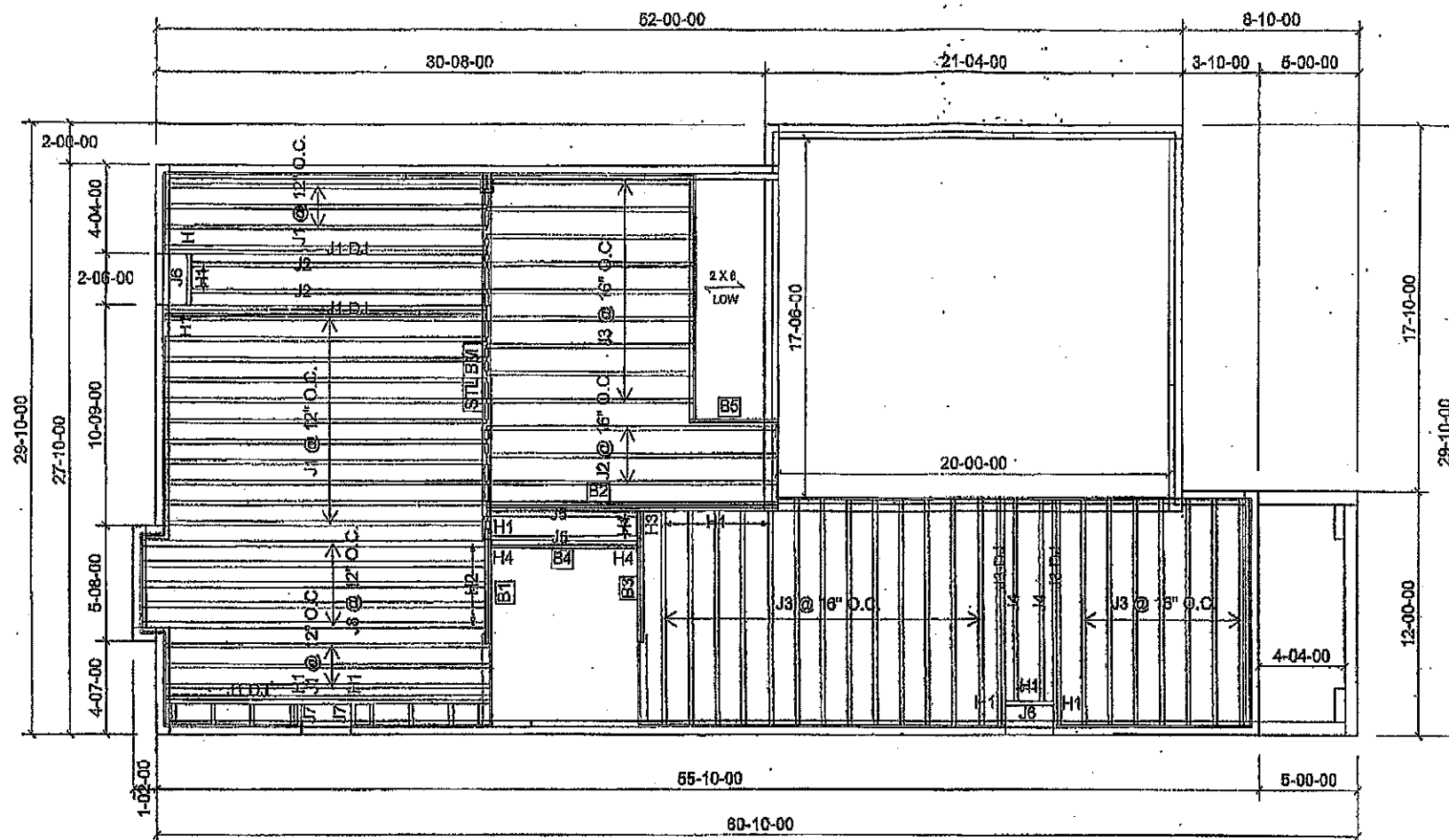
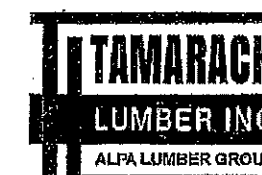




Products				
PlotID	Length	Product	Piles	Net Qty
J1	18-00-00	9 1/2" NI-40x	1	17
J1 DJ	18-00-00	9 1/2" NI-40x	2	6
J2	16-00-00	9 1/2" NI-40x	1	5
J3	12-00-00	9 1/2" NI-40x	1	29
J3 DJ	12-00-00	9 1/2" NI-40x	2	4
J4	10-00-00	9 1/2" NI-40x	1	2
J5	8-00-00	9 1/2" NI-40x	1	2
J6	4-00-00	9 1/2" NI-40x	1	2
J7	2-00-00	9 1/2" NI-40x	1	2
J8	18-00-00	9 1/2" NI-80	1	5
B2	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3
B4	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	2	2
B6	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B1	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
3	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
5	H1	IUS2.56/9.5
4	H1	IUS2.56/9.5
5	H2	IUS3.56/9.5
1	H3	HGUS410
2	H4	HUS1.81/10



FROM PLAN DATED: OCT 15 2018

BUILDER: GREEN PARK HOMES

SITE: LAMBERT LANE

MODEL: BARTON 3

ELEVATION: 2

LOT: 27

CITY: CALEDON

SALESMAN: M D

DESIGNER: PL

REVISION:

NOTES:

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

SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2 S.P.F REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. MULTIPLE SQUASH BLOCKS REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. CANTILEVERED JOISTS INCLUDING CANT' OVER BRICK REQ. 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

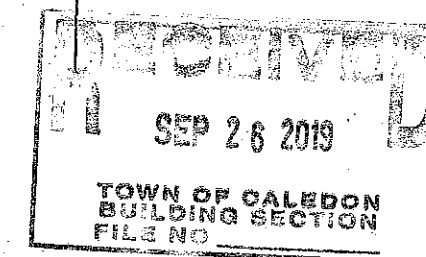
TILED AREAS: 20 lb/ft²

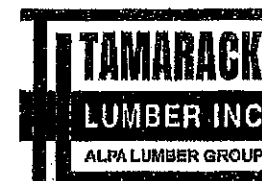
SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 11/14/2018

1st FLOOR

THIS STRUCTURE MUST BE
CONSTRUCTED TO MEET OR
EXCEED THE PROVISIONS OF
THE ONTARIO BUILDING CODE





FROM PLAN DATED: OCT 15 2018

BUILDER: GREEN PARK HOMES

SITE: LAMBERT LANE

MODEL: BARTON 3

ELEVATION: 2

LOT: 27

CITY: CALEDON

SALESMAN: M D

DESIGNER: PL

REVISION:

NOTES:

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

LOADING:

DESIGN LOADS: L/400.000

LIVE LOAD: 40.0 lb/ft²

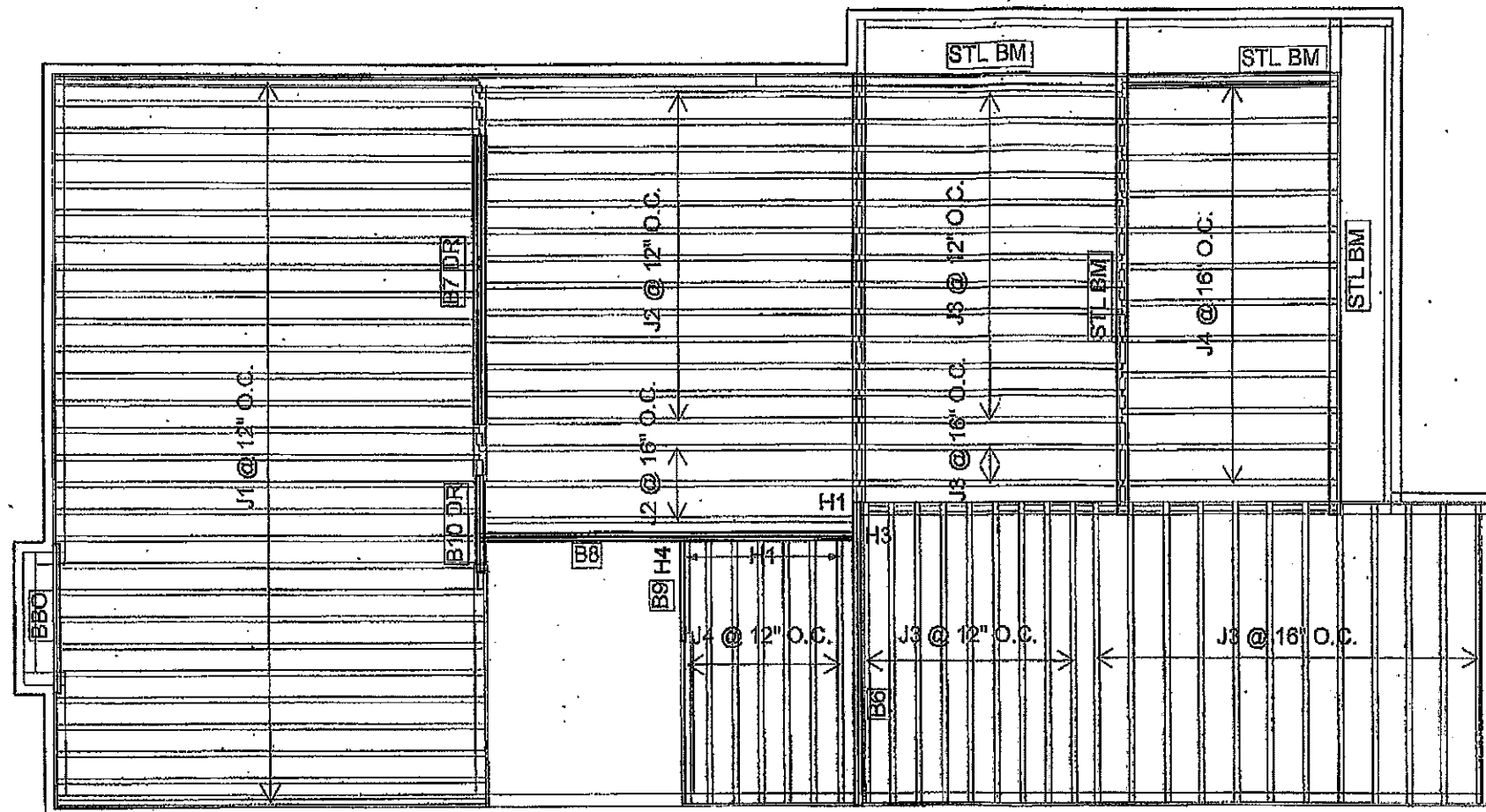
DEAD LOAD: 15.0 lb/ft²

TILED AREAS: 20 lb/ft²

SUBFLOOR: 5/8" GLUED AND NAILED

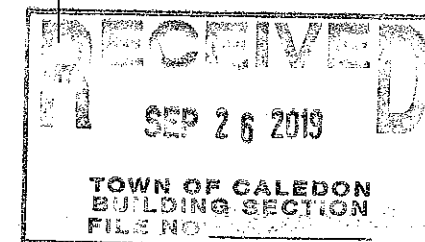
DATE: 11/14/2018

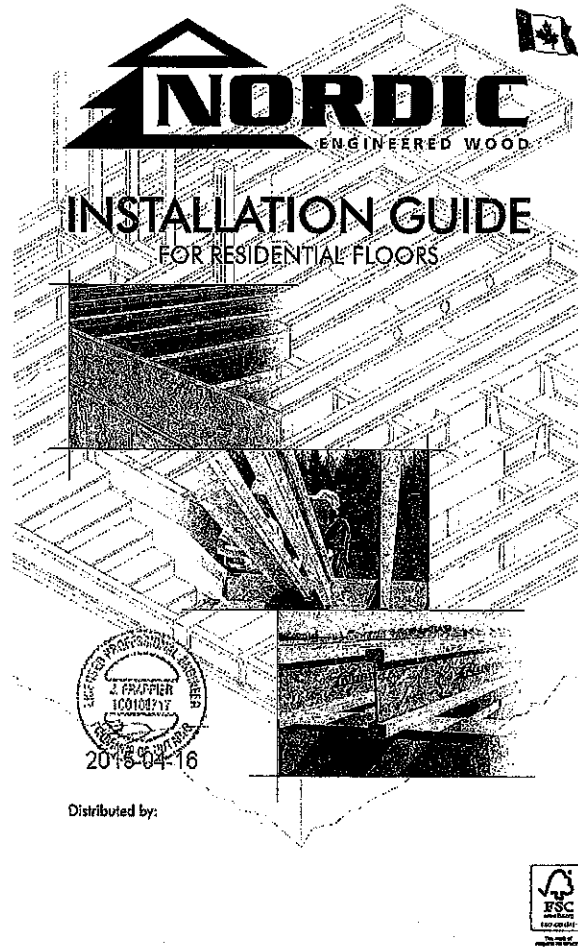
2nd FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	9 1/2" NI-40x	1	28
J2	16-00-00	9 1/2" NI-40x	1	16
J3	12-00-00	9 1/2" NI-40x	1	36
J4	10-00-00	9 1/2" NI-40x	1	19
B8	16-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2
B6	12-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2
B7 DR	12-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	3	3
B9	4-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	1	1
B10 DR	4-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
8	H1	IUS2.58/9.5
1	H3	HGUS410
1	H4	HUS1.81/10





NCB 1 / November 2014

SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

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

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

Avoid Accidents by Following these Important Guidelines:

1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bracing at joint ends. When I-joists are applied continuously over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.

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.

3. Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on center, and must be secured with a minimum of two 2-1/2" x 1/2" nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. Top ends of adjoining bracing over at least two I-joists.

4. 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.

5. For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-bracing.

6. Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only.

7. Never install a damaged I-joist.

8. Do not handle I-joists in a horizontal orientation.

9. NEVER USE OR TRY TO REPAIR A DAMAGED I-JOIST.

10. Restrain ends of floor joists to prevent rollover. Use rim board, rim joist or I-joist blocking panels.

11. For I-joists installed over and beneath bearing walls, use full depth blocking panels, rim board, or squash blocks (triple member) to transfer gravity loads through the floor system to the wall or foundation below.

12. Due to shrinkage, common framing lumber set an edge may never be used as blocking or rim boards. I-joist blocking panels or other engineered wood products – such as rim board – must be cut to fit between the I-joists, and an I-joist-compatible depth selected.

13. Provide permanent lateral support of the bottom flange of all I-joists at interior supports of multiple-span joists. Similarly, support the bottom flange of all cantilevered I-joists at the end support next to the cantilever extension. In the completed structure, the gypsum wallboard ceiling provides this lateral support. Until the final finished ceiling is applied, temporary bracing or struts must be used.

14. If square-edge panels are used, edges must be supported between I-joists with 2x4 blocking. Glue panels to blocking to minimize squeaks. Blocking is not required under structural finish flooring, such as wood strip flooring, or if a separate underlayment layer is installed.

15. Nail spacing: Space nails installed to the flange's top face in accordance with the applicable building code requirements or approved building plans.

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

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

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

19. Flange Width Material Thickness Required* Minimum Depth**

2-1/2" 1" 5-1/2"

3-1/2" 1-1/2" 7-1/4"

* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-Q325 or CAN/CSA-Q437 Standard.

** For face-mount hangers use net depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".

Notes:

1. Support back of I-joist web during nailing to prevent damage to web flange connection.

2. Leave a 1/8 to 1/4 inch gap between top of filler block and bottom of top I-joist flange.

3. Filler block is required between joists for full length of span.

4. Nail joists together with two rows of 3" nails at 12 inches o.c. (clinched when possible) on each side of the double I-joist. Total of four nails per foot required. If nails can be clinched, only two nails per foot are required.

5. The maximum factored load that may be applied to one side of the double joist using this detail is 560 lbs/ft. Verify double I-joist capacity.

6. Filler block

7. Offset nails from opposite face by 6"

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

9. Lumber 2x4 min., edge blocks to face of adjacent web. Two 2-1/2" x 1/2" nails from each web to lumber place, alternate on opposite side.

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

11. Notes:

1. In some local codes, blocking is prescriptively required in the first joist space (or first and second joist space) next to the starter joist. Where required, use local code requirements for spacing of the blocking.

2. All nails are common spiral in this detail.

3. Pair of Squash Blocks

4. Maximum Factored Vertical Load per Pair of Squash Blocks (lbs)

5. 2x Lumber

6. 1-1/8" Rim Board Plus

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

8. Attach rim joist to floor joist with one nail at top and bottom. Nail must provide 1 inch minimum penetration into floor joist. Toe-nailing may be used.

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

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

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

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

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112. Attach I-joist to top plate using 2-1/2" x 1/2" wire or spiral toe-nails at 6" o.c.

113. Attach I-joist to top plate using 2-1/2" x 1/2" wire or spiral toe-nails at 6" o.c.

114. Attach I-joist to top plate using 2-1/2" x 1/2" wire or spiral toe-nails at 6" o.c.

115. Attach I-joist to top plate using 2-1/2" x 1/2" wire or spiral toe-nails at 6" o.c.

116. Attach I-joist to top plate using 2-1/2" x 1/2" wire or spiral toe-nails at 6" o.c.

117. Attach I-joist to top plate using 2-1/2" x 1/2" wire or spiral toe-nails at 6" o.c.

118. Attach I-joist to top plate using 2-1/2" x 1/2" wire or spiral toe-nails at 6" o.c.

119. Attach I-joist to top plate using 2-1/2" x 1/2" wire or spiral toe-nails at 6" o.c.

120. Attach I-joist to top plate using 2-1/2" x 1/2" wire or spiral toe-nails at 6" o.c.

121. Attach I-joist to top plate using 2-1/2" x 1/2" wire or spiral toe-nails at 6" o.c.

122. Attach I-joist to top plate using 2-1/2" x 1/2" wire or spiral toe-nails at 6" o.c.

123. Attach I-joist to top plate using 2-1/2" x 1/2" wire or spiral toe-nails at 6" o



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

WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

- The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the largest rectangular hole or duct chase opening) and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
- A knockout is not considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
- Holes measuring 1-1/2 inches or smaller are permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.

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

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

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

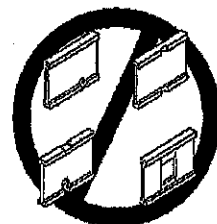
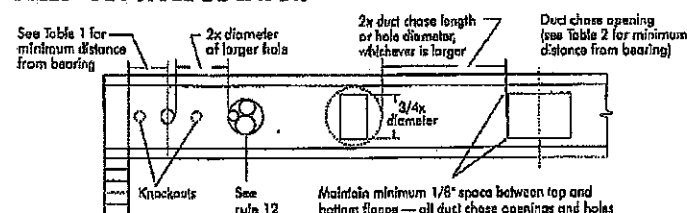
- Above table may be used for I-joint spacing of 24 inches on centre or less.
- Hole location distance is measured from inside face of supports to centre of hole.
- Distances in this chart are based on uniformly loaded joists.
- The above table is based on the I-joints being used at their maximum spans.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

TABLE 2
DUCT CHASE OPENING SIZES AND LOCATIONS
Simple Span Only

Joist Depth	Joist Series	Minimum Distance from Inside Face of Supports to Centre of Opening (ft - in.)											
		Duct Chase Length (in.)											
9-1/2"	NL-20	4-1"	4-5"	4-10"	5-4"	5-8"	6-1"	6-6"	7-1"	7-5"	---	---	---
	NL-40x	5-3"	5-8"	6-10"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	---	---	---
	NL-60	5-4"	5-9"	6-2"	6-7"	7-1"	7-5"	8-0"	8-5"	8-9"	---	---	---
	NL-70	5-1"	5-6"	5-10"	6-3"	6-7"	7-1"	7-6"	8-0"	8-4"	---	---	---
	NL-80	5-3"	5-8"	6-10"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	---	---	---
11-7/8"	NL-20	5-3"	5-8"	6-10"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	---	---	---
	NL-40x	6-0"	7-2"	7-6"	8-1"	8-6"	9-1"	9-6"	10-1"	10-6"	---	---	---
	NL-60	7-3"	7-8"	8-10"	8-5"	9-0"	9-5"	9-9"	10-3"	10-8"	---	---	---
	NL-70	7-1"	7-4"	7-9"	8-3"	8-7"	9-1"	9-6"	10-1"	10-6"	---	---	---
	NL-80	7-2"	7-7"	8-0"	8-5"	8-10"	9-3"	9-8"	10-2"	10-6"	---	---	---
14"	NL-20	7-6"	7-11"	8-4"	8-9"	9-2"	9-7"	10-1"	10-6"	10-11"	---	---	---
	NL-40x	7-7"	8-1"	8-5"	8-10"	9-4"	9-8"	10-2"	10-6"	11-0"	---	---	---
	NL-60	8-1"	8-7"	9-0"	9-6"	10-1"	10-7"	11-2"	12-0"	12-5"	---	---	---
	NL-70	8-0"	8-3"	9-0"	9-6"	10-1"	10-7"	11-2"	12-0"	12-5"	---	---	---
	NL-80	8-7"	9-1"	9-5"	9-10"	10-4"	10-8"	11-2"	11-7"	12-3"	---	---	---
16"	NL-20	9-0"	9-3"	9-9"	10-1"	10-7"	11-1"	11-6"	12-1"	12-6"	---	---	---
	NL-40x	9-2"	9-8"	10-0"	10-6"	11-1"	11-6"	12-1"	12-6"	13-1"	---	---	---
	NL-60	9-4"	9-9"	10-3"	10-7"	11-1"	11-6"	12-1"	12-6"	13-1"	---	---	---
	NL-70	10-3"	10-8"	11-2"	11-6"	12-1"	12-6"	13-1"	13-6"	14-1"	---	---	---
	NL-80	10-4"	10-9"	11-3"	11-8"	12-3"	12-8"	13-3"	13-8"	14-3"	---	---	---

- Above table may be used for I-joint spacing of 24 inches on centre or less.
- Duct chase opening location distance is measured from inside face of supports to centre of opening.
- The above table is based on simple span joists only. For other applications, contact your local distributor.
- Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of 1/400.
- The above table is based on I-joints being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans; contact your local distributor.

FIGURE 7
FIELD-CUT HOLE LOCATOR



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

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

Holes in webs should be cut with a sharp saw.

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

SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

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

AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:

- Brace and nail each I-joint as it is installed, using hangers, blocking panels, rim board, and/or cross-briding at joist ends. When I-joints are applied continuous over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
- When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joints. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joint rollover or buckling.
 - Temporary bracing or struts must be 1 1/4 inch minimum, at least 9 feet long and spaced no more than 8 feet on centre, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joint. Nail the bracing to a lateral restraint at the end of each bay. Top ends of bracing bracing over at least two I-joints.
 - On sheathing (temporary or permanent) can be nailed to the top flange of the first 4 feet of I-joints at the end of the bay.
- For cantilevered I-joints, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-briding.
- Install and fully nail permanent sheathing to each I-joint before placing loads on the floor system. Then, stack building materials over beams or walls only.
- Never install a damaged I-joint.

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

PRODUCT WARRANTY

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

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

Blocking Panel or Rim Joist

Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (psf)
N-Joints	3,300

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

Attach I-joint to top plate per detail 1b

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

Blocking Panel or Rim Joist

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

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

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

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

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

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

Pair of Squash Blocks

Pair of Squash Blocks	Maximum Factored Vertical Load per Pair of Squash Blocks (lbs)
2x Lumber	3-1/2" wide: 5,500 5-1/2" wide: 6,500
1-1/8" Rim Board Plus	5,500 6,500

Provide lateral bracing per detail 1a or 1b

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

Joist attachment per detail 1b

Load bearing wall above shall align vertically with the bearing below. Other conditions, such as offset bearing walls, are not covered by this detail.

Blocking required over all interior supports under load-bearing walls or when floor joists are not continuous over support

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

N-Joint blocking panel per detail 1a

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

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

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

* Minimum grade for backer block material shall be 3-PF No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-C308 or CAN/CSA-O487 Standard.

** For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".

Top- or face-mount hanger

Double I-joint header

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

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

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

Nordic Lam or Structural Composite Lumber (SCL)

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

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

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

2x plate flush with inside face of wall or beam. 1/8" overhang allowed past inside face of wall or beam.

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

Top-mount hanger installed per manufacturer's recommendations

Multiple I-joint header with full depth filler block shown. Nordic Lam or SCL headers may also be used. Verify double I-joint capacity to support concentrated loads.

Backer block attached per detail 1b. Nail with twelve 3" nails, clinch when possible.

Filler block per detail 1p

Install hanger per manufacturer's recommendations

Maximum support capacity = 1,620 lbs.

Do not bore-cut joist beyond inside face of wall

Attach I-joint per detail 1b

NOTE: Blocking required at bearing for lateral support, not shown for clarity.

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

N-Joint blocking panel

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

FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

Filler block

Offset nails from opposite face by 6"

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

NOTES:

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

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

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

2x4 min. (1/8" gap minimum)

Two 2-1/2" nails from each web to lumber piece, alternate on opposite side

One 2-1/2" nail one side only

NOTES:

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

All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.125" dia.) common spiral nails may be substituted for 2-1/2" (0.125" dia.) common wire nails assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for clarity.

WEB STIFFENERS

RECOMMENDATIONS:

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

FIGURE 2
WEB STIFFENER INSTALLATION DETAILS

Flange width 2-1/2" or 3-1/2"

Approx. 2" L

1/8" to 1/4" Gap

(4) 2-1/2" nails, 3" nails required for 3-1/2" flange width

No Gap

See the adjacent table for web stiffener size requirements

CONCENTRATED LOAD (Load stiffener)

END BEARING (Bearing stiffener)

STIFFENER SIZE REQUIREMENTS

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

CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

Method 1 — SHEATHING REINFORCEMENT ONE SIDE

Rim board or wood structural panel closure (3/4" minimum thickness); attach per detail 1a

N-Joint blocking panel or rim board blocking, attach per detail 1g

Attach I-joint to plate per detail 1b

2-1/2" nails

3-1/2" min. bearing required

Method 2 — SHEATHING REINFORCEMENT TWO SIDES

Use same installation as Method 1 but reinforces both sides of I-joint with sheathing.

Use nailing pattern shown for Method 1 with opposite face nailing offset by 3".

NOTE: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4") required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2" nails at 6" o.c., top and bottom

NORDIC STRUCTURES

COMPANY
TAMARACK LUMBER INC.
3269 NORTH SERVICE ROAD
BURLINGTON ONTARIO
Nov. 14, 2018 11:53

PROJECT
J1 1ST FLOOR

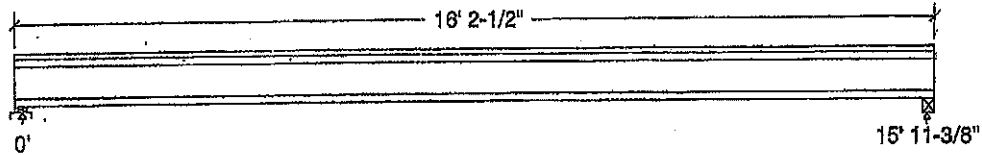
Design Check Calculation Sheet

Nordic Sizer - Canada 7.1

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), Bearing Resistances (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	159		159
Live	319		319
Factored:			
Total	678		678
Bearing:			
Resistance			
Joist	1865		1867
Support	3651		-
Des ratio			
Joist	0.36		0.36
Support	0.19		-
Load case	#2		#2
Length	2-3/8		2-1/2
Min req'd	1-3/4		-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	1.00		-
fcp sup	769		-
Kzcp sup	1.00		-



DESIGN CONFORMS TO OBC2012

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

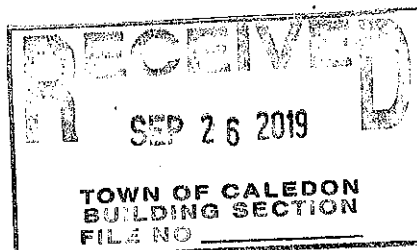
Supports: 1 - Lumber Sill plate, No.1/No.2; 2 - Steel Beam, W;

Total length: 16' 2-1/2"; Clear span: 15' 9-6/8"; 3/4" nailed and glued OSB sheathing

This section PASSES the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 678	Vr = 1895	lbs	Vf/Vr = 0.36
Moment (+)	Mf = 2702	Mr = 4824	lbs-ft	Mf/Mr = 0.56
Perm. Defl'n	0.12 = < L/999	0.53 = L/360	in	0.23
Live Defl'n	0.24 = L/783	0.40 = L/480	in	0.61
Total Defl'n	0.37 = L/522	0.80 = L/240	in	0.46
Bare Defl'n	0.29 = L/656	0.53 = L/360	in	0.55
Vibration	Lmax = 15'-11.4	Lv = 17'-1.8	ft	0.93
Defl'n	= 0.032	= 0.040	in	0.79



ET0000341

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=fireLoad Patterns: s=S/2 L=L+Ls _=no pattern load in this span
All Load Combinations (LCs) are listed in the Analysis output**CALCULATIONS:**Deflection: E_Ieff = 265e06 lb-in² K= 4.94e06 lbs

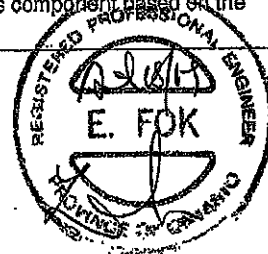
"Live" deflection = Deflection from all non-dead loads (live, wind, snow...)

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.



DESIGN CONFORMS TO OBC2012



ET0000342

NORDIC STRUCTURES

COMPANY
TAMARACK LUMBER INC.
3269 NORTH SERVICE ROAD
BURLINGTON ONTARIO
Nov. 14, 2018 11:54

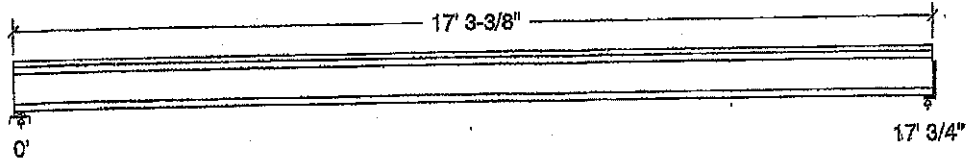
PROJECT
J8 1ST FLOOR

Design Check Calculation Sheet Nordic Sizer - Canada 7.1

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

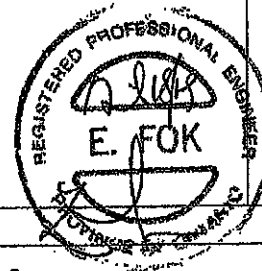
Maximum Reactions (lbs), Bearing Resistances (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	171		171
Live	341		341
Factored:			
Total	725		725
Bearing:			
Resistance			1893
Joist	1893		-
Support	5112		-
Des ratio			0.38
Joist	0.38		-
Support	0.14		-
Load case	#2		#2
Length	2-3/8		2
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	1.00		-
fcp sup	769		-
Kzcp sup	1.00		-



DESIGN CONFORMS TO OBC2012



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

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

Total length: 17' 3-3/8"; Clear span: 16' 11"; 3/4" nailed and glued OSB sheathing

This section PASSES the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 725	Vr = 1895	lbs	Vf/Vr = 0.38
Moment (+)	Mf = 3093	Mr = 8958	lbs-ft	Mf/Mr = 0.35
Perm. Defl'n	0.12 = < L/999	0.57 = L/360	in	0.20
Live Defl'n	0.23 = L/884	0.43 = L/480	in	0.54
Total Defl'n	0.35 = L/589	0.85 = L/240	in	0.41
Base Defl'n	0.26 = L/776	0.57 = L/360	in	0.46
Vibration	Lmax = 17'-0.8	Lv = 18'-4.9	ft	0.93
Defl'n	= 0.030	= 0.037	in	0.80

ET0000343

NORDIC STRUCTURES

COMPANY
TAMARACK LUMBER INC.
3269 NORTH SERVICE ROAD
BURLINGTON ONTARIO
Nov. 14, 2018 11:57

PROJECT
J1 2ND FLOOR

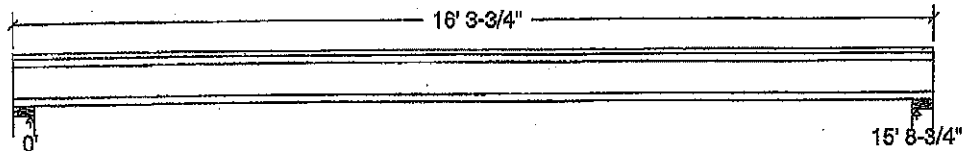
Design Check Calculation Sheet

Nordic Sizer - Canada 7.1

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), Bearing Resistances (lbs) and Bearing Lengths (in) :



Unfactored:				
Dead	157			157
Live	315			315
Factored:				
Total	668			668
Bearing:				
Resistance				
Joist	1893			1893
Support	7744			7744
Des ratio				
Joist	0.35			0.35
Support	0.09			0.09
Load case	#2			#2
Length	4-3/8			4-3/8
Min req'd	1-3/4			1-3/4
Stiffener	No			No
KD	1.00			1.00
KB support	1.00			1.00
fcp sup	769			769
Kzcp sup	1.15			1.15



DESIGN CONFORMS TO OBC2012



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

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

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

Total length: 16' 3-3/4"; Clear span: 15' 7"; 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 = 668	Vr = 1895	lbs	Vf/Vr = 0.35
Moment (+)	Mf = 2628	Mr = 4824	lbs-ft	Mf/Mr = 0.54
Perm. Defl'n	0.12 = < L/999	0.52 = L/360	in	0.23
Live Defl'n	0.24 = L/795	0.39 = L/480	in	0.60
Total Defl'n	0.36 = L/530	0.79 = L/240	in	0.45
Bare Defl'n	0.28 = L/682	0.52 = L/360	in	0.53
Vibration	Lmax = 15'-8.8	Lv = 16'-8.5	ft	0.94
Defl'n	= 0.034	= 0.041	in	0.83

ET0000345

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	EC#
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

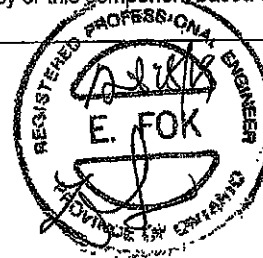
All Load Combinations (LCs) are listed in the Analysis output

CALCULATIONS:Deflection: E_{ieff} = 258e06 lb-in² K= 4.94e06 lbs

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

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.



DESIGN CONFORMS TO OBC2012

7ET0000346



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

PASSED

1ST FLOOR FRAMING\Flush Beams\B2(I4327)

Dry | 1 span | No cant.

November 14, 2018 13:31:34

BC CALCO® Member Report

Build 6476

Job name:

Address:

City, Province, Postal Code: CALEDON

Customer:

Code reports: CCMC 12472-R

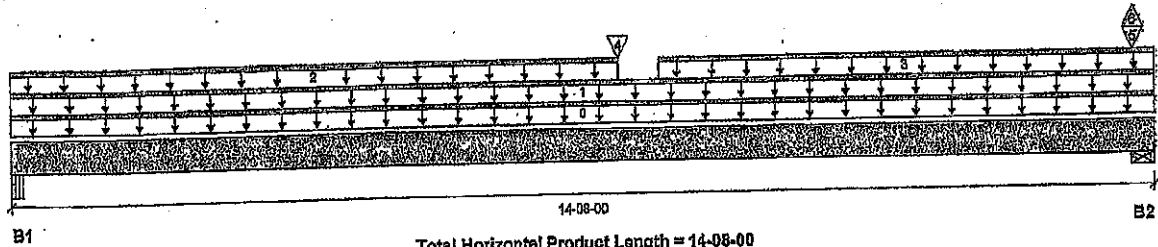
File name: BARTON 3.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B2(I4327)

Specifier:

Designer: PL

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-1/2"	959 / 0	643 / 0		
B2, 3-1/2"	3,336 / 2	2,398 / 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	14-08-00	Top	14				00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	14-08-00	Top	23	12			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	07-09-04	Top	8	4			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	08-08-08	14-08-00	Top	228	118			n/a
4	B3(I4398)	Conc. Pt. (lbs)	L	07-09-04	07-09-04	Top	980	610			n/a
6	6(I420)	Conc. Pt. (lbs)	L	14-04-11	14-04-11	Top	1,462	1,269			n/a
6	6(I420)	Conc. Pt. (lbs)	L	14-04-11	14-04-11	Top	-2				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	14,549 ft-lbs	36,222 ft-lbs	40.2%	1	07-09-04
End Shear	3,547 lbs	17,356 lbs	20.4%	1	13-07-00
Total Load Deflection	L/379 (0.452")	n/a	63.3%	6	07-08-10
Live Load Deflection	L/617 (0.276")	n/a	58.3%	6	07-08-10
Max Defl.	0.452"	n/a	n/a	6	07-08-10
Span / Depth	18.1				

Bearing Supports	D/m. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Beam 2-1/2" x 5-1/4"	2,241 lbs	32.0%	14.0%	Unspecified
B2	Wall/Plate 3-1/2" x 5-1/4"	8,002 lbs	81.6%	35.7%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-00-00.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALCO analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor: Normal Part code: Part 9
 Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.
 Nailing schedule applies to both sides of the member.

Nail one ply to another with
 3 1/2" spiral nails @ 6"
 o.c., staggered in 2 rows



DESIGN CONFORMS TO OBC2012

ET0000347



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

PASSED

1ST FLOOR FRAMING\Flush Beams\B4(14210)

Dry | 1 span | No cant.

November 14, 2018 13:31:34

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: CALEDON

Customer:

Code reports: CCMC 12472-R

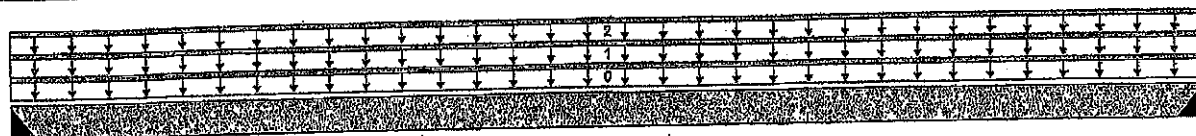
File name: BARTON 3.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B4(14210)

Specifier:

Designer: PL

Company:



B1 07-05-00 B2
Total Horizontal Product Length = 07-05-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3"	915 / 0	476 / 0		
B2, 3"	915 / 0	476 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-05-00	Top	1.00	0.65	1.00	1.16	00-00-00
1	STAIRS	Unf. Lin. (lb/ft)	L	00-00-00	07-05-00	Top	240	120			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	07-05-00	Top	10	5			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3,248 ft-lbs	11,610 ft-lbs	28.0%	1	03-09-00
End Shear	1,409 lbs	5,785 lbs	24.3%	1	01-00-08
Total Load Deflection	L/999 (0.082")	n/a	n/a	4	03-08-00
Live Load Deflection	L/999 (0.054")	n/a	n/a	5	03-08-00
Max Defl.	0.082"	n/a	n/a	4	03-08-00
Span / Depth	8.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Hanger	3" x 1-3/4"	1,967 lbs	n/a	30.7%	HUS1.81/10
B2 Hanger	3" x 1-3/4"	1,967 lbs	n/a	30.7%	HUS1.81/10

Cautions

Header for the hanger HUS1.81/10 at B1 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.
Hanger model HUS1.81/10 and seat length were input by the user. †

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

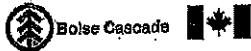
Notes

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



DESIGN CONFORMS TO OBC2012

ET0000348



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

PASSED

1ST FLOOR FRAMING\Flush Beams\B3(4396)

Dry | 1 span | No cant.

November 14, 2018 13:31:34

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: CALEDON

Customer:

Code reports: CCMC 12472-R

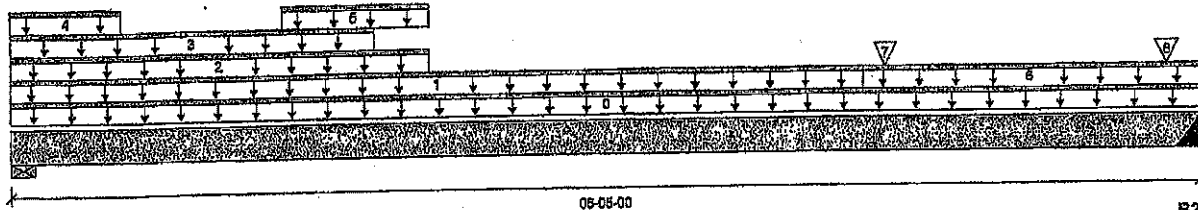
File name: BARTON 3.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B3(4396)

Specifier:

Designer: PL

Company:



06-05-00

B2

B1

Total Horizontal Product Length = 06-05-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	435 / 0	619 / 0		
B2, 4"	1,024 / 0	636 / 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	06-05-00	Top		10			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	04-07-02	Top	27	13			n/a
2	10(497)	Unf. Lin. (lb/ft)	L	00-00-00	02-03-00	Top		81			n/a
3	10(497)	Unf. Lin. (lb/ft)	L	00-00-00	01-11-08	Top		70			n/a
4	10(497)	Unf. Lin. (lb/ft)	L	00-00-00	00-07-02	Top	26				n/a
5	10(497)	Unf. Lin. (lb/ft)	L	01-05-08	02-03-00	Top	122	221			n/a
6	FC1 Floor Material	Unf. Lin. (lb/ft)	L	04-07-02	06-05-00	Top	24	12			n/a
7	-	Conc. Pt. (lbs)	L	04-08-09	04-08-09	Top	1,046	541			n/a
8	J5(4243)	Conc. Pt. (lbs)	L	06-02-14	06-02-14	Top	122	61			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2,861 ft-lbs	23,220 ft-lbs	12.3%	1	04-08-00
End Shear	2,001 lbs	11,571 lbs	17.3%	1	05-03-08
Total Load Deflection	L/999 (0.023")	n/a	n/a	4	03-04-03
Live Load Deflection	L/999 (0.013")	n/a	n/a	5	03-05-15
Max Defl.	0.023"	n/a	n/a	4	03-04-03
Span / Depth	7.4				

Bearing Supports	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4" x 3-1/2"	1,425 lbs	19.1%	8.3%	Unspecified
B2	Hanger 4" x 3-1/2"	2,331 lbs	n/a	13.6%	HGUS410

Cautions

Header for the hanger HGUS410 at B2 is a Triple 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.
Hanger model HGUS410 and seat length were input by the user.

Nail one ply to another with
3 1/2" spiral nails @
o.c. staggered in 2 rows



DESIGN CONFORMS TO OBC2012

ET0000349



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

PASSED

1ST FLOOR FRAMING\Flush Beams\B5\I4426

Dry | 1 span | No cant.

November 14, 2018 13:31:34

BC CALCO® Member Report

Build 8475

Job name:

Address:

City, Province, Postal Code: CALEDON

Customer:

Code reports: CCMC 12472-R

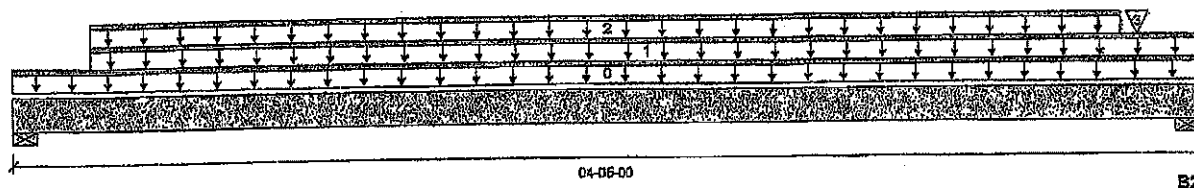
File name: BARTON 3.mmdl

Description: 1ST FLOOR FRAMING\Flush Beams\B5\I4426

Specifier:

Designer: PL

Company:



Total Horizontal Product Length = 04-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	247 / 0	134 / 0		
B2, 3-1/2"	250 / 0	147 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-06-00	Top	1.00	0.85	1.00	1.15	00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-03-08	04-06-00	Top	9	4			n/a
2	STAIRS	Unf. Lin. (lb/ft)	L	00-03-08	04-01-08	Top	120	60			n/a
3	7(I423)	Conc. Pt. (lbs)	L	04-02-04	04-02-04	Top		12			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	548 ft-lbs	11,810 ft-lbs	4.7%	1	02-02-08
End Shear	315 lbs	5,785 lbs	5.4%	1	01-01-00
Total Load Deflection	L/999 (0.004")	n/a	n/a	4	02-02-08
Live Load Deflection	L/999 (0.003")	n/a	n/a	5	02-02-08
Max Defl.	0.004"	n/a	n/a	4	02-02-08
Span / Depth	5.0				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 1-3/4"	539 lbs	16.5%	7.2%	Unspecified
B2	Wall/Plate 3-1/2" x 1-3/4"	559 lbs	17.1%	7.5%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALCO® 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



DESIGN CONFORMS TO OBC2012

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

ET0000350



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

1ST FLOOR FRAMING\Flush Beams\B1(i4331)

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

November 14, 2018 13:31:34

Build 6475

Job name:

File name: BARTON 3.mmdl

Address:

Description: 1ST FLOOR FRAMING\Flush Beams\B1(i4331)

City, Province, Postal Code: CALEDON

Specifier:

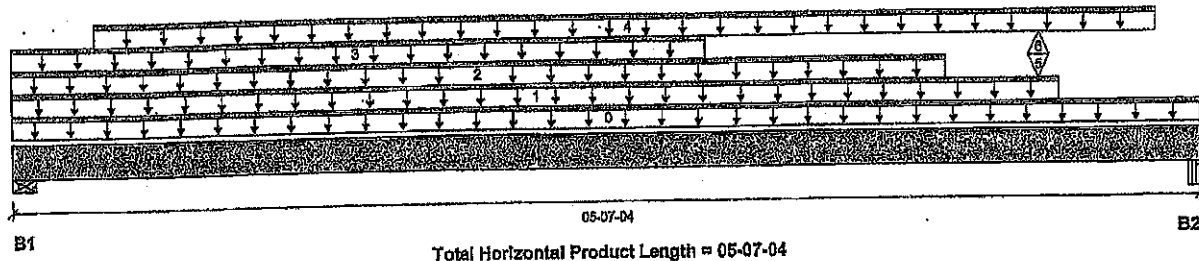
Customer:

Designer: PL

Code reports:

CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	1,943 / 0	1,440 / 0		
B2, 5-3/4"	4,000 / 1	2,803 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	05-07-04	Top	1.00	0.66	1.00	1.15	00-00-00
1	17(13754)	Unf. Lin. (lb/ft)	L	00-00-00	04-11-04	Top		81			n/a
2	17(13754)	Unf. Lin. (lb/ft)	L	00-00-00	04-04-12	Top	331	166			n/a
3	17(13754)	Unf. Lin. (lb/ft)	L	00-00-00	03-03-01	Top		79			n/a
4	Smoothed Load	Unf. Lin. (lb/ft)	L	00-04-12	05-04-12	Top	354	178			n/a
5	"	Conc. Pt. (lbs)	L	04-10-02	04-10-02	Top	2,705	1,885			n/a
6	"	Conc. Pt. (lbs)	L	04-10-02	04-10-02	Top	-1				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	5,823 ft-lbs	23,220 ft-lbs	25.1%	1	02-10-12
End Shear	4,751 lbs	11,571 lbs	41.1%	1	04-04-00
Total Load Deflection	L/999 (0.035")	n/a	n/a	6	02-10-00
Live Load Deflection	L/999 (0.021")	n/a	n/a	8	02-10-00
Max Defl.	0.035"	n/a	n/a	6	02-10-00
Span / Depth	6.1				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/4" x 3-1/2"	4,714 lbs	48.0%	21.0%	Unspecified
B2	Beam 5-3/4" x 3-1/2"	9,263 lbs	85.8%	37.5%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

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

Nail one ply to another with
3 1/2" spiral nails @ 6"

O.C. staggered in 2 rows



DESIGN CONFORMS TO OBC2012

ET0000351



Bolsa Cascade



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

2ND FLOOR FRAMING\Flush Beams\B8\14314

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

November 14, 2018 13:31:34

Build 8475

Job name:

File name: BARTON 3.mxd

Address:

Description: 2ND FLOOR FRAMING\Flush Beams\B8\14314

City, Province, Postal Code: CALEDON

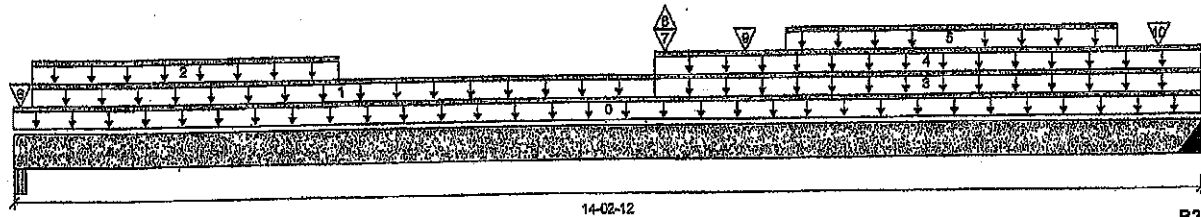
Specifier:

Customer:

Designer: PL

Code reports: CCMC 12472-R

Company:



B1

Total Horizontal Product Length = 14-02-12

B2

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	1,101 / 1	786 / 0		
B2, 4"	1,147 / 2	1,043 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.85	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	14-02-12	Top		10			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-02-12	07-07-12	Top	15	8			n/a
2	STAIRS	Unf. Lin. (lb/ft)	L	00-02-12	03-10-12	Top	240	120			n/a
3	20(14400)	Unf. Lin. (lb/ft)	L	07-07-12	14-02-12	Top		65			n/a
4	FC2 Floor Material	Unf. Lin. (lb/ft)	L	07-07-12	14-02-12	Top	13	6			n/a
5	Smoothed Load	Unf. Lin. (lb/ft)	L	09-02-10	13-02-10	Top	198	98			n/a
6	18(14252)	Conc. Pt. (lbs)	L	00-01-00	00-01-00	Top		19			n/a
7	-	Conc. Pt. (lbs)	L	07-09-04	07-09-04	Top	36	144			n/a
8	-	Conc. Pt. (lbs)	L	07-09-04	07-09-04	Top	-3				n/a
9	J4(13668)	Conc. Pt. (lbs)	L	08-08-10	08-08-10	Top	179	89			n/a
10	J4(14000)	Conc. Pt. (lbs)	L	13-08-10	13-08-10	Top	162	81			n/a

Controls Summary

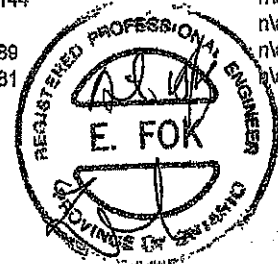
	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	8,153 ft-lbs	23,220 ft-lbs	35.1%	1	08-08-10
End Shear	2,623 lbs	11,571 lbs	22.7%	1	13-01-04
Total Load Deflection	L/406 (0.411")	n/a	59.2%	6	07-02-02
Live Load Deflection	L/768 (0.217")	n/a	46.9%	8	07-02-02
Max Defl.	0.411"	n/a	n/a	8	07-02-02
Span / Depth	17.5				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	1-3/4" x 3-1/2"	2,632 lbs	39.4%	35.2%	Unspecified
B2 Hanger	4" x 8-1/2"	3,025 lbs	n/a	17.7%	HGUS410

Cautions

Header for the hanger HGUS410 at B2 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF. Hanger model HGUS410 and seat length were input by the user. Nail one ply to another with 3 1/2" spiral nails @ 12" o.c. staggered in 2 rows



DESIGN CONFORMS TO OBC2012

ET0000352



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B6(14328)

Dry | 1 span | No cant.

November 14, 2018 13:31:34

BC CALC® Member Report

Buld 6475

Job name:

Address:

City, Province, Postal Code: CALEDON

Customer:

Code reports: CCMC 12472-R

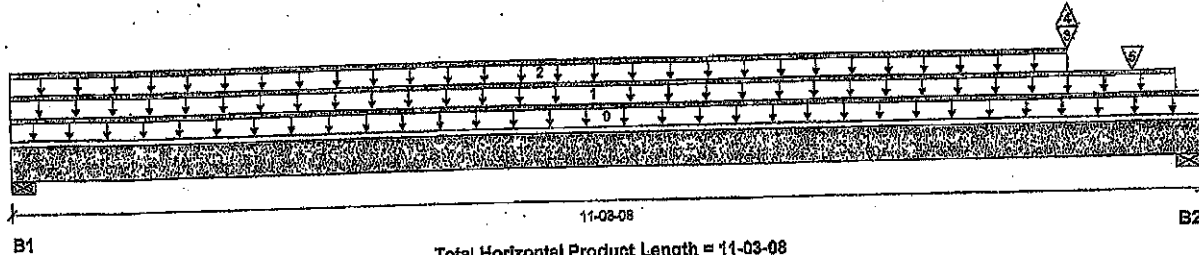
File name: BARTON 3.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B6(14328)

Specifier:

Designer: PL

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	210 / 0	199 / 0		
B2, 5-1/2"	1,413 / 2	1,201 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	11-03-08	Top	1.00	0.85	1.00	1.15	00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	11-00-12	Top	7	3			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	10-00-08	Top	13	7			n/a
3	-	Conc. Pt. (lbs)	L	10-00-08	10-00-08	Top	1,126	1,043			n/a
4	-	Conc. Pt. (lbs)	L	10-00-08	10-00-08	Top	-2				n/a
5	J2(14272)	Conc. Pt. (lbs)	L	10-08-00	10-08-00	Top	289	144			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2,692 ft-lbs	23,220 ft-lbs	11.6%	1	10-00-08
End Shear	3,106 lbs	11,571 lbs	26.8%	1	10-00-08
Total Load Deflection	L/999 (0.068")	n/a	n/a	6	08-02-05
Live Load Deflection	L/999 (0.035")	n/a	n/a	8	08-02-05
Max Defl.	0.068"	n/a	n/a	6	08-02-05
Span / Depth	13.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	564 lbs	6.5%	2.4%	Unspecified
B2	Wall/Plate 5-1/2" x 3-1/2"	3,620 lbs	35.2%	15.4%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

Nail one ply to another with
3 1/2" spiral nails @ 6"
o.c, staggered in 2 rows



DESIGN CONFORMS TO OBC2012

ET0000353



Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
2ND FLOOR FRAMING\Dropped Beams\B7 DR\I4441

PASSED

BC CALC® Member Report

Dry | 1 span | No cant.

November 14, 2018 13:31:34

Build 6475

Job name:

File name: BARTON 3.mmdl

Address:

Description: 2ND FLOOR FRAMING\Dro...ed Beams\B7 DR\I4441

City, Province, Postal Code: CALEDON

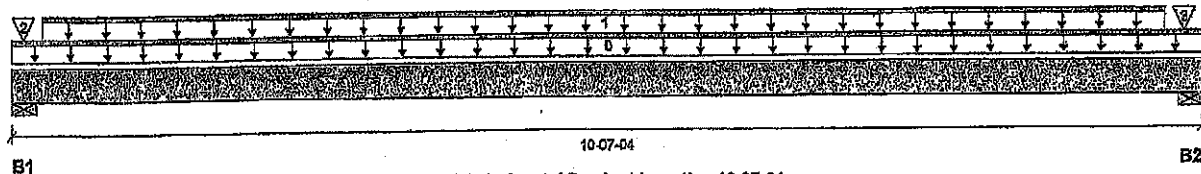
Specifier:

Customer:

Designer: PL

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 10-07-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-3/4"	3,264 / 0	2,063 / 0		
B2, 3-1/2"	3,115 / 0	1,989 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-07-04	Top		14			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-03-04	10-03-04	Top	809	369			n/a
2	J2(I4423)	Conc. Pt. (lbs)	L	00-01-04	00-01-04	Top	289	169			n/a
3	Bk1(I4406)	Conc. Pt. (lbs)	L	10-05-04	10-05-04	Top		40			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	17,874 ft-lbs	36,222 ft-lbs	49.3%	1	05-01-04
End Shear	6,482 lbs	17,356 lbs	37.3%	1	01-01-04
Total Load Deflection	L/388 (0.313")	n/a	61.8%	4	05-05-04
Live Load Deflection	L/832 (0.192")	n/a	56.9%	5	05-05-04
Max Defl.	0.313"	n/a	n/a	4	05-05-04
Span / Depth	12.8				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-3/4" x 5-1/4"	7,476 lbs	46.8%	31.1%	Unspecified
B2	Wall/Plate 3-1/2" x 5-1/4"	7,159 lbs	48.0%	31.9%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume unbraced length of Top: 00-02-12, Bottom: 00-02-12.
 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
 Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.
 Nailing schedule applies to both sides of the member.
 Member has no side loads.

Nail one ply to another with
 3 1/2" spiral nails @ 8"
 o.c., staggered in 2 rows (Top loaded)



DESIGN CONFORMS TO OBC2012

ET0000354



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
2ND FLOOR FRAMING\Flush Beams\B16\16577
 Dry | 1 span | No cant.

PASSED

November 15, 2018 10:50:00

BC CALC® Member Report

Build 6476

Job name:

Address:

City, Province, Postal Code: CALEDON

Customer:

Code reports: CCMC 12472-R

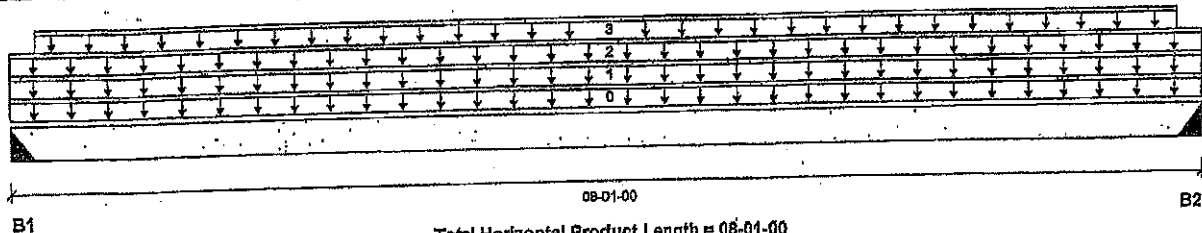
File name: BARTON 3.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B16\16577

Specifier:

Designer: PL

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	214 / 0	359 / 0	412 / 0	
B2, 4"	214 / 0	359 / 0	412 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.85	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-01-00	Top		10			00-00-00
1	LOW ROOF	Unf. Lin. (lb/ft)	L	00-00-00	08-01-00	Top	33	30	102		n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	08-01-00	Top	20	10			n/a
3	14(1787)	Unf. Lin. (lb/ft)	L	00-02-00	07-11-00	Top		41			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2,269 ft-lbs	23,220 ft-lbs	9.8%	13	04-00-08
End Shear	931 lbs	11,571 lbs	8.0%	13	01-01-08
Total Load Deflection	L/999 (0.036")	n/a	n/a	35	04-00-08
Live Load Deflection	L/999 (0.023")	n/a	n/a	51	04-00-08
Max Defl.	0.036"	n/a	n/a	35	04-00-08
Span / Depth	9.5				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Hanger	4" x 3-1/2"	1,281 lbs	n/a	7.5%	HGUS410
B2 Hanger	4" x 3-1/2"	1,281 lbs	n/a	7.5%	HGUS410

Cautions

Header for the hanger HGUS410 at B1 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF. Hanger model HGUS410 and seat length were input by the user.

Header for the hanger HGUS410 at B2 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.

Nail one ply to another with
 3 1/2" spiral nails @ 12"
 o.c., staggered in 2 rows



DESIGN CONFORMS TO OBC2012

ET0000355



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B9(14395)

Dry | 1 span | No cant.

November 14, 2018 13:31:34

BC CALCO® Member Report

Build 8475

Job name:

Address:

City, Province, Postal Code: CALEDON

Customer:

Code reports: CCMC 12472-R

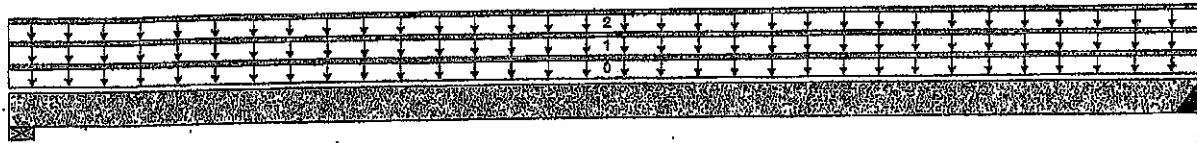
File name: BARTON 3.mndi

Description: 2ND FLOOR FRAMING\Flush Beams\B9(14395)

Specifier:

Designer: PL

Company:



B1 03-08-12 B2
Total Horizontal Product Length = 03-08-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	9 / 0	138 / 0		
B2, 3"	9 / 0	133 / 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	03-08-12	Top		5			00-00-00
1	19(14394)	Unf. Lin. (lb/ft)	L	00-00-00	03-08-12	Top		65			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-08-12	Top	5	3			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	138 ft-lbs	7,546 ft-lbs	1.8%	0	01-10-10
End Shear	81 lbs	3,761 lbs	2.2%	0	01-01-00
Total Load Deflection	L/999 (0.001")	n/a	n/a	4	01-10-10
Live Load Deflection	L/999 (0")	n/a	n/a	5	01-10-10
Max Defl.	0.001"	n/a	n/a	4	01-10-10
Span / Depth	4.2				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 1-3/4"	190 lbs	9.0%	3.9%	Unspecified
B2	Hanger 3" x 1-3/4"	186 lbs	n/a	4.5%	HUS1.81/10

Cautions

Header for the hanger HUS1.81/10 at B2 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.
Hanger model HUS1.81/10 and seat length were input by the user.

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume member is fully braced.
Hanger Manufacturer: Unassigned
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALCO 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



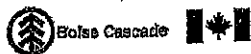
DESIGN CONFORMS TO OBC2012

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

ET0000356



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

2ND FLOOR FRAMING\Dropped Beams\B10 DR\4257

PASSED

BC CALC® Member Report

Build 8475

Job name:

Address:

City, Province, Postal Code: CALEDON

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

November 14, 2018 13:31:34

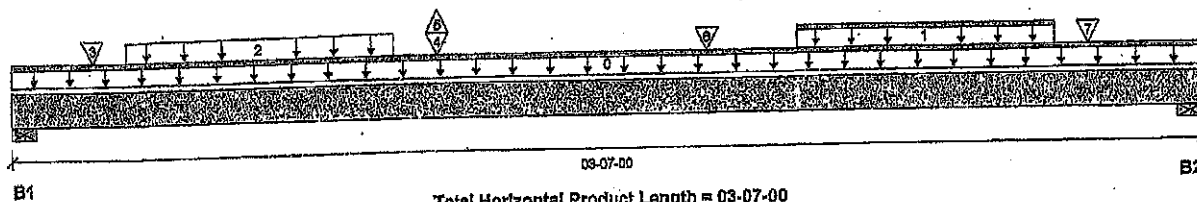
File name: BARTON 3.mmdl

Description: 2ND FLOOR FRAMING\Dro...d Beams\B10 DR\4257

Specifier:

Designer: PL

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	1,562 / 1	1,077 / 0		
B2, 3-1/2"	1,539 / 0	983 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-07-00	Top	10	65			n/a
1	Bk1(4351)	Unf. Lin. (lb/ft)	L	02-04-04	03-01-12	Top	34				n/a
2	Bk1(4367)	Trapezoidal (lb/ft)	L	00-04-04	01-01-12	Top	38				n/a
3	J1(3854)	Conc. Pt. (lbs)	L	00-03-00	00-03-00	Top	322	161			n/a
4	-	Conc. Pt. (lbs)	L	01-03-05	01-03-05	Top	1,443	1,075			n/a
5	-	Conc. Pt. (lbs)	L	01-03-05	01-03-05	Top	-1				n/a
6	-	Conc. Pt. (lbs)	L	02-01-01	02-01-01	Top	612	330			n/a
7	-	Conc. Pt. (lbs)	L	03-03-00	03-03-00	Top	703	365			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3,112 ft-lbs	23,220 ft-lbs	13.4%	1	01-03-08
End Shear	2,982 lbs	11,571 lbs	25.8%	1	01-01-00
Total Load Deflection	L/999 (0.007")	n/a	n/a	6	01-08-10
Live Load Deflection	L/999 (0.004")	n/a	n/a	8	01-08-10
Max Defl.	0.007"	n/a	n/a	6	01-08-10
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"	3,690 lbs	37.1%	24.7%	Unspecified
B2	Wall/Plate 3-1/2" x 3-1/2"	3,536 lbs	35.6%	23.7%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume unbraced length of Top: 00-02-12, Bottom: 00-02-12.
 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
 Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.
 Member has no side loads.

Nail one ply to another with
 3 1/2" spiral nails @ 6"
 o.c. staggered in 2 rows



DESIGN CONFORMS TO OBC2012

ET0000357



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

PASSED

2ND FLOOR FRAMING\Flush Beams\B15\I5331

Dry | 1 span | No cant.

November 15, 2018 10:50:00

BC CALC® Member Report

Build 6476

Job name:

Address:

Cty, Province, Postal Code: CALEDON

Customer:

Code reports: CCMC 12472-R

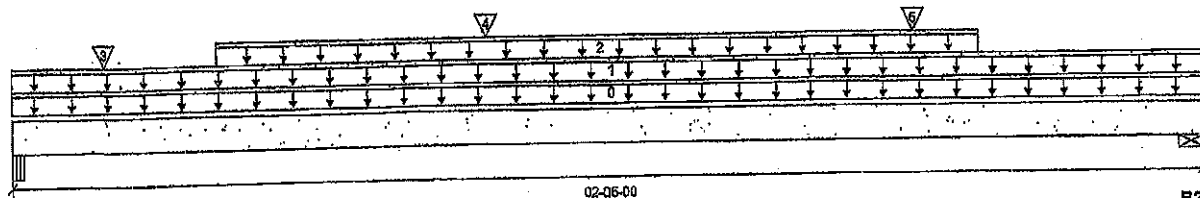
File name: BARTON 3.mmdl

Description: 2ND FLOOR FRAMING\Flush Beams\B15\I5331

Specifier:

Designer: PL

Company:



B1

Total Horizontal Product Length = 02-05-00

B2

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5"	368 / 0	634 / 0	893 / 0	
B2, 3-1/2"	405 / 0	871 / 0	999 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.85	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	02-05-00	Top	33	30	102		n/a
1	LOW ROOF	Unf. Lin. (lb/ft)	L	00-00-00	02-05-00	Top	33	111	102		n/a
2	13(I1788)	Unf. Lin. (lb/ft)	L	00-05-00	01-11-08	Top	120	207	477		n/a
3	E22(I1780)	Conc. Pt. (lbs)	L	00-02-04	00-02-04	Top	149	75			n/a
4	J4(I5485)	Conc. Pt. (lbs)	L	00-11-08	00-11-08	Top	369	653	1,011		n/a
5	-	Conc. Pt. (lbs)	L	01-09-14	01-09-14	Top					n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	968 ft-lbs	23,220 ft-lbs	4.1%	13	01-09-12
End Shear	814 lbs	11,571 lbs	7.0%	13	01-04-00
Total Load Deflection	L/999 (0.001")	n/a	n/a	35	01-04-00
Live Load Deflection	L/999 (0.001")	n/a	n/a	51	01-04-00
Max Defl.	0.001"	n/a	n/a	35	01-04-00
Span / Depth	2.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Beam 5" x 3-1/2"	2,374 lbs	25.4%	11.1%	Unspecified
B2	Wall/Plate 3-1/2" x 3-1/2"	2,742 lbs	41.9%	18.3%	Unspecified



DESIGN CONFORMS TO OBC2012

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume unbraced length of Top: 00-05-08, Bottom: 00-05-08.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Unbalanced snow loads determined from building geometry were used in selected product's verification.
 Design based on Dry Service Condition.
 Importance Factor: Normal Part code: Part 9
 Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.
 Nail one ply to another with
 3 1/2" spiral nails @ 4in
 o.c., staggered in 2 rows

ET0000358



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****2ND FLOOR FRAMING\Flush Beams\B17\15506****PASSED**

BC CALC® Member Report

Build 6475

Job name:

Address:

City, Province, Postal Code: CALEDON

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant

November 15, 2018 10:50:00

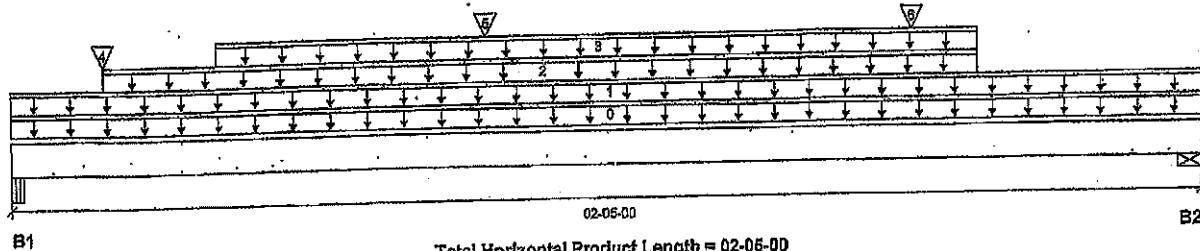
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Description: 2ND FLOOR FRAMING\Flush Beams\B17\15506

Specifier:

Designer: PL

Company:

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

Bearing	Live	Dead	Snow	Wind
B1, 5"	375 / 0	616 / 0	915 / 0	
B2, 3-1/2"	408 / 0	671 / 0	1,000 / 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	02-05-00	Top		10			00-00-00
1	LOW ROOF	Unf. Lin. (lb/ft)	L	00-00-00	02-05-00	Top	33	30	102		n/a
2	15(1786)	Unf. Lin. (lb/ft)	L	00-02-04	01-11-08	Top	33	30	102		n/a
3	15(1786)	Unf. Lin. (lb/ft)	L	00-05-00	01-11-08	Top		81			n/a
4	15(1786)	Conc. Pt. (lbs)	L	00-02-04	00-02-04	Top	120	183	477		n/a
5	J4(15465)	Conc. Pt. (lbs)	L	00-11-08	00-11-08	Top	150	75			n/a
6	-	Conc. Pt. (lbs)	L	01-09-14	01-09-14	Top	368	663	1,011		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	957 ft-lbs	23,220 ft-lbs	4.1%	13	01-09-12
End Shear	818 lbs	11,571 lbs	7.1%	13	01-04-00
Total Load Deflection	L/999 (0.001")	n/a	n/a	35	01-04-00
Live Load Deflection	L/999 (0.001")	n/a	n/a	61	01-04-00
Max Defl.	0.001"	n/a	n/a	35	01-04-00
Span / Depth	2.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Beam 5" x 3-1/2"	2,392 lbs	25.6%	11.2%	Unspecified
B2	Wall/Plate 3-1/2" x 3-1/2"	2,746 lbs	42.0%	18.4%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume unbraced length of Top: 00-05-08, Bottom: 00-05-08.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Unbalanced snow loads determined from building geometry were used in selected product's verification.
 Design based on Dry Service Condition.
 Importance Factor: Normal Part code: Part 9
 Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Nail one ply to another with
 3 1/2" spiral nails @ 4"
 o.c., staggered in 2 rows



DESIGN CONFORMS TO OBC2012

ET0000359



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

PASSED

1ST FLOOR FRAMING\Flush Beams\B1A\15795

Dry | 1 span | No cant.

April 12, 2019 11:53:12

BC CALCO® Member Report

Build 6766

Job name:

Address:

City, Province, Postal Code: CALEDON

Customer:

Code reports: CCMC 12472-R

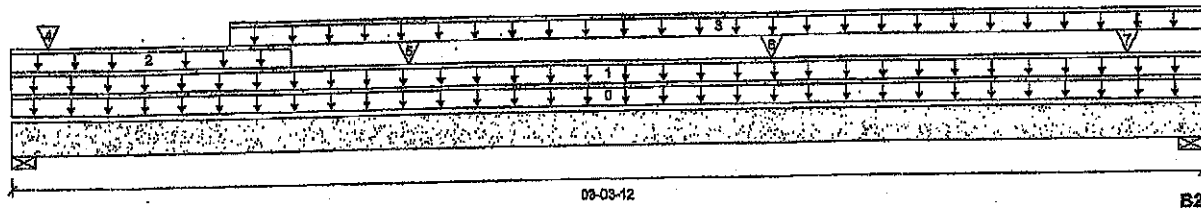
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Description: 1ST FLOOR FRAMING\Flush Beams\B1A\15795

Specifier:

Designer: PL

Company:



Total Horizontal Product Length = 03-03-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	1,199 / 0	760 / 0		
B2, 4"	1,195 / 0	747 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-03-12	Top	10	81			00-00-00
1	E8(1306)	Unf. Lin. (lb/ft)	L	00-00-00	00-09-04	Top	246	123			n/a
2	E8(1306)	Unf. Lin. (lb/ft)	L	00-07-04	03-03-12	Top	330	165			n/a
3	E8(1306)	Unf. Lin. (lb/ft)	L	00-01-04	00-01-04	Top	327	164			n/a
4	J1(15708)	Conc. Pt. (lbs)	L	01-01-04	01-01-04	Top	328	164			n/a
5	J1(15827)	Conc. Pt. (lbs)	L	02-01-04	02-01-04	Top	328	164			n/a
6	J1(15828)	Conc. Pt. (lbs)	L	03-01-04	03-01-04	Top	328	164			n/a
7	J1(15663)	Conc. Pt. (lbs)	L								

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1,412 ft-lbs	23,220 ft-lbs	6.1%	1	01-08-02
End Shear	1,722 lbs	11,571 lbs	14.9%	1	01-01-08
Total Load Deflection	L/999 (0.003")	n/a	n/a	4	01-07-12
Live Load Deflection	L/999 (0.002")	n/a	n/a	5	01-07-12
Max Defl.	0.003"	n/a	n/a	4	01-07-12
Span / Depth	3.5				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4" x 3-1/2"	2,737 lbs	36.6%	16.0%	Unspecified
B2	Wall/Plate 4" x 3-1/2"	2,726 lbs	36.5%	16.0%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

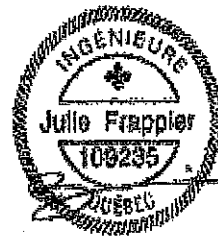
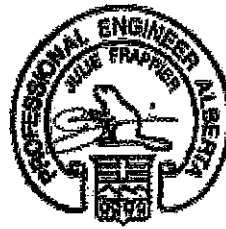
Importance Factor: Normal Part code: Part 9

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

Nail one ply to another with
3 1/2" spiral nails @ 4"
o.c., staggered in 2 rows



DESIGN CONFORMS TO OBC2012



Maximum Floor Spans

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

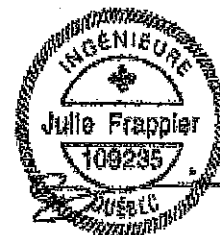
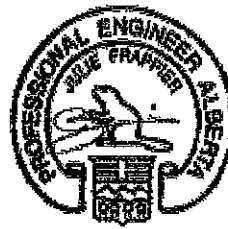
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-2"	13'-4"	12'-4"	15'-7"	14'-2"	13'-4"	12'-4"
	NI-40x	17'-0"	16'-0"	15'-1"	13'-11"	17'-5"	16'-1"	15'-1"	13'-11"
	NI-60	17'-2"	16'-2"	15'-5"	14'-3"	17'-6"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

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

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

Maximum Floor Spans

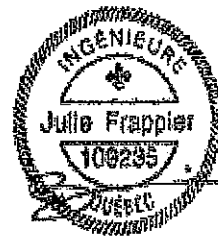
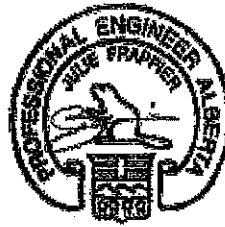
Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/480 Deflection Limit
5/8" OSB G&N Sheathing



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

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

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



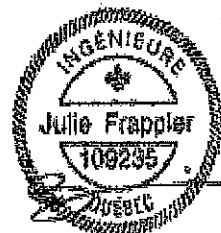
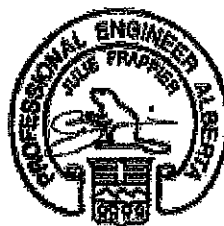
Maximum Floor Spans

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

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

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

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



Maximum Floor Spans

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

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

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

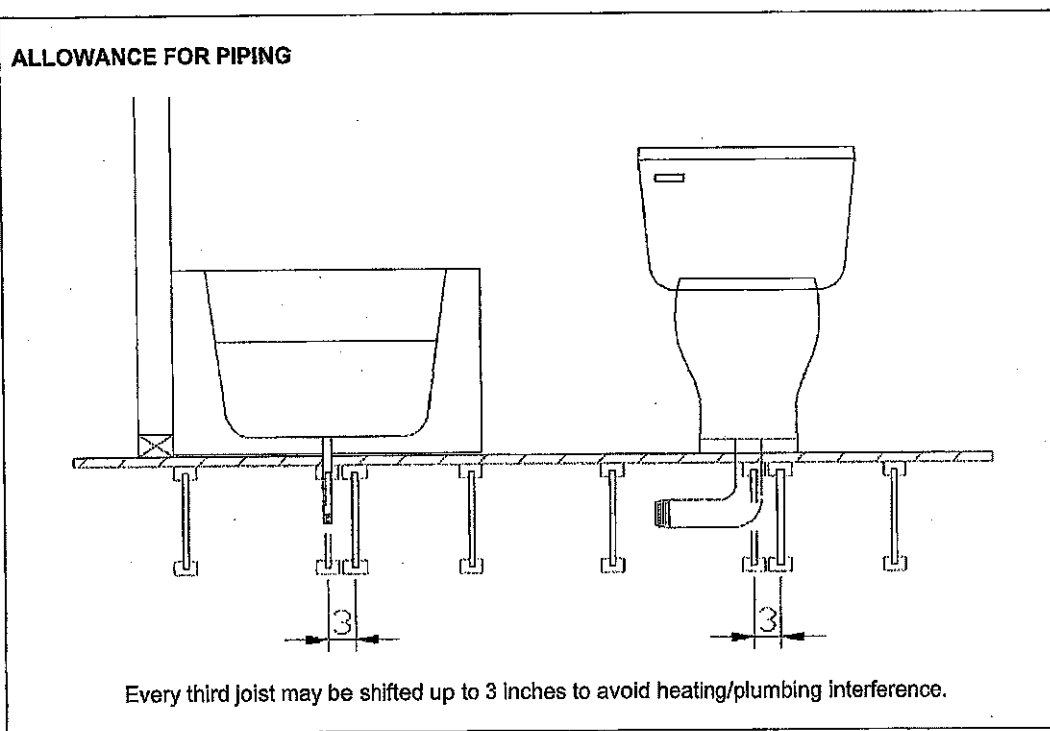
- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load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

Allowance for Piping (Installation Notes)

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

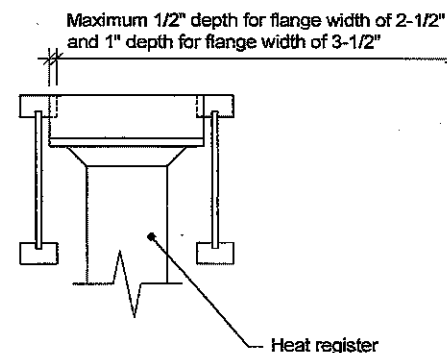
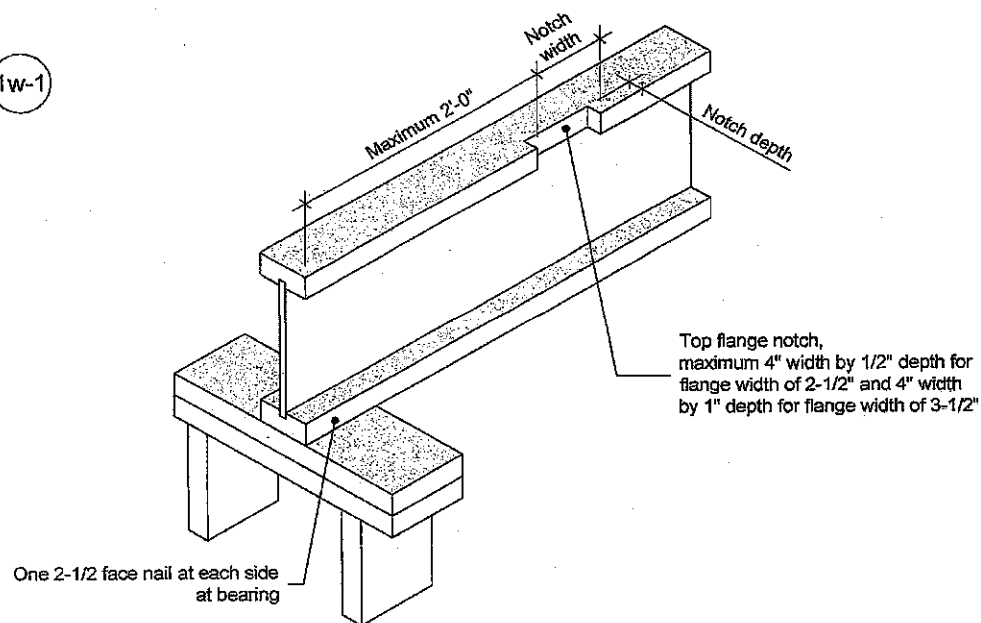
Installation of Nordic I-joists shall be as per *Nordic Joist Installation Guide for Residential Floors*. Refer to Tables 1 and 2 for maximum web hole and duct chase openings, respectively. These tables are based on the I-joists being used at their maximum spans. The minimum distance given may be reduced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

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



Revised April 12, 2012

1w-1



Notes:

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

This document supersedes all previous versions. If the document has been in effect for more than one year, consult nordic.ca or contact Nordic Structures.
All nails shown in the details are assumed to be common nails unless otherwise noted. Nails shall have a diameter not less than 0.128 inch for 2-1/2-inch nails, or 0.144 inch for 3-inch nails. Individual components not shown to scale for clarity.

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TITLE

Notch in I-joist for Heat Register

CATEGORY

I-joist - Typical Floor Framing and Construction Details

DOCUMENT

DATE

2018-04-10

NUMBER

1w-1