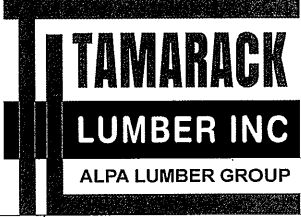


Products				
PlotID	Length	Product	Plies	Net Qty
J1	14-00-00	9 1/2" NI-40x	1	13
J1DJ	14-00-00	9 1/2" NI-40x	2	6
J2	12-00-00	9 1/2" NI-40x	1	12
J2DJ	12-00-00	9 1/2" NI-40x	2	4
J3	10-00-00	9 1/2" NI-40x	1	2
J4	6-00-00	9 1/2" NI-40x	1	3
J5	4-00-00	9 1/2" NI-40x	1	3
J6	2-00-00	9 1/2" NI-40x	1	2
J7	18-00-00	9 1/2" NI-80	1	23
B2	18-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B5	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B1	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B4	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B3	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
4	H1	IUS2.56/9.5
13	H1	IUS2.56/9.5
5	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
1	H2	HU310-2
1	H2	HU310-2
2	H3	IUS1.81/10



FROM PLAN DATED: MAR 2021

BUILDER: ROYAL PINE HOMES

SITE: CENTREFIELD

MODEL: 38-12

ELEVATION: A

LOT:

CITY: WATERDOWN

SALESMAN: WILL GARCIA

DESIGNER: LBV

REVISION: lbv

NOTES:

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

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

LOADING:

DESIGN LOADS: L/480.000

LIVE LOAD: 40.0 lb/ft²

DEAD LOAD: 15.0 lb/ft²

TILE LOAD: 20.0 lb/ft²

CITY OF RICHMOND HILL
BUILDING DIVISION

03/08/2022

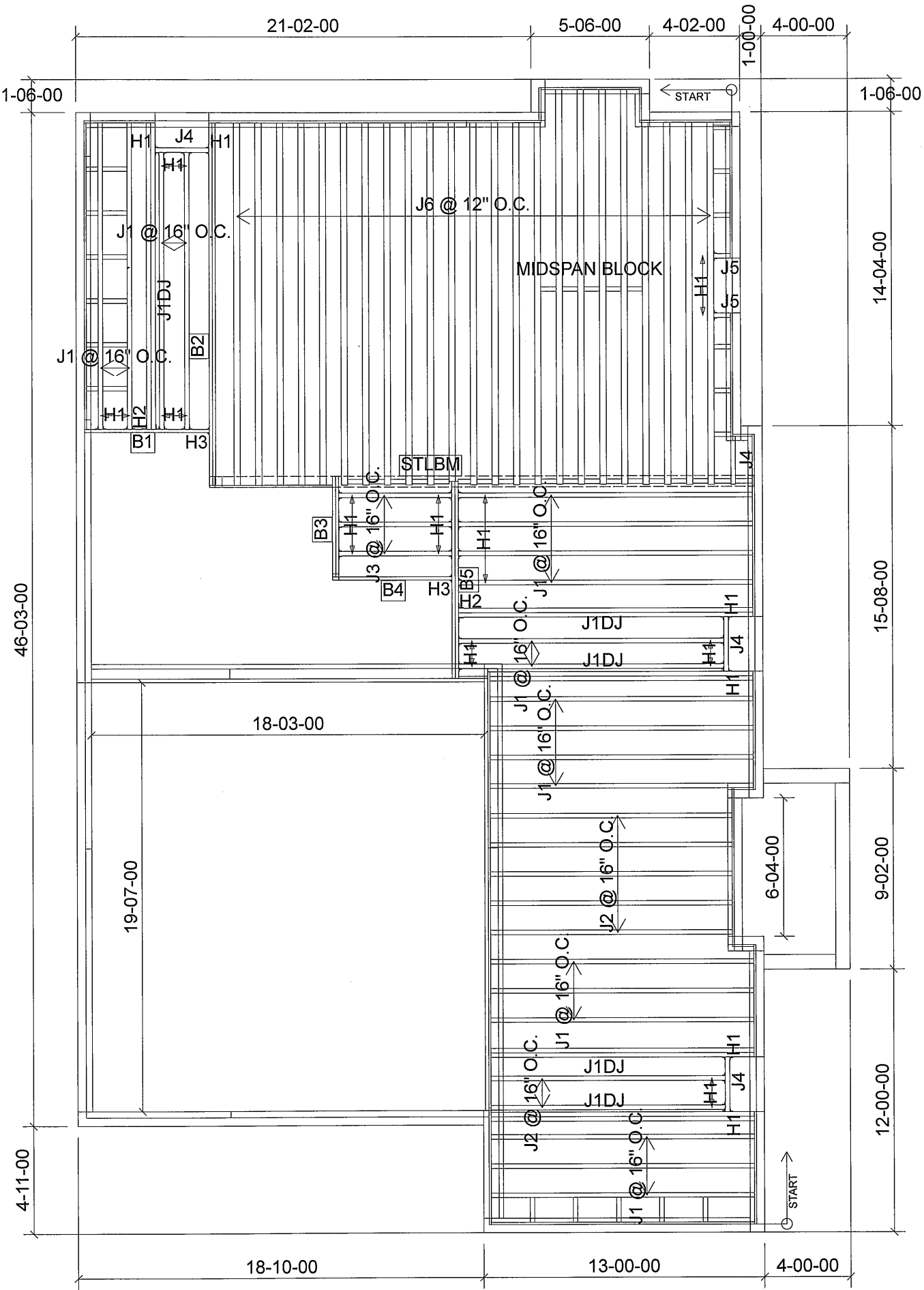
SUBFLOOR: 3/4" GLUED AND NAILED

RECEIVED

Per: joshua.nabua

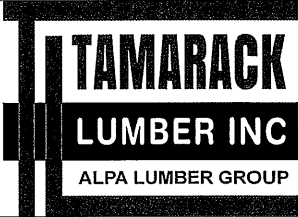
DATE: 2021-05-20

1st FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	14-00-00	9 1/2" NI-40x	1	20
J1DJ	14-00-00	9 1/2" NI-40x	2	10
J2	12-00-00	9 1/2" NI-40x	1	7
J3	6-00-00	9 1/2" NI-40x	1	3
J4	4-00-00	9 1/2" NI-40x	1	4
J5	2-00-00	9 1/2" NI-40x	1	2
J6	18-00-00	9 1/2" NI-80	1	23
B2	18-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B5	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B1	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B4	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B3	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
4	H1	IUS2.56/9.5
13	H1	IUS2.56/9.5
3	H1	IUS2.56/9.5
4	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
2	H1	IUS2.56/11.88
2	H1	IUS2.56/11.88
1	H2	HU310-2
1	H2	HU310-2
2	H3	IUS1.81/10



FROM PLAN DATED: MAR 2021

BUILDER: ROYAL PINE HOMES

SITE: CENTREFIELD

MODEL: 38-12

ELEVATION: B

LOT:

CITY: WATERDOWN

SALESMAN: WILL GARCIA

DESIGNER: LBV

REVISION: lbv

NOTES:

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

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

LOADING:

DESIGN LOADS: L/480.000

LIVE LOAD: 40.0 lb/ft²

DEAD LOAD: 15.0 lb/ft²

TILE LOAD: 20.0 lb/ft²

CITY OF RICHMOND HILL
BUILDING DIVISION

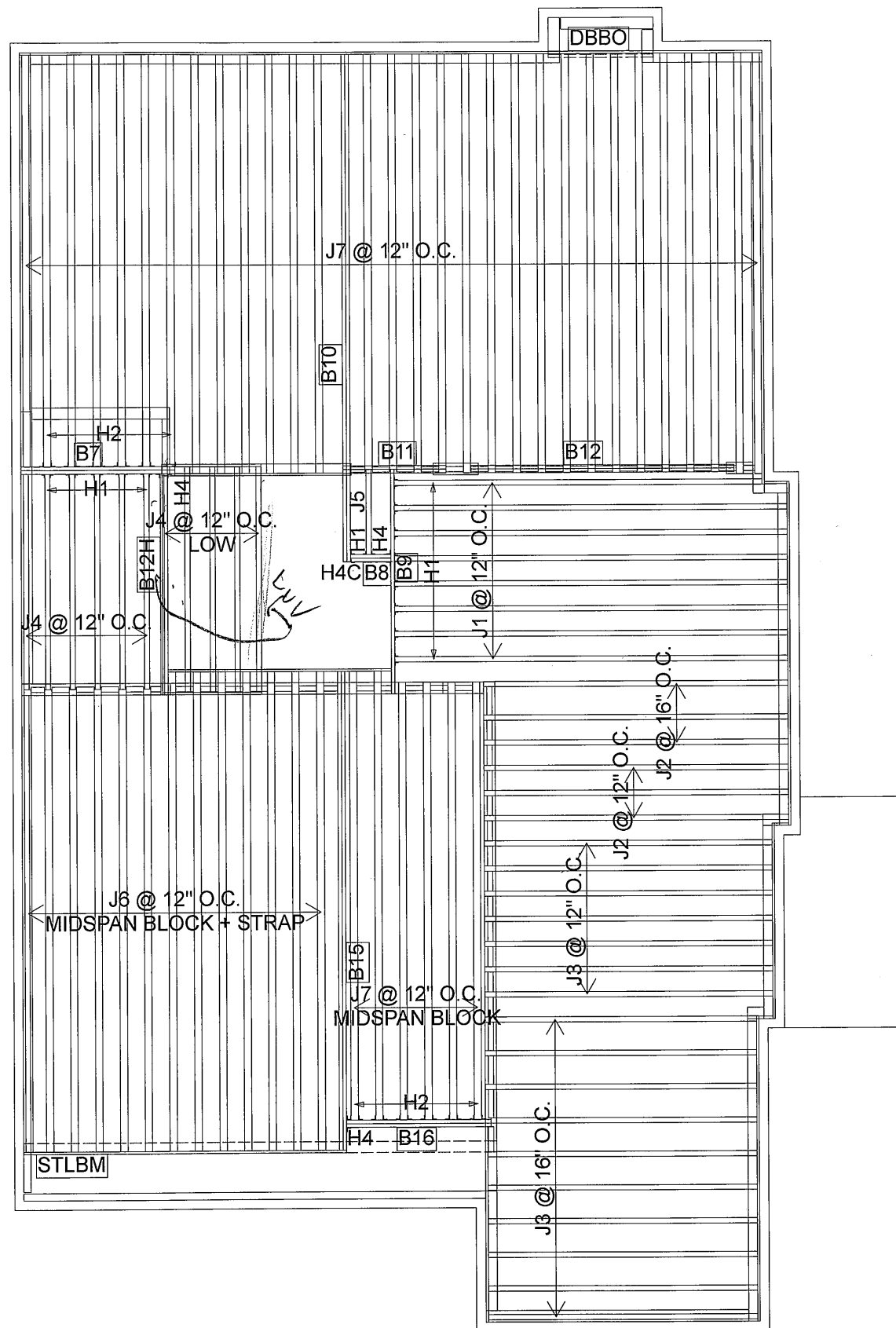
03/08/2022

SUBFLOOR: 3/4" GLUED AND NAILED

RECEIVED
Per: joshua.nabua


DATE: 2021-05-20

1st FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	8
J2	14-00-00	9 1/2" NI-40x	1	6
J3	12-00-00	9 1/2" NI-40x	1	17
J4	10-00-00	9 1/2" NI-40x	1	11
J5	4-00-00	9 1/2" NI-40x	1	1
J6	20-00-00	9 1/2" NI-80	1	13
J7	18-00-00	9 1/2" NI-80	1	36
B10	22-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B15	20-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B12	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B12H L	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B7	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B11	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B16	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B8	2-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
8	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
12	H2	IUS3.56/9.5
1	H4C	HUC410
1	H4	HGUS410
2	H4	HGUS410



TAMARACK
LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: AUG 2020

BUILDER: ROYAL PINE HOMES

SITE: CENTREFIELD

MODEL: 38-12

ELEVATION: A

LOT:

CITY: WATERDOWN

SALESMAN: WILL GARCIA

DESIGNER: LBV

REVISION:

NOTES:

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

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

LOADING:

DESIGN LOADS: L/480.000

LIVE LOAD: 40.0 lb/ft²

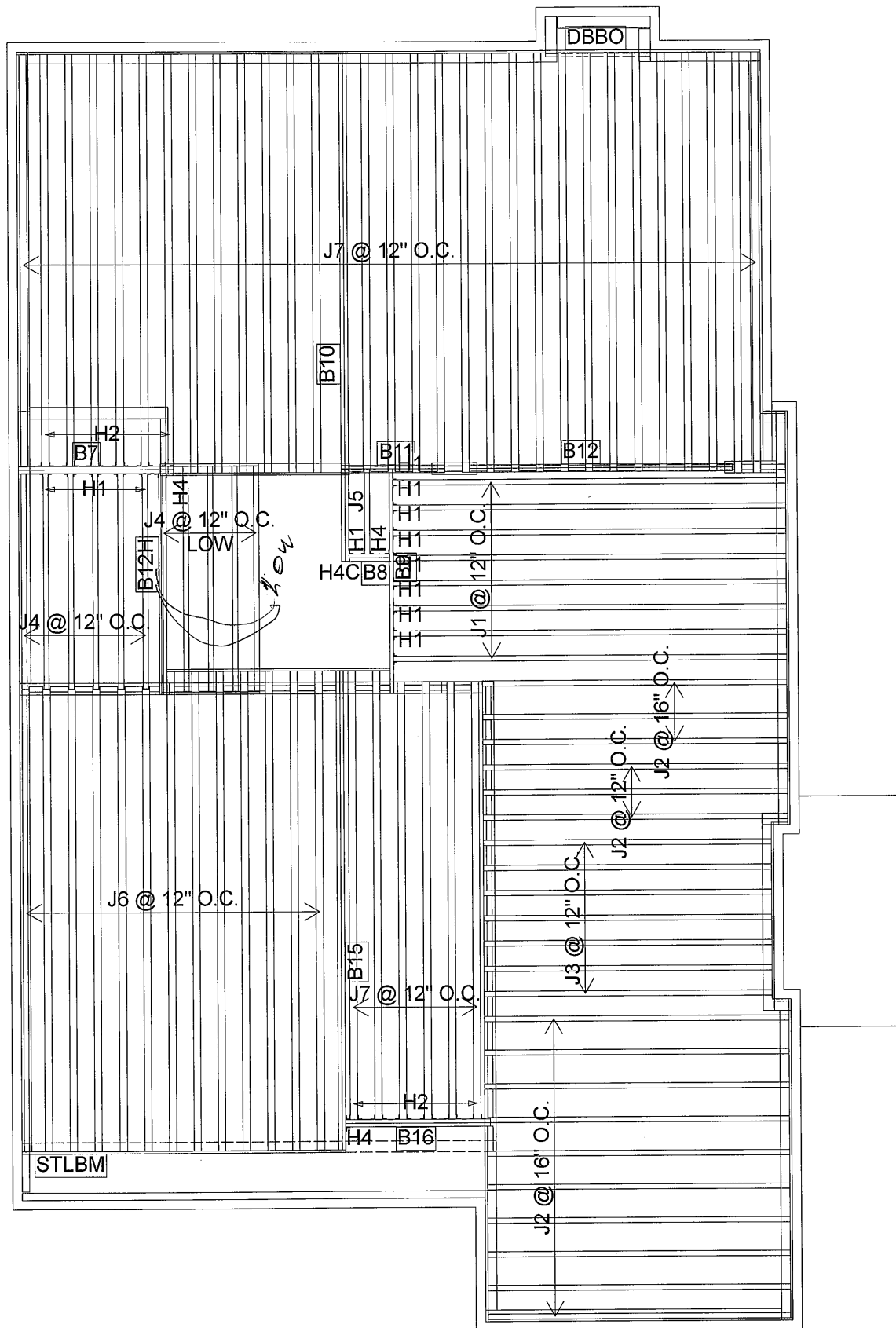
DEAD LOAD: 15.0 lb/ft²TILE LOAD: 20.0 lb/ft²

DATE: 2020-10-30

2ND FLOOR

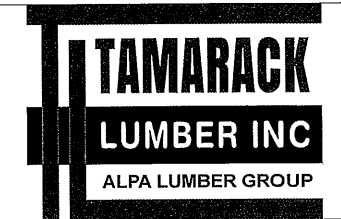
SUBFLOOR: 5/8" GLUED AND NAILED

RECEIVED
Per: joshua.nabua



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	8
J2	14-00-00	9 1/2" NI-40x	1	16
J3	12-00-00	9 1/2" NI-40x	1	7
J4	10-00-00	9 1/2" NI-40x	1	11
J5	4-00-00	9 1/2" NI-40x	1	1
J6	20-00-00	9 1/2" NI-80	1	13
J7	18-00-00	9 1/2" NI-80	1	36
B10	22-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B15	20-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B12	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B12H	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B7	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B11	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B16	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B8	2-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
8	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
12	H2	IUS3.56/9.5
1	H4C	HUC410
1	H4	HGUS410
2	H4	HGUS410



FROM PLAN DATED: AUG 2020

BUILDER: ROYAL PINE HOMES

SITE: CENTREFIELD

MODEL: 38-12

ELEVATION: B

LOT:

CITY: WATERDOWN

SALESMAN: WILL GARCIA

DESIGNER: LBV

REVISION:

NOTES:

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

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

LOADING:

DESIGN LOADS: L/480.000

LIVE LOAD: 40.0 lb/ft²

DEAD LOAD: 15.0 lb/ft²

TILE LOAD: 20.0 lb/ft²

CITY OF RICHMOND HILL
BUILDING DIVISION

03/08/2022

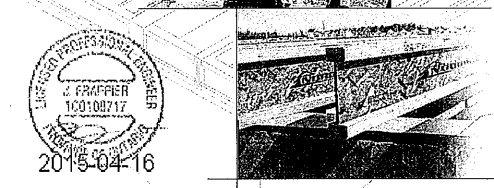
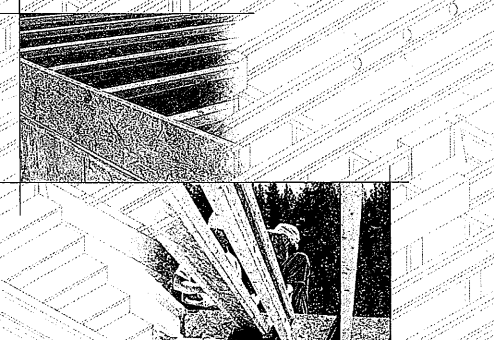
SUBFLOOR: 5/8" GLUED AND NAILED

RECEIVED
Per: joshua.nabua

DATE: 2020-10-30

2ND FLOOR

INSTALLATION GUIDE FOR RESIDENTIAL FLOORS

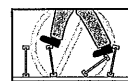


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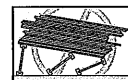


N-C301 / November 2014

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 unshelved I-joists. Once shelved, do not over-stress I-joist with concentrated loads from building materials.

WARNING

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

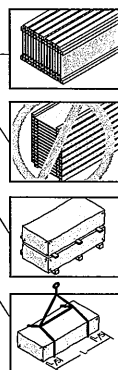
Avoid Accidents by Following these Important Guidelines:

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

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

STORAGE AND HANDLING GUIDELINES

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



MAXIMUM FLOOR SPANS

1. Maximum clear spans applicable to single-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
2. Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in CGS-71.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
3. Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
5. This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
6. Tables are based on Limit States Design per CAN/CSA O86-09 Standard, and NBC 2010.
7. SI units conversion: 1 inch = 25.4 mm, 1 foot = 0.305 m

MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS SIMPLE AND MULTIPLE SPANS

Joist Depth	Joist Series	Simple spans				Multiple spans			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-1"	14'-2"	13'-9"	13'-5"	16'-3"	15'-4"	14'-10"	14'-7"
	NI-40x	16'-1"	15'-2"	14'-8"	14'-9"	17'-5"	16'-5"	15'-10"	15'-5"
	NI-60	16'-3"	15'-4"	14'-10"	14'-11"	17'-7"	16'-7"	16'-0"	15'-1"
	NI-70	17'-1"	16'-1"	15'-6"	15'-7"	18'-7"	17'-4"	16'-9"	16'-0"
	NI-80	17'-3"	16'-3"	15'-8"	15'-9"	18'-10"	17'-6"	16'-11"	17'-0"
11-7/8"	NI-20	16'-11"	16'-0"	15'-5"	15'-6"	18'-4"	17'-3"	16'-8"	16'-7"
	NI-40x	18'-1"	17'-0"	16'-5"	16'-6"	20'-0"	18'-6"	17'-9"	17'-7"
	NI-60	18'-4"	17'-3"	16'-7"	16'-9"	20'-3"	18'-9"	18'-0"	18'-1"
	NI-70	19'-6"	18'-0"	17'-4"	17'-5"	21'-6"	19'-11"	19'-0"	19'-1"
	NI-80	19'-9"	18'-3"	17'-6"	17'-7"	21'-9"	20'-2"	19'-3"	19'-4"
14"	NI-20	20'-2"	18'-7"	17'-10"	17'-11"	22'-3"	20'-7"	19'-8"	19'-9"
	NI-40x	20'-4"	18'-9"	17'-11"	18'-0"	22'-5"	20'-9"	19'-10"	19'-11"
	NI-60	20'-5"	18'-11"	18'-1"	18'-2"	22'-7"	20'-11"	20'-0"	20'-1"
	NI-70	21'-7"	20'-0"	19'-1"	19'-2"	23'-10"	22'-1"	21'-1"	21'-2"
	NI-80	21'-11"	20'-3"	19'-4"	19'-5"	24'-3"	22'-5"	21'-5"	21'-6"
16"	NI-20	22'-5"	20'-8"	19'-9"	19'-10"	24'-9"	22'-10"	21'-10"	21'-10"
	NI-40x	22'-7"	20'-11"	19'-11"	20'-0"	25'-0"	23'-1"	22'-2"	22'-2"
	NI-60	22'-8"	20'-8"	19'-9"	19'-10"	25'-1"	23'-2"	22'-3"	22'-3"
	NI-70	23'-6"	21'-9"	20'-9"	20'-10"	26'-0"	24'-0"	22'-11"	23'-0"
	NI-80	23'-11"	22'-1"	21'-1"	21'-2"	26'-5"	24'-5"	23'-3"	23'-4"

CCMC EVALUATION REPORT 13032-R

WEB STIFFENERS

RECOMMENDATIONS:

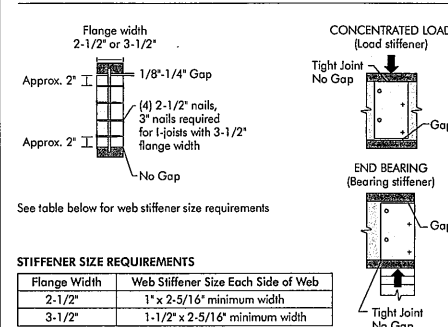
■ A bearing stiffener is required in all engineered applications with factored reactions greater than shown in the I-joist properties table found in the I-joist Construction Guide (C101). The gap between the stiffener and the flange is at the top.

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

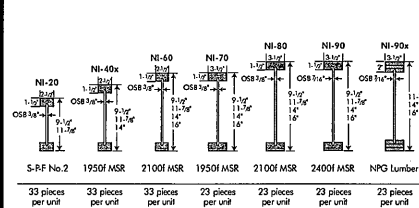
■ A load stiffener is required at locations where a factored concentrated load greater than 2,370 lbs is applied to the top flange between supports, or in the case of a cantilever, anywhere between the cantilever tip and the support. These values are for standard term load duration, and may be adjusted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

SI units conversion: 1 inch = 25.4 mm

FIGURE 2
WEB STIFFENER INSTALLATION DETAILS



NORDIC I-JOIST SERIES



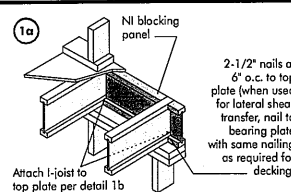
Chentiers Chibougamou Ltd. harvests its own trees, which enables Nordic products to adhere to strict quality control procedures throughout the manufacturing process. Every phase of the operation, from forest to finished product, reflects our commitment to quality.

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

2015-04-16

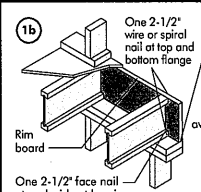
INSTALLING NORDIC I-JOISTS

1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact your supplier.
2. Except for cutting to length, I-joist flanges should **never** be cut, drilled, or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical alignment.
4. I-joists must be anchored securely to supports before floor sheathing is attached, and supports for multiple spans must be level.
5. Minimum bearing lengths: 1-3/4 inches for end bearings and 3-1/2 inches for intermediate bearings.
6. When using hangers, seat I-joists firmly in hanger bottoms to minimize settlement.
7. Leave a 1/16-inch gap between the I-joist end and a header.
8. Concentrated loads greater than those that can normally be expected in residential construction should **only** be applied to the top surface of the top flange. Normal concentrated loads include track lighting fixtures, audio equipment and security cameras. Never suspend unusual or heavy loads from the I-joist's bottom flange. Whenever possible, suspend all concentrated loads from the top of the I-joist. Or, attach the load to blocking that has been securely fastened to the I-joist webs.
9. Never install I-joists where they will be permanently exposed to weather, or where they will remain in direct contact with concrete or masonry.
10. Restrain ends of floor joists to prevent rollover. Use rim board, rim joists or I-joist blocking panels.
11. For I-joists installed over and beneath bearing walls, use full depth blocking panels, rim board, or squash blocks (cripple members) to transfer gravity loads through the floor system to the wall or foundation below.
12. Due to shrinkage, common framing lumber set on edge **may never** be used as blocking or rim boards. I-joist blocking panels or other engineered wood products – such as rim board – must be cut to fit between the I-joists, and 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.



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

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



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

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



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.

Attach I-joist to top plate per detail 1b

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.

Attach I-joist to top plate per detail 1b

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.

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Attach I-joist to top plate per detail 1b

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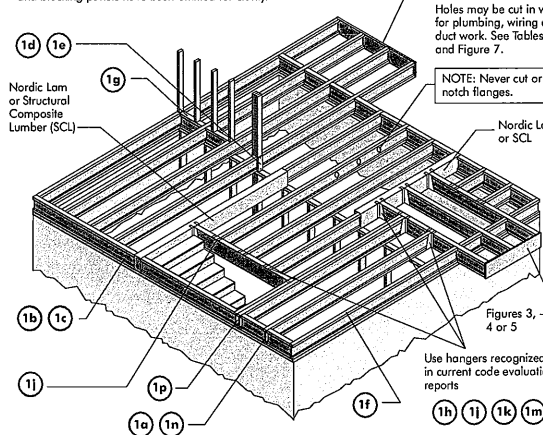
Attach I-joist to top plate per detail 1b

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.

Attach I-joist to top plate per detail 1b

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

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



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

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.

Attach I-joist to top plate per detail 1b

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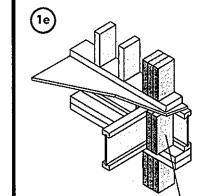
Attach I-joist to top plate per detail 1b

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.

Attach I-joist to top plate per detail 1b

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Attach I-joist to top plate per detail 1b



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

Attach I-joist to top plate per detail 1b

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.

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Attach I-joist to top plate per detail 1b

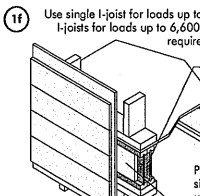
Attach rim joist to floor joist with one nail at top and bottom. Nail must provide 1 inch minimum penetration into floor joist. Toe-nailing may be used.

Attach I-joist to top plate per detail 1b

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.

Attach I-joist to top plate per detail 1b

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.



Use single I-joist for loads up to 3,300 plf, double I-joists for loads up to 6,600 plf (filler block not required). Attach I-joist to top plate using 2-1/2" nails at 6" o.c.

Attach I-joist to top plate per detail 1b

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.

Attach I-joist to top plate per detail 1b

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.

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Attach I-joist to top plate per detail 1b

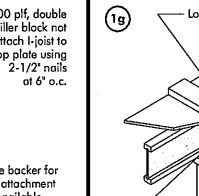
Attach rim joist to floor joist with one nail at top and bottom. Nail must provide 1 inch minimum penetration into floor joist. Toe-nailing may be used.

Attach I-joist to top plate per detail 1b

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Attach I-joist to top plate per detail 1b

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.



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

Attach I-joist to top plate per detail 1b

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.

Attach I-joist to top plate per detail 1b

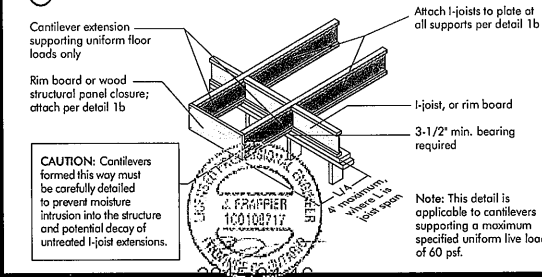
Attach rim joist to floor joist with one nail at top and bottom. Nail must provide 1 inch minimum penetration into floor joist. Toe-nailing may be used.

Attach I-joist to top plate per detail 1b

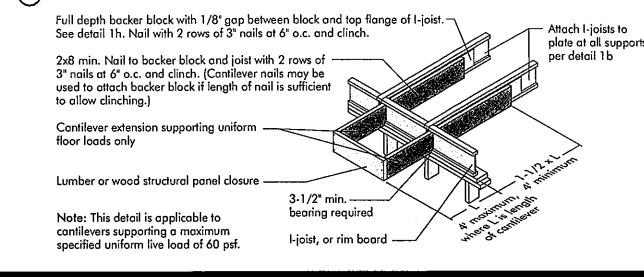
Attach rim joist to floor joist with one nail at top and bottom. Nail must provide 1 inch minimum

CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

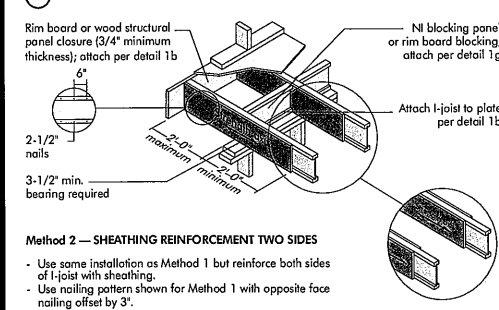


3b) LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)

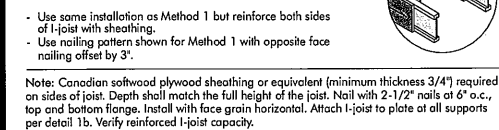


CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

4a) Method 1 — SHEATHING REINFORCEMENT ONE SIDE



Method 2 — SHEATHING REINFORCEMENT TWO SIDES



4b) Alternate Method 2 — DOUBLE I-JOIST

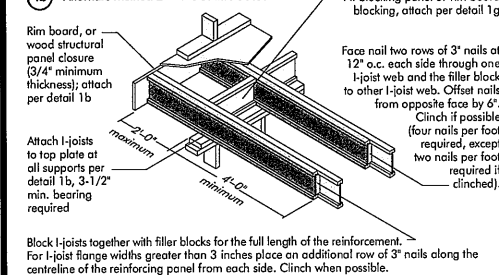
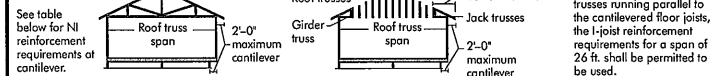


FIGURE 4 (continued)



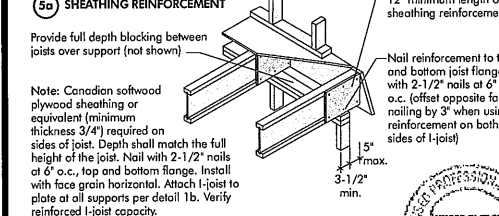
CANTILEVER REINFORCEMENT METHODS ALLOWED

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

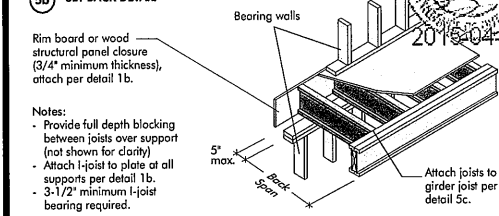
- N = No reinforcement required.
- N = I reinforced with 3/4" wood structural panel on one side only.
- N = I reinforced with 3/4" wood structural panel on both sides, or double I-joint.
- X = Try a deeper joist or closer spacing.
- Maximum design load shall be: 15 psf roof dead load, 55 psf floor total load, and 80 psf wall load. Wall load is based on 3'-0" maximum width window or door openings.
- For larger openings, or multiple 3'-0" wide openings spaced less than 6'-0" o.c., additional joists beneath the opening's cripple studs may be required.
- Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
- For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge board, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.
- Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

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

5a) SHEATHING REINFORCEMENT



5b) SET-BACK DETAIL



5c) SET-BACK CONNECTION

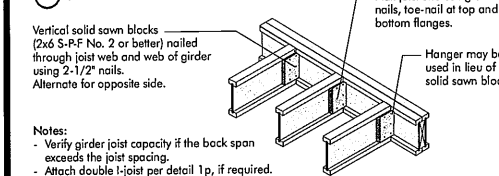
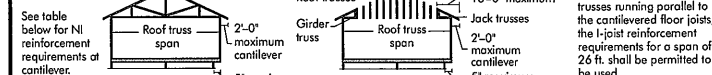


FIGURE 5 (continued)



BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

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

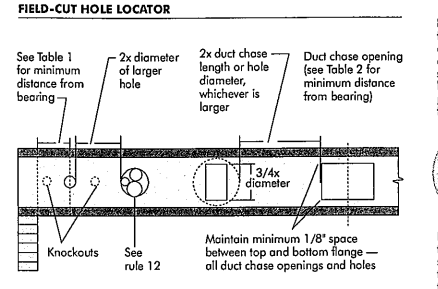
- N = No reinforcement required.
- N = I reinforced with 3/4" wood structural panel on one side only.
- N = I reinforced with 3/4" wood structural panel on both sides, or double I-joint.
- X = Try a deeper joist or closer spacing.
- Maximum design load shall be: 15 psf roof dead load, 55 psf floor total load, and 80 psf wall load. Wall load is based on 3'-0" maximum width window or door openings.
- For larger openings, or multiple 3'-0" wide openings spaced less than 6'-0" o.c., additional joists beneath the opening's cripple studs may be required.
- Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
- For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge board, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.
- Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

WEB HOLES

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

- The distance between the inside edge of the support and the centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
- I-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 longest rectangular hole or duct chase opening) and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
- A knockout is not considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
- Holes measuring 1-1/2 inches or smaller shall be permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.
- A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
- All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
- Limit three maximum size holes per span, of which one may be a duct chase opening.
- A group of round holes of approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

FIGURE 7 FIELD-CUT HOLE LOCATOR



Knockouts are predrilled 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 minimize damage to the I-joint.

TABLE 1 LOCATION OF CIRCULAR HOLES IN JOIST WEBS

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

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of hole (ft-in.)												Span adjustment Factor
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	
9-1/2"	N-20	0-7	1-6	2-10	3-8	4-6	5-4	6-2	7-0	7-8	8-6	9-4	10-2	13-8
	N-40	0-7	1-6	2-10	3-8	4-6	5-4	6-2	7-0	7-8	8-6	9-4	10-2	14-0
	N-60	0-7	1-6	2-10	3-8	4-6	5-4	6-2	7-0	7-8	8-6	9-4	10-2	14-11
	N-80	0-7	1-6	2-10	3-8	4-6	5-4	6-2	7-0	7-8	8-6	9-4	10-2	14-2
	N-100	0-7	1-6	2-10	3-8	4-6	5-4	6-2	7-0	7-8	8-6	9-4	10-2	14-3
11-7/8"	N-20	0-7	1-6	2-10	3-8	4-6	5-4	6-2	7-0	7-8	8-6	9-4	10-2	15-4
	N-40	0-7	1-6	2-10	3-8	4-6	5-4	6-2	7-0	7-8	8-6	9-4	10-2	16-4
	N-60	0-7	1-6	2-10	3-8	4-6	5-4	6-2	7-0	7-8	8-6	9-4	10-2	17-5
	N-80	0-7	1-6	2-10	3-8	4-6	5-4	6-2	7-0	7-8	8-6	9-4	10-2	17-7
	N-100	0-7	1-6	2-10	3-8	4-6	5-4	6-2	7-0	7-8	8-6	9-4	10-2	17-11
14"	N-20	0-7	1-6	2-10	3-8	4-6	5-4	6-2	7-0	7-8	8-6	9-4	10-2	17-11
	N-40	0-7	1-6	2-10	3-8	4-6	5-4	6-2	7-0	7-8	8-6	9-4	10-2	18-2
	N-60	0-7	1-6	2-10	3-8	4-6	5-4	6-2	7-0	7-8	8-6	9-4	10-2	19-3
	N-80	0-7	1-6	2-10	3-8	4-6	5-4	6-2	7-0	7-8	8-6	9-4	10-2	19-5
	N-100	0-7	1-6	2-10	3-8	4-6	5-4	6-2	7-0	7-8	8-6	9-4	10-2	19-9
16"	N-20	0-7	1-6	2-10	3-8	4-6	5-4	6-2	7-0	7-8	8-6	9-4	10-2	19-10
	N-40	0-7	1-6	2-10	3-8	4-6	5-4	6-2	7-0	7-8	8-6	9-4	10-2	20-10
	N-60	0-7	1-6	2-10	3-8	4-6	5-4	6-2	7-0	7-8	8-6	9-4	10-2	21-2
	N-80	0-7	1-6	2-10	3-8	4-6	5-4	6-2	7-0	7-8	8-6	9-4	10-2	21-4
	N-100	0-7	1-6	2-10	3-8	4-6	5-4	6-2	7-0	7-8	8-6	9-4	10-2	21-10

1. Above table may be used for I-joint spacing of 24 inches on centre or less.

2. Hole location distance is measured from inside face of supports to centre of hole.

3. Distances in this chart are based on uniformly loaded joists.

OPTIONAL:

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

$$D_{reduced} = \frac{D_{actual}}{SAF} \times D$$

Where:

- $D_{reduced}$ = Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span applications (ft.)
- D_{actual} = distance shall not be less than 6 inches from the face of the support to edge of the hole.
- D = The actual measured span distance between the inside faces of supports (ft.)
- SAF = Span Adjustment Factor given in this table.
- D_{actual} = The minimum distance from the inside face of any support to centre of hole from this table.
- If D_{actual} is greater than 1, use 1 in the above calculation for D_{actual} .

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

DUCT CHASE OPENING SIZES AND LOCATIONS — Simple Span Only													
Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of opening (ft-in.)											
		Duct chase length (in.)											
		8	10	12	14	16	18	20	22	24	26	28	30
9-1/2"	N-20	4'-1"	4'-5"	4'-10"	5'-4"	5'-8"	6'-1"	6'-4"	7'-1"	7'-5"	8'-1"	8'-4"	8'-8"
	N-40	4'-1"	5'-0"	5'-8"	6'-10"	6'-10"	7'-3"	7'-8"	8'-2"	8'-6"	9'-0"	9'-4"	9'-8"
	N-60	4'-1"	5'-0"	5'-8"	6'-10"	6'-10"	7'-3"	7'-8"	8'-2"	8'-6"	9'-0"	9'-4"	9'-8"
	N-80	4'-1"	5'-1"	5'-5"	5'-10"	6'-3"	6'-7"	7'-1"	7'-4"	8'-1"	8'-4"	8'-8"	9'-1"
	N-100	4'-1"	5'-1"	5'-5"	5'-10"	6'-3"	6'-7"	7'-1"	7'-4"	8'-1"	8'-4"	8'-8"	9'-1"
11-7/8"	N-20	5'-0"	6'-2"	6'-6"	7'-1"	7'-5"	7'-9"	8'-3"	8'-9"	9'-4"	9'-8"	10'-0"	10'-4"
	N-40	6'-8"	7'-2"	7'-6"	8'-1"	8'-6"	9'-1"	9'-6"	10'-1"	10'-6"	11'-1"	11'-6"	12'-0"
	N-60	7'-3"	7'-8"	8'-2"	8'-7"	9'-1"	9'-6"	10'-1"	10'-6"	11'-1"	11'-6"	12'-0"	12'-4"
	N-80	7'-1"	7'-4"	7'-6"	8'-0"	8'-3"	8'-7"	9'-1"	9'-4"	10'-1"	10'-4"	10'-8"	11'-1"
	N-100	7'-1"	7'-4"	7'-6"	8'-0"	8'-3"	8'-7"	9'-1"	9'-4"	10'-1"	10'-4"	10'-8"	11'-1"
14"	N-20	7'-0"	7'-11"	8'-4"	8'-9"	9'-2"	9'-7"	10'-1"	10'-7"	11'-0"	11'-6"	12'-0"	12'-4"
	N-40	7'-7"	8'-1"	8'-5"	8'-9"	9'-4"	9'-8"	10'-2"	10'-8"	11'-2"	11'-8"	12'-2"	12'-6"
	N-60	8'-0"	8'-4"	8'-8"	9'-2"	9'-6"	10'-0"	10'-4"	10'-8"	11'-2"	11'-6"	12'-0"	12'-4"
	N-80	8'-0"	8'-3"	9'-8"	10'-1"	10'-6"	11'-1"	11'-6"	12'-1"	12'-6"	13'-1"	13'-6"	14'-1"
	N-100	7'-7"	7'-10"	9'-0"	9'-5"	10'-0"	10'-5"	11'-0"	11'-5"	12'-0"	12'-5"	13'-0"	13'-5"
16"	N-20	8'-0"	9'-3"	9'-8"	10'-1"	10'-7"	11'-1"	11'-6"	12'-1"	12'-6"	13'-1"	13'-6"	14'-1"
	N-40	9'-2"	9'-8"	10'-0"	10'-6"	11'-1"	11'-6"	12'-1"	12'-6"	13'-1"	13'-6"	14'-1"	14'-6"
	N-60	9'-4"	9'-10"	10'-2"	10'-8"	11'-3"	11'-8"	12'-3"	12'-8"	13'-3"	13'-8"	14'-3"	14'-8"
	N-80	10'-10"	11'-9"	11'-3"	11'-9"	12'-1"	12'-7"	13'-1"	13'-7"	14'-1"	14'-7"	15'-1"	15'-7"
	N-100	10'-9"	11'-2"	11'-8"	12'-0"	12'-6"	13'-0"	13'-6"	14'-0"	14'-6"	15'-0"	15'-6"	16'-0"

CONSTRUCTION DETAILS FOR RESIDENTIAL FLOORS

N-C303 / April 2014



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

WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

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

- A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
- All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
- Limit three maximum size holes per span, of which one may be a duct chase opening.
- A group of round holes 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.)														
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	11	12	12-3/4
9-1/2"	NI-20	0-7"	1'-6"	2'-10"	4'-3"	5'-8"	6'-0"	---	---	---	---	---	---	---	---	---
	NI-40x	0-7"	1'-6"	3'-0"	4'-4"	6'-0"	6'-4"	---	---	---	---	---	---	---	---	---
	NI-60	1'-3"	2'-6"	4'-0"	5'-4"	7'-0"	7'-5"	---	---	---	---	---	---	---	---	---
	NI-70	2'-0"	3'-4"	4'-9"	6'-3"	8'-0"	8'-4"	---	---	---	---	---	---	---	---	---
	NI-80	2'-3"	3'-6"	5'-0"	6'-6"	8'-2"	8'-8"	---	---	---	---	---	---	---	---	---
11-7/8"	NI-20	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-6"	7-9"	---	---	---	---	---	---
	NI-40x	0-7"	0-8"	1-3"	2-6"	4-0"	4-4"	5-5"	7-0"	8-4"	---	---	---	---	---	---
	NI-60	0-7"	3-0"	4-3"	5-9"	6-0"	7-3"	8-10"	10-0"	---	---	---	---	---	---	---
	NI-70	1'-3"	2'-6"	4'-0"	5'-4"	6-9"	7'-2"	8-4"	10-0"	11-2"	---	---	---	---	---	---
	NI-80	1'-6"	2'-10"	4'-2"	5'-6"	7'-0"	7'-5"	8'-6"	10-3"	11-4"	---	---	---	---	---	---
14"	NI-20	0-7"	0-8"	1'-5"	3'-2"	4'-10"	5'-4"	6'-9"	8'-9"	10'-2"	---	---	---	---	---	---
	NI-40x	0-7"	0-8"	0-9"	2'-5"	4'-4"	4'-9"	6'-3"	---	---	---	---	---	---	---	---
	NI-60	0-7"	0-8"	0-8"	1'-0"	2-4"	2-9"	3-9"	5-2"	6-0"	6-6"	8-3"	10'-2"	---	---	---
	NI-70	0-7"	0-8"	1'-0"	3-0"	4-3"	4-8"	5-8"	7-2"	8-0"	8-8"	10-4"	11-9"	13-5"	---	---
	NI-80	0-10"	2'-0"	3'-4"	4'-9"	6'-2"	6'-5"	7'-6"	9'-0"	10'-0"	10-8"	12-4"	13-9"	---	---	---
16"	NI-20	0-7"	0-8"	0-10"	2'-5"	4'-0"	4'-5"	5'-9"	7'-5"	8'-8"	9'-4"	11'-4"	12'-11"	---	---	---
	NI-40x	0-7"	0-8"	0-8"	2'-0"	3'-9"	4-2"	5-5"	7'-3"	8-5"	9'-2"	---	---	---	---	---
	NI-60	0-7"	0-8"	0-8"	1'-6"	2'-10"	3'-2"	4-2"	5-6"	6-4"	7'-0"	8'-5"	9'-8"	10'-2"	12'-2"	13'-9"
	NI-70	0-7"	1'-0"	2'-3"	3'-6"	4'-10"	5-3"	6-3"	7'-8"	8-6"	9-2"	10-8"	12'-0"	12-9"	14-0"	15-6"
	NI-80	0-7"	1'-3"	2'-6"	3'-10"	5-3"	6-3"	7-3"	8-9"	9-5"	11'-0"	12'-3"	12-9"	14-5"	16'-0"	---
16"	NI-60	0-7"	0-8"	0-8"	2'-0"	3'-9"	3-8"	4-9"	6'-5"	7'-5"	8'-0"	9'-10"	11'-3"	11'-9"	13'-9"	15'-4"
	NI-70	0-7"	0-8"	0-8"	2'-0"	3'-6"	4'-0"	5'-0"	6'-9"	7'-9"	8'-4"	10'-2"	11'-6"	12'-0"	---	---
	NI-80	0-7"	0-8"	0-8"	2'-0"	3'-6"	4'-0"	5'-0"	6'-9"	7'-9"	8'-4"	10'-2"	11'-6"	12'-0"	---	---

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

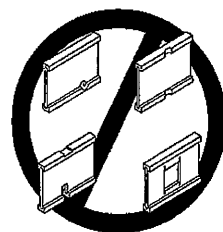
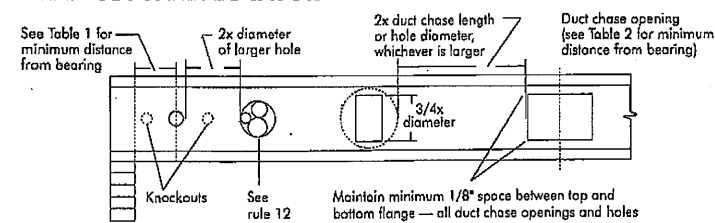
TABLE 2
DUCT CHASE OPENING SIZES AND LOCATIONS

Simple Span Only

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

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

FIGURE 7
FIELD-CUT HOLE LOCATOR



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

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

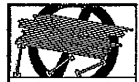
Holes in webs should be cut with a sharp saw.

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

SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

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

AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:

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

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



PRODUCT WARRANTY

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

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

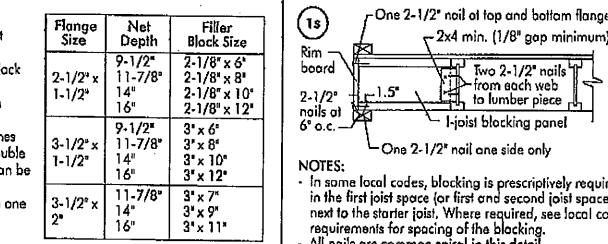
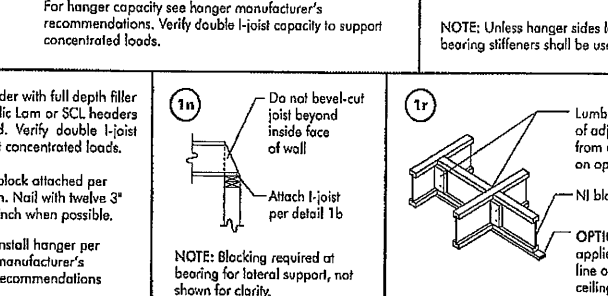
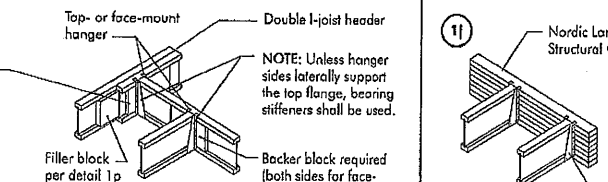
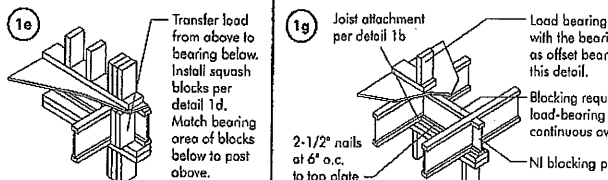
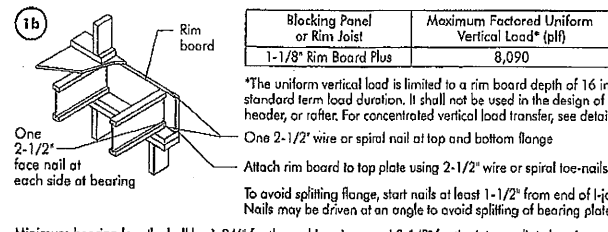
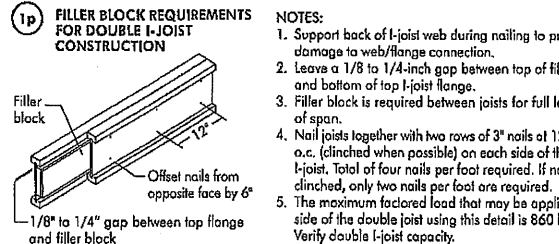
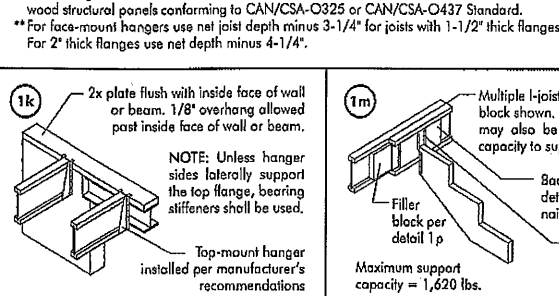
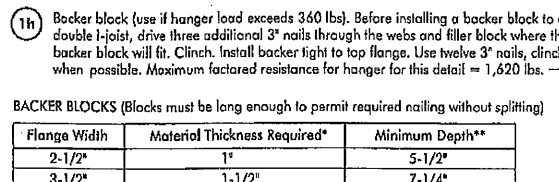
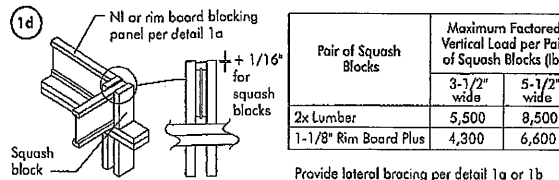
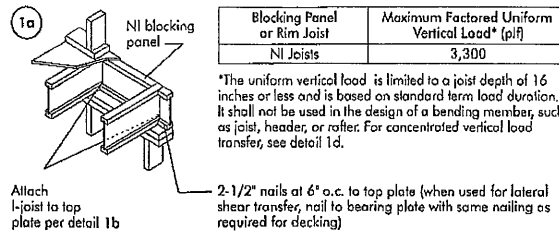
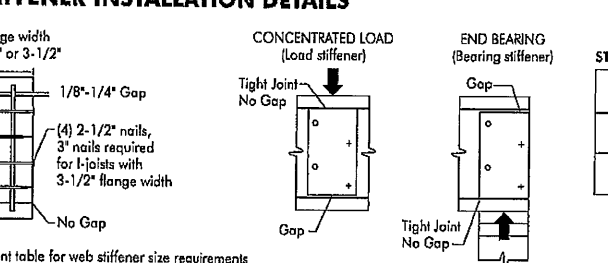
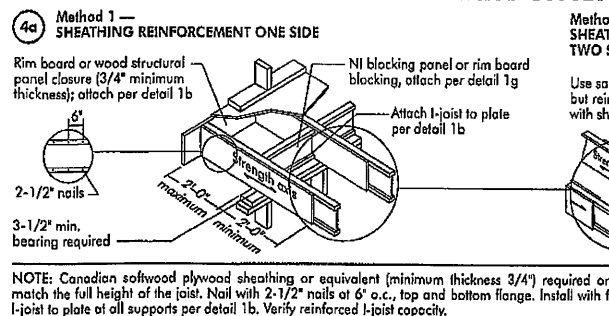


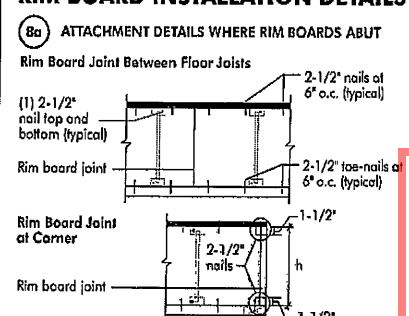
FIGURE 2
WEB STIFFENER INSTALLATION DETAILS



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET



RIM BOARD INSTALLATION DETAILS



CITY OF RICHMOND

NORDIC STRUCTURES

COMPANY
Oct. 14, 2020 14:56

PROJECT
J7 2ND FLR GARAGE.wwb

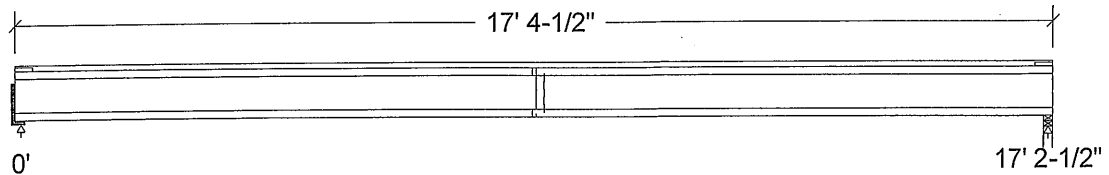
Design Check Calculation Sheet

Nordic Sizer – Canada 7.2

Loads:

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

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



Unfactored:			
Dead	172		172
Live	344		344
Factored:			
Total	731		731
Bearing:			
Capacity			
Joist	1893		1893
Support	-		3866
Des ratio			
Joist	0.39		0.39
Support	-		0.19
Load case	#2		#2
Length	2		1-3/4
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	-		-
fcp sup	-		769
Kzcp sup	-		-

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

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

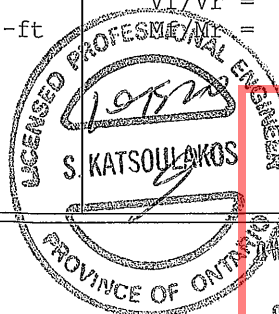
Supports: 1 - Hanger; 2 - Lumber Wall, No.1/No.2;

Total length: 17' 4-1/2"; Clear span: 17' 3/4"; 5/8" nailed and glued OSB sheathing with 1 row of blocking

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 = 731	Vr = 1895	lbs	Vf/Vr = 0.39
Moment (+)	Mf = 3146	Mr = 8958	lbs-ft	Mf/Mr = 0.35
Perm. Defl'n	0.12 = < L/999	0.57 = L/360	in	0.21
Live Defl'n	0.24 = L/847	0.43 = L/480	in	0.57
Total Defl'n	0.37 = L/564	0.86 = L/240	in	0.47
Bare Defl'n	0.27 = L/758	0.57 = L/360	in	0.93
Vibration	Lmax = 17'-2.5	Lv = 18'-5.4	ft	0.82
Defl'n	= 0.030	= 0.037	in	



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Additional Data:

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

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L

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

Deflection: LC #1 = 1.0D (permanent)

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

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

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

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

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

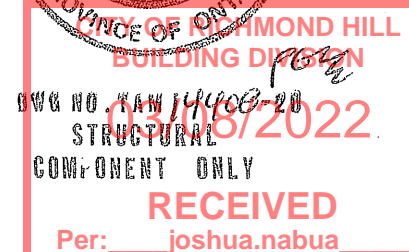
Load Types: D=dead W=wind S=snow H=earth,groundwater E=earthquake
L=live(use,occupancy) Ls=live(storage,equipment) f=fire

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

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

CALCULATIONS:E_Ieff = 367.27 lb-in² K= 4.94e06 lbs"Live" deflection is due to all non-dead loads (live, wind, snow...) **CONFORMS TO OBC 2012****AMENDED 2020****Design Notes:**

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



NORDIC STRUCTURES

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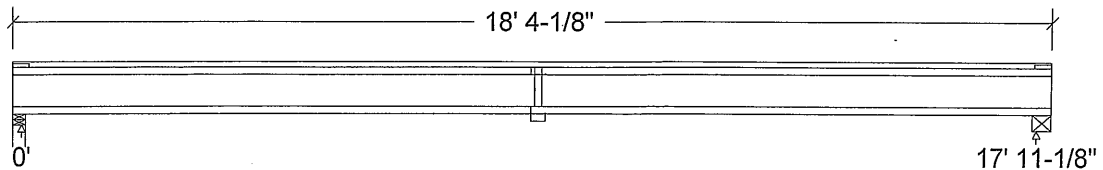
PROJECT
J6 2ND FLR GARAGE.wwb

Design Check Calculation Sheet Nordic Sizer – Canada 7.2

Loads:

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

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



Unfactored:			
Dead	179		179
Live	359		359
Factored:			
Total	762		762
Bearing:			
Capacity			
Joist	1893		1893
Support	6659		-
Des ratio			
Joist	0.40		0.40
Support	0.11		-
Load case	#2		#2
Length	2-3/4		4
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	-		-
fcp sup	769		-
Kzcp sup	-		-

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

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

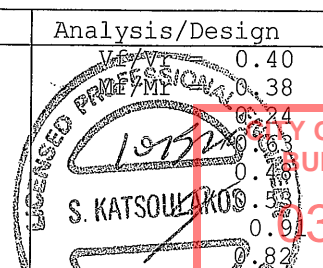
Supports: 1 - Lumber Wall, No.1/No.2; 2 - Steel Beam, W;

Total length: 18' 4-1/8"; Clear span: 17' 9-3/8"; 5/8" nailed and glued OSB sheathing with 1 row of blocking and strapping at blocking locations

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 = 762	Vr = 1895	lbs	Vf/Vr = 0.40
Moment (+)	Mf = 3415	Mr = 8958	lbs-ft	Mf/Mr = 0.38
Perm. Defl'n	0.14 = < L/999	0.60 = L/360	in	0.24
Live Defl'n	0.28 = L/756	0.45 = L/480	in	0.63
Total Defl'n	0.43 = L/504	0.90 = L/240	in	0.48
Bare Defl'n	0.32 = L/676	0.60 = L/360	in	0.53
Vibration	Lmax = 17'-11.1	Lv = 19'-7.2	ft	0.9
Defl'n	= 0.028	= 0.035	in	0.82



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Per: Joshua Nabua
PROJ. MGMT INC

Additional Data:

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

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L

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

Deflection: LC #1 = 1.0D (permanent)

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

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

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

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

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

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

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

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

CALCULATIONS:E_Ieff = 367.27 lb-in² K= 4.94e06 lbs

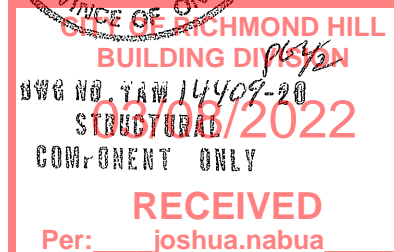
"Live" deflection is due to all non-dead loads (live, wind, snow...)

CONFORMS TO OBC 2012

Design Notes:

AMENDED 2020

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



NORDIC STRUCTURES

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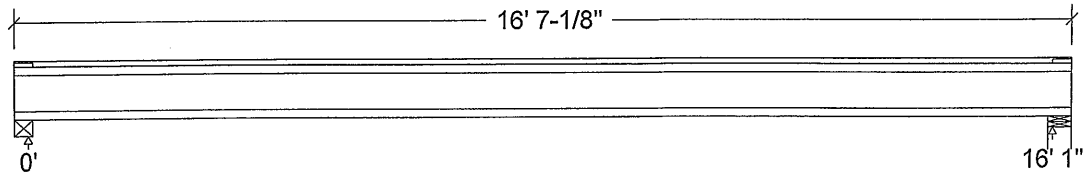
PROJECT
J7 2ND FLR.wwb

Design Check Calculation Sheet Nordic Sizer – Canada 7.2

Loads:

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

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



Unfactored:			
Dead	161		161
Live	322		322
Factored:			
Total	684		684
Bearing:			
Capacity			
Joist	1893		1893
Support	12259		10841
Des ratio			
Joist	0.36		0.36
Support	0.06		0.06
Load case	#2		#2
Length	3-1/2		4-3/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	1.00		-
fcp sup	1088		769
Kzcp sup	1.15		-

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

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

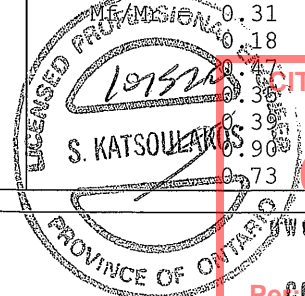
Supports: 1 - Nordic Lam Beam, 24F-1.9E; 2 - Lumber Wall, No.1/No.2;

Total length: 16' 7-1/8"; Clear span: 15' 11-1/4"; 5/8" nailed and glued OSB sheathing with 1/2" gypsum ceiling

This section PASSES the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 684	Vr = 1895	lbs	Vf/Vr = 0.36
Moment (+)	Mf = 2748	Mr = 8958	lbs-ft	Mf/Mr = 0.31
Perm. Defl'n	0.09 = < L/999	0.54 = L/360	in	0.18
Live Defl'n	0.19 = < L/999	0.40 = L/480	in	0.36
Total Defl'n	0.28 = L/680	0.80 = L/240	in	0.36
Bare Defl'n	0.21 = L/914	0.54 = L/360	in	0.36
Vibration	Lmax = 16'-1	Lv = 17'-9.5	ft	0.90
Defl'n	= 0.029	= 0.040	in	0.73



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Additional Data:

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

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L

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

Deflection: LC #1 = 1.0D (permanent)

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

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

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

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

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

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

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

Load Patterns: s=S/2 L=L+Ls _no pattern load in this span

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

CALCULATIONS:E_Ieff = 367.27 lb-in² K= 4.94e06 lbs

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

CONFORMS TO OBC 2012

AMENDED 2020

Design Notes:

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



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BUILDING DIVISION
DWG NO. TAM/4410-20
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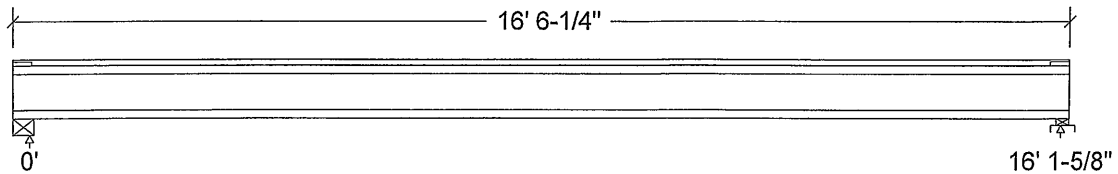
Design Check Calculation Sheet

Nordic Sizer – Canada 7.2

Loads:

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

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



Unfactored:			
Dead	161		161
Live	323		323
Factored:			
Total	686		686
Bearing:			
Capacity			
Joist	1893		1893
Support	-		5573
Des ratio			
Joist	0.36		0.36
Support	-		0.12
Load case	#2		#2
Length	4		2-3/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	-		1.00
fcp sup	-		769
Kzcp sup	-		1.09

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

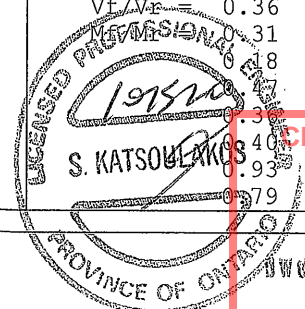
Supports: 1 - Steel Beam, W; 2 - Lumber Sill plate, No.1/No.2;

Total length: 16' 6-1/4"; Clear span: 15' 11-7/8"; 5/8" nailed and glued OSB sheathing

This section PASSES the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 686	Vr = 1895	lbs	Vf/Vr = 0.36
Moment (+)	Mf = 2766	Mr = 8958	lbs-ft	Mf/Mr = 0.31
Perm. Defl'n	0.10 = < L/999	0.54 = L/360	in	0.18
Live Defl'n	0.19 = < L/999	0.40 = L/480	in	0.47
Total Defl'n	0.29 = L/674	0.81 = L/240	in	0.36
Bare Defl'n	0.21 = L/906	0.54 = L/360	in	0.40
Vibration	Lmax = 16'-1.6	Lv = 17'-5	ft	0.93
Defl'n	= 0.031	= 0.040	in	0.79



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BUILDING DIVISION
03/08/2022
DWG NO. TAM/14411-20
STRUCTURAL
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Per: Joshua Nabua

Additional Data:

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

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L

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

Deflection: LC #1 = 1.0D (permanent)

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

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

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

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

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

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

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

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

CALCULATIONS:E_Ieff = 367.27 lb-in² K= 4.94e06 lbs

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

CONFORMS TO OBC 2012

AMENDED 2020

Design Notes:

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



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NORDIC STRUCTURES

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PROJECT
J9 GRD FLR FIRE PL.wwb

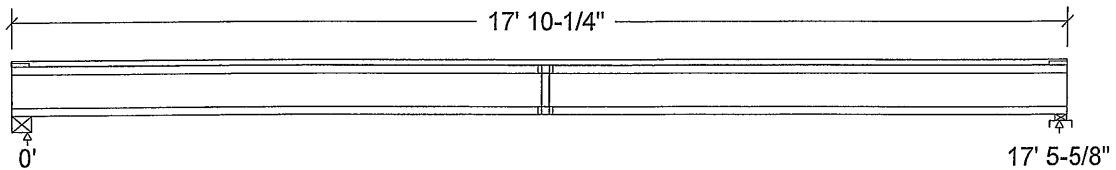
Design Check Calculation Sheet

Nordic Sizer – Canada 7.2

Loads:

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

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



Unfactored:			
Dead	175		175
Live	349		349
Factored:			
Total	742		742
Bearing:			
Capacity			
Joist	1893		1893
Support	-		5573
Des ratio			
Joist	0.39		0.39
Support	-		0.13
Load case	#2		#2
Length	4		2-3/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	-		1.00
fcu sup	-		769
Kzcp sup	-		1.09

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

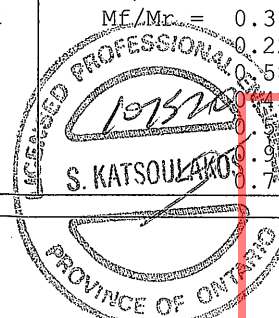
Supports: 1 - Steel Beam, W; 2 - Lumber Sill plate, No.1/No.2;

Total length: 17' 10-1/4"; Clear span: 17' 3-7/8"; 3/4" nailed and glued OSB sheathing with 1 row of blocking

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 = 742	Vr = 1895	lbs	Vf/Vr = 0.39
Moment (+)	Mf = 3242	Mr = 8958	lbs-ft	Mf/Mr = 0.36
Perm. Defl'n	0.13 = < L/999	0.58 = L/360	in	0.22
Live Defl'n	0.25 = L/828	0.44 = L/480	in	0.58
Total Defl'n	0.38 = L/552	0.87 = L/240	in	0.43
Bare Defl'n	0.29 = L/727	0.58 = L/360	in	0.50
Vibration	Lmax = 17'-5.6	Lv = 19'-4.7	ft	0.96
Defl'n	= 0.027	= 0.036	in	0.78



CITY OF RICHMOND HILL
BUILDING DIVISION

03/08/2022

OWU NO. YAM 14412-20

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Additional Data:

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

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L

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

Deflection: LC #1 = 1.0D (permanent)

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

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

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

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

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

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

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

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

CALCULATIONS:E_Ieff = 375.38 lb-in² K= 4.94e06 lbs

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

CONFORMS TO OBC 2012

AMENDED 2020

Design Notes:

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



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NORDIC STRUCTURES

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Oct. 14, 2020 15:05

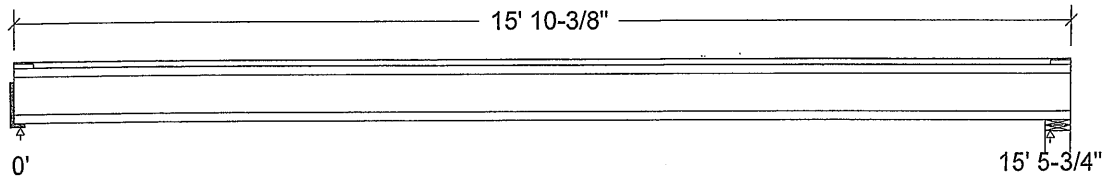
PROJECT
J1 2ND FLR.wwb

Design Check Calculation Sheet Nordic Sizer – Canada 7.2

Loads:

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

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



Unfactored:			
Dead	155		155
Live	310		310
Factored:			
Total	658		658
Bearing:			
Capacity			
Joist	1859		1893
Support	-		7744
Des ratio			
Joist	0.35		0.35
Support	-		0.08
Load case	#2		#2
Length	2		4-3/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
KD	1.00		1.00
KB support	-		-
fcy sup	-		769
Kzcp sup	-		-

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

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

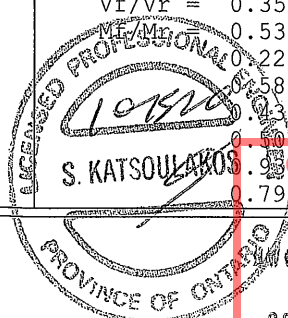
Supports: 1 - Hanger; 2 - Lumber Wall, No.1/No.2;

Total length: 15' 10-3/8"; Clear span: 15' 4"; 5/8" nailed and glued OSB sheathing with 1/2" gypsum ceiling

This section PASSES the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 658	Vr = 1895	lbs	Vf/Vr = 0.35
Moment(+)	Mf = 2546	Mr = 4824	lbs-ft	Mf/Mr = 0.53
Perm. Defl'n	0.11 = < L/999	0.52 = L/360	in	0.22
Live Defl'n	0.22 = L/831	0.39 = L/480	in	0.58
Total Defl'n	0.33 = L/554	0.77 = L/240	in	0.93
Bare Defl'n	0.26 = L/714	0.52 = L/360	in	0.50
Vibration	Lmax = 15'-5.8	Lv = 16'-8.5	ft	0.79
Defl'n	= 0.033	= 0.042	in	



CITY OF RICHMOND HILL
BUILDING DIVISION

03/08/2022

STRUCTURAL

COM-ONLINE ONLY

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Per: joshua.nabua

Additional Data:

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

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + 1.5L

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

Deflection: LC #1 = 1.0D (permanent)

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

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

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

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

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

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

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

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

CALCULATIONS:E_Ieff = 258.29 lb-in² K= 4.94e06 lbs

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

CONFORMS TO OBC 2012

AMENDED 2020

Design Notes:

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



CITY OF RICHMOND HILL
 BWA NO. 14413-20
 BUILDING DIVISION
 STRUCTURAL
 COMPONENT ONLY
 03/03/2022

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Per: joshua.nabua

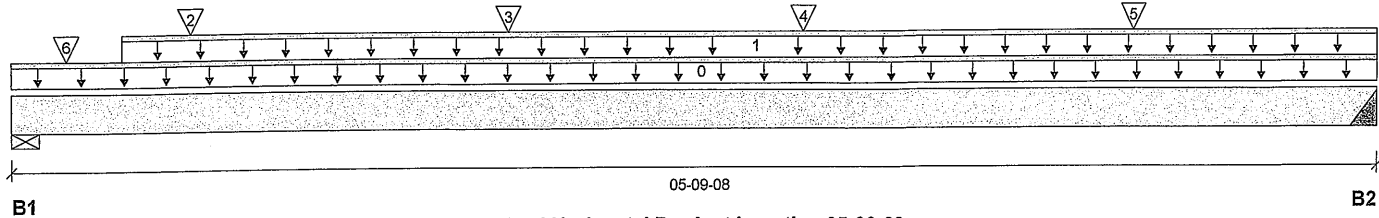
BC CALC® Member Report
Build 7493

Dry | 1 span | No cant.

October 14, 2020 15:46:24

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

File name: 38-12.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B1(i1670)
Specifier:
Designer: LBV
Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	731 / 0	603 / 0		
B2, 3"	662 / 0	578 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	05-09-08	Top		5			00-00-00
1	1(i491)	Unf. Lin. (lb/ft)	L	00-05-08	05-09-08	Top		81			n/a
2	J1(i1754)	Conc. Pt. (lbs)	L	00-09-00	00-09-00	Top	295	147			n/a
3	J1(i1705)	Conc. Pt. (lbs)	L	02-01-00	02-01-00	Top	330	165			n/a
4	-	Conc. Pt. (lbs)	L	03-03-13	03-03-13	Top	460	231			n/a
5	J1(i467)	Conc. Pt. (lbs)	L	04-09-00	04-09-00	Top	304	152			n/a
6	E4(i207)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top		26			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	2629 ft-lbs	11610 ft-lbs	22.6%	1	03-01-00
End Shear	1604 lbs	5785 lbs	27.7%	1	04-09-00
Total Load Deflection	L/999 (0.038")	n/a	n/a	4	02-10-12
Live Load Deflection	L/999 (0.021")	n/a	n/a	5	02-10-12
Max Defl.	0.038"	n/a	n/a	4	02-10-12
Span / Depth	6.8				

Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1 Wall/Plate	3-1/2" x 1-3/4"	1849 lbs	49.1%	24.7%	Spruce-Pine-Fir
B2 Hanger	3" x 1-3/4"	1716 lbs	n/a	26.8%	IUS1.81/10

Cautions

Header for the hanger IUS1.81/10 is a Double 1-3/4" x 9-1/2" LVL Beam.
Hanger model IUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.



CITY OF RICHMOND HILL
DWG NO. TAN 19419-20
STRUCTURAL
COMPONENT ONLY
03/08/2022

RECEIVED
Per: joshua.nabua



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
1ST FLR FRAMING\Flush Beams\B1(i1670) (Flush Beam)

PASSED

BC CALC® Member Report
Build 7493

Dry | 1 span | No cant.

October 14, 2020 15:46:24

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

File name: 38-12.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B1(i1670)
Specifier:
Designer: LBV
Company:

Notes

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

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. TAM 14414-20
STRUCTURAL
COMMENT ONLY

Disclosure

Use of the Boise Cascade Software is subject to the terms of the End User License Agreement (EULA).
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Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800) 232-0788 before installation.

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

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Per: joshua.nabua

**CITY OF RICHMOND HILL
BUILDING DIVISION
03/08/2022**

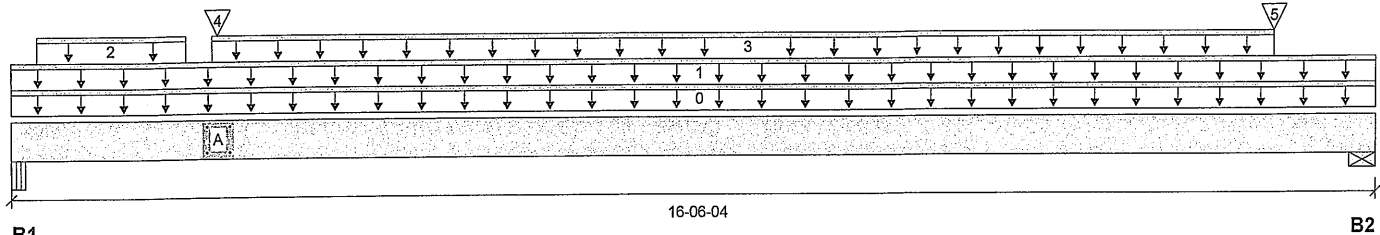
BC CALC® Member Report
Build 7493

Dry | 1 span | No cant.

October 14, 2020 15:46:24

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

File name: 38-12.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B2(i1838)
Specifier:
Designer: LBV
Company:



Total Horizontal Product Length = 16-06-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-7/8"	923 / 0	874 / 0		
B2, 2-3/8"	669 / 0	453 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	16-06-04	Top		10			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	16-06-04	Top	23	11			n/a
2	2(i493)	Unf. Lin. (lb/ft)	L	00-03-10	02-01-02	Top		65			n/a
3	FC1 Floor Material	Unf. Lin. (lb/ft)	L	02-04-14	15-03-06	Top	24	12			n/a
4	-	Conc. Pt. (lbs)	L	02-05-12	02-05-12	Top	643	578			n/a
5	J5(i447)	Conc. Pt. (lbs)	L	15-03-06	15-03-06	Top	243	121			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	5839 ft-lbs	23220 ft-lbs	25.1%	1	06-08-03
End Shear	2317 lbs	11571 lbs	20.0%	1	01-02-06
Total Load Deflection	L/478 (0.403")	n/a	50.2%	4	08-00-15
Live Load Deflection	L/852 (0.226")	n/a	42.3%	5	08-00-15
Max Defl.	0.403"	n/a	n/a	4	08-00-15
Span / Depth	20.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	4-7/8" x 3-1/2"	2478 lbs	34.0%	11.9%	Unspecified
B2 Wall/Plate	2-3/8" x 3-1/2"	1569 lbs	30.7%	15.5%	Spruce-Pine-Fir

Notes

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

CONFORMS TO OBC 2012

AMENDED 2020



PROVINCE OF ONTARIO
BUILDING DIVISION
DWG NO. TAM 14415-20
03/08/2022
COMPONENT ONLY

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Per: joshua.nabua

BC CALC® Member Report
Build 7493

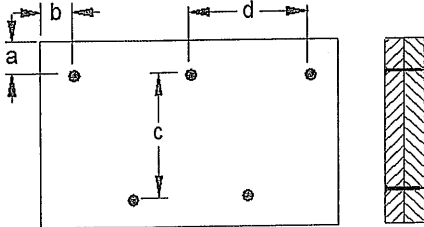
Dry | 1 span | No cant.

October 14, 2020 15:46:24

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

File name: 38-12.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B2(i1838)
Specifier:
Designer: LBV
Company:

Connection Diagram: Full Length of Member



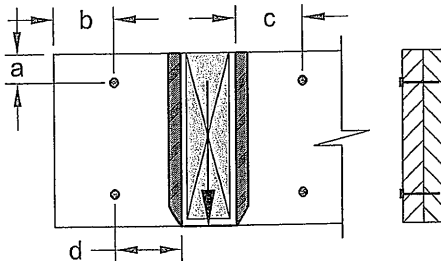
a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = 22"

Calculated Side Load = 257.9 lb/ft

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

Connection Diagrams: Concentrated Side Loads

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



a minimum = 2"
b minimum = 4"
c minimum = 4"
d maximum = 12"
Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL



Disclosure

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

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Per: joshua.nabua

BC CALC® Member Report

Build 7493

Job name:

File name: 38-12.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B3(i1764)

City, Province, Postal Code: WATERDOWN

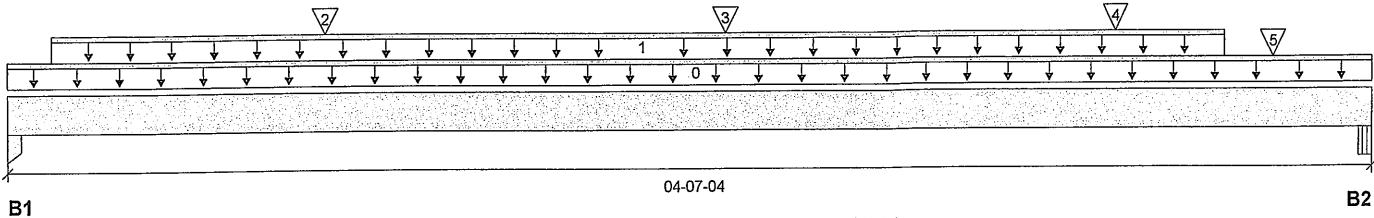
Specifier:

Customer:

Designer: LBV

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 04-07-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	431 / 0	236 / 0		
B2, 6"	622 / 0	359 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
							1.00	0.65	1.00	1.15	
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-07-04	Top		10			00-00-00
1	STAIRS	Unf. Lin. (lb/ft)	L	00-01-12	04-01-04	Top	120	60			n/a
2	J4(i481)	Conc. Pt. (lbs)	L	01-00-12	01-00-12	Top	148	74			n/a
3	J4(i425)	Conc. Pt. (lbs)	L	02-04-12	02-04-12	Top	156	78			n/a
4	J4(i393)	Conc. Pt. (lbs)	L	03-08-12	03-08-12	Top	122	61			n/a
5	11(i665)	Conc. Pt. (lbs)	L	04-03-04	04-03-04	Top	150	99			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1076 ft-lbs	23220 ft-lbs	4.6%	1	02-04-12
End Shear	728 lbs	11571 lbs	6.3%	1	00-11-04
Total Load Deflection	L/999 (0.004")	n/a	n/a	4	02-01-12
Live Load Deflection	L/999 (0.003")	n/a	n/a	5	02-01-12
Max Defl.	0.004"	n/a	n/a	4	02-01-12
Span / Depth	5.2				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Column	1-3/4" x 3-1/2"	941 lbs	23.7%	12.6%	Unspecified
B2 Beam	6" x 3-1/2"	1383 lbs	15.4%	5.4%	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.

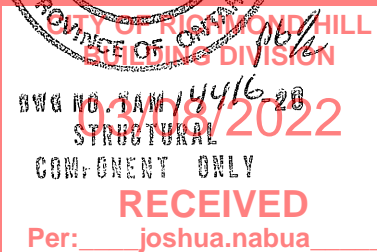
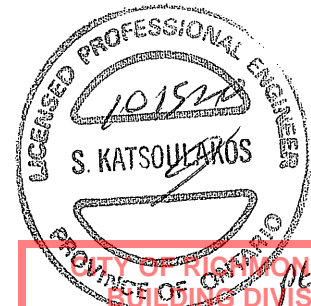
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

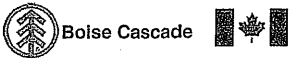
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020





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

PASSED

1ST FLR FRAMING\Flush Beams\B3(i1764) (Flush Beam)

Dry | 1 span | No cant.

October 14, 2020 15:46:24

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

File name: 38-12.mmdl

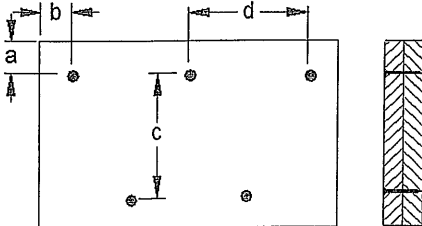
Description: 1ST FLR FRAMING\Flush Beams\B3(i1764)

Specifier:

Designer: LBV

Company:

Connection Diagram: Full Length of Member



a minimum = 2"

c = 5-1/2"

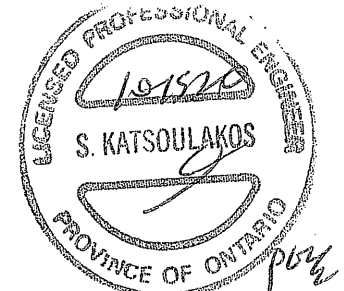
b minimum = 3"

d = 2 3/4"

Calculated Side Load = 165.8 lb/ft

Connectors are: Nails

3-1/2" ARDOX SPIRAL



DWG NO. TAM/4416-20

STRUCTURAL

COMPONENT ONLY

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Per: joshua.nabua

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

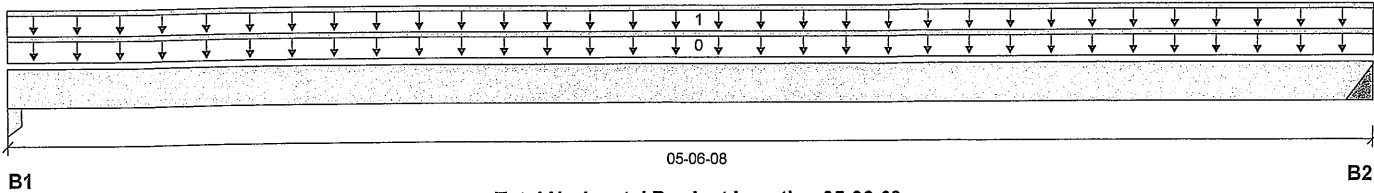
File name: 38-12.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B4(i387)

Specifier:

Designer: LBV

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	67 / 0	47 / 0		
B2, 3"	66 / 0	46 / 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	05-06-08	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	05-06-08	Top	24	12			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	188 ft-lbs	11610 ft-lbs	1.6%	1	02-09-08
End Shear	98 lbs	5785 lbs	1.7%	1	01-01-00
Total Load Deflection	L/999 (0.003")	n/a	n/a	4	02-09-08
Live Load Deflection	L/999 (0.002")	n/a	n/a	5	02-09-08
Max Defl.	0.003"	n/a	n/a	4	02-09-08
Span / Depth	6.5				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Column	3-1/2" x 1-3/4"	160 lbs	4.0%	2.1%	Unspecified
B2 Hanger	3" x 1-3/4"	158 lbs	n/a	2.5%	IUS1.81/10

Cautions

Header for the hanger IUS1.81/10 is a Double 1-3/4" x 9-1/2" LVL Beam.
Hanger model IUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Notes

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

CONFORMS TO OBC 2012

AMENDED 2020



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RECEIVED
Per: joshua.nabua

Build 7493

Job name:

File name: 38-12.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B5(i1832)

City, Province, Postal Code: WATERDOWN

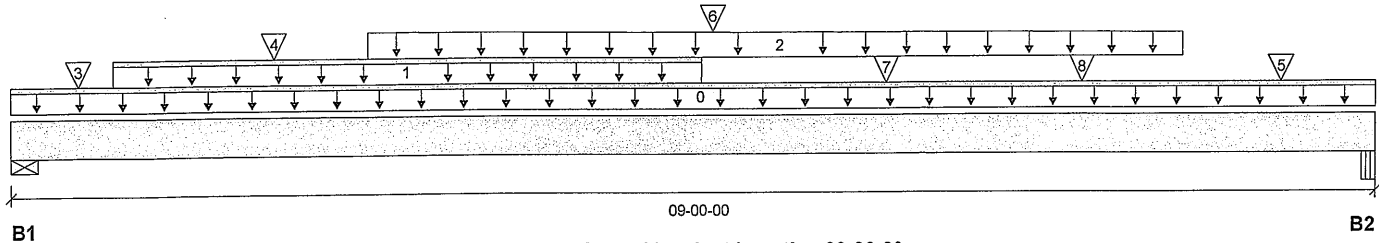
Specifier:

Customer:

Designer: LBV

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 09-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	1445 / 0	1143 / 0	681 / 0	
B2, 3"	1460 / 0	899 / 0	239 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-00-00	Top		10			00-00-00
1	STAIRS	Unf. Lin. (lb/ft)	L	00-08-00	04-06-00	Top		120	240		n/a
2	Smoothed Load	Trapezoidal (lb/ft)	L	02-03-14	07-08-10	Top	293	147			n/a
							266	133			
3	-	Conc. Pt. (lbs)	L	00-05-05	00-05-05	Top	356	207			n/a
4	J1(i401)	Conc. Pt. (lbs)	L	01-08-08	01-08-08	Top	317	158			n/a
5	-	Conc. Pt. (lbs)	L	08-04-08	08-04-08	Top	366	183			n/a
6	B4(j387)	Conc. Pt. (lbs)	L	04-06-14	04-06-14	Top	64	45			n/a
7	J4(j481)	Conc. Pt. (lbs)	L	05-08-08	05-08-08	Top	137	69			n/a
8	J4(j425)	Conc. Pt. (lbs)	L	07-00-08	07-00-08	Top	148	74			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	8121 ft-lbs	23220 ft-lbs	35.0%	1	04-04-08
End Shear	3469 lbs	11571 lbs	30.0%	1	01-03-00
Total Load Deflection	L/660 (0.153")	n/a	36.4%	35	04-06-14
Live Load Deflection	L/999 (0.1")	n/a	n/a	51	04-06-14
Max Defl.	0.153"	n/a	n/a	35	04-06-14
Span / Depth	10.6				

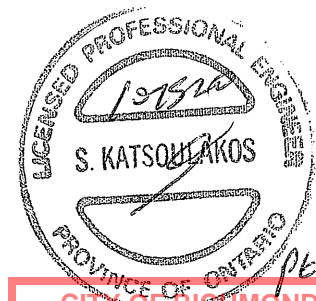
			Demand/Resistance Support	Demand/Resistance Member		
Bearing Supports	Dim. (LxW)	Demand			Material	
B1	Wall/Plate	5-1/2" x 3-1/2"	4277 lbs	36.1%	18.2%	Spruce-Pine-Fir
B2	Beam	3" x 3-1/2"	3552 lbs	79.2%	27.7%	Unspecified

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 CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Unbalanced snow loads determined from building geometry were used in selected product's verification.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



CITY OF RICHMOND HILL
 BUILDING DIVISION
 DVG NO. 1441118-20
 STRUCTURAL
 COMPONENT ONLY
 03/06/2022

RECEIVED
 Per: joshua.nabua



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
1ST FLR FRAMING\Flush Beams\B5(i1832) (Flush Beam)

PASSED

BC CALC® Member Report
Build 7493

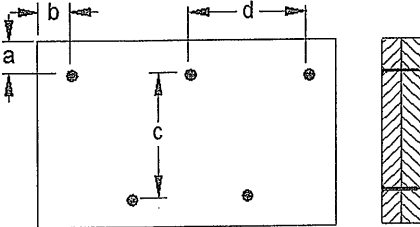
Dry | 1 span | No cant.

October 14, 2020 15:46:24

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

File name: 38-12.mmdl
Description: 1ST FLR FRAMING\Flush Beams\B5(i1832)
Specifier:
Designer: LBV
Company:

Connection Diagram: Full Length of Member



a minimum = 2" c = 5-1/2"
b minimum = 3" d = 12" 3/4"

Calculated Side Load = 821.6 lb/ft
Connectors are: 16d 1/2" Nails

3-1/2" ARDOX SPIRAL



Disclosure

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Per: joshua.nabua

BC CALC® Member Report

Dry | 1 span | No cant.

October 14, 2020 15:46:24

Build 7493

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

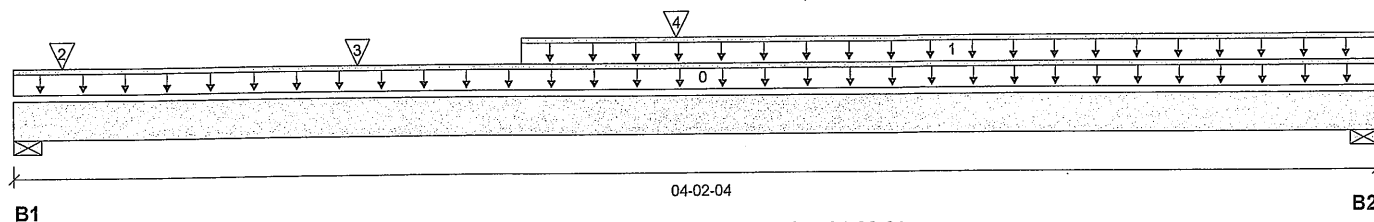
File name: 38-12.mmdl

Description: 2ND FLR FRAMING\Dropped Beams\B11(i1784)

Specifier:

Designer: LBV

Company:



Total Horizontal Product Length = 04-02-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	2148 / 0	1233 / 0		
B2, 6-1/4"	1534 / 0	802 / 0		

Load Summary

Load Summary							Live	Dead	Snow	Wind	Tributary
Tag	Description	Load Type	Ref.	Start	End	Loc.	1.00	0.65	1.00	1.15	
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-02-04	Top		10			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-06-08	04-02-04	Top	366	184			n/a
2		B10(i1756)	Conc. Pt. (lbs)	L	00-01-12	00-01-12	Top	942	598		n/a
3	-	Conc. Pt. (lbs)	L	01-00-08	01-00-08	Top	372	186			n/a
4	B9(i1149)	Conc. Pt. (lbs)	L	02-00-02	02-00-02	Top	1398	725			n/a

Controls Summary

Controls Summary	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3738 ft-lbs	23220 ft-lbs	16.1%	1	02-00-02
End Shear	2507 lbs	11571 lbs	21.7%	1	01-01-08
Total Load Deflection	L/999 (0.01")	n/a	n/a	4	02-00-02
Live Load Deflection	L/999 (0.006")	n/a	n/a	5	02-00-02
Max Defl.	0.01"	n/a	n/a	4	02-00-02
Span / Depth	4.4				

Bearing Supports

			Demand/ Resistance Support	Demand/ Resistance Member	Material	
Bearing Supports	Dim. (LxW)	Demand				
B1	Wall/Plate	4" x 3-1/2"	4764 lbs	25.5%	27.9%	Spruce-Pine-Fir
B2	Wall/Plate	6-1/4" x 3-1/2"	3303 lbs	11.3%	12.4%	Spruce-Pine-Fir

Notes

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

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

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

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



CITY OF RICHMOND HILL
 UWE NO. 174110819-20
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Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Dropped Beams\B11(i1784) (Dropped Beam)

PASSED

BC CALC® Member Report
Build 7493

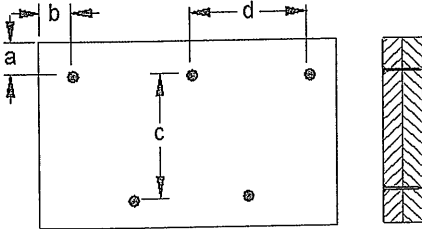
Dry | 1 span | No cant.

October 14, 2020 15:46:24

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

File name: 38-12.mmdl
Description: 2ND FLR FRAMING\Dropped Beams\B11(i1784)
Specifier:
Designer: LBV
Company:

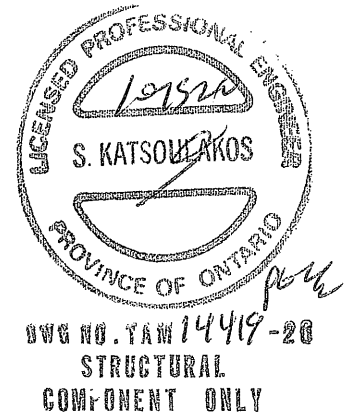
Connection Diagram: Full Length of Member



a minimum = 2" c = 5-1/2"
b minimum = 3" d = 20" B "

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

3-1/2" ARDOX SPIRAL



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

RECEIVED
Per: joshua.nabua

BC CALC® Member Report

Dry | 1 span | No cant.

October 14, 2020 15:46:24

Build 7493

Job name:

File name: 38-12.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B12(i1792)

City, Province, Postal Code: WATERDOWN

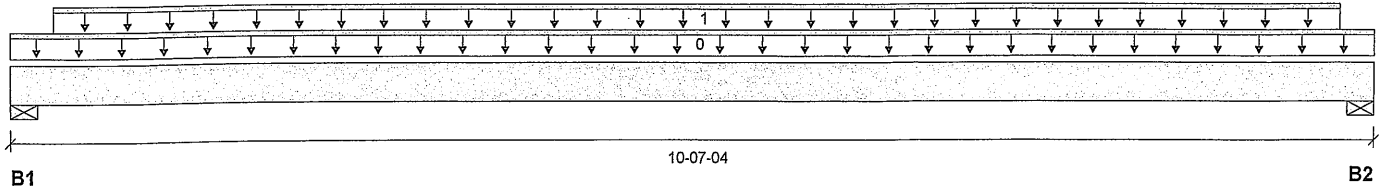
Specifier:

Customer:

Designer: LBV

Code reports: CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	1618 / 0	862 / 0		
B2, 3-3/4"	1642 / 0	874 / 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	1.00	0.65	1.00	1.15	00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-04-00	10-04-00	Top	325	163			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	9103 ft-lbs	23220 ft-lbs	39.2%	1	04-10-00
End Shear	3275 lbs	11571 lbs	28.3%	1	01-01-00
Total Load Deflection	L/511 (0.238")	n/a	47.0%	4	05-04-00
Live Load Deflection	L/782 (0.155")	n/a	46.0%	5	05-04-00
Max Defl.	0.238"	n/a	n/a	4	05-04-00
Span / Depth	12.8				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 3-1/2"	3505 lbs	21.4%	23.4%	Spruce-Pine-Fir
B2	Wall/Plate 3-3/4" x 3-1/2"	3557 lbs	20.3%	22.2%	Spruce-Pine-Fir

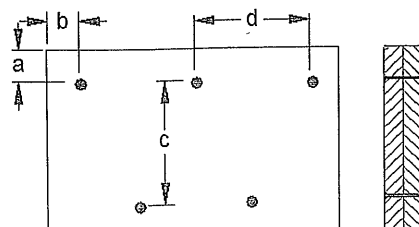
Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume unbraced length of Top: 00-08-08, Bottom: 00-08-08.
 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.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020

Connection Diagram: Full Length of Member



CITY OF RICHMOND HILL
 BUILDING DIVISION
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 03/08/2022

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 Per: joshua.nabua



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Dropped Beams\B12(i1792) (Dropped Beam)

PASSED

BC CALC® Member Report
Build 7493

Dry | 1 span | No cant.

October 14, 2020 15:46:24

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

File name: 38-12.mmdl
Description: 2ND FLR FRAMING\Dropped Beams\B12(i1792)
Specifier:
Designer: LBV
Company:

Connection Diagram: Full Length of Member

a minimum = 2" c = 5-1/2"
b minimum = 3" d = 2 3/4"

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



BWR NO. TAW 14420-20
STRUCTURAL
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ALLJOIST®, BC RIM BOARD™, BCi®,
BOISE GLULAM™, BC FloorValue®,
VERSA-LAM®, VERSA-RIM PLUS®

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Per: joshua.nabua

BC CALC® Member Report

Dry | 2 spans | L cant.

October 14, 2020 15:46:24

Build 7493

Job name:

File name: 38-12.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B10(i1756)

City, Province, Postal Code: WATERDOWN

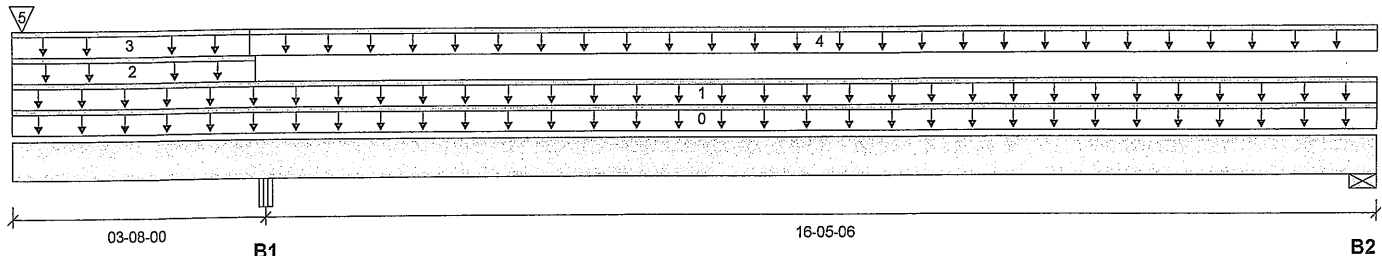
Specifier:

Customer:

Designer: LBV

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 20-01-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	945 / 0	600 / 0		
B2, 4-3/8"	335 / 69	208 / 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	20-01-06	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	20-01-06	Top	18	9			n/a
2	STAIRS	Unf. Lin. (lb/ft)	L	00-00-00	03-06-04	Top	120	60			n/a
3	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-05-04	Top	6	3			n/a
4	FC3 Floor Material	Unf. Lin. (lb/ft)	L	03-05-04	20-01-06	Top	22	11			n/a
5	B8(i1483)	Conc. Pt. (lbs)	L	00-01-12	00-01-12	Top	40	28			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2771 ft-lbs	23220 ft-lbs	11.9%	3	12-02-12
Neg. Moment	-2469 ft-lbs	-23220 ft-lbs	10.6%	2	03-08-00
End Shear	650 lbs	11571 lbs	5.6%	3	18-11-08
Cont. Shear	976 lbs	11571 lbs	8.4%	1	02-08-12
Total Load Deflection	L/1097 (0.177")	n/a	21.9%	10	12-00-01
Live Load Deflection	L/999 (0.122")	n/a	n/a	13	11-09-06
Total Neg. Defl.	2xL/1998 (-0.103")	n/a	n/a	10	00-00-00
Max Defl.	0.177"	n/a	n/a	10	12-00-01
Span / Depth	20.4				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	3-1/2" x 3-1/2"	2168 lbs	14.5%	14.5%	VL 2.0 3100 SP
B2 Wall/Plate	4-3/8" x 3-1/2"	763 lbs	8.1%	4.1%	Spruce-Pine-Fir

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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

CONFORMS TO OBC 2012

AMENDED 2020



CITY OF RICHMOND HILL
 BUILDING DIVISION
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 03/08/2022

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 Per: joshua.nabua



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING\Flush Beams\B10(i1756) (Flush Beam)

PASSED

BC CALC® Member Report
Build 7493

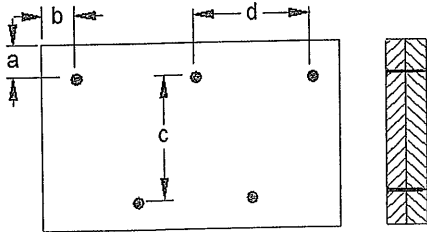
Dry | 2 spans | L cant.

October 14, 2020 15:46:24

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

File name: 38-12.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B10(i1756)
Specifier:
Designer: LBV
Company:

Connection Diagram: Full Length of Member



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

Calculated Side Load = 47.5 lb/ft

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



DWG NO. TAM 14421-20
STRUCTURAL
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Disclosure

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Per: joshua.nabua

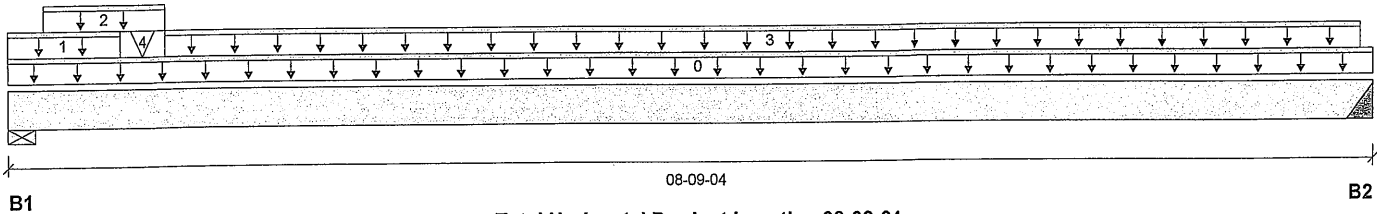
BC CALC® Member Report
 Build 7493

Dry | 1 span | No cant.

October 14, 2020 15:46:24

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

File name: 38-12.mmdl
 Description: 2ND FLR FRAMING\Flush Beams\B12H(i1775)
 Specifier:
 Designer: LBV
 Company:



Total Horizontal Product Length = 08-09-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-7/8"	75 / 0	141 / 0		
B2, 4"	72 / 0	79 / 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	08-09-04	Top		10			00-00-00
1	15(i713)	Unf. Lin. (lb/ft)	L	00-00-00	00-08-08	Top		65			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-02-12	01-00-00	Top	20	10			n/a
3	FC3 Floor Material	Unf. Lin. (lb/ft)	L	01-00-00	08-08-04	Top	17	9			n/a
4	14(i712)	Conc. Pt. (lbs)	L	00-10-04	00-10-04	Top		16			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	400 ft-lbs	23220 ft-lbs	1.7%	1	04-05-09
End Shear	211 lbs	11571 lbs	1.8%	1	01-03-06
Total Load Deflection	L/999 (0.007")	n/a	n/a	4	04-05-09
Live Load Deflection	L/999 (0.003")	n/a	n/a	5	04-05-09
Max Defl.	0.007"	n/a	n/a	4	04-05-09
Span / Depth	10.2				

				Demand/ Resistance Support	Demand/ Resistance Member	
Bearing Supports	Dim. (LxW)	Demand				Material
B1	Wall/Plate	5-7/8" x 3-1/2"	197 lbs	2.4%	1.2%	Spruce-Pine-Fir
B2	Hanger	4" x 3-1/2"	206 lbs	n/a	1.2%	HGUS410

Cautions

Header for the hanger HGUS410 is a Double 1-3/4" x 9-1/2" LVL Beam.
 Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Notes

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

CONFORMS TO OBC 2012

AMENDED 2020



OWN NO. TAM 14422-20
 CITY OF RICHMOND HILL
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03/08/2022

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Per: joshua.nabua



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

2ND FLR FRAMING\Flush Beams\B12H(i1775) (Flush Beam)

PASSED

BC CALC® Member Report
Build 7493

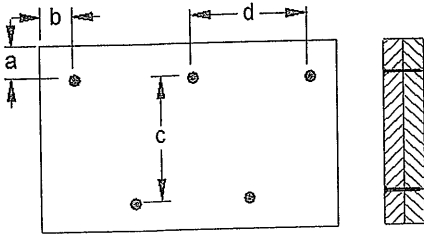
Dry | 1 span | No cant.

October 14, 2020 15:46:24

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

File name: 38-12.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B12H(i1775)
Specifier:
Designer: LBV
Company:

Connection Diagram: Full Length of Member



a minimum = 2" c = 5-1/2"
b minimum = 3" d = 24" 8"

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



DWG NO. TAM 1442220
STRUCTURAL
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Disclosure

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Per: joshua.nabua

BC CALC® Member Report

Dry | 2 spans | R cant.

October 14, 2020 15:46:24

Build 7493

Job name:

File name: 38-12.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B15(i1815)

City, Province, Postal Code: WATERDOWN

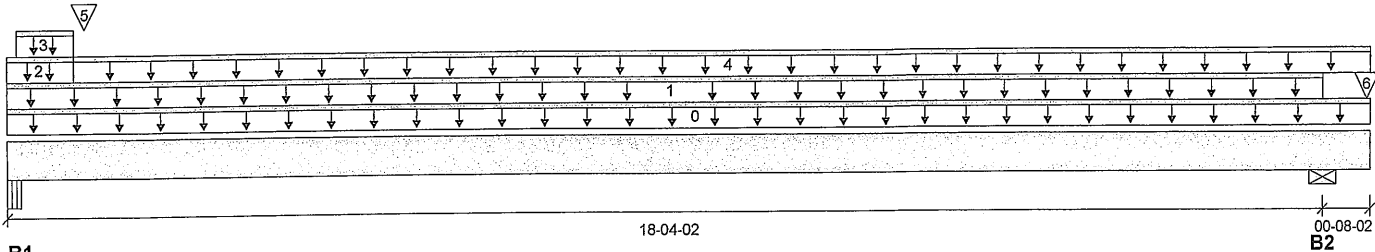
Specifier:

Customer:

Designer: LBV

Code reports: CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-1/8"	1180 / 0	1508 / 0	1059 / 0	
B2, 5-1/2"	296 / 0	319 / 0	44 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	19-00-04	Top		10			00-00-00
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	18-04-02	Top	17	9			n/a
2	E42(i550)	Unf. Lin. (lb/ft)	L	00-00-00	00-10-14	Top		81			n/a
3	E42(i550)	Unf. Lin. (lb/ft)	L	00-01-10	00-10-14	Top		75	163		n/a
4	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-10-14	19-00-04	Top	10	5			n/a
5	-	Conc. Pt. (lbs)	L	01-00-10	01-00-10	Top	977	1220	977		n/a
6	14(i712)	Conc. Pt. (lbs)	L	18-11-10	18-11-10	Top		43			n/a

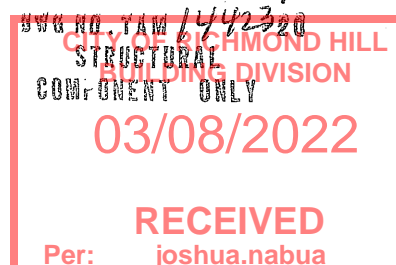
Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4575 ft-lbs	23220 ft-lbs	19.7%	2	06-08-06
Neg. Moment	-45 ft-lbs	-15093 ft-lbs	0.3%	0	18-04-02
End Shear	4160 lbs	11571 lbs	35.9%	1	01-01-10
Cont. Shear	727 lbs	11571 lbs	6.3%	1	17-03-14
Total Load Deflection	L/523 (0.414")	n/a	45.9%	82	08-08-11
Live Load Deflection	L/914 (0.237")	n/a	39.4%	120	08-08-11
Total Neg. Defl.	2xL/1998 (-0.046")	n/a	n/a	82	19-00-04
Max Defl.	0.414"	n/a	n/a	82	08-08-11
Span / Depth	22.8				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	4-1/8" x 3-1/2"	4714 lbs	76.4%	26.8%	Unspecified
B2 Wall/Plate	5-1/2" x 3-1/2"	887 lbs	7.5%	3.8%	Spruce-Pine-Fir

Cautions

Concentrated side load(s) 10,11,12,13,14 are closer than 18" from end of member. Please consult a technical representative or Professional of Record.



BC CALC® Member Report
Build 7493

Dry | 2 spans | R cant.

October 14, 2020 15:46:24

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

File name: 38-12.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B15(i1815)
Specifier:
Designer: LBV
Company:

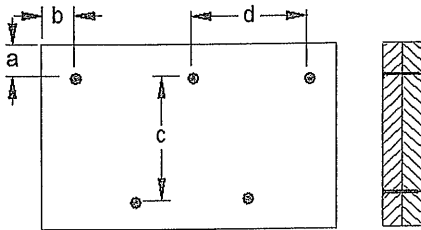
Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume member is fully braced.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Unbalanced snow loads determined from building geometry were used in selected product's verification.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Cantilevers require sheathed bottom flanges, blocking at cantilever support and closure at ends.

CONFORMS TO OBC 2012

AMENDED 2020

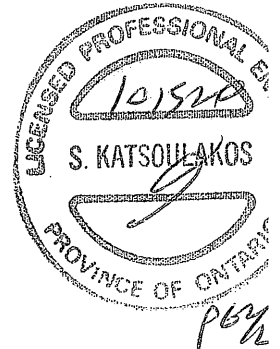
Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"

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

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



OWN NO. TAM 1442320
STRUCTURAL
COMPONENT ONLY

Disclosure

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

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RECEIVED

Per: joshua.nabua

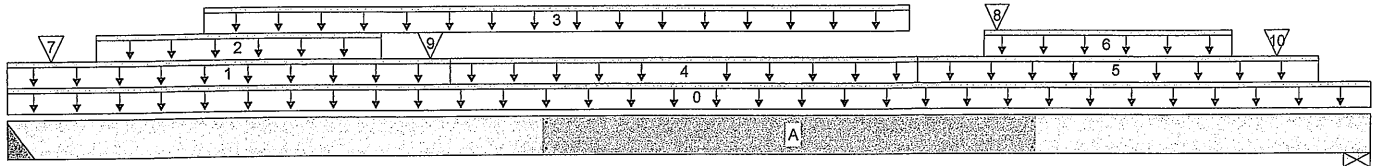
BC CALC® Member Report
Build 7493

Dry | 1 span | No cant.

October 14, 2020 15:46:24

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

File name: 38-12.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B16(i1828)
Specifier:
Designer: LBV
Company:



B1

05-10-04

B2

Total Horizontal Product Length = 05-10-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	1027 / 0	1200 / 0	939 / 0	
B2, 2-3/4"	919 / 0	1013 / 0	691 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	05-10-04	Top		10			00-00-00
1	E46(i559)	Unf. Lin. (lb/ft)	L	00-00-00	01-10-08	Top		81			n/a
2	E46(i559)	Unf. Lin. (lb/ft)	L	00-04-08	01-07-00	Top		48	111		n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	00-10-00	03-10-00	Top	354	176			n/a
4	E47(i560)	Unf. Lin. (lb/ft)	L	01-10-08	03-10-08	Top		41			n/a
5	E41(i548)	Unf. Lin. (lb/ft)	L	03-10-08	05-07-08	Top		81			n/a
6	E41(i548)	Unf. Lin. (lb/ft)	L	04-02-00	05-03-00	Top		48	111		n/a
7	-	Conc. Pt. (lbs)	L	00-02-04	00-02-04	Top	262	440	635		n/a
8	-	Conc. Pt. (lbs)	L	04-02-11	04-02-11	Top	355	257	140		n/a
9	E46(i559)	Conc. Pt. (lbs)	L	01-09-08	01-09-08	Top		83	146		n/a
10	-	Conc. Pt. (lbs)	L	05-05-06	05-05-06	Top	265	363	454		n/a

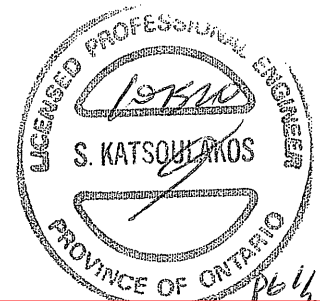
Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3658 ft-lbs	23220 ft-lbs	15.8%	1	03-04-00
End Shear	2274 lbs	11571 lbs	19.7%	1	01-01-08
Total Load Deflection	L/999 (0.029")	n/a	n/a	35	03-00-04
Live Load Deflection	L/999 (0.018")	n/a	n/a	51	03-00-04
Max Defl.	0.029"	n/a	n/a	35	03-00-04
Span / Depth	6.8				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 4" x 3-1/2"	3979 lbs	n/a	23.3%	HGUS410
B2	Wall/Plate 2-3/4" x 3-1/2"	3336 lbs	56.3%	28.4%	Spruce-Pine-Fir

Cautions

Header for the hanger HGUS410 is a Double 1-3/4" x 9-1/2" LVL Beam.
Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.



CITY OF RICHMOND HILL
BUILDING DIVISION
STRUCTURAL
COMPLIANT ONLY
03/08/2022

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Per: joshua.nabua

BC CALC® Member Report

Build 7493

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

File name: 38-12.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B16(i1828)

Specifier:

Designer: LBV

Company:

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

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

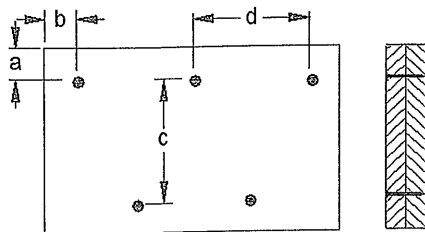
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020

Connection Diagram: Full Length of Member



a minimum = 2"
b minimum = 3"

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

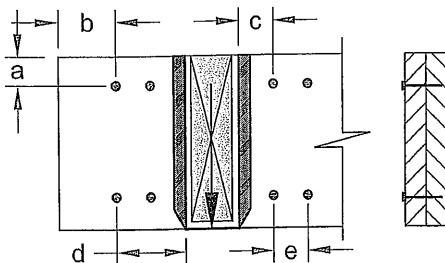
Calculated Side Load = 374.9 lb/ft
Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL

Connection Diagrams: Concentrated Side Loads

Connection Tag: A

Applies to load tag(s): 20+21+33



a minimum = 2"
b minimum = 4"
c minimum = 4"
d maximum = 12"
e minimum = 4"
Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL



DWG NO. TAM 1442420
STRUCTURAL
COMPONENT ONLY

Disclosure

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

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Per: joshua.nabua

CITY OF RICHMOND HILL
BUILDING DIVISION
10/15/2022

BC CALC® Member Report

Dry | 1 span | No cant.

October 14, 2020 15:46:24

Build 7493

Job name:

File name: 38-12.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B7(i1685)

City, Province, Postal Code: WATERDOWN

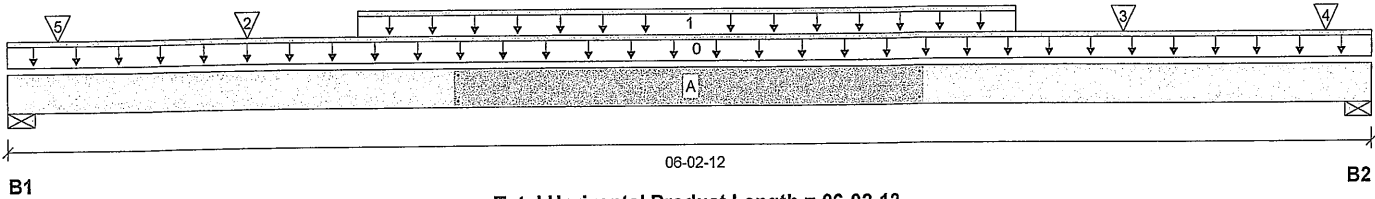
Specifier:

Customer:

Designer: LBV

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 06-02-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	1218 / 0	662 / 0		
B2, 6-1/4"	1635 / 0	889 / 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	06-02-12	Top		10			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-07-00	04-07-00	Top	500	250			n/a
2	-	Conc. Pt. (lbs)	L	01-01-00	01-01-00	Top	465	232			n/a
3	-	Conc. Pt. (lbs)	L	05-01-00	05-01-00	Top	484	242			n/a
4	-	Conc. Pt. (lbs)	L	06-00-03	06-00-03	Top	397	240			n/a
5	E44(i554)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top		24			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3959 ft-lbs	23220 ft-lbs	17.1%	1	03-01-00
End Shear	2434 lbs	11571 lbs	21.0%	1	04-11-00
Total Load Deflection	L/999 (0.028")	n/a	n/a	4	03-01-00
Live Load Deflection	L/999 (0.019")	n/a	n/a	5	03-01-00
Max Defl.	0.028"	n/a	n/a	4	03-01-00
Span / Depth	6.8				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	2654 lbs	22.4%	11.3%	Spruce-Pine-Fir
B2	Wall/Plate 6-1/4" x 3-1/2"	3563 lbs	26.5%	13.4%	Spruce-Pine-Fir

Notes

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

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

Calculations assume member is fully braced.

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

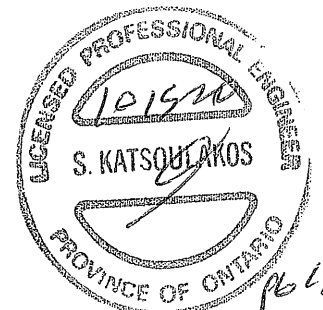
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020

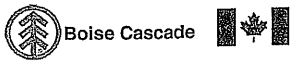


DWR NO. 12472-R
 CITY OF RICHMOND HILL
 STRUCTURAL
 BUILDING DIVISION
 COMPONENT ONLY

03/08/2022

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Per: joshua.nabua



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 2ND FLR FRAMING\Flush Beams\B7(i1685) (Flush Beam)

PASSED

BC CALC® Member Report
Build 7493

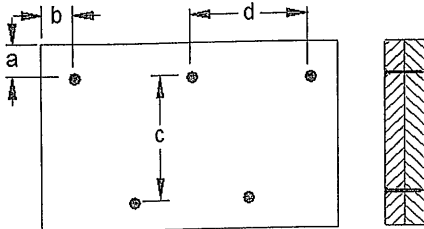
Dry | 1 span | No cant.

October 14, 2020 15:46:24

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

File name: 38-12.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B7(i1685)
Specifier:
Designer: LBV
Company:

Connection Diagram: Full Length of Member

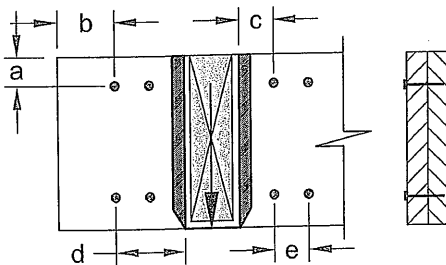


a minimum = 2"
b minimum = 3"
c = 5-1/2"
d = 8"

Calculated Side Load = 346.4 lb/ft
Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL Connection Diagrams: Concentrated Side Loads

Connection Tag: A Applies to load tag(s): 5+4+7+6+8+9



a minimum = 2"
b minimum = 4"
c minimum = 4"
d maximum = 12"
e minimum = 4"
Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL



DWG NO. TAM 1442520
STRUCTURAL
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Disclosure

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

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

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Per: joshua.nabua

CITY OF RICHMOND HILL
BUILDING DIVISION
00000022



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****2ND FLR FRAMING\Flush Beams\B8(i1483) (Flush Beam)****PASSED**

BC CALC® Member Report

Dry | 1 span | No cant.

October 14, 2020 15:46:24

Build 7493

Job name:

File name: 38-12.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B8(i1483)

City, Province, Postal Code: WATERDOWN

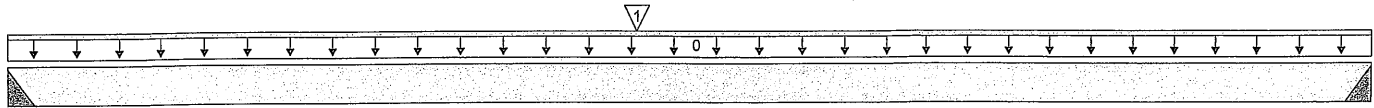
Specifier:

Customer:

Designer: LBV

Code reports: CCMC 12472-R

Company:



B1 B2

01-07-12

Total Horizontal Product Length = 01-07-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-1/2"	37 / 0	26 / 0		
B2, 4"	36 / 0	26 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	01-07-12	Top	1.00	0.65	1.00	1.15	00-00-00
1	J5(i1397)	Conc. Pt. (lbs)	L	00-09-00	00-09-00	Top	73	36			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	50 ft-lbs	23220 ft-lbs	0.2%	1	00-09-00
End Shear	28 lbs	11571 lbs	0.2%	1	00-06-04
Span / Depth	1.6				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2-1/2" x 3-1/2"	88 lbs	n/a	0.8%	HUC410
B2	Hanger 4" x 3-1/2"	87 lbs	n/a	0.5%	HGUS410

Cautions

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

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

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

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

Notes

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

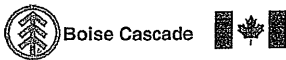
CONFORMS TO OBC 2012

AMENDED 2020



ONTARIO MINISTRY OF
STRUCTURAL
COMPONENT ONLY
03/08/2022

RECEIVEDPer: joshua.nabua



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

PASSED

BC CALC® Member Report
Build 7493

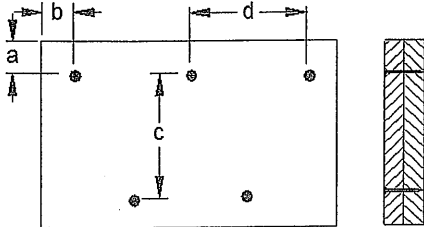
Dry | 1 span | No cant.

October 14, 2020 15:46:24

Job name:
Address:
City, Province, Postal Code: WATERDOWN
Customer:
Code reports: CCMC 12472-F

File name: 38-12.mmdl
Description: 2ND FLR FRAMING\Flush Beams\B8(i1483)
Specifier:
Designer: LBV
Company:

Connection Diagram: Full Length of Member



a minimum = 2" c = 5-1/2" ^{at}
b minimum = 3" d = 24" 6'

Calculated Side Load = 77.3 lb/ft

Connectors are: Nails

3-1/2" ARDOX SPIRAL



DWG NO. TAM 1442620
STRUCTURAL
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Disclosure

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

RECEIVED

Per: joshua.nabua

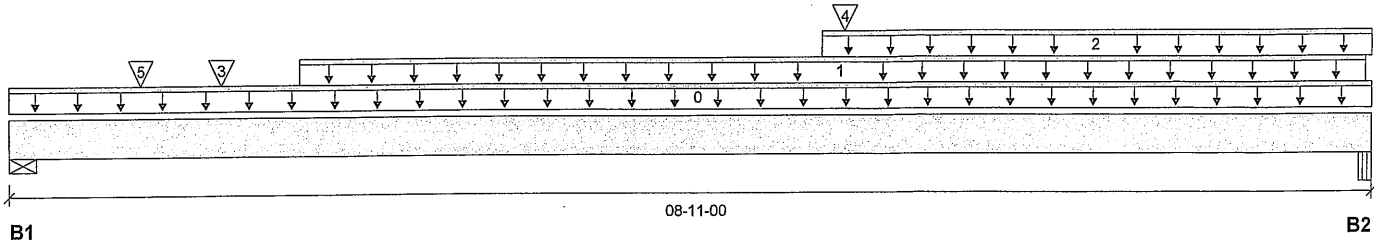
BC CALC® Member Report
 Build 7493

Dry | 1 span | No cant.

October 14, 2020 15:46:24

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

File name: 38-12.mmdl
 Description: 2ND FLR FRAMING\Flush Beams\B9(i1149)
 Specifier:
 Designer: LBV
 Company:



Total Horizontal Product Length = 08-11-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	1190 / 0	636 / 0		
B2, 1-3/4"	1397 / 0	724 / 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	08-11-00	Top		5			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-10-08	08-10-08	Top	314	156			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	05-03-00	08-11-00	Top	19	10			n/a
3	J1(i1192)	Conc. Pt. (lbs)	L	01-04-08	01-04-08	Top	278	139			n/a
4	B8(i1483)	Conc. Pt. (lbs)	L	05-04-12	05-04-12	Top	33	24			n/a
5	14(i712)	Conc. Pt. (lbs)	L	00-10-04	00-10-04	Top		16			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	6267 ft-lbs	11610 ft-lbs	54.0%	1	04-04-08
End Shear	2637 lbs	5785 lbs	45.6%	1	07-11-12
Total Load Deflection	L/448 (0.226")	n/a	53.6%	4	04-07-02
Live Load Deflection	L/682 (0.149")	n/a	52.8%	5	04-07-02
Max Defl.	0.226"	n/a	n/a	4	04-07-02
Span / Depth	10.7				

Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 5-1/2" x 1-3/4"	2581 lbs	43.6%	22.0%	Spruce-Pine-Fir
B2	Beam 1-3/4" x 1-3/4"	3001 lbs	80.3%	80.3%	VL 2.0 3100 SP

Notes

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

CONFORMS TO OBC 2012

AMENDED 2020



ENG. NO. 101520

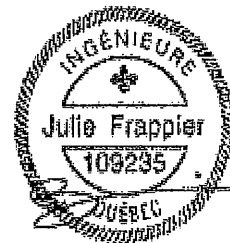
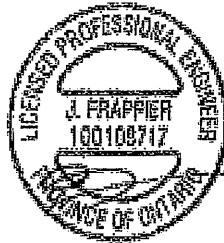
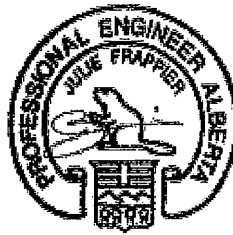
STRUCTURAL
 COMPONENT ONLY

Disclosure

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

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

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Maximum Floor Spans

Live Load = 40 psf, Dead Load = 15 psf

Simple Spans, L/480 Deflection Limit

5/8" OSB G&N Sheathing

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

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

1. 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.

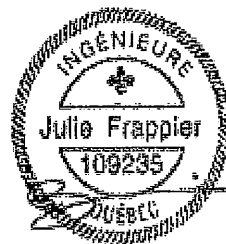
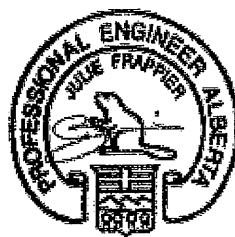
2. Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.

3. Minimum bearing length shall be 1-3/4 inches for the end bearings.

4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.

5. This span chart is based on uniform loads. For applications with other than 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.

6. Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



Maximum Floor Spans

Live Load = 40 psf, Dead Load = 15 psf

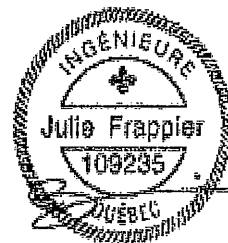
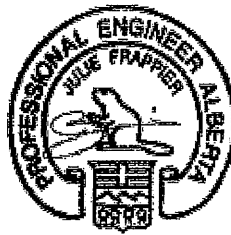
Simple Spans, L/480 Deflection Limit

3/4" OSB G&N Sheathing

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

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



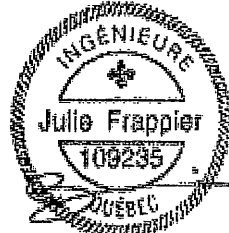
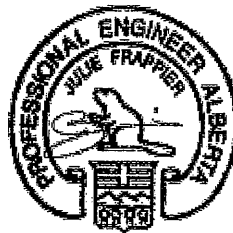
Maximum Floor Spans

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

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

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

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



Maximum Floor Spans

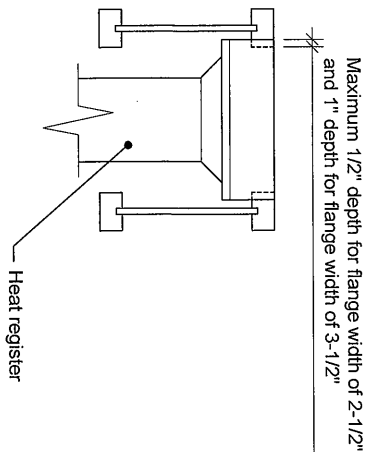
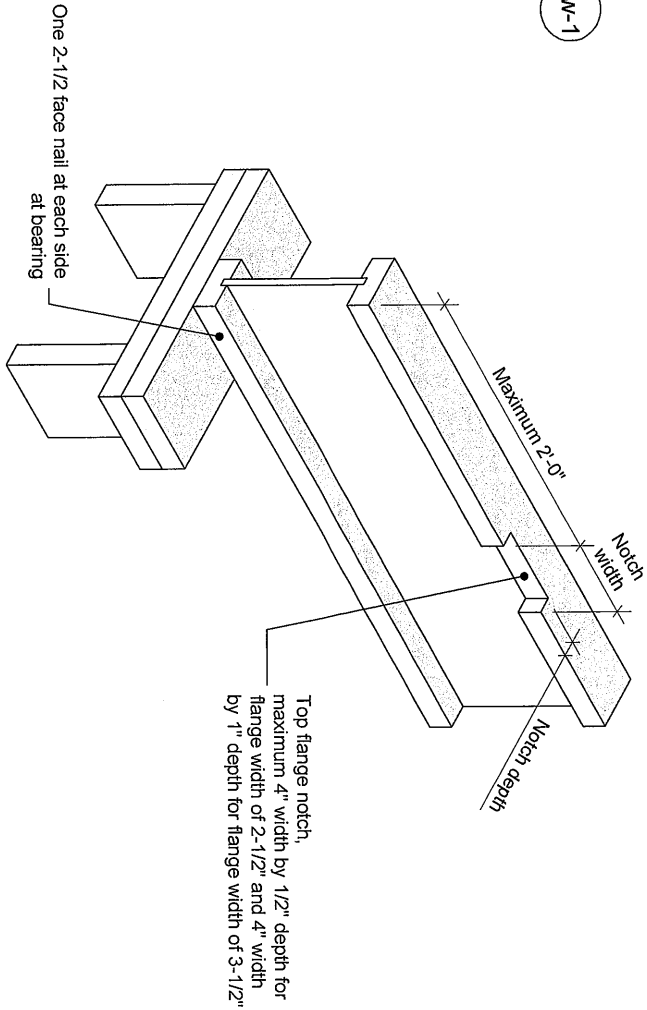
Live Load = 40 psf, Dead Load = 30 psf
Simple Spans, L/480 Deflection Limit
3/4" OSB G&N Sheathing

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

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

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

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- Notes:
1. Blocking required at bearing for lateral support, not shown for clarity.
 2. The maximum dimensions for a notch on the side of the top flange are 4-inch 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.

TITLE

Notch in I-joist for Heat Register

DOCUMENT

-

CATEGORY

I-joist - Typical Floor Framing and Construction Details

T 514-871-8526
1 866 817-3418

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BUILDING DIVISION

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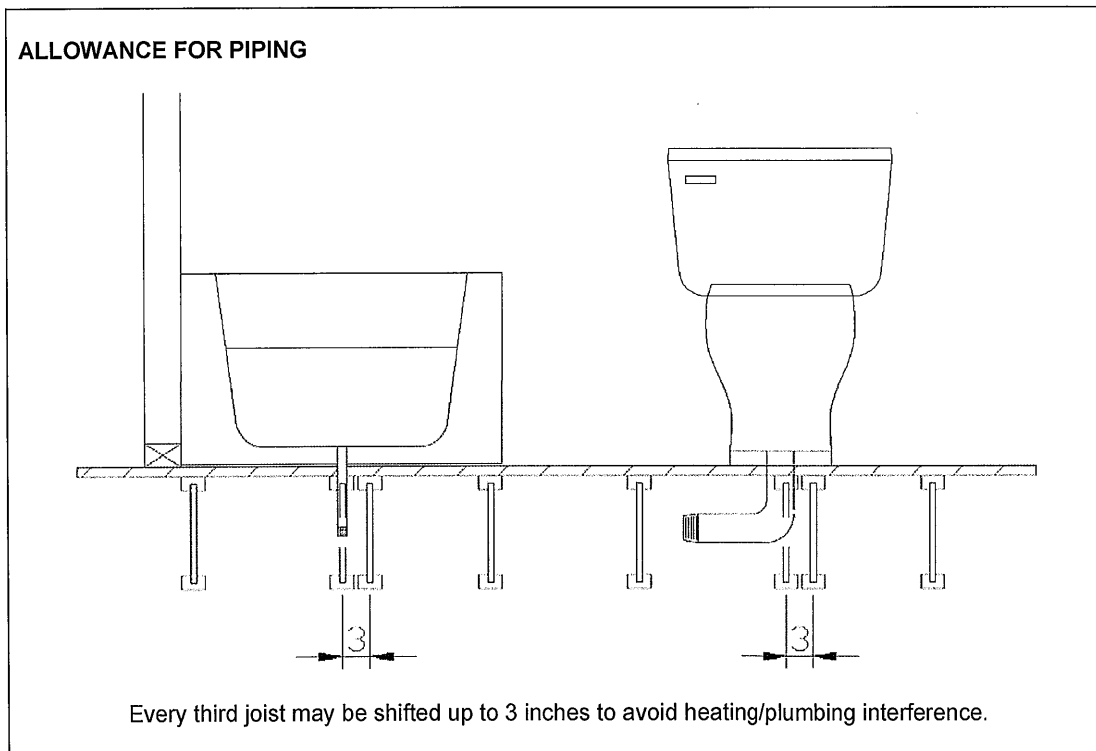


Allowance for Piping (Installation Notes)

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

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

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



Revised April 12, 2012