

FROM PLAN DATED:

BUILDER: GREENPARK HOMES

SITE: RUSSELL GARDENS PH 3

MODEL: VALLEYCREEK 3

ELEVATION: 3

LOT: 308

CITY: WATERDOWN

SALESMAN: MARIO DICIANO

DESIGNER: AJ

REVISION:

NOTES:

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

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

LOADING:

DESIGN LOADS: L/480.000

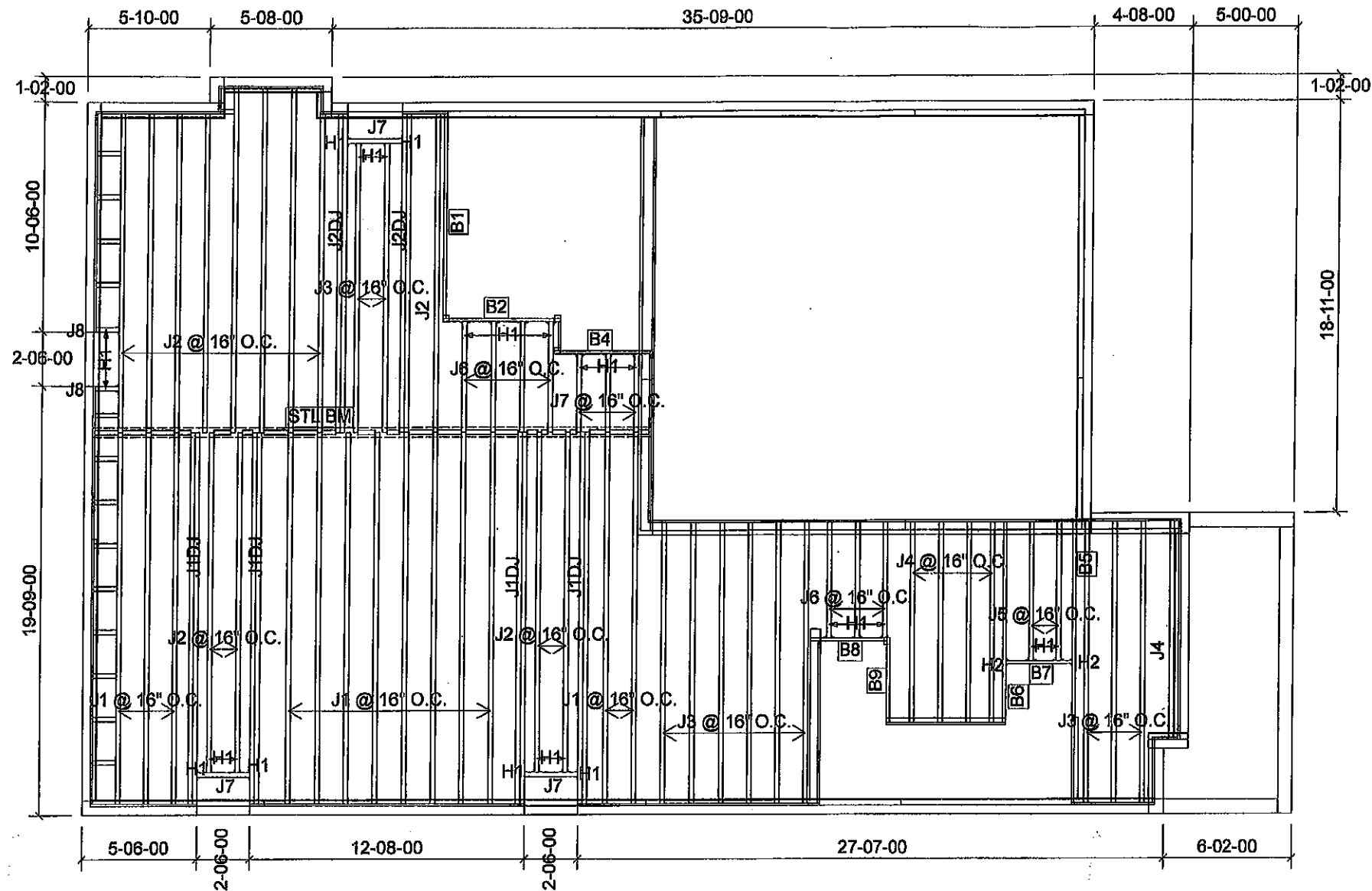
LIVE LOAD: 40.0 lb/ft<sup>2</sup>

DEAD LOAD: 20.0 lb/ft<sup>2</sup>

SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2020-02-20

1st FLOOR



| Products |          |                                         |       |         |          |
|----------|----------|-----------------------------------------|-------|---------|----------|
| PlotID   | Length   | Product                                 | Plies | Net Qty | Fab Type |
| J1       | 18-00-00 | 11 7/8" NI-40x                          | 1     | 13      | MFD      |
| J1DJ     | 18-00-00 | 11 7/8" NI-40x                          | 2     | 8       | MFD      |
| J2       | 16-00-00 | 11 7/8" NI-40x                          | 1     | 13      | MFD      |
| J2DJ     | 16-00-00 | 11 7/8" NI-40x                          | 2     | 4       | MFD      |
| J3       | 14-00-00 | 11 7/8" NI-40x                          | 1     | 11      | MFD      |
| J4       | 10-00-00 | 11 7/8" NI-40x                          | 1     | 5       | MFD      |
| J5       | 8-00-00  | 11 7/8" NI-40x                          | 1     | 2       | MFD      |
| J6       | 6-00-00  | 11 7/8" NI-40x                          | 1     | 7       | MFD      |
| J7       | 4-00-00  | 11 7/8" NI-40x                          | 1     | 6       | MFD      |
| J8       | 2-00-00  | 11 7/8" NI-40x                          | 1     | 2       | MFD      |
| B1       | 10-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| B5       | 10-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| B6       | 10-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| B2       | 6-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| B4       | 6-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| B7       | 4-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| B8       | 4-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| B9       | 4-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |

| Connector Summary |       |               |
|-------------------|-------|---------------|
| Qty               | Manuf | Product       |
| 12                | H1    | IUS2.56/11.88 |
| 6                 | H1    | IUS2.56/11.88 |
| 8                 | H1    | IUS2.56/11.88 |
| 2                 | H2    | HUS1.81/10    |

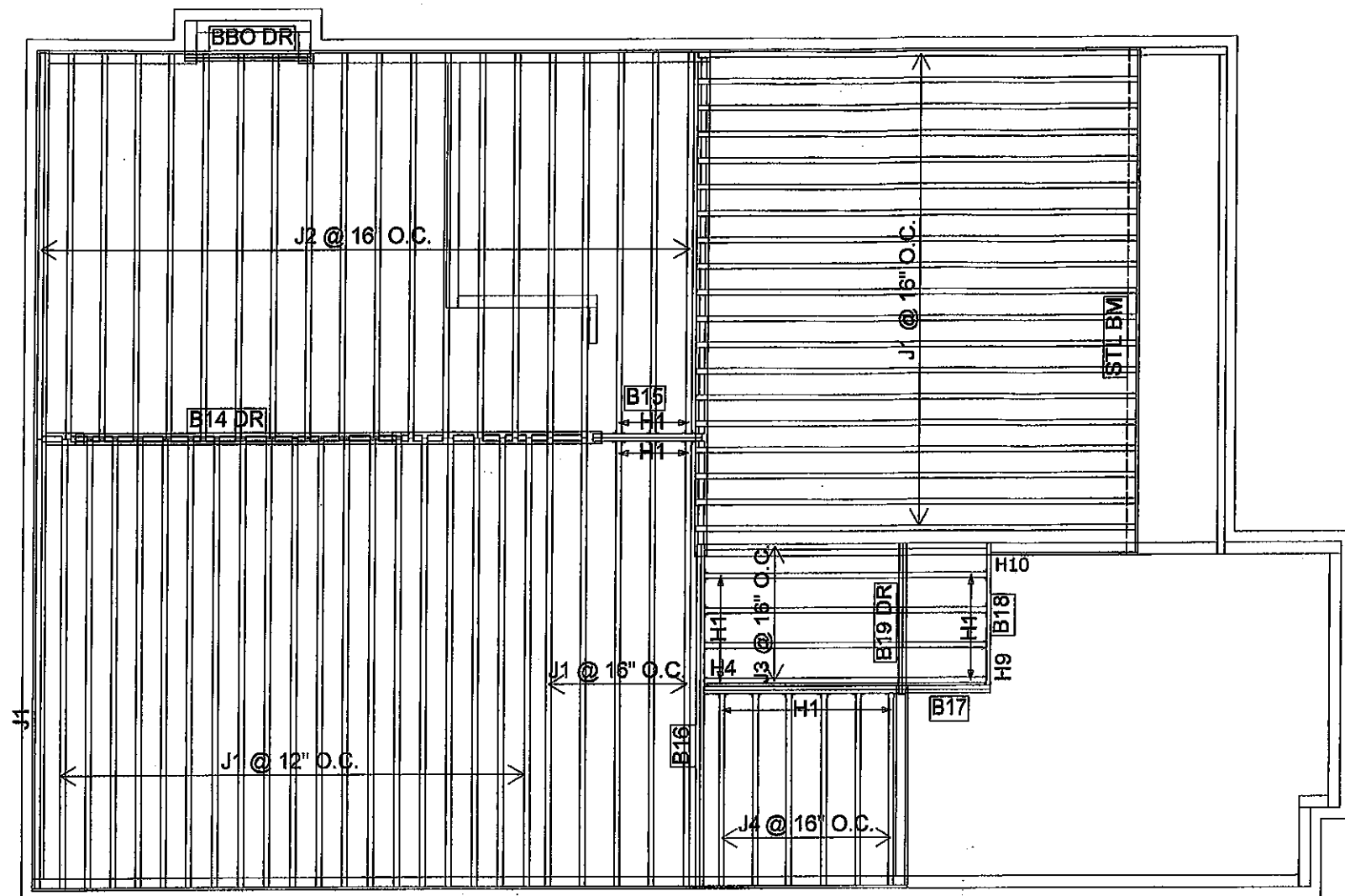
CITY OF HAMILTON  
Building Division

Permit No. 21 107141  
THESE STAMPED DRAWINGS SHALL BE AVAILABLE ON SITE  
THE OWNER AND/OR CONTRACTOR SHALL COMPLY WITH  
THE ONTARIO BUILDING CODE AND ALL OTHER APPLICABLE LAW

These drawings and/or specifications have been reviewed by  
FEB 23 2021  
DATE

FOR CHIEF BUILDING OFFICIAL

FROM PLAN DATED:  
BUILDER: GREENPARK HOMES  
SITE: RUSSELL GARDENS PH 3  
MODEL: VALLEYCREEK 3  
ELEVATION: 3  
LOT: 308  
CITY: WATERDOWN  
SALESMAN: MARIO DICIANO  
DESIGNER: AJ  
REVISION:  
  
NOTES:  
REFER TO THE NORDIC INSTALLATION GUIDE FOR PROPER STORAGE AND INSTALLATION. **SQUASH BLOCKS** OF 2x4, 2x6, 2x8 #2 S.P.F. REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. **CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURE 7 TABLES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7 TABLES 1 & 2 OF THE INSTALLATION GUIDE. **CERAMIC TILE** APPLICATION AS PER O.B.C. 9.30.6  
  
LOADING:  
DESIGN LOADS: L/480.000  
LIVE LOAD: 40.0 lb/ft²  
DEAD LOAD: 20.0 lb/ft²  
SUBFLOOR: 5/8" GLUED AND NAILED  
  
DATE: 2020-02-21



| Products |          |                                         |       |         |          |
|----------|----------|-----------------------------------------|-------|---------|----------|
| PlotID   | Length   | Product                                 | Plies | Net Qty | Fab Type |
| J1       | 18-00-00 | 11 7/8" NI-40x                          | 1     | 44      | MFD      |
| J2       | 16-00-00 | 11 7/8" NI-40x                          | 1     | 20      | MFD      |
| J3       | 12-00-00 | 11 7/8" NI-40x                          | 1     | 5       | MFD      |
| J4       | 8-00-00  | 11 7/8" NI-40x                          | 1     | 6       | MFD      |
| B16      | 14-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2     | 2       | MFD      |
| B14 DR   | 14-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 3     | 3       | MFD      |
| B17      | 12-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2     | 2       | MFD      |
| B18      | 6-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1     | 1       | MFD      |
| B15      | 6-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2     | 2       | MFD      |
| B19 DR   | 6-00-00  | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2     | 2       | MFD      |

| Connector Summary |       |               |
|-------------------|-------|---------------|
| Qty               | Manuf | Product       |
| 4                 | H1    | IUS2.56/11.88 |
| 16                | H1    | IUS2.56/11.88 |
| 1                 | H4    | HGUS410       |
| 1                 | H9    | LS90          |
| 1                 | H10   | H2.5A*        |

# NORDIC

## ENGINEERED WOOD

### INSTALLATION GUIDE

#### FOR RESIDENTIAL FLOORS

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.

Distributed by:

2016-04-16

### SAFETY AND CONSTRUCTION PRECAUTIONS

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

**Avoid Accidents by Following these Important Guidelines:**

- Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bracing at joist ends. When I-joists are applied continuously over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
- When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joist rollover or buckling.
  - Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on center, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. 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.
- For cantilevered I-joists, brace top and bottom flange, and brace ends with closure panels, rim board, or cross-bracing.
- 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.

### STORAGE AND HANDLING GUIDELINES

- Bundle wrap can be slippery when wet. Avoid walking on wrapped bundles.
- Store, stack, and handle I-joists vertically and level only.
- Always stack and handle I-joists in the upright position only.
- Do not store I-joists in direct contact with the ground and/or basements.
- Protect I-joists from weather, and use spacers to separate bundles.
- Bundled units should be kept intact until time of installation.
- 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.
  - Do not handle I-joists in a horizontal orientation.
- 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 1.5L + 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 COBS-71.26 Standard. No concrete topping or bedding 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 C086-09 Standard, and NBC 2010.

7. SI units conversion: 1 inch = 25.4 mm  
1 foot = 0.305 m

| Joist Depth | Joist Series | Simple spans      |         |         | Multiple spans    |         |         |
|-------------|--------------|-------------------|---------|---------|-------------------|---------|---------|
|             |              | On center spacing | 12"     | 16"     | On center spacing | 12"     | 16"     |
| 10"         | 10-10        | 16'-1"            | 14'-3"  | 13'-9"  | 16'-3"            | 15'-4"  | 14'-10" |
| 12"         | 12-12        | 16'-1"            | 15'-2"  | 14'-8"  | 17'-5"            | 16'-5"  | 15'-10" |
| 14"         | 14-14        | 16'-3"            | 15'-4"  | 14'-10" | 17'-7"            | 16'-7"  | 16'-1"  |
| 16"         | 16-16        | 17'-3"            | 16'-1"  | 15'-6"  | 18'-7"            | 17'-4"  | 16'-9"  |
| 18"         | 18-18        | 17'-3"            | 16'-3"  | 15'-9"  | 18'-10"           | 17'-6"  | 16'-11" |
| 20"         | 20-20        | 18'-11"           | 16'-8"  | 15'-5"  | 18'-4"            | 17'-3"  | 16'-7"  |
| 22"         | 22-22        | 18'-1"            | 16'-5"  | 14'-9"  | 20'-0"            | 18'-2"  | 17'-2"  |
| 24"         | 24-24        | 18'-4"            | 17'-3"  | 16'-9"  | 20'-3"            | 18'-9"  | 18'-1"  |
| 26"         | 26-26        | 19'-4"            | 18'-0"  | 17'-4"  | 21'-6"            | 19'-11" | 19'-0"  |
| 28"         | 28-28        | 19'-9"            | 18'-3"  | 17'-7"  | 21'-9"            | 20'-2"  | 19'-4"  |
| 30"         | 30-30        | 20'-2"            | 18'-7"  | 17'-11" | 22'-5"            | 20'-7"  | 19'-9"  |
| 32"         | 32-32        | 20'-4"            | 18'-9"  | 17'-11" | 22'-5"            | 20'-9"  | 19'-10" |
| 34"         | 34-34        | 20'-1"            | 18'-7"  | 17'-10" | 22'-2"            | 20'-6"  | 19'-4"  |
| 36"         | 36-36        | 20'-5"            | 18'-11" | 18'-1"  | 22'-7"            | 20'-11" | 20'-0"  |
| 38"         | 38-38        | 21'-7"            | 20'-2"  | 19'-1"  | 23'-10"           | 22'-1"  | 21'-1"  |
| 40"         | 40-40        | 22'-5"            | 20'-3"  | 19'-5"  | 24'-3"            | 22'-5"  | 21'-6"  |
| 42"         | 42-42        | 22'-5"            | 20'-8"  | 19'-9"  | 24'-9"            | 22'-10" | 21'-10" |
| 44"         | 44-44        | 22'-9"            | 20'-11" | 19'-11" | 25'-2"            | 22'-9"  | 22'-9"  |
| 46"         | 46-46        | 22'-3"            | 20'-8"  | 19'-4"  | 24'-7"            | 22'-9"  | 21'-10" |
| 48"         | 48-48        | 23'-4"            | 21'-9"  | 20'-9"  | 26'-0"            | 24'-0"  | 23'-0"  |
| 50"         | 50-50        | 23'-11"           | 22'-1"  | 21'-1"  | 26'-5"            | 24'-5"  | 23'-4"  |
| 52"         | 52-52        | 24'-2"            | 22'-6"  | 21'-6"  | 26'-11"           | 24'-10" | 23'-9"  |
| 54"         | 54-54        | 24'-8"            | 22'-9"  | 21'-9"  | 27'-3"            | 25'-2"  | 24'-1"  |

CCMC EVALUATION REPORT 13052-R

### I-JOIST HANGERS

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

Top Mount

Skewed

Face Mount

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

SI units conversion: 1 inch = 25.4 mm

**FIGURE 2 WEB STIFFENER INSTALLATION DETAILS**

See table below for web stiffener size requirements

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

### NORDIC I-JOIST SERIES

Choniers Chibougamau Ltd. harvests its own trees, which enables it to produce products to adhere to strict quality control procedures throughout the manufacturing process. Every phase of the operation, from the raw log to the finished product, reflects our commitment to quality.

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

2016-04-16

### INSTALLING NORDIC I-JOISTS

- Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, consult your supplier.
- Except for cutting to length, I-joist flanges should never be cut, drilled, or notched.
- Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical alignment.
- I-joists must be anchored securely to supports before floor sheathing is attached, and supports for intermediate bearings must be level.
- Minimum bearing lengths: 1-3/4 inches for end bearings and 3-1/2 inches for intermediate bearings.
- When using hangers, seat I-joists firmly in hanger bottoms to minimize settlement.
- Leave a 1/16-inch gap between the I-joist end and a header.
- 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.
- Never install I-joists where they will be permanently exposed to weather, or where they will remain in direct contact with concrete or masonry.
- Restrain ends of floor joists to prevent rollover. Use rim board, rim joists or I-joist blocking panels.
- For I-joists installed over and beneath bearing walls, use full depth blocking panels, rim board, or squash blocks (triple members) to transfer gravity loads through the floor system to the wall or foundation below.
- Due to shrinkage, common framing lumber set on edge may never be used as blocking or rim board. 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 loaded.
- 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.
- If square-edge panels are used, edges must be supported between I-joists with 2x4 blocking. Glue panels to blocking to minimize squeaking. Blocking is not required under structural finish flooring, such as wood strip flooring, or if a separate underlayment layer is installed.
- Nail spacing: Space nails installed to the flange's top face in accordance with the applicable building code requirements or approved building plans.

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

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

Figures 3, 4 or 5

Holes may be cut in web for plumbing, wiring and duct work. See Tables 1, 2 and Figure 7.

NOTE: Never cut or notch flanges.

Nordic Lom or Structural Composite Lumber (SCL)

Nordic Lom or SCL

Use hangers recognized in current code evaluation reports

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.

**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.

Figures 3, 4 or 5

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Nordic Lom or Structural Composite Lumber (SCL)

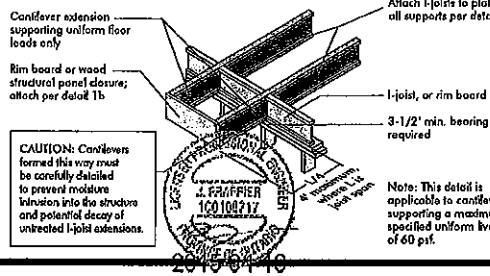
Nordic Lom or SCL

Use hangers recognized in current code evaluation reports

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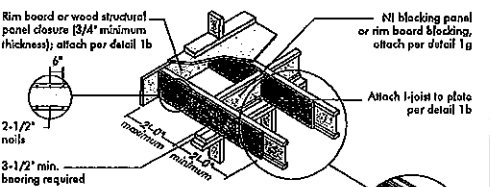
## CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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



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

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

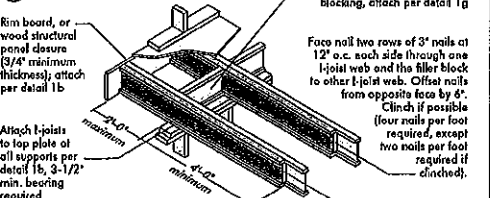


### Method 2 — SHEATHING REINFORCEMENT TWO SIDES

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

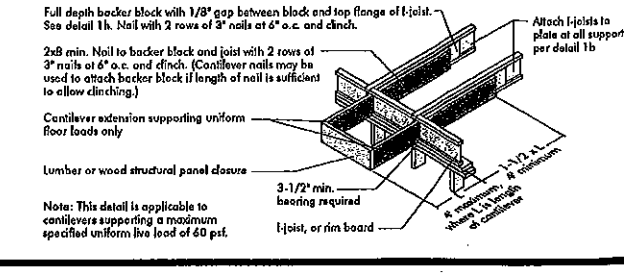
Note: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4\"/>

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



Block I-joists together with filler blocks for the full length of the reinforcement. For I-joist flange widths greater than 3 inches place an additional row of 3\"/>

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



### FIGURE 4 (continued)



### CANTILEVER REINFORCEMENT METHODS ALLOWED

| JOIST DEPTH (in.) | ROOF TRUSS SPAN (ft) | ROOF LOADING (UNFACTORED) |    |      |    |                          |    |      |    |                          |    |      |    |
|-------------------|----------------------|---------------------------|----|------|----|--------------------------|----|------|----|--------------------------|----|------|----|
|                   |                      | LL = 30 psf, DL = 15 psf  |    |      |    | LL = 40 psf, DL = 15 psf |    |      |    | LL = 50 psf, DL = 15 psf |    |      |    |
|                   |                      | 12                        | 16 | 19.2 | 24 | 12                       | 16 | 19.2 | 24 | 12                       | 16 | 19.2 | 24 |
| 9-1/2"            | 12                   | N                         | N  | 1    | 2  | N                        | N  | 1    | 2  | N                        | N  | 1    | 2  |
|                   | 16                   | N                         | N  | 1    | 1  | N                        | N  | 1    | 1  | N                        | N  | 1    | 1  |
|                   | 19.2                 | N                         | N  | 1    | 2  | N                        | N  | 2    | X  | N                        | N  | 2    | X  |
|                   | 24                   | N                         | N  | 1    | 2  | N                        | N  | 2    | X  | N                        | N  | 2    | X  |
| 11-7/8"           | 12                   | N                         | N  | 1    | 2  | N                        | N  | 1    | 2  | N                        | N  | 1    | 2  |
|                   | 16                   | N                         | N  | 1    | 1  | N                        | N  | 1    | 1  | N                        | N  | 1    | 1  |
|                   | 19.2                 | N                         | N  | 1    | 2  | N                        | N  | 2    | X  | N                        | N  | 2    | X  |
|                   | 24                   | N                         | N  | 1    | 2  | N                        | N  | 2    | X  | N                        | N  | 2    | X  |
| 14"               | 12                   | N                         | N  | 1    | 2  | N                        | N  | 1    | 2  | N                        | N  | 1    | 2  |
|                   | 16                   | N                         | N  | 1    | 1  | N                        | N  | 1    | 1  | N                        | N  | 1    | 1  |
|                   | 19.2                 | N                         | N  | 1    | 2  | N                        | N  | 2    | X  | N                        | N  | 2    | X  |
|                   | 24                   | N                         | N  | 1    | 2  | N                        | N  | 2    | X  | N                        | N  | 2    | X  |
| 16"               | 12                   | N                         | N  | 1    | 2  | N                        | N  | 1    | 2  | N                        | N  | 1    | 2  |
|                   | 16                   | N                         | N  | 1    | 1  | N                        | N  | 1    | 1  | N                        | N  | 1    | 1  |
|                   | 19.2                 | N                         | N  | 1    | 2  | N                        | N  | 2    | X  | N                        | N  | 2    | X  |
|                   | 24                   | N                         | N  | 1    | 2  | N                        | N  | 2    | X  | N                        | N  | 2    | X  |
| 18"               | 12                   | N                         | N  | 1    | 2  | N                        | N  | 1    | 2  | N                        | N  | 1    | 2  |
|                   | 16                   | N                         | N  | 1    | 1  | N                        | N  | 1    | 1  | N                        | N  | 1    | 1  |
|                   | 19.2                 | N                         | N  | 1    | 2  | N                        | N  | 2    | X  | N                        | N  | 2    | X  |
|                   | 24                   | N                         | N  | 1    | 2  | N                        | N  | 2    | X  | N                        | N  | 2    | X  |
| 20"               | 12                   | N                         | N  | 1    | 2  | N                        | N  | 1    | 2  | N                        | N  | 1    | 2  |
|                   | 16                   | N                         | N  | 1    | 1  | N                        | N  | 1    | 1  | N                        | N  | 1    | 1  |
|                   | 19.2                 | N                         | N  | 1    | 2  | N                        | N  | 2    | X  | N                        | N  | 2    | X  |
|                   | 24                   | N                         | N  | 1    | 2  | N                        | N  | 2    | X  | N                        | N  | 2    | X  |

- N = No reinforcement required.
- N = Reinforced with 3/4\"/>

## WEB HOLES

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

- The distance between the inside edge of the support and the centerline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
- I-joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
- Whenever possible, field-cut holes should be centered on the middle of the web.
- The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-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 long slots 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.

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

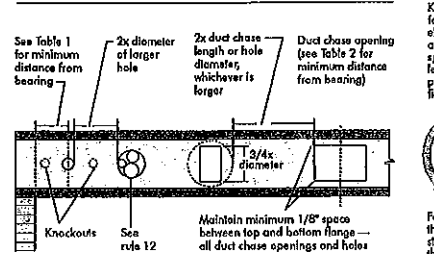
| Joist Depth | Joist Series | Minimum distance from inside face of any support to centre of hole (in.) |     |     |     |     |     |     |       |     |     |        |     | Span Adjustment Factor |
|-------------|--------------|--------------------------------------------------------------------------|-----|-----|-----|-----|-----|-----|-------|-----|-----|--------|-----|------------------------|
|             |              | 2                                                                        | 3   | 4   | 5   | 6   | 7   | 8   | 8-5/8 | 9   | 10  | 10-3/4 | 11  |                        |
| 9-1/2"      | 12           | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
|             | 16           | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
|             | 19.2         | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
|             | 24           | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
| 11-7/8"     | 12           | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
|             | 16           | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
|             | 19.2         | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
|             | 24           | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
| 14"         | 12           | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
|             | 16           | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
|             | 19.2         | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
|             | 24           | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
| 16"         | 12           | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
|             | 16           | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
|             | 19.2         | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
|             | 24           | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
| 18"         | 12           | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
|             | 16           | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
|             | 19.2         | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
|             | 24           | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
| 20"         | 12           | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
|             | 16           | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
|             | 19.2         | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |
|             | 24           | 1.0                                                                      | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0   | 1.0 | 1.0 | 1.0    | 1.0 | 1.0                    |

- 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.

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 Manufacturer's literature for details), the minimum distance from the inside face of the support to the centre of hole may be reduced as follows:

- Reduced =  $\frac{\text{Actual Span}}{\text{Maximum Span}} \times \text{Table Value}$
- Where:  
Reduced = Distance from the inside face of any support to centre of hole, reduced for less than maximum span application.  
Actual = The actual measured span distance between the inside faces of supports.  
Max = The maximum span distance between the inside faces of supports.  
SAF = Span Adjustment Factor given in this table.  
D = The minimum distance from the inside face of any support to centre of hole from this table.  
If SAF is greater than 1, use 1 in the above calculation for SAF.

### FIGURE 7 FIELD-CUT HOLE LOCATOR



Knockouts are preformed holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 15 inches on centre along the length of the 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.

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

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

| Joist Depth | Joist Series | Minimum distance from inside face of any support to centre of opening (in.) |     |     |     |     |     |     |     |     |     |     |  |
|-------------|--------------|-----------------------------------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
|             |              | 8                                                                           | 10  | 12  | 14  | 16  | 18  | 20  | 22  | 24  | 26  | 28  |  |
| 9-1/2"      | 12           | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
|             | 16           | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
|             | 19.2         | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
|             | 24           | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
| 11-7/8"     | 12           | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
|             | 16           | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
|             | 19.2         | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
|             | 24           | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
| 14"         | 12           | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
|             | 16           | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
|             | 19.2         | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
|             | 24           | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
| 16"         | 12           | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
|             | 16           | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
|             | 19.2         | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
|             | 24           | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
| 18"         | 12           | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
|             | 16           | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
|             | 19.2         | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
|             | 24           | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
| 20"         | 12           | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
|             | 16           | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
|             | 19.2         | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |
|             | 24           | 1.0                                                                         | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |  |

- 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 only. For other applications, consult your local distributor.
- Distances are based on uniformly



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

## WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

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

- 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.) |       |       |       |       |       |      |       |       |       |       |        |
|-------------|--------------|-------------------------------------------------------------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|--------|
|             |              | 2                                                                             | 3     | 4     | 5     | 6     | 6-1/4 | 7    | 8     | 8-5/8 | 9     | 10    | 10-3/4 |
| 9-1/2"      | NI-20        | 0-7"                                                                          | 1-6"  | 2-10" | 4-3"  | 5-8"  | 6-0"  | ---  | ---   | ---   | ---   | ---   | ---    |
|             | NI-40x       | 0-7"                                                                          | 1-6"  | 3-0"  | 4-4"  | 6-0"  | 6-4"  | ---  | ---   | ---   | ---   | ---   | ---    |
|             | NI-60        | 1-3"                                                                          | 2-6"  | 4-0"  | 4-4"  | 5-4"  | 7-0"  | 7-5" | ---   | ---   | ---   | ---   | ---    |
|             | NI-70        | 2-0"                                                                          | 3-4"  | 4-0"  | 6-3"  | 8-4"  | 8-4"  | ---  | ---   | ---   | ---   | ---   | ---    |
|             | NI-80        | 2-3"                                                                          | 3-6"  | 5-0"  | 6-6"  | 8-2"  | 8-8"  | ---  | ---   | ---   | ---   | ---   | ---    |
| 11-7/8"     | NI-20        | 0-7"                                                                          | 0-8"  | 1-0"  | 2-4"  | 3-8"  | 4-0"  | 5-0" | 6-6"  | 7-9"  | ---   | ---   | ---    |
|             | NI-40x       | 0-7"                                                                          | 0-8"  | 1-3"  | 2-8"  | 4-0"  | 4-4"  | 5-5" | 7-0"  | 8-4"  | ---   | ---   | ---    |
|             | NI-60        | 0-7"                                                                          | 1-6"  | 3-0"  | 4-3"  | 5-5"  | 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" | 4-0"  | 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"  | 1-5"  | 3-2"  | 4-10" | 5-4"  | 6-9" | 8-9"  | 10-2" | ---   | ---   | ---    |
|             | NI-60        | 0-7"                                                                          | 0-8"  | 1-5"  | 3-2"  | 4-10" | 5-4"  | 6-9" | 8-9"  | 10-2" | ---   | ---   | ---    |
|             | NI-70        | 0-7"                                                                          | 0-8"  | 1-5"  | 3-2"  | 4-10" | 5-4"  | 6-9" | 8-9"  | 10-2" | ---   | ---   | ---    |
|             | NI-80        | 0-7"                                                                          | 0-8"  | 1-5"  | 3-2"  | 4-10" | 5-4"  | 6-9" | 8-9"  | 10-2" | ---   | ---   | ---    |
| 16"         | NI-20        | 0-7"                                                                          | 0-8"  | 1-6"  | 2-10" | 3-2"  | 4-2"  | 5-4" | 6-4"  | 7-0"  | 8-6"  | 9-8"  | 10-2"  |
|             | NI-40x       | 0-7"                                                                          | 0-8"  | 1-6"  | 2-10" | 3-2"  | 4-2"  | 5-4" | 6-4"  | 7-0"  | 8-6"  | 9-8"  | 10-2"  |
|             | NI-60        | 0-7"                                                                          | 1-0"  | 2-3"  | 3-6"  | 4-10" | 5-3"  | 6-3" | 7-8"  | 8-6"  | 9-2"  | 10-8" | 12-0"  |
|             | NI-70        | 0-7"                                                                          | 1-3"  | 2-6"  | 3-10" | 5-3"  | 5-6"  | 6-6" | 8-0"  | 9-0"  | 11-0" | 12-3" | 14-5"  |
|             | NI-80        | 0-7"                                                                          | 0-8"  | 0-8"  | 1-9"  | 3-3"  | 3-8"  | 4-9" | 6-5"  | 7-5"  | 8-0"  | 9-10" | 11-3"  |

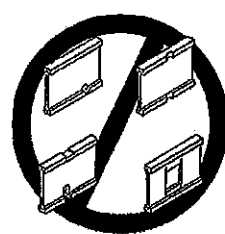
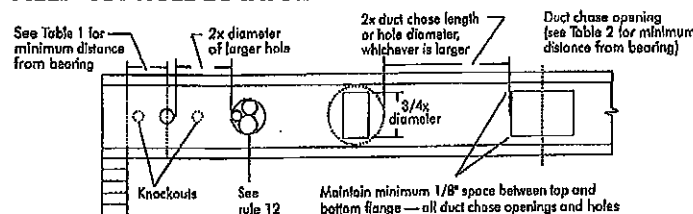
- Above table may be used for I-joist spacing of 24 inches on centre or less.
- Hole location distance is measured from inside face of supports to centre of hole.
- Distances in this chart are based on uniformly loaded joists.
- The above table is based on the I-joists being used at their maximum spans. 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.) |       |        |       |       |       |       |       |       |     |     |     |
|-------------|--------------|-------------------------------------------------------------------------------|-------|--------|-------|-------|-------|-------|-------|-------|-----|-----|-----|
|             |              | 8                                                                             | 10    | 12     | 14    | 16    | 18    | 20    | 22    | 24    | 26  | 28  | 30  |
| 9-1/2"      | NI-20        | 4-1"                                                                          | 4-5"  | 4-10"  | 5-4"  | 5-8"  | 6-1"  | 6-6"  | 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        | 6-4"                                                                          | 6-9"  | 6-2"   | 6-7"  | 7-1"  | 7-5"  | 8-0"  | 8-4"  | 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       | 6-9"                                                                          | 7-2"  | 7-6"   | 8-1"  | 8-5"  | 9-1"  | 9-6"  | 10-1" | 10-6" | --- | --- | --- |
|             | NI-60        | 7-9"                                                                          | 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" | 10-6" | --- | --- | --- |
|             | NI-80        | 7-2"                                                                          | 7-7"  | 8-0"   | 8-5"  | 8-10" | 9-3"  | 9-8"  | 10-3" | 10-8" | --- | --- | --- |
| 14"         | NI-20        | 7-6"                                                                          | 7-11" | 8-4"   | 8-9"  | 9-2"  | 9-7"  | 10-1" | 10-7" | 11-1" | --- | --- | --- |
|             | NI-40x       | 7-7"                                                                          | 8-1"  | 8-5"   | 8-10" | 9-4"  | 9-8"  | 10-2" | 10-8" | 11-2" | --- | --- | --- |
|             | NI-60        | 8-1"                                                                          | 8-7"  | 9-0"   | 9-6"  | 10-1" | 10-7" | 11-2" | 11-8" | 12-3" | --- | --- | --- |
|             | NI-70        | 8-9"                                                                          | 9-3"  | 9-8"   | 10-1" | 10-6" | 11-1" | 11-6" | 12-1" | 12-6" | --- | --- | --- |
|             | NI-80        | 9-0"                                                                          | 9-3"  | 9-9"   | 10-1" | 10-7" | 11-1" | 11-6" | 12-1" | 12-6" | --- | --- | --- |
| 16"         | NI-20        | 9-4"                                                                          | 9-9"  | 10-3"  | 10-7" | 11-1" | 11-6" | 12-1" | 12-6" | 13-1" | --- | --- | --- |
|             | NI-40x       | 10-3"                                                                         | 10-8" | 11-2"  | 11-6" | 12-1" | 12-6" | 13-1" | 13-6" | 14-1" | --- | --- | --- |
|             | NI-60        | 10-4"                                                                         | 10-9" | 11-3"  | 11-8" | 12-3" | 12-8" | 13-3" | 13-8" | 14-3" | --- | --- | --- |
|             | NI-70        | 10-9"                                                                         | 11-2" | 11-8"  | 12-0" | 12-6" | 13-0" | 13-6" | 14-0" | 14-6" | --- | --- | --- |
|             | NI-80        | 11-1"                                                                         | 11-5" | 11-10" | 11-4" | 12-0" | 12-4" | 13-0" | 13-4" | 14-0" | --- | --- | --- |

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

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

Holes in webs should be cut with a sharp saw.

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

## SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

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

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

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

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

Furthermore, Charters Chibongwan 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.

**1a** NI blocking panel

Blocking Panel or Rim Joist  
NI Joists

Maximum Factored Uniform Vertical Load\* (plf)

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.

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

Attach I-joist to top plate per detail 1b

**1b** Rim board

Blocking Panel or Rim Joist  
1-1/8" Rim Board Plus

Maximum Factored Uniform Vertical Load\* (plf)

8,090

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

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

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

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

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

**1d** NI or rim board blocking panel per detail 1a

Squash block

Pair of Squash Blocks

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

3-1/2" wide  
5,500

5-1/2" wide  
8,500

2x Lumber  
1-1/8" Rim Board Plus  
4,300

6,600

Provide lateral bracing per detail 1a or 1b

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

**1f** Joist attachment per detail 1b

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

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

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

NI blocking panel per detail 1a

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

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

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

\* Minimum grade for backer block material shall be S-PF No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-O325 or CAN/CSA-O437 Standard.  
\*\* For face-mount hangers use nail depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use nail depth minus 4-1/4".

**1i** Nordic Lam or Structural Composite Lumber (SCL)

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

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

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

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

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

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

Top-mount hanger installed per manufacturer's recommendations

**1m** Multiple I-joist header with full depth filler block shown, Nordic Lam or SCL headers may also be used. Verify double I-joist capacity to support concentrated loads.

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

Filler block per detail 1p

Maximum support capacity = 1,620 lbs.

**1n** Do not bevel-cut joist beyond inside face of wall

Attach I-joist per detail 1b

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

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

NI blocking panel

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

**1p** FILLER BLOCK REQUIREMENTS FOR

# NORDIC STRUCTURES

**COMPANY**  
Feb. 19, 2020 09:11

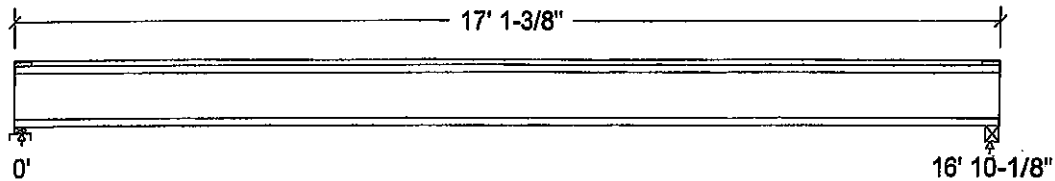
**PROJECT**  
J1 1ST FLOOR.wwb

## Design Check Calculation Sheet Nordic Sizer – Canada 7.2

### Loads:

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

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



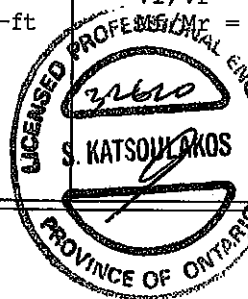
|             |       |  |       |
|-------------|-------|--|-------|
| Unfactored: |       |  |       |
| Dead        | 225   |  | 225   |
| Live        | 449   |  | 449   |
| Factored:   |       |  |       |
| Total       | 954   |  | 954   |
| Bearing:    |       |  |       |
| Capacity    |       |  |       |
| Joist       | 2101  |  | 2138  |
| Support     | 3971  |  | 4043  |
| Des ratio   |       |  |       |
| Joist       | 0.45  |  | 0.45  |
| Support     | 0.24  |  | 0.24  |
| Load case   | #2    |  | #2    |
| Length      | 2-3/8 |  | 2-5/8 |
| Min req'd   | 1-3/4 |  | 1-3/4 |
| Stiffener   | No    |  | No    |
| KD          | 1.00  |  | 1.00  |
| KB support  | 1.00  |  | 1.00  |
| fcp sup     | 769   |  | 769   |
| Kzcp sup    | 1.09  |  | 1.00  |

### Nordic Joist 11-7/8" NI-40x Floor joist @ 16" o.c.

Supports: 1 - Lumber Sill plate, No.1/No.2; 2 - Lumber Beam, No.1/No.2;  
Total length: 17' 1-3/8"; Clear span: 16' 8-3/8"; 3/4" nailed and glued OSB sheathing  
This section **PASSES** the design code check.

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

| Criterion    | Analysis Value  | Design Value | Unit   | Analysis/Design |
|--------------|-----------------|--------------|--------|-----------------|
| Shear        | Vf = 954        | Vr = 2336    | lbs    | Vf/Vr = 0.41    |
| Moment (+)   | Mf = 4019       | Mr = 6255    | lbs-ft | Mf/Mr = 0.64    |
| Perm. Defl'n | 0.12 = < L/999  | 0.56 = L/360 | in     | 0.21            |
| Live Defl'n  | 0.24 = L/844    | 0.42 = L/480 | in     | 0.57            |
| Total Defl'n | 0.36 = L/562    | 0.84 = L/240 | in     | 0.43            |
| Bare Defl'n  | 0.29 = L/697    | 0.56 = L/360 | in     | 0.52            |
| Vibration    | Lmax = 16'-10.1 | Lv = 18'-1.3 | ft     | 0.93            |
| Defl'n       | = 0.030         | = 0.038      | in     | 0.80            |



NO. YAN5491 -20  
STRUCTURAL  
COMPONENT ONLY

**Additional Data:**

| FACTORS: | f/E           | KD   | KH   | KZ | KL    | KT | KS | KN | LC# |
|----------|---------------|------|------|----|-------|----|----|----|-----|
| Vr       | 2336          | 1.00 | 1.00 | -  | -     | -  | -  | -  | #2  |
| Mr+      | 6255          | 1.00 | 1.00 | -  | 1.000 | -  | -  | -  | #2  |
| EI       | 371.1 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<sub>Ieff</sub> = 459.76 lb-in<sup>2</sup> K= 6.18e06 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 2010 National Building Code of Canada (NBC), Division B, Part 4, and the CSA O86-09 Engineering Design in Wood standard, which includes Update No.1
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer to Nordic Structures technical documentation for installation guidelines and construction details.
4. Nordic I-joists are listed in CCMC evaluation report 13032-R.
5. Joists shall be laterally supported at supports and continuously along the compression edge.
6. The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of this component based on the design criteria and loadings shown.



HWG NO. TAM 5491 -20  
STRUCTURAL  
COMPONENT ONLY

# NORDIC STRUCTURES

**COMPANY**  
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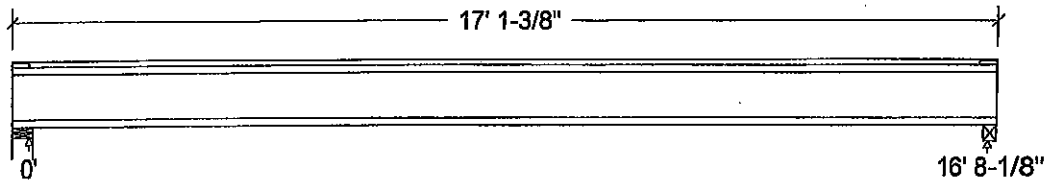
**PROJECT**  
J1 2ND FLOOR.wwb

## Design Check Calculation Sheet Nordic Sizer - Canada 7.2

### Loads:

| Load  | Type | Distribution | Pat-tern | Location [ft]<br>Start End | Magnitude<br>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        | 222   |  | 222   |
| Live        | 445   |  | 445   |
| Factored:   |       |  |       |
| Total       | 945   |  | 945   |
| Bearing:    |       |  |       |
| Capacity    |       |  |       |
| Joist       | 2336  |  | 2138  |
| Support     | 7735  |  | 4043  |
| Des ratio   |       |  |       |
| Joist       | 0.40  |  | 0.44  |
| Support     | 0.12  |  | 0.23  |
| Load case   | #2    |  | #2    |
| Length      | 4-3/8 |  | 2-5/8 |
| Min req'd   | 1-3/4 |  | 1-3/4 |
| Stiffener   | No    |  | No    |
| KD          | 1.00  |  | 1.00  |
| KB support  | -     |  | 1.00  |
| fcp sup     | 769   |  | 769   |
| Kzcp sup    | -     |  | 1.00  |

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

### Nordic Joist 11-7/8" NI-40x Floor joist @ 16" o.c.

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

Total length: 17' 1-3/8"; Clear span: 16' 6-3/8"; 5/8" nailed and glued OSB sheathing with 1/2" gypsum ceiling

**This section PASSES the design code check.**

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

| Criterion    | Analysis Value | Design Value | Unit   | Analysis/Design |
|--------------|----------------|--------------|--------|-----------------|
| Shear        | Vf = 945       | Vr = 2336    | lbs    | Vf/Vr = 0.40    |
| Moment (+)   | Mf = 3940      | Mr = 6255    | lbs-ft | Mf/Mr = 0.63    |
| Perm. Defl'n | 0.12 = < L/999 | 0.56 = L/360 | in     | 0.21            |
| Live Defl'n  | 0.24 = L/847   | 0.42 = L/480 | in     | 0.57            |
| Total Defl'n | 0.35 = L/564   | 0.83 = L/240 | in     | 0.42            |
| Bare Defl'n  | 0.28 = L/717   | 0.56 = L/360 | in     | 0.50            |
| Vibration    | Lmax = 16'-8.1 | Lv = 17'-8.1 | ft     | 0.94            |
| Defl'n       | = 0.032        | = 0.038      | in     | 0.83            |



NO. YAM 5492-20  
STRUCTURAL  
COMPONENT ONLY

**Additional Data:**

| FACTORS: | f/E           | KD   | KH   | KZ | KL    | KT | KS | KN | LC# |
|----------|---------------|------|------|----|-------|----|----|----|-----|
| Vr       | 2336          | 1.00 | 1.00 | -  | -     | -  | -  | -  | #2  |
| Mr+      | 6255          | 1.00 | 1.00 | -  | 1.000 | -  | -  | -  | #2  |
| EI       | 371.1 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<sub>ieff</sub> = 447.63 lb-in<sup>2</sup> K= 6.18e06 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 2010 National Building Code of Canada (NBC), Division B, Part 4, and the CSA O86-09 Engineering Design in Wood standard, which includes Update No. 1
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer to Nordic Structures technical documentation for installation guidelines and construction details.
4. Nordic I-joists are listed in CCMC evaluation report 13032-R.
5. Joists shall be laterally supported at supports and continuously along the compression edge.
6. The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of this component based on the design criteria and loadings shown.



DWG NO. 1AM 5482-20  
STRUCTURAL  
COMPONENT ONLY



Boise Cascade

**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLR FRAMING\Flush Beams\B1(I3068) (Flush Beam)**

Dry | 1 span | No cant.

February 19, 2020 08:54:40

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

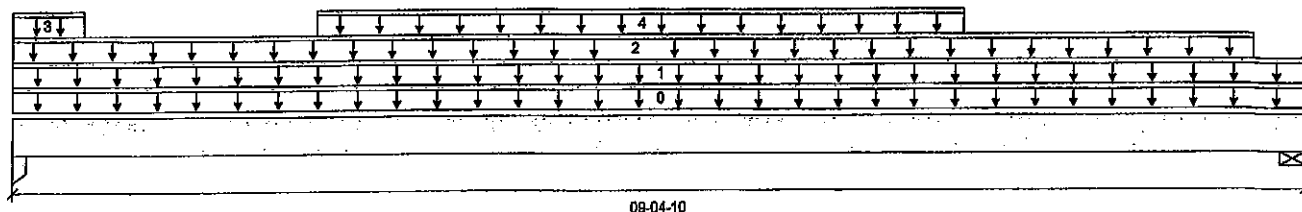
File name: VALLEYCREEK 3 EL 1.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B1(I3068)

Specifier:

Designer: AJ

Company:



B1

Total Horizontal Product Length = 09-04-10

B2

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

| Bearing    | Live    | Dead    | Snow | Wind |
|------------|---------|---------|------|------|
| B1, 1-3/4" | 396 / 0 | 590 / 0 |      |      |
| B2, 1-7/8" | 192 / 0 | 468 / 0 |      |      |

**Load Summary**

| Tag | Description        | Load Type         | Ref. | Start    | End      | Loc. | Live<br>1.00 | Dead<br>0.65 | Snow<br>1.00 | Wind<br>1.15 | Tributary |
|-----|--------------------|-------------------|------|----------|----------|------|--------------|--------------|--------------|--------------|-----------|
| 0   | Self-Weight        | Unf. Lin. (lb/ft) | L    | 00-00-00 | 09-04-10 | Top  |              | 6            |              |              | 00-00-00  |
| 1   | FC1 Floor Material | Unf. Lin. (lb/ft) | L    | 00-00-00 | 09-04-10 | Top  | 9            | 4            |              |              | n/a       |
| 2   | 12(I1307)          | Unf. Lin. (lb/ft) | L    | 00-00-00 | 09-00-04 | Top  |              | 81           |              |              | n/a       |
| 3   | 12(I1307)          | Unf. Lin. (lb/ft) | L    | 00-00-00 | 00-06-04 | Top  | 392          | 181          |              |              | n/a       |
| 4   | 12(I1307)          | Unf. Lin. (lb/ft) | L    | 02-02-08 | 06-10-14 | Top  | 64           | 29           |              |              |           |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/<br>Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-----------------------|------|----------|
| Pos. Moment           | 1693 ft-lbs     | 11502 ft-lbs        | 14.7%                 | 0    | 04-08-07 |
| End Shear             | 1082 lbs        | 7232 lbs            | 15.0%                 | 1    | 01-01-10 |
| Total Load Deflection | L/999 (0.056")  | n/a                 | n/a                   | 4    | 04-08-07 |
| Live Load Deflection  | L/999 (0.019")  | n/a                 | n/a                   | 5    | 04-08-07 |
| Max Defl.             | 0.056"          | n/a                 | n/a                   | 4    | 04-08-07 |
| Span / Depth          | 9.3             |                     |                       |      |          |

**Bearing Supports**

|    | Dim. (LxW)                 | Demand   | Demand/<br>Resistance<br>Support | Demand/<br>Resistance<br>Member | Material        |
|----|----------------------------|----------|----------------------------------|---------------------------------|-----------------|
| B1 | Column 1-3/4" x 1-3/4"     | 1332 lbs | 53.6%                            | 35.7%                           | Unspecified     |
| B2 | Wall/Plate 1-7/8" x 1-3/4" | 656 lbs  | 50.0%                            | 25.2%                           | 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: 00-00-00, Bottom: 00-00-00.

Resistance Factor phi has been applied to all presented results per CSA O86. **AMENDED 2020**

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

**CONFORMS TO OBC 2012**

DWG NO. TAM 5493-20

**STRUCTURAL****COMPONENT ONLY****Disclosure**

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



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****1ST FLR FRAMING\Flush Beams\B1A(i2953) (Flush Beam)****PASSED**

BC CALC® Member Report

Dry | 1 span | No cant.

February 19, 2020 08:54:40

Build 7239

Job name:

File name: VALLEYCREEK 3 EL 1.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B1A(i2953)

City, Province, Postal Code: WATERDOWN

Specifier:

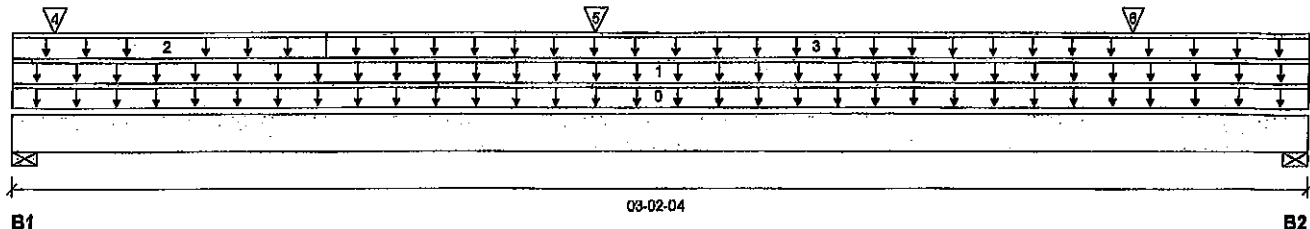
Customer:

Designer: AJ

Code reports:

CCMC 12472-R

Company:

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

| Bearing     | Live     | Dead    | Snow | Wind |
|-------------|----------|---------|------|------|
| B1, 3-5/8"  | 1264 / 0 | 782 / 0 |      |      |
| B2, 3-7/16" | 1183 / 0 | 739 / 0 |      |      |

**Load Summary**

| Tag | Description | Load Type         | Ref. | Start    | End      | Loc. | Live | Dead | Snow | Wind | Tributary |
|-----|-------------|-------------------|------|----------|----------|------|------|------|------|------|-----------|
| 0   | Self-Weight | Unf. Lin. (lb/ft) | L    | 00-00-00 | 03-02-04 | Top  |      | 12   |      |      | 00-00-00  |
| 1   | E24(i1296)  | Unf. Lin. (lb/ft) | L    | 00-00-00 | 03-02-04 | Top  |      | 81   |      |      | n/a       |
| 2   | E24(i1296)  | Unf. Lin. (lb/ft) | L    | 00-00-00 | 00-09-04 | Top  | 279  | 140  |      |      | n/a       |
| 3   | E24(i1296)  | Unf. Lin. (lb/ft) | L    | 00-09-04 | 03-02-04 | Top  | 349  | 174  |      |      | n/a       |
| 4   | J1(i3437)   | Conc. Pt. (lbs)   | L    | 00-01-04 | 00-01-04 | Top  | 463  | 232  |      |      | n/a       |
| 5   | J1(i3439)   | Conc. Pt. (lbs)   | L    | 01-05-04 | 01-05-04 | Top  | 463  | 232  |      |      | n/a       |
| 6   | J1(i3438)   | Conc. Pt. (lbs)   | L    | 02-09-04 | 02-09-04 | Top  | 463  | 232  |      |      | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 1515 ft-lbs     | 35392 ft-lbs        | 4.3%              | 1    | 01-05-04 |
| End Shear             | 1559 lbs        | 14464 lbs           | 10.8%             | 1    | 01-03-08 |
| Total Load Deflection | L/999 (0.001")  | n/a                 | n/a               | 4    | 01-07-01 |
| Live Load Deflection  | L/999 (0.001")  | n/a                 | n/a               | 5    | 01-07-01 |
| Max Defl.             | 0.001"          | n/a                 | n/a               | 4    | 01-07-01 |
| Span / Depth          | 2.8             |                     |                   |      |          |

**Bearing Supports**

|    | Dim. (LxW)                  | Demand   | Demand/Resistance Support | Demand/Resistance Member | Material        |
|----|-----------------------------|----------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 3-5/8" x 3-1/2"  | 2873 lbs | 36.6%                     | 18.5%                    | Spruce-Pine-Fir |
| B2 | Wall/Plate 3-7/16" x 3-1/2" | 2698 lbs | 36.5%                     | 18.4%                    | 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: 00-00-00, Bottom: 00-00-00.

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

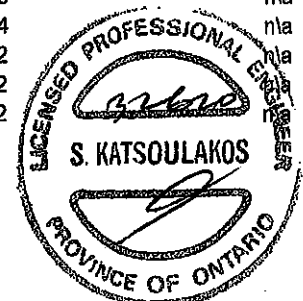
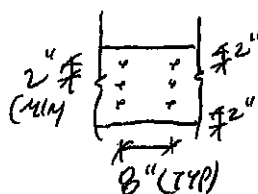
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

**CONFORMS TO OBC 2012****AMENDED 2020**

PROVIDE 3 ROWS OF 3/2" ARDOX SPIRAL NAILS @ 8" O/C FOR MULTI-PLY NAILING, MAINTAIN A MIN. 2" LUMBER EDGE/END DISTANCE. DO NOT USE AIR NAILS



BBG NO. YAM 5499-20  
STRUCTURAL

**Disclosure COMPONENT ONLY**

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



Bolsa Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****1ST FLR FRAMING\Flush Beams\B1B(I3945) (Flush Beam)****PASSED**

BC CALC® Member Report

Dry | 1 span | No cant.

February 19, 2020 08:54:40

Build 7239

Job name:

File name: VALLEYCREEK 3 EL 1.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B1B(I3945)

City, Province, Postal Code: WATERDOWN

Specifier:

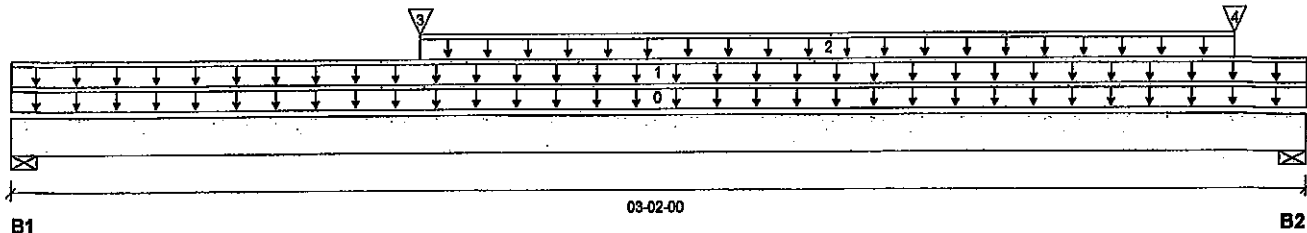
Customer:

Designer: AJ

Code reports:

CCMC 12472-R

Company:

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

| Bearing     | Live   | Dead    | Snow | Wind |
|-------------|--------|---------|------|------|
| B1, 3-7/16" | 89 / 0 | 201 / 0 |      |      |
| B2, 3-7/16" | 97 / 0 | 205 / 0 |      |      |

**Load Summary**

| Tag | Description        | Load Type         | Ref. | Start    | End      | Loc. | Live | Dead | Snow | Wind | Tributary |
|-----|--------------------|-------------------|------|----------|----------|------|------|------|------|------|-----------|
| 0   | Self-Weight        | Unf. Lin. (lb/ft) | L    | 00-00-00 | 03-02-00 | Top  |      | 12   |      |      | 00-00-00  |
| 1   | E13(I1289)         | Unf. Lin. (lb/ft) | L    | 00-00-00 | 03-02-00 | Top  | 31   | 102  |      |      | n/a       |
| 2   | FC1 Floor Material | Unf. Lin. (lb/ft) | L    | 01-00-00 | 03-00-00 | Top  | 27   | 13   |      |      | n/a       |
| 3   | Bk2(I3959)         | Conc. Pt. (lbs)   | L    | 01-00-00 | 01-00-00 | Top  | 30   | 15   |      |      | n/a       |
| 4   | Bk2(I3963)         | Conc. Pt. (lbs)   | L    | 03-00-00 | 03-00-00 | Top  | 5    |      |      |      | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 170 ft-lbs      | 23005 ft-lbs        | 0.7%              | 0    | 01-08-09 |
| End Shear             | 125 lbs         | 14464 lbs           | 0.9%              | 1    | 01-03-05 |
| Total Load Deflection | L/999 (0")      | n/a                 | n/a               | 4    | 01-07-00 |
| Live Load Deflection  | L/999 (0")      | n/a                 | n/a               | 5    | 01-07-00 |
| Max Defl.             | 0"              | n/a                 | n/a               | 4    | 01-07-00 |
| Span / Depth          | 2.7             |                     |                   |      |          |

**Bearing Supports**

|    | Dim. (LxW)                  | Demand  | Demand/Resistance Support | Demand/Resistance Member | Material        |
|----|-----------------------------|---------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 3-7/16" x 3-1/2" | 281 lbs | 5.9%                      | 3.0%                     | Spruce-Pine-Fir |
| B2 | Wall/Plate 3-7/16" x 3-1/2" | 287 lbs | 6.0%                      | 3.0%                     | Spruce-Pine-Fir |

**Notes**

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

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

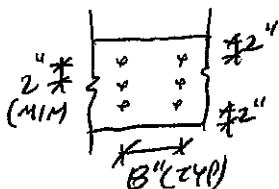
Calculations assume member is fully braced.

Resistance Factor phi has been applied to all presented results per CSA O86. **AMENDED 2020**

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

**CONFORMS TO OBC 2012**

**PROVIDE 3 ROWS OF 3/8" ARDOX SPIRAL NAILS @ 8" O/C FOR MULTI-PLY NAILING, MAINTAIN A MIN. 2" LUMBER EDGE/END DISTANCE. DO NOT USE AIR NAILS**



BWS NO. TAM 5495-20

**STRUCTURAL COMPONENT ONLY****Disclosure**

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

BC CALC® Member Report

Build 7239

Job name:

File name: VALLEYCREEK 3 EL 1.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B2(i2954)

City, Province, Postal Code: WATERDOWN

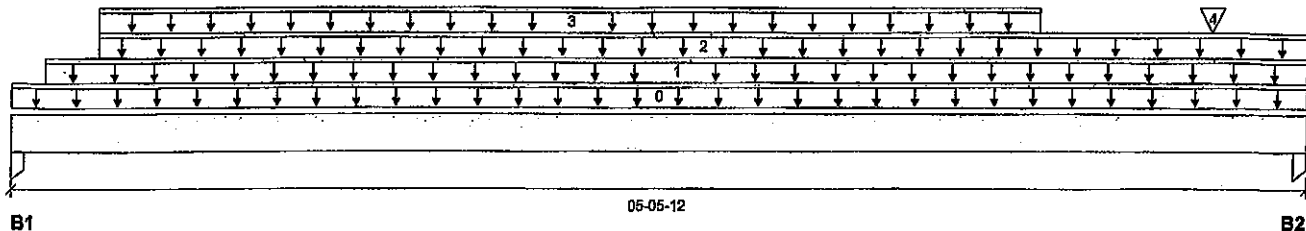
Specifier:

Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 05-05-12

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

| Bearing    | Live     | Dead    | Snow | Wind |
|------------|----------|---------|------|------|
| B1, 3-1/2" | 1150 / 0 | 802 / 0 |      |      |
| B2, 3-1/2" | 1329 / 0 | 946 / 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 | 05-05-12 | Top  | 6    |      |      |      | 00-00-00  |
| 1   | 13(i1308)     | Unf. Lin. (lb/ft) | L    | 00-01-12 | 05-05-12 | Top  |      | 81   |      |      | n/a       |
| 2   | 13(i1308)     | Unf. Lin. (lb/ft) | L    | 00-04-08 | 05-05-12 | Top  | 380  | 190  |      |      | n/a       |
| 3   | Smoothed Load | Unf. Lin. (lb/ft) | L    | 00-04-08 | 04-04-08 | Top  | 105  | 52   |      |      | n/a       |
| 4   | -             | Conc. Pt. (lbs)   | L    | 05-01-00 | 05-01-00 | Top  | 108  | 100  |      |      | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 3584 ft-lbs     | 17696 ft-lbs        | 20.3%             | 1    | 02-07-14 |
| End Shear             | 2529 lbs        | 7232 lbs            | 35.0%             | 1    | 01-03-06 |
| Total Load Deflection | L/999 (0.024")  | n/a                 | n/a               | 4    | 02-08-06 |
| Live Load Deflection  | L/999 (0.014")  | n/a                 | n/a               | 5    | 02-08-06 |
| Max Defl.             | 0.024"          | n/a                 | n/a               | 4    | 02-08-06 |
| Span / Depth          | 5.1             |                     |                   |      |          |



NWB NO. TAM 5496-20

**STRUCTURAL  
COMPONENT ONLY**
**Disclosure**

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**Bearing Supports**

|    | Dim. (LxW)             | Demand   | Demand/Resistance Support | Demand/Resistance Member | Material    |
|----|------------------------|----------|---------------------------|--------------------------|-------------|
| B1 | Column 3-1/2" x 1-3/4" | 2728 lbs | 54.9%                     | 36.5%                    | Unspecified |
| B2 | Column 3-1/2" x 1-3/4" | 3176 lbs | 63.9%                     | 42.5%                    | Unspecified |

**Notes**

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020

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

**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLR FRAMING\Flush Beams\B4(i3034) (Flush Beam)**

Dry | 1 span | No cant.

February 19, 2020 08:54:40

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

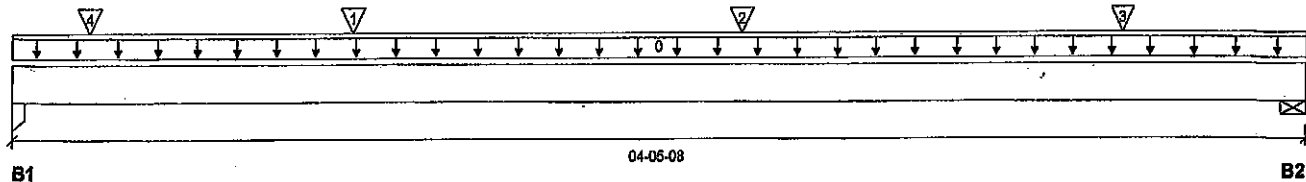
File name: VALLEYCREEK 3 EL 1.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B4(i3034)

Specifier:

Designer: AJ

Company:

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

| Bearing    | Live    | Dead    | Snow | Wind |
|------------|---------|---------|------|------|
| B1, 3-1/2" | 130 / 0 | 119 / 0 |      |      |
| B2, 4-3/8" | 152 / 0 | 90 / 0  |      |      |

**Load Summary**

| Tag | Description | Load Type         | Ref. | Start    | End      | Loc. | Live | Dead | Snow | Wind | Tributary |
|-----|-------------|-------------------|------|----------|----------|------|------|------|------|------|-----------|
| 0   | Self-Weight | Unf. Lin. (lb/ft) | L    | 00-00-00 | 04-05-08 | Top  | 1.00 | 0.65 | 1.00 | 1.15 | 00-00-00  |
| 1   | J7(i3073)   | Conc. Pt. (lbs)   | L    | 01-02-02 | 01-02-02 | Top  | 100  | 50   |      |      | n/a       |
| 2   | J7(i3097)   | Conc. Pt. (lbs)   | L    | 02-06-02 | 02-06-02 | Top  | 100  | 50   |      |      | n/a       |
| 3   | J7(i3055)   | Conc. Pt. (lbs)   | L    | 03-10-02 | 03-10-02 | Top  | 76   | 38   |      |      | n/a       |
| 4   | -           | Conc. Pt. (lbs)   | L    | 00-03-03 | 00-03-03 | Top  | 7    | 44   |      |      | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 331 ft-lbs      | 17696 ft-lbs        | 1.9%              | 1    | 02-06-02 |
| End Shear             | 248 lbs         | 7232 lbs            | 3.4%              | 1    | 01-03-06 |
| Total Load Deflection | L/999 (0.001")  | n/a                 | n/a               | 4    | 02-02-07 |
| Live Load Deflection  | L/999 (0.001")  | n/a                 | n/a               | 5    | 02-02-07 |
| Max Defl.             | 0.001"          | n/a                 | n/a               | 4    | 02-02-07 |
| Span / Depth          | 4.0             |                     |                   |      |          |

**Bearing Supports**

|    | Dim. (LxW)                 | Demand  | Demand/Resistance Support | Demand/Resistance Member | Material        |
|----|----------------------------|---------|---------------------------|--------------------------|-----------------|
| B1 | Column 3-1/2" x 1-3/4"     | 344 lbs | 6.9%                      | 4.6%                     | Unspecified     |
| B2 | Wall/Plate 4-3/8" x 1-3/4" | 340 lbs | 7.2%                      | 3.6%                     | Spruce-Pine-Fir |

**Notes**

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

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

Calculations assume member is fully braced.

Resistance Factor phi has been applied to all presented results per CSA O86. **AMENDED 2020**

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

**CONFORMS TO OBC 2012**

DWG NO. YAM 5492 -20  
**STRUCTURAL**  
**COMPONENT ONLY**

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

BC CALC® Member Report

Build 7239

Job name:

File name: VALLEYCREEK 3 EL 1.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B5(13064)

City, Province, Postal Code: WATERDOWN

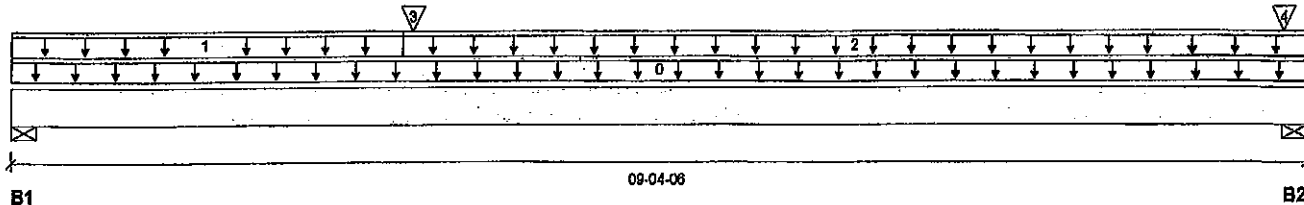
Specifier:

Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 09-04-08

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

| Bearing    | Live    | Dead    | Snow | Wind |
|------------|---------|---------|------|------|
| B1, 4"     | 340 / 0 | 205 / 0 |      |      |
| B2, 4-3/8" | 227 / 0 | 160 / 0 |      |      |

**Load Summary**

| Tag | Description        | Load Type         | Ref. | Start    | End      | Loc. | Live<br>1.00 | Dead<br>0.65 | Snow<br>1.00 | Wind<br>1.15 | Tributary |
|-----|--------------------|-------------------|------|----------|----------|------|--------------|--------------|--------------|--------------|-----------|
| 0   | Self-Weight        | Unf. Lin. (lb/ft) | L    | 00-00-00 | 09-04-08 | Top  | 6            |              |              |              | 00-00-00  |
| 1   | FC1 Floor Material | Unf. Lin. (lb/ft) | L    | 00-00-00 | 02-10-00 | Top  | 13           | 7            |              |              | n/a       |
| 2   | FC1 Floor Material | Unf. Lin. (lb/ft) | L    | 02-10-00 | 09-04-08 | Top  | 27           | 13           |              |              | n/a       |
| 3   | B7(13091)          | Conc. Pt. (lbs)   | L    | 02-10-14 | 02-10-14 | Top  | 355          | 187          |              |              | n/a       |
| 4   | FC1 Floor Material | Conc. Pt. (lbs)   | L    | 09-02-03 | 09-02-03 | Top  | 16           |              |              |              | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 1869 ft-lbs     | 17696 ft-lbs        | 10.6%             | 1    | 02-10-14 |
| End Shear             | 719 lbs         | 7232 lbs            | 9.9%              | 1    | 01-03-14 |
| Total Load Deflection | L/999 (0.033")  | n/a                 | n/a               | 4    | 04-05-01 |
| Live Load Deflection  | L/999 (0.021")  | n/a                 | n/a               | 5    | 04-04-02 |
| Max Defl.             | 0.033"          | n/a                 | n/a               | 4    | 04-05-01 |
| Span / Depth          | 8.9             |                     |                   |      |          |

**Bearing Supports**

|    | Dim. (LxW)                 | Demand  | Demand/Resistance Support | Demand/Resistance Member | Material        |
|----|----------------------------|---------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 4" x 1-3/4"     | 766 lbs | 17.8%                     | 9.0%                     | Spruce-Pine-Fir |
| B2 | Wall/Plate 4-3/8" x 1-3/4" | 541 lbs | 11.5%                     | 5.8%                     | Spruce-Pine-Fir |

**Notes**

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

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

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


 DWG NO. YAM 5498-20  
**STRUCTURAL  
 COMPONENT ONLY**
**Disclosure**

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

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

**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLR FRAMING\Flush Beams\B6(i3054) (Flush Beam)**

Dry | 1 span | No cant.

February 19, 2020 08:54:40

BC CALC® Member Report

Build 7239

Job name:

File name: VALLEYCREEK 3 EL 1.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B6(i3054)

City, Province, Postal Code: WATERDOWN

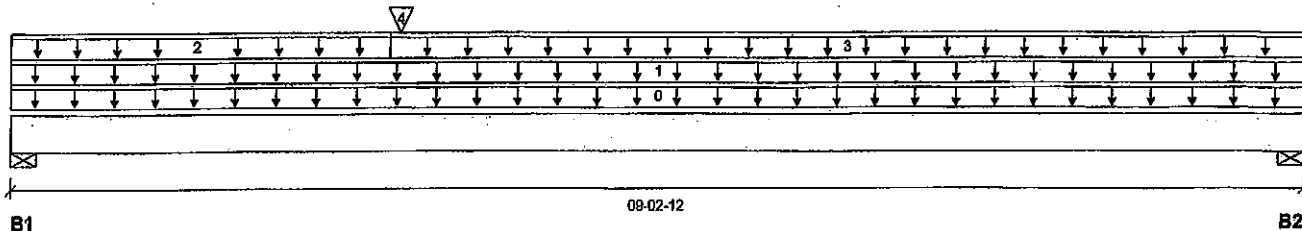
Specifier:

Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:

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

| Bearing    | Live    | Dead    | Snow | Wind |
|------------|---------|---------|------|------|
| B1, 2-3/8" | 340 / 0 | 204 / 0 |      |      |
| B2, 4-3/8" | 260 / 0 | 161 / 0 |      |      |

**Load Summary**

| Tag | Description        | Load Type         | Ref. | Start    | End      | Loc. | Live<br>1.00 | Dead<br>0.65 | Snow<br>1.00 | Wind<br>1.15 | Tributary |
|-----|--------------------|-------------------|------|----------|----------|------|--------------|--------------|--------------|--------------|-----------|
| 0   | Self-Weight        | Unf. Lin. (lb/ft) | L    | 00-00-00 | 09-02-12 | Top  |              | 6            |              |              | 00-00-00  |
| 1   | FC1 Floor Material | Unf. Lin. (lb/ft) | L    | 00-00-00 | 09-02-12 | Top  | 12           | 6            |              |              | n/a       |
| 2   | FC1 Floor Material | Unf. Lin. (lb/ft) | L    | 00-00-00 | 02-08-06 | Top  | 3            |              |              |              | n/a       |
| 3   | FC1 Floor Material | Unf. Lin. (lb/ft) | L    | 02-08-06 | 09-02-12 | Top  | 25           | 12           |              |              | n/a       |
| 4   | B7(i3091)          | Conc. Pt. (lbs)   | L    | 02-09-04 | 02-09-04 | Top  | 321          | 170          |              |              | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 1867 ft-lbs     | 17696 ft-lbs        | 10.5%             | 1    | 02-09-04 |
| End Shear             | 719 lbs         | 7232 lbs            | 9.9%              | 1    | 01-02-04 |
| Total Load Deflection | L/999 (0.035")  | n/a                 | n/a               | 4    | 04-03-07 |
| Live Load Deflection  | L/999 (0.022")  | n/a                 | n/a               | 5    | 04-03-07 |
| Max Defl.             | 0.035"          | n/a                 | n/a               | 4    | 04-03-07 |
| Span / Depth          | 8.9             |                     |                   |      |          |

**Bearing Supports**

|    | Dim. (LxW)                 | Demand  | Demand/Resistance Support | Demand/Resistance Member | Material        |
|----|----------------------------|---------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 2-3/8" x 1-3/4" | 765 lbs | 29.9%                     | 15.1%                    | Spruce-Pine-Fir |
| B2 | Wall/Plate 4-3/8" x 1-3/4" | 592 lbs | 12.6%                     | 6.3%                     | Spruce-Pine-Fir |

**Notes**

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

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

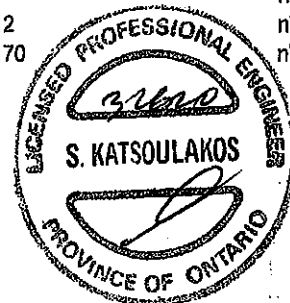
Calculations assume member is fully braced.

Resistance Factor phi has been applied to all presented results per CSA O86. **AMENDED 2020**

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

**CONFORMS TO O86 2012**

DWG NO. YAW 5499 -20

**STRUCTURAL****COMPONENT ONLY****Disclosure**

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



Boise Cascade

**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****1ST FLR FRAMING\Flush Beams\B7(i3091) (Flush Beam)****PASSED**

BC CALC® Member Report

Dry | 1 span | No cant.

February 19, 2020 08:54:40

Build 7239

Job name:

File name: VALLEYCREEK 3 EL 1.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B7(i3091)

City, Province, Postal Code: WATERDOWN

Specifier:

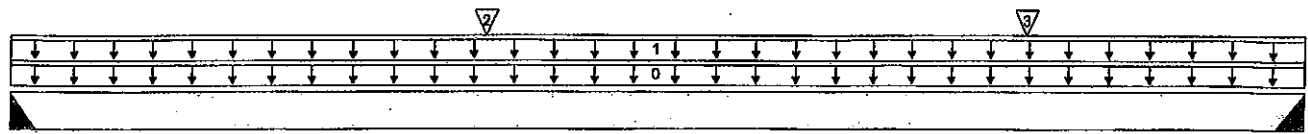
Customer:

Designer: AJ

Code reports:

CCMC 12472-R

Company:



B1

03-02-00

B2

Total Horizontal Product Length = 03-02-00

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

| Bearing | Live    | Dead    | Snow | Wind |
|---------|---------|---------|------|------|
| B1, 2"  | 320 / 0 | 170 / 0 |      |      |
| B2, 2"  | 356 / 0 | 187 / 0 |      |      |

**Load Summary**

| Tag | Description | Load Type         | Ref. | Start    | End      | Loc. | Live | Dead | Snow | Wind | Tributary |
|-----|-------------|-------------------|------|----------|----------|------|------|------|------|------|-----------|
| 0   | Self-Weight | Unf. Lin. (lb/ft) | L    | 00-00-00 | 03-02-00 | Top  | 1.00 | 0.65 | 1.00 | 1.15 | 00-00-00  |
| 1   | STAIR       | Unf. Lin. (lb/ft) | L    | 00-00-00 | 03-02-00 | Top  | 120  | 60   |      |      | n/a       |
| 2   | J5(i3083)   | Conc. Pt. (lbs)   | L    | 01-02-00 | 01-02-00 | Top  | 164  | 82   |      |      | n/a       |
| 3   | J5(i3089)   | Conc. Pt. (lbs)   | L    | 02-06-00 | 02-06-00 | Top  | 132  | 66   |      |      | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 561 ft-lbs      | 17696 ft-lbs        | 3.2%              | 1    | 01-03-09 |
| End Shear             | 389 lbs         | 7232 lbs            | 5.4%              | 1    | 01-01-14 |
| Total Load Deflection | L/999 (0.001")  | n/a                 | n/a               | 4    | 01-07-01 |
| Live Load Deflection  | L/999 (0.001")  | n/a                 | n/a               | 5    | 01-07-01 |
| Max Defl.             | 0.001"          | n/a                 | n/a               | 4    | 01-07-01 |
| Span / Depth          | 3.0             |                     |                   |      |          |

**Bearing Supports**

|           | Dlm. (LxW)  | Demand  | Demand/Resistance Support | Demand/Resistance Member | Material   |
|-----------|-------------|---------|---------------------------|--------------------------|------------|
| B1 Hanger | 2" x 1-3/4" | 692 lbs | n/a                       | 16.2%                    | HUS1.81/10 |
| B2 Hanger | 2" x 1-3/4" | 768 lbs | n/a                       | 18.0%                    | HUS1.81/10 |

**Cautions**

Header for the hanger HUS1.81/10 at B1 is a Single 1-3/4" x 11-7/8" VERSA-LAM® 1.7 2400 DF. Hanger model HUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Header for the hanger HUS1.81/10 at B2 is a Single 1-3/4" x 11-7/8" VERSA-LAM® 1.7 2400 DF.

**Notes**

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

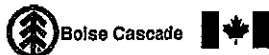
**CONFORMS TO CBC 2012****AMENDED 2020**

UWB NO. TAM 5500-20  
STRUCTURAL  
COMPONENT ONLY

**Disclosure**

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

**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLR FRAMING\Flush Beams\B8(i3040) (Flush Beam)**

BC CALC® Member Report

Dry | 1 span | No cant.

February 19, 2020 08:54:40

Build 7239

Job name:

File name: VALLEYCREEK 3 EL 1.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B8(i3040)

City, Province, Postal Code: WATERDOWN

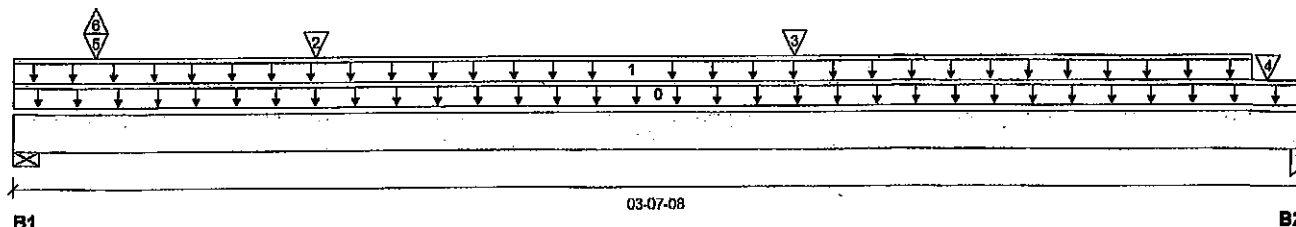
Specifier:

Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 03-07-08

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

| Bearing    | Live       | Dead     | Snow | Wind |
|------------|------------|----------|------|------|
| B1, 5-1/2" | 2871 / 245 | 1398 / 0 |      |      |
| B2, 1-3/4" | 423 / 0    | 221 / 0  |      |      |

**Load Summary**

| Tag | Description | Load Type         | Ref. | Start    | End      | Loc. | Live | Dead | Snow | Wind | Tributary |
|-----|-------------|-------------------|------|----------|----------|------|------|------|------|------|-----------|
| 0   | Self-Weight | Unf. Lin. (lb/ft) | L    | 00-00-00 | 03-07-08 | Top  | 1.00 | 0.65 | 1.00 | 1.15 | 00-00-00  |
| 1   | STAIR       | Unf. Lin. (lb/ft) | L    | 00-00-00 | 03-05-12 | Top  | 120  | 60   |      |      | n/a       |
| 2   | J6(i3045)   | Conc. Pt. (lbs)   | L    | 00-10-04 | 00-10-04 | Top  | 126  | 63   |      |      | n/a       |
| 3   | J6(i3081)   | Conc. Pt. (lbs)   | L    | 02-02-04 | 02-02-04 | Top  | 142  | 71   |      |      | n/a       |
| 4   | J6(i3048)   | Conc. Pt. (lbs)   | L    | 03-06-04 | 03-06-04 | Top  | 142  | 71   |      |      | n/a       |
| 5   | 17(i1315)   | Conc. Pt. (lbs)   | L    | 00-02-12 | 00-02-12 | Top  | 2263 | 1182 |      |      | n/a       |
| 6   | 17(i1315)   | Conc. Pt. (lbs)   | L    | 00-02-12 | 00-02-12 | Top  | -245 |      |      |      | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 604 ft-lbs      | 17696 ft-lbs        | 3.4%              | 1    | 02-02-04 |
| End Shear             | 348 lbs         | 7232 lbs            | 4.8%              | 1    | 02-05-14 |
| Total Load Deflection | L/999 (0.001")  | n/a                 | n/a               | 6    | 01-11-08 |
| Live Load Deflection  | L/999 (0.001")  | n/a                 | n/a               | 8    | 01-11-08 |
| Max Defl.             | 0.001"          | n/a                 | n/a               | 6    | 01-11-08 |
| Span / Depth          | 3.2             |                     |                   |      |          |

**Bearing Supports**

|    | Dim. (LxW)                 | Demand   | Demand/Resistance Support | Demand/Resistance Member | Material        |
|----|----------------------------|----------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 5-1/2" x 1-3/4" | 5754 lbs | 97.2%                     | 49.0%                    | Spruce-Pine-Fir |
| B2 | Column 1-3/4" x 1-3/4"     | 911 lbs  | 36.6%                     | 24.4%                    | 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****Disclosure**

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



ENG NO. TAM 5501-20  
STRUCTURAL  
COMPONENT ONLY

**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****1ST FLR FRAMING\Flush Beams\B9(i3046) (Flush Beam)**

BC CALC® Member Report

Dry | 1 span | No cant.

February 19, 2020 08:54:40

Build 7239

Job name:

File name: VALLEYCREEK 3 EL 1.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B9(i3046)

City, Province, Postal Code: WATERDOWN

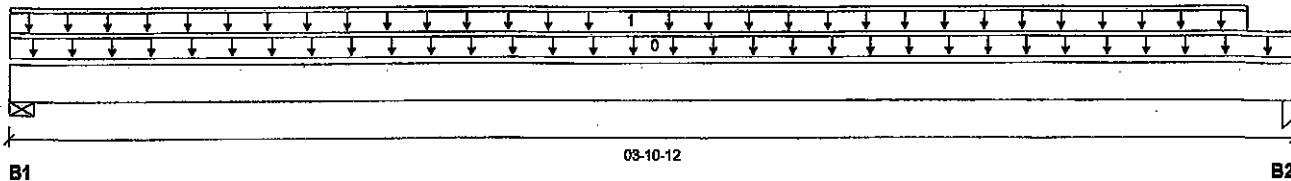
Specfifer:

Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:

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

| Bearing    | Live   | Dead   | Snow | Wind |
|------------|--------|--------|------|------|
| B1, 2-3/8" | 47 / 0 | 35 / 0 |      |      |
| B2, 3-1/2" | 45 / 0 | 35 / 0 |      |      |

**Load Summary**

| Tag | Description        | Load Type         | Ref. | Start    | End      | Loc. | Live | Dead | Snow | Wind | Tributary |
|-----|--------------------|-------------------|------|----------|----------|------|------|------|------|------|-----------|
| 0   | Self-Weight        | Unf. Lin. (lb/ft) | L    | 00-00-00 | 03-10-12 | Top  | 1.00 | 0.65 | 1.00 | 1.15 | 00-00-00  |
| 1   | FC1 Floor Material | Unf. Lin. (lb/ft) | L    | 00-00-00 | 03-09-00 | Top  | 25   | 12   |      |      | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 93 ft-lbs       | 17696 ft-lbs        | 0.5%              | 1    | 01-10-13 |
| End Shear             | 43 lbs          | 7232 lbs            | 0.6%              | 1    | 01-02-04 |
| Total Load Deflection | L/999 (0")      | n/a                 | n/a               | 4    | 01-10-13 |
| Live Load Deflection  | L/999 (0")      | n/a                 | n/a               | 5    | 01-10-13 |
| Max Defl.             | 0"              | n/a                 | n/a               | 4    | 01-10-13 |
| Span / Depth          | 3.6             |                     |                   |      |          |

**Bearing Supports**

|    | Dim. (LxW)                 | Demand  | Demand/Resistance Support | Demand/Resistance Member | Material        |
|----|----------------------------|---------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 2-3/8" x 1-3/4" | 114 lbs | 4.4%                      | 2.2%                     | Spruce-Pine-Fir |
| B2 | Column 3-1/2" x 1-3/4"     | 112 lbs | 2.2%                      | 1.5%                     | Unspecified     |

**Notes**

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

**CONFORMS TO OBC 2012****AMENDED 2020****Disclosure**

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



Boise Cascade



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

**PASSED**

## 2ND FLR FRAMING\Dropped Beams\B14 DR(I3211) (Dropped Beam)

BC CALC® Member Report

Dry | 1 span | No cant.

February 19, 2020 08:54:40

Build 7239

Job name:

File name: VALLEYCREEK 3 EL 1.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B14 DR(I3211)

City, Province, Postal Code: WATERDOWN

Specifier:

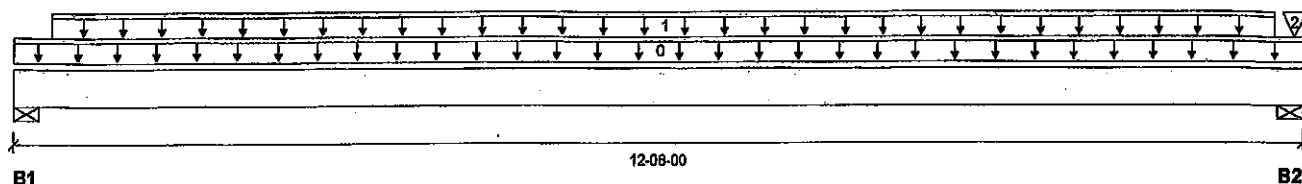
Customer:

Designer: AJ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 12-08-00

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

| Bearing | Live     | Dead     | Snow | Wind |
|---------|----------|----------|------|------|
| B1, 4"  | 3849 / 0 | 2042 / 0 |      |      |
| B2, 4"  | 4038 / 0 | 2135 / 0 |      |      |

## Load Summary

| Tag | Description   | Load Type         | Ref. | Start    | End      | Loc. | Live | Dead | Snow | Wind | Tributary |
|-----|---------------|-------------------|------|----------|----------|------|------|------|------|------|-----------|
| 0   | Self-Weight   | Unf. Lin. (lb/ft) | L    | 00-00-00 | 12-08-00 | Top  | 18   | 18   |      |      | 00-00-00  |
| 1   | Smoothed Load | Unf. Lin. (lb/ft) | L    | 00-04-08 | 12-04-08 | Top  | 629  | 315  |      |      | n/a       |
| 2   | J1(I3750)     | Conc. Pt. (lbs)   | L    | 12-06-14 | 12-06-14 | Top  | 339  | 169  |      |      | n/a       |

## Controls Summary

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 25143 ft-lbs    | 55212 ft-lbs        | 45.5%             | 1    | 06-04-08 |
| End Shear             | 7518 lbs        | 21696 lbs           | 34.7%             | 1    | 01-03-14 |
| Total Load Deflection | L/454 (0.32")   | n/a                 | 52.8%             | 4    | 06-04-08 |
| Live Load Deflection  | L/695 (0.209")  | n/a                 | 51.8%             | 5    | 06-04-08 |
| Max Defl.             | 0.32"           | n/a                 | n/a               | 4    | 06-04-08 |
| Span / Depth          | 12.3            |                     |                   |      |          |

## Bearing Supports

|    | Dim. (LxW)             | Demand   | Demand/Resistance Support | Demand/Resistance Member | Material        |
|----|------------------------|----------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 4" x 5-1/4" | 8327 lbs | 29.7%                     | 32.5%                    | Spruce-Pine-Fir |
| B2 | Wall/Plate 4" x 5-1/4" | 8726 lbs | 31.1%                     | 34.1%                    | 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 unbraced length of Top: 00-03-02, Bottom: 00-03-02.

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

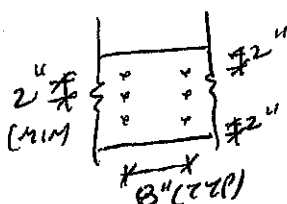
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



PROVIDE 3 ROWS OF 3/4" ARDOX SPIRAL NAILS @ 8" O/C FOR MULTI-PLY NAILING, MAINTAIN A MIN. 2" LUMBER EDGE/END DISTANCE. DO NOT USE AIR NAILS. STAGGER NAILS 4" BETWEEN PLYS.

## Disclosure

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



DWG NO. YAM5503 -20  
STRUCTURAL  
COMPONENT ONLY



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****2ND FLR FRAMING\Dropped Beams\B19 DR\i3169 (Dropped Beam)****PASSED**

BC CALC® Member Report

Dry | 1 span | No cant.

February 19, 2020 08:54:40

Build 7239

Job name:

File name: VALLEYCREEK 3 EL 1.mmdl

Address:

Description: 2ND FLR FRAMING\Dropped Beams\B19 DR\i3169

City, Province, Postal Code: WATERDOWN

Specifier:

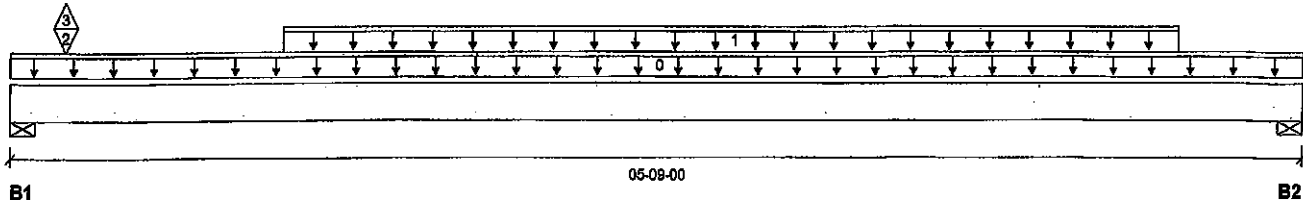
Customer:

Designer: AJ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 05-09-00

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

| Bearing    | Live       | Dead     | Snow | Wind |
|------------|------------|----------|------|------|
| B1, 4"     | 2180 / 234 | 1128 / 0 |      |      |
| B2, 5-1/2" | 759 / 0    | 414 / 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 | 05-09-00 | Top  | 1.00 | 0.65 | 1.00 | 1.15 | 00-00-00  |
| 1   | Smoothed Load | Unf. Lin. (lb/ft) | L    | 01-02-08 | 05-02-08 | Top  | 322  | 161  |      |      | n/a       |
| 2   | -             | Conc. Pt. (lbs)   | L    | 00-03-01 | 00-03-01 | Top  | 1652 | 831  |      |      | n/a       |
| 3   | -             | Conc. Pt. (lbs)   | L    | 00-03-01 | 00-03-01 | Top  | -234 |      |      |      | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 2289 ft-lbs     | 35392 ft-lbs        | 6.5%              | 1    | 03-02-08 |
| End Shear             | 1413 lbs        | 14464 lbs           | 9.8%              | 1    | 04-03-10 |
| Total Load Deflection | L/999 (0.008")  | n/a                 | n/a               | 6    | 02-09-08 |
| Live Load Deflection  | L/999 (0.005")  | n/a                 | n/a               | 8    | 02-09-08 |
| Max Defl.             | 0.008"          | n/a                 | n/a               | 6    | 02-09-08 |
| Span / Depth          | 5.1             |                     |                   |      |          |

**Bearing Supports**

|    | Dlm. (LxW)                 | Demand   | Demand/Support | Demand/Member | Material        |
|----|----------------------------|----------|----------------|---------------|-----------------|
| B1 | Wall/Plate 4" x 3-1/2"     | 4681 lbs | 25.1%          | 27.4%         | Spruce-Pine-Fir |
| B2 | Wall/Plate 5-1/2" x 3-1/2" | 1655 lbs | 6.4%           | 7.0%          | Spruce-Pine-Fir |

**Notes**

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

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

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

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

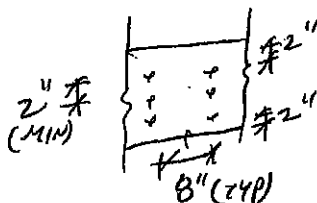
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



PROVIDE 3 ROWS OF 3/8" ARDOX  
SPIRAL NAILS @ 8" O/C FOR  
MULTI-PLY NAILING, MAINTAIN  
A MIN. 2" LUMBER EDGE/END  
DISTANCE. DO NOT USE AIR NAILS



OWB NO. YAM 5504 -20  
STRUCTURAL  
COMPONENT ONLY

**Disclosure**

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



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****2ND FLR FRAMING\Flush Beams\B15(i3358) (Flush Beam)****PASSED**

BC CALC® Member Report

Dry | 1 span | No cant.

February 19, 2020 08:54:40

Build 7239

Job name:

File name: VALLEYCREEK 3 EL 1.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B15(i3358)

City, Province, Postal Code: WATERDOWN

Specifier:

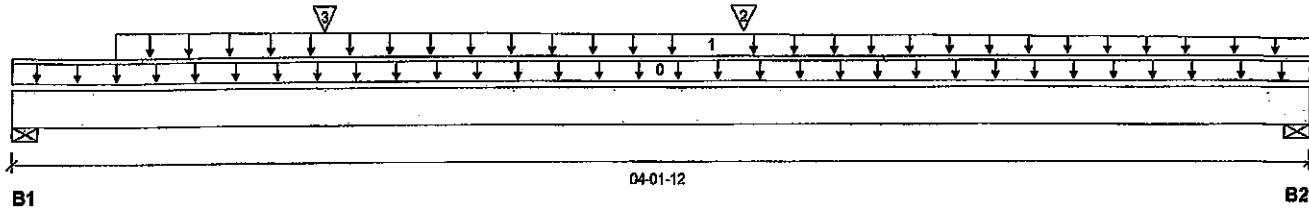
Customer:

Designer: AJ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 04-01-12

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

| Bearing    | Live     | Dead    | Snow | Wind |
|------------|----------|---------|------|------|
| B1, 4"     | 1099 / 0 | 575 / 0 |      |      |
| B2, 2-3/4" | 1213 / 0 | 631 / 0 |      |      |

**Load Summary**

| Tag | Description   | Load Type           | Ref. | Start    | End      | Loc. | Live | Dead | Snow | Wind | Tributary |
|-----|---------------|---------------------|------|----------|----------|------|------|------|------|------|-----------|
| 0   | Self-Weight   | Unf. Lin. (lb/ft)   | L    | 00-00-00 | 04-01-12 | Top  | 12   |      |      |      | 00-00-00  |
| 1   | Smoothed Load | Trapezoidal (lb/ft) | L    | 00-04-00 | 04-01-12 | Top  | 454  | 227  |      |      | n/a       |
| 2   | J1(i3255)     | Conc. Pt. (lbs)     | L    | 02-04-00 | 02-04-00 | Top  | 452  | 226  |      |      | n/a       |
| 3   | J2(i3513)     | Conc. Pt. (lbs)     | L    | 01-00-00 | 01-00-00 | Top  | 386  | 193  |      |      | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 2465 ft-lbs     | 35392 ft-lbs        | 7.0%              | 1    | 02-04-00 |
| End Shear             | 1766 lbs        | 14464 lbs           | 12.2%             | 1    | 01-03-14 |
| 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          | 3.7             |                     |                   |      |          |



DWS NO. YAM 5505 -20

**STRUCTURAL****COMPONENT ONLY****Disclosure**

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

| Bearing Supports | Dim. (LxW)                 | Demand   | Demand/Resistance Support | Demand/Resistance Member | Material        |
|------------------|----------------------------|----------|---------------------------|--------------------------|-----------------|
| B1               | Wall/Plate 4" x 3-1/2"     | 2367 lbs | 27.5%                     | 13.9%                    | Spruce-Pine-Fir |
| B2               | Wall/Plate 2-3/4" x 3-1/2" | 2609 lbs | 44.1%                     | 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 member is fully braced.

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

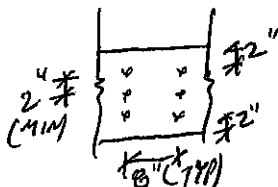
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

AMENDED 2020



PROVIDE 3 ROWS OF 3x2" ARDOX SPIRAL NAILS @ 8" O/C FOR MULTI-PLY NAILING. MAINTAIN A MIN. 2" LUMBER EDGE/END DISTANCE. DO NOT USE AIR NAILS



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****2ND FLR FRAMING\Flush Beams\B16(i3235) (Flush Beam)****PASSED**

BC CALC® Member Report

Dry | 1 span | No cant.

February 19, 2020 08:54:40

Build 7239

Job name:

File name: VALLEYCREEK 3 EL 1.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B16(i3235)

City, Province, Postal Code: WATERDOWN

Specifier:

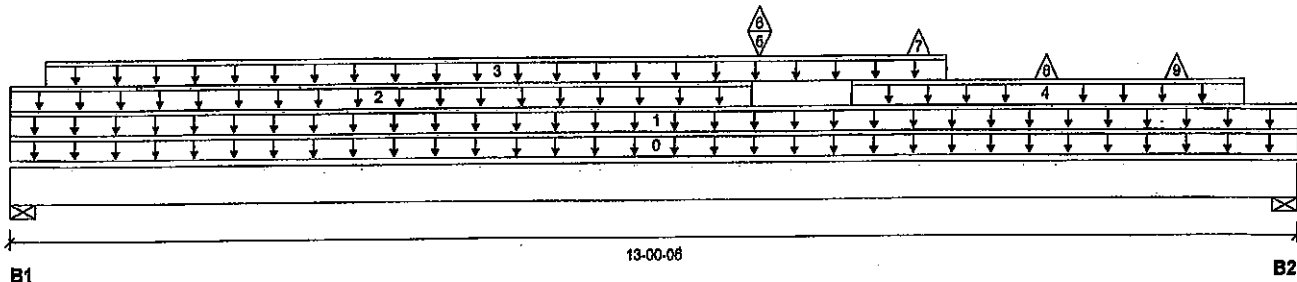
Customer:

Designer: AJ

Code reports:

CCMC 12472-R

Company:

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

| Bearing    | Live      | Dead    | Snow | Wind |
|------------|-----------|---------|------|------|
| B1, 4-3/8" | 527 / 77  | 872 / 0 |      |      |
| B2, 5-1/2" | 939 / 113 | 734 / 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 | 13-00-06 | Top  | 12   |      |      |      | 00-00-00  |
| 1   | FC2 Floor Material | Unf. Lin. (lb/ft) | L    | 00-00-00 | 13-00-06 | Top  | 10   | 5    |      |      | n/a       |
| 2   | FC2 Floor Material | Unf. Lin. (lb/ft) | L    | 00-00-00 | 07-05-10 | Top  | 17   | 9    |      |      | n/a       |
| 3   | WALL               | Unf. Lin. (lb/ft) | L    | 00-04-06 | 09-05-06 | Top  |      | 60   |      |      | n/a       |
| 4   | Smoothed Load      | Unf. Lin. (lb/ft) | L    | 08-05-14 | 12-05-14 | Top  | 135  | 66   |      |      | n/a       |
| 5   | -                  | Conc. Pt. (lbs)   | L    | 07-06-08 | 07-06-08 | Top  | 673  | 31   |      |      | n/a       |
| 6   | -                  | Conc. Pt. (lbs)   | L    | 07-06-08 | 07-06-08 | Top  | -181 |      |      |      | n/a       |
| 7   | J3(i3270)          | Conc. Pt. (lbs)   | L    | 09-01-14 | 09-01-14 | Top  | -3   |      |      |      | n/a       |
| 8   | J3(i3269)          | Conc. Pt. (lbs)   | L    | 10-05-14 | 10-05-14 | Top  | -3   |      |      |      | n/a       |
| 9   | J3(i3268)          | Conc. Pt. (lbs)   | L    | 11-09-14 | 11-09-14 | Top  | -3   |      |      |      | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 7794 ft-lbs     | 35392 ft-lbs        | 22.0%             | 1    | 07-05-10 |
| End Shear             | 2182 lbs        | 14464 lbs           | 15.1%             | 1    | 11-07-00 |
| Total Load Deflection | L/1040 (0.142") | n/a                 | 23.1%             | 6    | 06-08-07 |
| Live Load Deflection  | L/999 (0.074")  | n/a                 | n/a               | 8    | 06-10-12 |
| Max Defl.             | 0.142"          | n/a                 | n/a               | 6    | 06-08-07 |
| Span / Depth          | 12.5            |                     |                   |      |          |

**Bearing Supports**

|    | Dim. (LxW)                 | Demand   | Demand/Resistance Support | Demand/Resistance Member | Material        |
|----|----------------------------|----------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 4-3/8" x 3-1/2" | 1630 lbs | 17.3%                     | 8.7%                     | Spruce-Pine-Fir |
| B2 | Wall/Plate 5-1/2" x 3-1/2" | 2325 lbs | 19.6%                     | 9.9%                     | Spruce-Pine-Fir |

**Notes**

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

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

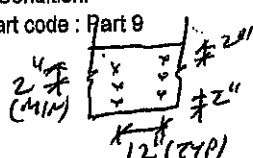
Calculations assume member is fully braced.

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**  
**PROVIDE 3 ROWS OF 3/4\"/>**



DWG NO. YAM5506 -20

**STRUCTURAL COMPONENT ONLY****Disclosure**

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Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****2ND FLR FRAMING\Flush Beams\B17(I3222) (Flush Beam)****PASSED**

BC CALC® Member Report

Dry | 2 spans | R cant.

February 19, 2020 08:54:40

Build 7239

Job name:

File name: VALLEYCREEK 3 EL 1.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B17(I3222)

City, Province, Postal Code: WATERDOWN

Specifier:

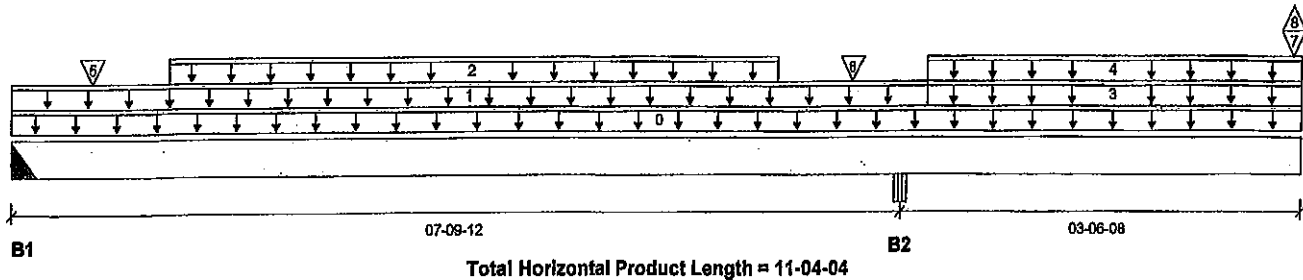
Customer:

Designer: AJ

Code reports:

CCMC 12472-R

Company:

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

| Bearing    | Live       | Dead    | Snow | Wind |
|------------|------------|---------|------|------|
| B1, 4"     | 652 / 190  | 264 / 0 |      |      |
| B2, 3-1/2" | 1367 / 235 | 687 / 0 |      |      |

**Load Summary**

| Tag | Description        | Load Type         | Ref. | Start    | End      | Loc. | Live | Dead | Snow | Wind | Tributary |
|-----|--------------------|-------------------|------|----------|----------|------|------|------|------|------|-----------|
| 0   | Self-Weight        | Unf. Lin. (lb/ft) | L    | 00-00-00 | 11-04-04 | Top  | 12   |      |      |      | 00-00-00  |
| 1   | FC2 Floor Material | Unf. Lin. (lb/ft) | L    | 00-00-00 | 08-00-08 | Top  | 7    | 4    |      |      | n/a       |
| 2   | Smoothed Load      | Unf. Lin. (lb/ft) | L    | 01-04-08 | 06-08-08 | Top  | 146  | 73   |      |      | n/a       |
| 3   | STAIR              | Unf. Lin. (lb/ft) | L    | 08-00-08 | 11-04-04 | Top  | 120  | 60   |      |      | n/a       |
| 4   | FC2 Floor Material | Unf. Lin. (lb/ft) | L    | 08-00-08 | 11-04-04 | Top  | 10   | 5    |      |      | n/a       |
| 5   | J5(13257)          | Conc. Pt. (lbs)   | L    | 00-08-08 | 00-08-08 | Top  | 160  | 80   |      |      | n/a       |
| 6   | J5(13262)          | Conc. Pt. (lbs)   | L    | 07-04-08 | 07-04-08 | Top  | 144  | 72   |      |      | n/a       |
| 7   | B18(13204)         | Conc. Pt. (lbs)   | L    | 11-03-08 | 11-03-08 | Top  | 179  | 24   |      |      | n/a       |
| 8   | B18(13204)         | Conc. Pt. (lbs)   | L    | 11-03-08 | 11-03-08 | Top  | -161 |      |      |      | n/a       |

**Controls Summary**

|                       | Factored Demand    | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|--------------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 2448 ft-lbs        | 35392 ft-lbs        | 6.9%              | 3    | 04-06-08 |
| Neg. Moment           | -2856 ft-lbs       | -35392 ft-lbs       | 8.1%              | 1    | 07-09-12 |
| End Shear             | 1056 lbs           | 14464 lbs           | 7.3%              | 3    | 01-03-14 |
| Cont. Shear           | 1384 lbs           | 14464 lbs           | 9.6%              | 1    | 06-08-02 |
| Total Load Deflection | 2xL/1998 (0.034")  | n/a                 | n/a               | 13   | 11-04-04 |
| Live Load Deflection  | 2xL/1998 (0.032")  | n/a                 | n/a               | 17   | 11-04-04 |
| Total Neg. Defl.      | 2xL/1998 (-0.027") | n/a                 | n/a               | 12   | 11-04-04 |
| Max Defl.             | 0.018"             | n/a                 | n/a               | 12   | 04-00-08 |
| Span / Depth          | 7.6                |                     |                   |      |          |

| Bearing Supports | Dlm. (LxW)      | Demand   | Demand/Resistance Support | Demand/Resistance Member | Material       |
|------------------|-----------------|----------|---------------------------|--------------------------|----------------|
| B1 Hanger        | 4" x 3-1/2"     | 1307 lbs | n/a                       | 7.7%                     | HGUS410        |
| B2 Beam          | 3-1/2" x 3-1/2" | 2908 lbs | 19.5%                     | 19.5%                    | VL 2.0 3100 SP |

**Cautions**

Header for the hanger HGUS410 at B1 is a Double 1-3/4" x 11-7/8" VERSA-LAM® 1.7 2400 DF.

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

Long Cantilever: Sheathing required on bottom flange and adjacent back span or bracing designed by the design professional of record. Design professional of record must address uplift at supports.

DWG NO. TAM 5507 -20  
STRUCTURAL  
COMPONENT ONLY



**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP**  
**2ND FLR FRAMING\Flush Beams\B17(i3222) (Flush Beam)**

**PASSED**

BC CALC® Member Report

Dry | 2 spans | R cant.

February 19, 2020 08:54:40

Build 7239

Job name:

File name: VALLEYCREEK 3 EL 1.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B17(i3222)

City, Province, Postal Code: WATERDOWN

Specifier:

Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:

**Notes**

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

CONFORMS TO OBC 2012

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

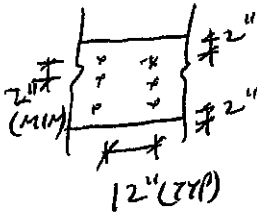
AMENDED 2020

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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



PROVIDE 3 ROWS OF 3/4" ARDOX  
 SPIRAL NAILS @ 12" O/C FOR  
 MULTI-PLY NAILING, MAINTAIN  
 A MIN. 2" LUMBER EDGE/END  
 DISTANCE. DO NOT USE AIR NAILS



DWG NO. TAM 5507-20  
 STRUCTURAL  
 COMPONENT ONLY

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

**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLR FRAMING\Flush Beams\B18(i3204) (Flush Beam)**

Dry | 1 span | No cant.

February 19, 2020 08:54:40

BC CALC® Member Report

Build 7239

Job name:

File name: VALLEYCREEK 3 EL 1.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B18(i3204)

City, Province, Postal Code: WATERDOWN

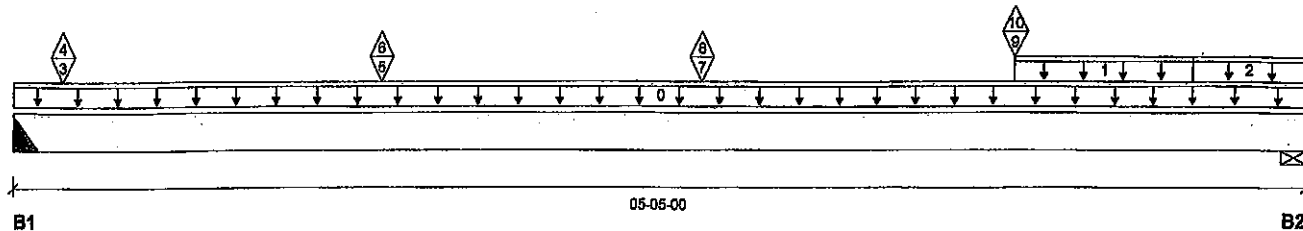
Specifier:

Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 05-05-00

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

| Bearing    | Live      | Dead   | Snow | Wind |
|------------|-----------|--------|------|------|
| B1, 2"     | 180 / 162 | 25 / 0 |      |      |
| B2, 6-1/2" | 158 / 143 | 25 / 0 |      |      |

**Load Summary**

| Tag | Description        | Load Type         | Ref. | Start    | End      | Loc. | Live<br>1.00 | Dead<br>0.65 | Snow<br>1.00 | Wind<br>1.15 | Tributary |
|-----|--------------------|-------------------|------|----------|----------|------|--------------|--------------|--------------|--------------|-----------|
| 0   | Self-Weight        | Unf. Lin. (lb/ft) | L    | 00-00-00 | 05-05-00 | Top  |              | 6            |              |              | 00-00-00  |
| 1   | FC2 Floor Material | Unf. Lin. (lb/ft) | L    | 04-02-08 | 04-11-08 | Top  |              | 1            |              |              | n/a       |
| 2   | FC2 Floor Material | Unf. Lin. (lb/ft) | L    | 04-11-08 | 05-05-00 | Top  |              | 2            |              |              | n/a       |
| 3   | J3(i3360)          | Conc. Pt. (lbs)   | L    | 00-02-08 | 00-02-08 | Top  | 62           | 4            |              |              | n/a       |
| 4   | J3(i3360)          | Conc. Pt. (lbs)   | L    | 00-02-08 | 00-02-08 | Top  | -53          |              |              |              | n/a       |
| 5   | J3(i3270)          | Conc. Pt. (lbs)   | L    | 01-06-08 | 01-06-08 | Top  | 91           | 4            |              |              | n/a       |
| 6   | J3(i3270)          | Conc. Pt. (lbs)   | L    | 01-06-08 | 01-06-08 | Top  | -84          |              |              |              | n/a       |
| 7   | J3(i3269)          | Conc. Pt. (lbs)   | L    | 02-10-08 | 02-10-08 | Top  | 91           | 4            |              |              | n/a       |
| 8   | J3(i3269)          | Conc. Pt. (lbs)   | L    | 02-10-08 | 02-10-08 | Top  | -84          |              |              |              | n/a       |
| 9   | J3(i3268)          | Conc. Pt. (lbs)   | L    | 04-02-08 | 04-02-08 | Top  | 90           | 3            |              |              | n/a       |
| 10  | J3(i3268)          | Conc. Pt. (lbs)   | L    | 04-02-08 | 04-02-08 | Top  | -84          |              |              |              | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 351 ft-lbs      | 17698 ft-lbs        | 2.0%              | 1    | 02-10-08 |
| Neg. Moment           | -268 ft-lbs     | -17696 ft-lbs       | 1.5%              | 4    | 02-10-08 |
| End Shear             | 220 lbs         | 7232 lbs            | 3.0%              | 1    | 03-11-10 |
| Total Load Deflection | L/999 (0.002")  | n/a                 | n/a               | 6    | 02-07-00 |
| Live Load Deflection  | L/999 (0.002")  | n/a                 | n/a               | 8    | 02-07-00 |
| Total Neg. Defl.      | L/999 (-0.001") | n/a                 | n/a               | 7    | 02-07-00 |
| Max Defl.             | 0.002"          | n/a                 | n/a               | 6    | 02-07-00 |
| Span / Depth          | 5.0             |                     |                   |      |          |

**Bearing Supports**

|               | Dim. (LxW)      | Demand  | Demand/Resistance Support | Demand/Resistance Member | Material        |
|---------------|-----------------|---------|---------------------------|--------------------------|-----------------|
| B1 Hanger     | 2" x 1-3/4"     | 300 lbs | n/a                       | 7.0%                     | LS90            |
| B1 Uplift     |                 | 221 lbs |                           |                          |                 |
| B2 Wall/Plate | 5-1/2" x 1-3/4" | 268 lbs | 4.5%                      | 2.3%                     | Spruce-Pine-Fir |
| B2 Uplift     |                 | 192 lbs |                           |                          |                 |



DWG NO. YAW 5508 -20  
**STRUCTURAL**  
 COMPONENT ONLY



Boise Cascade

**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****2ND FLR FRAMING\Flush Beams\B18(I3204) (Flush Beam)****PASSED**

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

February 19, 2020 08:54:40

File name: VALLEYCREEK 3 EL 1.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B18(I3204)

Specifier:

Designer: AJ

Company:

**Cautions**

Uplift of 221 lbs found at bearing B1.

Hanger B1 cannot handle uplift of -221 lbs.

Header for the hanger LS90 at B1 is a Double 1-3/4" x 11-7/8" VERSA-LAM® 1.7 2400 DF.

Hanger model LS90 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

**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



ONE NO. YAM 5508-20  
**STRUCTURAL**  
**COMPONENT ONLY**

**Disclosure**

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



Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****2ND FLR FRAMING\Flush Beams\B20(i3182) (Flush Beam)****PASSED**

BC CALC® Member Report

Dry | 1 span | No cant.

February 19, 2020 08:54:40

Build 7239

Job name:

File name: VALLEYCREEK 3 EL 1.mmdl

Address:

Description: 2ND FLR FRAMING\Flush Beams\B20(i3182)

City, Province, Postal Code: WATERDOWN

Specifier:

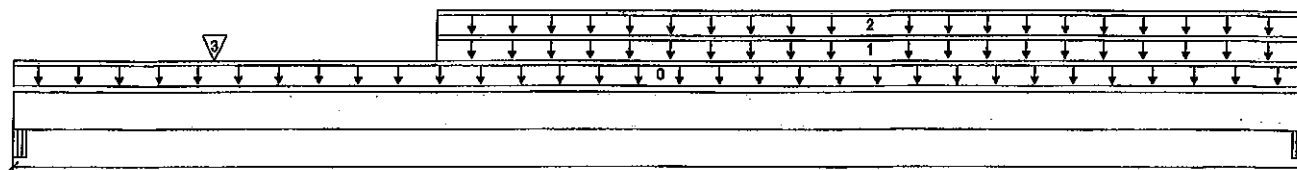
Customer:

Designer: AJ

Code reports:

CCMC 12472-R

Company:



B1

01-04-02

B2

Total Horizontal Product Length = 01-04-02

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

| Bearing    | Live   | Dead   | Snow   | Wind |
|------------|--------|--------|--------|------|
| B1, 5-1/4" | 30 / 0 | 94 / 0 | 47 / 0 |      |
| B2, 4-1/8" | 32 / 0 | 82 / 0 | 39 / 0 |      |

**Load Summary**

| Tag | Description        | Load Type         | Ref. | Start    | End      | Loc. | Live | Dead | Snow | Wind | Tributary |
|-----|--------------------|-------------------|------|----------|----------|------|------|------|------|------|-----------|
| 0   | Self-Weight        | Unf. Lin. (lb/ft) | L    | 00-00-00 | 01-04-02 | Top  | 1.00 | 0.65 | 1.00 | 1.15 |           |
| 1   | E29(i2853)         | Unf. Lin. (lb/ft) | L    | 00-05-04 | 01-04-02 | Top  | 33   | 111  | 63   |      | n/a       |
| 2   | FC2 Floor Material | Unf. Lin. (lb/ft) | L    | 00-05-04 | 01-04-02 | Top  | 19   | 9    |      |      | n/a       |
| 3   | E28(i2852)         | Conc. Pt. (lbs)   | L    | 00-02-08 | 00-02-08 | Top  | 15   | 51   | 29   |      | n/a       |

**Controls Summary**

|              | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|--------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment  | 18 ft-lbs       | 35392 ft-lbs        | n/a               | 13   | 00-08-10 |
| End Shear    | 88 lbs          | 14464 lbs           | 0.6%              | 13   | 00-05-04 |
| Span / Depth | 0.7             |                     |                   |      |          |

**Bearing Supports**

|    | Dim. (LxW)           | Demand  | Demand/Resistance Support | Demand/Resistance Member | Material    |
|----|----------------------|---------|---------------------------|--------------------------|-------------|
| B1 | Beam 5-1/4" x 3-1/2" | 217 lbs | 2.2%                      | 1.0%                     | Unspecified |
| B2 | Beam 4-1/8" x 3-1/2" | 194 lbs | 2.5%                      | 1.1%                     | Unspecified |

**Notes**

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.

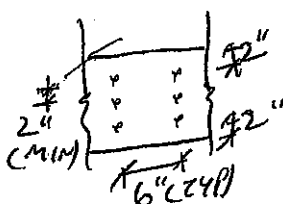
Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

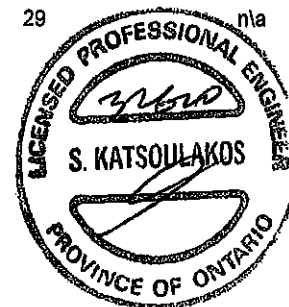
Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



PROVIDE 3 ROWS OF 3/4" ARDOX SPIRAL NAILS @ 6" O/C FOR MULTI-PLY NAILING. MAINTAIN A MIN. 2" LUMBER EDGE/END DISTANCE. DO NOT USE AIR NAILS



NW0 N0. YAM 5509-28

STRUCTURAL

COMPONENT ONLY

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Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****2ND FLR FRAMING\Flush Beams\B21(I3201) (Flush Beam)****PASSED**

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

February 19, 2020 08:54:40

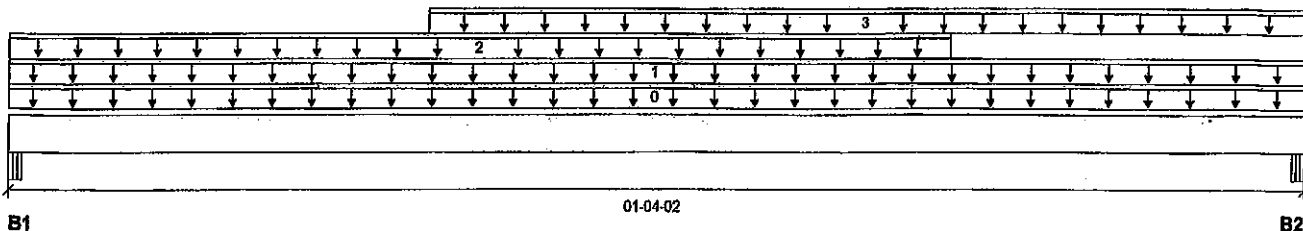
File name: VALLEYCREEK 3 EL 1.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B21(I3201)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 01-04-02

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

| Bearing    | Live   | Dead   | Snow   | Wind |
|------------|--------|--------|--------|------|
| B1, 5-1/4" | 18 / 0 | 51 / 0 | 22 / 0 |      |
| B2, 4-1/8" | 12 / 0 | 26 / 0 | 8 / 0  |      |

**Load Summary**

| Tag | Description        | Load Type         | Ref. | Start    | End      | Loc. | Live | Dead | Snow | Wind | Tributary |
|-----|--------------------|-------------------|------|----------|----------|------|------|------|------|------|-----------|
| 0   | Self-Weight        | Unf. Lin. (lb/ft) | L    | 00-00-00 | 01-04-02 | Top  | 1.00 | 0.65 | 1.00 | 1.15 | 00-00-00  |
| 1   | FC2 Floor Material | Unf. Lin. (lb/ft) | L    | 00-00-00 | 01-04-02 | Top  | 6    | 3    |      |      | n/a       |
| 2   | E31(I2650)         | Unf. Lin. (lb/ft) | L    | 00-00-00 | 00-11-12 | Top  | 16   | 56   | 32   |      | n/a       |
| 3   | FC2 Floor Material | Unf. Lin. (lb/ft) | L    | 00-05-04 | 01-04-02 | Top  | 6    | 3    |      |      | n/a       |

**Controls Summary**

|              | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|--------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment  | 10 ft-lbs       | 35392 ft-lbs        | n/a               | 13   | 00-08-10 |
| End Shear    | 46 lbs          | 14464 lbs           | 0.3%              | 1    | 00-05-04 |
| Span / Depth | 0.7             |                     |                   |      |          |

**Bearing Supports**

|         | Dim. (LxW)      | Demand  | Demand/Resistance Support | Demand/Resistance Member | Material    |
|---------|-----------------|---------|---------------------------|--------------------------|-------------|
| B1 Beam | 5-1/4" x 3-1/2" | 116 lbs | 1.2%                      | 0.5%                     | Unspecified |
| B2 Beam | 4-1/8" x 3-1/2" | 59 lbs  | 0.8%                      | 0.3%                     | Unspecified |

**Notes**

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.

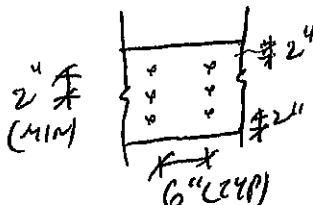
Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

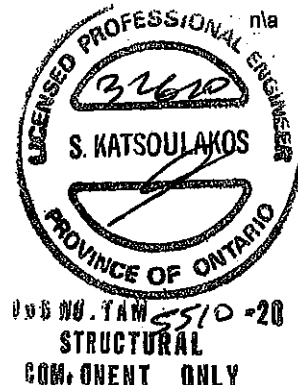
Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



PROVIDE 3 ROWS OF 3 1/2" ARDOX SPIRAL NAILS @ 6" O/C FOR MULTI-PLY NAILING. MAINTAIN A MIN. 2" LUMBER EDGE/END DISTANCE. DO NOT USE AIR NAILS

**Disclosure**

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Boise Cascade

**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP****1ST FLR FRAMING\Flush Beams\B30(I5007) (Flush Beam)****PASSED**

BC CALC® Member Report

Build 7239

Job name:

Address:

City, Province, Postal Code: WATERDOWN

Customer:

Code reports: CCMC 12472-R

Dry | 1 span | No cant.

March 24, 2020 15:43:43

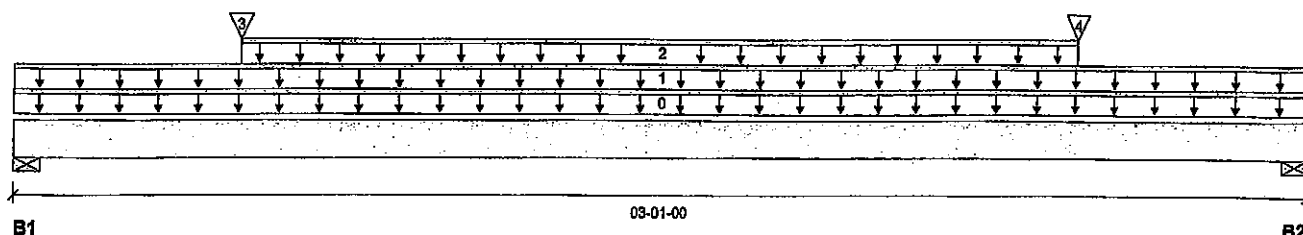
File name: VALLEYCREEK 3 EL 1 DECK CONDITION.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B30(I5007)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 03-01-00

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

| Bearing | Live   | Dead    | Snow | Wind |
|---------|--------|---------|------|------|
| B1, 3"  | 90 / 0 | 197 / 0 |      |      |
| B2, 3"  | 90 / 0 | 197 / 0 |      |      |

**Load Summary**

| Tag | Description        | Load Type         | Ref. | Start    | End      | Loc. | Live | Dead | Snow | Wind | Tributary |
|-----|--------------------|-------------------|------|----------|----------|------|------|------|------|------|-----------|
| 0   | Self-Weight        | Unf. Lin. (lb/ft) | L    | 00-00-00 | 03-01-00 | Top  | 12   |      |      |      | 00-00-00  |
| 1   | E13(I1289)         | Unf. Lin. (lb/ft) | L    | 00-00-00 | 03-01-00 | Top  | 31   | 102  |      |      | n/a       |
| 2   | FC1 Floor Material | Unf. Lin. (lb/ft) | L    | 00-06-08 | 02-06-08 | Top  | 27   | 13   |      |      | n/a       |
| 3   | Bk2(I4987)         | Conc. Pt. (lbs)   | L    | 00-06-08 | 00-06-08 | Top  | 16   | 8    |      |      | n/a       |
| 4   | Bk2(I4995)         | Conc. Pt. (lbs)   | L    | 02-06-08 | 02-06-08 | Top  | 16   | 8    |      |      | n/a       |

**Controls Summary**

|                       | Factored Demand | Factored Resistance | Demand/Resistance | Case | Location |
|-----------------------|-----------------|---------------------|-------------------|------|----------|
| Pos. Moment           | 166 ft-lbs      | 23005 ft-lbs        | 0.7%              | 0    | 01-06-08 |
| End Shear             | 124 lbs         | 14464 lbs           | 0.9%              | 1    | 01-02-14 |
| Total Load Deflection | L/999 (0")      | n/a                 | n/a               | 4    | 01-06-08 |
| Live Load Deflection  | L/999 (0")      | n/a                 | n/a               | 5    | 01-06-08 |
| Max Defl.             | 0"              | n/a                 | n/a               | 4    | 01-06-08 |
| Span / Depth          | 2.7             |                     |                   |      |          |

**Bearing Supports**

|    | Dim. (LxW)             | Demand  | Demand/Resistance Support | Demand/Resistance Member | Material        |
|----|------------------------|---------|---------------------------|--------------------------|-----------------|
| B1 | Wall/Plate 3" x 3-1/2" | 276 lbs | 6.6%                      | 3.3%                     | Spruce-Pine-Fir |
| B2 | Wall/Plate 3" x 3-1/2" | 276 lbs | 6.6%                      | 3.3%                     | Spruce-Pine-Fir |

**Notes**

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

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

Calculations assume member is fully braced.

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

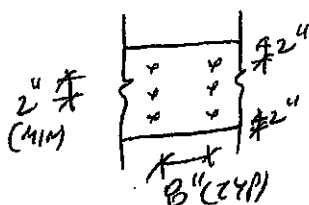
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

AMENDED 2020



PROVIDE 2 ROWS OF 3/4" ARDOX  
SPIRAL NAILS @ 8" O/C FOR  
MULTI-PLY NAILING. MAINTAIN  
A MIN. 2" LUMBER EDGE/END  
DISTANCE. DO NOT USE AIR NAILS



DWG NO. YAM 5511 -20  
STRUCTURAL  
COMPONENT ONLY

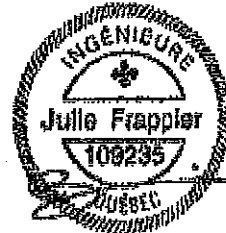
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## Maximum Floor Spans

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

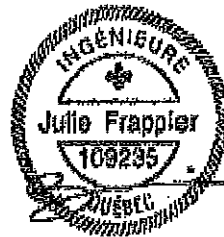


| Depth   | Series | Bare              |         |         |         | 1/2" Gypsum Ceiling |         |         |         |
|---------|--------|-------------------|---------|---------|---------|---------------------|---------|---------|---------|
|         |        | On Centre Spacing |         |         |         | 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 CMC evaluation report 13032-R and APA Product Report PR-L274C.

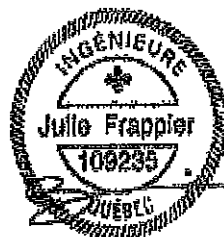
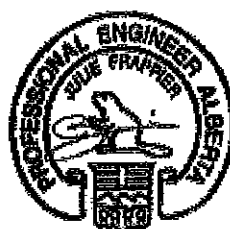


## Maximum Floor Spans

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

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

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



## Maximum Floor Spans

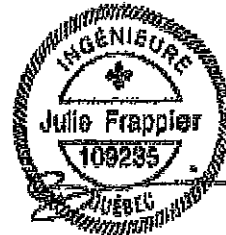
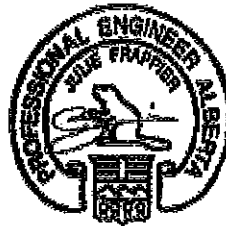
Live Load = 40 psf, Dead Load = 15 psf  
Simple Spans, L/480 Deflection Limit  
3/4" OSB G&N Sheathing

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

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

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



### Maximum Floor Spans

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

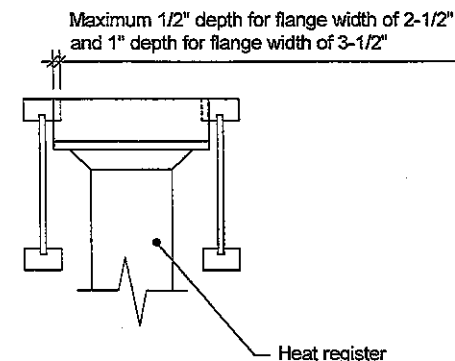
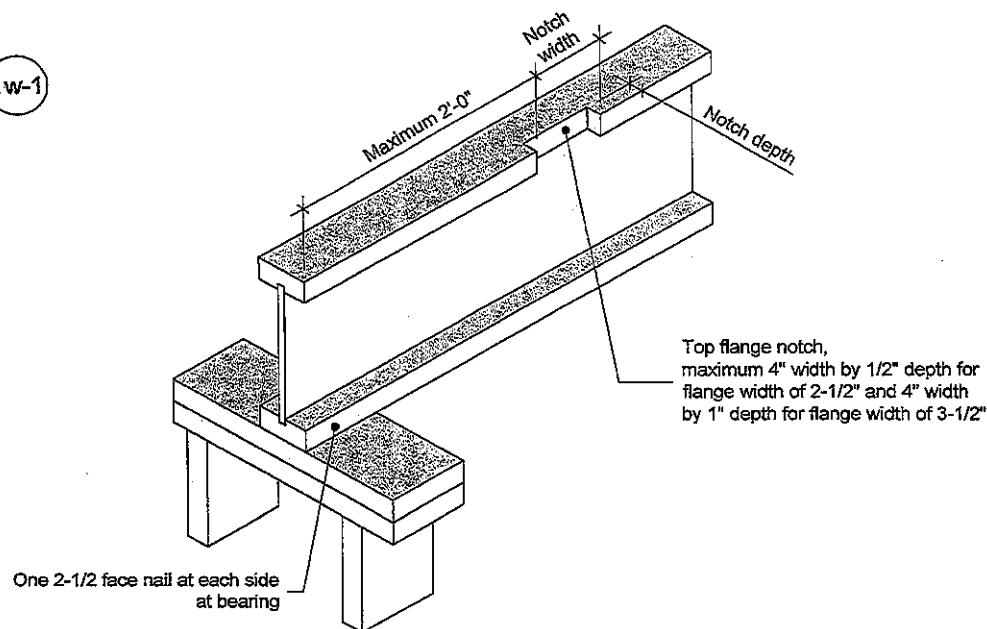
| Depth   | Series | Bare              |         |         |     | 1/2" Gypsum Ceiling |         |         |     |
|---------|--------|-------------------|---------|---------|-----|---------------------|---------|---------|-----|
|         |        | On Centre Spacing |         |         |     | On Centre 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.

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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](http://nordic.ca) or contact Nordic Structures.

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

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**TITLE**

Notch in I-joist for Heat Register

**CATEGORY**

I-joist - Typical Floor Framing and Construction Details

**DOCUMENT**

-

**DATE**

2018-04-10

**NUMBER**

1w-1



## Construction Detail

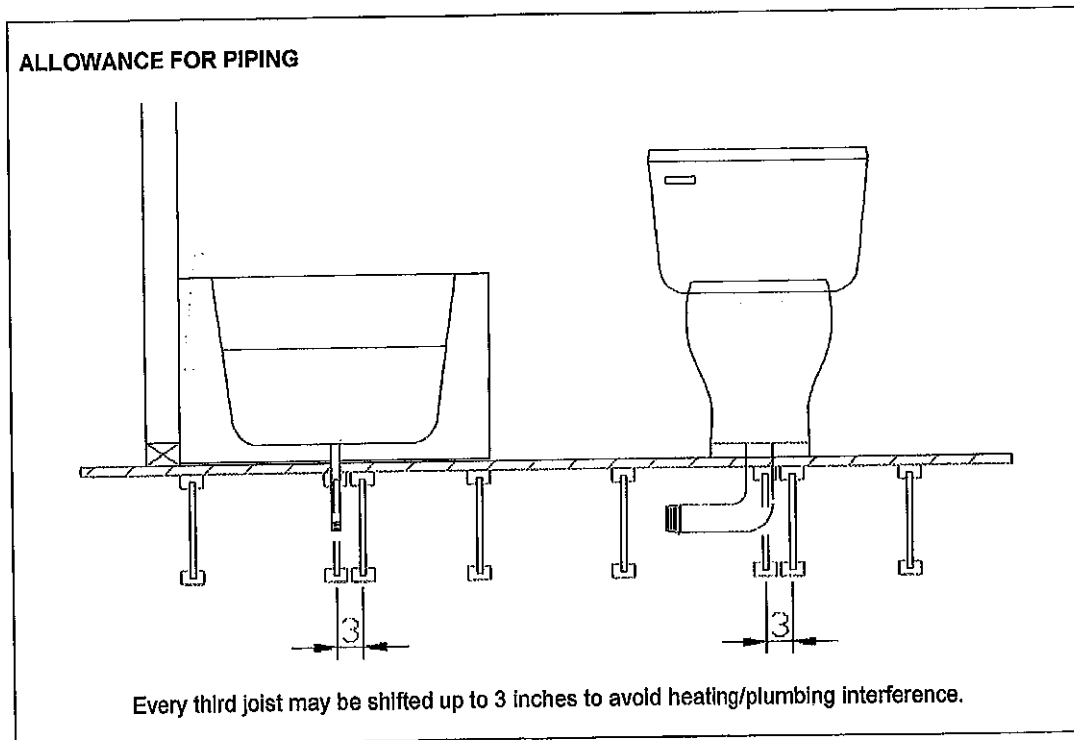
Limit States Design

### Allowance for Piping (Installation Notes)

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

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

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



Revised April 12, 2012