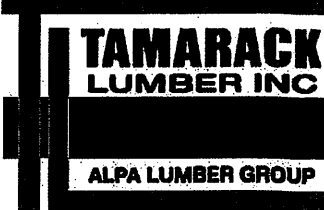


| Products | | | | |
|----------|----------|---|-------|---------|
| PlotID | Length | Product | Plies | Net Qty |
| J1 | 14-00-00 | 11 7/8" NI-40x | 1 | 22 |
| J1DJ | 14-00-00 | 11 7/8" NI-40x | 2 | 4 |
| J2 | 12-00-00 | 11 7/8" NI-40x | 1 | 36 |
| J2DJ | 12-00-00 | 11 7/8" NI-40x | 2 | 4 |
| J3 | 10-00-00 | 11 7/8" NI-40x | 1 | 2 |
| J4 | 6-00-00 | 11 7/8" NI-40x | 1 | 4 |
| J5 | 4-00-00 | 11 7/8" NI-40x | 1 | 2 |
| J6 | 2-00-00 | 11 7/8" NI-40x | 1 | 2 |
| B1 | 12-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2 | 2 |
| B3 | 12-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2 | 2 |
| B7 | 12-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2 | 2 |
| B4 | 10-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1 | 1 |
| B6 | 10-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1 | 1 |
| B2 | 8-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 2 | 2 |
| B5 | 4-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1 | 1 |
| B8 | 4-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1 | 1 |
| B9 | 4-00-00 | 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP | 1 | 1 |

| Connector Summary | | |
|-------------------|-------|---------------|
| Qty | Manuf | Product |
| 6 | H1 | IUS2.56/11.88 |
| 6 | H1 | IUS2.56/11.88 |
| 4 | H1 | IUS2.56/11.88 |
| 6 | H1 | IUS2.56/11.88 |
| 2 | H2 | HUS1.81/10 |
| 2 | H2 | HUS1.81/10 |
| 1 | H4 | HGUS410 |

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 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
TILED AREAS: 20 lb/ft₂

SUBFLOOR: 5/8" GLUE AND NAIL



FROM PLAN DATED:
FEB-2017

BUILDER:
ROYAL PINE HOMES

SITE:
FORESTSIDE ESTATES

MODEL: UNIT 2203 T3

ELEVATION: A,B

LOT:

CITY: BRAMPTON

SALESMAN: M D

DESIGNER: AJ

REVISION:

DATE: 4/25/2017

1st FLOOR

STANDARD

DATE 1/24/18

BCIN: 26064; FIRM: 29991

ENGINEERING ONLY - DIMENSIONS TO BE VERIFIED ON SITE SUPPORTING STRUCTURE TO BE VERIFIED BY QUALIFIED BUILDING DESIGNER. ALL CONVENTIONAL FRAMING TO BE SPECIFIED, REVIEWED, AND CONFIRMED BY BUILDING DESIGNER PRIOR TO JOIST(S) AND FLOOR BEAM(S) INSTALLATION. ALL NOTES DESIGNATING MORE OR LESS (AS PER PLAN WORK) DO NOT REPRESENT A PART OF THE SCOPE OF WORK WITHIN THE BOUNDARIES OF THE SEAL. THIS WORK IS DELEGATED TO A QUALIFIED BUILDING DESIGNER HAVING RESPONSIBILITY FOR THIS PROJECT. ALL BEAMS NOT ADDRESSED IN THIS DESCRIPTION AND LABELLED ON THIS LAYOUT ARE BEAMS SPECIFIED BY BUILDING DESIGNER AND/OR PROJECT ENGINEER AND ARE TO BE REVIEWED AND CONFIRMED BY THE SAME DESIGNER(S) PRIOR TO FABRICATION TO ENSURE ADEQUATE LOAD CAPACITY WITH RESPECT TO THE FLOOR SYSTEM COMPONENTS REVIEWED IN THIS SUBMISSION. MUNICIPALITY HAVING JURISDICTION TO OBTAIN LOT SPECIFIC SCHEDULE 1 FORM FROM THIS OFFICE PRIOR TO BUILDING PERMIT APPROVAL. INSTALLERS OF THIS FLOOR SYSTEM AND THEIR COMPANIES HAVE THE RESPONSIBILITY OF ENSURING THEY HAVE A COPY OF THE NORDIC INSTALLATION GUIDE AND ANY OTHER MANUFACTURER'S PRODUCT LITERATURE WHICH WILL AID IN THE OVERALL PROPER INSTALLATION OF THIS FLOOR SYSTEM. INSTALLERS ARE TO READ ALL PRODUCT LITERATURE AND INSTALLATION GUIDELINES BEFORE PROCEEDING. THE SUPPLIER AND SEALING ENGINEER OF THIS FLOOR SYSTEM ARE NOT RESPONSIBLE FOR SURPLUS OR DEFICIT OF PRODUCTS AT PROJECT'S END. THIS LAYOUT IS A GUIDE ONLY. CONFIRMATION OF ALL QUANTITIES, LENGTHS, AND DETAILS, REMAINS THE RESPONSIBILITY OF THE FLOOR SYSTEM INSTALLATION CONTRACTOR.

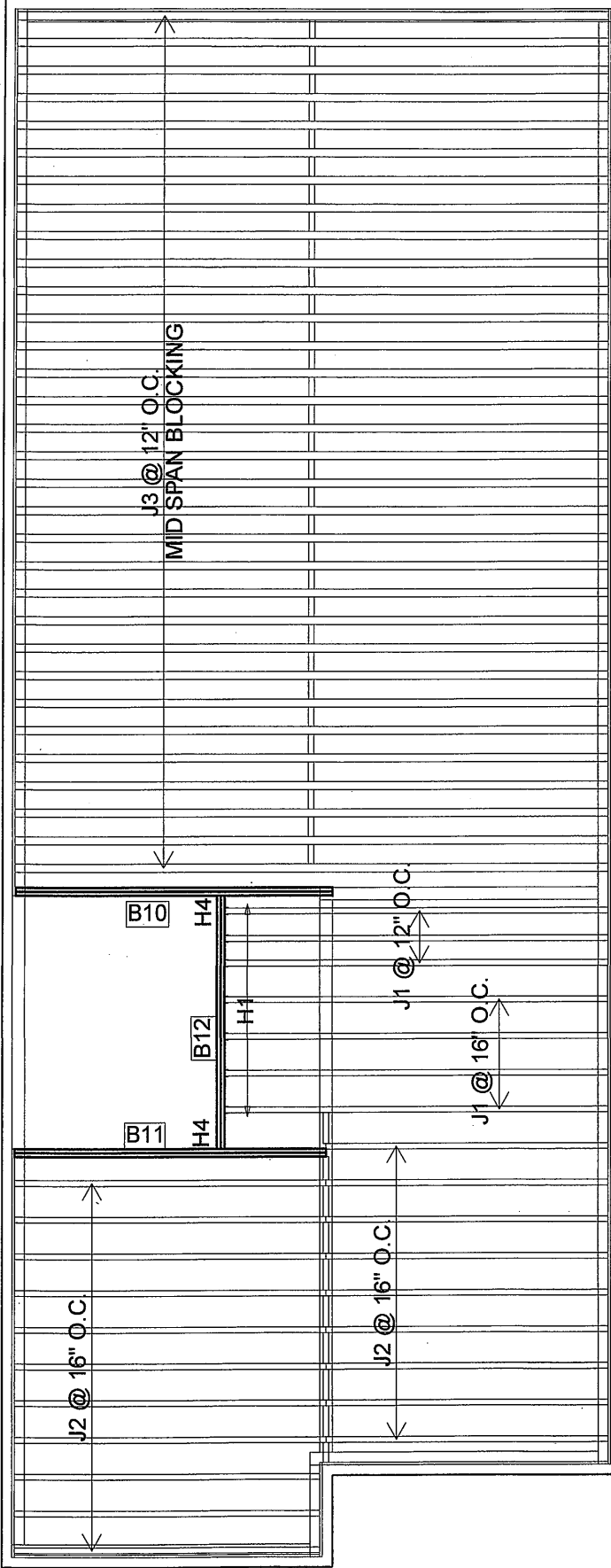
DWG# TAM 8558104 THROUGH DWG# TAM 8566104, INCLUSIVE DATED 1/24/18

SEALED STRUCTURAL COMPONENTS ONLY:
SEALED, THIRD PARTY LVL TYPE BEAMS, BUILT-UP CONVENTIONAL BEAMS, HEADERS, AND CONCENTRATED LOADED NORDIC WOOD-JOIST ONLY. 2 X 6 SQUASH BLOCK REQUIRED AT ALL EXTERIOR SUPPORTS OR AS PER PROJECT ENGINEER'S SPECIFICATIONS. WEB FILLER REINFORCEMENT REQUIRED AT ALL HANGER SUPPORTED JOIST EXCEEDING A REACTION OF 1500 LBS (FACTORED)-SEE DETAILS.
A COMPLETE FRAMING PLAN REQUIRES THE NORDIC PUBLISHED LITERATURE, WHICH INCLUDES INSTALLATION REQUIREMENTS, HANDLING AND STORAGE GUIDELINES, AND FORMS AN INTEGRAL PART OF THIS SEALED DOCUMENT. INSTALL SQUASH BLOCKS FOR TRANSFERRING POINT LOADS FROM GIRDER TRUSSES, HEADERS, AND BEAMS DOWN TO FOUNDATION COMPONENTS. FOR PROPER INSTALLATION, SEE NORDIC LITERATURE. PROVIDE 2 X 4 OR 2 X 6 STUD GRADE OR BETTER SQUASH BLOCKS, MATCHING SUPPORTED WALL WIDTH ABOVE BLOCKS. INSTALL SQUASH BLOCKS ON EACH SIDE OF JOIST. BLOCKING TO BE 1/16" DEEPER THAN JOIST DEPTH. SEE NORDIC LITERATURE FOR NAILING REQUIREMENT.

I REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK ON BEHALF OF A FIRM REGISTERED UNDER SUBSECTION 3.2.5 OF THE ONTARIO BUILDING CODE. I AM QUALIFIED AND THE FIRM IS REGISTERED, IN APPROPRIATE CLASSES AND/OR CATEGORIES.

REGISTERED FIRM: MICRO CITY ENGINEERING SERVICES INC.

DWG # TAM 3102618
BCIN: 26064
FIRM: 29991
SEALED STRUCTURAL
COMPONENTS ONLY



| Products | | | | |
|----------|----------|---|-------|------------|
| PlotID | Length | Product | Plies | Net Qty |
| J1 | 16-00-00 | 11 7/8" NI-40x | 1 | 7 |
| J2 | 12-00-00 | 11 7/8" NI-40x | 1 | 20 |
| J3 | 24-00-00 | 11 7/8" NI-80 | 1 | 32 ~ SB 22 |
| B10 ✓ | 12-00-00 | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 2 | 2 |
| B11 ✓ | 12-00-00 | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 2 | 2 |
| B12 ✓ | 10-00-00 | 1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP | 2 | 2 |

| Connector Summary | | |
|-------------------|-------|---------------|
| Qty | Manuf | Product |
| 7 | H1 | IUS2.56/11.88 |
| 2 | H4 | HGUS410 |

TAMARACK

LUMBER INC

ALPA LUMBER GROUP

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
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SEE FIGURE 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
TILED AREAS: 20 lb/ft²

SUBFLOOR: 5/8" GLUE AND NAIL

FROM PLAN DATED:
FEB-2017

BUILDER:
ROYAL PINE HOMES

SITE:
FORESTSIDE ESTATES

MODEL: UNIT 2203 T3

ELEVATION: A,B

LOT:

CITY: BRAMPTON

SALESMAN: M D

DESIGNER: AJ

REVISION:

DATE: 4/25/2017

2nd FLOOR

DATE 1/21/18

BCIN: 26064; FIRM: 29991

ENGINEERING ONLY - DIMENSIONS TO BE VERIFIED ON SITE SUPPORTING STRUCTURE TO BE VERIFIED BY QUALIFIED BUILDING DESIGNER. ALL CONVENTIONAL FRAMING TO BE SPECIFIED, REVIEWED, AND CONFIRMED BY BUILDING DESIGNER PRIOR TO JOIST(S) AND FLOOR BEAM(S) INSTALLATION. ALL NOTES DESIGNATING MORE OR LESS DAS PER PLAN WORK DO NOT REPRESENT A PART OF THE SCOPE OF WORK WITHIN THE BOUNDARIES OF THE SEAL. THIS WORK IS DELEGATED TO A QUALIFIED BUILDING DESIGNER HAVING RESPONSIBILITY FOR THIS PROJECT. ALL BEAMS NOT ADDRESSED IN THIS DESCRIPTION AND LABELLED ON THIS LAYOUT ARE BEAMS SPECIFIED BY BUILDING DESIGNER AND/OR PROJECT ENGINEER AND ARE TO BE REVIEWED AND CONFIRMED BY THE SAME DESIGNER(S) PRIOR TO FABRICATION TO ENSURE ADEQUATE LOAD CAPACITY WITH RESPECT TO THE FLOOR SYSTEM COMPONENTS REVIEWED IN THIS SUBMISSION. MUNICIPALITY HAVING JURISDICTION TO OBTAIN LOT SPECIFIC SCHEDULE 1 FORM FROM THIS OFFICE PRIOR TO BUILDING PERMIT APPROVAL. INSTALLERS OF THIS FLOOR SYSTEM AND THEIR COMPANIES HAVE THE RESPONSIBILITY OF ENSURING THEY HAVE A COPY OF THE NORDIC INSTALLATION GUIDE AND ANY OTHER MANUFACTURER'S PRODUCT LITERATURE WHICH WILL AID IN THE OVERALL PROPER INSTALLATION OF THIS FLOOR SYSTEM. INSTALLERS ARE TO READ ALL PRODUCT LITERATURE AND INSTALLATION GUIDELINES BEFORE PROCEEDING. THE SUPPLIER AND SEALING ENGINEER OF THIS FLOOR SYSTEM ARE NOT RESPONSIBLE FOR SURPLUS OR DEFICIT OF PRODUCTS AT PROJECT'S END. THIS LAYOUT IS A GUIDE ONLY. CONFIRMATION OF ALL QUANTITIES, LENGHTS, AND DETAILS, REMAINS THE RESPONSIBILITY OF THE FLOOR SYSTEM INSTALLATION CONTRACTOR.

DWG# TAM 056918H THROUGH DWG# TAM 056918H, INCLUSIVE DATED 1/21/18

SEALED STRUCTURAL COMPONENTS ONLY:
SEALED, THIRD PARTY LVL TYPE BEAMS, BUILT-UP CONVENTIONAL BEAMS, HEADERS, AND CONCENTRATED LOADED NORDIC WOOD-I JOIST ONLY. 2 X 6 SQUASH BLOCK REQUIRED AT ALL EXTERIOR SUPPORTS OR AS PE PROJECT ENGINEER'S SPECIFICATIONS. WEB FILLER REINFORCEMENT REQUIRED AT ALL HANGER SUPPORTED JOIST EXCEEDING A REACTION OF 1500 LBS (FACTORED)-SEE DETAILS.
A COMPLETE FRAMING PLAN REQUIRES THE NORDIC PUBLISHED LITERATURE, WHICH INCLUDES INSTALLATION REQUIREMENTS, HANDLING AND STORAGE GUIDELINES, AND FORMS AN INTEGRAL PART OF THIS SEALED DOCUMENT. INSTALL SQUASH BLOCKS FOR TRANSFERRING POINT LOADS FROM GIRDER TRUSSES, HEADERS, AND BEAMS DOWN TO FOUNDATION COMPONENTS. FOR PROPER INSTALLATION, SEE NORDIC LITERATURE. PROVIDE 2 X 4 OR 2 X 6 STUD GRADE OR BETTER SQUASH BLOCKS, MATCHING SUPPORTED WALL WIDTH ABOVE BLOCKS. INSTALL SQUASH BLOCKS ON EACH SIDE OF JOIST. BLOCKING TO BE 1/160 DEEPER THAN JOI DEPTH. SEE NORDIC LITERATURE FOR NAILING REQUIREMENT.

I REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK ON BEHALF OF A FIRM REGISTERED UNDER SUBSECTION 3.2.5 OF THE ONTARIO BUILDING CODE. I AM QUALIFIED AND HE FIRM IS REGISTERED, IN APPROPRIATE CLASSES AND/OR CATEGORIES.

REGISTERED FIRM: MICRO CITY ENGINEERING SERVICES INC.

DWG # TAM 310278
BCIN: 26064
FIRM: 29991
SEALED STRUCTURAL
COMPONENTS ONLY



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

WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

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

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

TABLE 1
LOCATION OF CIRCULAR HOLES IN JOIST WEBS

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

| Joist Depth | Joist Series | Minimum Distance from Inside Face of Any Support to Centre of Hole (ft - in.) | | | | | | | | | | | | |
|-------------|--------------|---|--------|--------|-------|--------|-------|-------|--------|--------|--------|--------|---------|--------|
| | | Round Hole Diameter (in.) | | | | | | | | | | | | |
| | | 2 | 3 | 4 | 5 | 6 | 6-1/4 | 7 | 8 | 8-5/8 | 9 | 10 | 10-3/4 | 11 |
| 9-1/2" | NI-20 | 0'-7" | 1'-6" | 2'-10" | 4'-3" | 5'-8" | 6'-0" | --- | --- | --- | --- | --- | --- | --- |
| | NI-40x | 0'-7" | 1'-6" | 3'-0" | 4'-4" | 6'-0" | 6'-4" | --- | --- | --- | --- | --- | --- | --- |
| | NI-60 | 1'-3" | 2'-6" | 4'-0" | 5'-4" | 7'-0" | 7'-5" | --- | --- | --- | --- | --- | --- | --- |
| | NI-70 | 2'-0" | 3'-4" | 4'-9" | 6'-3" | 8'-0" | 8'-4" | --- | --- | --- | --- | --- | --- | --- |
| | NI-80 | 2'-3" | 3'-6" | 5'-0" | 6'-4" | 8'-2" | 8'-8" | --- | --- | --- | --- | --- | --- | --- |
| 11-7/8" | NI-20 | 0'-7" | 0'-8" | 1'-0" | 2'-4" | 3'-8" | 4'-0" | 5'-0" | 6'-6" | 7'-9" | --- | --- | --- | --- |
| | NI-40x | 0'-7" | 0'-8" | 1'-3" | 2'-8" | 4'-0" | 4'-4" | 5'-5" | 7'-0" | 8'-4" | --- | --- | --- | --- |
| | NI-60 | 0'-7" | 1'-8" | 3'-0" | 4'-3" | 5'-9" | 6'-0" | 7'-3" | 8'-10" | 10'-0" | --- | --- | --- | --- |
| | NI-70 | 1'-3" | 2'-6" | 4'-0" | 5'-4" | 6'-9" | 7'-2" | 8'-4" | 10'-0" | 11'-2" | --- | --- | --- | --- |
| | NI-80 | 1'-6" | 2'-10" | 4'-2" | 5'-6" | 7'-0" | 7'-5" | 8'-6" | 10'-3" | 11'-4" | --- | --- | --- | --- |
| 14" | NI-90 | 0'-7" | 0'-8" | 1'-5" | 3'-2" | 4'-10" | 5'-4" | 6'-9" | 8'-9" | 10'-2" | --- | --- | --- | --- |
| | NI-90x | 0'-7" | 0'-8" | 0'-9" | 2'-5" | 4'-4" | 4'-9" | 6'-3" | --- | --- | --- | --- | --- | --- |
| | NI-40x | 0'-7" | 0'-8" | 0'-8" | 1'-0" | 2'-4" | 2'-9" | 3'-9" | 5'-2" | 6'-0" | 6'-6" | 8'-3" | 10'-2" | --- |
| | NI-60 | 0'-7" | 0'-8" | 1'-8" | 3'-0" | 4'-3" | 4'-8" | 5'-8" | 7'-2" | 8'-0" | 8'-8" | 10'-4" | 11'-9" | --- |
| | NI-70 | 0'-8" | 1'-10" | 3'-0" | 4'-5" | 5'-10" | 6'-2" | 7'-3" | 8'-9" | 9'-9" | 10'-4" | 12'-0" | 13'-5" | --- |
| 16" | NI-80 | 0'-10" | 2'-0" | 3'-4" | 4'-9" | 6'-2" | 6'-5" | 7'-6" | 9'-0" | 10'-0" | 10'-8" | 12'-4" | 13'-9" | --- |
| | NI-90 | 0'-7" | 0'-8" | 0'-10" | 2'-5" | 4'-0" | 4'-5" | 5'-9" | 7'-5" | 8'-9" | 9'-4" | 11'-4" | 12'-11" | --- |
| | NI-90x | 0'-7" | 0'-8" | 0'-8" | 2'-0" | 3'-9" | 4'-2" | 5'-5" | 7'-3" | 8'-5" | 9'-2" | --- | --- | --- |
| | NI-60 | 0'-7" | 0'-8" | 0'-8" | 1'-6" | 2'-10" | 3'-2" | 4'-2" | 5'-6" | 6'-4" | 7'-0" | 8'-5" | 9'-8" | 10'-2" |
| | NI-70 | 0'-7" | 1'-0" | 2'-3" | 3'-6" | 4'-10" | 5'-3" | 6'-3" | 7'-8" | 8'-6" | 9'-2" | 10'-8" | 12'-0" | 12'-4" |

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

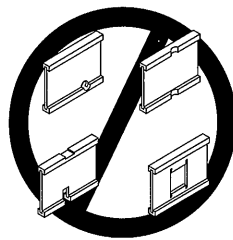
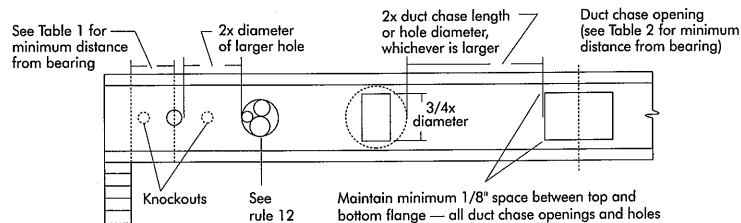
TABLE 2
DUCT CHASE OPENING SIZES AND LOCATIONS

Simple Span Only

| Joist Depth | Joist Series | Minimum distance from inside face of supports to centre of opening (ft - in.) | | | | | | | | | | | | |
|-------------|--------------|---|--------|--------|--------|---------|--------|--------|--------|---------|-----|-----|-----|-----|
| | | Duct Chase Length (in.) | | | | | | | | | | | | |
| | | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 |
| 9-1/2" | NI-20 | 4'-1" | 4'-5" | 4'-10" | 5'-4" | 5'-8" | 6'-1" | 6'-6" | 7'-1" | 7'-5" | --- | --- | --- | --- |
| | NI-40x | 5'-3" | 5'-8" | 6'-0" | 6'-5" | 6'-10" | 7'-3" | 7'-8" | 8'-2" | 8'-6" | --- | --- | --- | --- |
| | NI-60 | 5'-4" | 5'-9" | 6'-2" | 6'-7" | 7'-1" | 7'-5" | 8'-0" | 8'-3" | 8'-9" | --- | --- | --- | --- |
| | NI-70 | 5'-1" | 5'-5" | 5'-10" | 6'-3" | 6'-7" | 7'-1" | 7'-6" | 8'-1" | 8'-4" | --- | --- | --- | --- |
| | NI-80 | 5'-3" | 5'-8" | 6'-0" | 6'-5" | 6'-10" | 7'-3" | 7'-8" | 8'-2" | 8'-6" | --- | --- | --- | --- |
| 11-7/8" | NI-20 | 5'-9" | 6'-2" | 6'-6" | 7'-1" | 7'-5" | 7'-9" | 8'-3" | 8'-9" | 9'-4" | --- | --- | --- | --- |
| | NI-40x | 6'-8" | 7'-2" | 7'-6" | 8'-1" | 8'-6" | 9'-1" | 9'-6" | 10'-1" | 10'-9" | --- | --- | --- | --- |
| | NI-60 | 7'-3" | 7'-8" | 8'-0" | 8'-6" | 9'-0" | 9'-3" | 9'-9" | 10'-3" | 11'-0" | --- | --- | --- | --- |
| | NI-70 | 7'-1" | 7'-4" | 7'-9" | 8'-3" | 8'-7" | 9'-1" | 9'-6" | 10'-1" | 10'-4" | --- | --- | --- | --- |
| | NI-80 | 7'-2" | 7'-7" | 8'-0" | 8'-5" | 8'-10" | 9'-3" | 9'-8" | 10'-2" | 10'-8" | --- | --- | --- | --- |
| 14" | NI-90 | 7'-6" | 7'-11" | 8'-4" | 8'-9" | 9'-2" | 9'-7" | 10'-1" | 10'-7" | 10'-11" | --- | --- | --- | --- |
| | NI-90x | 7'-7" | 8'-1" | 8'-5" | 8'-10" | 9'-4" | 9'-8" | 10'-2" | 10'-8" | 11'-2" | --- | --- | --- | --- |
| | NI-40x | 8'-1" | 8'-7" | 9'-0" | 9'-6" | 10'-1" | 10'-7" | 11'-2" | 12'-0" | 12'-8" | --- | --- | --- | --- |
| | NI-60 | 8'-9" | 9'-3" | 9'-8" | 10'-1" | 10'-6" | 11'-1" | 11'-6" | 13'-3" | 13'-0" | --- | --- | --- | --- |
| | NI-70 | 8'-7" | 9'-1" | 9'-5" | 9'-10" | 10'-4" | 10'-9" | 11'-2" | 11'-7" | 12'-3" | --- | --- | --- | --- |
| 16" | NI-80 | 9'-0" | 9'-3" | 9'-9" | 10'-1" | 10'-7" | 11'-1" | 11'-6" | 12'-1" | 12'-6" | --- | --- | --- | --- |
| | NI-90 | 9'-2" | 9'-8" | 10'-0" | 10'-6" | 10'-11" | 11'-5" | 11'-9" | 12'-4" | 12'-11" | --- | --- | --- | --- |
| | NI-90x | 9'-4" | 9'-9" | 10'-3" | 10'-7" | 11'-1" | 11'-7" | 12'-1" | 12'-7" | 13'-2" | --- | --- | --- | --- |
| | NI-60 | 10'-3" | 10'-8" | 11'-2" | 11'-6" | 12'-1" | 12'-6" | 13'-2" | 14'-1" | 14'-10" | --- | --- | --- | --- |
| | NI-70 | 10'-1" | 10'-5" | 11'-0" | 11'-4" | 11'-10" | 12'-3" | 12'-8" | 13'-3" | 14'-0" | --- | --- | --- | --- |

- Above table may be used for I-joint spacing of 24 inches on centre or less.
- Duct chase opening location distance is measured from inside face of supports to centre of opening.
- The above table is based on simple-span joists only. For other applications, contact your local distributor.
- Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of 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 prescored holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 15 inches on centre along the length of the I-joint. Where possible, it is preferable to use knockouts instead of field-cut holes.

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

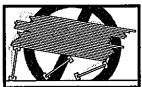
Holes in webs should be cut with a sharp saw.

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

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 unsheathed I-joists. Once sheathed, do not over-stress I-joists with concentrated loads from building materials.

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

AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:

- Brace and nail each I-joint as it is installed, using hangers, blocking panels, rim board, and/or cross-bridging at joist ends. When I-joists are applied continuous over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
 - 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-joint. Nail the bracing to a lateral restraint at the end of each bay. Lap ends of adjoining bracing over at least two I-joists.
 - Or, sheathing (temporary or permanent) can be nailed to the top flange of the first 4 feet of I-joists at the end of the bay.
- For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-bridging.
- Install and fully nail permanent sheathing to each I-joint before placing loads on the floor system. Then, stack building materials over beams or walls only.
- Never install a damaged I-joint.

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

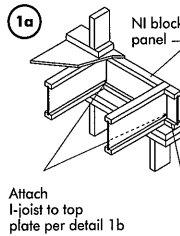


PRODUCT WARRANTY

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

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

1a

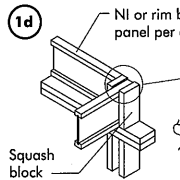


| Blocking Panel or Rim Joist | Maximum Factored Uniform Vertical Load* (plf) |
|-----------------------------|---|
| NI Joists | 3,300 |

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

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)

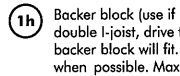
1d



| Pair of Squash Blocks | Maximum Factored Vertical Load per Pair of Squash Blocks (lbs) | |
|-----------------------|--|-------------|
| | 3-1/2" wide | 5-1/2" wide |
| 2x Lumber | 5,500 | 8,500 |
| 1-1/8" Rim Board Plus | 4,300 | 6,600 |

Provide lateral bracing per detail 1a or 1b

1h

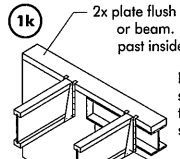


| Flange Width | Material Thickness Required* | Minimum Depth** |
|--------------|------------------------------|-----------------|
| 2-1/2" | 1" | 5-1/2" |
| 3-1/2" | 1-1/2" | 7-1/4" |

* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-O325 or CAN/CSA-O437 Standard.

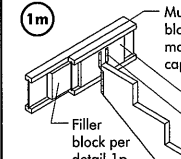
** For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".

1k



Top-mount hanger installed per manufacturer's recommendations

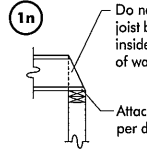
1m



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

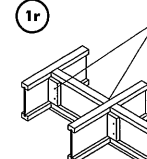
Install hanger per manufacturer's recommendations

1n



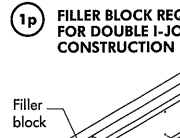
NOTE: Blocking required at bearing for lateral support, not shown for clarity.

1r



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.

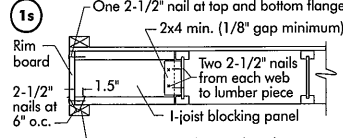
1p



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

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

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



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

All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122" 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.


WEB STIFFENERS

RECOMMENDATIONS:

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

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

| | | | | | |
|---|-------------------------------|---|---|----------------------------|----------|
| A. Project Information | | | | Application number: | |
| Building number, street name | | | | Unit no. | Lot/con. |
| Municipality CITY OF BRAMPTON | | Postal code | Plan number/ other description | | |
| B. Individual who reviews and takes responsibility for design activities | | | | | |
| Name SAM KATSOULAKOS | | | Firm MICRO CITY ENGINEERING SERVICES INC. | | |
| Street address R.R #1, PO BOX 61 | | | | Unit no. | Lot/con. |
| Municipality GLENCOE | Postal code N0L 1M0 | Province ONTARIO | E-mail | | |
| Telephone number (519) 287-2242 Business | | Fax number (519) 287-5750 | Cell number | | |
| C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1. of Division C] | | | | | |
| <div style="display: flex; flex-wrap: wrap;"> <div style="width: 33%;"> <input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings </div> <div style="width: 33%;"> <input type="checkbox"/> HVAC – House <input type="checkbox"/> Building Services <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Fire Protection </div> <div style="width: 33%;"> <input checked="" type="checkbox"/> Building Structural <input type="checkbox"/> Plumbing – House <input type="checkbox"/> Plumbing – All Buildings <input type="checkbox"/> On-site Sewage Systems </div> </div> | | | | | |
| Description of designer's work ROYAL PINE HOMES – FOREST SIDE – MODEL: UNIT 2203 – T3 - ELEV. A OR B 1ST FLOOR – STANDARD (SCHEDULE IS NOT ISSUED AS LOT SPECIFIC) REVIEW PRE-ENGINEERED FLOOR SYSTEM COMPONENT DRAWINGS AND LAYOUT PLACEMENT PLAN SUPPLIED BY TAMARACK ROOF TRUSSES INC. (SEE DWG #TAM31026-18 DATED 11-12-18). SUPPORTING STRUCTURE TO BE REVIEWED AND VERIFIED BY QUALIFIED BUILDING DESIGNER. | | | | | |
| D. Declaration of Designer | | | | | |
| I, <u>SAM KATSOULAKOS</u> declare that (choose one as appropriate): (print name) | | | | | |
| <input checked="" type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. | | | | | |
| Individual BCIN: <u>26064</u> | | | | | |
| Firm BCIN: <u>29991</u> | | | | | |
| <input type="checkbox"/> I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. | | | | | |
| Individual BCIN: _____ | | | | | |
| Basis for exemption from registration: _____ | | | | | |
| <input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code. | | | | | |
| Basis for exemption from registration and qualification: _____ | | | | | |
| I certify that: | | | | | |
| 1. The information contained in this schedule is true to the best of my knowledge. | | | | | |
| 2. I have submitted this application with the knowledge and consent of the firm. | | | | | |
| Date | | 11/22/18 Signature of Designer  | | | |

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

DWG #TAM31026-18
 DWG #TAM 31026-18

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

| | | | | |
|--|-------------------------------------|---|----------------------------|----------|
| A. Project Information | | | Application number: | |
| Building number, street name | | | Unit no. | Lot/con. |
| Municipality CITY OF BRAMPTON | Postal code | Plan number/ other description | | |
| B. Individual who reviews and takes responsibility for design activities | | | | |
| Name SAM KATSOULAKOS | | Firm MICRO CITY ENGINEERING SERVICES INC. | | |
| Street address R.R #1, PO BOX 61 | | | Unit no. | Lot/con. |
| Municipality GLENCOE | Postal code N0L 1M0 | Province ONTARIO | E-mail | |
| Telephone number (519) 287-2242 Business | Fax number (519) 287-5750 | Cell number | | |
| C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1. of Division C] | | | | |
| <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings </div> <div style="width: 30%;"> <input type="checkbox"/> HVAC – House <input type="checkbox"/> Building Services <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Fire Protection </div> <div style="width: 30%;"> <input checked="" type="checkbox"/> Building Structural <input type="checkbox"/> Plumbing – House <input type="checkbox"/> Plumbing – All Buildings <input type="checkbox"/> On-site Sewage Systems </div> </div> | | | | |
| Description of designer's work ROYAL PINE HOMES – FOREST SIDE – MODEL: UNIT 2203 – T3 - ELEV. A OR B 2ND FLOOR (SCHEDULE IS NOT ISSUED AS LOT SPECIFIC) REVIEW PRE-ENGINEERED FLOOR SYSTEM COMPONENT DRAWINGS AND LAYOUT PLACEMENT PLAN SUPPLIED BY TAMARACK ROOF TRUSSES INC. (SEE DWG #TAM31027-18 DATED 11-12-18). SUPPORTING STRUCTURE TO BE REVIEWED AND VERIFIED BY QUALIFIED BUILDING DESIGNER. | | | | |
| D. Declaration of Designer | | | | |
| I, <u>SAM KATSOULAKOS</u> declare that (choose one as appropriate): (print name) | | | | |
| <input checked="" type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. | | | | |
| Individual BCIN: <u>26064</u> | | | | |
| Firm BCIN: <u>29991</u> | | | | |
| <input type="checkbox"/> I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. | | | | |
| Individual BCIN: _____ | | | | |
| Basis for exemption from registration: _____ | | | | |
| <input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code. | | | | |
| Basis for exemption from registration and qualification: _____ | | | | |
| I certify that: | | | | |
| 1. The information contained in this schedule is true to the best of my knowledge. | | | | |
| 2. I have submitted this application with the knowledge and consent of the firm. | | | | |
| Date | | <u>11/21/18</u> Signature of Designer | | |

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d. of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
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DWG #TAM31027-18S
 DWG #TAM 31029-18S

11/23/18

NORDIC STRUCTURES

COMPANY
Apr. 25, 2017 16:48

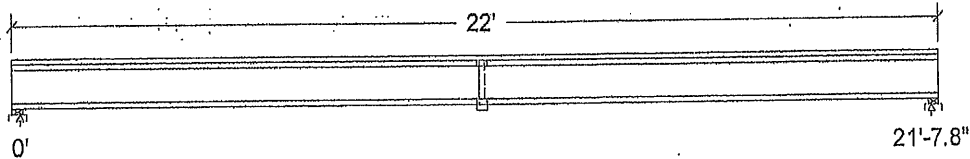
PROJECT
J3.2nd FLOOR
NORDIC SIZER

Design Check Calculation Sheet Nordic Sizer - Canada 6.4

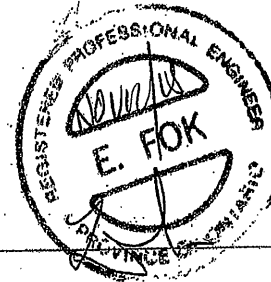
Loads:

| Load | Type | Distribution | Pat-tern | Location [ft] Start End | Magnitude Start End | Unit |
|-------------|------|--------------|----------|----------------------------|------------------------|------|
| Load1 | Dead | Full Area | | | 20.00 | psf |
| Load2 | Live | Full Area | | | 40.00 | psf |
| Self-weight | Dead | Full UDL | | | 3.4 | plf |

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



| | | | |
|-------------|-------|--|-------|
| Unfactored: | | | |
| Dead | 254 | | 254 |
| Live | 433 | | 433 |
| Factored: | | | |
| Total | 967 | | 967 |
| Bearing: | | | |
| Resistance | | | |
| Joist | 2243 | | 2243 |
| Support | 7426 | | 7426 |
| Des ratio | | | |
| Joist | 0.43 | | 0.43 |
| Support | 0.13 | | 0.13 |
| Load case | #2 | | #2 |
| Length | 3 | | 3 |
| Min req'd | 1-3/4 | | 1-3/4 |
| Stiffener | No | | No |
| Kd | 1.00 | | 1.00 |
| KB support | 1.00 | | 1.00 |
| fcp sup | 769 | | 769 |
| Kzcp sup | 1.15 | | 1.15 |



Nordic 11-7/8" NI-80 Floor joist @ 12" o.c.

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

Total length: 22'; 5/8" nailed and glued OSB sheathing with 1 row of blocking; strapping at blocking locations and 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 = 967 | Vr = 2336 | lbs | Vf/Vr = 0.41 |
| Moment (+) | Mf = 5231 | Mr = 11609 | lbs-ft | Mf/Mr = 0.45 |
| Perm. Defl'n | 0.21 = <L/999 | 0.72 = L/360 | in | 0.29 |
| Live Defl'n | 0.36 = L/724 | 0.54 = L/480 | in | 0.66 |
| Total Defl'n | 0.57 = L/456 | 1.08 = L/240 | in | 0.53 |
| Bare Defl'n | 0.40 = L/653 | 0.72 = L/360 | in | 0.55 |
| Vibration | Lmax = 21'-8 | Lv = 23'-6 | ft | |
| Defl'n | = 0.026 | = 0.031 | in | 0.84 |

JWG NO. YAM8557 - 18/11/12
STRUCTURAL
COMPONENT ONLY

T-18/11/12

Additional Data:

| FACTORS: | f/E | KD | KH | KZ | KL | KT | KS | KN | LC# |
|----------|---------------|------|------|----|-------|----|----|----|-----|
| Vr | 2336 | 1.00 | 1.00 | - | - | - | - | - | #2 |
| Mr+ | 11609 | 1.00 | 1.00 | - | 1.000 | - | - | - | #2 |
| EI | 547.1 million | - | - | - | - | - | - | - | #2 |

CRITICAL LOAD COMBINATIONS:

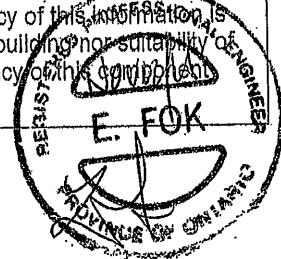
Shear : LC #2 = 1.25D + 1.5L
 Moment(+) : LC #2 = 1.25D + 1.5L
 Deflection: LC #1 = 1.0D (permanent)
 LC #2 = 1.0D + 1.0L (live)
 LC #2 = 1.0D + 1.0L (total)
 LC #2 = 1.0D + 1.0L (bare joist)
 Bearing : Support 1 - LC #2 = 1.25D + 1.5L
 Support 2 - LC #2 = 1.25D + 1.5L
 Load Types: D=dead W=wind S=snow H=earth,groundwater E=earthquake
 L=live(use,occupancy) Ls=live(storage,equipment) f=fire
 All Load Combinations (LCs) are listed in the Analysis output

CALCULATIONS:

Deflection: EIEff = 613e06 lb-in² K= 6.18e06 lbs
 "Live" deflection = Deflection from all non-dead loads (live, wind, snow...)

Design Notes:

1. WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC Part 4) and the CSA Q88-09 Engineering Design in Wood standard, which includes Update No.1. CONFORMS TO OBC 2012
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer to 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 or suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of this component based on the design criteria and loadings shown.



DWG NO. TAM 0557-18#
 STRUCTURAL
 COMPONENT ONLY

T-18113726



Boise Cascade

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement/Flush Beams/B1(i878)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

April 25, 2017 16:35:26

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports:

CCMC 12472-R

File Name: UNIT 2203 T3.mmdl

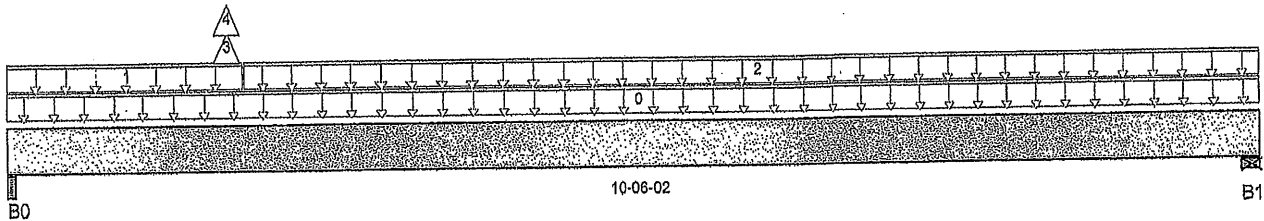
Description: Designs\Flush Beams\Basement\Flush Beams\B1(i878)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 10-06-02

Reaction Summary (Down / Uplift) (lbs)

| Bearing | Live | Dead | Snow | Wind |
|------------|-----------|---------|------|------|
| B0, 2-5/8" | 275 / 817 | 0 / 176 | | |
| B1, 2-3/8" | 174 / 160 | 76 / 0 | | |

Load Summary

| Tag | Description | Load Type | Ref. | Start | End | Live 1.00 | Dead 0.65 | Snow 1.00 | Wind 1.15 | Trib. |
|-----|--------------------|-------------------|------|----------|----------|-----------|-----------|-----------|-----------|-------|
| 0 | FC1 Floor Material | Unf. Lin. (lb/ft) | L | 00-00-00 | 10-06-02 | 23 | 12 | | | n/a |
| 1 | FC1 Floor Material | Unf. Lin. (lb/ft) | L | 00-00-00 | 01-11-12 | 17 | 8 | | | n/a |
| 2 | FC1 Floor Material | Unf. Lin. (lb/ft) | L | 01-11-12 | 10-06-02 | 6 | 3 | | | n/a |
| 3 | B2(i874) | Conc. Pt. (lbs) | L | 01-10-00 | 01-10-00 | 123 | -389 | | | n/a |
| 4 | B2(i874) | Conc. Pt. (lbs) | L | 01-10-00 | 01-10-00 | -977 | | | | n/a |

Controls Summary

| | Factored Demand | Factored Resistance | Demand / Resistance | Load Case | Location |
|------------------|-----------------|---------------------|---------------------|-----------|-----------|
| Pos. Moment | 780 ft-lbs | 38,727 ft-lbs | 2% | 1 | 05-10-00 |
| Neg. Moment | -2,488 ft-lbs | -38,727 ft-lbs | 6.4% | 2 | 01-10-00 |
| End Shear | 1,414 lbs | 14,464 lbs | 9.8% | 2 | 01-02-08 |
| Uplift | 1,444 lbs | n/a | n/a | 2 | 00-00-00 |
| Total Load Defl. | L/999 (0.009") | n/a | n/a | 6 | 05-06-07 |
| Live Load Defl. | L/999 (-0.019") | n/a | n/a | 9 | 04-06-016 |
| Total Neg. Defl. | L/999 (-0.019") | n/a | n/a | 7 | 04-03-05 |
| Max Defl. | -0.019" | n/a | n/a | 7 | 04-03-05 |
| Span / Depth | 10.3 | n/a | n/a | | 00-00-00 |

| Bearing Supports | Dim. (L x W) | Demand | Demand / Resistance Support | Demand / Resistance Member | Material |
|------------------|-----------------|-----------|-----------------------------|----------------------------|-------------|
| B0 Beam | 2-5/8" x 3-1/2" | 1,445 lbs | 36.8% | 12.9% | Unspecified |
| B1 Wall/Plate | 2-3/8" x 3-1/2" | 356 lbs | 10% | 3.5% | Unspecified |

Cautions

Uplift of 1,444 lbs found at span 1 - Left. (SIMPSON 2425A R. 07.30)

Notes

DWG NO. TAN B556-184
STRUCTURAL
COMPONENT ONLY

TUB373



Boise Cascade

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement/Flush Beams\B1(i878)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

April 25, 2017 16:35:26

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2203 T3.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B1(i878)

Specifier:

Designer: AJ

Company:

Msc:

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 2010 and CSA O86.

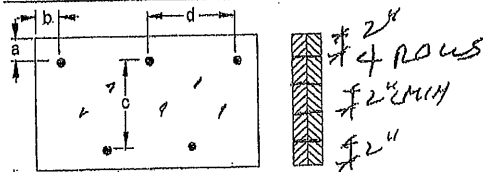
Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012**Disclosure**

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here 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 1-800-964-6999 before installation.

BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BC®, BOISE GLULAM™, SIMPLE FRAMING SYSTEM®, VERSA-LAM®, VERSA-RIM PLUS®, VERSA-RIM®, VERSA-STRAND®, VERSA-STUD® are trademarks of Boise Cascade Wood Products L.L.C.

Connection Diagram

a minimum = 2" c = 7-7/8"

b minimum = 3"

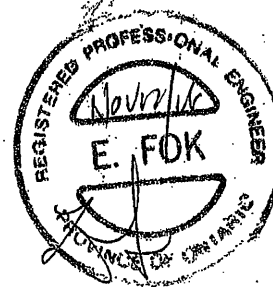
d = 6"

Calculated Side Load = 168.1 lb/ft

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

Connectors are: 1 Nails

3-1/2" ARDOX SPIRAL



DWG NO. TAM 0558-104
STRUCTURAL
COMPONENT ONLY

T-18137362



Boise Cascade

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B2(i874)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

April 25, 2017 16:35:27

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports:

CCMC 12472-R

File Name: UNIT 2203 T3.mmdl

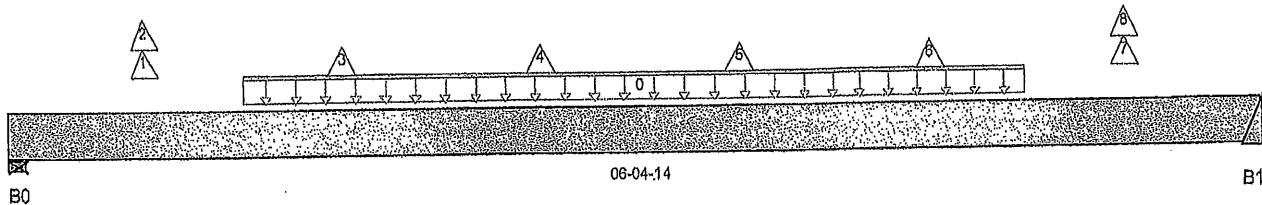
Description: Designs\Flush Beams\Basement\Flush Beams\B2(i874)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 06-04-14

Reaction Summary (Down / Uplift) (lbs)

| Bearing | Live | Dead | Snow | Wind |
|------------|-----------|---------|------|------|
| B0, 4-3/8" | 130 / 979 | 0 / 384 | | |
| B1 | 125 / 991 | 0 / 395 | | |

Load Summary

| Tag | Description | Load Type | Ref. | Start | End | Live 1.00 | Dead 0.65 | Snow 1.00 | Wind 1.15 | Trib. |
|-----|---------------|-------------------|------|----------|----------|--------------|--------------|--------------|--------------|-------|
| 0 | Smoothed Load | Unf. Lin. (lb/ft) | L | 01-02-08 | 05-02-08 | 44 | | | | n/a |
| 1 | J1(i879) | Conc. Pt. (lbs) | L | 00-08-08 | 00-08-08 | 38 | -109 | | | n/a |
| 2 | J1(i879) | Conc. Pt. (lbs) | L | 00-08-08 | 00-08-08 | -255 | | | | n/a |
| 3 | J1(i833) | Conc. Pt. (lbs) | L | 01-08-08 | 01-08-08 | -343 | -149 | | | n/a |
| 4 | J1(i847) | Conc. Pt. (lbs) | L | 02-08-08 | 02-08-08 | -343 | -149 | | | n/a |
| 5 | J1(i850) | Conc. Pt. (lbs) | L | 03-08-08 | 03-08-08 | -343 | -149 | | | n/a |
| 6 | J1(i789) | Conc. Pt. (lbs) | L | 04-08-08 | 04-08-08 | -343 | -149 | | | n/a |
| 7 | J1(i829) | Conc. Pt. (lbs) | L | 05-08-08 | 05-08-08 | 41 | -15 | | | n/a |
| 8 | J1(i829) | Conc. Pt. (lbs) | L | 05-08-08 | 05-08-08 | -343 | | | | n/a |

| Controls Summary | Factored Demand | Factored Resistance | Demand / Resistance | Load Case | Location |
|------------------|-----------------|---------------------|---------------------|-----------|----------|
| Neg. Moment | -3,083 ft-lbs | -38,727 ft-lbs | 8% | 2 | 03-08-08 |
| End Shear | 1,967 lbs | 14,464 lbs | 13.6% | 2 | 05-03-00 |
| Uplift | 1,980 lbs | n/a | n/a | 2 | 03-04-14 |
| Live Load Defl. | L/999 (-0.01") | n/a | n/a | 9 | 03-04-00 |
| Total Neg. Defl. | L/999 (-0.014") | n/a | n/a | 7 | 03-04-00 |
| Max Defl. | -0.014" | n/a | n/a | 7 | 03-04-00 |
| Span / Depth | 6.1 | n/a | n/a | | 00-00-00 |

| Bearing Supports | Dim. (L x W) | Demand | Demand / Resistance Support | Demand / Resistance Member | Material |
|------------------|-----------------|-----------|-----------------------------|----------------------------|-------------|
| B0 Wall/Plate | 4-3/8" x 3-1/2" | 1,949 lbs | 29.8% | 10.4% | Unspecified |
| B1 Hanger | 2" x 3-1/2" | 0 lbs | n/a | 23.2% | Hanger |
| B1 Hanger Uplift | 2" x 3-1/2" | 1,980 lbs | n/a | 0.19 | Hanger |

Cautions

Uplift of 1,980 lbs found at span 1 - Right. (SIMPSON H6V5410 @ B1)

Notes

DWG NO. YAW 0559-718 4
STRUCTURAL
COMPONENT ONLY
P616

TL81374



Boise Cascade

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement Flush Beams\B2(1874)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

April 25, 2017 16:35:27

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2203 T3.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B2(1874

Specifier:

Designer: AJ

Company:

Misc:

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

Calculations assume member is fully braced.

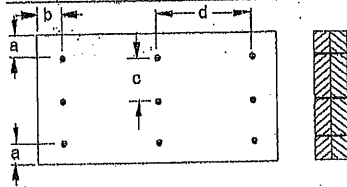
Resistance Factor phi has been applied to all presented results per CSA O86.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.

CONFORMS TO OBC 2012

Importance Factor: Normal Part code: Part 9

Connection Diagram

a minimum = 2" c = 3-15/16"

b minimum = 3" d = 6"

Calculated Side Load = 568.6 lb/ft

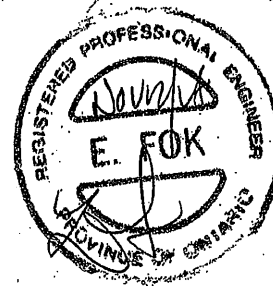
Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Connectors are: Nails

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

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here 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 1-800-964-6999 before installation.

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DWGN. TAM B559-18 H
STRUCTURAL
COMPONENT ONLY

T-181137461



Boise Cascade

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B3(i812)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

April 25, 2017 16:35:27

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports:

CCMC 12472-R

File Name: UNIT 2203 T3.mmdl

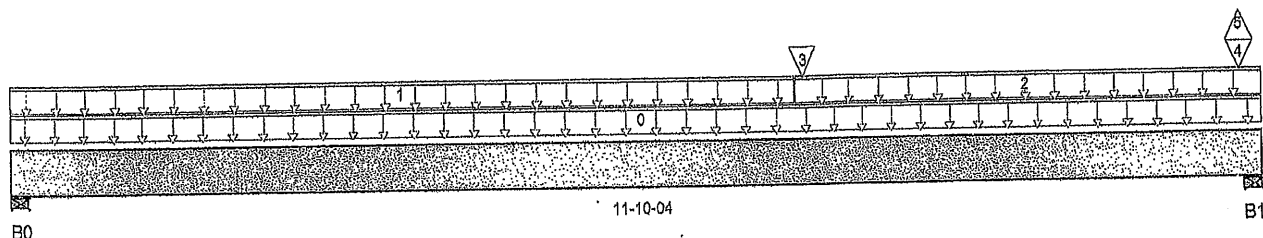
Description: Designs\Flush Beams\Basement\Flush Beams\B3(i812)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 11-10-04

Reaction Summary (Down / Uplift) (lbs)

| Bearing | Live | Dead | Snow | Wind |
|------------|-----------|---------|------|------|
| B0, 2-3/8" | 279 / 0 | 213 / 0 | | |
| B1, 5-3/8" | 980 / 305 | 560 / 0 | | |

Load Summary

| Tag | Description | Load Type | Ref. | Start | End | Live 1.00 | Dead 0.65 | Snow 1.00 | Wind 1.15 | Trib. |
|-----|--------------------|-------------------|------|----------|----------|--------------|--------------|--------------|--------------|-------|
| 0 | FC1 Floor Material | Unf. Lin. (lb/ft) | L | 00-00-00 | 11-10-04 | 10 | 5 | | | n/a |
| 1 | FC1 Floor Material | Unf. Lin. (lb/ft) | L | 00-00-00 | 07-04-08 | 6 | 3 | | | n/a |
| 2 | FC1 Floor Material | Unf. Lin. (lb/ft) | L | 07-04-08 | 11-10-04 | 24 | 12 | | | n/a |
| 3 | B8(i894) | Conc. Pt. (lbs) | L | 07-05-06 | 07-05-06 | 494 | 256 | | | n/a |
| 4 | 2(i246) | Conc. Pt. (lbs) | L | 11-07-09 | 11-07-09 | 500 | 241 | | | n/a |
| 5 | 2(i246) | Conc. Pt. (lbs) | L | 11-07-09 | 11-07-09 | -305 | | | | n/a |

Controls Summary

| | Factored Demand | Factored Resistance | Demand / Resistance | Load Case | Location |
|------------------|-----------------|---------------------|---------------------|-----------|----------|
| Pos. Moment | 3,667 ft-lbs | 38,727 ft-lbs | 9.5% | 1 | 07-05-06 |
| End Shear | 995 lbs | 14,464 lbs | 6.9% | 1 | 10-05-06 |
| Total Load Defl. | L/999 (0.052") | n/a | n/a | 6 | 06-02-09 |
| Live Load Defl. | L/999 (0.032") | n/a | n/a | 8 | 06-02-09 |
| Max Defl. | 0.052" | n/a | n/a | 6 | 06-02-09 |
| Span / Depth | 11.5 | n/a | n/a | | 00-00-00 |

Bearing Supports

| | Dim. (L x W) | Demand | Demand / Resistance Support | Demand / Resistance Member | Material |
|---------------|-----------------|-----------|-----------------------------|----------------------------|-------------|
| B0 Wall/Plate | 2-3/8" x 3-1/2" | 684 lbs | 19.3% | 6.7% | Unspecified |
| B1 Wall/Plate | 5-3/8" x 3-1/2" | 2,170 lbs | 27% | 9.5% | Unspecified |

Notes

DWG NO. TAM B560-18 H
STRUCTURAL
COMPONENT ONLY

T-211375



Boise Cascade

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement/Flush Beams/B3(i812)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

April 25, 2017 16:35:27

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT2203 T3.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B3(i812

Specifier:

Designer: AJ

Company:

Misc:

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 2010 and CSA O86.

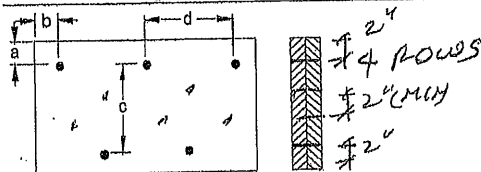
Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012**Disclosure**

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Connection Diagram

a minimum = 2" c = 7-7/8"

b minimum = 3"

d = 4"

Calculated Side Load = 89.5 lb/ft

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

Connectors are: 1 Nails

3-1/2" ARDOX SPIRAL

DWG NO. TAW B560-18H
STRUCTURAL
COMPONENT ONLY P62

T-1813756



Boise Cascade

Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement/Flush Beams/B4(i900)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

April 25, 2017 16:35:27

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2203 T3.mmdl

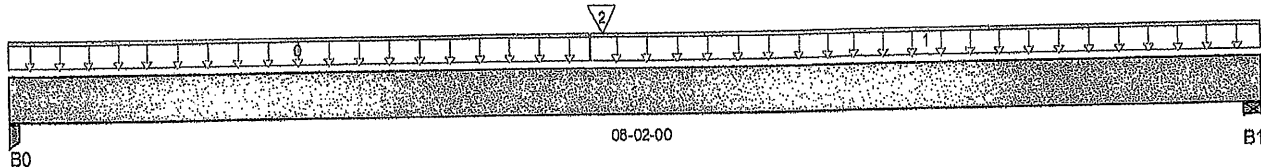
Description: Designs\Flush Beams\Basement\Flush Beams\B4(i900)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 08-02-00

Reaction Summary (Down / Uplift) (lbs)

| Bearing | Live | Dead | Snow | Wind |
|------------|---------|---------|------|------|
| B0, 1-3/4" | 311 / 0 | 184 / 0 | | |
| B1, 4-3/8" | 337 / 0 | 198 / 0 | | |

Load Summary

| Tag | Description | Load Type | Ref. | Start | End | Live | Dead | Snow | Wind | Trib. |
|-----|--------------------|-------------------|------|----------|----------|------|------|------|------|-------|
| 0 | FC1 Floor Material | Unf. Lin. (lb/ft) | L | 00-00-00 | 03-09-04 | 9 | 4 | | | n/a |
| 1 | FC1 Floor Material | Unf. Lin. (lb/ft) | L | 03-09-04 | 08-02-00 | 27 | 13 | | | n/a |
| 2 | B8 (i894) | Conc. Pt. (lbs) | L | 03-10-02 | 03-10-02 | 499 | 259 | | | n/a |

Controls Summary

| | Factored Demand | Factored Resistance | Demand / Resistance | Load Case | Location |
|------------------|-----------------|---------------------|---------------------|-----------|----------|
| Pos. Moment | 2,433 ft-lbs | 19,364 ft-lbs | 12.6% | 1 | 03-10-02 |
| End Shear | 668 lbs | 7,232 lbs | 9.2% | 1 | 01-01-10 |
| Total Load Defl. | L/999 (0.032") | n/a | n/a | 4 | 03-11-04 |
| Live Load Defl. | L/999 (0.02") | n/a | n/a | 5 | 03-11-04 |
| Max Defl. | 0.032" | n/a | n/a | 4 | 03-11-04 |
| Span / Depth | 7.9 | n/a | n/a | | 00-00-00 |

Disclosure

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Bearing Supports

| | D/m. (L x W) | Demand | Demand / Resistance Support | Demand / Resistance Member | Material |
|---------------|-----------------|---------|-----------------------------|----------------------------|-------------|
| B0 Post | 1-3/4" x 1-3/4" | 698 lbs | 35.1% | 18.7% | Unspecified |
| B1 Wall/Plate | 4-3/8" x 1-3/4" | 754 lbs | 23% | 8.1% | Unspecified |

Notes

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

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

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

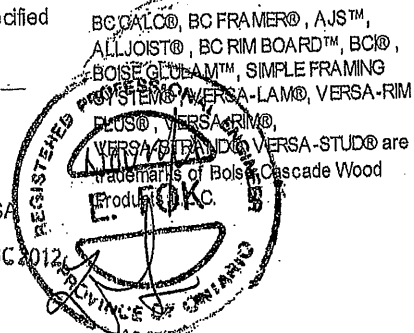
Resistance Factor phi has been applied to all presented results per CSA O86.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012



BY: DWG NO. TAM B561-18 67
STRUCTURAL
COMPONENT ONLY

T-411376



Boise Cascade

Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B5(i910)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

April 25, 2017 16:35:27

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports:

CCMC 12472-R

File Name: UNIT 2203 T3.mmdl

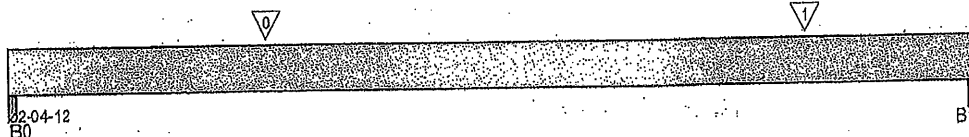
Description: Designs\Flush Beams\Basement\Flush Beams\B5(i910)

Specifier:

Designer: . AJ

Company:

Msc:



Total Horizontal Product Length = 02-04-12

Reaction Summary (Down / Uplift) (lbs)

| Bearing | Live | Dead | Snow | Wind |
|------------|---------|--------|------|------|
| B0, 3-1/2" | 139 / 0 | 77 / 0 | | |
| B1, 3-1/2" | 161 / 0 | 88 / 0 | | |

Load Summary

| Tag Description | Load Type | Ref. | Start | End | Live 1.00 | Dead 0.85 | Snow 1.00 | Wind 1.15 | Trib. |
|-----------------|-----------------|------|----------|----------|--------------|--------------|--------------|--------------|-------|
| 0 J5(i908) | Conc. Pt. (lbs) | L | 00-07-10 | 00-07-10 | 158 | 79 | | | n/a |
| 1 J5(i909) | Conc. Pt. (lbs) | L | 01-11-10 | 01-11-10 | 142 | 71 | | | n/a |

| Controls Summary | Factored Demand | Factored Resistance | Demand / Resistance | Load Case | Location |
|------------------|-----------------|---------------------|---------------------|-----------|----------|
| Pos. Moment | 123 ft-lbs | 19,364 ft-lbs | 0.6% | 1 | 00-07-10 |
| End Shear | 80 lbs | 7,232 lbs | 1.1% | 1 | 01-01-06 |
| Total Load Defl. | L/999 (0") | n/a | n/a | 4 | 01-01-14 |
| Live Load Defl. | L/999 (0") | n/a | n/a | 5 | 01-01-14 |
| Max Defl. | 0" | n/a | n/a | 4 | 01-01-14 |
| Span / Depth | 2 | n/a | n/a | | 00-00-00 |

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here 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 1-800-964-6999 before installation.

| Bearing Supports | Dim. (L x W) | Demand | Demand / Resistance Support | Demand / Resistance Member | Material |
|------------------|-----------------|---------|-----------------------------|----------------------------|-------------|
| B0 Post | 3-1/2" x 1-3/4" | 305 lbs | 7.7% | 4.1% | Unspecified |
| B1 Post | 3-1/2" x 1-3/4" | 350 lbs | 8.8% | 4.7% | Unspecified |

Notes

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

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

Calculations assume member is fully braced.

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

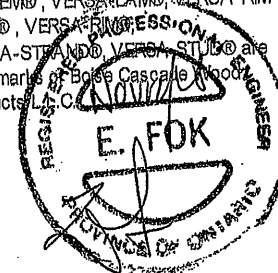
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

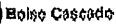
CONFORMS TO OBC 2012

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DWG NO. TAM B562-184
STRUCTURAL
COMPONENT ONLY

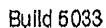
T-1811377



Dry | 1 span | No cantilevers | 0/12 slope (deg)

April 25, 2017 16:35:28

BC CALC® Design Report



Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports:

CCMC 12472-R

File Name: UNIT 2203 T3.mmdl

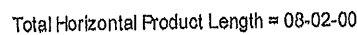
Description: Designs\Flush Beams\Basment\Flush Beams\B6(1898)

Specifier:

Designer: AJ

Company:

Misc:



Reaction Summary (Down / Uplift) (lbs)

| Bearing | Live | Dead | Snow | Wind |
|------------|-------|-------|------|------|
| B0, 1-3/4" | 488/0 | 265/0 | | |
| B1, 4-3/8" | 267/0 | 161/0 | | |

Load Summary

| Tag Description | Load Type | Ref. | Start | End | 1.00 | 0.66 | 1.00 | 1.10 | |
|----------------------|-------------------|------|----------|----------|------|------|------|------|-----|
| 0 FC1 Floor Material | Unf. Lin. (lb/ft) | L | 00-00-00 | 02-03-04 | 13 | 6 | | | n/a |
| 1 FC1 Floor Material | Unf. Lin. (lb/ft) | L | 02-03-04 | 08-02-00 | 27 | 13 | | | n/a |
| 2 B9(902) | Conc. Pt. (lbs) | L | 02-04-02 | 02-04-02 | 549 | 284 | | | n/a |

Controls Summary

| Controls Summary | Factored Demand | Factored Resistance | Demand / Resistance | Load Case | Location |
|------------------|-----------------|---------------------|---------------------|-----------|----------|
| Pos. Moment | 2,240 ft-lbs | 19,384 ft-lbs | 11.6% | 1 | 02-04-02 |
| End Shear | 994 lbs | 7,232 lbs | 13.7% | 1 | 01-01-10 |
| Total Load Defl. | L/999 (0.03") | n/a | n/a | 4 | 03-08-01 |
| Live Load Defl. | L/999 (0.019") | n/a | n/a | 5 | 03-08-01 |
| Max Defl. | 0.03" | n/a | n/a | 4 | 03-08-01 |
| Span / Depth | 7.9 | n/a | n/a | | 00-00-00 |

Bearing Supports

| Bearing Supports | | Dim. (L x W) | Demand | Support | Member | Material |
|------------------|------------|-----------------|-----------|---------|--------|-------------|
| B0 | Post | 1-3/4" x 1-3/4" | 1,033 lbs | 51.9% | 27.6% | Unspecified |
| B1 | Wall/Plate | 4-3/8" x 1-3/4" | 602 lbs | 18.4% | 6.4% | Unspecified |

Notes

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

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

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

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

Resistance Factor ϕ has been applied to all presented results per CSA C308.
BC CAI C® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA

BC C
086.

Design based on Dry Service Condition.

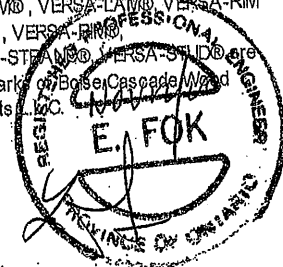
Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here 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 1-800-964-6999 before installation.

BC CALO®, BC FRAMER®, AJ8™,
ALLJOIST®, BC RIM BOARD™, BC®,
BOISE GLULAM™, SIMPLE FRAMING
SYSTEM®, VERSA-LAM®, VERSA-RIM
FLUS®, VERSA-RIM®,
VERSA-STAND®, VERSA-STUD® are
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Products, L.C.



DWG NO. TMC 8563.184
STRUCTURAL
COMPONENT ONLY

T-1811378



Boise Cascade

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement/Flush Beams/B7(1775)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

April 25, 2017 16:35:28

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2203 T3.mmdl

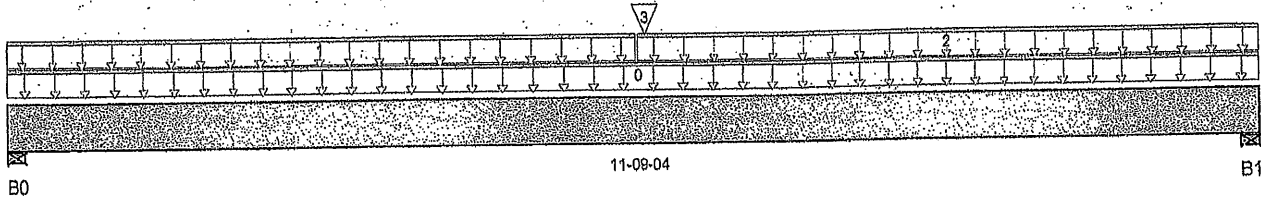
Description: Designs\Flush Beams\Basement\Flush Beams\B7(1775)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 11-09-04

Reaction Summary (Down / Uplift) (lbs)

| Bearing | Live | Dead | Snow | Wind |
|------------|---------|---------|------|------|
| B0, 2-3/8" | 425 / 0 | 287 / 0 | | |
| B1, 4-3/8" | 512 / 0 | 333 / 0 | | |

Load Summary

| Tag | Description | Load Type | Ref. | Start | End | Live 1.00 | Dead 0.65 | Snow 1.00 | Wind 1.15 | Trib. |
|-----|--------------------|-------------------|------|----------|----------|--------------|--------------|--------------|--------------|-------|
| 0 | FC1 Floor Material | Unf. Lin. (lb/ft) | L | 00-00-00 | 11-09-04 | 19 | 9 | | | n/a |
| 1 | FC1 Floor Material | Unf. Lin. (lb/ft) | L | 00-00-00 | 05-10-08 | 6 | 3 | | | n/a |
| 2 | FC1 Floor Material | Unf. Lin. (lb/ft) | L | 05-10-08 | 11-09-04 | 28 | 14 | | | n/a |
| 3 | B9(1902) | Conc. Pt. (lbs) | L | 05-11-06 | 05-11-06 | 517 | 268 | | | n/a |

Controls Summary

| | Factored Demand | Factored Resistance | Demand / Resistance | Load Case | Location |
|------------------|-----------------|---------------------|---------------------|-----------|----------|
| Pos. Moment | 4,601 ft-lbs | 38,727 ft-lbs | 11.9% | 1 | 05-11-06 |
| End Shear | 1,029 lbs | 14,464 lbs | 7.1% | 1 | 10-05-00 |
| Total Load Defl. | L/999 (0.067") | n/a | n/a | 4 | 05-10-08 |
| Live Load Defl. | L/999 (0.041") | n/a | n/a | 5 | 05-10-08 |
| Max Defl. | 0.067" | n/a | n/a | 4 | 05-10-08 |
| Span / Depth | 11.5 | n/a | n/a | | 00-00-00 |

Bearing Supports

| | Dim. (L x W) | Demand | Demand / Resistance Support | Demand / Resistance Member | Material |
|---------------|-----------------|-----------|-----------------------------|----------------------------|-------------|
| B0 Wall/Plate | 2-3/8" x 3-1/2" | 996 lbs | 28% | 9.8% | Unspecified |
| B1 Wall/Plate | 4-3/8" x 3-1/2" | 1,183 lbs | 18.1% | 6.3% | Unspecified |

Notes

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

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

Calculations assume member is fully braced.

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

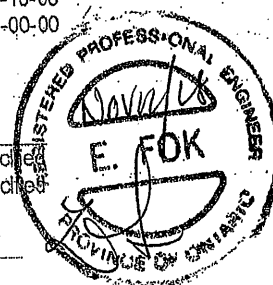
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA

O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO QBC 2012



DWG NO. TAMBS64-TB1
STRUCTURAL
COMPONENT ONLY
P614

T-1811379



Bolsé Cascade Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement/Flush Beams\B7(1775)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

April 25, 2017 16:35:28

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports:

CCMC 12472-R

File Name: UNIT 2203 T3.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B7(1775

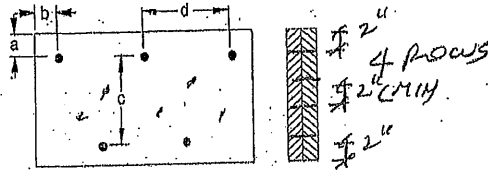
Specifier:

Designer: AJ

Company:

Misc:

Connection Diagram



a minimum = 2" c = 7-7/8"
b minimum = 3" d = 6"

Calculated Side Load = 94.3 lb/ft

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

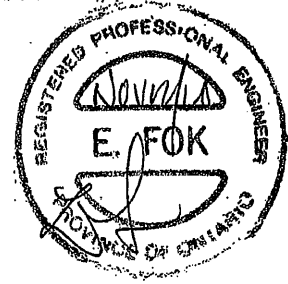
Connectors are: Nails

3-1/2" ARDOX SPIRAL

Disclosure

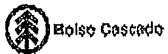
Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of Bolsé Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call 1-800-964-6999 before installation.

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DWG NO. TAM 056418 64
STRUCTURAL
COMPONENT ONLY

T-1811379611



Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement/Flush Beams/B8(1894)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

April 25, 2017 16:35:28

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports:

CCMC 12472-R

File Name: UNIT 2203 T3.mmdl

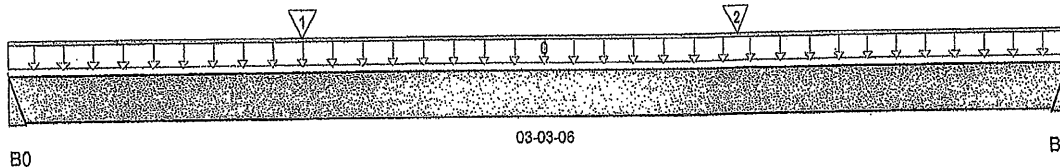
Description: Designs\Flush Beams\Basement\Flush Beams\B8(1894)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 03-03-06

Reaction Summary (Down / Uplift) (lbs)

| Bearing | Live | Dead | Snow | Wind |
|---------|-------|-------|------|------|
| B0 | 499/0 | 259/0 | | |
| B1 | 494/0 | 256/0 | | |

Load Summary

| Tag | Description | Load Type | Ref. | Start | End | Live | Dead | Snow | Wind | Trib. |
|-----|-------------|-------------------|------|----------|----------|------|------|------|------|-------|
| 0 | User Load | Unf. Lin. (lb/ft) | L | 00-00-00 | 03-03-06 | 240 | 120 | | | n/a |
| 1 | J6(1905) | Conc. Pt. (lbs) | L | 00-10-14 | 00-10-14 | 98 | 49 | | | n/a |
| 2 | J6(1896) | Conc. Pt. (lbs) | L | 02-02-14 | 02-02-14 | 107 | 53 | | | n/a |

Controls Summary

| | Factored Demand | Factored Resistance | Demand / Resistance | Load Case | Location |
|------------------|-----------------|---------------------|---------------------|-----------|----------|
| Pos. Moment | 801 ft-lbs | 19,364 ft-lbs | 4.1% | 1 | 01-08-01 |
| End Shear | 436 lbs | 7,232 lbs | 6% | 1 | 02-01-08 |
| Total Load Defl. | L/999 (0.002") | n/a | n/a | 4 | 01-07-11 |
| Live Load Defl. | L/999 (0.001") | n/a | n/a | 5 | 01-07-11 |
| Max Defl. | 0.002" | n/a | n/a | 4 | 01-07-11 |
| Span / Depth | 3.1 | n/a | n/a | | 00-00-00 |

Bearing Supports

| | Dim. (L x W) | Demand | Demand / Resistance Support | Demand / Resistance Member | Material |
|-----------|--------------|-----------|-----------------------------|----------------------------|----------|
| B0 Hanger | 2" x 1-3/4" | 1,072 lbs | n/a | 25.1% | Hanger |
| B1 Hanger | 2" x 1-3/4" | 1,061 lbs | n/a | 24.8% | Hanger |

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 2010 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

Disclosure

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DWG NO. TAM B565-10 H
STRUCTURAL
COMPONENT ONLY

T-1011380



Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B9(i902)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

April 25, 2017 16:35:28

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2203 T3.mmdl

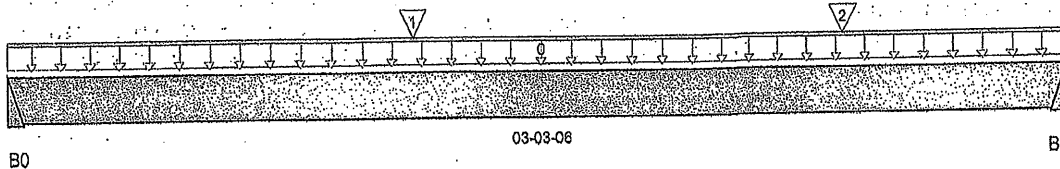
Description: Designs\Flush Beams\Basement\Flush Beams\B9(i902)

Specifier:

Designer: AJ

Company:

Msc:



Total Horizontal Product Length = 03-03-06

Reaction Summary (Down / Uplift) (lbs)

| Bearing | Live | Dead | Snow | Wind |
|---------|---------|---------|------|------|
| B0 | 516 / 0 | 267 / 0 | | |
| B1 | 550 / 0 | 284 / 0 | | |

Load Summary

| Tag | Description | Load Type | Ref. | Start | End | Live | Dead | Snow | Wind | Trib. |
|-----|-------------|-------------------|------|----------|----------|------|------|------|------|-------|
| 0 | User Load | Unf. Lin. (lb/ft) | L | 00-00-00 | 03-03-06 | 240 | 120 | | | n/a |
| 1 | J6(i901) | Conc. Pt. (lbs) | L | 01-03-00 | 01-03-00 | 157 | 78 | | | n/a |
| 2 | J6(i899) | Conc. Pt. (lbs) | L | 02-07-00 | 02-07-00 | 121 | 60 | | | n/a |

Controls Summary

| | Factored Demand | Factored Resistance | Demand / Resistance | Load Case | Location |
|------------------|-----------------|---------------------|---------------------|-----------|----------|
| Pos. Moment | 883 ft-lbs | 19,364 ft-lbs | 4.6% | 1 | 01-06-05 |
| End Shear | 509 lbs | 7,232 lbs | 7% | 1 | 01-01-14 |
| Total Load Defl. | L/999 (0.002") | n/a | n/a | 4 | 01-07-10 |
| Live Load Defl. | L/999 (0.001") | n/a | n/a | 5 | 01-07-10 |
| Max Defl. | 0.002" | n/a | n/a | 4 | 01-07-10 |
| Span / Depth | 3.1 | n/a | n/a | | 00-00-00 |

Disclosure

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Bearing Supports

| | Dim. (L x W) | Demand | Demand / Resistance Support | Demand / Resistance Member | Material |
|-----------|--------------|-----------|-----------------------------|----------------------------|----------|
| B0 Hanger | 2" x 1-3/4" | 1,107 lbs | n/a | 25.9% | Hanger |
| B1 Hanger | 2" x 1-3/4" | 1,180 lbs | n/a | 27.6% | Hanger |

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.

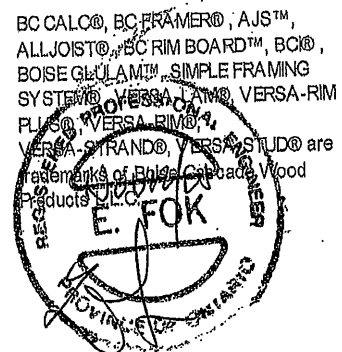
Resistance Factor phi has been applied to all presented results per CSA O86.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO QBC 2012



DWG NO. TAM0566-18 H
STRUCTURAL
COMPONENT ONLY

T-1811381



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B10(i907)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

April 25, 2017 16:35:28

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2203 T3.mmdl

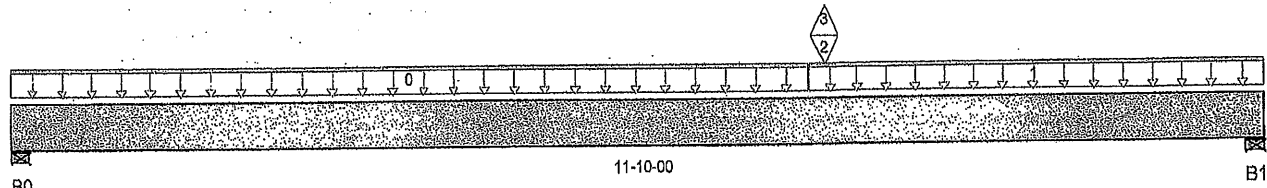
Description: Designs\Flush Beams\1st Floor\Flush Beams\B10(i907)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 11-10-00

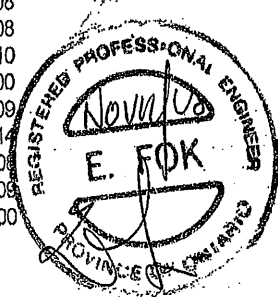
Reaction Summary (Down / Uplift) (lbs)

| Bearing | Live | Dead | Snow | Wind |
|------------|-----------|---------|------|------|
| B0, 4" | 304 / 161 | 161 / 0 | | |
| B1, 5-1/2" | 507 / 312 | 206 / 0 | | |

Load Summary

| Tag Description | Load Type | Ref. | Start | End | Live 1.00 | Dead 0.65 | Snow 1.00 | Wind 1.15 | Trib. |
|----------------------|-------------------|------|----------|----------|--------------|--------------|--------------|--------------|-------|
| 0 FC2 Floor Material | Unf. Lin. (lb/ft) | L | 00-00-00 | 07-05-12 | 20 | 10 | | | n/a |
| 1 FC2 Floor Material | Unf. Lin. (lb/ft) | L | 07-05-12 | 11-10-00 | 31 | 16 | | | n/a |
| 2 B12(i904) | Conc. Pt. (lbs) | L | 07-07-08 | 07-07-08 | 526 | 82 | | | n/a |
| 3 B12(i904) | Conc. Pt. (lbs) | L | 07-07-08 | 07-07-08 | 473 | | | | n/a |

| Controls Summary | Factored Demand | Factored Resistance | Demand / Resistance | Load Case | Location |
|------------------|-----------------|---------------------|---------------------|-----------|----------|
| Pos. Moment | 3,168 ft-lbs | 38,727 ft-lbs | 8.2% | 1 | 07-07-08 |
| Neg. Moment | -1,292 ft-lbs | -38,727 ft-lbs | 3.3% | 4 | 07-07-08 |
| End Shear | 901 lbs | 14,464 lbs | 6.2% | 1 | 10-04-10 |
| Uplift | 282 lbs | n/a | n/a | 4 | 11-10-00 |
| Total Load Defl. | L/999 (0.044") | n/a | n/a | 6 | 06-01-09 |
| Live Load Defl. | L/999 (0.032") | n/a | n/a | 8 | 06-03-14 |
| Total Neg. Defl. | L/999 (-0.009") | n/a | n/a | 7 | 06-08-08 |
| Max Defl. | 0.044" | n/a | n/a | 6 | 06-01-09 |
| Span / Depth | 11.3 | n/a | n/a | | 00-00-00 |



| Bearing Supports | Dim. (L x W) | Demand | Demand / Resistance Support | Demand / Resistance Member | Material |
|------------------|-----------------|-----------|-----------------------------|----------------------------|-------------|
| B0 Wall/Plate | 4" x 3-1/2" | 658 lbs | 11% | 3.9% | Unspecified |
| B1 Wall/Plate | 5-1/2" x 3-1/2" | 1,019 lbs | 12.4% | 4.3% | Unspecified |

Cautions

Uplift of 282 lbs found at span 1 - Right. (SIMPSON L-PLATE 2.0. B1)

Notes

DWG NO. TAM 8367-184
STRUCTURAL
COMPONENT ONLY

T-181138



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor... \B10(i907)

Dry | 1-span | No cantilevers | 0/12 slope (deg)

April 25, 2017 16:35:28

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT2203 T3.mmdl

Description: Design\Flush Beams\1st Floor\Flush Beams\B10(i907

Specifier:

Designer: AJ

Company:

Msc:

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.

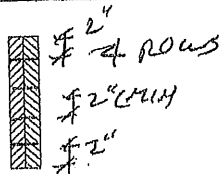
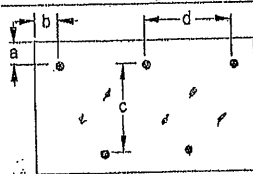
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

Connection Diagram



a minimum = 2" c = 7-7/8"
b minimum = 3" d = 6"

Calculated Side Load = 15.4 lb/ft

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

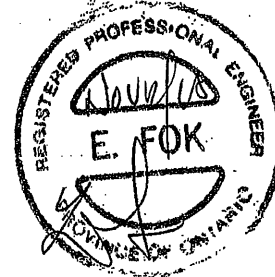
Connectors are: 1 Nails

3-1/2" ARDOX SPIRAL

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here 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 1-800-964-6999 before installation.

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DWNG. TAM B560184
STRUCTURAL
COMPONENT ONLY

T-181138261



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor... \B11(i893)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

April 25, 2017 16:35:29

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT 2203 T3.mmdl

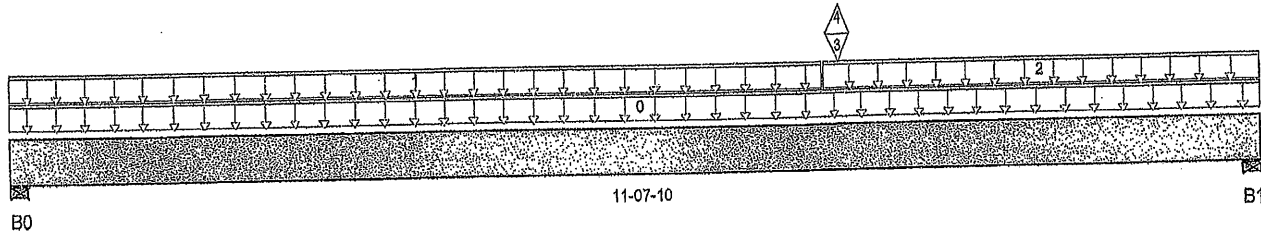
Description: Designs\Flush Beams\1st Floor\Flush Beams\B11(i893)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 11-07-10

Reaction Summary (Down / Uplift) (lbs)

| Bearing | Live | Dead | Snow | Wind |
|------------|-----------|---------|------|------|
| B0, 4-3/8" | 527 / 131 | 287 / 0 | | |
| B1, 2-3/4" | 913 / 254 | 435 / 0 | | |

Load Summary

| Tag Description | Load Type | Ref. | Start | End | Live 1.00 | Dead 0.68 | Snow 1.00 | Wind 1.15 | Trib. |
|----------------------|-------------------|------|----------|----------|--------------|--------------|--------------|--------------|-------|
| 0 FC2 Floor Material | Unf. Lin. (lb/ft) | L | 00-00-00 | 11-07-10 | 22 | 11 | | | n/a |
| 1 FC2 Floor Material | Unf. Lin. (lb/ft) | L | 00-00-00 | 07-06-02 | 6 | 3 | | | n/a |
| 2 FC2 Floor Material | Unf. Lin. (lb/ft) | L | 07-06-02 | 11-07-10 | 31 | 16 | | | n/a |
| 3 B12(1904) | Conc. Pt. (lbs) | L | 07-07-14 | 07-07-14 | 1,010 | 367 | | | n/a |
| 4 B12(1904) | Conc. Pt. (lbs) | L | 07-07-14 | 07-07-14 | -385 | | | | n/a |

Controls Summary

| | Factored Demand | Factored Resistance | Demand / Resistance | Load Case | Location |
|------------------|-----------------|---------------------|---------------------|-----------|----------|
| Pos. Moment | 6,275 ft-lbs | 38,727 ft-lbs | 16.2% | 1 | 07-07-14 |
| Neg. Moment | -234 ft-lbs | -38,727 ft-lbs | 0.6% | 4 | 07-07-14 |
| End Shear | 1,756 lbs | 14,464 lbs | 12.1% | 1 | 10-06-00 |
| Total Load Defl. | L/999 (0.085") | n/a | n/a | 6 | 06-04-04 |
| Live Load Defl. | L/999 (0.058") | n/a | n/a | 8 | 06-04-04 |
| Max Defl. | 0.085" | n/a | n/a | 6 | 06-04-04 |
| Span / Depth | 11.3 | n/a | n/a | | 00-00-00 |



Bearing Supports

| | Dim. (L' x W) | Demand | Demand / Resistance Support | Demand / Resistance Member | Material |
|---------------|-----------------|-----------|-----------------------------|----------------------------|-------------|
| B0 Wall/Plate | 4-3/8" x 3-1/2" | 1,149 lbs | 17.6% | 6.2% | Unspecified |
| B1 Wall/Plate | 2-3/4" x 3-1/2" | 1,913 lbs | 46.5% | 16.3% | Unspecified |

Notes

PG 1/2
DWG NO. TAM 0568-18 H
STRUCTURAL
COMPONENT ONLY

T-111883



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor...B11(1893)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

April 25, 2017 16:35:29

BC CALC® Design Report

Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT2203 T3.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B11(1893

Specifier:

Designer: AJ

Company:

Misc:

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 2010 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

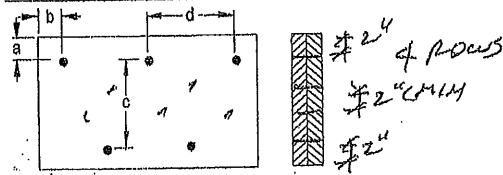
CONFORMS TO OBC 2012

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here 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 1-800-964-6999 before installation.

BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BC®, BOISE GLULAM™, SIMPLE FRAMING SYSTEM®, VERSA-LAM®, VERSA-RIM PLUS®, VERSA-RIM®, VERSA-STRAND®, VERSA-STUD® are trademarks of Boise Cascade Wood Products L.L.C.

Connection Diagram



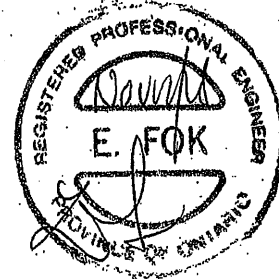
a minimum = 2" c = 7-7/8"
b minimum = 3" d = 6"

Calculated Side Load = 120.0 lb/ft

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

Connectors are: Nails

3-1/2" ARDOX SPIRAL



DWG NO. TAM 0566784
STRUCTURAL
COMPONENT ONLY

T-1811383(v)



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor...B12(I904)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

April 25, 2017 16:35:29

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports:

CCMC 12472-R

File Name: UNIT 2203 T3.mmdl

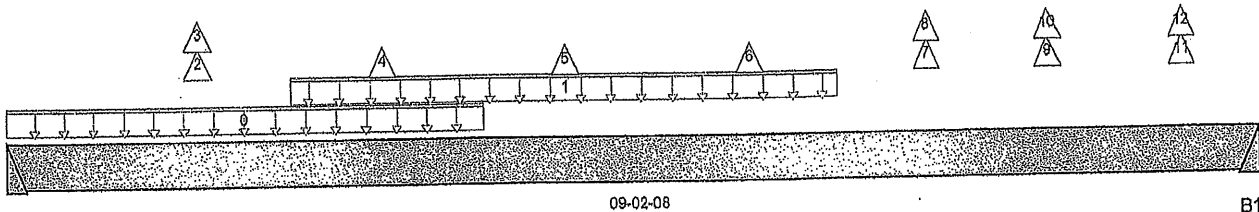
Description: Designs\Flush Beams\1st Floor\Flush Beams\B12(I904)

Specifier:

Designer: AJ

Company:

Misc:



B0

B1

Total Horizontal Product Length = 09-02-08

Reaction Summary (Down / Uplift) (lbs)

| Bearing | Live | Dead | Snow | Wind |
|---------|-------------|---------|------|------|
| B0 | 1,015 / 384 | 370 / 0 | | |
| B1 | 621 / 474 | 79 / 0 | | |

Load Summary

| Tag | Description | Load Type | Ref. | Start | End | Live 1.00 | Dead 0.85 | Snow 1.00 | Wind 1.15 | Trib. |
|-----|---------------|-------------------|------|----------|----------|--------------|--------------|--------------|--------------|-------|
| 0 | User Load | Unf. Lin. (lb/ft) | L | 00-00-00 | 03-06-00 | 240 | 120 | | | n/a |
| 1 | Smoothed Load | Unf. Lin. (lb/ft) | L | 02-01-00 | 06-01-00 | 83 | | | | n/a |
| 2 | J1(I635) | Conc. Pt. (lbs) | L | 01-05-00 | 01-05-00 | 120 | -6 | | | n/a |
| 3 | J1(I635) | Conc. Pt. (lbs) | L | 01-05-00 | 01-05-00 | -132 | | | | n/a |
| 4 | J1(I737) | Conc. Pt. (lbs) | L | 02-09-00 | 02-09-00 | -132 | -11 | | | n/a |
| 5 | J1(I737) | Conc. Pt. (lbs) | L | 04-01-00 | 04-01-00 | -132 | -11 | | | n/a |
| 6 | J1(I737) | Conc. Pt. (lbs) | L | 05-05-00 | 05-05-00 | -132 | -11 | | | n/a |
| 7 | J1(I683) | Conc. Pt. (lbs) | L | 06-09-00 | 06-09-00 | 93 | -9 | | | n/a |
| 8 | J1(I683) | Conc. Pt. (lbs) | L | 06-09-00 | 06-09-00 | -111 | | | | n/a |
| 9 | J1(I680) | Conc. Pt. (lbs) | L | 07-07-12 | 07-07-12 | 79 | -8 | | | n/a |
| 10 | J1(I680) | Conc. Pt. (lbs) | L | 07-07-12 | 07-07-12 | -94 | | | | n/a |
| 11 | J1(I577) | Conc. Pt. (lbs) | L | 08-07-12 | 08-07-12 | 71 | -26 | | | n/a |
| 12 | J1(I577) | Conc. Pt. (lbs) | L | 08-07-12 | 08-07-12 | -125 | | | | n/a |



| Controls Summary | Factored Demand | Factored Resistance | Demand / Resistance | Load Case | Location |
|------------------|-----------------|---------------------|---------------------|-----------|----------|
| Pos. Moment | 3,084 ft-lbs | 38,727 ft-lbs | 8% | 1 | 03-01-08 |
| Neg. Moment | -1,192 ft-lbs | -38,727 ft-lbs | 3.1% | 4 | 05-05-00 |
| End Shear | 1,378 lbs | 14,464 lbs | 9.5% | 1 | 01-01-14 |
| Uplift | 640 lbs | n/a | n/a | 4 | 09-02-08 |
| Total Load Defl. | L/999 (0.03") | n/a | n/a | 6 | 04-04-00 |
| Live Load Defl. | L/999 (0.024") | n/a | n/a | 8 | 04-04-00 |
| Total Neg. Defl. | L/999 (-0.009") | n/a | n/a | 7 | 04-11-00 |
| Max Defl. | 0.03" | n/a | n/a | 6 | 04-04-00 |
| Span / Depth | 9.1 | n/a | n/a | | 00-00-00 |

| Bearing Supports | Dim. (L x W) | Demand | Demand / Resistance Support | Demand / Resistance Member | Material |
|------------------|--------------|--------|-----------------------------|----------------------------|----------|
|------------------|--------------|--------|-----------------------------|----------------------------|----------|

DWG NO. FAM 8569.1814
STRUCTURAL
COMPONENT ONLY P612

T-1811384



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor...B12(i904)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

April 25, 2017 16:35:29

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRAMPTON,

Customer:

Code reports: CCMC 12472-R

File Name: UNIT2203 T3.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B12(i904

Specifier:

Designer: AJ

Company:

Misc:

| | | | | | | |
|----|---------------|-------------|------------|-----|-------|--------|
| B0 | Hanger | 2" x 3-1/2" | 1,985 lbs. | n/a | 23.2% | Hanger |
| B0 | Hanger Uplift | 2" x 3-1/2" | 243 lbs | n/a | 0.02 | Hanger |
| B1 | Hanger | 2" x 3-1/2" | 880 lbs | n/a | 10.3% | Hanger |
| B1 | Hanger Uplift | 2" x 3-1/2" | 640 lbs | n/a | 0.06 | Hanger |

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here 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 1-800-964-6999 before installation.

Cautions

Uplift of 640 lbs found at span 1 - Right. (SIMPSON 1-HOUSING @ ST. B1)

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.

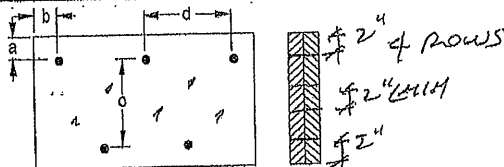
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

Connection Diagram



a minimum = 2" c = 7-7/8"
b minimum = 3" d = 12"

Calculated Side Load = 37.5 lb/ft

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

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



DRW NO. TAM 0569-18-H
STRUCTURAL
COMPONENT ONLY

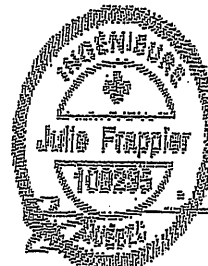
T-1811384(y)



Maximum Spans - E3
Limit States Design (CAN)

Maximum Floor Spans

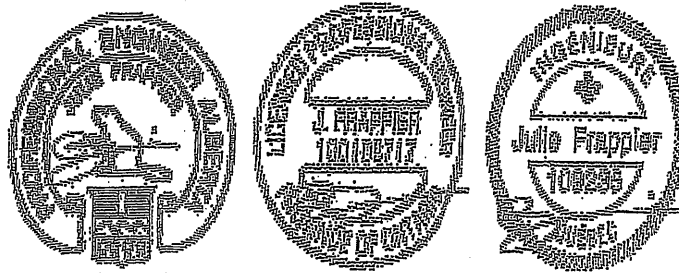
Live Load = 40 psf, Dead Load = 30 psf
Simple Spans 1/480 Deflection Limit
3/4" OSB G&N Sheathing



| 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'-4" | 15'-1" | 13'-11" |
| | NI-60 | 17'-2" | 16'-2" | 15'-5" | 14'-3" | 17'-6" | 16'-5" | 15'-5" | 14'-3" |
| | NI-70 | 18'-0" | 16'-11" | 16'-3" | 15'-6" | 18'-5" | 17'-3" | 16'-7" | 15'-6" |
| | NI-80 | 18'-3" | 17'-1" | 16'-5" | 15'-9" | 18'-8" | 17'-5" | 16'-9" | 15'-10" |
| 11-7/8" | NI-20 | 17'-10" | 16'-10" | 16'-0" | 14'-10" | 18'-6" | 17'-1" | 16'-0" | 14'-10" |
| | NI-40x | 19'-4" | 17'-11" | 17'-3" | 15'-10" | 19'-11" | 18'-6" | 17'-9" | 15'-10" |
| | NI-60 | 19'-7" | 18'-2" | 17'-5" | 16'-9" | 20'-2" | 18'-9" | 17'-11" | 17'-1" |
| | NI-70 | 20'-9" | 19'-2" | 18'-3" | 17'-5" | 21'-4" | 19'-9" | 18'-10" | 17'-10" |
| | NI-80 | 21'-1" | 19'-5" | 18'-6" | 17'-7" | 21'-7" | 20'-0" | 19'-0" | 18'-0" |
| 14" | NI-90x | 21'-8" | 20'-0" | 19'-1" | 18'-0" | 22'-2" | 20'-6" | 19'-6" | 18'-6" |
| | NI-40x | 21'-5" | 19'-10" | 18'-11" | 17'-5" | 22'-1" | 20'-6" | 19'-6" | 17'-5" |
| | NI-60 | 21'-10" | 20'-2" | 19'-3" | 18'-2" | 22'-5" | 20'-10" | 19'-11" | 18'-10" |
| | NI-70 | 23'-0" | 21'-3" | 20'-3" | 19'-2" | 23'-8" | 21'-11" | 20'-10" | 19'-9" |
| | NI-80 | 23'-5" | 21'-7" | 20'-7" | 19'-5" | 24'-0" | 22'-3" | 21'-2" | 20'-0" |
| 16" | NI-90x | 24'-1" | 22'-3" | 21'-2" | 20'-0" | 24'-8" | 22'-10" | 21'-9" | 20'-7" |
| | NI-60 | 23'-9" | 22'-0" | 20'-11" | 19'-10" | 24'-6" | 22'-9" | 21'-8" | 20'-6" |
| | NI-70 | 25'-1" | 23'-2" | 22'-0" | 20'-10" | 25'-9" | 23'-10" | 22'-9" | 21'-6" |
| | NI-80 | 25'-6" | 23'-6" | 22'-4" | 21'-2" | 26'-1" | 24'-2" | 23'-1" | 21'-10" |
| | NI-90x | 26'-4" | 24'-3" | 23'-1" | 21'-10" | 26'-11" | 24'-11" | 23'-8" | 22'-5" |

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

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 3/4 inch for a joist spacing of 24 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-1274C.



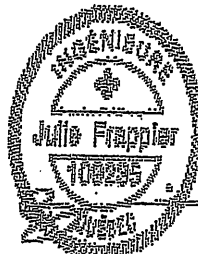
Maximum Floor Spans

Live load = 40 psf, Dead load = 15 psf
Simple spans, 1/480 deflection limit
5/4" 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'-4" |
| | NI-40x | 19'-4" | 17'-11" | 17'-3" | 16'-6" | 19'-11" | 18'-6" | 17'-9" | 17'-0" |
| | NI-60 | 19'-7" | 18'-2" | 17'-5" | 16'-9" | 20'-2" | 18'-9" | 17'-11" | 17'-2" |
| | NI-70 | 20'-9" | 19'-2" | 18'-3" | 17'-5" | 21'-4" | 19'-9" | 18'-10" | 17'-10" |
| | NI-80 | 21'-1" | 19'-5" | 18'-6" | 17'-7" | 21'-7" | 20'-0" | 19'-0" | 18'-0" |
| | NI-90x | 21'-8" | 20'-0" | 19'-1" | 18'-0" | 22'-2" | 20'-6" | 19'-6" | 18'-6" |
| 14" | NI-40x | 21'-5" | 19'-10" | 18'-11" | 17'-11" | 22'-1" | 20'-6" | 19'-7" | 18'-7" |
| | NI-60 | 21'-10" | 20'-2" | 19'-3" | 18'-2" | 22'-5" | 20'-10" | 19'-11" | 18'-10" |
| | NI-70 | 23'-0" | 21'-3" | 20'-3" | 19'-2" | 23'-8" | 21'-11" | 20'-10" | 19'-9" |
| | NI-80 | 23'-5" | 21'-7" | 20'-7" | 19'-5" | 24'-0" | 22'-3" | 21'-2" | 20'-0" |
| | NI-90x | 24'-1" | 22'-3" | 21'-2" | 20'-0" | 24'-8" | 22'-10" | 21'-9" | 20'-7" |
| 16" | NI-60 | 23'-9" | 22'-0" | 20'-11" | 19'-10" | 24'-6" | 22'-9" | 21'-8" | 20'-6" |
| | NI-70 | 25'-1" | 23'-2" | 22'-0" | 20'-10" | 25'-9" | 23'-10" | 22'-9" | 21'-6" |
| | NI-80 | 25'-6" | 23'-6" | 22'-4" | 21'-2" | 26'-1" | 24'-2" | 23'-2" | 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'-3" | 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'-10" |
| | NI-90x | 24'-3" | 22'-6" | 21'-6" | 20'-4" | 24'-8" | 23'-0" | 22'-0" | 20'-9" |
| 14" | NI-40x | 24'-5" | 22'-9" | 21'-8" | 19'-5" | 25'-1" | 23'-2" | 21'-9" | 19'-5" |
| | NI-60 | 24'-10" | 23'-1" | 22'-0" | 20'-10" | 25'-6" | 23'-8" | 22'-4" | 20'-10" |
| | NI-70 | 26'-1" | 24'-3" | 23'-2" | 21'-10" | 26'-8" | 24'-11" | 23'-9" | 22'-4" |
| | NI-80 | 26'-6" | 24'-7" | 23'-5" | 22'-2" | 27'-1" | 25'-3" | 24'-1" | 22'-9" |
| | NI-90x | 27'-3" | 25'-4" | 24'-1" | 22'-9" | 27'-9" | 25'-11" | 24'-8" | 23'-4" |
| 16" | NI-60 | 27'-3" | 25'-5" | 24'-2" | 22'-10" | 28'-0" | 26'-2" | 24'-9" | 23'-1" |
| | NI-70 | 28'-8" | 26'-8" | 25'-4" | 23'-11" | 29'-3" | 27'-4" | 26'-1" | 24'-8" |
| | NI-80 | 29'-1" | 27'-0" | 25'-9" | 24'-4" | 29'-8" | 27'-9" | 26'-5" | 25'-0" |
| | NI-90x | 29'-11" | 27'-10" | 26'-6" | 25'-0" | 30'-6" | 28'-5" | 27'-2" | 25'-8" |

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 3/4 inch for a joist spacing of 24 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-1274C.



Maximum Floor Spans

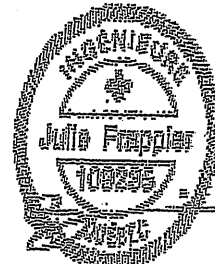
Live load = 40 psf; Dead load = 30 psf
Simple Spans, L/480 Deflection Limit
5/8" PSB G&N Sheathing

| 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'-4" | 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'-4" | 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'-1" | 21'-9" | 20'-9" | N/A | 24'-3" | 22'-5" | 21'-5" | N/A |
| | NI-80 | 23'-11" | 22'-1" | 21'-3" | 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-1274C.

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'-6" | 19'-1" | N/A | 22'-3" | 20'-7" | 19'-8" | N/A |
| | NI-80 | 21'-11" | 20'-3" | 19'-4" | N/A | 22'-7" | 20'-11" | 20'-0" | N/A |
| 16" | NI-90x | 22'-7" | 20'-11" | 19'-11" | N/A | 23'-3" | 21'-6" | 20'-6" | N/A |
| | NI-60 | 22'-3" | 20'-8" | 19'-9" | N/A | 23'-1" | 21'-5" | 20'-6" | N/A |
| | NI-70 | 23'-6" | 21'-9" | 20'-9" | N/A | 24'-3" | 22'-5" | 21'-5" | N/A |
| | NI-80 | 23'-11" | 22'-1" | 21'-1" | N/A | 24'-8" | 22'-10" | 21'-9" | N/A |
| | NI-90x | 24'-8" | 22'-9" | 21'-9" | N/A | 25'-4" | 23'-5" | 22'-4" | N/A |

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

1. Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.

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

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

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

5. This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.

6. Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-1274C.

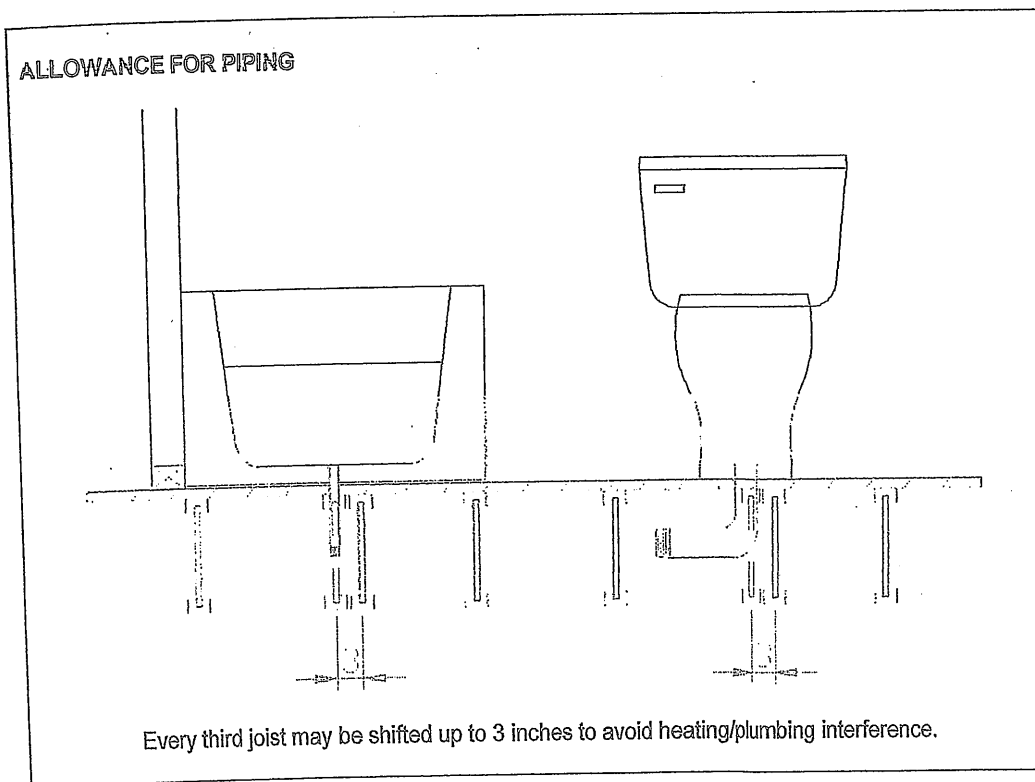


Allowance for Piping (Installation Notes)

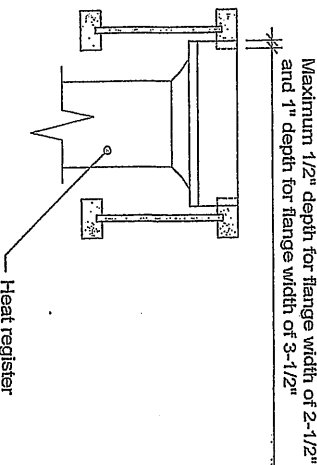
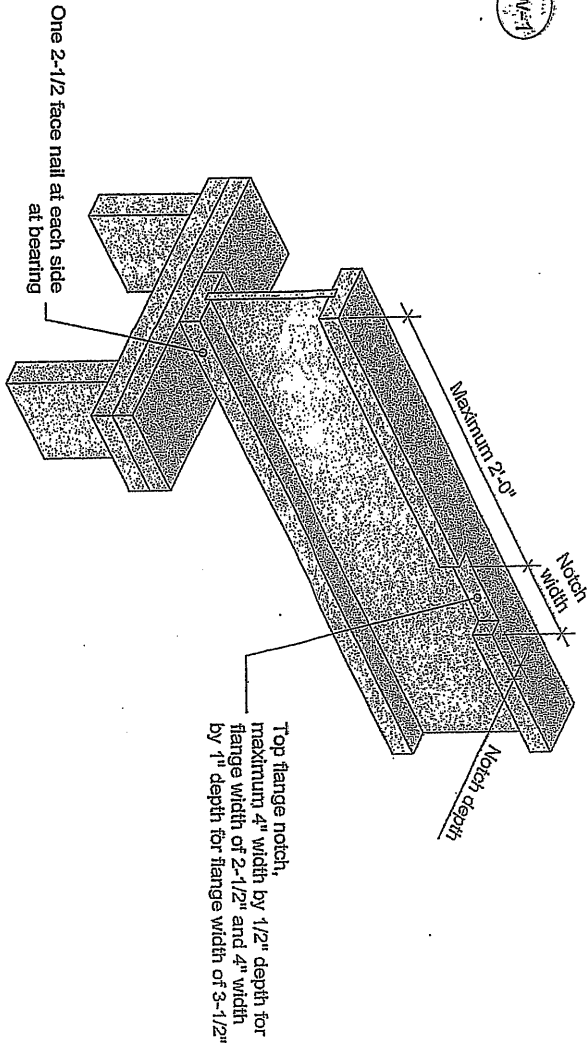
The floor layouts have usually not been checked for heating and/or plumbing interference. On-site adjustment of joists of up to 3 inches is permitted to avoid interferences. When moving a joist, the subfloor thickness shall be checked with code requirements when the joist spacing exceeds 19.2 inches.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



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

This document supersedes all previous versions. If the document has been in effect for more than one year, consult nordic.ca or contact Nordic Structures.

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

DOCUMENT

TITLE

Notch in I-joist for Heat Register

T 514-871-8526
1 866 817-3418

nordic.ca

CATEGORY

I-joist - Typical Floor Framing and Construction Details

DATE

2018-04-10

NUMBER

1W-1

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