

PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	19
J2DJ	18-00-00	11 7/8" NI-40x	2	6
J2	16-00-00	11 7/8" NI-40x	1	2
J3	14-00-00	11 7/8" NI-40x	1	23
J4DJ	14-00-00	11 7/8" NI-40x	2	8
J4	8-00-00	11 7/8" NI-40x	1	8
J5	6-00-00	11 7/8" NI-40x	1	10
J6	4-00-00	11 7/8" NI-40x	1	3
J7	2-00-00	11 7/8" NI-40x	1	4
B2 ✓	18-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	2	2
B11 ✓	14-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1
B10 ✓	8-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1
B7 ✓	8-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1
B8 ✓	8-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1
B9 ✓	8-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1
B1 ✓	8-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	3	3
B4 ✓	6-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1
B12 ✓	4-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1
B13 ✓	4-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1
B3 ✓	4-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1
B5 ✓	4-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1
B6 ✓	4-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
19	H1	IUS2.56/11.88
10	H1	IUS2.56/11.88
12	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
3	H2	HUS1.81/10
2	H2	HUS1.81/10
1	H5	HGUS5.5/11.88
1	H2.5A	H2.5A*

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

**LOADING:**  
 DESIGN LOADS: L/480.000  
 LIVE LOAD: 40.0 lb/ft<sup>2</sup>  
 DEAD LOAD: 20.0 lb/ft<sup>2</sup>  
 SNOW LOAD: 24.0 lb/ft<sup>2</sup>

**SUBFLOOR:** 3/4" GLUED AND NAILED

DATE 9/10/21  
 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, LENGTHS, AND DETAILS, REMAINS THE RESPONSIBILITY OF THE FLOOR SYSTEM INSTALLATION CONTRACTOR.

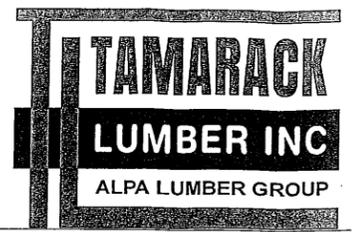
DWG# TAM 180902 THROUGH DWG# TAM 181034 INCLUSIVE DATED 8/14/21

SEALED STRUCTURAL COMPONENTS ONLY: LESS 18095-2  
 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 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.

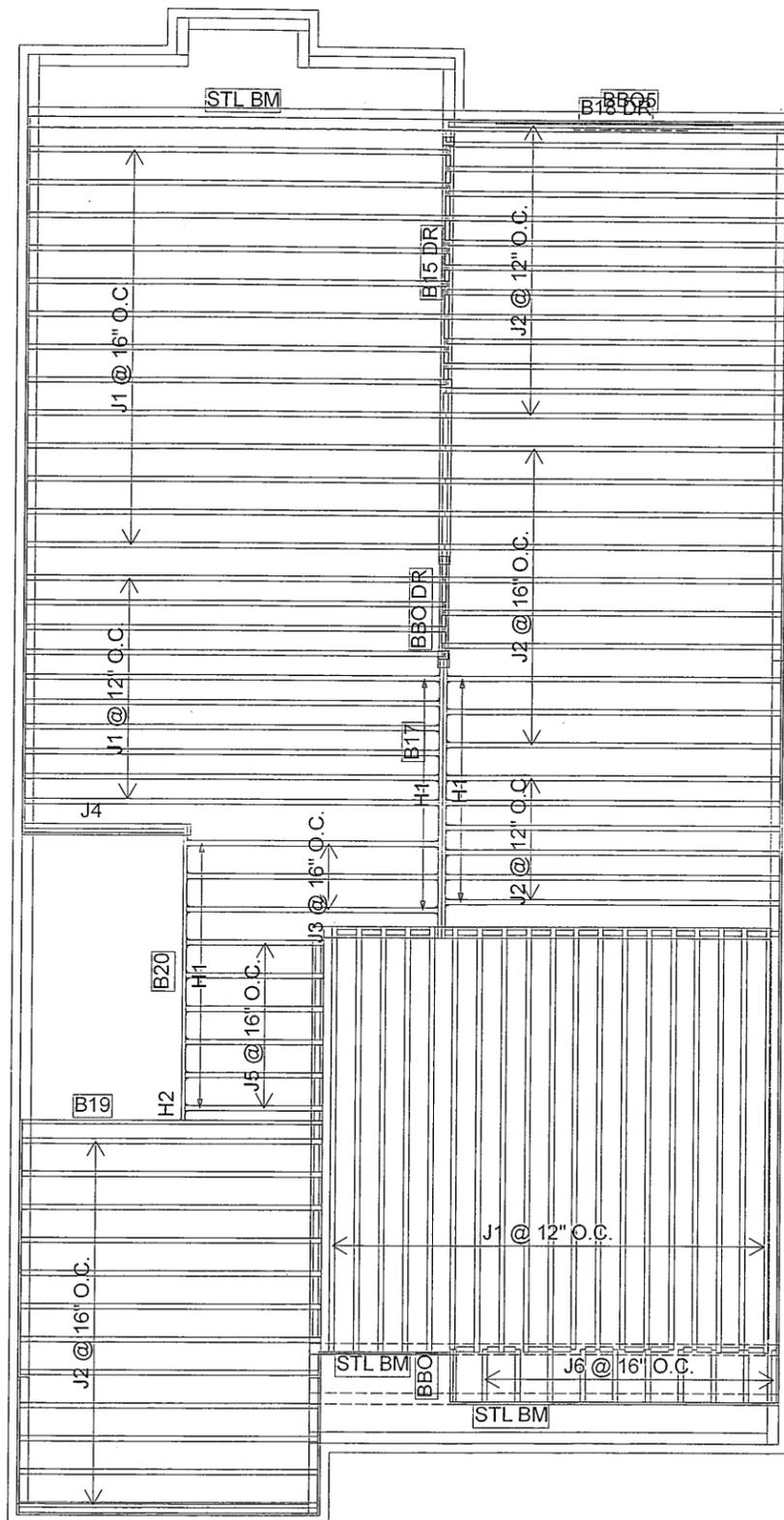
DWG # TAM 19569.21  
 BCIN: 26064  
 FIRM: 29991  
 SEALED STRUCTURAL COMPONENTS ONLY



**FROM PLAN DATED:**  
 2021/5  
**BUILDER:**  
 ROYAL PINE HOMES  
**SITE:**  
 VALES OF HUMBER NORTH  
**MODEL:** 40-2  
**ELEVATION:** A,B  
**LOT:**  
**CITY:** BRAMPTON  
**SALESMAN:** RICK DICIANO  
**DESIGNER:** AJ  
**REVISION:**  
**DATE:** 2021-08-30  
**1st FLOOR**







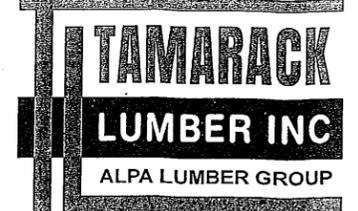
Products					
PlotID	Length	Product	Plies	Net Qty	
J1	18-00-00	11 7/8" NI-40x	1	42	
J2	14-00-00	11 7/8" NI-40x	1	41	
J3	12-00-00	11 7/8" NI-40x	1	3	
J4	8-00-00	11 7/8" NI-40x	1	1	
J5	6-00-00	11 7/8" NI-40x	1	6	
J6	4-00-00	11 7/8" NI-40x	1	10	
B15 DR ✓	12-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	3	3	
B18 DR ✓	10-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP	2	2	
B19 ✓	14-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1	
B20 ✓	12-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1	
B17 ✓	12-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	2	2	

Connector Summary			
Qty	Manuf	Product	
9	H1	IUS2.56/11.88	
18	H1	IUS2.56/11.88	
1	H2	HUS1.81/10	

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

**LOADING:**  
 DESIGN LOADS: L/480.000  
 LIVE LOAD: 40.0 lb/ft<sup>2</sup>  
 DEAD LOAD: 20.0 lb/ft<sup>2</sup>  
 SNOW LOAD: 24.0 lb/ft<sup>2</sup>

**SUBFLOOR:** 5/8" GLUED AND NAILED



**FROM PLAN DATED:**  
 2021/5  
**BUILDER:**  
 ROYAL PINE HOMES  
**SITE:**  
 VALES OF HUMBER NORTH  
**MODEL:** 40-2  
**ELEVATION:** A,B  
**LOT:**  
 CITY: BRAMPTON  
**SALESMAN:** RICK DICIANO  
**DESIGNER:** AJ  
**REVISION:**  
 DATE: 2021-08-30  
**2nd FLOOR**

DATE 9 01 21

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, LENGTHS, AND DETAILS, REMAINS THE RESPONSIBILITY OF THE FLOOR SYSTEM INSTALLATION CONTRACTOR.

DWG# TAM 181044 THROUGH DWG# TAM 181084, INCLUSIVE DATED 8 24 21

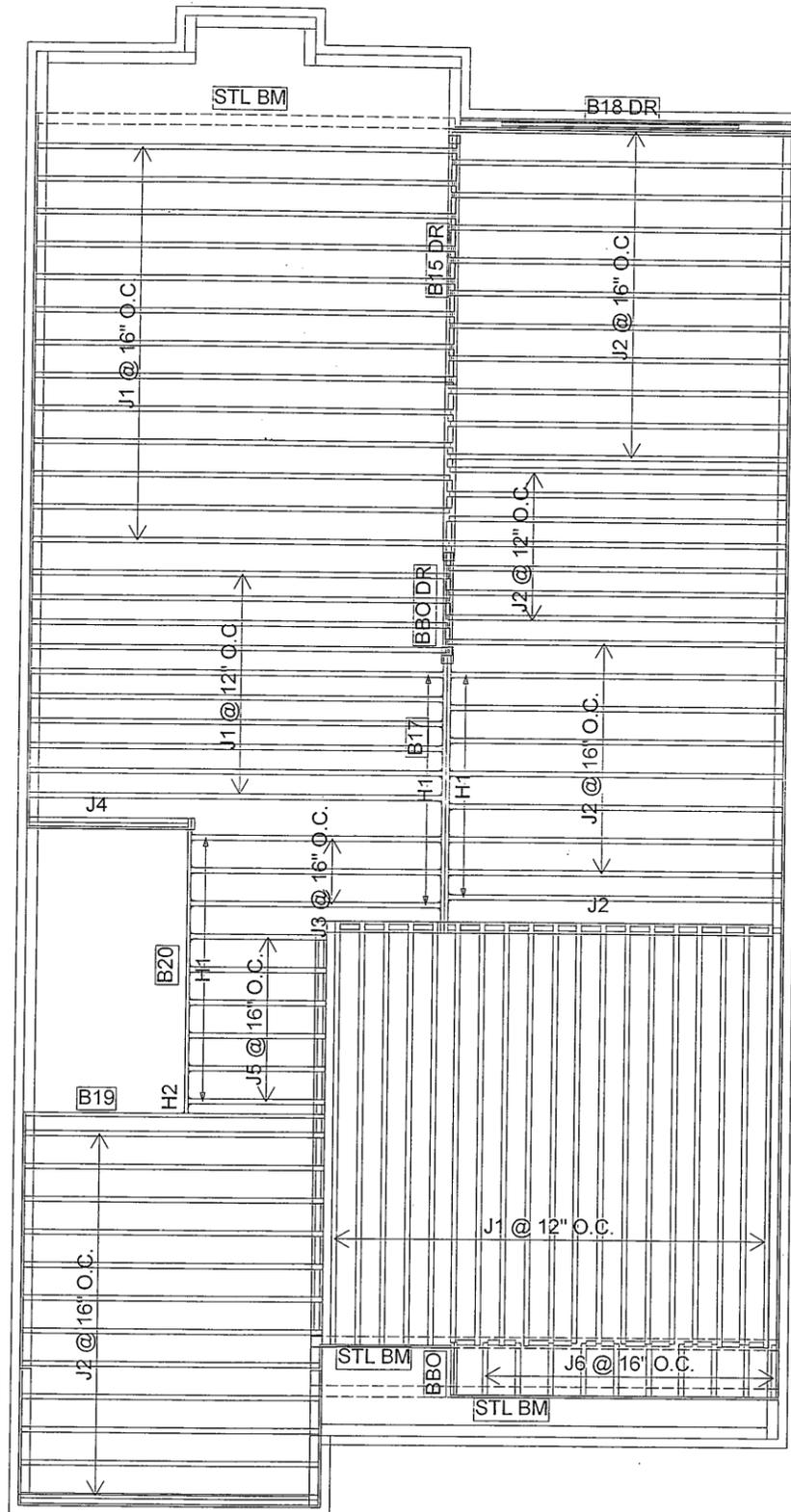
**SEALED STRUCTURAL COMPONENTS ONLY:**  
 SEALED, THIRD PARTY LVL TYPE BEAMS, BUILT-UP CONVENTIONAL BEAMS, HEADERS, AND CONCENTRATED LOADED NORDIC WOOD-I JOIST ONLY. 2 X 6 SQUASH BLOCK REQUIRED AT ALL EXTERIOR SUPPORTS OR AS PER PROJECT ENGINEER'S SPECIFICATIONS. WEB FILLER REINFORCEMENT REQUIRED AT ALL HANGER SUPPORTED JOIST EXCEEDING A REACTION OF 1500 LBS (FACTORED)-SEE DETAILS.  
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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 19569-21  
 BCIN: 26064  
 FIRM: 29991  
 SEALED STRUCTURAL COMPONENTS ONLY





Products					
PlotID	Length	Product	Plies	Net Qty	
J1	18-00-00	11 7/8" NI-40x	1	42	
J2	14-00-00	11 7/8" NI-40x	1	39	
J3	12-00-00	11 7/8" NI-40x	1	3	
J4	8-00-00	11 7/8" NI-40x	1	1	
J5	6-00-00	11 7/8" NI-40x	1	6	
J6	4-00-00	11 7/8" NI-40x	1	10	
B15 DR	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3	
B18 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2	
B19	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1	
B20	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1	
B17	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2	

Connector Summary		
Qty	Manuf	Product
9	H1	IUS2.56/11.88
17	H1	IUS2.56/11.88
1	H2	HUS1.81/10

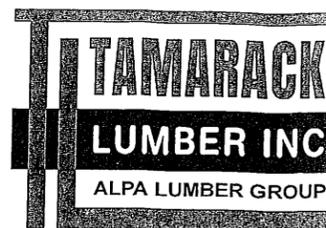
**NOTES:**

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

**LOADING:**

DESIGN LOADS: L/480,000  
LIVE LOAD: 40.0 lb/ft<sup>2</sup>  
DEAD LOAD: 20.0 lb/ft<sup>2</sup>  
SNOW LOAD: 24.0 lb/ft<sup>2</sup>

SUBFLOOR: 5/8" GLUED AND NAILED



FROM PLAN DATED: 2021/5

BUILDER: ROYAL PINE HOMES

SITE: VALES OF HUMBER NORTH  
MODEL: 40-2

ELEVATION: A,B

LOT:

CITY: BRAMPTON

SALESMAN: RICK DICIANO

DESIGNER: AJ

REVISION:

DATE: 2021-08-30

2nd FLOOR

OPTION 5 BEDROOM

DATE 9/01/21

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 QAS 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 181044 THROUGH DWG# TAM 181084, INCLUSIVE DATED 8/24/21

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 PER PROJECT ENGINEER'S SPECIFICATIONS. WEB FILLER REINFORCEMENT REQUIRED AT ALL HANGER SUPPORTED JOIST EXCEEDING A REACTION OF 1500 LBS (FACTORED)-SEE DETAILS.  
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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 19570-21  
BCIN: 26064  
FIRM: 29991  
SEALED STRUCTURAL COMPONENTS ONLY



# NORDIC

INSTALLATION GUIDE  
NORDIC JOIST

NS-G133    
VERSION  
2020-10-01

Engineered Wood Products  
**BASIC  
INSTALLATION  
GUIDE FOR  
RESIDENTIAL  
FLOORS**

 **NORDIC  
JOIST**

**NORDIC  
STRUCTURES**

nordic.ca

## INSTALLING NORDIC I-JOISTS

1. Installation of Nordic I-joists shall be as shown in details 1.
2. Except for cutting to length, I-joist flanges should never be cut, drilled or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical alignment.
4. Concentrated loads should only be applied to the top surface of the top flange. Concentrated loads should not be suspended from the bottom flange with the exception of light loads, such as ceiling fans or light fixtures.
5. I-joists must be protected from the weather prior to installation.
6. I-joists must not be used in applications where they will be permanently exposed to weather, or will reach a moisture content of 15 percent or greater, such as in swimming pool or hot tub areas. They must not be installed where they will remain in direct contact with concrete or masonry.
7. End bearing length must be at least 1-3/4 inch. For multiple-span joists, intermediate bearing length must be at least 3-1/2 inches.
8. Ends of floor joists shall be restrained to prevent rollover. Use rim board or I-joist blocking panels.
9. I-joists installed beneath bearing walls perpendicular to the joists shall have full-depth blocking panels, rim board, or squash blocks (cripple blocks) to transfer gravity loads from above the floor system to the wall or foundation below.
10. For I-joists installed directly beneath bearing walls parallel to the joists or used as rim board or blocking panels, the maximum vertical load using a single I-joist is 3,300 plf, and 6,600 plf if double I-joists are used.
11. Continuous lateral support of the I-joist's compression flange is required to prevent rotation and buckling. In simple span uses, lateral support of the top flange is normally supplied by the floor sheathing. In multiple-span or cantilever applications, bracing of the I-joist's bottom flange is also required at interior supports of multiple-span joists, and at the end support next to the cantilever extension. The ends of all cantilever extensions must be laterally braced as shown in details 3, 4, or 5.
12. Nails installed in flange face or edge shall be spaced in accordance with the applicable building code requirements or approved blocking plans, but should not be closer than those specified on page 3.3 of the Nordic Joist Technical Guide (NS-GT3).
13. Details 1 show only I-joist-specific fastener requirements. For other fastener requirements, see the applicable building code.
14. For proper temporary bracing of wood I-joists and placement of temporary construction loads, see **APA Technical Note: Temporary Construction Loads over I-Joist Roofs and Floors, Form J735**.

All nails shown in the details are assumed to be common nails unless otherwise noted. Nails shall have a diameter not less than 0.128 inch for 2-1/2-inch nails, or 0.148 inch for 3-inch nails. Individual components not shown to scale for clarity.

## SAFETY AND CONSTRUCTION PRECAUTIONS

- I-joists are not stable until completely installed, and will not carry any load until fully braced and sheathed.
- Avoid Accidents by Following these Important Guidelines:**
1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bracing at joist ends. When I-joists are applied continuously over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
  2. When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joist rollover or buckling.
    - Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on centre, and must be secured with a minimum of two 2-1/2-inch nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. Lap ends of adjoining bracing over at least two I-joists.
    - Or, sheathing (temporary or permanent) can be nailed to the top flange of the first 4 feet of I-joists at the end of the bay.
  3. For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-bracing.
  4. Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only.
  5. Never install a damaged I-joist.
- Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable hole sizes and locations, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines carefully.



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



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

## NORDIC I-JOIST SERIES RESIDENTIAL SERIES

Series	Depth (in.)	Flange Width (in.)	Flange Thickness (in.)	Web Thickness (in.)	Web Spacing (in.)	Weight (lb/ft)	Max. Span (ft)	Max. Uplift (psf)	Max. Point Load (lb)
NI-20	2-1/2	3-1/8	3/8	3/8	16	2.3	12	10	100
NI-40x	4	3-1/8	3/8	3/8	16	4.6	12	20	200
NI-60	6	3-1/8	3/8	3/8	16	6.9	12	30	300
NI-80	8	3-1/8	3/8	3/8	16	9.2	12	40	400
NI-90	9	3-1/8	3/8	3/8	16	10.3	12	45	450

**RIM BOARDS**  
Width Length  
1-1/8 in. 16 ft  
Depths  
9-1/2 to 16 in.  
APA Rim Board Plus

## WEB STIFFENERS

**Concentrated Load (Load Stiffener)**  
Tight joint, no gap. Gap. Tight joint, no gap.

**End Bearing (Bearing Stiffener)**  
Gap. Tight joint, no gap.

Flange width 2-1/2" or 3-1/2"  
Approx. 1/8" - 1/4" Gap  
Four 2-1/2" nails, 3" nails required for I-joists with 3-1/2" flange width  
No gap

**Stiffener Size Requirements**

Flange width (in.)	Web stiffener size each side of web (in.)
2-1/2	1 x 2-5/8 Minimum width
3-1/2	1-1/2 x 2-5/8 Minimum width

**1a**

Nordic I-joist blocking panel  
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 floor sheathing)  
Attach I-joist to top plate per detail 1b

**1b**

Rim board  
One 2-1/2" nail at top and bottom flange  
Attach rim board to top and bottom flange with one 2-1/2" nail at each location  
Note: 1. To avoid splitting flange, start nails at least 1-1/2" on from end of I-joist. Nails may be driven at an angle to avoid splitting of bearing plate.

**1c**

Squash block, 1/16" longer than the I-joist depth  
Attach squash block to top and bottom flange with one 2-1/2" nail at each location  
Transfer load from above to bearing below. Install squash blocks per detail 1d. Match bearing area of blocks below to post above. Stagger nails to avoid splitting.

**1d**

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

**1g**

Blocking panel required over all interior supports under load bearing walls or when floor joists are not continuous over support. The NBC requires blocking at load bearing and non-load bearing walls constructed with required braced wall panels (shearwalls).  
2-1/2" nails at 6" o.c. to top plate  
Nordic I-joist blocking panel per detail 1a

**1j**

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

**1k**

Top mount hanger installed per manufacturer's recommendations  
2x plate flush with inside face of wall or beam. 1/8" overhang allowed past inside face of wall or beam.

**1l**

Blocking panel  
Two 2-1/2" nails from blocking panel web to lumber piece  
2x4 minimum, alternate on opposite side

## NAIL SPACING

Nailing into flange face  
Nailing into flange edge

**Nailed to Only One Flange Edge (Top View)**  
Closest nail spacing

**Nailed to Both Flange Edges (Top View)**  
Closest nail spacing  
1/2 offset spacing

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

Fastener size (diameter x length)	Flange face nailing <sup>(a)</sup>		Flange edge nailing <sup>(b)</sup>	
	End distance (in.)	Nail spacing (in.)	End distance (in.)	Nail spacing (in.)
0.128" or smaller in diameter, and 3-1/4" or shorter in length	2	2	2	2
Greater than 0.128" up to 0.148" in diameter, and 3-1/4" or shorter in length	2	3	2	3
Greater than 0.148" or shorter in length	2	3	2	4

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

**1h**

Use backer block of hanger load exceeds 360 lb. Before installing a backer block to a double I-joist, drive three additional 3" nails through the webs and filler block where the backer block will fit. Cinch install backer block tight to top flange. Use twelve 3" nails, cinched when possible. Maximum resistance for hanger for this detail is 1,620 lb.

**1m**

Multiple I-joist header with full depth filler block shown. Nordic Lam or SCL headers may also be used. Verify header resistance to support concentrated loads.  
Backer block per detail 1h  
Filler block per detail 1p  
Note: 1. See detail 1h for maximum support resistance.

**1p**

Filler block  
1/8" to 1/4" gap between top flange and filler block  
Offset nails from opposite face by 6"

**1s-1**

Support back of I-joist web during nailing to prevent damage to web/flange connection.  
Leave a 1/8" min to 1/4" gap between top of filler block and bottom of top I-joist flange.  
Filler block required between joists for full length of span.  
For flange width of 2-1/2 inches, nail joists together with two rows of 3-inch nails at 12 inches o.c. (cinched when possible) on each side of the double I-joist (total of four nails per foot). For flange width of 3-1/2 inches, use two rows of 3-inch nails at 6 inches o.c. on each side of the double I-joist (total of eight nails per foot).  
The maximum factored load that may be applied to one side of the double I-joist using this detail is 660 lb/ft.

**1n**

Blocking required at bearing for lateral support, not shown for clarity.  
Do not bevel cut I-joist beyond inside face of wall.  
Attach I-joist per detail 1b

**1o**

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

**1p**

**Filler Block Requirements for Double I-joist Construction**

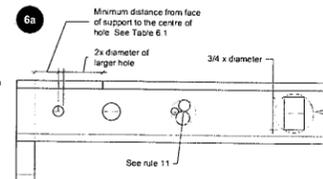
Flange width (in.)	Net depth (in.)	Filler block size (in.)	Example
2-1/2	9-1/2	2-1/8 to 2-1/4 x 6	2x6 + 5/8" or 3/4" sheathing
3-1/2	11-3/8	2-1/8 to 2-1/4 x 8	2x8 + 5/8" or 3/4" sheathing
4	13-1/8	2-1/8 to 2-1/4 x 10	2x10 + 5/8" or 3/4" sheathing
6	18	2-1/8 to 2-1/4 x 12	2x12 + 5/8" or 3/4" sheathing
9-1/2	24	2-1/8 to 2-1/4 x 16	2x16 + 5/8" or 3/4" sheathing
11-3/8	28	2-1/8 to 2-1/4 x 18	2x18 + 5/8" or 3/4" sheathing
13-1/8	32	2-1/8 to 2-1/4 x 20	2x20 + 5/8" or 3/4" sheathing
15	36	2-1/8 to 2-1/4 x 22	2x22 + 5/8" or 3/4" sheathing

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

## WEB HOLES AND OPENINGS

### WEB HOLES IN I-JOISTS

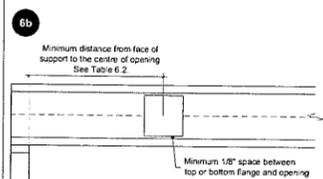
- Rules for Cutting Holes in I-joists**
1. The distance between the inside edge of the support and the centreline of any hole shall be in compliance with the requirements of Table 6.1.
  2. I-joist top and bottom flanges must never be cut, notched or otherwise modified.
  3. Whenever possible, field cut holes should be centred on the middle of the web.
  4. The maximum size hole that can be cut into an I-joist web shall equal the clear distance between the flanges of the I-joist minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the opening and the adjacent I-joist flange.
  5. The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
  6. Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole, or twice the length of the longest side of the longest rectangular hole, and each hole must be sized and located in compliance with the requirements of Table 6.1.
  7. Holes measuring 1-1/2 inch or smaller shall be permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.
  8. A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
  9. All holes shall be cut in accordance with the restrictions listed above and as illustrated in detail 6a.
  10. Limit three maximum-size holes per span.
  11. A group of round holes at approximately the same location shall be permitted if it meets the requirements for a single round hole circumscribed around them.



- Notes:**
1. Never drill, cut or notch the flange, or over-cut the web.
  2. Holes in web should be cut with a sharp saw.
  3. For rectangular holes, avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling a 1-inch diameter hole in each of the four corners and then making the cuts between the holes is another good method to minimize damage to the I-joist.

### DUCT CHASE OPENINGS

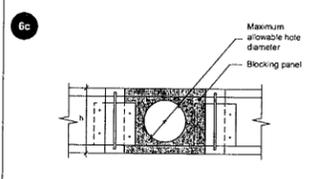
- Rules for Cutting Duct Chase Openings in I-joists**
1. The distance between the inside edge of the support and the centreline of a duct chase opening shall be in compliance with the requirements of Table 6.2.
  2. I-joist top and bottom flanges must never be cut, notched or otherwise modified.
  3. The maximum depth of a duct chase opening that can be cut into an I-joist web shall equal the clear distance between the flanges of the I-joist minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the opening and the adjacent I-joist flange.
  4. All openings shall be cut in accordance with the restrictions listed above and as illustrated in detail 6b.
  5. Limit one maximum-size duct chase opening per span.



- Notes:**
1. Never drill, cut or notch the flange, or over-cut the web.
  2. Holes in web should be cut with a sharp saw.
  3. Avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling a 1-inch diameter hole in each of the four corners and then making the cuts between the holes is another good method to minimize damage to the I-joist.

### HOLES IN BLOCKING PANELS

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



I-joist or rim board blocking depth (in.)	Maximum allowable hole diameter (in.) <sup>(a)</sup>
9-1/2	6-1/4
11-7/8	7-3/4
14	9-5/4
16	10-1/2

<sup>(a)</sup> Maximum allowable hole diameter in blocking panel, where the blocking panel is longer than its height.

TABLE 6.1 - LOCATION OF WEB HOLES

Joist depth	Minimum distance from inside face of any support to centre of hole (ft-in.)											
	1	2	3	4	5	6	6-1/4	7	8	8-6/8	9	
9-1/2"	NI-20	0-7"	1-2"	2-10"	4-3"	5-5"	6-0"	-	-	-	-	-
	NI-40x	0-7"	1-4"	3-0"	4-4"	6-0"	6-4"	-	-	-	-	-
	NI-60	1-3"	2-6"	4-0"	5-4"	7-0"	7-5"	-	-	-	-	-
	NI-80	2-3"	3-8"	5-0"	6-6"	8-2"	8-8"	-	-	-	-	-
11-7/8"	NI-20	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-6"	7-9"	-	-
	NI-40x	0-7"	0-8"	1-3"	2-8"	4-0"	4-4"	5-5"	7-0"	8-4"	-	-
	NI-60	0-7"	1-8"	3-0"	4-3"	5-9"	6-0"	7-3"	8-10"	10-0"	-	-
	NI-80	1-6"	2-10"	4-2"	5-6"	7-0"	7-5"	8-6"	10-3"	11-4"	-	-
14"	NI-20	0-7"	0-8"	0-8"	1-0"	2-4"	2-9"	3-9"	5-2"	6-0"	6-6"	8-3"
	NI-40x	0-7"	0-8"	0-8"	1-0"	2-4"	2-9"	3-9"	5-2"	6-0"	6-6"	8-3"
	NI-60	0-7"	0-8"	0-8"	1-0"	2-4"	2-9"	3-9"	5-2"	6-0"	6-6"	8-3"
	NI-80	0-7"	0-8"	0-8"	1-0"	2-4"	2-9"	3-9"	5-2"	6-0"	6-6"	8-3"
16"	NI-20	0-7"	1-3"	2-6"	3-10"	5-3"	5-6"	6-0"	6-4"	7-0"	8-5"	9-8"
	NI-40x	0-7"	1-3"	2-6"	3-10"	5-3"	5-6"	6-0"	6-4"	7-0"	8-5"	9-8"
	NI-60	0-7"	1-3"	2-6"	3-10"	5-3"	5-6"	6-0"	6-4"	7-0"	8-5"	9-8"
	NI-80	0-7"	1-3"	2-6"	3-10"	5-3"	5-6"	6-0"	6-4"	7-0"	8-5"	9-8"

- Notes:**
1. Tabulated values are applicable to residential floor construction meeting the above design criteria.
  2. The above table is based on the I-joists being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans; contact your local distributor.

## RIM BOARDS

**8a**

Rim Board Joint Between Floor Joists  
Toe-nails at 6" o.c. (typical)  
One 2-1/2" nail top and bottom (typical)

**8b**

Rim Board Joint at Corner  
Toe-nails at 6" o.c. (typical)  
One 2-1/2" nail top and bottom (typical)

**8c**

Rim board joint at door or window opening (4" o.c. maximum; engineering design of rim board required)

## I-JOIST MARKING

**8d**

Do not cut holes in rim board installed over openings, such as doors or windows, where the rim board is not fully supported.

**8e**

Holes in rim board shall be sized and located in compliance with the requirements of Table 6.1.

**8f**

Holes in blocking panels shall be sized and located in compliance with the requirements of Table 6.2.

**8g**

Concentrated load  
20 lb maximum  
Rim board

**8h**

Hole in I-joist web  
Hole in I-joist web shall be sized and located in compliance with the requirements of Table 6.1.

**8i**

**I-JOIST MARKING**

Certified by APA  
Plant Number  
CCMC Evaluation Report Number  
CE Certification Numbers  
Production Number  
ICC-ES Evaluation Report Number  
I-joist Series

**NORDIC JOIST**  
APA PLANT 1052 202781326  
CCMC 13032-R ESR-1742  
CE 1224-CPD-0176 ETA-09/0035  
NI-40x MADE IN CANADA

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

FOR ALL construction details  
DCC3





## 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 NOL 1M0	Province ONTARIO	E-mail mcengr@explornet.com
Telephone number (519) 287-2242 Business	Fax number	Cell number	

**C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1. of Division C]**

<input type="checkbox"/> House	<input type="checkbox"/> HVAC – House	<input checked="" type="checkbox"/> Building Structural
<input type="checkbox"/> Small Buildings	<input type="checkbox"/> Building Services	<input type="checkbox"/> Plumbing – House
<input type="checkbox"/> Large Buildings	<input type="checkbox"/> Detection, Lighting and Power	<input type="checkbox"/> Plumbing – All Buildings
<input type="checkbox"/> Complex Buildings	<input type="checkbox"/> Fire Protection	<input type="checkbox"/> On-site Sewage Systems

Description of designer's work:  
 ROYAL PINE HOMES-PROJECT:VALES OF HUMBER NORTH-MODEL: 40-2-ELEV.A OR B-2ND FLOOR-NOT LOT SPECIFIC  
 REVIEW PRE-ENGINEERED FLOOR SYSTEM COMPONENT DRAWINGS AND LAYOUT PLACEMENT PLAN SUPPLIED BY  
 TAMARACK LUMBER INC. (SEE DWG #TAM19569-21 DATED 9-01-21). SUPPORTING STRUCTURE (S) TO BE REVIEWED  
 AND VERIFIED BY QUALIFIED BUILDING DESIGNER.

**D. Declaration of Designer**

I, SAM KATSOULAKOS declare that (choose one as appropriate):

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: 26064

Firm BCIN: 29991

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: \_\_\_\_\_

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 9-01-21 Signature of Designer

**NOTE:**

1. 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.
2. 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 #TAM19569-21S  
 DWG #TAM19573-21S



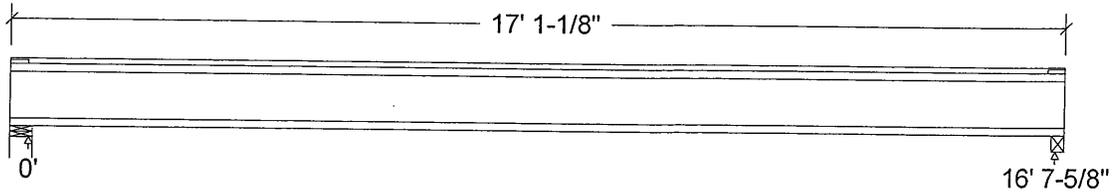
## Design Check Calculation Sheet

Nordic Sizer – Canada 8.0

**Loads:**

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

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



Unfactored:			
Dead	222		222
Live	444		444
Factored:			
Total	943		943
Bearing:			
Capacity			
Joist	2336		2138
Support	7735		4043
Des ratio			
Joist	0.40		0.44
Support	0.12		0.23
Load case	#2		#2
Length	4-3/8		2-5/8
Min req'd	1-1/2		1-1/2
Stiffener	No		No
KD	1.00		1.00
KB support	-		1.00
fcp sup	769		769
Kzcp sup	-		1.00

\*Minimum bearing length for joists is 1-1/2" for exterior supports

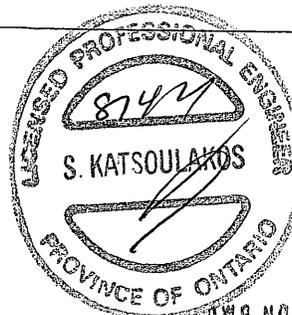
Bearing for wall supports is perpendicular-to-grain bearing on top plate. No stud design included.

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

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

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

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



pg 1/2

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 943	Vr = 2336	lbs	Vf/Vr = 0.40
Moment(+)	Mf = 3920	Mr = 6255	lbs-ft	Mf/Mr = 0.63
Perm. Defl'n	0.12 = < L/999	0.55 = L/360	in	0.21
Live Defl'n	0.23 = L/853	0.42 = L/480	in	0.56
Total Defl'n	0.35 = L/568	0.83 = L/240	in	0.42
Bare Defl'n	0.28 = L/707	0.55 = L/360	in	0.51
Vibration	Lmax = 16'-7.6	Lv = 17'-8.1	ft	0.94
Defl'n	= 0.032	= 0.038	in	0.83

**Additional Data:**

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	2336	1.00	1.00	-	-	-	-	-	#2
Mr+	6255	1.00	1.00	-	1.000	-	-	-	#2
EI	371.1 million	-	-	-	-	-	-	-	#2

**CRITICAL LOAD COMBINATIONS:**

Shear : LC #2 = 1.25D + 1.5L  
 Moment(+) : LC #2 = 1.25D + 1.5L  
 Deflection: LC #1 = 1.0D (permanent)  
               LC #2 = 1.0D + 1.0L (live)  
               LC #2 = 1.0D + 1.0L (total)  
               LC #2 = 1.0D + 1.0L (bare joist)  
 Bearing : Support 1 - LC #2 = 1.25D + 1.5L  
               Support 2 - LC #2 = 1.25D + 1.5L

Load Types: D=dead L=live(use, occupancy)

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

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

**CALCULATIONS:**

E<sub>I</sub>eff = 447.63 lb-in<sup>2</sup> K = 6.18e06 lbs GA = 0.77e06 lb

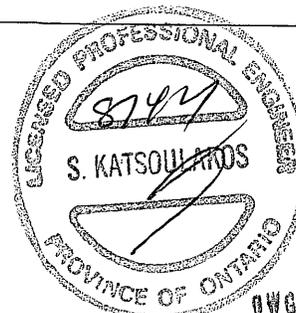
"Live" deflection is due to all non-dead loads (live, wind, snow...)

CONFORMS TO OBC 2012

**Design Notes:**

AMENDED 2020

- WoodWorks analysis and design are in accordance with the 2015 National Building Code of Canada (NBC), Division B, Part 4, and the CSA O86-14 Engineering Design in Wood standard, Update No. 2 (June 2017).
- Please verify that the default deflection limits are appropriate for your application.
- Refer to Nordic Structures technical documentation for installation guidelines and construction details.
- Nordic I-joists are listed in CCMC evaluation report 13032-R.
- Joists shall be laterally supported at supports and continuously along the compression edge.
- Allowable vibration-controlled span as per the Concluding Report, Development of Design Procedures for Vibration Controlled Spans using Engineered Wood Members, CWC et al for CCMC, 1997.
- Floor vibration design from the CCMC Concluding Report (1997) on vibration controlled spans for engineered wood products.
- The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of this component based on the design criteria and loadings shown.



662  
 DWG NO. TAM/BOBE-21  
 STRUCTURAL  
 COMPONENT ONLY

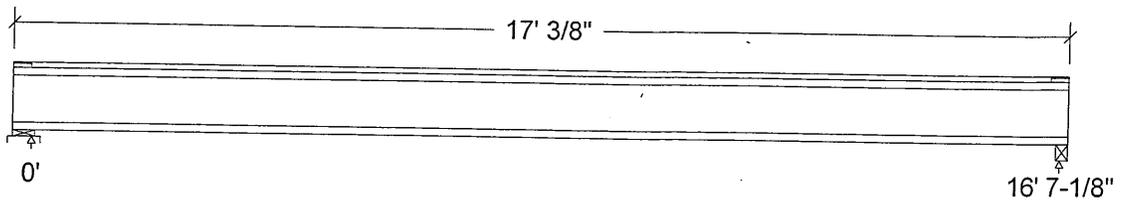
## Design Check Calculation Sheet

Nordic Sizer – Canada 8.0

### Loads:

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

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



Unfactored:			
Dead	221		221
Live	442		442
Factored:			
Total	940		940
Bearing:			
Capacity			
Joist	2336		2102
Support	7744		-
Des ratio			
Joist	0.40		0.45
Support	0.12		-
Load case	#2		#2
Length	4-3/8		2-3/8
Min req'd	1-1/2		1-1/2
Stiffener	No		No
KD	1.00		1.00
KB support	1.00		-
fcp sup	769		-
Kzcp sup	1.15		-

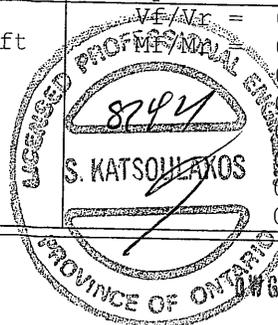
\*Minimum bearing length for joists is 1-1/2" for exterior supports

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

Supports: 1 - Lumber Sill plate, No.1/No.2; 2 - Steel Beam, W;  
Total length: 17' 3/8"; Clear span: 16' 5-5/8"; 3/4" nailed and glued OSB sheathing  
**This section PASSES the design code check.**

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 940	Vr = 2336	lbs	Vf/Vr = 0.40
Moment (+)	Mf = 3900	Mr = 6255	lbs-ft	0.62
Perm. Defl'n	0.11 = < L/999	0.55 = L/360	in	0.20
Live Defl'n	0.23 = L/879	0.41 = L/480	in	0.55
Total Defl'n	0.34 = L/586	0.83 = L/240	in	0.41
Bare Defl'n	0.28 = L/710	0.55 = L/360	in	0.51
Vibration	Lmax = 16'-7.1	Lv = 18'-1.3	ft	0.92
Defl'n	= 0.029	= 0.038	in	0.76



**Additional Data:**

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	2336	1.00	1.00	-	-	-	-	-	#2
Mr+	6255	1.00	1.00	-	1.000	-	-	-	#2
EI	371.1 million	-	-	-	-	-	-	-	#2

**CRITICAL LOAD COMBINATIONS:**

Shear : LC #2 = 1.25D + 1.5L  
 Moment (+) : LC #2 = 1.25D + 1.5L  
 Deflection: LC #1 = 1.0D (permanent)  
               LC #2 = 1.0D + 1.0L (live)  
               LC #2 = 1.0D + 1.0L (total)  
               LC #2 = 1.0D + 1.0L (bare joist)  
 Bearing : Support 1 - LC #2 = 1.25D + 1.5L  
               Support 2 - LC #2 = 1.25D + 1.5L  
 Load Types: D=dead L=live(use, occupancy)  
 Load Patterns: s=S/2 L=L+Ls \_=no pattern load in this span  
 All Load Combinations (LCs) are listed in the Analysis output

**CALCULATIONS:**

$EI_{eff} = 459.76 \text{ lb-in}^2$   $K = 6.18e06 \text{ lbs}$   $GA = 0.77e06 \text{ lb}$

"Live" deflection is due to all non-dead loads (live, wind, snow...) **CONFORMS TO OBC 2012**

**Design Notes:**

AMENDED 2020

1. WoodWorks analysis and design are in accordance with the 2015 National Building Code of Canada (NBC), Division B, Part 4, and the CSA O86-14 Engineering Design in Wood standard, Update No. 2 (June 2017).
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer to Nordic Structures technical documentation for installation guidelines and construction details.
4. Nordic I-joists are listed in CCMC evaluation report 13032-R.
5. Joists shall be laterally supported at supports and continuously along the compression edge.
6. Allowable vibration-controlled span as per the Concluding Report, Development of Design Procedures for Vibration Controlled Spans using Engineered Wood Members, CWC et al for CCMC, 1997.
7. Floor vibration design from the CCMC Concluding Report (1997) on vibration controlled spans for engineered wood products.
8. The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of this component based on the design criteria and loadings shown.



OWG NO. TAM/18089-21  
 STRUCTURAL  
 COMPONENT ONLY



**Triple 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP**  
**1ST FLR FRAMING\Flush Beams\B1(i1925) (Flush Beam)**

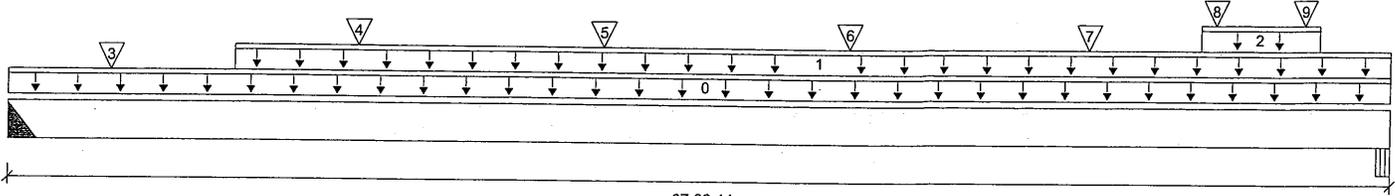
**PASSED**

BC CALC® Member Report  
Build 7773  
Job name:  
Address:  
City, Province, Postal Code:  
Customer:  
Code reports: CCMC 12472-R

Dry | 1 span | No cant.

July 12, 2021 09:09:50

File name: 40-2 EL A B SUNKEN.mmdl  
Description: 1ST FLR FRAMING\Flush Beams\B1(i1925)  
Specifier:  
Designer:  
Company:



B1 B2  
07-06-14  
Total Horizontal Product Length = 07-06-14

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

Bearing	Live	Dead	Snow	Wind
B1, 4"	1913 / 0	1032 / 0		
B2, 5-1/4"	6515 / 0	3461 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-06-14	Top	1.00	0.65	1.00	1.15	00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-02-12	07-06-14	Top	410	205			n/a
2	6(i690)	Unf. Lin. (lb/ft)	L	06-06-04	07-02-04	Top		81			n/a
3	-	Conc. Pt. (lbs)	L	00-06-12	00-06-12	Top	478	239			n/a
4	J6(i1811)	Conc. Pt. (lbs)	L	01-10-12	01-10-12	Top	149	74			n/a
5	J6(i1811)	Conc. Pt. (lbs)	L	03-02-12	03-02-12	Top	149	74			n/a
6	J5(i1744)	Conc. Pt. (lbs)	L	04-06-12	04-06-12	Top	198	99			n/a
7	J5(i1785)	Conc. Pt. (lbs)	L	05-10-12	05-10-12	Top	202	101			n/a
8	6(i690)	Conc. Pt. (lbs)	L	06-07-04	06-07-04	Top	3160	1649			n/a
9	6(i690)	Conc. Pt. (lbs)	L	07-01-04	07-01-04	Top	1480	760			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	8350 ft-lbs	55211 ft-lbs	15.1%	1	04-06-12
End Shear	6053 lbs	21696 lbs	27.9%	1	06-01-12
Total Load Deflection	L/999 (0.035")	n/a	n/a	4	03-10-12
Live Load Deflection	L/999 (0.023")	n/a	n/a	5	03-10-12
Max Defl.	0.035"	n/a	n/a	4	03-10-12
Span / Depth	7.0				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 4" x 5-1/4"	4159 lbs	n/a	16.2%	HGUS5.5/11.88
B2	Beam 5-1/4" x 5-1/4"	14099 lbs	95.8%	41.9%	Unspecified

**Cautions**

Header for the hanger HGUS5.5/11.88 is a Double 1-3/4" x 11-7/8" LVL Beam.  
Hanger model HGUS5.5/11.88 and seat length were input by the user. Hanger has not been analyzed for adequate capacity. *10/19*



OWB NO. TAM/0090-21  
STRUCTURAL  
COMPONENT ONLY



**Triple 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP**  
**1ST FLR FRAMING\Flush Beams\B1(i1925) (Flush Beam)**

**PASSED**

BC CALC® Member Report  
Build 7773

Dry | 1 span | No cant.

July 12, 2021 09:09:50

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

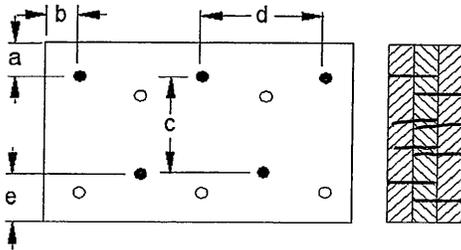
File name: 40-2 EL A B SUNKEN.mmdl  
Description: 1ST FLR FRAMING\Flush Beams\B1(i1925)  
Specifier:  
Designer:  
Company:

**Notes**

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

CONFORMS TO OBC 2012  
AMENDED 2020

**Connection Diagram: Full Length of Member**



a minimum = 1/2"  
b minimum = 3"  
c = 6-7/8"  
d = 8"  
e minimum = 3"

Calculated Side Load = 960.5 lb/ft  
Nailing applies to both sides of the member  
Connectors are: 16d Nails  
**3/2" ARDOX SPIRAL**



DWG NO. TAM 1809021  
**STRUCTURAL  
COMPONENT ONLY**

**Disclosure**

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



**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP**  
**1ST FLR FRAMING\Flush Beams\B10(i1920) (Flush Beam)**

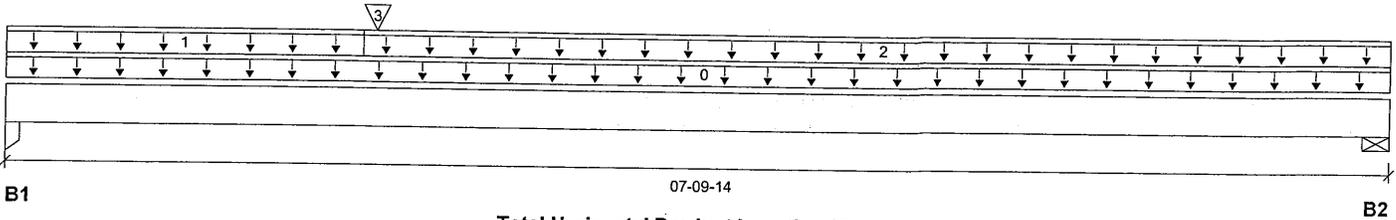
**PASSED**

BC CALC® Member Report  
Build 7773  
Job name:  
Address:  
City, Province, Postal Code:  
Customer:  
Code reports: CCMC 12472-R

Dry | 1 span | No cant.

July 12, 2021 09:09:50

File name: 40-2 EL A B SUNKEN.mmdl  
Description: 1ST FLR FRAMING\Flush Beams\B10(i1920)  
Specifier:  
Designer:  
Company:



Total Horizontal Product Length = 07-09-14

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

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	381 / 0	223 / 0		
B2, 4-3/8"	207 / 0	130 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-09-14	Top	1.00	0.65	1.00	1.15	
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	02-00-00	Top	8	4			00-00-00 n/a
2	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	02-00-00	07-09-14	Top	27	13			n/a
3	B12(i1953)	Conc. Pt. (lbs)	L	02-00-14	02-00-14	Top	416	220			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1515 ft-lbs	17696 ft-lbs	8.6%	1	02-00-14
End Shear	819 lbs	7232 lbs	11.3%	1	01-03-06
Total Load Deflection	L/999 (0.018")	n/a	n/a	4	03-07-00
Live Load Deflection	L/999 (0.011")	n/a	n/a	5	03-07-00
Max Defl.	0.018"	n/a	n/a	4	03-07-00
Span / Depth	7.4				

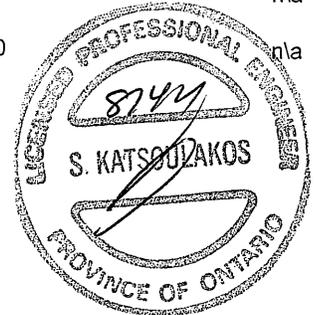
Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3-1/2" x 1-3/4"	851 lbs	17.1%	11.4%	Unspecified
B2	Wall/Plate 4-3/8" x 1-3/4"	472 lbs	10.0%	5.1%	Spruce-Pine-Fir

**Notes**

Design meets Code minimum (L/240) Total load deflection criteria.  
Design meets Code minimum (L/360) Live load deflection criteria.  
Resistance Factor phi has been applied to all presented results per CSA O86.  
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.  
Design based on Dry Service Condition.  
Importance Factor : Normal Part code : Part 9  
Calculations assume unbraced length of Top: 00-00-00, Bottom: 05-03-12.

CONFORMS TO CBC 2012

AMENDED 2020



UWB NO. TAM 18091-21

**STRUCTURAL COMPONENT ONLY**

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



**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP**  
**1ST FLR FRAMING\Flush Beams\B11(i2001) (Flush Beam)**

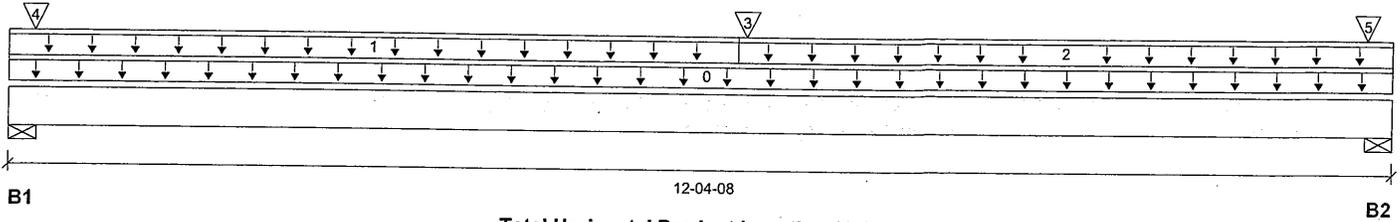
**PASSED**

BC CALC® Member Report  
Build 7773  
Job name:  
Address:  
City, Province, Postal Code:  
Customer:  
Code reports: CCMC 12472-R

Dry | 1 span | No cant.

July 12, 2021 09:09:50

File name: 40-2 EL A B SUNKEN.mmdl  
Description: 1ST FLR FRAMING\Flush Beams\B11(i2001)  
Specifier:  
Designer:  
Company:



Total Horizontal Product Length = 12-04-08

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

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	1666 / 0	1577 / 0		
B2, 5-1/2"	425 / 0	268 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-04-08	Top	1.00	0.65	1.00	1.15	
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	06-05-08	Top	19	9			00-00-00
2	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	06-05-08	12-04-08	Top	27	13			n/a
3	B12(i1953)	Conc. Pt. (lbs)	L	06-06-06	06-06-06	Top	446	235			n/a
4	E27(i1419)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top	1330	1366			n/a
5	3(i686)	Conc. Pt. (lbs)	L	12-01-12	12-01-12	Top	36	30			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3706 ft-lbs	17696 ft-lbs	20.9%	1	06-06-06
End Shear	787 lbs	7232 lbs	10.9%	1	10-11-02
Total Load Deflection	L/999 (0.111")	n/a	n/a	4	06-03-10
Live Load Deflection	L/999 (0.069")	n/a	n/a	5	06-03-10
Max Defl.	0.111"	n/a	n/a	4	06-03-10
Span / Depth	11.7				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 1-3/4"	4471 lbs	75.5%	38.1%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 1-3/4"	972 lbs	16.4%	8.3%	Spruce-Pine-Fir

**Notes**

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

CONFORMS TO OBC 2012

AMENDED 2020



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



**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP**  
**1ST FLR FRAMING\Flush Beams\B12(i1953) (Flush Beam)**

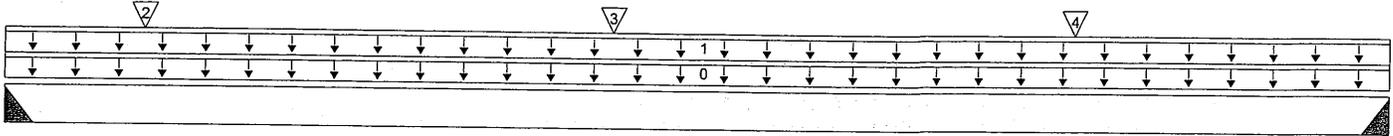
**PASSED**

BC CALC® Member Report  
 Build 7773  
 Job name:  
 Address:  
 City, Province, Postal Code:  
 Customer:  
 Code reports: CCMC 12472-R

Dry | 1 span | No cant.

July 12, 2021 09:09:50

File name: 40-2 EL A B SUNKEN.mmdl  
 Description: 1ST FLR FRAMING\Flush Beams\B12(i1953)  
 Specifier:  
 Designer:  
 Company:



B1 03-11-12 B2  
 Total Horizontal Product Length = 03-11-12

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

Bearing	Live	Dead	Snow	Wind
B1, 2"	447 / 0	236 / 0		
B2, 2"	415 / 0	220 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-11-12	Top	1.00	0.65	1.00	1.15	
1	STAIR	Unf. Lin. (lb/ft)	L	00-00-00	03-11-12	Top	120	60			00-00-00
2	J6(i1894)	Conc. Pt. (lbs)	L	00-04-12	00-04-12	Top	102	51			n/a
3	J6(i1932)	Conc. Pt. (lbs)	L	01-08-12	01-08-12	Top	151	76			n/a
4	J6(i1978)	Conc. Pt. (lbs)	L	03-00-12	03-00-12	Top	132	66			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	889 ft-lbs	17696 ft-lbs	5.0%	1	01-08-12
End Shear	526 lbs	7232 lbs	7.3%	1	02-09-14
Total Load Deflection	L/999 (0.003")	n/a	n/a	4	02-00-01
Live Load Deflection	L/999 (0.002")	n/a	n/a	5	02-00-01
Max Defl.	0.003"	n/a	n/a	4	02-00-01
Span / Depth	3.8				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	966 lbs	n/a	22.6%	HUS1.81/10
B2	Hanger 2" x 1-3/4"	898 lbs	n/a	21.0%	HUS1.81/10

**Cautions**

Header for the hanger HUS1.81/10 is a Single 1-3/4" x 11-7/8" LVL Beam.  
 Hanger model HUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

**Notes**

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



REG. NO. TAM 18093-21  
**STRUCTURAL COMPONENT ONLY**

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CONFORMS TO OBC 2012

AMENDED 2020

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



**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP**  
**1ST FLR FRAMING\Flush Beams\B13(i1912) (Flush Beam)**

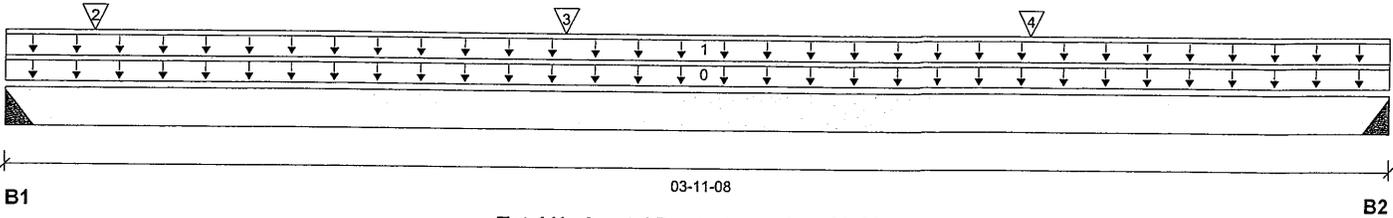
**PASSED**

BC CALC® Member Report  
Build 7773  
Job name:  
Address:  
City, Province, Postal Code:  
Customer:  
Code reports: CCMC 12472-R

Dry | 1 span | No cant.

July 12, 2021 09:09:50

File name: 40-2 EL A B SUNKEN.mmdl  
Description: 1ST FLR FRAMING\Flush Beams\B13(i1912)  
Specifier:  
Designer:  
Company:



Total Horizontal Product Length = 03-11-08

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

Bearing	Live	Dead	Snow	Wind
B1, 2"	458 / 0	241 / 0		
B2, 2"	411 / 0	218 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-11-08	Top	1.00	0.65	1.00	1.15	
1	STAIR	Unf. Lin. (lb/ft)	L	00-00-00	03-11-08	Top	120	60			n/a
2	J6(i1999)	Conc. Pt. (lbs)	L	00-03-00	00-03-00	Top	95	47			n/a
3	J6(i1812)	Conc. Pt. (lbs)	L	01-07-00	01-07-00	Top	154	77			n/a
4	J6(i1821)	Conc. Pt. (lbs)	L	02-11-00	02-11-00	Top	145	73			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	870 ft-lbs	17696 ft-lbs	4.9%	1	01-08-13
End Shear	549 lbs	7232 lbs	7.6%	1	02-09-10
Total Load Deflection	L/999 (0.003")	n/a	n/a	4	01-11-09
Live Load Deflection	L/999 (0.002")	n/a	n/a	5	01-11-09
Max Defl.	0.003"	n/a	n/a	4	01-11-09
Span / Depth	3.8				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	988 lbs	n/a	23.1%	HUS1.81/10
B2	Hanger 2" x 1-3/4"	888 lbs	n/a	20.8%	HUS1.81/10

**Cautions**

Header for the hanger HUS1.81/10 is a Single 1-3/4" x 11-7/8" LVL Beam.  
Hanger model HUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.  
Header for the hanger HUS1.81/10 is a Double 1-3/4" x 11-7/8" LVL Beam.

**Notes**

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

CONFORMS TO OBC 2012

AMENDED 2020



OWB NO. TAM 18094-21  
**STRUCTURAL COMPONENT ONLY**

**Disclosure**

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



**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP**  
**1ST FLR FRAMING\Flush Beams\B14(i1964) (Flush Beam)**

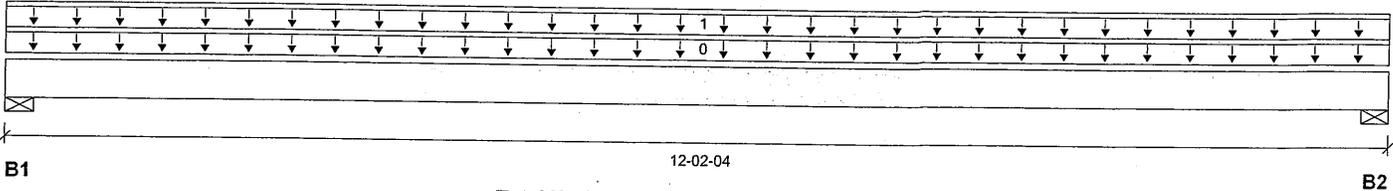
**PASSED**

BC CALC® Member Report  
 Build 7773  
 Job name:  
 Address:  
 City, Province, Postal Code:  
 Customer:  
 Code reports: CCMC 12472-R

Dry | 1 span | No cant.

July 12, 2021 09:09:50

File name: 40-2 EL A B SUNKEN.mmdl  
 Description: 1ST FLR FRAMING\Flush Beams\B14(i1964)  
 Specifier:  
 Designer:  
 Company:



Total Horizontal Product Length = 12-02-04

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

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	99 / 0	86 / 0		
B2, 4-3/8"	99 / 0	86 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-02-04	Top	1.00	0.65	1.00	1.15	
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	12-02-04	Top	16	8			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	705 ft-lbs	17696 ft-lbs	4.0%	1	06-01-02
End Shear	199 lbs	7232 lbs	2.8%	1	01-04-04
Total Load Deflection	L/999 (0.025")	n/a	n/a	4	06-01-02
Live Load Deflection	L/999 (0.013")	n/a	n/a	5	06-01-02
Max Defl.	0.025"	n/a	n/a	4	06-01-02
Span / Depth	11.7				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 1-3/4"	256 lbs	5.4%	2.7%	Spruce-Pine-Fir
B2	Wall/Plate 4-3/8" x 1-3/4"	256 lbs	5.4%	2.7%	Spruce-Pine-Fir

**Notes**

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Resistance Factor phi has been applied to all presented results per CSA O86.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 9  
 Calculations assume unbraced length of Top: 00-00-00, Bottom: 11-05-08.

CONFORMS TO CBC 2012  
 AMENDED 2020



DWG NO. TAM 18095-21  
**STRUCTURAL COMPONENT ONLY**

**Disclosure**

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



**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP**  
**1ST FLR FRAMING\Flush Beams\B2(i1971) (Flush Beam)**

**PASSED**

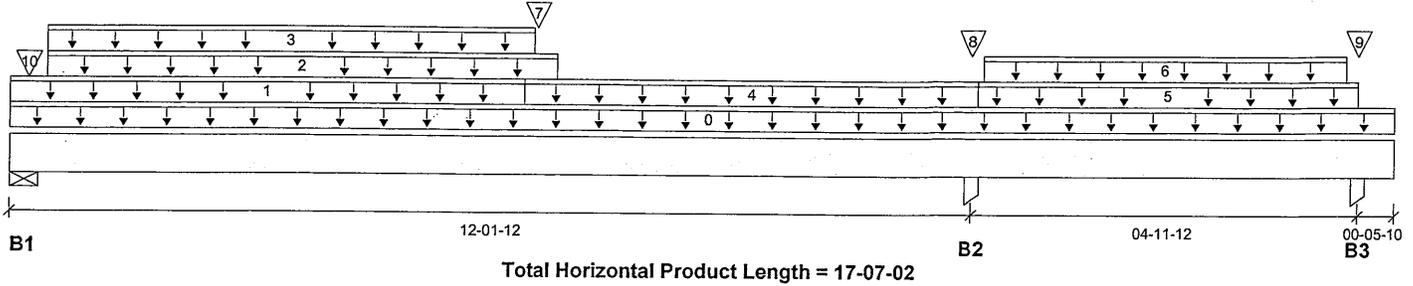
BC CALC® Member Report  
Build 7773

Dry | 3 spans | R cant.

July 12, 2021 09:09:50

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

File name: 40-2 EL A B SUNKEN.mmdl  
Description: 1ST FLR FRAMING\Flush Beams\B2(i1971)  
Specifier:  
Designer:  
Company:



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

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	1148 / 1	1692 / 0		
B2, 3-1/2"	2412 / 0	1982 / 0		
B3, 3-1/2"	1983 / 642	730 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	17-07-02	Top		12			00-00-00
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	06-05-08	Top	17	9			n/a
2	7(i700)	Unf. Lin. (lb/ft)	L	00-05-08	06-10-08	Top		81			n/a
3	7(i700)	Unf. Lin. (lb/ft)	L	00-05-08	06-07-00	Top	34	23			n/a
4	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	06-05-08	12-02-10	Top	38	19			n/a
5	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	12-02-10	17-01-08	Top	17				n/a
6	WALL	Unf. Lin. (lb/ft)	L	12-03-08	16-11-10	Top		60			n/a
7	-	Conc. Pt. (lbs)	L	06-07-09	06-07-09	Top	1839	968			n/a
8	B3(i1974)	Conc. Pt. (lbs)	L	12-01-12	12-01-12	Top	159	201			n/a
9	B1(i1925)	Conc. Pt. (lbs)	L	17-01-08	17-01-08	Top	1896	1022			n/a
10	E27(i1419)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top	286	834			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	10086 ft-lbs	35392 ft-lbs	28.5%	2	06-07-14
Neg. Moment	-8364 ft-lbs	-29362 ft-lbs	28.5%	4	12-01-12
End Shear	2111 lbs	14464 lbs	14.6%	2	01-05-06
Cont. Shear	3512 lbs	14464 lbs	24.3%	4	11-00-02
Total Load Deflection	L/1055 (0.134")	n/a	22.8%	13	05-11-00
Live Load Deflection	L/999 (0.077")	n/a	n/a	18	06-00-10
Total Neg. Defl.	L/999 (-0.016")	n/a	n/a	13	14-02-09
Max Defl.	0.134"	n/a	n/a	13	05-11-00
Span / Depth	11.9				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	3836 lbs	32.4%	16.3%	Spruce-Pine-Fir
B2	Column 3-1/2" x 3-1/2"	6095 lbs	61.3%	40.8%	Unspecified
B3	Column 3-1/2" x 3-1/2"	3887 lbs	39.1%	26.0%	Unspecified
B3	Uplift	306 lbs			



096 NO. TAM 10096 = 21  
STRUCTURAL  
COMPONENT ONLY



**Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP**  
**1ST FLR FRAMING\Flush Beams\B2(i1971) (Flush Beam)**

**PASSED**

BC CALC® Member Report  
 Build 7773  
 Job name:  
 Address:  
 City, Province, Postal Code:  
 Customer:  
 Code reports: CCMC 12472-R

Dry | 3 spans | R cant.

July 12, 2021 09:09:50

File name: 40-2 EL A B SUNKEN.mmdl  
 Description: 1ST FLR FRAMING\Flush Beams\B2(i1971)  
 Specifier:  
 Designer:  
 Company:

**Cautions**

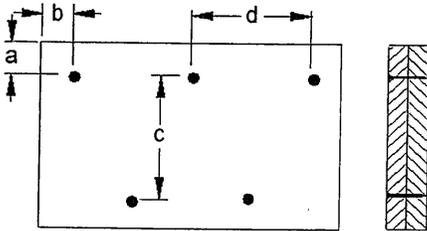
Uplift of 306 lbs found at bearing B3. *(SIMPSON 2-H25A @ D. B3)*  
 Concentrated side load(s) 12 are closer than 18" from end of member. Please consult a technical representative or Professional of Record. *) OK*

**Notes**

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

CONFORMS TO OBC 2012  
 AMENDED 2020

**Connection Diagram: Full Length of Member**



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

Calculated Side Load = 438.9 lb/ft  
 Connectors are: 16d *17* Nails  
**3 1/2" ARDOX SPIRAL**



*PKM*  
 DWG NO. TAM/8096-21  
**STRUCTURAL COMPONENT ONLY**

**Disclosure**

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**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP**  
1ST FLR FRAMING\Flush Beams\B3(i1974) (Flush Beam)

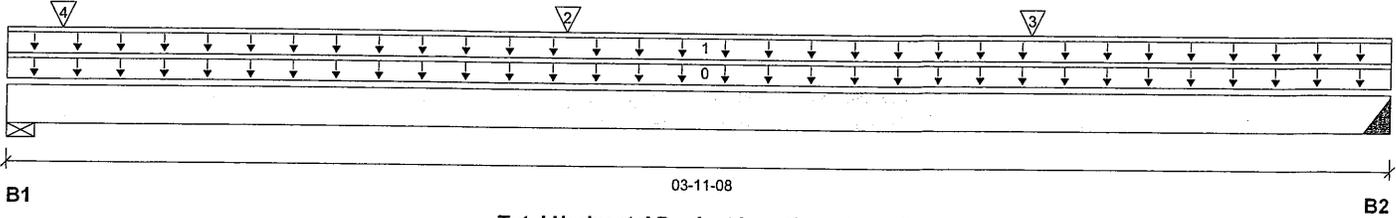
**PASSED**

BC CALC® Member Report  
Build 7773  
Job name:  
Address:  
City, Province, Postal Code:  
Customer:  
Code reports: CCMC 12472-R

Dry | 1 span | No cant.

July 12, 2021 09:09:50

File name: 40-2 EL A B SUNKEN.mmdl  
Description: 1ST FLR FRAMING\Flush Beams\B3(i1974)  
Specifier:  
Designer:  
Company:



Total Horizontal Product Length = 03-11-08

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

Bearing	Live	Dead	Snow	Wind
B1, 3-3/4"	165 / 0	243 / 0		
B2, 2"	164 / 0	208 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-11-08	Top		6			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	03-11-08	Top		60			n/a
2	J6(i1812)	Conc. Pt. (lbs)	L	01-07-00	01-07-00	Top	154	77			n/a
3	J6(i1821)	Conc. Pt. (lbs)	L	02-11-00	02-11-00	Top	145	73			n/a
4	3(i686)	Conc. Pt. (lbs)	L	00-01-14	00-01-14	Top	30	40			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	507 ft-lbs	17696 ft-lbs	2.9%	1	01-07-00
End Shear	376 lbs	7232 lbs	5.2%	1	02-09-10
Total Load Deflection	L/999 (0.002")	n/a	n/a	4	02-00-08
Live Load Deflection	L/999 (0.001")	n/a	n/a	5	02-00-08
Max Defl.	0.002"	n/a	n/a	4	02-00-08
Span / Depth	3.6				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-3/4" x 1-3/4"	551 lbs	13.6%	6.9%	Spruce-Pine-Fir
B2	Hanger 2" x 1-3/4"	507 lbs	n/a	11.9%	HUS1.81/10

**Cautions**

Header for the hanger HUS1.81/10 is a Double 1-3/4" x 11-7/8" LVL Beam.  
Hanger model HUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

**Notes**

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

CONFORMS TO CBC 2012

AMENDED 2020



DWG NO. TAM 18097-21  
**STRUCTURAL COMPONENT ONLY**

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



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

PASSED

## 1ST FLR FRAMING\Flush Beams\B4(i1781) (Flush Beam)

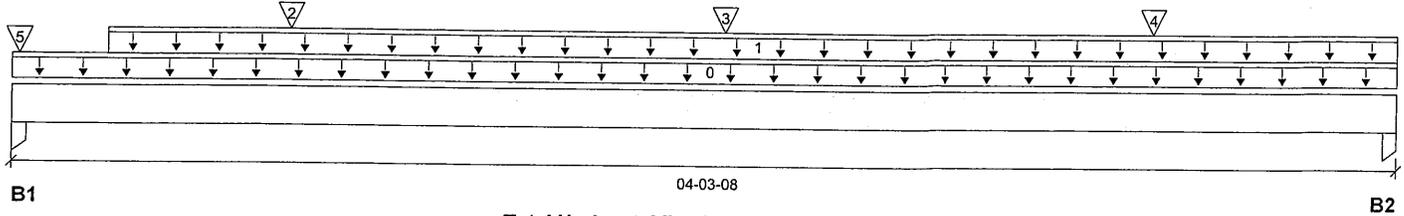
Dry | 1 span | No cant.

July 12, 2021 09:09:50

BC CALC® Member Report  
Build 7773

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

File name: 40-2 EL A B SUNKEN.mmdl  
Description: 1ST FLR FRAMING\Flush Beams\B4(i1781)  
Specifier:  
Designer:  
Company:



Total Horizontal Product Length = 04-03-08

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

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	472 / 0	248 / 0		
B2, 1-3/4"	458 / 0	241 / 0		

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-03-08	Top	1.00	0.65	1.00	1.15	00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-03-08	04-03-08	Top	120	60			n/a
2	J6(i1729)	Conc. Pt. (lbs)	L	00-10-04	00-10-04	Top	117	58			n/a
3	J6(i1787)	Conc. Pt. (lbs)	L	02-02-04	02-02-04	Top	145	72			n/a
4	J6(i1811)	Conc. Pt. (lbs)	L	03-06-04	03-06-04	Top	145	72			n/a
5	FC2 Floor Decking (Plan View Fill)	Conc. Pt. (lbs)	L	00-00-04	00-00-04	Top	43	21			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1008 ft-lbs	17696 ft-lbs	5.7%	1	02-02-04
End Shear	577 lbs	7232 lbs	8.0%	1	03-01-14
Total Load Deflection	L/999 (0.004")	n/a	n/a	4	02-03-00
Live Load Deflection	L/999 (0.003")	n/a	n/a	5	02-03-00
Max Defl.	0.004"	n/a	n/a	4	02-03-00
Span / Depth	4.0				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Column	3-1/2" x 1-3/4"	1018 lbs	20.5%	13.6%	Unspecified
B2 Column	1-3/4" x 1-3/4"	989 lbs	39.8%	26.5%	Unspecified

### Notes

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

CONFORMS TO OBC 2012  
AMENDED 2020



DWG NO. TAM 18098-21

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



**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP**  
**1ST FLR FRAMING\Flush Beams\B5(i1721) (Flush Beam)**

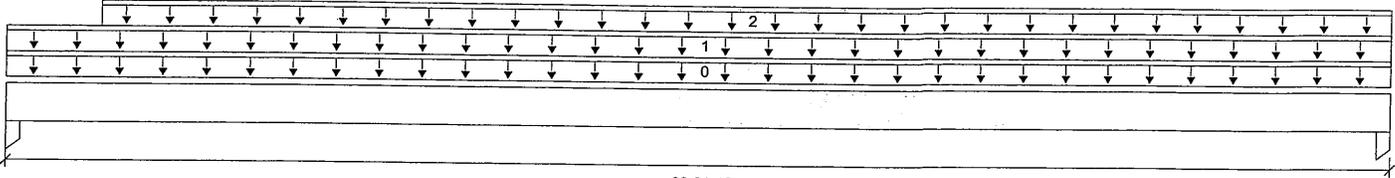
**PASSED**

BC CALC® Member Report  
 Build 7773  
 Job name:  
 Address:  
 City, Province, Postal Code:  
 Customer:  
 Code reports: CCMC 12472-R

Dry | 1 span | No cant.

July 12, 2021 09:09:50

File name: 40-2 EL A B SUNKEN.mmdl  
 Description: 1ST FLR FRAMING\Flush Beams\B5(i1721)  
 Specifier:  
 Designer:  
 Company:



B1 02-01-12 B2

Total Horizontal Product Length = 02-01-12

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

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	10 / 0	76 / 0		
B2, 3-1/2"	12 / 0	77 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	02-01-12	Top	1.00	0.65	1.00	1.15	00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	02-01-12	Top		60			na
2	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-01-12	02-01-12	Top	11	6			na

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	36 ft-lbs	11502 ft-lbs	0.3%	0	01-00-14
End Shear	21 lbs	4701 lbs	0.4%	0	01-03-06
Span / Depth	1.7				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3-1/2" x 1-3/4"	106 lbs	3.3%	2.2%	Unspecified
B2	Column 3-1/2" x 1-3/4"	108 lbs	3.3%	2.2%	Unspecified

**Notes**

Resistance Factor phi has been applied to all presented results per CSA O86.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 9  
 Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-10-04.

CONFORMS TO CBC 2012  
 AMENDED 2020



OWB NO. TAM 18099-21  
**STRUCTURAL COMPONENT ONLY**

**Disclosure**

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



**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP**  
**1ST FLR FRAMING\Flush Beams\B6(i1722) (Flush Beam)**

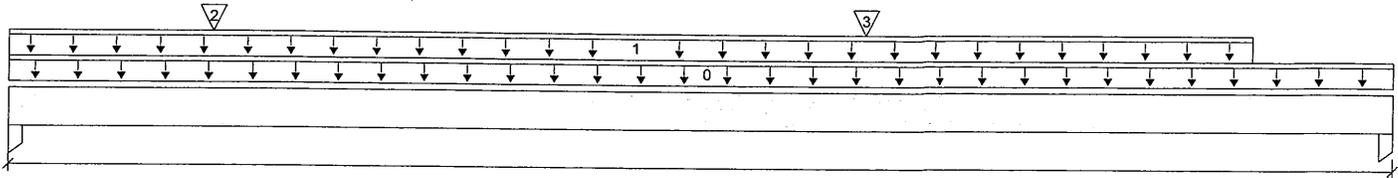
**PASSED**

BC CALC® Member Report  
Build 7773  
Job name:  
Address:  
City, Province, Postal Code:  
Customer:  
Code reports: CCMC 12472-R

Dry | 1 span | No cant.

July 12, 2021 09:09:50

File name: 40-2 EL A B SUNKEN.mmdl  
Description: 1ST FLR FRAMING\Flush Beams\B6(i1722)  
Specifier:  
Designer:  
Company:



B1 02-10-04 B2  
Total Horizontal Product Length = 02-10-04

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

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	217 / 0	197 / 0		
B2, 3-1/2"	152 / 0	158 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	02-10-04	Top	1.00	0.65	1.00	1.15	00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	02-06-12	Top		60			n/a
2	J5(i1744)	Conc. Pt. (lbs)	L	00-05-00	00-05-00	Top	171	85			n/a
3	J5(i1785)	Conc. Pt. (lbs)	L	01-09-00	01-09-00	Top	198	99			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	343 ft-lbs	17696 ft-lbs	1.9%	1	01-09-00
End Shear	266 lbs	7232 lbs	3.7%	1	01-06-14
Total Load Deflection	L/999 (0.001")	n/a	n/a	4	01-04-09
Live Load Deflection	L/999 (0")	n/a	n/a	5	01-04-09
Max Defl.	0.001"	n/a	n/a	4	01-04-09
Span / Depth	2.6				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 1-3/4" x 1-3/4"	572 lbs	23.0%	15.3%	Unspecified
B2	Column 3-1/2" x 1-3/4"	426 lbs	8.6%	5.7%	Unspecified

**Notes**

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

CONFORMS TO OBC 2012

AMENDED 2020



DWG NO. TAM/B100-21  
**STRUCTURAL COMPONENT ONLY**

**Disclosure**

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



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

**PASSED**

## 1ST FLR FRAMING\Flush Beams\B7(i1969) (Flush Beam)

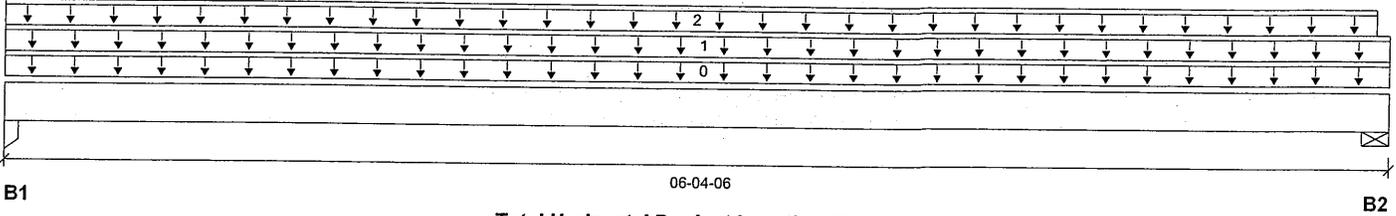
Dry | 1 span | No cant.

July 12, 2021 09:09:50

BC CALC® Member Report  
Build 7773

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

File name: 40-2 EL A B SUNKEN.mmdl  
Description: 1ST FLR FRAMING\Flush Beams\B7(i1969)  
Specifier:  
Designer:  
Company:



Total Horizontal Product Length = 06-04-06

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

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	392 / 0	214 / 0		
B2, 4-3/8"	412 / 0	226 / 0		

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	06-04-06	Top	1.00	0.65	1.00	1.15	
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	06-04-06	Top	8	4			00-00-00 n/a
2	STAIR	Unf. Lin. (lb/ft)	L	00-00-00	06-03-10	Top	120	60			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1244 ft-lbs	17696 ft-lbs	7.0%	1	03-00-14
End Shear	540 lbs	7232 lbs	7.5%	1	01-01-10
Total Load Deflection	L/999 (0.012")	n/a	n/a	4	03-00-14
Live Load Deflection	L/999 (0.008")	n/a	n/a	5	03-00-14
Max Defl.	0.012"	n/a	n/a	4	03-00-14
Span / Depth	6.0				

### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 1-3/4" x 1-3/4"	856 lbs	34.4%	22.9%	Unspecified
B2	Wall/Plate 4-3/8" x 1-3/4"	901 lbs	19.1%	9.6%	Spruce-Pine-Fir

### Notes

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

CONFORMS TO OBC 2012  
AMENDED 2020



096 NO. TAM/8101-21  
STRUCTURAL  
COMPONENT ONLY

### Disclosure

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



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

**PASSED**

1ST FLR FRAMING\Flush Beams\B8(i1995) (Flush Beam)

Dry | 1 span | No cant.

July 12, 2021 09:09:50

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

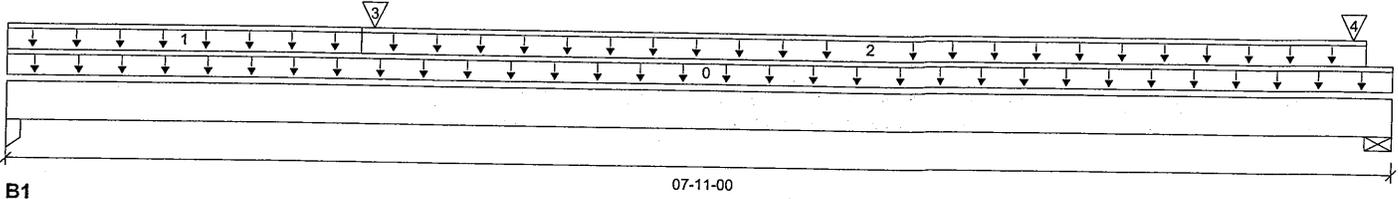
File name: 40-2 EL A B SUNKEN.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B8(i1995)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 07-11-00

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

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	440 / 0	252 / 0		
B2, 5-1/2"	234 / 0	156 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-11-00	Top	1.00	6	1.00	1.15	00-00-00
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	02-00-00	Top	22	11			n/a
2	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	02-00-00	07-09-02	Top	27	13			n/a
3	B13(i1912)	Conc. Pt. (lbs)	L	02-00-14	02-00-14	Top	463	243			n/a
4	3(i686)	Conc. Pt. (lbs)	L	07-08-04	07-08-04	Top	14	19			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1687 ft-lbs	17696 ft-lbs	9.5%	1	02-00-14
End Shear	907 lbs	7232 lbs	12.5%	1	01-03-06
Total Load Deflection	L/999 (0.02")	n/a	n/a	4	03-07-00
Live Load Deflection	L/999 (0.013")	n/a	n/a	5	03-07-00
Max Defl.	0.02"	n/a	n/a	4	03-07-00
Span / Depth	7.4				

**Bearing Supports**

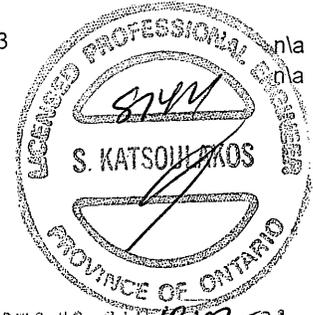
	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3-1/2" x 1-3/4"	975 lbs	19.7%	13.1%	Unspecified
B2	Wall/Plate 5-1/2" x 1-3/4"	546 lbs	9.2%	4.6%	Spruce-Pine-Fir

**Notes**

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

CONFORMS TO CBC 2012

AMENDED 2020



996 NO. TAM/18102-21

**STRUCTURAL COMPONENT ONLY**

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

**PASSED**

1ST FLR FRAMING\Flush Beams\B9(i1884) (Flush Beam)

Dry | 1 span | No cant.

July 12, 2021 09:09:50

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

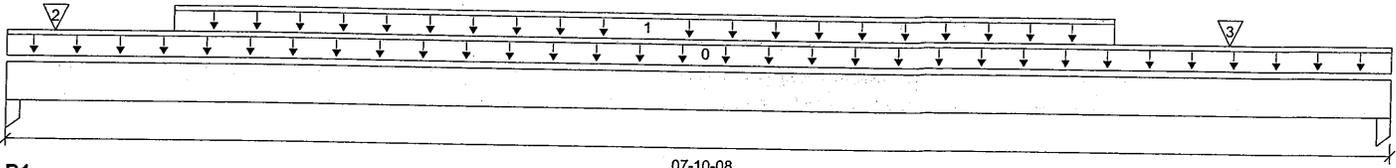
File name: 40-2 EL A B SUNKEN.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B9(i1884)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 07-10-08

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

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	593 / 0	320 / 0		
B2, 1-3/4"	541 / 0	293 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-10-08	Top	1.00	0.65	1.00	1.15	
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-11-04	06-03-04	Top	154	77			00-00-00
2	J5(i1952)	Conc. Pt. (lbs)	L	00-03-04	00-03-04	Top	131	66			n/a
3	J5(i1923)	Conc. Pt. (lbs)	L	06-11-04	06-11-04	Top	183	91			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2477 ft-lbs	17696 ft-lbs	14.0%	1	04-03-04
End Shear	1090 lbs	7232 lbs	15.1%	1	06-08-14
Total Load Deflection	L/999 (0.038")	n/a	n/a	4	03-11-04
Live Load Deflection	L/999 (0.025")	n/a	n/a	5	03-11-04
Max Defl.	0.038"	n/a	n/a	4	03-11-04
Span / Depth	7.8				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 1-3/4" x 1-3/4"	1290 lbs	51.9%	34.5%	Unspecified
B2	Column 1-3/4" x 1-3/4"	1177 lbs	47.3%	31.5%	Unspecified

**Notes**

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

CONFORMS TO OBC 2012

AMENDED 2020



OWB NO. TAM 18103-21  
**STRUCTURAL COMPONENT ONLY**

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

**PASSED**

## 2ND FLR FRAMING\Dropped Beams\B15 DR(i691) (Dropped Beam)

Dry | 1 span | No cant.

July 12, 2021 09:09:50

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

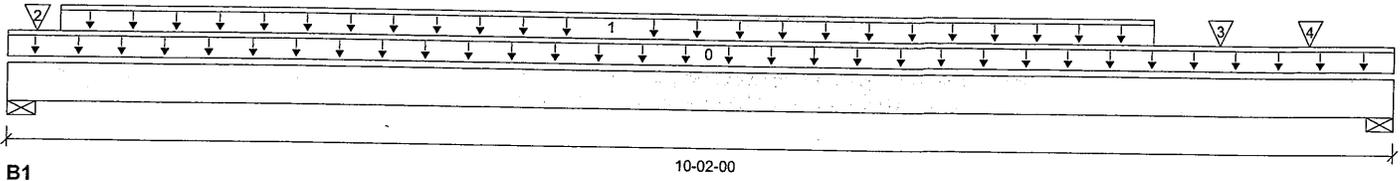
File name: 40-2 EL A B SUNKEN.mmdl

Description: 2ND FLR FRAMING\Dropped Beams\B15 DR(i691)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 10-02-00

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

Bearing	Live	Dead	Snow	Wind
B1, 4"	3142 / 0	1647 / 0		
B2, 4"	2569 / 0	1359 / 0		

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-02-00	Top	1.00	0.65	1.00	1.15	
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-04-08	08-04-08	Top	612	307			00-00-00
2	J1(i736)	Conc. Pt. (lbs)	L	00-02-08	00-02-08	Top	452	226			n/a
3	J2(i1054)	Conc. Pt. (lbs)	L	08-10-08	08-10-08	Top	137	68			n/a
4	J1(i770)	Conc. Pt. (lbs)	L	09-06-08	09-06-08	Top	226	113			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	14972 ft-lbs	36222 ft-lbs	41.3%	1	04-10-08
End Shear	5608 lbs	17356 lbs	32.3%	1	01-01-08
Total Load Deflection	L/492 (0.235")	n/a	48.8%	4	05-00-08
Live Load Deflection	L/750 (0.154")	n/a	48.0%	5	05-00-08
Max Defl.	0.235"	n/a	n/a	4	05-00-08
Span / Depth	12.2				

### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4" x 5-1/4"	6772 lbs	24.2%	26.4%	Spruce-Pine-Fir
B2	Wall/Plate 4" x 5-1/4"	5552 lbs	19.8%	21.7%	Spruce-Pine-Fir

### Notes

- Design meets Code minimum (L/240) Total load deflection criteria.
- Design meets Code minimum (L/360) Live load deflection criteria.
- Resistance Factor phi has been applied to all presented results per CSA O86.
- BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
- Design based on Dry Service Condition.
- Importance Factor : Normal Part code : Part 9
- Calculations assume unbraced length of Top: 00-10-12, Bottom: 10-02-00.

CONFORMS TO CBC 2012

AMENDED 2020



OWB NO. TAM 18104-21  
STRUCTURAL  
COMPONENT ONLY



BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File name: 40-2 EL A B SUNKEN.mmdl

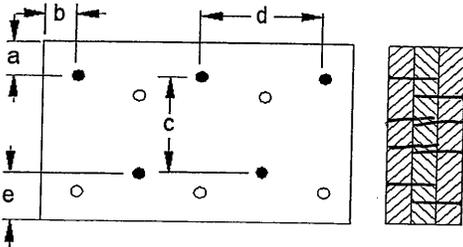
Description: 2ND FLR FRAMING\Dropped Beams\B15 DR(i691)

Specifier:

Designer:

Company:

**Connection Diagram: Full Length of Member**



*4 rows*

a minimum = 1"

b minimum = 3"

c = 6-1/2"

d = 8'

e minimum = 3"

Nailing applies to both sides of the member

Connectors are: *1* Nails

**3 1/2" ARDOX SPIRAL**



DWG NO. TAM 18104-21  
**STRUCTURAL  
COMPONENT ONLY**

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



**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP**  
2ND FLR FRAMING\Dropped Beams\B18 DR(i1713) (Dropped Beam)

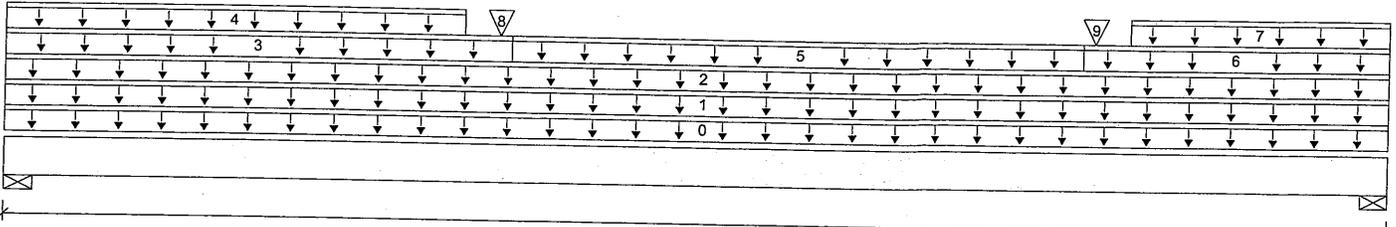
**PASSED**

BC CALC® Member Report  
Build 7773  
Job name:  
Address:  
City, Province, Postal Code:  
Customer:  
Code reports: CCMC 12472-R

Dry | 1 span | No cant.

July 12, 2021 09:09:50

File name: 40-2 EL A B SUNKEN.mmdl  
Description: 2ND FLR FRAMING\Dropped Beams\B18 DR(i1713)  
Specifier:  
Designer:  
Company:



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

Bearing	Live	Dead	Snow	Wind
B1, 4"	39 / 0	684 / 0	378 / 0	
B2, 4"	39 / 0	682 / 0	376 / 0	

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	09-08-00	Top	1.00	0.65	1.00	1.15	
1	R1(i1704)	Unf. Lin. (lb/ft)	L	00-00-00	09-08-00	Top		10			00-00-00
2	J2(i1710)	Unf. Lin. (lb/ft)	L	00-00-00	09-08-00	Top	4	5			n/a
3	R1(i1704)	Unf. Lin. (lb/ft)	L	00-00-00	09-08-00	Top	4	5			n/a
4	R1(i1704)	Unf. Lin. (lb/ft)	L	00-00-00	03-06-00	Top		81			n/a
5	R1(i1704)	Unf. Lin. (lb/ft)	L	00-00-00	03-02-00	Top		42	78		n/a
6	R1(i1704)	Unf. Lin. (lb/ft)	L	03-06-00	07-06-00	Top		61			n/a
7	R1(i1704)	Unf. Lin. (lb/ft)	L	07-06-00	09-08-00	Top		81			n/a
8	R1(i1704)	Unf. Lin. (lb/ft)	L	07-10-00	09-08-00	Top		42	78		n/a
8	R1(i1704)	Conc. Pt. (lbs)	L	03-05-00	03-05-00	Top		134	184		n/a
9	R1(i1704)	Conc. Pt. (lbs)	L	07-07-00	07-07-00	Top		132	180		n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2847 ft-lbs	16647 ft-lbs	17.1%	13	03-07-08
End Shear	745 lbs	7521 lbs	9.9%	0	01-01-08
Total Load Deflection	L/999 (0.066")	n/a	n/a	35	04-09-00
Live Load Deflection	L/999 (0.024")	n/a	n/a	51	04-09-00
Max Defl.	0.066"	n/a	n/a	35	04-09-00
Span / Depth	11.5				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4" x 3-1/2"	958 lbs	7.9%	8.6%	Spruce-Pine-Fir
B2	Wall/Plate 4" x 3-1/2"	954 lbs	7.9%	8.6%	Spruce-Pine-Fir



OWG NO. TAM18105-21  
STRUCTURAL  
COMPONENT ONLY



**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP**  
2ND FLR FRAMING\Dropped Beams\B18 DR(i1713) (Dropped Beam)

**PASSED**

BC CALC® Member Report  
Build 7773  
Job name:  
Address:  
City, Province, Postal Code:  
Customer:  
Code reports: CCMC 12472-R

Dry | 1 span | No cant.

July 12, 2021 09:09:50

File name: 40-2 EL A B SUNKEN.mmdl  
Description: 2ND FLR FRAMING\Dropped Beams\B18 DR(i1713)  
Specifier:  
Designer:  
Company:

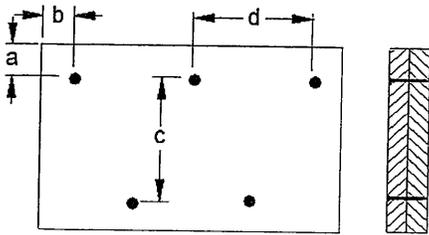
**Notes**

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

CONFORMS TO CBC 2012

AMENDED 2020

**Connection Diagram: Full Length of Member**



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

Connectors are: 1 : Nails  
**3/8" ARDOX SPIRAL**



OWB NO. TAM 18105-21  
**STRUCTURAL COMPONENT ONLY**

**Disclosure**

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



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

**PASSED**

**2ND FLR FRAMING\Flush Beams\B17(i1906) (Flush Beam)**

Dry | 1 span | No cant.

July 12, 2021 09:09:50

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

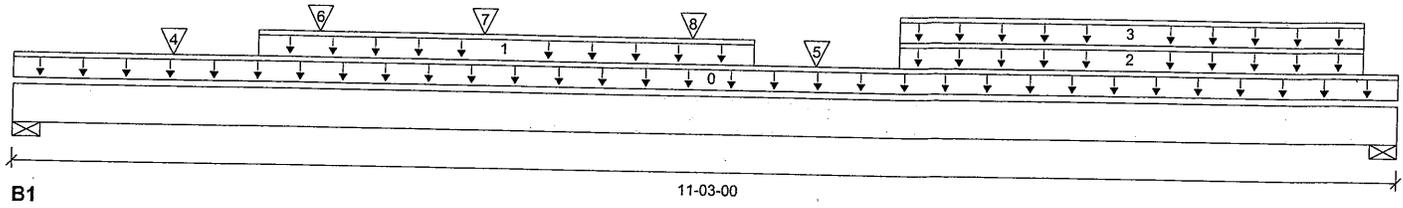
File name: 40-2 EL A B SUNKEN.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B17(i1906)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 11-03-00

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

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	2723 / 0	1432 / 0		
B2, 4"	3161 / 0	1650 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	11-03-00	Top	1.00	0.65	1.00	1.15	
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-11-08	05-11-08	Top	273	137			00-00-00
2	Smoothed Load	Unf. Lin. (lb/ft)	L	07-01-08	10-11-08	Top	354	177			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	07-01-08	10-11-08	Top	285	142			n/a
4	-	Conc. Pt. (lbs)	L	01-03-06	01-03-06	Top	622	311			n/a
5	-	Conc. Pt. (lbs)	L	06-05-08	06-05-08	Top	658	329			n/a
6	J3(i1951)	Conc. Pt. (lbs)	L	02-05-08	02-05-08	Top	283	141			n/a
7	J3(i1934)	Conc. Pt. (lbs)	L	03-09-08	03-09-08	Top	318	159			n/a
8	J1(i1986)	Conc. Pt. (lbs)	L	05-05-08	05-05-08	Top	436	218			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	17311 ft-lbs	35392 ft-lbs	48.9%	1	05-05-08
End Shear	5982 lbs	14464 lbs	41.4%	1	09-11-02
Total Load Deflection	L/507 (0.251")	n/a	47.4%	4	05-08-08
Live Load Deflection	L/771 (0.165")	n/a	46.7%	5	05-08-08
Max Defl.	0.251"	n/a	n/a	4	05-08-08
Span / Depth	10.7				

**Bearing Supports**

Bearing	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	5875 lbs	49.6%	25.0%	Spruce-Pine-Fir
B2	Wall/Plate 4" x 3-1/2"	6804 lbs	79.0%	39.8%	Spruce-Pine-Fir

**Notes**

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

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

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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

CONFORMS TO OBC 2012

AMENDED 2020



898 NO. TAM/18106 -21  
STRUCTURAL  
COMPONENT ONLY



BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File name: 40-2 EL A B SUNKEN.mmdl

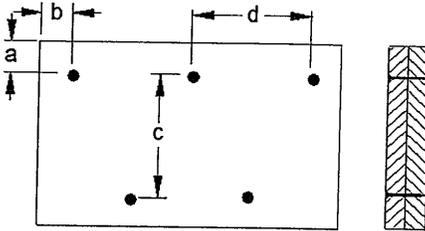
Description: 2ND FLR FRAMING\Flush Beams\B17(i1906)

Specifier:

Designer:

Company:

**Connection Diagram: Full Length of Member**



a minimum = 2"  
b minimum = 3"

c = 7-7/8"  
d = 8"

Calculated Side Load = 823.8 lb/ft  
Connectors are: 16d Nails

**3 1/2" ARDOX SPIRAL**



DWG NO. TAM 19106-21  
**STRUCTURAL COMPONENT ONLY**

**Disclosure**

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



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

**PASSED**

2ND FLR FRAMING\Flush Beams\B19(i1891) (Flush Beam)

Dry | 1 span | No cant.

July 12, 2021 09:09:50

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

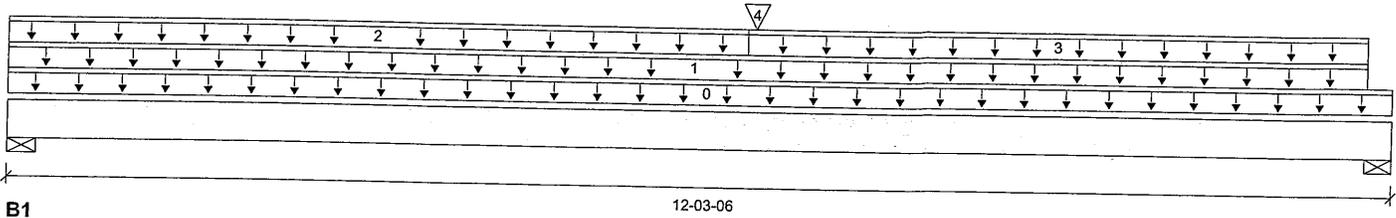
File name: 40-2 EL A B SUNKEN.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B19(i1891)

Specifier:

Designer:

Company:



Total Horizontal Product Length = 12-03-06

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

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	474 / 0	289 / 0		
B2, 5-1/2"	560 / 0	336 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-03-06	Top	1.00	0.65	1.00	1.15	
1	FC3 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	12-00-10	Top	15	8			00-00-00 n/a
2	FC3 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	06-05-14	Top	3	2			n/a
3	FC3 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	06-05-14	12-00-10	Top	12	6			n/a
4	B20(i1961)	Conc. Pt. (lbs)	L	06-06-12	06-06-12	Top	768	418			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	5728 ft-lbs	17696 ft-lbs	32.4%	1	06-06-12
End Shear	1179 lbs	7232 lbs	16.3%	1	10-10-00
Total Load Deflection	L/833 (0.167")	n/a	28.8%	4	06-02-00
Live Load Deflection	L/999 (0.105")	n/a	n/a	5	06-02-00
Max Defl.	0.167"	n/a	n/a	4	06-02-00
Span / Depth	11.7				

**Bearing Supports**

Bearing	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 1-3/4"	1073 lbs	22.8%	11.5%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 1-3/4"	1259 lbs	21.3%	10.7%	Spruce-Pine-Fir

**Notes**

- Design meets Code minimum (L/240) Total load deflection criteria.
- Design meets Code minimum (L/360) Live load deflection criteria.
- Resistance Factor phi has been applied to all presented results per CSA O86.
- BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
- Design based on Dry Service Condition.
- Importance Factor : Normal Part code : Part 9
- Calculations assume unbraced length of Top: 00-00-00, Bottom: 06-01-08.

CONFORMS TO OBC 2012

AMENDED 2020



**Disclosure COMPONENT ONLY**

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**Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP**  
**2ND FLR FRAMING\Flush Beams\B20(i1961) (Flush Beam)**

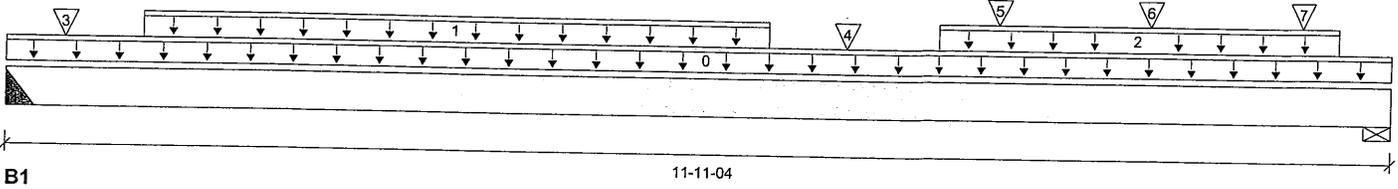
**PASSED**

BC CALC® Member Report  
Build 7773  
Job name:  
Address:  
City, Province, Postal Code:  
Customer:  
Code reports: CCMC 12472-R

Dry | 1 span | No cant.

July 12, 2021 09:09:50

File name: 40-2 EL A B SUNKEN.mmdl  
Description: 2ND FLR FRAMING\Flush Beams\B20(i1961)  
Specifier:  
Designer:  
Company:



Total Horizontal Product Length = 11-11-04

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

Bearing	Live	Dead	Snow	Wind
B1, 2"	773 / 0	421 / 0		
B2, 5-1/2"	1428 / 0	751 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	11-11-04	Top	1.00	0.65	1.00	1.15	
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-02-00	06-06-00	Top	114	57			00-00-00
2	STAIR	Unf. Lin. (lb/ft)	L	07-11-12	11-05-12	Top	120	60			n/a
3	J5(i737)	Conc. Pt. (lbs)	L	00-06-00	00-06-00	Top	109	54			n/a
4	J5(i741)	Conc. Pt. (lbs)	L	07-02-00	07-02-00	Top	132	66			n/a
5	J3(i1879)	Conc. Pt. (lbs)	L	08-06-00	08-06-00	Top	331	166			n/a
6	J3(i1951)	Conc. Pt. (lbs)	L	09-10-00	09-10-00	Top	283	141			n/a
7	J3(i1934)	Conc. Pt. (lbs)	L	11-02-00	11-02-00	Top	316	158			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	5863 ft-lbs	17696 ft-lbs	33.1%	1	07-02-00
End Shear	2356 lbs	7232 lbs	32.6%	1	10-05-14
Total Load Deflection	L/683 (0.201")	n/a	35.1%	4	06-00-00
Live Load Deflection	L/1050 (0.131")	n/a	34.3%	5	06-00-00
Max Defl.	0.201"	n/a	n/a	4	06-00-00
Span / Depth	11.6				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	1685 lbs	n/a	39.5%	HUS1.81/10
B2	Wall/Plate 5-1/2" x 1-3/4"	3081 lbs	52.0%	26.2%	Spruce-Pine-Fir

**Cautions**

Header for the hanger HUS1.81/10 is a Single 1-3/4" x 11-7/8" LVL Beam.  
Hanger model HUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.



HWB NO. TAM/18/08-21  
STRUCTURAL  
COMPONENT ONLY



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

## 2ND FLR FRAMING\Flush Beams\B20(i1961) (Flush Beam)

Dry | 1 span | No cant.

**PASSED**

July 12, 2021 09:09:50

BC CALC® Member Report

Build 7773

Job name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File name: 40-2 EL A B SUNKEN.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B20(i1961)

Specifier:

Designer:

Company:

### Notes

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

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

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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

CONFORMS TO CBC 2012

AMENDED 2020



SWG NO. TAM/18108-21

**STRUCTURAL  
COMPONENT ONLY**

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# NORDIC STRUCTURES

## Maximum Floor Spans – S2.1

### Design Criteria

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

### Maximum Floor Spans

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

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

### Notes:

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

## Maximum Floor Spans – S4.1

### Design Criteria

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

### Maximum Floor Spans

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

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

### Notes:

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

# NORDIC STRUCTURES

## Maximum Floor Spans – S6.1

### Design Criteria

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

### Maximum Floor Spans

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

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

### Notes:

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

## Maximum Floor Spans – S7.1

### Design Criteria

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

### Maximum Floor Spans

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

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

### Notes:

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

## Maximum Floor Spans – M2.1

### Design Criteria

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

### Maximum Floor Spans

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

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

### Notes:

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

## Maximum Floor Spans – M4.1

### Design Criteria

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

### Maximum Floor Spans

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

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

### Notes:

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

## Maximum Floor Spans – M6.1

### Design Criteria

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

### Maximum Floor Spans

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

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

### Notes:

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

## Maximum Floor Spans – M7.1

### Design Criteria

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

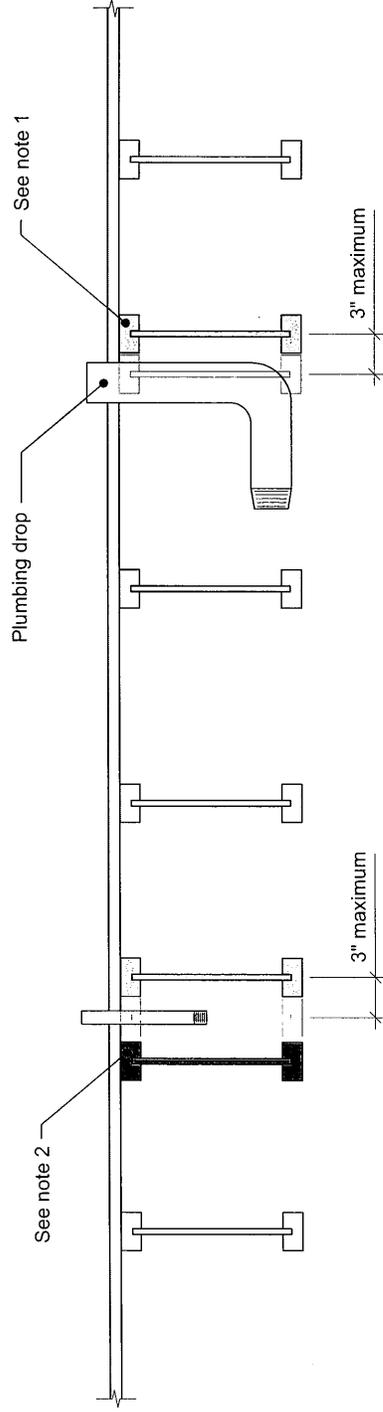
### Maximum Floor Spans

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

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

### Notes:

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

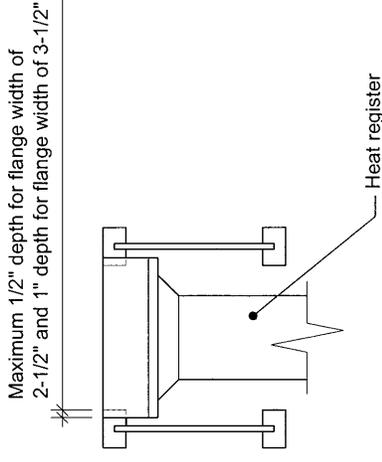
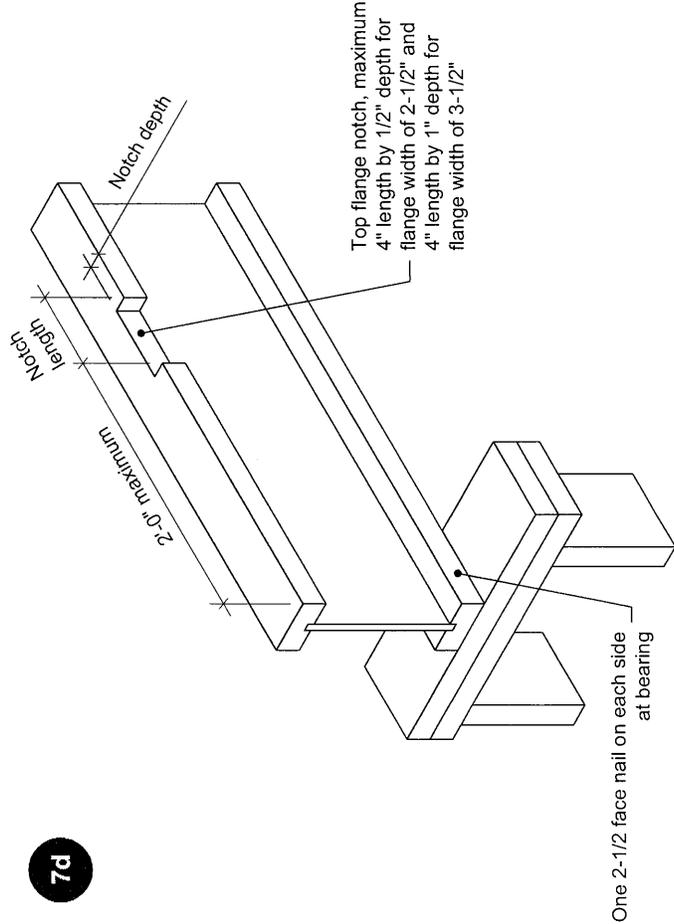


**Notes:**

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

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

<b>NORDIC</b> STRUCTURES nordic.ca	NS-DC3  DETAILS <b>NORDIC JOIST</b>	TITLE	DRAWING	PAGE
		Allowance for Piping Openings for Vertical Elements	7c	3.10
		CATEGORY	DATE	PAGE
		-	2020-10-01	3.10



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

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

 nordic.ca	NS-DC3  DETAILS 	TITLE <b>Notch in I-joist for Heat Register</b>		DRAWING <b>7d</b>
		CATEGORY <b>Openings for Vertical Elements</b>		SCALE -
				PAGE <b>3.11</b>