

Products				
PlotID	Length	Product	Plies	Net Qty
J1	14-00-00	9 1/2" NI-40x	1	6
J2	8-00-00	9 1/2" NI-40x	1	2
J3	20-00-00	11 7/8" NI-40x	2	2
J4	16-00-00	11 7/8" NI-40x	1	3
J5	10-00-00	11 7/8" NI-40x	1	3
J6	6-00-00	11 7/8" NI-40x	1	4
J7	2-00-00	11 7/8" NI-40x	1	4
J8	20-00-00	11 7/8" NI-80	1	22
B7AL	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B1	20-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B5	12-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B2	10-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B4	6-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	1	1
B3	4-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	1	1

Connector Summary		
Qty	Manuf	Product
2	H1	IUS2.56/11.88
8	H1	IUS2.56/11.88
4	H1	IUS2.56/11.88
1	H2	HUS1.81/10
1	H2	HUS1.81/10
1	H4	HGUS410
6	H11	IUS2.56/9.5

DATE: 1/19/24

1st FLOOR FRAMING  
SUNKEN -5R

TOWN OF BRADFORD WEST GWILLIMBURY  
BUILDING DEPARTMENT  
PLANS EXAMINED  
ONTARIO BUILDING CODE APPLIES  
DATE: 2024-04-25  
INSPECTOR: SE

REVIEWED



FROM PLAN DATED: 2023/11  
BUILDER: BAYVIEW WELLINGTON  
SITE: BRADFORD CAPITAL  
MODEL: THWU-12  
ELEVATION: A,B  
LOT:  
CITY: BRADFORD  
SALESMAN: RICK DICIANO  
DESIGNER: AJ  
REVISION:

REFER TO THE **NORDIC INSTALLATION GUIDE**  
FOR PROPER STORAGE AND INSTALLATION.  
**SQUASH BLOCKS** OF 2x4, 2x6, 2x8 SPF #2 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 6 AND TABLES 6.1/6.2.  
**CERAMIC TILE** APPLICATION AS PER OBC 9.30.6.

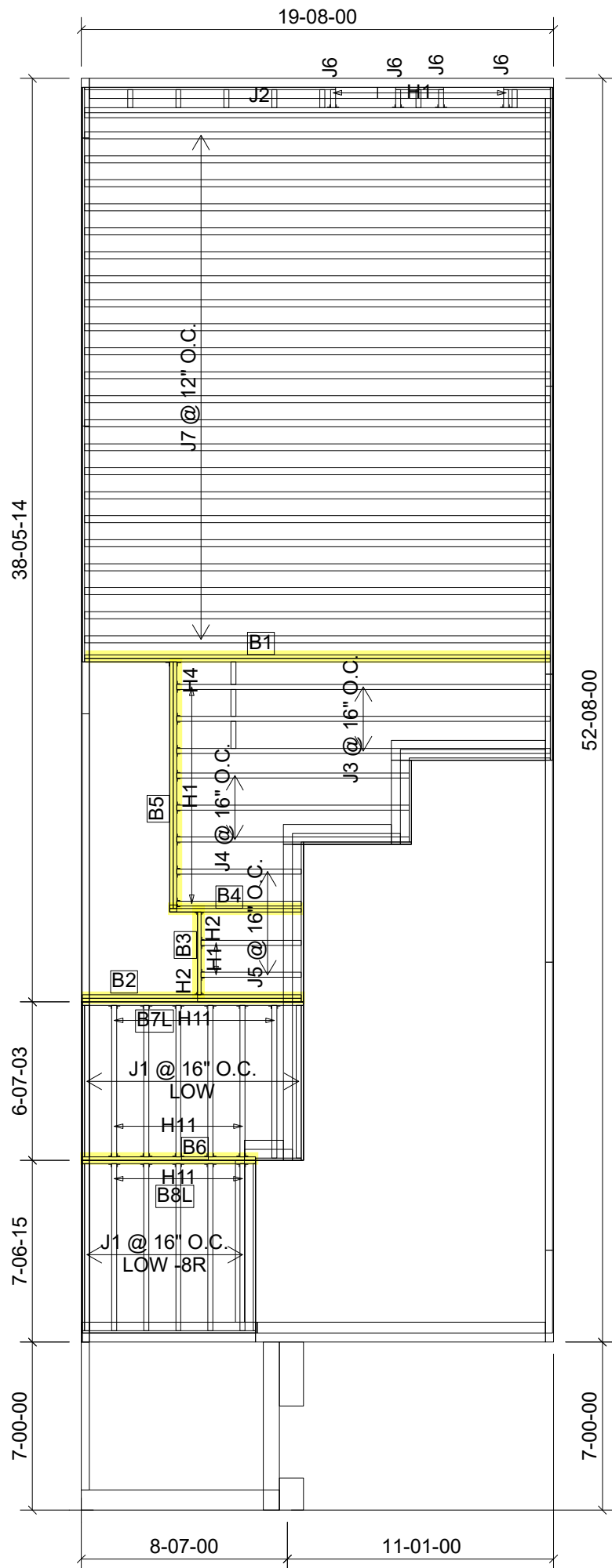
ALL **CONNECTORS** MUST BE INSTALLED AS PER THE  
**MANUFACTURER'S SPECIFICATIONS** USING THE  
MANUFACTURER **SPECIFIED FASTENERS**.  
ALL **BEAM HANGER FASTENERS** INSTALLED INTO  
THE **SUPPORTING MEMBER** **MUST** BE A MINIMUM  
OF **3.5"** IN LENGTH UNLESS OTHERWISE SPECIFIED  
BY THE SUPPORTING MEMBER ENGINEER OF RECORD.

**LOADING:**  
LIVE LOAD: 40.0 lb/ft<sup>2</sup>  
DEAD LOAD: 15.0 lb/ft<sup>2</sup>  
TILE LOAD: +5.0 lb/ft<sup>2</sup>

JOIST LL DEFLECTION LIMIT: L/480

SUBFLOOR: 3/4" GLUED AND NAILED





Products				
PlotID	Length	Product	Plies	Net Qty
J1	8-00-00	9 1/2" NI-40x	1	14
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J3	16-00-00	11 7/8" NI-40x	1	3
J4	10-00-00	11 7/8" NI-40x	1	3
J5	6-00-00	11 7/8" NI-40x	1	4
J6	2-00-00	11 7/8" NI-40x	1	4
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4	H1	IUS2.56/11.88
1	H2	HUS1.81/10
1	H2	HUS1.81/10
1	H4	HGUS410
16	H11	IUS2.56/9.5

DATE: 1/19/24

1st FLOOR FRAMING  
SUNKEN -8R

TOWN OF BRADFORD WEST GWILLIMBURY  
BUILDING DEPARTMENT  
PLANS EXAMINED  
ONTARIO BUILDING CODE APPLIES  
DATE: 2024-04-25  
INSPECTOR: SE

REVIEWED



FROM PLAN DATED: 2023/11  
BUILDER: BAYVIEW WELLINGTON  
SITE: BRADFORD CAPITAL  
MODEL: THWU-12  
ELEVATION: A,B  
LOT:  
CITY: BRADFORD  
SALESMAN: RICK DICIANO  
DESIGNER: AJ  
REVISION:

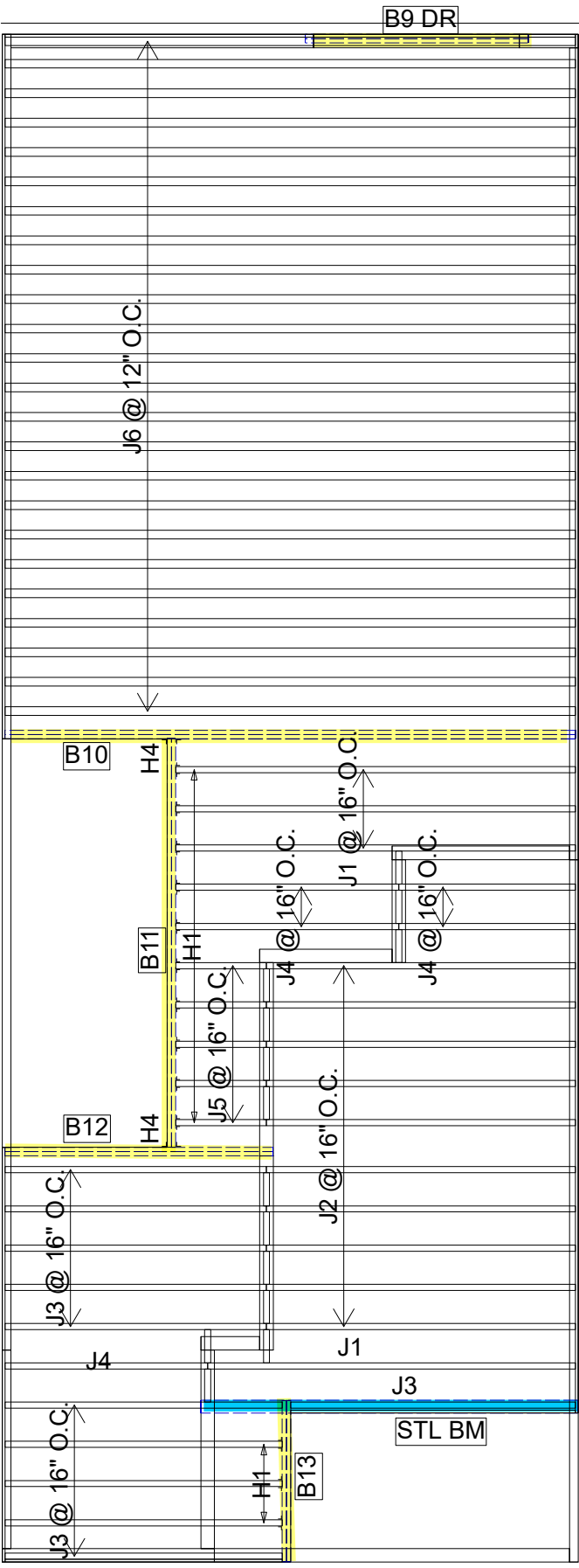
REFER TO THE **NORDIC INSTALLATION GUIDE** FOR PROPER STORAGE AND INSTALLATION.  
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**MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1.  
**CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURES 4/5 FOR REINFORCEMENT REQUIREMENTS.  
FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 6 AND TABLES 6.1/6.2.  
**CERAMIC TILE** APPLICATION AS PER OBC 9.30.6.

ALL **CONNECTORS** MUST BE INSTALLED AS PER THE **MANUFACTURER'S SPECIFICATIONS** USING THE MANUFACTURER **SPECIFIED FASTENERS**.  
ALL **BEAM HANGER FASTENERS** INSTALLED INTO THE **SUPPORTING MEMBER MUST** BE A MINIMUM OF **3.5"** IN LENGTH UNLESS OTHERWISE SPECIFIED BY THE SUPPORTING MEMBER ENGINEER OF RECORD.

**LOADING:**  
LIVE LOAD: 40.0 lb/ft<sup>2</sup>  
DEAD LOAD: 15.0 lb/ft<sup>2</sup>  
TILE LOAD: +5.0 lb/ft<sup>2</sup>

JOIST LL DEFLECTION LIMIT: L/480  
SUBFLOOR: 3/4" GLUED AND NAILED





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J4	8-00-00	11 7/8" NI-40x	1	5
J5	4-00-00	11 7/8" NI-40x	1	5
J6	20-00-00	11 7/8" NI-80	1	24
B9 DR	8-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B10	20-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B11	14-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B12	10-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B13	6-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2

Connector Summary		
Qty	Manuf	Product
13	H1	IUS2.56/11.88
2	H4	HGUS410

DATE: 2024-01-10

2nd FLOOR FRAMING

TOWN OF BRADFORD WEST GWILLIMBURY  
BUILDING DEPARTMENT  
PLANS EXAMINED  
ONTARIO BUILDING CODE APPLIES  
DATE: 2024-04-25  
INSPECTOR: SE

REVIEWED



FROM PLAN DATED: 2023/11  
BUILDER: BAYVIEW WELLINGTON  
SITE: BRADFORD CAPITAL  
MODEL: THWU-12  
ELEVATION: A,B  
LOT:  
CITY: BRADFORD  
SALESMAN: RICK DICIANO  
DESIGNER: AJ  
REVISION:

REFER TO THE **NORDIC INSTALLATION GUIDE** FOR PROPER STORAGE AND INSTALLATION.  
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LIVE LOAD: 40.0 lb/ft<sup>2</sup>  
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TILE LOAD: +5.0 lb/ft<sup>2</sup>

JOIST LL DEFLECTION LIMIT: L/480  
SUBFLOOR: 3/4" GLUED AND NAILED



# NORDIC

## INSTALLATION GUIDE NORDIC JOIST

NS-G133   
ENGLISH  
VERSION  
2020-10-01

Engineered Wood Products

## BASIC INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



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 6,000 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 building 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 0.144 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-bridging at joist ends. When I-joists are applied continuous over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
  2. When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joist rollover or buckling.
    - Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on centre, and must be secured with a minimum of two 2-1/2-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-bridging.
  4. Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only.
  5. Never install a damaged I-joist.
- Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable hole sizes and locations, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines carefully.



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



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

### NORDIC I-JOIST SERIES

#### RESIDENTIAL SERIES

**NI-20**  
**2x3** S-P-F No. 2  
3/8 in. web  
Depths  
9-1/2 and 11-7/8 in.  
33 pieces per unit

**NI-40x**  
**2x3** 1950F MSR  
3/8 in. web  
Depths  
9-1/2, 11-7/8 and 14 in.  
33 pieces per unit

**NI-60**  
**2x3** 2100F MSR  
3/8 in. web  
Depths  
9-1/2, 11-7/8, 14 and 16 in.  
33 pieces per unit

**NI-80**  
**2x4** 2400F MSR  
3/8 in. web  
Depths  
11-7/8, 14 and 16 in.  
23 pieces per unit

**NI-90**  
**2x4** 2400F MSR  
3/8 in. web  
Depths  
11-7/8, 14 and 16 in.  
23 pieces per unit

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

### WEB STIFFENERS

**2** Concentrated Load (Load Stiffener)

End Bearing (Bearing Stiffener)

Stiffener Size Requirements

Flange width (in.)	Web stiffener size each side of web (in.)
2-1/2	1 x 2-5/16 Minimum width
3-1/2	1-1/2 x 2-5/16 Minimum width

### NAIL SPACING

Nailing into flange face

Nailing into flange edge

Nailed to Only One Flange Edge (Top View)

Nailed to Both Flange Edges (Top View)

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>(a)</sup>		
	End distance (in.)	Nail spacing (in.)	End distance (in.)	Nail spacing (in.)	Nail spacing (in.)	
0.128" or smaller in diameter, and 3-1/4" or shorter in length	2	2	2	2	4	
Greater than 0.128" up to 0.148" in diameter, and 3-1/4" or shorter in length	2	3	2	3	6	

<sup>(a)</sup> If more than one row is required, offset rows a minimum of 1/2 inch and stagger.

<sup>(b)</sup> Closest nail spacing measured from one flange edge. Nails on opposite flange edge must be offset one-half the minimum spacing.

**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 plate using 2-1/2" toe-nails at 6" o.c.

One 2-1/2" face nail at each side at bearing

**1d** Nordic I-joist or rim board blocking panel per detail 1a

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

**1e** 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** Load-bearing wall above shall align vertically with the wall below. Other conditions, such as offset bearing walls, are not covered by this detail.

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).

Joist attachment per detail 1b

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

Nordic I-joist blocking panel per detail 1a

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

Double I-joist header

Filler block per detail 1p

Top- or face-mount hanger

Backer block required: - Only on the loaded side for top-mount hangers - On both sides for face-mount hangers

Notes:

1. An occasional blocking panel (one per line of blocking) may be left out for the passage of plumbing or ventilation ducts. For other applications, contact Nordic Structures.
2. For other options, see details 1g-1 to 1g-5.

**1j** Top- or face-mount hanger installed per manufacturer's recommendations

**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 joist web to lumber piece

Two 2-1/2" nails from blocking panel web to lumber piece

Notes:

1. This detail may be used to reduce floor vibration.
2. Blocking panels may be of any I-joist series. Nails attaching lumber piece to I-joist web should be driven from the web side and clinched on the lumber side.
3. One occasional blocking panel may be left out for the passage of plumbing or ventilation ducts. Otherwise, a hole of not more than 2/3 of the lesser dimension of the blocking depth or length may be drilled in the blocking panel.

**1m** Install hanger per manufacturer's recommendations

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

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

Attach I-joist per detail 1b

**1p** Filler block

Offset nails from opposite face by 6"

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

Notes:

1. Support back of I-joist web during nailing to prevent damage to web/flange connection.
2. Leave a 1/8-inch to 1/4-inch gap between top of filler block and bottom of top I-joist flange.
3. Filler block is required between joists for full length of span.
4. For flange width of 2-1/2 inches, nail joists together with two rows of 3-inch nails at 12 inches o.c. (clinched 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).
5. The maximum factored load may be applied to one side of the double I-joist using this detail is 860 dBf.

**1q** 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	2x8 x 5/8" or 3/4" sheathing
	11-7/8	2-1/8 to 2-1/4 x 8	2x8 x 5/8" or 3/4" sheathing
	14	2-1/8 to 2-1/4 x 10	2x10 x 5/8" or 3/4" sheathing
3-1/2	9-1/2	3 x 6	2 x 2x6
	11-7/8	3 x 8	2 x 2x6
	14	3 x 10	2 x 2x10

Notes:

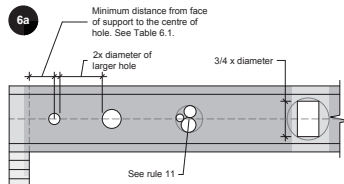
1. The height of the filler block may be different from that specified in the table, as long as it allows nailing and respects the required gap.

### 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.

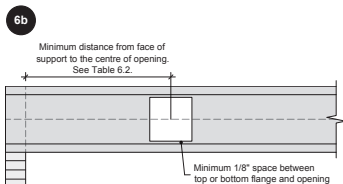


- Notes:
1. Never drill, cut or notch the flange, or over-cut the web.
  2. Holes in web should be cut with a sharp saw.
  3. For rectangular holes, avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular 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.

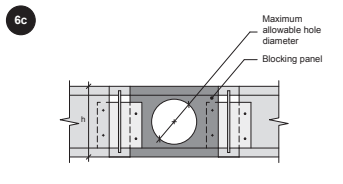


- Notes:
1. Never drill, cut or notch the flange, or over-cut the web.
  2. Holes in web should be cut with a sharp saw.
  3. Avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling a 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's depth or length. Assuming the blocking panel is longer than its height (or depth), the table aside 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, rectangle holes may be used provided the corners are not over cut. Slightly rounding corners or pre-drilling corners with a 1-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	9-3/4
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

Simple or multiple span		Minimum distance from inside face of any support to centre of hole (ft-in.)																
Joist depth	Joist series	2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	11	12	12-3/4		
9-1/2"	NI-20	0'-7"	1'-6"	2'-10"	4'-3"	5'-8"	6'-0"	-	-	-	-	-	-	-	-	-		
	NI-40x	0'-7"	1'-6"	3'-0"	4'-4"	6'-0"	6'-4"	-	-	-	-	-	-	-	-	-		
	NI-60	1'-3"	2'-6"	4'-0"	5'-4"	7'-0"	7'-5"	-	-	-	-	-	-	-	-	-		
	NI-80	2'-3"	3'-6"	5'-0"	6'-6"	8'-2"	8'-8"	-	-	-	-	-	-	-	-	-		
11-7/8"	NI-20	0'-7"	0'-8"	1'-0"	2'-4"	3'-8"	4'-0"	5'-0"	6'-8"	7'-9"	-	-	-	-	-	-		
	NI-40x	0'-7"	0'-8"	1'-3"	2'-8"	4'-0"	4'-4"	5'-5"	7'-2"	8'-4"	-	-	-	-	-	-		
	NI-60	0'-7"	1'-8"	3'-0"	4'-3"	5'-9"	6'-0"	7'-3"	6'-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"	1'-5"	3'-2"	4'-10"	5'-4"	6'-9"	8'-9"	10'-2"	-	-	-	-	-	-		
	NI-40x	0'-7"	0'-8"	1'-0"	2'-4"	2'-9"	3'-9"	5'-2"	6'-0"	6'-6"	8'-3"	10'-2"	-	-	-	-		
	NI-60	0'-7"	0'-8"	1'-8"	3'-0"	4'-3"	4'-8"	5'-8"	7'-2"	8'-0"	8'-8"	10'-4"	11'-9"	-	-	-		
	NI-80	0'-10"	2'-0"	3'-4"	4'-9"	6'-2"	6'-5"	7'-6"	9'-0"	10'-0"	10'-8"	12'-4"	13'-9"	-	-	-		
16"	NI-20	0'-7"	0'-8"	0'-10"	2'-5"	4'-0"	4'-5"	5'-9"	7'-5"	8'-8"	9'-4"	11'-4"	12'-11"	-	-	-		
	NI-40x	0'-7"	0'-8"	0'-8"	1'-6"	2'-10"	3'-2"	4'-2"	5'-8"	6'-4"	7'-0"	8'-5"	9'-8"	10'-2"	12'-2"	13'-9"		
	NI-60	0'-7"	1'-3"	2'-6"	3'-10"	5'-3"	5'-6"	6'-6"	8'-0"	9'-0"	9'-5"	11'-0"	12'-3"	12'-9"	14'-5"	16'-0"		
	NI-80	0'-7"	0'-8"	0'-8"	1'-9"	3'-3"	3'-8"	4'-9"	6'-5"	7'-5"	8'-0"	9'-10"	11'-3"	11'-9"	13'-6"	15'-4"		

- 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.

#### Design Criteria

Joist spacing	Up to 24 inches
Loads	Live load = 40 psf and dead load = 15 psf
Deflection limits	L/480 under live load and L/240 under total load

TABLE 6.2 - LOCATION OF DUCT CHASE OPENINGS

Simple span		Minimum distance from inside face of any support to centre of opening (ft.-in.)											
Joist depth	Joist series	Duct chase length (in.)											
		8	10	12	14	16	18	20	22	24			
9-1/2"	NI-20	4'-1"	4'-5"	4'-10"	-	-	-	-	-	-	-	-	-
	NI-40x	5'-3"	5'-8"	6'-0"	6'-5"	6'-10"	7'-3"	7'-8"	-	-	-	-	-
	NI-60	5'-4"	5'-9"	6'-2"	6'-7"	7'-1"	7'-5"	8'-0"	-	-	-	-	-
	NI-80	5'-3"	5'-8"	6'-0"	6'-5"	6'-10"	7'-3"	7'-8"	8'-2"	8'-6"	-	-	-
11-7/8"	NI-20	5'-9"	6'-2"	6'-6"	-	-	-	-	-	-	-	-	-
	NI-40x	6'-8"	7'-2"	7'-6"	8'-1"	8'-6"	9'-1"	9'-6"	-	-	-	-	-
	NI-60	7'-3"	7'-8"	8'-0"	8'-6"	9'-0"	9'-3"	9'-9"	-	-	-	-	-
	NI-80	7'-2"	7'-7"	8'-0"	8'-5"	8'-10"	9'-3"	9'-8"	10'-2"	10'-8"	-	-	-
14"	NI-20	6'-8"	7'-11"	8'-4"	8'-9"	9'-2"	9'-7"	10'-1"	10'-7"	10'-11"	-	-	-
	NI-40x	8'-1"	8'-7"	9'-0"	9'-6"	10'-1"	10'-7"	11'-2"	-	-	-	-	-
	NI-60	8'-0"	9'-3"	9'-8"	10'-11"	10'-6"	11'-1"	11'-6"	-	-	-	-	-
	NI-80	9'-9"	9'-3"	9'-9"	10'-1"	10'-7"	11'-1"	11'-6"	12'-1"	12'-6"	-	-	-
16"	NI-20	9'-2"	9'-8"	10'-0"	10'-6"	10'-11"	11'-5"	11'-9"	12'-4"	12'-11"	-	-	-
	NI-40x	10'-3"	10'-8"	11'-2"	11'-6"	12'-1"	12'-6"	13'-2"	-	-	-	-	-
	NI-60	10'-4"	10'-9"	11'-3"	11'-9"	12'-1"	12'-7"	13'-1"	13'-8"	14'-4"	-	-	-
	NI-80	10'-9"	11'-2"	11'-8"	12'-0"	12'-6"	13'-0"	13'-6"	14'-2"	14'-10"	-	-	-





BUILDER: **BAYVIEW WELLINGTON**  
SITE: **BRADFORD CAPITAL**  
MODEL: **THWU-12**  
CITY: **BRADFORD**

Job Name: **THWU-12**  
Level: **2ND FLR FRAMING**  
Label: **B9 DR - i964**  
Type: **Beam**

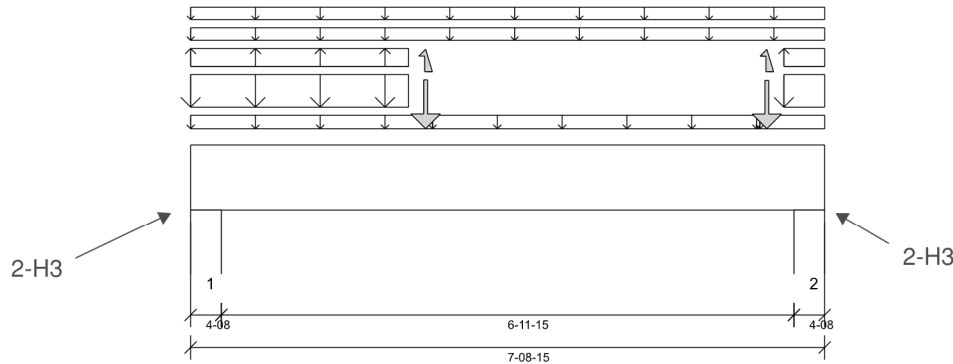
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.6.3.353.Update16.11

Report Version: 2021.03.26 01/19/2024 07:54



### DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)  
Design Methodology: LSD  
Service Condition: Dry  
LL Deflection Limit: L/360,  
TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 7'- 8 15/16" Bottom: 7'- 8 15/16"

#### Factored Resistance of Support Material:

- 812 psi Wall @ 0'- 3 1/2"
- 812 psi Wall @ 7'- 5 7/16"

**PLY TO PLY CONNECTION:**  
**3 ROWS OF 3.25" PNEUMATIC GUN**  
**NAILS (0.120"x3.25") @ 8" O/C**

PLY TO PLY CONNECTION ASSUMES ANY  
SUPPORTED BEAM HANGERS ARE FASTENED  
TO THIS BEAM WITH MIN. 3.5" FASTENERS.

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 10 7/16"	1.25D + 1.5S + L	1.00	14562 lb ft	22002 lb ft	Passed - 66%
Factored Neg. Moment:	2'- 10 7/16"	0.9D + 1.4W	1.15	1418 lb ft	24821 lb ft	Passed - 6%
Factored Shear:	1'- 2"	1.25D + 1.5S + L	1.00	6684 lb	11052 lb	Passed - 60%
Live Load (LL) Pos. Defl.:	3'- 7 9/16"	S + 0.5L		0.117"	L/360	Passed - L/715
Total Load (TL) Pos. Defl.:	3'- 7 13/16"	D + S + 0.5L		0.165"	L/240	Passed - L/509

### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	4'-08"	1.25D + 1.5S + L	1.00	9545 lb		16380 lb	12789 lb	Passed - 75%
1	4'-08"	0.9D + 1.4W	1.15		-943 lb	-	-	
2	4'-08"	1.25D + 1.5S + L	1.00	9532 lb		16380 lb	12789 lb	Passed - 75%
2	4'-08"	0.9D + 1.4W	1.15		-918 lb	-	-	

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	7'- 8 15/16"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	-0'	7'- 8 15/16"	J6(i965)	Top	13 lb/ft	20 lb/ft	-	-
Uniform	-0'	7'- 8 15/16"	R1(i994)	Top	5 lb/ft	5 lb/ft	-	-
Uniform	-0'	2'- 11 7/16"	R1(i994)	Top	100 lb/ft	-	-	-
Uniform	-0'	2'- 7 15/16"	R1(i994)	Top	322 lb/ft	246 lb/ft	1079 lb/ft	-467 lb/ft
Uniform	2'- 11 7/16"	6'- 11 7/16"	R1(i994)	Top	100 lb/ft	-	-	-
Uniform	6'- 11 7/16"	7'- 8 15/16"	R1(i994)	Top	100 lb/ft	-	-	-
Uniform	7'- 2 15/16"	7'- 8 15/16"	R1(i994)	Top	322 lb/ft	246 lb/ft	1079 lb/ft	-467 lb/ft
Point	2'- 10 7/16"	2'- 10 7/16"	R1(i994)	Top	777 lb	567 lb	2488 lb	-1077 lb
Point	7'- 7/16"	7'- 7/16"	R1(i994)	Top	768 lb	560 lb	2457 lb	-1063 lb

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 4 1/2"	E7(i150)	1756 lb	1039 lb	4138 lb	0 lb/ -1791 lb
2	7'- 4 7/16"	7'- 8 15/16"	E17(i288)	1801 lb	1058 lb	4219 lb	0 lb/ -1791 lb

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- Beam Stability Factor used in the calculation for Allowable Max Pos Moment (KL) = 0.94
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.
- Bearing capacity of member at support 1, 2 was verified for the effect of concentrated load applied near the support. At support 2. Required Load Area: L=3.500", W=3.500". LDF=1.00, Pf=5206 lb, Qr=9707 lb, Result=53.63%.

### PLY TO PLY CONNECTION

- Member design assumed proper ply to ply connection by others. Fastener spacing along length of member must not exceed 4 times depth of member. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.



STRUCTURAL COMPONENT ONLY  
DWG # TF24010921





BUILDER: **BAYVIEW WELLINGTON**  
SITE: **BRADFORD CAPITAL**  
MODEL: **THWU-12**  
CITY: **BRADFORD**

Job Name: **THWU-12**  
Level: **2ND FLR FRAMING**  
Label: **B10 - i897**  
Type: **Beam**

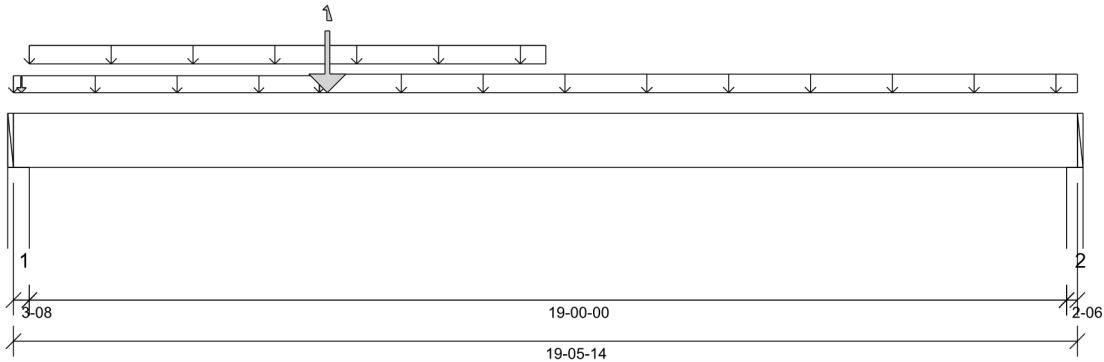
**2 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.6.3.353.Update16.11

Report Version: 2021.03.26 01/19/2024 07:54



#### DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)  
Design Methodology: LSD  
Service Condition: Dry  
LL Deflection Limit: L/360,  
TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 13'- 4 3/4"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 2 1/2"
- 615 psi Wall @ 19'- 4 1/2"

**PLY TO PLY CONNECTION:**  
**4 ROWS OF 3.25" PNEUMATIC GUN**  
**NAILS (0.120"x3.25") @ 12" O/C**

PLY TO PLY CONNECTION ASSUMES ANY  
SUPPORTED BEAM HANGERS ARE FASTENED  
TO THIS BEAM WITH MIN. 3.5" FASTENERS.



STRUCTURAL COMPONENT ONLY  
DWG # TF24010922

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	5'- 9"	1.25D + 1.5L	1.00	15501 lb ft	35345 lb ft	Passed - 44%
Factored Shear:	1'- 3 3/8"	1.25D + 1.5L	1.00	3018 lb	13815 lb	Passed - 22%
Live Load (LL) Pos. Defl.:	9'- 1 11/16"	L		0.363"	L/360	Passed - L/628
Total Load (TL) Pos. Defl.:	9'- 1 13/16"	D + L		0.695"	L/240	Passed - L/328
Permanent Deflection:	9'- 1 7/8"			-	L/360	Passed - L/707

#### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	3-08	1.25D + 1.5L	1.00	3199 lb		12740 lb	7536 lb	Passed - 42%
2	2-06	1.25D + 1.5L	1.00	1877 lb		8645 lb	5114 lb	Passed - 37%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	19'- 5 7/8"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	-0'	5'- 7 1/4"	FC4 Floor Decking (Plan View Fill)	Top	9 lb/ft	19 lb/ft	-	-
Uniform	0'- 3 1/2"	9'- 9 1/16"	User Load	Top	60 lb/ft	-	-	-
Uniform	5'- 7 1/4"	19'- 5 7/8"	FC4 Floor Decking (Plan View Fill)	Top	20 lb/ft	40 lb/ft	-	-
Point	5'- 9"	5'- 9"	B11(i944)	Front	678 lb	1193/-1 lb	-	-
Point	0'- 1 3/4"	0'- 1 3/4"	E28(i409)	Top	29 lb	-	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	E15(i209)	1202 lb	1145/-1 lb	-	-
2	19'- 3 1/2"	19'- 5 7/8"	E14(i208)	634 lb	709 lb	-	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- Beam Stability Factor used in the calculation for Allowable Max Pos Moment (KL) = 1.00
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

#### PLY TO PLY CONNECTION

- Member design assumed proper ply to ply connection by others. Fastener spacing along length of member must not exceed 4 times depth of member. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.




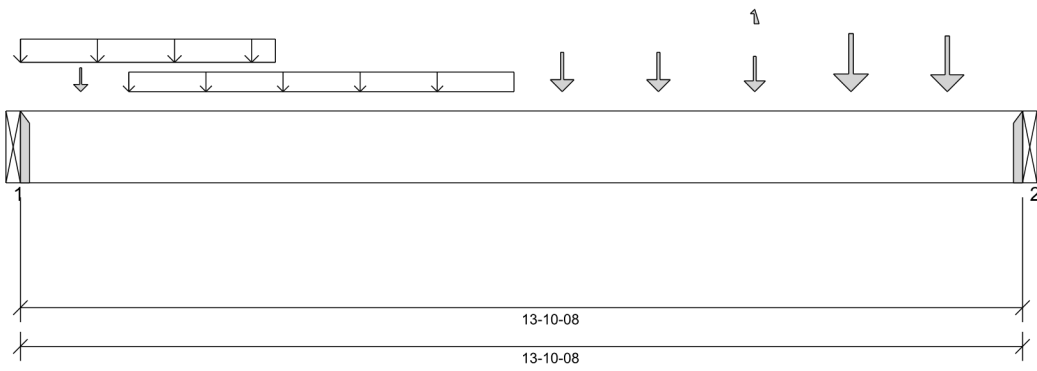
	<b>BUILDER:</b> BAYVIEW WELLINGTON <b>SITE:</b> BRADFORD CAPITAL <b>MODEL:</b> THWU-12 <b>CITY:</b> BRADFORD	<b>Job Name:</b> THWU-12 <b>Level:</b> 2ND FLR FRAMING <b>Label:</b> B11 - i944 <b>Type:</b> Beam	<b>2 Ply Member</b> <b>1 3/4" x 11 7/8" (2.0E 3100)</b> <b>WestFraser LVL</b>	<b>Status:</b> <b>Design Passed</b>
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Illustration Not to Scale. Pitch: 0/12
 Designed by Single Member Design Engine in MiTek® Structure Version 8.6.3.353.Update16.11
 Report Version: 2021.03.26 01/19/2024 07:54



DESIGN INFORMATION	
Building Code:	NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)
Design Methodology:	LSD
Service Condition:	Dry
LL Deflection Limit:	L/360,
TL Deflection Limit:	L/240,


**Lateral Restraint Requirements:**  
 Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:  
 Top: 0' Bottom: 1'- 1 1/2"

**Factored Resistance of Support Material:**

- 615 psi Beam @ 0'
- 615 psi Beam @ 13'- 10 1/2"

**PLY TO PLY CONNECTION:**  
 4 ROWS OF 3.25" PNEUMATIC GUN NAILS (0.120"x3.25") @ 12" O/C

PLY TO PLY CONNECTION ASSUMES ANY SUPPORTED BEAM HANGERS ARE FASTENED TO THIS BEAM WITH MIN. 3.5" FASTENERS.



STRUCTURAL COMPONENT ONLY  
 DWG # TF24010923 PG 1/2

ANALYSIS RESULTS						
Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	7'- 6"	1.25D + 1.5L	1.00	7694 lb ft	35345 lb ft	Passed - 22%
Factored Shear:	12'- 10 5/8"	1.25D + 1.5L	1.00	2622 lb	13815 lb	Passed - 19%
Live Load (LL) Pos. Defl.:	7'- 1"	L		0.127"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	7'- 7/8"	D + L		0.201"	L/240	Passed - L/830

SUPPORT AND REACTION INFORMATION								
ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	1-08	1.25D + 1.5L	1.00	2278 lb		5460 lb	-	Passed - 42%
2	1-08	1.25D + 1.5L	1.00	2637 lb		5460 lb	-	Passed - 48%

CONNECTOR INFORMATION						
ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories
			Top	Face	Member	
1	HGUS410		-	-	-	Connector manually specified by the user.
2	HGUS410		-	-	-	Connector manually specified by the user.

\* Connectors: Refer to manufacturer's specifications, fasteners requirements and installation instruction. Where header fasteners are longer than the width of the supporting member, install backer block or clinch header nails.

SPECIFIED LOADS								
Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	13'- 10 1/2"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'	3'- 6 3/8"	User Load	Back	60 lb/ft	120 lb/ft	-	-
Uniform	1'- 6"	6'- 10"	Smoothed Load	Front	35 lb/ft	71 lb/ft	-	-
Point	0'- 10"	0'- 10"	J5(i893)	Front	41 lb	81 lb	-	-
Point	7'- 6"	7'- 6"	J4(i426)	Front	107 lb	214 lb	-	-
Point	8'- 10"	8'- 10"	J4(i521)	Front	107 lb	214 lb	-	-
Point	10'- 2"	10'- 2"	J1(i974)	Front	89 lb	179/-2 lb	-	-
Point	11'- 6"	11'- 6"	J1(i968)	Front	187 lb	375 lb	-	-
Point	12'- 10"	12'- 10"	J1(i997)	Front	177 lb	354 lb	-	-


UNFACTORED REACTIONS							
ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B12(i901)	594 lb	1024 lb	-	-
2	13'- 10 1/2"	13'- 10 1/2"	B10(i897)	678 lb	1193/-1 lb	-	-

**DESIGN NOTES**

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- Beam Stability Factor used in the calculation for Allowable Max Pos Moment (KL) = 1.00
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

**PLY TO PLY CONNECTION**



	BUILDER:	BAYVIEW WELLINGTON	Job Name:	THWU-12	2 Ply Member	Status:
	SITE:	BRADFORD CAPITAL	Level:	2ND FLR FRAMING	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Design Passed
	MODEL:	THWU-12	Label:	B11 - i944		
	CITY:	BRADFORD	Type:	Beam		

PLY TO PLY CONNECTION

- Member design assumed proper ply to ply connection by others. Fastener spacing along length of member must not exceed 4 times depth of member. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.







BUILDER: **BAYVIEW WELLINGTON**  
SITE: **BRADFORD CAPITAL**  
MODEL: **THWU-12**  
CITY: **BRADFORD**

Job Name: **THWU-12**  
Level: **2ND FLR FRAMING**  
Label: **B12 - i901**  
Type: **Beam**

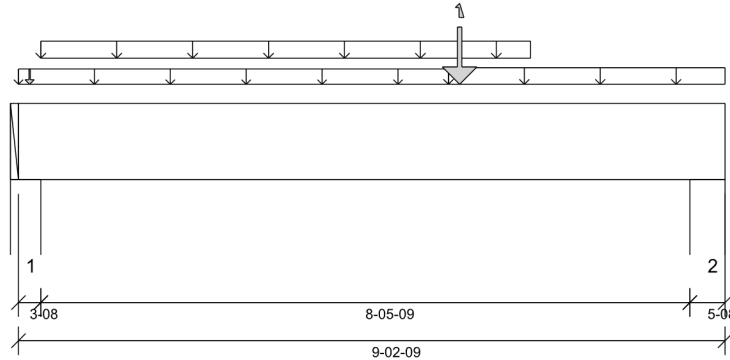
**2 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.6.3.353.Update16.11

Report Version: 2021.03.26 01/19/2024 07:54



### DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)  
Design Methodology: LSD  
Service Condition: Dry  
LL Deflection Limit: L/360,  
TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 5'- 3 3/4"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 2 1/2"
- 615 psi Wall @ 8'- 10 1/16"

**PLY TO PLY CONNECTION:**  
**4 ROWS OF 3.25" PNEUMATIC GUN**  
**NAILS (0.120"x3.25") @ 12" O/C**

PLY TO PLY CONNECTION ASSUMES ANY  
SUPPORTED BEAM HANGERS ARE FASTENED  
TO THIS BEAM WITH MIN. 3.5" FASTENERS.

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	5'- 9"	1.25D + 1.5L	1.00	5562 lb ft	35345 lb ft	Passed - 16%
Factored Shear:	7'- 9 3/16"	1.25D + 1.5L	1.00	1854 lb	13815 lb	Passed - 13%
Live Load (LL) Pos. Defl.:	4'- 10 1/16"	L		0.025"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 9 5/16"	D + L		0.048"	L/240	Passed - L/999

### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	3-08	1.25D + 1.5L	1.00	1383 lb		12740 lb	7536 lb	Passed - 18%
2	5-08	1.25D + 1.5L	1.00	1974 lb		20020 lb	11843 lb	Passed - 17%

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	9'- 2 9/16"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	-0'	5'- 7 1/4"	FC4 Floor Decking (Plan View Fill)	Top	8 lb/ft	15 lb/ft	-	-
Uniform	0'- 3 1/2"	6'- 8 1/8"	User Load	Top	60 lb/ft	-	-	-
Uniform	5'- 7 1/4"	9'- 2 9/16"	FC4 Floor Decking (Plan View Fill)	Top	16 lb/ft	32 lb/ft	-	-
Point	5'- 9"	5'- 9"	B11(i944)	Back	594 lb	1024/-1 lb	-	-
Point	0'- 1 3/4"	0'- 1 3/4"	E26(i407)	Top	29 lb	-	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	E32(i958)	585 lb	463 lb	-	-
2	8'- 9 1/16"	9'- 2 9/16"	4(i283)	631 lb	761 lb	-	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- Beam Stability Factor used in the calculation for Allowable Max Pos Moment (KL) = 1.00
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

### PLY TO PLY CONNECTION

- Member design assumed proper ply to ply connection by others. Fastener spacing along length of member must not exceed 4 times depth of member. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.



STRUCTURAL COMPONENT ONLY  
DWG # TF24010924





BUILDER: **BAYVIEW WELLINGTON**  
SITE: **BRADFORD CAPITAL**  
MODEL: **THWU-12**  
CITY: **BRADFORD**

Job Name: **THWU-12**  
Level: **2ND FLR FRAMING**  
Label: **B13 - i945**  
Type: **Beam**

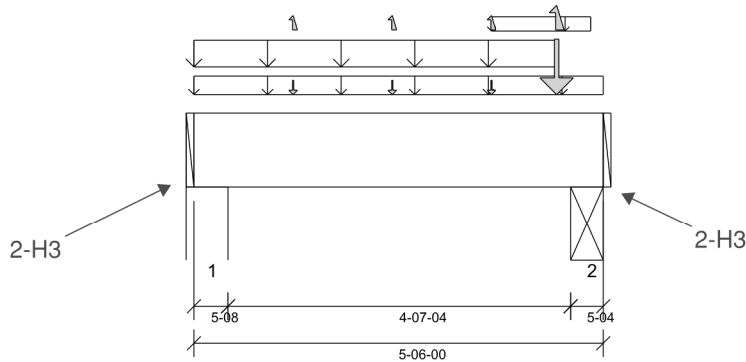
**2 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.6.3.353.Update16.11

Report Version: 2021.03.26 01/19/2024 07:54



#### DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)  
Design Methodology: LSD  
Service Condition: Dry  
LL Deflection Limit: L/360,  
TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 1'- 1 1/2"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 4 1/2"
- 615 psi Beam @ 5'- 1 3/4"

**PLY TO PLY CONNECTION:**  
**4 ROWS OF 3.25" PNEUMATIC GUN**  
**NAILS (0.120"x3.25") @ 6" O/C**

PLY TO PLY CONNECTION ASSUMES ANY  
SUPPORTED BEAM HANGERS ARE FASTENED  
TO THIS BEAM WITH MIN. 3.5" FASTENERS.

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	3'- 8 5/8"	1.25D + 1.5S + L	1.00	3198 lb ft	35345 lb ft	Passed - 9%
Factored Neg. Moment:	4'- 10 1/2"	0.9D + 1.4W + 0.5L	1.15	263 lb ft	40647 lb ft	Passed - 1%
Factored Shear:	4'- 7/8"	1.25D + 1.5S + L	1.00	2072 lb	13815 lb	Passed - 15%
Total Load (TL) Pos. Defl.:	2'- 11 1/8"	D + S + 0.5L		0.010"	L/240	Passed - L/999

#### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	5'-08"	1.25D + 1.5S + L	1.00	2139 lb		20020 lb	11843 lb	Passed - 18%
2	5'-04"	1.25D + 1.5S + L	1.00	10342 lb		19110 lb	11301 lb	Passed - 92%
2	5'-04"	0.9D + 1.4W + 0.5L	1.15		-891 lb	-	-	

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	5'- 6"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'	5'- 6"	E19(i400)	Top	100 lb/ft	-	-	-
Uniform	0'	4'- 10 1/2"	E19(i400)	Top	74 lb/ft	-	203 lb/ft	-
Uniform	4'	5'- 4"	FC4 Floor Decking (Plan View Fill)	Top	3 lb/ft	6 lb/ft	-	-
Point	1'- 4"	1'- 4"	J3(i946)	Back	-4 lb	73/-81 lb	-	-
Point	2'- 8"	2'- 8"	J3(i911)	Back	-5 lb	79/-88 lb	-	-
Point	4'	4'	J3(i885)	Back	-7 lb	75/-88 lb	-	-
Point	4'- 10 1/2"	4'- 10 1/2"	E19(i400)	Top	1325 lb	995 lb	4600 lb	-1793 lb

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	E1(i155)	506 lb	118/-132 lb	557 lb	-
2	5'- 3/4"	5'- 6"	STL BM(i293)	1787 lb	1112/-125 lb	5033 lb	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- Beam Stability Factor used in the calculation for Allowable Max Pos Moment (KL) = 1.00
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.
- User loads assume a bearing length of 3.5" in determining member capacity for loads near supports.
- Bearing capacity of member at support 1, 2 was verified for the effect of concentrated load applied near the support. At support 2. Required Load Area: L=2.624", W=3.500". LDF=1.00, Pf=9551 lb, Qr=9551 lb, Result=100.00%.

#### PLY TO PLY CONNECTION

- Member design assumed proper ply to ply connection by others. Fastener spacing along length of member must not exceed 4 times depth of member. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.



STRUCTURAL COMPONENT ONLY  
DWG # TF24010925





BUILDER: **BAYVIEW WELLINGTON**  
SITE: **BRADFORD CAPITAL**  
MODEL: **THWU-12**  
CITY: **BRADFORD**

Job Name: **THWU-12**  
Level: **1ST FLR FRAMING**  
Label: **B1 - i1134**  
Type: **Beam**

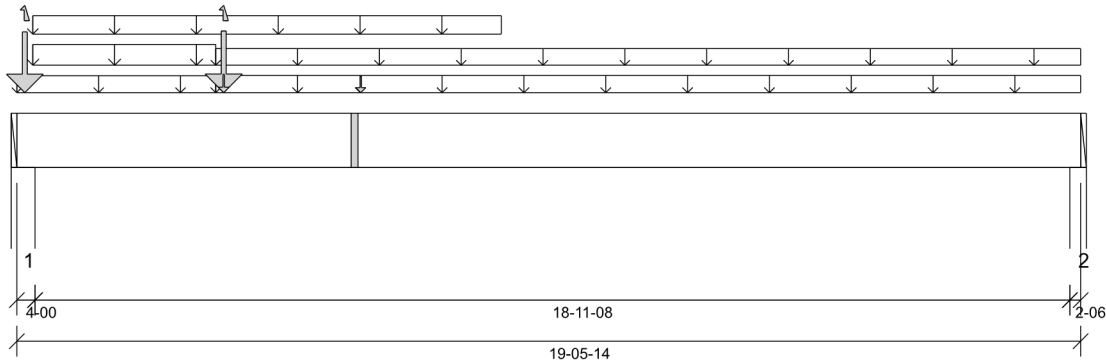
**2 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.6.3.353.Update16.11

Report Version: 2021.03.26 01/19/2024 07:54



### DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)  
Design Methodology: LSD  
Service Condition: Dry  
LL Deflection Limit: L/360,  
TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 12'- 10 3/4"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 3"
- 615 psi Wall @ 19'- 4 1/2"

**PLY TO PLY CONNECTION:**  
**4 ROWS OF 3.25" PNEUMATIC GUN**  
**NAILS (0.120"x3.25") @ 12" O/C**

PLY TO PLY CONNECTION ASSUMES ANY  
SUPPORTED BEAM HANGERS ARE FASTENED  
TO THIS BEAM WITH MIN. 3.5" FASTENERS.

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 11 1/2"	1.25D + 1.5L	1.00	14970 lb ft	35345 lb ft	Passed - 42%
Factored Neg. Moment:	0'- 3"	1.25D + 1.5L	1.00	341 lb ft	26821 lb ft	Passed - 1%
Factored Shear:	1'- 3 7/8"	1.25D + 1.5L	1.00	4486 lb	13815 lb	Passed - 32%
Live Load (LL) Pos. Defl.:	8'- 11 13/16"	L		0.367"	L/360	Passed - L/620
Total Load (TL) Pos. Defl.:	9'- 1/16"	D + L		0.693"	L/240	Passed - L/328
Permanent Deflection:	9'- 3/8"			-	L/360	Passed - L/718

### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	4-00	1.25D + 1.5L	1.00	8046 lb		14560 lb	8610 lb	Passed - 93%
2	2-06	1.25D + 1.5L	1.00	1820 lb		8645 lb	5114 lb	Passed - 36%

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	19'- 5 7/8"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'	3'- 7 3/4"	FC3 Floor Decking (Plan View Fill)	Top	9 lb/ft	19 lb/ft	-	-
Uniform	0'- 3 1/2"	8'- 10 1/2"	User Load	Top	60 lb/ft	-	-	-
Uniform	0'- 3 1/2"	3'- 7 3/4"	User Load	Top	35 lb/ft	70 lb/ft	-	-
Uniform	3'- 7 3/4"	19'- 5 7/8"	FC3 Floor Decking (Plan View Fill)	Top	8 lb/ft	16 lb/ft	-	-
Uniform	3'- 7 3/4"	6'- 3 1/2"	FC3 Floor Decking (Plan View Fill)	Top	12 lb/ft	24 lb/ft	-	-
Uniform	6'- 3 1/2"	19'- 5 7/8"	FC3 Floor Decking (Plan View Fill)	Top	12 lb/ft	24 lb/ft	-	-
Point	3'- 9 1/2"	3'- 9 1/2"	B5(i1017)	Front	936 lb	1485/-3 lb	-	-
Point	0'- 1 3/4"	0'- 1 3/4"	E15(i209)	Top	1231 lb	1145/-1 lb	-	-
Point	3'- 9 1/2"	3'- 9 1/2"	User Load	Top	50 lb	100 lb	-	-
Point	6'- 3 5/8"	6'- 3 5/8"	FC3 Floor Decking (Plan View Fill)	Top	18 lb	36 lb	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 4"	-	2853 lb	3023/-3 lb	-	-
+++	0'- 1 3/4"	0'- 1 3/4"	W20(i26)	2496 lb	2645/-3 lb	-	-
+++	0'- 3 3/4"	0'- 3 3/4"	PBO2(i1133)	357 lb	378 lb	-	-
2	19'- 3 1/2"	19'- 5 7/8"	W8(i8)	597 lb	680 lb	-	-


### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- Beam Stability Factor used in the calculation for Allowable Max Pos Moment (KL) = 1.00
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.
- Bearing capacity of member at support 1, 2 was verified for the effect of concentrated load applied near the support. At support 1. Required Load Area: L=1.500", W=3.500". LDF=1.00, Pf=3255 lb, Qr=5460 lb, Result=59.62%.



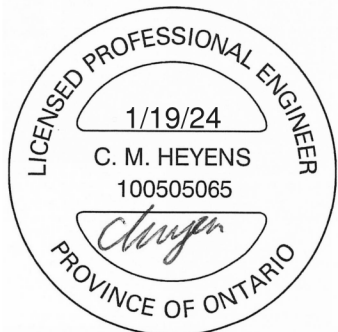
STRUCTURAL COMPONENT ONLY  
DWG # TF24010926 PG 1/2



	BUILDER:	BAYVIEW WELLINGTON	Job Name:	THWU-12	2 Ply Member	Status:
	SITE:	BRADFORD CAPITAL	Level:	1ST FLR FRAMING	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Design Passed
	MODEL:	THWU-12	Label:	B1 - i1134		
	CITY:	BRADFORD	Type:	Beam		

PLY TO PLY CONNECTION

- Member design assumed proper ply to ply connection by others. Fastener spacing along length of member must not exceed 4 times depth of member. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.







BUILDER: **BAYVIEW WELLINGTON**  
SITE: **BRADFORD CAPITAL**  
MODEL: **THWU-12**  
CITY: **BRADFORD**

Job Name: **THWU-12**  
Level: **1ST FLR FRAMING**  
Label: **B2 - i1042**  
Type: **Beam**

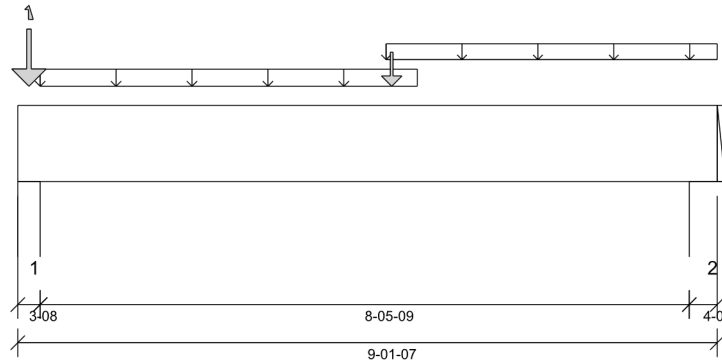
**2 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.6.3.353.Update16.11

Report Version: 2021.03.26 01/19/2024 07:54



#### DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 4'- 6 1/8" Bottom: 4'- 6 1/8"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 2 1/2"
- 615 psi Wall @ 8'- 10 1/16"

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 10 1/2"	1.25D + 1.5L	0.93	2241 lb ft	31957 lb ft	Passed - 7%
Factored Shear:	7'- 9 3/16"	1.25D + 1.5L	0.93	624 lb	12816 lb	Passed - 5%
Total Load (TL) Pos. Defl.:	4'- 7"	D + L		0.020"	L/240	Passed - L/999

#### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	3'-08"	1.25D + 1.5L	0.93	2168 lb		11819 lb	6991 lb	Passed - 31%
2	4'-06"	1.25D + 1.5L	0.93	714 lb		14774 lb	8739 lb	Passed - 8%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	9'- 1 7/16"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'- 3 1/2"	5'- 2 1/2"	User Load	Top	60 lb/ft	-	-	-
Uniform	4'- 9 5/8"	9'- 1 7/16"	FC3 Floor Decking (Plan View Fill)	Top	11 lb/ft	23 lb/ft	-	-
Point	4'- 10 1/2"	4'- 10 1/2"	B3(i1021)	Back	173 lb	326 lb	-	-
Point	0'- 1 3/4"	0'- 1 3/4"	E32(i958)	Top	614 lb	463/0 lb	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	W20(i26)	983 lb	648 lb	-	-
2	8'- 9 1/16"	9'- 1 7/16"	W17(i16)	256 lb	241 lb	-	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- Beam Stability Factor used in the calculation for Allowable Max Pos Moment (KL) = 0.97
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.
- Bearing length at support 2 was calculated based on the actual bearing area divided by the supported member width and may not match expected value when bearing is not rectangular or when the supported member is not supported by its full width.

#### PLY TO PLY CONNECTION

- Member design assumed proper ply to ply connection by others. Fastener spacing along length of member must not exceed 4 times depth of member. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.



STRUCTURAL COMPONENT ONLY  
DWG # TF24010927





BUILDER: **BAYVIEW WELLINGTON**  
SITE: **BRADFORD CAPITAL**  
MODEL: **THWU-12**  
CITY: **BRADFORD**

Job Name: **THWU-12**  
Level: **1ST FLR FRAMING**  
Label: **B3 - i1021**  
Type: **Beam**

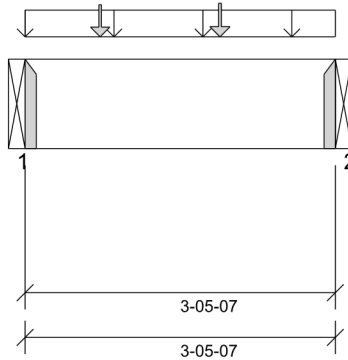
**1 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.6.3.353.Update16.11

Report Version: 2021.03.26 01/19/2024 07:54



#### DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 1'- 2 1/8"

#### Factored Resistance of Support Material:

- 615 psi Beam @ 0'
- 615 psi Beam @ 3'- 5 7/16"

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	1'- 10 3/8"	1.25D + 1.5L	1.00	637 lb ft	17672 lb ft	Passed - 4%
Factored Shear:	2'- 5 9/16"	1.25D + 1.5L	1.00	395 lb	6908 lb	Passed - 6%

#### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	1-08	1.25D + 1.5L	1.00	706 lb		2730 lb	-	Passed - 26%
2	1-08	1.25D + 1.5L	1.00	655 lb		2730 lb	-	Passed - 24%

#### CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories
			Top	Face	Member	
1	HUS1.81/10		-	-	-	Connector manually specified by the user.
2	HUS1.81/10		-	-	-	Connector manually specified by the user.

\* Connectors: Refer to manufacturer's specifications, fasteners requirements and installation instruction. Where header fasteners are longer than the width of the supporting member, install backer block or clinch header nails.

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	3'- 5 7/16"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'	3'- 5 7/16"	User Load	Back	60 lb/ft	120 lb/ft	-	-
Point	0'- 10"	0'- 10"	J6(i1051)	Front	51 lb	102 lb	-	-
Point	2'- 2"	2'- 2"	J6(i1050)	Front	56 lb	112 lb	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B2(i1042)	173 lb	326 lb	-	-
2	3'- 5 7/16"	3'- 5 7/16"	B4(i1115)	161 lb	302 lb	-	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- Beam Stability Factor used in the calculation for Allowable Max Pos Moment (KL) = 1.00
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.



STRUCTURAL COMPONENT ONLY  
DWG # TF24010928





BUILDER: **BAYVIEW WELLINGTON**  
SITE: **BRADFORD CAPITAL**  
MODEL: **THWU-12**  
CITY: **BRADFORD**

Job Name: **THWU-12**  
Level: **1ST FLR FRAMING**  
Label: **B4 - i1115**  
Type: **Beam**

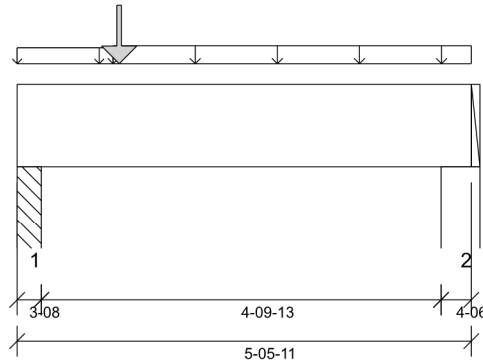
**1 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design  
Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.6.3.353.Update16.11

Report Version: 2021.03.26 01/19/2024 07:54



### DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018,  
ABC 2019, OBC 2012 (2019  
Amendment)

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

Both ends of the member and the outer supports  
must be laterally restrained. Top and bottom edges  
of the member must be fully restrained or have the  
following maximum unbraced length:

Top: 0' Bottom: 3'- 9 11/16"

#### Factored Resistance of Support Material:

- 615 psi Column @ 0'- 2 1/2"
- 615 psi Wall @ 5'- 2 5/16"

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	1'- 2 3/4"	1.25D + 1.5L	1.00	666 lb ft	17672 lb ft	Passed - 4%
Factored Shear:	1'- 3 3/8"	1.25D + 1.5L	1.00	633 lb	6908 lb	Passed - 9%

### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	3-08	1.25D + 1.5L	1.00	669 lb		6370 lb	3767 lb	Passed - 18%
2	4-06	1.25D + 1.5L	1.00	350 lb		7963 lb	4710 lb	Passed - 7%

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	5'- 5 11/16"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	-0'	1'- 1 7/8"	FC3 Floor Decking (Plan View Fill)	Top	3 lb/ft	7 lb/ft	-	-
Uniform	1'- 1 7/8"	5'- 5 11/16"	FC3 Floor Decking (Plan View Fill)	Top	16 lb/ft	33 lb/ft	-	-
Point	1'- 2 3/4"	1'- 2 3/4"	B3(i1021)	Front	161 lb	302 lb	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	PBO1(i112)	177 lb	305 lb	-	-
2	5'- 1 5/16"	5'- 5 11/16"	W17(i16)	93 lb	149 lb	-	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- Beam Stability Factor used in the calculation for Allowable Max Pos Moment (KL) = 1.00
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.
- Bearing length at support 2 was calculated based on the actual bearing area divided by the supported member width and may not match expected value when bearing is not rectangular or when the supported member is not supported by its full width.



STRUCTURAL COMPONENT ONLY  
DWG # TF24010929





BUILDER: **BAYVIEW WELLINGTON**  
SITE: **BRADFORD CAPITAL**  
MODEL: **THWU-12**  
CITY: **BRADFORD**

Job Name: **THWU-12**  
Level: **1ST FLR FRAMING**  
Label: **B5 - i1017**  
Type: **Beam**

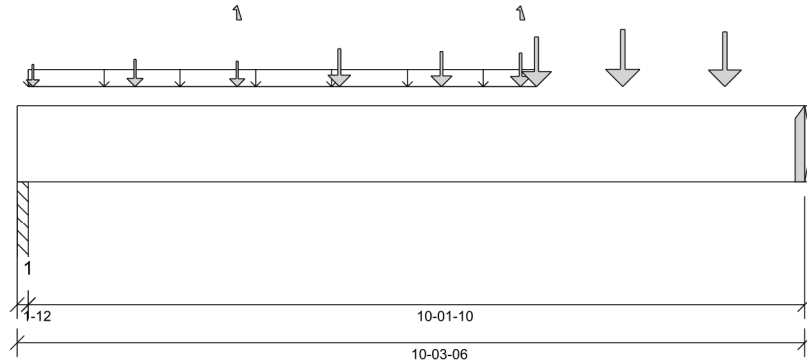
**2 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.6.3.353.Update16.11

Report Version: 2021.03.26 01/19/2024 07:54



### DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)  
Design Methodology: LSD  
Service Condition: Dry  
LL Deflection Limit: L/360,  
TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 1'- 1 1/2"

#### Factored Resistance of Support Material:

- 615 psi Column @ 0'- 3/4"
- 615 psi Beam @ 10'- 3 3/8"

**PLY TO PLY CONNECTION:**  
**4 ROWS OF 3.25" PNEUMATIC GUN**  
**NAILS (0.120"x3.25") @ 12" O/C**

PLY TO PLY CONNECTION ASSUMES ANY  
SUPPORTED BEAM HANGERS ARE FASTENED  
TO THIS BEAM WITH MIN. 3.5" FASTENERS.

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	6'- 6 7/8"	1.25D + 1.5L	1.00	8284 lb ft	35345 lb ft	Passed - 23%
Factored Shear:	9'- 3 1/2"	1.25D + 1.5L	1.00	3363 lb	13815 lb	Passed - 24%
Live Load (LL) Pos. Defl.:	5'- 4 3/4"	L		0.067"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	5'- 4 3/16"	D + L		0.114"	L/240	Passed - L/999

### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	1-12	1.25D + 1.5L	1.00	2426 lb		6370 lb	3767 lb	Passed - 64%
2	1-08	1.25D + 1.5L	1.00	3378 lb		5460 lb	-	Passed - 62%

### CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Top	Face	Member	Other Information or Requirement for Reinforcement Accessories
2	HGUS410	-	-	-	-	Connector manually specified by the user.

\* Connectors: Refer to manufacturer's specifications, fasteners requirements and installation instruction. Where header fasteners are longer than the width of the supporting member, install backer block or clinch header nails.

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	10'- 3 3/8"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'- 1 3/4"	6'- 9 3/8"	User Load	Top	60 lb/ft	-	-	-
Point	0'- 2 7/16"	0'- 2 7/16"	J6(i1120)	Front	45 lb	90 lb	-	-
Point	1'- 6 7/16"	1'- 6 7/16"	J6(i1121)	Front	73 lb	146 lb	-	-
Point	2'- 10 7/16"	2'- 10 7/16"	J5(i1126)	Front	61 lb	130/-8 lb	-	-
Point	4'- 2 7/16"	4'- 2 7/16"	J5(i1122)	Front	133 lb	266 lb	-	-
Point	5'- 6 7/16"	5'- 6 7/16"	J5(i1125)	Front	118 lb	236 lb	-	-
Point	6'- 6 7/8"	6'- 6 7/8"	J4(i1054)	Front	109 lb	219/-1 lb	-	-
Point	7'- 10 7/8"	7'- 10 7/8"	J4(i1053)	Front	242 lb	484 lb	-	-
Point	9'- 2 7/8"	9'- 2 7/8"	J4(i1052)	Front	229 lb	457 lb	-	-
Point	6'- 9 3/8"	6'- 9 3/8"	User Load	Top	200 lb	400 lb	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 1 3/4"	PBO1(i112)	794 lb	943/-6 lb	-	-
2	10'- 3 3/8"	10'- 3 3/8"	B1(i1134)	936 lb	1485/-3 lb	-	-

### DESIGN NOTES


- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- Beam Stability Factor used in the calculation for Allowable Max Pos Moment (KL) = 1.00
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

### PLY TO PLY CONNECTION



STRUCTURAL COMPONENT ONLY  
DWG # TF24010930 PG 1/2



	BUILDER:	BAYVIEW WELLINGTON	Job Name:	THWU-12	2 Ply Member	Status:
	SITE:	BRADFORD CAPITAL	Level:	1ST FLR FRAMING	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Design Passed
	MODEL:	THWU-12	Label:	B5 - i1017		
	CITY:	BRADFORD	Type:	Beam		

PLY TO PLY CONNECTION

- Member design assumed proper ply to ply connection by others. Fastener spacing along length of member must not exceed 4 times depth of member. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.







BUILDER: **BAYVIEW WELLINGTON**  
SITE: **BRADFORD CAPITAL**  
MODEL: **THWU-12**  
CITY: **BRADFORD**

Job Name: **THWU-12**  
Level: **1ST FLR FRAMING**  
Label: **B7AL - i956**  
Type: **Beam**

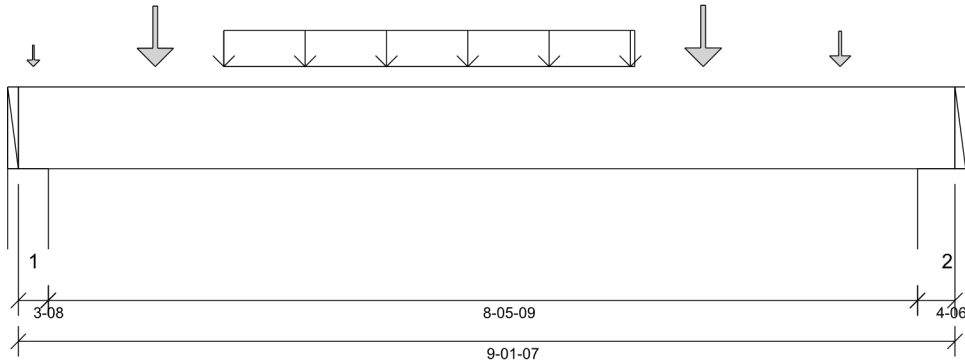
**1 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.6.3.353.Update16.11

Report Version: 2021.03.26 01/19/2024 07:54



### DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 1'- 1 1/2"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 2 1/2"
- 615 psi Wall @ 8'- 10 1/16"

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'	1.25D + 1.5L	1.00	5184 lb ft	11650 lb ft	Passed - 44%
Factored Shear:	1'- 1"	1.25D + 1.5L	1.00	2146 lb	5526 lb	Passed - 39%
Live Load (LL) Pos. Defl.:	4'- 5 15/16"	L		0.131"	L/360	Passed - L/775
Total Load (TL) Pos. Defl.:	4'- 6"	D + L		0.200"	L/240	Passed - L/508

### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	3-08	1.25D + 1.5L	1.00	2244 lb		6370 lb	3768 lb	Passed - 60%
2	4-06	1.25D + 1.5L	1.00	1960 lb		7963 lb	4710 lb	Passed - 42%

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	9'- 1 7/16"	Self Weight	Top	5 lb/ft	-	-	-
Uniform	2'	6'	Smoothed Load	Front	136 lb/ft	272 lb/ft	-	-
Point	1'- 4"	1'- 4"	J1(i905)	Front	167 lb	335 lb	-	-
Point	6'- 8"	6'- 8"	J1(i890)	Front	177 lb	334 lb	-	-
Point	8'	8'	J2(i934)	Front	75 lb	149 lb	-	-
Point	0'- 1 3/4"	0'- 1 3/4"	E11(i205)	Top	45 lb	24 lb	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	W22(i30)	569 lb	1023 lb	-	-
2	8'- 9 1/16"	9'- 1 7/16"	W21(i27)	481 lb	905 lb	-	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- Beam Stability Factor used in the calculation for Allowable Max Pos Moment (KL) = 1.00
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.
- Bearing length at support 2 was calculated based on the actual bearing area divided by the supported member width and may not match expected value when bearing is not rectangular or when the supported member is not supported by its full width.



STRUCTURAL COMPONENT ONLY  
DWG # TF24010931





BUILDER: **BAYVIEW WELLINGTON**  
SITE: **BRADFORD CAPITAL**  
MODEL: **THWU-12**  
CITY: **BRADFORD**

Job Name: **THWU-12**  
Level: **1ST FLR FRAMING**  
Label: **B6 - i737**  
Type: **Beam**

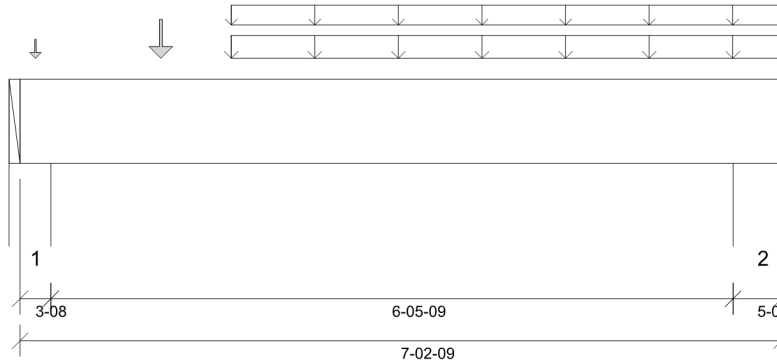
**1 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design  
Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.6.3.353.Update16.11

Report Version: 2021.03.26 01/19/2024 07:57



### DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)  
Design Methodology: LSD  
Service Condition: Dry  
LL Deflection Limit: L/360,  
TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 1'- 1 1/2"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 2 1/2"
- 615 psi Wall @ 6'- 10 1/16"

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'	1.25D + 1.5L	1.00	1550 lb ft	11650 lb ft	Passed - 13%
Factored Shear:	5'- 11 9/16"	1.25D + 1.5L	1.00	1080 lb	5526 lb	Passed - 20%
Live Load (LL) Pos. Defl.:	3'- 6 3/8"	L		0.023"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 6 5/16"	D + L		0.035"	L/240	Passed - L/999

### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	3-08	1.25D + 1.5L	1.00	838 lb		6370 lb	3768 lb	Passed - 22%
2	5-08	1.25D + 1.5L	1.00	1146 lb		10010 lb	5921 lb	Passed - 19%

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	7'- 2 9/16"	Self Weight	Top	5 lb/ft	-	-	-
Uniform	2'	7'- 2 9/16"	Smoothed Load	Back	-	135 lb/ft	-	-
Uniform	2'	7'- 2 9/16"	Smoothed Load	Top	77 lb/ft	-	-	-
Point	1'- 4"	1'- 4"	J1(i264)	Back	81 lb	163 lb	-	-
Point	0'- 1 3/4"	0'- 1 3/4"	E11(i205)	Top	33 lb	-	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	W22(i30)	231 lb	361 lb	-	-
2	6'- 9 1/16"	7'- 2 9/16"	W18(i19)	316 lb	506 lb	-	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- Beam Stability Factor used in the calculation for Allowable Max Pos Moment (KL) = 1.00
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.



STRUCTURAL COMPONENT ONLY  
DWG # TF24010932





BUILDER: **BAYVIEW WELLINGTON**  
SITE: **BRADFORD CAPITAL**  
MODEL: **THWU-12**  
CITY: **BRADFORD**

Job Name: **THWU-12**  
Level: **1ST FLR FRAMING**  
Label: **B7L - i761**  
Type: **Beam**

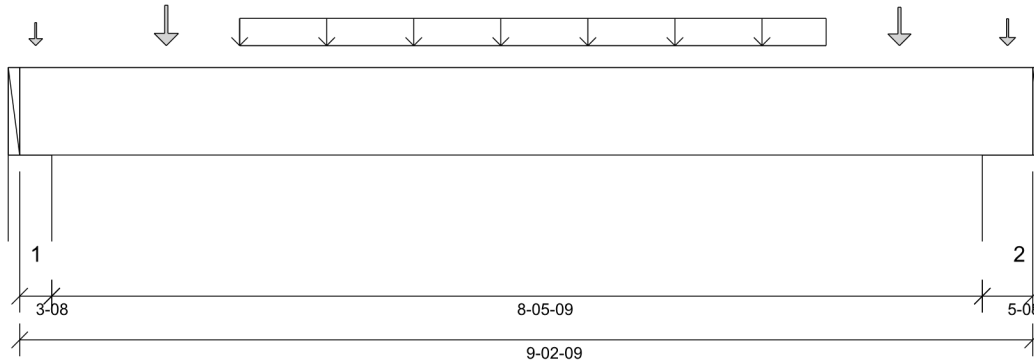
**1 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design  
Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.6.3.353.Update16.11

Report Version: 2021.03.26 01/19/2024 07:57



#### DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)  
Design Methodology: LSD  
Service Condition: Dry  
LL Deflection Limit: L/360,  
TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 1'- 1 1/2"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 2 1/2"
- 615 psi Wall @ 8'- 10 1/16"

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'	1.25D + 1.5L	1.00	2618 lb ft	11650 lb ft	Passed - 22%
Factored Shear:	7'- 11 9/16"	1.25D + 1.5L	1.00	1127 lb	5526 lb	Passed - 20%
Live Load (LL) Pos. Defl.:	4'- 6 1/4"	L		0.066"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 6 1/4"	D + L		0.102"	L/240	Passed - L/997

#### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	3-08	1.25D + 1.5L	1.00	1172 lb		6370 lb	3768 lb	Passed - 31%
2	5-08	1.25D + 1.5L	1.00	1285 lb		10010 lb	5921 lb	Passed - 22%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	9'- 2 9/16"	Self Weight	Top	5 lb/ft	-	-	-
Uniform	2'	7'- 4"	Smoothed Load	Front	66 lb/ft	132 lb/ft	-	-
Point	1'- 4"	1'- 4"	J1(i264)	Front	81 lb	163 lb	-	-
Point	8'	8'	J1(i797)	Front	75 lb	149 lb	-	-
Point	0'- 1 3/4"	0'- 1 3/4"	E11(i205)	Top	45 lb	24 lb	-	-
Point	8'- 11 13/16"	8'- 11 13/16"	5(i280)	Top	46 lb	62 lb	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	W22(i30)	315 lb	521 lb	-	-
2	8'- 9 1/16"	9'- 2 9/16"	W21(i27)	327 lb	581 lb	-	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- Beam Stability Factor used in the calculation for Allowable Max Pos Moment (KL) = 1.00
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.
- Bearing length at support 2 was calculated based on the actual bearing area divided by the supported member width and may not match expected value when bearing is not rectangular or when the supported member is not supported by its full width.



STRUCTURAL COMPONENT ONLY  
DWG # TF24010933





BUILDER: **BAYVIEW WELLINGTON**  
SITE: **BRADFORD CAPITAL**  
MODEL: **THWU-12**  
CITY: **BRADFORD**

Job Name: **THWU-12**  
Level: **1ST FLR FRAMING**  
Label: **B8L - i734**  
Type: **Beam**

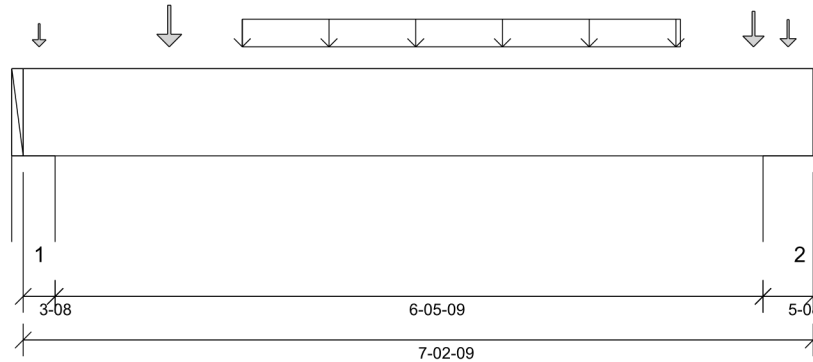
**1 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
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### DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 1'- 1 1/2"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 2 1/2"
- 615 psi Wall @ 6'- 10 1/16"

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'	1.25D + 1.5L	1.00	1611 lb ft	11650 lb ft	Passed - 14%
Factored Shear:	5'- 11 9/16"	1.25D + 1.5L	1.00	1025 lb	5526 lb	Passed - 19%
Live Load (LL) Pos. Defl.:	3'- 6 1/4"	L		0.024"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 6 1/4"	D + L		0.037"	L/240	Passed - L/999

### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	3-08	1.25D + 1.5L	1.00	929 lb		6370 lb	3768 lb	Passed - 25%
2	5-08	1.25D + 1.5L	1.00	1189 lb		10010 lb	5921 lb	Passed - 20%

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	7'- 2 9/16"	Self Weight	Top	5 lb/ft	-	-	-
Uniform	2'	6'	Smoothed Load	Front	70 lb/ft	139 lb/ft	-	-
Point	1'- 4"	1'- 4"	J1(i753)	Front	86 lb	172 lb	-	-
Point	6'- 8"	6'- 8"	J1(i728)	Front	65 lb	131 lb	-	-
Point	0'- 1 3/4"	0'- 1 3/4"	E12(i207)	Top	48 lb	23 lb	-	-
Point	6'- 11 13/16"	6'- 11 13/16"	7(i282)	Top	49 lb	63 lb	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	W12(i12)	257 lb	404 lb	-	-
2	6'- 9 1/16"	7'- 2 9/16"	W19(i14)	304 lb	540 lb	-	-

### DESIGN NOTES

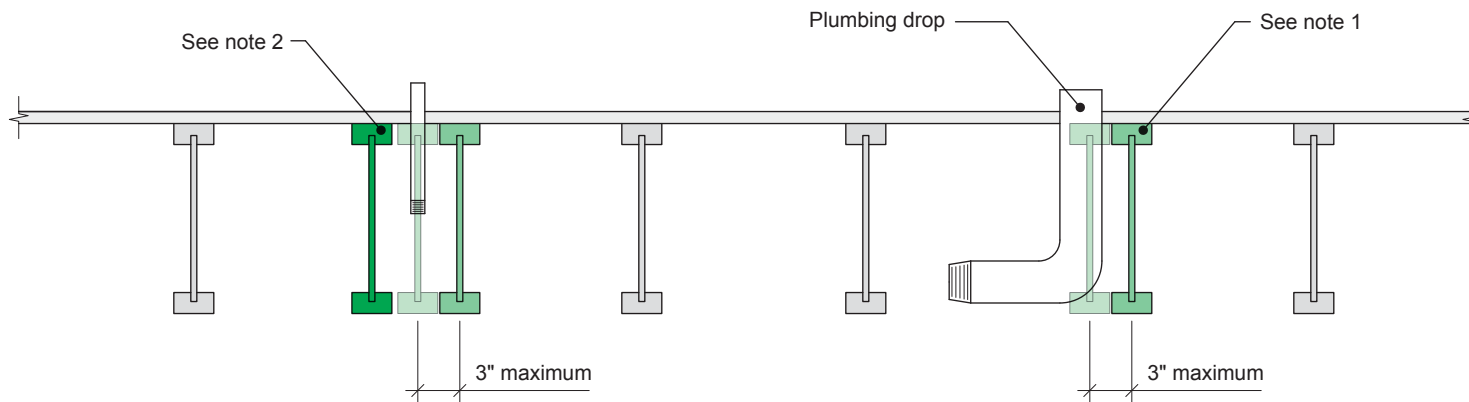
- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- Beam Stability Factor used in the calculation for Allowable Max Pos Moment (KL) = 1.00
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.
- Bearing length at support 2 was calculated based on the actual bearing area divided by the supported member width and may not match expected value when bearing is not rectangular or when the supported member is not supported by its full width.



STRUCTURAL COMPONENT ONLY  
DWG # TF24010934



7c



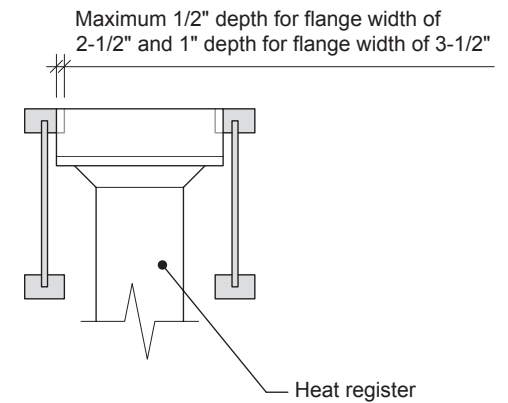
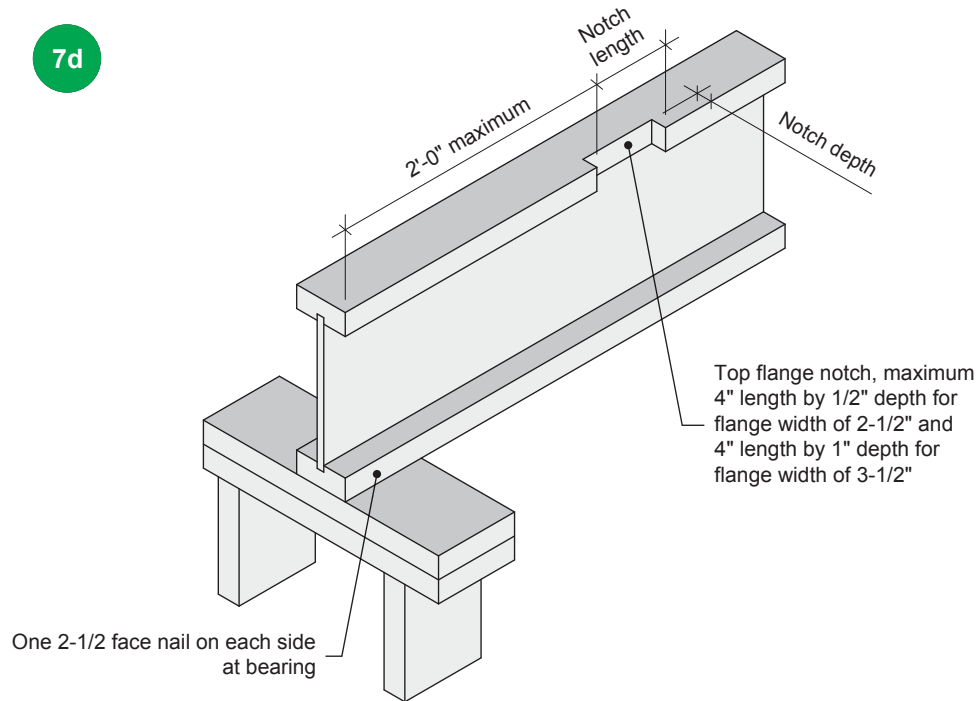
**Notes:**

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.



7d



**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.



### 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 On centre spacing				1/2 in. gypsum ceiling 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 On centre spacing				Mid-span blocking and 1/2 in. gypsum ceiling 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 On centre spacing				1/2 in. gypsum ceiling 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 On centre spacing				Mid-span blocking and 1/2 in. gypsum ceiling 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.



### 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 On centre spacing				1/2 in. gypsum ceiling 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 On centre spacing				Mid-span blocking and 1/2 in. gypsum ceiling 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 On centre spacing				1/2 in. gypsum ceiling 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 On centre spacing				Mid-span blocking and 1/2 in. gypsum ceiling 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:

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 – 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 On centre spacing				1/2 in. gypsum ceiling 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 On centre spacing				Mid-span blocking and 1/2 in. gypsum ceiling 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 On centre spacing				1/2 in. gypsum ceiling 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 On centre spacing				Mid-span blocking and 1/2 in. gypsum ceiling 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:

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 – 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 On centre spacing				1/2 in. gypsum ceiling 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 On centre spacing				Mid-span blocking and 1/2 in. gypsum ceiling 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:

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 – 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 On centre spacing				1/2 in. gypsum ceiling 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 On centre spacing				Mid-span blocking and 1/2 in. gypsum ceiling 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:

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.