

Products				
PlotID	Length	Product	Plies	Net Qty
J1	16'-00-00	9 1/2" NI-40x	1	20
J2	14'-00-00	9 1/2" NI-40x	1	30
J2DJ	14'-00-00	9 1/2" NI-40x	2	6
J3	12'-00-00	9 1/2" NI-40x	1	2
J4	10'-00-00	9 1/2" NI-40x	1	7
J5	8'-00-00	9 1/2" NI-40x	1	8
J6	6'-00-00	9 1/2" NI-40x	1	7
J7	4'-00-00	9 1/2" NI-40x	1	2
J8	2'-00-00	9 1/2" NI-40x	1	4
J9	18'-00-00	9 1/2" NI-80	1	15
J9DJ	18'-00-00	9 1/2" NI-80	2	4
B1	14'-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B4	14'-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B5	10'-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B2	10'-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B3	4'-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B6	4'-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B7L	4'-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1

Connector Summary		
Qty	Manuf	Product
17	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
5	H1	IUS2.56/9.5
3	H3	HUS1.81/10

TOWN OF BRADFORD WEST GWILLIMBURY  
BUILDING DEPARTMENT  
PLANS EXAMINED  
ONTARIO BUILDING CODE APPLIES  
DATE: 2022-08-09  
INSPECTOR: BG

REVIEWED

DATE: 6/22/22

1st FLOOR FRAMING



FROM PLAN DATED: FROM PLAN DATED  
BUILDER: BAYVIEW WELLINGTON  
SITE: GREEN VALLEY EAST  
MODEL: S38-20  
ELEVATION: A / B  
LOT:  
CITY: BRADFORD  
SALESMAN: RICK DICIANO  
DESIGNER: CH  
REVISION:

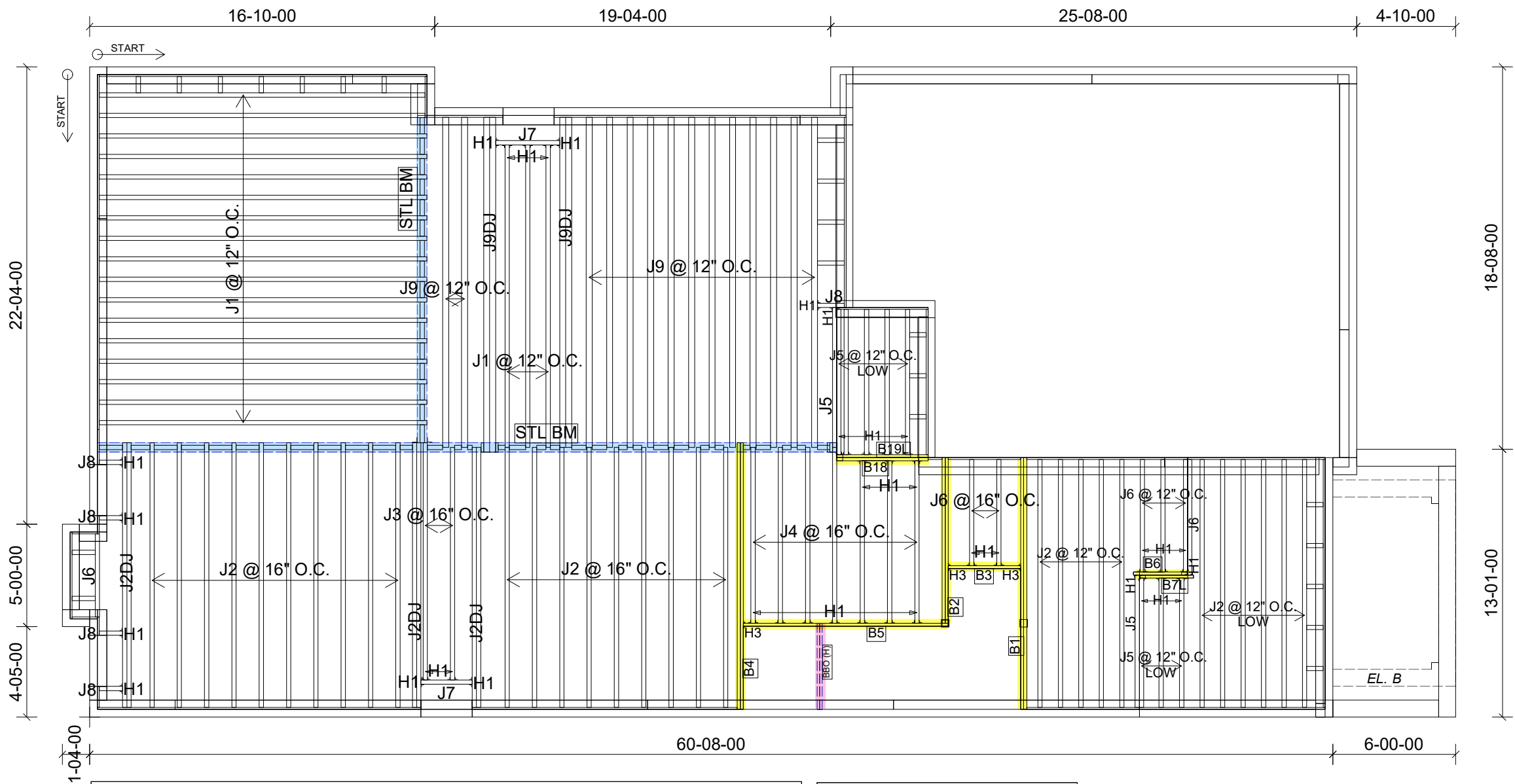
REFER TO THE NORDIC INSTALLATION GUIDE FOR PROPER STORAGE AND INSTALLATION.  
SQUASH BLOCKS OF 2x4, 2x6, 2x8 SPF #2 REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS.  
MULTIPLE SQUASH BLOCKS REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1.  
CANTILEVERED JOISTS INCLUDING CANT' OVER BRICK REQ. I-JOIST BLOCKING 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/ft²  
DEAD LOAD: 15.0 lb/ft²  
TILE LOAD: +5.0 lb/ft²

JOIST LL DEFLECTION LIMIT: L/480

SUBFLOOR: 5/8" GLUED AND NAILED



FROM PLAN DATED: FROM PLAN DATED  
BUILDER: BAYVIEW WELLINGTON  
SITE: GREEN VALLEY EAST  
MODEL: S38-20  
ELEVATION: A / B  
LOT:  
CITY: BRADFORD  
SALESMAN: RICK DICIANO  
DESIGNER: CH  
REVISION:

REFER TO THE **NORDIC INSTALLATION GUIDE**  
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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: 5/8" GLUED AND NAILED

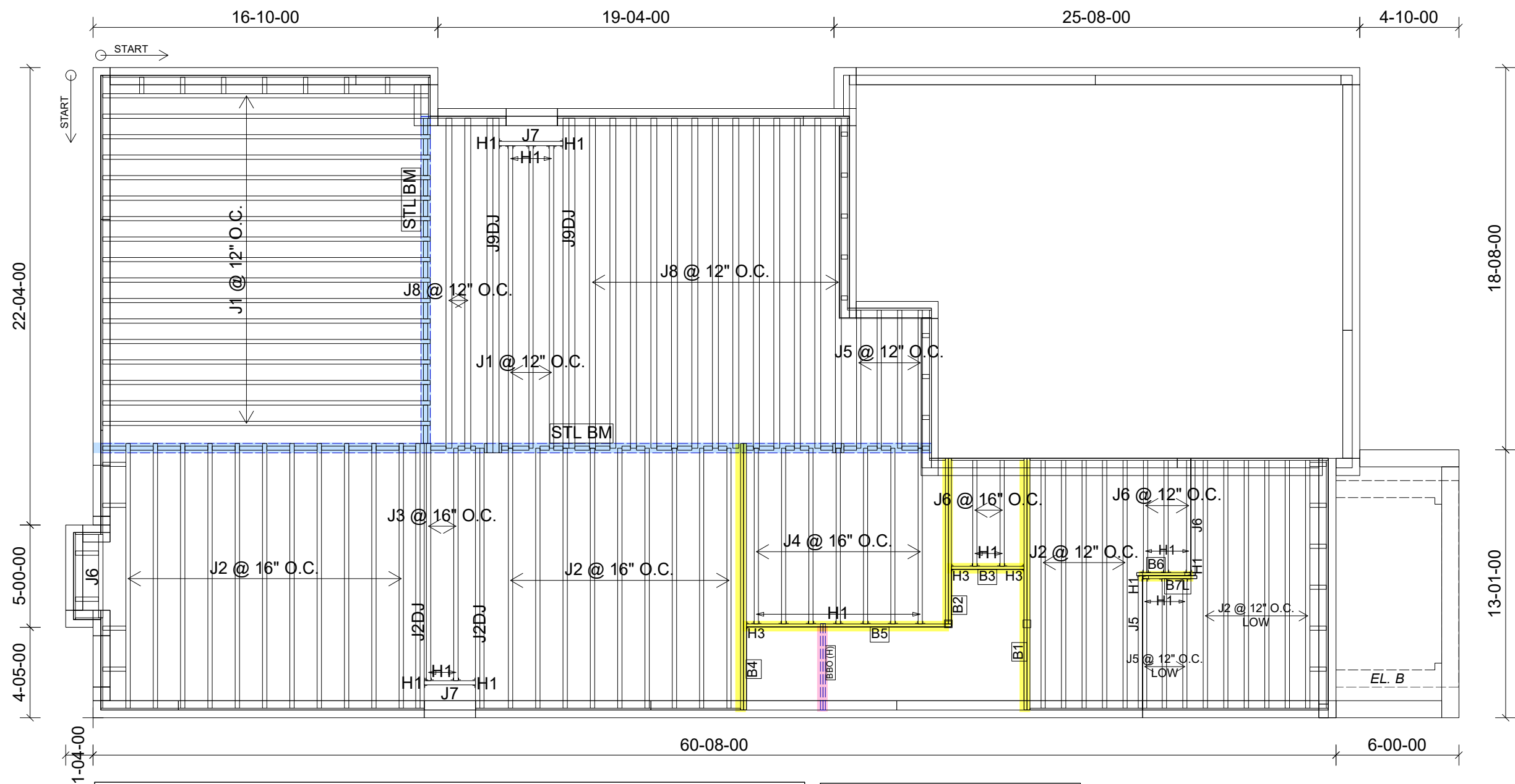
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J4	10-00-00	9 1/2" NI-40x	1	7
J5	8-00-00	9 1/2" NI-40x	1	10
J6	6-00-00	9 1/2" NI-40x	1	7
J7	4-00-00	9 1/2" NI-40x	1	2
J8	2-00-00	9 1/2" NI-40x	1	5
J9	18-00-00	9 1/2" NI-80	1	14
J9DJ	18-00-00	9 1/2" NI-80	2	4
B1	14-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B4	14-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B5	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B2	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B18	6-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B19L	6-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B3	4-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B6	4-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B7L	4-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1

Connector Summary		
Qty	Manuf	Product
25	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
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6	H1	IUS2.56/9.5
1	H1	IUS2.56/9.5
3	H3	HUS1.81/10

REVIEWED

DATE: 6/22/22

1st FLOOR FRAMING  
SUNKEN OPTION



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PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	20
J2	14-00-00	9 1/2" NI-40x	1	31
J2DJ	14-00-00	9 1/2" NI-40x	2	4
J3	12-00-00	9 1/2" NI-40x	1	2
J4	10-00-00	9 1/2" NI-40x	1	7
J5	8-00-00	9 1/2" NI-40x	1	8
J6	6-00-00	9 1/2" NI-40x	1	7
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B4	14-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B5	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B2	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B3	4-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
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Connector Summary		
Qty	Manuf	Product
17	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
5	H1	IUS2.56/9.5
3	H3	HUS1.81/10

REVIEWED

DATE: 6/22/22  
1st FLOOR FRAMING  
WOD / WOB CONDITION



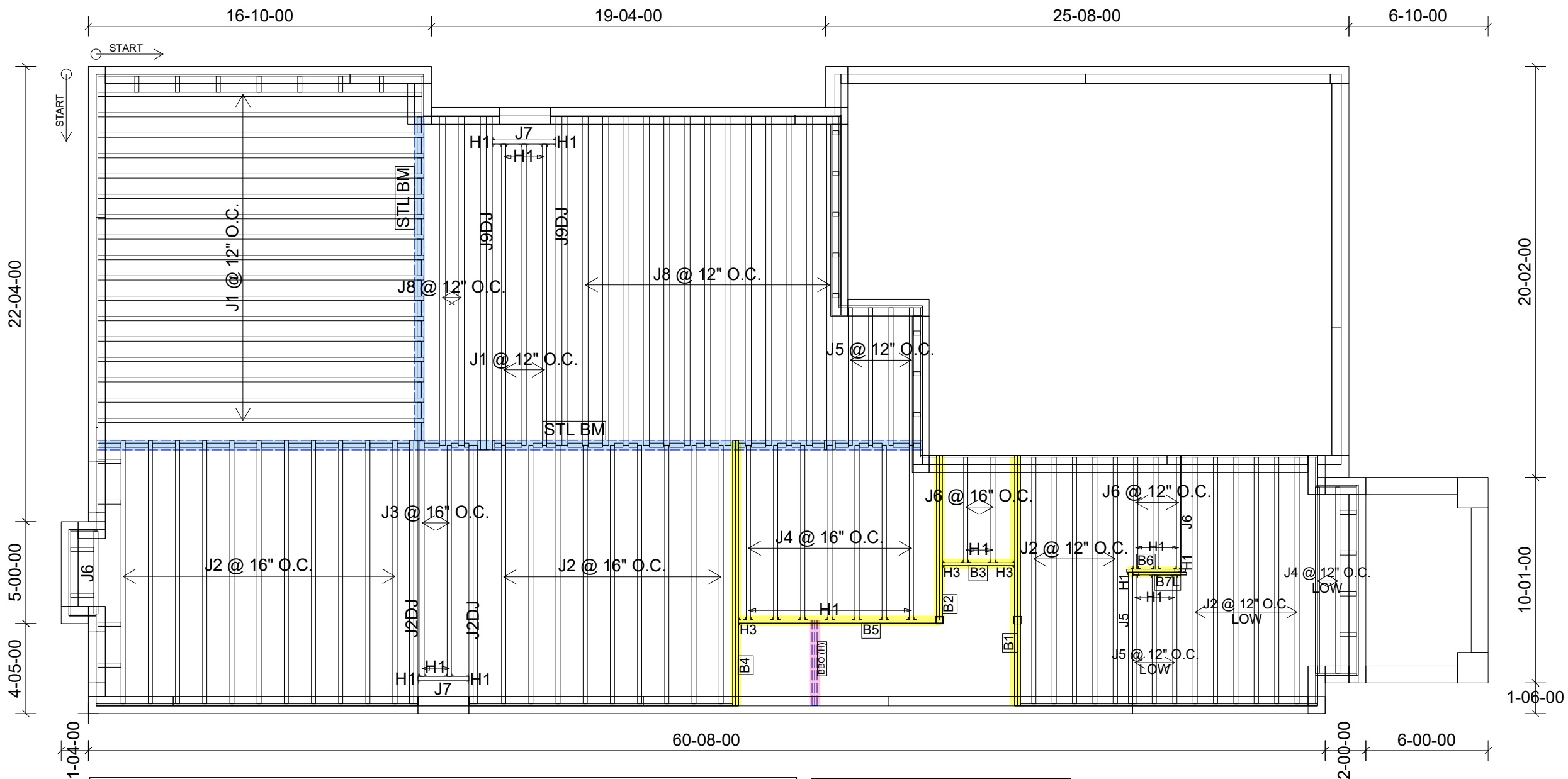
FROM PLAN DATED: FROM PLAN DATED  
BUILDER: BAYVIEW WELLINGTON  
SITE: GREEN VALLEY EAST  
MODEL: S38-20  
ELEVATION: A / B  
LOT:  
CITY: BRADFORD  
SALESMAN: RICK DICIANO  
DESIGNER: CH  
REVISION:

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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: 5/8" GLUED AND NAILED





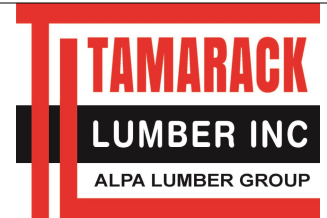
Products				
PlotID	Length	Product	Plies	Net Qty
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J3	12-00-00	9 1/2" NI-40x	1	2
J4	10-00-00	9 1/2" NI-40x	1	9
J5	8-00-00	9 1/2" NI-40x	1	8
J6	6-00-00	9 1/2" NI-40x	1	7
J7	4-00-00	9 1/2" NI-40x	1	2
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B5	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B2	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B3	4-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B6	4-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
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Connector Summary		
Qty	Manuf	Product
17	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
5	H1	IUS2.56/9.5
3	H3	HUS1.81/10

REVIEWED

DATE: 6/22/22

1st FLOOR FRAMING  
WOD / WOB CONDITION



FROM PLAN DATED: FROM PLAN DATED  
BUILDER: BAYVIEW WELLINGTON  
SITE: GREEN VALLEY EAST  
MODEL: S38-20  
ELEVATION: C  
LOT:  
CITY: BRADFORD  
SALESMAN: RICK DICIANO  
DESIGNER: CH  
REVISION:

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**CERAMIC TILE** APPLICATION AS PER OBC 9.30.6.

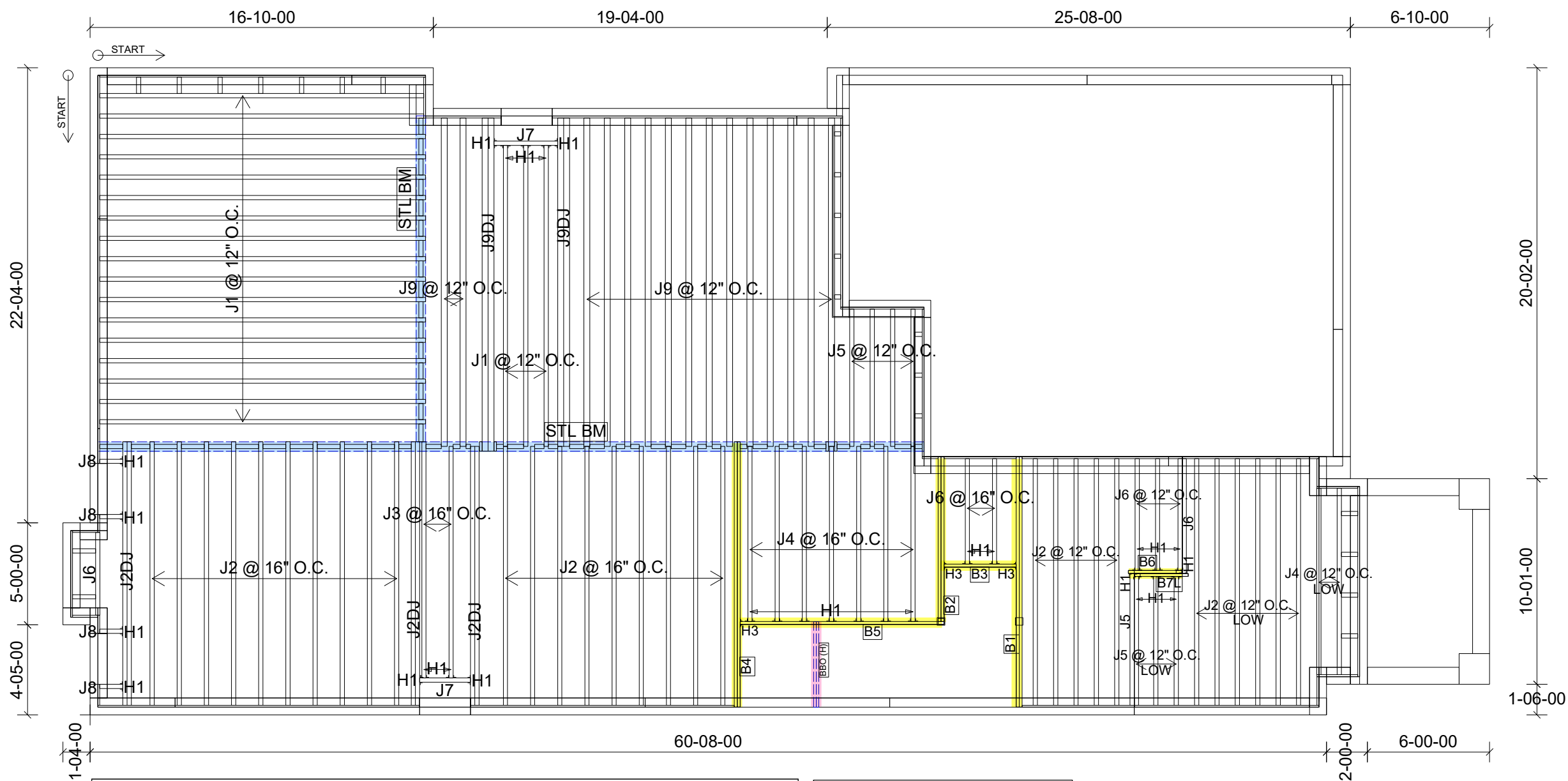
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**LOADING:**  
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TILE LOAD: +5.0 lb/ft<sup>2</sup>

JOIST LL DEFLECTION LIMIT: L/480

SUBFLOOR: 5/8" GLUED AND NAILED





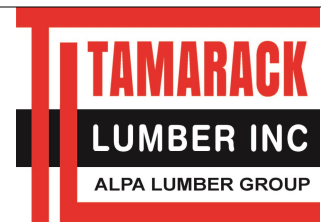
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1st FLOOR FRAMING



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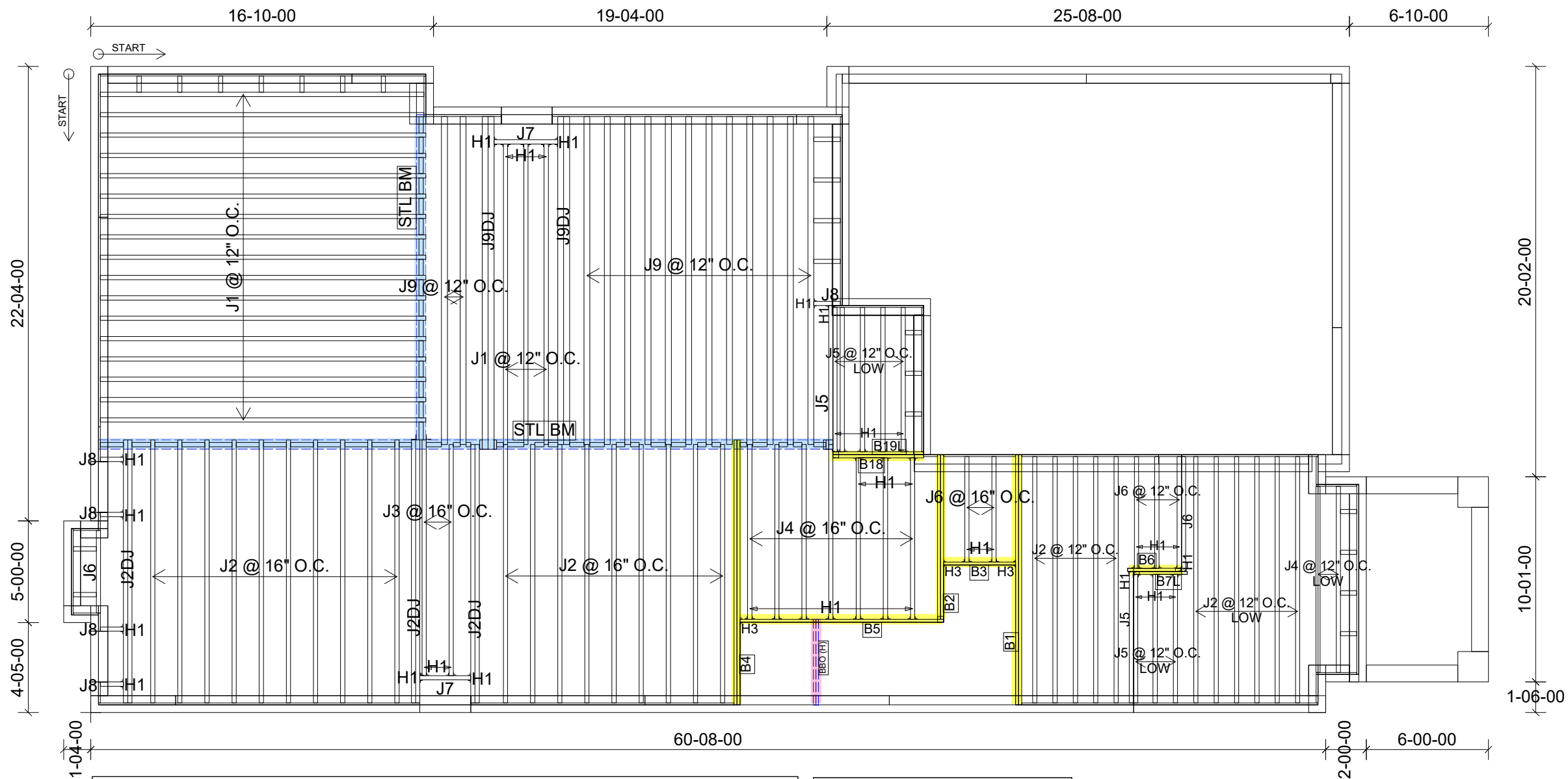
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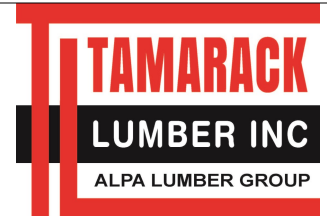
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3	H3	HUS1.81/10

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1st FLOOR FRAMING  
SUNKEN OPTION



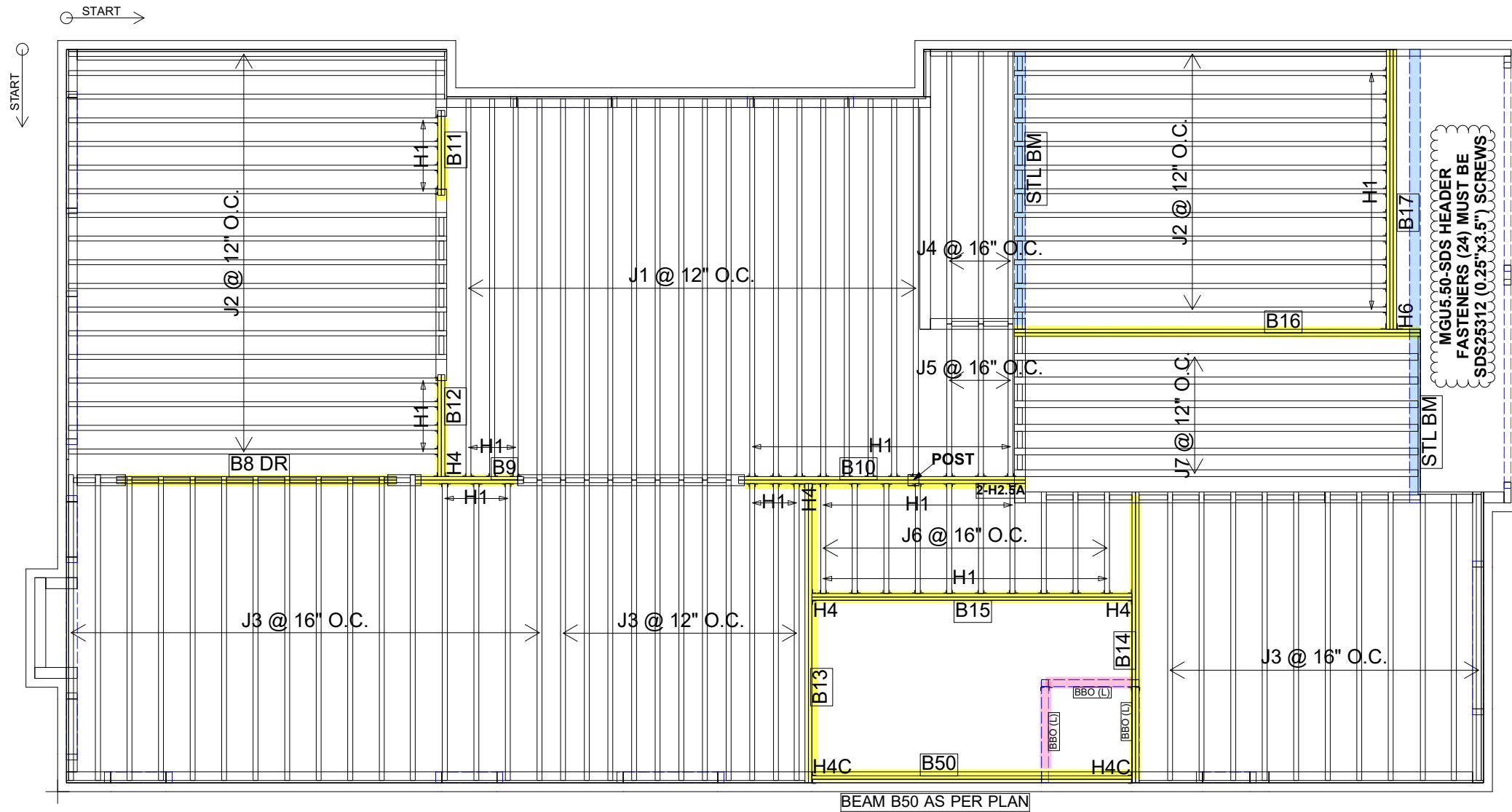
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**CERAMIC TILE** APPLICATION AS PER OBC 9.30.6.

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**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: 5/8" GLUED AND NAILED



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	9 1/2" NI-40x	1	20
J2	16-00-00	9 1/2" NI-40x	1	30
J3	14-00-00	9 1/2" NI-40x	1	38
J4	12-00-00	9 1/2" NI-40x	1	3
J5	8-00-00	9 1/2" NI-40x	1	3
J6	6-00-00	9 1/2" NI-40x	1	10
J7	18-00-00	9 1/2" NI-80	1	6
B16	18-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B10	14-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
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B17	12-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	3	3
B12	6-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B9	6-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B11	4-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2

Connector Summary		
Qty	Manuf	Product
45	H1	IUS2.56/9.5
11	H1	IUS2.56/9.5
2	H4C	HUC410
4	H4	HGUS410
1	H6	MGU5.50-SDS (H=9.25")
2		H2.5A*

REVIEWED

DATE: 6/22/22

2nd FLOOR FRAMING  
STD OR OPT



FROM PLAN DATED: FROM PLAN DATED  
BUILDER: BAYVIEW WELLINGTON  
SITE: GREEN VALLEY EAST  
MODEL: S38-20  
ELEVATION: A  
LOT:  
CITY: BRADFORD  
SALESMAN: RICK DICIANO  
DESIGNER: CH  
REVISION:

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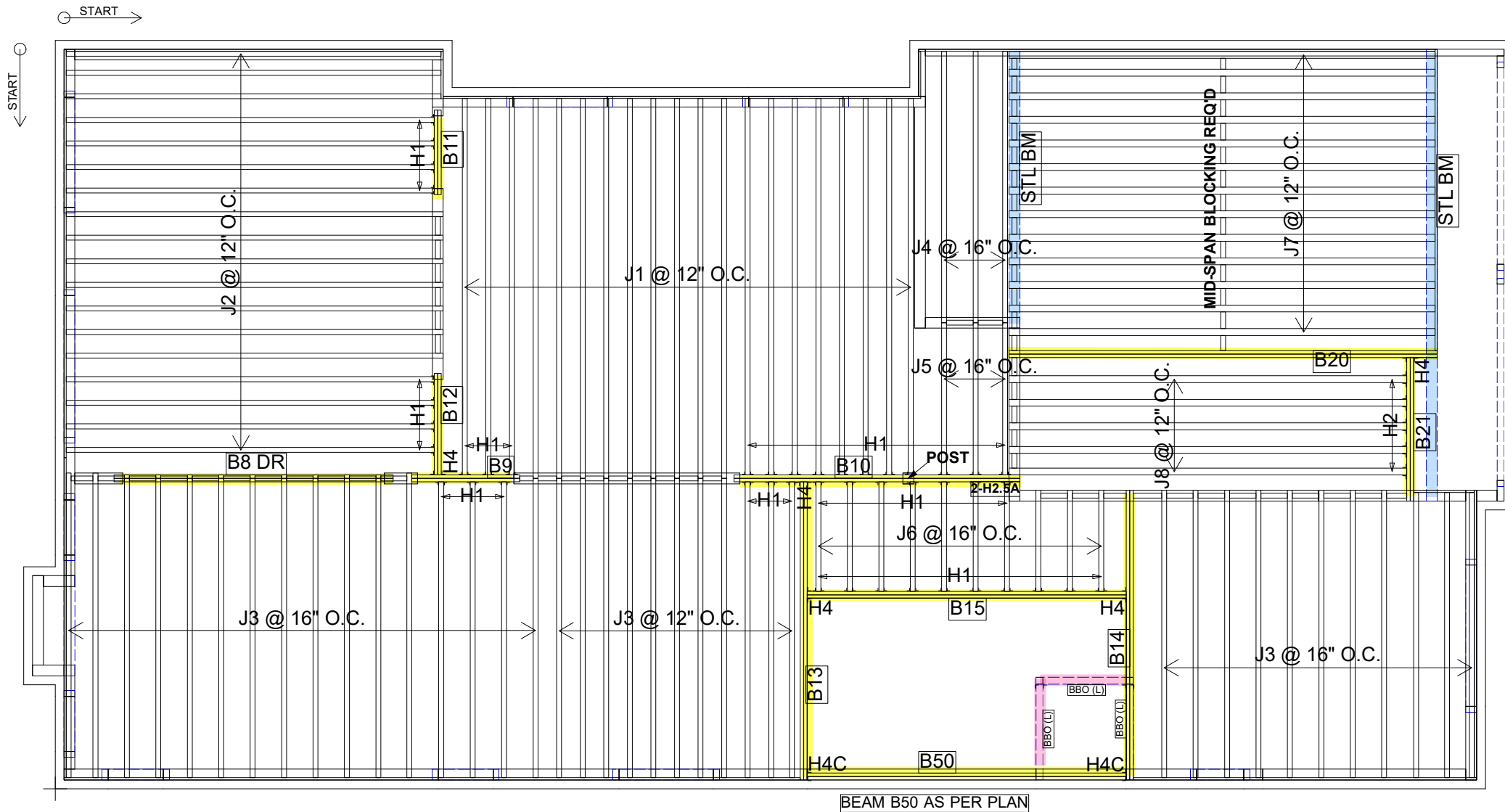
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REVIEWED

DATE: 6/22/22

2nd FLOOR FRAMING  
STD OR OPT



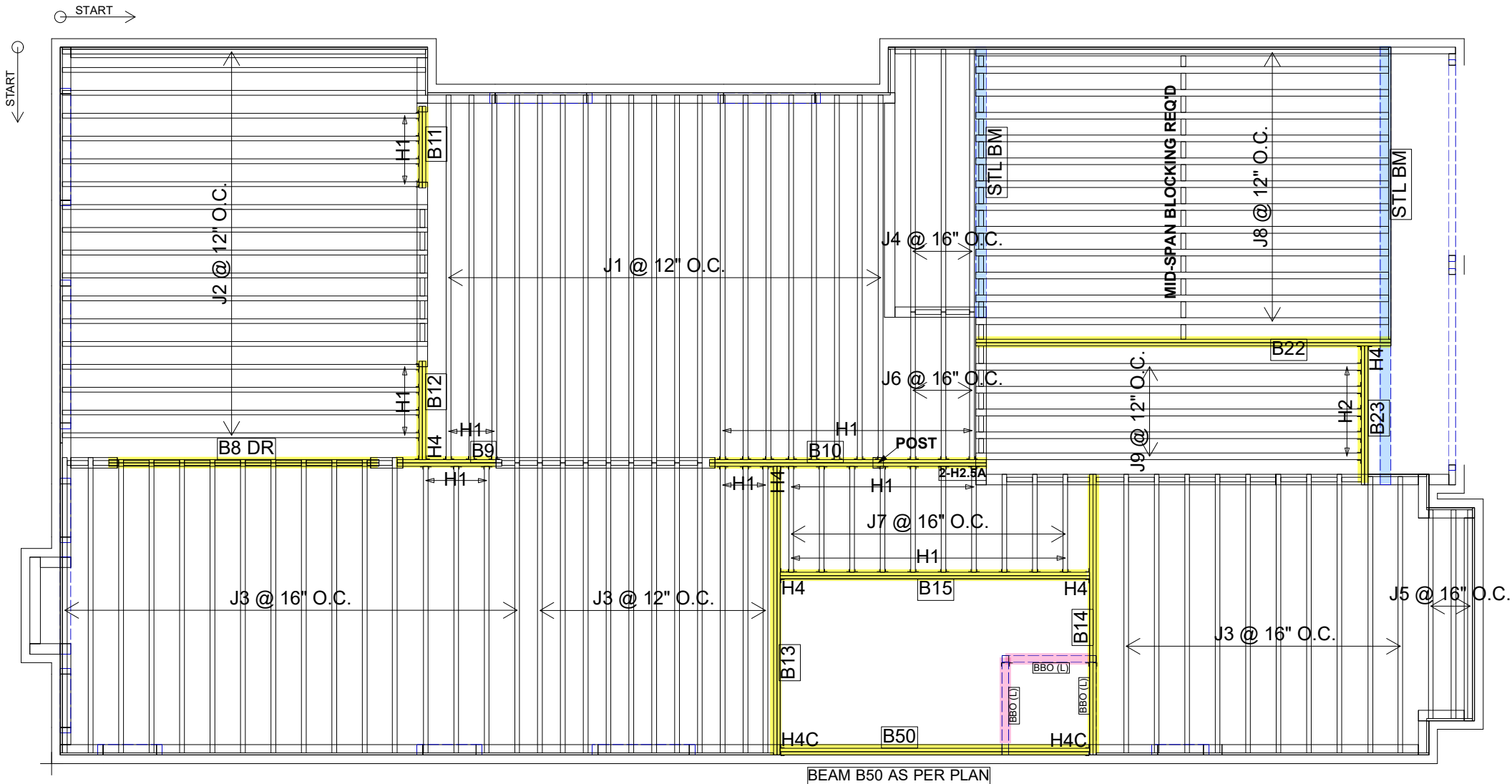
FROM PLAN DATED: FROM PLAN DATED  
BUILDER: BAYVIEW WELLINGTON  
SITE: GREEN VALLEY EAST  
MODEL: S38-20  
ELEVATION: B  
LOT:  
CITY: BRADFORD  
SALESMAN: RICK DICIANO  
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# NORDIC

## 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.

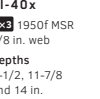



Never stack building materials over unsheathed I-joists. Once sheathed, do not overstress I-joist with concentrated loads from building materials.


### NORDIC I-JOIST SERIES


#### RESIDENTIAL SERIES

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

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

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

	<b>NI-80</b> <b>2x4</b> 2100F MSR 3/8 in. web <b>Depths</b> 9-1/2, 11-7/8, 14 and 16 in. 23 pieces per unit
-------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------

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

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

### WEB STIFFENERS

**2**

**Concentrated Load (Load Stiffener)**

Tight joint, no gap

Gap

End Bearing (Bearing Stiffener)

Gap

Tight joint, no gap

Flange width 2-1/2" or 3-1/2"

Approx. 2"

1/8"-1/4" Gap

Four 2-1/2" nails, 3" nails required for I-joists with 3-1/2" flange width

No gap

**Stiffener Size Requirements**

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

Closest nail spacing

**Nailed to Both Flange Edges (Top View)**

Closest nail spacing

1/2 offset spacing <sup>(1)</sup>

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

Fastener size (diameter x length)	Flange face nailing <sup>(2)</sup>			Flange edge nailing <sup>(3)</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	
					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>(1)</sup> If more than one row is required, offset rows a minimum of 1/2 inch and stagger.

<sup>(2)</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

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

**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

Flange width (in.)	Material thickness required (in.) <sup>(1)</sup>	Minimum depth (in.) <sup>(2)</sup>
2-1/2	1	5-1/2
3-1/2	1-1/2	7-1/4

<sup>(1)</sup> Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-Q325 Standard.

<sup>(2)</sup> For face-mount hangers use net joist depth minus 3-1/4 inches for joists with 1-1/2-inch-thick flanges.

**Notes:**  
1. Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.  
2. For hanger resistance, see manufacturer's recommendations.  
3. Verify double I-joist resistance to support concentrated loads.  
4. Backer blocks must be long enough to permit required nailing without splitting.

**1j**

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

**1k**

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

Top-mount hanger installed per manufacturer's recommendations

**1l**

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

**Note:**  
1. See detail 1h for maximum support resistance.

**1m**

Filler block per detail 1p

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 that may be applied to one side of the double I-joist using this detail is 860 dBf.

**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

**Note:**  
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.

**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 that may be applied to one side of the double I-joist using this detail is 860 dBf.

**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

**Note:**  
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.

**1s-1**

See note 2

1/8" gap minimum

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

Rim board

2-1/2" nails at 6" o.c.

One 2-1/2" nail, one side only

2x4 minimum

Blocking panel (note 1)

**Notes:**  
1. In some local codes, blocking panels are prescriptively required in the first joist space (or first and second joist spaces) next to the starter joist. Where required, see local code requirements for spacing of the blocking panels. As a minimum, it is recommended to use blocking panels spaced at 4 feet on centre.  
2. Details shown are for minimum blocking attachment. Transfer of lateral loads may require additional fasteners. In such cases, nail size, spacing and specific design detailing shall be provided by the building designer.  
3. Where blocking panels are required between adjacent joists, the blocking panels can be staggered by approximately 3 inches, and end-nails as shown.  
4. Nails attaching lumber piece to I-joist web should be driven from the web side and clinched on the lumbar side.

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

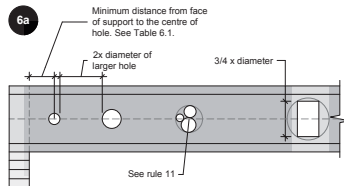
**FOR ALL construction details →DC3**

### 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.

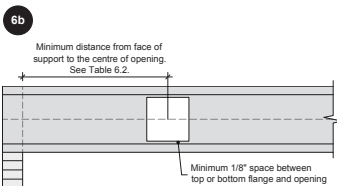


**Notes:**  
1. Never drill, cut or notch the flange, or over-cut the web.  
2. Holes in web should be cut with a sharp saw.  
3. For rectangular holes, avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular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

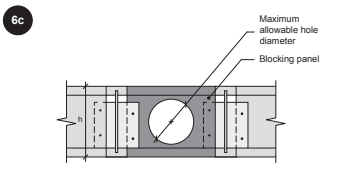


**Notes:**  
1. Never drill, cut or notch the flange, or over-cut the web.  
2. Holes in web should be cut with a sharp saw.  
3. Avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling 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 above 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 or (in.) <sup>(1)</sup>
9-1/2	6-1/4
11-7/8	7-3/4
14	9-3/4
16	10-1/2

<sup>(1)</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"	8'-10"	10'-0"	-	-	-	-	-	-	-
	NI-80	1'-6"	2'-10"	4'-2"	5'-6"	7'-0"	7'-5"	8'-6"	10'-3"	11'-4"	-	-	-	-	-	-	-
14"	NI-20	0-7"	0'-8"	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'-5"	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"	7'-0"	7'-3"	7'-8"	8'-2"	8'-6"	-	-	-	-	-	-	-
	NI-100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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"	-	-	-	-	-	-	-
	NI-90	7'-6"	7'-11"	8'-4"	8'-9"	9'-2"	9'-7"	10'-1"	10'-7"	10'-11"	-	-	-	-	-	-	-
14"	NI-40x	8'-1"	8'-7"	9'-0"	9'-6"	10'-1"	10'-7"	11'-2"	-	-	-	-	-	-	-	-	-
	NI-60	8'-9"	9'-3"	9'-8"	10'-11"	10'-6"	11'-1"	11'-6"	-	-	-	-	-	-	-	-	-
	NI-80	9'-0"	9'-3"	9'-9"	10'-1"	10'-7"	11'-1"	11'-6"	12'-1"	12'-6"	-	-	-	-	-	-	-
	NI-90	9'-2"	9'-8"	10'-0"	10'-6"	11'-1"	11'-5"	11'-9"	12'-4"	12'-11"	-	-	-	-	-	-	-
	NI-100	10'-3"	10'-8"	11'-2"	11'-6"	12'-1"	12'-6"	13'-2"	-	-	-	-	-	-	-	-	-
16"	NI-80	10'-4"	10'-9"	11'-3"	11'-9"	12'-1"	12'-7"	13'-1"	13'-8"	14'-0"	-	-	-	-	-	-	-
	NI-90	10'-9"	11'-2"	11'-8"	12'-0"	12'-6"	13'-0"	13'-6"	14'-2"	14'-4"	-	-	-	-	-	-	-
	NI-100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20**  
Level: **1ST FLR FRAMING**  
Label: **B1 - i28855**  
Type: **Beam**

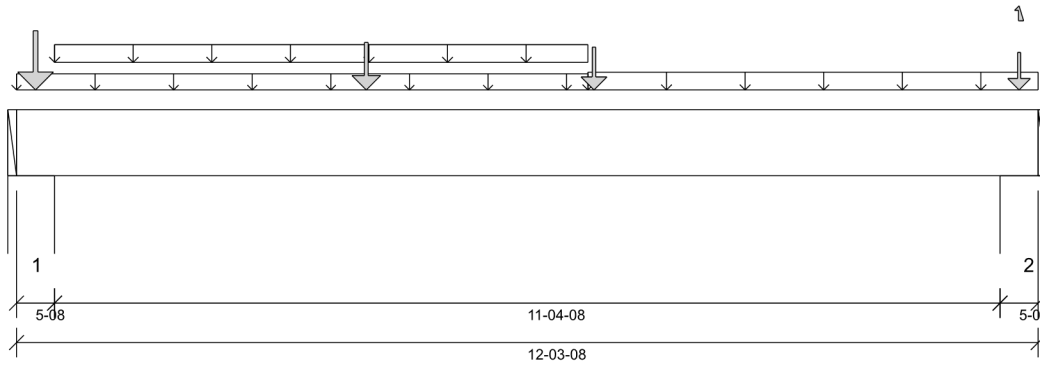
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 13

Report Version: 2020.06.20 01/07/2022 15:35



#### 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: 6'- 5"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 4 1/2"
- 615 psi Wall @ 11'- 11"

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	6'- 2 3/4"	1.25D + 1.5L	0.97	5306 lb ft	22687 lb ft	Passed - 23%
Factored Neg. Moment:	0'- 4 1/2"	1.25D + 1.5S + L	0.84	145 lb ft	18990 lb ft	Passed - 1%
Factored Shear:	1'- 3"	1.25D + 1.5L	0.97	1490 lb	10762 lb	Passed - 14%
Live Load (LL) Pos. Defl.:	6'- 1 7/16"	L		0.091"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	6'- 1/2"	D + L		0.184"	L/240	Passed - L/740

#### 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 + 1.5L + S	0.98	2738 lb		19567 lb	11571 lb	Passed - 24%
2	5-08	1.25D + 1.5L	0.97	1946 lb		19494 lb	11528 lb	Passed - 17%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	12'- 3 1/2"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	-0'	6'- 10 1/2"	FC1 Floor Decking (Plan View Fill)	Top	9 lb/ft	19 lb/ft	-	-
Uniform	0'- 5 1/2"	6'- 10 1/2"	User Load	Top	60 lb/ft	-	-	-
Uniform	6'- 10 1/2"	12'- 3 1/2"	FC1 Floor Decking (Plan View Fill)	Top	20 lb/ft	40 lb/ft	-	-
Point	6'- 11 3/8"	6'- 11 3/8"	B3(i28901)	Back	183 lb	348 lb	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	E48(i2171)	Top	427 lb	354 lb	59 lb	-
Point	4'- 2 1/2"	4'- 2 1/2"	PBO7(i2188)	Top	278 lb	341 lb	-	-
Point	12'- 3/4"	12'- 3/4"	E24(i1937)	Top	231 lb	200 lb	-5 lb	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	W33(i49)	1110 lb	884 lb	61 lb	-
2	11'- 10"	12'- 3 1/2"	W19(i18)	683 lb	705 lb	-7 lb	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Calculation of lateral stability factor (KL) is based on width of all plies.
- 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.
- 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 # TF22061166

**REVIEWED**



BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20**  
Level: **1ST FLR FRAMING**  
Label: **B2 - i28723**  
Type: **Beam**

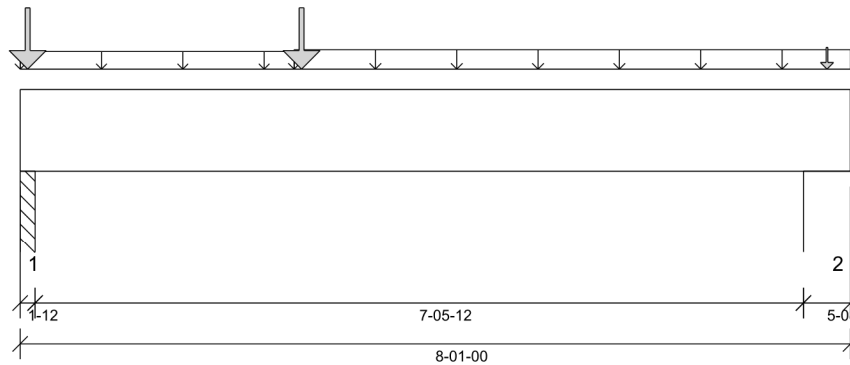
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 9.13

Report Version: 2020.06.20 01/07/2022 15:35



#### 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: 4'- 9 3/4"

#### Factored Resistance of Support Material:

- 615 psi Column @ 0'- 3/4"
- 615 psi Wall @ 7'- 8 1/2"

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 8 7/8"	1.25D + 1.5L	1.00	2011 lb ft	23299 lb ft	Passed - 9%
Factored Shear:	0'- 11 1/4"	1.25D + 1.5L	1.00	784 lb	11052 lb	Passed - 7%
Live Load (LL) Pos. Defl.:	3'- 8 11/16"	L		0.018"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 8 3/4"	D + L		0.028"	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	1597 lb		6370 lb	3767 lb	Passed - 42%
2	5-08	1.25D + 1.5L	1.00	867 lb		20020 lb	11839 lb	Passed - 7%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	8'- 1"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	2'- 8"	FC1 Floor Decking (Plan View Fill)	Top	15 lb/ft	30 lb/ft	-	-
Uniform	2'- 8"	8'- 1"	FC1 Floor Decking (Plan View Fill)	Top	27 lb/ft	53 lb/ft	-	-
Point	2'- 8 7/8"	2'- 8 7/8"	B3(i28901)	Front	180 lb	344 lb	-	-
Point	0'- 7/8"	0'- 7/8"	PBO6(i2187)	Top	212 lb	311 lb	-	-
Point	7'- 10 1/4"	7'- 10 1/4"	E24(i1937)	Top	44 lb	30 lb	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 1 3/4"	PBO1(i36)	446 lb	695 lb	-	-
2	7'- 7 1/2"	8'- 1"	W19(i18)	254 lb	364 lb	-	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Calculation of lateral stability factor (KL) is based on width of all plies.
- 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.
- 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 # TF22061167

**REVIEWED**



BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20**  
Level: **1ST FLR FRAMING**  
Label: **B3 - i28901**  
Type: **Beam**

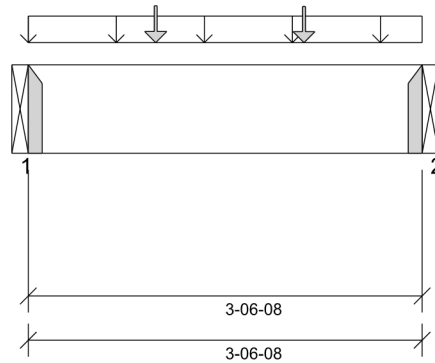
**1 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 13

Report Version: 2020.06.20 01/07/2022 15:35



### 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 @ 3'- 6 1/2"

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	1'- 8 13/16"	1.25D + 1.5L	1.00	723 lb ft	11650 lb ft	Passed - 6%
Factored Shear:	2'- 9"	1.25D + 1.5L	1.00	544 lb	5526 lb	Passed - 10%

### 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	741 lb		2730 lb	-	Passed - 27%
2	1-08	1.25D + 1.5L	1.00	751 lb		2730 lb	-	Passed - 28%

### 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'- 6 1/2"	Self Weight	Top	5 lb/ft	-	-	-
Uniform	0'	3'- 6 1/2"	User Load	Front	60 lb/ft	120 lb/ft	-	-
Point	1'- 1 3/4"	1'- 1 3/4"	J6(i28934)	Back	68 lb	136 lb	-	-
Point	2'- 5 3/4"	2'- 5 3/4"	J6(i28839)	Back	66 lb	131 lb	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B2(i28723)	180 lb	344 lb	-	-
2	3'- 6 1/2"	3'- 6 1/2"	B1(i28855)	183 lb	348 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.
- 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 # TF22061168

**REVIEWED**





BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20**  
Level: **1ST FLR FRAMING**  
Label: **B4 - i28774**  
Type: **Beam**

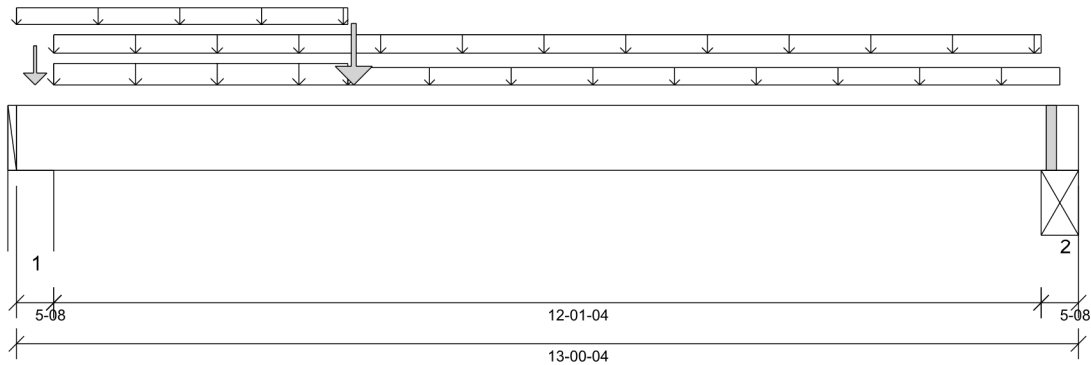
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 9-13

Report Version: 2020.06.20 01/07/2022 15:35



#### 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: 8'- 4 1/4"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 4 1/2"
- 615 psi Beam @ 12'- 7 3/4"

**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:	4'- 1 5/8"	1.25D + 1.5L	0.96	9187 lb ft	22285 lb ft	Passed - 41%
Factored Neg. Moment:	0'- 4 1/2"	1.25D + 1.5S	0.65	139 lb ft	14730 lb ft	Passed - 1%
Factored Shear:	1'- 3"	1.25D + 1.5L	0.96	2769 lb	10571 lb	Passed - 26%
Live Load (LL) Pos. Defl.:	5'- 11 15/16"	L		0.159"	L/360	Passed - L/915
Total Load (TL) Pos. Defl.:	6'- 1 1/4"	D + L		0.325"	L/240	Passed - L/446
Permanent Deflection:	6'- 2 9/16"			-	L/360	Passed - L/898

#### 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 + 1.5L + S	0.97	4103 lb		19476 lb	11517 lb	Passed - 36%
2	5-08	1.25D + 1.5L	0.96	1697 lb		19149 lb	11323 lb	Passed - 15%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	13'- 1/4"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	-0'	4'- 3/4"	FC1 Floor Decking (Plan View Fill)	Top	8 lb/ft	17 lb/ft	-	-
Uniform	0'- 5 1/2"	12'- 6 3/4"	User Load	Top	60 lb/ft	-	-	-
Uniform	0'- 5 1/2"	4'- 3/4"	User Load	Top	40 lb/ft	80 lb/ft	-	-
Uniform	4'- 3/4"	12'- 9 1/2"	FC1 Floor Decking (Plan View Fill)	Top	13 lb/ft	27 lb/ft	-	-
Point	4'- 1 5/8"	4'- 1 5/8"	B5(i28795)	Front	669 lb	1045 lb	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	E17(i1828)	Top	411 lb	185 lb	285 lb	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	W33(i49)	1508 lb	1308 lb	294 lb	-
2	12'- 6 3/4"	13'- 1/4"	STL BM(i25)	716 lb	512 lb	-9 lb	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Calculation of lateral stability factor (KL) is based on width of all plies.
- 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.
- 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 # TF22061169

**REVIEWED**



BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20**  
Level: **1ST FLR FRAMING**  
Label: **B5 - i28795**  
Type: **Beam**

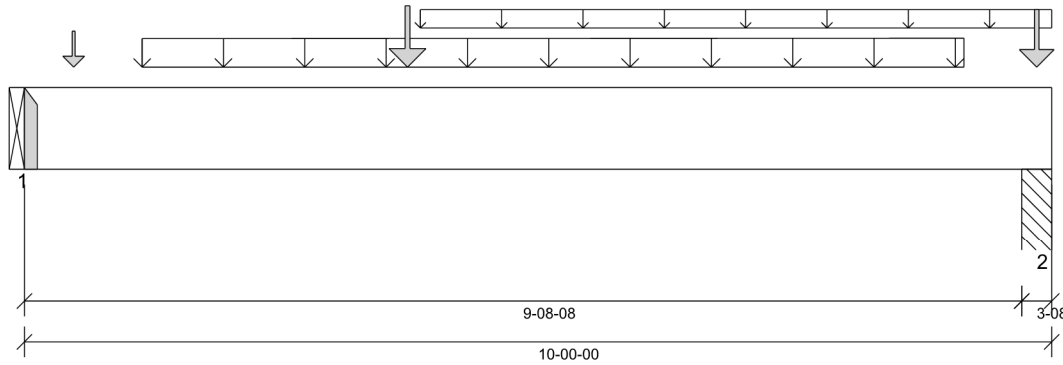
**1 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 13

Report Version: 2020.06.20 01/07/2022 15:35



### 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 Column @ 9'- 9 1/2"

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 5 3/4"	1.25D + 1.5L	1.00	6689 lb ft	11650 lb ft	Passed - 57%
Factored Shear:	0'- 9 1/2"	1.25D + 1.5L	1.00	2405 lb	5526 lb	Passed - 44%
Live Load (LL) Pos. Defl.:	4'- 9 11/16"	L		0.193"	L/360	Passed - L/604
Total Load (TL) Pos. Defl.:	4'- 10 1/8"	D + L		0.330"	L/240	Passed - L/352
Permanent Deflection:	4'- 10 11/16"			-	L/360	Passed - L/872

### 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	2410 lb		2730 lb	-	Passed - 88%
2	3-08	1.25D + 1.5L	1.00	2987 lb		6370 lb	3767 lb	Passed - 79%

### 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.

\* 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'	Self Weight	Top	5 lb/ft	-	-	-
Uniform	3'- 10 1/4"	10'	User Load	Top	60 lb/ft	-	-	-
Tapered	1'- 1 3/4"	9'- 1 3/4"	Smoothed Load	Back	86 To 89 lb/ft	173 To 178 lb/ft	-	-
Point	0'- 5 3/4"	0'- 5 3/4"	J4(i22441)	Back	85 lb	171 lb	-	-
Point	3'- 8 3/4"	3'- 8 3/4"	BBO (H)(i42)	Top	209 lb	360 lb	-	-
Point	9'- 10 1/4"	9'- 10 1/4"	PBO6(i2187)	Top	212 lb	312 lb	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B4(i28774)	669 lb	1045 lb	-	-
2	9'- 8 1/2"	10'	PBO1(i36)	952 lb	1202 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.
- 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 # TF22061170

**REVIEWED**



BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20**  
Level: **1ST FLR FRAMING**  
Label: **B6 - i28939**  
Type: **Beam**

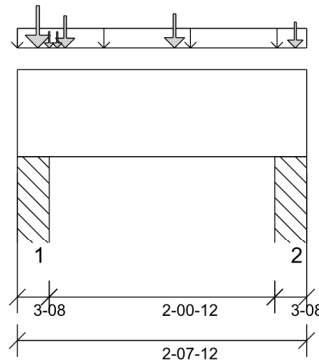
**1 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 9.13

Report Version: 2020.06.20 01/07/2022 15:35



### 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: 0'- 10 3/4"

#### Factored Resistance of Support Material:

- 615 psi Column @ 0'- 2 1/2"
- 615 psi Column @ 2'- 5 1/4"

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	1'- 5 1/4"	1.25D + 1.5L	0.91	203 lb ft	10602 lb ft	Passed - 2%
Factored Shear:	1'- 1"	1.25D + 1.5L	0.91	337 lb	5029 lb	Passed - 7%

### 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	0.91	771 lb		5797 lb	3428 lb	Passed - 22%
2	3-08	1.25D + 1.5L	0.91	416 lb		5797 lb	3428 lb	Passed - 12%

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	2'- 7 3/4"	Self Weight	Top	5 lb/ft	-	-	-
Uniform	-0'	2'- 7 3/4"	User Load	Top	60 lb/ft	-	-	-
Point	0'- 2 1/4"	0'- 2 1/4"	J5(i28818)	Front	210 lb	54 lb	-	-
Point	0'- 5 1/4"	0'- 5 1/4"	J6(i28889)	Back	54 lb	108 lb	-	-
Point	1'- 5 1/4"	1'- 5 1/4"	J6(i28790)	Back	61 lb	121 lb	-	-
Point	2'- 6 1/2"	2'- 6 1/2"	J6(i28960)	Back	33 lb	66 lb	-	-
Point	0'- 3 1/2"	0'- 3 1/2"	FC1 Floor Decking (Plan View Fill)	Top	0 lb	1 lb	-	-
Point	0'- 4 3/8"	0'- 4 3/8"	FC1 Floor Decking (Plan View Fill)	Top	0 lb	0 lb	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	PBO2(i43)	397 lb	223 lb	-	-
2	2'- 4 1/4"	2'- 7 3/4"	PBO3(i44)	133 lb	128 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.
- 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 # TF22061171

**REVIEWED**





BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20**  
Level: **1ST FLR FRAMING**  
Label: **B7L - i28965**  
Type: **Beam**

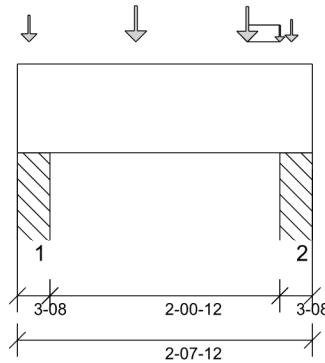
**1 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 9/13

Report Version: 2020.06.20 01/07/2022 15:35



### 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: 0'- 9 1/2"

#### Factored Resistance of Support Material:

- 615 psi Column @ 0'- 2 1/2"
- 615 psi Column @ 2'- 5 1/4"

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	1'- 3/4"	1.25D + 1.5L	1.00	177 lb ft	11650 lb ft	Passed - 2%
Factored Shear:	1'- 6 3/4"	1.25D + 1.5L	1.00	322 lb	5526 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	3-08	1.25D + 1.5L	1.00	372 lb		6370 lb	3767 lb	Passed - 10%
2	3-08	1.25D + 1.5L	1.00	413 lb		6370 lb	3767 lb	Passed - 11%

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	2'- 7 3/4"	Self Weight	Top	5 lb/ft	-	-	-
Uniform	2'- 3/4"	2'- 4 1/4"	FC2 Floor Decking (Plan View Fill)	Top	2 lb/ft	3 lb/ft	-	-
Point	0'- 1 1/4"	0'- 1 1/4"	J5(i28843)	Front	34 lb	67 lb	-	-
Point	1'- 3/4"	1'- 3/4"	J5(i28707)	Front	65 lb	130 lb	-	-
Point	2'- 3/4"	2'- 3/4"	J5(i28999)	Front	62 lb	125 lb	-	-
Point	2'- 5 1/2"	2'- 5 1/2"	J6(i28853)	Back	19 lb	39 lb	-	-
Point	2'- 4 1/4"	2'- 4 1/4"	FC2 Floor Decking (Plan View Fill)	Top	0 lb	1 lb	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	PBO4(i51)	94 lb	175 lb	-	-
2	2'- 4 1/4"	2'- 7 3/4"	PBO5(i52)	99 lb	188 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.
- 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 # TF22061172

**REVIEWED**



BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20**  
Level: **2ND FLR FRAMING**  
Label: **B8 DR - i29003**  
Type: **Beam**

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

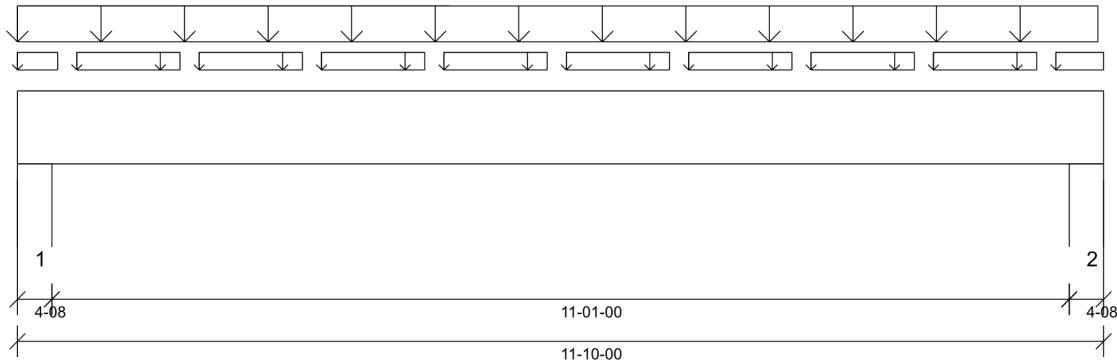
Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 13

Report Version: 2020.06.20

01/07/2022 15:35



### 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: 1'- 1 1/2" Bottom: 11'- 10"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 3 1/2"
- 615 psi Wall @ 11'- 6 1/2"

#### 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:	5'- 10 1/2"	1.25D + 1.5L	1.00	9423 lb ft	23299 lb ft	Passed - 40%
Factored Shear:	10'- 8"	1.25D + 1.5L	1.00	2963 lb	11052 lb	Passed - 27%
Live Load (LL) Pos. Defl.:	5'- 11"	L		0.203"	L/360	Passed - L/656
Total Load (TL) Pos. Defl.:	5'- 11"	D + L		0.310"	L/240	Passed - L/428

### 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 + 1.5L	1.00	3563 lb		16380 lb	9686 lb	Passed - 37%
2	4-08	1.25D + 1.5L	1.00	3511 lb		16380 lb	9686 lb	Passed - 36%

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	11'- 10"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	-0'	0'- 5 1/4"	Bk1(i28746)	Top	12 lb/ft	24 lb/ft	-	-
Uniform	0'- 7 3/4"	1'- 9 1/4"	Bk1(i28704)	Top	12 lb/ft	24 lb/ft	-	-
Uniform	1'- 11 3/4"	3'- 1 1/4"	Bk1(i28846)	Top	12 lb/ft	24 lb/ft	-	-
Uniform	3'- 3 3/4"	4'- 5 1/4"	Bk1(i28903)	Top	12 lb/ft	24 lb/ft	-	-
Uniform	4'- 7 3/4"	5'- 9 1/4"	Bk1(i28783)	Top	12 lb/ft	24 lb/ft	-	-
Uniform	5'- 11 3/4"	7'- 1 1/4"	Bk1(i28842)	Top	12 lb/ft	24 lb/ft	-	-
Uniform	7'- 3 3/4"	8'- 5 1/4"	Bk1(i28993)	Top	12 lb/ft	24 lb/ft	-	-
Uniform	8'- 7 3/4"	9'- 9 1/4"	Bk1(i28745)	Top	12 lb/ft	24 lb/ft	-	-
Uniform	9'- 11 3/4"	11'- 1 1/4"	Bk1(i28740)	Top	12 lb/ft	24 lb/ft	-	-
Uniform	11'- 3 3/4"	11'- 10"	Bk1(i28892)	Top	12 lb/ft	24 lb/ft	-	-
Tapered	0'	11'- 9 1/4"	Smoothed Load	Top	128 To 127 lb/ft	259 To 256 lb/ft	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 4 1/2"	1(i1943)	865 lb	1632 lb	-	-
2	11'- 5 1/2"	11'- 10"	5(i2194)	869 lb	1639 lb	-	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Calculation of lateral stability factor (KL) is based on width of all plies.
- 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.
- 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 # TF22061173

**REVIEWED**



BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20**  
Level: **2ND FLR FRAMING**  
Label: **B9 - i28955**  
Type: **Beam**

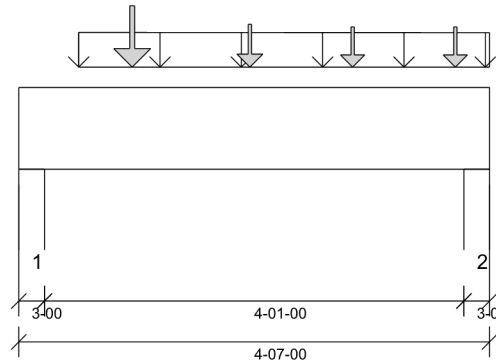
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 9.13

Report Version: 2020.06.20 01/07/2022 15:35



#### 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: 0'- 11 1/2"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 2"
- 615 psi Wall @ 4'- 5"

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 3"	1.25D + 1.5L	1.00	3072 lb ft	23299 lb ft	Passed - 13%
Factored Shear:	3'- 6 1/2"	1.25D + 1.5L	1.00	3017 lb	11052 lb	Passed - 27%
Total Load (TL) Pos. Defl.:	2'- 3 5/16"	D + L		0.014"	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'-00	1.25D + 1.5L	1.00	2520 lb		10920 lb	6458 lb	Passed - 39%
2	3'-00	1.25D + 1.5L	1.00	3029 lb		10920 lb	6457 lb	Passed - 47%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	4'- 7"	Self Weight	Top	9 lb/ft	-	-	-
Tapered	0'- 7"	4'- 7"	Smoothed Load	Front	127 To 125 lb/ft	253 To 251 lb/ft	-	-
Point	1'- 1 1/4"	1'- 1 1/4"	B12(i28739)	Back	307 lb	577 lb	-	-
Point	2'- 3"	2'- 3"	J1(i28777)	Back	176 lb	353 lb	-	-
Point	3'- 3"	3'- 3"	J1(i28994)	Back	160 lb	319 lb	-	-
Point	4'- 3"	4'- 3"	J1(i28687)	Back	160 lb	319 lb	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3"	5(i2194)	602 lb	1133 lb	-	-
2	4'- 4"	4'- 7"	4(i2193)	748 lb	1442 lb	-	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Calculation of lateral stability factor (KL) is based on width of all plies.
- 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.
- 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 # TF22061174

**REVIEWED**





BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20**  
Level: **2ND FLR FRAMING**  
Label: **B10 - i28787**  
Type: **Beam**

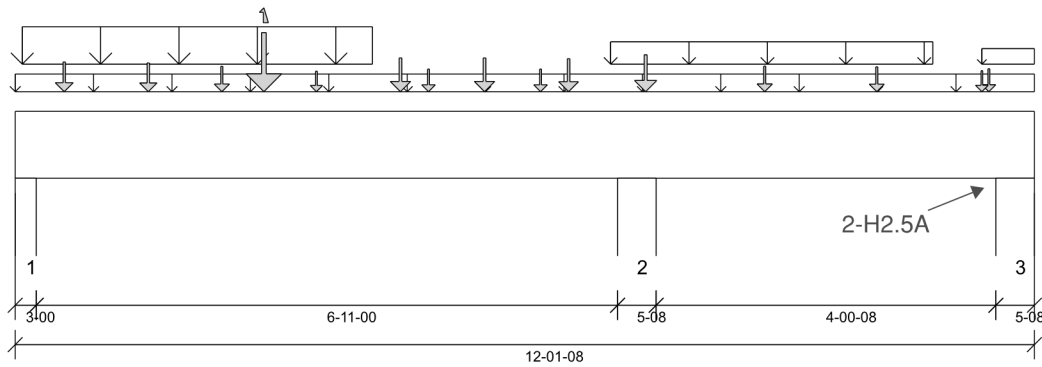
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 9.13

Report Version: 2020.06.20 01/07/2022 15:35



### 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"
- 615 psi Wall @ 7'- 4 3/4"
- 615 psi Wall @ 11'- 9"

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 11 1/2"	1.25D + 1.5L	1.00	7023 lb ft	23299 lb ft	Passed - 30%
Factored Neg. Moment:	7'- 4 3/4"	1.25D + 1.5L	1.00	5851 lb ft	23299 lb ft	Passed - 25%
Factored Shear:	6'- 4 1/2"	1.25D + 1.5L	1.00	4616 lb	11052 lb	Passed - 42%
Live Load (LL) Pos. Defl.:	3'- 5"	L		0.046"	L/360	Passed - L/999
Live Load (LL) Neg. Defl.:	9'- 2 13/16"	L		0.010"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 4 13/16"	D + L		0.078"	L/240	Passed - L/999
Total Load (TL) Neg. Defl.:	9'- 1 15/16"	D + L		0.014"	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	3-00	1.25D + 1.5L	1.00	4423 lb		10920 lb	6457 lb	Passed - 68%
2	5-08	1.25D + 1.5L	1.00	7957 lb		20020 lb	11839 lb	Passed - 67%
3	5-08	1.25D + 1.5L	0.78	844 lb		15706 lb	9288 lb	Passed - 9%
3	5-08	1.25D + 1.5L + S	1.00		-698 lb	-	-	

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	12'- 1 1/2"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	12'- 1 1/2"	User Load	Top	60 lb/ft	-	-	-
Uniform	0'- 1"	4'- 3"	Smoothed Load	Back	154 lb/ft	306 lb/ft	-	-
Uniform	7'- 1"	10'- 11"	Smoothed Load	Front	52 lb/ft	103 lb/ft	-	-
Uniform	11'- 6"	12'- 1 1/2"	FC3 Floor Decking (Plan View Fill)	Top	6 lb/ft	12 lb/ft	-	-
Point	0'- 7"	0'- 7"	J3(i28976)	Front	126 lb	251 lb	-	-
Point	1'- 7"	1'- 7"	J3(i28909)	Front	118 lb	235 lb	-	-
Point	2'- 5 1/2"	2'- 5 1/2"	J3(i28981)	Front	89 lb	179 lb	-	-
Point	2'- 11 1/2"	2'- 11 1/2"	B13(i28807)	Front	553 lb	567 lb	-5 lb	-
Point	3'- 7"	3'- 7"	J6(i29005)	Front	48 lb	97 lb	-	-
Point	4'- 11"	4'- 11"	J6(i28900)	Front	66 lb	132 lb	-	-
Point	6'- 3"	6'- 3"	J6(i28876)	Front	66 lb	132 lb	-	-
Point	11'- 7"	11'- 7"	J6(i28693)	Front	69 lb	139 lb	-	-
Point	4'- 7"	4'- 7"	J1(i28748)	Back	160 lb	319 lb	-	-
Point	5'- 7"	5'- 7"	J1(i28959)	Back	160 lb	319 lb	-	-
Point	6'- 7"	6'- 7"	J1(i28992)	Back	153 lb	306 lb	-	-
Point	7'- 6"	7'- 6"	J1(i28831)	Back	186 lb	373 lb	-	-
Point	8'- 11"	8'- 11"	J5(i28809)	Back	91 lb	182 lb	-	-
Point	10'- 3"	10'- 3"	J5(i28850)	Back	85 lb	171 lb	-	-
Point	11'- 6"	11'- 6"	J5(i28933)	Back	53 lb	106 lb	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3"	4(i2193)	1282 lb	1877/-24 lb	-3 lb	-
2	7'- 2"	7'- 7 1/2"	3(i2192)	2368 lb	3325 lb	-3 lb	-
3	11'- 8"	12'- 1 1/2"	E23(i1940)	57 lb	522/-513 lb	1 lb	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Calculation of lateral stability factor (KL) is based on width of all plies.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.

**REVIEWED**



STRUCTURAL COMPONENT ONLY  
DWG # TF22061175 PG 1/2



BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20**  
Level: **2ND FLR FRAMING**  
Label: **B10 - i28787**  
Type: **Beam**

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

Status:  
**Design  
Passed**

#### DESIGN NOTES

- 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.
- 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.





BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20**  
Level: **2ND FLR FRAMING**  
Label: **B11 - i29001**  
Type: **Beam**

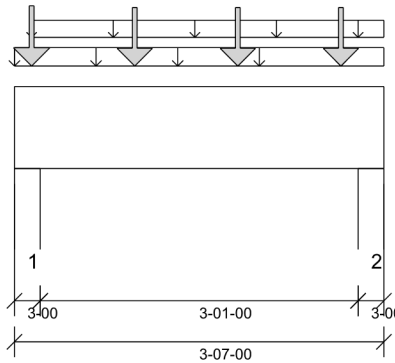
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 9.13

Report Version: 2020.06.20 01/07/2022 15:35



#### 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: 0'- 9 1/2"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 2"
- 615 psi Wall @ 3'- 5"

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 2"	1.25D + 1.5L	1.00	1035 lb ft	23299 lb ft	Passed - 4%
Factored Shear:	2'- 6 1/2"	1.25D + 1.5L	1.00	1326 lb	11052 lb	Passed - 12%

#### 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'-00"	1.25D + 1.5L	1.00	1688 lb		10920 lb	6458 lb	Passed - 26%
2	3'-00"	1.25D + 1.5L	1.00	1467 lb		10920 lb	6458 lb	Passed - 23%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	3'- 7"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	3'- 7"	User Load	Top	60 lb/ft	-	-	-
Uniform	0'- 2"	3'- 7"	FC3 Floor Decking (Plan View Fill)	Top	11 lb/ft	23 lb/ft	-	-
Point	0'- 2"	0'- 2"	J2(i28782)	Back	162 lb	324 lb	-	-
Point	1'- 2"	1'- 2"	J2(i28986)	Back	156 lb	312 lb	-	-
Point	2'- 2"	2'- 2"	J2(i28741)	Back	156 lb	312 lb	-	-
Point	3'- 2"	3'- 2"	J2(i28814)	Back	156 lb	312 lb	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3"	6(i2198)	481 lb	714 lb	-	-
2	3'- 4"	3'- 7"	2(i1944)	437 lb	624 lb	-	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Calculation of lateral stability factor (KL) is based on width of all plies.
- 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.
- 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 # TF22061176

**REVIEWED**





BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20**  
Level: **2ND FLR FRAMING**  
Label: **B12 - i28739**  
Type: **Beam**

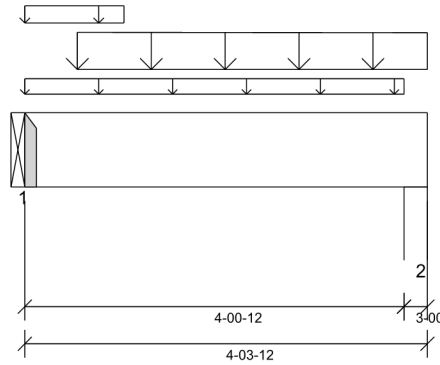
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 9-13

Report Version: 2020.06.20 01/07/2022 15:35



### 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: 0'- 11 1/2"

#### Factored Resistance of Support Material:

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

**PLY TO PLY CONNECTION:**  
**3 ROWS OF 3.25" PNEUMATIC GUN**  
**NAILS (0.120"x3.25") @ 4" 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'- 3/4"	1.25D + 1.5L	1.00	1590 lb ft	23299 lb ft	Passed - 7%
Factored Shear:	0'- 9 1/2"	1.25D + 1.5L	1.00	1112 lb	11052 lb	Passed - 10%

### 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	1263 lb		5460 lb	-	Passed - 23%
2	3-00	1.25D + 1.5L	1.00	1779 lb		10920 lb	6458 lb	Passed - 28%

### 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.

\* 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'	4'- 3 3/4"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	4'- 3/4"	FC3 Floor Decking (Plan View Fill)	Top	11 lb/ft	23 lb/ft	-	-
Uniform	0'	1'- 3/4"	FC3 Floor Decking (Plan View Fill)	Top	24 lb/ft	48 lb/ft	-	-
Tapered	0'- 6 3/4"	4'- 3 3/4"	Smoothed Load	Back	168 To 166 lb/ft	337 To 331 lb/ft	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B9(i28955)	307 lb	577 lb	-	-
2	4'- 3/4"	4'- 3 3/4"	6(i2198)	437 lb	831 lb	-	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Calculation of lateral stability factor (KL) is based on width of all plies.
- 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.
- 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 # TF22061177

**REVIEWED**



BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20**  
Level: **2ND FLR FRAMING**  
Label: **B13 - i28807**  
Type: **Beam**

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

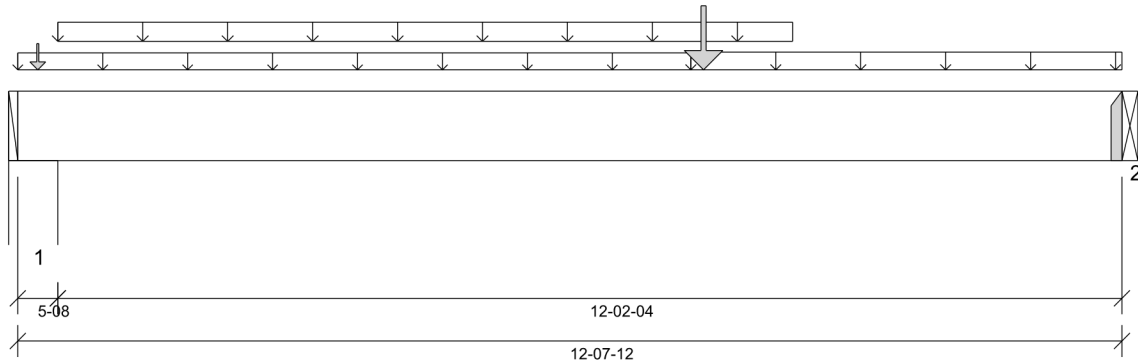
Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 13

Report Version: 2020.06.20

01/07/2022 15:35



### 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: 7'- 3"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 4 1/2"
- 615 psi Beam @ 12'- 7 3/4"

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	7'- 10 1/4"	1.25D + 1.5L	0.94	6741 lb ft	21918 lb ft	Passed - 31%
Factored Shear:	11'- 10 1/4"	1.25D + 1.5L	0.94	1511 lb	10397 lb	Passed - 15%
Live Load (LL) Pos. Defl.:	6'- 10 3/8"	L		0.113"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	6'- 8 7/8"	D + L		0.237"	L/240	Passed - L/617

### 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	0.85	1505 lb		17070 lb	10094 lb	Passed - 15%
2	1-08	1.25D + 1.5L	0.94	1565 lb		5136 lb	-	Passed - 30%

### CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories
			Top	Face	Member	
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'	12'- 7 3/4"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	7'- 8 1/2"	FC3 Floor Decking (Plan View Fill)	Top	7 lb/ft	13 lb/ft	-	-
Uniform	0'- 5 1/2"	8'- 10 1/2"	User Load	Top	60 lb/ft	-	-	-
Uniform	7'- 8 1/2"	12'- 7 3/4"	FC3 Floor Decking (Plan View Fill)	Top	11 lb/ft	23 lb/ft	-	-
Point	7'- 10 1/4"	7'- 10 1/4"	B15(i28754)	Front	439 lb	747 lb	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	E66(i3162)	Top	92 lb	-	160 lb	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	E17(i1828)	710 lb	394 lb	165 lb	-
2	12'- 7 3/4"	12'- 7 3/4"	B10(i28787)	553 lb	567 lb	-5 lb	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Calculation of lateral stability factor (KL) is based on width of all plies.
- 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.
- 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.

**REVIEWED**



STRUCTURAL COMPONENT ONLY  
DWG # TF22061178



BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20**  
Level: **2ND FLR FRAMING**  
Label: **B14 - i28719**  
Type: **Beam**

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

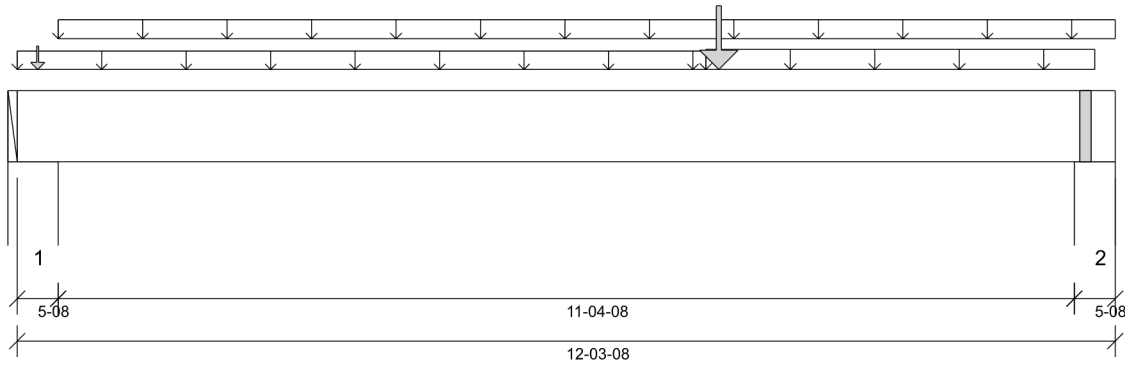
Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 9-13

Report Version: 2020.06.20

01/07/2022 15:35



#### 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: 7'- 3"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 4 1/2"
- 615 psi Wall @ 11'- 11"

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	7'- 10 1/4"	1.25D + 1.5L	0.97	8498 lb ft	22560 lb ft	Passed - 38%
Factored Shear:	11'- 1/2"	1.25D + 1.5L	0.97	2325 lb	10701 lb	Passed - 22%
Live Load (LL) Pos. Defl.:	6'- 6 3/8"	L		0.134"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	6'- 5 7/16"	D + L		0.264"	L/240	Passed - L/516

#### 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	0.86	1815 lb		17214 lb	10179 lb	Passed - 18%
2	5-08	1.25D + 1.5L	0.97	2549 lb		19384 lb	11463 lb	Passed - 22%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	12'- 3 1/2"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	7'- 8 1/2"	FC3 Floor Decking (Plan View Fill)	Top	16 lb/ft	32 lb/ft	-	-
Uniform	0'- 5 1/2"	12'- 3 1/2"	User Load	Top	60 lb/ft	-	-	-
Uniform	7'- 8 1/2"	12'- 3/4"	FC3 Floor Decking (Plan View Fill)	Top	27 lb/ft	53 lb/ft	-	-
Point	7'- 10 1/4"	7'- 10 1/4"	B15(i28754)	Back	573 lb	1016 lb	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	E65(i2900)	Top	92 lb	-	160 lb	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	E48(i2171)	812 lb	586 lb	165 lb	-
2	11'- 10"	12'- 3 1/2"	E24(i1937)	919 lb	910 lb	-5 lb	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Calculation of lateral stability factor (KL) is based on width of all plies.
- 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.
- 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 # TF22061179

**REVIEWED**





BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20**  
Level: **2ND FLR FRAMING**  
Label: **B15 - i28754**  
Type: **Beam**

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

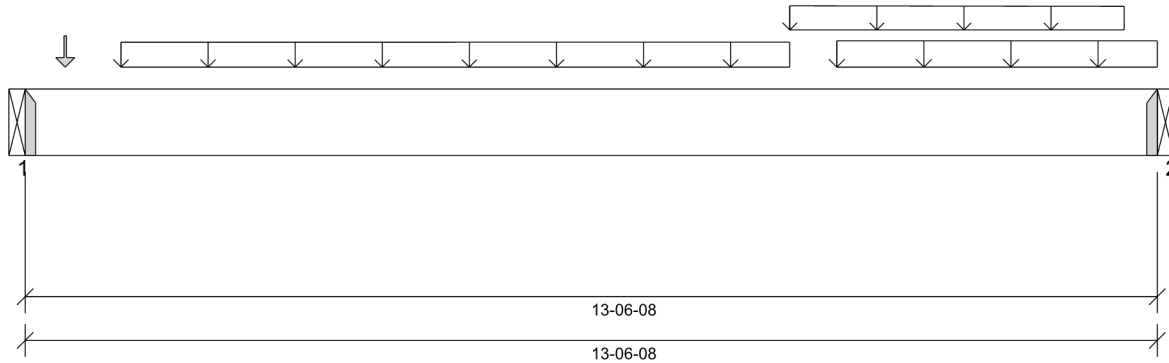
Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 13

Report Version: 2020.06.20

01/07/2022 15:35



#### 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'- 6 1/2"

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	7'- 1 3/4"	1.25D + 1.5L	1.00	6226 lb ft	23299 lb ft	Passed - 27%
Factored Shear:	12'- 9"	1.25D + 1.5L	1.00	2173 lb	11052 lb	Passed - 20%
Live Load (LL) Pos. Defl.:	6'- 10 7/8"	L		0.192"	L/360	Passed - L/846
Total Load (TL) Pos. Defl.:	6'- 10 13/16"	D + L		0.303"	L/240	Passed - L/536

#### 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	1668 lb		5460 lb	-	Passed - 31%
2	1-08	1.25D + 1.5L	1.00	2242 lb		5460 lb	-	Passed - 41%

#### 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'- 6 1/2"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	9'- 8 1/2"	13'- 6 1/2"	User Load	Front	60 lb/ft	120 lb/ft	-	-
Tapered	1'- 1 3/4"	9'- 1 3/4"	Smoothed Load	Back	53 lb/ft	104 To 105 lb/ft	-	-
Tapered	9'- 1 3/4"	13'- 1 3/4"	Smoothed Load	Back	47 To 44 lb/ft	95 To 88 lb/ft	-	-
Point	0'- 5 3/4"	0'- 5 3/4"	J6(i29005)	Back	51 lb	102 lb	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B13(i28807)	439 lb	747 lb	-	-
2	13'- 6 1/2"	13'- 6 1/2"	B14(i28719)	573 lb	1016 lb	-	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Calculation of lateral stability factor (KL) is based on width of all plies.
- 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.
- 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 # TF22061180

**REVIEWED**



BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20**  
Level: **2ND FLR FRAMING**  
Label: **B16 - i28890**  
Type: **Beam**

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

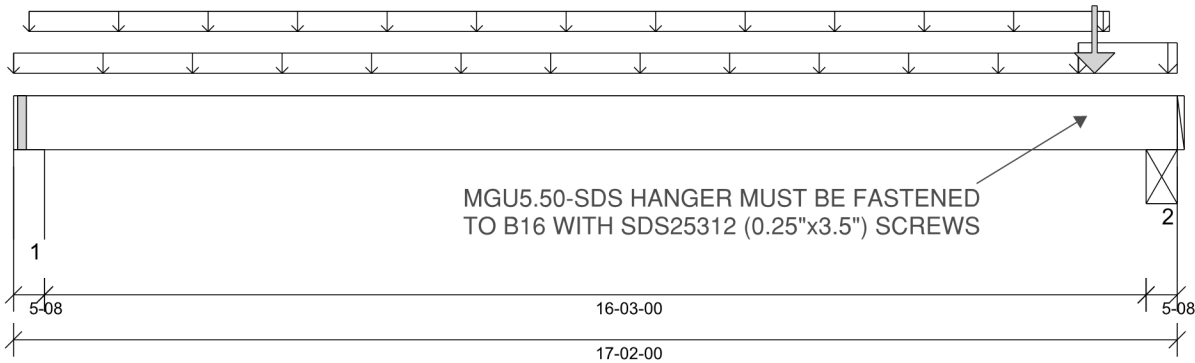
Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 9-13

Report Version: 2020.06.20

01/07/2022 15:35



#### 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: 15'- 3 1/4"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 4 1/2"
- 615 psi Beam @ 16'- 9 1/2"

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	11'- 15/16"	1.25D + 1.5L + S	0.98	9834 lb ft	22785 lb ft	Passed - 43%
Factored Shear:	15'- 11"	1.25D + 1.5S + L	0.98	8947 lb	10866 lb	Passed - 82%
Live Load (LL) Pos. Defl.:	9'- 2 3/4"	L + 0.5S		0.289"	L/360	Passed - L/674
Total Load (TL) Pos. Defl.:	9'- 5/8"	D + L + 0.5S		0.718"	L/240	Passed - L/271
Permanent Deflection:	8'- 11 1/4"			-	L/360	Passed - L/468

#### 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 + 1.5L	0.88	1755 lb		17708 lb	10471 lb	Passed - 17%
2	5-08	1.25D + 1.5S + L	0.98	9730 lb		19683 lb	11639 lb	Passed - 84%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	17'- 2"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	15'- 8 1/2"	User Load	Top	60 lb/ft	-	-	-
Uniform	0'- 2 3/4"	16'- 2"	FC3 Floor Decking (Plan View Fill)	Top	20 lb/ft	40 lb/ft	-	-
Uniform	15'- 8 1/2"	17'- 2"	E61(i2891)	Top	135 lb/ft	-	108 lb/ft	-
Point	15'- 11 3/8"	15'- 11 3/8"	B17(i28906)	Back	2496 lb	1781 lb	2443 lb	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	E23(i1940)	929 lb	448 lb	165 lb	-
2	16'- 8 1/2"	17'- 2"	STL BM(i2204)	3188 lb	1970 lb	2436 lb	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Calculation of lateral stability factor (KL) is based on width of all plies.
- 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.
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- 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 # TF22061181

**REVIEWED**



BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20**  
Level: **2ND FLR FRAMING**  
Label: **B17 - i28906**  
Type: **Beam**

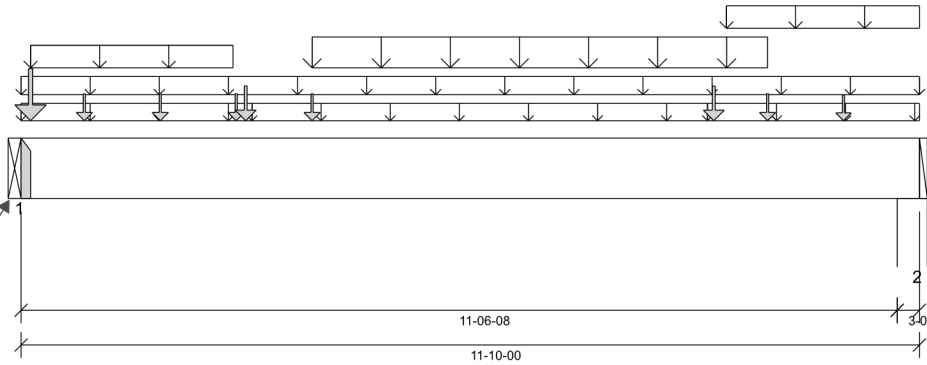
**3 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 9.13

Report Version: 2020.06.20 01/07/2022 15:35



HEADER FASTENERS OF  
MGU5.50-SDS HANGER  
MUST BE SDS25312  
(0.25"x3.5") SCREWS

#### 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: 0'- 9 1/2"

#### Factored Resistance of Support Material:

- 615 psi Beam @ 0'
- 615 psi Wall @ 11'- 7 1/2"

**PLY TO PLY CONNECTION:**  
**3 ROWS OF 3.25" PNEUMATIC GUN**  
**NAILS (0.120"x3.25") @ 6" O/C**  
NAIL FROM BOTH FACES (STAGGER 1/2 SPACE)

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'- 10"	1.25D + 1.5L + S	1.00	19459 lb ft	34949 lb ft	Passed - 56%
Factored Shear:	0'- 9 1/2"	1.25D + 1.5L + S	1.00	6977 lb	16578 lb	Passed - 42%
Live Load (LL) Pos. Defl.:	5'- 9 9/16"	L + 0.5S		0.246"	L/360	Passed - L/561
Total Load (TL) Pos. Defl.:	5'- 9 5/8"	D + L + 0.5S		0.454"	L/240	Passed - L/304
Permanent Deflection:	5'- 9 5/8"			-	L/360	Passed - L/687

#### 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	1-09	1.25D + 1.5S + L	1.00	8535 lb		8535 lb	-	Passed - 100%
2	3-08	1.25D + 1.5L + S	1.00	6899 lb		19110 lb	11300 lb	Passed - 61%

#### CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories
			Top	Face	Member	
1	MGU5.50-SDS (H=9.25")		-	-	-	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'	11'- 10"	Self Weight	Top	14 lb/ft	-	-	-
Uniform	-0'	11'- 10"	User Load	Front	35 lb/ft	-	85 lb/ft	-
Uniform	-0'	3'- 1/2"	E69(i3225)	Top	100 lb/ft	-	-	-
Uniform	0'- 1 1/2"	2'- 9 1/2"	E69(i3225)	Top	56 lb/ft	-	164 lb/ft	-
Uniform	3'- 1/2"	9'- 1/2"	E68(i3188)	Top	100 lb/ft	-	-	-
Uniform	3'- 10"	9'- 10"	Smoothed Load	Top	137 lb/ft	273 lb/ft	-	-
Uniform	9'- 1/2"	11'- 10"	E60(i2890)	Top	100 lb/ft	-	-	-
Uniform	9'- 3 1/2"	11'- 10"	E60(i2890)	Top	56 lb/ft	-	164 lb/ft	-
Point	0'- 10"	0'- 10"	J2(i28753)	Back	162 lb	324 lb	-	-
Point	1'- 10"	1'- 10"	J2(i28956)	Back	164 lb	327 lb	-	-
Point	2'- 10"	2'- 10"	J2(i28928)	Back	164 lb	327 lb	-	-
Point	3'- 10"	3'- 10"	J2(i28726)	Back	164 lb	327 lb	-	-
Point	9'- 10"	9'- 10"	J2(i28731)	Back	164 lb	327 lb	-	-
Point	10'- 10"	10'- 10"	J2(i28895)	Back	148 lb	295 lb	-	-
Point	0'- 1 1/2"	0'- 1 1/2"	E69(i3225)	Top	365 lb	-	1007 lb	-
Point	2'- 11 1/2"	2'- 11 1/2"	E69(i3225)	Top	231 lb	-	534 lb	-
Point	9'- 1 1/2"	9'- 1 1/2"	E60(i2890)	Top	230 lb	-	532 lb	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B16(i28890)	2496 lb	1781 lb	2443 lb	-
2	11'- 6 1/2"	11'- 10"	E19(i1848)	2175 lb	1781 lb	1491 lb	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Calculation of lateral stability factor (KL) is based on width of all plies.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.

**REVIEWED**



STRUCTURAL COMPONENT ONLY  
DWG # TF22061182 PG 1/2





BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20**  
Level: **2ND FLR FRAMING**  
Label: **B17 - i28906**  
Type: **Beam**

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

Status:  
**Design  
Passed**

#### DESIGN NOTES

- 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.
- 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.





BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20 SUNKEN**  
Level: **1ST FLR FRAMING**  
Label: **B18 - i28685**  
Type: **Beam**

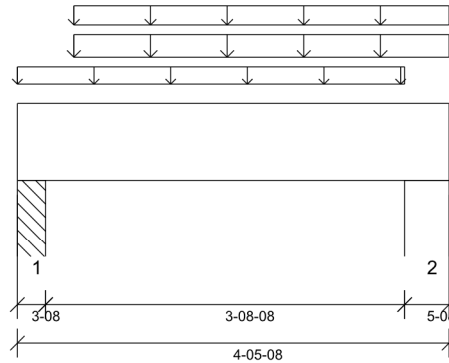
**1 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 9.13

Report Version: 2020.06.20 01/07/2022 14:08



#### 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 3/4"

#### Factored Resistance of Support Material:

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

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 7"	1.25D + 1.5L	1.00	805 lb ft	11650 lb ft	Passed - 7%
Factored Shear:	3'- 2 1/2"	1.25D + 1.5L	1.00	955 lb	5526 lb	Passed - 17%

#### 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	716 lb		6370 lb	3767 lb	Passed - 19%
2	5-08	1.25D + 1.5L	1.00	1080 lb		10010 lb	5919 lb	Passed - 18%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	4'- 5 1/2"	Self Weight	Top	5 lb/ft	-	-	-
Uniform	0'	4'	User Load	Top	60 lb/ft	-	-	-
Uniform	0'- 7"	4'- 5 1/2"	Smoothed Load	Front	-	171 lb/ft	-	-
Uniform	0'- 7"	4'- 5 1/2"	Smoothed Load	Top	98 lb/ft	-	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	PBO9(i28684)	262 lb	246 lb	-	-
2	4'	4'- 5 1/2"	W19(i18)	378 lb	418 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.
- 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 # TF22061183

**REVIEWED**



BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20 SUNKEN**  
Level: **1ST FLR FRAMING**  
Label: **B19L - i28735**  
Type: **Beam**

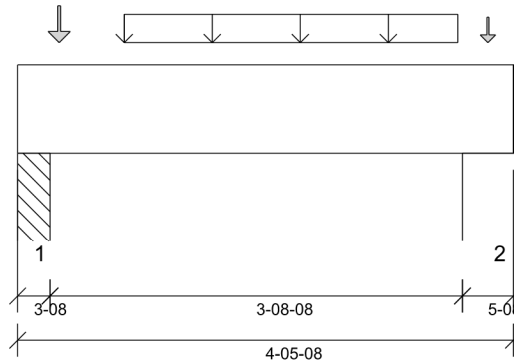
**1 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 9.13

Report Version: 2020.06.20 01/07/2022 14:08



#### 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: 0'- 9 1/2"

#### Factored Resistance of Support Material:

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

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 5 1/2"	1.25D + 1.5L	1.00	572 lb ft	11650 lb ft	Passed - 5%
Factored Shear:	1'- 1"	1.25D + 1.5L	1.00	588 lb	5526 lb	Passed - 11%

#### 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	664 lb		6370 lb	3767 lb	Passed - 18%
2	5-08	1.25D + 1.5L + S	1.00	685 lb		10010 lb	5919 lb	Passed - 12%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	4'- 5 1/2"	Self Weight	Top	5 lb/ft	-	-	-
Uniform	0'- 11 1/2"	3'- 11 1/2"	Smoothed Load	Back	71 lb/ft	142 lb/ft	-	-
Point	0'- 4 1/2"	0'- 4 1/2"	-	Back	68 lb	136 lb	-	-
Point	4'- 2 3/4"	4'- 2 3/4"	E23(i1940)	Top	25 lb	65 lb	0 lb	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	PBO10(i28734)	168 lb	316 lb	-	-
2	4'	4'- 5 1/2"	W18(i19)	159 lb	311 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.
- 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 # TF22061184

**REVIEWED**





BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20 EL B**  
Level: **2ND FLR FRAMING**  
Label: **B20 - i29411**  
Type: **Beam**

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

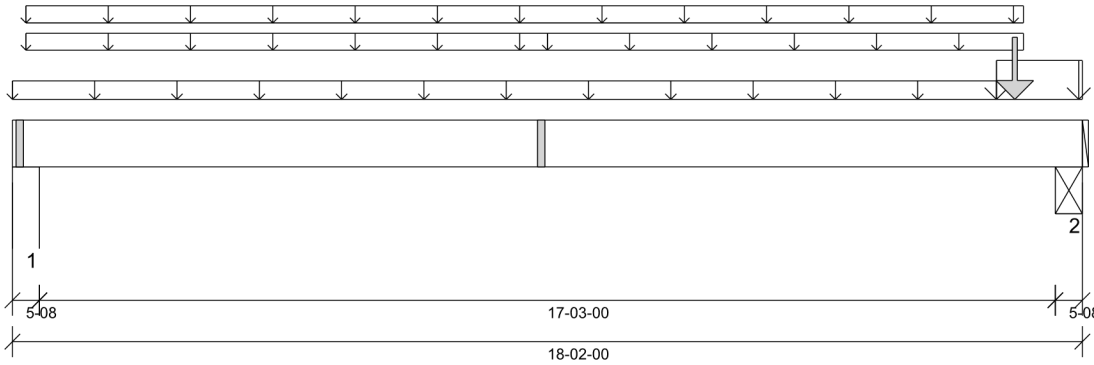
Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 13

Report Version: 2020.06.20

01/07/2022 15:49



#### 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: 8'- 6 1/4"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 4 1/2"
- 615 psi Beam @ 17'- 9 1/2"

#### PLY TO PLY CONNECTION:

3 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:	9'- 10 3/8"	1.25D + 1.5L	0.84	7732 lb ft	19681 lb ft	Passed - 39%
Factored Shear:	16'- 11"	1.25D + 1.5S + L	0.97	5323 lb	10717 lb	Passed - 50%
Live Load (LL) Pos. Defl.:	9'- 6 1/4"	L + 0.5S		0.261"	L/360	Passed - L/794
Total Load (TL) Pos. Defl.:	9'- 4 7/16"	D + L + 0.5S		0.715"	L/240	Passed - L/289
Permanent Deflection:	9'- 3 3/8"			-	L/360	Passed - L/469

#### 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 + 1.5L	0.84	1676 lb		16911 lb	10000 lb	Passed - 17%
2	5-08	1.25D + 1.5S + L	0.97	6785 lb		19412 lb	11479 lb	Passed - 59%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	18'- 2"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	16'- 8 1/2"	User Load	Top	60 lb/ft	-	-	-
Uniform	0'- 2 3/4"	17'- 2"	FC3 Floor Decking (Plan View Fill)	Top	11 lb/ft	21 lb/ft	-	-
Uniform	0'- 2 3/4"	9'- 1"	FC3 Floor Decking (Plan View Fill)	Top	9 lb/ft	19 lb/ft	-	-
Uniform	9'- 1"	17'- 2"	FC3 Floor Decking (Plan View Fill)	Top	9 lb/ft	19 lb/ft	-	-
Uniform	16'- 8 1/2"	18'- 2"	E93(i29340)	Top	196 lb/ft	-	256 lb/ft	-
Point	17'- 1/4"	17'- 1/4"	B21(i29386)	Front	1332 lb	854 lb	1584 lb	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	E23(i1940)	870 lb	390 lb	78 lb	-
2	17'- 8 1/2"	18'- 2"	STL BM(i2204)	2261 lb	1141 lb	1880 lb	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Calculation of lateral stability factor (KL) is based on width of all plies.
- 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.
- 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=0.97, Pf=5048 lb, Qr=10920 lb, Result=46.23%.

#### 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 # TF22061185

**REVIEWED**



BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20 EL B**  
Level: **2ND FLR FRAMING**  
Label: **B21 - i29386**  
Type: **Beam**

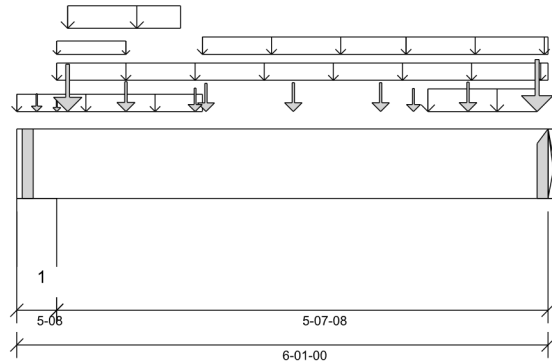
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 13

Report Version: 2020.06.20 01/07/2022 15:49



### 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: 0'- 9 1/4"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 4 1/2"
- 615 psi Beam @ 6'- 1"

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	3'- 2"	1.25D + 1.5L + S	1.00	5050 lb ft	23299 lb ft	Passed - 22%
Factored Shear:	1'- 3"	1.25D + 1.5L + S	1.00	2843 lb	11052 lb	Passed - 26%
Live Load (LL) Pos. Defl.:	3'- 2 5/8"	L + 0.5S		0.023"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 2 11/16"	D + L + 0.5S		0.042"	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	4952 lb		20020 lb	11839 lb	Passed - 42%
2	1-08	1.25D + 1.5S + L	1.00	4900 lb		5460 lb	-	Passed - 90%

### CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories
			Top	Face	Member	
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'	6'- 1"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	2'- 1 1/2"	E96(i29343)	Top	100 lb/ft	-	-	-
Uniform	0'- 5 1/2"	6'- 1"	User Load	Front	28 lb/ft	-	69 lb/ft	-
Uniform	0'- 5 1/2"	1'- 3"	FC3 Floor Decking (Plan View Fill)	Top	3 lb/ft	6 lb/ft	-	-
Uniform	0'- 7"	1'- 10 1/2"	E96(i29343)	Top	56 lb/ft	-	164 lb/ft	-
Uniform	2'- 1 1/2"	4'- 5 1/2"	E95(i29342)	Top	100 lb/ft	-	-	-
Uniform	4'- 5 1/2"	6'- 1"	E94(i29339)	Top	100 lb/ft	-	-	-
Uniform	4'- 8 1/2"	5'- 11 1/2"	E94(i29339)	Top	56 lb/ft	-	164 lb/ft	-
Point	1'- 3"	1'- 3"	J8(i29356)	Back	183 lb	367 lb	-	-
Point	2'- 2"	2'- 2"	J8(i29362)	Back	165 lb	330 lb	-	-
Point	3'- 2"	3'- 2"	J8(i28817)	Back	172 lb	345 lb	-	-
Point	4'- 2"	4'- 2"	J8(i28817)	Back	172 lb	345 lb	-	-
Point	5'- 2"	5'- 2"	J8(i29365)	Back	178 lb	355 lb	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	E96(i29343)	Top	42 lb	-	116 lb	-
Point	0'- 5 1/2"	0'- 5 1/2"	FC3 Floor Decking (Plan View Fill)	Top	1 lb	2 lb	-	-
Point	0'- 7"	0'- 7"	E96(i29343)	Top	290 lb	-	821 lb	-
Point	2'- 1/2"	2'- 1/2"	E96(i29343)	Top	102 lb	-	235 lb	-
Point	4'- 6 1/2"	4'- 6 1/2"	E94(i29339)	Top	100 lb	-	230 lb	-
Point	5'- 11 1/2"	5'- 11 1/2"	E94(i29339)	Top	335 lb	-	937 lb	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	E25(i1941)	1378 lb	895 lb	1560 lb	-
2	6'- 1"	6'- 1"	B20(i29411)	1332 lb	854 lb	1584 lb	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Calculation of lateral stability factor (KL) is based on width of all plies.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.

**REVIEWED**



STRUCTURAL COMPONENT ONLY  
DWG # TF22061186 PG 1/2



BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20 EL B**  
Level: **2ND FLR FRAMING**  
Label: **B21 - i29386**  
Type: **Beam**

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

Status:  
**Design  
Passed**

#### DESIGN NOTES

- 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.
- 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.







BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20 EL C**  
Level: **2ND FLR FRAMING**  
Label: **B22 - i29467**  
Type: **Beam**

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

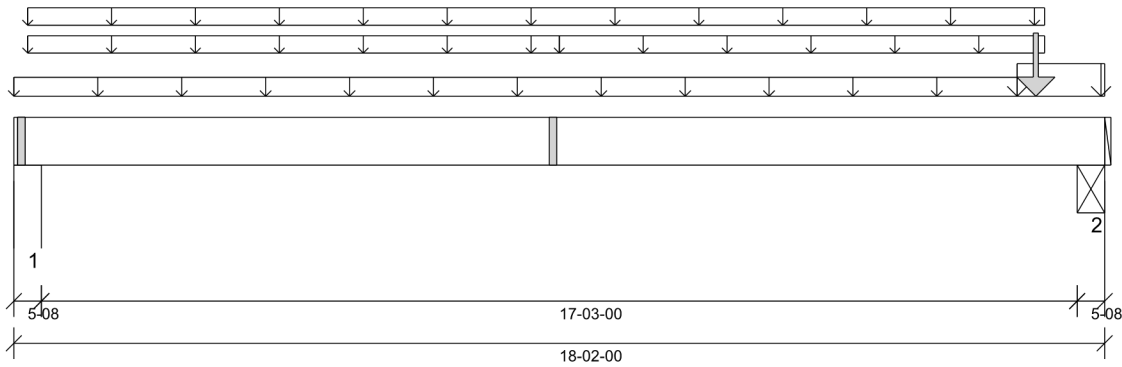
Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 9.13

Report Version: 2020.06.20

01/07/2022 16:53



#### 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: 8'- 6 1/4"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 4 1/2"
- 615 psi Beam @ 17'- 9 1/2"

**PLY TO PLY CONNECTION:**  
**3 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:	9'- 9 5/8"	1.25D + 1.5L	0.86	7629 lb ft	20064 lb ft	Passed - 38%
Factored Shear:	16'- 11"	1.25D + 1.5S + L	0.94	4614 lb	10369 lb	Passed - 44%
Live Load (LL) Pos. Defl.:	9'- 5 11/16"	L + 0.5S		0.248"	L/360	Passed - L/833
Total Load (TL) Pos. Defl.:	9'- 4"	D + L + 0.5S		0.692"	L/240	Passed - L/298
Permanent Deflection:	9'- 3 1/8"			-	L/360	Passed - L/480

#### 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 + 1.5L	0.86	1665 lb		17240 lb	10195 lb	Passed - 16%
2	5'-08"	1.25D + 1.5S + L	0.94	5733 lb		18782 lb	11107 lb	Passed - 52%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	18'- 2"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	16'- 8 1/2"	User Load	Top	60 lb/ft	-	-	-
Uniform	0'- 2 3/4"	17'- 2"	FC3 Floor Decking (Plan View Fill)	Top	11 lb/ft	21 lb/ft	-	-
Uniform	0'- 2 3/4"	9'- 1"	FC3 Floor Decking (Plan View Fill)	Top	9 lb/ft	19 lb/ft	-	-
Uniform	9'- 1"	17'- 2"	FC3 Floor Decking (Plan View Fill)	Top	9 lb/ft	19 lb/ft	-	-
Uniform	16'- 8 1/2"	18'- 2"	E93(i29340)	Top	156 lb/ft	-	164 lb/ft	-
Point	17'- 1/4"	17'- 1/4"	B23(i29463)	Front	1162 lb	854 lb	1179 lb	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	E23(i1940)	861 lb	390 lb	57 lb	-
2	17'- 8 1/2"	18'- 2"	STL BM(i2204)	2042 lb	1141 lb	1361 lb	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Calculation of lateral stability factor (KL) is based on width of all plies.
- 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.
- 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=0.94, Pf=4343 lb, Qr=10920 lb, Result=39.78%.

#### 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 # TF22061187

**REVIEWED**



BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20 EL C**  
Level: **2ND FLR FRAMING**  
Label: **B23 - i29463**  
Type: **Beam**

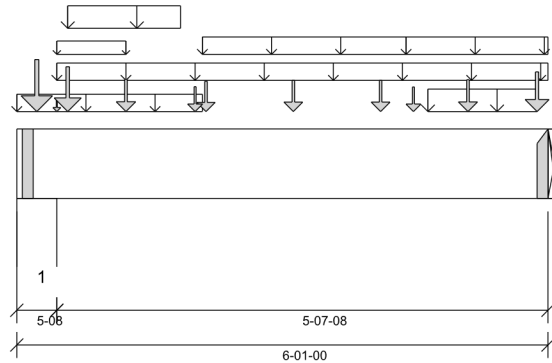
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure version  
8.4.2.286 Updated 13

Report Version: 2020.06.20 01/07/2022 16:53



### 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: 0'- 9 1/4"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 4 1/2"
- 615 psi Beam @ 6'- 1"

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	3'- 2"	1.25D + 1.5L + S	1.00	4923 lb ft	23299 lb ft	Passed - 21%
Factored Neg. Moment:	0'- 4 1/2"	1.25D + 1.5S + L	1.00	242 lb ft	23299 lb ft	Passed - 1%
Factored Shear:	1'- 3"	1.25D + 1.5L + S	1.00	2867 lb	11052 lb	Passed - 26%
Live Load (LL) Pos. Defl.:	3'- 2 11/16"	L + 0.5S		0.023"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 2 3/4"	D + L + 0.5S		0.041"	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	6056 lb		20020 lb	11839 lb	Passed - 51%
2	1-08	1.25D + 1.5S + L	1.00	4140 lb		5460 lb	-	Passed - 76%

### CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories
			Top	Face	Member	
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'	6'- 1"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	2'- 1 1/2"	E96(i29343)	Top	100 lb/ft	-	-	-
Uniform	0'- 5 1/2"	6'- 1"	User Load	Front	29 lb/ft	-	69 lb/ft	-
Uniform	0'- 5 1/2"	1'- 3"	FC3 Floor Decking (Plan View Fill)	Top	3 lb/ft	6 lb/ft	-	-
Uniform	0'- 7"	1'- 10 1/2"	E96(i29343)	Top	56 lb/ft	-	164 lb/ft	-
Uniform	2'- 1 1/2"	4'- 5 1/2"	E95(i29342)	Top	100 lb/ft	-	-	-
Uniform	4'- 5 1/2"	6'- 1"	E94(i29339)	Top	100 lb/ft	-	-	-
Uniform	4'- 8 1/2"	5'- 11 1/2"	E94(i29339)	Top	56 lb/ft	-	164 lb/ft	-
Point	1'- 3"	1'- 3"	J9(i29882)	Back	183 lb	367 lb	-	-
Point	2'- 2"	2'- 2"	J9(i29813)	Back	165 lb	330 lb	-	-
Point	3'- 2"	3'- 2"	J9(i29812)	Back	172 lb	345 lb	-	-
Point	4'- 2"	4'- 2"	J9(i29890)	Back	172 lb	345 lb	-	-
Point	5'- 2"	5'- 2"	J9(i29810)	Back	178 lb	355 lb	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	E96(i29343)	Top	291 lb	-	821 lb	-
Point	0'- 5 1/2"	0'- 5 1/2"	FC3 Floor Decking (Plan View Fill)	Top	1 lb	2 lb	-	-
Point	0'- 7"	0'- 7"	E96(i29343)	Top	240 lb	-	664 lb	-
Point	2'- 1/2"	2'- 1/2"	E96(i29343)	Top	102 lb	-	235 lb	-
Point	4'- 6 1/2"	4'- 6 1/2"	E94(i29339)	Top	100 lb	-	230 lb	-
Point	5'- 11 1/2"	5'- 11 1/2"	E94(i29339)	Top	179 lb	-	578 lb	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	E25(i1941)	1595 lb	895 lb	2154 lb	-
2	6'- 1"	6'- 1"	B22(i29467)	1162 lb	854 lb	1179 lb	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Calculation of lateral stability factor (KL) is based on width of all plies.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.

**REVIEWED**



STRUCTURAL COMPONENT ONLY  
DWG # TF22061188 PG 1/2



BUILDER: **BAYVIEW WELLINGTON**  
SITE: **GREEN VALLEY EAST**  
MODEL: **S38-20**  
CITY: **BRADFORD**

Job Name: **S38-20 EL C**  
Level: **2ND FLR FRAMING**  
Label: **B23 - i29463**  
Type: **Beam**

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

Status:  
**Design  
Passed**

#### DESIGN NOTES

- 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.
- 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.





### 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

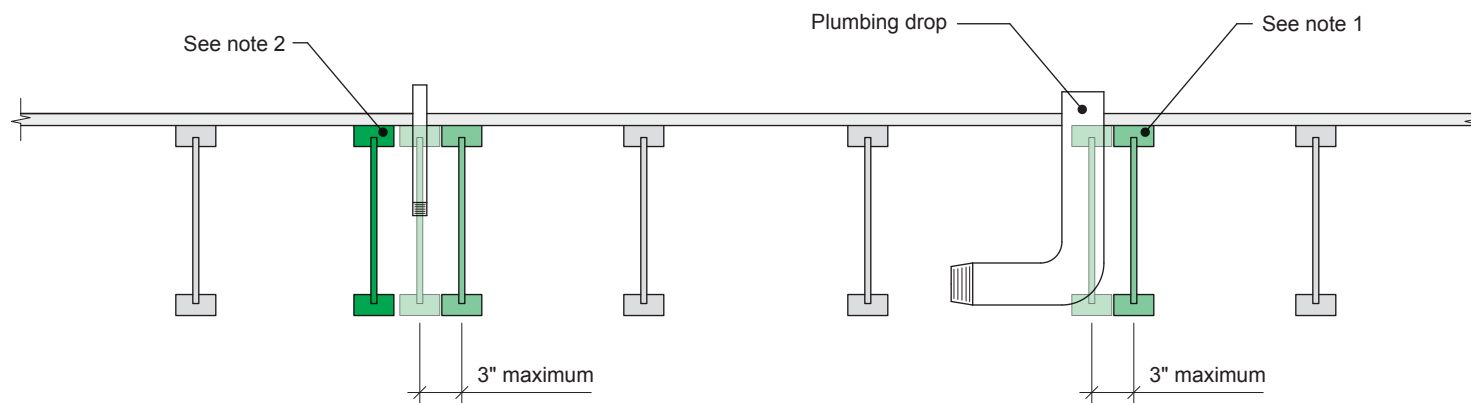
Joist depth	Joist series	Bare On centre spacing				1/2 in. gypsum ceiling On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-10"	15'-0"	14'-5"	13'-5"	16'-4"	15'-5"	14'-6"	13'-5"
	NI-40x	16'-11"	15'-11"	15'-4"	14'-9"	17'-4"	16'-4"	15'-9"	14'-11"
	NI-60	17'-1"	16'-1"	15'-6"	14'-10"	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.

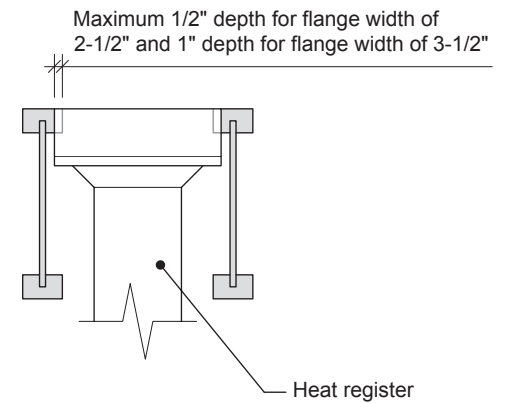
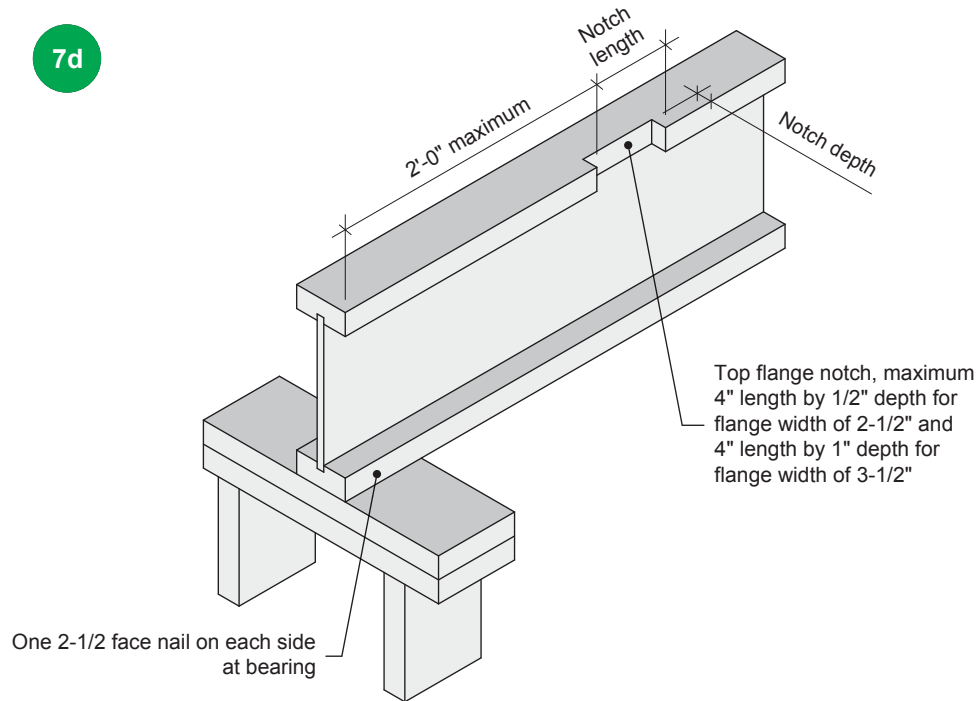
7c

**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.