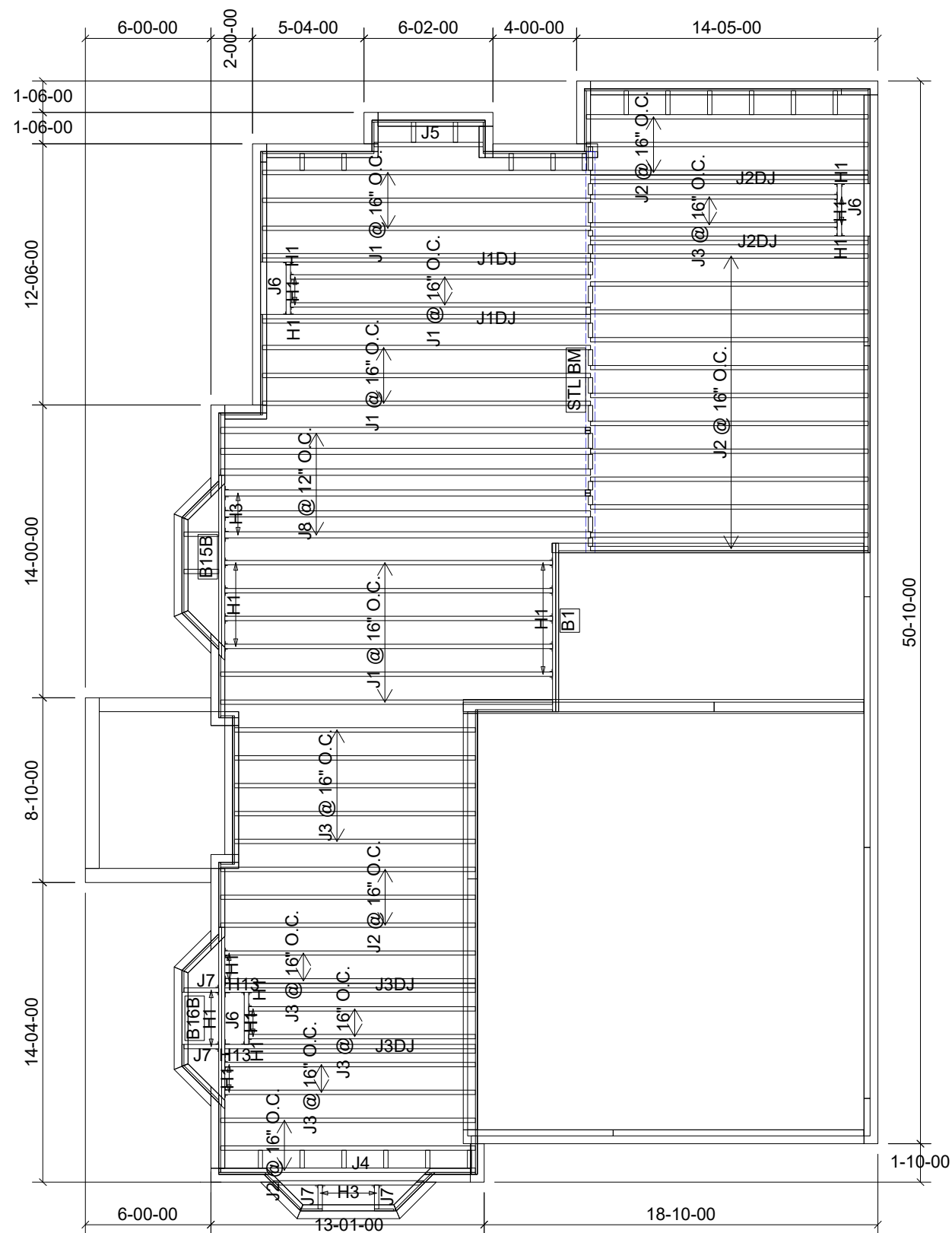


**LOADING:**  
LIVE LOAD: 40.0 lb/ft<sup>2</sup>  
DEAD LOAD: 15.0 lb/ft<sup>2</sup>  
TILE LOAD: +5.0 lb/ft<sup>2</sup>  
JOIST LL DEFLECTION LIMIT: L/480  
**SUBFLOOR:** 3/4" GLUED AND NAILED



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	14
J1DJ	16-00-00	9 1/2" NI-40x	2	4
J2	14-00-00	9 1/2" NI-40x	1	21
J2DJ	14-00-00	9 1/2" NI-40x	2	4
J3	12-00-00	9 1/2" NI-40x	1	13
J3DJ	12-00-00	9 1/2" NI-40x	2	4
J4	8-00-00	9 1/2" NI-40x	1	1
J5	6-00-00	9 1/2" NI-40x	1	1
J6	4-00-00	9 1/2" NI-40x	1	3
J7	2-00-00	9 1/2" NI-40x	1	4
J8	18-00-00	9 1/2" NI-80	1	6
B1	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B15B	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B16B	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2

Connector Summary		
Qty	Manuf	Product
6	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
4	H1	IUS3.56/9.5
5	H3	IUS3.56/9.5
3	H3	IUS3.56/9.5
2	H3	IUS3.56/9.5
2	H13	HU310-2

DATE: 7/27/23

1st FLOOR FRAMING



FROM PLAN DATED: 2023/03  
BUILDER: GREEN PARK HOMES  
SITE: TRINI GROUP DEVE.  
MODEL: VILLA 10  
ELEVATION: 2  
LOT:  
CITY: RICHMOND HILL  
SALESMAN: RICK DICIANO  
DESIGNER: AJ  
REVISION:

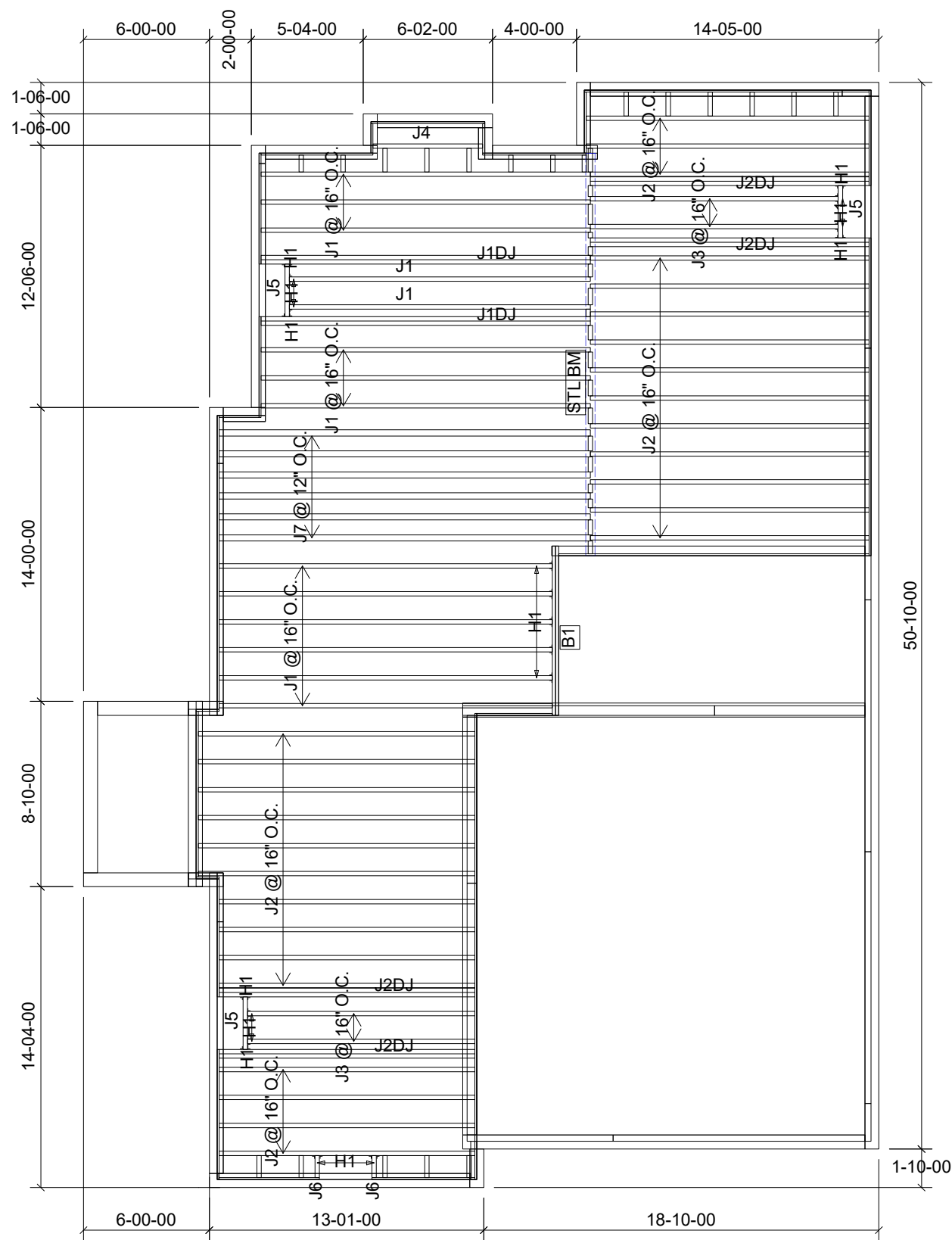
REFER TO THE **NORDIC INSTALLATION GUIDE** FOR PROPER STORAGE AND INSTALLATION.  
**SQUASH BLOCKS** OF 2x4, 2x6, 2x8 SPF #2 REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS.  
**MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1.  
**CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURES 4/5 FOR REINFORCEMENT REQUIREMENTS.  
FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 6 AND TABLES 6.1/6.2.  
**CERAMIC TILE** APPLICATION AS PER OBC 9.30.6.

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

LOADING:  
LIVE LOAD: 40.0 lb/ft²  
DEAD LOAD: 15.0 lb/ft²  
TILE LOAD: +5.0 lb/ft²

CITY OF RICHMOND HILL  
BUILDING DIVISION  
05/01/2024  
RECEIVED  
AND NAILED

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



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	14
J1DJ	16-00-00	9 1/2" NI-40x	2	4
J2	14-00-00	9 1/2" NI-40x	1	28
J2DJ	14-00-00	9 1/2" NI-40x	2	8
J3	12-00-00	9 1/2" NI-40x	1	4
J4	6-00-00	9 1/2" NI-40x	1	1
J5	4-00-00	9 1/2" NI-40x	1	3
J6	2-00-00	9 1/2" NI-40x	1	2
J7	18-00-00	9 1/2" NI-80	1	6
B1	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2

Connector Summary		
Qty	Manuf	Product
5	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
8	H1	IUS2.56/9.5

DATE: 7/27/23

1st FLOOR FRAMING



FROM PLAN DATED: 2023/03  
BUILDER: GREEN PARK HOMES  
SITE: TRINI GROUP DEVE.  
MODEL: VILLA 10  
ELEVATION: 3  
LOT:  
CITY: RICHMOND HILL  
SALESMAN: RICK DICIANO  
DESIGNER: AJ  
REVISION:

REFER TO THE **NORDIC INSTALLATION GUIDE** FOR PROPER STORAGE AND INSTALLATION.  
**SQUASH BLOCKS** OF 2x4, 2x6, 2x8 SPF #2 REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1.  
**CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURES 4/5 FOR REINFORCEMENT REQUIREMENTS.  
FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 6 AND TABLES 6.1/6.2. **CERAMIC TILE** APPLICATION AS PER OBC 9.30.6.

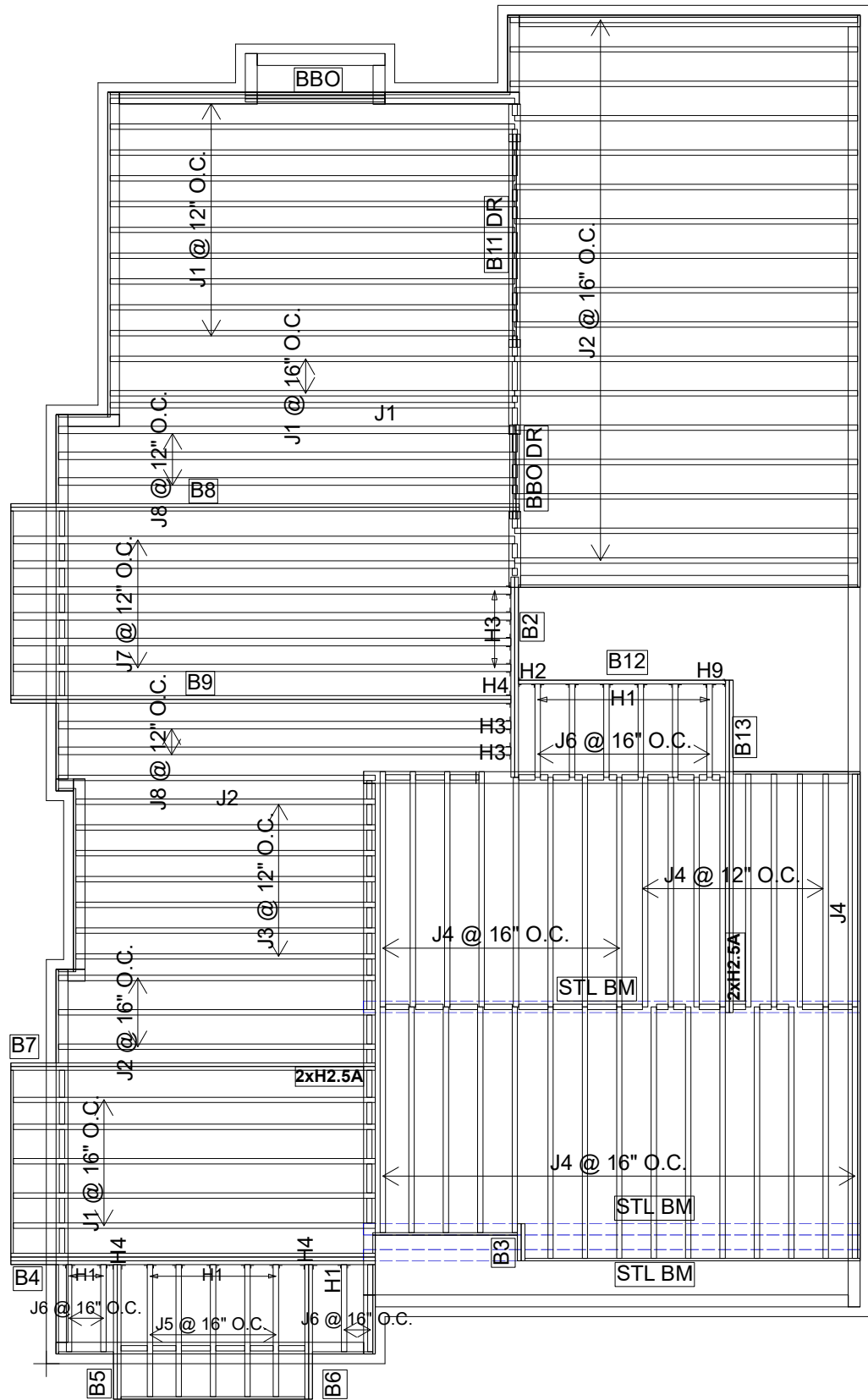
ALL **CONNECTORS** MUST BE INSTALLED AS PER THE **MANUFACTURER'S SPECIFICATIONS** USING THE MANUFACTURER **SPECIFIED FASTENERS**.  
ALL **BEAM HANGER FASTENERS** INSTALLED INTO THE **SUPPORTING MEMBER** **MUST** BE A MINIMUM OF **3.5"** IN LENGTH UNLESS OTHERWISE SPECIFIED BY THE SUPPORTING MEMBER ENGINEER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

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

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

**CITY OF RICHMOND HILL  
BUILDING DIVISION  
05/01/2024  
RECEIVED  
AND N/AILED**





Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	18
J2	14-00-00	9 1/2" NI-40x	1	21
J3	12-00-00	9 1/2" NI-40x	1	7
J4	10-00-00	9 1/2" NI-40x	1	32
J5	6-00-00	9 1/2" NI-40x	1	5
J6	4-00-00	9 1/2" NI-40x	1	10
J7	20-00-00	9 1/2" NI-80	1	6
J8	18-00-00	9 1/2" NI-80	1	5
B8	20-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B9	20-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B7	16-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B4	16-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	3	3
B13	14-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B12	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B11 DR	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	3	3
B2	8-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B5	6-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B6	6-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B3	2-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2

Connector Summary		
Qty	Manuf	Product
6	H1	IUS2.56/9.5
8	H1	IUS2.56/9.5
1	H2	HUS1.81/10
6	H3	IUS3.56/9.5
1	H4	HGUS410
2	H4	HGUS410
1	H9	LS90
4		H2.5A*

DATE: 7/27/23

2nd FLOOR FRAMING



FROM PLAN DATED: 2023/03  
BUILDER: GREEN PARK HOMES  
SITE: TRINI GROUP DEVE.  
MODEL: VILLA 10  
ELEVATION: 1  
LOT:  
CITY: RICHMOND HILL  
SALESMAN: RICK DICIANO  
DESIGNER: AJ  
REVISION:

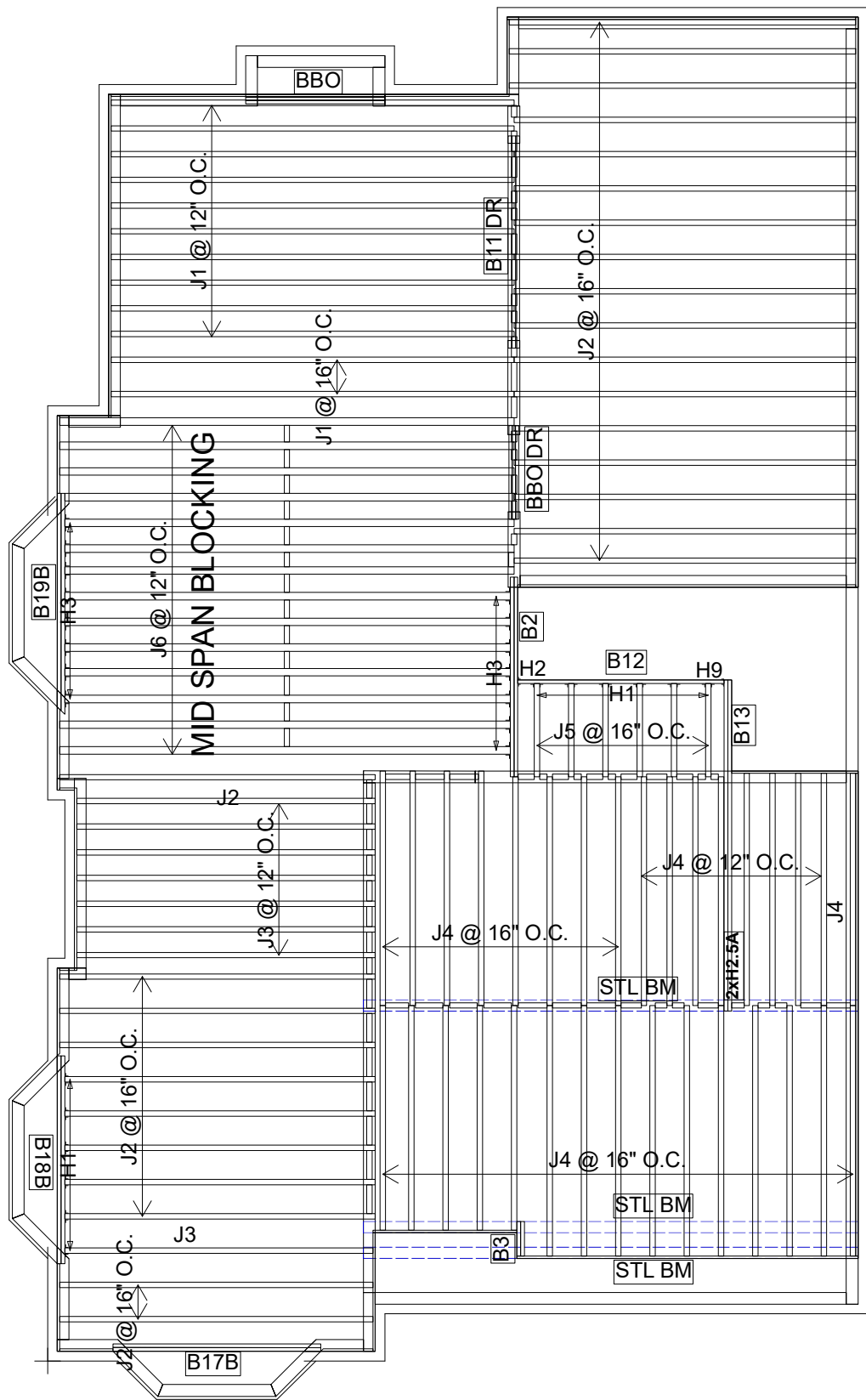
REFER TO THE **NORDIC INSTALLATION GUIDE** FOR PROPER STORAGE AND INSTALLATION.  
**SQUASH BLOCKS** OF 2x4, 2x6, 2x8 SPF #2 REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS.  
**MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1.  
**CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURES 4/5 FOR REINFORCEMENT REQUIREMENTS.  
FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 6 AND TABLES 6.1/6.2.  
**CERAMIC TILE** APPLICATION AS PER OBC 9.30.6.

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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

CITY OF RICHMOND HILL  
BUILDING DIVISION  
05/01/2024  
RECEIVED  
AND NAILED





Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	12
J2	14-00-00	9 1/2" NI-40x	1	28
J3	12-00-00	9 1/2" NI-40x	1	8
J4	10-00-00	9 1/2" NI-40x	1	32
J5	4-00-00	9 1/2" NI-40x	1	6
J6	18-00-00	9 1/2" NI-80	1	14
B13	14-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B12	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B17B	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B18B	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B19B	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B11 DR	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	3	3
B2	8-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B3	2-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2

Connector Summary		
Qty	Manuf	Product
6	H1	IUS2.56/9.5
6	H1	IUS3.56/9.5
1	H2	HUS1.81/10
15	H3	IUS3.56/9.5
1	H9	LS90
2		H2.5A*

DATE: 7/27/23

2nd FLOOR FRAMING



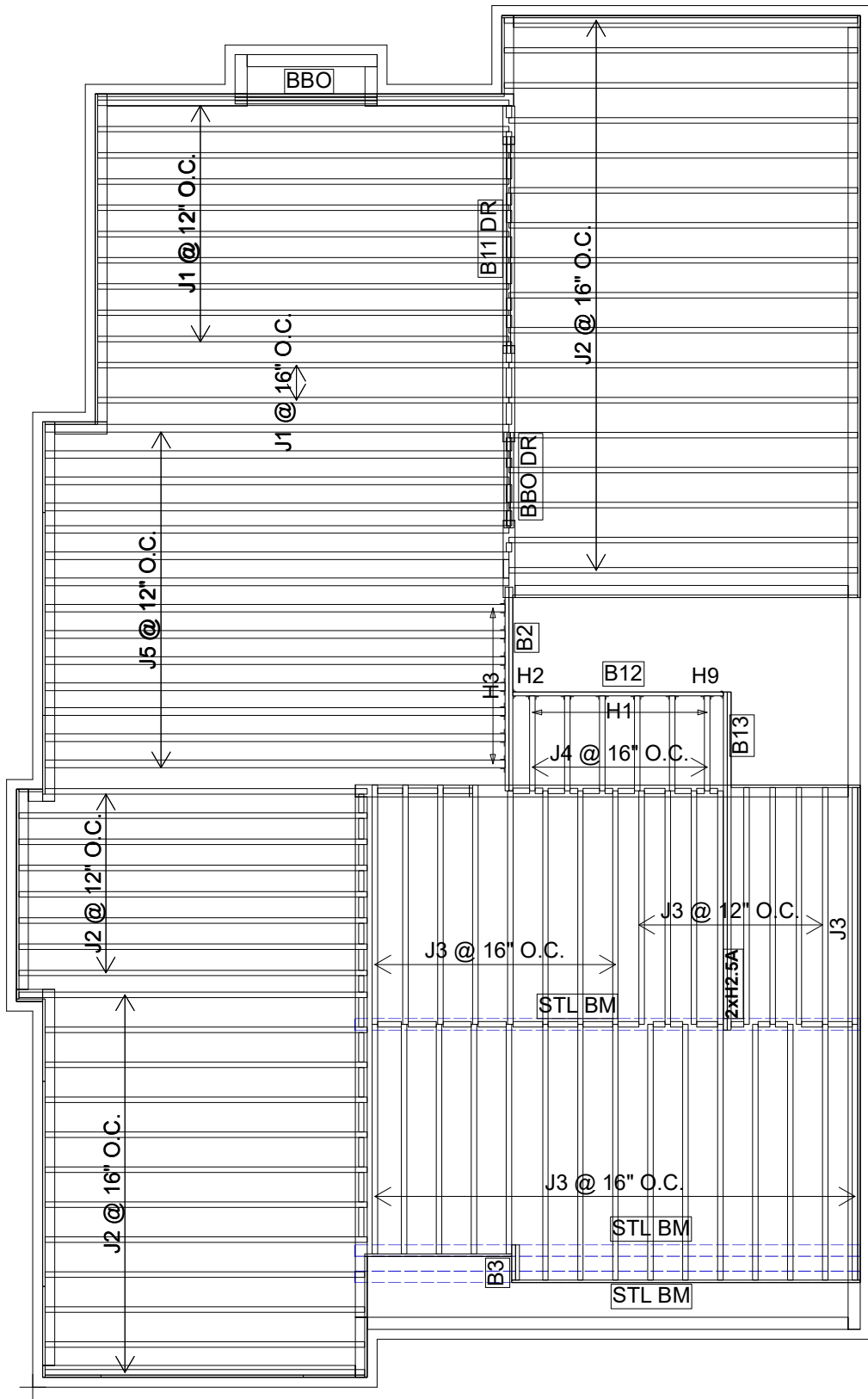
FROM PLAN DATED: 2023/03  
BUILDER: GREEN PARK HOMES  
SITE: TRINI GROUP DEVE.  
MODEL: VILLA 10  
ELEVATION: 2  
LOT:  
CITY: RICHMOND HILL  
SALESMAN: RICK DICIANO  
DESIGNER: AJ  
REVISION:

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**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

CITY OF RICHMOND HILL  
BUILDING DIVISION  
05/01/2024  
RECEIVED  
AND N/A



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	12
J2	14-00-00	9 1/2" NI-40x	1	37
J3	10-00-00	9 1/2" NI-40x	1	32
J4	4-00-00	9 1/2" NI-40x	1	6
J5	18-00-00	9 1/2" NI-80	1	14
B13	14-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B12	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B11 DR	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	3	3
B2	8-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B3	2-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2

Connector Summary		
Qty	Manuf	Product
6	H1	IUS2.56/9.5
1	H2	HUS1.81/10
7	H3	IUS3.56/9.5
1	H9	LS90
2		H2.5A*

DATE: 7/27/23

2nd FLOOR FRAMING



FROM PLAN DATED: 2023/03  
BUILDER: GREEN PARK HOMES  
SITE: TRINI GROUP DEVE.  
MODEL: VILLA 10  
ELEVATION: 3  
LOT:  
CITY: RICHMOND HILL  
SALESMAN: RICK DICIANO  
DESIGNER: AJ  
REVISION:

REFER TO THE **NORDIC INSTALLATION GUIDE** FOR PROPER STORAGE AND INSTALLATION.  
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**MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1.  
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LOADING:  
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DEAD LOAD: 15.0 lb/ft²  
TILE LOAD: +5.0 lb/ft²  
JOIST LL DEFLECTION LIMIT: L/480  
SUBFLOOR: 5/8" GLUED AND NAILED

CITY OF RICHMOND HILL  
BUILDING DIVISION  
05/01/2024  
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AND N/AILED  
abua

# 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-briding 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-briding.
  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.

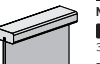
### NORDIC I-JOIST SERIES


#### RESIDENTIAL SERIES

	<b>NI-20</b> <b>2x3</b> S-P-F No. 2 3/8 in. web Depths 9-1/2 and 11-7/8 in. 33 pieces per unit
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	<b>NI-40x</b> <b>2x3</b> 1950F MSR 3/8 in. web Depths 9-1/2, 11-7/8 and 14 in. 33 pieces per unit
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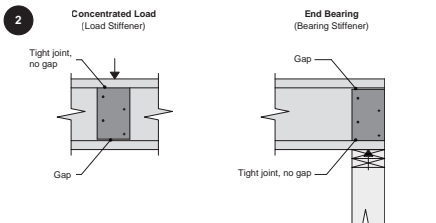
	<b>NI-60</b> <b>2x3</b> 2100F MSR 3/8 in. web Depths 9-1/2, 11-7/8, 14 and 16 in. 33 pieces per unit
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	<b>NI-80</b> <b>2x4</b> 2100F MSR 3/8 in. web Depths 9-1/2, 11-7/8, 14 and 16 in. 23 pieces per unit
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	<b>NI-90</b> <b>2x4</b> 2400F MSR 7/16 in. web Depths 11-7/8, 14 and 16 in. 23 pieces per unit
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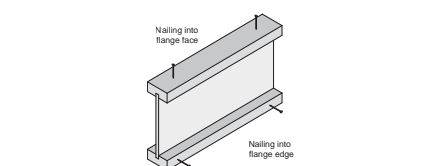
<b>RIM BOARDS</b>	<b>Width</b> 1-1/8 in. <b>Length</b> 16 ft <b>Depths</b> 9-1/2 to 16 in. APA Rim Board Plus
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### WEB STIFFENERS

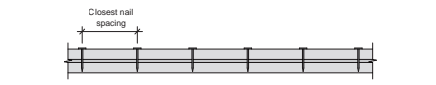


Stiffener Size Requirements	
Flange width (in.)	Web stiffener size each side of web (in.)
2-1/2	1 x 2-5/16 Minimum width
3-1/2	1-1/2 x 2-5/16 Minimum width

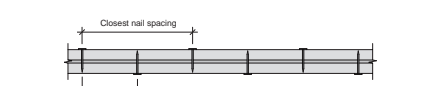
### NAIL SPACING



#### Nailed to Only One Flange Edge (Top View)



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

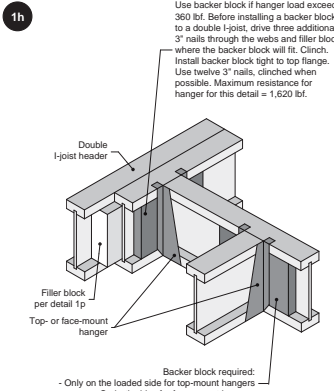


#### Recommended Closest Nail Spacing for Fastening Sheathing to I-joist Flanges to Minimize Splitting

Fastener size (diameter x length)	Flange face nailing <sup>(a)</sup>			Flange edge nailing <sup>(a)</sup>		
	End distance (in.)	Nail spacing (in.)	End distance (in.)	Nailed to only one flange edge	Nailed to both flange edges	
0.128" or smaller in diameter, and 3-1/4" or shorter in length	2	2	2	2	2	4
Greater than 0.128" up to 0.148" in diameter, and 3-1/4" or shorter in length	2	3	2	3	3	6

<sup>(a)</sup> If more than one row is required, offset rows a minimum of 1/2 inch and stagger.  
<sup>(b)</sup> Closest nail spacing measured from one flange edge. Nails on opposite flange edge must be offset one-half the minimum spacing.

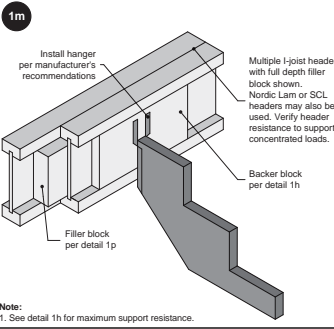
- Notes:**
1. An occasional blocking panel (one per line of blocking) may be left out for the passage of plumbing or ventilation ducts. For other applications, contact Nordic Structures.
  2. For other options, see details 1g-1 to 1g-5.



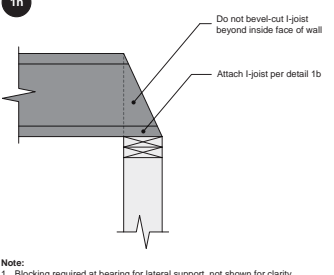
Flange width (in.)	Material thickness required (in.) <sup>(a)</sup>	Minimum depth (in.) <sup>(b)</sup>
2-1/2	1	5-1/2
3-1/2	1-1/2	7-1/4

- 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.

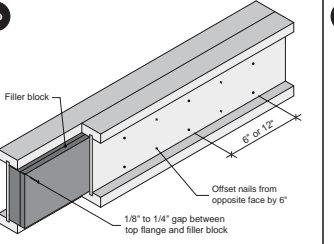
- Notes:**
1. Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.
  2. For nailing schedules for multiple Nordic Lam or SCL beams, see the manufacturer's recommendations.



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



- Notes:**
1. Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.



- 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. (clinch 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 fastened load that may be applied to one side of the double I-joist using this detail is 860 kNft.

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

Flange width (in.)	Net depth (in.)	Filler block size (in.)	Example
2-1/2	9-1/2	2-1/8 to 2-1/4 x 6	2x6 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 2x8
	14	3 x 10	2 x 2x10

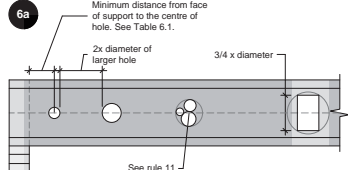
- Notes:**
1. The height of the filler block may be different from that specified in the table, as long as it allows nailing and respects the required gap.

### WEB HOLES AND OPENINGS

#### WEB HOLES IN I-JOISTS

##### Rules for Cutting Holes in I-joists

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

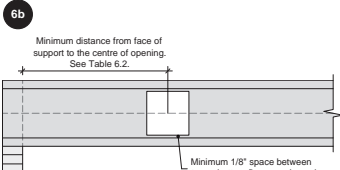


- Notes:**
1. Never drill, cut or notch the flange, or over-cut the web.
  2. Holes in web should be cut with a sharp saw.
  3. For rectangular holes, avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular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

#### DUCT CHASE OPENINGS

##### Rules for Cutting Duct Chase Openings in I-joists

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

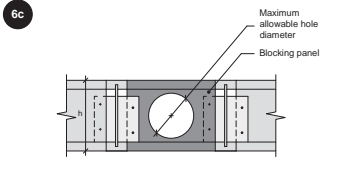


- Notes:**
1. Never drill, cut or notch the flange, or over-cut the web.
  2. Holes in web should be cut with a sharp saw.
  3. Avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling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

#### HOLES IN BLOCKING PANELS

##### Maximum Allowable Hole Size in Lateral-restraint-only Blocking Panels

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



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

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

TABLE 6.1 - LOCATION OF WEB HOLES

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

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

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

TABLE 6.2 - LOCATION OF DUCT CHASE OPENINGS

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





BUILDER: **GREEN PARK HOMES**  
SITE: **TRINI GROUP DEVE.**  
MODEL: **VILLA 10**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 10**  
Level: **2ND FLR FRAMING**  
Label: **B2 - i3927**  
Type: **Beam**

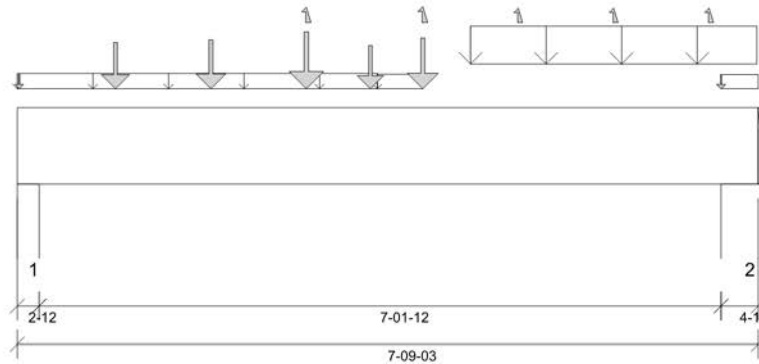
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.5.3.233.Update5.15

Report Version: 2021.03.26 07/27/2023 12:38



### 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'- 8 1/2"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 1 3/4"
- 615 psi Wall @ 7'- 5 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:	3'- 8 3/8"	1.25D + 1.5L	1.00	6268 lb ft	23299 lb ft	Passed - 27%
Factored Shear:	1'- 1/4"	1.25D + 1.5L	1.00	2847 lb	11052 lb	Passed - 26%
Live Load (LL) Pos. Defl.:	3'- 9 9/16"	L		0.056"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 9 1/2"	D + L		0.085"	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	2'-12	1.25D + 1.5L	1.00	2898 lb		10010 lb	5921 lb	Passed - 49%
2	4'-11	1.25D + 1.5L	1.00	3326 lb		17007 lb	10060 lb	Passed - 33%

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	7'- 9 3/16"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	3'- 9 1/4"	FC2 Floor Decking (Plan View Fill)	Top	9 lb/ft	18 lb/ft	-	-
Uniform	3'- 9 1/4"	4'- 3"	FC2 Floor Decking (Plan View Fill)	Top	3 lb/ft	6 lb/ft	-	-
Uniform	7'- 4 1/2"	7'- 9 3/16"	FC2 Floor Decking (Plan View Fill)	Top	0 lb/ft	0 lb/ft	-	-
Tapered	4'- 9"	7'- 9"	Smoothed Load	Back	164 To 167 lb/ft	361 To 357 lb/ft	-	-
Point	3'- 8 3/8"	3'- 8 3/8"	B12(i4158)	Front	159 lb	280 lb	-	-
Point	1'- 3/8"	1'- 3/8"	J8(i3943)	Back	162 lb	324 lb	-	-
Point	2'- 3/8"	2'- 3/8"	J8(i4136)	Back	175 lb	351 lb	-	-
Point	3'- 3/8"	3'- 3/8"	B9(i4078)	Back	251 lb	393/-3 lb	-14 lb	-
Point	4'- 3"	4'- 3"	J7(i4061)	Back	158 lb	396/-5 lb	-22 lb	-
Point	5'- 3"	5'- 3"	J7(i4104)	Back	-	-4 lb	-	-
Point	6'- 3"	6'- 3"	J7(i4067)	Back	-	-4 lb	-	-
Point	7'- 3"	7'- 3"	J7(i4160)	Back	-	-4 lb	-	-
Point	0'- 1/4"	0'- 1/4"	FC2 Floor Decking (Plan View Fill)	Top	0 lb	0 lb	-	-
Point	7'- 4 1/2"	7'- 4 1/2"	FC2 Floor Decking (Plan View Fill)	Top	0 lb	1 lb	-	-

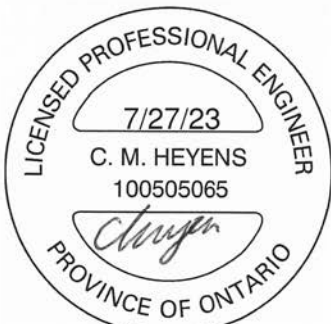
### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 2 3/4"	4(i348)	715 lb	1322/-6 lb	-18 lb	-
2	7'- 4 1/2"	7'- 9 3/16"	5(i349)	794 lb	1570/-14 lb	-18 lb	-

### DESIGN NOTES


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

### PLY TO PLY CONNECTION



STRUCTURAL COMPONENT ONLY  
DWG # TF23071122 PG 1/2

CITY OF RICHMOND HILL  
BUILDING DIVISION  
05/01/2024  
RECEIVED  
Per: joshua.nabua

	<b>BUILDER:</b> GREEN PARK HOMES <b>SITE:</b> TRINI GROUP DEVE. <b>MODEL:</b> VILLA 10 <b>CITY:</b> RICHMOND HILL	<b>Job Name:</b> VILLA 10 <b>Level:</b> 2ND FLR FRAMING <b>Label:</b> B2 - i3927 <b>Type:</b> Beam	<b>2 Ply Member</b> <b>1 3/4" x 9 1/2" (2.0E 3100)</b> <b>WestFraser LVL</b>	<b>Status:</b> <b>Design</b> <b>Passed</b>
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#### 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 # TF23071122 PG 2/2

CITY OF RICHMOND HILL  
 BUILDING DIVISION

05/01/2024

**RECEIVED**  
 Per: joshua.nabua



BUILDER: GREEN PARK HOMES  
SITE: TRINI GROUP DEVE.  
MODEL: VILLA 10  
CITY: RICHMOND HILL

Job Name: VILLA 10  
Level: 2ND FLR FRAMING  
Label: B3 - i4213  
Type: Beam

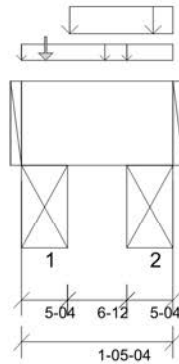
2 Ply Member  
1 3/4" x 9 1/2" (2.0E 3100)  
WestFraser LVL

Status:  
Design  
Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.5.3.233.Update5.15

Report Version: 2021.03.26 07/27/2023 12:38



### 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'- 6 3/4"

#### Factored Resistance of Support Material:

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

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	0'- 8 5/16"	1.4D	0.65	2 lb ft	15145 lb ft	Passed - 0%
Factored Shear:	1'- 2 3/4"	1.25D + 1.5L + S	0.75	109 lb	8250 lb	Passed - 1%

### 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'-04	1.25D + 1.5L + S	0.75	176 lb		14265 lb	8435 lb	Passed - 2%
2	5'-04	1.25D + 1.5L + S	0.75	212 lb		14265 lb	8435 lb	Passed - 3%

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	1'- 5 1/4"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	1'	FC2 Floor Decking (Plan View Fill)	Top	3 lb/ft	6 lb/ft	-	-
Uniform	0'- 5 1/2"	1'- 5 1/4"	E43(i1481)	Top	142 lb/ft	-	78 lb/ft	-
Uniform	1'	1'- 5 1/4"	FC2 Floor Decking (Plan View Fill)	Top	2 lb/ft	5 lb/ft	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	E42(i1502)	Top	49 lb	-	36 lb	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/4"	STL BM(i355)	114 lb	4 lb	70 lb	-
2	1'	1'- 5 1/4"	STL BM(i354)	95 lb	4 lb	44 lb	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- 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 # TF23071123

CITY OF RICHMOND HILL  
BUILDING DIVISION

05/01/2024

RECEIVED  
Per: joshua.nabua





BUILDER: GREEN PARK HOMES  
SITE: TRINI GROUP DEVE.  
MODEL: VILLA 10  
CITY: RICHMOND HILL

Job Name: VILLA 10  
Level: 2ND FLR FRAMING  
Label: B4 - i3854  
Type: Beam

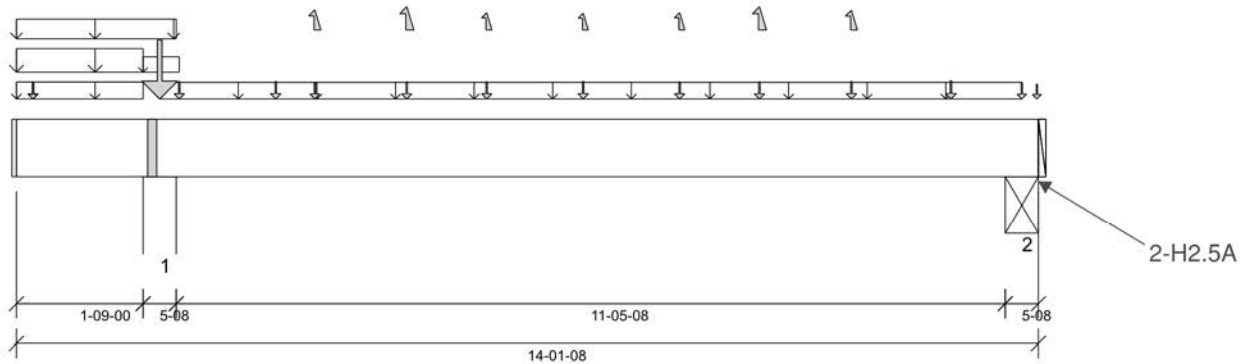
3 Ply Member  
1 3/4" x 9 1/2" (2.0E 3100)  
WestFraser LVL

Status:  
Design  
Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.5.3.233.Update5.15

Report Version: 2021.03.26 07/27/2023 12:38



### 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'- 7 7/8"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 1'- 11 3/4"
- 615 psi Beam @ 13'- 9"

**PLY TO PLY CONNECTION:**  
3 ROWS OF 3.25" PNEUMATIC GUN  
NAILS (0.120"x3.25") @ 8" 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:	7'- 10"	0.9D + 1.5L	1.00	1706 lb ft	34949 lb ft	Passed - 5%
Factored Neg. Moment:	6'- 6"	1.25D + 1.5L + S	0.75	2515 lb ft	26370 lb ft	Passed - 10%
Factored Shear:	11'- 6 1/2"	1.25D + 1.5L + S	0.75	709 lb	12509 lb	Passed - 6%
Live Load (LL) Pos. Defl.:	7'- 10 3/8"	L		0.058"	L/360	Passed - L/999
Total Load (TL) Neg. Defl.:	7'- 7 15/16"	D + S + 0.5L		0.068"	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	3440 lb		30030 lb	17764 lb	Passed - 19%
2	5-08	0.9D + 1.5L	1.00	717 lb		30030 lb	17758 lb	Passed - 4%
2	5-08	1.25D + 1.5S + L	1.00		-581 lb	-	-	

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	14'- 1 1/2"	Self Weight	Top	14 lb/ft	-	-	-
Uniform	-0'	2'- 2 1/2"	E53(i1734)	Top	100 lb/ft	-	-	-
Uniform	-0'	1'- 9"	E53(i1734)	Top	56 lb/ft	-	123 lb/ft	-
Uniform	-0'	1'- 9"	FC2 Floor Decking (Plan View Fill)	Top	15 lb/ft	30 lb/ft	-	-
Uniform	1'- 9"	2'- 3"	FC2 Floor Decking (Plan View Fill)	Top	4 lb/ft	9 lb/ft	-	-
Uniform	1'- 11 3/4"	13'- 10 3/4"	FC2 Floor Decking (Plan View Fill)	Top	13 lb/ft	26 lb/ft	-	-
Point	2'- 3"	2'- 3"	J6(i4166)	Front	31 lb	62 lb	-	-
Point	3'- 7"	3'- 7"	J6(i4030)	Front	33 lb	65 lb	-	-
Point	4'- 1 1/2"	4'- 1 1/2"	B5(i4022)	Front	-106 lb	67/-15 lb	-78 lb	-
Point	5'- 4 3/4"	5'- 4 3/4"	J5(i4033)	Front	-170 lb	87/-29 lb	-115 lb	-
Point	6'- 6"	6'- 6"	J5(i4114)	Front	-67 lb	90/-29 lb	-	-
Point	7'- 10"	7'- 10"	J5(i4019)	Front	-44 lb	98/-32 lb	-	-
Point	9'- 2"	9'- 2"	J5(i4086)	Front	-67 lb	90/-29 lb	-	-
Point	10'- 3 1/4"	10'- 3 1/4"	J5(i4101)	Front	-169 lb	87/-29 lb	-114 lb	-
Point	11'- 6 1/2"	11'- 6 1/2"	B6(i4026)	Front	-90 lb	97/-15 lb	-78 lb	-
Point	12'- 11"	12'- 11"	J6(i4216)	Front	42 lb	83 lb	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	FC2 Floor Decking (Plan View Fill)	Top	63 lb	-	23 lb	-
Point	0'- 2 3/4"	0'- 2 3/4"	E53(i1734)	Top	18 lb	-	-	-
Point	1'- 11 3/4"	1'- 11 3/4"	E53(i1734)	Top	580 lb	-	1020 lb	-
Point	13'- 10 3/4"	13'- 10 3/4"	E45(i1490)	Top	44 lb	-	-	-
Point	14'- 1 1/4"	14'- 1 1/4"	FC2 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	1'- 9"	2'- 2 1/2"	E1(i344)	938 lb	634/-89 lb	1086 lb	-
2	13'- 8"	14'- 1 1/2"	-	-140 lb	558/-89 lb	-213 lb	-
+++	13'- 11 11/16"	13'- 11 11/16"	STL BM(i355)	-93 lb	371/-59 lb	-142 lb	-
+++	14'- 5/8"	14'- 5/8"	2(i347)	-47 lb	187/-30 lb	-71 lb	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.



STRUCTURAL COMPONENT ONLY  
DWG # TF23071124 PG 1/2

CITY OF RICHMOND HILL  
BUILDING DIVISION

05/01/2024

RECEIVED  
Per: joshua.nabua



BUILDER: **GREEN PARK HOMES**  
SITE: **TRINI GROUP DEVE.**  
MODEL: **VILLA 10**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 10**  
Level: **2ND FLR FRAMING**  
Label: **B4 - i3854**  
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.
- The deflection at the cantilever for either live and/or total loads is less than 1/4" and therefore has been excluded from the deflection ratio considerations.
- 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 # TF23071124 PG 2/2

CITY OF RICHMOND HILL  
BUILDING DIVISION

05/01/2024

RECEIVED  
Per: joshua.nabua





BUILDER: **GREEN PARK HOMES**  
SITE: **TRINI GROUP DEVE.**  
MODEL: **VILLA 10**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 10**  
Level: **2ND FLR FRAMING**  
Label: **B5 - i4022**  
Type: **Beam**

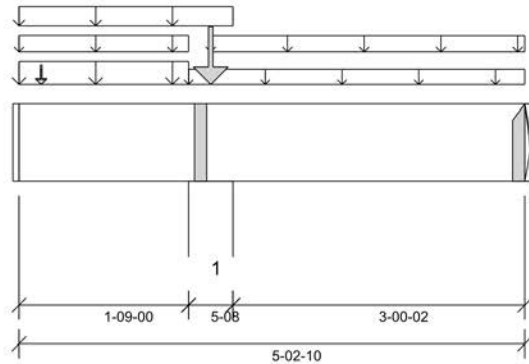
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15

Report Version: 2021.03.26 07/27/2023 12:38



#### DESIGN INFORMATION

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

#### Lateral Restraint Requirements:

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

Top: 0' Bottom: 3'- 1/8"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 1'- 11 3/4"
- 615 psi Beam @ 5'- 2 5/8"

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

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

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Neg. Moment:	1'- 11 3/4"	1.25D + 1.5L + S	0.84	954 lb ft	19674 lb ft	Passed - 5%
Factored Moment:	1'- 11 3/4"	1.25D + 1.5L + S	0.84	954 lb ft	19674 lb ft	Passed - 5%
Factored Moment:				0 lb ft	0 lb ft	
Factored Shear:	0'- 11 1/2"	1.25D + 1.5L + S	0.84	486 lb	9332 lb	Passed - 5%
Live Load (LL) Deflection:	3'- 4 3/16"	S + 0.5L		0.001"	L/360	Passed - L/999
Total Load (TL) Deflection:	3'- 3 15/16"	D + S + 0.5L		0.002"	L/240	Passed - L/999

#### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Upward Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	5-08	1.25D + 1.5S + L	0.99	2284 lb		19826 lb	11728 lb	Passed - 19%
2	1-08	0.9D + 1.5L	0.65	11 lb		11 lb	-	Passed - 100%
2	1-08	1.25D + 1.5L + S	0.84		-233 lb	-	-	

#### 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'	5'- 2 5/8"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	-0'	2'- 2 1/2"	E50(i1736)	Top	100 lb/ft	-	-	-
Uniform	-0'	1'- 9"	E50(i1736)	Top	56 lb/ft	-	123 lb/ft	-
Uniform	0'	1'- 9"	FC2 Floor Decking (Plan View Fill)	Top	14 lb/ft	28 lb/ft	-	-
Uniform	1'- 9"	5'- 2 5/8"	FC2 Floor Decking (Plan View Fill)	Top	5 lb/ft	11 lb/ft	-	-
Uniform	1'- 11 3/4"	5'- 2 5/8"	FC2 Floor Decking (Plan View Fill)	Top	13 lb/ft	25 lb/ft	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	FC2 Floor Decking (Plan View Fill)	Top	55 lb	-	20 lb	-
Point	0'- 2 3/4"	0'- 2 3/4"	E50(i1736)	Top	18 lb	-	-	-
Point	1'- 11 3/4"	1'- 11 3/4"	E50(i1736)	Top	229 lb	-	403 lb	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	1'- 9"	2'- 2 1/2"	E19(i329)	866 lb	125 lb	716 lb	-
2	5'- 2 5/8"	5'- 2 5/8"	B4(i3854)	-106 lb	67/-15 lb	-78 lb	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.



STRUCTURAL COMPONENT ONLY  
DWG # TF23071125 PG 1/2

CITY OF RICHMOND HILL  
BUILDING DIVISION  
05/01/2024  
**RECEIVED**  
Per: joshua.nabua





BUILDER: **GREEN PARK HOMES**  
SITE: **TRINI GROUP DEVE.**  
MODEL: **VILLA 10**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 10**  
Level: **2ND FLR FRAMING**  
Label: **B5 - i4022**  
Type: **Beam**

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

Status:  
**Design  
Passed**

- The deflection at the cantilever for either live and/or total loads is less than 1/4" and therefore has been excluded from the deflection ratio considerations.
- 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 # TF23071125 PG 2/2

CITY OF RICHMOND HILL  
BUILDING DIVISION

05/01/2024

RECEIVED  
Per: joshua.nabua



BUILDER: **GREEN PARK HOMES**  
SITE: **TRINI GROUP DEVE.**  
MODEL: **VILLA 10**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 10**  
Level: **2ND FLR FRAMING**  
Label: **B6 - i4026**  
Type: **Beam**

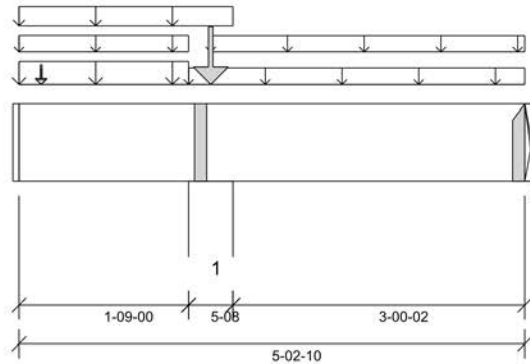
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15

Report Version: 2021.03.26 07/27/2023 12:38



### DESIGN INFORMATION

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

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

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

Top: 0' Bottom: 3'- 1/8"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 1'- 11 3/4"
- 615 psi Beam @ 5'- 2 5/8"

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

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

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 9 7/16"	0.9D + 1.5L	0.68	11 lb ft	15917 lb ft	Passed - 0%
Factored Neg. Moment:	1'- 11 3/4"	1.25D + 1.5L + S	0.84	955 lb ft	19510 lb ft	Passed - 5%
Factored Shear:	0'- 11 1/2"	1.25D + 1.5L + S	0.84	486 lb	9255 lb	Passed - 5%

### 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	0.99	2324 lb		19822 lb	11725 lb	Passed - 20%
2	1'-08	0.9D + 1.5L	0.68	71 lb		71 lb	-	Passed - 100%
2	1'-08	1.25D + 1.5L + S	0.84		-214 lb	-	-	

### 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'	5'- 2 5/8"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	-0'	2'- 2 1/2"	E52(i1737)	Top	100 lb/ft	-	-	-
Uniform	-0'	1'- 9"	E52(i1737)	Top	56 lb/ft	-	123 lb/ft	-
Uniform	-0'	1'- 9"	FC2 Floor Decking (Plan View Fill)	Top	14 lb/ft	28 lb/ft	-	-
Uniform	1'- 9"	5'- 2 5/8"	FC2 Floor Decking (Plan View Fill)	Top	14 lb/ft	28 lb/ft	-	-
Uniform	1'- 11 3/4"	5'- 2 5/8"	FC2 Floor Decking (Plan View Fill)	Top	13 lb/ft	25 lb/ft	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	FC2 Floor Decking (Plan View Fill)	Top	55 lb	-	20 lb	-
Point	0'- 2 3/4"	0'- 2 3/4"	E52(i1737)	Top	18 lb	-	-	-
Point	1'- 11 3/4"	1'- 11 3/4"	E52(i1737)	Top	226 lb	-	398 lb	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	1'- 9"	2'- 2 1/2"	E19(i329)	878 lb	154 lb	711 lb	-
2	5'- 2 5/8"	5'- 2 5/8"	B4(i3854)	-90 lb	97/-15 lb	-78 lb	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- The deflection at the cantilever for either live and/or total loads is less than 1/4" and therefore has been excluded from the deflection ratio considerations.
- 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 # TF23071126 PG 1/2

05/01/2024  
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	<b>BUILDER:</b> GREEN PARK HOMES <b>SITE:</b> TRINI GROUP DEVE. <b>MODEL:</b> VILLA 10 <b>CITY:</b> RICHMOND HILL	<b>Job Name:</b> VILLA 10 <b>Level:</b> 2ND FLR FRAMING <b>Label:</b> B6 - i4026 <b>Type:</b> Beam	<b>2 Ply Member</b> <b>1 3/4" x 9 1/2" (2.0E 3100)</b> <b>WestFraser LVL</b>	<b>Status:</b> <b>Design</b> <b>Passed</b>
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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.



CITY OF RICHMOND HILL  
 BUILDING DIVISION

05/01/2024

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 Per: joshua.nabua





BUILDER: **GREEN PARK HOMES**  
SITE: **TRINI GROUP DEVE.**  
MODEL: **VILLA 10**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 10**  
Level: **2ND FLR FRAMING**  
Label: **B7 - i3879**  
Type: **Beam**

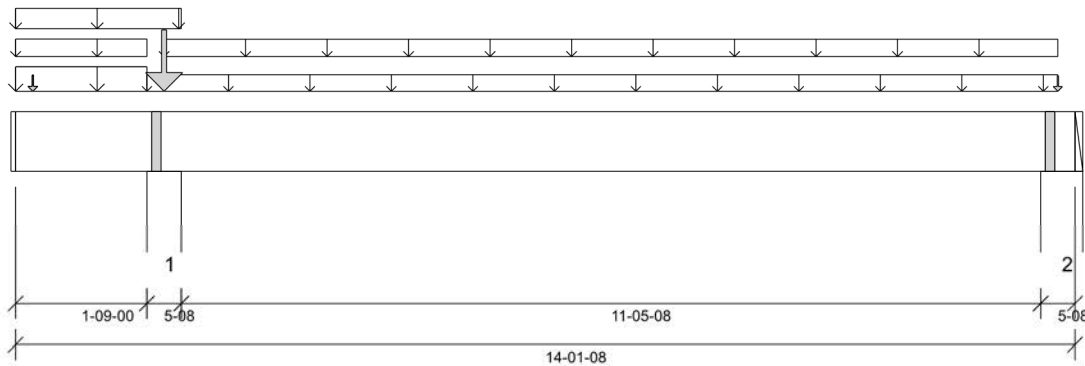
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.5.3.233.Update5.15

Report Version: 2021.03.26 07/27/2023 12:38



### 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: 11'- 5 1/2"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 1'- 11 3/4"
- 615 psi Wall @ 13'- 9"

**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.



STRUCTURAL COMPONENT ONLY  
DWG # TF23071127 PG 1/2

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	8'- 4 1/2"	1.25D + 1.5L	0.70	1435 lb ft	16328 lb ft	Passed - 9%
Factored Neg. Moment:	1'- 11 3/4"	1.25D + 1.5S + L	1.00	1070 lb ft	20460 lb ft	Passed - 5%
Factored Shear:	3'	1.25D + 1.5L	0.70	535 lb	7745 lb	Passed - 7%
Live Load (LL) Pos. Defl.:	7'- 10 3/8"	L		0.037"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	8'- 1 3/16"	D + L		0.049"	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	6173 lb		20020 lb	11843 lb	Passed - 52%
2	5-08	1.25D + 1.5L	0.70	552 lb		14030 lb	8299 lb	Passed - 7%

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	14'- 1 1/2"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	2'- 2 1/2"	E55(i1732)	Top	100 lb/ft	-	-	-
Uniform	0'	1'- 9"	E55(i1732)	Top	56 lb/ft	-	123 lb/ft	-
Uniform	0'	1'- 9"	FC2 Floor Decking (Plan View Fill)	Top	14 lb/ft	29 lb/ft	-	-
Uniform	1'- 9"	13'- 10 3/4"	FC2 Floor Decking (Plan View Fill)	Top	8 lb/ft	15 lb/ft	-	-
Uniform	1'- 11 3/4"	13'- 10 3/4"	FC2 Floor Decking (Plan View Fill)	Top	13 lb/ft	26 lb/ft	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	FC2 Floor Decking (Plan View Fill)	Top	57 lb	-	21 lb	-
Point	0'- 2 3/4"	0'- 2 3/4"	E55(i1732)	Top	18 lb	-	-	-
Point	1'- 11 3/4"	1'- 11 3/4"	E55(i1732)	Top	1149 lb	-	2149 lb	-
Point	13'- 10 3/4"	13'- 10 3/4"	FC2 Floor Decking (Plan View Fill)	Top	-	0 lb	-	-

### UNFACTORED REACTIONS


ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	1'- 9"	2'- 2 1/2"	E1(i344)	1810 lb	302 lb	2406 lb	-
2	13'- 8"	14'- 1 1/2"	2(i347)	140 lb	246/-4 lb	-22 lb	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- The deflection at the cantilever for either live and/or total loads is less than 1/4" and therefore has been excluded from the deflection ratio considerations.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.
- Bearing capacity of member at support 1, 2 was verified for the effect of concentrated load applied near the support. At support 1. Required Load Area: L=1.500", W=3.500". LDF=1.00, Pf=4660 lb, Qf=5460 lb, Result=85.34%.

### PLY TO PLY CONNECTION

CITY OF RICHMOND HILL  
BUILDING DIVISION  
15/11/2024  
**RECEIVED**  
Per: joshua.nabua

	<b>BUILDER:</b> GREEN PARK HOMES <b>SITE:</b> TRINI GROUP DEVE. <b>MODEL:</b> VILLA 10 <b>CITY:</b> RICHMOND HILL	<b>Job Name:</b> VILLA 10 <b>Level:</b> 2ND FLR FRAMING <b>Label:</b> B7 - i3879 <b>Type:</b> Beam	<b>2 Ply Member</b> <b>1 3/4" x 9 1/2" (2.0E 3100)</b> <b>WestFraser LVL</b>	<b>Status:</b> <b>Design</b> <b>Passed</b>
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#### 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 # TF23071127 PG 2/2

CITY OF RICHMOND HILL  
 BUILDING DIVISION

05/01/2024

**RECEIVED**  
 Per: joshua.nabua





BUILDER: **GREEN PARK HOMES**  
SITE: **TRINI GROUP DEVE.**  
MODEL: **VILLA 10**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 10**  
Level: **2ND FLR FRAMING**  
Label: **B8 - i4013**  
Type: **Beam**

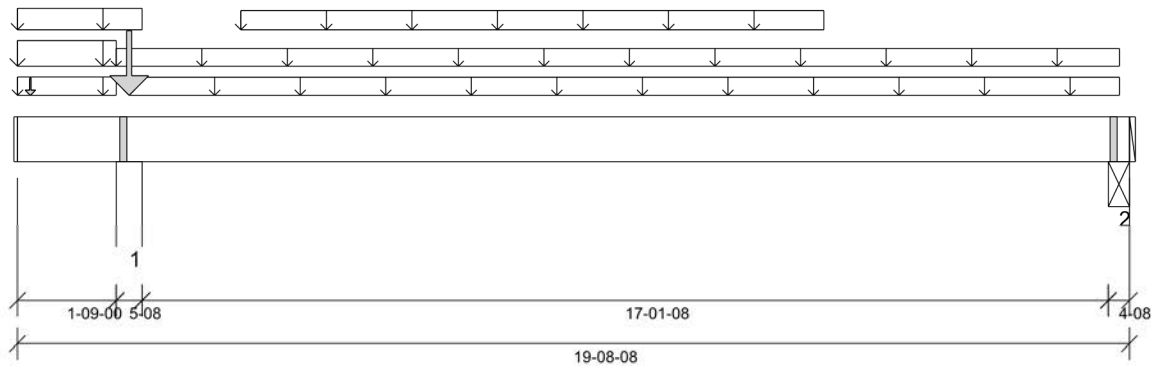
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.5.3.233.Update5.15

Report Version: 2021.03.26 07/27/2023 12:38



### 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: 17'- 1 1/2"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 1'- 11 3/4"
- 615 psi Beam @ 19'- 5"

**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:	10'- 7 1/2"	1.25D + 1.5L	0.75	6096 lb ft	17472 lb ft	Passed - 35%
Factored Neg. Moment:	1'- 11 3/4"	1.25D + 1.5S + L	0.94	1063 lb ft	16648 lb ft	Passed - 6%
Factored Shear:	3'	1.25D + 1.5L	0.75	1324 lb	8288 lb	Passed - 16%
Live Load (LL) Pos. Defl.:	10'- 8 3/8"	L		0.194"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	10'- 8 1/4"	D + L		0.498"	L/240	Passed - L/412
Permanent Deflection:	10'- 8 3/16"			-	L/360	Passed - L/696

### 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	0.98	5829 lb		19676 lb	11639 lb	Passed - 50%
2	4-08	1.25D + 1.5L	0.75	1240 lb		12283 lb	7266 lb	Passed - 17%

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	19'- 8 1/2"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	2'- 2 1/2"	E56(i1733)	Top	100 lb/ft	-	-	-
Uniform	0'	1'- 9"	E56(i1733)	Top	56 lb/ft	-	123 lb/ft	-
Uniform	-0'	1'- 9"	FC2 Floor Decking (Plan View Fill)	Top	14 lb/ft	28 lb/ft	-	-
Uniform	1'- 9"	19'- 6 3/8"	FC2 Floor Decking (Plan View Fill)	Top	10 lb/ft	20 lb/ft	-	-
Uniform	1'- 11 3/4"	19'- 6 3/8"	FC2 Floor Decking (Plan View Fill)	Top	13 lb/ft	25 lb/ft	-	-
Uniform	3'- 11 1/2"	14'- 3 1/2"	User Load	Top	60 lb/ft	-	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	FC2 Floor Decking (Plan View Fill)	Top	55 lb	-	20 lb	-
Point	0'- 2 3/4"	0'- 2 3/4"	E56(i1733)	Top	18 lb	-	-	-
Point	1'- 11 3/4"	1'- 11 3/4"	E56(i1733)	Top	892 lb	-	1664 lb	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	1'- 9"	2'- 2 1/2"	E5(i332)	2005 lb	452 lb	1914 lb	-
2	19'- 4"	19'- 8 1/2"	BBO DR(i4028)	510 lb	399/-3 lb	-15 lb	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- The deflection at the cantilever for either live and/or total loads is less than 1/4" and therefore has been excluded from the deflection ratio considerations.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.
- Bearing capacity of member at support 1, 2 was verified for the effect of concentrated load applied near the support. At support 1. Required Load Area: L=1.500", W=3.500". LDF=0.98, PF=3846 lb, Q'=5460 lb, Result=70.43%.


### PLY TO PLY CONNECTION



STRUCTURAL COMPONENT ONLY  
DWG # TF23071128 PG 1/2

CITY OF RICHMOND HILL  
BUILDING DIVISION  
05/01/2024  
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	<b>BUILDER:</b> GREEN PARK HOMES <b>SITE:</b> TRINI GROUP DEVE. <b>MODEL:</b> VILLA 10 <b>CITY:</b> RICHMOND HILL	<b>Job Name:</b> VILLA 10 <b>Level:</b> 2ND FLR FRAMING <b>Label:</b> B8 - i4013 <b>Type:</b> Beam	<b>2 Ply Member</b> <b>1 3/4" x 9 1/2" (2.0E 3100)</b> <b>WestFraser LVL</b>	<b>Status:</b> <b>Design</b> <b>Passed</b>
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#### 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 # TF23071128 PG 2/2

CITY OF RICHMOND HILL  
 BUILDING DIVISION

05/01/2024

**RECEIVED**  
 Per: joshua.nabua



BUILDER: GREEN PARK HOMES  
SITE: TRINI GROUP DEVE.  
MODEL: VILLA 10  
CITY: RICHMOND HILL

Job Name: VILLA 10  
Level: 2ND FLR FRAMING  
Label: B9 - i4078  
Type: Beam

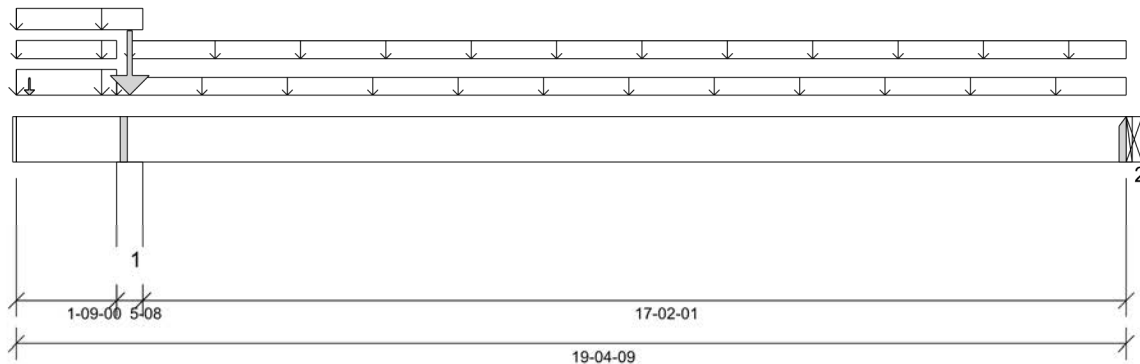
2 Ply Member  
1 3/4" x 9 1/2" (2.0E 3100)  
WestFraser LVL

Status:  
Design  
Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.5.3.233.Update5.15

Report Version: 2021.03.26 07/27/2023 12:38



### 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: 17'- 2 1/16"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 1'- 11 3/4"
- 615 psi Beam @ 19'- 4 9/16"

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

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

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	11'	1.25D + 1.5L	0.81	3732 lb ft	18814 lb ft	Passed - 20%
Factored Neg. Moment:	1'- 11 3/4"	1.25D + 1.5S + L	1.00	1049 lb ft	16924 lb ft	Passed - 6%
Factored Shear:	3'	1.25D + 1.5L	0.81	849 lb	8925 lb	Passed - 10%
Live Load (LL) Pos. Defl.:	10'- 8 3/16"	L		0.189"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	10'- 9 11/16"	D + L		0.292"	L/240	Passed - L/706

### 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	5395 lb		20020 lb	11843 lb	Passed - 46%
2	1-08	1.25D + 1.5L	0.81	904 lb		4409 lb	-	Passed - 21%

### 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'	19'- 4 9/16"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	-0'	2'- 2 1/2"	E58(i1735)	Top	100 lb/ft	-	-	-
Uniform	-0'	1'- 9"	E58(i1735)	Top	56 lb/ft	-	123 lb/ft	-
Uniform	0'	1'- 9"	FC2 Floor Decking (Plan View Fill)	Top	14 lb/ft	27 lb/ft	-	-
Uniform	1'- 9"	19'- 4 9/16"	FC2 Floor Decking (Plan View Fill)	Top	10 lb/ft	20 lb/ft	-	-
Uniform	1'- 11 3/4"	19'- 4 9/16"	FC2 Floor Decking (Plan View Fill)	Top	12 lb/ft	24 lb/ft	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	FC2 Floor Decking (Plan View Fill)	Top	51 lb	-	19 lb	-
Point	0'- 2 3/4"	0'- 2 3/4"	E58(i1735)	Top	18 lb	-	-	-
Point	1'- 11 3/4"	1'- 11 3/4"	E58(i1735)	Top	903 lb	-	1686 lb	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	1'- 9"	2'- 2 1/2"	E5(i332)	1640 lb	439 lb	1935 lb	-
2	19'- 4 9/16"	19'- 4 9/16"	B2(i3927)	251 lb	393/-3 lb	-14 lb	-


### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- The deflection at the cantilever for either live and/or total loads is less than 1/4" and therefore has been excluded from the deflection ratio considerations.



STRUCTURAL COMPONENT ONLY  
DWG # TF23071129 PG 1/2

RECEIVED  
Per: joshua.nabua

	<b>BUILDER: GREEN PARK HOMES</b> <b>SITE: TRINI GROUP DEVE.</b> <b>MODEL: VILLA 10</b> <b>CITY: RICHMOND HILL</b>	<b>Job Name: VILLA 10</b> <b>Level: 2ND FLR FRAMING</b> <b>Label: B9 - i4078</b> <b>Type: Beam</b>	<b>2 Ply Member</b> <b>1 3/4" x 9 1/2" (2.0E 3100)</b> <b>WestFraser LVL</b>	<b>Status:</b> <b>Design</b> <b>Passed</b>
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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.
- Bearing capacity of member at support 1, 2 was verified for the effect of concentrated load applied near the support. At support 1. Required Load Area: L=1.500", W=3.500". LDF=1.00, Pf=3658 lb, Q'r=5460 lb, Result=66.99%.

#### 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 # TF23071129 PG 2/2

CITY OF RICHMOND HILL  
BUILDING DIVISION

05/01/2024

**RECEIVED**  
Per: joshua.nabua





BUILDER: **GREEN PARK HOMES**  
SITE: **TRINI GROUP DEVE.**  
MODEL: **VILLA 10**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 10**  
Level: **2ND FLR FRAMING**  
Label: **B11 DR - i4218**  
Type: **Beam**

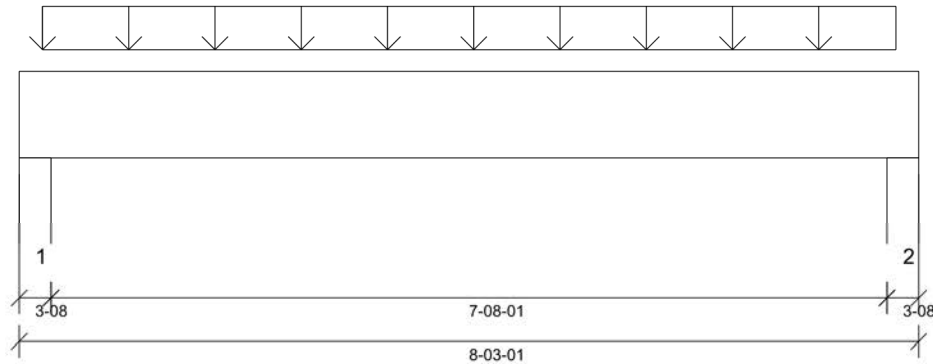
**3 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.5.3.233.Update5.15

Report Version: 2021.03.26 07/27/2023 12:38



#### 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'- 10 11/16" Bottom: 8'- 3 1/16"

#### Factored Resistance of Support Material:

- 812 psi Wall @ 0'- 2 1/2"
- 812 psi Wall @ 8'- 9/16"

**PLY TO PLY CONNECTION:**  
**3 ROWS OF 3.25" PNEUMATIC GUN**  
**NAILS (0.120"x3.25") @ 8" 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:	4'- 5 13/16"	1.25D + 1.5L	1.00	9490 lb ft	34949 lb ft	Passed - 27%
Factored Shear:	1'- 1"	1.25D + 1.5L	1.00	4294 lb	16578 lb	Passed - 26%
Live Load (LL) Pos. Defl.:	4'- 1 9/16"	L		0.067"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 1 9/16"	D + L		0.103"	L/240	Passed - L/896

#### 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	4952 lb		19110 lb	14921 lb	Passed - 33%
2	3-08	1.25D + 1.5L	1.00	4939 lb		19110 lb	14921 lb	Passed - 33%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	8'- 3 1/16"	Self Weight	Top	14 lb/ft	-	-	-
Uniform	0'- 2 9/16"	8'- 9/16"	Smoothed Load	Top	292 lb/ft	586 lb/ft	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	6(i350)	1205 lb	2297 lb	-	-
2	7'- 11 9/16"	8'- 3 1/16"	7(i351)	1202 lb	2291 lb	-	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- 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 # TF23071130

CITY OF RICHMOND HILL  
BUILDING DIVISION

05/01/2024

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Per: joshua.nabua



BUILDER: **GREEN PARK HOMES**  
SITE: **TRINI GROUP DEVE.**  
MODEL: **VILLA 10**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 10**  
Level: **2ND FLR FRAMING**  
Label: **B13 - i4210**  
Type: **Beam**

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

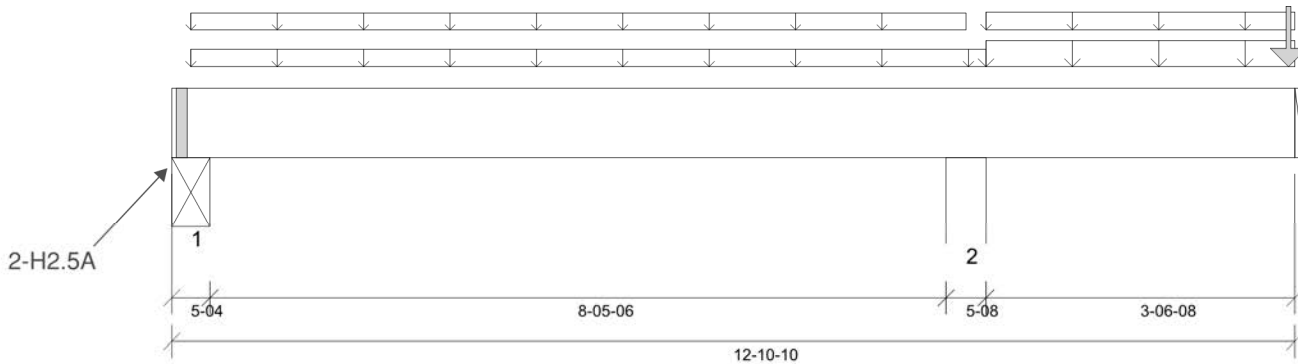
Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure Version  
8.5.3.233.Update5.15

Report Version: 2021.03.26

07/27/2023 12:38



### 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'- 5 3/8"

#### Factored Resistance of Support Material:

- 615 psi Beam @ 0'- 4 1/4"
- 615 psi Wall @ 9'- 1 3/8"

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

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

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 2 11/16"	0.9D + 1.5L	0.73	82 lb ft	16979 lb ft	Passed - 0%
Factored Neg. Moment:	9'- 1 3/8"	1.25D + 1.5L	1.00	4521 lb ft	21756 lb ft	Passed - 21%
Factored Shear:	10'- 1 5/8"	1.25D + 1.5L	1.00	1477 lb	11052 lb	Passed - 13%
Live Load (LL) Neg. Defl.:	5'- 4 15/16"	L		0.036"	L/360	Passed - L/999
Total Load (TL) Neg. Defl.:	5'- 5 13/16"	D + L		0.051"	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	5-04	0.9D + 1.5L	0.73	97 lb		13926 lb	11301 lb	Passed - 1%
1	5-04	0.9D + 1.5L	1.00		-389 lb	-	-	
2	5-08	1.25D + 1.5L	1.00	2483 lb		20020 lb	11843 lb	Passed - 21%

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	12'- 10 5/8"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'- 2 5/8"	9'- 4 1/8"	FC2 Floor Decking (Plan View Fill)	Top	7 lb/ft	15 lb/ft	-	-
Uniform	0'- 2 5/8"	9'- 1 3/8"	FC2 Floor Decking (Plan View Fill)	Top	3 lb/ft	5 lb/ft	-	-
Uniform	9'- 4 1/8"	12'- 10 5/8"	User Load	Front	60 lb/ft	120 lb/ft	-	-
Uniform	9'- 4 1/8"	12'- 10 5/8"	FC2 Floor Decking (Plan View Fill)	Top	9 lb/ft	18 lb/ft	-	-
Point	12'- 9 3/4"	12'- 9 3/4"	B12(i4158)	Back	163 lb	288 lb	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/4"	STL BM(i353)	-41 lb	89/-230 lb	-	-
2	8'- 10 5/8"	9'- 4 1/8"	4(i348)	661 lb	1098 lb	-	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- The deflection at the cantilever for either live and/or total loads is less than 1/4" and therefore has been excluded from the deflection ratio considerations.
- 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 # TF23071131

CITY OF RICHMOND HILL  
BUILDING DIVISION

05/01/2024

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Per: joshua.nabua





BUILDER: **GREEN PARK HOMES**  
SITE: **TRINI GROUP DEVE.**  
MODEL: **VILLA 10**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 10**  
Level: **2ND FLR FRAMING**  
Label: **B12 - i4158**  
Type: **Beam**

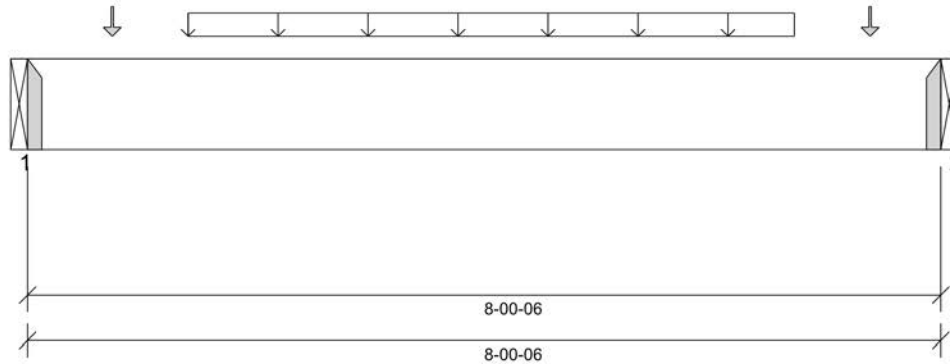
**1 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design  
Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.5.3.233.Update5.15

Report Version: 2021.03.26 07/27/2023 12:38



#### 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 @ 8'- 3/8"

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	3'- 4 15/16"	1.25D + 1.5L	1.00	1315 lb ft	11650 lb ft	Passed - 11%
Factored Shear:	7'- 2 7/8"	1.25D + 1.5L	1.00	453 lb	5526 lb	Passed - 8%
Live Load (LL) Pos. Defl.:	4'- 3/16"	L		0.029"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 3/16"	D + L		0.045"	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	1-08	1.25D + 1.5L	1.00	618 lb		2730 lb	-	Passed - 23%
2	1-08	1.25D + 1.5L	1.00	637 lb		2730 lb	-	Passed - 23%

#### 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	LS90		-	-	-	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'	8'- 3/8"	Self Weight	Top	5 lb/ft	-	-	-
Uniform	1'- 4 15/16"	6'- 8 15/16"	Smoothed Load	Front	38 lb/ft	75 lb/ft	-	-
Point	0'- 8 15/16"	0'- 8 15/16"	J6(i4063)	Front	42 lb	84 lb	-	-
Point	7'- 4 15/16"	7'- 4 15/16"	J6(i4119)	Front	42 lb	84 lb	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B2(i3927)	159 lb	280 lb	-	-
2	8'- 3/8"	8'- 3/8"	B13(i4210)	163 lb	288 lb	-	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as sloped 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 # TF23071132

CITY OF RICHMOND HILL  
BUILDING DIVISION

05/01/2024

RECEIVED  
Per: joshua.nabua





BUILDER: **GREEN PARK HOMES**  
SITE: **TRINI GROUP DEVE.**  
MODEL: **VILLA 10**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 10**  
Level: **1ST FLR FRAMING**  
Label: **B1 - i3940**  
Type: **Beam**

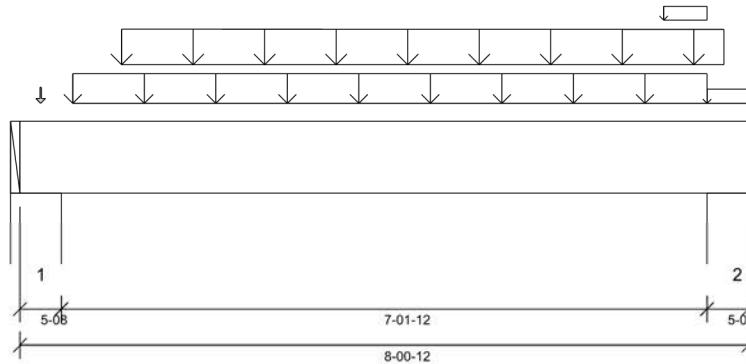
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.5.3.233.Update5.15

Report Version: 2021.03.26 07/27/2023 12:38



#### DESIGN INFORMATION

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

#### Lateral Restraint Requirements:

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

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

#### Factored Resistance of Support Material:

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

#### 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'- 4 7/8"	1.25D + 1.5L	1.00	8079 lb ft	23299 lb ft	Passed - 35%
Factored Shear:	6'- 9 3/4"	1.25D + 1.5L	1.00	4028 lb	11052 lb	Passed - 36%
Live Load (LL) Pos. Defl.:	4'- 1/2"	L		0.075"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 1/2"	D + L		0.113"	L/240	Passed - L/759

#### 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	1.00	3896 lb		20020 lb	11843 lb	Passed - 33%
2	5-08	1.25D + 1.5L	1.00	4463 lb		20020 lb	11843 lb	Passed - 38%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	8'- 3/4"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'- 7"	7'- 7 1/4"	User Load	Top	120 lb/ft	240 lb/ft	-	-
Uniform	7'- 1 1/2"	7'- 7 1/4"	FC1 Floor Decking (Plan View Fill)	Top	3 lb/ft	6 lb/ft	-	-
Uniform	7'- 7 1/4"	8'- 3/4"	FC1 Floor Decking (Plan View Fill)	Top	5 lb/ft	11 lb/ft	-	-
Tapered	1'- 1 1/2"	7'- 9 1/2"	Smoothed Load	Back	164 To 162 lb/ft	328 To 324 lb/ft	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	3(i346)	Top	27 lb	6 lb	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	W20(i38)	957 lb	1786 lb	-	-
2	7'- 7 1/4"	8'- 3/4"	1(i45)	1081 lb	2088 lb	-	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- 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 # TF23071133

CITY OF RICHMOND HILL  
BUILDING DIVISION

05/01/2024

RECEIVED  
Per: joshua.nabua



BUILDER: **GREEN PARK HOMES**  
SITE: **TRINI GROUP DEVE.**  
MODEL: **VILLA 10**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 10**  
Level: **2ND FLR FRAMING**  
Label: **B17B - i3670**  
Type: **Beam**

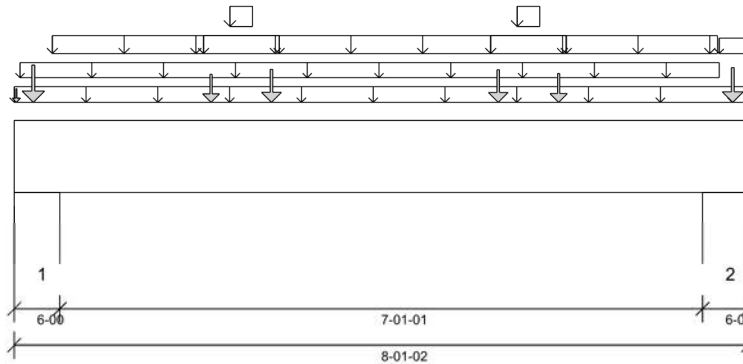
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.5.3.233.Update5.15

Report Version: 2021.03.26 07/27/2023 12:43



#### 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/372,

TL Deflection Limit: L/248,

#### 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'- 1 1/8"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 5"
- 615 psi Wall @ 7'- 8 1/16"

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

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

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 1/4"	1.25D + 1.5L + S	0.84	2542 lb ft	19677 lb ft	Passed - 13%
Factored Shear:	6'- 9 9/16"	1.25D + 1.5S + L	0.95	1328 lb	10479 lb	Passed - 13%
Live Load (LL) Pos. Defl.:	4'- 9/16"	S + 0.5L		0.017"	L/372	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 9/16"	D + S + 0.5L		0.041"	L/248	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	6-00	1.25D + 1.5S + L	0.95	1979 lb		20803 lb	12306 lb	Passed - 16%
2	6-01	1.25D + 1.5S + L	0.95	1970 lb		20827 lb	12320 lb	Passed - 16%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	8'- 1 1/8"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	-0'	8'- 1 1/8"	User Load	Top	15 lb/ft	-	32 lb/ft	-
Uniform	0'- 3/4"	7'- 9 1/4"	FC2 Floor Decking (Plan View Fill)	Top	12 lb/ft	25 lb/ft	-	-
Uniform	0'- 5 1/16"	2'- 1 1/16"	E90(i3284)	Top	100 lb/ft	-	-	-
Uniform	2'- 1 1/16"	2'- 11 1/16"	E91(i3285)	Top	100 lb/ft	-	-	-
Uniform	2'- 4 9/16"	2'- 7 9/16"	E91(i3285)	Top	44 lb/ft	-	104 lb/ft	-
Uniform	2'- 11 1/16"	5'- 3 1/16"	E92(i3286)	Top	100 lb/ft	-	-	-
Uniform	5'- 3 1/16"	6'- 1 1/16"	E93(i3287)	Top	100 lb/ft	-	-	-
Uniform	5'- 6 9/16"	5'- 9 9/16"	E93(i3287)	Top	44 lb/ft	-	104 lb/ft	-
Uniform	6'- 1 1/16"	7'- 9 1/16"	E94(i3288)	Top	100 lb/ft	-	-	-
Uniform	7'- 9 1/4"	8'- 1 1/8"	FC2 Floor Decking (Plan View Fill)	Top	14 lb/ft	28 lb/ft	-	-
Point	0'- 5/16"	0'- 5/16"	FC2 Floor Decking (Plan View Fill)	Top	1 lb	2 lb	-	-
Point	0'- 2 1/2"	0'- 2 1/2"	E20(i1501)	Top	129 lb	-	164 lb	-
Point	2'- 2 1/16"	2'- 2 1/16"	E91(i3285)	Top	65 lb	-	114 lb	-
Point	2'- 10 1/16"	2'- 10 1/16"	E91(i3285)	Top	87 lb	-	154 lb	-
Point	5'- 4 1/16"	5'- 4 1/16"	E93(i3287)	Top	85 lb	-	149 lb	-
Point	6'- 1/16"	6'- 1/16"	E93(i3287)	Top	68 lb	-	120 lb	-
Point	7'- 11 1/16"	7'- 11 1/16"	E46(i1509)	Top	114 lb	-	149 lb	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 6"	E71(i3038)	811 lb	102 lb	593 lb	-
2	7'- 7 1/16"	8'- 1 1/8"	E19(i329)	792 lb	101 lb	568 lb	-


#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- 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 # TF23071134 PG 1/2

**RECEIVED**  
05/01/2024  
Per: joshua.nabua

	BUILDER: <b>GREEN PARK HOMES</b> SITE: <b>TRINI GROUP DEVE.</b> MODEL: <b>VILLA 10</b> CITY: <b>RICHMOND HILL</b>	Job Name: <b>VILLA 10</b> Level: <b>2ND FLR FRAMING</b> Label: <b>B17B - i3670</b> Type: <b>Beam</b>	<b>2 Ply Member</b> <b>1 3/4" x 9 1/2" (2.0E 3100)</b> <b>WestFraser LVL</b>	Status: <b>Design Passed</b>
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#### 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 # TF23071134 PG 2/2

CITY OF RICHMOND HILL  
 BUILDING DIVISION

05/01/2024

RECEIVED  
 Per: joshua.nabua





BUILDER: **GREEN PARK HOMES**  
SITE: **TRINI GROUP DEVE.**  
MODEL: **VILLA 10**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 10**  
Level: **2ND FLR FRAMING**  
Label: **B18B - i3681**  
Type: **Beam**

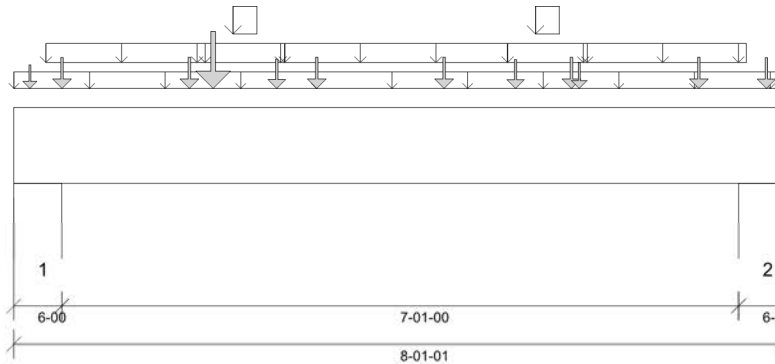
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15

Report Version: 2021.03.26 07/27/2023 12:43



### 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/372,  
TL Deflection Limit: L/248,

#### 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'- 5"
- 615 psi Wall @ 7'- 8 1/16"

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

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

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	3'- 2 1/16"	1.25D + 1.5S + L	1.00	7529 lb ft	23299 lb ft	Passed - 32%
Factored Neg. Moment:	7'- 8 1/16"	1.25D + 1.5S	0.95	149 lb ft	22024 lb ft	Passed - 1%
Factored Shear:	1'- 3 1/2"	1.25D + 1.5S + L	1.00	4482 lb	11052 lb	Passed - 41%
Live Load (LL) Pos. Defl.:	3'- 11 3/8"	S + 0.5L		0.054"	L/372	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 11 11/16"	D + S + 0.5L		0.103"	L/248	Passed - L/825

### 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	6-00	1.25D + 1.5S + L	1.00	5080 lb		21937 lb	12976 lb	Passed - 39%
2	6-00	1.25D + 1.5S + L	1.00	4467 lb		21932 lb	12973 lb	Passed - 34%

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	8'- 1 1/16"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	8'- 1 1/16"	User Load	Top	15 lb/ft	-	32 lb/ft	-
Uniform	0'- 4"	2'- 1/16"	E25(i1494)	Top	100 lb/ft	-	-	-
Uniform	2'	2'- 10"	E89(i3280)	Top	100 lb/ft	-	-	-
Uniform	2'- 3 9/16"	2'- 6 9/16"	E89(i3280)	Top	91 lb/ft	-	192 lb/ft	-
Uniform	2'- 10"	5'- 2"	E88(i3279)	Top	100 lb/ft	-	-	-
Uniform	5'- 2"	6'	E87(i3278)	Top	100 lb/ft	-	-	-
Uniform	5'- 5 9/16"	5'- 8 9/16"	E87(i3278)	Top	91 lb/ft	-	192 lb/ft	-
Uniform	6'	7'- 8 1/16"	E86(i3277)	Top	100 lb/ft	-	-	-
Point	0'- 6 1/16"	0'- 6 1/16"	J3(i3747)	Front	164 lb	328 lb	-	-
Point	1'- 10 1/16"	1'- 10 1/16"	J2(i3745)	Front	166 lb	332 lb	-	-
Point	3'- 2 1/16"	3'- 2 1/16"	J2(i3746)	Front	166 lb	332 lb	-	-
Point	4'- 6 1/16"	4'- 6 1/16"	J2(i3744)	Front	166 lb	332 lb	-	-
Point	5'- 10 1/16"	5'- 10 1/16"	J2(i3751)	Front	166 lb	332 lb	-	-
Point	7'- 2 1/16"	7'- 2 1/16"	J2(i3748)	Front	166 lb	332 lb	-	-
Point	0'- 2"	0'- 2"	E21(i1496)	Top	116 lb	-	155 lb	-
Point	2'- 1 1/16"	2'- 1 1/16"	E89(i3280)	Top	415 lb	-	849 lb	-
Point	2'- 9"	2'- 9"	E89(i3280)	Top	157 lb	-	285 lb	-
Point	5'- 3"	5'- 3"	E87(i3278)	Top	152 lb	-	275 lb	-
Point	5'- 11"	5'- 11"	E87(i3278)	Top	122 lb	-	222 lb	-
Point	7'- 10 9/16"	7'- 10 9/16"	E85(i3276)	Top	196 lb	-	291 lb	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 6"	E1(i344)	1653 lb	1057 lb	1342 lb	-
2	7'- 7 1/16"	8'- 1 1/16"	E75(i3057)	1476 lb	931 lb	1090 lb	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.



STRUCTURAL COMPONENT ONLY  
DWG # TF23071135 PG 1/2

CITY OF RICHMOND HILL  
BUILDING DIVISION  
06/01/2024  
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Per: joshua.nabua



BUILDER:	GREEN PARK HOMES	Job Name:	VILLA 10	2 Ply Member	Status:
SITE:	TRINI GROUP DEVE.	Level:	2ND FLR FRAMING	1 3/4" x 9 1/2" (2.0E 3100)	Design
MODEL:	VILLA 10	Label:	B18B - i3681	WestFraser LVL	Passed
CITY:	RICHMOND HILL	Type:	Beam		

- 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 # TF23071135 PG 2/2

CITY OF RICHMOND HILL  
BUILDING DIVISION

05/01/2024

RECEIVED  
Per: joshua.nabua



BUILDER: **GREEN PARK HOMES**  
SITE: **TRINI GROUP DEVE.**  
MODEL: **VILLA 10**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 10**  
Level: **2ND FLR FRAMING**  
Label: **B19B - i3686**  
Type: **Beam**

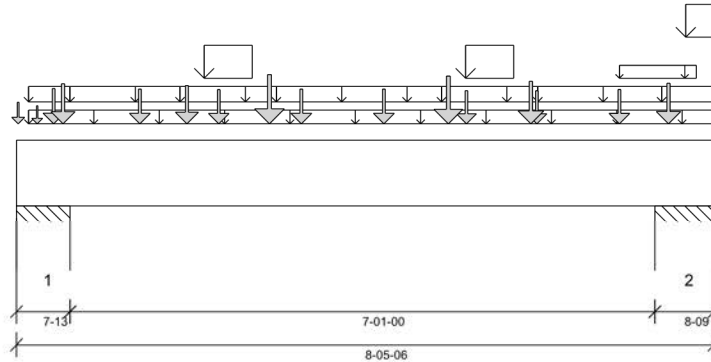
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.5.3.233.Update5.15

Report Version: 2021.03.26 07/27/2023 12:43



### 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/372,  
TL Deflection Limit: L/248,

#### 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'- 1 3/4" Bottom: 0'- 9 1/16"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 6 13/16"
- 615 psi Wall @ 7'- 9 13/16"

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

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

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 5 3/8"	1.25D + 1.5S + L	1.00	10599 lb ft	23299 lb ft	Passed - 45%
Factored Neg. Moment:	0'- 6 13/16"	1.25D + 1.5S + L	1.00	317 lb ft	23299 lb ft	Passed - 1%
Factored Shear:	6'- 11 5/16"	1.25D + 1.5S + L	1.00	5359 lb	11052 lb	Passed - 48%
Live Load (LL) Pos. Defl.:	4'- 2 3/8"	S + 0.5L		0.078"	L/372	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 2 3/8"	D + S + 0.5L		0.143"	L/248	Passed - L/592

### 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	7-13	1.25D + 1.5S + L	1.00	7465 lb		28349 lb	16769 lb	Passed - 45%
2	8-09	1.25D + 1.5S + L	1.00	6957 lb		31269 lb	18497 lb	Passed - 38%

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	8'- 5 3/8"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'- 1 3/4"	8'- 5 3/8"	User Load	Top	15 lb/ft	-	32 lb/ft	-
Uniform	0'- 1 3/4"	0'- 7 3/4"	E29(i1489)	Top	100 lb/ft	-	-	-
Uniform	0'- 7 3/4"	1'- 11 3/4"	E84(i3272)	Top	100 lb/ft	-	-	-
Uniform	1'- 11 3/4"	3'- 1 13/16"	E83(i3271)	Top	100 lb/ft	-	-	-
Uniform	2'- 3 5/16"	2'- 10 1/4"	E83(i3271)	Top	224 lb/ft	-	433 lb/ft	-
Uniform	3'- 1 3/4"	5'- 1 3/4"	E82(i3270)	Top	100 lb/ft	-	-	-
Uniform	5'- 1 3/4"	6'- 3 13/16"	E81(i3269)	Top	100 lb/ft	-	-	-
Uniform	5'- 5 5/16"	6'- 1/4"	E81(i3269)	Top	224 lb/ft	-	433 lb/ft	-
Uniform	6'- 3 3/4"	7'- 9 3/4"	E80(i3268)	Top	100 lb/ft	-	-	-
Uniform	7'- 3 5/8"	8'- 2 13/16"	FC2 Floor Decking (Plan View Fill)	Top	6 lb/ft	12 lb/ft	-	-
Uniform	7'- 9 3/4"	8'- 5 3/8"	E33(i1493)	Top	100 lb/ft	-	-	-
Uniform	8'- 1 5/16"	8'- 5 3/8"	E33(i1493)	Top	224 lb/ft	-	433 lb/ft	-
Point	0'- 5 3/8"	0'- 5 3/8"	J6(i3764)	Front	183 lb	366 lb	-	-
Point	1'- 5 15/16"	1'- 5 15/16"	J6(i3715)	Front	179 lb	358 lb	-	-
Point	2'- 5 3/8"	2'- 5 3/8"	J6(i3768)	Front	175 lb	350 lb	-	-
Point	3'- 5 3/8"	3'- 5 3/8"	J6(i3699)	Front	179 lb	358 lb	-	-
Point	4'- 5 3/8"	4'- 5 3/8"	J6(i3714)	Front	179 lb	358 lb	-	-
Point	5'- 5 3/8"	5'- 5 3/8"	J6(i3760)	Front	166 lb	333 lb	-	-
Point	6'- 3 5/8"	6'- 3 5/8"	J6(i3716)	Front	166 lb	332 lb	-	-
Point	7'- 3 5/8"	7'- 3 5/8"	J6(i3696)	Front	176 lb	353 lb	-	-
Point	0'- 1/4"	0'- 1/4"	E29(i1489)	Top	95 lb	-	127 lb	-
Point	0'- 3"	0'- 3"	E29(i1489)	Top	47 lb	-	91 lb	-
Point	0'- 6 3/4"	0'- 6 3/4"	E29(i1489)	Top	236 lb	-	429 lb	-
Point	2'- 3/4"	2'- 3/4"	E83(i3271)	Top	222 lb	-	401 lb	-
Point	3'- 3/4"	3'- 3/4"	E83(i3271)	Top	315 lb	-	571 lb	-
Point	5'- 2 3/4"	5'- 2 3/4"	E81(i3269)	Top	302 lb	-	547 lb	-
Point	6'- 2 3/4"	6'- 2 3/4"	E81(i3269)	Top	257 lb	-	467 lb	-
Point	7'- 10 3/4"	7'- 10 3/4"	E33(i1493)	Top	241 lb	-	435 lb	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 7 13/16"	E5(i332)	2303 lb	1522 lb	1998 lb	-
2	7'- 8 13/16"	8'- 5 3/8"	E79(i3111)	2194 lb	1298 lb	1998 lb	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)



STRUCTURAL COMPONENT ONLY  
DWG # TF23071136 PG 1/2

CITY OF RICHMOND HILL  
BUILDING DIVISION  
05/01/2024  
**RECEIVED**  
Per: joshua.nabua





BUILDER: **GREEN PARK HOMES**  
SITE: **TRINI GROUP DEVE.**  
MODEL: **VILLA 10**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 10**  
Level: **2ND FLR FRAMING**  
Label: **B19B - i3686**  
Type: **Beam**

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

Status:  
**Design  
Passed**

#### DESIGN NOTES

- 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 # TF23071136 PG 2/2

CITY OF RICHMOND HILL  
BUILDING DIVISION

05/01/2024

RECEIVED  
Per: joshua.nabua



BUILDER: **GREEN PARK HOMES**  
SITE: **TRINI GROUP DEVE.**  
MODEL: **VILLA 10**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 10**  
Level: **1ST FLR FRAMING**  
Label: **B15B - i3689**  
Type: **Beam**

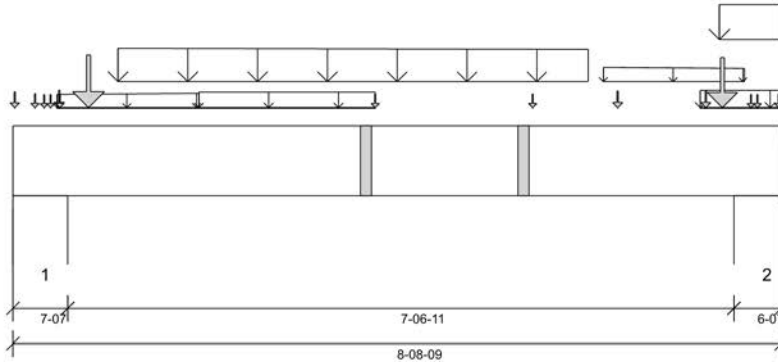
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.5.3.233.Update5.15

Report Version: 2021.03.26 07/27/2023 12:43



#### 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/372,  
TL Deflection Limit: L/248,

#### 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'- 1 3/4" Bottom: 1'- 1 1/2"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 6 7/16"
- 615 psi Wall @ 8'- 3 1/8"

**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'- 6 5/16"	1.25D + 1.5L + S	1.00	7540 lb ft	23299 lb ft	Passed - 32%
Factored Neg. Moment:	0'- 6 7/16"	1.25D + 1.5S + L	1.00	316 lb ft	23299 lb ft	Passed - 1%
Factored Shear:	1'- 4 15/16"	1.25D + 1.5L + S	1.00	4544 lb	11052 lb	Passed - 41%
Live Load (LL) Pos. Defl.:	4'- 4 11/16"	L + 0.5S		0.075"	L/372	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 4 11/16"	D + L + 0.5S		0.120"	L/248	Passed - L/753

#### 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	7'-07"	1.25D + 1.5L + S	1.00	11268 lb		27140 lb	16054 lb	Passed - 70%
2	6'-07"	1.25D + 1.5L + S	1.00	10583 lb		23400 lb	13842 lb	Passed - 76%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	8'- 8 9/16"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	2'- 1 5/16"	4'- 1 5/16"	FC1 Floor Decking (Plan View Fill)	Top	19 lb/ft	38 lb/ft	-	-
Uniform	7'- 9 9/16"	8'- 8 9/16"	E79(i3111)	Top	100 lb/ft	-	-	-
Tapered	0'- 6"	2'- 1 5/16"	FC1 Floor Decking (Plan View Fill)	Top	2 To 10 lb/ft	3 To 19 lb/ft	-	-
Tapered	1'- 2 5/16"	6'- 6 5/16"	Smoothed Load	Front	162 To 154 lb/ft	325 To 308 lb/ft	-	-
Tapered	6'- 8 3/8"	8'- 3 9/16"	FC1 Floor Decking (Plan View Fill)	Top	10 To 2 lb/ft	19 To 3 lb/ft	-	-
Tapered	8'- 1/8"	8'- 8 9/16"	E79(i3111)	Top	175 To 176 lb/ft	351 To 352 lb/ft	-	-
Point	0'- 6 5/16"	0'- 6 5/16"	J1(i3688)	Front	213 lb	426 lb	-	-
Point	6'- 10 5/16"	6'- 10 5/16"	J8(i3719)	Front	177 lb	353 lb	-	-
Point	7'- 10 5/16"	7'- 10 5/16"	J8(i3703)	Front	177 lb	353 lb	-	-
Point	4'- 1 5/16"	4'- 1 5/16"	Bk2(i3592)	Back	17 lb	33 lb	-	-
Point	5'- 10 3/4"	5'- 10 3/4"	Bk2(i3593)	Back	31 lb	63 lb	-	-
Point	0'- 1/4"	0'- 1/4"	E5(i332)	Top	175 lb	79 lb	142 lb	-
Point	0'- 3"	0'- 3"	E5(i332)	Top	57 lb	56 lb	11 lb	-
Point	0'- 4 1/4"	0'- 4 1/4"	FC1 Floor Decking (Plan View Fill)	Top	0 lb	0 lb	-	-
Point	0'- 5 1/8"	0'- 5 1/8"	FC1 Floor Decking (Plan View Fill)	Top	0 lb	0 lb	-	-
Point	0'- 6 3/8"	0'- 6 3/8"	E5(i332)	Top	49 lb	-	18 lb	-
Point	0'- 10 5/16"	0'- 10 5/16"	E5(i332)	Top	2343 lb	1522 lb	2004 lb	-
Point	8'- 9/16"	8'- 9/16"	E79(i3111)	Top	2194 lb	1298 lb	1998 lb	-
Point	8'- 4 7/16"	8'- 4 7/16"	FC1 Floor Decking (Plan View Fill)	Top	0 lb	0 lb	-	-
Point	8'- 5 5/16"	8'- 5 5/16"	FC1 Floor Decking (Plan View Fill)	Top	0 lb	0 lb	-	-
Point	8'- 8 1/4"	8'- 8 1/4"	E79(i3111)	Top	19 lb	1 lb	24 lb	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 7 7/16"	W5(i25)	3502 lb	3254 lb	2221 lb	-
2	8'- 2 1/8"	8'- 8 9/16"	W36(i2560)	3147 lb	2975 lb	1976 lb	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.



STRUCTURAL COMPONENT ONLY  
DWG # TF23071137 PG 1/2

**CITY OF RICHMOND HILL**  
**BUILDING DIVISION**  
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BUILDER: **GREEN PARK HOMES**  
SITE: **TRINI GROUP DEVE.**  
MODEL: **VILLA 10**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 10**  
Level: **1ST FLR FRAMING**  
Label: **B15B - i3689**  
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.
- User loads assume a bearing length of 3.5" in determining member capacity for loads near supports.
- Bearing capacity of member at support 1, 2 was verified for the effect of concentrated load applied near the support.  
At support 1. Required Load Area: L=2.049", W=3.500". LDF=1.00, Pf=7457 lb, Q'r=7457 lb, Result=100.00%.  
At support 2. Required Load Area: L=1.933", W=3.500". LDF=1.00, Pf=7038 lb, Q'r=7038 lb, Result=100.00%.

#### PLY TO PLY CONNECTION

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



STRUCTURAL COMPONENT ONLY  
DWG # TF23071137 PG 2/2

CITY OF RICHMOND HILL  
BUILDING DIVISION

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BUILDER: **GREEN PARK HOMES**  
SITE: **TRINI GROUP DEVE.**  
MODEL: **VILLA 10**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 10**  
Level: **1ST FLR FRAMING**  
Label: **B16B - i3680**  
Type: **Beam**

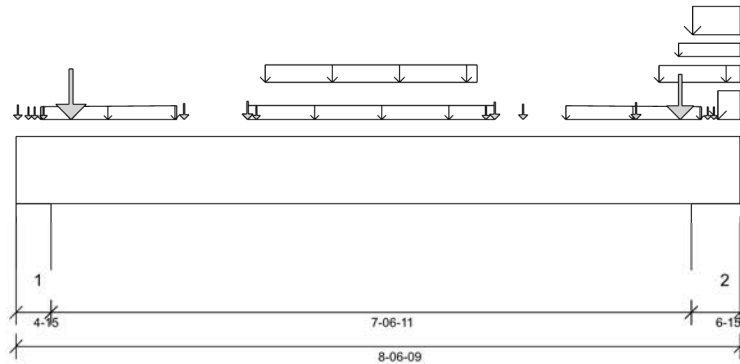
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15

Report Version: 2021.03.26 07/27/2023 12:43



### 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/372,  
TL Deflection Limit: L/248,

#### 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'- 1 3/4" Bottom: 2'- 6"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 3 15/16"
- 615 psi Wall @ 8'- 5/8"

**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:	3'- 9 3/8"	1.25D + 1.5L + S	1.00	5587 lb ft	23299 lb ft	Passed - 24%
Factored Neg. Moment:	8'- 5/8"	1.25D + 1.5L + S	1.00	126 lb ft	23299 lb ft	Passed - 1%
Factored Shear:	1'- 2 7/16"	1.25D + 1.5L + S	1.00	3425 lb	11052 lb	Passed - 31%
Live Load (LL) Pos. Defl.:	4'- 1 15/16"	L + 0.5S		0.057"	L/372	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 1 13/16"	D + L + 0.5S		0.093"	L/248	Passed - L/977

### 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	4-15	1.25D + 1.5L + S	1.00	7785 lb		18017 lb	10658 lb	Passed - 73%
2	6-15	1.25D + 1.5L + S	1.00	7274 lb		25188 lb	14900 lb	Passed - 49%

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	-0'	8'- 6 9/16"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	2'- 8 13/16"	5'- 7 13/16"	FC1 Floor Decking (Plan View Fill)	Top	12 lb/ft	24 lb/ft	-	-
Uniform	2'- 11 5/16"	5'- 5 5/16"	FC1 Floor Decking (Plan View Fill)	Top	38 lb/ft	76 lb/ft	-	-
Uniform	7'- 7 1/16"	8'- 6 9/16"	E75(i3057)	Top	100 lb/ft	-	-	-
Uniform	7'- 9 13/16"	8'- 6 9/16"	E75(i3057)	Top	8 lb/ft	-	8 lb/ft	-
Uniform	7'- 11 13/16"	8'- 6 9/16"	E75(i3057)	Top	125 lb/ft	251 lb/ft	-	-
Uniform	8'- 3 3/8"	8'- 6 9/16"	E75(i3057)	Top	191 lb/ft	-	192 lb/ft	-
Tapered	0'- 3 1/2"	1'- 10 3/4"	FC1 Floor Decking (Plan View Fill)	Top	2 To 10 lb/ft	3 To 19 lb/ft	-	-
Tapered	6'- 5 7/8"	8'- 1 1/16"	FC1 Floor Decking (Plan View Fill)	Top	10 To 2 lb/ft	19 To 3 lb/ft	-	-
Point	0'- 7 13/16"	0'- 7 13/16"	J3(i3732)	Front	160 lb	320 lb	-	-
Point	1'- 11 13/16"	1'- 11 13/16"	J3(i3743)	Front	125 lb	250 lb	-	-
Point	2'- 8 13/16"	2'- 8 13/16"	J3DJ(i3722)	Front	205 lb	410 lb	-	-
Point	5'- 7 13/16"	5'- 7 13/16"	J3DJ(i3730)	Front	177 lb	353 lb	-	-
Point	5'- 11 13/16"	5'- 11 13/16"	J3(i3736)	Front	100 lb	200 lb	-	-
Point	7'- 3 13/16"	7'- 3 13/16"	J3(i3728)	Front	160 lb	320 lb	-	-
Point	2'- 10 1/16"	2'- 10 1/16"	J7(i3474)	Back	19 lb	39 lb	-	-
Point	5'- 6 9/16"	5'- 6 9/16"	J7(i3474)	Back	19 lb	39 lb	-	-
Point	0'- 1/4"	0'- 1/4"	E1(i344)	Top	108 lb	72 lb	30 lb	-
Point	0'- 1 3/4"	0'- 1 3/4"	FC1 Floor Decking (Plan View Fill)	Top	0 lb	0 lb	-	-
Point	0'- 2 5/8"	0'- 2 5/8"	FC1 Floor Decking (Plan View Fill)	Top	0 lb	0 lb	-	-
Point	0'- 3 7/8"	0'- 3 7/8"	E1(i344)	Top	36 lb	-	-	-
Point	0'- 7 3/4"	0'- 7 3/4"	E1(i344)	Top	1682 lb	1057 lb	1342 lb	-
Point	7'- 10 1/16"	7'- 10 1/16"	E75(i3057)	Top	1476 lb	931 lb	1090 lb	-
Point	8'- 1 15/16"	8'- 1 15/16"	FC1 Floor Decking (Plan View Fill)	Top	0 lb	0 lb	-	-
Point	8'- 2 13/16"	8'- 2 13/16"	FC1 Floor Decking (Plan View Fill)	Top	1 lb	1 lb	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 4 15/16"	W1(i33)	2453 lb	2279 lb	1390 lb	-
2	7'- 11 5/8"	8'- 6 9/16"	W37(i2726)	2266 lb	2149 lb	1138 lb	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)



STRUCTURAL COMPONENT ONLY  
DWG # TF23071138 PG 1/2

CITY OF RICHMOND HILL  
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BUILDER: **GREEN PARK HOMES**  
SITE: **TRINI GROUP DEVE.**  
MODEL: **VILLA 10**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 10**  
Level: **1ST FLR FRAMING**  
Label: **B16B - i3680**  
Type: **Beam**

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

Status:  
**Design  
Passed**

#### DESIGN NOTES

- 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.
- User loads assume a bearing length of 3.5" in determining member capacity for loads near supports.
- Bearing capacity of member at support 1, 2 was verified for the effect of concentrated load applied near the support.  
At support 1. Required Load Area: L=1.500", W=3.500". LDF=1.00, Pf=5173 lb, Q'r=5460 lb, Result=94.73%.  
At support 2. Required Load Area: L=1.500", W=3.500". LDF=1.00, Pf=4411 lb, Q'r=5460 lb, Result=80.79%.

#### 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 # TF23071138 PG 2/2

CITY OF RICHMOND HILL  
BUILDING DIVISION

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### 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:

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



## Maximum Floor Spans – 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:

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

## Maximum Floor Spans – 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:

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



## Maximum Floor Spans – M7.1

### Design Criteria

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

### Maximum Floor Spans

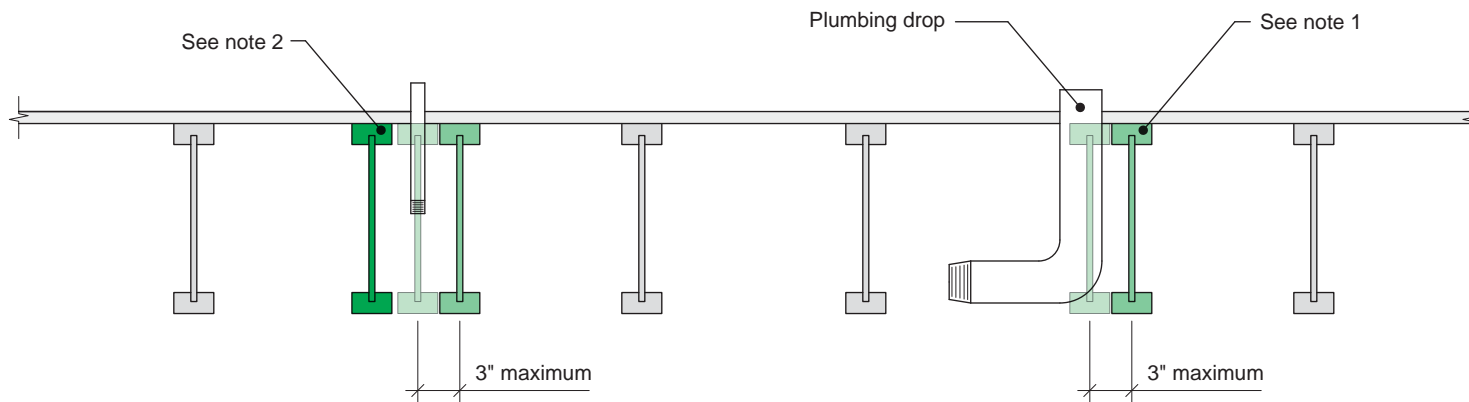
Joist depth	Joist series	Bare On centre spacing				1/2 in. gypsum ceiling On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-10"	15'-0"	14'-5"	13'-5"	16'-4"	15'-5"	14'-6"	13'-5"
	NI-40x	16'-11"	15'-11"	15'-4"	14'-9"	17'-4"	16'-4"	15'-9"	14'-11"
	NI-60	17'-1"	16'-1"	15'-6"	14'-10"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

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

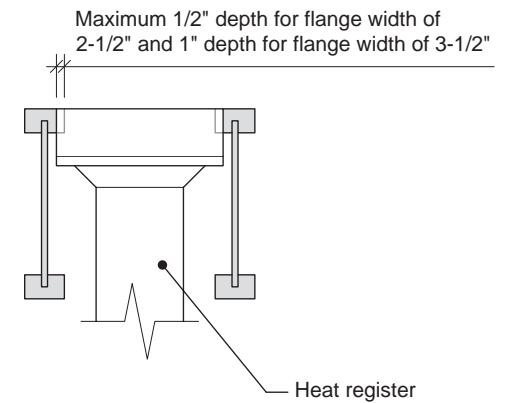
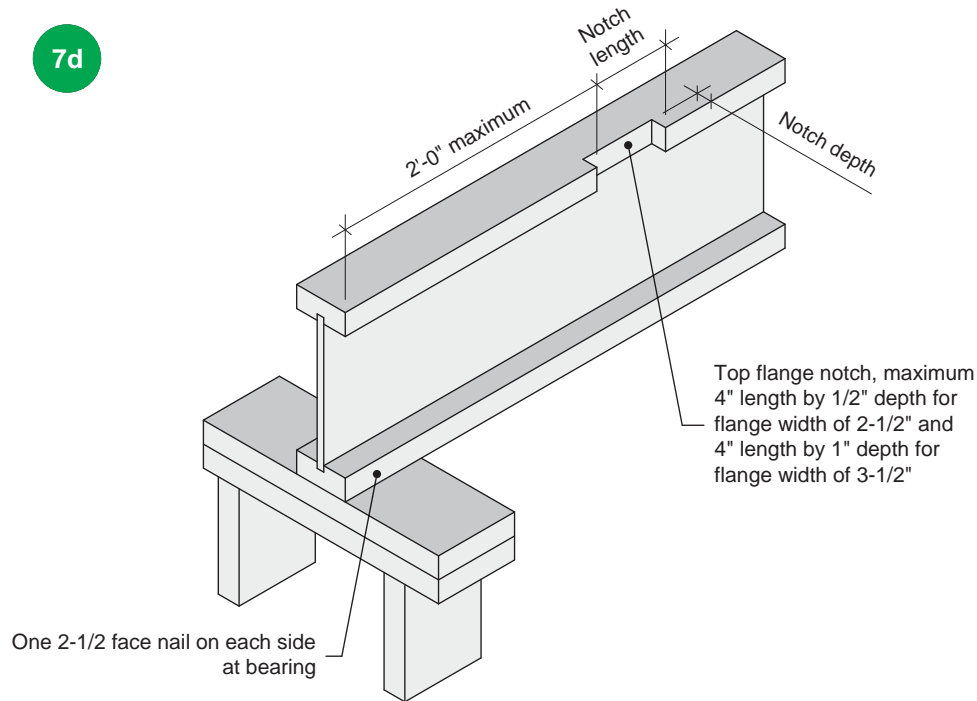
7c

**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.