

Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	11 7/8" NI-40x	1	16
J1 DJ	16-00-00	11 7/8" NI-40x	2	8
J2	14-00-00	11 7/8" NI-40x	1	20
J2 DJ	14-00-00	11 7/8" NI-40x	2	4
J3	12-00-00	11 7/8" NI-40x	1	11
J4	8-00-00	11 7/8" NI-40x	1	4
J5	6-00-00	11 7/8" NI-40x	1	9
J6	4-00-00	11 7/8" NI-40x	1	3
B1 H	16-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B3	16-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B4	16-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B5	12-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B2 H	8-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	1	1
B6	4-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2

Connector Summary		
Qty	Manuf	Product
14	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
2	H3	HGUS410
1	H4	HUS1.81/10



**FROM PLAN DATED:** 2023-07-18  
**BUILDER:** GREENPARK HOMES  
**SITE:** Trinigroup Developments Inc.  
**MODEL:** VILLA 3  
**ELEVATION:** 1,2  
**LOT:**  
**CITY:** RICHMOND HILL  
**SALESMAN:** Rick DiCiano  
**DESIGNER:** PL  
**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.

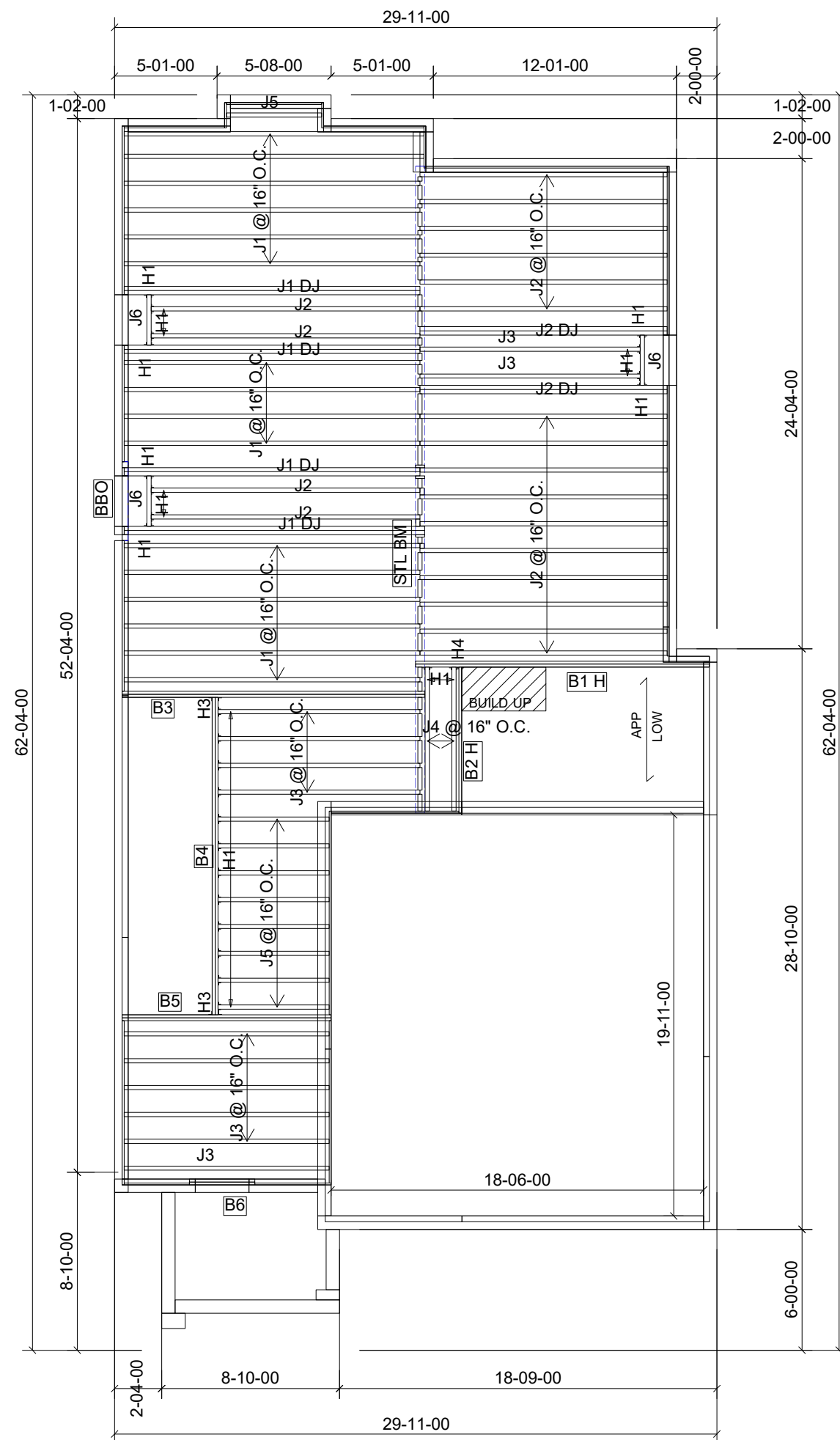
ALL CONNECTORS MUST BE INSTALLED AS PER THE MANUFACTURER'S SPECIFICATIONS USING THE MANUFACTURER SPECIFIED FASTENERS.

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

**DATE:** 9/27/23

# 1st FLOOR FRAMING



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	11 7/8" NI-40x	1	16
J1 DJ	16-00-00	11 7/8" NI-40x	2	8
J2	14-00-00	11 7/8" NI-40x	1	20
J2 DJ	14-00-00	11 7/8" NI-40x	2	4
J3	12-00-00	11 7/8" NI-40x	1	12
J4	8-00-00	11 7/8" NI-40x	1	2
J5	6-00-00	11 7/8" NI-40x	1	9
J6	4-00-00	11 7/8" NI-40x	1	3
B1 H	16-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B3	16-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B4	16-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B5	12-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B2 H	8-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	1	1
B6	4-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2

Connector Summary		
Qty	Manuf	Product
14	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
2	H3	HGUS410
1	H4	HUS1.81/10



**FROM PLAN DATED:** 2023-07-18  
**BUILDER:** GREENPARK HOMES  
**SITE:** Trinigroup Developments Inc.  
**MODEL:** VILLA 3  
**ELEVATION:** 3  
**LOT:**  
**CITY:** RICHMOND HILL  
**SALESMAN:** Rick DiCiano  
**DESIGNER:** PL  
**REVISION:**

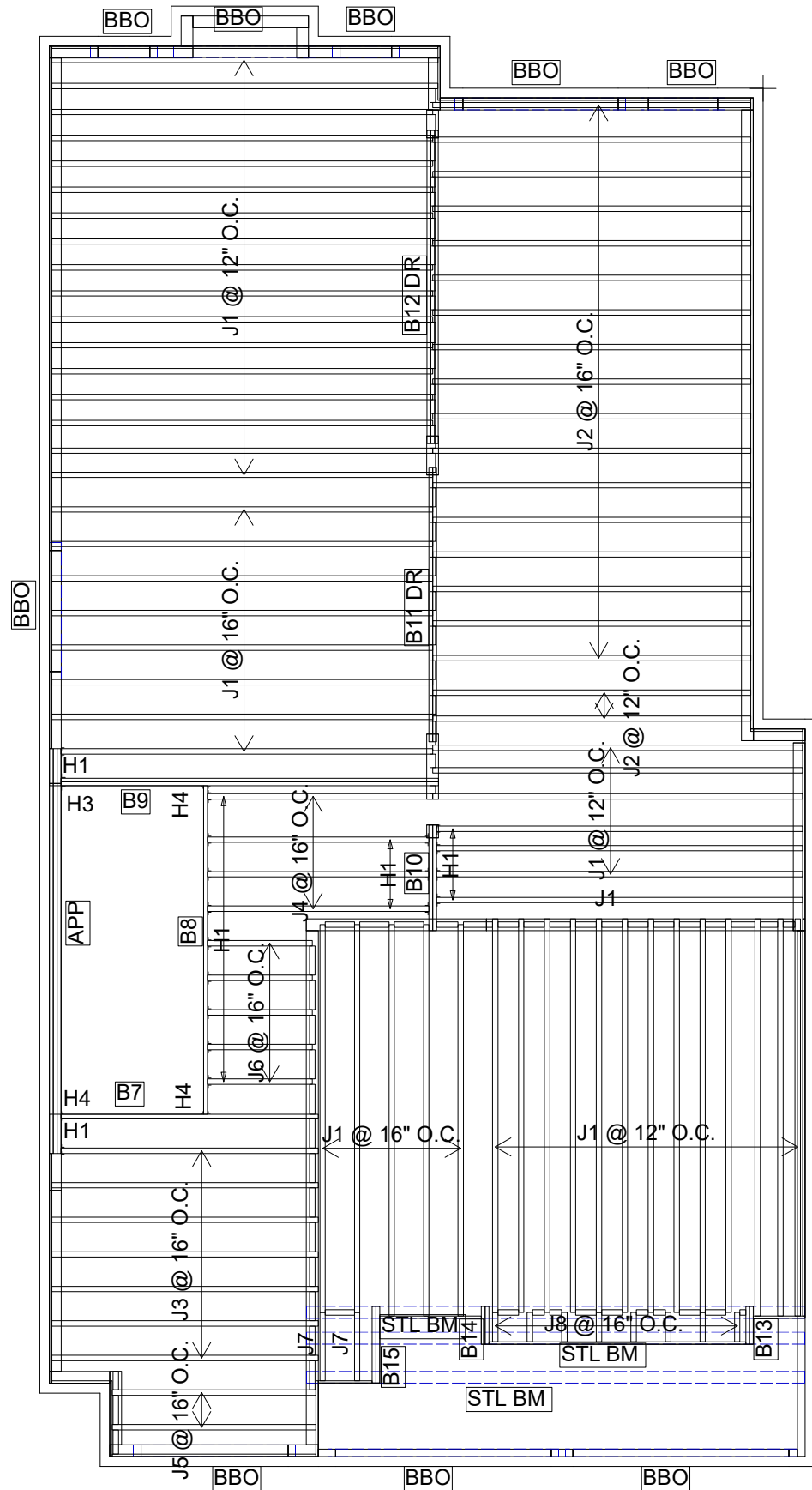
REFER TO THE **NORDIC INSTALLATION GUIDE**  
FOR PROPER STORAGE AND INSTALLATION.  
**SQUASH BLOCKS** OF 2x4, 2x6, 2x8 SPF #2 REQ'D  
UNDER INTERIOR UNIFORM LOAD BEARING WALLS.  
**MULTIPLE SQUASH BLOCKS** REQ'D UNDER  
CONCENTRATED LOADS. SEE FIGURE 1.  
**CANTILEVERED JOISTS** INCLUDING **CANT' OVER**  
**BRICK** REQ. 1-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

DATE: 9/27/23

## 1st FLOOR FRAMING



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	11 7/8" NI-40x	1	50
J2	14-00-00	11 7/8" NI-40x	1	19
J3	12-00-00	11 7/8" NI-40x	1	7
J4	10-00-00	11 7/8" NI-40x	1	4
J5	8-00-00	11 7/8" NI-40x	1	2
J6	6-00-00	11 7/8" NI-40x	1	5
J7	4-00-00	11 7/8" NI-40x	1	2
J8	2-00-00	11 7/8" NI-40x	1	8
B12 DR	14-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	3	3
B11 DR	12-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B9	16-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
APP	16-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	3	3
B8	14-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	1	1
B7	10-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	1	1
B10	6-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B15	4-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B13	2-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B14	2-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2

Connector Summary		
Qty	Manuf	Product
9	H1	IUS2.56/11.88
7	H1	IUS2.56/11.88
2	H1	IUS2.56/11.88
1	H3	HGUS410
1	H4	HUS1.81/10
1	H4	HUS1.81/10
1	H4	HUS1.81/10

DATE: 2023-09-12

2nd FLOOR FRAMING



FROM PLAN DATED: 2023-07-18  
BUILDER: GREENPARK HOMES  
SITE: Trinigroup Developments Inc.  
MODEL: VILLA 3  
ELEVATION: 1,2  
LOT:  
CITY: RICHMOND HILL  
SALESMAN: Rick DiCiano  
DESIGNER: PL  
REVISION:

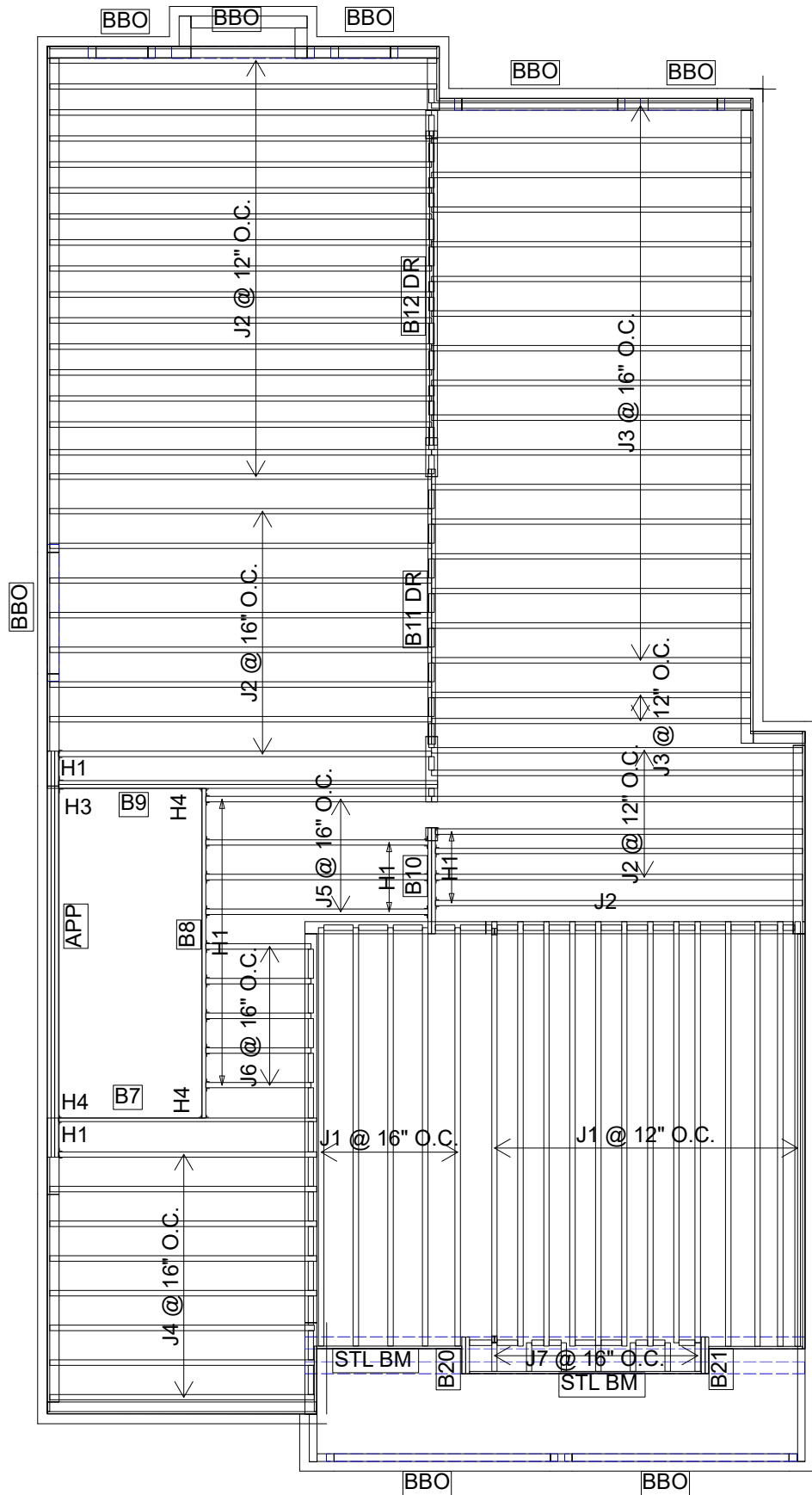
REFER TO THE **NORDIC INSTALLATION GUIDE** FOR PROPER STORAGE AND INSTALLATION.  
**SQUASH BLOCKS** OF 2x4, 2x6, 2x8 SPF #2 REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS.  
**MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1.  
**CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** 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: 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	18-00-00	11 7/8" NI-40x	1	18
J2	16-00-00	11 7/8" NI-40x	1	32
J3	14-00-00	11 7/8" NI-40x	1	19
J4	12-00-00	11 7/8" NI-40x	1	8
J5	10-00-00	11 7/8" NI-40x	1	4
J6	6-00-00	11 7/8" NI-40x	1	5
J7	2-00-00	11 7/8" NI-40x	1	7
B12 DR	14-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	3	3
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B9	16-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
APP	16-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	3	3
B8	14-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	1	1
B7	10-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	1	1
B10	6-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B20	2-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B21	2-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2

Connector Summary		
Qty	Manuf	Product
9	H1	IUS2.56/11.88
7	H1	IUS2.56/11.88
2	H1	IUS2.56/11.88
1	H3	HGUS410
1	H4	HUS1.81/10
1	H4	HUS1.81/10
1	H4	HUS1.81/10

DATE: 2023-09-12

2nd FLOOR FRAMING



FROM PLAN DATED: 2023-07-18  
BUILDER: GREENPARK HOMES  
SITE: Trinigroup Developments Inc.  
MODEL: VILLA 3  
ELEVATION: 3  
LOT:  
CITY: RICHMOND HILL  
SALESMAN: Rick DiCiano  
DESIGNER: PL  
REVISION:

REFER TO THE **NORDIC INSTALLATION GUIDE** FOR PROPER STORAGE AND INSTALLATION.  
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FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 6 AND TABLES 6.1/6.2.  
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ALL **CONNECTORS** MUST BE INSTALLED AS PER THE **MANUFACTURER'S SPECIFICATIONS** USING THE MANUFACTURER **SPECIFIED FASTENERS**.  
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**LOADING:**  
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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 N/A



# 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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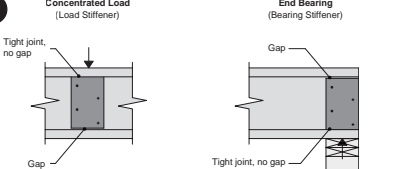
	<b>NI-80</b> <b>2x4</b> 2100F MSR 3/8 in. web Depths 9-1/2, 11-7/8, 14 and 16 in. 23 pieces per unit
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	<b>NI-90</b> <b>2x4</b> 2400F MSR 7/16 in. web Depths 11-7/8, 14 and 16 in. 23 pieces per unit
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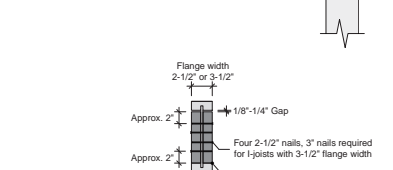
<b>RIM BOARDS</b>	<b>Width</b> 1-1/8 in. <b>Length</b> 16 ft <b>Depths</b> 9-1/2 to 16 in. APA Rim Board Plus
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### WEB STIFFENERS

**2** **Concentrated Load (Load Stiffener)**



**End Bearing (Bearing Stiffener)**

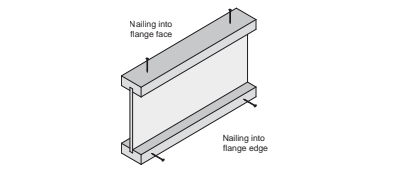


**Stiffener Size Requirements**

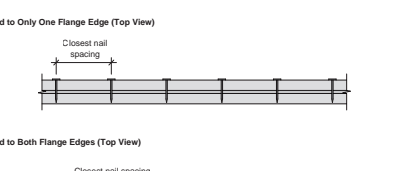
Flange width (in.)	Web stiffener size each side of web (in.)
2-1/2	1 x 2-5/16 Minimum width
3-1/2	1-1/2 x 2-5/16 Minimum width

### NAIL SPACING

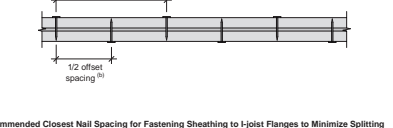
**Nailing into flange face**



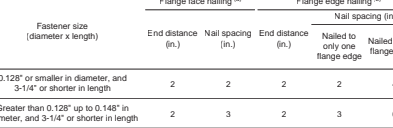
**Nailing into flange edge**



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



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

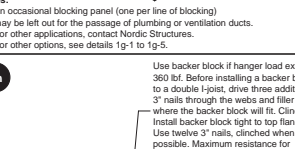


**Recommended Closest Nail Spacing for Fastening Sheathing to I-joist Flanges to Minimize Splitting**

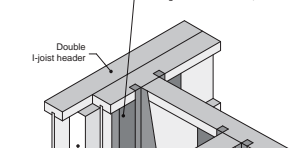
Fastener size (diameter x length)	Flange face nailing <sup>(a)</sup>			Flange edge nailing <sup>(a)</sup>		
	End distance (in.)	Nail spacing (in.)	End distance (in.)	Nail spacing (in.)	Nail spacing (in.)	
0.128" or smaller in diameter, and 3-1/4" or shorter in length	2	2	2	2	4	
Greater than 0.128" up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

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

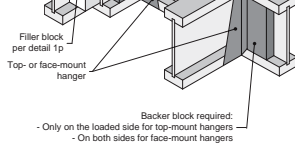
**1a**



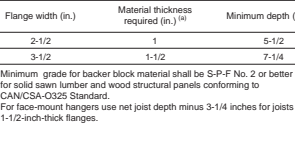
**1b**




**1c**



**1d**



**1e**



**1f**



**1g**



**1h**



**1i**



**1j**



**1k**



**1l**



**1m**



**1n**



**1o**



**1p**



**1q**



**1r**



**1s**



**1t**



**1u**



**1v**



**1w**



**1x**



**1y**



**1z**



**2**



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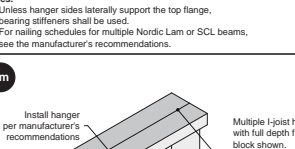
**100**



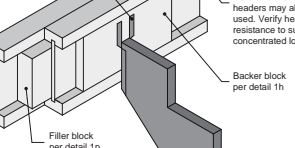
**Notes:**

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.

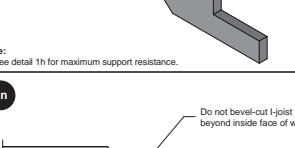
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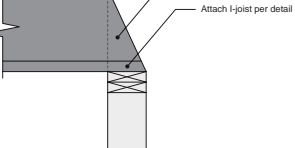
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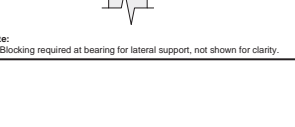
**1c**



**1d**



**1e**



**1f**



**1g**



**1h**



**1i**



**1j**



**1k**



**1l**



**1m**



**1n**



**1o**



**1p**



**1q**



**1r**



**1s**



**1t**



**1u**



**1v**



**1w**



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BUILDER: **GREENPARK HOMES**  
SITE: **Trinigroup Developments Inc.**  
MODEL: **VILLA 3**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 3**  
Level: **2ND FLOOR**  
Label: **B7 - i2710**  
Type: **Beam**

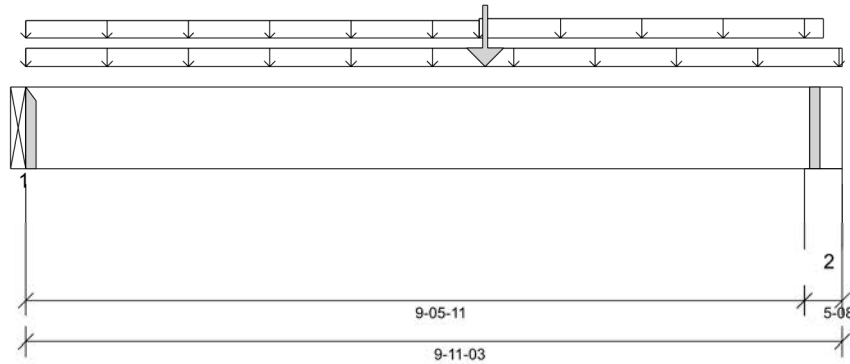
**1 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 09/27/2023 08:00



### DESIGN INFORMATION

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

#### Lateral Restraint Requirements:

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

Top: 0' Bottom: 5'- 5 15/16"

#### Factored Resistance of Support Material:

- 615 psi Beam @ 0'
- 615 psi Wall @ 9'- 6 11/16"

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	5'- 7 1/16"	1.25D + 1.5L	0.97	5139 lb ft	17084 lb ft	Passed - 30%
Factored Shear:	8'- 5 13/16"	1.25D + 1.5L	0.97	1475 lb	6678 lb	Passed - 22%
Live Load (LL) Pos. Defl.:	4'- 11 15/16"	L		0.056"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 11 3/8"	D + L		0.113"	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	0.97	1343 lb		2639 lb	-	Passed - 51%
2	5-08	1.25D + 1.5L	0.97	1732 lb		9677 lb	5724 lb	Passed - 30%

### CONNECTOR INFORMATION

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

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

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	9'- 11 3/16"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'	9'- 11 3/16"	User Load	Top	60 lb/ft	-	-	-
Uniform	0'	5'- 6 3/16"	FC2 Floor Decking (Plan View Fill)	Top	14 lb/ft	28 lb/ft	-	-
Uniform	5'- 6 3/16"	9'- 8 7/16"	FC2 Floor Decking (Plan View Fill)	Top	27 lb/ft	53 lb/ft	-	-
Point	5'- 7 1/16"	5'- 7 1/16"	B8(i2734)	Back	362 lb	649 lb	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	APP(i2705)	553 lb	444 lb	-	-
2	9'- 5 11/16"	9'- 11 3/16"	2(i367)	660 lb	595 lb	-	-

### DESIGN NOTES

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



STRUCTURAL COMPONENT ONLY  
DWG # TF23091221

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





BUILDER: **GREENPARK HOMES**  
SITE: **Trinigroup Developments Inc.**  
MODEL: **VILLA 3**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 3**  
Level: **2ND FLOOR**  
Label: **B8 - i2734**  
Type: **Beam**

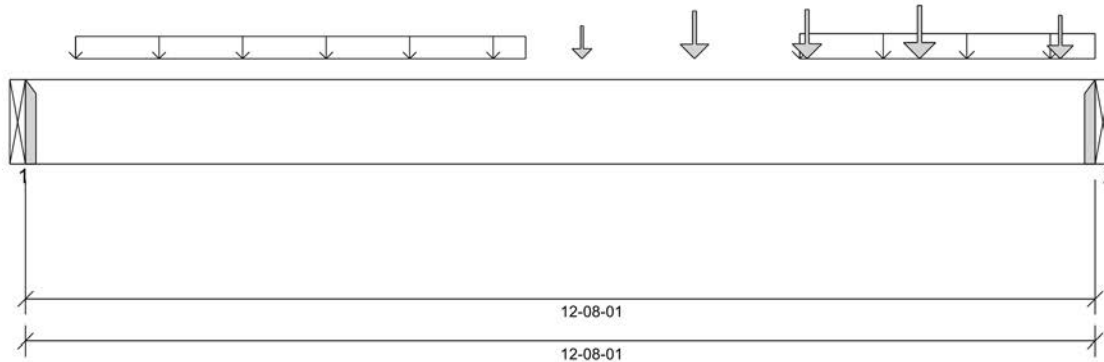
**1 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 09/27/2023 08:00



#### 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'- 5 1/2"

#### Factored Resistance of Support Material:

- 615 psi Beam @ 0'
- 615 psi Beam @ 12'- 8 1/16"

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	7'- 11 1/8"	1.25D + 1.5L	1.00	6257 lb ft	17672 lb ft	Passed - 35%
Factored Shear:	11'- 8 3/16"	1.25D + 1.5L	1.00	2061 lb	6908 lb	Passed - 30%
Live Load (LL) Pos. Defl.:	6'- 7 7/16"	L		0.171"	L/360	Passed - L/887
Total Load (TL) Pos. Defl.:	6'- 7 5/16"	D + L		0.264"	L/240	Passed - L/575

#### 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	1423 lb		2730 lb	-	Passed - 52%
2	1-08	1.25D + 1.5L	1.00	2738 lb		2738 lb	-	Passed - 100%

#### CONNECTOR INFORMATION

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

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

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	12'- 8 1/16"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'- 7 1/8"	5'- 11 1/8"	Smoothed Load	Front	42 lb/ft	84 lb/ft	-	-
Uniform	9'- 2 1/16"	12'- 8 1/16"	User Load	Back	60 lb/ft	120 lb/ft	-	-
Point	6'- 7 1/8"	6'- 7 1/8"	J6(i2405)	Front	61 lb	122 lb	-	-
Point	7'- 11 1/8"	7'- 11 1/8"	J4(i2394)	Front	113 lb	226 lb	-	-
Point	9'- 3 1/8"	9'- 3 1/8"	J4(i2327)	Front	118 lb	236 lb	-	-
Point	10'- 7 1/8"	10'- 7 1/8"	J4(i2335)	Front	133 lb	265 lb	-	-
Point	12'- 3 1/8"	12'- 3 1/8"	J4(i2145)	Front	98 lb	197 lb	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B7(i2710)	362 lb	649 lb	-	-
2	12'- 8 1/16"	12'- 8 1/16"	B9(i2731)	670 lb	1265 lb	-	-

#### DESIGN NOTES

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



STRUCTURAL COMPONENT ONLY  
DWG # TF23091222

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





BUILDER: **GREENPARK HOMES**  
SITE: **Trinigroup Developments Inc.**  
MODEL: **VILLA 3**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 3**  
Level: **2ND FLOOR**  
Label: **B9 - i2731**  
Type: **Beam**

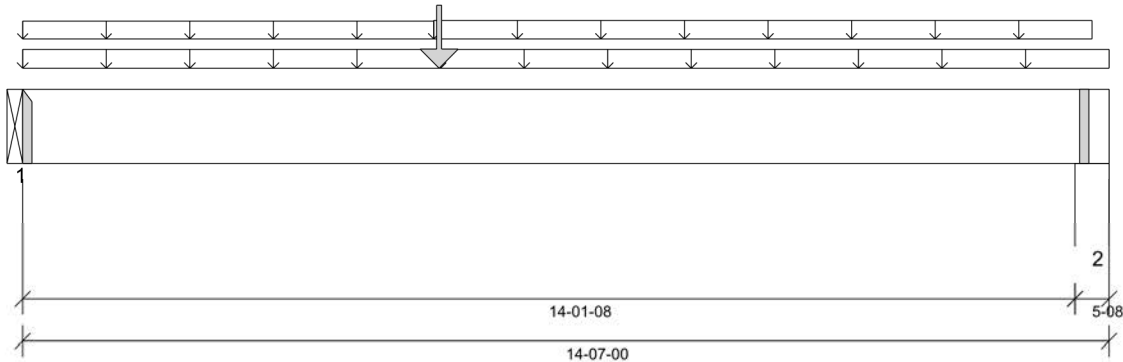
**2 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 09/27/2023 08:00



### 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 1/2"

#### Factored Resistance of Support Material:

- 615 psi Beam @ 0'
- 615 psi Wall @ 14'- 2 1/2"

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

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

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	5'- 7 1/16"	1.25D + 1.5L	0.97	13050 lb ft	34428 lb ft	Passed - 38%
Factored Shear:	0'- 11 7/8"	1.25D + 1.5L	0.97	2598 lb	13457 lb	Passed - 19%
Live Load (LL) Pos. Defl.:	6'- 9 1/16"	L		0.160"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	6'- 9 15/16"	D + L		0.314"	L/240	Passed - L/540

### 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	0.97	2768 lb		5318 lb	-	Passed - 52%
2	5-08	1.25D + 1.5L	0.97	2265 lb		19501 lb	11536 lb	Passed - 20%

### CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories
			Top	Face	Member	
1	HGUS410		-	-	-	Connector manually specified by the user.
* Connectors: Refer to manufacturer's specifications, fasteners requirements and installation instruction. Where header fasteners are longer than the width of the supporting member, install backer block or clinch header nails.						

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	14'- 7"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'	14'- 7"	User Load	Top	60 lb/ft	-	-	-
Uniform	0'	5'- 6 3/16"	FC2 Floor Decking (Plan View Fill)	Top	13 lb/ft	26 lb/ft	-	-
Uniform	5'- 6 3/16"	14'- 4 1/4"	FC2 Floor Decking (Plan View Fill)	Top	17 lb/ft	35 lb/ft	-	-
Point	5'- 7 1/16"	5'- 7 1/16"	B8(i2734)	Front	670 lb	1265 lb	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	APP(i2705)	1031 lb	997 lb	-	-
2	14'- 1 1/2"	14'- 7"	5(i391)	918 lb	733 lb	-	-

### DESIGN NOTES

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

### PLY TO PLY CONNECTION

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



STRUCTURAL COMPONENT ONLY  
DWG # TF23091223

CITY OF RICHMOND HILL  
BUILDING DIVISION

05/01/2024

RECEIVED  
Per: joshua.nabua



BUILDER: **GREENPARK HOMES**  
SITE: **Trinigroup Developments Inc.**  
MODEL: **VILLA 3**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 3**  
Level: **2ND FLOOR**  
Label: **B10 - i2412**  
Type: **Beam**

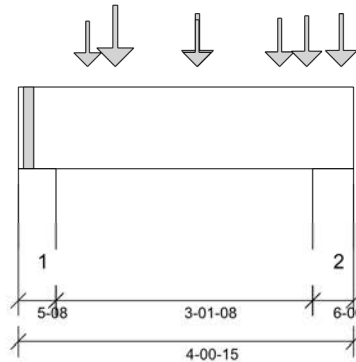
**2 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 09/27/2023 08:00



#### DESIGN INFORMATION

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

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

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

Top: 0' Bottom: 0'- 9 1/2"

#### Factored Resistance of Support Material:

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

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 2 1/8"	1.25D + 1.5L	1.00	1386 lb ft	35345 lb ft	Passed - 4%
Factored Shear:	2'- 7 1/8"	1.25D + 1.5L	1.00	1894 lb	13815 lb	Passed - 14%

#### 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	1550 lb		20020 lb	11843 lb	Passed - 13%
2	6'-00	1.25D + 1.5L	1.00	2515 lb		21743 lb	12862 lb	Passed - 20%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	4'- 15/16"	Self Weight	Top	12 lb/ft	-	-	-
Point	1'- 2 3/16"	1'- 2 3/16"	J1(i2514)	Front	172 lb	345 lb	-	-
Point	2'- 2 3/16"	2'- 2 3/16"	J1(i2185)	Front	141 lb	283 lb	-	-
Point	3'- 2 3/16"	3'- 2 3/16"	J1(i2507)	Front	124 lb	248 lb	-	-
Point	3'- 11 3/16"	3'- 11 3/16"	J1(i2528)	Front	141 lb	282 lb	-	-
Point	0'- 10 1/8"	0'- 10 1/8"	J4(i2394)	Back	113 lb	226 lb	-	-
Point	2'- 2 1/8"	2'- 2 1/8"	J4(i2327)	Back	118 lb	236 lb	-	-
Point	3'- 6 1/8"	3'- 6 1/8"	J4(i2335)	Back	133 lb	265 lb	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	9(i395)	386 lb	726 lb	-	-
2	3'- 7"	4'- 15/16"	8(i394)	604 lb	1159 lb	-	-

#### DESIGN NOTES

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

#### PLY TO PLY CONNECTION

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



STRUCTURAL COMPONENT ONLY  
DWG # TF23091224

CITY OF RICHMOND HILL  
BUILDING DIVISION

05/01/2024

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Per: joshua.nabua





BUILDER: **GREENPARK HOMES**  
SITE: **Trinigroup Developments Inc.**  
MODEL: **VILLA 3**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 3**  
Level: **2ND FLOOR**  
Label: **B11 DR - i2163**  
Type: **Beam**

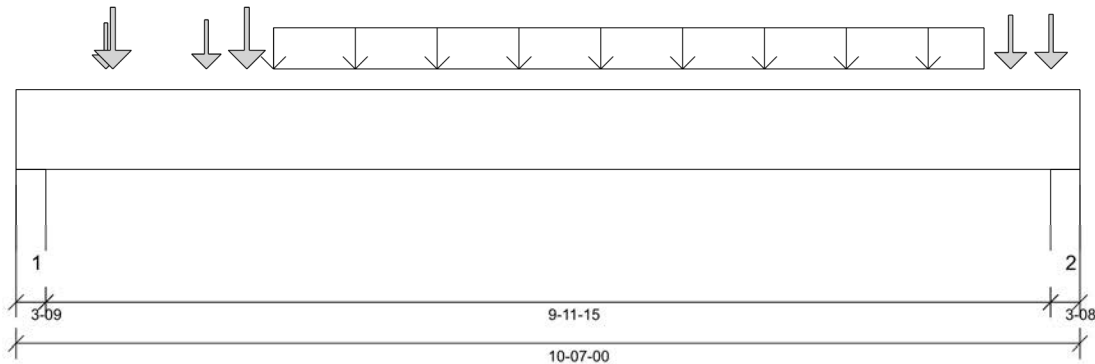
**2 Ply Member**  
**1 3/4" x 9 1/2" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 09/27/2023 08:00



### 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 1/8" Bottom: 10'- 7"

#### Factored Resistance of Support Material:

- 812 psi Wall @ 0'- 2 9/16"
- 812 psi Wall @ 10'- 4 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.



STRUCTURAL COMPONENT ONLY  
DWG # TF23091225

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 11 9/16"	1.25D + 1.5L	1.00	14717 lb ft	23299 lb ft	Passed - 63%
Factored Shear:	1'- 1 1/16"	1.25D + 1.5L	1.00	5394 lb	11052 lb	Passed - 49%
Live Load (LL) Pos. Defl.:	5'- 3 1/2"	L		0.262"	L/360	Passed - L/457
Total Load (TL) Pos. Defl.:	5'- 3 1/2"	D + L		0.398"	L/240	Passed - L/301
Permanent Deflection:	5'- 3 1/2"			-	L/360	Passed - L/909

### 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	3-09	1.25D + 1.5L	1.00	5670 lb		12934 lb	10099 lb	Passed - 56%
2	3-08	1.25D + 1.5L	1.00	6132 lb		12740 lb	9947 lb	Passed - 62%

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	10'- 7"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	2'- 6 3/4"	9'- 7 9/16"	Smoothed Load	Top	250 lb/ft	500 lb/ft	-	-
Point	0'- 10 3/4"	0'- 10 3/4"	J2(i2521)	Top	128 lb	256 lb	-	-
Point	0'- 11 9/16"	0'- 11 9/16"	J1(i2445)	Top	193 lb	386 lb	-	-
Point	1'- 10 3/4"	1'- 10 3/4"	J2(i2376)	Top	141 lb	281 lb	-	-
Point	2'- 3 9/16"	2'- 3 9/16"	J1(i2343)	Top	193 lb	386 lb	-	-
Point	9'- 10 3/4"	9'- 10 3/4"	J2(i2453)	Top	161 lb	321 lb	-	-
Point	10'- 3 9/16"	10'- 3 9/16"	J1(i2339)	Top	164 lb	328 lb	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 9/16"	5(i391)	1369 lb	2634 lb	-	-
2	10'- 3 1/2"	10'- 7"	6(i392)	1482 lb	2859 lb	-	-

### DESIGN NOTES

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

### PLY TO PLY CONNECTION

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

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





BUILDER: **GREENPARK HOMES**  
SITE: **Trinigroup Developments Inc.**  
MODEL: **VILLA 3**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 3**  
Level: **2ND FLOOR**  
Label: **B12 DR - i2385**  
Type: **Beam**

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

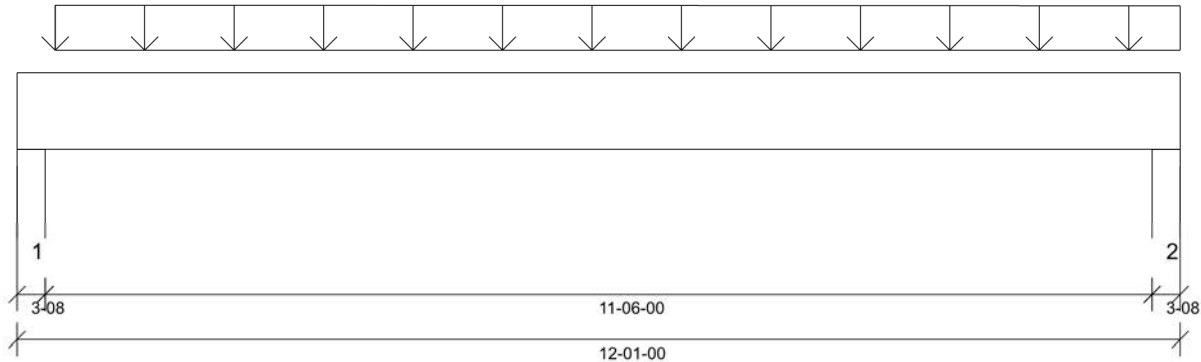
Status:  
**Design  
Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26

09/27/2023 08:00



#### 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 3/4" Bottom: 12'- 1"

#### Factored Resistance of Support Material:

- 812 psi Wall @ 0'- 2 1/2"
- 812 psi Wall @ 11'- 10 1/2"

**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:	5'- 9 9/16"	1.25D + 1.5L	1.00	19571 lb ft	34949 lb ft	Passed - 56%
Factored Shear:	1'- 1"	1.25D + 1.5L	1.00	6309 lb	16578 lb	Passed - 38%
Live Load (LL) Pos. Defl.:	6'- 1/2"	L		0.305"	L/360	Passed - L/451
Total Load (TL) Pos. Defl.:	6'- 1/2"	D + L		0.466"	L/240	Passed - L/296
Permanent Deflection:	6'- 1/2"			-	L/360	Passed - L/884

#### 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	6576 lb		19110 lb	14920 lb	Passed - 44%
2	3-08	1.25D + 1.5L	1.00	7256 lb		19110 lb	14920 lb	Passed - 49%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	12'- 1"	Self Weight	Top	14 lb/ft	-	-	-
Tapered	0'- 4 3/4"	12'- 1"	Smoothed Load	Top	277 To 271 lb/ft	554 To 543 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(i392)	1592 lb	3015 lb	-	-
2	11'- 9 1/2"	12'- 1"	7(i393)	1782 lb	3394 lb	-	-

#### DESIGN NOTES

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

#### PLY TO PLY CONNECTION

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



STRUCTURAL COMPONENT ONLY  
DWG # TF23091226

CITY OF RICHMOND HILL  
BUILDING DIVISION

05/01/2024

RECEIVED  
Per: joshua.nabua



BUILDER: **GREENPARK HOMES**  
SITE: **Trinigroup Developments Inc.**  
MODEL: **VILLA 3**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 3**  
Level: **2ND FLOOR**  
Label: **B13 - i2504**  
Type: **Beam**

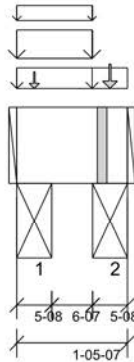
**2 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 09/27/2023 08:00



### 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 7/16"

#### Factored Resistance of Support Material:

- 615 psi Beam @ 0'- 4 1/2"
- 615 psi Beam @ 1'- 15/16"

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

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

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Moment:	0'- 4 1/2"	1.25D + 1.5S + L	0.98	51 lb ft	34792 lb ft	Passed - 0%
Factored Moment:				0 lb ft	0 lb ft	
Factored Moment:				0 lb ft	0 lb ft	
Factored Shear:	1'- 5 3/8"	1.25D + 1.5S + L	0.98	131 lb	13599 lb	Passed - 1%
Live Load (LL) Deflection:	0'- 8 7/16"	S		0.000"	L/360	Passed - L/999
Total Load (TL) Deflection:	0'- 8 3/16"	D + S		0.000"	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	0.98	525 lb		19707 lb	11653 lb	Passed - 5%
2	5-08	1.25D + 1.5S + L	0.98	418 lb		19707 lb	11653 lb	Passed - 4%

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	1'- 5 7/16"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'	1'- 5 7/16"	User Load	Top	60 lb/ft	-	77 lb/ft	-
Uniform	-0'	0'- 11 15/16"	E41(i421)	Top	170 lb/ft	-	134 lb/ft	-
Uniform	0'	0'- 11 15/16"	FC2 Floor Decking (Plan View Fill)	Top	6 lb/ft	12 lb/ft	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	E41(i421)	Top	14 lb	-	18 lb	-
Point	1'- 2 11/16"	1'- 2 11/16"	E40(i423)	Top	61 lb	-	61 lb	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	STL BM (i369)	204 lb	9 lb	182 lb	-
2	0'- 11 15/16"	1'- 5 7/16"	STL BM (i370)	151 lb	3 lb	143 lb	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- 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 # TF23091227

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





BUILDER: **GREENPARK HOMES**  
SITE: **Trinigroup Developments Inc.**  
MODEL: **VILLA 3**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 3**  
Level: **2ND FLOOR**  
Label: **B14 - i2352**  
Type: **Beam**

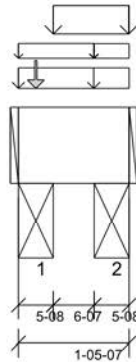
**2 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 09/27/2023 08:00



#### 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 7/16"

#### Factored Resistance of Support Material:

- 615 psi Beam @ 0'- 4 1/2"
- 615 psi Beam @ 1'- 15/16"

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

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

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Moment:	0'- 4 1/2"	1.25D + 1.5S + L	0.99	48 lb ft	34822 lb ft	Passed - 0%
Factored Moment:				0 lb ft	0 lb ft	
Factored Moment:				0 lb ft	0 lb ft	
Factored Shear:	1'- 5 3/8"	1.25D + 1.5S + L	0.99	280 lb	13611 lb	Passed - 2%
Live Load (LL) Deflection:	0'- 8 3/8"	S + 0.5L		0.000"	L/360	Passed - L/999
Total Load (TL) Deflection:	0'- 8 1/2"	D + S + 0.5L		0.000"	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	0.99	506 lb		19724 lb	11664 lb	Passed - 4%
2	5-08	1.25D + 1.5S + L	0.99	453 lb		19724 lb	11664 lb	Passed - 4%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	1'- 5 7/16"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	-0'	1'- 5 7/16"	User Load	Top	60 lb/ft	-	77 lb/ft	-
Uniform	0'	0'- 11 15/16"	FC2 Floor Decking (Plan View Fill)	Top	5 lb/ft	11 lb/ft	-	-
Uniform	0'- 5 1/2"	1'- 5 7/16"	E43(i415)	Top	170 lb/ft	-	134 lb/ft	-
Uniform	0'- 11 15/16"	1'- 5 7/16"	FC2 Floor Decking (Plan View Fill)	Top	4 lb/ft	8 lb/ft	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	E60(i435)	Top	79 lb	-	84 lb	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	STL BM (i369)	213 lb	8 lb	211 lb	-
2	0'- 11 15/16"	1'- 5 7/16"	STL BM (i370)	147 lb	6 lb	119 lb	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- 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 # TF23091228

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





BUILDER: **GREENPARK HOMES**  
SITE: **Trinigroup Developments Inc.**  
MODEL: **VILLA 3**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 3**  
Level: **2ND FLOOR**  
Label: **B15 - i2554**  
Type: **Beam**

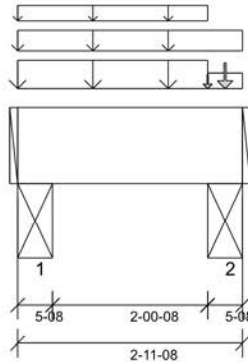
**2 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design  
Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 09/27/2023 08:00



#### 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'- 1/2"

#### Factored Resistance of Support Material:

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

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	1'- 5 3/4"	1.25D + 1.5S + L	0.98	346 lb ft	34715 lb ft	Passed - 1%
Factored Shear:	1'- 5 3/8"	1.25D + 1.5S + L	0.98	19 lb	13569 lb	Passed - 0%

#### 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	951 lb		19663 lb	11628 lb	Passed - 8%
2	5-08	1.25D + 1.5S + L	0.98	955 lb		19663 lb	11628 lb	Passed - 8%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	2'- 11 1/2"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'	2'- 11 1/2"	User Load	Top	60 lb/ft	-	77 lb/ft	-
Uniform	-0'	2'- 6"	E45(i420)	Top	162 lb/ft	-	138 lb/ft	-
Uniform	-0'	2'- 6"	FC2 Floor Decking (Plan View Fill)	Top	9 lb/ft	17 lb/ft	-	-
Uniform	2'- 6"	2'- 11 1/2"	FC2 Floor Decking (Plan View Fill)	Top	10 lb/ft	20 lb/ft	-	-
Point	2'- 6"	2'- 6"	FC2 Floor Decking (Plan View Fill)	Top	1 lb	1 lb	-	-
Point	2'- 8 3/4"	2'- 8 3/4"	E44(i432)	Top	74 lb	-	63 lb	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	STL BM (i368)	357 lb	26 lb	316 lb	-
2	2'- 6"	2'- 11 1/2"	STL BM (i370)	362 lb	29 lb	319 lb	-

#### DESIGN NOTES

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

#### PLY TO PLY CONNECTION

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



STRUCTURAL COMPONENT ONLY  
DWG # TF23091229

CITY OF RICHMOND HILL  
BUILDING DIVISION

05/01/2024

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Per: joshua.nabua



BUILDER: **GREENPARK HOMES**  
SITE: **Trinigroup Developments Inc.**  
MODEL: **VILLA 3**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 3**  
Level: **1ST FLOOR**  
Label: **B1 H - i2724**  
Type: **Beam**

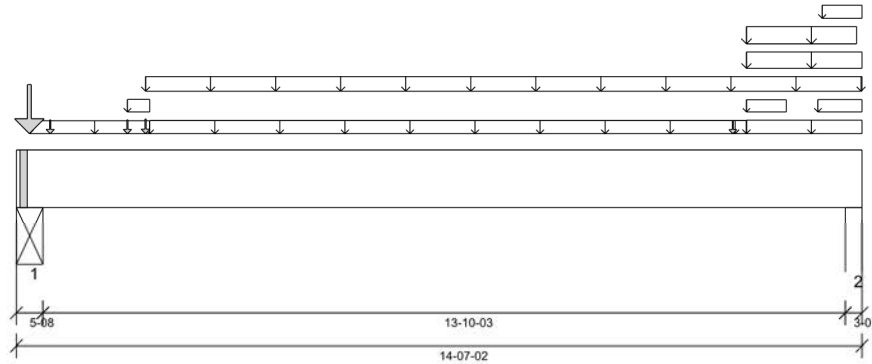
**2 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 09/27/2023 08:00



#### DESIGN INFORMATION

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

#### Lateral Restraint Requirements:

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

Top: 0' Bottom: 12'- 5/8"

#### Factored Resistance of Support Material:

- 615 psi Beam @ 0'- 4 1/2"
- 615 psi Wall @ 14'- 4 11/16"

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

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

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	7'- 7 1/8"	1.4D	0.65	3205 lb ft	22974 lb ft	Passed - 14%
Factored Neg. Moment:	0'- 4 1/2"	1.25D + 1.5L	1.00	911 lb ft	27884 lb ft	Passed - 3%
Factored Shear:	1'- 5 3/8"	1.4D	0.65	1129 lb	8980 lb	Passed - 13%
Live Load (LL) Pos. Defl.:	7'- 10 1/8"	L		0.011"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	7'- 5 15/16"	D + L		0.099"	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 + 1.5L	1.00	7631 lb		19997 lb	11825 lb	Passed - 65%
2	3-07	1.4D	0.65	1466 lb		8125 lb	4806 lb	Passed - 30%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	14'- 7 1/8"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'- 2 3/4"	2'- 3 5/8"	FC1 Floor Decking (Plan View Fill)	Top	6 lb/ft	11 lb/ft	-	-
Uniform	1'- 11"	2'- 3 5/8"	FC1 Floor Decking (Plan View Fill)	Top	3 lb/ft	6 lb/ft	-	-
Uniform	2'- 2 3/4"	14'- 7 1/8"	User Load	Top	60 lb/ft	-	-	-
Uniform	2'- 3 5/8"	12'- 7 3/16"	FC1 Floor Decking (Plan View Fill)	Top	7 lb/ft	14 lb/ft	-	-
Uniform	12'- 7 3/16"	14'- 7 1/8"	FC1 Floor Decking (Plan View Fill)	Top	11 lb/ft	21 lb/ft	-	-
Uniform	12'- 7 3/16"	14'- 6"	E39(i399)	Top	111 lb/ft	15 lb/ft	-	-
Uniform	12'- 7 3/16"	13'- 3 7/16"	E39(i399)	Top	0 lb/ft	-	-	-
Uniform	13'- 10"	14'- 7 1/8"	E39(i399)	Top	1 lb/ft	1 lb/ft	-	-
Uniform	13'- 10 7/8"	14'- 7 1/8"	E39(i399)	Top	21 lb/ft	-	-	-
Tapered	12'- 7 3/16"	14'- 7 1/8"	E39(i399)	Top	100 To 101 lb/ft	-	-	-
Point	0'- 7"	0'- 7"	J4(i2599)	Front	62 lb	124 lb	-	-
Point	1'- 11"	1'- 11"	J4(i2598)	Front	62 lb	125 lb	-	-
Point	2'- 2 3/4"	2'- 2 3/4"	B2 H(i2596)	Front	245 lb	27 lb	-	-
Point	0'- 2 11/16"	0'- 2 11/16"	5(i391)	Top	1467 lb	2783 lb	-	-
Point	12'- 4 3/8"	12'- 4 3/8"	E8(i360)	Top	61 lb	26 lb	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	STL BM (i44)	2321 lb	3219 lb	-	-
2	14'- 3 11/16"	14'- 7 1/8"	-	1024 lb	107 lb	-	-
+++	14'- 5 11/16"	14'- 5 11/16"	W16(i29)	859 lb	90 lb	-	-
+++	14'- 6 7/8"	14'- 6 7/8"	W15(i21)	165 lb	17 lb	-	-

#### DESIGN NOTES

- CAUTION: One or more plies are not supported properly at 14-05-07. At least 75% of every ply must be contacting support.
- CAUTION: One or more plies are not supported properly at 14-05-07. At least 75% of every ply must be contacting support.
- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.



STRUCTURAL COMPONENT ONLY  
DWG # TF23091230 PG 1/2

CITY OF RICHMOND HILL  
BUILDING DIVISION

05/01/2024

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Per: joshua.nabua





BUILDER:	<b>GREENPARK HOMES</b>	Job Name:	<b>VILLA 3</b>	<b>2 Ply Member</b>	Status:
SITE:	<b>Trinigroup Developments Inc.</b>	Level:	<b>1ST FLOOR</b>	<b>1 3/4" x 11 7/8" (2.0E 3100)</b>	<b>Design</b>
MODEL:	<b>VILLA 3</b>	Label:	<b>B1 H - i2724</b>	<b>WestFraser LVL</b>	<b>Passed</b>
CITY:	<b>RICHMOND HILL</b>	Type:	<b>Beam</b>		

#### 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.
- Beam Stability Factor used in the calculation for Allowable Max Pos Moment (KL) = 1.00
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.
- Bearing capacity of member at support 1, 2 was verified for the effect of concentrated load applied near the support. At support 1. Required Load Area: L=1.652", W=3.500". LDF=1.00, Pf=6015 lb, Q'r=6015 lb, Result=100.00%.
- Bearing length at support 2 was calculated based on the actual bearing area divided by the supported member width and may not match expected value when bearing is not rectangular or when the supported member is not supported by its full width.
- One or more plies are not properly supported at 2. Verify with structural engineer or EWP manufacturer if this condition is acceptable.

#### 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: **GREENPARK HOMES**  
SITE: **Trinigroup Developments Inc.**  
MODEL: **VILLA 3**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 3**  
Level: **1ST FLOOR**  
Label: **B2 H - i2596**  
Type: **Beam**

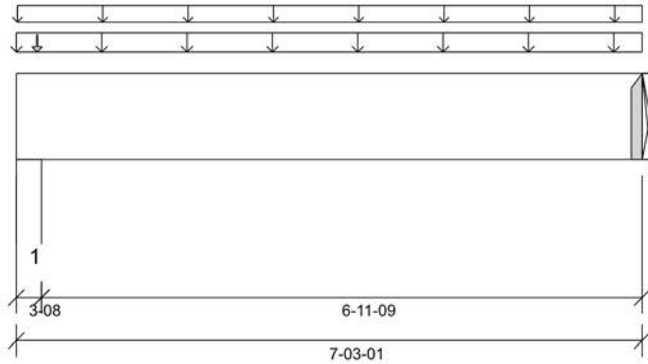
**1 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 09/27/2023 08:00



#### 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'- 1/8" Bottom: 6'- 11 9/16"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 2 1/2"
- 615 psi Beam @ 7'- 3 1/16"

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	3'- 8 13/16"	1.25D + 1.5L	0.65	612 lb ft	11487 lb ft	Passed - 5%
Factored Shear:	6'- 3 3/16"	1.25D + 1.5L	0.65	250 lb	4490 lb	Passed - 6%

#### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	3-08	1.25D + 1.5L	0.65	384 lb		4141 lb	2449 lb	Passed - 16%
2	1-08	1.25D + 1.5L	0.65	348 lb		1774 lb	-	Passed - 20%

#### CONNECTOR INFORMATION

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

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

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	7'- 3 1/16"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'	7'- 3 1/16"	User Load	Top	60 lb/ft	-	-	-
Uniform	0'- 1/8"	7'- 3 1/16"	FC1 Floor Decking (Plan View Fill)	Top	4 lb/ft	8 lb/ft	-	-
Point	0'- 2 7/8"	0'- 2 7/8"	9(i395)	Top	12 lb	-	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	W26(i50)	273 lb	29 lb	-	-
2	7'- 3 1/16"	7'- 3 1/16"	B1 H(i2724)	245 lb	27 lb	-	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- Beam Stability Factor used in the calculation for Allowable Max Pos Moment (KL) = 1.00
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.
- Bearing length at support 1 was calculated based on the actual bearing area divided by the supported member width and may not match expected value when bearing is not rectangular or when the supported member is not supported by its full width.



STRUCTURAL COMPONENT ONLY  
DWG # TF23091231

CITY OF RICHMOND HILL  
BUILDING DIVISION

05/01/2024

RECEIVED  
Per: joshua.nabua



BUILDER: **GREENPARK HOMES**  
SITE: **Trinigroup Developments Inc.**  
MODEL: **VILLA 3**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 3**  
Level: **1ST FLOOR**  
Label: **B3 - i2735**  
Type: **Beam**

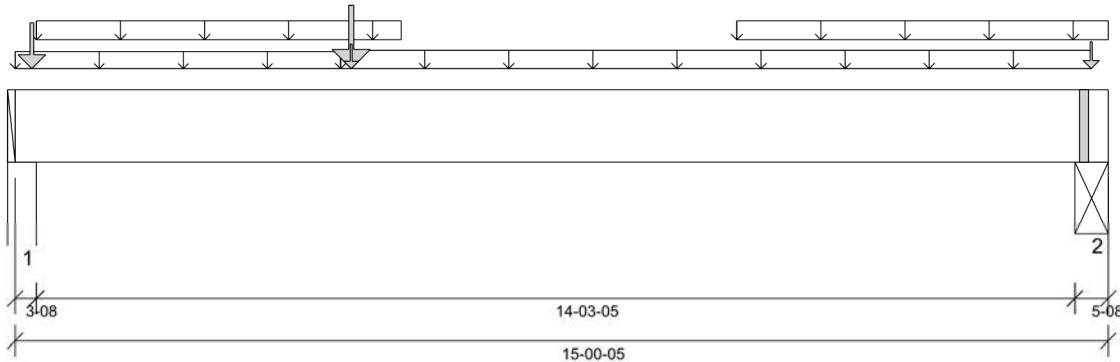
**2 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 09/27/2023 08:00



#### 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: 9'- 9 5/8"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 2 1/2"
- 615 psi Beam @ 14'- 7 13/16"

#### PLY TO PLY CONNECTION:

4 ROWS OF 3.25" PNEUMATIC GUN NAILS (0.120"x3.25") @ 12" O/C

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

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 7 7/16"	1.25D + 1.5L	1.00	19286 lb ft	35345 lb ft	Passed - 55%
Factored Neg. Moment:	14'- 7 13/16"	1.25D + 1.5L	1.00	156 lb ft	30422 lb ft	Passed - 1%
Factored Shear:	1'- 3 3/8"	1.25D + 1.5L	1.00	4503 lb	13815 lb	Passed - 33%
Live Load (LL) Pos. Defl.:	6'- 9 9/16"	L		0.248"	L/360	Passed - L/691
Total Load (TL) Pos. Defl.:	6'- 10 1/16"	D + L		0.448"	L/240	Passed - L/381
Permanent Deflection:	6'- 10 3/4"			-	L/360	Passed - L/879

#### 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	7507 lb		12741 lb	7537 lb	Passed - 100%
2	5-08	1.25D + 1.5L	1.00	3727 lb		20021 lb	11839 lb	Passed - 31%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	15'- 5/16"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	-0'	4'- 5 11/16"	FC1 Floor Decking (Plan View Fill)	Top	9 lb/ft	17 lb/ft	-	-
Uniform	0'- 3 1/2"	5'- 3 11/16"	User Load	Top	60 lb/ft	-	-	-
Uniform	4'- 5 11/16"	14'- 9 9/16"	FC1 Floor Decking (Plan View Fill)	Top	16 lb/ft	32 lb/ft	-	-
Uniform	9'- 11"	15'- 5/16"	User Load	Top	60 lb/ft	-	-	-
Point	4'- 7 7/16"	4'- 7 7/16"	B4(i2714)	Front	1342 lb	1961 lb	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	E36(i396)	Top	1095 lb	997 lb	-	-
Point	4'- 7 7/16"	4'- 7 7/16"	User Load	Top	200 lb	400 lb	-	-
Point	14'- 9 1/2"	14'- 9 1/2"	5(i391)	Top	352 lb	414 lb	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	W6(i17)	2669 lb	2856 lb	-	-
2	14'- 6 13/16"	15'- 5/16"	STL BM (i44)	1307 lb	1320 lb	-	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- Beam Stability Factor used in the calculation for Allowable Max Pos Moment (KL) = 1.00
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.
- Bearing capacity of member at support 1, 2 was verified for the effect of concentrated load applied near the support. At support 1. Required Load Area: L=1.500", W=3.500". LDF=1.00, Pf=2864 lb, Q'=5460 lb, Result=52.46%.

#### 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 # TF23091232

RECEIVED  
Per: joshua.nabua  
05/01/2024





BUILDER: **GREENPARK HOMES**  
SITE: **Trinigroup Developments Inc.**  
MODEL: **VILLA 3**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 3**  
Level: **1ST FLOOR**  
Label: **B4 - i2714**  
Type: **Beam**

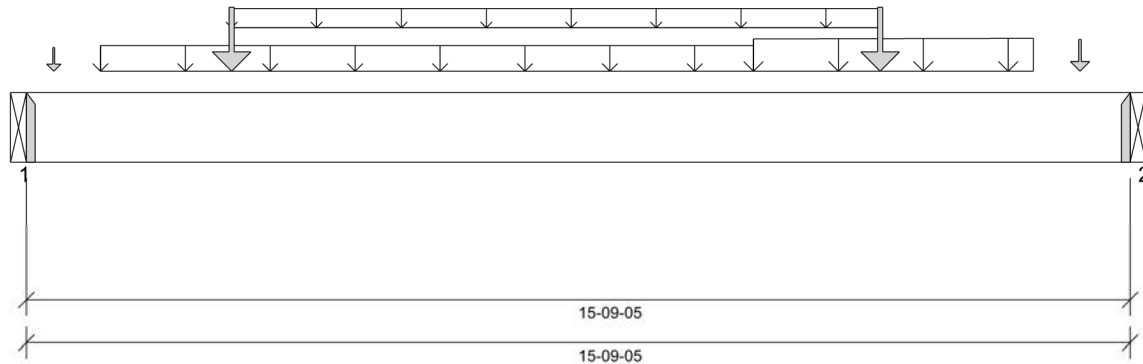
**2 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 09/27/2023 08:00



### 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 @ 15'- 9 5/16"

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

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

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	8'- 4 11/16"	1.25D + 1.5L	1.00	16570 lb ft	35345 lb ft	Passed - 47%
Factored Shear:	14'- 9 7/16"	1.25D + 1.5L	1.00	4100 lb	13815 lb	Passed - 30%
Live Load (LL) Pos. Defl.:	8'- 1/16"	L		0.330"	L/360	Passed - L/573
Total Load (TL) Pos. Defl.:	7'- 11 3/4"	D + L		0.583"	L/240	Passed - L/324
Permanent Deflection:	7'- 11 3/8"			-	L/360	Passed - L/771

### 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	4175 lb		5460 lb	-	Passed - 76%
2	1-08	1.25D + 1.5L	1.00	4603 lb		5460 lb	-	Passed - 84%

### CONNECTOR INFORMATION

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

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

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	15'- 9 5/16"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	1'- 11/16"	10'- 4 11/16"	Smoothed Load	Front	60 lb/ft	120 lb/ft	-	-
Uniform	2'- 11 3/16"	12'- 2 7/16"	User Load	Top	60 lb/ft	-	-	-
Tapered	10'- 4 11/16"	14'- 4 11/16"	Smoothed Load	Front	103 To 106 lb/ft	204 To 211 lb/ft	-	-
Point	0'- 4 11/16"	0'- 4 11/16"	J5(i2728)	Front	56 lb	112 lb	-	-
Point	15'- 11/16"	15'- 11/16"	J3(i2726)	Front	115 lb	230 lb	-	-
Point	2'- 11 3/16"	2'- 11 3/16"	User Load	Top	350 lb	700 lb	-	-
Point	12'- 2 7/16"	12'- 2 7/16"	User Load	Top	350 lb	700 lb	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B5(i2716)	1249 lb	1732 lb	-	-
2	15'- 9 5/16"	15'- 9 5/16"	B3(i2735)	1342 lb	1961 lb	-	-

### DESIGN NOTES

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

### PLY TO PLY CONNECTION



STRUCTURAL COMPONENT ONLY  
DWG # TF23091233 PG 1/2

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

	BUILDER:	<b>GREENPARK HOMES</b>	Job Name:	<b>VILLA 3</b>	<b>2 Ply Member</b> <b>1 3/4" x 11 7/8" (2.0E 3100)</b> <b>WestFraser LVL</b>	Status: <b>Design</b> <b>Passed</b>
	SITE:	<b>Trinigroup Developments Inc.</b>	Level:	<b>1ST FLOOR</b>		
	MODEL:	<b>VILLA 3</b>	Label:	<b>B4 - i2714</b>		
	CITY:	<b>RICHMOND HILL</b>	Type:	<b>Beam</b>		

#### 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

**RECEIVED**  
Per: joshua.nabua





BUILDER: **GREENPARK HOMES**  
SITE: **Trinigroup Developments Inc.**  
MODEL: **VILLA 3**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 3**  
Level: **1ST FLOOR**  
Label: **B5 - i2716**  
Type: **Beam**

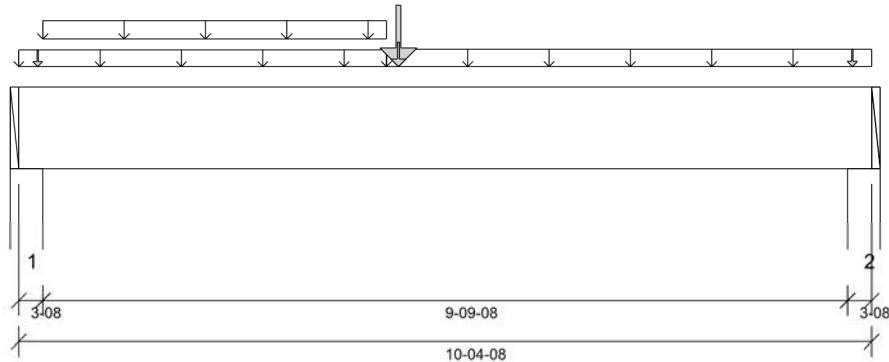
**2 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 09/27/2023 08:00



#### DESIGN INFORMATION

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

#### Lateral Restraint Requirements:

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

Top: 0' Bottom: 5'- 3 7/8"

#### Factored Resistance of Support Material:

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

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

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



STRUCTURAL COMPONENT ONLY  
DWG # TF23091234

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 7 7/16"	1.25D + 1.5L	1.00	13482 lb ft	35345 lb ft	Passed - 38%
Factored Shear:	1'- 3 3/8"	1.25D + 1.5L	1.00	3203 lb	13815 lb	Passed - 23%
Live Load (LL) Pos. Defl.:	5'- 5/16"	L		0.084"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	5'- 3/16"	D + L		0.149"	L/240	Passed - L/791

#### 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	3422 lb		12740 lb	7536 lb	Passed - 45%
2	3-08	1.25D + 1.5L	1.00	2801 lb		12740 lb	7536 lb	Passed - 37%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	10'- 4 1/2"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'	4'- 5 11/16"	FC1 Floor Decking (Plan View Fill)	Top	9 lb/ft	19 lb/ft	-	-
Uniform	0'- 3 1/2"	4'- 5 11/16"	User Load	Top	60 lb/ft	-	-	-
Uniform	4'- 5 11/16"	10'- 4 1/2"	FC1 Floor Decking (Plan View Fill)	Top	13 lb/ft	27 lb/ft	-	-
Point	4'- 7 7/16"	4'- 7 7/16"	B4(i2714)	Back	1249 lb	1732 lb	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	E14(i359)	Top	59 lb	-	-	-
Point	4'- 7 7/16"	4'- 7 7/16"	User Load	Top	200 lb	400 lb	-	-
Point	10'- 1 11/16"	10'- 1 11/16"	2(i367)	Top	54 lb	61 lb	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	W6(i17)	1203 lb	1330 lb	-	-
2	10'- 1"	10'- 4 1/2"	W19(i37)	854 lb	1105 lb	-	-

#### DESIGN NOTES

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

#### PLY TO PLY CONNECTION

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

**CITY OF RICHMOND HILL**  
**BUILDING DIVISION**

**05/01/2024**

**RECEIVED**  
Per: joshua.nabua



BUILDER: **GREENPARK HOMES**  
SITE: **Trinigroup Developments Inc.**  
MODEL: **VILLA 3**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 3**  
Level: **1ST FLOOR**  
Label: **B6 - i2647**  
Type: **Beam**

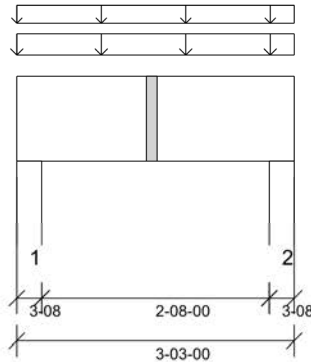
**2 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 09/27/2023 08:00



#### 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"

#### Factored Resistance of Support Material:

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

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	1'- 7 1/2"	1.25D + 1.5L	0.66	193 lb ft	23478 lb ft	Passed - 1%
Factored Shear:	1'- 3 3/8"	1.25D + 1.5L	0.66	68 lb	9177 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	3-08	1.25D + 1.5L	0.66	319 lb		8463 lb	5006 lb	Passed - 6%
2	3-08	1.25D + 1.5L	0.66	319 lb		8463 lb	5006 lb	Passed - 6%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	3'- 3"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'	3'- 3"	E20(i376)	Top	100 lb/ft	-	-	-
Uniform	0'	3'- 3"	FC1 Floor Decking (Plan View Fill)	Top	13 lb/ft	27 lb/ft	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	W28(i61)	203 lb	43 lb	-	-
2	2'- 11 1/2"	3'- 3"	W1(i24)	203 lb	43 lb	-	-

#### DESIGN NOTES

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

#### PLY TO PLY CONNECTION

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



STRUCTURAL COMPONENT ONLY  
DWG # TF23091235

CITY OF RICHMOND HILL  
BUILDING DIVISION

05/01/2024

RECEIVED  
Per: joshua.nabua





BUILDER: **GREENPARK HOMES**  
SITE: **Trinigroup Developments Inc.**  
MODEL: **VILLA 3**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 3**  
Level: **2ND FLOOR**  
Label: **B21 - i2566**  
Type: **Beam**

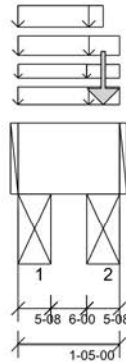
**2 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 09-12-2023 08:19



#### 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"

#### Factored Resistance of Support Material:

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

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

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



STRUCTURAL COMPONENT ONLY  
DWG # TF23091236

#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Neg. Moment:	1'- 1/2"	1.25D + 1.5S + L	1.00	205 lb ft	35345 lb ft	Passed - 1%
Factored Moment:	1'- 1/2"	1.25D + 1.5S + L	1.00	205 lb ft	35345 lb ft	Passed - 1%
Factored Moment:				0 lb ft	0 lb ft	
Live Load (LL) Deflection:	0'- 9 1/16"	S + 0.5L		0.000"	L/360	Passed - L/999
Total Load (TL) Deflection:	0'- 9 1/16"	D + S + 0.5L		0.000"	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	1.4D	0.65	160 lb		13013 lb	7695 lb	Passed - 2%
2	5-08	1.25D + 1.5S + L	1.00	1833 lb		20020 lb	11839 lb	Passed - 15%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	1'- 5"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'	1'- 5"	User Load	Top	60 lb/ft	-	77 lb/ft	-
Uniform	-0'	1'- 5"	E41(i421)	Top	100 lb/ft	-	-	-
Uniform	-0'	1'- 2 1/4"	E41(i421)	Top	64 lb/ft	-	122 lb/ft	-
Uniform	0'- 11 1/2"	1'- 5"	FC2 Floor Decking (Plan View Fill)	Top	3 lb/ft	6 lb/ft	-	-
Tapered	-0'	0'- 11 1/2"	FC2 Floor Decking (Plan View Fill)	Top	4 To 4 lb/ft	9 To 8 lb/ft	-	-
Point	1'- 2 1/4"	1'- 2 1/4"	E41(i421)	Top	282 lb	-	578 lb	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	STL BM (i369)	179 lb	6 lb	158 lb	-
2	0'- 11 1/2"	1'- 5"	STL BM (i370)	430 lb	5 lb	674 lb	-

#### DESIGN NOTES

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

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



BUILDER: **GREENPARK HOMES**  
SITE: **Trinigroup Developments Inc.**  
MODEL: **VILLA 3**  
CITY: **RICHMOND HILL**

Job Name: **VILLA 3**  
Level: **2ND FLOOR**  
Label: **B20 - i2856**  
Type: **Beam**

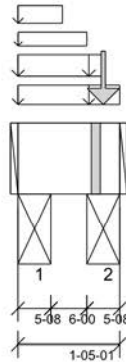
**2 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 09-12-2023 08:19



### 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"

#### Factored Resistance of Support Material:

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

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

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



STRUCTURAL COMPONENT ONLY  
DWG # TF23091237

### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Neg. Moment:	1'- 9/16"	1.25D + 1.5S	1.00	195 lb ft	35345 lb ft	Passed - 1%
Factored Moment:	1'- 9/16"	1.25D + 1.5S	1.00	195 lb ft	35345 lb ft	Passed - 1%
Factored Moment:				0 lb ft	0 lb ft	
Factored Moment:				0 lb ft	0 lb ft	
Live Load (LL) Deflection:	0'- 9 1/8"	S		0.000"	L/360	Passed - L/999
Total Load (TL) Deflection:	0'- 9 1/16"	D + S		0.000"	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	1.4D	0.65	156 lb		13047 lb	7715 lb	Passed - 2%
2	5-08	1.25D + 1.5S + L	1.00	1728 lb		20020 lb	11839 lb	Passed - 15%

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	1'- 5 1/16"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'	1'- 5 1/16"	User Load	Top	60 lb/ft	-	77 lb/ft	-
Uniform	-0'	1'- 2 5/16"	E43(i415)	Top	64 lb/ft	-	122 lb/ft	-
Uniform	-0'	0'- 7 7/16"	E43(i415)	Top	100 lb/ft	-	-	-
Tapered	0'	0'- 11 9/16"	FC2 Floor Decking (Plan View Fill)	Top	3 lb/ft	6 To 6 lb/ft	-	-
Point	1'- 2 5/16"	1'- 2 5/16"	E43(i415)	Top	282 lb	-	578 lb	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	STL BM (i369)	184 lb	4 lb	158 lb	-
2	0'- 11 9/16"	1'- 5 1/16"	STL BM (i370)	341 lb	1 lb	675 lb	-

### DESIGN NOTES

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

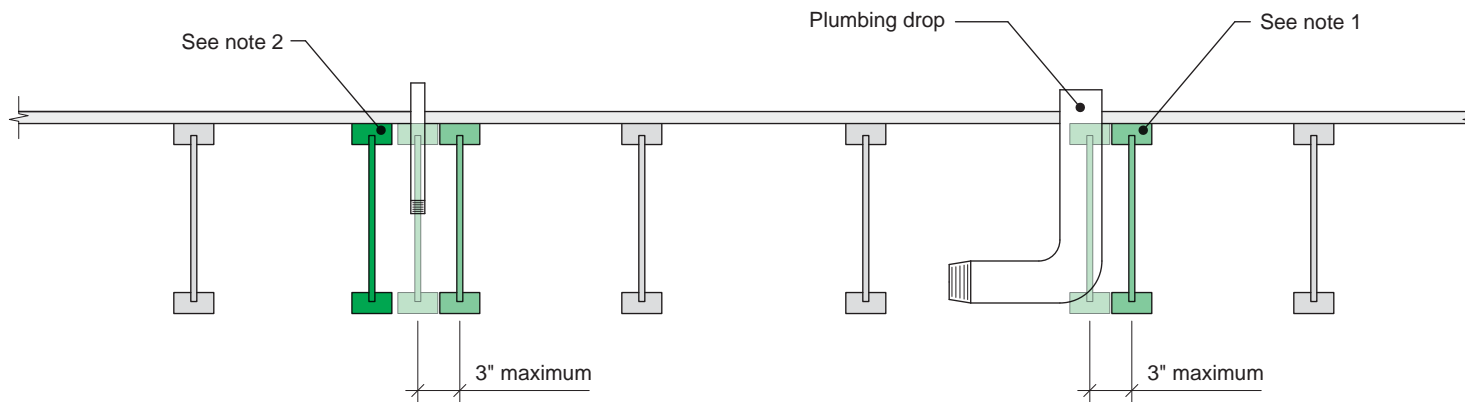
### PLY TO PLY CONNECTION

- 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.

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7c

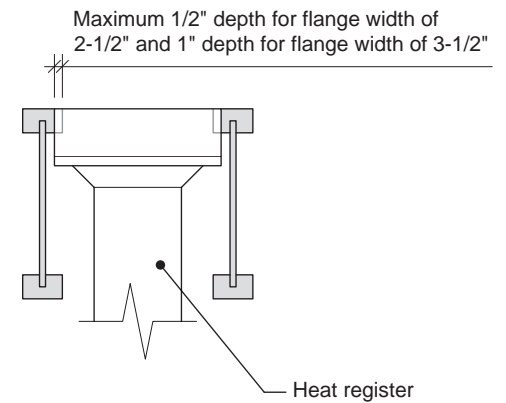
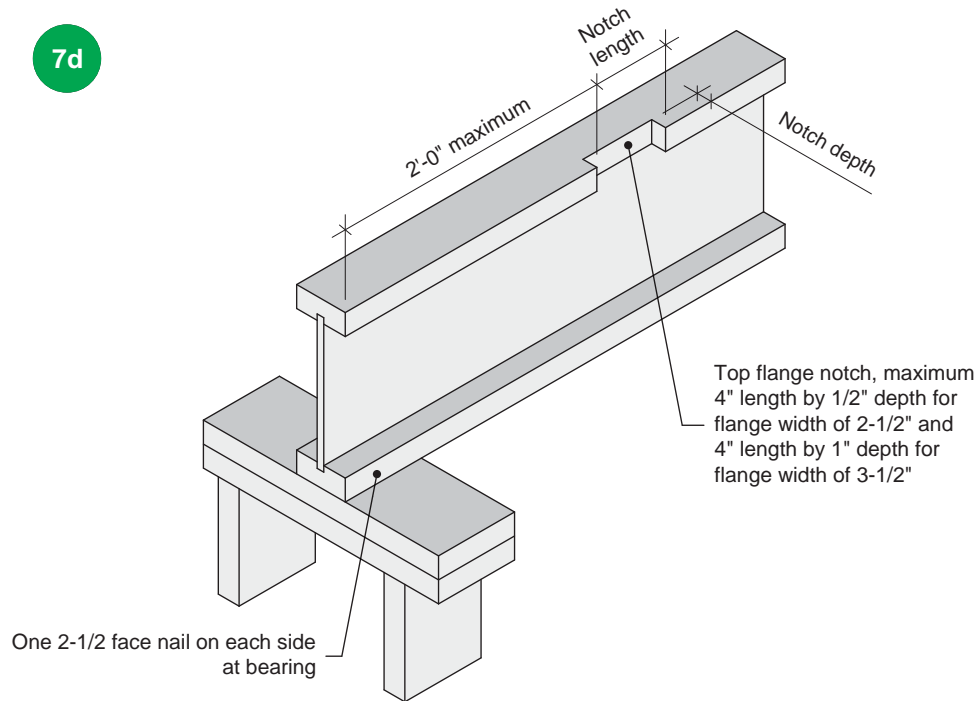


**Notes:**

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

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

7d



**Notes:**

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

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



### Maximum Floor Spans – S2.1

#### Design Criteria

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

#### Maximum Floor Spans

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

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

#### Notes:

- 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:

- 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 – 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:

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



## Maximum Floor Spans – M2.1

### Design Criteria

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

### Maximum Floor Spans

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

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

### Notes:

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

## Maximum Floor Spans – M4.1

### Design Criteria

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

### Maximum Floor Spans

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

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

### Notes:

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



## Maximum Floor Spans – M6.1

### Design Criteria

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

### Maximum Floor Spans

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

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

### Notes:

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

## Maximum Floor Spans – M7.1

### Design Criteria

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

### Maximum Floor Spans

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

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

### Notes:

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