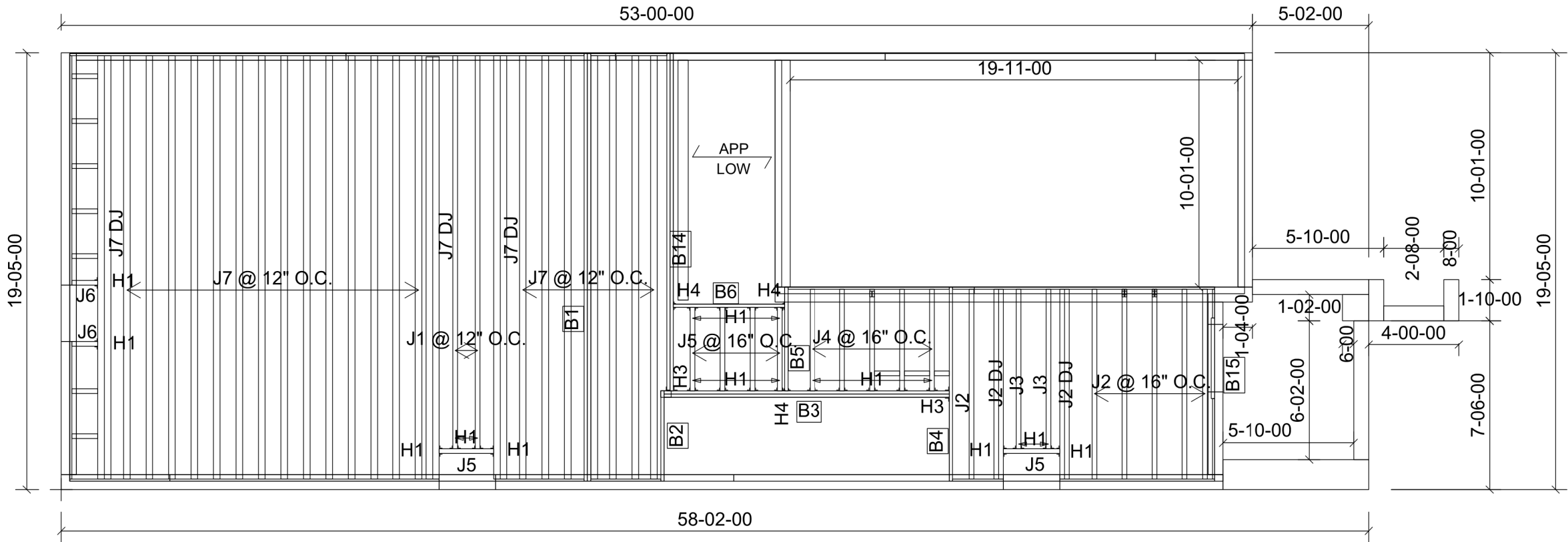


NOT THE GRANTING OF A PERMIT NOR REVIEWING OF SPECS & DRAWINGS NOR INSPECTIONS MADE DURING INSTALLATION BY THE OFFICIAL HAVING JURISDICTION SHALL RELIEVE THE OWNER FROM REQUIREMENTS OF THE ONTARIO BUILDING CODE AND ANY OTHER REFERENCED REQUIREMENTS.



| Products |          |                                             |       |         |
|----------|----------|---------------------------------------------|-------|---------|
| PlotID   | Length   | Product                                     | Plies | Net Qty |
| J1       | 18-00-00 | 11 7/8" NI-40x                              | 1     | 2       |
| J2       | 10-00-00 | 11 7/8" NI-40x                              | 1     | 6       |
| J2 DJ    | 10-00-00 | 11 7/8" NI-40x                              | 2     | 4       |
| J3       | 8-00-00  | 11 7/8" NI-40x                              | 1     | 2       |
| J4       | 6-00-00  | 11 7/8" NI-40x                              | 1     | 5       |
| J5       | 4-00-00  | 11 7/8" NI-40x                              | 1     | 6       |
| J6       | 2-00-00  | 11 7/8" NI-40x                              | 1     | 2       |
| J7       | 20-00-00 | 11 7/8" NI-80                               | 1     | 21      |
| J7 DJ    | 20-00-00 | 11 7/8" NI-80                               | 2     | 6       |
| B1       | 20-00-00 | 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL | 2     | 2       |
| B14      | 16-00-00 | 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL | 2     | 2       |
| B3       | 14-00-00 | 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL | 2     | 2       |
| B4       | 10-00-00 | 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL | 1     | 1       |
| B2       | 6-00-00  | 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL | 1     | 1       |
| B5       | 6-00-00  | 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL | 1     | 1       |
| B6       | 6-00-00  | 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL | 1     | 1       |
| B15      | 4-00-00  | 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL | 1     | 1       |

| Connector Summary |       |               |
|-------------------|-------|---------------|
| Qty               | Manuf | Product       |
| 4                 | H1    | IUS2.56/11.88 |
| 9                 | H1    | IUS2.56/11.88 |
| 2                 | H1    | IUS2.56/11.88 |
| 4                 | H1    | IUS2.56/11.88 |
| 4                 | H1    | IUS2.56/11.88 |
| 1                 | H3    | HGUS410       |
| 1                 | H3    | HGUS410       |
| 1                 | H4    | HUS1.81/10    |
| 2                 | H4    | HUS1.81/10    |

DWG# TF22080991 TO TF22080998



STRUCTURAL COMPONENTS ONLY  
DWG# TF22080999

THIS IS A FLOOR COMPONENT  
PLACEMENT PLAN ONLY.

The wood beams and joists outlined on this plan are designed as individual building components to be incorporated into the design of the building at the specification of the building designer. Please see the individual beam reports, joist reports, and/or joist span tables for each component identified on this placement plan.  
The supporting structure is to be specified by the building designer prior to the installation of joist(s) and/or beam(s). The building designer is responsible for the bracing of the floor system and its integration into the bracing of the overall structure. All components labelled "by others" or "as per plan", and all steel beams, are not within the scope of work of this seal.  
The building designer must review and approve this plan to ascertain conformity to the overall structural plan of the building. All dimensions to be verified on site.

DATE: 2022-08-11

1st FLOOR FRAMING

Block 122 Units 49 to 54



FROM PLAN DATED: JUNE 20 2022  
BUILDER: GREEN PARK HOMES  
SITE: BARLASSINA  
MODEL: WILLOW 3E  
ELEVATION: 1  
LOT:  
CITY: CAMBRIDGE  
SALESMAN: William Garcia  
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.

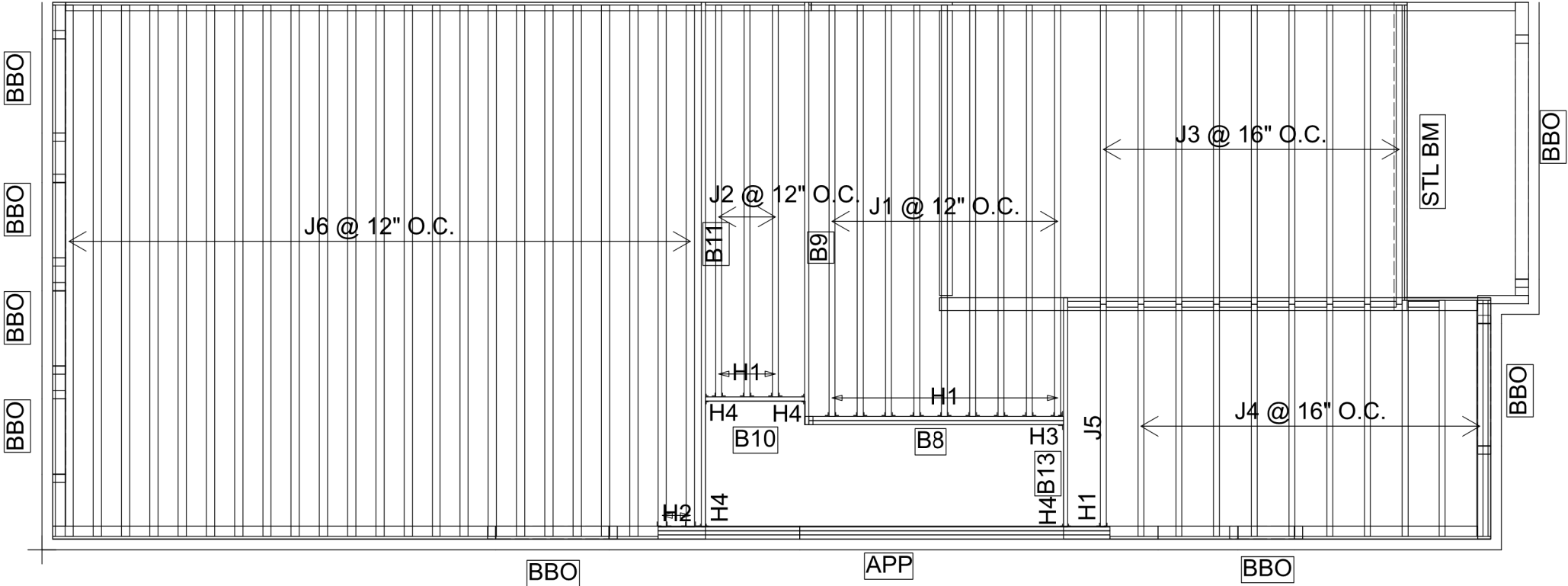
ALL **CONNECTORS** MUST BE INSTALLED AS PER THE **MANUFACTURER'S SPECIFICATIONS** USING THE MANUFACTURER **SPECIFIED FASTENERS**.  
ALL **BEAM HANGER FASTENERS** INSTALLED INTO THE **SUPPORTING MEMBER MUST** BE A MINIMUM OF **3.5"** IN LENGTH UNLESS OTHERWISE SPECIFIED BY THE SUPPORTING MEMBER ENGINEER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

NOT THE GRANTING OF A PERMIT NOR REVIEWING OF SPECS & DRAWINGS NOR INSPECTIONS MADE DURING INSTALLATION BY THE OFFICIAL HAVING JURISDICTION SHALL RELIEVE THE OWNER FROM REQUIREMENTS OF THE ONTARIO BUILDING CODE AND ANY OTHER REFERENCED REQUIREMENTS.



| Products |          |                                             |       |         |
|----------|----------|---------------------------------------------|-------|---------|
| PlotID   | Length   | Product                                     | Plies | Net Qty |
| J1       | 16-00-00 | 11 7/8" NI-40x                              | 1     | 9       |
| J2       | 14-00-00 | 11 7/8" NI-40x                              | 1     | 3       |
| J3       | 12-00-00 | 11 7/8" NI-40x                              | 1     | 9       |
| J4       | 10-00-00 | 11 7/8" NI-40x                              | 1     | 10      |
| J5       | 8-00-00  | 11 7/8" NI-40x                              | 1     | 1       |
| J6       | 20-00-00 | 11 7/8" NI-80                               | 1     | 23      |
| B11      | 20-00-00 | 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL | 1     | 1       |
| B9       | 16-00-00 | 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL | 1     | 1       |
| APP      | 16-00-00 | 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL | 3     | 3       |
| B13      | 10-00-00 | 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL | 1     | 1       |
| B8       | 10-00-00 | 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL | 2     | 2       |
| B10      | 4-00-00  | 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL | 1     | 1       |

| Connector Summary |       |               |
|-------------------|-------|---------------|
| Qty               | Manuf | Product       |
| 3                 | H1    | IUS2.56/11.88 |
| 9                 | H1    | IUS2.56/11.88 |
| 1                 | H1    | IUS2.56/11.88 |
| 2                 | H2    | IUS3.56/11.88 |
| 1                 | H3    | HGUS410       |
| 2                 | H4    | HUS1.81/10    |
| 2                 | H4    | HUS1.81/10    |

DWG# TF22080986 TO TF22080990



STRUCTURAL COMPONENTS ONLY  
DWG# TF22081002

THIS IS A FLOOR COMPONENT  
PLACEMENT PLAN ONLY.

The wood beams and joists outlined on this plan are designed as individual building components to be incorporated into the design of the building at the specification of the building designer. Please see the individual beam reports, joist reports, and/or joist span tables for each component identified on this placement plan.  
The supporting structure is to be specified by the building designer prior to the installation of joist(s) and/or beam(s). The building designer is responsible for the bracing of the floor system and its integration into the bracing of the overall structure. All components labelled "by others" or "as per plan", and all steel beams, are not within the scope of work of this seal.  
The building designer must review and approve this plan to ascertain conformity to the overall structural plan of the building. All dimensions to be verified on site.

DATE: 2022-08-11

2nd FLOOR FRAMING

Block 122 Units 49 to 54



FROM PLAN DATED: JUNE 20 2022

BUILDER: GREEN PARK HOMES

SITE: BARLASSINA

MODEL: WILLOW 3E

ELEVATION: 1

LOT:

CITY: CAMBRIDGE

SALESMAN: William Garcia

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



# NORDIC

## INSTALLATION GUIDE NORDIC JOIST

NS-G133   
ENGLISH  
VERSION  
2020-10-01

Engineered Wood Products

## BASIC INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



NORDIC  
STRUCTURES

nordic.ca

### INSTALLING NORDIC I-JOISTS

1. Installation of Nordic I-joists shall be as shown in details 1.
2. Except for cutting to length, I-joist flanges should never be cut, drilled or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical alignment.
4. Concentrated loads should only be applied to the top surface of the top flange. Concentrated loads should not be suspended from the bottom flange with the exception of light loads, such as ceiling fans or light fixtures.
5. I-joists must be protected from the weather prior to installation.
6. I-joists must not be used in applications where they will be permanently exposed to weather, or will reach a moisture content of 15 percent or greater, such as in swimming pool or hot tub areas. They must not be installed where they will remain in direct contact with concrete or masonry.
7. End bearing length must be at least 1-3/4 inch. For multiple-span joists, intermediate bearing length must be at least 3-1/2 inches.
8. Ends of floor joists shall be restrained to prevent rollover. Use rim board or I-joist blocking panels.
9. I-joists installed beneath bearing walls perpendicular to the joists shall have full-depth blocking panels, rim board, or squash blocks (cripple blocks) to transfer gravity loads from above the floor system to the wall or foundation below.
10. For I-joists installed directly beneath bearing walls parallel to the joists or used as rim board or blocking panels, the maximum vertical load using a single I-joist is 3,300 plf, and 6,000 plf if double I-joists are used.
11. Continuous lateral support of the I-joist's compression flange is required to prevent rotation and buckling. In simple span uses, lateral support of the top flange is normally supplied by the floor sheathing. In multiple-span or cantilever applications, bracing of the I-joist's bottom flange is also required at interior supports of multiple-span joists, and at the end support next to the cantilever extension. The ends of all cantilever extensions must be laterally braced as shown in details 3, 4, or 5.
12. Nails installed in flange face or edge shall be spaced in accordance with the applicable building code requirements or approved building plans, but should not be closer than those specified on page 3.3 of the Nordic Joist Technical Guide (NS-GT3).
13. Details 1 show only I-joist-specific fastener requirements. For other fastener requirements, see the applicable building code.
14. For proper temporary bracing of wood I-joists and placement of temporary construction loads, see [APA Technical Note: Temporary Construction Loads over I-Joist Roofs and Floors, Form J735](#).

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

### SAFETY AND CONSTRUCTION PRECAUTIONS

I-joists are not stable until completely installed, and will not carry any load until fully braced and sheathed.

#### Avoid Accidents by Following these Important Guidelines:

1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bridging at joist ends. When I-joists are applied continuous over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
  2. When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joist rollover or buckling.
    - Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on centre, and must be secured with a minimum of two 2-1/2-inch nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. Lap ends of adjoining bracing over at least two I-joists.
    - Or, sheathing (temporary or permanent) can be nailed to the top flange of the first 4 feet of I-joists at the end of the bay.
  3. For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-bridging.
  4. Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only.
  5. Never install a damaged I-joist.
- Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable hole sizes and locations, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines carefully.



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



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

### NORDIC I-JOIST SERIES

#### RESIDENTIAL SERIES

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

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

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

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

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

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

### WEB STIFFENERS

**2**

**Concentrated Load (Load Stiffener)**

Tight joint, no gap

Gap

**End Bearing (Bearing Stiffener)**

Gap

Tight joint, no gap

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

Approx. 2"

1/8"-1/4" Gap

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

No gap

**Stiffener Size Requirements**

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

### NAIL SPACING

Nailing into flange face

Nailing into flange edge

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

Closest nail spacing

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

Closest nail spacing

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

**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                           |  |
|                                                                               |                                    |                    |                    |                                    | Nailed to both flange edges |  |
| Greater than 0.128" up to 0.148" in diameter, and 3-1/4" or shorter in length | 2                                  | 3                  | 2                  | 3                                  | 6                           |  |
|                                                                               |                                    |                    |                    |                                    | Nailed to both flange edges |  |

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

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

**1a**

Nordic I-joist blocking panel

2-1/2" nails at 6" o.c. to top plate (when used for lateral shear transfer; nail to bearing plate with same nailing as required for floor sheathing)

Attach I-joist to top plate per detail 1b

**1b**

Rim board

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

Attach rim board to top plate using 2-1/2" toe-nails at 6" o.c.

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

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

**1g**

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

Blocking panel required over all interior supports under load-bearing walls or when floor joists are not continuous over support. The NBC requires blocking at load-bearing and non-load-bearing walls constructed with required braced wall panels (shearwalls).

Joist attachment per detail 1b

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

Nordic I-joist blocking panel per detail 1a

**1h**

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

Double I-joist header

Filler block per detail 1p

Top- or face-mount hanger

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

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

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

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

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

**1j**

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

**1k**

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

Top-mount hanger installed per manufacturer's recommendations

**1l**

Install hanger per manufacturer's recommendations

Multiple I-joist header with full depth filler block shown. Nordic Lam or SCL headers may also be used. Verify header resistance to support concentrated loads.

Backer block per detail 1h

Filler block per detail 1p

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

**1m**

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

Attach I-joist per detail 1b

**Note:**  
1. Blocking required at bearing for lateral support, not shown for clarity.

**1p**

Filler block

Offset nails from opposite face by 6"

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

**1q**

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

Top-mount hanger installed per manufacturer's recommendations

**1r**

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

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

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

**1s**

See note 2

1/8" gap minimum

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

Rim board

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

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

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

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

| Flange width (in.) | Net depth (in.) | Filler block size (in.) | Example                       |
|--------------------|-----------------|-------------------------|-------------------------------|
| 2-1/2              | 9-1/2           | 2-1/8 to 2-1/4 x 6      | 2x8 x 5/8" or 3/4" sheathing  |
|                    | 11-7/8          | 2-1/8 to 2-1/4 x 8      | 2x8 x 5/8" or 3/4" sheathing  |
|                    | 14              | 2-1/8 to 2-1/4 x 10     | 2x10 x 5/8" or 3/4" sheathing |
| 3-1/2              | 9-1/2           | 3 x 6                   | 2 x 2x6                       |
|                    | 11-7/8          | 3 x 8                   | 2 x 2x6                       |
|                    | 14              | 3 x 10                  | 2 x 2x10                      |

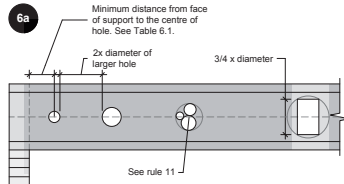
**Note:**  
1. The height of the filler block may be different from that specified in the table, as long as it allows nailing and respects the required gap.

### WEB HOLES AND OPENINGS

#### WEB HOLES IN I-JOISTS

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

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

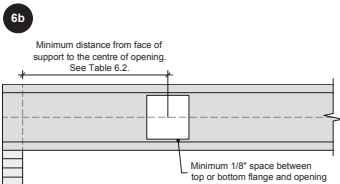


- Notes:**
1. Never drill, cut or notch the flange, or over-cut the web.
  2. Holes in web should be cut with a sharp saw.
  3. For rectangular holes, avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular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

#### DUCT CHASE OPENINGS

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

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

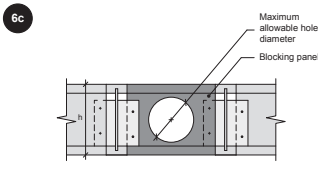


- Notes:**
1. Never drill, cut or notch the flange, or over-cut the web.
  2. Holes in web should be cut with a sharp saw.
  3. Avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling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

#### HOLES IN BLOCKING PANELS

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

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



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

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

TABLE 6.1 - LOCATION OF WEB HOLES

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

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

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

TABLE 6.2 - LOCATION OF DUCT CHASE OPENINGS

| Simple span |              | Minimum distance from inside face of any support to centre of opening (ft.-in.) |        |        |         |        |        |        |        |         |        |         |   |   |   |   |   |
|-------------|--------------|---------------------------------------------------------------------------------|--------|--------|---------|--------|--------|--------|--------|---------|--------|---------|---|---|---|---|---|
| Joist depth | Joist series | Duct chase length (in.)                                                         |        |        |         |        |        |        |        |         |        |         |   |   |   |   |   |
|             |              | 8                                                                               | 10     | 12     | 14      | 16     | 18     | 20     | 22     | 24      |        |         |   |   |   |   |   |
| 9-1/2"      | NI-20        | 4'-1"                                                                           | 4'-5"  | 4'-10" | -       | -      | -      | -      | -      | -       | -      | -       | - | - | - | - | - |
|             | NI-40x       | 5'-3"                                                                           | 5'-8"  | 6'-0"  | 6'-5"   | 6'-10" | 7'-3"  | 7'-8"  | -      | -       | -      | -       | - | - | - | - | - |
|             | NI-60        | 5'-4"                                                                           | 5'-9"  | 6'-2"  | 6'-7"   | 7'-1"  | 7'-5"  | 8'-0"  | -      | -       | -      | -       | - | - | - | - | - |
|             | NI-80        | 5'-3"                                                                           | 5'-8"  | 6'-0"  | 6'-5"   | 6'-10" | 7'-3"  | 7'-8"  | 8'-2"  | 8'-6"   | -      | -       | - | - | - | - | - |
| 11-7/8"     | NI-20        | 5'-9"                                                                           | 6'-2"  | 6'-6"  | -       | -      | -      | -      | -      | -       | -      | -       | - | - | - | - | - |
|             | NI-40x       | 6'-8"                                                                           | 7'-2"  | 7'-6"  | 8'-1"   | 8'-6"  | 9'-1"  | 9'-6"  | -      | -       | -      | -       | - | - | - | - | - |
|             | NI-60        | 7'-3"                                                                           | 7'-8"  | 8'-0"  | 8'-6"   | 9'-0"  | 9'-3"  | 9'-9"  | -      | -       | -      | -       | - | - | - | - | - |
|             | NI-80        | 7'-2"                                                                           | 7'-7"  | 8'-0"  | 8'-5"   | 8'-10" | 9'-3"  | 9'-8"  | 10'-2" | 10'-8"  | -      | -       | - | - | - | - | - |
| 14"         | NI-20        | 6'-1"                                                                           | 6'-7"  | 7'-0"  | 7'-6"   | 8'-0"  | 8'-6"  | 9'-0"  | 9'-6"  | 10'-0"  | 10'-7" | 10'-11" | - | - | - | - | - |
|             | NI-40x       | 6'-8"                                                                           | 7'-11" | 8'-9"  | 9'-6"   | 10'-2" | 10'-7" | 11'-2" | -      | -       | -      | -       | - | - | - | - | - |
|             | NI-60        | 8'-9"                                                                           | 9'-3"  | 9'-8"  | 10'-11" | 10'-6" | 11'-1" | 11'-6" | -      | -       | -      | -       | - | - | - | - | - |
|             | NI-80        | 9'-0"                                                                           | 9'-3"  | 9'-9"  | 10'-1"  | 10'-7" | 11'-1" | 11'-6" | 12'-1" | 12'-6"  | -      | -       | - | - | - | - | - |
| 16"         | NI-20        | 9'-2"                                                                           | 9'-8"  | 10'-0" | 10'-6"  | 11'-0" | 11'-5" | 11'-9" | 12'-4" | 12'-11" | -      | -       | - | - | - | - | - |
|             | NI-60        | 10'-3"                                                                          | 10'-8" | 11'-2" | 11'-6"  | 12'-1" | 12'-6" | 13'-2" | -      | -       | -      | -       | - | - | - | - | - |
|             | NI-80        | 10'-4"                                                                          | 10'-9" | 11'-3" | 11'-9"  | 12'-1" | 12'-7" | 13'-1" | 13'-8" | 14'-4"  | -      | -       | - | - | - | - | - |
|             | NI-90        | 10'-9"                                                                          | 11'-2" | 11'-8" | 12'-0"  | 12'-6" | 13'-0" | 13'-6" | 14'-2" | 14'-10" | -      | -       | - | - | - | - | - |



BUILDER: **GREEN PARK HOMES**  
SITE: **BARLASSINA**  
MODEL: **WILLOW 3E**  
CITY: **CAMBRIDGE**

Job Name: **WILLOW 3E**  
Level: **2ND FLOOR**  
Label: **B8 - i3109**  
Type: **Beam**

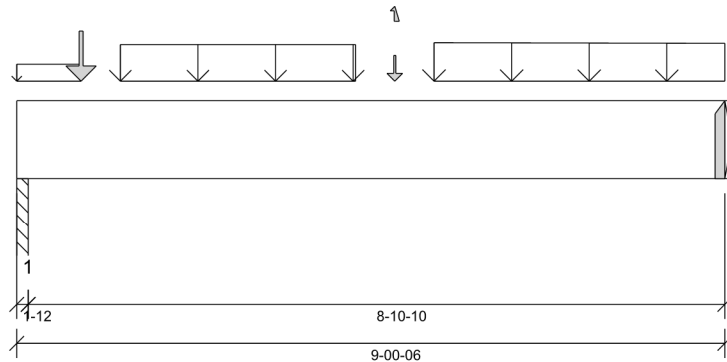
**2 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design  
Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 08/16/2022 14:24



#### DESIGN INFORMATION

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

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

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

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

#### Factored Resistance of Support Material:

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

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

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



STRUCTURAL COMPONENT ONLY  
DWG # TF22080986

#### ANALYSIS RESULTS

| Design Criteria             | Location   | Load Combination | LDF  | Design     | Limit       | Result         |
|-----------------------------|------------|------------------|------|------------|-------------|----------------|
| Factored Pos. Moment:       | 3'- 9 7/8" | 1.25D + 1.5L     | 1.00 | 5632 lb ft | 35345 lb ft | Passed - 16%   |
| Factored Shear:             | 8'- 1/2"   | 1.25D + 1.5L     | 1.00 | 2219 lb    | 13815 lb    | Passed - 16%   |
| Live Load (LL) Pos. Defl.:  | 4'- 6 3/8" | L                |      | 0.040"     | L/360       | Passed - L/999 |
| Total Load (TL) Pos. Defl.: | 4'- 6 3/8" | D + L            |      | 0.062"     | L/240       | Passed - L/999 |

#### SUPPORT AND REACTION INFORMATION

| ID | Input Bearing Length | Controlling Load Combination | LDF  | Factored Downward Reaction | Factored Uplift Reaction | Factored Resistance of Member | Factored Resistance of Support | Result       |
|----|----------------------|------------------------------|------|----------------------------|--------------------------|-------------------------------|--------------------------------|--------------|
| 1  | 1'-12                | 1.25D + 1.5L                 | 1.00 | 2558 lb                    |                          | 6370 lb                       | 3767 lb                        | Passed - 68% |
| 2  | 1'-08                | 1.25D + 1.5L                 | 1.00 | 2859 lb                    |                          | 5460 lb                       | -                              | Passed - 52% |

#### CONNECTOR INFORMATION

| ID                                                                                                                                                                                                                                 | Part No. | Manufacturer | Top | Face | Member | Nailing Requirements |  |  | Other Information or Requirement for Reinforcement Accessories |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------|-----|------|--------|----------------------|--|--|----------------------------------------------------------------|
| 2                                                                                                                                                                                                                                  | HGUS410  |              | -   | -    | -      |                      |  |  | Connector manually specified by the user.                      |
| * Connectors: Refer to manufacturer's specifications, fasteners requirements and installation instruction. Where header fasteners are longer than the width of the supporting member, install backer block or clinch header nails. |          |              |     |      |        |                      |  |  |                                                                |

#### SPECIFIED LOADS

| Type        | Start Loc  | End Loc    | Source                             | Face | Dead (D)         | Live (L)         | Snow (S) | Wind (W) |
|-------------|------------|------------|------------------------------------|------|------------------|------------------|----------|----------|
| Self Weight | 0'         | 9'- 3/8"   | Self Weight                        | Top  | 12 lb/ft         | -                | -        | -        |
| Uniform     | 0'         | 0'- 9 7/8" | FC2 Floor Decking (Plan View Fill) | Top  | 17 lb/ft         | 33 lb/ft         | -        | -        |
| Uniform     | 1'- 3 7/8" | 4'- 3 7/8" | Smoothed Load                      | Back | 150 lb/ft        | 301 lb/ft        | -        | -        |
| Tapered     | 5'- 3 7/8" | 9'- 3/8"   | Smoothed Load                      | Back | 163 To 159 lb/ft | 327 To 318 lb/ft | -        | -        |
| Point       | 0'- 9 7/8" | 0'- 9 7/8" | J1(i3031)                          | Back | 135 lb           | 270 lb           | -        | -        |
| Point       | 4'- 9 7/8" | 4'- 9 7/8" | J1(i3035)                          | Back | 41 lb            | 88/-5 lb         | -        | -        |

#### UNFACTORED REACTIONS

| ID | Start Loc | End Loc    | Source     | Dead (D) | Live (L)   | Snow (S) | Wind (W) |
|----|-----------|------------|------------|----------|------------|----------|----------|
| 1  | 0'        | 0'- 1 3/4" | PBO2(i683) | 630 lb   | 1159/-2 lb | -        | -        |
| 2  | 9'- 3/8"  | 9'- 3/8"   | B13(i3134) | 716 lb   | 1331/-3 lb | -        | -        |

#### DESIGN NOTES

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

#### PLY TO PLY CONNECTION

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





BUILDER: **GREEN PARK HOMES**  
SITE: **BARLASSINA**  
MODEL: **WILLOW 3E**  
CITY: **CAMBRIDGE**

Job Name: **WILLOW 3E**  
Level: **2ND FLOOR**  
Label: **B9 - i3093**  
Type: **Beam**

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

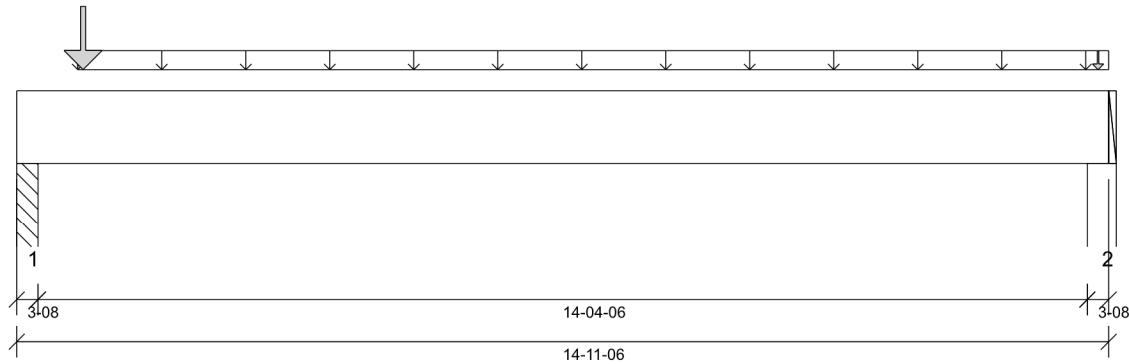
Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26

08/16/2022 14:24



### DESIGN INFORMATION

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

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

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

Top: 0' Bottom: 13'- 8 1/16"

#### Factored Resistance of Support Material:

- 615 psi Column @ 0'- 2 1/2"
- 615 psi Wall @ 14'- 8 7/8"

### ANALYSIS RESULTS

| Design Criteria             | Location     | Load Combination | LDF  | Design     | Limit       | Result         |
|-----------------------------|--------------|------------------|------|------------|-------------|----------------|
| Factored Pos. Moment:       | 6'- 7 3/8"   | 1.25D + 1.5L     | 1.00 | 3044 lb ft | 17672 lb ft | Passed - 17%   |
| Factored Shear:             | 1'- 3 3/8"   | 1.25D + 1.5L     | 1.00 | 2157 lb    | 6908 lb     | Passed - 31%   |
| Live Load (LL) Pos. Defl.:  | 7'- 2 3/4"   | L                |      | 0.110"     | L/360       | Passed - L/999 |
| Total Load (TL) Pos. Defl.: | 7'- 2 15/16" | D + L            |      | 0.178"     | L/240       | Passed - L/966 |

### 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 | 2204 lb                    |                          | 6370 lb                       | 3767 lb                        | Passed - 59% |
| 2  | 3'-08"               | 1.25D + 1.5L + S             | 1.00 | 848 lb                     |                          | 6370 lb                       | 3768 lb                        | Passed - 23% |

### SPECIFIED LOADS

| Type        | Start Loc   | End Loc      | Source                             | Face | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|-------------|-------------|--------------|------------------------------------|------|----------|----------|----------|----------|
| Self Weight | 0'          | 14'- 11 3/8" | Self Weight                        | Top  | 6 lb/ft  | -        | -        | -        |
| Uniform     | 0'- 10"     | 14'- 11 3/8" | FC2 Floor Decking (Plan View Fill) | Top  | 20 lb/ft | 40 lb/ft | -        | -        |
| Point       | 0'- 10 7/8" | 0'- 10 7/8"  | B10(i2973)                         | Back | 399 lb   | 777 lb   | -        | -        |
| Point       | 14'- 9 5/8" | 14'- 9 5/8"  | 10(i1027)                          | Top  | 29 lb    | -        | 42 lb    | -        |

### UNFACTORED REACTIONS

| ID | Start Loc   | End Loc      | Source     | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|----|-------------|--------------|------------|----------|----------|----------|----------|
| 1  | 0'          | 0'- 3 1/2"   | PBO2(i683) | 559 lb   | 1009 lb  | -        | -        |
| 2  | 14'- 7 7/8" | 14'- 11 3/8" | 2(i313)    | 240 lb   | 332 lb   | 42 lb    | -        |

### DESIGN NOTES

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



STRUCTURAL COMPONENT ONLY  
DWG # TF22080987



BUILDER: **GREEN PARK HOMES**  
SITE: **BARLASSINA**  
MODEL: **WILLOW 3E**  
CITY: **CAMBRIDGE**

Job Name: **WILLOW 3E**  
Level: **2ND FLOOR**  
Label: **B10 - i2973**  
Type: **Beam**

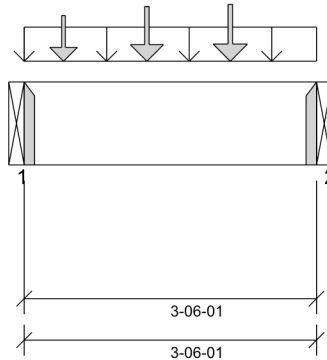
**1 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 08/16/2022 14:24



### DESIGN INFORMATION

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

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

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

Top: 0' Bottom: 0'- 11 1/8"

#### Factored Resistance of Support Material:

- 615 psi Beam @ 0'
- 615 psi Beam @ 3'- 6 1/16"

### ANALYSIS RESULTS

| Design Criteria       | Location    | Load Combination | LDF  | Design     | Limit       | Result       |
|-----------------------|-------------|------------------|------|------------|-------------|--------------|
| Factored Pos. Moment: | 1'- 6 1/16" | 1.25D + 1.5L     | 1.00 | 1684 lb ft | 17672 lb ft | Passed - 10% |
| Factored Shear:       | 2'- 6 3/16" | 1.25D + 1.5L     | 1.00 | 1151 lb    | 6908 lb     | Passed - 17% |

### SUPPORT AND REACTION INFORMATION

| ID | Input Bearing Length | Controlling Load Combination | LDF  | Factored Downward Reaction | Factored Uplift Reaction | Factored Resistance of Member | Factored Resistance of Support | Result       |
|----|----------------------|------------------------------|------|----------------------------|--------------------------|-------------------------------|--------------------------------|--------------|
| 1  | 1-08                 | 1.25D + 1.5L                 | 1.00 | 1838 lb                    |                          | 2730 lb                       | -                              | Passed - 67% |
| 2  | 1-08                 | 1.25D + 1.5L                 | 1.00 | 1663 lb                    |                          | 2730 lb                       | -                              | Passed - 61% |

### CONNECTOR INFORMATION

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

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

### SPECIFIED LOADS

| Type        | Start Loc    | End Loc      | Source      | Face  | Dead (D)  | Live (L)  | Snow (S) | Wind (W) |
|-------------|--------------|--------------|-------------|-------|-----------|-----------|----------|----------|
| Self Weight | 0'           | 3'- 6 1/16"  | Self Weight | Top   | 6 lb/ft   | -         | -        | -        |
| Uniform     | 0'           | 3'- 6 1/16"  | User Load   | Front | 120 lb/ft | 240 lb/ft | -        | -        |
| Point       | 0'- 5 11/16" | 0'- 5 11/16" | J2(i3028)   | Back  | 109 lb    | 217 lb    | -        | -        |
| Point       | 1'- 5 11/16" | 1'- 5 11/16" | J2(i3029)   | Back  | 140 lb    | 281 lb    | -        | -        |
| Point       | 2'- 5 11/16" | 2'- 5 11/16" | J2(i3113)   | Back  | 148 lb    | 296 lb    | -        | -        |

### UNFACTORED REACTIONS

| ID | Start Loc   | End Loc     | Source     | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|----|-------------|-------------|------------|----------|----------|----------|----------|
| 1  | 0'          | 0'          | B11(i3172) | 440 lb   | 859 lb   | -        | -        |
| 2  | 3'- 6 1/16" | 3'- 6 1/16" | B9(i3093)  | 399 lb   | 777 lb   | -        | -        |

### DESIGN NOTES

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



STRUCTURAL COMPONENT ONLY  
DWG # TF22080988



BUILDER: **GREEN PARK HOMES**  
SITE: **BARLASSINA**  
MODEL: **WILLOW 3E**  
CITY: **CAMBRIDGE**

Job Name: **WILLOW 3E**  
Level: **2ND FLOOR**  
Label: **B11 - i3172**  
Type: **Beam**

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

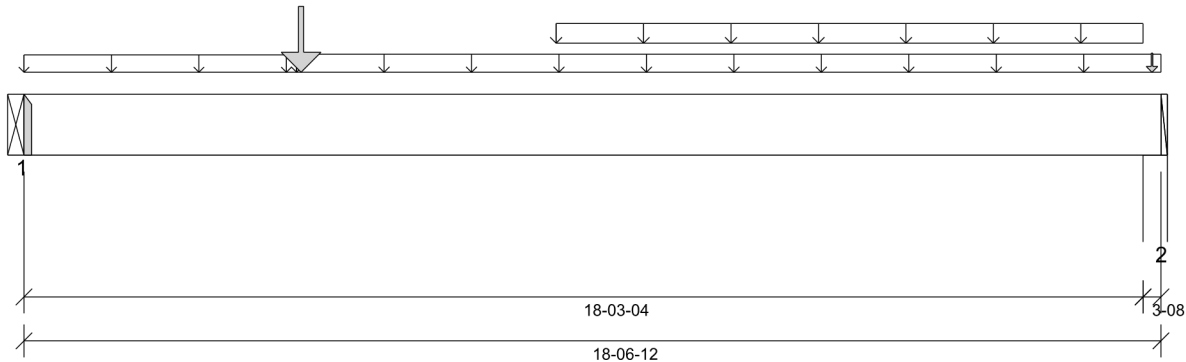
Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26

08/16/2022 14:24



### DESIGN INFORMATION

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

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

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

Top: 0' Bottom: 13'- 8 1/16"

#### Factored Resistance of Support Material:

- 615 psi Beam @ 0'
- 615 psi Wall @ 18'- 4 1/4"

### ANALYSIS RESULTS

| Design Criteria             | Location     | Load Combination | LDF  | Design     | Limit       | Result         |
|-----------------------------|--------------|------------------|------|------------|-------------|----------------|
| Factored Pos. Moment:       | 4'- 6 5/16"  | 1.25D + 1.5L     | 0.98 | 8541 lb ft | 17282 lb ft | Passed - 49%   |
| Factored Shear:             | 0'- 11 7/8"  | 1.25D + 1.5L     | 0.98 | 1926 lb    | 6755 lb     | Passed - 29%   |
| Live Load (LL) Pos. Defl.:  | 8'- 4 13/16" | L                |      | 0.378"     | L/360       | Passed - L/580 |
| Total Load (TL) Pos. Defl.: | 8'- 9 1/4"   | D + L            |      | 0.774"     | L/240       | Passed - L/283 |
| Permanent Deflection:       | 9'- 1 7/16"  |                  |      | -          | L/360       | Passed - L/568 |

### 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                 | 0.98 | 1965 lb                    |                          | 2670 lb                       | -                              | Passed - 74% |
| 2  | 3-08                 | 1.25D + 1.5S + L             | 0.84 | 1341 lb                    |                          | 5365 lb                       | 3173 lb                        | Passed - 42% |

### CONNECTOR INFORMATION

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

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

### SPECIFIED LOADS

| Type        | Start Loc   | End Loc     | Source                             | Face  | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|-------------|-------------|-------------|------------------------------------|-------|----------|----------|----------|----------|
| Self Weight | 0'          | 18'- 6 3/4" | Self Weight                        | Top   | 6 lb/ft  | -        | -        | -        |
| Uniform     | 0'          | 4'- 5 7/16" | FC2 Floor Decking (Plan View Fill) | Top   | 5 lb/ft  | 11 lb/ft | -        | -        |
| Uniform     | 4'- 5 7/16" | 18'- 6 3/4" | FC2 Floor Decking (Plan View Fill) | Top   | 10 lb/ft | 20 lb/ft | -        | -        |
| Uniform     | 8'- 8 1/4"  | 18'- 3 1/4" | User Load                          | Top   | 60 lb/ft | -        | -        | -        |
| Point       | 4'- 6 5/16" | 4'- 6 5/16" | B10(i2973)                         | Front | 440 lb   | 859 lb   | -        | -        |
| Point       | 18'- 5"     | 18'- 5"     | 10(i1027)                          | Top   | 29 lb    | -        | 42 lb    | -        |

### UNFACTORED REACTIONS

| ID | Start Loc   | End Loc     | Source     | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|----|-------------|-------------|------------|----------|----------|----------|----------|
| 1  | 0'          | 0'          | APP(i3127) | 615 lb   | 802 lb   | -        | -        |
| 2  | 18'- 3 1/4" | 18'- 6 3/4" | 2(i313)    | 706 lb   | 391 lb   | 42 lb    | -        |

### DESIGN NOTES

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



STRUCTURAL COMPONENT ONLY  
DWG # TF22080989





BUILDER: **GREEN PARK HOMES**  
SITE: **BARLASSINA**  
MODEL: **WILLOW 3E**  
CITY: **CAMBRIDGE**

Job Name: **WILLOW 3E**  
Level: **2ND FLOOR**  
Label: **B13 - i3134**  
Type: **Beam**

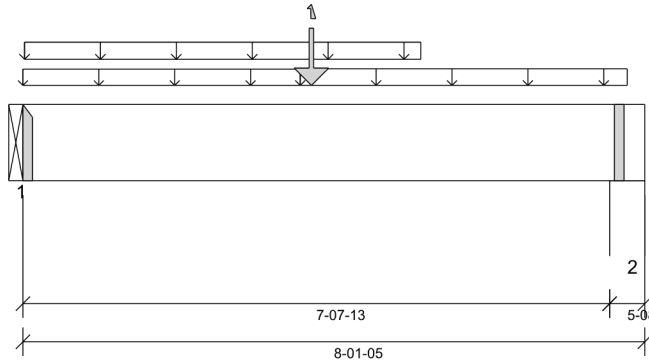
**1 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 08/16/2022 14:24



#### DESIGN INFORMATION

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

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

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

Top: 0' Bottom: 3'- 8 15/16"

#### Factored Resistance of Support Material:

- 615 psi Beam @ 0'
- 615 psi Wall @ 7'- 8 13/16"

#### ANALYSIS RESULTS

| Design Criteria             | Location     | Load Combination | LDF  | Design     | Limit       | Result         |
|-----------------------------|--------------|------------------|------|------------|-------------|----------------|
| Factored Pos. Moment:       | 3'- 9 1/8"   | 1.25D + 1.5L     | 1.00 | 6566 lb ft | 17672 lb ft | Passed - 37%   |
| Factored Shear:             | 0'- 11 7/8"  | 1.25D + 1.5L     | 1.00 | 1872 lb    | 6908 lb     | Passed - 27%   |
| Live Load (LL) Pos. Defl.:  | 3'- 10 1/16" | L                |      | 0.052"     | L/360       | Passed - L/999 |
| Total Load (TL) Pos. Defl.: | 3'- 9 15/16" | D + L            |      | 0.088"     | L/240       | Passed - L/999 |

#### SUPPORT AND REACTION INFORMATION

| ID | Input Bearing Length | Controlling Load Combination | LDF  | Factored Downward Reaction | Factored Uplift Reaction | Factored Resistance of Member | Factored Resistance of Support | Result       |
|----|----------------------|------------------------------|------|----------------------------|--------------------------|-------------------------------|--------------------------------|--------------|
| 1  | 1-08                 | 1.25D + 1.5L                 | 1.00 | 2038 lb                    |                          | 2730 lb                       | -                              | Passed - 75% |
| 2  | 5-08                 | 1.25D + 1.5L                 | 1.00 | 1836 lb                    |                          | 10010 lb                      | 5921 lb                        | Passed - 31% |

#### CONNECTOR INFORMATION

| ID                                                                                                                                                                                                                                 | Part No.   | Manufacturer | Nailing Requirements |      |        | Other Information or Requirement for Reinforcement Accessories |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------|----------------------|------|--------|----------------------------------------------------------------|
|                                                                                                                                                                                                                                    |            |              | Top                  | Face | Member |                                                                |
| 1                                                                                                                                                                                                                                  | HUS1.81/10 |              | -                    | -    | -      | Connector manually specified by the user.                      |
| * Connectors: Refer to manufacturer's specifications, fasteners requirements and installation instruction. Where header fasteners are longer than the width of the supporting member, install backer block or clinch header nails. |            |              |                      |      |        |                                                                |

#### SPECIFIED LOADS

| Type        | Start Loc  | End Loc      | Source                             | Face | Dead (D) | Live (L)   | Snow (S) | Wind (W) |
|-------------|------------|--------------|------------------------------------|------|----------|------------|----------|----------|
| Self Weight | 0'         | 8'- 1 5/16"  | Self Weight                        | Top  | 6 lb/ft  | -          | -        | -        |
| Uniform     | 0'         | 3'- 7 3/8"   | FC2 Floor Decking (Plan View Fill) | Top  | 14 lb/ft | 28 lb/ft   | -        | -        |
| Uniform     | 0'- 1/4"   | 5'- 2 1/4"   | User Load                          | Top  | 60 lb/ft | -          | -        | -        |
| Uniform     | 3'- 7 3/8" | 7'- 10 9/16" | FC2 Floor Decking (Plan View Fill) | Top  | 16 lb/ft | 32 lb/ft   | -        | -        |
| Point       | 3'- 9 1/8" | 3'- 9 1/8"   | B8(i3109)                          | Back | 716 lb   | 1331/-3 lb | -        | -        |

#### UNFACTORED REACTIONS

| ID | Start Loc    | End Loc     | Source     | Dead (D) | Live (L)  | Snow (S) | Wind (W) |
|----|--------------|-------------|------------|----------|-----------|----------|----------|
| 1  | 0'           | 0'          | APP(i3127) | 673 lb   | 835/-2 lb | -        | -        |
| 2  | 7'- 7 13/16" | 8'- 1 5/16" | 4(i501)    | 527 lb   | 748/-1 lb | -        | -        |

#### DESIGN NOTES

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



STRUCTURAL COMPONENT ONLY  
DWG # TF22080990



BUILDER: **GREEN PARK HOMES**  
SITE: **BARLASSINA**  
MODEL: **WILLOW 3E**  
CITY: **CAMBRIDGE**

Job Name: **WILLOW 3E**  
Level: **1ST FLOOR**  
Label: **B1 - i3323**  
Type: **Beam**

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

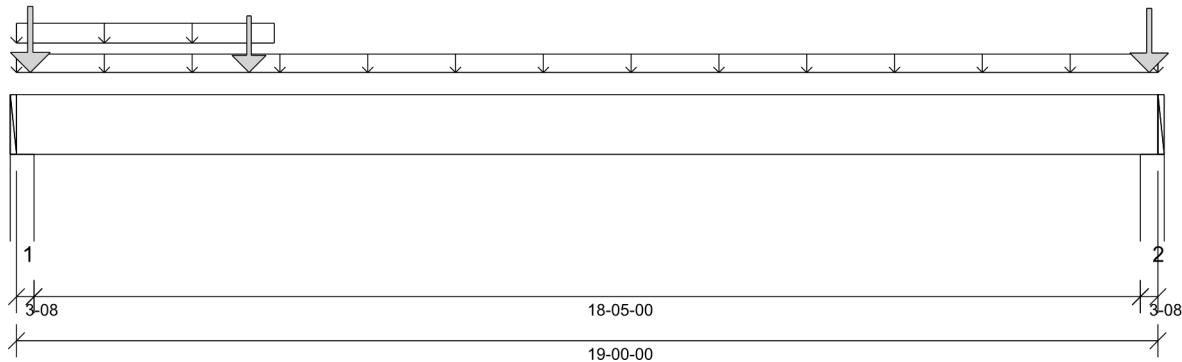
Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26

08/16/2022 14:24



### 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: 18'- 5"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 2 1/2"
- 615 psi Wall @ 18'- 9 1/2"

### ANALYSIS RESULTS

| Design Criteria             | Location     | Load Combination | LDF  | Design     | Limit       | Result         |
|-----------------------------|--------------|------------------|------|------------|-------------|----------------|
| Factored Pos. Moment:       | 6'- 4 3/16"  | 1.25D + 1.5L     | 0.95 | 4972 lb ft | 33691 lb ft | Passed - 15%   |
| Factored Shear:             | 1'- 3 3/8"   | 1.25D + 1.5L     | 0.95 | 1404 lb    | 13169 lb    | Passed - 11%   |
| Live Load (LL) Pos. Defl.:  | 8'- 11 3/8"  | L                |      | 0.121"     | L/360       | Passed - L/999 |
| Total Load (TL) Pos. Defl.: | 8'- 11 9/16" | D + L            |      | 0.234"     | L/240       | Passed - L/943 |

### 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 + S             | 0.98 | 2529 lb                    |                          | 12494 lb                      | 7391 lb                        | Passed - 34% |
| 2  | 3'-08"               | 1.25D + 1.5L + S             | 0.98 | 1716 lb                    |                          | 12494 lb                      | 7391 lb                        | Passed - 23% |

### SPECIFIED LOADS

| Type        | Start Loc    | End Loc      | Source                             | Face | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|-------------|--------------|--------------|------------------------------------|------|----------|----------|----------|----------|
| Self Weight | 0'           | 19'          | Self Weight                        | Top  | 12 lb/ft | -        | -        | -        |
| Uniform     | 0'           | 19'          | FC1 Floor Decking (Plan View Fill) | Top  | 12 lb/ft | 24 lb/ft | -        | -        |
| Uniform     | 0'           | 4'- 3 1/2"   | User Load                          | Top  | 60 lb/ft | -        | -        | -        |
| Point       | 0'- 2 3/4"   | 0'- 2 3/4"   | E8(i370)                           | Top  | 337 lb   | 238 lb   | 168 lb   | -        |
| Point       | 3'- 10 7/16" | 3'- 10 7/16" | User Load                          | Top  | 200 lb   | 400 lb   | -        | -        |
| Point       | 18'- 10 1/4" | 18'- 10 1/4" | 2(i313)                            | Top  | 343 lb   | 193 lb   | 177 lb   | -        |

### UNFACTORED REACTIONS

| ID | Start Loc   | End Loc    | Source   | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|----|-------------|------------|----------|----------|----------|----------|----------|
| 1  | 0'          | 0'- 3 1/2" | W13(i23) | 956 lb   | 785 lb   | 170 lb   | -        |
| 2  | 18'- 8 1/2" | 19'        | W2(i12)  | 630 lb   | 493 lb   | 175 lb   | -        |

### DESIGN NOTES

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

### PLY TO PLY CONNECTION

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

**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 # TF22080991



BUILDER: **GREEN PARK HOMES**  
SITE: **BARLASSINA**  
MODEL: **WILLOW 3E**  
CITY: **CAMBRIDGE**

Job Name: **WILLOW 3E**  
Level: **1ST FLOOR**  
Label: **B2 - i3337**  
Type: **Beam**

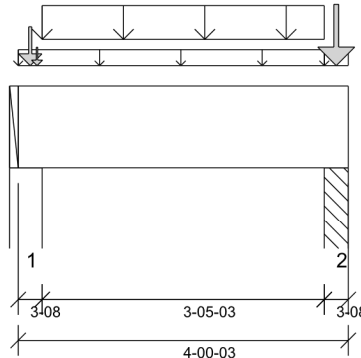
**1 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 08/16/2022 14:24



### DESIGN INFORMATION

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

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

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

Top: 0' Bottom: 3'- 5 3/16"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 2 1/2"
- 615 psi Column @ 3'- 9 11/16"

### ANALYSIS RESULTS

| Design Criteria       | Location      | Load Combination | LDF  | Design    | Limit       | Result       |
|-----------------------|---------------|------------------|------|-----------|-------------|--------------|
| Factored Pos. Moment: | 1'- 11 11/16" | 1.25D + 1.5L + S | 1.00 | 774 lb ft | 17672 lb ft | Passed - 4%  |
| Factored Neg. Moment: | 3'- 9 11/16"  | 1.25D + 1.5L     | 1.00 | 125 lb ft | 12841 lb ft | Passed - 1%  |
| Factored Shear:       | 2'- 8 13/16"  | 1.25D + 1.5L + S | 1.00 | 764 lb    | 6908 lb     | Passed - 11% |

### SUPPORT AND REACTION INFORMATION

| ID | Input Bearing Length | Controlling Load Combination | LDF  | Factored Downward Reaction | Factored Uplift Reaction | Factored Resistance of Member | Factored Resistance of Support | Result       |
|----|----------------------|------------------------------|------|----------------------------|--------------------------|-------------------------------|--------------------------------|--------------|
| 1  | 3-08                 | 1.25D + 1.5L + S             | 1.00 | 2038 lb                    |                          | 6370 lb                       | 3768 lb                        | Passed - 54% |
| 2  | 3-08                 | 1.25D + 1.5L + S             | 1.00 | 2945 lb                    |                          | 6370 lb                       | 3767 lb                        | Passed - 78% |

### SPECIFIED LOADS

| Type        | Start Loc    | End Loc      | Source                             | Face  | Dead (D)  | Live (L)  | Snow (S) | Wind (W) |
|-------------|--------------|--------------|------------------------------------|-------|-----------|-----------|----------|----------|
| Self Weight | 0'           | 4'- 3/16"    | Self Weight                        | Top   | 6 lb/ft   | -         | -        | -        |
| Uniform     | -0'          | 3'- 8 11/16" | FC1 Floor Decking (Plan View Fill) | Top   | 5 lb/ft   | 9 lb/ft   | -        | -        |
| Uniform     | 0'- 3 1/2"   | 3'- 8 11/16" | User Load                          | Front | 120 lb/ft | 240 lb/ft | -        | -        |
| Uniform     | 3'- 8 11/16" | 4'- 3/16"    | FC1 Floor Decking (Plan View Fill) | Top   | 5 lb/ft   | 11 lb/ft  | -        | -        |
| Point       | 0'- 1 3/4"   | 0'- 1 3/4"   | User Load                          | Top   | 240 lb    | 480 lb    | -        | -        |
| Point       | 0'- 2 3/4"   | 0'- 2 3/4"   | E8(i370)                           | Top   | 52 lb     | -         | 42 lb    | -        |
| Point       | 3'- 10 7/16" | 3'- 10 7/16" | User Load                          | Top   | 470 lb    | 940 lb    | -        | -        |

### UNFACTORED REACTIONS

| ID | Start Loc    | End Loc    | Source      | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|----|--------------|------------|-------------|----------|----------|----------|----------|
| 1  | 0'           | 0'- 3 1/2" | W13(i23)    | 536 lb   | 938 lb   | 44 lb    | -        |
| 2  | 3'- 8 11/16" | 4'- 3/16"  | PBO3(i1888) | 680 lb   | 1343 lb  | -2 lb    | -        |

### DESIGN NOTES

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



STRUCTURAL COMPONENT ONLY  
DWG # TF22080992



BUILDER: **GREEN PARK HOMES**  
SITE: **BARLASSINA**  
MODEL: **WILLOW 3E**  
CITY: **CAMBRIDGE**

Job Name: **WILLOW 3E**  
Level: **1ST FLOOR**  
Label: **B3 - i3339**  
Type: **Beam**

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

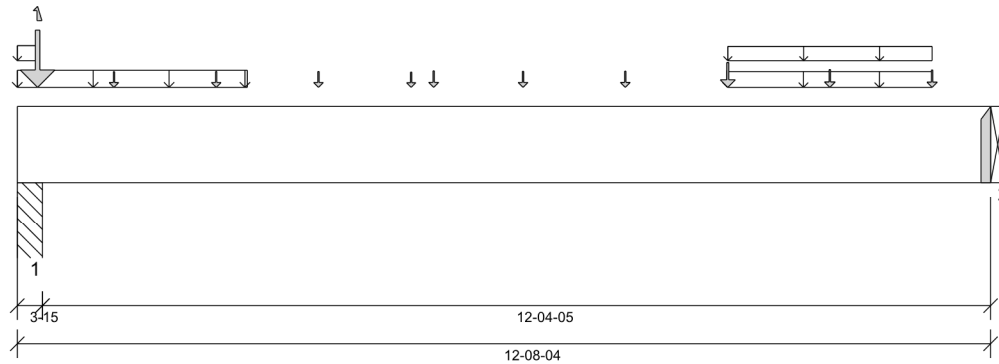
Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26

08/16/2022 14:24



### DESIGN INFORMATION

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

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

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

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

#### Factored Resistance of Support Material:

- 615 psi Column @ 0'- 2 15/16"
- 615 psi Beam @ 12'- 8 1/4"

**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'- 11 1/8"  | 1.25D + 1.5L     | 1.00 | 8381 lb ft | 35345 lb ft | Passed - 24%   |
| Factored Shear:             | 11'- 8 3/8"  | 1.25D + 1.5L     | 1.00 | 2576 lb    | 13815 lb    | Passed - 19%   |
| Live Load (LL) Pos. Defl.:  | 6'- 9 5/16"  | L                |      | 0.107"     | L/360       | Passed - L/999 |
| Total Load (TL) Pos. Defl.: | 6'- 8 13/16" | D + L            |      | 0.172"     | L/240       | Passed - L/860 |

### 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  | 3-15                 | 1.25D + 1.5L                 | 1.00 | 7987 lb                    |                          | 14335 lb                      | 8477 lb                        | Passed - 94% |
| 2  | 1-08                 | 1.25D + 1.5L                 | 1.00 | 3026 lb                    |                          | 5460 lb                       | -                              | Passed - 55% |

### CONNECTOR INFORMATION

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

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

### SPECIFIED LOADS

| Type        | Start Loc    | End Loc      | Source                             | Face | Dead (D) | Live (L)   | Snow (S) | Wind (W) |
|-------------|--------------|--------------|------------------------------------|------|----------|------------|----------|----------|
| Self Weight | 0'           | 12'- 8 1/4"  | Self Weight                        | Top  | 12 lb/ft | -          | -        | -        |
| Uniform     | 0'           | 3'           | User Load                          | Top  | 60 lb/ft | -          | -        | -        |
| Uniform     | 0'           | 0'- 3 3/16"  | FC1 Floor Decking (Plan View Fill) | Top  | 6 lb/ft  | 12 lb/ft   | -        | -        |
| Uniform     | 9'- 3 1/8"   | 11'- 11 1/8" | FC1 Floor Decking (Plan View Fill) | Top  | 11 lb/ft | 21 lb/ft   | -        | -        |
| Uniform     | 9'- 3 3/16"  | 11'- 11 1/8" | FC1 Floor Decking (Plan View Fill) | Top  | 0 lb/ft  | 1 lb/ft    | -        | -        |
| Point       | 0'- 3 3/16"  | 0'- 3 3/16"  | B14(i3338)                         | Back | 1609 lb  | 2649/-2 lb | -        | -        |
| Point       | 1'- 3 1/8"   | 1'- 3 1/8"   | J5(i3316)                          | Back | 50 lb    | 100 lb     | -        | -        |
| Point       | 2'- 7 1/8"   | 2'- 7 1/8"   | J5(i3209)                          | Back | 57 lb    | 114 lb     | -        | -        |
| Point       | 3'- 11 1/8"  | 3'- 11 1/8"  | J5(i3273)                          | Back | 55 lb    | 109 lb     | -        | -        |
| Point       | 5'- 1 5/8"   | 5'- 1 5/8"   | J5(i3298)                          | Back | 32 lb    | 64 lb      | -        | -        |
| Point       | 5'- 5 1/8"   | 5'- 5 1/8"   | B5(i3275)                          | Back | 85 lb    | 141 lb     | -        | -        |
| Point       | 6'- 7 1/8"   | 6'- 7 1/8"   | J4(i3272)                          | Back | 62 lb    | 124 lb     | -        | -        |
| Point       | 7'- 11 1/8"  | 7'- 11 1/8"  | J4(i3311)                          | Back | 66 lb    | 133 lb     | -        | -        |
| Point       | 9'- 3 1/8"   | 9'- 3 1/8"   | J4(i3281)                          | Back | 92 lb    | 183 lb     | -        | -        |
| Point       | 10'- 7 1/8"  | 10'- 7 1/8"  | J4(i3309)                          | Back | 117 lb   | 234 lb     | -        | -        |
| Point       | 11'- 11 1/8" | 11'- 11 1/8" | J4(i3324)                          | Back | 100 lb   | 200 lb     | -        | -        |
| Point       | 9'- 3 3/16"  | 9'- 3 3/16"  | 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'- 3 15/16" | PBO3(i1888) | 2288 lb  | 3501/-2 lb | -        | -        |
| 2  | 12'- 8 1/4" | 12'- 8 1/4"  | B4(i3340)   | 748 lb   | 1311 lb    | -        | -        |

### DESIGN NOTES

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



STRUCTURAL COMPONENT ONLY  
DWG # TF22080993 PG 1/2





BUILDER: **GREEN PARK HOMES**  
SITE: **BARLASSINA**  
MODEL: **WILLOW 3E**  
CITY: **CAMBRIDGE**

Job Name: **WILLOW 3E**  
Level: **1ST FLOOR**  
Label: **B3 - i3339**  
Type: **Beam**

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

Status:  
**Design  
Passed**

#### DESIGN NOTES

- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.
- 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=3.500", W=3.500". LDF=1.00, Pf=5982 lb, Q'r=9025 lb, Result=66.28%.

#### PLY TO PLY CONNECTION

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





BUILDER: **GREEN PARK HOMES**  
SITE: **BARLASSINA**  
MODEL: **WILLOW 3E**  
CITY: **CAMBRIDGE**

Job Name: **WILLOW 3E**  
Level: **1ST FLOOR**  
Label: **B4 - i3340**  
Type: **Beam**

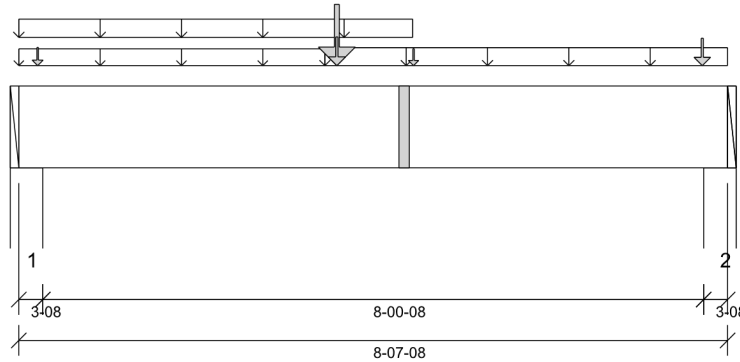
**1 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 08/16/2022 14:24



### DESIGN INFORMATION

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

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

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

Top: 0' Bottom: 3'- 5 1/4"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 2 1/2"
- 615 psi Wall @ 8'- 5"

### ANALYSIS RESULTS

| Design Criteria             | Location     | Load Combination | LDF  | Design     | Limit       | Result         |
|-----------------------------|--------------|------------------|------|------------|-------------|----------------|
| Factored Pos. Moment:       | 3'- 10 7/16" | 1.25D + 1.5L + S | 1.00 | 8790 lb ft | 17672 lb ft | Passed - 50%   |
| Factored Shear:             | 1'- 3 3/8"   | 1.25D + 1.5L     | 1.00 | 2495 lb    | 6908 lb     | Passed - 36%   |
| Live Load (LL) Pos. Defl.:  | 4'- 2 7/16"  | L + 0.5S         |      | 0.080"     | L/360       | Passed - L/999 |
| Total Load (TL) Pos. Defl.: | 4'- 2 5/16"  | D + L + 0.5S     |      | 0.132"     | L/240       | Passed - L/730 |

### 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 + S             | 1.00 | 2810 lb                    |                          | 6370 lb                       | 3768 lb                        | Passed - 75% |
| 2  | 3'-08"               | 1.25D + 1.5L + S             | 1.00 | 2906 lb                    |                          | 6370 lb                       | 3768 lb                        | Passed - 77% |

### SPECIFIED LOADS

| Type        | Start Loc    | End Loc      | Source                             | Face | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|-------------|--------------|--------------|------------------------------------|------|----------|----------|----------|----------|
| Self Weight | 0'           | 8'- 7 1/2"   | Self Weight                        | Top  | 6 lb/ft  | -        | -        | -        |
| Uniform     | 0'           | 4'- 9 1/2"   | User Load                          | Top  | 60 lb/ft | -        | -        | -        |
| Uniform     | 0'           | 3'- 8 11/16" | FC1 Floor Decking (Plan View Fill) | Top  | 10 lb/ft | 20 lb/ft | -        | -        |
| Uniform     | 3'- 8 11/16" | 8'- 7 1/2"   | FC1 Floor Decking (Plan View Fill) | Top  | 18 lb/ft | 35 lb/ft | -        | -        |
| Point       | 3'- 10 7/16" | 3'- 10 7/16" | B3(i3339)                          | Back | 748 lb   | 1311 lb  | -        | -        |
| Point       | 0'- 2 3/4"   | 0'- 2 3/4"   | E20(i584)                          | Top  | 61 lb    | 25 lb    | 42 lb    | -        |
| Point       | 3'- 10 7/16" | 3'- 10 7/16" | User Load                          | Top  | 200 lb   | 400 lb   | -        | -        |
| Point       | 4'- 9 5/8"   | 4'- 9 5/8"   | FC1 Floor Decking (Plan View Fill) | Top  | 25 lb    | 50 lb    | -        | -        |
| Point       | 8'- 3 13/16" | 8'- 3 13/16" | 4(i501)                            | Top  | 227 lb   | 316 lb   | -        | -        |

### UNFACTORED REACTIONS

| ID | Start Loc | End Loc    | Source   | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|----|-----------|------------|----------|----------|----------|----------|----------|
| 1  | 0'        | 0'- 3 1/2" | W13(i23) | 905 lb   | 1132 lb  | 43 lb    | -        |
| 2  | 8'- 4"    | 8'- 7 1/2" | W17(i27) | 818 lb   | 1216 lb  | -1 lb    | -        |

### DESIGN NOTES

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



STRUCTURAL COMPONENT ONLY  
DWG # TF22080994



BUILDER: **GREEN PARK HOMES**  
SITE: **BARLASSINA**  
MODEL: **WILLOW 3E**  
CITY: **CAMBRIDGE**

Job Name: **WILLOW 3E**  
Level: **1ST FLOOR**  
Label: **B5 - i3275**  
Type: **Beam**

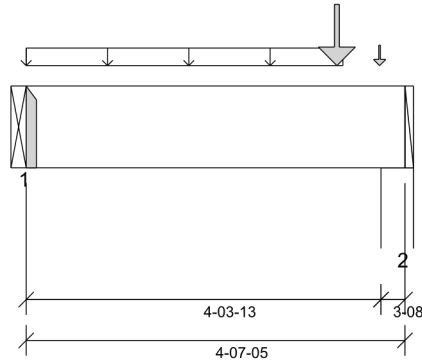
**1 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design  
Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 08/16/2022 14:24



### DESIGN INFORMATION

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

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

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

Top: 0' Bottom: 3'- 8 1/2"

#### Factored Resistance of Support Material:

- 615 psi Beam @ 0'
- 615 psi Wall @ 4'- 4 13/16"

### ANALYSIS RESULTS

| Design Criteria       | Location     | Load Combination | LDF  | Design    | Limit       | Result       |
|-----------------------|--------------|------------------|------|-----------|-------------|--------------|
| Factored Pos. Moment: | 3'- 9 3/8"   | 1.25D + 1.5L     | 1.00 | 639 lb ft | 17672 lb ft | Passed - 4%  |
| Factored Shear:       | 3'- 3 15/16" | 1.25D + 1.5L     | 1.00 | 978 lb    | 6908 lb     | Passed - 14% |

### SUPPORT AND REACTION INFORMATION

| ID | Input<br>Bearing<br>Length | Controlling Load<br>Combination | LDF  | Factored<br>Downward<br>Reaction | Factored<br>Uplift<br>Reaction | Factored<br>Resistance<br>of Member | Factored<br>Resistance<br>of Support | Result       |
|----|----------------------------|---------------------------------|------|----------------------------------|--------------------------------|-------------------------------------|--------------------------------------|--------------|
| 1  | 1-08                       | 1.25D + 1.5L                    | 1.00 | 318 lb                           |                                | 2730 lb                             | -                                    | Passed - 12% |
| 2  | 3-08                       | 1.25D + 1.5L                    | 1.00 | 1123 lb                          |                                | 6370 lb                             | 3768 lb                              | Passed - 30% |

### CONNECTOR INFORMATION

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

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

### SPECIFIED LOADS

| Type        | Start Loc  | End Loc     | Source                                | Face | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|-------------|------------|-------------|---------------------------------------|------|----------|----------|----------|----------|
| Self Weight | 0'         | 4'- 7 5/16" | Self Weight                           | Top  | 6 lb/ft  | -        | -        | -        |
| Uniform     | 0'         | 3'- 10 1/4" | FC1 Floor Decking<br>(Plan View Fill) | Top  | 15 lb/ft | 29 lb/ft | -        | -        |
| Point       | 3'- 9 3/8" | 3'- 9 3/8"  | B6(i3271)                             | Back | 256 lb   | 484 lb   | -        | -        |
| Point       | 4'- 3 5/8" | 4'- 3 5/8"  | 4(i501)                               | Top  | 83 lb    | -        | -        | -        |

### UNFACTORED REACTIONS

| ID | Start Loc    | End Loc     | Source    | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|----|--------------|-------------|-----------|----------|----------|----------|----------|
| 1  | 0'           | 0'          | B3(i3339) | 85 lb    | 141 lb   | -        | -        |
| 2  | 4'- 3 13/16" | 4'- 7 5/16" | W17(i27)  | 341 lb   | 464 lb   | -        | -        |

### DESIGN NOTES

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



STRUCTURAL COMPONENT ONLY  
DWG # TF22080995



BUILDER: **GREEN PARK HOMES**  
SITE: **BARLASSINA**  
MODEL: **WILLOW 3E**  
CITY: **CAMBRIDGE**

Job Name: **WILLOW 3E**  
Level: **1ST FLOOR**  
Label: **B6 - i3271**  
Type: **Beam**

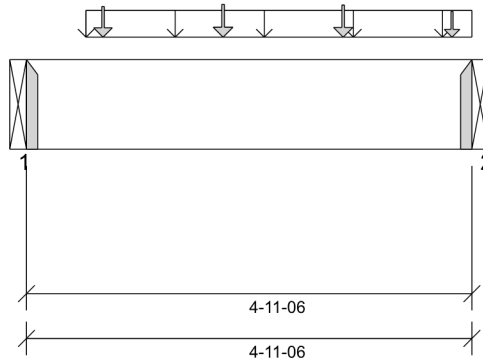
**1 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 08/16/2022 14:24



### 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 @ 4'- 11 3/8"

### ANALYSIS RESULTS

| Design Criteria       | Location    | Load Combination | LDF  | Design     | Limit       | Result       |
|-----------------------|-------------|------------------|------|------------|-------------|--------------|
| Factored Pos. Moment: | 2'- 3 3/16" | 1.25D + 1.5L     | 1.00 | 1281 lb ft | 17672 lb ft | Passed - 7%  |
| Factored Shear:       | 3'- 11 1/2" | 1.25D + 1.5L     | 1.00 | 660 lb     | 6908 lb     | Passed - 10% |

### SUPPORT AND REACTION INFORMATION

| ID | Input Bearing Length | Controlling Load Combination | LDF  | Factored Downward Reaction | Factored Uplift Reaction | Factored Resistance of Member | Factored Resistance of Support | Result       |
|----|----------------------|------------------------------|------|----------------------------|--------------------------|-------------------------------|--------------------------------|--------------|
| 1  | 1-08                 | 1.25D + 1.5L                 | 1.00 | 851 lb                     |                          | 2730 lb                       | -                              | Passed - 31% |
| 2  | 1-08                 | 1.25D + 1.5L                 | 1.00 | 1048 lb                    |                          | 2730 lb                       | -                              | Passed - 38% |

### 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'           | 4'- 11 3/8"  | Self Weight | Top   | 6 lb/ft  | -         | -        | -        |
| Uniform     | 0'- 7 15/16" | 4'- 11 3/8"  | User Load   | Back  | 60 lb/ft | 120 lb/ft | -        | -        |
| Point       | 0'- 10 3/16" | 0'- 10 3/16" | J5(i3316)   | Front | 47 lb    | 93 lb     | -        | -        |
| Point       | 2'- 2 3/16"  | 2'- 2 3/16"  | J5(i3209)   | Front | 53 lb    | 107 lb    | -        | -        |
| Point       | 3'- 6 3/16"  | 3'- 6 3/16"  | J5(i3273)   | Front | 51 lb    | 102 lb    | -        | -        |
| Point       | 4'- 8 11/16" | 4'- 8 11/16" | J5(i3298)   | Front | 30 lb    | 60 lb     | -        | -        |

### UNFACTORED REACTIONS

| ID | Start Loc   | End Loc     | Source     | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|----|-------------|-------------|------------|----------|----------|----------|----------|
| 1  | 0'          | 0'          | B14(i3338) | 211 lb   | 393 lb   | -        | -        |
| 2  | 4'- 11 3/8" | 4'- 11 3/8" | B5(i3275)  | 256 lb   | 484 lb   | -        | -        |

### DESIGN NOTES

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



STRUCTURAL COMPONENT ONLY  
DWG # TF22080996



BUILDER: **GREEN PARK HOMES**  
SITE: **BARLASSINA**  
MODEL: **WILLOW 3E**  
CITY: **CAMBRIDGE**

Job Name: **WILLOW 3E**  
Level: **1ST FLOOR**  
Label: **B14 - i3338**  
Type: **Beam**

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

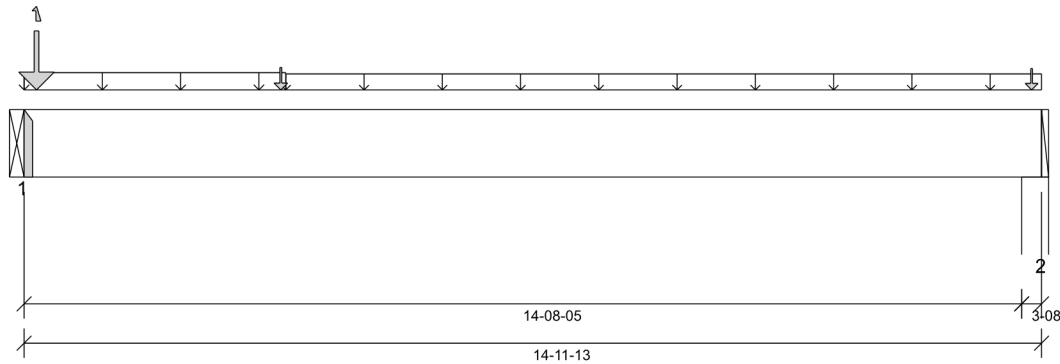
Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26

08/16/2022 14:24



### 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: 10'- 10 1/16"

#### Factored Resistance of Support Material:

- 615 psi Beam @ 0'
- 615 psi Wall @ 14'- 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.



STRUCTURAL COMPONENT ONLY  
DWG # TF22080997

### ANALYSIS RESULTS

| Design Criteria             | Location     | Load Combination | LDF  | Design     | Limit       | Result         |
|-----------------------------|--------------|------------------|------|------------|-------------|----------------|
| Factored Pos. Moment:       | 3'- 9 3/8"   | 1.25D + 1.5L     | 1.00 | 4323 lb ft | 35345 lb ft | Passed - 12%   |
| Factored Shear:             | 0'- 11 7/8"  | 1.25D + 1.5L     | 1.00 | 1883 lb    | 13815 lb    | Passed - 14%   |
| Live Load (LL) Pos. Defl.:  | 6'- 8 13/16" | L                |      | 0.067"     | L/360       | Passed - L/999 |
| Total Load (TL) Pos. Defl.: | 6'- 9 5/8"   | D + L            |      | 0.115"     | 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  | 1-10                 | 1.25D + 1.5L                 | 1.00 | 5927 lb                    |                          | 5927 lb                       | -                              | Passed - 100% |
| 2  | 3-08                 | 1.25D + 1.5L + S             | 1.00 | 1322 lb                    |                          | 12740 lb                      | 7536 lb                        | Passed - 18%  |

### 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'- 11 13/16" | Self Weight                        | Top   | 12 lb/ft | -          | -        | -        |
| Uniform     | 0'            | 3'- 10 1/4"    | FC1 Floor Decking (Plan View Fill) | Top   | 17 lb/ft | 34 lb/ft   | -        | -        |
| Uniform     | 3'- 10 1/4"   | 14'- 11 13/16" | FC1 Floor Decking (Plan View Fill) | Top   | 9 lb/ft  | 17 lb/ft   | -        | -        |
| Point       | 3'- 9 3/8"    | 3'- 9 3/8"     | B6(i3271)                          | Front | 211 lb   | 393 lb     | -        | -        |
| Point       | 0'- 2 3/16"   | 0'- 2 3/16"    | PBO2(i683)                         | Top   | 1270 lb  | 2168/-2 lb | -        | -        |
| Point       | 14'- 10 1/16" | 14'- 10 1/16"  | 2(i313)                            | Top   | 219 lb   | 116 lb     | 183 lb   | -        |

### UNFACTORED REACTIONS

| ID | Start Loc    | End Loc        | Source    | Dead (D) | Live (L)   | Snow (S) | Wind (W) |
|----|--------------|----------------|-----------|----------|------------|----------|----------|
| 1  | 0'           | 0'             | B3(i3339) | 1609 lb  | 2649/-2 lb | -        | -        |
| 2  | 14'- 8 5/16" | 14'- 11 13/16" | W2(i12)   | 434 lb   | 359 lb     | 183 lb   | -        |

### DESIGN NOTES

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

### PLY TO PLY CONNECTION

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





BUILDER: **GREEN PARK HOMES**  
SITE: **BARLASSINA**  
MODEL: **WILLOW 3E**  
CITY: **CAMBRIDGE**

Job Name: **WILLOW 3E**  
Level: **1ST FLOOR**  
Label: **B15 - i3188**  
Type: **Beam**

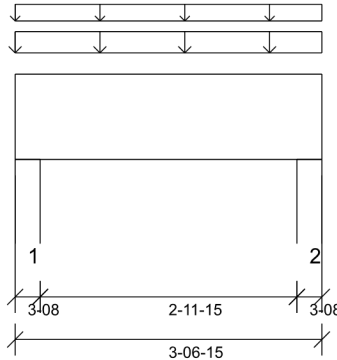
**1 Ply Member**  
**1 3/4" x 11 7/8" (2.0E 3100)**  
**WestFraser LVL**

Status:  
**Design  
Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 08/16/2022 14:24



### DESIGN INFORMATION

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

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

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

Top: 0' Bottom: 3'- 6 15/16"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 2 1/2"
- 615 psi Wall @ 3'- 4 7/16"

### ANALYSIS RESULTS

| Design Criteria       | Location    | Load Combination | LDF  | Design    | Limit       | Result      |
|-----------------------|-------------|------------------|------|-----------|-------------|-------------|
| Factored Pos. Moment: | 1'- 9 1/2"  | 1.4D             | 0.65 | 189 lb ft | 11487 lb ft | Passed - 2% |
| Factored Shear:       | 2'- 3 9/16" | 1.4D             | 0.65 | 78 lb     | 4490 lb     | Passed - 2% |

### SUPPORT AND REACTION INFORMATION

| ID | Input<br>Bearing<br>Length | Controlling Load<br>Combination | LDF  | Factored<br>Downward<br>Reaction | Factored<br>Uplift<br>Reaction | Factored<br>Resistance<br>of Member | Factored<br>Resistance<br>of Support | Result       |
|----|----------------------------|---------------------------------|------|----------------------------------|--------------------------------|-------------------------------------|--------------------------------------|--------------|
| 1  | 3-08                       | 1.4D                            | 0.65 | 276 lb                           |                                | 4140 lb                             | 2449 lb                              | Passed - 11% |
| 2  | 3-08                       | 1.4D                            | 0.65 | 276 lb                           |                                | 4140 lb                             | 2449 lb                              | Passed - 11% |

### SPECIFIED LOADS

| Type        | Start Loc | End Loc      | Source                                | Face | Dead (D)  | Live (L) | Snow (S) | Wind (W) |
|-------------|-----------|--------------|---------------------------------------|------|-----------|----------|----------|----------|
| Self Weight | 0'        | 3'- 6 15/16" | Self Weight                           | Top  | 6 lb/ft   | -        | -        | -        |
| Uniform     | -0'       | 3'- 6 15/16" | E23(i587)                             | Top  | 100 lb/ft | -        | -        | -        |
| Uniform     | -0'       | 3'- 6 15/16" | FC1 Floor Decking<br>(Plan View Fill) | Top  | 4 lb/ft   | 8 lb/ft  | -        | -        |

### UNFACTORED REACTIONS

| ID | Start Loc   | End Loc      | Source     | Dead (D) | Live (L) | Snow (S) | Wind (W) |
|----|-------------|--------------|------------|----------|----------|----------|----------|
| 1  | 0'          | 0'- 3 1/2"   | W54(i2809) | 197 lb   | 15 lb    | -        | -        |
| 2  | 3'- 3 7/16" | 3'- 6 15/16" | W18(i28)   | 197 lb   | 15 lb    | -        | -        |

### DESIGN NOTES

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



STRUCTURAL COMPONENT ONLY  
DWG # TF22080998

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

#### Notes:

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

## Maximum Floor Spans – S4.1

### Design Criteria

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

### Maximum Floor Spans

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

### Notes:

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

### Maximum Floor Spans – S6.1

#### Design Criteria

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

#### Maximum Floor Spans

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

#### Notes:

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

## Maximum Floor Spans – S7.1

### Design Criteria

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

### Maximum Floor Spans

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

### Notes:

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

### Maximum Floor Spans – M2.1

#### Design Criteria

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

#### Maximum Floor Spans

| Joist depth | Joist series | Bare<br>On centre spacing |         |         |     | 1/2 in. gypsum ceiling<br>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<br>On centre spacing |         |         |     | Mid-span blocking and 1/2 in. gypsum ceiling<br>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<br>On centre spacing |         |         |         | 1/2 in. gypsum ceiling<br>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<br>On centre spacing |         |         |         | Mid-span blocking and 1/2 in. gypsum ceiling<br>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<br>On centre spacing |         |         |     | 1/2 in. gypsum ceiling<br>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<br>On centre spacing |         |         |     | Mid-span blocking and 1/2 in. gypsum ceiling<br>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

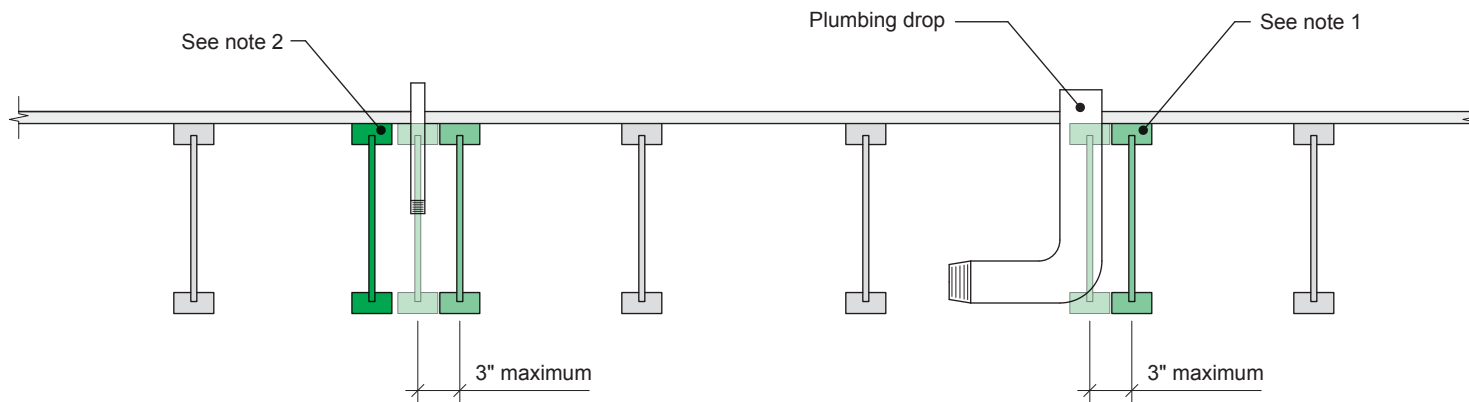
| Joist depth | Joist series | Bare<br>On centre spacing |         |         |         | 1/2 in. gypsum ceiling<br>On centre spacing |         |         |         |
|-------------|--------------|---------------------------|---------|---------|---------|---------------------------------------------|---------|---------|---------|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

### Notes:

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

7c

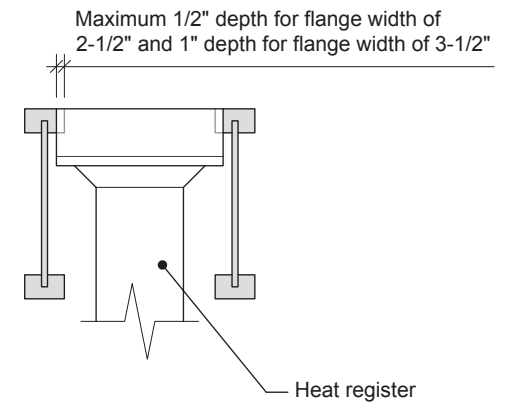
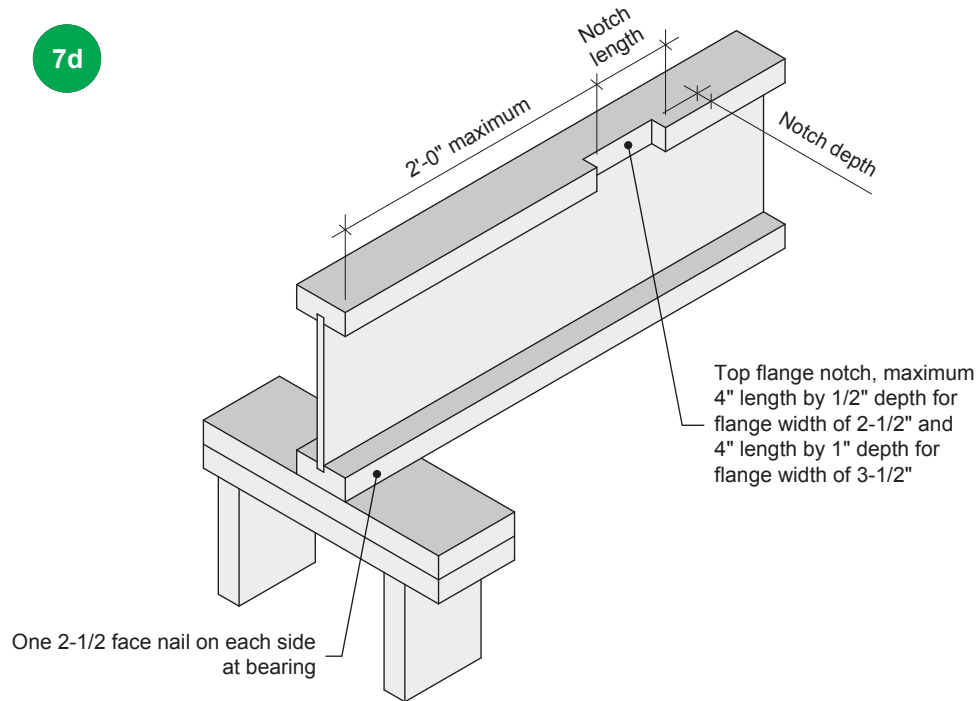


**Notes:**

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

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

7d



**Notes:**

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

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