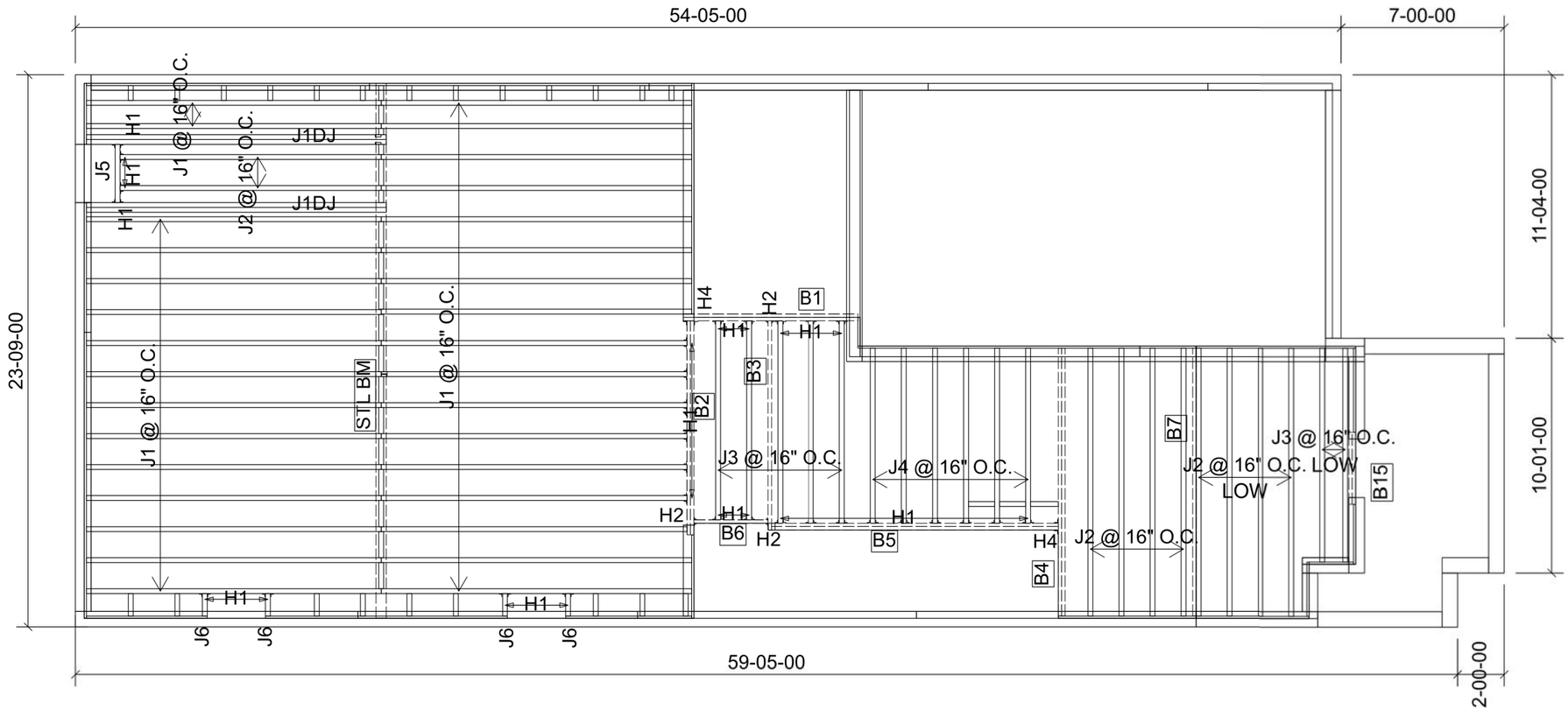


Garden 2
Elev 1

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: 2022/06
BUILDER: GREENPARK HOMES
SITE: BARLASSINA CONSTRUCTION
MODEL: GARDEN 2
ELEVATION: 1,2
LOT:
CITY: CAMBRIDGE
SALESMAN: RICK DICIANO
DESIGNER: AJ
REVISION:

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

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

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

JOIST LL DEFLECTION LIMIT: L/480

SUBFLOOR: 3/4" GLUED AND NAILED

Products				
PlotID	Length	Product	Plies	Net Qty
J1	14-00-00	9 1/2" NI-40x	1	32
J1DJ	14-00-00	9 1/2" NI-40x	2	4
J2	12-00-00	9 1/2" NI-40x	1	10
J3	10-00-00	9 1/2" NI-40x	1	7
J4	8-00-00	9 1/2" NI-40x	1	6
J5	4-00-00	9 1/2" NI-40x	1	1
J6	2-00-00	9 1/2" NI-40x	1	4
B5	14-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B7	12-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B4	12-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B3	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B2	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B1	8-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B6	4-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B15	4-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2

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

DWG# TF22080120 TO TF22080127

LICENSED PROFESSIONAL ENGINEER
8/03/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

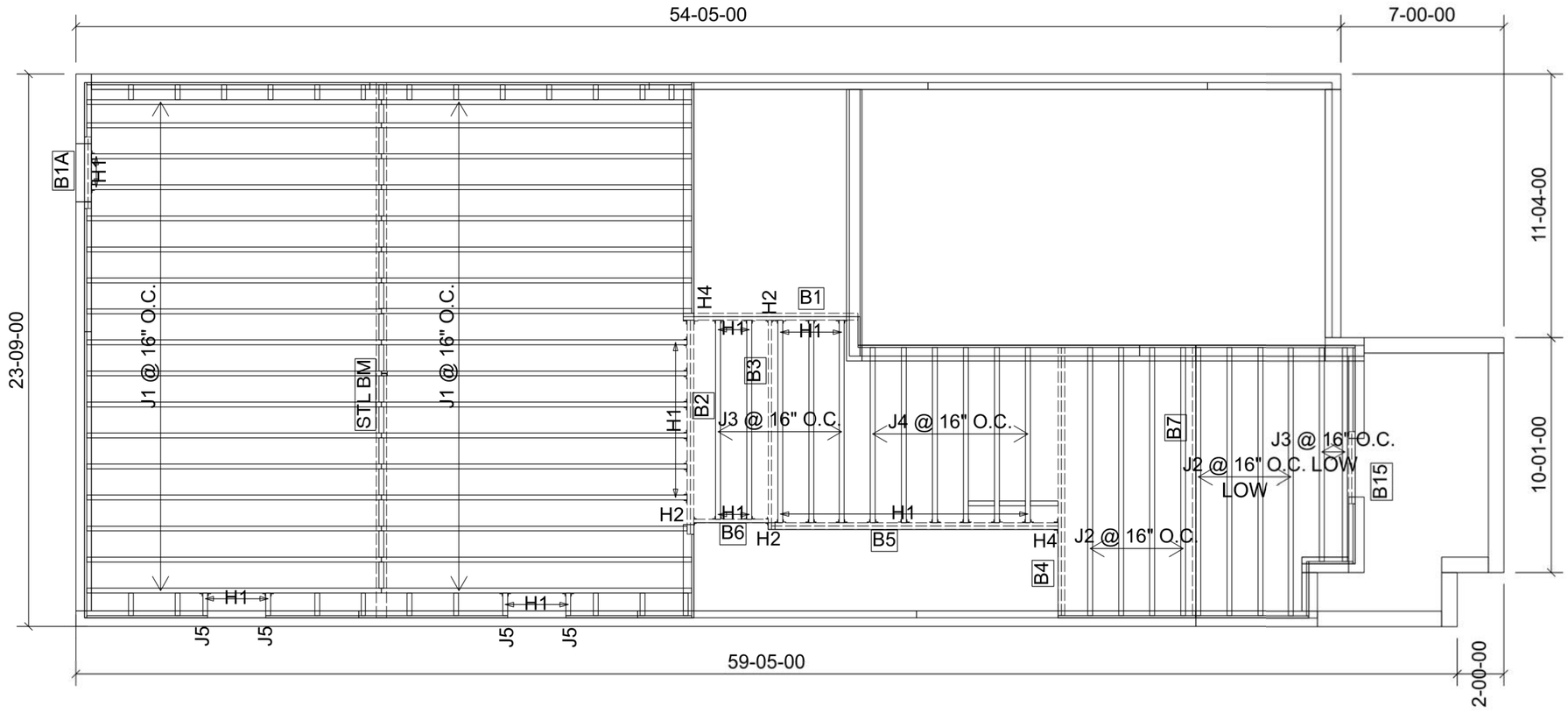
STRUCTURAL COMPONENTS ONLY
DWG# TF22080132

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 acertain conformity to the overall structural plan of the building. All dimensions to be verified on site.

DATE: 2022-08-03

1st FLOOR FRAMING



Products				
PlotID	Length	Product	Plies	Net Qty
J1	14-00-00	9 1/2" NI-40x	1	34
J2	12-00-00	9 1/2" NI-40x	1	8
J3	10-00-00	9 1/2" NI-40x	1	7
J4	8-00-00	9 1/2" NI-40x	1	6
J5	2-00-00	9 1/2" NI-40x	1	4
B5	14-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B7	12-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B4	12-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B3	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B2	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B1	8-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B6	4-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B15	4-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B1A	4-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2

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

DWG# TF22080120 TO TF22080127
DWG# TF22080130

LICENSED PROFESSIONAL ENGINEER
8/03/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENTS ONLY
DWG# TF22080133

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 acertain conformity to the overall structural plan of the building. All dimensions to be verified on site.

DATE: 2022-08-03

1st FLOOR FRAMING WITH DECK CONDITION

Garden 2 Elev 1

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: 2022/06
BUILDER: GREENPARK HOMES
SITE: BARLASSINA CONSTRUCTION
MODEL: GARDEN 2
ELEVATION: 1,2
LOT:
CITY: CAMBRIDGE
SALESMAN: RICK DICIANO
DESIGNER: AJ
REVISION:

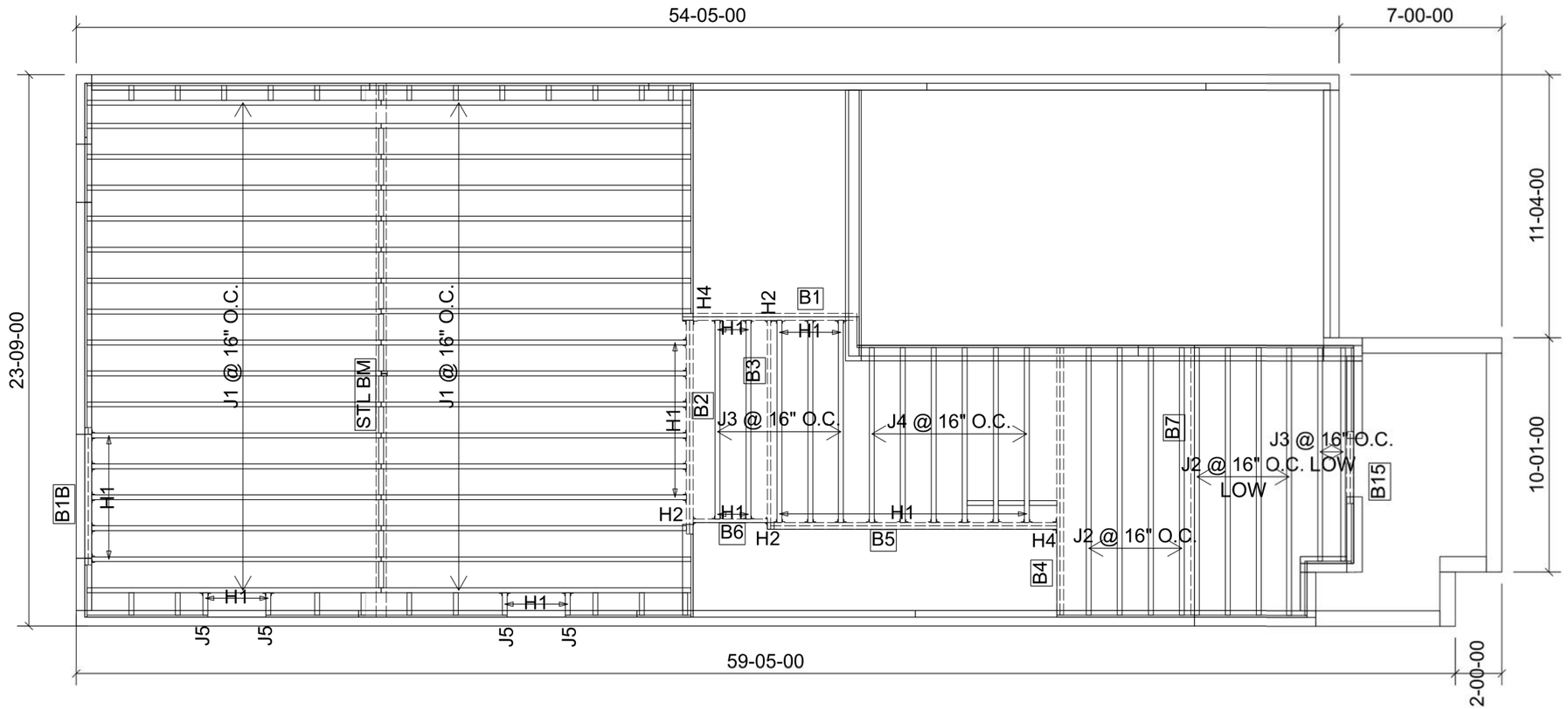
REFER TO THE **NORDIC INSTALLATION** GUIDE FOR PROPER STORAGE AND INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 SPF #2 REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS.
MULTIPLE SQUASH BLOCKS REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1.
CANTILEVERED JOISTS INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING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

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

LOADING:
LIVE LOAD: 40.0 lb/ft^2
DEAD LOAD: 15.0 lb/ft^2
TILE LOAD: +5.0 lb/ft^2

JOIST LL DEFLECTION LIMIT: L/480

SUBFLOOR: 3/4" GLUED AND NAILED



Garden 2
Elev 1

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: 2022/06
BUILDER: GREENPARK HOMES
SITE: BARLASSINA CONSTRUCTION
MODEL: GARDEN 2
ELEVATION: 1,2
LOT:
CITY: CAMBRIDGE
SALESMAN: RICK DICIANO
DESIGNER: AJ
REVISION:

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

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

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

JOIST LL DEFLECTION LIMIT: L/480

SUBFLOOR: 3/4" GLUED AND NAILED

Products				
PlotID	Length	Product	Plies	Net Qty
J1	14-00-00	9 1/2" NI-40x	1	34
J2	12-00-00	9 1/2" NI-40x	1	8
J3	10-00-00	9 1/2" NI-40x	1	7
J4	8-00-00	9 1/2" NI-40x	1	6
J5	2-00-00	9 1/2" NI-40x	1	4
B5	14-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B7	12-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B4	12-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B3	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B2	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B1	8-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B1B	6-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B6	4-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B15	4-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2

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

DWG# TF22080120 TO TF22080127
DWG# TF22080131

LICENSED PROFESSIONAL ENGINEER
8/03/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

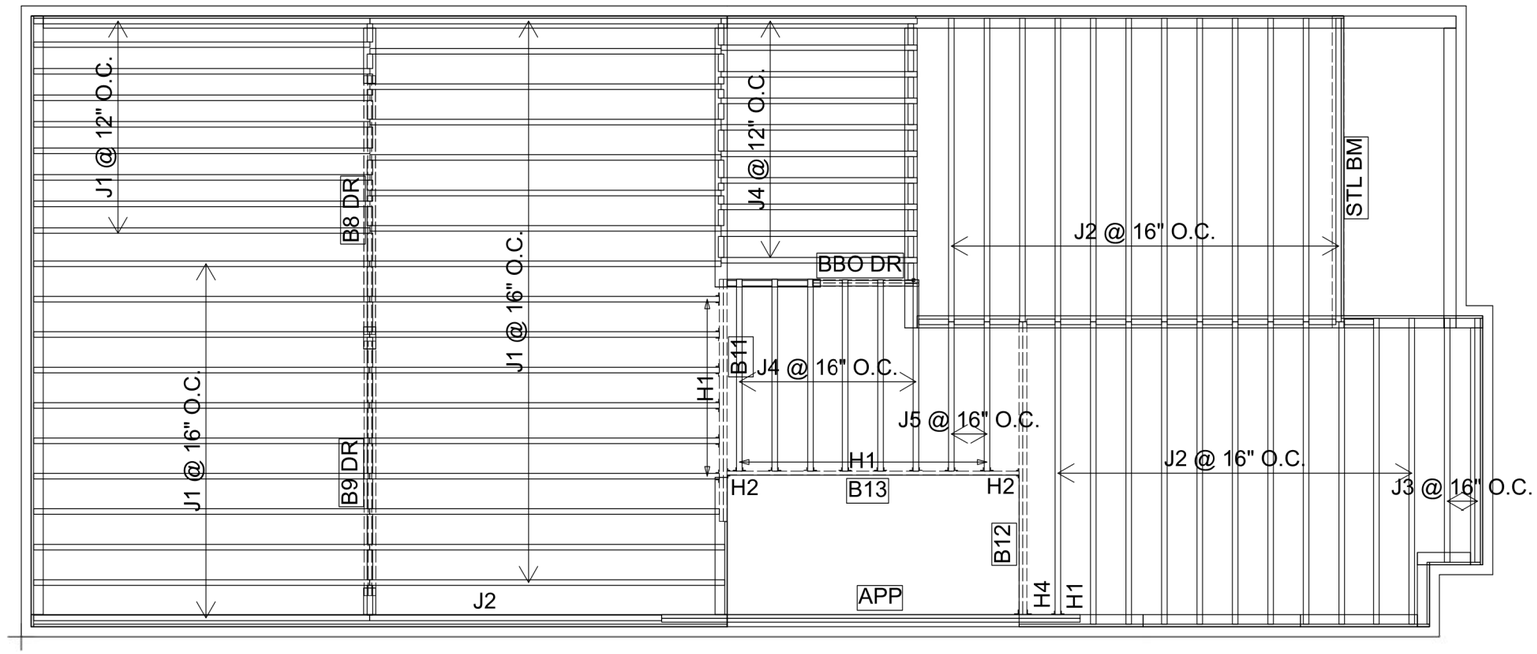
STRUCTURAL COMPONENTS ONLY
DWG# TF22080134

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 acertain conformity to the overall structural plan of the building. All dimensions to be verified on site.

DATE: 2022-08-03

1st FLOOR FRAMING
WALKOUT CONDITION



Garden 2
Elev 1

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: 2022/06
BUILDER: GREENPARK HOMES
SITE: BARLASSINA CONSTRUCTION
MODEL: GARDEN 2
ELEVATION: 1
LOT:
CITY: CAMBRIDGE
SALESMAN: RICK DICIANO
DESIGNER: AJ
REVISION:

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

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

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

JOIST LL DEFLECTION LIMIT: L/480

SUBFLOOR: 5/8" GLUED AND NAILED

Products				
PlotID	Length	Product	Plies	Net Qty
J1	14-00-00	9 1/2" NI-40x	1	37
J2	12-00-00	9 1/2" NI-40x	1	24
J3	10-00-00	9 1/2" NI-40x	1	2
J4	8-00-00	9 1/2" NI-40x	1	16
J5	6-00-00	9 1/2" NI-40x	1	2
APP	16-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B13	12-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B12	12-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B11	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B8 DR	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	3	3
B9 DR	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	3	3

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

DWG# TF22080115 TO TF22080119

LICENSED PROFESSIONAL ENGINEER
8/03/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENTS ONLY
DWG# TF22080138

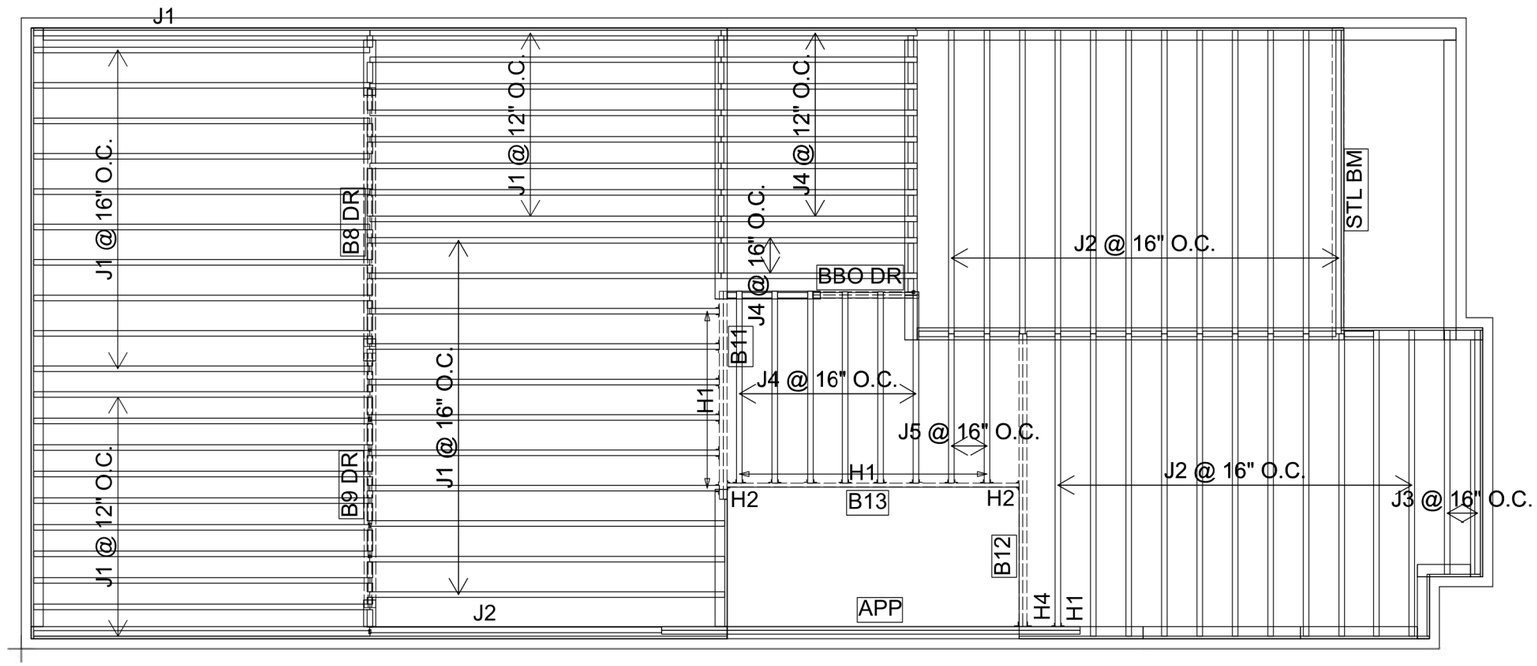
THIS IS A FLOOR COMPONENT PLACEMENT PLAN ONLY.

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 acertain conformity to the overall structural plan of the building. All dimensions to be verified on site.

DATE: 2022-08-03

2nd FLOOR FRAMING

Garden 2
Elev 1



Products				
PlotID	Length	Product	Plies	Net Qty
J1	14-00-00	9 1/2" NI-40x	1	40
J2	12-00-00	9 1/2" NI-40x	1	24
J3	10-00-00	9 1/2" NI-40x	1	2
J4	8-00-00	9 1/2" NI-40x	1	16
J5	6-00-00	9 1/2" NI-40x	1	2
APP	16-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B13	12-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B12	12-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B8 DR	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	3	3
B9 DR	10-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	3	3
B11	8-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2

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

DWG# TF22080115 TO TF22080119

LICENSED PROFESSIONAL ENGINEER
1/18/23
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENTS ONLY
DWG# TF23010732

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 acertain conformity to the overall structural plan of the building. All dimensions to be verified on site.

DATE: 2023-01-16

2nd FLOOR FRAMING OPTION 4 BEDROOM

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: 2022/06
BUILDER: GREENPARK HOMES
SITE: BARLASSINA CONSTRUCTION
MODEL: GARDEN 2
ELEVATION: 1
LOT:
CITY: COMBRIDGE
SALESMAN: RICK DICIANO
DESIGNER: AJ
REVISION:

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

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

LOADING:
LIVE LOAD: 40.0 lb/ft^2
DEAD LOAD: 15.0 lb/ft^2
TILE LOAD: +5.0 lb/ft^2

JOIST LL DEFLECTION LIMIT: L/480

SUBFLOOR: 5/8" GLUED AND NAILED

NORDIC

INSTALLATION GUIDE
NORDIC JOIST

NS-GI33

ENGLISH

VERSION
2020-10-01

Engineered Wood Products

BASIC INSTALLATION GUIDE FOR RESIDENTIAL FLOORS

NORDIC JOIST

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 6,600 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.

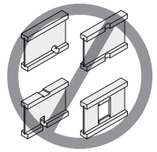
Never stack building materials over unsheathed I-joists. Once sheathed, do not overstress I-joist with concentrated loads from building materials.

WEB HOLES AND OPENINGS

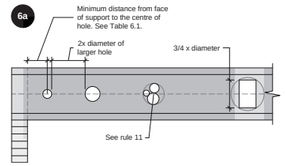
WEB HOLES IN I-JOISTS

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 hole 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.



6a



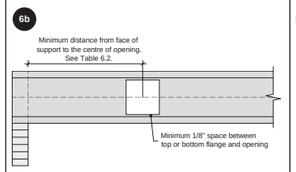
Notes:
1. Never drill, cut or notch the flange, or over-cut the web.
2. Holes in web should be cut with a sharp saw.
3. For rectangular holes, avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole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

6b



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.

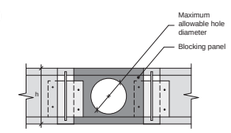
I-joist depth (in.)	Maximum depth of the opening (in.)
9-1/2	6-1/4
11-7/8	8-5/8
14	10-3/4
16	12-3/4

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.

6c



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

[a] Maximum allowable hole diameter in blocking panel, where the blocking panel is longer than its height.

NORDIC I-JOIST SERIES — RESIDENTIAL SERIES

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

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

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

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

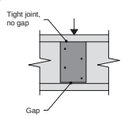
NI-90 2x4 2400f MSR 7/16 in. web
Depths 11-7/8, 14 and 16 in.
23 pieces per unit

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

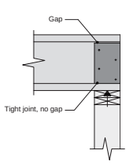
WEB STIFFENERS

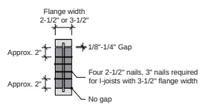
2

Concentrated Load (Load Stiffener)



End Bearing (Bearing Stiffener)

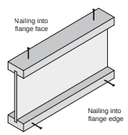




Stiffener Size Requirements

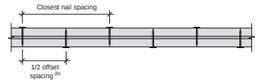
Flange width (in.)	Web stiffener size each side of web (in.)
2-1/2	1 x 2-5/16 Minimum width
3-1/2	1-1/2 x 2-5/16 Minimum width

NAIL SPACING



Nailed to Only One Flange Edge (Top View)

Nailed to Both Flange Edges (Top View)

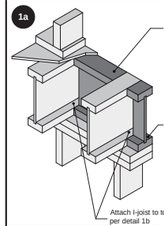


Recommended Closest Nail Spacing for Fastening Sheathing to I-joist Flanges to Minimize Splitting

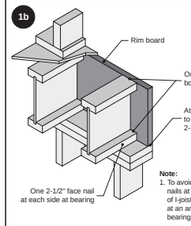
Fastener size (diameter x length)	Flange face nailing [a]		Flange edge nailing [a]		
				Nail spacing (in.)	
	End distance (in.)	Nail spacing (in.)	End distance (in.)	Nailed to only one flange edge	Nailed to both flange edges
0.128" or smaller in diameter, and 3-1/4" or shorter in length	2	2	2	2	4
Greater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

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

1a

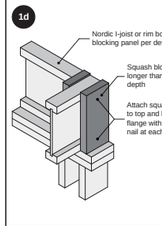


1b

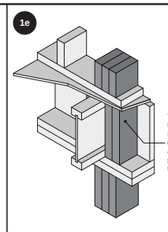


Note:
1. To avoid splitting flange, start nails at least 1-1/2 inch from end of I-joist. Nails may be driven at an angle to avoid splitting of bearing plate.

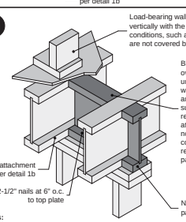
1d



1e

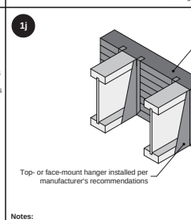


1g



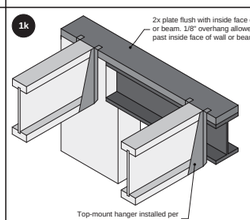
Notes:
1. An occasional blocking panel (one per line of blocking) may be left out for the passage of plumbing or ventilation ducts. For other applications, contact Nordic Structures.
2. For other options, see details 1g-1 to 1g-5.

1j



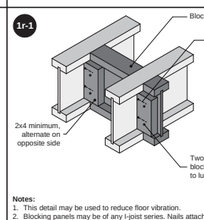
Notes:
1. Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.
2. For nailing schedules for multiple Nordic Lam or SCL beams, see the manufacturer's recommendations.

1k



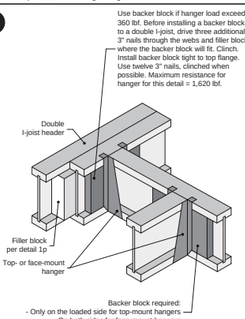
Note:
1. Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

1r-1



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.

1h

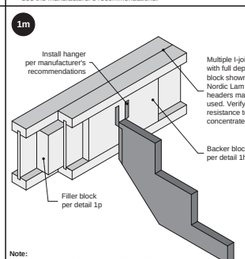


Flange width (in.)	Material thickness required (in.) [a]	Minimum depth (in.) [b]
2-1/2	1	5-1/2
3-1/2	1-1/2	7-1/4

[a] 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-O325 Standard.
[b] For face-mount hangers use net joist depth minus 3-1/4 inches for joists with 1-1/2-inch-thick flanges.

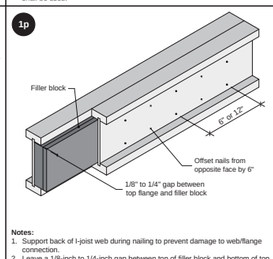
Notes:
1. Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.
2. For hanger resistance, see manufacturer's recommendations.
3. Verify double I-joist resistance to support concentrated loads.
4. Backer blocks must be long enough to permit required nailing without splitting.

1m



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

1p



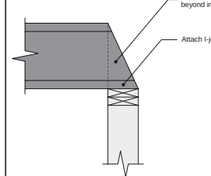
Notes:
1. Support back of I-joist web during nailing to prevent damage to web/flange connection.
2. Leave a 1/8-inch to 1/4-inch gap between top of filler block and bottom of top I-joist flange.
3. Filler block is required between joists for full length of span.
4. For flange width of 2-1/2 inches, nail joists together with two rows of 3-inch nails at 12 inches o.c. (clinched when possible) on each side of the double I-joist (total of four nails per foot). For flange width of 3-1/2 inches, use two rows of 3-inch nails at 6 inches o.c. on each side of the double I-joist (total of eight nails per foot).
5. The maximum factored load that may be applied to one side of the double I-joist using this detail is 860 lbf/ft.

Filler Block Requirements for Double I-joist Construction

Flange width (in.)	Net depth (in.)	Filler block size (in.)	Example
2-1/2	9-1/2	2-1/8 to 2-1/4 x 6	2x6 + 5/8" or 3/4" sheathing
	11-7/8	2-1/8 to 2-1/4 x 8	2x8 + 5/8" or 3/4" sheathing
	14	2-1/8 to 2-1/4 x 10	2x10 + 5/8" or 3/4" sheathing
	16	2-1/8 to 2-1/4 x 12	2x12 + 5/8" or 3/4" sheathing
3-1/2	9-1/2	3 x 6	2 x 2x6
	11-7/8	3 x 8	2 x 2x8
	14	3 x 10	2 x 2x10
	16	3 x 12	2 x 2x12

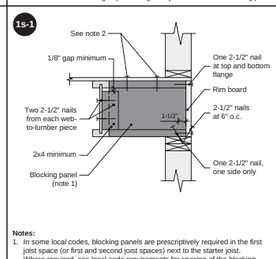
Note:
1. The height of the filler block may be different from that specified in the table, as long as it allows nailing and respects the required gap.

1n



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

1s-1



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

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

FOR ALL construction details →DC3

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	Round hole diameter (in.)														
		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'-6"	7'-9"	-	-	-	-	-	-
	NI-40x	0'-7"	0'-8"	1'-3"	2'-8"	4'-0"	4'-4"	5'-5"	7'-0"	8'-4"	-	-	-	-	-	-
	NI-60	0'-7"	1'-8"	3'-0"	4'-3"	5'-9"	6'-0"	7'-3"	8'-10"	10'-0"	-	-	-	-	-	-
	NI-80	1'-6"	2'-10"	4'-2"	5'-6"	7'-0"	7'-5"	8'-6"	10'-3"	11'-4"	-	-	-	-	-	-
	NI-90	0'-7"	0'-8"	1'-5"	3'-2"	4'-10"	5'-4"	6'-9"	8'-9"	10'-2"	-	-	-	-	-	-
14"	NI-20	0'-7"	0'-8"	0'-8"	1'-0"	2'-4"	2'-9"	3'-9"	5'-2"	6'-0"	6'-6"	8'-3"	10'-2"	-	-	-
	NI-40x	0'-7"	0'-8"	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"	-	-	-
	NI-90	0'-7"	0'-8"	0'-10"	2'-5"	4'-0"	4'-5"	5'-9"	7'-5"	8'-8"	9'-4"	11'-4"	12'-11"	-	-	-
16"	NI-60	0'-7"	0'-8"	0'-8"	1'-6"	2'-10"	3'-2"	4'-2"	5'-6"	6'-4"	7'-0"	8'-5"	9'-8"	10'-2"	12'-2"	13'-9"
	NI-80	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-90	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'-9"	15'-4"

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

Design Criteria

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

TABLE 6.2 – LOCATION OF DUCT CHASE OPENINGS

Simple span

Minimum distance from inside face of any support to centre of opening (ft-in.)

Joist depth	Joist series	Duct chase length (in.)								
		8	10	12	14	16	18	20	22	24
9-1/2"	NI-20	4'-1"	4'-5"	4'-10"	-	-	-	-	-	-
	NI-40x	5'-3"	5'-8"	6'-0"	6'-5"	6'-10"	7'-3"	7'-8"	-	-
	NI-60	5'-4"	5'-9"	6'-2"	6'-7"	7'-1"	7'-5"	8'-0"	-	-
	NI-80	5'-3"	5'-8"	6'-0"	6'-5"	6'-10"	7'-3"	7'-8"	8'-2"	8'-6"
11-7/8"	NI-20	5'-9"	6'-2"	6'-6"	-	-	-	-	-	-
	NI-40x	6'-8"	7'-2"	7'-6"	8'-1"	8'-6"	9'-1"	9'-6"	-	-
	NI-60	7'-3"	7'-8"	8'-0"	8'-6"	9'-0"	9'-3"	9'-9"	-	-
	NI-80	7'-2"	7'-7"	8'-0"	8'-5"	8'-10"	9'-3"	9'-8"	10'-2"	10'-8"
	NI-90	7'-6"	7'-11"	8'-4"	8'-9"	9'-2"	9'-7"	10'-1"	10'-7"	10'-11"
14"	NI-40x	8'-1"	8'-7"	9'-0"	9'-6"	10'-1"	10'-7"	11'-2"	-	-
	NI-60	8'-9"	9'-3"	9'-8"	10'-11"	10'-6"	11'-1"	11'-6"	-	-
	NI-80	9'-0"	9'-3"	9'-9"	10'-1"	10'-7"	11'-1"	11'-6"	12'-1"	12'-6"
	NI-90	9'-2"	9'-8"	10'-0"	10'-6"	10'-11"	11'-5"	11'-9"	12'-4"	12'-11"
16"	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"

Design Criteria

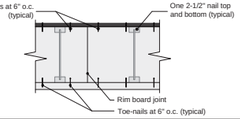
Joist spacing	Up to 24 inches
Loads	Live load = 40 psf and dead load = 15 psf
Deflection limits	L/480 under live load and L/240 under total load

Note:
1. Tabulated values are applicable to residential floor construction meeting the above design criteria.

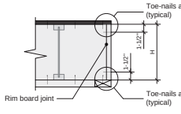
RIM BOARDS

8a

Rim Board Joint Between Floor Joists

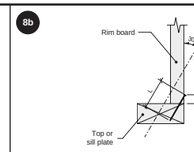


Rim Board Joint at Corner



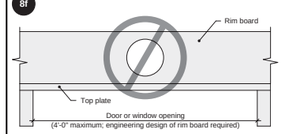
Notes:
1. Floor sheathing to rim board - Use 2-1/2-inch common nails at 6 inches o.c. **Caution:** The horizontal load resistance is not necessarily increased with a decreased nail spacing. Under no circumstances should the nail spacing be less than 3 inches. The 3-1/2-inch common nails used to connect the bottom plate of a wall to the rim board through the sheathing do not reduce the horizontal load resistance of the rim board provided that the 2-1/2-inch nail spacing (sheathing-rim board) is 6 inches o.c. and the 3-1/2-inch nail spacing (bottom plate-sheathing-rim board) is in accordance with the prescriptive requirements of the applicable code. APA recommends a minimum 3/8-inch panel edge distance be maintained when nailing. Calculations show that the tongue does not need to be removed for floor sheathing 7/8-inch thick or less when used in conjunction with rim boards of 1-1/8 inch. Some local code jurisdictions, however, may require removal of the tongue at the edge of floor framing when nailing it to rim board.
2. Rim board to I-joist - Use two 2-1/2-inch common nails, one each into the top and bottom flange.

8b



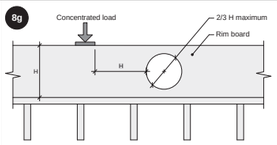
Note:
1. Rim board to sill plate - Toe-nail using 2-1/2-inch common nails at 6 inches o.c.

8f

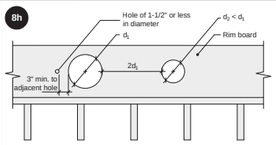


Note:
1. Do not cut holes in rim board installed over openings, such as doors or windows, where the rim board is not fully supported, except that holes of 1-1/2 inch or less in size are permitted provided they are positioned at the mid-depth and in the middle one-third of the span.

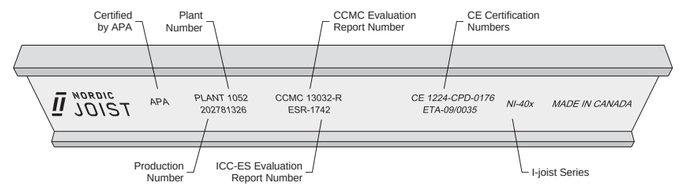
8g



8h



I-JOIST MARKING



BUILDER: GREENPARK HOMES SITE: BARLASSINA CONSTRUCTION MODEL: GARDEN 2 CITY: COMBRIDGE	Job Name: GARDEN 2 EL 1 Level: 2ND FLR FRAMING Label: B8 DR - i1838 Type: Beam	3 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed
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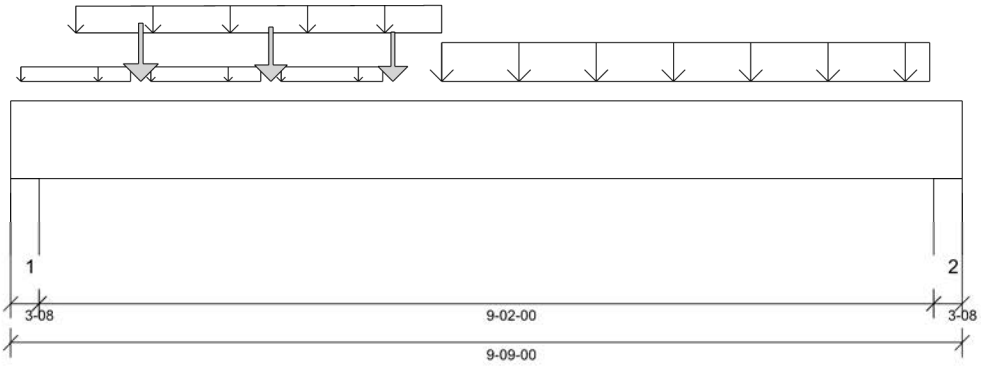
Illustration Not to Scale. Pitch: 0/12 | Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15 | Report Version: 2021.03.26 08/03/2022 07:22



DESIGN INFORMATION

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

Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:
Top: 1'- 2 3/4" Bottom: 9'- 9"

Factored Resistance of Support Material:

- 812 psi Wall @ 0'- 2 1/2"
- 812 psi Wall @ 9'- 6 1/2"

PLY TO PLY CONNECTION:
3 ROWS OF 3.25" PNEUMATIC GUN NAILS (0.120"x3.25") @ 8" O/C
NAIL FROM BOTH FACES (STAGGER 1/2 SPACE)

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

LICENSED PROFESSIONAL ENGINEER
8/03/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22080115

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 11"	1.25D + 1.5L	1.00	12114 lb ft	34949 lb ft	Passed - 35%
Factored Shear:	1'- 1"	1.25D + 1.5L	1.00	4670 lb	16578 lb	Passed - 28%
Live Load (LL) Pos. Defl.:	4'- 10 1/2"	L		0.120"	L/360	Passed - L/913
Total Load (TL) Pos. Defl.:	4'- 10 1/2"	D + L		0.184"	L/240	Passed - L/597

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	4690 lb		19110 lb	14920 lb	Passed - 31%
2	3-08	1.25D + 1.5L	1.00	5376 lb		19110 lb	14921 lb	Passed - 36%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	9'- 9"	Self Weight	Top	14 lb/ft	-	-	-
Uniform	0'- 1 1/4"	1'- 2 3/4"	Bk1(i1848)	Top	0 lb/ft	0 lb/ft	-	-
Uniform	1'- 5 1/4"	2'- 6 3/4"	Bk1(i1374)	Top	0 lb/ft	0 lb/ft	-	-
Uniform	2'- 9 1/4"	3'- 9 3/4"	Bk1(i1380)	Top	0 lb/ft	0 lb/ft	-	-
Uniform	4'- 5"	9'- 5"	Smoothed Load	Top	266 lb/ft	532 lb/ft	-	-
Tapered	0'- 8"	4'- 5"	Smoothed Load	Top	134 To 143 lb/ft	267 To 285 lb/ft	-	-
Point	1'- 4"	1'- 4"	J1(i1836)	Top	177 lb	354 lb	-	-
Point	2'- 8"	2'- 8"	J1(i482)	Top	162 lb	323 lb	-	-
Point	3'- 11"	3'- 11"	J1(i1243)	Top	141 lb	282 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	7(i346)	1134 lb	2129 lb	-	-
2	9'- 5 1/2"	9'- 9"	8(i347)	1333 lb	2526 lb	-	-

DESIGN NOTES

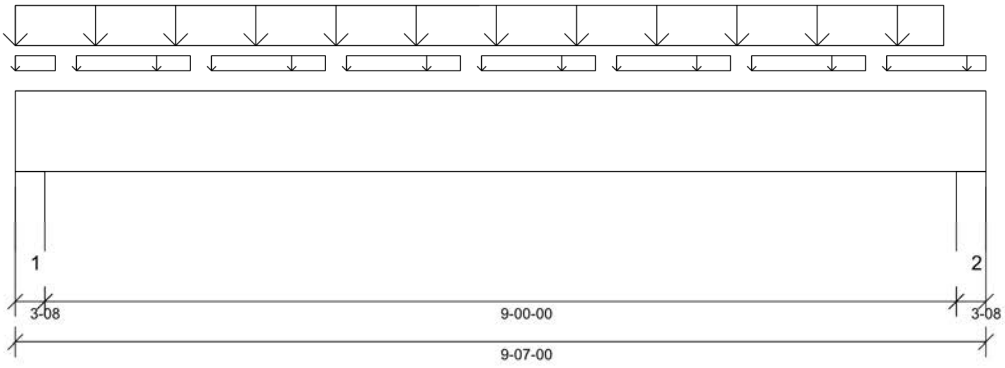
- The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been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

MiTek	BUILDER: GREENPARK HOMES SITE: BARLASSINA CONSTRUCTION MODEL: GARDEN 2 CITY: COMBRIDGE	Job Name: GARDEN 2 EL 1 Level: 2ND FLR FRAMING Label: B9 DR - i1843 Type: Beam	3 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15 — Report Version: 2021.03.26 08/03/2022 07:22



DESIGN INFORMATION

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

Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:
Top: 1'- 2 11/16" Bottom: 9'- 7"

Factored Resistance of Support Material:

- 812 psi Wall @ 0'- 2 1/2"
- 812 psi Wall @ 9'- 4 1/2"

PLY TO PLY CONNECTION:
3 ROWS OF 3.25" PNEUMATIC GUN NAILS (0.120"x3.25") @ 8" O/C
NAIL FROM BOTH FACES (STAGGER 1/2 SPACE)

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

LICENSED PROFESSIONAL ENGINEER
8/03/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22080116

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 6"	1.25D + 1.5L	1.00	11844 lb ft	34949 lb ft	Passed - 34%
Factored Shear:	8'- 6"	1.25D + 1.5L	1.00	4858 lb	16578 lb	Passed - 29%
Live Load (LL) Pos. Defl.:	4'- 9 1/2"	L		0.113"	L/360	Passed - L/956
Total Load (TL) Pos. Defl.:	4'- 9 1/2"	D + L		0.172"	L/240	Passed - L/626

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	5521 lb		19110 lb	14920 lb	Passed - 37%
2	3-08	1.25D + 1.5L	1.00	4878 lb		19110 lb	14920 lb	Passed - 33%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	9'- 7"	Self Weight	Top	14 lb/ft	-	-	-
Uniform	-0'	0'- 4 3/4"	Bk1(i1366)	Top	0 lb/ft	0 lb/ft	-	-
Uniform	0'- 7 1/4"	1'- 8 3/4"	Bk1(i1863)	Top	0 lb/ft	0 lb/ft	-	-
Uniform	1'- 11 1/4"	3'- 3/4"	Bk1(i1839)	Top	0 lb/ft	0 lb/ft	-	-
Uniform	3'- 3 1/4"	4'- 4 3/4"	Bk1(i1841)	Top	0 lb/ft	0 lb/ft	-	-
Uniform	4'- 7 1/4"	5'- 8 3/4"	Bk1(i1846)	Top	0 lb/ft	0 lb/ft	-	-
Uniform	5'- 11 1/4"	7'- 3/4"	Bk1(i1845)	Top	0 lb/ft	0 lb/ft	-	-
Uniform	7'- 3 1/4"	8'- 4 3/4"	Bk1(i1842)	Top	0 lb/ft	0 lb/ft	-	-
Uniform	8'- 7 1/4"	9'- 7"	Bk1(i1859)	Top	0 lb/ft	0 lb/ft	-	-
Tapered	0'	9'- 2"	Smoothed Load	Top	262 To 263 lb/ft	524 To 526 lb/ft	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	6(i345)	1334 lb	2533 lb	-	-
2	9'- 3 1/2"	9'- 7"	7(i346)	1208 lb	2280 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

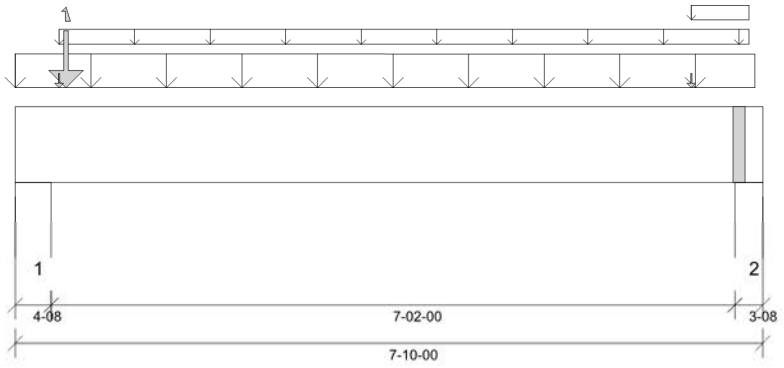
- Member design assumed proper ply to ply connection by others. Fastener spacing along length of member must not exceed 4 times depth of member. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally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

MiTek	BUILDER: GREENPARK HOMES SITE: BARLASSINA CONSTRUCTION MODEL: GARDEN 2 CITY: COMBRIDGE	Job Name: GARDEN 2 EL 1 Level: 2ND FLR FRAMING Label: B11 - i2166 Type: Beam	2 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 08/03/2022 09:26



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

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

Factored Resistance of Support Material:

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

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

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

LICENSED PROFESSIONAL ENGINEER
8/03/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22080117

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 5"	1.25D + 1.5L	1.00	4316 lb ft	23299 lb ft	Passed - 19%
Factored Shear:	1'- 2"	1.25D + 1.5L	1.00	4810 lb	11052 lb	Passed - 44%
Live Load (LL) Pos. Defl.:	3'- 11 1/8"	L		0.040"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 11 1/8"	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	4-08	1.25D + 1.5L	1.00	4843 lb		16380 lb	9689 lb	Passed - 50%
2	3-08	1.25D + 1.5L	1.00	2349 lb		12740 lb	7536 lb	Passed - 31%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	7'- 10"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'- 5 1/2"	7'- 8 1/4"	FC3 Floor Decking (Plan View Fill)	Top	6 lb/ft	12 lb/ft	-	-
Uniform	7'- 1"	7'- 8 1/4"	FC3 Floor Decking (Plan View Fill)	Top	2 lb/ft	3 lb/ft	-	-
Tapered	0'	7'- 9"	Smoothed Load	Back	138 To 136 lb/ft	276 To 272 lb/ft	-	-
Point	0'- 6 3/8"	0'- 6 3/8"	B13(i2139)	Front	576 lb	1114/0 lb	-	-
Point	0'- 5 1/2"	0'- 5 1/2"	FC3 Floor Decking (Plan View Fill)	Top	0 lb	0 lb	-	-
Point	7'- 1"	7'- 1"	FC3 Floor Decking (Plan View Fill)	Top	0 lb	0 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 4 1/2"	12(i353)	1201 lb	2289 lb	-	-
2	7'- 6 1/2"	7'- 10"	9(i350)	556 lb	1041 lb	-	-

DESIGN NOTES

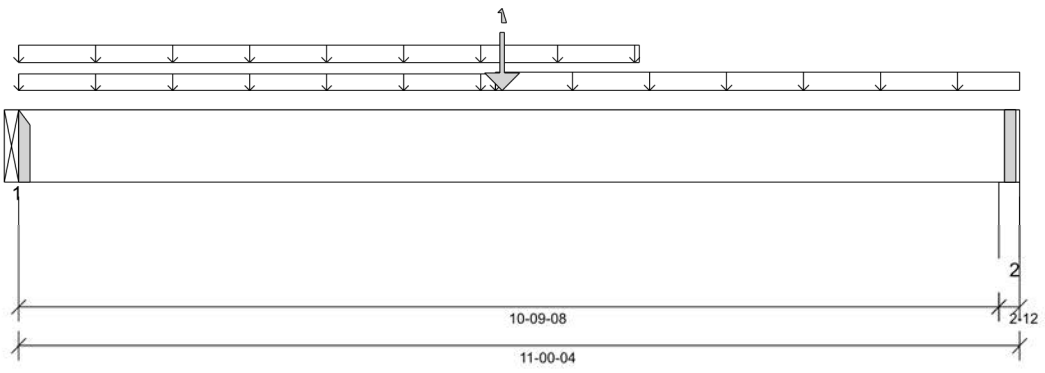
- The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been 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.
- 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=2391 lb, Q'r=9707 lb, Result=24.63%.

PLY TO PLY CONNECTION

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

MiTek	BUILDER: GREENPARK HOMES SITE: BARLASSINA CONSTRUCTION MODEL: GARDEN 2 CITY: COMBRIDGE	Job Name: GARDEN 2 EL 1 Level: 2ND FLR FRAMING Label: B12 - i1867 Type: Beam	2 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15 — Report Version: 2021.03.26 08/03/2022 07:22



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

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

Factored Resistance of Support Material:

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

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

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

STRUCTURAL COMPONENT ONLY
DWG # TF22080118

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	5'- 3 7/8"	1.25D + 1.5L	1.00	6400 lb ft	23299 lb ft	Passed - 27%
Factored Shear:	0'- 9 1/2"	1.25D + 1.5L	1.00	1481 lb	11052 lb	Passed - 13%
Live Load (LL) Pos. Defl.:	5'- 5 5/16"	L		0.094"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	5'- 4 7/8"	D + L		0.176"	L/240	Passed - L/736

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	1607 lb		5460 lb	-	Passed - 29%
2	2-12	1.25D + 1.5L	1.00	1534 lb		10010 lb	5921 lb	Passed - 26%

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'	11'- 1/4"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	-0'	6'- 10"	User Load	Top	60 lb/ft	-	-	-
Uniform	0'	5'- 3"	FC3 Floor Decking (Plan View Fill)	Top	15 lb/ft	29 lb/ft	-	-
Uniform	5'- 3"	11'- 1/4"	FC3 Floor Decking (Plan View Fill)	Top	27 lb/ft	53 lb/ft	-	-
Point	5'- 3 7/8"	5'- 3 7/8"	B13(i1860)	Back	367 lb	701/0 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	APP(i1853)	621 lb	561 lb	-	-
2	10'- 9 1/2"	11'- 1/4"	5(i344)	492 lb	606 lb	-	-

DESIGN NOTES

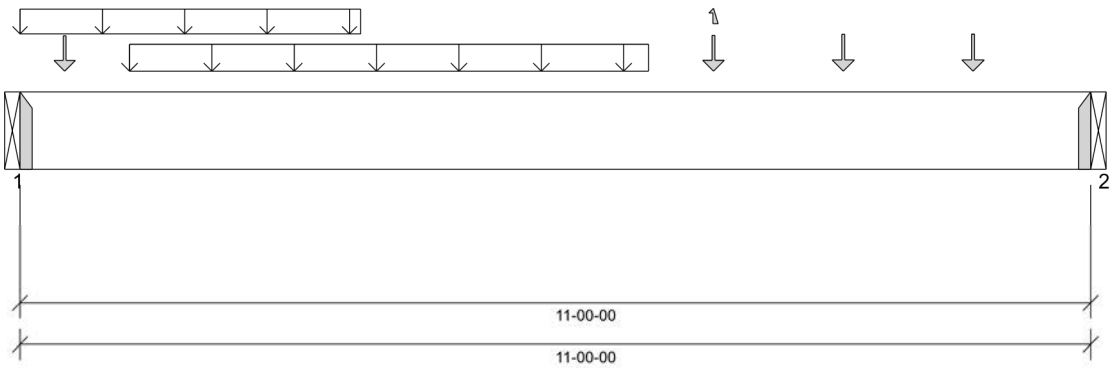
- The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- Lateral stability factor (KL) was based on user preference to use the width of all plies. (Consult with manufacturer for guideline pertaining to this design option.)
- Analysis and Design has been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

MiTek	BUILDER: GREENPARK HOMES SITE: BARLASSINA CONSTRUCTION MODEL: GARDEN 2 CITY: COMBRIDGE	Job Name: GARDEN 2 EL 1 Level: 2ND FLR FRAMING Label: B13 - i1860 Type: Beam	1 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15 — Report Version: 2021.03.26 08/03/2022 07:22



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 @ 11'

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 5 1/2"	1.25D + 1.5L	1.00	5299 lb ft	11650 lb ft	Passed - 45%
Factored Shear:	0'- 9 1/2"	1.25D + 1.5L	1.00	1881 lb	5526 lb	Passed - 34%
Live Load (LL) Pos. Defl.:	5'- 4 3/16"	L		0.221"	L/360	Passed - L/598
Total Load (TL) Pos. Defl.:	5'- 4 3/16"	D + L		0.335"	L/240	Passed - L/394

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	2391 lb		2730 lb	-	Passed - 88%
2	1-08	1.25D + 1.5L	1.00	1510 lb		2730 lb	-	Passed - 55%

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'	11'	Self Weight	Top	5 lb/ft	-	-	-
Uniform	0'	3'- 6"	User Load	Top	60 lb/ft	120 lb/ft	-	-
Uniform	1'- 1 1/2"	6'- 5 1/2"	Smoothed Load	Back	74 lb/ft	148 lb/ft	-	-
Point	0'- 5 1/2"	0'- 5 1/2"	J4(i1851)	Back	71 lb	143 lb	-	-
Point	7'- 1 1/2"	7'- 1 1/2"	J4(i395)	Back	64 lb	155/0 lb	-	-
Point	8'- 5 1/2"	8'- 5 1/2"	J5(i394)	Back	77 lb	154 lb	-	-
Point	9'- 9 1/2"	9'- 9 1/2"	J5(i394)	Back	77 lb	155 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B11(i1844)	576 lb	1114 lb	-	-
2	11'	11'	B12(i1867)	367 lb	701 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.

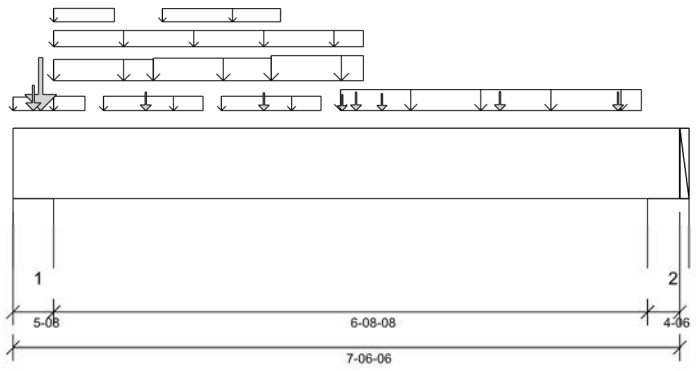
STRUCTURAL COMPONENT ONLY
DWG # TF22080119

MiTek	BUILDER: GREENPARK HOMES SITE: BARLASSINA CONSTRUCTION MODEL: GARDEN 2 CITY: COMBRIDGE	Job Name: GARDEN 2 EL 1 Level: 1ST FLR FRAMING Label: B1 - i1883 Type: Beam	2 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 08/03/2022 07:22



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

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

Factored Resistance of Support Material:

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

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

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

LICENSED PROFESSIONAL ENGINEER
8/03/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22080120 PG 1/2

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	3'- 10 1/2"	1.25D + 1.5L	1.00	5188 lb ft	23299 lb ft	Passed - 22%
Factored Neg. Moment:	0'- 4 1/2"	1.25D + 1.5L	1.00	379 lb ft	23299 lb ft	Passed - 2%
Factored Shear:	6'- 4 1/2"	1.25D + 1.5L	1.00	2454 lb	11052 lb	Passed - 22%
Live Load (LL) Pos. Defl.:	3'- 9 7/8"	L		0.037"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 9 11/16"	D + L		0.061"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	5-08	1.25D + 1.5L	1.00	7363 lb		20020 lb	11843 lb	Passed - 62%
2	4-06	1.25D + 1.5L	1.00	2652 lb		15925 lb	9420 lb	Passed - 28%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	7'- 6 3/8"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	0'- 5 1/2"	FC2 Floor Decking (Plan View Fill)	Top	2 lb/ft	5 lb/ft	-	-
Uniform	0'- 5 1/2"	3'- 11 1/2"	10(i351)	Top	66 lb/ft	2 lb/ft	-	-
Uniform	0'- 5 1/2"	1'- 7"	10(i351)	Top	61 lb/ft	122 lb/ft	-	-
Uniform	0'- 5 1/2"	1'- 1 3/4"	10(i351)	Top	2 lb/ft	4 lb/ft	-	-
Uniform	0'- 5 1/2"	0'- 9 3/4"	10(i351)	Top	9 lb/ft	17 lb/ft	-	-
Uniform	1'- 1/4"	2'- 1 3/4"	10(i351)	Top	9 lb/ft	17 lb/ft	-	-
Uniform	1'- 7"	2'- 11"	10(i351)	Top	71 lb/ft	142 lb/ft	-	-
Uniform	1'- 8 1/4"	3'- 1/4"	10(i351)	Top	1 lb/ft	2 lb/ft	-	-
Uniform	2'- 4 1/4"	3'- 5 3/4"	10(i351)	Top	9 lb/ft	17 lb/ft	-	-
Uniform	2'- 11"	3'- 11 1/2"	10(i351)	Top	90 lb/ft	181 lb/ft	-	-
Uniform	3'- 8 3/8"	7'- 1 3/16"	User Load	Top	60 lb/ft	120 lb/ft	-	-
Point	0'- 3 3/4"	0'- 3 3/4"	B2(i2053)	Front	878 lb	1625 lb	-	-
Point	1'- 6"	1'- 6"	J3(i2068)	Front	112 lb	223 lb	-	-
Point	2'- 10"	2'- 10"	J3(i2041)	Front	98 lb	196 lb	-	-
Point	3'- 8 5/8"	3'- 8 5/8"	B3(i1876)	Front	72 lb	103 lb	-	-
Point	4'- 2"	4'- 2"	J3(i2032)	Front	80 lb	160 lb	-	-
Point	5'- 6"	5'- 6"	J3(i2079)	Front	120 lb	240 lb	-	-
Point	6'- 10"	6'- 10"	J3(i2085)	Front	114 lb	227 lb	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	9(i350)	Top	279 lb	484 lb	-	-
Point	3'- 10 1/2"	3'- 10 1/2"	10(i351)	Top	120 lb	218 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	1(i33)	1959 lb	3273 lb	-	-
2	7'- 2"	7'- 6 3/8"	W19(i31)	702 lb	1186 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.

MiTek	BUILDER: GREENPARK HOMES SITE: BARLASSINA CONSTRUCTION MODEL: GARDEN 2 CITY: COMBRIDGE	Job Name: GARDEN 2 EL 1 Level: 1ST FLR FRAMING Label: B1 - i1883 Type: Beam	2 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed

- 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=3535 lb, Q'r=10920 lb, Result=32.37%.

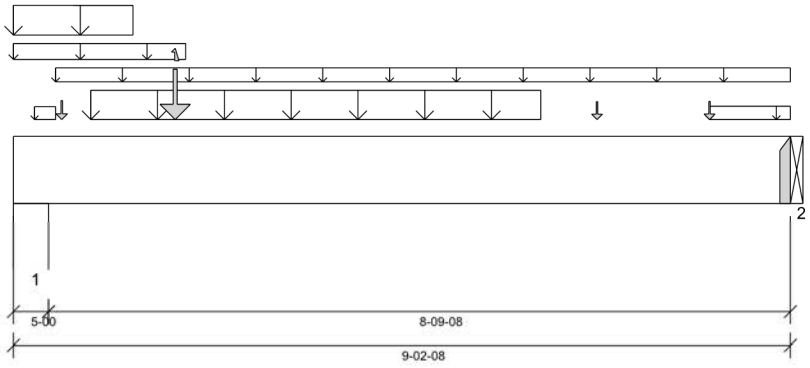
PLY TO PLY CONNECTION

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

STRUCTURAL COMPONENT ONLY

MiTek	BUILDER: GREENPARK HOMES SITE: BARLASSINA CONSTRUCTION MODEL: GARDEN 2 CITY: COMBRIDGE	Job Name: GARDEN 2 EL 1 Level: 1ST FLR FRAMING Label: B2 - i2053 Type: Beam	2 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15 — Report Version: 2021.03.26 08/03/2022 07:22



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

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

Factored Resistance of Support Material:

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

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

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

LICENSED PROFESSIONAL ENGINEER
8/03/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22080121
PG 1/2

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 11"	1.25D + 1.5L	1.00	11117 lb ft	23299 lb ft	Passed - 48%
Factored Shear:	1'- 2 1/2"	1.25D + 1.5L	1.00	6583 lb	11052 lb	Passed - 60%
Live Load (LL) Pos. Defl.:	4'- 6 1/8"	L		0.147"	L/360	Passed - L/715
Total Load (TL) Pos. Defl.:	4'- 6 1/16"	D + L		0.228"	L/240	Passed - L/463

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	5-00	1.25D + 1.5L	1.00	8301 lb		18200 lb	10766 lb	Passed - 77%
2	1-08	1.25D + 1.5L	1.00	3553 lb		5460 lb	-	Passed - 65%

CONNECTOR INFORMATION

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

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

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	9'- 2 1/2"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	-0'	2'- 1/2"	12(i353)	Top	81 lb/ft	-	-	-
Uniform	0'- 3"	0'- 6"	FC2 Floor Decking (Plan View Fill)	Top	3 lb/ft	6 lb/ft	-	-
Uniform	0'- 6"	9'- 2 1/2"	FC2 Floor Decking (Plan View Fill)	Top	12 lb/ft	24 lb/ft	-	-
Uniform	0'- 11"	6'- 3"	Smoothed Load	Back	133 lb/ft	266 lb/ft	-	-
Uniform	8'- 3"	9'- 2 1/2"	FC2 Floor Decking (Plan View Fill)	Top	6 lb/ft	12 lb/ft	-	-
Tapered	-0'	1'- 5"	12(i353)	Top	137 To 136 lb/ft	273 To 273 lb/ft	-	-
Point	0'- 6 7/8"	0'- 6 7/8"	B6(i1875)	Front	204 lb	391 lb	-	-
Point	6'- 11"	6'- 11"	J1(i1970)	Back	164 lb	330 lb	-	-
Point	8'- 3"	8'- 3"	J1(i2057)	Back	175 lb	351 lb	-	-
Point	1'- 11"	1'- 11"	12(i353)	Top	1212 lb	2284/0 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5"	2(i35)	2143 lb	3759 lb	-	-
2	9'- 2 1/2"	9'- 2 1/2"	B1(i1883)	878 lb	1625 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.

MiTek	BUILDER:	GREENPARK HOMES	Job Name:	GARDEN 2 EL 1	2 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed
	SITE:	BARLASSINA CONSTRUCTION	Level:	1ST FLR FRAMING		
	MODEL:	GARDEN 2	Label:	B2 - i2053		
	CITY:	COMBRIDGE	Type:	Beam		

PLY TO PLY CONNECTION

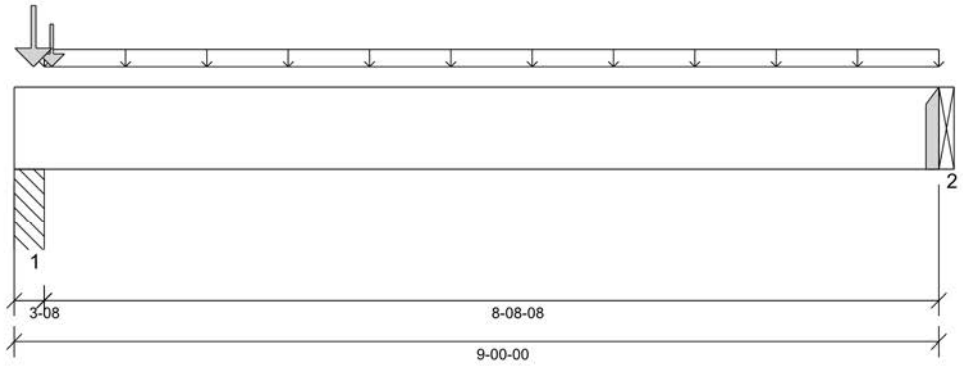
- Member design assumed proper ply to ply connection by others. Fastener spacing along length of member must not exceed 4 times depth of member. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally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

STRUCTURAL COMPONENT ONLY

DWG # TF22080121 PG 2/2

MiTek	BUILDER: GREENPARK HOMES SITE: BARLASSINA CONSTRUCTION MODEL: GARDEN 2 CITY: COMBRIDGE	Job Name: GARDEN 2 EL 1 Level: 1ST FLR FRAMING Label: B3 - i1876 Type: Beam	1 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15 — Report Version: 2021.03.26 08/03/2022 07:22



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

Top: 0' Bottom: 8'- 6 3/4"

Factored Resistance of Support Material:

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

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 4 15/16"	1.25D + 1.5L	1.00	659 lb ft	11650 lb ft	Passed - 6%
Factored Neg. Moment:	0'- 2 1/2"	1.25D + 1.5L	1.00	31 lb ft	4320 lb ft	Passed - 1%
Factored Shear:	8'- 2 1/2"	1.25D + 1.5L	1.00	238 lb	5526 lb	Passed - 4%
Live Load (LL) Pos. Defl.:	4'- 6 1/2"	L		0.016"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 6 9/16"	D + L		0.027"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	3-08	1.25D + 1.5L	1.00	2628 lb		6370 lb	3767 lb	Passed - 70%
2	1-08	1.25D + 1.5L	1.00	295 lb		2730 lb	-	Passed - 11%

CONNECTOR INFORMATION

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

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

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	9'	Self Weight	Top	5 lb/ft	-	-	-
Uniform	0'- 3 1/2"	9'	FC2 Floor Decking (Plan View Fill)	Top	13 lb/ft	27 lb/ft	-	-
Point	0'- 4 3/8"	0'- 4 3/8"	B6(i1875)	Back	213 lb	410 lb	-	-
Point	0'- 2 1/4"	0'- 2 1/4"	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 1/2"	PBO1(i42)	651 lb	1243 lb	-	-
2	9'	9'	B1(i1883)	72 lb	103 lb	-	-

DESIGN NOTES

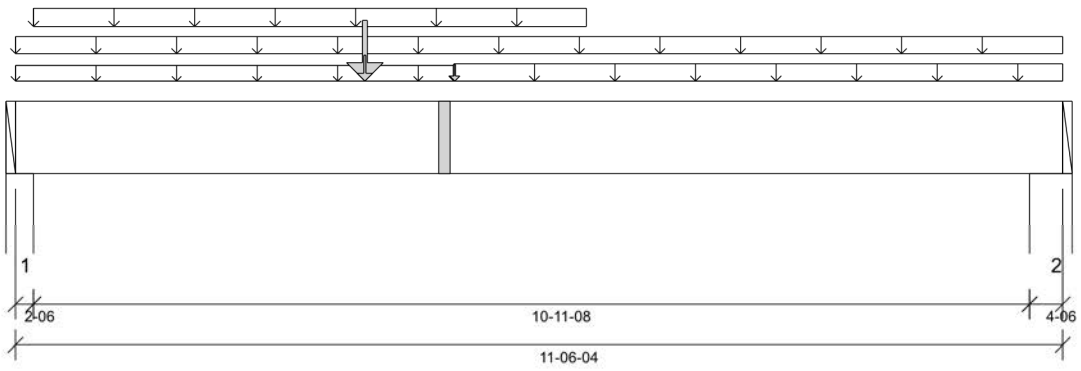
- The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based 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.

LICENSED PROFESSIONAL ENGINEER
8/03/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22080122

MiTek	BUILDER: GREENPARK HOMES SITE: BARLASSINA CONSTRUCTION MODEL: GARDEN 2 CITY: COMBRIDGE	Job Name: GARDEN 2 EL 1 Level: 1ST FLR FRAMING Label: B4 - i1921 Type: Beam	2 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15 — Report Version: 2021.03.26 08/03/2022 07:22



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

Top: 0' Bottom: 6'- 2 3/4"

Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 1 3/8"
- 615 psi Wall @ 11'- 2 7/8"

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

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

LICENSED PROFESSIONAL ENGINEER
8/03/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22080123

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	3'- 10 1/8"	1.25D + 1.5L	1.00	13632 lb ft	23299 lb ft	Passed - 59%
Factored Shear:	0'- 11 7/8"	1.25D + 1.5L	1.00	3806 lb	11052 lb	Passed - 34%
Live Load (LL) Pos. Defl.:	5'- 3 3/8"	L		0.223"	L/360	Passed - L/590
Total Load (TL) Pos. Defl.:	5'- 3 7/16"	D + L		0.372"	L/240	Passed - L/353
Permanent Deflection:	5'- 3 5/8"			-	L/360	Passed - L/910

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	2-06	1.25D + 1.5L	1.00	3947 lb		8645 lb	5114 lb	Passed - 77%
2	4-06	1.25D + 1.5L	1.00	2408 lb		15925 lb	9420 lb	Passed - 26%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	11'- 6 1/4"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	11'- 6 1/4"	FC2 Floor Decking (Plan View Fill)	Top	12 lb/ft	25 lb/ft	-	-
Uniform	0'	4'- 9 7/8"	FC2 Floor Decking (Plan View Fill)	Top	3 lb/ft	6 lb/ft	-	-
Uniform	0'- 2 3/8"	6'- 3 3/8"	User Load	Top	60 lb/ft	-	-	-
Uniform	4'- 9 7/8"	11'- 6 1/4"	FC2 Floor Decking (Plan View Fill)	Top	14 lb/ft	29 lb/ft	-	-
Point	3'- 10 1/8"	3'- 10 1/8"	B5(i2045)	Back	896 lb	1661 lb	-	-
Point	4'- 9 7/8"	4'- 9 7/8"	Bk2(i2089)	Back	24 lb	49 lb	-	-
Point	3'- 10 1/8"	3'- 10 1/8"	User Load	Top	200 lb	400 lb	-	-
Point	4'- 10"	4'- 10"	FC2 Floor Decking (Plan View Fill)	Top	26 lb	52 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 2 3/8"	W23(i44)	1198 lb	1673 lb	-	-
2	11'- 1 7/8"	11'- 6 1/4"	W20(i30)	678 lb	1000 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

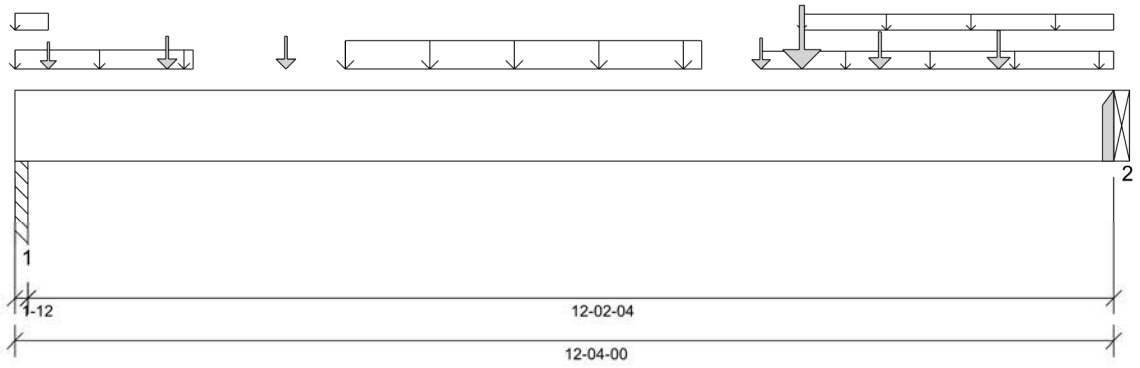
- Member design assumed proper ply to ply connection by others. Fastener spacing along length of member must not exceed 4 times depth of member. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally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

MiTek	BUILDER: GREENPARK HOMES SITE: BARLASSINA CONSTRUCTION MODEL: GARDEN 2 CITY: COMBRIDGE	Job Name: GARDEN 2 EL 1 Level: 1ST FLR FRAMING Label: B5 - i2045 Type: Beam	2 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 08/03/2022 07:22



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

Top: 0' Bottom: 1'- 2 1/4"

Factored Resistance of Support Material:

- 615 psi Column @ 0'- 3/4"
- 615 psi Beam @ 12'- 4"

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

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

LICENSED PROFESSIONAL ENGINEER
8/03/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22080124 PG 1/2

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	7'- 1/2"	1.25D + 1.5L	1.00	10363 lb ft	23299 lb ft	Passed - 44%
Factored Shear:	11'- 6 1/2"	1.25D + 1.5L	1.00	3550 lb	11052 lb	Passed - 32%
Live Load (LL) Pos. Defl.:	6'- 5 1/8"	L		0.264"	L/360	Passed - L/554
Total Load (TL) Pos. Defl.:	6'- 4 15/16"	D + L		0.409"	L/240	Passed - L/357

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	2958 lb		6370 lb	3767 lb	Passed - 79%
2	1-08	1.25D + 1.5L	1.00	3598 lb		5460 lb	-	Passed - 66%

CONNECTOR INFORMATION

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

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

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	12'- 4"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	2'	User Load	Top	60 lb/ft	-	-	-
Uniform	0'	0'- 4 1/2"	FC2 Floor Decking (Plan View Fill)	Top	6 lb/ft	12 lb/ft	-	-
Uniform	3'- 8 1/2"	7'- 8 1/2"	Smoothed Load	Back	78 lb/ft	157 lb/ft	-	-
Uniform	8'- 4 1/2"	12'- 4"	FC2 Floor Decking (Plan View Fill)	Top	11 lb/ft	23 lb/ft	-	-
Uniform	8'- 10"	12'- 4"	FC2 Floor Decking (Plan View Fill)	Top	0 lb/ft	1 lb/ft	-	-
Point	0'- 4 1/2"	0'- 4 1/2"	J3(i2032)	Back	81 lb	163 lb	-	-
Point	1'- 8 1/2"	1'- 8 1/2"	J3(i2079)	Back	124 lb	248 lb	-	-
Point	3'- 1/2"	3'- 1/2"	J3(i2085)	Back	124 lb	247 lb	-	-
Point	8'- 4 1/2"	8'- 4 1/2"	J4(i2036)	Back	111 lb	223 lb	-	-
Point	9'- 8 1/2"	9'- 8 1/2"	J4(i2082)	Back	156 lb	312 lb	-	-
Point	11'- 1/2"	11'- 1/2"	J4(i1950)	Back	165 lb	330 lb	-	-
Point	8'- 10"	8'- 10"	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'- 1 3/4"	PBO1(i42)	812 lb	1286 lb	-	-
2	12'- 4"	12'- 4"	B4(i1921)	896 lb	1661 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.

MiTek	BUILDER:	GREENPARK HOMES	Job Name:	GARDEN 2 EL 1	2 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed
	SITE:	BARLASSINA CONSTRUCTION	Level:	1ST FLR FRAMING		
	MODEL:	GARDEN 2	Label:	B5 - i2045		
	CITY:	COMBRIDGE	Type:	Beam		

- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

PLY TO PLY CONNECTION

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

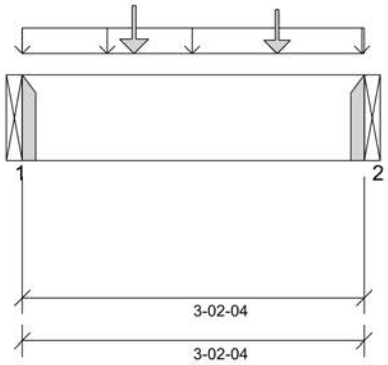
STRUCTURAL COMPONENT ONLY
DWG # TF22080124 PG 2/2

BUILDER: GREENPARK HOMES SITE: BARLASSINA CONSTRUCTION MODEL: GARDEN 2 CITY: COMBRIDGE	Job Name: GARDEN 2 EL 1 Level: 1ST FLR FRAMING Label: B6 - i1875 Type: Beam	**1 Ply Member** **1 3/4" x 9 1/2" (2.0E 3100)** **WestFraser LVL**	Status: **Design Passed**

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 08/03/2022 07:22



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

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

Factored Resistance of Support Material:

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

STRUCTURAL COMPONENT ONLY
DWG # TF22080125

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	1'- 4 7/8"	1.25D + 1.5L	1.00	752 lb ft	11650 lb ft	Passed - 6%
Factored Shear:	2'- 4 3/4"	1.25D + 1.5L	1.00	675 lb	5526 lb	Passed - 12%

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	1-08	1.25D + 1.5L	1.00	841 lb		2730 lb	-	Passed - 31%
2	1-08	1.25D + 1.5L	1.00	881 lb		2730 lb	-	Passed - 32%

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'- 2 1/4"	Self Weight	Top	5 lb/ft	-	-	-
Uniform	0'	3'- 2 1/4"	User Load	Top	60 lb/ft	120 lb/ft	-	-
Point	1'- 1/2"	1'- 1/2"	J3(i2068)	Back	112 lb	223 lb	-	-
Point	2'- 4 1/2"	2'- 4 1/2"	J3(i2041)	Back	98 lb	196 lb	-	-

UNFACTORED REACTIONS

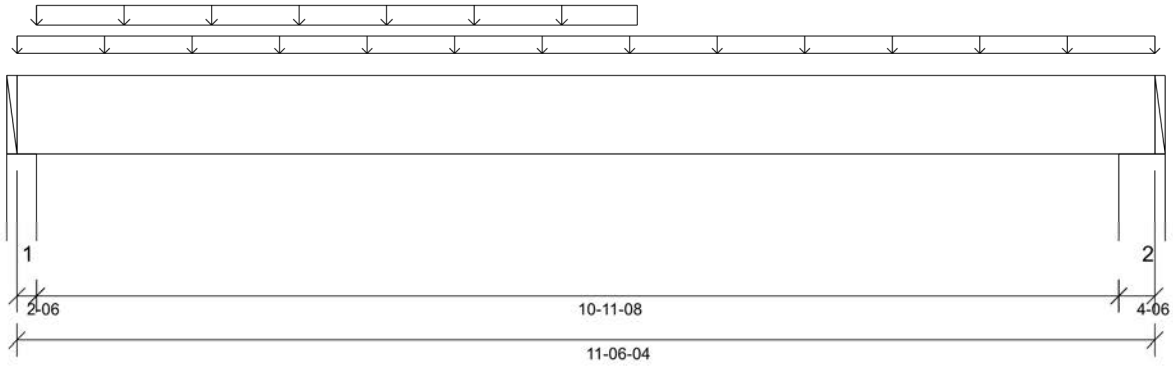
ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B2(i2053)	204 lb	391 lb	-	-
2	3'- 2 1/4"	3'- 2 1/4"	B3(i1876)	213 lb	410 lb	-	-

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.

MiTek	BUILDER: GREENPARK HOMES SITE: BARLASSINA CONSTRUCTION MODEL: GARDEN 2 CITY: COMBRIDGE	Job Name: GARDEN 2 EL 1 Level: 1ST FLR FRAMING Label: B7 - i1869 Type: Beam	1 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15 — Report Version: 2021.03.26 08/03/2022 07:22



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'- 11 1/2"

Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 1 3/8"
- 615 psi Wall @ 11'- 2 7/8"

STRUCTURAL COMPONENT ONLY
DWG # TF22080126

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 10 9/16"	1.25D + 1.5L	0.71	1179 lb ft	8268 lb ft	Passed - 14%
Factored Shear:	0'- 11 7/8"	1.25D + 1.5L	0.71	404 lb	3922 lb	Passed - 10%
Live Load (LL) Pos. Defl.:	5'- 8 1/8"	L		0.015"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	5'- 5 5/16"	D + L		0.080"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	2-06	1.25D + 1.5L	0.71	494 lb		3068 lb	1815 lb	Passed - 27%
2	4-06	1.25D + 1.5L	0.71	300 lb		5651 lb	3343 lb	Passed - 9%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	11'- 6 1/4"	Self Weight	Top	5 lb/ft	-	-	-
Uniform	0'	11'- 6 1/4"	FC2 Floor Decking (Plan View Fill)	Top	5 lb/ft	11 lb/ft	-	-
Uniform	0'- 2 3/8"	6'- 3 3/8"	User Load	Top	60 lb/ft	-	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 2 3/8"	W23(i44)	322 lb	63 lb	-	-
2	11'- 1 7/8"	11'- 6 1/4"	W20(i30)	161 lb	64 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.
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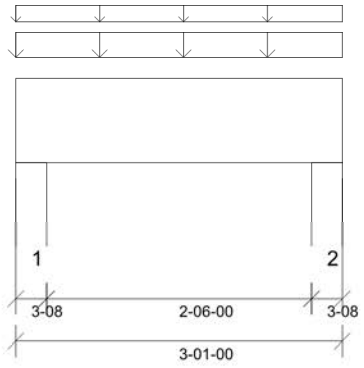
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

MiTek	BUILDER: GREENPARK HOMES SITE: BARLASSINA CONSTRUCTION MODEL: GARDEN 2 CITY: COMBRIDGE	Job Name: GARDEN 2 EL 1 Level: 1ST FLR FRAMING Label: B15 - i615 Type: Beam	2 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 08/03/2022 07:22



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

Top: 0' Bottom: 3'- 1"

Factored Resistance of Support Material:

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

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

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

LICENSED PROFESSIONAL ENGINEER
8/03/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22080127

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	1'- 6 1/2"	1.25D + 1.5L	0.70	224 lb ft	16260 lb ft	Passed - 1%
Factored Shear:	1'- 1"	1.25D + 1.5L	0.70	119 lb	7713 lb	Passed - 2%

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	3-08	1.25D + 1.5L	0.70	399 lb		8891 lb	5259 lb	Passed - 8%
2	3-08	1.25D + 1.5L	0.70	399 lb		8891 lb	5259 lb	Passed - 8%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	3'- 1"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	-0'	3'- 1"	E5(i338)	Top	146 lb/ft	31 lb/ft	-	-
Uniform	-0'	3'- 1"	FC1 Floor Decking (Plan View Fill)	Top	5 lb/ft	9 lb/ft	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	W25(i613)	246 lb	61 lb	-	-
2	2'- 9 1/2"	3'- 1"	W9(i21)	246 lb	61 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

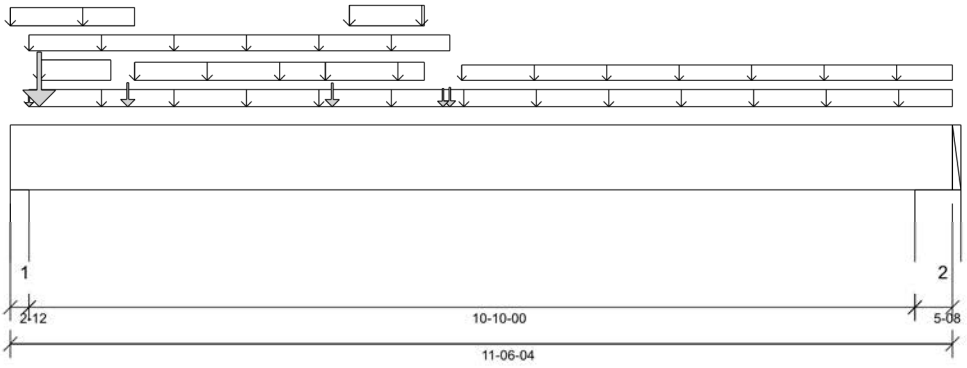
- Member design assumed proper ply to ply connection by others. Fastener spacing along length of member must not exceed 4 times depth of member. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally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

MiTek	BUILDER: GREENPARK HOMES SITE: BARLASSINA CONSTRUCTION MODEL: GARDEN 2 CITY: COMBRIDGE	Job Name: GARDEN 2 EL 3 Level: 2ND FLR FRAMING Label: B16C - i2230 Type: Beam	2 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 08/03/2022 07:16



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: 6' Bottom: 5'- 6 1/2"

Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 1 3/4"
- 615 psi Wall @ 11'- 1 3/4"

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

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

STRUCTURAL COMPONENT ONLY
DWG # TF22080128

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 9 5/8"	1.25D + 1.5S + L	1.00	6011 lb ft	22521 lb ft	Passed - 27%
Factored Shear:	1'- 1/4"	1.25D + 1.5S + L	1.00	2453 lb	11052 lb	Passed - 22%
Live Load (LL) Pos. Defl.:	5'- 5 9/16"	S + 0.5L		0.094"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	5'- 5 1/16"	D + S + 0.5L		0.186"	L/240	Passed - L/700

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	2-12	1.25D + 1.5S + L	1.00	3799 lb		10010 lb	5921 lb	Passed - 64%
2	5-08	1.25D + 1.5S + L	1.00	1618 lb		20020 lb	11843 lb	Passed - 14%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	11'- 6 1/4"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	-0'	1'- 6 1/4"	E19(i2085)	Top	100 lb/ft	-	-	-
Uniform	0'- 2 3/4"	11'- 6 1/4"	User Load	Front	26 lb/ft	-	52 lb/ft	-
Uniform	0'- 2 3/4"	5'- 4 1/2"	FC3 Floor Decking (Plan View Fill)	Top	17 lb/ft	33 lb/ft	-	-
Uniform	0'- 4 1/4"	1'- 2 3/4"	E19(i2085)	Top	44 lb/ft	-	107 lb/ft	-
Uniform	1'- 6 1/4"	3'- 10 1/4"	E18(i2084)	Top	100 lb/ft	-	-	-
Uniform	3'- 10 1/4"	5'- 3/4"	E15(i2081)	Top	100 lb/ft	-	-	-
Uniform	4'- 1 3/4"	5'- 3/4"	E15(i2081)	Top	44 lb/ft	-	107 lb/ft	-
Uniform	5'- 6 1/4"	11'- 6 1/4"	User Load	Back	14 lb/ft	-	27 lb/ft	-
Point	5'- 4 1/2"	5'- 4 1/2"	B17C(i2234)	Back	80 lb	5 lb	50 lb	-
Point	0'- 2 3/4"	0'- 2 3/4"	FC3 Floor Decking (Plan View Fill)	Top	0 lb	0 lb	-	-
Point	0'- 4 1/4"	0'- 4 1/4"	E19(i2085)	Top	301 lb	-	666 lb	-
Point	1'- 5 1/4"	1'- 5 1/4"	E19(i2085)	Top	87 lb	-	159 lb	-
Point	3'- 11 1/4"	3'- 11 1/4"	E15(i2081)	Top	85 lb	-	153 lb	-
Point	5'- 3 1/2"	5'- 3 1/2"	E14(i2080)	Top	52 lb	-	56 lb	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 2 3/4"	5(i344)	1233 lb	132 lb	1425 lb	-
2	11'- 3/4"	11'- 6 1/4"	E9(i1328)	530 lb	44 lb	599 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

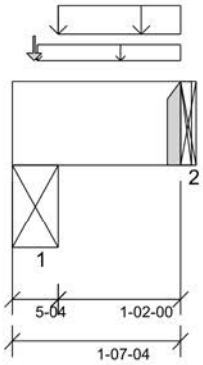
- Member design assumed proper ply to ply connection by others. Fastener spacing along length of member must not exceed 4 times depth of member. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally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

MiTek	BUILDER: GREENPARK HOMES SITE: BARLASSINA CONSTRUCTION MODEL: GARDEN 2 CITY: COMBRIDGE	Job Name: GARDEN 2 EL 3 Level: 2ND FLR FRAMING Label: B17C - i2234 Type: Beam	2 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 08/03/2022 07:16



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

Top: 0' Bottom: 1'- 2"

Factored Resistance of Support Material:

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

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

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

LICENSED PROFESSIONAL ENGINEER
8/03/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22080129

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	1'- 5/16"	1.25D + 1.5L + S	0.80	52 lb ft	18748 lb ft	Passed - 0%
Factored Shear:	0'- 9 3/4"	1.25D + 1.5S + L	0.94	78 lb	10369 lb	Passed - 1%

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	5-04	1.25D + 1.5S + L	0.94	355 lb		17930 lb	10603 lb	Passed - 3%
2	1-08	1.25D + 1.5L + S	0.80	184 lb		4393 lb	-	Passed - 4%

CONNECTOR INFORMATION

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

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

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	1'- 7 1/4"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'- 2 7/8"	1'- 7 1/4"	FC3 Floor Decking (Plan View Fill)	Top	3 lb/ft	6 lb/ft	-	-
Uniform	0'- 5 1/4"	1'- 7 1/4"	E14(i2080)	Top	144 lb/ft	-	107 lb/ft	-
Point	0'- 2 1/2"	0'- 2 1/2"	E13(i2079)	Top	49 lb	-	49 lb	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/4"	STL BM(i358)	157 lb	5 lb	124 lb	-
2	1'- 7 1/4"	1'- 7 1/4"	B16C(i2230)	80 lb	5 lb	50 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

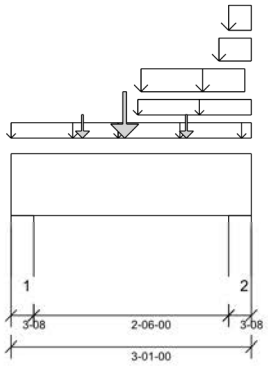
- Member design assumed proper ply to ply connection by others. Fastener spacing along length of member must not exceed 4 times depth of member. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally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

MiTek	BUILDER: GREENPARK HOMES SITE: BARLASSINA CONSTRUCTION MODEL: GARDEN 2 CITY: COMBRIDGE	Job Name: GARDEN 2 EL 1 WITH DECK Level: 1ST FLR FRAMING Label: B1A - i1740 Type: Beam	2 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 08/03/2022 07:30



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

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

Factored Resistance of Support Material:

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

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

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

LICENSED PROFESSIONAL ENGINEER
8/03/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22080130

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	1'- 5 1/2"	1.25D + 1.5L + S	1.00	2125 lb ft	23299 lb ft	Passed - 9%
Factored Shear:	1'- 1"	1.25D + 1.5L + S	1.00	1986 lb	11052 lb	Passed - 18%

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	2134 lb		12740 lb	7536 lb	Passed - 28%
2	3-08	1.25D + 1.5L + S	1.00	2781 lb		12740 lb	7536 lb	Passed - 37%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	3'- 1"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	-0'	1'- 4 1/2"	E15(i2134)	Top	100 lb/ft	-	-	-
Uniform	1'- 4 1/2"	3'- 1"	E16(i2135)	Top	100 lb/ft	-	-	-
Uniform	1'- 7 1/2"	3'- 1"	E16(i2135)	Top	100 lb/ft	-	-	-
Uniform	1'- 8"	3'	E16(i2135)	Top	98 lb/ft	195 lb/ft	-	-
Uniform	2'- 8"	3'- 1"	E16(i2135)	Top	98 lb/ft	195 lb/ft	-	-
Uniform	2'- 9 1/2"	3'- 1"	E16(i2135)	Top	119 lb/ft	-	227 lb/ft	-
Point	0'- 11"	0'- 11"	J1(i1696)	Front	173 lb	345 lb	-	-
Point	2'- 3"	2'- 3"	J1(i1686)	Front	173 lb	345 lb	-	-
Point	1'- 5 1/2"	1'- 5 1/2"	E16(i2135)	Top	679 lb	633 lb	210 lb	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	W1(i12)	704 lb	684 lb	98 lb	-
2	2'- 9 1/2"	3'- 1"	W32(i1792)	1011 lb	980 lb	178 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.
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- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
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- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

PLY TO PLY CONNECTION

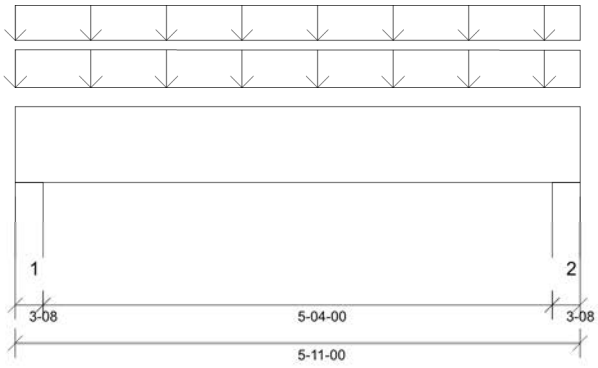
- Member design assumed proper ply to ply connection by others. Fastener spacing along length of member must not exceed 4 times depth of member. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally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

MiTek	BUILDER: GREENPARK HOMES SITE: BARLASSINA CONSTRUCTION MODEL: GARDEN 2 CITY: COMBRIDGE	Job Name: GARDEN 2 EL 1 WITH WALKO... Level: 1ST FLR FRAMING Label: B1B - i1740 Type: Beam	2 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 08/03/2022 07:34



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

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

Factored Resistance of Support Material:

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

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

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

LICENSED PROFESSIONAL ENGINEER
8/03/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22080131

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 11"	1.25D + 1.5L	1.00	4711 lb ft	23299 lb ft	Passed - 20%
Factored Shear:	4'- 10"	1.25D + 1.5L	1.00	3104 lb	11052 lb	Passed - 28%
Live Load (LL) Pos. Defl.:	2'- 11 1/2"	L		0.022"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	2'- 11 1/2"	D + L		0.037"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	3-08	1.25D + 1.5L	1.00	3915 lb		12740 lb	7536 lb	Passed - 52%
2	3-08	1.25D + 1.5L	1.00	3850 lb		12740 lb	7536 lb	Passed - 51%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	5'- 11"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	5'- 11"	Smoothed Load	Front	146 lb/ft	291 lb/ft	-	-
Tapered	-0'	5'- 11"	E1(i335)	Top	232 To 230 lb/ft	263 To 259 lb/ft	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	W1(i12)	1156 lb	1657 lb	-	-
2	5'- 7 1/2"	5'- 11"	W34(i1796)	1133 lb	1612 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.
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- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

PLY TO PLY CONNECTION

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

NORDIC STRUCTURES

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

NORDIC STRUCTURES

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

NORDIC STRUCTURES

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

NORDIC STRUCTURES

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

NORDIC STRUCTURES

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

NORDIC STRUCTURES

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

NORDIC STRUCTURES

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

NORDIC STRUCTURES

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

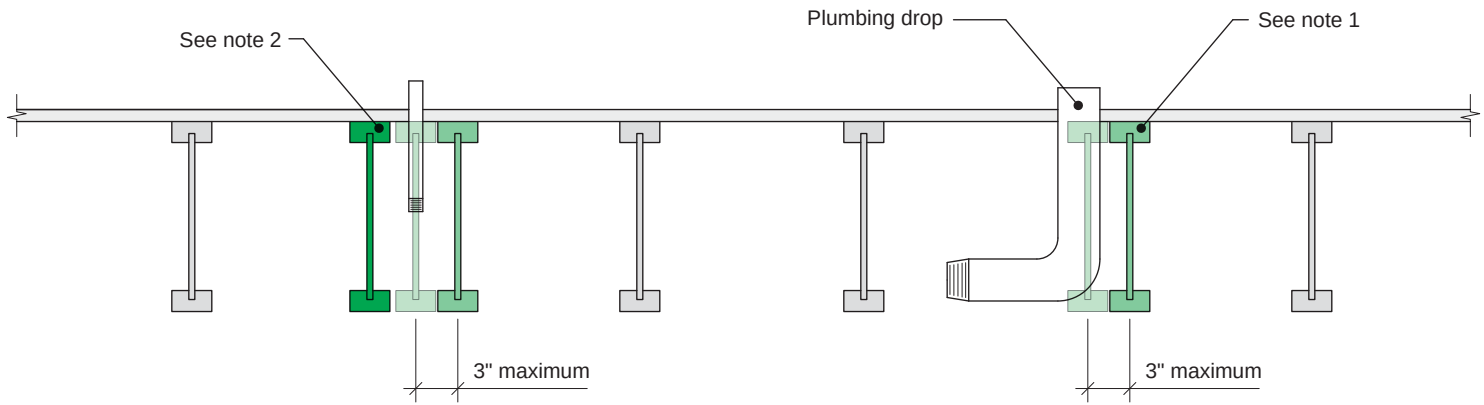
Joist depth	Joist series	Bare				1/2 in. gypsum ceiling			
		On centre spacing				On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-10"	15'-0"	14'-5"	13'-5"	16'-4"	15'-5"	14'-6"	13'-5"
	NI-40x	16'-11"	15'-11"	15'-4"	14'-9"	17'-4"	16'-4"	15'-9"	14'-11"
	NI-60	17'-1"	16'-1"	15'-6"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

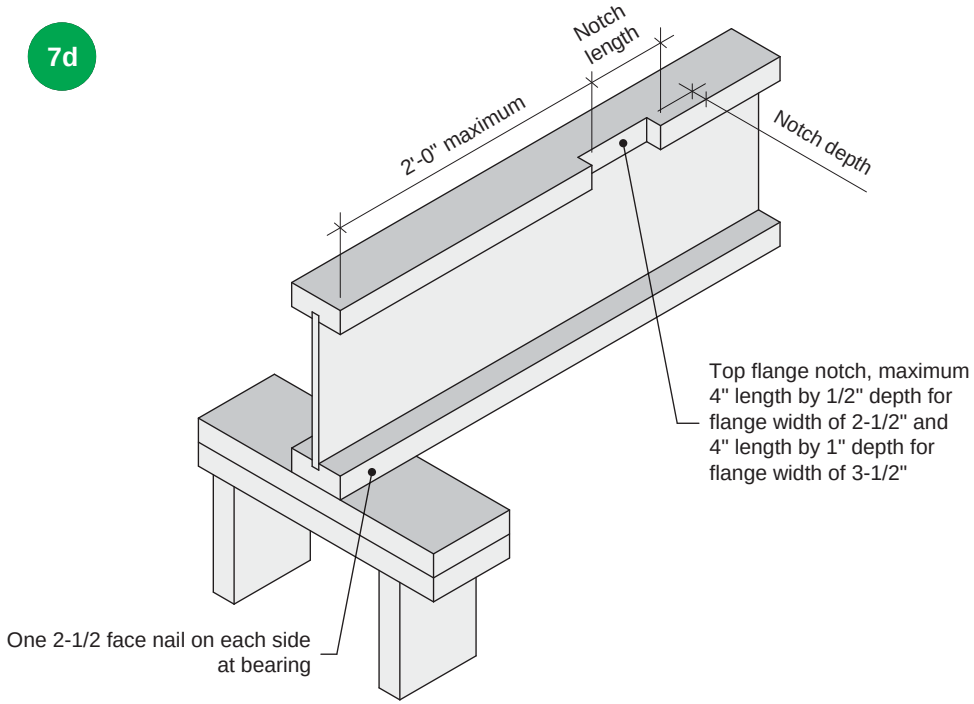


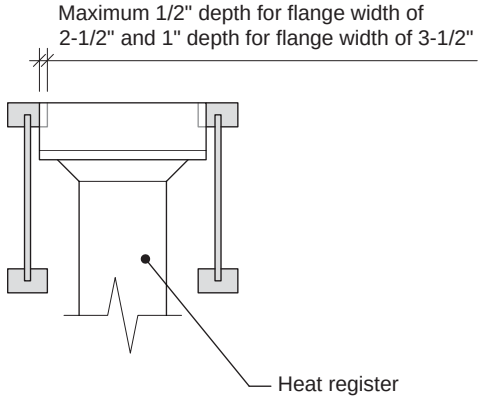
Notes:

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.