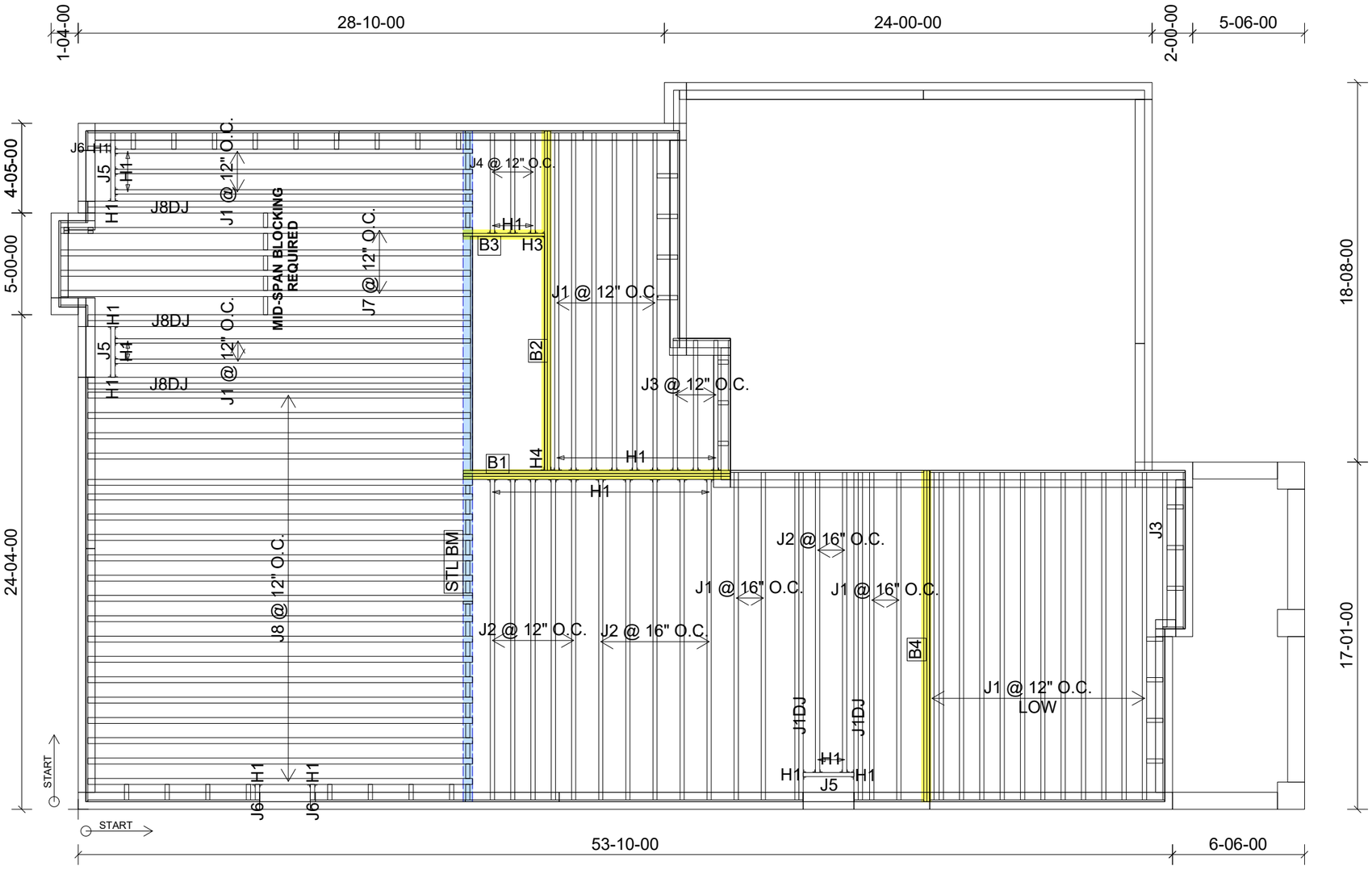

Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	27
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J3	8-00-00	11 7/8" NI-40x	1	4
J4	6-00-00	11 7/8" NI-40x	1	3
J5	4-00-00	11 7/8" NI-40x	1	3
J6	2-00-00	11 7/8" NI-40x	1	3
J7	22-00-00	11 7/8" NI-80	1	4
J8	20-00-00	11 7/8" NI-80	1	20
J8DJ	20-00-00	11 7/8" NI-80	2	6
B2	18-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B4	18-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B1	14-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	3	3
B3	4-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	1	1

Connector Summary		
Qty	Manuf	Product
3	H1	IUS2.56/11.88
2	H1	IUS2.56/11.88
3	H1	IUS2.56/11.88
19	H1	IUS2.56/11.88
8	H1	IUS2.56/11.88
2	H1	IUS2.56/11.88
1	H3	HUS1.81/10
1	H4	HGUS410

TOWN OF BRADFORD WEST GWILLIMBURY
BUILDING DEPARTMENT
PLANS EXAMINED
ONTARIO BUILDING CODE APPLIES
DATE: 2022-09-01
INSPECTOR: BG

REVIEWED

DATE: 6/22/22

1st FLOOR FRAMING

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: OCT. 2021
BUILDER: BAYVIEW WELLINGTON
SITE: GREEN VALLEY EAST
MODEL: S42-19
ELEVATION: A
LOT:
CITY: BRADFORD
SALESMAN: RICK DICIANO
DESIGNER: CH
REVISION:

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

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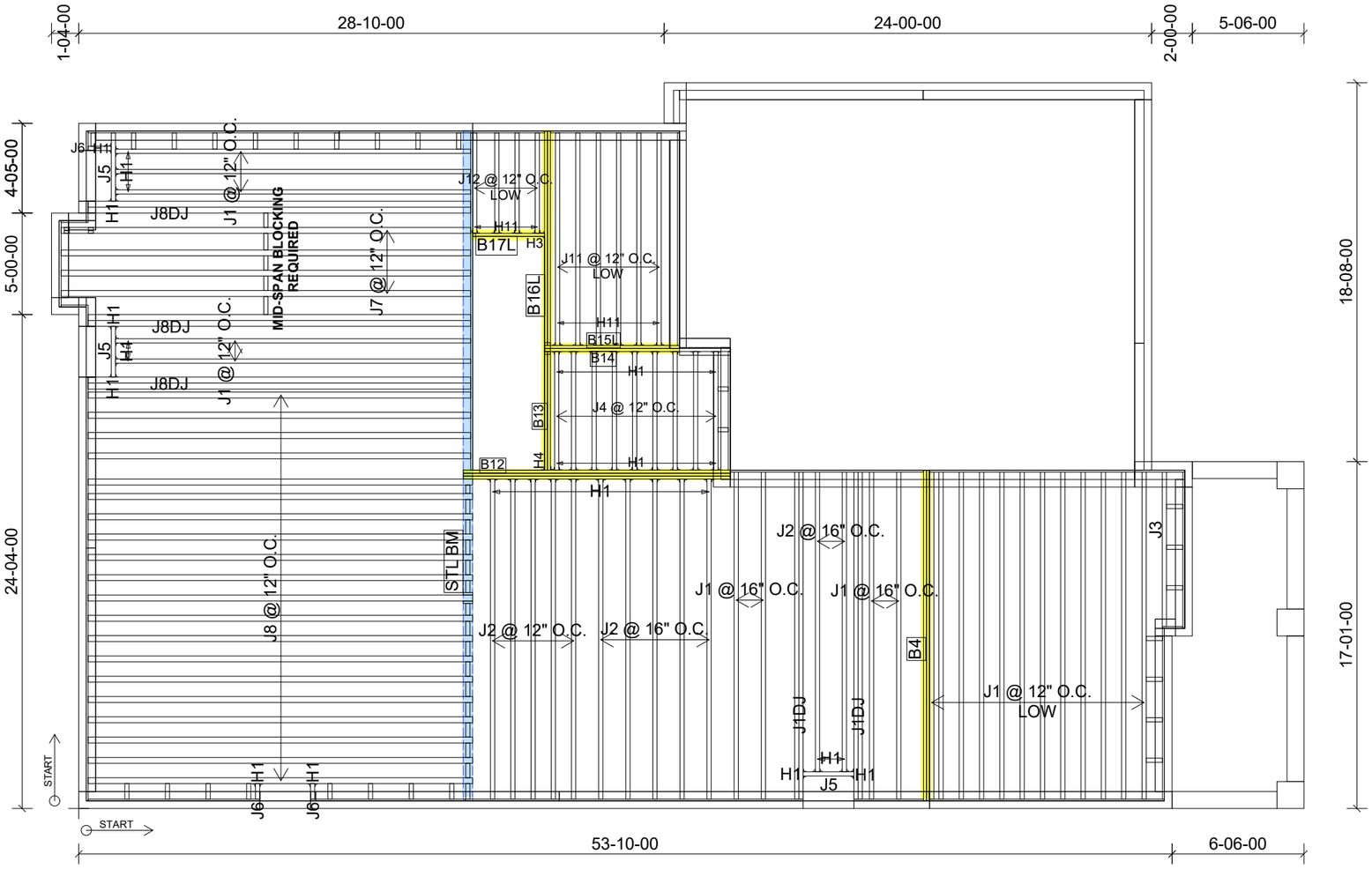
LOADING:
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: +5.0 lb/ft²

JOIST LL DEFLECTION LIMIT: L/480

SUBFLOOR: 5/8" GLUED AND NAILED



Products				
PlotID	Length	Product	Plies	Net Qty
J11	12-00-00	9 1/2" NI-40x	1	6
J12	6-00-00	9 1/2" NI-40x	1	4
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J1DJ	18-00-00	11 7/8" NI-40x	2	4
J2	16-00-00	11 7/8" NI-40x	1	12
J3	8-00-00	11 7/8" NI-40x	1	1
J4	6-00-00	11 7/8" NI-40x	1	9
J5	4-00-00	11 7/8" NI-40x	1	3
J6	2-00-00	11 7/8" NI-40x	1	3
J7	22-00-00	11 7/8" NI-80	1	4
J8	20-00-00	11 7/8" NI-80	1	20
J8DJ	20-00-00	11 7/8" NI-80	2	6
B16L	12-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B15L	8-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B17L	4-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B4	18-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B12	14-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	3	3
B14	10-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	1	1
B13	6-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2

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8	H1	IUS2.56/11.88
2	H1	IUS2.56/11.88
1	H3	HUS1.81/10
1	H4	HGUS410
10	H11	IUS2.56/9.5

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: OCT. 2021
BUILDER: BAYVIEW WELLINGTON
SITE: GREEN VALLEY EAST
MODEL: S42-19
ELEVATION: A
LOT:
CITY: BRADFORD
SALESMAN: RICK DICIANO
DESIGNER: CH
REVISION:

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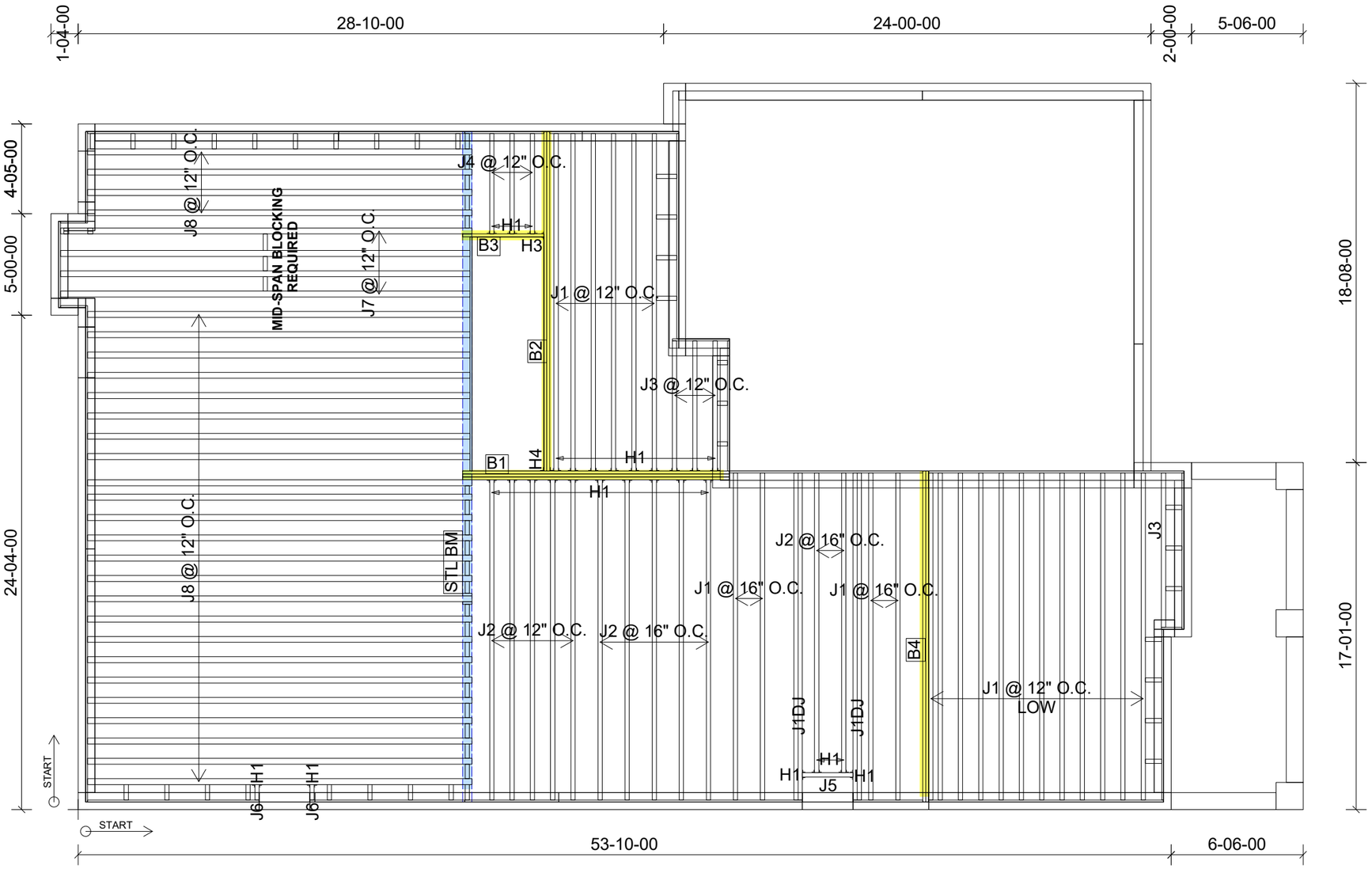
SUBFLOOR: 5/8" GLUED AND NAILED

REVIEWED

DATE: 6/22/22

1st FLOOR FRAMING
SUNKEN OPTION



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J5	4-00-00	11 7/8" NI-40x	1	1
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B2	18-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
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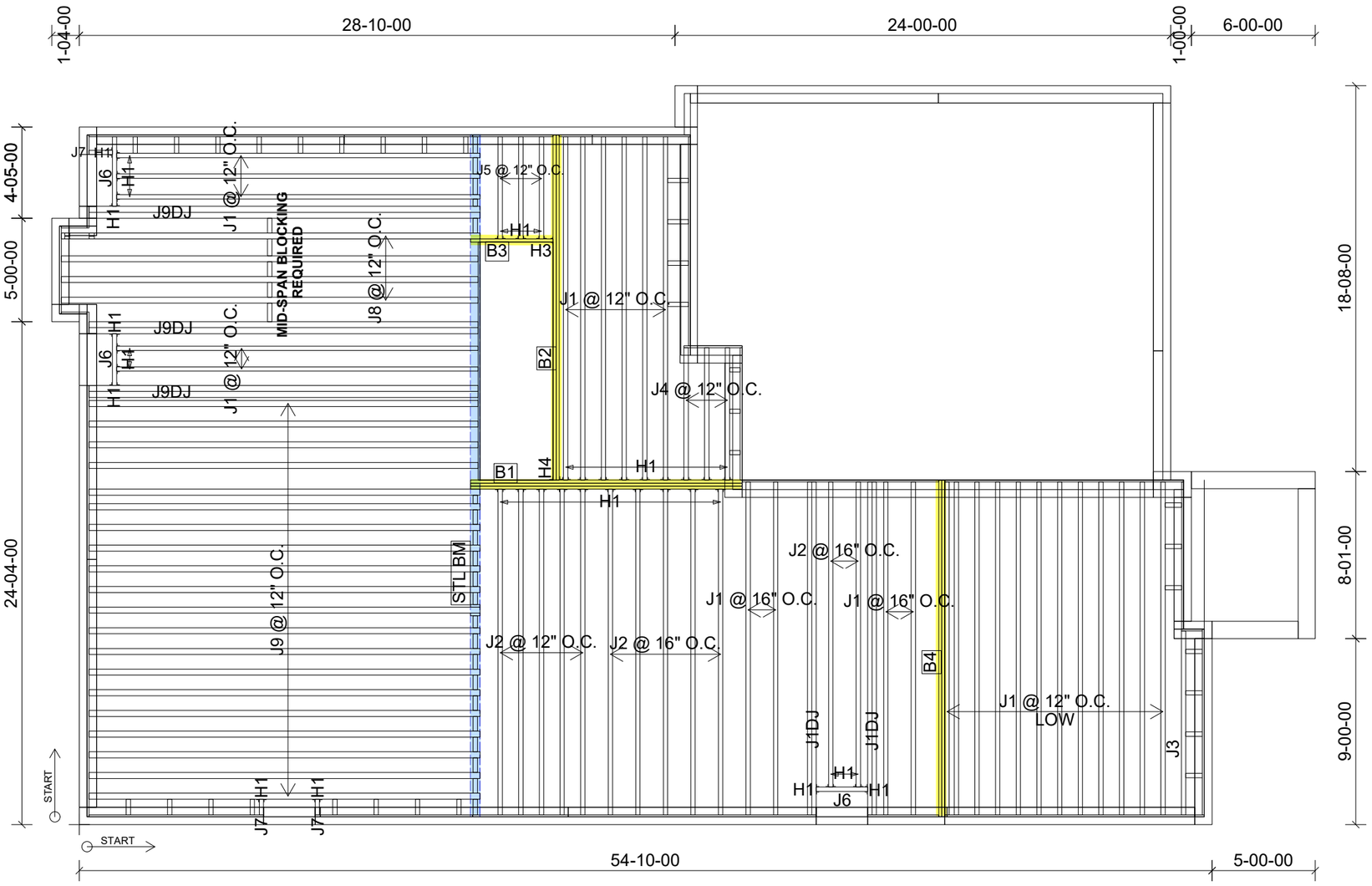
REVIEWED

DATE: 6/22/22

1st FLOOR FRAMING
WOD / WOB CONDITION



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J9DJ	20-00-00	11 7/8" NI-80	2	6
B2	18-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B4	18-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B1	14-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	3	3
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REVIEWED

DATE: 6/22/22

1st FLOOR FRAMING

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: OCT. 2021
BUILDER: BAYVIEW WELLINGTON
SITE: GREEN VALLEY EAST
MODEL: S42-19
ELEVATION: B
LOT:
CITY: BRADFORD
SALESMAN: RICK DICIANO
DESIGNER: CH
REVISION:

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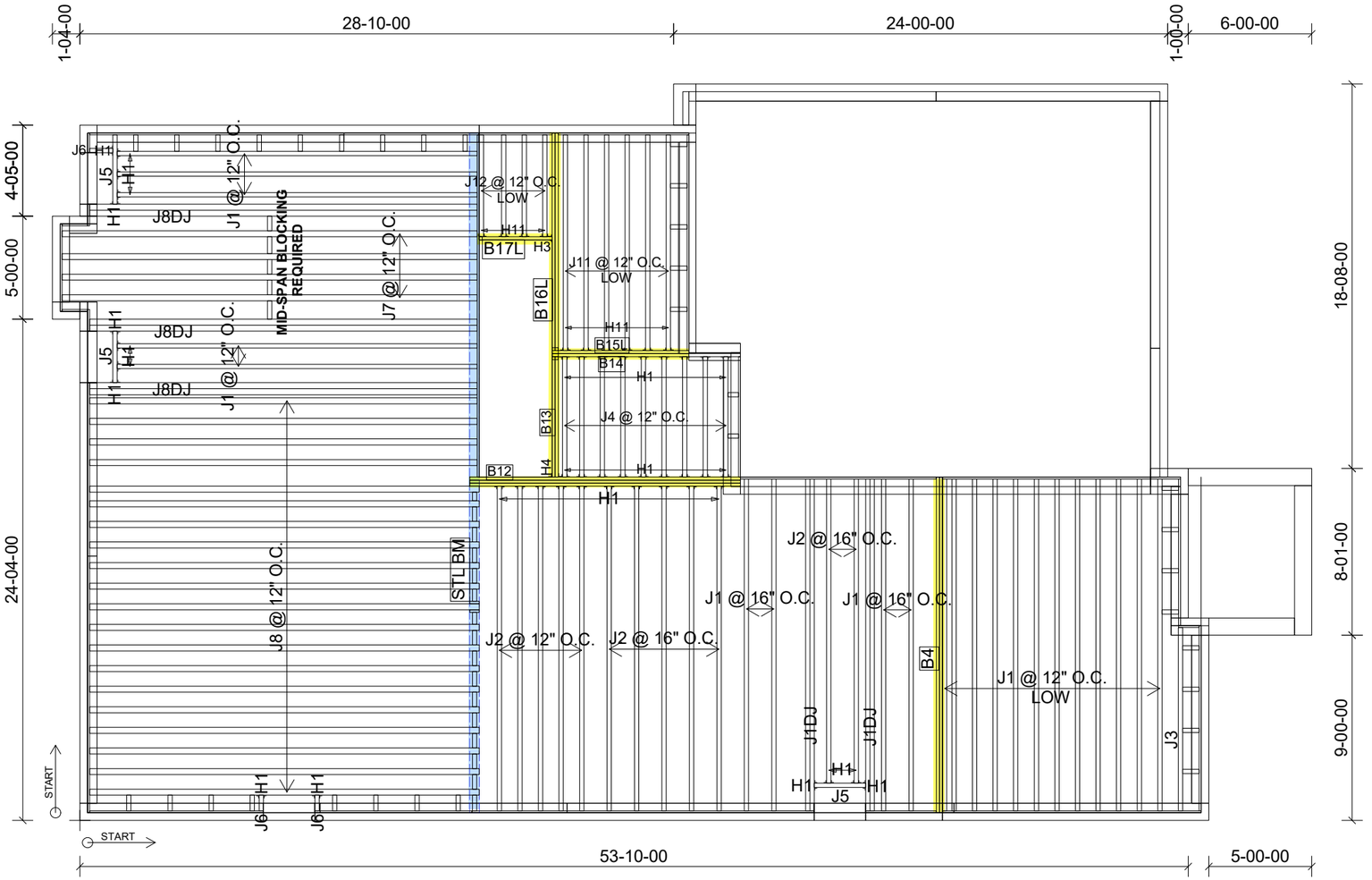

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J3	10-00-00	11 7/8" NI-40x	1	1
J4	6-00-00	11 7/8" NI-40x	1	9
J5	4-00-00	11 7/8" NI-40x	1	3
J6	2-00-00	11 7/8" NI-40x	1	3
J7	22-00-00	11 7/8" NI-80	1	4
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Connector Summary		
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10	H11	IUS2.56/9.5

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: OCT. 2021
BUILDER: BAYVIEW WELLINGTON
SITE: GREEN VALLEY EAST
MODEL: S42-19
ELEVATION: B
LOT:
CITY: BRADFORD
SALESMAN: RICK DICIANO
DESIGNER: CH
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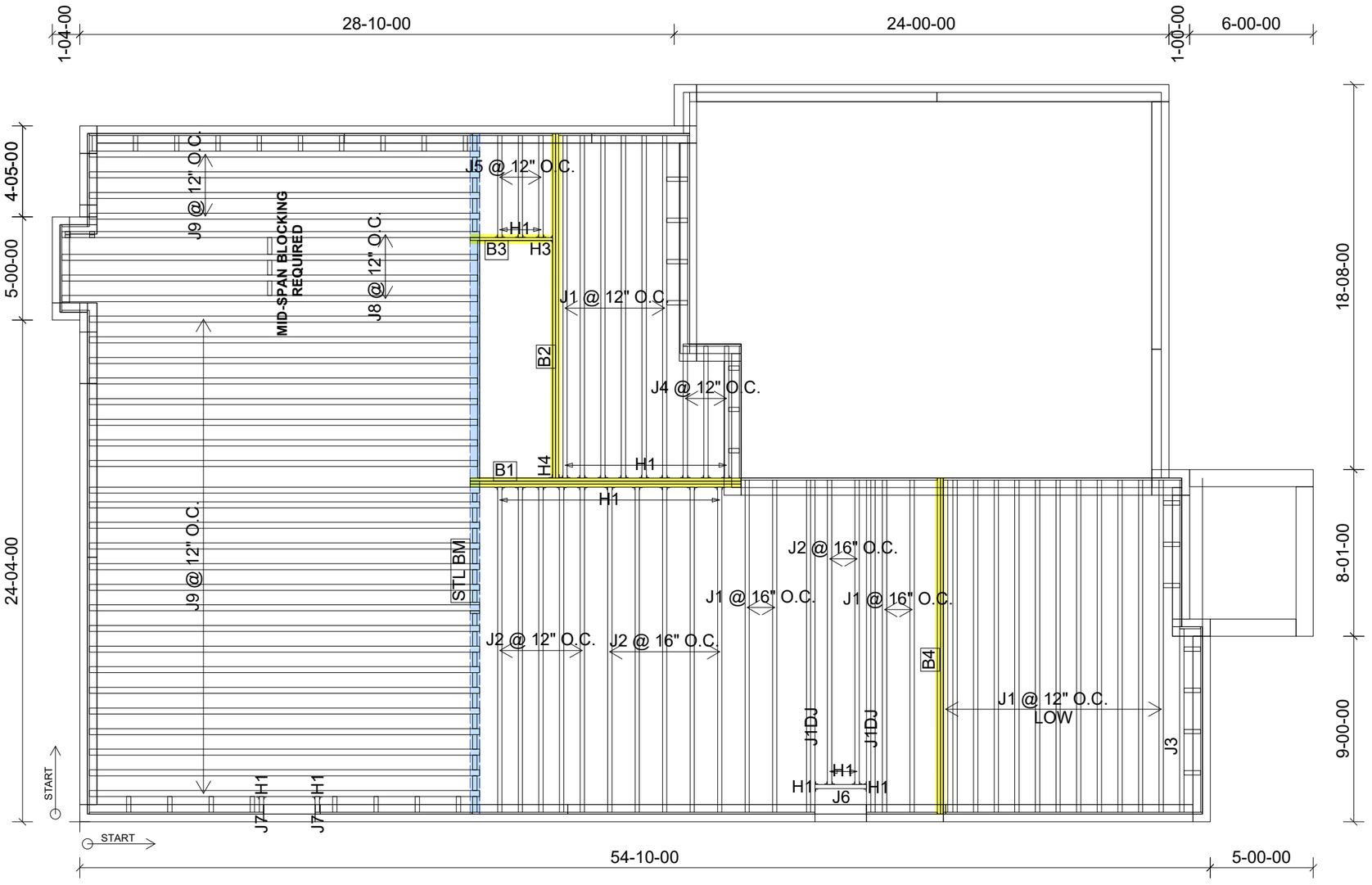
REVIEWED

DATE: 6/22/22

1st FLOOR FRAMING
SUNKEN OPTION



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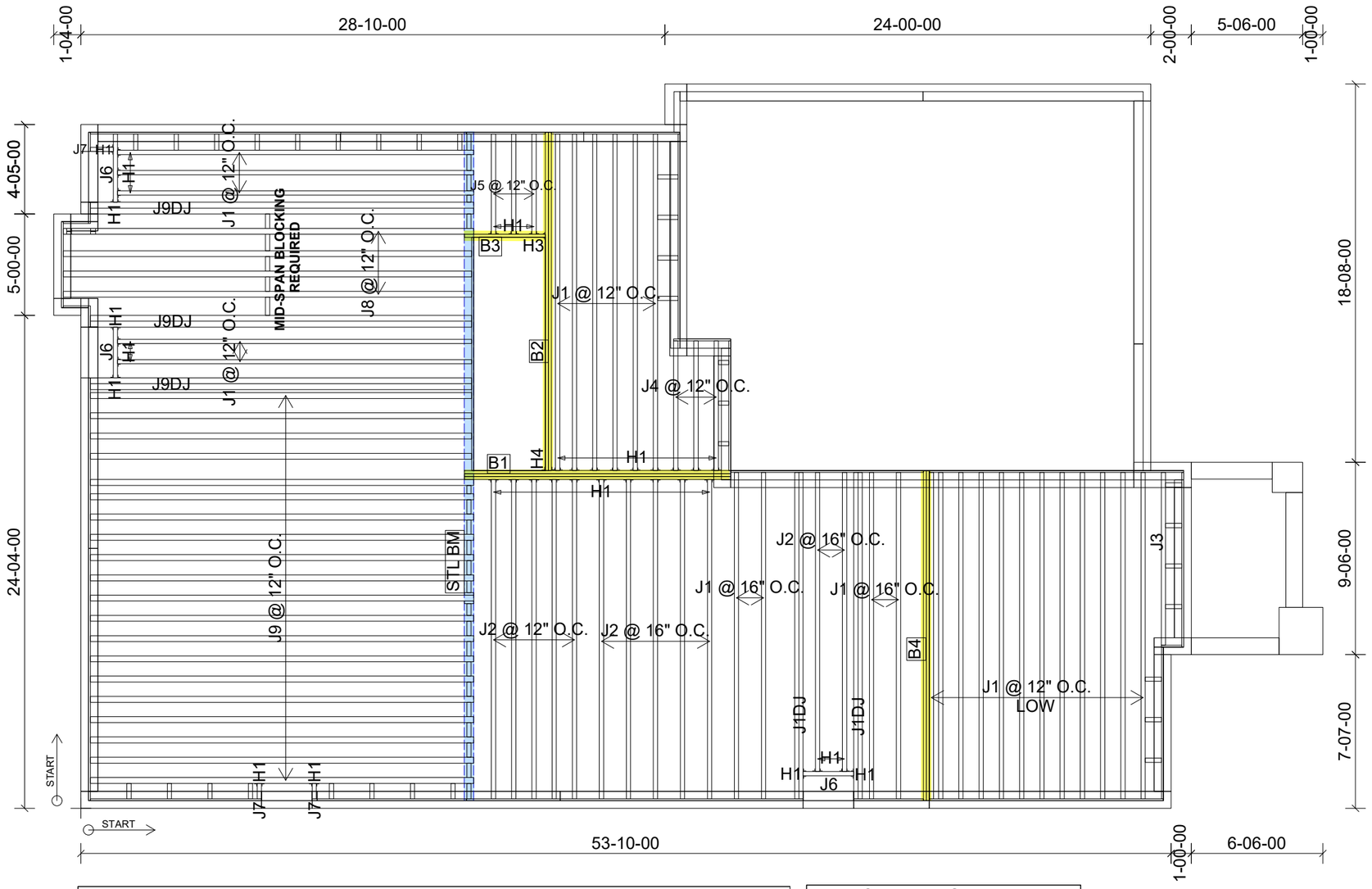

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J9	20-00-00	11 7/8" NI-80	1	20
J9DJ	20-00-00	11 7/8" NI-80	2	6
B2	18-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B4	18-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B1	14-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	3	3
B3	4-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	1	1

Connector Summary		
Qty	Manuf	Product
3	H1	IUS2.56/11.88
2	H1	IUS2.56/11.88
3	H1	IUS2.56/11.88
19	H1	IUS2.56/11.88
8	H1	IUS2.56/11.88
2	H1	IUS2.56/11.88
1	H3	HUS1.81/10
1	H4	HGUS410

REVIEWED

DATE: 6/22/22

1st FLOOR FRAMING

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: OCT. 2021
BUILDER: BAYVIEW WELLINGTON
SITE: GREEN VALLEY EAST
MODEL: S42-19
ELEVATION: C
LOT:
CITY: BRADFORD
SALESMAN: RICK DICIANO
DESIGNER: CH
REVISION:

REFER TO THE **NORDIC INSTALLATION** GUIDE FOR PROPER STORAGE AND INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 SPF #2 REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS.
MULTIPLE SQUASH BLOCKS REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1.
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FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 6 AND TABLES 6.1/6.2.
CERAMIC TILE APPLICATION AS PER OBC 9.30.6.

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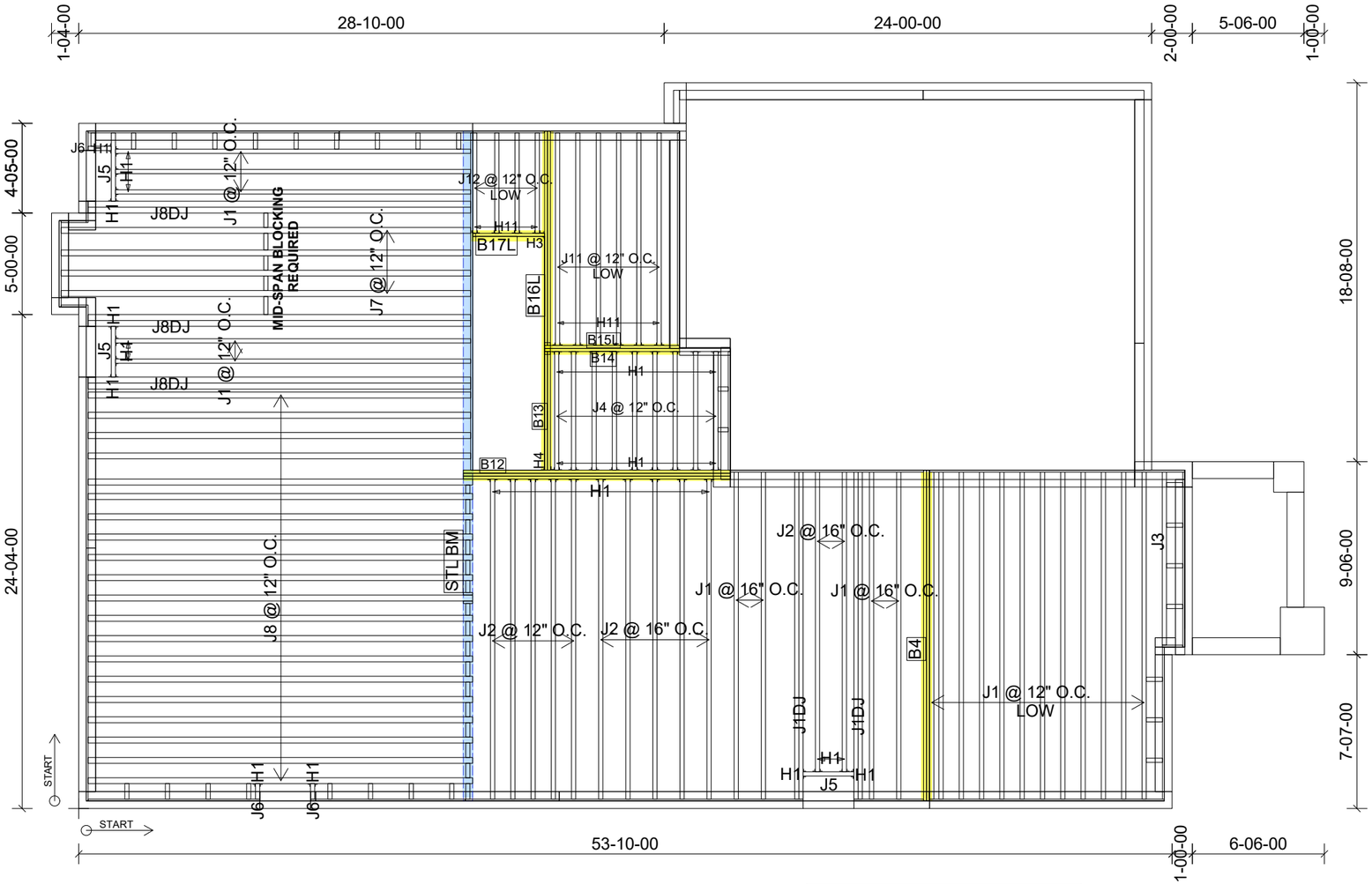
LOADING:
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft²
TILE LOAD: +5.0 lb/ft²

JOIST LL DEFLECTION LIMIT: L/480

SUBFLOOR: 5/8" GLUED AND NAILED



Products				
PlotID	Length	Product	Plies	Net Qty
J11	12-00-00	9 1/2" NI-40x	1	6
J12	6-00-00	9 1/2" NI-40x	1	4
J1	18-00-00	11 7/8" NI-40x	1	21
J1DJ	18-00-00	11 7/8" NI-40x	2	4
J2	16-00-00	11 7/8" NI-40x	1	12
J3	10-00-00	11 7/8" NI-40x	1	1
J4	6-00-00	11 7/8" NI-40x	1	9
J5	4-00-00	11 7/8" NI-40x	1	3
J6	2-00-00	11 7/8" NI-40x	1	3
J7	22-00-00	11 7/8" NI-80	1	4
J8	20-00-00	11 7/8" NI-80	1	20
J8DJ	20-00-00	11 7/8" NI-80	2	6
B16L	12-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	2	2
B15L	8-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B17L	4-00-00	1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	1	1
B4	18-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B12	14-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	3	3
B14	10-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	1	1
B13	6-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2

Connector Summary		
Qty	Manuf	Product
9	H1	IUS2.56/11.88
2	H1	IUS2.56/11.88
3	H1	IUS2.56/11.88
19	H1	IUS2.56/11.88
8	H1	IUS2.56/11.88
2	H1	IUS2.56/11.88
1	H3	HUS1.81/10
1	H4	HGUS410
10	H11	IUS2.56/9.5

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: OCT. 2021
BUILDER: BAYVIEW WELLINGTON
SITE: GREEN VALLEY EAST
MODEL: S42-19
ELEVATION: C
LOT:
CITY: BRADFORD
SALESMAN: RICK DICIANO
DESIGNER: CH
REVISION:

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

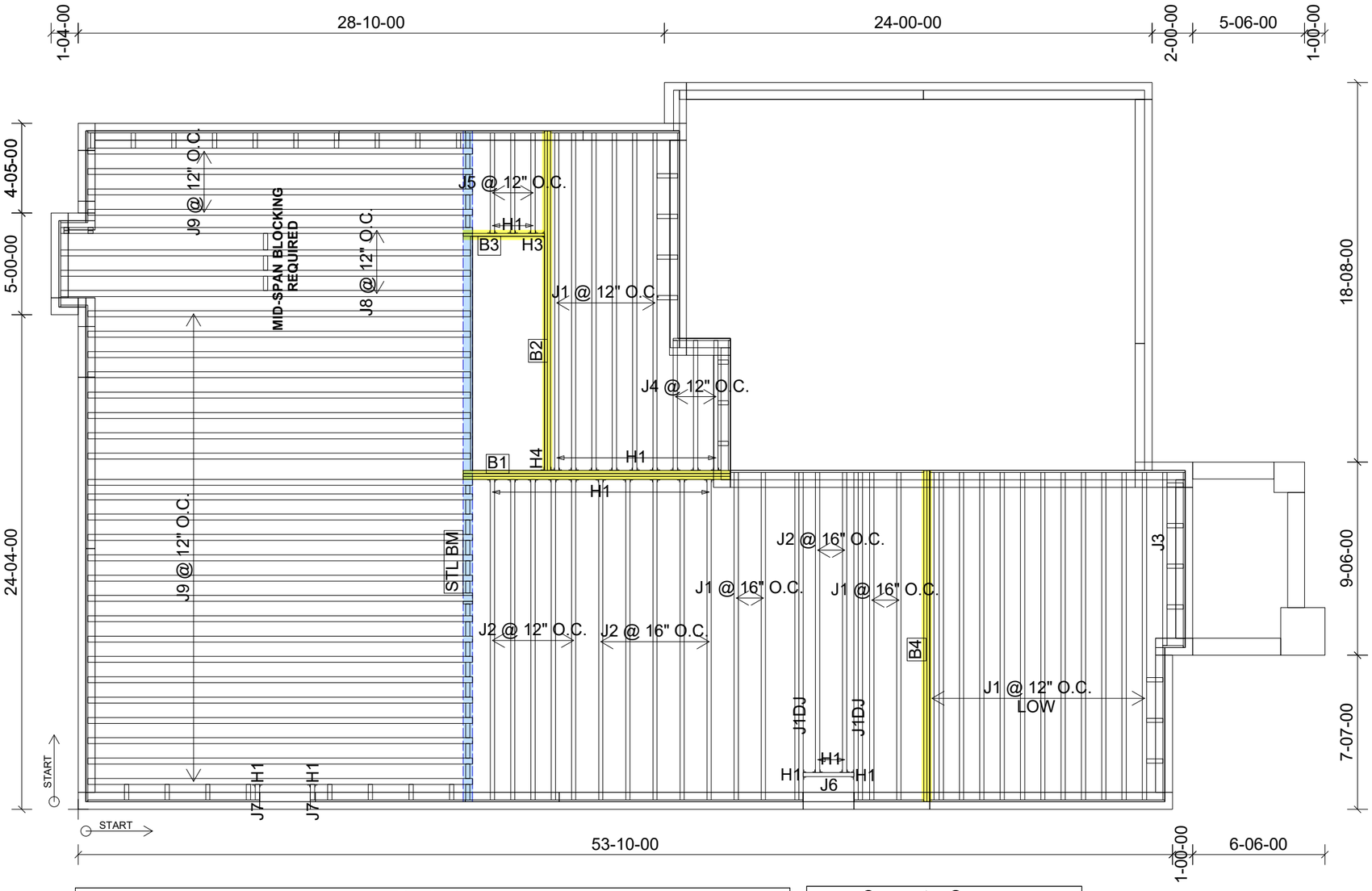
JOIST LL DEFLECTION LIMIT: L/480

SUBFLOOR: 5/8" GLUED AND NAILED

REVIEWED

DATE: 6/22/22

1st FLOOR FRAMING
SUNKEN OPTION



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	22
J1DJ	18-00-00	11 7/8" NI-40x	2	4
J2	16-00-00	11 7/8" NI-40x	1	12
J3	10-00-00	11 7/8" NI-40x	1	1
J4	8-00-00	11 7/8" NI-40x	1	3
J5	6-00-00	11 7/8" NI-40x	1	3
J6	4-00-00	11 7/8" NI-40x	1	1
J7	2-00-00	11 7/8" NI-40x	1	2
J8	22-00-00	11 7/8" NI-80	1	4
J9	20-00-00	11 7/8" NI-80	1	28
B2	18-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B4	18-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B1	14-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	3	3
B3	4-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	1	1

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

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: OCT. 2021
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MODEL: S42-19
ELEVATION: C
LOT:
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SALESMAN: RICK DICIANO
DESIGNER: CH
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TILE LOAD: +5.0 lb/ft²

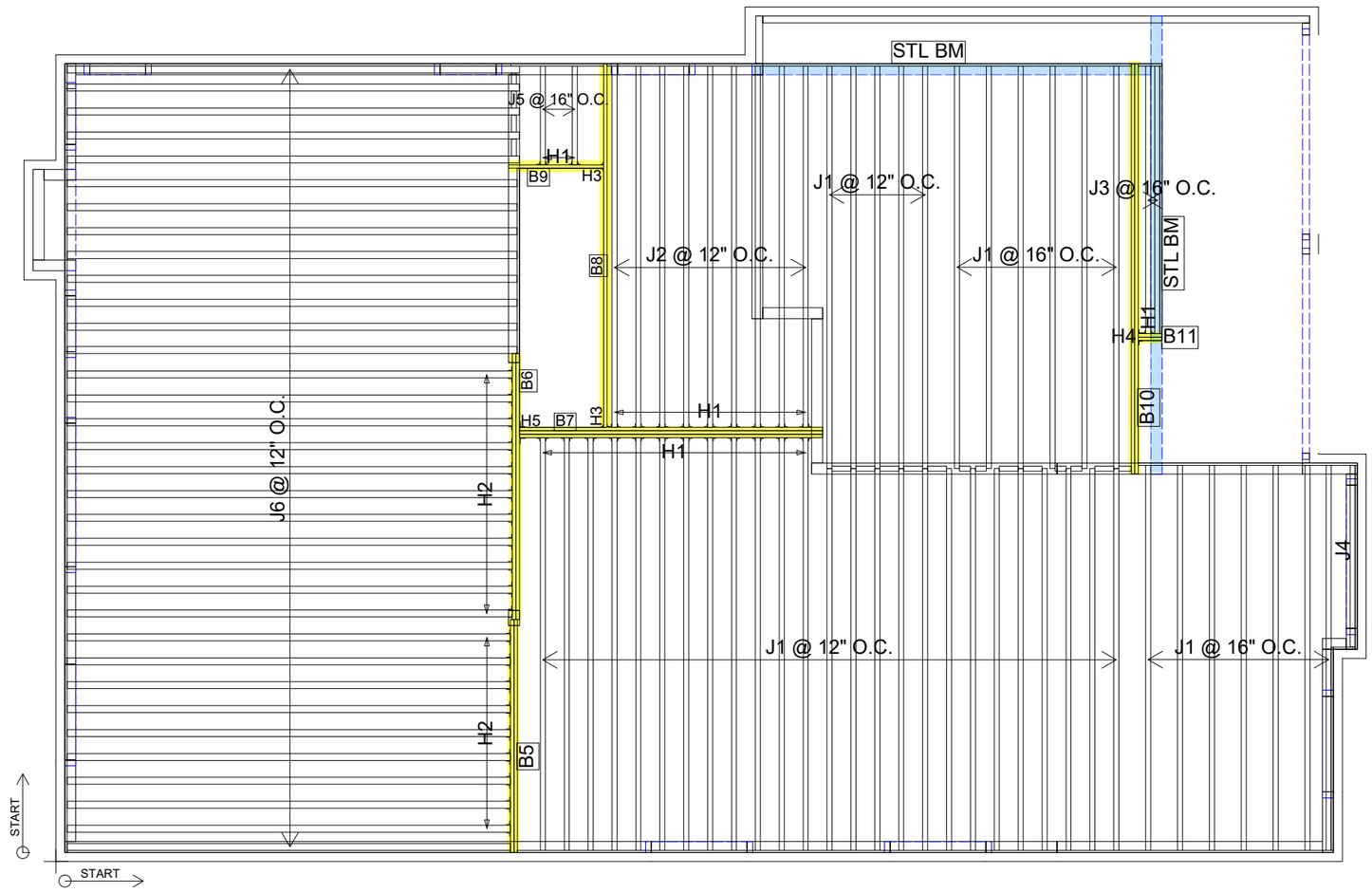
JOIST LL DEFLECTION LIMIT: L/480

SUBFLOOR: 5/8" GLUED AND NAILED

REVIEWED

DATE: 6/22/22

1st FLOOR FRAMING
WOD / WOB CONDITION



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	43
J2	16-00-00	11 7/8" NI-40x	1	9
J3	12-00-00	11 7/8" NI-40x	1	2
J4	8-00-00	11 7/8" NI-40x	1	1
J5	6-00-00	11 7/8" NI-40x	1	2
J6	20-00-00	11 7/8" NI-80	1	34
B10	18-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B8	16-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	1	1
B7	14-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	3	3
B6	12-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B5	10-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B9	4-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	1	1
B11	2-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2

Connector Summary		
Qty	Manuf	Product
2	H1	IUS2.56/11.88
1	H1	IUS2.56/11.88
21	H1	IUS2.56/11.88
20	H2	IUS3.56/11.88
1	H3	HUS1.81/10
1	H3	HUS1.81/10
1	H4	HGUS410
1	H5	HGUS5.50/10

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: OCT. 2021
BUILDER: BAYVIEW WELLINGTON
SITE: GREEN VALLEY EAST
MODEL: S42-19
ELEVATION: A
LOT:
CITY: BRADFORD
SALESMAN: RICK DICIANO
DESIGNER: CH
REVISION:

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

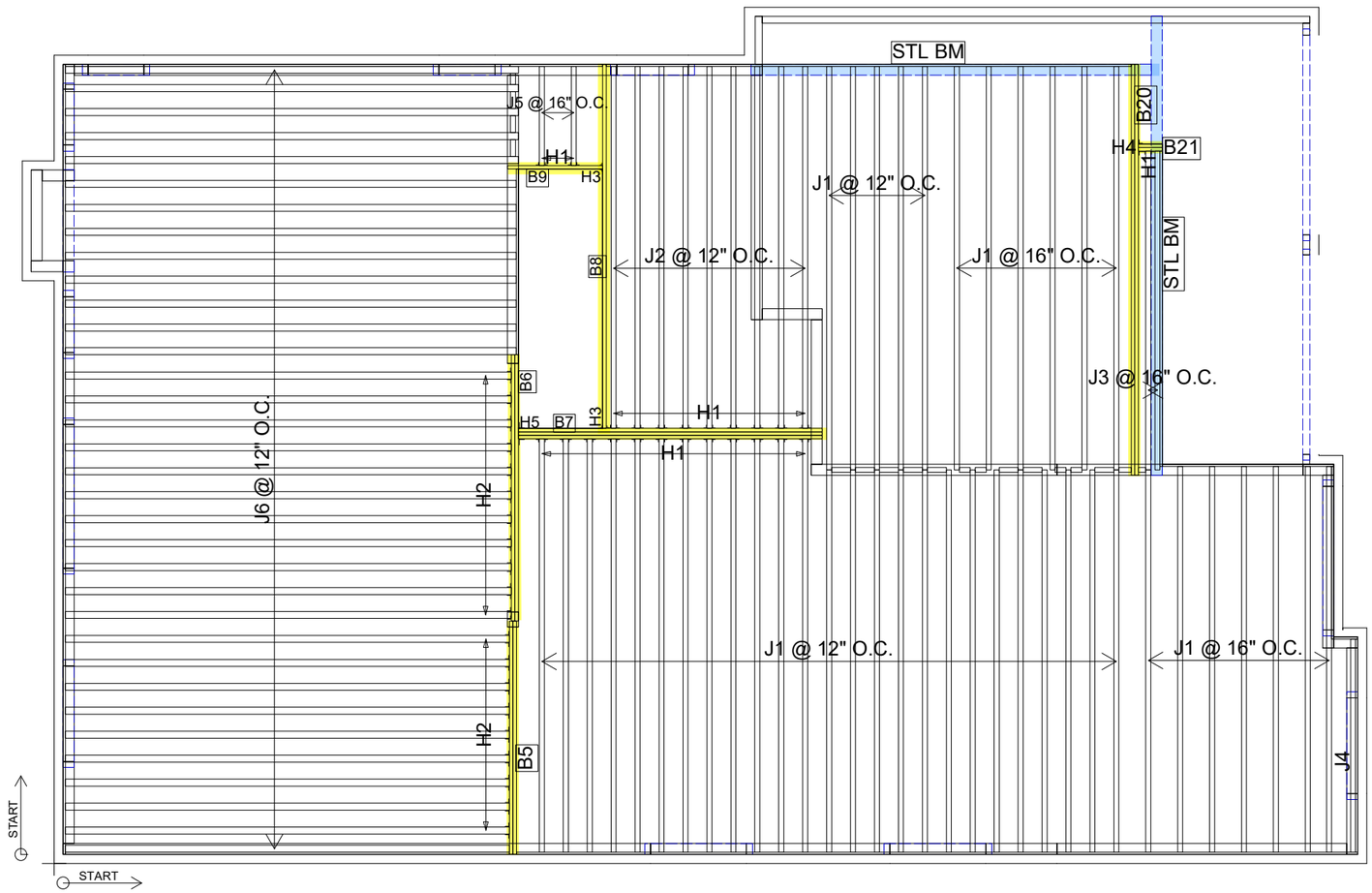
JOIST LL DEFLECTION LIMIT: L/480

SUBFLOOR: 5/8" GLUED AND NAILED

REVIEWED

DATE: 6/22/22

2nd FLOOR FRAMING



Products				
PlotID	Length	Product	Plies	Net Qty
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J2	16-00-00	11 7/8" NI-40x	1	9
J3	14-00-00	11 7/8" NI-40x	1	2
J4	10-00-00	11 7/8" NI-40x	1	1
J5	6-00-00	11 7/8" NI-40x	1	2
J6	20-00-00	11 7/8" NI-80	1	34
B20	18-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B8	16-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	1	1
B7	14-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	3	3
B6	12-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B5	10-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B9	4-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	1	1
B21	2-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2

Connector Summary		
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2	H1	IUS2.56/11.88
1	H1	IUS2.56/11.88
21	H1	IUS2.56/11.88
20	H2	IUS3.56/11.88
1	H3	HUS1.81/10
1	H3	HUS1.81/10
1	H4	HGUS410
1	H5	HGUS5.50/10

TAMARACK LUMBER INC
ALPA LUMBER GROUP

FROM PLAN DATED: OCT. 2021
BUILDER: BAYVIEW WELLINGTON
SITE: GREEN VALLEY EAST
MODEL: S42-19
ELEVATION: B
LOT:
CITY: BRADFORD
SALESMAN: RICK DICIANO
DESIGNER: CH
REVISION:

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SUBFLOOR: 5/8" GLUED AND NAILED

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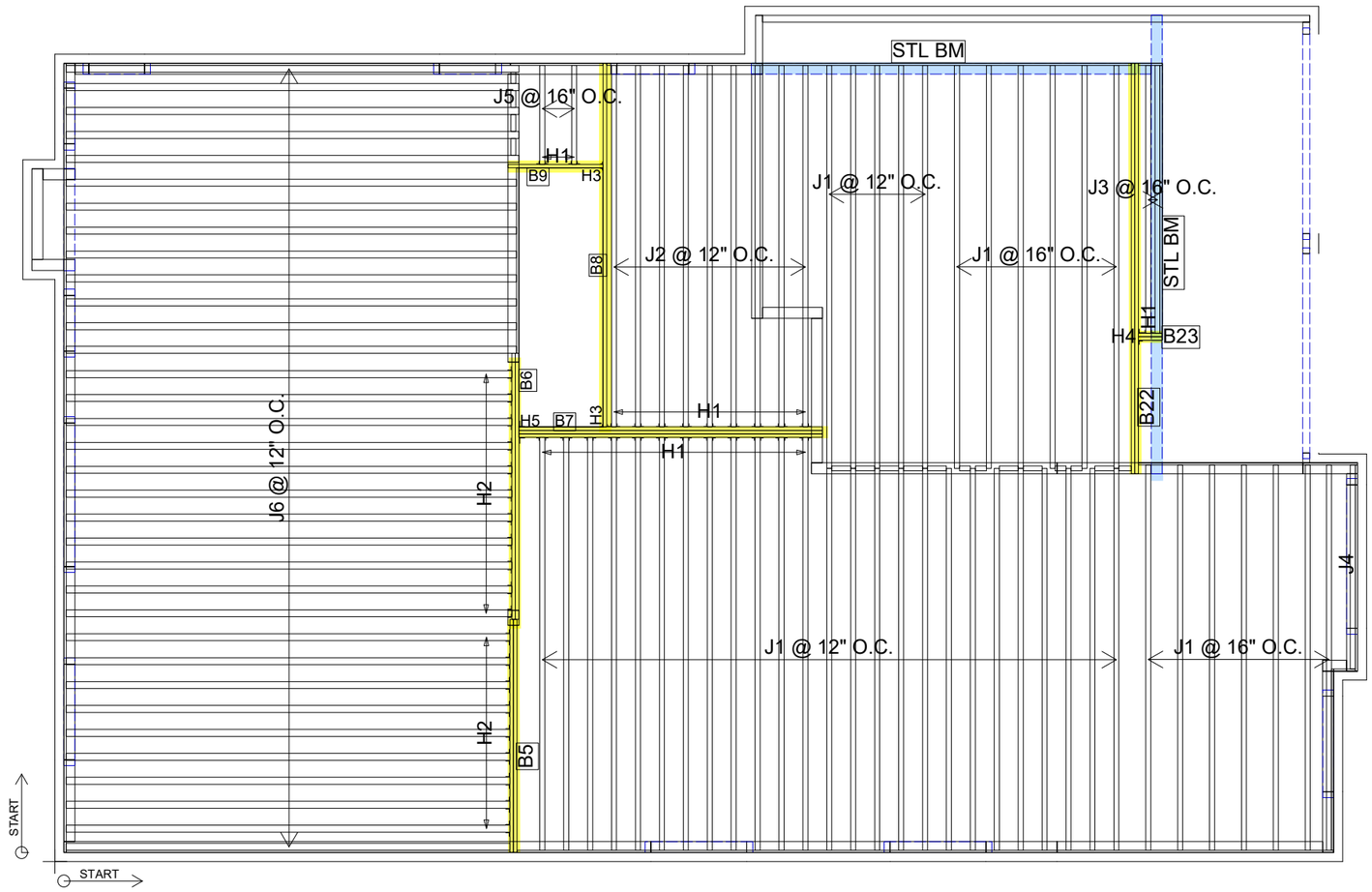
2nd FLOOR FRAMING



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J4	10-00-00	11 7/8" NI-40x	1	1
J5	6-00-00	11 7/8" NI-40x	1	2
J6	20-00-00	11 7/8" NI-80	1	34
B22	18-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B8	16-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	1	1
B7	14-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	3	3
B6	12-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B5	10-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2
B9	4-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	1	1
B23	2-00-00	1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	2	2

Connector Summary		
Qty	Manuf	Product
2	H1	IUS2.56/11.88
1	H1	IUS2.56/11.88
21	H1	IUS2.56/11.88
20	H2	IUS3.56/11.88
1	H3	HUS1.81/10
1	H3	HUS1.81/10
1	H4	HGUS410
1	H5	HGUS5.50/10

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LOT:
CITY: BRADFORD
SALESMAN: RICK DICIANO
DESIGNER: CH
REVISION:

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JOIST LL DEFLECTION LIMIT: L/480

SUBFLOOR: 5/8" GLUED AND NAILED

REVIEWED

DATE: 6/22/22

2nd FLOOR FRAMING

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.

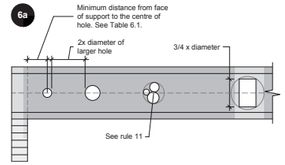
WEB HOLES AND OPENINGS

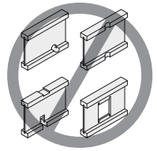
WEB HOLES IN I-JOISTS

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





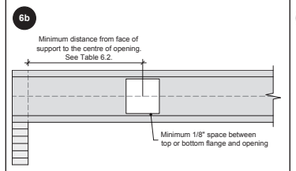
Notes:
1. Never drill, cut or notch the flange, or over-cut the web.
2. Holes in web should be cut with a sharp saw.
3. For rectangular holes, avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole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

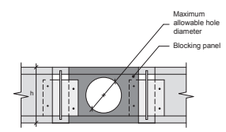
I-joist depth (in.)	Maximum depth of the opening (in.)
9-1/2	6-1/4
11-7/8	8-5/8
14	10-3/4
16	12-3/4

HOLES IN BLOCKING PANELS

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

1. The maximum allowable web 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

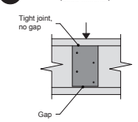
NI-90 2x4 2400f MSR 7/16 in. web
Depths 11-7/8, 14 and 16 in.
23 pieces per unit

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

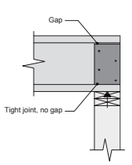
WEB STIFFENERS

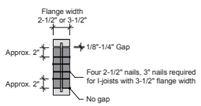
2

Concentrated Load (Load Stiffener)



End Bearing (Bearing Stiffener)

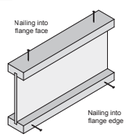




Stiffener Size Requirements

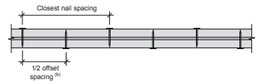
Flange width (in.)	Web stiffener size each side of web (in.)
2-1/2	1 x 2-5/16 Minimum width
3-1/2	1-1/2 x 2-5/16 Minimum width

NAIL SPACING



Nailed to Only One Flange Edge (Top View)

Nailed to Both Flange Edges (Top View)

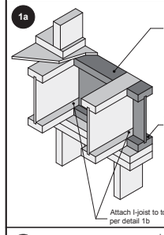


Recommended Closest Nail Spacing for Fastening Sheathing to I-joist Flanges to Minimize Splitting

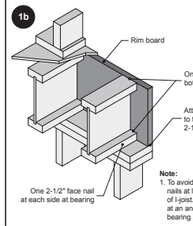
Fastener size (diameter x length)	Flange face nailing [a]		Flange edge nailing [a]		
				Nail spacing (in.)	
	End distance (in.)	Nail spacing (in.)	End distance (in.)	Nailed to only one flange edge	Nailed to both flange edges
0.128" or smaller in diameter, and 3-1/4" or shorter in length	2	2	2	2	4
Greater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

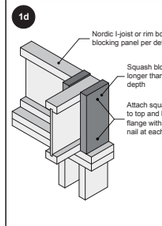


1b

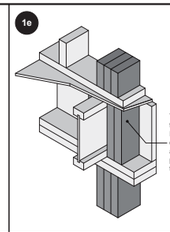


Note:
1. To avoid splitting flange, start nails at least 1-1/2 inch from end of I-joist. Nails may be driven at an angle to avoid splitting of bearing plate.

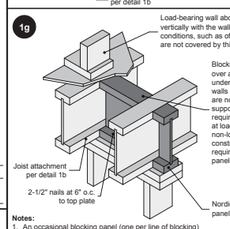
1d



1e

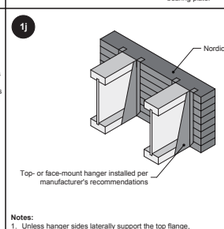


1g



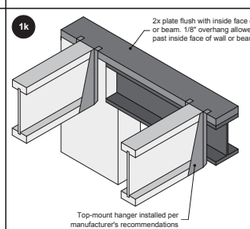
Notes:
1. An occasional blocking panel (one per line of blocking) may be left out for the passage of plumbing or ventilation ducts. For other applications, contact Nordic Structures.
2. For other options, see details 1g-1 to 1g-5.

1j



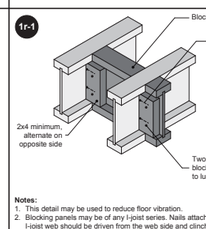
Notes:
1. Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.
2. For nailing schedules for multiple Nordic Lam or SCL beams, see the manufacturer's recommendations.

1k



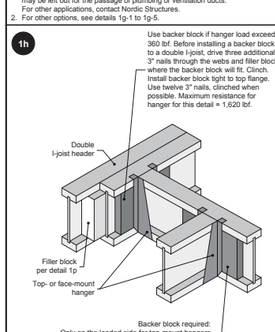
Note:
1. Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

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

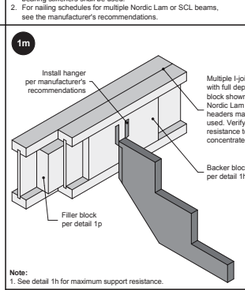


Flange width (in.)	Material thickness required (in.) [a]	Minimum depth (in.) [b]
2-1/2	1	5-1/2
3-1/2	1-1/2	7-1/4

[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.

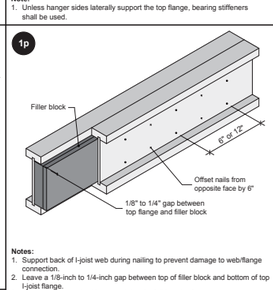
Notes:
1. Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.
2. For hanger resistance, see manufacturer's recommendations.
3. Verify double I-joist resistance to support concentrated loads.
4. Backer blocks must be long enough to permit required nailing without splitting.

1m



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

1p



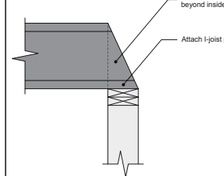
Notes:
1. Support back of I-joist web during nailing to prevent damage to web/flange connection.
2. Leave a 1/8-inch to 1/4-inch gap between top of filler block and bottom of top I-joist flange.
3. Filler block is required between joists for full length of span.
4. For flange width of 2-1/2 inches, nail 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

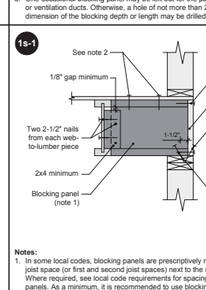
Note:
1. The height of the filler block may be different from that specified in the table, as long as it allows nailing and respects the required gap.

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-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'-8"	10'-11"	10'-6"	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

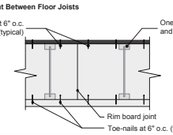
Joist spacing	Up to 24 inches
Loads	Live load = 40 psf and dead load = 15 psf
Deflection limits	L/480 under live load and L/240 under total load

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

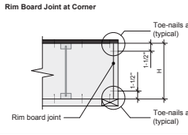
RIM BOARDS

8a

Rim Board Joint Between Floor Joists

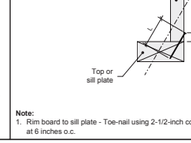


Rim Board Joint at Corner



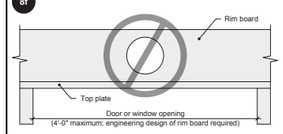
Notes:
1. Floor sheathing to rim board - Use 2-1/2-inch common nails at 6 inches o.c. **Caution:** The horizontal load resistance is not necessarily increased with a decreased nail spacing. Under no circumstances should the nail spacing be less than 3 inches. The 3-1/2-inch common nails used to connect 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



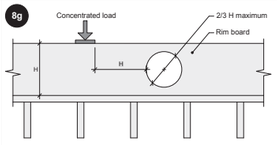
Note:
1. Rim board to sill plate - Toe-nail using 2-1/2-inch common nails at 6 inches o.c.

8f

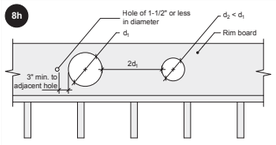


Note:
1. Do not cut holes in rim board installed over openings, such as doors or windows, where the rim board is not fully supported, except that holes of 1-1/2 inch or less in size are permitted provided they are positioned at the mid-depth and in the middle one-third of the span.

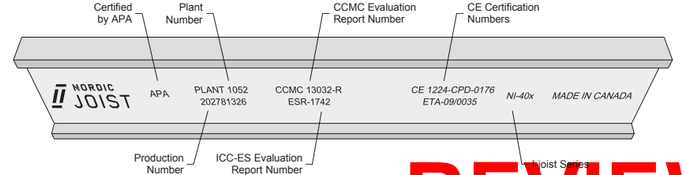
8g



8h



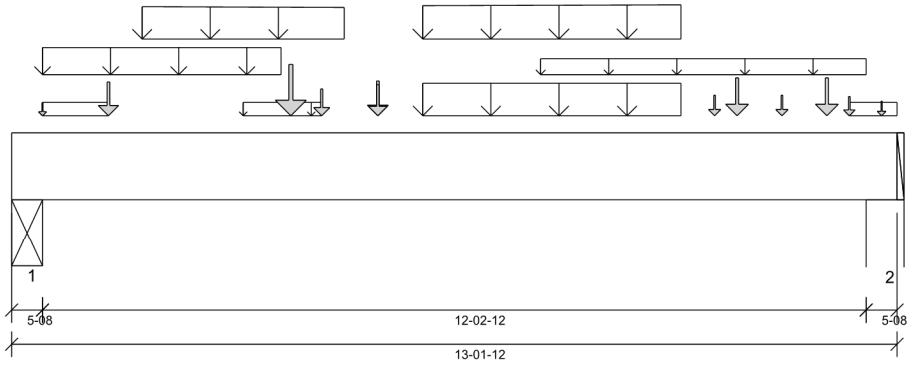
I-JOIST MARKING



REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 Level: 1ST FLR FRAMING Label: B1 - i3453 Type: Beam	3 Ply Member 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13 — Report Version: 2020.06.20 01/10/2022 14:29



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

Top: 0' Bottom: 0'- 10 1/2"

Factored Resistance of Support Material:

- 615 psi Beam @ 0'- 4 1/2"
- 615 psi Wall @ 12'- 9 1/4"

PLY TO PLY CONNECTION:
4 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
6/23/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22061215 PG 1/2

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	6'- 5 1/4"	1.25D + 1.5L	1.00	28340 lb ft	53017 lb ft	Passed - 53%
Factored Shear:	11'- 8 3/8"	1.25D + 1.5L	1.00	8150 lb	20723 lb	Passed - 39%
Live Load (LL) Pos. Defl.:	6'- 6 9/16"	L		0.236"	L/360	Passed - L/622
Total Load (TL) Pos. Defl.:	6'- 6 3/8"	D + L		0.392"	L/240	Passed - L/374
Permanent Deflection:	6'- 6 1/8"			-	L/360	Passed - L/968

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	8563 lb		30030 lb	17758 lb	Passed - 48%
2	5-08	1.25D + 1.5L	1.00	8352 lb		30030 lb	17758 lb	Passed - 47%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	13'- 1 3/4"	Self Weight	Top	18 lb/ft	-	-	-
Uniform	0'- 5 1/2"	4'	User Load	Top	120 lb/ft	240 lb/ft	-	-
Uniform	0'- 5 1/2"	1'- 5 1/4"	FC1 Floor Decking (Plan View Fill)	Top	4 lb/ft	9 lb/ft	-	-
Uniform	3'- 5 1/4"	4'- 7 1/4"	FC1 Floor Decking (Plan View Fill)	Top	4 lb/ft	9 lb/ft	-	-
Uniform	6'- 1 1/4"	9'- 11 1/4"	Smoothed Load	Front	166 lb/ft	332 lb/ft	-	-
Uniform	7'- 10 1/4"	12'- 8 1/4"	User Load	Top	80 lb/ft	-	-	-
Uniform	12'- 5 1/4"	13'- 1 3/4"	FC1 Floor Decking (Plan View Fill)	Top	4 lb/ft	9 lb/ft	-	-
Tapered	1'- 11 1/4"	4'- 11 1/4"	Smoothed Load	Front	164 To 158 lb/ft	329 To 316 lb/ft	-	-
Tapered	6'- 1 1/4"	9'- 11 1/4"	Smoothed Load	Back	173 To 180 lb/ft	345 To 360 lb/ft	-	-
Point	1'- 5 1/4"	1'- 5 1/4"	J2(i3404)	Front	177 lb	355 lb	-	-
Point	5'- 5 1/4"	5'- 5 1/4"	J2(i3081)	Front	186 lb	371 lb	-	-
Point	10'- 9 1/4"	10'- 9 1/4"	J2(i3446)	Front	212 lb	424 lb	-	-
Point	12'- 1 1/4"	12'- 1 1/4"	J2(i3446)	Front	212 lb	424 lb	-	-
Point	4'- 1 3/4"	4'- 1 3/4"	B2(i3448)	Back	697 lb	279 lb	-	-
Point	4'- 7 1/4"	4'- 7 1/4"	J1(i3412)	Back	118 lb	236 lb	-	-
Point	5'- 5 1/4"	5'- 5 1/4"	J1(i3169)	Back	154 lb	307 lb	-	-
Point	10'- 5 1/4"	10'- 5 1/4"	J3(i3094)	Back	65 lb	131 lb	-	-
Point	11'- 5 1/4"	11'- 5 1/4"	J3(i3344)	Back	65 lb	131 lb	-	-
Point	12'- 5 1/4"	12'- 5 1/4"	J3(i3096)	Back	54 lb	109 lb	-	-
Point	0'- 5 1/2"	0'- 5 1/2"	FC1 Floor Decking (Plan View Fill)	Top	4 lb	7 lb	-	-
Point	12'- 11"	12'- 11"	E21(i572)	Top	46 lb	-	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	STL BM(i28)	2437 lb	3696 lb	-	-
2	12'- 8 1/4"	13'- 1 3/4"	W26(i24)	2406 lb	3545 lb	-	-

DESIGN NOTES

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

REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 Level: 1ST FLR FRAMING Label: B1 - i3453 Type: Beam	3 Ply Member 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Status: Design Passed

DESIGN NOTES

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

PLY TO PLY CONNECTION

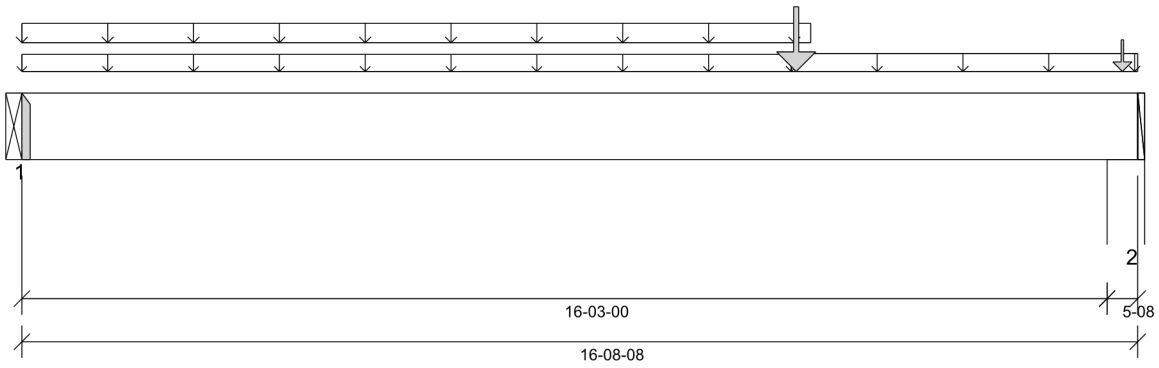
Member design assumed proper ply to ply connection by others. Fastener spacing along length of member must not exceed 4 times depth of member. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally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

STRUCTURAL COMPONENT ONLY
DWG # TF22061215

REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 Level: 1ST FLR FRAMING Label: B2 - i3448 Type: Beam	2 Ply Member 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13 — Report Version: 2020.06.20 01/10/2022 14:29



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

Top: 0' Bottom: 11'- 6 1/4"

Factored Resistance of Support Material:

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

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

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

LICENSED PROFESSIONAL ENGINEER
6/23/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22061216

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	11'- 1/4"	1.25D + 1.5L	0.91	7013 lb ft	32194 lb ft	Passed - 22%
Factored Shear:	15'- 3 1/8"	1.25D + 1.5L	0.91	1572 lb	12584 lb	Passed - 12%
Live Load (LL) Pos. Defl.:	8'- 10 1/4"	L		0.099"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	8'- 5 15/16"	D + L		0.252"	L/240	Passed - L/773

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	1.4D	0.65	964 lb		3549 lb	-	Passed - 27%
2	5-08	1.25D + 1.5L	0.91	2055 lb		18235 lb	10783 lb	Passed - 19%

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'	16'- 8 1/2"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'	11'- 9 3/4"	User Load	Top	60 lb/ft	-	-	-
Uniform	-0'	11'- 6 1/4"	FC1 Floor Decking (Plan View Fill)	Top	6 lb/ft	12 lb/ft	-	-
Uniform	11'- 6 1/4"	16'- 8 1/2"	FC1 Floor Decking (Plan View Fill)	Top	12 lb/ft	23 lb/ft	-	-
Point	11'- 7 1/8"	11'- 7 1/8"	B3(i2922)	Back	301 lb	584 lb	-	-
Point	16'- 5 3/4"	16'- 5 3/4"	E25(i576)	Top	145 lb	139 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B1(i3453)	697 lb	279 lb	-	-
2	16'- 3"	16'- 8 1/2"	W6(i8)	785 lb	705 lb	-	-

DESIGN NOTES

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

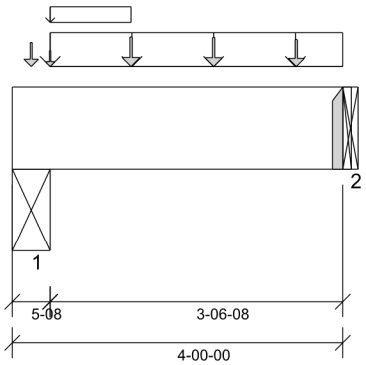
PLY TO PLY CONNECTION

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

REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 Level: 1ST FLR FRAMING Label: B3 - i2922 Type: Beam	1 Ply Member 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13 — Report Version: 2020.06.20 01/10/2022 14:29



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

Top: 0' Bottom: 0'- 10 1/2"

Factored Resistance of Support Material:

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

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

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

LICENSED PROFESSIONAL ENGINEER
6/23/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22061217

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 3 5/8"	1.25D + 1.5L	1.00	1174 lb ft	17672 lb ft	Passed - 7%
Factored Shear:	3'- 1/8"	1.25D + 1.5L	1.00	576 lb	6908 lb	Passed - 8%

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	1320 lb		10010 lb	5919 lb	Passed - 22%
2	1-08	1.25D + 1.5L	1.00	1267 lb		2730 lb	-	Passed - 46%

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'	4'	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'- 5 1/2"	4'	User Load	Front	120 lb/ft	240 lb/ft	-	-
Uniform	0'- 5 1/2"	1'- 5 1/4"	FC1 Floor Decking (Plan View Fill)	Top	2 lb/ft	3 lb/ft	-	-
Point	1'- 5 1/4"	1'- 5 1/4"	J4(i3154)	Back	51 lb	102 lb	-	-
Point	2'- 5 1/4"	2'- 5 1/4"	J4(i3371)	Back	49 lb	99 lb	-	-
Point	3'- 5 1/4"	3'- 5 1/4"	J4(i3402)	Back	42 lb	84 lb	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	1(i641)	Top	39 lb	55 lb	-	-
Point	0'- 5 1/2"	0'- 5 1/2"	FC1 Floor Decking (Plan View Fill)	Top	2 lb	4 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	STL BM(i28)	332 lb	613 lb	-	-
2	4'	4'	B2(i3448)	301 lb	584 lb	-	-

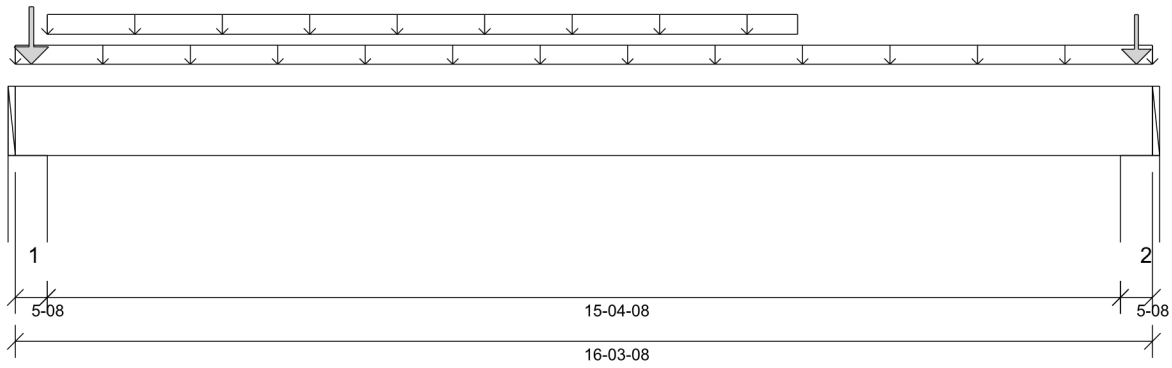
DESIGN NOTES

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

REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 Level: 1ST FLR FRAMING Label: B4 - i3330 Type: Beam	2 Ply Member 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13 — Report Version: 2020.06.20 01/10/2022 14:29



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

Top: 0' Bottom: 15'- 4 1/2"

Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 4 1/2"
- 615 psi Wall @ 15'- 11"

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

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

LICENSED PROFESSIONAL ENGINEER
6/23/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22061218

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	7'- 7 7/8"	1.4D	0.65	3195 lb ft	22974 lb ft	Passed - 14%
Factored Shear:	1'- 5 3/8"	1.4D	0.65	757 lb	8980 lb	Passed - 8%
Live Load (LL) Pos. Defl.:	8'- 1 5/8"	L		0.041"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	8'- 3/8"	D + L		0.143"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	5-08	1.25D + 1.5S + L	0.80	1587 lb		16081 lb	9510 lb	Passed - 17%
2	5-08	1.25D + 1.5L	0.88	1400 lb		17527 lb	10365 lb	Passed - 14%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	16'- 3 1/2"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	-0'	16'- 3 1/2"	FC1 Floor Decking (Plan View Fill)	Top	15 lb/ft	30 lb/ft	-	-
Uniform	0'- 5 1/2"	11'- 2 1/2"	User Load	Top	60 lb/ft	-	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	E37(i588)	Top	165 lb	80 lb	169 lb	-
Point	16'- 3/4"	16'- 3/4"	E21(i572)	Top	131 lb	203 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	W37(i42)	809 lb	330 lb	173 lb	-
2	15'- 10"	16'- 3 1/2"	W27(i27)	572 lb	449 lb	-4 lb	-

DESIGN NOTES

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

PLY TO PLY CONNECTION

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

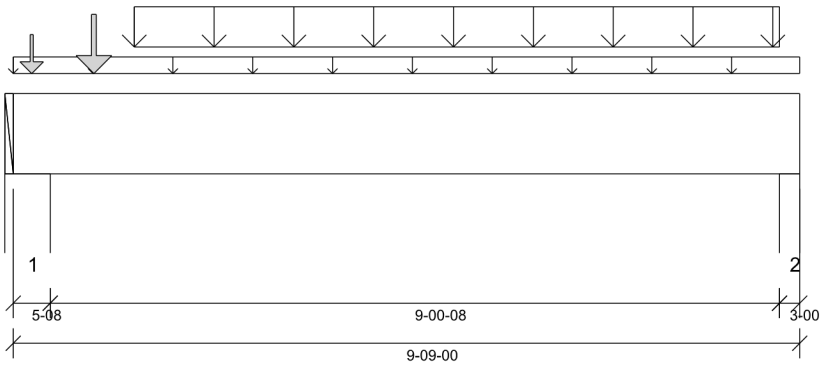
REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 Level: 2ND FLR FRAMING Label: B5 - i3176 Type: Beam	2 Ply Member 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Status: Design Passed	

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13

Report Version: 2020.06.20 01/10/2022 14:29



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

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

Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 4 1/2"
- 615 psi Wall @ 9'- 7"

PLY TO PLY CONNECTION:
4 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 # TF22061219

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	5'	1.25D + 1.5L	1.00	9117 lb ft	35345 lb ft	Passed - 26%
Factored Shear:	8'- 6 1/8"	1.25D + 1.5L	1.00	3791 lb	13815 lb	Passed - 27%
Live Load (LL) Pos. Defl.:	4'- 11 13/16"	L		0.067"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 11 13/16"	D + L		0.103"	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 + S	1.00	4069 lb		20020 lb	11839 lb	Passed - 34%
2	3-00	1.25D + 1.5L	1.00	3873 lb		10920 lb	6458 lb	Passed - 60%

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	12 lb/ft	-	-	-
Uniform	-0'	9'- 9"	FC3 Floor Decking (Plan View Fill)	Top	12 lb/ft	24 lb/ft	-	-
Uniform	1'- 6"	9'- 6"	Smoothed Load	Back	186 lb/ft	371 lb/ft	-	-
Point	1'	1'	J6(i3365)	Back	163 lb	327 lb	-	-
Point	0'- 2 3/4"	0'- 2 3/4"	E81(i2899)	Top	96 lb	-	169 lb	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	E47(i623)	1031 lb	1741 lb	176 lb	-
2	9'- 6"	9'- 9"	2(i642)	949 lb	1789 lb	-7 lb	-

DESIGN NOTES

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

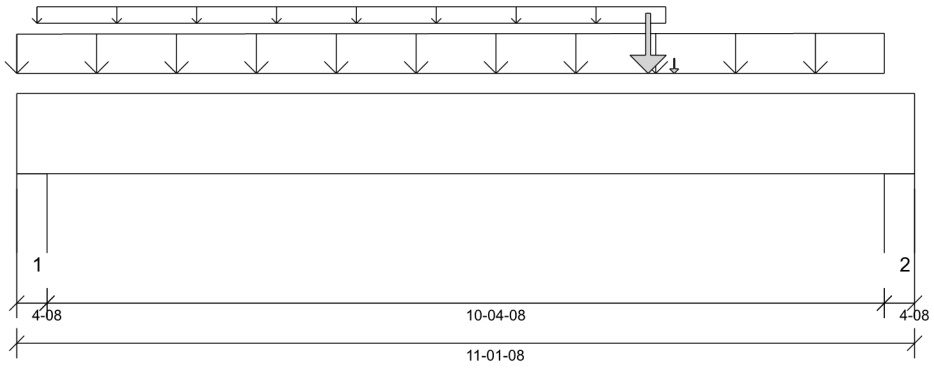
PLY TO PLY CONNECTION

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

REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 Level: 2ND FLR FRAMING Label: B6 - i3133 Type: Beam	2 Ply Member 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13 — Report Version: 2020.06.20 01/10/2022 14:29



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

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

Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 3 1/2"
- 615 psi Wall @ 10'- 10"

PLY TO PLY CONNECTION:
4 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
6/23/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22061220

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	7'- 9 7/8"	1.25D + 1.5L	1.00	24127 lb ft	35345 lb ft	Passed - 68%
Factored Shear:	9'- 9 1/8"	1.25D + 1.5L	1.00	9172 lb	13815 lb	Passed - 66%
Live Load (LL) Pos. Defl.:	5'- 10"	L		0.221"	L/360	Passed - L/563
Total Load (TL) Pos. Defl.:	5'- 10"	D + L		0.339"	L/240	Passed - L/366

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	6869 lb		16380 lb	9686 lb	Passed - 71%
2	4-08	1.25D + 1.5L	1.00	9192 lb		16380 lb	9686 lb	Passed - 95%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	11'- 1 1/2"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'- 3"	8'- 1/2"	FC3 Floor Decking (Plan View Fill)	Top	11 lb/ft	23 lb/ft	-	-
Tapered	0'	10'- 9"	Smoothed Load	Back	189 To 194 lb/ft	377 To 390 lb/ft	-	-
Point	7'- 9 7/8"	7'- 9 7/8"	B7(i2974)	Front	1694 lb	3103 lb	-	-
Point	8'- 1 3/4"	8'- 1 3/4"	FC3 Floor Decking (Plan View Fill)	Top	1 lb	1 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 4 1/2"	2(i642)	1694 lb	3180 lb	-	-
2	10'- 9"	11'- 1 1/2"	1(i641)	2275 lb	4220 lb	-	-

DESIGN NOTES

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

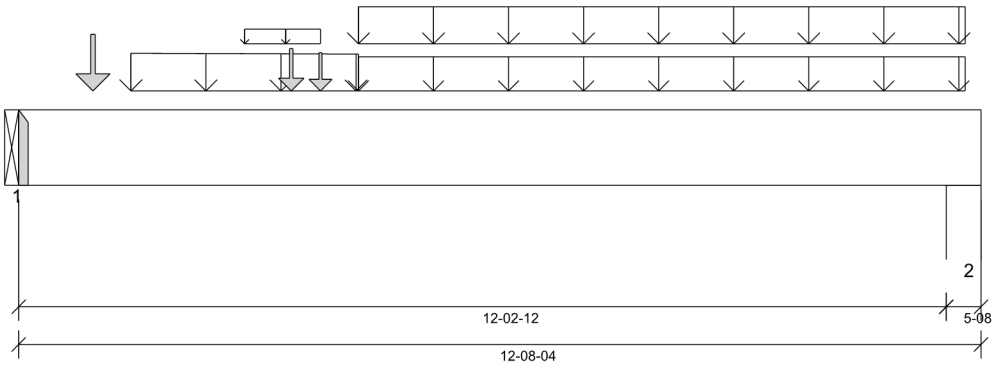
PLY TO PLY CONNECTION

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

REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 Level: 2ND FLR FRAMING Label: B7 - i2974 Type: Beam	3 Ply Member 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13 — Report Version: 2020.06.20 01/10/2022 14:29



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

Top: 0' Bottom: 0'- 10 1/2"

Factored Resistance of Support Material:

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

PLY TO PLY CONNECTION:
4 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
6/23/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22061221 PG 1/2

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	5'- 11 3/4"	1.25D + 1.5L	1.00	25544 lb ft	53017 lb ft	Passed - 48%
Factored Shear:	11'- 2 7/8"	1.25D + 1.5L	1.00	8683 lb	20723 lb	Passed - 42%
Live Load (LL) Pos. Defl.:	6'- 2 1/2"	L		0.223"	L/360	Passed - L/656
Total Load (TL) Pos. Defl.:	6'- 2 7/16"	D + L		0.343"	L/240	Passed - L/427

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	6772 lb		8190 lb	-	Passed - 83%
2	5-08	1.25D + 1.5L	1.00	8715 lb		30029 lb	17758 lb	Passed - 49%

CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements Top	Face	Member	Other Information or Requirement for Reinforcement Accessories
1	HGUS5.50/10		-	-	-	Connector manually specified by the user.

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

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	12'- 8 1/4"	Self Weight	Top	18 lb/ft	-	-	-
Uniform	2'- 11 3/4"	3'- 6 1/4"	FC3 Floor Decking (Plan View Fill)	Top	4 lb/ft	9 lb/ft	-	-
Uniform	3'- 6 1/4"	3'- 11 3/4"	FC3 Floor Decking (Plan View Fill)	Top	4 lb/ft	9 lb/ft	-	-
Uniform	4'- 5 3/4"	12'- 5 3/4"	Smoothed Load	Front	174 lb/ft	348 lb/ft	-	-
Uniform	4'- 5 3/4"	12'- 5 3/4"	Smoothed Load	Back	153 lb/ft	305 lb/ft	-	-
Tapered	1'- 5 3/4"	4'- 5 3/4"	Smoothed Load	Front	179 To 173 lb/ft	359 To 346 lb/ft	-	-
Point	0'- 11 3/4"	0'- 11 3/4"	J1(i3347)	Front	194 lb	389 lb	-	-
Point	3'- 7 1/8"	3'- 7 1/8"	B8(i3378)	Back	160 lb	227 lb	-	-
Point	3'- 11 3/4"	3'- 11 3/4"	J2(i3376)	Back	110 lb	220 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B6(i3133)	1694 lb	3103 lb	-	-
2	12'- 2 3/4"	12'- 8 1/4"	E49(i1458)	2144 lb	4023 lb	-	-

DESIGN NOTES

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

PLY TO PLY CONNECTION

REVIEWED

MiTek	BUILDER:	BAYVIEW WELLINGTON	Job Name:	S42-19	3 Ply Member 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Status: Design Passed
	SITE:	GREEN VALLEY EAST	Level:	2ND FLR FRAMING		
	MODEL:	S42-19	Label:	B7 - i2974		
	CITY:	BRADFORD	Type:	Beam		

PLY TO PLY CONNECTION

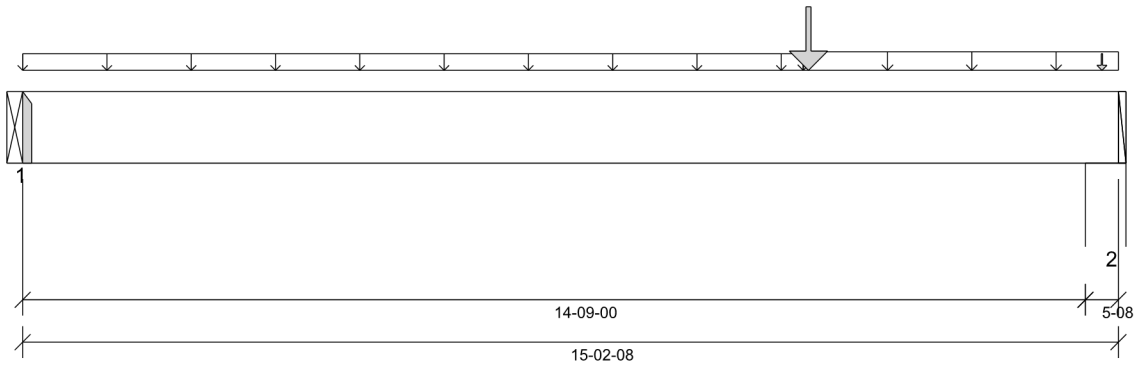
Member design assumed proper ply to ply connection by others. Fastener spacing along length of member must not exceed 4 times depth of member. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally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

STRUCTURAL COMPONENT ONLY
DWG # TF22061221 PG 2/2

REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 Level: 2ND FLR FRAMING Label: B8 - i3378 Type: Beam	1 Ply Member 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13 — Report Version: 2020.06.20 01/10/2022 14:29



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

Top: 0' Bottom: 10'- 10"

Factored Resistance of Support Material:

- 615 psi Beam @ 0'
- 615 psi Wall @ 14'- 10"

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	10'- 10 7/8"	1.25D + 1.5L	1.00	4229 lb ft	17672 lb ft	Passed - 24%
Factored Shear:	13'- 9 1/8"	1.25D + 1.5L	1.00	1149 lb	6908 lb	Passed - 17%
Live Load (LL) Pos. Defl.:	8'- 1 9/16"	L		0.128"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	8'- 1"	D + L		0.207"	L/240	Passed - L/853

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	534 lb		2730 lb	-	Passed - 20%
2	5-08	1.25D + 1.5L	1.00	1281 lb		10010 lb	5919 lb	Passed - 22%

CONNECTOR INFORMATION

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

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

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	15'- 2 1/2"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	-0'	10'- 10"	FC3 Floor Decking (Plan View Fill)	Top	5 lb/ft	9 lb/ft	-	-
Uniform	10'- 10"	15'- 2 1/2"	FC3 Floor Decking (Plan View Fill)	Top	17 lb/ft	33 lb/ft	-	-
Point	10'- 10 7/8"	10'- 10 7/8"	B9(i3166)	Back	281 lb	541 lb	-	-
Point	14'- 11 3/4"	14'- 11 3/4"	E68(i2886)	Top	15 lb	-	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B7(i2974)	160 lb	227 lb	-	-
2	14'- 9"	15'- 2 1/2"	E25(i576)	348 lb	559 lb	-	-

DESIGN NOTES

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

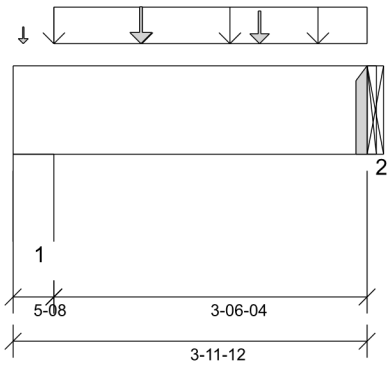
LICENSED PROFESSIONAL ENGINEER
6/23/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22061222

REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 Level: 2ND FLR FRAMING Label: B9 - i3166 Type: Beam	1 Ply Member 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13 — Report Version: 2020.06.20 01/10/2022 14:29



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 Beam @ 3'- 11 3/4"

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 1 15/16"	1.25D + 1.5L	1.00	1131 lb ft	17672 lb ft	Passed - 6%
Factored Shear:	2'- 11 7/8"	1.25D + 1.5L	1.00	657 lb	6908 lb	Passed - 10%

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	5-08	1.25D + 1.5L	1.00	1177 lb		10010 lb	5919 lb	Passed - 20%
2	1-08	1.25D + 1.5L	1.00	1169 lb		2730 lb	-	Passed - 43%

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'	3'- 11 3/4"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'- 5 1/2"	3'- 11 3/4"	User Load	Front	120 lb/ft	240 lb/ft	-	-
Point	1'- 5 1/4"	1'- 5 1/4"	J5(i3389)	Back	68 lb	136 lb	-	-
Point	2'- 9 1/4"	2'- 9 1/4"	J5(i3179)	Back	54 lb	108 lb	-	-
Point	0'- 1 3/8"	0'- 1 3/8"	FC3 Floor Decking (Plan View Fill)	Top	1 lb	1 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	1(i641)	288 lb	549 lb	-	-
2	3'- 11 3/4"	3'- 11 3/4"	B8(i3378)	281 lb	541 lb	-	-

DESIGN NOTES

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

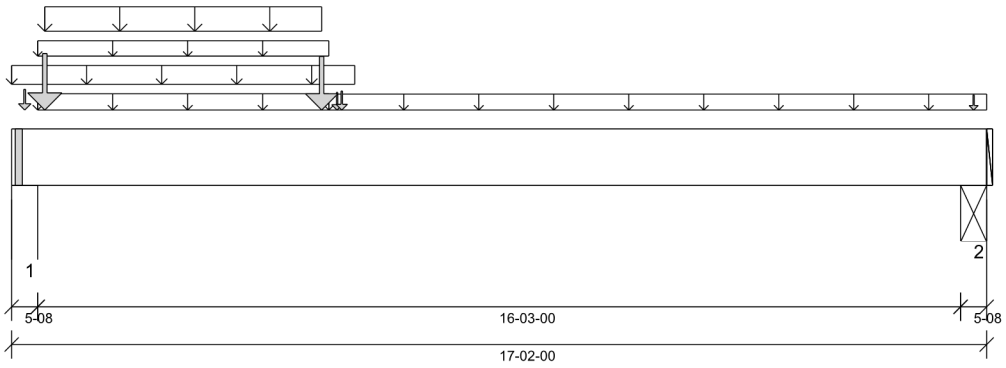
LICENSED PROFESSIONAL ENGINEER
6/23/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22061223

REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 Level: 2ND FLR FRAMING Label: B10 - i3463 Type: Beam	2 Ply Member 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13 — Report Version: 2020.06.20 01/10/2022 14:29



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

Top: 0' Bottom: 10'- 10"

Factored Resistance of Support Material:

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

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

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

LICENSED PROFESSIONAL ENGINEER
6/23/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22061224

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	5'- 5 1/2"	1.25D + 1.5S + L	1.00	13679 lb ft	35345 lb ft	Passed - 39%
Factored Shear:	1'- 5 3/8"	1.25D + 1.5S + L	1.00	3846 lb	13815 lb	Passed - 28%
Live Load (LL) Pos. Defl.:	7'- 9 3/8"	S + 0.5L		0.244"	L/360	Passed - L/800
Total Load (TL) Pos. Defl.:	7'- 10"	D + S + 0.5L		0.414"	L/240	Passed - L/471

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	5-08	1.25D + 1.5S + L	1.00	6096 lb		20020 lb	11839 lb	Passed - 51%
2	5-08	1.25D + 1.5S + L	1.00	1607 lb		20020 lb	11839 lb	Passed - 14%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	17'- 2"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'	6'- 1/2"	E54(i2737)	Top	100 lb/ft	-	-	-
Uniform	0'- 5 1/2"	5'- 7"	User Load	Front	14 lb/ft	-	33 lb/ft	-
Uniform	0'- 5 1/2"	5'- 7"	FC3 Floor Decking (Plan View Fill)	Top	9 lb/ft	18 lb/ft	-	-
Uniform	0'- 7"	5'- 5 1/2"	E54(i2737)	Top	56 lb/ft	-	164 lb/ft	-
Uniform	5'- 7"	17'- 2"	FC3 Floor Decking (Plan View Fill)	Top	13 lb/ft	27 lb/ft	-	-
Point	5'- 8 3/4"	5'- 8 3/4"	B11(i3381)	Front	48 lb	-	56 lb	-
Point	0'- 2 3/4"	0'- 2 3/4"	E54(i2737)	Top	54 lb	-	142 lb	-
Point	0'- 7"	0'- 7"	E54(i2737)	Top	338 lb	-	920 lb	-
Point	5'- 5 1/2"	5'- 5 1/2"	E54(i2737)	Top	306 lb	-	866 lb	-
Point	5'- 9 3/4"	5'- 9 3/4"	E54(i2737)	Top	39 lb	-	106 lb	-
Point	16'- 11 1/4"	16'- 11 1/4"	E71(i2889)	Top	29 lb	-	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	E36(i587)	1652 lb	181 lb	2582 lb	-
2	16'- 8 1/2"	17'- 2"	STL BM(i652)	517 lb	222 lb	477 lb	-

DESIGN NOTES

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

PLY TO PLY CONNECTION

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

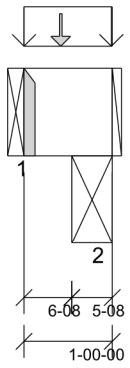
REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 Level: 2ND FLR FRAMING Label: B11 - i3381 Type: Beam	2 Ply Member 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13

Report Version: 2020.06.20 01/10/2022 14:29



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

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

Factored Resistance of Support Material:

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

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

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

LICENSED PROFESSIONAL ENGINEER
6/23/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22061225

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	0'- 5"	1.25D + 1.5L	0.82	31 lb ft	28906 lb ft	Passed - 0%
Factored Shear:	0'- 11 7/8"	1.25D + 1.5S	0.98	256 lb	13565 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	1-08	1.25D + 1.5S + L	1.00	178 lb		5460 lb	-	Passed - 3%
2	5-08	1.25D + 1.5S + L	1.00	594 lb		20020 lb	11839 lb	Passed - 5%

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'	1'	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'	1'	E53(i2740)	Top	186 lb/ft	-	232 lb/ft	-
Point	0'- 5"	0'- 5"	J3(i3186)	Back	54 lb	109 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B10(i3463)	48 lb	-	56 lb	-
2	0'- 6 1/2"	1'	STL BM(i651)	205 lb	109 lb	176 lb	-

DESIGN NOTES

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

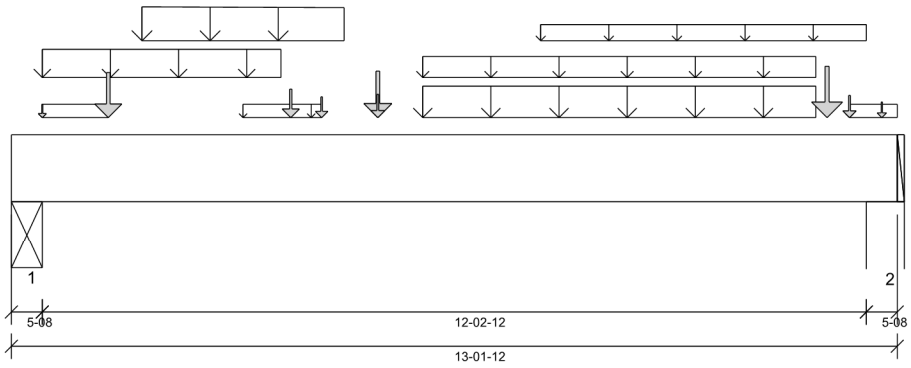
PLY TO PLY CONNECTION

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

REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 SUNKEN Level: 1ST FLR FRAMING Label: B12 - i3475 Type: Beam	3 Ply Member 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13 — Report Version: 2020.06.20 01/10/2022 14:52



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

Top: 0' Bottom: 0'- 10 1/2"

Factored Resistance of Support Material:

- 615 psi Beam @ 0'- 4 1/2"
- 615 psi Wall @ 12'- 9 1/4"

PLY TO PLY CONNECTION:
4 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
6/23/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22061226 PG 1/2

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	6'- 9 1/4"	1.25D + 1.5L	1.00	20534 lb ft	53017 lb ft	Passed - 39%
Factored Shear:	11'- 8 3/8"	1.25D + 1.5L	1.00	6456 lb	20723 lb	Passed - 31%
Live Load (LL) Pos. Defl.:	6'- 6 7/16"	L		0.175"	L/360	Passed - L/839
Total Load (TL) Pos. Defl.:	6'- 6 1/2"	D + L		0.287"	L/240	Passed - L/511

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	6746 lb		30030 lb	17758 lb	Passed - 38%
2	5-08	1.25D + 1.5L	1.00	6657 lb		30030 lb	17758 lb	Passed - 37%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	13'- 1 3/4"	Self Weight	Top	18 lb/ft	-	-	-
Uniform	0'- 5 1/2"	4'	User Load	Top	120 lb/ft	240 lb/ft	-	-
Uniform	0'- 5 1/2"	1'- 5 1/4"	FC1 Floor Decking (Plan View Fill)	Top	4 lb/ft	9 lb/ft	-	-
Uniform	3'- 5 1/4"	4'- 7 1/4"	FC1 Floor Decking (Plan View Fill)	Top	4 lb/ft	9 lb/ft	-	-
Uniform	6'- 1 1/4"	11'- 11 1/4"	Smoothed Load	Front	145 lb/ft	291 lb/ft	-	-
Uniform	6'- 1 1/4"	11'- 11 1/4"	Smoothed Load	Back	65 lb/ft	130 lb/ft	-	-
Uniform	7'- 10 1/4"	12'- 8 1/4"	User Load	Top	80 lb/ft	-	-	-
Uniform	12'- 5 1/4"	13'- 1 3/4"	FC1 Floor Decking (Plan View Fill)	Top	4 lb/ft	9 lb/ft	-	-
Tapered	1'- 11 1/4"	4'- 11 1/4"	Smoothed Load	Front	164 To 158 lb/ft	329 To 316 lb/ft	-	-
Point	1'- 5 1/4"	1'- 5 1/4"	J2(i3514)	Front	177 lb	355 lb	-	-
Point	5'- 5 1/4"	5'- 5 1/4"	J2(i3559)	Front	186 lb	371 lb	-	-
Point	12'- 1 1/4"	12'- 1 1/4"	J2(i3564)	Front	212 lb	424 lb	-	-
Point	4'- 1 3/4"	4'- 1 3/4"	B13(i3474)	Back	225 lb	35 lb	-	-
Point	4'- 7 1/4"	4'- 7 1/4"	J4(i3590)	Back	44 lb	88 lb	-	-
Point	5'- 5 1/4"	5'- 5 1/4"	J4(i3591)	Back	58 lb	115 lb	-	-
Point	12'- 5 1/4"	12'- 5 1/4"	J4(i3598)	Back	52 lb	104 lb	-	-
Point	0'- 5 1/2"	0'- 5 1/2"	FC1 Floor Decking (Plan View Fill)	Top	4 lb	7 lb	-	-
Point	12'- 11"	12'- 11"	E21(i572)	Top	46 lb	-	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	STL BM(i28)	1831 lb	2981 lb	-	-
2	12'- 8 1/4"	13'- 1 3/4"	W26(i24)	1938 lb	2813 lb	-	-

DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Calculation of lateral stability factor (KL) is based on width of all plies.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
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- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

PLY TO PLY CONNECTION

REVIEWED

MiTek	BUILDER:	BAYVIEW WELLINGTON	Job Name:	S42-19 SUNKEN	3 Ply Member 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Status: Design Passed
	SITE:	GREEN VALLEY EAST	Level:	1ST FLR FRAMING		
	MODEL:	S42-19	Label:	B12 - i3475		
	CITY:	BRADFORD	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 # TF22061226 PG 2/2

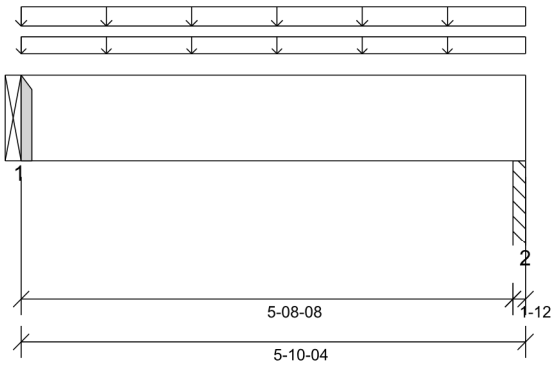
REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 SUNKEN Level: 1ST FLR FRAMING Label: B13 - i3474 Type: Beam	2 Ply Member 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13

Report Version: 2020.06.20 01/10/2022 14:52



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'- 10 1/4"

Factored Resistance of Support Material:

- 615 psi Beam @ 0'
- 615 psi Column @ 5'- 9 1/2"

PLY TO PLY CONNECTION:
4 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
6/23/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22061227

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 10 3/4"	1.25D + 1.5L	0.65	484 lb ft	22974 lb ft	Passed - 2%
Factored Shear:	0'- 11 7/8"	1.25D + 1.5L	0.65	220 lb	8980 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	1-08	1.25D + 1.5L	0.65	334 lb		3549 lb	-	Passed - 9%
2	1-12	1.25D + 1.5L	0.65	345 lb		4140 lb	2448 lb	Passed - 14%

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'	5'- 10 1/4"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'	5'- 10 1/4"	User Load	Top	60 lb/ft	-	-	-
Uniform	-0'	5'- 10 1/4"	FC1 Floor Decking (Plan View Fill)	Top	6 lb/ft	12 lb/ft	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B12(i3475)	225 lb	35 lb	-	-
2	5'- 8 1/2"	5'- 10 1/4"	PBO1(i3587)	231 lb	38 lb	-	-

DESIGN NOTES

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

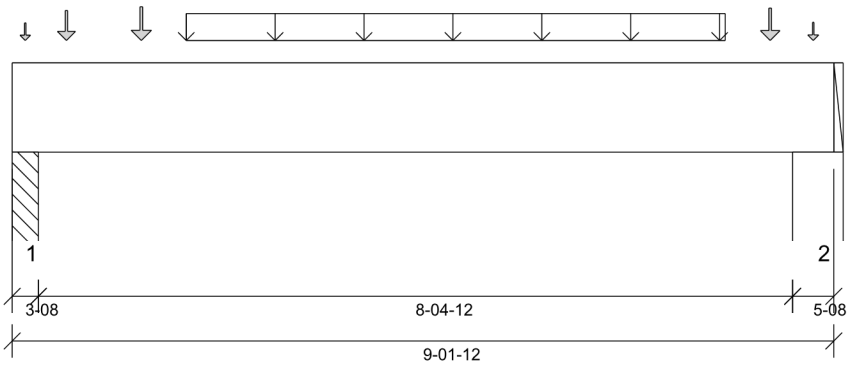
PLY TO PLY CONNECTION

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

REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 SUNKEN Level: 1ST FLR FRAMING Label: B14 - i3589 Type: Beam	1 Ply Member 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13 — Report Version: 2020.06.20 01/10/2022 14:52



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

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

Factored Resistance of Support Material:

- 615 psi Column @ 0'- 2 1/2"
- 615 psi Wall @ 8'- 9 1/4"

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 5 1/4"	1.25D + 1.5L	1.00	2469 lb ft	17672 lb ft	Passed - 14%
Factored Shear:	7'- 8 3/8"	1.25D + 1.5L	1.00	1145 lb	6908 lb	Passed - 17%
Live Load (LL) Pos. Defl.:	4'- 5 7/8"	L		0.031"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 5 7/8"	D + L		0.048"	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	1136 lb		6370 lb	3767 lb	Passed - 30%
2	5-08	1.25D + 1.5L	1.00	1174 lb		10010 lb	5919 lb	Passed - 20%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	9'- 1 3/4"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	1'- 11 1/4"	7'- 11 1/4"	Smoothed Load	Front	61 lb/ft	123 lb/ft	-	-
Point	0'- 7 1/4"	0'- 7 1/4"	J4(i3590)	Front	44 lb	88 lb	-	-
Point	1'- 5 1/4"	1'- 5 1/4"	J4(i3591)	Front	56 lb	113 lb	-	-
Point	8'- 5 1/4"	8'- 5 1/4"	J4(i3598)	Front	52 lb	105 lb	-	-
Point	0'- 1 3/4"	0'- 1 3/4"	User Load	Top	9 lb	-	-	-
Point	8'- 11"	8'- 11"	E49(i1458)	Top	15 lb	-	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	PBO1(i3587)	291 lb	515 lb	-	-
2	8'- 8 1/4"	9'- 1 3/4"	W25(i26)	305 lb	529 lb	-	-

DESIGN NOTES

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

LICENSED PROFESSIONAL ENGINEER
6/23/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22061228

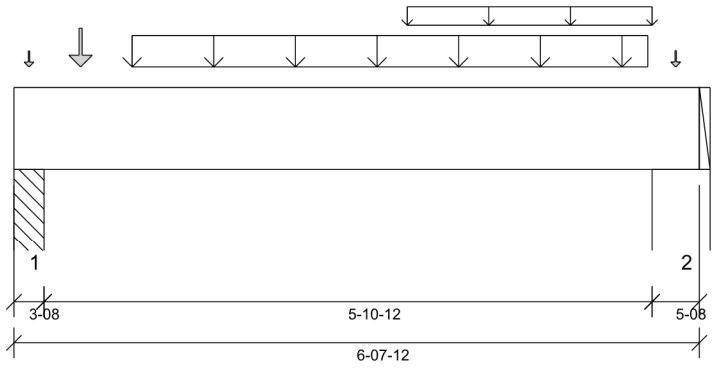
REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 SUNKEN Level: 1ST FLR FRAMING Label: B15L - i3679 Type: Beam	1 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13

Report Version: 2020.06.20 01/10/2022 14:52



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

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

Factored Resistance of Support Material:

- 615 psi Column @ 0'- 2 1/2"
- 615 psi Wall @ 6'- 3 1/4"

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	3'- 7 3/4"	1.25D + 1.5L	1.00	2197 lb ft	11650 lb ft	Passed - 19%
Factored Shear:	5'- 4 3/4"	1.25D + 1.5L	1.00	1381 lb	5526 lb	Passed - 25%
Live Load (LL) Pos. Defl.:	3'- 2 15/16"	L		0.026"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 3 3/16"	D + L		0.042"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	3-08	1.25D + 1.5L	1.00	1364 lb		6370 lb	3767 lb	Passed - 36%
2	5-08	1.25D + 1.5L	1.00	1462 lb		10010 lb	5919 lb	Passed - 25%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	6'- 7 3/4"	Self Weight	Top	5 lb/ft	-	-	-
Uniform	1'- 1 3/4"	6'- 1 3/4"	Smoothed Load	Back	105 lb/ft	209 lb/ft	-	-
Uniform	3'- 9 3/4"	6'- 2 1/4"	User Load	Top	60 lb/ft	-	-	-
Point	0'- 7 3/4"	0'- 7 3/4"	J11(i3681)	Back	85 lb	169 lb	-	-
Point	0'- 1 3/4"	0'- 1 3/4"	User Load	Top	9 lb	-	-	-
Point	6'- 5"	6'- 5"	4(i1051)	Top	11 lb	-	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 1/2"	PBO2(i3621)	357 lb	604 lb	-	-
2	6'- 2 1/4"	6'- 7 3/4"	W24(i25)	446 lb	610 lb	-	-

DESIGN NOTES

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

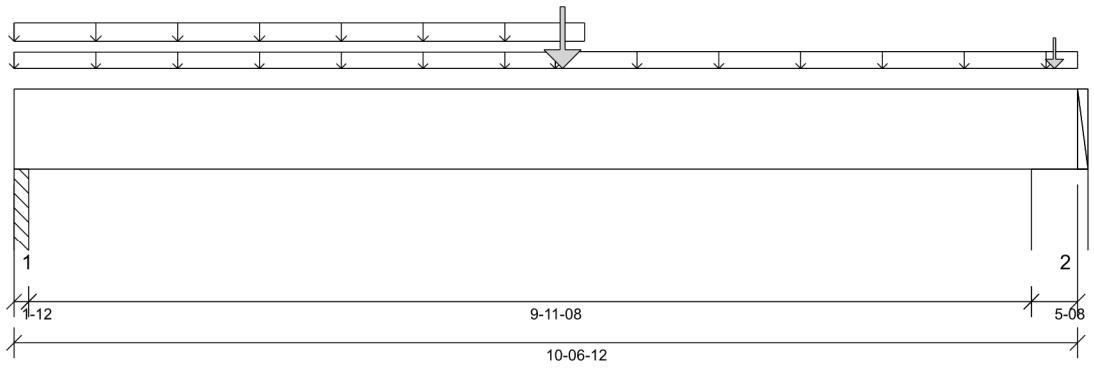
LICENSED PROFESSIONAL ENGINEER
6/23/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22061229

REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 SUNKEN Level: 1ST FLR FRAMING Label: B16L - i3680 Type: Beam	**2 Ply Member** **1 3/4" x 9 1/2" (2.0E 3100)** **WestFraser LVL**	Status: **Design Passed**

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13 — Report Version: 2020.06.20 01/10/2022 14:52



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 1/2"

Factored Resistance of Support Material:

- 615 psi Column @ 0'- 3/4"
- 615 psi Wall @ 10'- 2 1/4"

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

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

STRUCTURAL COMPONENT ONLY
DWG # TF22061230

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	5'- 5 3/8"	1.25D + 1.5L	0.98	4275 lb ft	22862 lb ft	Passed - 19%
Factored Shear:	0'- 11 1/4"	1.25D + 1.5L	0.98	1002 lb	10845 lb	Passed - 9%
Live Load (LL) Pos. Defl.:	5'- 2 11/16"	L		0.052"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	5'- 1 13/16"	D + L		0.100"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	1-12	1.25D + 1.5L	0.98	1113 lb		6250 lb	3696 lb	Passed - 30%
2	5-08	1.25D + 1.5L	0.98	1464 lb		19644 lb	11616 lb	Passed - 13%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	10'- 6 3/4"	Self Weight	Top	9 lb/ft	-	-	-
Uniform	0'	5'- 8"	User Load	Top	60 lb/ft	-	-	-
Uniform	0'	5'- 4 1/2"	FC4 Floor Decking (Plan View Fill)	Top	7 lb/ft	13 lb/ft	-	-
Uniform	5'- 4 1/2"	10'- 6 3/4"	FC4 Floor Decking (Plan View Fill)	Top	10 lb/ft	20 lb/ft	-	-
Point	5'- 5 3/8"	5'- 5 3/8"	B17L(i3688)	Back	301 lb	586 lb	-	-
Point	10'- 4"	10'- 4"	E87(i3639)	Top	153 lb	139 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 1 3/4"	PBO2(i3621)	480 lb	353 lb	-	-
2	10'- 1 1/4"	10'- 6 3/4"	W91(i3620)	502 lb	547 lb	-	-

DESIGN NOTES

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

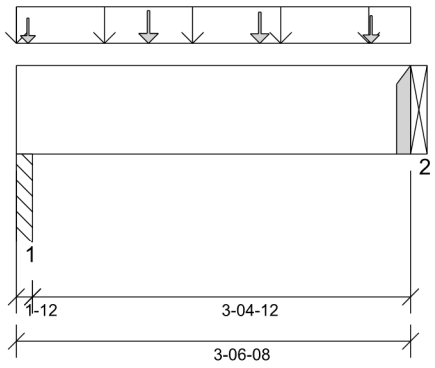
PLY TO PLY CONNECTION

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

REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 SUNKEN Level: 1ST FLR FRAMING Label: B17L - i3688 Type: Beam	1 Ply Member 1 3/4" x 9 1/2" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13 — Report Version: 2020.06.20 01/10/2022 14:52



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

Top: 0' Bottom: 0'- 10 1/2"

Factored Resistance of Support Material:

- 615 psi Column @ 0'- 3/4"
- 615 psi Beam @ 3'- 6 1/2"

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	1'- 10 1/8"	1.25D + 1.5L	1.00	1082 lb ft	11650 lb ft	Passed - 9%
Factored Shear:	0'- 11 1/4"	1.25D + 1.5L	1.00	698 lb	5526 lb	Passed - 13%

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	1306 lb		3185 lb	1883 lb	Passed - 69%
2	1-08	1.25D + 1.5L	1.00	1242 lb		2730 lb	-	Passed - 46%

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'	3'- 6 1/2"	Self Weight	Top	5 lb/ft	-	-	-
Uniform	0'	3'- 6 1/2"	User Load	Front	120 lb/ft	240 lb/ft	-	-
Point	0'- 1 1/4"	0'- 1 1/4"	J12(i3677)	Back	29 lb	59 lb	-	-
Point	1'- 2 1/4"	1'- 2 1/4"	J12(i3683)	Back	54 lb	108 lb	-	-
Point	2'- 2 1/4"	2'- 2 1/4"	J12(i3682)	Back	49 lb	99 lb	-	-
Point	3'- 2 1/4"	3'- 2 1/4"	J12(i3676)	Back	37 lb	74 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 1 3/4"	PBO3(i3625)	310 lb	604 lb	-	-
2	3'- 6 1/2"	3'- 6 1/2"	B16L(i3680)	301 lb	586 lb	-	-

DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
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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.

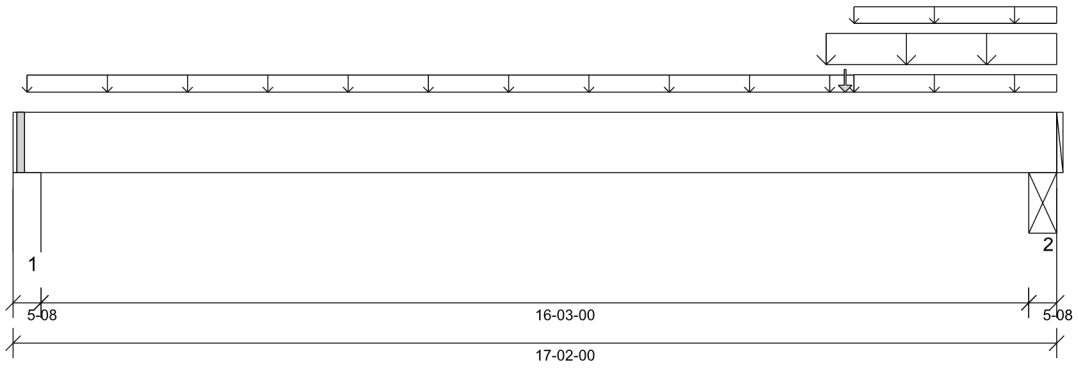
LICENSED PROFESSIONAL ENGINEER
6/23/22
C. M. HEYENS
100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22061231

REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 EL B Level: 2ND FLR FRAMING Label: B20 - i3786 Type: Beam	**2 Ply Member** **1 3/4" x 11 7/8" (2.0E 3100)** **WestFraser LVL**	Status: **Design Passed**

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13 — Report Version: 2020.06.20 01/10/2022 15:16



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: 13'- 1"

Factored Resistance of Support Material:

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

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

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

STRUCTURAL COMPONENT ONLY
DWG # TF22061232

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	10'- 8 11/16"	1.25D + 1.5L + S	0.93	3824 lb ft	33037 lb ft	Passed - 12%
Factored Shear:	15'- 8 5/8"	1.25D + 1.5S + L	0.98	1655 lb	13502 lb	Passed - 12%
Live Load (LL) Pos. Defl.:	8'- 10 5/8"	L + 0.5S		0.063"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	8'- 11 3/4"	D + L + 0.5S		0.139"	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	0.79	679 lb		15888 lb	9395 lb	Passed - 7%
2	5-08	1.25D + 1.5S + L	0.98	2278 lb		19566 lb	11570 lb	Passed - 20%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	17'- 2"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'- 2 3/4"	13'- 10"	FC3 Floor Decking (Plan View Fill)	Top	13 lb/ft	27 lb/ft	-	-
Uniform	13'- 4 1/2"	17'- 2"	E89(i4033)	Top	156 lb/ft	-	164 lb/ft	-
Uniform	13'- 10"	17'- 2"	User Load	Front	14 lb/ft	-	33 lb/ft	-
Uniform	13'- 10"	17'- 2"	FC3 Floor Decking (Plan View Fill)	Top	9 lb/ft	18 lb/ft	-	-
Point	13'- 8 1/4"	13'- 8 1/4"	B21(i4013)	Front	42 lb	-	44 lb	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	E36(i587)	277 lb	219 lb	74 lb	-
2	16'- 8 1/2"	17'- 2"	STL BM(i652)	820 lb	205 lb	702 lb	-

DESIGN NOTES

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

PLY TO PLY CONNECTION

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

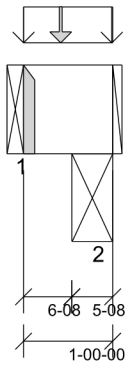
REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 EL B Level: 2ND FLR FRAMING Label: B21 - i4013 Type: Beam	2 Ply Member 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13

Report Version: 2020.06.20 01/10/2022 15:16



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: 0'- 3 3/4"

Factored Resistance of Support Material:

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

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

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

LICENSED PROFESSIONAL ENGINEER
6/23/22
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100505065
PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22061233

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	0'- 5"	1.25D + 1.5L	0.87	38 lb ft	30600 lb ft	Passed - 0%
Factored Shear:	0'- 11 7/8"	1.25D + 1.5S	0.94	199 lb	13003 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	1-08	1.25D + 1.5L + S	0.98	173 lb		5362 lb	-	Passed - 3%
2	5-08	1.25D + 1.5S + L	1.00	538 lb		20020 lb	11839 lb	Passed - 5%

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'	1'	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'	1'	E90(i4034)	Top	164 lb/ft	-	184 lb/ft	-
Point	0'- 5"	0'- 5"	J3(i4016)	Front	65 lb	130 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B20(i3786)	42 lb	-	44 lb	-
2	0'- 6 1/2"	1'	STL BM(i651)	199 lb	130 lb	140 lb	-

DESIGN NOTES

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

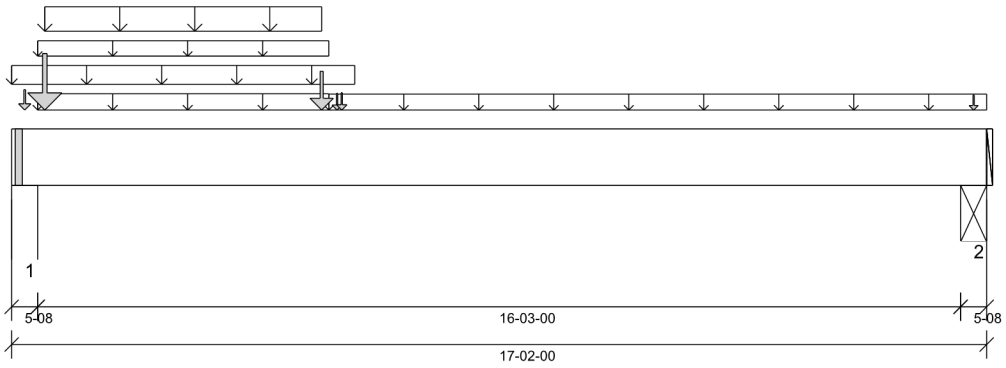
PLY TO PLY CONNECTION

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

REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 EL C Level: 2ND FLR FRAMING Label: B22 - i3781 Type: Beam	2 Ply Member 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13 — Report Version: 2020.06.20 01/10/2022 15:36



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

Top: 0' Bottom: 10'- 10"

Factored Resistance of Support Material:

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

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

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

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PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22061234

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	5'- 5 1/2"	1.25D + 1.5S + L	1.00	11298 lb ft	35345 lb ft	Passed - 32%
Factored Shear:	1'- 5 3/8"	1.25D + 1.5S + L	1.00	3384 lb	13815 lb	Passed - 24%
Live Load (LL) Pos. Defl.:	7'- 9 3/8"	S + 0.5L		0.198"	L/360	Passed - L/985
Total Load (TL) Pos. Defl.:	7'- 10 1/16"	D + S + 0.5L		0.348"	L/240	Passed - L/560

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	5-08	1.25D + 1.5S + L	1.00	5700 lb		20020 lb	11839 lb	Passed - 48%
2	5-08	1.25D + 1.5L	0.65	928 lb		13013 lb	7695 lb	Passed - 12%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	17'- 2"	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'	6'- 1/2"	E54(i2737)	Top	100 lb/ft	-	-	-
Uniform	0'- 5 1/2"	5'- 7"	User Load	Front	14 lb/ft	-	33 lb/ft	-
Uniform	0'- 5 1/2"	5'- 7"	FC3 Floor Decking (Plan View Fill)	Top	9 lb/ft	18 lb/ft	-	-
Uniform	0'- 7"	5'- 5 1/2"	E54(i2737)	Top	56 lb/ft	-	164 lb/ft	-
Uniform	5'- 7"	17'- 2"	FC3 Floor Decking (Plan View Fill)	Top	13 lb/ft	27 lb/ft	-	-
Point	5'- 8 3/4"	5'- 8 3/4"	B23(i3770)	Front	40 lb	-	39 lb	-
Point	0'- 2 3/4"	0'- 2 3/4"	E54(i2737)	Top	54 lb	-	142 lb	-
Point	0'- 7"	0'- 7"	E54(i2737)	Top	352 lb	-	959 lb	-
Point	5'- 5 1/2"	5'- 5 1/2"	E54(i2737)	Top	180 lb	-	582 lb	-
Point	5'- 9 3/4"	5'- 9 3/4"	E54(i2737)	Top	25 lb	-	74 lb	-
Point	16'- 11 1/4"	16'- 11 1/4"	E71(i2889)	Top	29 lb	-	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	E36(i587)	1565 lb	181 lb	2394 lb	-
2	16'- 8 1/2"	17'- 2"	STL BM(i652)	470 lb	222 lb	371 lb	-

DESIGN NOTES

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

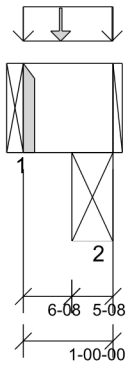
PLY TO PLY CONNECTION

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

REVIEWED

MiTek	BUILDER: BAYVIEW WELLINGTON SITE: GREEN VALLEY EAST MODEL: S42-19 CITY: BRADFORD	Job Name: S42-19 EL C Level: 2ND FLR FRAMING Label: B23 - i3770 Type: Beam	2 Ply Member 1 3/4" x 11 7/8" (2.0E 3100) WestFraser LVL	Status: Design Passed

Illustration Not to Scale. Pitch: 0/12 — Designed by Single Member Design Engine in MiTek® Structure Version 8.4.2.286 Update9.13 — Report Version: 2020.06.20 01/10/2022 15:36



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

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

Factored Resistance of Support Material:

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

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

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

LICENSED PROFESSIONAL ENGINEER
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PROVINCE OF ONTARIO

STRUCTURAL COMPONENT ONLY
DWG # TF22061235

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	0'- 5"	1.25D + 1.5L	0.85	31 lb ft	29947 lb ft	Passed - 0%
Factored Shear:	0'- 11 7/8"	1.25D + 1.5S	0.93	183 lb	12876 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	1-08	1.25D + 1.5L + S	0.97	151 lb		5282 lb	-	Passed - 3%
2	5-08	1.25D + 1.5S + L	1.00	477 lb		19926 lb	11783 lb	Passed - 4%

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'	1'	Self Weight	Top	12 lb/ft	-	-	-
Uniform	0'	1'	E53(i2740)	Top	154 lb/ft	-	161 lb/ft	-
Point	0'- 5"	0'- 5"	J3(i3767)	Back	54 lb	109 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B22(i3781)	40 lb	-	39 lb	-
2	0'- 6 1/2"	1'	STL BM(i651)	180 lb	109 lb	122 lb	-

DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Calculation of lateral stability factor (KL) is based on width of all plies.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
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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.

REVIEWED

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

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

Notes:

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

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

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

Notes:

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

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

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

Notes:

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

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

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

Notes:

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

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

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

Notes:

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

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

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

Notes:

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

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

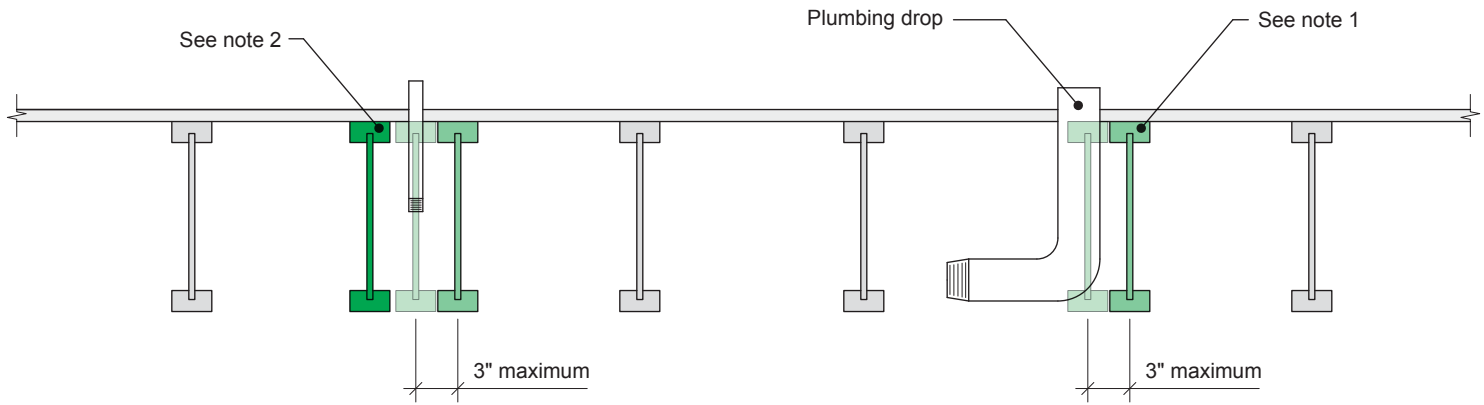
Joist depth	Joist series	Bare, On centre spacing				1/2 in. gypsum ceiling, On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-10"	15'-0"	14'-5"	13'-5"	16'-4"	15'-5"	14'-6"	13'-5"
	NI-40x	16'-11"	15'-11"	15'-4"	14'-9"	17'-4"	16'-4"	15'-9"	14'-11"
	NI-60	17'-1"	16'-1"	15'-6"	14'-10"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

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

Notes:

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

7c

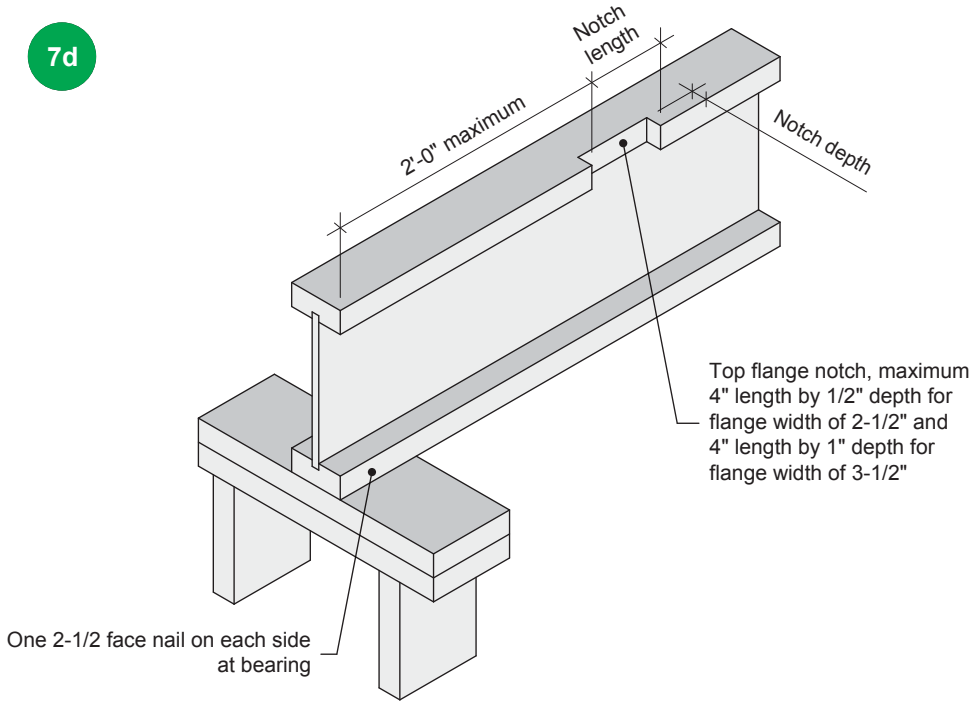


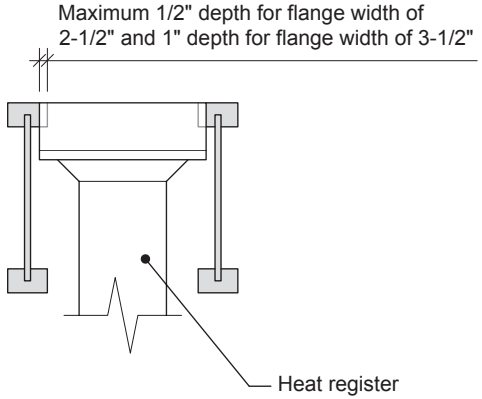
Notes:

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

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

7d





Notes:

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