

MODEL: 3102- CORNER
- EL.A
+ OPT. LOGGIA

REVISION: November 22, 2021

Second Floor Framing

Do not scale - refer to architectural plans for dimensions

SE033161 - SE033177
SE039905 - SE039914

Products				
PlotID	Length	Product	Plies	Net Qty
B1	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B18	6-00-00	11 7/8" NI-20	2	2
B19	11-00-00	11 7/8" NI-20	2	4
B22	13-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B23	13-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
Ca1	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
Ca2	117-00-00	1 1/8" x 11 7/8" Rim Board	1	1
J1	14-00-00	11 7/8" NI-20	1	8
J2	13-00-00	11 7/8" NI-20	1	6
J3	13-00-00	11 7/8" NI-20	2	4
J4	12-00-00	11 7/8" NI-20	1	4
J5	11-00-00	11 7/8" NI-20	1	26
J6	10-00-00	11 7/8" NI-20	1	8
J7	7-00-00	11 7/8" NI-20	1	1
J8	4-00-00	11 7/8" NI-20	1	1
J9	18-00-00	11 7/8" NI-40x	1	26

Connector Summary			
PlotID	Qty	Manuf	Product
H1	2		HUS1.81/10
H2	34		LT251188
H3	2		MIT311.88-2

DESIGN LOADING:

LIVE LOAD = 40 PSF
DEAD LOAD = 15 PSF
DEAD LOAD @TILE = 20 PSF

RIMBOARD

1- 1/8" X 11 7/8" O.S.B.

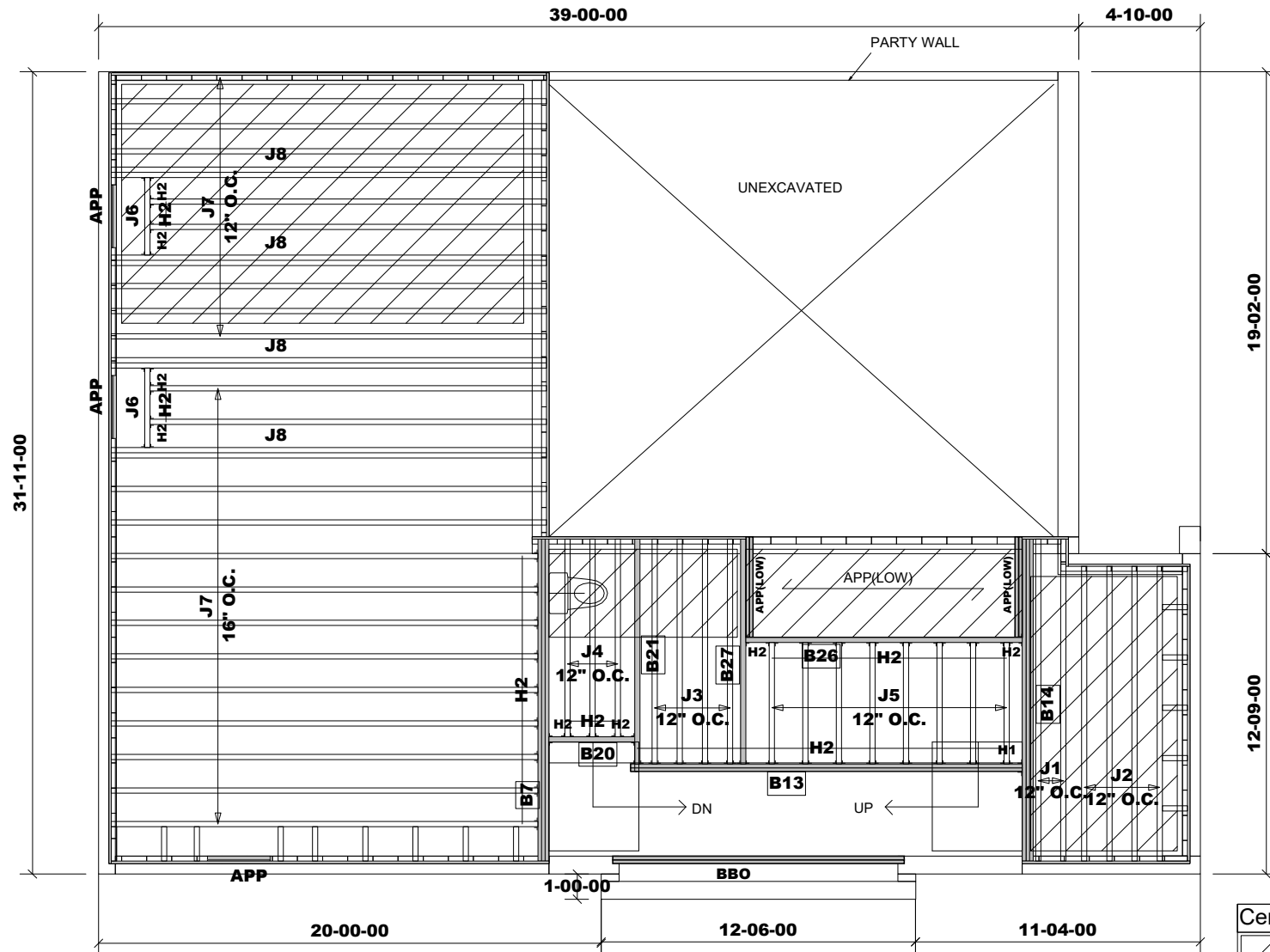
SUBFLOOR - 3/4" NAILED & GLUED*

APP - AS PER PLAN
BBO - BEAM BY OTHERS

Ceramic tile application as per O.B.C. 9.30.6

Provide I-Joist Blocking between cantilevered joists (along bearing) and rimboard closure at ends.

Blocking panels are required over all interior supports
Squash blocks are required under concentrated loads.



Products				
PlotID	Length	Product	Plies	Net Qty
B7	13-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3
B13	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B14	13-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3
B20	4-00-00	11 7/8" NI-20	1	1
B21	9-00-00	11 7/8" NI-20	1	1
B26	11-00-00	11 7/8" NI-20	1	1
B27	9-00-00	11 7/8" NI-20	1	1
BBO	12-00-00	VERSALAM-10 2.0E	2	2
Ca1	120-00-00	1 1/8" x 11 7/8" Rim Board	1	1
J1	13-00-00	11 7/8" NI-20	1	2
J2	12-00-00	11 7/8" NI-20	1	4
J3	9-00-00	11 7/8" NI-20	1	4
J4	8-00-00	11 7/8" NI-20	1	3
J5	5-00-00	11 7/8" NI-20	1	8
J6	4-00-00	11 7/8" NI-20	1	2
J7	18-00-00	11 7/8" NI-40x	1	22
J8	18-00-00	11 7/8" NI-40x	2	8

Connector Summary			
PlotID	Qty	Manuf	Product
H1	1		HGUS410
H2	46		LT251188

RIMBOARD
1- 1/8" X 11 7/8" O.S.B.
SUBFLOOR - 3/4" NAILED & GLUED*
APP - AS PER PLAN
BBO - BEAM BY OTHERS

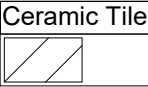
DESIGN LOADING:
LIVE LOAD = 40 PSF
DEAD LOAD = 15 PSF
DEAD LOAD @TILE = 20 PSF

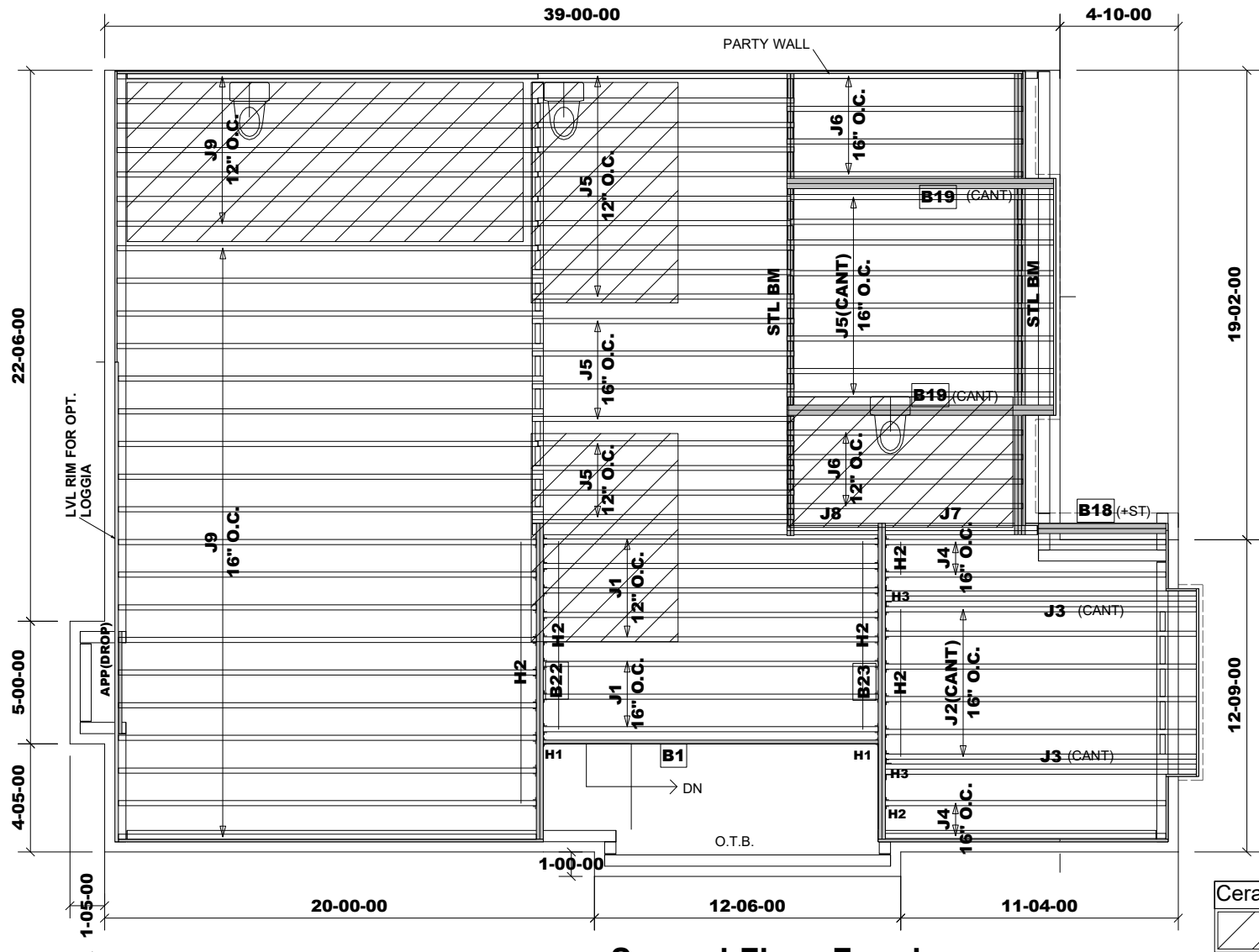
Ceramic tile application as per O.B.C. 9.30.6
Blocking panels are required over all interior supports
Squash blocks are required under concentrated loads.

MODEL: 3102- CORNER
- EL.A+B(W/SUNKEN MUDRM)
+ OPT. LOGGIA

First Floor Framing

Do not scale - refer to architectural plans for dimensions
REVISION: November 22, 2021



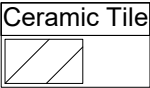


**MODEL: 3102- CORNER
- EL.A(W/FIREPLACE)
+ OPT. LOGGIA**

Second Floor Framing

Do not scale - refer to architectural plans for dimensions

REVISION: November 22, 2021



Products				
PlotID	Length	Product	Plies	Net Qty
B1	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B18	6-00-00	11 7/8" NI-20	2	2
B19	11-00-00	11 7/8" NI-20	2	4
B22	13-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B23	13-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
Ca1	20-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
Ca2	113-00-00	1 1/8" x 11 7/8" Rim Board	1	1
J1	14-00-00	11 7/8" NI-20	1	8
J2	13-00-00	11 7/8" NI-20	1	6
J3	13-00-00	11 7/8" NI-20	2	4
J4	12-00-00	11 7/8" NI-20	1	4
J5	11-00-00	11 7/8" NI-20	1	26
J6	10-00-00	11 7/8" NI-20	1	8
J7	7-00-00	11 7/8" NI-20	1	1
J8	4-00-00	11 7/8" NI-20	1	1
J9	18-00-00	11 7/8" NI-40x	1	26

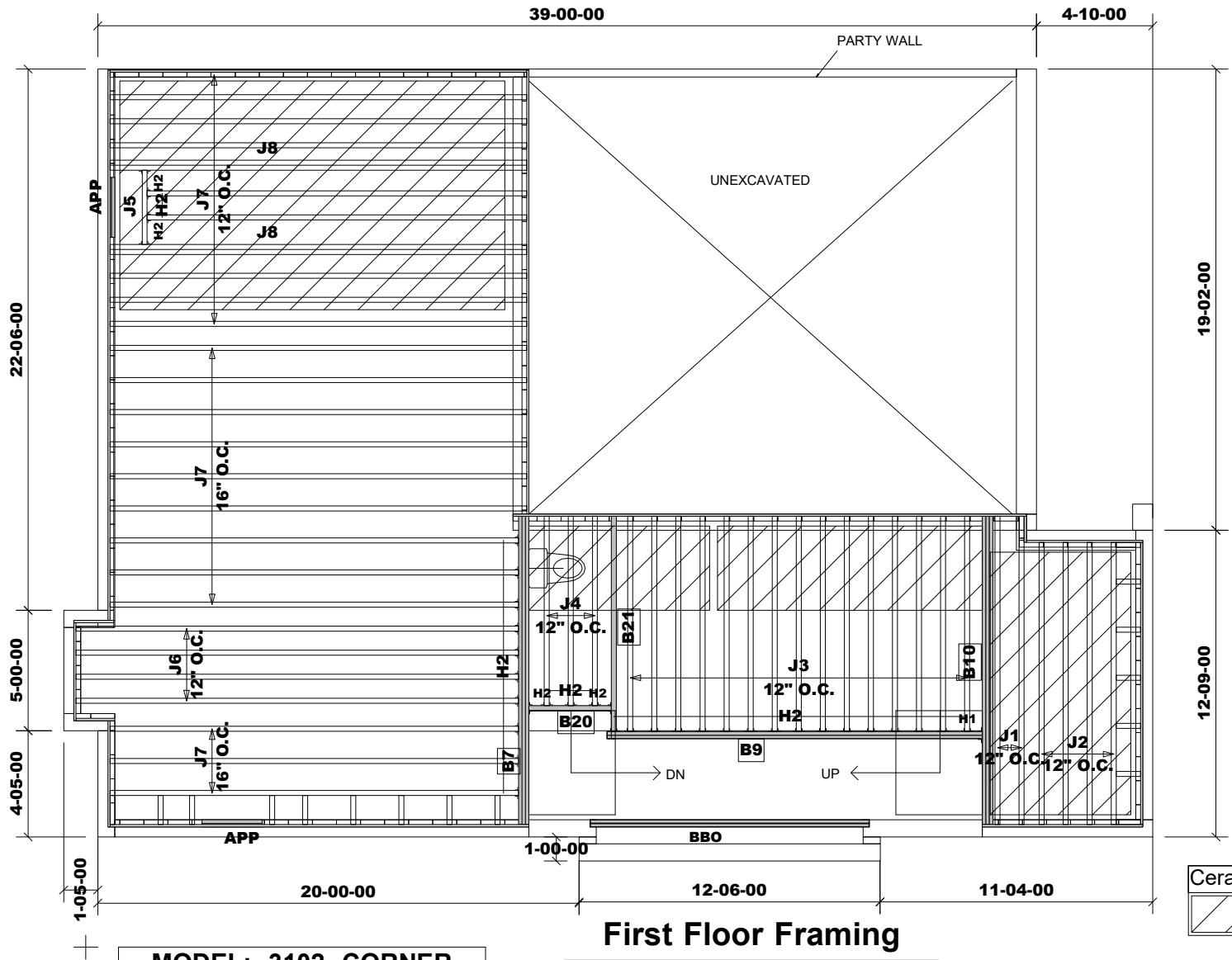
Connector Summary			
PlotID	Qty	Manuf	Product
H1	2		HUS1.81/10
H2	34		LT251188
H3	2		MIT311.88-2

DESIGN LOADING:

LIVE LOAD = 40 PSF
DEAD LOAD = 15 PSF
DEAD LOAD @TILE = 20 PSF

RIMBOARD
 1- 1/8" X 11 7/8" O.S.B.
 SUBFLOOR - 3/4" NAILED & GLUED*
 APP - AS PER PLAN
 BBO - BEAM BY OTHERS

Ceramic tile application as per O.B.C. 9.30.6
 Provide I-Joist Blocking between cantilevered joists (along bearing) and rimboard closure at ends.
 Blocking panels are required over all interior supports
 Squash blocks are required under concentrated loads.



Products				
PlotID	Length	Product	Plies	Net Qty
B7	13-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3
B9	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B10	13-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3
B20	4-00-00	11 7/8" NI-20	1	1
B21	9-00-00	11 7/8" NI-20	1	1
Ca1	134-00-00	1 1/8" x 11 7/8" Rim Board	1	1
J1	13-00-00	11 7/8" NI-20	1	2
J2	12-00-00	11 7/8" NI-20	1	4
J3	9-00-00	11 7/8" NI-20	1	15
J4	8-00-00	11 7/8" NI-20	1	3
J5	4-00-00	11 7/8" NI-20	1	1
J6	19-00-00	11 7/8" NI-40x	1	4
J7	18-00-00	11 7/8" NI-40x	1	21
J8	18-00-00	11 7/8" NI-40x	2	4

Connector Summary			
PlotID	Qty	Manuf	Product
H1	1		HGUS410
H2	35		LT251188

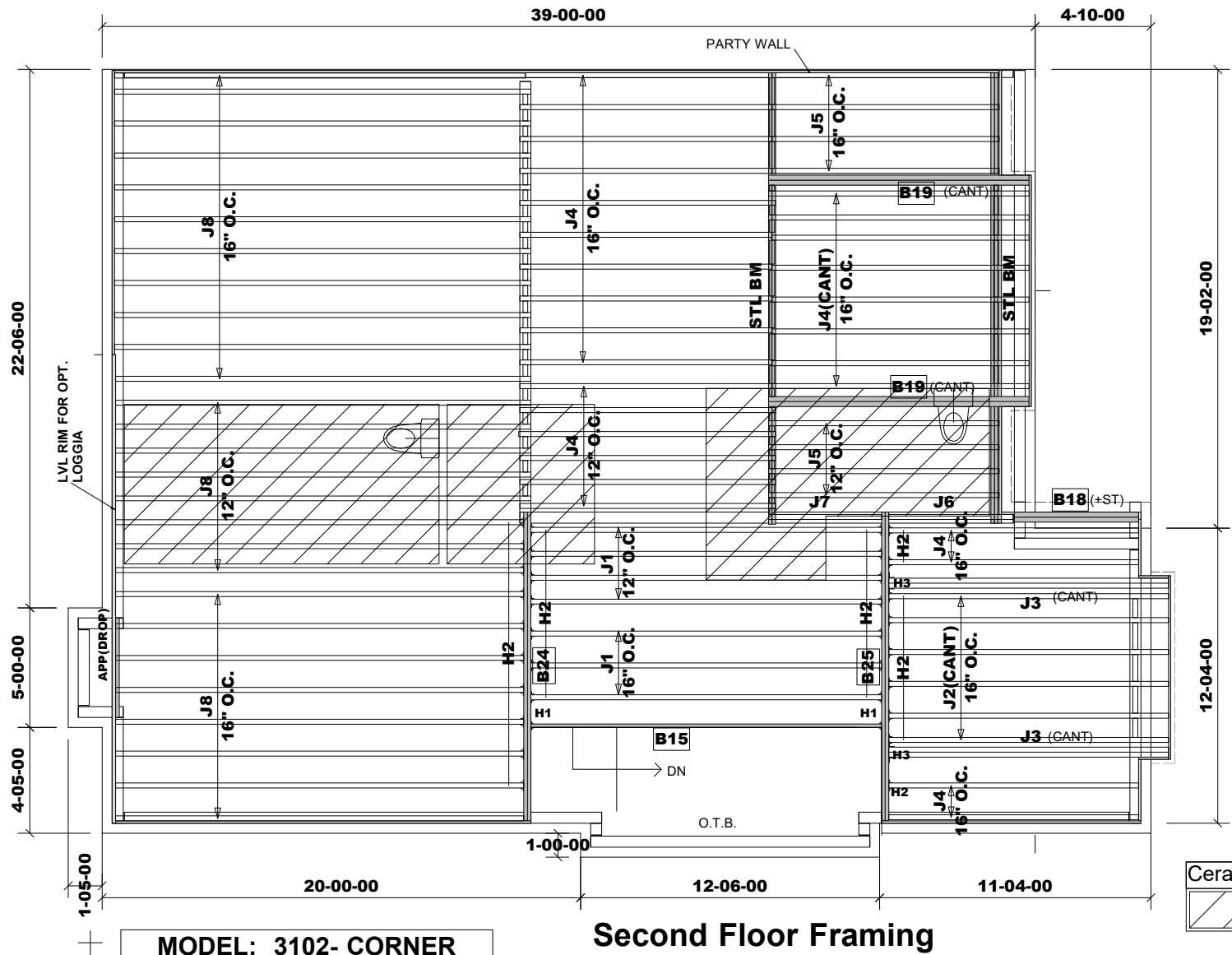
RIMBOARD
1- 1/8" X 11 7/8" O.S.B.
SUBFLOOR - 3/4" NAILED & GLUED*
APP - AS PER PLAN
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DESIGN LOADING:
LIVE LOAD = 40 PSF
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DEAD LOAD @TILE = 20 PSF

Ceramic tile application as per O.B.C. 9.30.6
Blocking panels are required over all interior supports
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MODEL: 3102- CORNER
- EL.A+B(W/FIREPLACE)
+ OPT. LOGGIA

First Floor Framing
Do not scale - refer to architectural plans for dimensions
REVISION: November 22, 2021



Products				
PlotID	Length	Product	Plies	Net Qty
B15	15-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1
B18	6-00-00	11 7/8" NI-20	2	2
B19	11-00-00	11 7/8" NI-20	2	4
B24	13-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	2	2
B25	13-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	2	2
Ca1	20-00-00	1-3/4" x 11-7/8" VERSA-LAM@ 2.0 3100 SP	1	1
Ca2	112-00-00	1 1/8" x 11 7/8" Rim Board	1	1
J1	15-00-00	11 7/8" NI-20	1	7
J2	12-00-00	11 7/8" NI-20	1	6
J3	12-00-00	11 7/8" NI-20	2	4
J4	11-00-00	11 7/8" NI-20	1	28
J5	10-00-00	11 7/8" NI-20	1	8
J6	6-00-00	11 7/8" NI-20	1	1
J7	5-00-00	11 7/8" NI-20	1	1
J8	18-00-00	11 7/8" NI-40x	1	27

Connector Summary			
PlotID	Qty	Manuf	Product
H1	2		HUS1.81/10
H2	33		LT251188
H3	2		MIT311.88-2

DESIGN LOADING:

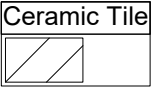
LIVE LOAD = 40 PSF
DEAD LOAD = 15 PSF
DEAD LOAD @TILE = 20 PSF

RIMBOARD

1- 1/8" X 11 7/8" O.S.B.

SUBFLOOR - 3/4" NAILED & GLUED*

APP - AS PER PLAN
BBO - BEAM BY OTHERS



Ceramic tile application as per O.B.C. 9.30.6

Provide I-Joist Blocking between cantilevered joists (along bearing) and rimboard closure at ends.

Blocking panels are required over all interior supports
Squash blocks are required under concentrated loads.



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(3102)**

Job Name: **338993-A**
Level: **2nd Floor - Supply/BOM**
Label: **B18 - i18224**
Type: **Beam**

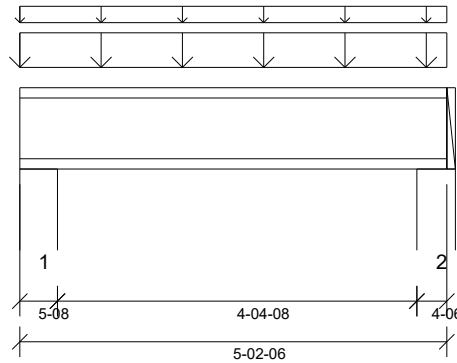
2 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure version
8.4.2.2861 Undated 9.13

Report Version: 2020.06.20 11/09/2021 10:02



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: 4'- 4 1/2"

Factored Resistance of Support Material:

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

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 7 13/16"	1.25D + 1.5S + L	0.94	1388 lb ft	10544 lb ft	Passed - 13%
Factored Shear:	0'- 5 9/16"	1.25D + 1.5S + L	0.94	1205 lb	4233 lb	Passed - 28%
Total Load (TL) Pos. Defl.:	2'- 7 3/4"	D + S + 0.5L		0.015"	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	0.94	1460 lb		4233 lb	15984 lb	Passed - 34%
2	4'-06	1.25D + 1.5S + L	0.94	1403 lb		4233 lb	12714 lb	Passed - 33%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	5'- 2 3/8"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'	5'- 2 3/8"	E33(i16771)	Top	213 lb/ft	-	168 lb/ft	-
Uniform	0'	5'- 2 3/8"	FC1 Floor Decking (Plan View Fill)	Top	8 lb/ft	15 lb/ft	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	E38(i16780)	601 lb	40 lb	446 lb	-
2	4'- 10"	5'- 2 3/8"	E37(i16778)	577 lb	40 lb	428 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.

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.



SE-039905



Customer: **Gold Park**
 Job Address: **Pine Valley**
 City: **Vaughan**
 Job Track: **45147(3102)**

Job Name: **338993-A**
 Level: **2nd Floor - Supply/BOM**
 Label: **B19 - i18182**
 Type: **Beam**

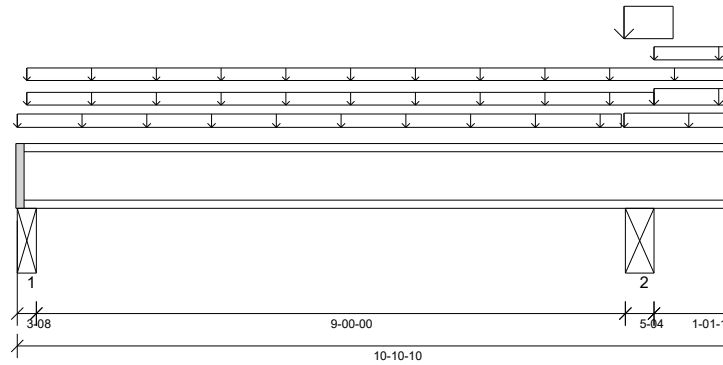
2 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure version
 8.4.2.286.1 dated 9.13

Report Version: 2020.06.20 11/09/2021 10:02



DESIGN INFORMATION

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

Lateral Restraint Requirements:

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

Top: 0' Bottom: 9'

Factored Resistance of Support Material:

- 769 psi Beam @ 0'-2 1/2"
- 769 psi Beam @ 9'-6 1/8"

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'-7 7/16"	1.25D + 1.5L	0.66	1438 lb ft	7409 lb ft	Passed - 19%
Factored Neg. Moment:	9'-6 1/8"	1.25D + 1.5L + S	0.70	614 lb ft	7828 lb ft	Passed - 8%
Factored Shear:	9'-8 13/16"	1.25D + 1.5L + S	0.70	865 lb	3142 lb	Passed - 28%
Live Load (LL) Pos. Defl.:	4'-10 5/16"	L		0.013"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	4'-9 3/16"	D + L		0.041"	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	0.66	674 lb		2894 lb	8934 lb	Passed - 23%
2	5-04	1.25D + 1.5L + S	0.70	1955 lb		7055 lb	14159 lb	Passed - 28%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	10'-10 5/8"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	-0'	9'-2 3/4"	User Load	Top	60 lb/ft	-	-	-
Uniform	0'-1 3/4"	10'-10 5/8"	FC1 Floor Decking (Plan View Fill)	Top	6 lb/ft	13 lb/ft	-	-
Uniform	0'-1 3/4"	9'-8 3/4"	FC1 Floor Decking (Plan View Fill)	Top	9 lb/ft	18 lb/ft	-	-
Uniform	9'-3 1/4"	10'-10 5/8"	E31(i16773)	Top	101 lb/ft	-	-	-
Uniform	9'-3 1/4"	10'-1/4"	E31(i16773)	Top	392 lb/ft	-	588 lb/ft	-
Uniform	9'-8 3/4"	10'-10 5/8"	E31(i16773)	Top	84 lb/ft	-	126 lb/ft	-
Uniform	9'-8 3/4"	10'-10 5/8"	FC1 Floor Decking (Plan View Fill)	Top	18 lb/ft	8 lb/ft	21 lb/ft	-
Point	10'-10 3/8"	10'-10 3/8"	E31(i16773)	Top	17 lb	-	12 lb	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'-3 1/2"	STL BM(i15212)	352 lb	145/-2 lb	-28 lb	-
2	9'-3 1/2"	9'-8 3/4"	STL BM(i15213)	1015 lb	179 lb	653 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.
- The deflection at the cantilever for either live and/or total loads is less than 3/8" and therefore has been excluded from the deflection ratio considerations.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

PLY TO PLY CONNECTION

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



SE-039906



Customer: **Gold Park**
 Job Address: **Pine Valley**
 City: **Vaughan**
 Job Track: **45147(3102)**

Job Name: **338993-A**
 Level: **1st Floor - Supply/BOM**
 Label: **B20 - i18097**
 Type: **Beam**

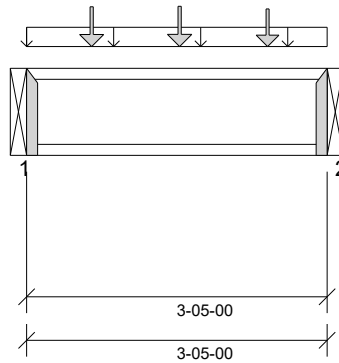
1 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure version
 8.4.2.2861 Undated 9.13

Report Version: 2020.06.20 11/09/2021 10:04



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:

- 769 psi Beam @ 0'
- 769 psi Beam @ 3'- 5"

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	1'- 8 7/8"	1.25D + 1.5L	1.00	646 lb ft	5580 lb ft	Passed - 12%
Factored Shear:	0'- 1/16"	1.25D + 1.5L	1.00	638 lb	2240 lb	Passed - 28%
Total Load (TL) Pos. Defl.:	1'- 8 1/2"	D + L		0.011"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	1-12	1.25D + 1.5L	1.00	639 lb		1970 lb	-	Passed - 32%
2	1-12	1.25D + 1.5L	1.00	638 lb		1970 lb	-	Passed - 32%

CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories
			Top	Face	Member	
1	LT251188		-	-	-	Connector manually specified by the user.
2	LT251188		-	-	-	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'- 5"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'	3'- 5"	User Load	Top	15 lb/ft	40 lb/ft	-	-
Point	0'- 8 7/8"	0'- 8 7/8"	J4(i18071)	Back	80 lb	160 lb	-	-
Point	1'- 8 7/8"	1'- 8 7/8"	J4(i18083)	Back	82 lb	163 lb	-	-
Point	2'- 8 7/8"	2'- 8 7/8"	J4(i18101)	Back	73 lb	145 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B7(i18085)	148 lb	302 lb	-	-
2	3'- 5"	3'- 5"	B21(i18061)	148 lb	302 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.



SE-039907



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(3102)**

Job Name: **338993-A**
Level: **1st Floor - Supply/BOM**
Label: **B21 - i18061**
Type: **Beam**

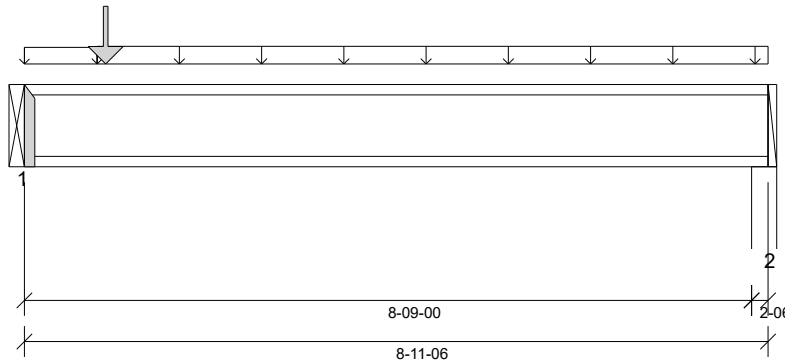
1 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in Mitek® Structure version
8.4.2.2861 dated 9.13

Report Version: 2020.06.20 11/09/2021 10:04



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: 7'- 8"

Factored Resistance of Support Material:

- 769 psi Beam @ 0'
- 615 psi Wall @ 8'- 10"

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	3'- 4 1/8"	1.25D + 1.5L	1.00	994 lb ft	5580 lb ft	Passed - 18%
Factored Shear:	0'- 1/16"	1.25D + 1.5L	1.00	846 lb	2240 lb	Passed - 38%
Live Load (LL) Pos. Defl.:	4'- 2 1/8"	L		0.033"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 2 5/16"	D + L		0.051"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	1-12	1.25D + 1.5L	1.00	856 lb		1970 lb	-	Passed - 43%
2	2-06	1.25D + 1.5L	1.00	376 lb		2045 lb	3653 lb	Passed - 18%

CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories
			Top	Face	Member	
1	LT251188		-	-	-	Connector manually specified by the user.
* Connectors: Refer to manufacturer's specifications, fasteners requirements and installation instruction. Where header fasteners are longer than the width of the supporting member, install backer block or clinch header nails.						

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	8'- 11 3/8"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'	0'- 10 1/2"	FC2 Floor Decking (Plan View Fill)	Top	8 lb/ft	16 lb/ft	-	-
Uniform	0'- 10 1/2"	8'- 11 3/8"	FC2 Floor Decking (Plan View Fill)	Top	15 lb/ft	29 lb/ft	-	-
Point	0'- 11 3/4"	0'- 11 3/4"	-	Back	148 lb	309 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B9(i18117)	210 lb	401 lb	-	-
2	8'- 9"	8'- 11 3/8"	W11(i15447)	95 lb	166 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.



SE-039908

BC CALC® Member Report

Dry | 1 span | No cant.

November 20, 2021 12:45:31

Build 7773

Job name: 45147(3102)

File name: 338993-A.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B22(i18490)

City, Province, Postal Code: Vaughan, ON

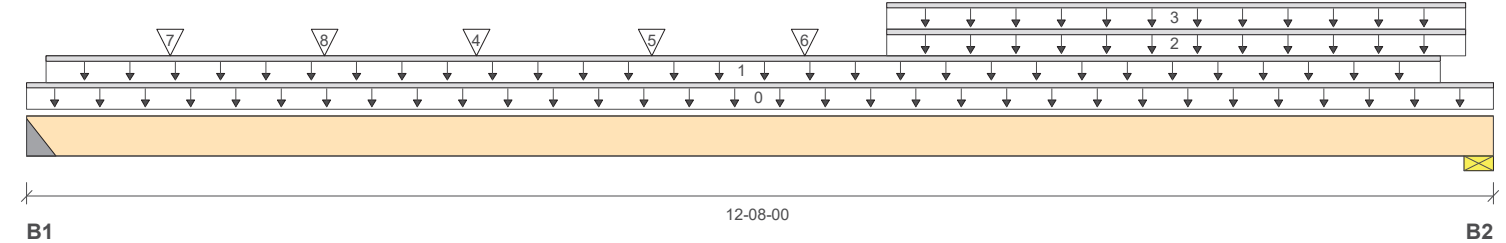
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	3006 / 0	2090 / 0	372 / 0	
B2, 5-1/2"	3846 / 0	2428 / 0	159 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-08-00	Top		12			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-02-00	12-02-08	Top		60			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	07-05-02	12-05-02	Top	364	182			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	07-05-02	12-05-02	Top	278	139			n/a
4	-	Conc. Pt. (lbs)	L	03-10-10	03-10-10	Top	989	711	531		n/a
5	-	Conc. Pt. (lbs)	L	05-04-13	05-04-13	Top	828	414			n/a
6	-	Conc. Pt. (lbs)	L	06-08-10	06-08-10	Top	782	391			n/a
7	J9(i18512)	Conc. Pt. (lbs)	L	01-02-14	01-02-14	Top	561	280			n/a
8	J9(i18449)	Conc. Pt. (lbs)	L	02-06-14	02-06-14	Top	460	230			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	26446 ft-lbs	35392 ft-lbs	74.7%	1	06-06-14
End Shear	7767 lbs	14464 lbs	53.7%	1	11-02-10
Total Load Deflection	L/280 (0.522")	n/a	85.8%	35	06-01-00
Live Load Deflection	L/448 (0.326")	n/a	80.3%	51	06-01-00
Max Defl.	0.522"	n/a	n/a	35	06-01-00
Span / Depth	12.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 3-1/2"	7494 lbs	n/a	87.8%	HGUS410
B2	Wall/Plate 5-1/2" x 3-1/2"	8962 lbs	75.7%	38.2%	Spruce-Pine-Fir

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS
@ 6" O.C., STAGGERED IN TWO ROWS



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
2nd Floor - Supply/BOM\Flush Beams\B22(i18490) (Flush Beam)**PASSED**

BC CALC® Member Report

Dry | 1 span | No cant.

November 20, 2021 12:45:31

Build 7773

Job name: 45147(3102)

File name: 338993-A.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B22(i18490)

City, Province, Postal Code: Vaughan, ON

Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses

Notes

Design meets Code minimum (L/240) Total load deflection criteria.

Design meets Code minimum (L/360) Live load deflection criteria.

Hanger Manufacturer: Unassigned

Resistance Factor phi has been applied to all presented results per CSA O86.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-01-10.

**Disclosure**

Use of the Boise Cascade Software is subject to the terms of the End User License Agreement (EULA). Completeness and accuracy of input must be reviewed and verified by a qualified engineer or other appropriate expert to assure its adequacy, prior to anyone relying on such output as evidence of suitability for a particular application. The output here is based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

SE-039909(2)

BC CALC® Member Report

Dry | 1 span | No cant.

November 20, 2021 12:46:28

Build 7773

Job name: 45147(3102)

File name: 338993-A.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B23(i18403)

City, Province, Postal Code: Vaughan, ON

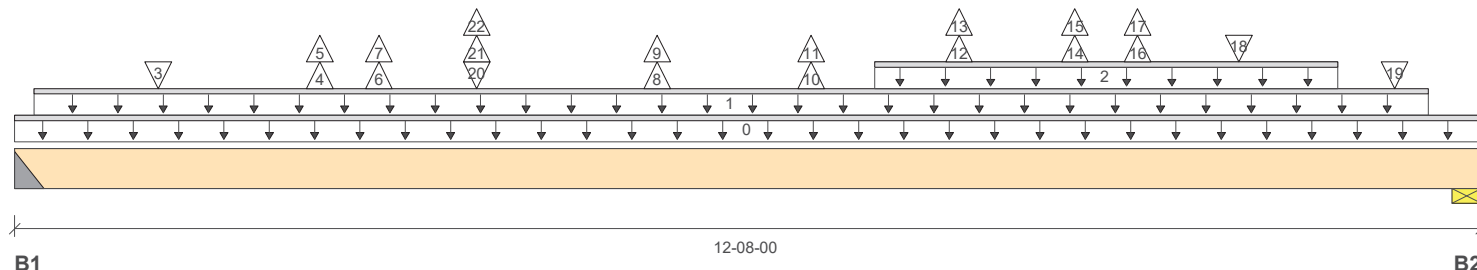
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	2336 / 15	1570 / 0	133 / 63	
B2, 5-1/2"	3019 / 14	1881 / 0	56 / 63	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-08-00	Top		12			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-02-00	12-02-08	Top		60			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	07-05-02	11-05-02	Top	279	140			n/a
3	J4(i18495)	Conc. Pt. (lbs)	L	01-02-14	01-02-14	Top	368	184			n/a
4	J3(i18436)	Conc. Pt. (lbs)	L	02-07-10	02-07-10	Top	228	93	-15		n/a
5	J3(i18436)	Conc. Pt. (lbs)	L	02-07-10	02-07-10	Top	-2				n/a
6	J2(i18396)	Conc. Pt. (lbs)	L	03-01-12	03-01-12	Top	178	63	-24		n/a
7	J2(i18396)	Conc. Pt. (lbs)	L	03-01-12	03-01-12	Top	-3				n/a
8	-	Conc. Pt. (lbs)	L	05-06-09	05-06-09	Top	681	315	-13		n/a
9	-	Conc. Pt. (lbs)	L	05-06-09	05-06-09	Top	-5				n/a
10	-	Conc. Pt. (lbs)	L	06-10-09	06-10-09	Top	635	292	-13		n/a
11	-	Conc. Pt. (lbs)	L	06-10-09	06-10-09	Top	-5				n/a
12	J2(i18437)	Conc. Pt. (lbs)	L	08-01-14	08-01-14	Top	271	113	-11		n/a
13	J2(i18437)	Conc. Pt. (lbs)	L	08-01-14	08-01-14	Top	-4				n/a
14	J2(i18426)	Conc. Pt. (lbs)	L	09-01-14	09-01-14	Top	179	63	-24		n/a
15	J2(i18426)	Conc. Pt. (lbs)	L	09-01-14	09-01-14	Top	-3				n/a
16	J3(i18413)	Conc. Pt. (lbs)	L	09-08-06	09-08-06	Top	164	60	-15		n/a
17	J3(i18413)	Conc. Pt. (lbs)	L	09-08-06	09-08-06	Top	-2				n/a
18	J4(i18591)	Conc. Pt. (lbs)	L	10-06-14	10-06-14	Top	253	126			n/a
19	-	Conc. Pt. (lbs)	L	11-11-00	11-11-00	Top	470				la
20	-	Conc. Pt. (lbs)	L	03-11-14	03-11-14	Top	805				la
21	-	Conc. Pt. (lbs)	L	03-11-14	03-11-14	Top	-5				la
22	-	Conc. Pt. (lbs)	L	03-11-14	03-11-14	Top					la

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	20616 ft-lbs	35392 ft-lbs	58.3%	9	06-09-14
End Shear	6134 lbs	14464 lbs	42.4%	9	11-02-10
Total Load Deflection	L/363 (0.402")	n/a	66.1%	116	06-02-08
Live Load Deflection	L/582 (0.251")	n/a	61.8%	168	06-02-08
Max Defl.	0.402"	n/a	n/a	116	06-02-08
Span / Depth	12.3				



NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS
 @ 8" O.C., STAGGERED IN TWO ROWS

BC CALC® Member Report

Dry | 1 span | No cant.

November 20, 2021 12:46:28

Build 7773

Job name: 45147(3102)

File name: 338993-A.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B23(i18403)

City, Province, Postal Code: Vaughan, ON

Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses

Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1 Hanger	2" x 3-1/2"	5599 lbs	n/a	65.6%	HGUS410
B2 Wall/Plate	5-1/2" x 3-1/2"	6936 lbs	58.6%	29.5%	Spruce-Pine-Fir

Cautions

Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Notes

Design meets Code minimum (L/240) Total load deflection criteria.

Design meets Code minimum (L/360) Live load deflection criteria.

Hanger Manufacturer: Unassigned

Resistance Factor phi has been applied to all presented results per CSA O86.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-01-10.



Disclosure

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BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

SE-039910(2)

BC CALC® Member Report

Dry | 1 span | No cant.

November 20, 2021 12:55:39

Build 7773

Job name: 45147(3102)

File name: 338993-A-OPT2.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B24(i18308)

City, Province, Postal Code: Vaughan, ON

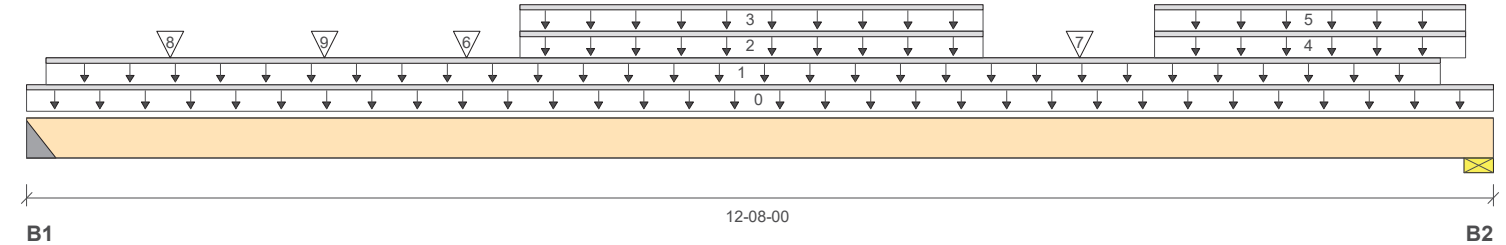
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	3002 / 0	2100 / 0	381 / 0	
B2, 5-1/2"	3995 / 0	2507 / 0	163 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-08-00	Top		12			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-02-00	12-02-08	Top		60			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	04-03-02	08-03-02	Top	342	171			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	04-03-02	08-03-02	Top	297	148			n/a
4	Smoothed Load	Unf. Lin. (lb/ft)	L	09-08-14	12-05-02	Top	380	190			n/a
5	Smoothed Load	Unf. Lin. (lb/ft)	L	09-08-14	12-05-02	Top	332	166			n/a
6	-	Conc. Pt. (lbs)	L	03-09-10	03-09-10	Top	738	603	544		n/a
7	-	Conc. Pt. (lbs)	L	09-01-02	09-01-02	Top	748	375			n/a
8	J9(i18385)	Conc. Pt. (lbs)	L	01-02-14	01-02-14	Top	560	280			n/a
9	J9(i18390)	Conc. Pt. (lbs)	L	02-06-14	02-06-14	Top	460	230			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	26899 ft-lbs	35392 ft-lbs	76.0%	1	06-03-02
End Shear	7996 lbs	14464 lbs	55.3%	1	11-02-10
Total Load Deflection	L/277 (0.528")	n/a	86.8%	35	06-03-02
Live Load Deflection	L/444 (0.329")	n/a	81.2%	51	06-03-02
Max Defl.	0.528"	n/a	n/a	35	06-03-02
Span / Depth	12.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 3-1/2"	7510 lbs	n/a	87.9%	HGUS410
B2	Wall/Plate 5-1/2" x 3-1/2"	9289 lbs	78.4%	39.6%	Spruce-Pine-Fir

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS
 @ 6" O.C., STAGGERED IN TWO ROWS



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
2nd Floor - Supply/BOM\Flush Beams\B24(i18308) (Flush Beam)**PASSED**

BC CALC® Member Report

Dry | 1 span | No cant.

November 20, 2021 12:55:39

Build 7773

Job name: 45147(3102)

File name: 338993-A-OPT2.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B24(i18308)

City, Province, Postal Code: Vaughan, ON

Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses

Notes

Design meets Code minimum (L/240) Total load deflection criteria.

Design meets Code minimum (L/360) Live load deflection criteria.

Hanger Manufacturer: Unassigned

Resistance Factor phi has been applied to all presented results per CSA O86.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-01-10.

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BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

SE-039911(2)

BC CALC® Member Report

Dry | 1 span | No cant.

November 20, 2021 12:56:04

Build 7773

Job name: 45147(3102)

File name: 338993-A-OPT2.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B25(i18271)

City, Province, Postal Code: Vaughan, ON

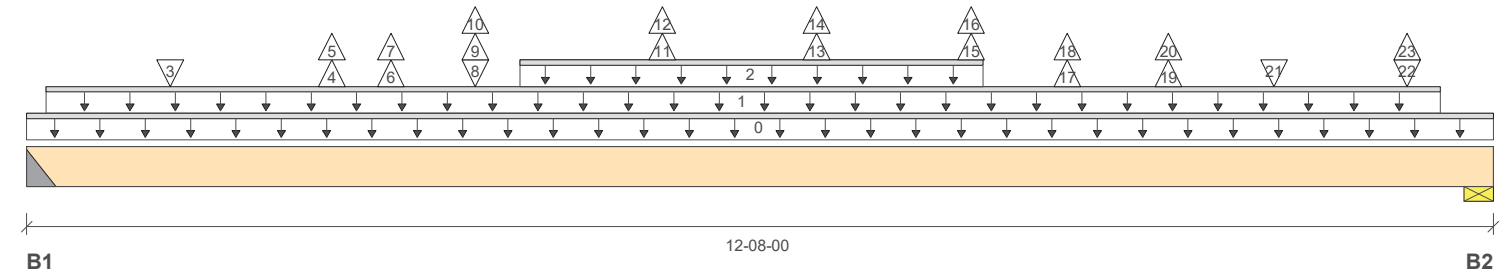
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	2263 / 16	1527 / 0	123 / 68	
B2, 5-1/2"	2882 / 26	1799 / 0	53 / 68	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-08-00	Top		12			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-02-00	12-02-08	Top		60			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	04-03-02	08-03-02	Top	297	148			n/a
3	J4(i18334)	Conc. Pt. (lbs)	L	01-02-14	01-02-14	Top	384	192			n/a
4	J3(i18429)	Conc. Pt. (lbs)	L	02-07-10	02-07-10	Top	209	81	-16		n/a
5	J3(i18429)	Conc. Pt. (lbs)	L	02-07-10	02-07-10	Top	-2				n/a
6	J2(i18337)	Conc. Pt. (lbs)	L	03-01-12	03-01-12	Top	163	52	-26		n/a
7	J2(i18337)	Conc. Pt. (lbs)	L	03-01-12	03-01-12	Top	-3				n/a
8	-	Conc. Pt. (lbs)	L	03-10-08	03-10-08	Top	531	337	176		n/a
9	-	Conc. Pt. (lbs)	L	03-10-08	03-10-08	Top	-5				n/a
10	-	Conc. Pt. (lbs)	L	03-10-08	03-10-08	Top			-12		n/a
11	J2(i18388)	Conc. Pt. (lbs)	L	05-05-14	05-05-14	Top	283	113	-14		n/a
12	J2(i18388)	Conc. Pt. (lbs)	L	05-05-14	05-05-14	Top	-6				n/a
13	J2(i18315)	Conc. Pt. (lbs)	L	06-09-14	06-09-14	Top	283	113	-14		n/a
14	J2(i18315)	Conc. Pt. (lbs)	L	06-09-14	06-09-14	Top	-6				n/a
15	J2(i18280)	Conc. Pt. (lbs)	L	08-01-14	08-01-14	Top	247	99	-12		n/a
16	J2(i18280)	Conc. Pt. (lbs)	L	08-01-14	08-01-14	Top	-5				n/a
17	-	Conc. Pt. (lbs)	L	08-11-14	08-11-14	Top	512	228	-26		n/a
18	-	Conc. Pt. (lbs)	L	08-11-14	08-11-14	Top	-3				n/a
19	-	Conc. Pt. (lbs)	L	09-10-05	09-10-05	Top	449	201	-16		n/a
20	-	Conc. Pt. (lbs)	L	09-10-05	09-10-05	Top	-2				n/a
21	-	Conc. Pt. (lbs)	L	10-09-04	10-09-04	Top	530	265			n/a
22	-	Conc. Pt. (lbs)	L	11-11-01	11-11-01	Top	356	173			n/a
23	-	Conc. Pt. (lbs)	L	11-11-01	11-11-01	Top	-10				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	20264 ft-lbs	35392 ft-lbs	57.3%	9	06-03-02
End Shear	5996 lbs	14464 lbs	41.5%	9	11-02-10
Total Load Deflection	L/373 (0.392")	n/a	64.4%	116	06-03-02
Live Load Deflection	L/598 (0.244")	n/a	60.2%	168	06-03-02
Max Defl.	0.392"	n/a	n/a	116	06-03-02
Span / Depth	12.3				

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS
@ 8" O.C., STAGGERED IN TWO ROWS



BC CALC® Member Report

Dry | 1 span | No cant.

November 20, 2021 12:56:04

Build 7773

Job name: 45147(3102)

File name: 338993-A-OPT2.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B25(i18271)

City, Province, Postal Code: Vaughan, ON

Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses

Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1 Hanger	2" x 3-1/2"	5427 lbs	n/a	63.6%	HGUS410
B2 Wall/Plate	5-1/2" x 3-1/2"	6624 lbs	55.9%	28.2%	Spruce-Pine-Fir

Cautions

Hanger model HGUS410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Notes

Design meets Code minimum (L/240) Total load deflection criteria.

Design meets Code minimum (L/360) Live load deflection criteria.

Hanger Manufacturer: Unassigned

Resistance Factor phi has been applied to all presented results per CSA O86.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-01-10.



Disclosure

Use of the Boise Cascade Software is subject to the terms of the End User License Agreement (EULA). Completeness and accuracy of input must be reviewed and verified by a qualified engineer or other appropriate expert to assure its adequacy, prior to anyone relying on such output as evidence of suitability for a particular application. The output here is based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

SE-039912(2)



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(3102)**

Job Name: **338993-SUNK**
Level: **1st Floor - Supply/BOM**
Label: **B27 - i18348**
Type: **Beam**

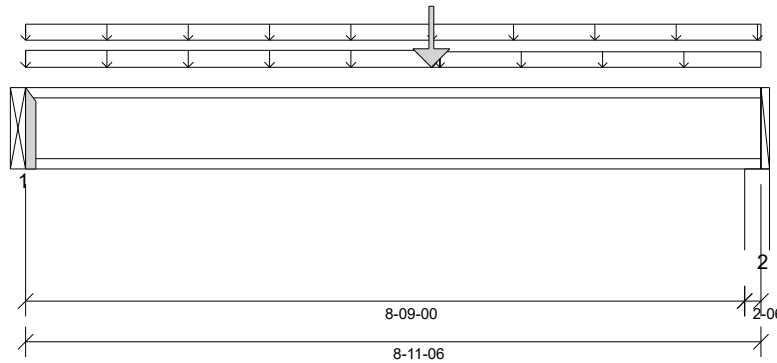
1 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure version
8.4.2.2861 dated 9.13

Report Version: 2020.06.20 11/20/2021 13:23



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: 4'- 10"

Factored Resistance of Support Material:

- 769 psi Beam @ 0'
- 615 psi Wall @ 8'- 10"

Reinforcement Accessories Required

- Critical Load Web Stiffener @ 4'- 11 1/4"



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 11 1/4"	1.25D + 1.5L	1.00	3940 lb ft	5580 lb ft	Passed - 71%
Factored Shear:	8'- 8 15/16"	1.25D + 1.5L	1.00	1076 lb	2240 lb	Passed - 48%
Live Load (LL) Pos. Defl.:	4'- 6 1/4"	L		0.087"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 6 7/16"	D + L		0.177"	L/240	Passed - L/593

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	1002 lb		1970 lb	-	Passed - 51%
2	2-06	1.25D + 1.5L	1.00	1086 lb		2045 lb	3653 lb	Passed - 53%

CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements	Other Information or Requirement for Reinforcement Accessories
			Top Face Member	
1	LT251188	-	-	Connector manually specified by the user.

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

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	8'- 11 3/8"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'	8'- 11 3/8"	FC2 Floor Decking (Plan View Fill)	Top	5 lb/ft	10 lb/ft	-	-
Uniform	0'	5'- 1/2"	FC2 Floor Decking (Plan View Fill)	Top	11 lb/ft	23 lb/ft	-	-
Uniform	5'- 1/2"	8'- 11 3/8"	FC2 Floor Decking (Plan View Fill)	Top	2 lb/ft	4 lb/ft	-	-
Point	4'- 11 1/4"	4'- 11 1/4"	B26(i18371)	Front	610 lb	528 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B13(i18349)	345 lb	368 lb	-	-
2	8'- 9"	8'- 11 3/8"	W11(i15447)	408 lb	396 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.

SE-039913



Customer: **Gold Park**
Job Address: **Pine Valley**
City: **Vaughan**
Job Track: **45147(3102)**

Job Name: **338993-SUNK**
Level: **1st Floor - Supply/BOM**
Label: **B26 - i18371**
Type: **Beam**

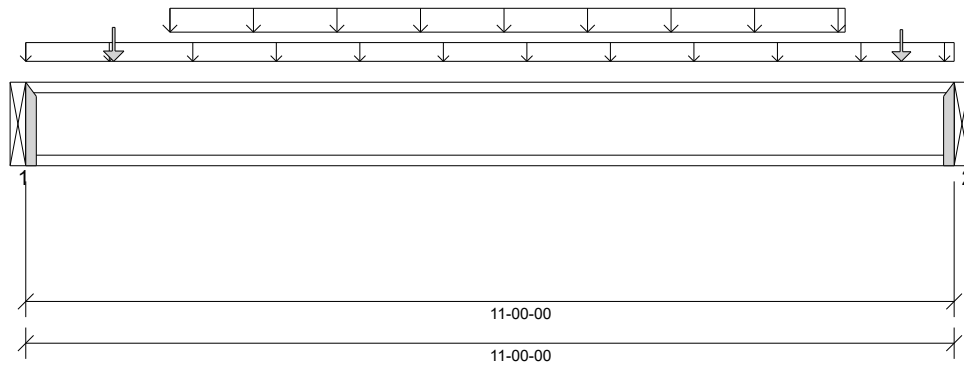
1 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure version
8.4.2.2861 dated 9.13

Report Version: 2020.06.20 11/20/2021 13:23



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:

- 769 psi Beam @ 0'
- 769 psi Beam @ 11'

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	5'- 1/2"	1.25D + 1.5L	0.97	4545 lb ft	5424 lb ft	Passed - 84%
Factored Shear:	10'- 11 15/16"	1.25D + 1.5L	0.97	1613 lb	2177 lb	Passed - 74%
Live Load (LL) Pos. Defl.:	5'- 6"	L		0.160"	L/360	Passed - L/823
Live Load (LL) Neg. Defl.:	11'	L		0.025"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	5'- 6"	D + L		0.337"	L/240	Passed - L/391
Total Load (TL) Neg. Defl.:	11'	D + L		0.052"	L/240	Passed - L/999
Permanent Deflection:	5'- 6"			-	L/360	Passed - L/882

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	0.97	1555 lb		1970 lb	-	Passed - 79%
2	1-12	1.25D + 1.5L	0.97	1613 lb		1970 lb	-	Passed - 82%

CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories
			Top	Face	Member	
1	LT251188		-	-	-	Connector manually specified by the user.
2	LT251188		-	-	-	Connector manually specified by the user.

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

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	11'	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'	11'	User Load	Top	60 lb/ft	-	-	-
Uniform	1'- 8 1/2"	9'- 8 1/2"	Smoothed Load	Front	53 lb/ft	105 lb/ft	-	-
Point	1'- 1/2"	1'- 1/2"	J5(i18370)	Front	65 lb	130 lb	-	-
Point	10'- 4 1/2"	10'- 4 1/2"	J5(i18366)	Front	57 lb	114 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B27(i18348)	610 lb	528 lb	-	-
2	11'	11'	B14(i18356)	624 lb	556 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.



SE-039914



Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
2nd Floor - Supply/BOM\Flush Beams\B1(i17417) (Flush Beam)

PASSED

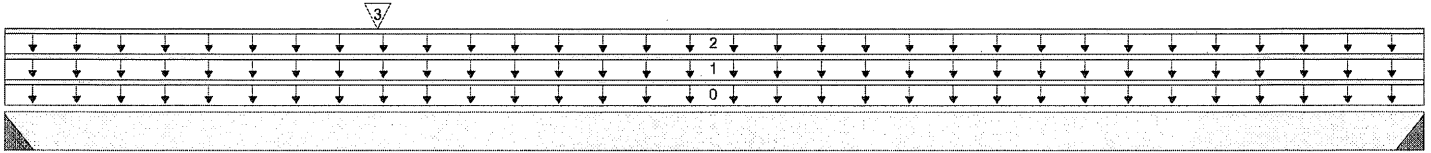
BC CALC® Member Report
Build 7773

Dry | 1 span | No cant.

May 19, 2021 16:11:49

Job name: 45147(3102)
Address: Pine Valley
City, Province, Postal Code: Vaughan, ON
Customer: Gold Park
Code reports: CCMC 12472-R

File name: 333173-A.mmdl
Description: 2nd Floor - Supply/BOM\Flush Beams\B1(i17417)
Specifier:
Designer: NL
Company: Alpa Roof Trusses



B1 13-08-00 B2

Total Horizontal Product Length = 13-08-00

Reaction Summary (Down / Uplift) (lbs)

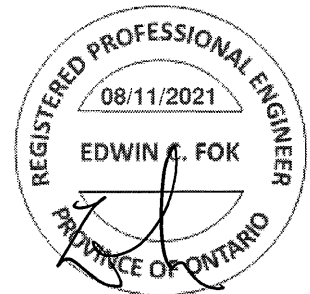
Bearing	Live	Dead	Snow	Wind
B1, 2"	266 / 0	350 / 0	534 / 0	
B2, 2"	266 / 0	220 / 0	186 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	13-08-00	Top		6			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	13-08-00	Top	27	10			n/a
2	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	13-08-00	Top	12	6			n/a
3	User Load	Conc. Pt. (lbs)	L	03-07-00	03-07-00	Top		270	720		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4807 ft-lbs	17696 ft-lbs	27.2%	13	03-07-00
End Shear	1428 lbs	7232 lbs	19.7%	13	01-01-14
Total Load Deflection	L/739 (0.219")	n/a	32.5%	35	06-04-08
Live Load Deflection	L/1070 (0.151")	n/a	33.7%	51	06-04-08
Max Defl.	0.219"	n/a	n/a	35	06-04-08
Span / Depth	13.6				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	1504 lbs	n/a	35.2%	LT251188
B2	Hanger 2" x 1-3/4"	859 lbs	n/a	20.1%	LT251188

Cautions

Header for the hanger LT251188 is a Double 1-3/4" x 11-7/8" LVL Beam.
Hanger model LT251188 and seat length were input by the user

SG03316 1



Triple 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor - Supply/BOM\Flush Beams\B7(i17678) (Flush Beam)

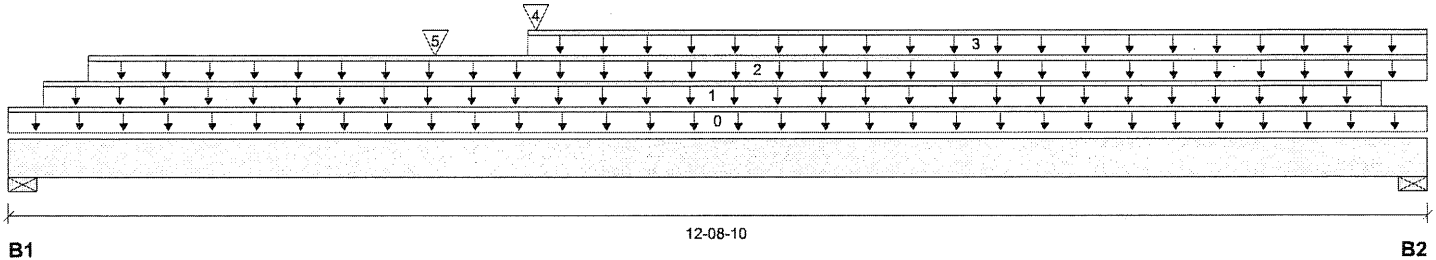
PASSED

 BC CALC® Member Report
 Build 7773

Dry | 1 span | No cant.

May 19, 2021 16:11:49

 Job name: 45147(3102)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

 File name: 333173-A.mmdl
 Description: 1st Floor - Supply/BOM\Flush Beams\B7(i17678)
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses


Total Horizontal Product Length = 12-08-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	2285 / 0	1610 / 0		
B2, 2-3/8"	2458 / 0	1701 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-08-10	Top		18			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-03-12	12-03-12	Top		60			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-08-10	12-08-10	Top	348	174			n/a
3	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	04-07-12	12-08-10	Top	19	10			n/a
4	B6(i17660)	Conc. Pt. (lbs)	L	04-08-10	04-08-10	Top	232	126			n/a
5	User Load	Conc. Pt. (lbs)	L	03-09-12	03-09-12	Top	160	60			n/a

Controls Summary

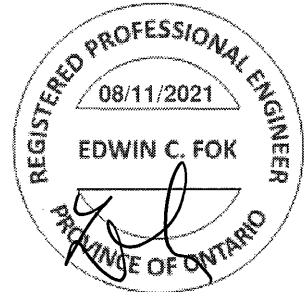
	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	18683 ft-lbs	55211 ft-lbs	33.8%	1	06-00-10
End Shear	5414 lbs	21696 lbs	25.0%	1	01-01-10
Total Load Deflection	L/584 (0.257")	n/a	41.1%	4	06-02-10
Live Load Deflection	L/988 (0.152")	n/a	36.4%	5	06-02-10
Max Defl.	0.257"	n/a	n/a	4	06-02-10
Span / Depth	12.6				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 1-3/4" x 5-1/4"	5440 lbs	96.2%	48.5%	Spruce-Pine-Fir
B2	Wall/Plate 2-3/8" x 5-1/4"	5813 lbs	75.8%	38.2%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9
 Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-01-08.

NAIL ONE PLY TO ANOTHER WITH
 3-1/2" SPIRAL NAILS @ 6" O/C
 STAGGERED IN 2 ROWS



SE033167



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP
1st Floor - Supply/BOM\Flush Beams\B9(i17627) (Flush Beam)

PASSED

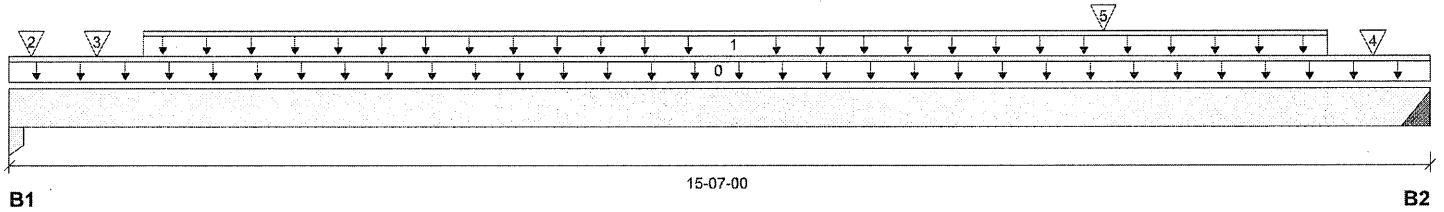
BC CALC® Member Report
 Build 7773

Dry | 1 span | No cant.

May 19, 2021 16:11:49

Job name: 45147(3102)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File name: 333173-A.mmdl
 Description: 1st Floor - Supply/BOM\Flush Beams\B9(i17627)
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses



Total Horizontal Product Length = 15-07-00

Reaction Summary (Down / Uplift) (lbs)

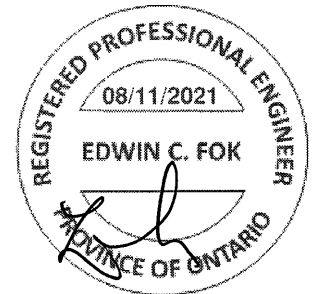
Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	1697 / 0	1045 / 0	173 / 0	
B2, 2"	1415 / 0	1020 / 0	587 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	15-07-00	Top		12			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-05-08	14-05-08	Top	188	94			n/a
2	B8(i17679)	Conc. Pt. (lbs)	L	00-02-14	00-02-14	Top	331	202			n/a
3	J3(i17634)	Conc. Pt. (lbs)	L	00-11-08	00-11-08	Top	163	82			n/a
4	J3(i17631)	Conc. Pt. (lbs)	L	14-11-08	14-11-08	Top	174	87			n/a
5	User Load	Conc. Pt. (lbs)	L	12-00-00	12-00-00	Top		285	760		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	14041 ft-lbs	35392 ft-lbs	39.7%	1	08-11-08
End Shear	3768 lbs	14464 lbs	26.1%	1	14-05-02
Total Load Deflection	L/404 (0.453")	n/a	59.4%	35	07-11-08
Live Load Deflection	L/616 (0.297")	n/a	58.5%	51	07-11-08
Max Defl.	0.453"	n/a	n/a	35	07-11-08
Span / Depth	15.4				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3-1/2" x 3-1/2"	4026 lbs	18.9%	26.9%	Spruce-Pine-Fir
B2	Hanger 2" x 3-1/2"	3984 lbs	n/a	46.6%	HGUS410

Cautions

Header for the hanger HGUS410 is a Double 1-3/4" x 11-7/8" LVL Beam.

Hanger model HGUS410 and seat length were input by the user.

NAIL ONE PLY TO ANOTHER WITH
 3-1/2" SPIRAL NAILS @ 12" O/C
 STAGGERED IN 2 ROWS

SE033169

Triple 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor - Supply/BOM/Flush Beams\B10(i17685) (Flush Beam)

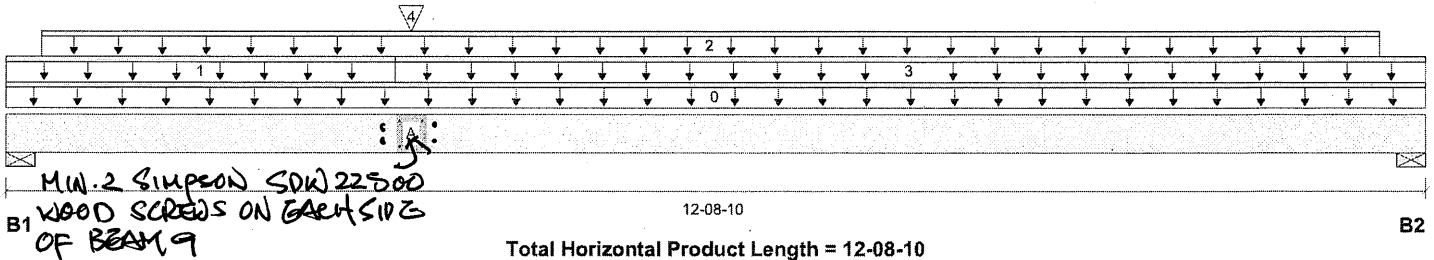
PASSED

 BC CALC® Member Report
 Build 7773

Dry | 1 span | No cant.

May 19, 2021 16:11:49

 Job name: 45147(3102)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

 File name: 333173-A.mmdl
 Description: 1st Floor - Supply/BOM/Flush Beams\B10(i17685)
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses


Reaction Summary (Down / Uplift) (lbs)

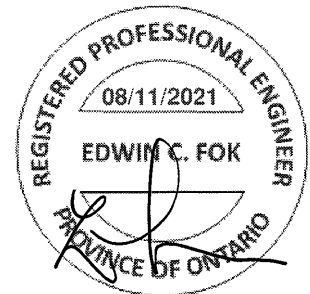
Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	1414 / 0	1369 / 0	418 / 0	
B2, 2-3/8"	666 / 0	881 / 0	165 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-08-10	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	03-05-12	Top	13	6			n/a
2	User Load	Unf. Lin. (lb/ft)	L	00-03-12	12-03-12	Top		60			n/a
3	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	03-05-12	12-08-10	Top	25	13			n/a
4	-	Conc. Pt. (lbs)	L	03-07-08	03-07-08	Top	1803	1162	583		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	14314 ft-lbs	55211 ft-lbs	25.9%	1	03-07-08
End Shear	4195 lbs	21696 lbs	19.3%	1	01-01-10
Total Load Deflection	L/869 (0.173")	n/a	27.6%	35	05-10-03
Live Load Deflection	L/999 (0.097")	n/a	n/a	51	05-08-11
Max Defl.	0.173"	n/a	n/a	35	05-10-03
Span / Depth	12.6				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 1-3/4" x 5-1/4"	4251 lbs	75.2%	37.9%	Spruce-Pine-Fir
B2	Wall/Plate 2-3/8" x 5-1/4"	2265 lbs	29.5%	14.9%	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Unbalanced snow loads determined from building geometry were used in selected product's verification.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9
 Calculations assume unbraced length of Top: 00-00-00, Bottom: 08-09-00.

NAIL ONE PLY TO ANOTHER WITH
 3-1/2" SPIRAL NAILS @ 2' O/C
 STAGGERED IN 2 ROWS



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor - Supply/BOM Flush Beams\B13(i18345) (Flush Beam)

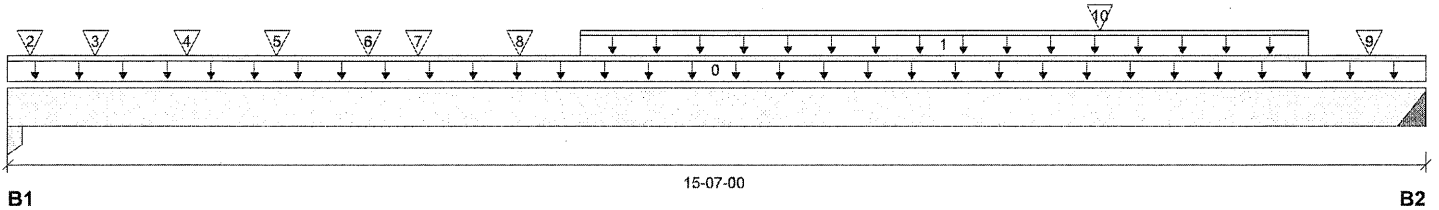
PASSED

 BC CALC® Member Report
 Build 7773

Dry | 1 span | No cant.

May 19, 2021 17:25:10

 Job name: 45147(3102)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

 File name: 333173-SUNK.mmdl
 Description: 1st Floor - Supply/BOM Flush Beams\B13(i18345)
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses


Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	1568 / 0	1111 / 0	173 / 0	
B2, 2"	941 / 0	835 / 0	587 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	15-07-00	Top	12				00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	06-03-08	14-03-08	Top	110	55			n/a
2	B8(i18330)	Conc. Pt. (lbs)	L	00-02-14	00-02-14	Top	331	202			n/a
3	J3(i18325)	Conc. Pt. (lbs)	L	00-11-08	00-11-08	Top	163	82			n/a
4	J3(i18322)	Conc. Pt. (lbs)	L	01-11-08	01-11-08	Top	188	94			n/a
5	J3(i18322)	Conc. Pt. (lbs)	L	02-11-08	02-11-08	Top	188	94			n/a
6	J3(i18337)	Conc. Pt. (lbs)	L	03-11-08	03-11-08	Top	146	73			n/a
7	B12(i18344)	Conc. Pt. (lbs)	L	04-06-02	04-06-02	Top	364	364			n/a
8	J5(i17886)	Conc. Pt. (lbs)	L	05-07-08	05-07-08	Top	134	67			n/a
9	J5(i17872)	Conc. Pt. (lbs)	L	14-11-08	14-11-08	Top	119	60			n/a
10	User Load	Conc. Pt. (lbs)	L	12-00-00	12-00-00	Top	285	760			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	11503 ft-lbs	35392 ft-lbs	32.5%	1	07-07-08
End Shear	3033 lbs	14464 lbs	21.0%	1	01-03-06
Total Load Deflection	L/473 (0.387")	n/a	50.8%	35	07-11-08
Live Load Deflection	L/758 (0.241")	n/a	47.5%	51	07-11-08
Max Defl.	0.387"	n/a	n/a	35	07-11-08
Span / Depth	15.4				

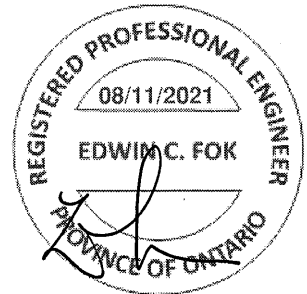
Bearing Supports

Bearing Supports			Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Column	3-1/2" x 3-1/2"	3915 lbs	18.4%	26.2%	Spruce-Pine-Fir	
B2	Hanger	2" x 3-1/2"	3042 lbs	n/a	35.6%	HGUS410	

Cautions

Header for the hanger HGUS410 is a Double 1-3/4" x 11-7/8" LVL Beam.

Hanger model HGUS410 and seat length were input by the user.

 NAIL ONE PLY TO ANOTHER WITH
 3-1/2" SPIRAL NAILS @ 12" O/C
 STAGGERED IN 2 ROWS


Triple 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor - Supply/BOM/Flush Beams\B14(i18346) (Flush Beam)

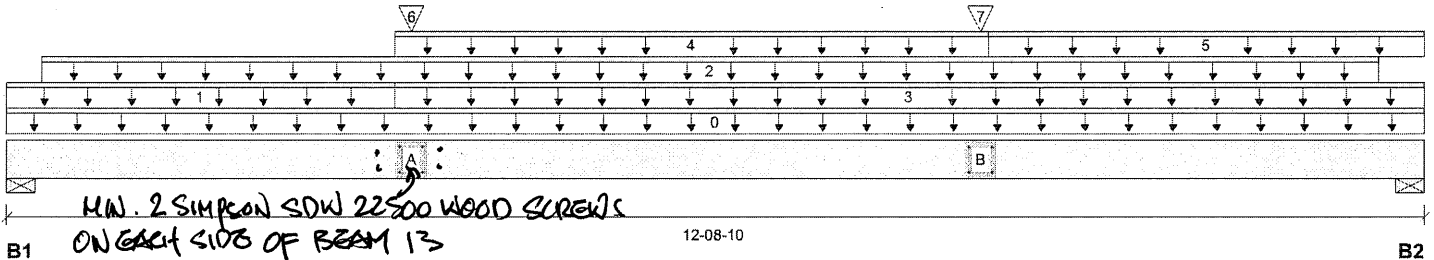
PASSED

 BC CALC® Member Report
 Build 7773

Dry | 1 span | No cant.

May 19, 2021 17:25:10

 Job name: 45147(3102)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

 File name: 333173-SUNK.mmdl
 Description: 1st Floor - Supply/BOM/Flush Beams\B14(i18346)
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses


Total Horizontal Product Length = 12-08-10

Reaction Summary (Down / Uplift) (lbs)

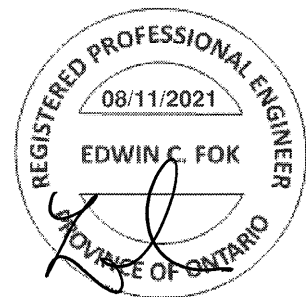
Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	1241 / 0	1435 / 0	428 / 0	
B2, 2-3/8"	885 / 0	1257 / 0	169 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-08-10	Top		18			00-00-00
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	03-05-12	Top	13				n/a
2	User Load	Unf. Lin. (lb/ft)	L	00-03-12	12-03-12	Top		60			n/a
3	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	03-05-12	12-08-10	Top	8	4			n/a
4	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	03-05-12	08-09-12	Top	17	8			n/a
5	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	08-09-12	12-08-10	Top	9				n/a
6	-	Conc. Pt. (lbs)	L	03-07-08	03-07-08	Top	1332	983	597		n/a
7	B11(i18347)	Conc. Pt. (lbs)	L	08-08-14	08-08-14	Top	548	637			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	13716 ft-lbs	55211 ft-lbs	24.8%	1	03-07-08
End Shear	4026 lbs	21696 lbs	18.6%	1	01-01-10
Total Load Deflection	L/776 (0.193")	n/a	30.9%	35	06-02-03
Live Load Deflection	L/999 (0.1")	n/a	n/a	51	06-00-04
Max Defl.	0.193"	n/a	n/a	35	06-02-03
Span / Depth	12.6				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 1-3/4" x 5-1/4"	4082 lbs	72.2%	36.4%	Spruce-Pine-Fir
B2	Wall/Plate 2-3/8" x 5-1/4"	3068 lbs	40.0%	20.2%	Spruce-Pine-Fir

 NAIL ONE PLY TO ANOTHER WITH
 3-1/2" SPIRAL NAILS @ 12" O/C
 STAGGERED IN 2 ROWS

36033174

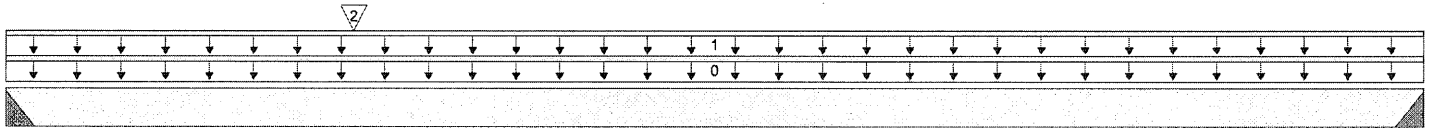
BC CALC® Member Report
 Build 7773

Dry | 1 span | No cant.

May 20, 2021 08:39:33

Job name: 45147(3102)
 Address: Pine Valley
 City, Province, Postal Code: Vaughan, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File name: 333173-A-OPT2.mmdl
 Description: 2nd Floor - Supply/BOM\Flush Beams\B15(i17931)
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses



B1 14-08-00 B2
 Total Horizontal Product Length = 14-08-00

Reaction Summary (Down / Uplift) (lbs)

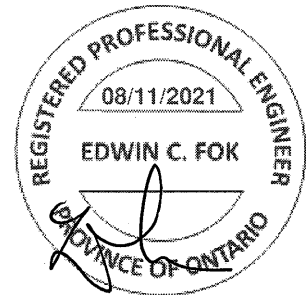
Bearing	Live	Dead	Snow	Wind
B1, 2"	282 / 0	376 / 0	547 / 0	
B2, 2"	282 / 0	236 / 0	173 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	14-08-00	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	14-08-00	Top	38	17			n/a
2	User Load	Conc. Pt. (lbs)	L	03-07-00	03-07-00	Top		270	720		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	5034 ft-lbs	17696 ft-lbs	28.4%	13	03-07-00
End Shear	1532 lbs	7232 lbs	21.2%	13	01-01-14
Total Load Deflection	L/637 (0.273")	n/a	37.7%	35	06-10-02
Live Load Deflection	L/937 (0.185")	n/a	38.4%	51	06-10-02
Max Defl.	0.273"	n/a	n/a	35	06-10-02
Span / Depth	14.6				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	1572 lbs	n/a	36.8%	HUS1.81/10
B2	Hanger 2" x 1-3/4"	891 lbs	n/a	20.9%	HUS1.81/10

Cautions

Header for the hanger HUS1.81/10 is a Triple 1-3/4" x 11-7/8" LVL Beam.
 Hanger model HUS1.81/10 and seat length were input by the user.

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Hanger Manufacturer: Unassigned
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Unbalanced snow loads determined from building geometry were used in selected product's verification.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9
 Calculations assume unbraced length of Top: 00-00-00, Bottom: 14-08-00.

Disclosure

Use of the Boise Cascade Software is subject to the terms of the End User License Agreement (EULA). Completeness and accuracy of input must be reviewed and verified by a qualified engineer or other appropriate expert to assure its adequacy, prior to anyone relying on such output as evidence of suitability for a particular application. The output here is based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

Maximum Floor Spans – M7.1, L/360

Design Criteria

Spans:	Simple span
Loads:	Live load = 40 psf and dead load = 20 psf
Deflection limits:	L/360 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	17'-1"	15'-5"	14'-6"	13'-5"	17'-1"	15'-5"	14'-6"	13'-5"
	NI-40x	18'-7"	17'-6"	16'-7"	14'-11"	19'-1"	17'-8"	16'-7"	14'-11"
	NI-60	18'-10"	17'-7"	16'-10"	15'-7"	19'-4"	18'-0"	16'-10"	15'-7"
	NI-80	20'-2"	18'-9"	17'-11"	17'-2"	20'-7"	19'-2"	18'-3"	17'-5"
11-7/8"	NI-20	20'-3"	18'-8"	17'-6"	16'-1"	20'-7"	18'-8"	17'-6"	16'-1"
	NI-40x	21'-9"	20'-3"	19'-0"	17'-0"	22'-4"	20'-10"	19'-0"	17'-0"
	NI-60	22'-0"	20'-6"	19'-7"	18'-7"	22'-7"	21'-1"	20'-2"	18'-8"
	NI-80	23'-6"	21'-10"	20'-10"	19'-9"	24'-0"	22'-5"	21'-4"	20'-3"
	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'-9"	22'-8"	21'-4"
	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'-11"	23'-1"
	NI-80	29'-0"	26'-11"	25'-8"	24'-3"	29'-7"	27'-7"	26'-4"	24'-11"
	NI-90	29'-6"	27'-5"	26'-1"	24'-8"	30'-1"	28'-1"	26'-9"	25'-4"

Notes:

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

The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

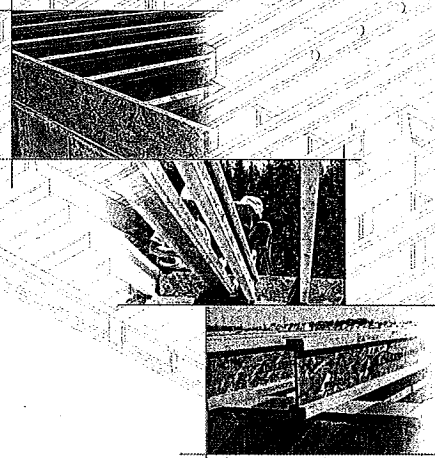
Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

This document does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of its component based on the design criteria and loadings shown on the calculation sheets.

(Nordic Request 1810-095)

NORDIC ENGINEERED WOOD

INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



Distributed by:



SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

WARNING

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 continuously 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" 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 flanges 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.

STORAGE AND HANDLING GUIDELINES

1. Bundle wrap can be slippery when wet. Avoid walking on wrapped bundles.
2. Store, stack, and handle I-joists vertically and level only.
3. Always stack and handle I-joists in the upright position only.
4. Do not store I-joists in direct contact with the ground and/or flammable.
5. Protect I-joists from weather, and use spacers to separate bundles.
6. Bundled units should be kept intact until time of installation.
 - Pick I-joists in bundles as shipped by the supplier.
 - Orient the bundles so that the webs of the I-joists are vertical.
 - Pick the bundles at the 5th points, using a spreader bar if necessary.
8. Do not handle I-joists in a horizontal orientation.
9. NEVER USE OR TRY TO REPAIR A DAMAGED I-JOIST.

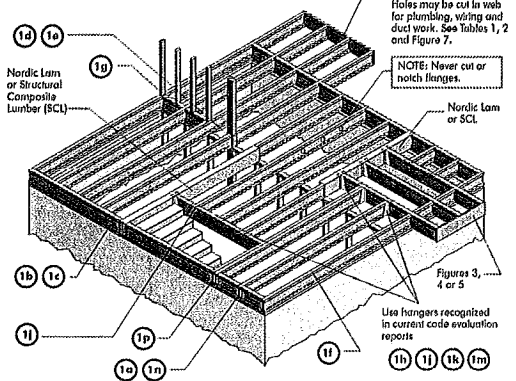


INSTALLING NORDIC I-JOISTS

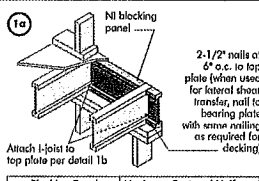
1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact your supplier.
2. Except for cutting to length, I-joist flanges should never be cut, drilled, or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical alignment.
4. I-joists must be anchored securely to supports before floor sheathing is attached, and supports for multiple-span joists must be level.
5. Minimum bearing lengths: 1-3/4 inches for end bearings and 3-1/2 inches for intermediate bearings.
6. When using hangers, seat I-joists firmly in hanger bottoms to minimize settlement.
7. Leave a 1/16-inch gap between the I-joist end and a header.
8. Concentrated loads greater than those that can normally be expected in residential construction should only be applied to the top surface of the top flange. Normal concentrated loads include track lighting fixtures, audio equipment and security cameras. Never suspend unbraced or heavy loads from the I-joist's bottom flange. Whenever possible, suspend all concentrated loads from the top of the I-joist. Or, attach the load to blocking that has been securely fastened to the I-joist webs.
9. Never install I-joists where they will be permanently exposed to weather, or where they will remain in direct contact with concrete or masonry.
10. Restrain ends of floor joists to prevent rollover. Use rim board, rim joists or I-joist blocking panels.
11. For I-joists installed over and beneath bearing walls, use full depth blocking panels, rim board, or squash blocks (cripple members) to transfer gravity loads through the floor system to the wall or foundation below.
12. Due to shrinkage, common framing lumber set on edge may never be used as blocking or rim boards. I-joist blocking panels or other engineered wood products – such as rim board – must be cut to fit between the I-joists, and an I-joist-compatible depth selected.
13. Provide permanent lateral support of the bottom flange of all I-joists at interior supports of multiple-span joists. Similarly, support the bottom flange of all cantilevered I-joists at the end support next to the cantilever extension. In the completed structure, the gypsum wallboard ceiling provides this lateral support. Until the final finished ceiling is applied, temporary bracing or struts must be used.
14. If square-edge panels are used, edges must be supported between I-joists with 2x4 blocking. Glue panels to blocking to minimize squeaks. Blocking is not required under structural finish flooring, such as wood strip flooring, or if a separate underlayment layer is installed.
15. Nail spacing: Space nails installed to the flange's top face in accordance with the applicable building code requirements or approved building plans.

FIGURE 1
TYPICAL NORDIC I-JOIST FLOOR FRAMING AND CONSTRUCTION DETAILS

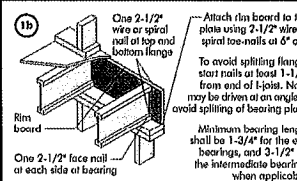
Some framing requirements such as erection bracing and blocking panels have been omitted for clarity.



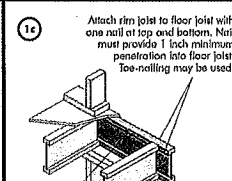
All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.125" dia.) common spiral nails may be substituted for 2-1/2" (0.120" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for clarity.



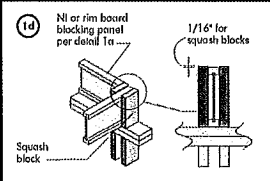
*The uniform vertical load is limited to a joist depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.



*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.



*The uniform vertical load is limited to a joist depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.



*The uniform vertical load is limited to a joist depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

This document does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of its component based on the design criteria and loadings shown on the calculation sheets.

MAXIMUM FLOOR SPANS

- Maximum clear spans applicable to single-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.35L + 1.25D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in C085-71.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
- Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
- Tables are based on Unit States Design per CAN/CSA C085-07 Standard, and NBC 2010.
- SI units conversion: 1 inch = 25.4 mm
1 foot = 0.305 m

MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS

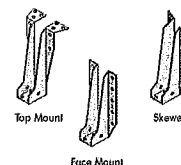
SIMPLE AND MULTIPLE SPANS

Joist Depth	Joist Series	Simple spans				Multiple spans			
		On centre spacing				On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	Ni-20	15'-1"	14'-2"	13'-9"	12'-5"	16'-3"	15'-4"	14'-10"	14'-7"
	Ni-40x	16'-1"	15'-2"	14'-8"	14'-9"	17'-5"	16'-5"	15'-10"	15'-5"
	Ni-60	16'-3"	15'-4"	14'-10"	14'-11"	17'-7"	16'-7"	16'-0"	16'-4"
	Ni-80	17'-1"	16'-1"	15'-4"	15'-7"	18'-7"	17'-4"	16'-9"	17'-2"
11-7/8"	Ni-20	16'-11"	16'-0"	15'-5"	15'-4"	18'-4"	17'-3"	16'-8"	16'-7"
	Ni-40x	18'-1"	17'-0"	16'-5"	16'-4"	20'-0"	18'-9"	17'-9"	17'-7"
	Ni-60	18'-4"	17'-3"	16'-7"	16'-9"	20'-3"	19'-0"	18'-0"	18'-9"
	Ni-80	19'-6"	18'-0"	17'-4"	17'-5"	21'-6"	19'-11"	19'-0"	19'-8"
14"	Ni-20	19'-9"	18'-3"	17'-4"	17'-7"	21'-9"	20'-2"	19'-3"	19'-11"
	Ni-40x	20'-2"	18'-7"	17'-10"	17'-11"	22'-3"	20'-7"	19'-8"	19'-9"
	Ni-60	20'-4"	18'-9"	17'-11"	18'-0"	22'-5"	20'-9"	19'-10"	20'-5"
	Ni-80	21'-1"	19'-1"	18'-1"	18'-2"	22'-7"	20'-11"	20'-10"	20'-10"
16"	Ni-20	20'-5"	18'-11"	18'-1"	18'-2"	22'-7"	20'-11"	20'-10"	20'-10"
	Ni-40x	21'-7"	20'-0"	19'-1"	19'-2"	23'-10"	22'-1"	21'-1"	21'-10"
	Ni-60	21'-11"	20'-3"	19'-4"	19'-5"	24'-3"	22'-5"	21'-5"	22'-2"
	Ni-80	22'-3"	20'-8"	19'-9"	19'-9"	24'-9"	22'-10"	21'-10"	21'-10"

CCMC EVALUATION REPORT 13032-R

I-JOIST HANGERS

- Hangers shown illustrate the three most commonly used metal hangers to support I-joists.
- All nailing must meet the hanger manufacturer's recommendations.
- Hangers should be selected based on the joist depth, flange width and load capacity based on the maximum spans.
- Web stiffeners are required when the sides of the hangers do not laterally brace the top flange of the I-joist.



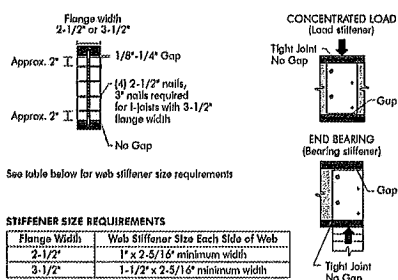
WEB STIFFENERS

RECOMMENDATIONS:

- A bearing stiffener is required in all engineered applications with factored reactions greater than shown in the I-joist properties table found in the I-joist Construction Guide (C101). The gap between the stiffener and the flange is at the top.
- A bearing stiffener is required when the I-joist is supported in a hanger and the sides of the hanger do not extend up to, and support, the top flange. The gap between the stiffener and flange is at the top.
- A load stiffener is required at locations where a factored concentrated load greater than 2,370 lbs is applied to the top flange between supports, or in the case of a cantilever, anywhere between the cantilever tip and the support. These values are for standard term load duration, and may be adjusted for other load durations as permitted by the code. The gap between the stiffener and the flange is at the bottom.

SI units conversion: 1 inch = 25.4 mm

FIGURE 2
WEB STIFFENER INSTALLATION DETAILS



STIFFENER SIZE REQUIREMENTS

Flange Width	Web Stiffener Size Each Side of Web
2-1/2"	1" x 2-5/16" minimum width
3-1/2"	1-1/2" x 2-5/16" minimum width

NORDIC I-JOIST SERIES

Series	Depth	Flange Width	Weight	Spacing
Ni-20	9-1/2"	15'-1"	33 pieces per unit	12"
Ni-40x	11-7/8"	16'-1"	33 pieces per unit	16"
Ni-60	14"	18'-1"	33 pieces per unit	19.2"
Ni-80	16"	20'-1"	33 pieces per unit	24"
Ni-90x	18"	22'-1"	33 pieces per unit	24"
Ni-90x	18"	22'-1"	33 pieces per unit	24"

Chantiers Chibougon Ltd. harvests its own trees, which enables Nordic products to adhere to strict quality control procedures throughout the manufacturing process. Every phase of the operation, from forest to the finished product, reflects our commitment to quality.

Nordic Engineered Wood I-Joists use only finger-jointed black spruce lumber in their flanges, ensuring consistent quality, superior strength, and longer span carrying capacity.

(Nordic Request 1810-095)



1a Transfer load from above to bearing below. Install squish blocks per detail 1d. Match bearing area of blocks below to peak above.

1b Use single I-joist for loads up to 3,300 plf, double I-joists for loads up to 6,600 plf (filler block not required). Attach I-joist to top plate using 2-1/2" nails at 6" o.c.

1c Load bearing wall above shall align vertically with the bearing below. Other conditions, such as offset bearing walls, are not covered by this detail.

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

1e Double I-joist header

1f Top- or face-mount hanger

1g Filler block per detail 1p

1h Backer block required (both sides for face-mount hangers)

1i For hanger capacity see hanger manufacturer's recommendations. Verify double I-joist capacity to support concentrated loads.

1j BACKER BLOCKS (Blocks must be long enough to permit required nailing without spilling)

Flange Width	Material Thickness Required*	Minimum Depth**
2-1/2"	1"	5-1/2"
3-1/2"	1-1/2"	7-1/4"

* 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-C0325 or CAN/CSA-C0437 Standard.

** For face-mount hangers use nail joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use nail depth minus 4-1/4".

1k Nordic Lumber or SCL

1l Top- or face-mount hanger installed per manufacturer's recommendations

1m Top-mount hanger installed per manufacturer's recommendations

1n Multiple I-joist header with full depth filler block shown. Nordic Lumber or SCL headers may also be used. Vary double I-joist capacity to support concentrated loads.

1o Do not bowl-cut joist beyond inside face of wall

1p Filler block

1q Filler block requirements for DOUBLE I-JOIST CONSTRUCTION

Flange Size	Joist Depth	Filler Block Size
9-1/2"	11-7/8"	2-1/8" x 6"
11-7/8"	14"	2-1/8" x 8"
14"	16"	2-1/8" x 10"
16"	18"	2-1/8" x 12"
18"	20"	3" x 6"
20"	22"	3" x 8"
22"	24"	3" x 10"
24"	26"	3" x 12"
26"	28"	3" x 14"
28"	30"	3" x 16"
30"	32"	3" x 18"
32"	34"	3" x 20"
34"	36"	3" x 22"
36"	38"	3" x 24"
38"	40"	3" x 26"
40"	42"	3" x 28"
42"	44"	3" x 30"
44"	46"	3" x 32"
46"	48"	3" x 34"
48"	50"	3" x 36"
50"	52"	3" x 38"
52"	54"	3" x 40"
54"	56"	3" x 42"
56"	58"	3" x 44"
58"	60"	3" x 46"
60"	62"	3" x 48"
62"	64"	3" x 50"
64"	66"	3" x 52"
66"	68"	3" x 54"
68"	70"	3" x 56"
70"	72"	3" x 58"
72"	74"	3" x 60"
74"	76"	3" x 62"
76"	78"	3" x 64"
78"	80"	3" x 66"
80"	82"	3" x 68"
82"	84"	3" x 70"
84"	86"	3" x 72"
86"	88"	3" x 74"
88"	90"	3" x 76"
90"	92"	3" x 78"
92"	94"	3" x 80"
94"	96"	3" x 82"
96"	98"	3" x 84"
98"	100"	3" x 86"
100"	102"	3" x 88"
102"	104"	3" x 90"
104"	106"	3" x 92"
106"	108"	3" x 94"
108"	110"	3" x 96"
110"	112"	3" x 98"
112"	114"	3" x 100"
114"	116"	3" x 102"
116"	118"	3" x 104"
118"	120"	3" x 106"
120"	122"	3" x 108"
122"	124"	3" x 110"
124"	126"	3" x 112"
126"	128"	3" x 114"
128"	130"	3" x 116"
130"	132"	3" x 118"
132"	134"	3" x 120"
134"	136"	3" x 122"
136"	138"	3" x 124"
138"	140"	3" x 126"
140"	142"	3" x 128"
142"	144"	3" x 130"
144"	146"	3" x 132"
146"	148"	3" x 134"
148"	150"	3" x 136"
150"	152"	3" x 138"
152"	154"	3" x 140"
154"	156"	3" x 142"
156"	158"	3" x 144"
158"	160"	3" x 146"
160"	162"	3" x 148"
162"	164"	3" x 150"
164"	166"	3" x 152"
166"	168"	3" x 154"
168"	170"	3" x 156"
170"	172"	3" x 158"
172"	174"	3" x 160"
174"	176"	3" x 162"
176"	178"	3" x 164"
178"	180"	3" x 166"
180"	182"	3" x 168"
182"	184"	3" x 170"
184"	186"	3" x 172"
186"	188"	3" x 174"
188"	190"	3" x 176"
190"	192"	3" x 178"
192"	194"	3" x 180"
194"	196"	3" x 182"
196"	198"	3" x 184"
198"	200"	3" x 186"
200"	202"	3" x 188"
202"	204"	3" x 190"
204"	206"	3" x 192"
206"	208"	3" x 194"
208"	210"	3" x 196"
210"	212"	3" x 198"
212"	214"	3" x 200"
214"	216"	3" x 202"
216"	218"	3" x 204"
218"	220"	3" x 206"
220"	222"	3" x 208"
222"	224"	3" x 210"
224"	226"	3" x 212"
226"	228"	3" x 214"
228"	230"	3" x 216"
230"	232"	3" x 218"
232"	234"	3" x 220"
234"	236"	3" x 222"
236"	238"	3" x 224"
238"	240"	3" x 226"
240"	242"	3" x 228"
242"	244"	3" x 230"
244"	246"	3" x 232"
246"	248"	3" x 234"
248"	250"	3" x 236"
250"	252"	3" x 238"
252"	254"	3" x 240"
254"	256"	3" x 242"
256"	258"	3" x 244"
258"	260"	3" x 246"
260"	262"	3" x 248"
262"	264"	3" x 250"
264"	266"	3" x 252"
266"	268"	3" x 254"
268"	270"	3" x 256"
270"	272"	3" x 258"
272"	274"	3" x 260"
274"	276"	3" x 262"
276"	278"	3" x 264"
278"	280"	3" x 266"
280"	282"	3" x 268"
282"	284"	3" x 270"
284"	286"	3" x 272"
286"	288"	3" x 274"
288"	290"	3" x 276"
290"	292"	3" x 278"
292"	294"	3" x 280"
294"	296"	3" x 282"
296"	298"	3" x 284"
298"	300"	3" x 286"
300"	302"	3" x 288"
302"	304"	3" x 290"
304"	306"	3" x 292"
306"	308"	3" x 294"
308"	310"	3" x 296"
310"	312"	3" x 298"
312"	314"	3" x 300"
314"	316"	3" x 302"
316"	318"	3" x 304"
318"	320"	3" x 306"
320"	322"	3" x 308"
322"	324"	3" x 310"
324"	326"	3" x 312"
326"	328"	3" x 314"
328"	330"	3" x 316"
330"	332"	3" x 318"
332"	334"	3" x 320"
334"	336"	3" x 322"
336"	338"	3" x 324"
338"	340"	3" x 326"
340"	342"	3" x 328"
342"	344"	3" x 330"
344"	346"	3" x 332"
346"	348"	3" x 334"
348"	350"	3" x 336"
350"	352"	3" x 338"
352"	354"	3" x 340"
354"	356"	3" x 342"
356"	358"	3" x 344"
358"	360"	3" x 346"
360"	362"	3" x 348"
362"	364"	3" x 350"
364"	366"	3" x 352"
366"	368"	3" x 354"
368"	370"	3" x 356"
370"	372"	3" x 358"
372"	374"	3" x 360"
374"	376"	3" x 362"
376"	378"	3" x 364"
378"	380"	3" x 366"
380"	382"	3" x 368"
382"	384"	3" x 370"
384"	386"	3" x 372"
386"	388"	3" x 374"
388"	390"	3" x 376"
390"	392"	3" x 378"
392"	394"	3" x 380"
394"	396"	3" x 382"
396"	398"	3" x 384"
398"	400"	3" x 386"
400"	402"	3" x 388"
402"	404"	3" x 390"
404"	406"	3" x 392"
406"	408"	3" x 394"
408"	410"	3" x 396"
410"	412"	3" x 398"
412"	414"	3" x 400"
414"	416"	3" x 402"
416"	418"	3" x 404"
418"	420"	3" x 406"
420"	422"	3" x 408"
422"	424"	3" x 410"
424"	426"	3" x 412"
426"	428"	3

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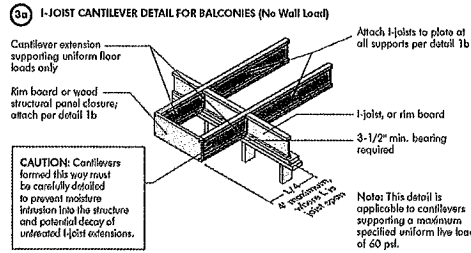
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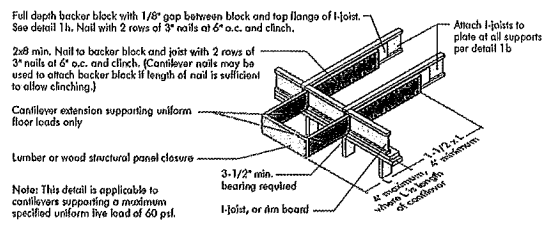
(Nordic Request 1810-095)



CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)



3b LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

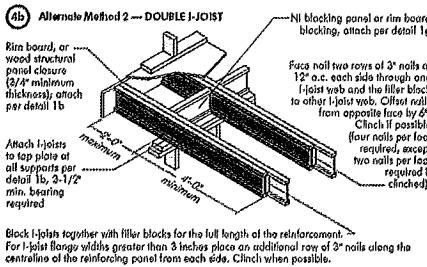
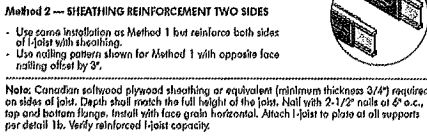
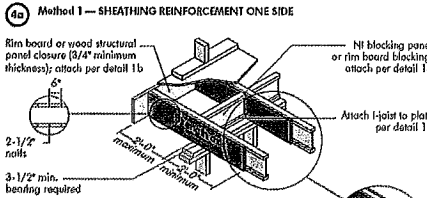


FIGURE 4 (continued)



CANTILEVER REINFORCEMENT METHODS ALLOWED

Joint Depth (in.)	Roof Truss Span (ft)	ROOF LOADING (UNFACTORED)							
		LL = 30 psf, DL = 15 psf				LL = 40 psf, DL = 15 psf			
		Joint Spacing (in.)				Joint Spacing (in.)			
		12	16	19.2	24	12	16	19.2	24
9-1/2	26	N	N	1	2	N	1	2	X
	28	N	N	1	X	N	1	2	X
	30	N	1	1	X	N	1	2	X
	32	N	1	2	X	N	2	X	X
	34	N	1	2	X	N	2	X	X
11-7/8	26	N	1	2	X	N	1	2	X
	28	N	1	2	X	N	1	2	X
	30	N	1	2	X	N	1	2	X
	32	N	1	2	X	N	1	2	X
	34	N	1	2	X	N	1	2	X
14	26	N	1	2	X	N	1	2	X
	28	N	1	2	X	N	1	2	X
	30	N	1	2	X	N	1	2	X
	32	N	1	2	X	N	1	2	X
	34	N	1	2	X	N	1	2	X
16	26	N	1	2	X	N	1	2	X
	28	N	1	2	X	N	1	2	X
	30	N	1	2	X	N	1	2	X
	32	N	1	2	X	N	1	2	X
	34	N	1	2	X	N	1	2	X

- N = No reinforcement required.
 - 1 = NI reinforced with 3/4" wood structural panel on one side only.
 - 2 = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
 - X = Try a deeper joist or closer spacing.
2. Maximum design load shall be 15 psf roof dead load, 55 psf floor total load, and 80 psf wall load. Wall load is based on 3'-0" maximum width window or door openings.
- For larger openings, or multiple 3'-0" wide openings spaced less than 6'-0" o.c., additional joints beneath the opening's cripple studs may be required.
3. Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
4. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge beam, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.
5. Cantilevered joints supporting glider trusses or roof beams may require additional reinforcing.

BRICK CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

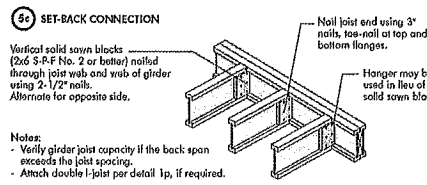
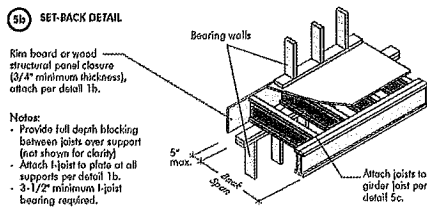
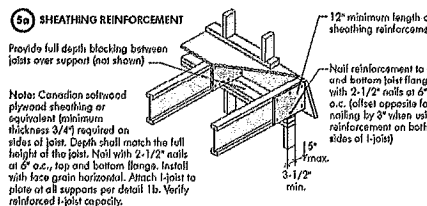


FIGURE 5 (continued)



BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

Joint Depth (in.)	Roof Truss Span (ft)	ROOF LOADING (UNFACTORED)							
		LL = 30 psf, DL = 15 psf				LL = 40 psf, DL = 15 psf			
		Joint Spacing (in.)				Joint Spacing (in.)			
		12	16	19.2	24	12	16	19.2	24
9-1/2	26	1	X	X	X	2	X	X	X
	28	1	X	X	X	2	X	X	X
	30	1	X	X	X	2	X	X	X
	32	2	X	X	X	2	X	X	X
	34	2	X	X	X	2	X	X	X
11-7/8	26	1	X	X	X	2	X	X	X
	28	1	X	X	X	2	X	X	X
	30	1	X	X	X	2	X	X	X
	32	1	X	X	X	2	X	X	X
	34	1	X	X	X	2	X	X	X
14	26	1	X	X	X	2	X	X	X
	28	1	X	X	X	2	X	X	X
	30	1	X	X	X	2	X	X	X
	32	1	X	X	X	2	X	X	X
	34	1	X	X	X	2	X	X	X
16	26	1	X	X	X	2	X	X	X
	28	1	X	X	X	2	X	X	X
	30	1	X	X	X	2	X	X	X
	32	1	X	X	X	2	X	X	X
	34	1	X	X	X	2	X	X	X

- N = No reinforcement required.
 - 1 = NI reinforced with 3/4" wood structural panel on one side only.
 - 2 = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
 - X = Try a deeper joist or closer spacing.
2. Maximum design load shall be 15 psf roof dead load, 55 psf floor total load, and 80 psf wall load. Wall load is based on 3'-0" maximum width window or door openings.
- For larger openings, or multiple 3'-0" wide openings spaced less than 6'-0" o.c., additional joints beneath the opening's cripple studs may be required.
3. Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
4. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge beam, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.
5. Cantilevered joints supporting glider trusses or roof beams may require additional reinforcing.

The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

This document does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of its component based on the design criteria and loadings shown on the calculation sheets.

WEB HOLES

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

- The distance between the inside edge of the support and the centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
- I-Joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
- Whenever possible, field-cut holes should be centred on the middle of the web.
- The maximum size hole or 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 shall always be maintained between the top or bottom of the hole or opening and the adjacent I-Joist flange.
- 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.
- 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 largest side of the largest rectangular hole or duct chase opening) and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
- A knockout is NOT considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
- Holes measuring 1-1/2 inches or smaller shall be permitted anywhere in a confined section of a joist. Holes of greater size may be permitted subject to verification.
- 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.
- All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
- Limit three maximum size holes per span, of which one may be a duct chase opening.
- A group of round holes at approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

TABLE 1
LOCATION OF CIRCULAR HOLES IN JOIST WEBS
Simple or Multiple Span for Dead Loads up to 15 psf and Live Loads up to 40 psf

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of hole (8 in.)												Span adjustment factor
		2	3	4	5	6	7	8	9	10	11	12	13	
9-1/2"	N100	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	1.0
	N140	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	1.0
	N170	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	1.0
	N200	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	1.0
11-7/8"	N100	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	1.0
	N140	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	1.0
	N170	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	1.0
	N200	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	1.0
14"	N100	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	1.0
	N140	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	1.0
	N170	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	1.0
	N200	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	1.0
16"	N100	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	1.0
	N140	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	1.0
	N170	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	1.0
	N200	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	1.0

1. Above table may be used for I-Joist spacing of 24 inches on centre or less.
2. Hole location distance is measured from inside face of support to centre of hole.
3. Distances in this chart are based on uniformly loaded joists.

OPTIONAL:

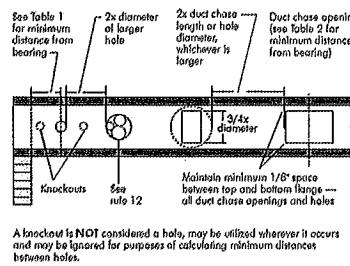
The above table is based on the I-Joist used at its maximum span. If the I-Joist is placed at less than its full maximum span (see Maximum Floor Span), the minimum distance from the centreline of the hole to the face of any support (D) as given above may be reduced as follows:

$$\text{Reduced } D = \frac{\text{Actual Span}}{\text{Maximum Span}} \times D$$

Where:

- Reduced = Distance from the inside face of any support to centre of hole, reduced for less than maximum span applications (D).
- Actual = The actual measured span distance between the inside faces of supports (S).
- Maximum = The maximum span distance between the inside faces of supports (S).
- Span Adjustment Factor given in this table.
- The minimum distance from the inside face of any support to centre of hole from this table.
- If Actual is greater than 1, use 1 in the above calculation for Actual.

FIGURE 7
FIELD-CUT HOLE LOCATOR



Knockouts are predrilled holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 15 inches on centre along the length of the I-Joist. Where possible, it is preferable to use knockouts instead of field-cut holes.

Never drill, cut or notch the flange, or over-cut the web.

Holes in webs should be cut with a sharp saw.

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.

TABLE 2
DUCT CHASE OPENING SIZES AND LOCATIONS — Simple Span Only

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of opening (8 in.)											
		2	3	4	5	6	7	8	9	10	11	12	13
9-1/2"	N100	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2
	N140	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2
	N170	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2
	N200	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2
11-7/8"	N100	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2
	N140	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2
	N170	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2
	N200	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2
14"	N100	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2
	N140	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2
	N170	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2
	N200	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2
16"	N100	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2
	N140	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2
	N170	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2
	N200	0.7	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2

1. Above table may be used for I-Joist spacing of 24 inches on centre or less.
2. Duct chase opening location distance is measured from inside face of support to centre of opening.
3. The above table is based on simple span joists only. For other applications, contact your local distributor.
4. Distances are based on uniform loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/400. For other applications, contact your local distributor.

INSTALLING THE GLUED FLOOR SYSTEM

- Wipe any mud, dirt, water, or ice from I-Joist flanges before gluing.
- Snap a chalk line across the I-joists four feet from the wall for panel edge alignment and as a boundary for spreading glue.
- Spread only enough glue to lay one or two panels at a time, or follow specific recommendations from the glue manufacturer.
- Lay the first panel with tongue side to the wall, and nail in place. This protects the tongue of the next panel from damage when tapped into place with a block and sledgehammer.
- Apply a continuous line of glue (about 1/4-inch diameter) to the top flange of a single I-Joist. Apply glue in a wavy pattern on wide areas, such as with double I-joists.
- Apply two lines of glue on I-joists where panel ends butt to assure proper gluing of each end.
- After the first row of panels is in place, spread glue in the groove of one or two panels at a time before laying the next row. Glue line may be continuous or spaced, but avoid squeeze-out by applying a thinner line (1/8 inch) than used on I-Joist flanges.
- Tap the second row of panels into place, using a block to protect groove edges.
- Stagger and joints in each succeeding row of panels. A 1/8-inch space between all end joints and 1/8 inch at all edges, including T&G edges, is recommended. (Use a spacer block or an 1/8" common nail to assure accurate and consistent spacing.)
- Complete all nailing of each panel before glue sets. Check the manufacturer's recommendations for cure time. (Warm weather accelerates glue setting.) Use 2" ring- or screw-shank nails for panels 3/4-inch thick or less, and 2-1/2" ring- or screw-shank nails for thicker panels. Space nails per the table below. Closer nail spacing may be required by some codes, or for diaphragm construction. The finished deck can be walked on right away and will carry construction loads without damage to the glue bond.

FASTENERS FOR SHEATHING AND SUBFLOORING⁽¹⁾

Maximum Joist Spacing (in.)	Minimum Panel Thickness (in.)	Nail Size and Type				Maximum Spacing of Fasteners	
		Common Wire or Spiral Nails	Ring Threaded Nails or Screws	Staples		Edges	Interior Supports
16	5/8	2"	1-3/4"	2"		6"	12"
20	5/8	2"	1-3/4"	2"		6"	12"
24	3/4	2"	1-3/4"	2"		6"	12"

- Fasteners of sheathing and subflooring shall conform to the above table.
- Staples shall not be less than 1/16-inch in diameter or thickness, with not less than a 3/8-inch crown driven with the crown parallel to framing.
- Flooring screws shall not be less than 1/8-inch in diameter.
- Special conditions may impose heavy traffic and concentrated loads that require construction in excess of the minimums shown.
- Use only adhesives conforming to CAN/CSB-71.26 Standard, Adhesives for Field-Gluing Plywood to Lumber Framing for Floor System, applied in accordance with the manufacturer's recommendations. If OSB panels with sealed surfaces and edges are to be used, use only solvent-based glues check with panel manufacturer.

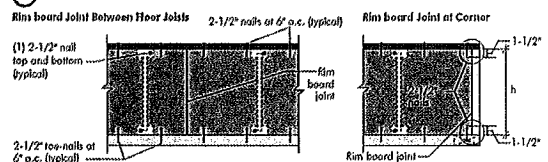
Ref.: NBC-CNBC, National Building Code of Canada 2010, Table 9.23.3.5.

IMPORTANT NOTE:

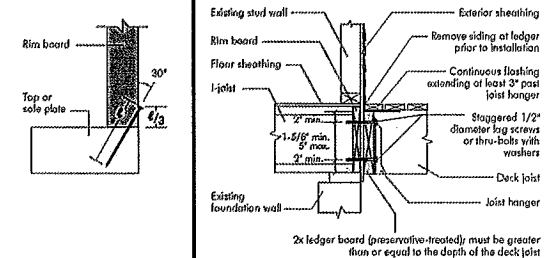
Floor sheathing must be field glued to the I-Joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-Joist spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

(a) ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



(b) TOE-NAIL CONNECTION AT RIM BOARD

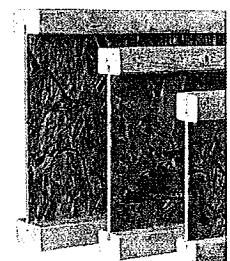




PRODUCT WARRANTY

Chantier Diamantier warrants that, in accordance with our specifications, Nordic products are free from manufacturing defect in material and workmanship.

Furthermore, Chantier Diamantier warrants that our products, when utilized in accordance with our building and installation instructions, will meet or exceed our specifications for the lifetime of the structure.





CONSTRUCTION DETAILS FOR RESIDENTIAL FLOORS

N-C303 / September 2013



Refer to the Installation Guide for Residential Floors for additional information.
CCMC EVALUATION REPORT 13032-R

WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

1. The distance between the inside edge of the support and the centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
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 or 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 shall always be maintained between the top or bottom of the hole or opening and the adjacent I-joist flange.

5. The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
6. Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the longest rectangular hole/duct chase opening) and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
7. A knockout is not considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
8. Holes measuring 1-1/2 inches or smaller are permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.

9. 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.
10. All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
11. Limit three maximum size holes per span, of which one may be a duct chase opening.
12. A group of round holes of approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

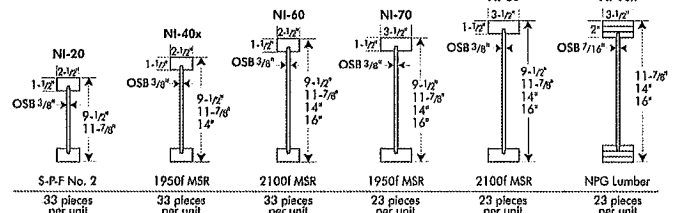


TABLE 1

LOCATION OF CIRCULAR HOLES IN JOIST WEBS

Simple or Multiple Span for Dead Loads up to 15 psf and Live Loads up to 40 psf

Joist Depth	Joist Series	Minimum Distance from Inside Face of Any Support to Centre of Hole (ft - in.)														
		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"	4-4"	5-8"	6-0"	...	...	...	...	...	...	...	...
	NI-40x	0-7"	1-6"	3-0"	4-4"	5-0"	6-4"	...	...	...	...	...	...	...	...
	NI-60	1-3"	2-6"	4-0"	5-4"	7-0"	7-5"	...	...	...	...	...	...	...	...
	NI-70	2-0"	3-4"	4-9"	6-3"	8-0"	8-4"	...	...	...	...	...	...	...	...
	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-70	1-3"	2-6"	4-0"	5-4"	6-9"	7-2"	8-4"	10-0"	11-2"	...	...	...	...	...
	NI-80	1-6"	2-10"	4-2"	5-6"	7-0"	7-5"	8-6"	10-3"	11-4"	...	...	...	...	...
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-70	0-8"	1-10"	3-0"	4-5"	5-10"	6-2"	7-3"	8-9"	9-9"	10-4"	12-0"	13-5"	...	...
	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-90x	0-7"	0-8"	0-8"	1-0"	2-4"	2-9"	3-9"	5-2"	6-0"	6-6"	8-3"	10-2"	...	...
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-70	0-7"	1-0"	2-3"	3-6"	4-10"	5-3"	6-3"	7-8"	8-6"	9-2"	10-8"	12-0"	12-4"	14-0"	15-6"
	NI-80	0-7"	1-0"	2-3"	3-6"	4-10"	5-3"	6-3"	7-8"	8-6"	9-2"	10-8"	11-9"	14-5"	16-0"	...
	NI-90x	0-7"	0-8"	0-9"	2-0"	3-6"	4-0"	5-0"	6-9"	7-2"	8-4"	10-2"	11-6"	12-0"

1a NI blocking panel

Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI Joists	3,300

*The uniform vertical load is limited to a joist depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

Attach I-joist to top plate per detail 1b

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

1b Rim board

Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

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

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

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

Minimum bearing length shall be 1-3/4" for the end bearings, and 3-1/2" for the intermediate bearings when applicable.

1d NI or rim board blocking panel per detail 1a

Pair of Squash Blocks	Maximum Factored Vertical Load per Pair of Squash Blocks (lbs)
3-1/2" wide	5,500
5-1/2" wide	8,500
2x Lumber	5,500
1-1/8" Rim Board Plus	4,300
	6,600

Provide lateral bracing per detail 1a or 1b

1e Transfer load from above to bearing below. Install squash blocks per detail 1d. Match bearing area of blocks below to post above.

1f Joist attachment per detail 1b

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

Blocking required over all interior supports under load-bearing walls or when floor joists are not continuous over support

NI blocking panel per detail 1a

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

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

BACKER BLOCKS (Blocks must be long enough to permit required nailing without splitting)

Flange Width	Material Thickness Required*	Minimum Depth**
2-1/2"	1"	5-1/2"
3-1/2"	1-1/2"	7-1/4"

* 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 or CAN/CSA-O437 Standard.

** For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".

1i Nordic Lam or Structural Composite Lumber (SCL)

For nailing schedules for multiple beams, see the manufacturer's recommendations.

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

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

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

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

Top-mount hanger installed per manufacturer's recommendations

1l Multiple I-joist header with full depth filler block shown. Nordic Lam or SCL headers may also be used. Verify double I-joist capacity to support concentrated loads.

Backer block attached per detail 1h. Nail with twelve 3" nails, clinch when possible.

Install hanger per manufacturer's recommendations

Maximum support capacity = 1,620 lbs.

1m Do not bawl-cut joist beyond inside face of wall

Attach I-joist per detail 1b

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

1n Lumber 2x4 min., extend block to face of adjacent web. Two 2-1/2" spiral nails from each web to lumber piece, alternate on opposite side.

NI blocking panel

1o OPTIONAL: Minimum 1x4 inch strap applied to underside of joist at blocking line or 1/2 inch minimum gypsum ceiling attached to underside of joists.

1p FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

Filler block

Offset nails from opposite face by 6"

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

NOTES:

- Support back of I-joist web during nailing to prevent damage to web/flange connection.
- Leave a 1/8" to 1/4" gap between top of filler block and bottom of top I-joist flange.
- Filler block is required for joists for full length of span.
- Nail joists together with two rows of 3" nails at 12 inches o.c. (clinched when possible) on each side of the double I-joist. Total of four nails per foot required. If nails can be clinched, only two nails per foot are required.
- The maximum factored load that may be applied to one side of the double joist using this detail is 860 lb/ft. Verify double I-joist capacity.

Flange Size	Net Depth	Filler Block Size
2-1/2" x 1-1/2"	9-1/2" 11-7/8" 14" 16"	2-1/8" x 6" 2-1/8" x 8" 2-1/8" x 10" 2-1/8" x 12"
3-1/2" x 1-1/2"	9-1/2" 11-7/8" 14" 16"	3" x 6" 3" x 8" 3" x 10" 3" x 12"
3-1/2" x 2"	11-7/8" 14" 16"	3" x 7" 3" x 9" 3" x 11"

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

2x4 min. (1/8" gap minimum)

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

1-joist blocking panel

One 2-1/2" nail one side only

NOTES:

- In some local codes, blocking is prescriptively required in the first joist space (or first and second joist space) next to the starter joist. Where required, see local code requirements for spacing of the blocking.
- All nails are common spiral in this detail.

All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.125" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for clarity.

WEB STIFFENERS

RECOMMENDATIONS:

- A bearing stiffener is required in all engineered applications with factored reactions greater than shown in the I-joist properties table found in the I-joist Construction Guide (C101). The gap between the stiffener and the flange is at the top.
- A bearing stiffener is required when the I-joist is supported in a hanger and the sides of the hanger do not extend up to, and support, the top flange. The gap between the stiffener and flange is at the top.
- A load stiffener is required at locations where a factored concentrated load greater than 2,370 lbs is applied to the top flange between supports, or in the case of a cantilever, anywhere between the cantilever tip and the support. These values are for standard term load duration, and may be adjusted for other load durations as permitted by the code. The gap between the stiffener and the flange is at the bottom.

FIGURE 2

WEB STIFFENER INSTALLATION DETAILS

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

Approx. 2"

1/8"-1/4" Gap

(4) 2-1/2" nails, 3" nails required for I-joists with 3-1/2" flange width

Approx. 2"

No Gap

See the adjacent table for web stiffener size requirements

CONCENTRATED LOAD (Load stiffener)

Tight Joint No Gap

Gap

END BEARING (Bearing stiffener)

Gap

Tight Joint No Gap

STIFFENER SIZE REQUIREMENTS

Flange Width	Web Stiffener Size Each Side of Web
2-1/2"	1" x 2-5/16" minimum width
3-1/2"	1-1/2" x 2-5/16" minimum width

CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

Method 1 — SHEATHING REINFORCEMENT ONE SIDE

Rim board or wood structural panel closure (3/4" minimum thickness), attach per detail 1b

NI blocking panel or rim board blocking, attach per detail 1g

Attach I-joist to plate per detail 1b

2-1/2" nails

3-1/2" min. bearing required

Use same installation as Method 1 but reinforce both sides of I-joist with sheathing.

Use nailing pattern shown for Method 1 with opposite face nailing offset by 3".

NOTE: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4") required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2" nails at 6" o.c., top and bottom flange. Install with face grain horizontal. Attach I-joist to plate at all supports per detail 1b. Verify reinforced I-joist capacity.

Method 2 — SHEATHING REINFORCEMENT TWO SIDES

RIM BOARD INSTALLATION DETAILS

8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

Rim Board Joint Between Floor Joists

(1) 2-1/2" nail top and bottom (typical)

Rim board joint

2-1/2" toe-nails at 6" o.c. (typical)

Rim Board Joint at Corner

2-1/2" nails

Rim board joint

1-1/2"

1-1/2"

8b TOE-NAIL CONNECTION AT RIM BOARD

Rim board

Top or sole plate

30°

1/2"

The construction details for residential designs are prone to changes.

Details released after September 2013 supersedes N-303

Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

This document does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of its component based on the design criteria and loadings shown on the calculation sheets.

