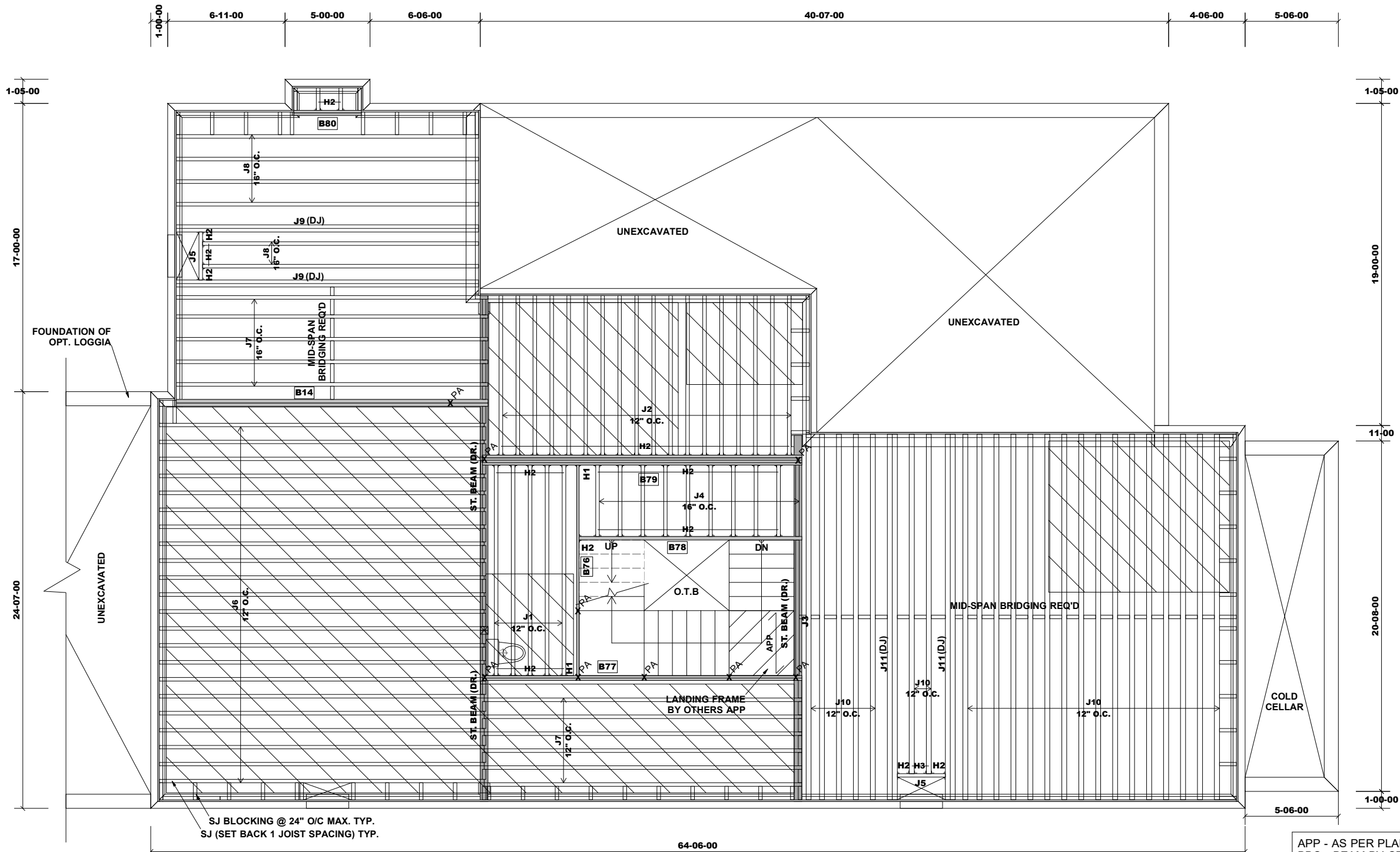




Products				
PlotID	Length	Product	Piles	Net Qty
B14	19-00-00	11 7/8" NI-40x	2	2
B76	13-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B77	19-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B78	14-00-00	11 7/8" NI-20	1	1
B79	19-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	4	4
B80	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
J1	13-00-00	11 7/8" NI-20	1	5
J2	10-00-00	11 7/8" NI-20	1	18
J3	8-00-00	11 7/8" NI-20	1	1
J4	5-00-00	11 7/8" NI-20	1	10
J5	3-00-00	11 7/8" NI-20	1	2
J6	20-00-00	11 7/8" NI-40x	1	22
J7	19-00-00	11 7/8" NI-40x	1	11
J8	18-00-00	11 7/8" NI-40x	1	6
J9	18-00-00	11 7/8" NI-40x	2	4
J10	22-00-00	11 7/8" NI-80	1	23
J11	22-00-00	11 7/8" NI-80	2	4
Ca1	221-00-00	1 1/8" x 11 7/8" Rim Board	1	1
Bk1	108-00-00	11 7/8" NI-20	1	1

Connector Summary			
PlotID	Qty	Manuf	Product
H1	2		HUS1.81/10
H2	55		LT251188
H3	2		LT351188

GROUND FLOOR FRAMING
UNIT 5011 MOD - LOT 30 -THE TIMBERLAND
ELEVATION A

SE046729 - SE046767
SE059851 - SE059863

FLOOR LOADING
LIVE LOAD : 40 PSF
DEAD LOAD : 15 PSF
DEAD LOAD (TILE): 20 PSF

HATCH LEGEND	
	Ceramic Tile
	Conv Framed

APP - AS PER PLAN
BBO - BEAM BY OTHERS
PA - POST ABOVE
O.T.B - OPEN TO BELOW
GT - GIRDER TRUSS
RT - ROOF TRUSS

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

SUBFLOOR: 3/4" NAILED & GLUED**

Blocking panels are required over all interior supports.

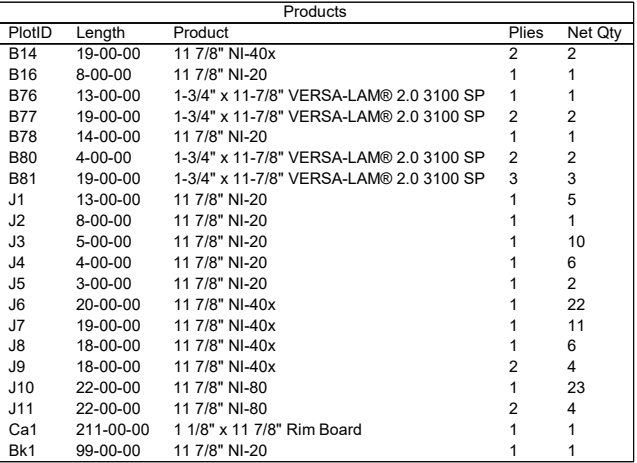
Squash blocks are required under concentrated loads.

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

Refer to manufacturer's specifications: (Nordic Engineering Wood Products - Construction Details Nordic Joist) NS-DC3 latest edition.

Ceramic Tile Application as per O.B.C. 9.30.6

Do not scale - refer to architectural plans for dimensions.



Connector Summary			
PlotID	Qty	Manuf	Product
H1	2		HUS1.81/10
H2	48		LT251188
H3	2		LT351188

Blocking panels are required over all interior supports.

Squash blocks are required under concentrated loads.

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

Refer to manufacturer's specifications: (Nordic Engineering Wood Products - Construction Details Nordic Joist) NS-DC3 latest edition.

Ceramic Tile Application as per O.B.C. 9.30.6

Do not scale - refer to architectural plans for dimensions.

APP - AS PER PLAN
BBO - BEAM BY OTHERS
PA - POST ABOVE
O.T.B - OPEN TO BELOW
GT - GIRDER TRUSS
RT - ROOF TRUSS

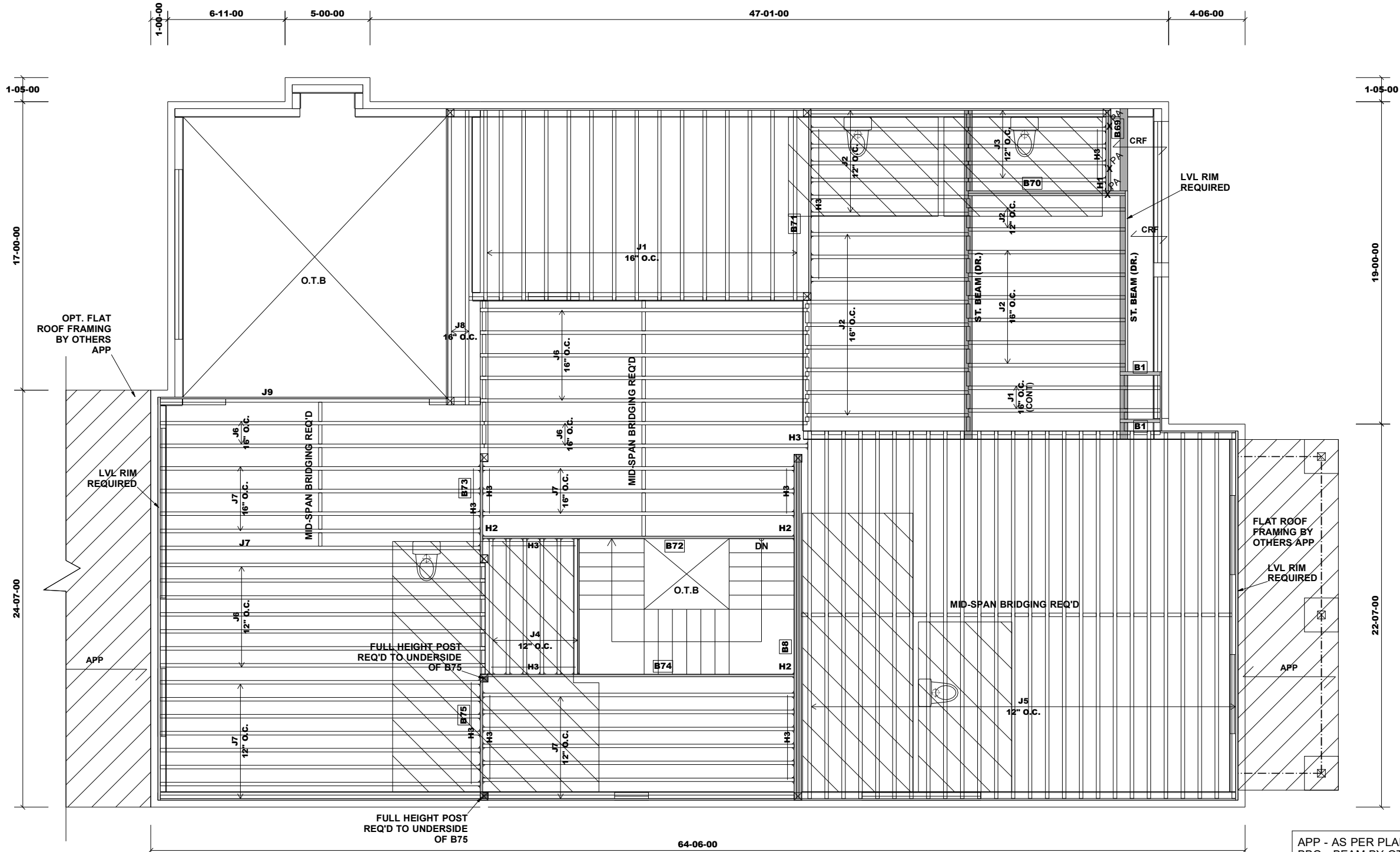
RIMBOARD
1-1/8" X 11-7/8" O.S.B.

SUBFLOOR: 3/4" NAILED & GLUED**

GROUND FLOOR FRAMING
UNIT 5011 MOD - LOT 30 -THE TIMBERLAND
ELEVATION A
W/ SUNKEN MUDROOM

HATCH LEGEND	
	Ceramic Tile
	Conv Framed

FLOOR LOADING
LIVE LOAD : 40 PSF
DEAD LOAD : 15 PSF
DEAD LOAD (TILE): 20 PSF



SECOND FLOOR FRAMING

UNIT 5011 MOD - LOT 30 -THE TIMBERLAND

ELEVATION A

FLOOR LOADING

LIVE LOAD : 40 PSF

DEAD LOAD : 15 PSF

DEAD LOAD (TILE): 20 PSF

HATCH LEGEND

Ceramic Tile

Conv Framed

APP - AS PER PLAN

BBO - BEAM BY OTHERS

PA - POST ABOVE

O.T.B - OPEN TO BELOW

GT - GIRDER TRUSS

RT - ROOF TRUSS

RIMBOARD

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

SUBFLOOR: 3/4" NAILED & GLUED**

Products				
PlotID	Length	Product	Piles	Net Qty
B1	3-00-00	11 7/8" NI-20	1	2
B8	21-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3
B69	5-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B70	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B71	12-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B72	19-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B73	7-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B74	19-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B75	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
J1	12-00-00	11 7/8" NI-20	1	17
J2	10-00-00	11 7/8" NI-20	1	24
J3	9-00-00	11 7/8" NI-20	1	5
J4	8-00-00	11 7/8" NI-20	1	6
J5	22-00-00	11 7/8" NI-40x	1	26
J6	20-00-00	11 7/8" NI-40x	1	16
J7	19-00-00	11 7/8" NI-40x	1	23
J8	18-00-00	11 7/8" NI-40x	1	2
J9	17-00-00	11 7/8" NI-40x	1	1
Ca1	57-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
Ca2	152-04-02	1 1/8" x 11 7/8" Rim Board	1	1
Bk1	107-00-00	11 7/8" NI-20	1	1

Connector Summary			
PlotID	Qty	Manuf	Product
H1	1		HGUS410
H2	3		HUS1.81/10
H3	56		LT251188

Blocking panels are required over all interior supports.

Squash blocks are required under concentrated loads.

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

Refer to manufacturer's specifications: (Nordic Engineering Wood Products - Construction Details Nordic Joist) NS-DC3 latest edition.

Ceramic Tile Application as per O.B.C. 9.30.6

Do not scale - refer to architectural plans for dimensions.



Customer: **Gold Park Homes**
Job Address: **Pine Valley Ph2**
City: **Vaughan**
Job Track: **45147**

Job Name: **343073 Ground A + Second A (1,**
Level: **Second Floor**
Label: **B1 - i50586**
Type: **Beam**

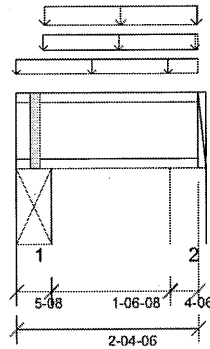
1 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 04/01/2022 16:42



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'- 6 1/2"

Factored Resistance of Support Material:

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

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	1'- 2 7/16"	1.25D + 1.5L	0.65	58 lb ft	3649 lb ft	Passed - 2%
Factored Shear:	1'- 11 15/16"	1.25D + 1.5L	0.65	135 lb	1465 lb	Passed - 9%

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	5'-08"	1.25D + 1.5L	0.65	147 lb		1465 lb	6914 lb	Passed - 10%
2	4'-06"	1.25D + 1.5L	0.65	203 lb		1465 lb	4400 lb	Passed - 14%

SPECIFIED LOADS

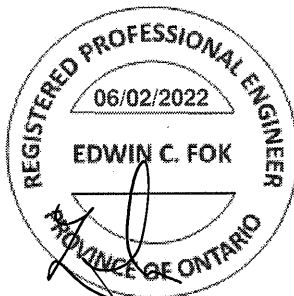
Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	2'- 4 3/8"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'	2'- 4 3/8"	FC2 Floor Decking (Plan View Fill)	Top	2 lb/ft	4 lb/ft	-	-
Uniform	0'- 4 1/4"	2'- 4 3/8"	FC2 Floor Decking (Plan View Fill)	Top	6 lb/ft	17 lb/ft	-	-
Uniform	0'- 4 1/2"	2'- 4 3/8"	E26(41636)	Top	101 lb/ft	-	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 5 1/2"	ST. BEAM (DR.)(41693)	95 lb	20 lb	-	-
2	2'	2'- 4 3/8"	E9(41609)	130 lb	26 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.



SZ046729



Triple 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

PASSED

Second Floor\Flush Beams\B8(i50995) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

April 1, 2022 16:45:22

Build 8183

Job name: 45147-Model 5011

File name: 343073 Ground A + Second A (1,13).mmdl

Address: Pine Valley Ph2

Description: Second Floor\Flush Beams\B8(i50995)

City, Province, Postal Code: Vaughan, ON

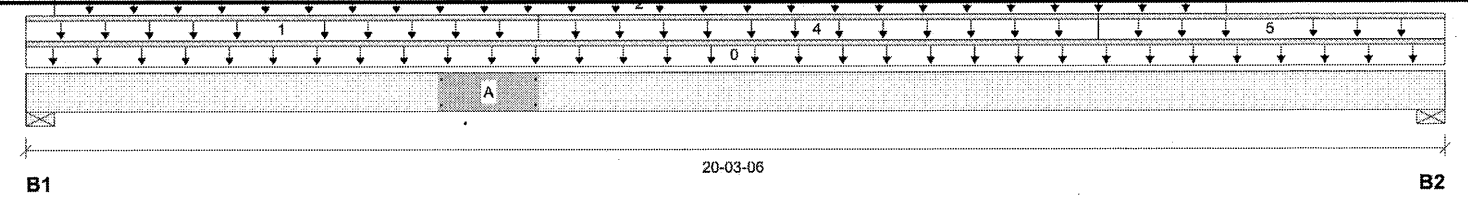
Specifier:

Customer: Gold Park Homes

Designer: TL

Code reports: CMC 12472-R

Company: Alpa Roof Trusses Inc.



B1 B2
Total Horizontal Product Length = 20-03-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	2583 / 0	2153 / 0		
B2, 5-1/2"	2617 / 0	1903 / 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	20-03-06	Top		18			00-00-00
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	07-03-14	Top	14	5			n/a
2	WALL	Unf. Lin. (lb/ft)	L	00-04-14	17-01-14	Top		60			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	00-07-04	05-07-04	Back	373	146			n/a
4	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	07-03-14	15-03-14	Top	18	7			n/a
5	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	15-03-14	20-03-06	Top	14				n/a
6	Smoothed Load	Unf. Lin. (lb/ft)	L	16-01-08	20-01-08	Back	378	142			n/a
7	J7(i50782)	Conc. Pt. (lbs)	L	06-01-04	06-01-04	Back	405	158			n/a
8	B7(i50294)	Conc. Pt. (lbs)	L	07-01-06	07-01-06	Back	366	703			n/a
9	B5(i51035)	Conc. Pt. (lbs)	L	15-06-06	15-06-06	Back	710	389			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	26055 ft-lbs	55211 ft-lbs	47.2%	1	07-01-06
End Shear	6310 lbs	21696 lbs	29.1%	1	01-04-04
Total Load Deflection	L/260 (0.905")	n/a	92.5%	4	09-11-07
Live Load Deflection	L/517 (0.455")	n/a	69.7%	5	09-11-07
Max Defl.	0.905"	n/a	n/a	4	09-11-07
Span / Depth	19.8				

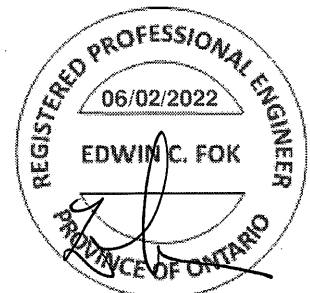
Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 5-1/4"	6566 lbs	46.5%	23.4%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 5-1/4"	6304 lbs	35.5%	17.9%	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 CALCC® 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: 04-04-11.

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



343073



Customer: **Gold Park Homes**
Job Address: **Pine Valley Ph2**
City: **Vaughan**
Job Track: **45147**

Job Name: **343073 Ground A + Second A (1**
Level: **Ground Floor**
Label: **B14 - i51051**
Type: **Beam**

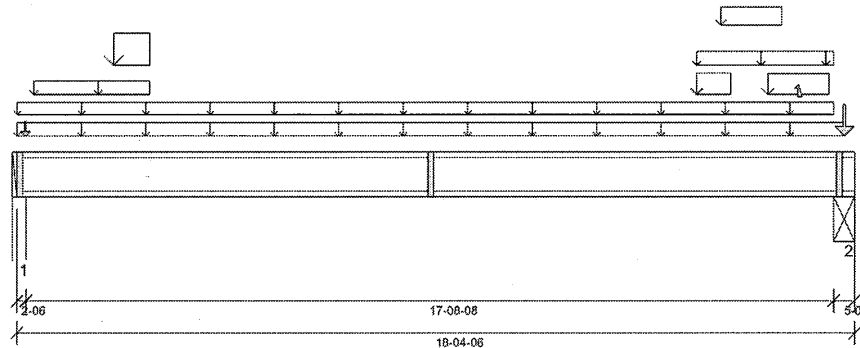
2 Ply Member
11 7/8" NI-40x

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 04/01/2022 16:47



DESIGN INFORMATION

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

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

Lateral Restraint Requirements:

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

Top: 0' Bottom: 8'- 11 7/8"

Factored Resistance of Support Material:

- 1305 psi Wall @ 0'- 1 3/8"
- 769 psi Beam @ 17'- 11 7/8"

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	9'- 4 1/4"	1.25D + 1.5L	1.00	6489 lb ft	12510 lb ft	Passed - 52%
Factored Shear:	17'- 10 13/16"	1.25D + 1.5L	1.00	2724 lb	4680 lb	Passed - 58%
Live Load (LL) Pos. Defl.:	9'- 1 3/8"	L		0.265"	L/360	Passed - L/803
Total Load (TL) Pos. Defl.:	9'- 1 5/16"	D + L		0.420"	L/240	Passed - L/506

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	2-06	1.25D + 1.5L	1.00	2066 lb		4203 lb	15500 lb	Passed - 49%
2	5-08	1.25D + 1.5L	1.00	3120 lb		4680 lb	21151 lb	Passed - 67%

SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	18'- 4 3/8"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'	18'- 1 5/8"	FC1 Floor Decking (Plan View Fill)	Top	16 lb/ft	42 lb/ft	-	-
Uniform	0'	17'- 10 7/8"	FC1 Floor Decking (Plan View Fill)	Top	2 lb/ft	-	-	-
Uniform	0'- 4 3/8"	2'- 10 7/8"	13(i42108)	Top	68 lb/ft	-	-	-
Uniform	2'- 1 3/8"	2'- 10 7/8"	13(i42108)	Top	244 lb/ft	577 lb/ft	-	-
Uniform	14'- 10 7/8"	17'- 10 7/8"	14(i42109)	Top	68 lb/ft	-	-	-
Uniform	14'- 10 7/8"	15'- 7 7/8"	14(i42109)	Top	104 lb/ft	280 lb/ft	-	-
Uniform	15'- 5 1/4"	16'- 9 1/4"	14(i42109)	Top	69 lb/ft	183 lb/ft	-	-
Uniform	16'- 5 5/8"	17'- 9 5/8"	14(i42109)	Top	99 lb/ft	264 lb/ft	-	-
Point	0'- 2 3/16"	0'- 2 3/16"	E2(i41607)	Top	41 lb	-	-	-
Point	17'- 1 5/8"	17'- 1 5/8"	14(i42109)	Top	-	-1 lb	-	-
Point	18'- 1 5/8"	18'- 1 5/8"	8(i41678)	Top	93 lb	171 lb	-	-

UNFACTORED REACTIONS

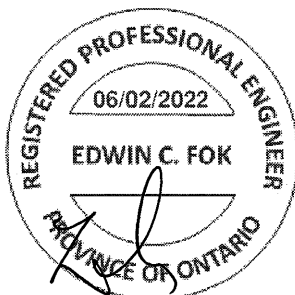
ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 2 3/8"	-	624 lb	859 lb	-	-
++>	0'- 1/2"	0'- 1/2"	W3(i41588)	272 lb	374 lb	-	-
++>	0'- 11/16"	0'- 11/16"	W2(i41593)	352 lb	485 lb	-	-
2	17'- 10 7/8"	18'- 4 3/8"	ST. BEAM (DR.)(i41669)	821 lb	1394/-1 lb	-	-

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. Verify connection between piles according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.



83046742



Customer: **Gold Park Homes**
Job Address: **Pine Valley Ph2**
City: **Vaughan**
Job Track: **45147**

Job Name: **343073 Ground A W Sunken M...**
Level: **Ground Floor**
Label: **B16 - i52558**
Type: **Beam**

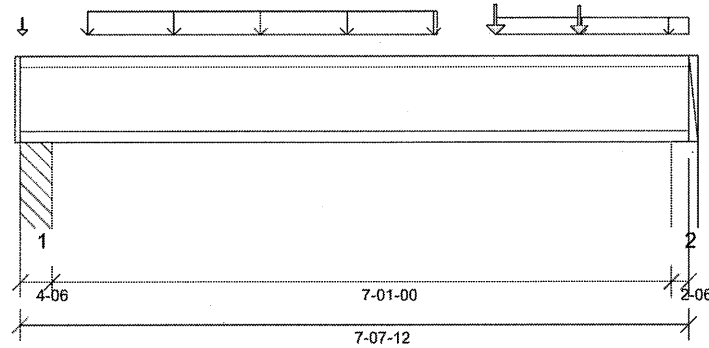
1 Ply Member
11 7/8" NI-20

Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26 04/04/2022 09:35



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:

- 1334 psi Column @ 0'- 3 3/8"
- 615 psi Wall @ 7'- 6 3/8"

ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 1 1/4"	1.25D + 1.5L	1.00	1292 lb ft	5580 lb ft	Passed - 23%
Factored Shear:	0'- 4 7/16"	1.25D + 1.5L	1.00	614 lb	2240 lb	Passed - 27%
Live Load (LL) Pos. Defl.:	3'- 10 15/16"	L		0.034"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 10 15/16"	D + L		0.047"	L/240	Passed - L/999

SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	4-06	1.25D + 1.5L	1.00	633 lb		2240 lb	14595 lb	Passed - 28%
2	2-06	1.25D + 1.5L	1.00	617 lb		2045 lb	3653 lb	Passed - 30%

SPECIFIED LOADS

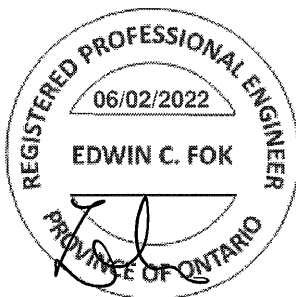
Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	7'- 7 3/4"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'- 9 1/4"	4'- 9 1/4"	Smoothed Load	Front	37 lb/ft	98 lb/ft	-	-
Tapered	5'- 5 1/4"	7'- 7 3/4"	FC1 Floor Decking (Plan View Fill)	Top	4 To 2 lb/ft	11 To 6 lb/ft	-	-
Point	5'- 5 1/4"	5'- 5 1/4"	J2(i52495)	Front	40 lb	107 lb	-	-
Point	6'- 4 3/4"	6'- 4 3/4"	J2(i52472)	Front	36 lb	95 lb	-	-
Point	0'- 1/4"	0'- 1/4"	FC1 Floor Decking (Plan View Fill)	Top	4 lb	9 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 4 3/8"	P1(i52557)	130 lb	314 lb	-	-
2	7'- 5 3/8"	7'- 7 3/4"	W39(i52072)	126 lb	307 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.



53046744

Second Floor\Flush Beams\B69(i59041) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

November 18, 2022 13:56:58

Build 8183

Job name: 5011 MOD Lot 30

File name: 350620 Ground A + Second A (1,3).mmdl

Address: Pine Valley Ph2

Description: Second Floor\Flush Beams\B69(i59041)

City, Province, Postal Code: Vaughan, ON

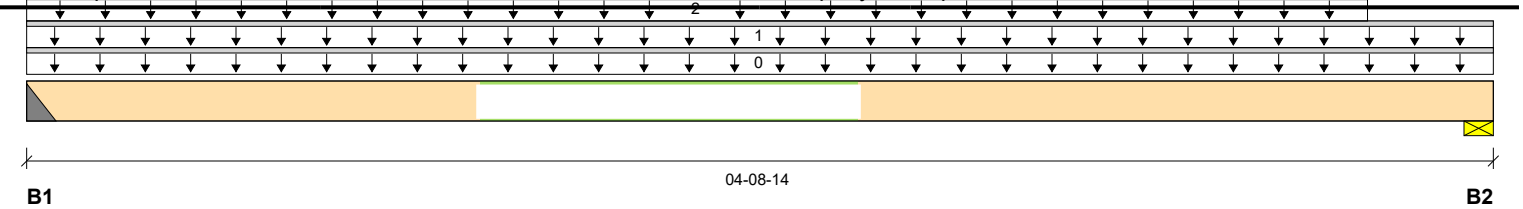
Specifier:

Customer: Gold Park Homes

Designer: TL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses Inc.


Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	347 / 0	597 / 0	261 / 0	
B2, 4-3/8"	318 / 0	560 / 0	250 / 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	04-08-14	Top		12			00-00-00
1	ROOF	Unf. Lin. (lb/ft)	L	00-00-00	04-08-14	Top		21	32		n/a
2	E18(i41627)	Unf. Lin. (lb/ft)	L	00-00-00	04-04-00	Top		101			n/a
3	E18(i41627)	Unf. Lin. (lb/ft)	L	00-00-00	01-03-08	Top		53	83		n/a
4	E18(i41627)	Unf. Lin. (lb/ft)	L	03-10-08	04-04-00	Top		53	83		n/a
5	J3(i59522)	Conc. Pt. (lbs)	L	00-07-10	00-07-10	Back	152	74			n/a
6	-	Conc. Pt. (lbs)	L	01-06-04	01-06-04	Back	171	156	107		n/a
7	J3(i59704)	Conc. Pt. (lbs)	L	02-07-10	02-07-10	Back	171	83			n/a
8	-	Conc. Pt. (lbs)	L	03-08-08	03-08-08	Back	171	156	107		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1549 ft-lbs	35392 ft-lbs	4.4%	1	02-03-02
End Shear	1151 lbs	14464 lbs	8.0%	1	03-04-10
Total Load Deflection	L/999 (0.004")	n/a	n/a	35	02-03-02
Live Load Deflection	L/999 (0.002")	n/a	n/a	51	02-03-02
Max Defl.	0.004"	n/a	n/a	35	02-03-02
Span / Depth	4.4				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 3-1/2"	1528 lbs	n/a	17.9%	HGUS410
B2	Wall/Plate 4-3/8" x 3-1/2"	1427 lbs	15.1%	7.6%	Spruce-Pine-Fir

Cautions

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

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

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


Second Floor\Flush Beams\B70(i59390) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

November 18, 2022 13:57:16

Build 8183

Job name: 5011 MOD Lot 30

File name: 350620 Ground A + Second A (1,3).mmdl

Address: Pine Valley Ph2

Description: Second Floor\Flush Beams\B70(i59390)

City, Province, Postal Code: Vaughan, ON

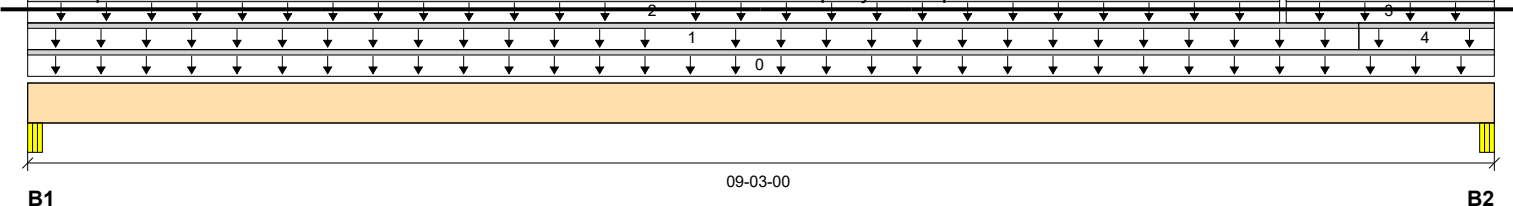
Specifier:

Customer: Gold Park Homes

Designer: TL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses Inc.


Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-3/4"	188 / 0	212 / 0	55 / 0	
B2, 3-3/4"	444 / 0	973 / 0	531 / 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	09-03-00	Top		12			00-00-00
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	08-04-12	Top	35	13			n/a
2	TILE	Unf. Lin. (lb/ft)	L	00-00-00	07-10-12	Top		4			n/a
3	E19(i41630)	Unf. Lin. (lb/ft)	L	07-11-04	09-03-00	Top		101			n/a
4	E19(i41630)	Unf. Lin. (lb/ft)	L	08-04-12	09-03-00	Top		27	42		n/a
5	-	Conc. Pt. (lbs)	L	08-02-03	08-02-03	Back	340	774	550		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1932 ft-lbs	35392 ft-lbs	5.5%	1	06-10-04
End Shear	1746 lbs	14464 lbs	12.1%	13	07-11-06
Total Load Deflection	L/999 (0.021")	n/a	n/a	35	04-11-11
Live Load Deflection	L/999 (0.011")	n/a	n/a	51	04-11-11
Max Defl.	0.021"	n/a	n/a	35	04-11-11
Span / Depth	8.9				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Beam 2-3/4" x 3-1/2"	601 lbs	8.1%	5.1%	Unspecified
B2	Beam 3-3/4" x 3-1/2"	2457 lbs	24.3%	15.3%	Unspecified

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

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: 07-10-08.



Second Floor\Flush Beams\B71(i59418) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

November 18, 2022 13:57:37

Build 8183

Job name: 5011 MOD Lot 30

File name: 350620 Ground A + Second A (1,3).mmdl

Address: Pine Valley Ph2

Description: Second Floor\Flush Beams\B71(i59418)

City, Province, Postal Code: Vaughan, ON

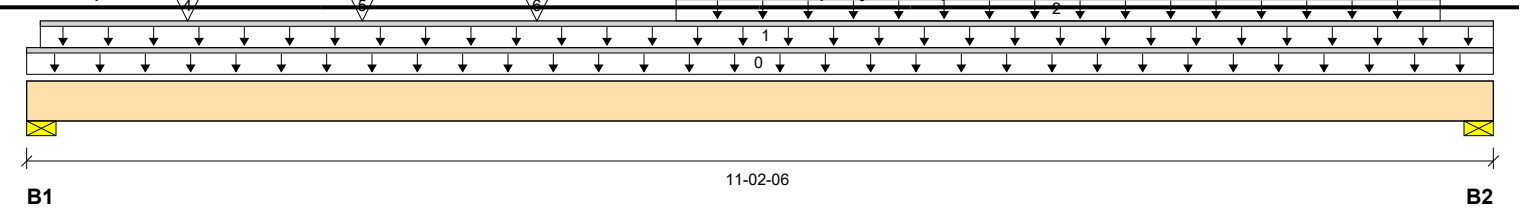
Specifier:

Customer: Gold Park Homes

Designer: TL

Code reports: CCMC 12472-R

Company: Alpha Roof Trusses Inc.



Total Horizontal Product Length = 11-02-06

Reaction Summary (Down / Uplift) (lbs)

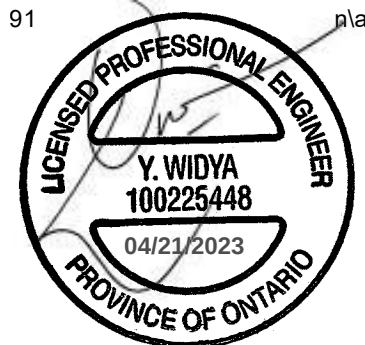
Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	1036 / 0	465 / 0		
B2, 4-3/8"	1014 / 0	511 / 0		

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	11-02-06	Top		6			00-00-00
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-01-04	11-02-06	Top	17	7			n/a
2	TILE	Unf. Lin. (lb/ft)	L	04-11-08	10-09-08	Top		2			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	05-07-02	10-07-02	Front	185	92			n/a
4	J2(i59450)	Conc. Pt. (lbs)	L	01-02-12	01-02-12	Front	247	93			n/a
5	J2(i59451)	Conc. Pt. (lbs)	L	02-06-12	02-06-12	Front	247	93			n/a
6	J2(i59746)	Conc. Pt. (lbs)	L	03-10-12	03-10-12	Front	235	88			n/a
7	J2(i59517)	Conc. Pt. (lbs)	L	05-01-02	05-01-02	Front	204	91			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	5886 ft-lbs	17696 ft-lbs	33.3%	1	06-01-02
End Shear	2006 lbs	7232 lbs	27.7%	1	09-10-02
Total Load Deflection	L/749 (0.168")	n/a	32.0%	4	05-08-10
Live Load Deflection	L/999 (0.114")	n/a	n/a	5	05-07-02
Max Defl.	0.168"	n/a	n/a	4	05-08-10
Span / Depth	10.6				


Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 1-3/4"	2135 lbs	36.1%	18.2%	Spruce-Pine-Fir
B2	Wall/Plate 4-3/8" x 1-3/4"	2161 lbs	45.9%	23.1%	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.

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®,

SE059853

Second Floor\Flush Beams\B72(i58976) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

November 18, 2022 13:58:37

Build 8183

Job name: 5011 MOD Lot 30

File name: 350620 Ground A + Second A (1,3).mmdl

Address: Pine Valley Ph2

Description: Second Floor\Flush Beams\B72(i58976)

City, Province, Postal Code: Vaughan, ON

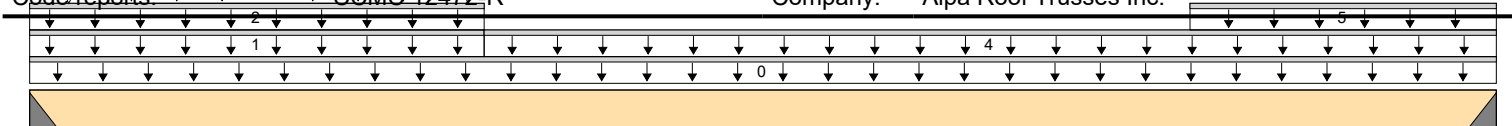
Specifier:

Customer: Gold Park Homes

Designer: TL

Code reports: CEMG 12472-R

Company: Alpa Roof Trusses Inc.



18-04-04

B1

B2

Total Horizontal Product Length = 18-04-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	1043 / 0	821 / 0		
B2, 2"	698 / 0	385 / 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	18-04-04	Top		6			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-00-00	05-08-04	Top		60			n/a
2	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	05-08-04	Top	28	11			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	00-11-14	04-11-14	Front	163	81			n/a
4	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	05-08-04	18-04-04	Top	29	11			n/a
5	STAIR	Unf. Lin. (lb/ft)	L	14-06-04	18-04-04	Top	84	32			n/a
6	J4(i58997)	Conc. Pt. (lbs)	L	00-05-14	00-05-14	Front	123	60			n/a
7	J4(i59671)	Conc. Pt. (lbs)	L	05-05-14	05-05-14	Front	97	44			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	7130 ft-lbs	17696 ft-lbs	40.3%	1	05-05-14
End Shear	2257 lbs	7232 lbs	31.2%	1	01-01-14
Total Load Deflection	L/357 (0.609")	n/a	67.1%	4	08-09-05
Live Load Deflection	L/604 (0.36")	n/a	59.6%	5	08-09-05
Max Defl.	0.609"	n/a	n/a	4	08-09-05
Span / Depth	18.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	2591 lbs	n/a	60.7%	HUS1.81/10
B2	Hanger 2" x 1-3/4"	1529 lbs	n/a	35.8%	HUS1.81/10

Cautions

Hanger model HUS1.81/10 and seat length were input by the user.

Header for the hanger HUS1.81/10 is a Single 1-3/4" x 11-7/8" LVL beam.



Second Floor\Flush Beams\B73(i58908) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

November 18, 2022 13:58:52

Build 8183

Job name: 5011 MOD Lot 30

File name: 350620 Ground A + Second A (1,3).mmdl

Address: Pine Valley Ph2

Description: Second Floor\Flush Beams\B73(i58908)

City, Province, Postal Code: Vaughan, ON

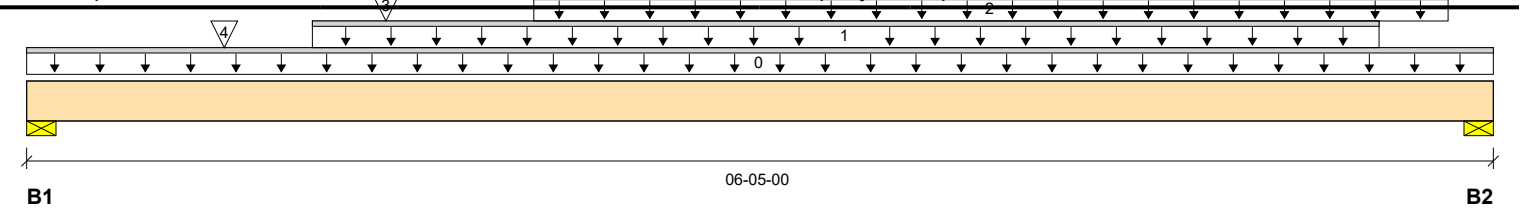
Specifier:

Customer: Gold Park Homes

Designer: TL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses Inc.



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	2411 / 0	1410 / 0		
B2, 5-1/2"	2346 / 0	1145 / 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	06-05-00	Top		6			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	01-03-00	05-11-00	Top		60			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	02-02-10	06-02-10	Front	374	140			n/a
3	-	Conc. Pt. (lbs)	L	01-06-14	01-06-14	Front	1421	963			n/a
4	J7(i59497)	Conc. Pt. (lbs)	L	00-10-06	00-10-06	Back	375	159			n/a
5	J7(i59503)	Conc. Pt. (lbs)	L	02-10-10	02-10-10	Back	442	166			n/a
6	J7(i59502)	Conc. Pt. (lbs)	L	04-02-10	04-02-10	Back	500	188			n/a
7	J7(i59501)	Conc. Pt. (lbs)	L	05-06-10	05-06-10	Back	500	188			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	7272 ft-lbs	17696 ft-lbs	41.1%	1	02-10-10
End Shear	4886 lbs	7232 lbs	67.6%	1	01-05-06
Total Load Deflection	L/999 (0.059")	n/a	n/a	4	03-01-10
Live Load Deflection	L/999 (0.039")	n/a	n/a	5	03-01-10
Max Defl.	0.059"	n/a	n/a	4	03-01-10
Span / Depth	5.7				



Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 1-3/4"	5379 lbs	90.8%	45.8%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 1-3/4"	4950 lbs	83.6%	42.2%	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.

Disclosure

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 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®,

SE059855

Second Floor\Flush Beams\B74(i58988) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

November 18, 2022 13:59:14

Build 8183

Job name: 5011 MOD Lot 30

File name: 350620 Ground A + Second A (1,3).mmdl

Address: Pine Valley Ph2

Description: Second Floor\Flush Beams\B74(i58988)

City, Province, Postal Code: Vaughan, ON

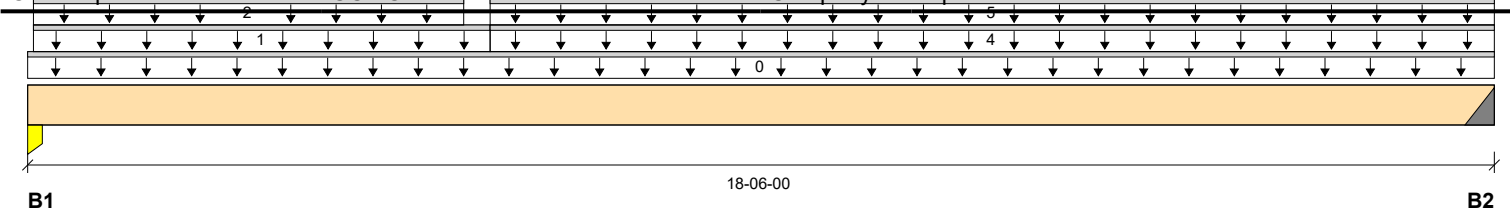
Specifier:

Customer: Gold Park Homes

Designer: TL

Code Reports: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Company: Alpa Roof Trusses Inc.


Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	969 / 0	785 / 0		
B2, 2"	355 / 0	702 / 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	18-06-00	Top		6			00-00-00
1	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-14	05-10-00	Top	23	9			n/a
2	TILE	Unf. Lin. (lb/ft)	L	00-00-14	05-06-00	Top		3			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	01-01-10	05-01-10	Back	163	81			n/a
4	WALL	Unf. Lin. (lb/ft)	L	05-10-00	18-06-00	Top		60			n/a
5	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	05-10-00	18-06-00	Top	24	9			n/a
6	J4(i58997)	Conc. Pt. (lbs)	L	00-07-10	00-07-10	Back	118	59			n/a
7	-	Conc. Pt. (lbs)	L	05-07-14	05-07-14	Back	113	44			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	7464 ft-lbs	17696 ft-lbs	42.2%	1	07-07-12
End Shear	2152 lbs	7232 lbs	29.8%	1	01-05-06
Total Load Deflection	L/325 (0.664")	n/a	73.8%	4	09-01-04
Live Load Deflection	L/771 (0.28")	n/a	46.7%	5	08-09-06
Max Defl.	0.664"	n/a	n/a	4	09-01-04
Span / Depth	18.2				


Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 5-1/2" x 1-3/4"	2436 lbs	14.6%	20.7%	Spruce-Pine-Fir
B2	Hanger 2" x 1-3/4"	983 lbs	n/a	35.4%	HUS1.81/10

Cautions

Hanger model HUS1.81/10 and seat length were input by the user.

Second Floor\Flush Beams\B75(i59763) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

November 18, 2022 13:59:38

Build 8183

Job name: 5011 MOD Lot 30

File name: 350620 Ground A + Second A (1,3).mmdl

Address: Pine Valley Ph2

Description: Second Floor\Flush Beams\B75(i59763)

City, Province, Postal Code: Vaughan, ON

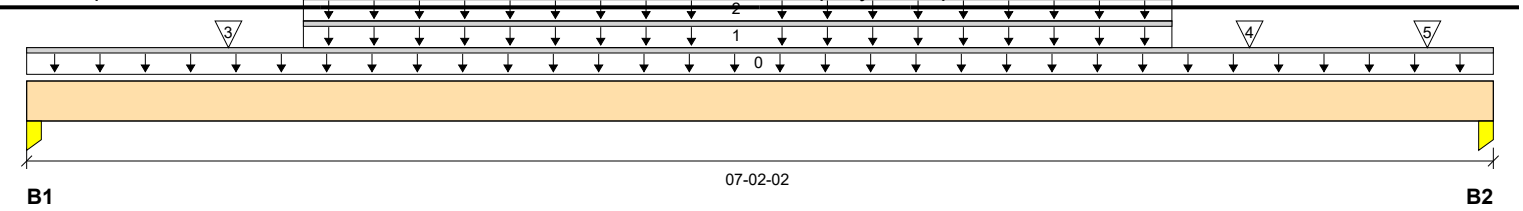
Specifier:

Customer: Gold Park Homes

Designer: TL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses Inc.



Total Horizontal Product Length = 07-02-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	2288 / 0	1034 / 0		
B2, 3-3/4"	2543 / 0	1145 / 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	07-02-02	Top		6			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-04-04	05-07-04	Back	353	153			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-04-04	05-07-04	Front	348	157			n/a
3	-	Conc. Pt. (lbs)	L	00-11-14	00-11-14	Front	698	308			n/a
4	-	Conc. Pt. (lbs)	L	05-11-13	05-11-13	Front	778	344			n/a
5	J7(i59496)	Conc. Pt. (lbs)	L	06-10-04	06-10-04	Back	375	163			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	8409 ft-lbs	17696 ft-lbs	47.5%	1	03-10-04
End Shear	4277 lbs	7232 lbs	59.1%	1	05-10-08
Total Load Deflection	L/999 (0.095")	n/a	n/a	4	03-06-14
Live Load Deflection	L/999 (0.066")	n/a	n/a	5	03-06-14
Max Defl.	0.095"	n/a	n/a	4	03-06-14
Span / Depth	6.7				


Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 4-3/8" x 1-3/4"	4724 lbs	35.6%	50.6%	Spruce-Pine-Fir
B2	Column 3-3/4" x 1-3/4"	5245 lbs	46.1%	65.5%	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: 00-06-08.

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®,

SE059857

Ground Floor\Flush Beams\B76(i59369) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

November 18, 2022 14:00:01

Build 8183

Job name: 5011 MOD Lot 30

File name: 350620 Ground A + Second A (1,3).mmdl

Address: Pine Valley Ph2

Description: Ground Floor\Flush Beams\B76(i59369)

City, Province, Postal Code: Vaughan, ON

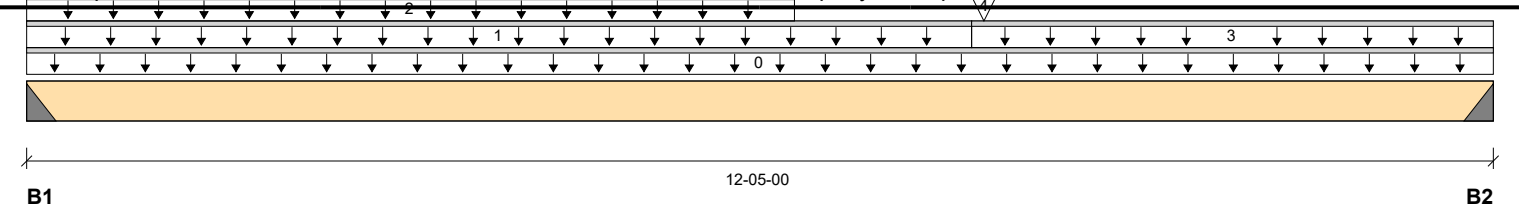
Specifier:

Customer: Gold Park Homes

Designer: TL

Code reports: CCMC 124723R

Company: Alpa Roof Trusses Inc.



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	641 / 0	578 / 0		
B2, 2"	853 / 0	472 / 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	12-05-00	Top		6			00-00-00
1	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	08-00-00	Top	18	7			n/a
2	WALL	Unf. Lin. (lb/ft)	L	00-00-00	06-06-00	Top		60			n/a
3	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	08-00-00	12-05-00	Top	40	15			n/a
4	B78(i59362)	Conc. Pt. (lbs)	L	08-01-04	08-01-04	Front	868	345			n/a
5	LANDING	Conc. Pt. (lbs)	L	03-10-00	03-10-00	Top	308	116			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	7077 ft-lbs	17696 ft-lbs	40.0%	1	08-01-04
End Shear	1771 lbs	7232 lbs	24.5%	1	11-03-02
Total Load Deflection	L/562 (0.261")	n/a	42.7%	4	06-04-08
Live Load Deflection	L/920 (0.159")	n/a	39.1%	5	06-06-00
Max Defl.	0.261"	n/a	n/a	4	06-04-08
Span / Depth	12.3				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	1684 lbs	n/a	39.4%	HUS1.81/10
B2	Hanger 2" x 1-3/4"	1870 lbs	n/a	43.8%	HUS1.81/10

Cautions

Hanger model HUS1.81/10 and seat length were input by the user.

Header for the hanger HUS1.81/10 is a Double 1-3/4" x 11-7/8" LVL beam.

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.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Calculations assume unbraced length of Top: 00-00-00, Bottom: 08-00-00.



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®,

SE059858

Ground Floor\Flush Beams\B77(i58927) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

November 18, 2022 14:00:20

Build 8183

Job name: 5011 MOD Lot 30

File name: 350620 Ground A + Second A (1,3).mmdl

Address: Pine Valley Ph2

Description: Ground Floor\Flush Beams\B77(i58927)

City, Province, Postal Code: Vaughan, ON

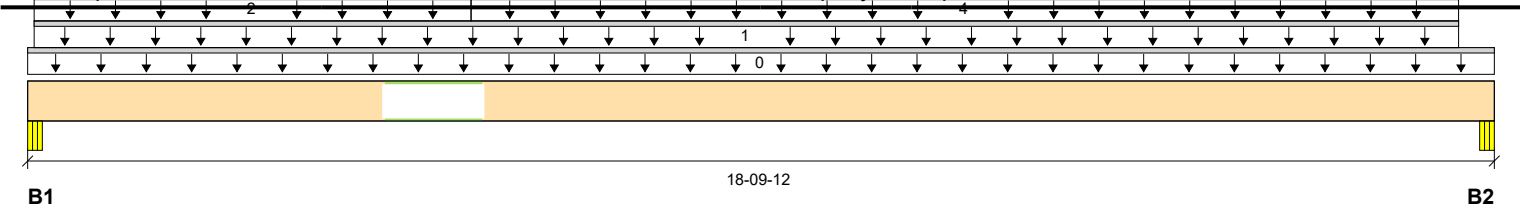
Specifier:

Customer: Gold Park Homes

Designer: TL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses Inc.



Total Horizontal Product Length = 18-09-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-3/4"	4118 / 0	2948 / 0		
B2, 5-1/2"	1253 / 0	1254 / 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	18-09-12	Top		12			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-01-00	18-04-04	Top		60			n/a
2	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-01-00	05-08-04	Top	26	10			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	01-03-08	04-03-08	Back	254	118			n/a
4	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	05-08-04	18-04-04	Top	29	11			n/a
5	J1(i59729)	Conc. Pt. (lbs)	L	00-09-08	00-09-08	Back	217	101			n/a
6	J1(i59435)	Conc. Pt. (lbs)	L	04-09-08	04-09-08	Back	237	109			n/a
7	B76(i59369)	Conc. Pt. (lbs)	L	05-07-06	05-07-06	Back	650	580			n/a
8	Pt1(i58956)	Conc. Pt. (lbs)	L	00-01-14	00-01-14	Top	2019	1149			n/a
9	LANDING	Conc. Pt. (lbs)	L	05-07-06	05-07-06	Top	148	56			n/a
10	LANDING	Conc. Pt. (lbs)	L	09-06-04	09-06-04	Top	339	127			n/a
11	LANDING	Conc. Pt. (lbs)	L	14-06-04	14-06-04	Top	339	127			n/a
12	LANDING	Conc. Pt. (lbs)	L	18-05-02	18-05-02	Top	148	56			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	19721 ft-lbs	35392 ft-lbs	55.7%	1	06-02-00
End Shear	4989 lbs	14464 lbs	34.5%	1	01-03-10
Total Load Deflection	L/255 (0.856")	n/a	94.2%	4	09-00-08
Live Load Deflection	L/497 (0.439")	n/a	72.5%	5	08-09-10
Max Defl.	0.856"	n/a	n/a	4	09-00-08
Span / Depth	18.4				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Beam 3-3/4" x 3-1/2"	9861 lbs	97.7%	61.6%	Unspecified
B2	Beam 5-1/2" x 3-1/2"	3447 lbs	23.3%	14.7%	Unspecified

 NAIL ONE PLY TO ANOTHER WITH 3-1/2" SPIRAL NAILS @ 10" O/C,
 STAGGERED IN 2 ROWS




Customer: **Gold Park Homes**
Job Address: **Pine Valley Ph2**
City: **Vaughan**
Job Track: **45147**

Job Name: **350620 Ground A + Second A (1,**
Level: **Ground Floor**
Label: **B78 - i59362**
Type: **Beam**

1 Ply Member
11 7/8" NI-20

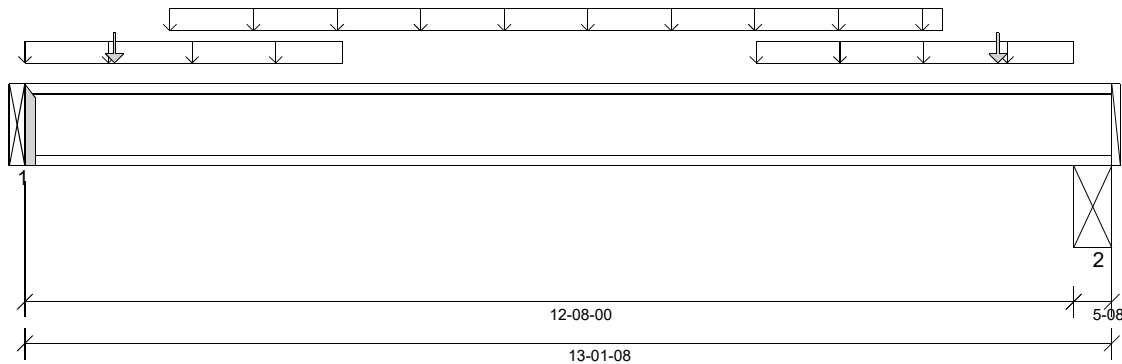
Status:
Design Passed

Illustration Not to Scale. Pitch: 0/12

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

Report Version: 2021.03.26

11/18/2022 14:00



DESIGN INFORMATION

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

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360,

TL Deflection Limit: L/240,

Lateral Restraint Requirements:

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

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

Factored Resistance of Support Material:

- 769 psi Beam @ 0'
- 769 psi Beam @ 12'- 9"

Reinforcement Accessories Required

- Critical Reaction Web Stiffener @ 0'



ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	6'- 5"	1.25D + 1.5L	1.00	5016 lb ft	5580 lb ft	Passed - 90%
Factored Shear:	12'- 7 15/16"	1.25D + 1.5L	1.00	1734 lb	2240 lb	Passed - 77%
Live Load (LL) Pos. Defl.:	6'- 4 9/16"	L		0.337"	L/360	Passed - L/451
Total Load (TL) Pos. Defl.:	6'- 4 9/16"	D + L		0.471"	L/240	Passed - L/322

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	1729 lb		1970 lb	-	Passed - 88%
2	5-08	1.25D + 1.5L	1.00	1739 lb		2240 lb	10574 lb	Passed - 78%

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'	13'- 1 1/2"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	-0'	3'- 10"	User Load	Top	32 lb/ft	84 lb/ft	-	-
Uniform	1'- 9"	11'- 1"	Smoothed Load	Back	35 lb/ft	92 lb/ft	-	-
Uniform	8'- 10"	12'- 8"	User Load	Top	32 lb/ft	84 lb/ft	-	-
Point	1'- 1"	1'- 1"	J4(i59758)	Back	43 lb	115 lb	-	-
Point	11'- 9"	11'- 9"	J4(i59194)	Back	42 lb	111 lb	-	-

UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B76(i59369)	345 lb	868 lb	-	-
2	12'- 8"	13'- 1 1/2"	ST. BEAM (DR.)()	346 lb	867 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.

SE059860

Ground Floor\Flush Beams\B79(i58942) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

November 18, 2022 14:00:56

Build 8183

Job name: 5011 MOD Lot 30

File name: 350620 Ground A + Second A (1,3).mmdl

Address: Pine Valley Ph2

Description: Ground Floor\Flush Beams\B79(i58942)

City, Province, Postal Code: Vaughan, ON

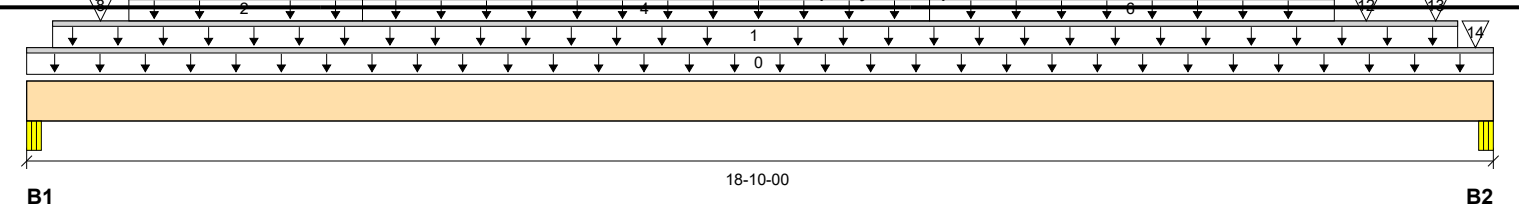
Specifier:

Customer: Gold Park Homes

Designer: TL

Code reports: E2CMC/12472-R

Company: Alpa Roof Trusses Inc


Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	3790 / 0	2505 / 0		
B2, 5-1/2"	5624 / 0	4008 / 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	18-10-00	Top		24			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-04-00	18-04-08	Top		60			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-03-12	04-03-12	Front	260	105			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	01-03-12	04-03-12	Back	197	97			n/a
4	-	Unf. Lin. (lb/ft)	L	04-03-12	11-07-02	Back	189	93			n/a
5	Smoothed Load	Unf. Lin. (lb/ft)	L	07-05-08	11-07-02	Front	93	35			n/a
6	Smoothed Load	Unf. Lin. (lb/ft)	L	11-07-02	16-09-08	Back	190	78			n/a
7	Smoothed Load	Unf. Lin. (lb/ft)	L	11-07-02	16-09-08	Front	99	37			n/a
8	-	Conc. Pt. (lbs)	L	00-11-06	00-11-06	Front	418	185			n/a
9	J1(i59435)	Conc. Pt. (lbs)	L	04-09-12	04-09-12	Front	241	97			n/a
10	B76(i59369)	Conc. Pt. (lbs)	L	05-07-10	05-07-10	Front	856	474			n/a
11	J4(i59758)	Conc. Pt. (lbs)	L	06-09-08	06-09-08	Front	119				n/a
12	-	Conc. Pt. (lbs)	L	17-02-07	17-02-07	Front	315	81			n/a
13	J2(i59215)	Conc. Pt. (lbs)	L	18-01-02	18-01-02	Back	221	90			n/a
14	12(i41685)	Conc. Pt. (lbs)	L	18-07-04	18-07-04	Top	2613	1940			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	36082 ft-lbs	73615 ft-lbs	49.0%	1	08-01-08
End Shear	8377 lbs	28927 lbs	29.0%	1	01-03-14
Total Load Deflection	L/277 (0.787")	n/a	86.6%	4	09-01-02
Live Load Deflection	L/465 (0.469")	n/a	77.4%	5	09-01-02
Max Defl.	0.787"	n/a	n/a	4	09-01-02
Span / Depth	18.4				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam 4" x 7"	8816 lbs	40.9%	25.8%	Unspecified
B2	Beam 5-1/2" x 7"	13446 lbs	45.4%	28.6%	Unspecified



SDW22634 SIMPSON WOOD SCREW @ 20" O/C, STAGGERED IN 2 ROWS.

Ground Floor\Flush Beams\B80(i59411) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

November 18, 2022 14:01:15

Build 8183

Job name: 5011 MOD Lot 30

File name: 350620 Ground A + Second A (1,3).mmdl

Address: Pine Valley Ph2

Description: Ground Floor\Flush Beams\B80(i59411)

City, Province, Postal Code: Vaughan, ON

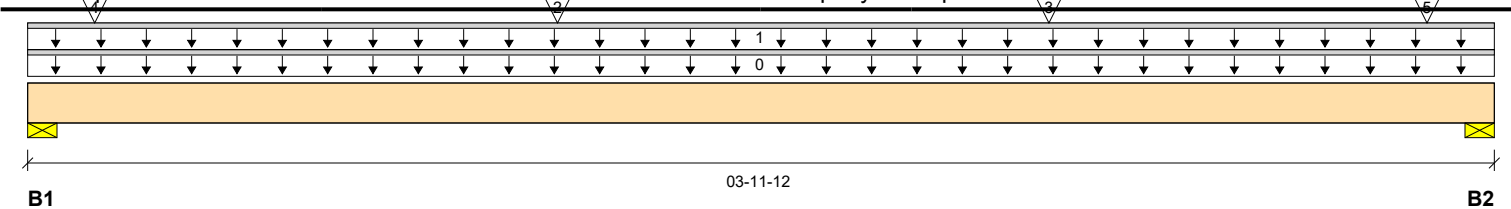
Specifier:

Customer: Gold Park Homes

Designer: TL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses Inc.


Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-3/8"	92 / 0	240 / 0		
B2, 2-3/8"	96 / 0	329 / 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	03-11-12	Top		12			00-00-00
1	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	03-11-12	Top	28	10			n/a
2	Bk1(i59347)	Conc. Pt. (lbs)	L	01-05-04	01-05-04	Back	41	15			n/a
3	Bk1(i59414)	Conc. Pt. (lbs)	L	02-09-04	02-09-04	Back	37	14			n/a
4	E4(i41612)	Conc. Pt. (lbs)	L	00-02-03	00-02-03	Top		182			n/a
5	E8(i41611)	Conc. Pt. (lbs)	L	03-09-09	03-09-09	Top		269			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	211 ft-lbs	35392 ft-lbs	0.6%	1	01-10-12
End Shear	136 lbs	14464 lbs	0.9%	1	02-09-08
Total Load Deflection	L/999 (0")	n/a	n/a	4	01-11-12
Live Load Deflection	L/999 (0")	n/a	n/a	5	01-11-12
Max Defl.	0"	n/a	n/a	4	01-11-12
Span / Depth	3.7				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 2-3/8" x 3-1/2"	337 lbs	10.1%	5.1%	Spruce-Pine-Fir
B2	Wall/Plate 2-3/8" x 3-1/2"	460 lbs	13.8%	7.0%	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 @ 4" O/C,
 STAGGERED IN 2 ROWS



Ground Floor\Flush Beams\B81(i58308) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

November 18, 2022 14:01:35

Build 8183

Job name: 5011 MOD Lot 30

File name: 350620 Ground A W Sunken Mudroom (2).mmdl

Address: Pine Valley Ph2

Description: Ground Floor\Flush Beams\B81(i58308)

City, Province, Postal Code: Vaughan, ON

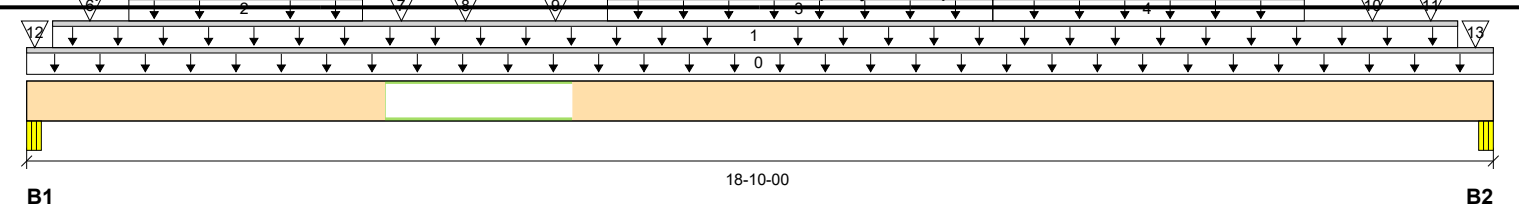
Specifier:

Customer: Gold Park Homes

Designer: TL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses Inc.


Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	5009 / 0	3053 / 0		
B2, 5-1/2"	4323 / 0	3338 / 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	18-10-00	Top		18			00-00-00
1	WALL	Unf. Lin. (lb/ft)	L	00-04-00	18-04-08	Top		60			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-03-12	04-03-12	Front	269	108			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	07-05-08	12-04-14	Front	109	41			n/a
4	Smoothed Load	Unf. Lin. (lb/ft)	L	12-04-14	16-04-14	Front	96	36			n/a
5	Smoothed Load	Unf. Lin. (lb/ft)	L	12-04-14	16-04-14	Back	88	33			n/a
6	J1(i58365)	Conc. Pt. (lbs)	L	00-09-12	00-09-12	Front	226	91			n/a
7	J1(i58030)	Conc. Pt. (lbs)	L	04-09-12	04-09-12	Front	249	100			n/a
8	B76(i57947)	Conc. Pt. (lbs)	L	05-07-10	05-07-10	Front	869	480			n/a
9	J3(i58400)	Conc. Pt. (lbs)	L	06-09-08	06-09-08	Front	130				n/a
10	-	Conc. Pt. (lbs)	L	17-03-06	17-03-06	Front	217				n/a
11	J4(i58043)	Conc. Pt. (lbs)	L	18-00-06	18-00-06	Back	96				n/a
12	8(i41678)	Conc. Pt. (lbs)	L	00-01-04	00-01-04	Top	2760	1361			n/a
13	12(i41685)	Conc. Pt. (lbs)	L	18-07-04	18-07-04	Top	2619	1936			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	21400 ft-lbs	55211 ft-lbs	38.8%	1	08-01-08
End Shear	5151 lbs	21696 lbs	23.7%	1	01-03-14
Total Load Deflection	L/344 (0.633")	n/a	69.7%	4	09-01-08
Live Load Deflection	L/621 (0.351")	n/a	58.0%	5	09-01-08
Max Defl.	0.633"	n/a	n/a	4	09-01-08
Span / Depth	18.4				


Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Beam 4" x 5-1/4"	11330 lbs	87.7%	44.2%	Unspecified
B2	Beam 5-1/2" x 5-1/4"	10657 lbs	60.0%	30.3%	Unspecified

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 @ 9" O/C,
 STAGGERED IN 2 ROWS

SE059863

Maximum Floor Spans – M3.1, 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:	23/32 in. nailed-glued oriented strand board (OSB) sheathing



Maximum Floor Spans

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

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'-6"	17'-5"	16'-7"	14'-11"	19'-0"	17'-8"	16'-7"	14'-11"
	NI-60	18'-9"	17'-7"	16'-10"	15'-7"	19'-2"	17'-11"	16'-10"	15'-7"
	NI-80	20'-0"	18'-7"	17'-10"	17'-1"	20'-6"	19'-1"	18'-2"	17'-5"
11-7/8"	NI-20	20'-1"	18'-8"	17'-6"	16'-1"	20'-7"	18'-8"	17'-6"	16'-1"
	NI-40x	21'-8"	20'-2"	19'-0"	17'-0"	22'-3"	20'-9"	19'-0"	17'-0"
	NI-60	21'-11"	20'-5"	19'-6"	18'-6"	22'-6"	21'-0"	20'-1"	18'-8"
	NI-80	23'-5"	21'-9"	20'-9"	19'-8"	23'-11"	22'-3"	21'-3"	20'-2"
	NI-90	23'-11"	22'-2"	21'-1"	20'-0"	24'-4"	22'-8"	21'-8"	20'-6"
14"	NI-40x	24'-3"	22'-7"	20'-11"	18'-8"	24'-11"	22'-11"	20'-11"	18'-8"
	NI-60	24'-8"	22'-11"	21'-10"	20'-8"	25'-3"	23'-7"	22'-7"	21'-4"
	NI-80	26'-3"	24'-5"	23'-3"	22'-0"	26'-10"	25'-0"	23'-10"	22'-7"
	NI-90	26'-9"	24'-10"	23'-8"	22'-5"	27'-4"	25'-5"	24'-3"	22'-11"
16"	NI-60	27'-1"	25'-2"	24'-0"	22'-9"	27'-9"	26'-0"	24'-10"	23'-1"
	NI-80	28'-10"	26'-10"	25'-6"	24'-2"	29'-6"	27'-6"	26'-3"	24'-10"
	NI-90	29'-5"	27'-3"	26'-0"	24'-6"	30'-0"	27'-11"	26'-8"	25'-2"

Notes:

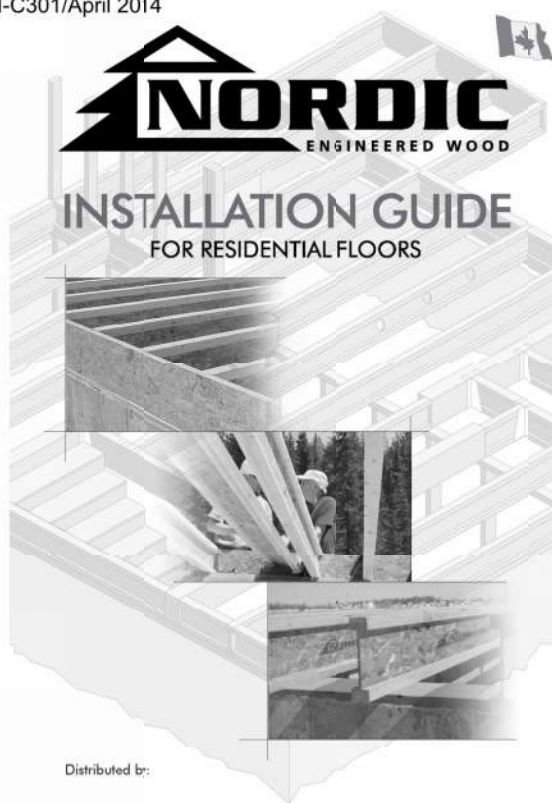
- The tabulated clear spans are based on CSA O86-14 and NBC 2015, and are applicable to residential floor construction meeting the above design criteria.
- For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
- Minimum bearing length shall be 1-3/4 inch for end bearings, 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.



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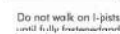


SAFETY AND CONSTRUCTION PRECAUTIONS

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:



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



Never stack building materials over unbraced I-joists. Once sheathed, do not move across I-joists with concentrated loads from building materials.

2. When the building is completed, the floor sheathing will provide lateral support for the top flange 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 1 foot 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 joist. Nail the bracing to a lateral restraint at the end of each bay. Lap ends of adjoining bracing over at least two I-joists.

■ Or, sheathing (temporary or permanent) can be nailed to the top flange of the first 4 feet of I-joists at the end of the bay.

3. For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-briding.

4. Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only.

5. Never install a damaged I-joist.

Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable hole sizes and locations, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines carefully.

STORAGE AND HANDLING GUIDELINES

1. Bundle wrap on the shipping end. Avoid cutting unbraced 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 flatwise.

5. Protect I-joists from weather, and use spacers to separate bundles.

6. Bundled units should be kept intact until time of installation.

7. When handling I-joists with a crane on the job site, take a few simple precautions to prevent damage to the I-joists and injury to your work crew.

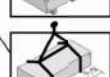
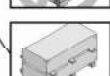
■ Pick I-joists in bundles as shipped by the supplier.

■ 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 CRUTY TO REPAIR A DAMAGED I-JOIST.

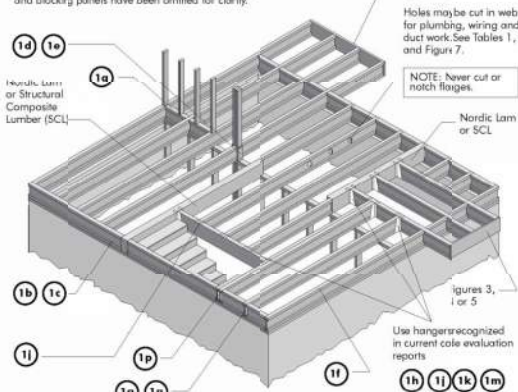


INSTALLING NORDIC I-JOISTS

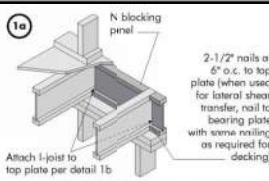
- Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not contact your supplier.
- Except for cutting to length, I-joist flanges should **never** be cut, drilled, or notched.
- Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical alignment.
- I-joists must be anchored securely to supports before floor sheathing is attached, and supports for multiple-span joists must be level.
- Minimum bearing lengths: 1-3/4 inches for end bearings and 3-1/2 inches for intermediate bearings.
- When using hangers, seat I-joists firmly in hanger bottoms to minimize settlement.
- Leave a 1/16-inch gap between the I-joist end and a header.
- Concentrated load 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 unusual 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.
- Never install I-joists where they will be permanently exposed to weather, or where they will remain in direct contact with concrete or masonry.
- Restrain ends of floor joists to prevent rollover. Use rim board, rim joists or I-joist blocking panels.
- 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.
- Due to shrinkage, common framing lumber set on edge **must 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.
- 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.
- 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.
- Nail spacing: Spacing 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.

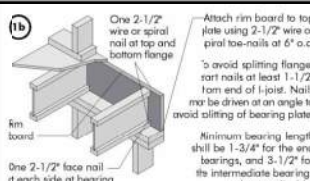


All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122" dia.) common spiral nails may be substituted or 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for clarity.



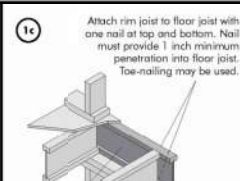
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
Ni Joists	3,300

*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.



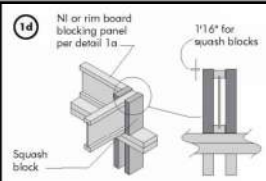
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

*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.



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.



Pair of Squash Blocks	Maximum Factored Uniform Vertical Load* (plf)
2x Lumber	5,500
1-1/8" Rim Board Plus	4,300

*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 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/>

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MAXIMUM FLOOR SPANS

- Maximum **clear** spans applicable to simple 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 1.50L + 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 CGS-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 Limit States Design per CAN/CSA C86-09 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"	13-5"	13-5"	16-3"	15-4"	14-10"	14-7"
	Ni-40	14-1"	13-2"	12-5"	12-5"	15-6"	14-6"	13-10"	13-5"
	Ni-60	16-3"	15-4"	14-10"	14-11"	17-7"	16-7"	16-0"	16-6"
	Ni-70	17-1"	16-1"	15-6"	15-7"	18-7"	17-4"	16-9"	17-2"
11-7/8"	Ni-20	17-3"	16-3"	15-8"	15-9"	18-10"	17-6"	16-11"	17-5"
	Ni-40x	16-11"	15-0"	13-5"	13-6"	18-4"	17-3"	16-8"	16-7"
	Ni-60	18-11"	17-0"	16-5"	16-6"	20-0"	18-6"	17-9"	17-7"
	Ni-70	19-4"	18-0"	17-4"	17-5"	21-6"	19-11"	19-0"	19-8"
14"	Ni-20	19-9"	18-3"	17-6"	17-7"	21-9"	20-2"	19-3"	19-11"
	Ni-40	20-2"	18-7"	17-10"	17-11"	22-3"	20-7"	19-8"	19-9"
	Ni-60x	20-4"	18-9"	17-11"	17-12"	22-5"	20-8"	19-10"	20-4"
	Ni-70	20-5"	19-11"	18-1"	18-2"	22-7"	20-11"	20-0"	20-10"
16"	Ni-20	21-7"	20-0"	19-1"	19-2"	23-10"	22-1"	21-1"	21-10"
	Ni-40	21-11"	20-3"	19-4"	19-5"	24-3"	22-5"	21-5"	22-2"
	Ni-60	22-5"	20-8"	19-9"	19-9"	24-9"	22-10"	21-10"	21-10"
	Ni-70x	22-7"	21-11"	19-11"	20-0"	25-0"	23-1"	22-0"	22-9"
18"	Ni-20	22-9"	21-2"	20-2"	20-3"	25-2"	23-2"	22-2"	22-9"
	Ni-40	23-6"	21-9"	20-9"	20-10"	26-0"	24-0"	22-11"	23-9"
	Ni-60	23-11"	22-1"	21-1"	21-2"	26-5"	24-5"	23-3"	24-1"
	Ni-70	24-5"	22-6"	21-5"	21-6"	26-11"	24-10"	23-9"	23-9"
20"	Ni-20x	24-8"	22-9"	21-9"	21-10"	27-3"	25-2"	24-0"	24-10"
	Ni-40x								

CCAC 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 STIFFENER

RECOMMENDATIONS:

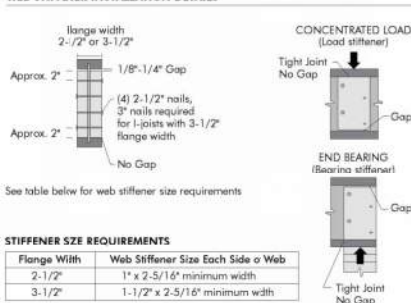
■ A **bearing stiffener** is required in all engineered applications with factored reactions greater than those in the I-joist properties table found in the I-joist Construction Guide (C101). The gap between the stiffener and the flange is at the top.

■ A **bearing stiffener** is required when the I-joist is supported in hanger and the sides of the hanger do not extend up to, and support, the top flange. The gap between the stiffener and the 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 4 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

Ni-20	Ni-40x	Ni-60	Ni-70	Ni-80	Ni-90	Ni-90x
3-5/8" No. 2	1950F MSR	2100F MSR	1950F MSR	2100F MSR	2400F MSR	NFC Lumber
33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit	23 pieces per unit	23 pieces per unit	2 pieces per unit

Chantiers Chibougamau 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.

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

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

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

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

14 Backer block (use if hanger load exceeds 360 lbs). Before installing backer block to a double I-joist, drive three additional 3" nails through the webs and filler block when 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.

15 Double I-joist header. Top- or face-mount hanger installed per manufacturer's recommendations. Note: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

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

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-PF No. 2 or better for solid saw lumber and wood structural panels conforming to CAN/CSA-O337 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".

17 Top- or face-mount hanger installed per manufacturer's recommendations. For nailing schedules for multiple beams, see the manufacturer's recommendations.

18 Top-mount hanger installed per manufacturer's recommendations. Note: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

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

20 Do not level-cut joist beyond inside face of wall.

21 Attach I-joist per detail 1b.

22 Backer block attached per detail 1h. Nail with twelve 3" nails, clinched when possible. Maximum support capacity = 1,620 lbs.

23 Filler block per detail 1p.

24 Install hanger per manufacturer's recommendations.

25 Backer block attached per detail 1h. Nail with twelve 3" nails, clinched when possible. Maximum support capacity = 1,620 lbs.

26 Attach I-joist per detail 1b.

27 Note: Blocking required at bearing for lateral resistance to wall frame for clarity.

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

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

30 One 2-1/2" nails at top and bottom flange. Two 2-1/2" nails from each web to lumber piece. 2x4 min. (1/8" gap minimum). Two 2-1/2" nails from each web to lumber piece. I-joist blocking panel. One 2-1/2" nails one side only. 2-1/2" nails at 6" o.c.

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

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.



CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

3a I-JOIST CANTILEVER DETAIL FOR BALCONIES (No Wall Load)

Cantilever extension supporting uniform floor loads only

Attach I-joists to plate at all supports per detail 1b

3-1/2" min. bearing required

CAUTION: Cantilevers formed this way must be carefully detailed to prevent moisture intrusion into the structure and potential decay of untreated I-joist extensions.

Note: This detail is applicable to cantilevers supporting a maximum specified uniform live load of 60 psf.

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

Full depth backer block with 1/8" gap between block and top flange of I-joist. See detail 1b. Nail with 2 rows of 3" nails at 6" o.c. and clinch.

2x6 min. Nail to backer block and joist with 2 rows of 3" nails at 6" o.c. and clinch. (Cantilever nails may be used to attach backer block if length of nail is sufficient to allow clinching.)

Cantilever extension supporting uniform floor loads only

Lumber or wood structural panel closure

3-1/2" min. bearing required

Attach I-joists to plate at all supports per detail 1b

Note: This detail is applicable to cantilevers supporting a maximum specified uniform live load of 60 psf.

CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

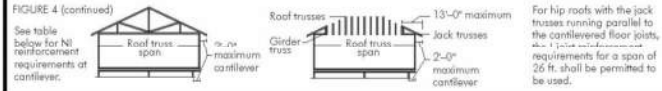
4a Method 1 — SHEATHING REINFORCEMENT ONE SIDE

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

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.

4b Alternate Method 2 — DOUBLE I-JOIST

Block I-joists together with filler blocks for the full length of the reinforcement. For I-joist flange widths greater than 3 inches place an additional row of 3" nails along the centreline of the reinforcing panel from each side. Clinch when possible.



CANTILEVER REINFORCEMENT METHODS ALLOWED

Joist Depth (in.)	Roof Truss Span (ft)	ROOF LOADING (UNFACTORED)																							
		LL = 30 psf, DL = 15 psf								LL = 40 psf, DL = 15 psf								LL = 50 psf, DL = 15 psf							
		Joist Spacing (in.)								Joist Spacing (in.)								Joist Spacing (in.)							
		12	16	19.2	24			12	16	19.2	24			12	16	19.2	24			12	16	19.2	24		
9-1/2	26	N	N	N	1	2	N	1	2	X	N	2	X	N	2	X	X								
	28	N	N	N	1	X	N	1	2	X	N	2	X	N	2	X	X								
	30	N	1	1	2	X	N	1	2	X	N	1	2	X	1	2	X	X							
	32	N	1	1	2	X	N	2	X	N	2	X	N	1	X	X	X								
	34	N	1	2	X	N	2	X	N	2	X	N	1	X	1	X	X	X							
	36	N	1	2	X	X	1	2	X	X	1	2	X	X	1	X	X	X							
11-7/8	26	1	N	N	N	1	2	1	N	1	2	2	N	1	2	N	1	2	N	1	2	N	1	2	
	28	1	N	N	N	1	2	N	1	2	X	1	2	X	1	2	X	1	2	X	1	2	X		
	30	1	N	N	1	1	2	N	1	2	X	1	2	X	1	2	X	1	2	X	1	2	X		
	32	1	N	1	2	1	2	N	1	2	X	1	2	X	1	2	X	1	2	X	1	2	X		
	34	1	N	1	2	2	2	1	1	2	X	1	2	X	1	2	X	1	2	X	1	2	X		
	36	2	N	1	2	X	1	2	X	1	2	X	X	1	2	X	1	2	X	1	2	X	1		
14	26	2	N	N	1	2	X	1	2	X	1	2	X	X	2	X	X	2	X	X	2	X	X		
	28	N	N	N	N	N	N	N	N	N	1	N	N	N	N	N	N	N	N	N	N	N	1		
	30	N	N	N	N	N	N	N	N	N	1	N	N	1	N	N	1	N	N	1	N	N	2		
	32	N	N	N	N	1	N	N	N	1	N	N	1	N	N	1	N	N	1	N	N	1	2		
	34	N	N	N	N	1	N	N	N	1	N	N	1	N	N	1	N	N	1	N	N	1	2		
16	26	N	N	N	N	1	N	N	1	N	N	1	N	N	1	N	N	1	N	N	1	N	N	2	
	28	N	N	N	N	1	N	N	1	N	N	1	N	N	1	N	N	1	N	N	1	N	N	2	
	30	N	N	N	N	N	N	N	N	N	1	N	N	1	N	N	1	N	N	1	N	N	2		
	32	N	N	N	N	N	N	N	N	N	1	N	N	1	N	N	1	N	N	1	N	N	2		
	34	N	N	N	N	N	N	N	N	N	1	N	N	1	N	N	1	N	N	1	N	N	2		
	36	N	N	N	N	1	N	N	1	N	N	1	N	N	1	N	N	1	N	N	1	N	2		
	38	N	N	N	N	1	N	N	1	N	N	1	N	N	1	N	N	1	N	N	1	N	2		
	40	N	N	N	N	1	N	N	1	N	N	1	N	N	1	N	N	1	N	N	1	N	2		

1. N = No reinforcement required.
2. NI reinforced with 3/4" wood structural panel on one side only.
3. NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
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 or if a truss is used.
5. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

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

5a SHEATHING REINFORCEMENT

Provide full depth blocking between joists over support (not shown)

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.

5b SET-BACK DETAIL

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

Notes:

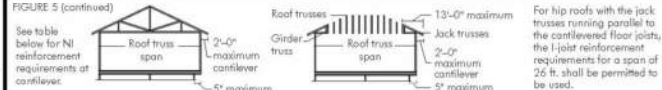
- Provide full depth blocking between joists over support (not shown for clarity).
- Attach I-joist to plate at all supports per detail 1b.
- 3-1/2" minimum I-joist bearing required.

5c SET-BACK CONNECTION

Vertical solid sawn blocks (2x6 S-P-F No. 2 or better) nailed through joist web and web of girder using 2-1/2" nails.

Notes:

- Verify girder joist capacity if the back span exceeds the joist spacing.
- Attach double I-joist per detail 1p, if required.



BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

Joist Depth (in.)	Roof Truss Span (ft)	LL = 30 psf, DL = 15 psf								LL = 40 psf, DL = 15 psf								LL = 50 psf, DL = 15 psf							
		Joist Spacing (in.)								Joist Spacing (in.)								Joist Spacing (in.)							
		12	16	19.2	24	24	24	24	24	12	16	19.2	24	24	24	24	24	12	16	19.2	24	24	24	24	24
9-1/2	26	1	X	X	X	X	2	X	X	2	X	X	X	X	X	X	X	2	X	X	X	X	X	X	X
	28	1	X	X	X	X	2	X	X	2	X	X	X	X	X	X	X	2	X	X	X	X	X	X	X
	30	1	X	X	X	X	2	X	X	2	X	X	X	X	X	X	X	2	X	X	X	X	X	X	X
	32	2	X	X	X	X	2	X	X	2	X	X	X	X	X	X	X	2	X	X	X	X	X	X	X
	34	2	X	X	X	X	2	X	X	2	X	X	X	X	X	X	X	2	X	X	X	X	X	X	X
11-7/8	26	X	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	28	X	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	30	X	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	32	X	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	34	X	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14	26	N	2	X	X	X	1	X	X	1	X	X	X	1	X	X	1	N	2	X	X	2	X	X	X
	28	N	2	X	X	X	1	X	X	1	X	X	X	1	X	X	2	X	2	X	X	2	X	X	X
	30	1	X	X	X	X	1	X	X	1	X	X	X	1	X	X	2	X	2	X	X	2	X	X	X
	32	1	X	X	X	X	2	X	X	2	X	X	X	2	X	X	2	X	2	X	X	2	X	X	X
	34	1	X	X	X	X	2	X	X	2	X	X	X	2	X	X	2	X	2	X	X	2	X	X	X
16	26	1	2	X	X	X	2	X	X	2	X	X	X	2	X	X	2	X	2	X	X	2	X	X	X
	28	1	2	X	X	X	2	X	X	2	X	X	X	2	X	X	2	X	2	X	X	2	X	X	X
	30	1	2	X	X	X	2	X	X	2	X	X	X	2	X	X	2	X	2	X	X	2	X	X	X
	32	1	X	X	X	X	2	X	X	2	X	X	X	2	X	X	2	X	2	X	X	2	X	X	X
	34	1	X	X	X	X	2	X	X	2	X	X	X	2	X	X	2	X	2	X	X	2	X	X	X

1. N = No reinforcement required.
2. NI reinforced with 3/4" wood structural panel on one side only.
3. NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
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 or if a truss is used.
5. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

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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 should always be maintained between the edges of the hole or duct chase 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 longest side of the longest 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 continuous 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 (ft.-in.)														Span adjustment Factor
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	11	12	
9-1/2"	N120	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N140	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N160	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N180	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
11-7/8"	N120	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N140	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N160	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N180	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
14"	N120	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N140	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N160	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N180	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
16"	N120	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N140	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N160	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"
	N180	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"	1-16"

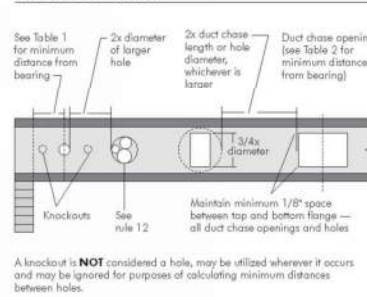
- Above table may be used for I-joist spacing of 24 inches on centre or less.
- Hole location distance is measured from inside face of supports to centre of hole.
- Distances in this chart are based on uniformly loaded joists.

OPTIONAL:

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

- Where:
- $D_{reduced} = D \times \frac{S_{actual}}{S_{max}}$ = Distance from the inside face of any support to centre of hole, reduced for less than maximum span applications [8]. The reduced distance shall not be less than 6 inches from the face of the support to edge of the hole.
 - S_{actual} = The actual measured span distance between the inside faces of supports [8].
 - S_{max} = Span Adjustment Factor given in this table.
 - D = The minimum distance from the inside face of any support to centre of hole from this table.
- If $\frac{S_{actual}}{S_{max}}$ is greater than 1, use 1 in the above calculation for $\frac{S_{actual}}{S_{max}}$.

FIGURE 7
FIELD-CUT HOLE LOCATOR



Knockouts are pre-cored 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 (ft.-in.)													
		8	10	12	14	16	18	20	22	24	26	28	30	32	34
9-1/2"	N120	4-1"	4-5"	4-10"	4-5"	5-0"	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"
	N140	5-0"	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"
	N160	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"	12-0"
	N180	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"	12-0"	12-5"
11-7/8"	N120	4-1"	4-5"	4-10"	4-5"	5-0"	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"
	N140	5-0"	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"
	N160	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"	12-0"
	N180	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"	12-0"	12-5"
14"	N120	4-1"	4-5"	4-10"	4-5"	5-0"	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"
	N140	5-0"	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"
	N160	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"	12-0"
	N180	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"	12-0"	12-5"
16"	N120	4-1"	4-5"	4-10"	4-5"	5-0"	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"
	N140	5-0"	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"
	N160	5-5"	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"	12-0"
	N180	6-0"	6-5"	7-0"	7-5"	8-0"	8-5"	9-0"	9-5"	10-0"	10-5"	11-0"	11-5"	12-0"	12-5"

- Above table may be used for I-joist spacing of 24 inches on centre or less.
- Duct chase opening location distance is measured from inside face of supports to centre of opening.
- The above table is based on simple-span joist only. For other applications, contact your local distributor.
- Distances are based on uniformly 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/480. 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 in 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 winding 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 on 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.
- Top 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 tool or an 2-1/2" 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 Thread Nails or Screws	Staples	Edges	Interiors
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 above minimums.
- 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.

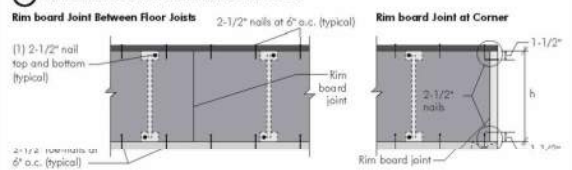
Ref.: NRC-CNRC, National Building Code of Canada 2010, Table 9.23.3.5.

IMPORTANT NOTE:

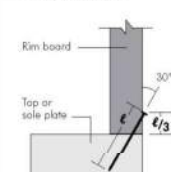
Floor sheathing must be field glued to the I-joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-joist spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

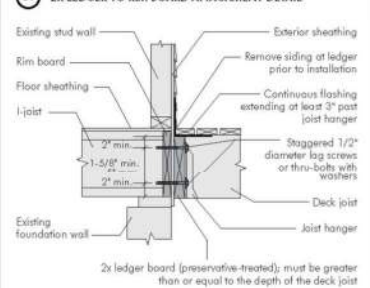
80 ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



80 TOE-NAIL CONNECTION AT RIM BOARD



80 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL



PRODUCT WARRANTY

Chertex Chivignoux guarantees that, in accordance with our specifications, Nordic products are free from manufacturing defects in material and workmanship.

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



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 should always be maintained between the top/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 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.
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 canilevered 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 at approximately the same location shall be permitted if they meet the requirements for 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'-3"	5'-3"	6'-0"	---	---	---	---	---	---	---	---	---
	NI-40	0-7"	1'-6"	3'-0"	4'-4"	6'-3"	6'-4"	---	---	---	---	---	---	---	---	---
	NI-60	1-3"	2'-6"	4'-0"	5'-4"	7'-3"	7'-5"	---	---	---	---	---	---	---	---	---
	NI-70	2'-0"	2'-6"	4'-0"	4'-2"	6'-3"	---	---	---	---	---	---	---	---	---	---
	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"	3-3"	4-0"	5-0"	6'-6"	7'-9"	---	---	---	---	---	---
	NI-40	0-7"	0-8"	1-3"	2-8"	4-3"	4-4"	5-5"	7-0"	8'-4"	---	---	---	---	---	---
	NI-60	0-7"	1-8"	3-0"	4-3"	5-2"	6-0"	7-3"	8-10"	10-0"	---	---	---	---	---	---
	NI-70	1-3"	2'-6"	4-0"	5'-4"	6'-2"	7-2"	8-4"	10-0"	11-2"	---	---	---	---	---	---
	NI-80	1-6"	2'-10"	4-2"	5'-6"	7-3"	7-5"	8'-6"	10-3"	11-4"	---	---	---	---	---	---
14"	NI-90	0-7"	0-8"	0-9"	2-5"	4-4"	4-9"	6-3"	---	---	---	---	---	---	---	---
	NI-40	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"	---	---	---
16"	NI-90	0-7"	0-8"	0-8"	2-0"	3-2"	4-2"	5-5"	7-3"	8-5"	9-2"	---	---	---	---	---
	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"	7-6"	8-6"	9-2"	10-8"	12-0"	12-4"	14-0"	15-6"
	NI-80	0-7"	1-3"	2-6"	3-10"	5-3"	5-6"	6-6"	8-0"	9-0"	9-5"	11-0"	12-3"	12-9"	14-5"	16-0"
	NI-90	0-7"	0-8"	0-9"	2-0"	3-5"	4-0"	5-0"	6-9"	7-9"	8-4"	10-2"	11-6"	12-0"	---	---

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 supports to centre of hole.
3. Distances in this chart are based on uniformly loaded joists.
4. The above table is based on the I-joists being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans; contact your local distributor.

TABLE 2

DUCT CHASE OPENING SIZES AND LOCATIONS

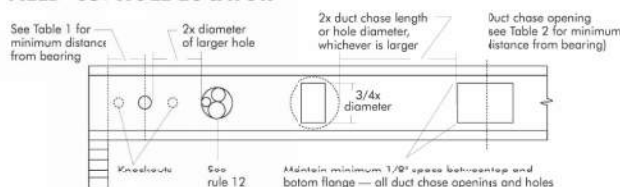
Simple Span Only

Joist Depth	Joist Series	Minimum Distance from Inside Face of Supports to Centre of Opening (ft - in.)												
		Duct Chase Length (in.)												
		8	10	12	14	16	18	20	22	24	26	28	30	32
9-1/2"	NI-20	4-1"	4-5"	4-10"	5-4"	5-8"	6-1"	6-6"	7-1"	7-5"	---	---	---	---
	NI-40x	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	---	---	---	---
	NI-60	5-4"	5-9"	6-2"	6-7"	7-1"	7-5"	8-0"	8-3"	8-9"	---	---	---	---
	NI-80	6-1"	6-6"	6-10"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	---	---	---	---
11-7/8"	NI-20	5-9"	6-2"	6-6"	7-1"	7-5"	7-9"	8-3"	8-9"	9-4"	---	---	---	---
	NI-40x	6-8"	7-2"	7-6"	8-1"	8-6"	9-1"	9-6"	10-1"	10-9"	---	---	---	---
	NI-60	7-3"	7-8"	8-0"	8-6"	9-0"	9-3"	9-9"	10-3"	11-0"	---	---	---	---
	NI-70	7-1"	7-4"	7-9"	8-3"	8-7"	9-1"	9-6"	10-1"	10-4"	---	---	---	---
14"	NI-80	7-2"	7-7"	8-0"	8-5"	8-10"	9-4"	9-8"	10-2"	10-8"	---	---	---	---
	NI-90	7-7"	8-1"	8-5"	8-10"	9-4"	9-8"	10-2"	10-8"	11-2"	---	---	---	---
	NI-40x	8-1"	8-7"	9-0"	9-6"	10-1"	10-7"	11-2"	12-0"	12-8"	---	---	---	---
	NI-60	8-9"	9-3"	9-8"	10-1"	10-6"	11-1"	11-6"	12-3"	13-0"	---	---	---	---
16"	NI-70	8-7"	9-1"	9-5"	9-10"	10-4"	10-8"	11-2"	11-7"	12-3"	---	---	---	---
	NI-80	9-0"	9-3"	9-9"	10-1"	10-7"	11-1"	11-6"	12-1"	12-6"	---	---	---	---
	NI-90	9-4"	9-9"	10-3"	10-7"	11-1"	11-7"	12-1"	12-7"	13-2"	---	---	---	---
	NI-60	10-3"	10-8"	11-2"	11-6"	12-1"	12-6"	13-2"	14-1"	14-10"	---	---	---	---
16"	NI-70	10-1"	10-5"	11-0"	11-4"	11-10"	12-3"	12-8"	13-2"	14-0"	---	---	---	---
	NI-80	10-4"	10-9"	11-3"	11-9"	12-1"	12-7"	13-1"	13-6"	14-4"	---	---	---	---
	NI-90	11-1"	11-5"	11-10"	12-4"	12-10"	13-2"	13-9"	14-4"	15-2"	---	---	---	---
	NI-60	11-1"	11-5"	11-10"	12-4"	12-10"	13-2"	13-9"	14-4"	15-2"	---	---	---	---

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 supports 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 uniformly 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/480.
5. The above table is based on the I-joists being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans; contact your local distributor.

FIGURE 7

FIELD-CUT HOLE LOCATOR



Knockouts are prescored 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.

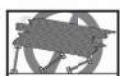
Holes in webs should be cut with a sharp saw.

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.

SAFETY AND CONSTRUCTION PRECAUTIONS



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



Never stack building materials over unbraced joists. Once sheathed, do not over-stress I-joists 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-briding at joist ends. When I-joists are installed continuous over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
2. When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, when called out, 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 flange of the first 4 feet of I-joists at the end of the bay.
3. For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-briding.
4. Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only.
5. Never install a damaged I-joist.

Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable hole sizes and locations, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines carefully.

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.



1a NI blocking panel

Attach I-joint to top plate per detail 1b

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

Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
N 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.

1b Rim board

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

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-joint. 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

Squash block

Pair of Squash Blocks

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

3-1/2" wide
5-1/2" wide

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

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

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

1h Backer block (use if hanger load exceeds 360 lbs). Before installing a backer block to a double I-joint, drive three additional 3" nails through the webs 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 wood 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".

Top- or face-mount hanger

Double I-joint header

Filler block - per detail 1p

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

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

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

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

1m Multiple I-joint header with full depth filler block shown. Nordic Lam or SCL headers may also be used. Verify double I-joint 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.

1n Do not bevel-cut joist beyond inside face of wall

Attach I-joint per detail 1b

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

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

NI blocking panel

OPTIONAL: Minimum 1x4 incl 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-joint web during nailing to prevent damage to web/flange connection
- Leave a 1/8 to 1/4-inch gap between top and bottom of top I-joint flange.
- Filler block is required between 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-joint. 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-joint capacity.

Flange Size	Net Depth	Filler Block Size
2-1/2" x 1-1/2"	1-1/8" x 1-7/8"	2-1/8" x 8"
	4"	2-1/8" x 10"
	6"	2-1/8" x 12"
3-1/2" x 1-1/2"	1-1/2" x 1-7/8"	3" x 6"
	4"	3" x 8"
	6"	3" x 10"
3-1/2" x 2"	1-7/8" x 1-7/8"	3" x 7"
	4"	3" x 9"
	6"	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

I-joint blocking panel

One 2-1/2" nail one side only

NOTE:

- 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-joint properties table found in the I-Joint Construction Guide (C101). The gap between the stiffener and the flange is at the top.
- A **bearing stiffener** is required when the I-joint 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 area of a stiffener, anywhere between the stiffener top 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-joints with 3-1/2" flange width

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

Flange Width	Web Stiffener Size Each Side of Web
2-1/2"	1" x 2-5/8" 6" minimum width
3-1/2"	1-1/2" x 2-1/8" 6" 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)

6"

2-1/2" nails

3-1/2" min. bearing required

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

Attach I-joint to plate per detail 1b

Strength axis

2-0" minimum

2-0" minimum

Method 2 — SHEATHING REINFORCEMENT TWO SIDES

Use same installation as Method 1 but reinforce both sides of I-joint 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-joint to plate at all supports per detail 1b. Verify reinforced I-joint capacity.

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)

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

Rim board joint

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

Rim Board Joint at Corner

2-1/2" nails

h

1-1/2"

1-1/2"

8b TOE-NAIL CONNECTION AT RIMBOARD

Rim board

Top or sole plate

30°

1/3

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.

