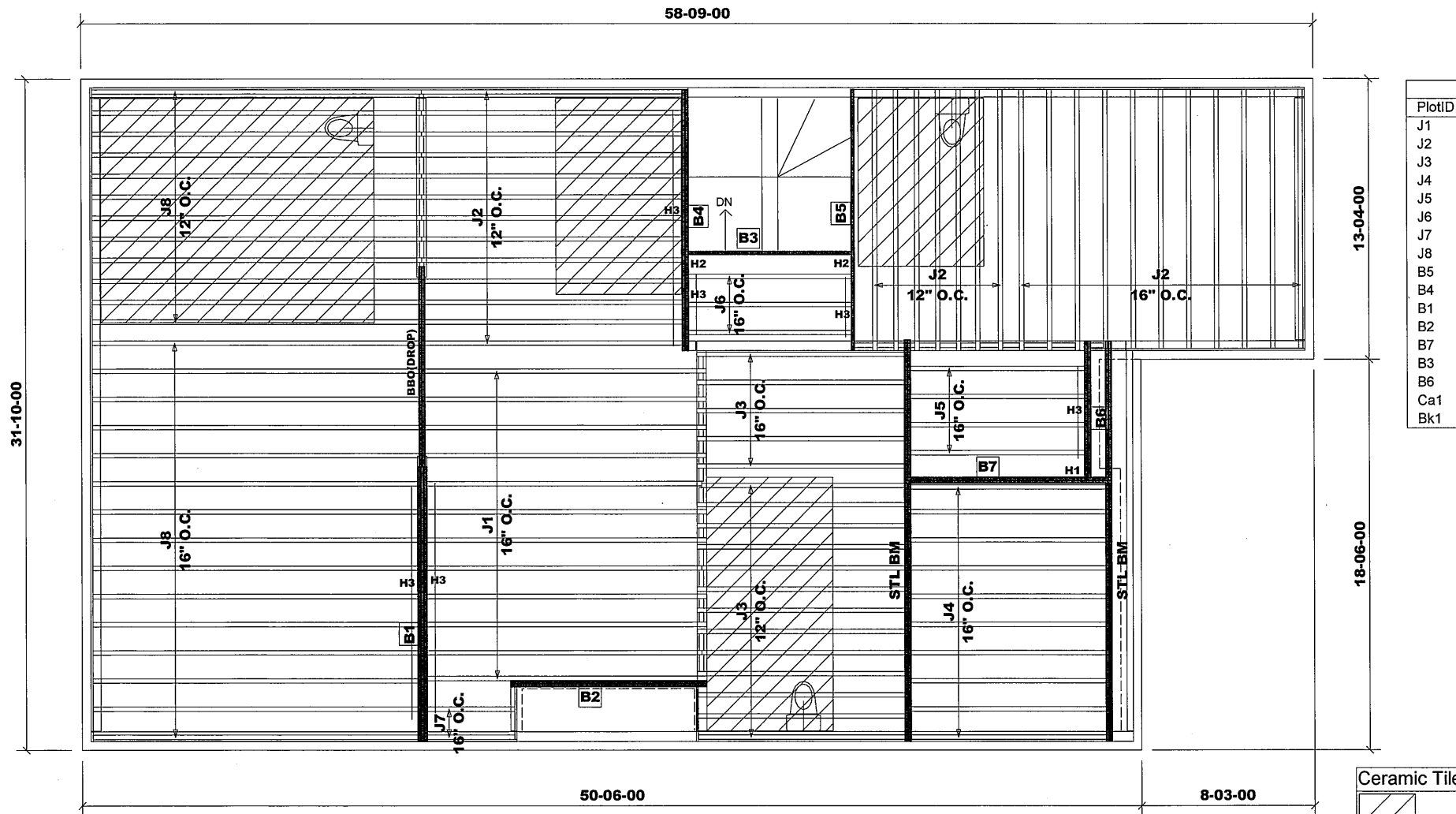
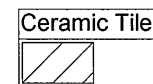




Products				
PlotID	Length	Product	Plies	Net Qty
J1	14'-00"-00	9 1/2" NI-20	1	12
J2	13'-00"-00	9 1/2" NI-20	1	31
J3	11'-00"-00	9 1/2" NI-20	1	18
J4	10'-00"-00	9 1/2" NI-20	1	10
J5	9'-00"-00	9 1/2" NI-20	1	4
J6	8'-00"-00	9 1/2" NI-20	1	3
J7	5'-00"-00	9 1/2" NI-20	1	2
J8	16'-00"-00	9 1/2" NI-40x	1	27
B5	13'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B4	13'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B1	13'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3
B2	10'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B7	10'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B3	8'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B6	7'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
Ca1	162'-00"-00	1 1/8" x 9 1/2" Rim Board	1	1
Bk1	46'-00"-00	9 1/2" NI-20	1	1

Connector Summary			
PlotID	Qty	Manuf	Product
H1	1		HGUS410
H2	2		HUS1.81/10
H3	40		LT259

RIMBOARD
1- 1/8" X 9 1/2" O.S.B.
SUBFLOOR - 5/8" GLUE & NAILED
APP - AS PER PLAN
BBO - BEAM BY OTHERS



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

Second Floor Framing

Do not scale - refer to architectural plans for dimensions

FIRM BCIN 113884
DESIGNER BCIN 25593

SE004713- BE004727

JT/PL: 39002/104573

Builder: Gold Park

Location: Brampton

Designer: NL

Alpa Roof Trusses Inc.

Salesperson: Derek

LI: 314130

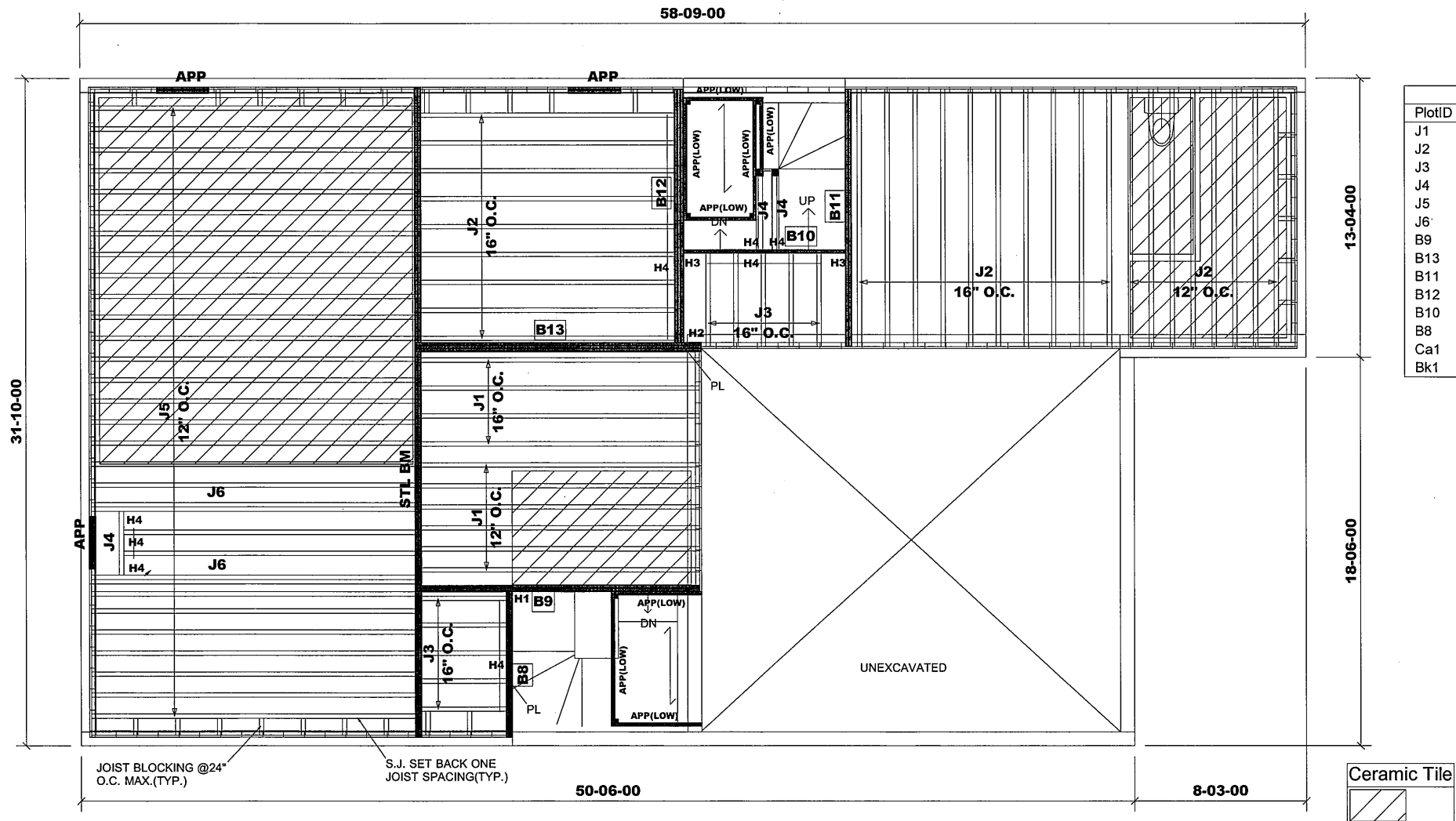
Project: Encore 2

Date: October 29, 2019

Sheet: 1 of 5

Maple, Ontario

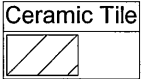
Home Lumber



Products				
PlotID	Length	Product	Plies	Net Qty
J1	14-00-00	9 1/2" NI-20	1	10
J2	13-00-00	9 1/2" NI-20	1	27
J3	5-00-00	9 1/2" NI-20	1	10
J4	4-00-00	9 1/2" NI-20	1	3
J5	16-00-00	9 1/2" NI-40x	1	28
J6	16-00-00	9 1/2" NI-40x	2	4
B9	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B13	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3
B11	13-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B12	13-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3
B10	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B8	7-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
Ca1	162-00-00	1 1/8" x 9 1/2" Rim Board	1	1
Bk1	44-00-00	9 1/2" NI-20	1	1

Connector Summary			
PlotID	Qty	Manuf	Product
H1	1		HGUS410
H2	1		HGUS5.5/10
H3	2		HUS1.81/10
H4	26		LT259

RIMBOARD
 1- 1/8" X 9 1/2" O.S.B.
 SUBFLOOR - 5/8" GLUE & NAILED
 APP - AS PER PLAN
 BBO - BEAM BY OTHERS



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

First Floor Framing

MODEL: 38-11 - ELEV.A+B

Do not scale - refer to architectural plans for dimensions

FIRM BCIN 113884
 DESIGNER BCIN 25593

JT/PL: 39002/104573

Builder: Gold Park

Location: Brampton

Designer: NL

Alpa Roof Trusses Inc.

Salesperson: Derek

LI: 314130

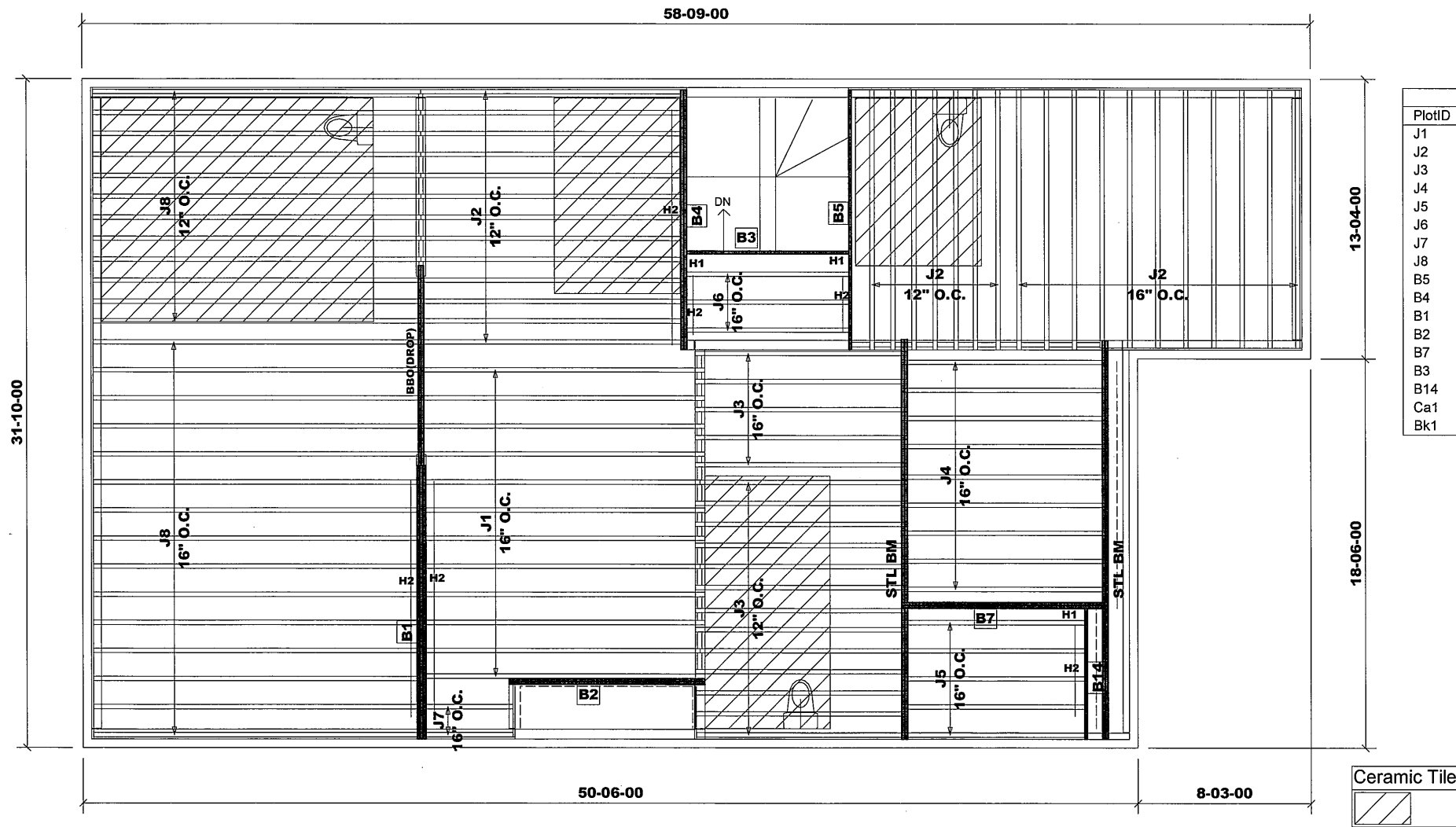
Project: Encore 2

Date: October 29, 2019

Sheet: 2 of 5

Maple, Ontario

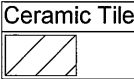
Home Lumber



Products				
PlotID	Length	Product	Plies	Net Qty
J1	14'-00"-00	9 1/2" NI-20	1	12
J2	13'-00"-00	9 1/2" NI-20	1	31
J3	11'-00"-00	9 1/2" NI-20	1	18
J4	10'-00"-00	9 1/2" NI-20	1	9
J5	9'-00"-00	9 1/2" NI-20	1	5
J6	8'-00"-00	9 1/2" NI-20	1	3
J7	5'-00"-00	9 1/2" NI-20	1	2
J8	16'-00"-00	9 1/2" NI-40x	1	27
B5	13'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B4	13'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B1	13'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3
B2	10'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B7	10'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B3	8'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B14	7'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
Ca1	160'-00"-00	1 1/8" x 9 1/2" Rim Board	1	1
Bk1	46'-00"-00	9 1/2" NI-20	1	1

Connector Summary			
PlotID	Qty	Manuf	Product
H1	3		HUS1.81/10
H2	40		LT259

RIMBOARD
1- 1/8" X 9 1/2" O.S.B.
SUBFLOOR - 5/8" GLUE & NAILED
APP - AS PER PLAN
BBO - BEAM BY OTHERS



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

Second Floor Framing

MODEL: 38-11 - ELEV.B

Do not scale - refer to architectural plans for dimensions

FIRM BCIN 113884
DESIGNER BCIN 25593

JT/PL: 39002/104573

LI: 314130

Builder: Gold Park

Project: Encore 2

Location: Brampton

Date: October 30, 2019

Designer: NL

Sheet: 3 of 5

Alpa Roof Trusses Inc.

Maple, Ontario

Salesperson: Derek

Home Lumber

BC CALC® Member Report

Build 7118

Job name: 39002(38-11)

File name: 314130-A.mmdl

Address: Encore 2

Description: 2nd Floor - Supply/BOM\Flush Beams\B1(i34847)

City, Province, Postal Code: Brampton, ON

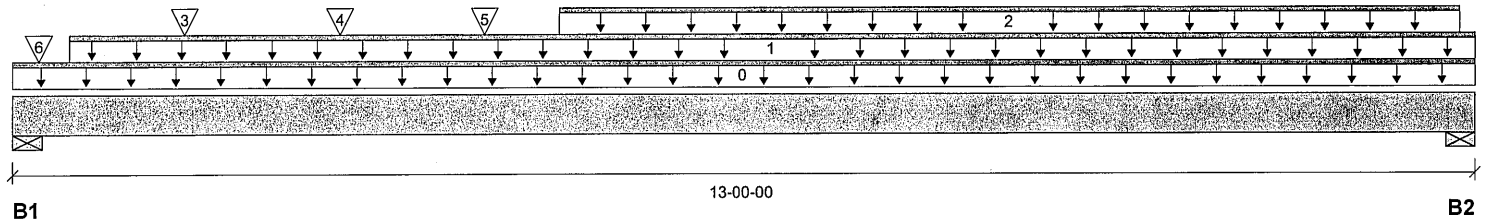
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 13-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	2,987 / 0	1,989 / 0		
B2, 6"	3,672 / 0	2,321 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	13-00-00	Top		14			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-06-00	13-00-00	Top		60			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	04-10-06	12-10-06	Top	582	290			n/a
3	-	Conc. Pt. (lbs)	L	01-06-06	01-06-06	Top	540	270			n/a
4	-	Conc. Pt. (lbs)	L	02-10-15	02-10-15	Top	707	353			n/a
5	-	Conc. Pt. (lbs)	L	04-02-06	04-02-06	Top	758	379			n/a
6	E12(i34136)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top		44			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	24,214 ft-lbs	36,222 ft-lbs	66.8 %	1	06-10-06
End Shear	7,272 lbs	17,356 lbs	41.9 %	1	11-08-08
Total Load Deflection	L/240 (0.608")	n/a	99.9 %	4	06-06-06
Live Load Deflection	L/392 (0.373")	n/a	91.9 %	5	06-06-06
Max Defl.	0.608"	n/a	n/a	4	06-06-06
Span / Depth	15.4				


Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 5-1/4"	6,967 lbs	39.2 %	19.8 %	Spruce-Pine-Fir
B2	Wall/Plate 6" x 5-1/4"	8,409 lbs	43.4 %	21.9 %	Spruce-Pine-Fir

Notes

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

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

Calculations assume member is fully braced.

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

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Nailing schedule applies to both sides of the member.

Nail one ply to another with

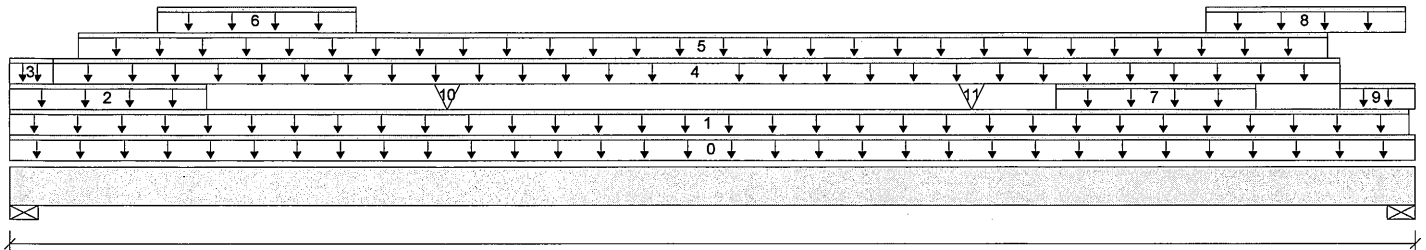
3 1/2" spiral nails @ 6"

o.c, staggered in 2 rows

SE004713

BC CALC® Member Report
 Build 7118

 Job name: 39002(38-11)
 Address: Encore 2
 City, Province, Postal Code: Brampton, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

 File name: 314130-A-REV.mmdl
 Description: 2nd Floor - Supply/BOM\Flush Beams\B2(i35883)
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses


B1

09-04-08

B2

Total Horizontal Product Length = 09-04-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	36 / 0	1,694 / 0	1,941 / 0	
B2, 5-1/2"	36 / 0	1,723 / 0	1,965 / 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	09-04-08	Top		10			00-00-00
1	-	Unf. Lin. (lb/ft)	L	00-00-00	09-04-00	Top		100			n/a
2	E27(i35059)	Unf. Lin. (lb/ft)	L	00-00-00	01-03-12	Top		136	226		n/a
3	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	00-03-08	Top	5				n/a
4	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-03-08	08-10-08	Top	8	4			n/a
5	User Load	Unf. Lin. (lb/ft)	L	00-05-08	08-09-08	Top		21	35		n/a
6	E27(i35059)	Unf. Lin. (lb/ft)	L	00-11-12	02-03-12	Top		194	322		n/a
7	E18(i34146)	Unf. Lin. (lb/ft)	L	06-11-12	08-03-12	Top		194	322		n/a
8	E18(i34146)	Unf. Lin. (lb/ft)	L	07-11-12	09-03-12	Top		142	236		n/a
9	FC1 Floor Material	Unf. Lin. (lb/ft)	L	08-10-08	09-04-08	Top	5				n/a
10	E27(i35059)	Conc. Pt. (lbs)	L	02-11-00	02-11-00	Top		674	1,121		n/a
11	E18(i34146)	Conc. Pt. (lbs)	L	06-05-00	06-05-00	Top		616	1,024		n/a

Controls Summary

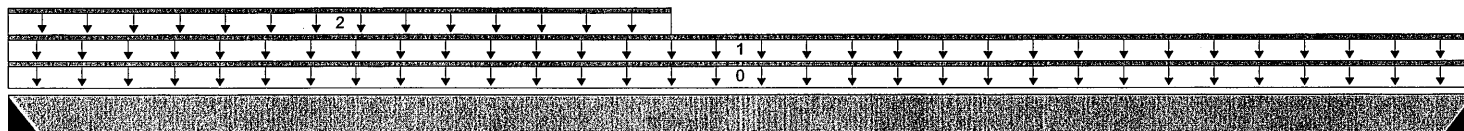
	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	10,177 ft-lbs	23,220 ft-lbs	43.8%	17	04-00-08
End Shear	4,351 lbs	11,571 lbs	37.6%	17	01-01-00
Total Load Deflection	L/489 (0.215")	n/a	49.1%	39	04-08-00
Live Load Deflection	L/999 (0.116")	n/a	n/a	55	04-08-00
Max Defl.	0.215"	n/a	n/a	39	04-08-00
Span / Depth	11.1				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 3-1/2"	5,065 lbs	67.2%	33.9%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 3-1/2"	5,136 lbs	43.4%	21.9%	Spruce-Pine-Fir

 Nail one ply to another with
 3 1/2" spiral nails @ 12"
 o.c, staggered in 2 rows


Build 7118		
Job name:	39002(38-11)	File name: 314130-A.mmdl
Address:	Encore 2	Description: 2nd Floor - Supply/BOM/Flush Beams\B3(i34922)
City, Province, Postal Code:	Brampton, ON	Specifier:
Customer:	Gold Park	Designer: NL
Code reports:	CCMC 12472-R	Company: Alpa Roof Trusses


B1

07-09-00

B2
Total Horizontal Product Length = 07-09-00
Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	420 / 0	188 / 0		
B2, 2"	184 / 0	99 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-09-00	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	07-09-00	Top	24	12			n/a
2	User Load	Unf. Lin. (lb/ft)	L	00-00-00	03-06-00	Top	120	45			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1,190 ft-lbs	11,610 ft-lbs	10.2 %	1	02-11-05
End Shear	585 lbs	5,785 lbs	10.1 %	1	00-11-08
Total Load Deflection	L/999 (0.032")	n/a	n/a	4	03-07-14
Live Load Deflection	L/999 (0.022")	n/a	n/a	5	03-07-04
Max Defl.	0.032"	n/a	n/a	4	03-07-14
Span / Depth	9.5				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 1-3/4"	865 lbs	n/a	20.3 %	HUS1.81/10
B2	Hanger 2" x 1-3/4"	399 lbs	n/a	9.4 %	HUS1.81/10

Cautions

Header for the hanger HUS1.81/10 at B1 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.

Header for the hanger HUS1.81/10 at B2 is a Single 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume member is fully braced.
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


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®,

8E004715



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****2nd Floor - Supply/BOM\Flush Beams\B4(i34951)**

Dry | 1 span | No cant.

October 30, 2019 09:00:43

BC CALC® Member Report

Build 7118

Job name: 39002(38-11)

File name: 314130-A.mmdl

Address: Encore 2

Description: 2nd Floor - Supply/BOM\Flush Beams\B4(i34951)

City, Province, Postal Code: Brampton, ON

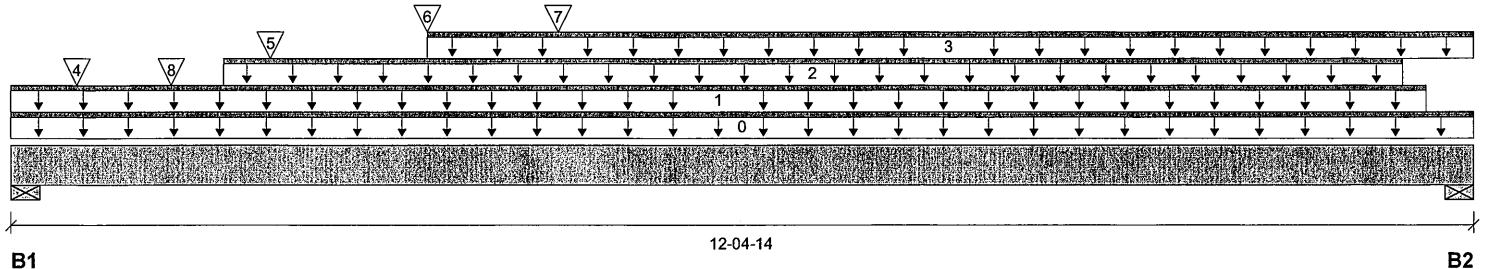
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses

**Reaction Summary (Down / Uplift) (lbs)**

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	2,464 / 0	1,655 / 0		
B2, 4-3/8"	1,676 / 0	1,235 / 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	12-04-14	Top		10			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	12-00-00	Top		60			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-09-10	11-09-10	Top	252	126			n/a
3	FC1 Floor Material	Unf. Lin. (lb/ft)	L	03-06-04	12-04-14	Top	6				n/a
4	-	Conc. Pt. (lbs)	L	00-06-12	00-06-12	Top	500	250			n/a
5	J6(i35007)	Conc. Pt. (lbs)	L	02-02-04	02-02-04	Top	214	107			n/a
6	J6(i35002)	Conc. Pt. (lbs)	L	03-06-04	03-06-04	Top	199	100			n/a
7	B3(i34922)	Conc. Pt. (lbs)	L	04-07-10	04-07-10	Top	417	187			n/a
8	J2(i35010)	Conc. Pt. (lbs)	L	01-04-06	01-04-06	Top	245	123			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	14,064 ft-lbs	23,220 ft-lbs	60.6 %	1	05-03-10
End Shear	4,811 lbs	11,571 lbs	41.6 %	1	01-03-00
Total Load Deflection	L/285 (0.493")	n/a	84.1 %	4	06-00-10
Live Load Deflection	L/484 (0.291")	n/a	74.5 %	5	06-00-10
Max Defl.	0.493"	n/a	n/a	4	06-00-10
Span / Depth	14.8				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 5-1/2" x 3-1/2"	5,766 lbs	48.7 %	24.6 %	Spruce-Pine-Fir
B2	Wall/Plate 4-3/8" x 3-1/2"	4,059 lbs	43.1 %	21.7 %	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume member is fully braced.
 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
 Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.
 Nail one ply to another with
 3 1/2" spiral nails @ 10"
 o.c, staggered in 2 rows

SE004716



Boise Cascade

**Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****2nd Floor - Supply/BOM\Flush Beams\B5(i34886)**

BC CALC® Member Report

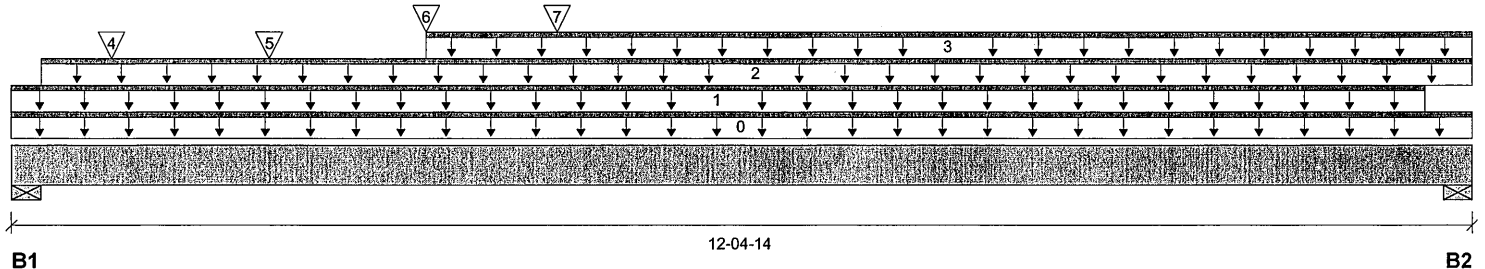
Dry | 1 span | No cant.

October 30, 2019 09:00:43

Build 7118

Job name: 39002(38-11)
 Address: Encore 2
 City, Province, Postal Code: Brampton, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File name: 314130-A.mmdl
 Description: 2nd Floor - Supply/BOM\Flush Beams\B5(i34886)
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses



Total Horizontal Product Length = 12-04-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	896 / 0	857 / 0		
B2, 4-3/8"	422 / 0	588 / 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	12-04-14	Top		5			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	12-00-00	Top	20	70			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-03-00	12-04-14	Top	21	11			n/a
3	FC1 Floor Material	Unf. Lin. (lb/ft)	L	03-06-04	12-04-14	Top	3				n/a
4	J6(i35003)	Conc. Pt. (lbs)	L	00-10-04	00-10-04	Top	201	100			n/a
5	J6(i35007)	Conc. Pt. (lbs)	L	02-02-04	02-02-04	Top	211	105			n/a
6	J6(i35002)	Conc. Pt. (lbs)	L	03-06-04	03-06-04	Top	197	99			n/a
7	B3(i34922)	Conc. Pt. (lbs)	L	04-07-10	04-07-10	Top	187	100			n/a

Controls Summary

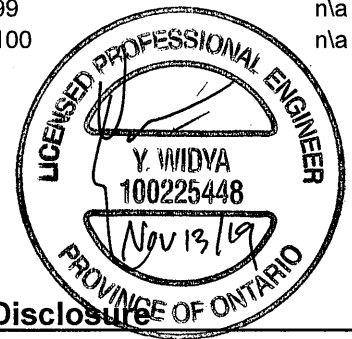
	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	5,311 ft-lbs	11,610 ft-lbs	45.7 %	1	04-07-10
End Shear	2,002 lbs	5,785 lbs	34.6 %	1	01-03-00
Total Load Deflection	L/379 (0.37")	n/a	63.2 %	4	05-11-04
Live Load Deflection	L/812 (0.173")	n/a	44.4 %	5	05-11-04
Max Defl.	0.37"	n/a	n/a	4	05-11-04
Span / Depth	14.8				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 5-1/2" x 1-3/4"	2,415 lbs	40.8 %	20.6 %	Spruce-Pine-Fir
B2	Wall/Plate 4-3/8" x 1-3/4"	1,368 lbs	29.0 %	14.6 %	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume member is fully braced.
 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

**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®,

8004717

2nd Floor - Supply/BOM\Flush Beams\B6(i34167)

Dry | 1 span | No cant.

October 29, 2019 16:09:47

BC CALC® Member Report

Build 7118

Job name: 39002(38-11)

File name: 314130-A.mmdl

Address: Encore 2

Description: 2nd Floor - Supply/BOM\Flush Beams\B6(i34167)

City, Province, Postal Code: Brampton, ON

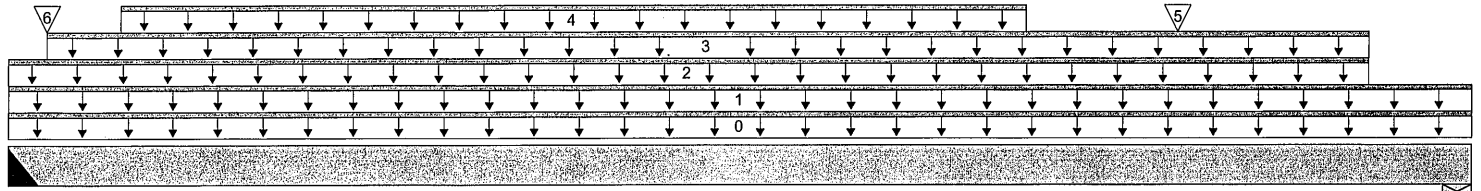
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



B1

06-05-08

B2

Total Horizontal Product Length = 06-05-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	463 / 0	1,116 / 0	906 / 0	
B2, 5-1/2"	468 / 0	813 / 0	342 / 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	06-05-08	Top		10			00-00-00
1	E13(i34144)	Unf. Lin. (lb/ft)	L	00-00-00	06-05-08	Top		101			n/a
2	User Load	Unf. Lin. (lb/ft)	L	00-00-00	06-00-00	Top		14	23		n/a
3	E13(i34144)	Unf. Lin. (lb/ft)	L	00-02-00	06-00-00	Top		56	94		n/a
4	Smoothed Load	Unf. Lin. (lb/ft)	L	00-05-14	04-05-14	Top	180	90			n/a
5	J5(i34209)	Conc. Pt. (lbs)	L	05-01-14	05-01-14	Top	204	102			n/a
6	E13(i34144)	Conc. Pt. (lbs)	L	00-02-00	00-02-00	Top		336	560		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	3,176 ft-lbs	23,220 ft-lbs	13.7 %	1	02-11-14
End Shear	1,713 lbs	11,571 lbs	14.8 %	1	00-11-08
Total Load Deflection	L/999 (0.032")	n/a	n/a	35	03-00-14
Live Load Deflection	L/999 (0.017")	n/a	n/a	51	03-00-14
Max Defl.	0.032"	n/a	n/a	35	03-00-14
Span / Depth	7.5				


Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger 2" x 3-1/2"	3,216 lbs	n/a	37.7 %	HGUS410
B2	Wall/Plate 5-1/2" x 3-1/2"	2,060 lbs	17.4 %	8.8 %	Spruce-Pine-Fir

Cautions

Header for the hanger HGUS410 at B1 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.

Nail one ply to another with
3 1/2" spiral nails @ 12"
o.c. staggered in 2 rows

2nd Floor - Supply/BOM\Flush Beams\B7(i34168)

Dry | 1 span | No cant.

October 29, 2019 16:09:47

BC CALC® Member Report

Build 7118

Job name: 39002(38-11)

File name: 314130-A.mmdl

Address: Encore 2

Description: 2nd Floor - Supply/BOM\Flush Beams\B7(i34168)

City, Province, Postal Code: Brampton, ON

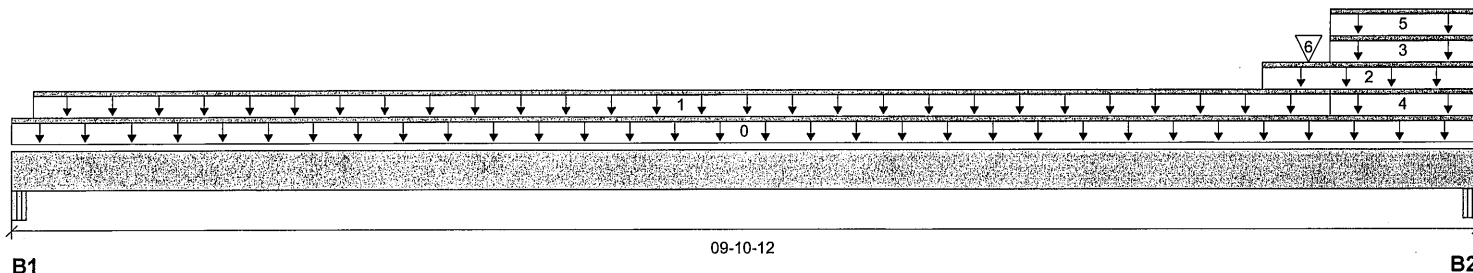
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 09-10-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	200 / 0	245 / 0	94 / 0	
B2, 3-1/2"	550 / 0	1,375 / 0	1,018 / 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	09-10-12	Top		10			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-01-12	08-10-12	Top	32	16			n/a
2	E14(i34147)	Unf. Lin. (lb/ft)	L	08-05-04	09-10-12	Top		101			n/a
3	E14(i34147)	Unf. Lin. (lb/ft)	L	08-10-12	09-10-12	Top		112	187		n/a
4	User Load	Unf. Lin. (lb/ft)	L	08-10-12	09-10-12	Top			23		n/a
5	FC1 Floor Material	Unf. Lin. (lb/ft)	L	08-10-12	09-10-12	Top	9				n/a
6	B6(i34167)	Conc. Pt. (lbs)	L	08-09-00	08-09-00	Top	456	1,104	902		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3,091 ft-lbs	23,220 ft-lbs	13.3 %	13	08-09-00
End Shear	3,504 lbs	11,571 lbs	30.3 %	13	08-09-12
Total Load Deflection	L/999 (0.068")	n/a	n/a	35	05-05-06
Live Load Deflection	L/999 (0.037")	n/a	n/a	51	05-05-06
Max Defl.	0.068"	n/a	n/a	35	05-05-06
Span / Depth	11.9				


Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	3-1/2" x 3-1/2"	700 lbs	9.3 %	4.7 %	Unspecified
B2 Beam	3-1/2" x 3-1/2"	3,796 lbs	50.4 %	25.4 %	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Nail one ply to another with

3 1/2" spiral nails @ 12"

o.c, staggered in 2 rows

SE 009719

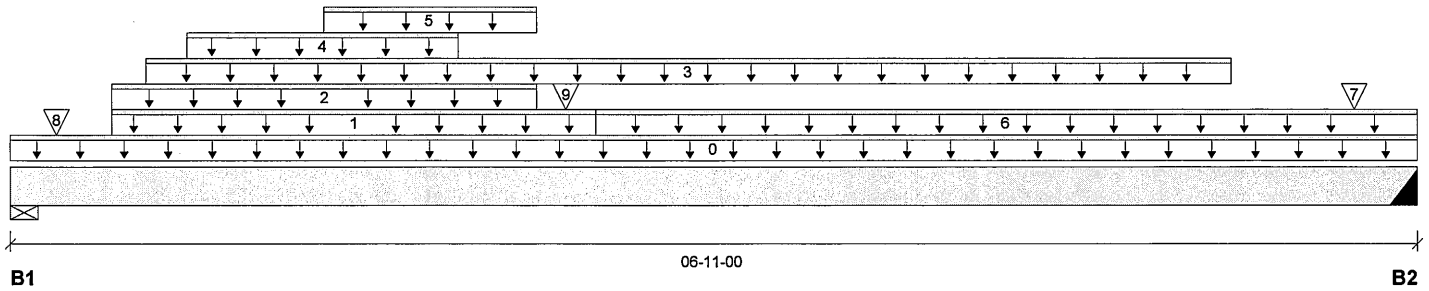
1st Floor - Supply/BOM\Flush Beams\B8(i36010)

Dry | 1 span | No cant.

November 5, 2019 09:50:07

BC CALC® Member Report
 Build 7118

 Job name: 39002(38-11)
 Address: Encore 2
 City, Province, Postal Code: Brampton, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

 File name: 314130-A-REV.mmdl
 Description: 1st Floor - Supply/BOM\Flush Beams\B8(i36010)
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses


Total Horizontal Product Length = 06-11-00

Reaction Summary (Down / Uplift) (lbs)

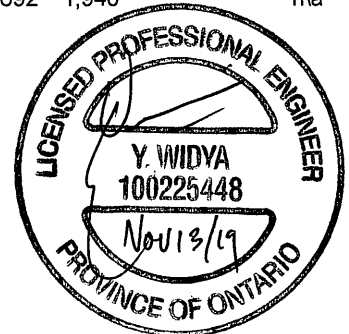
Bearing	Live	Dead	Snow	Wind
B1, 3"	406 / 0	1,757 / 0	1,320 / 0	
B2, 2"	360 / 0	1,126 / 0	775 / 0	

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	06-11-00	Top		10			00-00-00
1	7(i34165)	Unf. Lin. (lb/ft)	L	00-06-00	02-10-08	Top		68			n/a
2	7(i34165)	Unf. Lin. (lb/ft)	L	00-06-00	02-07-00	Top		146	70		n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	00-08-00	06-00-00	Top	95	48			n/a
4	7(i34165)	Unf. Lin. (lb/ft)	L	00-10-06	02-02-06	Top	88	44			n/a
5	7(i34165)	Unf. Lin. (lb/ft)	L	01-06-06	02-07-00	Top	13				n/a
6	User Load	Unf. Lin. (lb/ft)	L	02-10-08	06-11-00	Top		60			n/a
7	J3(i35154)	Conc. Pt. (lbs)	L	06-07-04	06-07-04	Top	82	41			n/a
8	E6(i34119)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	Top	11	55			n/a
9	7(i34165)	Conc. Pt. (lbs)	L	02-08-12	02-08-12	Top	36	1,692	1,940		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	9,896 ft-lbs	23,220 ft-lbs	42.6%	17	02-08-12
End Shear	4,480 lbs	11,571 lbs	38.7%	17	01-00-08
Total Load Deflection	L/999 (0.098")	n/a	n/a	39	03-03-09
Live Load Deflection	L/999 (0.05")	n/a	n/a	55	03-03-09
Max Defl.	0.098"	n/a	n/a	39	03-03-09
Span / Depth	8.4				


Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3" x 3-1/2"	4,582 lbs	70.9%	35.8%	Spruce-Pine-Fir
B2	Hanger 2" x 3-1/2"	2,930 lbs	n/a	34.3%	HGUS410

Cautions

Header for the hanger HGUS410 at B2 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.

 Nail one ply to another with
 3 1/2" spiral nails @ 12"
 o.c, staggered in 2 rows



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****1st Floor - Supply/BOM\Flush Beams\B9(i36019)**

Dry | 1 span | No cant.

November 5, 2019 09:50:07

BC CALC® Member Report

Build 7118

Job name: 39002(38-11)

File name: 314130-A-REV.mmdl

Address: Encore 2

Description: 1st Floor - Supply/BOM\Flush Beams\B9(i36019)

City, Province, Postal Code: Brampton, ON

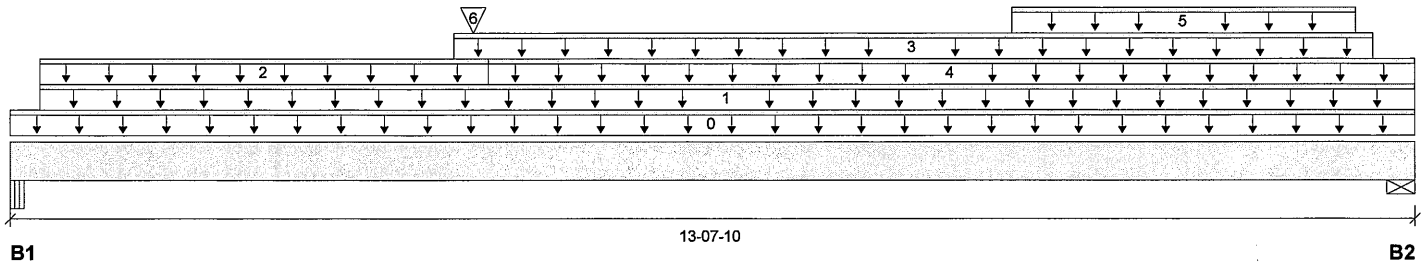
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 13-07-10

Reaction Summary (Down / Uplift) (lbs)

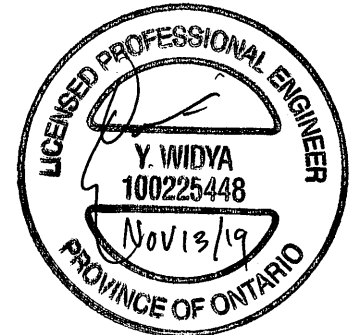
Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	436 / 0	1,131 / 0	549 / 0	
B2, 2-3/8"	391 / 0	904 / 0	260 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	13-07-10	Top		10			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-03-08	13-07-10	Top	18	9			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-03-08	04-07-12	Top	9	5			n/a
3	User Load	Unf. Lin. (lb/ft)	L	04-03-12	13-02-12	Top		60			n/a
4	FC2 Floor Material	Unf. Lin. (lb/ft)	L	04-07-12	13-07-10	Top	6	3			n/a
5	User Load	Unf. Lin. (lb/ft)	L	09-08-12	13-00-12	Top	40	15			n/a
6	B8(i36010)	Conc. Pt. (lbs)	L	04-06-00	04-06-00	Top	358	1,151	809		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	10,879 ft-lbs	23,220 ft-lbs	46.9%	17	04-06-00
End Shear	2,619 lbs	11,571 lbs	22.6%	17	01-01-00
Total Load Deflection	L/338 (0.471")	n/a	71.0%	39	06-06-10
Live Load Deflection	L/762 (0.209")	n/a	47.2%	55	06-04-12
Max Defl.	0.471"	n/a	n/a	39	06-06-10
Span / Depth	16.8				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Beam 3-1/2" x 3-1/2"	2,673 lbs	35.5%	17.9%	Unspecified
B2	Wall/Plate 2-3/8" x 3-1/2"	1,976 lbs	38.6%	19.5%	Spruce-Pine-Fir

Notes

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

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

Calculations assume member is fully braced.

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

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Nail one ply to another with

3 1/2" spiral nails @ 12"

o.c, staggered in 2 rows

SE 004721



Boise Cascade

**Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****1st Floor - Supply/BOM\Flush Beams\B10(i34776)**

Dry | 1 span | No cant.

October 29, 2019 16:13:35

BC CALC® Member Report

Build 7118

Job name: 39002(38-11)

File name: 314130-A.mmdl

Address: Encore 2

Description: 1st Floor - Supply/BOM\Flush Beams\B10(i34776)

City, Province, Postal Code: Brampton, ON

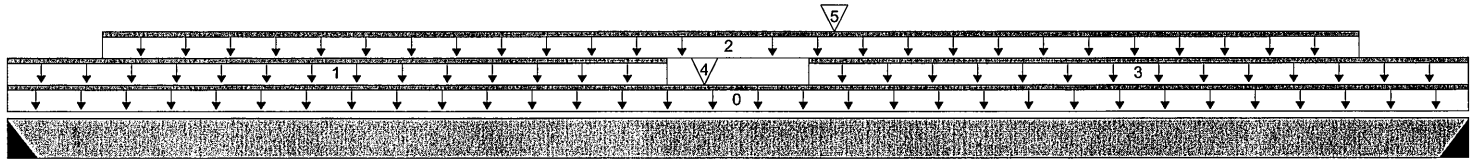
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



B1

07-09-00

B2

Total Horizontal Product Length = 07-09-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2"	865 / 0	387 / 0		
B2, 2"	1,100 / 0	475 / 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	07-09-00	Top		5			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	03-06-00	Top	120	45			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-06-00	07-02-00	Top	92	46			n/a
3	User Load	Unf. Lin. (lb/ft)	L	04-03-00	07-09-00	Top	240	90			n/a
4	J4(i34777)	Conc. Pt. (lbs)	L	03-08-06	03-08-06	Top	33	17			n/a
5	J4(i34779)	Conc. Pt. (lbs)	L	04-04-10	04-04-10	Top	41	20			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	3,824 ft-lbs	11,610 ft-lbs	32.9 %	1	04-04-10
End Shear	1,779 lbs	5,785 lbs	30.7 %	1	06-09-08
Total Load Deflection	L/999 (0.11")	n/a	n/a	4	03-11-04
Live Load Deflection	L/999 (0.076")	n/a	n/a	5	03-11-04
Max Defl.	0.11"	n/a	n/a	4	03-11-04
Span / Depth	9.5				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Hanger 2" x 1-3/4"	1,782 lbs	n/a	41.7 %	HUS1.81/10
B2	Hanger 2" x 1-3/4"	2,243 lbs	n/a	52.5 %	HUS1.81/10

Cautions

Header for the hanger HUS1.81/10 at B1 is a Triple 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.

Header for the hanger HUS1.81/10 at B2 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.

SE004722

1st Floor - Supply/BOM\Flush Beams\B11(i34780)

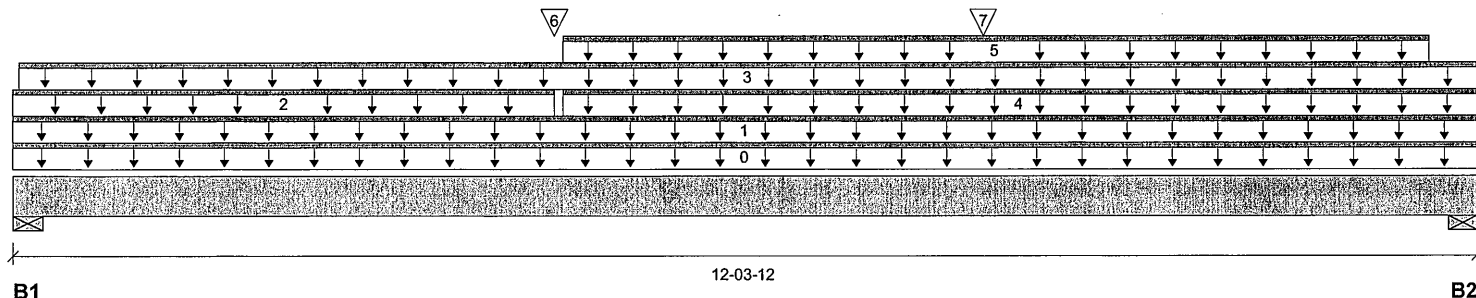
Dry | 1 span | No cant.

October 29, 2019 16:13:35

BC CALC® Member Report

Build 7118

 Job name: 39002(38-11)
 Address: Encore 2
 City, Province, Postal Code: Brampton, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

 File name: 314130-A.mmdl
 Description: 1st Floor - Supply/BOM\Flush Beams\B11(i34780)
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses


Total Horizontal Product Length = 12-03-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-3/8"	1,136 / 0	706 / 0		
B2, 1-7/8"	905 / 0	745 / 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	12-03-12	Top		10			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	12-03-12	Top	10	5			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	04-06-08	Top	28	14			n/a
3	User Load	Unf. Lin. (lb/ft)	L	00-00-10	12-03-12	Top	20	10			n/a
4	FC2 Floor Material	Unf. Lin. (lb/ft)	L	04-07-06	12-03-12	Top	6	3			n/a
5	User Load	Unf. Lin. (lb/ft)	L	04-07-06	11-10-14	Top		60			n/a
6	B10(i34776)	Conc. Pt. (lbs)	L	04-06-08	04-06-08	Top	1,096	473			n/a
7	User Load	Conc. Pt. (lbs)	L	08-01-14	08-01-14	Top	400	150			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	10,009 ft-lbs	23,220 ft-lbs	43.1 %	1	04-06-08
End Shear	2,455 lbs	11,571 lbs	21.2 %	1	00-11-14
Total Load Deflection	L/414 (0.35")	n/a	57.9 %	4	05-11-05
Live Load Deflection	L/691 (0.21")	n/a	52.1 %	5	05-11-05
Max Defl.	0.35"	n/a	n/a	4	05-11-05
Span / Depth	15.3				

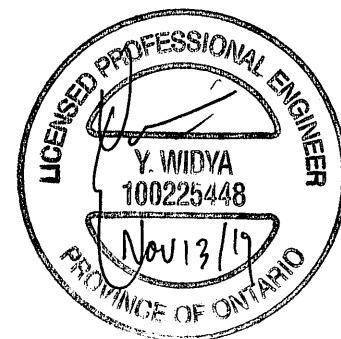
Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 2-3/8" x 3-1/2"	2,587 lbs	50.6 %	25.5 %	Spruce-Pine-Fir
B2	Wall/Plate 1-7/8" x 3-1/2"	2,290 lbs	56.7 %	28.6 %	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume member is fully braced.
 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
 Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Nail one ply to another with
 3 1/2" spiral nails @ 12"
 o.c, staggered in 2 rows



SE004723



Boise Cascade

**Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****1st Floor - Supply/BOM/Flush Beams\B12(i34775)**

Dry | 1 span | No cant.

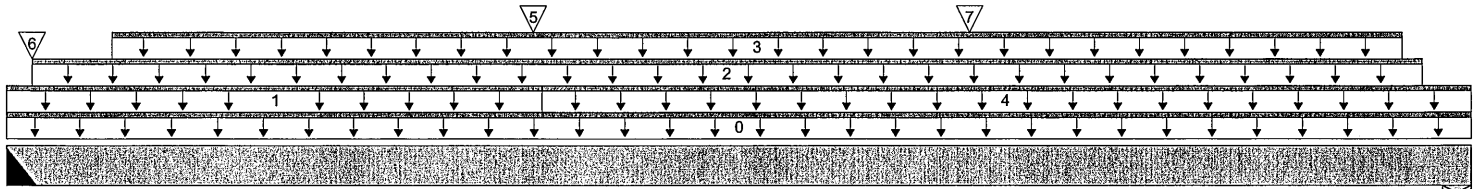
October 29, 2019 16:13:35

BC CALC® Member Report

Build 7118

Job name: 39002(38-11)
 Address: Encore 2
 City, Province, Postal Code: Brampton, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File name: 314130-A.mmdl
 Description: 1st Floor - Supply/BOM/Flush Beams\B12(i34775)
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses



B1

12-01-06

B2

Total Horizontal Product Length = 12-01-06

Reaction Summary (Down / Uplift) (lbs)

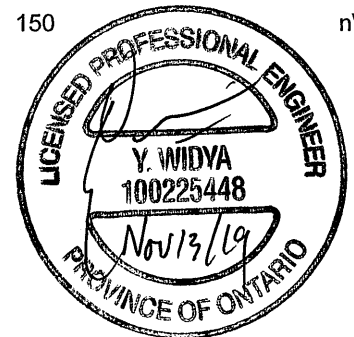
Bearing	Live	Dead	Snow	Wind
B1, 2"	2,361 / 0	1,572 / 0		
B2, 1-7/8"	2,025 / 0	1,389 / 0		

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	12-01-06	Top		14			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	04-05-00	Top	28	14			n/a
2	User Load	Unf. Lin. (lb/ft)	L	00-02-08	11-08-08	Top		60			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	00-10-08	11-06-08	Top	254	126			n/a
4	FC2 Floor Material	Unf. Lin. (lb/ft)	L	04-05-00	12-01-06	Top	9	4			n/a
5	B10(i34776)	Conc. Pt. (lbs)	L	04-04-02	04-04-02	Top	870	389			n/a
6	J2(i34574)	Conc. Pt. (lbs)	L	00-02-08	00-02-08	Top	223	112			n/a
7	User Load	Conc. Pt. (lbs)	L	07-11-08	07-11-08	Top	400	150			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	17,267 ft-lbs	36,222 ft-lbs	47.7 %	1	05-06-08
End Shear	4,983 lbs	17,356 lbs	28.7 %	1	00-11-08
Total Load Deflection	L/344 (0.416")	n/a	69.7 %	4	06-00-08
Live Load Deflection	L/568 (0.252")	n/a	63.4 %	5	06-00-08
Max Defl.	0.416"	n/a	n/a	4	06-00-08
Span / Depth	15.1				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 5-1/4"	5,506 lbs	n/a	43.0 %	HGUS5.5/10
B2	Wall/Plate 1-7/8" x 5-1/4"	4,773 lbs	78.8 %	39.7 %	Spruce-Pine-Fir

Cautions

Header for the hanger HGUS5.5/10 at B1 is a Triple 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF.

Nail one ply to another with
 3 1/2" spiral nails @ 8"
 o.c, staggered in 2 rows

SE009724



Boise Cascade

**Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****1st Floor - Supply/BOM/Flush Beams\B13(i34778)**

Dry | 1 span | No cant.

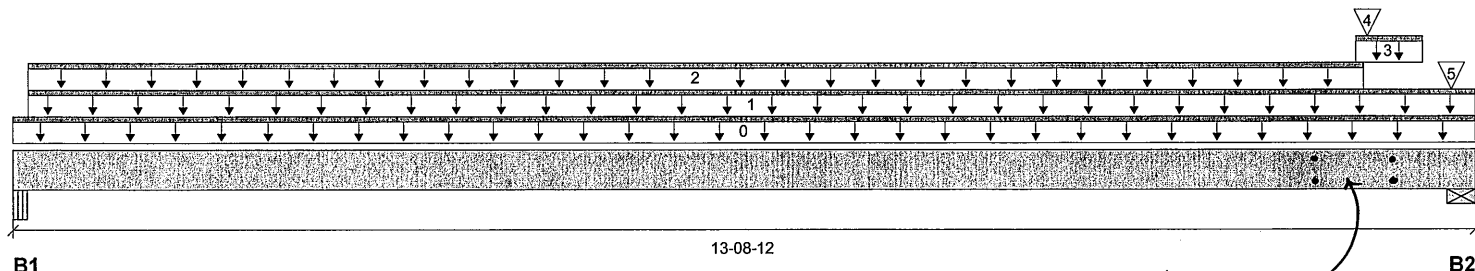
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BC CALC® Member Report

Build 7118

Job name: 39002(38-11)
 Address: Encore 2
 City, Province, Postal Code: Brampton, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File name: 314130-A.mmdl
 Description: 1st Floor - Supply/BOM/Flush Beams\B13(i34778)
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses



Total Horizontal Product Length = 13-08-12

*NOTE 1.

Reaction Summary (Down / Uplift) (lbs)

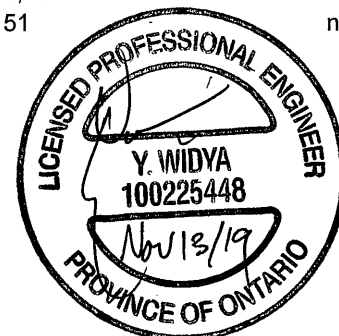
Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	404 / 0	351 / 0		
B2, 3-1/2"	4,385 / 0	3,138 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	13-08-12	Top		14			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-01-12	13-08-12	Top	12	6			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-01-12	12-08-02	Top	9	4			n/a
3	6(i34156)	Unf. Lin. (lb/ft)	L	12-07-04	13-02-12	Top		68			n/a
4	-	Conc. Pt. (lbs)	L	12-08-09	12-08-09	Top	4,441	3,033			n/a
5	2(i34151)	Conc. Pt. (lbs)	L	13-06-00	13-06-00	Top		51			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	8,075 ft-lbs	36,222 ft-lbs	22.3 %	1	12-08-02
End Shear	9,368 lbs	17,356 lbs	54.0 %	1	12-07-12
Total Load Deflection	L/818 (0.195")	n/a	29.3 %	4	07-06-12
Live Load Deflection	L/999 (0.11")	n/a	n/a	5	07-08-15
Max Defl.	0.195"	n/a	n/a	4	07-06-12
Span / Depth	16.8				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Beam 3-1/2" x 5-1/4"	1,044 lbs	9.2 %	4.7 %	Unspecified
B2	Wall/Plate 3-1/2" x 5-1/4"	10,500 lbs	92.9 %	46.8 %	Spruce-Pine-Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume member is fully braced.
 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
 Concentrated side-load exceeds allowable magnitude for connection design. Please consult a technical representative or Professional Engineer for the design of the connection.

Nail one ply to another with
 3 1/2" spiral nails @ 12"
 o.c, staggered in 2 rows

NOTE 1: MIN. 2 SDW22500 SIMPSON
 WOOD SCREW ON EACH SIDE
 OF B12

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®, AJSTM®, ALLJOIST®, BC RIM BOARD™, BCi®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®, SE004725



Boise Cascade

**Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****2nd Floor - Supply/BOM\Flush Beams\B14(i35559)**

Dry | 1 span | No cant.

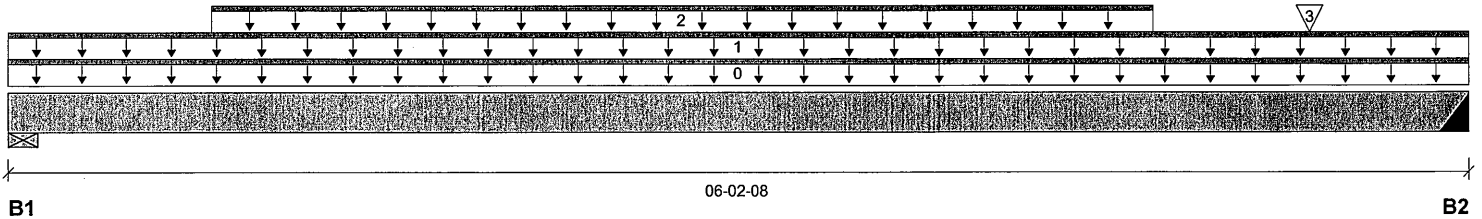
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BC CALC® Member Report

Build 7118

Job name: 39002(38-11)
 Address: Encore 2
 City, Province, Postal Code: Brampton, ON
 Customer: Gold Park
 Code reports: CCMC 12472-R

File name: 314130-B.mmdl
 Description: 2nd Floor - Supply/BOM\Flush Beams\B14(i35559)
 Specifier:
 Designer: NL
 Company: Alpa Roof Trusses

**Reaction Summary (Down / Uplift) (lbs)**

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	410 / 0	750 / 0	351 / 0	
B2, 2"	492 / 0	777 / 0	350 / 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	06-02-08	Top		5			00-00-00
1	E29(i34955)	Unf. Lin. (lb/ft)	L	00-00-00	06-02-08	Top		157	94		n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-10-06	04-10-06	Top	178	102	23		n/a
3	J5(i35570)	Conc. Pt. (lbs)	L	05-06-06	05-06-06	Top	192	111	25		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3,067 ft-lbs	11,610 ft-lbs	26.4 %	1	02-10-06
End Shear	1,614 lbs	5,785 lbs	27.9 %	1	05-03-00
Total Load Deflection	L/999 (0.059")	n/a	n/a	35	03-02-06
Live Load Deflection	L/999 (0.031")	n/a	n/a	51	03-02-06
Max Defl.	0.059"	n/a	n/a	35	03-02-06
Span / Depth	7.4				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 1-3/4"	1,905 lbs	50.5 %	25.5 %	Spruce-Pine-Fir
B2	Hanger 2" x 1-3/4"	2,058 lbs	n/a	48.2 %	Hanger

Cautions**Notes**

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

**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.

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

SE004726



Boise Cascade

**Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****1st Floor - Supply/BOM\Flush Beams\B15(i35222)**

Dry | 1 span | No cant.

October 30, 2019 09:23:23

BC CALC® Member Report

Build 7118

Job name: 39002(38-11)

File name: 314130-A(-2R).mmdl

Address: Encore 2

Description: 1st Floor - Supply/BOM\Flush Beams\B15(i35222)

City, Province, Postal Code: Brampton, ON

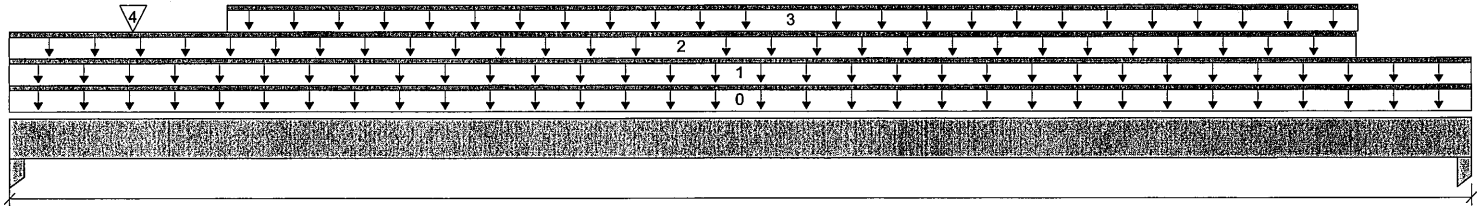
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



B1

07-09-00

B2

Total Horizontal Product Length = 07-09-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	1,326 / 0	1,098 / 0		
B2, 4"	1,208 / 0	1,040 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-09-00	Top	1.00	0.65	1.00	1.15	00-00-00
1	E4(i34121)	Unf. Lin. (lb/ft)	L	00-00-00	07-09-00	Top		107			n/a
2	E4(i34121)	Unf. Lin. (lb/ft)	L	00-00-00	07-01-10	Top	125	63			n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	01-01-12	07-01-12	Top	242	121			n/a
4	J4(i35210)	Conc. Pt. (lbs)	L	00-07-12	00-07-12	Top	185	92			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	5,953 ft-lbs	11,610 ft-lbs	51.3 %	1	03-07-12
End Shear	2,933 lbs	5,785 lbs	50.7 %	1	06-07-08
Total Load Deflection	L/541 (0.16")	n/a	44.3 %	4	03-10-12
Live Load Deflection	L/999 (0.088")	n/a	n/a	5	03-10-12
Max Defl.	0.16"	n/a	n/a	4	03-10-12
Span / Depth	9.1				



Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 4" x 1-3/4"	3,361 lbs	46.0 %	39.4 %	Unspecified
B2	Column 4" x 1-3/4"	3,112 lbs	42.6 %	36.4 %	Unspecified

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.

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume member is fully braced.
 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

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

SE004727

Maximum Floor Spans – M2.1, 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:	5/8 in. nailed-glued oriented strand board (OSB) sheathing



Maximum Floor Spans

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

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

Notes:

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

The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

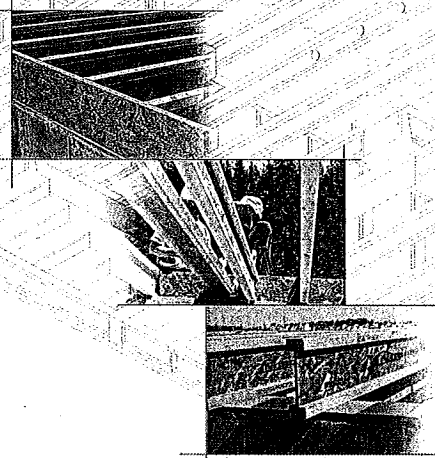
Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

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

(Nordic Request 1810-095)

NORDIC ENGINEERED WOOD

INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



Distributed by:



SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

WARNING

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

Avoid Accidents by Following these Important Guidelines:

- Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bridging at joist ends. When I-joists are applied continuously over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
- When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until the sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joist rollover or buckling.
 - Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on centre, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. Lap ends of adjoining bracing over at least two I-joists.
 - Or, sheathing (temporary or permanent) can be nailed to the top flanges of the first 4 feet of I-joists at the end of the bay.
- For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-bridging.
- 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.
- 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

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

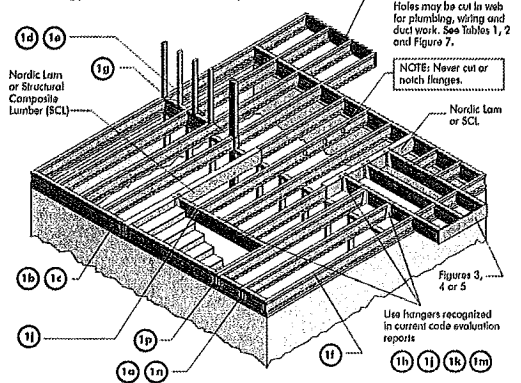


INSTALLING NORDIC I-JOISTS

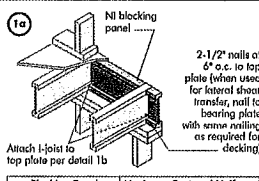
- Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact your supplier.
- Except for cutting to length, I-joist flanges should never be cut, drilled, or notched.
- Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical 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 loads greater than those that can normally be expected in residential construction should only be applied to the top surface of the top flange. Normal concentrated loads include track lighting fixtures, audio equipment and security cameras. Never suspend unbraced or heavy loads from the I-joist's bottom flange. Whenever possible, suspend all concentrated loads from the top of the I-joist. Or, attach the load to blocking that has been securely fastened to the I-joist webs.
- 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 may never be used as blocking or rim boards. I-joist blocking panels or other engineered wood products – such as rim board – must be cut to fit between the I-joists, and an I-joist-compatible depth selected.
- 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: Space nails installed to the flange's top face in accordance with the applicable building code requirements or approved building plans.

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

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

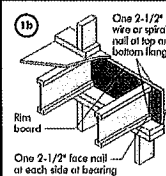


All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.125" dia.) common spiral nails may be substituted for 2-1/2" (0.120" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for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



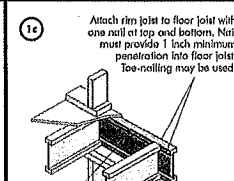
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
Ni Joists	3,300

*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.



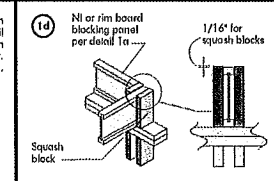
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

*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.



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 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.



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 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.

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

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

MAXIMUM FLOOR SPANS

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

MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS

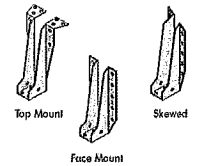
SINGLE AND MULTIPLE SPANS

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'-3"	12'-5"	16'-3"	15'-4"	14'-5"	13'-7"
	Ni-40x	16'-1"	15'-2"	14'-3"	13'-5"	17'-3"	16'-4"	15'-5"	14'-7"
	Ni-60	16'-3"	15'-4"	14'-5"	13'-7"	17'-5"	16'-6"	15'-7"	14'-9"
	Ni-80	17'-1"	16'-2"	15'-3"	14'-5"	18'-1"	17'-2"	16'-3"	15'-5"
11-7/8"	Ni-20	16'-11"	15'-2"	14'-3"	13'-5"	17'-3"	16'-4"	15'-5"	14'-7"
	Ni-40x	18'-1"	17'-0"	16'-1"	15'-3"	19'-3"	18'-4"	17'-5"	16'-7"
	Ni-60	18'-4"	17'-3"	16'-4"	15'-6"	20'-3"	19'-4"	18'-5"	17'-7"
	Ni-80	19'-6"	18'-0"	17'-4"	16'-6"	21'-6"	20'-1"	19'-2"	18'-4"
14"	Ni-20	19'-9"	18'-3"	17'-4"	16'-6"	21'-9"	20'-2"	19'-3"	18'-5"
	Ni-40x	20'-2"	18'-7"	17'-10"	16'-11"	22'-3"	20'-7"	19'-8"	19'-0"
	Ni-60	20'-4"	18'-9"	17'-11"	16'-13"	22'-5"	20'-9"	19'-10"	19'-2"
	Ni-80	21'-1"	19'-6"	18'-1"	17'-1"	23'-2"	21'-4"	20'-5"	19'-7"
16"	Ni-20	20'-1"	18'-1"	17'-0"	16'-2"	22'-2"	20'-4"	19'-5"	18'-7"
	Ni-40x	20'-5"	18'-11"	18'-1"	17'-2"	22'-7"	20'-11"	20'-10"	19'-10"
	Ni-60	21'-7"	20'-0"	19'-1"	18'-2"	23'-10"	22'-1"	21'-1"	20'-10"
	Ni-80	21'-11"	20'-3"	19'-4"	18'-5"	24'-3"	22'-5"	21'-5"	20'-10"

CCMC EVALUATION REPORT 13032-R

I-JOIST HANGERS

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



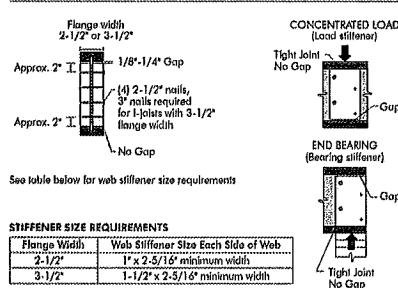
WEB STIFFENERS

RECOMMENDATIONS:

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

SI units conversion: 1 inch = 25.4 mm

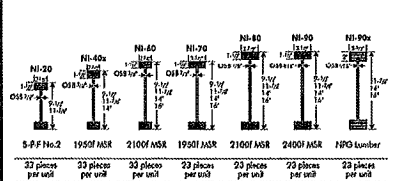
FIGURE 2
WEB STIFFENER INSTALLATION DETAILS



STIFFENER SIZE REQUIREMENTS

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

NORDIC I-JOIST SERIES



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

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

(Nordic Request 1810-095)



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

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

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

1d Blocking required over all interior supports under load-bearing walls or when floor joists are not continuous over support.

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

1f Double I-joist header

1g Top- or face-mount hanger

1h Filler block per detail 1p

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

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

1k Backer blocks (Blocks must be long enough to permit required nailing without spilling)

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

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

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

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

1p Notes: 1. Support back of I-joist web during nailing to prevent damage to web/flange connection. 2. Leave a 1/8 to 1/4-inch gap between top of filler block and bottom of top I-joist flange. 3. Filler block is required between joists for full length of spans. 4. Nail joists together with two rows of 3" nails at 12 inches o.c. (clinched when possible) on each side of the double I-joist. Total of four nails per foot required. If nails can be clinched, only two nails per foot are required. 5. The maximum factored load that may be applied to one side of the double I-joist using this detail is 860 lb/ft. Verify double I-joist capacity.

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

1r Notes: 1. One 2-1/2" nails at top and bottom flange. 2. Two 2-1/2" nails from each web to lumber piece. 3. 2x4 min. (1/8" gap minimum) 4. Two 2-1/2" nails from each web to lumber piece. 5. One 2-1/2" nails one side only. 6. 2-1/2" nails at 6" o.c.

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

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

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

1k Backer blocks (Blocks must be long enough to permit required nailing without spilling)

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

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

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

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

1p Notes: 1. Support back of I-joist web during nailing to prevent damage to web/flange connection. 2. Leave a 1/8 to 1/4-inch gap between top of filler block and bottom of top I-joist flange. 3. Filler block is required between joists for full length of spans. 4. Nail joists together with two rows of 3" nails at 12 inches o.c. (clinched when possible) on each side of the double I-joist. Total of four nails per foot required. If nails can be clinched, only two nails per foot are required. 5. The maximum factored load that may be applied to one side of the double I-joist using this detail is 860 lb/ft. Verify double I-joist capacity.

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

1r Notes: 1. One 2-1/2" nails at top and bottom flange. 2. Two 2-1/2" nails from each web to lumber piece. 3. 2x4 min. (1/8" gap minimum) 4. Two 2-1/2" nails from each web to lumber piece. 5. One 2-1/2" nails one side only. 6. 2-1/2" nails at 6" o.c.

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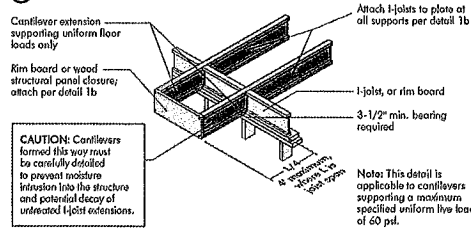
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(Nordic Request 1810-095)

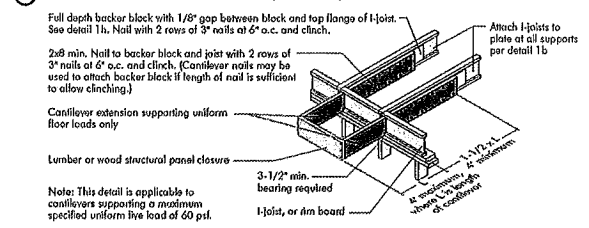


CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

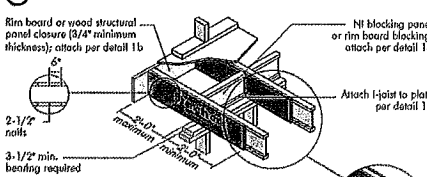


3b LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

4a Method 1 — SHEATHING REINFORCEMENT ONE SIDE

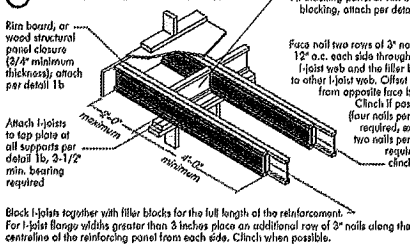


Method 2 — SHEATHING REINFORCEMENT TWO SIDES

- Use same installation as Method 1 but reinforce both sides of I-joist with sheathing.
- Use nailing pattern shown for Method 1 with opposite face nailing offset by 9\"/>

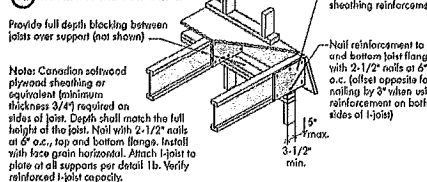
Note: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4\"/>

4b Alternate Method 2 — DOUBLE I-JOIST

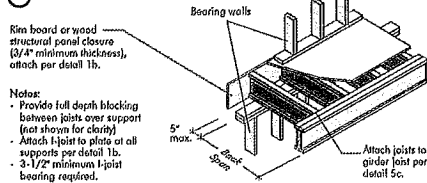


BRICK CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

5a SHEATHING REINFORCEMENT



5b SET-BACK DETAIL



5c SET-BACK CONNECTION

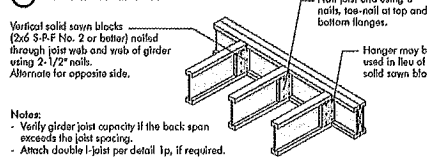


FIGURE 4 (continued)



CANTILEVER REINFORCEMENT METHODS ALLOWED

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

1. N = No reinforcement required.
2. N = Reinforced with 3/4\"/>

FIGURE 5 (continued)



BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

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

1. N = No reinforcement required.
2. N = Reinforced with 3/4\"/>

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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 shall always be maintained between the top or bottom of the hole or opening and the adjacent I-Joist flange.
- The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the largest side of the largest rectangular hole or duct chase opening) and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
- A knockout is NOT considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
- Holes measuring 1-1/2 inches or smaller shall be permitted anywhere in a confined section of a joist. Holes of greater size may be permitted subject to verification.
- A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
- All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
- Limit three maximum size holes per span, of which one may be a duct chase opening.
- A group of round holes at approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

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

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

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

OPTIONAL:

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

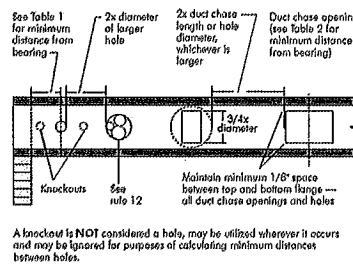
$$\text{Reduced } D = \frac{\text{Actual Span}}{\text{Full Span}} \times D$$

Where:

- Reduced = Distance from the inside face of any support to centre of hole, reduced for first span maximum span applications (D).
- Actual = The actual measured span distance between the inside faces of supports (S).
- Full Span = 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 Actual is greater than 1, use 1 in the above calculation for Actual.

FIGURE 7
FIELD-CUT HOLE LOCATOR



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

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

Holes in webs should be cut with a sharp saw.



For rectangular holes, avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling a 1-inch diameter hole in each of the four corners and then making the cuts between the holes is another good method to minimize damage to the I-Joist.

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

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

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

INSTALLING THE GLUED FLOOR SYSTEM

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

FASTENERS FOR SHEATHING AND SUBFLOORING⁽¹⁾

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

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

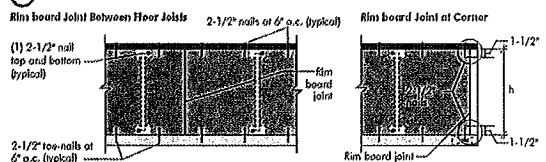
Ref.: NBC-CNBC, National Building Code of Canada 2010, Table 9.23.3.5.

IMPORTANT NOTE:

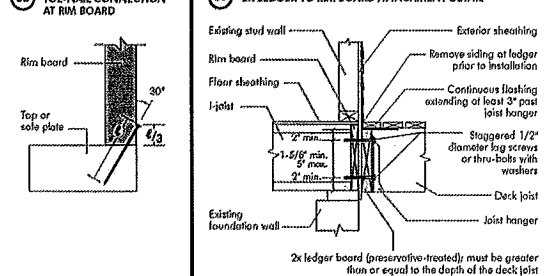
Floor sheathing must be field glued to the I-Joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-Joist spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

(a) ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



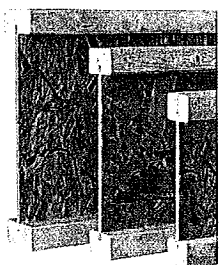
(b) TOE-NAIL CONNECTION AT RIM BOARD



PRODUCT WARRANTY

Chandler Clibborn guarantees that, in accordance with our specifications, Nordic products are free from manufacturing defect in material and workmanship.

Furthermore, Chandler Clibborn warrants that our products, when installed in accordance with our building 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 or bottom of the hole or opening and the adjacent I-joist flange.

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

9. A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
10. All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
11. Limit three maximum size holes per span, of which one may be a duct chase opening.
12. A group of round holes of approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

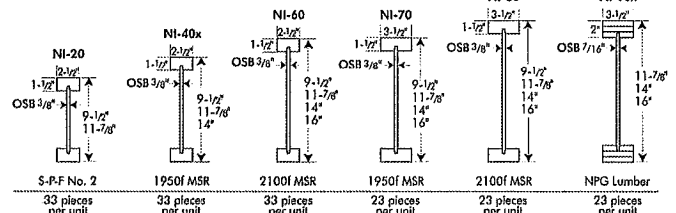


TABLE 1
LOCATION OF CIRCULAR HOLES IN JOIST WEBS

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

Joist Depth	Joist Series	Minimum Distance from Inside Face of Any Support to Centre of Hole (ft - in.)											
		Round Hole Diameter (in.)											
9-1/2"	NI-20	0-7"	1-6"	2-10"	4-3"	5-8"	6-0"	---	---	---	---	---	---
	NI-40x	0-7"	1-6"	3-0"	4-4"	6-0"	6-4"	---	---	---	---	---	---
	NI-60	1-3"	2-6"	4-0"	5-4"	7-0"	7-5"	---	---	---	---	---	---
	NI-70	2-0"	3-4"	5-0"	6-3"	8-0"	8-4"	---	---	---	---	---	---
	NI-80	2-3"	3-6"	5-0"	6-3"	8-2"	8-8"	---	---	---	---	---	---
11-7/8"	NI-20	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-6"	7-9"	---	---	---
	NI-40x	0-7"	0-8"	1-3"	2-8"	4-0"	4-4"	5-5"	7-0"	8-4"	---	---	---
	NI-60	0-7"	1-8"	3-0"	4-3"	5-9"	6-0"	7-3"	8-10"	10-0"	---	---	---
	NI-70	1-3"	2-6"	4-0"	5-4"	6-9"	7-2"	8-4"	10-0"	11-2"	---	---	---
	NI-80	1-6"	2-10"	4-2"	5-6"	7-0"	7-5"	8-8"	10-3"	11-4"	---	---	---
14"	NI-40x	0-7"	0-8"	0-8"	1-0"	2-4"	2-9"	3-9"	5-2"	6-0"	6-6"	8-3"	10-2"
	NI-60	0-7"	0-8"	1-8"	3-0"	4-3"	4-8"	5-8"	7-2"	8-0"	8-8"	10-4"	11-9"
	NI-70	0-8"	1-10"	3-0"	4-5"	5-10"	6-2"	7-3"	8-9"	9-9"	10-4"	12-0"	13-5"
	NI-80	0-10"	2-0"	3-4"	4-9"	6-2"	6-5"	7-6"	9-0"	10-0"	10-8"	12-4"	13-9"
	NI-90x	0-7"	0-8"	0-8"	2-0"	3-9"	4-2"	5-5"	7-3"	8-5"	9-2"	---	---
16"	NI-60	0-7"	0-8"	0-8"	1-6"	2-10"	3-2"	4-2"	5-6"	6-4"	7-0"	8-5"	9-8"
	NI-70	0-7"	1-0"	2-3"	3-6"	4-10"	5-3"	6-3"	7-8"	8-6"	9-2"	10-8"	12-0"
	NI-80	0-7"	1-3"	2-6"	3-10"	5-3"	6-6"	6-6"	8-0"	9-0"	9-5"	11-0"	12-3"
	NI-90x	0-7"	0-8"	0-9"	2-0"	3-6"	4-0"	5-0"	6-9"	7-9"	8-4"	10-2"	11-6"
	NI-90x	0-7"	0-8"	0-9"	2-0"	3-6"	4-0"	5-0"	6-9"	7-9"	8-4"	10-2"	11-6"

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.

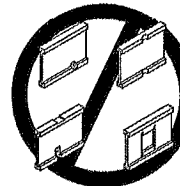
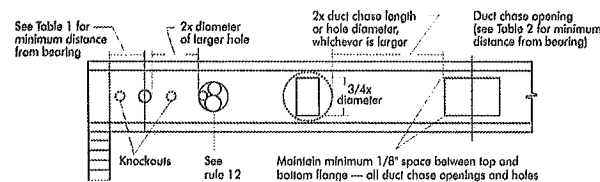
TABLE 2
DUCT CHASE OPENING SIZES AND LOCATIONS

Simple Span Only

Joist Depth	Joist Series	Minimum Distance from Inside Face of Supports to Centre of Opening (ft - in.)											
		Duct Chase Length (in.)											
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-70	5-1"	5-5"	5-10"	6-3"	6-7"	7-1"	7-6"	8-1"	8-4"	---	---	---
	NI-80	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	---	---	---
11-7/8"	NI-20	5-9"	6-2"	6-6"	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"	---	---	---
	NI-80	7-2"	7-7"	8-0"	8-5"	8-10"	9-3"	9-8"	10-2"	10-6"	---	---	---
14"	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"	13-3"	13-0"	---	---	---
	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"	12-6"	12-6"	---	---	---
	NI-90x	9-4"	9-9"	10-3"	10-7"	11-1"	11-7"	12-1"	12-7"	13-2"	---	---	---
16"	NI-60	10-3"	10-8"	11-2"	11-6"	12-1"	12-6"	13-2"	14-1"	14-10"	---	---	---
	NI-70	10-1"	10-5"	11-0"	11-4"	11-10"	12-3"	12-8"	13-3"	14-0"	---	---	---
	NI-80	10-4"	10-9"	11-3"	11-9"	12-1"	12-7"	13-1"	13-8"	14-4"	---	---	---
	NI-90x	11-1"	11-10"	12-4"	12-10"	13-2"	13-7"	13-9"	14-4"	15-2"	---	---	---
	NI-90x	11-1"	11-10"	12-4"	12-10"	13-2"	13-7"	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 pre-scored 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 I-joists until fully fastened and braced, or serious injuries can result.



Never stack building materials over unshoed I-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 applied continuous over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
2. When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joist rollover or buckling.
 - * Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on centre, and must be secured with a minimum of two 2-1/2" 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.



PRODUCT WARRANTY

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

Furthermore, Chantiers Chibougamau 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.

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(Nordic Request 1810-095)

1a NI blocking panel

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

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

Attach I-joist to top plate per detail 1b

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

1b Rim board

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

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

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

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

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

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

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

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

Provide lateral bracing per detail 1a or 1b

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

1f Joist attachment per detail 1b

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

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

NI blocking panel per detail 1a

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

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

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

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

* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-O325 or CAN/CSA-O437 Standard.

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

1i Nordic Lam or Structural Composite Lumber (SCL)

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

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

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

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

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

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

Top-mount hanger installed per manufacturer's recommendations

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

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

Install hanger per manufacturer's recommendations

Maximum support capacity = 1,620 lbs.

1m Filler block per detail 1p

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

Attach I-joist per detail 1b

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

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

NI blocking panel

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

1p FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

Filler block

Offset nails from opposite face by 6"

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

NOTES:

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

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

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

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

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

I-joist blocking panel

One 2-1/2" nail one side only

NOTES:

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

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

WEB STIFFENERS

RECOMMENDATIONS:

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

FIGURE 2

WEB STIFFENER INSTALLATION DETAILS

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

Approx. 2"

1/8"-1/4" Gap

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

Approx. 2"

No Gap

See the adjacent table for web stiffener size requirements

CONCENTRATED LOAD (Load stiffener)

Tight Joint No Gap

END BEARING (Bearing stiffener)

Gap

Tight Joint No Gap

STIFFENER SIZE REQUIREMENTS

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

CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

Method 1 — SHEATHING REINFORCEMENT ONE SIDE

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

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

Attach I-joist to plate per detail 1b

2-1/2" nails

3-1/2" min. bearing required

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

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

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

Method 2 — SHEATHING REINFORCEMENT TWO SIDES

RIM BOARD INSTALLATION DETAILS

8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

Rim Board Joint Between Floor Joists

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

Rim board joint

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

Rim Board Joint at Corner

2-1/2" nails

Rim board joint

1-1/2"

1-1/2"

8b TOE-NAIL CONNECTION AT RIM BOARD

Rim board

Top or sole plate

30°

1/2"

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