

FROM PLAN DATED: JAN 25 2018
BUILDER: BAYVIEW WELLINGTON
SITE: GREEN VALLEY EAST
MODEL: S38-16 BAROSSA 16
ELEVATION: A,B,C
LOT:
CITY: BRADFORD
SALESMAN: M D
DESIGNER: CZ
REVISION:

NOTES:
REFER TO THE NORDIC
INSTALLATION GUIDE FOR PROPER
STORAGE AND INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2
S.P.F REQ'D UNDER INTERIOR
UNIFORM LOAD BEARING WALLS.
MULTIPLE SQUASH BLOCKS REQ'D
UNDER CONCENTRATED LOADS. SEE
FIGURE 1. CANTILEVERED JOISTS
INCLUDING CANT' OVER BRICK REQ.
I-JOIST BLOCKING ALONG BEARING
AND RIMBOARD CLOSURE AT ENDS.
SEE FIGURES 4 & 5 FOR
REINFORCEMENT REQUIREMENTS.
FOR HOLES INCLUDING DUCT
CHASE AND FIELD CUT OPENINGS
SEE FIGURE 7, TABLES 1 & 2.
CERAMIC TILE APPLICATION AS PER
O.B.C 9.30.6.
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft
TILED AREAS: 20 lb/ft
SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 15/02/2018

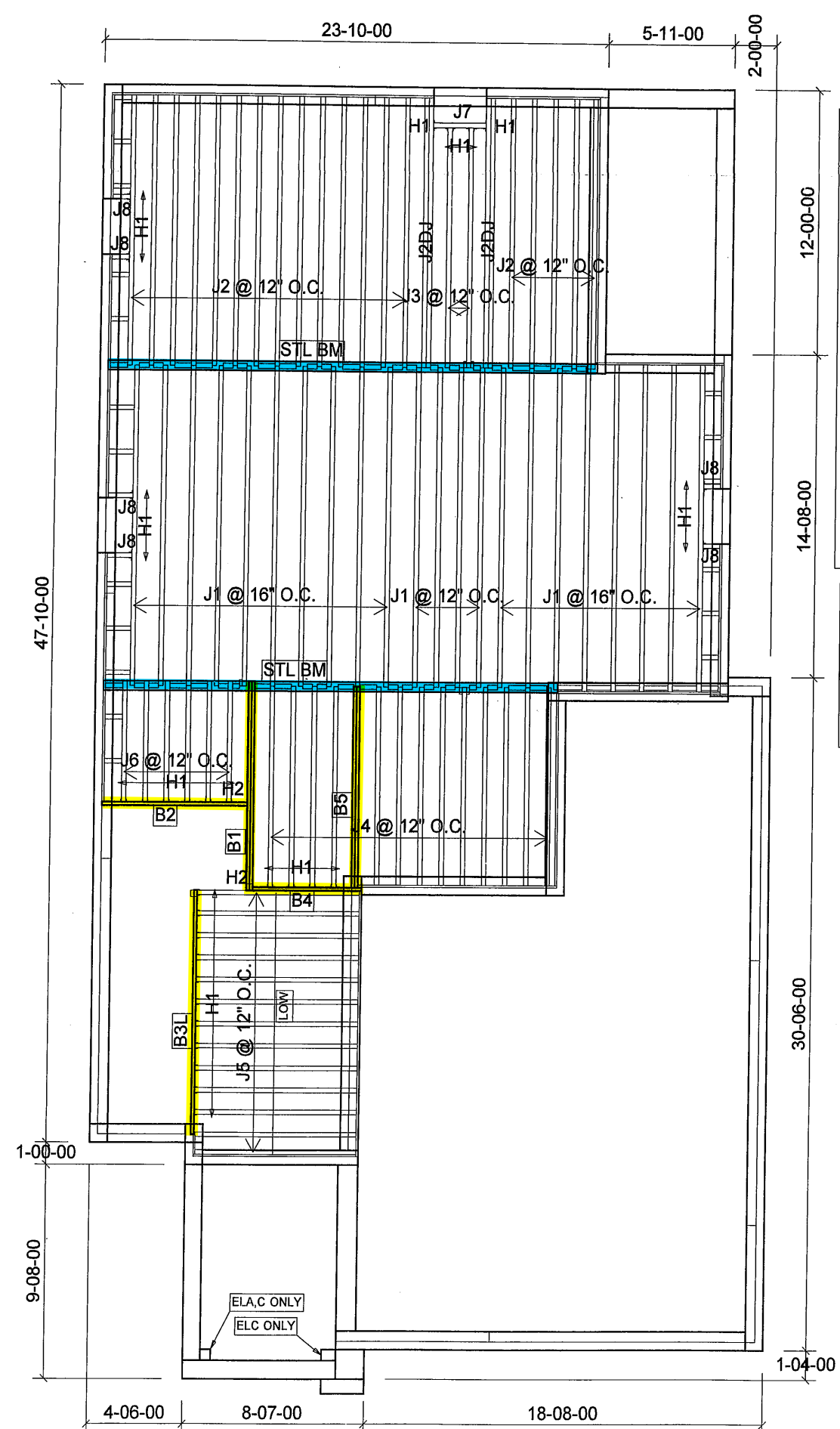
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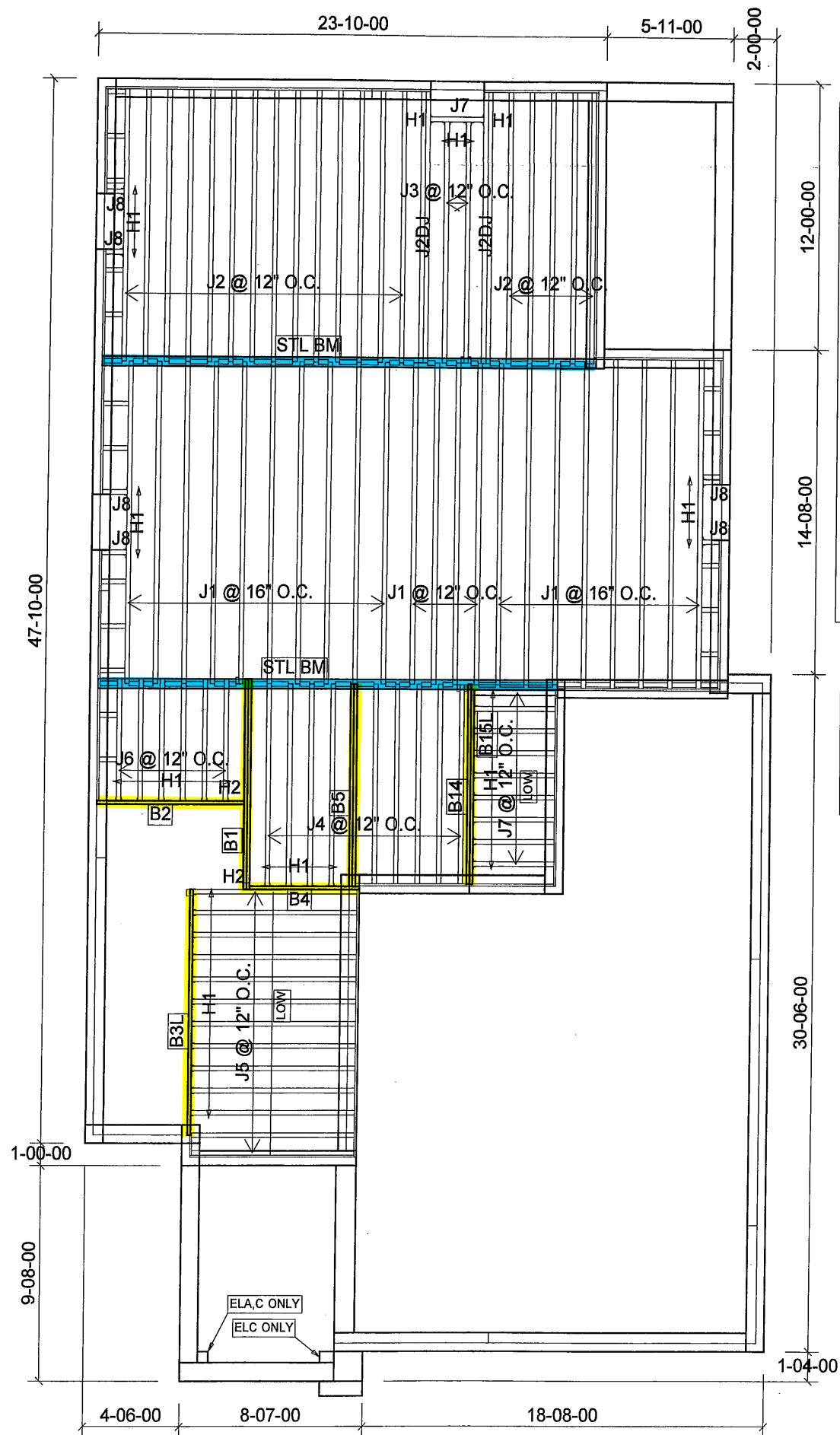
Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	22
J2	14-00-00	9 1/2" NI-40x	1	19
J2DJ	14-00-00	9 1/2" NI-40x	2	4
J3	12-00-00	9 1/2" NI-40x	1	2
J4	10-00-00	9 1/2" NI-40x	1	13
J5	8-00-00	9 1/2" NI-40x	1	13
J6	6-00-00	9 1/2" NI-40x	1	6
J7	4-00-00	9 1/2" NI-40x	1	1
J8	2-00-00	9 1/2" NI-40x	1	6
B3L	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B1	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B5	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B2	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B4	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
21	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
8	H1	IUS2.56/9.5
2	H2	HUS1.81/10

TOWN OF BRADFORD WEST GWILLIMBURY
BUILDING DEPARTMENT
PLANS EXAMINED
ONTARIO BUILDING CODE APPLIES
DATE: 2018-11-15
INSPECTOR: BG

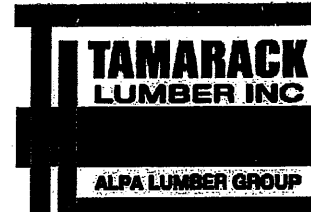
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J4	10-00-00	9 1/2" NI-40x	1	9
J5	8-00-00	9 1/2" NI-40x	1	13
J6	6-00-00	9 1/2" NI-40x	1	6
J7	4-00-00	9 1/2" NI-40x	1	10
J8	2-00-00	9 1/2" NI-40x	1	6
B3L	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B14	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B15L	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B1	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B5	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
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FROM PLAN DATED: SEPT 2016
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DESIGNER: CZ
REVISION:

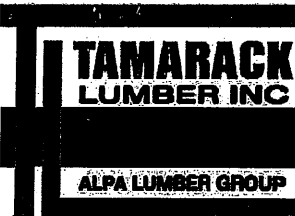
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TILED AREAS: 20 lb/ft
SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 15/02/2018

1st FLOOR

SUNKEN

SITE COPY



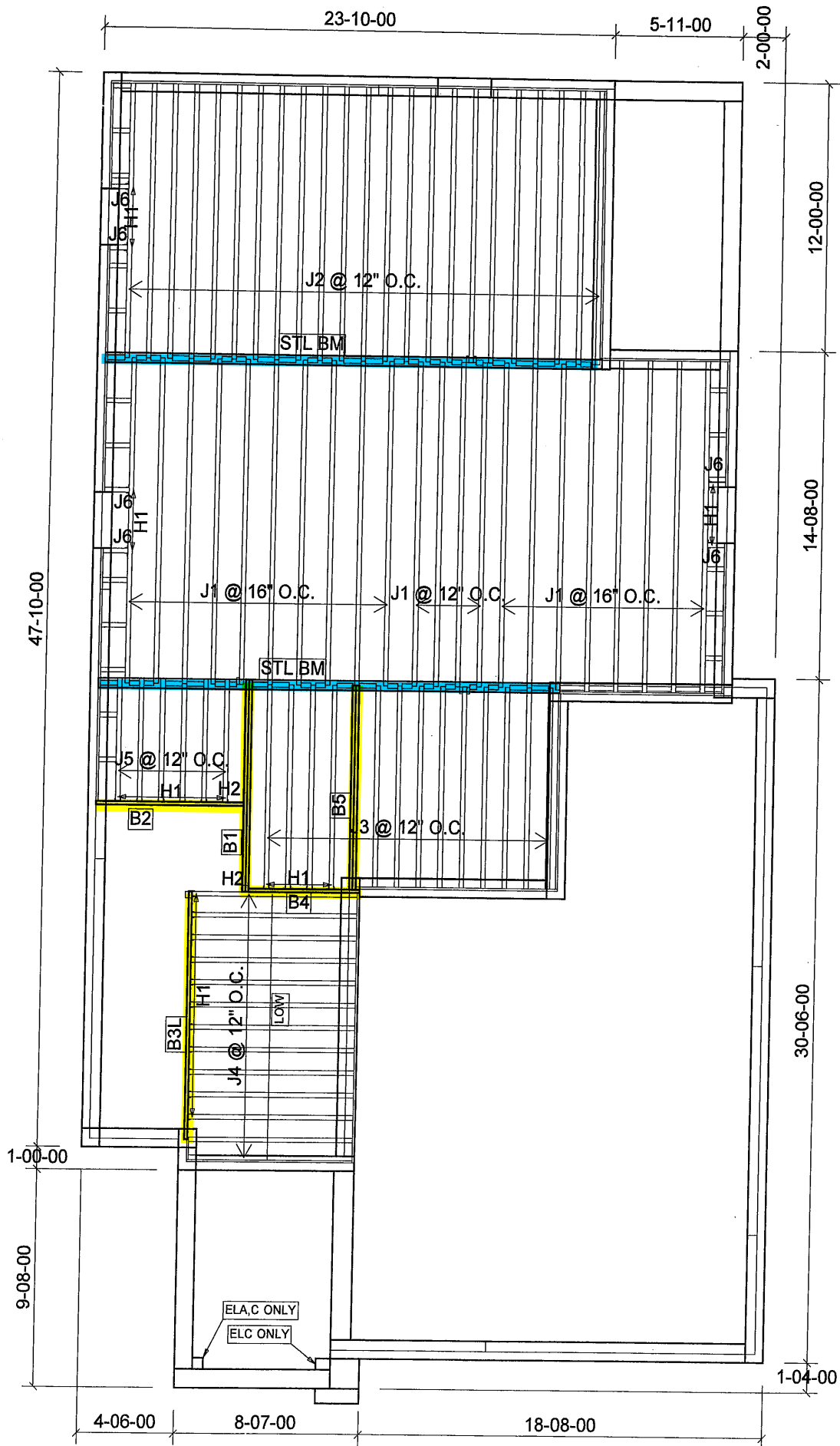
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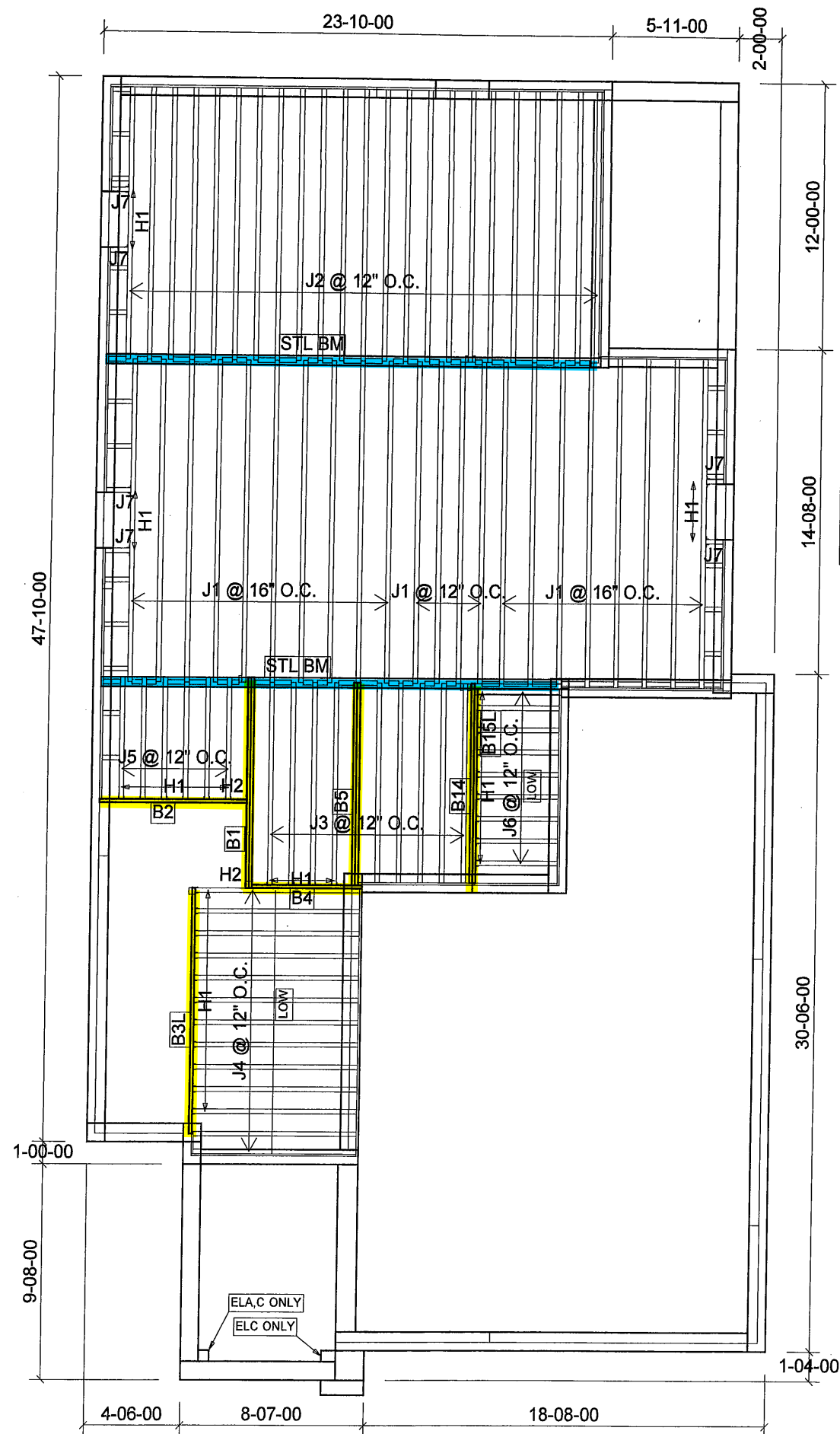
STANDARD WITH WOD &WOB



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	22
J2	14-00-00	9 1/2" NI-40x	1	23
J3	10-00-00	9 1/2" NI-40x	1	13
J4	8-00-00	9 1/2" NI-40x	1	13
J5	6-00-00	9 1/2" NI-40x	1	6
J6	2-00-00	9 1/2" NI-40x	1	6
B3L	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B1	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B5	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B2	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B4	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1

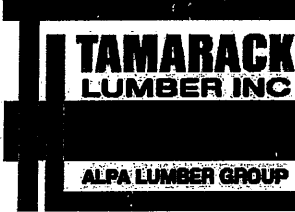
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Qty	Manuf	Product
21	H1	IUS2.56/9.5
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SALESMAN: M D
DESIGNER: CZ
REVISION:

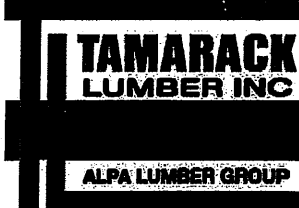
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1st FLOOR

SUNKEN WITH WOD & WOB

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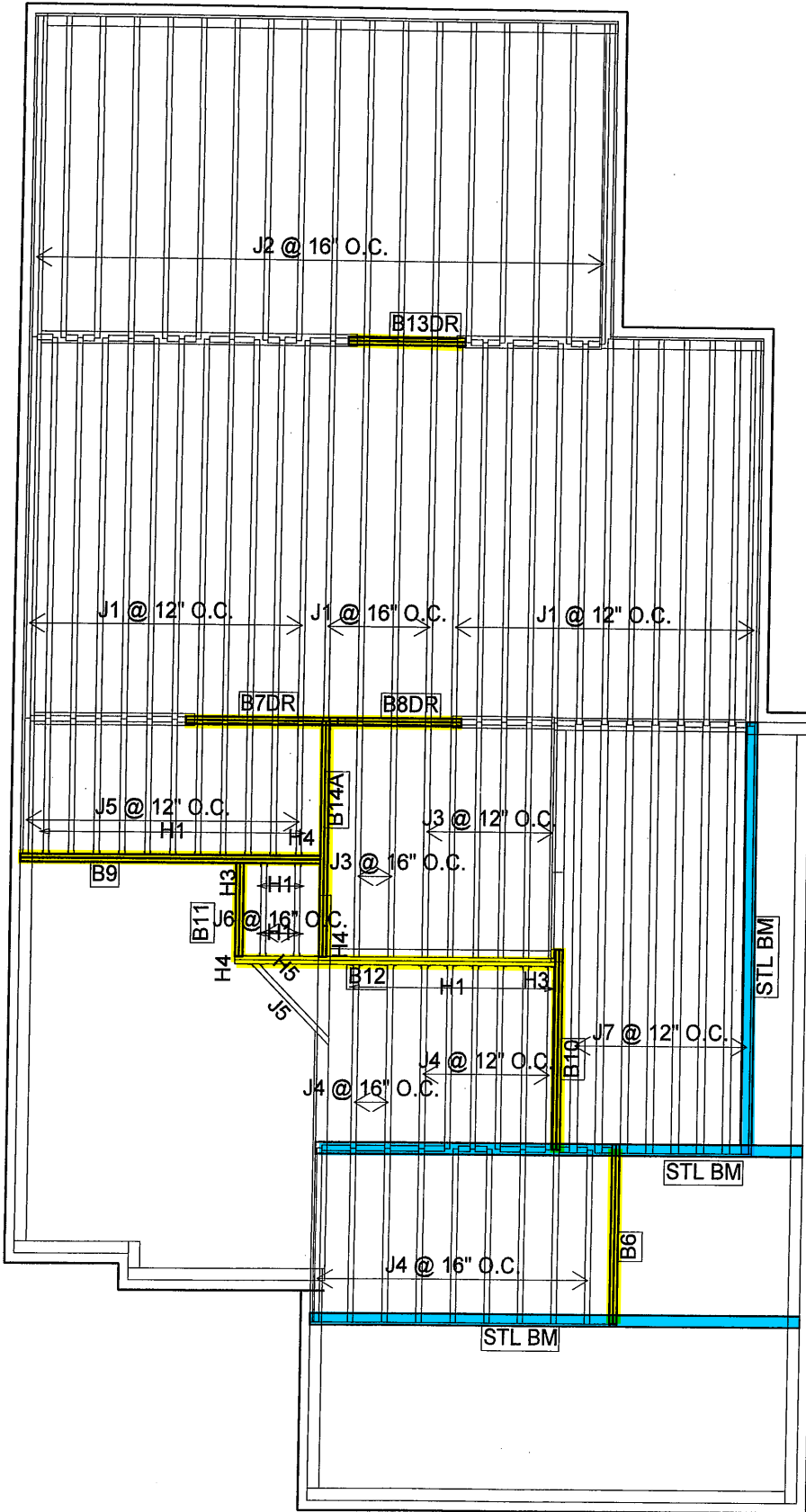


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MODEL: S38-16 BAROSSA 16
ELEVATION: A
LOT:
CITY: BRADFORD
SALESMAN: M D
DESIGNER: CZ
REVISION:

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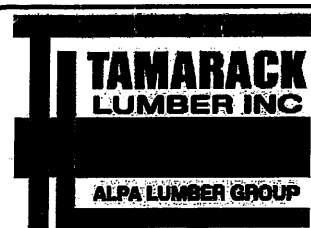
2nd FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	29
J2	14-00-00	9 1/2" NI-40x	1	18
J3	10-00-00	9 1/2" NI-40x	1	8
J4	8-00-00	9 1/2" NI-40x	1	17
J5	6-00-00	9 1/2" NI-40x	1	13
J6	4-00-00	9 1/2" NI-40x	1	2
J7	18-00-00	9 1/2" NI-80	1	8
B12	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B14A	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B10	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B6	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B7DR	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B13DR	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B8DR	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B11	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
23	H1	IUS2.56/9.5
2	H3	HGUS410
2	H4	HGUS410
1	H4	HUC410
1	H5	SUR2.56/9

SITE COPY



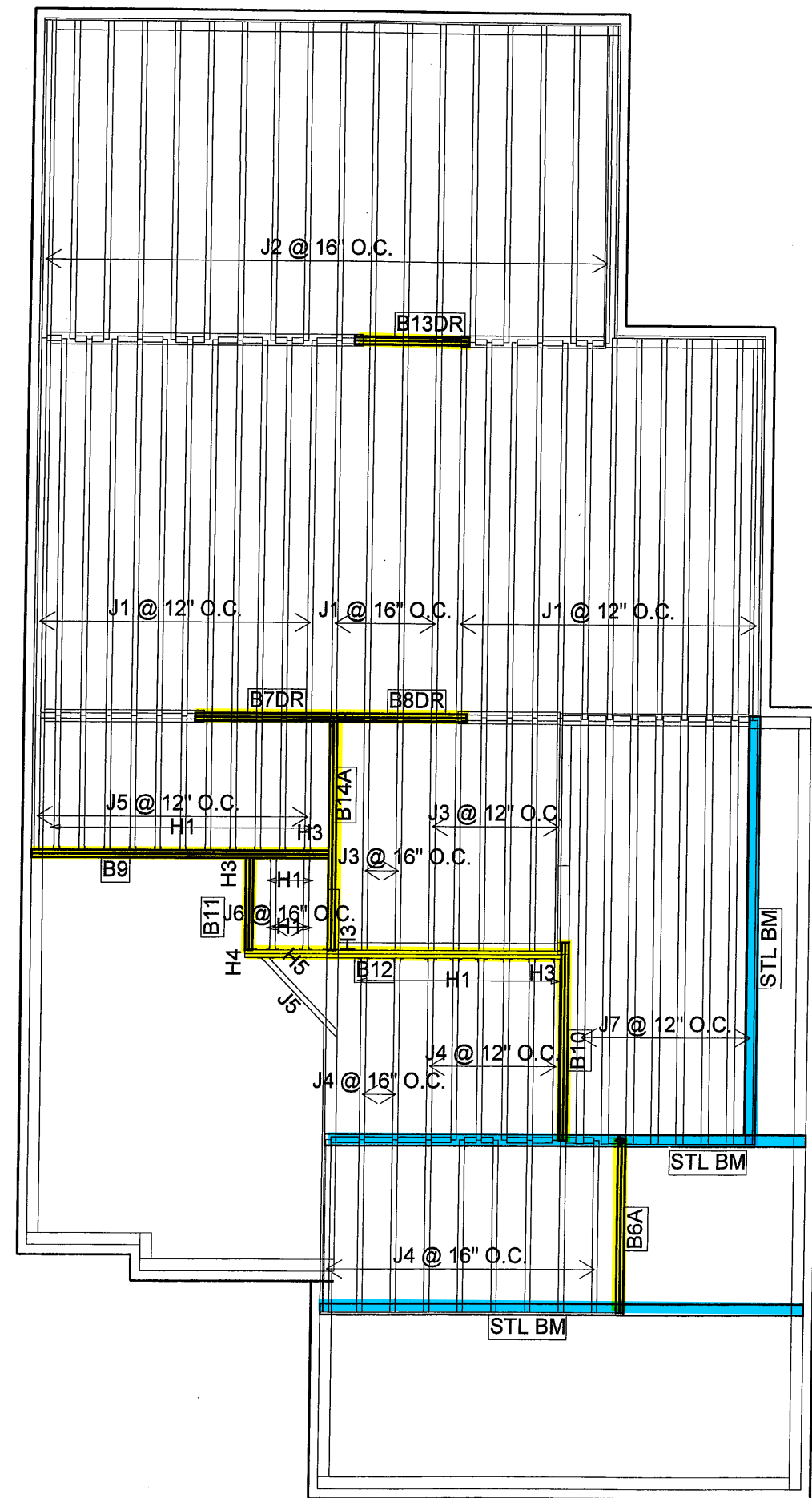
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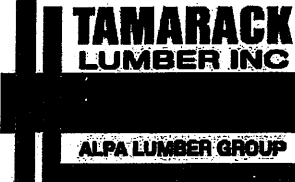
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B9	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B14A	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B10	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B6A	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
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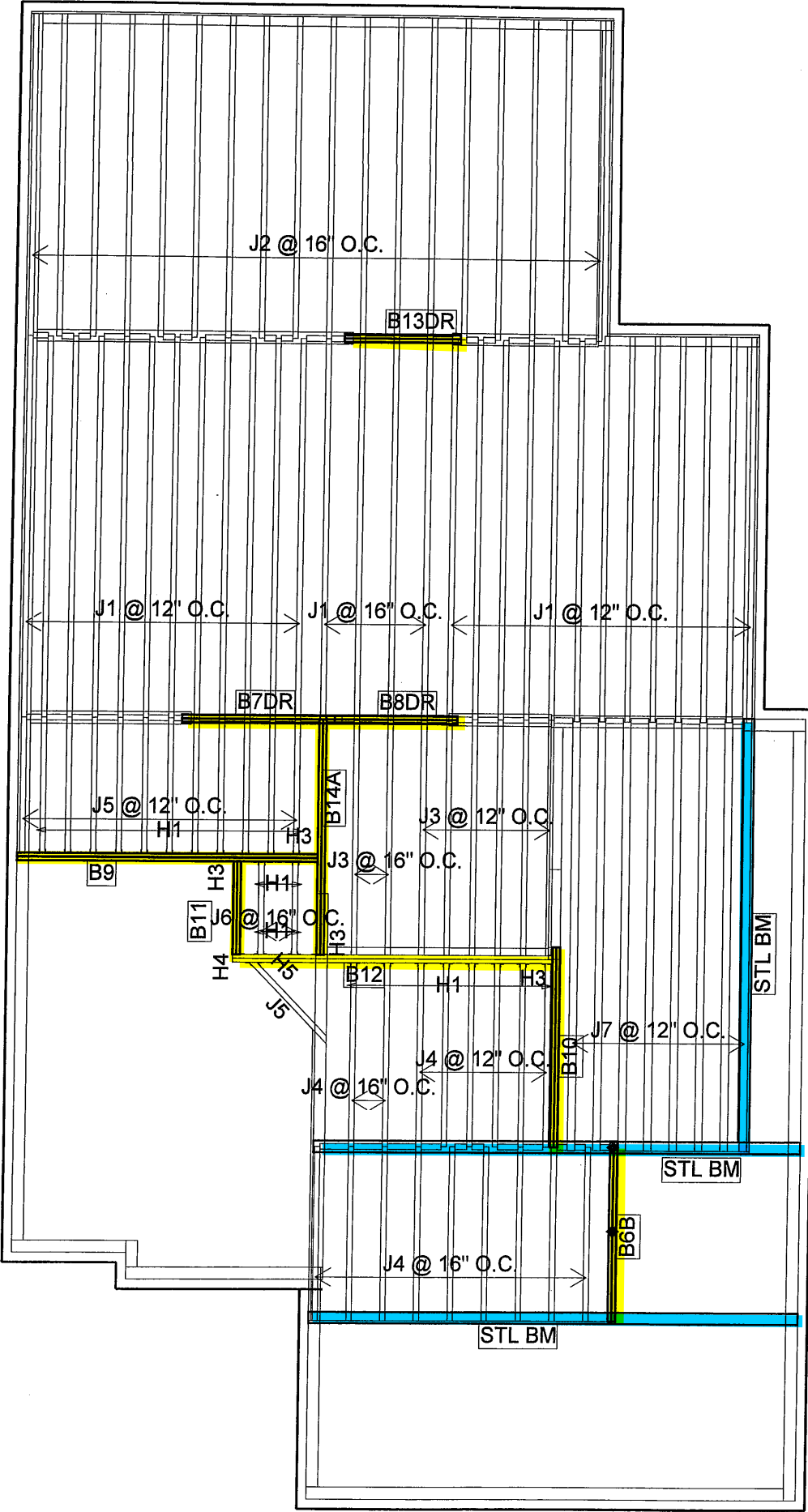
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B6B	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
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4	H3	HGUS410
1	H4	HUC410
1	H5	SUR2.56/9



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B1(i4242)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

September 21, 2017 16:20:04

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:BRADFORD,

Customer:

Code reports:

CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

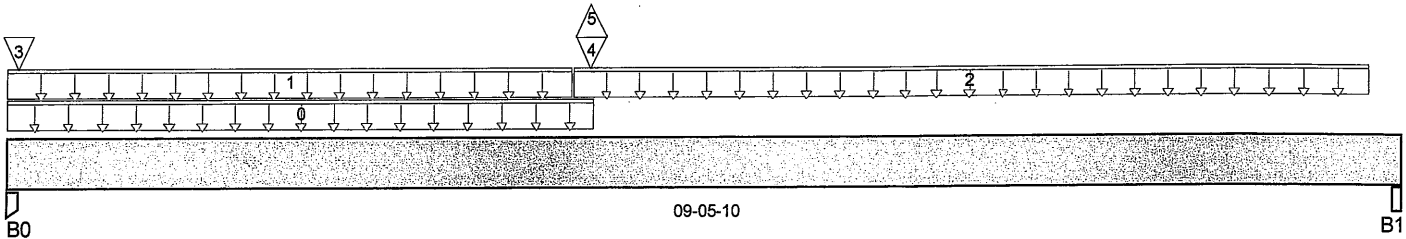
Description: Designs\Flush Beams\Basement\Flush Beams\B1(i4242)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 09-05-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	2,848 / 8	1,894 / 0		
B1, 5-1/4"	1,496 / 6	1,118 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	User Load	Unf. Lin. (lb/ft)	L	00-00-00	03-11-12	240	120			n/a
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-10-00	22	8			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	03-10-00	09-03-00	40	15			n/a
3	B4(i4115)	Conc. Pt. (lbs)	L	00-00-14	00-00-14	382	154			n/a
4	-	Conc. Pt. (lbs)	L	03-11-06	03-11-06	2,704	2,176			n/a
5	-	Conc. Pt. (lbs)	L	03-11-06	03-11-06	-14				n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	17,352 ft-lbs	25,408 ft-lbs	68.3%	1	03-11-12
End Shear	5,260 lbs	11,571 lbs	45.5%	1	01-01-00
Total Load Defl.	L/367 (0.29")	0.443"	65.4%	6	04-04-09
Live Load Defl.	L/642 (0.166")	0.295"	56.1%	8	04-04-09
Max Defl.	0.29"	1"	29%	6	04-04-09
Span / Depth	11.2	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Post	3-1/2" x 3-1/2"	6,639 lbs	66.7%	44.4%	Unspecified
B1 Beam	5-1/4" x 3-1/2"	3,642 lbs	37.1%	16.2%	Unspecified

Notes





Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B1(i4242)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

September 21, 2017 16:20:04

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B1(i4242)

Specifier:

Designer: CZ

Company:

Misc:

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

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

Design meets User specified (1") Maximum total load deflection criteria.

Design meets User specified (0.75") Maximum live load deflection criteria.

Calculations assume member is fully braced.

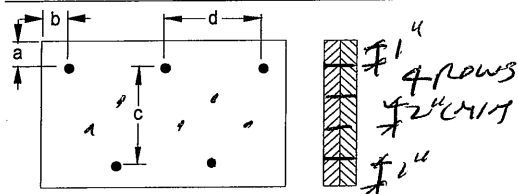
Resistance Factor phi has been applied to all presented results per CSA O86.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

Connection Diagram

a minimum = 1" c = 3-1/2" ^u
 b minimum = 3" d = 4" ^u

Calculated Side Load = 300.1 lb/ft

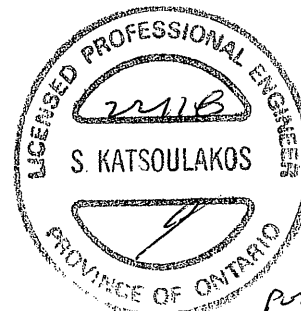
Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL**Disclosure**

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here 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 1-800-964-6999 before installation.

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Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B2(i4007)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

September 21, 2017 16:20:05

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports:

CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

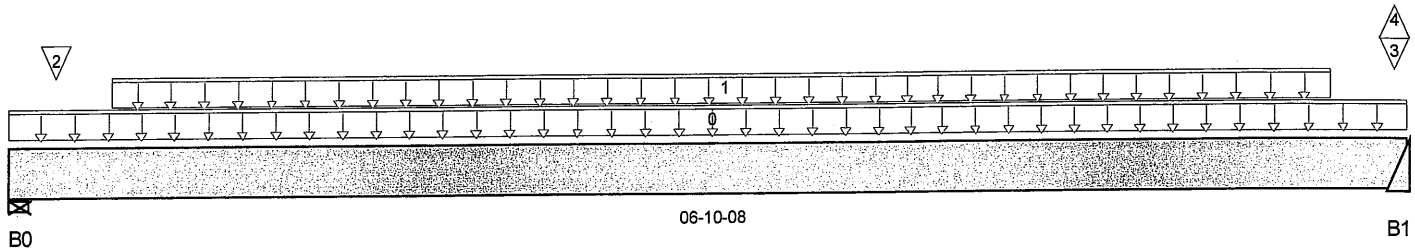
Description: Designs\Flush Beams\Basement\Flush Beams\B2(i4007)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 06-10-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	396 / 0	384 / 0		
B1	1,119 / 5	951 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0 User Load	Unf. Lin. (lb/ft)	L	00-00-00	06-10-08		60			n/a
1 Smoothed Load	Unf. Lin. (lb/ft)	L	00-06-00	06-06-00	110	42			n/a
2 E2(i541)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	57	24			n/a
3 PBO5(i751)	Conc. Pt. (lbs)	L	06-09-10	06-09-10	796	616			n/a
4 PBO5(i751)	Conc. Pt. (lbs)	L	06-09-10	06-09-10	-5				n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,513 ft-lbs	12,704 ft-lbs	11.9%	1	03-09-00
End Shear	803 lbs	5,785 lbs	13.9%	1	05-11-00
Total Load Defl.	L/999 (0.032")	n/a	n/a	6	03-06-12
Live Load Defl.	L/999 (0.016")	n/a	n/a	8	03-06-12
Max Defl.	0.032"	n/a	n/a	6	03-06-12
Span / Depth	8.1	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 1-3/4"	1,074 lbs	20.9%	9.1%	Unspecified
B1 Hanger	2" x 1-3/4"	2,868 lbs	n/a	67.2%	HUS1.81/10

Notes





Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B2(i4007)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

September 21, 2017 16:20:05

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B2(i4007)

Specifier:

Designer: CZ

Company:

Misc:

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

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

Design meets User specified (1") Maximum total load deflection criteria.

Design meets User specified (0.75") Maximum 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 2010 and CSA

O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

Disclosure

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BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

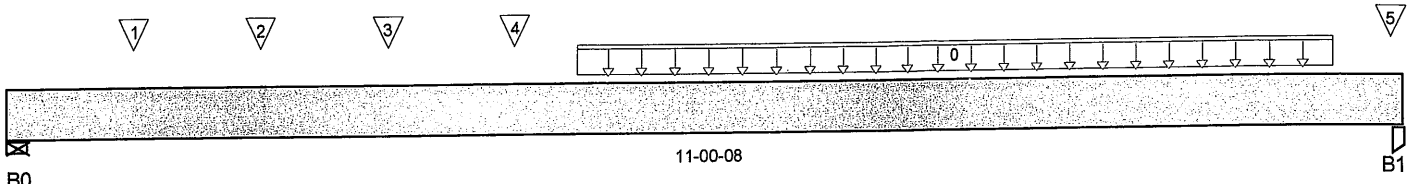
Description: Designs\Flush Beams\Basement\Flush Beams\B3L(i4299

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 11-00-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	1,359 / 0	608 / 0		
B1, 3-1/2"	947 / 0	396 / 0		

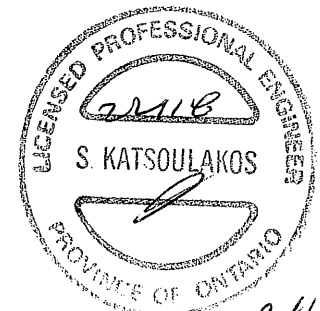
Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	04-06-00	10-06-00	154	58			n/a
1	J5(i4175)	Conc. Pt. (lbs)	L	01-00-00	01-00-00	367	165			n/a
2	J5(i3994)	Conc. Pt. (lbs)	L	02-00-00	02-00-00	371	167			n/a
3	J5(i4082)	Conc. Pt. (lbs)	L	03-00-00	03-00-00	354	158			n/a
4	J5(i4282)	Conc. Pt. (lbs)	L	04-00-00	04-00-00	193	77			n/a
5	J5(i4161)	Conc. Pt. (lbs)	L	10-11-04	10-11-04	80	30			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	5,526 ft-lbs	12,704 ft-lbs	43.5%	1	05-00-00
End Shear	2,540 lbs	5,785 lbs	43.9%	1	01-03-00
Total Load Defl.	L/410 (0.305")	0.521"	58.6%	4	05-06-00
Live Load Defl.	L/586 (0.213")	0.347"	61.5%	5	05-06-00
Max Defl.	0.305"	1"	30.5%	4	05-06-00
Span / Depth	13.2	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 1-3/4"	2,799 lbs	20.5%	23.8%	Unspecified
B1 Post	3-1/2" x 1-3/4"	1,915 lbs	38.5%	25.6%	Unspecified

Notes





Boise Cascade

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B3L(i4299)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

September 21, 2017 16:20:04

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B3L(i4299)

Specifier:

Designer: CZ

Company:

Misc:

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

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

Design meets User specified (1") Maximum total load deflection criteria.

Design meets User specified (0.75") Maximum 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 2010 and CSA O86.

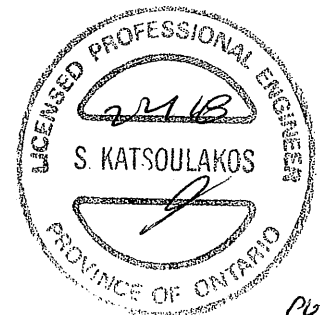
Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012**Disclosure**

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here 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 1-800-964-6999 before installation.

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DWG NO. TAM 9792-18
STRUCTURAL
COMPONENT ONLY



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B4(i4115)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

September 21, 2017 16:20:05

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

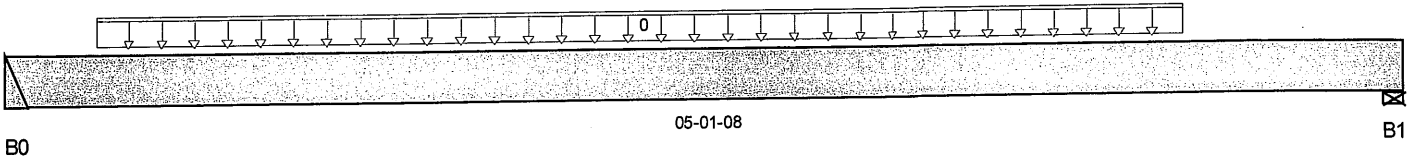
Description: Designs\Flush Beams\Basement\Flush Beams\B4(i4115)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 05-01-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	389 / 0	157 / 0		
B1, 5-1/2"	359 / 0	147 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0 Smoothed Load	Unf. Lin. (lb/ft)	L	00-04-00	04-04-00	186	73			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	982 ft-lbs	12,704 ft-lbs	7.7%	1	02-10-00
End Shear	714 lbs	5,785 lbs	12.3%	1	00-11-08
Total Load Defl.	L/999 (0.011")	n/a	n/a	4	02-04-12
Live Load Defl.	L/999 (0.008")	n/a	n/a	5	02-04-12
Max Defl.	0.011"	n/a	n/a	4	02-04-12
Span / Depth	5.8	n/a	n/a		00-00-00

Disclosure

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Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 1-3/4"	779 lbs	n/a	18.2%	HUS1.81/10
B1 Wall/Plate	5-1/2" x 1-3/4"	722 lbs	14%	6.1%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum total load deflection criteria.
 Design meets User specified (0.75") Maximum live load deflection criteria.
 Calculations assume unbraced length of Top: 00-02-02, Bottom: 00-02-02.
 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 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012



BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

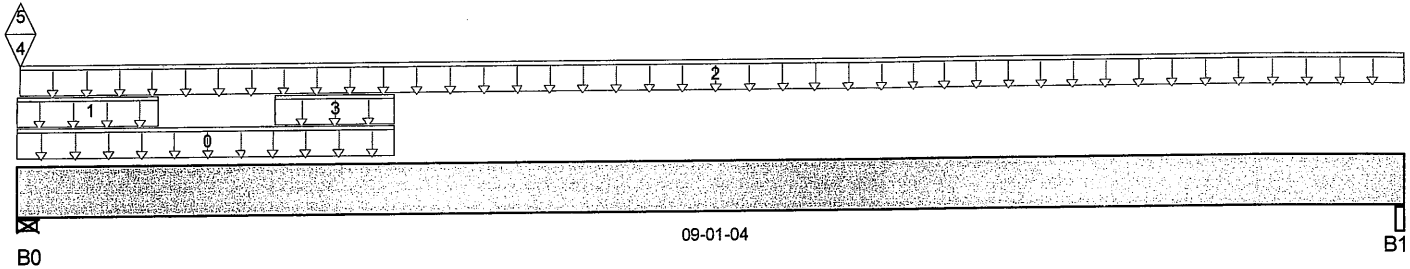
Description: Designs\Flush Beams\Basement\Flush Beams\B5(i4100)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 09-01-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-9/16"	2,109 / 2	1,221 / 0		
B1, 2-5/8"	201 / 0	139 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	10(i580)	Unf. Lin. (lb/ft)	L	00-00-00	02-05-12		81			n/a
1	10(i580)	Unf. Lin. (lb/ft)	L	00-00-00	00-11-04	57	21			n/a
2	FC 1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-04	09-01-04	40	15			n/a
3	10(i580)	Unf. Lin. (lb/ft)	L	01-08-04	02-05-12	148	56			n/a
4	-	Conc. Pt. (lbs)	L	00-00-04	00-00-04	1,776	871			n/a
5	-	Conc. Pt. (lbs)	L	00-00-04	00-00-04	-2				n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,171 ft-lbs	25,408 ft-lbs	4.6%	1	03-10-10
End Shear	646 lbs	11,571 lbs	5.6%	1	01-03-01
Total Load Defl.	L/999 (0.022")	n/a	n/a	6	04-05-15
Live Load Defl.	L/999 (0.013")	n/a	n/a	8	04-07-00
Max Defl.	0.022"	n/a	n/a	6	04-05-15
Span / Depth	10.8	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-9/16" x 3-1/2"	4,690 lbs	45.3%	19.8%	Unspecified
B1 Beam	2-5/8" x 3-1/2"	475 lbs	9.7%	4.2%	Unspecified

Notes





Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basment\Flush Beams\B5(i4100)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

September 21, 2017 16:20:05

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

Description: Designs\Flush Beams\Basment\Flush Beams\B5(i4100)

Specifier:

Designer: CZ

Company:

Misc:

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

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

Design meets User specified (1") Maximum total load deflection criteria.

Design meets User specified (0.75") Maximum live load deflection criteria.

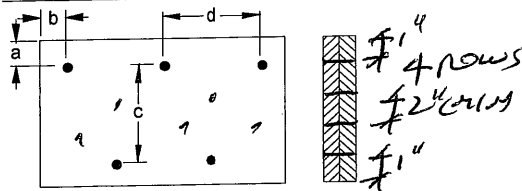
Calculations assume member is fully braced.

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 2010 and CSA O86.
CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

Connection Diagram

a minimum = 1" c = 1-1/2" 4
 b minimum = 3" d = 4"

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.

Member has no side loads.

Connectors are: 16d Spiral Nails

3-1/2" ARDOX SPIRAL**Disclosure**

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BC CALC® Design Report

Build 6215

Job name:

File name: S38-16 BAROSSA 16 EL A-L2.mmdl

Address:

Description: 1st Floor\Flush Beams\B6(i5162)

City, Province, Postal Code: BRA...RD

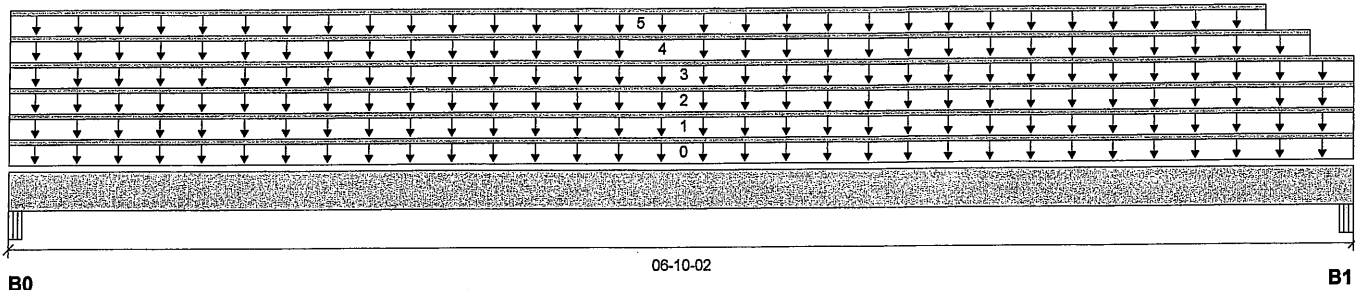
Specifier:

Customer:

Designer: CZ

Code reports: CCMC 12472-R

Company:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-1/8"	419 / 0	747 / 0	1,229 / 0	
B1, 5-1/4"	424 / 0	766 / 0	1,263 / 0	

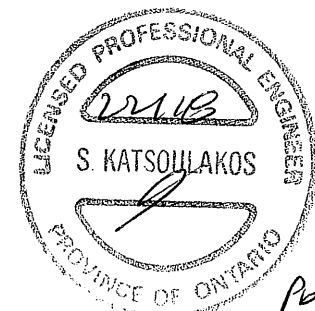
Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	06-10-02		10			00-00-00
1	ROOF LOAD	Unf. Lin. (lb/ft)	L	00-00-00	06-10-02	60	64	240		n/a
2	LOW ROOF	Unf. Lin. (lb/ft)	L	00-00-00	06-10-02	38	38	124		n/a
3	WALL	Unf. Lin. (lb/ft)	L	00-00-00	06-10-02		100			n/a
4	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	06-07-08	20	8			n/a
5	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	06-04-14	6				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	4,235 ft-lbs	23,220 ft-lbs	18.2 %	13	03-04-08
End Shear	1,982 lbs	11,571 lbs	17.1 %	13	01-01-10
Total Load Deflection	L/999 (0.043")	n/a	n/a	45	03-04-08
Live Load Deflection	L/999 (0.028")	n/a	n/a	61	03-04-08
Max Defl.	0.043"	n/a	n/a	45	03-04-08
Span / Depth	7.8				

Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Beam 4-1/8" x 3-1/2"	2,987 lbs	38.7 %	17.0 %	Unspecified
B1	Beam 5-1/4" x 3-1/2"	3,063 lbs	31.2 %	13.7 %	Unspecified



SITE COPY

DWG NO. TAM 9795-18
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

1st Floor\Flush Beams\B6(i5162)

Dry | 1 span | No cant.

February 15, 2018 09:19:36

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: BRA...RD

Customer:

Code reports: CCMC 12472-R.

File name: S38-16 BAROSSA 16 EL A-L2.mmdl

Description: 1st Floor\Flush Beams\B6(i5162)

Specifier:

Designer: CZ

Company:

Notes

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

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

Design meets User specified (1") Maximum Total load deflection criteria.

Design meets User specified (0.75") Maximum 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 2010 and CSA O86.

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

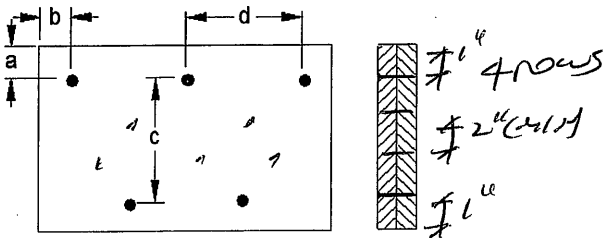
CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Member has no side loads.

Connection Diagram



a minimum = 1"
b minimum = 3"

c = 1-1/2"
d = 4"

Member has no side loads.

Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL

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®,

DWG NO. TAM 9795-18
STRUCTURAL
COMPONENT ONLY

SITE COPY





Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

BC CALC® Design Report

Dry | 1 span | No cant.

February 15, 2018 09:38:15

Build 6215

Job name:

File name: S38-16 BAROSSA 16 EL B-L2.mmdl

Address:

Description: 1st Floor\Flush Beams\B6A(i5173)

City, Province, Postal Code: BRA...RD

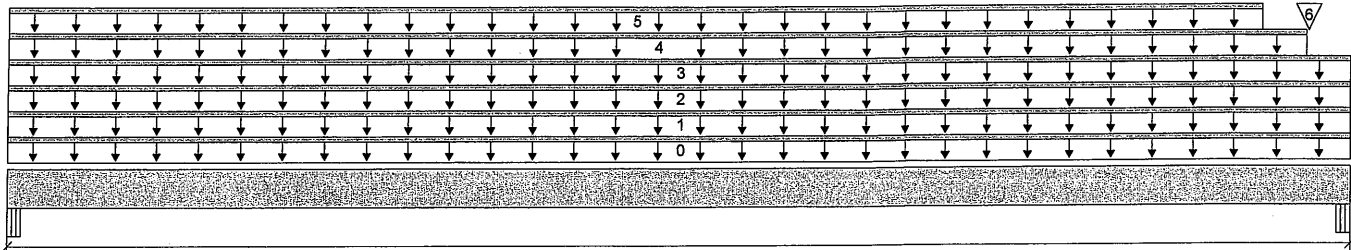
Specifier:

Customer:

Designer: CZ

Code reports: CCMC 12472-R

Company:



B0

06-10-02

B1

Total Horizontal Product Length = 06-10-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-1/8"	588 / 0	869 / 0	1,532 / 0	
B1, 5-1/4"	1,056 / 0	1,374 / 0	3,340 / 0	

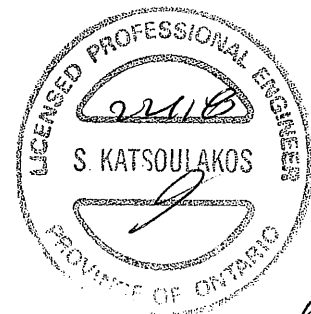
Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	06-10-02		10			00-00-00
1	ROOF LOAD	Unf. Lin. (lb/ft)	L	00-00-00	06-10-02	110	100	330		n/a
2	LOW ROOF	Unf. Lin. (lb/ft)	L	00-00-00	06-10-02	38	38	124		n/a
3	WALL	Unf. Lin. (lb/ft)	L	00-00-00	06-10-02		100			n/a
4	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	06-07-08	20	8			n/a
5	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	06-04-14	6				n/a
6	User Load	Conc. Pt. (lbs)	L	06-07-10	06-07-10	459	484	1,765		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	5,216 ft-lbs	23,220 ft-lbs	22.5 %	13	03-04-08
End Shear	2,441 lbs	11,571 lbs	21.1 %	13	01-01-10
Total Load Deflection	L/999 (0.053")	n/a	n/a	45	03-04-08
Live Load Deflection	L/999 (0.036")	n/a	n/a	61	03-04-08
Max Defl.	0.053"	n/a	n/a	45	03-04-08
Span / Depth	7.8				

Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Beam 4-1/8" x 3-1/2"	3,679 lbs	47.7 %	20.9 %	Unspecified
B1	Beam 5-1/4" x 3-1/2"	7,256 lbs	73.9 %	32.4 %	Unspecified



SITE COPY

DWG NO. TAM 9796-18
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report
Build 6215

1st Floor\Flush Beams\B6A(i5173)

Dry | 1 span | No cant.

February 15, 2018 09:38:15

Job name:

File name: S38-16 BAROSSA 16 EL B-L2.mmdl

Address:

Description: 1st Floor\Flush Beams\B6A(i5173)

City, Province, Postal Code: BRA...RD

Specifier:

Customer:

Designer: CZ

Code reports: CCMC 12472-R

Company:

Notes

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

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

Design meets User specified (1") Maximum Total load deflection criteria.

Design meets User specified (0.75") Maximum 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 2010 and CSA O86.

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

CONFORMS TO OBC 2012

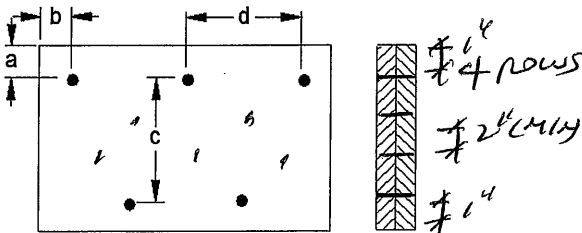
Design based on Dry Service Condition.

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.

Member has no side loads.

Connection Diagram



a minimum = 1"
b minimum = 3"

c = 1-1/2"
d = 4"

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.

Member has no side loads.

Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 9796-18
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

BC CALC® Design Report
Build 6215

1st Floor\Flush Beams\B6B(i5177)

Dry | 1 span | No cant.

February 15, 2018 10:56:21

Job name:

File name: S38-16 BAROSSA 16 EL C-L2.mmdl

Address:

Description: 1st Floor\Flush Beams\B6B(i5177)

City, Province, Postal Code: BRA...RD

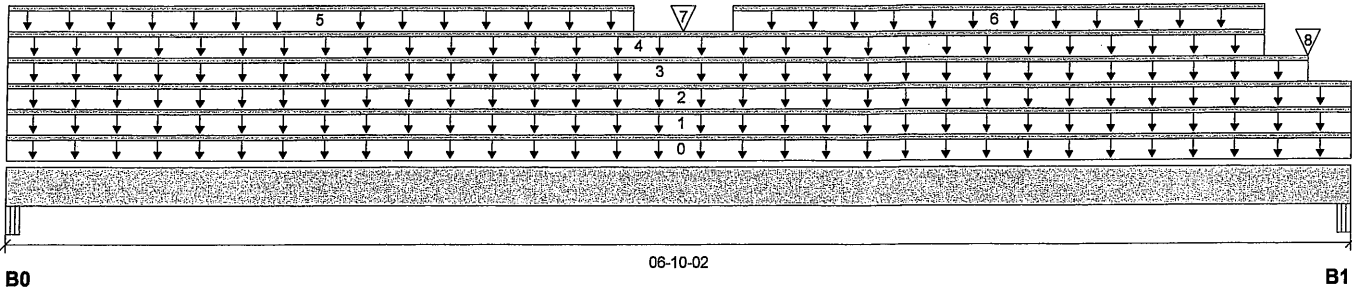
Specifier:

Customer:

Designer: CZ

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 06-10-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-1/8"	418 / 0	725 / 0	1,068 / 0	
B1, 5-1/4"	884 / 0	1,229 / 0	2,863 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	06-10-02		10			00-00-00
1	LOW ROOF	Unf. Lin. (lb/ft)	L	00-00-00	06-10-02	38	38	124		n/a
2	WALL	Unf. Lin. (lb/ft)	L	00-00-00	06-10-02		100			n/a
3	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	06-07-08	20	8			n/a
4	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	06-04-14	6				n/a
5	ROOF LOAD	Unf. Lin. (lb/ft)	L	00-00-00	03-02-01	33	30	99		n/a
6	ROOF LOAD	Unf. Lin. (lb/ft)	L	03-08-01	06-04-14	44	40	132		n/a
7	User Load	Conc. Pt. (lbs)	L	03-05-01	03-05-01	184	189	648		n/a
8	User Load	Conc. Pt. (lbs)	L	06-07-08	06-07-08	460	485	1,760		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4,949 ft-lbs	23,220 ft-lbs	21.3 %	13	03-05-01
End Shear	2,080 lbs	11,571 lbs	18.0 %	13	05-07-06
Total Load Deflection	L/999 (0.046")	n/a	n/a	45	03-04-05
Live Load Deflection	L/999 (0.031")	n/a	n/a	61	03-05-01
Max Defl.	0.046"	n/a	n/a	45	03-04-05
Span / Depth	7.8				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Beam 4-1/8" x 3-1/2"	2,717 lbs	35.2 %	15.4 %	Unspecified
B1	Beam 5-1/4" x 3-1/2"	6,273 lbs	63.9 %	28.0 %	Unspecified



SITE COPY

DWG NO. TAM 9797-18
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

BC CALC® Design Report
Build 6215

1st Floor\Flush Beams\B6B(i5177)

Dry | 1 span | No cant.

February 15, 2018 10:56:21

Job name:

File name: S38-16 BAROSSA 16 EL C-L2.mmdl

Address:

Description: 1st Floor\Flush Beams\B6B(i5177)

City, Province, Postal Code: BRA...RD

Specifier:

Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:

Notes

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

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

Design meets User specified (1") Maximum Total load deflection criteria.

Design meets User specified (0.75") Maximum 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 2010 and CSA O86.

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

Design based on Dry Service Condition.

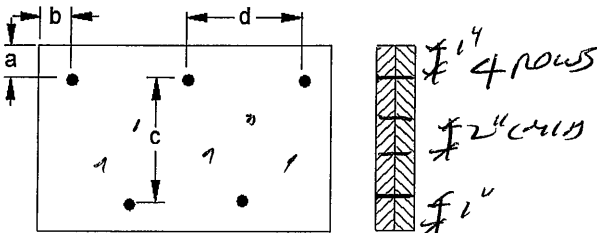
CONFORMS TO OBC 2012

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.

Member has no side loads.

Connection Diagram



a minimum = 1"
b minimum = 3"

c = 1 1/2"
d = 4"

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.

Member has no side loads.

Connectors are: 16d ~~Sinker~~ Nails

3-1/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 9797-18
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report


Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

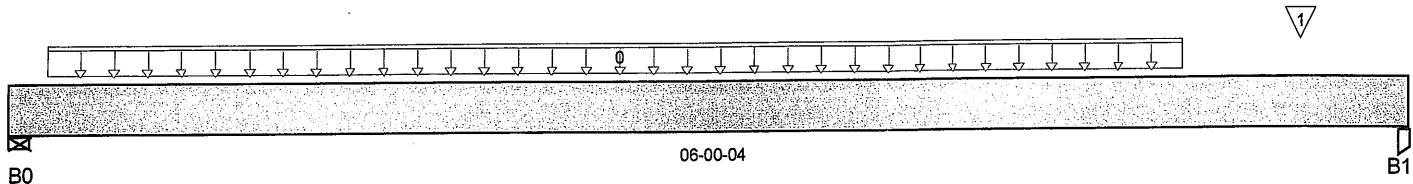
Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B7D

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 06-00-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-1/4"	1,172 / 0	469 / 0		
B1, 3-1/2"	1,249 / 0	497 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	00-02-00	05-00-12	401	150			n/a
1	-	Conc. Pt. (lbs)	L	05-06-12	05-06-12	457	171			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,962 ft-lbs	25,408 ft-lbs	11.7%	1	02-06-12
End Shear	1,771 lbs	11,571 lbs	15.3%	1	04-11-04
Total Load Defl.	L/999 (0.023")	n/a	n/a	4	03-00-12
Live Load Defl.	L/999 (0.016")	n/a	n/a	5	03-00-12
Max Defl.	0.023"	n/a	n/a	4	03-00-12
Span / Depth	6.9	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4-1/4" x 3-1/2"	2,343 lbs	19.4%	12.9%	Unspecified
B1 Post	3-1/2" x 3-1/2"	2,495 lbs	25.1%	16.7%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum total load deflection criteria.
 Design meets User specified (0.75") Maximum live load deflection criteria.
 Calculations assume unbraced length of Top: 00-02-00, Bottom: 00-02-00.
 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 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012



BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B7

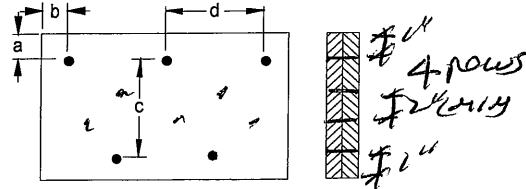
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



a minimum = 1" c = 1-1/2"
b minimum = 3" d = 4"

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.

Member has no side loads.

Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL

Disclosure

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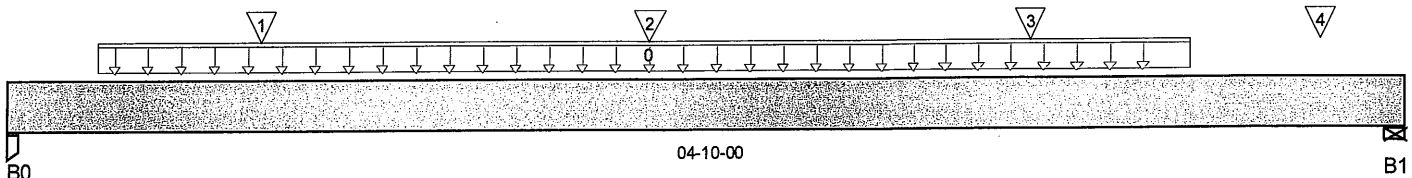
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Build 5033
Job Name:
Address:
City, Province, Postal Code: BRADFORD,
Customer:
Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmd
Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B8D
Specifier:
Designer: CZ
Company:
Misc:



Total Horizontal Product Length = 04-10-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	846 / 0	341 / 0		
B1, 4"	971 / 0	389 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	00-03-12	04-01-04	109	41			n/a
1	J2(i4164)	Conc. Pt. (lbs)	L	00-10-08	00-10-08	386	145			n/a
2	J2(i4093)	Conc. Pt. (lbs)	L	02-02-08	02-02-08	386	145			n/a
3	J2(i4089)	Conc. Pt. (lbs)	L	03-06-08	03-06-08	338	127			n/a
4	J2(i4106)	Conc. Pt. (lbs)	L	04-06-08	04-06-08	290	109			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,946 ft-lbs	25,408 ft-lbs	7.7%	1	02-02-08
End Shear	1,410 lbs	11,571 lbs	12.2%	1	01-01-00
Total Load Defl.	L/999 (0.009")	n/a	n/a	4	02-04-10
Live Load Defl.	L/999 (0.006")	n/a	n/a	5	02-04-10
Max Defl.	0.009"	n/a	n/a	4	02-04-10
Span / Depth	5.5	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Post	3-1/2" x 3-1/2"	1,695 lbs	17%	11.3%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	1,943 lbs	17.1%	11.4%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum total load deflection criteria.
Design meets User specified (0.75") Maximum live load deflection criteria.
Calculations assume unbraced length of Top: 00-03-04, Bottom: 00-03-04.
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 2010 and CSA O86.
Design based on Dry Service Condition.
Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012





BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports:

CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B8

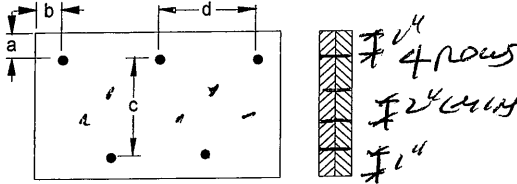
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



a minimum = 1" c = 1-1/2"
b minimum = 3" d = 4"

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.

Member has no side loads.

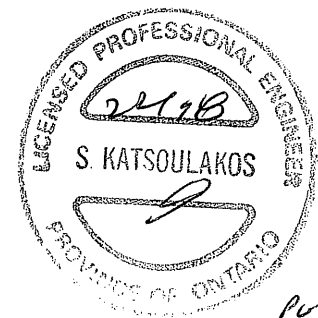
Connectors are: 16d ^{3-1/2"} Nails

3-1/2" ARDOX SPIRAL

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here 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 1-800-964-6999 before installation.

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BC CALC® Design Report



Dry | 1 span | No cantilevers | 0/12 slope (deg)

September 26, 2017 11:26:03

Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

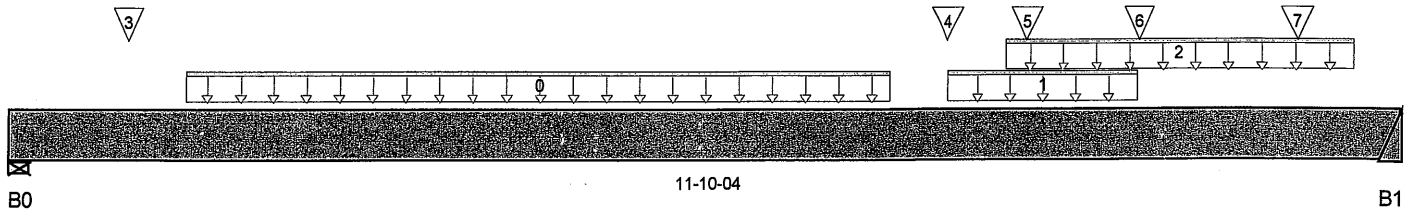
Description: Designs\Flush Beams\1st Floor\Flush Beams\B9(i4703)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 11-10-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	761 / 0	691 / 0		
B1	1,097 / 0	843 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	01-06-00	07-06-00	112	102			n/a
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	08-00-00	09-07-12		32			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	08-06-01	11-05-11	108	70			n/a
3	J6(i4098)	Conc. Pt. (lbs)	L	01-00-00	01-00-00	101	92			n/a
4	J6(i4225)	Conc. Pt. (lbs)	L	08-00-00	08-00-00	110	86			n/a
5	B11(i4472)	Conc. Pt. (lbs)	L	08-08-04	08-08-04	464	244			n/a
6	J7(i4495)	Conc. Pt. (lbs)	L	09-07-12	09-07-12	90	54			n/a
7	-	Conc. Pt. (lbs)	L	10-11-14	10-11-14	90	70			n/a

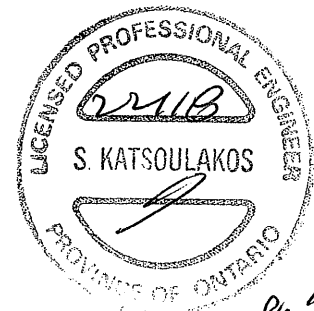
Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	6,924 ft-lbs	25,408 ft-lbs	27.3%	1	07-00-00
End Shear	2,632 lbs	11,571 lbs	22.7%	1	10-10-12
Total Load Defl.	L/589 (0.231")	0.568"	40.8%	4	06-03-00
Live Load Defl.	L/1,077 (0.127")	0.378"	33.4%	5	06-03-00
Max Defl.	0.231"	1"	23.1%	4	06-03-00
Span / Depth	14.3	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	2,006 lbs	19.5%	8.5%	Unspecified
B1 Hanger	2" x 3-1/2"	2,699 lbs	n/a	31.6%	HGUS410

Notes





Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B9(i4703)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

September 26, 2017 11:26:03

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B9(i4703)

Specifier:

Designer: CZ

Company:

Misc:

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

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

Design meets User specified (1") Maximum total load deflection criteria.

Design meets User specified (0.75") Maximum 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.

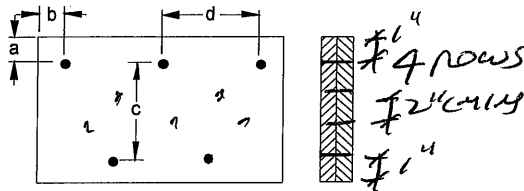
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012**Disclosure**

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here 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 1-800-964-6999 before installation.

Connection Diagram

a minimum = 1" c = 1-1/2"
b minimum = 3" d = 6"

Calculated Side Load = 257.9 lb/ft

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.

Connectors are: 3-1/4" Pneumatic Nails

3-1/2" ARDOX SPIRAL

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DWG NO. TAM 9000-18
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B10(i4893)

BC CALC® Design Report



Dry | 1 span | No cantilevers | 0/12 slope (deg)

September 28, 2017 16:36:32

Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports:

CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

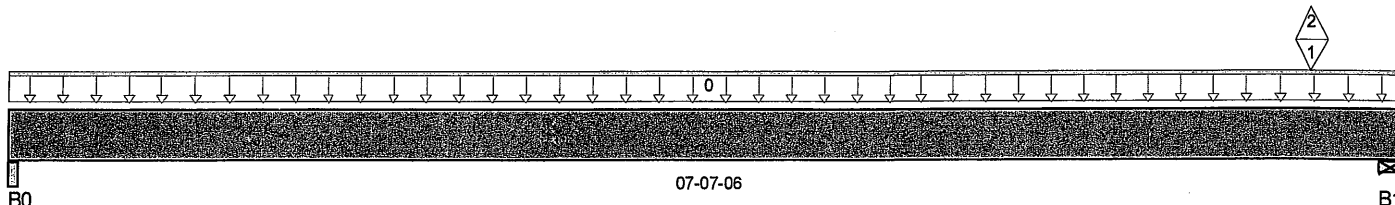
Description: Designs\Flush Beams\1st Floor\Flush Beams\B10(i4893)

Specifier:

Designer: CZ

Company:

Msc:



Total Horizontal Product Length = 07-07-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-5/8"	82 / 3	65 / 0		
B1, 5-1/2"	723 / 247	215 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	07-07-06	20	7			n/a
1	B12(i4873)	Conc. Pt. (lbs)	L	07-01-10	07-01-10	652	150			n/a
2	B12(i4873)	Conc. Pt. (lbs)	L	07-01-10	07-01-10	-250				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	371 ft-lbs	25,408 ft-lbs	1.5%	1	03-11-04
Neg. Moment	-15 ft-lbs	n/a	n/a	4	07-01-10
End Shear	164 lbs	11,571 lbs	1.4%	1	06-04-06
Uplift	177 lbs	n/a	n/a	4	07-07-06
Total Load Defl.	L/999 (0.005")	n/a	n/a	6	03-09-04
Live Load Defl.	L/999 (0.003")	n/a	n/a	8	03-09-04
Max Defl.	0.005"	n/a	n/a	6	03-09-04
Span / Depth	8.9	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Beam	2-5/8" x 3-1/2"	203 lbs	4.1%	1.8%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	1,354 lbs	13.2%	5.8%	Unspecified

Cautions

Uplift of 177 lbs found at span 1 - Right. *CSIMPSON 1-H2-5A @ D.B1*

Notes





Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B10(i4893)

Dry | 1 span | No cantilevers | 0/12 slope(deg)

September 28, 2017 16:36:32

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B10(i4893)

Specifier:

Designer: CZ

Company:

Misc:

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

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

Design meets User specified (1") Maximum total load deflection criteria.

Design meets User specified (0.75") Maximum live load deflection criteria.

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

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 2010 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

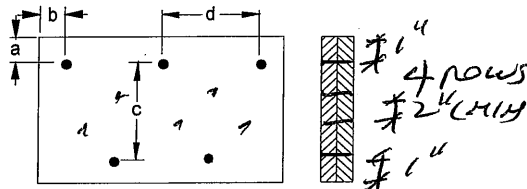
CONFORMS TO OBC 2012

Disclosure

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Connection Diagram



a minimum = 1" c = 1-1/2"
b minimum = 3" d = 4"

Calculated Side Load = 103.8 lb/ft

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.

Connectors are: 3-1/4" Pneumatic Gun Nails

3-1/2" ARDOX SPIRAL



DWG NO. TAM 9801-88
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B11(i4472)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

September 26, 2017 11:26:03

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

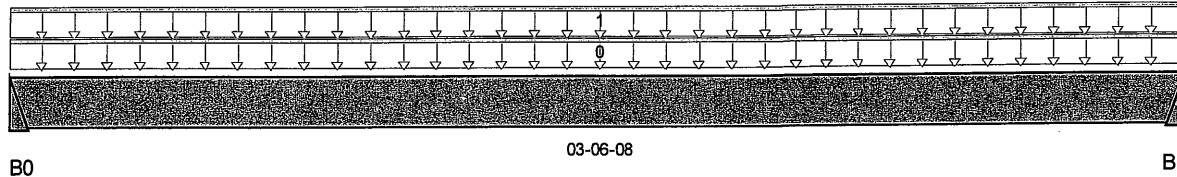
Description: Designs\Flush Beams\1st Floor\Flush Beams\B11(i4472)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 03-06-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	464 / 0	244 / 0		
B1	464 / 0	244 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	User Load	Unf. Lin. (lb/ft)	L	00-00-00	03-06-08	240	120			n/a
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-06-08	22	8			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	785 ft-lbs	25,408 ft-lbs	3.1%	1	01-09-04
End Shear	459 lbs	11,571 lbs	4%	1	00-11-08
Total Load Defl.	L/999 (0.002")	n/a	n/a	4	01-09-04
Live Load Defl.	L/999 (0.001")	n/a	n/a	5	01-09-04
Max Defl.	0.002"	n/a	n/a	4	01-09-04
Span / Depth	4.2	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 3-1/2"	1,001 lbs	n/a	11.7%	HUC410
B1 Hanger	2" x 3-1/2"	1,001 lbs	n/a	11.7%	HGUS410

Notes

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

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

Design meets User specified (1") Maximum total load deflection criteria.

Design meets User specified (0.75") Maximum 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 2010 and CSA O86.

CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9



DWG NO. TAM 9802-18
STRUCTURAL
COMPONENT ONLY

SITE COPY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B11(i4472)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

September 26, 2017 11:26:03

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B11(i4472)

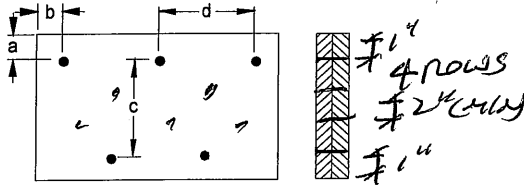
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



a minimum = 1" c = 1-1/2"
b minimum = 3" d = 4"

Member has no side loads.

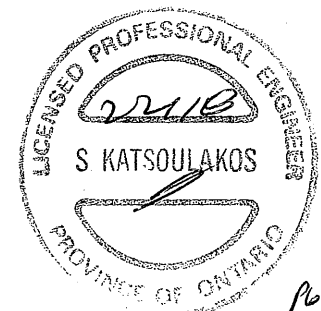
Connectors are: 16d Sinkers Nails

3-1/2" ARDOX SPIRAL

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here 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 1-800-964-6999 before installation.

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DWG NO. TAM 9802-18
STRUCTURAL
COMPONENT ONLY

SITE COPY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\B12

Dry | 2 spans | Left cantilever | 0/12 slope (deg)

February 15, 2018 08:05:55

BC CALC® Design Report



Build 6536

Job Name:

BAYVIEW WELLINGTON

Address:

GREEN VALLEY EAST

City, Province, Postal Code: BRADFORD,

Customer:

Code reports:

CCMC 12472-R

File Name: B12.bcc

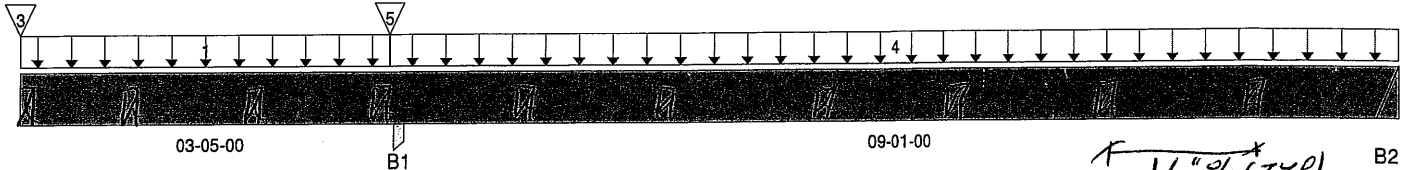
Description: Designs\B12

Specifier: S38-16

Designer:

Company:

Misc:



Total Horizontal Product Length = 12-06-00

F 16" 9/16" (24P) B2 N.T.S.

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	2,615 / 0	1,602 / 0		
B2	842 / 237	337 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Standard Load	Unf. Area (lb/ft^2)	L	00-00-00	03-04-00	40	20			02-00-00
3	B11	Conc. Pt. (lbs)	L	00-00-00	00-00-00	453	232			n/a
4		Unf. Area (lb/ft^2)	L	03-04-00	12-06-00	40	20			04-06-00
5	B14A	Conc. Pt. (lbs)	L	03-04-00	03-04-00	851	629			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,153 ft-lbs	23,220 ft-lbs	13.6%	3	08-02-07
Neg. Moment	-4,547 ft-lbs	-23,220 ft-lbs	19.6%	1	03-05-00
End Shear	1,240 lbs	11,571 lbs	10.7%	3	11-04-08
Cont. Shear	1,885 lbs	11,571 lbs	16.3%	1	04-04-04
Total Load Defl.	2xL/1,998 (0.117")	n/a	n/a	9	00-00-00
Live Load Defl.	2xL/1,998 (0.098")	n/a	n/a	12	00-00-00
Total Neg. Defl.	2xL/1,998 (-0.041")	n/a	n/a	10	00-00-00
Max Defl.	0.057"	n/a	n/a	10	07-11-13
Cant. Max Defl.	0.117"	n/a	n/a	9	00-00-00
Span / Depth	11.1	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Post	3-1/2" x 3-1/2"	5,926 lbs	n/a	39.7%	Unspecified
B2 Hanger	4" x 3-1/2"	1,684 lbs	13.9%	9.9%	HGUS410
B2 Hanger Uplift	4" x 3-1/2"	52 lbs	0.01	0.00	HGUS410

Cautions

Uplift of 52 lbs found at span 2 - Right. *(SIMPSON 1-HGUS410 @ 0.32)*
 Header for the hanger HGUS410 at B2 is a Single 3-1/2" x 9-1/2" VERSA-LAM® 1.7 2650 SP.

Long Cantilever: Sheathing required on bottom flange and adjacent back span or bracing designed by the design professional of record. Design professional of record must address uplift at supports. *(SIMPSON 1-H25A @ 0.31)*

Notes



SITE COPY

DWG NO. TAM 9803-18
 STRUCTURAL
 COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\B12

Dry | 2 spans | Left cantilever | 0/12 slope (deg)

February 15, 2018 08:05:55

BC CALC® Design Report



Build 6536

Job Name:

BAYVIEW WELLINGTON

Address:

GREEN VALLEY EAST

City, Province, Postal Code: BRADFORD,

Customer:

Code reports:

CCMC 12472-R

File Name: B12.bcc

Description: Designs\B12

Specifier: S38-16

Designer:

Company:

Misc:

Design meets User specified (2xL/240) Total load deflection criteria.

Design meets User specified (2xL/360) Live load deflection criteria.

Design meets User specified (1") Maximum Total load deflection criteria.

Design meets arbitrary (1") Cantilever Maximum Total load deflection criteria.

Calculations assume member is fully braced.

Hanger Manufacturer: Simpson Strong-Tie, Inc.

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 2010 and CSA O86.

CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

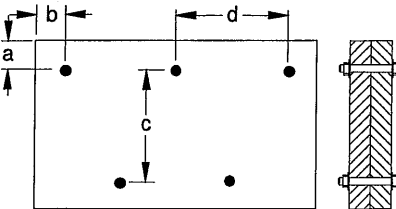
Cantilevers require sheathed bottom flanges, blocking at cantilever support and closure at ends.

Disclosure

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Connection Diagram



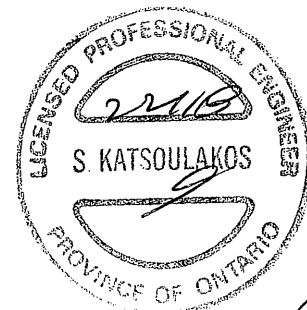
a minimum = $2\frac{1}{2}"$ c = $4\frac{1}{2}"$
b minimum = $2\frac{1}{2}"$ d = $12"$

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.

Bolts are assumed to be Grade A307 or Grade 2 or higher.

Member has no side loads.

Connectors are: 1/2 in. Staggered Through Bolt



SITE COPY

DWG NO. TAM 9B03-18
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor...\B13DR(i4052)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

September 21, 2017 16:20:03

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

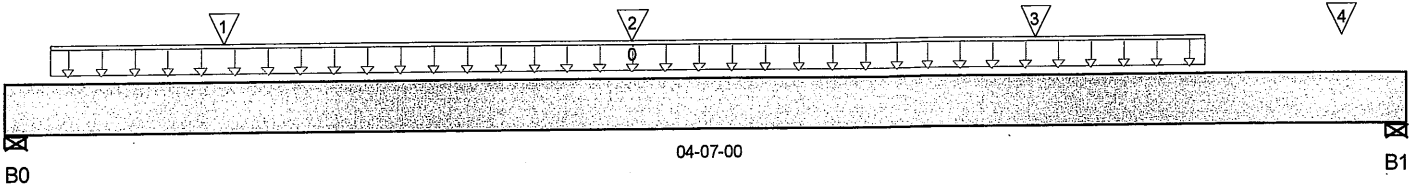
Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B13

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 04-07-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	1,179 / 0	465 / 0		
B1, 4"	1,181 / 0	466 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	00-01-12	03-11-04	253	95			n/a
1	J2(i4164)	Conc. Pt. (lbs)	L	00-08-08	00-08-08	386	145			n/a
2	J2(i4093)	Conc. Pt. (lbs)	L	02-00-08	02-00-08	386	145			n/a
3	J2(i4089)	Conc. Pt. (lbs)	L	03-04-08	03-04-08	338	127			n/a
4	J2(i4106)	Conc. Pt. (lbs)	L	04-04-08	04-04-08	290	109			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,281 ft-lbs	25,408 ft-lbs	9%	1	02-00-08
End Shear	1,770 lbs	11,571 lbs	15.3%	1	03-05-08
Total Load Defl.	L/999 (0.009")	n/a	n/a	4	02-03-07
Live Load Defl.	L/999 (0.006")	n/a	n/a	5	02-03-07
Max Defl.	0.009"	n/a	n/a	4	02-03-07
Span / Depth	5.1	n/a	n/a		00-00-00

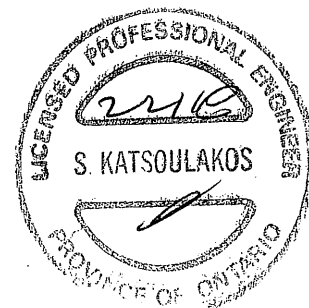
Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4" x 3-1/2"	2,350 lbs	20.7%	13.8%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	2,354 lbs	20.7%	13.8%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum total load deflection criteria.
 Design meets User specified (0.75") Maximum live load deflection criteria.
 Calculations assume unbraced length of Top: 00-02-11, Bottom: 00-02-11
 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 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC2012



SITE COPY

DWG NO. TAM 9804-18
 STRUCTURAL
 COMPONENT ONLY



BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

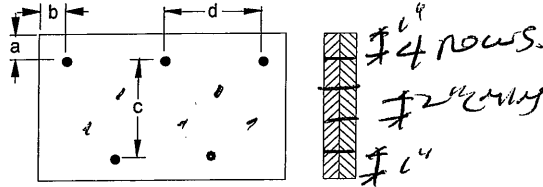
Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B1

Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram

a minimum = 1" c = 3-1/2"
 b minimum = 3" d = 6"

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.

Member has no side loads.

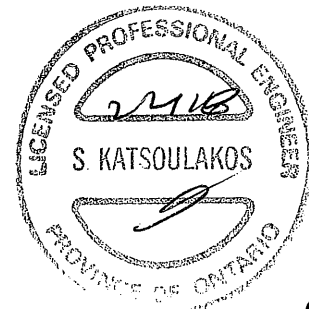
Connectors are: 16d Sinker Nails

3-1/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 9804-18
 STRUCTURAL
 COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B14A(i4602)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

September 26, 2017 11:26:03

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

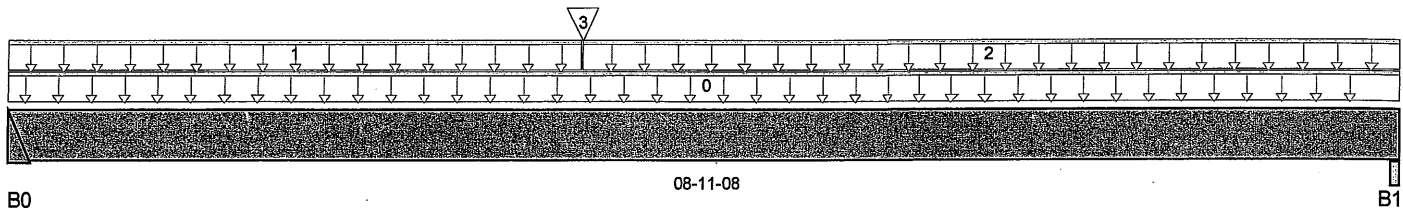
Description: Designs\Flush Beams\1st Floor\Flush Beams\B14A(i4602)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 08-11-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	851 / 0	629 / 0		
B1, 1-3/4"	651 / 0	472 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	08-11-08	27	10			n/a
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-08-04	20	8			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	03-08-04	08-11-08	20	7			n/a
3	-	Conc. Pt. (lbs)	L	03-08-04	03-08-04	1,083	857			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	6,682 ft-lbs	25,408 ft-lbs	26.3%	1	03-08-04
End Shear	1,963 lbs	11,571 lbs	17%	1	00-11-08
Total Load Defl.	L/999 (0.11")	n/a	n/a	4	04-02-14
Live Load Defl.	L/999 (0.063")	n/a	n/a	5	04-02-14
Max Defl.	0.11"	n/a	n/a	4	04-02-14
Span / Depth	11.1	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 3-1/2"	2,064 lbs	n/a	24.2%	HGUS410
B1 Beam	1-3/4" x 3-1/2"	1,566 lbs	23.5%	21%	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.

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 2010 and CSA

O86.

CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9



SITE COPY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor...B14A(i4602)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

September 26, 2017 11:26:03

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B14A(i4602)

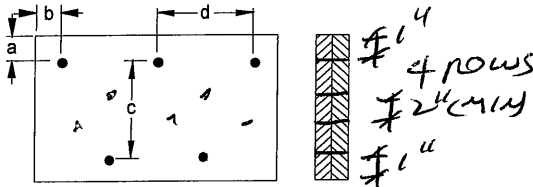
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



a minimum = 1" c = 1-1/2"
b minimum = 3" d = 4"

Calculated Side Load = 297.6 lb/ft

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.

Connectors are: 16d Box Nails

3-1/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 9805-18
STRUCTURAL
COMPONENT ONLY



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B14(i4415)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

September 26, 2017 11:32:22

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16-SUNKEN.mmdl

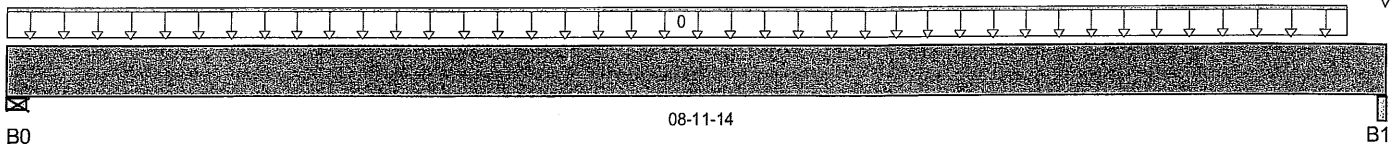
Description: Designs\Flush Beams\Basement\Flush Beams\B14(i4415

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 08-11-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	39 / 0	37 / 0		
B1, 2-5/8"	111 / 0	81 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	08-08-14	9	3			n/a
1	8(i553)	Conc. Pt. (lbs)	L	08-11-10	08-11-10	75	46			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	208 ft-lbs	12,704 ft-lbs	1.6%	1	04-06-13
End Shear	91 lbs	5,785 lbs	1.6%	1	07-11-12
Total Load Defl.	L/999 (0.008")	n/a	n/a	4	04-06-13
Live Load Defl.	L/999 (0.004")	n/a	n/a	5	04-06-13
Max Defl.	0.008"	n/a	n/a	4	04-06-13
Span / Depth	10.8	n/a	n/a		00-00-00

Disclosure

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Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4-3/8" x 1-3/4"	104 lbs	2.6%	1.1%	Unspecified
B1 Beam	2-5/8" x 1-3/4"	267 lbs	10.9%	4.8%	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.

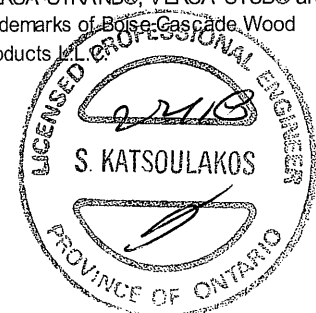
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

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Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\...\B15L(i4499)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

September 26, 2017 11:32:22

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16-SUNKEN.mmdl

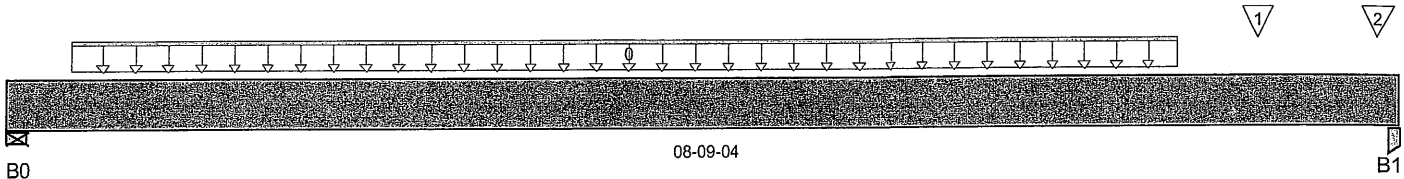
Description: Designs\Flush Beams\Basement\Flush Beams\B15L(i449

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 08-09-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	304 / 0	173 / 0		
B1, 3-1/2"	331 / 0	187 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	00-04-14	07-04-14	76	38			n/a
1	J7(i4523)	Conc. Pt. (lbs)	L	07-10-14	07-10-14	65	33			n/a
2	J7(i4536)	Conc. Pt. (lbs)	L	08-07-10	08-07-10	38	19			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,413 ft-lbs	12,704 ft-lbs	11.1%	1	04-06-06
End Shear	615 lbs	5,785 lbs	10.6%	1	01-01-14
Total Load Defl.	L/999 (0.049")	n/a	n/a	4	04-04-14
Live Load Defl.	L/999 (0.031")	n/a	n/a	5	04-04-14
Max Defl.	0.049"	n/a	n/a	4	04-04-14
Span / Depth	10.4	n/a	n/a		00-00-00

Disclosure

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Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4-3/8" x 1-3/4"	673 lbs	16.5%	7.2%	Unspecified
B1 Post	3-1/2" x 1-3/4"	730 lbs	14.7%	9.8%	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.

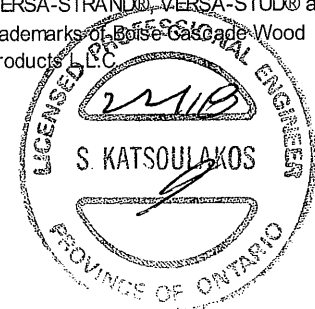
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

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DWG NO. TAM 9807-18
STRUCTURAL
COMPONENT ONLY



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\...\B15L(i4499)

Dry | 1 span | No cantilevers | 0/12 slope (deg)

September 26, 2017 11:32:22

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16-SUNKEN.mmdl

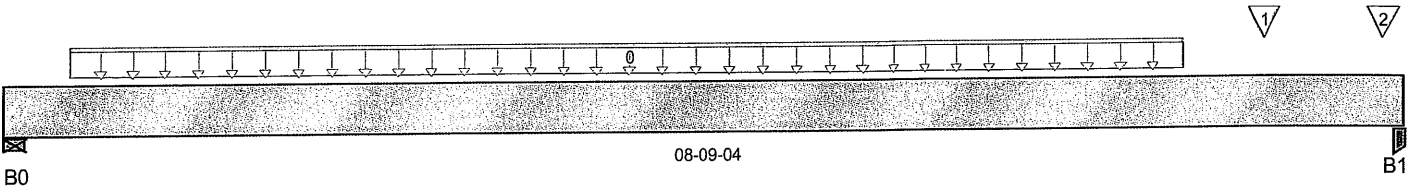
Description: Designs\Flush Beams\Basement\Flush Beams\B15L(i449

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 08-09-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	304 / 0	173 / 0		
B1, 3-1/2"	331 / 0	187 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	00-04-14	07-04-14	76	38			n/a
1	J7(i4523)	Conc. Pt. (lbs)	L	07-10-14	07-10-14	65	33			n/a
2	J7(i4536)	Conc. Pt. (lbs)	L	08-07-10	08-07-10	38	19			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,413 ft-lbs	12,704 ft-lbs	11.1%	1	04-06-06
End Shear	615 lbs	5,785 lbs	10.6%	1	01-01-14
Total Load Defl.	L/999 (0.049")	n/a	n/a	4	04-04-14
Live Load Defl.	L/999 (0.031")	n/a	n/a	5	04-04-14
Max Defl.	0.049"	n/a	n/a	4	04-04-14
Span / Depth	10.4	n/a	n/a		00-00-00

Disclosure

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Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4-3/8" x 1-3/4"	673 lbs	16.5%	7.2%	Unspecified
B1 Post	3-1/2" x 1-3/4"	730 lbs	14.7%	9.8%	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.

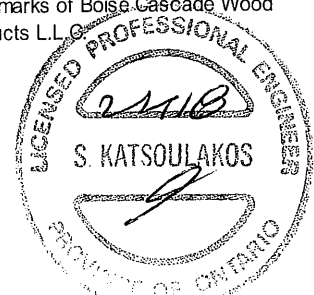
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

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BC CALC® Design Report



Dry | 1 span | No cantilevers | 0/12 slope (deg)

September 26, 2017 11:32:22

Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-16 BAROSSA 16-SUNKEN.mmdl

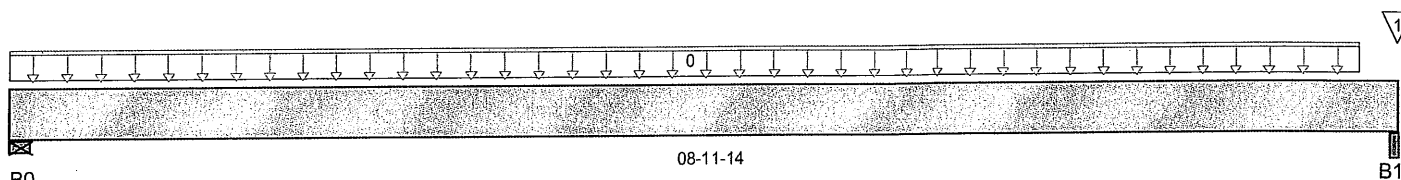
Description: Designs\Flush Beams\Basement\Flush Beams\B14(i4415

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 08-11-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	39 / 0	37 / 0		
B1, 2-5/8"	111 / 0	81 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	08-08-14	9	3			n/a
1	8(i553)	Conc. Pt. (lbs)	L	08-11-10	08-11-10	75	46			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	208 ft-lbs	12,704 ft-lbs	1.6%	1	04-06-13
End Shear	91 lbs	5,785 lbs	1.6%	1	07-11-12
Total Load Defl.	L/999 (0.008")	n/a	n/a	4	04-06-13
Live Load Defl.	L/999 (0.004")	n/a	n/a	5	04-06-13
Max Defl.	0.008"	n/a	n/a	4	04-06-13
Span / Depth	10.8	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4-3/8" x 1-3/4"	104 lbs	2.6%	1.1%	Unspecified
B1 Beam	2-5/8" x 1-3/4"	267 lbs	10.9%	4.8%	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 2010 and CSA O86.

CONFORMS TO OBC 2012

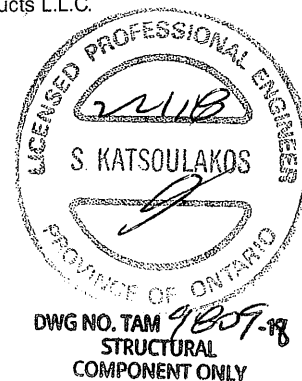
Design based on Dry Service Condition.

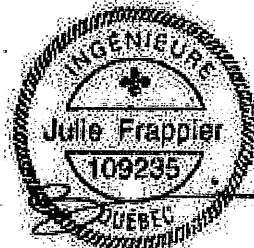
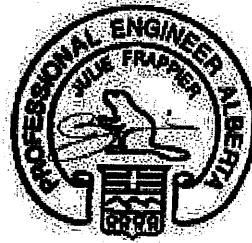
Importance Factor : Normal Part code : Part 9

Disclosure

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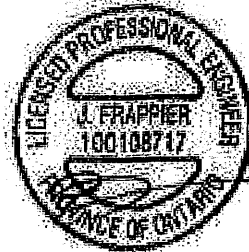
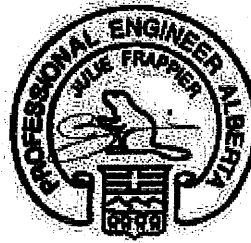
Maximum Floor Spans

Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/480 Deflection Limit
5/8" OSB G&N Sheathing

Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-1"	14'-2"	13'-9"	N/A	15'-7"	14'-8"	14'-2"	N/A
	NI-40x	16'-1"	15'-2"	14'-8"	N/A	16'-7"	15'-7"	15'-1"	N/A
	NI-60	16'-3"	15'-4"	14'-10"	N/A	16'-8"	15'-9"	15'-3"	N/A
	NI-70	17'-1"	16'-1"	15'-6"	N/A	17'-5"	16'-5"	15'-10"	N/A
	NI-80	17'-3"	16'-3"	15'-8"	N/A	17'-8"	16'-7"	16'-0"	N/A
11-7/8"	NI-20	16'-11"	16'-0"	15'-5"	N/A	17'-6"	16'-6"	16'-0"	N/A
	NI-40x	18'-1"	17'-0"	16'-5"	N/A	18'-9"	17'-6"	16'-11"	N/A
	NI-60	18'-4"	17'-3"	16'-7"	N/A	19'-0"	17'-8"	17'-1"	N/A
	NI-70	19'-6"	18'-0"	17'-4"	N/A	20'-1"	18'-7"	17'-9"	N/A
	NI-80	19'-9"	18'-3"	17'-6"	N/A	20'-4"	18'-10"	17'-11"	N/A
14"	NI-90x	20'-4"	18'-9"	17'-11"	N/A	20'-10"	19'-3"	18'-5"	N/A
	NI-40x	20'-1"	18'-7"	17'-10"	N/A	20'-10"	19'-4"	18'-6"	N/A
	NI-60	20'-5"	18'-11"	18'-1"	N/A	21'-2"	19'-7"	18'-9"	N/A
	NI-70	21'-7"	20'-0"	19'-1"	N/A	22'-3"	20'-7"	19'-8"	N/A
	NI-80	21'-11"	20'-3"	19'-4"	N/A	22'-7"	20'-11"	20'-0"	N/A
16"	NI-90x	22'-7"	20'-11"	19'-11"	N/A	23'-3"	21'-6"	20'-6"	N/A
	NI-60	22'-3"	20'-8"	19'-9"	N/A	23'-1"	21'-5"	20'-6"	N/A
	NI-70	23'-6"	21'-9"	20'-9"	N/A	24'-3"	22'-5"	21'-5"	N/A
	NI-80	23'-11"	22'-1"	21'-1"	N/A	24'-8"	22'-10"	21'-9"	N/A
	NI-90x	24'-8"	22'-9"	21'-9"	N/A	25'-4"	23'-5"	22'-4"	N/A

Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	16'-8"	15'-3"	14'-5"	N/A	16'-8"	15'-3"	14'-5"	N/A
	NI-40x	17'-11"	16'-11"	16'-1"	N/A	18'-5"	17'-1"	16'-1"	N/A
	NI-60	18'-2"	17'-1"	16'-4"	N/A	18'-7"	17'-4"	16'-4"	N/A
	NI-70	19'-2"	17'-10"	17'-2"	N/A	19'-7"	18'-3"	17'-7"	N/A
	NI-80	19'-5"	18'-0"	17'-4"	N/A	19'-10"	18'-5"	17'-8"	N/A
11-7/8"	NI-20	19'-6"	18'-1"	17'-3"	N/A	19'-11"	18'-3"	17'-3"	N/A
	NI-40x	21'-0"	19'-6"	18'-8"	N/A	21'-7"	20'-2"	19'-2"	N/A
	NI-60	21'-4"	19'-9"	18'-11"	N/A	21'-11"	20'-4"	19'-6"	N/A
	NI-70	22'-6"	20'-10"	19'-11"	N/A	23'-0"	21'-5"	20'-5"	N/A
	NI-80	22'-9"	21'-1"	20'-1"	N/A	23'-3"	21'-7"	20'-8"	N/A
14"	NI-90x	23'-4"	21'-8"	20'-8"	N/A	23'-10"	22'-2"	21'-2"	N/A
	NI-40x	23'-7"	21'-11"	20'-11"	N/A	24'-3"	22'-7"	21'-7"	N/A
	NI-60	24'-0"	22'-3"	21'-3"	N/A	24'-8"	22'-11"	21'-11"	N/A
	NI-70	25'-3"	23'-4"	22'-3"	N/A	25'-10"	24'-0"	22'-11"	N/A
	NI-80	25'-7"	23'-8"	22'-7"	N/A	26'-2"	24'-4"	23'-2"	N/A
16"	NI-90x	26'-4"	24'-4"	23'-3"	N/A	26'-10"	24'-11"	23'-9"	N/A
	NI-60	26'-5"	24'-6"	23'-4"	N/A	27'-2"	25'-3"	24'-2"	N/A
	NI-70	27'-9"	25'-8"	24'-6"	N/A	28'-5"	26'-5"	25'-2"	N/A
	NI-80	28'-2"	26'-1"	24'-10"	N/A	28'-10"	26'-9"	25'-6"	N/A
	NI-90x	29'-0"	26'-10"	25'-7"	N/A	29'-7"	27'-5"	26'-2"	N/A

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of $1.50L + 1.25D$. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- 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. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end 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 uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



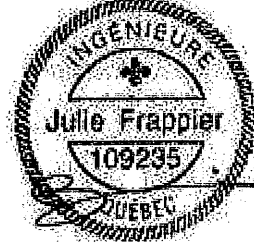
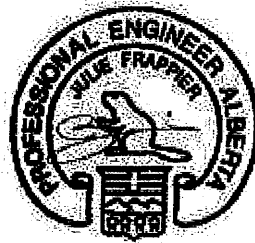
Maximum Floor Spans

Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/480 Deflection Limit
3/4" OSB G&N Sheathing

Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-10"	15'-0"	14'-5"	13'-5"	16'-4"	15'-5"	14'-6"	13'-5"
	NI-40x	17'-0"	16'-0"	15'-5"	14'-9"	17'-5"	16'-5"	15'-10"	15'-2"
	NI-60	17'-2"	16'-2"	15'-7"	14'-11"	17'-6"	16'-7"	15'-11"	15'-3"
	NI-70	18'-0"	16'-11"	16'-3"	15'-7"	18'-5"	17'-3"	16'-7"	15'-11"
	NI-80	18'-3"	17'-1"	16'-5"	15'-9"	18'-8"	17'-5"	16'-9"	16'-1"
11-7/8"	NI-20	17'-10"	16'-10"	16'-2"	15'-6"	18'-6"	17'-4"	16'-9"	16'-1"
	NI-40x	19'-4"	17'-11"	17'-3"	16'-6"	19'-11"	18'-6"	17'-9"	17'-0"
	NI-60	19'-7"	18'-2"	17'-5"	16'-9"	20'-2"	18'-9"	17'-11"	17'-2"
	NI-70	20'-9"	19'-2"	18'-3"	17'-5"	21'-4"	19'-9"	18'-10"	17'-10"
	NI-80	21'-1"	19'-5"	18'-6"	17'-7"	21'-7"	20'-0"	19'-0"	18'-0"
	NI-90x	21'-8"	20'-0"	19'-1"	18'-0"	22'-2"	20'-6"	19'-6"	18'-6"
14"	NI-40x	21'-5"	19'-10"	18'-11"	17'-11"	22'-1"	20'-6"	19'-7"	18'-7"
	NI-60	21'-10"	20'-2"	19'-3"	18'-2"	22'-5"	20'-10"	19'-11"	18'-10"
	NI-70	23'-0"	21'-3"	20'-3"	19'-2"	23'-8"	21'-11"	20'-10"	19'-9"
	NI-80	23'-5"	21'-7"	20'-7"	19'-5"	24'-0"	22'-3"	21'-2"	20'-0"
	NI-90x	24'-1"	22'-3"	21'-2"	20'-0"	24'-8"	22'-10"	21'-9"	20'-7"
16"	NI-60	23'-9"	22'-0"	20'-11"	19'-10"	24'-6"	22'-9"	21'-8"	20'-6"
	NI-70	25'-1"	23'-2"	22'-0"	20'-10"	25'-9"	23'-10"	22'-9"	21'-6"
	NI-80	25'-6"	23'-6"	22'-4"	21'-2"	26'-1"	24'-2"	23'-1"	21'-10"
	NI-90x	26'-4"	24'-3"	23'-1"	21'-10"	26'-11"	24'-11"	23'-8"	22'-5"

Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	16'-10"	15'-5"	14'-6"	13'-5"	16'-10"	15'-5"	14'-6"	13'-5"
	NI-40x	18'-8"	17'-2"	16'-3"	15'-2"	18'-10"	17'-2"	16'-3"	15'-2"
	NI-60	18'-11"	17'-6"	16'-6"	15'-5"	19'-2"	17'-6"	16'-6"	15'-5"
	NI-70	20'-0"	18'-7"	17'-9"	16'-7"	20'-5"	18'-11"	17'-10"	16'-7"
	NI-80	20'-3"	18'-10"	17'-11"	16'-10"	20'-8"	19'-3"	18'-2"	16'-10"
11-7/8"	NI-20	20'-1"	18'-5"	17'-5"	16'-2"	20'-1"	18'-5"	17'-5"	16'-2"
	NI-40x	21'-10"	20'-4"	19'-4"	17'-8"	22'-5"	20'-6"	19'-4"	17'-8"
	NI-60	22'-1"	20'-7"	19'-7"	18'-4"	22'-8"	20'-10"	19'-8"	18'-4"
	NI-70	23'-4"	21'-8"	20'-8"	19'-7"	23'-10"	22'-3"	21'-2"	19'-9"
	NI-80	23'-7"	21'-11"	20'-11"	19'-9"	24'-1"	22'-6"	21'-5"	20'-0"
	NI-90x	24'-3"	22'-6"	21'-6"	20'-4"	24'-8"	23'-0"	22'-0"	20'-9"
14"	NI-40x	24'-5"	22'-9"	21'-8"	19'-5"	25'-1"	23'-2"	21'-9"	19'-5"
	NI-60	24'-10"	23'-1"	22'-0"	20'-10"	25'-6"	23'-8"	22'-4"	20'-10"
	NI-70	26'-1"	24'-3"	23'-2"	21'-10"	26'-8"	24'-11"	23'-9"	22'-4"
	NI-80	26'-6"	24'-7"	23'-5"	22'-2"	27'-1"	25'-3"	24'-1"	22'-9"
	NI-90x	27'-3"	25'-4"	24'-1"	22'-9"	27'-9"	25'-11"	24'-8"	23'-4"
16"	NI-60	27'-3"	25'-5"	24'-2"	22'-10"	28'-0"	26'-2"	24'-9"	23'-1"
	NI-70	28'-8"	26'-8"	25'-4"	23'-11"	29'-3"	27'-4"	26'-1"	24'-8"
	NI-80	29'-1"	27'-0"	25'-9"	24'-4"	29'-8"	27'-9"	26'-5"	25'-0"
	NI-90x	29'-11"	27'-10"	26'-6"	25'-0"	30'-6"	28'-5"	27'-2"	25'-8"

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 3/4 inch for a joist spacing of 24 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end 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 uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



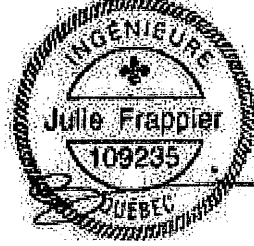
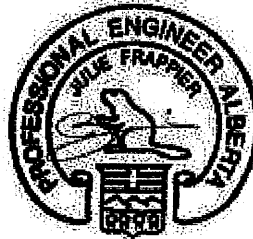
Maximum Floor Spans

Live Load = 40 psf, Dead Load = 30 psf
Simple Spans, L/480 Deflection Limit
5/8" OSB G&N Sheathing

Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-1"	14'-1"	13'-3"	N/A	15'-7"	14'-1"	13'-3"	N/A
	NI-40x	16'-1"	15'-2"	14'-8"	N/A	16'-7"	15'-7"	15'-1"	N/A
	NI-60	16'-3"	15'-4"	14'-10"	N/A	16'-8"	15'-9"	15'-3"	N/A
	NI-70	17'-1"	16'-1"	15'-6"	N/A	17'-5"	16'-5"	15'-10"	N/A
	NI-80	17'-3"	16'-3"	15'-8"	N/A	17'-8"	16'-7"	16'-0"	N/A
11-7/8"	NI-20	16'-11"	16'-0"	15'-5"	N/A	17'-6"	16'-6"	16'-0"	N/A
	NI-40x	18'-1"	17'-0"	16'-5"	N/A	18'-9"	17'-6"	16'-11"	N/A
	NI-60	18'-4"	17'-3"	16'-7"	N/A	19'-0"	17'-8"	17'-1"	N/A
	NI-70	19'-6"	18'-0"	17'-4"	N/A	20'-1"	18'-7"	17'-9"	N/A
	NI-80	19'-9"	18'-3"	17'-6"	N/A	20'-4"	18'-10"	17'-11"	N/A
	NI-90x	20'-4"	18'-9"	17'-11"	N/A	20'-10"	19'-3"	18'-5"	N/A
14"	NI-40x	20'-1"	18'-7"	17'-10"	N/A	20'-10"	19'-4"	18'-6"	N/A
	NI-60	20'-5"	18'-11"	18'-1"	N/A	21'-2"	19'-7"	18'-9"	N/A
	NI-70	21'-7"	20'-0"	19'-1"	N/A	22'-3"	20'-7"	19'-8"	N/A
	NI-80	21'-11"	20'-3"	19'-4"	N/A	22'-7"	20'-11"	20'-0"	N/A
	NI-90x	22'-7"	20'-11"	19'-11"	N/A	23'-3"	21'-6"	20'-6"	N/A
16"	NI-60	22'-3"	20'-8"	19'-9"	N/A	23'-1"	21'-5"	20'-6"	N/A
	NI-70	23'-6"	21'-9"	20'-9"	N/A	24'-3"	22'-5"	21'-5"	N/A
	NI-80	23'-11"	22'-1"	21'-1"	N/A	24'-8"	22'-10"	21'-9"	N/A
	NI-90x	24'-8"	22'-9"	21'-9"	N/A	25'-4"	23'-5"	22'-4"	N/A

Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-1"	13'-3"	N/A	15'-7"	14'-1"	13'-3"	N/A
	NI-40x	17'-9"	16'-1"	15'-1"	N/A	17'-9"	16'-1"	15'-1"	N/A
	NI-60	18'-1"	16'-4"	15'-4"	N/A	18'-1"	16'-4"	15'-4"	N/A
	NI-70	19'-2"	17'-10"	16'-9"	N/A	19'-7"	17'-10"	16'-9"	N/A
	NI-80	19'-5"	18'-0"	17'-1"	N/A	19'-10"	18'-3"	17'-1"	N/A
11-7/8"	NI-20	18'-9"	17'-0"	16'-0"	N/A	18'-9"	17'-0"	16'-0"	N/A
	NI-40x	21'-0"	19'-3"	17'-9"	N/A	21'-3"	19'-3"	17'-9"	N/A
	NI-60	21'-4"	19'-8"	18'-5"	N/A	21'-8"	19'-8"	18'-5"	N/A
	NI-70	22'-6"	20'-10"	19'-11"	N/A	23'-0"	21'-4"	20'-0"	N/A
	NI-80	22'-9"	21'-1"	20'-1"	N/A	23'-3"	21'-7"	20'-5"	N/A
	NI-90x	23'-4"	21'-8"	20'-8"	N/A	23'-10"	22'-2"	21'-2"	N/A
14"	NI-40x	23'-7"	21'-5"	19'-6"	N/A	24'-1"	21'-5"	19'-6"	N/A
	NI-60	24'-0"	22'-3"	21'-0"	N/A	24'-8"	22'-5"	21'-0"	N/A
	NI-70	25'-3"	23'-4"	22'-3"	N/A	25'-10"	24'-0"	22'-9"	N/A
	NI-80	25'-7"	23'-8"	22'-7"	N/A	26'-2"	24'-4"	23'-2"	N/A
	NI-90x	26'-4"	24'-4"	23'-3"	N/A	26'-10"	24'-11"	23'-9"	N/A
16"	NI-60	26'-5"	24'-6"	23'-4"	N/A	27'-2"	24'-10"	23'-4"	N/A
	NI-70	27'-9"	25'-8"	24'-6"	N/A	28'-5"	26'-5"	25'-2"	N/A
	NI-80	28'-2"	26'-1"	24'-10"	N/A	28'-10"	26'-9"	25'-6"	N/A
	NI-90x	29'-0"	26'-10"	25'-7"	N/A	29'-7"	27'-5"	26'-2"	N/A

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- 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. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end 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 uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



Maximum Floor Spans

Live Load = 40 psf, Dead Load = 30 psf
Simple Spans, L/480 Deflection Limit
3/4" OSB G&N Sheathing

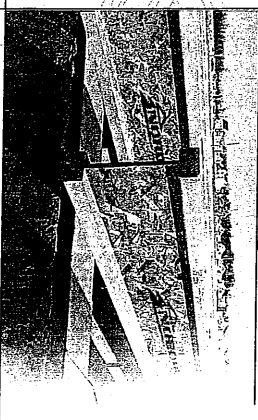
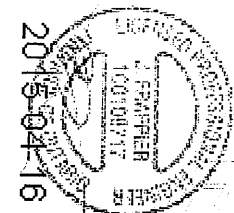
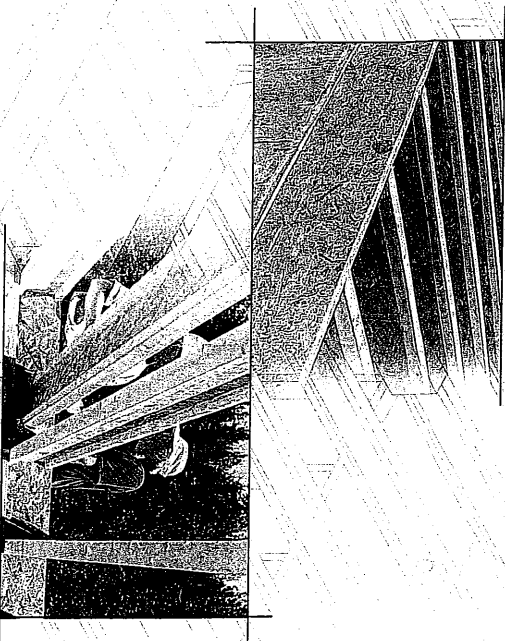
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-2"	13'-4"	12'-4"	15'-7"	14'-2"	13'-4"	12'-4"
	NI-40x	17'-0"	16'-0"	15'-1"	13'-11"	17'-5"	16'-1"	15'-1"	13'-11"
	NI-60	17'-2"	16'-2"	15'-5"	14'-3"	17'-6"	16'-5"	15'-5"	14'-3"
	NI-70	18'-0"	16'-11"	16'-3"	15'-6"	18'-5"	17'-3"	16'-7"	15'-6"
	NI-80	18'-3"	17'-1"	16'-5"	15'-9"	18'-8"	17'-5"	16'-9"	15'-10"
11-7/8"	NI-20	17'-10"	16'-10"	16'-0"	14'-10"	18'-6"	17'-1"	16'-0"	14'-10"
	NI-40x	19'-4"	17'-11"	17'-3"	15'-10"	19'-11"	18'-6"	17'-9"	15'-10"
	NI-60	19'-7"	18'-2"	17'-5"	16'-9"	20'-2"	18'-9"	17'-11"	17'-1"
	NI-70	20'-9"	19'-2"	18'-3"	17'-5"	21'-4"	19'-9"	18'-10"	17'-10"
	NI-80	21'-1"	19'-5"	18'-6"	17'-7"	21'-7"	20'-0"	19'-0"	18'-0"
	NI-90x	21'-8"	20'-0"	19'-1"	18'-0"	22'-2"	20'-6"	19'-6"	18'-6"
14"	NI-40x	21'-5"	19'-10"	18'-11"	17'-5"	22'-1"	20'-6"	19'-6"	17'-5"
	NI-60	21'-10"	20'-2"	19'-3"	18'-2"	22'-5"	20'-10"	19'-11"	18'-10"
	NI-70	23'-0"	21'-3"	20'-3"	19'-2"	23'-8"	21'-11"	20'-10"	19'-9"
	NI-80	23'-5"	21'-7"	20'-7"	19'-5"	24'-0"	22'-3"	21'-2"	20'-0"
	NI-90x	24'-1"	22'-3"	21'-2"	20'-0"	24'-8"	22'-10"	21'-9"	20'-7"
16"	NI-60	23'-9"	22'-0"	20'-11"	19'-10"	24'-6"	22'-9"	21'-8"	20'-6"
	NI-70	25'-1"	23'-2"	22'-0"	20'-10"	25'-9"	23'-10"	22'-9"	21'-6"
	NI-80	25'-6"	23'-6"	22'-4"	21'-2"	26'-1"	24'-2"	23'-1"	21'-10"
	NI-90x	26'-4"	24'-3"	23'-1"	21'-10"	26'-11"	24'-11"	23'-8"	22'-5"

Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-2"	13'-4"	12'-4"	15'-7"	14'-2"	13'-4"	12'-4"
	NI-40x	17'-9"	16'-1"	15'-1"	13'-11"	17'-9"	16'-1"	15'-1"	13'-11"
	NI-60	18'-1"	16'-5"	15'-5"	14'-3"	18'-1"	16'-5"	15'-5"	14'-3"
	NI-70	19'-10"	17'-11"	16'-9"	15'-6"	19'-10"	17'-11"	16'-9"	15'-6"
	NI-80	20'-2"	18'-3"	17'-1"	15'-10"	20'-2"	18'-3"	17'-1"	15'-10"
11-7/8"	NI-20	18'-10"	17'-1"	16'-0"	14'-10"	18'-10"	17'-1"	16'-0"	14'-10"
	NI-40x	21'-3"	19'-3"	17'-9"	15'-10"	21'-3"	19'-3"	17'-9"	15'-10"
	NI-60	21'-9"	19'-8"	18'-5"	17'-1"	21'-9"	19'-8"	18'-5"	17'-1"
	NI-70	23'-4"	21'-5"	20'-1"	18'-6"	23'-8"	21'-5"	20'-1"	18'-6"
	NI-80	23'-7"	21'-10"	20'-5"	18'-11"	24'-1"	21'-10"	20'-5"	18'-11"
	NI-90x	24'-3"	22'-6"	21'-3"	19'-7"	24'-8"	22'-7"	21'-3"	19'-7"
14"	NI-40x	24'-2"	21'-5"	19'-6"	17'-5"	24'-2"	21'-5"	19'-6"	17'-5"
	NI-60	24'-9"	22'-5"	21'-0"	19'-6"	24'-9"	22'-5"	21'-0"	19'-6"
	NI-70	26'-1"	24'-3"	22'-9"	21'-0"	26'-8"	24'-3"	22'-9"	21'-0"
	NI-80	26'-6"	24'-7"	23'-3"	21'-6"	27'-1"	24'-10"	23'-3"	21'-6"
	NI-90x	27'-3"	25'-4"	24'-1"	22'-4"	27'-9"	25'-10"	24'-3"	22'-4"
16"	NI-60	27'-3"	24'-11"	23'-5"	21'-7"	27'-6"	24'-11"	23'-5"	21'-7"
	NI-70	28'-8"	26'-8"	25'-3"	23'-4"	29'-3"	26'-11"	25'-3"	23'-4"
	NI-80	29'-1"	27'-0"	25'-9"	23'-10"	29'-8"	27'-6"	25'-10"	23'-10"
	NI-90x	29'-11"	27'-10"	26'-6"	24'-10"	30'-6"	28'-5"	26'-11"	24'-10"

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 3/4 inch for a joist spacing of 24 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end 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 uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



Distributed by:

N-C301 / November 2014

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 unsheathed I-joists. Once sheathed, do not over-stress I-joist with concentrated loads from building materials.

WARNING

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

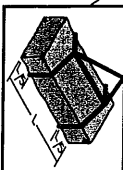
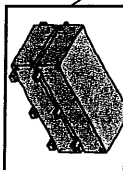
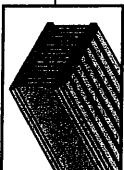
Avoid Accidents by Following these Important Guidelines:

1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bridging at joist ends. When I-joists are applied continuous over interior supports and a load-bearing wall is planned at that location, blocking will be required over 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-bridging.
4. Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only.
5. Never install a damaged I-joist.

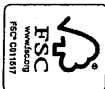
Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable hole sizes and locations, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines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

STORAGE AND HANDLING GUIDELINES

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



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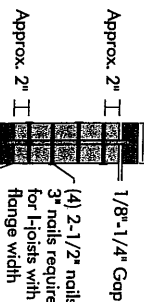
MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS
SIMPLE AND MULTIPLE SPANS

- CCMC EVALUATION REPORT 13032-R

RECOMMENDATIONS:

- 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.

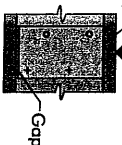
Flange width
2-1/2" or 3-1/2"



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

CONCENTRATED LOAD
(Load stiffener)

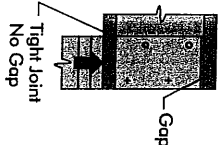
Tight Joint
No Gap

A cross-sectional diagram of a beam with a concentrated load. A thick black arrow points downwards from the top surface of the beam, labeled "CONCENTRATED LOAD (Load stiffener)". The beam is composed of two parts joined at a horizontal interface. The top part is labeled "Tight Joint" and the bottom part is labeled "No Gap". The beam is shown in a cross-section with a hatched pattern.

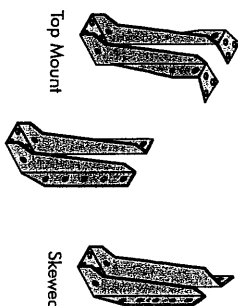
See table below for web stiffener size requirements

Flange Width	Web
--------------	-----

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



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



33 pieces per unit	33 pieces per unit	33 pieces per unit	23 pieces per unit	23 pieces per unit	23 pieces per unit	23 pieces per unit	23 pieces per unit
S-F No.2							
1950f MSR							
2100f MSR							
1950f MSR							
2100f MSR							
2400f MSR							
NPG lumber							

Chamriers Cribbougamau 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 Joists use only finger-jointed black spruce lumber in their flanges, ensuring consistent quality, superior strength, longer span carrying capacity.

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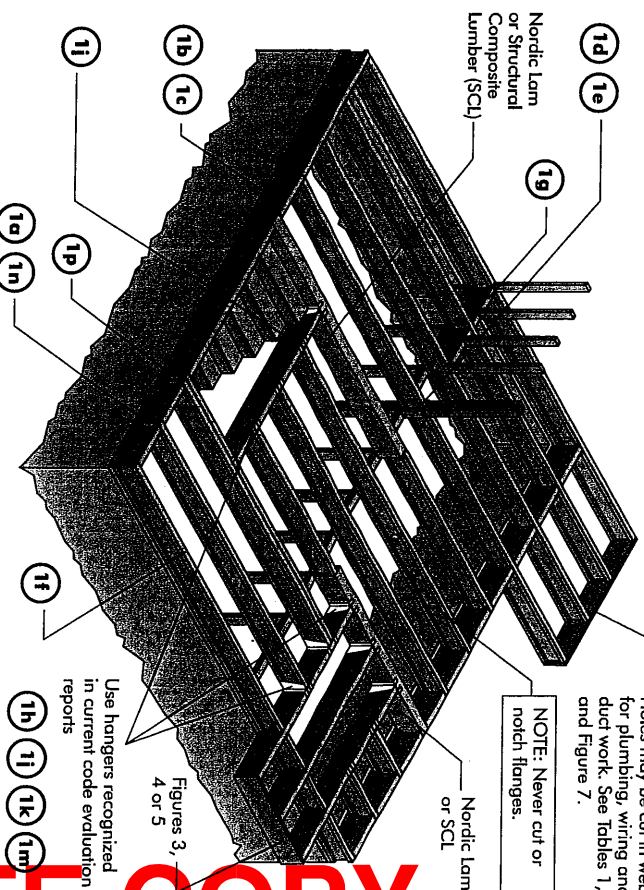
INSTALLING NORDIC I-JOISTS

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



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

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

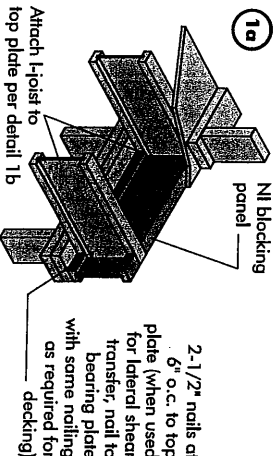


Figures 3, 4 or 5
Holes may be cut in webs for plumbing, wiring and duct work. See Tables 1, 2 and Figure 7.

NOTE: Never cut or notch flanges.

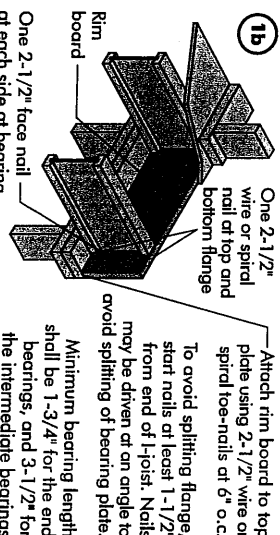
Use hangers recognized in current code evaluation reports

All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122" dia.) common spiral nails may be substituted 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.



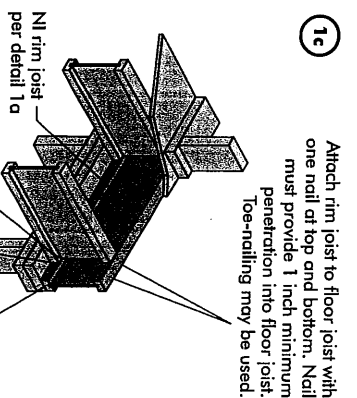
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
Nl joists	3,300

*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.

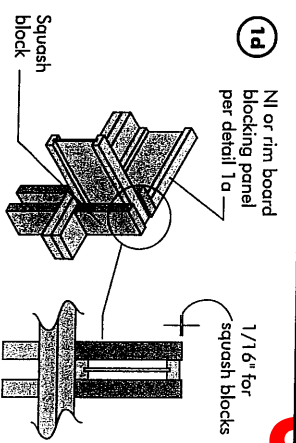


Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

*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.



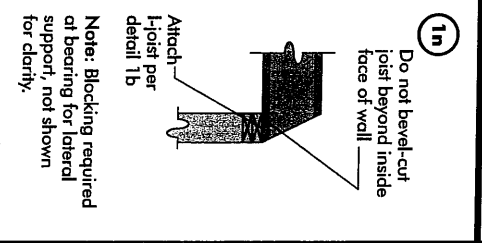
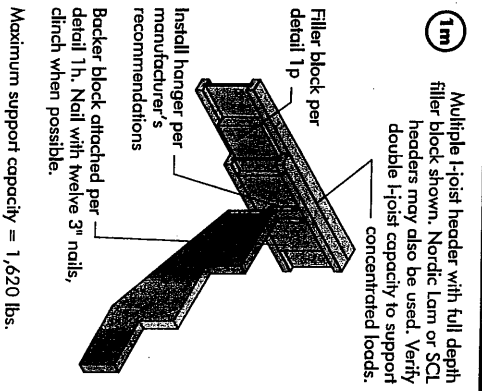
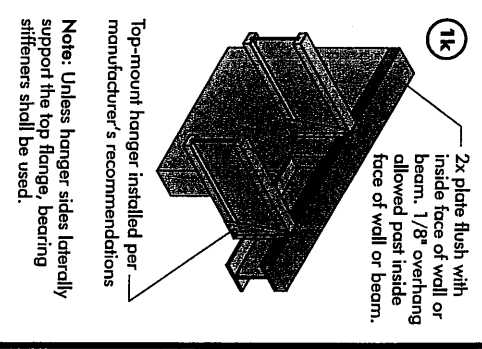
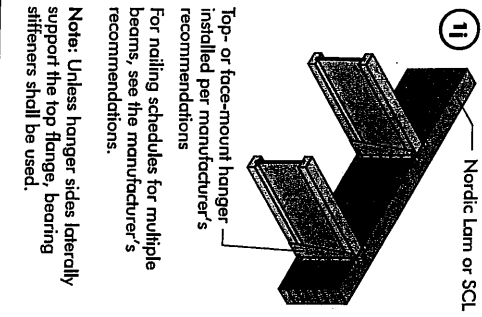
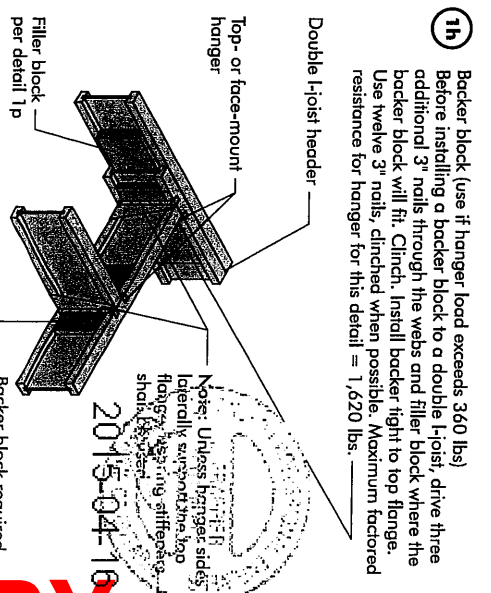
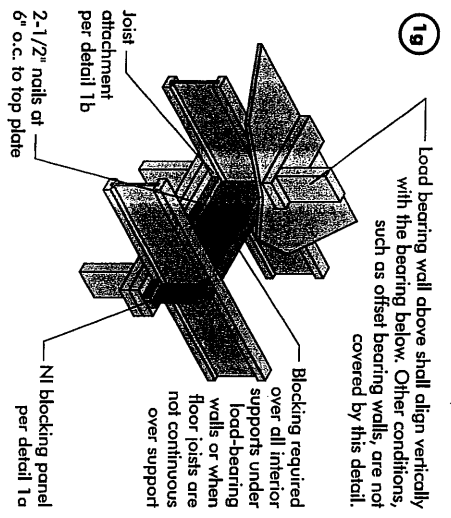
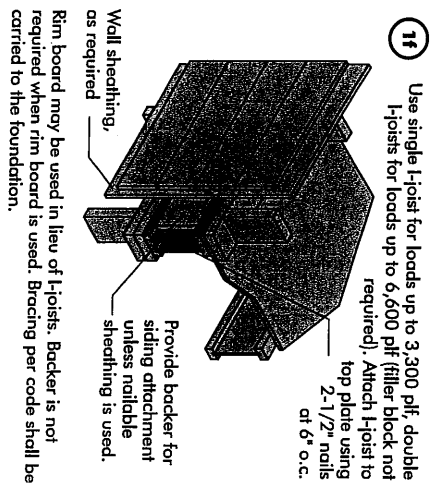
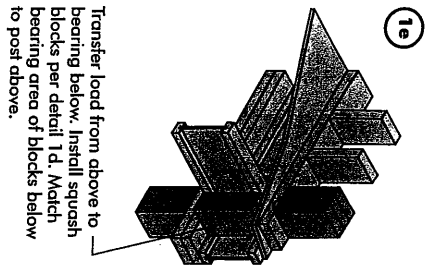
Attach rim joist to floor joist with one nail at top and bottom. Nail must provide 1 inch minimum penetration into floor joist. Toe-nailing may be used.



Pair of Squash Blocks	Maximum Factored Vertical 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, 1b, or 1c

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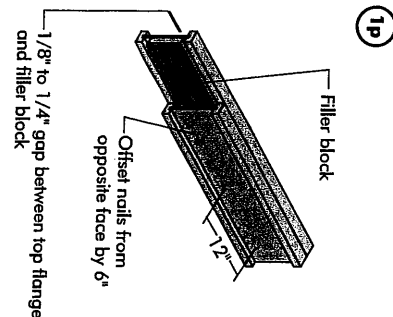


BACKER BLOCKS (Blocks must be long enough to permit required nailing without splitting)

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-Q325 or CAN/CSA-Q437 Standard.

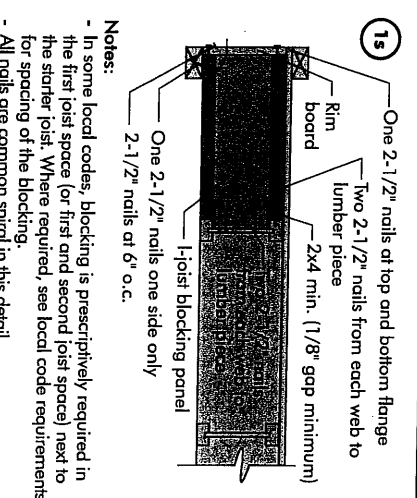
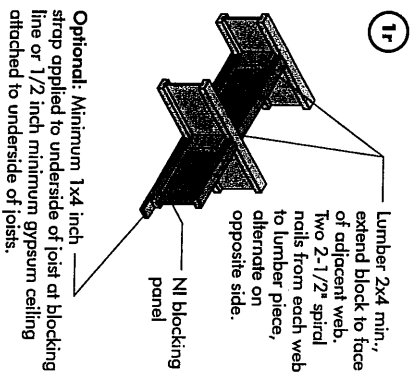
** For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".



- 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 span.
 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 joist using this detail is 860 lb/ft. Verify double I-joist capacity.

FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

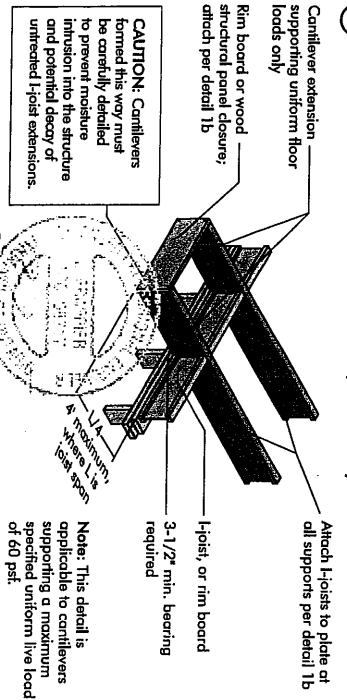
Flange Size	Joist Depth	Block Size	Filler Size
2-1/2" x 1-1/2"	9-1/2"	11-7/8"	2-1/8" x 6"
2-1/2" x 1-1/2"	14"	2-1/8" x 8"	2-1/8" x 10"
2-1/2" x 1-1/2"	16"	2-1/8" x 12"	2-1/8" x 12"
3-1/2" x 1-1/2"	9-1/2"	11-7/8"	3" x 6"
3-1/2" x 1-1/2"	14"	3" x 8"	3" x 10"
3-1/2" x 1-1/2"	16"	3" x 12"	3" x 12"
3-1/2"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



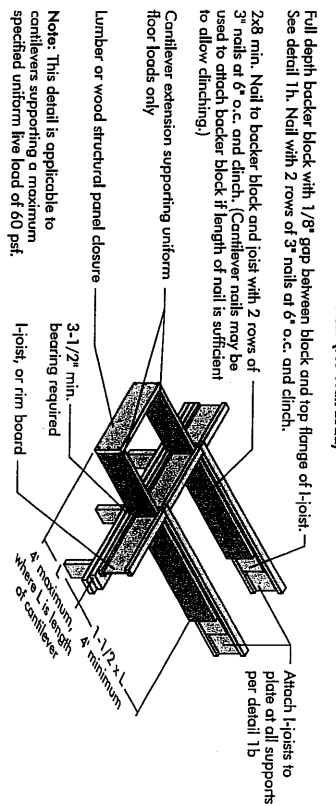
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CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

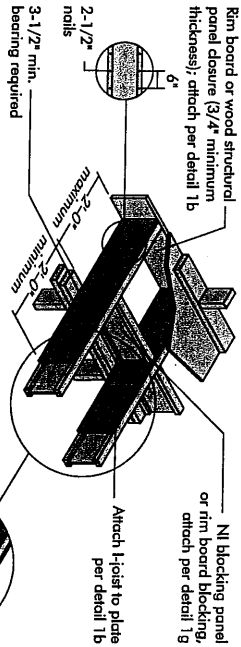


3b) LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



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 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.

4b) Alternate Method 2 — DOUBLE I-JOIST

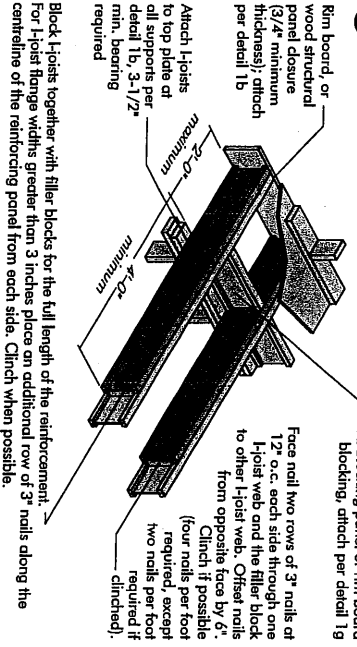
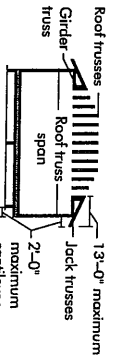
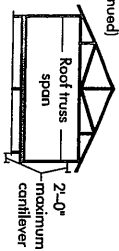


FIGURE 4 (continued)
See table below for NI reinforcement requirements of cantilever.



For hip roofs with the jack trusses running parallel to the cantilevered floor joists, the I-joist reinforcement requirements for a span of 26 ft. shall be permitted to be used.

CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS				ROOF LOADING (UNFACTORED)				ROOF TRUSS			
	TL = 30 psf, DL = 15 psf	TL = 40 psf, DL = 15 psf	TL = 50 psf, DL = 15 psf	JOIST SPACING (in.)	TL = 30 psf, DL = 15 psf	TL = 40 psf, DL = 15 psf	TL = 50 psf, DL = 15 psf	JOIST SPACING (in.)	TL = 30 psf, DL = 15 psf	TL = 40 psf, DL = 15 psf	TL = 50 psf, DL = 15 psf	JOIST SPACING (in.)
24	1	1	1	12	1	1	1	12	1	1	1	12
30	1	1	1	16	1	1	1	16	1	1	1	16
36	1	1	1	19.2	1	1	1	19.2	1	1	1	19.2
42	1	1	1	24	1	1	1	24	1	1	1	24
24	2	2	2	12	2	2	2	12	2	2	2	12
30	2	2	2	16	2	2	2	16	2	2	2	16
36	2	2	2	19.2	2	2	2	19.2	2	2	2	19.2
42	2	2	2	24	2	2	2	24	2	2	2	24
24	3	3	3	12	3	3	3	12	3	3	3	12
30	3	3	3	16	3	3	3	16	3	3	3	16
36	3	3	3	19.2	3	3	3	19.2	3	3	3	19.2
42	3	3	3	24	3	3	3	24	3	3	3	24
24	4	4	4	12	4	4	4	12	4	4	4	12
30	4	4	4	16	4	4	4	16	4	4	4	16
36	4	4	4	19.2	4	4	4	19.2	4	4	4	19.2
42	4	4	4	24	4	4	4	24	4	4	4	24

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

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RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS.

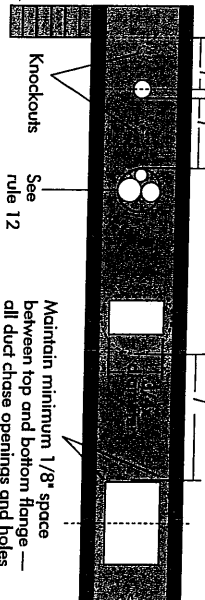
1. The distance between the inside edge of the support and the centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
2. I-joint top and bottom flanges must NEVER be cut, notched, or otherwise modified.
3. Whenever possible, field-cut 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-joint web shall equal the clear distance between the flanges of the I-joint 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-joint flange.
5. The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
6. Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the longest rectangular hole or duct chase opening), and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
7. A knockout is **not** considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
8. Holes measuring 1-1/2 inches or smaller shall be permitted anywhere in a conifered section of a joist. Holes of greater size may be permitted subject to verification.
9. A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
10. All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
11. Limit three maximum size holes per span, of which one may be a duct chase opening.
12. A group of round holes at approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

See Table 1 for minimum distance from bearing

2x diameter of larger hole

2x duct chase length or hole diameter, whichever is larger

Duct chase opening (see Table 2 for minimum distance from bearing)



A knockout is **NOT** considered a hole, may be utilized wherever it occurs and may be ignored for purposes of calculating minimum distances between holes.

[illegible]

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.

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

SAF

SAF

Where:

Where: D_{reduced}

Actual

SAF = Span Adjustment Factor given in this table.

D = The minimum distance from the inside face of any support to center of the beam.

If $\frac{\text{Lactual}}{\text{SAF}}$ is greater than 1, use 1 in the above calculation for $\frac{\text{Lactual}}{\text{SAF}}$

Joist Series	Joist Depth	Minimum distance from inside face of any support to centre of opening (ft-in.)	Duct chase length (in.)
10	10	10	10
12	12	12	12
14	14	14	14
16	16	16	16
18	18	18	18
20	20	20	20
22	22	22	22
24	24	24	24
26	26	26	26
28	28	28	28
30	30	30	30
32	32	32	32
34	34	34	34
36	36	36	36
38	38	38	38
40	40	40	40
42	42	42	42
44	44	44	44
46	46	46	46
48	48	48	48
50	50	50	50
52	52	52	52
54	54	54	54
56	56	56	56
58	58	58	58
60	60	60	60
62	62	62	62
64	64	64	64
66	66	66	66
68	68	68	68
70	70	70	70
72	72	72	72
74	74	74	74
76	76	76	76
78	78	78	78
80	80	80	80
82	82	82	82
84	84	84	84
86	86	86	86
88	88	88	88
90	90	90	90
92	92	92	92
94	94	94	94
96	96	96	96
98	98	98	98
100	100	100	100

[illegible]

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 $1/480$. For other applications, contact your local distributor.

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

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.

2019-04-16

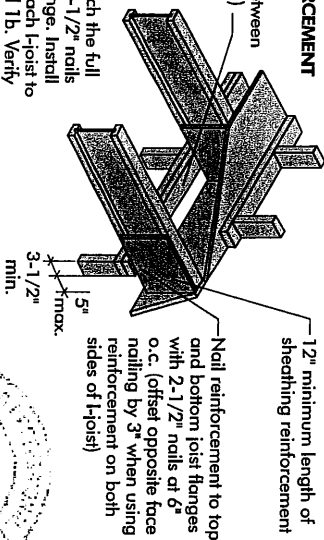
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BRICK CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

5c SHEATHING REINFORCEMENT

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

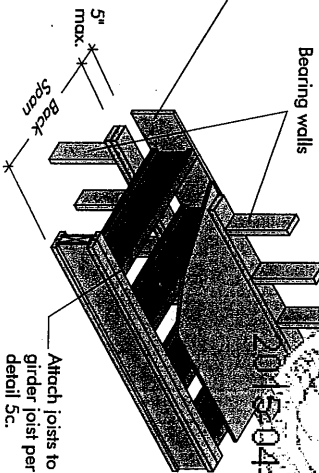
Note: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4") required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2" nails at 6" o.c., top and bottom flange. Install with face grain horizontal. Attach I-joist to plate of all supports per detail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



5b SET-BACK DETAIL

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

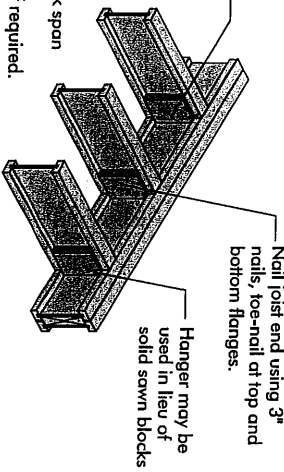
Notes:
- Provide full depth blocking between joists over support (not shown for clarity)
- Attach I-joist to plate of all supports per detail 1b.
- 3-1/2" minimum I-joist bearing required.



5c SET-BACK CONNECTION

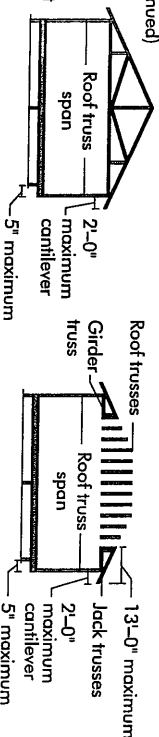
Vertical solid sawn blocks (2x6 S-P-F No. 2 or better) nailed through joist web and web of girder using 2-1/2" nails.

Alternate for opposite side.



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

FIGURE 5 (continued)
See table below for NI reinforcement requirements at cantilever.



For hip roofs with the jack trusses running parallel to the cantilevered floor joists, the I-joist reinforcement requirements for a span of 26 ft. shall be permitted to be used.

BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft)	LL = 30 psf, DL = 15 psf JOIST SPACING (in.)				ROOF LOADING (UNFACTORED) LL = 40 psf, DL = 15 psf JOIST SPACING (in.)				LL = 50 psf, DL = 15 psf JOIST SPACING (in.)			
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
26	26	-	X	X	X	N	X	X	X	N	X	X	X
	30	-	X	X	X	N	X	X	X	N	X	X	X
	32	-	X	X	X	N	X	X	X	N	X	X	X
	34	-	X	X	X	N	X	X	X	N	X	X	X
	36	-	X	X	X	N	X	X	X	N	X	X	X
	38	-	X	X	X	N	X	X	X	N	X	X	X
30	26	-	X	X	X	N	X	X	X	N	X	X	X
	30	-	X	X	X	N	X	X	X	N	X	X	X
	32	-	X	X	X	N	X	X	X	N	X	X	X
	34	-	X	X	X	N	X	X	X	N	X	X	X
	36	-	X	X	X	N	X	X	X	N	X	X	X
	38	-	X	X	X	N	X	X	X	N	X	X	X
32	26	-	X	X	X	N	X	X	X	N	X	X	X
	30	-	X	X	X	N	X	X	X	N	X	X	X
	32	-	X	X	X	N	X	X	X	N	X	X	X
	34	-	X	X	X	N	X	X	X	N	X	X	X
	36	-	X	X	X	N	X	X	X	N	X	X	X
	38	-	X	X	X	N	X	X	X	N	X	X	X
34	26	-	X	X	X	N	X	X	X	N	X	X	X
	30	-	X	X	X	N	X	X	X	N	X	X	X
	32	-	X	X	X	N	X	X	X	N	X	X	X
	34	-	X	X	X	N	X	X	X	N	X	X	X
	36	-	X	X	X	N	X	X	X	N	X	X	X
	38	-	X	X	X	N	X	X	X	N	X	X	X
36	26	-	X	X	X	N	X	X	X	N	X	X	X
	30	-	X	X	X	N	X	X	X	N	X	X	X
	32	-	X	X	X	N	X	X	X	N	X	X	X
	34	-	X	X	X	N	X	X	X	N	X	X	X
	36	-	X	X	X	N	X	X	X	N	X	X	X
	38	-	X	X	X	N	X	X	X	N	X	X	X
38	26	-	X	X	X	N	X	X	X	N	X	X	X
	30	-	X	X	X	N	X	X	X	N	X	X	X
	32	-	X	X	X	N	X	X	X	N	X	X	X
	34	-	X	X	X	N	X	X	X	N	X	X	X
	36	-	X	X	X	N	X	X	X	N	X	X	X
	38	-	X	X	X	N	X	X	X	N	X	X	X
40	26	-	X	X	X	N	X	X	X	N	X	X	X
	30	-	X	X	X	N	X	X	X	N	X	X	X
	32	-	X	X	X	N	X	X	X	N	X	X	X
	34	-	X	X	X	N	X	X	X	N	X	X	X
	36	-	X	X	X	N	X	X	X	N	X	X	X
	38	-	X	X	X	N	X	X	X	N	X	X	X
42	26	-	X	X	X	N	X	X	X	N	X	X	X
	30	-	X	X	X	N	X	X	X	N	X	X	X
	32	-	X	X	X	N	X	X	X	N	X	X	X
	34	-	X	X	X	N	X	X	X	N	X	X	X
	36	-	X	X	X	N	X	X	X	N	X	X	X
	38	-	X	X	X	N	X	X	X	N	X	X	X

1. N = No reinforcement required.
2. NI = Reinforced with 3/4" wood structural panel on one side only.
3. Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
4. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is formed using a ridge board, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.
5. Cantilevered joist supporting girder trusses or roof beams may require additional reinforcing.

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INSTALLING THE GLUED FLOOR SYSTEM

1. Wipe any mud, dirt, water, or ice from I-joist flanges before gluing.
2. Snap a chalk line across the I-joists four feet in from the wall for panel edge alignment and as a boundary for spreading glue.
3. Spread only enough glue to lay one or two panels at a time, or follow specific recommendations from the glue manufacturer.
4. 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.
5. Apply a continuous line of glue (about 1/4-inch diameter) to the top flange of a single I-joist. Apply glue in a winding pattern on wide areas, such as with double I-joists.
6. Apply two lines of glue on I-joists where panel ends butt to assure proper gluing of each end.
7. 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.
8. Top the second row of panels into place, using a block to protect groove edges.
9. Stagger end joints in each succeeding row of panels. A 1/8-inch space between all end joints and 1/8-inch at all edges, including T&G edges, is recommended. (Use a spacer tool or an 2-1/2" common nail to assure accurate and consistent spacing.)
10. **Complete all nailing of each panel before glue sets.** Check the manufacturer's recommendations for cure time. (Warm weather accelerates glue setting.) Use 2" ring- or screw-shank nails for panels 3/4-inch thick or less, and 2-1/2" ring- or screw-shank nails for thicker panels. Space nails per the table below. Closer nail spacing may be required by some codes, or for diaphragm construction. The finished deck can be walked on right away and will carry construction loads without damage to the glue bond.

FASTENERS FOR SHEATHING AND SUBFLOORING(1)

Maximum Joist Spacing (in.)			Minimum Panel Thickness (in.)		Nail Size and Type		Maximum Spacing of Fasteners	
			Common Wire or Spiral Nails	Ring Thread Nails or Screws	Staples	Edges	Intern. 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"		

1. Fasteners of sheathing and subflooring shall conform to the above table.
2. 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.
3. Flooring screws shall not be less than 1/8-inch in diameter.
4. Special conditions may impose heavy traffic and concentrated loads that require construction in excess of the minimums shown.
5. Use only adhesives conforming to CAN/CGSB-71.26 Standard, Adhesives for Field-Gluing Plywood to Lumber Framing for Floor System, applied in accordance with the manufacturer's recommendations. If OSB panels with sealed surfaces and edges are to be used, use only solvent-based glues; check with panel manufacturer.

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

IMPORTANT NOTE:

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

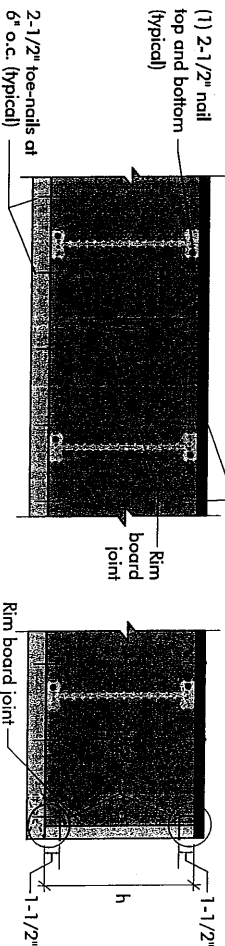
RIM BOARD INSTALLATION DETAILS

8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

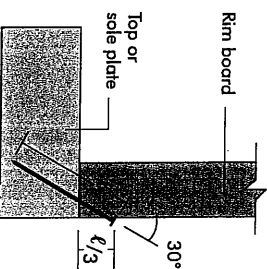
Rim board Joint Between Floor Joists

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

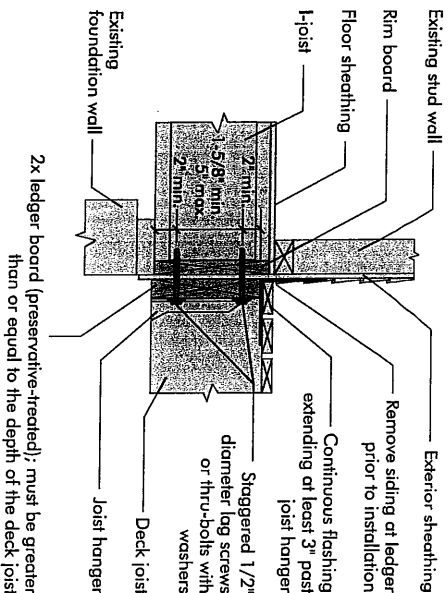
Rim board Joint at Corner



8b TOE-NAIL CONNECTION AT RIM BOARD



8c 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL



2015-04-16

PRODUCT WARRANTY

Champion Challenge guarantees that, in accordance with our performance, these products are free from manufacturing defects in material and workmanship.

Furthermore, Champion Challenge 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.

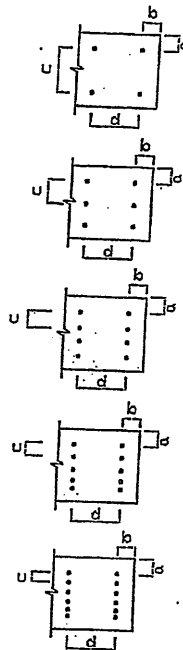
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MICRO CITY ENGINEERING SERVICES INC.

TEL: (519) 287 - 2242

R.R. #1, P.O. BOX 61, GLENCOE, ONTARIO, N0L 1M0

LVL HEADER AND CONVENTIONAL LUMBER NAILING DETAILS		
DETAIL NUMBER	NUMBER OF ROWS	SPACING (INCHES o/c) "d"
A	2	12
B	2	8
C	2	6
D	2	4
1A	3	12
1B	3	8
1C	3	6
1D	3	4
2A	4	12
2B	4	8
2C	4	6
2D	4	4
3A	5	12
3B	5	8
3C	5	6
3D	5	4
4A	6	12
4B	6	8
4C	6	6
4D	6	4



NOTES:

- (1) MINIMUM LUMBER EDGE DISTANCE "a" = 1"
- (2) MINIMUM LUMBER END DISTANCE "b" = 2"
- (3) MINIMUM NAIL ROW SPACING "c" = 2"
- (4) STAGGER NAILS "d/2" BETWEEN PLIES FOR MULTI-PLY MEMBERS (3 PLY OR MORE)
- (5) ALL NAILS ARE 3-1/2" ARDOX SPIRAL NAILS
- (6) DO NOT USE AIR-DRIVEN NAILS



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BEARING THE
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