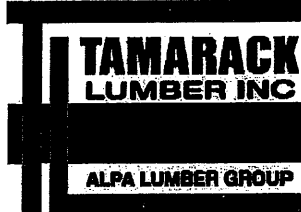


Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	14
J2	14-00-00	9 1/2" NI-40x	1	19
J3	12-00-00	9 1/2" NI-40x	1	26
J3DJ	12-00-00	9 1/2" NI-40x	2	4
J4	8-00-00	9 1/2" NI-40x	1	4
J5	6-00-00	9 1/2" NI-40x	1	13
J6	4-00-00	9 1/2" NI-40x	1	1
J7	2-00-00	9 1/2" NI-40x	1	4
B1	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B3	12-00-00	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	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B6	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B5	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B8	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B7	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
8	H1	IUS2.56/9.5
15	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
5	H1	IUS2.56/9.5
2	H3	HUS1.81/10
2	H3	HUS1.81/10

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

SITE COPY



FROM PLAN DATED: SEPT 2016

BUILDER: BAYVIEW WELLINGTON

SITE: GREEN VALLEY EAST

MODEL: S38-17 BAROSSA 17

ELEVATION: A,B,C

LOT:

CITY: BRADFORD

SALESMAN: M D

DESIGNER: CZ

REVISION:

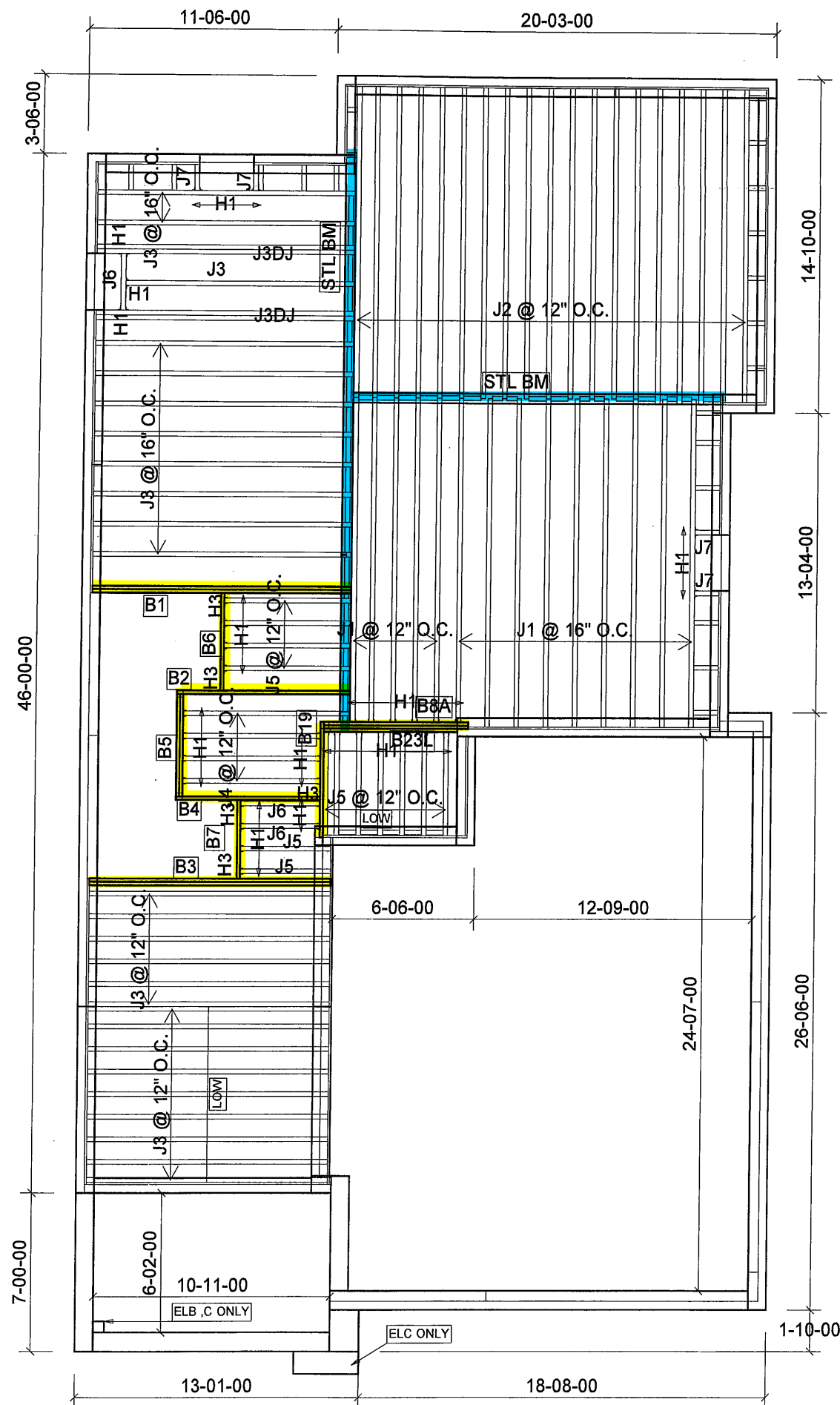
NOTES:
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MULTIPLE SQUASH BLOCKS REQ'D
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FIGURE 1. CANTILEVERED JOISTS
INCLUDING CANT' OVER BRICK REQ.
I-JOIST BLOCKING ALONG BEARING
AND RIMBOARD CLOSURE AT ENDS.
SEE FIGURES 4 & 5 FOR
REINFORCEMENT 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: 3/4" GLUED AND NAILED

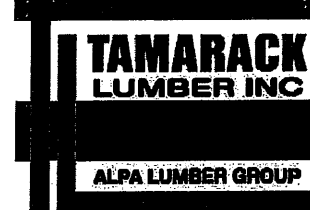
DATE: 14/02/2018

1st FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	14
J2	14-00-00	9 1/2" NI-40x	1	19
J3	12-00-00	9 1/2" NI-40x	1	26
J3DJ	12-00-00	9 1/2" NI-40x	2	4
J4	8-00-00	9 1/2" NI-40x	1	4
J5	6-00-00	9 1/2" NI-40x	1	13
J6	4-00-00	9 1/2" NI-40x	1	3
J7	2-00-00	9 1/2" NI-40x	1	4
B1	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B3	12-00-00	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
B23L	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B4	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B8A	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
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B7	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
20	H1	IUS2.56/9.5
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2	H1	IUS2.56/9.5
5	H1	IUS2.56/9.5
3	H3	HUS1.81/10
2	H3	HUS1.81/10



FROM PLAN DATED: SEPT 2016

BUILDER: BAYVIEW WELLINGTON

SITE: GREEN VALLEY EAST

MODEL: S38-17 BAROSSA 17

ELEVATION: A,B,C

LOT:

CITY: BRADFORD

SALESMAN: M D

DESIGNER: CZ

REVISION:

NOTES:

REFER TO THE NORDIC
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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

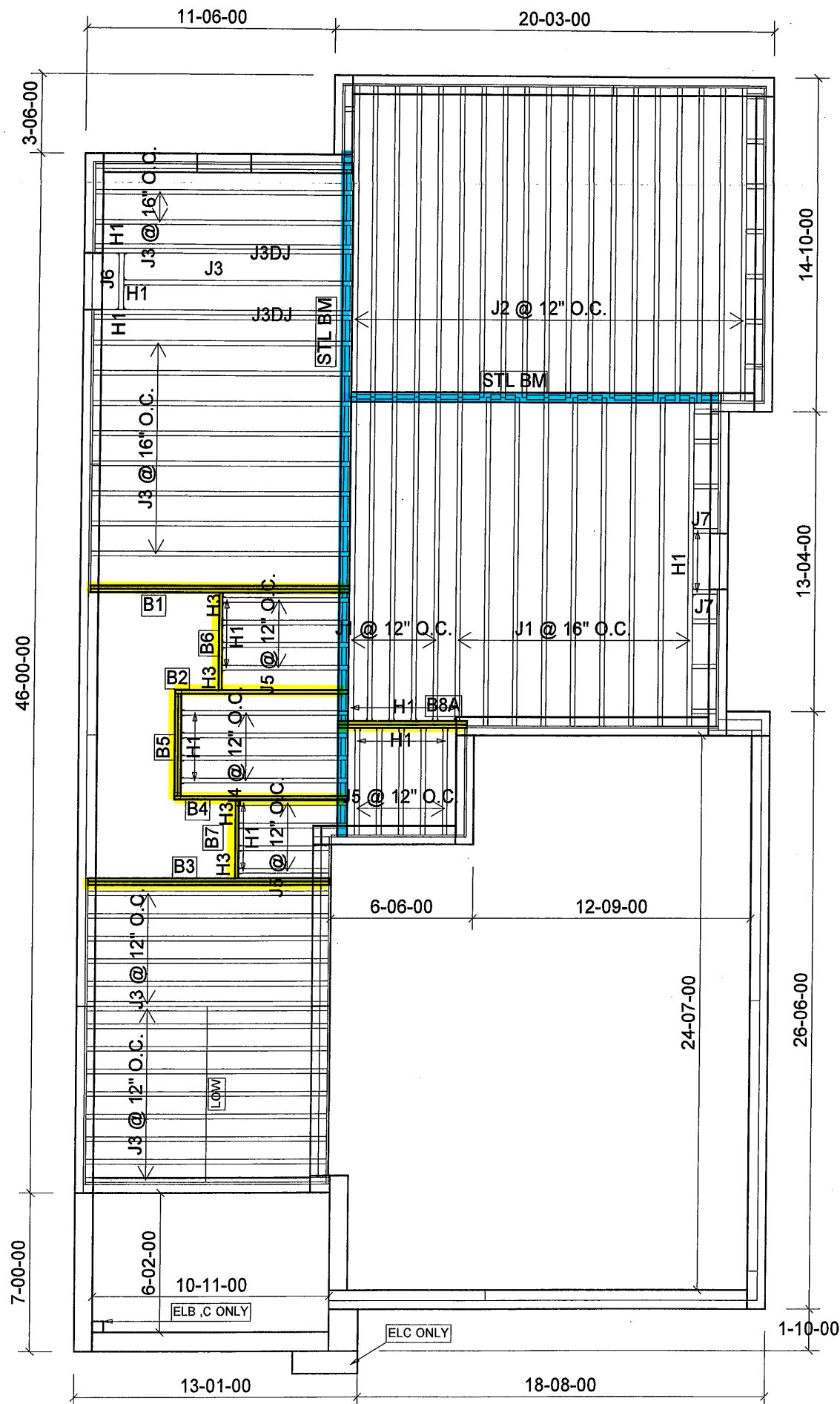
SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 14/02/2018

1st FLOOR

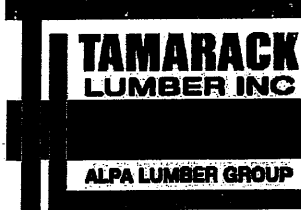
SUNKEN

SITE COPY



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J1	16-00-00	9 1/2" NI-40x	1	14
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J5	6-00-00	9 1/2" NI-40x	1	13
J6	4-00-00	9 1/2" NI-40x	1	1
J7	2-00-00	9 1/2" NI-40x	1	2
B1	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
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B4	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B6	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B5	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B8A	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B7	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
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2	H1	IUS2.56/9.5
3	H1	IUS2.56/9.5
2	H3	HUS1.81/10
2	H3	HUS1.81/10



FROM PLAN DATED: SEPT 2016

BUILDER: BAYVIEW WELLINGTON

SITE: GREEN VALLEY EAST

MODEL: S38-17 BAROSSA 17

ELEVATION: A,B,C

LOT:

CITY: BRADFORD

SALESMAN: M D

DESIGNER: CZ

REVISION:

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CERAMIC TILE APPLICATION AS PER
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LOADING:

DESIGN LOADS: L/480.000

LIVE LOAD: 40.0 lb/ft²

DEAD LOAD: 15.0 lb/ft

TILED AREAS: 20 lb/ft

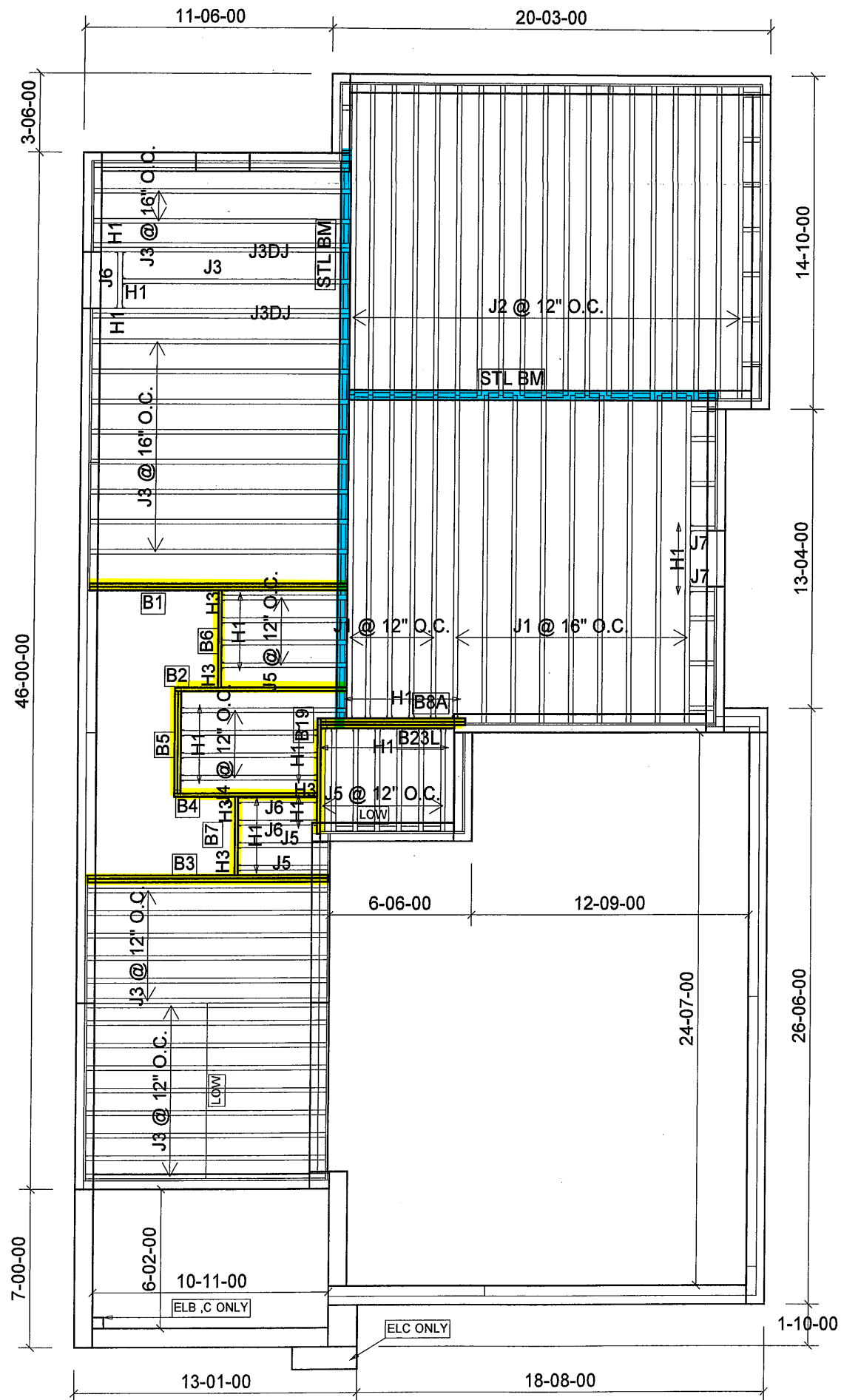
SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 14/02/2018

1st FLOOR

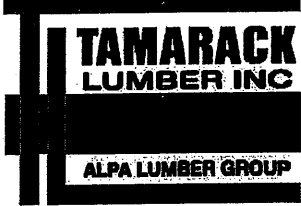
STANDARD WITH WOD. & WOB.

SITE COPY



Products				
PlotID	Length	Product	Plies	Net Qty
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J4	8-00-00	9 1/2" NI-40x	1	4
J5	6-00-00	9 1/2" NI-40x	1	13
J6	4-00-00	9 1/2" NI-40x	1	3
J7	2-00-00	9 1/2" NI-40x	1	2
B1	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
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B2	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B23L	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B4	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B8A	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B19	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B6	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B5	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B7	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
20	H1	IUS2.56/9.5
10	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
3	H1	IUS2.56/9.5
3	H3	HUS1.81/10
2	H3	HUS1.81/10



FROM PLAN DATED: SEPT 2016

BUILDER: BAYVIEW WELLINGTON

SITE: GREEN VALLEY EAST

MODEL: S38-17 BAROSSA 17

ELEVATION: A,B,C

LOT:

CITY: BRADFORD

SALESMAN: M D

DESIGNER: CZ

REVISION:

NOTES:

REFER TO THE NORDIC
INSTALLATION GUIDE FOR PROPER
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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

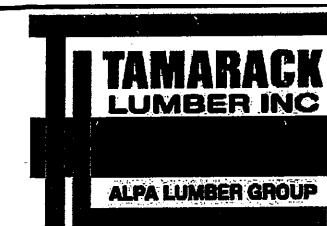
SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 14/02/2018

1st FLOOR

SUNKEN WITH WOD &WOB

SITE COPY



FROM PLAN DATED: SEPT 2016

BUILDER: BAYVIEW WELLINGTON

SITE: GREEN VALLEY EAST

MODEL: S38-17 BAROSSA 17

ELEVATION: A B C

LOT:

CITY: BRADFORD

SALESMAN: M D

DESIGNER: CZ

REVISION:

NOTES:

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SEE FIGURE 7 TABLES 1 & 2 OF THE
INSTALLATION GUIDE. CERAMIC TILE
APPLICATION AS PER O.B.C. 9.30.6
LOADING:

DESIGN LOADS: L/480.000

LIVE LOAD: 40.0 lb/ft²

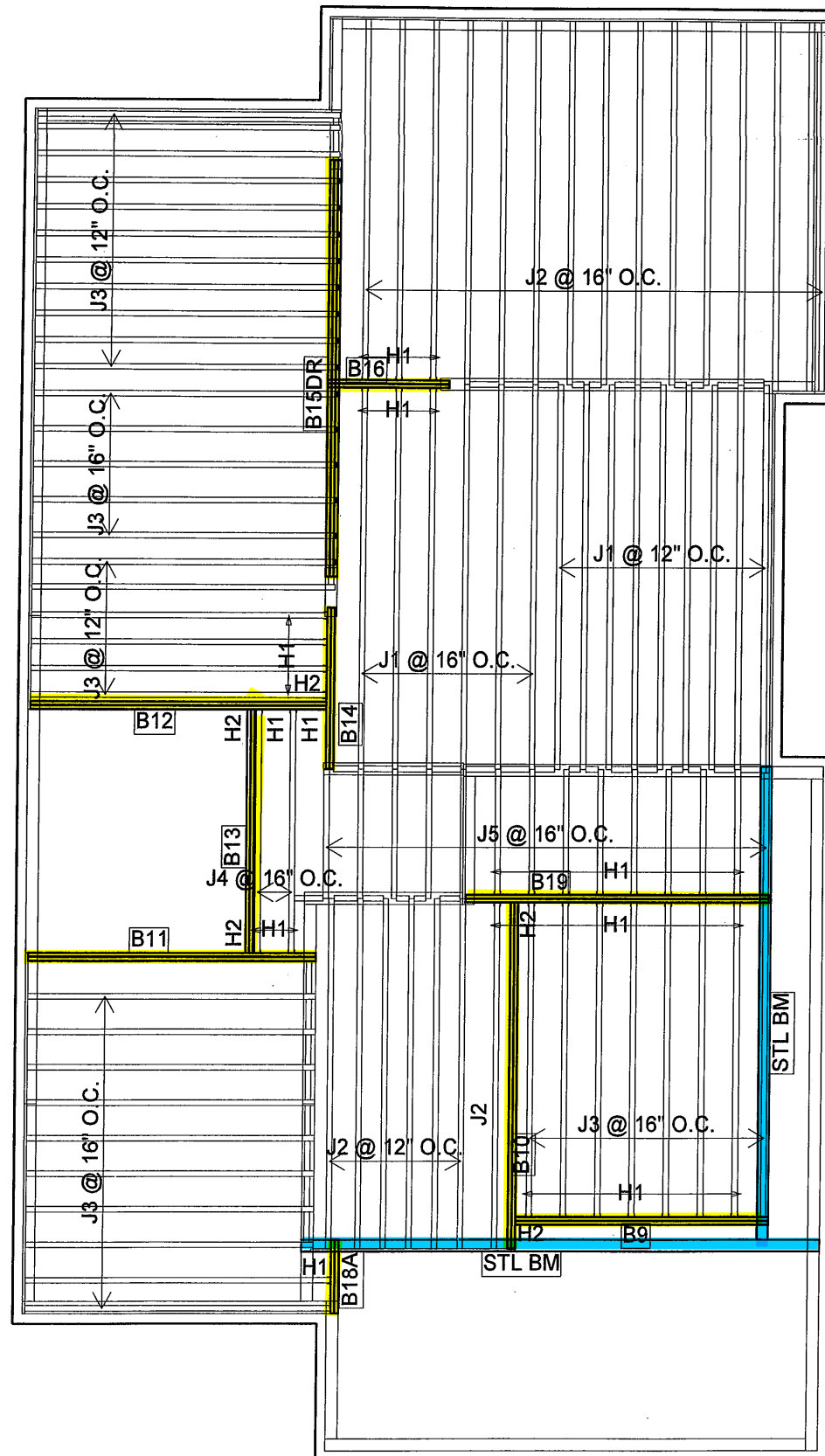
DEAD LOAD: 15.0 lb/ft

TILED AREAS: 20 lb/ft

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 14/02/2018

2nd FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	15
J2	14-00-00	9 1/2" NI-40x	1	22
J3	12-00-00	9 1/2" NI-40x	1	40
J4	10-00-00	9 1/2" NI-40x	1	2
J5	6-00-00	9 1/2" NI-40x	1	14
B10	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B11	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B12	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B19	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B13	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B14	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B16	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B18A	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B15DR	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3

Connector Summary		
Qty	Manuf	Product
38	H1	IUS2.56/9.5
5	H2	HGUS410

SITE COPY

BC CALC® Design Report

Basement Flush Beams B1(i2907)

Dry | 1 span | No cant.

February 14, 2018 15:18:31

Build 6215

Job name:

File name: S38-17 BAROSSA 17 EL A.mmdl

Address:

Description: Basement Flush Beams B1(i2907)

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

Specifier:

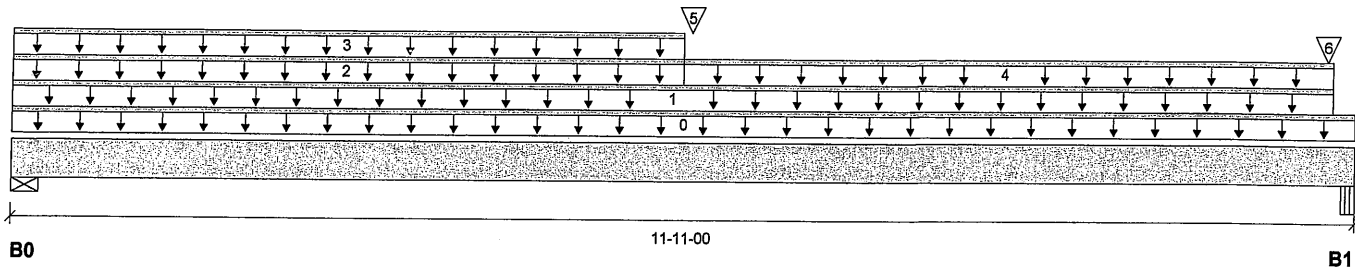
Customer:

Designer: CZ

Code reports:

CCMC 12472-R

Company:



Total Horizontal Product Length = 11-11-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	601 / 0	591 / 0		
B1, 5-1/4"	998 / 0	634 / 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	11-11-00		10			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	11-08-11	31	12			n/a
2	User Load	Unf. Lin. (lb/ft)	L	00-00-00	05-11-06		60			n/a
3	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	05-11-06	6	2			n/a
4	FC1 Floor Material	Unf. Lin. (lb/ft)	L	05-11-06	11-08-11	10	4			n/a
5	B6(i2203)	Conc. Pt. (lbs)	L	06-00-04	06-00-04	766	362			n/a
6	6(i593)	Conc. Pt. (lbs)	L	11-08-02	11-08-02	377	220			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	6,487 ft-lbs	23,220 ft-lbs	27.9 %	1	06-00-04
End Shear	1,455 lbs	11,571 lbs	12.6 %	1	01-01-14
Total Load Deflection	L/740 (0.182")	n/a	32.4 %	4	05-11-06
Live Load Deflection	L/999 (0.106")	n/a	n/a	5	05-11-06
Max Defl.	0.182"	n/a	18.2 %	4	05-11-06
Span / Depth	14.2				

Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate 4-3/8" x 3-1/2"	1,640 lbs	20.1 %	8.8 %	Unspecified
B1	Beam 5-1/4" x 3-1/2"	2,290 lbs	23.3 %	10.2 %	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 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.

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.



SITE COPY

DWG NO. TAM 9773 :18
STRUCTURAL
COMPONENT ONLY

Basement\Flush Beams\B1(i2907)

Dry | 1 span | No cant.

February 14, 2018 15:18:31

BC CALC® Design Report

Build 6215

Job name:

File name: S38-17 BAROSSA 17 EL A.mmdl

Address:

Description: Basement\Flush Beams\B1(i2907)

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

Specifier:

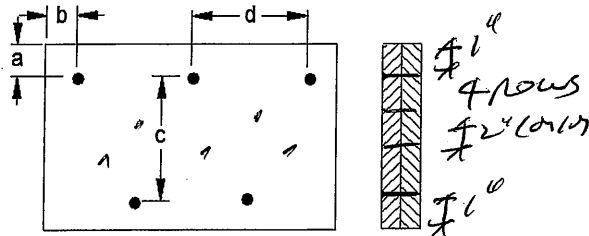
Customer:

Designer: CZ

Code reports: CCMC 12472-R

Company:

Connection Diagram



a minimum = 1"
b minimum = 3"

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

Calculated Side Load = 134.4 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.

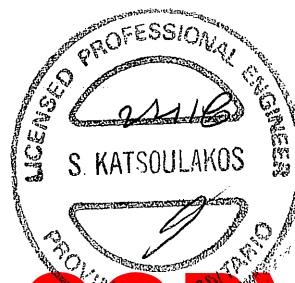
Connectors are: Nails

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



SITE COPY

DWG NO. TAM 9773-18
STRUCTURAL
COMPONENT ONLY

Basement/Flush Beams/B3(i3145)

Dry | 1 span | No cant.

February 14, 2018 15:18:31

BC CALC® Design Report

Build 6215

Job name:

File name: S38-17 BAROSSA 17 EL A.mmdl

Address:

Description: Basement/Flush Beams/B3(i3145)

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

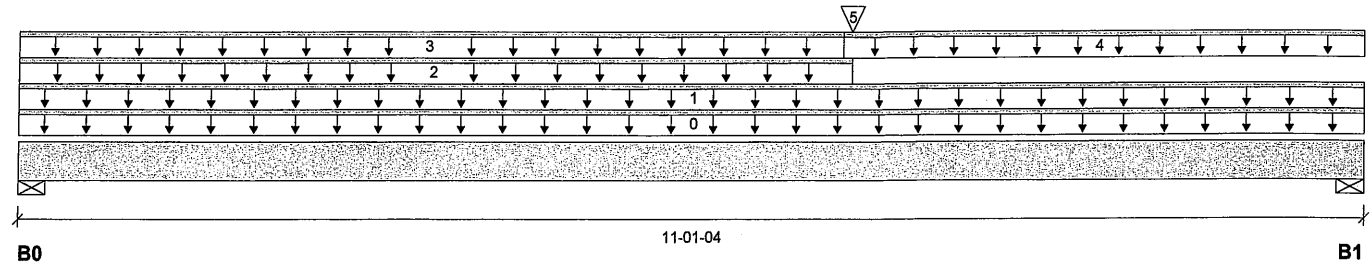
Specifier:

Customer:

Designer: CZ

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 11-01-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	303 / 0	478 / 0		
B1, 4-3/8"	451 / 0	383 / 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	11-01-04		10			00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	11-01-04	10	4			n/a
2	User Load	Unf. Lin. (lb/ft)	L	00-00-00	06-10-04		60			n/a
3	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	06-09-06	6	2			n/a
4	FC1 Floor Material	Unf. Lin. (lb/ft)	L	06-09-06	11-01-04	10	4			n/a
5	B7(i3051)	Conc. Pt. (lbs)	L	06-10-04	06-10-04	557	270			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4,102 ft-lbs	23,220 ft-lbs	17.7 %	1	06-10-04
End Shear	1,096 lbs	11,571 lbs	9.5 %	1	09-11-06
Total Load Deflection	L/999 (0.104")	n/a	n/a	4	05-08-11
Live Load Deflection	L/999 (0.052")	n/a	n/a	5	05-10-13
Max Defl.	0.104"	n/a	n/a	4	05-08-11
Span / Depth	13.3				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 4-3/8" x 3-1/2"	1,052 lbs	12.9 %	5.6 %	Unspecified
B1	Wall/Plate 4-3/8" x 3-1/2"	1,156 lbs	14.1 %	6.2 %	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 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.

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.



SITE COPY

 DWG NO. TAM 9774-18
 STRUCTURAL
 COMPONENT ONLY

BC CALC® Design Report

Build 6215

Job name:

File name: S38-17 BAROSSA 17 EL A.mmdl

Address:

Description: Basement\Flush Beams\B3(i3145)

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

Specifier:

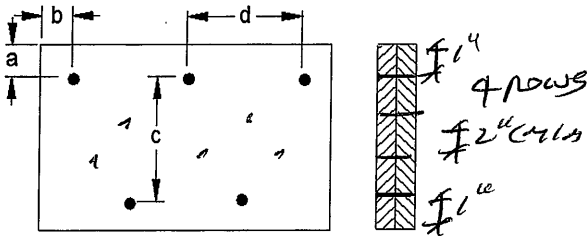
Customer:

Designer: CZ

Code reports: CCMC 12472-R

Company:

Connection Diagram



a minimum = 0"
b minimum = 3"

c = 2 1/2"
d = 4"

Calculated Side Load = 105.6 lb/ft

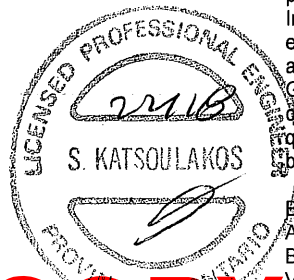
Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Connectors are: 3-1/2" ARDOX SPIRAL 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.



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DWG NO. TAM 9774-18
STRUCTURAL
COMPONENT ONLY



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B2(i2139)

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

September 22, 2017 11:26:42

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELA.mmdl

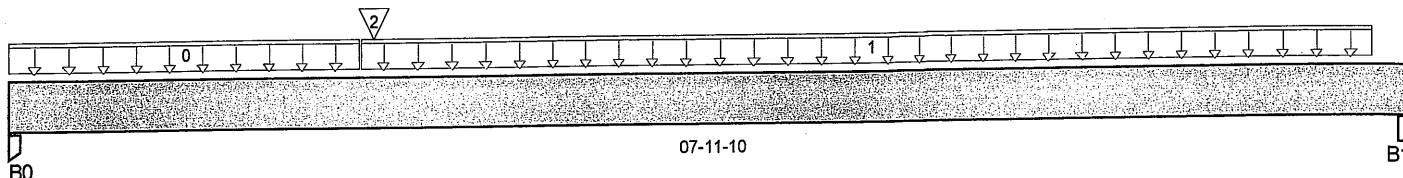
Description: Designs\Flush Beams\Basement\Flush Beams\B2(i2139)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 07-11-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	661 / 0	323 / 0		
B1, 5-1/4"	331 / 0	162 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC 1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	02-00-00	20	7			n/a
1	FC 1 Floor Material	Unf. Lin. (lb/ft)	L	02-00-00	07-09-05	40	15			n/a
2	B6(i2203)	Conc. Pt. (lbs)	L	02-00-14	02-00-14	721	346			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,478 ft-lbs	12,704 ft-lbs	19.5%	1	02-00-14
End Shear	1,347 lbs	5,785 lbs	23.3%	1	01-01-00
Total Load Defl.	L/999 (0.058")	n/a	n/a	4	03-07-04
Live Load Defl.	L/999 (0.039")	n/a	n/a	5	03-07-04
Max Defl.	0.058"	n/a	n/a	4	03-07-04
Span / Depth	9.3	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 1-3/4"	1,396 lbs	28.1%	18.7%	Unspecified
B1 Beam	5-1/4" x 1-3/4"	699 lbs	14.3%	6.2%	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 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.

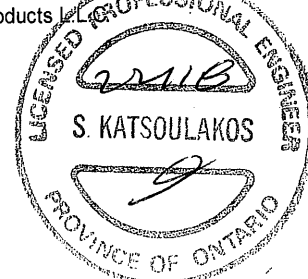
Importance Factor : Normal Part code : Part 9

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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Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B4(i2201)

BC CALC® Design Report



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

September 22, 2017 11:26:41

Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELA.mmdl

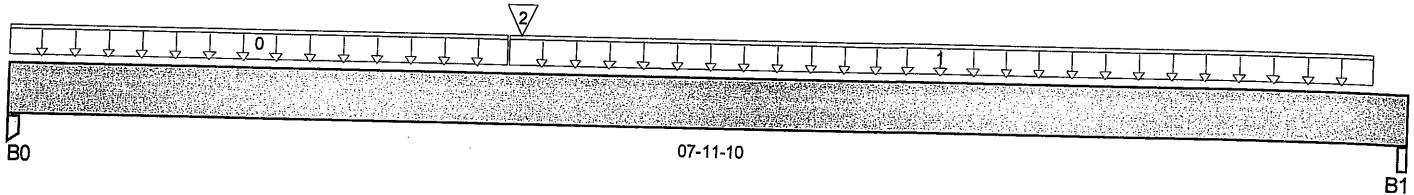
Description: Designs\Flush Beams\Basement\Flush Beams\B4(i2201)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 07-11-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	440 / 0	223 / 0		
B1, 5-1/4"	287 / 0	149 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	02-10-00	17	6	1.00	1.15	n/a
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	02-10-00	07-09-05	20	8			n/a
2	B7(i2135)	Conc. Pt. (lbs)	L	02-10-14	02-10-14	581	279			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,350 ft-lbs	12,704 ft-lbs	18.5%	1	02-10-14
End Shear	897 lbs	5,785 lbs	15.5%	1	01-01-00
Total Load Defl.	L/999 (0.053")	n/a	n/a	4	03-08-04
Live Load Defl.	L/999 (0.035")	n/a	n/a	5	03-08-04
Max Defl.	0.053"	n/a	n/a	4	03-08-04
Span / Depth	9.3	n/a	n/a		00-00-00

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.

Bearing Supports

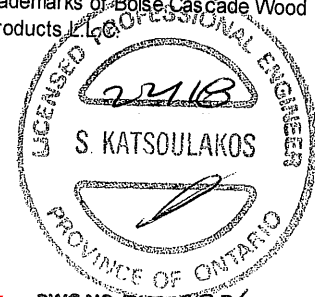
	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Post	3-1/2" x 1-3/4"	939 lbs	18.9%	12.6%	Unspecified
B1 Beam	5-1/4" x 1-3/4"	617 lbs	12.6%	5.5%	Unspecified

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 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

BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BC®, BOISE GLULAM™, SIMPLE FRAMING SYSTEM®, VERSA-LAM®, VERSA-RIM PLUS®, VERSA-RIM®, VERSA-STRAND®, VERSA-STUD® are trademarks of Boise Cascade Wood Products Ltd.



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DWG NO. TAM 9776-18
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B5(i2208)

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

September 22, 2017 11:26:42

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELA.mmdl

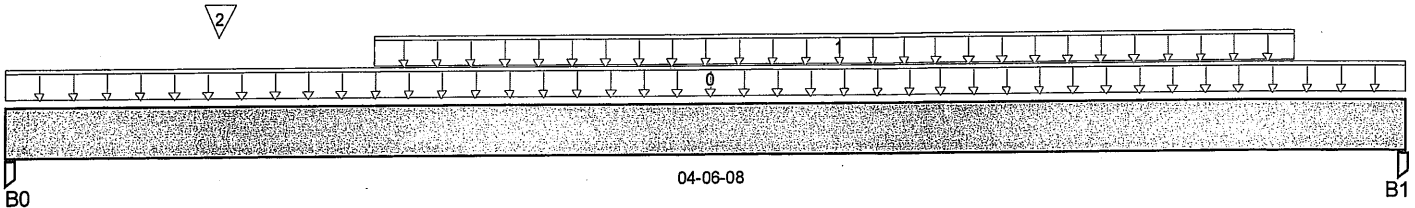
Description: Designs\Flush Beams\Basement\Flush Beams\B5(i2208)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 04-06-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 1-3/4"	320 / 0	277 / 0		
B1, 1-3/4"	304 / 0	272 / 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	04-06-08		60			n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-02-04	04-02-04	160	60			n/a
2	J4(i2198)	Conc. Pt. (lbs)	L	00-08-04	00-08-04	145	54			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	951 ft-lbs	25,408 ft-lbs	3.7%	1	02-06-12
End Shear	682 lbs	11,571 lbs	5.9%	1	03-07-04
Total Load Defl.	L/999 (0.005")	n/a	n/a	4	02-03-00
Live Load Defl.	L/999 (0.003")	n/a	n/a	5	02-03-00
Max Defl.	0.005"	n/a	n/a	4	02-03-00
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	1-3/4" x 3-1/2"	826 lbs	16.6%	11.1%	Unspecified
B1 Post	1-3/4" x 3-1/2"	796 lbs	16%	10.7%	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 member is fully braced.

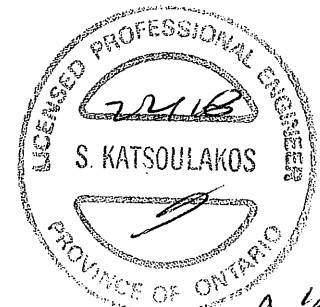
Resistance Factor phi has been applied to all presented results per CSA O86.

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 9777-18
 STRUCTURAL
 COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B5(i2208)

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

September 22, 2017 11:26:42

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELA.mxd

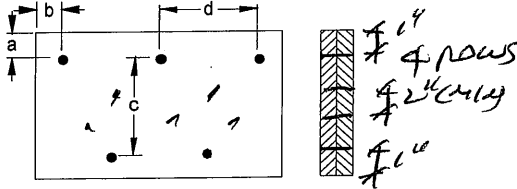
Description: Designs\Flush Beams\Basement\Flush Beams\B5(i2208)

Specifier:

Designer: CZ

Company:


Misc:

Connection Diagram

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

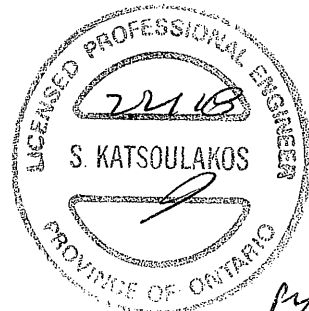
Calculated Side Load = 270.2 lb/ft

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:  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\B6(i2203)

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

September 22, 2017 11:26:42

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELA.mmdl

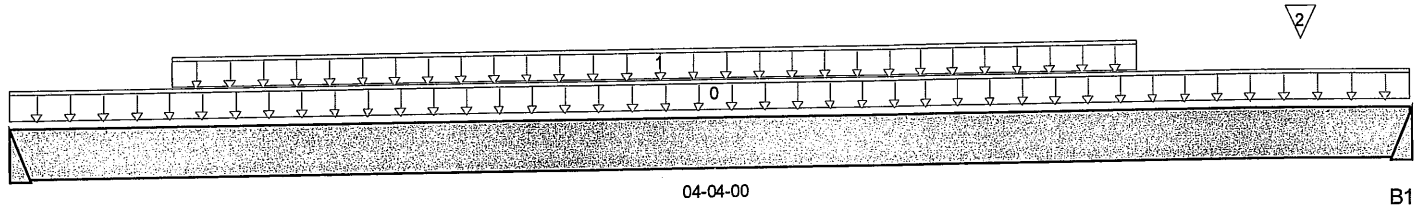
Description: Designs\Flush Beams\Basement\Flush Beams\B6(i2203)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 04-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	720 / 0	345 / 0		
B1	767 / 0	363 / 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	04-04-00	240	120			n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-06-00	03-06-00	120	44			n/a
2	J5(i2212)	Conc. Pt. (lbs)	L	04-00-00	04-00-00	88	33			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,595 ft-lbs	12,704 ft-lbs	12.6%	1	02-00-00
End Shear	1,017 lbs	5,785 lbs	17.6%	1	00-11-08
Total Load Defl.	L/999 (0.014")	n/a	n/a	4	02-02-04
Live Load Defl.	L/999 (0.009")	n/a	n/a	5	02-02-04
Max Defl.	0.014"	n/a	n/a	4	02-02-04
Span / Depth	5.2	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 1-3/4"	1,512 lbs	n/a	35.4%	HUS1.81/10
B1 Hanger	2" x 1-3/4"	1,604 lbs	n/a	37.6%	HUS1.81/10

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



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Boise Cascade

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B6(i2203)

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

September 22, 2017 11:26:42

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELAmmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B6(i2203)

Specifier:

Designer: CZ

Company:

Misc:

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 9778-78
STRUCTURAL
COMPONENT ONLY

SITE COPY



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B7(i2135)

BC CALC® Design Report



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

September 22, 2017 11:26:41

Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELA.mmdl

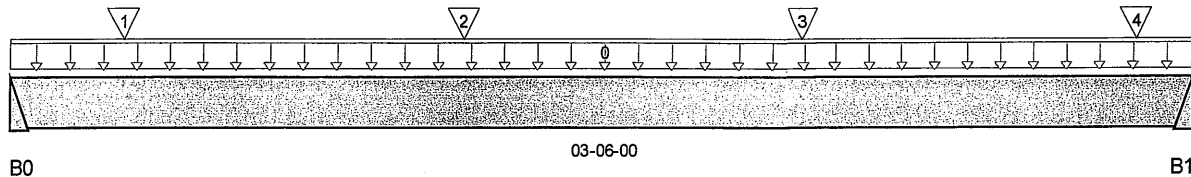
Description: Designs\Flush Beams\Basement\Flush Beams\B7(i2135)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 03-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	560 / 0	271 / 0		
B1	578 / 0	278 / 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	03-06-00	240	120			n/a
1	J5(i1963)	Conc. Pt. (lbs)	L	00-04-00	00-04-00	62	23			n/a
2	J5(i1959)	Conc. Pt. (lbs)	L	01-04-00	01-04-00	83	31			n/a
3	J5(i2204)	Conc. Pt. (lbs)	L	02-04-00	02-04-00	90	34			n/a
4	J5(i2194)	Conc. Pt. (lbs)	L	03-04-00	03-04-00	63	24			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	912 ft-lbs	12,704 ft-lbs	7.2%	1	01-08-14
End Shear	720 lbs	5,785 lbs	12.4%	1	02-06-08
Total Load Defl.	L/999 (0.005")	n/a	n/a	4	01-08-14
Live Load Defl.	L/999 (0.003")	n/a	n/a	5	01-08-14
Max Defl.	0.005"	n/a	n/a	4	01-08-14
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 1-3/4"	1,178 lbs	n/a	27.6%	HUS1.81/10
B1 Hanger	2" x 1-3/4"	1,215 lbs	n/a	28.4%	HUS1.81/10

Notes





Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B7(i2135)

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

September 22, 2017 11:26:41

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELAmmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B7(i213

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.

CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

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 9279-18
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B8(i2210)

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

September 22, 2017 11:26:42

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:BRADFORD,

Customer:

Code reports:

CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELAmmdl

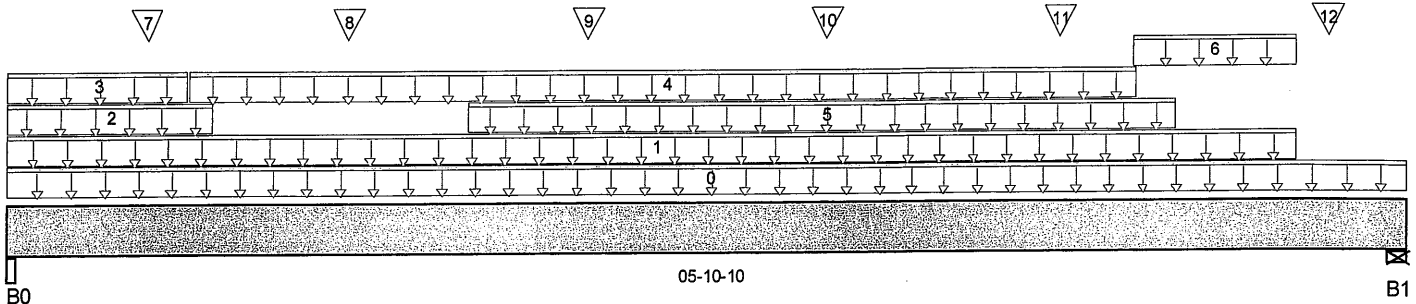
Description: Designs\Flush Beams\Basement\Flush Beams\B8(i2210)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 05-10-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/4"	2,582 / 0	1,599 / 0		
B1, 6"	2,493 / 0	1,388 / 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	05-10-10		60			n/a
1	8(i610)	Unf. Lin. (lb/ft)	L	00-00-00	05-05-02		81			n/a
2	8(i610)	Unf. Lin. (lb/ft)	L	00-00-00	00-10-06	776	519			n/a
3	8(i610)	Unf. Lin. (lb/ft)	L	00-00-00	00-09-02	164	62			n/a
4	8(i610)	Unf. Lin. (lb/ft)	L	00-09-02	04-09-02	384	144			n/a
5	Smoothed Load	Unf. Lin. (lb/ft)	L	01-11-02	04-11-02	291	109			n/a
6	8(i610)	Unf. Lin. (lb/ft)	L	04-08-14	05-05-02	386	146			n/a
7	-	Conc. Pt. (lbs)	L	00-07-00	00-07-00	242	65			n/a
8	-	Conc. Pt. (lbs)	L	01-05-02	01-05-02	355	134			n/a
9	J5(i1846)	Conc. Pt. (lbs)	L	02-05-02	02-05-02	94	35			n/a
10	J5(i1812)	Conc. Pt. (lbs)	L	03-05-02	03-05-02	94	35			n/a
11	J5(i1761)	Conc. Pt. (lbs)	L	04-05-02	04-05-02	112	42			n/a
12	-	Conc. Pt. (lbs)	L	05-06-09	05-06-09	700	299			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	5,514 ft-lbs	25,408 ft-lbs	21.7%	1	02-10-06
End Shear	4,318 lbs	11,571 lbs	37.3%	1	01-02-12
Total Load Defl.	L/999 (0.037")	n/a	n/a	4	02-11-02
Live Load Defl.	L/999 (0.023")	n/a	n/a	5	02-11-02
Max Defl.	0.037"	n/a	n/a	4	02-11-02
Span / Depth	6.4	n/a	n/a		00-00-00

Bearing Supports

Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
--------------	--------	-----------------------------	----------------------------	----------





Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B8(i2210)

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

September 22, 2017 11:26:42

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELA.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B8(i2210)

Specifier:

Designer: CZ

Company:

Misc:

B0	Beam	5-1/4" x 3-1/2"	5,873 lbs	59.9%	26.2%	Unspecified
B1	Wall/Plate	6" x 3-1/2"	5,475 lbs	48.8%	21.4%	Unspecified

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.

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.

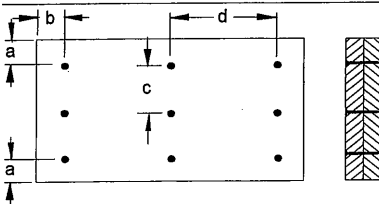
Resistance Factor phi has been applied to all presented results per CSA O86.

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

Design based on Dry Service Condition.

CONFORMS TO OBC 2012

Importance Factor: Normal Part code: Part 9

Connection Diagram

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

Calculated Side Load = 553.0 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

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DWG NO. TAM 9700-18
 STRUCTURAL
 COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B9(i2124)

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

September 22, 2017 11:26:41

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELA.mmdl

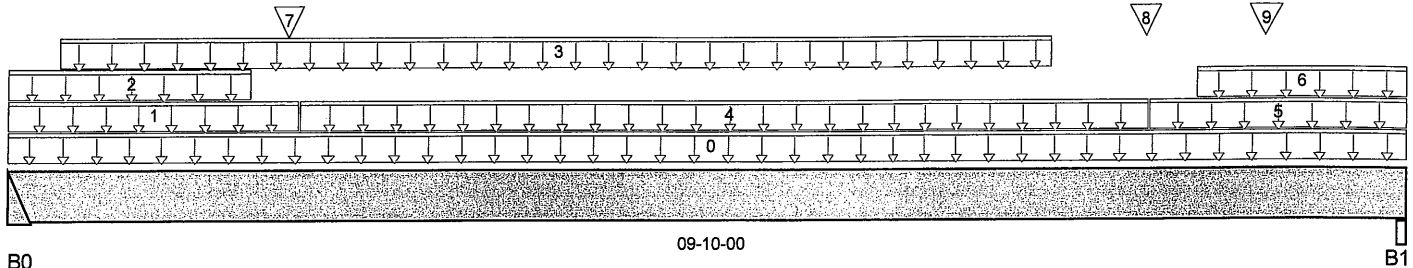
Description: Designs\Flush Beams\1st Floor\Flush Beams\B9(i2124)

Specifier:

Designer: CZ

Company:

Misc:



09-10-00

Total Horizontal Product Length = 09-10-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	1,868 / 0	1,281 / 0		
B1, 5-1/4"	1,903 / 0	1,325 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	LOWROOF	Unf. Lin. (lb/ft)	L	00-00-00	09-10-00	33	30		99	n/a
1	E21(i977)	Unf. Lin. (lb/ft)	L	00-00-00	02-00-08		81			n/a
2	E21(i977)	Unf. Lin. (lb/ft)	L	00-00-00	01-08-08	38	35		116	n/a
3	Smoothed Load	Unf. Lin. (lb/ft)	L	00-04-04	07-04-04	345	129			n/a
4	E20(i976)	Unf. Lin. (lb/ft)	L	02-00-08	08-00-08		61			n/a
5	E16(i973)	Unf. Lin. (lb/ft)	L	08-00-08	09-10-00		81			n/a
6	E16(i973)	Unf. Lin. (lb/ft)	L	08-04-08	09-10-00	38	35		116	n/a
7	E21(i977)	Conc. Pt. (lbs)	L	01-11-08	01-11-08	129	142		388	n/a
8	-	Conc. Pt. (lbs)	L	08-00-02	08-00-02	473	270		385	n/a
9	J3(i1919)	Conc. Pt. (lbs)	L	08-10-04	08-10-04	308	115			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	10,106 ft-lbs	25,408 ft-lbs	39.8%	1	04-10-04
End Shear	4,026 lbs	11,571 lbs	34.8%	1	00-11-08
Total Load Defl.	L/492 (0.228")	0.468"	48.8%	4	04-10-04
Live Load Defl.	L/809 (0.139")	0.312"	44.5%	5	04-10-04
Max Defl.	0.228"	1"	22.8%	4	04-10-04
Span / Depth	11.8	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"	4,404 lbs	n/a	51.6%	HGUS410
B1 Beam	5-1/4" x 3-1/2"	4,511 lbs	46%	20.1%	Unspecified

Notes



SITE COPY

DWG NO. TAM 9781-18
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B9(i2124)

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

September 22, 2017 11:26:41

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELA.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B9(i2124

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

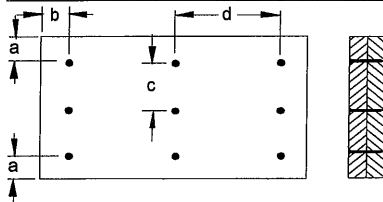
O86.

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

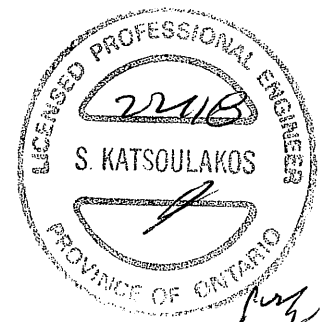
Calculated Side Load = 613.8 lb/ft

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: 16d Common Nails

3-1/2" ARDOX SPIRAL

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DWG NO. TAM 7781-18
 STRUCTURAL
 COMPONENT ONLY

SITE COPY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor...\B10(i2213)

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

September 22, 2017 11:26:41

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELAmmdl

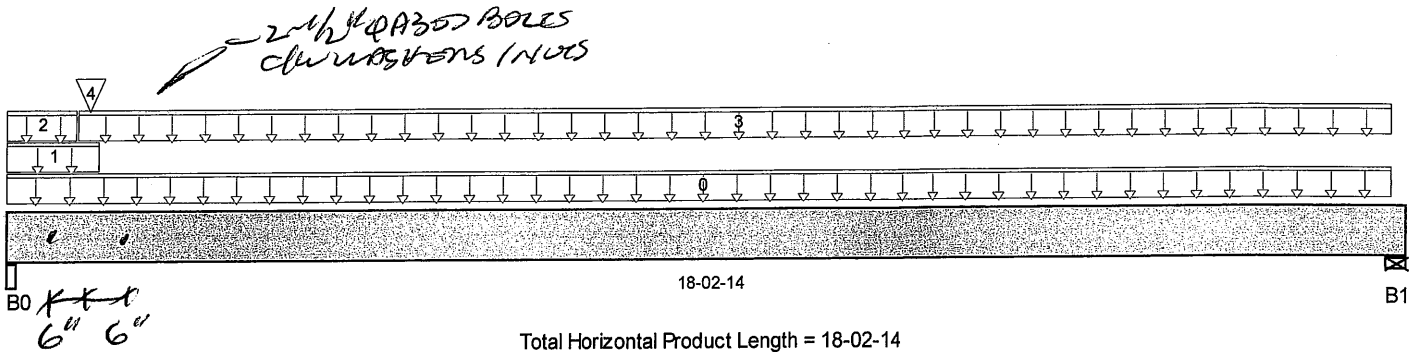
Description: Designs\Flush Beams\1st Floor\Flush Beams\B10(i2213)

Specifier:

Designer: CZ

Company:

Misc:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-1/8"	2,293 / 0	1,728 / 0		
B1, 5-1/2"	447 / 0	289 / 0		

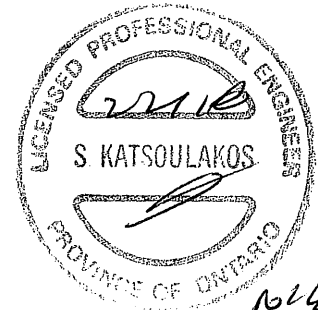
Load Summary

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	18-00-10	20	8			n/a
1	LOWROOF	Unf. Lin. (lb/ft)	L	00-00-00	01-02-06	33	30		99	n/a
2	E17(i972)	Unf. Lin. (lb/ft)	L	00-00-00	00-10-14	38	116		116	n/a
3	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-10-14	18-00-10	20	8			n/a
4	-	Conc. Pt. (lbs)	L	01-00-12	01-00-12	1,956	1,435		1,339	n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	5,623 ft-lbs	25,408 ft-lbs	22.1%	1	06-07-08
End Shear	4,908 lbs	11,571 lbs	42.4%	1	01-01-10
Total Load Defl.	L/461 (0.457")	0.878"	52%	4	08-07-03
Live Load Defl.	L/769 (0.274")	0.585"	46.8%	5	08-07-03
Max Defl.	0.457"	1"	45.7%	4	08-07-03
Span / Depth	22.2	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Beam	4-1/8" x 3-1/2"	5,599 lbs	72.6%	31.8%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	1,032 lbs	10%	4.4%	Unspecified

Notes





Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor...\B10(i2213)

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

September 22, 2017 11:26:41

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELA.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B10(i2213)

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

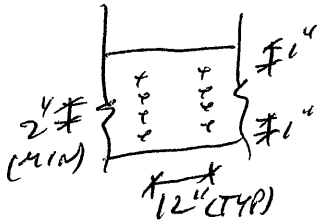
CONFORMS TO OBC 2012

Disclosure

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Connection Diagram

Concentrated side-load exceeds allowable magnitude for connection design. Please consult a technical representative or Professional Engineer for the design of the connection.



PROVIDE 4 ROWS OF 3-1/2" ARDOX SPIRAL NAILS @ 12" O/C FOR MULTI-PLY NAILING. MAINTAIN A MIN. 1" LUMBER EDGE / END DISTANCE. DO NOT USE AIR NAILS.

+
BOLTS

OK WITH
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DWG NO. TAM 9702-18
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B11(i2138)

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

September 22, 2017 11:26:40

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports:

CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELA.mmdl

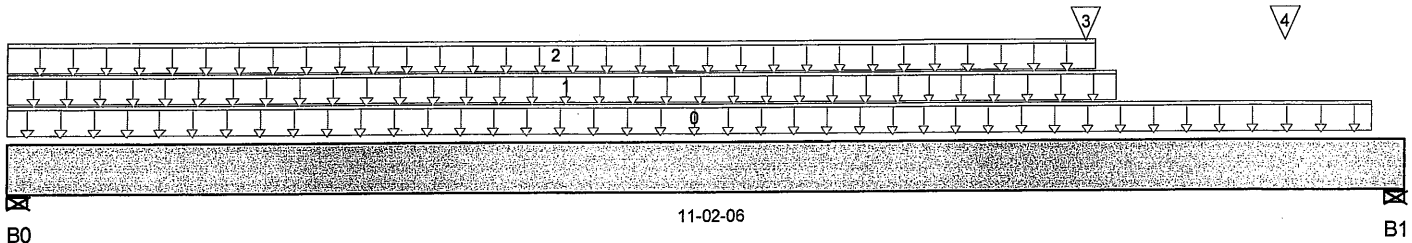
Description: Designs\Flush Beams\1st Floor\Flush Beams\B11(i2138);

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 11-02-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	392 / 0	549 / 0		
B1, 5-1/2"	1,136 / 0	785 / 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	10-11-04	30	11			n/a
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	08-10-14	6	2			n/a
2	0	Unf. Lin. (lb/ft)	L	00-00-00	08-08-14		60			n/a
3	-	Conc. Pt. (lbs)	L	08-07-12	08-07-12	890	463			n/a
4	J7(i1981)	Conc. Pt. (lbs)	L	10-02-14	10-02-14	262	98			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	4,796 ft-lbs	25,408 ft-lbs	18.9%	1	08-01-04
End Shear	2,423 lbs	11,571 lbs	20.9%	1	09-11-06
Total Load Defl.	L/952 (0.132")	0.525"	25.2%	4	05-11-05
Live Load Defl.	L/999 (0.066")	n/a	n/a	5	06-00-11
Max Defl.	0.132"	1"	13.2%	4	05-11-05
Span / Depth	13.3	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4-3/8" x 3-1/2"	1,274 lbs	15.6%	6.8%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	2,685 lbs	26.1%	11.4%	Unspecified

Notes



P6 1/2

DWG NO. TAM 9703-18
STRUCTURAL
COMPONENT ONLY

SITE COPY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor...\B11(i2138)

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

September 22, 2017 11:26:40

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELAmmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B11(i2138)

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

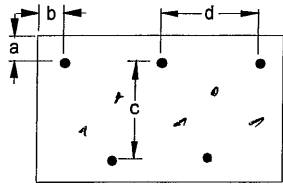
CONFORMS TO OBC 2012

Disclosure

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Connection Diagram



#1 4 rows
#2 4 rows
#1 4

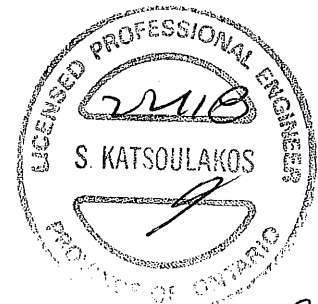
a minimum = 1" c = 3-1/2"
b minimum = 3" d = 4"

Calculated Side Load = 216.9 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 in. Fire Retardant Nails

3-1/2" ARDOX SPIRAL



DWG NO. TAM 9783-R
STRUCTURAL
COMPONENT ONLY

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Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor...\B12(i2142)

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

September 22, 2017 11:26:40

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELA.mmdl

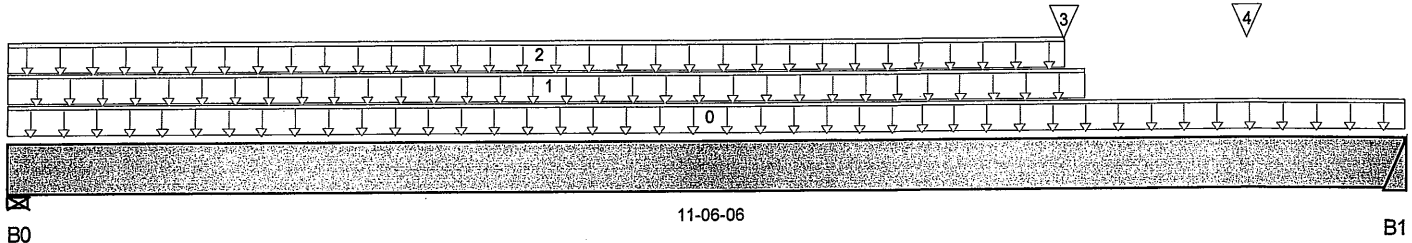
Description: Designs\Flush Beams\1st Floor\Flush Beams\B12(i2142)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 11-06-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	274 / 0	508 / 0		
B1	651 / 0	539 / 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	11-06-06	21	8			n/a
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	08-10-14	6	2			n/a
2	0	Unf. Lin. (lb/ft)	L	00-00-00	08-08-14		60			n/a
3	-	Conc. Pt. (lbs)	L	08-08-10	08-08-10	370	203			n/a
4	J7(i1981)	Conc. Pt. (lbs)	L	10-02-14	10-02-14	258	97			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,591 ft-lbs	25,408 ft-lbs	14.1%	1	07-05-01
End Shear	1,598 lbs	11,571 lbs	13.8%	1	10-06-14
Total Load Defl.	L/999 (0.117")	n/a	n/a	4	06-02-00
Live Load Defl.	L/999 (0.051")	n/a	n/a	5	06-03-06
Max Defl.	0.117"	n/a	n/a	4	06-02-00
Span / Depth	14.1	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4-3/8" x 3-1/2"	711 lbs	13.4%	5.9%	Unspecified
B1 Hanger	2" x 3-1/2"	1,650 lbs	n/a	19.3%	HGUS410

Notes



DWG NO. TAM 9784-78
STRUCTURAL
COMPONENT ONLY

SITE COPY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B12(i2142)

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

September 22, 2017 11:26:40

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELAmmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B12(i2142)

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

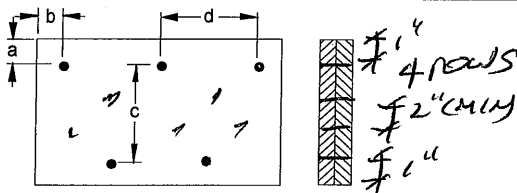
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Disclosure

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Connection Diagram



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

Calculated Side Load = 114.2 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 in. Protected Gun Nails

3-1/2" ARDOX SPIRAL



DWG NO. TAM 9784
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor...B13(i2137)

BC CALC® Design Report



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

September 22, 2017 11:26:41

Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELA.mmdl

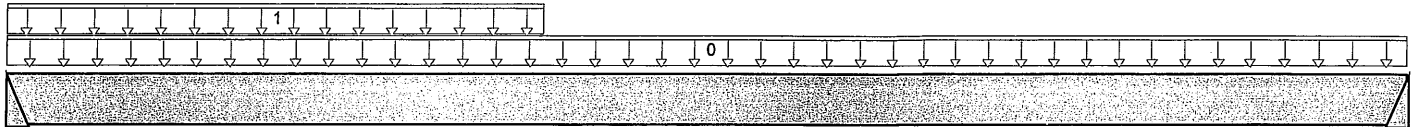
Description: Designs\Flush Beams\1st Floor\Flush Beams\B13(i2137)

Specifier:

Designer: CZ

Company:

Misc:



09-02-00

B0

B1

Total Horizontal Product Length = 09-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	728 / 0	403 / 0		
B1	196 / 0	137 / 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	09-02-00	9	3			n/a
1	0	Unf. Lin. (lb/ft)	L	00-00-00	03-06-00	240	120			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,191 ft-lbs	25,408 ft-lbs	8.6%	1	02-11-05
End Shear	1,077 lbs	11,571 lbs	9.3%	1	00-11-08
Total Load Defl.	L/999 (0.039")	n/a	n/a	4	04-01-15
Live Load Defl.	L/999 (0.025")	n/a	n/a	5	04-01-15
Max Defl.	0.039"	n/a	n/a	4	04-01-15
Span / Depth	11.3	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"	1,595 lbs	n/a	18.7%	HGUS410
B1 Hanger	2" x 3-1/2"	466 lbs	n/a	5.5%	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.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9





Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B13(i2137)

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

September 22, 2017 11:26:41

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELA.mxd

Description: Designs\Flush Beams\1st Floor\Flush Beams\B13(i2137)

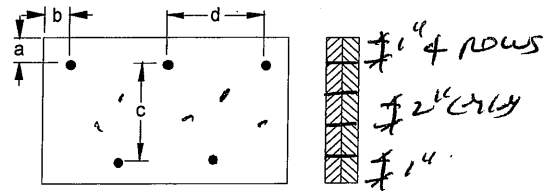
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



a minimum = 1" c = 2-1/2"
b minimum = 3" d = 12"

Member has no side loads.

Connectors are: 16d 8d 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 9785-18
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B14(i2195)

BC CALC® Design Report



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

September 22, 2017 11:26:41

Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELA.mmdl

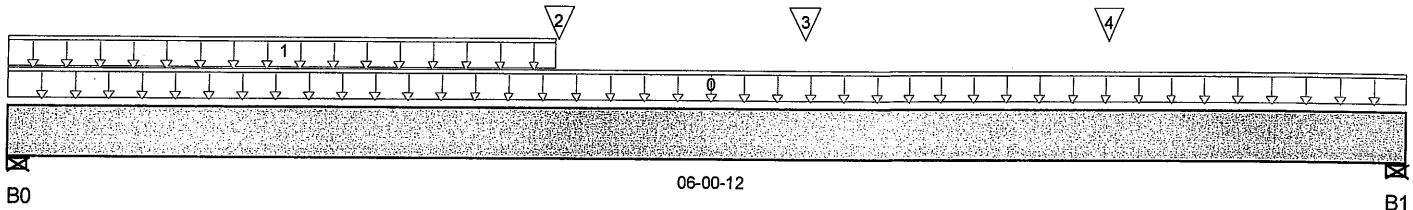
Description: Designs\Flush Beams\1st Floor\Flush Beams\B14(i2195)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 06-00-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-3/4"	695 / 0	465 / 0		
B1, 4"	761 / 0	429 / 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	06-00-12	25	9			n/a
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	02-04-08	29	11			n/a
2	B12(i2142)	Conc. Pt. (lbs)	L	02-04-08	02-04-08	648	532			n/a
3	J6(i1980)	Conc. Pt. (lbs)	L	03-05-04	03-05-04	276	104			n/a
4	J6(i2018)	Conc. Pt. (lbs)	L	04-09-04	04-09-04	315	118			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,259 ft-lbs	25,408 ft-lbs	12.8%	1	02-04-08
End Shear	1,609 lbs	11,571 lbs	13.9%	1	04-11-04
Total Load Defl.	L/999 (0.024")	n/a	n/a	4	02-10-14
Live Load Defl.	L/999 (0.015")	n/a	n/a	5	02-11-11
Max Defl.	0.024"	n/a	n/a	4	02-10-14
Span / Depth	7.1	n/a	n/a		00-00-00

Demand / Resistance
Support Member

Bearing Supports

Bearing Supports		Dim. (L x W)	Demand	Support	Member	Material
B0	Wall/Plate	2-3/4" x 3-1/2"	1,625 lbs	31.6%	13.8%	Unspecified
B1	Wall/Plate	4" x 3-1/2"	1,677 lbs	22.4%	9.8%	Unspecified

Notes





Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B14(i2195)

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

September 22, 2017 11:26:41

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELA.mdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B14(i2195)

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

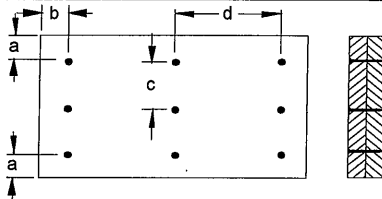
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Disclosure

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Connection Diagram



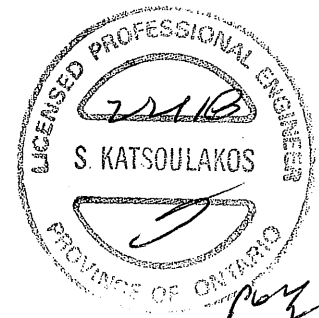
a minimum = 2" c = 2-3/4"
b minimum = 3" d = 4"

Calculated Side Load = 462.0 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





Triple 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor...\B15DR(i2141)

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

September 22, 2017 11:26:41

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELAmmdl

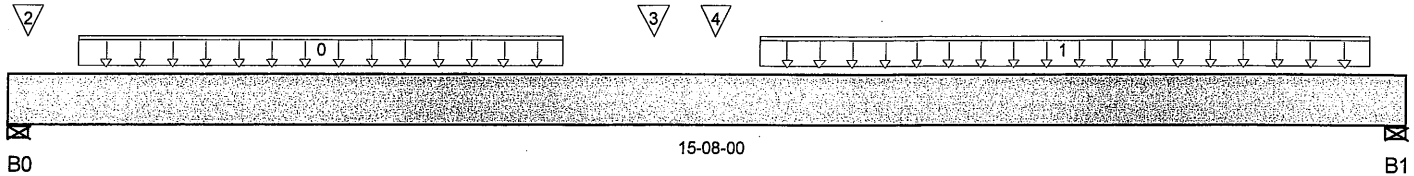
Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B15

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 15-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	2,556 / 0	1,111 / 0		
B1, 4"	2,335 / 0	1,023 / 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	00-09-04	06-02-08	227	85			n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	08-04-08	15-03-04	238	88			n/a
2	J6(i1982)	Conc. Pt. (lbs)	L	00-02-08	00-02-08	296	111			n/a
3	-	Conc. Pt. (lbs)	L	07-02-04	07-02-04	1,167	460			n/a
4	J6(i2003)	Conc. Pt. (lbs)	L	07-10-08	07-10-08	251	94			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	21,550 ft-lbs	60,415 ft-lbs	35.7%	1	07-03-04
End Shear	4,555 lbs	21,696 lbs	21%	1	01-03-14
Total Load Defl.	L/454 (0.4")	0.756"	52.9%	4	07-10-08
Live Load Defl.	L/650 (0.279")	0.504"	55.4%	5	07-10-08
Max Defl.	0.4"	1"	40%	4	07-10-08
Span / Depth	15.3	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4" x 5-1/4"	5,223 lbs	30.6%	20.4%	Unspecified
B1 Wall/Plate	4" x 5-1/4"	4,781 lbs	28%	18.7%	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: 00-04-07, Bottom: 00-04-07.

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 9787-18
STRUCTURAL
COMPONENT ONLY



Triple 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor...\B15DR(i2141)

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

September 22, 2017 11:26:41

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELAmmdl

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

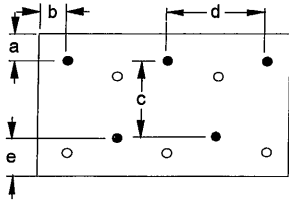
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



4 rows

a minimum = 1" c = 6-7/8"
b minimum = 3" d = 6-7/8"
e minimum = 2"

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

Nailing schedule applies to both sides of the member.

Member has no side loads.

Connectors are: 16d Sinker Nails

3-1/2" ARDOX SPIRAL

Disclosure

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Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B16(i2193)

BC CALC® Design Report



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

September 22, 2017 11:26:40

Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELA.mmdl

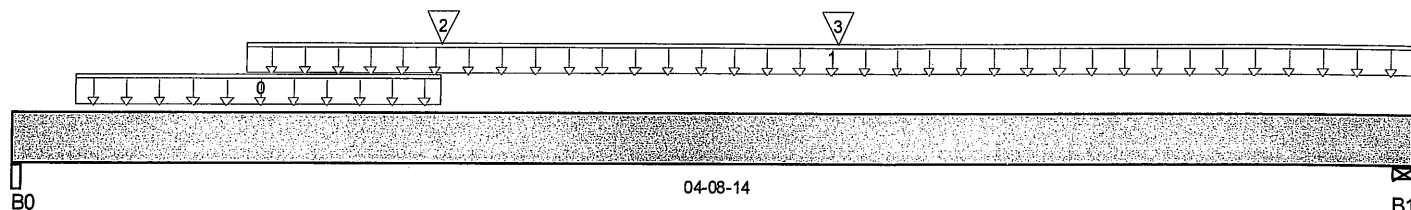
Description: Designs\Flush Beams\1st Floor\Flush Beams\B16(i2193)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 04-08-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/4"	914 / 0	366 / 0		
B1, 4"	1,309 / 0	512 / 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	00-02-08	01-05-06	24	9			n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-09-06	04-08-14	335	125			n/a
2	J4(i1876)	Conc. Pt. (lbs)	L	01-05-06	01-05-06	363	136			n/a
3	J4(i1798)	Conc. Pt. (lbs)	L	02-09-06	02-09-06	387	145			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,408 ft-lbs	25,408 ft-lbs	9.5%	1	02-09-06
End Shear	1,765 lbs	11,571 lbs	15.3%	1	01-02-12
Total Load Defl.	L/999 (0.01")	n/a	n/a	4	02-05-06
Live Load Defl.	L/999 (0.007")	n/a	n/a	5	02-05-06
Max Defl.	0.01"	n/a	n/a	4	02-05-06
Span / Depth	5.2	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Beam	5-1/4" x 3-1/2"	1,828 lbs	9.1%	8.2%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	2,604 lbs	34.8%	15.2%	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 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 9708-18
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B16(i2193)

BC CALC® Design Report



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

September 22, 2017 11:26:40

Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELA.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B16(i2193)

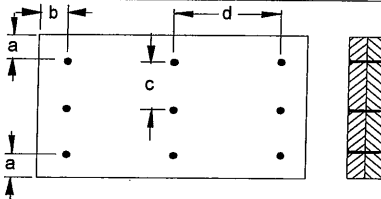
Specifier:

Designer: CZ

Company:

Msc:

Connection Diagram



a minimum = 2" c = 2-3/4"
b minimum = 3" d = 6"

Calculated Side Load = 472.2 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

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.

BC CALO®, BC FRAMER®, AJST™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, SIMPLE FRAMING SYSTEM®, VERSA-LAM®, VERSA-RIM PLUS®, VERSA-RIM®, VERSA-STRAND®, VERSA-STUD® are trademarks of Boise Cascade Wood Products L.L.C.



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DWG NO. TAM 9700.18
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COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor...\B18A(i2206)

BC CALC® Design Report



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

September 22, 2017 11:26:40

Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports:

CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELA.mmdl

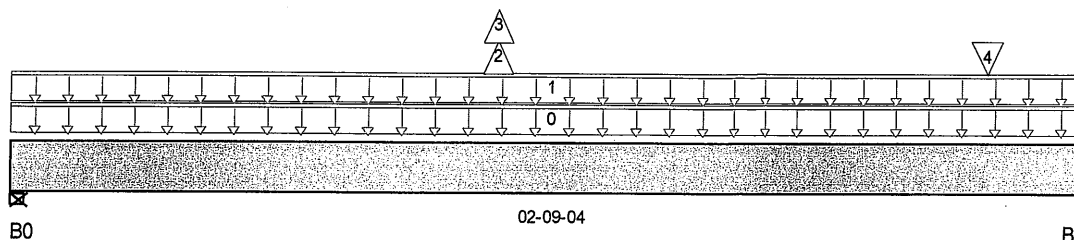
Description: Designs\Flush Beams\1st Floor\Flush Beams\B18A(i2206)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 02-09-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	150/516	82/0		
B1, 5-1/4"	151/384	152/0		

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	02-09-04	77	170		231	n/a
1	LOWROOF	Unf. Lin. (lb/ft)	L	00-00-00	02-09-04	11	10		33	n/a
2	J6(i2017)	Conc. Pt. (lbs)	L	01-03-00	01-03-00	48	-319			n/a
3	J6(i2017)	Conc. Pt. (lbs)	L	01-03-00	01-03-00	-900				n/a
4	-	Conc. Pt. (lbs)	L	02-06-03	02-06-03	8	24			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	74 ft-lbs	25,408 ft-lbs	0.3%	3	01-08-05
Neg. Moment	-739 ft-lbs	-25,408 ft-lbs	2.9%	2	01-03-00
End Shear	644 lbs	11,571 lbs	5.6%	4	01-03-00
Uplift	701 lbs	n/a	n/a	4	00-00-00
Total Load Defl.	L/999 (0")	n/a	n/a	6	01-06-13
Live Load Defl.	L/999 (-0.001")	n/a	n/a	9	01-04-05
Total Neg. Defl.	L/999 (-0.001")	n/a	n/a	7	01-04-02
Max Defl.	-0.001"	n/a	n/a	7	01-04-02
Span / Depth	2.5	n/a	n/a		00-00-00

Bearing Supports

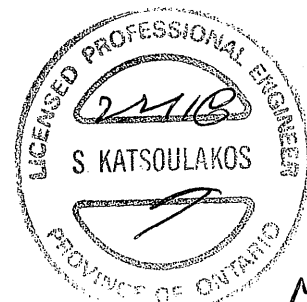
B0	Wall/Plate	5-1/2" x 3-1/2"	701 lbs	6.8%	3%	Unspecified
B1	Beam	5-1/4" x 3-1/2"	439 lbs	4.5%	2%	Unspecified

Cautions

Uplift of 701 lbs found at span 1 - Left.

(SIMPSON 1-HZ-5A @ A-B0)

Notes



DWG NO. TAM 9789-18
STRUCTURAL
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Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B18A(i2206)

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

September 22, 2017 11:26:40

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S38-17 BAROSSA 17 ELAmmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B18A(i2206)

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

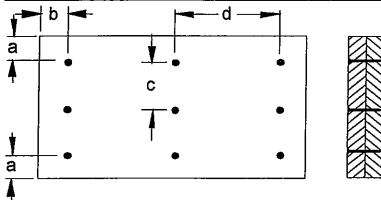
CONFORMS TO OBC 2012

Disclosure

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BC CALO®, BC FRAMER®, AJST™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, SIMPLE FRAMING SYSTEM®, VERSA-LAM®, VERSA-RIM PLUS®, VERSA-RIM®, VERSA-STRAND®, VERSA-STUD® are trademarks of Boise Cascade Wood Products L.L.C.

Connection Diagram



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

Calculated Side Load = 605.1 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 Common Nails

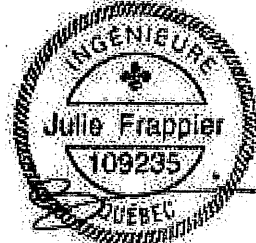
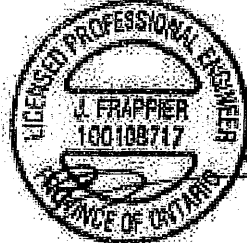
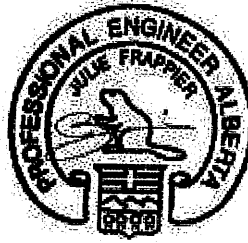
3-1/2" ARDOX SPIRAL



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DWG NO. TAM 9709-18
STRUCTURAL
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SITE COPY



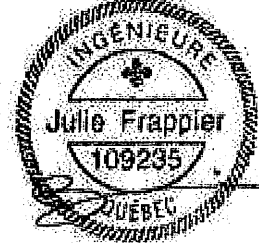
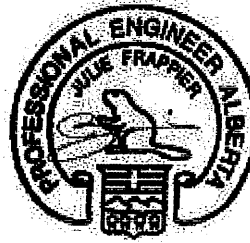
Maximum Floor Spans

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
	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	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
	NI-90x	23'-4"	21'-8"	20'-8"	N/A	23'-10"	22'-2"	21'-2"	N/A
14"	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
	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"	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.



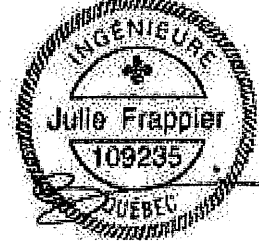
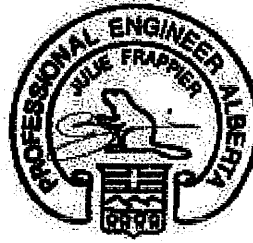
Maximum Floor Spans

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"
14"	NI-90x	21'-8"	20'-0"	19'-1"	18'-0"	22'-2"	20'-6"	19'-6"	18'-6"
	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'-3"	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"
16"	NI-90x	24'-1"	22'-3"	21'-2"	20'-0"	24'-8"	22'-10"	21'-9"	20'-7"
	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"
14"	NI-90x	24'-3"	22'-6"	21'-6"	20'-4"	24'-8"	23'-0"	22'-0"	20'-9"
	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"
16"	NI-90x	27'-3"	25'-4"	24'-1"	22'-9"	27'-9"	25'-11"	24'-8"	23'-4"
	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.



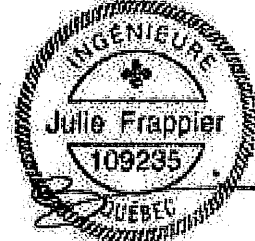
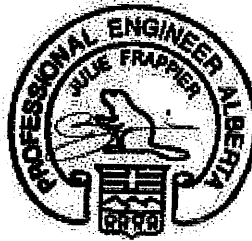
Maximum Floor Spans

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.



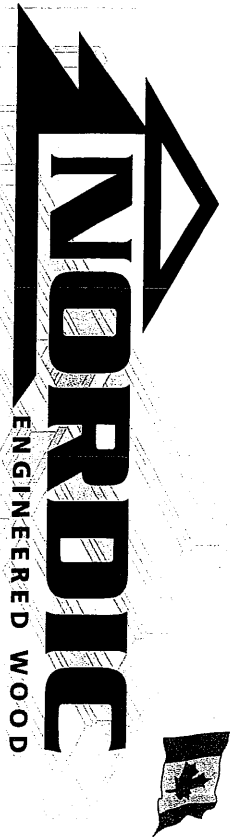
Maximum Floor Spans

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

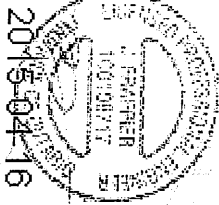
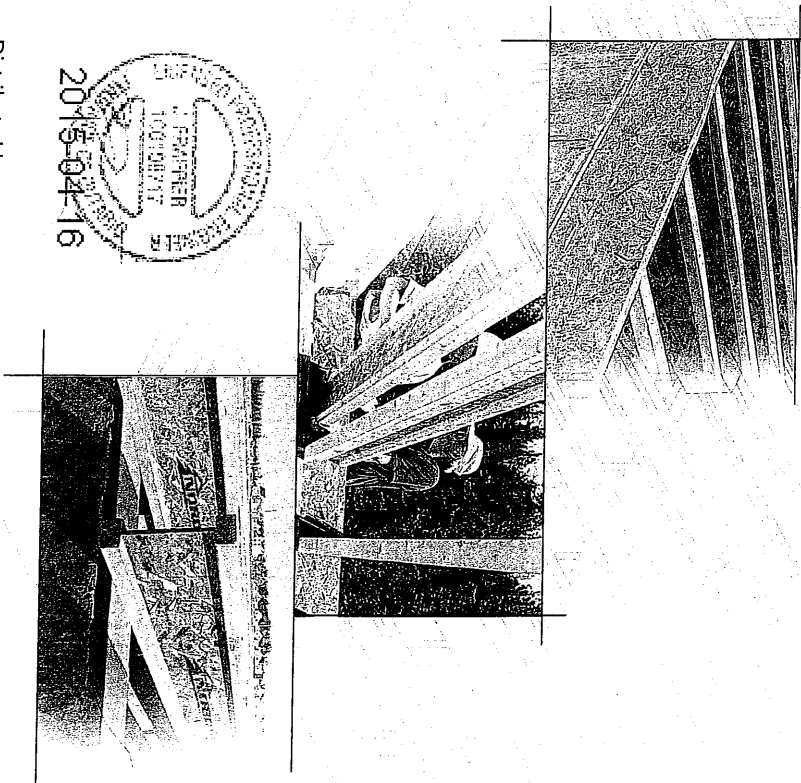
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-2"	13'-4"	12'-4"	15'-7"	14'-2"	13'-4"	12'-4"
	NI-40x	17'-0"	16'-0"	15'-1"	13'-11"	17'-5"	16'-1"	15'-1"	13'-11"
	NI-60	17'-2"	16'-2"	15'-5"	14'-3"	17'-6"	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"
14"	NI-90x	21'-8"	20'-0"	19'-1"	18'-0"	22'-2"	20'-6"	19'-6"	18'-6"
	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"
16"	NI-90x	24'-1"	22'-3"	21'-2"	20'-0"	24'-8"	22'-10"	21'-9"	20'-7"
	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"
14"	NI-90x	24'-3"	22'-6"	21'-3"	19'-7"	24'-8"	22'-7"	21'-3"	19'-7"
	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"
16"	NI-90x	27'-3"	25'-4"	24'-1"	22'-4"	27'-9"	25'-10"	24'-3"	22'-4"
	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.
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- 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

WARNING

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

Avoid Accidents by Following these Important Guidelines:

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



1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-briding of joist ends. When I-joists are applied continuous over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.

2. When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joist rollover or buckling.

- Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on centre, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. Lap ends of adjoining bracing over at least two I-joists.

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

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

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

5. Never install a damaged I-joist.

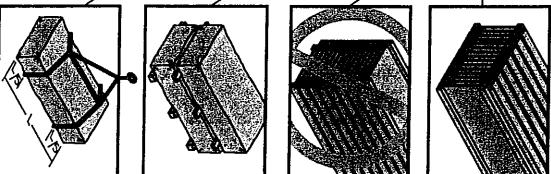
Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable hole sizes and locations, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines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



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

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.
8. Do not handle I-joists in a horizontal orientation.
9. NEVER USE OR TRY TO REPAIR A DAMAGED I-JOIST.




SITE COPY



1-101ST HANGERS

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

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.
- 
- The diagrams show three different hanger configurations. The 'Top Mount' hanger is attached to the top flange of the I-joist. The 'Face Mount' hanger is attached to the side of the I-joist. The 'Skewed' hanger is attached to the side of the I-joist at an angle.

most commonly used metric

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.

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NOTES

FIGURE 2

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

1/8" 1/4" C-

CONCENTRATED LOAD
(Load stiffener)

Tight Joint →

See table below for web stiffener size requirements

STIFFENER SIZE REQUIREMENTS

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

Downloaded from <http://ajph.org/> on November 11, 2014

A cross-sectional diagram of a joint between two materials. A thick, dark, textured material is on the left, and a lighter, stippled material is on the right. A horizontal arrow points from the dark material into the lighter material, labeled "Tight Joint". A small gap is visible between the two materials, labeled "Gap".

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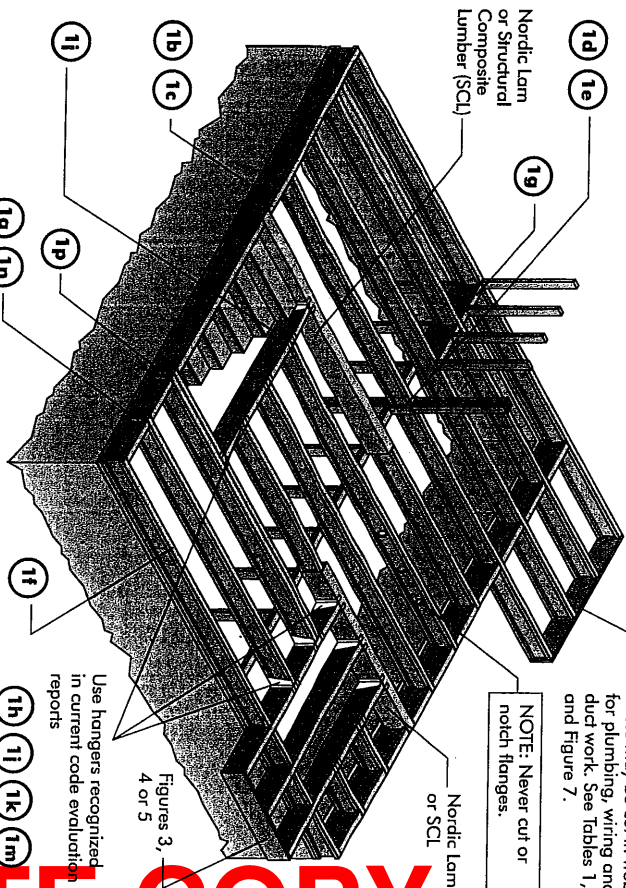
INSTALLING NORDIC I-JOISTS

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 spans must be level.
5. Minimum bearing lengths: 1-3/4 inches for end bearings and 3-1/2 inches for intermediate bearings.
6. When using hangers, seat I-joists firmly in hanger bottoms to minimize settlement.
7. Leave a 1/16-inch gap between the I-joist end and a header.
8. Concentrated loads greater than those that can normally be expected in residential construction should only be applied to the top surface of the top flange. Normal concentrated loads include track lighting fixtures, audio equipment and security cameras. Never suspend 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.

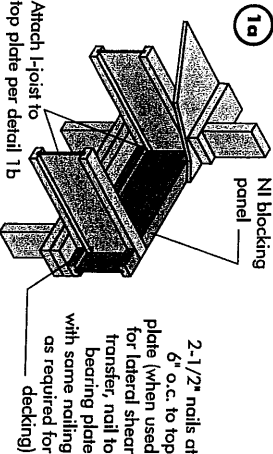
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FIGURE 1
TYPICAL NORDIC I-JOIST FLOOR FRAMING AND CONSTRUCTION DETAILS

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

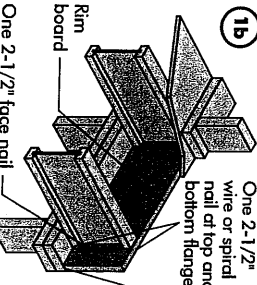


All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for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



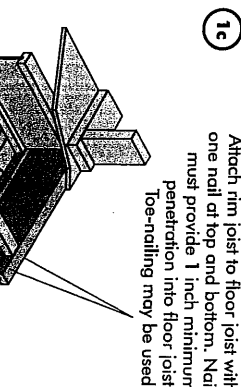
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI Joists	3,300

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



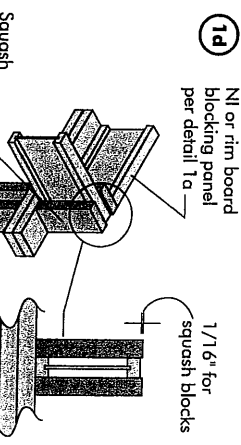
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

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



Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI rim joist per detail 1a	Minimum 1-3/4"

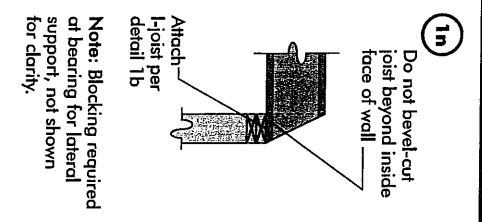
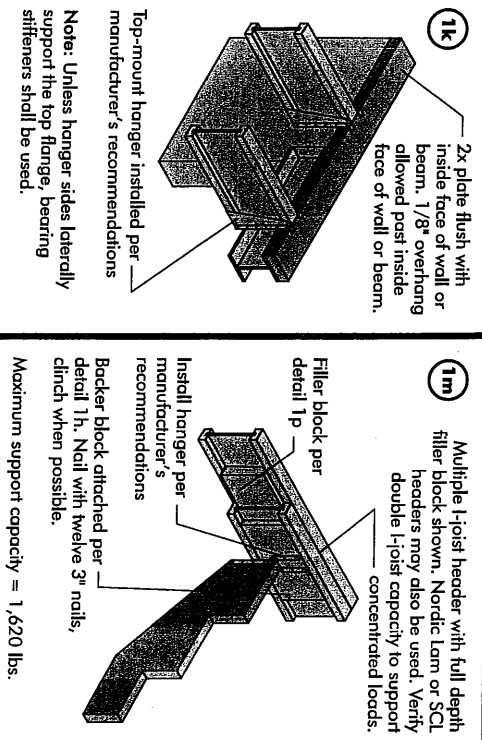
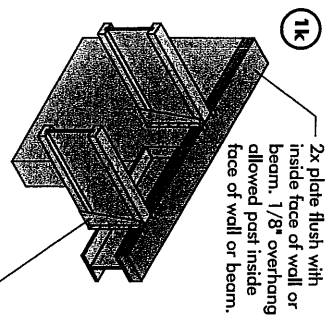
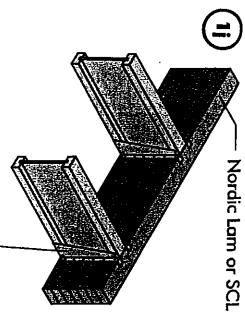
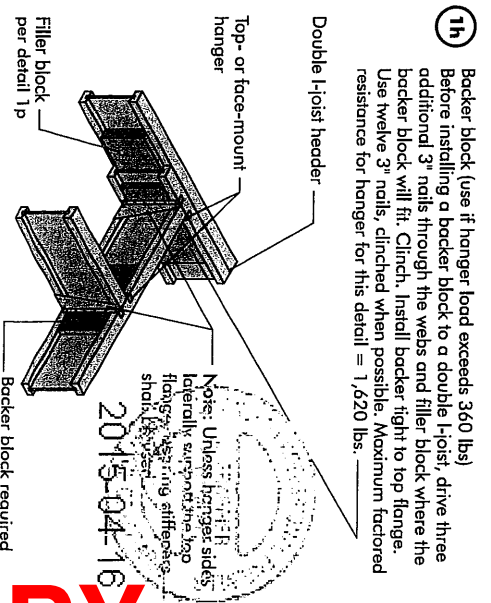
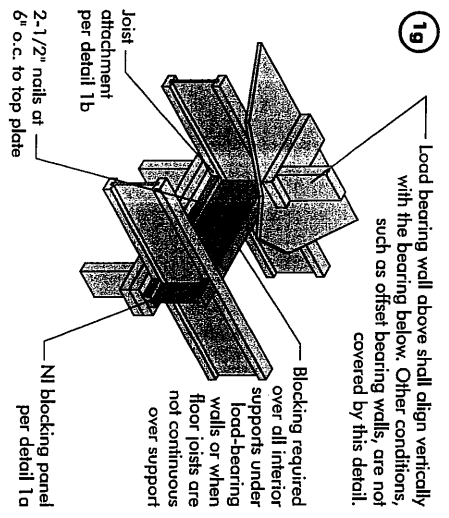
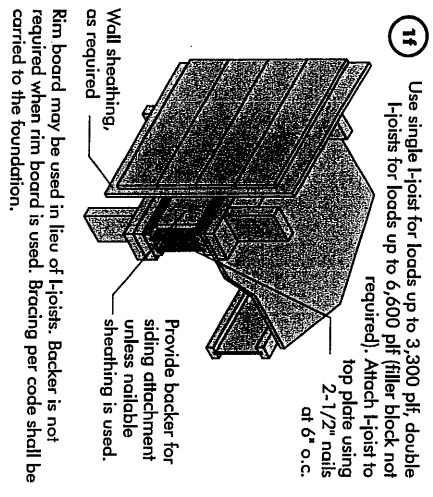
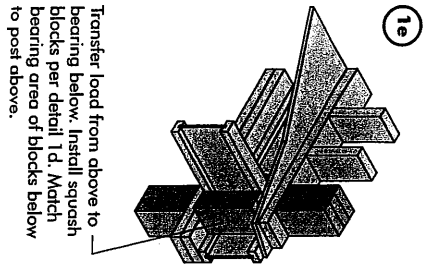
Attach rim joist to floor joist with one nail at top and bottom. Nail must provide 1 inch minimum penetration into floor joist. Toe-nailing may be used.



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

Provide lateral bracing per detail 1a, 1b, or 1c

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

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

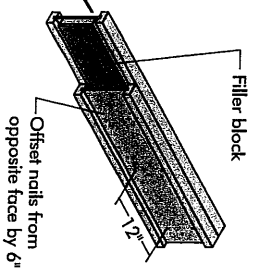
Note: Blocking required at bearing for lateral support, not shown for clarity.

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".

1p



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

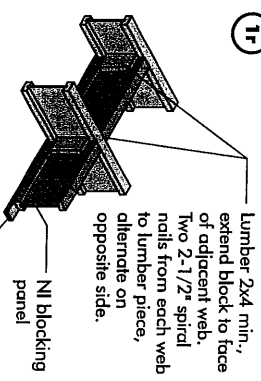
Notes:

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

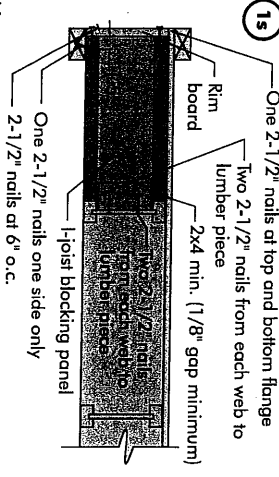
Flange Size	Joist Depth	Filler Block Size
2-1/2" x 1-1/2"	9-1/2" x 11-7/8"	2-1/8" x 6"
3-1/2" x 1-1/2"	14" x 11-7/8"	2-1/8" x 8"
3-1/2" x 1-1/2"	14" x 11-7/8"	2-1/8" x 10"
3-1/2" x 1-1/2"	16" x 11-7/8"	2-1/8" x 12"
3-1/2" x 1-1/2"	14" x 11-7/8"	3" x 6"
3-1/2" x 1-1/2"	14" x 11-7/8"	3" x 8"
3-1/2" x 1-1/2"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

1r



Optional: Minimum 1x4 inch strip applied to underside of joist at blocking attached to underside of joists.

1s



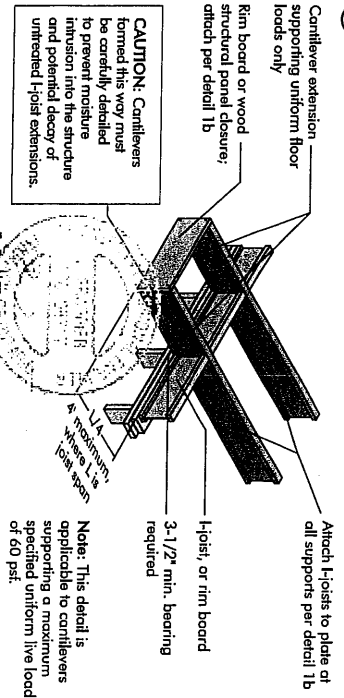
Notes:

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

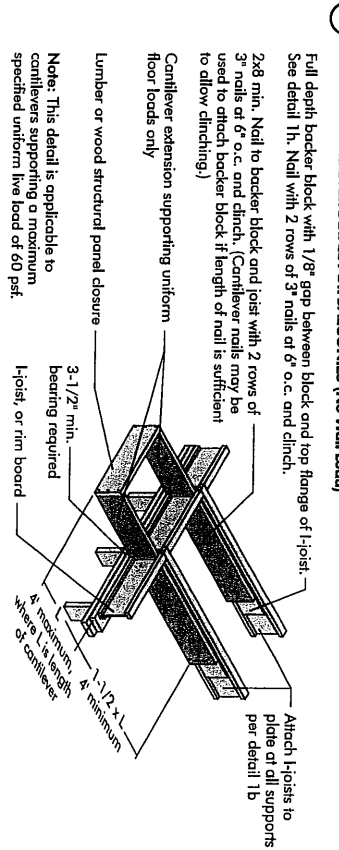
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CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

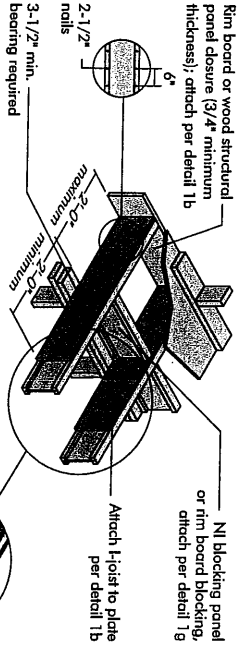


3b LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



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

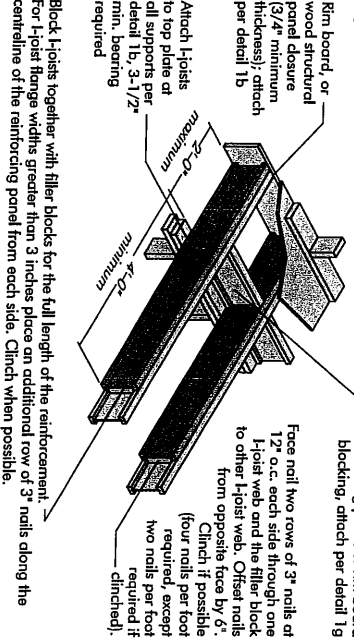
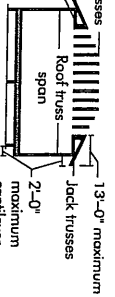
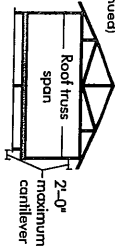


FIGURE 4 (continued)
See table below for NI reinforcement requirements of cantilever.



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 SPAN (ft)	ROOF LOADING (UNFACTORED)			
		LL = 30 psf, DL = 15 psf	LL = 40 psf, DL = 15 psf	LL = 50 psf, DL = 15 psf	JOIST SPACING (in.)
12	12	1	1	1	1
16	16	1	1	1	1
19.2	19.2	1	1	1	1
24	24	1	1	1	1
28	28	1	1	1	1
30	30	1	1	1	1
32	32	1	1	1	1
34	34	1	1	1	1
36	36	1	1	1	1
38	38	1	1	1	1
40	40	1	1	1	1
42	42	1	1	1	1
44	44	1	1	1	1
46	46	1	1	1	1
48	48	1	1	1	1
50	50	1	1	1	1
52	52	1	1	1	1
54	54	1	1	1	1
56	56	1	1	1	1
58	58	1	1	1	1
60	60	1	1	1	1
62	62	1	1	1	1
64	64	1	1	1	1
66	66	1	1	1	1
68	68	1	1	1	1
70	70	1	1	1	1
72	72	1	1	1	1
74	74	1	1	1	1
76	76	1	1	1	1
78	78	1	1	1	1
80	80	1	1	1	1
82	82	1	1	1	1
84	84	1	1	1	1
86	86	1	1	1	1
88	88	1	1	1	1
90	90	1	1	1	1
92	92	1	1	1	1
94	94	1	1	1	1
96	96	1	1	1	1
98	98	1	1	1	1
100	100	1	1	1	1

1. N = No reinforcement required.
2. N = NI reinforced with 3/4" wood structural panel on one side only.
3. NI = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
4. For larger openings, or multiple 3'-0" with openings spaced less than 6'-0" o.c., additional joists beneath the opening's cripple studs may be required.
5. Table applies to joists 12" to 24" o.c. that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
6. Cantilevered joist supporting girder trusses or roof beams may require additional reinforcing.

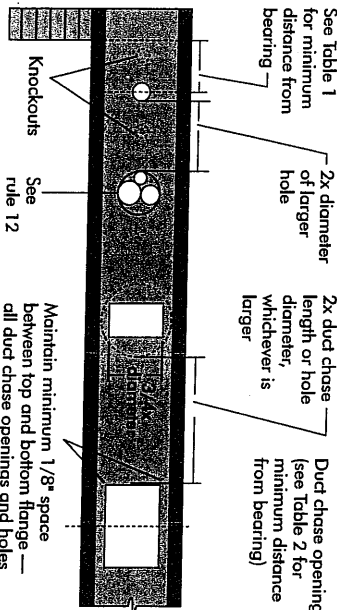
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WEB HOLES

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. Joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
3. Whenever possible, field-cut holes should be centred on the middle of the web.
4. The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-joist web shall equal the clear distance between the flanges of the I-joist minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the hole or opening and the adjacent I-joist flange.
5. The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
6. Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the longest rectangular hole 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 cantilevered section of a joist. Holes of greater size may be permitted subject to verification.
9. A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
10. All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
11. Limit three maximum size holes per span, of which one may be a duct chase opening.
12. A group of round holes at approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

FIGURE 7
FIELD-CUT HOLE LOCATOR



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.



Never drill, cut or notch the flange, or over-cut the web.
Holes in webs should be cut with a sharp saw.

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

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

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

Joist Depth	Joist Series	2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	11	12	12-3/4	Span adjustment Factor
0	0	0.72	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	1.0
10	10	0.72	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	1.0
20	20	0.72	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	1.0
30	30	0.72	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	1.0
40	40	0.72	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	1.0
50	50	0.72	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	1.0
60	60	0.72	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	1.0
70	70	0.72	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	1.0
80	80	0.72	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	1.0
90	90	0.72	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	1.0
100	100	0.72	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	1.0

1. Above table may be used for I-joist spacing of 24 inches on center 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.

OPTIONAL:

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

Where: $\text{Reduced} = \frac{\text{Lactual} \times D}{\text{SAF}}$
 Lactual = Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span application (ft). The reduced distance shall not be less than 6 inches from the face of the support to edge of the hole.
 SAF = The actual measured span distance between the inside faces of supports (ft).
 D = Span Adjustment Factor given in this table.
 The minimum distance from the inside face of any support to centre of hole from this table.
 If Lactual is greater than 1, use 1 in the above calculation for Lactual .

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

Joist Depth	Joist Series	8	10	12	14	16	18	20	22	24
0	0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5
10	10	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5
20	20	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5
30	30	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5
40	40	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5
50	50	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5
60	60	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5
70	70	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5
80	80	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5
90	90	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5
100	100	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5

1. Above table may be used for I-joist spacing of 24 inches on center 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 single-span joists only. For other applications, contact your local distributor.
4. Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. For other applications, contact your local distributor.

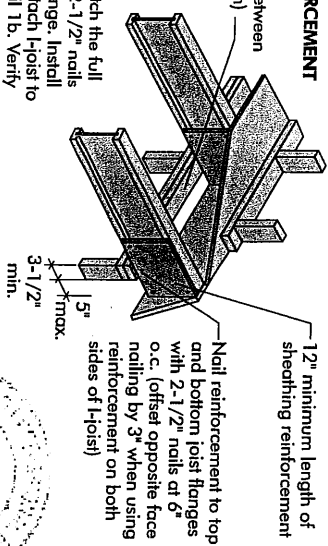
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BRICK CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

5c SHEATHING REINFORCEMENT

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

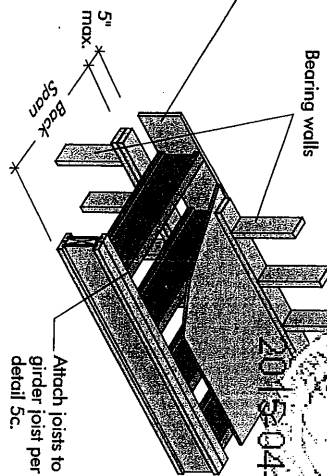
Note: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4") required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2" nails at 6" o.c., top and bottom flange. Install with face grain horizontal. Attach I-joist to plate at all supports per detail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



5c SET-BACK CONNECTION

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

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.

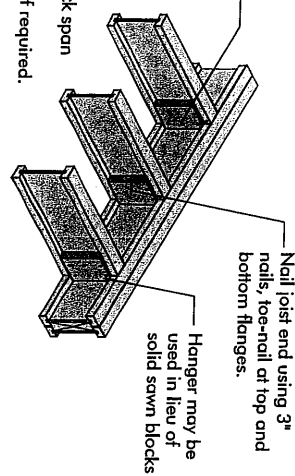
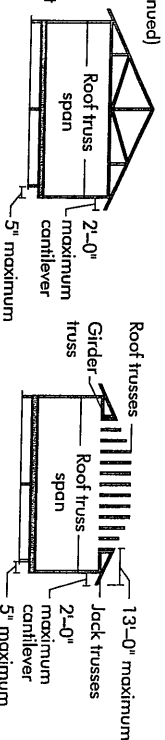


FIGURE 5 (continued)

See table below for NI reinforcement requirements 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.

BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS				ROOF LOADING (UNFACTORED)							
	LL = 30 psf, DL = 15 psf	JOIST SPACING (in.)			LL = 40 psf, DL = 15 psf	JOIST SPACING (in.)			LL = 50 psf, DL = 15 psf	JOIST SPACING (in.)		
SPAN (ft)	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
8-1/2	26 28 30 32 34 36	1 2 2 2 2 2	X X X X X X	X X X X X X	2 2 2 2 2 2	X X X X X X	X X X X X X	X X X X X X	2 2 2 2 2 2	X X X X X X	X X X X X X	X X X X X X
11-7/8	26 28 30 32 34 36 38	1 1 1 1 1 1 1	X X X X X X X	X X X X X X X	2 2 2 2 2 2 2	X X X X X X X	X X X X X X X	X X X X X X X	2 2 2 2 2 2 2	X X X X X X X	X X X X X X X	X X X X X X X
14	26 28 30 32 34 36 38 40	1 1 1 1 1 1 1 1	X X X X X X X X	X X X X X X X X	2 2 2 2 2 2 2 2	X X X X X X X X	X X X X X X X X	X X X X X X X X	2 2 2 2 2 2 2 2	X X X X X X X X	X X X X X X X X	X X X X X X X X
16	26 28 30 32 34 36 38 40 42	1 1 1 1 1 1 1 1 1	X X X X X X X X X	X X X X X X X X X	2 2 2 2 2 2 2 2 2	X X X X X X X X X	X X X X X X X X X	X X X X X X X X X	2 2 2 2 2 2 2 2 2	X X X X X X X X X	X X X X X X X X X	X X X X X X X X X

1. N = No reinforcement required.
2. 1 = NI reinforced with 3/4" wood structural panel on one side only.
3. 2 = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
4. X = Try a deeper joist or closer spacing.
5. Maximum design load shall be: 15 psf roof dead load, 35 psf floor total load, and 80 psf wall load. Wall load is based on 3'-0" maximum width window or door openings.
6. For larger openings, or multiple 3'-0" with openings spaced less than 6'-0" o.c., additional joists beneath the opening's cripple studs may be required.
7. 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.
8. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge board, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.
9. Cantilevered joists 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 topped 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 and joints in each succeeding row of panels. A 1/8-inch space between all end joints and 1/8-inch at all edges, including T&G edges, is recommended. (Use a spacer tool or an 2-1/2" common nail to assure accurate and consistent spacing.)
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.)	Common Wire or Spiral Nails	Nail Size and Type Ring Thread Nails or Screws	Staples	Maximum Spacing of Fasteners Intern. Supports
16	5/8	2"	1-3/4"	2"	6"
20	5/8	2"	1-3/4"	2"	6"
24	3/4	2"	1-3/4"	2"	6"

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.

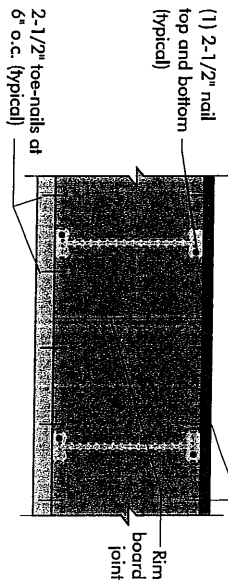
IMPORTANT NOTE:
Floor sheathing must be field glued to the I-joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-joist spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

8c ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

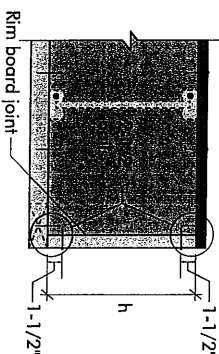
Rim board Joint Between Floor Joists

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

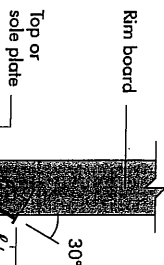


2-1/2" nails at 6" o.c. (typical)

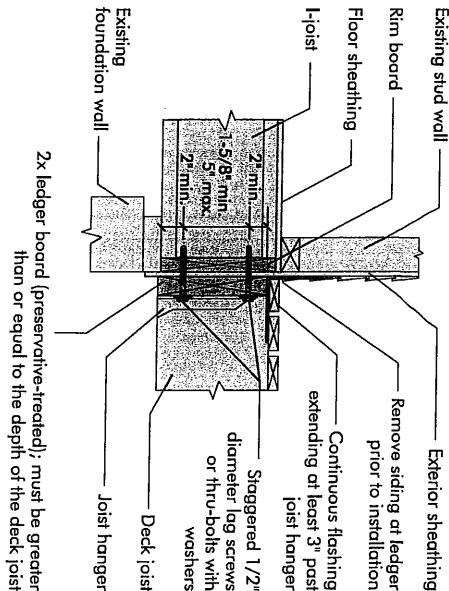
Rim board Joint at Corner



8b TOE-NAIL CONNECTION AT RIM BOARD



8c 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL



2015-04-16

PRODUCT WARRANTY

Champion Challenging guarantees that, in accordance with our specifications, Mondo products are free from manufacturing defects in material and workmanship.

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

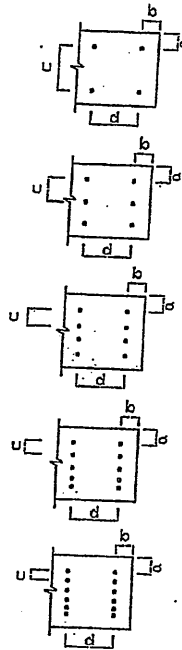
SITE COPY

MICRO CITY ENGINEERING SERVICES INC.

TEL: (519) 287 - 2242

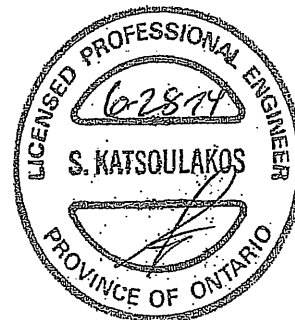
R.R. #1, P.O. BOX 61, GLENCOE, ONTARIO, N0L 1M0

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 PLYS 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



DWG NO TAMN1001.14

STRUCTURAL

COMPONENT ONLY

TO BE USED ONLY
WITH BEAM CALCS
BEARING THE
STAMP BELOW

PROVIDE NAILING
DETAIL NO X SEE
DWG #TAMN1001-14

SITE COPY