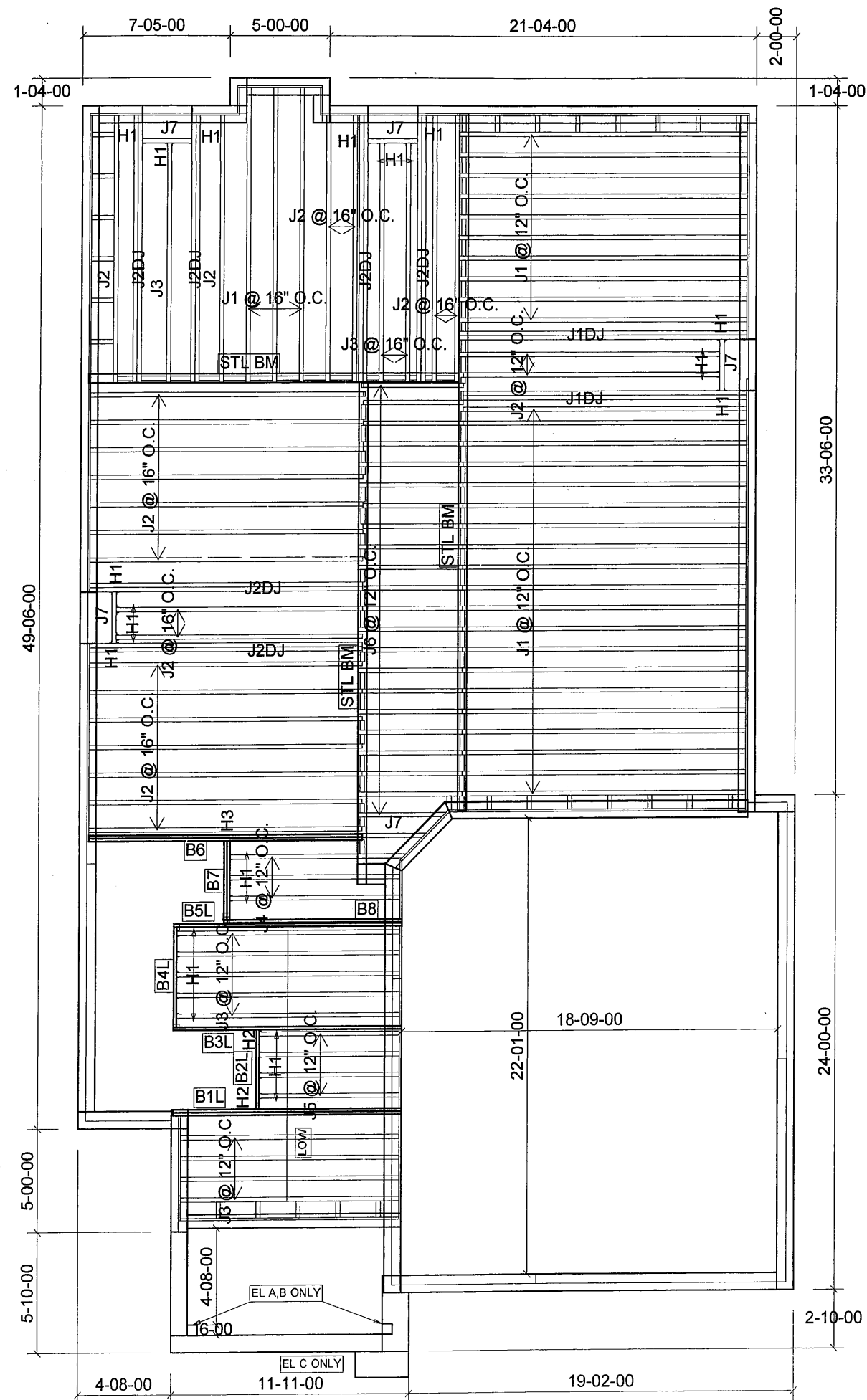
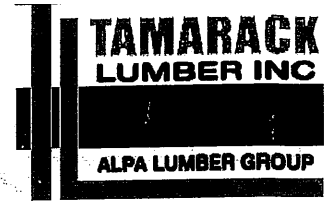




Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	33
J1DJ	16-00-00	9 1/2" NI-40x	2	4
J2	14-00-00	9 1/2" NI-40x	1	24
J2DJ	14-00-00	9 1/2" NI-40x	2	12
J3	12-00-00	9 1/2" NI-40x	1	12
J4	10-00-00	9 1/2" NI-40x	1	3
J5	8-00-00	9 1/2" NI-40x	1	4
J6	6-00-00	9 1/2" NI-40x	1	22
J7	4-00-00	9 1/2" NI-40x	1	5
B6	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B3L	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B5L	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B1L	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B8	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B4L	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B2L	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B7	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2

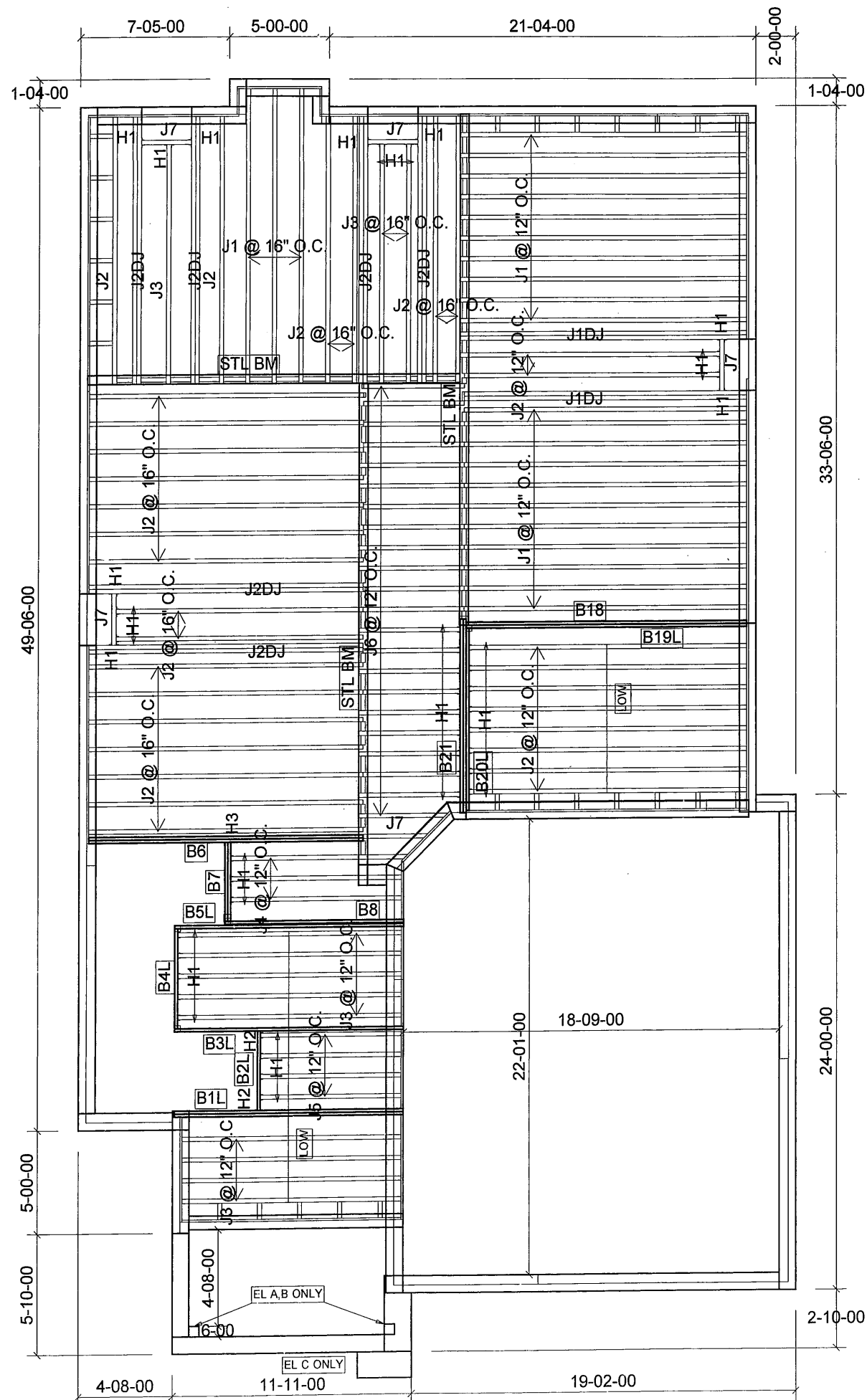
Connector Summary		
Qty	Manuf	Product
9	H1	IUS2.56/9.5
3	H1	IUS2.56/9.5
8	H1	IUS2.56/9.5
7	H1	IUS2.56/9.5
1	H2	HUS1.81/10
1	H2	HUS1.81/10
1	H3	HGUS410



FROM PLAN DATED:
BUILDER: BAYVIEW WELLINGTON
SITE: GREEN VALLEY EAST
MODEL: S42-17 RIDEAU 17
ELEVATION: A,B,C
LOT:
CITY: BRADFORD
SALESMAN: MD
DESIGNER: CZ
REVISION:

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

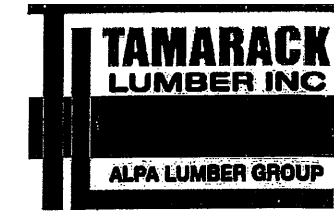
DATE: 01/09/2017
1st FLOOR



Connector Summary		
Qty	Manuf	Product
17	H1	IUS2.56/9.5
12	H1	IUS2.56/9.5
8	H1	IUS2.56/9.5
7	H1	IUS2.56/9.5
1	H2	HUS1.81/10
1	H2	HUS1.81/10
1	H3	HGUS410

1st FLOOR

Site Copy



FROM PLAN DATED:

BUILDER: BAYVIEW WELLINGTON

SITE: GREEN VALLEY EAST

MODEL: S42-17 RIDEAU 17

ELEVATION: A,B,C

LOT:

CITY: BRADFORD

SALESMAN: MD

DESIGNER: CZ

REVISION:

NOTES:

REFER TO THE NORDIC
INSTALLATION GUIDE FOR PROPER
STORAGE AND INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2
S.P.F. REQ'D UNDER INTERIOR
UNIFORM LOAD BEARING WALLS.
MULTIPLE SQUASH BLOCKS REQ'D
UNDER CONCENTRATED LOADS. SEE
FIGURE 1. CANTILEVERED JOISTS
INCLUDING CANT' OVER BRICK REQ.
I-JOIST BLOCKING ALONG BEARING
AND RIMBOARD CLOSURE AT ENDS.
SEE FIGURE 7 TABLES 4 & 5 FOR
REINFORCEMENT REQUIREMENTS.
FOR HOLES INCLUDING DUCT
CHASE AND FIELD CUT OPENINGS
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

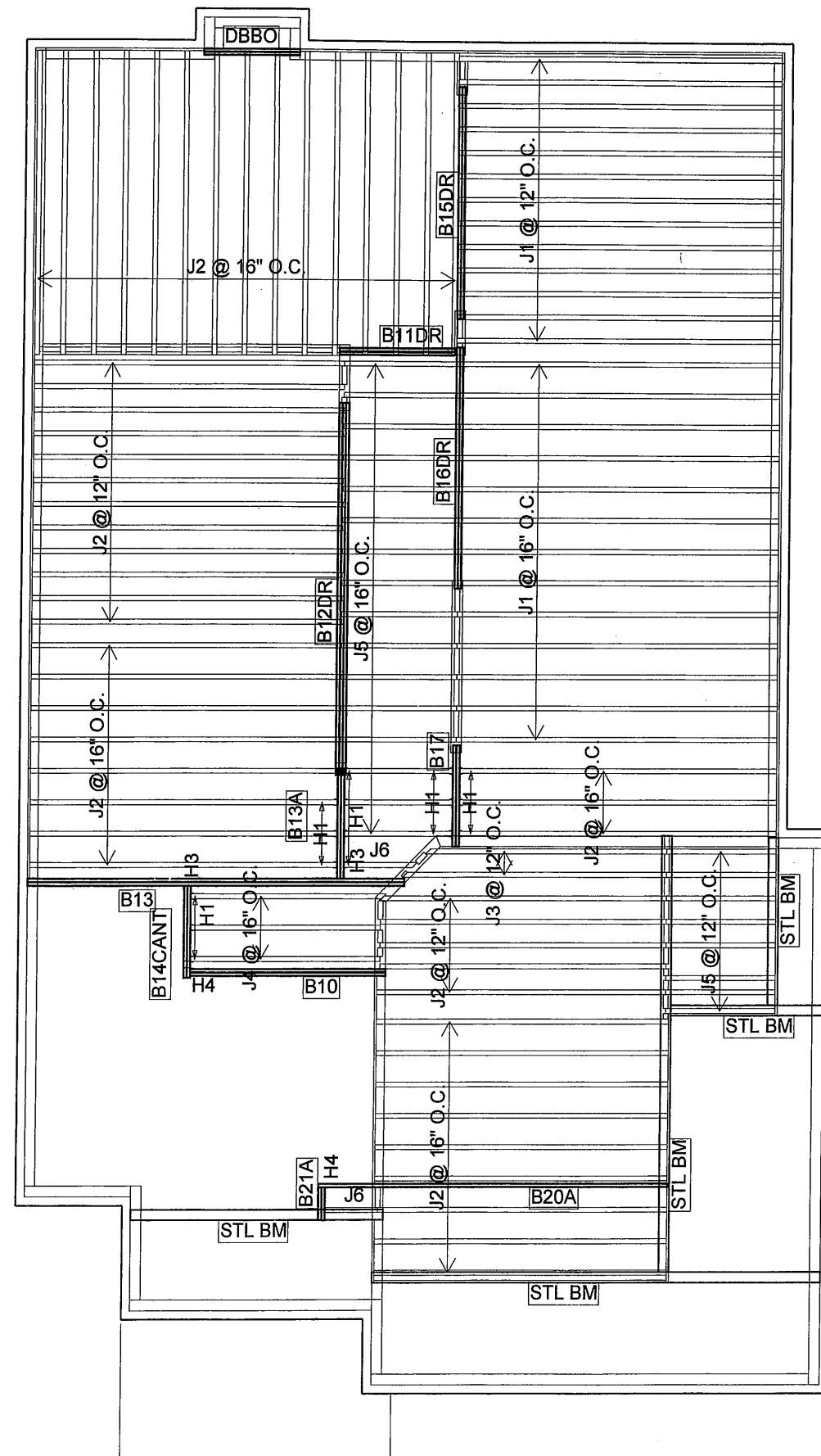
DEAD LOAD: 15.0 lb/ft

TILED AREAS: 20 lb/ft

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 28/02/2018

2nd FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	26
J2	14-00-00	9 1/2" NI-40x	1	52
J3	12-00-00	9 1/2" NI-40x	1	2
J4	10-00-00	9 1/2" NI-40x	1	3
J5	6-00-00	9 1/2" NI-40x	1	24
J6	4-00-00	9 1/2" NI-40x	1	2
B13	18-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B20A	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B16DR	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B10	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B15DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B11DR	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B13A	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B17	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B14CANT	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B21A	2-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B12DR	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3

Connector Summary		
Qty	Manuf	Product
16	H1	IUS2.56/9.5
2	H3	HUGS410
1	H4	HUC410
1	H4	HUC410



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basment\...\B1L(i2882)

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

August 30, 2017 17:00:12

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

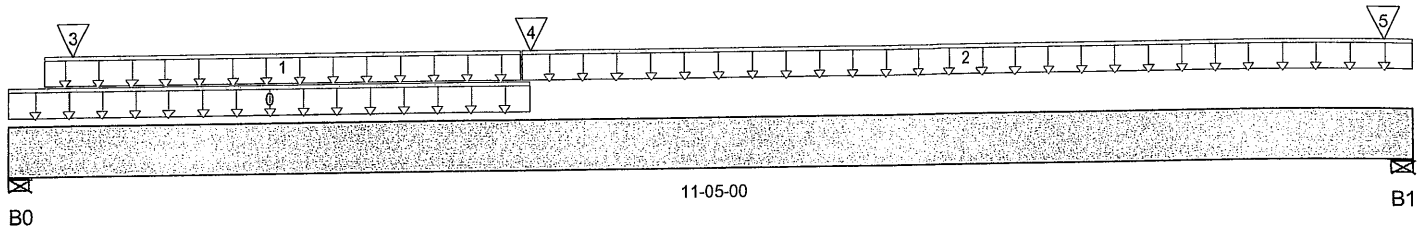
Description: Designs\Flush Beams\Basment\Flush Beams\B1L(i2882

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 11-05-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 9"	633 / 0	617 / 0		
B1, 5-1/2"	528 / 0	387 / 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	04-02-14		60			n/a
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-03-08	04-02-00	27	14			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	04-02-00	11-05-00	40	20			n/a
3	E14(i723)	Conc. Pt. (lbs)	L	00-06-04	00-06-04		21			n/a
4	B2L(i2571)	Conc. Pt. (lbs)	L	04-02-14	04-02-14	689	353			n/a
5	1(i823)	Conc. Pt. (lbs)	L	11-02-04	11-02-04	76	68			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	4,812 ft-lbs	25,408 ft-lbs	18.9%	1	04-02-14
End Shear	1,489 lbs	11,571 lbs	12.9%	1	01-06-08
Total Load Defl.	L/999 (0.114")	n/a	n/a	4	05-06-07
Live Load Defl.	L/999 (0.067")	n/a	n/a	5	05-06-07
Max Defl.	0.114"	n/a	n/a	4	05-06-07
Span / Depth	13.1	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	9" x 3-1/2"	1,722 lbs	3.9%	4.5%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	1,276 lbs	12.4%	5.4%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume unbraced length of Top: 00-03-08, Bottom: 00-03-08.
 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



pg 1/2



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basementl...B1L(i2882)

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

August 30, 2017 17:00:12

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B1L(i28

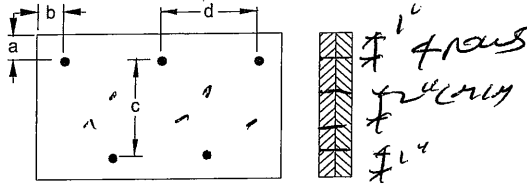
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



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

Calculated Side Load = 129.2 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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Boise Cascade

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B2L(i2571)

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

August 30, 2017 17:00:12

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

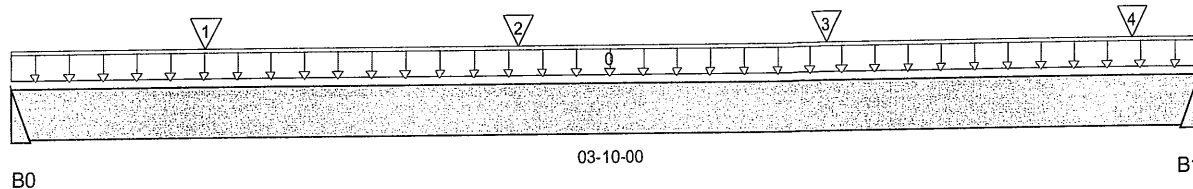
Description: Designs\Flush Beams\Basement\Flush Beams\B2L(i2571

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 03-10-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	693 / 0	356 / 0		
B1	721 / 0	370 / 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	03-10-00	240	120			n/a
1	J5(i2539)	Conc. Pt. (lbs)	L	00-07-08	00-07-08	124	62			n/a
2	J5(i2586)	Conc. Pt. (lbs)	L	01-07-08	01-07-08	140	70			n/a
3	J5(i2560)	Conc. Pt. (lbs)	L	02-07-08	02-07-08	140	70			n/a
4	J5(i2538)	Conc. Pt. (lbs)	L	03-07-08	03-07-08	90	45			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,321 ft-lbs	12,704 ft-lbs	10.4%	1	01-09-06
End Shear	878 lbs	5,785 lbs	15.2%	1	00-11-08
Total Load Defl.	L/999 (0.009")	n/a	n/a	4	01-10-14
Live Load Defl.	L/999 (0.006")	n/a	n/a	5	01-10-14
Max Defl.	0.009"	n/a	n/a	4	01-10-14
Span / Depth	4.6	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"	1,483 lbs	n/a	34.7%	HUS1.81/10
B1 Hanger	2" x 1-3/4"	1,544 lbs	n/a	36.2%	HUS1.81/10

Notes

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

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

Calculations assume member is fully braced.

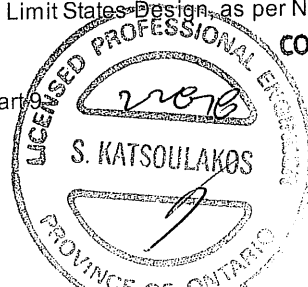
Hanger Manufacturer: Unassigned

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

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

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.

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 L.L.C.



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B3L(i2925)

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

August 30, 2017 17:00:12

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports:

CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

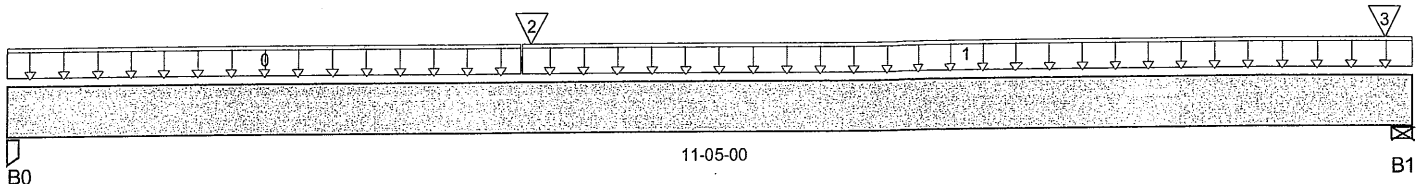
Description: Designs\Flush Beams\Basement\Flush Beams\B3L(i2925

Specifier:

Designer: CZ

Company:

Msc:



Total Horizontal Product Length = 11-05-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	542 / 0	304 / 0		
B1, 5-1/2"	408 / 0	250 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	04-02-00	14	7			n/a
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	04-02-00	11-05-00	18	9			n/a
2	B2L(i2571)	Conc. Pt. (lbs)	L	04-02-14	04-02-14	725	372			n/a
3	1(i823)	Conc. Pt. (lbs)	L	11-02-04	11-02-04	38	34			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	4,468 ft-lbs	12,704 ft-lbs	35.2%	1	04-02-14
End Shear	1,155 lbs	5,785 lbs	20%	1	01-01-00
Total Load Defl.	L/594 (0.218")	0.54"	40.4%	4	05-03-02
Live Load Defl.	L/923 (0.14")	0.36"	39%	5	05-03-02
Max Defl.	0.218"	n/a	n/a	4	05-03-02
Span / Depth	13.6	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"	1,193 lbs	24%	16%	Unspecified
B1 Wall/Plate	5-1/2" x 1-3/4"	925 lbs	18%	7.9%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

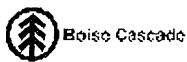
CONFORMS TO OBC 2012



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 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 L.L.C.



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B4L(i2545)

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

August 30, 2017 17:00:13

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

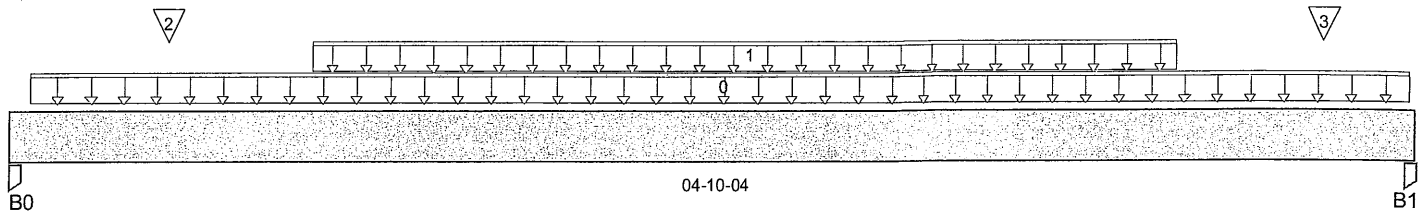
Description: Designs\Flush Beams\Basement\Flush Beams\B4L(i2545

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 04-10-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 1-3/4"	495 / 0	401 / 0		
B1, 1-3/4"	526 / 0	420 / 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	00-00-14	04-10-01	60				n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-00-08	04-00-08	224	112			n/a
2	J3(i2540)	Conc. Pt. (lbs)	L	00-06-08	00-06-08	186	93			n/a
3	J3(i2575)	Conc. Pt. (lbs)	L	04-06-08	04-06-08	163	82			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,544 ft-lbs	12,704 ft-lbs	12.2%	1	02-06-08
End Shear	976 lbs	5,785 lbs	16.9%	1	00-11-04
Total Load Defl.	L/999 (0.017")	n/a	n/a	4	02-05-00
Live Load Defl.	L/999 (0.01")	n/a	n/a	5	02-05-00
Max Defl.	0.017"	n/a	n/a	4	02-05-00
Span / Depth	5.9	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 1-3/4"	1,244 lbs	50%	33.3%	Unspecified
B1 Post	1-3/4" x 1-3/4"	1,313 lbs	52.8%	35.1%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

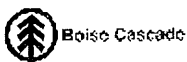
CONFORMS TO OBC 2012



Disclosure

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Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B5L(i2916)

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

August 30, 2017 17:00:12

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

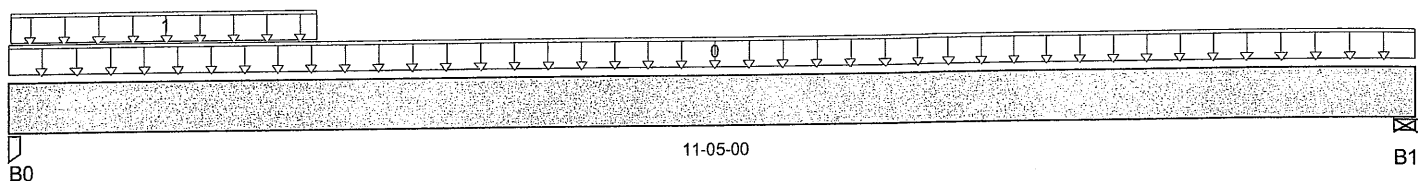
Description: Designs\Flush Beams\Basement\Flush Beams\B5L(i2916

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 11-05-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	52 / 0	187 / 0		
B1, 5-1/2"	164 / 80	161 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	11-05-00	9	5			n/a
1	User Load	Unf. Lin. (lb/ft)	L	00-00-04	02-06-00		60			n/a
2	1(i823)	Conc. Pt. (lbs)	L	11-02-04	11-02-04	111	92			n/a
3	1(i823)	Conc. Pt. (lbs)	L	11-02-04	11-02-04	-80				n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	315 ft-lbs	8,258 ft-lbs	3.8%	0	04-00-11
End Shear	159 lbs	3,761 lbs	4.2%	0	01-01-00
Total Load Defl.	L/999 (0.03")	n/a	n/a	6	05-05-15
Live Load Defl.	L/999 (0.011")	n/a	n/a	8	05-07-06
Max Defl.	0.03"	n/a	n/a	6	05-05-15
Span / Depth	13.6	n/a	n/a		00-00-00

Disclosure

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Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Post	3-1/2" x 1-3/4"	262 lbs	8.1%	5.4%	Unspecified
B1 Wall/Plate	5-1/2" x 1-3/4"	447 lbs	8.7%	3.8%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

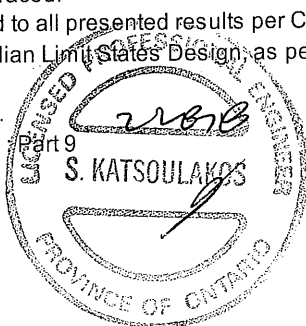
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code

CONFORMS TO OBC 2012

BC CALCO®, 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 L.L.C.





Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B6(i4842)

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

September 1, 2017 11:38:22

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

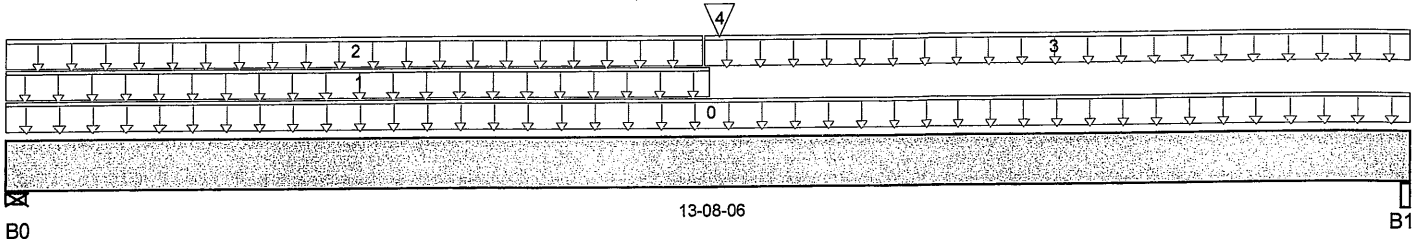
Description: Designs\Flush Beams\Basement\Flush Beams\B6(i4842)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 13-08-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	449 / 0	614 / 0		
B1, 2-5/8"	492 / 0	418 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	13-08-06	8	4			n/a
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	06-10-03		60			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	06-09-06	6	3			n/a
3	FC1 Floor Material	Unf. Lin. (lb/ft)	L	06-09-06	13-08-06	19	9			n/a
4	B7(i4995)	Conc. Pt. (lbs)	L	06-11-02	06-11-02	663	350			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	6,760 ft-lbs	25,408 ft-lbs	26.6%	1	06-11-02
End Shear	1,306 lbs	11,571 lbs	11.3%	1	01-01-14
Total Load Defl.	L/598 (0.266")	0.662"	40.1%	6	06-10-03
Live Load Defl.	L/1,143 (0.139")	0.441"	31.5%	8	06-11-02
Max Defl.	0.266"	n/a	n/a	6	06-10-03
Span / Depth	16.7	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"	1,441 lbs	17.6%	7.7%	Unspecified
B1 Beam	2-5/8" x 3-1/2"	1,260 lbs	25.7%	11.2%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9



DWG NO. TAM 1/2468
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basment\Flush Beams\B6(i4842)

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

September 1, 2017 11:38:22

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports:

CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

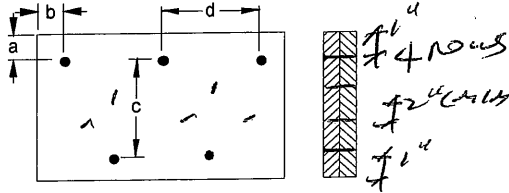
Description: Designs\Flush Beams\Basment\Flush Beams\B6(i4842)

Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram

a minimum = 8" c = 7-1/2" 4"
 b minimum = 3" d = 4" 4"

Calculated Side Load = 104.5 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**

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DWG NO. TAM 11296-18
 STRUCTURAL
 COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B7(i4995)

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

September 1, 2017 11:38:22

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

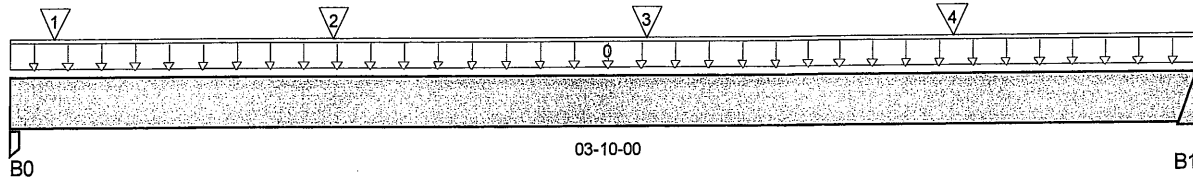
Description: Designs\Flush Beams\Basement\Flush Beams\B7(i4995)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 03-10-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 1-3/4"	1,456 / 0	906 / 0		
B1	682 / 0	362 / 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	03-10-00	240	120			n/a
1	PBO7(i3528)	Conc. Pt. (lbs)	L	00-01-12	00-01-12	795	559			n/a
2	J4(i4994)	Conc. Pt. (lbs)	L	01-00-08	01-00-08	193	97			n/a
3	J4(i4894)	Conc. Pt. (lbs)	L	02-00-08	02-00-08	116	58			n/a
4	J4(i4929)	Conc. Pt. (lbs)	L	03-00-08	03-00-08	114	57			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,415 ft-lbs	25,408 ft-lbs	5.6%	1	01-11-06
End Shear	936 lbs	11,571 lbs	8.1%	1	00-11-04
Total Load Defl.	L/999 (0.005")	n/a	n/a	6	01-10-10
Live Load Defl.	L/999 (0.003")	n/a	n/a	8	01-10-10
Max Defl.	0.005"	n/a	n/a	6	01-10-10
Span / Depth	4.6	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"	3,317 lbs	66.7%	44.4%	Unspecified
B1 Hanger	2" x 3-1/2"	1,475 lbs	n/a	17.3%	HGUS4 10

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012





Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B7(i4995)

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

September 1, 2017 11:38:22

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports:

CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

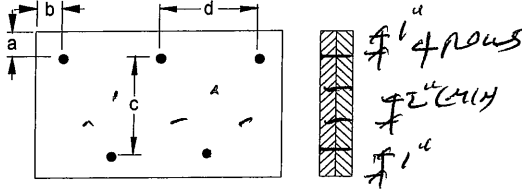
Description: Designs\Flush Beams\Basement\Flush Beams\B7(i499

Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram

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

b minimum = 3" d = 4"

Calculated Side Load = 234.5 lb/ft

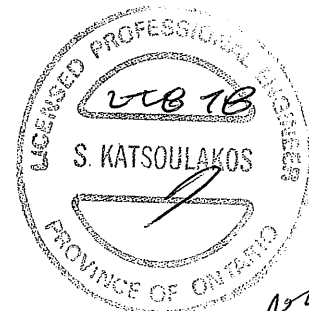
Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

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

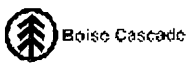
3-1/2" ARDOX SPIRAL**Disclosure**

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DWG NO. TAM 11291-18
STRUCTURAL
COMPONENT ONLY



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B8(i2897)

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

August 30, 2017 17:00:13

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

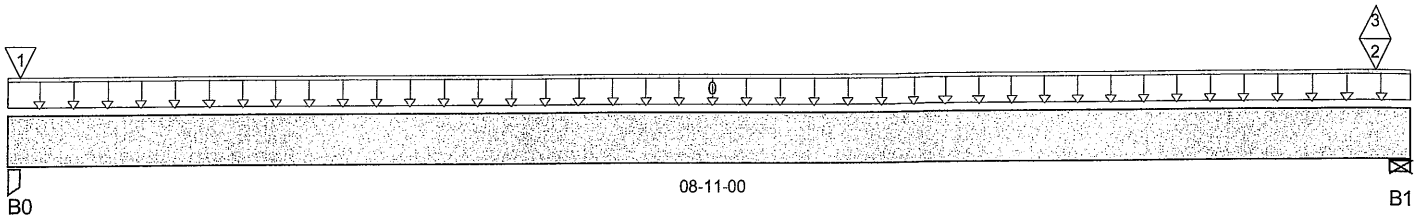
Description: Designs\Flush Beams\Basement\Flush Beams\B8(i2897)

Specifier:

Designer: CZ

Company:

Msc:



Total Horizontal Product Length = 08-11-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	130 / 0	86 / 0		
B1, 5-1/2"	335 / 168	243 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	08-11-00	24	12			n/a
1	User Load	Conc. Pt. (lbs)	L	00-00-14	00-00-14	26	13			n/a
2	2(i824)	Conc. Pt. (lbs)	L	08-08-04	08-08-04	227	167			n/a
3	2(i824)	Conc. Pt. (lbs)	L	08-08-04	08-08-04	-168				n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	485 ft-lbs	12,704 ft-lbs	3.8%	1	04-04-08
End Shear	186 lbs	5,785 lbs	3.2%	1	01-01-00
Uplift	33 lbs	n/a	n/a	4	08-11-00
Total Load Defl.	L/999 (0.017")	n/a	n/a	6	04-04-08
Live Load Defl.	L/999 (0.01")	n/a	n/a	8	04-04-08
Max Defl.	0.017"	n/a	n/a	6	04-04-08
Span / Depth	10.5	n/a	n/a		00-00-00

Disclosure

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Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Post	3-1/2" x 1-3/4"	302 lbs	6.1%	4%	Unspecified
B1 Wall/Plate	5-1/2" x 1-3/4"	806 lbs	15.7%	6.9%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

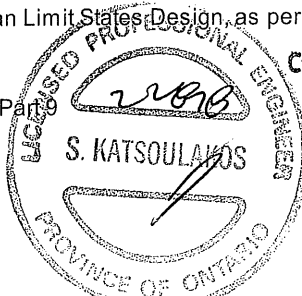
Resistance Factor phi has been applied to all presented results per CSA O86.

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012





Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B10(i5511)

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

September 1, 2017 11:41:33

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

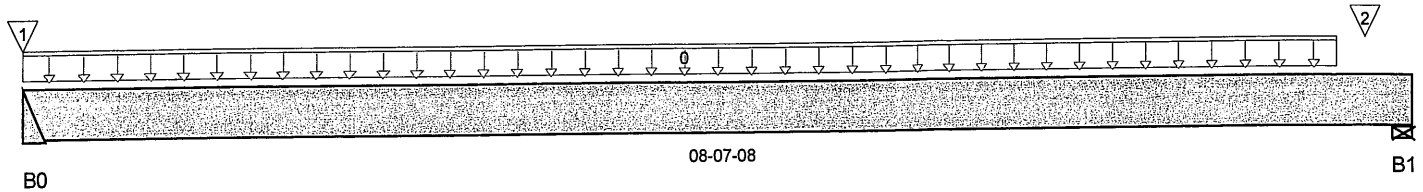
Description: Designs\Flush Beams\1st Floor\Flush Beams\B10(i5511)

Specifier:

Designer: CZ

Company:

Misc:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	62 / 0	71 / 0		
B1, 5-1/2"	60 / 0	73 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	08-02-00	14	7			n/a
1	FC3 Floor Material	Conc. Pt. (lbs)	L	00-00-00	00-00-00	3	1			n/a
2	-	Conc. Pt. (lbs)	L	08-03-15	08-03-15	3	2			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	348 ft-lbs	25,408 ft-lbs	1.4%	1	04-02-00
End Shear	135 lbs	11,571 lbs	1.2%	1	00-11-08
Total Load Defl.	L/999 (0.006")	n/a	n/a	4	04-02-00
Live Load Defl.	L/999 (0.003")	n/a	n/a	5	04-02-00
Max Defl.	0.006"	n/a	n/a	4	04-02-00
Span / Depth	10.3	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"	181 lbs	n/a	2.1%	HUC410
B1 Wall/Plate	5-1/2" x 3-1/2"	182 lbs	1.8%	0.8%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

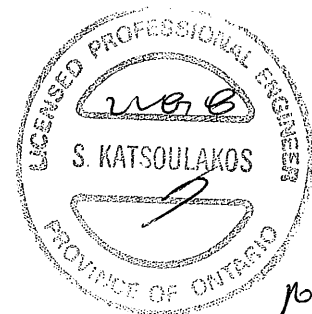
Resistance Factor phi has been applied to all presented results per CSA O86.

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





Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...B10(i5511)

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

September 1, 2017 11:41:33

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports:

CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B10(i55

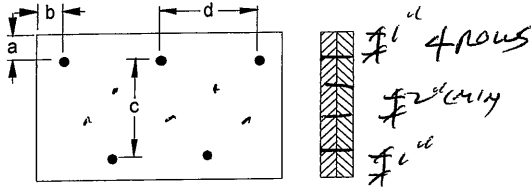
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



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

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

Member has no side loads.

Connectors are: 16d ^{16d} Nails

3-1/2" ARDOX SPIRAL

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods.

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DWG NO. TAM 1/299-18
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B11DR(i3279)

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

August 30, 2017 17:00:13

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

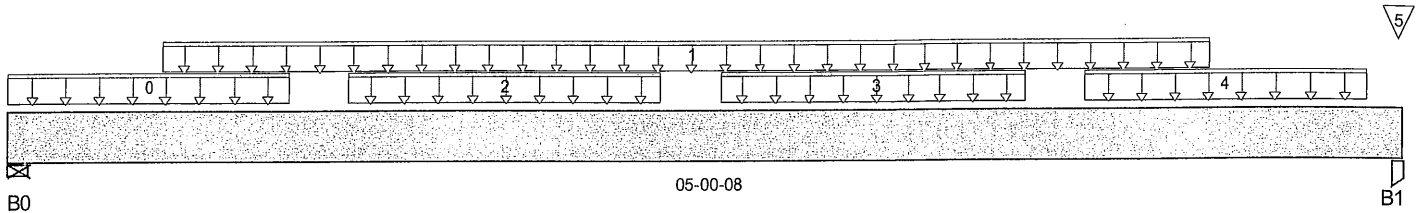
Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B11

Specifier:

Designer: CZ

Company:

Msc:



Total Horizontal Product Length = 05-00-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	553 / 0	302 / 0		
B1, 3-1/2"	588 / 0	318 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Bk1(i3368)	Unf. Lin. (lb/ft)	L	00-00-00	01-00-04	6				n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-06-12	04-04-04	259	130			n/a
2	Bk1(i3140)	Unf. Lin. (lb/ft)	L	01-02-12	02-04-04	11	6			n/a
3	Bk1(i3198)	Unf. Lin. (lb/ft)	L	02-06-12	03-08-04	11	6			n/a
4	Bk1(i3155)	Unf. Lin. (lb/ft)	L	03-10-12	04-11-00		6			n/a
5	J2(i3271)	Conc. Pt. (lbs)	L	05-00-04	05-00-04	109	54			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,450 ft-lbs	25,408 ft-lbs	5.7%	1	02-05-08
End Shear	1,070 lbs	11,571 lbs	9.3%	1	01-03-00
Total Load Defl.	L/999 (0.007")	n/a	n/a	4	02-06-12
Live Load Defl.	L/999 (0.004")	n/a	n/a	5	02-06-12
Max Defl.	0.007"	n/a	n/a	4	02-06-12
Span / Depth	5.6	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	1,208 lbs	7.7%	5.1%	Unspecified
B1 Post	3-1/2" x 3-1/2"	1,279 lbs	12.9%	8.6%	Unspecified

Notes

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

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

Calculations assume unbraced length of Top: 00-03-08, Bottom: 00-03-08.

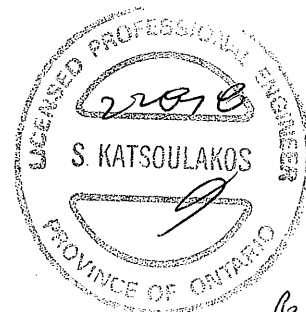
Resistance Factor phi has been applied to all presented results per CSA O86.

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





Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B11DR(i3279)

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

August 30, 2017 17:00:13

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

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

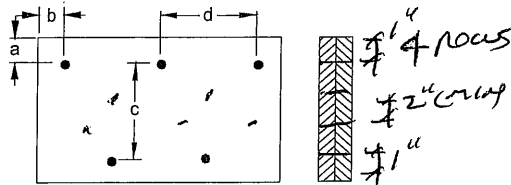
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



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

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

Member has no side loads.

Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL

Disclosure

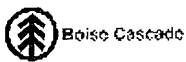
Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance 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 11300-18
STRUCTURAL
COMPONENT ONLY

Site Copy



Triple 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B12DR(i2906)

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

August 30, 2017 17:00:13

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

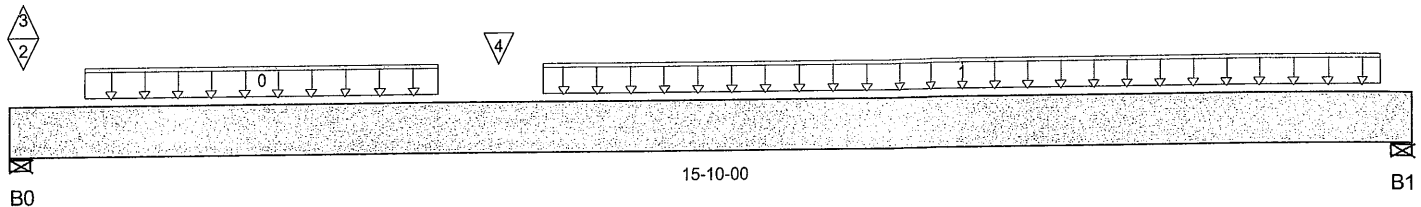
Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B12I

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 15-10-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 6"	3,421 / 26	1,915 / 0		
B1, 4"	2,925 / 0	1,604 / 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	00-10-00	04-10-00	372	186			n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	06-00-00	15-06-00	384	192			n/a
2	-	Conc. Pt. (lbs)	L	00-01-13	00-01-13	759	440			n/a
3	-	Conc. Pt. (lbs)	L	00-01-13	00-01-13	-26				n/a
4	-	Conc. Pt. (lbs)	L	05-06-00	05-06-00	450	225			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	23,240 ft-lbs	60,415 ft-lbs	38.5%	1	08-02-00
End Shear	5,803 lbs	21,696 lbs	26.7%	1	01-05-14
Total Load Defl.	L/393 (0.462")	0.756"	61.1%	6	08-02-00
Live Load Defl.	L/608 (0.298")	0.504"	59.2%	8	08-02-00
Max Defl.	0.462"	n/a	n/a	6	08-02-00
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	6" x 5-1/4"	7,525 lbs	29.4%	19.6%	Unspecified
B1 Wall/Plate	4" x 5-1/4"	6,392 lbs	37.5%	24.9%	Unspecified

Notes

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

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

Calculations assume unbraced length of Top: 00-04-03, Bottom: 00-04-03.

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



BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

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

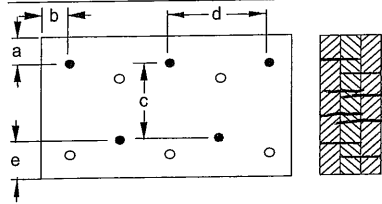
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



a minimum = 1"
b minimum = 3"
c = 6-7/8"
d = 4"
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.

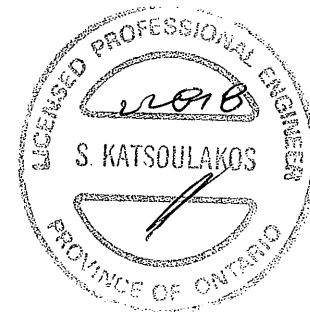
Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL

Disclosure

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BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

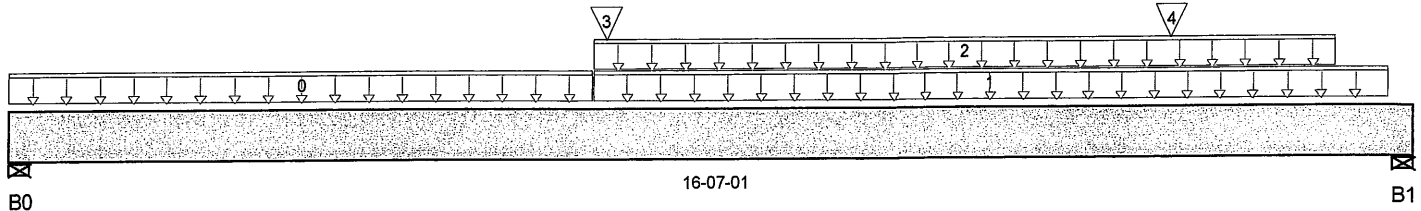
Description: Designs\Flush Beams\1st Floor\Flush Beams\B13(i5328)

Specifier:

Designer: CZ

Company:

Misc:


Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	643 / 0	410 / 0		
B1, 7-1/16"	1,083 / 0	645 / 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	06-10-08	17	9			n/a
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	06-10-08	16-03-11	15	7			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	06-10-08	15-08-07	12	6			n/a
3	-	Conc. Pt. (lbs)	L	07-00-04	07-00-04	637	328			n/a
4	B13A(i5627)	Conc. Pt. (lbs)	L	13-09-00	13-09-00	723	384			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	8,571 ft-lbs	25,408 ft-lbs	33.7%	1	07-00-04
End Shear	2,379 lbs	11,571 lbs	20.6%	1	15-02-08
Total Load Defl.	L/368 (0.511")	0.783"	65.2%	4	08-03-06
Live Load Defl.	L/588 (0.32")	0.522"	61.2%	5	08-03-06
Max Defl.	0.511"	n/a	n/a	4	08-03-06
Span / Depth	19.8	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	1,477 lbs	14.4%	6.3%	Unspecified
B1 Wall/Plate	7-1/16" x 3-1/2"	2,431 lbs	18.5%	8.1%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9



BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B13(i5328)

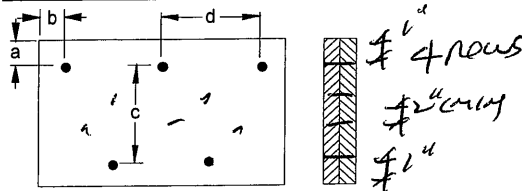
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



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

Calculated Side Load = 94.3 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: 2 rows of 3-1/2" ARDOX SPIRAL 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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Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B13A(i5627)

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

September 1, 2017 11:41:34

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

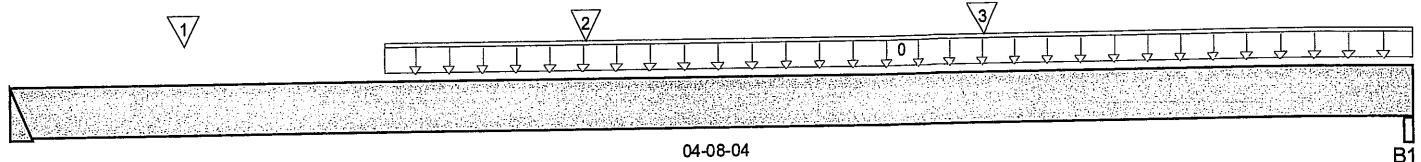
Description: Designs\Flush Beams\1st Floor\Flush Beams\B13A(i5627

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 04-08-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	738 / 0	392 / 0		
B1, 3-1/4"	957 / 0	502 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	01-03-00	04-08-04	314	157			n/a
1	-	Conc. Pt. (lbs)	L	00-07-00	00-07-00	349	175			n/a
2	J5(i5307)	Conc. Pt. (lbs)	L	01-11-00	01-11-00	131	66			n/a
3	J5(i5427)	Conc. Pt. (lbs)	L	03-03-00	03-03-00	135	68			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,879 ft-lbs	25,408 ft-lbs	7.4%	1	01-11-00
End Shear	1,286 lbs	11,571 lbs	11.1%	1	03-07-08
Total Load Defl.	L/999 (0.009")	n/a	n/a	4	02-03-08
Live Load Defl.	L/999 (0.006")	n/a	n/a	5	02-03-08
Max Defl.	0.009"	n/a	n/a	4	02-03-08
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 Hanger	2" x 3-1/2"	1,596 lbs	n/a	18.7%	HGUS410
B1 Beam	3-1/4" x 3-1/2"	2,064 lbs	16.6%	14.9%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012



1026

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B13A(i5627)

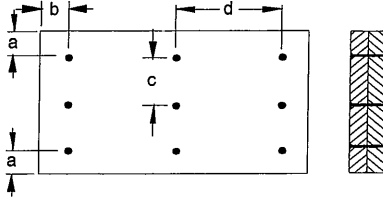
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



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

Calculated Side Load = 618.0 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.

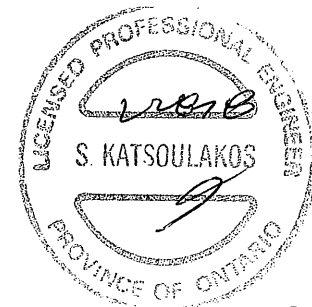
Connectors are: 16d Common Nails

3-1/2" ARDOX SPIRAL

Disclosure

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Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

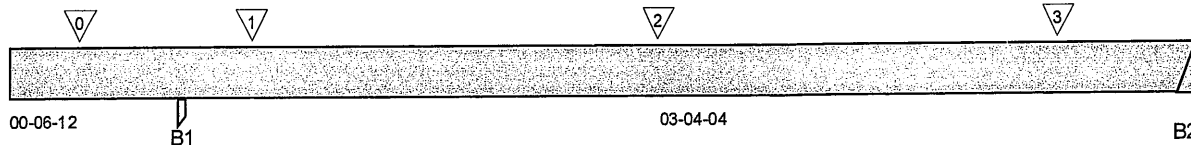
Description: Designs\Flush Beams\1st Floor\Flush Beams\B14CANT(

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 03-11-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	745 / 0	438 / 0		
B2	651 / 7	335 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	B10(i5511)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	65	72			n/a
1	J4(i5573)	Conc. Pt. (lbs)	L	00-09-08	00-09-08	367	184			n/a
2	J4(i5662)	Conc. Pt. (lbs)	L	02-01-08	02-01-08	556	278			n/a
3	J4(i5351)	Conc. Pt. (lbs)	L	03-05-08	03-05-08	402	201			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,196 ft-lbs	25,408 ft-lbs	4.7%	3	02-01-08
Neg. Moment	-64 ft-lbs	-25,408 ft-lbs	0.3%	1	00-06-12
End Shear	844 lbs	11,571 lbs	7.3%	3	02-11-08
Cont. Shear	762 lbs	11,571 lbs	6.6%	1	01-06-00
Total Load Defl.	L/999 (0.003")	n/a	n/a	10	02-02-02
Live Load Defl.	L/999 (0.002")	n/a	n/a	13	02-02-02
Total Neg. Defl.	2xL/1,998 (-0.002")	n/a	n/a	10	00-00-00
Max Defl.	0.003"	n/a	n/a	10	02-02-02
Span / Depth	4.1	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B1 Post	3-1/2" x 3-1/2"	1,666 lbs	16.7%	11.1%	Unspecified
B2 Hanger	2" x 3-1/2"	1,395 lbs	n/a	16.3%	HGUS4 10

Notes


 DWG NO. TAM 11304 -18
 STRUCTURAL
 COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B14CANT(i5281)

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

September 1, 2017 11:41:33

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B14CAN

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.

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

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

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

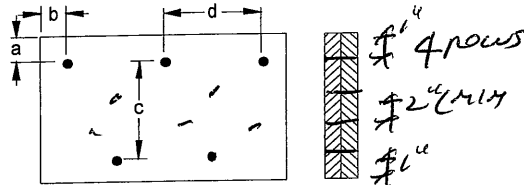
CONFORMS TO UBC 2012

Disclosure

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Connection Diagram



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

Calculated Side Load = 766.9 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: 16d Nails

3-1/2" ARDOX SPIRAL



DWG NO. TAM 11304-18
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B15DR(i3265)

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

August 30, 2017 17:00:14

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

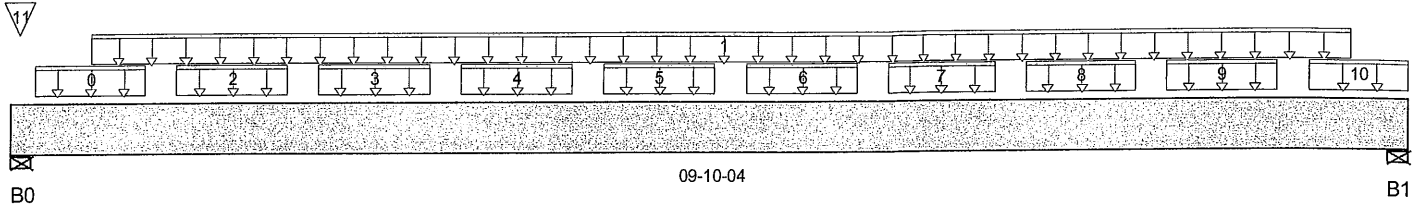
Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B15

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 09-10-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	1,506 / 0	1,089 / 0		
B1, 4"	1,303 / 0	997 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Bk1(i3151)	Unf. Lin. (lb/ft)	L	00-02-00	00-11-08		62			n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-06-12	09-05-08	280	153			n/a
2	Bk1(i3350)	Unf. Lin. (lb/ft)	L	01-02-00	01-11-08		62			n/a
3	Bk1(i3204)	Unf. Lin. (lb/ft)	L	02-02-00	02-11-08		62			n/a
4	Bk1(i3192)	Unf. Lin. (lb/ft)	L	03-02-00	03-11-08		62			n/a
5	Bk1(i3242)	Unf. Lin. (lb/ft)	L	04-02-00	04-11-08		62			n/a
6	Bk1(i3376)	Unf. Lin. (lb/ft)	L	05-02-00	05-11-08		62			n/a
7	Bk1(i3200)	Unf. Lin. (lb/ft)	L	06-02-00	06-11-08		62			n/a
8	Bk1(i3394)	Unf. Lin. (lb/ft)	L	07-02-00	07-11-08		62			n/a
9	Bk1(i3384)	Unf. Lin. (lb/ft)	L	08-02-00	08-11-08		62			n/a
10	Bk1(i3429)	Unf. Lin. (lb/ft)	L	09-02-00	09-10-04		62			n/a
11	J1(i3244)	Conc. Pt. (lbs)	L	00-00-12	00-00-12	276	138			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	7,479 ft-lbs	25,408 ft-lbs	29.4%	1	05-00-12
End Shear	2,957 lbs	11,571 lbs	25.6%	1	01-01-08
Total Load Defl.	L/671 (0.167")	0.466"	35.8%	4	04-11-08
Live Load Defl.	L/999 (0.095")	n/a	n/a	5	04-11-08
Max Defl.	0.167"	n/a	n/a	4	04-11-08
Span / Depth	11.8	n/a	n/a		00-00-00

			Demand/Resistance Support	Demand/Resistance Member	Material
Bearing Supports		Dim. (L x W)	Demand		
B0	Wall/Plate	4" x 3-1/2"	3,620 lbs	31.8%	21.2%
B1	Wall/Plate	4" x 3-1/2"	3,200 lbs	28.2%	18.7%

Notes



BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

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

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.

Calculations assume unbraced length of Top: 00-02-06, Bottom: 00-02-06.

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

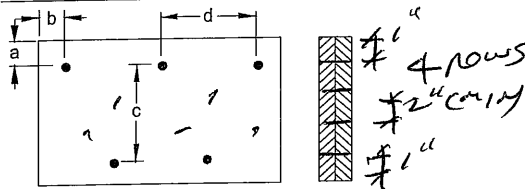
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

Connection Diagram



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

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

Member has no side loads.

Connectors are: 16d Spiral 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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Handwritten signature

DWG NO. TAM 11305-48
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B16DR(i3344)

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

August 30, 2017 17:00:13

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

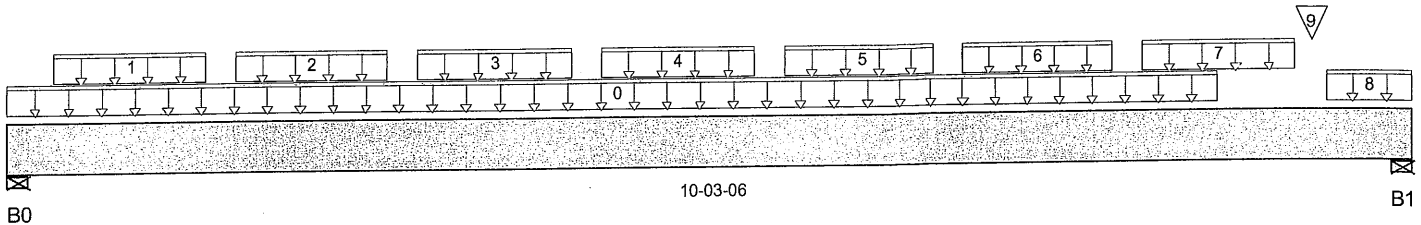
Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B161

Specifier:

Designer: CZ

Company:

Msc:



Total Horizontal Product Length = 10-03-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	2,103 / 0	1,400 / 0		
B1, 4"	1,834 / 0	1,273 / 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	00-00-00	08-10-12	395	207			n/a
1	Bk1(i3383)	Unf. Lin. (lb/ft)	L	00-04-00	01-05-08		60			n/a
2	Bk1(i3382)	Unf. Lin. (lb/ft)	L	01-08-00	02-09-08		60			n/a
3	Bk1(i3428)	Unf. Lin. (lb/ft)	L	03-00-00	04-01-08		60			n/a
4	Bk1(i3287)	Unf. Lin. (lb/ft)	L	04-04-00	05-05-08		60			n/a
5	Bk1(i3406)	Unf. Lin. (lb/ft)	L	05-08-00	06-09-08		60			n/a
6	Bk1(i3240)	Unf. Lin. (lb/ft)	L	07-00-00	08-01-08		60			n/a
7	Bk1(i3185)	Unf. Lin. (lb/ft)	L	08-04-00	09-05-08		60			n/a
8	Bk1(i3307)	Unf. Lin. (lb/ft)	L	09-08-00	10-03-06		65			n/a
9	-	Conc. Pt. (lbs)	L	09-06-12	09-06-12	416	220			n/a

Controls Summary

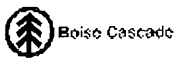
	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	10,491 ft-lbs	25,408 ft-lbs	41.3%	1	05-06-12
End Shear	3,836 lbs	11,571 lbs	33.1%	1	09-01-14
Total Load Defl.	L/459 (0.255")	0.487"	52.3%	4	05-02-02
Live Load Defl.	L/773 (0.151")	0.325"	46.6%	5	05-02-02
Max Defl.	0.255"	n/a	n/a	4	05-02-02
Span / Depth	12.3	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 3-1/2"	4,905 lbs	43.1%	28.7%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	4,343 lbs	38.2%	25.4%	Unspecified

Notes





Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B16DR(i3344)

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

August 30, 2017 17:00:13

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

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

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.

Calculations assume unbraced length of Top: 00-02-12, Bottom: 00-02-12.

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

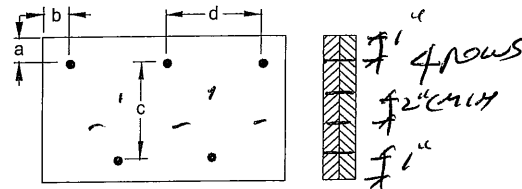
CONFORMS TO OBC 2012

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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Connection Diagram



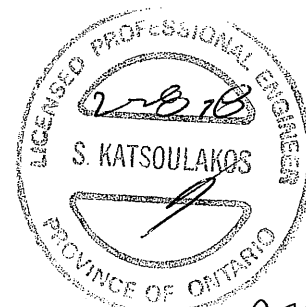
a minimum = 1" c = 1-1/2"
b minimum = 3" d = 6"

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

Member has no side loads.

Connectors are: 16d ~~Sink~~ Nails

3-1/2" ARDOX SPIRAL



DWG NO. TAM 11306-18
STRUCTURAL
COMPONENT ONLY

Site Copy

BC CALC® Design Report


Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

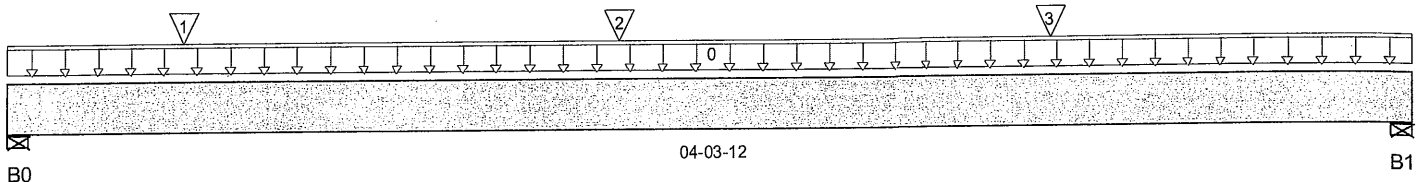
Description: Designs\Flush Beams\1st Floor\Flush Beams\B17(i2954)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 04-03-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	1,087 / 0	697 / 0		
B1, 4"	692 / 0	491 / 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	04-03-12		60			n/a
1	-	Conc. Pt. (lbs)	L	00-06-08	00-06-08	573	286			n/a
2	-	Conc. Pt. (lbs)	L	01-10-08	01-10-08	686	343			n/a
3	-	Conc. Pt. (lbs)	L	03-02-08	03-02-08	507	253			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,890 ft-lbs	25,408 ft-lbs	7.4%	1	01-10-08
End Shear	1,526 lbs	11,571 lbs	13.2%	1	03-02-04
Total Load Defl.	L/999 (0.006")	n/a	n/a	4	02-02-07
Live Load Defl.	L/999 (0.004")	n/a	n/a	5	02-02-07
Max Defl.	0.006"	n/a	n/a	4	02-02-07
Span / Depth	4.6	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	2,502 lbs	24.3%	10.7%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	1,653 lbs	22.1%	9.7%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

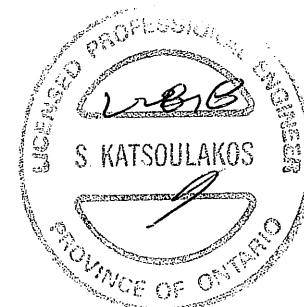
Resistance Factor phi has been applied to all presented results per CSA O86.

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012





Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B17(i2954)

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

August 30, 2017 17:00:14

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B17(i2954)

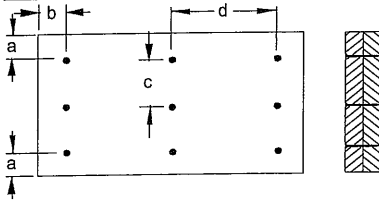
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



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

Calculated Side Load = 509.9 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: 16d Nails

3-1/2" ARDOX SPIRAL

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call 1-800-964-6999 before installation.

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Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B18(i3447)

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

August 30, 2017 17:00:11

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmd

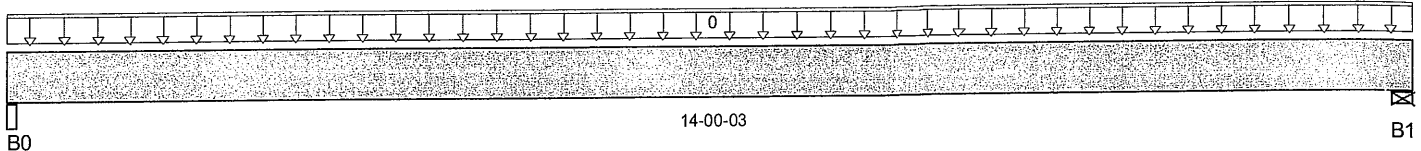
Description: Designs\Flush Beams\Basement\Flush Beams\B18(i3447)

Specifier:

Designer: CZ

Company:

Msc:



Total Horizontal Product Length = 14-00-03

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 1-7/16"	109 / 0	88 / 0		
B1, 4-3/8"	113 / 0	91 / 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	14-00-03	16	8			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	924 ft-lbs	12,704 ft-lbs	7.3%	1	06-10-10
End Shear	237 lbs	5,785 lbs	4.1%	1	00-10-15
Total Load Defl.	L/999 (0.089")	n/a	n/a	4	06-10-10
Live Load Defl.	L/999 (0.05")	n/a	n/a	5	06-10-10
Max Defl.	0.089"	n/a	n/a	4	06-10-10
Span / Depth	17.2	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 Beam	1-1/2" x 1-3/4"	273 lbs	20.2%	8.9%	Unspecified
B1 Wall/Plate	4-3/8" x 1-3/4"	283 lbs	6.9%	3%	Unspecified

Notes

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

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

Minimum bearing length for B0 is 1-1/2".

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





Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\...\B19L(i3408)

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

August 30, 2017 17:00:13

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

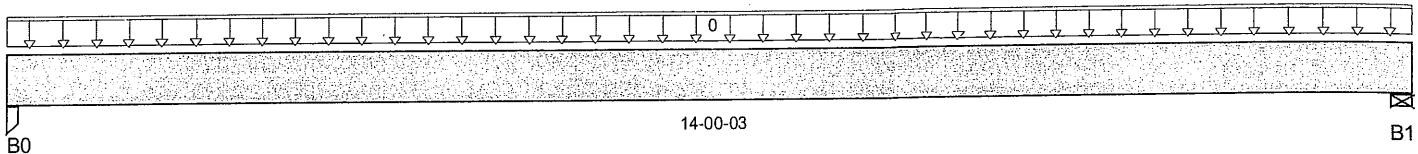
Description: Designs\Flush Beams\Basement\Flush Beams\B19L(i3408)

Specifier:

Designer: CZ

Company:

Msc:



Total Horizontal Product Length = 14-00-03

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	151 / 0	109 / 0		
B1, 4-3/8"	153 / 0	110 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	FC4 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	14-00-03	22	11			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,183 ft-lbs	12,704 ft-lbs	9.3%	1	06-11-11
End Shear	307 lbs	5,785 lbs	5.3%	1	01-01-00
Total Load Defl.	L/999 (0.111")	n/a	n/a	4	06-11-11
Live Load Defl.	L/999 (0.064")	n/a	n/a	5	06-11-11
Max Defl.	0.111"	n/a	n/a	4	06-11-11
Span / Depth	17	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"	363 lbs	7.3%	4.9%	Unspecified
B1 Wall/Plate	4-3/8" x 1-3/4"	367 lbs	9%	3.9%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012





Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B7(i2872)

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

August 30, 2017 17:00:13

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

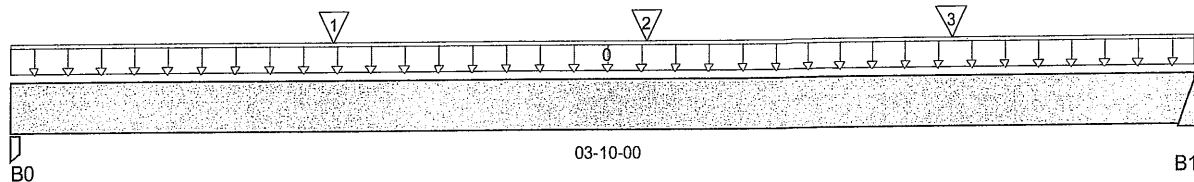
Description: Designs\Flush Beams\Basement\Flush Beams\B7(i2872)

Specifier:

Designer: CZ

Company:

Msc:



Total Horizontal Product Length = 03-10-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 1-3/4"	672 / 0	345 / 0		
B1	666 / 0	342 / 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	03-10-00	240	120			n/a
1	J4(i2874)	Conc. Pt. (lbs)	L	01-00-08	01-00-08	190	95			n/a
2	J4(i2867)	Conc. Pt. (lbs)	L	02-00-08	02-00-08	113	56			n/a
3	J4(i2895)	Conc. Pt. (lbs)	L	03-00-08	03-00-08	115	57			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,339 ft-lbs	12,704 ft-lbs	10.5%	1	01-11-12
End Shear	954 lbs	5,785 lbs	16.5%	1	00-11-04
Total Load Defl.	L/999 (0.009")	n/a	n/a	6	01-10-10
Live Load Defl.	L/999 (0.006")	n/a	n/a	8	01-10-10
Max Defl.	0.009"	n/a	n/a	6	01-10-10
Span / Depth	4.6	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 1-3/4"	1,438 lbs	57.8%	38.5%	Unspecified
B1 Hanger	2" x 1-3/4"	1,427 lbs	n/a	33.4%	HUS1.81/10

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

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.

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 L.L.C.





Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\...\B20L(i2861)

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

August 30, 2017 17:00:12

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports:

CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

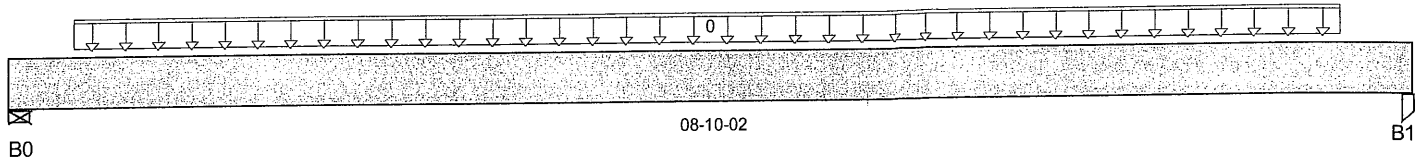
Description: Designs\Flush Beams\Basement\Flush Beams\B20L(i286

Specifier:

Designer: CZ

Company:

Msc:



Total Horizontal Product Length = 08-10-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	1,142 / 0	595 / 0		
B1, 1-3/4"	1,086 / 0	566 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	00-04-14	08-04-14	278	140			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	5,346 ft-lbs	12,704 ft-lbs	42.1%	1	04-10-14
End Shear	2,331 lbs	5,785 lbs	40.3%	1	07-10-14
Total Load Defl.	L/522 (0.194")	0.423"	46%	4	04-06-06
Live Load Defl.	L/793 (0.128")	0.282"	45.4%	5	04-06-06
Max Defl.	0.194"	n/a	n/a	4	04-06-06
Span / Depth	10.7	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4-3/8" x 1-3/4"	2,456 lbs	60.1%	26.3%	Unspecified
B1 Post	1-3/4" x 1-3/4"	2,336 lbs	94%	62.5%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012

Disclosure

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BC CALC® Design Report


Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

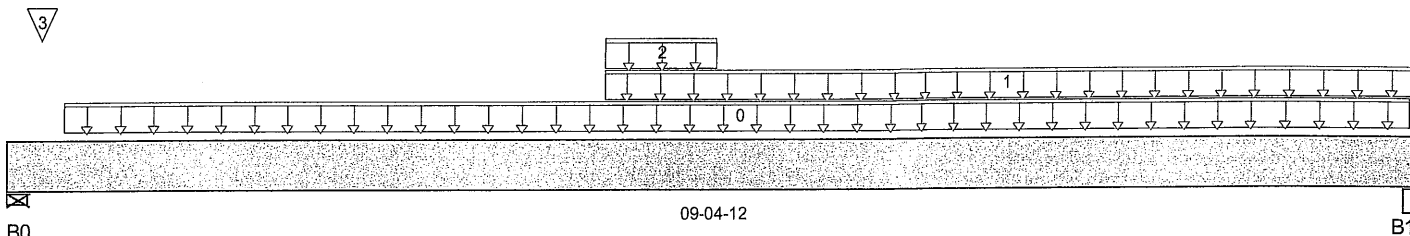
Description: Designs\Flush Beams\Basement\Flush Beams\B21(i3299

Specifier:

Designer: CZ

Company:

Msc:



Total Horizontal Product Length = 09-04-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	2,445 / 0	1,676 / 0		
B1, 3-3/4"	2,274 / 0	1,561 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	00-04-08	09-04-08	106	54			n/a
1	9(i846)	Unf. Lin. (lb/ft)	L	03-11-12	09-04-12	380	271			n/a
2	9(i846)	Unf. Lin. (lb/ft)	L	03-11-12	04-08-12	891	639			n/a
3	-	Conc. Pt. (lbs)	L	00-02-12	00-02-12	1,012	705			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	11,263 ft-lbs	25,408 ft-lbs	44.3%	1	04-10-08
End Shear	4,182 lbs	11,571 lbs	36.1%	1	08-03-08
Total Load Defl.	L/500 (0.21")	0.437"	48%	4	04-10-08
Live Load Defl.	L/999 (0.125")	n/a	n/a	5	04-10-08
Max Defl.	0.21"	n/a	n/a	4	04-10-08
Span / Depth	11.1	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	5,762 lbs	56.1%	24.5%	Unspecified
B1 Beam	3-3/4" x 3-1/2"	5,363 lbs	76.5%	33.5%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012





BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: S42-17 RIDEAU 17 SUNKEN.mmdl

Description: Designs\Flush Beams\Basment\Flush Beams\B21(i32

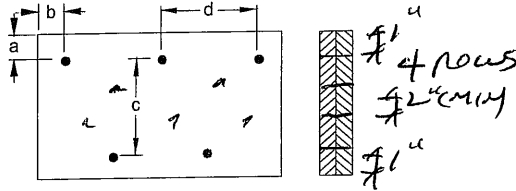
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



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

Calculated Side Load = 215.7 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.

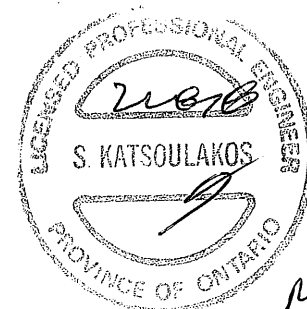
Connectors are: Nails

3-1/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 11312-18
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report

Build 6215

Job name:

File name: S42-17 RIDEAU 17-ST.mmdl

Address:

Description: 1st Floor/Flush Beams\B20A(i3571)

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

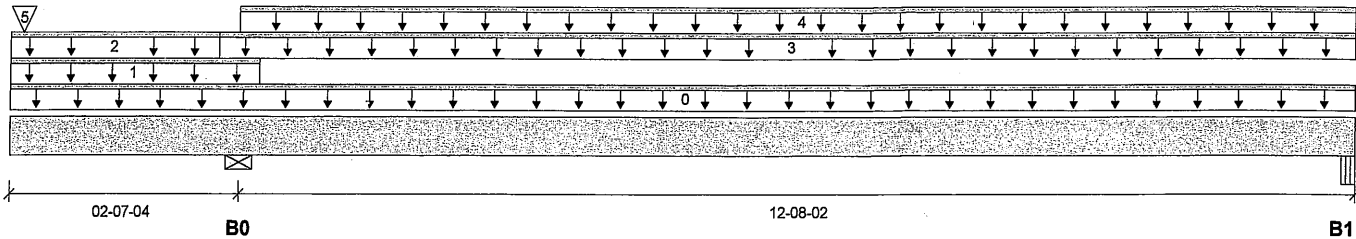
Specifier:

Customer:

Designer: CZ

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 15-03-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	226 / 0	384 / 0		
B1, 4-1/8"	173 / 6	90 / 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	15-03-06		5			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	02-10-00		60			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	02-04-08	23	11			n/a
3	FC3 Floor Material	Unf. Lin. (lb/ft)	L	02-04-08	15-03-06	6	3			n/a
4	FC3 Floor Material	Unf. Lin. (lb/ft)	L	02-07-04	15-03-06	21	11			n/a
5	B21(i3573)	Conc. Pt. (lbs)	L	00-01-12	00-01-12		34			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1,001 ft-lbs	11,610 ft-lbs	8.6 %	3	09-04-04
Neg. Moment	-478 ft-lbs	-7,546 ft-lbs	6.3 %	0	02-07-04
End Shear	301 lbs	5,785 lbs	5.2 %	3	14-01-12
Cont. Shear	368 lbs	5,785 lbs	6.4 %	1	03-07-08
Total Load Deflection	L/999 (0.073")	n/a	n/a	10	09-00-04
Live Load Deflection	L/999 (0.057")	n/a	n/a	13	08-10-05
Total Neg. Defl.	2xL/1,998 (-0.034")	n/a	n/a	10	00-00-00
Max Defl.	0.073"	n/a	n/a	10	09-00-04
Span / Depth	15.7				


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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STRUCTURAL
COMPONENT ONLY

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 5-1/2" x 1-3/4"	537 lbs	16.1 %	7.0 %	Unspecified
B1	Beam 4-1/8" x 1-3/4"	372 lbs	9.6 %	4.2 %	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume member is fully braced.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
Design based on Dry Service Condition. **CONFORMS TO OBC 2012**
Importance Factor : Normal Part code : Part 9
Cantilevers require sheathed bottom flanges, blocking at cantilever support and closure at ends.

1st Floor\Flush Beams\B21A(i3573)

Dry | 1 span | No cant.

February 28, 2018 08:49:29

BC CALC® Design Report

Build 6215

Job name:

File name: S42-17 RIDEAU 17-ST.mmdl

Address:

Description: 1st Floor\Flush Beams\B21A(i3573)

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

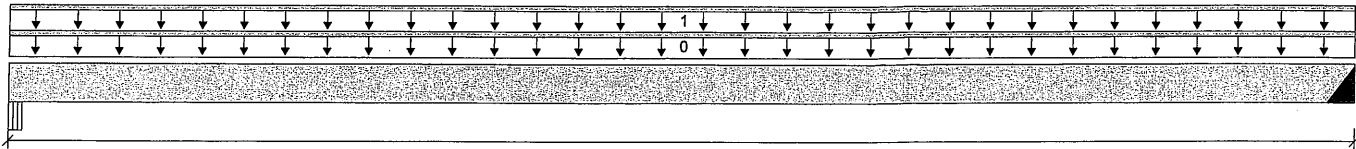
Specifier:

Customer:

Designer: CZ

Code reports: CCMC 12472-R

Company:



B0

01-04-12

B1

Total Horizontal Product Length = 01-04-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/4"		58 / 0		
B1, 2"		39 / 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	01-04-12		10			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	01-04-12		60			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	10 ft-lbs	15,093 ft-lbs	n/a	0	00-10-00
End Shear	39 lbs	7,521 lbs	0.5 %	0	01-02-12
Span / Depth	1.2				

Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Beam 5-1/4" x 3-1/2"	81 lbs	1.3 %	0.6 %	Unspecified
B1	Hanger 2" x 3-1/2"	55 lbs	n/a	1.0 %	HUC410

Cautions

Hanger model HUC410 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Notes

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

Member has no side loads.


 DWG NO. TAM 11314-8
 STRUCTURAL
 COMPONENT ONLY

Site Copy

BC CALC® Design Report

Build 6215

Job name:

Address:

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

Customer:

Code reports: CCMC 12472-R

1st Floor Flush Beams B21A(i3573)

Dry | 1 span | No cant.

February 28, 2018 08:49:29

File name: S42-17 RIDEAU 17-ST.mmdl

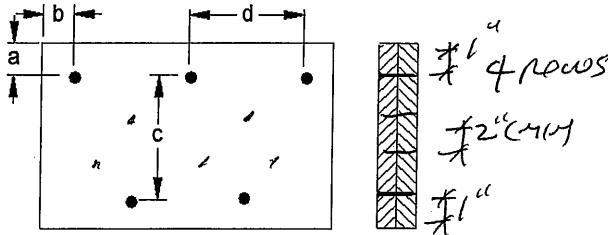
Description: 1st Floor Flush Beams B21A(i3573)

Specifier:

Designer: CZ

Company:

Connection Diagram



a minimum = 1"
b minimum = 3"

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

Member has no side loads.

Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL

Disclosure

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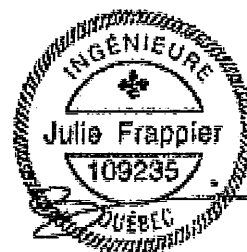
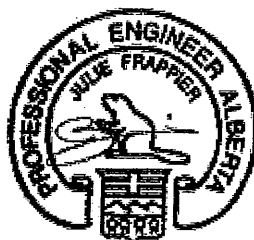
DWG NO. TAM 11314
STRUCTURAL
COMPONENT ONLY

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Site Copy

Maximum Floor Spans

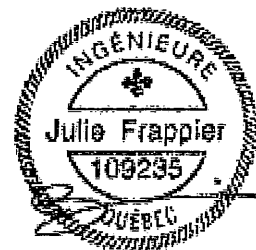
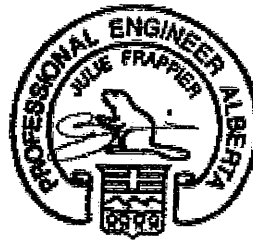
Live Load = 40 psf Dead Load = 15 psf
Simple Spans, L/480 Deflection Limit
5/8" OSB G&N Sheathing



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
14"	NI-90x	20'-4"	18'-9"	17'-11"	N/A	20'-10"	19'-3"	18'-5"	N/A
	NI-40x	20'-1"	18'-7"	17'-10"	N/A	20'-10"	19'-4"	18'-6"	N/A
	NI-60	20'-5"	18'-11"	18'-1"	N/A	21'-2"	19'-7"	18'-9"	N/A
	NI-70	21'-7"	20'-0"	19'-1"	N/A	22'-3"	20'-7"	19'-8"	N/A
	NI-80	21'-11"	20'-3"	19'-4"	N/A	22'-7"	20'-11"	20'-0"	N/A
16"	NI-90x	22'-7"	20'-11"	19'-11"	N/A	23'-3"	21'-6"	20'-6"	N/A
	NI-60	22'-3"	20'-8"	19'-9"	N/A	23'-1"	21'-5"	20'-6"	N/A
	NI-70	23'-6"	21'-9"	20'-9"	N/A	24'-3"	22'-5"	21'-5"	N/A
	NI-80	23'-11"	22'-1"	21'-1"	N/A	24'-8"	22'-10"	21'-9"	N/A
	NI-90x	24'-8"	22'-9"	21'-9"	N/A	25'-4"	23'-5"	22'-4"	N/A

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

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



Maximum Floor Spans

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

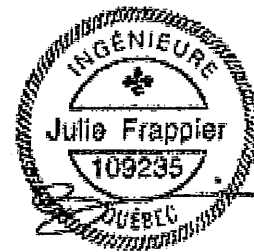
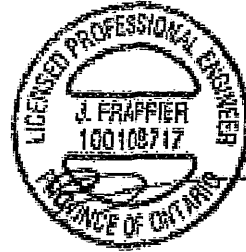
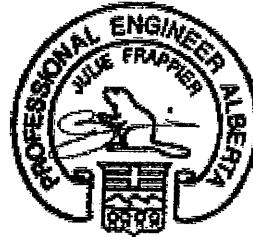
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-10"	15'-0"	14'-5"	13'-5"	16'-4"	15'-5"	14'-6"	13'-5"
	NI-40x	17'-0"	16'-0"	15'-5"	14'-9"	17'-5"	16'-5"	15'-10"	15'-2"
	NI-60	17'-2"	16'-2"	15'-7"	14'-11"	17'-6"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



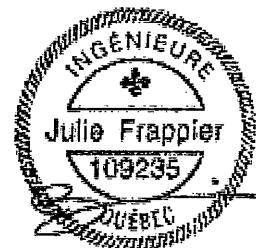
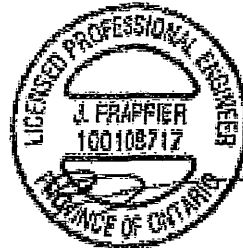
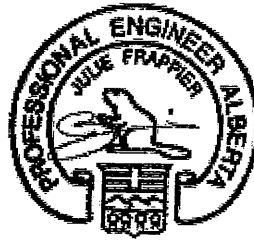
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-1"	14'-1"	13'-3"	N/A	15'-7"	14'-1"	13'-3"	N/A
	NI-40x	16'-1"	15'-2"	14'-8"	N/A	16'-7"	15'-7"	15'-1"	N/A
	NI-60	16'-3"	15'-4"	14'-10"	N/A	16'-8"	15'-9"	15'-3"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

Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	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
14"	NI-90x	23'-4"	21'-8"	20'-8"	N/A	23'-10"	22'-2"	21'-2"	N/A
	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
16"	NI-90x	26'-4"	24'-4"	23'-3"	N/A	26'-10"	24'-11"	23'-9"	N/A
	NI-60	26'-5"	24'-6"	23'-4"	N/A	27'-2"	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"

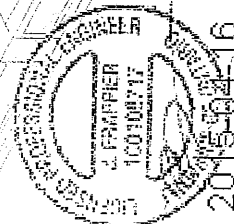
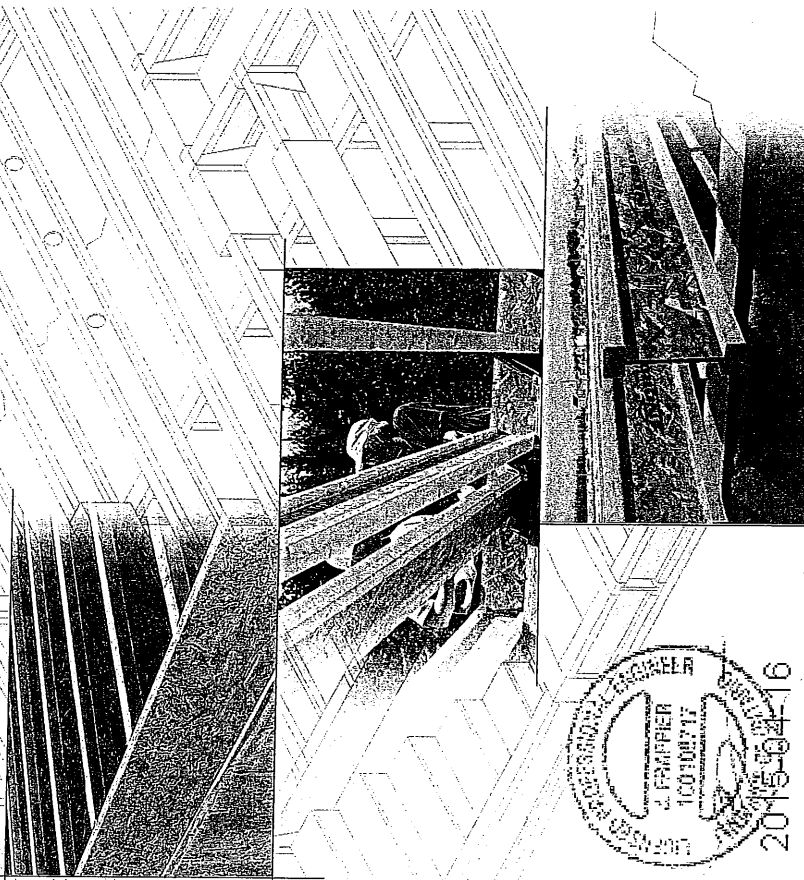
- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of $1.50L + 1.25D$. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of $L/480$ and a total load deflection limit of $L/240$.
- 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.



NORDIC

ENGINEERED WOOD

INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



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SAFETY AND CONSTRUCTION PRECAUTIONS

WARNING

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

Avoid Accidents by Following these Important Guidelines:

1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bridging at joist ends. When I-joists are applied continuous over interior supports and a load-bearing wall is planned at that location, blocking will be required 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, to prevent I-joist rollover or buckling.
 - Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on centre, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. Lap ends of adjoining bracing over at least two I-joists.
 - Or, sheathing (temporary or permanent) can be nailed to the top flange of the first 4 feet of I-joists at the end of the bay.
3. For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-bridging.
4. Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only.
5. Never install a damaged I-joist.

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



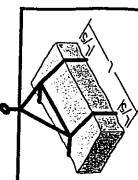
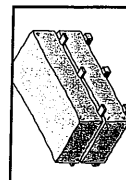
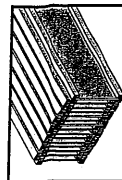
Do not walk on I-joists until fully fastened and braced, or serious injuries can result.



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

STORAGE AND HANDLING GUIDELINES

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



I-JOIST HANGERS

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

Joist Depth	Joist Series	Simple spans			Multiple spans		
		On centre spacing			On centre spacing		
		12"	16"	24"	12"	16"	24"
9-1/2"	N120	15-1"	14-2"	13-5"	16-3"	15-4"	14-10"
	N140x	16-1"	15-2"	14-8"	17-5"	16-5"	15-10"
	N160	16-3"	15-4"	14-10"	17-7"	16-7"	15-5"
	N170	17-1"	16-1"	15-6"	18-7"	17-4"	16-1"
	N180	17-3"	16-3"	15-8"	18-10"	17-6"	16-10"
	N190x	17-3"	16-3"	15-8"	18-10"	17-6"	16-10"
11-7/8"	N120	16-1 1/2"	16-0"	15-5"	18-4"	17-3"	16-8"
	N140x	18-1"	17-0"	16-5"	20-0"	18-6"	17-7"
	N160	18-4"	17-3"	16-9"	20-3"	18-9"	18-0"
	N170	19-6"	18-0"	17-4"	21-6"	19-1 1/2"	18-1"
	N180	19-9"	18-3"	17-6"	21-9"	19-3"	19-1"
	N190	20-2"	18-7"	17-10"	22-3"	20-7"	19-8"
14"	N120	20-4"	18-9"	17-1 1/2"	22-5"	20-9"	19-1 1/2"
	N140x	20-1"	18-7"	17-10"	22-2"	20-6"	19-8"
	N160	20-5"	18-1 1/2"	18-2"	22-7"	20-11"	19-4"
	N170	21-7"	20-0"	19-1"	23-10"	22-1"	20-1"
	N180	21-11"	20-3"	19-4"	24-3"	22-5"	21-6"
	N190	22-5"	20-8"	19-9"	24-9"	22-10"	21-10"
16"	N120	22-7"	20-1 1/2"	19-1 1/2"	25-0"	23-1"	22-2"
	N140x	22-3"	20-8"	19-9"	24-7"	22-9"	21-9"
	N160	23-6"	21-9"	20-9"	26-0"	24-0"	23-10"
	N170	23-11"	22-1"	21-2"	26-5"	24-5"	23-4"
	N180	24-5"	22-6"	21-5"	26-11"	24-10"	23-9"
	N190x	24-8"	22-9"	21-9"	27-3"	25-2"	24-1"

CCMC EVALUATION REPORT 13032-R

NORDIC I-JOIST SERIES

FIGURE 2

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

SI units conversion: 1 inch = 25.4 mm

FIGURE 2

WEB STIFFENER INSTALLATION DETAILS

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

Approx. 2" I

1/8"-1/4" Gap

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

No Gap

Approx. 2" I

CONCENTRATED LOAD
(load stiffener)

Tight Joint
No Gap

Gap

END BEARING
(bearing stiffener)

Gap

Tight Joint
No Gap

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
3-1/2"	1-1/2" x 2-5/16" minimum width

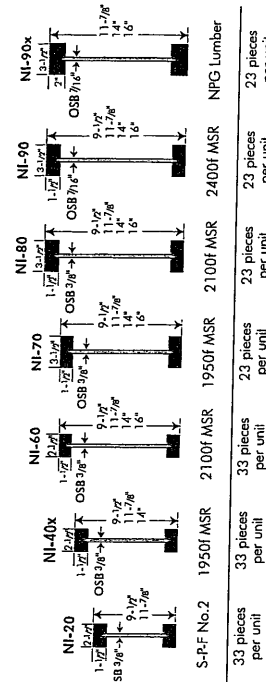
See table below for web stiffener size requirements

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

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

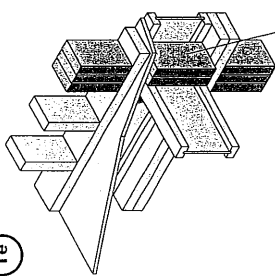
Nordic Engineered Wood I-joists use only finger-jointed black spruce lumber in their flanges, ensuring consistent quality, superior strength and longer span carrying capacity.

SI units conversion: 1 inch = 25.4 mm



2015-94-16

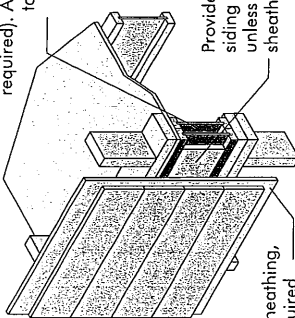
1e



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

1f

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

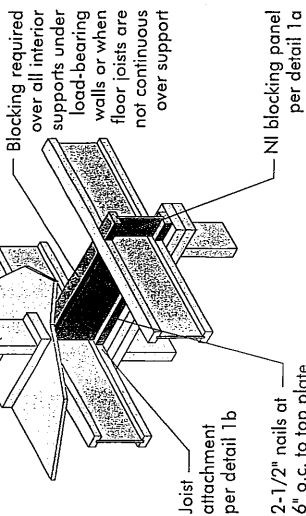


Wall sheathing, as required. Provide backer for siding attachment unless available sheathing is used.

Rim board may be used in lieu of I-joists. Backer is not required when rim board is used. Bracing per code shall be carried to the foundation.

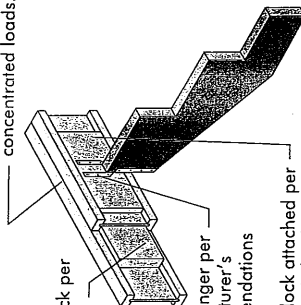
1g

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



1m

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



Filler block per detail 1p

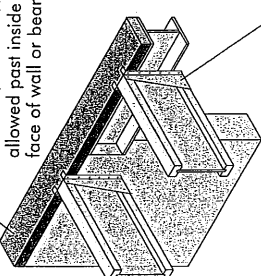
Install hanger per manufacturer's recommendations

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

Maximum support capacity = 1,620 lbs.

1k

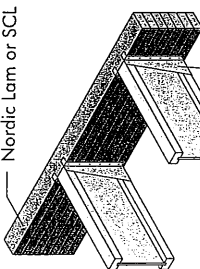
2x plate flush with inside face of wall or beam. 1/8" overhang allowed past inside face of wall or beam.



Top-mount hanger installed per manufacturer's recommendations

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

1j

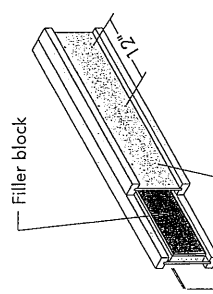


Top- or face-mount hanger installed per manufacturer's recommendations

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

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

1p



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

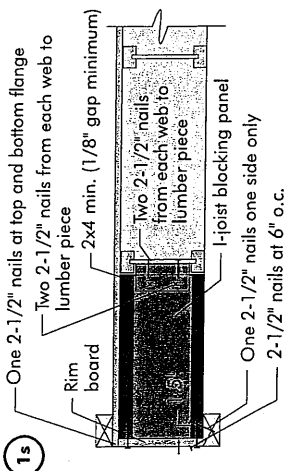
FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

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

Notes:

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

1s

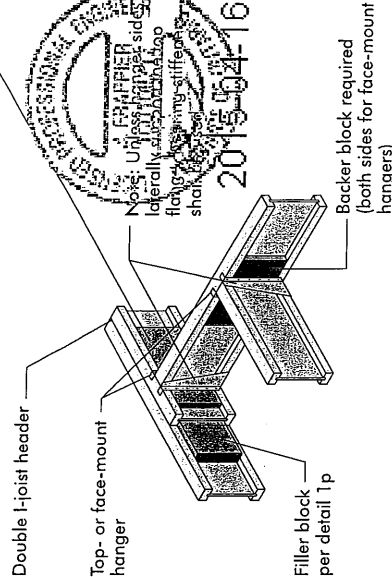


Notes:

- 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.

1h

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



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

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

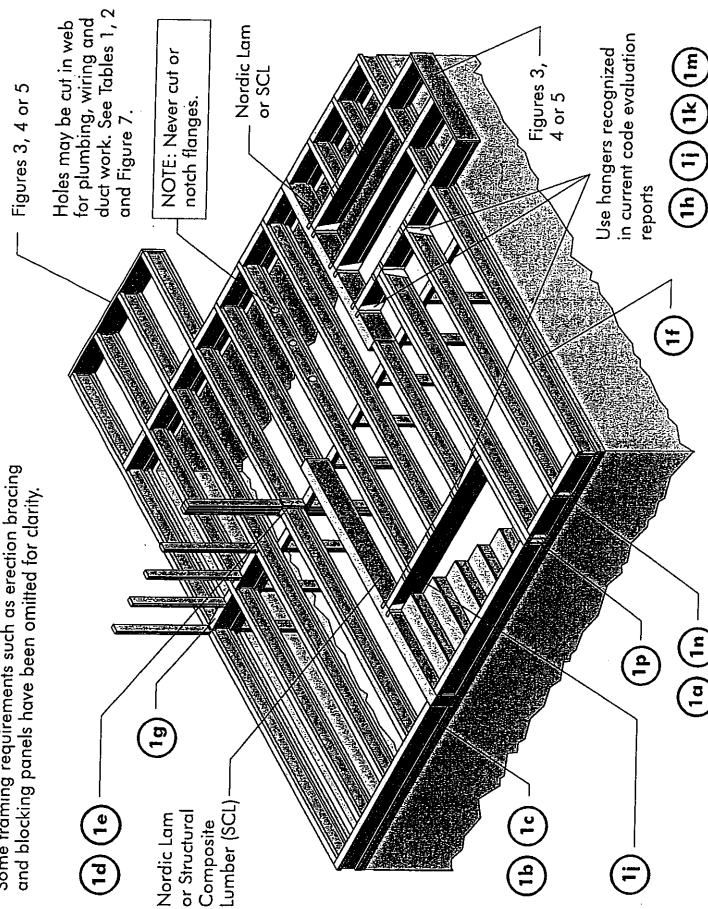
Flange Width	Material Thickness Required*	Minimum Depth**
2-1/2"	1"	5-1/2"
3-1/2"	1-1/2"	7-1/4"

* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-O325 or CAN/CSA-O437 Standard.
** For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".

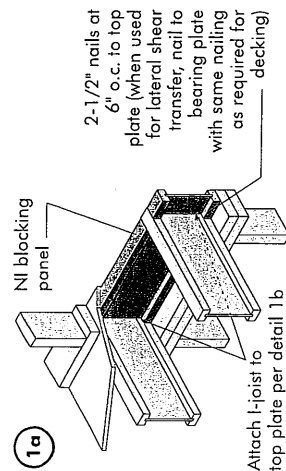
1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact your supplier.
2. Except for cutting to length, I-joist flanges should **never** be cut, drilled, or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical alignment.
4. I-joists must be anchored securely to supports before floor sheathing is attached, and supports for multiple-span systems 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.

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 blocking plans.

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

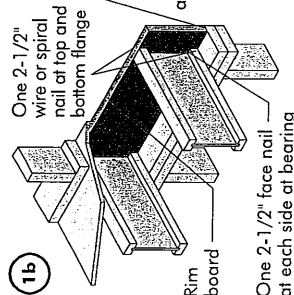


All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for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



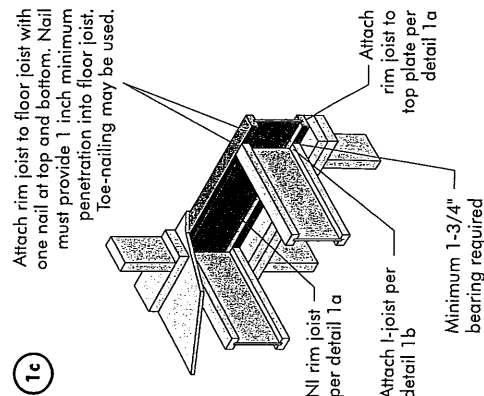
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI Joists	3,300

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



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

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

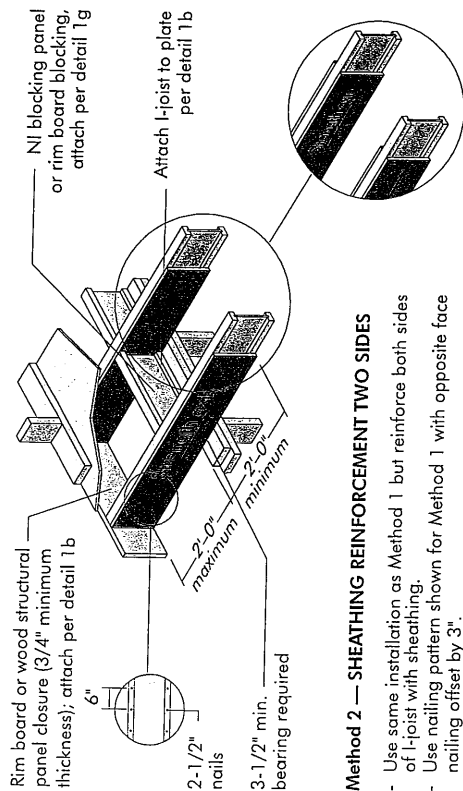


Pair of Squash Blocks	Maximum Factored Vertical per Pair of Squash Blocks (lbs)	
	3-1/2" wide	5-1/2" wide
2x Lumber	5,500	8,500
1-1/8" Rim Board Plus	4,300	6,600

Provide lateral bracing per detail 1a, 1b, or 1c
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CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

4a Method 1 — SHEATHING REINFORCEMENT ONE SIDE

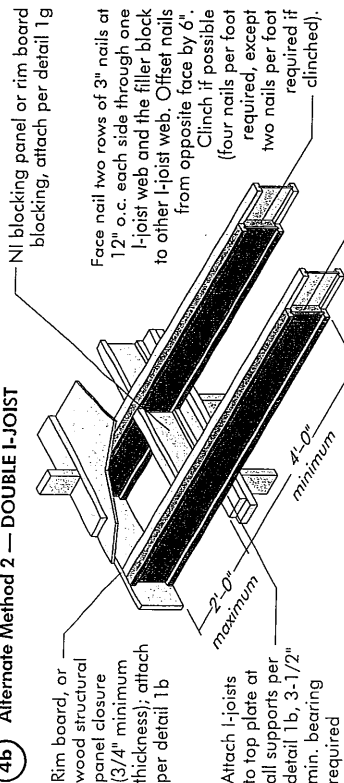


Method 2 — SHEATHING REINFORCEMENT TWO SIDES

- 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".

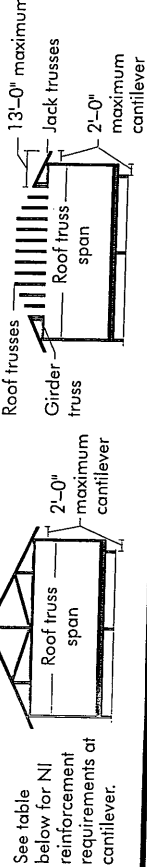
Note: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4") required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2" nails at 6" o.c., top and bottom flange. Install with face grain horizontal. Attach I-joist to plate at all supports per detail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

4b Alternate Method 2 — DOUBLE I-JOIST



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

FIGURE 4 (continued)



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

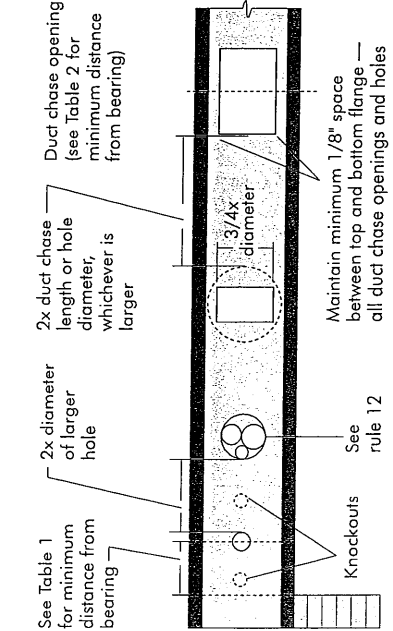
JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft)	ROOF LOADING (UNFACTORED)												LL = 50 psf, DL = 15 psf JOIST SPACING (in.)					
		LL = 30 psf, DL = 15 psf JOIST SPACING (in.)						LL = 40 psf, DL = 15 psf JOIST SPACING (in.)											
		12	16	19.2	24	24	24	12	16	19.2	24	24	24	12	16	19.2	24		
9-1/2"	26	N	N	1	2		N	N	1	2	X		N	N	2	16	19.2	24	
	28	N	N	1	X		N	N	1	2	X	X	N	N	2	X	X	X	
	30	N	N	1	X		N	N	1	2	X	X	1	N	2	X	X	X	
	32	N	N	2	X		N	N	2	X	X	X	1	1	X	X	X	X	
	34	N	N	2	X		N	N	2	X	X	X	1	1	X	X	X	X	
11-7/8"	26	N	N	2	X		N	N	2	X	X		N	N	1	X	X	X	
	28	N	N	2			N	N	2	1	2		N	N	1	N	1	2	
	30	N	N	2			N	N	2	1	2		N	N	1	1	1	X	
	32	N	N	1			N	N	1	1	2		N	N	1	1	2	X	
	34	N	N	1			N	N	1	1	2	X	N	N	1	1	2	X	
14"	26	N	N	1	2		N	N	1	2	X	X	N	N	1	1	2	X	
	28	N	N	2			N	N	2	2	X		N	N	2	X	X	X	
	30	N	N	2			N	N	2	2	X		N	N	2	X	X	X	
	32	N	N	2			N	N	2	2	X		N	N	2	X	X	X	
	34	N	N	2			N	N	2	2	X		N	N	2	X	X	X	
16"	26	N	N	2			N	N	2	2	X		N	N	2	X	X	X	
	28	N	N	2			N	N	2	2	X		N	N	2	X	X	X	
	30	N	N	2			N	N	2	2	X		N	N	2	X	X	X	
	32	N	N	2			N	N	2	2	X		N	N	2	X	X	X	
	34	N	N	2			N	N	2	2	X		N	N	2	X	X	X	

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

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

- 1. The distance between the inside edge of the support and the centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
- 2. I-joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
- 3. Whenever possible, field-cut holes should be centred on the middle of the web.
- 4. The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-joist web shall equal the clear distance between the flanges of the I-joist minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the hole or opening and the adjacent I-joist flange.
- 5. The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- 6. Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the longest rectangular hole 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.

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



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

Holes in webs should be cut with a sharp saw.

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

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

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of hole (ft.-in.)														Span adjustment Factor
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	11	12	
9 1/2"	NI-20	0-7"	1-6"	2-10"	4-3"	5-8"	6-0"	6-4"	---	---	---	---	---	---	---	---
	NI-40x	0-7"	1-6"	3-0"	4-4"	6-0"	6-4"	---	---	---	---	---	---	---	---	---
	NI-60	1-3"	2-6"	4-0"	5-4"	7-0"	7-5"	---	---	---	---	---	---	---	---	---
	NI-70	2-0"	3-4"	4-9"	6-3"	8-0"	8-4"	---	---	---	---	---	---	---	---	---
11 7/8"	NI-80	2-3"	3-6"	5-0"	6-6"	8-2"	8-8"	---	---	---	---	---	---	---	---	---
	NI-20	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-6"	7-9"	---	---	---	---	---	---
	NI-40x	0-7"	0-8"	1-3"	2-8"	3-8"	4-0"	5-0"	6-6"	7-9"	8-4"	---	---	---	---	---
	NI-60	0-7"	1-8"	3-0"	4-3"	5-9"	6-4"	7-3"	8-10"	10-0"	---	---	---	---	---	---
14"	NI-70	1-3"	2-6"	4-0"	5-4"	6-9"	7-2"	8-4"	10-0"	11-2"	---	---	---	---	---	---
	NI-80	0-7"	2-10"	4-5"	5-6"	7-0"	7-5"	8-6"	10-3"	11-4"	---	---	---	---	---	---
	NI-90	0-7"	0-8"	1-5"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"	---	---	---	---	---	---
	NI-90x	0-7"	0-8"	0-8"	2-5"	4-4"	4-9"	6-3"	---	---	---	---	---	---	---	---
16"	NI-40x	0-7"	0-8"	1-0"	2-4"	3-9"	3-9"	5-2"	6-0"	6-6"	8-3"	10-2"	---	---	---	---
	NI-60	0-7"	0-8"	1-8"	3-0"	4-3"	4-8"	5-8"	7-2"	8-8"	10-4"	11-9"	---	---	---	---
	NI-70	0-8"	1-10"	3-4"	4-5"	5-10"	6-2"	7-3"	8-9"	9-9"	10-4"	12-0"	13-5"	---	---	---
	NI-80	0-10"	2-0"	3-4"	4-9"	6-2"	6-5"	7-6"	9-0"	10-0"	10-8"	12-4"	13-9"	---	---	---
18"	NI-90	0-7"	0-8"	0-10"	2-5"	4-4"	4-5"	5-9"	7-5"	8-8"	9-4"	11-4"	12-11"	---	---	---
	NI-90x	0-7"	0-8"	2-0"	3-9"	4-2"	5-5"	7-3"	8-5"	9-2"	---	---	---	---	---	---
	NI-60	0-7"	0-8"	0-8"	1-6"	2-10"	3-2"	4-2"	5-6"	6-4"	7-0"	8-5"	9-8"	10-2"	12-2"	13-9"
	NI-70	0-7"	1-0"	2-3"	3-6"	4-10"	5-3"	6-3"	7-8"	8-6"	9-2"	10-8"	12-0"	12-4"	14-0"	15-6"
20"	NI-80	0-7"	1-3"	2-6"	3-10"	5-3"	5-6"	6-6"	8-0"	9-0"	9-5"	11-0"	12-3"	12-4"	14-5"	16-0"
	NI-90	0-7"	0-8"	0-8"	1-9"	3-3"	3-8"	4-9"	6-5"	7-5"	8-0"	9-10"	11-3"	11-9"	13-9"	15-4"
	NI-90x	0-7"	0-8"	0-9"	2-0"	3-6"	4-0"	5-0"	6-9"	7-9"	8-4"	10-2"	11-6"	12-0"	---	---
	NI-90x	0-7"	0-8"	0-9"	2-0"	3-6"	4-0"	5-0"	6-9"	7-9"	8-4"	10-2"	11-6"	12-0"	---	---

Above table may be used for joist sections of 12" depth or less.

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

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 Span Table) the minimum distance from the centreline of the hole to the face of any support (D) as given above may be reduced as follows:

$D_{reduced} = \frac{L_{actual}}{L_{span}} \times D$

Where:

- $D_{reduced}$ = Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span applications (ft.)
- L_{actual} = The actual measured span distance between the inside faces of supports (ft.)
- L_{span} = Span Adjustment Factor given in this table.
- D = The minimum distance from the inside face of any support to centre of hole from this table, if L_{actual} is greater than 1, use 1 in the above calculation for L_{actual} .

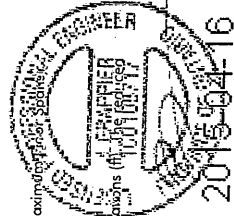


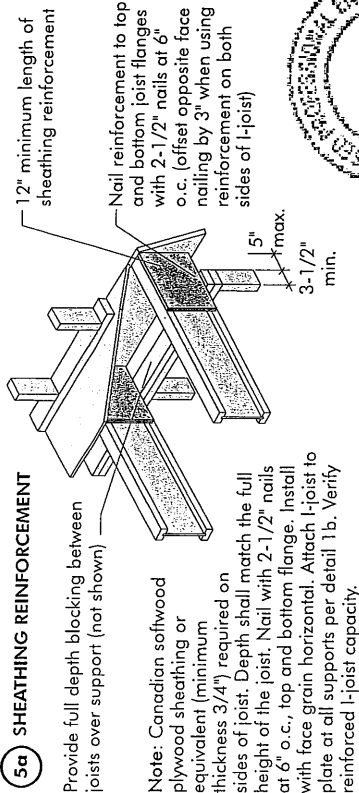
TABLE 2
DUCT CHASE OPENING SIZES AND LOCATIONS — Simple Span Only

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of opening (ft.-in.)													
		8	10	12	14	16	18	20	22	24	26	28	30	32	34
9 1/2"	NI-20	4-1"	4-5"	4-10"	5-4"	5-8"	6-1"	6-4"	7-1"	7-5"	7-8"	8-2"	8-6"	8-9"	9-4"
	NI-40x	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	8-9"	9-4"	9-8"	10-3"	10-9"
	NI-60	5-4"	5-9"	6-2"	6-7"	7-1"	7-5"	7-8"	8-2"	8-6"	8-9"	9-4"	9-8"	10-3"	10-9"
	NI-70	5-1"	5-5"	5-10"	6-3"	6-7"	7-1"	7-5"	7-8"	8-2"	8-6"	8-9"	9-4"	9-8"	10-3"
11 7/8"	NI-20	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"	8-6"	8-9"	9-4"	9-8"	10-3"	10-9"
	NI-40x	6-2"	6-6"	6-6"	7-1"	7-5"	7-9"	8-3"	8-7"	9-1"	9-4"	9-8"	10-1"	10-4"	10-8"
	NI-60	6-2"	6-6"	6-6"	7-1"	7-5"	7-9"	8-3"	8-7"	9-1"	9-4"	9-8"	10-1"	10-4"	10-8"
	NI-70	6-2"	6-6"	6-6"	7-1"	7-5"	7-9"	8-3"	8-7"	9-1"	9-4"	9-8"	10-1"	10-4"	10-8"
14"	NI-20	7-1"	7-6"	7-7"	8-1"	8-5"	8-10"	9-4"	9-8"	10-1"	10-4"	10-7"	10-11"	10-11"	10-11"
	NI-40x	8-1"	8-7"	9-0"	9-4"	9-8"	10-1"	10-4"	10-7"	10-11"	10-11"	10-11"	10-11"	10-11"	10-11"
	NI-60	8-9"	9-3"	9-5"	9-9"	10-3"	10-6"	10-8"	10-11"	10-11"	10-11"	10-11"	10-11"	10-11"	10-11"
	NI-70	8-9"	9-3"	9-5"	9-9"	10-3"	10-6"	10-8"	10-11"	10-11"	10-11"	10-11"	10-11"	10-11"	10-11"
16"	NI-20	9-2"	9-8"	10-1"	10-5"	10-9"	11-3"	11-7"	12-1"	12-5"	12-9"	13-3"	13-7"	14-1"	14-5"
	NI-40x	10-3"	10-8"	11-2"	11-6"	12-0"	12-4"	12-8"	13-2"	13-6"	14-0"	14-4"	14-8"	15-2"	15-6"
	NI-60	10-1"	10-5"	11-0"	11-4"	11-8"	12-2"	12-6"	13-0"	13-4"	13-8"	14-2"	14-6"	15-0"	15-4"
	NI-70	10-4"	10-9"	11-3"	11-7"	12-1"	12-5"	12-9"	13-3"	13-7"	14-1"	14-5"	14-9"	15-3"	15-7"

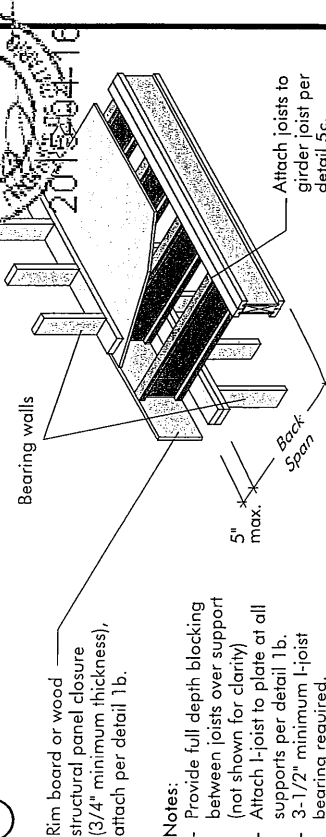
- 1. Above table may be used for I-joist spacing of 24 inches on centre or less.
- 2. Duct chase opening distance is measured from inside face of supports to centre of opening.
- 3. The above table is based on simple-span joists only. For other applications, contact your local distributor.
- 4. Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. For other applications, contact your local distributor.

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

5a SHEATHING REINFORCEMENT



5b SET-BACK DETAIL



5c SET-BACK CONNECTION

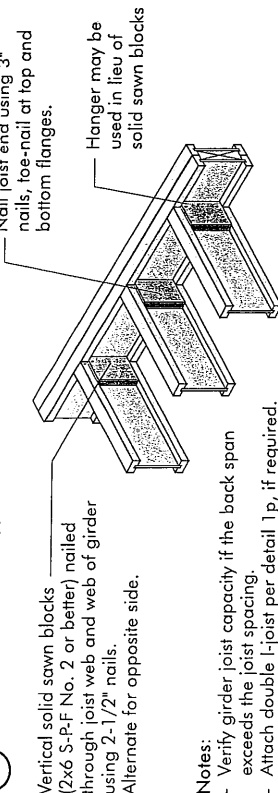
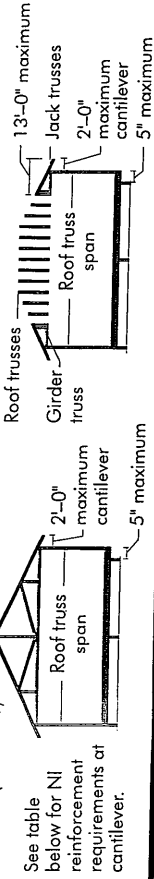


FIGURE 5 (continued)



BRICK 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				
		JOIST SPACING (in.)					JOIST SPACING (in.)				
		12	16	19.2	24		12	16	19.2	24	
9'-1/2"	26	1	X	X	X		2	X	X	X	X
	28	1	X	X	X		2	X	X	X	X
	30	1	X	X	X		2	X	X	X	X
	32	2	X	X	X		2	X	X	X	X
	34	2	X	X	X		2	X	X	X	X
11'-7/8"	26	2	X	X	X		X	X	X	X	X
	28	N	2	X	X		1	X	X	X	X
	30	N	2	X	X		1	X	X	X	X
	32	1	2	X	X		1	X	X	X	X
	34	1	2	X	X		2	X	X	X	X
14"	26	1	X	X	X		2	X	X	X	X
	28	N	1	2	X		N	2	X	X	X
	30	N	1	2	X		1	2	X	X	X
	32	N	2	X	X		1	2	X	X	X
	34	N	2	X	X		1	2	X	X	X
16"	26	1	2	X	X		1	2	X	X	X
	28	N	1	2	X		2	X	X	X	X
	30	N	1	2	X		N	2	X	X	X
	32	N	2	X	X		N	2	X	X	X
	34	N	2	X	X		1	2	X	X	X
18"	26	1	2	X	X		1	2	X	X	X
	28	N	1	2	X		N	2	X	X	X
	30	N	1	2	X		N	2	X	X	X
	32	N	2	X	X		N	2	X	X	X
	34	N	2	X	X		1	2	X	X	X
20"	26	1	2	X	X		1	2	X	X	X
	28	N	1	2	X		N	2	X	X	X
	30	N	1	2	X		N	2	X	X	X
	32	N	2	X	X		N	2	X	X	X
	34	N	2	X	X		1	2	X	X	X
22"	26	1	2	X	X		1	2	X	X	X
	28	N	1	2	X		N	2	X	X	X
	30	N	1	2	X		N	2	X	X	X
	32	N	2	X	X		N	2	X	X	X
	34	N	2	X	X		1	2	X	X	X
24"	26	1	2	X	X		1	2	X	X	X
	28	N	1	2	X		N	2	X	X	X
	30	N	1	2	X		N	2	X	X	X
	32	N	2	X	X		N	2	X	X	X
	34	N	2	X	X		1	2	X	X	X
26"	26	1	2	X	X		1	2	X	X	X
	28	N	1	2	X		N	2	X	X	X
	30	N	1	2	X		N	2	X	X	X
	32	N	2	X	X		N	2	X	X	X
	34	N	2	X	X		1	2	X	X	X
28"	26	1	2	X	X		1	2	X	X	X
	28	N	1	2	X		N	2	X	X	X
	30	N	1	2	X		N	2	X	X	X
	32	N	2	X	X		N	2	X	X	X
	34	N	2	X	X		1	2	X	X	X
30"	26	1	2	X	X		1	2	X	X	X
	28	N	1	2	X		N	2	X	X	X
	30	N	1	2	X		N	2	X	X	X
	32	N	2	X	X		N	2	X	X	X
	34	N	2	X	X		1	2	X	X	X
32"	26	1	2	X	X		1	2	X	X	X
	28	N	1	2	X		N	2	X	X	X
	30	N	1	2	X		N	2	X	X	X
	32	N	2	X	X		N	2	X	X	X
	34	N	2	X	X		1	2	X	X	X
34"	26	1	2	X	X		1	2	X	X	X
	28	N	1	2	X		N	2	X	X	X
	30	N	1	2	X		N	2	X	X	X
	32	N	2	X	X		N	2	X	X	X
	34	N	2	X	X		1	2	X	X	X
36"	26	1	2	X	X		1	2	X	X	X
	28	N	1	2	X		N	2	X	X	X
	30	N	1	2	X		N	2	X	X	X
	32	N	2	X	X		N	2	X	X	X
	34	N	2	X	X		1	2	X	X	X
38"	26	1	2	X	X		1	2	X	X	X
	28	N	1	2	X		N	2	X	X	X
	30	N	1	2	X		N	2	X	X	X
	32	N	2	X	X		N	2	X	X	X
	34	N	2	X	X		1	2	X	X	X
40"	26	1	2	X	X		1	2	X	X	X
	28	N	1	2	X		N	2	X	X	X
	30	N	1	2	X		N	2	X	X	X
	32	N	2	X	X		N	2	X	X	X
	34	N	2	X	X		1	2	X	X	X
42"	26	1	2	X	X		1	2	X	X	X
	28	N	1	2	X		N	2	X	X	X
	30	N	1	2	X		N	2	X	X	X
	32	N	2	X	X		N	2	X	X	X
	34	N	2	X	X		1	2	X	X	X

1. N = No reinforcement required.
2. 1 = Nl reinforced with 3/4" wood structural panel on one side only.
3. 2 = Nl reinforced with 3/4" wood structural panel on both sides, or double I-joist.
4. X = Try a deeper joist or closer spacing.
5. 2. Maximum design load shall be: 15 psf roof dead load, 55 psf floor total load, and 80 plf wall load. Wall load is based on 3'-0" maximum width window or door openings.
6. For larger openings, or multiple 3'-0" width 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.
9. 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.
10. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

INSTALLING THE GLUED FLOOR SYSTEM

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

FASTENERS FOR SHEATHING AND SUBFLOORING(1)

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

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

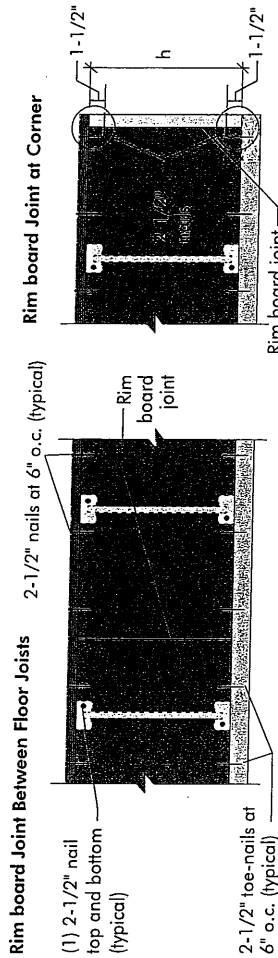
Ref.: NRC-CNRC, National Building Code of Canada 2010, Table 9.23.3.5.

IMPORTANT NOTE:

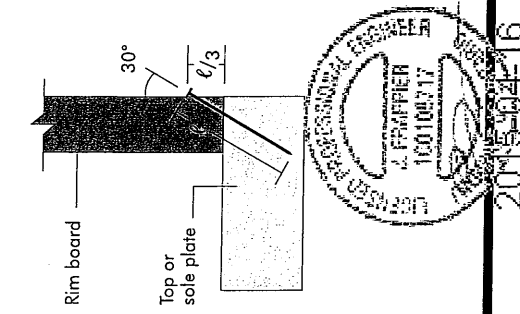
Floor sheathing must be field glued to the I-joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-joist spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

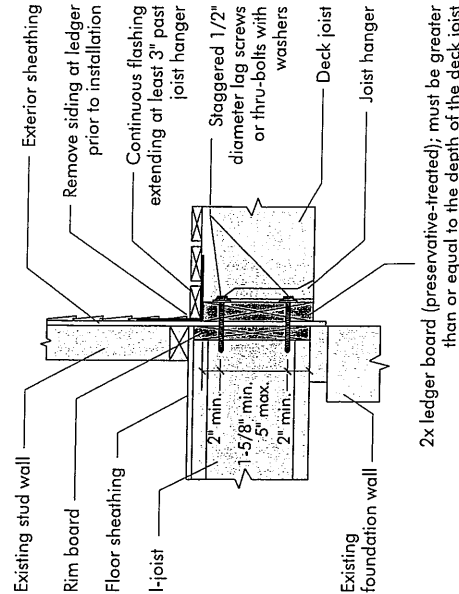
8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



8b TOE-NAIL CONNECTION AT RIM BOARD



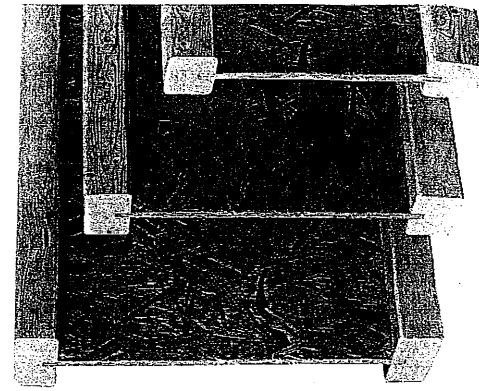
8c 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL



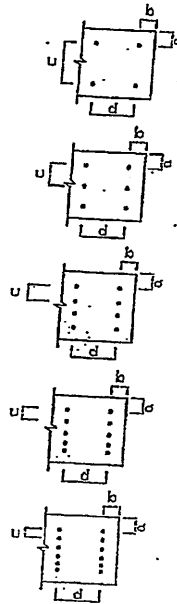
PRODUCT WARRANTY

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

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



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 # X SEE
DWG # TAMN1001-14