



FROM PLAN DATED: NOV 2015

BUILDER:
BAYVIEW WELLINGTON

SITE:
ALCONA SHORES

MODEL:\$48-3

ELEVATION: A

LOT:

CITY: INNISFILL

SALESMAN: M D
DESIGNER: AJ
REVISION:

NOTES:
CERAMIC TILE APPLICATION
AS PER O.B.C. 9.30.6.
SQUASH BLOCKS
2x4 OR 2x6 #2 S.P.F. REQ'D UNDER
INTERIOR UNIFORM LOAD BEARING
WALLS.
MULTIPLE SQUASH BLOCKS REQ'D
UNDER CONCENTRATED LOADS.
CANTILEVERED JOISTS
REQUIRE I-JOIST BLOCKING ALONG
BEARING AND RIMBOARD CLOSURE
AT ENDS.

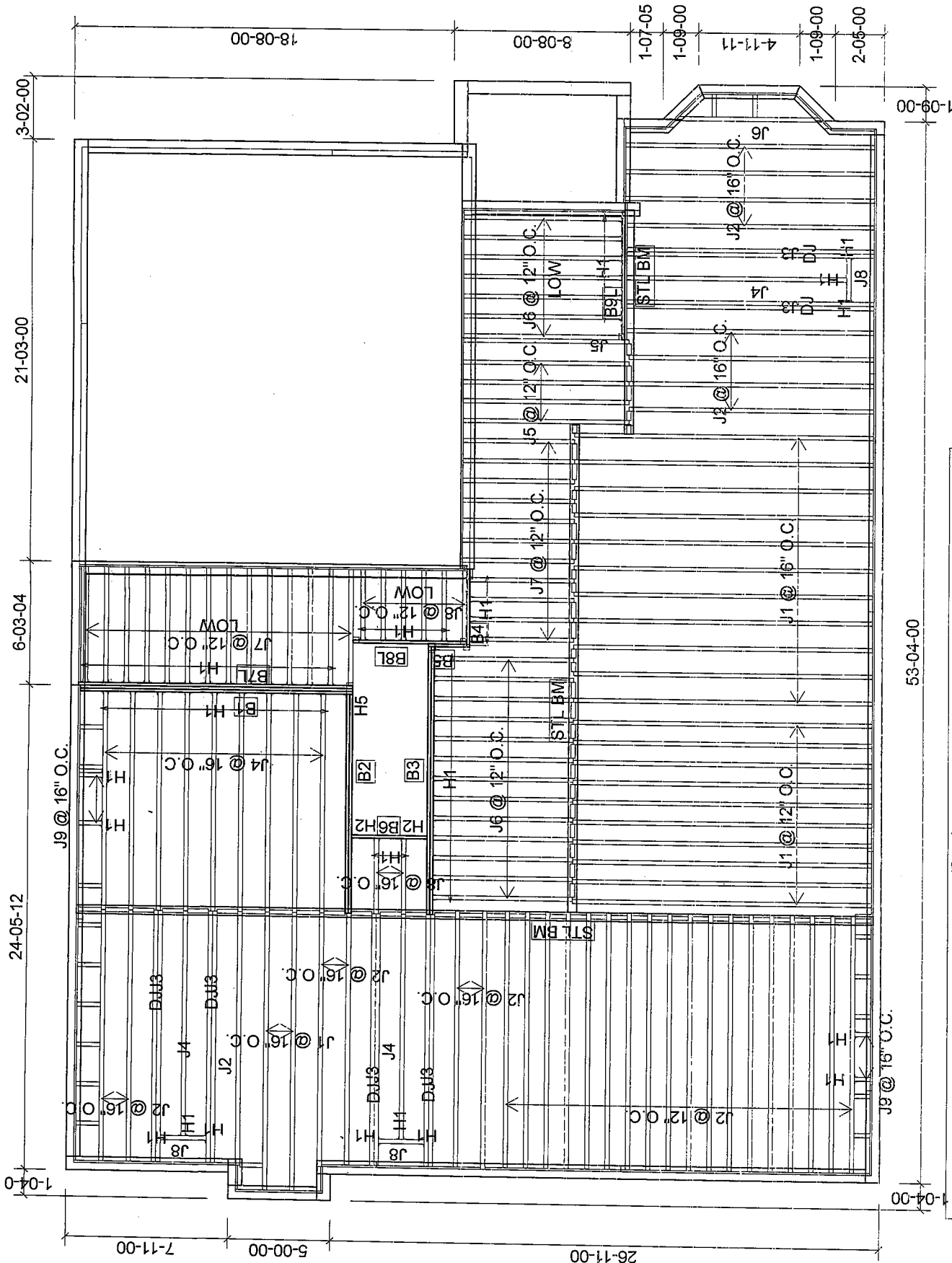
REFER TO THE NORDIC
INSTALLATION GUIDE FOR PROPER
STORAGE AND INSTALLATION.

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: 9/22/2016

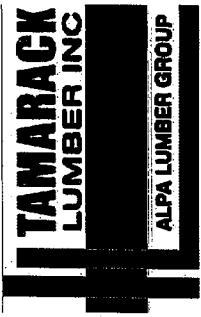
1st FLOOR



Products					Plies		Net Qty	
PlotID	Length	Product						
J1	16-00-00	9 1/2" NI-40x			1		23	
J2	14-00-00	9 1/2" NI-40x			1		33	
J3	14-00-00	9 1/2" NI-40x			2		12	
J4	12-00-00	9 1/2" NI-40x			1		12	
J5	10-00-00	9 1/2" NI-40x			1		5	
J6	8-00-00	9 1/2" NI-40x			1		21	
J7	6-00-00	9 1/2" NI-40x			1		25	
J8	4-00-00	9 1/2" NI-40x			1		11	
J9	2-00-00	9 1/2" NI-40x			1		4	
B7L	14-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP			1		1	
B1	14-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP			2		2	
B3	14-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP			2		2	
B2	12-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP			2		2	
B9L	8-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP			1		1	
B8L	6-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP			1		1	
B4	4-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP			1		1	
B6	4-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP			1		1	
B5	2-00-00	1-3/4" x 9-1/2" VERSA-LAM@ 2.0 3100 SP			1		1	

Connector Summary		
Qty	Manuf	Product
30	H1	IUS2.56/9.5
22	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
7	H1	IUS2.56/9.5
2	H2	HUS1.81/9.5
1	H5	HUC410

Town of Innisfil Certified Model
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FROM PLAN DATED: NOV 2015

BUILDER:
BAYVIEW WELLINGTON

SITE:
ALCONA SHORES

MODEL: S48-3

ELEVATION: A

Lot:

CITY: INNISFILL

SALESMAN: M D

DESIGNER: AJ

REVISION:

NOTES:

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AS PER O.B.C. 9.30.6.

SQUASH BLOCKS

2x4 OR 2x6 #2 S.P.F. REQ'D UNDER
INTERIOR UNIFORM LOAD BEARING
WALLS.

**WALLS:
MULTIPLE SQUASH BLOCKS REQ'D
UNDER CONCENTRATED LOADS.**

**CANTILEVERED JOISTS
REQUIRE I-JOIST BLOCKING ALONG
BEARING AND RIMBOARD CLOSURE
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LOADING:

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LIVE LOAD: 40.0 lb/ft²

DEAD LOAD: 15.0 lb/ft

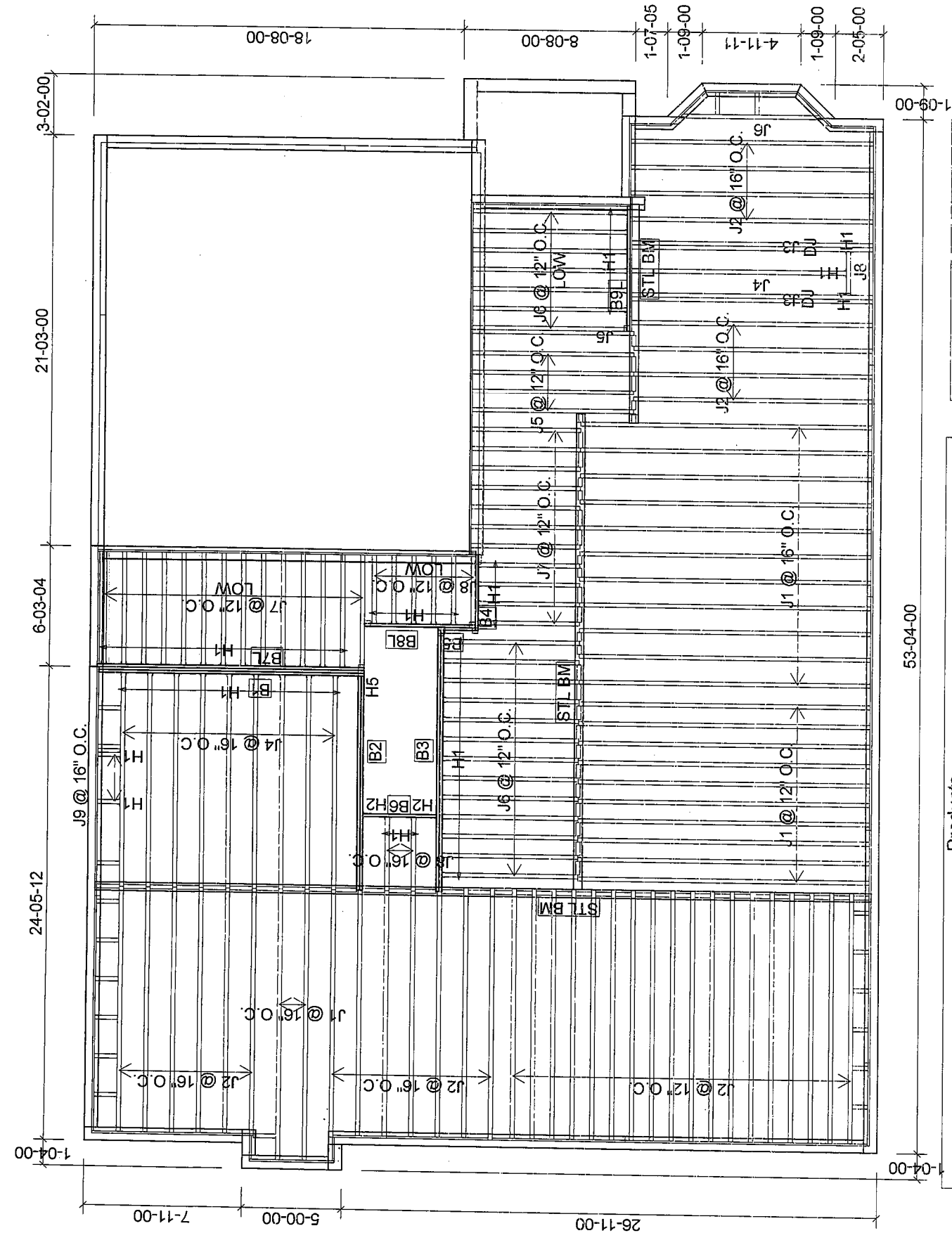
TTLED AREAS: 20 lb/ft

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 9/22/2016

st FLOOR

V.O.B & W.O.D



Products				
PlotID	Length	Product	Piles	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	23
J2	14-00-00	9 1/2" NI-40x	1	39
J3	14-00-00	9 1/2" NI-40x	2	4
J4	12-00-00	9 1/2" NI-40x	1	10
J5	10-00-00	9 1/2" NI-40x	1	5
J6	8-00-00	9 1/2" NI-40x	1	21
J7	6-00-00	9 1/2" NI-40x	1	25
J8	4-00-00	9 1/2" NI-40x	1	9
J9	2-00-00	9 1/2" NI-40x	1	2
B7L	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B1	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
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Town of Innisfil Certified Model
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BAYVIEW WELLINGTON

SITE:
ALCONA SHORES

MODEL:\$48-3

ELEVATION: B

LOT:

CITY: INNISFILL

SALESMAN: M D
DESIGNER: AJ
REVISION:

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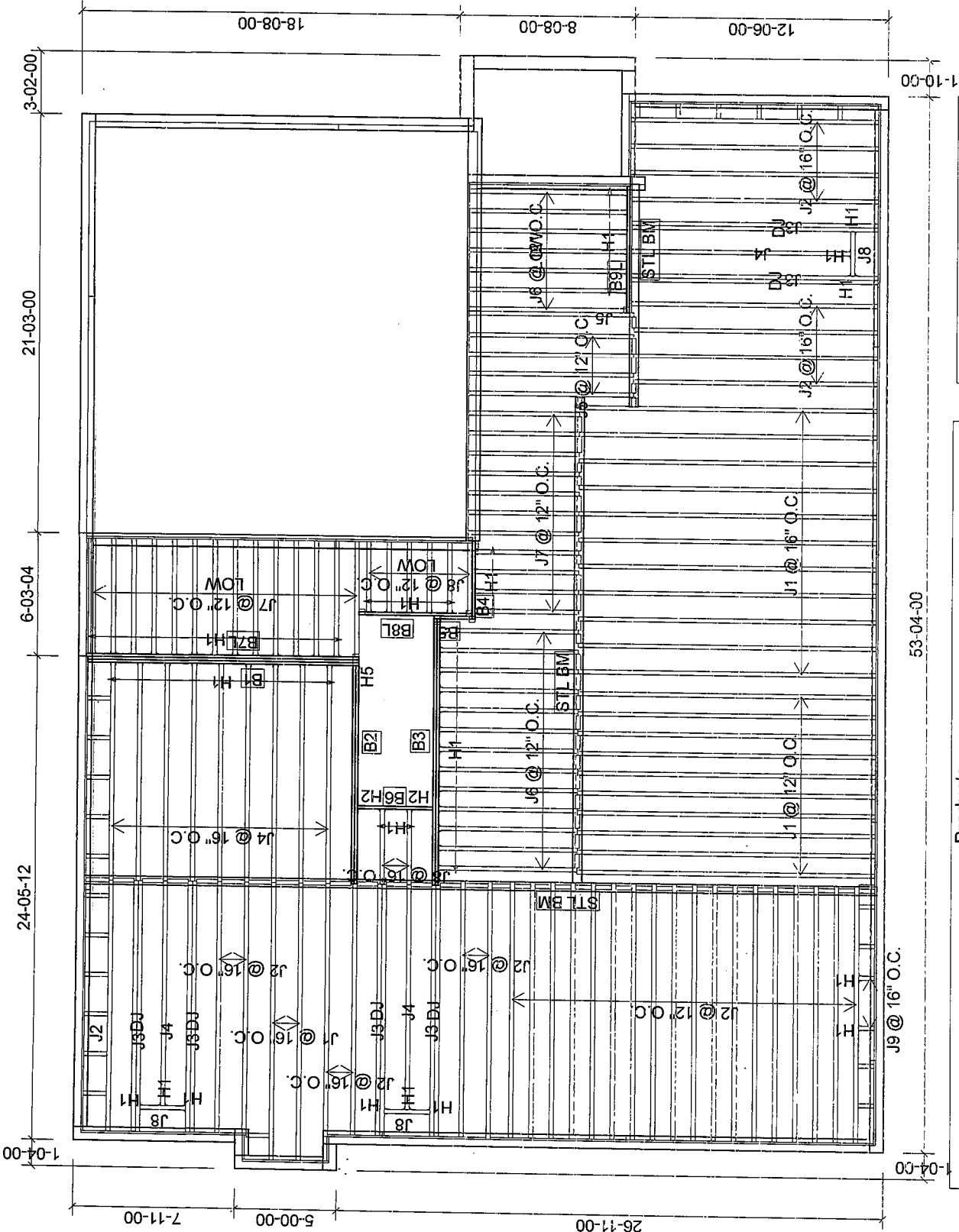
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1st FLOOR





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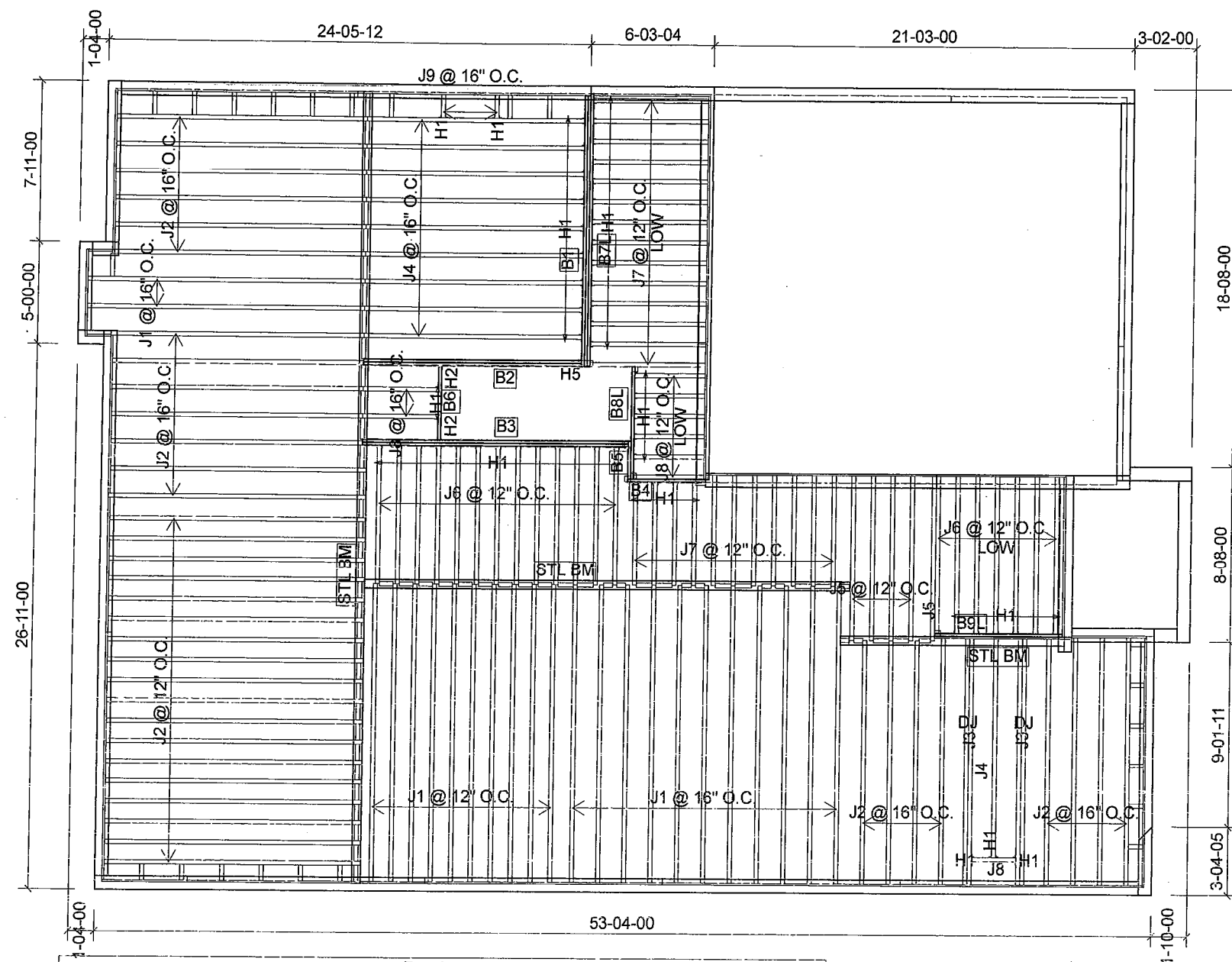
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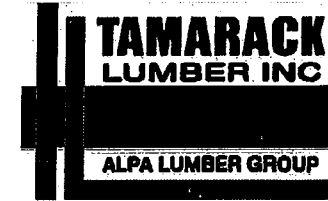
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J7	6-00-00	9 1/2" NI-40x	1	25
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Town of Innisfil Certified Model
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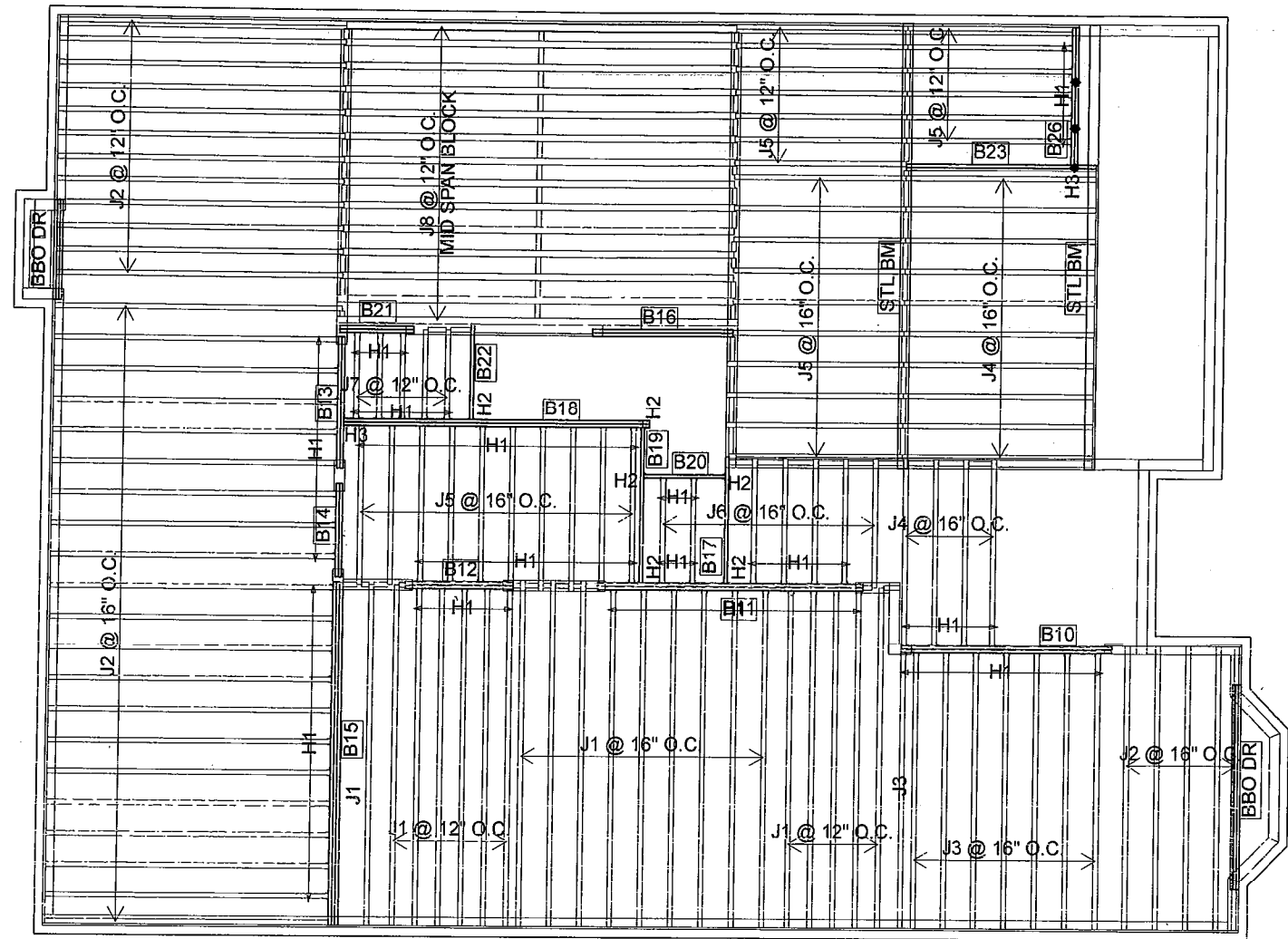
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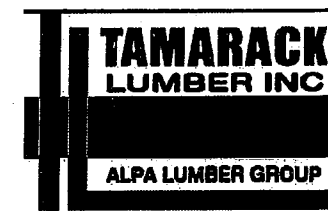


Products				
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J2	14'-00"-00	9 1/2" NI-40x	1	38
J3	12'-00"-00	9 1/2" NI-40x	1	8
J4	10'-00"-00	9 1/2" NI-40x	1	14
J5	8'-00"-00	9 1/2" NI-40x	1	33
J6	6'-00"-00	9 1/2" NI-40x	1	7
J7	4'-00"-00	9 1/2" NI-40x	1	5
J8	18'-00"-00	9 1/2" NI-80	1	14
B15	16'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3
B18	14'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B11	12'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B10	10'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B23	10'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B19	8'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B16	8'-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	1	1
B22	6'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B12	6'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B13	6'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B26	6'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B20	4'-00"-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
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70	H1	IUS2.56/9.5
11	H1	IUS2.56/9.5
2	H2	HUS1.81/9.5
4	H2	HUS1.81/9.5
2	H3	HGUS410

Town of Innisfil Certified Model
02/01/2018 3:42:00 PM kgervais

2nd FLOOR



FROM PLAN DATED: NOV 2015

BUILDER:
BAYVIEW WELLINGTON

SITE:
ALCONA SHORES

MODEL:\$48-3

ELEVATION: B

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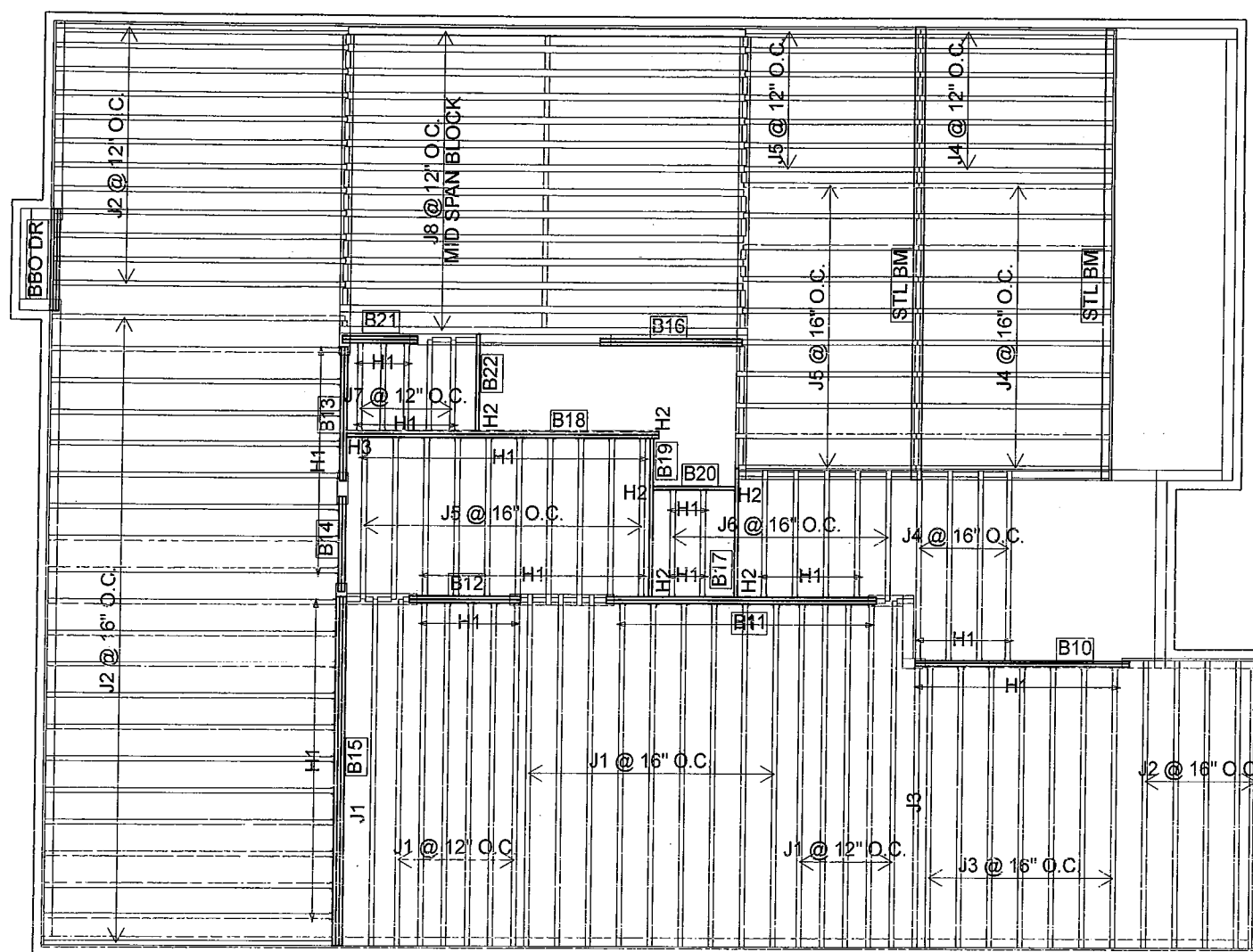
SALESMAN: M D
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REVISION:

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B16	8-00-00	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	1	1
B22	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B12	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
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B21	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
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65	H1	IUS2.56/9.5
11	H1	IUS2.56/9.5
2	H2	HUS1.81/9.5
4	H2	HUS1.81/9.5
1	H3	HGUS410

Town of Innisfil Certified Model
02/01/2018 3:42:07 PM kgervais

2nd FLOOR



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B1(i3883)

BC CALC® Design Report



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

September 22, 2016 15:05:02

Build 4340

File Name: S48-3 EL-A.mmdl

Job Name:

Description: Designs\Flush Beams\Basement\Flush Beams\B1(i3883)

Address:

Specifier:

City, Province, Postal Code: INNISFILL,

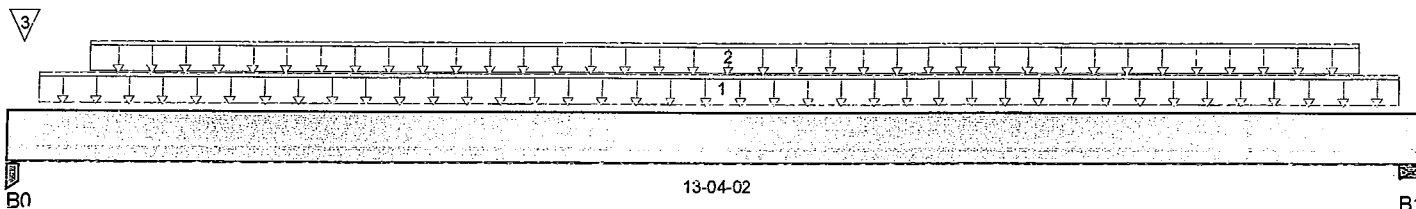
Designer: AJ

Customer:

Company:

Code reports: CCMC 12472-R

Misc:



Total Horizontal Product Length = 13-04-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1,958 / 0	2,033 / 0		
B1, 2-3/8"	1,385 / 0	1,141 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	User Load	Unf. Lin. (lb/ft)	L	00-03-08	13-01-12	60				n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-09-04	12-09-04	230	115			n/a
3	-	Conc. Pt (lbs)	L	00-01-12	00-01-12	564	898			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	12,133 ft-lbs	25,408 ft-lbs	47.8%	1	06-09-04
End Shear	3,433 lbs	11,571 lbs	29.7%	1	12-04-04
Total Load Defl.	L/296 (0.527")	0.649"	81.1%	4	06-09-04
Live Load Defl.	L/534 (0.292")	0.433"	67.4%	5	06-09-04
Max Defl.	0.527"	n/a	n/a	4	06-09-04
Span / Depth	16.4	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Post	3-1/2" x 3-1/2"	5,479 lbs	68.9%	36.7%	Unspecified
B1 Wall/Plate	2-3/8" x 3-1/2"	3,504 lbs	98.7%	34.6%	Unspecified

Notes

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

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

Calculations assume Member is Fully Braced.

Resistance Factor phi has been applied to all presented results per CSA 086.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Deflections less than 1/8" were ignored in the results.

CONFORMS TO OBC 2012



P612



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B1(i3883)

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

September 22, 2016 15:05:02

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-Ammdl

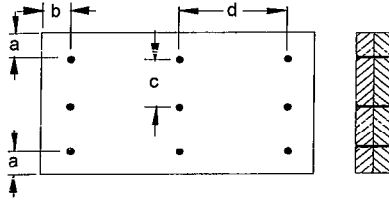
Description: Designs\Flush Beams\Basement\Flush Beams\B1(i3883)

Specifier:

Designer: AJ

Company:

Misc:

Connection Diagram

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

Calculated Side Load = 604.8 lb/ft

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

Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 44769-17
 STRUCTURAL
 COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B2(i3794)

BC CALC® Design Report



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

September 22, 2016 15:05:02

Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-A.mmdl

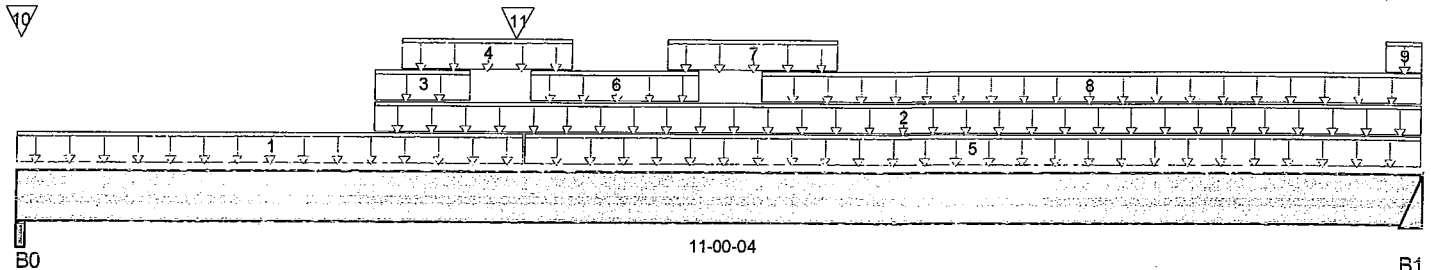
Description: Designs\Flush Beams\Basement\Flush Beams\B2(i3794)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 11-00-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-5/8"	1,430 / 0	1,146 / 0		
B1	562 / 0	833 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-11-08	53	27			n/a
2	13(i929)	Unf. Lin. (lb/ft)	L	02-09-08	11-00-04		81			n/a
3	13(i929)	Unf. Lin. (lb/ft)	L	02-09-08	03-06-08	197	120			n/a
4	13(i929)	Unf. Lin. (lb/ft)	L	03-00-00	04-04-00	58	29			n/a
5	FC3 Floor Material	Unf. Lin. (lb/ft)	L	03-11-08	11-00-04	29	14			n/a
6	13(i929)	Unf. Lin. (lb/ft)	L	04-00-00	05-04-00	61	30			n/a
7	13(i929)	Unf. Lin. (lb/ft)	L	05-00-14	06-04-14	33	107			n/a
8	13(i929)	Unf. Lin. (lb/ft)	L	05-09-12	11-00-04	12	6			n/a
9	13(i929)	Unf. Lin. (lb/ft)	L	10-08-12	11-00-04		67			n/a
10	3(i903)	Conc. Pt. (lbs)	L	00-00-04	00-00-04	575	342			n/a
11	B6(i3561)	Conc. Pt. (lbs)	L	03-10-10	03-10-10	549	284			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	7,242 ft-lbs	25,408 ft-lbs	28.5%	1	04-01-04
End Shear	2,161 lbs	11,571 lbs	18.7%	1	01-00-02
Total Load Defl.	L/628 (0.206")	0.538"	38.2%	4	05-04-00
Live Load Defl.	L/999 (0.097")	n/a	n/a	5	05-02-12
Max Defl.	0.206"	n/a	n/a	4	05-04-00
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 Beam	2-5/8" x 3-1/2"	3,577 lbs	91.1%	31.9%	Unspecified
B1 Hanger	2" x 3-1/2"	1,885 lbs	n/a	22.1%	HUC410

Notes





Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement Flush Beams\B2(i3794)

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

September 22, 2016 15:05:02

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-Ammdl

Description: Designs\Flush Beams\Basement\Flush Beams\B2(i379

Specifier:

Designer: AJ

Company:

Misc:

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 086.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.

Design based on Dry Service Condition.

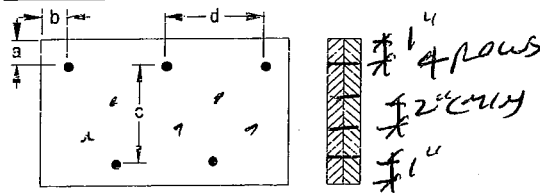
Importance Factor: Normal Part code: Part 9

Deflections less than 1/8" were ignored in the results.

CONFORMS TO DBC 2012**Disclosure**

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Connection Diagram

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

Calculated Side Load = 110.8 lb/ft

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

Connectors are: Nails
3 1/2" ARDOX SPIRAL



DWG NO. TAM 4477217
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B3(i3867)

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

September 22, 2016 15:05:02

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports:

CCMC 12472-R

File Name: S48-3 EL-A.mmdl

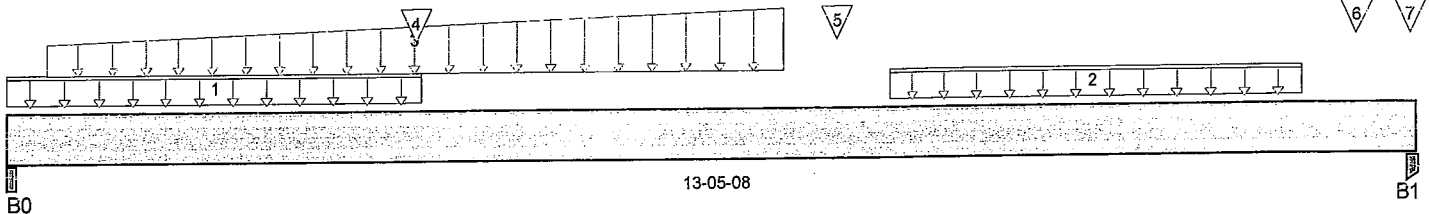
Description: Designs\Flush Beams\Basement\Flush Beams\B3(i3867)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 13-05-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-5/8"	1,372 / 0	756 / 0		
B1, 3-1/2"	1,842 / 0	1,093 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	-00-00-00	03-11-08	26	13			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	08-04-08	12-04-08	145	73			n/a
3	Smoothed Load	Trapezoidal (lb/ft)	L	00-04-08	07-04-08	132	65			n/a
4	B6(i3561)	Conc. Pt. (lbs)	L	03-10-10	03-10-10	552	285			n/a
5	J5(i3632)	Conc. Pt. (lbs)	L	07-10-08	07-10-08	139	69			n/a
6	J5(i3627)	Conc. Pt. (lbs)	L	12-10-08	12-10-08	137	68			n/a
7	PBO11(i935)	Conc. Pt. (lbs)	L	13-04-10	13-04-10	713	462			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	9,406 ft-lbs	25,408 ft-lbs	37%	1	05-10-08
End Shear	2,888 lbs	11,571 lbs	25%	1	01-00-02
Total Load Defl.	L/384 (0.409")	0.654"	62.5%	4	06-06-00
Live Load Defl.	L/596 (0.263")	0.436"	60.4%	5	06-06-00
Max Defl.	0.409"	n/a	n/a	4	06-06-00
Span / Depth	16.5	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Beam	2-5/8" x 3-1/2"	3,003 lbs	76.5%	26.8%	Unspecified
B1 Post	3-1/2" x 3-1/2"	4,129 lbs	51.9%	27.6%	Unspecified

Notes

DWONG, TAM 44771-17
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement Flush Beams\B3(i3867)

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

September 22, 2016 15:05:02

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-Ammdl

Description: Designs\Flush Beams\Basement\Flush Beams\B3(i3867)

Specifier:

Designer: AJ

Company:

Misc:

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.

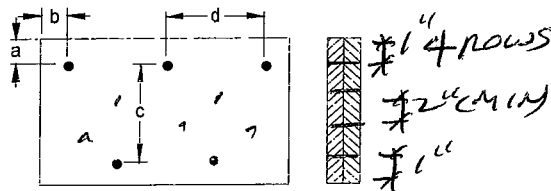
Resistance Factor phi has been applied to all presented results per CSA086.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA086.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

Deflections less than 1/8" were ignored in the results.

CONFORMS TO OBC 2012**Connection Diagram**

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

Calculated Side Load = 300.8 lb/ft

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

Connectors are: 16d Nail 3-1/2 in.

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

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DWG NO. TAM 44771-17
 STRUCTURAL
 COMPONENT ONLY



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B4(i3863)

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

September 22, 2016 15:05:03

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-A.mmdl

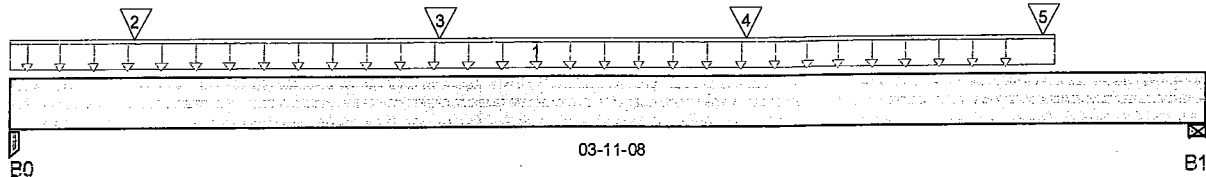
Description: Designs\Flush Beams\Basement\Flush Beams\B4(i3863)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 03-11-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 1-3/4"	638 / 0	328 / 0		
B1, 5-1/2"	617 / 0	319 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	03-05-08	240	120			n/a
2	J6(i3623)	Conc. Pt. (lbs)	L	00-05-00	00-05-00	106	53			n/a
3	J6(i3623)	Conc. Pt. (lbs)	L	01-05-00	01-05-00	106	53			n/a
4	J6(i3623)	Conc. Pt. (lbs)	L	02-05-00	02-05-00	106	53			n/a
5	J6(i3623)	Conc. Pt. (lbs)	L	03-05-00	03-05-00	106	53			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,113 ft-lbs	12,704 ft-lbs	8.8%	1	01-09-08
End Shear	1,114 lbs	5,785 lbs	19.3%	1	02-08-08
Total Load Defl.	L/999 (0.007")	n/a	n/a	4	01-09-08
Live Load Defl.	L/999 (0.005")	n/a	n/a	5	01-09-08
Max Defl.	0.007"	n/a	n/a	4	01-09-08
Span / Depth	4.4	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"	1,366 lbs	68.7%	36.6%	Unspecified
B1 Wall/Plate	5-1/2" x 1-3/4"	1,323 lbs	21.2%	11.3%	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 086.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

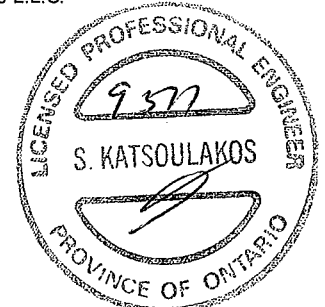
Deflections less than 1/8" were ignored in the results.

Disclosure

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CONFORMS TO OBC 2012





Boise Cascade

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement Flush Beams\B5\13864)

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

September 22, 2016 15:05:03



BC CALC® Design Report

Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-A.mmdl

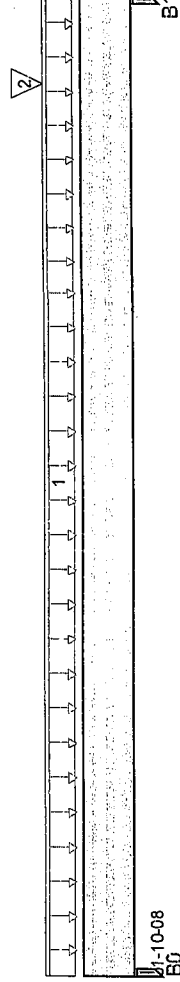
Description: Designs\Flush Beams\Basement\Flush Beams\B5\13864)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 01-10-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 1-3/4"	13 / 0	10 / 0		
B1, 3-1/2"	782 / 0	510 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1 FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	01-10-08	15	7			n/a
2 PBO11 (935)	Conc. Pt. (lbs)	L	01-08-08	01-08-08	767	498			n/a

Controls Summary

Pos. Moment	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
End Shear	11 ft-lbs	n/a	n/a	1	00-10-08
Span / Depth	3 lbs	n/a	n/a	1	00-11-04
	2	n/a	n/a		00-00-00

Disclosure

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Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Resistance Member	Material
B0 Post	1-3/4" x 1-3/4"	32 lbs	1.6%	0.9%	Unspecified
B1 Post	3-1/2" x 1-3/4"	1,810 lbs	45.5%	24.2%	Unspecified

Notes

Calculations assume Member is Fully Braced.

Resistance Factor phi has been applied to all presented results per CSA 086.

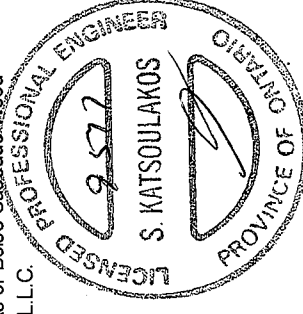
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Deflections less than 1/8" were ignored in the results.

CONFORMS TO CBC 2012



DWG NO. TAM 44773-17

STRUCTURAL

COMPONENT ONLY



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement Flush Beams\B6(i3561)



BC CALC® Design Report

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

September 22, 2016 15:05:03

Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports:

File Name: S48-3 EL-A.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B6(i3561)

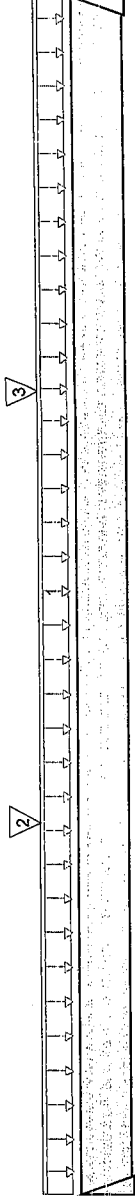
Specifier:

Designer: AJ

Company:

Misc:

CCMC 12472-R



B0

03-08-08

B1

Total Horizontal Product Length = 03-08-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	552/0	285/0		
B1	549/0	284/0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1 User Load	Unf. Lin. (lb/ft)	L	00-00-00	03-08-08	240	120			n/a
2 J7 (i3611)	Conc. Pt. (lbs)	L	01-01-12	01-01-12	104	52			n/a
3 J7 (i3610)	Conc. Pt. (lbs)	L	02-05-12	02-05-12	107	54			n/a

Controls Summary

Pos. Moment	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
End Shear	1,034 ft-lbs	12,704 ft-lbs	8.1%	1	01-10-04
Total Load Defl.	691 lbs	5,785 lbs	11.9%	1	00-11-08
Live Load Defl.	L/999 (0.007")	n/a	n/a	4	01-10-04
Max Defl.	L/999 (0.004")	n/a	n/a	5	01-10-04
Span / Depth	0.007"	n/a	n/a	4	01-10-04
	4.4	n/a	n/a		00-00-00

Disclosure

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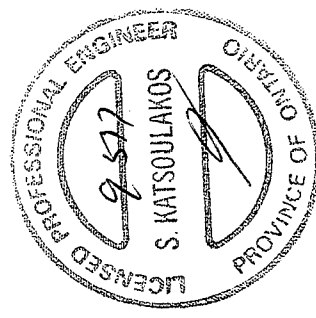
Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Resistance Member	Material
B0 Hanger	2" x 1-3/4"	1,185 lbs	n/a	27.8%	HUS1.81/9.5
B1 Hanger	2" x 1-3/4"	1,177 lbs	n/a	27.6%	HUS1.81/9.5

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 086.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.
Design based on Dry Service Condition.
Importance Factor: Normal Part code: Part 9
Deflections less than 1/8" were ignored in the results.

CONFORMS TO CBC 2012



DWG NO. YAM 4474-17
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B7L(i3872)

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

September 22, 2016 15:05:03



BC CALC® Design Report

Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-A.mmdl

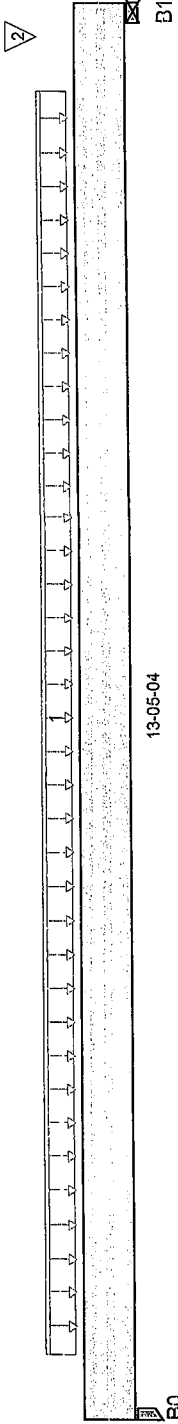
Description: Designs\Flush Beams\Basement\Flush Beams\B7L(i3872

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 13-05-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	719/0	302/0		
B1, 3-1/2"	767/0	321/0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1 Smoothed Load	Unf. Lin. (lb/ft)	L	00-07-04	12-07-04	118	44			n/a
2 J6(i94)	Conc. Pt. (lbs)	L	13-01-04	13-01-04	78	29			n/a

Controls Summary

Pos. Moment	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
End Shear	1,449 lbs	5,785 lbs	25%	1	07-01-04
Total Load Defl.	L/369 (0.422")	0.649"	65.1%	4	01-01-00
Live Load Defl.	L/523 (0.298")	0.433"	68.9%	5	06-07-04
Max Defl.	0.422"	n/a	n/a	4	06-07-04
Span / Depth	16.4	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 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	Resistance Member	Material
--	--------------	--------	-----------------------------	-------------------	----------

B0 Post	3-1/2" x 1-3/4"	1,456 lbs	36.6%	19.5%	Unspecified
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B1 Wall/Plate	3-1/2" x 1-3/4"	1,552 lbs	59.3%	20.8%	Unspecified
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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.

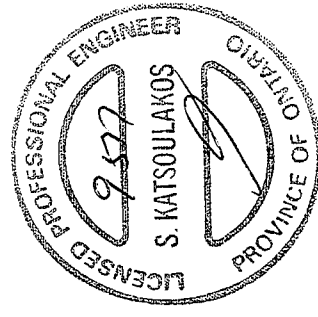
Resistance Factor phi has been applied to all presented results per CSA 086.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

Deflections less than 1/8" were ignored in the results.

CONFORMS TO OBC 2012DWG NO. YAW 44775-17
STRUCTURAL
COMPONENT ONLY



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement Flush Beams\B8L\i3876

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

September 22, 2016 15:05:03



BC CALC® Design Report

Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports:

CCMC 12472-R

File Name: S48-3 EL-A.mmdl

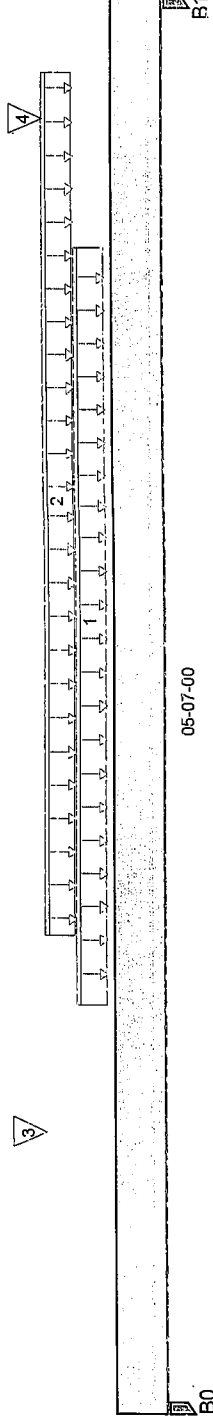
Description: Designs\Flush Beams\Basement\Flush Beams\B8L\i3876

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 05-07-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	442/0	215/0		
B1, 3-1/2"	722/0	352/0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1 Smoothed Load	Unf. Lin. (lb/ft)	L	01-07-04	04-07-04	71	27			n/a
2 User Load	Unf. Lin. (lb/ft)	L	01-10-08	06-03-08	240	120			n/a
3 J7 (i3878)	Conc. Pt. (lbs)	L	01-01-04	01-01-04	75	28			n/a
4 J7 (i3862)	Conc. Pt. (lbs)	L	05-01-04	05-01-04	56	21			n/a

Controls Summary

Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Moment	1,826 ft-lbs	12,704 ft-lbs	14.4%	1	03-01-04
End Shear	1,029 lbs	5,785 lbs	17.8%	1	04-06-00
Total Load Defl.	L/999 (0.024")	n/a	n/a	4	02-10-04
Live Load Defl.	L/999 (0.016")	n/a	n/a	5	02-10-04
Max Defl.	0.024"	n/a	n/a	4	02-10-04
Span / Depth	6.5	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 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.

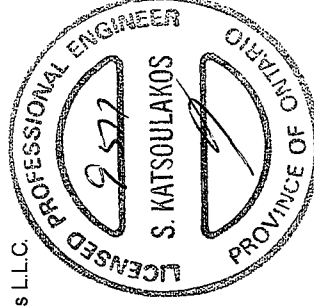
BC CALCO®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BC®, BOISE GLULAM™, SIMPLE FRAMING SYSTEM®, VERSA-LAM®, VERSA-RIM PLUS®, VERSA-RIM®, VERSA-STRAND®, VERSA-STUD® are trademarks of Boise Cascade Wood Products L.L.C.

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Resistance Member	Material
B0 Post	3-1/2" x 1-3/4"	931 lbs	23.4%	12.5%	Unspecified
B1 Post	3-1/2" x 1-3/4"	1,523 lbs	38.3%	20.4%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume Member is Fully Braced.
 Resistance Factor phi has been applied to all presented results per CSA 086.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9
 Deflections less than 1/8", were ignored in the results.

CONFORMS TO OBC 2012



DWG NO. TAM 44776-17
 STRUCTURAL
 COMPONENT ONLY



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B9L\I99)

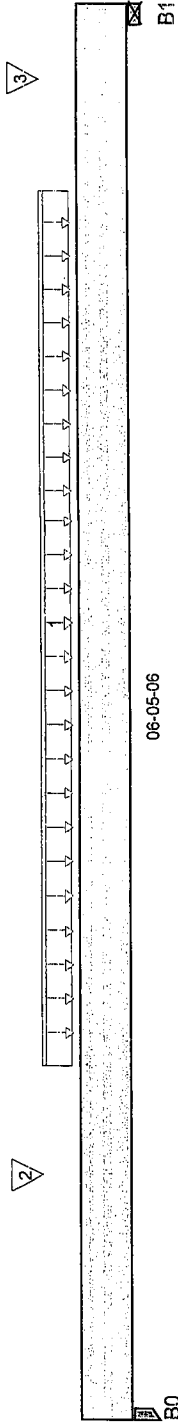


BC CALC® Design Report

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

September 22, 2016 15:05:04

Build 4340
Job Name: File Name: S48-3 EL-A.mmdl
Address: Description: Designs\Flush Beams\Basement\Flush Beams\B9L\I99)
City, Province, Postal Code: INNISFILL, Designer: AJ
Customer: Company:
Code reports: CCMC 12472-R Misc:



Total Horizontal Product Length = 06-05-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	422/0	173/0		
B1, 2-3/8"	478/0	193/0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1 Smoothed Load	Unf. Lin. (lb/ft)	L	01-07-04	05-07-04	156	58			n/a
2 J5(1108)	Conc. Pt (lbs)	L	01-01-04	01-01-04	164	61			n/a
3 J5(1109)	Conc. Pt (lbs)	L	06-01-04	06-01-04	112	42			n/a

Controls Summary

Pos.	Moment	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
1	842 lbs	12,704 ft-lbs	11.5%	1	03-01-04	
2	Total Load Defl.	L/999 (0.027")	5,785 lbs	14.6%	1	01-01-00
3	Live Load Defl.	L/999 (0.019")	n/a	n/a	4	03-03-08
4	Max Defl.	0.027"	n/a	n/a	5	03-03-08
5	Span / Depth	7.7	n/a	n/a	4	03-03-08
6						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 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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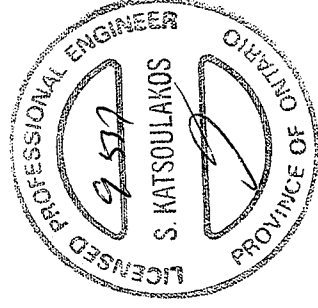
Bearing Supports

	Dim. (L x W)	Demand	Resistance Support	Demand / Resistance Member	Material
B0 Post	3-1/2" x 1-3/4"	849 lbs	21.3%	11.4%	Unspecified
B1 Wall/Plate	2-3/8" x 1-3/4"	959 lbs	54%	18.9%	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 086.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Deflections less than 1/8" were ignored in the results.

CONFORMS TO NBC 2012



DWG NO. TAM 44777-17
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B10(i2388)

BC CALC® Design Report

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

September 22, 2016 15:05:04



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-A.mmdl

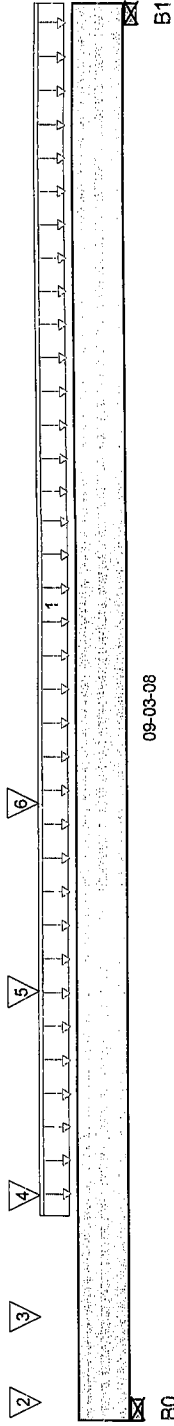
Description: Designs\Flush Beams\1st Floor\Flush Beams\B10(i2388)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 09-03-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	1,837 / 0	964 / 0		
B1, 4"	1,250 / 0	669 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1 Smoothed Load	Unf. Lin. (lb/ft)	L	01-04-00	09-03-08	242	121			n/a
2	Conc. Pt. (lbs)	L	00-01-06	00-01-06	389	194			n/a
3 J4(i2436)	Conc. Pt. (lbs)	L	00-08-00	00-08-00	226	113			n/a
4 J5(i2419)	Conc. Pt. (lbs)	L	01-05-08	01-05-08	218	109			n/a
5 J5(i2418)	Conc. Pt. (lbs)	L	02-09-08	02-09-08	211	105			n/a
6 J5(i2568)	Conc. Pt. (lbs)	L	04-00-04	04-00-04	102	51			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	6,150 ft-lbs	25,408 ft-lbs	24.2%	1	04-08-00
End Shear	2,765 lbs	11,571 lbs	23.9%	1	01-03-00
Total Load Defl.	L/999 (0.116")	n/a	n/a	4	04-08-00
Live Load Defl.	L/999 (0.076")	n/a	n/a	5	04-08-00
Max Defl.	0.116"	n/a	n/a	4	04-08-00
Span / Depth	10.9	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	3,960 lbs	48.2%	16.9%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	2,711 lbs	45.3%	15.9%	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.

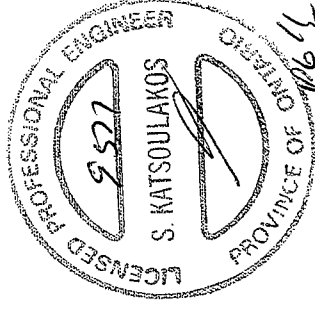
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Deflections less than 1/8" were ignored in the results.

CONFORMS TO CBC 2012



DWG NO. TAM44778-17
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B10(i2388)

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

September 22, 2016 15:05:04

BC CALCO® Design Report

Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-Ammdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B10(i238

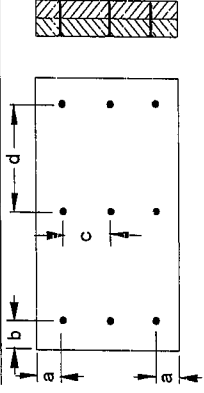
Specifier:

Designer: AJ

Company:

Msc:

Connection Diagram



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

Calculated Side Load = 553.7 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: 16d

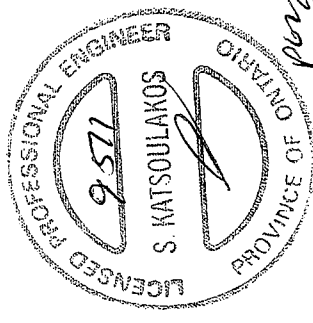
Nails

3 1/2" ARDOX SPIRAL

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ALLJOIST®, BC RIM BOARD™, BOJO®,
BOISE GLULAM™, SIMPLE FRAMING
SYSTEM®, VERSA-LAM®, VERSA-RIM
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Disclosure

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per
DWG NO. TAM 4477B.17
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B11(i3753)

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

September 22, 2016 15:05:04

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-Ammdl

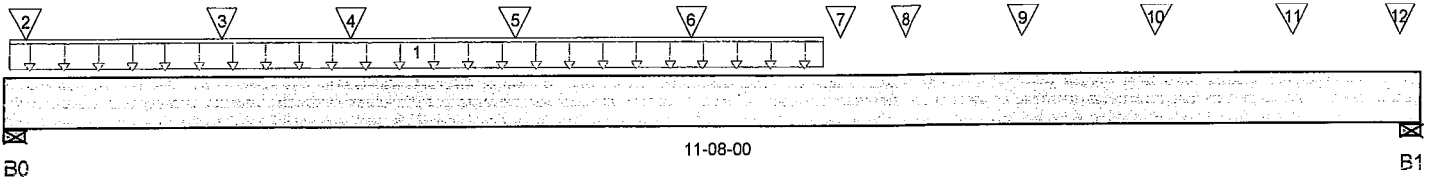
Description: Designs\Flush Beams\1st Floor\Flush Beams\B11(i3753)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 11-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	2,597 / 0	1,378 / 0		
B1, 4"	2,452 / 0	1,293 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-08	06-08-08	291	146			n/a
2	J5(i2407)	Conc. Pt. (lbs)	L	00-02-00	00-02-00	186	93			n/a
3	-	Conc. Pt. (lbs)	L	01-09-05	01-09-05	379	208			n/a
4	J6(i2417)	Conc. Pt. (lbs)	L	02-10-00	02-10-00	109	55			n/a
5	J6(i2416)	Conc. Pt. (lbs)	L	04-02-00	04-02-00	134	67			n/a
6	B17(i3756)	Conc. Pt. (lbs)	L	05-07-06	05-07-06	193	110			n/a
7	J6(i2425)	Conc. Pt. (lbs)	L	06-10-00	06-10-00	136	68			n/a
8	J1(i2435)	Conc. Pt. (lbs)	L	07-04-08	07-04-08	355	178			n/a
9	-	Conc. Pt. (lbs)	L	08-04-09	08-04-09	452	226			n/a
10	-	Conc. Pt. (lbs)	L	09-05-13	09-05-13	437	219			n/a
11	-	Conc. Pt. (lbs)	L	10-07-03	10-07-03	437	219			n/a
12	J1(i2571)	Conc. Pt. (lbs)	L	11-05-12	11-05-12	291	146			n/a

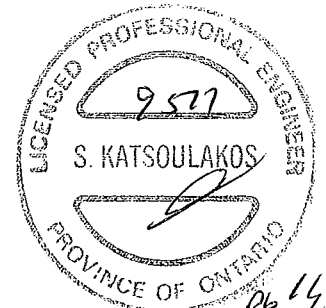
Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	13,930 ft-lbs	25,408 ft-lbs	54.8%	1	06-00-08
End Shear	4,775 lbs	11,571 lbs	41.3%	1	01-01-08
Total Load Defl.	L/305 (0.438")	0.556"	78.8%	4	05-09-15
Live Load Defl.	L/467 (0.286")	0.371"	77.2%	5	05-09-15
Max Defl.	0.438"	n/a	n/a	4	05-09-15
Span / Depth	14.1	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4" x 3-1/2"	5,618 lbs	93.9%	32.9%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	5,295 lbs	88.5%	31%	Unspecified

Notes



DWG NO. TAM 44779-17
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-Ammdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B11(i3753)

Specifier:

Designer: AJ

Company:

Misc:

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 CSA086.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA086.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

Deflections less than 1/8" were ignored in the results.

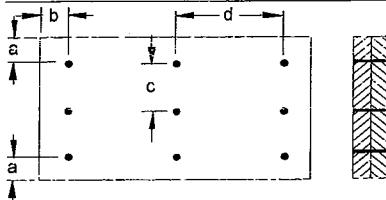
CONFORMS TO OBC 2012

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

Calculated Side Load = 655.3 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: 16d Nails 3-1/2 in.

3 1/2" ARDOX SPIRAL



DWG NO. TAM44779-17
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-Ammdl

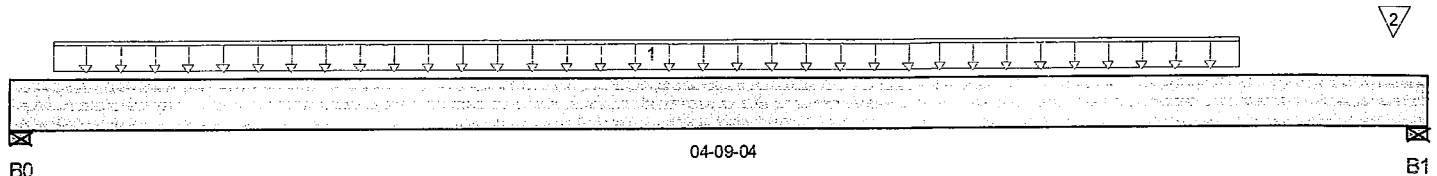
Description: Designs\Flush Beams\1st Floor\Flush Beams\B12(i2301)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 04-09-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	959 / 0	503 / 0		
B1, 5-1/4"	1,177 / 0	613 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1 Smoothed Load	Unf. Lin. (lb/ft)	L	00-01-12	04-01-12	430	216			n/a
2 -	Conc. Pt. (lbs)	L	04-07-14	04-07-14	414	207			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,973 ft-lbs	25,408 ft-lbs	7.8%	1	02-07-12
End Shear	1,556 lbs	11,571 lbs	13.4%	1	03-06-08
Total Load Defl.	L/999 (0.009")	n/a	n/a	4	02-03-14
Live Load Defl.	L/999 (0.006")	n/a	n/a	5	02-03-14
Max Defl.	0.009"	n/a	n/a	4	02-03-14
Span / Depth	5.2	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4" x 3-1/2"	2,067 lbs	34.6%	12.1%	Unspecified
B1 Wall/Plate	5-1/4" x 3-1/2"	2,532 lbs	32.2%	11.3%	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 086.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.
 Design based on Dry Service Condition.
 Importance Factor: Normal Part code: Part 9
 Deflections less than 1/8" were ignored in the results.

CONFORMS TO OBC 2012



DWG NO. TAM 4478011
 STRUCTURAL
 COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B12(12301)

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

September 22, 2016 15:05:04



BC CALC® Design Report

Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL.

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-Ammdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B12(12301)

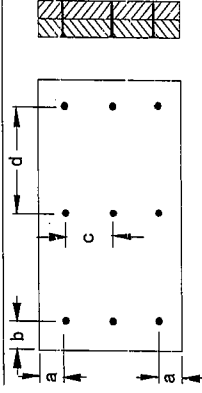
Specifier:

Designer: AJ

Company:

Msc:

Connection Diagram



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

Calculated Side Load = 642.5 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: 16d

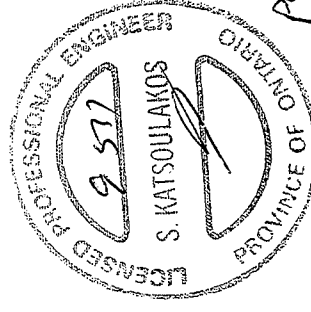
Nails 3-1/2 in.

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 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 4478917

STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...IB13(i3813)

BC CALC® Design Report

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

September 22, 2016 15:05:05



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports:

File Name: S48-3 EL-Amm.d

Description: Designs\Flush Beams\1st Floor\Flush Beams\IB13(i3813)

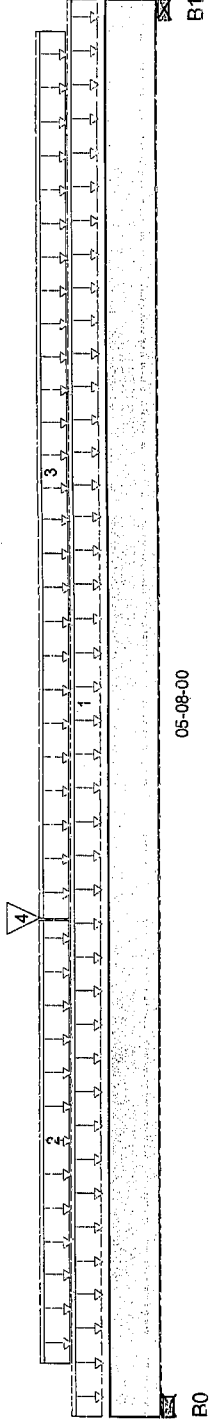
Specifier:

Designer: AJ

Company:

Misc:

CCMC 12472-R



Total Horizontal Product Length = 05-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	1,702 / 0	967 / 0		
B1, 4"	1,296 / 0	720 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1 Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	05-08-00	294	148			n/a
2 FC4 Floor Material	Unf. Lin. (lb/ft)	L	00-02-08	01-11-12	19				n/a
3 FC4 Floor Material	Unf. Lin. (lb/ft)	L	01-11-12	05-06-08	14	7			n/a
4 B18(3781)	Conc. Pt. (lbs)	L	01-11-12	01-11-12	1,248	757			n/a

Controls Summary

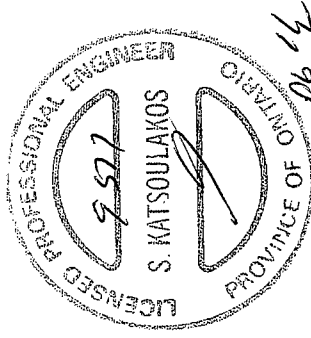
	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	4,819 ft-lbs	25,408 ft-lbs	19%	1	01-11-12
End Shear	3,002 lbs	11,571 lbs	25.9%	1	01-01-08
Total Load Defl.	L/999 (0.029")	n/a	n/a	4	02-08-08
Live Load Defl.	L/999 (0.018")	n/a	n/a	5	02-08-08
Max Defl.	0.029"	n/a	n/a	4	02-08-08
Span / Depth	6.5	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance		Material
			Support	Member	
B0 Wall/Plate	4" x 3-1/2"	3,762 lbs	62.9%	22%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	2,844 lbs	47.5%	16.6%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume Member is Fully Braced.
Resistance Factor phi has been applied to all presented results per CSA086.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA086.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9
Deflections less than 1/8" were ignored in the results.

CONFORMS TO OBC 2012



DWG NO. TAN 44781-17

STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...IB13(i3813)

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

September 22, 2016 15:05:05

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-Ammdl

Description: Designs\Flush Beams\1st Floor\Flush Beams IB13(i3813)

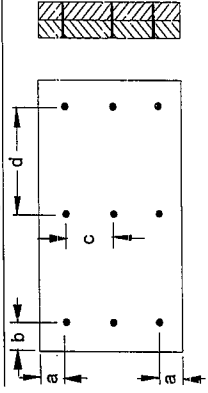
Specifier:

Designer: AJ

Company:

Misc:

Connection Diagram



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

Calculated Side Load = 647.6 lb/ft

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

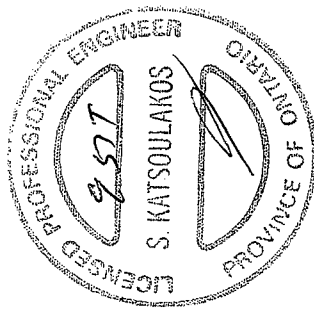
Connectors are: 16d Nails 3-1/2 in.

3 1/2" ARDOX SPIRAL

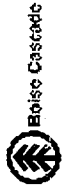
Disclosure

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per
DWG NO. TAM 44707-17
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B14(i2177)



BC CALC® Design Report

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

September 22, 2016 15:05:05

Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-A.mmdl

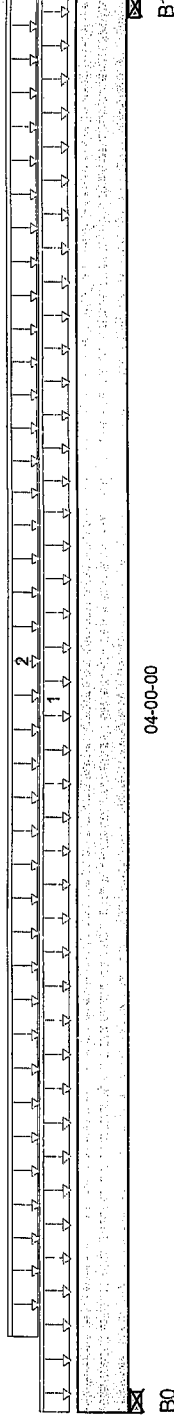
Description: Designs\Flush Beams\1st Floor\Flush Beams\B14(i2177;

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 04-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	478/0	258/0		
B1, 4"	599/0	319/0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1 FC4 Floor Material	Unf Lin. (lb/ft)	L	-00-00-00	04-00-00	19	9			n/a
2 Smoothed Load	Unf Lin. (lb/ft)	L	00-02-08	04-00-00	264	132			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	944 ft-lbs	25,408 ft-lbs	3.7%	1	02-02-08
End Shear	757 lbs	11,571 lbs	6.5%	1	01-01-08
Total Load Defl.	L/999 (0.003")	n/a	n/a	4	02-00-01
Live Load Defl.	L/999 (0.002")	n/a	n/a	5	02-00-01
Max Defl.	0.003"	n/a	n/a	4	02-00-01
Span / Depth	4.4	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"	1,040 lbs	17.4%	6.1%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	1,297 lbs	21.7%	7.6%	Unspecified

Notes

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

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

Calculations assume Member is Fully Braced.

Resistance Factor phi has been applied to all presented results per CSA 086.

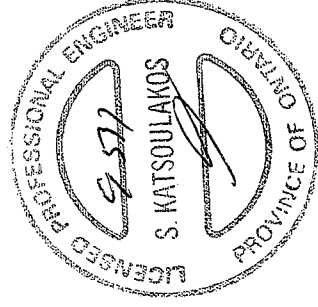
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.

Design based on Dry Service Condition.

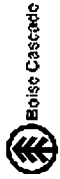
Importance Factor : Normal Part code : Part 9

Deflections less than 1/8" were ignored in the results.

CONFORMS TO CBC 2012



DWG NO. TAN447B217
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor...IB14(12177)

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

September 22, 2016 15:05:05

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-Amm.d

Description: Designs\Flush Beams\1st Floor\Flush Beams\IB14(12177

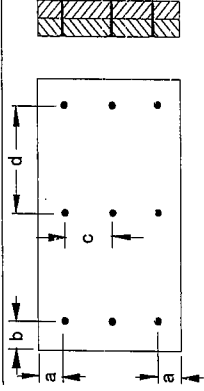
Specifier:

Designer: AJ

Company:

Msc:

Connection Diagram



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

Calculated Side Load = 551.1 lb/ft

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

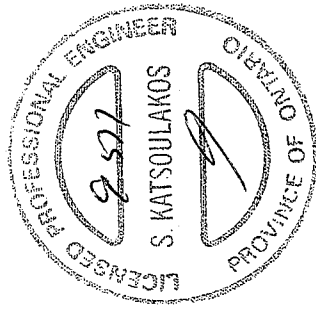
Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL

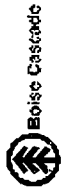
Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of BOISE 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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page
DWG NO. TAM 4478241
STRUCTURAL
COMPONENT ONLY



Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B15(i2253)

Dry | 1 span | No cantilevers | 0/12 slope (deg) September 22, 2016 15:05:05



BC CALCC® Design Report

Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-A.mmdl

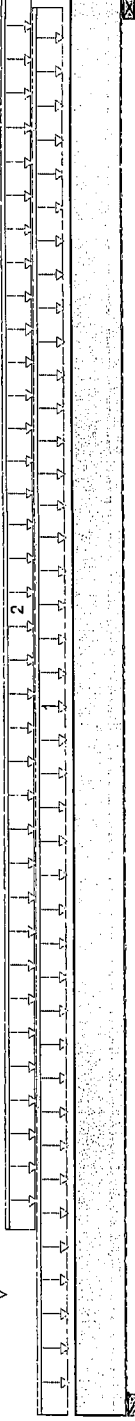
Description: Designs\Flush Beams\1st Floor\Flush Beams\B15(i2253);

Specifier:

Designer: AJ

Company:

Msc:



14-09-12

B0

B1

Total Horizontal Product Length = 14-09-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	1,919 / 0	1,067 / 0		
B1, 4"	2,187 / 0	1,200 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1 FC4 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	14-08-08	30	15			n/a
2 Smoothed Load	Unf. Lin. (lb/ft)	L	01-10-14	14-09-12	260	130			n/a
3 J3(2447)	Conc. Pt. (lbs)	L	01-02-14	01-02-14	311	156			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	15,580 ft-lbs	39,636 ft-lbs	39.3%	1	07-10-14
End Shear	4,119 lbs	17,356 lbs	23.7%	1	01-01-14
Total Load Defl.	L/318 (0.537")	0.712"	75.4%	4	07-04-14
Live Load Defl.	L/494 (0.346")	0.475"	72.9%	5	07-04-14
Max Defl.	0.537"	n/a	n/a	4	07-04-14
Span / Depth	18	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 5-1/4"	4,213 lbs	42.9%	15%	Unspecified
B1 Wall/Plate	4" x 5-1/4"	4,781 lbs	53.3%	18.7%	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.

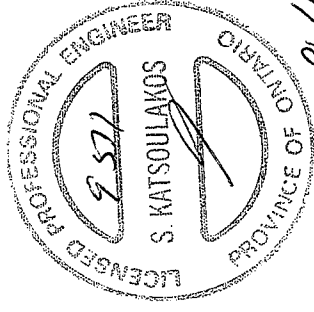
BC CALCC® analysis is based on Canadian Limit States Design, as per NBCC and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

Deflections less than 1/8" were ignored in the results.

CONFORMS TO OBC 2012



DRW NO. TAM 4478317
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B15(i2253)

BC CALCO® Design Report

Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-A.mxd

Description: Designs\Flush Beams\1st Floor\Flush Beams\B15(i2253)

Specifier:

Designer: AJ

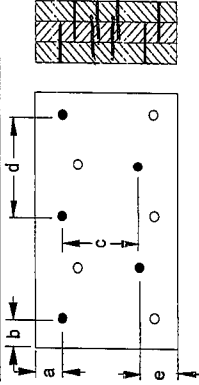
Company:

Msc:

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

September 22, 2016 15:05:05

Connection Diagram



4 rows

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

Calculated Side Load = 545.3 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.

Nailing schedule applies to both sides of the member.

Connectors are: 16d

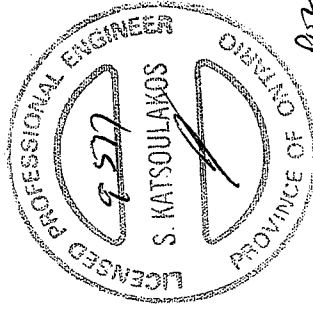
Nails:

3 1/2" ARDOX SPIRAL

Disclosure

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prz
DWG NO. TAM 447B317
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B16(i3780)



BC CALC® Design Report

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

September 22, 2016 15:05:05

Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-A.mmdl

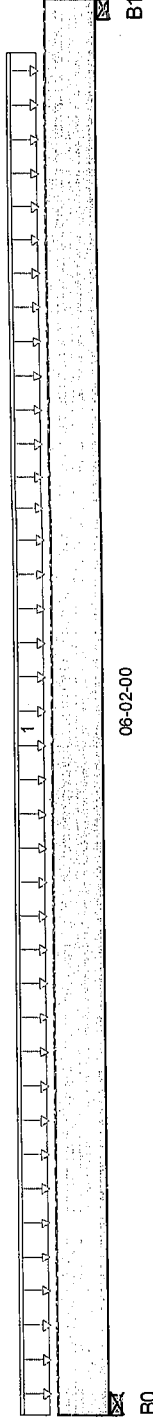
Description: Designs\Flush Beams\1st Floor\Flush Beams\B16(i3780)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 06-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	39 / 0	50 / 0		
B1, 2-3/4"	33 / 0	45 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1 FC4 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	05-11-04	12	6			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	148 ft-lbs	25,408 ft-lbs	0.6%	1	03-02-06
End Shear	73 lbs	11,571 lbs	0.6%	1	01-03-00
Total Load Defl.	L/999 (0.001")	n/a	n/a	4	03-02-06
Live Load Defl.	L/999 (0.001")	n/a	n/a	5	03-02-06
Max Defl.	0.001"	n/a	n/a	4	03-02-06
Span / Depth	7.1	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Resistance Support	Demand/ Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	121 lbs	1.5%	0.5%	Unspecified
B1 Wall/Plate	2-3/4" x 3-1/2"	106 lbs	2.6%	0.9%	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 086.

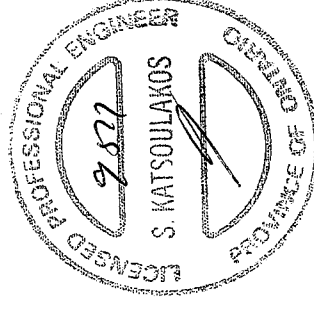
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code : Part 9

Deflections less than 1/8" were ignored in the results.

CONFORMS TO OBC 2012



pc ll
DWG NO. TAM 4478417
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-Ammdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B16(i3780)

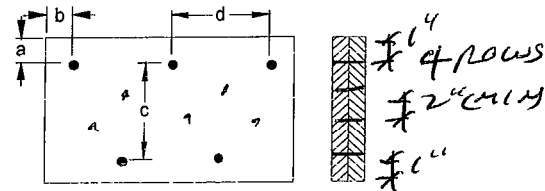
Specifier:

Designer: AJ

Company:

Misc:

Connection Diagram



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

Member has no side loads.

Connectors are: 16d

Nails
3/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 4478417
STRUCTURAL
COMPONENT ONLY

BC CALC® Design Report



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

September 22, 2016 15:05:06

Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-A.mmdl

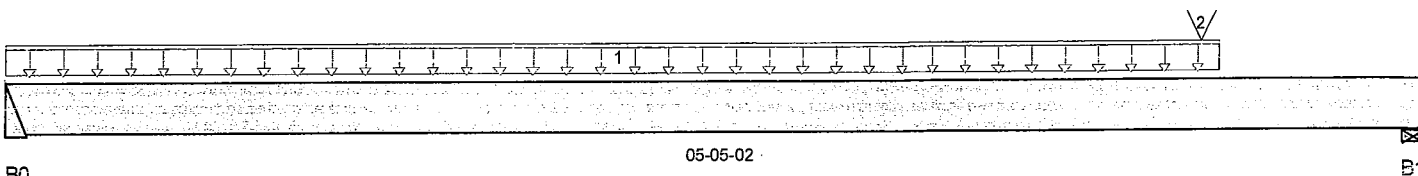
Description: Designs\Flush Beams\1st Floor\Flush Beams\B17(i3756)

Specifier:

Designer: AJ

Company:

Misc:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	185 / 0	106 / 0		
B1, 5-1/2"	601 / 0	322 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	FC4 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	04-07-14	53	27			n/a
2	B20(i3755)	Conc. Pt. (lbs)	L	04-07-00	04-07-00	538	278			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	662 ft-lbs	12,704 ft-lbs	5.2%	1	03-05-01
End Shear	705 lbs	5,785 lbs	12.2%	1	04-02-02
Total Load Defl.	L/999 (0.008")	n/a	n/a	4	02-08-10
Live Load Defl.	L/999 (0.005")	n/a	n/a	5	02-08-10
Max Defl.	0.008"	n/a	n/a	4	02-08-10
Span / Depth	6.2	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 1-3/4"	410 lbs	n/a	9.6%	HUS1.81/9.5
B1 Wall/Plate	5-1/2" x 1-3/4"	1,305 lbs	31.7%	11.1%	Unspecified

Notes

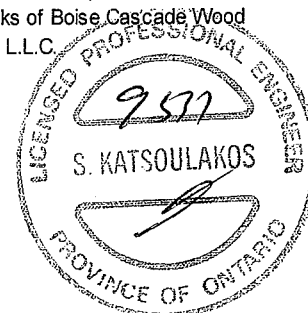
Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume Member is Fully Braced.
 Hanger Manufacturer: Unassigned
 Resistance Factor phi has been applied to all presented results per CSA086.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA086.
 Design based on Dry Service Condition.
 Importance Factor: Normal Part code: Part 9
 Deflections less than 1/8" were ignored in the results.

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 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\...\B18(i3781)

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

September 22, 2016 15:05:06

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code: INNISFILL,

Customer:

Code reports: CCMC 12472-R

File Name: S48-3 EL-A.mmdl

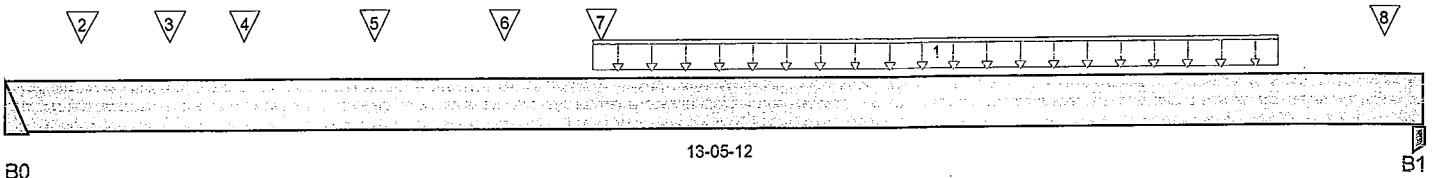
Description: Designs\Flush Beams\1st Floor\Flush Beams\B18(i3781;

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 13-05-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	1,258 / 0	763 / 0		
B1, 3-1/2"	1,471 / 0	874 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Smoothed Load	Unf. Lin. (lb/ft)	L	05-06-08	12-01-08	148	74			n/a
2	-	Conc. Pt. (lbs)	L	00-08-10	00-08-10	237	118			n/a
3	J7(i2470)	Conc. Pt. (lbs)	L	01-06-08	01-06-08	80	40			n/a
4	-	Conc. Pt. (lbs)	L	02-02-15	02-02-15	263	132			n/a
5	-	Conc. Pt. (lbs)	L	03-05-13	03-05-13	269	135			n/a
6	-	Conc. Pt. (lbs)	L	04-08-09	04-08-09	270	135			n/a
7	B22(i3784)	Conc. Pt. (lbs)	L	05-07-06	05-07-06	42	140			n/a
8	-	Conc. Pt. (lbs)	L	13-01-04	13-01-04	578	311			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	8,748 ft-lbs	25,408 ft-lbs	34.4%	1	06-01-08
End Shear	2,677 lbs	11,571 lbs	23.1%	1	00-11-08
Total Load Defl.	L/411 (0.384")	0.657"	58.4%	4	06-07-08
Live Load Defl.	L/673 (0.234")	0.438"	53.5%	5	06-07-08
Max Defl.	0.384"	n/a	n/a	4	06-07-08
Span / Depth	16.6	n/a	n/a		00-00-00

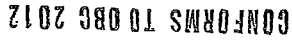
Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 3-1/2"	2,840 lbs	n/a	33.3%	HGUS4 10
B1 Post	3-1/2" x 3-1/2"	3,298 lbs	41.4%	22.1%	Unspecified

Notes



pg 1/2



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

Boise Cascade



CONFORMS TO OBC 2012

Deflections less than 1/8" were ignored in the results.

Importance Factor: Normal Part code : Part 9

Design based on Dry Service Condition.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA086.

Resistance Factor phi has been applied to all presented results per CSA 086.

Hanger Manufacturer: Unassigned

Calculations assume Member is Fully Braced.

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

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

Notes

Bearing Supports	Dim. (L x W)	Demand	Support	Member	Material
B0 Hanger	2" x 1-3/4"	1,209 lbs	n/a	28.3%	HUS1.81/9.5
B1 Hanger	2" x 1-3/4"	1,152 lbs	n/a	27%	HUS1.81/9.5

Bearing Supports

Pos. Moment	1,003 ft-lbs	12,704 ft-lbs	7.9%	1
End Shear	687 lbs	5,785 lbs	11.9%	1
Total Load Defl.	L/999 (0.006")	n/a	n/a	4
Live Load Defl.	L/999 (0.004")	n/a	n/a	5
Max Defl.	0.006"	n/a	n/a	4
Span / Depth	4.2	n/a	n/a	00-00-00

Controls Summary

Location	Load	Demand /	Factored	Factored
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00
2	J6(2417)	Conc. Ft. (lbs)	L	00-10-06
3	J6(2416)	Conc. Ft. (lbs)	L	02-02-06
				03-06-14
				00-10-06
				02-02-06
				134
				240
				109
				134

[illegible]

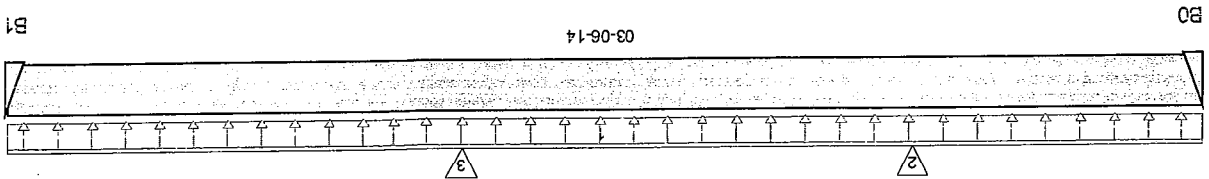
Tag Description	Load Type	Ref. Start	End	Live	Dead	Snow Wind	Trib.
				1.00	0.65	1.00 1.15	

B0	564/0	291/0
B1	537/0	277/0

Reaction Summary (Down / Uplift) (lbs)
Bearing
Live

Bearing	Live	Dead	Snow	Wind
---------	------	------	------	------

Total Horizontal Product Length = 03-06-14



Build 4340	File Name: S48-3-EL-Armmid	Description: Designs\Flush Beams\1st Floor\Flush Beams\B20(13755).
Job Name:	Specifer:	
Address:	Designer: AJ	
City, Province, Postal Code:INNISFILL	Company:	
Customer:	Misc:	
Code reports:	CCMC 12472-R	

BC CALC® Design Report



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

September 22, 2016 15:05:06

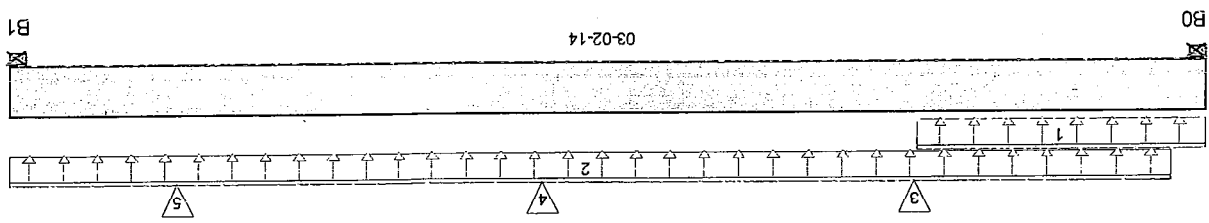
Boise Cascade
Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor/Flush Beams\B20(13755)



Build 4340
Job Name:
Address:
City, Province, Postal Code: INNISFILL,
Customer:
Code reports: CCMC 12472-R
File Name: S48-3 EL-A.mmdl
Description: Designs\Flush Beams\1st Floor\Flush Beams\B21(13811)
Specifiter:
Designer: AJ
Company:
Misc:

Dry | 1 span | No cantilevers | 0/12 slope (deg)
September 22, 2016 15:05:06

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor...B21(13811)



Total Horizontal Product Length = 03-02-14

Reaction Summary (Down / Uplift) (lbs)

Beam	Live	Dead	Snow	Wind
B0, 3-7/8"	115 / 0	74 / 0		
B1, 4"	142 / 0	87 / 0		

Load Summary

Tag Description	Load Type	Ref. Start	End	Live	Dead	Snow	Wind	Trib.
1 FC4 Floor Material	Unf. Lin. (lb/ft)	L 00-00-00	00-09-06	18	9			n/a
2 FC4 Floor Material	Unf. Lin. (lb/ft)	L 00-01-02	03-02-14	8	4			n/a
3 J7(2471)	Conc. Pt. (lbs)	L 00-09-06	00-09-06	61	31			n/a
4 J7(2470)	Conc. Pt. (lbs)	L 01-09-06	01-09-06	80	40			n/a
5 J7(2469)	Conc. Pt. (lbs)	L 02-09-06	02-09-06	77	39			n/a

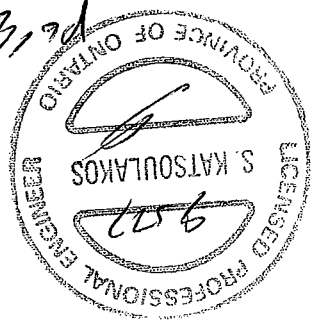
Controls Summary

	Factored Demand	Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	189 ft-lbs	25,408 ft-lbs	0.7%	1	01-09-06
End Shear	167 lbs	11,571 lbs	1.4%	1	01-01-06
Total Load Defl.	L/999 (0")	n/a	n/a	4	01-07-06
Live Load Defl.	L/999 (0")	n/a	n/a	5	01-07-06
Max Defl.	0"	n/a	n/a	4	01-07-06
Span / Depth	3.4	n/a	n/a		00-00-00

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 and CSA O86.
Importance Factor: Normal Part code: Part 9
Deflections less than 1/8" were ignored in the results.

CONFORMS TO OBC 2012



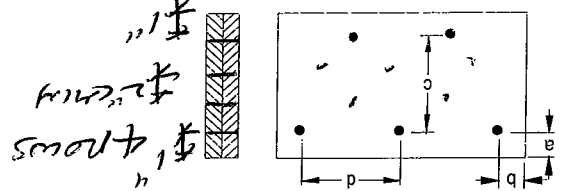
DWNG. TAN 4478917
STRUCTURAL
COMPONENT ONLY



Build 4340
Job Name:
Address:
City, Province, Postal Code: INNISFILL,
Customer:
Code reports: CCMC 12472-R
Misc:

File Name: S48-3 EL-Ammid
Description: Designs Floor/Floor Beams B21 (38-
Designer: AJ
Company:
Spec:

Connection Diagram



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

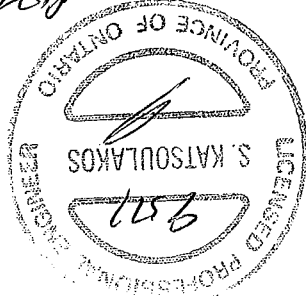
Calculated Side Load = 148.4 lb/ft

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

3/4" ARDOX SPIRAL

Nails

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 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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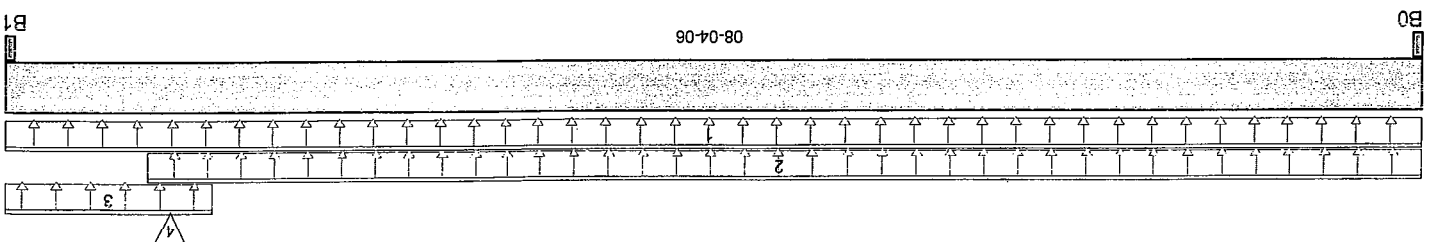
2nd
DWN'D, TAM 4/4/98
STRUCTURAL
COMPONENT ONLY


Boise Cascade

Total Horizontal Product Length = 04-01-08



Build 4340
Job Name:
Address:
City, Province, Postal Code: INNISFILL,
Customer:
Code reports: CCMC 12472-R
File Name: S48-3 EL-Ammid
Description: Designs\Flush Beams\1st Floor\Flush Beams\B23(13885)
Specifier:
Designer: AJ
Company:
Misc:



Total Horizontal Product Length = 08-04-06

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-5/8"	201 / 0	185 / 0	114 / 0	
B1, 4-1/8"	801 / 0	978 / 0	1,201 / 0	

Load Summary

Tag Description	Load Type	Ref. Start	End	Live	Dead	Snow	Wind	Trib.
1 FC4 Floor Material	Unit Lin. (lb/ft)	L 00-00-00	08-04-06	10	5			n/a
2 FC4 Floor Material	Unit Lin. (lb/ft)	L 00-00-00	07-06-08	23	11			n/a
3 User Load	Unit Lin. (lb/ft)	L 07-01-12	08-04-06	100				n/a
4 -	Conc. Pt. (lbs)	L 07-04-12	07-04-12	737	829			n/a

Controls Summary

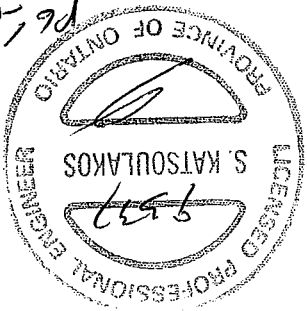
Pos. Moment	2,284 ft-lbs	Demand	Resistance	Demand / Resistance	Case	Location
End Shear	2,543 lbs	11,571 lbs	22%	13	07-02-12	
Total Load Defl.	L/999 (0.032")	n/a	n/a	35	04-05-09	
Live Load Defl.	L/999 (0.019")	n/a	n/a	51	04-06-11	
Max Defl.	0.032"	n/a	n/a	35	04-05-09	
Span / Depth	10	n/a	n/a		00-00-00	

Bearing Supports

Bearing Supports		Dim. (L x W)	Demand	Resistance	Demand/Resistance	Member	Material
B0	Beam	2-5/8" x 3-1/2"	590 lbs	15%	5.3%	Unspecified	Unspecified
B1	Beam	4-1/8" x 3-1/2"	3,425 lbs	55.5%	19.4%	Unspecified	Unspecified

Notes

7, 6, 11



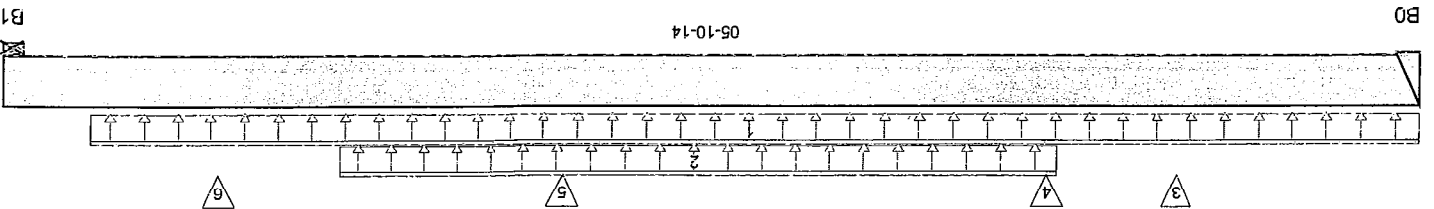

Boise Cascade



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

September 22, 2016 15:05:07

Build 4340
Job Name:
Address:
City, Province, Postal Code: INNISFIL,
Customer:
Code reports: CCMC 12472-R
File Name: S48-3 EL-Alumini
Description: Designs\Flush Beams\1st Floor\1st Beams\B26(13904).
Specifer:
Designer: AJ
Company:
Misc:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	547 / 0	658 / 0	619 / 0	
B1, 4-3/8"	551 / 0	638 / 0	557 / 0	

Load Summary

Tag Description	Load Type	Ref. Start	End	Live	Dead	Snow	Wind	Trib.
1 User Load	Unit Lin. (lb/ft)	L	00-00-00	05-06-08	44	140	156	n/a
2 Smoothed Load	Unit Lin. (lb/ft)	L	01-06-00	04-06-00	154	77		n/a
3 J5(12587)	Conc. Pt. (lbs)	L	01-00-00	01-00-00	165	83		n/a
4 User Load	Conc. Pt. (lbs)	L	01-06-08	01-06-08	44	40	156	n/a
5 User Load	Conc. Pt. (lbs)	L	03-06-08	03-06-08	44	40	156	n/a
6 J5(12583)	Conc. Pt. (lbs)	L	05-00-00	05-00-00	139	69		n/a

Controls Summary

Pos. Moment	Factorored Demand	Factorored Resistance	Demand / Resistance	Load Case	Location
2,879 ft-lbs	25,408 ft-lbs	11.3%	13	03-00-00	
End Shear	1,635 lbs	11.571 lbs	14.1%	1	00-11-08
Total Load Defl.	L/999 (0.024")	n/a	n/a	45	02-10-08
Live Load Defl.	L/999 (0.014")	n/a	n/a	61	02-10-08
Max Defl.	0.024"	n/a	n/a	45	02-10-08
Span / Depth	6.9	n/a	n/a		00-00-00

Bearing Supports

Dim. (L x W)	Demand	Resistance	Demand / Resistance	Member	Material
2" x 3-1/2"	2,024 lbs	n/a	23.7%	HGUS410	Unspecified
4-3/8" x 3-1/2"	1,909 lbs	29.2%	10.2%		

Notes

B0 Hanger
B1 Wall/Plate



PROFESSIONAL ENGINEER
S. KATSOULAKOS
PROVINCE OF ONTARIO
LICENSE NO. 9577
DIVISION 1, T&E
STRUCTURAL
COMPONENT ONLY



File Name: S48-3 EL-Ammid

Description: Designs\Floor\Flush Beams\B26(139)

Specifier: AJ

Company:

Misc:

Code reports:

CCMC 12472-R

Customer:

City, Province, Postal Code: INNISFIL,

Address:

Job Name:

Build 4340

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 086.

BC CALCO analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.

Unbalanced snow loads determined from building geometry were used in selected products

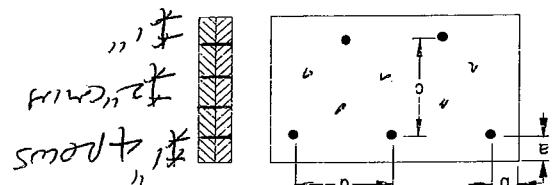
verification.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

Deflections less than 1/8" were ignored in the results.

Connection Diagram



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

Calculated Side Load = 285.3 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: 16d Nail 3-1/2 in. 3/4" 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 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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ALLJOIST®, BC RIM BOARD™, BCI®,

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SYSTEM®, VERSA-LAM®, VERSA-RIM

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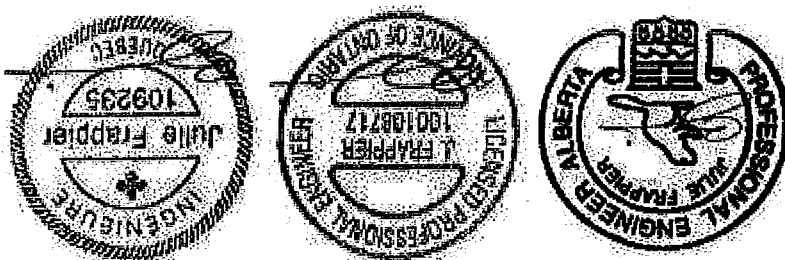
Products L.L.C.



DWG NO. TAM4792-17

STRUCTURAL

COMPONENT ONLY



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			
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"
11-7/8"	NI-80	18'-3"	17'-1"	16'-5"	15'-9"	18'-8"	17'-5"	16'-9"	16'-1"
	NI-40x	19'-4"	17'-11"	16'-10"	15'-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"	17'-5"	16'-9"	21'-4"	19'-9"	18'-10"	17'-10"
14"	NI-80	21'-1"	19'-5"	18'-6"	17'-7"	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	23'-0"	20'-2"	18'-2"	17'-10"	22'-5"	20'-10"	19'-11"	18'-10"
	NI-70	23'-5"	21'-3"	19'-3"	18'-2"	23'-8"	21'-11"	20'-10"	19'-9"
16"	NI-80	25'-1"	23'-2"	22'-0"	20'-10"	25'-9"	23'-10"	22'-9"	21'-6"
	NI-40x	25'-6"	23'-6"	22'-4"	21'-2"	26'-1"	24'-2"	23'-1"	21'-10"
	NI-60	26'-4"	24'-3"	23'-1"	21'-10"	26'-11"	24'-11"	23'-8"	22'-5"
	NI-70	27'-0"	24'-6"	23'-4"	22'-2"	27'-0"	24'-4"	23'-5"	22'-8"

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

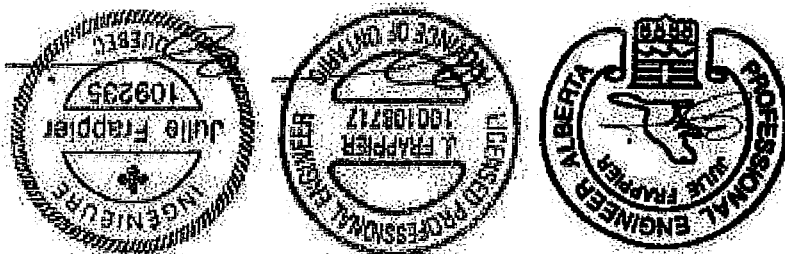
- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load 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 = 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									
9-1/2"	NI-20	15'-1"	14'-2"	13'-9"	12'-9"	11'-9"	10'-9"	9'-9"	8'-9"	7'-9"	6'-9"	14'-2"	13'-9"	12'-9"	11'-9"	10'-9"	9'-9"	8'-9"	7'-9"	6'-9"	5'-9"
	NI-40x	16'-1"	15'-2"	14'-8"	13'-9"	12'-9"	11'-9"	10'-9"	9'-9"	8'-9"	7'-9"	15'-3"	14'-8"	13'-9"	12'-9"	11'-9"	10'-9"	9'-9"	8'-9"	7'-9"	6'-9"
	NI-60	16'-3"	15'-4"	14'-10"	13'-9"	12'-9"	11'-9"	10'-9"	9'-9"	8'-9"	7'-9"	15'-5"	14'-10"	13'-9"	12'-9"	11'-9"	10'-9"	9'-9"	8'-9"	7'-9"	6'-9"
	NI-70	17'-1"	16'-1"	15'-6"	14'-11"	13'-9"	12'-9"	11'-9"	10'-9"	9'-9"	8'-9"	16'-1"	15'-6"	14'-11"	13'-9"	12'-9"	11'-9"	10'-9"	9'-9"	8'-9"	7'-9"
	NI-90x	17'-3"	16'-3"	15'-8"	14'-11"	13'-9"	12'-9"	11'-9"	10'-9"	9'-9"	8'-9"	16'-3"	15'-8"	14'-11"	13'-9"	12'-9"	11'-9"	10'-9"	9'-9"	8'-9"	7'-9"
11-7/8"	NI-20	20'-1"	18'-7"	17'-10"	15'-10"	14'-10"	13'-10"	12'-10"	11'-10"	10'-10"	9'-10"	18'-5"	17'-10"	16'-10"	15'-10"	14'-10"	13'-10"	12'-10"	11'-10"	10'-10"	9'-10"
	NI-40x	20'-5"	18'-11"	17'-10"	15'-10"	14'-10"	13'-10"	12'-10"	11'-10"	10'-10"	9'-10"	18'-9"	17'-10"	16'-10"	15'-10"	14'-10"	13'-10"	12'-10"	11'-10"	10'-10"	9'-10"
	NI-60	20'-5"	18'-11"	17'-10"	15'-10"	14'-10"	13'-10"	12'-10"	11'-10"	10'-10"	9'-10"	18'-9"	17'-10"	16'-10"	15'-10"	14'-10"	13'-10"	12'-10"	11'-10"	10'-10"	9'-10"
	NI-70	21'-7"	20'-0"	19'-1"	17'-4"	16'-7"	15'-0"	14'-0"	13'-0"	12'-0"	11'-0"	19'-9"	18'-7"	17'-4"	16'-7"	15'-0"	14'-0"	13'-0"	12'-0"	11'-0"	10'-0"
	NI-90x	22'-7"	20'-11"	19'-11"	17'-4"	16'-7"	15'-0"	14'-0"	13'-0"	12'-0"	11'-0"	20'-0"	18'-7"	17'-4"	16'-7"	15'-0"	14'-0"	13'-0"	12'-0"	11'-0"	10'-0"
14"	NI-60	22'-3"	20'-8"	19'-9"	17'-9"	16'-9"	15'-9"	14'-9"	13'-9"	12'-9"	11'-9"	20'-6"	19'-5"	18'-5"	17'-5"	16'-5"	15'-5"	14'-5"	13'-5"	12'-5"	11'-5"
	NI-70	23'-6"	21'-9"	20'-9"	19'-9"	18'-9"	17'-9"	16'-9"	15'-9"	14'-9"	13'-9"	21'-5"	20'-5"	19'-5"	18'-5"	17'-5"	16'-5"	15'-5"	14'-5"	13'-5"	12'-5"
	NI-80	24'-8"	23'-11"	22'-9"	21'-9"	20'-9"	19'-9"	18'-9"	17'-9"	16'-9"	15'-9"	22'-4"	21'-4"	20'-4"	19'-4"	18'-4"	17'-4"	16'-4"	15'-4"	14'-4"	13'-4"
	NI-90x	26'-5"	24'-6"	23'-4"	22'-7"	21'-7"	20'-7"	19'-7"	18'-7"	17'-7"	16'-7"	23'-9"	22'-9"	21'-9"	20'-9"	19'-9"	18'-9"	17'-9"	16'-9"	15'-9"	14'-9"
	NI-90x	26'-5"	24'-6"	23'-4"	22'-7"	21'-7"	20'-7"	19'-7"	18'-7"	17'-7"	16'-7"	23'-9"	22'-9"	21'-9"	20'-9"	19'-9"	18'-9"	17'-9"	16'-9"	15'-9"	14'-9"
16"	NI-60	26'-5"	24'-6"	23'-4"	22'-7"	21'-7"	20'-7"	19'-7"	18'-7"	17'-7"	16'-7"	24'-2"	23'-2"	22'-2"	21'-2"	20'-2"	19'-2"	18'-2"	17'-2"	16'-2"	15'-2"
	NI-70	27'-9"	25'-8"	24'-6"	23'-8"	22'-7"	21'-7"	20'-7"	19'-7"	18'-7"	17'-7"	25'-2"	24'-2"	23'-2"	22'-2"	21'-2"	20'-2"	19'-2"	18'-2"	17'-2"	16'-2"
	NI-80	28'-2"	26'-1"	25'-5"	24'-10"	23'-3"	22'-3"	21'-3"	20'-3"	19'-3"	18'-3"	26'-9"	25'-9"	24'-9"	23'-9"	22'-9"	21'-9"	20'-9"	19'-9"	18'-9"	17'-9"
	NI-90x	29'-0"	26'-10"	25'-10"	24'-4"	23'-3"	22'-3"	21'-3"	20'-3"	19'-3"	18'-3"	27'-5"	26'-5"	25'-5"	24'-5"	23'-5"	22'-5"	21'-5"	20'-5"	19'-5"	18'-5"
	NI-90x	29'-0"	26'-10"	25'-10"	24'-4"	23'-3"	22'-3"	21'-3"	20'-3"	19'-3"	18'-3"	27'-5"	26'-5"	25'-5"	24'-5"	23'-5"	22'-5"	21'-5"	20'-5"	19'-5"	18'-5"

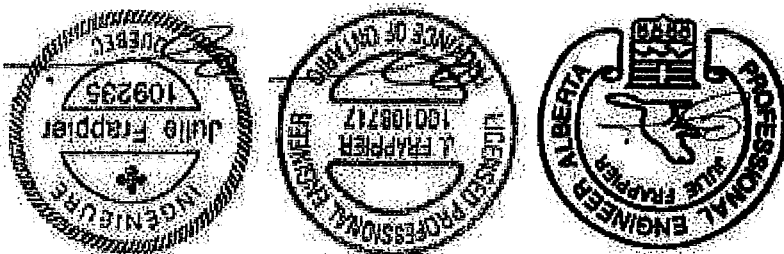
1. Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
2. 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.
3. Minimum bearing length shall be 1-3/4 inches for the end bearings.
4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
5. 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 CBC 2012.
6. 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									
		NI-20	NI-40x	NI-60	NI-70	NI-80	NI-90x	NI-20	NI-40x	NI-60	NI-70	NI-80	NI-90x	NI-20	NI-40x	NI-60	NI-70	NI-80	NI-90x	NI-20	NI-40x
9'-1/2"		15'-1"	16'-1"	16'-3"	17'-1"	17'-3"	17'-3"	15'-2"	15'-4"	15'-6"	16'-1"	16'-3"	16'-3"	14'-1"	14'-3"	14'-4"	15'-1"	15'-3"	15'-3"	13'-3"	N/A
		14'-1"	15'-2"	15'-4"	16'-1"	16'-3"	16'-3"	14'-8"	14'-10"	15'-7"	15'-7"	16'-7"	16'-7"	13'-7"	13'-9"	14'-1"	14'-1"	15'-1"	15'-1"	13'-3"	N/A
		13'-3"	14'-1"	14'-3"	15'-2"	15'-4"	15'-4"	13'-8"	13'-10"	14'-5"	14'-5"	15'-5"	15'-5"	12'-7"	12'-9"	13'-1"	13'-1"	14'-1"	14'-1"	12'-7"	N/A
		12"	13"	13"	14"	14"	14"	12"	12"	12"	13"	13"	13"	11"	11"	11"	12"	12"	12"	10"	N/A
		12"	13"	13"	14"	14"	14"	12"	12"	12"	13"	13"	13"	11"	11"	11"	12"	12"	12"	10"	N/A
11'-7/8"		18'-1"	18'-1"	18'-1"	18'-1"	18'-1"	18'-1"	17'-10"	17'-10"	18'-4"	18'-4"	18'-4"	18'-4"	16'-11"	16'-11"	17'-4"	17'-4"	17'-4"	17'-4"	15'-4"	N/A
		17'-1"	17'-1"	17'-1"	17'-1"	17'-1"	17'-1"	16'-11"	16'-11"	17'-5"	17'-5"	17'-5"	17'-5"	15'-4"	15'-4"	16'-8"	16'-8"	16'-8"	16'-8"	14'-4"	N/A
		16'-1"	16'-1"	16'-1"	16'-1"	16'-1"	16'-1"	15'-11"	15'-11"	16'-5"	16'-5"	16'-5"	16'-5"	14'-11"	14'-11"	15'-5"	15'-5"	15'-5"	15'-5"	13'-3"	N/A
		15'-1"	15'-1"	15'-1"	15'-1"	15'-1"	15'-1"	14'-10"	14'-10"	15'-4"	15'-4"	15'-4"	15'-4"	13'-7"	13'-7"	14'-1"	14'-1"	14'-1"	14'-1"	12'-7"	N/A
		14'-1"	14'-1"	14'-1"	14'-1"	14'-1"	14'-1"	13'-10"	13'-10"	14'-4"	14'-4"	14'-4"	14'-4"	12'-7"	12'-7"	13'-1"	13'-1"	13'-1"	13'-1"	11'-7"	N/A
14"		20'-5"	20'-5"	20'-5"	20'-5"	20'-5"	20'-5"	18'-11"	18'-11"	19'-1"	19'-1"	19'-1"	19'-1"	17'-10"	17'-10"	18'-4"	18'-4"	18'-4"	18'-4"	16'-0"	N/A
		19'-1"	19'-1"	19'-1"	19'-1"	19'-1"	19'-1"	18'-1"	18'-1"	18'-7"	18'-7"	18'-7"	18'-7"	16'-11"	16'-11"	17'-5"	17'-5"	17'-5"	17'-5"	15'-4"	N/A
		18'-1"	18'-1"	18'-1"	18'-1"	18'-1"	18'-1"	17'-10"	17'-10"	18'-4"	18'-4"	18'-4"	18'-4"	16'-11"	16'-11"	17'-5"	17'-5"	17'-5"	17'-5"	15'-4"	N/A
		17'-1"	17'-1"	17'-1"	17'-1"	17'-1"	17'-1"	16'-11"	16'-11"	17'-5"	17'-5"	17'-5"	17'-5"	15'-4"	15'-4"	16'-8"	16'-8"	16'-8"	16'-8"	14'-4"	N/A
		16'-1"	16'-1"	16'-1"	16'-1"	16'-1"	16'-1"	15'-11"	15'-11"	16'-5"	16'-5"	16'-5"	16'-5"	14'-11"	14'-11"	15'-5"	15'-5"	15'-5"	15'-5"	13'-3"	N/A
11-7/8"		22'-6"	22'-6"	22'-6"	22'-6"	22'-6"	22'-6"	20'-10"	20'-10"	21'-4"	21'-4"	21'-4"	21'-4"	18'-8"	18'-8"	19'-3"	19'-3"	19'-3"	19'-3"	17'-0"	N/A
		21'-4"	21'-4"	21'-4"	21'-4"	21'-4"	21'-4"	19'-8"	19'-8"	20'-2"	20'-2"	20'-2"	20'-2"	17'-4"	17'-4"	18'-8"	18'-8"	18'-8"	18'-8"	16'-0"	N/A
		20'-10"	20'-10"	20'-10"	20'-10"	20'-10"	20'-10"	18'-2"	18'-2"	19'-6"	19'-6"	19'-6"	19'-6"	16'-10"	16'-10"	17'-4"	17'-4"	17'-4"	17'-4"	15'-4"	N/A
		19'-8"	19'-8"	19'-8"	19'-8"	19'-8"	19'-8"	17'-10"	17'-10"	18'-4"	18'-4"	18'-4"	18'-4"	16'-10"	16'-10"	17'-4"	17'-4"	17'-4"	17'-4"	15'-4"	N/A
		18'-8"	18'-8"	18'-8"	18'-8"	18'-8"	18'-8"	17'-10"	17'-10"	18'-4"	18'-4"	18'-4"	18'-4"	16'-10"	16'-10"	17'-4"	17'-4"	17'-4"	17'-4"	15'-4"	N/A
9-1/2"		20'-5"	20'-5"	20'-5"	20'-5"	20'-5"	20'-5"	18'-8"	18'-8"	19'-3"	19'-3"	19'-3"	19'-3"	16'-0"	16'-0"	17'-4"	17'-4"	17'-4"	17'-4"	15'-4"	N/A
		19'-3"	19'-3"	19'-3"	19'-3"	19'-3"	19'-3"	17'-10"	17'-10"	18'-4"	18'-4"	18'-4"	18'-4"	16'-10"	16'-10"	17'-4"	17'-4"	17'-4"	17'-4"	15'-4"	N/A
		18'-8"	18'-8"	18'-8"	18'-8"	18'-8"	18'-8"	17'-10"	17'-10"	18'-4"	18'-4"	18'-4"	18'-4"	16'-10"	16'-10"	17'-4"	17'-4"	17'-4"	17'-4"	15'-4"	N/A
		17'-0"	17'-0"	17'-0"	17'-0"	17'-0"	17'-0"	16'-10"	16'-10"	17'-4"	17'-4"	17'-4"	17'-4"	15'-4"	15'-4"	16'-8"	16'-8"	16'-8"	16'-8"	14'-4"	N/A
		16'-0"	16'-0"	16'-0"	16'-0"	16'-0"	16'-0"	15'-4"	15'-4"	16'-8"	16'-8"	16'-8"	16'-8"	14'-4"	14'-4"	15'-8"	15'-8"	15'-8"	15'-8"	13'-3"	N/A
14"		25'-3"	25'-3"	25'-3"	25'-3"	25'-3"	25'-3"	23'-3"	23'-3"	24'-8"	24'-8"	24'-8"	24'-8"	21'-5"	21'-5"	22'-9"	22'-9"	22'-9"	22'-9"	20'-0"	N/A
		24'-8"	24'-8"	24'-8"	24'-8"	24'-8"	24'-8"	22'-9"	22'-9"	23'-3"	23'-3"	23'-3"	23'-3"	21'-5"	21'-5"	22'-9"	22'-9"	22'-9"	22'-9"	20'-0"	N/A
		23'-3"	23'-3"	23'-3"	23'-3"	23'-3"	23'-3"	21'-5"	21'-5"	22'-9"	22'-9"	22'-9"	22'-9"	20'-0"	20'-0"	21'-4"	21'-4"	21'-4"	21'-4"	19'-0"	N/A
		22'-9"	22'-9"	22'-9"	22'-9"	22'-9"	22'-9"	20'-0"	20'-0"	21'-4"	21'-4"	21'-4"	21'-4"	19'-0"	19'-0"	20'-4"	20'-4"	20'-4"	20'-4"	18'-0"	N/A
		21'-5"	21'-5"	21'-5"	21'-5"	21'-5"	21'-5"	19'-0"	19'-0"	20'-4"	20'-4"	20'-4"	20'-4"	18'-0"	18'-0"	19'-4"	19'-4"	19'-4"	19'-4"	17'-0"	N/A
16"		26'-1"	26'-1"	26'-1"	26'-1"	26'-1"	26'-1"	24'-10"	24'-10"	25'-5"	25'-5"	25'-5"	25'-5"	22'-2"	22'-2"	23'-6"	23'-6"	23'-6"	23'-6"	21'-0"	N/A
		25'-5"	25'-5"	25'-5"	25'-5"	25'-5"	25'-5"	23'-6"	23'-6"	24'-10"	24'-10"	24'-10"	24'-10"	22'-2"	22'-2"	23'-6"	23'-6"	23'-6"	23'-6"	21'-0"	N/A
		24'-10"	24'-10"	24'-10"	24'-10"	24'-10"	24'-10"	22'-2"	22'-2"	23'-6"	23'-6"	23'-6"	23'-6"	21'-0"	21'-0"	22'-4"	22'-4"	22'-4"	22'-4"	20'-0"	N/A
		23'-6"	23'-6"	23'-6"	23'-6"	23'-6"	23'-6"	21'-0"	21'-0"	22'-4"	22'-4"	22'-4"	22'-4"	20'-0"	20'-0"	21'-4"	21'-4"	21'-4"	21'-4"	19'-0"	N/A
		22'-2"	22'-2"	22'-2"	22'-2"	22'-2"	22'-2"	20'-0"	20'-0"	21'-4"	21'-4"	21'-4"	21'-4"	19'-0"	19'-0"	20'-4"	20'-4"	20'-4"	20'-4"	18'-0"	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.
- 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.
- 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									
		On Centre Spacing					1/2" Gypsum Ceiling				
9-1/2"	NI-20	12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	24"
	NI-40x	15.7"	14.2"	13.4"	12.4"	15.7"	14.2"	13.4"	12.4"	13.4"	12.4"
	NI-60	17.0"	16.0"	15.1"	13.1"	17.5"	16.1"	15.1"	13.1"	13.1"	12.4"
	NI-70	20.9"	19.2"	18.3"	16.3"	21.4"	19.9"	18.3"	16.3"	16.3"	15.6"
	NI-80	21.1"	19.5"	18.6"	17.7"	21.7"	20.0"	19.6"	18.6"	18.6"	18.0"
11-7/8"	NI-90x	21.8"	20.0"	19.1"	18.0"	22.2"	20.6"	19.6"	18.6"	18.6"	18.0"
	NI-40x	21.5"	19.10"	18.11"	17.5"	22.1"	20.6"	19.6"	18.6"	18.6"	17.5"
	NI-60	21.10"	19.3"	18.2"	17.5"	22.5"	20.10"	19.11"	18.11"	18.11"	17.5"
	NI-70	23.0"	21.3"	20.7"	19.5"	24.0"	22.3"	21.2"	20.10"	20.10"	19.9"
	NI-80	23.5"	21.7"	20.7"	19.5"	24.0"	22.3"	21.2"	20.10"	20.10"	20.7"
14"	NI-90x	24.1"	22.3"	21.2"	20.0"	24.8"	22.10"	21.9"	20.7"	20.7"	20.6"
	NI-60	23.9"	22.0"	20.11"	19.10"	24.6"	22.9"	21.8"	20.6"	20.6"	20.6"
	NI-70	25.1"	23.2"	22.0"	20.10"	25.9"	23.10"	22.9"	21.6"	21.6"	21.6"
	NI-80	25.6"	23.6"	22.4"	21.2"	26.1"	24.2"	23.1"	21.10"	21.10"	21.6"
	NI-90x	26.4"	24.3"	23.1"	21.10"	26.11"	24.11"	23.8"	21.5"	21.5"	22.5"
16"	NI-60	26.3"	24.0"	22.11"	20.10"	26.6"	24.6"	23.9"	22.6"	22.6"	22.5"
	NI-70	25.1"	23.2"	22.0"	20.10"	25.9"	23.10"	22.9"	21.6"	21.6"	21.6"
	NI-80	25.6"	23.6"	22.4"	21.2"	26.1"	24.2"	23.1"	21.10"	21.10"	21.6"
	NI-90x	26.4"	24.3"	23.1"	21.10"	26.11"	24.11"	23.8"	21.5"	21.5"	22.5"

Depth	Series	Mid-Span Blocking									
		On Centre Spacing					Mid-Span Blocking and 1/2" Gypsum Ceiling				
9-1/2"	NI-20	12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	24"
	NI-40x	15.7"	14.2"	13.4"	12.4"	15.7"	14.2"	13.4"	12.4"	13.4"	12.4"
	NI-60	18.1"	16.5"	15.5"	14.3"	18.1"	16.5"	15.5"	14.3"	14.3"	13.11"
	NI-70	19.10"	17.11"	16.9"	15.6"	19.10"	17.11"	16.9"	15.6"	15.6"	14.3"
	NI-80	20.2"	18.3"	17.1"	15.10"	20.2"	18.3"	17.1"	15.10"	15.10"	15.6"
11-7/8"	NI-90x	24.3"	22.6"	21.3"	19.7"	24.8"	22.7"	21.3"	19.7"	19.7"	19.7"
	NI-40x	24.2"	21.5"	19.6"	17.5"	24.2"	21.5"	19.6"	17.5"	17.5"	17.5"
	NI-60	24.9"	22.5"	21.0"	19.6"	24.9"	22.5"	21.0"	19.6"	19.6"	19.6"
	NI-70	26.1"	24.3"	22.9"	21.0"	26.8"	24.3"	22.9"	21.0"	21.0"	21.0"
	NI-80	26.6"	24.7"	23.3"	21.6"	27.1"	24.10"	23.3"	21.6"	21.6"	21.6"
14"	NI-90x	27.3"	25.4"	24.1"	22.4"	27.9"	25.10"	24.3"	22.4"	22.4"	22.4"
	NI-60	27.3"	24.1"	22.9"	21.6"	27.9"	25.10"	24.3"	22.4"	22.4"	22.4"
	NI-70	28.8"	26.8"	25.3"	23.4"	29.3"	26.11"	25.3"	23.4"	23.4"	23.4"
	NI-80	29.1"	27.0"	25.9"	23.10"	29.8"	27.6"	26.1"	25.3"	25.3"	25.3"
	NI-90x	29.11"	27.1"	25.9"	24.1"	30.6"	28.11"	26.11"	25.3"	25.3"	25.3"
16"	NI-20	12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	24"
	NI-40x	15.7"	14.2"	13.4"	12.4"	15.7"	14.2"	13.4"	12.4"	13.4"	12.4"
	NI-60	18.1"	16.5"	15.5"	14.3"	18.1"	16.5"	15.5"	14.3"	14.3"	13.11"
	NI-70	19.10"	17.11"	16.9"	15.6"	19.10"	17.11"	16.9"	15.6"	15.6"	14.3"
	NI-80	20.2"	18.3"	17.1"	15.10"	20.2"	18.3"	17.1"	15.10"	15.10"	15.6"

1. 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.

2. 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.

3. Minimum bearing length shall be 1-3/4 inches for the end bearings.

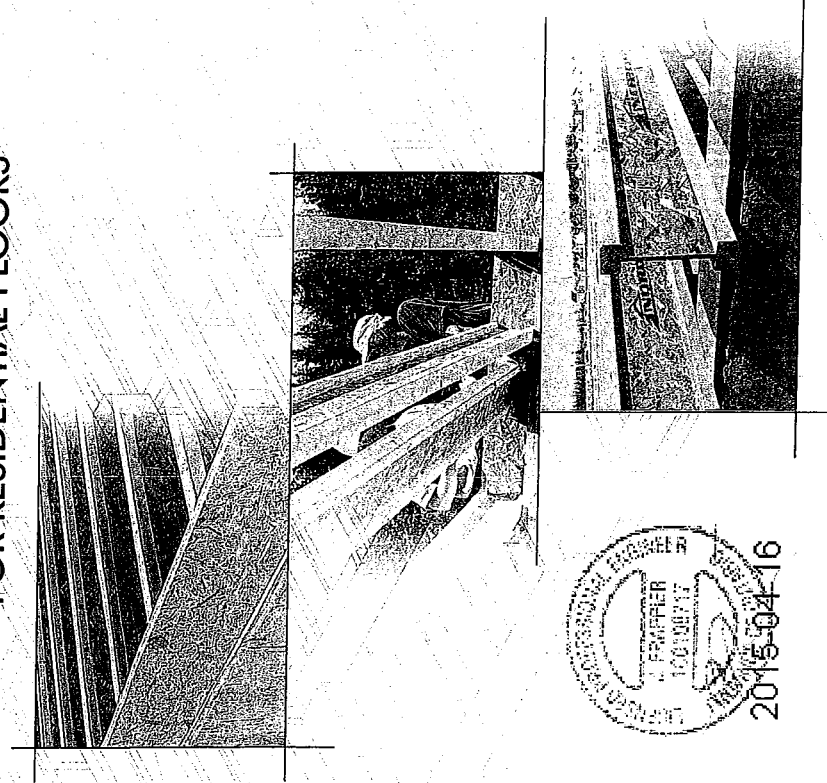
4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.

5. 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.

6. Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



Distributed by:



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



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

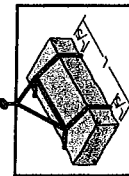
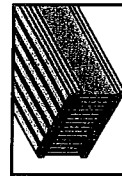


Never stack building materials over unsheathed I-joists. Once sheathed, do not over-stress I-joist with concentrated loads from building materials.

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

STORAGE AND HANDLING GUIDELINES

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



1. Maximum **clear** spans applicable to simple-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of $1.50L + 1.25D$. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of $1/480$. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.

2. Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in CGSB-71.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the used of gypsum and/or a row of blocking at mid-span.
3. Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
5. This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
6. Tables are based on Limit States Design per CAN/CSA O86-09 Standard, and NBC 2010.

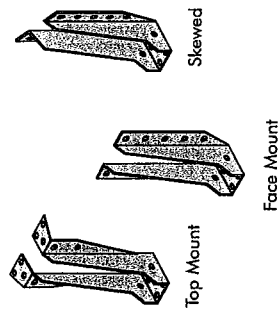
7. SI units conversion:
1 inch = 25.4 mm
1 foot = 0.305 m

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

Joist Depth	Joist Series	Simple spans				Multiple spans			
		On centre spacing				On centre spacing			
		12"	16"	19.2	24"	12"	16"	19.2"	24"
12"	N-16	5.41	14.52	16.99	3.95	16.53	15.21	14.10	4.47
12"	N-18	6.01	15.52	17.98	4.39	17.55	16.55	15.10	4.95
12"	N-20	6.61	16.54	18.99	4.83	17.77	16.77	16.00	5.41
12"	N-22	7.21	17.54	19.99	5.27	18.77	17.44	16.99	5.87
12"	N-24	7.81	18.54	20.99	5.71	18.77	17.44	16.99	6.33
12"	N-26	8.41	19.54	21.99	6.15	18.77	17.44	16.99	6.79
12"	N-28	9.01	20.54	22.99	6.59	18.77	17.44	16.99	7.25
12"	N-30	9.61	21.54	23.99	7.03	18.77	17.44	16.99	7.71
12"	N-32	10.21	22.54	24.99	7.47	18.77	17.44	16.99	8.17
12"	N-34	10.81	23.54	25.99	7.91	18.77	17.44	16.99	8.63
12"	N-36	11.41	24.54	26.99	8.35	18.77	17.44	16.99	9.09
12"	N-38	12.01	25.54	27.99	8.79	18.77	17.44	16.99	9.55
12"	N-40	12.61	26.54	28.99	9.23	18.77	17.44	16.99	10.01
12"	N-42	13.21	27.54	29.99	9.67	18.77	17.44	16.99	10.47
12"	N-44	13.81	28.54	30.99	10.11	18.77	17.44	16.99	10.93
12"	N-46	14.41	29.54	31.99	10.55	18.77	17.44	16.99	11.39
12"	N-48	15.01	30.54	32.99	10.99	18.77	17.44	16.99	11.85
12"	N-50	15.61	31.54	33.99	11.43	18.77	17.44	16.99	12.31
12"	N-52	16.21	32.54	34.99	11.87	18.77	17.44	16.99	12.77
12"	N-54	16.81	33.54	35.99	12.31	18.77	17.44	16.99	13.23
12"	N-56	17.41	34.54	36.99	12.75	18.77	17.44	16.99	13.69
12"	N-58	18.01	35.54	37.99	13.19	18.77	17.44	16.99	14.15
12"	N-60	18.61	36.54	38.99	13.63	18.77	17.44	16.99	14.61
12"	N-62	19.21	37.54	39.99	14.07	18.77	17.44	16.99	15.07
12"	N-64	19.81	38.54	40.99	14.51	18.77	17.44	16.99	15.53
12"	N-66	20.41	39.54	41.99	14.95	18.77	17.44	16.99	15.99
12"	N-68	21.01	40.54	42.99	15.39	18.77	17.44	16.99	16.45
12"	N-70	21.61	41.54	43.99	15.83	18.77	17.44	16.99	16.91
12"	N-72	22.21	42.54	44.99	16.27	18.77	17.44	16.99	17.37
12"	N-74	22.81	43.54	45.99	16.71	18.77	17.44	16.99	17.83
12"	N-76	23.41	44.54	46.99	17.15	18.77	17.44	16.99	18.29
12"	N-78	24.01	45.54	47.99	17.59	18.77	17.44	16.99	18.75
12"	N-80	24.61	46.54	48.99	18.03	18.77	17.44	16.99	19.21
12"	N-82	25.21	47.54	49.99	18.47	18.77	17.44	16.99	19.67
12"	N-84	25.81	48.54	50.99	18.91	18.77	17.44	16.99	20.13
12"	N-86	26.41	49.54	51.99	19.35	18.77	17.44	16.99	20.59
12"	N-88	27.01	50.54	52.99	19.79	18.77	17.44	16.99	21.05
12"	N-90	27.61	51.54	53.99	20.23	18.77	17.44	16.99	21.51
12"	N-92	28.21	52.54	54.99	20.67	18.77	17.44	16.99	21.97
12"	N-94	28.81	53.54	55.99	21.11	18.77	17.44	16.99	22.43
12"	N-96	29.41	54.54	56.99	21.55	18.77	17.44	16.99	22.89
12"	N-98	30.01	55.54	57.99	21.99	18.77	17.44	16.99	23.35
12"	N-100	30.61	56.54	58.99	22.43	18.77	17.44	16.99	23.81

I-JOIST HANGERS

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



WEB STIFFENERS

RECOMMENDATIONS:

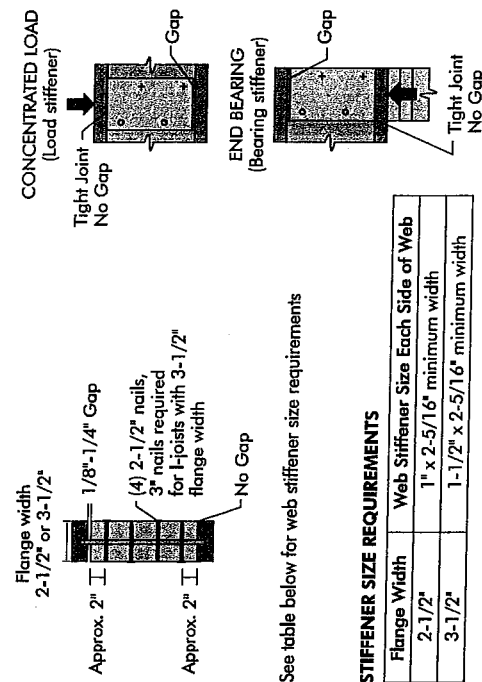
■ A **bearing stiffener** is required in all engineered applications with factored reactions greater than shown in the I-joint properties table found of the I-joint Construction Guide (C101). The gap between the stiffener and the flange is at the top.

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

■ **A load stiffener** is required at locations where a factored concentrated load greater than 2,370 lbs is applied to the top flange between supports, or in the case of a cantilever, anywhere between the cantilever tip and the support. These values are for standard term load duration, and may be adjusted for other load durations as permitted by the code. The gap between the stiffener and the flange is at the bottom.

SI units conversion: 1 inch = 25.4 mm

FIGURE 2
WEB STIFF

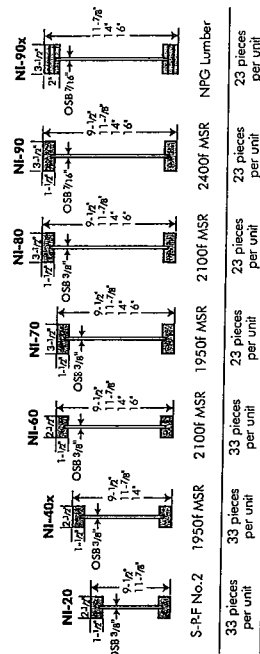


See table below for web stiffener size requirements

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

NORDIC I-JOIST SERIES



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 felling to the finished product, reflects our commitment to quality.

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

1

2015-04-16

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 joists must be level.
5. Minimum bearing lengths: 1-3/4 inches for end bearings and 3-1/2 inches for intermediate bearings.
6. When using hangers, seat I-joists firmly in hanger bottoms to minimize settlement.

8. Concentrated loads greater than those that can normally be expected in residential construction should only be applied to the top surface of the top flange. Normal concentrated loads include track lighting fixtures, audio equipment and security cameras. Never suspend unusual or heavy loads from the I-joist's bottom flange. Whenever possible, suspend all concentrated loads from the top of the I-joist. Or, attach the load to blocking that has been securely fastened to the I-joist webs.
9. Never install I-joists where they will be permanently exposed to weather, or where they will remain in direct contact with concrete or masonry.
10. Restrain ends of floor joists to prevent rollover. Use rim board, rim joists or I-joist blocking panels.
11. For I-joists installed over and beneath bearing walls, use full depth blocking panels, rim board, or squash blocks (cripple members) to transfer gravity loads through the floor system to the wall or foundation below.
12. Due to shrinkage, common framing lumber set on edge **may never** be used as blocking or rim boards. I-joist blocking panels or other engineered wood products – such as rim board – must be cut to fit between the I-joists, and an I-joist-compatible depth selected.
13. Provide permanent lateral support of the bottom flange of all I-joists at interior supports of multiple-span joists. Similarly, support the bottom flange of all cantilevered I-joists at the end support next to the cantilever extension. In the completed structure, the gypsum wallboard ceiling provides this lateral support. Until the final finished ceiling is applied, temporary bracing or struts must be used.
14. If square-edge panels are used, edges must be supported between I-joists with 2x4 blocking. Glue panels to blocking to minimize squeaks. Blocking is not required under structural finish flooring, such as wood strip flooring, or if a separate underlayment layer is installed.
15. Nail spacing: Space nails installed to the flange's top face in accordance with the applicable building code requirements or approved building plans.

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

Figures 3, 4 or 5

Holes may be cut in web for plumbing, wiring and duct work. See Tables 1, 2 and Figure 7.

NOTE: Never cut or notch flanges.

Nordic Lam or SCL

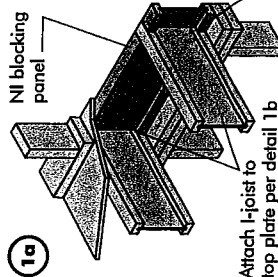
Nordic Lam or Structural Composite Lumber (SCL)

Figures 3, 4 or 5

Use hangers recognized in current code evaluation reports

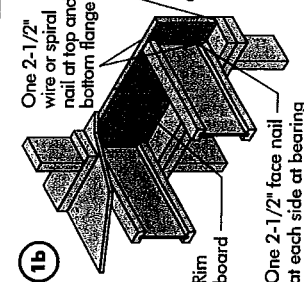
1a 1b 1c 1d 1e 1f 1g 1h 1i 1j 1k 1l 1m

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



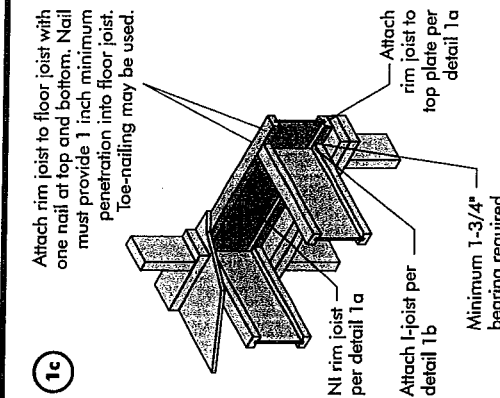
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI Joists	3,300

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



Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,000

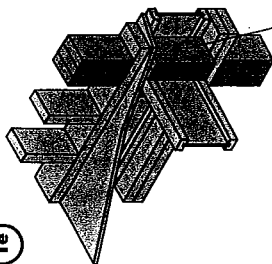
*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1 d.



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

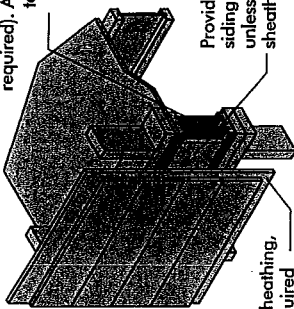
1e



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

1f

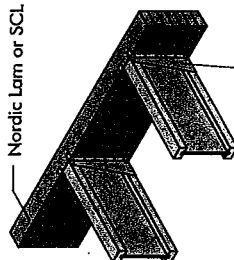
Use single I-joist for loads up to 3,300 plf, double I-joists for loads up to 6,600 plf (filler block not required). Attach I-joist to top plate using 2-1/2" nails at 6" o.c.



Wall sheathing, as required. Provide backer for siding attachment unless nailable 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.

1i

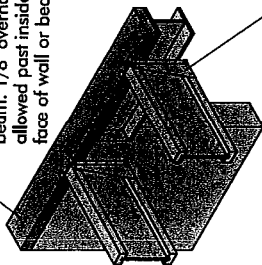


Top- or face-mount hanger installed per manufacturer's recommendations. For nailing schedules for multiple beams, see the manufacturer's recommendations.

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

1k

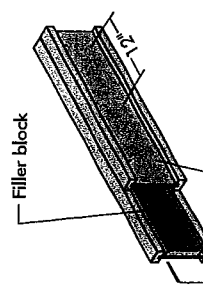
2x plate flush with inside face of wall or beam. 1/8" overhang allowed past inside face of wall or beam.



Top-mount hanger installed per manufacturer's recommendations.

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

1p

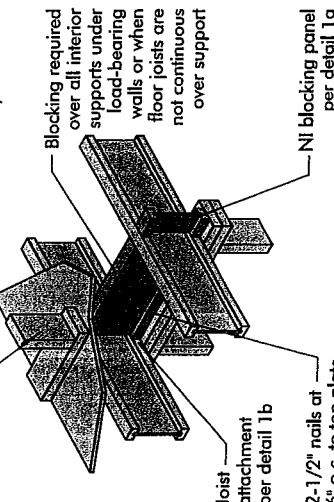


Offset nails from opposite face by 6"

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

1g

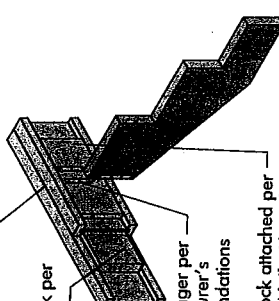
Load bearing wall above shall align vertically with the bearing below. Other conditions, such as offset bearing walls, are not covered by this detail.



Blocking required over all interior supports under load-bearing walls or when floor joists are not continuous over support. NI blocking panel per detail 1a

1m

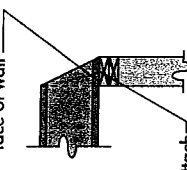
Multiple I-joist header with full depth filler block shown. Nordic Lam or SCL headers may also be used. Verify double I-joist capacity to support concentrated loads.



Maximum support capacity = 1,620 lbs.

1n

Do not bevel-cut joist beyond inside face of wall



Attach I-joist per detail 1b

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

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:

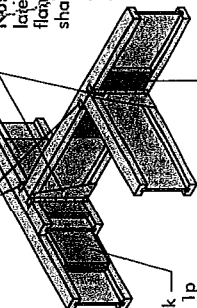
- Support back of I-joist web during nailing to prevent damage to web/flange connection.
- Leave a 1/8 to 1/4-inch gap between top of filler block and bottom of top I-joist flange.
- Filler block is required between joists for full length of span.
- Nail joists together with two rows of 3" nails at 12 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.

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.

Double I-joist header

Top- or face-mount hanger



Filler block per detail 1p

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

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

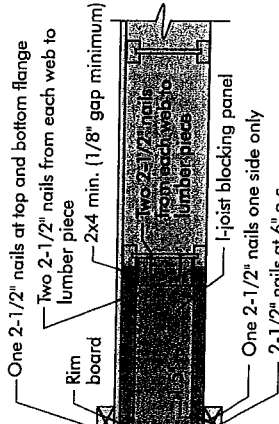
BACKER BLOCKS (Blocks must be long enough to permit required nailing without splitting)

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

* Minimum grade for backer block material shall be S-PF No. 2 or better for solid 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".

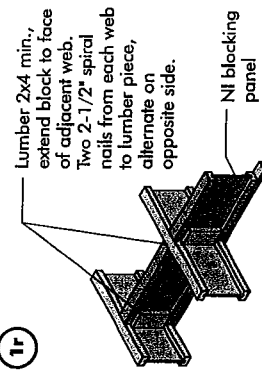
1s



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.

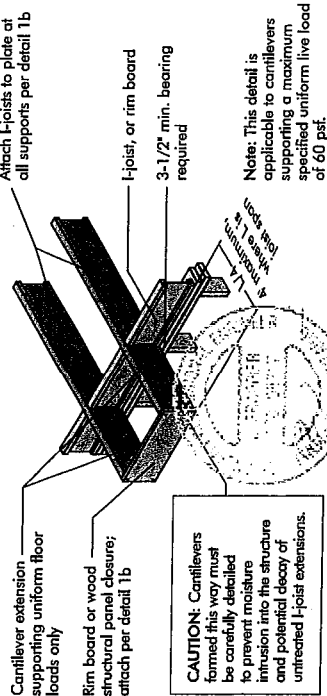
1r



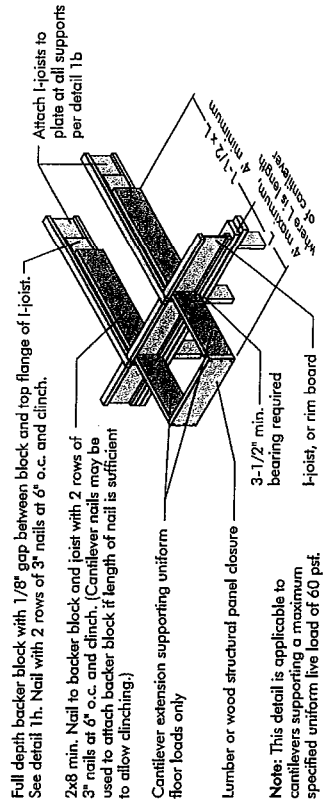
Optional: Minimum 1x4 inch strap applied to underside of joist at blocking line or 1/2 inch minimum gypsum ceiling attached to underside of joists.

CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

3a I-JOIST CANTILEVER DETAIL FOR BALCONIES (NO WALL LOAD)

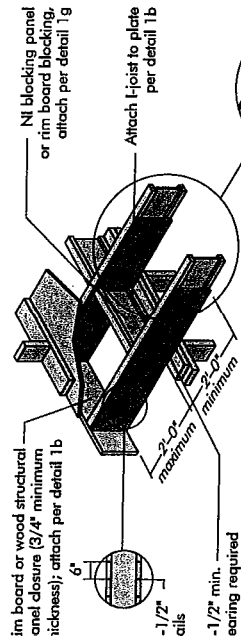


3b LUMBER CANTILEVER DETAIL FOR BALCONIES (NO WALL LOAD)



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

4a Method 1 — SHEATHING REINFORCEMENT ONE SIDE



Method 2 — SHEATHING REINFORCEMENT TWO SIDES

- Use same installation as Method 1 but reinforce both sides of I-joist with sheathing.
- Use nailing pattern shown for Method 1 with opposite face nailing offset by 3".

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

4b Alternate Method 2 — DOUBLE I-JOIST

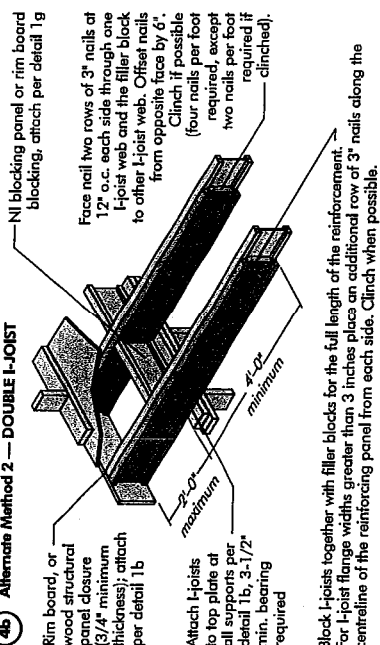


FIGURE 4 (continued)

See table below for NI reinforcement requirements at cantilever.

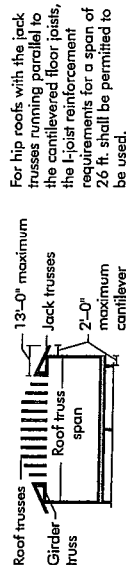
CANTILEVER REINFORCEMENT METHODS ALLOWED

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.)									
		12	16	19.2	24	24	12	16	19.2	24	24
9 1/2"	24	X	X	X	X	X	X	X	X	X	X
	28	X	X	X	X	X	X	X	X	X	X
	30	X	X	X	X	X	X	X	X	X	X
	32	X	X	X	X	X	X	X	X	X	X
	34	X	X	X	X	X	X	X	X	X	X
11 7/8"	24	X	X	X	X	X	X	X	X	X	X
	28	X	X	X	X	X	X	X	X	X	X
	30	X	X	X	X	X	X	X	X	X	X
	32	X	X	X	X	X	X	X	X	X	X
	34	X	X	X	X	X	X	X	X	X	X
14"	24	X	X	X	X	X	X	X	X	X	X
	28	X	X	X	X	X	X	X	X	X	X
	30	X	X	X	X	X	X	X	X	X	X
	32	X	X	X	X	X	X	X	X	X	X
	34	X	X	X	X	X	X	X	X	X	X
16"	24	X	X	X	X	X	X	X	X	X	X
	28	X	X	X	X	X	X	X	X	X	X
	30	X	X	X	X	X	X	X	X	X	X
	32	X	X	X	X	X	X	X	X	X	X
	34	X	X	X	X	X	X	X	X	X	X

- 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.

- 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.
- 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.

- 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.
- Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

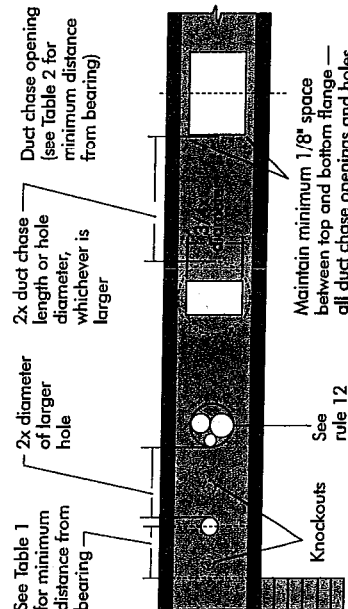


For hip roofs with the jack trusses running parallel to the cantilevered floor joists, the I-joist reinforcement requirements for a span of 26 ft. shall be permitted to be used.

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.

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



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

Holes in webs should be cut with a sharp saw.

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

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.)										
		Duct chase length (in.)										
		8	10	12	14	16	18	20	22	24		
12	25	4-11	4-5	4-10	5-4	5-9	6-11	6-5	7-1	7-5	7-9	
	26	5-0	5-4	5-9	6-3	6-10	7-1	7-8	8-2	8-6	8-9	
	27	5-4	5-9	6-2	6-9	7-11	7-5	8-0	8-3	8-9	9-1	
	28	5-1	5-5	5-10	6-3	6-7	7-1	7-6	8-1	8-4	8-8	
	29	5-3	5-8	6-0	6-5	6-10	7-3	7-8	8-1	8-4	8-8	
	30	5-6	6-1	6-6	6-11	7-5	7-9	8-3	8-6	9-1	9-4	
	31	5-9	6-4	6-9	7-4	7-8	8-3	8-6	9-1	9-4	9-8	
	32	6-2	6-7	7-0	7-5	8-0	8-4	8-7	9-1	9-4	9-8	
	33	6-5	7-0	7-4	7-9	8-3	8-7	9-1	9-4	9-8	10-1	
	34	6-8	7-3	7-7	8-0	8-5	8-10	9-3	9-6	10-1	10-5	
14	35	7-0	7-5	7-9	8-3	8-7	9-1	9-5	10-0	10-3	10-7	
	36	7-3	7-8	8-2	8-6	9-0	9-4	9-8	10-2	10-6	11-0	
	37	7-6	8-1	8-5	8-9	9-2	9-7	10-1	10-5	10-9	11-3	
	38	7-9	8-4	8-8	9-2	9-6	10-0	10-4	10-8	11-2	11-6	
	39	8-2	8-7	9-1	9-5	9-9	10-3	10-7	11-1	11-5	11-9	
	40	8-5	9-0	9-4	9-8	10-2	10-6	11-0	11-4	11-8	12-2	
	41	8-8	9-3	9-7	10-1	10-5	10-9	11-3	11-7	12-1	12-5	
	42	9-1	9-6	10-0	10-4	10-8	11-2	11-6	12-0	12-4	12-8	
	43	9-4	9-9	10-3	10-7	11-1	11-5	11-9	12-3	12-7	13-1	
	44	9-7	10-2	10-6	11-0	11-4	11-8	12-2	12-6	13-0	13-4	
16	45	10-0	10-5	11-0	11-4	11-8	12-2	12-6	13-0	13-4	13-8	
	46	10-3	10-8	11-3	11-7	12-1	12-5	12-9	13-3	13-7	14-1	
	47	10-6	11-1	11-6	12-0	12-4	12-8	13-2	13-6	14-0	14-4	
	48	10-9	11-4	11-9	12-3	12-7	13-1	13-5	13-9	14-3	14-7	
	49	11-2	11-7	12-2	12-6	13-0	13-4	13-8	14-2	14-6	15-0	
	50	11-5	12-0	12-5	12-9	13-3	13-7	14-1	14-5	14-9	15-3	
	51	11-8	12-3	12-8	13-2	13-6	14-0	14-4	14-8	15-2	15-6	
	52	12-1	12-6	13-1	13-5	13-9	14-3	14-7	15-1	15-5	15-9	
	53	12-4	12-9	13-4	13-8	14-2	14-6	15-0	15-4	15-8	16-2	
	54	12-7	13-2	13-7	14-1	14-5	14-9	15-3	15-7	16-1	16-5	

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

The above table is based on the minimum distance from

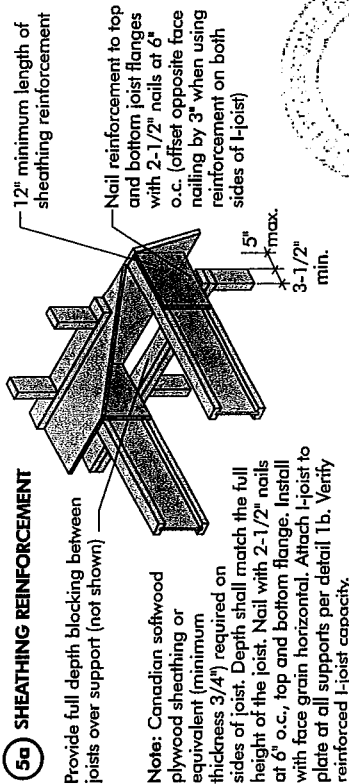
$$D_{\text{reduced}} = \frac{L_{\text{actual}}}{x D}$$

D	Reduced	=	Distance from the inside face of any support to centre of hole, reduced for less-than-maximum distance shall not be less than 6 inches from the face of the support to edge of the hole.
L	Actual	=	The actual measured span distance between the inside faces of supports (ft).
SAF		=	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.

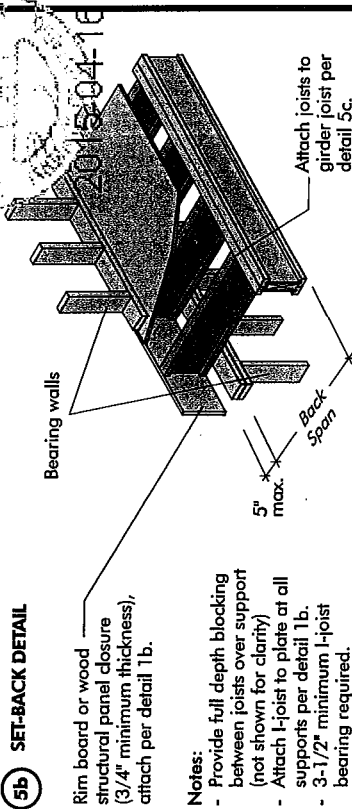
1. Above table may be used for I-joist spacing of 24 inches on centre or less.
2. Hole location distance is measured from inside face of supports to centre of hole.
3. Distances in this chart are based on uniformly loaded joists.

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

5a SHEATHING REINFORCEMENT



5b SET-BACK DETAIL



5c SET-BACK CONNECTION

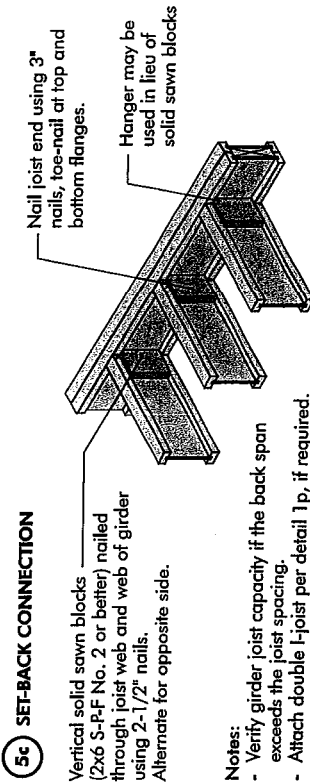
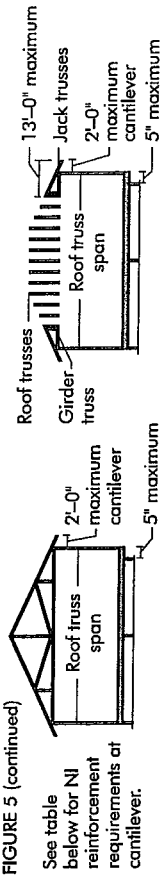


FIGURE 5 (continued)



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.

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	
26	1	X	X	X	X	2	X	X	X	X	2
28	1	X	X	X	X	2	X	X	X	X	2
30	1	X	X	X	X	2	X	X	X	X	2
32	1	X	X	X	X	2	X	X	X	X	2
34	1	X	X	X	X	2	X	X	X	X	2
36	1	X	X	X	X	2	X	X	X	X	2
38	1	X	X	X	X	2	X	X	X	X	2
40	1	X	X	X	X	2	X	X	X	X	2
42	1	X	X	X	X	2	X	X	X	X	2
26	N	N	N	N	N	2	N	N	N	N	2
28	N	N	N	N	N	2	N	N	N	N	2
30	N	N	N	N	N	2	N	N	N	N	2
32	N	N	N	N	N	2	N	N	N	N	2
34	N	N	N	N	N	2	N	N	N	N	2
36	N	N	N	N	N	2	N	N	N	N	2
38	N	N	N	N	N	2	N	N	N	N	2
40	N	N	N	N	N	2	N	N	N	N	2
42	N	N	N	N	N	2	N	N	N	N	2
26	1	X	X	X	X	2	X	X	X	X	2
28	1	X	X	X	X	2	X	X	X	X	2
30	1	X	X	X	X	2	X	X	X	X	2
32	1	X	X	X	X	2	X	X	X	X	2
34	1	X	X	X	X	2	X	X	X	X	2
36	1	X	X	X	X	2	X	X	X	X	2
38	1	X	X	X	X	2	X	X	X	X	2
40	1	X	X	X	X	2	X	X	X	X	2
42	1	X	X	X	X	2	X	X	X	X	2
26	N	N	N	N	N	2	N	N	N	N	2
28	N	N	N	N	N	2	N	N	N	N	2
30	N	N	N	N	N	2	N	N	N	N	2
32	N	N	N	N	N	2	N	N	N	N	2
34	N	N	N	N	N	2	N	N	N	N	2
36	N	N	N	N	N	2	N	N	N	N	2
38	N	N	N	N	N	2	N	N	N	N	2
40	N	N	N	N	N	2	N	N	N	N	2
42	N	N	N	N	N	2	N	N	N	N	2

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.

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.)	Common Wire or Spiral Nails	Nail Size and Type Ring Thread Nails or Screws	Staples	Maximum Spacing of Fasteners 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:

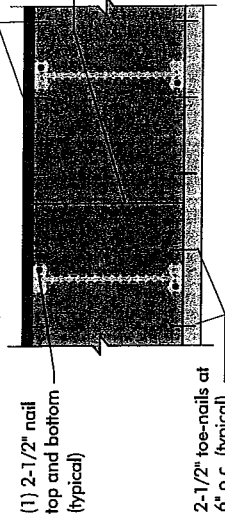
Floor sheathing must be field glued to the I-joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-joist spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

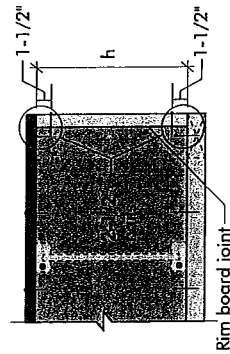
8a ATTACHMENT DETAILS WHERE RIM BOARDS ABOUT

Rim board Joint Between Floor Joists

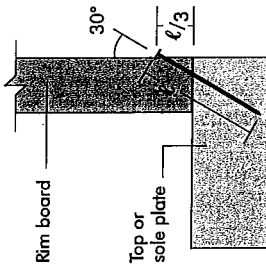
2-1/2" nails at 6" o.c. (typical)



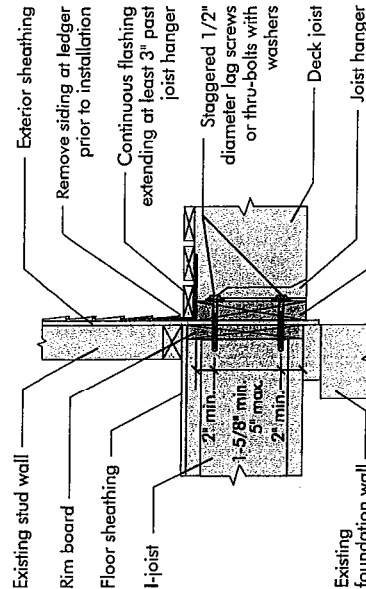
Rim board Joint at Corner



8b TOE-NAIL CONNECTION AT RIM BOARD



8c 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL



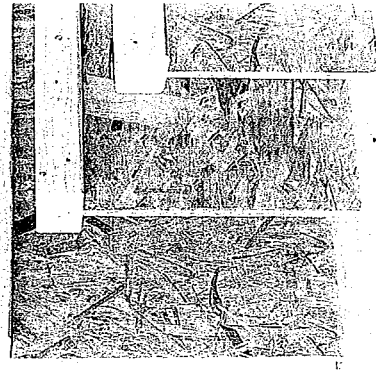
2x ledger board (preservative-treated); must be greater than or equal to the depth of the deck joist



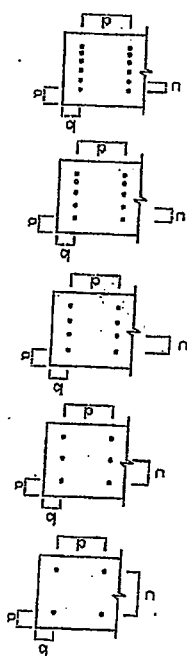
PRODUCT WARRANTY

Climber's performance guarantees that, in accordance with our specifications, Climber products are free from manufacturing defects in material and workmanship.

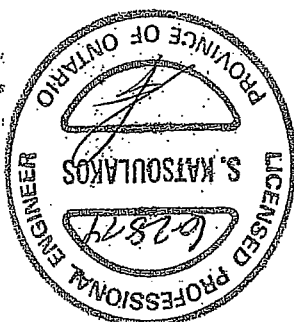
Furthermore, Climber's performance warrants that our products, when utilized in accordance with our handling and installation instructions, will meet or exceed our specifications for the lifetime of the structure.



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



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



DWG NO TAMN1001.14

STRUCTURAL COMPONENT ONLY

TO BE USED ONLY WITH BEAM CABLES
DESCENDING THE
STAIR BELOW

PROVIDE NAILING

DETAIL # X SEE

DWG # TAMN1001-14