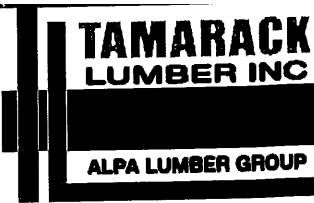


Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	18
J2	14-00-00	9 1/2" NI-40x	1	18
J2DJ	14-00-00	9 1/2" NI-40x	2	4
J3	12-00-00	9 1/2" NI-40x	1	27
J3DJ	12-00-00	9 1/2" NI-40x	2	4
J4	10-00-00	9 1/2" NI-40x	1	2
J5	6-00-00	9 1/2" NI-40x	1	5
J6	4-00-00	9 1/2" NI-40x	1	2
J7	2-00-00	9 1/2" NI-40x	1	2
B1	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B2	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B4	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B3	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
5	H1	IUS2.56/9.5
4	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
2	H2	HGUS410

Town of Innisfil Certified Model  
14/02/2018 10:03:13 AM kgervais



FROM PLAN DATED: FEB 2016

BUILDER:  
BAYVIEW WELLINGTON

SITE:  
ALCONA SHORES

MODEL: S32-5-12

ELEVATION: A,B

LOT:  
CITY: INNISFIL

SALESMAN: MARIO  
DESIGNER: CZ  
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.

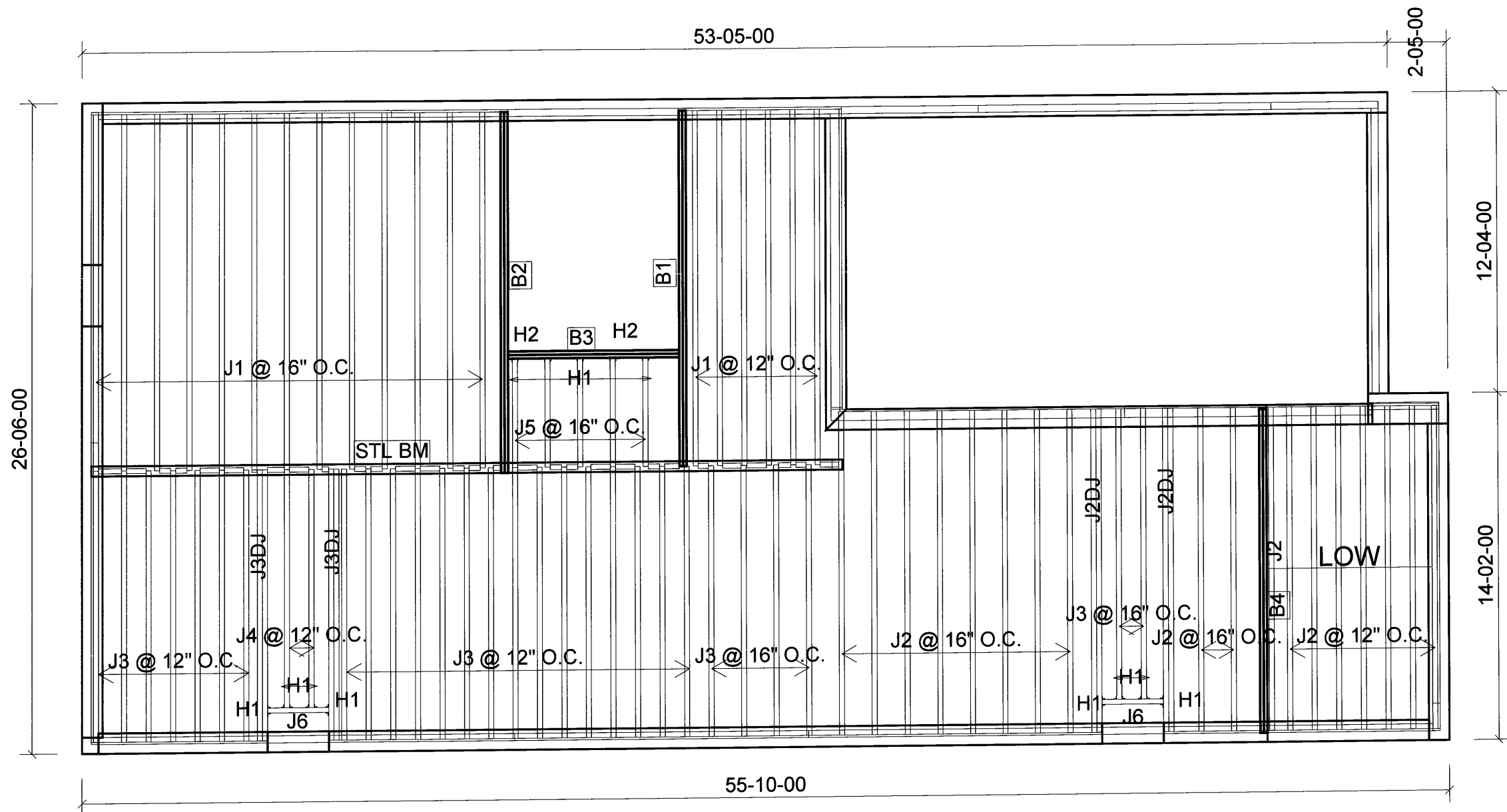
LOADING:  
DESIGN LOADS: L/480.000  
LIVE LOAD: 40.0 lb/ft²  
DEAD LOAD: 15.0 lb/ft  
TILED AREAS: 20 lb/ft

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 11/09/2017

1st FLOOR

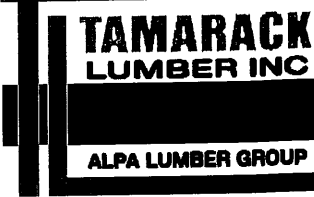
STANDARD



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	19
J2	14-00-00	9 1/2" NI-40x	1	18
J2DJ	14-00-00	9 1/2" NI-40x	2	4
J3	12-00-00	9 1/2" NI-40x	1	28
J3DJ	12-00-00	9 1/2" NI-40x	2	4
J4	10-00-00	9 1/2" NI-40x	1	2
J5	6-00-00	9 1/2" NI-40x	1	5
J6	4-00-00	9 1/2" NI-40x	1	2
B1	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B2	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B4	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B3	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2

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

Town of Innisfil Certified Model  
14/02/2018 10:03:24 AM kgervais



FROM PLAN DATED: FEB 2016

BUILDER:  
BAYVIEW WELLINGTON

SITE:  
ALCONA SHORES

MODEL: S32-5-12

ELEVATION: A,B

LOT:  
CITY: INNISFIL

SALESMAN: MARIO  
DESIGNER: CZ  
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.

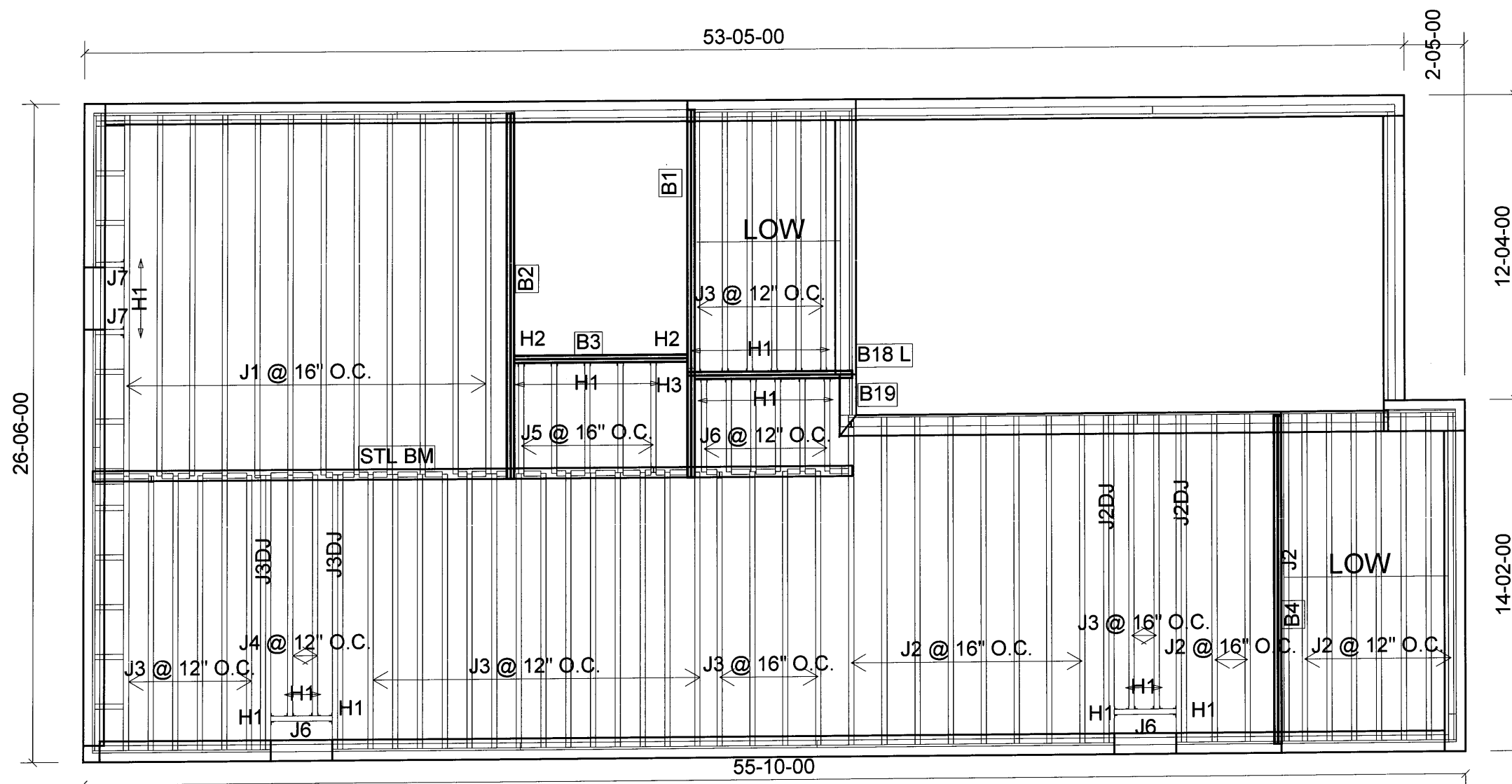
LOADING:  
DESIGN LOADS: L/480.000  
LIVE LOAD: 40.0 lb/ft²  
DEAD LOAD: 15.0 lb/ft  
TILED AREAS: 20 lb/ft

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 11/09/2017

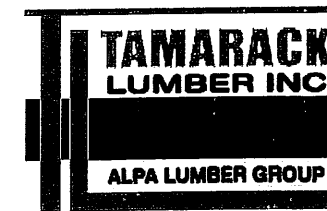
1st FLOOR

WOD



Connector Summary		
Qty	Manuf	Product
12	H1	IUS2.56/9.5
5	H1	IUS2.56/9.5
4	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
2	H2	HGUS410
1	H3	HUS1.81/10

# SUNKEN



FROM PLAN DATED: FEB 2016

BUILDER:  
BAYVIEW WELLINGTON

SITE:  
ALCONA SHORES

MODEL: S32-5-12

ELEVATION: A

LOT:  
CITY: INNISFIL

SALESMAN: MARIO  
DESIGNER: CZ  
REVISION:

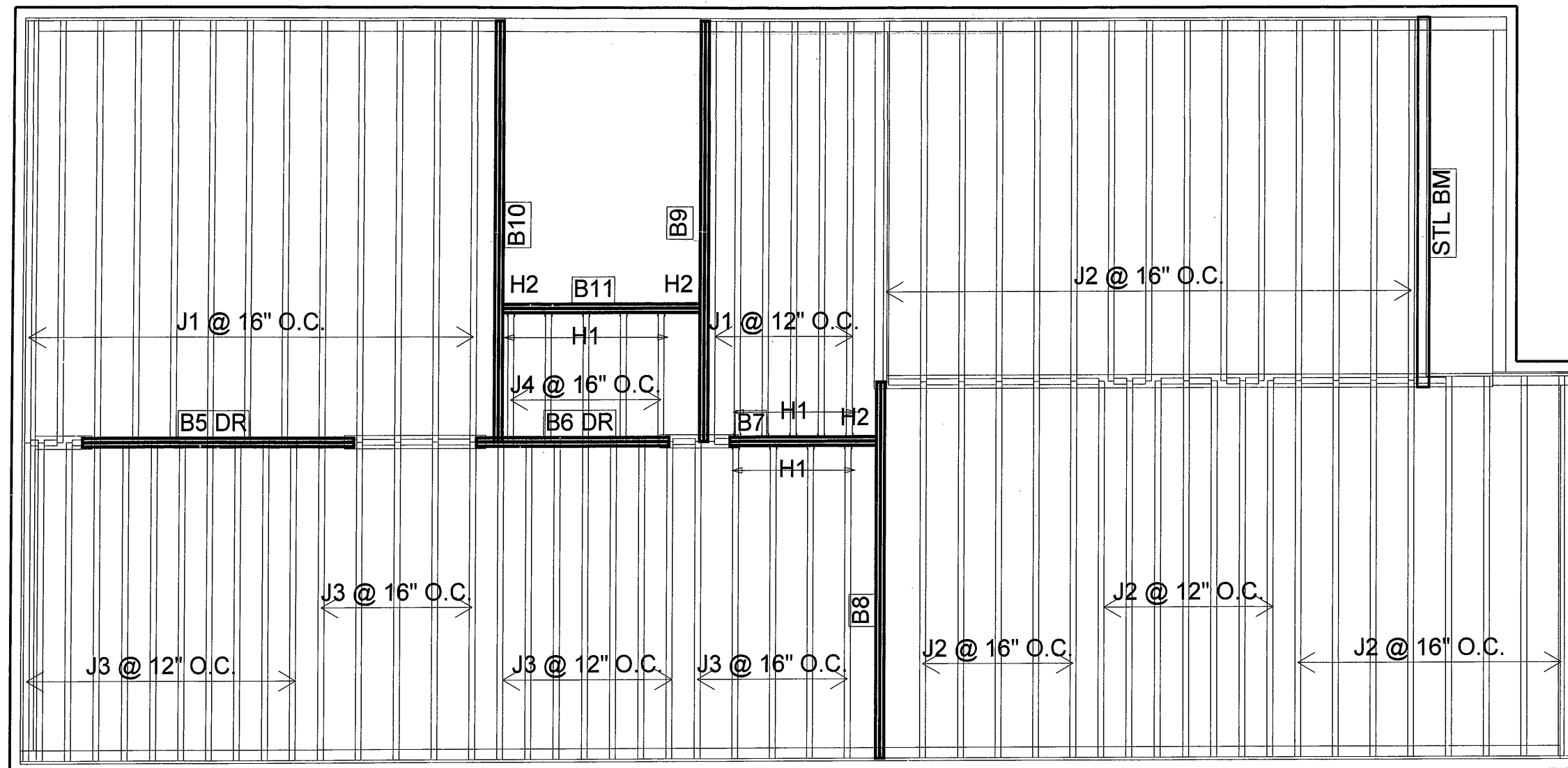
NOTES:  
CERAMIC TILE APPLICATION  
AS PER O.B.C. 9.30.6.  
SQUASH BLOCKS  
2x4 OR 2x6 #2 S.P.F. REQ'D UNDER  
INTERIOR UNIFORM LOAD BEARING  
WALLS.  
MULTIPLE SQUASH BLOCKS REQ'D  
UNDER CONCENTRATED LOADS.  
CANTILEVERED JOISTS  
REQUIRE I-JOIST BLOCKING ALONG  
BEARING AND RIMBOARD CLOSURE  
AT ENDS.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

LOADING:  
DESIGN LOADS: L/480.000  
LIVE LOAD: 40.0 lb/ft<sup>2</sup>  
DEAD LOAD: 15.0 lb/ft  
TILED AREAS: 20 lb/ft

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 06/09/2017

2nd FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	19
J2	14-00-00	9 1/2" NI-40x	1	35
J3	12-00-00	9 1/2" NI-40x	1	28
J4	6-00-00	9 1/2" NI-40x	1	5
B10	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B8	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B5 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B11	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B6 DR	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B7	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
14	H1	IUS2.56/9.5
3	H2	HGUS410

Town of Innisfil Certified Model  
14/02/2018 10:03:36 AM kgervais

FROM PLAN DATED: FEB 2016

BUILDER:  
BAYVIEW WELLINGTON

SITE:  
ALCONA SHORES

MODEL: S32-5-12

ELEVATION: B

LOT:  
CITY: INNISFIL

SALESMAN: MARIO  
DESIGNER: CZ  
REVISION: -

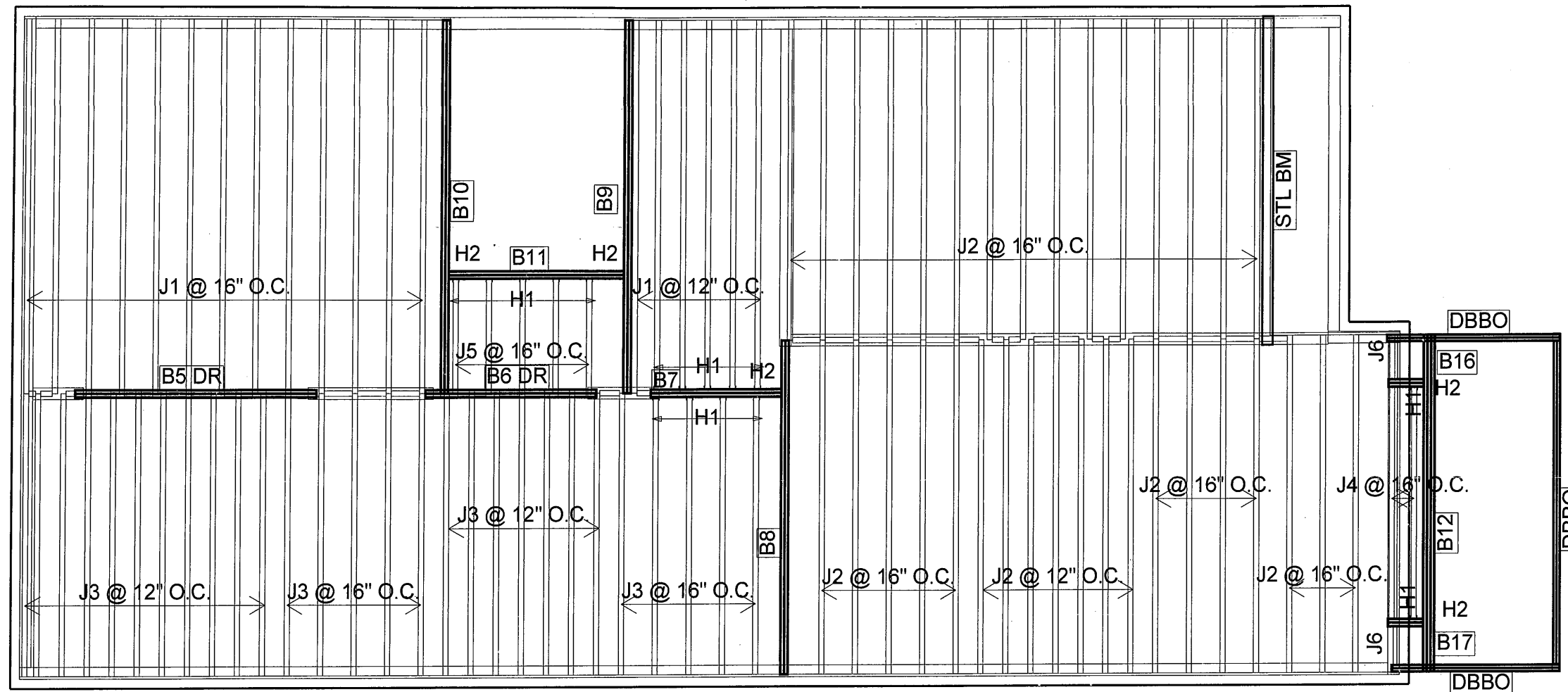
NOTES:  
CERAMIC TILE APPLICATION  
AS PER O.B.C. 9.30.6.  
SQUASH BLOCKS  
2x4 OR 2x6 #2 S.P.F. REQ'D UNDER  
INTERIOR UNIFORM LOAD BEARING  
WALLS.  
MULTIPLE SQUASH BLOCKS REQ'D  
UNDER CONCENTRATED LOADS.  
CANTILEVERED JOISTS  
REQUIRE I-JOIST BLOCKING ALONG  
BEARING AND RIMBOARD CLOSURE  
AT ENDS.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

LOADING:  
DESIGN LOADS: L/480.000  
LIVE LOAD: 40.0 lb/ft<sup>2</sup>  
DEAD LOAD: 15.0 lb/ft  
TILED AREAS: 20 lb/ft

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 06/09/2017

**2nd FLOOR**



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	19
J2	14-00-00	9 1/2" NI-40x	1	34
J3	12-00-00	9 1/2" NI-40x	1	28
J4	10-00-00	9 1/2" NI-40x	1	2
J5	6-00-00	9 1/2" NI-40x	1	5
J6	2-00-00	9 1/2" NI-40x	1	2
B10	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B9	16-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B8	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B12	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3
B5 DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B11	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B6 DR	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B7	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B16	2-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B17	2-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary		
Qty	Manuf	Product
16	H1	IUS2.56/9.5
3	H2	HGUS410
2	H2	HGUS410

**Town of Innisfil Certified Model**  
14/02/2018 10:03:40 AM kgervais



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B1(i1948)**

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

September 6, 2017 15:34:24

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B1(i1948)

Specifier:

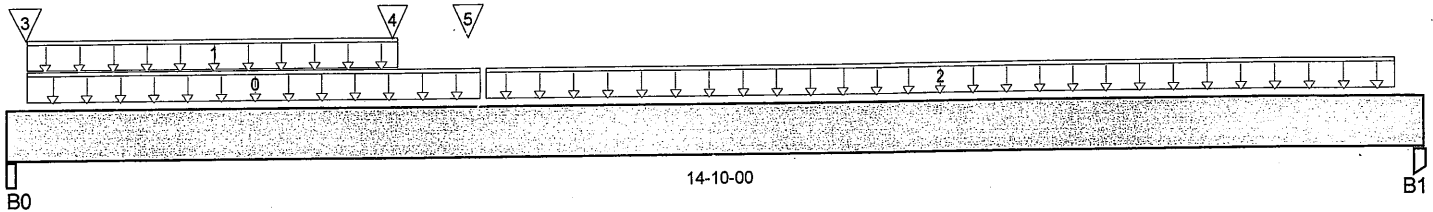
Designer:

Company:

Misc:

**Town of Innisfil Certified Model**

14/02/2018 10:03:44 AM kgervais



Total Horizontal Product Length = 14-10-00

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

Bearing	Live	Dead	Snow	Wind
B0, 5"	1,337 / 0	1,046 / 0		
B1, 6"	435 / 0	686 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-02-08	04-11-08	30	15			n/a
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-02-08	04-01-04	10	5			n/a
2	User Load	Unf. Lin. (lb/ft)	L	05-00-00	14-06-08		60			n/a
3	7(i486)	Conc. Pt. (lbs)	L	00-02-04	00-02-04	267	221			n/a
4	B19(i1949)	Conc. Pt. (lbs)	L	04-00-06	04-00-06	220	122			n/a
5	B3(i1902)	Conc. Pt. (lbs)	L	04-09-12	04-09-12	1,094	579			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	10,319 ft-lbs	17,073 ft-lbs	60.4%	1	04-09-12
End Shear	2,534 lbs	11,571 lbs	21.9%	1	01-02-08
Total Load Defl.	L/377 (0.447")	0.702"	63.7%	4	06-10-07
Live Load Defl.	L/732 (0.23")	0.468"	49.2%	5	06-07-04
Max Defl.	0.447"	n/a	n/a	4	06-10-07
Span / Depth	17.7	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Beam	5" x 3-1/2"	3,312 lbs	35.4%	15.5%	Unspecified
B1 Post	6" x 3-1/2"	1,510 lbs	8.9%	5.9%	Unspecified

**Notes**

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

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

Calculations assume unbraced length of Top: 09-09-08, Bottom: 09-09-08.

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

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

O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

**CONFORMS TO OBC 2012**

P612



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement/Flush Beams\B1(i1948)**

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

September 6, 2017 15:34:24

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

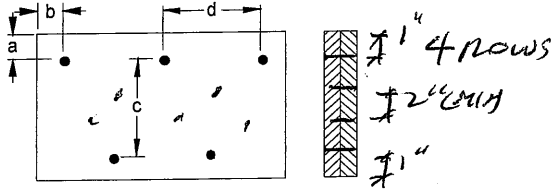
Description: Designs\Flush Beams\Basement\Flush Beams\B1(i194

Specifier:

Designer:

Company:

Misc:

**Connection Diagram**

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

Calculated Side Load = 159.4 lb/ft

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

Connectors are: Nails

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

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

BC CALO®, BC FRAMER®, 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.

**Town of Innisfil Certified Model**

14/02/2018 10:03:47 AM kgervais



DWG NO. TAM45375-17  
 STRUCTURAL  
 COMPONENT ONLY



# Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B2(i1891)

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

September 6, 2017 15:34:24

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B2(i1891)

Specifier:

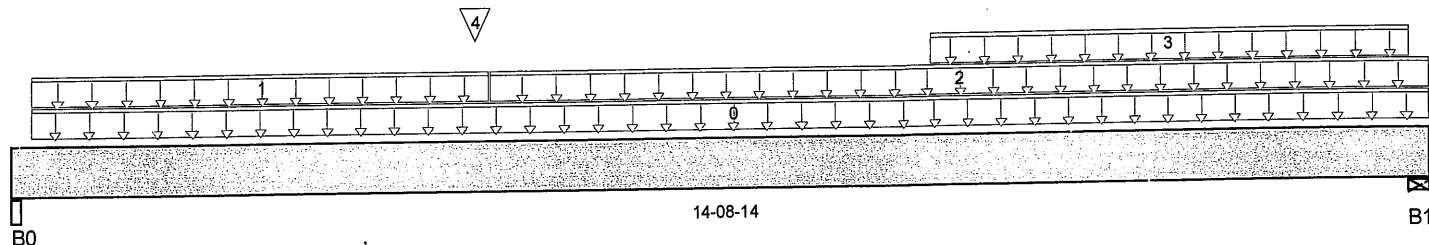
Designer:

Company:

Misc:

**Town of Innisfil Certified Model**

14/02/2018 10:03:50 AM kgervais



Total Horizontal Product Length = 14-08-14

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

Bearing	Live	Dead	Snow	Wind
B0, 5"	992 / 0	645 / 0		
B1, 2-3/8"	542 / 0	598 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-02-08	14-08-14	18	9			n/a
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-02-08	04-11-08	9	4			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	04-11-08	14-08-14	6	3			n/a
3	User Load	Unf. Lin. (lb/ft)	L	09-06-08	14-06-08		60			n/a
4	B3(i1902)	Conc. Pt. (lbs)	L	04-09-12	04-09-12	1,175	621			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	9,487 ft-lbs	25,408 ft-lbs	37.3%	1	04-09-12
End Shear	2,222 lbs	11,571 lbs	19.2%	1	01-02-08
Total Load Defl.	L/403 (0.424")	0.712"	59.5%	4	06-11-09
Live Load Defl.	L/692 (0.247")	0.475"	52%	5	06-11-09
Max Defl.	0.424"	n/a	n/a	4	06-11-09
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 Beam	5" x 3-1/2"	2,294 lbs	24.5%	10.7%	Unspecified
B1 Wall/Plate	2-3/8" x 3-1/2"	1,560 lbs	35.2%	15.4%	Unspecified

## Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO DBC 2012



DWG NO. TAM 45376-17  
STRUCTURAL  
COMPONENT ONLY



# Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B2(i1891)

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

September 6, 2017 15:34:24

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B2(i189

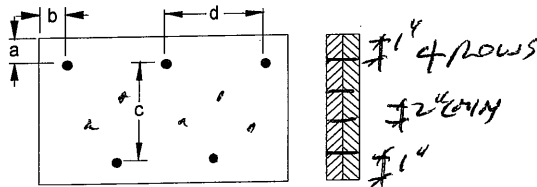
Specifier:

Designer:

Company:

Misc:

## Connection Diagram



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

Calculated Side Load = 172.2 lb/ft

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

Connectors are: Nails

3 1/2" ARDOX SPIRAL

## Disclosure

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

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

**Town of Innisfil Certified Model**

14/02/2018 10:03:54 AM kgervais



DWG NO. TAM 45376 17  
STRUCTURAL  
COMPONENT ONLY



# Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B3(i1902)

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

September 6, 2017 15:34:25

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

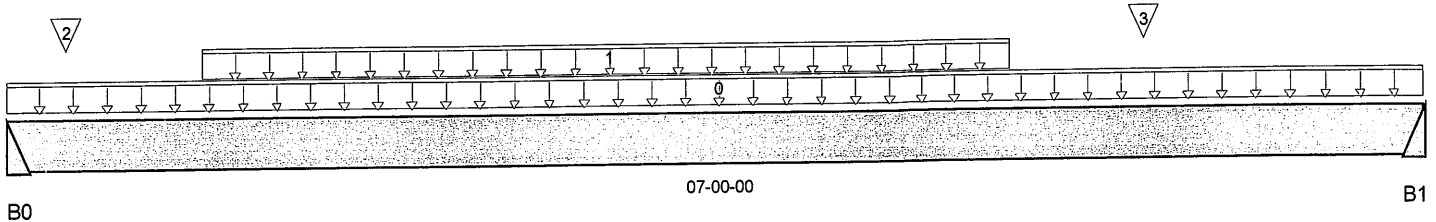
Description: Designs\Flush Beams\Basement\Flush Beams\B3(i1902)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 07-00-00

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

Bearing	Live	Dead	Snow	Wind
B0	1,173 / 0	620 / 0		
B1	1,096 / 0	580 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	User Load	Unf. Lin. (lb/ft)	L	00-00-00	07-00-00	240	120			n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-11-08	04-11-08	98	50			n/a
2	J5(i1925)	Conc. Pt. (lbs)	L	00-03-08	00-03-08	87	43			n/a
3	J5(i1958)	Conc. Pt. (lbs)	L	05-07-08	05-07-08	109	52			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	4,147 ft-lbs	25,408 ft-lbs	16.3%	1	03-05-08
End Shear	1,879 lbs	11,571 lbs	16.2%	1	00-11-08
Total Load Defl.	L/999 (0.049")	n/a	n/a	6	03-05-08
Live Load Defl.	L/999 (0.032")	n/a	n/a	8	03-05-08
Max Defl.	0.049"	n/a	n/a	6	03-05-08
Span / Depth	8.6	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"	2,534 lbs	n/a	29.7%	HGUS410
B1 Hanger	2" x 3-1/2"	2,370 lbs	n/a	27.7%	HGUS410

## Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012



P6 1/2

DWG NO. TAM 45377-17  
STRUCTURAL  
COMPONENT ONLY



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B3(i1902)**

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

September 6, 2017 15:34:25

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

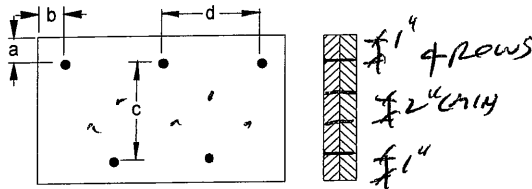
Description: Designs\Flush Beams\Basement\Flush Beams\B3(i1902)

Specifier:

Designer:

Company:

Misc:

**Connection Diagram**

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

Calculated Side Load = 178.5 lb/ft

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

Connectors are: Nails

3 1/2" ARDOX SPIRAL

**Disclosure**

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

Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call 1-800-964-6999 before installation.

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**Town of Innisfil Certified Model**

14/02/2018 10:03:57 AM kgervais



DWG NO. TAM 45377-17  
 STRUCTURAL  
 COMPONENT ONLY



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basment\Flush Beams\B4(i2061)**

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

September 6, 2017 15:34:24

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

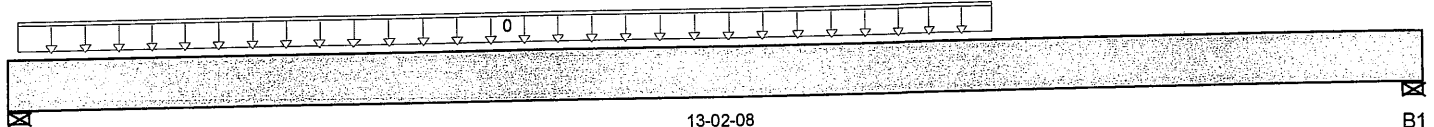
Description: Designs\Flush Beams\Basment\Flush Beams\B4(i2061)

Specifier:

Designer:

Company:

Misc:



B0

B1

Total Horizontal Product Length = 13-02-08

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"		419 / 0		
B1, 8"		255 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	User Load	Unf. Lin. (lb/ft)	L	00-01-02	09-02-08	1.00	0.65	1.00	1.15	n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand / Resistance	Load	Location
Pos. Moment	1,582 ft-lbs	13,029 ft-lbs	12.1%	0	01-03-00
End Shear	472 lbs	7,521 lbs	6.3%	1	06-04-03
Total Load Defl.	L/999 (0.059")	n/a	n/a	1	06-04-03
Max Defl.	0.059"	n/a	n/a		00-00-00
Span / Depth	15.4	n/a	n/a		

**Town of Innisfil Certified Model**

14/02/2018 10:04:00 AM kgervais

**Bearing Supports**

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	586 lbs	3.3%	3.8%	Unspecified
B1 Wall/Plate	8" x 3-1/2"	358 lbs	1.4%	1.6%	Unspecified

**Notes**

Design meets Code minimum (L/240) Total load deflection criteria.  
 Calculations assume unbraced length of Top: 12-01-00, Bottom: 12-01-00.  
 Resistance Factor phi has been applied to all presented results per CSA O86.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 9

**CONFORMS TO OBC 2012**



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basment\Flush Beams\B4(i2061)**

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

September 6, 2017 15:34:24

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

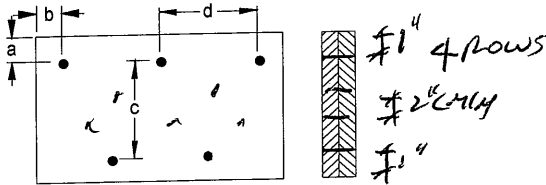
Description: Designs\Flush Beams\Basment\Flush Beams\B4(i206

Specifier:

Designer:

Company:

Misc:

**Connection Diagram**

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

Member has no side loads.

Connectors are: 16d Nails

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

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

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**Town of Innisfil Certified Model**

14/02/2018 10:04:02 AM kgervais



DWG NO. TAM 4537B-17  
 STRUCTURAL  
 COMPONENT ONLY



# Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B5 DR(i917)

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

September 6, 2017 15:34:24

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

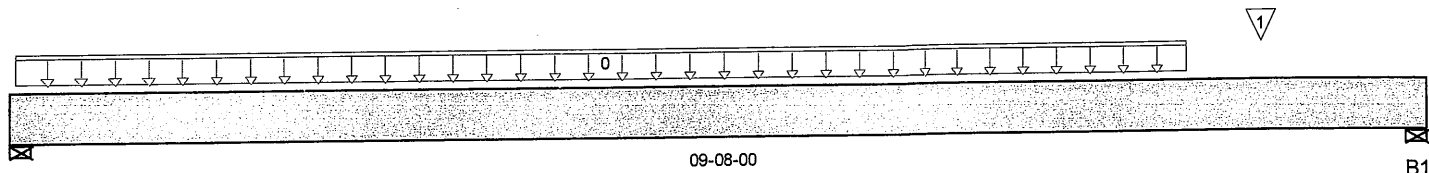
Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B5 D

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 09-08-00

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

Bearing	Live	Dead	Snow	Wind
B0, 4"	2,460 / 0	1,276 / 0		
B1, 4"	2,194 / 0	1,144 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-08	08-00-08	502	251	1.00	1.15	n/a
1	-	Conc. Pt. (lbs)	L	08-06-08	08-06-08	634	317			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	11,367 ft-lbs	25,408 ft-lbs	44.7%	1	04-06-08
End Shear	4,707 lbs	11,571 lbs	40.7%	1	08-06-08
Total Load Defl.	L/458 (0.239")	0.456"	52.4%	4	04-09-08
Live Load Defl.	L/695 (0.158")	0.304"	51.8%	5	04-09-08
Max Defl.	0.239"	n/a	n/a	4	04-09-08
Span / Depth	11.5	n/a	n/a		00-00-00

Town of Markham Certified Model  
14/02/2018 09:04:23 0.04kg G. Walskervais

## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4" x 3-1/2"	5,285 lbs	46.5%	30.9%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	4,721 lbs	41.5%	27.6%	Unspecified

## Notes

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

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

Calculations assume unbraced length of Top: 00-04-02, Bottom: 00-04-02.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012



DWG NO. TAM-45379-17  
STRUCTURAL  
COMPONENT ONLY

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B5

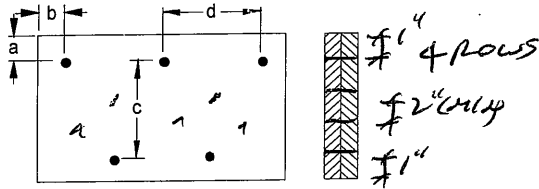
Specifier:

Designer:

Company:

Misc:

### Connection Diagram



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

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.  
Member has no side loads.

Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL

### Disclosure

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

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**Town of Innisfil Certified Model**

14/02/2018 10:04:07 AM kgervais



*Per*

DWG NO. TAM 45379-17  
STRUCTURAL  
COMPONENT ONLY



# Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B6 DR(i1004)

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

September 6, 2017 15:34:24

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

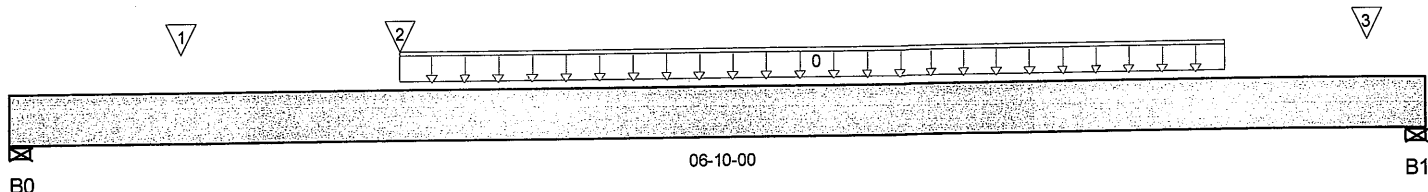
Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B6 D

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 06-10-00

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

Bearing	Live	Dead	Snow	Wind
B0, 4"	1,388 / 0	991 / 0		
B1, 4"	1,033 / 0	573 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	01-10-08	05-10-08	307	154			n/a
1	-	Conc. Pt. (lbs)	L	00-09-15	00-09-15	848	710			n/a
2	J3(i1003)	Conc. Pt. (lbs)	L	01-10-08	01-10-08	216	108			n/a
3	J5(i916)	Conc. Pt. (lbs)	L	06-06-08	06-06-08	130	65			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,632 ft-lbs	25,408 ft-lbs	14.3%	1	02-10-08
End Shear	2,478 lbs	11,571 lbs	21.4%	1	01-01-08
Total Load Defl.	L/999 (0.037")	n/a	n/a	4	03-04-08
Live Load Defl.	L/999 (0.024")	n/a	n/a	5	03-04-08
Max Defl.	0.037"	n/a	n/a	4	03-04-08
Span / Depth	7.9	n/a	n/a		00-00-00

**Town of Innisfil Certified Model**

14/02/2018 10:04:09 AM kgervais

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4" x 3-1/2"	3,321 lbs	29.2%	19.4%	Unspecified
B1 Wall/Plate	4" x 3-1/2"	2,265 lbs	19.9%	13.3%	Unspecified

## Notes

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

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

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

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

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

**CONFORMS TO OBC 2012**

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9



DWG NO. TAM 45382 17  
STRUCTURAL  
COMPONENT ONLY

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B6

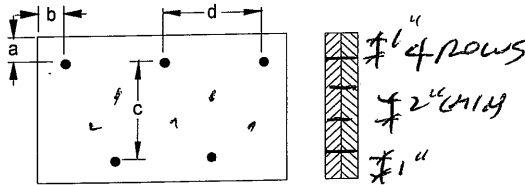
Specifier:

Designer:

Company:

Misc:

### Connection Diagram



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

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

Member has no side loads.

Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL

### Disclosure

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**Town of Innisfil Certified Model**

14/02/2018 10:04:10 AM kgervais



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DWG NO. TAM 45380 17  
STRUCTURAL  
COMPONENT ONLY



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B7(i1031)**

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

September 6, 2017 15:34:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

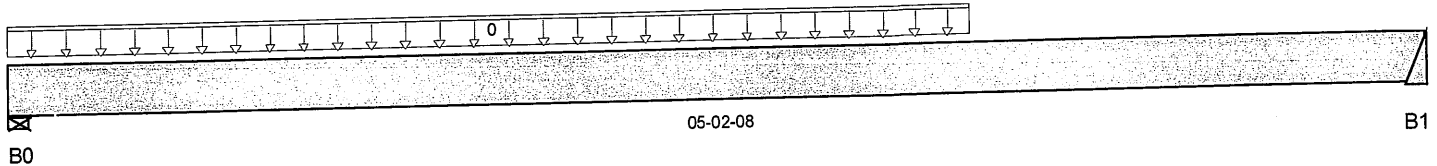
Description: Designs\Flush Beams\1st Floor\Flush Beams\B7(i1031)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 05-02-08

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

Bearing	Live	Dead	Snow	Wind	
B0, 4"	1,528 / 0	790 / 0			
B1	1,071 / 0	561 / 0			

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	03-06-08	567	284			n/a
1	-	Conc. Pt. (lbs)	L	04-02-12	04-02-12	592	297			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,174 ft-lbs	25,408 ft-lbs	12.5%	1	02-10-08
End Shear	2,296 lbs	11,571 lbs	19.8%	1	04-03-00
Total Load Defl.	L/999 (0.019")	n/a	n/a	4	02-08-10
Live Load Defl.	L/999 (0.012")	n/a	n/a	5	02-08-10
Max Defl.	0.019"	n/a	n/a	4	02-08-10
Span / Depth	6.1	n/a	n/a		00-00-00

**Town of Innisfil Certified Model**

14/02/2018 10:04:11 AM kgervais

**Bearing Supports**

Beaming Support						
B0	Wall/Plate	4" x 3-1/2"	3,280 lbs	43.9%	19.2%	Unspecified
B1	Hanger	2" x 3-1/2"	2,308 lbs	n/a	27%	HGUS410

**Notes**

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

**CONFORMS TO OBC 2012**



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor/Flush Beams\B7(i1031)**

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

September 6, 2017 15:34:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

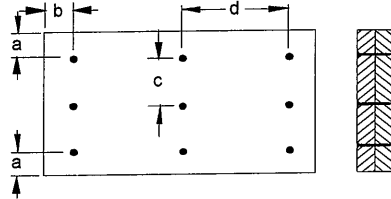
Description: Designs\Flush Beams\1st Floor\Flush Beams\B7(i1031

Specifier:

Designer:

Company:

Misc:

**Connection Diagram**

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

Calculated Side Load = 595.9 lb/ft

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

Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL

**Disclosure**

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**Town of Innisfil Certified Model**

14/02/2018 10:04:13 AM kgervais



DWG NO. TAM 4531-17  
 STRUCTURAL  
 COMPONENT ONLY



# Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B8(i891)

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

September 6, 2017 15:34:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

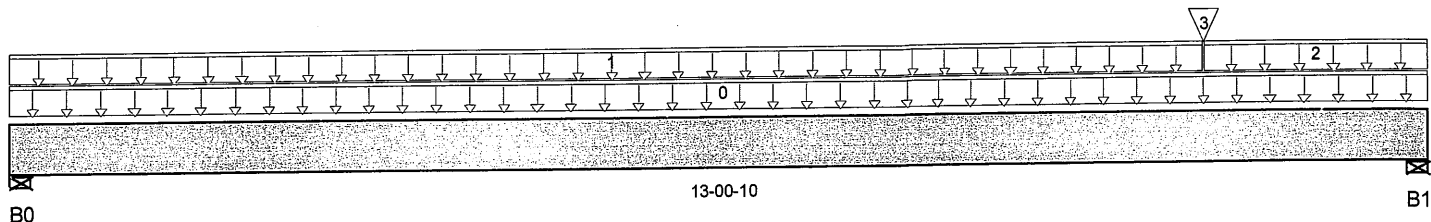
Description: Designs\Flush Beams\1st Floor\Flush Beams\B8(i891)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 13-00-10

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

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	507 / 0	321 / 0		
B1, 2-3/4"	1,231 / 0	698 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	13-00-10	30	15			n/a
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	11-00-02	23	11			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	11-00-02	13-00-10	22	11			n/a
3	B7(i1031)	Conc. Pt. (lbs)	L	11-00-02	11-00-02	1,044	546			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	5,034 ft-lbs	25,408 ft-lbs	19.8%	1	09-03-13
End Shear	2,594 lbs	11,571 lbs	22.4%	1	12-00-06
Total Load Defl.	L/751 (0.201")	0.629"	31.9%	4	07-00-01
Live Load Defl.	L/1,201 (0.126")	0.419"	30%	5	07-00-01
Max Defl.	0.201"	n/a	n/a	4	07-00-01
Span / Depth	15.9	n/a	n/a		00-00-00

**Town of Innisfil Certified Model**

14/02/2018 10:04:14 AM kgervais

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4-3/8" x 3-1/2"	1,161 lbs	14.2%	6.2%	Unspecified
B1 Wall/Plate	2-3/4" x 3-1/2"	2,720 lbs	52.9%	23.2%	Unspecified

## Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012



PC12

DWG NO. TAM 45382-17  
STRUCTURAL  
COMPONENT ONLY



# Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor/Flush Beams\B8(i891)

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

September 6, 2017 15:34:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B8(i891)

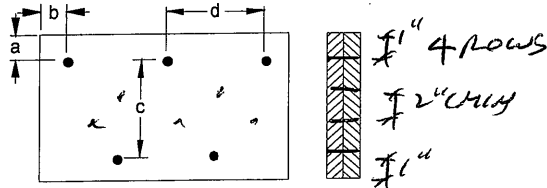
Specifier:

Designer:

Company:

Msc:

## Connection Diagram



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

Calculated Side Load = 172.3 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: 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 Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call 1-800-964-6999 before installation.

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**Town of Innisfil Certified Model**

14/02/2018 10:04:15 AM kgervais



DWG NO. TAM45382-17  
STRUCTURAL  
COMPONENT ONLY



# Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B9(i908)

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

September 6, 2017 15:34:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

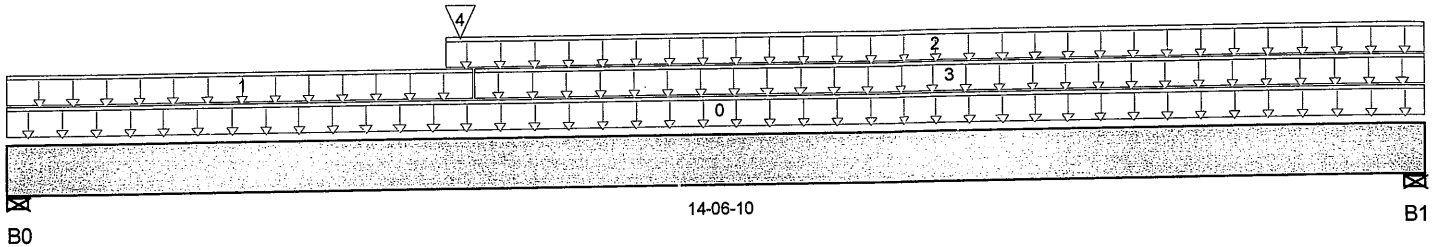
Description: Designs\Flush Beams\1st Floor\Flush Beams\B9(i908)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 14-06-10

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

Bearing	Live	Dead	Snow	Wind
B0, 2-3/4"	808 / 0	700 / 0		
B1, 4-3/8"	394 / 0	679 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	14-06-10	6	3			n/a
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	04-09-04	30	15			n/a
2	User Load	Unf. Lin. (lb/ft)	L	04-05-12	14-06-10		60			n/a
3	FC3 Floor Material	Unf. Lin. (lb/ft)	L	04-09-04	14-06-10	6	3			n/a
4	B11(i980)	Conc. Pt. (lbs)	L	04-07-08	04-07-08	914	491			n/a

**Town of Innisfil Certified Model**  
14/02/2018 10:04:17 AM kgervais

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	8,348 ft-lbs	25,408 ft-lbs	32.9%	1	04-07-08
End Shear	1,995 lbs	11,571 lbs	17.2%	1	01-00-04
Total Load Defl.	L/443 (0.381")	0.704"	54.1%	4	06-09-08
Live Load Defl.	L/919 (0.184")	0.469"	39.2%	5	06-07-14
Max Defl.	0.381"	n/a	n/a	4	06-09-08
Span / Depth	17.8	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	2-3/4" x 3-1/2"	2,086 lbs	40.6%	17.8%	Unspecified
B1 Wall/Plate	4-3/8" x 3-1/2"	951 lbs	17.9%	7.8%	Unspecified

## Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

**CONFORMS TO OBC 2012**



P612

DWG NO. TAM 45383 17  
STRUCTURAL  
COMPONENT ONLY

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B9(i908)

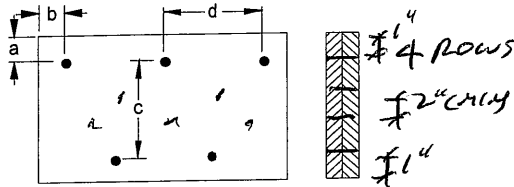
Specifier:

Designer:

Company:

Misc:

### Connection Diagram



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

Calculated Side Load = 136.4 lb/ft

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

Connectors are: Nails

3 1/2" ARDOX SPIRAL

### Disclosure

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**Town of Innisfil Certified Model**

14/02/2018 10:04:18 AM kgervais



DWG NO. TAM453B3-17  
STRUCTURAL  
COMPONENT ONLY



# Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B10(i948)

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

September 6, 2017 15:34:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

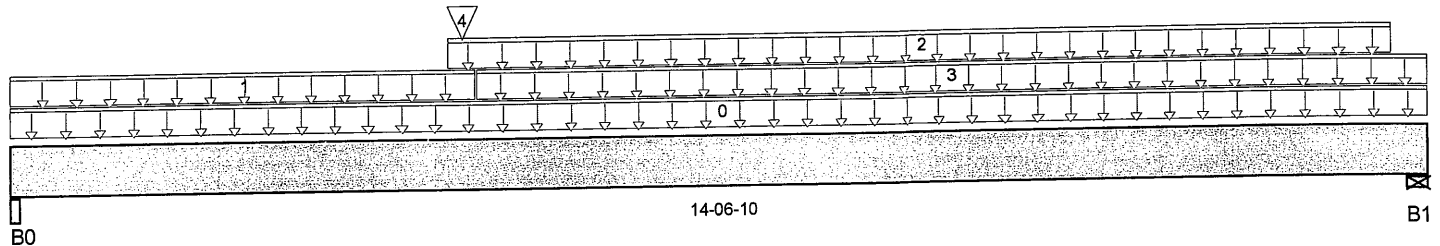
Description: Designs\Flush Beams\1st Floor\Flush Beams\B10(i948)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 14-06-10

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

Bearing	Live	Dead	Snow	Wind
B0, 1-3/4"	560 / 0	575 / 0		
B1, 4-3/8"	356 / 0	641 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	14-06-10	18	9			n/a
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	04-09-04	9	4			n/a
2	User Load	Unf. Lin. (lb/ft)	L	04-05-12	14-02-04		60			n/a
3	FC3 Floor Material	Unf. Lin. (lb/ft)	L	04-09-04	14-06-10	6	3			n/a
4	B11(i980)	Conc. Pt. (lbs)	L	04-07-08	04-07-08	557	313			n/a

**Town of Innisfil Certified Model**  
14/02/2018 10:04:20 AM kgervais

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	6,344 ft-lbs	25,408 ft-lbs	25%	1	04-07-08
End Shear	1,495 lbs	11,571 lbs	12.9%	1	00-11-04
Total Load Defl.	L/536 (0.317")	0.708"	44.8%	4	06-11-02
Live Load Defl.	L/1,217 (0.14")	0.472"	29.6%	5	06-07-14
Max Defl.	0.317"	n/a	n/a	4	06-11-02
Span / Depth	17.9	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Beam	1-3/4" x 3-1/2"	1,559 lbs	23.4%	20.9%	Unspecified
B1 Wall/Plate	4-3/8" x 3-1/2"	897 lbs	16.9%	7.4%	Unspecified

## Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

**CONFORMS TO OBC 2012**





BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B10(i948

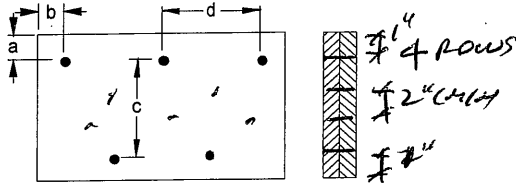
Specifier:

Designer:

Company:

Misc:

## Connection Diagram



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

Calculated Side Load = 84.3 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: 3/4" x 3" Ardox Spiral Nails

3 1/2" ARDOX SPIRAL

## Disclosure

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**Town of Innisfil Certified Model**

14/02/2018 10:04:21 AM kgervais



pg 2

DWG NO. TAM45384-17  
STRUCTURAL  
COMPONENT ONLY



# Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B11(i980)

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

September 6, 2017 15:34:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

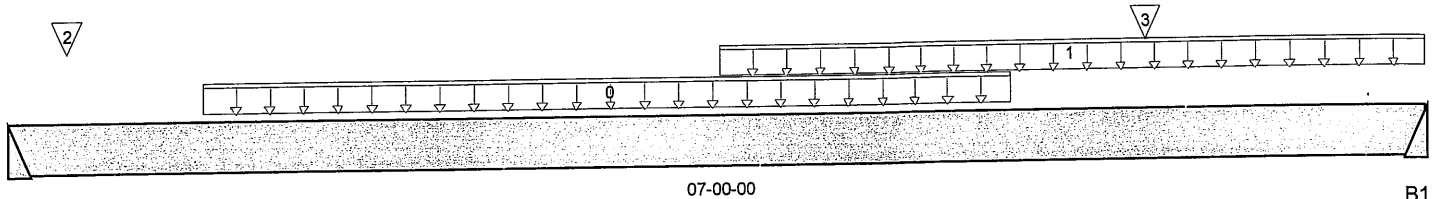
Description: Designs\Flush Beams\1st Floor\Flush Beams\B11(i980)

Specifier:

Designer:

Company:

Msc:



Total Horizontal Product Length = 07-00-00

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

Bearing	Live	Dead	Snow	Wind
B0	548 / 0	308 / 0		
B1	923 / 0	495 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	00-11-08	04-11-08	100	50			n/a
1	User Load	Unf. Lin. (lb/ft)	L	03-06-00	07-00-00	240	120			n/a
2	J5(i956)	Conc. Pt. (lbs)	L	00-03-08	00-03-08	89	44			n/a
3	J5(i916)	Conc. Pt. (lbs)	L	05-07-08	05-07-08	143	71			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,900 ft-lbs	25,408 ft-lbs	11.4%	1	04-03-08
End Shear	1,503 lbs	11,571 lbs	13%	1	06-00-08
Total Load Defl.	L/999 (0.032")	n/a	n/a	4	03-08-06
Live Load Defl.	L/999 (0.021")	n/a	n/a	5	03-08-06
Max Defl.	0.032"	n/a	n/a	4	03-08-06
Span / Depth	8.6	n/a	n/a		00-00-00

**Town of Innisfil Certified Model**

14/02/2018 10:04:22 AM kgervais

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 3-1/2"	1,208 lbs	n/a	14.1%	HGUS410
B1 Hanger	2" x 3-1/2"	2,003 lbs	n/a	23.5%	HGUS410

## Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

**CONFORMS TO OBC 2012**





Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B11(i980)**

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

September 6, 2017 15:34:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

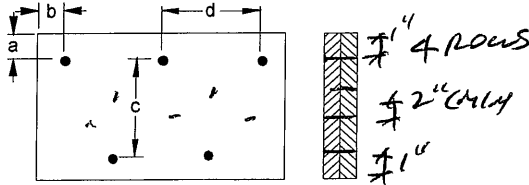
Description: Designs\Flush Beams\1st Floor\Flush Beams\B11(i980)

Specifier:

Designer:

Company:

Misc:

**Connection Diagram**

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

Calculated Side Load = 191.6 lb/ft

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

Connectors are: 3" x 1/2" ARDOX SPIRAL

3 1/2" ARDOX SPIRAL

**Disclosure**

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**Town of Innisfil Certified Model**

14/02/2018 10:04:25 AM kgervais



DWG NO. TAM 45385.17  
 STRUCTURAL  
 COMPONENT ONLY



# Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B12(i1285)

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

September 6, 2017 15:34:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

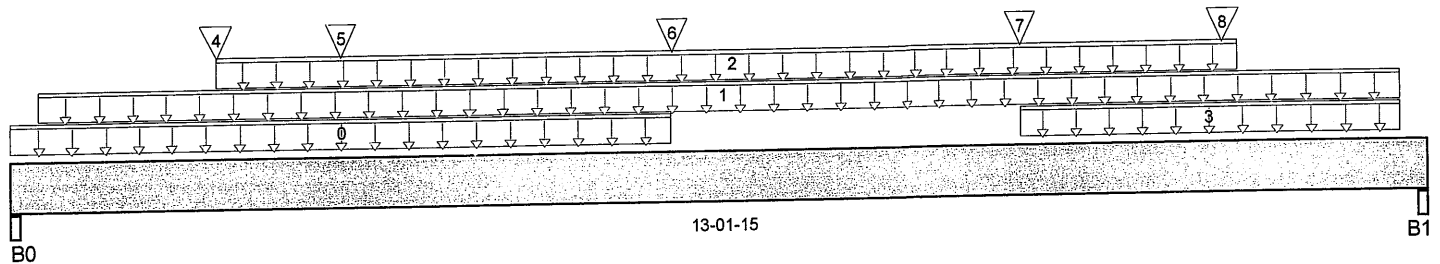
Description: Designs\Flush Beams\1st Floor\Flush Beams\B12(i1285)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 13-01-15

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

Bearing	Live	Dead	Snow	Wind
B0, 3"	817 / 0	1,361 / 0	1,892 / 0	
B1, 3"	772 / 0	1,235 / 0	1,758 / 0	

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	User Load	Unf. Lin. (lb/ft)	L	00-00-00	06-01-07	33	130	96		n/a
1	User Load	Unf. Lin. (lb/ft)	L	00-03-00	12-10-15	44	40	128		n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	01-10-14	11-05-01	16	8			n/a
3	User Load	Unf. Lin. (lb/ft)	L	09-04-09	12-10-15	33	130	96		n/a
4	B17(i1289)	Conc. Pt. (lbs)	L	01-10-14	01-10-14	122	126	91		n/a
5	User Load	Conc. Pt. (lbs)	L	03-00-11	03-00-11	99	90	288		n/a
6	User Load	Conc. Pt. (lbs)	L	06-01-07	06-01-07	99	90	288		n/a
7	User Load	Conc. Pt. (lbs)	L	09-04-09	09-04-09	99	90	288		n/a
8	B16(i1290)	Conc. Pt. (lbs)	L	11-03-05	11-03-05	120	124	91		n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	14,629 ft-lbs	39,636 ft-lbs	36.9%	13	06-01-07
End Shear	4,384 lbs	17,356 lbs	25.3%	13	01-00-08
Total Load Defl.	L/361 (0.425")	0.639"	66.5%	45	06-06-05
Live Load Defl.	L/553 (0.277")	0.426"	65.1%	61	06-06-05
Max Defl.	0.425"	n/a	n/a	45	06-06-05
Span / Depth	16.2	n/a	n/a		00-00-00

**Town of Innisfil Certified Model**

14/02/2018 10:04:28 AM kgervais

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Beam	3" x 5-1/4"	4,948 lbs	58.8%	25.8%	Unspecified
B1 Beam	3" x 5-1/4"	4,566 lbs	54.3%	23.8%	Unspecified

## Notes



P614

DWG NO. TAM45386 17  
STRUCTURAL  
COMPONENT ONLY



# Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B12(i1285)

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

September 6, 2017 15:34:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B12(i1285)

Specifier:

Designer:

Company:

Misc:

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

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

Calculations assume unbraced length of Top: 01-09-01, Bottom: 01-09-01.

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

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

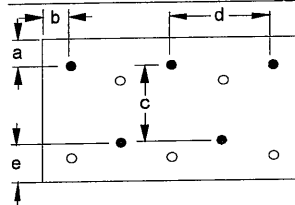
**CONFORMS TO OBC 2012**

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

## Connection Diagram



4 rows

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

Calculated Side Load = 58.2 lb/ft

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

Nailing schedule applies to both sides of the member.

Connectors are: Nails

3 1/2" ARDOX SPIRAL

## Disclosure

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**Town of Innisfil Certified Model**

14/02/2018 10:04:29 AM kgervais



P62

DWG NO. TAM 45386-17  
STRUCTURAL  
COMPONENT ONLY

**BC CALC® Design Report**


Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

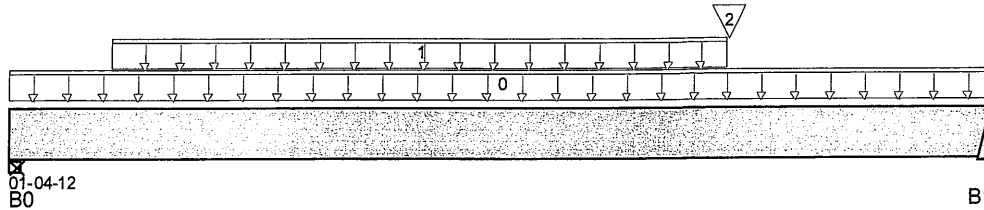
Description: Designs\Flush Beams\1st Floor\Flush Beams\B16(i1290)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 01-04-12

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	100 / 0	165 / 0	162 / 0	
B1	133 / 0	142 / 0	106 / 0	

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	User Load	Unf. Lin. (lb/ft)	L	00-00-00	01-04-12	66	160	192		n/a
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-01-12	01-00-04	6				n/a
2	J4(i1287)	Conc. Pt. (lbs)	L	01-00-04	01-00-04	136	68			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	89 ft-lbs	25,408 ft-lbs	0.4%	1	01-00-04
End Shear	221 lbs	11,571 lbs	1.9%	13	00-05-04
Span / Depth	1.1	n/a	n/a		00-00-00

**Bearing Supports**

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	500 lbs	4.9%	2.1%	Unspecified
B1 Hanger	2" x 3-1/2"	430 lbs	n/a	5%	HGUS410

**Town of Innisfil Certified Model**

14/02/2018 10:04:30 AM kgervais

**Notes**

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

**CONFORMS TO OBC 2012**

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9



P614

 DWG NO. TAM453B7-17  
 STRUCTURAL  
 COMPONENT ONLY

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B16(i1290)

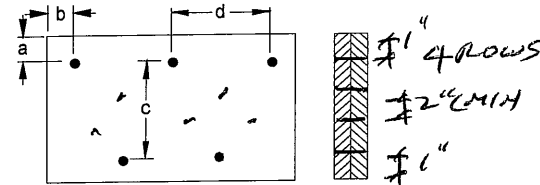
Specifier:

Designer:

Company:

Misc:

### Connection Diagram



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

Calculated Side Load = 207.0 lb/ft

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

Connectors are: Nails

3 1/2" ARDOX SPIRAL

### Disclosure

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

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**Town of Innisfil Certified Model**

14/02/2018 10:04:32 AM kgervais





# Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor...\B17(i1289)

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

September 6, 2017 15:34:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

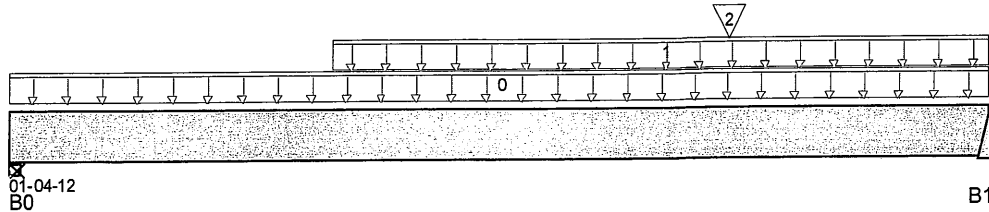
Description: Designs\Flush Beams\1st Floor\Flush Beams\B17(i1289)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 01-04-12

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	98 / 0	164 / 0	162 / 0	
B1	133 / 0	142 / 0	106 / 0	

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	User Load	Unf. Lin. (lb/ft)	L	00-00-00	01-04-12	66	160	192		n/a
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-05-08	01-04-12	6				n/a
2	J4(i1287)	Conc. Pt. (lbs)	L	01-00-04	01-00-04	133	67			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	89 ft-lbs	25,408 ft-lbs	0.3%	1	01-00-04
End Shear	220 lbs	11,571 lbs	1.9%	13	00-05-04
Span / Depth	1.1	n/a	n/a		00-00-00

## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0	Wall/Plate 5-1/2" x 3-1/2"	498 lbs	4.8%	2.1%	Unspecified
B1	Hanger 2" x 3-1/2"	430 lbs	n/a	5%	HGUS410

**Town of Innisfil Certified Model**

14/02/2018 10:04:33 AM kgervais

## Notes

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

**CONFORMS TO CBC 2012**



P616

DWG NO. TAM45388.17  
STRUCTURAL  
COMPONENT ONLY



# Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B17(i1289)

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

September 6, 2017 15:34:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B17(i1289)

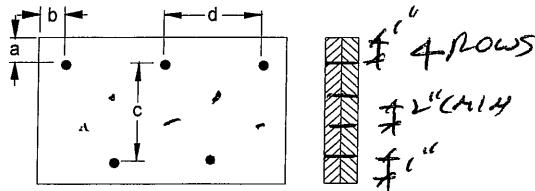
Specifier:

Designer:

Company:

Misc:

## Connection Diagram



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

Calculated Side Load = 202.9 lb/ft

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

Connectors are: 3 1/2" ARDOX SPIRAL

## Disclosure

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

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**Town of Innisfil Certified Model**

14/02/2018 10:04:34 AM kgervais



DWG NO. TAM 45308 17  
STRUCTURAL  
COMPONENT ONLY



# Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\...\B18 L(i1827)

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

September 6, 2017 15:34:24

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B18 L(i1827

Specifier:

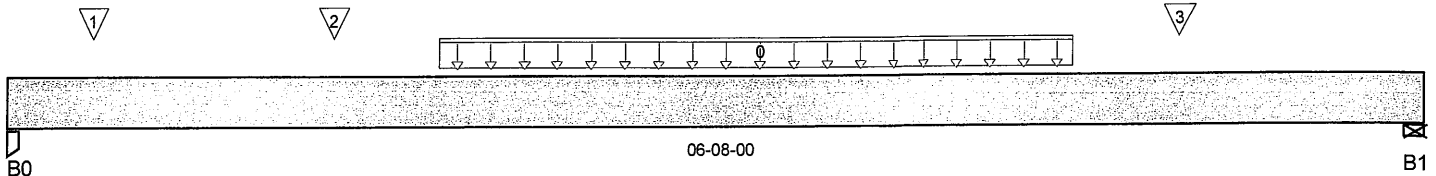
Designer:

Company:

Misc:

**Town of Innisfil Certified Model**

14/02/2018 10:04:37 AM kgervais



Total Horizontal Product Length = 06-08-00

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	634 / 0	334 / 0		
B1, 5-1/2"	603 / 0	318 / 0		

## Load Summary

Tag Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0 Smoothed Load	Unf. Lin. (lb/ft)	L	02-00-04	05-00-04	213	107			n/a
1 J3(i1839)	Conc. Pt. (lbs)	L	00-04-12	00-04-12	131	66			n/a
2 J3(i1830)	Conc. Pt. (lbs)	L	01-06-04	01-06-04	238	119			n/a
3 J3(i1837)	Conc. Pt. (lbs)	L	05-06-04	05-06-04	229	114			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,129 ft-lbs	12,704 ft-lbs	16.8%	1	03-06-04
End Shear	1,232 lbs	5,785 lbs	21.3%	1	05-05-00
Total Load Defl.	L/999 (0.039")	n/a	n/a	4	03-03-04
Live Load Defl.	L/999 (0.026")	n/a	n/a	5	03-03-04
Max Defl.	0.039"	n/a	n/a	4	03-03-04
Span / Depth	7.6	n/a	n/a		00-00-00

## Disclosure

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

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Post	3-1/2" x 1-3/4"	1,368 lbs	27.5%	18.3%	Unspecified
B1 Wall/Plate	5-1/2" x 1-3/4"	1,303 lbs	25.4%	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 unbraced length of Top: 00-03-08, Bottom: 00-03-08.

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

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

**CONFORMS TO OBC 2012**

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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DWG NO. TAM 45389-17  
STRUCTURAL  
COMPONENT ONLY



# Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basment\Flush Beams\B19(i1949)

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

September 6, 2017 15:34:24

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: S32-5-12-ELB.mmdl

Description: Designs\Flush Beams\Basment\Flush Beams\B19(i1949

Specifier:

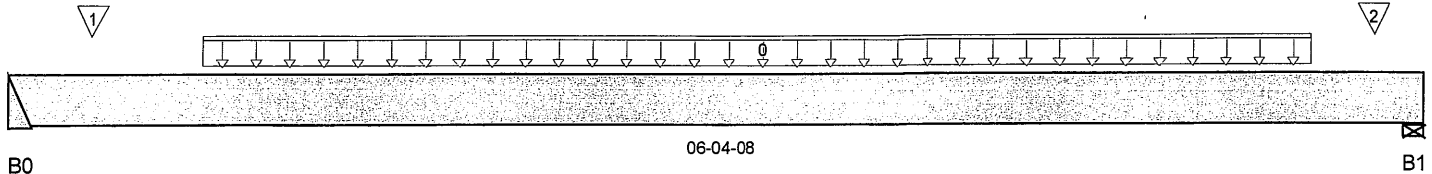
Designer:

Company:

Misc:

**Town of Innisfil Certified Model**

14/02/2018 10:04:38 AM kgervais



Total Horizontal Product Length = 06-04-08

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

Bearing	Live	Dead	Snow	Wind
B0	223 / 0	124 / 0		
B1, 5-1/2"	766 / 0	1,269 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	00-10-08	05-10-08	78	39			n/a
1	J6(i1918)	Conc. Pt. (lbs)	L	00-04-08	00-04-08	53	24			n/a
2	1(i483)	Conc. Pt. (lbs)	L	06-01-12	06-01-12	547	1,143			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	742 ft-lbs	12,704 ft-lbs	5.8%	1	03-04-08
End Shear	426 lbs	5,785 lbs	7.4%	1	05-01-08
Total Load Defl.	L/999 (0.013")	n/a	n/a	4	03-00-12
Live Load Defl.	L/999 (0.008")	n/a	n/a	5	03-00-12
Max Defl.	0.013"	n/a	n/a	4	03-00-12
Span / Depth	7.4	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 Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call 1-800-964-6999 before installation.

## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 1-3/4"	490 lbs	n/a	11.5%	HUS1.81/10
B1 Wall/Plate	5-1/2" x 1-3/4"	2,734 lbs	53.2%	23.3%	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.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

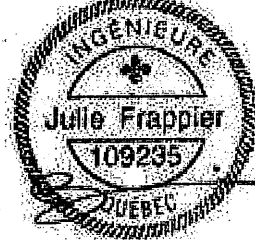
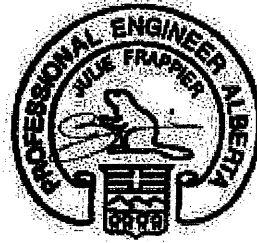
Importance Factor: Normal Part code: Part 9

**CONFORMS TO OBC 2012**

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DWG NO. TAM 45390 17  
STRUCTURAL  
COMPONENT ONLY



## Maximum Floor Spans

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

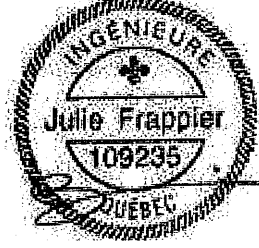
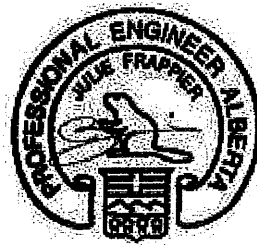
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-1"	14'-2"	13'-9"	N/A	15'-7"	14'-8"	14'-2"	N/A
	NI-40x	16'-1"	15'-2"	14'-8"	N/A	16'-7"	15'-7"	15'-1"	N/A
	NI-60	16'-3"	15'-4"	14'-10"	N/A	16'-8"	15'-9"	15'-3"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

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

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

**Town of Innisfil Certified Model**  
14/02/2018 10:04:43 AM kgervais



## Maximum Floor Spans

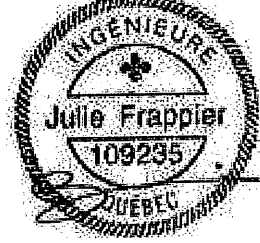
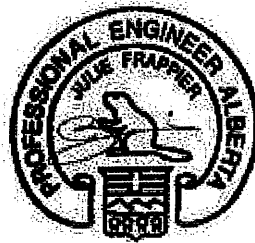
Live Load = 40 psf, Dead Load = 15 psf  
Simple Spans, L/480 Deflection Limit  
3/4" OSB G&N Sheathing

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

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

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 3/4 inch for a joist spacing of 24 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



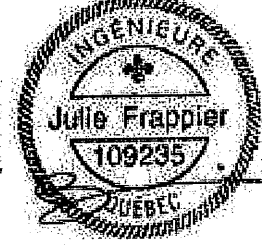
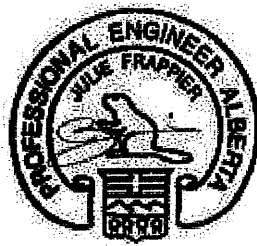
## Maximum Floor Spans

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

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

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

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



## Maximum Floor Spans

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

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

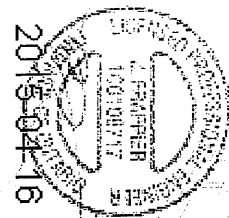
  

Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-2"	13'-4"	12'-4"	15'-7"	14'-2"	13'-4"	12'-4"
	NI-40x	17'-9"	16'-1"	15'-1"	13'-11"	17'-9"	16'-1"	15'-1"	13'-11"
	NI-60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

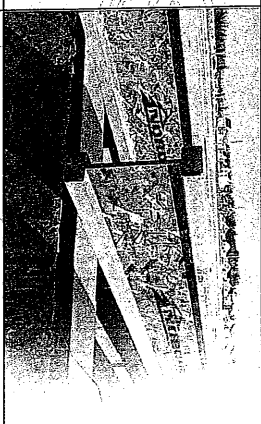
- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- 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.
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- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



# INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



Distributed by:



N-C301 / November 2014

## SAFETY AND CONSTRUCTION PRECAUTIONS



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



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

### WARNING

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

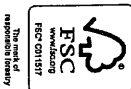
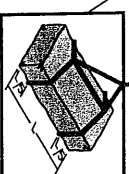
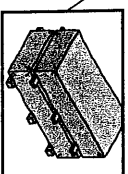
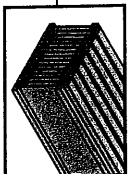
### Avoid Accidents by Following these Important Guidelines:

1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, end/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.

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 stock 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 5<sup>th</sup> points, using a spreader bar if necessary.
8. Do not handle I-joists in a horizontal orientation.
9. NEVER USE OR TRY TO REPAIR A DAMAGED I-JOIST.



## I-JOIST HANGERS

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

- | Multiple spans<br>On centre spacing | 24"      |          |     |
|-------------------------------------|----------|----------|-----|
|                                     | 16"      | 19.2"    | 24" |
| 15.2'                               | 14.3' 0" | 14.7'    |     |
| 16.5'                               | 15.1' 0" | 15.6'    |     |
| 16.7'                               | 16.0'    | 16.1'    |     |
| 17.4'                               | 16.9'    | 16.1' 0" |     |
| 17.6'                               | 16.1' 1" | 17.0'    |     |
| 17.3'                               | 16.8'    | 16.7'    |     |
| 18.6'                               | 17.9'    | 17.7'    |     |
| 18.9'                               | 18.0'    | 18.1'    |     |
| 19.1'                               | 19.0'    | 19.1'    |     |
| 20.2'                               | 19.3'    | 19.4'    |     |
| 20.2'                               | 19.8'    | 19.9'    |     |
| 20.9'                               | 19.1' 0" | 19.1' 1" |     |
| 20.6'                               | 19.8'    | 19.4'    |     |
| 20.1'                               | 20.0'    | 20.1'    |     |
| 20.1'                               | 21.4'    | 21.2'    |     |
| 22.5'                               | 21.6'    | 21.6'    |     |
| 22.1' 0"                            | 21.1' 0" | 21.1' 0" |     |
| 22.1' 0"                            | 22.0'    | 22.0'    |     |
| 22.0'                               | 21.9'    | 21.1' 0" |     |
| 24.0'                               | 22.1' 0" | 23.0' 0" |     |
| 24.5'                               | 23.3'    | 23.4'    |     |
| 24.1' 0"                            | 23.9'    | 23.9'    |     |
| 25.2'                               | 24.0'    | 24.1'    |     |

## NORDIC I-JOIST SERIES

**FIGURE 2**  
**WEB STIFFENER INSTALLATION DETAILS**

- CONCENTRATED LOAD**  
(Load stiffener)
- 
- Approx. 2"  $\perp$
- Flange width  
2-1/2" or 3-1/2"
- 1/8"-1/4" Gap
- (4) 2-1/2" nails,  
3" nails required  
for H-joists with  
3-1/2" flange width
- Approx. 2"  $\perp$
- No Gap
- STIFFENER SIZE REQUIREMENTS**
- | Flange Width | Web Stiffener Size Each Side of Web |
|--------------|-------------------------------------|
| 2-1/2"       | 1" x 2-5/16" minimum width          |
| 3-1/2"       | 1-1/2" x 2-5/16" minimum width      |
- END BEARING**  
(Bearing stiffener)
- Gap
- Tight Joint  
No Gap
- Gap
- Tight Joint  
No Gap

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

33 pieces Per unit	33 pieces Per unit	33 pieces Per unit	23 pieces Per unit	23 pieces Per unit	23 pieces Per unit	23 pieces Per unit	23 pieces Per unit
S-PF No.2	1950I MSR	2100I MSR	1950I MSR	2100I MSR	2400I MSR	NPG Lumber	
	NI-48x	NI-60	NI-70	NI-90	NI-90x		

## I-JOIST HANGERS

- 

### Face Mount

CCMC EVALUATION REPORT 13032-R

2015-04-16

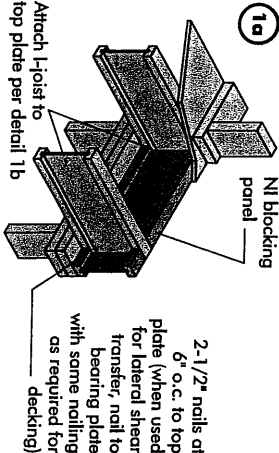
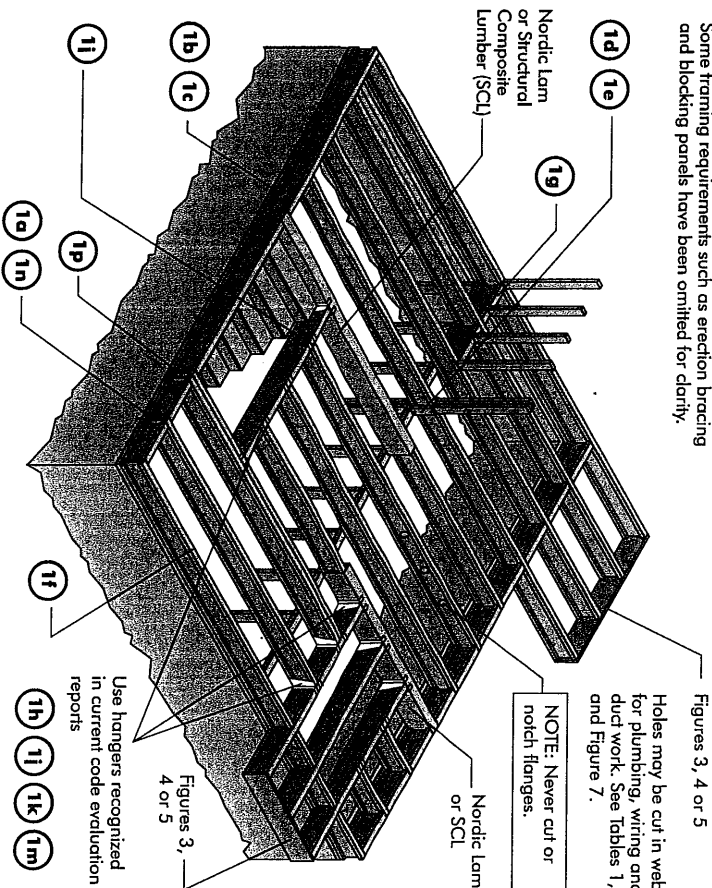
# INSTALLING NORDIC I-JOISTS

1. Before laying out floor system components, verify that I-joint flange widths match hanger widths. If not, contact your supplier.
2. Except for cutting to length, I-joint 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.
7. Leave a 1/16-inch gap between the I-joint end and a header.
8. Concentrated loads greater than those that can normally be expected in residential construction should only be applied to the top surface of the top flange. Normal concentrated loads include track lighting fixtures, audio equipment and security cameras. Never suspend unusual or heavy loads from the I-joist's bottom flange. Whenever possible, suspend all concentrated loads from the top of the I-joist. Or, attach the load to blocking that has been securely fastened to the I-joint 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.

2015-04-16

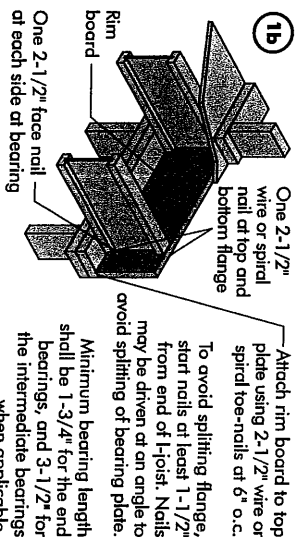
FIGURE 1  
TYPICAL NORDIC I-JOIST FLOOR FRAMING AND CONSTRUCTION DETAILS

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



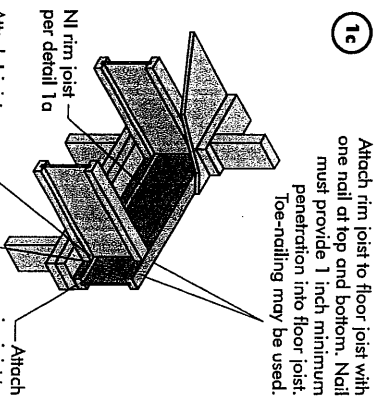
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI Joists	3,300

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



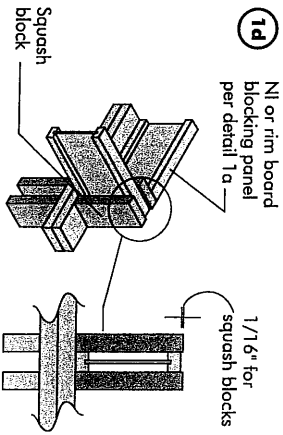
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

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



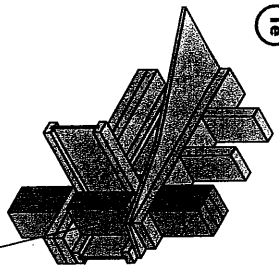
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI rim joist	8,090

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

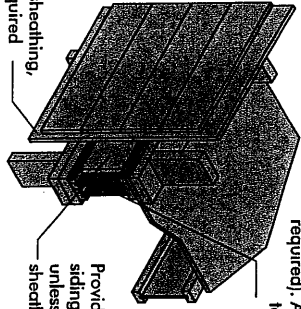


Pair of Squash Blocks	Maximum Factored Vertical per Pair of Squash Blocks (lbs)
2x Lumber	5,500
1-1/8" Rim Board Plus	4,300

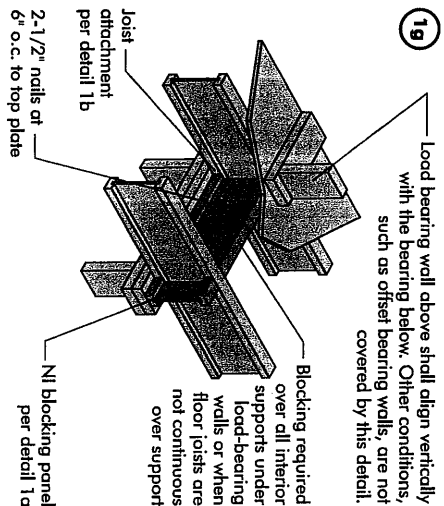
Provide lateral bracing per detail 1a, 1b, or 1c



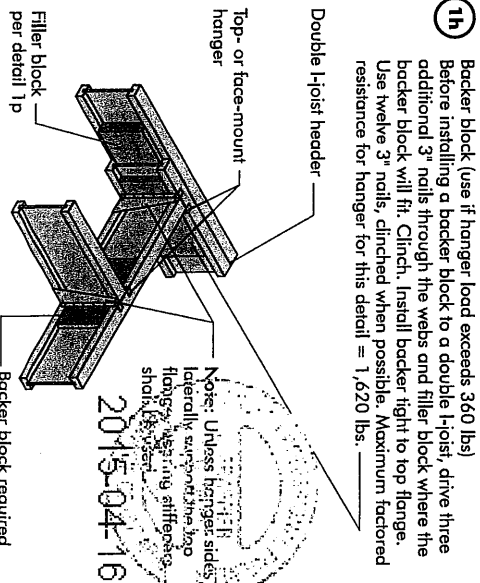
Transfer load from above to bearing below. Install squish blocks per detail 1d. Match bearing area of blocks below to post above.



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.



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

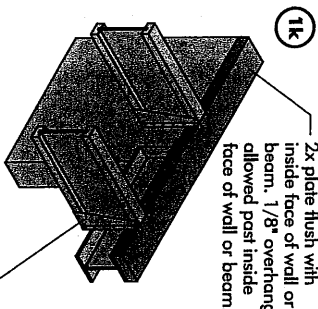


For hanger capacity see hanger manufacturer's recommendations. Verify double I-joist capacity to support concentrated loads.

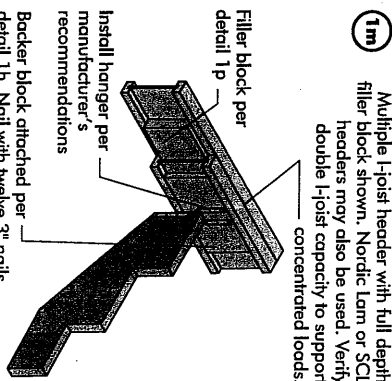
BACKER BLOCKS (Blocks must be long enough to permit required nailing without splitting)

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

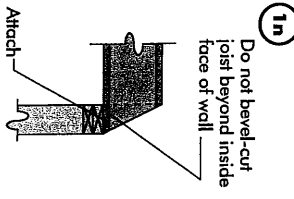
\* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-O325 or CAN/CSA-O437 Standard.  
\*\* For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use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



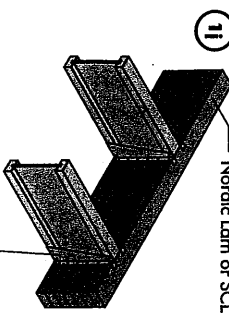
2x plate flush with inside face of wall or beam. 1/8" overhang allowed past inside face of wall or beam.



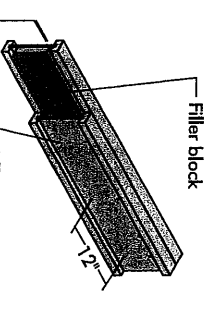
Multiple I-joist header with full depth filler block shown. Nordic Lam or SCL headers may also be used. Verify double I-joist capacity to support concentrated loads.



Do not bevel-cut joist beyond inside face of wall.



Nordic Lam or SCL.



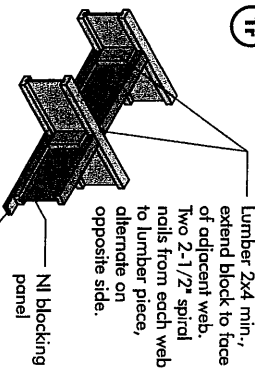
Offset nails from opposite face by 6".

Notes:

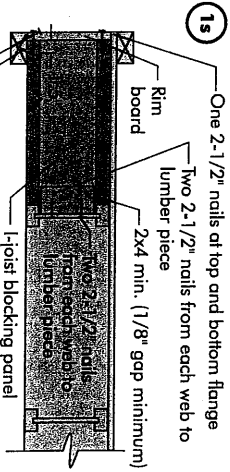
1. Support back of I-joist web during nailing to prevent damage to web/flange connection.
2. Leave a 1/8 to 1/4-inch gap between top of filler block and bottom of top I-joist flange.
3. Filler block is required between joists for full length of span.
4. Nail joists together with two rows of 3" nails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

### FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION

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



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



One 2-1/2" nails at top and bottom flange. Two 2-1/2" nails from each web to 2x4 min. (1/8" gap minimum).

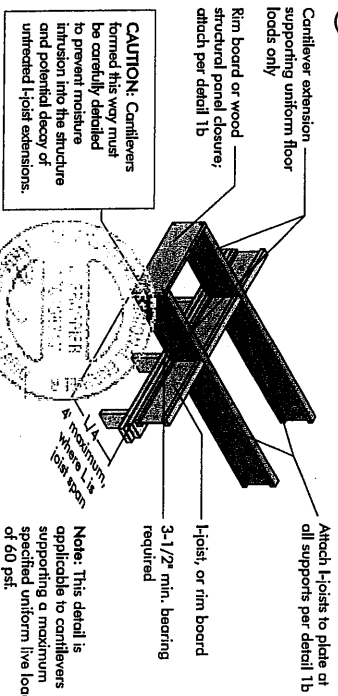
Notes:

- 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.

2015-04-16

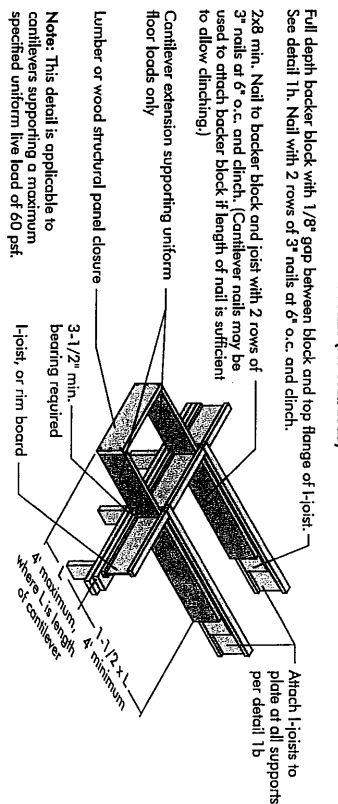
# CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

## 39 I-JOIST CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



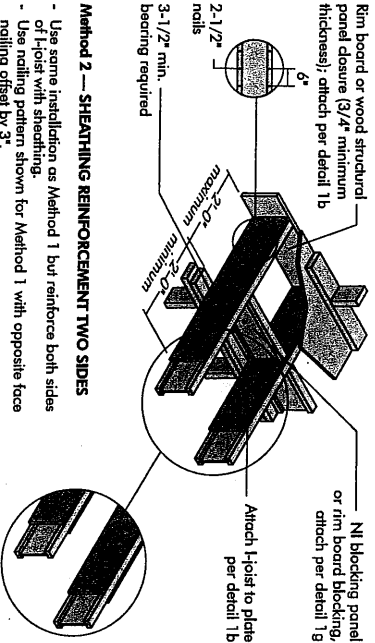
2015-04-10

## 35 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

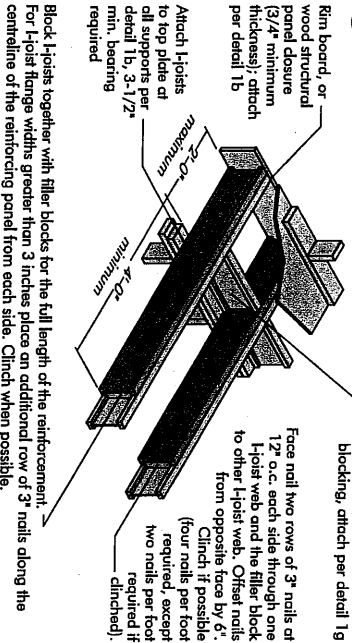
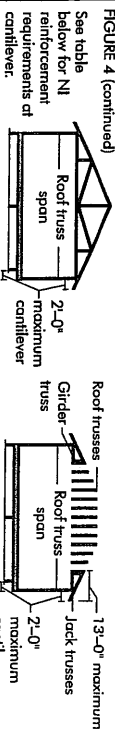


FIGURE 4 (continued)



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

## CANTILEVER REINFORCEMENT METHODS ALLOWED

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

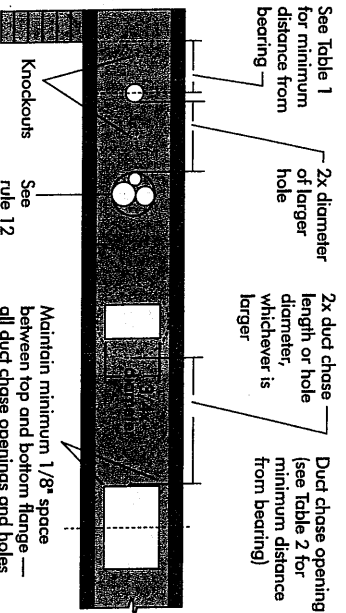
1. N = No reinforcement required.
2. N = NI reinforced with 3/4" wood structural panel on one side only.
3. N = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
4. For larger openings, or multiple 3-0" wide openings spaced less than 6-0" o.c., additional joists beneath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

# WEB HOLES

## RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

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

FIGURE 7  
FIELD-CUT HOLE LOCATOR



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

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

Joist Depth	Joist Series	2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	11	12	12-3/4	Span adjustment Factor
10	10	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.0
12	12	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.0
14	14	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.0
16	16	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.0
18	18	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.0
20	20	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.0
22	22	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.0
24	24	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.0
26	26	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.0
28	28	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.0
30	30	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.0
32	32	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.0
34	34	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.0
36	36	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.0
38	38	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.0
40	40	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.0

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

### OPTIONAL:

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

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

Where:

- $D_{\text{reduced}}$  = Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span application (ft.). The reduced distance shall not be less than 6 inches from the face of the support to edge of the hole.
- $L_{\text{actual}}$  = The actual measured span distance between the inside faces of supports (ft.).
- $L_{\text{span}}$  = Span Adjustment Factor given in this table.
- $D$  = The minimum distance from the inside face of any support to centre of hole from this table.

If  $L_{\text{actual}}$  is greater than 1, use 1 in the above calculation for  $L_{\text{span}}$ .

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

Joist Depth	Joist Series	8	10	12	14	16	18	20	22	24
10	10	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
12	12	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
14	14	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
16	16	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
18	18	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
20	20	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
22	22	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
24	24	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
26	26	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
28	28	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
30	30	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
32	32	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
34	34	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
36	36	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
38	38	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
40	40	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5

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 L/480. For other applications, contact your local distributor.



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

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

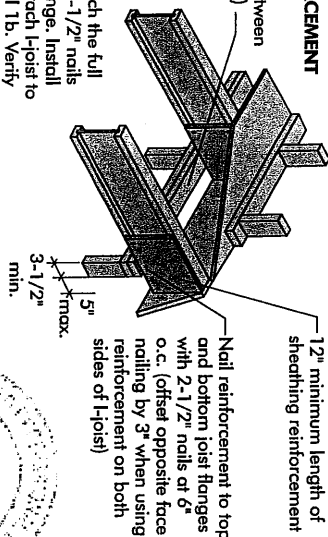
2015-04-16

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

## 5a SHEATHING REINFORCEMENT

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

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

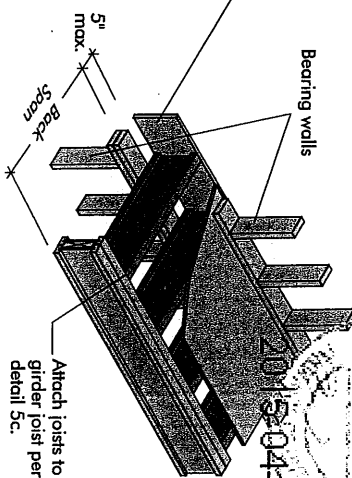


## 5b SET-BACK DETAIL

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

### Notes:

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



## 5c SET-BACK CONNECTION

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

Alternate for opposite side.

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

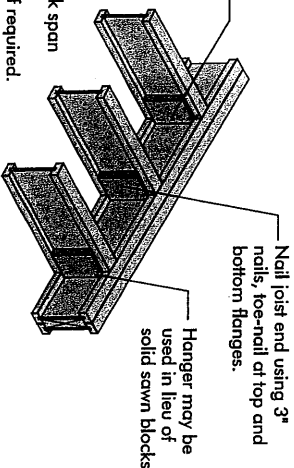
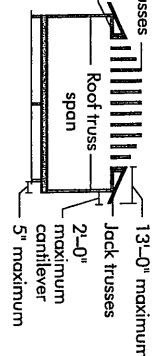
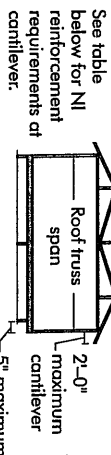


FIGURE 5 (continued)



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

## BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft)	LL = 30 psf, DL = 15 psf				LL = 40 psf, DL = 15 psf				LL = 50 psf, DL = 15 psf			
		JOIST SPACING (in.)				JOIST SPACING (in.)				JOIST SPACING (in.)			
12	12	1	1	1	1	1	1	1	1	1	1	1	1
16	16	1	1	1	1	1	1	1	1	1	1	1	1
19.2	19.2	1	1	1	1	1	1	1	1	1	1	1	1
24	24	1	1	1	1	1	1	1	1	1	1	1	1
28	28	1	1	1	1	1	1	1	1	1	1	1	1
30	30	1	1	1	1	1	1	1	1	1	1	1	1
32	32	1	1	1	1	1	1	1	1	1	1	1	1
34	34	1	1	1	1	1	1	1	1	1	1	1	1
36	36	1	1	1	1	1	1	1	1	1	1	1	1
38	38	1	1	1	1	1	1	1	1	1	1	1	1
40	40	1	1	1	1	1	1	1	1	1	1	1	1
42	42	1	1	1	1	1	1	1	1	1	1	1	1
14	14	1	1	1	1	1	1	1	1	1	1	1	1
16	16	1	1	1	1	1	1	1	1	1	1	1	1
18	18	1	1	1	1	1	1	1	1	1	1	1	1
20	20	1	1	1	1	1	1	1	1	1	1	1	1
22	22	1	1	1	1	1	1	1	1	1	1	1	1
24	24	1	1	1	1	1	1	1	1	1	1	1	1
26	26	1	1	1	1	1	1	1	1	1	1	1	1
28	28	1	1	1	1	1	1	1	1	1	1	1	1
30	30	1	1	1	1	1	1	1	1	1	1	1	1
32	32	1	1	1	1	1	1	1	1	1	1	1	1
34	34	1	1	1	1	1	1	1	1	1	1	1	1
36	36	1	1	1	1	1	1	1	1	1	1	1	1
38	38	1	1	1	1	1	1	1	1	1	1	1	1
40	40	1	1	1	1	1	1	1	1	1	1	1	1
42	42	1	1	1	1	1	1	1	1	1	1	1	1

1. N = No reinforcement required.
2. = NI reinforced with 3/4" wood structural panel on one side only.
3. = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
4. = Try a deeper joist or closer spacing.
5. 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.

3. Joist 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.

## RIM BOARD INSTALLATION DETAILS

- ## FASTENERS FOR SHEATHING AND SUBFLOORING<sup>(1)</sup>

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.

**IMPORTANT NOTE:**

**Floor sheathing must be field glued to the I-joist Ranges 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.**

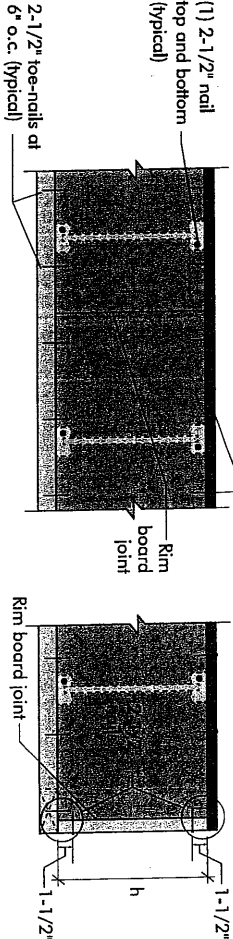
## RIM BOARD INSTALLATION DETAILS

### Rim board Joint Between Floor Joists

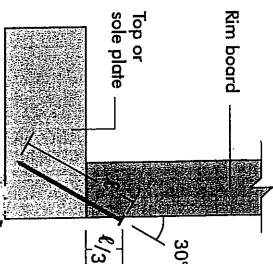
2-1/2" nails at 6" o.c. (typical)



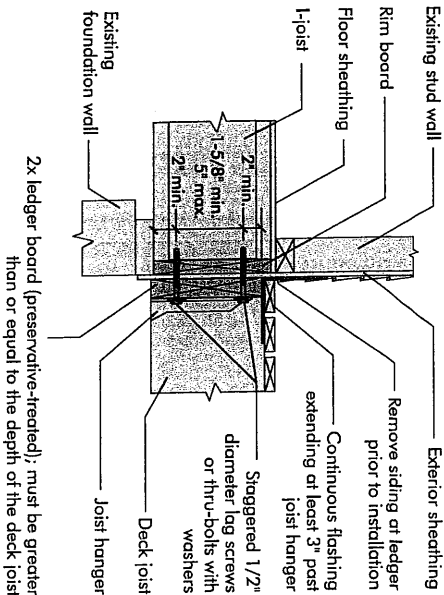
### Rim board joint at Corner



**8b TOE-NAIL CONNECTION  
AT RIM BOARD**



**8c 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL**

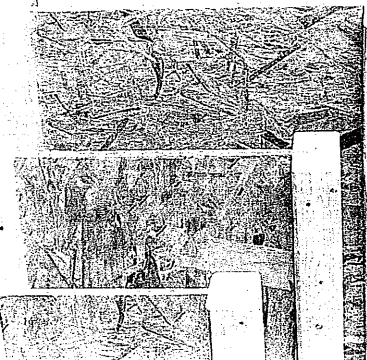


2015-04-16

## PRODUCT WARRANTY

*Carstens Cellulosemas guarantees that, in accordance with our specifications, Nordic products are free from manufacturing defects in material and workmanship.*

Furthermore, *Chasiers Ciblegras* warrants that our product, when utilized in accordance with our handling and installation instructions, will meet or exceed our specifications for the lifetime of the structure.



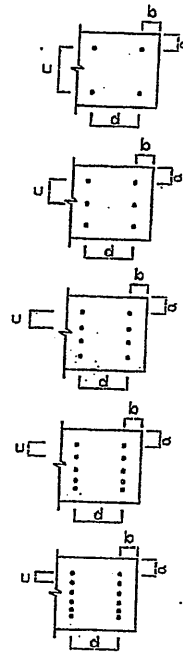
# MICRO CITY

## ENGINEERING SERVICES INC.

TEL: (519) 287 - 2242

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

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



### NOTES:

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



DWG NO TAMN1001.14

STRUCTURAL

COMPONENT ONLY

TO BE USED ONLY  
WITH BEAM CALCS  
BEARING THE  
STAMP BELOWS

PROVIDE NAILING  
DETAIL NO X SEE  
DWG #TAMN1001-14