

FROM PLAN DATED: FEB 2016

BUILDER:  
GREENPARK

SITE:  
STARTIME

MODEL: BRIDGEFORD 1

ELEVATION: 1

LOT:  
CITY: VAUGHAN

SALESMAN: MARIO  
DESIGNER: AJ  
REVISION:

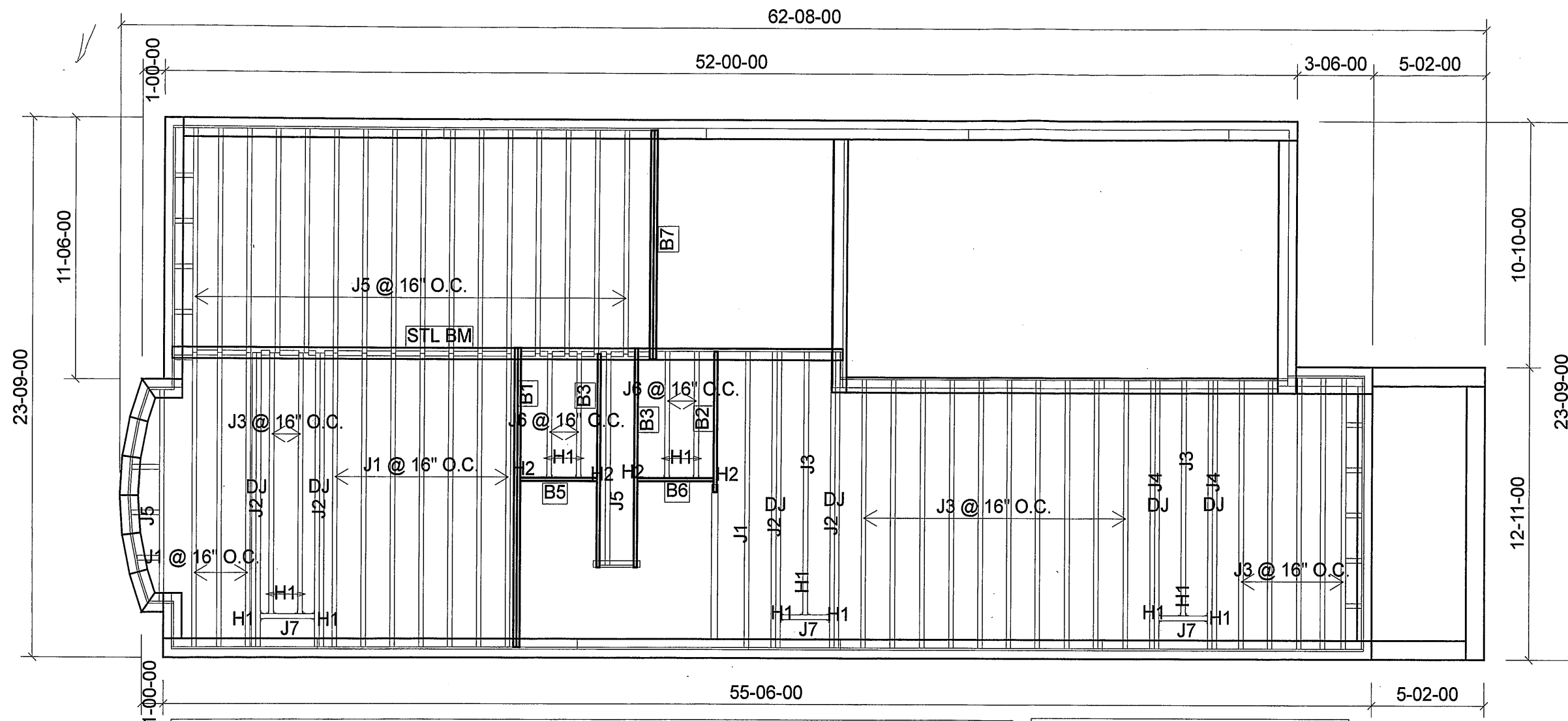
NOTES:  
CERAMIC TILE APPLICATION  
AS PER O.B.C. 9.30.6.  
SQUASH BLOCKS  
2x4 OR 2x6 #2 S.P.F. REQ'D UNDER  
INTERIOR UNIFORM LOAD BEARING  
WALLS.  
MULTIPLE SQUASH BLOCKS REQ'D  
UNDER CONCENTRATED LOADS.  
CANTILEVERED JOISTS  
REQUIRE I-JOIST BLOCKING ALONG  
BEARING AND RIMBOARD CLOSURE  
AT

ENDS.  
REFER TO THE NORDIC  
INSTALLATION GUIDE FOR PROPER  
STORAGE AND INSTALLATION.  
LOADING:

SUBFLOOR: 3/4" GLUED AND NAILED

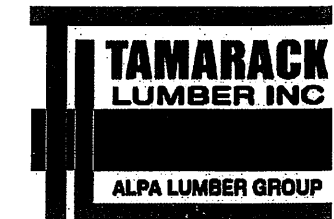
DATE: 5/2/2016

1st FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	14-00-00	9 1/2" NI-40x	1	11
J2	14-00-00	9 1/2" NI-40x	2	8
J3	12-00-00	9 1/2" NI-40x	1	19
J4	12-00-00	9 1/2" NI-40x	2	4
J5	10-00-00	9 1/2" NI-40x	1	18
J6	6-00-00	9 1/2" NI-40x	1	4
J7	4-00-00	9 1/2" NI-40x	1	3
B1	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B7	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B3	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	2
B2	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
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B6	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
4	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
4	H1	IUS2.56/9.5
3	H1	HUS1.81/9.5
1	H1	HUS1.81/9.5



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LOT:  
CITY: VAUGHAN

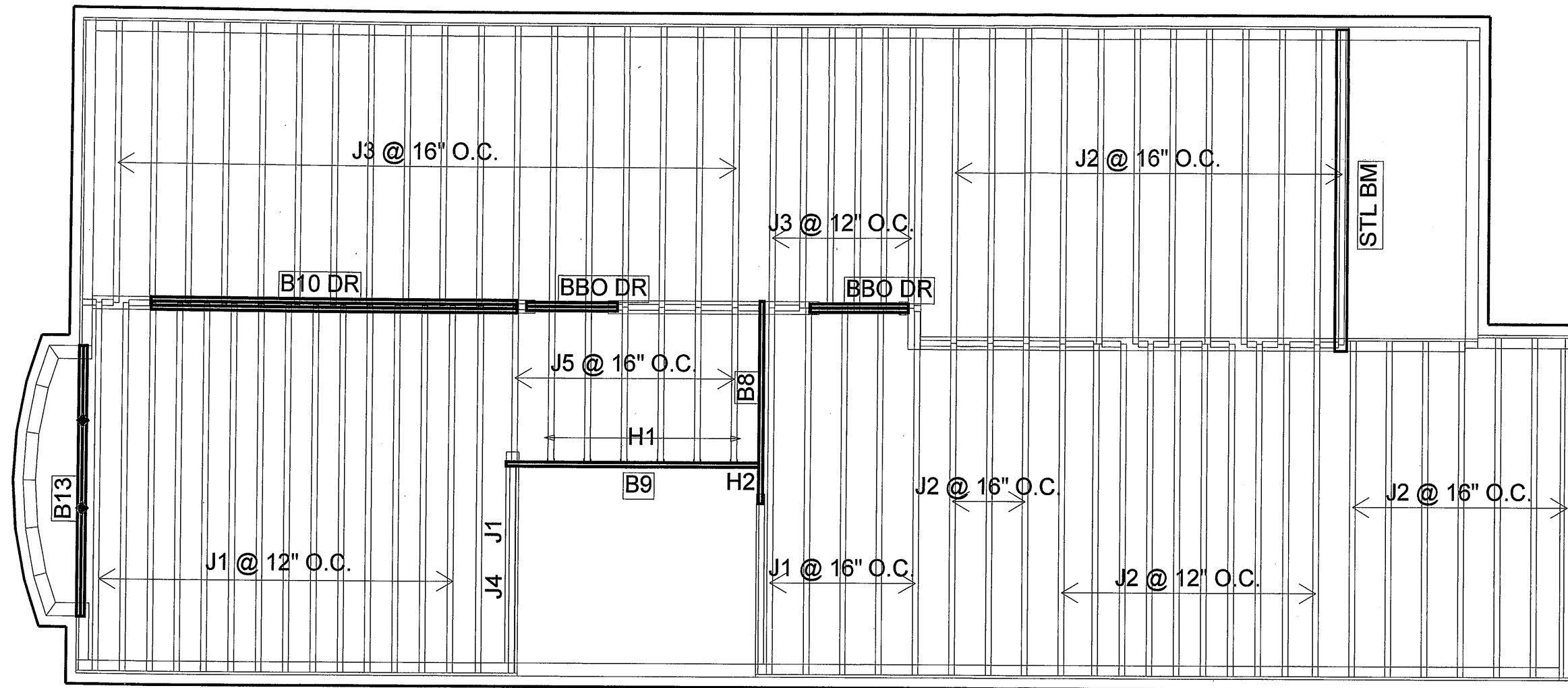
SALESMAN: MARIO  
DESIGNER: AJ  
REVISION:

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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

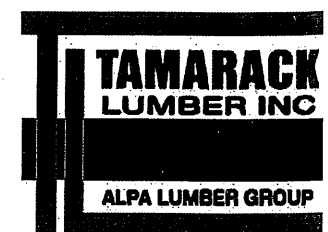
DATE: 5/2/2016

## 2nd FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	14-00-00	9 1/2" NI-40x	1	20
J2	12-00-00	9 1/2" NI-40x	1	32
J3	10-00-00	9 1/2" NI-40x	1	24
J4	8-00-00	9 1/2" NI-40x	1	1
J5	6-00-00	9 1/2" NI-40x	1	7
B10 DR	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3
B9	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
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Connector Summary		
Qty	Manuf	Product
6	H1	IUS2.56/9.5
1	H1	HUS1.81/9.5



FROM PLAN DATED: FEB 2016

BUILDER:  
GREENPARK

SITE:  
STARTIME

MODEL: BRIDGEFORD 1

ELEVATION: 2

LOT:  
CITY: VAUGHAN

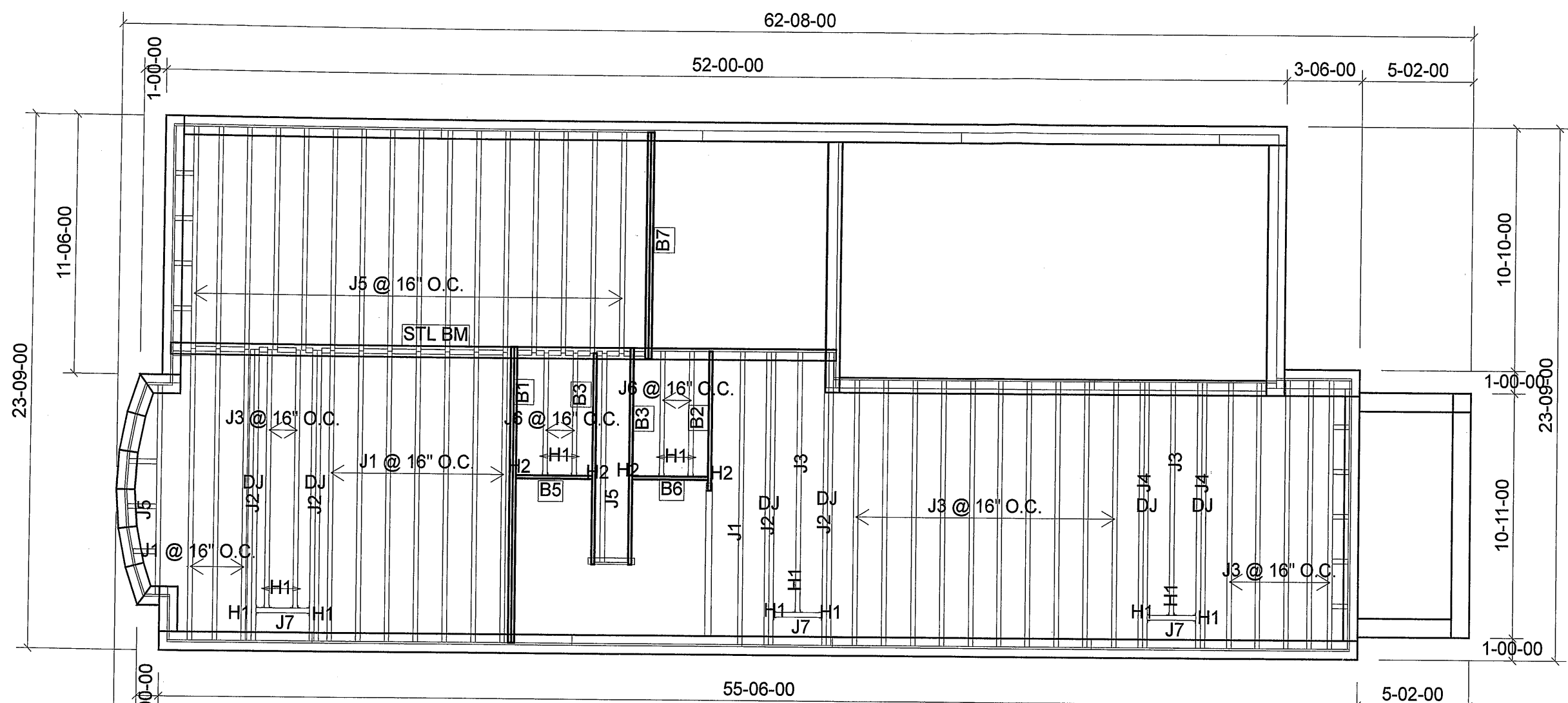
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DEAD LOAD: 15.0 lb/ft  
TILED AREAS: 20 lb/ft

SUBFLOOR: 3/4" GLUED AND NAILED

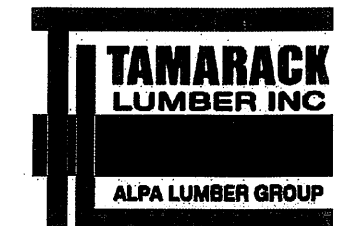
DATE: 5/2/2016

# 1st FLOOR



Products					62-08-00	
PlotID	Length	Product	Plies	Net Qty		
J1	14-00-00	9 1/2" NI-40x	1	11		
J2	14-00-00	9 1/2" NI-40x	2	8		
J3	12-00-00	9 1/2" NI-40x	1	19		
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Connector Summary		
Qty	Manuf	Product
4	H1	IUS2.56/9.5
6	H1	IUS2.56/9.5
4	H1	IUS2.56/9.5
3	H1	HUS1.81/9.5
1	H1	HUS1.81/9.5



FROM PLAN DATED: FEB 2016

BUILDER:  
GREENPARK

SITE:  
STARTIME

MODEL: BRIDGEFORD 1

ELEVATION: 2

LOT:  
CITY: VAUGHAN

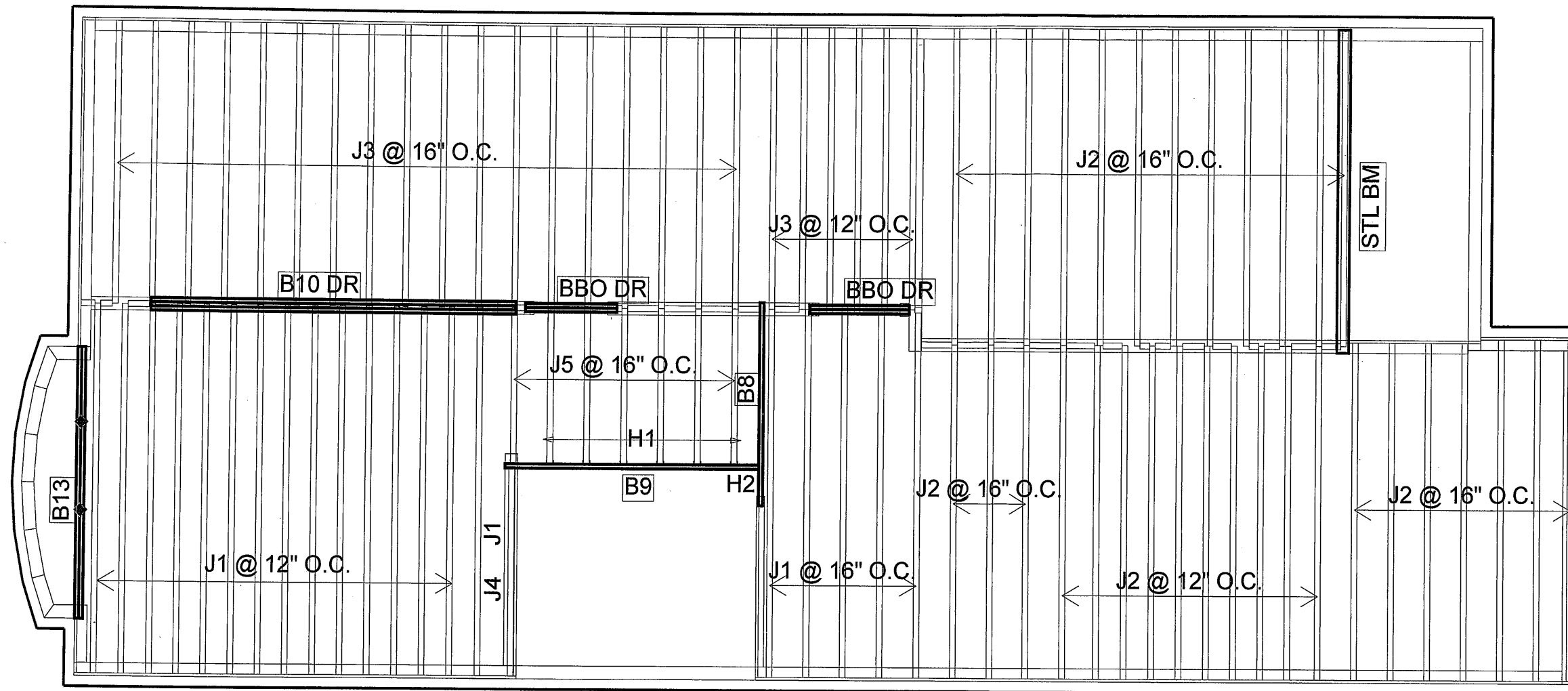
SALESMAN: MARIO  
DESIGNER: AJ  
REVISION:

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DEAD LOAD: 15.0 lb/ft  
TILED AREAS: 20 lb/ft

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 5/2/2016

2nd FLOOR

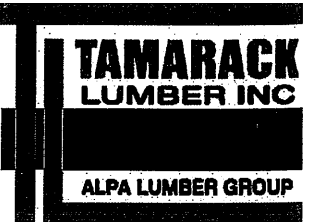


### Products

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### Connector Summary

Qty	Manuf	Product
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1	H1	HUS1.81/9.5



FROM PLAN DATED: FEB 2016

BUILDER:  
GREENPARK

SITE:  
STARTIME

MODEL: BRIDGEFORD 1

ELEVATION: 3

LOT:  
CITY: VAUGHAN

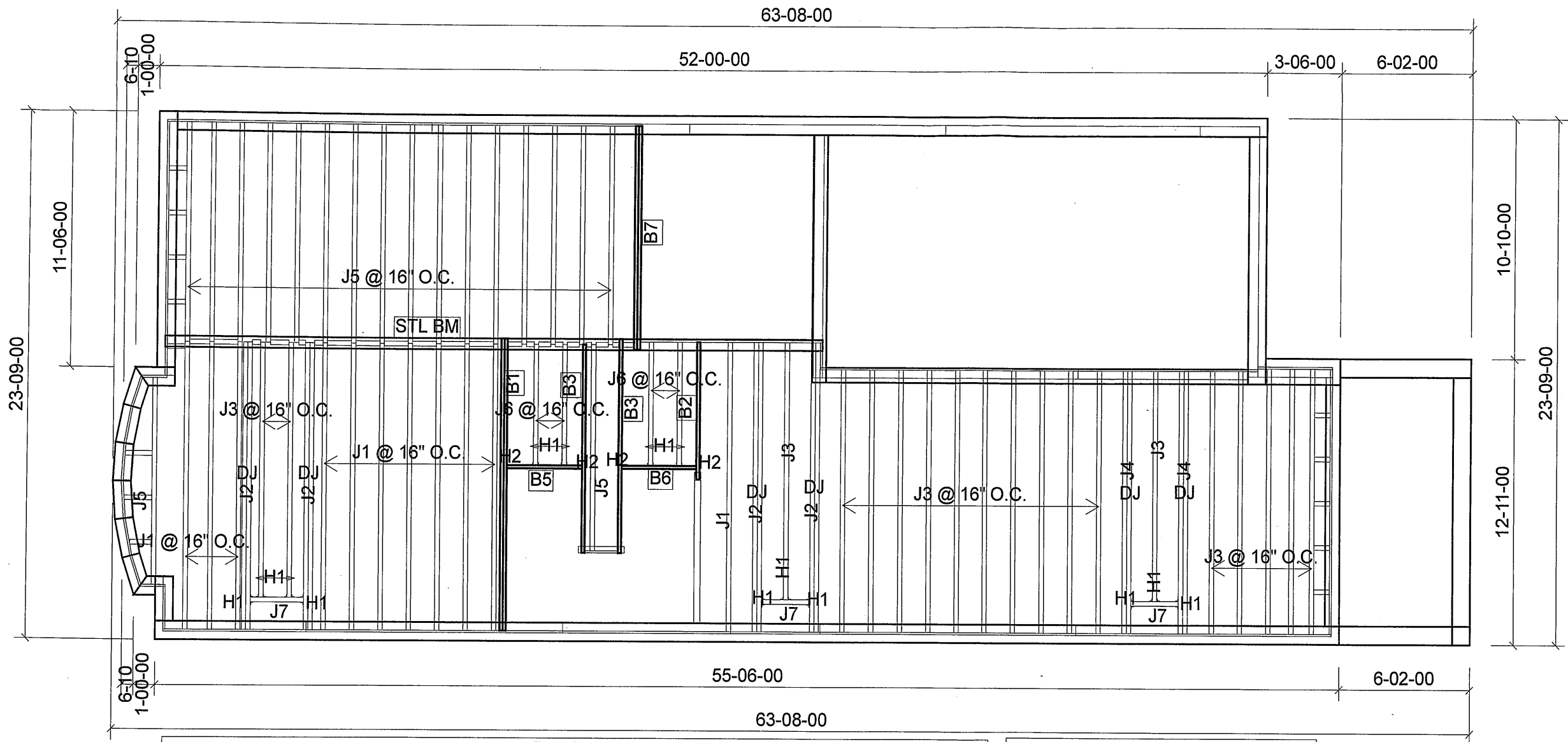
SALESMAN: MARIO  
DESIGNER: AJ  
REVISION:

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SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 5/2/2016

## 1st FLOOR



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Connector Summary		
Qty	Manuf	Product
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6	H1	IUS2.56/9.5
4	H1	IUS2.56/9.5
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1	H1	HUS1.81/9.5

FROM PLAN DATED: FEB 2016

**BUILDER:**  
GREENPARK

**SITE:**  
STARTIME

**MODEL:** BRIDGEFORD 1

**ELEVATION:** 3

**LOT:**  
CITY: VAUGHAN

**SALESMAN:** MARIO  
**DESIGNER:** AJ  
**REVISION:**

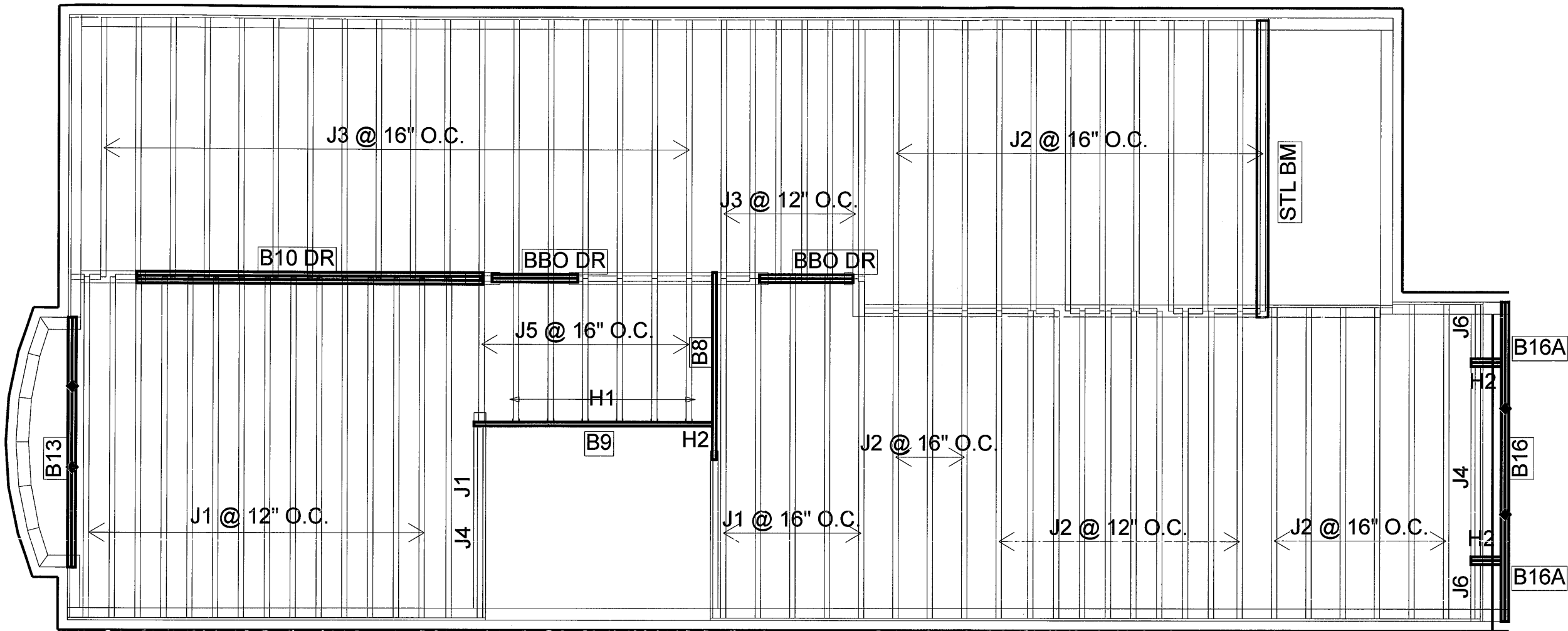
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LIVE LOAD: 40.0 lb/ft<sup>2</sup>  
DEAD LOAD: 15.0 lb/ft<sup>2</sup>  
TILED AREAS: 20 lb/ft<sup>2</sup>

**SUBFLOOR:** 5/8" GLUED AND NAILED

**DATE:** 2016-07-28

## 2nd FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	14-00-00	9 1/2" NI-40x	1	20
J2	12-00-00	9 1/2" NI-40x	1	31
J3	10-00-00	9 1/2" NI-40x	1	24
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Connector Summary		
Qty	Manuf	Product
6	H1	IUS2.56/9.5
1	H1	HUS1.81/9.5
2	H2	HGUS410



# Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B1(i1705)

BC CALC® Design Report



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

April 30, 2016 10:22:39

Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: BRIDGEFORD 1 EL-1.mmdl

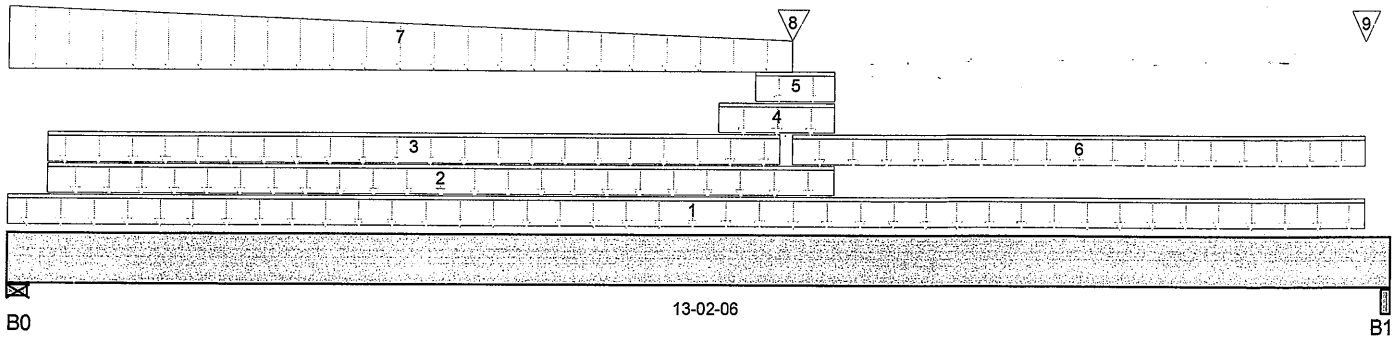
Description: Designs\Flush Beams\Basement\Flush Beams\B1(i1705)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 13-02-06

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

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	1,514 / 0	1,224 / 0		
B1, 6"	1,419 / 0	964 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	FC 1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	12-11-06	8	4			n/a
2	9(i564)	Unf. Lin. (lb/ft)	L	00-04-06	07-09-12		81			n/a
3	9(i564)	Unf. Lin. (lb/ft)	L	00-04-06	07-03-12	33	17			n/a
4	9(i564)	Unf. Lin. (lb/ft)	L	06-08-10	07-09-12	987	464			n/a
5	9(i564)	Unf. Lin. (lb/ft)	L	07-00-12	07-09-12	203	76			n/a
6	FC 1 Floor Material	Unf. Lin. (lb/ft)	L	07-04-14	12-11-06	30	15			n/a
7	FC 1 Floor Material	Trapezoidal (lb/ft)	L	00-00-00	07-04-14	102	51			n/a
8	B5(i1725)	Conc. Pt. (lbs)	L	07-04-14	07-04-14	544	281			n/a
9	4(i556)	Conc. Pt. (lbs)	L	12-11-04	12-11-04		30			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	16,039 ft-lbs	25,408 ft-lbs	63.1%	1	07-03-12
End Shear	3,551 lbs	11,571 lbs	30.7%	1	01-01-14
Total Load Defl.	L/261 (0.573")	0.623"	91.9%	4	06-07-12
Live Load Defl.	L/440 (0.34")	0.415"	81.9%	5	06-07-12
Max Defl.	0.573"	n/a	n/a	4	06-07-12
Span / Depth	15.7	n/a	n/a		00-00-00

## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4-3/8" x 3-1/2"	3,801 lbs	46.5%	20.3%	Unspecified
B1 Beam	6" x 3-1/2"	3,333 lbs	29.7%	13%	Unspecified

## Notes

Page 1 of 2



DWG NO. TAM 2763 616  
STRUCTURAL  
COMPONENT ONLY



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B1(i1705)**

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

April 30, 2016 10:22:39

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: BRIDGEFORD 1 EL-1.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B1(i170

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 Member is Fully Braced.

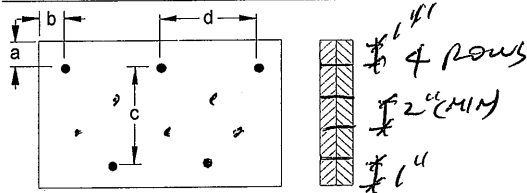
Resistance Factor phi has been applied to all presented results per CSA086.

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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

**CONFORMS TO CBC 2012****Connection Diagram**

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

Calculated Side Load = 91.6 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: 1. 100mm Nails @ 100mm min.

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

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

BC CALC®, 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.



p624

DWG NO. TAM 2763616  
 STRUCTURAL  
 COMPONENT ONLY





# Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B2(i1588)

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

April 30, 2016 10:11:24

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: BRIDGEFORD 1 EL-1.mmdl

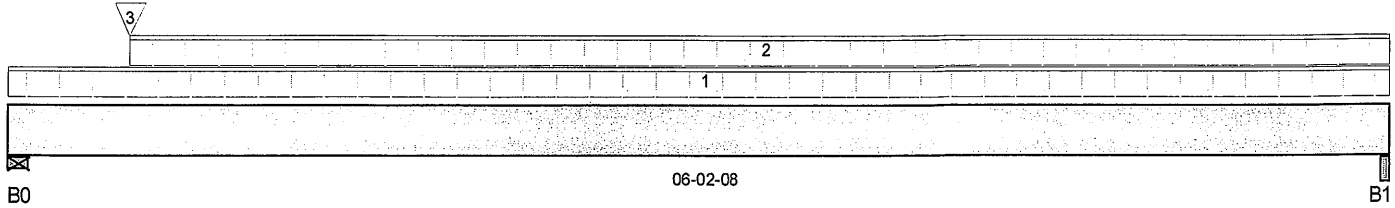
Description: Designs\Flush Beams\Basement\Flush Beams\B2(i1588)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 06-02-08

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

Bearing	Live	Dead	Snow	Wind
B0, 4"	688 / 0	460 / 0		
B1, 4-1/2"	175 / 0	108 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	06-02-08	30	15			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-06-08	06-02-08	18	9			n/a
3	-	Conc. Pt. (lbs)	L	00-06-08	00-06-08	573	397			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	625 ft-lbs	12,704 ft-lbs	4.9%	1	02-05-11
End Shear	523 lbs	5,785 lbs	9%	1	01-01-08
Total Load Defl.	L/999 (0.01")	n/a	n/a	4	02-11-09
Live Load Defl.	L/999 (0.006")	n/a	n/a	5	02-11-09
Max Defl.	0.01"	n/a	n/a	4	02-11-09
Span / Depth	7.1	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4" x 1-3/4"	1,607 lbs	53.7%	18.8%	Unspecified
B1 Beam	4-1/2" x 1-3/4"	397 lbs	11.8%	4.1%	Unspecified

## Notes

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

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

Calculations assume Member is Fully Braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

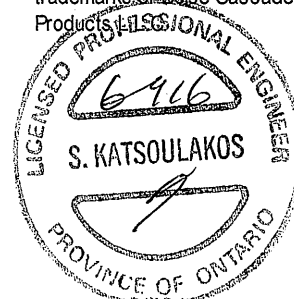
Deflections less than 1/8" were ignored in the results.

CONFORMS TO QBC 2012

## Disclosure

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

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DWG NO. TAM 27637-16  
STRUCTURAL



# Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B3(i1583)

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

April 30, 2016 10:11:24

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: BRIDGEFORD 1 EL-1.mmdl

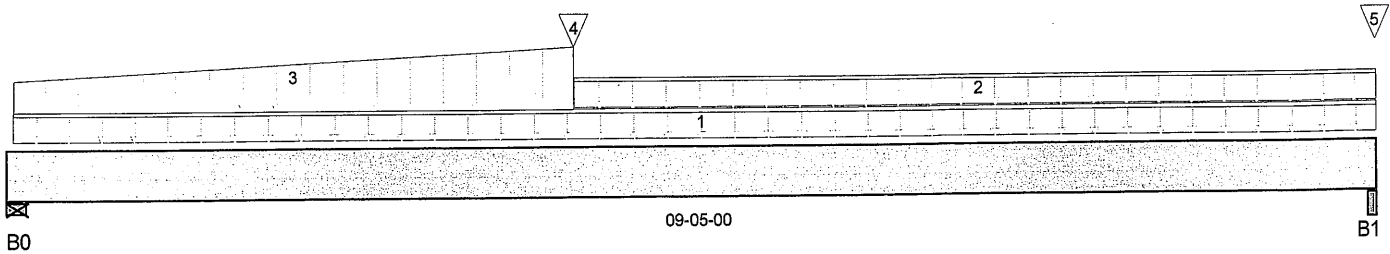
Description: Designs\Flush Beams\Basement\Flush Beams\B3(i1583)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 09-05-00

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	766 / 0	411 / 0		
B1, 3"	483 / 0	274 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-09	09-05-00	9	4			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	03-10-08	09-05-00	18	9			n/a
3	FC1 Floor Material	Trapezoidal (lb/ft)	L	00-00-09	03-10-08	91	45			n/a
					03-10-08	146	73			n/a
4	B5(i1608)	Conc. Pt. (lbs)	L	03-10-08	03-10-08	571	294			n/a
5	5(i1557)	Conc. Pt. (lbs)	L	09-04-12	09-04-12	45	29			n/a

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	4,191 ft-lbs	12,704 ft-lbs	33%	1	03-10-08
End Shear	1,590 lbs	5,785 lbs	27.5%	1	01-01-00
Total Load Defl.	L/734 (0.147")	0.45"	32.7%	4	04-05-04
Live Load Defl.	L/999 (0.096")	n/a	n/a	5	04-05-04
Max Defl.	0.147"	n/a	n/a	4	04-05-04
Span / Depth	11.4	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	1,663 lbs	63.6%	22.3%	Unspecified
B1 Beam	3" x 1-3/4"	1,066 lbs	47.5%	16.6%	Unspecified

## Notes



DWG NO. TAM2763B 16  
STRUCTURAL  
COMPONENT ONLY



# Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B3(i1583)

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

April 30, 2016 10:11:24

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: BRIDGEFORD 1 EL-1.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B3(i1583)

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 Member is Fully Braced.

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

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

**CONFORMS TO OBC 2012**

## Disclosure

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

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DWG NO. TAM 27638.16  
STRUCTURAL  
COMPONENT ONLY



# Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B5(i1608)

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

April 30, 2016 10:11:24

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: BRIDGEFORD 1 EL-1.mmdl

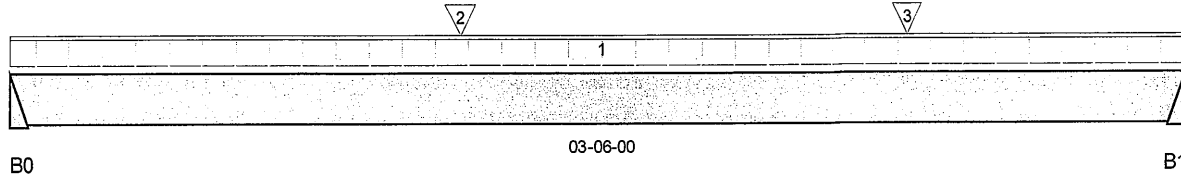
Description: Designs\Flush Beams\Basement\Flush Beams\B5(i1608)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 03-06-00

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

Bearing	Live	Dead	Snow	Wind
B0	543 / 0	280 / 0		
B1	572 / 0	295 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	03-06-00	240	120			n/a
2	J6(i1594)	Conc. Pt. (lbs)	L	01-04-00	01-04-00	153	77			n/a
3	J6(i1590)	Conc. Pt. (lbs)	L	02-08-00	02-08-00	122	61			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	998 ft-lbs	12,704 ft-lbs	7.9%	1	01-07-10
End Shear	691 lbs	5,785 lbs	11.9%	1	02-06-08
Total Load Defl.	L/999 (0.006")	n/a	n/a	4	01-09-00
Live Load Defl.	L/999 (0.004")	n/a	n/a	5	01-09-00
Max Defl.	0.006"	n/a	n/a	4	01-09-00
Span / Depth	4.2	n/a	n/a		00-00-00

## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 1-3/4"	1,165 lbs	n/a	27.3%	Hanger
B1 Hanger	2" x 1-3/4"	1,227 lbs	n/a	28.7%	Hanger

## Notes

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

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

Calculations assume Member is Fully Braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

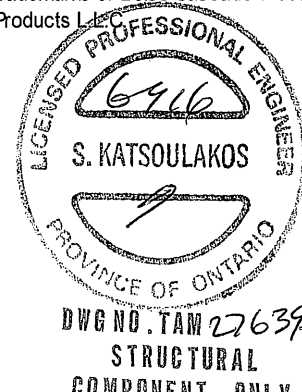
Deflections less than 1/8" were ignored in the results.

CONFORMS TO OBC 2012

## Disclosure

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

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# Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B6(i1595)

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

April 30, 2016 10:11:24

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: BRIDGEFORD 1 EL-1.mmdl

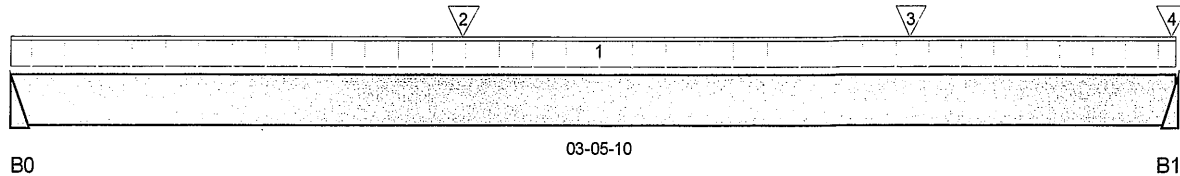
Description: Designs\Flush Beams\Basement\Flush Beams\B6(i1595)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 03-05-10

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

Bearing	Live	Dead	Snow	Wind
B0	535 / 0	275 / 0		
B1	574 / 0	345 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	03-05-10	240	120			n/a
2	J6(i1601)	Conc. Pt. (lbs)	L	01-04-00	01-04-00	149	74			n/a
3	J6(i1567)	Conc. Pt. (lbs)	L	02-08-00	02-08-00	120	60			n/a
4	FC1 Floor Material	Conc. Pt. (lbs)	L	03-05-06	03-05-06		53			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	973 ft-lbs	12,704 ft-lbs	7.7%	1	01-07-01
End Shear	670 lbs	5,785 lbs	11.6%	1	02-06-02
Total Load Defl.	L/999 (0.005")	n/a	n/a	4	01-08-14
Live Load Defl.	L/999 (0.003")	n/a	n/a	5	01-08-14
Max Defl.	0.005"	n/a	n/a	4	01-08-14
Span / Depth	4.1	n/a	n/a		00-00-00

## Disclosure

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

## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 1-3/4"	1,146 lbs	n/a	26.8%	Hanger
B1 Hanger	2" x 1-3/4"	1,292 lbs	n/a	30.2%	Hanger

## Notes

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

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

Calculations assume Member is Fully Braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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

CONFORMS TO OBC 2012

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# Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B8(i563)

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

April 30, 2016 10:11:25

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: BRIDGEFORD 1 EL-1.mmdl

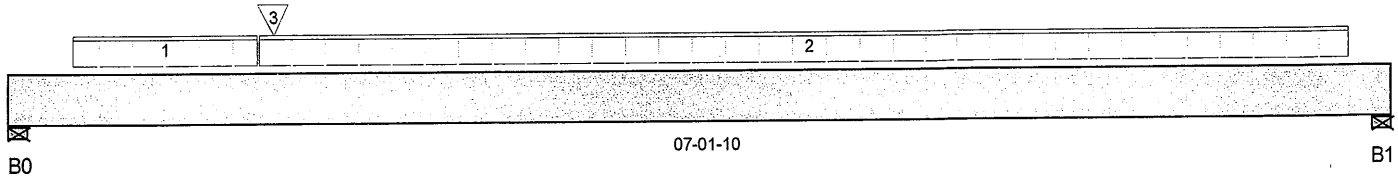
Description: Designs\Flush Beams\1st Floor\Flush Beams\B8(i563)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 07-01-10

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

Bearing	Live	Dead	Snow	Wind
B0, 4"	579 / 0	268 / 0		
B1, 5-1/2"	191 / 0	96 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-04-00	01-03-06	9				n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	01-03-06	06-10-14	27	10			n/a
3	B9(i565)	Conc. Pt. (lbs)	L	01-04-04	01-04-04	608	269			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,281 ft-lbs	12,704 ft-lbs	10.1%	1	01-04-04
End Shear	1,176 lbs	5,785 lbs	20.3%	1	01-01-08
Total Load Defl.	L/999 (0.023")	n/a	n/a	4	03-02-05
Live Load Defl.	L/999 (0.016")	n/a	n/a	5	03-02-05
Max Defl.	0.023"	n/a	n/a	4	03-02-05
Span / Depth	8.2	n/a	n/a		00-00-00

## Bearing Supports

Beaming Supports						
B0	Wall/Plate	4" x 1-3/4"	1,204 lbs	40.3%	14.1%	Unspecified
B1	Wall/Plate	5-1/2" x 1-3/4"	407 lbs	9.9%	3.5%	Unspecified

## Notes

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

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

Calculations assume Member is Fully Braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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

CONFORMS TO OBC 2012

## Disclosure

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

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DWG NO. TAM 27641-16

STRUCTURAL

COMPONENT ONLY



# Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B9(i565)

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

April 30, 2016 10:11:25

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: BRIDGEFORD 1 EL-1.mmdl

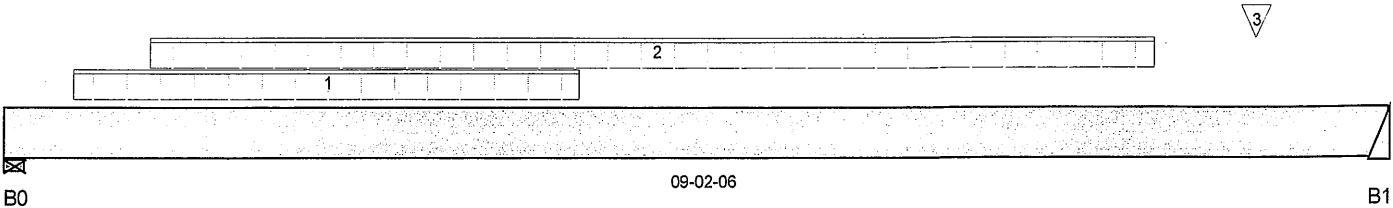
Description: Designs\Flush Beams\1st Floor\Flush Beams\B9(i565)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 09-02-06

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	1,074 / 0	505 / 0		
B1	614 / 0	271 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	User Load	Unf. Lin. (lb/ft)	L	00-05-08	03-09-08	240	120			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-11-08	07-07-08	114	42			n/a
3	J5(i679)	Conc. Pt. (lbs)	L	08-03-08	08-03-08	130	49			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,826 ft-lbs	12,704 ft-lbs	30.1%	1	03-07-00
End Shear	1,824 lbs	5,785 lbs	31.5%	1	01-03-00
Total Load Defl.	L/730 (0.143")	0.435"	32.9%	4	04-06-08
Live Load Defl.	L/999 (0.099")	n/a	n/a	5	04-06-08
Max Defl.	0.143"	n/a	n/a	4	04-06-08
Span / Depth	11	n/a	n/a		00-00-00

## Disclosure

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

## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 1-3/4"	2,241 lbs	54.5%	19.1%	Unspecified
B1 Hanger	2" x 1-3/4"	1,260 lbs	n/a	29.5%	Hanger

## Notes

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

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

Calculations assume Member is Fully Braced.

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

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

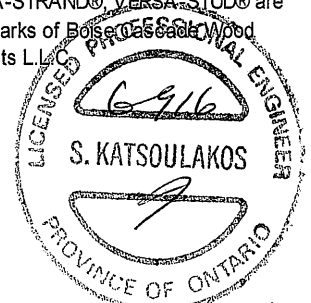
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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

CONFORMS TO OBC 2012

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DWG NO. TAM 2264216  
STRUCTURAL  
COMPONENT ONLY



# Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B13(i632)

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

April 30, 2016 10:11:25

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: BRIDGEFORD 1 EL-1.mmdl

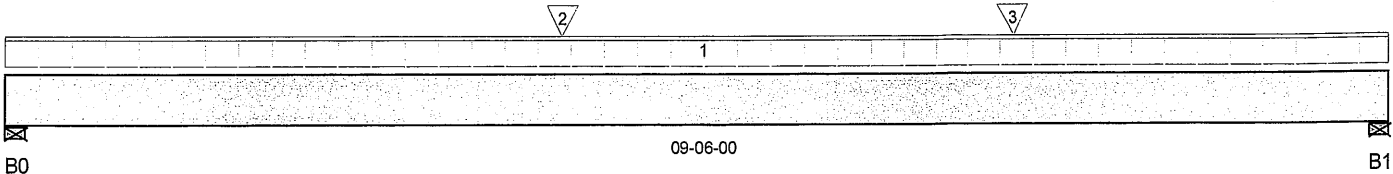
Description: Designs\Flush Beams\1st Floor\Flush Beams\B13(i632)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 09-06-00

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	211 / 0	202 / 0	342 / 0	
B1, 5-1/2"	256 / 0	243 / 0	448 / 0	

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	09-06-00	14	5			n/a
2	User Load	Conc. Pt. (lbs)	L	03-09-08	03-09-08	167	152	395		n/a
3	User Load	Conc. Pt. (lbs)	L	06-10-08	06-10-08	167	152	395		n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,777 ft-lbs	25,408 ft-lbs	10.9%	13	03-09-08
End Shear	1,072 lbs	11,571 lbs	9.3%	13	08-03-00
Total Load Defl.	L/999 (0.055")	n/a	n/a	45	04-09-01
Live Load Defl.	L/999 (0.039")	n/a	n/a	61	04-09-01
Max Defl.	0.055"	n/a	n/a	45	04-09-01
Span / Depth	11	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"	871 lbs	10.6%	3.7%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	1,103 lbs	13.4%	4.7%	Unspecified

## Notes

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

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

Calculations assume Member is Fully Braced.

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

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

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

CONFORMS TO OBC 2012



10/12

DWG NO. TAM27643.16  
STRUCTURAL  
COMPONENT ONLY





Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B13(i632)**

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

April 30, 2016 10:11:25

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: BRIDGEFORD 1 EL-1.mmdl

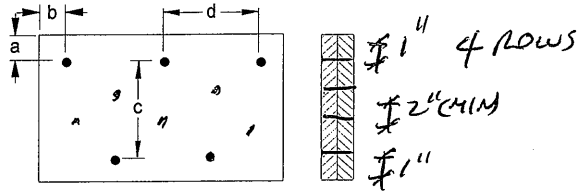
Description: Designs\Flush Beams\1st Floor\Flush Beams\B13(i632)

Specifier:

Designer:

Company:

Misc:

**Connection Diagram**

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

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

Member has no side loads.

Connectors are: 16d Nails (16d x 3 1/2")

3 1/2" ARDOX SPIRAL

**Disclosure**

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

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DWG NO. TAM22643-16  
 STRUCTURAL  
 COMPONENT ONLY

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: BRIDGEFORD 1 EL-1.mmdl

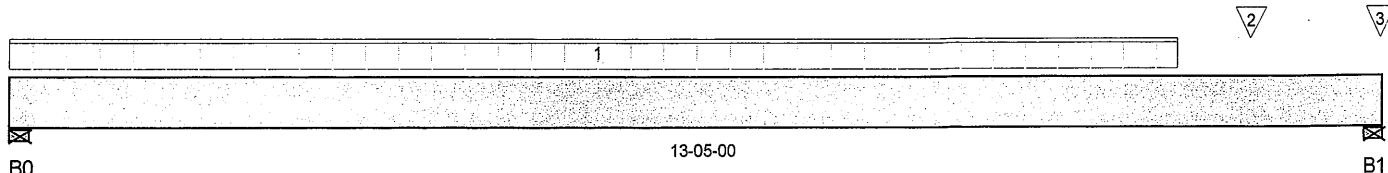
Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B10

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 13-05-00

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

Bearing	Live	Dead	Snow	Wind
B0, 4"	3,249 / 0	1,316 / 0		
B1, 4"	3,100 / 0	1,260 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	11-04-08	475	178			n/a
2	-	Conc. Pt. (lbs)	L	12-00-15	12-00-15	551	207			n/a
3	-	Conc. Pt. (lbs)	L	13-04-08	13-04-08	393	148			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	18,776 ft-lbs	39,636 ft-lbs	47.4%	1	06-08-08
End Shear	5,455 lbs	17,356 lbs	31.4%	1	01-01-08
Total Load Defl.	L/296 (0.522")	0.644"	81.1%	4	06-08-08
Live Load Defl.	L/416 (0.371")	0.429"	86.4%	5	06-08-08
Max Defl.	0.522"	n/a	n/a	4	06-08-08
Span / Depth	16.3	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4" x 5-1/4"	6,518 lbs	47.8%	25.4%	Unspecified
B1 Wall/Plate	4" x 5-1/4"	6,226 lbs	45.6%	24.3%	Unspecified

**Notes**

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

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

Calculation assumes member is partially braced. See engineering report for the unbraced length.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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

CONFORMS TO UBC 2012


 DWG NO. TAM22644-10  
 STRUCTURAL  
 COMPONENT ONLY



# Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B10 DR(i610)

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

April 30, 2016 10:11:25

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code;

Customer:

Code reports:

CCMC 12472-R

File Name: BRIDGEFORD 1 EL-1.mmdl

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

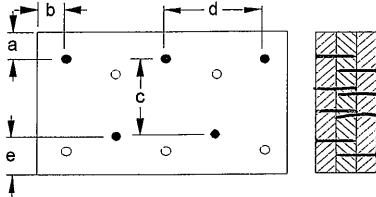
Specifier:

Designer:

Company:

Misc:

## Connection Diagram



4 rows

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

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

Nailing schedule applies to both sides of the member.

Member has no side loads.

Connectors are: 16d Nails

3 1/2" ARDQX SPIRAL

## Disclosure

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P622

DWG NO. TAM 27644/16  
STRUCTURAL  
COMPONENT ONLY

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports: CCMC 12472-R

File Name: BRIDGEFORD 1 EL-3.mmdl

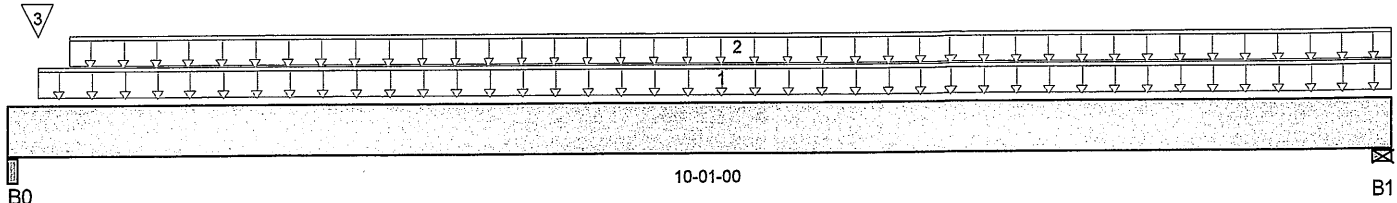
Description: Designs\Flush Beams\Basement\Flush Beams\B7(i1747)

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 10-01-00

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

Bearing	Live	Dead	Snow	Wind
B0, 5-5/8"	198 / 0	135 / 0		
B1, 4-3/8"	159 / 0	104 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-02-10	10-01-00	23	12			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-05-04	10-01-00	9	4			n/a
3	5(i557)	Conc. Pt. (lbs)	L	00-02-08	00-02-08	45	34			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	810 ft-lbs	12,704 ft-lbs	6.4%	1	05-01-02
End Shear	283 lbs	5,785 lbs	4.9%	1	01-03-02
Total Load Defl.	L/999 (0.037")	n/a	n/a	4	05-01-02
Live Load Defl.	L/999 (0.022")	n/a	n/a	5	05-01-02
Max Defl.	0.037"	n/a	n/a	4	05-01-02
Span / Depth	11.8	n/a	n/a		00-00-00

## Disclosure

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

## Bearing Supports

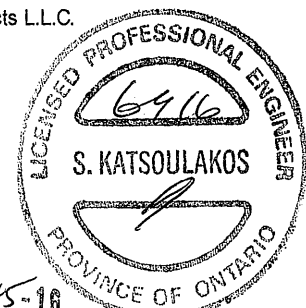
	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Beam	5-5/8" x 1-3/4"	467 lbs	8.9%	3.9%	Unspecified
B1 Wall/Plate	4-3/8" x 1-3/4"	368 lbs	9%	3.9%	Unspecified

## Notes

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

CONFORMS TO OBC 2012

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BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: BRIDGEFORD 1 EL-3.mmdl

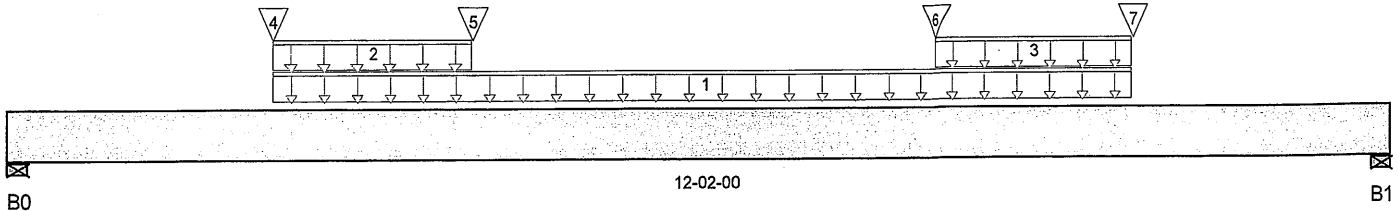
Description: Designs\Flush Beams\1st Floor\Flush Beams\B16()

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 12-02-00

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	193 / 0	422 / 0	216 / 0	
B1, 5-1/2"	193 / 0	422 / 0	216 / 0	

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	02-03-12	09-10-04	24	12			n/a
2	User Load	Unf. Lin. (lb/ft)	L	02-03-12	04-00-12		100			n/a
3	User Load	Unf. Lin. (lb/ft)	L	08-01-04	09-10-04		100			n/a
4	-	Conc. Pt. (lbs)	L	02-03-12	02-03-12	4	54			n/a
5	User Load	Conc. Pt. (lbs)	L	04-00-12	04-00-12	99	90	216		n/a
6	User Load	Conc. Pt. (lbs)	L	08-01-04	08-01-04	99	90	216		n/a
7	-	Conc. Pt. (lbs)	L	09-10-04	09-10-04	4	54			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,106 ft-lbs	25,408 ft-lbs	12.2%	13	06-01-00
End Shear	934 lbs	11,571 lbs	8.1%	13	01-03-00
Total Load Defl.	L/999 (0.116")	n/a	n/a	45	06-01-00
Live Load Defl.	L/999 (0.055")	n/a	n/a	61	06-01-00
Max Defl.	0.116"	n/a	n/a	45	06-01-00
Span / Depth	14.4	n/a	n/a		00-00-00

## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	949 lbs	9.2%	4%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	949 lbs	9.2%	4%	Unspecified

## Notes


 DWG NO. TAN 2764616  
 STRUCTURAL  
 COMPONENT ONLY

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: BRIDGEFORD 1 EL-3.mmdl

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

Specifier:

Designer: AJ

Company:

Misc:

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

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

Calculation assumes member is partially braced. See engineering report for the unbraced length.

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

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

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

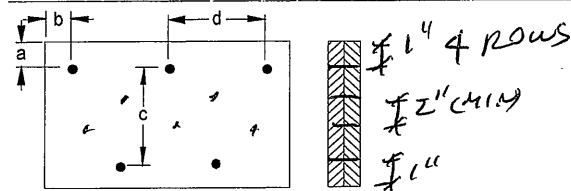
CONFORMS TO OBC 2012

**Disclosure**

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**Connection Diagram**

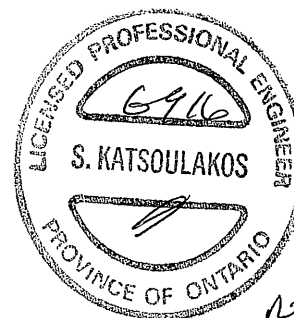


a minimum = 1" c = 1-1/2"  
b minimum = 3" d = 6"

Calculated Side Load = 10.0 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: 3 1/2" ARDOX SPIRAL



DWG NO. TAM2164616  
STRUCTURAL  
COMPONENT ONLY



# Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor...\B16A(i2030)

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

June 6, 2016 14:18:46

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: BRIDGEFORD 1 EL-3.mmdl

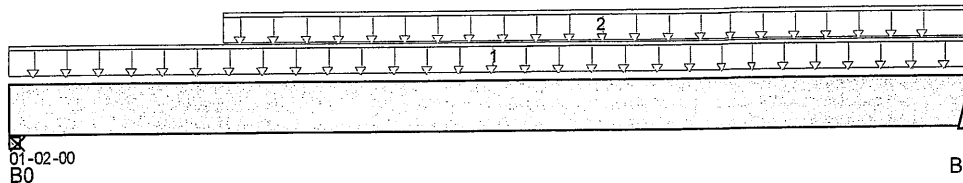
Description: Designs\Flush Beams\1st Floor\Flush Beams\B16A(i2030

Specifier:

Designer: AJ

Company:

Misc:



Total Horizontal Product Length = 01-02-00

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	3 / 0	81 / 0		
B1	3 / 0	49 / 0		

## Load Summary

Tag Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1 User Load	Unf. Lin. (lb/ft)	L	00-00-00	01-02-00		100			n/a
2 FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-03-02	01-02-00	6	3			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	9 ft-lbs	n/a	n/a	0	00-08-12
End Shear	43 lbs	7,521 lbs	0.6%	0	00-05-08
Span / Depth	0.8	n/a	n/a		00-00-00

## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	114 lbs	1.7%	0.7%	Unspecified
B1 Hanger	2" x 3-1/2"	69 lbs	n/a	1.2%	HGUS410

## Notes

Calculations assume Member is Fully Braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

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

CONFORMS TO OBC 2012



P6 1/2

DWG NO. TAM 2264718  
STRUCTURAL  
COMPONENT ONLY

BC CALC® Design Report



Build 4340

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name: BRIDGEFORD 1 EL-3.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B16A(i2030)

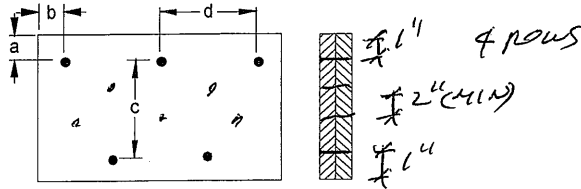
Specifier:

Designer: AJ

Company:

Misc:

### Connection Diagram



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

Member has no side loads.

Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL

### Disclosure

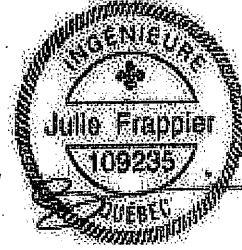
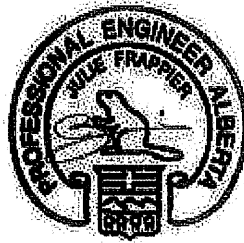
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DWG NO. TAM 2647-16  
STRUCTURAL  
COMPONENT ONLY





## Maximum Floor Spans

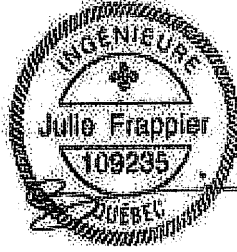
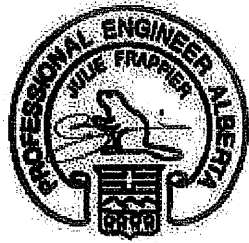
Live Load = 40 psf, Dead Load = 15 psf  
Simple Spans, L/480 Deflection Limit  
5/8" OSB G&N Sheathing

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

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

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



## Maximum Floor Spans

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

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

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

1. Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.

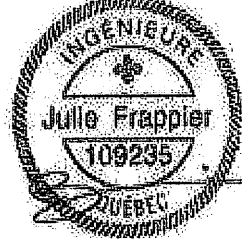
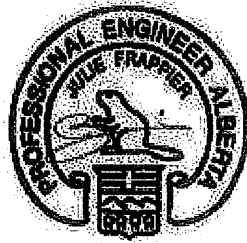
2. Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 3/4 inch for a joist spacing of 24 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.

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

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

5. This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.

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



## Maximum Floor Spans

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

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

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

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

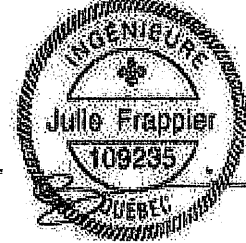
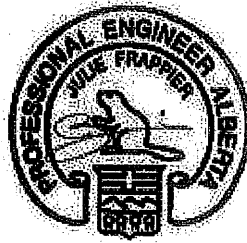
2. Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.

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

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

5. This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.

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



## Maximum Floor Spans

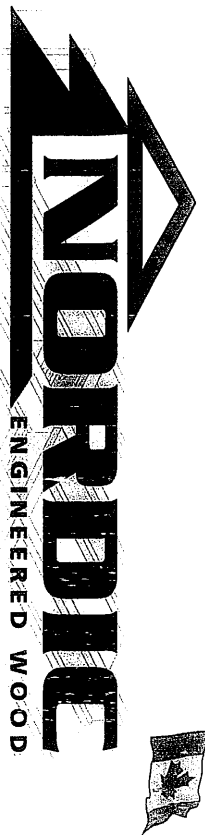
Live Load = 40 psf, Dead Load = 30 psf  
Simple Spans, L/480 Deflection Limit  
3/4" OSB G&N Sheathing

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

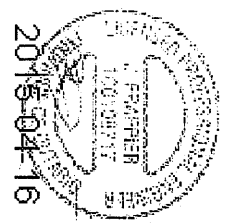
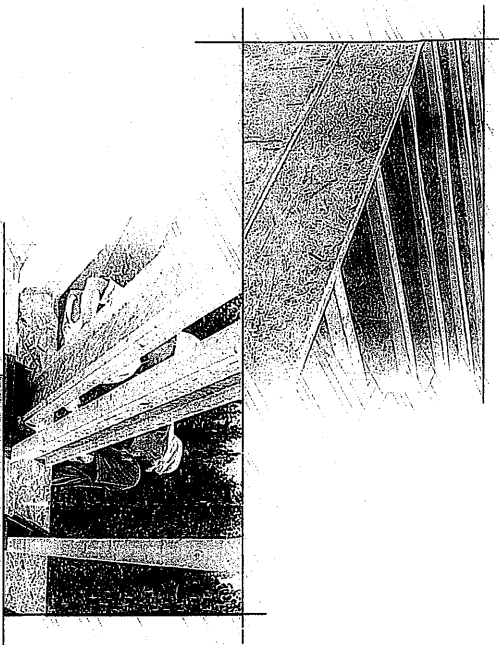
  

Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-2"	13'-4"	12'-4"	15'-7"	14'-2"	13'-4"	12'-4"
	NI-40x	17'-9"	16'-1"	15'-1"	13'-11"	17'-9"	16'-1"	15'-1"	13'-11"
	NI-60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

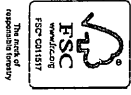
- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 3/4 inch for a joist spacing of 24 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



# 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.

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.

### WARNING

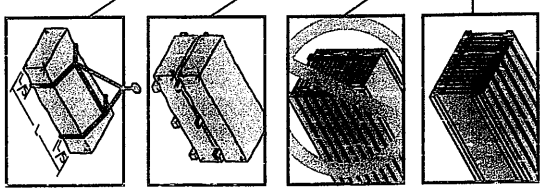
I-joists are not stable until completely installed, and will not carry any load until fully braced and sheathed.

### Avoid Accidents by Following these Important Guidelines:

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

## STORAGE AND HANDLING GUIDELINES

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



1. Maximum clear spans applicable to simple-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
2. Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in CGS8-71.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
3. Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
5. This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
6. Tables are based on Limit States Design per CAN/CSA C08-09 Standard, and NBC 2010.
7. SI units conversion: 1 inch = 25.4 mm  
1 foot = 0.305 m

### RECOMMENDATIONS:

- A **beeing stiffener** is required in all engineered applications with factored reactions greater than shown in the Hoist properties table found at the *Construction Guide* (C101). The gap between the stiffener and the flange is at the top.
- A **bearing stiffener** is required when the I-joist is supported in a hanger and the sides of the hanger do not extend up to, and support, the top flange. The gap between the stiffener and flange is at the top.

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

SI units conversion: 1 inch = 25.4 mm

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

Approx. 2"

Approx. 2"

1/8"-1/4" Gap

(4) 2-1/2" bolts,  
3" bolts required  
for 1-bolts with 3-1/2"  
flange width

No Gap

**See table below for web stiffener size requirements**

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

**CONCENTRATED LOAD**  
(load stiffener)

**No Gap**

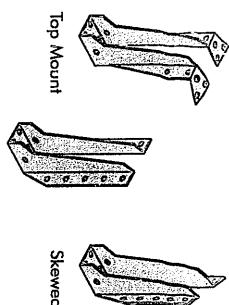
A diagram showing a square with a smaller square inside it. The space between the two squares is labeled "Gap".

(Bearing stiffener)

Gap

**Tight Joint  
No Gap**

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



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

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

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

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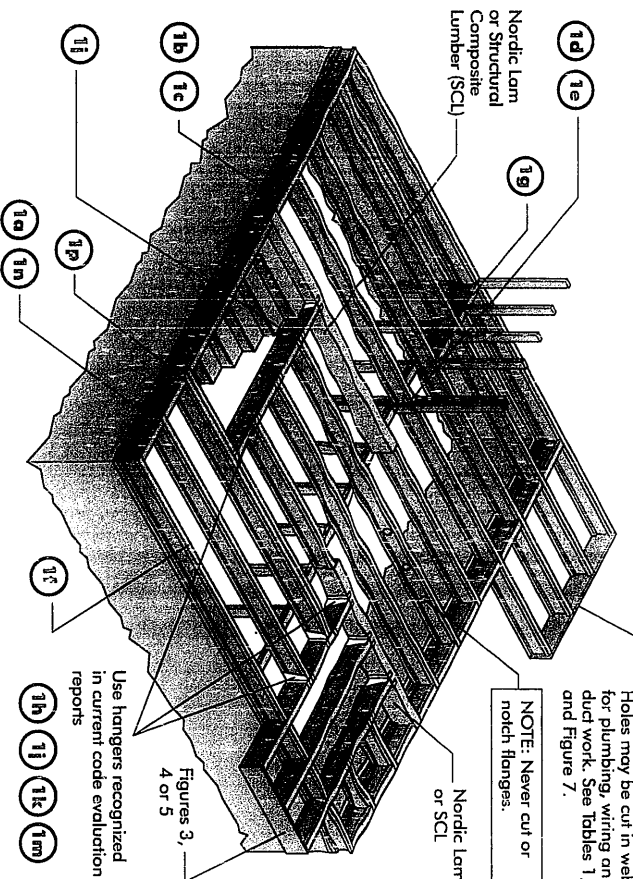
# INSTALLING NORDIC I-JOISTS

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. Wherever possible, suspend all concentrated loads from the top of the I-joist. Or, attach the load to blocking that has been securely fastened to the I-joist webs.
9. Never install I-joists where they will be permanently exposed to weather, or where they will remain in direct contact with concrete or masonry.
10. Restrain ends of floor joists to prevent rollover. Use rim board, rim joists or I-joint 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-joint blocking panels or other engineered wood products – such as rim board – must be cut to fit between the I-joists, and an I-joint-compatible depth selected.
13. Provide permanent lateral support of the bottom flange of all I-joists at interior supports of multiple-span joists. Similarly, support the bottom flange of all cantilevered I-joists at the end support next to the cantilever extension. In the completed structure, the gypsum wallboard ceiling provides this lateral support. Until the final finished ceiling is applied, temporary bracing or struts must be used.
14. If square-edge panels are used, edges must be supported between I-joists with 2x4 blocking. Glue panels to blocking to minimize squeaks. Blocking is not required under structural finish flooring, such as wood strip flooring, or if a separate underlayment layer is installed.
15. Nail spacing: Space nails installed to the flange's top face in accordance with the applicable building code requirements or approved building plans.

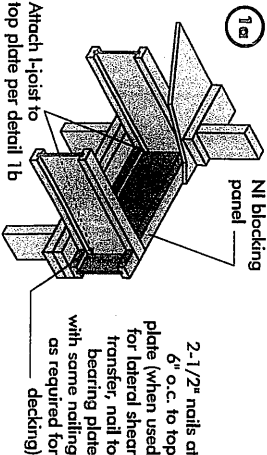
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**FIGURE 1**  
**TYPICAL NORDIC I-JOIST FLOOR FRAMING AND CONSTRUCTION DETAILS**

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

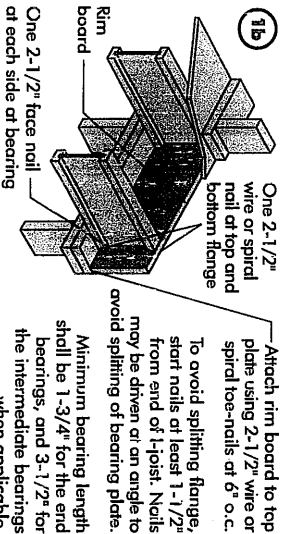


Figures 3, 4 or 5  
Holes may be cut in web for plumbing, wiring and duct work. See Tables 1, 2 and Figure 7.  
**NOTE:** Never cut or notch flanges.



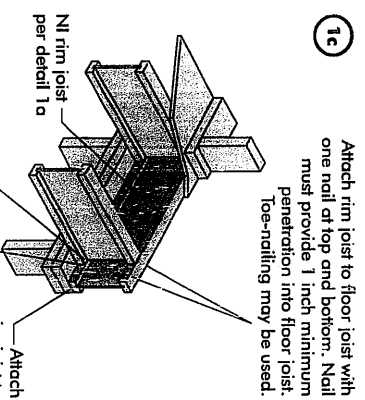
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (psf)
NI Joists	3,300

\*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.

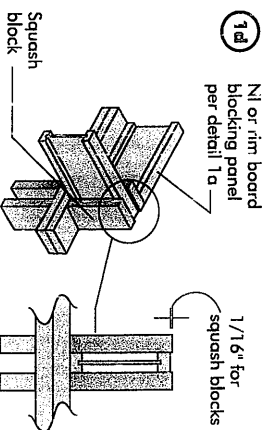


Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (psf)
1-1/8" Rim Board Plus	8,090

\*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.



Minimum 1-3/4" bearing required

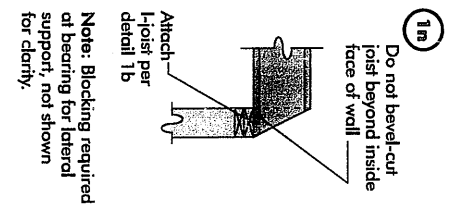
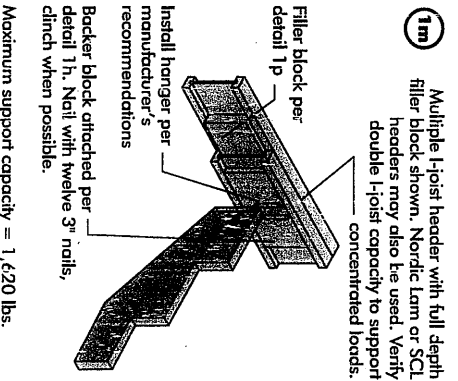
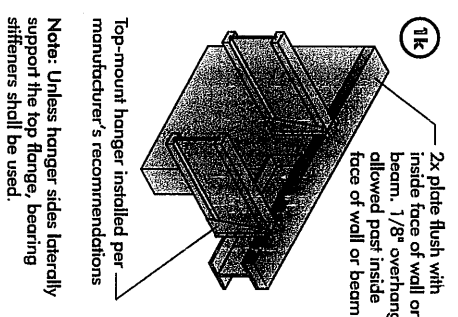
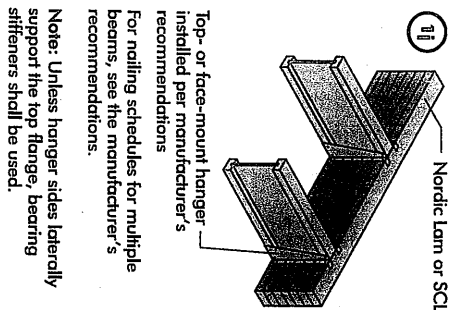
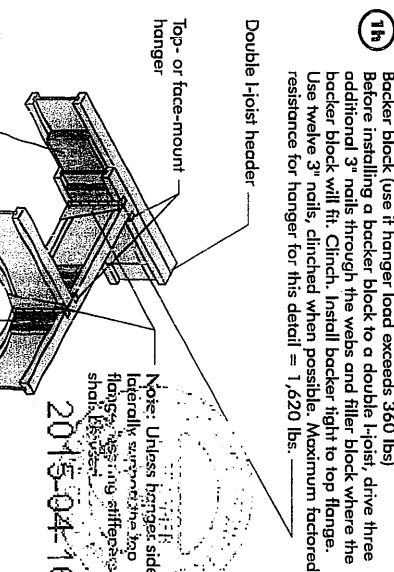
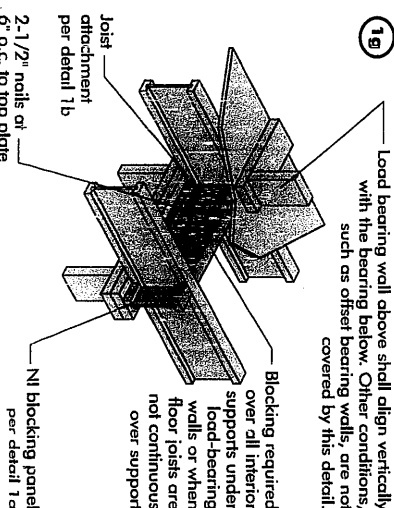
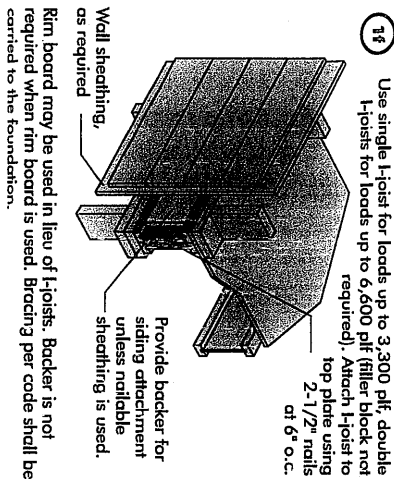
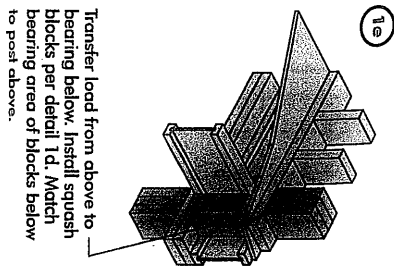


Pair of Squash Blocks	Maximum Factored Vertical per Pair of Squash Blocks (lbs)
3-1/2" wide	5,500
5-1/2" wide	8,500
1-1/8" Rim Board Plus	4,300

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

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

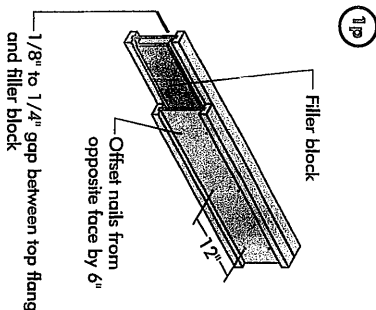




**BACKER BLOCKS** (Blocks must be long enough to permit required nailing without splitting)

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

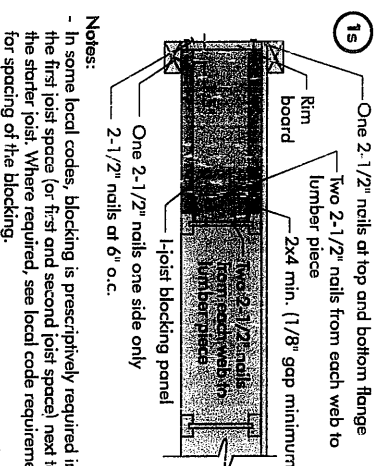
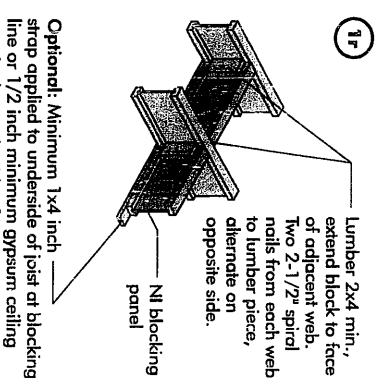
\* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-Q325 or CAN/CSA-Q437 Standard.  
 \*\* For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".



- Notes:**
- Support back of I-joist web during nailing to prevent damage to web/flange connection.
  - Leave a 1/8" to 1/4" gap between top of filler block and bottom of top I-joist flange.
  - Filler block is required between joists for full length of span.
  - Nail joists together with two rows of 3" nails at 12 inches o.c. (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.
  - 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 11-7/8" x 14"	2-1/8" x 6" x 8"
3-1/2" x 1-1/2"	9-1/2" x 11-7/8" x 14"	2-1/8" x 8" x 10"
3-1/2" x 1-1/2"	9-1/2" x 11-7/8" x 14"	2-1/8" x 12" x 12"
3-1/2" x 1-1/2"	11-7/8" x 14" x 16"	3" x 7" x 9"
3-1/2" x 1-1/2"	11-7/8" x 14" x 16"	3" x 11" x 11"

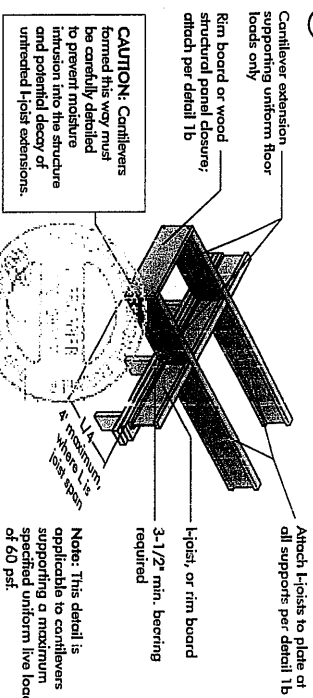


- Notes:**
- In some local codes, blocking is prescriptively required in the first joist space (or first and second joist space) next to the starter joist. Where required, see local code requirements for spacing of the blocking.
  - All nails are common spiral in this detail.

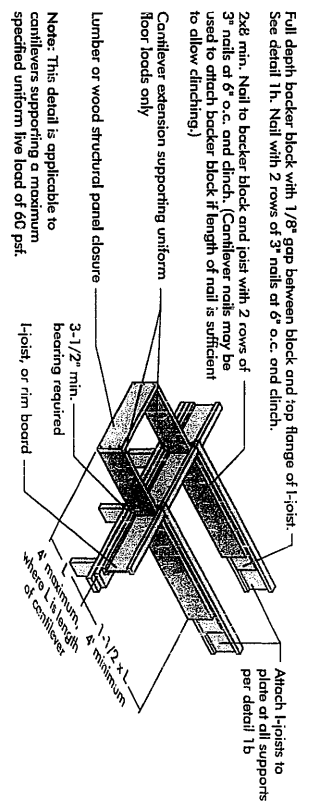


## CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

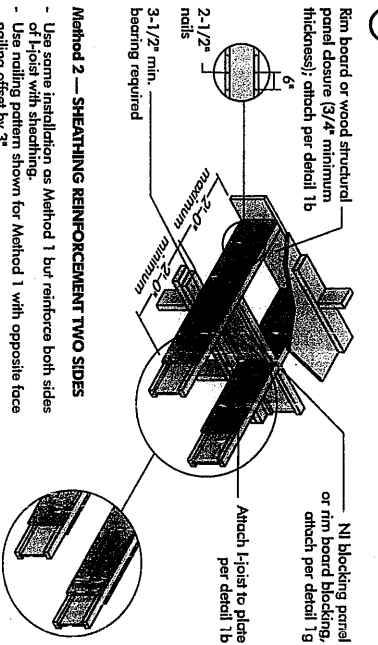


### 3b) LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



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

### 4a) Method 1 — SHEATHING REINFORCEMENT ONE SIDE



### Method 2 — SHEATHING REINFORCEMENT TWO SIDES

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

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

### 4b) Alternate Method 2 — DOUBLE I-JOIST

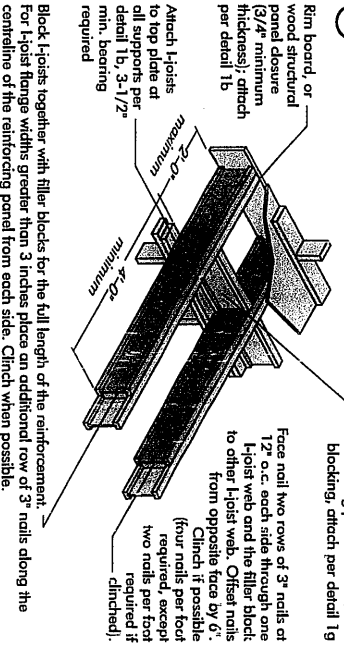
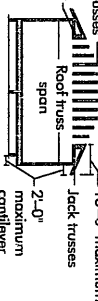
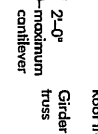
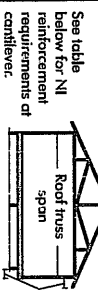


FIGURE 4 (continued)



For hip roofs with the jack trusses running parallel to the cantilevered floor joists, the I-joist reinforcement requirements for a span of 24 ft. shall be permitted to be used.

## CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft)	ROOF LOADING (UNFACTORED)				JOIST SPACING (in.)			
		LL = 30 psf, DL = 15 psf	LL = 40 psf, DL = 15 psf	LL = 50 psf, DL = 15 psf	LL = 60 psf, DL = 15 psf	12	16	19.2	24
9-1/2	12	N	N	N	N	N	N	N	N
11-7/8	12	N	N	N	N	N	N	N	N
14	12	N	N	N	N	N	N	N	N
16	12	N	N	N	N	N	N	N	N
18	12	N	N	N	N	N	N	N	N
20	12	N	N	N	N	N	N	N	N
22	12	N	N	N	N	N	N	N	N
24	12	N	N	N	N	N	N	N	N
26	12	N	N	N	N	N	N	N	N
28	12	N	N	N	N	N	N	N	N
30	12	N	N	N	N	N	N	N	N
32	12	N	N	N	N	N	N	N	N
34	12	N	N	N	N	N	N	N	N
36	12	N	N	N	N	N	N	N	N
38	12	N	N	N	N	N	N	N	N
40	12	N	N	N	N	N	N	N	N
42	12	N	N	N	N	N	N	N	N
44	12	N	N	N	N	N	N	N	N
46	12	N	N	N	N	N	N	N	N
48	12	N	N	N	N	N	N	N	N
50	12	N	N	N	N	N	N	N	N
52	12	N	N	N	N	N	N	N	N
54	12	N	N	N	N	N	N	N	N
56	12	N	N	N	N	N	N	N	N
58	12	N	N	N	N	N	N	N	N
60	12	N	N	N	N	N	N	N	N
62	12	N	N	N	N	N	N	N	N
64	12	N	N	N	N	N	N	N	N
66	12	N	N	N	N	N	N	N	N
68	12	N	N	N	N	N	N	N	N
70	12	N	N	N	N	N	N	N	N
72	12	N	N	N	N	N	N	N	N
74	12	N	N	N	N	N	N	N	N
76	12	N	N	N	N	N	N	N	N
78	12	N	N	N	N	N	N	N	N
80	12	N	N	N	N	N	N	N	N
82	12	N	N	N	N	N	N	N	N
84	12	N	N	N	N	N	N	N	N
86	12	N	N	N	N	N	N	N	N
88	12	N	N	N	N	N	N	N	N
90	12	N	N	N	N	N	N	N	N
92	12	N	N	N	N	N	N	N	N
94	12	N	N	N	N	N	N	N	N
96	12	N	N	N	N	N	N	N	N
98	12	N	N	N	N	N	N	N	N
100	12	N	N	N	N	N	N	N	N

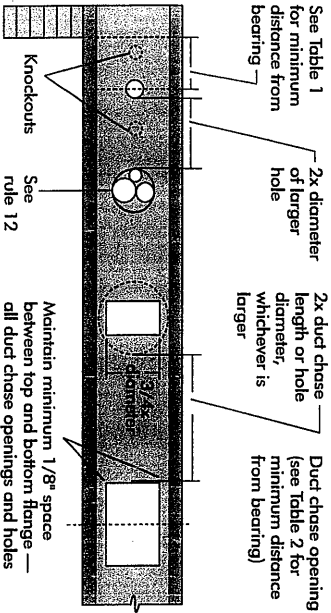
1. N = No reinforcement required.
2. N = NI reinforced with 3/4" wood structural panel on one side only.
3. X = Try a deeper joist or closer spacing. Maximum design load shall be: 15 psf roof dead load, 55 psf floor total load, and 80 psf wall load. Wall load is based on 3'-0" maximum width window or door openings.
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 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.

## 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 duct chase opening, and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
7. A knockout is **not** considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
8. Holes measuring 1-1/2 inches or smaller shall be permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.
9. A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
10. All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
11. Limit three maximum size holes per span, of which one may be a duct chase opening.
12. A group of round holes at approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

**FIGURE 7**  
**FIELD-CUT HOLE LOCATOR**



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

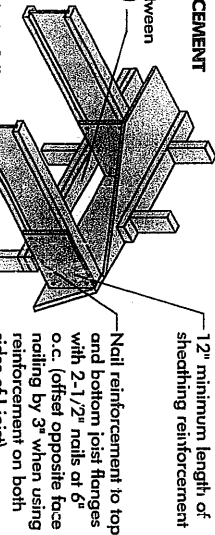
**TABLE 1**  
**LOCATION OF CIRCULAR HOLES IN JOIST WEBS**  
**Simple or Multiple Span for Dead Loads up to 15 psf and Live Loads up to 40 psf**

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of hole (ft-in.)	Span adjustment Factor
12	2	0.75	1.0
12	3	0.75	1.0
12	4	0.75	1.0
12	5	0.75	1.0
12	6	0.75	1.0
12	6-1/4	0.75	1.0
12	7	0.75	1.0
12	8	0.75	1.0
12	8-5/8	0.75	1.0
12	9	0.75	1.0
12	10	0.75	1.0
12	10-3/4	0.75	1.0
12	11	0.75	1.0
12	12	0.75	1.0
12	12-3/4	0.75	1.0
12	13	0.75	1.0
12	13-3/4	0.75	1.0
12	14	0.75	1.0
12	14-3/4	0.75	1.0
12	15	0.75	1.0
12	15-3/4	0.75	1.0
12	16	0.75	1.0
12	16-3/4	0.75	1.0
12	17	0.75	1.0
12	17-3/4	0.75	1.0
12	18	0.75	1.0
12	18-3/4	0.75	1.0
12	19	0.75	1.0
12	19-3/4	0.75	1.0
12	20	0.75	1.0
12	20-3/4	0.75	1.0
12	21	0.75	1.0
12	21-3/4	0.75	1.0
12	22	0.75	1.0
12	22-3/4	0.75	1.0
12	23	0.75	1.0
12	23-3/4	0.75	1.0
12	24	0.75	1.0
12	24-3/4	0.75	1.0
12	25	0.75	1.0
12	25-3/4	0.75	1.0
12	26	0.75	1.0
12	26-3/4	0.75	1.0
12	27	0.75	1.0
12	27-3/4	0.75	1.0
12	28	0.75	1.0
12	28-3/4	0.75	1.0
12	29	0.75	1.0
12	29-3/4	0.75	1.0
12	30	0.75	1.0
12	30-3/4	0.75	1.0
12	31	0.75	1.0
12	31-3/4	0.75	1.0
12	32	0.75	1.0
12	32-3/4	0.75	1.0
12	33	0.75	1.0
12	33-3/4	0.75	1.0
12	34	0.75	1.0
12	34-3/4	0.75	1.0
12	35	0.75	1.0
12	35-3/4	0.75	1.0
12	36	0.75	1.0
12	36-3/4	0.75	1.0
12	37	0.75	1.0
12	37-3/4	0.75	1.0
12	38	0.75	1.0
12	38-3/4	0.75	1.0
12	39	0.75	1.0
12	39-3/4	0.75	1.0
12	40	0.75	1.0
12	40-3/4	0.75	1.0
12	41	0.75	1.0
12	41-3/4	0.75	1.0
12	42	0.75	1.0
12	42-3/4	0.75	1.0
12	43	0.75	1.0
12	43-3/4	0.75	1.0
12	44	0.75	1.0
12	44-3/4	0.75	1.0
12	45	0.75	1.0
12	45-3/4	0.75	1.0
12	46	0.75	1.0
12	46-3/4	0.75	1.0
12	47	0.75	1.0
12	47-3/4	0.75	1.0
12	48	0.75	1.0
12	48-3/4	0.75	1.0
12	49	0.75	1.0
12	49-3/4	0.75	1.0
12	50	0.75	1.0
12	50-3/4	0.75	1.0
12	51	0.75	1.0
12	51-3/4	0.75	1.0
12	52	0.75	1.0
12	52-3/4	0.75	1.0
12	53	0.75	1.0
12	53-3/4	0.75	1.0
12	54	0.75	1.0
12	54-3/4	0.75	1.0
12	55	0.75	1.0
12	55-3/4	0.75	1.0
12	56	0.75	1.0
12	56-3/4	0.75	1.0
12	57	0.75	1.0
12	57-3/4	0.75	1.0
12	58	0.75	1.0
12	58-3/4	0.75	1.0
12	59	0.75	1.0
12	59-3/4	0.75	1.0
12	60	0.75	1.0
12	60-3/4	0.75	1.0
12	61	0.75	1.0
12	61-3/4	0.75	1.0
12	62	0.75	1.0
12	62-3/4	0.75	1.0
12	63	0.75	1.0
12	63-3/4	0.75	1.0
12	64	0.75	1.0
12	64-3/4	0.75	1.0
12	65	0.75	1.0
12	65-3/4	0.75	1.0
12	66	0.75	1.0
12	66-3/4	0.75	1.0
12	67	0.75	1.0
12	67-3/4	0.75	1.0
12	68	0.75	1.0
12	68-3/4	0.75	1.0
12	69	0.75	1.0
12	69-3/4	0.75	1.0
12	70	0.75	1.0
12	70-3/4	0.75	1.0
12	71	0.75	1.0
12	71-3/4	0.75	1.0
12	72	0.75	1.0
12	72-3/4	0.75	1.0
12	73	0.75	1.0
12	73-3/4	0.75	1.0
12	74	0.75	1.0
12	74-3/4	0.75	1.0
12	75	0.75	1.0
12	75-3/4	0.75	1.0
12	76	0.75	1.0
12	76-3/4	0.75	1.0
12	77	0.75	1.0
12	77-3/4	0.75	1.0
12	78	0.75	1.0
12	78-3/4	0.75	1.0
12	79	0.75	1.0
12	79-3/4	0.75	1.0
12	80	0.75	1.0
12	80-3/4	0.75	1.0
12	81	0.75	1.0
12	81-3/4	0.75	1.0
12	82	0.75	1.0
12	82-3/4	0.75	1.0
12	83	0.75	1.0
12	83-3/4	0.75	1.0
12	84	0.75	1.0
12	84-3/4	0.75	1.0
12	85	0.75	1.0
12	85-3/4	0.75	1.0
12	86	0.75	1.0
12	86-3/4	0.75	1.0
12	87	0.75	1.0
12	87-3/4	0.75	1.0
12	88	0.75	1.0
12	88-3/4	0.75	1.0
12	89	0.75	1.0
12	89-3/4	0.75	1.0
12	90	0.75	1.0
12	90-3/4	0.75	1.0
12	91	0.75	1.0
12	91-3/4	0.75	1.0
12	92	0.75	1.0
12	92-3/4	0.75	1.0
12	93	0.75	1.0
12	93-3/4	0.75	1.0
12	94	0.75	1.0
12	94-3/4	0.75	1.0
12	95	0.75	1.0
12	95-3/4	0.75	1.0
12	96	0.75	1.0
12	96-3/4	0.75	1.0
12	97	0.75	1.0
12	97-3/4	0.75	1.0
12	98	0.75	1.0
12	98-3/4	0.75	1.0
12	99	0.75	1.0
12	99-3/4	0.75	1.0
12	100	0.75	1.0
12	100-3/4	0.75	1.0
12	101	0.75	1.0
12	101-3/4	0.75	1.0
12	102	0.75	1.0
12	102-3/4	0.75	1.0
12	103	0.75	1.0
12	103-3/4	0.75	1.0
12	104	0.75	1.0
12	104-3/4	0.75	1.0
12	105	0.75	1.0
12	105-3/4	0.75	1.0
12	106	0.75	1.0
12	106-3/4	0.75	1.0
12	107	0.75	1.0
12	107-3/4	0.75	1.0
12	108	0.75	1.0
12	108-3/4	0.75	1.0
12	109	0.75	1.0
12	109-3/4	0.75	1.0
12	110	0.75	1.0
12	110-3/4	0.75	1.0
12	111	0.75	1.0
12	111-3/4	0.75	1.0
12	112	0.75	1.0
12	112-3/4	0.75	1.0
12	113	0.75	1.0
12	113-3/4	0.75	1.0
12	114	0.75	1.0
12	114-3/4	0.75	1.0
12	115	0.75	1.0
12	115-3/4	0.75	1.0
12	116	0.75	1.0
12	116-3/4	0.75	1.0
12	117	0.75	1.0
12	117-3/4	0.75	1.0
12	118	0.75	1.0
12	118-3/4	0.75	1.0
12	119	0.75	1.0
12	119-3/4	0.75	1.0
12	120	0.75	1.0
12	120-3/4	0.75	1.0
12	121	0.75	1.0
12	121-3/4	0.75	1.0
12	122	0.75	1.0
12	122-3/4	0.75	1.0
12	123	0.75	1.0
12	123-3/4	0.75	1.0
12	124	0.75	1.0
12	124-3/4	0.75	1.0
12	125	0.75	1.0
12	125-3/4	0.75	1.0
12	126	0.75	1.0
12	126-3/4	0.75	1.0
12	127	0.75	1.0
12	127-3/4	0.75	1.0
12	128	0.75	1.0
12	128-3/4	0.75	1.0
12	129	0.75	1.0
12	129-3/4	0.75	1.0
12	130	0.75	1.0
12	130-3/4	0.75	1.0
12	131	0.75	1.0
12	131-3/4	0.75	1.0
12	132	0.75	1.0
12	132-3/4	0.75	1.0
12	133	0.75	1.0
12	133-3/4	0.75	1.0
12	134	0.75	1.0
12	134-3/4	0.75	1.0
12	135	0.75	1.0
12	135-3/4	0.75	1.0
12	136	0.75	1.0
12	136-3/4	0.75	1.0
12	137	0.75	1.0
12	137-3/4	0.75	1.0
12	138	0.75	1.0
12	138-3/4	0.75	1.0
12	139	0.75	1.0
12	139-3/4	0.75	1.0
12	140	0.75	1.0
12	140-3/4	0.75	1.0
12	141	0.75	1.0
12	141-3/4	0.75	1.0
12	142	0.75	1.0
12	142-3/4	0.75	1.0
12	143	0.75	1.0
12	143-3/4	0.75	1.0
12	144	0.75	1.0
12	144-3/4	0.75	1.0
12	145	0.75	1.0
12	145-3/4	0.75	1.0
12	146	0.75	1.0
12	146-3/4	0.75	1.0
12	147	0.75	1.0
12	147-3/4	0.75	1.0
12	148	0.75	1.0

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

## 5a SHEATHING REINFORCEMENT

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

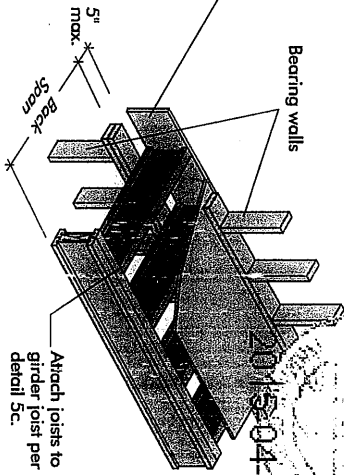


Note: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4") required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2" nails at 6" o.c., top and bottom flange. Install with face grain horizontal. Attach I-joist to plate at all supports per detail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

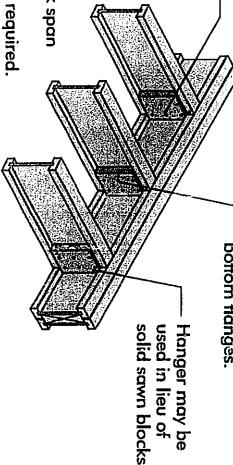
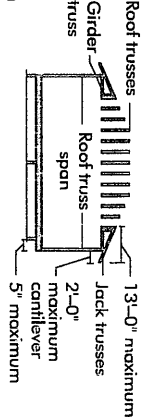
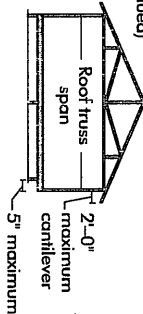


FIGURE 5 (continued)  
See table below for NI reinforcement requirements of cantilever.



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

## BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft)	ROOF LOADING (UNFACED)				ROOF LOADING (FACED)							
		LL = 30 psf, DL = 15 psf				LL = 40 psf, DL = 15 psf							
		JOIST SPACING (in.)				JOIST SPACING (in.)							
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
9 1/2"	28	1	X	X	X	2	X	X	X	2	X	X	X
	30	1	X	X	X	2	X	X	X	2	X	X	X
	32	2	X	X	X	2	X	X	X	X	X	X	X
	34	2	X	X	X	X	X	X	X	X	X	X	X
	36	2	X	X	X	X	X	X	X	X	X	X	X
14"	28	N	X	X	X	1	X	X	X	1	X	X	X
	30	N	X	X	X	1	X	X	X	1	X	X	X
	32	N	2	X	X	2	X	X	X	2	X	X	X
	34	N	2	X	X	X	X	X	X	2	X	X	X
	36	N	2	X	X	X	X	X	X	2	X	X	X
16"	28	N	1	2	2	N	2	2	2	N	1	2	2
	30	N	1	2	2	N	2	2	2	N	1	2	2
	32	N	1	2	2	N	2	2	2	N	1	2	2
	34	N	1	2	2	N	2	2	2	N	1	2	2
	36	N	1	2	2	N	2	2	2	N	1	2	2

1. N = No reinforcement required.  
1 = NI reinforced with 3/4" wood structural panel on one side only.
- 2 = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.  
X = Try a deeper joist or closer spacing.
3. Maximum design load shall be: 15 psf roof dead load, 35 psf floor total load, and 80 psf live load. Wall load is based on 3'-0" maximum width window or door openings.
4. 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.
5. Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
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 framed 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.

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

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

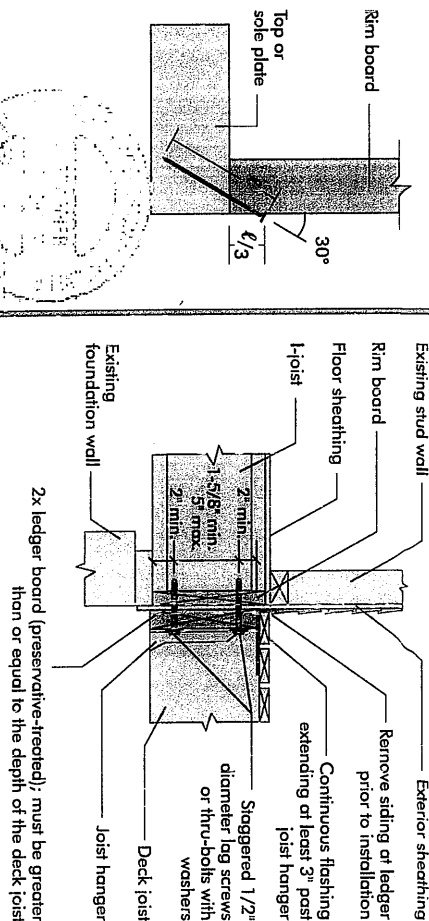
- Ref.: NRC-CNRC, National Building Code of Canada 2010, Table 9.23.3.5.

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

**8c ATTACHMENT DETAILS WHERE RIM BOARDS ABUT**

- 
- Rim board joint between floor joists**
- 2-1/2" nails at 6" o.c. (typical)
- (1) 2-1/2" nail top and bottom (typical)
- Rim board joint
- 2-1/2" toe-nails at 6" o.c. (typical)
- Rim board joint at Corner**
- 1-1/2"
- h
- Rim board joint

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

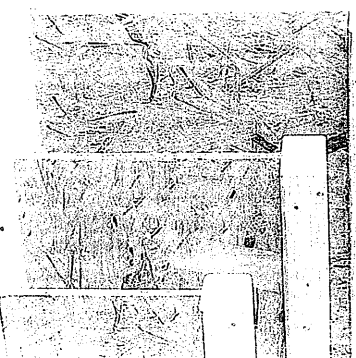


2015-04-16

## PRODUCT WARRANTY

*Chemier Chibongmas guarantees that, in accordance with our specifications, Nordle products are free from manufacturing defects in material and workmanship.*

**Furthermore, Chemtreat Criboguard 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.**



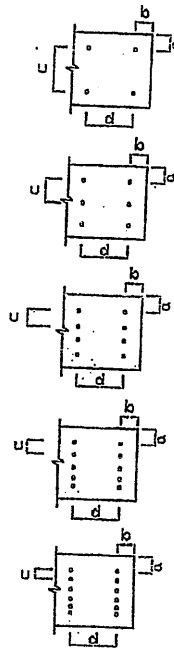
# MICRO CITY

## 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 CLOS  
BEARING THE  
STAMP BELOW

PROVIDE NAILING  
DETAIL # X SEE  
DWG # TAMN1001-14