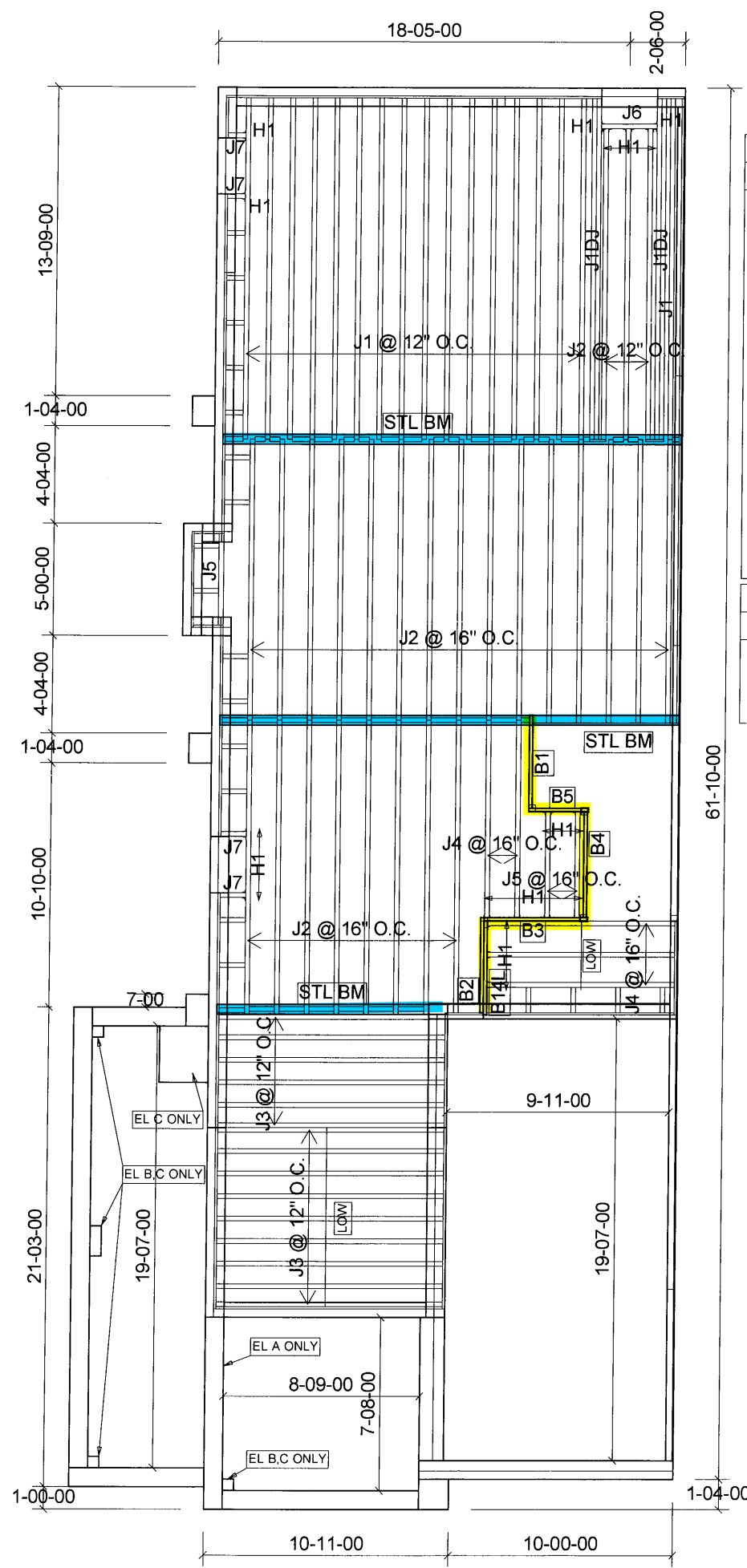


FROM PLAN DATED: NOV 2016
BUILDER: BAYVIEW WELLINGTON
SITE: GREEN VALLEY ESTATES
MODEL: SD25-4 SONOMA 4
ELEVATION: A,B,C
LOT: 154
CITY: BRADFORD
SALESMAN: M D
DESIGNER: CZ
REVISION:

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

DATE: 29/08/2017
1st FLOOR

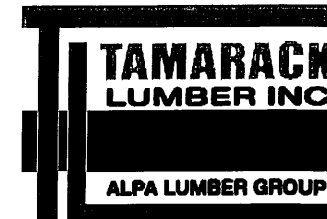


Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	17
J1DJ	16-00-00	9 1/2" NI-40x	2	4
J2	14-00-00	9 1/2" NI-40x	1	26
J3	12-00-00	9 1/2" NI-40x	1	15
J4	10-00-00	9 1/2" NI-40x	1	5
J5	6-00-00	9 1/2" NI-40x	1	3
J6	4-00-00	9 1/2" NI-40x	1	1
J7	2-00-00	9 1/2" NI-40x	1	4
B1	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B14L	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B2	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B3	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B4	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B5	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
9	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
7	H1	IUS2.56/9.5

TOWN OF BRADFORD WEST GWILLIMBURY
BUILDING DEPARTMENT
PLANS EXAMINED
ONTARIO BUILDING CODE APPLIES
DATE: 2018-10-22
INSPECTOR: BG

SITE COPY

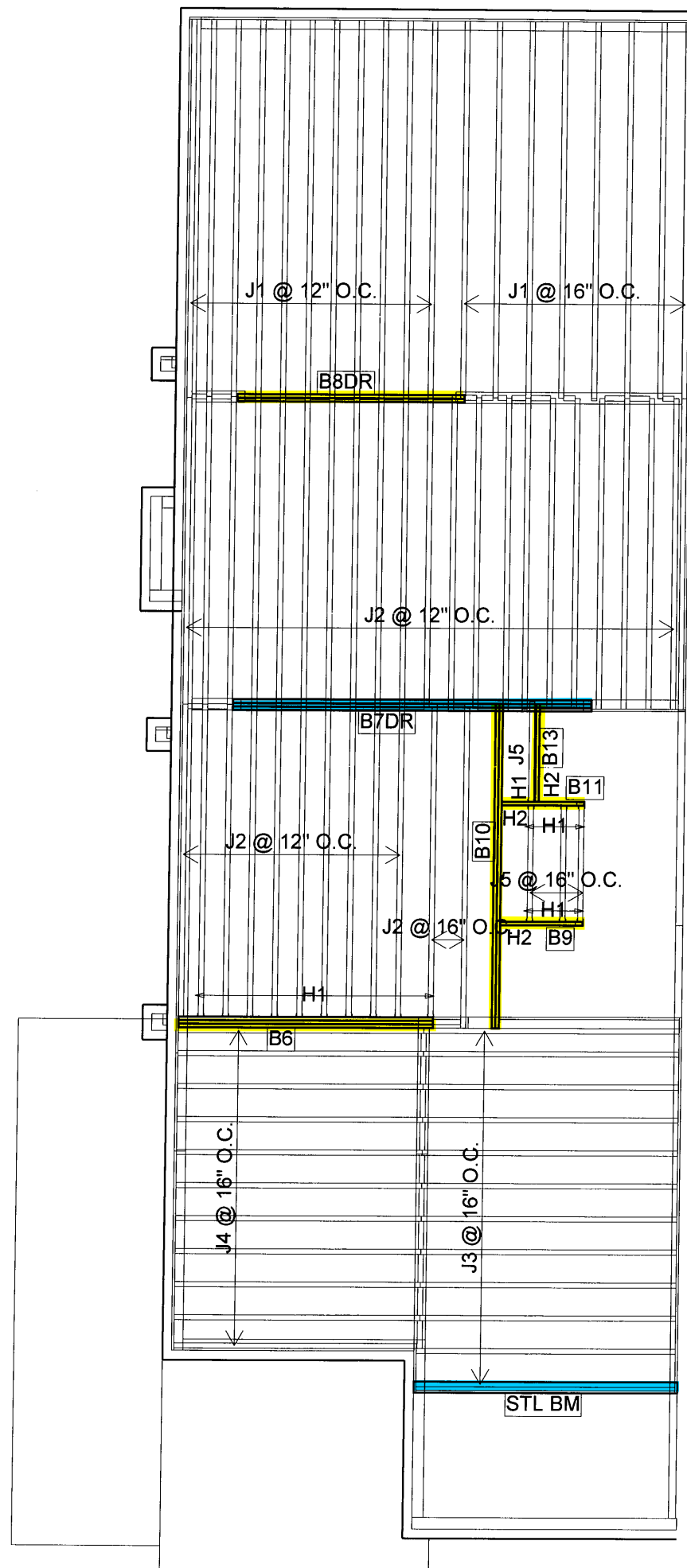


FROM PLAN DATED: NOV 2016
BUILDER: BAYVIEW WELLINGTON
SITE: GREEN VALLEY ESTATES
MODEL: SD25-4 SONOMA 4
ELEVATION: **A****B**
LOT: 154
CITY: BRADFORD
SALESMAN: M D
DESIGNER: CZ
REVISION:

NOTES:
REFER TO THE NORDIC
INSTALLATION GUIDE FOR PROPER
STORAGE AND INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2
S.P.F. REQ'D UNDER INTERIOR
UNIFORM LOAD BEARING WALLS.
MULTIPLE SQUASH BLOCKS REQ'D
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FIGURE 1. CANTILEVERED JOISTS
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I-JOIST BLOCKING ALONG BEARING
AND RIMBOARD CLOSURE AT ENDS.
SEE FIGURE 7 TABLES 4 & 5 FOR
REINFORCEMENT REQUIREMENTS.
FOR HOLES INCLUDING DUCT
CHASE AND FIELD CUT OPENINGS
SEE FIGURE 7 TABLES 1 & 2 OF THE
INSTALLATION GUIDE. CERAMIC TILE
APPLICATION AS PER O.B.C. 9.30.6
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 15.0 lb/ft
TILED AREAS: 20 lb/ft
SUBFLOOR: 5/8" GLUED AND NAILED
DATE: 29/08/2017

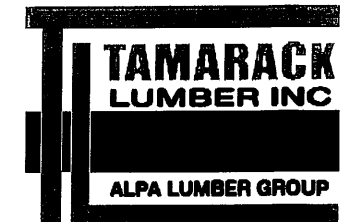
Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	19
J2	14-00-00	9 1/2" NI-40x	1	33
J3	12-00-00	9 1/2" NI-40x	1	12
J4	10-00-00	9 1/2" NI-40x	1	11
J5	6-00-00	9 1/2" NI-40x	1	4
B10	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B6	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3
B8DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B11	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B13	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B9	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B7DR	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3

Connector Summary		
Qty	Manuf	Product
7	H1	IUS2.56/9.5
10	H1	IUS2.56/9.5
1	H2	HUS1.81/10
2	H2	HUS1.81/10



SITE COPY

2nd FLOOR



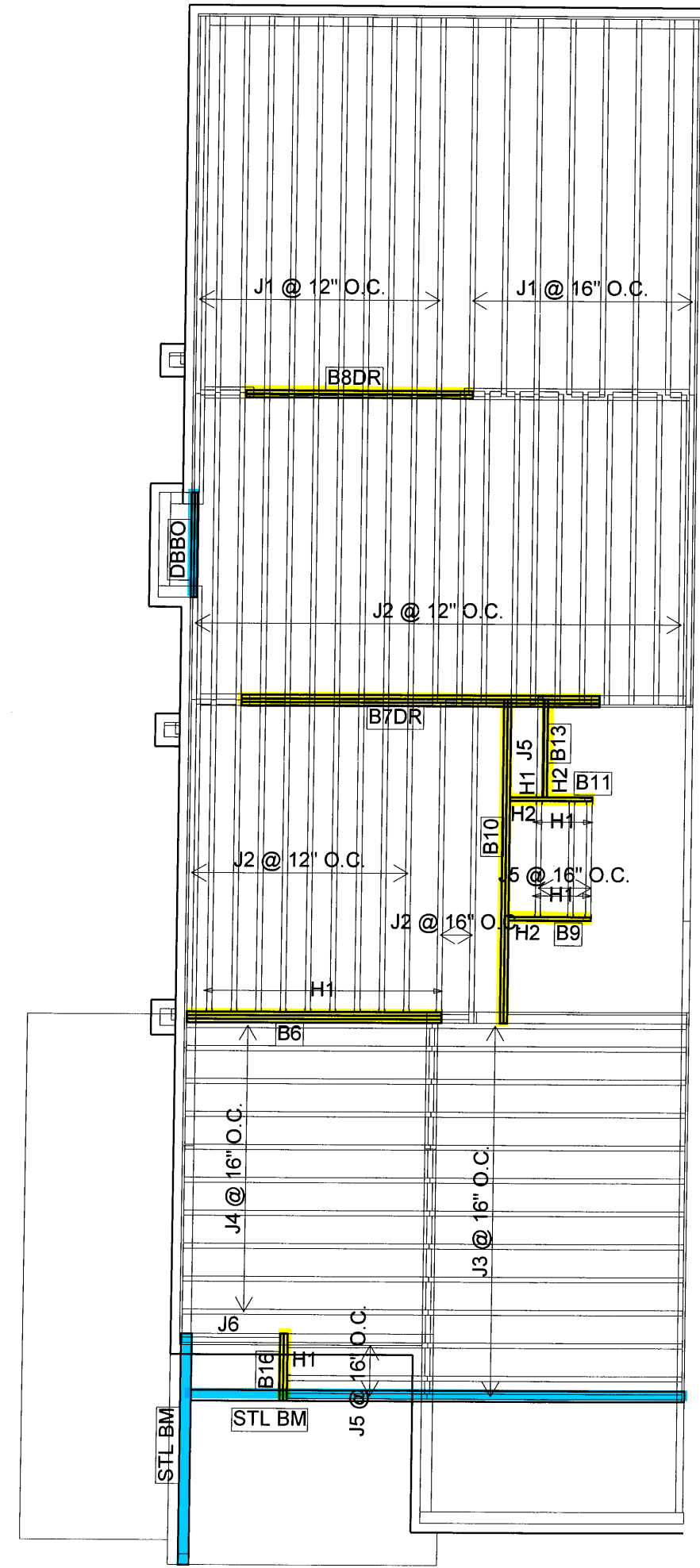
FROM PLAN DATED: NOV 2016
BUILDER: BAYVIEW WELLINGTON
SITE: GREEN VALLEY ESTATES
MODEL: SD25-4 SONOMA 4
ELEVATION: C
LOT: 154
CITY: BRADFORD
SALESMAN: M D
DESIGNER: CZ
REVISION:

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

DATE: 29/08/2017
2nd FLOOR

Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	19
J2	14-00-00	9 1/2" NI-40x	1	33
J3	12-00-00	9 1/2" NI-40x	1	13
J4	10-00-00	9 1/2" NI-40x	1	10
J5	6-00-00	9 1/2" NI-40x	1	7
J6	4-00-00	9 1/2" NI-40x	1	1
B10	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B6	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3
B8DR	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B11	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B13	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B9	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B16	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B7DR	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3

Connector Summary		
Qty	Manuf	Product
7	H1	IUS2.56/9.5
1	H1	IUS2.56/9.5
10	H1	IUS2.56/9.5
1	H2	HUS1.81/10
2	H2	HUS1.81/10



SITE COPY



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B1(i1242)

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

August 29, 2017 09:54:22

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: SD25-4 SONOMA 4 EL C.mmdl

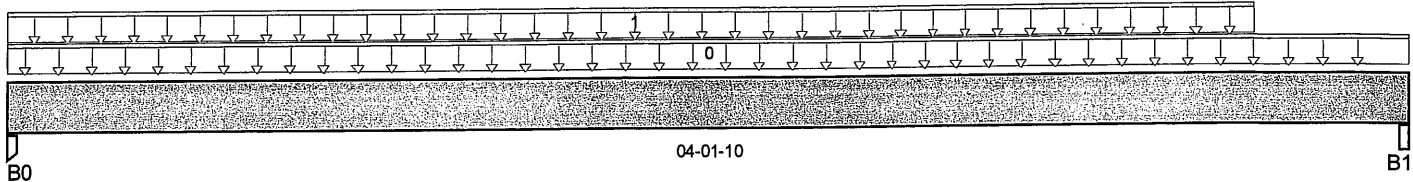
Description: Designs\Flush Beams\Basement\Flush Beams\B1(i1242)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 04-01-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 1-3/4"	485 / 0	252 / 0		
B1, 5-1/4"	553 / 0	287 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	User Load	Unf. Lin. (lb/ft)	L	00-00-00	04-01-10	240	120			n/a
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-08-06	12	6			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	917 ft-lbs	12,704 ft-lbs	7.2%	1	01-11-01
End Shear	534 lbs	5,785 lbs	9.2%	1	00-11-04
Total Load Defl.	L/999 (0.006")	n/a	n/a	4	01-11-01
Live Load Defl.	L/999 (0.004")	n/a	n/a	5	01-11-01
Max Defl.	0.006"	n/a	n/a	4	01-11-01
Span / Depth	4.6	n/a	n/a		00-00-00

Disclosure

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

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Post	1-3/4" x 1-3/4"	1,043 lbs	41.9%	27.9%	Unspecified
B1 Beam	5-1/4" x 1-3/4"	1,189 lbs	24.2%	10.6%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

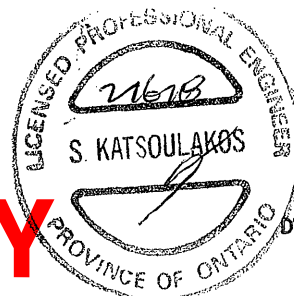
Resistance Factor phi has been applied to all presented results per CSA O86.

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012



DWG NO. TAM 9259 -18
STRUCTURAL
COMPONENT ONLY

SITE COPY



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B2(i1241)

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

August 29, 2017 09:54:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: SD25-4 SONOMA 4 EL C.mmdl

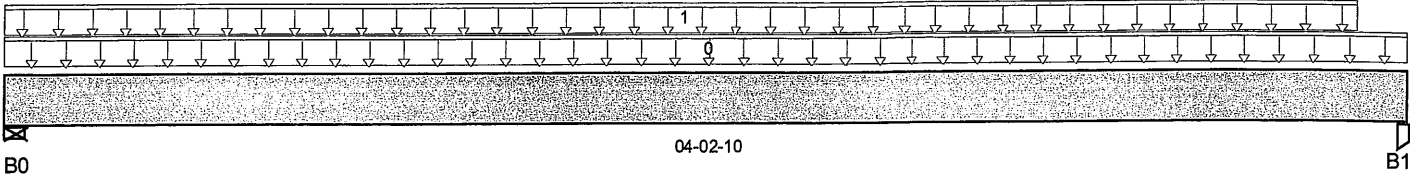
Description: Designs\Flush Beams\Basement\Flush Beams\B2(i1241)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 04-02-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	586 / 0	304 / 0		
B1, 1-3/4"	525 / 0	272 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	User Load	Unf. Lin. (lb/ft)	L	00-00-00	04-02-10	240	120			n/a
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	04-00-14	24	12			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,042 ft-lbs	12,704 ft-lbs	8.2%	1	02-02-10
End Shear	603 lbs	5,785 lbs	10.4%	1	01-01-14
Total Load Defl.	L/999 (0.008")	n/a	n/a	4	02-02-10
Live Load Defl.	L/999 (0.005")	n/a	n/a	5	02-02-10
Max Defl.	0.008"	n/a	n/a	4	02-02-10
Span / Depth	4.8	n/a	n/a		00-00-00

Bearing Supports

B0	Wall/Plate	4-3/8" x 1-3/4"	1,259 lbs	30.8%	13.5%	Unspecified
B1	Post	1-3/4" x 1-3/4"	1,127 lbs	45.3%	30.2%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

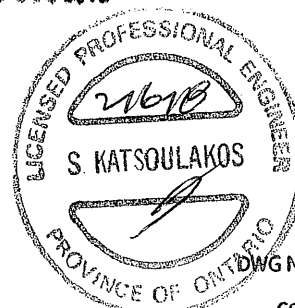
Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

Disclosure

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

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



DWG NO. TAM 9260-18
STRUCTURAL
COMPONENT ONLY

SITE COPY



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B3(i1269)

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

August 29, 2017 09:54:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports:

CCMC 12472-R

File Name: SD25-4 SONOMA 4 EL C.mmdl

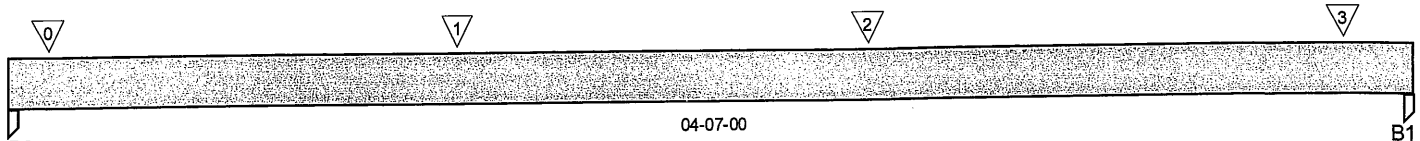
Description: Designs\Flush Beams\Basement\Flush Beams\B3(i1269)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 04-07-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 1-3/4"	442 / 0	232 / 0		
B1, 3-1/2"	417 / 0	310 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	J4(i1346)	Conc. Pt. (lbs)	L	00-01-08	00-01-08	238	119			n/a
1	J4(i1334)	Conc. Pt. (lbs)	L	01-05-08	01-05-08	226	113			n/a
2	J5(i1303)	Conc. Pt. (lbs)	L	02-09-08	02-09-08	133	67			n/a
3	-	Conc. Pt. (lbs)	L	04-04-04	04-04-04	262	221			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	630 ft-lbs	12,704 ft-lbs	5%	1	01-05-08
End Shear	442 lbs	5,785 lbs	7.6%	1	00-11-04
Total Load Defl.	L/999 (0.006")	n/a	n/a	4	02-02-00
Live Load Defl.	L/999 (0.004")	n/a	n/a	5	02-02-00
Max Defl.	0.006"	n/a	n/a	4	02-02-00
Span / Depth	5.4	n/a	n/a		00-00-00

Disclosure

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

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Post	1-3/4" x 1-3/4"	953 lbs	38.3%	25.5%	Unspecified
B1 Post	3-1/2" x 1-3/4"	1,013 lbs	20.4%	13.6%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

O86.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012



DWG NO. TAM 9261 -18
STRUCTURAL
COMPONENT ONLY



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B4(i1580)

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

August 29, 2017 09:54:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: SD25-4 SONOMA 4 EL C.mmdl

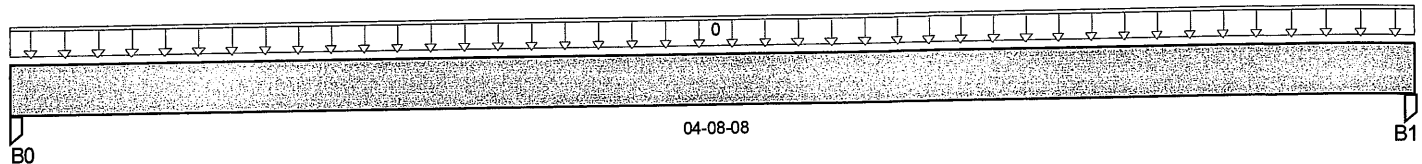
Description: Designs\Flush Beams\Basement\Flush Beams\B4(i1580)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 04-08-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 1-3/4"	26 / 0	25 / 0		
B1, 1-3/4"	26 / 0	25 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0 FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	04-08-08	11	6	1.00	1.15	n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	77 ft-lbs	12,704 ft-lbs	0.6%	1	02-04-04
End Shear	42 lbs	5,785 lbs	0.7%	1	00-11-04
Total Load Defl.	L/999 (0.001")	n/a	n/a	4	02-04-04
Live Load Defl.	L/999 (0")	n/a	n/a	5	02-04-04
Max Defl.	0.001"	n/a	n/a	4	02-04-04
Span / Depth	5.7	n/a	n/a		00-00-00

Disclosure

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

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Post	1-3/4" x 1-3/4"	70 lbs	2.8%	1.9%	Unspecified
B1 Post	1-3/4" x 1-3/4"	70 lbs	2.8%	1.9%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9



DWG NO. TAM 9262-18
STRUCTURAL
COMPONENT ONLY



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B5(i1343)

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

August 29, 2017 09:54:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: SD25-4 SONOMA 4 EL C.mmdl

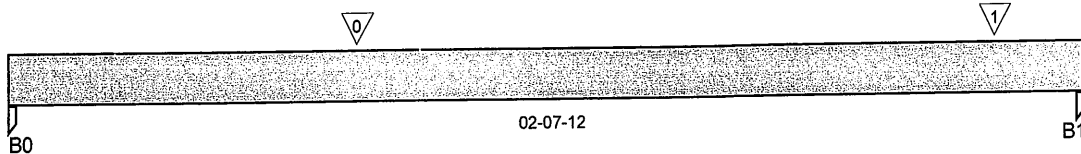
Description: Designs\Flush Beams\Basement\Flush Beams\B5(i1343)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 02-07-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	104 / 0	59 / 0		
B1, 3-1/2"	318 / 0	259 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	J5(i1303)	Conc. Pt. (lbs)	L	00-10-04	00-10-04	133	67			n/a
1	-	Conc. Pt. (lbs)	L	02-05-02	02-05-02	289	238			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	141 ft-lbs	12,704 ft-lbs	1.1%	1	00-10-04
End Shear	141 lbs	5,785 lbs	2.4%	1	01-01-00
Total Load Defl.	L/999 (0")	n/a	n/a	4	01-03-03
Live Load Defl.	L/999 (0")	n/a	n/a	5	01-03-03
Max Defl.	0"	n/a	n/a	4	01-03-03
Span / Depth	2.8	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 Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call 1-800-964-6999 before installation.

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Post	3-1/2" x 1-3/4"	229 lbs	4.6%	3.1%	Unspecified
B1 Post	3-1/2" x 1-3/4"	801 lbs	16.1%	10.7%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

CONFORMS TO OBC 2012



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Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B6(i1554)

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

August 29, 2017 09:54:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: SD25-4 SONOMA 4 EL C.mmdl

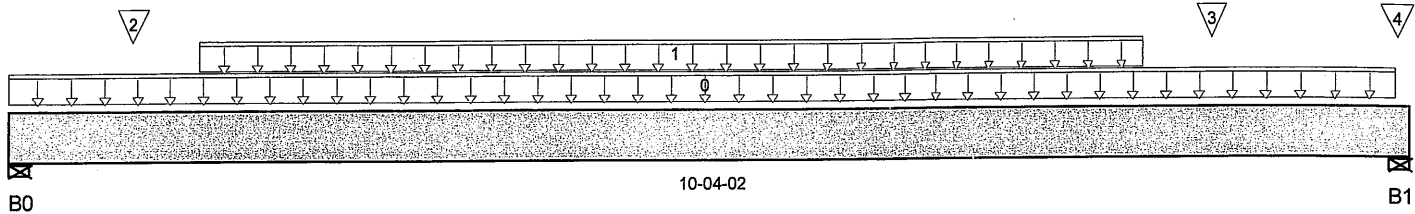
Description: Designs\Flush Beams\1st Floor\Flush Beams\B6(i1554)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 10-04-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	1,212 / 0	679 / 0		
B1, 7-1/4"	1,540 / 0	847 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	10-02-14	6	3			n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-04-14	08-04-14	258	130			n/a
2	J2(i1450)	Conc. Pt. (lbs)	L	00-10-14	00-10-14	234	117			n/a
3	J2(i1463)	Conc. Pt. (lbs)	L	08-10-14	08-10-14	301	151			n/a
4	J2(i1618)	Conc. Pt. (lbs)	L	10-02-14	10-02-14	343	172			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	6,611 ft-lbs	39,636 ft-lbs	16.7%	1	04-10-14
End Shear	2,596 lbs	17,356 lbs	15%	1	08-11-06
Total Load Defl.	L/999 (0.101")	n/a	n/a	4	05-00-06
Live Load Defl.	L/999 (0.065")	n/a	n/a	5	05-00-06
Max Defl.	0.101"	n/a	n/a	4	05-00-06
Span / Depth	12	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4-3/8" x 5-1/4"	2,668 lbs	21.7%	9.5%	Unspecified
B1 Wall/Plate	7-1/4" x 5-1/4"	3,369 lbs	16.6%	7.3%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9



SITE COPY



Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B6(i1554)

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

August 29, 2017 09:54:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports:

CCMC 12472-R

File Name: SD25-4 SONOMA 4 EL C.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B6(i1554

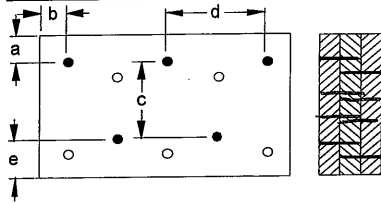
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



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

Calculated Side Load = 551.9 lb/ft

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

Nailing schedule applies to both sides of the member.

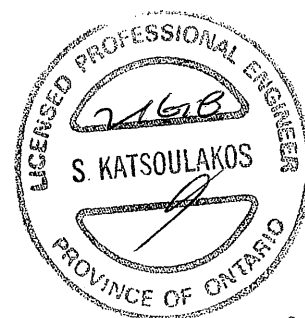
Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL

Disclosure

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BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: SD25-4 SONOMA 4 EL C.mmdl

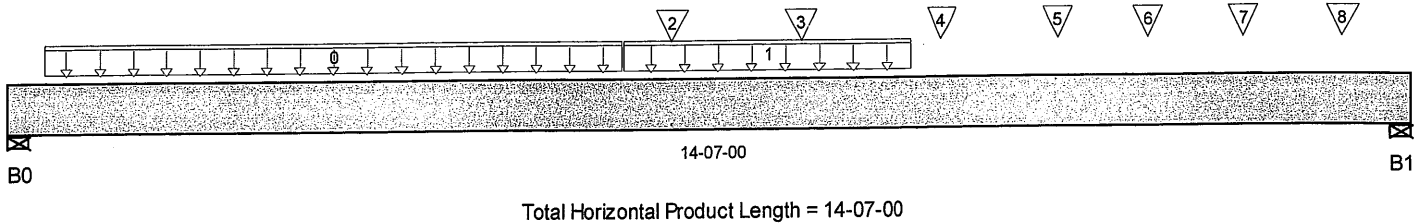
Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B7D

Specifier:

Designer: CZ

Company:

Misc:


Reaction Summary (Down / Uplift) (lbs)

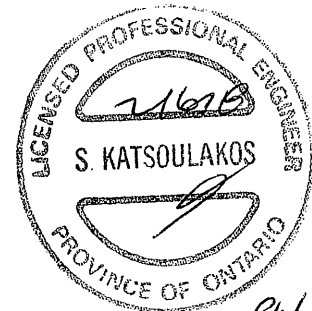
Bearing	Live	Dead	Snow	Wind
B0, 4"	3,503 / 0	1,901 / 0		
B1, 4"	3,198 / 0	1,794 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	00-04-08	06-04-08	504	252			n/a
1	Smoothed Load	Unf. Lin. (lb/ft)	L	06-04-08	09-04-08	253	126			n/a
2	J2(i1728)	Conc. Pt. (lbs)	L	06-10-08	06-10-08	294	147			n/a
3	J2(i1710)	Conc. Pt. (lbs)	L	08-02-08	08-02-08	336	168			n/a
4	-	Conc. Pt. (lbs)	L	09-08-05	09-08-05	618	310			n/a
5	-	Conc. Pt. (lbs)	L	10-11-01	10-11-01	848	498			n/a
6	J2(i1436)	Conc. Pt. (lbs)	L	11-10-08	11-10-08	220	110			n/a
7	J2(i1429)	Conc. Pt. (lbs)	L	12-10-08	12-10-08	251	125			n/a
8	J2(i1423)	Conc. Pt. (lbs)	L	13-10-08	13-10-08	258	129			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	27,315 ft-lbs	60,415 ft-lbs	45.2%	1	06-10-08
End Shear	7,113 lbs	21,696 lbs	32.8%	1	01-03-14
Total Load Defl.	L/360 (0.468")	0.702"	66.7%	4	07-04-08
Live Load Defl.	L/557 (0.303")	0.468"	64.7%	5	07-04-08
Max Defl.	0.468"	n/a	n/a	4	07-04-08
Span / Depth	14.2	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4" x 5-1/4"	7,630 lbs	44.7%	29.8%	Unspecified
B1 Wall/Plate	4" x 5-1/4"	7,039 lbs	41.3%	27.5%	Unspecified

Notes




Triple 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B7DR(i1792)

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

August 29, 2017 09:54:24

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: SD25-4 SONOMA 4 EL C.mmdl

Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B7

Specifier:

Designer: CZ

Company:

Misc:

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

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

Calculations assume unbraced length of Top: 00-05-04, Bottom: 00-05-04.

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

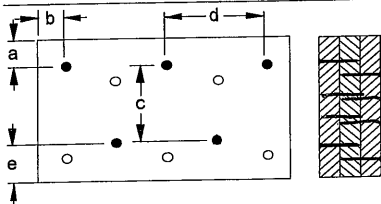
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

Connection Diagram



a minimum = 4" c = 6-7/8" 4 N
b minimum = 3" d = 4" 4 N
e minimum = 3"

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

Nailing schedule applies to both sides of the member.

Member has no side loads.

Connectors are: 16d [^] Nails

3-1/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 9265-18
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B8DR(i1694)

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

August 29, 2017 09:54:24

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: SD25-4 SONOMA 4 EL C.mmdl

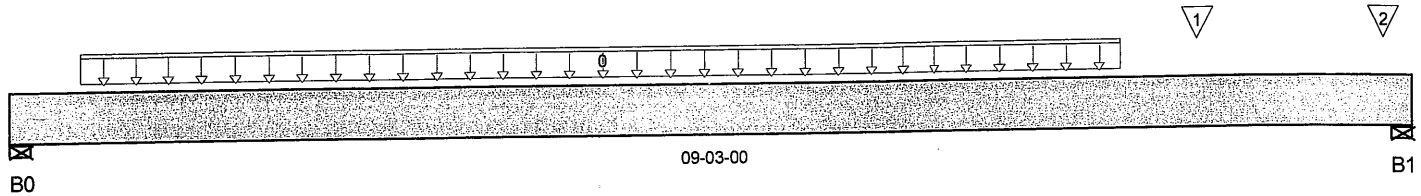
Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B8D

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 09-03-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-3/4"	2,329 / 0	1,211 / 0		
B1, 4-1/4"	2,755 / 0	1,425 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	00-05-08	07-04-04	556	278			n/a
1	-	Conc. Pt. (lbs)	L	07-10-04	07-10-04	597	299			n/a
2	-	Conc. Pt. (lbs)	L	09-00-12	09-00-12	646	324			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	11,250 ft-lbs	25,408 ft-lbs	44.3%	1	04-10-04
End Shear	4,626 lbs	11,571 lbs	40%	1	01-01-04
Total Load Defl.	L/485 (0.216")	0.435"	49.5%	4	04-09-00
Live Load Defl.	L/736 (0.142")	0.29"	48.9%	5	04-09-00
Max Defl.	0.216"	n/a	n/a	4	04-09-00
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	3-3/4" x 3-1/2"	5,007 lbs	47%	31.3%	Unspecified
B1 Wall/Plate	4-1/4" x 3-1/2"	5,914 lbs	49%	32.6%	Unspecified

Notes

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

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

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

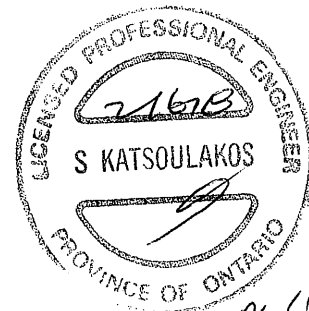
Resistance Factor phi has been applied to all presented results per CSA O86.

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

CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9



P6 1/2



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B8DR(i1694)

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

August 29, 2017 09:54:24

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports:

CCMC 12472-R

File Name: SD25-4 SONOMA 4 EL C.mmdl

Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B8

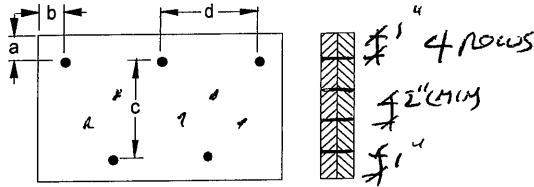
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



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

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

Member has no side loads.

Connectors are: 16d ^{hooker} Nails

3-1/2" ARDOX SPIRAL

Disclosure

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Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B9(i1576)

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

August 29, 2017 09:54:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: SD25-4 SONOMA 4 EL C.mmdl

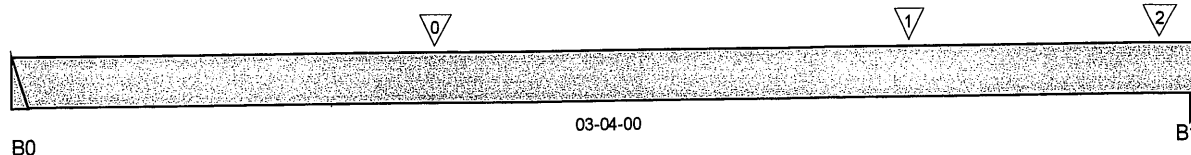
Description: Designs\Flush Beams\1st Floor\Flush Beams\B9(i1576)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 03-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	106 / 0	61 / 0		
B1, 3-1/2"	175 / 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.
0	J5(i1546)	Conc. Pt. (lbs)	L	01-02-04	01-02-04	133	67			n/a
1	J5(i1556)	Conc. Pt. (lbs)	L	02-06-04	02-06-04	107	54			n/a
2	J5(i1582)	Conc. Pt. (lbs)	L	03-02-12	03-02-12	41	20			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	250 ft-lbs	12,704 ft-lbs	2%	1	01-02-04
End Shear	229 lbs	5,785 lbs	4%	1	00-11-08
Total Load Defl.	L/999 (0.001")	n/a	n/a	4	01-07-01
Live Load Defl.	L/999 (0.001")	n/a	n/a	5	01-07-01
Max Defl.	0.001"	n/a	n/a	4	01-07-01
Span / Depth	3.8	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 1-3/4"	235 lbs	n/a	5.5%	HUS1.81/10
B1 Post	3-1/2" x 1-3/4"	383 lbs	7.7%	5.1%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor: Normal, Part code: Part 9

Disclosure

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DWG NO. TAM 9267-18
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor...B10(i1232)

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

August 29, 2017 09:54:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: SD25-4 SONOMA 4 EL C.mmdl

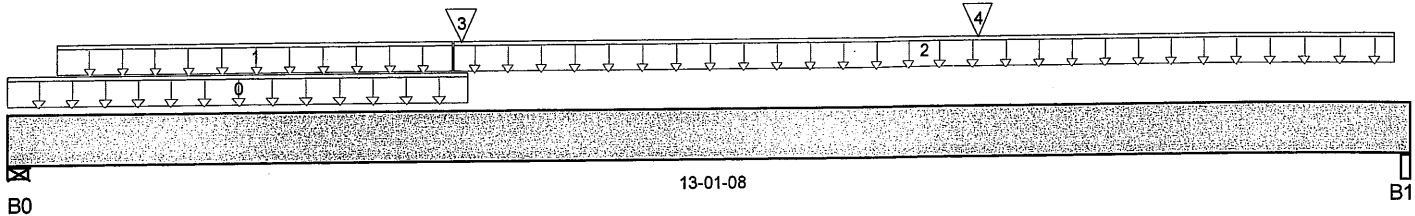
Description: Designs\Flush Beams\1st Floor\Flush Beams\B10(i1232)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 13-01-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	1,260 / 0	703 / 0		
B1, 3-1/2"	604 / 0	376 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	User Load	Unf. Lin. (lb/ft)	L	00-00-00	04-03-12	240	120			n/a
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-05-08	04-02-00	29	15			n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	04-02-00	12-11-12	53	26			n/a
3	B9(i1576)	Conc. Pt. (lbs)	L	04-02-14	04-02-14	103	59			n/a
4	B11(i1461)	Conc. Pt. (lbs)	L	09-01-02	09-01-02	148	88			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	5,537 ft-lbs	25,408 ft-lbs	21.8%	1	04-07-06
End Shear	2,061 lbs	11,571 lbs	17.8%	1	01-03-00
Total Load Defl.	L/675 (0.222")	0.625"	35.5%	4	06-04-14
Live Load Defl.	L/1,076 (0.139")	0.417"	33.5%	5	06-04-14
Max Defl.	0.222"	n/a	n/a	4	06-04-14
Span / Depth	15.8	n/a	n/a		00-00-00

Bearing Supports

B0	Wall/Plate	5-1/2" x 3-1/2"	2,769 lbs	26.9%	11.8%	Unspecified
B1	Beam	3-1/2" x 3-1/2"	1,376 lbs	10.3%	9.2%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

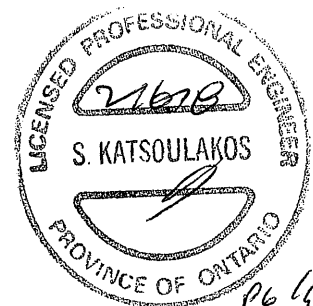
Resistance Factor phi has been applied to all presented results per CSA O86.

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

CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9



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BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: SD25-4 SONOMA 4 EL C.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B10(i1232)

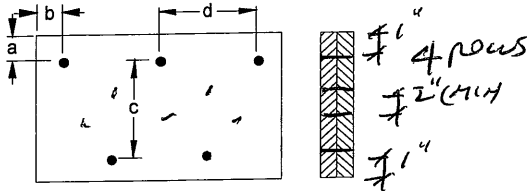
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



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

Calculated Side Load = 42.7 lb/ft

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

Connectors are: Nails

3-1/2" ARDOX SPIRAL

Disclosure

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

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Boise Cascade

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B11(i1461)

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

August 29, 2017 09:54:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:BRADFORD,

Customer:

Code reports:

CCMC 12472-R

File Name: SD25-4 SONOMA 4 EL C.mmdl

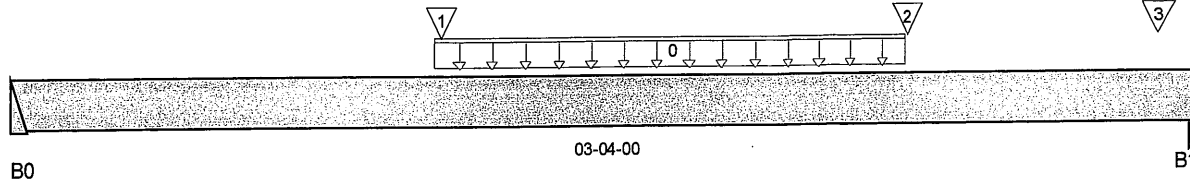
Description: Designs\Flush Beams\1st Floor\Flush Beams\B11(i1461)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 03-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	151 / 0	89 / 0		
B1, 3-1/2"	202 / 0	114 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC3 Floor Material	Unf. Lin. (lb/ft)	L	01-02-04	02-06-04	3				n/a
1	-	Conc. Pt. (lbs)	L	01-02-08	01-02-08	204	112			n/a
2	J5(i1556)	Conc. Pt. (lbs)	L	02-06-04	02-06-04	105	53			n/a
3	J5(i1582)	Conc. Pt. (lbs)	L	03-02-12	03-02-12	41	20			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	363 ft-lbs	12,704 ft-lbs	2.9%	1	01-02-04
End Shear	333 lbs	5,785 lbs	5.8%	1	00-11-08
Total Load Defl.	L/999 (0.002")	n/a	n/a	4	01-06-09
Live Load Defl.	L/999 (0.001")	n/a	n/a	5	01-06-09
Max Defl.	0.002"	n/a	n/a	4	01-06-09
Span / Depth	3.8	n/a	n/a		00-00-00

Disclosure

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Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 1-3/4"	339 lbs	n/a	7.9%	HUS1.81/10
B1 Post	3-1/2" x 1-3/4"	446 lbs	9%	6%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

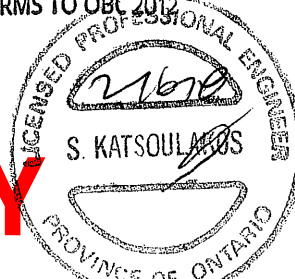
Resistance Factor phi has been applied to all presented results per CSA O86.

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012



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DWG NO. TAM 9269-18
STRUCTURAL
COMPONENT ONLY

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Boise Cascade

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\Flush Beams\B13(i1675)

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

August 29, 2017 09:54:24

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:BRADFORD,

Customer:

Code reports:

CCMC 12472-R

File Name: SD25-4 SONOMA4 EL C.mmdl

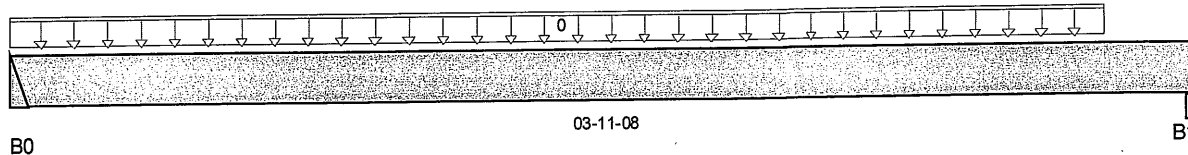
Description: Designs\Flush Beams\1st Floor\Flush Beams\B13(i1675)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 03-11-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	12 / 0	15 / 0		
B1, 3-1/2"	11 / 0	15 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0 FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	03-08-00	6	3			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	32 ft-lbs	12,704 ft-lbs	0.2%	1	01-11-00
End Shear	18 lbs	5,785 lbs	0.3%	1	00-11-08
Total Load Defl.	L/999 (0")	n/a	n/a	4	01-11-00
Live Load Defl.	L/999 (0")	n/a	n/a	5	01-11-00
Max Defl.	0"	n/a	n/a	4	01-11-00
Span / Depth	4.6	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 1-3/4"	37 lbs	n/a	0.9%	HUS1.81/10
B1 Beam	3-1/2" x 1-3/4"	36 lbs	0.5%	0.5%	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.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

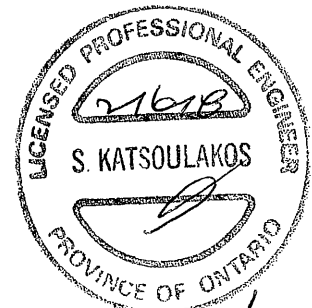
Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

Disclosure

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

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Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP Basement...B14L(i1364)

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

August 29, 2017 09:54:23

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports:

CCMC 12472-R

File Name: SD25-4 SONOMA 4 EL C.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B14L(i136

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 04-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	255 / 0	153 / 0		
B1, 3-1/2"	344 / 0	181 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	1(i649)	Conc. Pt. (lbs)	L	00-02-12	00-02-12		15			n/a
1	J4(i1390)	Conc. Pt. (lbs)	L	01-04-00	01-04-00	228	114			n/a
2	J4(i1388)	Conc. Pt. (lbs)	L	02-08-00	02-08-00	243	121			n/a
3	J4(i1386)	Conc. Pt. (lbs)	L	04-00-12	04-00-12	128	64			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	592 ft-lbs	12,704 ft-lbs	4.7%	1	02-08-00
End Shear	547 lbs	5,785 lbs	9.5%	1	01-03-00
Total Load Defl.	L/999 (0.004")	n/a	n/a	4	02-02-00
Live Load Defl.	L/999 (0.002")	n/a	n/a	5	02-02-00
Max Defl.	0.004"	n/a	n/a	4	02-02-00
Span / Depth	4.5	n/a	n/a		00-00-00

Disclosure

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Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 1-3/4"	573 lbs	11.1%	4.9%	Unspecified
B1 Post	3-1/2" x 1-3/4"	743 lbs	14.9%	9.9%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012





Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: SD25-4 SONOMA 4 CORNER EL C.mxd

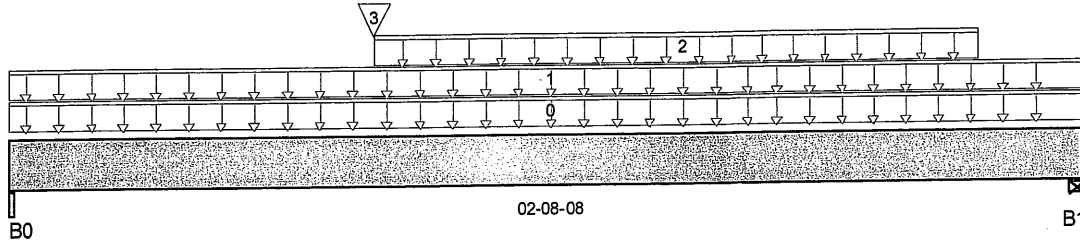
Description: Designs\Flush Beams\1st Floor\Flush Beams\B16(i2866)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 02-08-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/4"	179 / 0	273 / 0	193 / 0	
B1, 5-1/2"	130 / 0	251 / 0	196 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	User Load	Unf. Lin. (lb/ft)	L	00-00-00	02-08-08	33	130	72		n/a
1	LOWROOF	Unf. Lin. (lb/ft)	L	00-00-00	02-08-08	33	30	72		n/a
2	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-11-00	02-05-06	6				n/a
3	J5(i2808)	Conc. Pt. (lbs)	L	00-11-00	00-11-00	121	60			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	260 ft-lbs	25,408 ft-lbs	1%	1	01-02-01
End Shear	134 lbs	11,571 lbs	1.2%	1	01-02-12
Total Load Defl.	L/999 (0")	n/a	n/a	35	01-03-13
Live Load Defl.	L/999 (0")	n/a	n/a	51	01-03-13
Max Defl.	0"	n/a	n/a	35	01-03-13
Span / Depth	2.4	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Beam	5-1/4" x 3-1/2"	720 lbs	7.3%	3.2%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	674 lbs	6.6%	2.9%	Unspecified

Notes


 DWG NO. TAM 9222-18
 STRUCTURAL
 COMPONENT ONLY

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: BRADFORD,

Customer:

Code reports: CCMC 12472-R

File Name: SD25-4 SONOMA 4 CORNER EL C.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B16(i2866)

Specifier:

Designer: CZ

Company:

Misc:

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

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

Calculations assume member is fully braced.

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

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

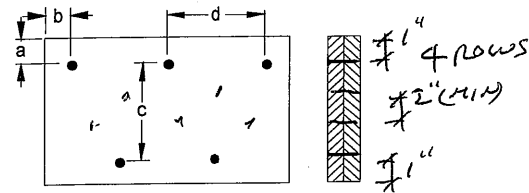
CONFORMS TO OBC 2012

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Connection Diagram



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

Calculated Side Load = 94.7 lb/ft

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

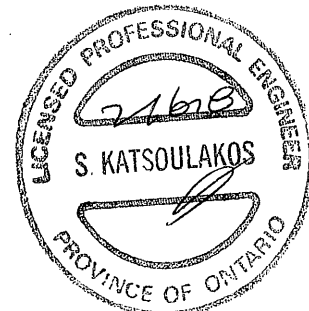
Connectors are: Nails

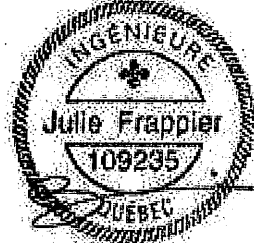
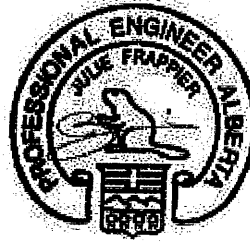
3-1/2" ARDOX SPIRAL

Disclosure

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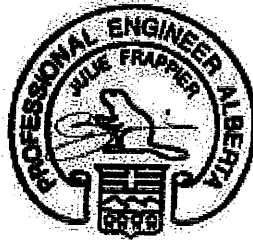
Maximum Floor Spans

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

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

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

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



Maximum Floor Spans

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

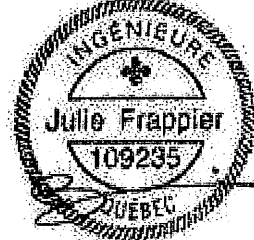
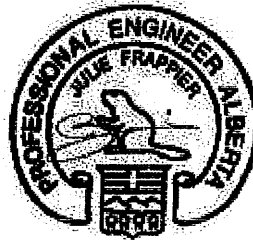
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-10"	15'-0"	14'-5"	13'-5"	16'-4"	15'-5"	14'-6"	13'-5"
	NI-40x	17'-0"	16'-0"	15'-5"	14'-9"	17'-5"	16'-5"	15'-10"	15'-2"
	NI-60	17'-2"	16'-2"	15'-7"	14'-11"	17'-6"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

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

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

Maximum Floor Spans

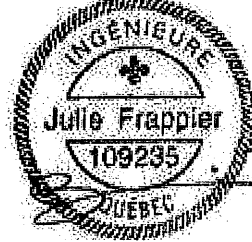
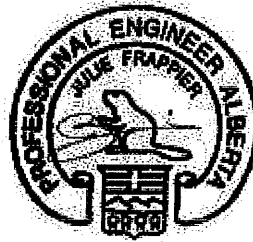
Live Load = 40 psf, Dead Load = 30 psf
Simple Spans, L/480 Deflection Limit
5/8" OSB G&N Sheathing



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

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

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



Maximum Floor Spans

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

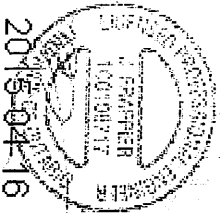
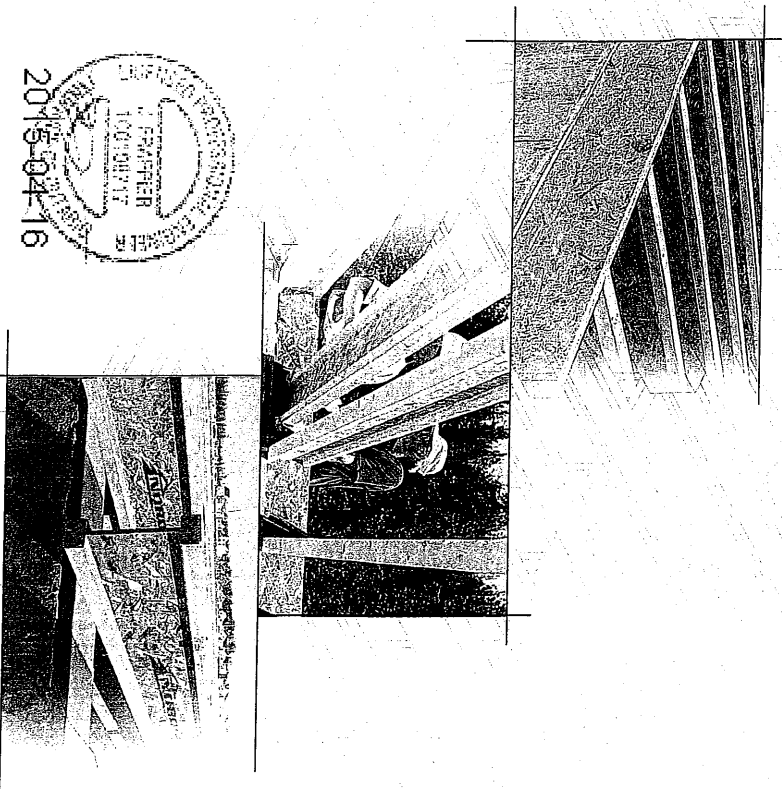
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-2"	13'-4"	12'-4"	15'-7"	14'-2"	13'-4"	12'-4"
	NI-40x	17'-0"	16'-0"	15'-1"	13'-11"	17'-5"	16'-1"	15'-1"	13'-11"
	NI-60	17'-2"	16'-2"	15'-5"	14'-3"	17'-6"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

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

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



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

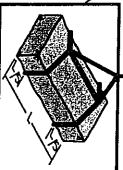
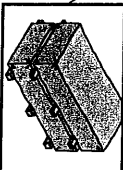
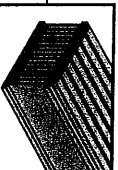
I-joists are not stable until completely installed, and will not carry any load until fully braced and sheathed.

Avoid Accidents by Following these Important Guidelines:

1. Brace and nail each I-joist as it is installed, using longers, 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 5th points, using a spreader bar if necessary.
8. Do not handle I-joists in a horizontal orientation.
9. NEVER USE OR TRY TO REPAIR A DAMAGED I-JOIST.



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MAXIMUM FLOOR SPANS

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 CBS-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 O86-09 Standard, and NBC 2010.
7. SI units conversion: 1 inch = 25.4 mm
1 foot = 0.305 m

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

Joist Depth	Joist Series	Simple spans				Multiple spans			
		12"	16"	19.2	24"	12"	16"	On centre spacing	24"
12	NI-20	15.11	14.52	13.92	13.32	16.53	15.94	15.34	14.74
12	NI-20x	16.43	15.84	15.24	14.64	17.85	17.26	16.66	16.06
12	NI-20x	17.75	17.16	16.56	15.96	19.17	18.58	17.98	17.38
12	NI-20x	19.07	18.48	17.88	17.28	20.49	19.90	19.30	18.70
12	NI-20x	20.39	19.80	19.20	18.60	21.81	21.22	20.62	20.02
12	NI-20x	21.71	21.12	20.52	19.92	23.13	22.54	21.94	21.34
12	NI-20x	23.03	22.44	21.84	21.24	24.45	23.86	23.26	22.66
12	NI-20x	24.35	23.76	23.16	22.56	25.77	25.18	24.58	23.98
12	NI-20x	25.67	25.08	24.48	23.88	27.09	26.50	25.90	25.30
12	NI-20x	26.99	26.40	25.80	25.20	28.41	27.82	27.22	26.62
12	NI-20x	28.31	27.72	27.12	26.52	29.73	29.14	28.54	27.94
12	NI-20x	29.63	29.04	28.44	27.84	31.05	30.46	29.86	29.26
12	NI-20x	30.95	30.36	29.76	29.16	32.37	31.78	31.18	30.58
12	NI-20x	32.27	31.68	31.08	30.48	33.69	33.10	32.50	31.90
12	NI-20x	33.59	33.00	32.40	31.80	35.01	34.42	33.82	33.22
12	NI-20x	34.91	34.32	33.72	33.12	36.33	35.74	35.14	34.54
12	NI-20x	36.23	35.64	35.04	34.44	37.65	37.06	36.46	35.86
12	NI-20x	37.55	36.96	36.36	35.76	38.97	38.38	37.78	37.18
12	NI-20x	38.87	38.28	37.68	37.08	40.29	39.70	39.10	38.50
12	NI-20x	40.19	39.60	39.00	38.40	41.61	41.02	40.42	39.82
12	NI-20x	41.51	40.92	40.32	39.72	42.93	42.34	41.74	41.14
12	NI-20x	42.83	42.24	41.64	41.04	44.25	43.66	43.06	42.46
12	NI-20x	44.15	43.56	42.96	42.36	45.57	44.98	44.38	43.78
12	NI-20x	45.47	44.88	44.28	43.68	46.89	46.30	45.70	45.10
12	NI-20x	46.79	46.20	45.60	45.00	48.21	47.62	47.02	46.42
12	NI-20x	48.11	47.52	46.92	46.32	49.53	48.94	48.34	47.74
12	NI-20x	49.43	48.84	48.24	47.64	50.85	50.26	49.66	49.06
12	NI-20x	50.75	50.16	49.56	48.96	52.17	51.58	50.98	50.38
12	NI-20x	52.07	51.48	50.88	50.28	53.49	52.90	52.30	51.70
12	NI-20x	53.39	52.80	52.20	51.60	54.81	54.22	53.62	53.02
12	NI-20x	54.71	54.12	53.52	52.92	56.13	55.54	54.94	54.34
12	NI-20x	56.03	55.44	54.84	54.24	57.45	56.86	56.26	55.66
12	NI-20x	57.35	56.76	56.16	55.56	58.77	58.18	57.58	56.98
12	NI-20x	58.67	58.08	57.48	56.88	60.09	59.50	58.90	58.30
12	NI-20x	59.99	59.40	58.80	58.20	61.41	60.82	60.22	59.62
12	NI-20x	61.31	60.72	60.12	59.52	62.73	62.14	61.54	60.94
12	NI-20x	62.63	62.04	61.44	60.84	64.05	63.46	62.86	62.26
12	NI-20x	63.95	63.36	62.76	62.16	65.37	64.78	64.18	63.58
12	NI-20x	65.27	64.68	64.08	63.48	66.69	66.10	65.50	64.90
12	NI-20x	66.59	66.00	65.40	64.80	68.01	67.42	66.82	66.22
12	NI-20x	67.91	67.32	66.72	66.12	69.33	68.74	68.14	67.54
12	NI-20x	69.23	68.64	68.04	67.44	70.65	70.06	69.46	68.86
12	NI-20x	70.55	69.96	69.36	68.76	71.97	71.38	70.78	70.18
12	NI-20x	71.87	71.28	70.68	70.08	73.29	72.70	72.10	71.50
12	NI-20x	73.19	72.60	72.00	71.40	74.61	74.02	73.42	72.82
12	NI-20x	74.51	73.92	73.32	72.72	75.93	75.34	74.74	74.14
12	NI-20x	75.83	75.24	74.64	74.04	77.25	76.66	76.06	75.46
12	NI-20x	77.15	76.56	75.96	75.36	78.57	77.98	77.38	76.78
12	NI-20x	78.47	77.88	77.28	76.68	79.89	79.30	78.70	78.10
12	NI-20x	79.79	79.20	78.60	78.00	81.21	80.62	80.02	79.42
12	NI-20x	81.11	80.52	79.92	79.32	82.53	81.94	81.34	80.74
12	NI-20x	82.43	81.84	81.24	80.64	83.85	83.26	82.66	82.06
12	NI-20x	83.75	83.16	82.56	81.96	85.17	84.58	83.98	83.38
12	NI-20x	85.07	84.48	83.88	83.28	86.49	85.90	85.30	84.70
12	NI-20x	86.39	85.80	85.20	84.60	87.81	87.22	86.62	86.02
12	NI-20x	87.71	87.12	86.52	85.92	89.13	88.54	87.94	87.34
12	NI-20x	89.03	88.44	87.84	87.24	90.45	89.86	89.26	88.66
12	NI-20x	90.35	89.76	89.16	88.56	91.77	91.18	90.58	89.98
12	NI-20x	91.67	91.08	90.48	89.88	93.09	92.50	91.90	91.30
12	NI-20x	92.99	92.40	91.80	91.20	94.41	93.82	93.22	92.62
12	NI-20x	94.31	93.72	93.12	92.52	95.73	95.14	94.54	93.94
12	NI-20x	95.63	95.04	94.44	93.84	97.05	96.46	95.86	95.26
12	NI-20x	96.95	96.36	95.76	95.16	98.37	97.78	97.18	96.58
12	NI-20x	98.27	97.68	97.08	96.48	99.69	99.10	98.50	97.90
12	NI-20x	99.59	99.00	98.40	97.80	101.01	100.42	99.82	99.22
12	NI-20x	100.91	100.32	99.72	99.12	102.33	101.74	101.14	100.54
12	NI-20x	102.23	101.64	101.04	100.44	103.65	103.06	102.46	101.86
12	NI-20x	103.55	102.96	102.36	101.76	104.97	104.38	103.78	103.18
12	NI-20x	104.87	104.28	103.68	103.08	106.29	105.70	105.10	104.50
12	NI-20x	106.19	105.60	105.00	104.40	107.61	107.02	106.42	105.82
12	NI-20x	107.51	106.92	106.32	105.72	108.93	108.34	107.74	107.14
12	NI-20x	108.83	108.24	107.64	107.04	110.25	109.66	109.06	108.46
12	NI-20x	110.15	109.56	108.96	108.36	111.57	110.98	110.38	109.78
12	NI-20x	111.47	110.88	110.28	109.68	112.89	112.30	111.70	111.10
12	NI-20x	112.79	112.20	111.60	111.00	114.21	113.62	113.02	112.42
12	NI-20x	114.11	113.52	112.92	112.32	115.53	114.94	114.34	113.74
12	NI-20x	115.43	114.84	114.24	113.64	116.85	116.26	115.66	115.06
12	NI-20x	116.75	116.16	115.56	114.96	118.17	117.58	116.98	116.38
12	NI-20x	118.07	117.48	116.88	116.28	119.49	118.90	118.30	117.70
12	NI-20x	119.39	118.80	118.20	117.60	120.81	120.22	119.62	119.02
12	NI-20x	120.71	120.12	119.52	118.92	122.13	121.54	120.94	120.34
12	NI-20x	122.03	121.44	120.84	120.24	123.45	122.86	122.26	121.66
12	NI-20x	123.35	122.76	122.16	121.56	124.77	124.18	123.58	122.98
12	NI-20x	124.67	124.08	123.48	122.88	126.09	125.50	124.90	124.30
12	NI-20x	125.99	125.40	124.80	124.20	127.41	126.82	126.22	125.62
12	NI-20x	127.31	126.72	126.12	125.52	128.73	128.14	127.54	126.94
12	NI-20x	128.63	128.04	127.44	126.84	130.05	129.46	128.86	128.26
12	NI-20x	129.95	129.36	128.76	128.16	131.37	130.78	130.18	129.58
12	NI-20x	131.27	130.68	130.08	129.48	132.69	132.10	131.50	130.90
12	NI-20x	132.59	132.00	131.40	130.80	134.01	133.42	132.82	132.22
12	NI-20x	133.91	133.32	132.72	132.12	135.33	134.74	134.14	133.54
12	NI-20x	135.23	134.64	134.04	133.44	136.65	136.06	135.46	134.86
12	NI-20x	136.55	135.96	135.36	134.76	137.97	137.38	136.78	136.18
12	NI-20x	137.87	137.28	136.68	136.08	139.29	138.70	138.10	137.50
12	NI-20x	139.19	138.60	138.00	137.40	140.61	140.02	139.42	138.82
12	NI-20x	140.51	139.92	139.32	138.72	141.93	141.34	140.74	140.14
12	NI-20x	141.83	141.24	140.64	140.04	143.25	142.66	142.06	141.46
12	NI-20x	143.15	142.56	141.96	141.36	144.57	143.98	143.38	142.78
12	NI-20x	144.47	143.88	143.28	142.68	145.89	145.30	144.70	144.10
12	NI-20x	145.79	145.20	144.60	144.00	147.21	146.62	146.02	145.42
12	NI-20x	147.11	146.52	145.92	145.32	148.53	147.94	147.34	146.74
12	NI-20x	148.43	147.84	147.24	146.64	149.85	149.26	148.66	148.06
12	NI-20x	149.75	149.16	148.56	147.96	151.17	150.58	149.98	149.38
12	NI-20x	151.07	150.48	149.88	149.28	152.49	151.90	151.30	150.70
12	NI-20x	152.39	151.80	151.20	150.60	153.81	153.22	152.62	152.02
12	NI-20x	153.71	153.12	152.52	151.92	155.13	154.54	153.94	153.34
12	NI-20x	155.03	154.44	153.84	153.24	156.45	155.86	155.26	154.66
12	NI-20x	156.35	155.76	155.16	154.56	157.77	157.18	156.58	155.98
12	NI-20x	157.67	157.08	156.48	155.88	159.09	158.50	157.90	157.30
12	NI-20x	158.99	158.40	157.80	157.20	160.41	159.82	159.22	158.62
12	NI-20x	160.31	159.72	159.12	158.52	161.73	161.14	160.54	159.94
12	NI-20x	161.63	161.04	160.44	159.84	163.05	162.46	161.86	161.26
12	NI-20x	162.95	162.36	161.76	161.16	164.37	163.78	163.18	162.58
12	NI-20x	164.27	163.68	163.08	162.48	165.69	165.10	164.50	163.90
12	NI-20x	165.59	165.00	164.40	163.80	167.01	166.42	165.82	165.22
12	NI-20x	166.91	166.32	165.72	165.12	168.33	167.74	167.14	166.54
12	NI-20x	168.23	167.64	167.04	166.44	169.65	169.06	168.46	167.86
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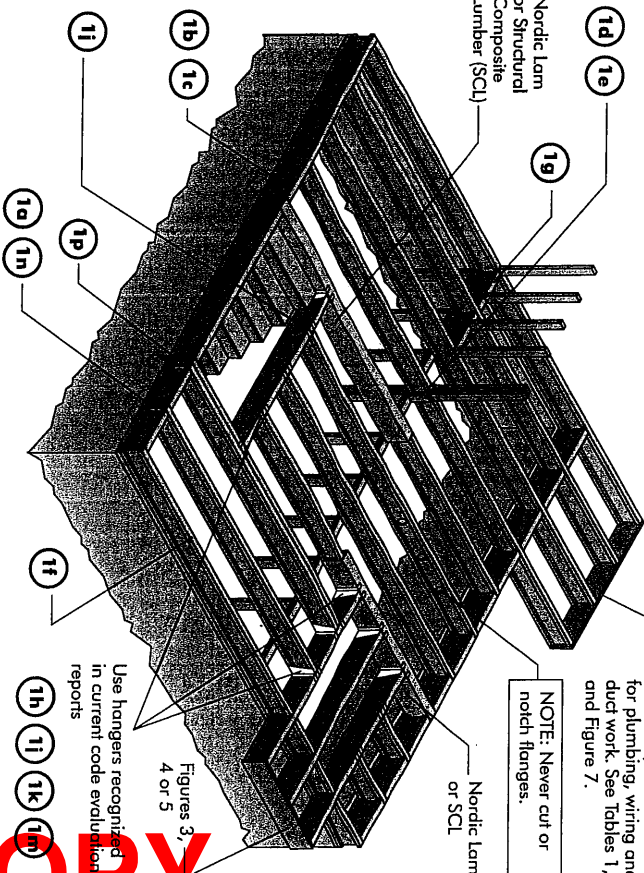
INSTALLING NORDIC I-JOISTS

1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact your supplier.
2. Except for cutting to length, I-joist flanges should **never** be cut, drilled, or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical alignment.
4. I-joists must be anchored securely to supports before floor sheathing is attached, and supports for multiple spans must be level.
5. Minimum bearing lengths: 1-3/4 inches for end bearings and 3-1/2 inches for intermediate bearings.
6. When using hangers, seat I-joists firmly in hanger bottoms to minimize settlement.
7. Leave a 1/16-inch gap between the I-joist end and a header.
8. Concentrated loads greater than those that can normally be expected in residential construction should only be applied to the top surface of the top flange. Normal concentrated loads include track lighting fixtures, audio equipment and security cameras. Never suspend unusual or heavy loads from the I-joist's bottom flange. Whenever possible, suspend all concentrated loads from the top of the I-joist. Or, attach the load to blocking that has been securely fastened to the I-joist webs.
9. Never install I-joists where they will be permanently exposed to weather, or where they will remain in direct contact with concrete or masonry.
10. Restrain ends of floor joists to prevent rollover. Use rim board, rim joists or I-joist blocking panels.
11. For I-joists installed over and beneath bearing walls, use full depth blocking panels, rim board, or squash blocks (cripple members) to transfer gravity loads through the floor system to the wall or foundation below.
12. Due to shrinkage, common framing lumber set on edge **may never** be used as blocking or rim boards. I-joist blocking panels or other engineered wood products – such as rim board – must be cut to fit between the I-joists, and an I-joist-compatible depth selected.
13. Provide permanent lateral support of the bottom flange of all I-joists at interior supports of multiple-span joists. Similarly, support the bottom flange of all cantilevered I-joists at end support next to the cantilever extension. In the completed structure, the gypsum wallboard ceiling provides this lateral support. Until the final finished ceiling is applied, temporary bracing or struts must be used.
14. If square-edge panels are used, edges must be supported between I-joists with 2x4 blocking. Glue panels to blocking to minimize squeaks. Blocking is not required under structural finish flooring, such as wood strip flooring, or if a separate underlayment layer is installed.
15. Nail spacing: Space nails installed to the flange's top face in accordance with the applicable building code requirements or approved building plans.

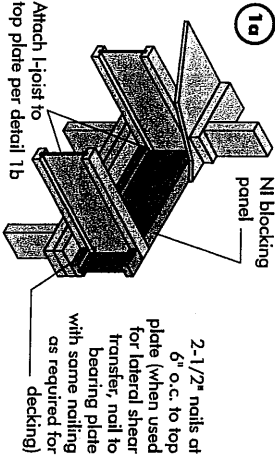
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FIGURE 1
TYPICAL NORDIC I-JOIST FLOOR FRAMING AND CONSTRUCTION DETAILS

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

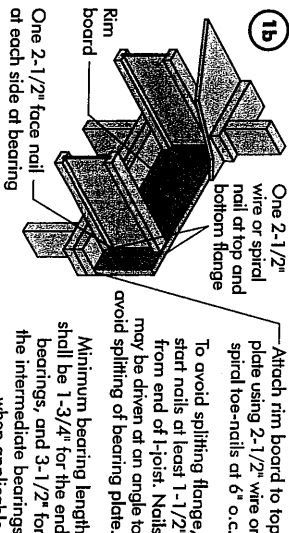


All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for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



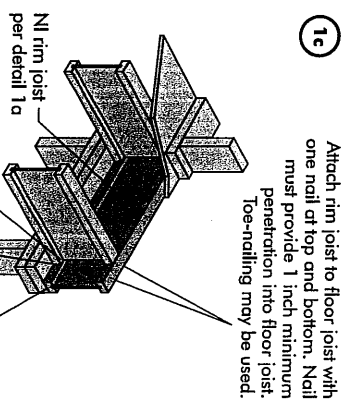
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI Joists	3,300

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

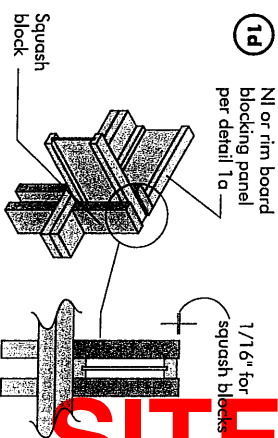


Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

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



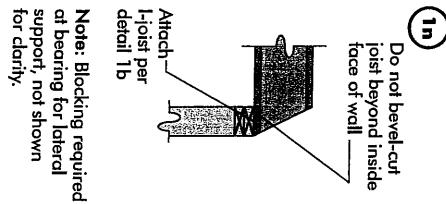
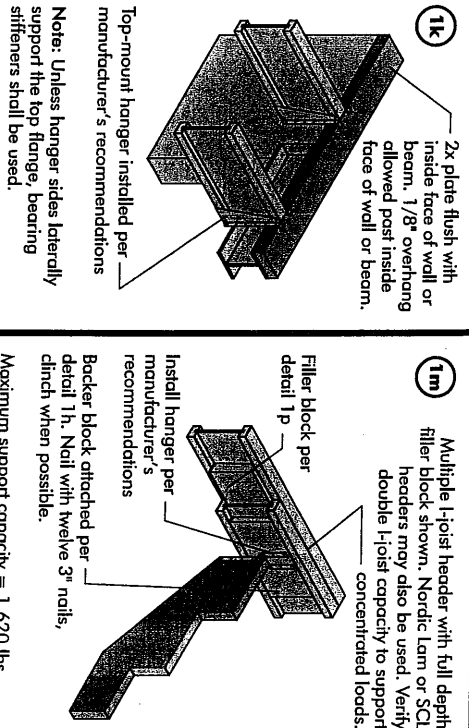
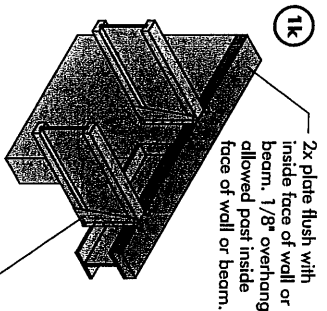
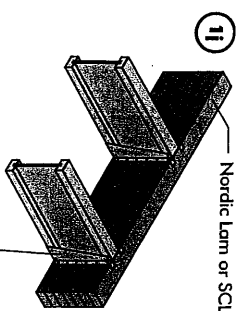
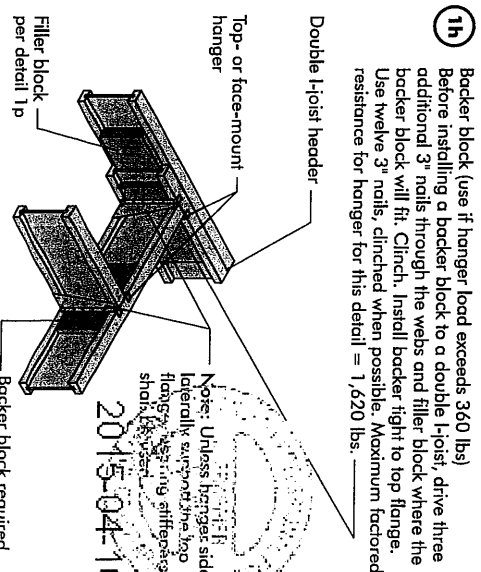
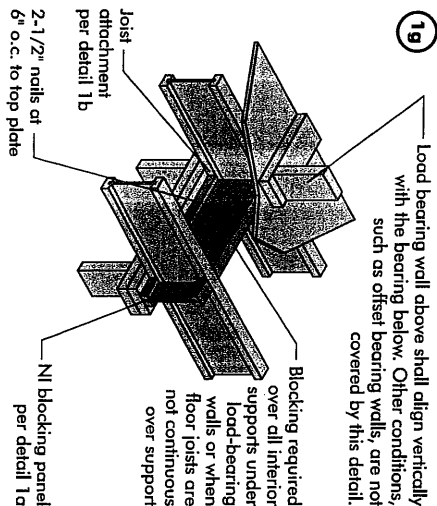
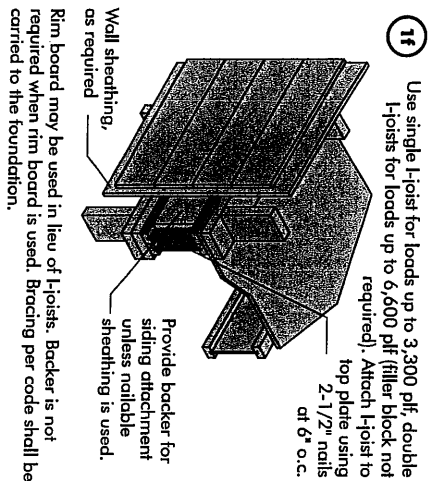
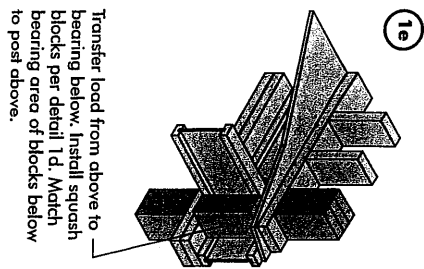
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090



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

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

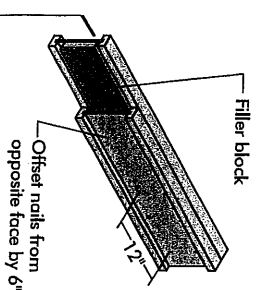
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Flange Width	Material Thickness Required*	Minimum Depth**
2-1/2"	1"	5-1/2"
3-1/2"	1-1/2"	7-1/4"

* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-O325 or CAN/CSA-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".

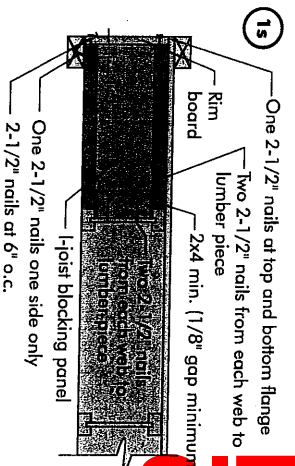
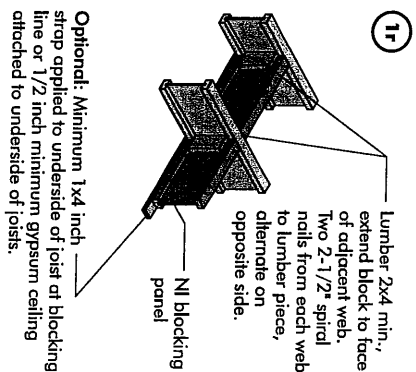
BACKER BLOCKS (Blocks must be long enough to permit required nailing without splitting)



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



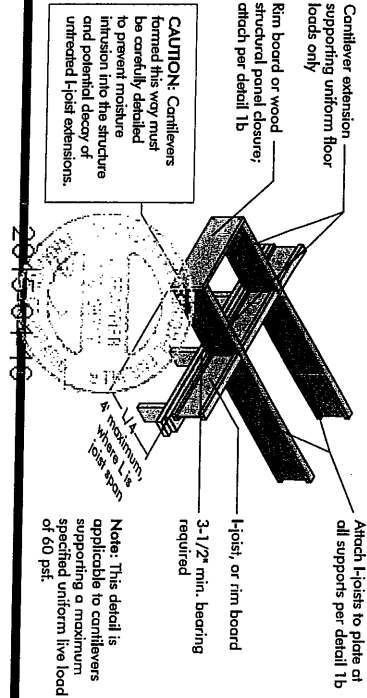
Notes:

- 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.

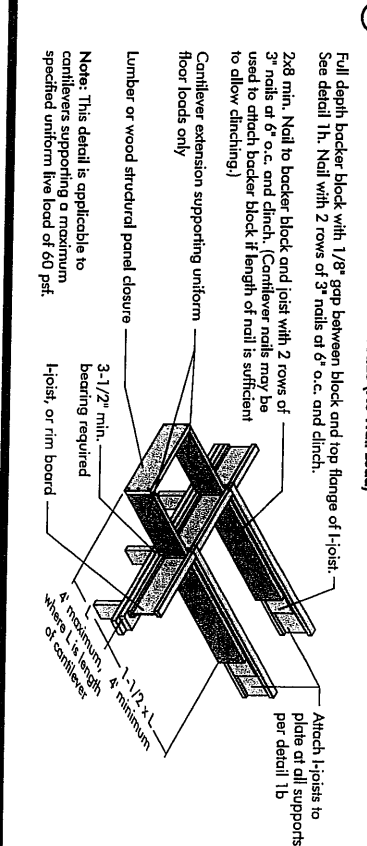
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CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

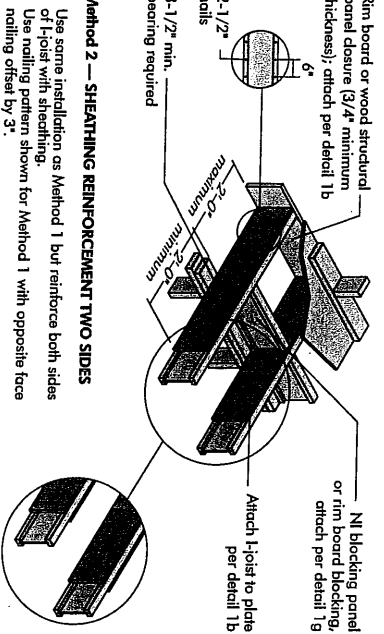


3b) LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

4a) Method 1 — SHEATHING REINFORCEMENT ONE SIDE



Method 2 — SHEATHING REINFORCEMENT TWO SIDES

- Use same insulation 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. 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

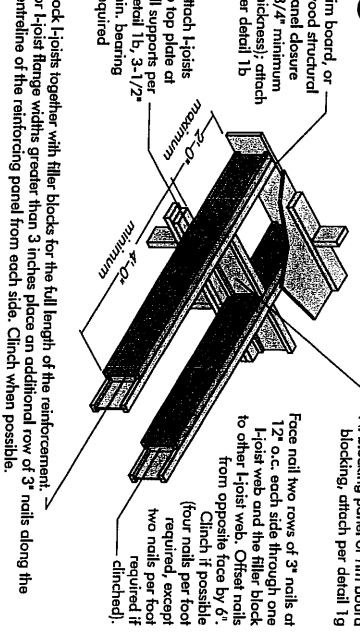
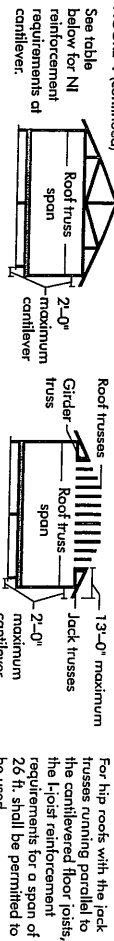


FIGURE 4 (continued)



CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (#)	JOIST SPACING (in.)				ROOF LOADING (UNFACTORED)			
		12	16	19.2	24	12	16	19.2	24
12	26	1	1	1	1	1	1	1	1
12	28	1	1	1	1	1	1	1	1
12	30	1	1	1	1	1	1	1	1
12	32	1	1	1	1	1	1	1	1
12	34	1	1	1	1	1	1	1	1
12	36	1	1	1	1	1	1	1	1
12	38	1	1	1	1	1	1	1	1
12	40	1	1	1	1	1	1	1	1
12	42	1	1	1	1	1	1	1	1
16	26	1	1	1	1	1	1	1	1
16	28	1	1	1	1	1	1	1	1
16	30	1	1	1	1	1	1	1	1
16	32	1	1	1	1	1	1	1	1
16	34	1	1	1	1	1	1	1	1
16	36	1	1	1	1	1	1	1	1
16	38	1	1	1	1	1	1	1	1
16	40	1	1	1	1	1	1	1	1
16	42	1	1	1	1	1	1	1	1

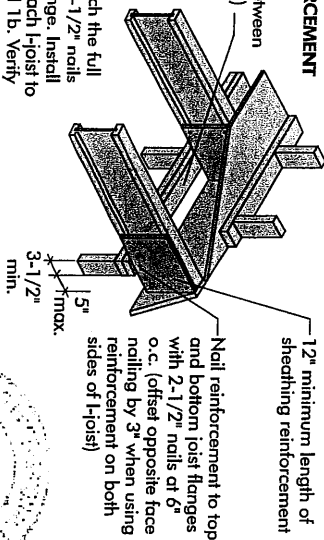
1. N = No reinforcement required.
2. NI = NI reinforced with 3/4" wood structural panel on one side only.
3. For larger openings, or multiple 3-0" wide openings spaced less than 6-0" o.c., additional joists beneath the opening's cripple studs may be required.
4. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge beam, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.
5. Cantilevered joist supporting girder trusses or roof beams may require additional reinforcing.

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

5a SHEATHING REINFORCEMENT

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

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

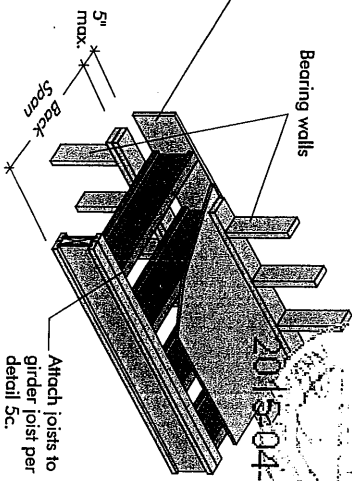


5b SET-BACK DETAIL

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

Notes:

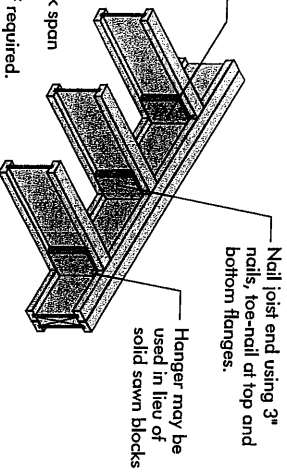
- Provide full depth blocking between joists over support (not shown for clarity)
- Attach I-joist to plate at all supports per detail 1b.
- 3-1/2" minimum I-joist bearing required.



5c SET-BACK CONNECTION

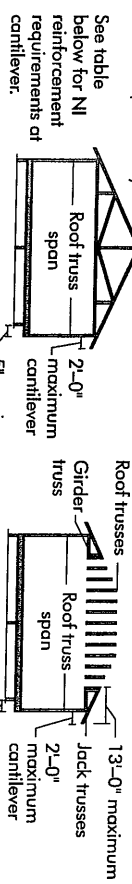
Vertical solid sawn blocks (2x6 S-P-F No. 2 or better) nailed through joist web and web of girder using 2-1/2" nails.

Alternate for opposite side.



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

FIGURE 5 (continued)



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

BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft)				ROOF LOADING (UNFACTORED)				ROOF LOADING (UNFACTORED)			
	LL = 30 psf, DL = 15 psf				LL = 40 psf, DL = 15 psf				LL = 50 psf, DL = 15 psf			
	12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
9-1/2"	26	30	32	34	26	30	32	34	26	30	32	34
12"	26	30	32	34	26	30	32	34	26	30	32	34
14"	26	30	32	34	26	30	32	34	26	30	32	34
16"	26	30	32	34	26	30	32	34	26	30	32	34
18"	26	30	32	34	26	30	32	34	26	30	32	34
20"	26	30	32	34	26	30	32	34	26	30	32	34
22"	26	30	32	34	26	30	32	34	26	30	32	34
24"	26	30	32	34	26	30	32	34	26	30	32	34
26"	26	30	32	34	26	30	32	34	26	30	32	34
28"	26	30	32	34	26	30	32	34	26	30	32	34
30"	26	30	32	34	26	30	32	34	26	30	32	34
32"	26	30	32	34	26	30	32	34	26	30	32	34
34"	26	30	32	34	26	30	32	34	26	30	32	34
36"	26	30	32	34	26	30	32	34	26	30	32	34
38"	26	30	32	34	26	30	32	34	26	30	32	34
40"	26	30	32	34	26	30	32	34	26	30	32	34
42"	26	30	32	34	26	30	32	34	26	30	32	34

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.
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.

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INSTALLING THE GLUED FLOOR SYSTEM

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

FASTENERS FOR SHEATHING AND SUBFLOORING(1)

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

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

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

IMPORTANT NOTE:

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

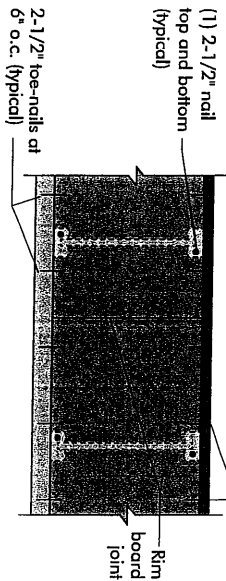
RIM BOARD INSTALLATION DETAILS

8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

Rim board joint Between Floor Joists

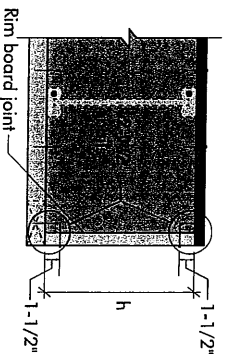
2-1/2" nails at 6" o.c. (typical)

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

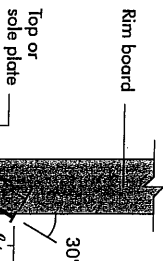


Rim board joint at Corner

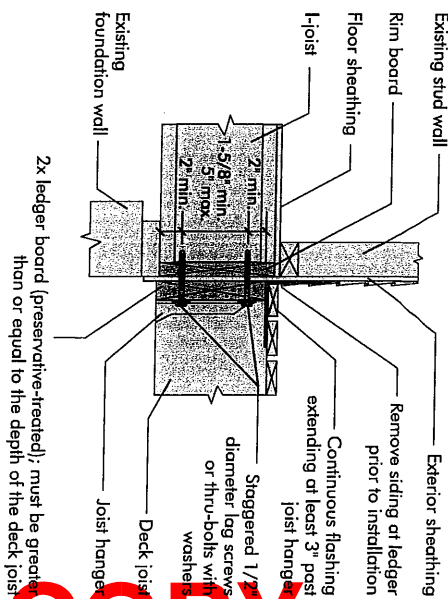
1-1/2" h



8b TOE-NAIL CONNECTION AT RIM BOARD



8c 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL



2015-04-16

PRODUCT WARRANTY

Chambers Outriggers guarantees that, in accordance with our specifications, Nork products are free from manufacturing defects in material and workmanship.

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

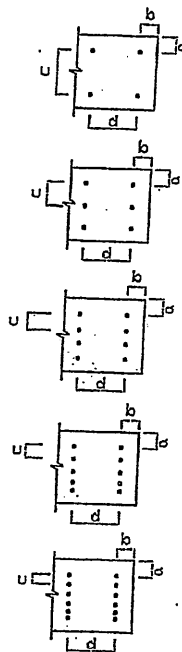
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MICRO CITY ENGINEERING SERVICES INC.

TEL: (519) 287 - 2242

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

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



NOTES:

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



DWG NO TAMN1001.14

STRUCTURAL
COMPONENT ONLY

TO BE USED ONLY
WITH BEAM CALCS
BEARING THE
STAMP BELOW

PROVIDE NAILING
DETAIL # X SEE
DWG #TAMN1001-14

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