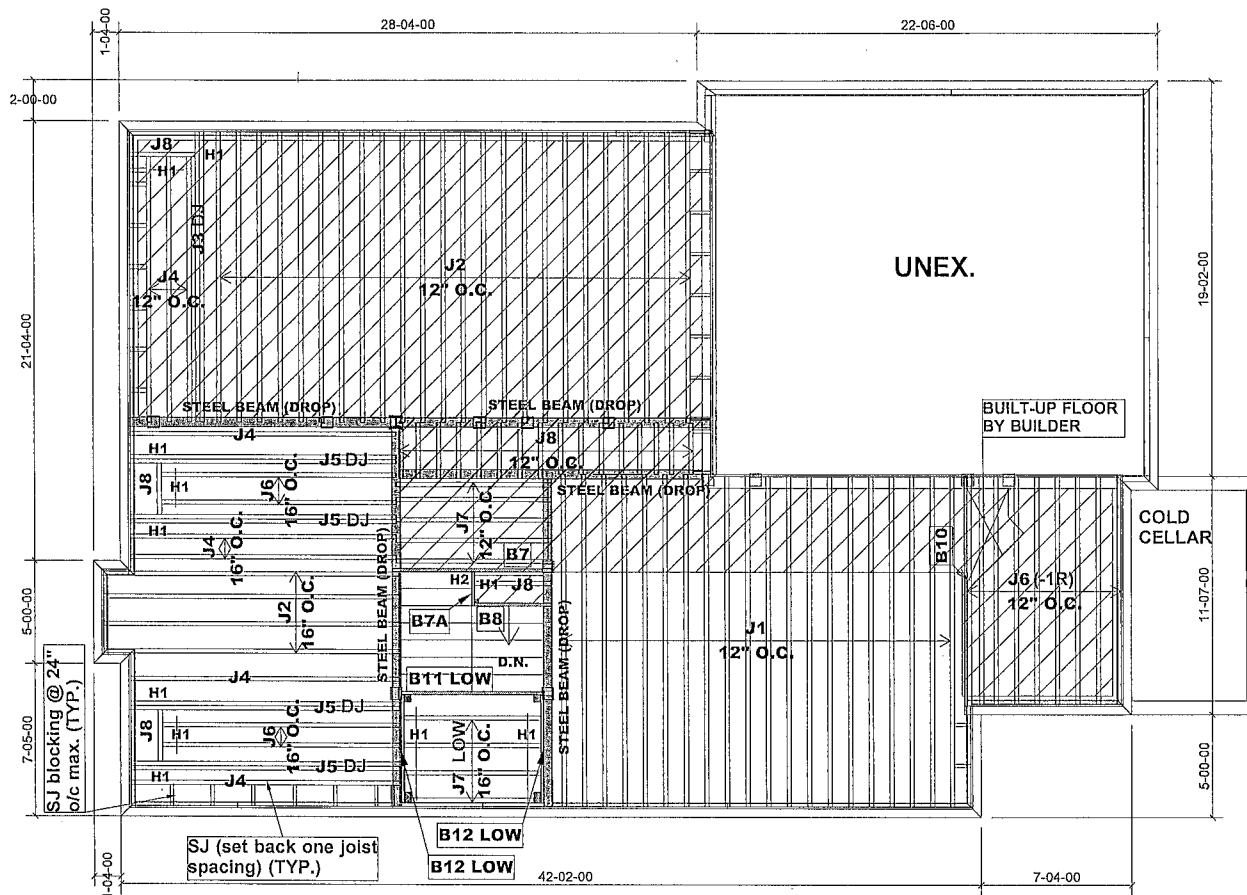




Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	9 1/2" NI-40x	1	20
J2	16-00-00	9 1/2" NI-40x	1	28
J3	16-00-00	9 1/2" NI-40x	2	2
J4	14-00-00	9 1/2" NI-40x	1	8
J5	14-00-00	9 1/2" NI-40x	2	8
J6	12-00-00	9 1/2" NI-40x	1	13
J7	8-00-00	9 1/2" NI-40x	1	9
J8	4-00-00	9 1/2" NI-40x	1	20
B10	12-00-00	VERSALAM-10 2.0E	1	1
B11 LOW	8-00-00	VERSALAM-10 2.0E	1	1
B7	8-00-00	VERSALAM-10 2.0E	1	1
B12 LOW	6-00-00	VERSALAM-10 2.0E	1	2
B8	4-00-00	VERSALAM-10 2.0E	1	1
B7A	2-00-00	VERSALAM-10 2.0E	1	1

HANGERS SCHEDULE

H1-----IUS2.56/9.5
H2-----HUS1.81/10

RIMBOARD

1-1/8" X 9 1/2" O.S.B

SUBFLOOR : 5/8" NAILED & GLUED

BBO---- BEAM BY OTHERS

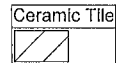
APP----AS PER PLAN

1 - 2 X 6 SPF # 2 squash block req'd on one side of each joist under interior load bearing walls. Multiple squash blocks are req'd under concentrated loads.

Ceramic Tile Application as per O.B.C. 9.30.6

Do not scale - refer to architectural plans for dimensions.

**S42-16 ELEV. A & B & C
FIRST FLOOR FRAMING
& UPGRADED REAR ELEVATION**



FLOOR LOADING:

LIVE : 40 PSF
DEAD : 15 PSF
DEAD : 20 PSF (TILE AREAS ONLY)

97055 - March 8/18

T.1511105 - T.1511125 + T.1803005

JT:44997/94450

Builder: Bayview Wellington

Location: Bradford

Designer: MQ/SG

Alpa Roof Trusses Inc.
Maple, Ontario

Salesperson: Mario
Tamarack Lumber

File: 289522(260547)

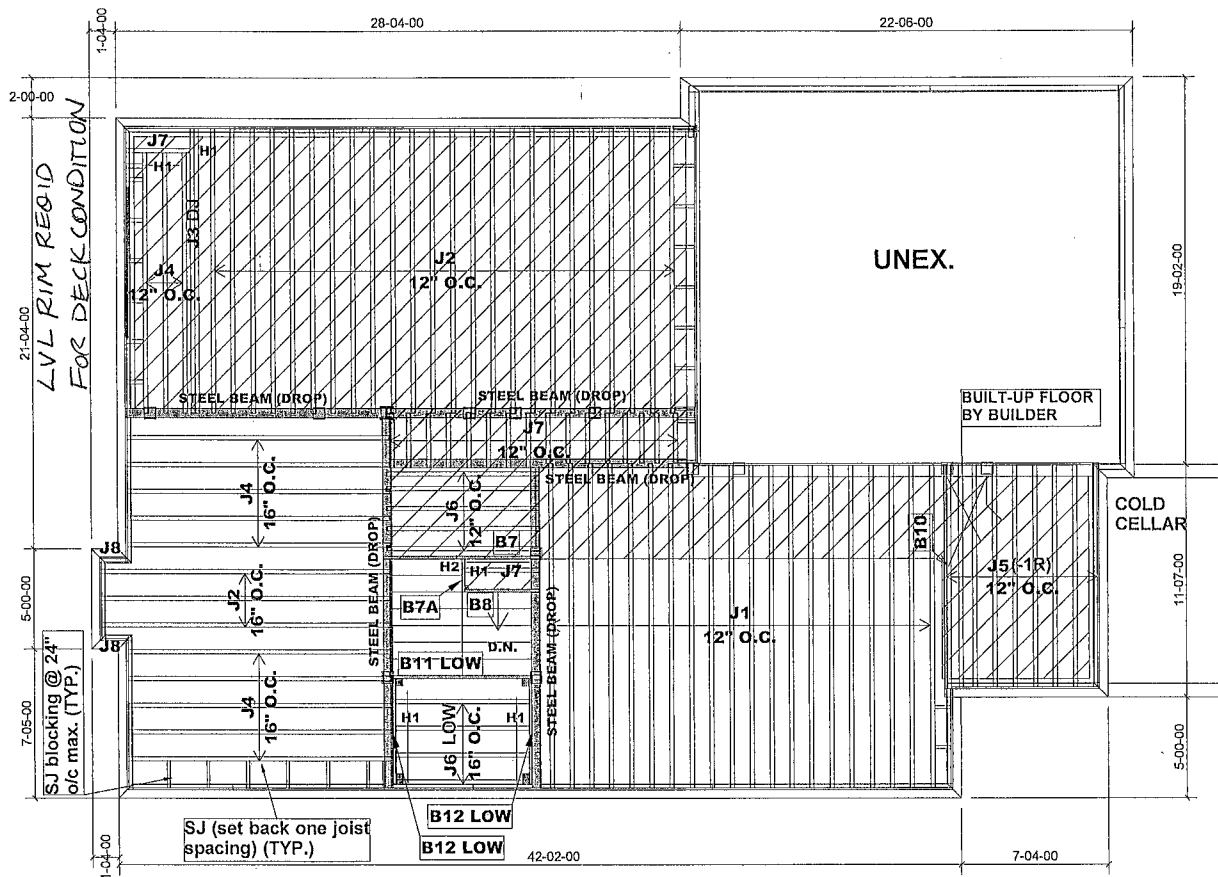
Project: Green Valley Estates East

Date: Oct. 16 / 2017

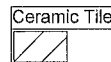
Sheet: 1 of 7

295647

Site Copy



**S42-16 ELEV. A & B & C
FIRST FLOOR FRAMING
WOD & WOB CONDITION
& UPGRADED REAR ELEVATION**



FLOOR LOADING:
LIVE : 40 PSF
DEAD : 15 PSF
DEAD : 20 PSF (TILE AREAS ONLY)

Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	9 1/2" NI-40x	1	20
J2	16-00-00	9 1/2" NI-40x	1	27
J3	16-00-00	9 1/2" NI-40x	2	2
J4	14-00-00	9 1/2" NI-40x	1	13
J5	12-00-00	9 1/2" NI-40x	1	9
J6	8-00-00	9 1/2" NI-40x	1	9
J7	4-00-00	9 1/2" NI-40x	1	18
J8	2-00-00	9 1/2" NI-40x	1	2
B10	12-00-00	VERSALAM-10 2.0E	1	1
B11 LOW	8-00-00	VERSALAM-10 2.0E	1	1
B7	8-00-00	VERSALAM-10 2.0E	1	1
B12 LOW	6-00-00	VERSALAM-10 2.0E	1	2
B8	4-00-00	VERSALAM-10 2.0E	1	1
B7A	2-00-00	VERSALAM-10 2.0E	1	1

HANGERS SCHEDULE

H1-----IUS2.56/9.5
H2-----HUS1.81/10

RIMBOARD

1-1/8" X 9 1/2" O.S.B

SUBFLOOR : 5/8" NAILED & GLUED

BBO---- BEAM BY OTHERS

APP----AS PER PLAN

1 - 2 X 6 SPF # 2 squash block req'd on one side of each joist under interior load bearing walls. Multiple squash blocks are req'd under concentrated loads.

Ceramic Tile Application as per O.B.C. 9.30.6

Do not scale - refer to architectural plans for dimensions.

97055 - March 8/18 - revised
JT:44997/94450
File: 289522(260547)
295647

Builder: Bayview Wellington

Project: Green Valley Estates East

Location: Bradford

Date: Oct. 16 / 2017

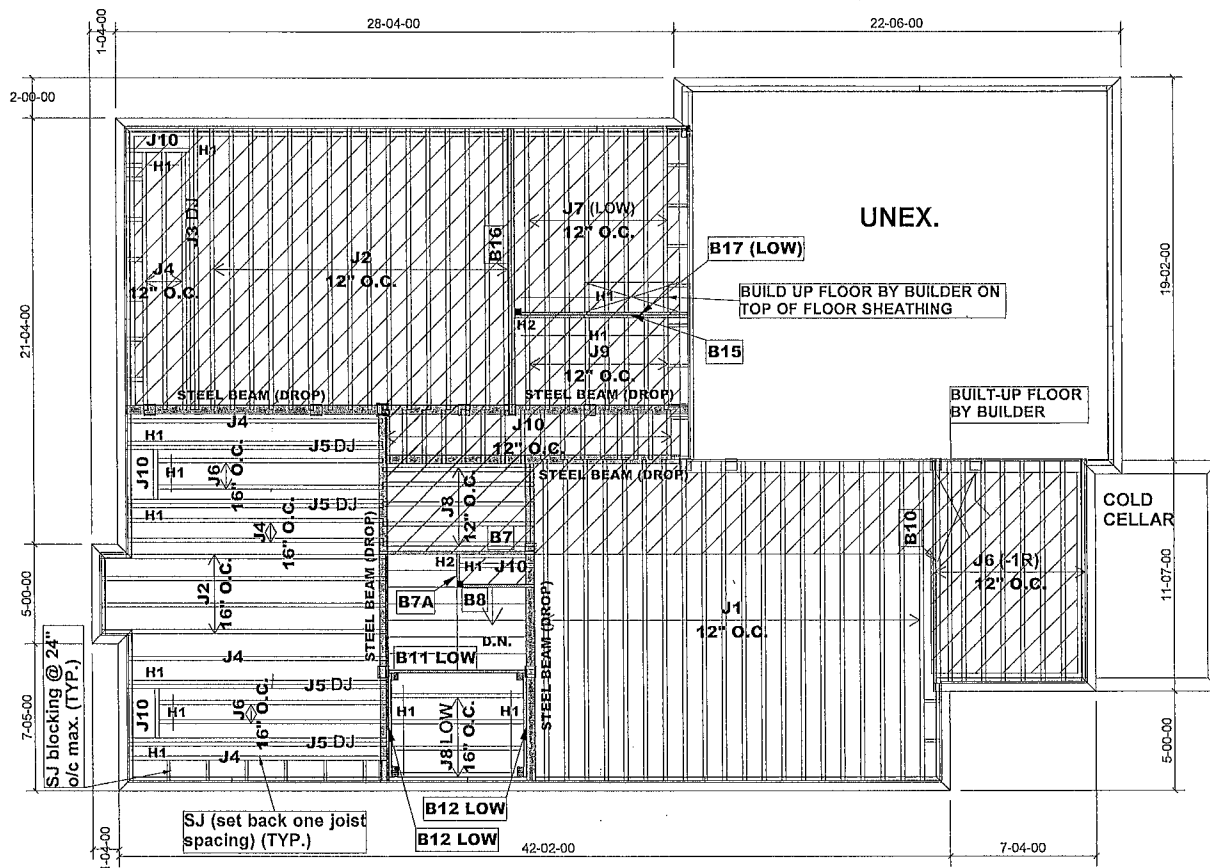
Designer: MQ/SG

Sheet: 2 of 7

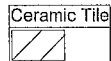
Alpa Roof Trusses Inc.
Maple, Ontario

Salesperson: Mario
Tamarack Lumber

Site Copy



**S42-16 ELEV. A & B & C
FIRST FLOOR FRAMING
SUNKEN LAUNDRY CONDITION (-1R/-2R/-3R)
& UPGRADED REAR ELEVATION**



FLOOR LOADING:
LIVE : 40 PSF
DEAD : 15 PSF
DEAD : 20 PSF (TILE AREAS ONLY)

Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	9 1/2" NI-40x	1	20
J2	16-00-00	9 1/2" NI-40x	1	20
J3	16-00-00	9 1/2" NI-40x	2	2
J4	14-00-00	9 1/2" NI-40x	1	8
J5	14-00-00	9 1/2" NI-40x	2	8
J6	12-00-00	9 1/2" NI-40x	1	13
J7	10-00-00	9 1/2" NI-40x	1	8
J8	8-00-00	9 1/2" NI-40x	1	9
J9	6-00-00	9 1/2" NI-40x	1	8
J10	4-00-00	9 1/2" NI-40x	1	20
B16	16-00-00	VERSALAM-10 2.0E	2	2
B10	12-00-00	VERSALAM-10 2.0E	1	1
B15	10-00-00	VERSALAM-10 2.0E	1	1
B17 (LOW)	10-00-00	VERSALAM-10 2.0E	1	1
B11 LOW	8-00-00	VERSALAM-10 2.0E	1	1
B7	8-00-00	VERSALAM-10 2.0E	1	1
B12 LOW	6-00-00	VERSALAM-10 2.0E	1	2
B8	4-00-00	VERSALAM-10 2.0E	1	1
B7A	2-00-00	VERSALAM-10 2.0E	1	1

HANGERS SCHEDULE

H1-----IUS2.56/9.5
H2-----HUS1.81/10

RIMBOARD

1-1/8" X 9 1/2" O.S.B

SUBFLOOR : 5/8" NAILED & GLUED

BBO---- BEAM BY OTHERS
APP----AS PER PLAN

1 - 2 X 6 SPF # 2 squash block req'd on one side of each joist under interior load bearing walls. Multiple squash blocks are req'd under concentrated loads.

Ceramic Tile Application as per O.B.C. 9.30.6

Do not scale - refer to architectural plans for dimensions.

97055 - March 8/18

JT:44997/94450

Builder: Bayview Wellington

Location: Bradford

Designer: MQ/SG

Alpa Roof Trusses Inc.
Maple, Ontario

Salesperson: Mario
Tamarack Lumber

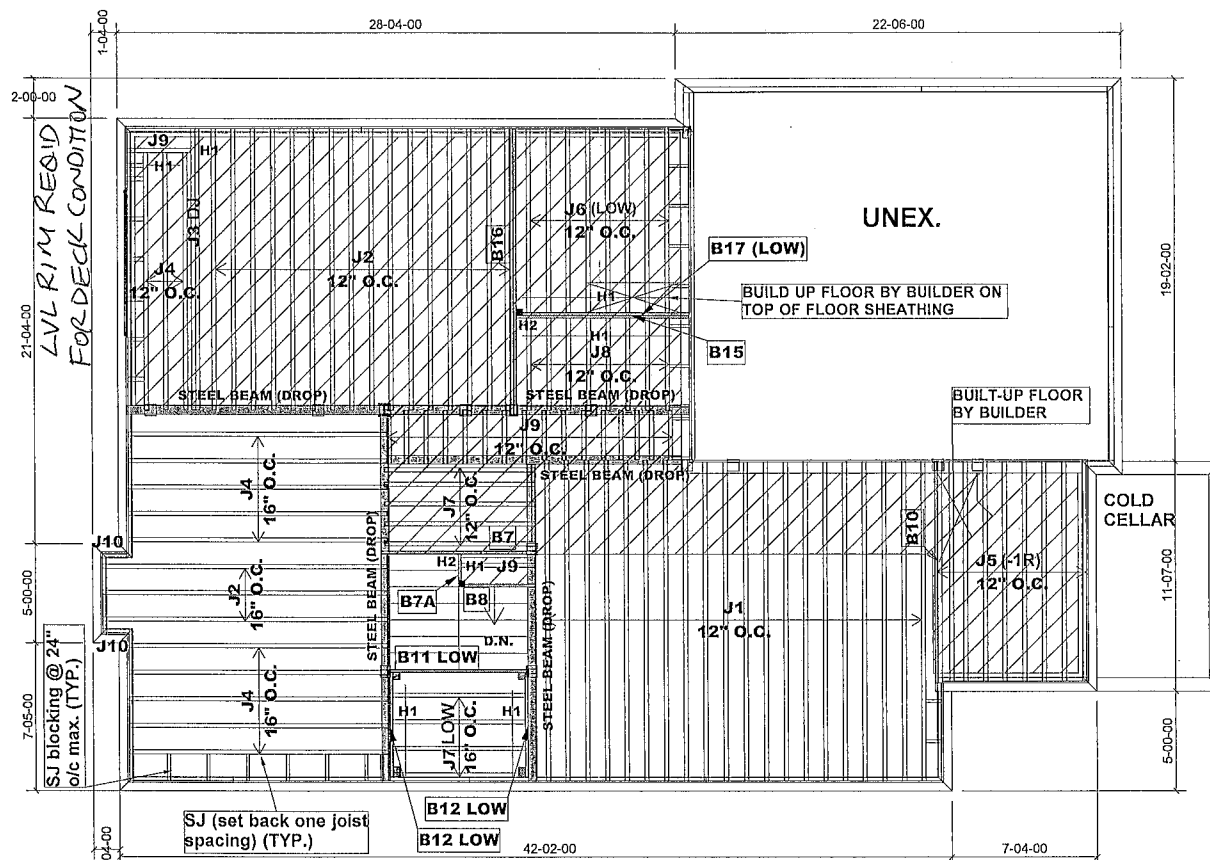
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Project: Green Valley Estates East

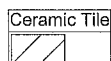
Date: Oct. 16 / 2017

Sheet: 3 of 7

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S42-16 ELEV. A & B & C
FIRST FLOOR FRAMING
SUNKEN LAUNDRY CONDITION (-1R/-2R/-3R)
WOD & WOB CONDITION
& UPGRADED REAR ELEVATION



FLOOR LOADING:
 LIVE : 40 PSF
 DEAD : 15 PSF
 DEAD : 20 PSF (TILE AREAS ONLY)

Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	9 1/2" NI-40x	1	20
J2	16-00-00	9 1/2" NI-40x	1	19
J3	16-00-00	9 1/2" NI-40x	2	2
J4	14-00-00	9 1/2" NI-40x	1	13
J5	12-00-00	9 1/2" NI-40x	1	9
J6	10-00-00	9 1/2" NI-40x	1	8
J7	8-00-00	9 1/2" NI-40x	1	9
J8	6-00-00	9 1/2" NI-40x	1	8
J9	4-00-00	9 1/2" NI-40x	1	18
J10	2-00-00	9 1/2" NI-40x	1	2
B16	16-00-00	VERSALAM-10 2.0E	2	2
B10	12-00-00	VERSALAM-10 2.0E	1	1
B15	10-00-00	VERSALAM-10 2.0E	1	1
B17 (LOW)	10-00-00	VERSALAM-10 2.0E	1	1
B11 LOW	8-00-00	VERSALAM-10 2.0E	1	1
B7	8-00-00	VERSALAM-10 2.0E	1	1
B12 LOW	6-00-00	VERSALAM-10 2.0E	1	2
B8	4-00-00	VERSALAM-10 2.0E	1	1
B7A	2-00-00	VERSALAM-10 2.0E	1	1

HANGERS SCHEDULE

H1-----IUS2.56/9.5
 H2-----HUS1.81/10

RIMBOARD

1-1/8" X 9 1/2" O.S.B

SUBFLOOR : 5/8" NAILED & GLUED

BBO-----BEAM BY OTHERS
 APP-----AS PER PLAN

1 - 2 X 6 SPF # 2 squash block req'd on one side of each joist under interior load bearing walls. Multiple squash blocks are req'd under concentrated loads.

Ceramic Tile Application as per O.B.C. 9.30.6

Do not scale - refer to architectural plans for dimensions.

JT:44997/94450

Builder: Bayview Wellington

Location: Bradford

Designer: MQ/SG

Alpa Roof Trusses Inc.
 Maple, Ontario

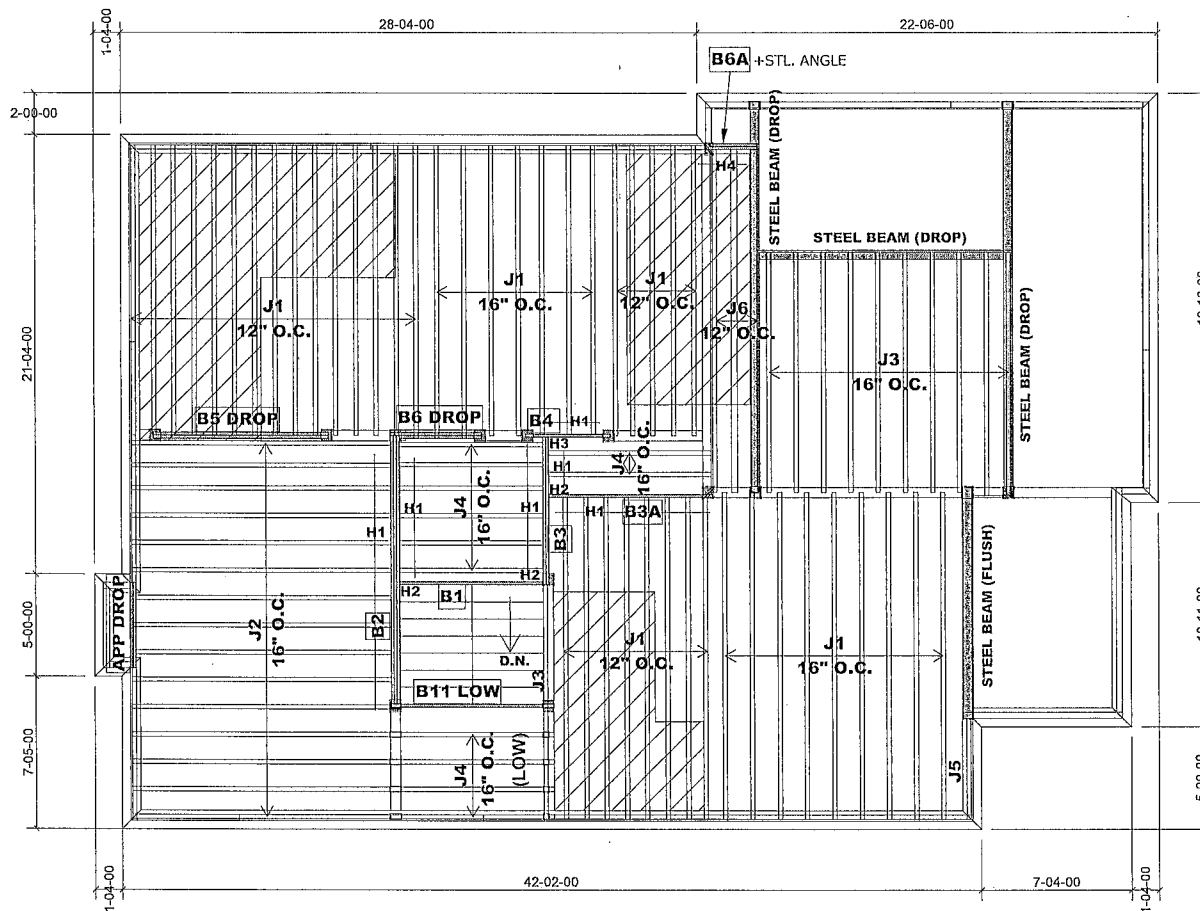
Salesperson: Mario
 Tamarack Lumber

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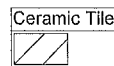
Project: Green Valley Estates East

Date: Oct. 16 / 2017

Sheet: 4 of 7



**S42-16 ELEV. A
SECOND FLOOR FRAMING
& UPGRADED REAR ELEVATION**



FLOOR LOADING:

LIVE : 40 PSF
DEAD : 15 PSF
DEAD : 20 PSF (TILE AREAS ONLY)

Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	44
J2	14-00-00	9 1/2" NI-40x	1	15
J3	12-00-00	9 1/2" NI-40x	1	11
J4	8-00-00	9 1/2" NI-40x	1	12
J5	6-00-00	9 1/2" NI-40x	1	1
J6	18-00-00	9 1/2" NI-80	1	3
B2	14-00-00	VERSALAM-10 2.0E	3	3
B3A	10-00-00	VERSALAM-10 2.0E	1	1
B5 DROP	10-00-00	VERSALAM-10 2.0E	2	2
B1	8-00-00	VERSALAM-10 2.0E	1	1
B11 LOW	8-00-00	VERSALAM-10 2.0E	1	1
B3	8-00-00	VERSALAM-10 2.0E	2	2
B4	6-00-00	VERSALAM-10 2.0E	1	1
B6 DROP	6-00-00	VERSALAM-10 2.0E	2	2
B6A	4-00-00	VERSALAM-10 2.0E	2	2

HANGERS SCHEDULE

H1-----IUS2.56/9.5
H2-----HUS1.81/10
H3-----HGUS410
H4-----IUS3.56/9.5

RIMBOARD

1-1/8" X 9 1/2" O.S.B

SUBFLOOR : 5/8" NAILED & GLUED

1 - 2 X 6 SPF # 2 squash block req'd on one side of each joist under interior load bearing walls. Multiple squash blocks are req'd under concentrated loads.

Ceramic Tile Application as per O.B.C. 9.30.6

Do not scale - refer to architectural plans for dimensions.

97055 - March 8/18

JT:44997/94450

Builder: Bayview Wellington

Location: Bradford

Designer: MQ/SG

Alpa Roof Trusses Inc.
Maple, Ontario

Salesperson: Mario
Tamarack Lumber

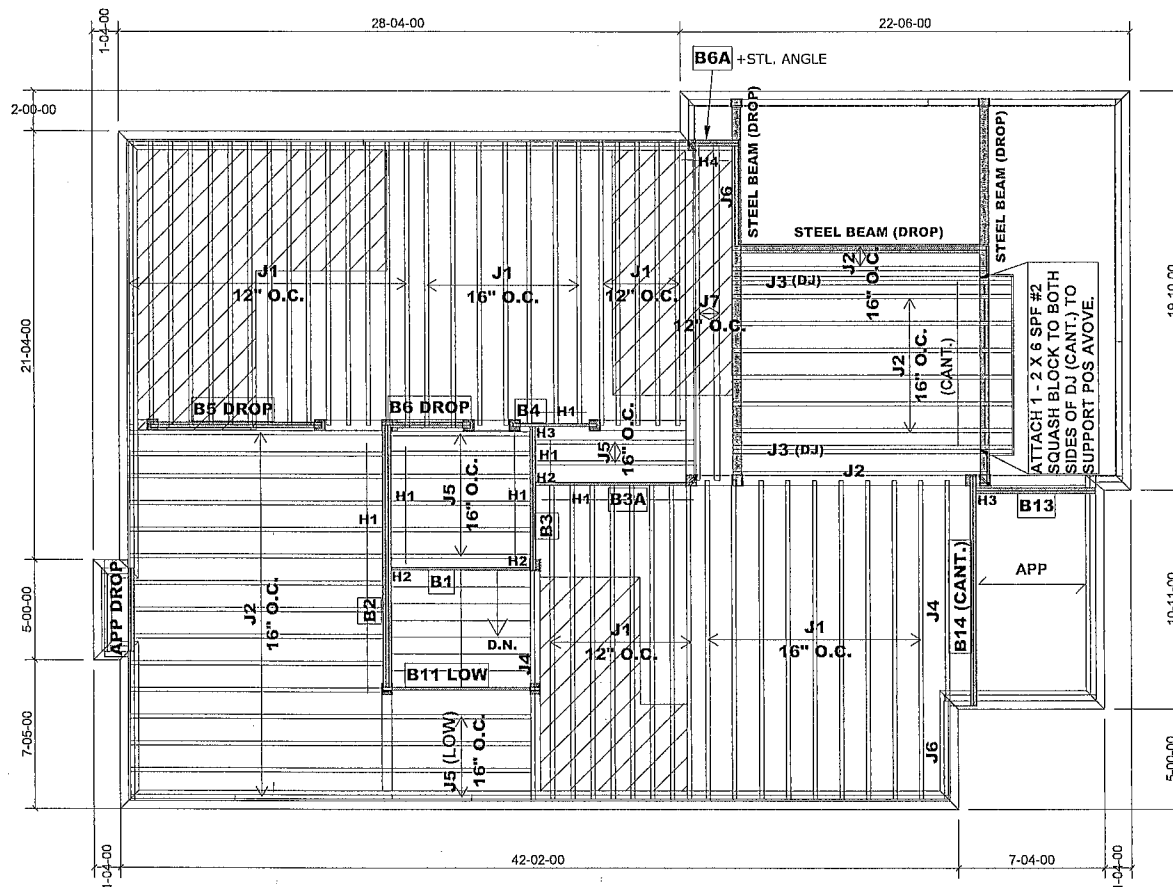
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Project: Green Valley Estates East

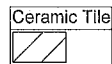
Date: Oct. 16 / 2017

Sheet: 5 of 7

295647



**S42-16 ELEV. B
SECOND FLOOR FRAMING
& UPGRADED REAR ELEVATION**



FLOOR LOADING:
LIVE : 40 PSF
DEAD : 15 PSF
DEAD : 20 PSF (TILE AREAS ONLY)

Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	44
J2	14-00-00	9 1/2" NI-40x	1	24
J3	14-00-00	9 1/2" NI-40x	2	4
J4	12-00-00	9 1/2" NI-40x	1	2
J5	8-00-00	9 1/2" NI-40x	1	12
J6	6-00-00	9 1/2" NI-40x	1	2
J7	18-00-00	9 1/2" NI-80	1	2
B2	14-00-00	VERSALAM-10 2.0E	3	3
B14 (CANT.)	12-00-00	VERSALAM-10 2.0E	2	2
B3A	10-00-00	VERSALAM-10 2.0E	1	1
B5 DROP	10-00-00	VERSALAM-10 2.0E	2	2
B1	8-00-00	VERSALAM-10 2.0E	1	1
B11 LOW	8-00-00	VERSALAM-10 2.0E	1	1
B3	8-00-00	VERSALAM-10 2.0E	2	2
B4	6-00-00	VERSALAM-10 2.0E	1	1
B13	6-00-00	VERSALAM-10 2.0E	2	2
B6 DROP	6-00-00	VERSALAM-10 2.0E	2	2
B6A	4-00-00	VERSALAM-10 2.0E	2	2

HANGERS SCHEDULE

H1-----IUS2.56/9.5
H2-----HUS1.81/10
H3-----HGUS410
H4-----IUS3.56/9.5

RIMBOARD

1-1/8" X 9 1/2" O.S.B

SUBFLOOR : 5/8" NAILED & GLUED

1 - 2 X 6 SPF # 2 squash block req'd on one side of each joist under interior load bearing walls. Multiple squash blocks are req'd under concentrated loads.

Ceramic Tile Application as per O.B.C. 9.30.6

Provide I-Joist blocking between cantilevered joists (along bearing) and rimboard closure at ends.

Do not scale - refer to architectural plans for dimensions.

97055 - March 8/18

JT:44997/94450

Builder: Bayview Wellington

Location: Bradford

Designer: MQ/SG

Alpa Roof Trusses Inc.
Maple, Ontario

Salesperson: Mario
Tamarack Lumber

File: 289522(260547)

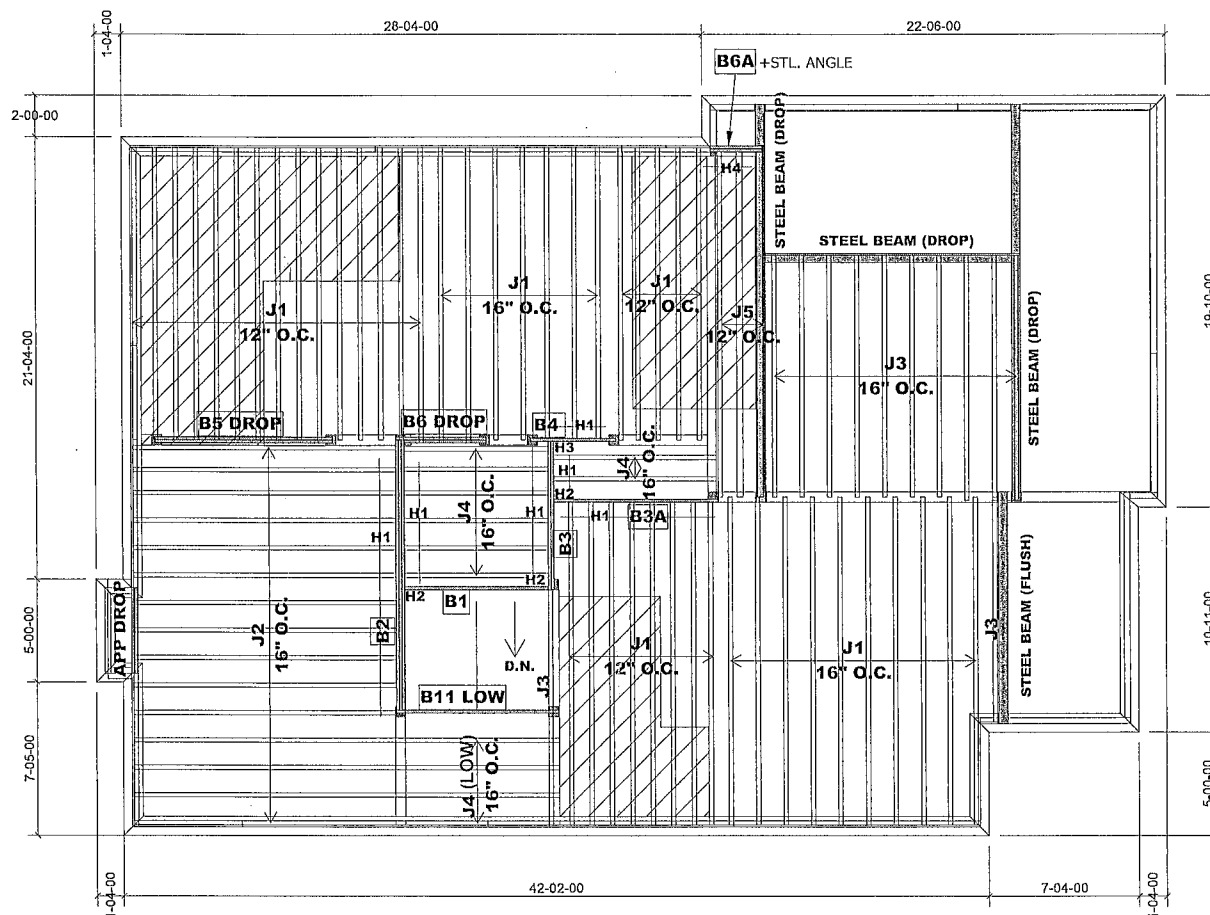
Project: Green Valley Estates East

Date: Oct. 16 / 2017

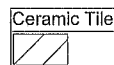
Sheet: 6 of 7

295647

Site Copy



**S42-16 ELEV. C
SECOND FLOOR FRAMING
& UPGRADED REAR ELEVATION**



FLOOR LOADING:

LIVE : 40 PSF
DEAD : 15 PSF
DEAD : 20 PSF (TILE AREAS ONLY)

Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	45
J2	14-00-00	9 1/2" NI-40x	1	15
J3	12-00-00	9 1/2" NI-40x	1	12
J4	8-00-00	9 1/2" NI-40x	1	12
J5	18-00-00	9 1/2" NI-80	1	3
B2	14-00-00	VERSALAM-10 2.0E	3	3
B3A	10-00-00	VERSALAM-10 2.0E	1	1
B5 DROP	10-00-00	VERSALAM-10 2.0E	2	2
B1	8-00-00	VERSALAM-10 2.0E	1	1
B11 LOW	8-00-00	VERSALAM-10 2.0E	1	1
B3	8-00-00	VERSALAM-10 2.0E	2	2
B4	6-00-00	VERSALAM-10 2.0E	1	1
B6 DROP	6-00-00	VERSALAM-10 2.0E	2	2
B6A	4-00-00	VERSALAM-10 2.0E	2	2

HANGERS SCHEDULE

H1-----IUS2.56/9.5
H2-----HUS1.81/10
H3-----HGUS410
H4-----IUS3.56/9.5

RIMBOARD

1-1/8" X 9 1/2" O.S.B

SUBFLOOR : 5/8" NAILED & GLUED

1 - 2 X 6 SPF # 2 squash block req'd on one side of each joist under interior load bearing walls. Multiple squash blocks are req'd under concentrated loads.

Ceramic Tile Application as per O.B.C. 9.30.6

Do not scale - refer to architectural plans for dimensions.

97055-March 8/18

JT:44997/94450

Builder: Bayview Wellington

Location: Bradford

Designer: MQ/SG

Alpa Roof Trusses Inc.
Maple, Ontario

Salesperson: Mario
Tamarack Lumber

File: 289522(260547)

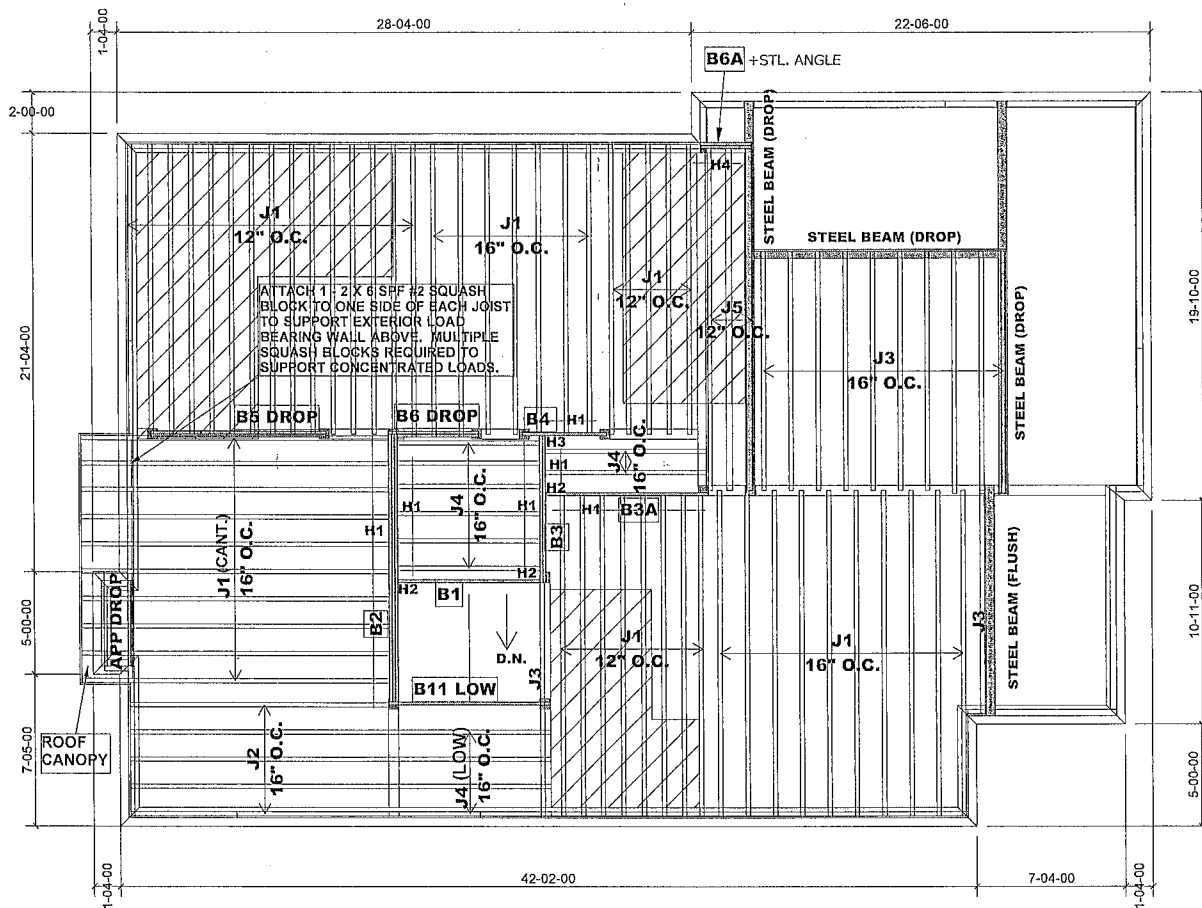
Project: Green Valley Estates East

Date: Oct. 16 / 2017

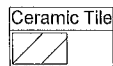
Sheet: 7 of 7

295647

Site Copy



**S42-16 ELEV. C
SECOND FLOOR FRAMING
& UPGRADED REAR ELEVATION
& REAR UPGRADE**



FLOOR LOADING:
LIVE : 40 PSF
DEAD : 15 PSF
DEAD : 20 PSF (TILE AREAS ONLY)

Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	55
J2	14-00-00	9 1/2" NI-40x	1	5
J3	12-00-00	9 1/2" NI-40x	1	12
J4	8-00-00	9 1/2" NI-40x	1	12
J5	18-00-00	9 1/2" NI-80	1	3
B2	14-00-00	VERSALAM-10 2.0E	3	3
B3A	10-00-00	VERSALAM-10 2.0E	1	1
B5 DROP	10-00-00	VERSALAM-10 2.0E	2	2
B1	8-00-00	VERSALAM-10 2.0E	1	1
B11 LOW	8-00-00	VERSALAM-10 2.0E	1	1
B3	8-00-00	VERSALAM-10 2.0E	2	2
B4	6-00-00	VERSALAM-10 2.0E	1	1
B6 DROP	6-00-00	VERSALAM-10 2.0E	2	2
B6A	4-00-00	VERSALAM-10 2.0E	2	2

HANGERS SCHEDULE

H1-----IUS2.56/9.5
H2-----HUS1.81/10
H3-----HGUS410
H4-----IUS3.56/9.5

RIMBOARD

1-1/8" X 9 1/2" O.S.B

SUBFLOOR : 5/8" NAILED & GLUED

1 - 2 X 6 SPF # 2 squash block req'd on one side of each joist under interior load bearing walls. Multiple squash blocks are req'd under concentrated loads.

Ceramic Tile Application as per O.B.C. 9.30.6

Provide I-Joist blocking between cantilevered joists (along bearing) and rimboard closure at ends.

Do not scale - refer to architectural plans for dimensions.

JT:44997/97055
File: 295647
289522(260547)

Builder: Bayview Wellington
Project: Green Valley Estates East

Location: Bradford
Date: March 8 / 2018

Designer: MQ/SG
Sheet: 7^a of 7

Alpa Roof Trusses Inc.
Maple, Ontario

Salesperson: Mario
Tamarack Lumber

T.1803005



Boise Cascade

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\01

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

October 24, 2015 11:02:00

BC CALC® Design Report

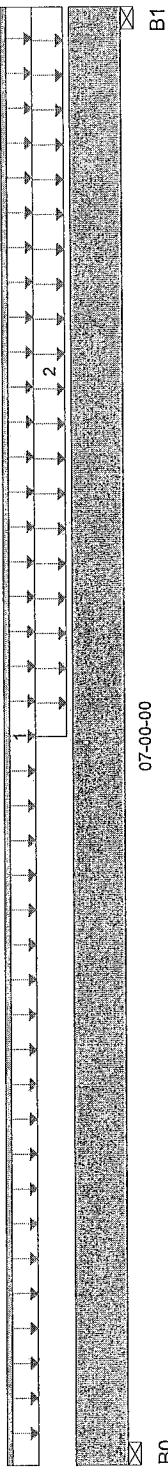


uild 4137

Job Name: 38514
Address: GREEN VALLEY ESTATES
City, Province, Postal Code: BRADFORD, ON
Customer:

File Name: 260547.bcc
Description: Designs\01
Specifier: S42-16
Designer: MQ
Company: ALPA ROOF TRUSSES
Misc:

Code reports: CCMC 12472-R



Total Horizontal Product Length = 07-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	193 / 0	89 / 0		
B1, 3-1/2"	416 / 0	173 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Lin. (lb/ft)	L	00-00-00	07-00-00	27	10			n/a
2	Unf. Area (lb/ft^2)	L	03-06-00	07-00-00	40	15			03-00-00

Controls Summary

Pos. Moment	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
1	1,011 ft-lbs	12,704 ft-lbs	0.08	1	04-02-03
End Shear	520 lbs	5,785 lbs	0.09	1	05-11-00
Total Load Defl.	L/999 (0.021")	n/a	n/a	4	03-07-13
Live Load Defl.	L/999 (0.014")	n/a	n/a	5	03-07-13
Max Defl.	0.021"	n/a	n/a	4	03-07-13
Span / Depth	8.3	n/a	n/a		00-00-00

Disclosure

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

Bearing Supports

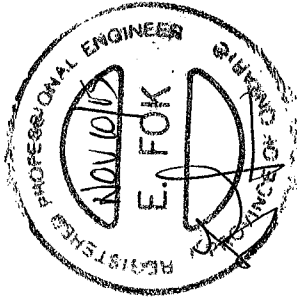
	Dim. (L x W)	Demand	Demand/Resistance Support	Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	400 lbs	0.11	0.05	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	840 lbs	0.22	0.11	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum total load deflection criteria.
Calculations assume Member is Fully Braced.
Resistance Factor phi has been applied to all presented results per CSA 086.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 4
Deflections less than 1/8" were ignored in the results.

User Notes

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS
@ O.C.. STAGGERED IN TWO ROWS



T-151105



Boise Cascade

Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\02

October 24, 2015 11:02:00



BC CALC® Design Report

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

uild 4137

File Name: 260547.bcc

38514

Description: Designs\02

Job Name: GREEN VALLEY ESTATES

Specifier: S42-16

Address: City, Province, Postal Code:BRADFORD , ON

Designer: MQ

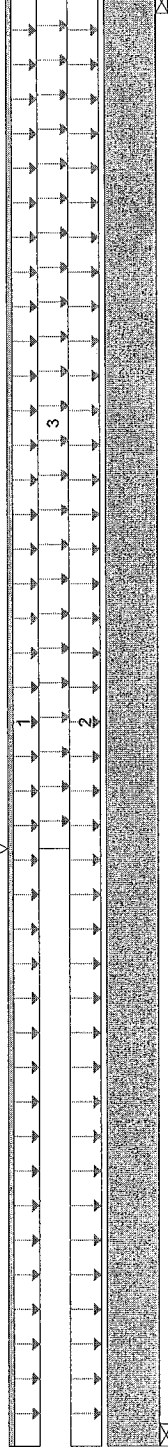
Customer:

Company: ALPA ROOF TRUSSES

Code reports: CCMC 12472-R

Misc:

4



13-04-00

B1

Total Horizontal Product Length = 13-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	2,268 / 0	1,360 / 0		
B1, 2-1/2"	2,734 / 0	1,525 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Lin. (lb/ft)	L	00-00-00	13-04-00	0	60			n/a
2	Unf. Area (lb/ft^2)	L	00-00-00	13-04-00	40	15			06-08-00
3	Unf. Area (lb/ft^2)	L	05-06-00	13-04-00	40	15			04-00-00
4	Conc. Pt. (lbs)	L	05-06-00	05-06-00	193	89			n/a

Controls Summary

Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Moment	18,468 ft-lbs	39,636 ft-lbs	0.47	1	06-10-11
End Shear	5,074 lbs	17,356 lbs	0.29	1	12-04-00
Total Load Defl.	L/298 (0.521")	0.648"	0.8	4	06-09-06
Live Load Defl.	L/468 (0.332")	0.432"	0.77	5	06-09-06
Max Defl.	0.521"	1"	0.52	4	06-09-06
Span / Depth	16.4	n/a	n/a		00-00-00

Bearing	Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0	Wall/Plate	3-1/2" x 5-1/4"	5,102 lbs	0.45	0.23	Spruce Pine Fir
B1	Wall/Plate	2-1/2" x 5-1/4"	6,007 lbs	0.74	0.38	Spruce Pine Fir

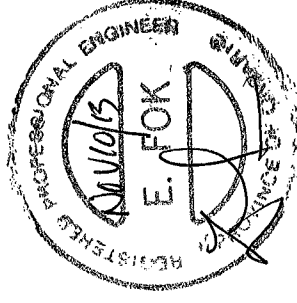
Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum total load deflection criteria.
 Calculations assume Member is Fully Braced.
 Resistance Factor phi has been applied to all presented results per CSA 086.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4
 Deflections less than 1/8" were ignored in the results.

User Notes

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS
 @ 10" O.C., STAGGERED IN 2 ROWS

Page 1 of 2



T-1511106

Site Copy



Boise Cascade

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\03A

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

October 24, 2015 11:02:01

BC CALC® Design Report



uild 4137

38514

Job Name:

GREEN VALLEY ESTATES

Address:

City, Province, Postal Code:BRADFORD ON,

Customer:

CCMC 12472-R

Code reports:

File Name: 260547.bcc

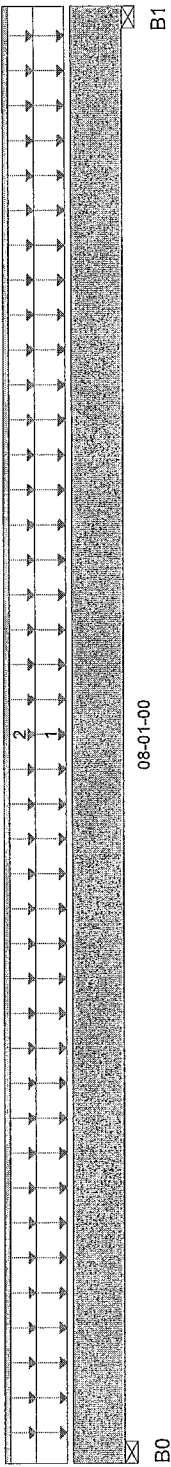
Description: Designs\03A

Specifier: S42-16

Designer: MQ

Company: ALPA ROOF TRUSSES

Misc:



Total Horizontal Product Length = 08-01-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1,402 / 0	707 / 0		
B1, 3-1/2"	1,402 / 0	707 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Area (lb/ft^2)	L	00-00-00	08-01-00	40	20			08-00-00
2	Unf. Lin. (lb/ft)	L	00-00-00	08-01-00	27	10			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	5,371 ft-lbs	12,704 ft-lbs	0.42	1	04-00-08
End Shear	2,186 lbs	5,785 lbs	0.38	1	01-01-00
Total Load Defl.	L/577 (0.159")	0.381"	0.42	4	04-00-08
Live Load Defl.	L/999 (0.106")	n/a	n/a	5	04-00-08
Max Defl.	0.159"	1"	0.16	4	04-00-08
Span / Depth	9.6	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 engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call 1-800-964-6999 before installation.

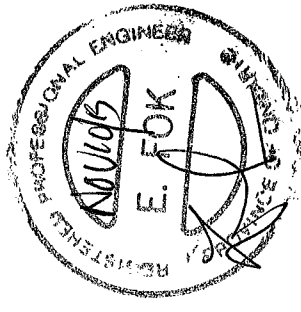
BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, SIMPLE FRAMING SYSTEM®, VERSA-LAM®, VERSA-RIM PLUS®, VERSA-RIM®, VERSA-STRAND®, VERSA-STUD® are trademarks of Boise Cascade Wood Products L.L.C.

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	2,987 lbs	0.79	0.4	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	2,987 lbs	0.79	0.4	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum total load deflection criteria.
Calculations assume Member is Fully Braced.
Resistance Factor phi has been applied to all presented results per CSA 086.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 4
Deflections less than 1/8" were ignored in the results.



Site Copy

F-1511107



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\03

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

October 24, 2015 11:02:00



BC CALC® Design Report

uild 4137

Job Name:

Address:

City, Province, Postal Code:BRADFORD , ON

Customer:

Code reports:

38514

GREEN VALLEY ESTATES

City, Province, Postal Code:BRADFORD , ON

Customer:

CCMC 12472-R

File Name: 260547.bcc

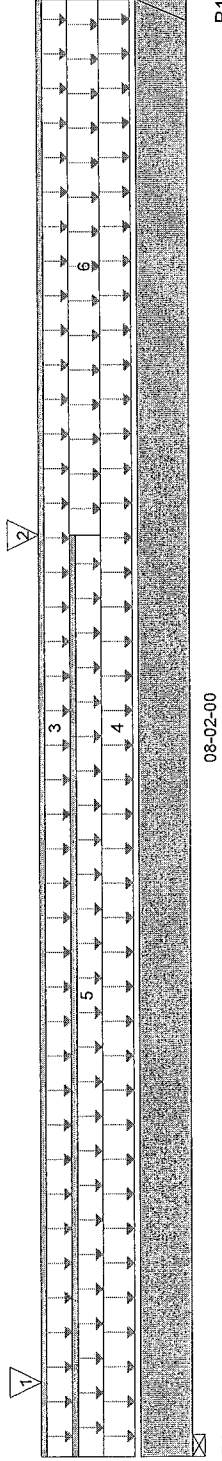
Description: Designs\03

Specifier: S42-16

Designer: MQ

Company: ALPA ROOF TRUSSES

Misc:



08-02-00

B1

Total Horizontal Product Length = 08-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1,774 / 0	1,052 / 0		
B1	1,990 / 0	1,147 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
2	Conc. Pt. (lbs)	L	00-05-00	00-05-00	416	173			n/a
3	Conc. Pt. (lbs)	L	05-02-00	05-02-00	1,402	707			n/a
4	Unf. Lin. (lb/ft)	L	00-00-00	08-02-00	0	60			n/a
5	Unf. Area (lb/ft^2)	L	00-00-00	08-02-00	40	15			04-00-00
6	Unf. Lin. (lb/ft)	L	00-00-00	05-02-00	27	14			n/a
	Unf. Area (lb/ft^2)	L	05-02-00	08-02-00	40	15			04-02-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	9,512 ft-lbs	25,408 ft-lbs	0.37	1	05-02-00
End Shear	3,718 lbs	11,571 lbs	0.32	1	07-02-08
Total Load Defl.	L704 (0.133")	0.392"	0.34	4	04-03-04
Live Load Defl.	L999 (0.084")	n/a	n/a	5	04-03-04
Max Defl.	0.133"	1"	0.13	4	04-03-04
Span / Depth	9.9	n/a	n/a		00-00-00

Demand / Resistance Support Member

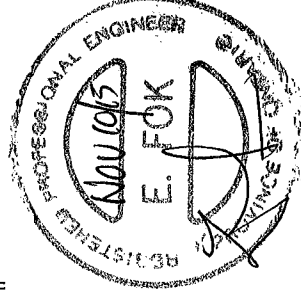
Bearing Supports	Dim. (L x W)	Demand	Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	3-1/2" x 3-1/2"	3,976 lbs	0.53	0.27	Spruce Pine Fir
B1 Hanger	2" x 3-1/2"	4,418 lbs	n/a	0.52	Hanger

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum total load deflection criteria.
 Calculations assume Member is Fully Braced.
 Resistance Factor phi has been applied to all presented results per CSA 086.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4
 Deflections less than 1/8" were ignored in the results.

User Notes

Page 1 of 2
 @ 12" O.C., STAGGERED IN 2 ROWS



T-151110f

Site Copy



Boise Cascade

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\04

BC CALC® Design Report

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

October 24, 2015 11:02:01

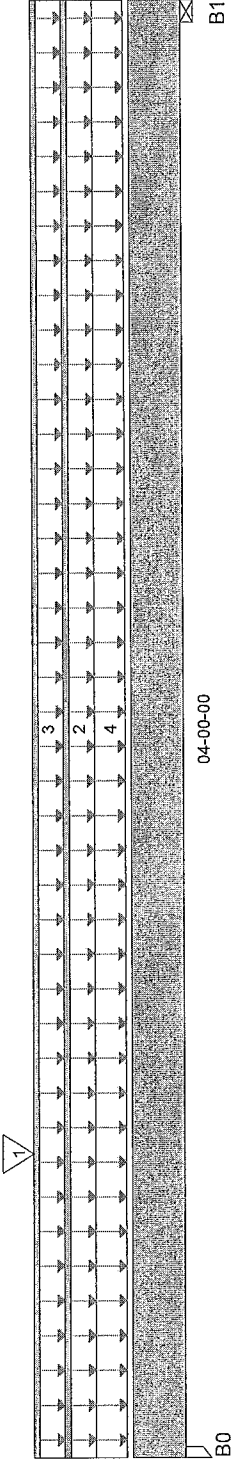
uild 4137

38514

Job Name: GREEN VALLEY ESTATES
Address: City, Province, Postal Code:BRADFORD , ON
Customer:

File Name: 260547.bcc
Description: Designs\04
Specifier: S42-16
Designer: MQ
Company: ALPA ROOF TRUSSES
Misc:

Code reports: CCMC 12472-R



Total Horizontal Product Length = 04-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	2,271 / 0	1,314 / 0		
B1, 3-1/2"	960 / 0	558 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
2	Conc. Pt. (lbs)	L	00-10-00	00-10-00	1,990	1,147			n/a
3	Unf. Lin. (lb/ft)	L	00-00-00	04-00-00	0	60			n/a
4	Unf. Lin. (lb/ft)	L	00-00-00	04-00-00	27	10			n/a
	Unf. Area (lb/ft^2)	L	00-00-00	04-00-00	40	15			07-01-00

Controls Summary

Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Moment	2,828 ft-lbs	12,704 ft-lbs	0.22	1	00-10-12
End Shear	2,904 lbs	5,785 lbs	0.5	1	01-01-00
Total Load Defl.	L/999 (0.017")	n/a	n/a	4	01-10-05
Live Load Defl.	L/999 (0.011")	n/a	n/a	5	01-10-05
Max Defl.	0.017"	n/a	n/a	4	01-10-05
Span / Depth	4.5	n/a	n/a		00-00-00

Bearing Supports

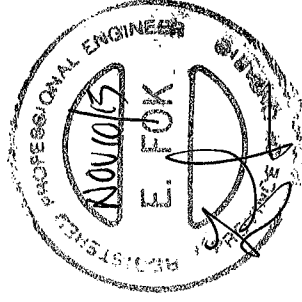
	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Post	3-1/2" x 1-3/4"	5,049 lbs	0.48	0.68	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	2,137 lbs	0.57	0.29	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume Member is Fully Braced.
Resistance Factor phi has been applied to all presented results per CSA 086.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 4
Deflections less than 1/8" were ignored in the results.

User Notes

Site Copy



T-1511109



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\05

BC CALC® Design Report

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

October 24, 2015 11:02:01

uild 4137

Job Name:

Address:

City, Province, Postal Code:BRADFORD , ON

Customer:

Code reports:

38514

GREEN VALLEY ESTATES

City, Province, Postal Code:BRADFORD , ON

Customer:

CCMC 12472-R

File Name: 260547.bcc

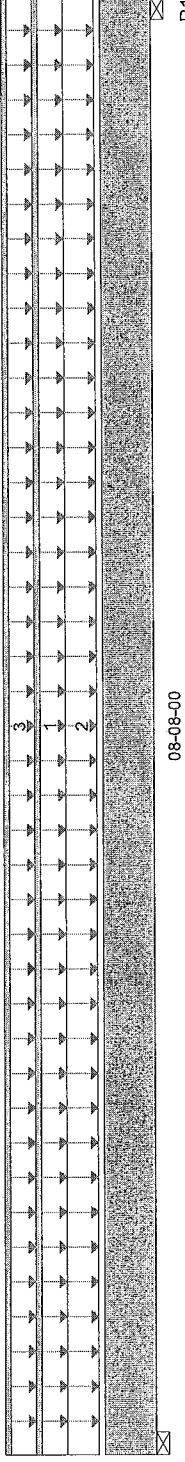
Description: Designs\05

Specifier: S42-16

Designer: MQ

Company: ALPA ROOF TRUSSES

Misc:



08-08-00

B1

Total Horizontal Product Length = 08-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1,359 / 0	966 / 0		
B1, 3-1/2"	1,359 / 0	966 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Lin. (lb/ft)	L	00-00-00	08-08-00	0	60			n/a
	Unf. Area (lb/ft^2)	L	00-00-00	08-08-00	40	20			07-02-00
	Unf. Lin. (lb/ft)	L	00-00-00	08-08-00	27	10			n/a

Controls Summary

Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Moment	6,310 ft-lbs	25,408 ft-lbs	0.25	1	04-04-00
End Shear	2,435 lbs	11,571 lbs	0.21	1	01-01-00
Total Load Defl.	L/999 (0.11")	n/a	n/a	4	04-04-00
Live Load Defl.	L/999 (0.064")	n/a	n/a	5	04-04-00
Max Defl.	0.11"	n/a	n/a	4	04-04-00
Span / Depth	10.4	n/a	n/a		00-00-00

Bearing Supports

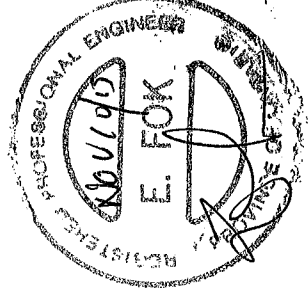
	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material	
B0	Wall/Plate	3-1/2" x 3-1/2"	3,247 lbs	0.43	0.22	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	3,247 lbs	0.43	0.22	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum total load deflection criteria.
Calculations assume Member is Fully Braced.
Resistance Factor phi has been applied to all presented results per CSA 086.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 4
Deflections less than 1/8" were ignored in the results.

User Notes

JAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS
@ 12" O.C., STAGGERED IN 2 ROWS (TOP WARDEN)



Site Copy

7-1511110



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\06



BC CALC® Design Report

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

October 24, 2015 11:02:01

uild 4137

Job Name:

Address:

City, Province, Postal Code: BRADFORD, ON

Customer:

Code reports:

38514

GREEN VALLEY ESTATES

City, Province, Postal Code: BRADFORD, ON

Customer:

CCMC 12472-R

File Name: 260547.bcc

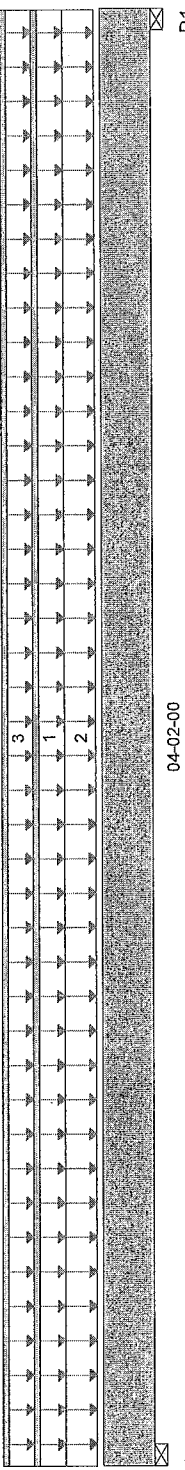
Description: Designs\06

Specifier: S42-16

Designer: MQ

Company: ALPA ROOF TRUSSES

Misc:



04-02-00

B1

Total Horizontal Product Length = 04-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	653 / 0	390 / 0		
B1, 3-1/2"	653 / 0	390 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Lin. (lb/ft)	L	00-00-00	04-02-00	0	60			n/a
2	Unf. Area (lb/ft^2)	L	00-00-00	04-02-00	40	15			07-02-00
3	Unf. Lin. (lb/ft)	L	00-00-00	04-02-00	27	10			n/a

Controls Summary

Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,211 ft-lbs	25,408 ft-lbs	0.05	1	02-01-00
End Shear	704 lbs	11,571 lbs	0.06	1	01-01-00
Total Load Defl.	L/999 (0.004")	n/a	n/a	4	02-01-00
Live Load Defl.	L/999 (0.003")	n/a	n/a	5	02-01-00
Max Defl.	0.004"	n/a	n/a	4	02-01-00
Span / Depth	4.7	n/a	n/a		00-00-00

Demand/Resistance Support

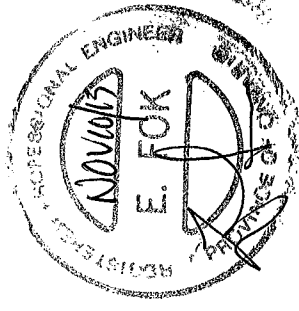
Bearing Supports	Dim. (L x W)	Demand	Demand/Resistance Support	Member	Material
B0 Wall/Plate	3-1/2" x 3-1/2"	1,468 lbs	0.19	0.1	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 3-1/2"	1,468 lbs	0.19	0.1	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume Member is Fully Braced.
Resistance Factor phi has been applied to all presented results per CSA 086.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 4
Deflections less than 1/8" were ignored in the results.

User Notes

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS
12" O.C., STAGGERED IN TWO ROWS



Site Copy

7-1511111



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\06A

BC CALC® Design Report

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

October 24, 2015 11:02:02



Build 4137

38514

Job Name: GREEN VALLEY ESTATES

Address: City, Province, Postal Code: BRADFORD ON,

Customer:

Code reports: CCMC 12472-R

File Name: 260547.bcc

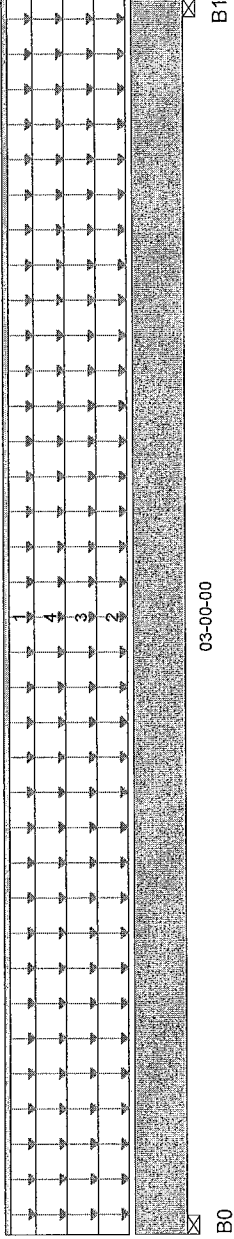
Description: Designs\06A

Specifier: S42-16

Designer: MQ

Company: ALPA ROOF TRUSSES

Misc:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	584 / 0	484 / 0	203 / 0	
B1, 3-1/2"	584 / 0	484 / 0	203 / 0	

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
2	Unf. Lin. (lb/ft)	L	00-00-00	03-00-00	0	100			n/a
3	Unf. Area (lb/ft^2)	L	00-00-00	03-00-00	40	20			08-07-00
4	Unf. Area (lb/ft^2)	L	00-00-00	03-00-00	11	10		32	03-00-00
	Unf. Area (lb/ft^2)	L	00-00-00	03-00-00	11	10		32	01-02-00

Controls Summary

Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Moment	852 ft-lbs	25,408 ft-lbs	0.03	1	01-06-00
End Shear	440 lbs	11,571 lbs	0.04	1	01-01-00
Total Load Defl.	L/999 (0.001")	n/a	n/a	11	01-06-00
Live Load Defl.	L/999 (0.001")	n/a	n/a	15	01-06-00
Max Defl.	0.001"	n/a	n/a	11	01-06-00
Span / Depth	3.2	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	3-1/2" x 3-1/2"	1,583 lbs	0.21	0.11	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 3-1/2"	1,583 lbs	0.21	0.11	Spruce Pine Fir

Notes

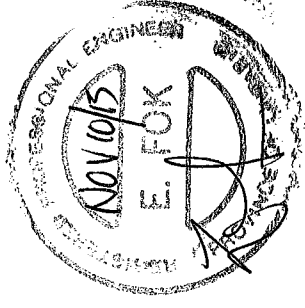
Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum total load deflection criteria.
Calculations assume Member is Fully Braced.
Resistance Factor phi has been applied to all presented results per CSA 086.
BC CALC® analysis is based on Canadian Limit States Design. as per NBCC and CSA 086.
Design based on Drv Service Condition.
Importance Factor : Normal Part code : Part 4
Deflections less than 1/8" were ignored in the results.

Site Copy

User Notes

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS

@ 6" O.C., STAGGERED IN 2 ROWS



T-1511112



Boise Cascade

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\11



RC CALC® Design Report

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

October 24, 2015 11:02:03

uild 4137

Job Name: 38514

Address:

GREEN VALLEY ESTATES

City, Province, Postal Code: BRADFORD, ON

Customer:

Code reports: CCMC 12472-R

File Name: 260547.bcc

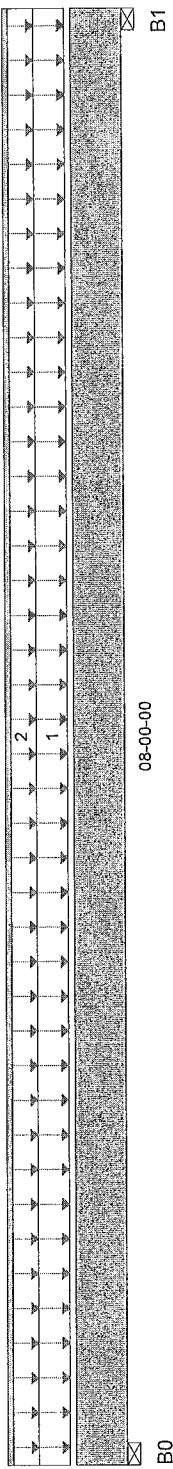
Description: Designs\11

Specifier: S42-16

Designer: MQ

Company: ALPA ROOF TRUSSES

Misc:



Total Horizontal Product Length = 08-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	588 / 0	239 / 0		
B1, 3-1/2"	588 / 0	239 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Area (lb/ft^2)	L	00-00-00	08-00-00	40	15		1.00	03-00-00
2	Unf. Lin. (lb/ft)	L	00-00-00	08-00-00	27	10		1.15	n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,099 ft-lbs	12,704 ft-lbs	0.17	1	04-00-00
End Shear	861 lbs	5,785 lbs	0.15	1	01-01-00
Total Load Defl.	L/999 (0.06")	n/a	n/a	4	04-00-00
Live Load Defl.	L/999 (0.043")	n/a	n/a	5	04-00-00
Max Defl.	0.06"	n/a	n/a	4	04-00-00
Span / Depth	9.5	n/a	n/a		00-00-00

Disclosure

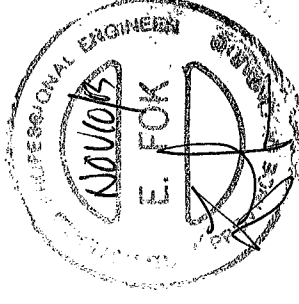
Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of BOISE engineered wood products must be in accordance with current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

Bearing Supports

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	1,181 lbs	0.31	0.16	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,181 lbs	0.31	0.16	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum total load deflection criteria.
Calculations assume Member is Fully Braced.
Resistance Factor phi has been applied to all presented results per CSA 086.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 4
Deflections less than 1/8" were ignored in the results.



T-51113



Boise Cascade

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\07A

BC CALC® Design Report

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

October 24, 2015 11:02:02



Build 4137

File Name: 260547.bcc

Job Name:

Description: Designs\07A

Address:

Specifier: S42-16

City, Province, Postal Code: BRADFORD ON,

Designer: MQ

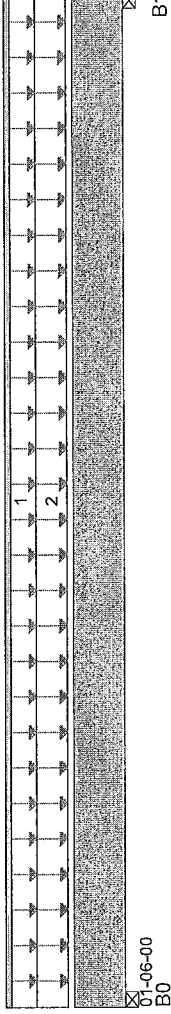
Customer:

Company: ALPA ROOF TRUSSES

Code reports:

CCMC 12472-R

Misc:



Total Horizontal Product Length = 01-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	60 / 0	79 / 0		
B1, 3-1/2"	60 / 0	79 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1		Unf. Lin. (lb/ft)	L	00-00-00	01-06-00	0	60			n/a
2		Unf. Area (lb/ft²)	L	00-00-00	01-06-00	40	20			02-00-00

Controls Summary

Pos.	Moment	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
End Shear	84 lbs	34 ft-lbs	12,704 ft-lbs	0	1	00-09-00
Span / Depth	1.3	1.3	5,785 lbs	0.01	1	01-01-00
			n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	188 lbs	0.05	0.03	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	188 lbs	0.05	0.03	Spruce Pine Fir

Notes

Calculations assume Member is Fully Braced.

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

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

Design based on Dry Service Condition.

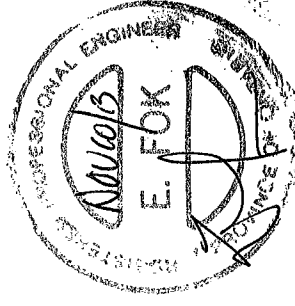
Importance Factor : Normal Part code : Part 4

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

Disclosure

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

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



T-151114



Boise Cascade

BC CALC® Design Report



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\07

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

October 24, 2015 11:02:02

uild 4137

38514

Job Name: GREEN VALLEY ESTATES

Address: City, Province, Postal Code: BRADFORD, ON

Customer:

Code reports: CCMC 12472-R

File Name: 260547.bcc

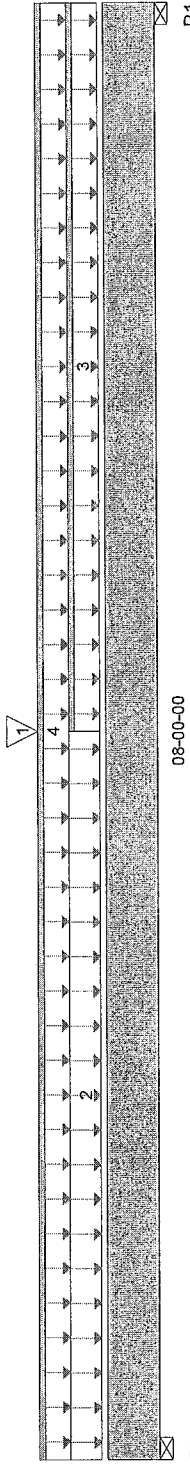
Description: Designs\07

Specifier: S42-16

Designer: MQ

Company: ALPA ROOF TRUSSES

Misc:



08-00-00

B1

Total Horizontal Product Length = 08-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Load Type	Live	Dead	Snow	Wind
B0, 3-1/2"		530 / 0	266 / 0		
B1, 3-1/2"		334 / 0	200 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Conc. Pt. (lbs)	L	04-00-00	04-00-00	60	79			n/a
	Unf. Area (lb/ft^2)	L	00-00-00	04-00-00	40	15			03-00-00
	Unf. Lin. (lb/ft)	L	04-00-00	08-00-00	27	14			n/a
4	Unf. Lin. (lb/ft)	L	00-00-00	08-00-00	27	14			n/a

Controls Summary

Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Moment	1,866 ft-lbs	12,704 ft-lbs	0.15	1	03-08-11
End Shear	802 lbs	5,785 lbs	0.14	1	01-01-00
Total Load Defl.	L/999 (0.052")	n/a	n/a	4	03-10-14
Live Load Defl.	L/999 (0.033")	n/a	n/a	5	03-10-14
Max Defl.	0.052"	n/a	n/a	4	03-10-14
Span / Depth	9.5	n/a	n/a		00-00-00

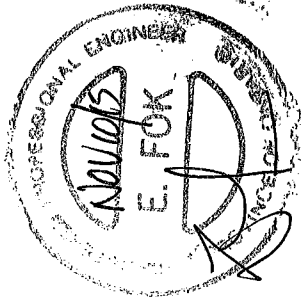
Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	1,127 lbs	0.3	0.15	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	750 lbs	0.2	0.1	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum total load deflection criteria.
Calculations assume Member is Fully Braced.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 4
Deflections less than 1/8" were ignored in the results.

User Notes





Boise Cascade

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\08

BC CALC® Design Report



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

October 24, 2015 11:02:02

uild 4137

Job Name:

Address:

City, Province, Postal Code:BRADFORD , ON

Customer:

Code reports:

38514

GREEN VALLEY ESTATES

City, Province, Postal Code:BRADFORD , ON

Customer:

Code reports:

File Name: 260547.bcc

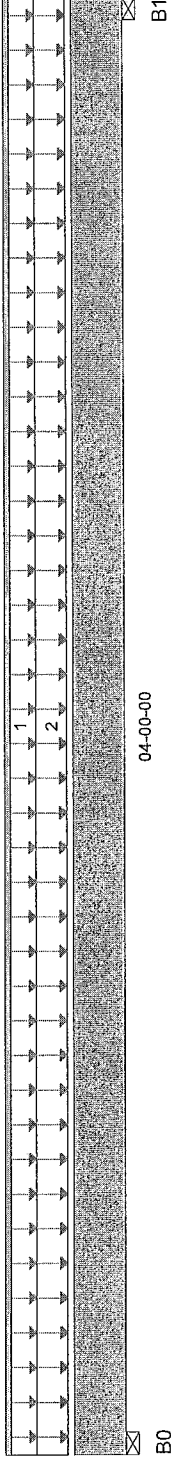
Description: Designs\08

Specifier: S42-16

Designer: MQ

Company: ALPA ROOF TRUSSES

Misc:



Total Horizontal Product Length = 04-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	221 / 0	100 / 0		
B1, 3-1/2"	221 / 0	100 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Lin. (lb/ft)	L	00-00-00	04-00-00	27	14			n/a
2	Unf. Area (lb/ft^2)	L	00-00-00	04-00-00	40	15			02-01-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	358 ft-lbs	12,704 ft-lbs	0.03	1	02-00-00
End Shear	209 lbs	5,785 lbs	0.04	1	01-01-00
Total Load Defl.	L/999 (0.002")	n/a	n/a	4	02-00-00
Live Load Defl.	L/999 (0.002")	n/a	n/a	5	02-00-00
Max Defl.	0.002"	n/a	n/a	4	02-00-00
Span / Depth	4.5	n/a	n/a		00-00-00

Disclosure

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

Bearing Supports

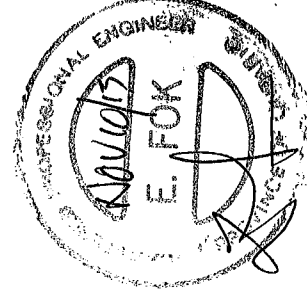
	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	456 lbs	0.12	0.06	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	456 lbs	0.12	0.06	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum total load deflection criteria.
Calculations assume Member is Fully Braced.
Resistance Factor phi has been applied to all presented results per CSA 086.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 4
Deflections less than 1/8" were ignored in the results.

User Notes

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS
O.C.. STAGGERED IN TWO ROWS



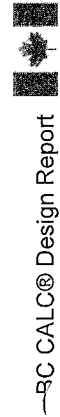
T-151116



Boise Cascade

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\10



BC CALC® Design Report

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

October 24, 2015 11:02:03

uild 4137

Job Name:

Address:

City, Province, Postal Code:BRADFORD , ON

Customer:

Code reports:

38514

GREEN VALLEY ESTATES

City, Province, Postal Code:BRADFORD , ON

Customer:

CCMC 12472-R

File Name: 260547.bcc

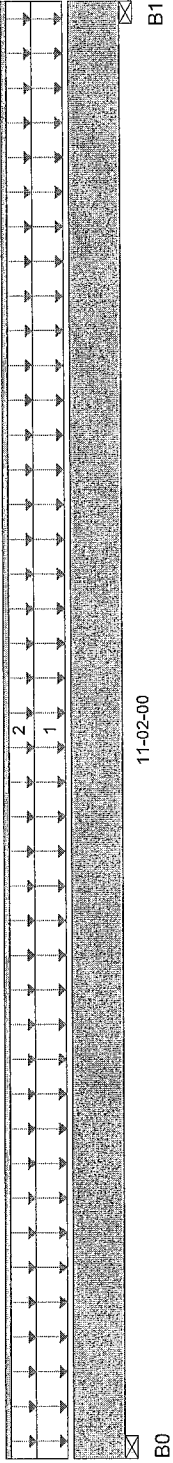
Description: Designs\10

Specifier: S42-16

Designer: MQ

Company: ALPA ROOF TRUSSES

Misc:



Total Horizontal Product Length = 11-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	298 / 0	511 / 0		
B1, 3-1/2"	298 / 0	511 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Area (lb/ft²)	L	00-00-00	11-02-00	40	20			01-04-00
2	Unf. Lin. (lb/ft)	L	00-00-00	11-02-00	0	60			n/a

Controls Summary

Pos. Moment	Factored Demand	Resistance	Factored Resistance	Demand / Resistance	Load Case	Location
End Shear	576 lbs	8,258 ft-lbs	0.22	0	05-07-00	
Total Load Defl.	L750 (0.171")	3,761 lbs	0.15	0	01-01-00	
Live Load Defl.	L999 (0.063")	0.535"	0.32	4	05-07-00	
Max Defl.	0.171"	n/a	n/a	5	05-07-00	
Span / Depth	13.5	n/a	0.17	4	05-07-00	
			n/a		00-00-00	

Disclosure

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

Bearing Supports

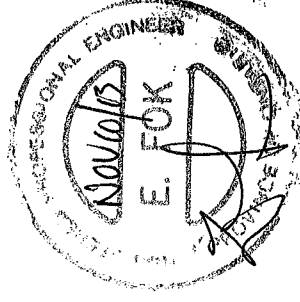
	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	715 lbs	0.29	0.15	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	715 lbs	0.29	0.15	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum total load deflection criteria.
 Calculations assume Member is Fully Braced.
 Resistance Factor phi has been applied to all presented results per CSA 086.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4
 Deflections less than 1/8" were ignored in the results.

User Notes

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS
 O.C.. STAGGERED IN TWO ROWS



Site Copy

7-151117



Boise Cascade

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\12

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

October 24, 2015 11:02:03

BC CALC® Design Report



uild 4137

Job Name:

Address:

City, Province, Postal Code:BRADFORD , ON

Customer:

Code reports:

38514

GREEN VALLEY ESTATES

File Name: 260547.bcc

Description: Designs\12

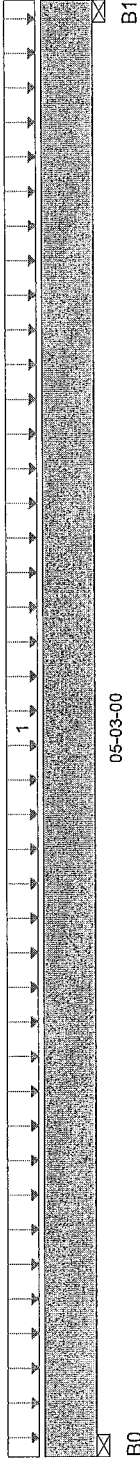
Specifier: S42-16

Designer: MQ

Company: ALPA ROOF TRUSSES

Misc:

CCMC 12472-R



Total Horizontal Product Length = 05-03-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead
B0, 3-1/2"	367 / 0	150 / 0
B1, 3-1/2"	367 / 0	150 / 0

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Area (lb/ft²)	L	00-00-00	05-03-00	40	15		1.00 1.15	03-06-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
os. Moment	808 ft-lbs	12,704 ft-lbs	0.06	1	02-07-08
nd Shear	434 lbs	5,785 lbs	0.08	1	01-01-00
Total Load Defl.	L/999 (0.009")	n/a	n/a	4	02-07-08
Live Load Defl.	L/999 (0.007")	n/a	n/a	5	02-07-08
Max Defl.	0.009"	n/a	n/a	4	02-07-08
Span / Depth	6.1	n/a	n/a		00-00-00

Disclosure

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

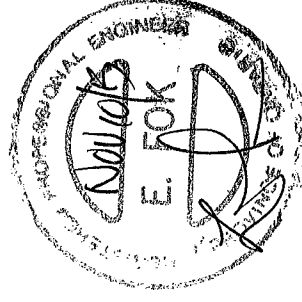
BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, SIMPLE FRAMING SYSTEM®, VERSA-LAM®, VERSA-RIM PLUS®, VERSA-RIM®, VERSA-STRAND®, VERSA-STUD® are trademarks of Boise Cascade Wood Products L.L.C.

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	739 lbs	0.2	0.1	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	739 lbs	0.2	0.1	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Design meets User specified (1") Maximum total load deflection criteria.
 Calculations assume Member is Fully Braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4
 Deflections less than 1/8" were ignored in the results.



T-1511118



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\13



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

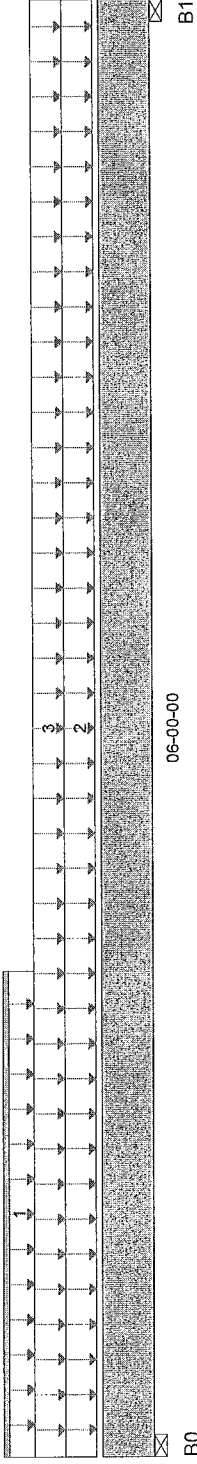
October 24, 2015 11:02:03

BC CALC® Design Report

.iuld 4137

Job Name: 38514
Address: GREEN VALLEY ESTATES
City, Province, Postal Code: BRADFORD ON,
Customer:
Code reports: CCMC 12472-R

File Name: 260547.bcc
Description: Designs\13
Specifier: S42-16
Designer: MQ
Company: ALPA ROOF TRUSSES
Misc:



Total Horizontal Product Length = 06-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	33 / 0	291 / 0	517 / 0	
B1, 3-1/2"	33 / 0	147 / 0	517 / 0	

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Lin. (lb/ft)	L	00-00-00	02-00-00	0	100			n/a
	Unf. Area (lb/ft^2)	L	00-00-00	06-00-00		20		140	01-00-00
	Unf. Area (lb/ft^2)	L	00-00-00	06-00-00	11	10		32	01-00-00

Controls Summary

Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,305 ft-lbs	25,408 ft-lbs	0.05	5	02-10-15
End Shear	681 lbs	11,571 lbs	0.06	5	01-01-00
Total Load Defl.	L/999 (0.009")	n/a	n/a	13	02-11-08
Live Load Defl.	L/999 (0.007")	n/a	n/a	17	03-00-01
Max Defl.	0.009"	n/a	n/a	13	02-11-08
Span / Depth	7	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	3-1/2" x 3-1/2"	1,156 lbs	0.15	0.08	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 3-1/2"	977 lbs	0.13	0.07	Spruce Pine Fir

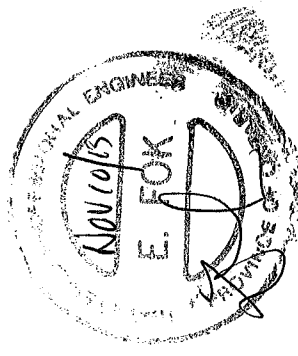
Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum total load deflection criteria.
Calculations assume Member is Fully Braced.
Resistance Factor phi has been applied to all presented results per CSA 086.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.
Design based on Drv Service Condition.
Importance Factor : Normal Part code : Part 4
Deflections less than 1/8" were ignored in the results.

User Notes

AIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS
@ (2") O.C., STAGGERED IN TWO ROWS

Site Copy



T-1511119



Boise Cascade

BC CALC® Design Report



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\14

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

October 24, 2015 11:02:04

uild 4137

38514

Job Name: GREEN VALLEY ESTATES

Address: City, Province, Postal Code: BRADFORD ON,

Customer:

Code reports: CCMC 12472-R

File Name: 260547.bcc

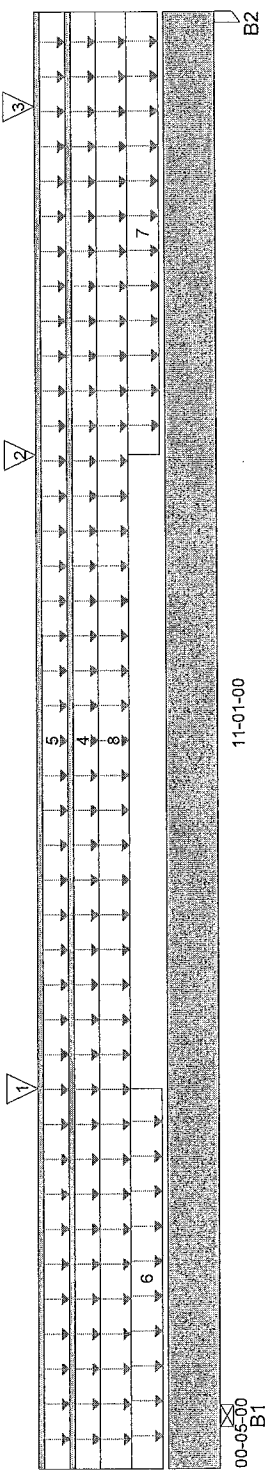
Description: Designs\14

Specifier: S42-16

Designer: MQ

Company: ALPA ROOF TRUSSES

Misc:



Total Horizontal Product Length = 11-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	362 / 0	1,585 / 0	3,333 / 0	
B2, 3-1/2"	379 / 0	1,767 / 0	3,681 / 0	

Load Summary

ag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Conc. Pt. (lbs)	L	03-00-00	03-00-00	91	371	314	1.00 1.15	n/a
2	Conc. Pt. (lbs)	L	08-00-00	08-00-00	91	371	314		n/a
3	Conc. Pt. (lbs)	L	10-09-00	10-09-00	33	291	517		n/a
4	Unf. Lin. (lb/ft)	L	00-00-00	11-06-00	0	100			n/a
5	Unf. Lin. (lb/ft)	L	00-00-00	11-06-00	27	10			n/a
6	Unf. Area (lb/ft^2)	L	00-00-00	03-00-00	11	10	32		03-00-00
7	Unf. Area (lb/ft^2)	L	08-00-00	11-06-00	11	10	32		03-00-00
8	Unf. Area (lb/ft^2)	L	00-00-00	11-06-00	20	20	140		03-03-00

Controls Summary

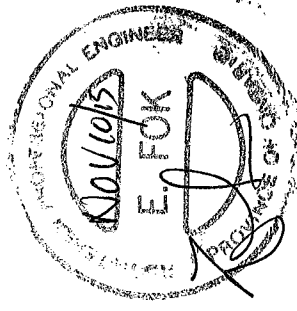
Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Moment	17,671 ft-lbs	25,408 ft-lbs	0.7	30	05-11-10
Neg. Moment	-98 ft-lbs	-25,408 ft-lbs	0	25	00-05-00
End Shear	6,211 lbs	11,571 lbs	0.54	28	10-05-00
Cont. Shear	5,634 lbs	11,571 lbs	0.49	31	01-04-04
Total Load Defl.	L/255 (0.51")	0.543"	0.94	70	05-09-12
Live Load Defl.	L/388 (0.336")	0.362"	0.93	94	05-09-12
Total Neg. Defl.	2xL/1,998 (-0.063")	n/a	n/a	70	00-00-00
Max Defl.	0.51"	1"	0.51	70	05-09-12
Cant. Max Defl.	-0.063"	n/a	n/a	70	00-00-00
Span / Depth	13.7	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Member	Material
B1 Wall/Plate	3-1/2" x 3-1/2"	7,161 lbs	0.95	0.48	Spruce Pine Fir
B2 Post	3-1/2" x 3-1/2"	7,919 lbs	0.37	0.53	Spruce Pine Fir

Notes

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS
@ 12" O.C., STAGGERED IN 2 ROWS



T-1511120



Boise Cascade

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\15

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

October 24, 2015 11:02:04

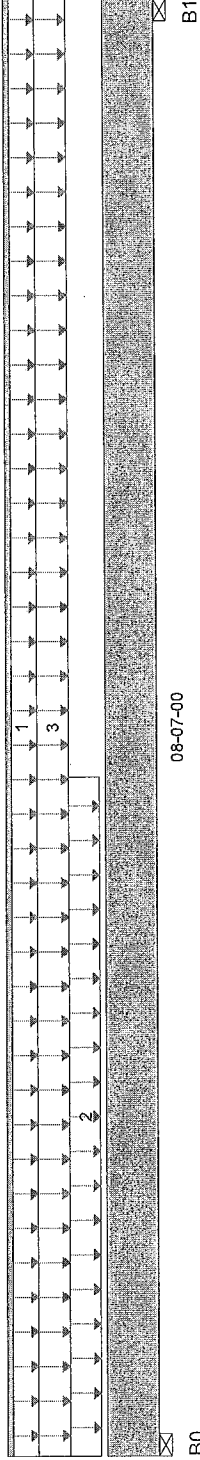


BC CALC® Design Report

uild 4137

Job Name: 38514
Address: GREEN VALLEY ESTATES
City, Province, Postal Code: BRADFORD ON,
Customer:
Code reports: CCMC 12472-R

File Name: 260547.bcc
Description: Designs\15
Specifier: S42-16
Designer: MQ
Company: ALPA ROOF TRUSSES
Misc:



Total Horizontal Product Length = 08-07-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	554 / 0	540 / 0		
B1, 3-1/2"	464 / 0	506 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Lin. (lb/ft)	L	00-00-00	08-07-00	0	60			n/a
	Unf. Area (lb/ft²)	L	00-00-00	04-00-00	40	15			01-00-00
	Unf. Area (lb/ft²)	L	00-00-00	08-07-00	40	20			02-06-00

Controls Summary

Pos.	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,710 ft-lbs	12,704 ft-lbs	0.21	1	04-01-05
End Shear	1,102 lbs	5,785 lbs	0.19	1	01-01-00
Total Load Defl.	L/999 (0.094")	n/a	n/a	4	04-03-05
Live Load Defl.	L/999 (0.046")	n/a	n/a	5	04-02-10
Max Defl.	0.094"	n/a	n/a	4	04-03-05
Span / Depth	10.3	n/a	n/a		00-00-00

Disclosure

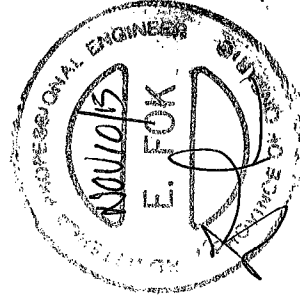
Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of BOISE engineered wood products must be in accordance with current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

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	1,506 lbs	0.4	0.2	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,329 lbs	0.35	0.18	Spruce Pine Fir

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

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum total load deflection criteria.
Calculations assume Member is Fully Braced.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 4
Deflections less than 1/8" were ignored in the results.



T-15112



Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\16



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

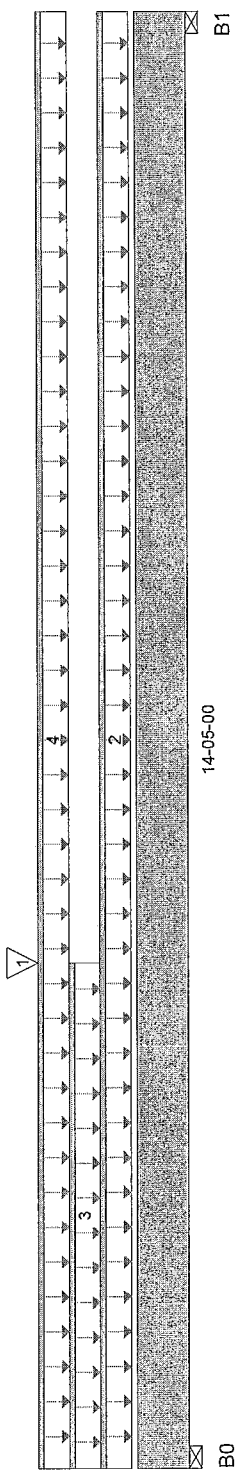
October 24, 2015 11:02:04

BC CALC® Design Report

uild 4137

Job Name: 38514
Address: GREEN VALLEY ESTATES
City, Province, Postal Code: BRADFORD ON,
Customer:
Code reports: CCMC 12472-R

File Name: 260547.bcc
Description: Designs\16
Specifier: S42-16
Designer: MQ
Company: ALPA ROOF TRUSSES
Misc:



Total Horizontal Product Length = 14-05-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	672 / 0	1,017 / 0		
B1, 3-1/2"	406 / 0	799 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
2	Conc. Pt. (lbs)	L	05-00-00	05-00-00	554	540			n/a
3	Unf. Lin. (lb/ft)	L	00-00-00	14-05-00	0	60			n/a
4	Unf. Lin. (lb/ft)	L	00-00-00	05-00-00	27	14			n/a
	Unf. Lin. (lb/ft)	L	00-00-00	14-05-00	27	14			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	8,342 ft-lbs	25,408 ft-lbs	0.33	1	05-00-00
End Shear	2,060 lbs	11,571 lbs	0.18	1	01-01-00
Total Load Defl.	L/426 (0.393")	0.698"	0.56	4	06-09-14
Live Load Defl.	L/1,097 (0.153")	0.465"	0.33	5	06-09-14
Max Defl.	0.393"	1"	0.39	4	06-09-14
Span / Depth	17.6	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	3-1/2" x 3-1/2"	2,279 lbs	0.3	0.15	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 3-1/2"	1,118 lbs	0.23	0.12	Spruce Pine Fir

Notes

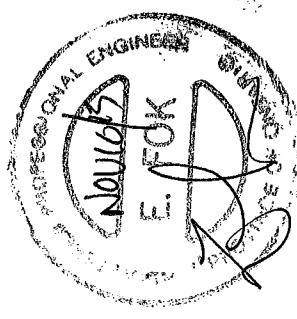
Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum total load deflection criteria.
Calculations assume Member is Fully Braced.
Resistance Factor phi has been applied to all presented results per CSA 086.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.
Design based on Drv Service Condition.
Importance Factor : Normal Part code : Part 4
Deflections less than 1/8" were ignored in the results.

User Notes

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS

@ 12" O.C., STAGGERED IN 2 ROWS

Page 1 of 2



T-151122

Site Copy



Boise Cascade

Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

Floor Beam\17



BC CALC® Design Report

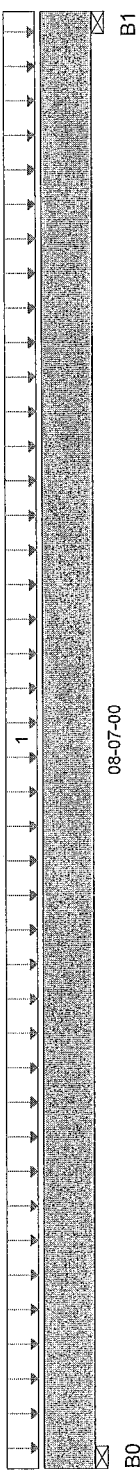
Dry | 1 span | No cantilevers | 0/12 slope (deg)

October 24, 2015 11:02:04

.uild 4137

Job Name: 38514
Address: GREEN VALLEY ESTATES
City, Province, Postal Code: BRADFORD ON,
Customer:
Code reports: CCMC 12472-R

File Name: 260547.bcc
Description: Designs\17
Specifier: S42-16
Designer: MQ
Company: ALPA ROOF TRUSSES
Misc:



Total Horizontal Product Length = 08-07-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	858 / 0	450 / 0		
B1, 3-1/2"	858 / 0	450 / 0		

Load Summary

Tag Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Unf. Area (lb/ft²)	L	00-00-00	08-07-00	40	20		1.00 1.15	05-00-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
os. Moment	3,557 ft-lbs	12,704 ft-lbs	0.28	1	04-03-08
and Shear	1,383 lbs	5,785 lbs	0.24	1	01-01-00
Total Load Defl.	L/999 (0.12")	n/a	n/a	4	04-03-08
Live Load Defl.	L/999 (0.078")	n/a	n/a	5	04-03-08
Max Defl.	0.12"	n/a	n/a	4	04-03-08
Span / Depth	10.3	n/a	n/a		00-00-00

Disclosure

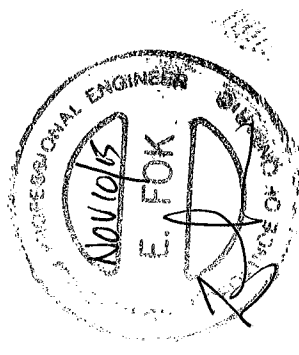
Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of BOISE engineered wood products must be in accordance with current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

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	1,850 lbs	0.49	0.25	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,850 lbs	0.49	0.25	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets User specified (1") Maximum total load deflection criteria.
Calculations assume Member is Fully Braced.
Resistance Factor phi has been applied to all presented results per CSA 086.
BC CALC® analysis is based on Canadian Limit States Design. as per NBCC and CSA 086.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 4
Deflections less than 1/8" were ignored in the results.



Site Copy

T-151123

T1 cant. @ rnd fl. e/ev. c

COMPANY	PROJECT
ALPA RT	38514
MQ	S42-16
Oct. 24, 2015 12:00	SJ CANT..

Nordic Sizer – Canada 6.3

Load	Type	Distribution	Part	Location [ft]	Max/min	Unit
					Start End	
Load1	Live	Full Area	No		15.00	psf
Load2	Dead	Full Area	No		40.00	psf
Load3	Dead	Partial UDL	No	0.00 1.50	10.00 10.00	plf
Load4	Live	Partial UDL	No	0.00 1.50	11.00 11.00	plf
Load5	Dead	Partial UDL	No	0.50 1.50	10.00 10.00	plf
Load6	Snow	Partial UDL	Yes	0.00 1.50	32.5 32.5	plf
Load7	Live	Point	No	0.00	40	lbs
Load8	Dead	Point	No	0.00	40	lbs
Load9	Snow	Point	Yes	0.50	130	lbs
Load10	Dead	Point	No	0.50	130	lbs
Self-weights	Dead	Full UDL	No		1.33	plf

Load	Type	Distribution	Var. Start	Location (ft)	Max. Depth	Unit
Load1	Live	Full Area	No	0.00	40.00	Prof
Load2	Dead	Partial UDL	No	0.00	150.00	100.0
Load3	Dead	Partial UDL	No	0.00	150.00	100.0
Load4	Live	Partial UDL	No	0.00	11.0	11.0
Load5	Dead	Partial UDL	No	0.00	150.0	100.0
Load6	Live	Partial UDL	No	0.00	150.0	100.0
Load7	Live	Point	No	0.00	32.5	32.5
Load8	Dead	Point	No	0.00	44	100
Load9	Snow	Point	Yes	0.00	0.00	100
Load10	Snow	Point	Yes	0.00	130	130
Load11	Wind	Point	Yes	0.00	130	130
Load12	Wind	Point	Yes	0.00	130	130
Load13	Seal-weight	Full UDL	No	0.00	2.7	100
Load14	Seal-weight	Full UDL	No	0.00	2.7	100

Self-weight	Dead	Full UDL	NO	2.7	PLI
Load magnitude does not include Normal Importance factor from 086 Table 4.2.3.2, which is applied during analysis.					

- 14-3-

Unreferenced:	σ	1.5°	14.31°
Dead		548	111
Live		489	121
Ph. Shown:		297	2.5
Total		1517	1.6
Bearing:			630
Resistance			
Tie		3804	1855
Support		6188	2798
Anal/Des		0.40	0.34
Support		0.25	0.23
Load case		#4	1-3/4
Length		3-1/2	1-3/4
Material		5	1
Stiffener		No	No
KB support		1.00	769
Fcp sup		1.19	3.03

K_{exp} sup	1.15
Main stress reaction on at least one element is from a different load combination than the critical one for bearing design shown here due to K_d factor. See Analysis results for reaction from critical load combination.	

Supports: All - Lumber Sill plate, No. 1/No. 2

Supports: All - Lumber Sill plate, No.1/No.2
Total length: 14'-3.0"; 5/8" nailed and glued OSB sheathing
This section PASSES the design code check.

Limit States Design using CSA-O86-09 and Vibration Criteria:

Test Criteria	100-yr. return value			Design and ultimate limit state			Back-calculation/Design		
	Mean	Stdev	W	W ₁	W ₂	W ₃	100-yr	100-yr	100-yr
Shear	Mf	403		Mr	4824				
Moment(+)	Mf	1331		Mr	4824		100-yr		
Displacement	Mf	927		Mr	4500		100-yr		
Interior: Deck									
Top	Mf	1596		Mr	1760		in		0.06
Bottom	Mf	1596		Mr	1760		in		0.06
Web	Mf	1596		Mr	1760		in		0.06
Diaphragm	Mf	1596		Mr	1760		in		0.06
Exterior: Deck									
Top	Mf	1596		Mr	1760		in		0.06
Bottom	Mf	1596		Mr	1760		in		0.06
Web	Mf	1596		Mr	1760		in		0.06
Diaphragm	Mf	1596		Mr	1760		in		0.06
Castil. Deck									
Top	Mf	1596		Mr	1760		in		0.06
Bottom	Mf	1596		Mr	1760		in		0.06
Web	Mf	1596		Mr	1760		in		0.06
Diaphragm	Mf	1596		Mr	1760		in		0.06
Base Defln									
Top	Mf	1596		Mr	1760		in		0.06
Bottom	Mf	1596		Mr	1760		in		0.06
Web	Mf	1596		Mr	1760		in		0.06
Diaphragm	Mf	1596		Mr	1760		in		0.06
Castil. Deck									
Top	Mf	1596		Mr	1760		in		0.06
Bottom	Mf	1596		Mr	1760		in		0.06

Additional Books:

[illegible]

218.1 MILLION
CRITICAL LOAD COMBINATIONS:

Shear	: LC #5	= 1.25D + 1.011.55 + 0.5L
Moment(+)	: LC #2	= 1.25D + 1.5L
Moment(-)	: LC #5	= 1.25D + 1.011.55 + 0.5L
Deflection:	LC #1	= 1.0D (permanent)
	LC #2	= 1.0D + 1.0L (live)
	LC #3	= 1.0D + 1.0L (total)
	LC #2	= 1.0D + 1.0L (bare joist)

Bearing : Support 1 - Lo

Support 2 - LC #1 = 1.2SD + 1.5L + 1.010.5S
Support 3 - LC #2 = 1.2SD + 1.5L
Load Types: D=dead W=wind S=snow E=earthquake
L=live (use occupancy) Ls=live (storage, equipment) f=fire
Load Pattern: S=5/2 L=1.5L - no pattern load in this span
All load combinations (ULC) are listed in the Analytic Current

CALCULATIONS:

Deflection: E1comp = 268e06 lb-in2 K= 4.94e06 lbs
"tension" deflection = Deflection from all non-dead loads live. wind.

Design Notes:

1. Design and design team is in accordance with the 2010 National Building Code of Canada (NBC Part 4) and the CSA C906-09 Engineering Design in Wood standard, which includes Update No. 1.
2. Design and design team is responsible for the structural adequacy of this component based on the design criteria and loadings shown.
3. Refer to technical documentation for installation guidelines and construction details.
4. Nottke H-locks are listed in CCMC evaluation report 13032-R.
5. Joints shall be laterally supported at supports and continuously along the compression edge.
6. The design assumptions and specifications have been provided by the client. Any design deviations resulting from faulty or incomplete information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis does not constitute a record of the design.
7. The design team is responsible only for the structural adequacy of this component based on the design criteria and loadings shown.



COMPANY ALPA RT MQ	PROJECT 38514 S42-16 DJ CANT..wwb
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COMPANY ALPA RT MQ	PROJECT 38514 S42-16 DJ CANT..wwb
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T2 DIS cont. @ 2nd Fl. elev. c

Design Check Calculation Sheet
Nordic Sizer – Canada 6.3

Nordic Sizer – Canada 6.3

Load	Type	Distribution	Per- cent	Location [in] Start End	Magnitude Start End	Unit
Load1	Live	Full Area	No	0.00	45.00	psf
Load2	Dead	Partial UDL	No	0.00	15.00	100.0
Load3	Live	Partial UDL	No	0.00	11.0	11.0
Load4	Live	Partial UDL	No	0.00	11.0	11.0
Load5	Dead	Partial UDL	No	0.00	1.50	10.0
Load6	Snow	Partial UDL	Yes	0.00	32.5	32.5
Load7	Wind	Point	No	0.00	4.0	lbs
Load8	Dead	Point	No	0.00	4.0	lbs
Load9	Snow	Point	Yes	0.00	130	lbs
Load10	Dead	Point	No	0.00	133	lbs
Load11	Wind	Partial UDL	No	0.00	133	lbs

Load magnitude does not include Normal Importance factor from *ASCE Table 4.3.2.2*. Wind is applied during analysis.

Maximum Reactions (lbs), Bearing Resistances (lbs) and Bearing Lengths (in) :

U		1-5*		14-21*	
Unfasten/rech					
Dead		559			128
Live		489			128
Shed		197			218
Fastened:					
Total		1544			651
Bearing:					
Resistance		7658			3709
Support		12273			5595
Ama./Eas		0.20			0.18
Solest:		0.13			0.12
Load case		#4			1-3/2
Length		3-1/2			1-3/4
Stiffness		3-1/2			No
Stiffened		3-1/2			No
RB support		1.00			1.00
fcg sup		769			1.03

$K_{\text{sep sup}}$	1.15
----------------------	------

Maximum reaction on at least one support is from a different load combination than the critical one for bearing design, shown here, due to Kd factor. See Analysis results for reaction from critical load combination.

Nordic 9-1/2" NI-40x 2-ply Floor joist @ 16" o.c.

Supports: All - Lumber Sill plate, No. 1/No.2
Total length: 14'-3.0"; 5/8" nailed and glued OSB sheathing
This section PASSES the design code check.

heathing

This section PASSES the design code check.

THIS SECTION PASSES THE DESIGN CODE CHECK.

Limit States Design using CSA-Q86-09 and Vibration Criterion:

[illegible]

Additional Data:

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Bearing : Support 1 - LC

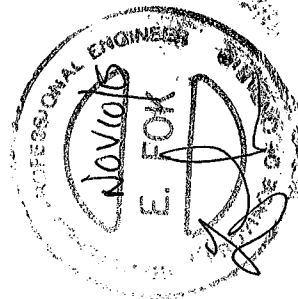
Support 2 - LC #4 = 1.25D + 1.2L + (1.0)0.53
Support 3 - LC #2 = 1.25D + 1.5L
Load Types: D=dead W=wind S=snow H=earth groundwater E=earthquake

L=live(use, occupancy) Le=live(storage, equipment) f=fire
Load Patterns: s=S/2 L=L+Ls _=no pattern load in this span
All Load Combinations (LCa) are listed in the Analysis output

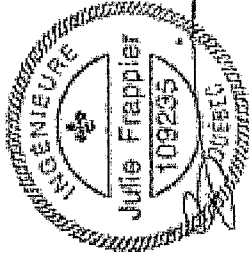
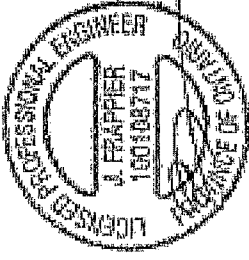
All Load Combinations (LCs) are listed in the Analysis output
 CALCULATIONS:
 Deflection: E1comp = 247e06 lb-in2/ply K= 4.94e06 lbs/ply
 active deflection = Deflection from all non-dead loads (live wind, snow,

Design Notes:

- Design Notes:**
1. All design and details are in accordance with the 2010 National Building Code of Canada (NBC Part 4) and the CSA C98-06 Engineering Design in Wood standard, which includes Update No.1.
 2. Please verify that the default deflection limits are appropriate for your application.
 3. Refer to technical documentation for installation guidelines and construction details.
 4. Nordic Joists are listed in CMCO evaluation report 13302-R.
 5. Details shall be laterally supported at supports and continuously along the compression edge.
 6. The design engineer shall confirm the suitability of the design assumptions made. Nordic Structures is responsible for providing the information required to ensure the structural adequacy of the component based on the design criteria and loadings shown. This analysis does not constitute a record of the work performed by the designer.



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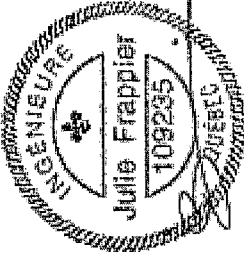
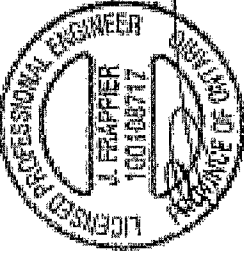
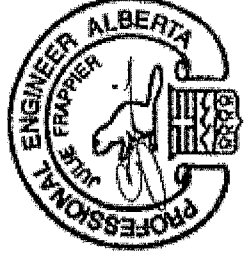
Maximum Floor Spans

Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/360 Deflection Limit
5/8" OSB G&N Sheathing

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

1. Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 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/360 and a total load deflection limit of L/240.
2. Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
3. Minimum bearing length shall be 1-3/4 inches for the end bearings.
4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
5. This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and OBC 2012.
6. Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



Maximum Floor Spans

Live Load = 40 psf, Dead Load = 30 psf
Simple Spans, L/360 Deflection Limit
5/8" OSB G&N Sheathing

Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing		On Centre Spacing		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"	13'-11"	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
11-7/8"	NI-80	17'-3"	16'-3"	15'-8"	N/A	17'-8"	16'-7"	16'-0"	N/A
	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
14"	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
	NI-40x	20'-1"	18'-7"	17'-10"	N/A	20'-10"	19'-4"	18'-6"	N/A
16"	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
	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

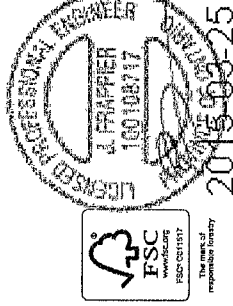
Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing		On Centre Spacing		On Centre Spacing		On Centre Spacing	
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	16'-4"	14'-10"	13'-11"	N/A	16'-4"	14'-10"	13'-11"	N/A
	NI-40x	17'-11"	16'-10"	15'-7"	N/A	18'-5"	16'-10"	15'-7"	N/A
	NI-60	18'-2"	17'-1"	16'-1"	N/A	18'-7"	17'-2"	16'-1"	N/A
	NI-70	19'-2"	17'-10"	17'-2"	N/A	19'-7"	18'-3"	17'-7"	N/A
11-7/8"	NI-80	19'-5"	18'-0"	17'-4"	N/A	19'-10"	18'-5"	17'-8"	N/A
	NI-20	19'-6"	17'-10"	16'-9"	N/A	19'-8"	17'-10"	16'-9"	N/A
	NI-40x	21'-0"	19'-6"	17'-9"	N/A	21'-7"	19'-6"	17'-9"	N/A
	NI-60	21'-4"	19'-9"	18'-11"	N/A	21'-11"	20'-4"	19'-4"	N/A
14"	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
	NI-40x	23'-7"	21'-5"	19'-6"	N/A	24'-3"	21'-5"	19'-6"	N/A
16"	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
	NI-60	26'-5"	24'-6"	23'-4"	N/A	27'-2"	25'-3"	24'-1"	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/360 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.



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Refer to the Installation Guide for Residential Floors for additional information.
ICMC EVALUATION REPORT 13032-R



WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

- The distance between the inside edge of the support and the centerline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
- Lip top and bottom flanges must NEVER be cut, notched, or otherwise modified. Whenever possible, field-cut holes should be centered on the middle of the web.
- The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-joist web shall equal the clear distance between the flanges of the I-joist minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the hole or opening and the adjacent I-joist flange.

TABLE 1

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

Joist Depth	Joist Series	Minimum Distance from Inside Face of Any Support to Centre of Hole (ft - in.)											
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4
9-1/2"	NL-20	0-7"	1-6"	2-10"	4-3"	5-8"	6-0"	---	---	---	---	---	12-3/4"
	NL-40x	0-7"	1-6"	3-0"	4-4"	6-0"	6-4"	---	---	---	---	---	---
	NL-60	1-3"	2-6"	4-0"	5-4"	7-0"	7-5"	---	---	---	---	---	---
	NL-70	2-0"	3-4"	4-9"	6-3"	8-0"	8-4"	---	---	---	---	---	---
11-7/8"	NL-20	0-7"	3-6"	5-0"	6-5"	8-0"	8-4"	---	---	---	---	---	---
	NL-40x	0-7"	1-0"	2-4"	3-8"	4-0"	5-0"	6-6"	7-9"	---	---	---	---
	NL-60	0-7"	0-8"	1-3"	2-8"	4-3"	5-9"	7-3"	8-10"	10-0"	---	---	---
	NL-70	1-3"	2-6"	4-0"	5-4"	6-9"	7-3"	8-4"	10-0"	11-2"	---	---	---
14"	NL-20	0-7"	1-6"	2-10"	4-2"	5-6"	7-0"	8-5"	10-3"	11-4"	---	---	---
	NL-40x	0-7"	0-8"	1-5"	3-2"	4-10"	5-4"	6-9"	8-9"	10-2"	---	---	---
	NL-60	0-7"	0-8"	0-9"	2-5"	4-4"	4-9"	6-3"	---	---	---	---	---
	NL-70	0-7"	0-8"	1-0"	2-4"	2-9"	3-9"	5-2"	6-0"	8-3"	10-2"	---	---
16"	NL-20	0-7"	0-8"	1-0"	2-4"	3-2"	4-2"	5-6"	6-4"	7-0"	8-5"	9-8"	10-2"
	NL-40x	0-7"	0-8"	1-0"	2-4"	3-2"	4-2"	5-6"	6-4"	7-0"	8-5"	9-8"	10-2"
	NL-60	0-7"	1-0"	2-3"	3-6"	4-10"	5-3"	6-6"	8-0"	9-0"	10-8"	12-0"	13-9"
	NL-70	0-7"	1-3"	2-6"	3-10"	5-3"	5-6"	6-6"	8-0"	9-0"	10-8"	12-0"	13-9"

1. Above table may be used for I-joist spacing of 24 inches on centre or less.

2. Hole location distance is measured from inside face of supports to centre of hole.

3. Distances in this chart are based on uniformly loaded joists.

4. The above table is based on the I-joists being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans, contact your local distributor.

FIELD-CUT HOLE LOCATOR

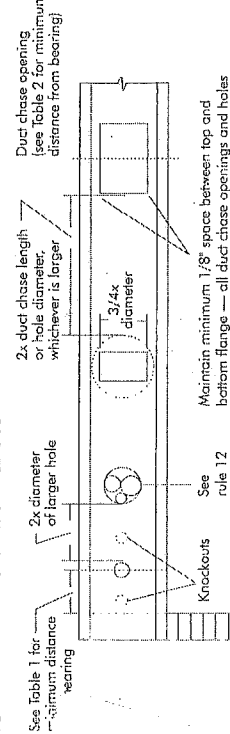


FIGURE 7

SAFETY AND CONSTRUCTION PRECAUTIONS



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



Do not use building materials over unheated I-joists. Once sheathed, do not over-stress I-joists with concentrated loads from building materials.

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

AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:

- Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bracing at joist ends. When I-joists are applied continuously over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
- 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.
- For cantilevered I-joists, brace top and bottom flanges, and brace ends with dense panels, rim board, or cross-bracing.
- 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.
- Never install a damaged I-joist.

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

TABLE 2

DUCT CHASE OPENING SIZES AND LOCATIONS
Simple Span Only

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

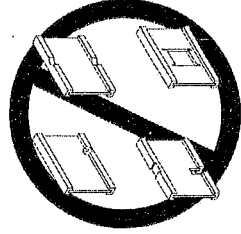
1. Above table may be used for I-joist spacing of 24 inches on centre or less.

2. Duct chase opening location distance is measured from inside face of supports to centre of opening.

3. The above table is based on simple-span joists only. For other applications, contact your local distributor.

4. Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480.

5. The above table is based on the I-joists being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans, contact your local distributor.



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

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

Holes in webs should be cut with a sharp saw.

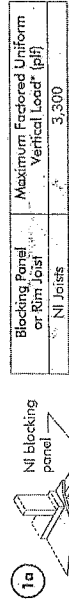
For rectangular holes, avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling a 1-inch diameter hole in each of the four corners and then making the cuts between the holes is another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



PRODUCT WARRANTY

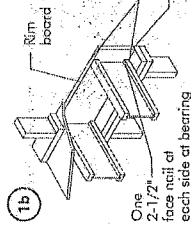
Chantiers Chibougamau guarantees that, in accordance with our specifications, Nordic products are free from manufacturing defects in material and workmanship.

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



*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.

Attach I-joist to top plate per detail 1b



Minimum bearing length shall be 1-3/4" for the intermediate bearings when applicable.

Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,050

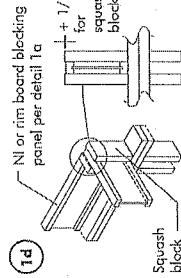
The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

One 2-1/2" wire or spiral nail at top and bottom flange

Attach rim board to top plate using 2-1/2" wire or spiral be-nails at 6" o.c.

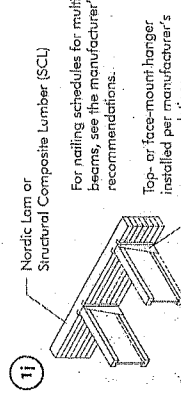
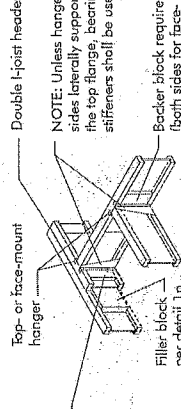
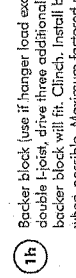
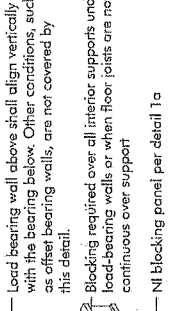
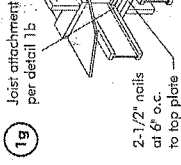
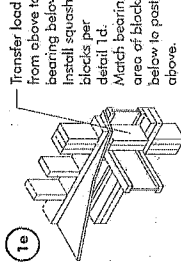
To avoid splitting flange, start nails at least 1-1/2" from end of I-joist. Nails may be driven at an angle to avoid splitting of bearing plate.

Minimum bearing length shall be 1-3/4" for the intermediate bearings when applicable.



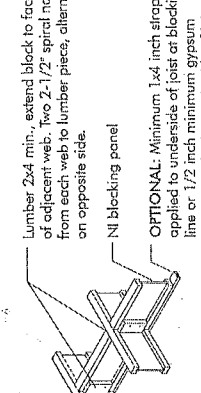
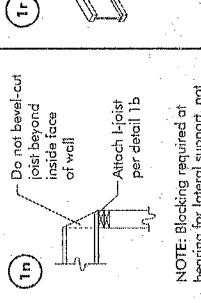
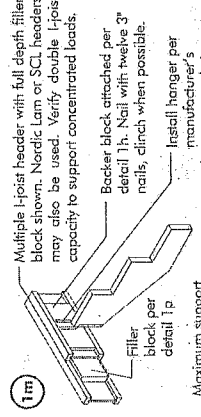
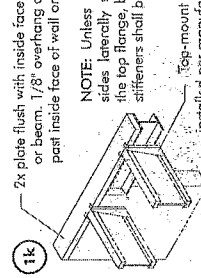
Pair of Squash Blocks	Maximum Factored Vertical Load per Pair or Squash Blocks (lbs)
3-1/2" wide	5,500
5-1/2" wide	8,500
2x Lumber	4,300
1-1/8" Rim Board Plus	6,600

Provide lateral bracing per detail 1a or 1b

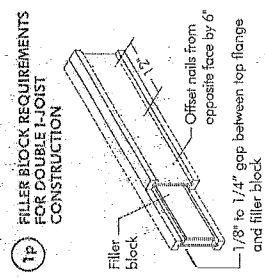


* Minimum grade for backer block material shall be S-PF No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-Q325 or CAN/CSA-Q437 Standard.
** For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth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

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

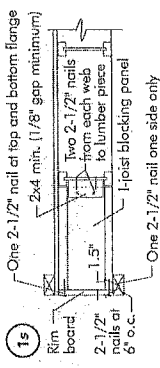


NOTE: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.



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

Flange Size	Net Depth	Filler Block Size
2-1/2" x 1-1/2"	9-1/2"	2-1/8" x 6"
3-1/2" x 1-1/2"	11-7/8"	2-1/8" x 8"
3-1/2" x 1-1/2"	14"	2-1/8" x 10"
3-1/2" x 1-1/2"	16"	2-1/8" x 12"
3-1/2" x 1-1/2"	18"	3" x 6"
3-1/2" x 1-1/2"	20"	3" x 8"
3-1/2" x 1-1/2"	22"	3" x 10"
3-1/2" x 1-1/2"	24"	3" x 12"
3-1/2" x 1-1/2"	26"	3" x 14"
3-1/2" x 1-1/2"	28"	3" x 16"



All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 2" (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.

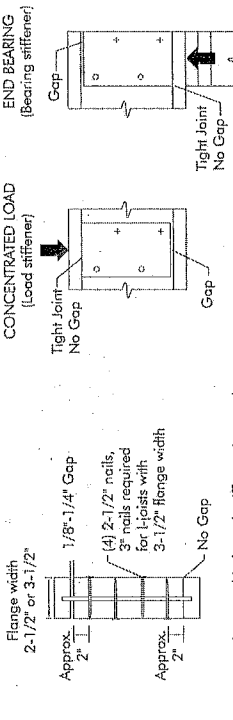
WEB STIFFENERS

RECOMMENDATIONS:

- A bearing stiffener is required in all engineered applications with factored reactions greater than shown in the I-joist properties table found in the I-joist Construction Guide (C101). The gap between the stiffener and the flange is at the top.
- A bearing stiffener is required when the I-joist is supported in a hanger and the sides of the hanger do not extend up to, and support, the top flange. The gap between the stiffener and flange is at the top.
- A load stiffener is required at locations where a factored concentrated load greater than 2,370 lbs is applied to the top flange between supports, or in the case of a cantilever, anywhere between the cantilever tip and the support. These values are for standard term load duration, and may be adjusted for other load durations as permitted by the code. The gap between the stiffener and the flange is at the bottom.

WEB STIFFENER INSTALLATION DETAILS

CONCENTRATED LOAD (Bearing stiffener)



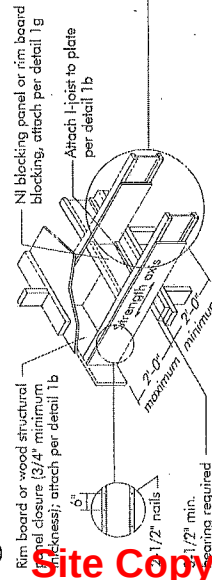
Flange Width	Web Stiffener Size Each Side of Web
2-1/2"	1" x 2-5/16" minimum width
3-1/2"	1-1/2" x 2-5/16" minimum width

STIFFENER SIZE REQUIREMENTS

See the adjacent table for web stiffener size requirements

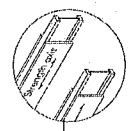
CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

Method 1 — SHEATHING REINFORCEMENT ONE SIDE



Method 2 — SHEATHING REINFORCEMENT TWO SIDES

Use same installation as Method 1 but reinforce both sides of I-joist with sheathing.



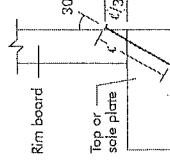
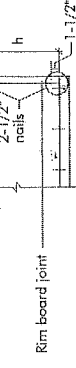
RIM BOARD INSTALLATION DETAILS

ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

Rim Board Joint Between Floor Joists



Rim Board Joint at Corner



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 toe grain horizontal. Attach I-joist to plate at all supports per detail 1b. Verify reinforced I-joist capacity.

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

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

Attach I-joists to plate at all supports per detail 1b

Cantilever extension



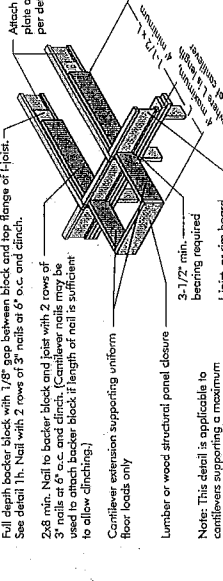
CAUTION: Cantilevers formed this way must be carefully detailed to prevent moisture intrusion into the structure and potential decay of untreated l-joint extensions.

be carefully detailed to prevent moisture intrusion into the structure and potential decay of untreated l-joint extensions.

Figure 1. The effect of the concentration of the inhibitor on the rate of polymerization of α -methylstyrene in the presence of SnCl_4 at 25°C . The concentration of α -methylstyrene was 1.0 mol/L, and the concentration of SnCl_4 was 0.01 mol/L. The concentration of the inhibitor was 0.001 mol/L (○), 0.002 mol/L (□), 0.004 mol/L (△), 0.006 mol/L (◇), 0.008 mol/L (▽), 0.01 mol/L (×), 0.02 mol/L (●), 0.04 mol/L (◊), 0.06 mol/L (◐), 0.08 mol/L (◑), 0.1 mol/L (◒), 0.2 mol/L (◓), 0.4 mol/L (◔), 0.6 mol/L (◕), 0.8 mol/L (◖), 1.0 mol/L (◗).

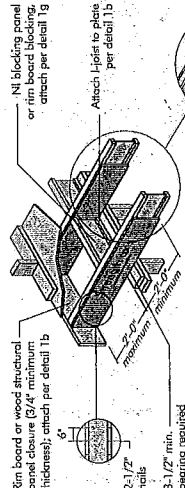
(3b) LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)

Full depth backer block with 1/8" gap between block and top flange.
See detail 1b Nail with 2 rows of 3" nails at 6" o.c. and clinch.



Note: This detail is applicable to cantilevers supporting a maximum specified uniform live load of 60

Method 1 — SHEATHING REINFORCEMENT ONE SIDE

FIG. 1
E SIDE

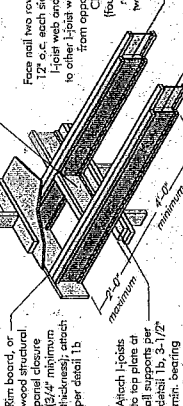
Method 2 — SHEATHING REINFORCEMENT TWO SIDES

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

Note: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4") required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2" nails at 6" o.c., top and bottom flanges. Install with face grain horizontal. Attach I-joist to plate at all supports per detail 10. Verify engineered I-joist capacity.

4b) Alternate Method 2 — DOUBLE I-JOIST

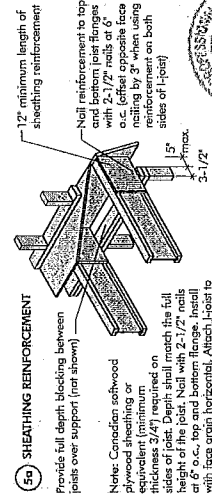
blocking, attach per detail 11 g



Block I-joists together with filler blocks for the full length of the reinforcement. For I-joist flange widths greater than 3 inches place an additional row of 3" nails along the

C

5a SHEATHING REINFORCEMENT



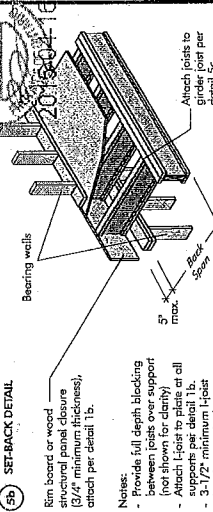
Note: Canadian softwood plywood sheathing or equivalent (minimum thickness $3/4"$) required on sides of joist. Depth shall match the full height of the joist. Nail with $2-1/2"$ nails at $6"$ o.c., top and bottom flange. Install with face grain horizontal. Attach 1-joist to 1-support. Verify supports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

SET BACK DETAIL

5D
SELF-BACK DETAIL

Notes:

- Notes:**
- Provide full depth blocking over joists
 - (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.

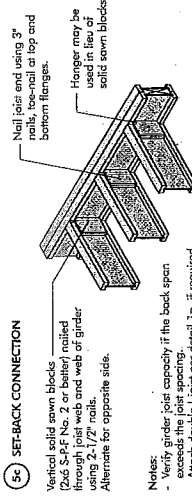


FIGURE 4 (continued)

FIGURE 4 (continued)



CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH Line	JOIST SPAN (ft)	ROOF LOADING UNFACTORED	
		(LL=30 psf DL=15 psf) JOIST SPACING (in)	(LL=20 psf DL=15 psf) JOIST SPACING (in)
6" x 7"	24	12	12
	30	12	12
	36	12	12
	42	12	12
8" x 10"	24	12	12
	30	12	12
	36	12	12
	42	12	12
10" x 14"	24	12	12
	30	12	12
	36	12	12
	42	12	12
12" x 16"	24	12	12
	30	12	12
	36	12	12
	42	12	12

[illegible]

FIGURE 5 (continued)

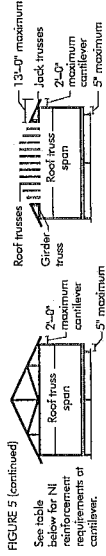


FIGURE 5 (continued)

See table below for N1 reinforcement requirements at roof truss span, roof truss span, and roof truss span.

Roof trusses

Girder

Roof truss span

Jack trusses

2-in. maximum roof truss span

2-in. maximum roof truss span

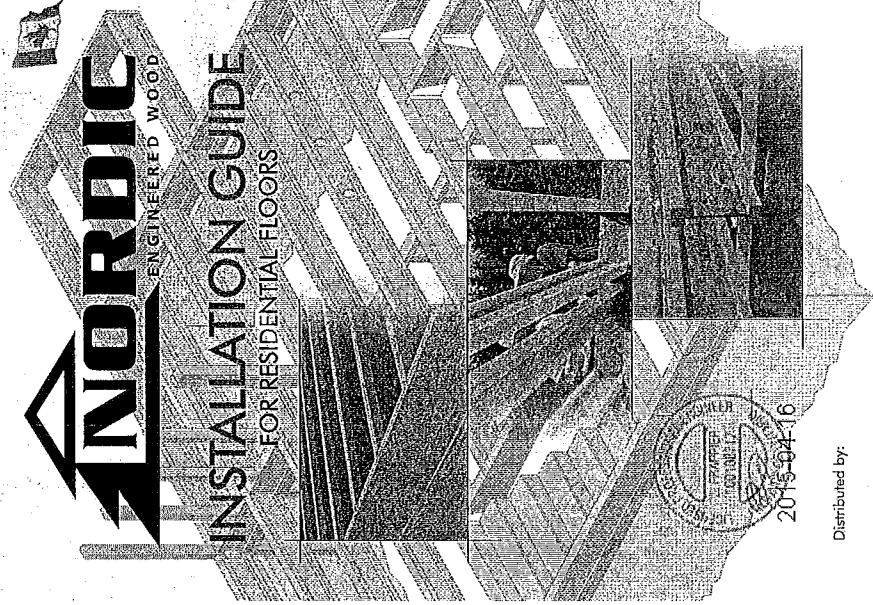
5-in. maximum roof truss span

13-in. maximum roof truss span

BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

[illegible]

1. N = No reinforcement required.
2. N = 1 ft (305 mm) vertical reinforcement with 3/4" wood structural studs.
3. N = 1 ft (305 mm) vertical reinforcement with 3/4" wood structural studs may be required.
4. For conventional roof construction using a ridge beam, the ridge beam is supported by the existing cripple studs supporting wall and the ridge beam.
5. The roof is framed using a ridge board, the floor joist is equivalent to the ridge beam.
6. The roof is framed with the supporting wall truss is used.
7. Cantilevered joint supporting girder trusses or truss is used.



INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



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SAFETY AND CONSTRUCTION PRECAUTIONS



WARNING
Joists are not stable until completely installed, and will not carry any load until fully braced and sheathed.

Avoid Accidents by Following these Important Guidelines:

1. Brace and nail each I-Joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bracing at joist ends. When I-Joists are applied continuously for interior supports and/or spanning, blocking must be planned at that location, blocking will be required at the interior support.
2. When the building is completed, the floor sheathing will provide lateral bracing for the I-Joists. Until then, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-Joist rollover or buckling.
- Temporary bracing or struts must be 1 1/4 inch minimum, at least 8 feet long and spaced no more than 8 feet on center, 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-bracing.
4. Install and fully nail permanent sheathing to each I-Joist before placing loads on the floor system. Then, stack building materials over beams or walls only.
5. Never install a damaged I-Joist.



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

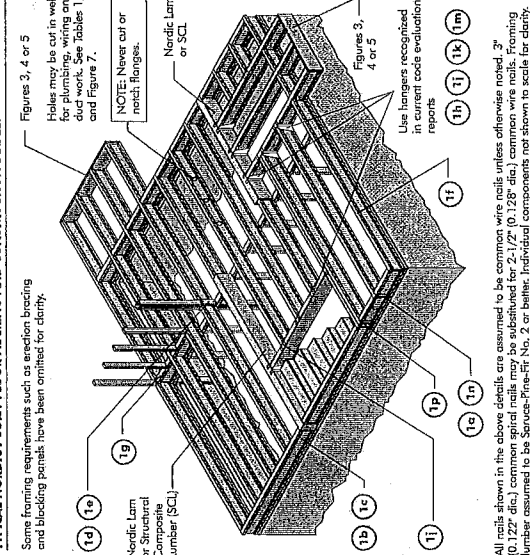
STORAGE AND HANDLING GUIDELINES

1. Bundle wrap can be slippery when wet. Avoid walking on wrapped bundles.
2. Store, stack, and handle I-Joists vertically and level only.
3. Always stack and handle I-Joists in the upright position only.
4. Do not store I-Joists in direct contact with the ground and/or flange.
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-Joist 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.

INSTALLING NORDIC I-JOISTS

1. Before laying out floor system components, verify that I-Joist flange widths match hanger widths. If not, contact 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, and other equipment. Do not apply 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. Retrain ends of floor joists to prevent rollover. Use rim board, rim joist or I-Joist blocking panels.
11. For I-Joists installed over and beneath bearing walls, use full depth blocking panels, rim board, or squish blocks (cripple members) to transfer gravity loads through the floor system to the wall or foundation below.
12. Due to shrinkage, common framing lumber set on edge may never be used as blocking or rim boards. I-Joist blocking panels or other engineered wood products - such as rim board - must be cut to fit between the I-Joists, and an I-Joist-compatible depth selected.
13. Provide permanent lateral support of the bottom flange of all I-Joists at interior supports of multiple-span joists. Similarly support the bottom flange of all cantilevered I-Joists at the end support next to the cantilever extension. In the completed structure, the gypsum wallboard ceiling provides this lateral support. Until the final finished ceiling is applied, temporary bracing or struts must be used.
14. If square-edge panels are used, edges must be supported between I-Joists with 2x4 blocking. Glue panels to blocking to minimize squeaks. Blocking is not required under structural finish flooring, such as wood strip flooring, or if a separate underlayment layer is installed.
15. Nail joists. Square nails installed to the flange's top face in accordance with the applicable building code requirements or approved building plans.

TYPICAL NORDIC I-JOIST FLOOR FRAMING AND CONSTRUCTION DETAILS



All walls shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.125 dia.) common spiral nails may be substituted for 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.

1a

Attach I-Joist to top plate per detail 1b

Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load (plf)
Ni Joist	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 post, header, or rafter. For concentrated vertical load transfer, see detail 1d.

1b

One 2-1/2" face nail at each side of bearing

Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load (plf)
1-1/8" Kim Board Plus	3,190

*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 post, header, or rafter. For concentrated vertical load transfer, see detail 1d.

1c

Attach rim joist to floor joist with one nail at top and bottom. Nail must provide 1 inch minimum penetration into floor joist. Toe-nailing may be used.

1d

Attach rim joist to floor joist with one nail at top and bottom. Nail must provide 1 inch minimum penetration into floor joist. Toe-nailing may be used.

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

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

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

6. Tables are based on Limit States Design per CAN/CSA Q86-09 Standard and NBC 2010

WEB STIFFENERS

CCMC EVALUATION REPORT 13032-R

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

See table below for web stiffener size requirements

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

Notes:

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

1/2" to 1/4" gap between top flange and filler block

1/2" gap between bottom flange and filler block

Filler block

Offset nails from opposite faces by 6"

FILLER BLOCK REQUIREMENTS FOR DOUBLE JOIST CONSTRUCTION

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

1r

Lumber 2x4 min., extend block to face of adjacent web.

Two 2-1/2" spiral nails from each web to lumber piece, on opposite side.

Blocking panel

Optional: Minimum 1x4, not less than 1/2" thick, nail to blocking plate or 1x2 min. minimum joist at blocking end to underside of joists.

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

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

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

* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-O325 or CAN/CSA-O437 Standard.

** For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".

13

One 2-1/2" nails at top and bottom flange

Two 2-1/2" nails from each web to lumber piece

2x4 min. (1/8" gap minimum)

Rim board

1-ply blocking panel

One 2-1/2" nails one side only

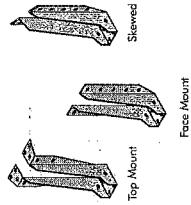
2-1/2" nails at 6" o.c.

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 notes are common to this detail.

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



Face Mount

Face Mount

Face Mount