

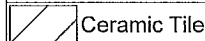
TH-6E ELEV. A & B
FIRST FLOOR FRAMING
& WOD & WOB CONDITIONS

REVISED : JUL 23, 2018

FLOOR LOADING:

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

Ceramic Tile



Products				
PlotID	Length	Product	Plies	Net Qty
J1	10-00-00	9 1/2" NI-40x	1	9
J2	20-00-00	11 7/8" NI-40x	1	17
J3	20-00-00	11 7/8" NI-40x	2	8
J4	19-00-00	11 7/8" NI-40x	1	6
J5	16-00-00	11 7/8" NI-40x	1	6
J6	10-00-00	11 7/8" NI-40x	1	6
J7	6-00-00	11 7/8" NI-40x	1	3
J8	5-00-00	11 7/8" NI-40x	1	3
J9	3-00-00	11 7/8" NI-40x	1	2
B10B	20-00-00	VERSALAM-12 2.0E	3	3
B8A	10-00-00	VERSALAM-12 2.0E	1	1
B9B	10-00-00	VERSALAM-12 2.0E	1	1
B7A	6-00-00	VERSALAM-12 2.0E	1	1
B6A	4-00-00	VERSALAM-12 2.0E	1	1

HANGER SCHEDULE

H1-----IUS2.56/11.88
 H2-----HUS1.81/10

RIMBOARD

1-1/8" X 9 1/2" O.S.B
 1-1/8" X 11 7/8" O.S.B

SUBFLOOR : 3/4" 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.

T-18071984-T-18071997
 T-1405164-T-1405178

JT/PL: 44997/99072
 LI: 300553
 297418(241750)

Builder: Bayview Wellington

Project: Green Valley Estates East

Location: Bradford

Date: April 24/18

Designer: SG

Sheet: 1 of 4

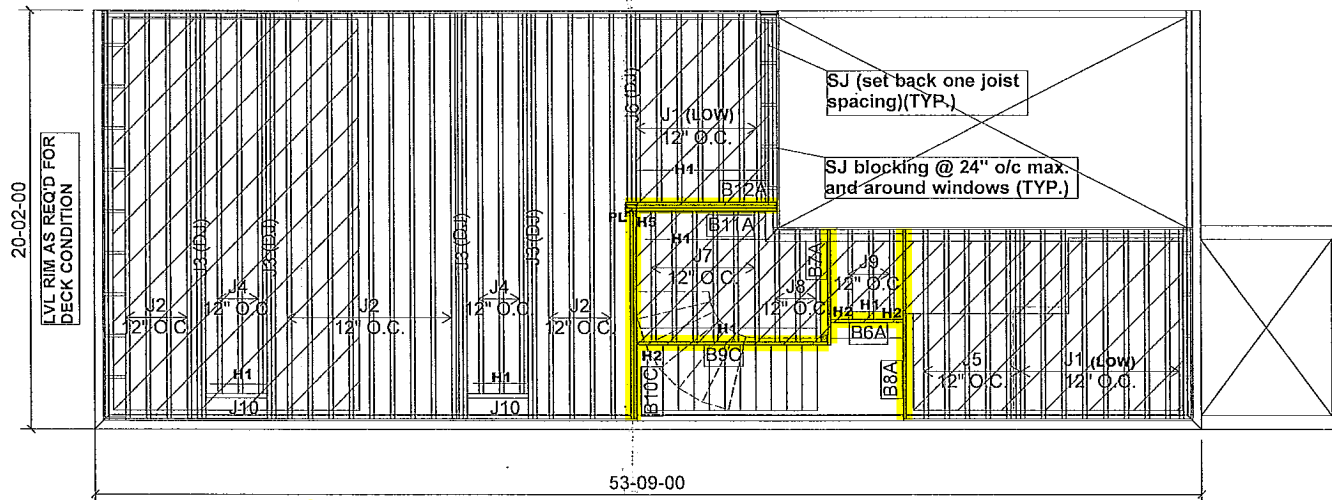
Alpa Roof Trusses Inc.
 Maple, Ontario

Salesperson: Mario
 Tamarack Lumber

TOWN OF BRADFORD WEST GWILLIMBURY
 BUILDING DEPARTMENT
 PLANS EXAMINED
 ONTARIO BUILDING CODE APPLIES
 DATE: 2018-12-11

INSPECTOR: BG

SITE COPY



TH-6E ELEV. A & B
FIRST FLOOR FRAMING
SUNKEN CONDITION
& WOD & WOB CONDITIONS
 REVISED : JUL 23, 2018

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

Ceramic Tile
 Ceramic Tile

Products				
PlotID	Length	Product	Plies	Net Qty
J1	10-00-00	9 1/2" NI-40x	1	16
J2	20-00-00	11 7/8" NI-40x	1	17
J3	20-00-00	11 7/8" NI-40x	2	8
J4	19-00-00	11 7/8" NI-40x	1	6
J5	10-00-00	11 7/8" NI-40x	1	6
J6	10-00-00	11 7/8" NI-40x	2	2
J7	7-00-00	11 7/8" NI-40x	1	6
J8	6-00-00	11 7/8" NI-40x	1	3
J9	5-00-00	11 7/8" NI-40x	1	3
J10	3-00-00	11 7/8" NI-40x	1	2
B10C	11-00-00	VERSALAM-12 2.0E	2	2
B8A	10-00-00	VERSALAM-12 2.0E	1	1
B9C	10-00-00	VERSALAM-12 2.0E	1	1
B12A	8-00-00	VERSALAM-10 2.0E	1	1
B11A	8-00-00	VERSALAM-12 2.0E	2	2
B7A	6-00-00	VERSALAM-12 2.0E	1	1
B6A	4-00-00	VERSALAM-12 2.0E	1	1

HANGER SCHEDULE

H1-----IUS2.56/11.88
 H2-----HUS1.81/10
 H5-----HUC412

RIMBOARD

1-1/8" X 9 1/2" O.S.B
 1-1/8" X 11 7/8" O.S.B

SUBFLOOR : 3/4" 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.

JT/PL: 44997/99072
 LI: 300553
 297418(241750)

Builder: Bayview Wellington

Project: Green Valley Estates East

Location: Bradford

Date: April 24/18

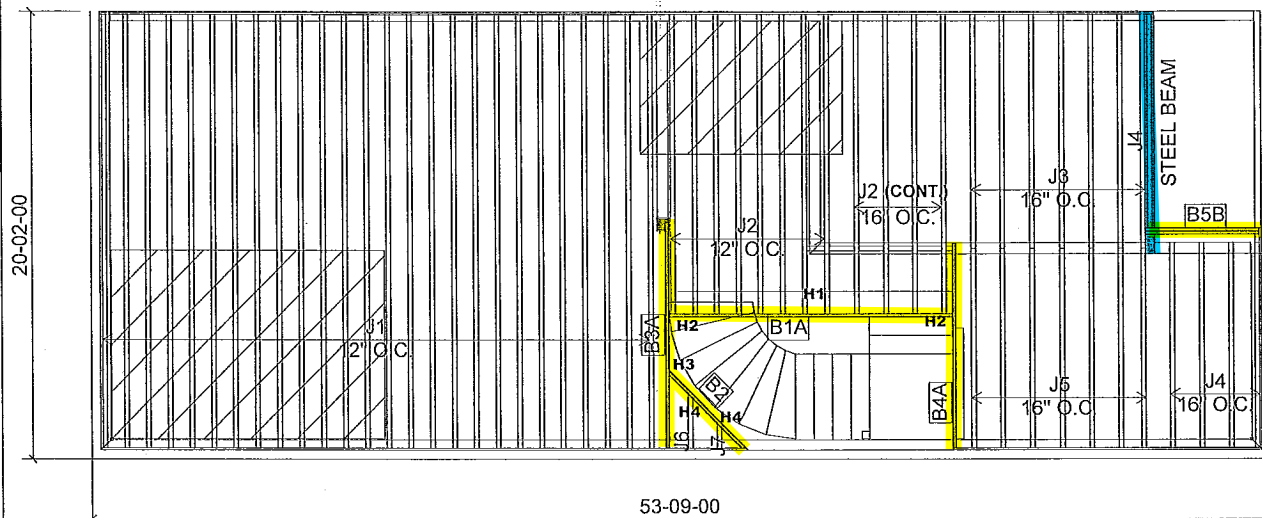
Designer: SG

Sheet: 2 of 4

Alpa Roof Trusses Inc.
 Maple, Ontario

Salesperson: Mario
 Tamarack Lumber

SITE COPY

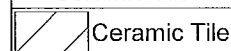


TH-6E ELEV. A
SECOND FLOOR FRAMING

FLOOR LOADING:

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

Ceramic Tile



Products				
PlotID	Length	Product	Plies	Net Qty
J1	20-00-00	11 7/8" NI-40x	1	26
J2	14-00-00	11 7/8" NI-40x	1	12
J3	11-00-00	11 7/8" NI-40x	1	7
J4	10-00-00	11 7/8" NI-40x	1	5
J5	9-00-00	11 7/8" NI-40x	1	7
J6	3-00-00	11 7/8" NI-40x	1	1
J7	2-00-00	11 7/8" NI-40x	1	1
B1A	13-00-00	VERSALAM-12 2.0E	1	1
B3A	11-00-00	VERSALAM-12 2.0E	1	1
B4A	10-00-00	VERSALAM-12 2.0E	1	1
B5B	6-00-00	VERSALAM-12 2.0E	2	2
B2	5-00-00	VERSALAM-12 2.0E	1	1

HANGER SCHEDULE

H1-----IUS2.56/11.88
H2-----HUS1.81/10
H3-----SUL1.81/9
H4-----SUR2.56/11

RIMBOARD

1-1/8" X 11 7/8" O.S.B

SUBFLOOR : 3/4" 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 continuous joists (along bearing) and rimboard closure at ends.

Do not scale - refer to architectural plans for dimensions.

July 23, 2018 99072

JT/PL: 44997/97794
300553
LI: 297418(241750)

Builder: Bayview Wellington

Project: Green Valley Estates East

Location: Bradford

Date: April 24/18

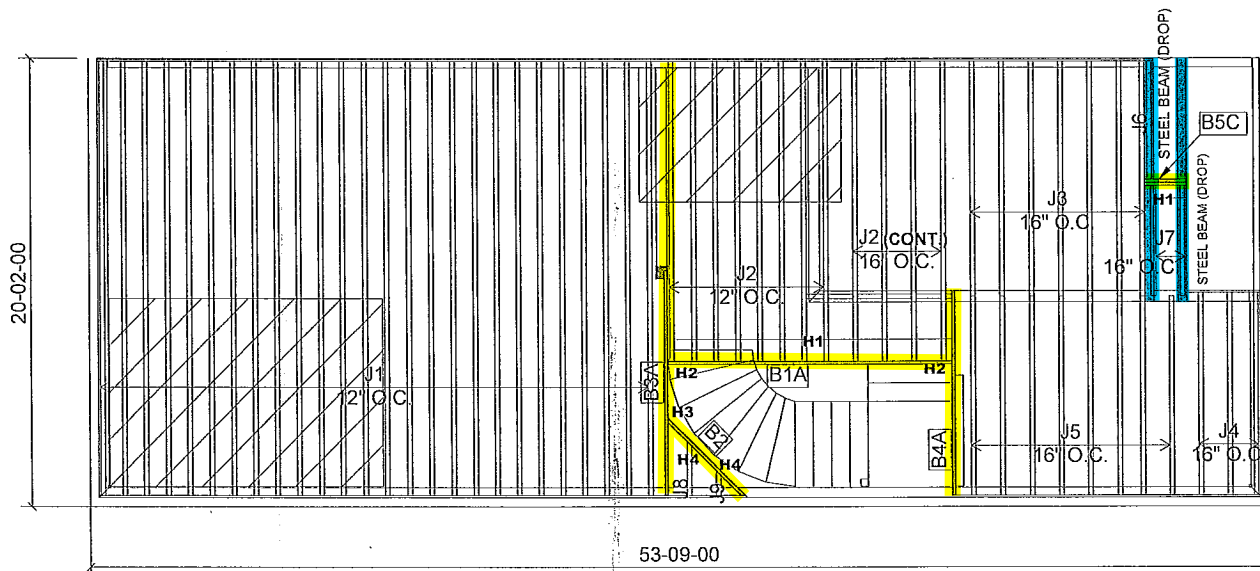
Designer: SG

Sheet: 3 of 4

Alpa Roof Trusses Inc.
Maple, Ontario

Salesperson: Mario
Tamarack Lumber

SITE COPY

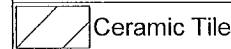


TH-6E ELEV. B
SECOND FLOOR FRAMING

FLOOR LOADING:

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

Ceramic Tile



Products				
PlotID	Length	Product	Plies	Net Qty
J1	20-00-00	11 7/8" NI-40x	1	26
J2	14-00-00	11 7/8" NI-40x	1	12
J3	11-00-00	11 7/8" NI-40x	1	7
J4	10-00-00	11 7/8" NI-40x	1	3
J5	9-00-00	11 7/8" NI-40x	1	8
J6	6-00-00	11 7/8" NI-40x	1	1
J7	5-00-00	11 7/8" NI-40x	1	2
J8	3-00-00	11 7/8" NI-40x	1	1
J9	2-00-00	11 7/8" NI-40x	1	1
B1A	13-00-00	VERSALAM-12 2.0E	1	1
B3A	11-00-00	VERSALAM-12 2.0E	1	1
B4A	10-00-00	VERSALAM-12 2.0E	1	1
B2	5-00-00	VERSALAM-12 2.0E	1	1
B5C	2-00-00	VERSALAM-12 2.0E	2	2

HANGER SCHEDULE

H1-----IUS2.56/11.88
H2-----HUS1.81/10
H3-----SUL1.81/9
H4-----SUR2.56/11

RIMBOARD

1-1/8" X 11 7/8" O.S.B

SUBFLOOR : 3/4" 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 continuous joists (along bearing) and rimboard closure at ends.

Do not scale - refer to architectural plans for dimensions.

July 18, 2018 99072

JT/PL: 44997/97794
300553
LI: 297418(241750)

Builder: Bayview Wellington

Project: Green Valley Estates East

Location: Bradford

Date: April 24/18

Designer: SG

Sheet: 4 of 4

Alpa Roof Trusses Inc.
Maple, Ontario

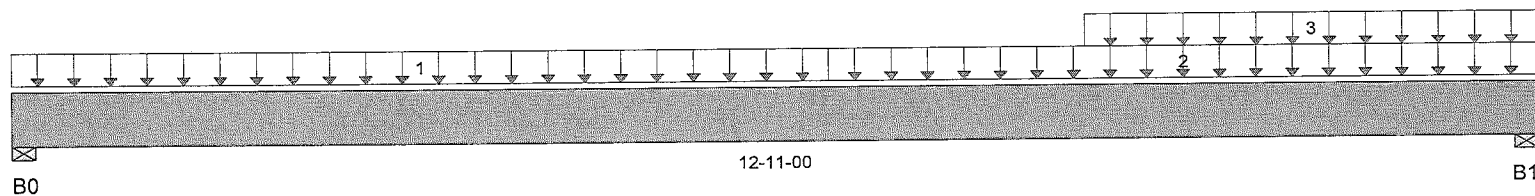
Salesperson: Mario
Tamarack Lumber

SITE COPY

BC CALC® Design Report


Build 6536
 Job Name: 38514
 Address: Green Valley Estates, TH6E
 City, Province, Postal Code: Bradford, ON
 Customer: Bayview Wellington
 Code reports: CCMC 12472-R

File Name: 241750.bcc
 Description: Designs\1A
 Specifier:
 Designer: SG
 Company:
 Misc:


Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1,476 / 0	763 / 0		
B1, 3-1/2"	922 / 0	444 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Area (lb/ft²)	L	00-00-00	06-11-00	40	20			06-08-00
2		Unf. Area (lb/ft²)	L	06-11-00	12-11-00	40	15			01-08-00
3		Unf. Area (lb/ft²)	L	09-01-00	12-11-00	40	15			01-00-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	8,024 ft-lbs	17,696 ft-lbs	45.3%	1	05-06-01
End Shear	2,431 lbs	7,232 lbs	33.6%	1	01-03-06
Total Load Defl.	L/480 (0.312")	0.623"	50%	4	06-02-09
Live Load Defl.	L/723 (0.207")	0.415"	49.8%	5	06-02-09
Max Defl.	0.312"	n/a	n/a	4	06-02-09
Span / Depth	12.6	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 1-3/4"	3,167 lbs	84.1%	42.4%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,938 lbs	51.4%	25.9%	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 O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4

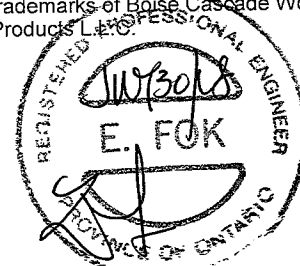
User Notes

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

Disclosure

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

BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, 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.P.C.



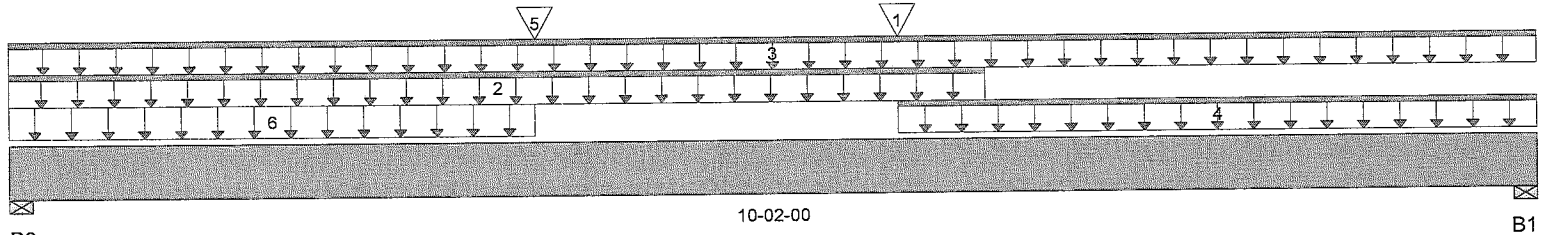
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T.18071984

BC CALC® Design Report


Build 6536
 Job Name: 38514
 Address: Green Valley Estates, TH6E
 City, Province, Postal Code: Bradford, ON
 Customer: Bayview Wellington
 Code reports: CCMC 12472-R

File Name: 241750.bcc
 Description: Designs\3A
 Specifier:
 Designer: SG
 Company:
 Misc:



Total Horizontal Product Length = 10-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	864 / 0	723 / 0		
B1, 3-1/2"	1,078 / 0	689 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	B1AL	Conc. Pt. (lbs)	L	05-11-00	05-11-00	1,476	763			n/a
2		Unf. Lin. (lb/ft)	L	00-00-00	06-06-00	0	60			n/a
3		Unf. Lin. (lb/ft)	L	00-00-00	10-02-00	20	8			n/a
4		Unf. Lin. (lb/ft)	L	05-11-00	10-02-00	20	8			n/a
5	B2L	Conc. Pt. (lbs)	L	03-06-00	03-06-00	85	47			n/a
6		Unf. Area (lb/ft^2)	L	00-00-00	03-06-00	40	15			00-08-00

Controls Summary

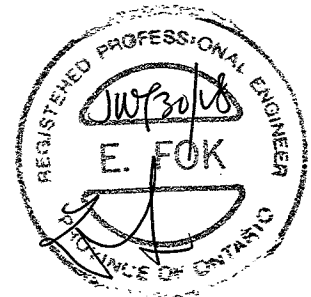
	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	9,159 ft-lbs	17,696 ft-lbs	51.8%	1	05-11-00
End Shear	2,366 lbs	7,232 lbs	32.7%	1	08-10-10
Total Load Defl.	L/606 (0.192")	0.485"	39.6%	4	05-02-13
Live Load Defl.	L/999 (0.114")	n/a	n/a	5	05-03-12
Max Defl.	0.192"	n/a	n/a	4	05-02-13
Span / Depth	9.8	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0	Wall/Plate 3-1/2" x 1-3/4"	2,200 lbs	58.4%	29.4%	Spruce Pine Fir
B1	Wall/Plate 3-1/2" x 1-3/4"	2,478 lbs	65.8%	33.2%	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 O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4


User Notes

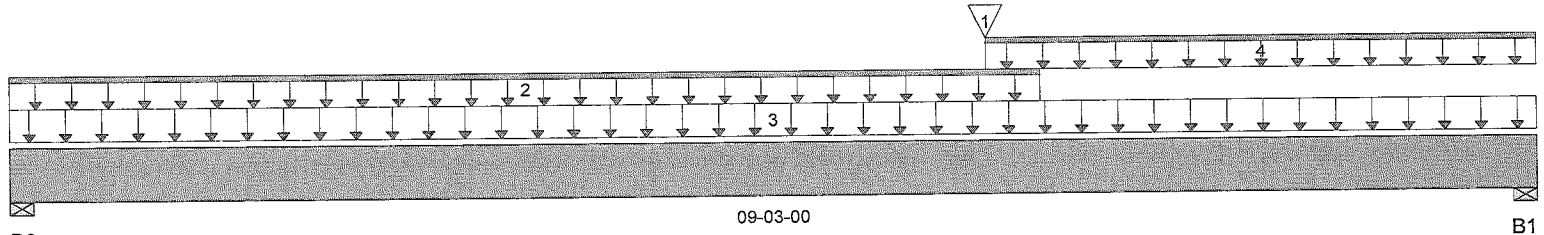
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T. 18071985



Build 6536
 Job Name: 38514
 Address: Green Valley Estates, TH6E
 City, Province, Postal Code: Bradford, ON
 Customer: Bayview Wellington
 Code reports: CCMC 12472-R

File Name: 241750.bcc
 Description: Designs\4A
 Specifier:
 Designer: SG
 Company:
 Misc:



09-03-00

B1

B0

Total Horizontal Product Length = 09-03-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	464 / 0	488 / 0		
B1, 3-1/2"	795 / 0	513 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	B1AR	Conc. Pt. (lbs)	L	05-11-00	05-11-00	922	444			n/a
2		Unf. Lin. (lb/ft)	L	00-00-00	06-03-00	0	60			n/a
3		Unf. Area (lb/ft^2)	L	00-00-00	09-03-00	40	15			00-08-00
4		Unf. Lin. (lb/ft)	L	05-11-00	09-03-00	27	10			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	5,061 ft-lbs	17,696 ft-lbs	28.6%	1	05-11-00
End Shear	1,689 lbs	7,232 lbs	23.4%	1	07-11-10
Total Load Defl.	L/999 (0.088")	n/a	n/a	4	04-10-13
Live Load Defl.	L/999 (0.05")	n/a	n/a	5	04-10-13
Max Defl.	0.088"	n/a	n/a	4	04-10-13
Span / Depth	8.9	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	1,305 lbs	34.6%	17.5%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,834 lbs	48.7%	24.5%	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 O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4



User Notes

SITE COPY

T.18071986

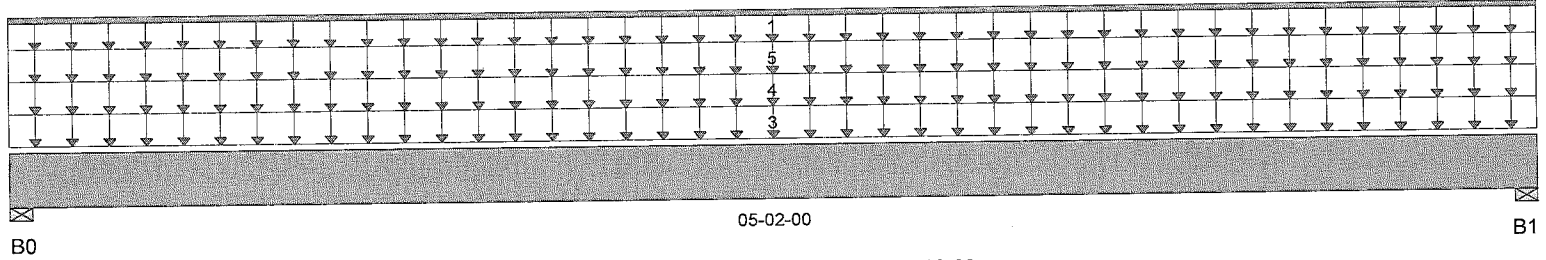
BC CALC® Design Report



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

Build 6536
 Job Name: 38514
 Address: Green Valley Estates, TH6E
 City, Province, Postal Code: Bradford, ON
 Customer: Bayview Wellington
 Code reports: CCMC 12472-R

File Name: 241750.bcc
 Description: Designs\5B
 Specifier:
 Designer: SG
 Company:
 Misc:



Total Horizontal Product Length = 05-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	307 / 0	568 / 0	630 / 0	
B1, 3-1/2"	307 / 0	568 / 0	630 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Lin. (lb/ft)	L	00-00-00	05-02-00	0	100			n/a
3		Unf. Area (lb/ft^2)	L	00-00-00	05-02-00	11	12	32		06-06-00
4		Unf. Area (lb/ft^2)	L	00-00-00	05-02-00	40	15			01-00-00
5		Unf. Area (lb/ft^2)	L	00-00-00	05-02-00	11	12	32		01-00-00

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,940 ft-lbs	35,392 ft-lbs	5.5%	5	02-07-00
End Shear	912 lbs	14,464 lbs	6.3%	5	01-03-06
Total Load Defl.	L/999 (0.006")	n/a	n/a	13	02-07-00
Live Load Defl.	L/999 (0.003")	n/a	n/a	17	02-07-00
Max Defl.	0.006"	n/a	n/a	13	02-07-00
Span / Depth	4.8	n/a	n/a		00-00-00

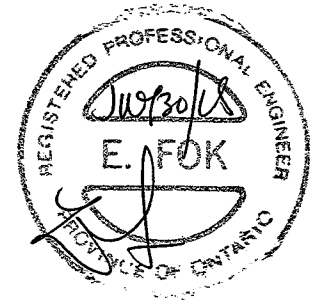
Bearing Supports	Dim. (L x W)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0 Wall/Plate	3-1/2" x 3-1/2"	1,808 lbs	24%	12.1%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 3-1/2"	1,808 lbs	24%	12.1%	Spruce Pine Fir

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 O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4

User Notes

Nail one ply to another with
 3 1/2" spiral nails @ 12"
 o.c, staggered in 2 rows



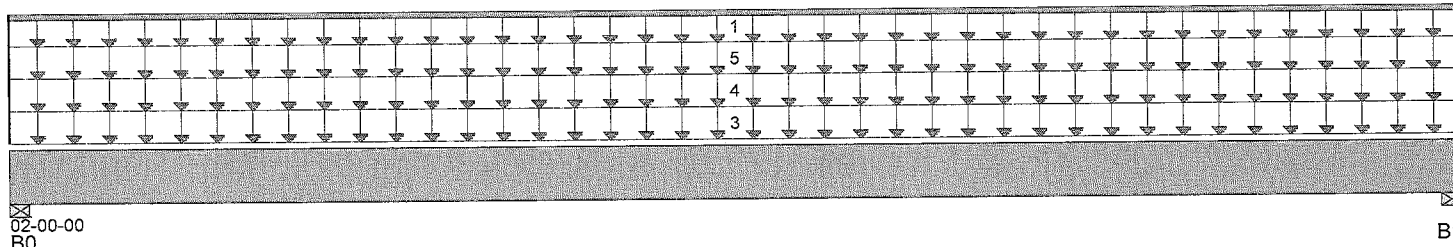
SITE COPY

T. 18071987

BC CALC® Design Report


Build 6536
 Job Name: 38514
 Address: Green Valley Estates, TH6E
 City, Province, Postal Code: Bradford, ON
 Customer: Bayview Wellington
 Code reports: CCMC 12472-R

File Name: 241750.bcc
 Description: Designs\5C
 Specifier:
 Designer: SG
 Company:
 Misc:



Total Horizontal Product Length = 02-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	152 / 0	203 / 0	130 / 0	
B1, 3-1/2"	152 / 0	203 / 0	130 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Lin. (lb/ft)	L	00-00-00	02-00-00	0	100			n/a
3		Unf. Area (lb/ft^2)	L	00-00-00	02-00-00	11	12	32		03-00-00
4		Unf. Area (lb/ft^2)	L	00-00-00	02-00-00	40	15			02-09-00
5		Unf. Area (lb/ft^2)	L	00-00-00	02-00-00	11	12	32		01-00-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	162 ft-lbs	35,392 ft-lbs	0.5%	1	01-00-00
End Shear	154 lbs	14,464 lbs	1.1%	1	01-03-06
Total Load Defl.	L/999 (0")	n/a	n/a	11	01-00-00
Max Defl.	0"	n/a	n/a	11	01-00-00
Span / Depth	1.6	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"	547 lbs	7.3%	3.7%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 3-1/2"	547 lbs	7.3%	3.7%	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) 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 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4

User Notes

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



SITE COPY

T. 18071988

BC CALC® Design Report

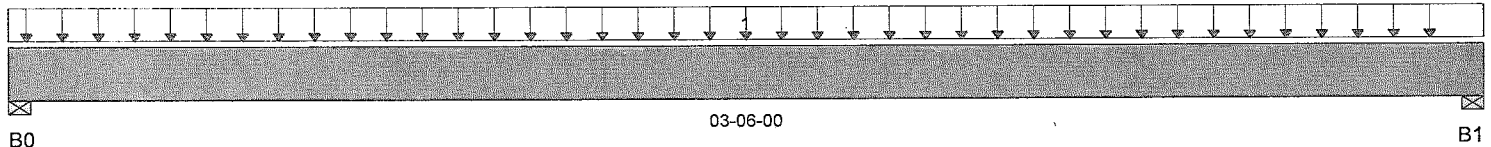


Dry | 1 span | No cantilevers | 0/12 slope (deg)

July 23, 2018 15:29:38

Build 6536
Job Name: 38514
Address: Green Valley Estates, TH6E
City, Province, Postal Code: Bradford, ON
Customer: Bayview Wellington
Code reports: CCMC 12472-R

File Name: 241750.bcc
Description: Designs\6A
Specifier:
Designer: SG
Company:
Misc:



Total Horizontal Product Length = 03-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	193 / 0	107 / 0		
B1, 3-1/2"	193 / 0	107 / 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	03-06-00	40	20			02-09-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	279 ft-lbs	17,696 ft-lbs	1.6%	1	01-09-00
End Shear	113 lbs	7,232 lbs	1.6%	1	01-03-06
Total Load Defl.	L/999 (0.001")	n/a	n/a	4	01-09-00
Live Load Defl.	L/999 (0")	n/a	n/a	5	01-09-00
Max Defl.	0.001"	n/a	n/a	4	01-09-00
Span / Depth	3.1	n/a	n/a		00-00-00

Bearing Supports

B0	Wall/Plate	3-1/2" x 1-3/4"	422 lbs	11.2%	5.7%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 1-3/4"	422 lbs	11.2%	5.7%	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 O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 4

User Notes

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

Disclosure

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

BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, 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.



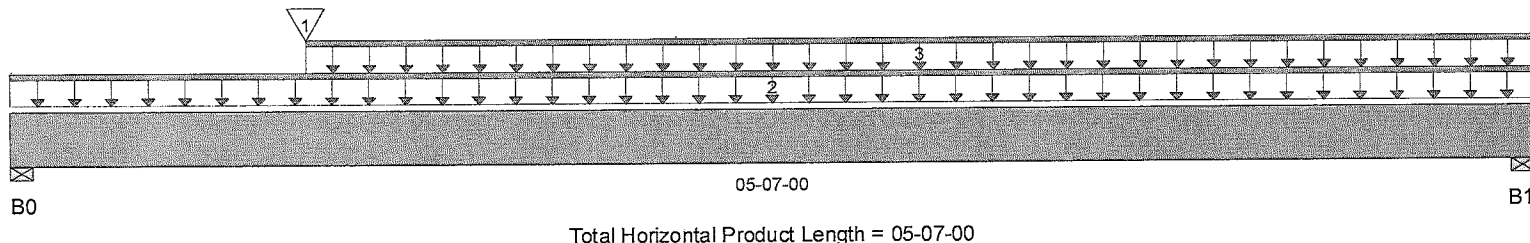
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T-18071989



Build 6536
 Job Name: 38514
 Address: Green Valley Estates, TH6E
 City, Province, Postal Code: Bradford, ON
 Customer: Bayview Wellington
 Code reports: CCMC 12472-R

File Name: 241750.bcc
 Description: Designs\7A
 Specifier:
 Designer: SG
 Company:
 Misc:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	252 / 0	152 / 0		
B1, 3-1/2"	142 / 0	90 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	B6AL	Conc. Pt. (lbs)	L	01-01-00	01-01-00	193	107			n/a
2		Unf. Lin. (lb/ft)	L	00-00-00	05-07-00	20	10			n/a
3		Unf. Lin. (lb/ft)	L	01-01-00	05-07-00	20	10			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	501 ft-lbs	17,696 ft-lbs	2.8%	1	02-01-00
End Shear	419 lbs	7,232 lbs	5.8%	1	01-03-06
Total Load Defl.	L/999 (0.003")	n/a	n/a	4	02-07-13
Live Load Defl.	L/999 (0.002")	n/a	n/a	5	02-07-13
Max Defl.	0.003"	n/a	n/a	4	02-07-13
Span / Depth	5.2	n/a	n/a		00-00-00

Bearing Supports

Beaming Support		Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate	3-1/2" x 1-3/4"	568 lbs	15.1%	7.6%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 1-3/4"	326 lbs	8.6%	4.4%	Spruce Pine Fir

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4

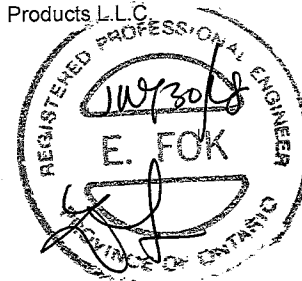
User Notes

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

Disclosure

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

BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, 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.

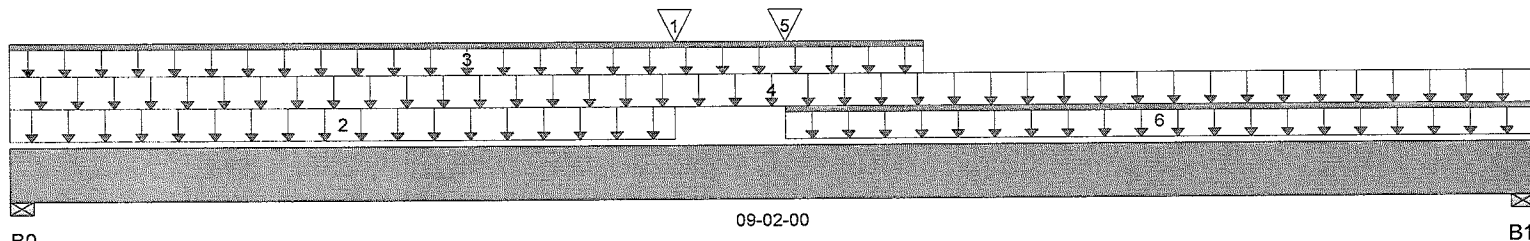


SITE COPY

T.18071990

Build 6536
 Job Name: 38514
 Address: Green Valley Estates, TH6E
 City, Province, Postal Code: Bradford, ON
 Customer: Bayview Wellington
 Code reports: CCMC 12472-R

File Name: 241750.bcc
 Description: Designs\8A
 Specifier:
 Designer: SG
 Company:
 Misc:



Total Horizontal Product Length = 09-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	451 / 0	462 / 0		
B1, 3-1/2"	402 / 0	312 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Conc. Pt. (lbs)	L	04-00-00	04-00-00	280	105			n/a
2		Unf. Area (lb/ft^2)	L	00-00-00	04-00-00	40	15			00-08-00
3		Unf. Lin. (lb/ft)	L	00-00-00	05-06-00	0	60			n/a
4		Unf. Area (lb/ft^2)	L	00-00-00	09-02-00	40	20			00-06-00
5	B6AR	Conc. Pt. (lbs)	L	04-08-00	04-08-00	193	107			n/a
6		Unf. Lin. (lb/ft)	L	04-08-00	09-02-00	20	10			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,312 ft-lbs	17,696 ft-lbs	18.7%	1	04-00-00
End Shear	1,026 lbs	7,232 lbs	14.2%	1	01-03-06
Total Load Defl.	L/999 (0.061")	n/a	n/a	4	04-06-00
Live Load Defl.	L/999 (0.033")	n/a	n/a	5	04-06-00
Max Defl.	0.061"	n/a	n/a	4	04-06-00
Span / Depth	8.8	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0	Wall/Plate 3-1/2" x 1-3/4"	1,254 lbs	33.3%	16.8%	Spruce Pine Fir
B1	Wall/Plate 3-1/2" x 1-3/4"	993 lbs	26.3%	13.3%	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 O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4

User Notes

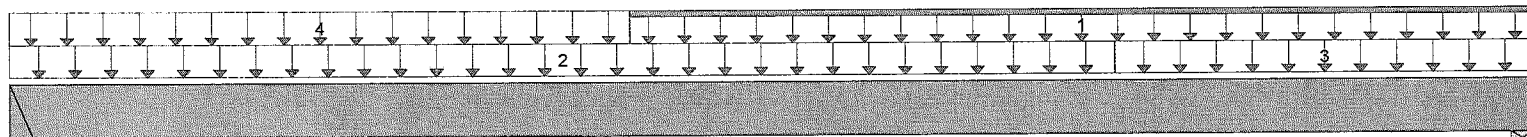


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T. 18071991

Build 6536
 Job Name: 38514
 Address: Green Valley Estates, TH6E
 City, Province, Postal Code: Bradford, ON
 Customer: Bayview Wellington
 Code reports: CCMC 12472-R

File Name: 241750.bcc
 Description: Designs\9B
 Specifier:
 Designer: SG
 Company:
 Misc:



B0 09-05-00 B1

Total Horizontal Product Length = 09-05-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	2,178 / 0	1,120 / 0		
B1, 3-1/2"	1,213 / 0	852 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Lin. (lb/ft)	L	03-10-00	09-05-00	0	60			n/a
2		Unf. Area (lb/ft^2)	L	00-00-00	06-10-00	40	20			08-00-00
3		Unf. Area (lb/ft^2)	L	06-10-00	09-05-00	40	20			02-09-00
4		Unf. Area (lb/ft^2)	L	00-00-00	03-10-00	40	15			06-00-00

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	8,545 ft-lbs	17,696 ft-lbs	48.3%	1	04-01-06
End Shear	3,229 lbs	7,232 lbs	44.7%	1	01-02-14
Total Load Defl.	L/604 (0.179")	0.45"	39.8%	4	04-07-00
Live Load Defl.	L/999 (0.112")	n/a	n/a	5	04-05-14
Max Defl.	0.179"	n/a	n/a	4	04-07-00
Span / Depth	9.1	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	3" x 1-3/4"	4,667 lbs	60.9%	72.9%	HUS1.81/10
B1 Wall/Plate	3-1/2" x 1-3/4"	2,884 lbs	76.5%	38.6%	Spruce Pine Fir

Cautions

Header for the hanger HUS1.81/10 at B0 is a Triple 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP.

Hanger HUS1.81/10 requires (30) 10d face nails, (10) 10d joist nails.

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Simpson Strong-Tie, Inc.

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

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 4



BC CALC® Design Report

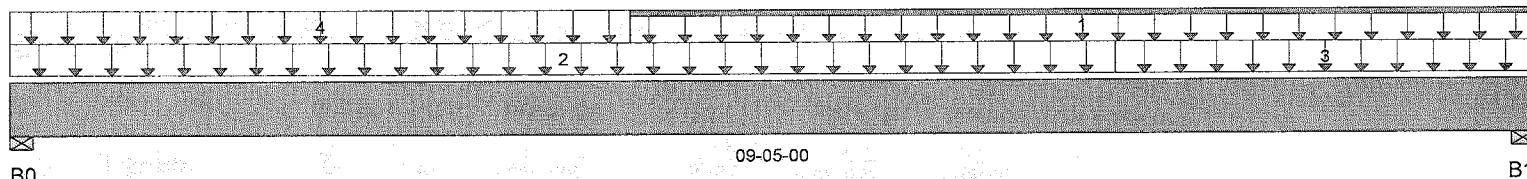


Dry | 1 span | No cantilevers | 0/12 slope (deg)

July 23, 2018 15:45:36

Build 6536
 Job Name: 38514
 Address: Green Valley Estates, TH6E
 City, Province, Postal Code: Bradford, ON
 Customer: Bayview Wellington
 Code reports: CCMC 12472-R

File Name: 241750.bcc
 Description: Designs\9C
 Specifier:
 Designer: SG
 Company:
 Misc:



Total Horizontal Product Length = 09-05-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1,337 / 0	700 / 0		
B1, 3-1/2"	733 / 0	612 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1		Unf. Lin. (lb/ft)	L	03-10-00	09-05-00	0	60			n/a
2		Unf. Area (lb/ft^2)	L	00-00-00	06-10-00	40	20			03-02-00
3		Unf. Area (lb/ft^2)	L	06-10-00	09-05-00	40	20			02-09-00
4		Unf. Area (lb/ft^2)	L	00-00-00	03-10-00	40	15			06-00-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	4,898 ft-lbs	17,696 ft-lbs	27.7%	1	03-10-00
End Shear	1,921 lbs	7,232 lbs	26.6%	1	01-03-06
Total Load Defl.	L/999 (0.103")	n/a	n/a	4	04-07-00
Live Load Defl.	L/999 (0.062")	n/a	n/a	5	04-05-14
Max Defl.	0.103"	n/a	n/a	4	04-07-00
Span / Depth	9.1	n/a	n/a		00-00-00

Disclosure

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Bearing Supports

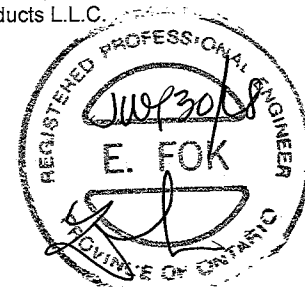
	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	2,881 lbs	76.5%	38.6%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,864 lbs	49.5%	24.9%	Spruce Pine Fir

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 O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4

User Notes

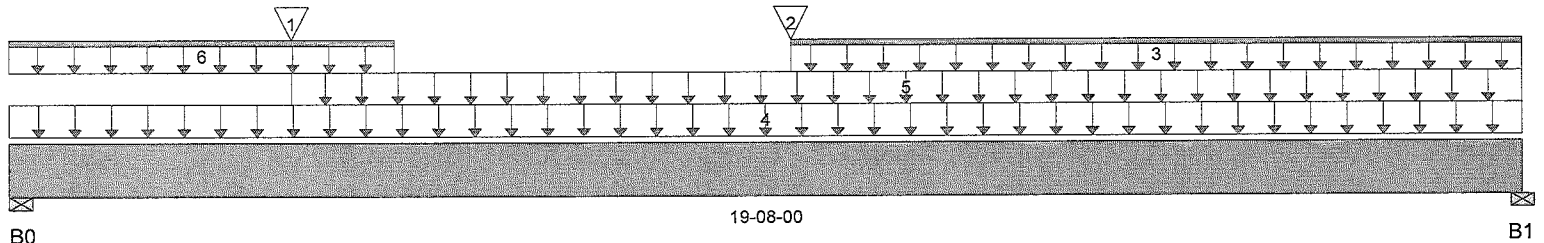
NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS
 @ O.C., STAGGERED IN TWO ROWS





Build 6536
 Job Name: 38514
 Address: Green Valley Estates, TH6E
 City, Province, Postal Code: Bradford, ON
 Customer: Bayview Wellington
 Code reports: CCMC 12472-R

File Name: 241750.bcc
 Description: Designs\10B
 Specifier:
 Designer: SG
 Company:
 Misc:



Total Horizontal Product Length = 19-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	2,645 / 0	1,977 / 0		
B1, 1-3/4"	1,325 / 0	1,365 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	B9BL	Conc. Pt. (lbs)	L	03-08-00	03-08-00	2,178	1,120			n/a
2	B3AR	Conc. Pt. (lbs)	L	10-02-00	10-02-00	1,078	689			n/a
3		Unf. Lin. (lb/ft)	L	10-02-00	19-08-00	0	60			n/a
4		Unf. Area (lb/ft^2)	L	00-00-00	19-08-00	40	15			00-06-00
5		Unf. Area (lb/ft^2)	L	03-08-00	19-08-00	40	20			00-06-00
6		Unf. Lin. (lb/ft)	L	00-00-00	05-00-00	0	60			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	26,677 ft-lbs	55,212 ft-lbs	48.3%	1	10-02-00
End Shear	6,263 lbs	21,696 lbs	28.9%	1	01-03-06
Total Load Defl.	L/272 (0.854")	0.968"	88.2%	4	09-06-04
Live Load Defl.	L/490 (0.474")	0.645"	73.5%	5	09-06-04
Max Defl.	0.854"	n/a	n/a	4	09-06-04
Span / Depth	19.6	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 5-1/4"	6,438 lbs	57%	28.7%	Spruce Pine Fir
B1	Wall/Plate 1-3/4" x 5-1/4"	3,693 lbs	65.3%	32.9%	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 O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4

User Notes

Nail one ply to another with
 3 1/2" spiral nails @ 12"
 o.c, staggered in 2 rows



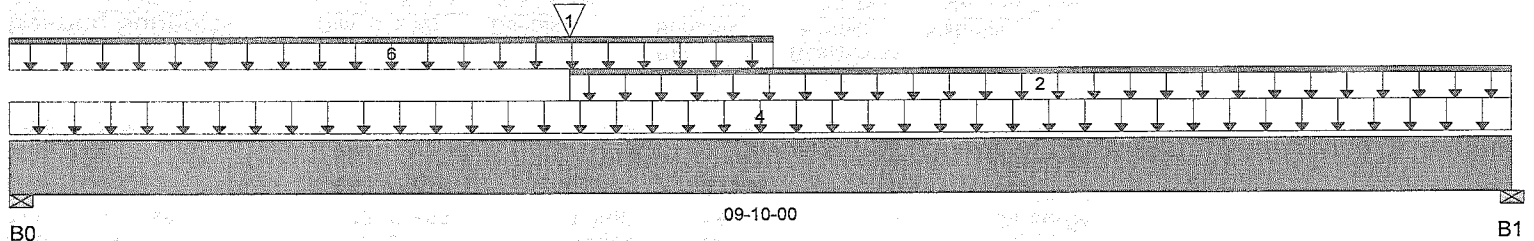
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T.18071994



Build 6536
 Job Name: 38514
 Address: Green Valley Estates, TH6E
 City, Province, Postal Code: Bradford, ON
 Customer: Bayview Wellington
 Code reports: CCMC 12472-R

File Name: 241750.bcc
 Description: Designs\10C
 Specifier:
 Designer: SG
 Company:
 Misc:



Total Horizontal Product Length = 09-10-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	993 / 0	792 / 0		
B1, 1-3/4"	664 / 0	461 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	B9CL	Conc. Pt. (lbs)	L	03-08-00	03-08-00	1,337	700			n/a
2		Unf. Lin. (lb/ft)	L	03-08-00	09-10-00	20	10			n/a
4		Unf. Area (lb/ft^2)	L	00-00-00	09-10-00	40	15			00-06-00
6		Unf. Lin. (lb/ft)	L	00-00-00	05-00-00	0	60			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	7,659 ft-lbs	35,392 ft-lbs	21.6%	1	03-08-00
End Shear	2,314 lbs	14,464 lbs	16%	1	01-03-06
Total Load Defl.	L/999 (0.076")	n/a	n/a	4	04-08-00
Live Load Defl.	L/999 (0.045")	n/a	n/a	5	04-08-00
Max Defl.	0.076"	n/a	n/a	4	04-08-00
Span / Depth	9.6	n/a	n/a		00-00-00

Bearing Supports

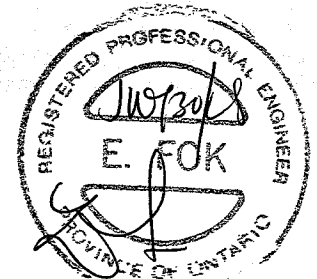
B0	Wall/Plate	3-1/2" x 3-1/2"	2,480 lbs	32.9%	16.6%	Spruce Pine Fir
B1	Wall/Plate	1-3/4" x 3-1/2"	1,573 lbs	41.7%	21%	Spruce Pine Fir

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 O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4

User Notes

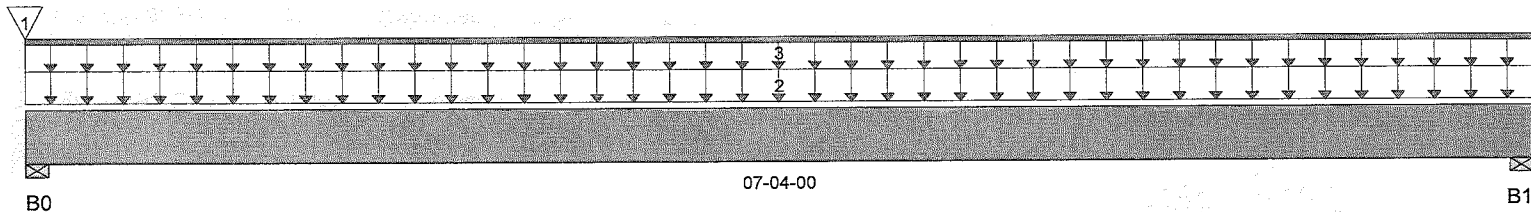
Nail one ply to another with
 3 1/2" spiral nails @ 12"
 o.c, staggered in 2 rows





Build 6536
 Job Name: 38514
 Address: Green Valley Estates, TH6E
 City, Province, Postal Code: Bradford, ON
 Customer: Bayview Wellington
 Code reports: CCMC 12472-R

File Name: 241750.bcc
 Description: Designs\B11A
 Specifier:
 Designer: SG
 Company:
 Misc:



Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1,128 / 0	957 / 0		
B1, 3-1/2"	464 / 0	496 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	B10CR	Conc. Pt. (lbs)	L	00-00-00	00-00-00	664	461			n/a
2		Unf. Area (lb/ft^2)	L	00-00-00	07-04-00	40	20			03-02-00
3		Unf. Lin. (lb/ft)	L	00-00-00	07-04-00	0	60			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,122 ft-lbs	35,392 ft-lbs	6%	1	03-08-00
End Shear	857 lbs	14,464 lbs	5.9%	1	01-03-06
Total Load Defl.	L/999 (0.013")	n/a	n/a	4	03-08-00
Live Load Defl.	L/999 (0.007")	n/a	n/a	5	03-08-00
Max Defl.	0.013"	n/a	n/a	4	03-08-00
Span / Depth	6.9	n/a	n/a		00-00-00

Bearing Supports

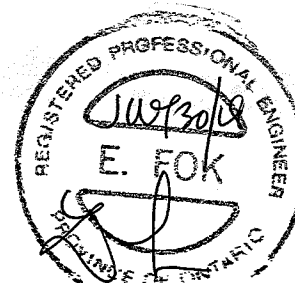
	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0	Wall/Plate 3-1/2" x 3-1/2"	2,889 lbs	38.3%	19.3%	Spruce Pine Fir
B1	Wall/Plate 3-1/2" x 3-1/2"	1,317 lbs	17.5%	8.8%	Spruce Pine Fir

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 O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 4

User Notes

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



BC CALC® Design Report

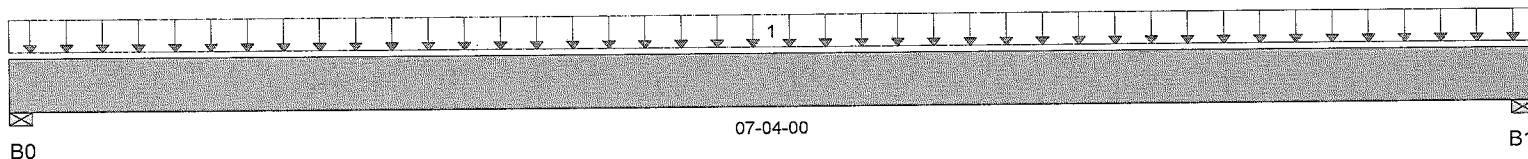


Dry | 1 span | No cantilevers | 0/12 slope (deg)

April 25, 2018 08:40:53

Build 6536
Job Name: 38514
Address: Green Valley Estates, TH6E
City, Province, Postal Code: Bradford, ON
Customer: Bayview Wellington
Code reports: CCMC 12472-R

File Name: 241750.bcc
Description: Designs\12A
Specifier:
Designer: SG
Company:
Misc:



Total Horizontal Product Length = 07-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	697 / 0	366 / 0		
B1, 3-1/2"	697 / 0	366 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1		Unf. Area (lb/ft²)	L	00-00-00	07-04-00	40	20			04-09-00

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,421 ft-lbs	11,610 ft-lbs	20.9%	1	03-08-00
End Shear	1,059 lbs	5,785 lbs	18.3%	1	01-01-00
Total Load Defl.	L/999 (0.058")	n/a	n/a	4	03-08-00
Live Load Defl.	L/999 (0.038")	n/a	n/a	5	03-08-00
Max Defl.	0.058"	n/a	n/a	4	03-08-00
Span / Depth	8.7	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 1-3/4"	1,502 lbs	39.9%	20.1%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	1,502 lbs	39.9%	20.1%	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 O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 4

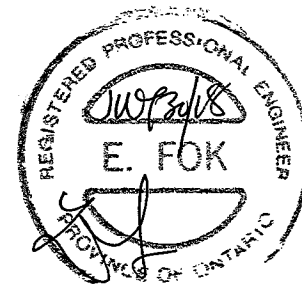
User Notes

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

Disclosure

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

BC CALC®, BC FRAMER®, AJST™, 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.



SITE COPY

T. 18071997



Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

Floor Beam\02

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

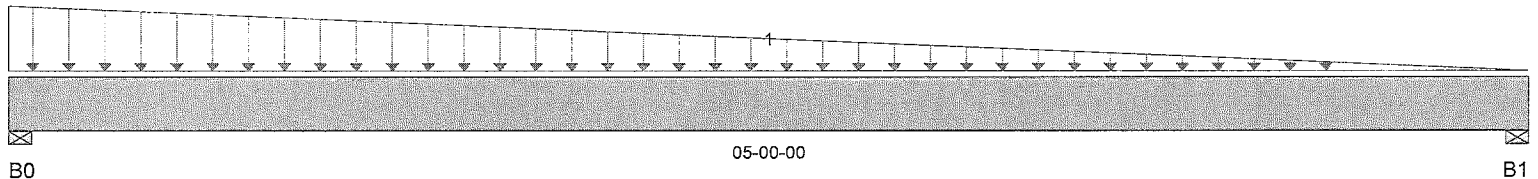
May-14-14

BC CALC® Design Report - CA

File Name: 241750

Name: 38514
Address: Green Valley Estates, TH6E
City, Province, Postal Code: Bradford, ON
Customer: Bayview Wellington
Code reports: CCMC 12472-R

Description: Designs\02
Specifier:
Designer: SG
Company:
Misc:



Total Horizontal Product Length = 05-00-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	85 / 0	47 / 0		
B1, 3-1/2"	40 / 0	30 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1		Trapezoidal (lb/ft)	L	00-00-00	05-00-00	50	19	1.00	1.15	n/a
						0	0			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	149 ft-lbs	19,364 ft-lbs	0.01	1	02-02-09
End Shear	149 lbs	7,232 lbs	0.02	1	01-03-06
Total Load Defl.	L/999 (0.001")	n/a	n/a	4	02-05-03
Live Load Defl.	L/999 (0")	n/a	n/a	5	02-05-00
Span / Depth	4.6	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	186 lbs	0.05	0.02	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	97 lbs	0.03	0.01	Spruce Pine Fir

Notes

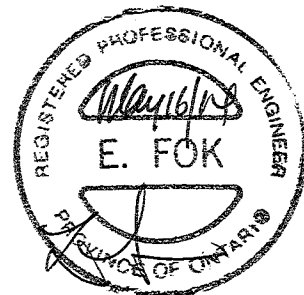
Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume Member is Fully Braced.
Resistance Factor phi has been applied to all presented results per CSA 086.
BC CALC® analysis is based on Canadian Limit States 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
@ O.C., STAGGERED IN TWO ROWS

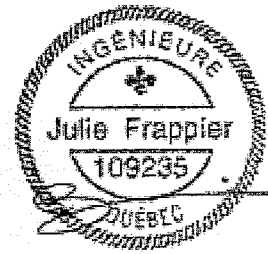
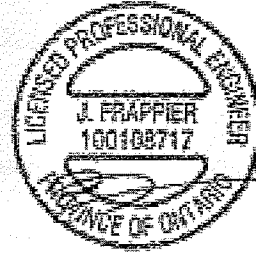
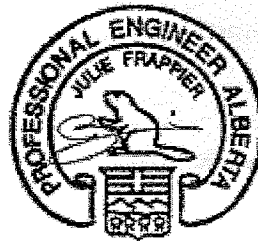
Disclosure

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.



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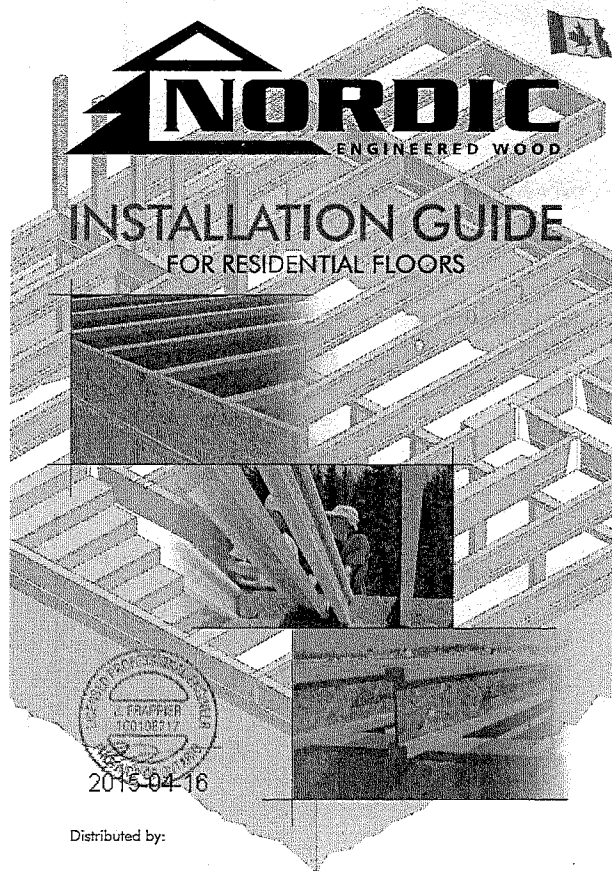


Maximum Floor Spans

Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/360 Deflection Limit
3/4" OSB G&N Sheathing

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

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



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SAFETY AND CONSTRUCTION PRECAUTIONS

WARNING

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

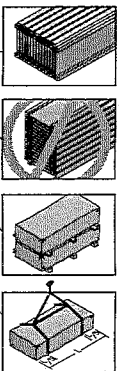
Avoid Accidents by Following these Important Guidelines:

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

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

STORAGE AND HANDLING GUIDELINES

1. Bundle wrap can be slippery when wet. Avoid walking on wrapped bundles.
2. Store, stack, and handle I-joists vertically and level only.
3. Always stack and handle I-joists in the upright position only.
4. Do not store I-joists in direct contact with the ground and/or flatwise.
5. Protect I-joists from weather, and use spacers to separate bundles.
6. Bundled units should be kept intact until time of installation.
 - 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.



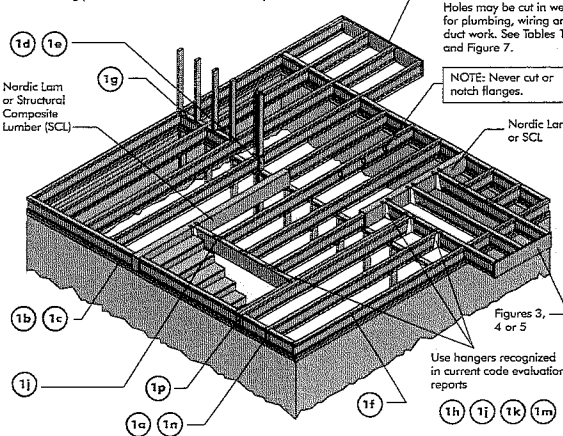
INSTALLING NORDIC I-JOISTS

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

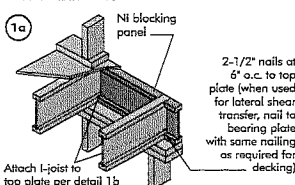
FIGURE 1

TYPICAL NORDIC I-JOIST FLOOR FRAMING AND CONSTRUCTION DETAILS

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

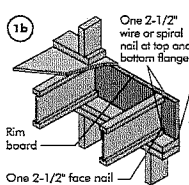


All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for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



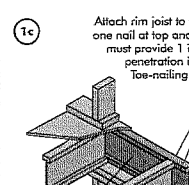
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (psf)
Ni Joists	3,300

*The uniform vertical load is limited to a joist depth of 16 inches or less and is based on standard term load duration. It shall not be used for design of blocking or other vertical load transfer, see detail 1d.



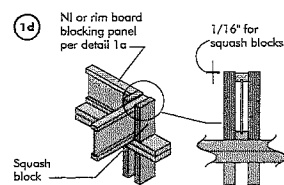
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (psf)
1-1/8" Rim Board Plus	8,090

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



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

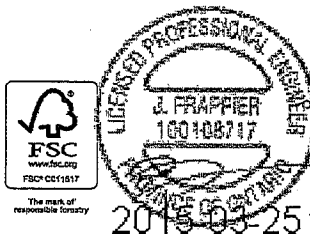
*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a blocking member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.



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

*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 blocking member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

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Joist Series	NI-20	NI-40x	NI-60	NI-70	NI-80	NI-90	NI-90x
Span Rating	5-RF No.2	1950f MSR	2100f MSR	1950f MSR	2100f MSR	2400f MSR	NPG Lumber
Pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit	23 pieces per unit	23 pieces per unit	23 pieces per unit	23 pieces per unit

Refer to the Installation Guide for Residential Floors for additional information.
CMC 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 centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
- I-joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
- Whenever possible, field-cut holes should be centred 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.

- The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the longest rectangular hole or duct chase opening) and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
- A knockout is **not** considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
- Holes measuring 1-1/2 inches or smaller are permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.

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

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.)											
		Round Hole Diameter (in.)											
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4
9-1/2"	NI-20	0-7"	1-6"	2-10"	4-3"	5-8"	6-0"	---	---	---	---	---	---
	NI-40x	0-7"	1-6"	3-0"	4-4"	6-0"	6-4"	---	---	---	---	---	---
	NI-60	1-3"	2-6"	4-0"	5-4"	7-0"	7-5"	---	---	---	---	---	---
	NI-70	2-0"	3-4"	4-9"	6-3"	8-0"	8-4"	---	---	---	---	---	---
	NI-80	2-3"	3-6"	5-0"	6-6"	8-2"	8-8"	---	---	---	---	---	---
11-7/8"	NI-20	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-6"	7-9"	---	---	---
	NI-40x	0-7"	0-8"	1-3"	2-8"	4-0"	4-4"	5-3"	7-0"	8-4"	---	---	---
	NI-60	0-7"	1-8"	3-0"	4-3"	5-9"	6-0"	7-3"	8-10"	10-0"	---	---	---
	NI-70	1-3"	2-6"	4-0"	5-4"	6-9"	7-2"	8-4"	10-0"	11-2"	---	---	---
	NI-80	1-6"	2-10"	4-2"	5-6"	7-0"	7-5"	8-6"	10-3"	11-4"	---	---	---
14"	NI-20	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-6"	7-9"	---	---	---
	NI-40x	0-7"	0-8"	1-3"	2-8"	4-0"	4-4"	5-3"	7-0"	8-4"	---	---	---
	NI-60	0-7"	1-8"	3-0"	4-3"	5-9"	6-0"	7-3"	8-10"	10-0"	---	---	---
	NI-70	0-8"	1-10"	3-0"	4-5"	5-10"	6-2"	7-3"	8-9"	9-9"	10-4"	12-0"	13-5"
	NI-80	0-10"	2-0"	3-4"	4-9"	6-2"	6-5"	7-6"	9-0"	10-0"	10-8"	13-9"	---
16"	NI-20	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-6"	7-9"	---	---	---
	NI-40x	0-7"	0-8"	1-3"	2-8"	4-0"	4-4"	5-3"	7-0"	8-4"	---	---	---
	NI-60	0-7"	1-8"	3-0"	4-3"	5-9"	6-0"	7-3"	8-10"	10-0"	---	---	---
	NI-70	0-7"	1-10"	3-0"	4-5"	5-10"	6-2"	7-3"	8-9"	9-9"	10-4"	12-0"	13-5"
	NI-80	0-7"	0-8"	1-0"	2-4"	3-8"	4-0"	5-0"	6-6"	7-9"	---	---	---

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

TABLE 2

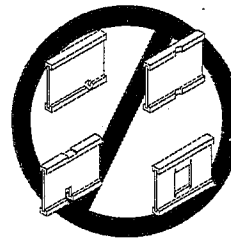
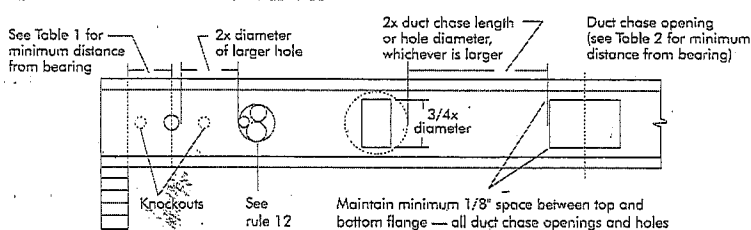
DUCT CHASE OPENING SIZES AND LOCATIONS

Simple Span Only

Joist Depth	Joist Series	Minimum distance from inside face of supports to centre of opening (ft - in.)							
		Duct Chase Length (in.)							
		8	10	12	14	16	18	20	22
9-1/2"	NI-20	4-1"	4-5"	4-10"	5-4"	5-8"	6-1"	6-6"	7-1"
	NI-40x	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"
	NI-60	5-4"	5-9"	6-2"	6-7"	7-1"	7-5"	8-0"	8-3"
	NI-70	5-1"	5-5"	5-10"	6-3"	6-7"	7-1"	7-6"	8-1"
	NI-80	5-3"	5-8"	6-0"	6-5"	6-10"	7-3"	7-8"	8-2"
11-7/8"	NI-20	5-9"	6-2"	6-6"	7-1"	7-5"	7-9"	8-3"	8-9"
	NI-40x	6-8"	7-2"	7-6"	8-1"	8-6"	9-1"	9-6"	10-1"
	NI-60	7-3"	7-8"	8-0"	8-6"	9-0"	9-3"	9-9"	10-3"
	NI-70	7-1"	7-4"	7-9"	8-3"	8-7"	9-1"	9-6"	10-1"
	NI-80	7-2"	7-11"	8-0"	8-5"	8-10"	9-3"	9-8"	10-2"
14"	NI-20	7-6"	7-11"	8-4"	8-9"	9-2"	9-7"	10-1"	10-7"
	NI-40x	8-1"	8-7"	9-0"	9-6"	10-1"	10-7"	11-2"	12-0"
	NI-60	8-2"	9-3"	9-8"	10-1"	10-6"	11-1"	11-6"	12-3"
	NI-70	8-7"	9-1"	9-5"	9-10"	10-4"	10-8"	11-2"	11-7"
	NI-80	9-0"	9-3"	9-9"	10-1"	10-7"	11-1"	11-6"	12-1"
16"	NI-20	9-2"	9-8"	10-0"	10-6"	11-1"	11-5"	11-9"	12-4"
	NI-40x	9-4"	9-9"	10-3"	10-7"	11-1"	11-7"	12-1"	12-7"
	NI-60	10-3"	10-8"	11-2"	11-6"	12-1"	12-6"	13-2"	14-1"
	NI-70	10-1"	10-5"	11-0"	11-4"	11-10"	12-3"	12-8"	13-3"
	NI-80	10-4"	10-9"	11-3"	11-9"	12-1"	12-7"	13-1"	13-8"

- Above table may be used for I-joist spacing of 24 inches on centre or less.
- Duct chase opening location distance is measured from inside face of supports to centre of opening.
- The above table is based on simple-span joists only. For other applications, contact your local distributor.
- 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.
- The above table is based on the I-joists being used at their maximum spans. The minimum distance given above may be reduced for shorter spans; contact your local distributor.

FIGURE 7
FIELD-CUT HOLE LOCATOR



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

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

Holes in webs should be cut with a sharp saw.

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

SAFETY AND CONSTRUCTION PRECAUTIONS



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



Never stack building materials over unshathed I-joists. Once shathed, 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-briding at joist ends. When I-joists are applied continuous over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
- 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 closure panels, rim board, or cross-briding.
- 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.

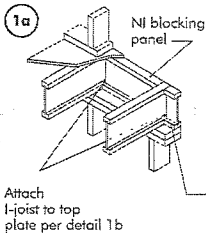


PRODUCT WARRANTY

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

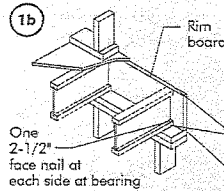
Furthermore, Chantiers Chibougamau warrants that our products, when utilized in accordance with our handling and installation instructions, will meet or exceed our specifications for the lifetime of the structure.

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

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

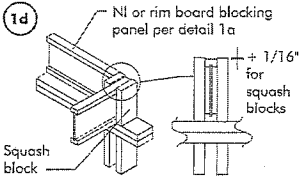


Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

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

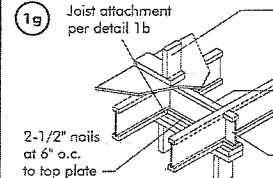
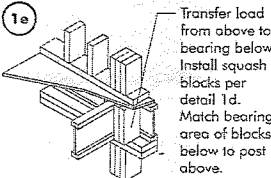
Attach rim board to top plate using 2-1/2" wire or spiral toe-nails at 6" o.c. To avoid splitting flange, start nails at least 1-1/2" from end of I-joist. Nails may be driven at an angle to avoid splitting of bearing plate.

Minimum bearing length shall be 1-3/4" for the end bearings, and 3-1/2" for the intermediate bearings when applicable.



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

Provide lateral bracing per detail 1a or 1b



Load bearing wall above shall align vertically with the bearing below. Other conditions, such as offset bearing walls, are not covered by this detail. Blocking required over all interior supports under load-bearing walls or when floor joists are not continuous over support. NI blocking panel per detail 1a

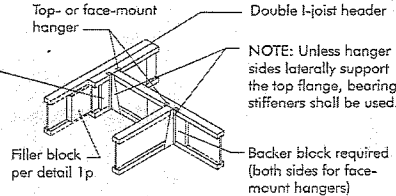
1h Backer block (use if hanger load exceeds 360 lbs). Before installing a backer block to a double I-joist, drive three additional 3" nails through the webs and filler block where the backer block will fit. Clinch. Install backer tight to top flange. Use twelve 3" nails, clinched when possible. Maximum factored resistance for hanger for this detail = 1,620 lbs.

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

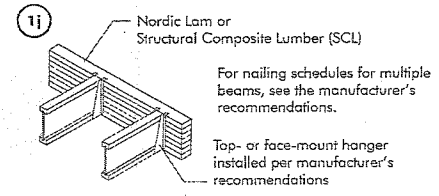
Flange Width	Material Thickness Required*	Minimum Depth**
2-1/2"	1"	5-1/2"
3-1/2"	1-1/2"	7-1/4"

* 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.

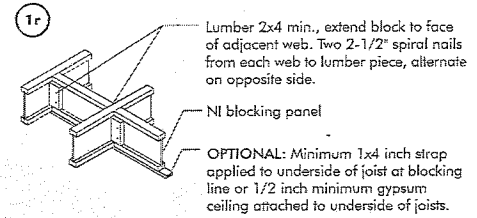
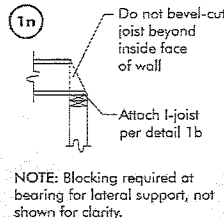
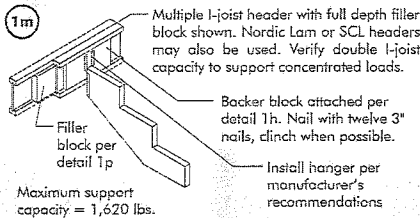
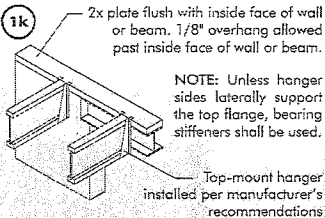
** For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".



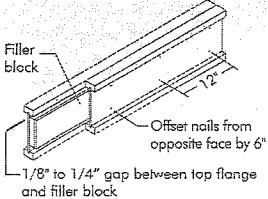
For hanger capacity see hanger manufacturer's recommendations. Verify double I-joist capacity to support concentrated loads.



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



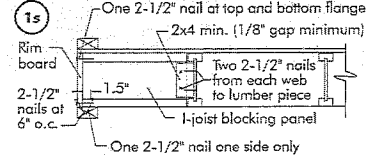
1p FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION



NOTES:

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

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



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

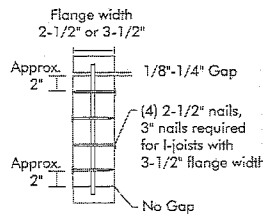
All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for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

WEB STIFFENERS

RECOMMENDATIONS:

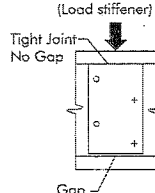
- A **bearing stiffener** is required in all engineered applications with factored reactions greater than shown in the I-joist properties table found in the I-joist Construction Guide (C101). The gap between the stiffener and the flange is at the top.
- A **bearing stiffener** is required when the I-joist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

FIGURE 2 WEB STIFFENER INSTALLATION DETAILS

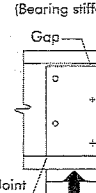


See the adjacent table for web stiffener size requirements

CONCENTRATED LOAD (Load stiffener)



END BEARING (Bearing stiffener)

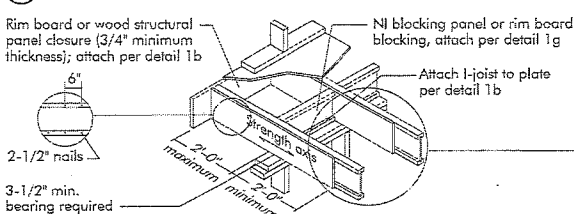


STIFFENER SIZE REQUIREMENTS

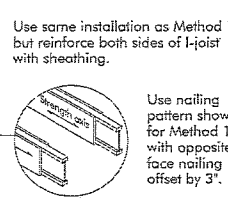
Flange Width	Web Stiffener Size Each Side of Web
2-1/2"	1" x 2-5/16" minimum width
3-1/2"	1-1/2" x 2-5/16" minimum width

CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

4a Method 1 — SHEATHING REINFORCEMENT ONE SIDE



Method 2 — SHEATHING REINFORCEMENT TWO SIDES

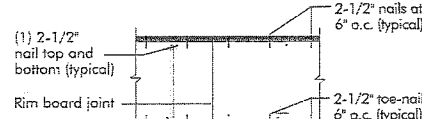


NOTE: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4") required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2" nails at 6" o.c., top and bottom flanges. Install with face grain horizontal. Attach I-joist to plate at all supports per detail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

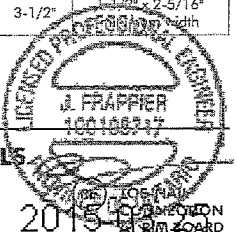
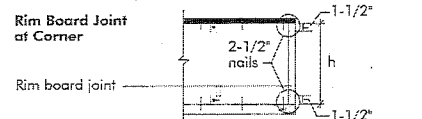
RIM BOARD INSTALLATION DETAILS

8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

Rim Board Joint Between Floor Joists

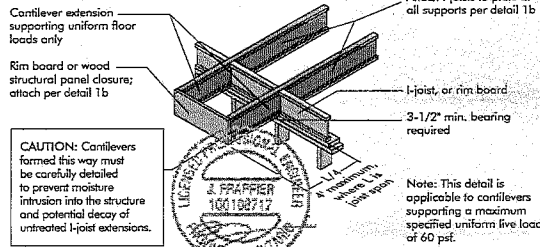


Rim Board Joint at Corner

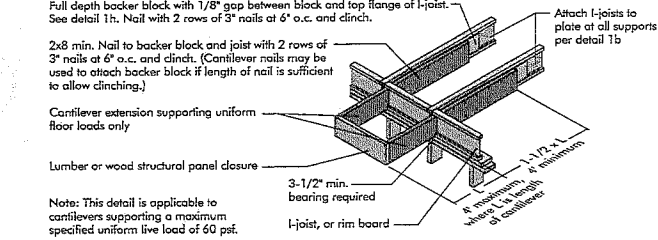


CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

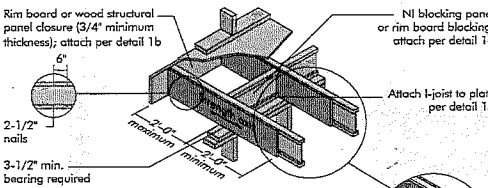


3b LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

4a Method 1 — SHEATHING REINFORCEMENT ONE SIDE

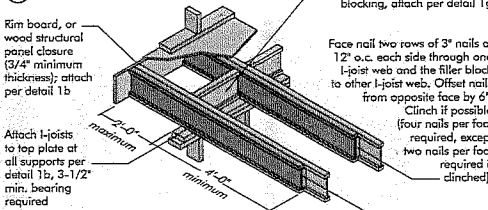


Method 2 — SHEATHING REINFORCEMENT TWO SIDES

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

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

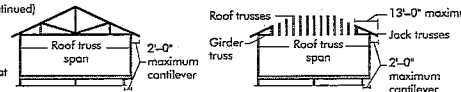
4b Alternate Method 2 — DOUBLE I-JOIST



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 centreline of the reinforcing panel from each side. Clinch when possible.

FIGURE 4 (continued)

See table below for NI reinforcement requirements at cantilever.



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

CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft)	(ROOF LOADING (UNFACTORED))											
		LL = 30 psf DL = 15 psf				LL = 40 psf DL = 15 psf				LL = 50 psf DL = 15 psf			
		JOIST SPACING (in.)				JOIST SPACING (in.)				JOIST SPACING (in.)			
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
9-1/2"	26	N	N	1	2	N	1	2	X	N	2	X	X
	28	N	N	1	X	N	1	2	X	N	2	X	X
	30	N	1	1	X	N	1	2	X	1	2	X	X
	32	N	1	2	X	N	2	X	X	1	X	X	X
	34	N	1	2	X	N	2	X	X	1	X	X	X
11-7/8"	26	N	N	N	1	N	N	1	2	N	N	1	2
	28	N	N	N	1	N	N	1	2	N	1	1	X
	30	N	N	N	1	N	N	1	2	N	1	2	X
	32	N	N	1	1	N	N	1	2	N	1	2	X
	34	N	N	1	2	N	1	1	X	N	1	2	X
14"	26	N	N	1	2	N	1	2	X	N	1	2	X
	28	N	N	1	2	N	1	2	X	N	2	X	X
	30	N	N	N	N	N	N	1	1	N	N	N	1
	32	N	N	N	1	N	N	N	1	N	N	1	2
	34	N	N	N	1	N	N	1	1	N	N	1	2
16"	26	N	N	1	1	N	N	1	2	N	1	1	2
	28	N	N	1	1	N	N	1	2	N	1	1	X
	30	N	N	N	1	N	N	1	2	N	1	2	X
	32	N	N	N	1	N	N	1	2	N	1	2	X
	34	N	N	N	1	N	N	1	2	N	1	2	X
16'	26	N	N	N	N	N	N	N	1	N	N	N	1
	28	N	N	N	N	N	N	N	1	N	N	N	1
	30	N	N	N	N	N	N	1	1	N	N	1	1
	32	N	N	N	N	N	N	1	1	N	N	1	2
	34	N	N	N	N	N	N	1	1	N	N	1	2
	36	N	N	N	1	N	N	N	1	N	N	1	2
	38	N	N	N	1	N	N	1	2	N	1	1	X
	40	N	N	N	1	N	N	1	2	N	1	2	X
	42	N	N	N	1	N	N	1	2	N	1	1	X
	44	N	N	N	1	N	N	1	2	N	1	1	X

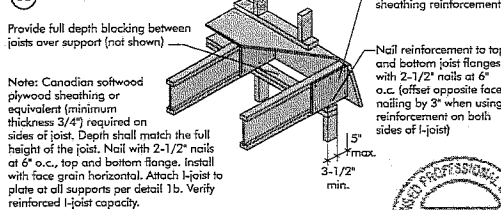
1. N = No reinforcement required.
- 1 = NI reinforced with 3/4\" wood structural panel on one side only.
- 2 = NI reinforced with 3/4\" wood structural panel on both sides, or double I-joist.
- X = Try a deeper joist or closer spacing.
2. Maximum design load shall be: 15 psf roof dead load, 55 psf floor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

For larger openings, or multiple 3-0\" width openings spaced less than 6-0\" o.c., additional joists beneath the opening's cripple studs may be required.

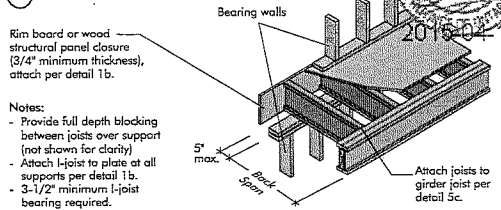
3. Table applies to joists 12\" to 24\" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12\" o.c. requirements for lesser spacing.
4. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge board, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.
5. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

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

5a SHEATHING REINFORCEMENT



5b SET-BACK DETAIL



5c SET-BACK CONNECTION

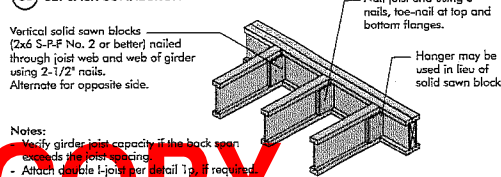
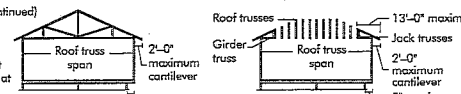


FIGURE 5 (continued)

See table below for NI reinforcement requirements at cantilever.



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

BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN (ft)	ROOF LOADING (UNFACTORED)												
		LL = 30 psf, DL = 15 psf				LL = 40 psf, DL = 15 psf				LL = 50 psf, DL = 15 psf				
		JOIST SPACING (in.)				JOIST SPACING (in.)				JOIST SPACING (in.)				
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24	
9-1/2"	26	N	N	N	N	2	2	X	X	X	2	X	X	X
	28	N	N	N	N	2	2	X	X	X	2	X	X	X
	30	N	N	N	N	2	2	X	X	X	2	X	X	X
	32	N	N	N	N	2	2	X	X	X	2	X	X	X
	34	N	N	N	N	2	2	X	X	X	2	X	X	X
11-7/8"	26	N	N	2	X	N	1	X	X	X	N	1	X	X
	28	N	N	2	X	N	1	X	X	X	N	2	X	X
	30	N	N	2	X	N	1	X	X	X	N	2	X	X
	32	N	N	1	X	N	2	X	X	X	N	2	X	X
	34	N	N	1	X	N	2	X	X	X	N	2	X	X
14"	26	N	N	1	X	N	2	X	X	X	N	2	X	X
	28	N	N	1	X	N	2	X	X	X	N	2	X	X
	30	N	N	2	X	N	1	X	X	X	N	2	X	X
	32	N	N	2	X	N	1	X	X	X	N	2	X	X
	34	N	N	2	X	N	1	X	X	X	N	2	X	X
16"	26	N	N	1	X	N	2	X	X	X	N	2	X	X
	28	N	N	1	X	N	2	X	X	X	N	2	X	X
	30	N	N	1	X	N	2	X	X	X	N	2	X	X
	32	N	N	1	X	N	2	X	X	X	N	2	X	X
	34	N	N	2	X	N	1	X	X	X	N	2	X	X

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

For larger openings, or multiple 3-0\" width openings spaced less than 6-0\" o.c., additional joists beneath the opening's cripple studs may be required.

3. Table applies to joists 12\" to 24\" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12\" o.c. requirements for lesser spacing.
4. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge board, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.
5. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

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RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

- The distance between the inside edge of the support and the centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
- I-joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
- Whenever possible, field-cut holes should be centred 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.
- The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the longest rectangular hole or duct chase opening) and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
- A knockout is **not** considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
- Holes measuring 1-1/2 inches or smaller shall be permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.
- A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
- All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
- Limit three maximum size holes per span, of which one may be a duct chase opening.
- A group of round holes at approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

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 (in.)												Span adjustment factor
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	
9-1/2"	NH20	0.7	1.0	2.1	4.2	5.8	6.0	...	...	...	...	...	...	0.9
	NH40	0.7	1.0	2.1	4.2	5.8	6.0	...	...	...	...	...	...	0.9
	NH60	1.0	2.4	4.0	5.4	7.0	7.0	...	...	...	...	...	...	0.9
	NH70	2.0	2.4	4.0	5.4	7.0	7.0	...	...	...	...	...	...	0.9
11-7/8"	NH20	0.7	0.8	1.0	2.4	3.8	4.0	5.0	6.4	7.9	...	...	...	0.9
	NH40	0.7	0.8	1.0	2.4	3.8	4.0	5.0	6.4	7.9	...	...	...	0.9
	NH60	0.7	1.0	2.0	4.0	5.9	6.0	7.3	8.1	10.0	...	...	...	0.9
	NH70	1.0	2.4	4.0	5.4	6.9	7.2	8.4	10.0	11.2	...	...	...	0.9
14"	NH20	0.7	0.8	1.0	2.4	3.8	4.0	5.0	6.4	7.9	...	...	...	0.9
	NH40	0.7	0.8	1.0	2.4	3.8	4.0	5.0	6.4	7.9	...	...	...	0.9
	NH60	0.7	1.0	2.0	4.0	5.9	6.0	7.3	8.1	10.0	...	...	...	0.9
	NH70	1.0	2.4	4.0	5.4	6.9	7.2	8.4	10.0	11.2	...	...	...	0.9
16"	NH20	0.7	0.8	1.0	2.4	3.8	4.0	5.0	6.4	7.9	...	...	...	0.9
	NH40	0.7	0.8	1.0	2.4	3.8	4.0	5.0	6.4	7.9	...	...	...	0.9
	NH60	0.7	1.0	2.0	4.0	5.9	6.0	7.3	8.1	10.0	...	...	...	0.9
	NH70	1.0	2.4	4.0	5.4	6.9	7.2	8.4	10.0	11.2	...	...	...	0.9

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

OPTIONAL:

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

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

Where:

 L_{actual} = Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span applications (ft).

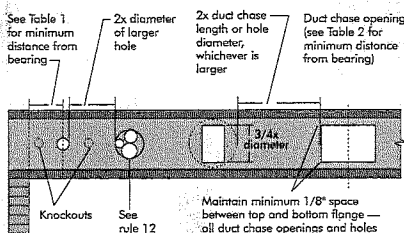
 L_{max} = The actual measured span distance between the inside faces of supports (ft).

 D = Span Adjustment Factor given in this table.

 D = The minimum distance from the inside face of any support to centre of hole from this table.

 D = If L_{actual} is greater than 1, use 1 in the above calculation for L_{actual} .

FIGURE 7
FIELD-CUT HOLE LOCATOR



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

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



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

Holes in webs should be cut with a sharp saw.

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

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

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of opening (in.)											
		8	10	12	14	16	18	20	22	24	26	28	30
9-1/2"	NH12	4.1	4.5	4.1	3.4	3.8	4.1	4.4	4.1	3.8	3.4	3.1	2.8
	NH20	4.1	4.5	4.1	3.4	3.8	4.1	4.4	4.1	3.8	3.4	3.1	2.8
	NH40	4.1	4.5	4.1	3.4	3.8	4.1	4.4	4.1	3.8	3.4	3.1	2.8
	NH60	4.1	4.5	4.1	3.4	3.8	4.1	4.4	4.1	3.8	3.4	3.1	2.8
11-7/8"	NH12	4.1	4.5	4.1	3.4	3.8	4.1	4.4	4.1	3.8	3.4	3.1	2.8
	NH20	4.1	4.5	4.1	3.4	3.8	4.1	4.4	4.1	3.8	3.4	3.1	2.8
	NH40	4.1	4.5	4.1	3.4	3.8	4.1	4.4	4.1	3.8	3.4	3.1	2.8
	NH60	4.1	4.5	4.1	3.4	3.8	4.1	4.4	4.1	3.8	3.4	3.1	2.8
14"	NH12	4.1	4.5	4.1	3.4	3.8	4.1	4.4	4.1	3.8	3.4	3.1	2.8
	NH20	4.1	4.5	4.1	3.4	3.8	4.1	4.4	4.1	3.8	3.4	3.1	2.8
	NH40	4.1	4.5	4.1	3.4	3.8	4.1	4.4	4.1	3.8	3.4	3.1	2.8
	NH60	4.1	4.5	4.1	3.4	3.8	4.1	4.4	4.1	3.8	3.4	3.1	2.8
16"	NH12	4.1	4.5	4.1	3.4	3.8	4.1	4.4	4.1	3.8	3.4	3.1	2.8
	NH20	4.1	4.5	4.1	3.4	3.8	4.1	4.4	4.1	3.8	3.4	3.1	2.8
	NH40	4.1	4.5	4.1	3.4	3.8	4.1	4.4	4.1	3.8	3.4	3.1	2.8
	NH60	4.1	4.5	4.1	3.4	3.8	4.1	4.4	4.1	3.8	3.4	3.1	2.8

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

INSTALLING THE GLUED FLOOR SYSTEM

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

FASTENERS FOR SHEATHING AND SUBFLOORING(1)

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

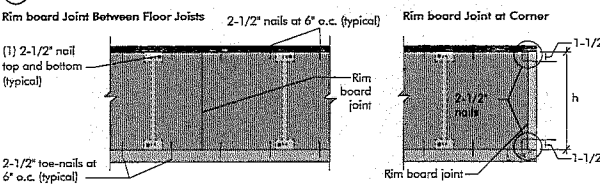
- Fasteners of sheathing and subflooring shall conform to the above table.
- Staples shall not be less than 1/16-inch in diameter or thickness, with not less than a 3/8-inch crown driven with the crown parallel to framing.
- Flooring screws shall not be less than 1/8-inch in diameter.
- Special conditions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

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

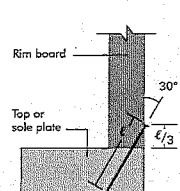
IMPORTANT NOTE:
Floor sheathing must be field glued to the I-joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-joist spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

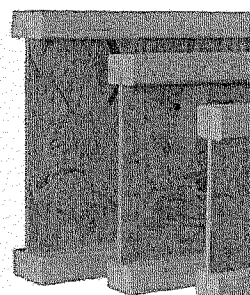
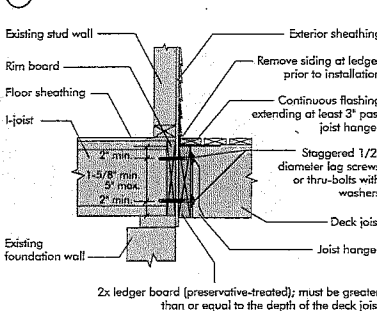
(8a) ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



(8b) TOE-NAIL CONNECTION AT RIM BOARD



(8c) 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL



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MAXIMUM FLOOR SPANS

- Maximum clear spans applicable to simple-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in CGS-71.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
- Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate 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 uniform loads, an engineering analysis may be required based on the use of the design properties.
- Tables are based on Limit States Design per CAN/CSA O86-09 Standard, and NBC 2010.
- SI units conversion: 1 inch = 25.4 mm
1 foot = 0.305 m

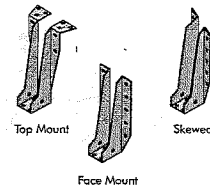
MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS SIMPLE AND MULTIPLE SPANS

Joist Depth	Joist Series	Simple spans				Multiple spans			
		On centre spacing				On centre spacing			
		12"	14"	19.2"	24"	12"	14"	19.2"	24"
9-1/2"	NI-20	15'-1"	14'-2"	13'-9"	13'-5"	16'-3"	15'-4"	14'-10"	14'-7"
	NI-40x	16'-1"	15'-2"	14'-8"	14'-9"	17'-5"	16'-5"	15'-10"	15'-5"
	NI-60	16'-3"	15'-4"	14'-10"	14'-11"	17'-7"	16'-7"	16'-0"	16'-1"
	NI-70	17'-1"	16'-1"	15'-6"	15'-7"	18'-7"	17'-4"	16'-9"	16'-10"
	NI-80	17'-3"	16'-3"	15'-8"	15'-9"	18'-10"	17'-6"	16'-11"	17'-0"
11-7/8"	NI-20	16'-11"	15'-0"	14'-5"	14'-6"	18'-4"	17'-3"	16'-8"	16'-7"
	NI-40x	18'-1"	17'-0"	16'-5"	16'-6"	20'-0"	18'-6"	17'-9"	17'-7"
	NI-60	18'-4"	17'-3"	16'-7"	16'-9"	20'-3"	18'-9"	18'-0"	18'-1"
	NI-70	19'-4"	18'-0"	17'-4"	17'-5"	21'-4"	19'-11"	19'-0"	19'-1"
	NI-80	19'-9"	18'-3"	17'-6"	17'-7"	21'-9"	20'-2"	19'-3"	19'-4"
14"	NI-20	20'-2"	18'-7"	17'-10"	17'-11"	22'-3"	20'-7"	19'-8"	19'-9"
	NI-40x	20'-4"	18'-9"	17'-11"	18'-0"	22'-5"	20'-9"	19'-10"	19'-11"
	NI-60	20'-5"	18'-11"	18'-1"	18'-2"	22'-7"	20'-11"	20'-0"	20'-1"
	NI-70	21'-7"	20'-0"	19'-1"	19'-2"	23'-10"	22'-1"	21'-1"	21'-2"
	NI-80	21'-11"	20'-3"	19'-4"	19'-5"	24'-3"	22'-5"	21'-5"	21'-6"
16"	NI-20	22'-5"	20'-8"	19'-9"	19'-10"	24'-9"	22'-10"	21'-10"	21'-10"
	NI-40x	22'-7"	20'-11"	19'-11"	20'-0"	25'-0"	23'-1"	22'-0"	22'-1"
	NI-60	22'-8"	20'-9"	19'-9"	19'-10"	24'-7"	22'-9"	21'-9"	21'-10"
	NI-70	23'-0"	21'-0"	20'-9"	20'-10"	24'-0"	22'-11"	22'-0"	22'-0"
	NI-80	23'-11"	22'-1"	21'-11"	21'-2"	24'-5"	23'-3"	23'-3"	23'-4"
18"	NI-20	24'-5"	22'-5"	21'-5"	21'-6"	26'-11"	24'-10"	23'-5"	23'-6"
	NI-40x	24'-8"	22'-9"	21'-9"	21'-10"	27'-3"	25'-2"	24'-0"	24'-1"

CMC EVALUATION REPORT 13832-R

I-JOIST HANGERS

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



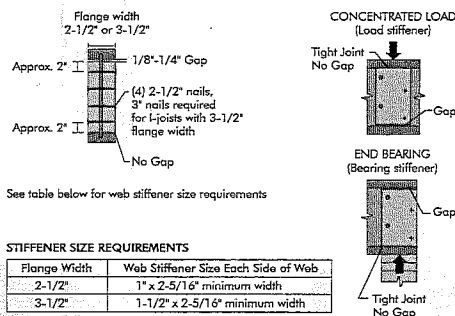
WEB STIFFENERS

RECOMMENDATIONS:

- A bearing stiffener is required in all engineered applications with factored reactions greater than found 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.

SI units conversion: 1 inch = 25.4 mm

FIGURE 2
WEB STIFFENER INSTALLATION DETAILS



See table below for web stiffener size requirements

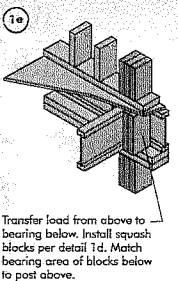
NORDIC I-JOIST SERIES

NI-20	NI-40x	NI-60	NI-70	NI-80	NI-90	NI-90x
5-RF No.2	1950F MSR	2100F MSR	1950F MSR	2100F MSR	2400F MSR	NPG Lumber
33 pieces per unit	33 pieces per unit	33 pieces per unit	23 pieces per unit	23 pieces per unit	23 pieces per unit	23 pieces per unit

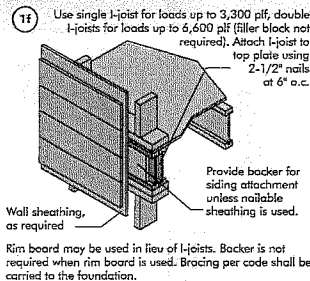
Chantiers Chibougamau Ltd. harvests its own trees, which enables Nordic products to adhere to strict quality control procedures throughout the manufacturing process. Every phase of the operation, from the raw material to the finished product, reflects our commitment to quality.

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

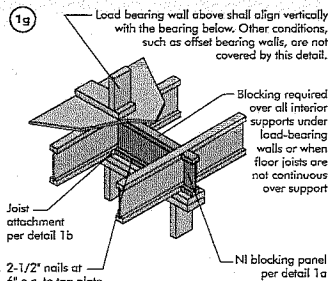
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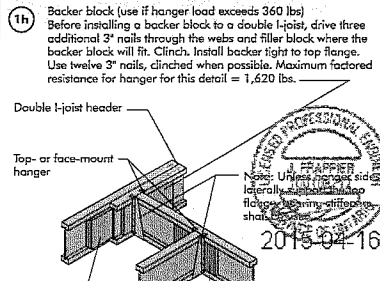
Transfer load from above to bearing below. Install squish blocks per detail 1d. Match bearing area of blocks below to post above.



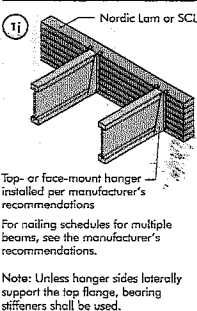
Use single I-joist for loads up to 3,300 plf, double I-joists for loads up to 6,600 plf. Attach I-joist to top plate using 2-1/2" nails at 6" o.c. Provide backer for siding attachment unless nailable sheathing is used. Rim board may be used in lieu of I-joists. Backer is not required when rim board is used. Bracing per code shall be carried to the foundation.



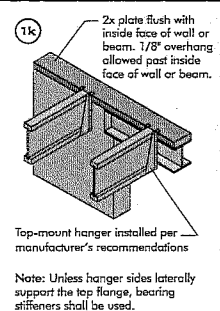
Load bearing wall above shall align vertically with the bearing below. Other conditions, such as offset bearing walls, are not covered by this detail. Blocking required over all interior supports under load-bearing walls or when floor joists are not continuous over support. Joist attachment per detail 1b. 2-1/2" nails at 6" o.c. to top plate. NI blocking panel per detail 1a.



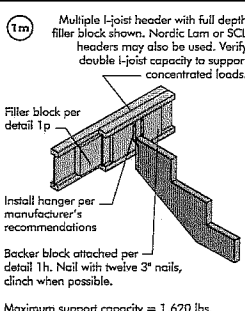
Backer block (use if hanger load exceeds 360 lbs). Before installing a backer block to a double I-joist, drive three additional 3" nails through the webs and filler block where the backer block will fit. Clinch. Install backer tight to top flange. Use twelve 3" nails, clinched when possible. Maximum factored resistance for hanger for this detail = 1,620 lbs. Double I-joist header. Top- or face-mount hanger. Filler block per detail 1p. Backer block required (both sides for face-mount hangers). Note: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.



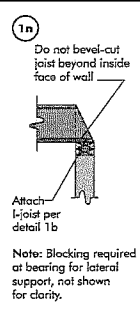
Nordic Lam or SCL. Top- or face-mount hanger installed per manufacturer's recommendations. For nailing schedules for multiple beams, see the manufacturer's recommendations. Note: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.



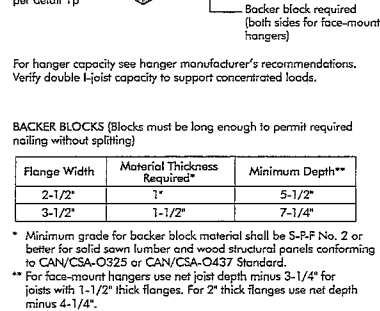
2x plate flush with inside face of wall or beam. 1/8" overhang allowed past inside face of wall or beam. Top-mount hanger installed per manufacturer's recommendations. Note: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.



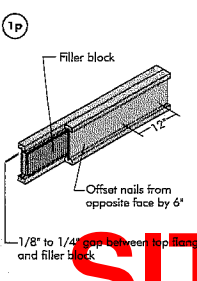
Multiple I-joist header with full depth filler block shown. Nordic Lam or SCL headers may also be used. Verify double I-joist capacity to support concentrated loads. Filler block per detail 1p. Install hanger per manufacturer's recommendations. Backer block attached per detail 1h. Nail with twelve 3" nails, clinch when possible. Maximum support capacity = 1,620 lbs.



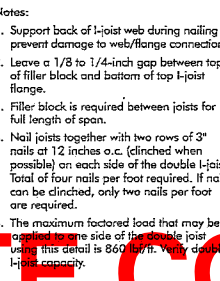
Do not bevel-cut joist beyond inside face of wall. Attach I-joist per detail 1b. Note: Blocking required or bearing for lateral support, not shown for clarity.



Backer blocks (Blocks must be long enough to permit required nailing without splitting). Table showing Flange Width, Material Thickness Required, and Minimum Depth. Note: 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".



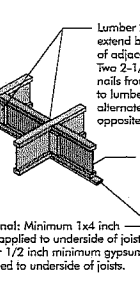
Filler block. 1/8" to 1/4" gap between top flange and filler block. Offset nails from opposite face by 6".



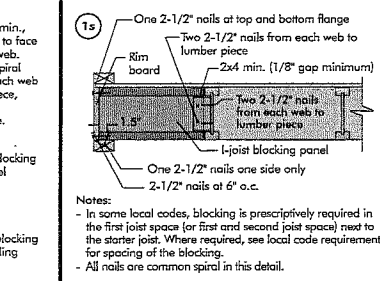
Support back of I-joist web during nailing to prevent damage to web/flange connection. Leave a 1/8" to 1/4" gap between top of filler block and bottom of top I-joist flange. Filler block is required between joists for full length of span. Nail joists together with two rows of 3" nails at 12 inches o.c.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

FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION			
Flange Size	Joist Depth	Filler Block Size	
2-1/2" x 1-1/2"	9-1/2"	2-1/8" x 6"	
	11-7/8"	2-1/8" x 8"	
	14"	2-1/8" x 10"	
3-1/2" x 1-1/2"	9-1/2"	3" x 6"	
	11-7/8"	3" x 8"	
	14"	3" x 10"	
3-1/2" x 2"	9-1/2"	3" x 6"	
	11-7/8"	3" x 7"	
	14"	3" x 9"	

FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION. Table showing Flange Size, Joist Depth, and Filler Block Size.



Lumber 2x4 min., extend block to face of adjacent web. Two 2-1/2" spiral nails from each web to lumber piece, alternate on opposite side. NI blocking panel. Optional: Minimum 1x4 inch strip applied to underside of joist at blocking line or 1/2 inch minimum gypsum ceiling attached to underside of joists.



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). Two 2-1/2" nails from each web to lumber piece. I-joist blocking panel. One 2-1/2" nails one side only. 2-1/2" nails at 6" o.c. Note: In some local codes, blocking is prescriptively required in the first joist space (or first and second joist space) next to the starter joist. Where required, see local code requirements for spacing of the blocking. All nails are common spiral in this detail.

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