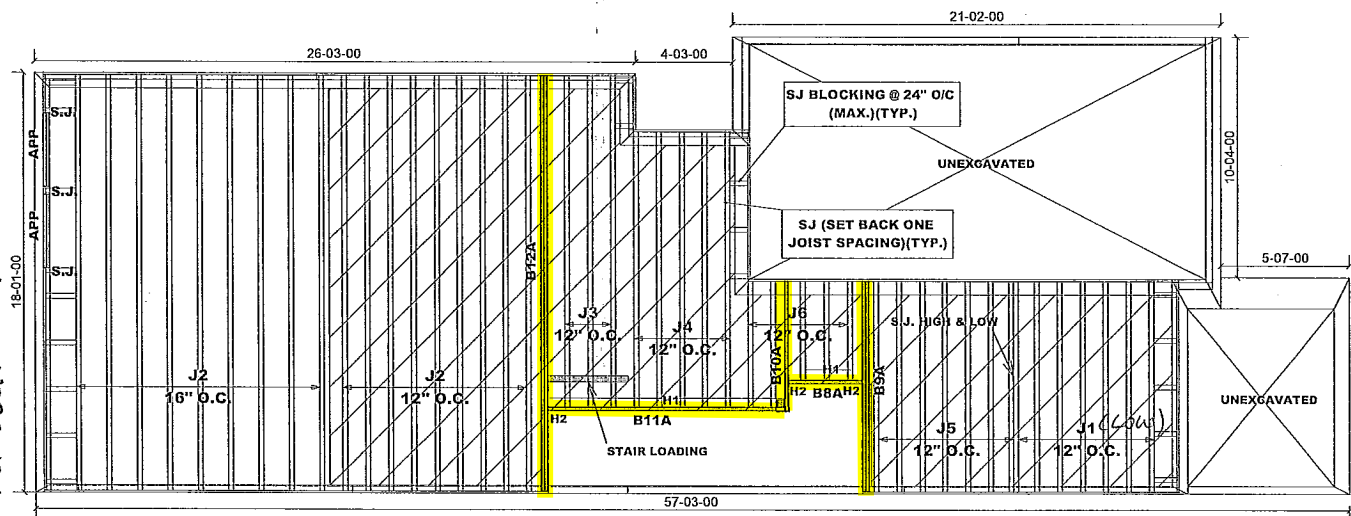


LVL RIM AS RES'D  
FOR DECK CONDITION



Products				
ProdID	Length	Product	Piles	Net Qty
J1	10-00-00	9 1/2" NI-40x	1	7
J2	18-00-00	11 7/8" NI-40x	1	18
J3	16-00-00	11 7/8" NI-40x	1	3
J4	12-00-00	11 7/8" NI-40x	1	5
J5	10-00-00	11 7/8" NI-40x	1	7
J6	6-00-00	11 7/8" NI-40x	1	5
S.J.	2-00-00	11 7/8" NI-40x	1	3
B12A	18-00-00	VERSALAM-12 2.0E	2	2
B11A	11-00-00	VERSALAM-12 2.0E	1	1
B9A	10-00-00	VERSALAM-12 2.0E	2	2
B10A	6-00-00	VERSALAM-12 2.0E	1	1
B8A	4-00-00	VERSALAM-12 2.0E	1	1

1 - 2 X 6 SPF # 2 SQUASH BLOCK REQUIRED ON ONE SIDE OF EACH JOIST UNDER INTERIOR BEARING WALLS.  
MULTIPLE SQUASH BLOCKS ARE REQUIRED UNDER CONCENTRATED LOADS.  
JOIST SPACING UNDER CERAMIC IS 12" O.C.  
CERAMIC TILE APPLICATIONS AS PER O.B.C. 9.30.6  
DO NOT SCALE - REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS.

TOWN OF BRADFORD WEST GWILLIMBURY  
BUILDING DEPARTMENT  
PLANS EXAMINED  
ONTARIO BUILDING CODE APPLIES  
DATE: 2019-04-30

INSPECTOR: BG



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

DESIGN LOADS:  
LIVE LOAD: 40 PSF  
DEAD LOAD: 15 PSF  
DEAD LOAD: 20 PSF  
(TILED AREAS ONLY)

UNIT: TH1  
ELEVATION 'A' & 'B'  
FIRST FLOOR FRAMING  
E WOD & WOB CAN BE TYPICAL

July 19, 2018 99072

T. 18071935 - T. 18071944  
T. 1405223 - T. 1405237

JT/PL: 44997/197794

Builder: Bayview Wellington

Location: Bradford

Designer: YW/SG

Alpa Roof Trusses Inc.  
Maple, Ontario

Salesperson: Mario  
Tamarack Lumber

LI: 297253(241697)

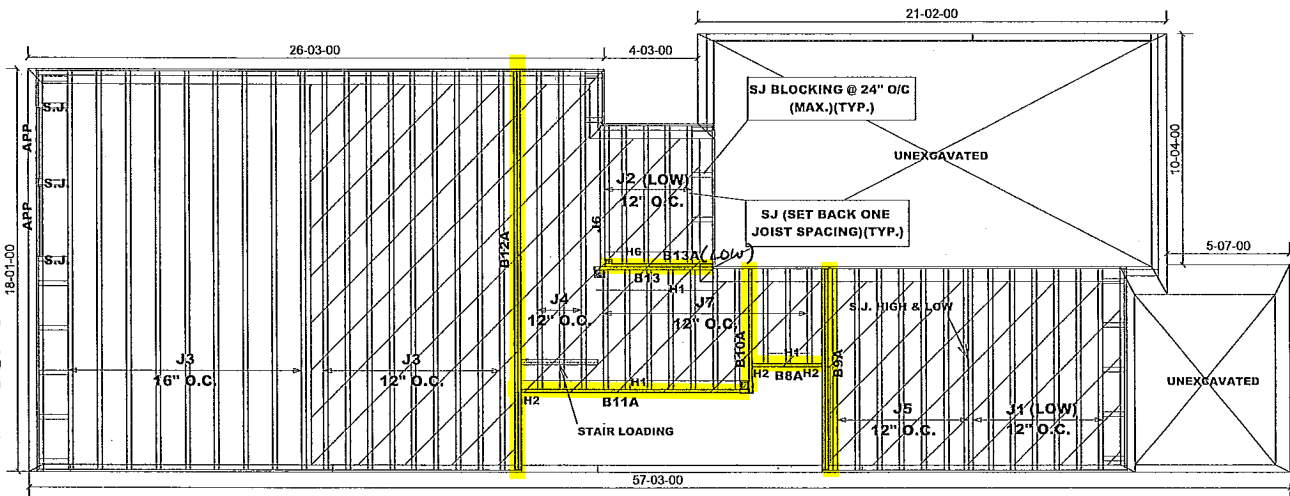
Project: Green Valley Estates East

Date: April 20, 2018

Sheet: 1 of 4

**SITE COPY**

LVL RIM AS REQ'D  
FOR DECK CONDITION



**HANGER SCHEDULE**  
H1 - IUS2.56/11.88  
H2 - HUS1.81/10  
H6 - IUS2.56/19.5  
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 AND GLUED  
APP - AS PER PLAN  
BBO - BEAM BY OTHERS

Products				
PlotID	Length	Product	Plies	Net Qty
J1	10-00-00	9 1/2" NI-40x	1	7
J2	8-00-00	9 1/2" NI-40x	1	5
J3	18-00-00	11 7/8" NI-40x	1	18
J4	16-00-00	11 7/8" NI-40x	1	3
J5	10-00-00	11 7/8" NI-40x	1	7
J6	8-00-00	11 7/8" NI-40x	1	1
J7	6-00-00	11 7/8" NI-40x	1	10
S.J.	2-00-00	11 7/8" NI-40x	1	3
B12A	18-00-00	VERSALAM-12 2.0E	2	2
B11A	11-00-00	VERSALAM-12 2.0E	1	1
B9A	10-00-00	VERSALAM-12 2.0E	2	2
B10A	6-00-00	VERSALAM-12 2.0E	1	1
B13	6-00-00	VERSALAM-12 2.0E	1	1
B13A	5-00-00	VERSALAM-10 2.0E	1	1
B8A	4-00-00	VERSALAM-12 2.0E	1	1

1 - 2 X 6 SPF # 2 SQUASH BLOCK REQUIRED ON ONE SIDE OF EACH JOIST UNDER INTERIOR BEARING WALLS.  
MULTIPLE SQUASH BLOCKS ARE REQUIRED UNDER CONCENTRATED LOADS.  
JOIST SPACING UNDER CERAMIC IS 12" O.C.  
CERAMIC TILE APPLICATIONS AS PER O.B.C. 9.30.6  
DO NOT SCALE - REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS.

**DESIGN LOADS:**  
LIVE LOAD: 40 PSF  
DEAD LOAD: 15 PSF  
DEAD LOAD: 20 PSF  
(TILED AREAS ONLY)

**UNIT: TH1**  
**ELEVATION 'A' & 'B'**  
**FIRST FLOOR FRAMING**  
**SUNKEN CONDITION**

WOD & WOB CONDITION

JULY 19, 2018 99072

JT/PL: 44997: /97794

Builder: Bayview Wellington

Location: Bradford

Designer: YW/SG

Alpa Roof Trusses Inc.  
Maple, Ontario

Salesperson: Mario  
Tamarack Lumber

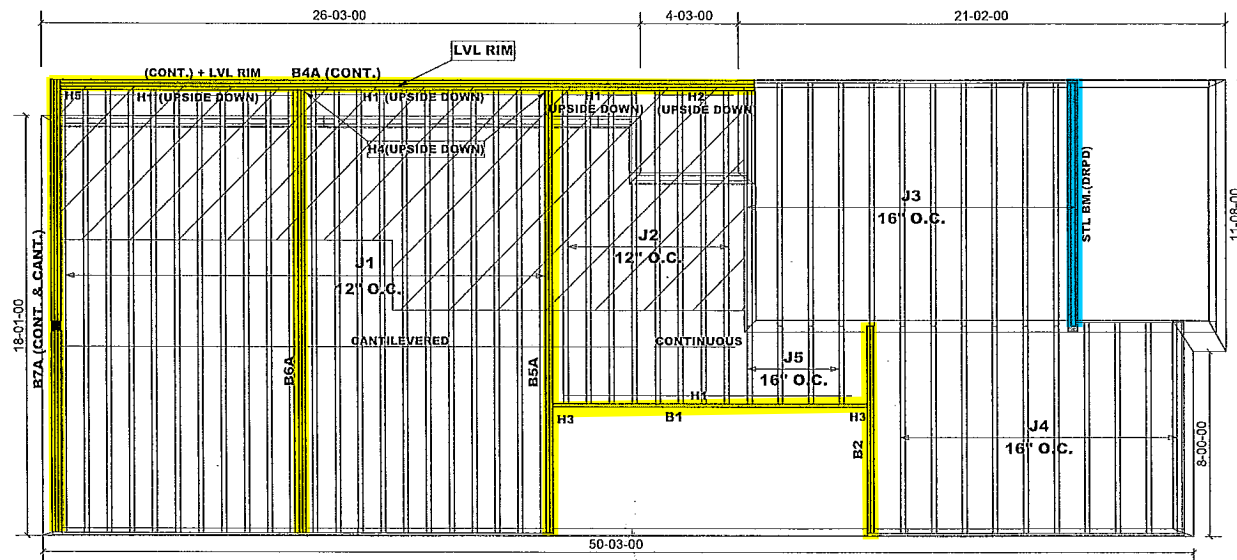
LI: 297253(241697)

Project: Green Valley Estates East

Date: April 20, 2018

Sheet: 2 of 4

**SITE COPY**



**Hatch Legend**

 **Ceramic Tile**

**HANGER SCHEDULE**  
H1 - IUS2.56/11.88  
H2 - HU412 (WEB STIFFENERS REQUIRED)  
H3 - HUS1.81/10  
H4 - HGUS410  
H5 - HUC410  
**RIMBOARD**  
1-1/8" X 11-7/8" O.S.B.  
SUBFLOOR 3/4"  
NAILED AND GLUED  
APP - AS PER PLAN  
BBO - BEAM BY OTHERS

Products				
PlotID	Length	Product	Piles	Net Qty
J1	20-00-00	11 7/8" NI-40x	1	22
J2	14-00-00	11 7/8" NI-40x	1	8
J3	12-00-00	11 7/8" NI-40x	1	12
J4	10-00-00	11 7/8" NI-40x	1	10
J5	4-00-00	11 7/8" NI-40x	1	4
B4A (CONT.)	31-00-00	VERSALAM-12 2.0E	2	2
B5A	20-00-00	VERSALAM-12 2.0E	2	2
B6A	20-00-00	VERSALAM-12 2.0E	2	2
B7A (CONT. & CANT.)	20-00-00	VERSALAM-12 2.0E	3	3
B1	14-00-00	VERSALAM-12 2.0E	1	1
B2	9-00-00	VERSALAM-12 2.0E	2	2

1 - 2 X 6 SPF # 2 SQUASH BLOCK REQUIRED ON ONE SIDE OF EACH JOIST UNDER INTERIOR BEARING WALLS.

MULTIPLE SQUASH BLOCKS ARE REQUIRED UNDER CONCENTRATED LOADS.

JOIST SPACING UNDER CERAMIC IS 12" O.C.

CERAMIC TILE APPLICATIONS AS PER O.B.C. 9.30.6

PROVIDE I-JOIST BLOCKING BETWEEN CANTILEVERED & CONTINUOUS JOISTS (ALONG BEARING) AND RIMBOARD CLOSURE AT ENDS.

DO NOT SCALE - REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS.

**DESIGN LOADS:**  
LIVE LOAD: 40 PSF  
DEAD LOAD: 15 PSF  
DEAD LOAD: 20 PSF  
(TILED AREAS ONLY)

**UNIT: TH1**  
**ELEVATION 'A'**  
**SECOND FLOOR FRAMING**

July 19, 2018 99072

JT/PL: 44997-197794

Builder: Bayview Wellington

Location: Bradford

Designer: YW/SG

Alpa Roof Trusses Inc.  
Maple, Ontario

Salesperson: Mario  
Tamarack Lumber

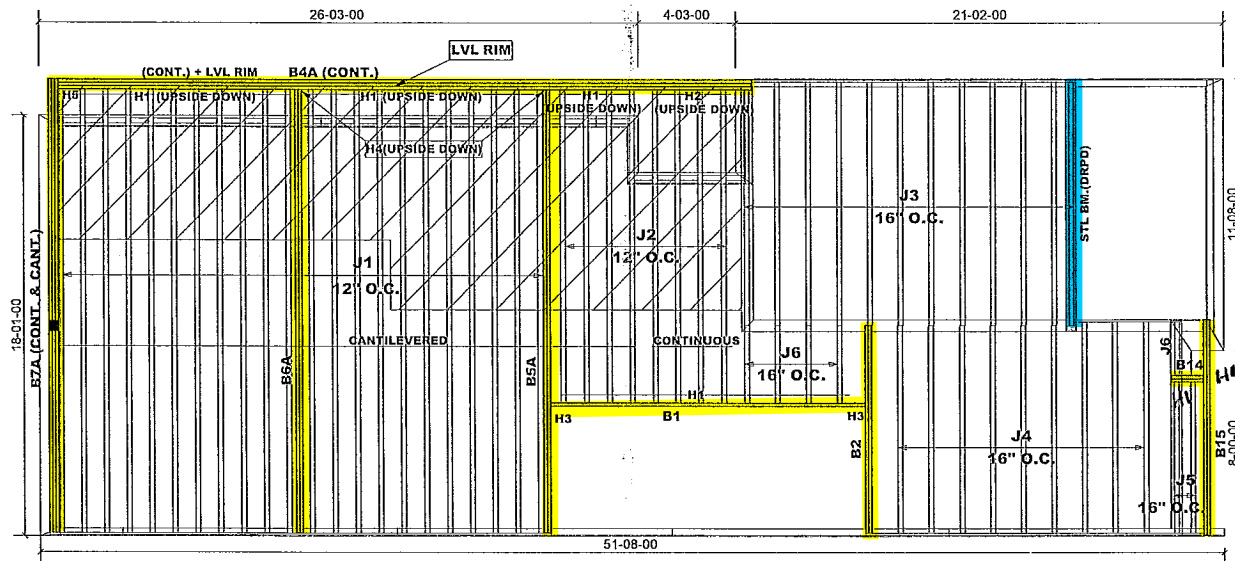
LI: 297253(241697)

Project: Green Valley Estates East

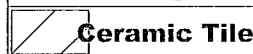
Date: April 20, 2018

Sheet: 3 of 4

**SITE COPY**



### Hatch Legend



**HANGER SCHEDULE**  
H1 - IUS2.56/11.88  
H2 - HU412 (WEB STIFFENERS REQUIRED)  
H3 - HUS1.81/10  
H4 - HGUS410  
H5 - HUC410  
RIMBOARD  
1-1/8" X 11-7/8" O.S.B.  
SUBFLOOR 3/4"  
NAILED AND GLUED  
APP - AS PER PLAN  
BBO - BEAM BY OTHERS

Products				
PlotID	Length	Product	Piles	Net Qty
J1	20-00-00	11 7/8" NI-40x	1	22
J2	14-00-00	11 7/8" NI-40x	1	8
J3	12-00-00	11 7/8" NI-40x	1	12
J4	10-00-00	11 7/8" NI-40x	1	9
J5	8-00-00	11 7/8" NI-40x	1	2
J6	4-00-00	11 7/8" NI-40x	1	5
B4A (CONT.)	31-00-00	VERSALAM-12 2.0E	2	2
B5A	20-00-00	VERSALAM-12 2.0E	2	2
B6A	20-00-00	VERSALAM-12 2.0E	2	2
B7A (CONT. & CANT.)	20-00-00	VERSALAM-12 2.0E	3	3
B1	14-00-00	VERSALAM-12 2.0E	1	1
B15	10-00-00	VERSALAM-12 2.0E	2	2
B2	9-00-00	VERSALAM-12 2.0E	2	2
B14	2-00-00	VERSALAM-12 2.0E	2	2

1 - 2 X 6 SPF # 2 SQUASH BLOCK REQUIRED ON ONE SIDE OF EACH JOIST UNDER INTERIOR BEARING WALLS.

MULTIPLE SQUASH BLOCKS ARE REQUIRED UNDER CONCENTRATED LOADS.

JOIST SPACING UNDER CERAMIC IS 12" O.C.

CERAMIC TILE APPLICATIONS AS PER O.B.C. 9.30.6

PROVIDE I-JOIST BLOCKING BETWEEN CANTILEVERED & CONTINUOUS JOISTS (ALONG BEARING) AND RIMBOARD CLOSURE AT ENDS.

DO NOT SCALE - REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS.

**DESIGN LOADS:**  
LIVE LOAD: 40 PSF  
DEAD LOAD: 15 PSF  
DEAD LOAD: 20 PSF  
(TILED AREAS ONLY)

**UNIT: TH1**  
**ELEVATION 'B'**  
**SECOND FLOOR FRAMING**

July 19, 2018 99072

JT/PL: 449978/97794

Builder: Bayview Wellington

Location: Bradford

Designer: YW/SG

Alpa Roof Trusses Inc.  
Maple, Ontario

Salesperson: Mario  
Tamarack Lumber

LI: 297253(241697)

Project: Green Valley Estates East

Date: April 20, 2018

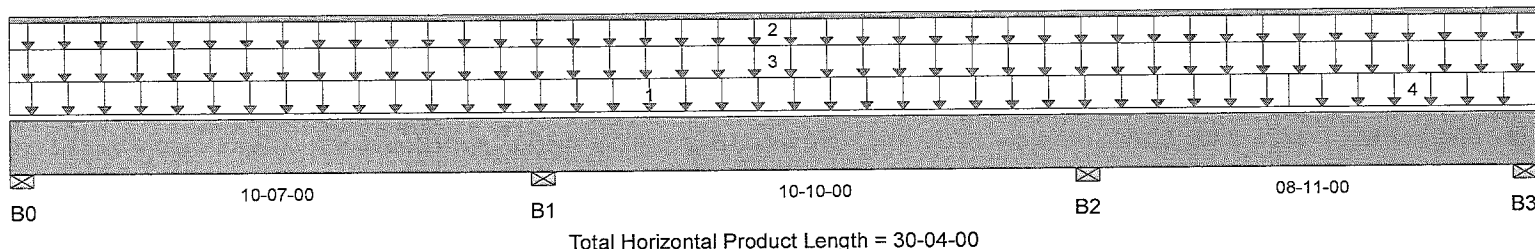
Sheet: 4 of 4

**SITE COPY**



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

File Name: 241697.bcc  
 Description: Designs\B4A  
 Specifier: TH1  
 Designer: Yuri Widya  
 Company: Alpa Roof Trusses Inc.  
 Misc:



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

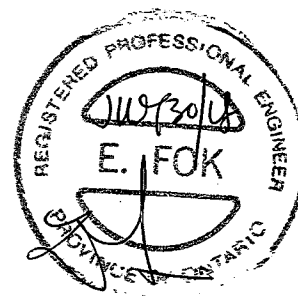
Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	298 / 34	757 / 0	391 / 0	
B1, 3-1/2"	769 / 0	2,109 / 0	1,069 / 0	
B2, 3-1/2"	798 / 0	1,912 / 0	965 / 0	
B3, 3-1/2"	431 / 46	709 / 0	330 / 0	

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Floor	Unf. Area (lb/ft <sup>2</sup> )	L	00-00-00	25-05-00	40	20			01-00-00
2	Wall	Unf. Lin. (lb/ft)	L	00-00-00	30-04-00	0	120			n/a
3	Roof	Unf. Area (lb/ft <sup>2</sup> )	L	00-00-00	30-04-00	11	12	44		02-00-00
4		Unf. Area (lb/ft <sup>2</sup> )	L	25-05-00	30-04-00	40	20			02-03-00

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,329 ft-lbs	35,392 ft-lbs	9.4%	62	04-04-14
Neg. Moment	-4,573 ft-lbs	-35,392 ft-lbs	12.9%	79	10-07-00
End Shear	1,193 lbs	14,464 lbs	8.2%	62	01-03-06
Cont. Shear	1,986 lbs	14,464 lbs	13.7%	79	09-05-06
Total Load Defl.	L/999 (0.041")	n/a	n/a	128	04-10-04
Live Load Defl.	L/999 (0.018")	n/a	n/a	188	05-01-05
Total Neg. Defl.	L/999 (-0.004")	n/a	n/a	128	12-04-11
Max Defl.	0.041"	n/a	n/a	128	04-10-04
Span / Depth	10.9	n/a	n/a		00-00-00



## Bearing Supports

Boarding Support		Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate	3-1/2" x 3-1/2"	1,683 lbs	22.3%	11.3%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	4,624 lbs	61.4%	30.9%	Spruce Pine Fir
B2	Wall/Plate	3-1/2" x 3-1/2"	4,237 lbs	56.2%	28.3%	Spruce Pine Fir
B3	Wall/Plate	3-1/2" x 3-1/2"	1,696 lbs	22.5%	11.4%	Spruce Pine Fir

## Notes

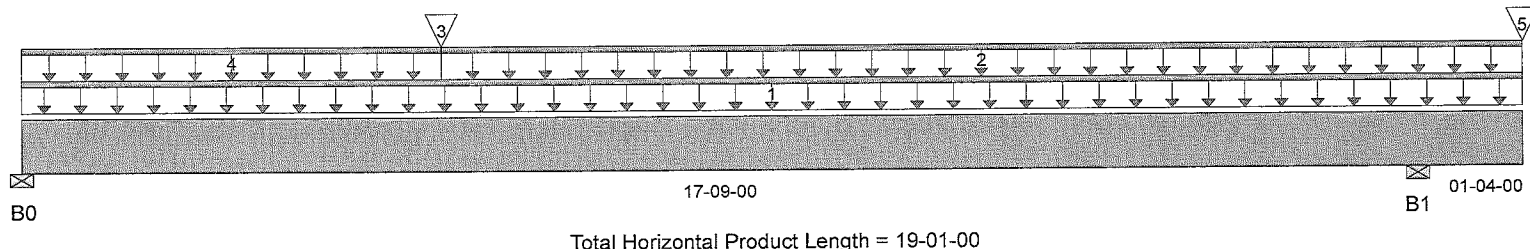
Nail one ply to another with  
 3 1/2" spiral nails @ 12"  
 o.c., staggered in 2 rows

# SITE COPY T.18071935



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

File Name: 241697.bcc  
 Description: Designs\B5A  
 Specifier: TH1  
 Designer: Yuri Widya  
 Company: Alpa Roof Trusses Inc.  
 Misc:



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

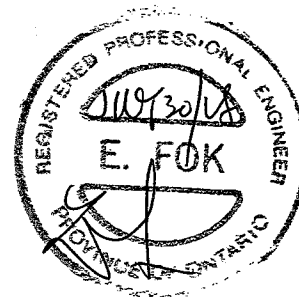
Bearing	Live	Dead	Snow	Wind
B0, 1-3/4"	1,262 / 62	885 / 0	0 / 73	
B1, 5-1/2"	1,673 / 0	2,642 / 0	1,038 / 0	

## 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	19-01-00	20	10			n/a
2		Unf. Lin. (lb/ft)	L	05-04-00	19-01-00	20	10			n/a
3	B1	Conc. Pt. (lbs)	L	05-04-00	05-04-00	1,418	737			n/a
4		Unf. Lin. (lb/ft)	L	00-00-00	05-04-00	0	60			n/a
5	B4	Conc. Pt. (lbs)	L	19-01-00	19-01-00	798	1,912	965		n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	13,866 ft-lbs	35,392 ft-lbs	39.2%	8	05-04-00
Neg. Moment	-5,701 ft-lbs	-35,392 ft-lbs	16.1%	13	17-09-00
End Shear	2,850 lbs	14,464 lbs	19.7%	8	01-01-10
Cont. Shear	4,243 lbs	14,464 lbs	29.3%	13	18-11-10
Total Load Defl.	L/485 (0.437")	0.883"	49.5%	23	07-11-08
Live Load Defl.	L/685 (0.309")	0.589"	52.5%	33	08-03-11
Total Neg. Defl.	2xL/1,998 (-0.075")	n/a	n/a	23	19-01-00
Max Defl.	0.437"	n/a	n/a	23	07-11-08
Span / Depth	17.9	n/a	n/a		00-00-00



## Bearing Supports

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	1-3/4" x 3-1/2"	3,000 lbs	79.6%	40.1%	Spruce Pine Fir
B1	5-1/2" x 3-1/2"	6,330 lbs	53.4%	27%	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  
 Cantilevers require sheathed bottom flanges, blocking at cantilever support and closure at ends.

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

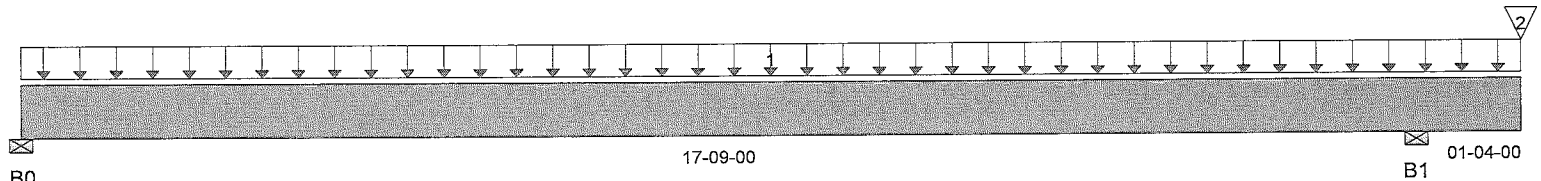
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T. 18071936



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

File Name: 241697.bcc  
 Description: Designs\B6A  
 Specifier: TH1  
 Designer: Yuri Widya  
 Company: Alpa Roof Trusses Inc.  
 Misc:



Total Horizontal Product Length = 19'-01"

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

Bearing	Live	Dead	Snow	Wind
B0, 1-3/4"	357 / 60	125 / 0	0 / 81	
B1, 5-1/2"	1,236 / 0	2,595 / 0	1,150 / 0	

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Floor	Unf. Area (lb/ft^2)	L	00-00-00	19-01-00	40	20			01-00-00
2	B4	Conc. Pt. (lbs)	L	19-01-00	19-01-00	769	2,109	1,069		n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,330 ft-lbs	35,392 ft-lbs	6.6%	8	06-10-15
Neg. Moment	-6,218 ft-lbs	-35,392 ft-lbs	17.6%	13	17-09-00
End Shear	578 lbs	14,464 lbs	4%	8	01-01-10
Cont. Shear	4,631 lbs	14,464 lbs	32%	13	18-11-10
Total Load Defl.	L/999 (0.066")	n/a	n/a	23	07-04-11
Live Load Defl.	L/999 (0.09")	n/a	n/a	33	08-10-00
Total Neg. Defl.	L/999 (-0.097")	n/a	n/a	31	11-02-14
Max Defl.	-0.097"	n/a	n/a	31	11-02-14
Span / Depth	17.9	n/a	n/a		00-00-00

## Bearing Supports

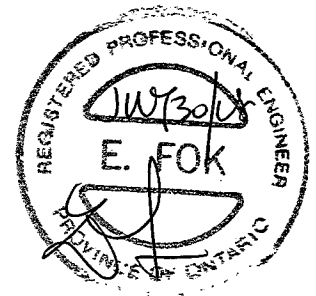
	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 1-3/4" x 3-1/2"	691 lbs	18.3%	9.2%	Spruce Pine Fir
B1	Wall/Plate 5-1/2" x 3-1/2"	5,673 lbs	47.9%	24.2%	Spruce Pine Fir

## 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  
 Cantilevers require sheathed bottom flanges, blocking at cantilever support and closure at ends.

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

## User Notes



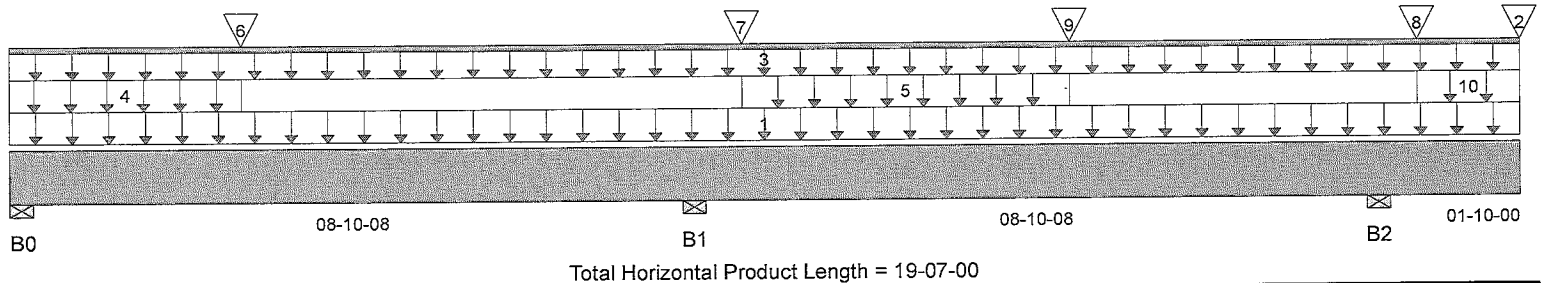
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T-18071937



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

File Name: 241697.bcc  
 Description: Designs\B7A  
 Specifier: TH1  
 Designer: Yuri Widya  
 Company: Alpa Roof Trusses Inc.  
 Misc:



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

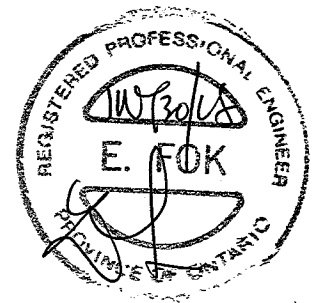
Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	1,367 / 188	1,653 / 0	4,922 / 0	
B1, 9"	2,932 / 0	5,108 / 0	9,956 / 0	
B2, 5-1/2"	2,020 / 0	5,904 / 0	4,094 / 0	

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Floor	Unf. Area (lb/ft <sup>2</sup> )	L	00-00-00	19-07-00	40	20			00-06-00
2	B4	Conc. Pt. (lbs)	L	19-07-00	19-07-00	298	757	391		n/a
3	Wall	Unf. Lin. (lb/ft)	L	00-00-00	19-07-00	0	100			n/a
4	Roof	Unf. Area (lb/ft <sup>2</sup> )	L	00-00-00	03-00-00	11	12	44		26-02-00
5	Roof	Unf. Area (lb/ft <sup>2</sup> )	L	09-06-00	13-09-00	11	12	44		23-10-00
6		Conc. Pt. (lbs)	L	03-00-00	03-00-00	893	1,055	3,700		n/a
7		Conc. Pt. (lbs)	L	09-06-00	09-06-00	893	1,055	3,700		n/a
8		Conc. Pt. (lbs)	L	18-03-00	18-03-00	563	2,333	665		n/a
9		Conc. Pt. (lbs)	L	13-09-00	13-09-00	563	2,333	665		n/a
10	Roof	Unf. Area (lb/ft <sup>2</sup> )	L	18-03-00	19-07-00	11	12	44		23-10-00

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	15,687 ft-lbs	55,212 ft-lbs	28.4%	62	03-00-00
Neg. Moment	-17,940 ft-lbs	-55,212 ft-lbs	32.5%	79	08-10-08
End Shear	6,628 lbs	21,696 lbs	30.5%	62	01-05-06
Cont. Shear	11,102 lbs	21,696 lbs	51.2%	79	10-02-14
Total Load Defl.	L/999 (0.066")	n/a	n/a	169	13-02-07
Live Load Defl.	L/999 (0.043")	n/a	n/a	218	03-08-07
Total Neg. Defl.	2xL/1,998 (-0.025")	n/a	n/a	174	19-07-00
Max Defl.	0.066"	n/a	n/a	169	13-02-07
Span / Depth	8.6	n/a	n/a		00-00-00



## Bearing Supports

Bearing Supports		Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate	5-1/2" x 5-1/4"	10,132 lbs	57%	28.8%	Spruce Pine Fir
B1	Wall/Plate	9" x 5-1/4"	22,786 lbs	78.4%	39.5%	Spruce Pine Fir
B2	Wall/Plate	5-1/2" x 5-1/4"	14,531 lbs	81.8%	41.2%	Spruce Pine Fir

## Notes

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

# SITE COPY

T. 18071938



BC CALC® Design Report

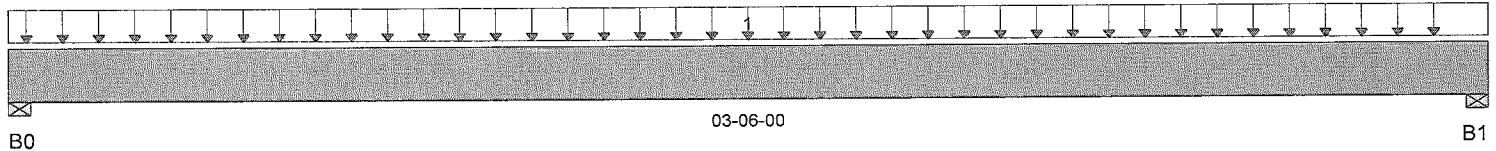


Dry | 1 span | No cantilevers | 0/12 slope (deg)

April 20, 2018 15:42:13

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

File Name: 241697.bcc  
Description: Designs\B8A  
Specifier: TH1  
Designer: Yuri Widya  
Company: Alpa Roof Trusses Inc.  
Misc:



Total Horizontal Product Length = 03-06-00

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	210 / 0	116 / 0		
B1, 3-1/2"	210 / 0	116 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Floor + Stair	Unf. Area (lb/ft^2)	L	00-00-00	03-06-00	40	20	1.00	1.15	03-00-00

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	304 ft-lbs	17,696 ft-lbs	1.7%	1	01-09-00
End Shear	123 lbs	7,232 lbs	1.7%	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"	459 lbs	12.2%	6.1%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 1-3/4"	459 lbs	12.2%	6.1%	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

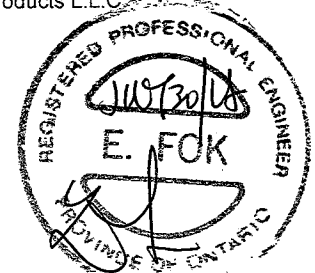
## User Notes

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®, 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.

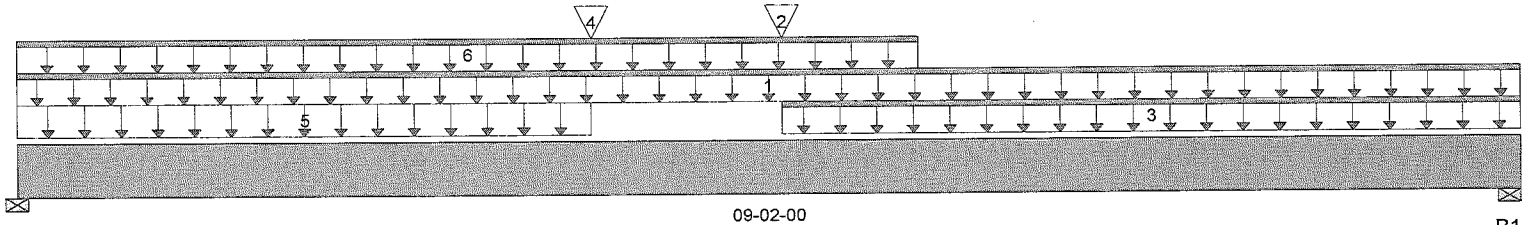


# SITE COPY

T.18071939

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

File Name: 241697.bcc  
 Description: Designs\B9A  
 Specifier: TH1  
 Designer: Yuri Widya  
 Company: Alpa Roof Trusses Inc.  
 Misc:



Total Horizontal Product Length = 09-02-00

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

Bearing	Live	Dead	Snow	Wind
B0, 1-3/4"	484 / 0	498 / 0		
B1, 3-1/2"	412 / 0	350 / 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	09-02-00	20	10			n/a
2	B8A	Conc. Pt. (lbs)	L	04-08-00	04-08-00	210	116			n/a
3		Unf. Lin. (lb/ft)	L	04-08-00	09-02-00	20	10			n/a
4	PL	Conc. Pt. (lbs)	L	03-06-00	03-06-00	320	120			n/a
5	Landing	Unf. Area (lb/ft^2)	L	00-00-00	03-06-00	40	15			00-08-00
6		Unf. Lin. (lb/ft)	L	00-00-00	05-06-00	0	60			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,497 ft-lbs	35,392 ft-lbs	9.9%	1	04-01-00
End Shear	1,139 lbs	14,464 lbs	7.9%	1	01-01-10
Total Load Defl.	L/999 (0.034")	n/a	n/a	4	04-04-08
Live Load Defl.	L/999 (0.018")	n/a	n/a	5	04-04-08
Max Defl.	0.034"	n/a	n/a	4	04-04-08
Span / Depth	8.9	n/a	n/a		00-00-00

## Bearing Supports

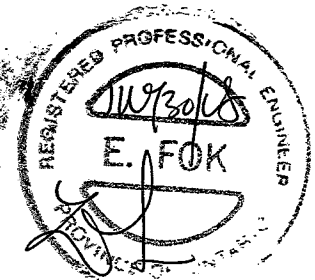
B0	Wall/Plate	1-3/4" x 3-1/2"	1,350 lbs	35.8%	18.1%	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	1,055 lbs	14%	7.1%	Spruce Pine Fir

## 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

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

## User Notes



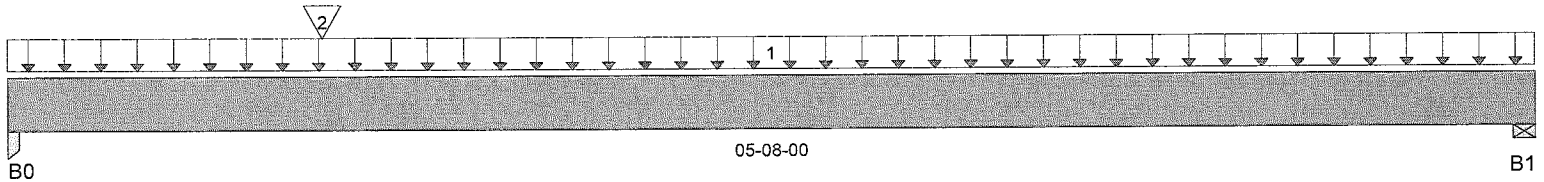
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T.18071940



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

File Name: 241697.bcc  
 Description: Designs\B10A  
 Specifier: TH1  
 Designer: Yuri Widya  
 Company: Alpa Roof Trusses Inc.  
 Misc:



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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	286 / 0	169 / 0		
B1, 3-1/2"	151 / 0	95 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
1	Floor	Unf. Area (lb/ft^2)	L	00-00-00	05-08-00	40	20			01-00-00
2	B8A	Conc. Pt. (lbs)	L	01-02-00	01-02-00	210	116			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	567 ft-lbs	17,696 ft-lbs	3.2%	1	01-11-08
End Shear	467 lbs	7,232 lbs	6.5%	1	01-03-06
Total Load Defl.	L/999 (0.004")	n/a	n/a	4	02-08-04
Live Load Defl.	L/999 (0.002")	n/a	n/a	5	02-08-04
Max Defl.	0.004"	n/a	n/a	4	02-08-04
Span / Depth	5.3	n/a	n/a		00-00-00

## Bearing Supports

	Dim. (L x W)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0 Post	3-1/2" x 1-3/4"	639 lbs	6%	8.6%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	345 lbs	9.2%	4.6%	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

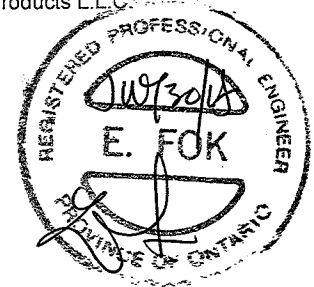
## User Notes

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.



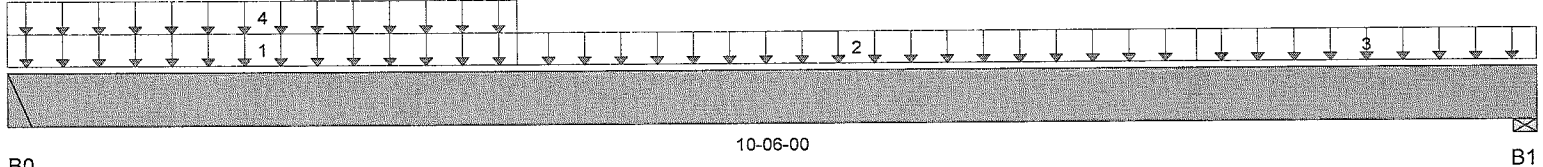
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T-18071941



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

File Name: 241697.bcc  
 Description: Designs\B11A  
 Specifier: TH1  
 Designer: Yuri Widya  
 Company: Alpa Roof Trusses Inc.  
 Misc:



Total Horizontal Product Length = 10-06-00

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

Bearing	Live	Dead	Snow	Wind
B0	1,945 / 0	930 / 0		
B1, 3-1/2"	1,116 / 0	576 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Floor	Unf. Area (lb/ft^2)	L	00-00-00	03-06-00	40	20			07-01-00
2	Floor	Unf. Area (lb/ft^2)	L	03-06-00	08-02-00	40	20			06-00-00
3	Floor	Unf. Area (lb/ft^2)	L	08-02-00	10-06-00	40	20			02-08-00
4	Stair	Unf. Area (lb/ft^2)	L	00-00-00	03-06-00	40	15			05-00-00

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	7,699 ft-lbs	17,696 ft-lbs	43.5%	1	04-08-00
End Shear	2,837 lbs	7,232 lbs	39.2%	1	01-02-14
Total Load Defl.	L/594 (0.204")	0.504"	40.4%	4	05-01-04
Live Load Defl.	L/891 (0.136")	0.336"	40.4%	5	05-01-04
Max Defl.	0.204"	n/a	n/a	4	05-01-04
Span / Depth	10.2	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"	4,081 lbs	53.2%	63.7%	HUS1.81/10
B1 Wall/Plate	3-1/2" x 1-3/4"	2,393 lbs	63.5%	32%	Spruce Pine Fir

## Cautions

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

## 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

## User Notes



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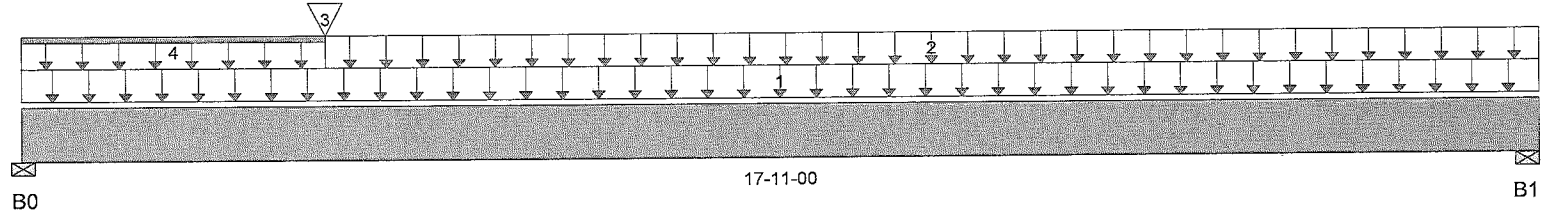
T-18071942





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

File Name: 241697.bcc  
Description: Designs\B12A  
Specifier: TH1  
Designer: Yuri Widya  
Company: Alpa Roof Trusses Inc.  
Misc:



Total Horizontal Product Length = 17-11-00

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

Bearing	Live	Dead	Snow	Wind
B0, 2"	1,851 / 0	1,193 / 0		
B1, 3-1/2"	739 / 0	490 / 0		

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Floor	Unf. Area (lb/ft <sup>2</sup> )	L	00-00-00	17-11-00	40	20			00-06-00
2	Floor	Unf. Area (lb/ft <sup>2</sup> )	L	03-07-00	17-11-00	40	20			00-06-00
3	B11A	Conc. Pt. (lbs)	L	03-07-00	03-07-00	1,945	930			n/a
4		Unf. Lin. (lb/ft)	L	00-00-00	03-07-00	0	60			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	13,994 ft-lbs	35,392 ft-lbs	39.5%	1	03-07-00
End Shear	4,115 lbs	14,464 lbs	28.5%	1	01-01-14
Total Load Defl.	L/428 (0.493")	0.879"	56.1%	4	08-00-14
Live Load Defl.	L/689 (0.306")	0.586"	52.2%	5	08-00-14
Max Defl.	0.493"	n/a	n/a	4	08-00-14
Span / Depth	17.8	n/a	n/a		00-00-00

### Bearing Supports

	Dim. (L x W)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 2" x 3-1/2"	4,268 lbs	99.1%	50%	Spruce Pine Fir
B1	Wall/Plate 3-1/2" x 3-1/2"	1,721 lbs	22.8%	11.5%	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

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



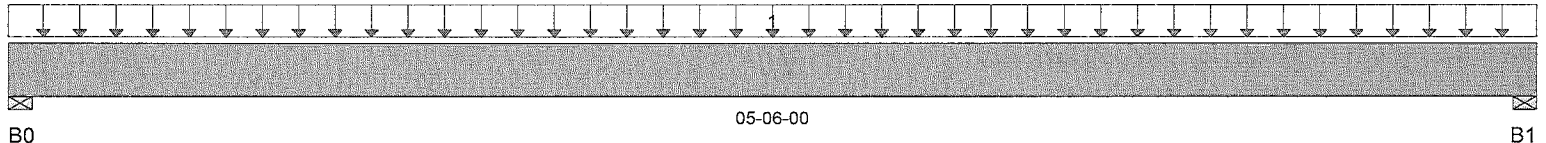
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T-18071943



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

File Name: 241697.bcc  
 Description: Designs\B13A  
 Specifier: TH1  
 Designer: Yuri Widya  
 Company: Alpa Roof Trusses Inc.  
 Misc:



Total Horizontal Product Length = 05-06-00

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	385 / 0	206 / 0		
B1, 3-1/2"	385 / 0	206 / 0		

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Floor	Unf. Area (lb/ft^2)	L	00-00-00	05-06-00	40	20			03-06-00

### Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	964 ft-lbs	11,610 ft-lbs	8.3%	1	02-09-00
End Shear	506 lbs	5,785 lbs	8.7%	1	01-01-00
Total Load Defl.	L/999 (0.012")	n/a	n/a	4	02-09-00
Live Load Defl.	L/999 (0.008")	n/a	n/a	5	02-09-00
Max Defl.	0.012"	n/a	n/a	4	02-09-00
Span / Depth	6.4	n/a	n/a		00-00-00

### Disclosure

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### Bearing Supports

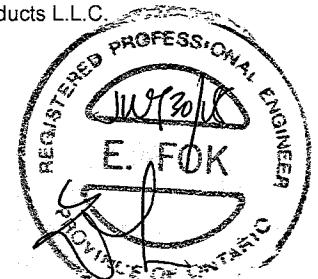
	Dim. (L x W)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	835 lbs	22.2%	11.2%	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	835 lbs	22.2%	11.2%	Spruce Pine Fir

### 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

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



**SITE COPY**

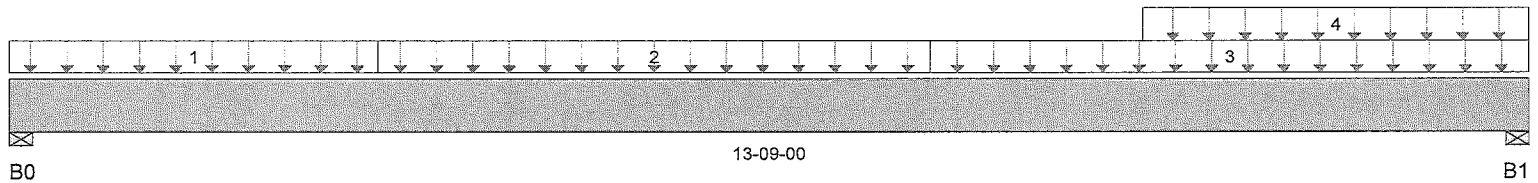
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**BC CALC® Design Report - CA**

File No: 2627

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

File Name: BC  
 Description: Designs\B01  
 Specifier: TH1  
 Designer: Yuri Widya  
 Company: Alpa Roof Trusses Inc.  
 Misc:



Total Horizontal Product Length = 13-09-00

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1,418 / 0	736 / 0		
B1, 3-1/2"	1,082 / 0	510 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Floor	Unf. Area (lb/ft^2)	L	00-00-00	03-04-00	40	20			06-02-00
2	Floor	Unf. Area (lb/ft^2)	L	03-04-00	08-04-00	40	20			05-00-00
3	Floor	Unf. Area (lb/ft^2)	L	08-04-00	13-09-00	40	15			01-10-00
	Stair	Unf. Area (lb/ft^2)	L	10-03-00	13-09-00	40	15			02-00-00

**Controls Summary**

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	8,395 ft-lbs	19,364 ft-lbs	0.43	1	06-03-05
End Shear	2,365 lbs	7,232 lbs	0.33	1	01-03-06
Total Load Defl.	L/419 (0.381")	0.665"	0.57	4	06-08-09
Live Load Defl.	L/632 (0.252")	0.443"	0.57	5	06-08-12
Span / Depth	13.4	n/a	n/a		00-00-00

**Bearing Supports**

B0	Wall/Plate	3-1/2" x 1-3/4"	3,046 lbs	0.81	0.41	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 1-3/4"	2,260 lbs	0.6	0.3	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 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**

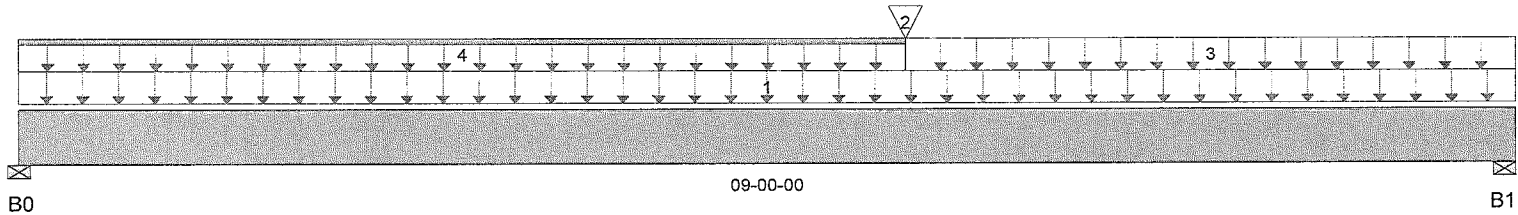
Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of BOISE engineered wood products must be in accordance with current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



**BC CALC® Design Report - CA**

2627  
 Name: 38514  
 Address: Green Valley Estates  
 City, Province, Postal Code: Bradford, ON  
 Customer: Bayview Wellington  
 Code reports: CCMC 12472-R

File Name: 241697  
 Description: Designs\B02  
 Specifier: TH1  
 Designer: Yuri Widya  
 Company: Alpa Roof Trusses Inc.  
 Misc:



Total Horizontal Product Length = 09-00-00

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

Bearing	Live	Dead	Snow	Wind
B0, 1-7/8"	565 / 0	504 / 0		
B1, 3-1/2"	855 / 0	505 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Floor	Unf. Area (lb/ft^2)	L	00-00-00	09-00-00	40	15			00-08-00
B1	Floor	Conc. Pt. (lbs)	L	05-04-00	05-04-00	1,082	510			n/a
4	Wall	Unf. Lin. (lb/ft)	L	00-00-00	05-04-00	0	60			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	5,824 ft-lbs	19,364 ft-lbs	0.3	1	05-04-00
End Shear	1,770 lbs	7,232 lbs	0.24	1	07-08-10
Total Load Defl.	L/999 (0.097")	n/a	n/a	4	04-07-08
Live Load Defl.	L/999 (0.058")	n/a	n/a	5	04-08-02
Span / Depth	8.8	n/a	n/a		00-00-00

**Disclosure**

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**Bearing Supports**

B0	Wall/Plate	1-7/8" x 1-3/4"	1,478 lbs	0.73	0.37	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 1-3/4"	1,914 lbs	0.51	0.26	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



# SITE COPY

BC CALC® Design Report - CA

File Name: 241697

Description: Designs\B14

Name: 38514

Address: Green Valley Estates

City, Province, Postal Code: Bradford, ON

Customer: Bayview Wellington

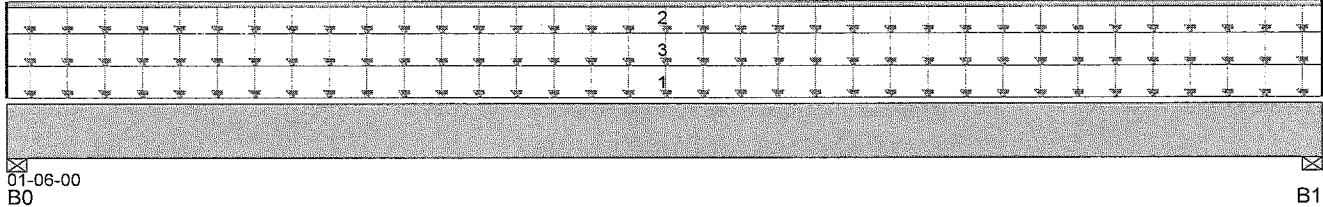
Code reports: CCMC 12472-R

Specifier: TH1

Designer: Yuri Widya

Company: Alpa Roof Trusses Inc.

Misc:



Total Horizontal Product Length = 01-06-00

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	110 / 0	128 / 0	16 / 0	
B1, 3-1/2"	110 / 0	128 / 0	16 / 0	

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Floor	Unf. Area (lb/ft^2)	L	00-00-00	01-06-00	40	15			03-06-00
2	Wall	Unf. Lin. (lb/ft)	L	00-00-00	01-06-00	0	100			n/a
	Roof	Unf. Area (lb/ft^2)	L	00-00-00	01-06-00	11	10	32		00-08-00

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	60 ft-lbs	38,727 ft-lbs	0	1	00-09-00
End Shear	204 lbs	14,464 lbs	0.01	1	00-03-08
Span / Depth	1.1	n/a	n/a		00-00-00

## Bearing Supports

B0	Wall/Plate	3-1/2" x 3-1/2"	334 lbs	0.04	0.02	Spruce Pine Fir
B1	Wall/Plate	3-1/2" x 3-1/2"	334 lbs	0.04	0.02	Spruce Pine Fir

## Notes

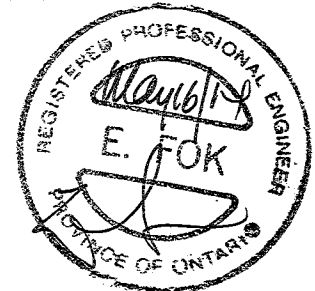
Calculations assume Member is Fully Braced.  
 Resistance Factor phi has been applied to all presented results per CSA 086.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC and CSA 086.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part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

## User Notes

NAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS @ 6" 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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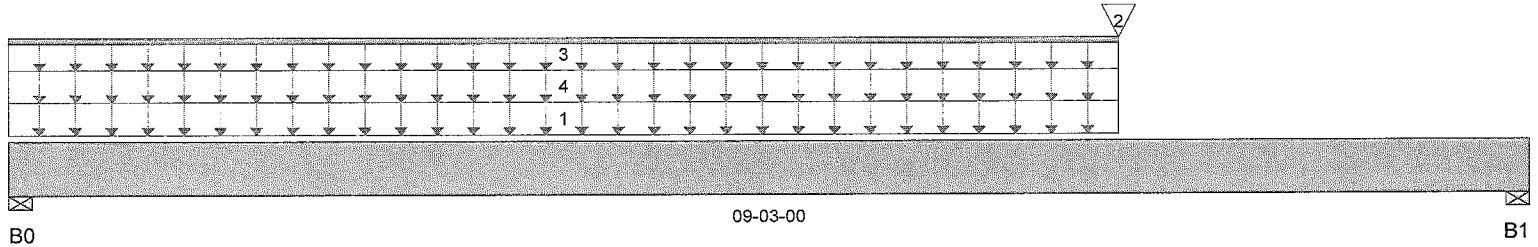


**BC CALC® Design Report - CA**

Build 2627

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

File Name: 241697  
 Description: Designs\B15  
 Specifier: TH1  
 Designer: Yuri Widya  
 Company: Alpa Roof Trusses Inc.  
 Misc:



Total Horizontal Product Length = 09-03-00

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	303 / 0	715 / 0	497 / 0	
B1, 3-1/2"	235 / 0	500 / 0	287 / 0	

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Floor	Unf. Area (lb/ft²)	L	00-00-00	06-09-00	40	15			00-08-00
2	B14	Conc. Pt. (lbs)	L	06-09-00	06-09-00	110	128	16		n/a
3	Wall	Unf. Lin. (lb/ft)	L	00-00-00	06-09-00	0	100			n/a
4	Roof	Unf. Area (lb/ft²)	L	00-00-00	06-09-00	11	10	32		03-06-00

**Controls Summary**

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	3,628 ft-lbs	38,727 ft-lbs	0.09	5	04-06-00
End Shear	1,281 lbs	14,464 lbs	0.09	5	01-03-06
Total Load Defl.	L/999 (0.038")	n/a	n/a	13	04-07-00
Live Load Defl.	L/999 (0.017")	n/a	n/a	17	04-06-14
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 3-1/2"	1,791 lbs	0.24	0.12	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 3-1/2"	1,173 lbs	0.16	0.08	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**

MAIL ONE PLY TO ANOTHER WITH 3 1/2" SPIRAL NAILS @ 12" O.C.,  
 LAGGED 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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# Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

Floor Beam\B13

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

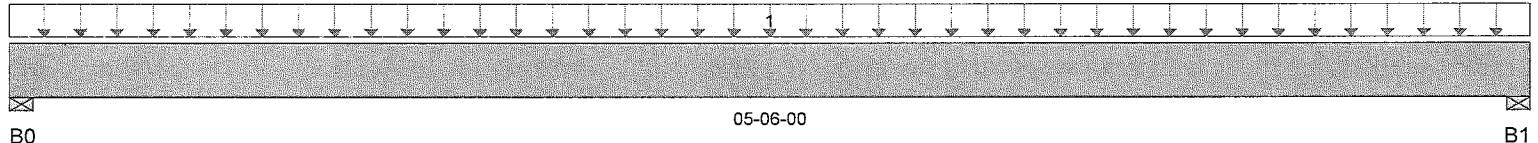
May-15-14

BC CALC® Design Report - CA

Field 2627

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

File Name: 241697  
Description: Designs\B13  
Specifier: TH1  
Designer: Yuri Widya  
Company: Alpa Roof Trusses Inc.  
Misc:



Total Horizontal Product Length = 05-06-00

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	385 / 0	209 / 0		
B1, 3-1/2"	385 / 0	209 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
1	Floor	Unf. Area (lb/ft^2)	L	00-00-00	05-06-00	40	20			03-06-00

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
B0 Moment	968 ft-lbs	19,364 ft-lbs	0.05	1	02-09-00
B0 Shear	448 lbs	7,232 lbs	0.06	1	01-03-06
Total Load Defl.	L/999 (0.006")	n/a	n/a	4	02-09-00
Live Load Defl.	L/999 (0.004")	n/a	n/a	5	02-09-00
Span / Depth	5.1	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0 Wall/Plate	3-1/2" x 1-3/4"	838 lbs	0.22	0.11	Spruce Pine Fir
B1 Wall/Plate	3-1/2" x 1-3/4"	838 lbs	0.22	0.11	Spruce Pine Fir

## Notes

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

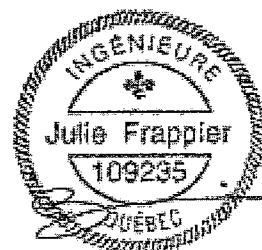
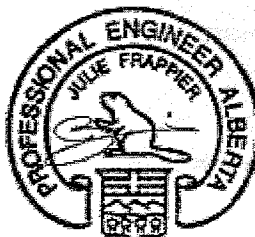
## User Notes

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



# SITE COPY

T-1408237



## Maximum Floor Spans

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

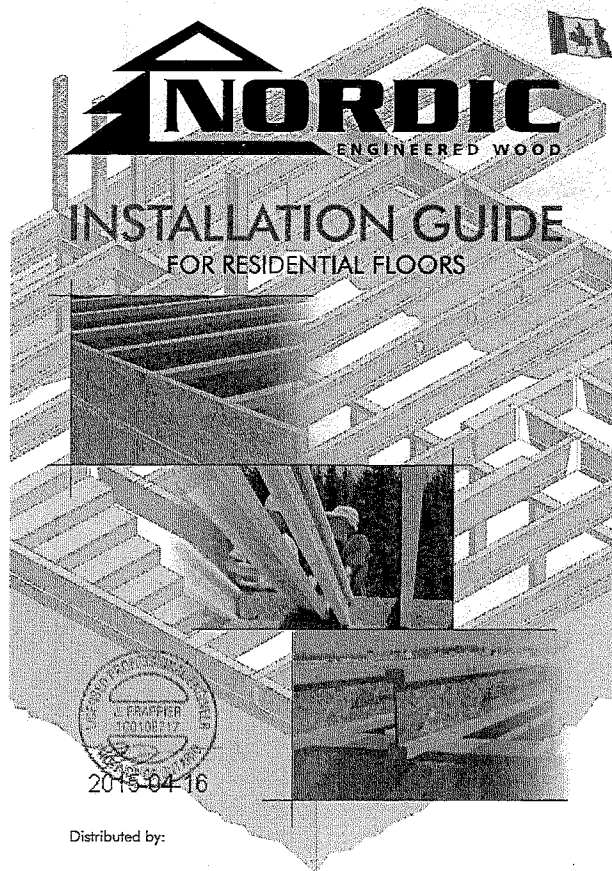
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-10"	15'-0"	14'-5"	13'-5"	16'-4"	15'-5"	14'-6"	13'-5"
	NI-40x	17'-0"	16'-0"	15'-5"	14'-9"	17'-5"	16'-5"	15'-10"	15'-2"
	NI-60	17'-2"	16'-2"	15'-7"	14'-11"	17'-6"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

Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	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"	19'-0"	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"	18'-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"	21'-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.





N-C101 / November 2014

## SAFETY AND CONSTRUCTION PRECAUTIONS

### WARNING

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

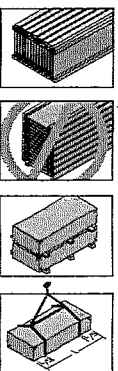
### Avoid Accidents by Following these Important Guidelines:

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.
7. When handling I-joists with a crane on the job site, take a few simple precautions to prevent damage to the I-joists and injury to your work crew.
  - Pick I-joists in bundles as shipped by the supplier.
  - Orient the bundles so that the webs of the I-joists are vertical.
  - Pick the bundles at the 5th points, using a spreader bar if necessary.
8. Do not handle I-joists in a horizontal orientation.
9. NEVER USE OR TRY TO REPAIR A DAMAGED I-JOIST.



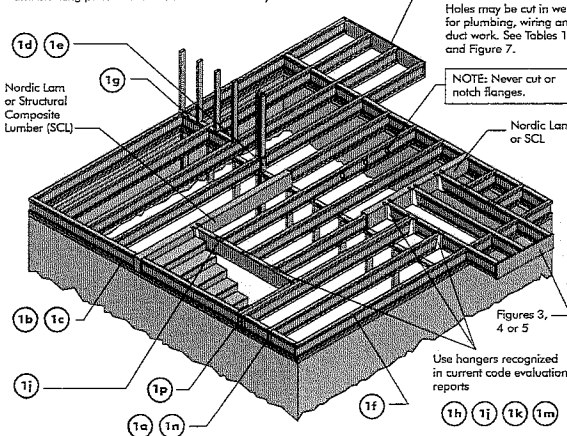
## INSTALLING NORDIC I-JOISTS

1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact the 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 end support next to the cantilever extension. In the completed structure, the gypsum wallboard ceiling provides this lateral support. Until the final finished ceiling is applied, temporary bracing or struts must be used.
14. If square-edge panels are used, edges must be supported between I-joists with 2x4 blocking. Glue panels to blocking to minimize squeaks. Blocking is not required under structural finish flooring, such as wood strip flooring, or if a separate underlayment layer is installed.
15. Nail spacing: Space nails installed to the flange's top face in accordance with the applicable building code requirements or approved building plans.

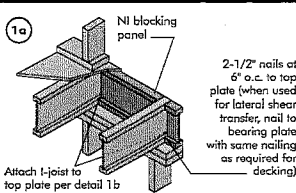
FIGURE 1

### TYPICAL NORDIC I-JOIST FLOOR FRAMING AND CONSTRUCTION DETAILS

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

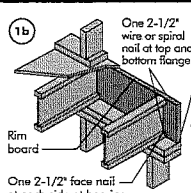


All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3/8" (0.122" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for clarity.



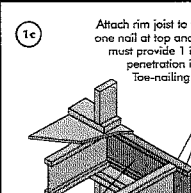
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
Ni Joists	3,300

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



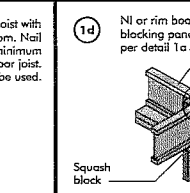
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

\*The uniform vertical load is limited to a rim board depth of 16 inches or less. This is based on standard term load duration. It shall not be used in the design of a bearing 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

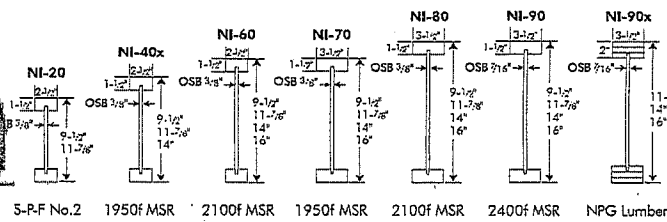
\*The uniform vertical load is limited to a rim board depth of 16 inches or less. This is based on standard term load duration. It shall not be used in the design of a bearing member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.



Pair of Squash Blocks	Maximum Factored Uniform Vertical Load* (plf)
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. This is based on standard term load duration. It shall not be used in the design of a bearing member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

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Refer to the Installation Guide for Residential Floors for additional information.  
CCMC 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	11
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"	---	---	---	---	---	---	---
11-7/8"	NI-80	2'-3"	3'-6"	5'-0"	6'-6"	8'-2"	8'-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'-5"	7'-0"	8'-4"	---	---	---	---
	NI-60	0'-7"	1'-8"	3'-0"	4'-3"	5'-9"	6'-0"	7'-3"	8'-10"	10'-0"	---	---	---	---
14"	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"	---	---	---	---
	NI-90	0'-7"	0'-8"	1'-5"	3'-2"	4'-10"	5'-4"	6'-9"	8'-9"	10'-2"	---	---	---	---
	NI-90x	0'-7"	0'-8"	0'-9"	2'-5"	4'-4"	4'-9"	6'-3"	---	---	---	---	---	---
16"	NI-40x	0'-7"	0'-8"	0'-8"	1'-0"	2'-4"	2'-9"	3'-9"	5'-2"	6'-0"	6'-6"	8'-3"	10'-2"	---
	NI-60	0'-7"	0'-8"	1'-8"	3'-0"	4'-3"	4'-8"	5'-8"	7'-2"	8'-0"	8'-8"	10'-4"	11'-9"	---
	NI-70	0'-8"	1'-10"	3'-0"	4'-5"	5'-10"	6'-2"	7'-3"	8'-9"	9'-9"	10'-4"	12'-3"	13'-5"	---
	NI-80	0'-10"	2'-0"	3'-4"	4'-9"	6'-2"	6'-5"	7'-6"	9'-0"	10'-0"	10'-8"	12'-4"	13'-9"	---
16"	NI-90	0'-7"	0'-8"	0'-10"	2'-5"	4'-0"	4'-5"	5'-9"	7'-5"	8'-8"	9'-4"	11'-4"	12'-11"	---
	NI-90x	0'-7"	0'-8"	0'-8"	2'-0"	3'-9"	4'-2"	5'-5"	7'-3"	8'-5"	9'-2"	---	---	---
	NI-60	0'-7"	0'-8"	0'-8"	1'-6"	2'-10"	3'-2"	4'-2"	5'-6"	6'-4"	7'-0"	8'-5"	9'-8"	10'-2"
	NI-70	0'-7"	1'-0"	2'-3"	3'-6"	4'-10"	5'-3"	6'-3"	7'-8"	8'-6"	9'-2"	10'-8"	12'-0"	12'-4"
16"	NI-80	0'-7"	1'-3"	2'-6"	3'-10"	5'-3"	5'-6"	6'-6"	8'-0"	9'-0"	9'-5"	11'-0"	12'-3"	12'-9"
	NI-90	0'-7"	0'-8"	0'-8"	1'-9"	3'-3"	3'-8"	4'-9"	6'-5"	7'-5"	8'-0"	9'-10"	11'-3"	11'-9"
	NI-90x	0'-7"	0'-8"	0'-9"	2'-0"	3'-6"	4'-0"	5'-0"	6'-9"	7'-9"	8'-4"	10'-2"	11'-6"	12'-0"

- 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.

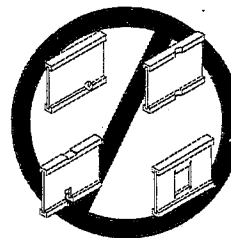
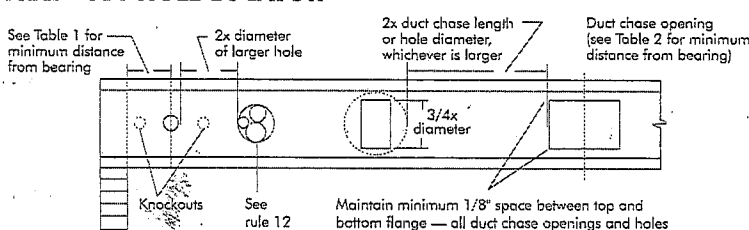
TABLE 2  
**DUCT CHASE OPENING SIZES AND LOCATIONS**

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	24	26	28	30	32
9-1/2"	NI-20	4'-1"	4'-5"	4'-10"	5'-4"	5'-8"	6'-1"	6'-6"	7'-1"	7'-5"	---	---	---	---
	NI-40x	5'-3"	5'-8"	6'-0"	6'-5"	6'-10"	7'-3"	7'-8"	8'-2"	8'-6"	---	---	---	---
	NI-60	5'-4"	5'-9"	6'-2"	6'-7"	7'-1"	7'-5"	8'-0"	8'-5"	8'-9"	---	---	---	---
	NI-70	5'-1"	5'-5"	5'-10"	6'-3"	6'-7"	7'-1"	7'-6"	8'-1"	8'-4"	---	---	---	---
11-7/8"	NI-80	5'-3"	5'-8"	6'-0"	6'-5"	6'-10"	7'-3"	7'-8"	8'-2"	8'-6"	---	---	---	---
	NI-20	5'-9"	6'-2"	6'-6"	7'-1"	7'-5"	8'-3"	8'-9"	9'-4"	9'-8"	---	---	---	---
	NI-40x	6'-8"	7'-2"	7'-6"	8'-1"	8'-6"	9'-1"	9'-6"	10'-1"	10'-9"	---	---	---	---
	NI-60	7'-3"	7'-8"	8'-0"	8'-6"	9'-0"	9'-3"	9'-9"	10'-3"	11'-0"	---	---	---	---
14"	NI-70	7'-1"	7'-4"	7'-9"	8'-3"	8'-7"	9'-1"	9'-6"	10'-1"	10'-8"	---	---	---	---
	NI-80	7'-2"	7'-7"	8'-0"	8'-5"	8'-9"	9'-3"	9'-8"	10'-2"	10'-8"	---	---	---	---
	NI-90	7'-6"	7'-11"	8'-4"	8'-9"	9'-2"	9'-7"	10'-1"	10'-7"	10'-11"	---	---	---	---
	NI-90x	7'-7"	8'-1"	8'-5"	8'-10"	9'-4"	9'-8"	10'-2"	10'-8"	11'-2"	---	---	---	---
16"	NI-40x	8'-1"	8'-7"	9'-0"	9'-6"	10'-1"	10'-7"	11'-2"	12'-0"	12'-8"	---	---	---	---
	NI-60	8'-9"	9'-3"	9'-8"	10'-1"	10'-6"	11'-1"	11'-6"	12'-3"	13'-0"	---	---	---	---
	NI-70	8'-7"	9'-1"	9'-5"	9'-10"	10'-4"	10'-9"	11'-2"	11'-7"	12'-3"	---	---	---	---
	NI-80	9'-0"	9'-3"	9'-9"	10'-1"	10'-7"	11'-1"	11'-6"	12'-1"	12'-6"	---	---	---	---
16"	NI-90	9'-2"	9'-8"	10'-0"	10'-6"	10'-11"	11'-5"	11'-9"	12'-4"	12'-11"	---	---	---	---
	NI-90x	9'-4"	9'-9"	10'-3"	10'-7"	11'-1"	11'-7"	12'-1"	12'-7"	13'-2"	---	---	---	---
	NI-60	10'-3"	10'-8"	11'-2"	11'-6"	12'-1"	12'-6"	13'-2"	14'-1"	14'-10"	---	---	---	---
	NI-70	10'-1"	10'-5"	11'-0"	11'-4"	11'-10"	12'-3"	12'-8"	13'-3"	14'-0"	---	---	---	---
16"	NI-80	10'-4"	10'-9"	11'-3"	11'-9"	12'-1"	12'-7"	13'-1"	13'-8"	14'-4"	---	---	---	---
	NI-90	10'-9"	11'-2"	11'-8"	12'-0"	12'-6"	13'-0"	13'-6"	14'-2"	14'-10"	---	---	---	---
	NI-90x	11'-1"	11'-5"	11'-10"	12'-4"	12'-10"	13'-2"	13'-9"	14'-4"	15'-2"	---	---	---	---

- 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.

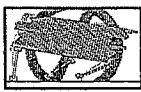
Holes in webs should be cut with a sharp saw.

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-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.
- 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-bridging.
- 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.



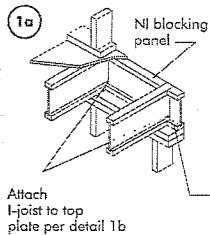
## PRODUCT WARRANTY

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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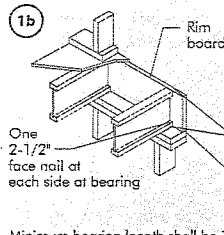


Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
NI Joists	3,300

\*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.

Attach I-joist to top plate per detail 1b

2-1/2" nails at 6" o.c. to top plate (when used for lateral shear transfer, nail to bearing plate with same nailing as required for decking)



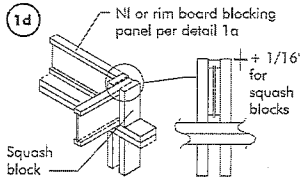
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

\*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.

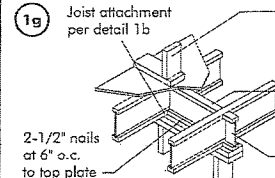
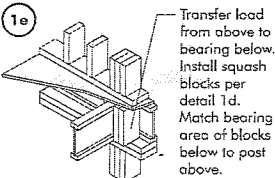
To avoid splitting flange, start nails at least 1-1/2" from end of I-joist. Nails may be driven at an angle to avoid splitting of bearing plate.

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)
2x Lumber	5,500
1-1/8" Rim Board Plus	4,300

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

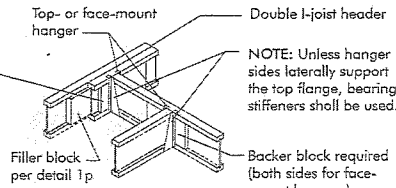
**1h** Backer block (use if hanger load exceeds 360 lbs). Before installing a backer block to a double I-joist, drive three additional 3" nails through the webs and filler block where the backer block will fit. Clinch. Install backer tight to top flange. Use twelve 3" nails, clinched when possible. Maximum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

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

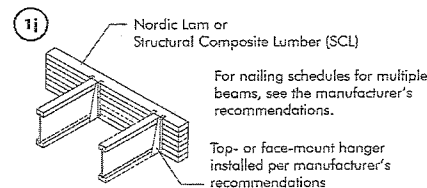
Flange Width	Material Thickness Required*	Minimum Depth**
2-1/2"	1"	5-1/2"
3-1/2"	1-1/2"	7-1/4"

\* 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.

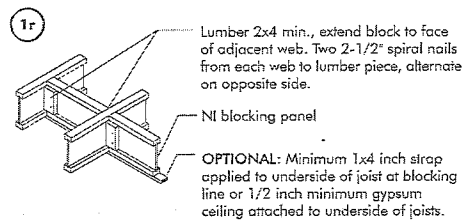
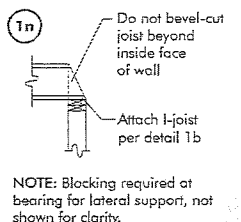
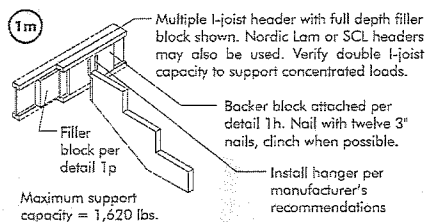
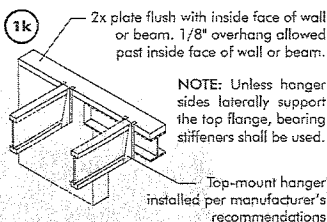
\*\* For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".



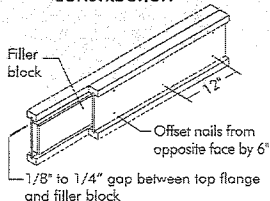
For hanger capacity see hanger manufacturer's recommendations. Verify double I-joist capacity to support concentrated loads.



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

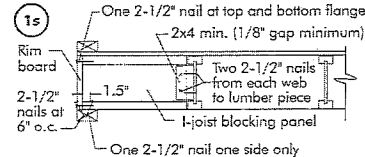


### 1p FILLER BLOCK REQUIREMENTS FOR DOUBLE I-JOIST CONSTRUCTION



- 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.

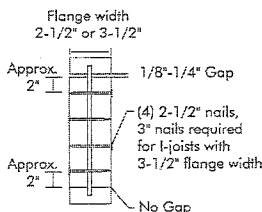
**All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale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

## WEB STIFFENERS

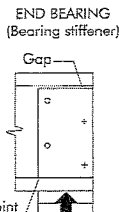
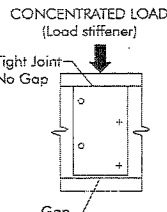
### RECOMMENDATIONS:

- 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 3,370 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

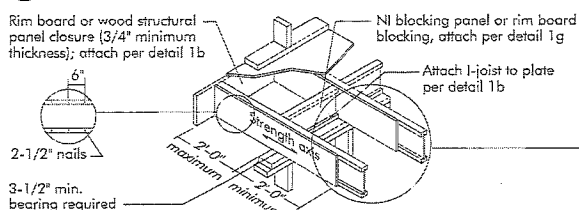


### STIFFENER SIZE REQUIREMENTS

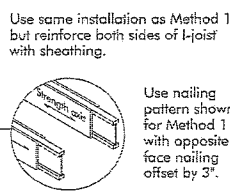
Flange Width	Web Stiffener Size Each Side of Web
2-1/2"	1" x 2-5/16" minimum width
3-1/2"	1-1/4" x 2-5/16" minimum width

## CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

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



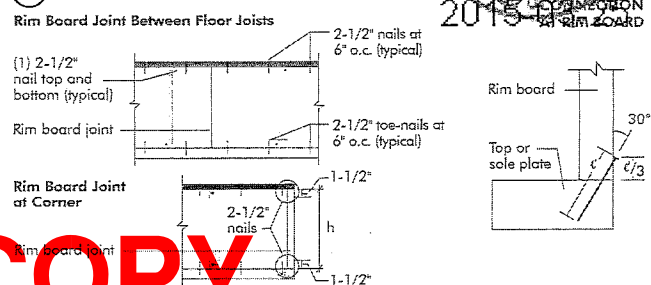
### Method 2 — SHEATHING REINFORCEMENT TWO SIDES



**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 flange. 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

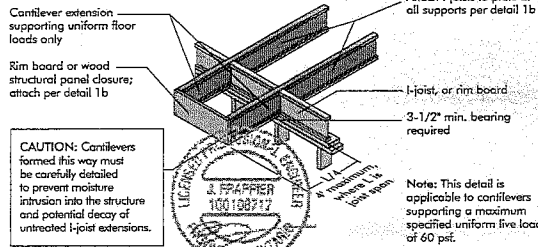


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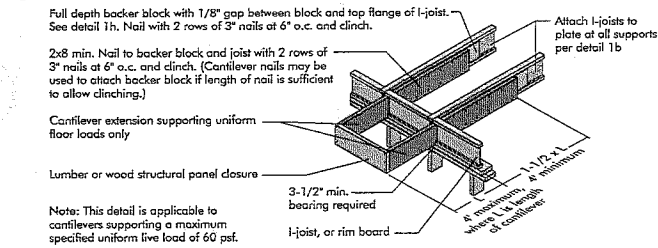


## CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

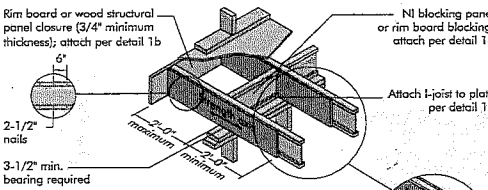


### 3b LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)



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

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

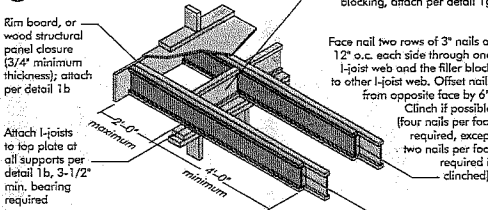


### Method 2 — SHEATHING REINFORCEMENT TWO SIDES

- Use same 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)



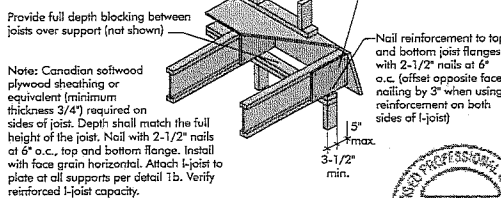
### CANTILEVER REINFORCEMENT METHODS ALLOWED

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

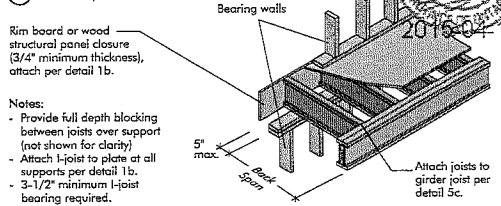
1. N = No reinforcement required.
2. N = NI reinforced with 3/4\" wood structural panel on one side only.
3. N = NI reinforced with 3/4\" wood structural panel on both sides, or double I-joist.
4. For larger openings, or multiple 3-0\" width openings spaced less than 6-0\" o.c., additional joists beneath the opening's cripple studs may be required.
5. Table applies to joists 12\" to 24\" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12\" o.c. requirements for lesser spacing.
6. 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.
7. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge beam, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.
8. 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

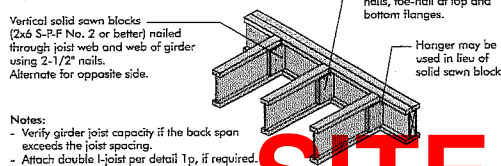
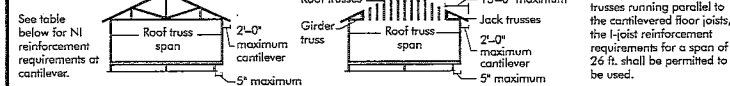


FIGURE 5 (continued)



### 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			
		JOIST SPACING (in.)				JOIST SPACING (in.)			
		12	16	19.2	24	12	16	19.2	24
9-1/2"	26	N	N	N	1	N	N	N	1
	28	N	N	N	1	N	N	N	1
	30	N	N	N	1	N	N	N	1
	32	N	N	N	1	N	N	N	1
	34	N	N	N	1	N	N	N	1
11-7/8"	26	N	N	N	1	N	N	N	1
	28	N	N	N	1	N	N	N	1
	30	N	N	N	1	N	N	N	1
	32	N	N	N	1	N	N	N	1
	34	N	N	N	1	N	N	N	1
14"	26	N	N	N	1	N	N	N	1
	28	N	N	N	1	N	N	N	1
	30	N	N	N	1	N	N	N	1
	32	N	N	N	1	N	N	N	1
	34	N	N	N	1	N	N	N	1
16"	26	N	N	N	1	N	N	N	1
	28	N	N	N	1	N	N	N	1
	30	N	N	N	1	N	N	N	1
	32	N	N	N	1	N	N	N	1
	34	N	N	N	1	N	N	N	1

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

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## WEB HOLES

### 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-joint 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-joint web shall equal the clear distance between the flanges of the I-joint 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-joint 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 or 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
		Round hole diameter (in.)															
		2	3	4	5	6	6-1/4	7	8	8-3/4	9	10	10-3/4	11	12	12-3/4	
9-1/2"	NH-30	0.7	1.0	2.10	4.3	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	
	NH-40	0.7	1.0	2.0	4.0	6.0	6.0	6.4	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
	NH-50	0.7	1.0	2.0	4.0	6.0	6.0	6.4	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
	NH-60	0.7	1.0	2.0	4.0	6.0	6.0	6.4	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
	NH-30	0.7	1.0	2.0	4.0	6.0	6.0	6.4	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
	NH-40	0.7	1.0	2.0	4.0	6.0	6.0	6.4	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
11-7/8"	NH-30	0.7	1.0	2.10	4.3	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	
	NH-40	0.7	1.0	2.0	4.0	6.0	6.0	6.4	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
	NH-50	0.7	1.0	2.0	4.0	6.0	6.0	6.4	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
	NH-60	0.7	1.0	2.0	4.0	6.0	6.0	6.4	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
	NH-30	0.7	1.0	2.0	4.0	6.0	6.0	6.4	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
	NH-40	0.7	1.0	2.0	4.0	6.0	6.0	6.4	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
14"	NH-30	0.7	1.0	2.10	4.3	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	
	NH-40	0.7	1.0	2.0	4.0	6.0	6.0	6.4	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
	NH-50	0.7	1.0	2.0	4.0	6.0	6.0	6.4	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
	NH-60	0.7	1.0	2.0	4.0	6.0	6.0	6.4	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
	NH-30	0.7	1.0	2.0	4.0	6.0	6.0	6.4	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
	NH-40	0.7	1.0	2.0	4.0	6.0	6.0	6.4	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
16"	NH-30	0.7	1.0	2.10	4.3	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	
	NH-40	0.7	1.0	2.0	4.0	6.0	6.0	6.4	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
	NH-50	0.7	1.0	2.0	4.0	6.0	6.0	6.4	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
	NH-60	0.7	1.0	2.0	4.0	6.0	6.0	6.4	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
	NH-30	0.7	1.0	2.0	4.0	6.0	6.0	6.4	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
	NH-40	0.7	1.0	2.0	4.0	6.0	6.0	6.4	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	

- Above table may be used for I-joint 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 Factor, Span Limit), the minimum distance from the centreline of the hole to the face of any support (D) as given above may be reduced as follows:

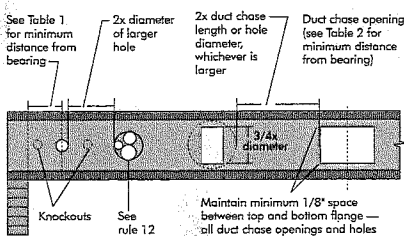
$$D_{reduced} = \frac{L_{actual}}{L_{max}} \times D$$

Where:

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

If  $L_{actual}$  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-joint. 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-joint.

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.)											
		Duct chase length (in.)											
		8	10	12	14	16	18	20	22	24	26	28	30
9-1/2"	NH-30	0.7	4.5	4.5	4.5	5.4	5.8	6.1	6.3	6.6	7.1	7.5	7.9
	NH-40	0.7	4.5	4.5	4.5	5.4	5.8	6.1	6.3	6.6	7.1	7.5	7.9
	NH-50	0.7	4.5	5.0	6.0	6.7	7.1	7.5	8.0	8.4	8.8	9.3	9.8
	NH-60	0.7	4.5	5.0	6.0	6.7	7.1	7.5	8.0	8.4	8.8	9.3	9.8
11-7/8"	NH-30	0.7	5.3	5.8	6.0	6.3	6.8	7.0	7.3	7.8	8.2	8.6	9.0
	NH-40	0.7	5.3	5.8	6.0	6.3	6.8	7.0	7.3	7.8	8.2	8.6	9.0
	NH-50	0.7	5.3	6.2	6.6	7.1	7.5	7.9	8.3	8.7	9.1	9.5	9.9
	NH-60	0.7	5.3	6.2	6.6	7.1	7.5	7.9	8.3	8.7	9.1	9.5	9.9
14"	NH-30	0.7	7.3	7.8	8.0	8.6	9.0	9.3	9.6	9.9	10.4	10.8	11.2
	NH-40	0.7	7.3	7.8	8.0	8.6	9.0	9.3	9.6	9.9	10.4	10.8	11.2
	NH-50	0.7	7.3	7.4	7.8	8.3	8.8	9.1	9.4	9.7	10.1	10.4	10.8
	NH-60	0.7	7.3	7.4	7.8	8.3	8.8	9.1	9.4	9.7	10.1	10.4	10.8
16"	NH-30	0.7	8.5	9.0	9.4	9.9	10.2	10.6	10.9	11.3	11.7	12.1	12.5
	NH-40	0.7	8.5	9.0	9.4	9.9	10.2	10.6	10.9	11.3	11.7	12.1	12.5
	NH-50	0.7	8.5	9.3	9.8	10.1	10.6	11.1	11.6	12.0	12.4	12.8	13.2
	NH-60	0.7	8.5	9.3	9.8	10.1	10.6	11.1	11.6	12.0	12.4	12.8	13.2
18"	NH-30	0.7	10.2	10.8	11.2	11.6	12.1	12.6	13.0	13.4	13.8	14.2	14.6
	NH-40	0.7	10.2	10.8	11.2	11.6	12.1	12.6	13.0	13.4	13.8	14.2	14.6
	NH-50	0.7	10.2	10.9	11.3	11.8	12.3	12.7	13.1	13.5	13.9	14.3	14.7
	NH-60	0.7	10.2	10.9	11.3	11.8	12.3	12.7	13.1	13.5	13.9	14.3	14.7

- Above table may be used for I-joint 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-joint 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-joint. Apply glue in a winding pattern on wide areas, such as with double I-joists.
- Apply two lines of glue on I-joists where panel ends butt to assure proper gluing of each end.
- After the first row of panels is in place, spread glue in the grooves 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-joint 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 space between all end joints and 1/8-inch at all edges, including T&G edges, is recommended. (Use a spacer tool or an 2-1/2" common nail to assure accurate and consistent spacing.)
- 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<sup>(1)</sup>

Maximum Joist Spacing (in.)	Maximum Panel Thickness (in.)	Nail Size and Type			Maximum Spacing of Fasteners	
		Common Wire or Spiral Nails	Ring Thread Nails or Screws	Staples	Edges	Interiors
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 minimums 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.

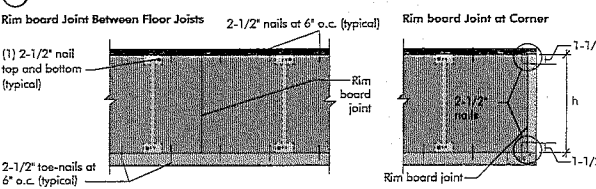
Ref.: NRC-CNRC, National Building Code of Canada 2010, Table 9.23.3.5.

### IMPORTANT NOTE:

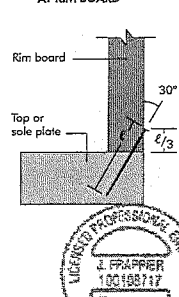
Floor sheathing must be field glued to the I-joint flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-joint spans must be verified with your local distributor.

## RIM BOARD INSTALLATION DETAILS

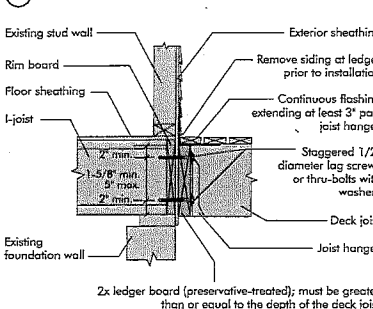
### 8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



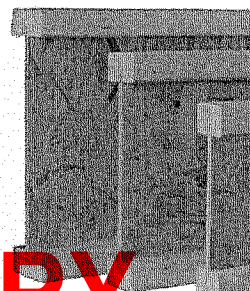
### 8b TOE-NAIL CONNECTION AT RIM BOARD



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



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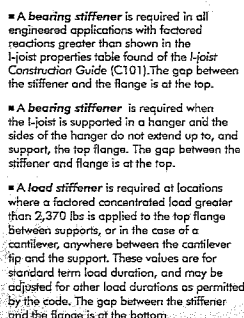


1. Maximum clear spans applicable to simple-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of  $1.50L + 1.25D$ . The serviceability limit states include the consideration for floor vibration and a live load deflection limit of  $L/480$ . For multiple-span applications, the end spans shall be 40% or more of the adjacent span.

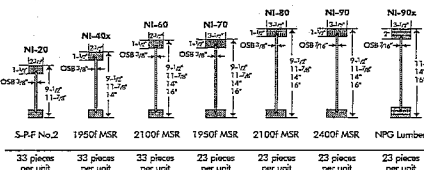
2. Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in CG88-71.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
3. Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
5. This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
6. Tables are based on Limit States Design per CAN/CSA O86-09 Standard, and NRC 2010.
7. SI units conversion: 1 inch = 25.4 mm  
1 foot = 9.375 m.

Joint Depth	Joint Series	Simple spans				Multiple spans			
		On centre spacing				On centre spacing			
		12"	14"	16"	24"	12"	14"	16"	24"
9-1/2"	N-20	19-1"	14-2"	13-9"	15-5"	18-3"	15-4"	14-10"	14-7"
	N-40a	16-1"	15-2"	14-8"	14-9"	17-5"	16-5"	15-10"	15-4"
	N-40b	16-3"	15-4"	14-10"	14-11"	17-7"	16-7"	15-12"	15-10"
	N-70	17-1"	16-1"	15-6"	15-7"	18-7"	17-6"	16-14"	16-10"
	N-80	17-3"	16-3"	15-7"	15-8"	18-9"	17-8"	16-16"	16-12"
	N-120	16-11"	16-0"	15-5"	15-6"	18-4"	17-3"	16-8"	16-7"
	N-140a	18-1"	17-0"	16-5"	16-6"	20-0"	18-6"	17-9"	17-7"
	N-140b	18-4"	17-3"	16-7"	16-8"	20-3"	18-9"	18-1"	17-9"
	N-170	19-4"	18-0"	17-4"	17-5"	21-6"	19-11"	19-0"	19-0"
	N-180	19-9"	18-5"	17-6"	17-7"	21-9"	20-2"	19-3"	19-4"
11-7/8"	N-20	20-2"	18-7"	17-10"	17-11"	22-3"	20-7"	19-8"	19-8"
	N-40	20-3"	18-8"	17-11"	18-0"	22-4"	20-9"	19-9"	19-11"
	N-40a	20-1"	18-7"	17-10"	17-11"	22-2"	20-6"	19-8"	19-4"
	N-40b	20-5"	18-11"	18-1"	18-2"	22-7"	20-11"	20-0"	20-1"
	N-70	21-7"	20-0"	19-2"	19-3"	23-9"	22-0"	21-2"	21-2"
	N-80	21-11"	20-3"	19-4"	19-5"	24-3"	22-5"	21-5"	21-6"
	N-120	22-5"	20-8"	19-9"	19-10"	24-9"	22-10"	21-10"	21-10"
	N-140	22-7"	20-1"	19-11"	20-0"	25-0"	23-1"	22-2"	22-2"
	N-170	22-5"	20-9"	19-10"	19-10"	24-9"	22-9"	22-0"	22-0"
	N-180	23-6"	21-9"	20-9"	20-10"	26-0"	24-0"	22-11"	23-0"
16"	N-20	23-11"	22-1"	21-11"	21-12"	26-5"	24-5"	23-5"	23-4"
	N-40	24-8"	23-5"	21-6"	21-6"	26-11"	24-10"	23-9"	23-9"
	N-70	25-1"	22-3"	21-5"	21-10"	27-3"	25-3"	24-3"	24-3"
	N-80	25-11"	22-11"	21-11"	21-11"	27-11"	25-11"	24-11"	24-11"

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



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

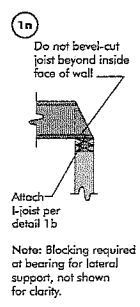
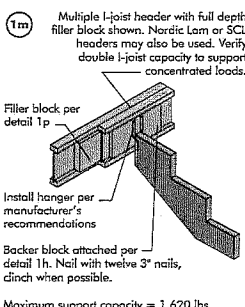
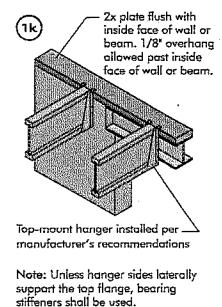
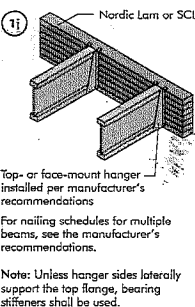
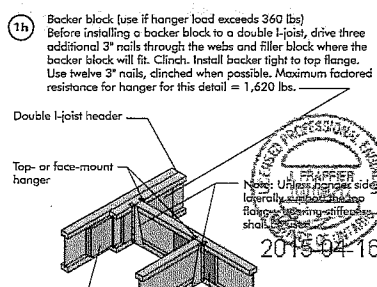
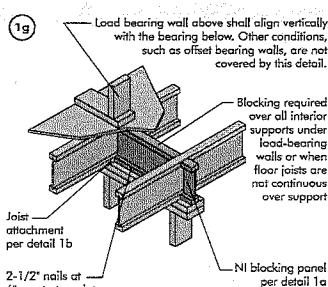
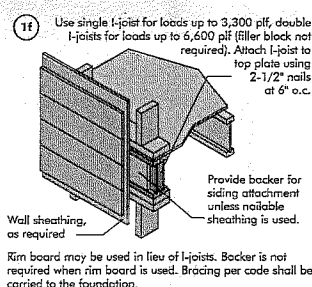


Chantiers Chibougamau Ltd. harvests its own trees, which enables Nordic products to adhere to strict quality control procedures throughout the entire manufacturing process. Every phase of the operation, from growing to the finished product, reflects our commitment to quality.

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.

1a

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



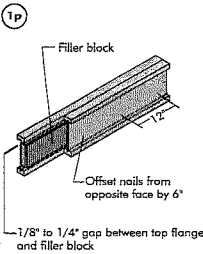
For hanger capacity see hanger manufacturer's recommendations. Verify double joint capacity to support concentrated loads.

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

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

\* Minimum grade for backer block material shall be S-P-F No. 2 or better for solid sawn lumber and wood structural panels conforming to CAN/CSA-C325 or CAN/CSA-O437 Standard.

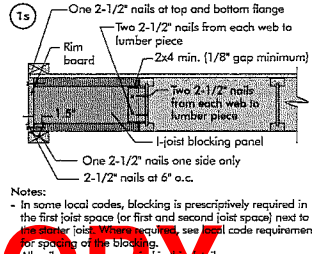
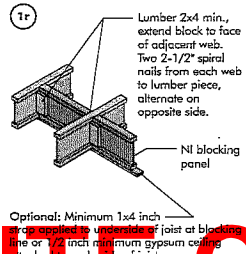
\*\* For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".



**Notes:**

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

Flange Size	Joist 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.

strap applied to underside of joist at blocking line or 1/2 inch minimum gypsum ceiling attached to underside of joists.	the starter joist. Where required, see for spacing of the blocking. - All nails are common spiral in this
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