

Products				
PlotID	Length	Product	Plies	Net Qty
B1	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B25	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B26	13-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B27	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3
Ca1	119-00-00	1 1/8" x 11 7/8" Rim Board	1	1
J1	15-00-00	11 7/8" NI-20	1	17
J2	13-00-00	11 7/8" NI-20	1	10
J3	10-00-00	11 7/8" NI-20	1	4
J4	20-00-00	11 7/8" NI-40x	1	16
J5	20-00-00	11 7/8" NI-40x	2	2

Connector Summary			
PlotID	Qty	Manuf	Product
H1	1		HGUS410
H2	30		LT251188
H3	1		MIT311.88-2

RIMBOARD  
1- 1/8" X 11 7/8" O.S.B.  
SUBFLOOR - 3/4" NAILED & GLUED\*  
APP - AS PER PLAN  
BBO - BEAM BY OTHERS

DESIGN LOADING:  
LIVE LOAD = 40 PSF  
DEAD LOAD = 15 PSF  
DEAD LOAD @TILE = 20 PSF

Ceramic tile application as per O.B.C. 9.30.6  
Blocking panels are required over all interior supports  
Squash blocks are required under concentrated loads.

MODEL: 4201 - EL.A  
+ OPT. LOGGIA

REV.#3: March 13, 2020  
REV.#4: April 25, 2022

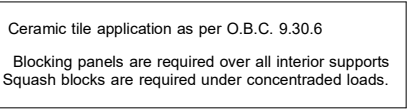
Second Floor Framing

Do not scale - refer to architectural plans for dimensions

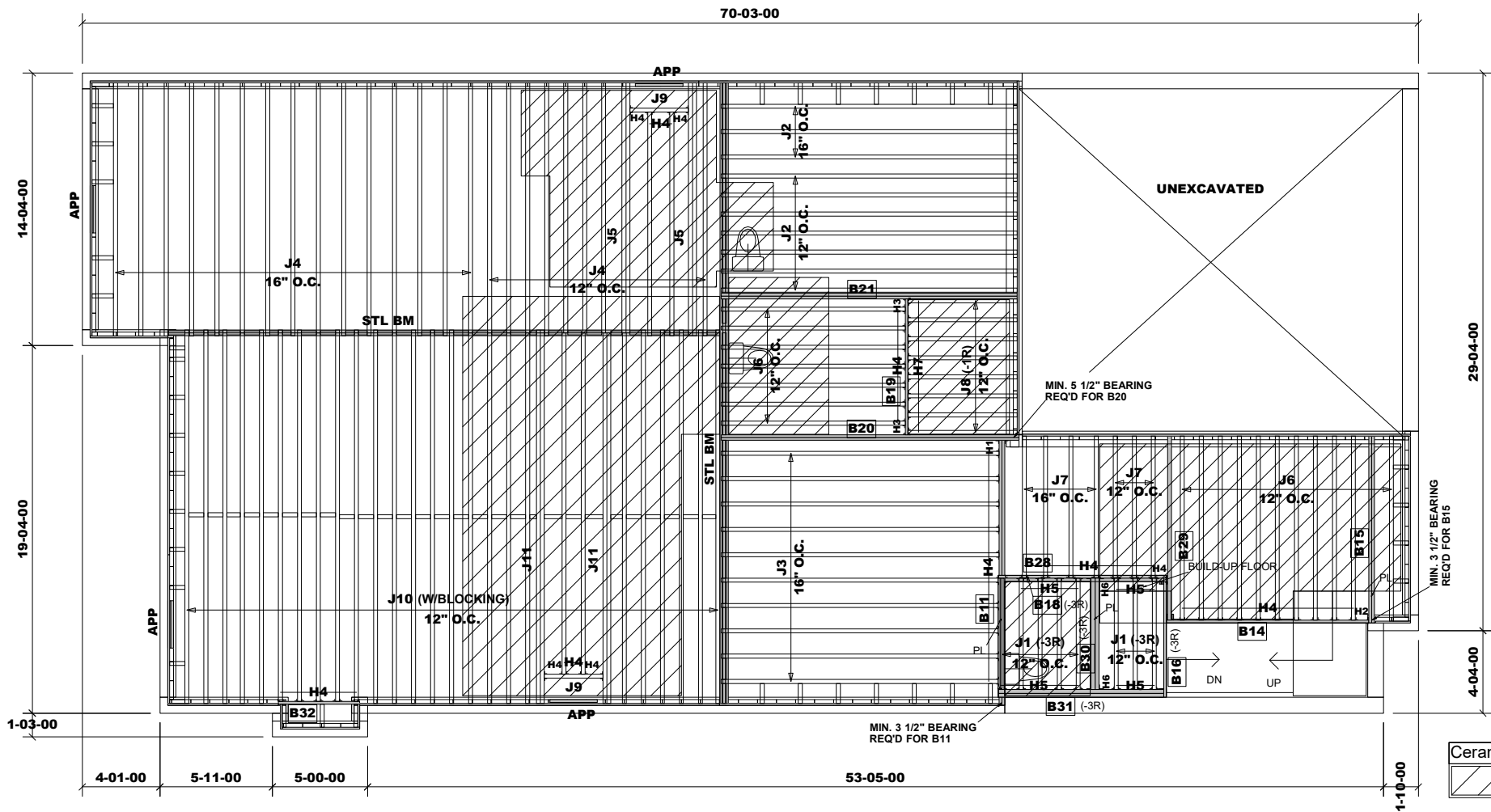
SE007707 - SE007727

SE047315 - SE047325

PL: 117690 NP



REV.#3: March 13, 2020  
REV.#4: April 25, 2022



Products				
PlotID	Length	Product	Plies	Net Qty
B11	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B14	11-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B15	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B16	7-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B18	9-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B19	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B20	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B21	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B28	9-00-00	11 7/8" NI-40x	1	1
B29	10-00-00	11 7/8" NI-20	1	1
B30	6-00-00	9 1/2" NI-20	2	2
B31	9-00-00	9 1/2" NI-20	2	2
B32	5-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
Ca1	6-00-00	1 1/8" x 9 1/2" Rim Board	1	1
Ca2	7-00-00	1 1/8" x 11 7/8" Rim Board	1	1
Ca2	176-00-00	1 1/8" x 11 7/8" Rim Board	1	1
J1	6-00-00	9 1/2" NI-20	1	8
J2	16-00-00	11 7/8" NI-20	1	10
J3	15-00-00	11 7/8" NI-20	1	10
J4	14-00-00	11 7/8" NI-20	1	25
J5	14-00-00	11 7/8" NI-20	2	4
J6	10-00-00	11 7/8" NI-20	1	18
J7	8-00-00	11 7/8" NI-20	1	7
J8	6-00-00	11 7/8" NI-20	1	8
J9	4-00-00	11 7/8" NI-20	1	2
J10	20-00-00	11 7/8" NI-40x	1	27
J11	20-00-00	11 7/8" NI-40x	2	4

RIMBOARD  
1- 1/8" X 11 7/8" O.S.B.  
SUBFLOOR - 3/4" NAILED & GLUED\*  
APP - AS PER PLAN  
BBO - BEAM BY OTHERS

Connector Summary			
PlotID	Qty	Manuf	Product
H1	1		HGUS410
H2	1		HUCQ1.81/9
H3	2		HUS1.81/10
H4	49		LT251188
H5	17		LT259
H6	2		MIT39.5-2
H7	8		THAI322

DESIGN LOADING:  
LIVE LOAD = 40 PSF  
DEAD LOAD = 15 PSF  
DEAD LOAD @TILE = 20 PSF

Ceramic tile application as per O.B.C. 9.30.6  
Blocking panels are required over all interior supports  
Squash blocks are required under concentrated loads.

MODEL: 4201 - EL.A  
W/SUNKEN MUD(-1R)

First Floor Framing  
Do not scale - refer to architectural plans for dimensions

REV.#3: March 13, 2020  
REV.#4: April 25, 2022

PL: 117690 NP

JT/PL: 45147/116407  
LI: (290678)344920\*

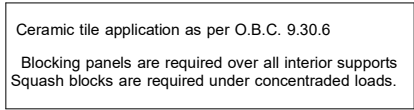
Builder: Gold Park  
Project: Pine Valley PH.2

Location: Vaughan  
Date: June 29, 2018

Designer: FC/NL  
Sheet: 3 of 12

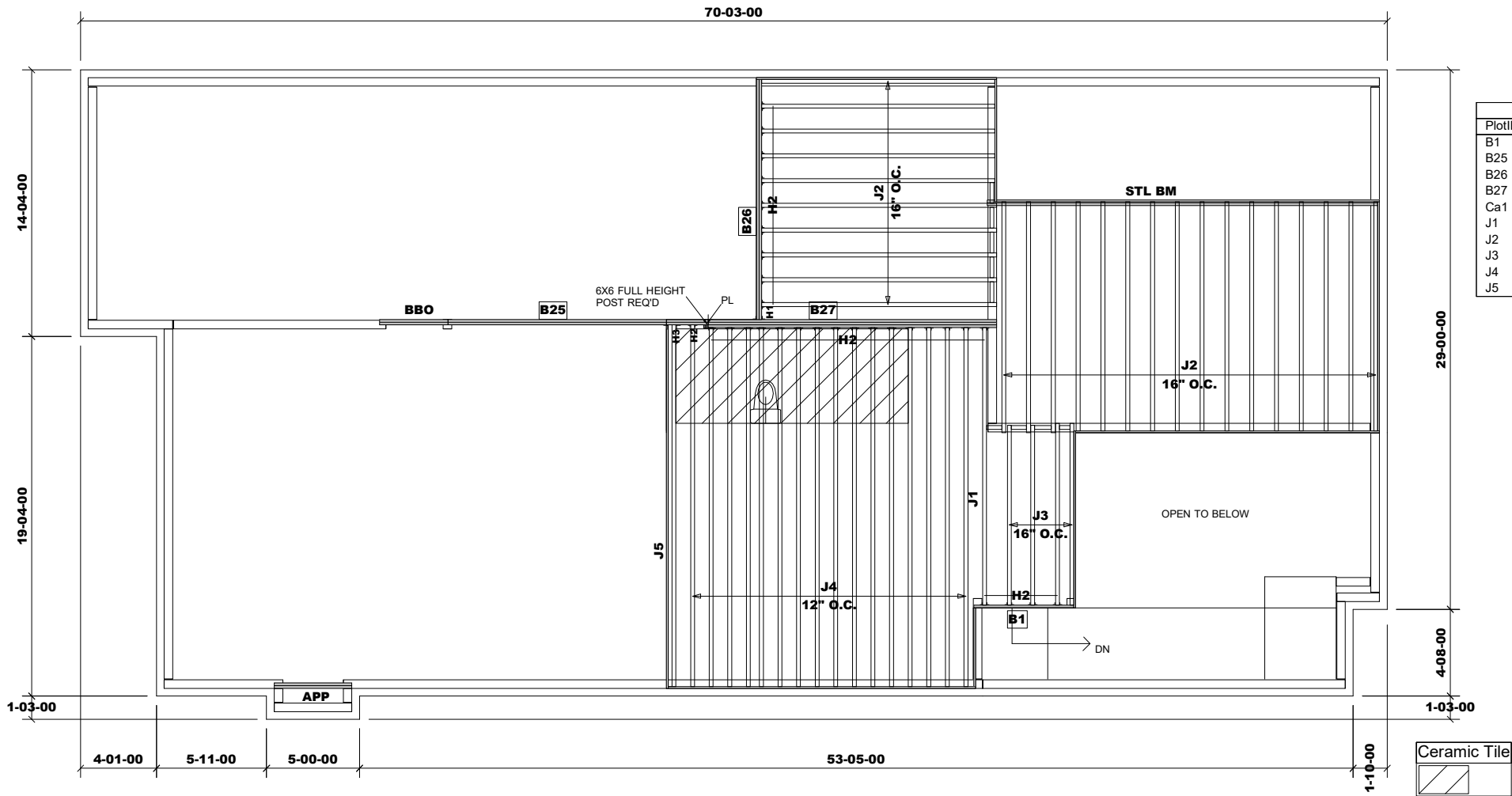
Alpa Roof Trusses Inc.  
Maple, Ontario

Salesperson: Derek  
Home Lumber



REV.#3: March 13, 2020  
REV.#4: April 26, 2022



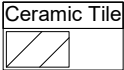


Products				
PlotID	Length	Product	Plies	Net Qty
B1	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B25	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B26	13-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B27	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3
Ca1	119-00-00	1 1/8" x 11 7/8" Rim Board	1	1
J1	15-00-00	11 7/8" NI-20	1	1
J2	13-00-00	11 7/8" NI-20	1	26
J3	10-00-00	11 7/8" NI-20	1	4
J4	20-00-00	11 7/8" NI-40x	1	16
J5	20-00-00	11 7/8" NI-40x	2	2

Connector Summary			
PlotID	Qty	Manuf	Product
H1	1		HGUS410
H2	30		LT251188
H3	1		MIT311.88-2

RIMBOARD  
1- 1/8" X 11 7/8" O.S.B.  
SUBFLOOR - 3/4" NAILED & GLUED\*  
APP - AS PER PLAN  
BBO - BEAM BY OTHERS

DESIGN LOADING:  
LIVE LOAD = 40 PSF  
DEAD LOAD = 15 PSF  
DEAD LOAD @TILE = 20 PSF



Ceramic tile application as per O.B.C. 9.30.6  
Blocking panels are required over all interior supports  
Squash blocks are required under concentrated loads.

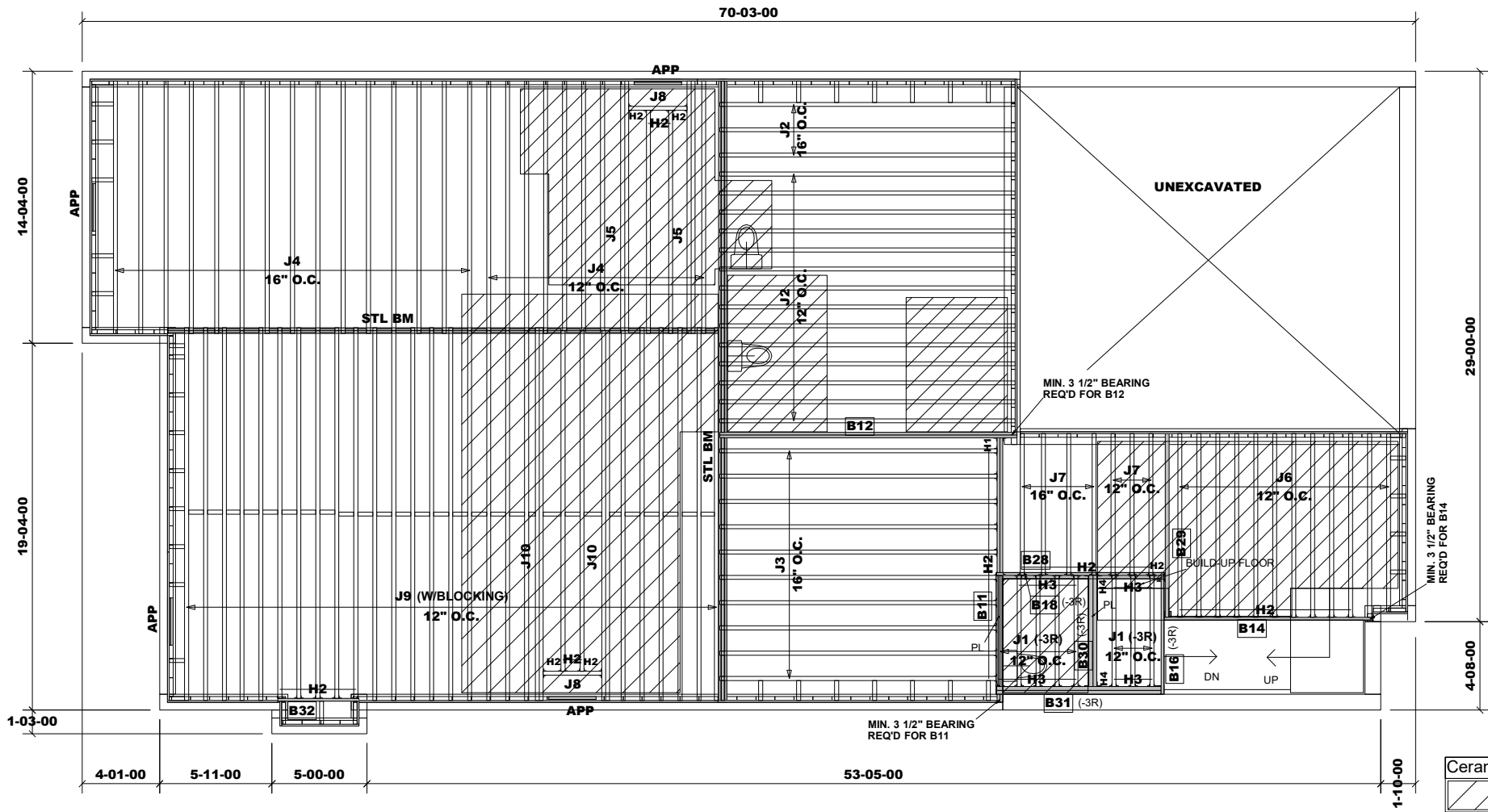
MODEL: 4201 - EL.B  
+ OPT. LOGGIA

Second Floor Framing

Do not scale - refer to architectural plans for dimensions

REV.#3: March 13, 2020  
REV.#4: April 26, 2022

PL: 117690 NP



Products				
PlotID	Length	Product	Plies	Net Qty
B11	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B12	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B14	11-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B16	7-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B18	9-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B28	9-00-00	11 7/8" NI-40x	1	1
B29	10-00-00	11 7/8" NI-20	1	1
B30	6-00-00	9 1/2" NI-20	2	2
B31	9-00-00	9 1/2" NI-20	2	2
B32	5-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
Ca1	6-00-00	1 1/8" x 9 1/2" Rim Board	1	1
Ca2	7-00-00	1 1/8" x 11 7/8" Rim Board	1	1
Ca2	176-00-00	1 1/8" x 11 7/8" Rim Board	1	1
J1	6-00-00	9 1/2" NI-20	1	8
J2	16-00-00	11 7/8" NI-20	1	17
J3	15-00-00	11 7/8" NI-20	1	10
J4	14-00-00	11 7/8" NI-20	1	25
J5	14-00-00	11 7/8" NI-20	2	4
J6	10-00-00	11 7/8" NI-20	1	12
J7	8-00-00	11 7/8" NI-20	1	7
J8	4-00-00	11 7/8" NI-20	1	2
J9	20-00-00	11 7/8" NI-40x	1	27
J10	20-00-00	11 7/8" NI-40x	2	4

Connector Summary			
PlotID	Qty	Manuf	Product
H1	1		HGUS410
H2	42		LT251188
H3	17		LT259
H4	2		MIT39.5-2

DESIGN LOADING:  
  
LIVE LOAD = 40 PSF  
DEAD LOAD = 15 PSF  
DEAD LOAD @TILE = 20 PSF

RIMBOARD  
1- 1/8" X 11 7/8" O.S.B.  
  
SUBFLOOR - 3/4" NAILED & GLUED\*  
  
APP - AS PER PLAN  
BBO - BEAM BY OTHERS

Ceramic tile application as per O.B.C. 9.30.6  
  
Blocking panels are required over all interior supports  
Squash blocks are required under concentrated loads.

MODEL: 4201 - EL.B

First Floor Framing

Do not scale - refer to architectural plans for dimensions

REV.#3: March 13, 2020  
REV.#4: April 26, 2022

PL: 117690 NP

JT/PL: 45147/116407  
LI: (290678)344920\*

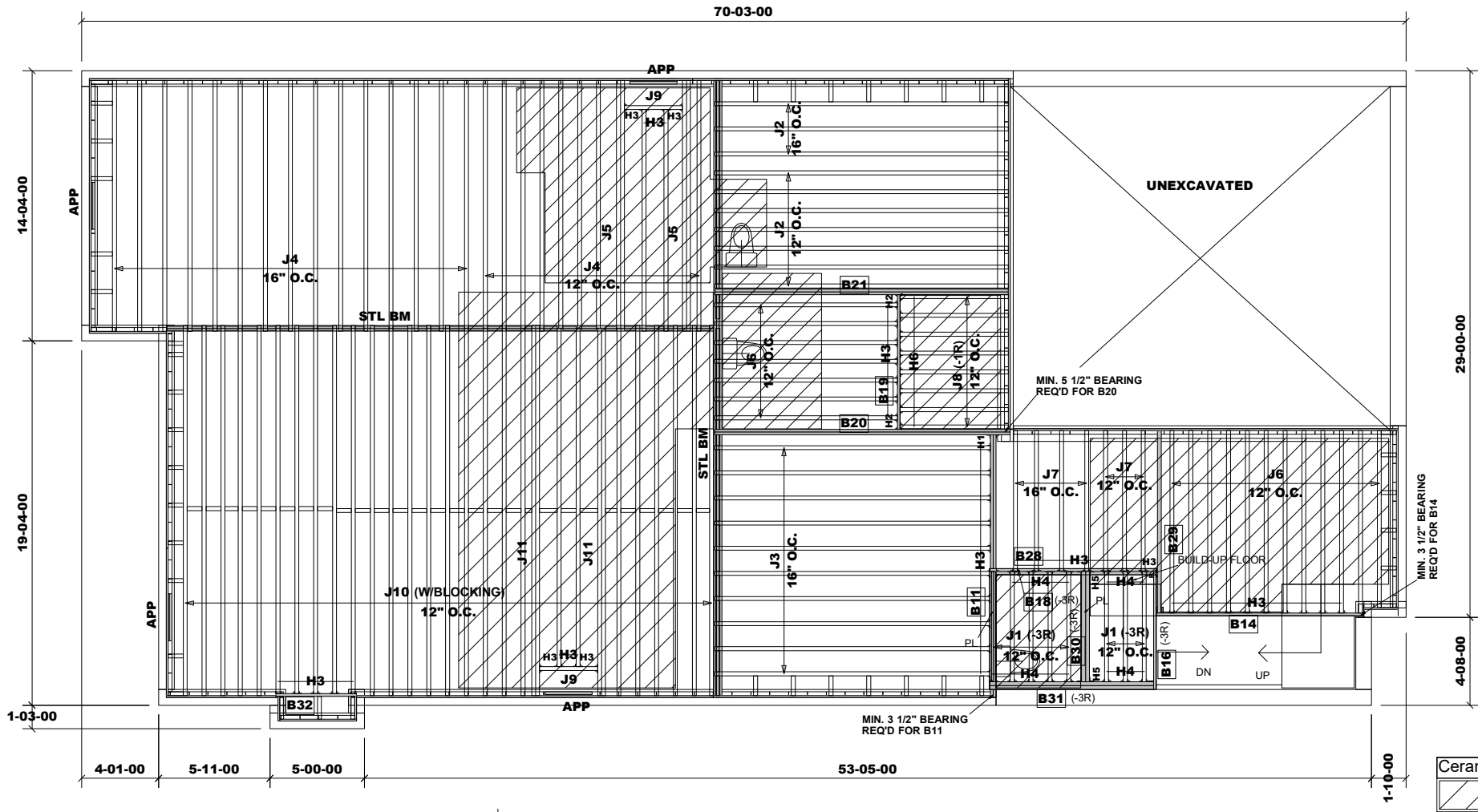
Builder: Gold Park  
Project: Pine Valley PH.2

Location: Vaughan  
Date: June 29, 2018

Designer: FC/NL  
Sheet: 6 of 12

Alpa Roof Trusses Inc.  
Maple, Ontario

Salesperson: Derek  
Home Lumber



Products				
PlotID	Length	Product	Plies	Net Qty
B11	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B14	11-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B16	7-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B18	9-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B19	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B20	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B21	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B28	9-00-00	11 7/8" NI-40x	1	1
B29	10-00-00	11 7/8" NI-20	1	1
B30	6-00-00	9 1/2" NI-20	2	2
B31	9-00-00	9 1/2" NI-20	2	2
B32	5-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
Ca1	6-00-00	1 1/8" x 9 1/2" Rim Board	1	1
Ca2	7-00-00	1 1/8" x 11 7/8" Rim Board	1	1
Ca2	176-00-00	1 1/8" x 11 7/8" Rim Board	1	1
J1	6-00-00	9 1/2" NI-20	1	8
J2	16-00-00	11 7/8" NI-20	1	10
J3	15-00-00	11 7/8" NI-20	1	10
J4	14-00-00	11 7/8" NI-20	1	25
J5	14-00-00	11 7/8" NI-20	2	4
J6	10-00-00	11 7/8" NI-20	1	19
J7	8-00-00	11 7/8" NI-20	1	7
J8	6-00-00	11 7/8" NI-20	1	8
J9	4-00-00	11 7/8" NI-20	1	2
J10	20-00-00	11 7/8" NI-40x	1	27
J11	20-00-00	11 7/8" NI-40x	2	4

RIMBOARD  
1- 1/8" X 11 7/8" O.S.B.  
SUBFLOOR - 3/4" NAILED & GLUED\*  
APP - AS PER PLAN  
BBO - BEAM BY OTHERS

Connector Summary			
PlotID	Qty	Manuf	Product
H1	1		HGUS410
H2	2		HUS1.81/10
H3	49		LT251188
H4	17		LT259
H5	2		MIT39.5-2
H6	8		THA1322

DESIGN LOADING:  
LIVE LOAD = 40 PSF  
DEAD LOAD = 15 PSF  
DEAD LOAD @TILE = 20 PSF

Ceramic tile application as per O.B.C. 9.30.6  
Blocking panels are required over all interior supports  
Squash blocks are required under concentrated loads.

MODEL: 4201 - EL.B  
W/SUNKEN MUD(-1R)

First Floor Framing  
Do not scale - refer to architectural plans for dimensions

REV.#3: March 13, 2020  
REV.#4: April 26, 2022

PL: 117690 NP

JT/PL: 45147/116407  
LI: (290678)344920\*

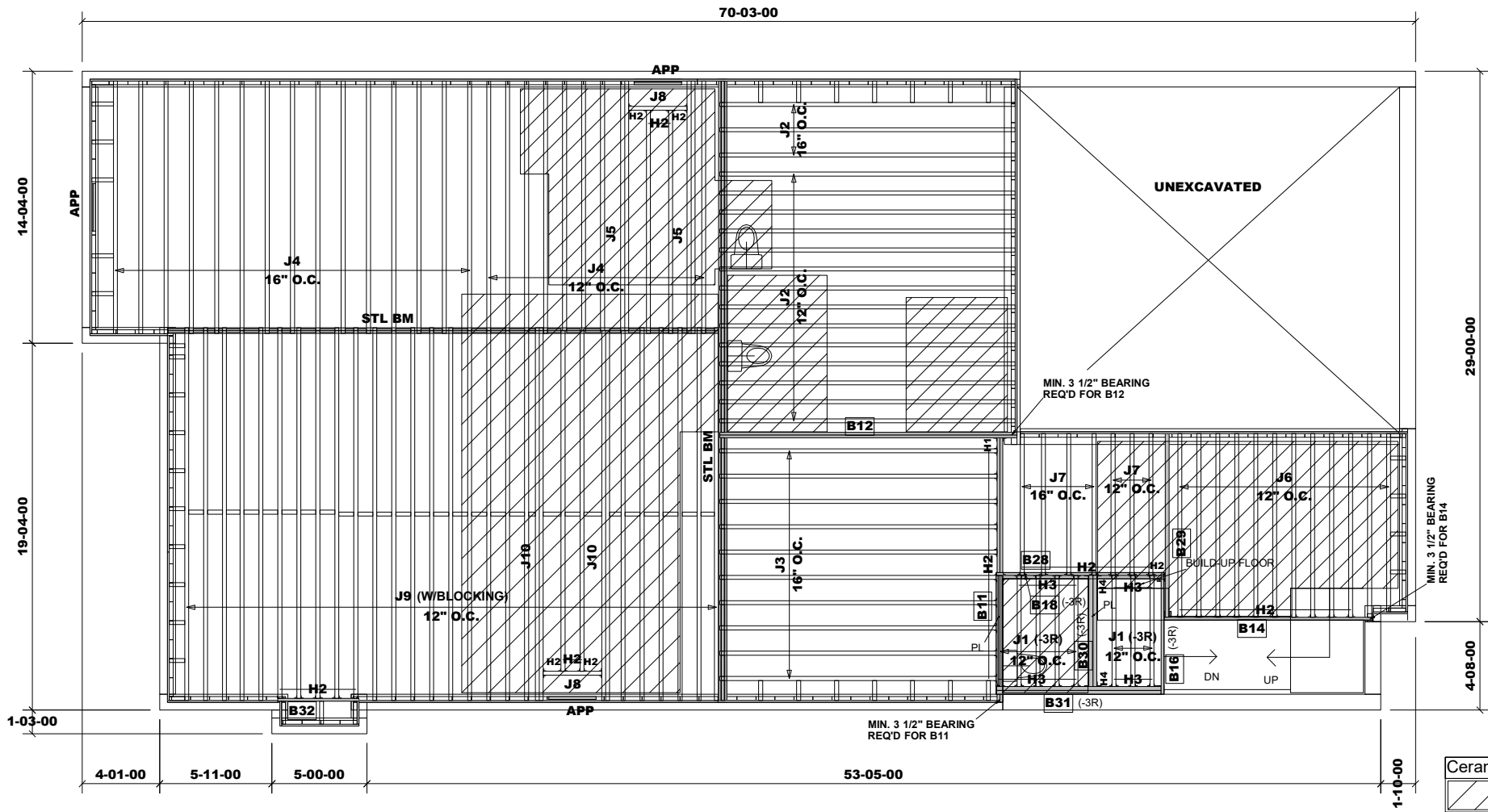
Builder: Gold Park  
Project: Pine Valley PH.2

Location: Vaughan  
Date: June 29, 2018

Designer: FC/NL  
Sheet: 7 of 12

Alpa Roof Trusses Inc.  
Maple, Ontario

Salesperson: Derek  
Home Lumber



Products				
PlotID	Length	Product	Plies	Net Qty
B11	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B12	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B14	11-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B16	7-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B18	9-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B28	9-00-00	11 7/8" NI-40x	1	1
B29	10-00-00	11 7/8" NI-20	1	1
B30	6-00-00	9 1/2" NI-20	2	2
B31	9-00-00	9 1/2" NI-20	2	2
B32	5-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
Ca1	6-00-00	1 1/8" x 9 1/2" Rim Board	1	1
Ca2	7-00-00	1 1/8" x 11 7/8" Rim Board	1	1
Ca2	176-00-00	1 1/8" x 11 7/8" Rim Board	1	1
J1	6-00-00	9 1/2" NI-20	1	8
J2	16-00-00	11 7/8" NI-20	1	17
J3	15-00-00	11 7/8" NI-20	1	10
J4	14-00-00	11 7/8" NI-20	1	25
J5	14-00-00	11 7/8" NI-20	2	4
J6	10-00-00	11 7/8" NI-20	1	12
J7	8-00-00	11 7/8" NI-20	1	7
J8	4-00-00	11 7/8" NI-20	1	2
J9	20-00-00	11 7/8" NI-40x	1	27
J10	20-00-00	11 7/8" NI-40x	2	4

Connector Summary			
PlotID	Qty	Manuf	Product
H1	1		HGUS410
H2	42		LT251188
H3	17		LT259
H4	2		MIT39.5-2

**DESIGN LOADING:**  
  
LIVE LOAD = 40 PSF  
DEAD LOAD = 15 PSF  
DEAD LOAD @TILE = 20 PSF

RIMBOARD  
1- 1/8" X 11 7/8" O.S.B.  
  
SUBFLOOR - 3/4" NAILED & GLUED\*  
  
APP - AS PER PLAN  
BBO - BEAM BY OTHERS

Ceramic tile application as per O.B.C. 9.30.6  
  
Blocking panels are required over all interior supports  
Squash blocks are required under concentrated loads.

MODEL: 4201 - EL.B  
W/OPT. LOGGIA

First Floor Framing  
Do not scale - refer to architectural plans for dimensions

REV.#3: March 13, 2020  
REV.#4: April 26, 2022

PL: 117690 NP

JT/PL: 45147/116407  
LI: (290678)344920\*

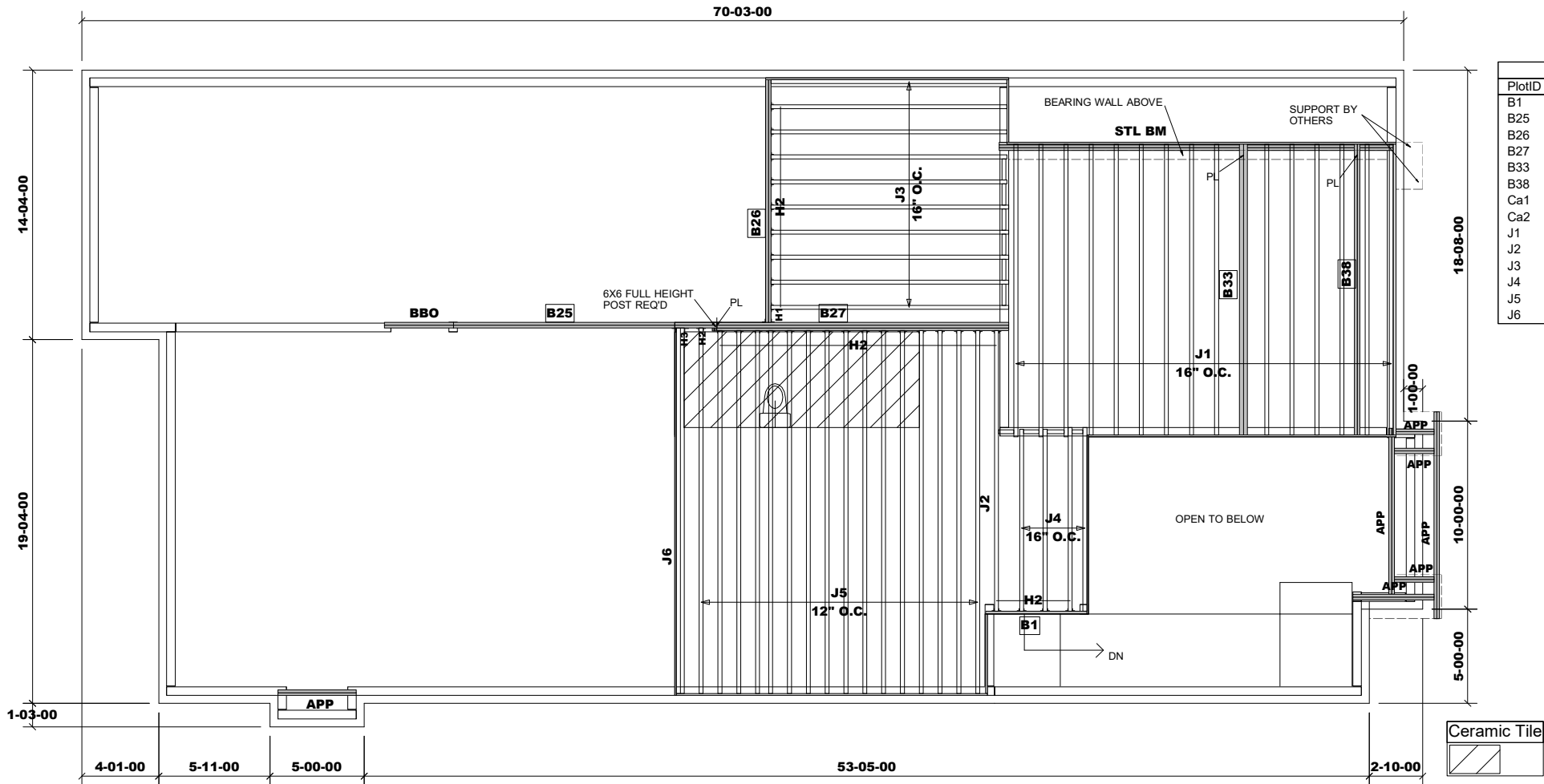
Builder: Gold Park  
Project: Pine Valley PH.2

Location: Vaughan  
Date: June 29, 2018

Designer: FC/NL  
Sheet: 8 of 12

Alpa Roof Trusses Inc.  
Maple, Ontario

Salesperson: Derek  
Home Lumber



Products				
PlotID	Length	Product	Plies	Net Qty
B1	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B25	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B26	13-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B27	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	3	3
B33	16-00-00	11 7/8" NI-20	2	2
B38	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
Ca1	16-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
Ca2	104-00-00	1 1/8" x 11 7/8" Rim Board	1	1
J1	16-00-00	11 7/8" NI-20	1	15
J2	15-00-00	11 7/8" NI-20	1	1
J3	13-00-00	11 7/8" NI-20	1	10
J4	10-00-00	11 7/8" NI-20	1	4
J5	20-00-00	11 7/8" NI-40x	1	16
J6	20-00-00	11 7/8" NI-40x	2	2

Connector Summary			
PlotID	Qty	Manuf	Product
H1	1		HGUS410
H2	37		LT251188
H3	1		MIT311.88-2

RIMBOARD  
1- 1/8" X 11 7/8" O.S.B.  
SUBFLOOR - 3/4" NAILED & GLUED\*  
APP - AS PER PLAN  
BBO - BEAM BY OTHERS

DESIGN LOADING:  
LIVE LOAD = 40 PSF  
DEAD LOAD = 15 PSF  
DEAD LOAD @TILE = 20 PSF

Ceramic tile application as per O.B.C. 9.30.6  
Blocking panels are required over all interior supports  
Squash blocks are required under concentrated loads.

MODEL: 4201 - EL.C  
+ OPT. LOGGIA

Second Floor Framing

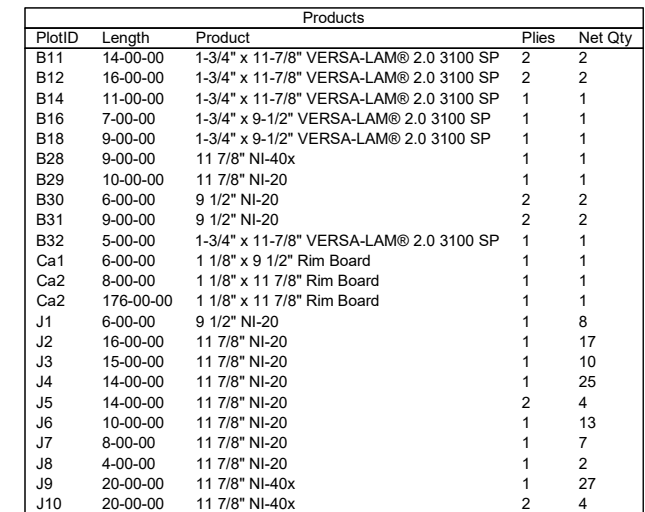
Do not scale - refer to architectural plans for dimensions

REVISION: June 3, 2022

PL: 117690 NP



# Home Lumber



Connector Summary			
PlotID	Qty	Manuf	Product
H1	1		HGUS410
H2	42		LT251188
H3	17		LT259
H4	2		MIT39.5-2

**DESIGN LOADING:**


LIVE LOAD = 40 PSF  
DEAD LOAD = 15 PSF  
DEAD LOAD @TILE = 20 PSF

RIMBOARD

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

SUBFLOOR - 3/4" NAILED & GLUED\*

APP - AS PER PLAN  
BBO - BEAM BY OTHERS

Ceramic Tile	
--------------	---

Ceramic tile application as per O.B.C. 9.30.6

Blocking panels are required over all interior supports  
Squash blocks are required under concentrated loads.

**MODEL: 4201 - EL.C  
W/OPT. LOGGIA**

## First Floor Framing

Do not scale - refer to architectural plans for dimensions

PL: 117690 NP

JT/PL: 45147/116407

LI: (290678)344920\*

Builder: Gold Park

Project: Pine Valley PH.2

Location: Vaughan

Date: April 26, 2022

Designer: FC/NL

Sheet: 12 of 12

Alpa Roof Trusses Inc.

Maple, Ontario

Salesperson: Derek

Home Lumber



## B01 (Floor Beam)

Dry | 1 span | No cant.

March 13, 2020 15:40:06

BC CALC® Member Report

Build 7555

Job name: 45147 (4201)

File name: 290678

Address: Pine Valley

Description: Second Floor Framing

City, Province, Postal Code: Vaughan, ON

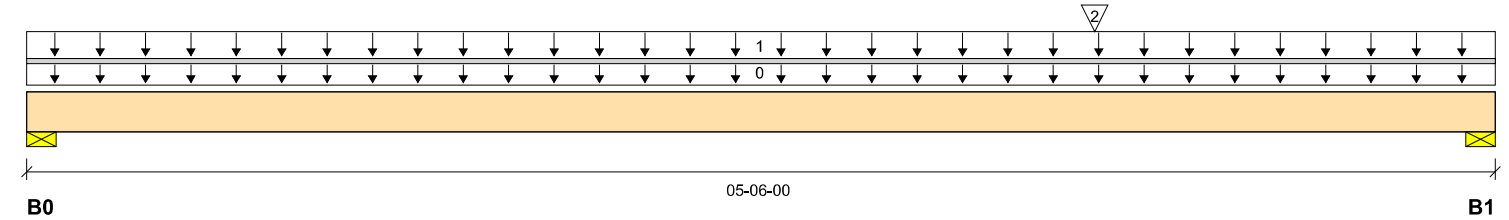
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 05-06-00

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	777 / 0	308 / 0		
B1, 3-1/2"	1223 / 0	476 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	05-06-00	Top		6			00-00-00
1		Unf. Area (lb/ft²)	L	00-00-00	05-06-00	Top	40	15			05-00-00
2		Conc. Pt. (lbs)	L	04-00-00	04-00-00	Top	900	338			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	2651 ft-lbs	17696 ft-lbs	15.0%	1	03-10-07
End Shear	1915 lbs	7232 lbs	26.5%	1	04-02-10
Total Load Deflection	L/999 (0.017")	n/a	n/a	4	02-10-12
Live Load Deflection	L/999 (0.012")	n/a	n/a	5	02-10-12
Max Defl.	0.017"	n/a	n/a	4	02-10-12
Span / Depth	5.1				

## Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 3-1/2" x 1-3/4"	1551 lbs	41.2%	20.8%	Spruce-Pine-Fir
B1	Wall/Plate 3-1/2" x 1-3/4"	2429 lbs	64.5%	32.5%	Spruce-Pine-Fir

## Notes

Design meets Code minimum (L/240) Total load deflection criteria.  
Design meets Code minimum (L/360) Live load deflection criteria.  
Design meets User specified (1") Maximum Total load deflection criteria.  
Calculations assume member is fully braced.  
Resistance Factor phi has been applied to all presented results per CSA O86.  
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.  
Design based on Dry Service Condition.  
Importance Factor : Normal Part code : Part 4



## Disclosure

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BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

SE007707

## B11 (Floor Beam)

Dry | 1 span | No cant.

March 13, 2020 15:40:06

BC CALC® Member Report

Build 7555

Job name: 45147 (4201)

File name: 290678

Address: Pine Valley

Description: First Floor Framing

City, Province, Postal Code: Vaughan, ON

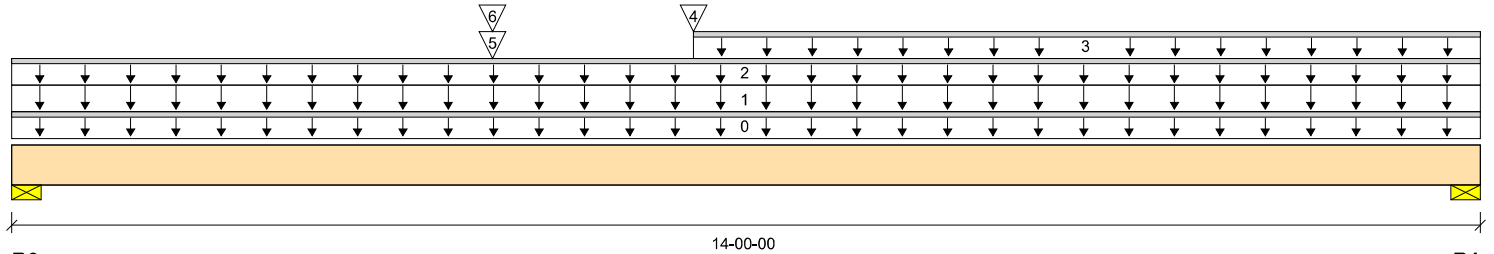
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 14-00-00

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	3204 / 0	1972 / 0		
B1, 3-1/2"	2898 / 0	1816 / 0		

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	14-00-00	Top		12			00-00-00
1		Unf. Area (lb/ft²)	L	00-00-00	14-00-00	Top	40	15			07-06-00
2		Unf. Lin. (lb/ft)	L	00-00-00	14-00-00	Top		60			n/a
3		Unf. Lin. (lb/ft)	L	06-06-00	14-00-00	Top	27	14			n/a
4		Conc. Pt. (lbs)	L	06-06-00	06-06-00	Top	720	657			n/a
5		Conc. Pt. (lbs)	L	04-07-00	04-07-00	Top	777	308			n/a
6		Conc. Pt. (lbs)	L	04-07-00	04-07-00	Top	203	134			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	27356 ft-lbs	35392 ft-lbs	77.3%	1	06-06-00
End Shear	6399 lbs	14464 lbs	44.2%	1	01-03-06
Total Load Deflection	L/259 (0.627")	n/a	92.5%	4	06-10-11
Live Load Deflection	L/423 (0.384")	n/a	85.1%	5	06-10-11
Max Defl.	0.627"	n/a	62.7%	4	06-10-11
Span / Depth	13.7				



### Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate 3-1/2" x 3-1/2"	7271 lbs	96.5%	48.7%	Spruce-Pine-Fir
B1	Wall/Plate 3-1/2" x 3-1/2"	6617 lbs	87.8%	44.3%	Spruce-Pine-Fir

### Notes

Design meets Code minimum (L/240) Total load deflection criteria.  
Design meets Code minimum (L/360) Live load deflection criteria.  
Design meets User specified (1") Maximum Total load deflection criteria.  
Calculations assume member is fully braced.  
Resistance Factor phi has been applied to all presented results per CSA O86.  
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 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 @ 10" O/C,  
STAGGERED IN 2 ROWS

## B12 (Floor Beam)

Dry | 1 span | No cant.

March 13, 2020 15:40:06

BC CALC® Member Report

Build 7555

Job name: 45147 (4201)

File name: 290678

Address: Pine Valley

Description: First Floor Framing

City, Province, Postal Code: Vaughan, ON

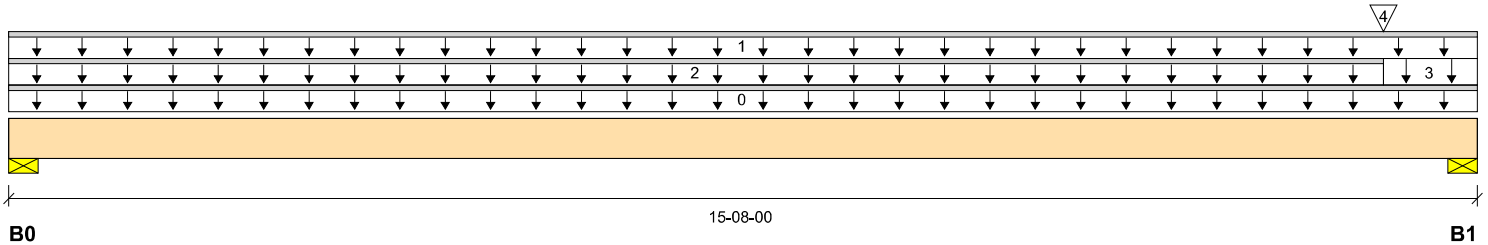
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 15-08-00

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	563 / 0	869 / 0		
B1, 4"	3314 / 0	2560 / 0		

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	15-08-00	Top		12			00-00-00
1		Unf. Lin. (lb/ft)	L	00-00-00	15-08-00	Top	27	74			n/a
2		Unf. Lin. (lb/ft)	L	00-00-00	14-08-00	Top	27	14			n/a
3		Unf. Area (lb/ft²)	L	14-08-00	15-08-00	Top	40	15			04-00-00
4		Conc. Pt. (lbs)	L	14-08-00	14-08-00	Top	2898	1816			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	8617 ft-lbs	35392 ft-lbs	24.3%	1	09-05-05
End Shear	5710 lbs	14464 lbs	39.5%	1	14-04-02
Total Load Deflection	L/658 (0.277")	n/a	36.5%	4	08-02-10
Live Load Deflection	L/999 (0.121")	n/a	n/a	5	08-02-10
Max Defl.	0.277"	n/a	27.7%	4	08-02-10
Span / Depth	15.3				



### Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate 3-1/2" x 3-1/2"	1932 lbs	25.6%	12.9%	Spruce-Pine-Fir
B1	Wall/Plate 4" x 3-1/2"	8170 lbs	94.9%	47.8%	Spruce-Pine-Fir

### Notes

Design meets Code minimum (L/240) Total load deflection criteria.  
Design meets Code minimum (L/360) Live load deflection criteria.  
Design meets User specified (1") Maximum Total load deflection criteria.  
Calculations assume member is fully braced.  
Resistance Factor phi has been applied to all presented results per CSA O86.  
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 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

## B14 (Floor Beam)

Dry | 1 span | No cant.

March 13, 2020 15:40:06

BC CALC® Member Report

Build 7555

Job name: 45147 (4201)

File name: 290678

Address: Pine Valley

Description: First Floor Framing

City, Province, Postal Code: Vaughan, ON

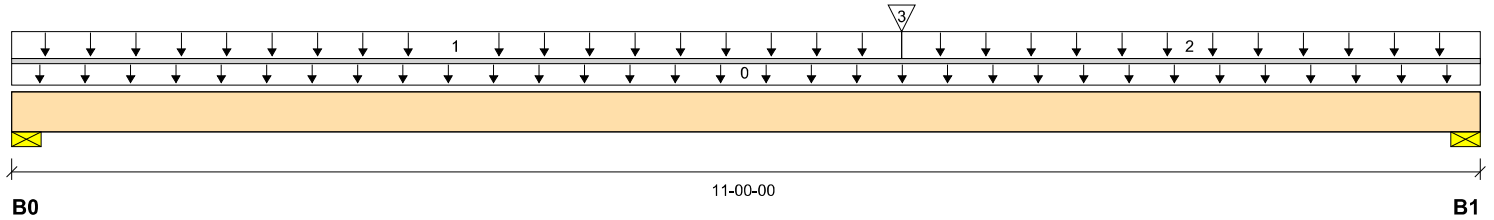
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 11-00-00

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1538 / 0	751 / 0		
B1, 3-11/16"	1885 / 0	896 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	11-00-00	Top		6			00-00-00
1		Unf. Area (lb/ft²)	L	00-00-00	06-08-00	Top	40	20			05-00-00
2		Unf. Area (lb/ft²)	L	06-08-00	11-00-00	Top	40	20			06-00-00
3		Conc. Pt. (lbs)	L	06-08-00	06-08-00	Top	1050	394			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	11297 ft-lbs	17696 ft-lbs	63.8%	1	06-08-00
End Shear	3276 lbs	7232 lbs	45.3%	1	09-08-07
Total Load Deflection	L/421 (0.3")	n/a	57.0%	4	05-07-14
Live Load Deflection	L/617 (0.205")	n/a	58.4%	5	05-07-14
Max Defl.	0.3"	n/a	30.0%	4	05-07-14
Span / Depth	10.6				

## Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate 3-1/2" x 1-3/4"	3246 lbs	86.1%	43.4%	Spruce-Pine-Fir
B1	Wall/Plate 3-11/16" x 1-3/4"	3947 lbs	99.4%	50.1%	Spruce-Pine-Fir

## Notes

Design meets Code minimum (L/240) Total load deflection criteria.  
Design meets Code minimum (L/360) Live load deflection criteria.  
Design meets User specified (1") Maximum Total load deflection criteria.  
Calculations assume member is fully braced.  
Resistance Factor phi has been applied to all presented results per CSA O86.  
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.  
Design based on Dry Service Condition.  
Importance Factor : Normal Part code : Part 4



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SE007720

## B15 (Floor Beam)

Dry | 1 span | No cant.

March 13, 2020 15:40:06

BC CALC® Member Report

Build 7555

Job name: 45147 (4201)

File name: 290678

Address: Pine Valley

Description: First Floor Framing

City, Province, Postal Code: Vaughan, ON

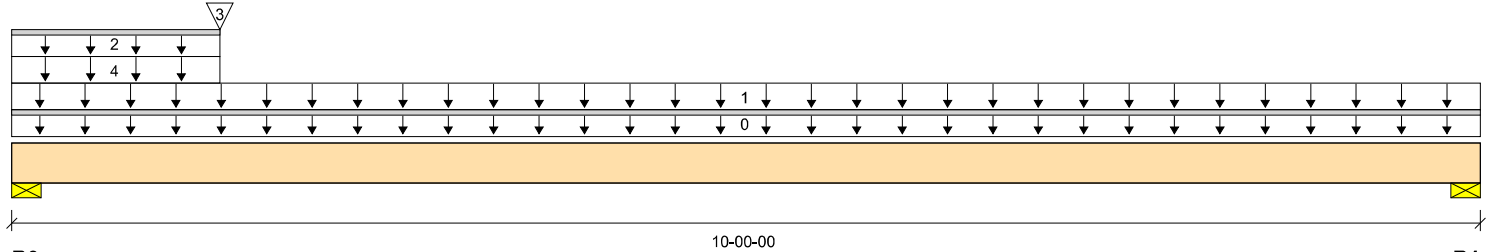
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 10-00-00

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	200 / 0	952 / 0	903 / 0	
B1, 3-1/2"	200 / 0	238 / 0	104 / 0	

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-00-00	Top		12			00-00-00
1		Unf. Area (lb/ft²)	L	00-00-00	10-00-00	Top	40	20			01-00-00
2		Unf. Lin. (lb/ft)	L	00-00-00	01-05-00	Top		160			n/a
3		Conc. Pt. (lbs)	L	01-05-00	01-05-00	Top		454	709		n/a
4		Unf. Area (lb/ft²)	L	00-00-00	01-05-00	Top		13	21		10-00-00

## Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	2521 ft-lbs	35392 ft-lbs	7.1%	5	01-10-08
End Shear	1768 lbs	14464 lbs	12.2%	5	01-03-06
Total Load Deflection	L/999 (0.03")	n/a	n/a	11	04-07-05
Live Load Deflection	L/999 (0.017")	n/a	n/a	15	04-07-05
Max Defl.	0.03"	n/a	n/a	11	04-07-05
Span / Depth	9.6				



## Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate 3-1/2" x 3-1/2"	2745 lbs	36.4%	18.4%	Spruce-Pine-Fir
B1	Wall/Plate 3-1/2" x 3-1/2"	702 lbs	9.3%	4.7%	Spruce-Pine-Fir

## Notes

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Design meets User specified (1") Maximum Total load deflection criteria.  
 Calculations assume member is fully braced.  
 Resistance Factor phi has been applied to all presented results per CSA O86.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 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

SE007721



**B16 (Floor Beam)**

Dry | 1 span | No cant.

March 13, 2020 15:40:06

BC CALC® Member Report

Build 7555

Job name: 45147 (4201)

File name: 290678

Address: Pine Valley

Description: First Floor Framing

City, Province, Postal Code: Vaughan, ON

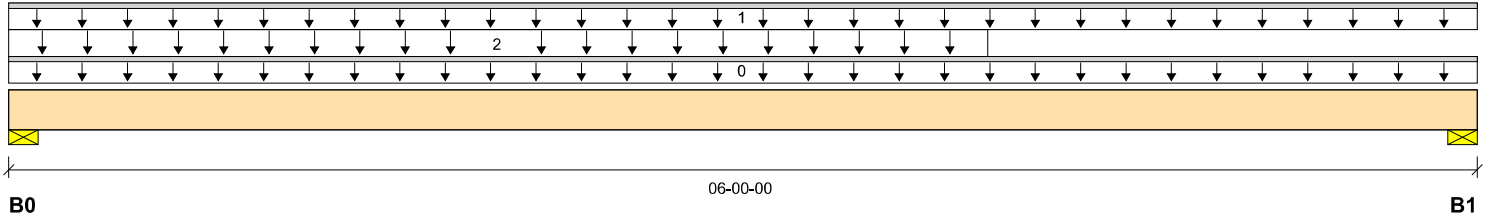
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 06-00-00

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	516 / 0	219 / 0		
B1, 3-1/2"	286 / 0	133 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	06-00-00	Top		5			00-00-00
1		Unf. Lin. (lb/ft)	L	00-00-00	06-00-00	Top	27	14			n/a
2		Unf. Area (lb/ft²)	L	00-00-00	04-00-00	Top	40	15			04-00-00

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1218 ft-lbs	11610 ft-lbs	10.5%	1	02-09-04
End Shear	637 lbs	5785 lbs	11.0%	1	01-01-00
Total Load Deflection	L/999 (0.018")	n/a	n/a	4	02-10-14
Live Load Deflection	L/999 (0.013")	n/a	n/a	5	02-10-14
Max Defl.	0.018"	n/a	n/a	4	02-10-14
Span / Depth	7.0				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 3-1/2" x 1-3/4"	1048 lbs	27.8%	14.0%	Spruce-Pine-Fir
B1	Wall/Plate 3-1/2" x 1-3/4"	596 lbs	15.8%	8.0%	Spruce-Pine-Fir

**Notes**

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Design meets User specified (1") Maximum Total load deflection criteria.  
 Calculations assume member is fully braced.  
 Resistance Factor phi has been applied to all presented results per CSA O86.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 4


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BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

**SE007722**

**B18 (Floor Beam)**

Dry | 1 span | No cant.

March 13, 2020 15:40:06

BC CALC® Member Report

Build 7555

Job name: 45147 (4201)

File name: 290678

Address: Pine Valley

Description: First Floor Framing

City, Province, Postal Code: Vaughan, ON

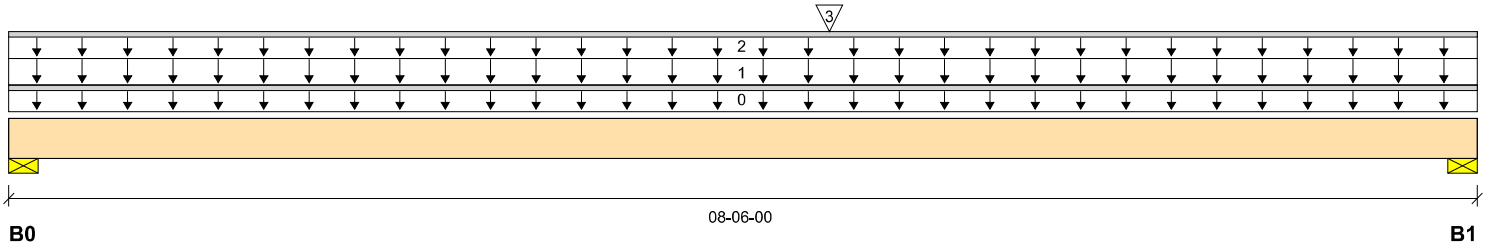
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 08-06-00

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	961 / 0	805 / 0		
B1, 3-1/2"	1090 / 0	884 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-06-00	Top		5			00-00-00
1		Unf. Area (lb/ft²)	L	00-00-00	08-06-00	Top	40	20			03-00-00
2		Unf. Lin. (lb/ft)	L	00-00-00	08-06-00	Top		60			n/a
3		Conc. Pt. (lbs)	L	04-09-00	04-09-00	Top	1031	628			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	7289 ft-lbs	11610 ft-lbs	62.8%	1	04-09-00
End Shear	2375 lbs	5785 lbs	41.0%	1	07-05-00
Total Load Deflection	L/452 (0.214")	n/a	53.1%	4	04-03-08
Live Load Deflection	L/999 (0.121")	n/a	n/a	5	04-04-14
Max Defl.	0.214"	n/a	21.4%	4	04-03-08
Span / Depth	10.2				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 3-1/2" x 1-3/4"	2449 lbs	65.0%	32.8%	Spruce-Pine-Fir
B1	Wall/Plate 3-1/2" x 1-3/4"	2739 lbs	72.7%	36.7%	Spruce-Pine-Fir

**Notes**

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Design meets User specified (1") Maximum Total load deflection criteria.  
 Calculations assume member is fully braced.  
 Resistance Factor phi has been applied to all presented results per CSA O86.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 4


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BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

**SE007724**

**B19 (Floor Beam)**

Dry | 1 span | No cant.

March 13, 2020 15:40:06

BC CALC® Member Report

Build 7555

Job name: 45147 (4201)

File name: 290678

Address: Pine Valley

Description: First Floor Framing

City, Province, Postal Code: Vaughan, ON

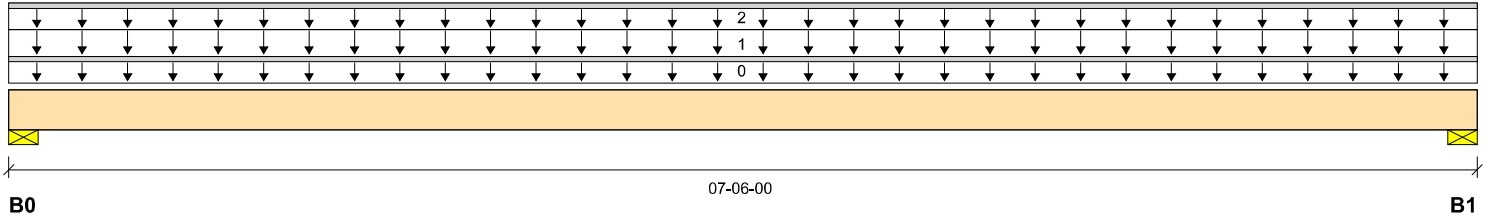
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 07-06-00

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1162 / 0	829 / 0		
B1, 3-1/2"	1163 / 0	829 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-06-00	Top		6			00-00-00
1		Unf. Area (lb/ft²)	L	00-00-00	07-06-00	Top	40	20			07-09-00
2		Unf. Lin. (lb/ft)	L	00-00-00	07-06-00	Top		60			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4595 ft-lbs	17696 ft-lbs	26.0%	1	03-09-00
End Shear	1830 lbs	7232 lbs	25.3%	1	01-03-06
Total Load Deflection	L/999 (0.06")	n/a	n/a	4	03-09-00
Live Load Deflection	L/999 (0.035")	n/a	n/a	5	03-09-00
Max Defl.	0.06"	n/a	n/a	4	03-09-00
Span / Depth	7.1				

**Bearing Supports**

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 3-1/2" x 1-3/4"	2780 lbs	73.8%	37.2%	Spruce-Pine-Fir
B1	Wall/Plate 3-1/2" x 1-3/4"	2780 lbs	73.8%	37.2%	Spruce-Pine-Fir

**Notes**

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Design meets User specified (1") Maximum Total load deflection criteria.  
 Calculations assume member is fully braced.  
 Resistance Factor phi has been applied to all presented results per CSA O86.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 4


**Disclosure**

Use of the Boise Cascade Software is subject to the terms of the End User License Agreement (EULA). Completeness and accuracy of input must be reviewed and verified by a qualified engineer or other appropriate expert to assure its adequacy, prior to anyone relying on such output as evidence of suitability for a particular application. The output here is 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 (800)232-0788 before installation.

BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

**SE007725**



## B20 (Floor Beam)

Dry | 1 span | No cant.

March 13, 2020 15:40:06

BC CALC® Member Report

Build 7555

Job name: 45147 (4201)

File name: 290678

Address: Pine Valley

Description: First Floor Framing

City, Province, Postal Code: Vaughan, ON

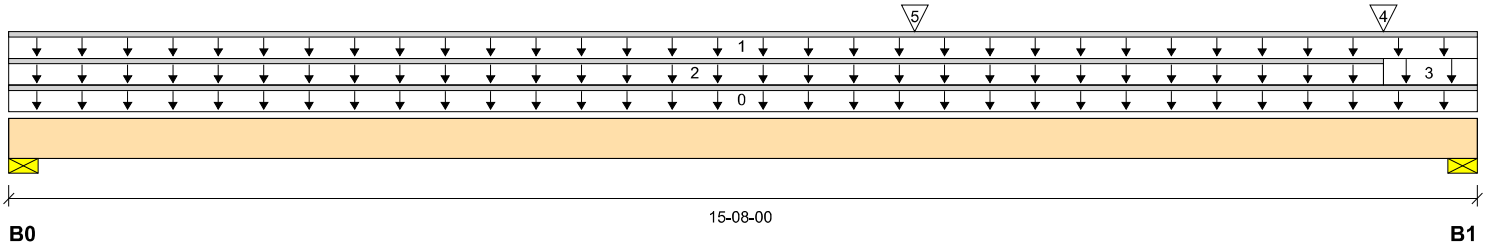
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 15-08-00

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	969 / 0	1157 / 0		
B1, 5-1/2"	4070 / 0	3101 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	15-08-00	Top		12			00-00-00
1		Unf. Lin. (lb/ft)	L	00-00-00	15-08-00	Top	27	74			n/a
2		Unf. Lin. (lb/ft)	L	00-00-00	14-08-00	Top	27	14			n/a
3		Unf. Area (lb/ft²)	L	14-08-00	15-08-00	Top	40	15			04-00-00
4		Conc. Pt. (lbs)	L	14-08-00	14-08-00	Top	2898	1816			n/a
5	Reaction from B19 at bearing B0	Conc. Pt. (lbs)	L	09-08-00	09-08-00	Top	1162	829			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	17753 ft-lbs	35392 ft-lbs	50.2%	1	09-08-00
End Shear	6627 lbs	14464 lbs	45.8%	1	14-02-10
Total Load Deflection	L/374 (0.483")	n/a	64.2%	4	08-01-02
Live Load Deflection	L/746 (0.242")	n/a	48.2%	5	08-04-04
Max Defl.	0.483"	n/a	48.3%	4	08-01-02
Span / Depth	15.2				



## Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 3-1/2" x 3-1/2"	2900 lbs	38.5%	19.4%	Spruce-Pine-Fir
B1	Wall/Plate 5-1/2" x 3-1/2"	9981 lbs	84.3%	42.5%	Spruce-Pine-Fir

## Notes

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Design meets User specified (1") Maximum Total load deflection criteria.  
 Calculations assume member is fully braced.  
 Resistance Factor phi has been applied to all presented results per CSA O86.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 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

## B21 (Floor Beam)

Dry | 1 span | No cant.

March 13, 2020 15:40:06

BC CALC® Member Report

Build 7555

Job name: 45147 (4201)

File name: 290678

Address: Pine Valley

Description: First Floor Framing

City, Province, Postal Code: Vaughan, ON

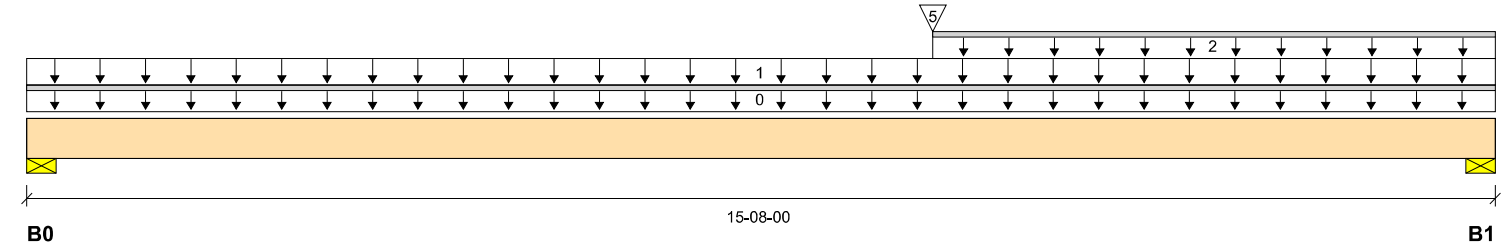
Specifier:

Builder: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 15-08-00

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	1053 / 0	775 / 0		
B1, 5-1/2"	1363 / 0	1229 / 0		

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	15-08-00	Top		12			00-00-00
1		Unf. Area (lb/ft²)	L	00-00-00	15-08-00	Top	40	20			02-00-00
2		Unf. Lin. (lb/ft)	L	09-08-00	15-08-00	Top		60			n/a
5	Reaction from B19 at bearing B0	Conc. Pt. (lbs)	L	09-08-00	09-08-00	Top	1162	829			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	15405 ft-lbs	35392 ft-lbs	43.5%	1	09-08-00
End Shear	3204 lbs	14464 lbs	22.2%	1	14-02-10
Total Load Deflection	L/445 (0.406")	n/a	53.9%	4	08-01-02
Live Load Deflection	L/793 (0.228")	n/a	45.4%	5	08-01-02
Max Defl.	0.406"	n/a	40.6%	4	08-01-02
Span / Depth	15.2				



### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B0	Wall/Plate 3-1/2" x 3-1/2"	2548 lbs	33.8%	17.0%	Spruce-Pine-Fir
B1	Wall/Plate 5-1/2" x 3-1/2"	3581 lbs	30.2%	15.2%	Spruce-Pine-Fir

### Notes

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Design meets User specified (1") Maximum Total load deflection criteria.  
 Calculations assume member is fully braced.  
 Resistance Factor phi has been applied to all presented results per CSA O86.  
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 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

SE007727

## 2nd Floor - Supply/BOM\Flush Beams\B25(i32542) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

April 25, 2022 15:10:29

Build 8183

Job name: 45147(4201)

File name: 343714-A.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B25(i32542)

City, Province, Postal Code: Vaughan, ON

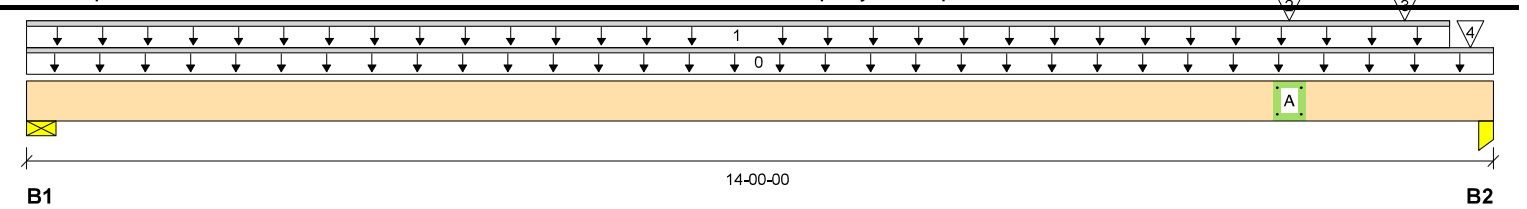
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 14-00-00

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

Bearing	Live	Dead	Snow	Wind
B1, 2-1/2"	63 / 0	609 / 0		
B2, 3"	689 / 0	2958 / 0	2504 / 0	

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	14-00-00	Top		12			00-00-00
1	-	Unf. Lin. (lb/ft)	L	00-00-00	13-07-00	Top		61			n/a
2	J5(i32679)	Conc. Pt. (lbs)	L	12-00-10	12-00-10	Front	337	696			n/a
3	J4(i32826)	Conc. Pt. (lbs)	L	13-01-14	13-01-14	Front	415	178			n/a
4	15(i31230)	Conc. Pt. (lbs)	L	13-09-06	13-09-06	Top		1690	2499		n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3881 ft-lbs	16939 ft-lbs	22.9%	1	09-03-05
End Shear	1649 lbs	9401 lbs	17.5%	0	12-09-02
Total Load Deflection	L/999 (0.104")	n/a	n/a	35	07-05-09
Live Load Deflection	L/999 (0.018")	n/a	n/a	51	07-11-08
Max Defl.	0.104"	n/a	n/a	35	07-05-09
Span / Depth	13.8				



### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 2-1/2" x 3-1/2"	853 lbs	24.4%	12.3%	Spruce-Pine-Fir
B2	Column 3" x 3-1/2"	8142 lbs	44.7%	63.6%	Spruce-Pine-Fir

### Notes

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Design meets User specified (1") Maximum Total load deflection criteria.  
 Design meets User specified (0.75") Maximum live load deflection criteria.  
 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 2015 and CSA O86.  
 Unbalanced snow loads determined from building geometry were used in selected product's verification.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 9  
 Calculations assume unbraced length of Top: 11-09-00, Bottom: 11-06-08.

NAIL ONE PLY TO ANOTHER WITH 3-1/2" SPIRAL NAILS @ 8" O/C,  
 STAGGERED IN 2 ROWS

## 2nd Floor - Supply/BOM\Flush Beams\B26(i32812) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

April 25, 2022 15:10:29

Build 8183

Job name: 45147(4201)

File name: 343714-A.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B26(i32812)

City, Province, Postal Code: Vaughan, ON

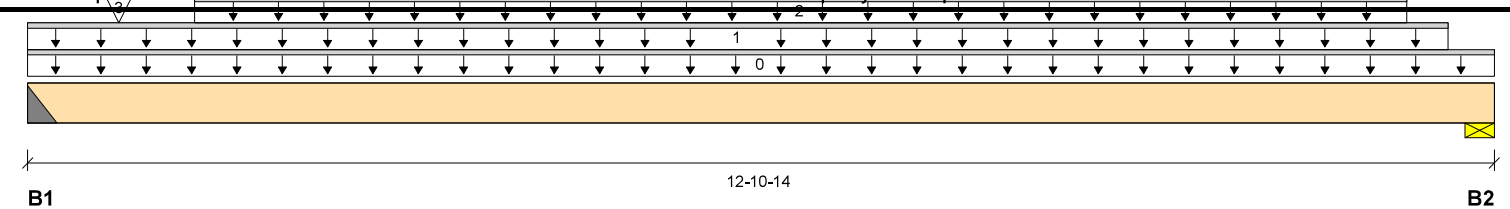
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 12-10-14

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

Bearing	Live	Dead	Snow	Wind
B1, 2"	1571 / 0	2252 / 0	1801 / 0	
B2, 4-3/8"	1492 / 0	2173 / 0	1742 / 0	

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-10-14	Top		12			00-00-00
1	1(i31148)	Unf. Lin. (lb/ft)	L	00-00-00	12-06-00	Top		250	284		n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-05-10	12-01-10	Front	259	97			n/a
3	J2(i32671)	Conc. Pt. (lbs)	L	00-09-10	00-09-10	Front	305	114			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	22140 ft-lbs	35392 ft-lbs	62.6%	13	06-01-10
End Shear	6801 lbs	14464 lbs	47.0%	13	11-06-10
Total Load Deflection	L/296 (0.506")	n/a	81.0%	35	06-03-10
Live Load Deflection	L/492 (0.305")	n/a	73.1%	51	06-03-10
Max Defl.	0.506"	n/a	50.6%	35	06-03-10
Span / Depth	12.6				



### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Hanger 2" x 3-1/2"	7088 lbs	n/a	83.0%	HGUS410
B2	Wall/Plate 4-3/8" x 3-1/2"	6822 lbs	72.4%	36.5%	Spruce-Pine-Fir

### Cautions

Hanger model HGUS410 and seat length were input by the user.

Header for the hanger HGUS410 is a Triple 1-3/4" x 11-7/8" LVL beam.

### Notes

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

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

Design meets User specified (1") Maximum Total load deflection criteria.

Design meets User specified (0.75") Maximum live load deflection criteria.

Hanger Manufacturer: Unassigned

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

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

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

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

Calculations assume unbraced length of Top: 00-00-00, Bottom: 01-01-08.

NAIL ONE PLY TO ANOTHER WITH 3-1/2" SPIRAL NAILS @ 9" O/C,  
STAGGERED IN 2 ROWS

SE047316

## 2nd Floor - Supply/BOM\Flush Beams\B27(i32488) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

April 25, 2022 15:10:29

Build 8183

Job name: 45147(4201)

File name: 343714-A.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B27(i32488)

City, Province, Postal Code: Vaughan, ON

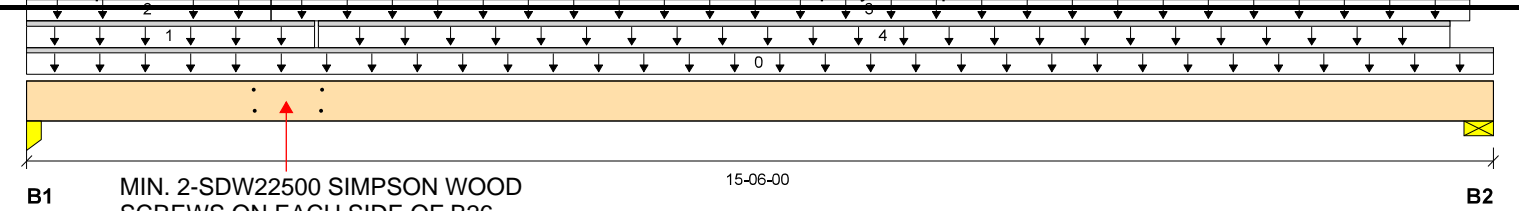
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpha Roof Trusses



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

Bearing	Live	Dead	Snow	Wind
B1, 3"	4535 / 0	3929 / 0	1759 / 0	
B2, 5-1/2"	3354 / 0	2214 / 0	327 / 0	

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	15-06-00	Top		18			00-00-00
1	2(i31149)	Unf. Lin. (lb/ft)	L	00-00-00	03-00-08	Top		30			n/a
2	2(i31149)	Unf. Lin. (lb/ft)	L	00-00-00	02-07-00	Top		77	116		n/a
3	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	02-07-00	15-03-00	Top	20	8			n/a
4	User Load	Unf. Lin. (lb/ft)	L	03-01-00	15-00-08	Top		60			n/a
5	Smoothed Load	Unf. Lin. (lb/ft)	L	03-04-04	10-04-04	Front	389	168			n/a
6	Smoothed Load	Unf. Lin. (lb/ft)	L	11-04-04	14-04-04	Front	388	145			n/a
7	J4(i32681)	Conc. Pt. (lbs)	L	00-01-14	00-01-14	Front	398	171			n/a
8	J4(i32731)	Conc. Pt. (lbs)	L	01-01-14	01-01-14	Front	398	171			n/a
9	J4(i32683)	Conc. Pt. (lbs)	L	02-01-14	02-01-14	Front	335	144			n/a
10	-	Conc. Pt. (lbs)	L	02-08-14	02-08-14	Front	1891	2379	1788		n/a
11	J4(i32692)	Conc. Pt. (lbs)	L	10-10-04	10-10-04	Front	389	155			n/a
12	J1(i32696)	Conc. Pt. (lbs)	L	14-10-04	14-10-04	Front	330	124			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	35491 ft-lbs	55211 ft-lbs	64.3%	1	06-01-04
End Shear	12257 lbs	21696 lbs	56.5%	1	01-02-14
Total Load Deflection	L/245 (0.731")	n/a	98.1%	35	07-04-04
Live Load Deflection	L/397 (0.451")	n/a	90.6%	51	07-04-04
Max Defl.	0.731"	n/a	73.1%	35	07-04-04
Span / Depth	15.1				



### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Column 3" x 5-1/4"	13474 lbs	49.3%	70.1%	Spruce-Pine-Fir
B2	Wall/Plate 5-1/2" x 5-1/4"	8125 lbs	45.7%	23.1%	Spruce-Pine-Fir

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



Customer: **Gold Park**  
Job Address: **Pine Valley**  
City: **Vaughan**  
Job Track: **45147(4201)**

Job Name: **343714-A**  
Level: **1st Floor - Supply/BOM**  
Label: **B28 - i33943**  
Type: **Beam**

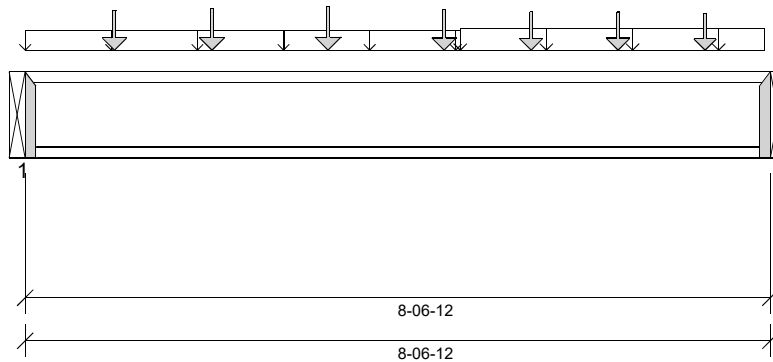
**1 Ply Member**  
**11 7/8" NI-40x**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15

Report Version: 2021.03.26 04/25/2022 15:37



#### DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)  
Design Methodology: LSD  
Service Condition: Dry  
LL Deflection Limit: L/360, 0.75" (absolute)  
TL Deflection Limit: L/240, 1.00" (absolute)

#### Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 1'- 1 1/2"

#### Factored Resistance of Support Material:

- 769 psi Beam @ 0'
- 769 psi Beam @ 8'- 6 3/4"

#### Reinforcement Accessories Required

- Critical Reaction Web Stiffener @ 8'- 6 3/4"



#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	4'- 9 3/4"	1.25D + 1.5L	1.00	3856 lb ft	6255 lb ft	Passed - 62%
Factored Shear:	8'- 6 11/16"	1.25D + 1.5L	1.00	1827 lb	2340 lb	Passed - 78%
Live Load (LL) Pos. Defl.:	4'- 4 1/4"	L		0.086"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 3 7/8"	D + L		0.140"	L/240	Passed - L/732

#### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	1'-12	1.25D + 1.5L	1.00	1586 lb		2010 lb	-	Passed - 79%
2	1'-12	1.25D + 1.5L	1.00	1827 lb		2340 lb	-	Passed - 78%

#### CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories
			Top	Face	Member	
1	LT251188		-	-	-	Connector manually specified by the user.
2	LT251188		-	-	-	Connector manually specified by the user.

\* Connectors: Refer to manufacturer's specifications, fasteners requirements and installation instruction. Where header fasteners are longer than the width of the supporting member, install backer block or clinch header nails.

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	8'- 6 3/4"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'	5'	User Load	Top	60 lb/ft	-	-	-
Uniform	5'	8'- 6"	User Load	Top	30 lb/ft	80 lb/ft	-	-
Point	1'- 5/16"	1'- 5/16"	J7(i33907)	Back	67 lb	178 lb	-	-
Point	2'- 1 3/4"	2'- 1 3/4"	J7(i33833)	Back	71 lb	190 lb	-	-
Point	3'- 5 3/4"	3'- 5 3/4"	J7(i34029)	Back	77 lb	207 lb	-	-
Point	4'- 9 3/4"	4'- 9 3/4"	J7(i33964)	Back	74 lb	181 lb	-	-
Point	5'- 9 3/4"	5'- 9 3/4"	J7(i33926)	Back	76 lb	155 lb	-	-
Point	6'- 9 3/4"	6'- 9 3/4"	J7(i33815)	Back	77 lb	155 lb	-	-
Point	7'- 9 3/4"	7'- 9 3/4"	J7(i33963)	Back	71 lb	144 lb	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B11(i33936)	482 lb	650 lb	-	-
2	8'- 6 3/4"	8'- 6 3/4"	B29(i33870)	461 lb	840 lb	-	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

SE047318





Customer: **Gold Park**  
Job Address: **Pine Valley**  
City: **Vaughan**  
Job Track: **45147(4201)**

Job Name: **343714-A**  
Level: **1st Floor - Supply/BOM**  
Label: **B29 - i34110**  
Type: **Beam**

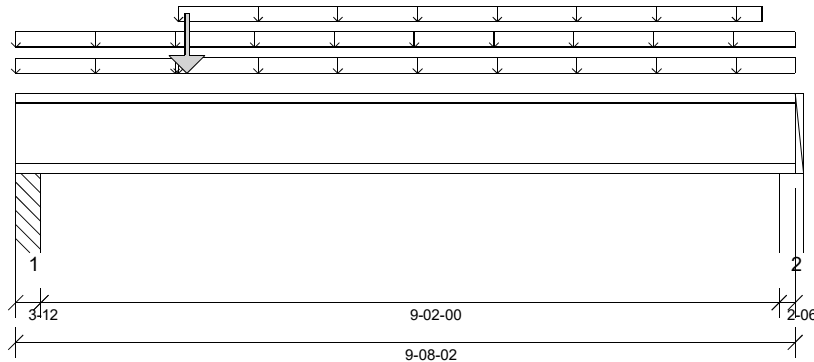
**1 Ply Member**  
**11 7/8" NI-20**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.5.3.233.Update5.15

Report Version: 2021.03.26 04/25/2022 15:46



#### DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360, 0.75" (absolute)

TL Deflection Limit: L/240, 1.00" (absolute)

#### Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 7'- 3"

#### Factored Resistance of Support Material:

- 1334 psi Column @ 0'- 2 3/4"
- 615 psi Wall @ 9'- 6 3/4"

#### Reinforcement Accessories Required

- Critical Load Web Stiffener @ 2'- 1 1/2"



#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	2'- 1 1/2"	1.25D + 1.5L	1.00	3222 lb ft	5580 lb ft	Passed - 58%
Factored Shear:	0'- 3 13/16"	1.25D + 1.5L	1.00	1739 lb	2240 lb	Passed - 78%
Live Load (LL) Pos. Defl.:	4'- 5 7/16"	L		0.099"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 5 1/2"	D + L		0.155"	L/240	Passed - L/709

#### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	3-12	1.25D + 1.5L	1.00	1759 lb		2210 lb	12510 lb	Passed - 80%
2	2-06	1.25D + 1.5L	1.00	698 lb		2045 lb	3653 lb	Passed - 34%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	9'- 8 1/8"	Self Weight	Top	3 lb/ft	-	-	-
Uniform	0'	9'- 8 1/8"	FC2 Floor Decking (Plan View Fill)	Top	5 lb/ft	13 lb/ft	-	-
Uniform	0'	2'- 1/4"	FC2 Floor Decking (Plan View Fill)	Top	4 lb/ft	7 lb/ft	-	-
Uniform	2'- 1/4"	9'- 8 1/8"	FC2 Floor Decking (Plan View Fill)	Top	6 lb/ft	17 lb/ft	-	-
Uniform	2'- 1/4"	9'- 3 1/4"	FC2 Floor Decking (Plan View Fill)	Top	4 lb/ft	-	-	-
Point	2'- 1 1/2"	2'- 1 1/2"	B28(i34102)	Back	461 lb	840 lb	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 3 3/4"	Pt1(i34105)	450 lb	811 lb	-	-
2	9'- 5 3/4"	9'- 8 1/8"	W18(i31276)	174 lb	308 lb	-	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

SE047319



Customer: **Gold Park**  
Job Address: **Pine Valley**  
City: **Vaughan**  
Job Track: **45147(4201)**

Job Name: **343714-A**  
Level: **1st Floor - Supply/BOM**  
Label: **B30 - i34068**  
Type: **Beam**

**2 Ply Member**

**9 1/2" NI-20**

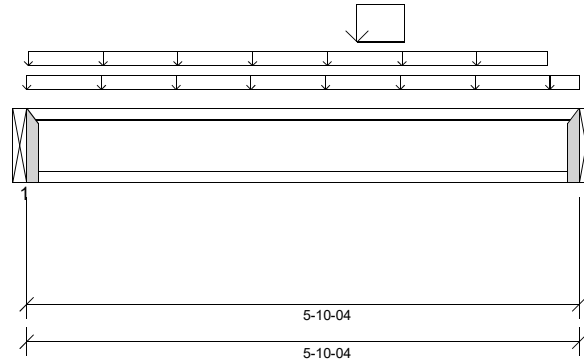
Status:

**Design  
Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version  
8.5.3.233.Update5.15

Report Version: 2021.03.26 04/25/2022 15:44



### DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018,  
ABC 2019, OBC 2012 (2019  
Amendment)

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360, 0.75" (absolute)

TL Deflection Limit: L/240, 1.00" (absolute)

#### Lateral Restraint Requirements:

Both ends of the member and the outer supports  
must be laterally restrained. Top and bottom edges  
of the member must be fully restrained or have the  
following maximum unbraced length:

Top: 0' Bottom: 5'- 10 1/4"

#### Factored Resistance of Support Material:

- 769 psi Beam @ 0'
- 769 psi Beam @ 5'- 10 1/4"



### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	3'- 7 13/16"	1.25D + 1.5L	1.00	3564 lb ft	8620 lb ft	Passed - 41%
Factored Shear:	5'- 10 3/16"	1.25D + 1.5L	1.00	1900 lb	3540 lb	Passed - 54%
Live Load (LL) Pos. Defl.:	3'- 1 1/2"	L		0.043"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	3'- 1 3/16"	D + L		0.071"	L/240	Passed - L/986

### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	1-12	1.25D + 1.5L	1.00	1329 lb		3260 lb	-	Passed - 41%
2	1-12	1.25D + 1.5L	1.00	1913 lb		3260 lb	-	Passed - 59%

### CONNECTOR INFORMATION

ID	Part No.	Manufacturer	Nailing Requirements			Other Information or Requirement for Reinforcement Accessories
			Top	Face	Member	
1	MIT39.5-2		-	-	-	Connector manually specified by the user.
2	MIT39.5-2		-	-	-	Connector manually specified by the user.

\* Connectors: Refer to manufacturer's specifications, fasteners requirements and installation instruction. Where header fasteners are longer than the width of the supporting member, install backer block or clinch header nails.

### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	5'- 10 1/4"	Self Weight	Top	5 lb/ft	-	-	-
Uniform	0'	5'- 10 1/4"	FC3 Floor Decking (Plan View Fill)	Top	20 lb/ft	40 lb/ft	-	-
Uniform	0'- 3/16"	5'- 6 1/4"	User Load	Top	60 lb/ft	-	-	-
Uniform	3'- 6"	4'	12(i31224)	Top	961 lb/ft	2160 lb/ft	-	-

### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'	B31(i34078)	431 lb	527 lb	-	-
2	5'- 10 1/4"	5'- 10 1/4"	B18(i34083)	543 lb	823 lb	-	-

### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

### PLY TO PLY CONNECTION

- Member design assumed proper ply to ply connection by others. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.

SE047320





Customer: **Gold Park**  
Job Address: **Pine Valley**  
City: **Vaughan**  
Job Track: **45147(4201)**

Job Name: **343714-A**  
Level: **1st Floor - Supply/BOM**  
Label: **B31 - i34078**  
Type: **Beam**

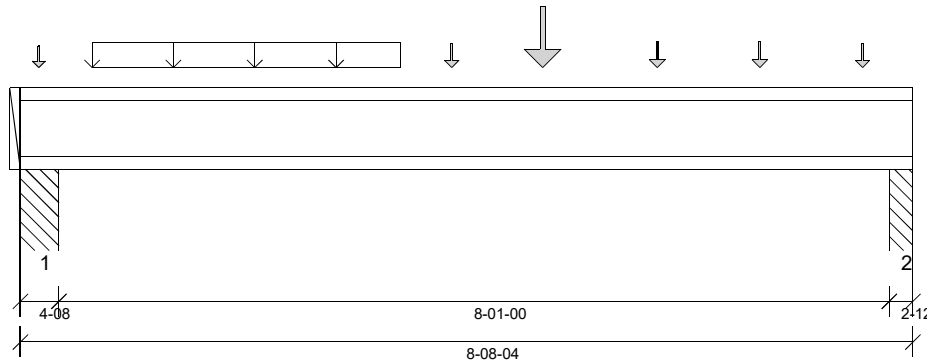
**2 Ply Member**  
**9 1/2" NI-20**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15

Report Version: 2021.03.26 04/25/2022 15:48



#### DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)

Design Methodology: LSD

Service Condition: Dry

LL Deflection Limit: L/360, 0.75" (absolute)

TL Deflection Limit: L/240, 1.00" (absolute)

#### Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 0'- 9 5/8"

#### Factored Resistance of Support Material:

- 1334 psi Column @ 0'- 3 1/2"
- 1334 psi Column @ 8'- 6 1/2"



#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	5'- 1"	1.25D + 1.5L	1.00	4585 lb ft	8620 lb ft	Passed - 53%
Factored Shear:	8'- 5 7/16"	1.25D + 1.5L	1.00	1869 lb	3540 lb	Passed - 53%
Live Load (LL) Pos. Defl.:	4'- 6"	L		0.094"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	4'- 6 1/8"	D + L		0.158"	L/240	Passed - L/613

#### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	4-08	1.25D + 1.5L	1.00	1744 lb		3540 lb	30024 lb	Passed - 49%
2	2-12	1.25D + 1.5L	1.00	1871 lb		3384 lb	18348 lb	Passed - 55%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	8'- 8 1/4"	Self Weight	Top	5 lb/ft	-	-	-
Uniform	0'- 8 3/8"	3'- 8 3/8"	Smoothed Load	Back	67 lb/ft	134 lb/ft	-	-
Point	0'- 2 1/8"	0'- 2 1/8"	-	Back	53 lb	77 lb	-	-
Point	4'- 2 3/8"	4'- 2 3/8"	J1(i34082)	Back	63 lb	126 lb	-	-
Point	5'- 1"	5'- 1"	B30(i34068)	Back	431 lb	527 lb	-	-
Point	6'- 2 3/8"	6'- 2 3/8"	J1(i34074)	Back	77 lb	158 lb	-	-
Point	7'- 2 3/8"	7'- 2 3/8"	J1(i34067)	Back	73 lb	150 lb	-	-
Point	8'- 2 3/8"	8'- 2 3/8"	J1(i34073)	Back	60 lb	122 lb	-	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 4 1/2"	Pt2(i34080)	482 lb	764 lb	-	-
2	8'- 5 1/2"	8'- 8 1/4"	Pt2(i34075)	520 lb	811 lb	-	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

#### PLY TO PLY CONNECTION

- Member design assumed proper ply to ply connection by others. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.

SE047321

## 1st Floor - Supply/BOM\Flush Beams\B32(i34010) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

April 25, 2022 15:51:48

Build 8183

Job name: 45147(4201)

File name: 343714-A.mmdl

Address: Pine Valley

Description: 1st Floor - Supply/BOM\Flush Beams\B32(i34010)

City, Province, Postal Code: Vaughan, ON

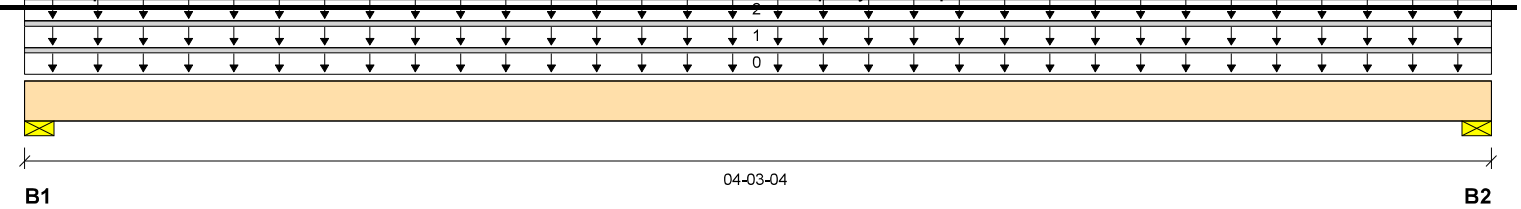
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



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

Bearing	Live	Dead	Snow	Wind
B1, 4-3/4"	1052 / 0	723 / 0		
B2, 3-1/2"	1000 / 0	581 / 0		

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-03-04	Top		6			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	04-03-04	Back	456				n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	04-03-04	Top		177			n/a
3	E12(i31093)	Unf. Lin. (lb/ft)	L	00-00-00	00-06-12	Top		114			n/a
4	FC2 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-03-10	04-00-14	Top	28	10			n/a
5	E12(i31093)	Conc. Pt. (lbs)	L	00-05-12	00-05-12	Top		215			n/a
6	E30(i31237)	Conc. Pt. (lbs)	L	04-00-08	04-00-08	Top		193			n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1468 ft-lbs	17696 ft-lbs	8.3%	1	02-01-04
End Shear	1060 lbs	7232 lbs	14.7%	1	02-11-14
Total Load Deflection	L/999 (0.005")	n/a	n/a	4	02-02-07
Live Load Deflection	L/999 (0.004")	n/a	n/a	5	02-02-07
Max Defl.	0.005"	n/a	n/a	4	02-02-07
Span / Depth	3.7				



### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/4" x 1-3/4"	2482 lbs	48.5%	24.5%	Spruce-Pine-Fir
B2	Wall/Plate 3-1/2" x 1-3/4"	2226 lbs	59.1%	29.8%	Spruce-Pine-Fir

### Notes

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 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 2015 and CSA O86.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 9  
 Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-09-08.

### Disclosure

Use of the Boise Cascade Software is subject to the terms of the End User License Agreement (EULA). Completeness and accuracy of input must be reviewed and verified by a qualified engineer or other appropriate expert to assure its adequacy, prior to anyone relying on such output as evidence of suitability for a particular application. The output here is 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 (800)232-0788 before installation.

BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

SE047322



Customer: **Gold Park**  
Job Address: **Pine Valley**  
City: **Vaughan**  
Job Track: **45147(4201)**

Job Name: **343714-C**  
Level: **2nd Floor - Supply/BOM**  
Label: **B33 - i36167**  
Type: **Beam**

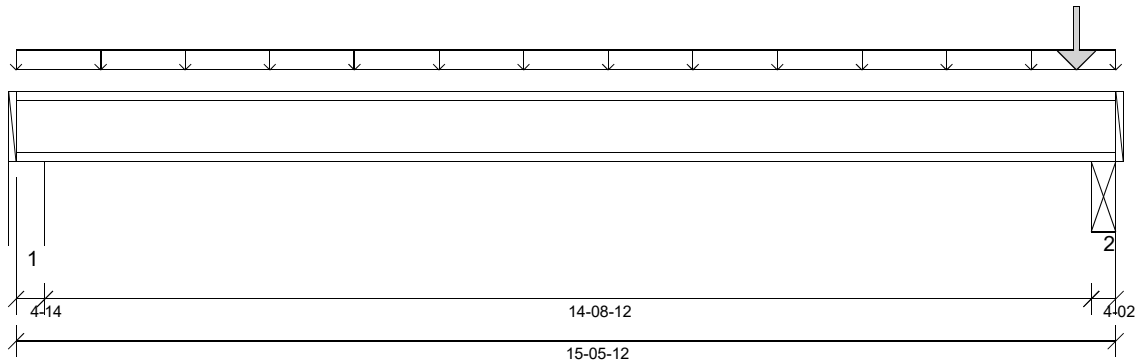
**2 Ply Member**  
**11 7/8" NI-20**

Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15

Report Version: 2021.03.26 04/26/2022 11:41



#### DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)

Design Methodology: LSD  
Service Condition: Dry  
LL Deflection Limit: L/360,  
TL Deflection Limit: L/240,

#### Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 14'- 8 3/4"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 3 7/8"
- 769 psi Beam @ 15'- 2 5/8"

#### Reinforcement Accessories Required

- Critical Load Web Stiffener @ 14'- 11 1/8"



#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	8'- 7/16"	1.25D + 1.5L	0.86	3325 lb ft	9580 lb ft	Passed - 35%
Factored Shear:	15'- 1 9/16"	1.25D + 1.5S + L	1.00	4434 lb	4480 lb	Passed - 99%
Live Load (LL) Pos. Defl.:	7'- 10 5/16"	L + 0.5S		0.140"	L/360	Passed - L/999
Total Load (TL) Pos. Defl.:	7'- 11"	D + L + 0.5S		0.219"	L/240	Passed - L/805

#### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	4'-14"	1.25D + 1.5L	0.86	911 lb		3846 lb	12873 lb	Passed - 24%
2	4'-02"	1.25D + 1.5S + L	1.00	4471 lb		4480 lb	15861 lb	Passed - 100%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Self Weight	0'	15'- 5 3/4"	Self Weight	Top	6 lb/ft	-	-	-
Uniform	0'	15'- 5 3/4"	FC1 Floor Decking (Plan View Fill)	Top	20 lb/ft	53 lb/ft	-	-
Point	14'- 11 1/8"	14'- 11 1/8"	E26(i31140)	Top	1202 lb	-	1586 lb	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 4 7/8"	5(i31212)	202 lb	420 lb	-	-
2	15'- 1 5/8"	15'- 5 3/4"	STL BM(i31191)	1402 lb	416 lb	1586 lb	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- When the applied loads are coming from a member/post/wall above that does not sit directly on this beam, adequate load transfer elements, such as squash blocks, wall studs, or beveled plates are required to transfer the loads to this beam.

#### PLY TO PLY CONNECTION

- Member design assumed proper ply to ply connection by others. Verify connection between plies according to code specification and follow the manufacturer's installation instruction. Loads assumed to be distributed equally to each ply.

SE047323

## 2nd Floor - Supply/BOM\Flush Beams\B38(i37531) (Flush Beam)

BC Design Engine Member Report

Dry | 1 span | No cant.

June 3, 2022 13:21:25

Build 8183

Job name: 45147(4201)

File name: 344920-C.mmdl

Address: Pine Valley

Description: 2nd Floor - Supply/BOM\Flush Beams\B38(i37531)

City, Province, Postal Code: Vaughan, ON

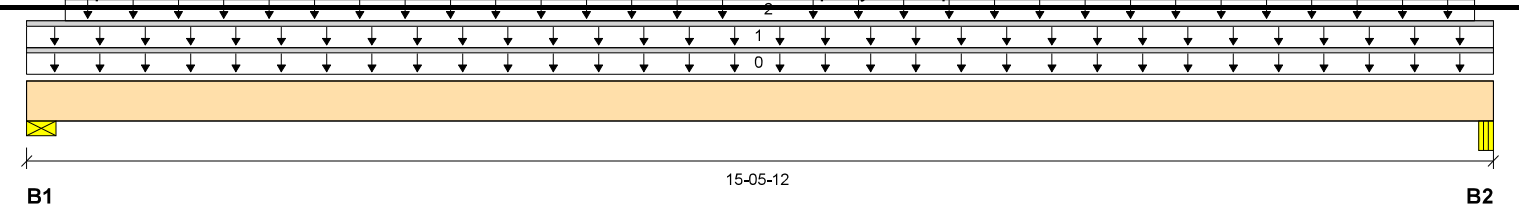
Specifier:

Customer: Gold Park

Designer: NL

Code reports: CCMC 12472-R

Company: Alpa Roof Trusses



Total Horizontal Product Length = 15'-05-12

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

Bearing	Live	Dead	Snow	Wind
B1, 4-7/8"	406 / 0	269 / 0	35 / 0	
B2, 4-1/8"	408 / 0	1537 / 0	1865 / 0	

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	15-05-12	Top		12			00-00-00
1	FC1 Floor Decking (Plan View Fill)	Unf. Lin. (lb/ft)	L	00-00-00	15-05-12	Top	27	10			n/a
2	User Load	Unf. Lin. (lb/ft)	L	00-04-14	15-03-06	Top	27	10			n/a
3	E26(i31140)	Conc. Pt. (lbs)	L	14-11-02	14-11-02	Top		1314	1897		n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	3821 ft-lbs	35392 ft-lbs	10.8%	1	08-04-07
End Shear	1461 lbs	14464 lbs	10.1%	13	14-01-12
Total Load Deflection	L/999 (0.117")	n/a	n/a	35	07-11-10
Live Load Deflection	L/999 (0.073")	n/a	n/a	51	07-11-10
Max Defl.	0.117"	n/a	n/a	35	07-11-10
Span / Depth	15.0				



### Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-7/8" x 3-1/2"	980 lbs	9.3%	4.7%	Spruce-Pine-Fir
B2	Beam 4-1/8" x 3-1/2"	5128 lbs	46.2%	29.1%	Unspecified

### Notes

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 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 2015 and CSA O86.  
 Unbalanced snow loads determined from building geometry were used in selected product's verification.  
 Design based on Dry Service Condition.  
 Importance Factor : Normal Part code : Part 9  
 Calculations assume unbraced length of Top: 00-00-00, Bottom: 14-08-12.

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



Customer: **Gold Park**  
Job Address: **Pine Valley**  
City: **Vaughan**  
Job Track: **45147(4201)**

Job Name: **343714-C**  
Level: **2nd Floor - Supply/BOM**  
Label: **J1 - i36218**  
Type: **FloorJoist**

**1 Ply Member**  
**11 7/8" NI-20**

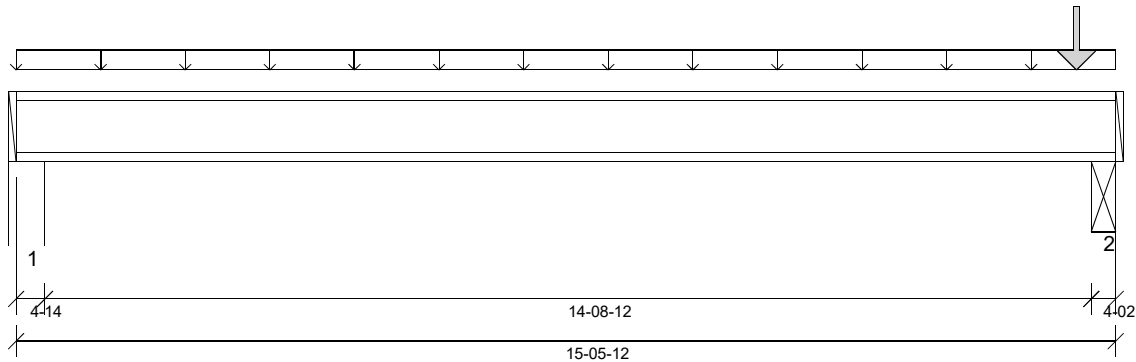
Status:  
**Design Passed**

Illustration Not to Scale. Pitch: 0/12

Designed by Single Member Design Engine in MiTek® Structure Version 8.5.3.233.Update5.15

Report Version: 2021.03.26

04/26/2022 11:43



#### DESIGN INFORMATION

Building Code: NBCC 2015, Part9, BCBC 2018, ABC 2019, OBC 2012 (2019 Amendment)

Design Methodology: LSD  
Service Condition: Dry  
System Live Load: 40.0 psf  
System Dead Load: 15.0 psf  
System Spacing: 16" c.c  
LL Deflection Limit: L/360,  
TL Deflection Limit: L/240,

#### Floor Assembly Requirements:

Subfloor: 3/4" OSB Plywood  
Connection: Glued And Nailed  
Ceiling: None  
Blocking: None  
Bridging: None  
Strapping: None

#### Lateral Restraint Requirements:

Both ends of the member and the outer supports must be laterally restrained. Top and bottom edges of the member must be fully restrained or have the following maximum unbraced length:

Top: 0' Bottom: 14'- 8 3/4"

#### Factored Resistance of Support Material:

- 615 psi Wall @ 0'- 3 7/8"
- 769 psi Beam @ 15'- 2 5/8"



#### ANALYSIS RESULTS

Design Criteria	Location	Load Combination	LDF	Design	Limit	Result
Factored Pos. Moment:	7'- 11 1/2"	1.25D + 1.5L + S	1.00	3052 lb ft	5580 lb ft	Passed - 55%
Factored Shear:	15'- 1 9/16"	1.25D + 1.5S + L	1.00	1771 lb	2240 lb	Passed - 79%
Live Load (LL) Pos. Defl.:	7'- 9 9/16"	L + 0.5S		0.209"	L/360	Passed - L/844
Total Load (TL) Pos. Defl.:	7'- 9 15/16"	D + L + 0.5S		0.296"	L/240	Passed - L/596
Bare Joist Deflection:	7'- 9 1/4"	L		0.256"	L/360	Passed - L/690
Vibration Controlled Span:				14'- 8 3/4"	17'- 7/16"	Passed - 86%

#### SUPPORT AND REACTION INFORMATION

ID	Input Bearing Length	Controlling Load Combination	LDF	Factored Downward Reaction	Factored Uplift Reaction	Factored Resistance of Member	Factored Resistance of Support	Result
1	4-14	1.25D + 1.5L + S	1.00	845 lb		2240 lb	7498 lb	Passed - 38%
2	4-02	1.25D + 1.5S + L	1.00	1806 lb		2240 lb	7931 lb	Passed - 81%

#### SPECIFIED LOADS

Type	Start Loc	End Loc	Source	Face	Dead (D)	Live (L)	Snow (S)	Wind (W)
Uniform	0'	15'- 5 3/4"	FC1 Floor Decking (Plan View Fill)	Top	20 lb/ft	53 lb/ft	-	-
Point	14'- 11 1/8"	14'- 11 1/8"	E26(i31140)	Top	434 lb	-	451 lb	-

#### UNFACTORED REACTIONS

ID	Start Loc	End Loc	Source	Dead (D)	Live (L)	Snow (S)	Wind (W)
1	0'	0'- 4 7/8"	5(i31212)	157 lb	420 lb	-	-
2	15'- 1 5/8"	15'- 5 3/4"	STL BM(i31191)	590 lb	416 lb	451 lb	-

#### DESIGN NOTES

- The dead loads used in the design of this member were applied to the structure as projected dead loads.
- Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.
- A load bearing wall is supported by the I-joist at a location where the I-joist is supported by a member below. Please see manufacturer installation guidelines for requirements of blocking/squash blocks.
- Tributary Loads have been generated based on actual spacing between members in the model which may differ from the default system spacing. The actual loads applied to the member are shown in the Specified Loads table.
- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.
- This report is based on modeled conditions input by the user. Source information for the loads and supports are provided for reference only. Verify that all loads and support conditions are correct.
- Review all loads and reactions to ensure that the member/bearing/connector/structure can resist adequately. Unless already specified on this report, anchorage for uplift reactions to be specified by others. Installation of member and accessories (if required) as per manufacturer's instruction.
- Design for vibration control is based on the concluding report: "Development of Design Procedures for Vibration Controlled Spans Using Engineered Wood Members," dated Sep-04-97.

SE047325

## Maximum Floor Spans – M3.1, L/360

### Design Criteria

Spans:	Simple span
Loads:	Live load = 40 psf and dead load = 20 psf
Deflection limits:	L/360 under live load and L/240 under total load
Sheathing:	23/32 in. nailed-glued oriented strand board (OSB) sheathing



### Maximum Floor Spans

Joist depth	Joist series	Bare On centre spacing				1/2 in. gypsum ceiling On centre spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-9"	14'-10"	14'-4"	13'-5"	16'-2"	15'-4"	14'-6"	13'-5"
	NI-40x	16'-10"	15'-10"	15'-3"	14'-8"	17'-2"	16'-3"	15'-8"	14'-11"
	NI-60	16'-11"	16'-0"	15'-5"	14'-9"	17'-4"	16'-4"	15'-9"	15'-2"
	NI-80	18'-0"	16'-11"	16'-3"	15'-7"	18'-5"	17'-3"	16'-7"	15'-11"
11-7/8"	NI-20	17'-8"	16'-8"	16'-1"	15'-6"	18'-3"	17'-3"	16'-7"	16'-0"
	NI-40x	19'-1"	17'-9"	17'-1"	16'-5"	19'-8"	18'-3"	17'-6"	16'-10"
	NI-60	19'-4"	17'-11"	17'-3"	16'-7"	19'-11"	18'-6"	17'-8"	17'-0"
	NI-80	20'-9"	19'-2"	18'-3"	17'-5"	21'-3"	19'-8"	18'-9"	17'-10"
	NI-90	21'-2"	19'-7"	18'-8"	17'-9"	21'-8"	20'-1"	19'-1"	18'-1"
14"	NI-40x	21'-2"	19'-7"	18'-8"	17'-9"	21'-10"	20'-3"	19'-4"	18'-4"
	NI-60	21'-6"	19'-11"	19'-0"	18'-0"	22'-2"	20'-7"	19'-8"	18'-8"
	NI-80	23'-1"	21'-4"	20'-3"	19'-3"	23'-8"	21'-11"	20'-10"	19'-9"
	NI-90	23'-6"	21'-9"	20'-8"	19'-7"	24'-1"	22'-4"	21'-3"	20'-1"
16"	NI-60	23'-5"	21'-8"	20'-8"	19'-7"	24'-2"	22'-5"	21'-5"	20'-4"
	NI-80	25'-1"	23'-2"	22'-1"	20'-11"	25'-9"	23'-10"	22'-9"	21'-6"
	NI-90	25'-7"	23'-7"	22'-6"	21'-3"	26'-3"	24'-3"	23'-1"	21'-11"

Joist depth	Joist series	Mid-span blocking with 1x4 inch strap On centre spacing				Mid-span blocking and 1/2 in. gypsum ceiling 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'-6"	17'-5"	16'-7"	14'-11"	19'-0"	17'-8"	16'-7"	14'-11"
	NI-60	18'-9"	17'-7"	16'-10"	15'-7"	19'-2"	17'-11"	16'-10"	15'-7"
	NI-80	20'-0"	18'-7"	17'-10"	17'-1"	20'-6"	19'-1"	18'-2"	17'-5"
11-7/8"	NI-20	20'-1"	18'-8"	17'-6"	16'-1"	20'-7"	18'-8"	17'-6"	16'-1"
	NI-40x	21'-8"	20'-2"	19'-0"	17'-0"	22'-3"	20'-9"	19'-0"	17'-0"
	NI-60	21'-11"	20'-5"	19'-6"	18'-6"	22'-6"	21'-0"	20'-1"	18'-8"
	NI-80	23'-5"	21'-9"	20'-9"	19'-8"	23'-11"	22'-3"	21'-3"	20'-2"
	NI-90	23'-11"	22'-2"	21'-1"	20'-0"	24'-4"	22'-8"	21'-8"	20'-6"
14"	NI-40x	24'-3"	22'-7"	20'-11"	18'-8"	24'-11"	22'-11"	20'-11"	18'-8"
	NI-60	24'-8"	22'-11"	21'-10"	20'-8"	25'-3"	23'-7"	22'-7"	21'-4"
	NI-80	26'-3"	24'-5"	23'-3"	22'-0"	26'-10"	25'-0"	23'-10"	22'-7"
	NI-90	26'-9"	24'-10"	23'-8"	22'-5"	27'-4"	25'-5"	24'-3"	22'-11"
16"	NI-60	27'-1"	25'-2"	24'-0"	22'-9"	27'-9"	26'-0"	24'-10"	23'-1"
	NI-80	28'-10"	26'-10"	25'-6"	24'-2"	29'-6"	27'-6"	26'-3"	24'-10"
	NI-90	29'-5"	27'-3"	26'-0"	24'-6"	30'-0"	27'-11"	26'-8"	25'-2"

### Notes:

- The tabulated clear spans are based on CSA O86-14 and NBC 2015, and are applicable to residential floor construction meeting the above design criteria.
- For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
- Minimum bearing length shall be 1-3/4 inch for end bearings, and 3-1/2 inches for intermediate bearings.
- Bearing stiffeners are not required when I-joists are used in accordance with this table, except as required for hangers.
- Nordic I-joists are listed in CCMC Evaluation Report 13032-R and APA Product Report PR-L274C.

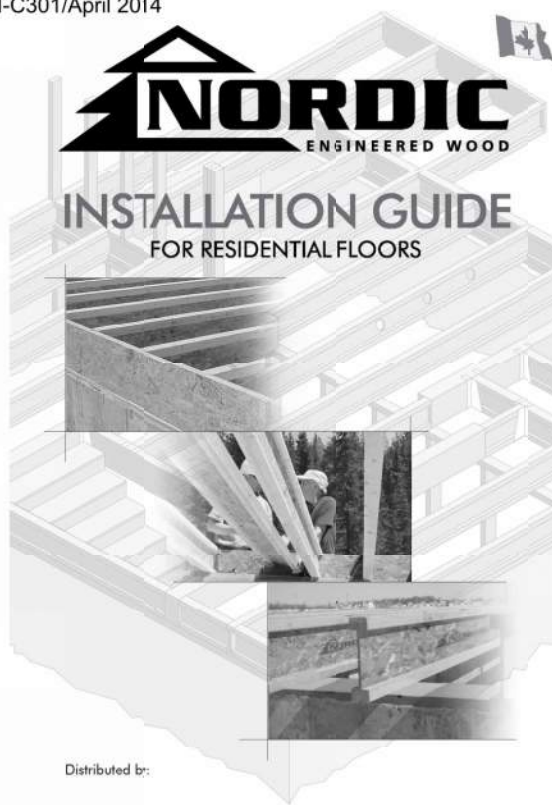


The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

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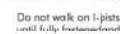


## SAFETY AND CONSTRUCTION PRECAUTIONS

### WARNING

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

### Avoid Accidents by Following these Important Guidelines:



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



Never stack building materials over unbraced I-joists. Once sheathed, do not move across I-joists with concentrated loads from building materials.

2. When the building is completed, the floor sheathing will provide lateral support for the top flange 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 1 foot 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 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-briding.

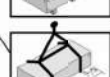
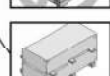
4. Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only.

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 on the shipping side. Avoid cutting unbraced 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 CRUTY TO REPAIR A DAMAGED I-JOIST.

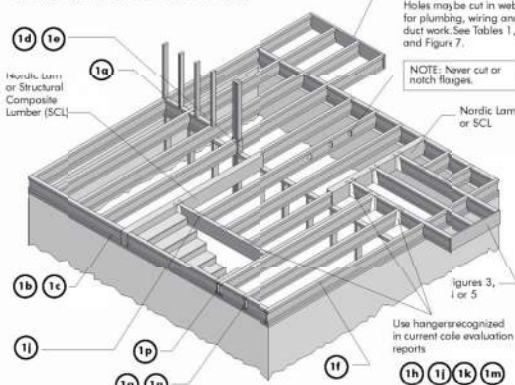


## INSTALLING NORDIC I-JOISTS

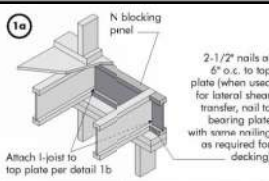
1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not contact your supplier.
2. Except for cutting to length, I-joist flanges should **never** be cut, drilled, or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical alignment.
4. I-joists must be anchored securely to supports before floor sheathing is attached, and supports for multiple-span joists must be level.
5. Minimum bearing lengths: 1-3/4 inches for end bearings and 3-1/2 inches for intermediate bearings.
6. When using hangers, seat I-joists firmly in hanger bottoms to minimize settlement.
7. Leave a 1/16-inch gap between the I-joist end and a header.
8. Concentrated load 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 **must 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: Spacing nails installed to the flange's top face in accordance with the applicable building code requirements or approved building plans.

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

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

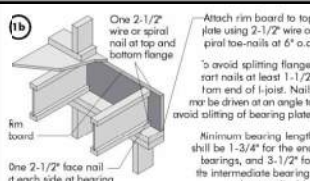


All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.122" dia.) common spiral nails may be substituted for 2-1/2" (0.128" dia.) common wire nails. Framing lumber assumed to be Spruce-Pine-Fir No. 2 or better. Individual components not shown to scale for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



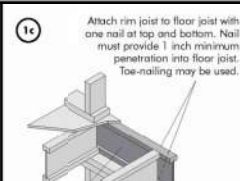
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
Ni Joists	3,300

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



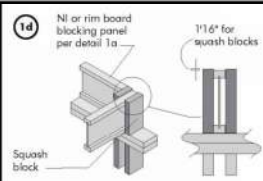
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

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



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

\*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.



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 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.

The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

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## MAXIMUM FLOOR SPANS

- Maximum **clear** spans applicable to simple span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in CGS-71.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
- Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
- Tables are based on Limit States Design per CAN/CSA C86-09 Standard, and NBC 2010.
- SI units conversion: 1 inch = 25.4 mm  
1 foot = 0.305 m

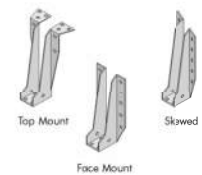
## MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS SIMPLE AND MULTIPLE SPANS

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

CCAC EVALUATION REPORT 13032-R

## I-JOIST HANGERS

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



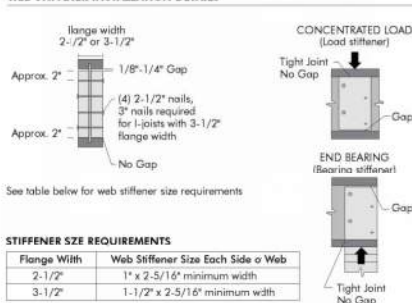
## WEB STIFFENER

### RECOMMENDATIONS:

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

SI units conversion: 1 inch = 25.4 mm

### FIGURE 4 WEB STIFFENER INSTALLATION DETAILS



### STIFFENER SIZE REQUIREMENTS

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

## NORDIC I-JOIST SERIES

Ni-20	Ni-40x	Ni-60	Ni-70	Ni-80	Ni-90	Ni-90x
3-5/8" No. 2	3-5/8" No. 2	3-5/8" No. 2	3-5/8" No. 2	3-5/8" No. 2	3-5/8" No. 2	3-5/8" No. 2
33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit	33 pieces per unit

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

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

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

**11** Use single I-joist for load up to 3,300 plf, double I-joists for loads up to 1,600 plf (filler block not required). Attach I-joist to top plate using 2-1/2" nails at 6" o.c.

**12** Load bearing wall above shall align vertically with the bearing below. Other conditions, such as offset bearing walls, are not covered in this detail.

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

**14** Double I-joist header. Top- or face-mount hanger installed per manufacturer's recommendations. Note: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

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

**16** 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-PF No. 2 or better for solid saw lumber and wood structural panels conforming to CAN/CSA-C337 or CAN/CSA-C337 Standard.  
\*\* For free-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".

**17** Top- or face-mount hanger installed per manufacturer's recommendations. For nailing schedules for multiple beams, see the manufacturer's recommendations.

**18** Top-mount hanger installed per manufacturer's recommendations. Note: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

**19** Multiple I-joist reader with full depth filler block shown. Nordic Lam or SCL headers may also be used. Verify double I-joist capacity to support concentrated loads.

**20** Do not level-cut joist beyond inside face of wall. Attach I-joist per detail 1b. Note: Blocking required at bearing for lateral resistance to not exceed for clarity.

**21** Filler block required for double I-joist construction.

Flange Size	Joist Depth	Filler Block Size
2-1/2" x 1-1/2"	9-1/2"	21/8" x 6"
	11-7/8"	21/8" x 8"
	14"	21/8" x 10"
	16"	21/8" x 12"
2-1/2" x 1-1/2"	9-1/2"	3" x 6"
	11-7/8"	3" x 8"
	14"	3" x 10"
	16"	3" x 12"
3-1/2" x 2"	11-7/8"	3" x 7"
	14"	3" x 9"
	16"	3" x 11"

**22** Lumber 2x4 min., extend block to face of adjacent webs. Two 2-1/2" spiral nails from each web to lumber piece, alternate on opposite side.

**23** One 2-1/2" nails at top and bottom flange. Two 2-1/2" nails from each web to lumber piece. 2x4 min. (1/8" gap minimum). Two 2-1/2" nails from each web to lumber piece. I-joist blocking panel. One 2-1/2" nails one side only. 2-1/2" nails at 6" o.c.

**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.



The construction details for residential designs are prone to changes.

Details released after April 2014 supersedes N-C301

Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

This document does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of its component based on the design criteria and loadings shown on the calculation sheets.



# CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

Cantilever extension supporting uniform floor loads only

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

3-1/2" min. bearing required

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

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

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

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

2x6 min. Nail to backer block and joist with 2 rows of 3" nails at 6" o.c. and clinch. (Cantilever nails may be used to attach backer block if length of nail is sufficient to allow clinching.)

Cantilever extension supporting uniform floor loads only

Lumber or wood structural panel closure

3-1/2" min. bearing required

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

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

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

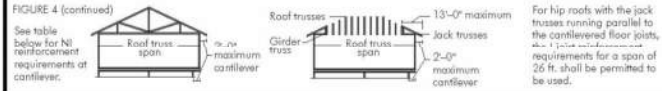
**4a Method 1 — SHEATHING REINFORCEMENT ONE SIDE**

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

**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.



## CANTILEVER REINFORCEMENT METHODS ALLOWED

Joist Depth (in.)	Roof Truss Span (ft)	LL = 30 psf, DL = 15 psf								LL = 40 psf, DL = 15 psf								LL = 50 psf, DL = 15 psf							
		Joist Spacing (in.)								Joist Spacing (in.)								Joist Spacing (in.)							
		12	16	19.2	24	24	24	24	24	12	16	19.2	24	24	24	24	24	12	16	19.2	24	24	24	24	24
9-1/2	26	N	N	N	1	2	N	N	1	2	N	N	1	2	N	N	1	N	N	1	2	N	N	1	2
	28	N	N	N	1	2	N	N	1	2	N	N	1	2	N	N	1	N	N	1	2	N	N	1	2
	30	N	N	N	1	2	N	N	1	2	N	N	1	2	N	N	1	N	N	1	2	N	N	1	2
	32	N	N	N	1	2	N	N	1	2	N	N	1	2	N	N	1	N	N	1	2	N	N	1	2
	34	N	N	N	1	2	N	N	1	2	N	N	1	2	N	N	1	N	N	1	2	N	N	1	2
11-7/8	26	N	N	N	1	2	N	N	1	2	N	N	1	2	N	N	1	N	N	1	2	N	N	1	2
	28	N	N	N	1	2	N	N	1	2	N	N	1	2	N	N	1	N	N	1	2	N	N	1	2
	30	N	N	N	1	2	N	N	1	2	N	N	1	2	N	N	1	N	N	1	2	N	N	1	2
	32	N	N	N	1	2	N	N	1	2	N	N	1	2	N	N	1	N	N	1	2	N	N	1	2
	34	N	N	N	1	2	N	N	1	2	N	N	1	2	N	N	1	N	N	1	2	N	N	1	2
14	26	N	N	N	1	2	N	N	1	2	N	N	1	2	N	N	1	N	N	1	2	N	N	1	2
	28	N	N	N	1	2	N	N	1	2	N	N	1	2	N	N	1	N	N	1	2	N	N	1	2
	30	N	N	N	1	2	N	N	1	2	N	N	1	2	N	N	1	N	N	1	2	N	N	1	2
	32	N	N	N	1	2	N	N	1	2	N	N	1	2	N	N	1	N	N	1	2	N	N	1	2
	34	N	N	N	1	2	N	N	1	2	N	N	1	2	N	N	1	N	N	1	2	N	N	1	2
16	26	N	N	N	1	2	N	N	1	2	N	N	1	2	N	N	1	N	N	1	2	N	N	1	2
	28	N	N	N	1	2	N	N	1	2	N	N	1	2	N	N	1	N	N	1	2	N	N	1	2
	30	N	N	N	1	2	N	N	1	2	N	N	1	2	N	N	1	N	N	1	2	N	N	1	2
	32	N	N	N	1	2	N	N	1	2	N	N	1	2	N	N	1	N	N	1	2	N	N	1	2
	34	N	N	N	1	2	N	N	1	2	N	N	1	2	N	N	1	N	N	1	2	N	N	1	2

1. N = No reinforcement required.
2. NI = NI reinforced with 3/4" wood structural panel on one side only.
3. NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
4. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge beam, the Roof Truss Span is equivalent to the distance between the supporting walls or if a truss is used.
5. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

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

**5a SHEATHING REINFORCEMENT**

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

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

**5b SET-BACK DETAIL**

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

**Notes:**

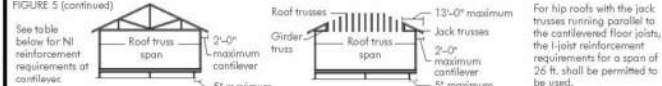
- Provide full depth blocking between joists over support (not shown for clarity).
- Attach I-joist to plate at all supports per detail 1b.
- 3-1/2" minimum I-joist bearing required.

**5c SET-BACK CONNECTION**

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

**Notes:**

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



## BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

Joist Depth (in.)	Roof Truss Span (ft)	LL = 30 psf, DL = 15 psf								LL = 40 psf, DL = 15 psf								LL = 50 psf, DL = 15 psf							
		Joist Spacing (in.)								Joist Spacing (in.)								Joist Spacing (in.)							
		12	16	19.2	24	24	24	24	24	12	16	19.2	24	24	24	24	24	12	16	19.2	24	24	24	24	24
9-1/2	26	1	X	X	X	X	2	X	X	2	X	X	X	X	X	X	X	2	X	X	X	X	X	X	X
	28	1	X	X	X	X	2	X	X	2	X	X	X	X	X	X	X	2	X	X	X	X	X	X	X
	30	1	X	X	X	X	2	X	X	2	X	X	X	X	X	X	X	2	X	X	X	X	X	X	X
	32	1	X	X	X	X	2	X	X	2	X	X	X	X	X	X	X	2	X	X	X	X	X	X	X
	34	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2	X	X	X	X	X	X	X
11-7/8	26	X	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2	X	X	X	X	X	X
	28	X	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2	X	X	X	X	X	X
	30	X	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2	X	X	X	X	X	X
	32	X	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2	X	X	X	X	X	X
	34	X	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2	X	X	X	X	X	X
14	26	N	2	X	X	X	1	X	X	1	X	X	X	X	1	X	X	N	2	X	X	X	X	X	X
	28	N	2	X	X	X	1	X	X	1	X	X	X	X	1	X	X	N	2	X	X	X	X	X	X
	30	N	2	X	X	X	1	X	X	1	X	X	X	X	1	X	X	N	2	X	X	X	X	X	X
	32	N	2	X	X	X	1	X	X	1	X	X	X	X	1	X	X	N	2	X	X	X	X	X	X
	34	1	X	X	X	X	2	X	X	2	X	X	X	X	2	X	X	1	X	X	X	X	X	X	X
16	26	1	X	X	X	X	2	X	X	2	X	X	X	X	2	X	X	1	X	X	X	X	X	X	X
	28	1	X	X	X	X	2	X	X	2	X	X	X	X	2	X	X	1	X	X	X	X	X	X	X
	30	1	X	X	X	X	2	X	X	2	X	X	X	X	2	X	X	1	X	X	X	X	X	X	X
	32	1	X	X	X	X	2	X	X	2	X	X	X	X	2	X	X	1	X	X	X	X	X	X	X
	34	1	X	X	X	X	2	X	X	2	X	X	X	X	2	X	X	1	X	X	X	X	X	X	X

1. N = No reinforcement required.
2. NI = NI reinforced with 3/4" wood structural panel on one side only.
3. NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
4. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge beam, the Roof Truss Span is equivalent to the distance between the supporting walls or if a truss is used.
5. 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-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 edges of the hole or duct chase opening and the adjacent I-joist flange.
- The sides of square holes or longest sides of rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the longest rectangular hole or duct chase opening) and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
- A knockout is **not** considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
- Holes measuring 1-1/2 inches or smaller shall be permitted anywhere in a continuous 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.)													Span adjustment Factor
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	11	
9-1/2"	N120	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"
	N140	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"
	N160	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"
	N180	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"
11-7/8"	N120	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"
	N140	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"
	N160	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"
	N180	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"
14"	N120	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"
	N140	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"
	N160	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"
	N180	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"
16"	N120	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"
	N140	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"
	N160	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"
	N180	0-7"	1-0"	1-10"	1-4"	1-6"	1-7"	1-8"	1-9"	1-10"	1-11"	1-12"	1-13"	1-14"	1-15"

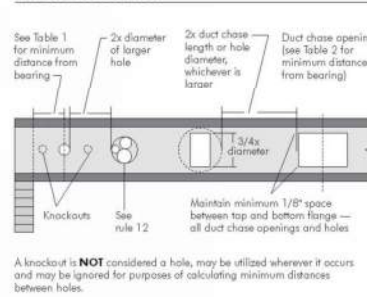
- Above table may be used for I-joist spacing of 24 inches on centre or less.
- Hole location distance is measured from inside face of supports to centre of hole.
- Distances in this chart are based on uniformly loaded joists.

### OPTIONAL:

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

- Where:
- $D_{reduced} = D \times \frac{S_{actual}}{S_{max}}$  = Distance from the inside face of any support to centre of hole, reduced for less than maximum span applications [9]. The reduced distance shall not be less than 6 inches from the face of the support to edge of the hole.
  - $S_{actual}$  = The actual measured span distance between the inside faces of supports [9].
  - $S_{max}$  = 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  $\frac{S_{actual}}{S_{max}}$  is greater than 1, use 1 in the above calculation for  $\frac{S_{actual}}{S_{max}}$ .

FIGURE 7  
FIELD-CUT HOLE LOCATOR



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

**Never** drill, cut or notch the flange, or over-cut the web. Holes in webs should be cut with a sharp saw.

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

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 (ft-in.)												
		8	10	12	14	16	18	20	22	24	26	28	30	32
9-1/2"	N120	4-1"	4-5"	4-10"	4-5"	5-0"	5-1"	5-6"	5-1"	5-6"	5-1"	5-6"	5-1"	5-6"
	N140	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"
	N160	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"
	N180	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"
11-7/8"	N120	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"
	N140	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"
	N160	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"
	N180	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"
14"	N120	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"
	N140	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"
	N160	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"
	N180	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"
16"	N120	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"
	N140	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"
	N160	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"
	N180	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"	5-0"

- 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 joist only. For other applications, contact your local distributor.
- Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. For other applications, contact your local distributor.

## INSTALLING THE GLUED FLOOR SYSTEM

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

### FASTENERS FOR SHEATHING AND SUBFLOORING(1)

Maximum Joist Spacing (in.)	Minimum Panel Thickness (in.)	Nail Size and Type			Maximum Spacing of Fasteners	
		Common Wire or Spiral Nails	Ring Thread Nails or Screws	Staples	Edges	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 above minimums.
- Use only adhesives conforming to CAN/CSB-71.26 Standard, Adhesives for Field-Gluing Plywood to Lumber Framing for Floor System, applied in accordance with the manufacturer's recommendations. If OSB panels with sealed surfaces and edges are to be used, use only solvent-based glues; check with panel manufacturer.

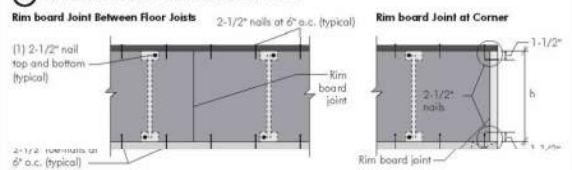
Ref.: NRC-CNRC, National Building Code of Canada 2010, Table 9.23.3.5.

### IMPORTANT NOTE:

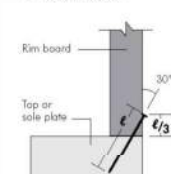
Floor sheathing must be field glued to the I-joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-joist spans must be verified with your local distributor.

## RIM BOARD INSTALLATION DETAILS

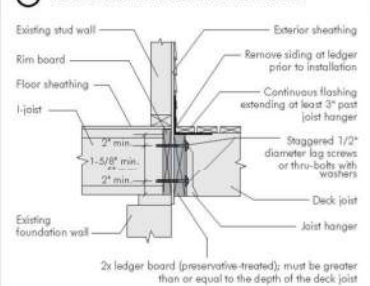
### 80 ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



### 86 TOE-NAIL CONNECTION AT RIM BOARD



### 86 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL



## PRODUCT WARRANTY

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

Furthermore, Chertex Chivignoux 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.





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:

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

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

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

TABLE 1

### LOCATION OF CIRCULAR HOLES IN JOIST WEBS

Simple or Multiple Span for Dead Loads up to 15 psf and Live Loads up to 40 psf

Joist Depth	Joist Series	Minimum Distance from Inside Face of Any Support to Centre of Hole (ft - in.)											
		Round Hole Diameter (in.)											
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4
9-1/2"	NI-20	0-7"	1-6"	2-10"	4-3"	5-3"	6-0"	---	---	---	---	---	---
	NI-40	0-7"	1-6"	3-0"	4-4"	6-3"	6-4"	---	---	---	---	---	---
	NI-60	1-3"	2-6"	4-0"	5-4"	7-3"	7-5"	---	---	---	---	---	---
	NI-80	2-0"	3-4"	4-8"	6-2"	8-1"	8-4"	---	---	---	---	---	---
11-7/8"	NI-20	0-7"	0-8"	1-0"	2-4"	3-3"	4-0"	5-0"	6-6"	7-9"	---	---	---
	NI-40	0-7"	0-8"	1-3"	2-8"	4-3"	4-4"	5-5"	7-0"	8-4"	---	---	---
	NI-60	0-7"	1-8"	3-0"	4-3"	5-2"	6-0"	7-3"	8-10"	10-0"	---	---	---
	NI-70	1-3"	2-6"	4-0"	5-4"	6-3"	7-2"	8-4"	10-0"	11-2"	---	---	---
14"	NI-80	1-6"	2-10"	4-2"	5-6"	7-3"	7-5"	8-6"	10-3"	11-4"	---	---	---
	NI-90	0-7"	0-8"	0-9"	2-5"	4-4"	4-9"	6-3"	---	---	---	---	---
	NI-40	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"
16"	NI-70	0-8"	1-10"	3-0"	4-5"	5-10"	6-2"	7-3"	8-9"	9-9"	10-4"	12-0"	13-5"
	NI-80	0-10"	2-0"	3-4"	4-9"	6-2"	6-5"	7-6"	9-0"	10-0"	10-8"	12-4"	13-9"
	NI-90	0-7"	0-8"	0-8"	2-0"	3-2"	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"
18"	NI-70	0-7"	1-0"	2-3	3-6	4-10	3-3	6-3	7-8	8-6	9-2	10-8	12-0
	NI-80	0-7"	1-3"	2-6"	3-10"	5-3"	5-6"	6-6"	8-0"	9-0"	9-8"	11-0"	12-3"
	NI-90	0-7"	0-8"	0-9"	2-0"	3-5"	4-0"	5-0"	6-9"	7-9"	8-4"	10-2"	11-6"
	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"

1. Above table may be used for I-joist spacing of 24 inches on centre or less.
2. Hole location distance is measured from inside face of supports to centre of hole.
3. Distances in this chart are based on uniformly loaded joists.
4. The above table is based on the I-joists being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans; contact your local distributor.

TABLE 2

### DUCT CHASE OPENING SIZES AND LOCATIONS

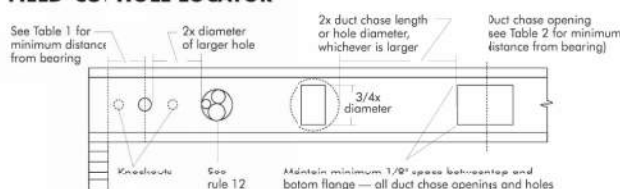
Simple Span Only

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
9-1/2"	NI-20	4-1"	4-5"	4-10"	5-4"	5-8"	6-1"	6-6"	7-1"	7-5"	---	---	---
	NI-40	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"	8-3"	8-9"	---	---	---
	NI-80	6-1"	6-6"	6-10"	7-3"	7-8"	8-2"	8-6"	9-0"	9-4"	---	---	---
11-7/8"	NI-20	5-9"	6-2"	6-6"	7-1"	7-5"	7-9"	8-3"	8-9"	9-4"	---	---	---
	NI-40	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"	---	---	---
	NI-70	7-1"	7-4"	7-9"	8-3"	8-7"	9-1"	9-6"	10-1"	10-4"	---	---	---
14"	NI-80	7-2"	7-7"	8-0"	8-5"	8-10"	9-4"	9-8"	10-2"	10-8"	---	---	---
	NI-90	7-7"	8-1"	8-5"	8-10"	9-4"	9-8"	10-2"	10-8"	11-2"	---	---	---
	NI-40	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"	---	---	---
16"	NI-70	8-7"	9-1"	9-5"	9-10"	10-4"	10-8"	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"	---	---	---
	NI-90	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"	---	---	---
18"	NI-70	10-1"	10-5"	11-0"	11-4"	11-10"	12-3"	12-8"	13-2"	14-0"	---	---	---
	NI-80	10-4"	10-9"	11-3"	11-9"	12-1"	12-7"	13-1"	13-6"	14-4"	---	---	---
	NI-90	11-1"	11-5"	11-10"	12-4"	12-10"	13-2"	13-9"	14-4"	15-2"	---	---	---
	NI-60	11-1"	11-5"	11-10"	12-4"	12-10"	13-2"	13-9"	14-4"	15-2"	---	---	---

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

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

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

#### AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:

1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-briding at joist ends. When I-joists are installed 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, when called out, or temporary sheathing must be applied to prevent I-joist rafter 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 (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-briding.
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.

The construction details for residential designs are prone to changes.

Details released after September 2013 supersedes N-303

Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

This document does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of its component based on the design criteria and loadings shown on the calculation sheets.





**1a** NI blocking panel

Attach I-joint to top plate per detail 1b

2-1/2" nail 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)
N 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.

**1b** Rim board

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

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.

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

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

To avoid splitting/flange, start nails at least 1-1/2" from end of I-joint. 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.

**1d** NI or rim board blocking panel per detail 1a

Squash block

Pair of Squash Blocks

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

3-1/2" wide  
5-1/2" wide

Provide lateral bracing per detail 1a or 1b

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

**1f** Joist attachment per detail 1b

2-1/2" nails at 6" o.c. to top plate

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-joint, 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 wood 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".

Top- or face-mount hanger

Double I-joint header

Filler block - per detail 1p

Backer block required (both sides for face-mount hangers)

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

**1i** Nordic Lam or Structural Composite Lumber (SCL)

For nailing schedules for multiple beams, see the manufacturer's recommendations.

Top- or face-mount hanger installed per manufacturer's recommendations

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

**1k** 2x plate flush with inside face of wall or beam. 1/8" overhang allowed past inside face of wall or beam.

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

Top-mount hanger installed per manufacturer's recommendations

**1m** Multiple I-joint header with full depth filler block shown. Nordic Lam or SCL headers may also be used. Verify double I-joint capacity to support concentrated loads.

Backer block attached per detail 1h. Nail with twelve 3" nails, clinch when possible.

Install hanger per manufacturer's recommendations

Maximum support capacity = 1,620 lbs.

**1n** Do not bevel-cut joist beyond inside face of wall

Attach I-joint per detail 1b

NOTE: Blocking required at bearing for lateral support, not shown for clarity.

**1r** Lumber 2x4 min., extend blocks to face of adjacent web. Two 2-1/2" spiral nails from each web to lumber piece, alternate on opposite side

NI blocking panel

OPTIONAL: Minimum 1x4 incl strap applied to underside of joist at blocking line or 1/2 inch minimum gypsum ceiling attached to underside of joists.

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

Filler block

Offset nails from opposite face by 6"

1/8" to 1/4" gap between top flange and filler block

NOTES:

- Support back of I-joint web during nailing to prevent damage to web/flange connection
- Leave a 1/8 to 1/4-inch gap between top and bottom of top I-joint 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-joint. 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 lb/ft. Verify double I-joint capacity.

Flange Size	Net Depth	Filler Block Size
2-1/2" x 1-1/2"	1-1/8" to 1-7/8"	2-1/8" x 8"
	4"	2-1/8" x 10"
	6"	2-1/8" x 12"
3-1/2" x 1-1/2"	1-1/2" to 1-7/8"	3" x 6"
	4"	3" x 8"
	6"	3" x 10"
3-1/2" x 2"	1-7/8" to 1-7/8"	3" x 7"
	4"	3" x 9"
	6"	3" x 11"

**1s** One 2-1/2" nail at top and bottom flange

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

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

I-joint blocking panel

One 2-1/2" nail one side only

NOTE:

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

All nails shown in the above details are assumed to be common wire nails unless otherwise noted. 3" (0.125" dia.) common spiral nails may be substituted for 2-1/2" (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-joint properties table found in the I-Joint Construction Guide (C101). The gap between the stiffener and the flange is at the top.
- A **bearing stiffener** is required when the I-joint is supported in a hanger and the sides of the hanger do not extend up to, and support, the top flange. The gap between the stiffener and flange is at the top.
- A **load stiffener** is required at locations where a factored concentrated load greater than 2,370 lbs is applied to the top flange between supports, or in the area of a stiffener, anywhere between the stiffener top 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

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

Approx. 2"

1/8"-1/4" Gap

(4) 2-1/2" nails, 3" nails required for I-joints with 3-1/2" flange width

No Gap

See the adjacent table for web stiffener size requirements

CONCENTRATED LOAD (Load stiffener)

Tight Joint No Gap

Gap

END BEARING (Bearing stiffener)

Gap

Tight Joint No Gap

Flange Width	Web Stiffener Size Each Side of Web
2-1/2"	1" x 2-5/8" 6" minimum width
3-1/2"	1-1/2" x 2-1/8" 6" minimum width

## CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET

## Method 1 — SHEATHING REINFORCEMENT ONE SIDE

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

NI blocking panel or rim board blocking, attach per detail 1g

Attach I-joint to plate per detail 1b

2-1/2" nails

3-1/2" min. bearing required

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-joint to plate at all supports per detail 1b. Verify reinforced I-joint capacity.

## Method 2 — SHEATHING REINFORCEMENT TWO SIDES

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

Use nailing pattern shown for Method 1 with opposite face nailing offset by 3".

## RIM BOARD INSTALLATION DETAILS

## 8a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

Rim Board Joint Between Floor Joists

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

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

Rim board joint

Rim Board Joint at Corner

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

1-1/2"

2-1/2" nails

h

1-1/2"

## 8b TOE-NAIL CONNECTION AT RIMBOARD

Rim board

Top or sole plate

30°

1/3

The construction details for residential designs are prone to changes.

Details released after September 2013 supersedes N-303

Installation must comply with latest documentation on I-Joist and other Nordic products from the <http://nordic.ca/>

This document does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of its component based on the design criteria and loadings shown on the calculation sheets.

