

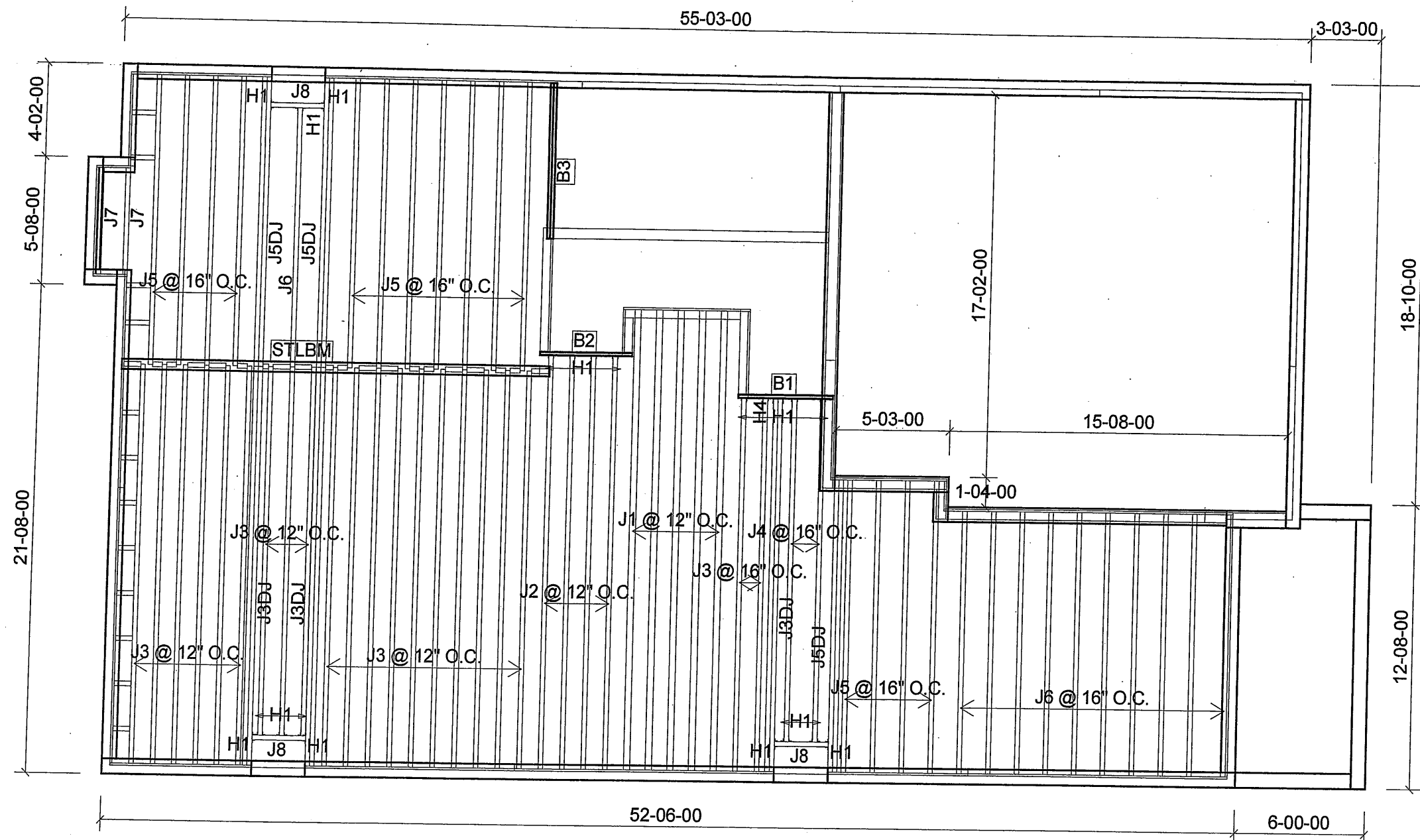
**NOTES:**  
REFER TO THE **NORDIC INSTALLATION GUIDE** FOR PROPER STORAGE AND INSTALLATION.  
**SQUASH BLOCKS** OF 2x4, 2x6, 2x8 #2 S.P.F. REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. **CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7, TABLES 1 & 2. **CERAMIC TILE** APPLICATION AS PER O.B.C 9.30.6.

**LOADING:**  
DESIGN LOADS: L/480.000  
LIVE LOAD: 40.0 lb/ft<sup>2</sup>  
DEAD LOAD: 15.0 lb/ft<sup>2</sup>  
TILED AREAS: 20 lb/ft<sup>2</sup>

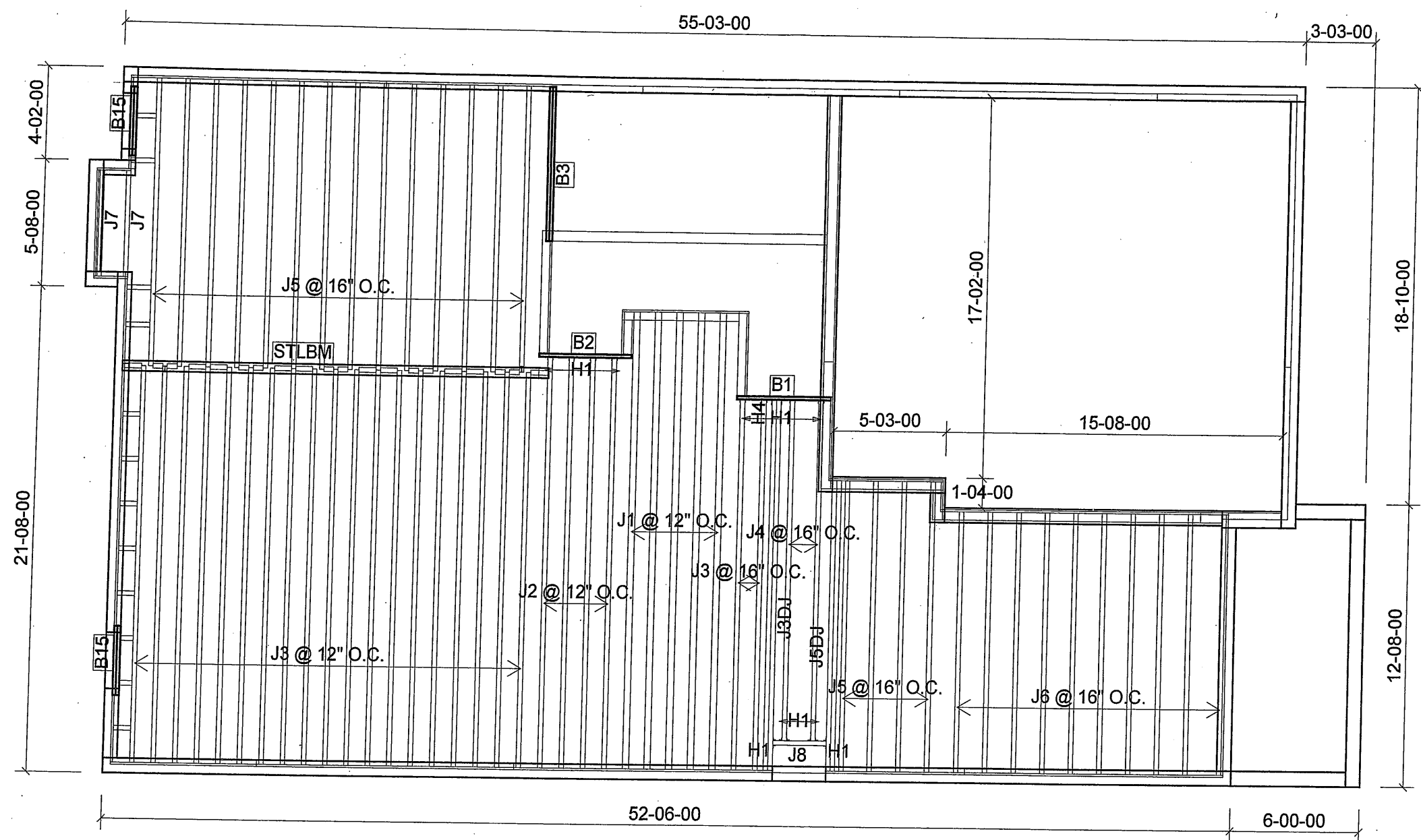
**SUBFLOOR: 3/4" GLUED AND NAILED**

**DATE:** 2018-01-22

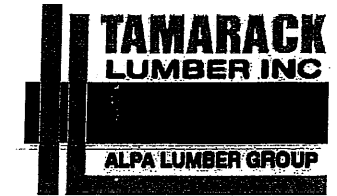
## 1st FLOOR



Products					Connector Summary		
PlotID	Length	Product	Plies	Net Qty	Qty	Manuf	Product
J2	20-00-00	11 7/8" NI-40x	1	4	8	H1	IUS2.56/11.88
J3	18-00-00	11 7/8" NI-40x	1	21	6	H1	IUS2.56/11.88
J3DJ	18-00-00	11 7/8" NI-40x	2	6	6	H1	IUS2.56/11.88
J4	16-00-00	11 7/8" NI-40x	1	2	1	H4	HU310-2
J5	14-00-00	11 7/8" NI-40x	1	15			
J5DJ	14-00-00	11 7/8" NI-40x	2	6			
J6	12-00-00	11 7/8" NI-40x	1	11			
J7	6-00-00	11 7/8" NI-40x	1	2			
J8	4-00-00	11 7/8" NI-40x	1	3			
J1	22-00-00	11 7/8" NI-80	1	5			
B3	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			
B1	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1			
B2	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1			



Products					Connector Summary		
PlotID	Length	Product	Plies	Net Qty	Qty	Manuf	Product
J2	20-00-00	11 7/8" NI-40x	1	4	8	H1	IUS2.56/11.88
J3	18-00-00	11 7/8" NI-40x	1	21	2	H1	IUS2.56/11.88
J3DJ	18-00-00	11 7/8" NI-40x	2	2	2	H1	IUS2.56/11.88
J4	16-00-00	11 7/8" NI-40x	1	2	1	H4	HU310-2
J5	14-00-00	11 7/8" NI-40x	1	18			
J5DJ	14-00-00	11 7/8" NI-40x	2	2			
J6	12-00-00	11 7/8" NI-40x	1	10			
J7	6-00-00	11 7/8" NI-40x	1	2			
J8	4-00-00	11 7/8" NI-40x	1	1			
J1	22-00-00	11 7/8" NI-80	1	5			
B3	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			
B1	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1			
B2	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1			
B15	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	4			



FROM PLAN DATED: SEP 2017

BUILDER: GREEN PARK HOMES

SITE: SECONDO VALES ESTATES

MODEL: PINEBROOK 1A

ELEVATION: 1, 2, 3

LOT:

CITY: EAST GWILLIMBURY

SALESMAN: M D

DESIGNER: CF

REVISION: lbv

#### NOTES:

REFER TO THE **NORDIC INSTALLATION** GUIDE FOR PROPER STORAGE AND INSTALLATION.

**SQUASH BLOCKS** OF 2x4, 2x6, 2x8 #2 S.P.F REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. **CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7, TABLES 1 & 2. **CERAMIC TILE** APPLICATION AS PER O.B.C 9.30.6.

#### LOADING:

DESIGN LOADS: L/480.000

LIVE LOAD: 40.0 lb/ft<sup>2</sup>

DEAD LOAD: 15.0 lb/ft<sup>2</sup>

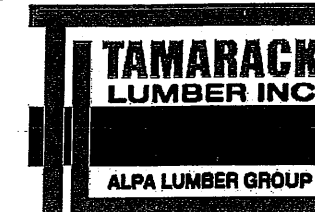
TILED AREAS: 20 lb/ft

**SUBFLOOR:** 3/4" GLUED AND NAILED

DATE: 2018-01-22

## 1st FLOOR

DECK CONDITION



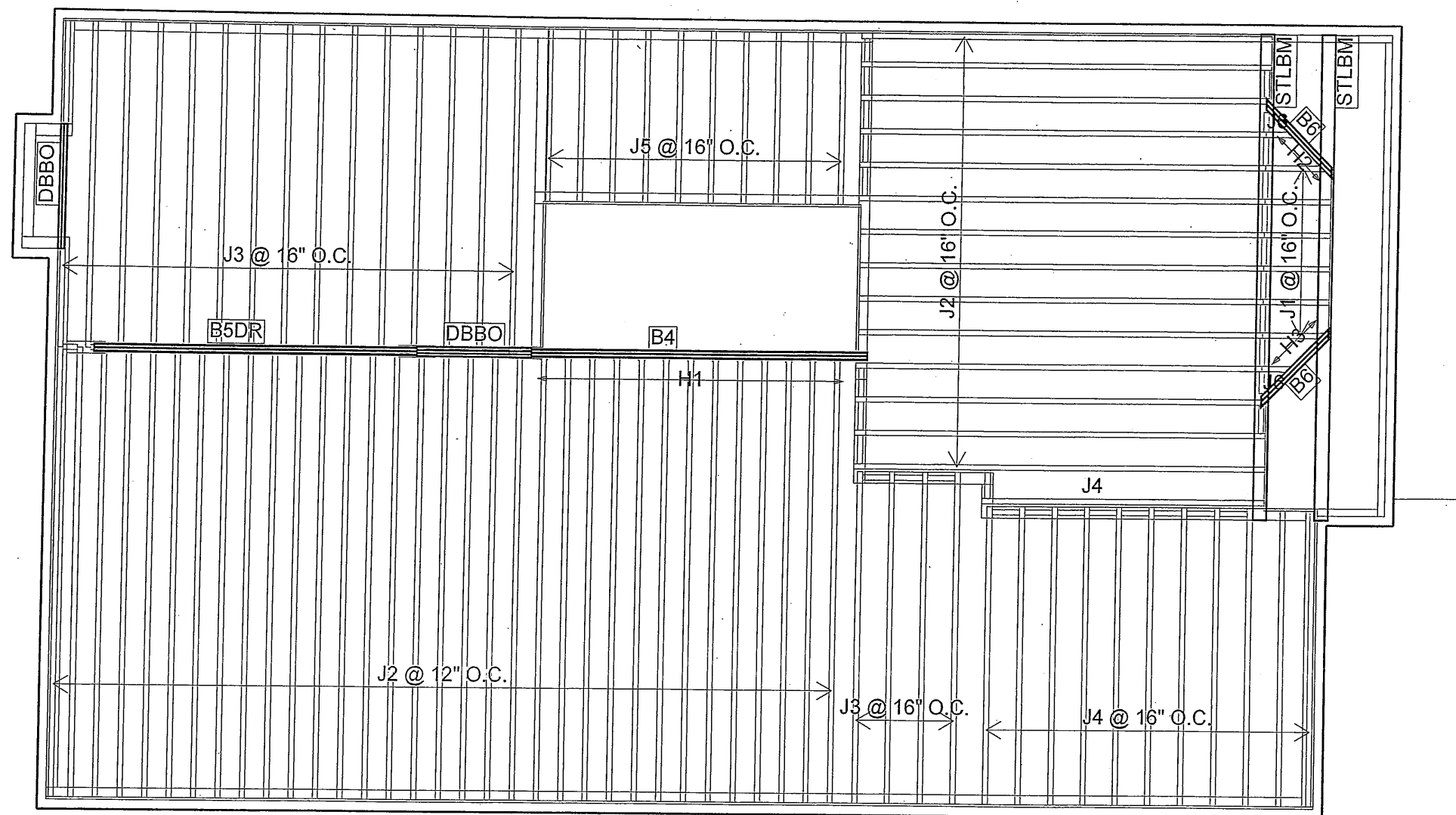
FROM PLAN DATED: SEP 2017  
BUILDER: GREEN PARK HOMES  
SITE: SECONDO VALES ESTATES  
MODEL: PINEBROOK 1A  
ELEVATION: 1  
LOT:  
CITY: EAST GWILLIMBURY  
SALESMAN: M D  
DESIGNER: CF  
REVISION: lbv

NOTES:  
REFER TO THE NORDIC **INSTALLATION GUIDE** FOR PROPER STORAGE AND INSTALLATION. **SQUASH BLOCKS** OF 2x4, 2x6, 2x8 #2 S.P.F. REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. **CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURE 7 TABLES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7 TABLES 1 & 2 OF THE INSTALLATION GUIDE. **CERAMIC TILE** APPLICATION AS PER O.B.C. 9.30.6

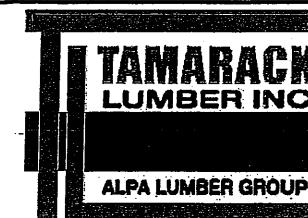
LOADING:  
DESIGN LOADS: L/480.000  
LIVE LOAD: 40.0 lb/ft<sup>2</sup>  
DEAD LOAD: 15.0 lb/ft<sup>2</sup>  
TILED AREAS: 20 lb/ft<sup>2</sup>  
SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2017-11-30

2nd FLOOR



Products					Connector Summary		
PlotID	Length	Product	Plies	Net Qty	Qty	Manuf	Product
J2	18-00-00	11 7/8" NI-40x	1	47	13	H1	IUS2.56/11.88
J3	14-00-00	11 7/8" NI-40x	1	19	2	H2	SUL2.56/11.88
J4	12-00-00	11 7/8" NI-40x	1	12	2	H3	SUR2.56/11.88
J5	8-00-00	11 7/8" NI-40x	1	10			
J1	4-00-00	11 7/8" NI-40x	1	6			
J6	2-00-00	11 7/8" NI-40x	1	2			
B4	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			
B5DR	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			
B6	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	4			



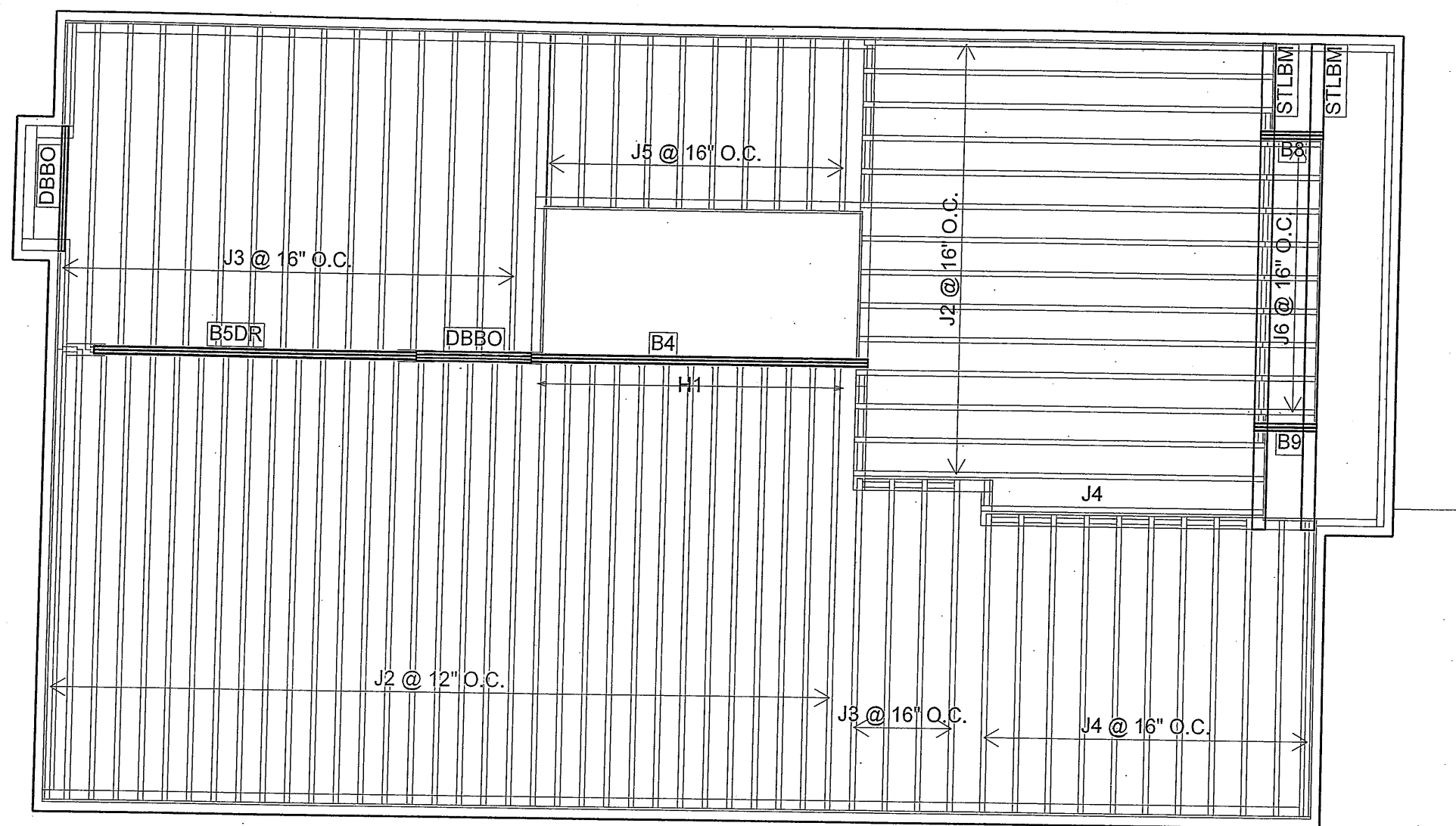
FROM PLAN DATED: SEP 2017  
BUILDER: GREEN PARK HOMES  
SITE: SECONDO VALES ESTATES  
MODEL: PINEBROOK 1A  
ELEVATION: 2  
LOT:  
CITY: EAST GWILLIMBURY  
SALESMAN: M D  
DESIGNER: CF  
REVISION: lbv

NOTES:  
REFER TO THE NORDIC **INSTALLATION GUIDE** FOR PROPER STORAGE AND INSTALLATION. **SQUASH BLOCKS** OF 2x4, 2x6, 2x8 #2 S.P.F. REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. **CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURE 7 TABLES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7 TABLES 1 & 2 OF THE INSTALLATION GUIDE. **CERAMIC TILE** APPLICATION AS PER O.B.C. 9.30.6

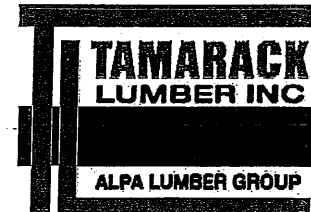
LOADING:  
DESIGN LOADS: L/480.000  
LIVE LOAD: 40.0 lb/ft<sup>2</sup>  
DEAD LOAD: 15.0 lb/ft<sup>2</sup>  
TILED AREAS: 20 lb/ft<sup>2</sup>  
SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2017-11-30

2nd FLOOR



Products					Connector Summary		
PlotID	Length	Product	Plies	Net Qty	Qty	Manuf	Product
J2	18-00-00	11 7/8" NI-40x	1	47	13	H1	IUS2.56/11.88
J3	14-00-00	11 7/8" NI-40x	1	19			
J4	12-00-00	11 7/8" NI-40x	1	12			
J5	8-00-00	11 7/8" NI-40x	1	10			
J6	4-00-00	11 7/8" NI-40x	1	9			
B4	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			
B5DR	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			
B8	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			
B9	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			



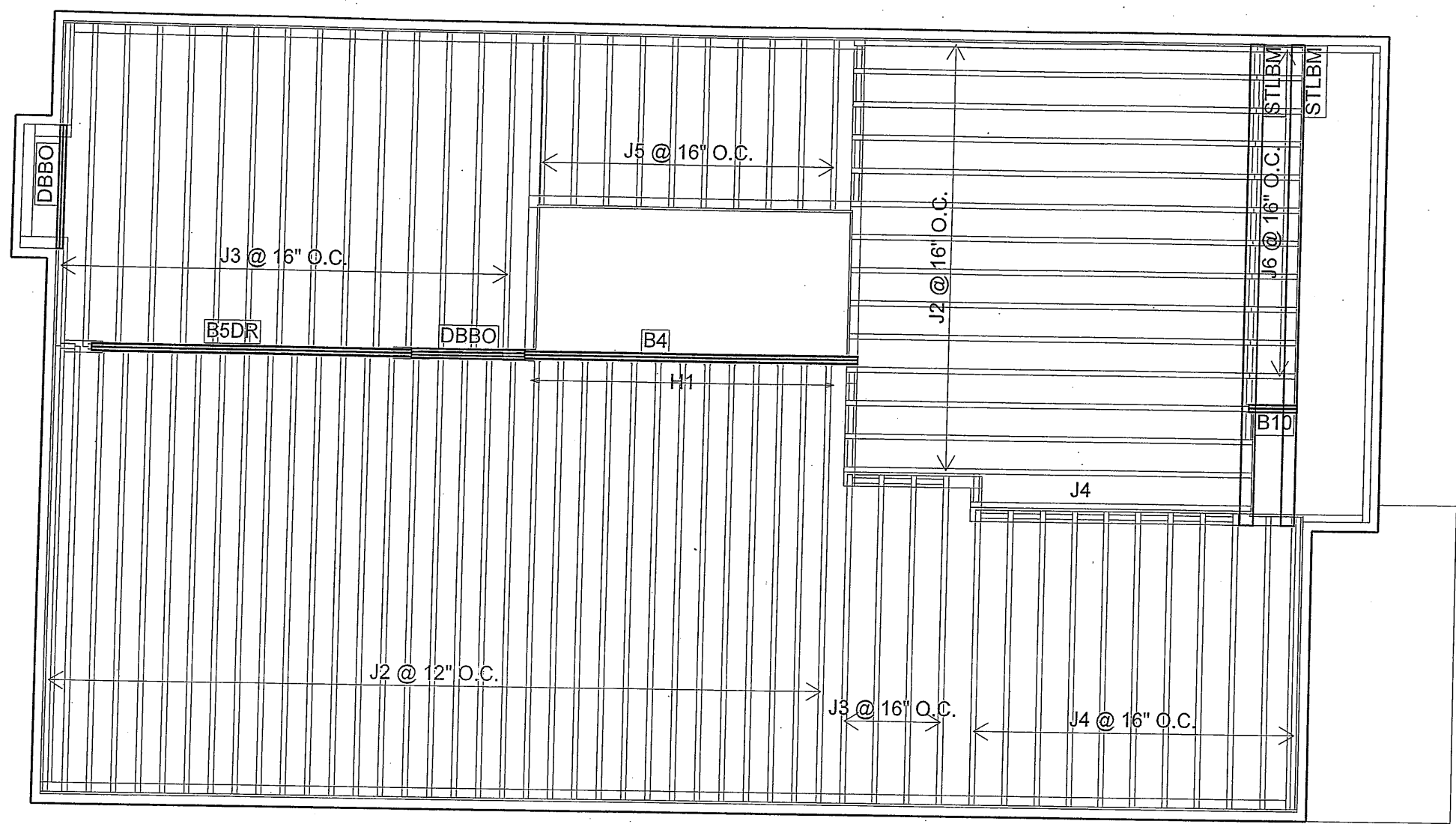
FROM PLAN DATED: SEP 2017  
BUILDER: GREEN PARK HOMES  
SITE: SECONDO VALES ESTATES  
MODEL: PINEBROOK 1A  
ELEVATION: 3  
LOT:  
CITY: EAST GWILLIMBURY  
SALESMAN: M D  
DESIGNER: CF  
REVISION: lbv

NOTES:  
REFER TO THE NORDIC INSTALLATION GUIDE FOR PROPER STORAGE AND INSTALLATION. **SQUASH BLOCKS** OF 2x4, 2x6, 2x8 #2 S.P.F. REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. **CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURE 7 TABLES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7 TABLES 1 & 2 OF THE INSTALLATION GUIDE. **CERAMIC TILE** APPLICATION AS PER O.B.C. 9.30.6

LOADING:  
DESIGN LOADS: L/480.000  
LIVE LOAD: 40.0 lb/ft²  
DEAD LOAD: 15.0 lb/ft²  
TILED AREAS: 20 lb/ft²  
SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2017-11-30

2nd FLOOR



Products					Connector Summary		
PlotID	Length	Product	Plies	Net Qty	Qty	Manuf	Product
J2	18-00-00	11 7/8" NI-40x	1	47	13	H1	IUS2.56/11.88
J3	14-00-00	11 7/8" NI-40x	1	19			
J4	12-00-00	11 7/8" NI-40x	1	12			
J5	8-00-00	11 7/8" NI-40x	1	10			
J6	2-00-00	11 7/8" NI-40x	1	11			
B4	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			
B5DR	14-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			
B10	2-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2			

# NORDIC STRUCTURES

**COMPANY**  
TAMARACK LUMBER  
BURLINGTON  
Nov. 29, 2017 07:52

**PROJECT**  
J3 GRD FLR

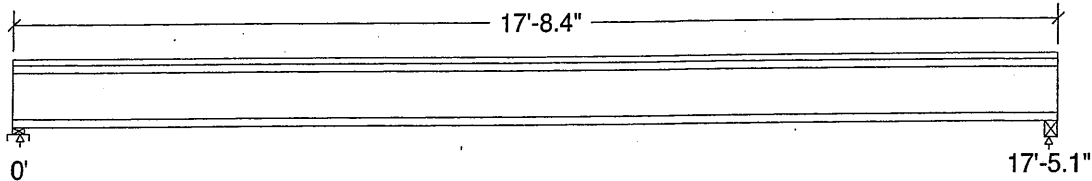
## Design Check Calculation Sheet

Nordic Sizer – Canada 6.4

### Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start End	Magnitude Start End	Unit
Load1	Dead	Full Area			20.00	psf
Load2	Live	Full Area			40.00	psf

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



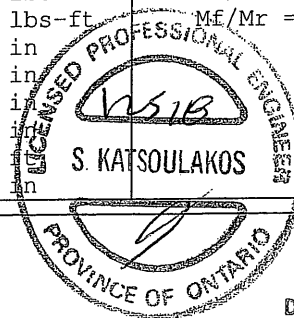
Unfactored:			
Dead	177		177
Live	354		354
Factored:			
Total	751		753
Bearing:			
Resistance			
Joist	2099		2135
Support	3651		-
Des ratio			
Joist	0.36		0.35
Support	0.21		-
Load case	#2		#2
Length	2-3/8		2-5/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
Kd	1.00		1.00
KB support	1.00		-
fcp sup	769		-
Kzcp sup	1.00		-

\*Minimum bearing length for joists is 2" for exterior supports

**Nordic Joist 11-7/8" NI-40x Floor joist @ 12" o.c.**  
 Supports: 1 - Lumber Sill plate, No.1/No.2; 2 - Steel Beam, W;  
 Total length: 17'-8.4"; 3/4" nailed and glued OSB sheathing,  
**This section PASSES the design code check.**

### Limit States Design using CSA O86-14 and Vibration Criterion:

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 741	Vr = 2336	lbs	Vf/Vr = 0.32
Moment (+)	Mf = 3228	Mr = 6255	lbs-ft	ME/Mr = 0.52
Perm. Defl'n	0.11 = <L/999	0.58 = L/360	in	0.18
Live Defl'n	0.21 = L/991	0.44 = L/480	in	0.48
Total Defl'n	0.32 = L/661	0.87 = L/240	in	0.36
Bare Defl'n	0.25 = L/845	0.58 = L/360	in	0.43
Vibration	Lmax = 17'-5	Lv = 19'-6	in	0.74
Defl'n	= 0.026	= 0.036		



DWG NO. TAM 5339 -18  
 STRUCTURAL  
 COMPONENT ONLY

**Additional Data:**

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	2336	1.00	1.00	-	-	-	-	-	#2
Mr+	6255	1.00	1.00	-	1.000	-	-	-	#2
EI	371.1 million	-	-	-	-	-	-	-	#2

**CRITICAL LOAD COMBINATIONS:**

Shear : LC #2 = 1.25D + 1.5L

Moment(+) : LC #2 = 1.25D + 1.5L

Deflection: LC #1 = 1.0D (permanent)

LC #2 = 1.0D + 1.0L (live)

LC #2 = 1.0D + 1.0L (total)

LC #2 = 1.0D + 1.0L (bare joist)

Bearing : Support 1 - LC #2 = 1.25D + 1.5L

Support 2 - LC #2 = 1.25D + 1.5L

Load Types: D=dead W=wind S=snow H=earth,groundwater E=earthquake  
L=live(use,occupancy) Ls=live(storage,equipment) f=fire

Load Patterns: s=S/2 L=L+Ls \_=no pattern load in this span

All Load Combinations (LCs) are listed in the Analysis output

**CALCULATIONS:**

Deflection: E<sub>Eff</sub> = 443e06 lb-in<sup>2</sup> K= 6.18e06 lbs

"Live" deflection = Deflection from all non-dead loads (live, wind, snow...)

**Design Notes:**

1. WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC Part 4) and the CSA O86-14 Engineering Design in Wood standard (May 2014 edition).
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer to technical documentation for installation guidelines and construction details.
4. Nordic I-joists are listed in CCMC evaluation report 13032-R.
5. Joists shall be laterally supported at supports and continuously along the compression edge.
6. The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of this component based on the design criteria and loadings shown.

CONFORMS TO OBC 2012



DWG NO. TAM 5339 -18  
STRUCTURAL  
COMPONENT ONLY

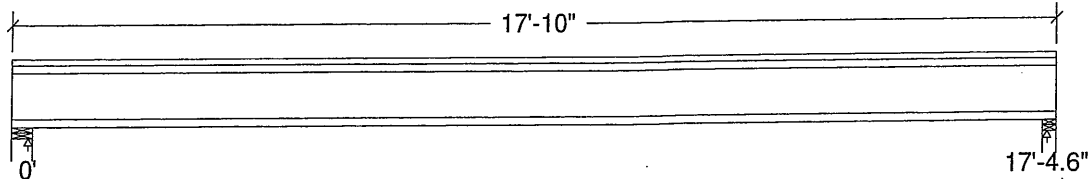
## Design Check Calculation Sheet

Nordic Sizer – Canada 6.4

### Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start End	Magnitude Start End	Unit
Load1	Dead	Full Area			20.00	psf
Load2	Live	Full Area			40.00	psf

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



Unfactored:			
Dead	180		177
Live	359		354
Factored:			
Total	764		752
Bearing:			
Resistance			
Joist	2336		2153
Support	7735		4756
Des ratio			
Joist	0.33		0.35
Support	0.10		0.16
Load case	#2		#2
Length	4-3/8		2-3/4
Min req'd	1-3/4		1-3/4
Stiffener	No		No
Kd	1.00		1.00
KB support	1.00		1.00
fcp sup	769		769
Kzcp sup	1.15		1.13

\*Minimum bearing length for joists is 2" for exterior supports

Bearing for wall supports is perpendicular-to-grain bearing on top plate. No stud design included.

### Nordic Joist 11-7/8" NI-40x Floor joist @ 12" o.c.

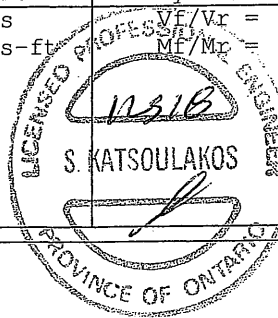
Supports: All - Lumber Wall, No.1/No.2

Total length: 17'-10.0"; 5/8" nailed and glued OSB sheathing with 1/2" gypsum ceiling

**This section PASSES the design code check.**

### Limit States Design using CSA O86-14 and Vibration Criterion:

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 739	Vr = 2336	lbs	Vf/Vr = 0.32
Moment (+)	Mf = 3212	Mr = 6255	lbs-ft	Mf/Mr = 0.51
Perm. Defl'n	0.11 = <L/999	0.58 = L/360	in	0.18
Live Defl'n	0.21 = L/977	0.43 = L/480	in	0.49
Total Defl'n	0.32 = L/651	0.87 = L/240	in	0.37
Bare Defl'n	0.25 = L/851	0.58 = L/360	in	0.42
Vibration	Lmax = 17'-5	Lv = 18'-11	ft	
Defl'n	= 0.029	= 0.036	in	0.79





**Additional Data:**

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	2336	1.00	1.00	-	-	-	-	-	#2
Mr+	6255	1.00	1.00	-	1.000	-	-	-	#2
EI	371.1 million	-	-	-	-	-	-	-	#2

**CRITICAL LOAD COMBINATIONS:**

Shear : LC #2 = 1.25D + 1.5L

Moment (+) : LC #2 = 1.25D + 1.5L

Deflection: LC #1 = 1.0D (permanent)

LC #2 = 1.0D + 1.0L (live)

LC #2 = 1.0D + 1.0L (total)

LC #2 = 1.0D + 1.0L (bare joist)

Bearing : Support 1 - LC #2 = 1.25D + 1.5L

Support 2 - LC #2 = 1.25D + 1.5L

Load Types: D=dead W=wind S=snow H=earth,groundwater E=earthquake

L=live(use,occupancy) Ls=live(storage,equipment) f=fire

Load Patterns: s=S/2 L=L+Ls \_=no pattern load in this span

All Load Combinations (LCs) are listed in the Analysis output

**CALCULATIONS:**Deflection: E<sub>I</sub>eff = 433e06 lb-in<sup>2</sup> K= 6.18e06 lbs

"Live" deflection = Deflection from all non-dead loads (live, wind, snow...)

**Design Notes:**

1. WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC Part 4) and the CSA O86-14 Engineering Design in Wood standard (May 2014 edition).
2. Please verify that the default deflection limits are appropriate for your application.
3. Refer to technical documentation for installation guidelines and construction details.
4. Nordic I-joists are listed in CCMC evaluation report 13032-R.
5. Joists shall be laterally supported at supports and continuously along the compression edge.
6. The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of this component based on the design criteria and loadings shown.

CONFORMS TO OBC 2012



DWG NO. TAM 5342-18  
STRUCTURAL  
COMPONENT ONLY

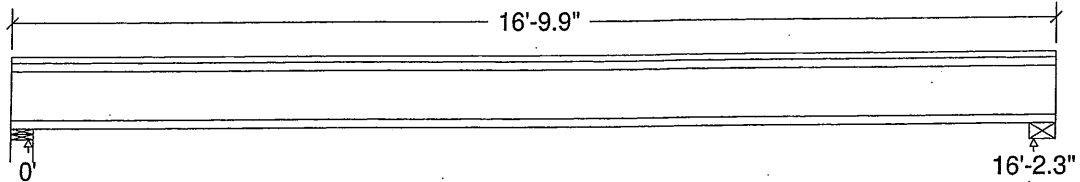
## Design Check Calculation Sheet

Nordic Sizer – Canada 6.4

### Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start End	Magnitude Start End	Unit
Load1	Dead	Full Area			20.00	psf
Load2	Live	Full Area			40.00	psf

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



Unfactored:			
Dead	224		225
Live	447		450
Factored:			
Total	950		956
Bearing:			
Resistance			
Joist	2336		2336
Support	7735		-
Des ratio			
Joist	0.41		0.41
Support	0.12		-
Load case	#2		#2
Length	4-3/8		5
Min req'd	1-3/4		1-3/4
Stiffener	No		No
Kd	1.00		1.00
KB support	1.00		-
fcp sup	769		-
Kzcp sup	1.15		-

\*Minimum bearing length for joists is 2" for exterior supports

Bearing for wall supports is perpendicular-to-grain bearing on top plate. No stud design included.

### Nordic Joist 11-7/8" NI-40x Floor joist @ 16" o.c.

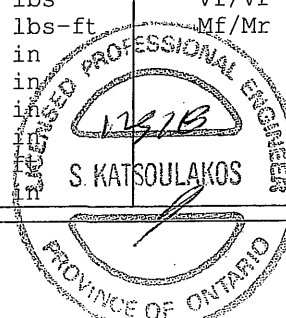
Supports: 1 - Lumber Wall, No.1/No.2; 2 - Steel Beam, W;

Total length: 16'-9.9"; 5/8" nailed and glued OSB sheathing

**This section PASSES the design code check.**

### Limit States Design using CSA O86-14 and Vibration Criterion:

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 917	Vr = 2336	lbs	Vf/Vr = 0.39
Moment (+)	Mf = 3713	Mr = 6255	lbs-ft	Mf/Mr = 0.59
Perm. Defl'n	0.11 = <L/999	0.54 = L/360	in	0.20
Live Defl'n	0.21 = L/919	0.40 = L/480	in	0.52
Total Defl'n	0.32 = L/612	0.81 = L/240	in	0.39
Bare Defl'n	0.25 = L/779	0.54 = L/360	in	0.46
Vibration	Lmax = 16'-2	Lv = 17'-2	in	
Defl'n	= 0.033	= 0.040		0.82



**Additional Data:**

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	2336	1.00	1.00	-	-	-	-	-	#2
Mr+	6255	1.00	1.00	-	1.000	-	-	-	#2
EI	371.1 million	-	-	-	-	-	-	-	#2

**CRITICAL LOAD COMBINATIONS:**

Shear : LC #2 = 1.25D + 1.5L

Moment (+) : LC #2 = 1.25D + 1.5L

Deflection: LC #1 = 1.0D (permanent)

LC #2 = 1.0D + 1.0L (live)

LC #2 = 1.0D + 1.0L (total)

LC #2 = 1.0D + 1.0L (bare joist)

Bearing : Support 1 - LC #2 = 1.25D + 1.5L

Support 2 - LC #2 = 1.25D + 1.5L

Load Types: D=dead W=wind S=snow H=earth,groundwater E=earthquake  
L=live(use,occupancy) Ls=live(storage,equipment) f=fire

Load Patterns: s=S/2 L=L+Ls \_=no pattern load in this span

All Load Combinations (LCs) are listed in the Analysis output

**CALCULATIONS:**Deflection: E<sub>IEff</sub> = 448e06 lb-in<sup>2</sup> K= 6.18e06 lbs

"Live" deflection = Deflection from all non-dead loads (live, wind, snow...)

**Design Notes:**

1. WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC Part 4) and the CSA O86-14 Engineering Design in Wood standard (May 2014 edition).

CONFORMS TO OBC 2012

2. Please verify that the default deflection limits are appropriate for your application.

3. Refer to technical documentation for installation guidelines and construction details.

4. Nordic I-joists are listed in CCMC evaluation report 13032-R.

5. Joists shall be laterally supported at supports and continuously along the compression edge.

6. The design assumptions and specifications have been provided by the client. Any damages resulting from faulty or incorrect information, specifications, and/or designs furnished, and the correctness or accuracy of this information is their responsibility. This analysis does not constitute a record of the structural integrity of the building nor suitability of the design assumptions made. Nordic Structures is responsible only for the structural adequacy of this component based on the design criteria and loadings shown.



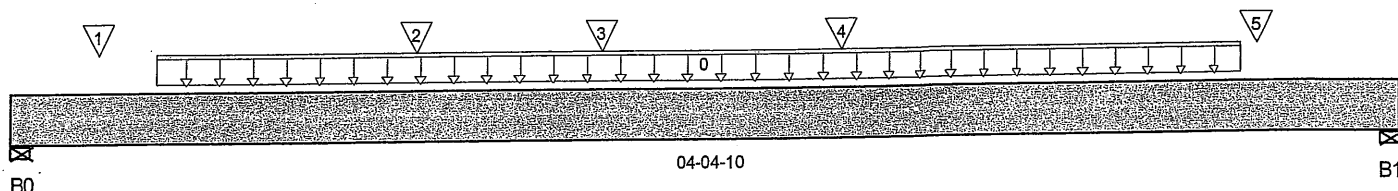
DWG NO. TAM 5343-18  
STRUCTURAL  
COMPONENT ONLY

BC CALC® Design Report



Build 5033  
Job Name:  
Address:  
City, Province, Postal Code: EAST GWILLIMBURY,  
Customer:  
Code reports: CCMC 12472-R

File Name: PINEBROOK 1A.mmdl  
Description: Designs\Flush Beams\Basement\Flush Beams\B1(i2336)  
Specifier:  
Designer: CF  
Company:  
Misc:



Total Horizontal Product Length = 04-04-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	1,260 / 0	644 / 0		
B1, 4-3/8"	1,062 / 0	544 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	STAIR	Unf. Lin. (lb/ft)	L	00-05-08	03-10-12	240	120			n/a
1	J3(i2311)	Conc. Pt. (lbs)	L	00-03-04	00-03-04	334	167			n/a
2	J3(i2302)	Conc. Pt. (lbs)	L	01-03-04	01-03-04	264	132			n/a
3	J3DJ(i2282)	Conc. Pt. (lbs)	L	01-10-04	01-10-04	249	125			n/a
4	J4(i1819)	Conc. Pt. (lbs)	L	02-07-04	02-07-04	322	161			n/a
5	J4(i1869)	Conc. Pt. (lbs)	L	03-11-04	03-11-04	316	158			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,073 ft-lbs	19,364 ft-lbs	10.7%	1	02-01-10
End Shear	1,641 lbs	7,232 lbs	22.7%	1	03-00-06
Total Load Defl.	L/999 (0.007")	n/a	n/a	4	02-02-12
Live Load Defl.	L/999 (0.005")	n/a	n/a	5	02-02-12
Max Defl.	0.007"	n/a	n/a	4	02-02-12
Span / Depth	3.7	n/a	n/a		00-00-00

Disclosure

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

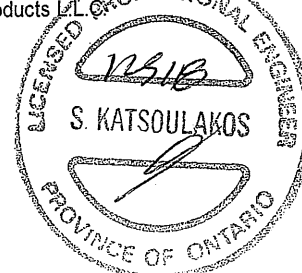
Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 1-3/4"	2,695 lbs	52.4%	23%	Unspecified
B1 Wall/Plate	4-3/8" x 1-3/4"	2,274 lbs	55.6%	24.3%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.  
Design meets Code minimum (L/360) Live load deflection criteria.  
Calculations assume member is fully braced.  
Resistance Factor phi has been applied to all presented results per CSA O86.  
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.  
Design based on Dry Service Condition.  
Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012



BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code:

Customer:

Code reports:

CCMC 12472-R

File Name:

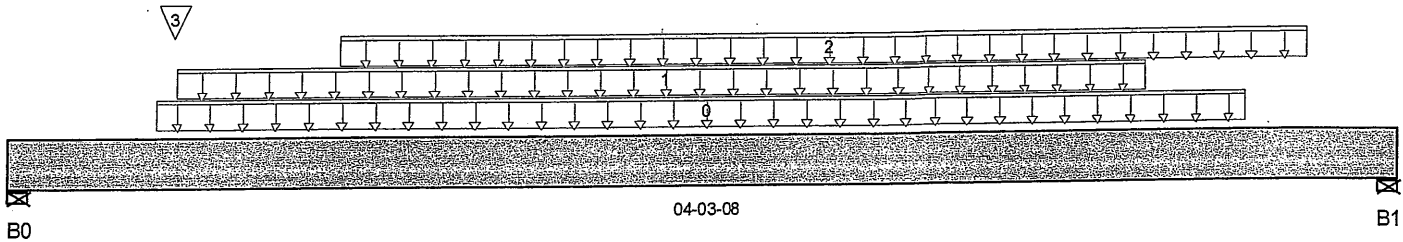
Description: Designs\Flush Beams\Basement\Flush Beams\B2(i2315)

Specifier:

Designer:

Company:

Misc:



Total Horizontal Product Length = 04-03-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	1,182 / 0	620 / 0		
B1, 5-1/2"	1,077 / 0	551 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	STAIR	Unf. Lin. (lb/ft)	L	00-05-08	03-10-00	240	120			n/a
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-06-04	03-06-04	17	9			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	01-00-04	04-00-04	342	170			n/a
3	-	Conc. Pt. (lbs)	L	00-06-03	00-06-03	356	196			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,940 ft-lbs	19,364 ft-lbs	10%	1	02-04-00
End Shear	1,290 lbs	7,232 lbs	17.8%	1	01-05-06
Total Load Defl.	L/999 (0.006")	n/a	n/a	4	02-01-12
Live Load Defl.	L/999 (0.004")	n/a	n/a	5	02-01-12
Max Defl.	0.006"	n/a	n/a	4	02-01-12
Span / Depth	3.5	n/a	n/a		00-00-00

Disclosure

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

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 1-3/4"	2,547 lbs	49.6%	21.7%	Unspecified
B1 Wall/Plate	5-1/2" x 1-3/4"	2,304 lbs	44.8%	19.6%	Unspecified

Notes

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

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

Calculations assume member is fully braced.

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

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

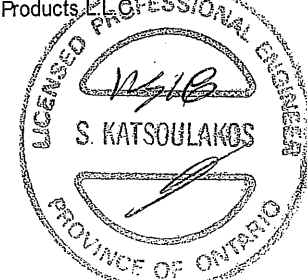
Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

DWG NO. TAM 5345-18  
STRUCTURAL  
COMPONENT ONLY

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BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOK 1A.mmdl

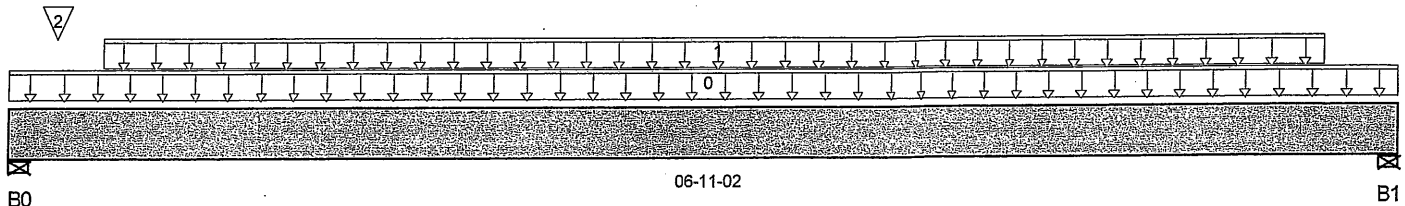
Description: Designs\Flush Beams\Basment\Flush Beams\B3(i2297)

Specifier:

Designer: CF

Company:

Misc:



Total Horizontal Product Length = 06-11-02

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	124 / 0	392 / 0		
B1, 2-3/8"	85 / 0	323 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	06-11-02	25	13			n/a
1	11 (i884)	Unf. Lin. (lb/ft)	L	00-05-08	06-06-12		81			n/a
2	-	Conc. Pt. (lbs)	L	00-02-12	00-02-12	33	50			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	755 ft-lbs	25,173 ft-lbs	3%	0	03-07-02
End Shear	411 lbs	9,401 lbs	4.4%	0	05-08-14
Total Load Defl.	L/999 (0.005")	n/a	n/a	4	03-07-02
Live Load Defl.	L/999 (0.001")	n/a	n/a	5	03-07-02
Max Defl.	0.005"	n/a	n/a	4	03-07-02
Span / Depth	6.5	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	549 lbs	8.2%	3.6%	Unspecified
B1 Wall/Plate	2-3/8" x 3-1/2"	452 lbs	15.7%	6.9%	Unspecified

**Notes**

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

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

Calculations assume member is fully braced.

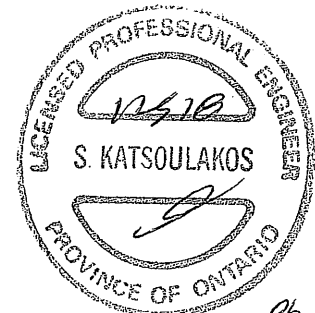
Resistance Factor phi has been applied to all presented results per CSA O86.

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012



p6 1/2

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOK 1A.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B3(i2297

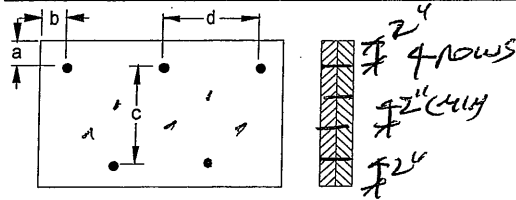
Specifier:

Designer: CF

Company:

Misc:

Connection Diagram



a minimum = 2" c = 7-7/8"  
b minimum = 3" d = 12"

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

Member has no side loads.

Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL

Disclosure

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

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DWG NO. TAM 5346  
STRUCTURAL  
COMPONENT ONLY

**BC CALC® Design Report**


Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOK 1A.mmdl

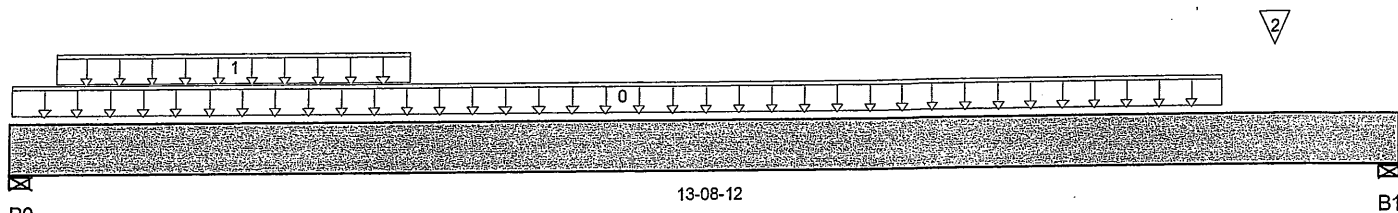
Description: Designs\Flush Beams\1st Floor\Flush Beams\B4(i2226)

Specifier:

Designer: CF

Company:

Misc:



Total Horizontal Product Length = 13-08-12

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	3,162 / 0	1,661 / 0		
B1, 5-1/2"	2,308 / 0	1,234 / 0		

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-04	12-00-04	356	178			n/a
1	STAIR	Unf. Lin. (lb/ft)	L	00-05-08	03-11-08	240	120			n/a
2	J2(i1680)	Conc. Pt. (lbs)	L	12-06-04	12-06-04	339	169			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	17,868 ft-lbs	38,727 ft-lbs	46.1%	1	06-06-04
End Shear	5,588 lbs	14,464 lbs	38.6%	1	01-05-06
Total Load Defl.	L/396 (0.393")	0.647"	60.7%	4	06-09-04
Live Load Defl.	L/605 (0.257")	0.431"	59.5%	5	06-09-04
Max Defl.	0.393"	n/a	n/a	4	06-09-04
Span / Depth	13.1	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	6,820 lbs	66.3%	29%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	5,004 lbs	48.7%	21.3%	Unspecified

**Notes**

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

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

Calculations assume member is fully braced.

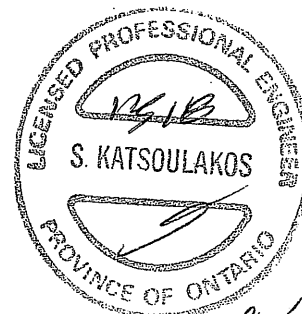
Resistance Factor phi has been applied to all presented results per CSA O86.

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012





BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOK 1A.mxd

Description: Designs\Flush Beams\1st Floor\Flush Beams\B4(i2226)

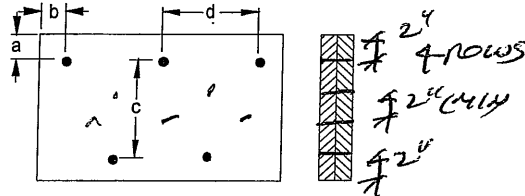
Specifier:

Designer: CF

Company:

Msc:

Connection Diagram



a minimum = 2" c = 7-7/8"  
b minimum = 3" d = 12"

Calculated Side Load = 714.5 lb/ft

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

Connectors are: 16d Nails

3-1/2" ARDOX SPIRAL

Disclosure

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

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DWG NO. TAM 5347-18  
STRUCTURAL  
COMPONENT ONLY



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B5DR(i2334)

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

November 29, 2017 09:40:41

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOK 1A.mxd

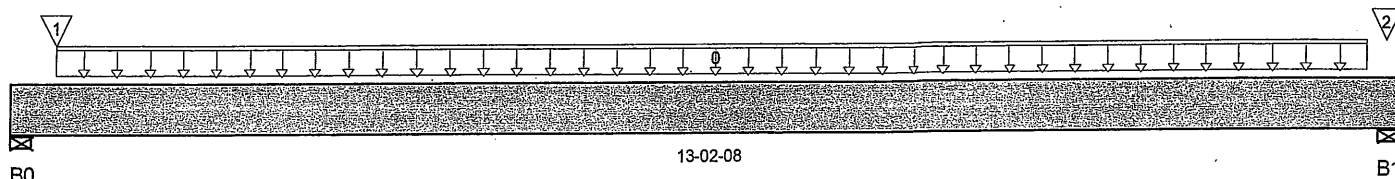
Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B5D

Specifier:

Designer: CF

Company:

Misc:



Total Horizontal Product Length = 13-02-08

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

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	3,811 / 0	1,989 / 0		
B1, 9"	4,096 / 0	2,135 / 0		

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	Smoothed Load	Unf. Lin. (lb/ft)	L	00-05-00	12-11-00	578	290			n/a
1	J2(i2290)	Conc. Pt. (lbs)	L	00-05-00	00-05-00	349	175			n/a
2	J3(i2251)	Conc. Pt. (lbs)	L	13-01-00	13-01-00	337	169			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	23,933 ft-lbs	38,727 ft-lbs	61.8%	1	06-05-00
End Shear	7,155 lbs	14,464 lbs	49.5%	1	11-05-10
Total Load Defl.	L/319 (0.456")	0.606"	75.2%	4	06-05-00
Live Load Defl.	L/486 (0.3")	0.404"	74.1%	5	06-05-00
Max Defl.	0.456"	n/a	n/a	4	06-05-00
Span / Depth	12.3	n/a	n/a		00-00-00

## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	5-1/2" x 3-1/2"	8,202 lbs	52.5%	34.9%	Unspecified
B1 Wall/Plate	9" x 3-1/2"	8,813 lbs	34.5%	22.9%	Unspecified

## Notes

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

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

Calculations assume unbraced length of Top: 00-02-12, Bottom: 00-02-12.

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012



DWG NO. TAM 5348-18  
STRUCTURAL  
COMPONENT ONLY

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOK 1A.mdl

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

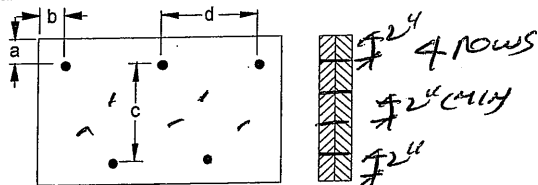
Specifier:

Designer: CF

Company:

Misc:

Connection Diagram



a minimum = 2" c = 7-7/8"

b minimum = 3" d = 12"

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

Member has no side loads.

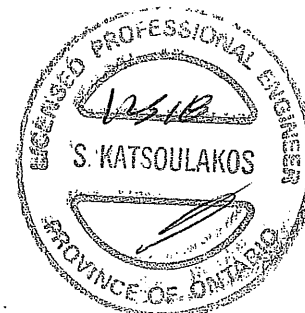
Connectors are: 16d ~~Sinker~~ Nails

3-1/2" ARDOX SPIRAL

Disclosure

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Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOK 1AEL 1.mmdl

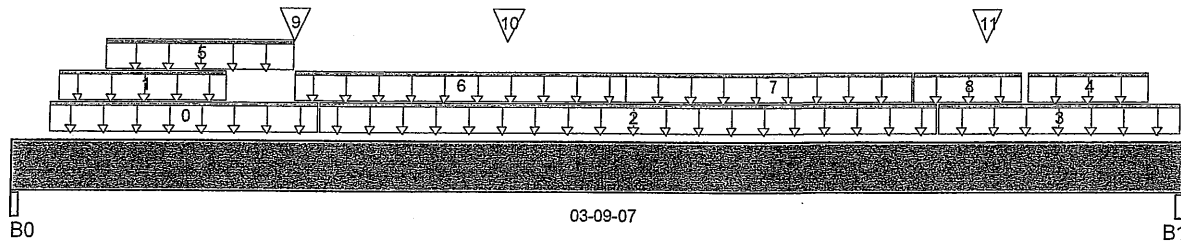
Description: Designs\Flush Beams\1st Floor\Flush Beams\B6(i2646)

Specifier:

Designer: CF

Company:

Misc:



Total Horizontal Product Length = 03-09-07

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

Bearing	Live	Dead	Snow	Wind
B0, 4-5/8"	92 / 0	221 / 0	282 / 0	
B1, 7-5/8"	155 / 0	284 / 0	324 / 0	

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	E31(i2082)	Unf. Lin. (lb/ft)	L	00-01-08	00-11-14		81			n/a
1	E31(i2082)	Unf. Lin. (lb/ft)	L	00-01-13	00-08-05	35	41	172		n/a
2	E30(i2081)	Unf. Lin. (lb/ft)	L	00-11-14	02-11-14		41			n/a
3	E26(i2074)	Unf. Lin. (lb/ft)	L	02-11-13	03-09-04		81			n/a
4	E26(i2074)	Unf. Lin. (lb/ft)	L	03-03-06	03-08-00	35	41	172		n/a
5	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-03-09	00-10-14	4				n/a
6	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-10-14	01-11-09	11				n/a
7	FC2 Floor Material	Unf. Lin. (lb/ft)	L	01-11-09	02-10-14	0	0			n/a
8	FC2 Floor Material	Unf. Lin. (lb/ft)	L	02-10-14	03-03-03	19				n/a
9	E31(i2082)	Conc. Pt. (lbs)	L	00-10-13	00-10-13	46	73	227		n/a
10	J6(i2840)	Conc. Pt. (lbs)	L	01-07-00	01-07-00	38	19			n/a
11	-	Conc. Pt. (lbs)	L	03-01-11	03-01-11	93	95	217		n/a

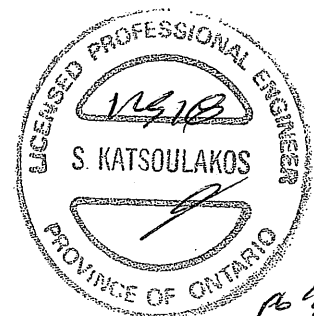
## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	318 ft-lbs	38,727 ft-lbs	0.8%	25	01-00-07
End Shear	404 lbs	14,464 lbs	2.8%	25	01-04-08
Total Load Defl.	L/999 (0")	n/a	n/a	73	01-08-02
Live Load Defl.	L/999 (0")	n/a	n/a	100	01-08-02
Max Defl.	0"	n/a	n/a	73	01-08-02
Span / Depth	2.9	n/a	n/a		00-00-00

## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Beam	4-5/8" x 3-1/2"	746 lbs	8.7%	3.8%	Unspecified
B1 Beam	7-5/8" x 3-1/2"	919 lbs	6.5%	2.8%	Unspecified

## Notes



BC CALC® Design Report



Build 5033  
Job Name:  
Address:  
City, Province, Postal Code: EAST GWILLIMBURY,  
Customer:  
Code reports: CCMC 12472-R

File Name: PINEBROOK 1AEL 1.mmdl  
Description: Designs\Flush Beams\1st Floor\Flush Beams\B6(i2646)  
Specifier:  
Designer: CF  
Company:  
Misc:

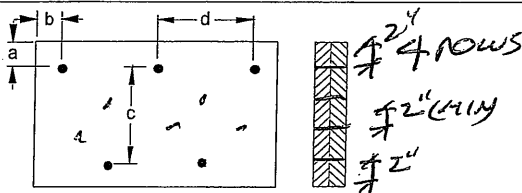
Design meets Code minimum (L/240) Total load deflection criteria.  
Design meets Code minimum (L/360) Live load deflection criteria.  
Calculations assume unbraced length of Top: 00-03-08, Bottom: 00-03-08.  
Resistance Factor phi has been applied to all presented results per CSA O86.  
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.  
**CONFORMS TO OBC 2012**  
Unbalanced snow loads determined from building geometry were used in selected product's verification.  
Design based on Dry Service Condition.  
Importance Factor: Normal Part code: Part 9

**Disclosure**

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**Connection Diagram**



a minimum = 2" c = 7-7/8"  
b minimum = 3" d = 6"

Calculated Side Load = 48.7 lb/ft

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

Connectors are: Nails

**3-1/2" ARDOX SPIRAL**



DWG NO. TAM 5349-18  
STRUCTURAL  
COMPONENT ONLY



# Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B8(i2397)

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

November 29, 2017 09:58:41

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOK 1A EL 2.mmdl

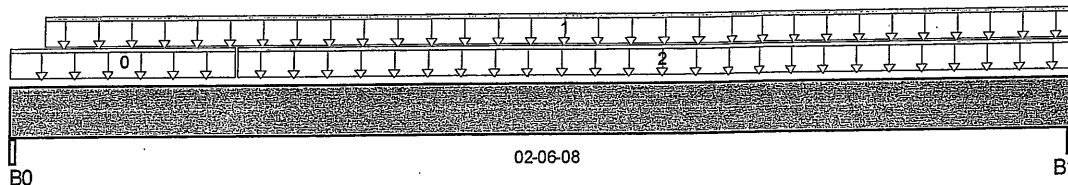
Description: Designs\Flush Beams\1st Floor\Flush Beams\B8(i2397)

Specifier:

Designer: CF

Company:

Misc:



Total Horizontal Product Length = 02-06-08

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

Bearing	Live	Dead	Snow	Wind
B0, 6-1/2"	90 / 0	188 / 0	171 / 0	
B1, 6-1/2"	97 / 0	201 / 0	183 / 0	

## Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	00-06-08	7				n/a
1	E24(i2072)	Unf. Lin. (lb/ft)	L	00-01-00	02-06-08	66	141	144		n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-06-08	02-06-08	10	5			n/a

## Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	141 ft-lbs	38,727 ft-lbs	0.4%	13	01-03-04
End Shear	118 lbs	14,464 lbs	0.8%	13	01-06-06
Total Load Defl.	L/999 (0")	n/a	n/a	45	01-03-04
Max Defl.	0"	n/a	n/a	45	01-03-04
Span / Depth	1.6	n/a	n/a		00-00-00

## Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Beam	6-1/2" x 3-1/2"	536 lbs	4.4%	1.9%	Unspecified
B1 Beam	6-1/2" x 3-1/2"	574 lbs	4.7%	2.1%	Unspecified

## Notes

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

Calculations assume member is fully braced.

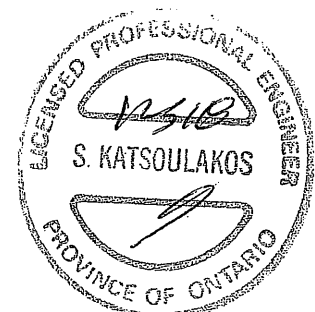
Resistance Factor phi has been applied to all presented results per CSA O86.

BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86. CONFORMS TO OBC 2012

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9



BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports:

CCMC 12472-R

File Name: PINEBROOK 1AEL 2.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B8(i2397

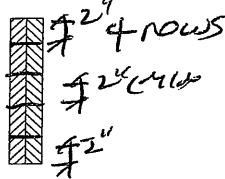
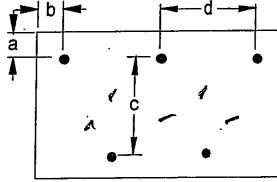
Specifier:

Designer: CF

Company:

Misc:

### Connection Diagram



a minimum = 2" c = 7-7/8"  
b minimum = 3" d = 6"

Member has no side loads.

Connectors are: 16d Spike Nails

3-1/2" ARDOX SPIRAL

### Disclosure

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DWG NO. TAM 5350-18  
STRUCTURAL  
COMPONENT ONLY

**BC CALC® Design Report**


Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOK 1A EL 2.mmdl

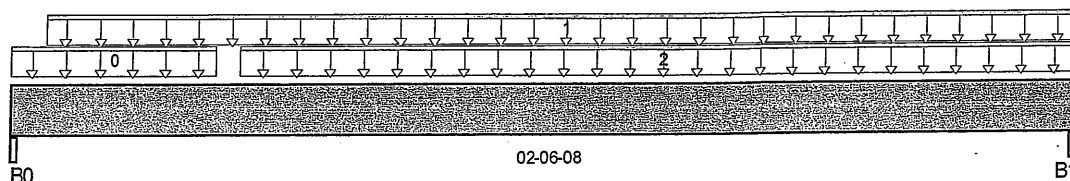
Description: Designs\Flush Beams\1st Floor\Flush Beams\B9(i2428)

Specifier:

Designer: CF

Company:

Misc:



Total Horizontal Product Length = 02-06-08

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

Bearing	Live	Dead	Snow	Wind
B0, 6-1/2"	95 / 0	191 / 0	171 / 0	
B1, 6-1/2"	103 / 0	204 / 0	183 / 0	

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	00-05-15	12				n/a
1	E31(i2082)	Unf. Lin. (lb/ft)	L	00-01-00	02-06-08	66	141	144		n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-06-08	02-06-08	15	7			n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	143 ft-lbs	38,727 ft-lbs	0.4%	13	01-03-04
End Shear	119 lbs	14,464 lbs	0.8%	13	01-06-06
Total Load Defl.	L/999 (0")	n/a	n/a	45	01-03-04
Max Defl.	0"	n/a	n/a	45	01-03-04
Span / Depth	1.6	n/a	n/a		00-00-00

**Bearing Supports**

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Beam	6-1/2" x 3-1/2"	543 lbs	4.5%	2%	Unspecified
B1 Beam	6-1/2" x 3-1/2"	581 lbs	4.8%	2.1%	Unspecified

**Notes**

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

Calculations assume member is fully braced.

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

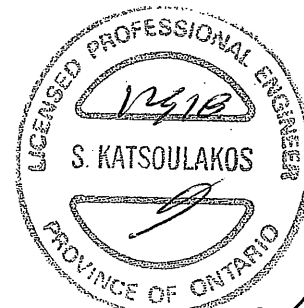
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2010 and CSA O86.

CONFORMS TO OBC 2012

Unbalanced snow loads determined from building geometry were used in selected products verification.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9


 DWG NO. TAM 5351-18  
 STRUCTURAL  
 COMPONENT ONLY



BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports: CCMC 12472-R

File Name: PINEBROOK 1AEL 2.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B9(i2428

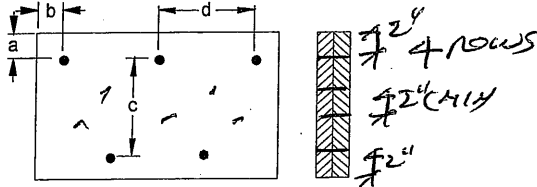
Specifier:

Designer: CF

Company:

Misc:

Connection Diagram



a minimum = 2" c = 7-7/8"  
b minimum = 3" d = 6"

Member has no side loads.

Connectors are: 16d <sup>1</sup>/<sub>2</sub>" Nails

3-1/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 5351-18  
STRUCTURAL  
COMPONENT ONLY

**BC CALC® Design Report**


Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports:

CCMC 12472-R

File Name: PINEBROOK 1A EL 3.mmdl

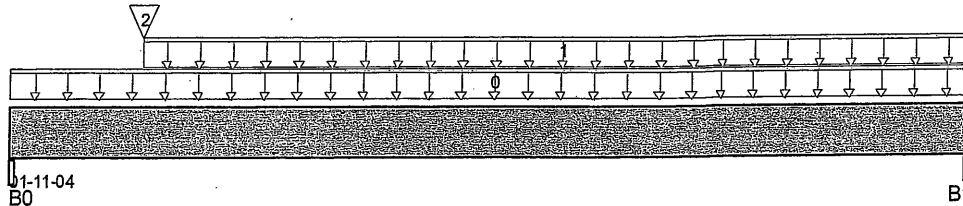
Description: Designs\Flush Beams\1st Floor\Flush Beams\B10(i2690)

Specifier:

Designer: CF

Company:

Misc:



Total Horizontal Product Length = 01-11-04

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/4"	90 / 0	150 / 0	150 / 0	
B1, 6-1/2"	124 / 0	202 / 0	199 / 0	

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	E31(i2913)	Unf. Lin. (lb/ft)	L	00-00-00	01-11-04	83	156	180		n/a
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-03-04	01-11-04	29	15			n/a
2	FC2 Floor Material	Conc. Pt. (lbs)	L	00-03-04	00-03-04	5				n/a

**Controls Summary**

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	108 ft-lbs	38,727 ft-lbs	0.3%	13	00-10-00
End Shear	242 lbs	14,464 lbs	1.7%	13	01-03-02
Span / Depth	1.3	n/a	n/a		00-00-00

**Bearing Supports**

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Beam	3-1/4" x 3-1/2"	458 lbs	7.5%	3.3%	Unspecified
B1 Beam	6-1/2" x 3-1/2"	612 lbs	5%	2.2%	Unspecified

**Notes**

Calculations assume member is fully braced.

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

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

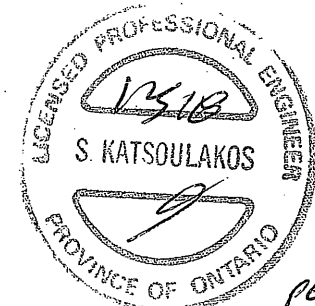
O86.

CONFORMS TO OBC 2012

Unbalanced snow loads determined from building geometry were used in selected products verification.

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9



P66

 DWG NO. TAM 5352-18  
STRUCTURAL  
COMPONENT ONLY

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: EAST GWILLIMBURY,

Customer:

Code reports:

CCMC 12472-R

File Name: PINEBROOK 1AEL 3.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B10(i2690)

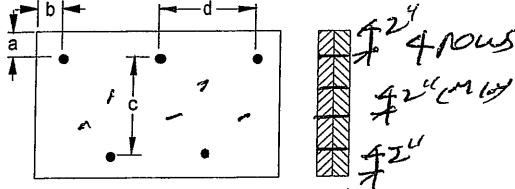
Specifier:

Designer: CF

Company:

Msc:

Connection Diagram



a minimum = 2" c = 7-7/8"  
b minimum = 3" d = 6"

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

Member has no side loads.

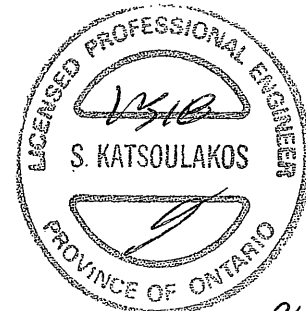
Connectors are: 16d Sinker Nails

3-1/2" ARDOX SPIRAL

Disclosure

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DWG NO. TAM 5352-18  
STRUCTURAL  
COMPONENT ONLY

BC CALC® Design Report

Basement\Flush Beams\B15(i3147)

Dry | 1 span | No cant.

January 22, 2018 08:04:35

Build 6215

Job name:

File name: PINEBROOK 1A EL 1, 2, 3 DECK CONDITION.mmdl

Address:

Description: Basement\Flush Beams\B15(i3147)

City, Province, Postal Code: EAS...URY

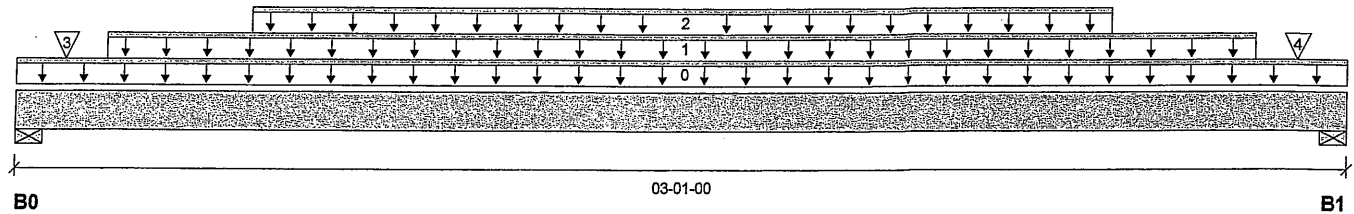
Specifier:

Customer:

Designer: CF

Code reports: CCMC 12472-R

Company:



Total Horizontal Product Length = 03-01-00

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

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	221 / 0	426 / 0	184 / 0	
B1, 3-1/2"	243 / 0	452 / 0	211 / 0	

### Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	03-01-00	12				00-00-00
1	E50(i3243)	Unf. Lin. (lb/ft)	L	00-02-08	02-10-08	41				n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-06-08	02-06-08	20	10			n/a
3	-	Conc. Pt. (lbs)	L	00-01-06	00-01-06	201	337	184		n/a
4	-	Conc. Pt. (lbs)	L	02-11-11	02-11-11	223	363	211		n/a

### Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	78 ft-lbs	23,005 ft-lbs	0.3%	0	01-06-08
End Shear	67 lbs	14,464 lbs	0.5%	1	01-03-06
Total Load Deflection	L/999 (0")	n/a	n/a	35	01-06-08
Max Defl.	0"	n/a	n/a	35	01-06-08
Span / Depth	2.7				

### Bearing Supports

	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate 3-1/2" x 3-1/2"	956 lbs	14.6%	6.4%	Unspecified
B1	Wall/Plate 3-1/2" x 3-1/2"	1,035 lbs	15.8%	6.9%	Unspecified

### Notes

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

Calculations assume member is fully braced.

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

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

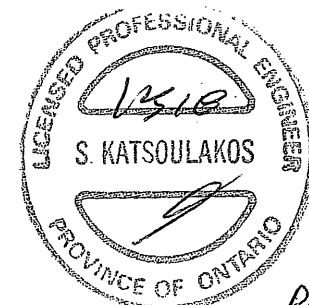
Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

CONFORMS TO OBC 2012

Importance Factor : Normal Part code : Part 9

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



DWG NO. TAM 5353-13  
STRUCTURAL  
COMPONENT ONLY

Basement\Flush Beams\B15(i3147)

Dry | 1 span | No cant:

January 22, 2018 08:04:35

BC CALC® Design Report

Build 6215

Job name:

Address:

City, Province, Postal Code: EAS...URY

Customer:

Code reports: CCMC 12472-R

File name: PINEBROOK 1A EL 1, 2, 3 DECK CONDITION.mmdl

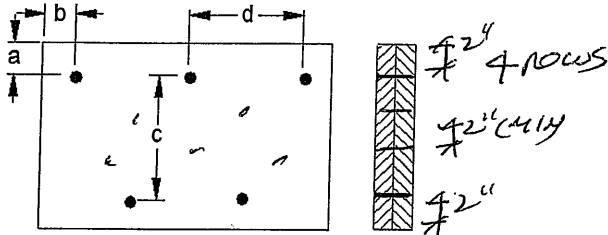
Description: Basement\Flush Beams\B15(i3147)

Specifier:

Designer: CF

Company:

Connection Diagram



a minimum = 2"

c = 7-7/8"

b minimum = 3"

d = 6"

Calculated Side Load = 17.5 lb/ft

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

Connectors are: Pneumatic Gun Nails

3-1/2" ARDOX SPIRAL

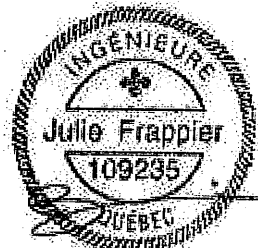
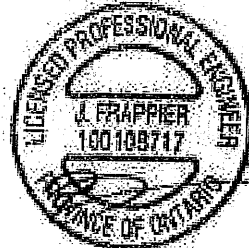
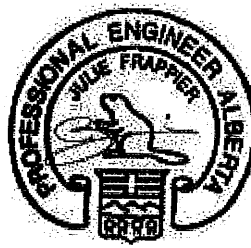
Disclosure

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®

DWG NO. TAM5353-18 P62  
STRUCTURAL  
COMPONENT ONLY



## Maximum Floor Spans

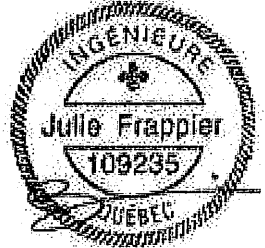
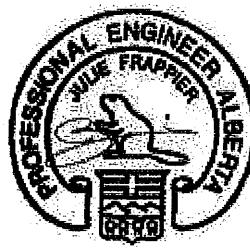
Live Load = 40 psf, Dead Load = 15 psf  
Simple Spans, L/480 Deflection Limit  
5/8" OSB G&N Sheathing

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

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

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



## Maximum Floor Spans

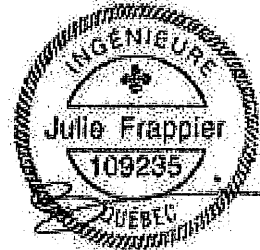
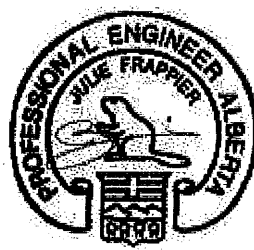
Live Load = 40 psf, Dead Load = 15 psf  
Simple Spans, L/480 Deflection Limit  
3/4" OSB G&N Sheathing

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

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

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



## Maximum Floor Spans

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

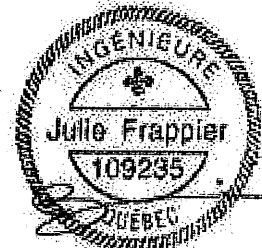
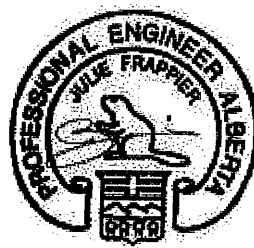
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-1"	14'-1"	13'-3"	N/A	15'-7"	14'-1"	13'-3"	N/A
	NI-40x	16'-1"	15'-2"	14'-8"	N/A	16'-7"	15'-7"	15'-1"	N/A
	NI-60	16'-3"	15'-4"	14'-10"	N/A	16'-8"	15'-9"	15'-3"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

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

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





## Maximum Floor Spans

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

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

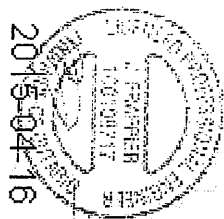
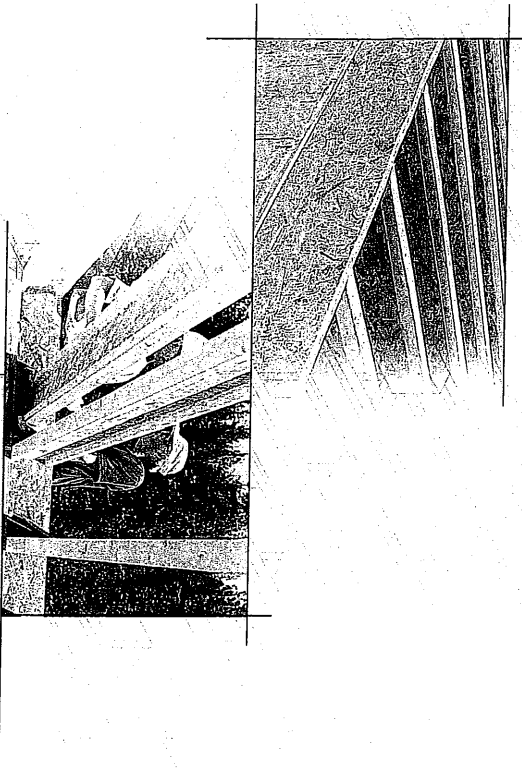
  

Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-2"	13'-4"	12'-4"	15'-7"	14'-2"	13'-4"	12'-4"
	NI-40x	17'-9"	16'-1"	15'-1"	13'-11"	17'-9"	16'-1"	15'-1"	13'-11"
	NI-60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

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



# INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



Distributed by:



N-C301 / November 2014

## SAFETY AND CONSTRUCTION PRECAUTIONS

### WARNING

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

### Avoid Accidents by Following these Important Guidelines:

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



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

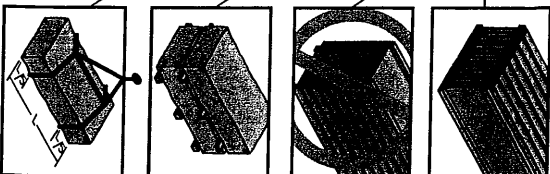



Never stack building materials over unsheathed I-joists. Once sheathed, do not over-stress I-joist with concentrated loads from building materials.


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

## STORAGE AND HANDLING GUIDELINES

1. Bundle wrap can be slippery when wet. Avoid walking on wrapped bundles.
2. Store, stack, and handle I-joists vertically and level only.
3. Always stack and handle I-joists in the upright position only.
4. Do not store I-joists in direct contact with the ground and/or flatwise.
5. Protect I-joists from weather, and use spacers to separate bundles.
6. Bundled units should be kept intact until time of installation.
7. When handling I-joists with a crane on the job site, take a few simple precautions to prevent damage to the I-joists and injury to your work crew.
  - Pick I-joists in bundles as shipped by the supplier.
  - Orient the bundles so that the webs of the I-joists are vertical.
  - Pick the bundles at the 5th points, using a spreader bar if necessary.
8. Do not handle I-joists in a horizontal orientation.
9. NEVER USE OR TRY TO REPAIR A DAMAGED I-JOIST.



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

Top Mount
- 

Skewed

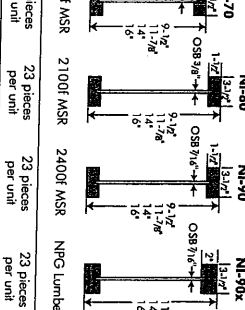
1. Hangers shown illustrate the three

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

100

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- Figure 1 shows schematic diagrams of three types of composite beams: (a) NI-80, (b) NI-90, and (c) NI-90x. Each diagram illustrates the cross-section of the beam, including the top flange, web, and bottom flange, with dimensions in inches. The top flange is 9.1/2" wide, the web is 1.1/2" high, and the bottom flange is 9.1/2" wide. The total height of the beam is 16". The diagrams also show the location of the reinforcement bars (rebar) and the concrete fill.

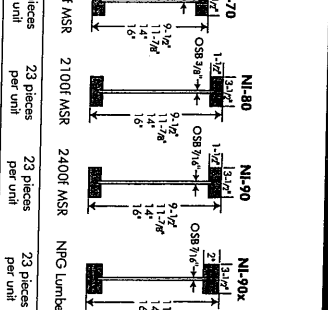


its own trees which anchor Nest-

ment to quality.

Only finger-jointed black spruce  
consistent quality, superior strength.

6



its own trees, which enables Nordic control procedures throughout the life of the operation, from forest to the mill to quality.

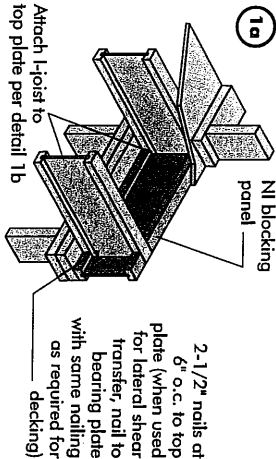
Only finger-jointed black spruce  
consistent quality, superior strength.

2015-04-7

# INSTALLING NORDIC I-JOISTS

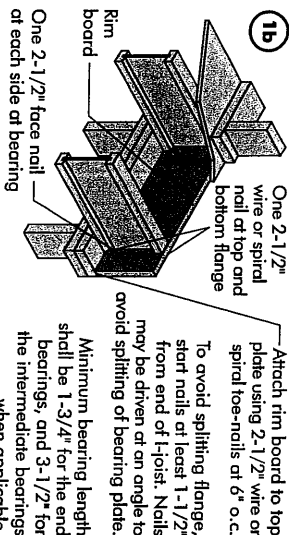
1. Before laying out floor system components, verify that I-joint flange widths match hanger widths. If not, contact your supplier.
2. Except for cutting to length, I-joint flanges should **never** be cut, drilled, or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of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

2015-04-16



Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (psf)
N1 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.

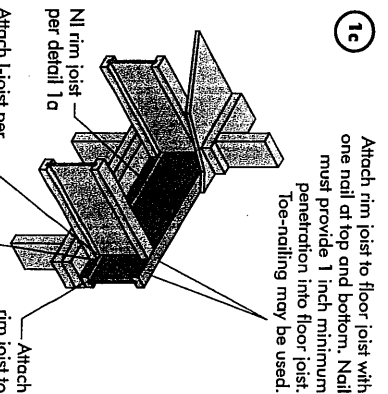
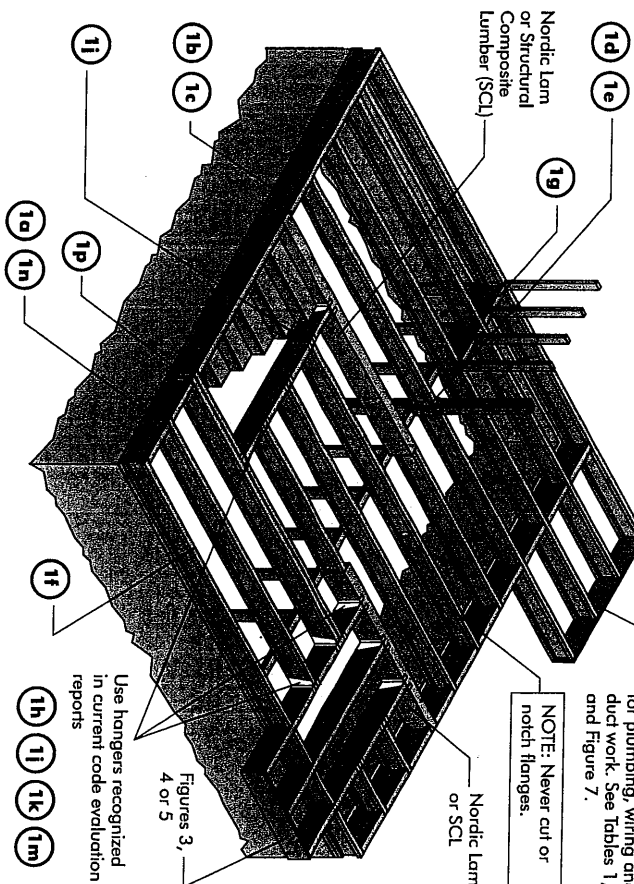


Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (psf)
1-1/8" Rim Board Plus	8,090

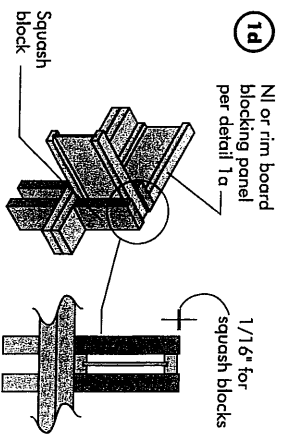
\*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

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.

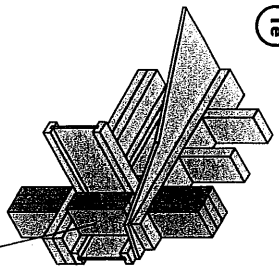


Attach rim joist to floor joist with one nail at top and bottom. Nail must provide 1 inch minimum penetration into floor joist. Toe-nailing may be used.

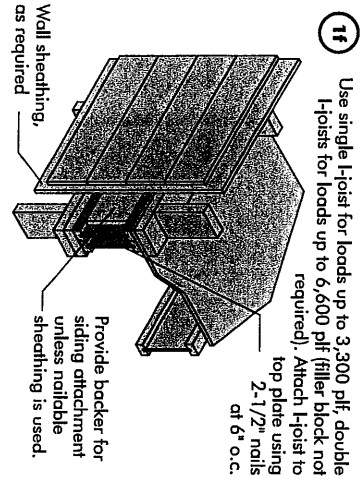


Pair of Squash Blocks	Maximum Factored Vertical per Pair of Squash Blocks (lbs)
2x Lumber	5,500
1-1/8" Rim Board Plus	4,300
	6,600

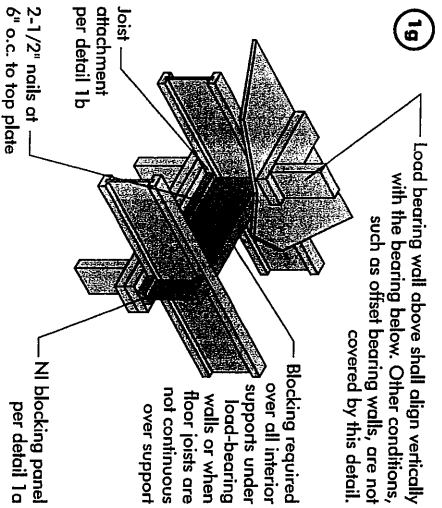
Provide lateral bracing per detail 1a, 1b, or 1c



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

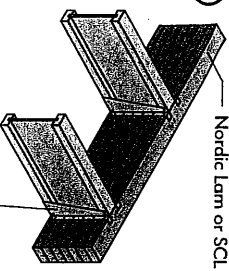


Provide backer for siding attachment unless nailable sheathing is used. Rim board may be used in lieu of I-joists. Backer is not required when rim board is used. Bracing per code shall be carried to the foundation.



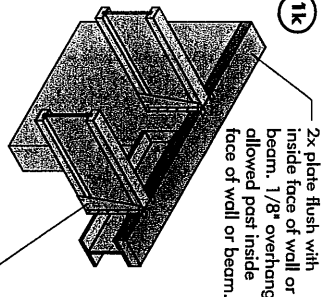
Blocking required over all interior supports under load-bearing walls or when floor joists are not continuous over support. 2-1/2" nails at 6" o.c. to top plate. Joist attachment per detail 1b. N1 blocking panel per detail 1a.

11 Nordic Lam or SCL



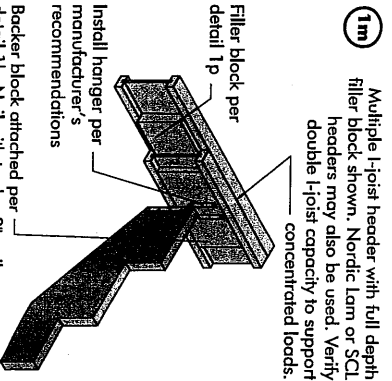
Top- or face-mount hanger installed per manufacturer's recommendations. For nailing schedules for multiple beams, see the manufacturer's recommendations. Note: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

1k



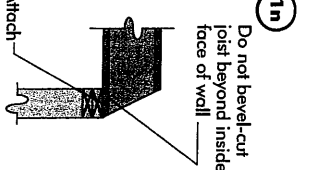
Top-mount hanger installed per manufacturer's recommendations. Note: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used.

1m



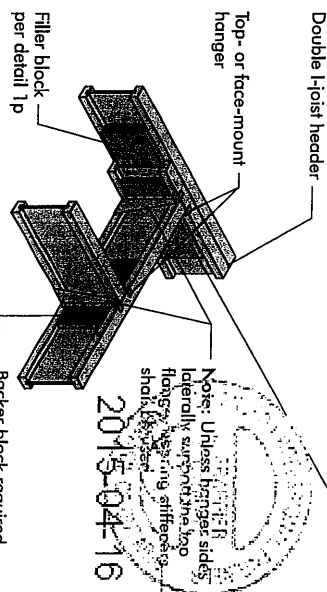
Filler block per detail 1p. Install hanger per manufacturer's recommendations. Backer block attached per detail 1n. Nail with twelve 3" nails, clinch when possible. Maximum support capacity = 1,620 lbs.

1n



Attach I-joist per detail 1b. Note: Blocking required at bearing for lateral support, not shown for clarity.

1h



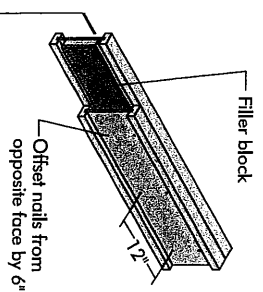
Double I-joist header. Top- or face-mount hanger. Filler block per detail 1p. Backer block required (both sides for face-mount hangers). Note: Unless hanger sides laterally support the top flange, bearing stiffeners shall be used. 2015-04-16

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-P-F No. 2 or better for solid lumber and wood structural panels conforming to CAN/CSA-Q325 or CAN/CSA-Q437 Standard. \*\* For face-mount hangers use net joist depth minus 3-1/4" for joists with 1-1/2" thick flanges. For 2" thick flanges use net depth minus 4-1/4".

1p



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

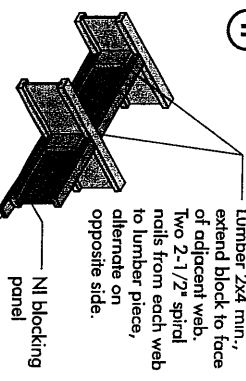
Notes:

1. Support back of I-joist web during nailing to prevent damage to web/flange connection.
2. Leave a 1/8 to 1/4-inch gap between top of filler block and bottom of top I-joist flange.
3. Filler block is required between joists for full length of span.
4. Nail joists together with two rows of 3" nails at 12 inches o.c. (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.
5. The maximum factored load that may be applied to one side of the double joist using this detail is 860 lb/ft. Verify double I-joist capacity.

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

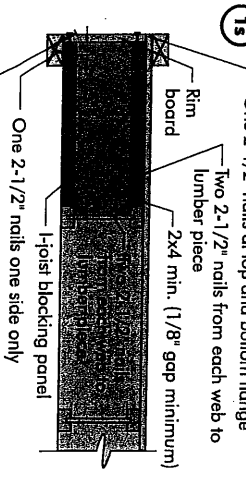
Flange Size	Joist Depth	Block Size
2-1/2" x 1-1/2"	9-1/2" x 14" x 16"	2-1/8" x 6" x 8"
2-1/2" x 1-1/2"	11-7/8" x 14" x 16"	2-1/8" x 8" x 10"
3-1/2" x 1-1/2"	11-7/8" x 14" x 16"	3" x 6" x 8"
3-1/2" x 1-1/2"	11-7/8" x 14" x 16"	3" x 8" x 10"
3-1/2" x 1-1/2"	11-7/8" x 14" x 16"	3" x 12"
3-1/2" x 1-1/2"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

1r



Optional: Minimum 1x4 inch strip applied to underside of joist of blocking line or 1/2 inch minimum gypsum ceiling attached to underside of joists.

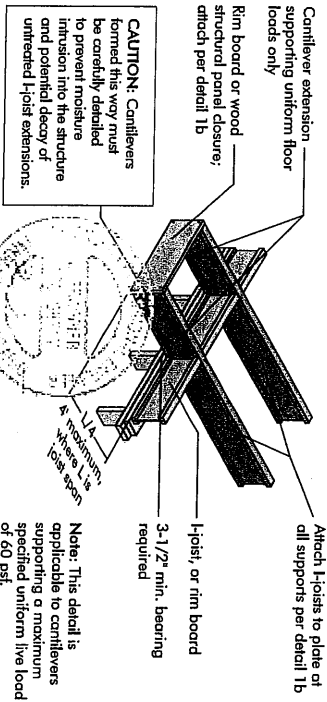
1s



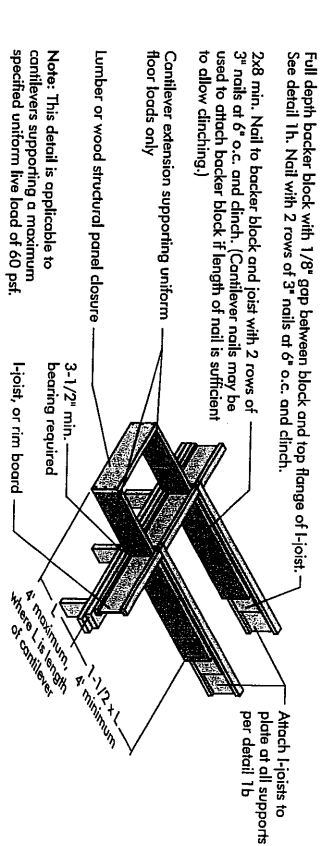
Notes: - In some local codes, blocking is prescriptively required in the first joist space (or first and second joist space) next to the starter joist. Where required, see local code requirements for spacing of the blocking. - All nails are common spiral in this detail.

# CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)

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

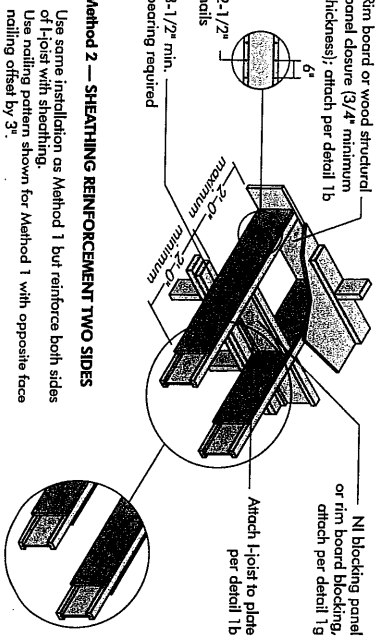


## 3b LUMBER CANTILEVER DETAIL FOR BALCONIES (No Wall Load)

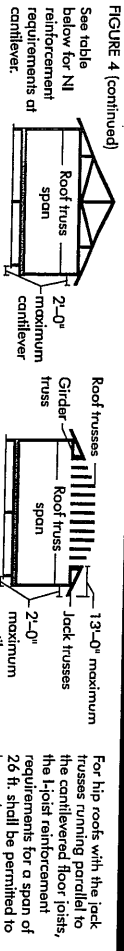
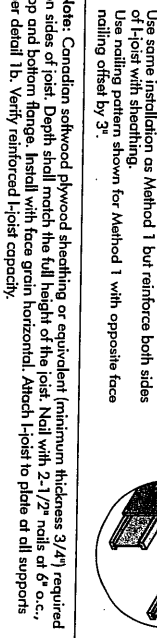


# CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)

## 4a Method 1 — SHEATHING REINFORCEMENT ONE SIDE



## Method 2 — SHEATHING REINFORCEMENT TWO SIDES



## CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST DEPTH (in.)	ROOF TRUSS SPAN				ROOF LOADING (UNFACTORED)			
	12	16	19.2	24	LL = 30 psf, DL = 15 psf	LL = 40 psf, DL = 15 psf	LL = 50 psf, DL = 15 psf	JOIST SPACING (in.)
24	X	X	X	X	X	X	X	24
30	X	X	X	X	X	X	X	24
36	X	X	X	X	X	X	X	24
42	X	X	X	X	X	X	X	24
48	X	X	X	X	X	X	X	24
54	X	X	X	X	X	X	X	24
60	X	X	X	X	X	X	X	24
66	X	X	X	X	X	X	X	24
72	X	X	X	X	X	X	X	24
78	X	X	X	X	X	X	X	24
84	X	X	X	X	X	X	X	24
90	X	X	X	X	X	X	X	24
96	X	X	X	X	X	X	X	24
102	X	X	X	X	X	X	X	24
108	X	X	X	X	X	X	X	24
114	X	X	X	X	X	X	X	24
120	X	X	X	X	X	X	X	24
126	X	X	X	X	X	X	X	24
132	X	X	X	X	X	X	X	24
138	X	X	X	X	X	X	X	24
144	X	X	X	X	X	X	X	24
150	X	X	X	X	X	X	X	24
156	X	X	X	X	X	X	X	24
162	X	X	X	X	X	X	X	24
168	X	X	X	X	X	X	X	24
174	X	X	X	X	X	X	X	24
180	X	X	X	X	X	X	X	24
186	X	X	X	X	X	X	X	24
192	X	X	X	X	X	X	X	24
198	X	X	X	X	X	X	X	24
204	X	X	X	X	X	X	X	24
210	X	X	X	X	X	X	X	24
216	X	X	X	X	X	X	X	24
222	X	X	X	X	X	X	X	24
228	X	X	X	X	X	X	X	24
234	X	X	X	X	X	X	X	24
240	X	X	X	X	X	X	X	24
246	X	X	X	X	X	X	X	24
252	X	X	X	X	X	X	X	24
258	X	X	X	X	X	X	X	24
264	X	X	X	X	X	X	X	24
270	X	X	X	X	X	X	X	24
276	X	X	X	X	X	X	X	24
282	X	X	X	X	X	X	X	24
288	X	X	X	X	X	X	X	24
294	X	X	X	X	X	X	X	24
300	X	X	X	X	X	X	X	24
306	X	X	X	X	X	X	X	24
312	X	X	X	X	X	X	X	24
318	X	X	X	X	X	X	X	24
324	X	X	X	X	X	X	X	24
330	X	X	X	X	X	X	X	24
336	X	X	X	X	X	X	X	24
342	X	X	X	X	X	X	X	24
348	X	X	X	X	X	X	X	24
354	X	X	X	X	X	X	X	24
360	X	X	X	X	X	X	X	24
366	X	X	X	X	X	X	X	24
372	X	X	X	X	X	X	X	24
378	X	X	X	X	X	X	X	24
384	X	X	X	X	X	X	X	24
390	X	X	X	X	X	X	X	24
396	X	X	X	X	X	X	X	24
402	X	X	X	X	X	X	X	24
408	X	X	X	X	X	X	X	24
414	X	X	X	X	X	X	X	24
420	X	X	X	X	X	X	X	24
426	X	X	X	X	X	X	X	24
432	X	X	X	X	X	X	X	24
438	X	X	X	X	X	X	X	24
444	X	X	X	X	X	X	X	24
450	X	X	X	X	X	X	X	24
456	X	X	X	X	X	X	X	24
462	X	X	X	X	X	X	X	24
468	X	X	X	X	X	X	X	24
474	X	X	X	X	X	X	X	24
480	X	X	X	X	X	X	X	24
486	X	X	X	X	X	X	X	24
492	X	X	X	X	X	X	X	24
498	X	X	X	X	X	X	X	24
504	X	X	X	X	X	X	X	24
510	X	X	X	X	X	X	X	24
516	X	X	X	X	X	X	X	24
522	X	X	X	X	X	X	X	24
528	X	X	X	X	X	X	X	24
534	X	X	X	X	X	X	X	24
540	X	X	X	X	X	X	X	24
546	X	X	X	X	X	X	X	24
552	X	X	X	X	X	X	X	24
558	X	X	X	X	X	X	X	24
564	X	X	X	X	X	X	X	24
570	X	X	X	X	X	X	X	24
576	X	X	X	X	X	X	X	24
582	X	X	X	X	X	X	X	24
588	X	X	X	X	X	X	X	24
594	X	X	X	X	X	X	X	24
600	X	X	X	X	X	X	X	24
606	X	X	X	X	X	X	X	24
612	X	X	X	X	X	X	X	24
618	X	X	X	X	X	X	X	24
624	X	X	X	X	X	X	X	24
630	X	X	X	X	X	X	X	24
636	X	X	X	X	X	X	X	24
642	X	X	X	X	X	X	X	24
648	X	X	X	X	X	X	X	24
654	X	X	X	X	X	X	X	24
660	X	X	X	X	X	X	X	24
666	X	X	X	X	X	X	X	24
672	X	X	X	X	X	X	X	24
678	X	X	X	X	X	X	X	24
684	X	X	X	X	X	X	X	24
690	X	X	X	X	X	X	X	24
696	X	X	X	X	X	X	X	24
702	X	X	X	X	X	X	X	24
708	X	X	X	X	X	X	X	24
714	X	X	X	X	X	X	X	24
720	X	X	X	X	X	X	X	24
726	X	X	X	X	X	X	X	24
732	X	X	X	X	X	X	X	24
738	X	X	X	X	X	X	X	24
744	X	X	X	X	X	X	X	24
750	X	X	X	X	X	X	X	24
756	X	X	X	X	X	X	X	24
762	X	X	X	X	X	X	X	24
768	X	X	X	X	X	X	X	24
774	X	X	X	X	X	X	X	24
780	X	X	X	X	X	X	X	24
786	X	X	X	X	X	X	X	24
792	X	X	X	X	X	X	X	24
798	X	X	X	X	X	X	X	24
804	X	X	X	X	X	X	X	24
810	X	X	X	X	X	X	X	24
816	X	X	X	X	X	X	X	24
822	X	X	X	X	X	X	X	24
828	X	X	X	X	X	X	X	24
834	X	X	X	X	X	X	X	24
840	X	X	X	X	X	X	X	24
846	X	X	X	X	X	X	X	24
852	X	X	X	X	X	X	X	24
858	X	X	X	X	X	X	X	24
864	X	X	X	X	X	X	X	24
870	X	X	X	X	X	X	X	24
876	X	X	X	X	X	X	X	24
882	X	X	X	X	X	X	X	24
888	X	X	X	X	X	X	X	24
894	X	X	X	X	X	X	X	24
900	X	X	X	X	X	X	X	24
906	X	X	X	X	X	X	X	24
912	X	X	X	X	X	X	X	24
918	X	X	X	X	X	X	X	24
924	X	X	X	X	X	X	X	24
930	X	X	X	X	X	X	X	24
936	X	X	X	X	X	X	X	24
942	X	X	X	X	X	X	X	24
948	X	X	X	X	X	X	X	24
954	X	X	X	X	X	X	X	24
960	X	X	X	X	X	X	X	24
966	X	X	X	X	X	X	X	24
972	X	X	X	X	X	X	X	24
978	X	X	X	X	X	X	X	24
984	X	X	X	X	X	X	X	24
990	X	X	X	X	X	X	X	24
996	X	X	X	X	X	X	X	24
1002	X	X	X	X	X	X	X	24
1008	X	X	X	X	X	X	X	24
1014	X	X	X	X	X	X	X	24
1020	X	X	X	X	X	X	X	24
1026	X	X	X	X	X	X	X	24
1032	X	X	X	X	X	X	X	24
1038	X	X	X	X	X	X	X	24
1044	X	X	X	X	X	X	X	24
1050	X	X	X	X	X	X	X	24
1056	X	X	X	X	X	X	X	24
1062	X	X	X	X	X	X	X	24
1068	X	X	X	X	X	X	X	24
1074	X	X	X	X	X	X	X	24
1080	X	X	X	X	X	X	X	24
1086	X	X	X	X	X	X	X	24
1092	X	X	X	X	X	X	X	24
1098	X	X	X	X	X	X	X	24
1104	X	X	X	X	X	X	X	24
1110	X	X	X	X	X	X	X	24
1116	X	X	X	X	X	X	X	24
1122	X	X	X	X	X	X	X	24
1128	X	X	X	X	X	X	X	24
1134	X	X	X	X	X	X	X	24
1140	X	X	X	X	X	X	X	24
1146	X	X	X	X	X	X	X	24
1152	X	X	X	X	X	X	X	24
1158	X	X	X	X	X	X	X	2

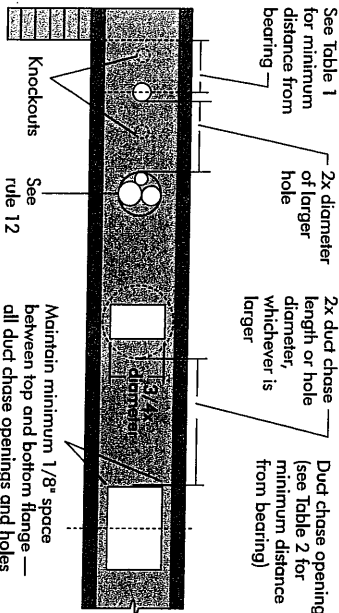


# WEB HOLES

## 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 or 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 shall be permitted anywhere in a cantilevered 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 a single round hole circumscribed around them.

FIGURE 7  
FIELD-CUT HOLE LOCATOR



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

Knockouts are prescored holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 15 inches on center 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 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	12
10	20	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	24	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	30	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	36	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	42	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	48	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	54	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	60	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	66	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	72	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
12	20	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	24	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	30	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	36	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	42	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	48	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	54	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	60	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	66	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	72	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
14	20	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	24	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	30	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	36	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	42	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	48	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	54	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	60	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	66	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	72	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
16	20	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	24	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	30	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	36	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	42	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	48	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	54	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	60	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	66	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	72	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
18	20	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	24	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	30	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	36	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	42	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	48	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	54	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	60	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	66	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	72	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
20	20	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	24	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	30	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	36	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	42	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	48	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	54	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	60	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	66	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25
	72	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25

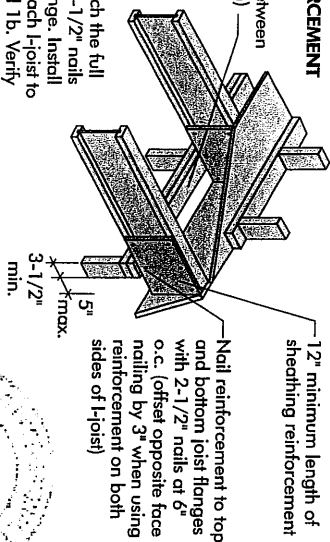
Above table may be used for I-beam spacings of 24 inches on centre or less.

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

## 5a SHEATHING REINFORCEMENT

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

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

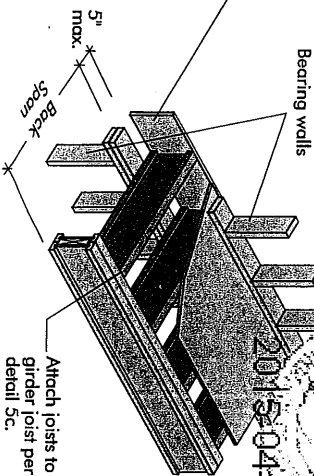


## 5b SET-BACK DETAIL

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

**Notes:**

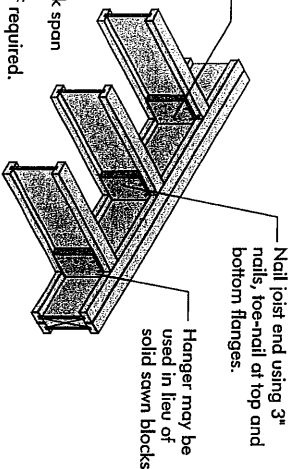
- Provide full depth blocking between joists over support (not shown for clarity)
- Attach I-joist to plate at all supports per detail 1b.
- 3-1/2" minimum I-joist bearing required.



## 5c SET-BACK CONNECTION

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

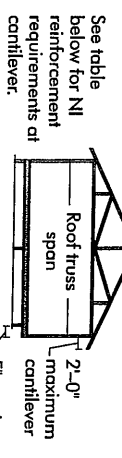
Alternate for opposite side.



**Notes:**

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

FIGURE 5 (continued)



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

## BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

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

1. N = No reinforcement required.
2. N = NI reinforced with 3/4" wood structural panel on one side only.
3. N = NI reinforced with 3/4" wood structural panel on both sides, or double I-joist.
4. For larger openings, or multiple 3'-0" width openings spaced less than 6'-0" o.c., additional joists beneath the opening's cripple studs may be required.
5. Table applies to joists 12" to 24" o.c. that meet the floor span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. Use 12" o.c. requirements for lesser spacing.
6. Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.



## INSTALLING THE GLUED FLOOR SYSTEM

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

### FASTENERS FOR SHEATHING AND SUBFLOORING(1)

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

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

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

#### IMPORTANT NOTE:

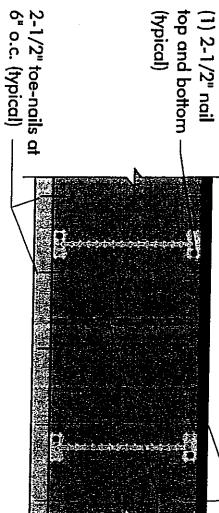
Floor sheathing must be field glued to the I-joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-joist spans must be verified with your local distributor.

## RIM BOARD INSTALLATION DETAILS

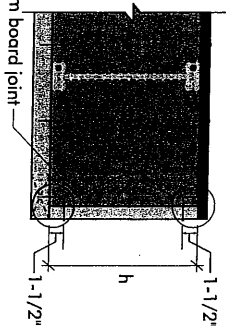
### (8a) ATTACHMENT DETAILS WHERE RIM BOARDS ABUT

#### Rim board Joint Between Floor Joists

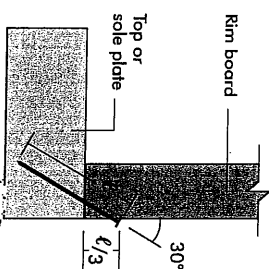
(1) 2-1/2" nail top and bottom (typical)



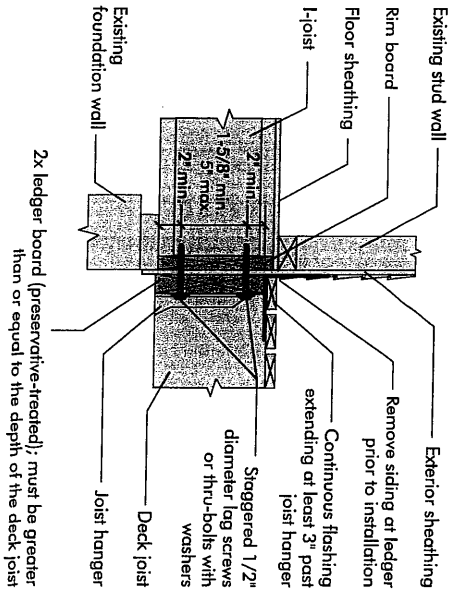
#### Rim board Joint at Corner



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



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

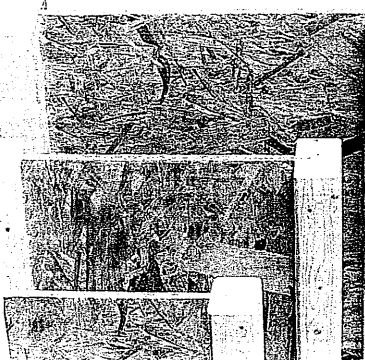


2015-04-16

## PRODUCT WARRANTY

Champion Challenging guarantees that, in accordance with our specifications, North products are free from manufacturing defects in material and workmanship.

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



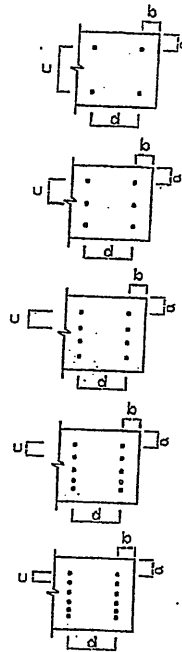
# MICRO CITY

## ENGINEERING SERVICES INC.

TEL: (519) 287-2242

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

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



### NOTES:

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



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STRUCTURAL

COMPONENT ONLY

TO BE USED ONLY  
WITH BEAM CLOS  
BEARING THE  
STAMP BELOW

PROVIDE NAILING

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