

FROM PLAN DATED:

BUILDER: GREENPARK

SITE: RUSSEL GARDEN II

MODEL: ROSEWOOD 2

ELEVATION: 1

LOT:

CITY: WATERDOWN

SALESMAN: MD

DESIGNER: CZ

REVISION:

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/ft²

DEAD LOAD: 15.0 lb/ft²

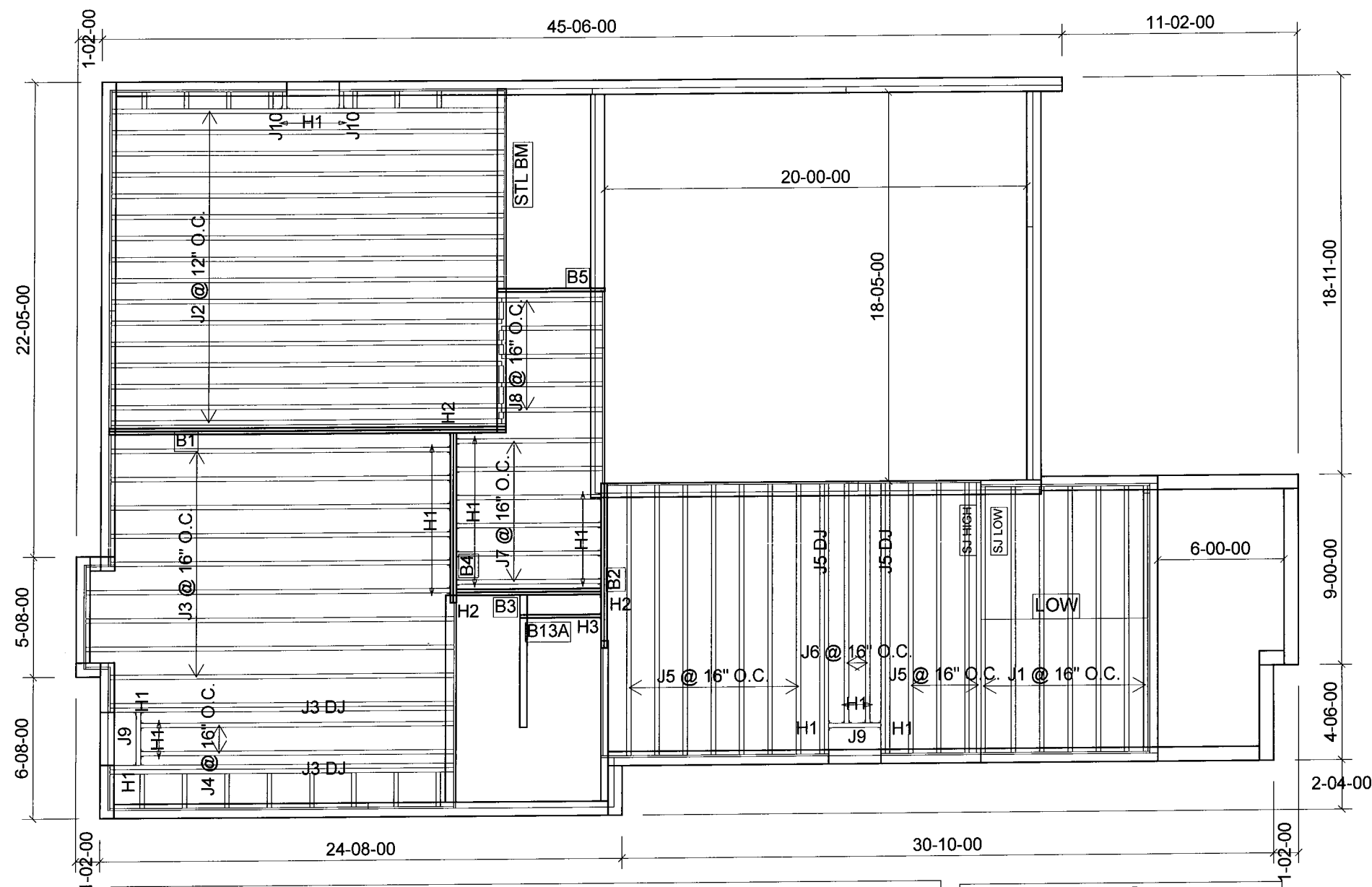
TILED AREAS: 20 lb/ft

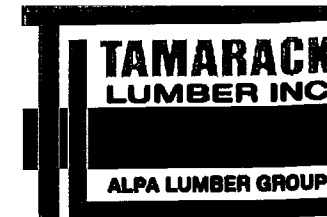
SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2017-09-01

1st FLOOR

STANDARD





FROM PLAN DATED:
BUILDER: GREENPARK
SITE: RUSSEL GARDEN II
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ELEVATION: 1
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DESIGNER: CZ
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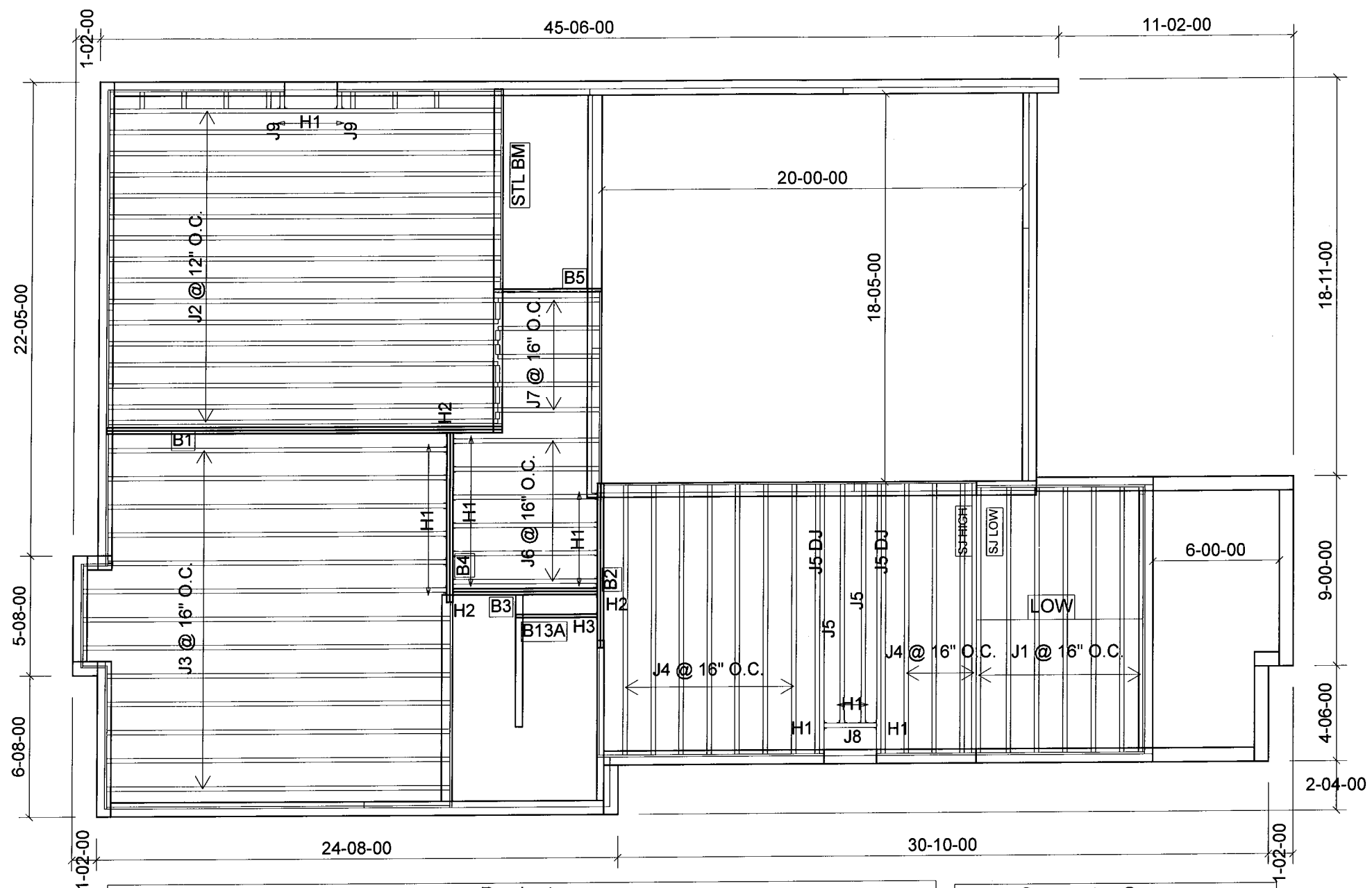
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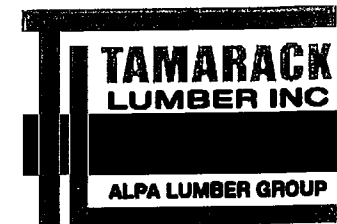
WALK UP CONDITION



Products				
PlotID	Length	Product	Plies	Net Qty
J1	14-00-00	9 1/2" NI-40x	1	7
J2	20-00-00	11 7/8" NI-40x	1	16
J3	18-00-00	11 7/8" NI-40x	1	13
J4	14-00-00	11 7/8" NI-40x	1	11
J5 DJ	14-00-00	11 7/8" NI-40x	2	4
J5	12-00-00	11 7/8" NI-40x	1	2
J6	8-00-00	11 7/8" NI-40x	1	6
J7	6-00-00	11 7/8" NI-40x	1	5
J8	4-00-00	11 7/8" NI-40x	1	1
J9	2-00-00	11 7/8" NI-40x	1	2
B1	20-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B4	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B2	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B3	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B5	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B13A	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
16	H1	IUS2.56/11.88
2	H1	IUS2.56/11.88
4	H1	IUS2.56/11.88
3	H2	HGUS410
1	H3	HUS1.81/10

DECK



FROM PLAN DATED:

BUILDER: GREENPARK

SITE: RUSSEL GARDEN II

MODEL: ROSEWOOD 2

ELEVATION: 2,3

LOT:

CITY: WATERDOWN

SALESMAN: MD

DESIGNER: CZ

REVISION:

NOTES:

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DEAD LOAD: 15.0 lb/ft²

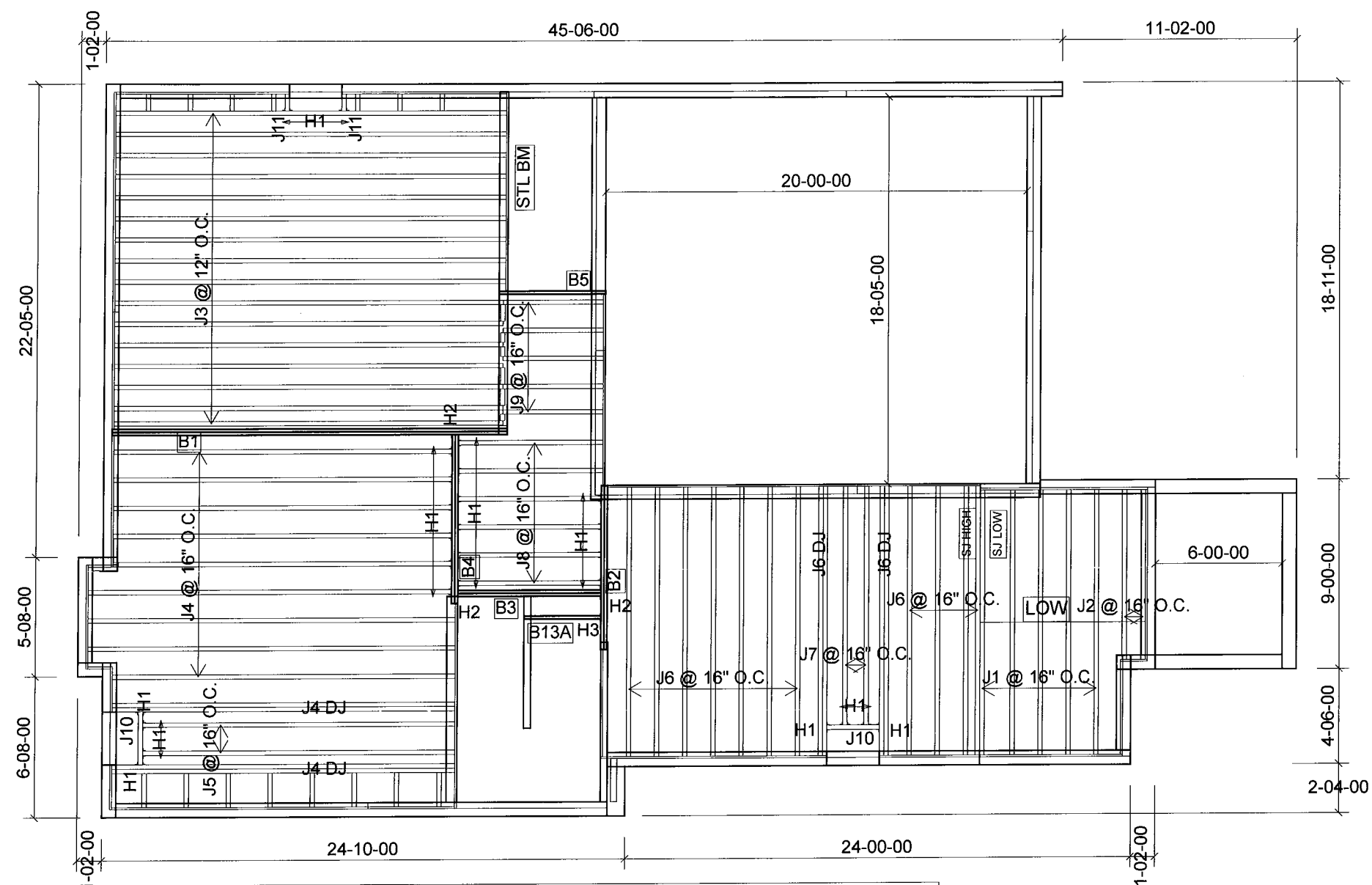
TILED AREAS: 20 lb/ft²

SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2017-09-01

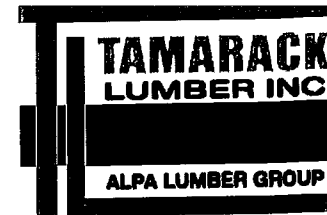
1st FLOOR

STANDARD



Products				
PlotID	Length	Product	Plies	Net Qty
J1	14-00-00	9 1/2" NI-40x	1	5
J2	10-00-00	9 1/2" NI-40x	1	2
J3	20-00-00	11 7/8" NI-40x	1	16
J4	18-00-00	11 7/8" NI-40x	1	9
J4 DJ	18-00-00	11 7/8" NI-40x	2	4
J5	16-00-00	11 7/8" NI-40x	1	2
J6	14-00-00	11 7/8" NI-40x	1	11
J6 DJ	14-00-00	11 7/8" NI-40x	2	4
J7	12-00-00	11 7/8" NI-40x	1	2
J8	8-00-00	11 7/8" NI-40x	1	6
J9	6-00-00	11 7/8" NI-40x	1	5
J10	4-00-00	11 7/8" NI-40x	1	2
J11	2-00-00	11 7/8" NI-40x	1	2
B1	20-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B4	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B2	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B3	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B5	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
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16	H1	IUS2.56/11.88
4	H1	IUS2.56/11.88
6	H1	IUS2.56/11.88
3	H2	HGUS410
1	H3	HUS1.81/10



FROM PLAN DATED:
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MODEL: ROSEWOOD 2
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DESIGNER: CZ
REVISION:

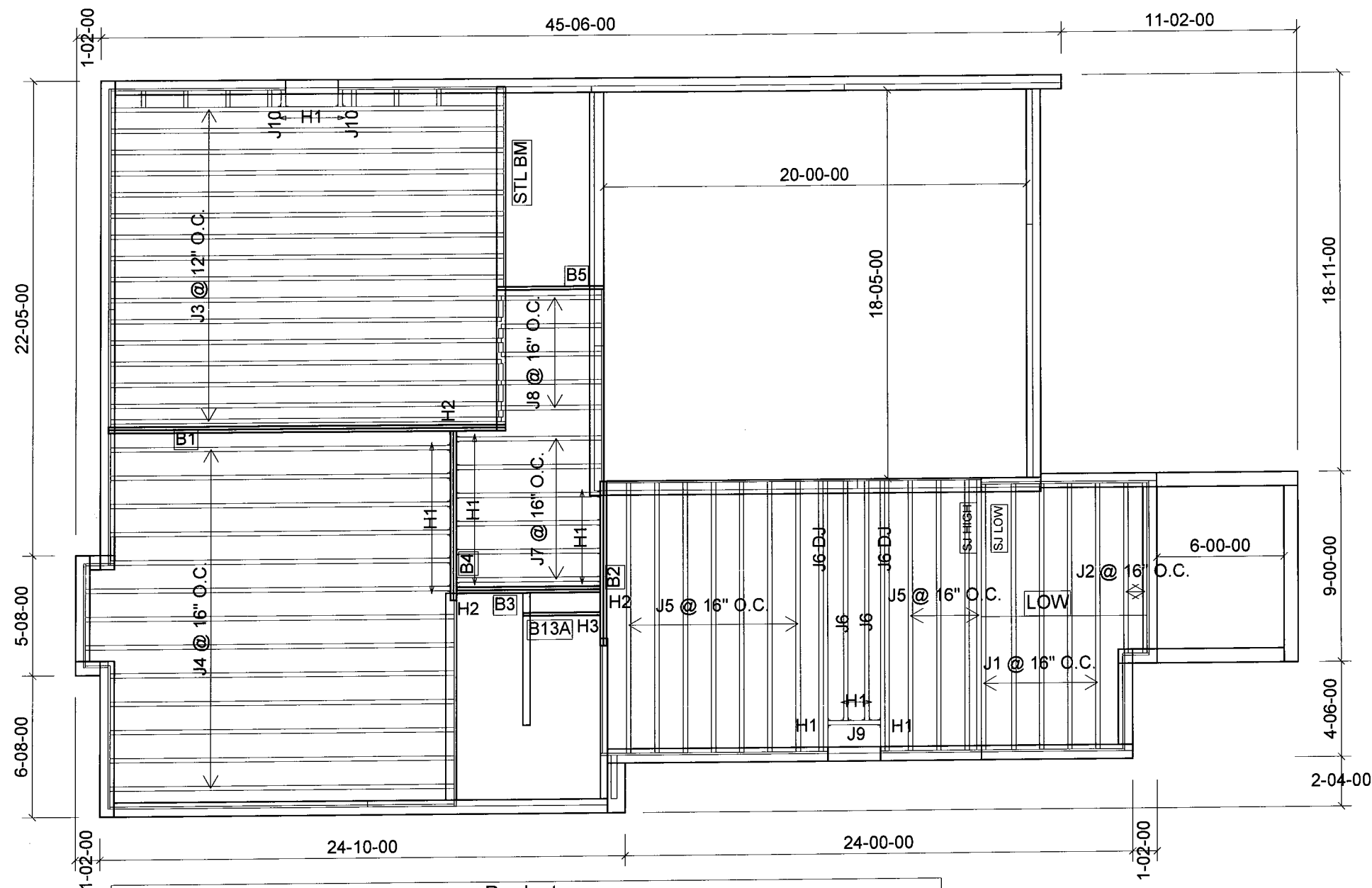
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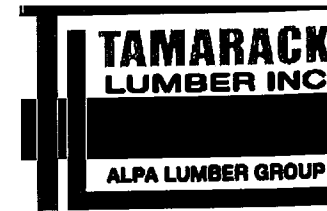
1st FLOOR

WALK UP



Products				
PlotID	Length	Product	Plies	Net Qty
J1	14-00-00	9 1/2" NI-40x	1	5
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J5	14-00-00	11 7/8" NI-40x	1	11
J6 DJ	14-00-00	11 7/8" NI-40x	2	4
J6	12-00-00	11 7/8" NI-40x	1	2
J7	8-00-00	11 7/8" NI-40x	1	6
J8	6-00-00	11 7/8" NI-40x	1	5
J9	4-00-00	11 7/8" NI-40x	1	1
J10	2-00-00	11 7/8" NI-40x	1	2
B1	20-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B4	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B2	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B3	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B5	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B13A	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1

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16	H1	IUS2.56/11.88
2	H1	IUS2.56/11.88
4	H1	IUS2.56/11.88
3	H2	HGUS410
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FROM PLAN DATED:

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SITE: RUSSEL GARDEN II

MODEL: ROSEWOOD 2

ELEVATION: 2,3

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SALESMAN: MD

DESIGNER: CZ

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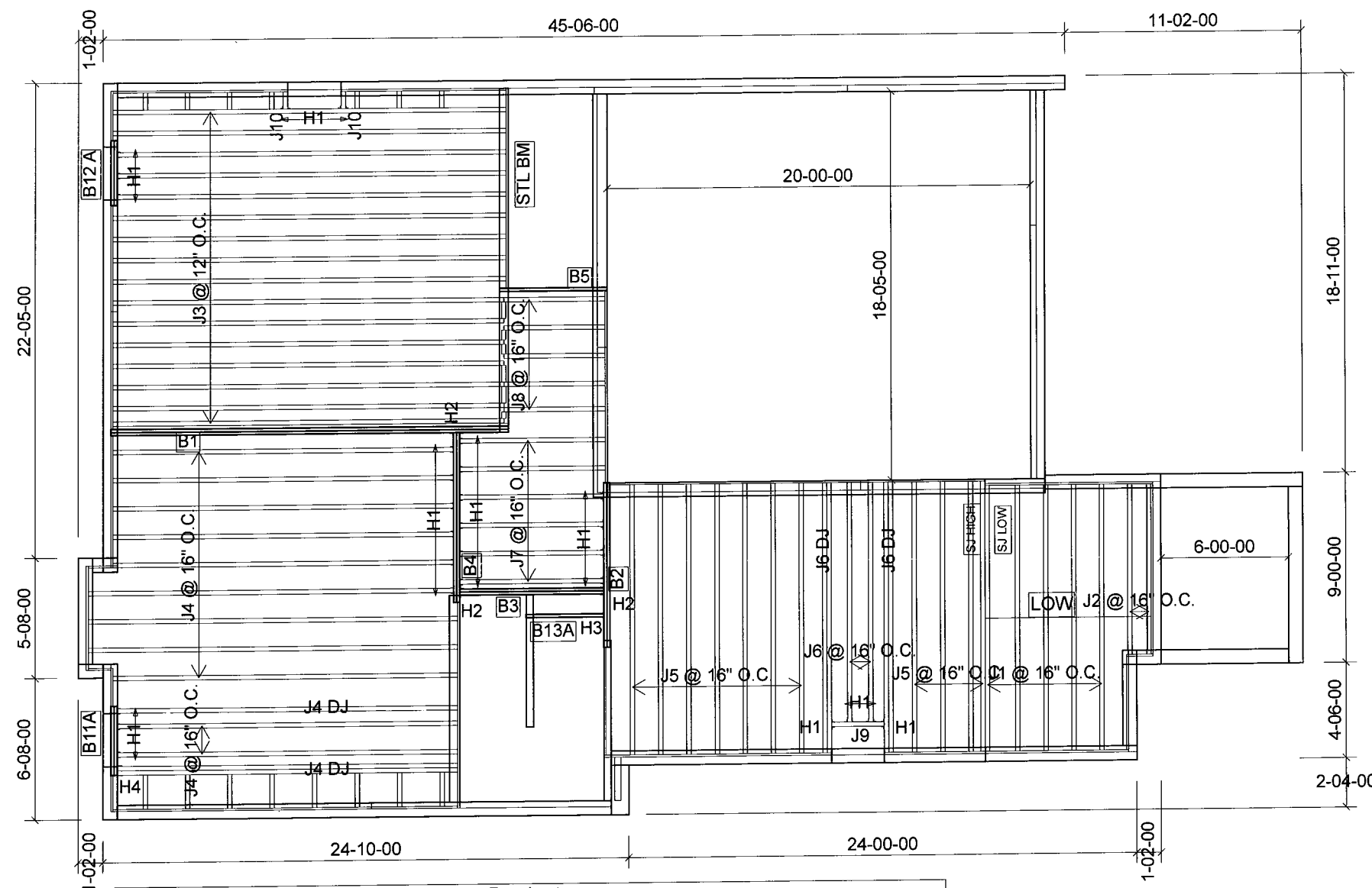
TILED AREAS: 20 lb/ft

SUBFLOOR: 3/4" GLUED AND NAILED

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1st FLOOR

DECK



Products				
PlotID	Length	Product	Plies	Net Qty
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J4	18-00-00	11 7/8" NI-40x	1	11
J4 DJ	18-00-00	11 7/8" NI-40x	1	1
J4 DJ	18-00-00	11 7/8" NI-40x	2	2
J5	14-00-00	11 7/8" NI-40x	1	11
J6 DJ	14-00-00	11 7/8" NI-40x	2	4
J6	12-00-00	11 7/8" NI-40x	1	2
J7	8-00-00	11 7/8" NI-40x	1	6
J8	6-00-00	11 7/8" NI-40x	1	5
J9	4-00-00	11 7/8" NI-40x	1	1
J10	2-00-00	11 7/8" NI-40x	1	2
B12 A	4-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B1	20-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B4	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B2	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B3	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B5	6-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B13A	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	1	1
B11A	4-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

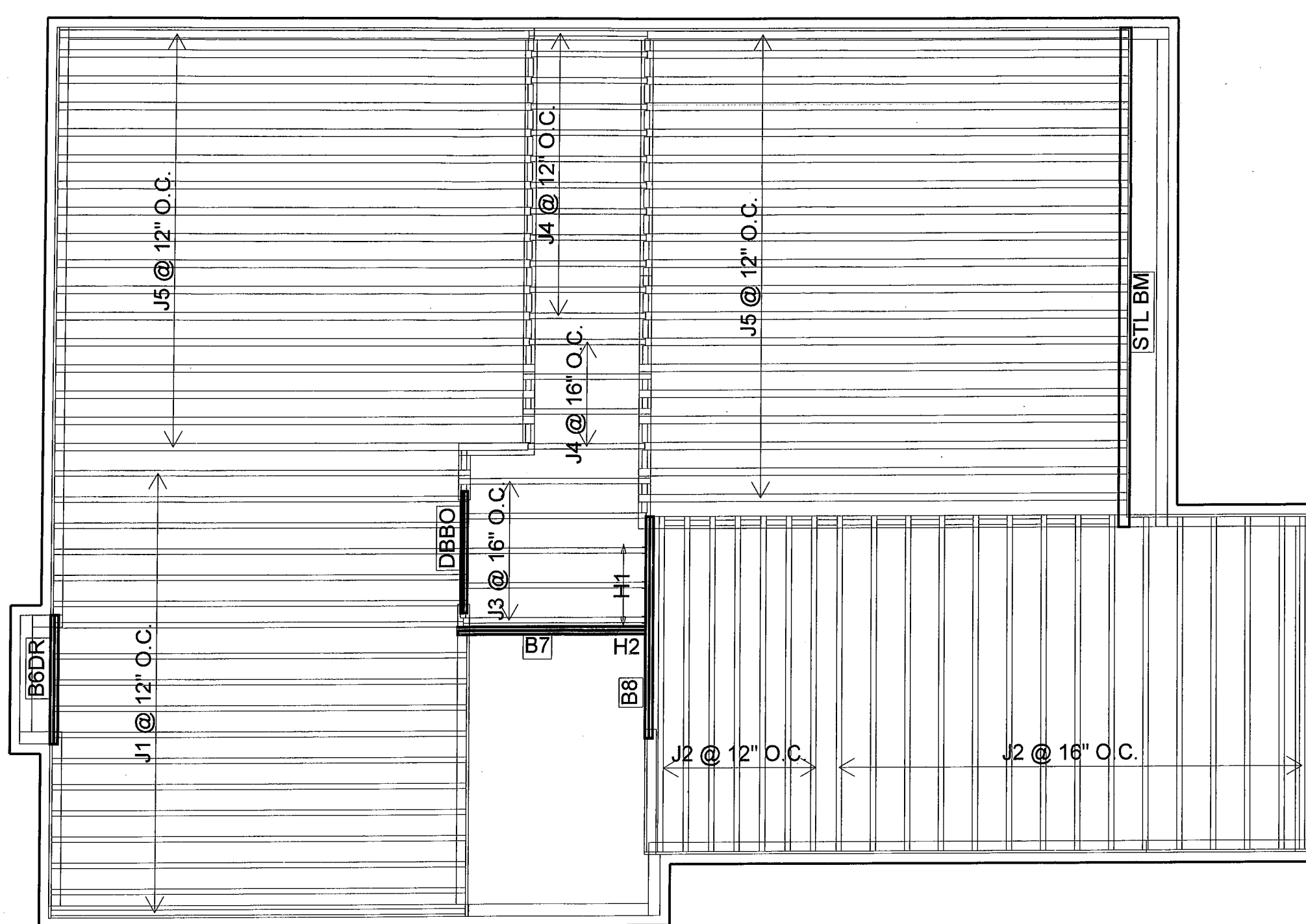
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2	H1	IUS2.56/11.88
4	H1	IUS2.56/11.88
3	H2	HGUS410
1	H3	HUS1.81/10
1	H4	HU310-2

FROM PLAN DATED:
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DESIGNER: CZ
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APPLICATION AS PER O.B.C. 9.30.6
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DEAD LOAD: 15.0 lb/ft
TILED AREAS: 20 lb/ft
SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 17/05/2017

2nd FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	18
J2	14-00-00	11 7/8" NI-40x	1	22
J3	8-00-00	11 7/8" NI-40x	1	5
J4	6-00-00	11 7/8" NI-40x	1	16
J5	20-00-00	11 7/8" NI-80	1	36
B6DR	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B8	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B7	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

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Qty	Manuf	Product
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MODEL: ROSEWOOD 2

ELEVATION: 2,3

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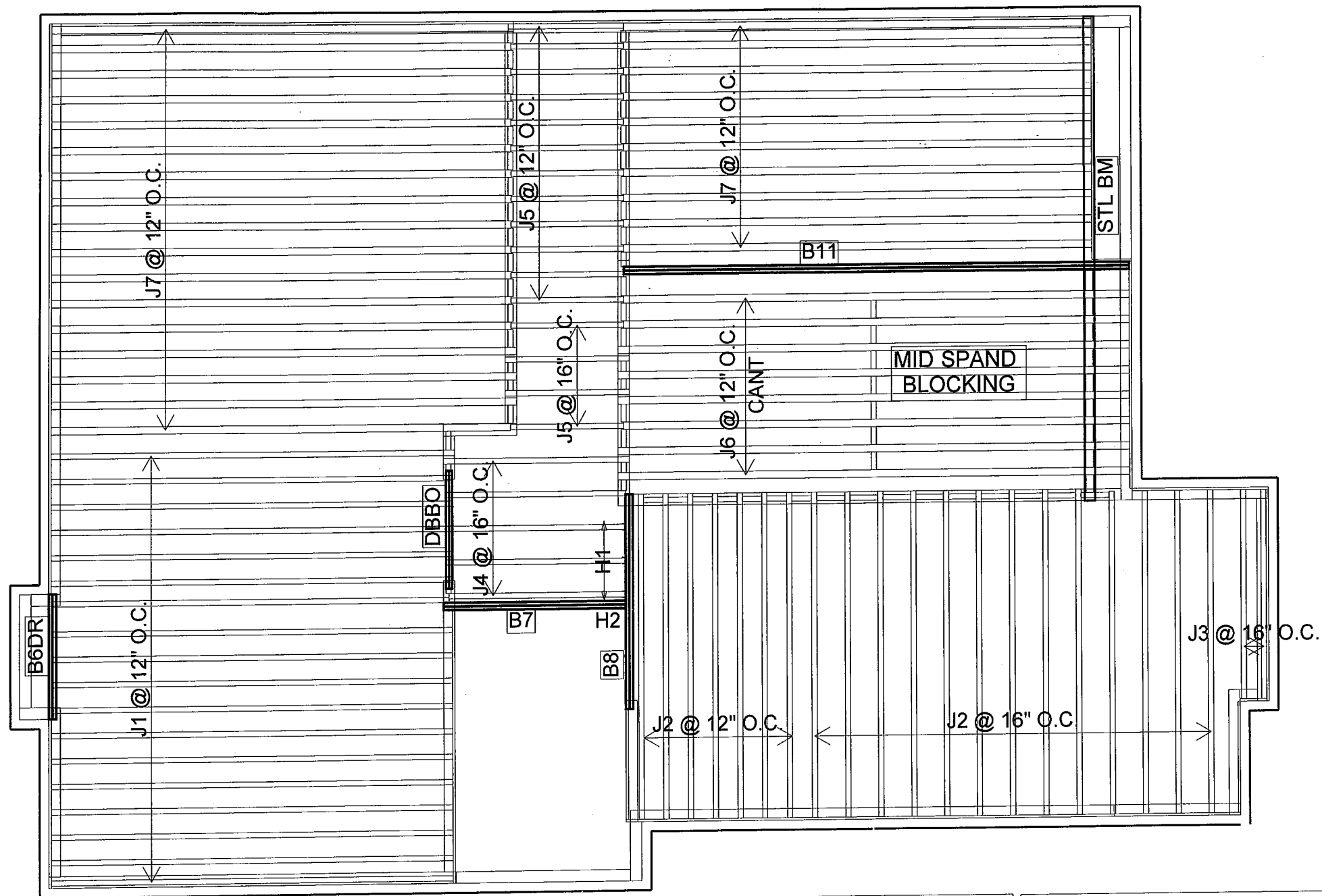
DEAD LOAD: 15.0 lb/ft

TILED AREAS: 20 lb/ft

SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 17/05/2017

2nd FLOOR



Products

PlotID	Length	Product	Plies	Net Qty
J1	18-00-00	11 7/8" NI-40x	1	18
J2	14-00-00	11 7/8" NI-40x	1	20
J3	10-00-00	11 7/8" NI-40x	1	2
J4	8-00-00	11 7/8" NI-40x	1	5
J5	6-00-00	11 7/8" NI-40x	1	16
J6	22-00-00	11 7/8" NI-80	1	8
J7	20-00-00	11 7/8" NI-80	1	27
B6DR	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B11	22-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B8	10-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2
B7	8-00-00	1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP	2	2

Connector Summary

Qty	Manuf	Product
3	H1	IUS2.56/11.88
1	H2	HGUS410

NORDIC STRUCTURES

COMPANY
TAMARACK LUMBER
3269 NORTH SERVICE ROAD
BURLINGTON, ON
by CZ
May 17, 2017 14:25

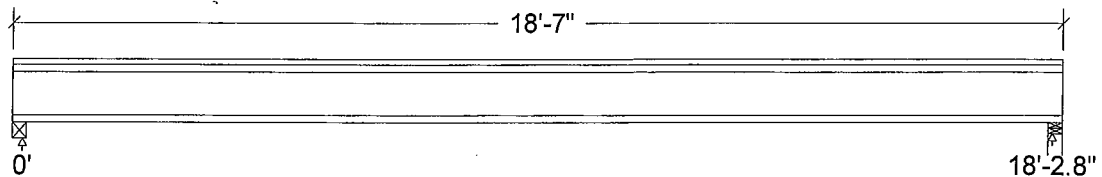
PROJECT
GREENPARK
ROSEWOOD 2
WATERDOWN
J1-1ST FL.-www

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

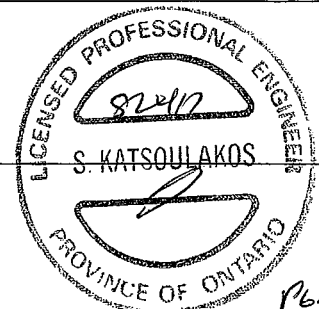
Maximum Reactions (lbs), Bearing Resistances (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	182		182
Live	365		365
Factored:			
Total	775		775
Bearing:			
Resistance			
Joist	2189		2189
Support	-		5304
Des ratio			
Joist	0.35		0.35
Support	-		0.15
Load case	#2		#2
Length	3		3
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

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: 1 - Steel Beam, W; 2 - Lumber Wall, No.1/No.2;
Total length: 18'-7.0"; 3/4" nailed and glued OSB sheathing
This section PASSES the design code check.



DWG NO. TAM 42734-17
STRUCTURAL
COMPONENT ONLY

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 775	Vr = 2336	lbs	Vf/Vr = 0.33
Moment (+)	Mf = 3531	Mr = 6255	lbs-ft	Mf/Mr = 0.56
Perm. Defl'n	0.13 = <L/999	0.61 = L/360	in	0.21
Live Defl'n	0.25 = L/875	0.46 = L/480	in	0.55
Total Defl'n	0.38 = L/583	0.91 = L/240	in	0.41
Bare Defl'n	0.29 = L/744	0.61 = L/360	in	0.48
Vibration	Lmax = 18'-3	Lv = 19'-6	ft	
Defl'n	= 0.029	= 0.034	in	0.84

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

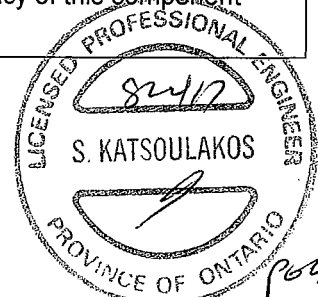
Load Patterns: s=S/2 L=L+Ls _=no pattern load in this span
 All Load Combinations (LCs) are listed in the Analysis output

CALCULATIONS:

Deflection: E_Ieff = 443e06 lb-in² K= 6.18e06 lbs
 "Live" deflection = Deflection from all non-dead loads (live, wind, snow...)

Design Notes:

- WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC Part 4) and the CSA O86-09 Engineering Design in Wood standard, which includes Update No.1. **CONFORMS TO OBC 2012**
- Please verify that the default deflection limits are appropriate for your application.
- Refer to technical documentation for installation guidelines and construction details.
- Nordic I-joists are listed in CCMC evaluation report 13032-R.
- Joists shall be laterally supported at supports and continuously along the compression edge.
- 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 4234-17
 STRUCTURAL
 COMPONENT ONLY

NORDIC STRUCTURES

COMPANY
TAMARACK LUMBER
3269 NORTH SERVICE ROAD
BURLINGTON, ON
by CZ
May 17, 2017 14:25

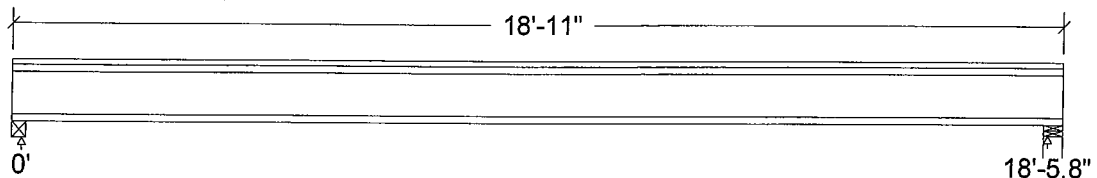
PROJECT
GREENPARK
ROSEWOOD 2
WATERDOWN
J5-2NDFL-.wwb

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

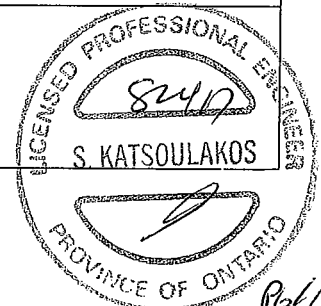
Maximum Reactions (lbs), Bearing Resistances (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	185		185
Live	370		370
Factored:			
Total	785		785
Bearing:			
Resistance			
Joist	2243		2334
Support	-		9901
Des ratio			
Joist	0.35		0.34
Support	-		0.08
Load case	#2		#2
Length	3		4
Min req'd	1-3/4		1-3/4
Stiffener	No		No
Kd	1.00		1.00
KB support	-		1.00
fcg sup	-		769
Kzcp sup	-		1.15

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

Nordic Joist 11-7/8" NI-80 Floor joist @ 12" o.c.
Supports: 1 - Steel Beam, W; 2 - Lumber Wall, No.1/No.2;
Total length: 18'-11.0"; 5/8" nailed and glued OSB sheathing
This section PASSES the design code check.



DWG NO. TAM 42235-17
STRUCTURAL
COMPONENT ONLY

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 785	Vr = 2336	lbs	Vf/Vr = 0.34
Moment (+)	Mf = 3629	Mr = 11609	lbs-ft	Mf/Mr = 0.31
Perm. Defl'n	0.10 = <L/999	0.62 = L/360	in	0.16
Live Defl'n	0.20 = <L/999	0.46 = L/480	in	0.43
Total Defl'n	0.30 = L/747	0.92 = L/240	in	0.32
Bare Defl'n	0.22 = <L/999	0.62 = L/360	in	0.35
Vibration	Lmax = 18'-6	Lv = 19'-11	ft	
Defl'n	= 0.028	= 0.034	in	0.83

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	2336	1.00	1.00	-	-	-	-	-	#2
Mr+	11609	1.00	1.00	-	1.000	-	-	-	#2
EI	547.1 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

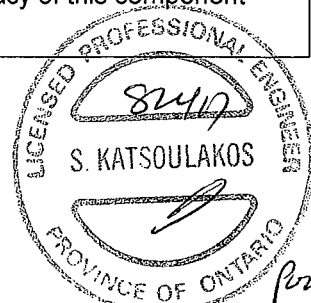
All Load Combinations (LCs) are listed in the Analysis output

CALCULATIONS:

Deflection: E_{leff} = 613e06 lb-in² 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 O86-09 Engineering Design in Wood standard, which includes Update No.1. **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 4235-17
 STRUCTURAL
 COMPONENT ONLY

NORDIC STRUCTURES

COMPANY
TAMARACK LUMBER
3269 NORTH SERVICE ROAD
BURLINGTON, ON
by CZ
May 17, 2017 14:12

PROJECT
GREENPARK
ROSEWOOD 2
WATERDOWN
J6-2NDFL-.www

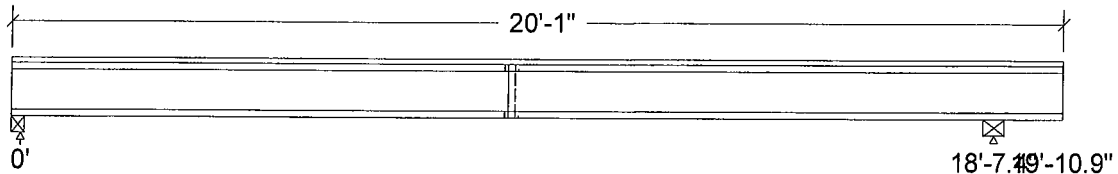
Design Check Calculation Sheet Nordic Sizer – Canada 6.4

Loads:

Load	Type	Distribution	Pat- tern	Location [ft] Start End	Magnitude Start End	Unit
Load1	Dead	Full Area	No		20.00	psf
Load2	Live	Full Area	Yes		40.00	psf
Load3	Dead	Point	No	20.08	130	lbs
Load4	Live	Point	Yes	20.08	33	lbs
Load5	Snow	Point	Yes	20.08	78	lbs

Load magnitude does not include Normal Importance factor from O86 Table 4.2.3.2, which is applied during analysis.

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



Unfactored:				
Dead	176		352	
Live	372		461	
Snow	-5		83	
Factored:				
Total	779		1173	
Bearing:				
Resistance				
Joist	2243		5531	
Support	-		-	
Des ratio				
Joist	0.35		0.21	
Support	-		-	
Load case	#10		#4	
Length	3		5	
Min req'd	1-3/4		3-1/2	
Stiffener	No		No	
Kd	1.00		1.00	
KB support	-		-	
fcp sup	-		-	
Kzcp sup	-		-	

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

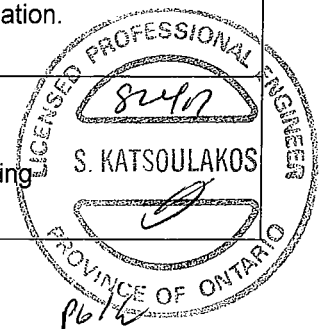
Nordic Joist 11-7/8" NI-80 Floor joist @ 12" o.c.

Supports: All - Steel Beam, W

Total length: 20'-1.0"; 5/8" nailed and glued OSB sheathing with 1 row of blocking

This section PASSES the design code check.

DWG NO. TAM 42736-17
STRUCTURAL
COMPONENT ONLY



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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 812	Vr = 2336	lbs	Vf/Vr = 0.35
Moment (+)	Mf = 3567	Mr = 11609	lbs-ft	Mf/Mr = 0.31
Moment (-)	Mf = 420	Mr = 10889	lbs-ft	Mf/Mr = 0.04
Deflection:				
Interior Perm	0.09 = <L/999	0.62 = L/360	in	0.14
Live	0.20 = <L/999	0.47 = L/480	in	0.44
Total	0.29 = L/765	0.93 = L/240	in	0.31
Cantil. Perm	-0.02 = <L/999	0.09 = L/180	in	0.18
Live	-0.04 = L/396	0.06 = L/240	in	0.61
Total	-0.05 = L/285	0.13 = L/120	in	0.42
Bare Defl'n	-0.04 = L/353	0.09 = L/180	in	0.51
Vibration	Lmax = 18'-7	Lv = 21'-6	ft	
Defl'n	= 0.024	= 0.034	in	0.72

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	2336	1.00	1.00	-	-	-	-	-	#4
Mr+	11609	1.00	1.00	-	1.000	-	-	-	#10
Mr-	11609	0.94	1.00	-	1.000	-	-	-	#5
EI	547.1 million	-	-	-	-	-	-	-	#10

CRITICAL LOAD COMBINATIONS:

Shear : LC #4 = 1.25D + 1.5L + (1.0)0.5S
 Moment (+) : LC #10 = 1.25D + 1.5L (pattern: L)
 Moment (-) : LC #5 = 1.25D + (1.0)1.5S + 0.5L
 Deflection: LC #1 = 1.0D (permanent)
 LC #10 = 1.0D + 1.0L (pattern: L) (live)
 LC #10 = 1.0D + 1.0L (pattern: L) (total)
 LC #10 = 1.0D + 1.0L (pattern: L) (bare joist)
 Bearing : Support 1 - LC #4 = 1.25D + 1.5L + (1.0)0.5S
 Support 2 - LC #0 = 1.4D

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

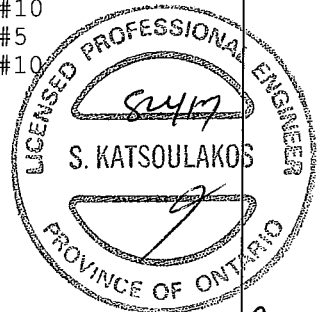
Load Patterns: s=S/2 L=L+Ls =no pattern load in this span
 All Load Combinations (LCs) are listed in the Analysis output

CALCULATIONS:

Deflection: E_Ieff = 613e06 lb-in² K= 6.18e06 lbs
 "Live" deflection = Deflection from all non-dead loads (live, wind, snow...)

Design Notes:

- WoodWorks analysis and design are in accordance with the 2010 National Building Code of Canada (NBC Part 4) and the CSA O86-09 Engineering Design in Wood standard, which includes Update No.1.
- Please verify that the default deflection limits are appropriate for your application.
- Refer to technical documentation for installation guidelines and construction details.
- Nordic I-joists are listed in CCMC evaluation report 13032-R.
- Joists shall be laterally supported at supports and continuously along the compression edge.
- 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. TAM42736-17
 STRUCTURAL
 COMPONENT ONLY

CONFORMS TO NBC 2012



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\...\B1(i3220)

BC CALC® Design Report



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

May 17, 2017 14:19:42

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports:

CCMC 12472-R

File Name: ROSEWOOD2-EL2,3.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B1(i3220)

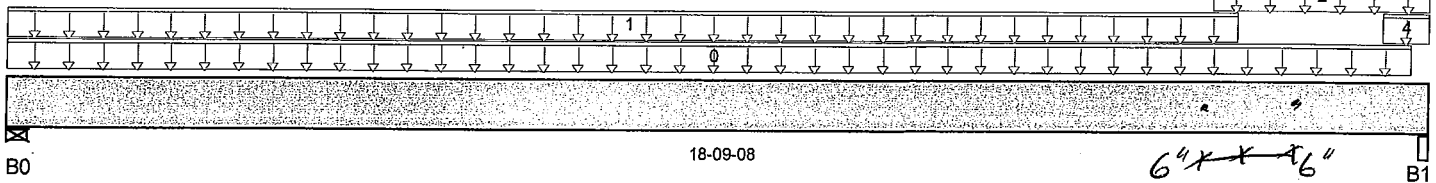
Specifier:

Designer: CZ

Company:

Misc:

5



Total Horizontal Product Length = 18-09-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-1/2"	794 / 0	593 / 0	0 / 0	
B1, 5"	3,795 / 0	2,407 / 0	0 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC 1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	18-06-13	8	4			n/a
1	FC 1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	16-03-12	19	9			n/a
2	7(i567)	Unf. Lin. (lb/ft)	L	15-11-08	18-09-08		81			n/a
3	7(i567)	Unf. Lin. (lb/ft)	L	15-11-08	16-09-00	559	280			n/a
4	7(i567)	Unf. Lin. (lb/ft)	L	18-02-00	18-09-08	163	81			n/a
5	E5(i441)	Conc. Pt. (lbs)	L	00-02-12	00-02-12	96	94			n/a
6	B4(i3227)	Conc. Pt. (lbs)	L	16-03-12	16-03-12	3,413	1,915			n/a

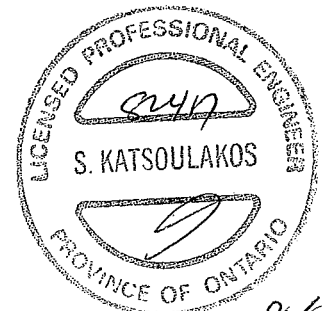
Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	17,247 ft-lbs	38,727 ft-lbs	44.5%	21	16-03-12
End Shear	8,254 lbs	14,464 lbs	57.1%	1	17-04-10
Total Load Defl.	L/360 (0.606")	0.91"	66.6%	56	10-05-07
Live Load Defl.	L/595 (0.367")	0.607"	60.5%	83	10-05-07
Max Defl.	0.606"	n/a	n/a	56	10-05-07
Span / Depth	18.4	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	3-1/2" x 3-1/2"	1,932 lbs	29.5%	12.9%	Unspecified
B1 Beam	5" x 3-1/2"	8,701 lbs	93.1%	40.8%	Unspecified

Notes



DWG NO. TAM 4231-17
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\...\B1(i3220)

BC CALC® Design Report



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

May 17, 2017 14:19:42

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD2-EL2,3.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B1(i3220)

Specifier:

Designer: CZ

Company:

Misc:

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.

CONFORMS TO OBC 2012

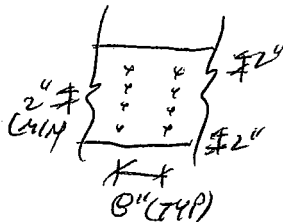
Unbalanced snow loads determined from building geometry were used in selected product's verification.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

Connection Diagram

Concentrated side-load exceeds allowable magnitude for connection design. Please consult a technical representative or Professional Engineer for the design of the connection.



PROVIDE 4 ROWS OF 3/4" ARDOX SPIRAL NAILS @ 8" O/C FOR MULTI-PLY NAILING, MAINTAIN A MIN. 2" LUMBER EDGE/END DISTANCE. DO NOT USE AIR NAILS

+
BOLTS

OK WITH
NAILING
+
BOLTS

Disclosure

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

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



DWGN. TAM 42737-17
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\...\B2(i3231)

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

May 17, 2017 14:19:41

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD2-EL2,3.mmdl

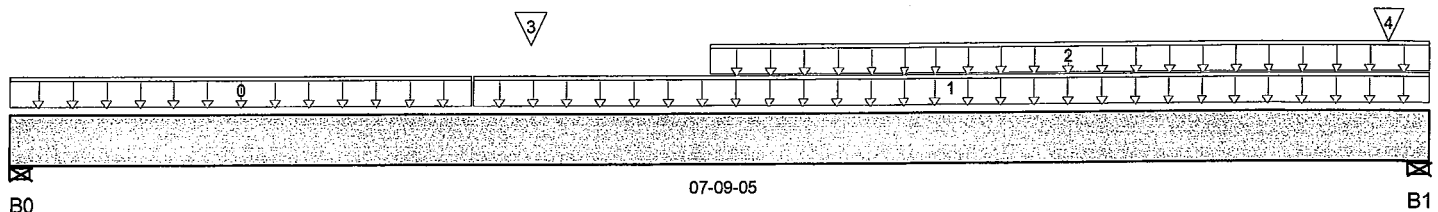
Description: Designs\Flush Beams\Basement\Flush Beams\B2(i3231)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 07-09-05

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 3-15/16"	503 / 0	325 / 0		
B1, 5-1/2"	979 / 0	622 / 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	02-06-05	27	13			n/a
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	02-06-05	07-09-05	24	12			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	03-09-13	07-09-05	161	84			n/a
3	-	Conc. Pt. (lbs)	L	02-10-01	02-10-01	437	260			n/a
4	2(i523)	Conc. Pt. (lbs)	L	07-06-09	07-06-09	213	162			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,689 ft-lbs	38,727 ft-lbs	6.9%	1	03-01-13
End Shear	1,134 lbs	14,464 lbs	7.8%	1	06-03-15
Total Load Defl.	L/999 (0.017")	n/a	n/a	4	03-09-13
Live Load Defl.	L/999 (0.011")	n/a	n/a	5	03-09-13
Max Defl.	0.017"	n/a	n/a	4	03-09-13
Span / Depth	7.2	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	3-15/16" x 3-1/2"	1,161 lbs	6%	6.9%	Unspecified
B1 Wall/Plate	5-1/2" x 3-1/2"	2,246 lbs	21.8%	9.6%	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.

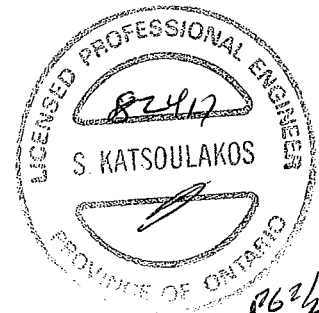
Resistance Factor phi has been applied to all presented results per CSA O86.

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. YAM4223B 17
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\...\B2(i3231)

BC CALC® Design Report



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

May 17, 2017 14:19:41

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD2-EL2.3.mmdl

Description: Designs\Flush Beams\Basment\Flush Beams\B2(i323

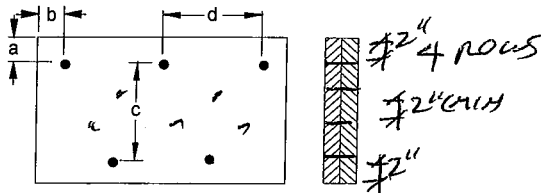
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



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

Calculated Side Load = 281.9 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.

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



DWG NO. TAM 4238-17
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basementl...B3(i1946)

BC CALC® Design Report



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

May 17, 2017 14:19:42

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD2-EL2,3.mmdl

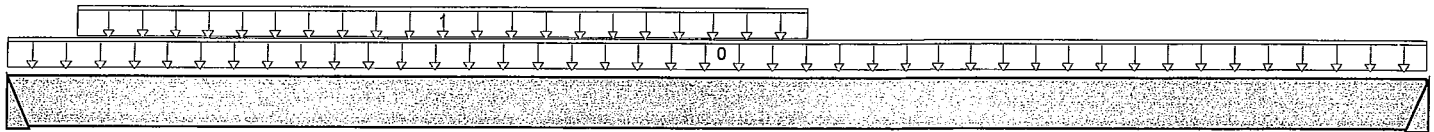
Description: Designs\Flush Beams\Basement\Flush Beams\B3(i1946)

Specifier:

Designer: CZ

Company:

Misc:



B0

06-09-15

B1

Total Horizontal Product Length = 06-09-15

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0	573 / 0	328 / 0		
B1	269 / 0	176 / 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	06-09-15	13	6			n/a
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-04-00	03-10-00	216	108			n/a

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,862 ft-lbs	38,727 ft-lbs	4.8%	1	02-09-15
End Shear	1,221 lbs	14,464 lbs	8.4%	1	01-01-14
Total Load Defl.	L/999 (0.01")	n/a	n/a	4	03-02-15
Live Load Defl.	L/999 (0.006")	n/a	n/a	5	03-02-15
Max Defl.	0.01"	n/a	n/a	4	03-02-15
Span / Depth	6.7	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Hanger	2" x 3-1/2"	1,269 lbs	n/a	14.9%	HGUS410
B1 Hanger	2" x 3-1/2"	623 lbs	n/a	7.3%	HGUS410

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012



DWG NO. YAM 423917
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\...\B3(i1946)

BC CALC® Design Report



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

May 17, 2017 14:19:42

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD2-EL2.3.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B3(i1946)

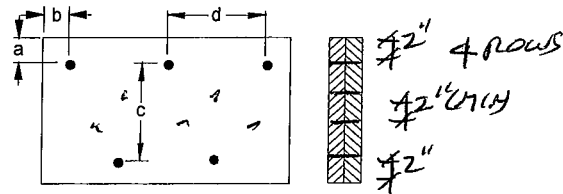
Specifier:

Designer: CZ

Company:

Msc:

Connection Diagram



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

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.

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



DWG NO. TAM 42739-17
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basementl...\B4(i3227)

BC CALC® Design Report



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

May 17, 2017 14:19:42

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports:

CCMC 12472-R

File Name: ROSEWOOD2-EL2,3.mmdl

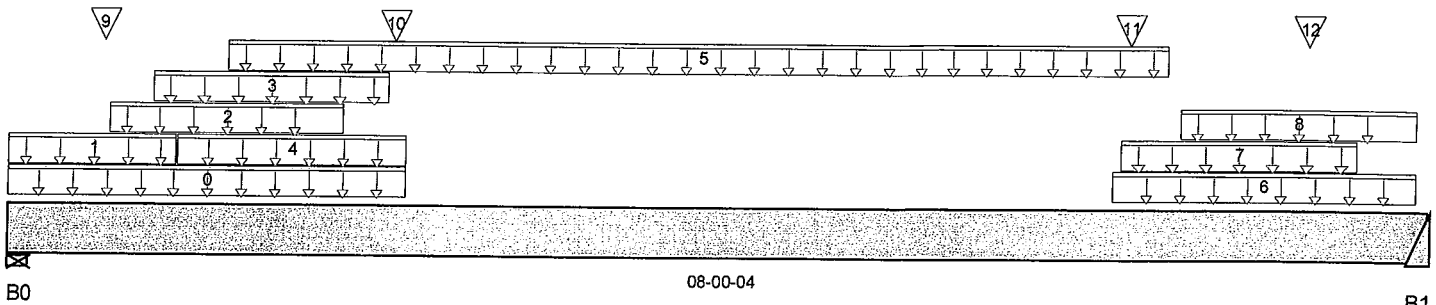
Description: Designs\Flush Beams\Basement\Flush Beams\B4(i3227)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 08-00-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	4,868 / 0	2,779 / 0	0 / 2	
B1	3,501 / 0	1,964 / 0	0 / 0	

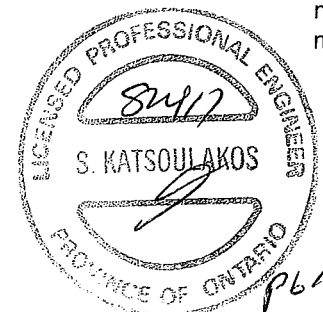
Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	4(i541)	Unf. Lin. (lb/ft)	L	00-00-00	02-03-00		81			n/a
1	4(i541)	Unf. Lin. (lb/ft)	L	00-00-00	00-11-08	265	132			n/a
2	4(i541)	Unf. Lin. (lb/ft)	L	00-06-12	01-10-12	498	284			n/a
3	4(i541)	Unf. Lin. (lb/ft)	L	00-09-12	02-01-12	237	118			n/a
4	4(i541)	Unf. Lin. (lb/ft)	L	00-11-08	02-03-00	105	53			n/a
5	Smoothed Load	Unf. Lin. (lb/ft)	L	01-02-12	06-06-12	465	232			n/a
6	9(i568)	Unf. Lin. (lb/ft)	L	06-03-00	07-11-08		81			n/a
7	9(i568)	Unf. Lin. (lb/ft)	L	06-03-08	07-07-08	142	71			n/a
8	9(i568)	Unf. Lin. (lb/ft)	L	06-07-08	07-11-08	237	118			n/a
9	-	Conc. Pt. (lbs)	L	00-06-05	00-06-05	1,353	744			n/a
10	-	Conc. Pt. (lbs)	L	02-02-00	02-02-00	1,009	519			n/a
11	9(i568)	Conc. Pt. (lbs)	L	06-04-00	06-04-00	1,107	568			n/a
12	-	Conc. Pt. (lbs)	L	07-04-02	07-04-02	524	261			n/a

-2

Controls Summary	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	13,423 ft-lbs	38,727 ft-lbs	34.7%	11	03-07-08
End Shear	8,149 lbs	14,464 lbs	56.3%	1	01-03-14
Total Load Defl.	L/999 (0.108")	n/a	n/a	34	04-01-02
Live Load Defl.	L/999 (0.07")	n/a	n/a	50	04-01-02
Max Defl.	0.108"	n/a	n/a	34	04-01-02
Span / Depth	7.7	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
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DWG NO. YAM 42740-17
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\...\B4(i3227)

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

May 17, 2017 14:19:42

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD2-EL2,3.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B4(i3227

Specifier:

Designer: CZ

Company:

Misc:

B0	Wall/Plate	4" x 3-1/2"	10,775 lbs	54.4%	63.1%	Unspecified
B1	Hanger	2" x 3-1/2"	7,707 lbs	n/a	90.2%	HGUS410

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.

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

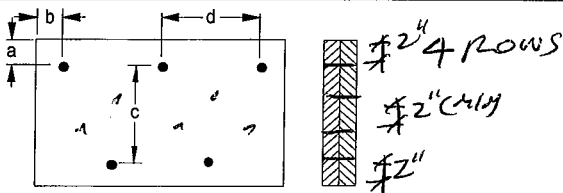
CONFORMS TO OBC 2012

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

Connection Diagram



a minimum = 2" c = 7-7/8"
b minimum = 3" d = 4"

Calculated Side Load = 677.5 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

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DWG NO. TAM 4274017
STRUCTURAL
COMPONENT ONLY



Boise Cascade

Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\Flush Beams\B5(i3205)

BC CALC® Design Report



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

May 17, 2017 14:19:42

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports:

CCMC 12472-R

File Name: ROSEWOOD2-EL2,3.mmdl

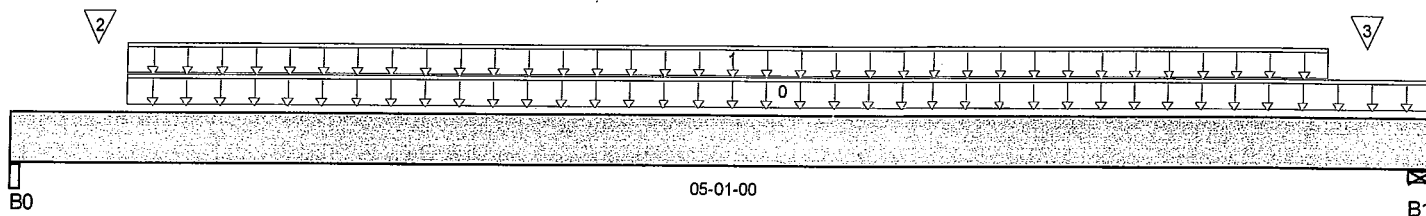
Description: Designs\Flush Beams\Basement\Flush Beams\B5(i3205)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 05-01-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5"	666 / 0	372 / 0		
B1, 5-1/2"	607 / 0	342 / 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	00-05-00	05-01-00	11	5			n/a
1	User Load	Unf. Lin. (lb/ft)	L	00-05-00	04-08-11	240	120			n/a
2	6(i549)	Conc. Pt. (lbs)	L	00-03-12	00-03-12	134	91			n/a
3	2(i523)	Conc. Pt. (lbs)	L	04-10-04	04-10-04	51	49			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,268 ft-lbs	19,364 ft-lbs	6.5%	1	02-06-04
End Shear	602 lbs	7,232 lbs	8.3%	1	01-04-14
Total Load Defl.	L/999 (0.006")	n/a	n/a	4	02-06-04
Live Load Defl.	L/999 (0.004")	n/a	n/a	5	02-06-04
Max Defl.	0.006"	n/a	n/a	4	02-06-04
Span / Depth	4.4	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 Beam	5" x 1-3/4"	1,464 lbs	31.3%	13.7%	Unspecified
B1 Wall/Plate	5-1/2" x 1-3/4"	1,339 lbs	26%	11.4%	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 4241-17

STRUCTURAL
COMPONENT ONLY

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Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B6DR(i2998)

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

May 17, 2017 14:19:41

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD2-EL2,3.mmdl

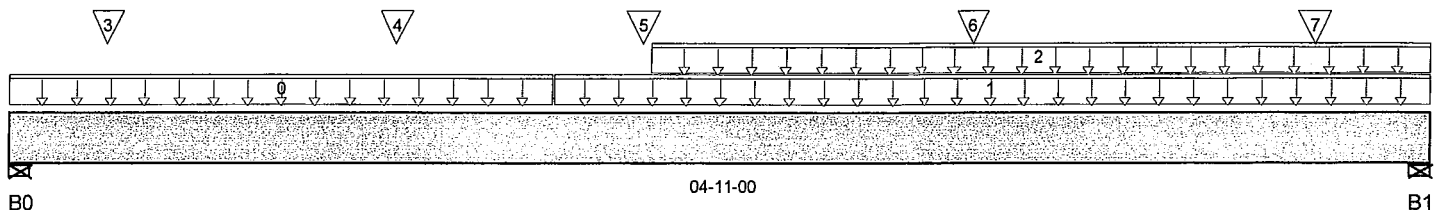
Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B6D

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 04-11-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	918 / 0	685 / 0	159 / 0	
B1, 5-1/2"	770 / 0	647 / 0	227 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	R1(i3035)	Unf. Lin. (lb/ft)	L	00-00-00	01-10-08		61			n/a
1	R1(i3035)	Unf. Lin. (lb/ft)	L	01-10-08	04-11-00		81			n/a
2	R1(i3035)	Unf. Lin. (lb/ft)	L	02-02-08	04-11-00	33	30	78		n/a
3	J1(i3055)	Conc. Pt. (lbs)	L	00-04-00	00-04-00	325	162			n/a
4	J1(i3021)	Conc. Pt. (lbs)	L	01-04-00	01-04-00	325	162			n/a
5	-	Conc. Pt. (lbs)	L	02-02-03	02-02-03	399	245	174		n/a
6	J1(i2967)	Conc. Pt. (lbs)	L	03-04-00	03-04-00	354	177			n/a
7	J1(i2992)	Conc. Pt. (lbs)	L	04-06-04	04-06-04	195	98			n/a

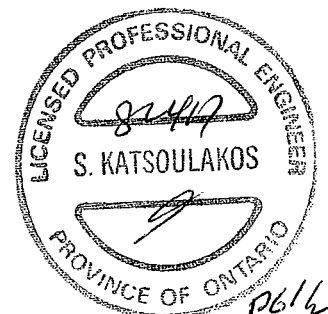
Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,105 ft-lbs	25,408 ft-lbs	8.3%	1	02-04-00
End Shear	1,513 lbs	11,571 lbs	13.1%	1	01-03-00
Total Load Defl.	L/999 (0.009")	n/a	n/a	35	02-05-08
Live Load Defl.	L/999 (0.005")	n/a	n/a	51	02-05-08
Max Defl.	0.009"	n/a	n/a	35	02-05-08
Span / Depth	5.2	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0	5-1/2" x 3-1/2"	2,313 lbs	14.8%	9.8%	Unspecified
B1	5-1/2" x 3-1/2"	2,077 lbs	13.3%	8.8%	Unspecified

Notes



DWG NO. TAM 42242-17
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B6DR(i2998)

BC CALC® Design Report



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

May 17, 2017 14:19:41

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports:

CCMC 12472-R

File Name: ROSEWOOD2-EL2,3.mmdl

Description: Designs\Dropped Beams\1st Floor\Dropped Beams\B6

Specifier:

Designer: CZ

Company:

Misc:

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.

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

Design based on Dry Service Condition.

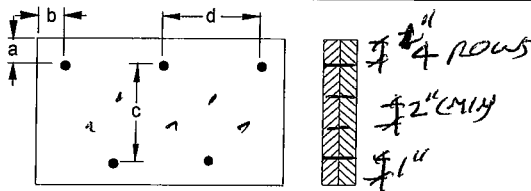
Importance Factor : Normal Part code : Part 9

Disclosure

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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Connection Diagram

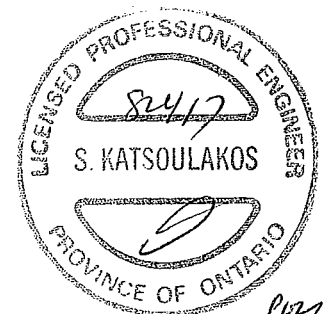


a minimum = 1" c = 1-1/2"
b minimum = 3" d = 6"

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 Nails

3 1/2" ARDOX SPIRAL



DWG NO. TAM 42742-17
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor...B7(i3054)

BC CALC® Design Report



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

May 17, 2017 14:19:41

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports:

CCMC 12472-R

File Name: ROSEWOOD2-EL2,3.mmdl

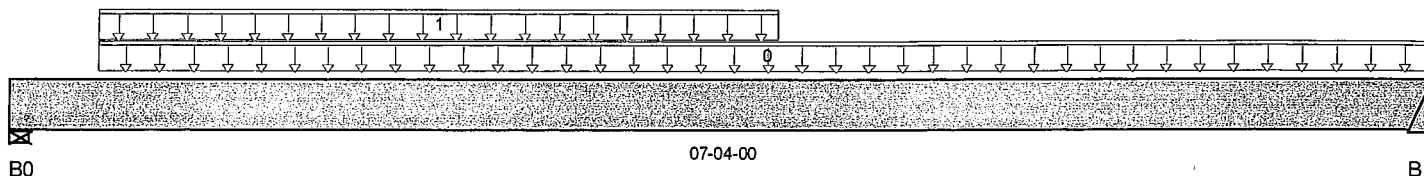
Description: Designs\Flush Beams\1st Floor\Flush Beams\B7(i3054)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 07-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	657 / 0	374 / 0		
B1	261 / 0	173 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-05-08	07-04-00	11	5			n/a
1	User Load	Unf. Lin. (lb/ft)	L	00-05-08	03-11-08	240	120			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,980 ft-lbs	38,727 ft-lbs	5.1%	1	03-01-02
End Shear	897 lbs	14,464 lbs	6.2%	1	01-05-06
Total Load Defl.	L/999 (0.011")	n/a	n/a	4	03-06-13
Live Load Defl.	L/999 (0.007")	n/a	n/a	5	03-06-13
Max Defl.	0.011"	n/a	n/a	4	03-06-13
Span / Depth	6.9	n/a	n/a		00-00-00

Bearing Supports

B0	Wall/Plate	5-1/2" x 3-1/2"	1,453 lbs	14.1%	6.2%	Unspecified
B1	Hanger	2" x 3-1/2"	608 lbs	n/a	7.1%	HGUS410

Notes

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

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

Calculations assume member is fully braced.

Hanger Manufacturer: Unassigned

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

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

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO DBC 2012



DW000.TAM 42743-17
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor...\B7(i3054)

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

May 17, 2017 14:19:41

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD2-EL2,3.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B7(i3054

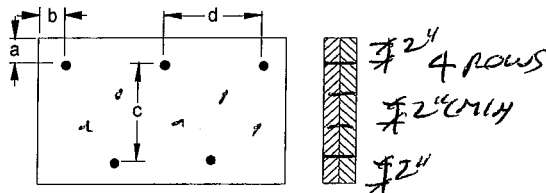
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



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

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 4243-1
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor... \B8(i2907)

BC CALC® Design Report



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

May 17, 2017 14:19:41

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD2-EL2,3.mmdl

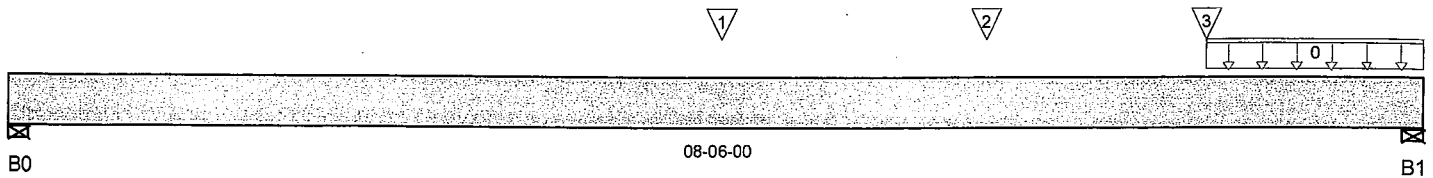
Description: Designs\Flush Beams\1st Floor\Flush Beams\B8(i2907)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 08-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	269 / 0	207 / 0		
B1, 5-1/2"	526 / 0	337 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC3 Floor Material	Unf. Lin. (lb/ft)	L	07-02-08	08-06-00	13	6			n/a
1	-	Conc. Pt. (lbs)	L	04-03-04	04-03-04	388	236			n/a
2	J4(i3042)	Conc. Pt. (lbs)	L	05-10-08	05-10-08	197	99			n/a
3	J4(i2826)	Conc. Pt. (lbs)	L	07-02-08	07-02-08	191	96			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,438 ft-lbs	38,727 ft-lbs	6.3%	1	04-04-02
End Shear	1,112 lbs	14,464 lbs	7.7%	1	07-00-10
Total Load Defl.	L/999 (0.018")	n/a	n/a	4	04-04-02
Live Load Defl.	L/999 (0.011")	n/a	n/a	5	04-04-02
Max Defl.	0.018"	n/a	n/a	4	04-04-02
Span / Depth	7.9	n/a	n/a		00-00-00

Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0	Wall/Plate 4" x 3-1/2"	662 lbs	8.9%	3.9%	Unspecified
B1	Wall/Plate 5-1/2" x 3-1/2"	1,211 lbs	11.8%	5.2%	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 4244-17
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B8(i2907)

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

May 17, 2017 14:19:41

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD2-EL2,3.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B8(i2907

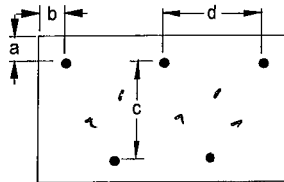
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



Handwritten notes: 2" 4 rows, 2" 4 rows, 2"

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

Calculated Side Load = 200.3 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

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 42244-17
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B11(i3208)

BC CALC® Design Report



Dry | 2 spans | No cantilevers | 0/12 slope (deg)

May 17, 2017 14:19:41

Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports:

CCMC 12472-R

File Name: ROSEWOOD2-EL2,3.mmdl

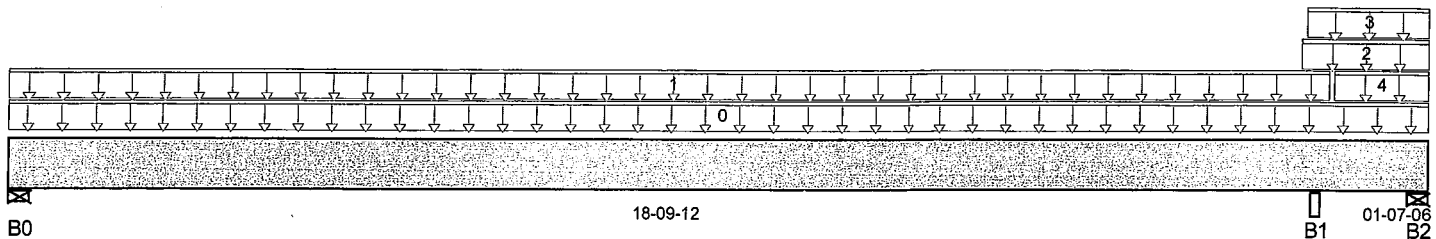
Description: Designs\Flush Beams\1st Floor\Flush Beams\B11(i3208)

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 20-05-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-3/4"	292 / 0	234 / 0	0 / 0	
B1, 5"	1,774 / 0	1,464 / 0	132 / 0	
B2, 4-3/8"	89 / 1,238	0 / 835	147 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	20-05-02	23	11			n/a
1	FC3 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	19-00-04	17	9			n/a
2	User Load	Unf. Lin. (lb/ft)	L	18-07-04	20-05-02	33	30	78		n/a
3	E24(i3168)	Unf. Lin. (lb/ft)	L	18-08-03	20-05-02	33	30	78		n/a
4	E24(i3168)	Unf. Lin. (lb/ft)	L	19-00-12	20-05-02		81			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	2,553 ft-lbs	38,727 ft-lbs	6.6%	44	07-04-07
Neg. Moment	-4,071 ft-lbs	-38,727 ft-lbs	10.5%	1	18-09-12
End Shear	2,771 lbs	14,464 lbs	19.2%	44	19-00-14
Cont. Shear	3,084 lbs	14,464 lbs	21.3%	44	20-00-02
Uplift	2,901 lbs	n/a	n/a	44	20-05-02
Total Load Defl.	L/999 (0.091")	n/a	n/a	107	08-01-10
Live Load Defl.	L/999 (0.05")	n/a	n/a	159	08-01-10
Total Neg. Defl.	L/999 (-0.001")	n/a	n/a	107	19-04-06
Max Defl.	0.091"	n/a	n/a	107	08-01-10
Span / Depth	18.8	n/a	n/a		00-00-00

Bearing Supports	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	2-3/4" x 3-1/2"	731 lbs	14.2%	6.2%	Unspecified
B1 Beam	5" x 3-1/2"	4,558 lbs	48.8%	21.3%	Unspecified
B2 Wall/Plate	4-3/8" x 3-1/2"	2,901 lbs	35.5%	15.5%	Unspecified

Cautions

Uplift of 2,901 lbs found at span 2 - Right (SIMPSON 2-TS22 @ 0. B2)

Notes



DWG NO. TAM 42745-17
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP 1st Floor\...\B11(i3208)

Dry | 2 spans | No cantilevers | 0/12 slope (deg)

May 17, 2017 14:19:41

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD2-EL2,3.mmdl

Description: Designs\Flush Beams\1st Floor\Flush Beams\B11(i3208)

Specifier:

Designer: CZ

Company:

Misc:

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.

CONFORMS TO OBC 2012

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

Design based on Dry Service Condition.

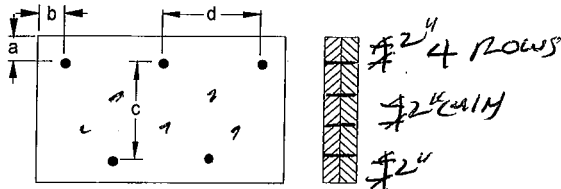
Importance Factor : Normal Part code : Part 9

Disclosure

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Connection Diagram



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

Member has no side loads.

Connectors are: 16d Nails

3 1/2" ARDOX SPIRAL



DWG NO. TAM 42745-1.1
STRUCTURAL
COMPONENT ONLY



Single 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\...\B13A(i3250)

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

May 25, 2017 10:45:45

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD2-EL2,3.mmdl

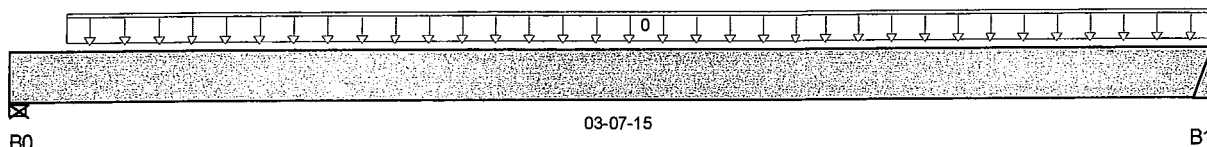
Description: Designs\Dropped Beams\Basement\Dropped Beams\B13.

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 03-07-15

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	418 / 0	221 / 0		
B1	419 / 0	220 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live	Dead	Snow	Wind	Trib.
0	User Load	Unf. Lin. (lb/ft)	L	00-02-01	03-07-15	240	120	1.00	1.15	n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	699 ft-lbs	14,777 ft-lbs	4.7%	1	01-10-15
End Shear	306 lbs	7,232 lbs	4.2%	1	01-03-14
Total Load Defl.	L/999 (0.002")	n/a	n/a	4	01-10-15
Live Load Defl.	L/999 (0.001")	n/a	n/a	5	01-10-15
Max Defl.	0.002"	n/a	n/a	4	01-10-15
Span / Depth	3.3	n/a	n/a		00-00-00

Disclosure

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Bearing Supports

	Dim. (L x W)	Demand	Demand / Resistance Support	Demand / Resistance Member	Material
B0 Wall/Plate	4" x 1-3/4"	903 lbs	9.1%	10.6%	Unspecified
B1 Hanger	2" x 1-3/4"	904 lbs	n/a	21.2%	HUS1.81/10

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: 03-03-15, Bottom: 03-03-15.

Hanger Manufacturer: Unassigned

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

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

O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

CONFORMS TO OBC 2012

DWOND.YAM 42746 17
STRUCTURAL
COMPONENT ONLY





Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports:

CCMC 12472-R

File Name: ROSEWOOD 2EL 2, 3-DECK.mmdl

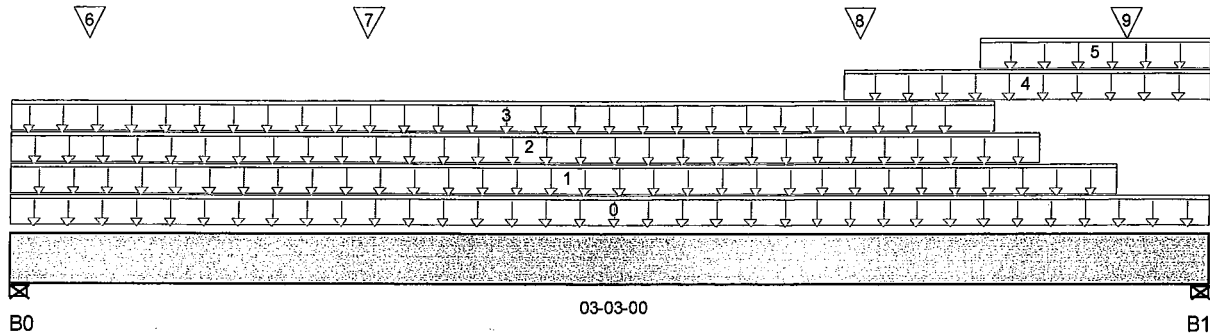
Description: Designs\Flush Beams\Basement\Flush Beams\B11A(i3335

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 03-03-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5"	1,372 / 0	1,001 / 0	142 / 0	
B1, 4"	1,301 / 0	966 / 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	E1(i440)	Unf. Lin. (lb/ft)	L	00-00-00	03-03-00	81				n/a
1	E1(i440)	Unf. Lin. (lb/ft)	L	00-00-00	03-00-00	81				n/a
2	E1(i440)	Unf. Lin. (lb/ft)	L	00-00-00	02-09-08	328	164			n/a
3	E1(i440)	Unf. Lin. (lb/ft)	L	00-00-00	02-08-00	33	30	78		n/a
4	E1(i440)	Unf. Lin. (lb/ft)	L	02-03-00	03-03-00	56	64	133		n/a
5	E1(i440)	Unf. Lin. (lb/ft)	L	02-07-08	03-03-00	246	123			n/a
6	J4 DJ(i3251)	Conc. Pt. (lbs)	L	00-02-08	00-02-08	412	205			n/a
7	J4(i3259)	Conc. Pt. (lbs)	L	00-11-08	00-11-08	340	170			n/a
8	J4(i3254)	Conc. Pt. (lbs)	L	02-03-08	02-03-08	337	168			n/a
9	J4 DJ(i3257)	Conc. Pt. (lbs)	L	03-00-04	03-00-04	371	185			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,398 ft-lbs	38,727 ft-lbs	3.6%	1	01-08-06
End Shear	1,675 lbs	14,464 lbs	11.6%	1	01-11-02
Total Load Defl.	L/999 (0.001")	n/a	n/a	35	01-08-00
Live Load Defl.	L/999 (0.001")	n/a	n/a	51	01-08-00
Max Defl.	0.001"	n/a	n/a	35	01-08-00
Span / Depth	2.7	n/a	n/a		00-00-00

Bearing Supports

			Demand/ Resistance Support	Demand/ Resistance Member	Material
Bearing Supports		Dim. (L x W)	Demand		
B0	Wall/Plate	5" x 3-1/2"	3,380 lbs	36.2%	15.8%
B1	Wall/Plate	4" x 3-1/2"	3,259 lbs	43.6%	19.1%
					Un specified
					Un specified

Notes


 DWG NO. TAM 42742-17
 STRUCTURAL
 COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\...\B11A(i3335)

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

August 21, 2017 13:46:21

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 2EL 2, 3-DECK.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B11A(i3:

Specifier:

Designer: CZ

Company:

Msc:

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.

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

Design based on Dry Service Condition.

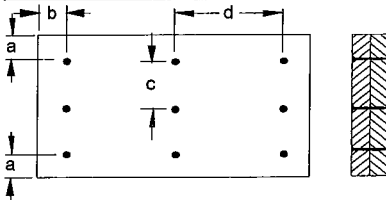
Importance Factor : Normal Part code : Part 9

Disclosure

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Connection Diagram



a minimum = 2" c = 3-15/16"
b minimum = 3" d = 6"

Calculated Side Load = 953.8 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



DWG NO. TAM 4247-17
STRUCTURAL
COMPONENT ONLY



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports: CCMC 12472-R

File Name: ROSEWOOD 2EL 2, 3-DECK.mmdl

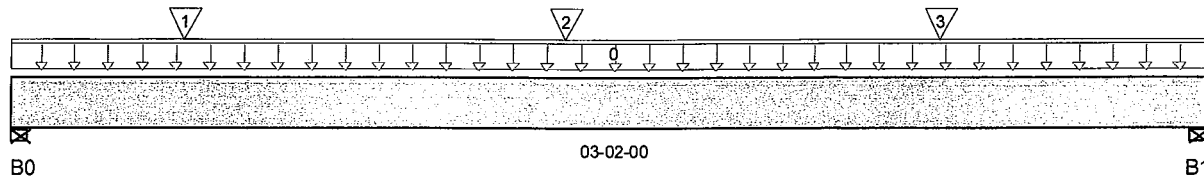
Description: Designs\Flush Beams\Basement\Flush Beams\B12A(i333

Specifier:

Designer: CZ

Company:

Misc:



Total Horizontal Product Length = 03-02-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4"	1,214 / 0	753 / 0		
B1, 4"	1,107 / 0	700 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Trib.
0	E5(i441)	Unf. Lin. (lb/ft)	L	00-00-00	03-02-00	378	270			n/a
1	J3(i3281)	Conc. Pt. (lbs)	L	00-05-08	00-05-08	375	187			n/a
2	J3(i3274)	Conc. Pt. (lbs)	L	01-05-08	01-05-08	375	187			n/a
3	J3(i3318)	Conc. Pt. (lbs)	L	02-05-08	02-05-08	375	187			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand / Resistance	Load Case	Location
Pos. Moment	1,541 ft-lbs	38,727 ft-lbs	4%	1	01-05-08
End Shear	1,746 lbs	14,464 lbs	12.1%	1	01-03-14
Total Load Defl.	L/999 (0.001")	n/a	n/a	4	01-06-15
Live Load Defl.	L/999 (0.001")	n/a	n/a	5	01-06-15
Max Defl.	0.001"	n/a	n/a	4	01-06-15
Span / Depth	2.7	n/a	n/a		00-00-00

Bearing Supports

B0	Wall/Plate	4" x 3-1/2"	2,763 lbs	37%	16.2%	Unspecified
B1	Wall/Plate	4" x 3-1/2"	2,534 lbs	33.9%	14.8%	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. CONFORMS TO OBC 2012

Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9



P6/L
DWG NO. TAM 42748-17
STRUCTURAL
COMPONENT ONLY



Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP Basement\...\B12A(i3333)

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

August 21, 2017 13:46:21

BC CALC® Design Report



Build 5033

Job Name:

Address:

City, Province, Postal Code: WATERDOWN,

Customer:

Code reports:

CCMC 12472-R

File Name: ROSEWOOD 2EL 2, 3-DECK.mmdl

Description: Designs\Flush Beams\Basement\Flush Beams\B12A(i3:

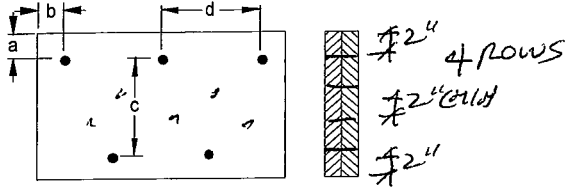
Specifier:

Designer: CZ

Company:

Misc:

Connection Diagram



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

Calculated Side Load = 754.3 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

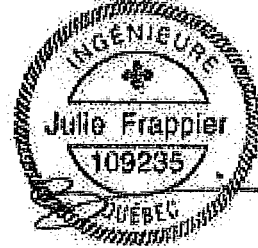
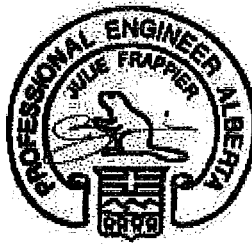
Disclosure

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DWG NO. TAM 42248-17
STRUCTURAL
COMPONENT ONLY



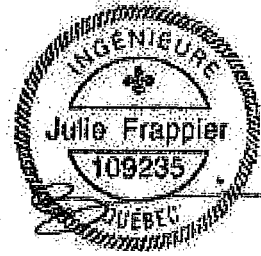
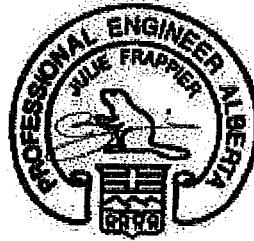
Maximum Floor Spans

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"
	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"
11-7/8"	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"
	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"
14"	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"
	NI-90x	24'-1"	22'-3"	21'-2"	20'-0"	24'-8"	22'-10"	21'-9"	20'-7"
16"	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"
	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"
11-7/8"	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"
	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"
14"	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"
	NI-90x	27'-3"	25'-4"	24'-1"	22'-9"	27'-9"	25'-11"	24'-8"	23'-4"
16"	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.



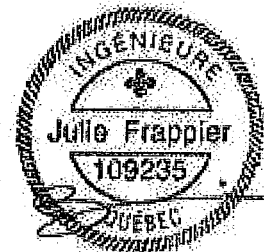
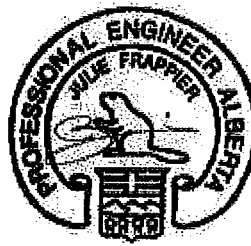
Maximum Floor Spans

Live Load = 40 psf, Dead Load = 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.



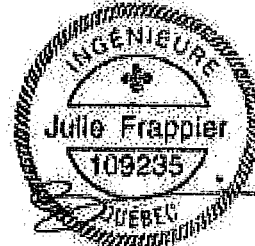
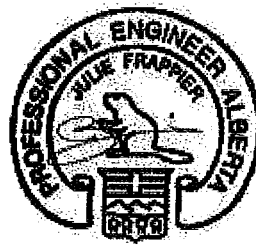
Maximum Floor Spans

Live Load = 40 psf, Dead Load = 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

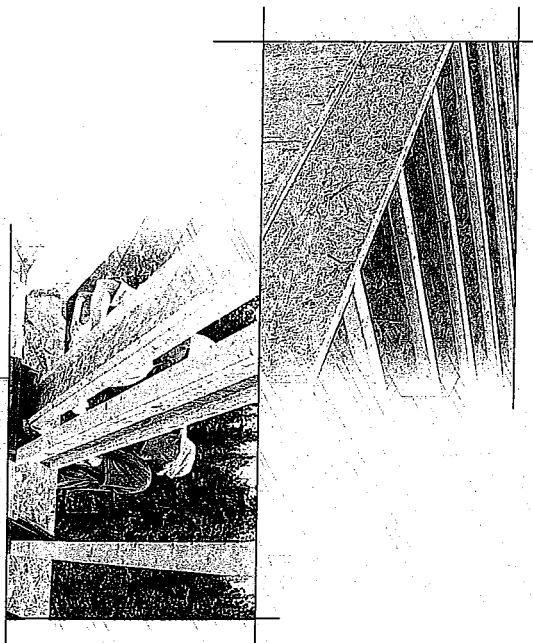
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-2"	13'-4"	12'-4"	15'-7"	14'-2"	13'-4"	12'-4"
	NI-40x	17'-0"	16'-0"	15'-1"	13'-11"	17'-5"	16'-1"	15'-1"	13'-11"
	NI-60	17'-2"	16'-2"	15'-5"	14'-3"	17'-6"	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"

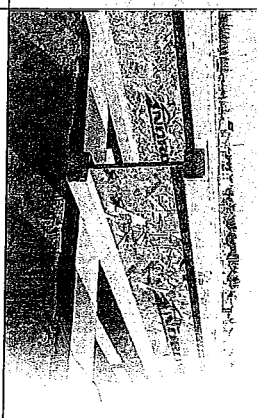
- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load 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.

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.

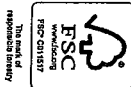
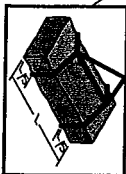


Do not walk on I-joists until fully fastened and braced, or serious injuries can result.



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.



MAXIMUM FLOOR SPANS

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

- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in CGS-71.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
- Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
- Tables are based on Limit States Design per CAN/CSA O86-09 Standard, and NBC 2010.
- SI units conversion: 1 inch = 25.4 mm
1 foot = 0.305 m

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

Joist Depth	Joist Series	Simple spans				Multiple spans			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
12"	NI-20	16.1	14.2	13.9	13.5	16.1	13.4	13.0	12.7
12"	NI-40	16.1	14.2	14.8	14.4	16.1	13.4	13.0	12.7
12"	NI-60	16.1	14.2	15.4	15.1	16.1	13.4	13.0	12.7
12"	NI-80	16.1	14.2	16.0	15.7	16.1	13.4	13.0	12.7
12"	NI-100	16.1	14.2	16.6	16.3	16.1	13.4	13.0	12.7
16"	NI-20	18.1	17.0	16.9	16.6	18.1	15.4	15.0	14.7
16"	NI-40	18.1	17.0	17.5	17.2	18.1	15.4	15.0	14.7
16"	NI-60	18.1	17.0	18.1	17.8	18.1	15.4	15.0	14.7
16"	NI-80	18.1	17.0	18.7	18.4	18.1	15.4	15.0	14.7
16"	NI-100	18.1	17.0	19.3	19.0	18.1	15.4	15.0	14.7
19.2"	NI-20	20.1	18.9	18.8	18.5	20.1	17.4	17.0	16.7
19.2"	NI-40	20.1	18.9	19.4	19.1	20.1	17.4	17.0	16.7
19.2"	NI-60	20.1	18.9	20.0	19.7	20.1	17.4	17.0	16.7
19.2"	NI-80	20.1	18.9	20.6	20.3	20.1	17.4	17.0	16.7
19.2"	NI-100	20.1	18.9	21.2	20.9	20.1	17.4	17.0	16.7
24"	NI-20	22.1	20.9	20.8	20.5	22.1	19.4	19.0	18.7
24"	NI-40	22.1	20.9	21.4	21.1	22.1	19.4	19.0	18.7
24"	NI-60	22.1	20.9	22.0	21.7	22.1	19.4	19.0	18.7
24"	NI-80	22.1	20.9	22.6	22.3	22.1	19.4	19.0	18.7
24"	NI-100	22.1	20.9	23.2	22.9	22.1	19.4	19.0	18.7

CCMC EVALUATION REPORT 13032-R

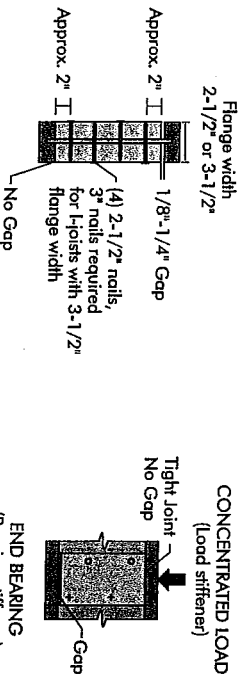
WEB STIFFENERS

RECOMMENDATIONS:

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

SI units conversion: 1 inch = 25.4 mm

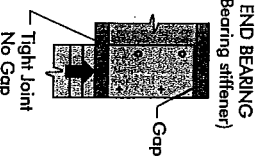
FIGURE 2
WEB STIFFENER INSTALLATION DETAILS



See table below for web stiffener size requirements

STIFFENER SIZE REQUIREMENTS

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



NORDIC I-JOIST SERIES

33 pieces per unit	33 pieces per unit	33 pieces per unit	23 pieces per unit	23 pieces per unit	23 pieces per unit	23 pieces per unit
NI-20	NI-40x	NI-60	NI-70	NI-80	NI-90	NI-90x
OSB 3/4"	OSB 3/4"	OSB 3/4"	OSB 3/4"	OSB 3/4"	OSB 3/4"	OSB 3/4"
9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
14"	14"	14"	14"	14"	14"	14"
16"	16"	16"	16"	16"	16"	16"
18"	18"	18"	18"	18"	18"	18"
20"	20"	20"	20"	20"	20"	20"
22"	22"	22"	22"	22"	22"	22"
24"	24"	24"	24"	24"	24"	24"
26"	26"	26"	26"	26"	26"	26"
28"	28"	28"	28"	28"	28"	28"
30"	30"	30"	30"	30"	30"	30"
32"	32"	32"	32"	32"	32"	32"
34"	34"	34"	34"	34"	34"	34"
36"	36"	36"	36"	36"	36"	36"
38"	38"	38"	38"	38"	38"	38"
40"	40"	40"	40"	40"	40"	40"
42"	42"	42"	42"	42"	42"	42"
44"	44"	44"	44"	44"	44"	44"
46"	46"	46"	46"	46"	46"	46"
48"	48"	48"	48"	48"	48"	48"
50"	50"	50"	50"	50"	50"	50"
52"	52"	52"	52"	52"	52"	52"
54"	54"	54"	54"	54"	54"	54"
56"	56"	56"	56"	56"	56"	56"
58"	58"	58"	58"	58"	58"	58"
60"	60"	60"	60"	60"	60"	60"
62"	62"	62"	62"	62"	62"	62"
64"	64"	64"	64"	64"	64"	64"
66"	66"	66"	66"	66"	66"	66"
68"	68"	68"	68"	68"	68"	68"
70"	70"	70"	70"	70"	70"	70"
72"	72"	72"	72"	72"	72"	72"
74"	74"	74"	74"	74"	74"	74"
76"	76"	76"	76"	76"	76"	76"
78"	78"	78"	78"	78"	78"	78"
80"	80"	80"	80"	80"	80"	80"
82"	82"	82"	82"	82"	82"	82"
84"	84"	84"	84"	84"	84"	84"
86"	86"	86"	86"	86"	86"	86"
88"	88"	88"	88"	88"	88"	88"
90"	90"	90"	90"	90"	90"	90"
92"	92"	92"	92"	92"	92"	92"
94"	94"	94"	94"	94"	94"	94"
96"	96"	96"	96"	96"	96"	96"
98"	98"	98"	98"	98"	98"	98"
100"	100"	100"	100"	100"	100"	100"

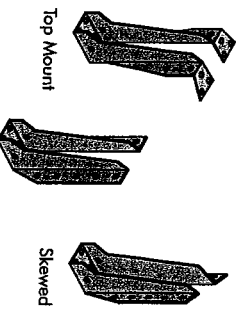
Chantiers Chibougama Ltd. harvests its own trees, which enables Nordic products to adhere to strict quality control procedures through every manufacturing process. Every phase of the operation, from forest to the finished product, reflects our commitment to quality.

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

2015-04-16

I-JOIST HANGERS

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



INSTALLING NORDIC I-JOISTS

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

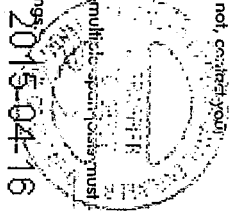
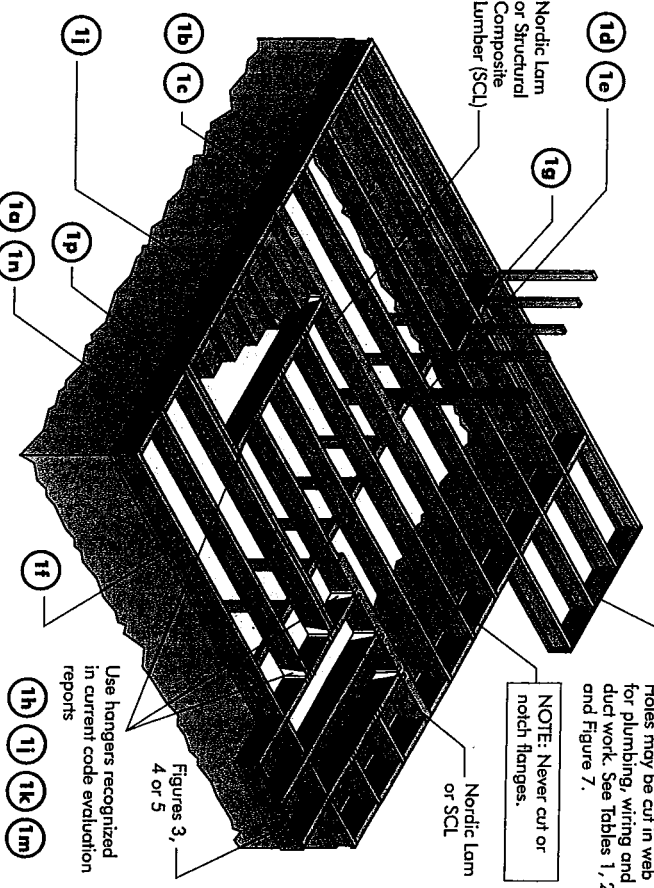


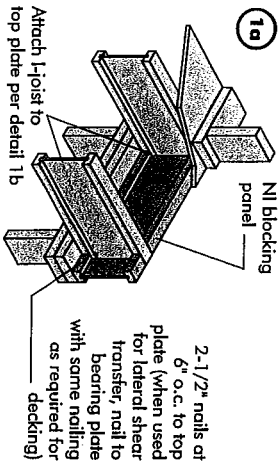
FIGURE 1
TYPICAL NORDIC I-JOIST FLOOR FRAMING AND CONSTRUCTION DETAILS

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



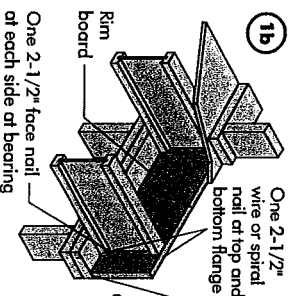
Figures 3, 4 or 5
Holes may be cut in web for plumbing, wiring and duct work. See Tables 1, 2 and Figure 7.

Use hangers recognized in current code evaluation reports



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

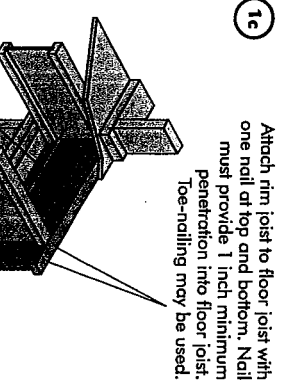
*The uniform vertical load is limited to a joist depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.



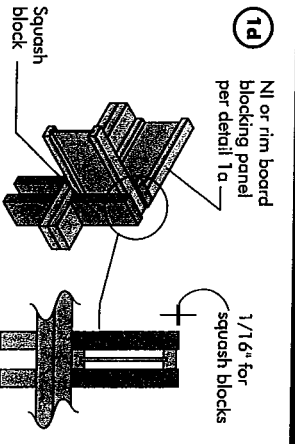
Blocking Panel or Rim Joist	Maximum Factored Uniform Vertical Load* (plf)
1-1/8" Rim Board Plus	8,090

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

Attach rim board to top plate using 2-1/2" wire or spiral toe-nails at 6" o.c. To avoid splitting flange, start nails at least 1-1/2" from end of I-joist. Nails may be driven at an angle to avoid splitting of bearing plate. Minimum bearing length shall be 1-3/4" for the end bearings, and 3-1/2" for the intermediate bearings when applicable.



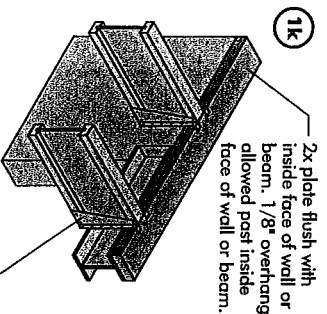
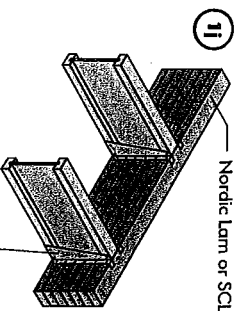
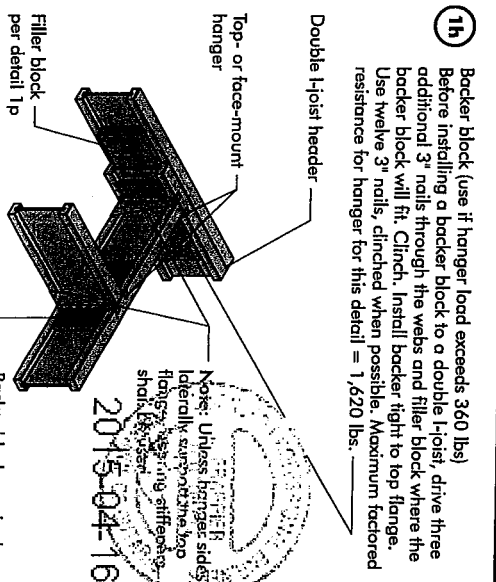
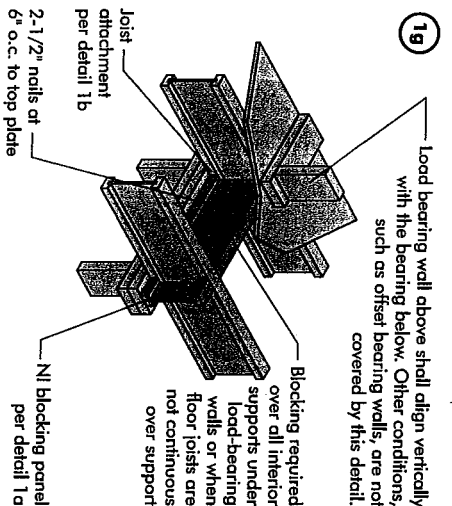
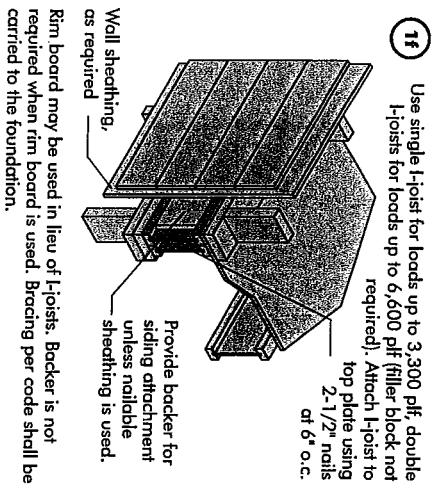
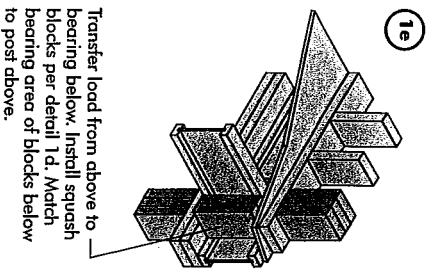
NI rim joist per detail 1a
Attach I-joist per detail 1b
Minimum 1-3/4" bearing required



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
	8,500
	6,500

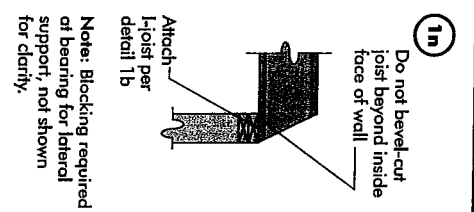
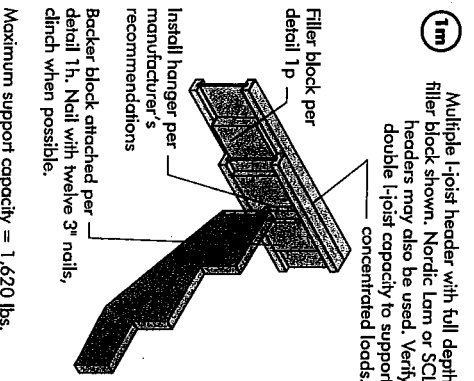
Provide lateral bracing per detail 1a, 1b, or 1c

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



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

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

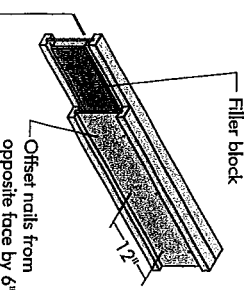


Flange Width	Material Thickness Required*	Minimum Depth**
2-1/2"	1"	5-1/2"
3-1/2"	1-1/2"	7-1/4"

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

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

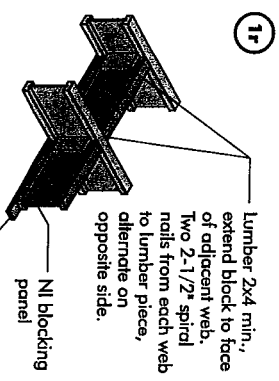
For hanger capacity see hanger manufacturer's recommendations. Verify double I-joist capacity to support concentrated loads.



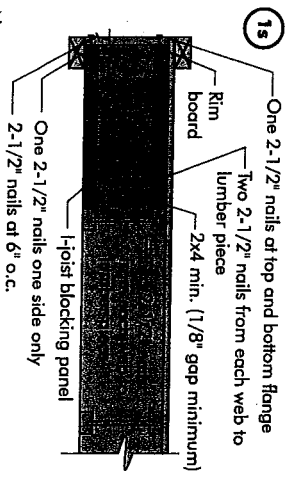
1/8" to 1/4" gap between top flange and filler block

- 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 lbf/ft. Verify double I-joist capacity.

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



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



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.

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

structural panel closure;
attach per detail 1b

4' modin
where L is
joist span

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

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

See detail 1h. Nail with 2 rows of 3" nails at 6" o.c. and clinch.

2x8 min. Nail to backer block and joist with 2 rows of 3" nails at 6" o.c. and clinch. (Cantilever nails may be used to attach backer block if length of nail is sufficient to allow clinching.)

Can't lever external floor loads only

Lumber or wood structural panel closure

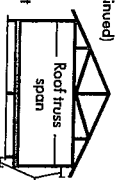
Note: This detail is applicable to cantilevers supporting a maximum specified uniform live load of 60 psf.

4a Method 1 — SHEATHING REINFORCEMENT ONE SIDE

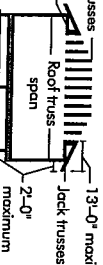
Rim board or wood structural panel closure (3/4" minimum thickness); attach per detail 1

— **NI blocking panel**
or rim board blocking,
attach per detail 1a

FIGURE 4 (cont.)
See table
below for NI
reinforcement
requirements
cantilever.



Roof trusses 13'-0" maximum



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

CANTILEVER REINFORCEMENT METHODS ALLOWED

[illegible]

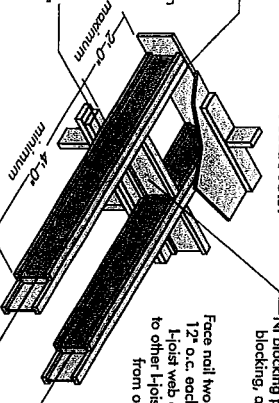
Method 2 — SHEATHING REINFORCEMENT TWO SIDES

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

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

4b Alternate Method 2 — DOUBLE JOIST

4x6 wood structural panel closure (3/4" minimum thickness); attach per detail 1b



Face nail two rows of 3" nails at 12" o.c. each side through one I-joist web and the filler block to other I-joist web. Offset nails from opposite face by 6".

Clinch if possible (four nails per foot required, except two nails per foot required if not clinched).

Block I-joists together with filler blocks for the full length of the reinforcement. For I-joist flange widths greater than 3 inches place an additional row of 3" nails along the centreline of the reinforcing panel from each side. Clinch when possible.

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

4. For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a rigid board, the Roof Truss Span is equivalent to the distance between the supporting walls as if a truss is used.

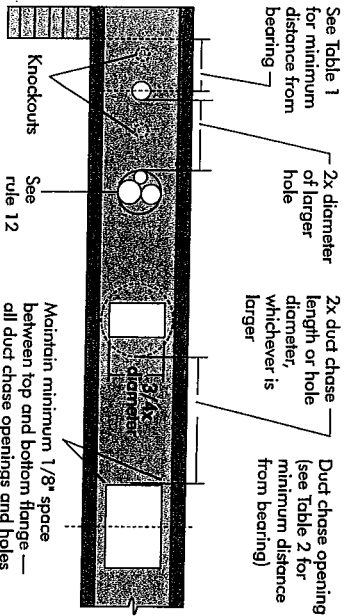
5. Combined joists supporting girders, trusses or roof beams may require additional raftering.

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 centre along the length of the I-joist. Where possible, it is preferable to use knockouts instead of field-cut holes.

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

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

TABLE 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

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

OPTIONAL:

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

Reduced = $\frac{L_{actual}}{L_{max}} \times D$

Where:

L_{actual}

=

Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span applications (ft.). The reduced distance shall not be less than 6 inches from the face of the support to edge of the hole.

L_{max}

=

The actual measured span distance between the inside faces of supports (ft.).

D

=

Span Adjustment Factor given in this table.

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

SAF

=

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

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

SAF

=

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

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

SAF

=

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

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

SAF

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

Joist Depth	Joist Series	Minimum distance from inside face of any support to centre of opening (ft-in.)											
		8	10	12	14	16	18	20	22	24	26	28	30
10	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	6-1/4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	8-5/8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	10-3/4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	12-3/4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	6-1/4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	8-5/8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	10-3/4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	12-3/4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

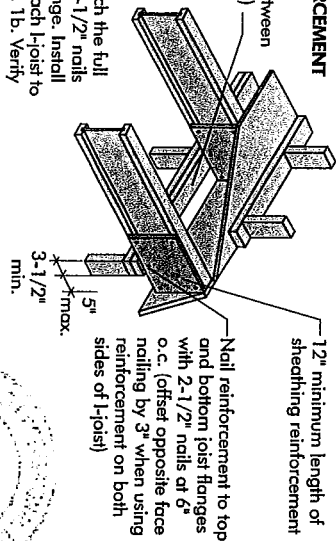
1. Above table may be used for I-joist spacing of 24 inches on centre or less.
2. Duct chase opening location distance is measured from inside face of supports to centre of opening.
3. The above table is based on simple-span joists only. For other applications, contact your local distributor.
4. Distances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

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

5c SHEATHING REINFORCEMENT

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

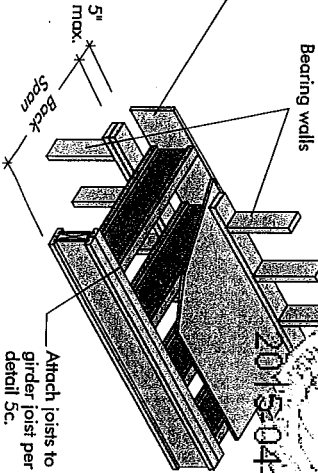
Note: Canadian softwood plywood sheathing or equivalent (minimum thickness 3/4") required on sides of joist. Depth shall match the full height of the joist. Nail with 2-1/2" nails at 6" o.c., top and bottom flange. Install with face grain horizontal. Attach 1-joist to plate at all supports per detail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



5b SET-BACK DETAIL

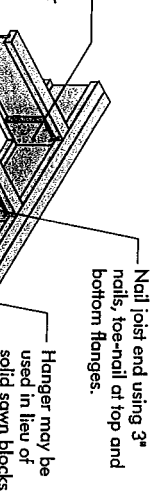
Rim board or wood structural panel closure (3/4" minimum thickness), attach per detail 1b.

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



5c SET-BACK CONNECTION

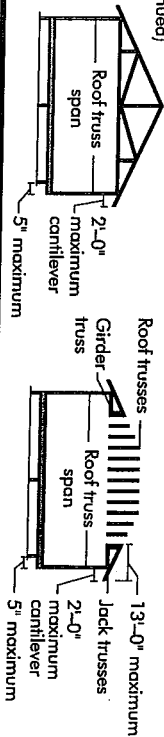
Vertical solid sawn blocks (2x6 S-P-F No. 2 or better) nailed through joist web and web of girder using 2-1/2" nails.



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

FIGURE 5 (continued)

See table below for NI reinforcement requirements of cantilever.



For hip roofs with the jack trusses running parallel to the cantilevered floor joists, the 1-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)	LL = 30 psf, DL = 15 psf	JOIST SPACING (in.)		JOIST SPACING (in.)		JOIST SPACING (in.)		JOIST SPACING (in.)	
12	12	16	19.2	24	12	16	19.2	24	12	16
16	16	20	24	28	16	20	24	28	16	20
20	20	24	28	32	20	24	28	32	20	24
24	24	28	32	36	24	28	32	36	24	28
28	28	32	36	40	28	32	36	40	28	32
32	32	36	40	44	32	36	40	44	32	36
36	36	40	44	48	36	40	44	48	36	40
40	40	44	48	52	40	44	48	52	40	44
44	44	48	52	56	44	48	52	56	44	48
48	48	52	56	60	48	52	56	60	48	52
52	52	56	60	64	52	56	60	64	52	56
56	56	60	64	68	56	60	64	68	56	60
60	60	64	68	72	60	64	68	72	60	64
64	64	68	72	76	64	68	72	76	64	68
68	68	72	76	80	68	72	76	80	68	72
72	72	76	80	84	72	76	80	84	72	76
76	76	80	84	88	76	80	84	88	76	80
80	80	84	88	92	80	84	88	92	80	84
84	84	88	92	96	84	88	92	96	84	88
88	88	92	96	100	88	92	96	100	88	92
92	92	96	100	104	92	96	100	104	92	96
96	96	100	104	108	96	100	104	108	96	100
100	100	104	108	112	100	104	108	112	100	104
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116	116	120	124	128	116	120	124	128	116	120
120	120	124	128	132	120	124	128	132	120	124
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132	132	136	140	144	132	136	140	144	132	136
136	136	140	144	148	136	140	144	148	136	140
140	140	144	148	152	140	144	148	152	140	144
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304	304	308	312	316	304	308	312	316	304	308
308	308	312	316	320	308	312	316	320	308	312
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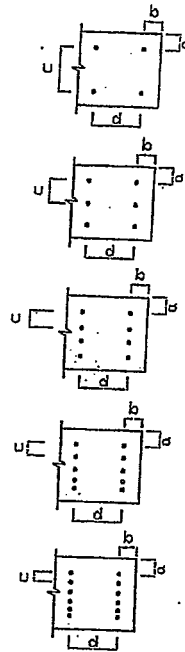
MICRO CITY

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



DWG NO TAMN1001.14

STRUCTURAL
COMPONENT ONLY

TO BE USED ONLY
WITH BEAM CALCS
BEARING THE
STAMP BELOW

PROVIDE NAILING
DETAIL NO X SEE
DWG #TAMN1001-14