NORDIC STRUCTURES

COMPANY
TAMARACK LUMBER
3269 NORTH SERVICE ROAD
BURLINGTON, ON
by CZ
Jan. 2, 2018 09:24

PROJECT
J1-2ND FL.wwb

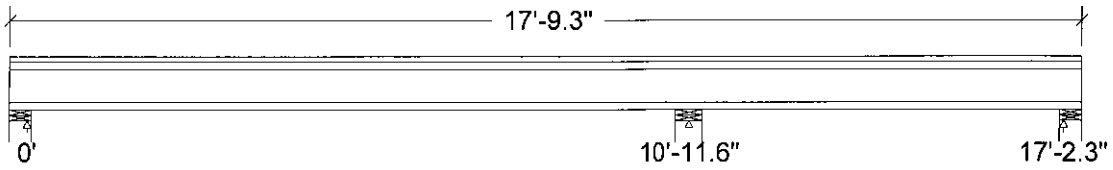
Design Check Calculation Sheet

Nordic Sizer – Canada 6.4

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Dead	Full Area	No			20.00		psf
Load2	Live	Full Area	Yes			40.00		psf

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



Unfactored:					
Dead	119		305		34
Live	246		611		151
Factored:					
Uplift					93
Total	517		1298		269
Bearing:					
Resistance					
Joist	1893		4150		1893
Support	7779		9724		7779
Des ratio					
Joist	0.27		0.31		0.14
Support	0.07		0.13		0.03
Load case	#4		#2		#5
Length	4-3/8		5-1/2		4-3/8
Min req'd	1-3/4		3-1/2		1-3/4
Stiffener	No		No		No
Kd	1.00		1.00		1.00
KB support	1.00		1.00		1.00
fcp sup	769		769		769
Kzcp sup	1.15		1.15		1.15

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

Nordic 9-1/2" NI-40x Floor joist @ 16" o.c.

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

Total length: 17'-9.3"; 3/4" nailed and glued OSB sheathing with 1/2" gypsum ceiling

This section PASSES the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 739	Vr = 1895	lbs	Vf/Vr = 0.39
Moment(+)	Mf = 1180	Mr = 4824	lbs-ft	Mf/Mr = 0.24
Moment(-)	Mf = 1286	Mr = 4824	lbs-ft	Mf/Mr = 0.27
Perm. Defl'n	0.02 = <L/999	0.37 = L/360	in	0.06
Live Defl'n	0.05 = <L/999	0.27 = L/480	in	0.18
Total Defl'n	0.07 = <L/999	0.55 = L/240	in	0.13
Bare Defl'n	0.06 = <L/999	0.37 = L/360	in	0.16
Vibration	Lmax = 11'-0	Lv = 17'-11	ft	
Defl'n	= 0.014	= 0.066	in	0.21

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	1895	1.00	1.00	-	-	-	-	-	#2
Mr+	4824	1.00	1.00	-	1.000	-	-	-	#4
Mr-	4824	1.00	1.00	-	1.000	-	-	-	#2
EI	218.1 million		-	-	-	-	-	-	#4

CRITICAL LOAD COMBINATIONS:

```
Shear      : LC #2  = 1.25D + 1.5L
Moment(+)  : LC #4  = 1.25D + 1.5L (pattern: L_)
Moment(-)  : LC #2  = 1.25D + 1.5L
Deflection: LC #1  = 1.0D  (permanent)
            LC #4  = 1.0D + 1.0L (pattern: L_)  (live)
            LC #4  = 1.0D + 1.0L (pattern: L_)  (total)
            LC #4  = 1.0D + 1.0L (pattern: L_)  (bare joist)
Bearing    : Support 1 - LC #4 = 1.25D + 1.5L (pattern: L_)
             Support 2 - LC #2 = 1.25D + 1.5L
             Support 3 - LC #5 = 1.25D + 1.5L (pattern: _L)
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:  EIeff =    276e06 lb-in2  K=  4.94e06 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.
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.

NORDIC STRUCTURES

COMPANY
TAMARACK LUMBER
3269 NORTH SERVICE ROAD
BURLINGTON, ON
by CZ
Jan. 2, 2018 09:23

PROJECT
J9-2ND FL.wwb

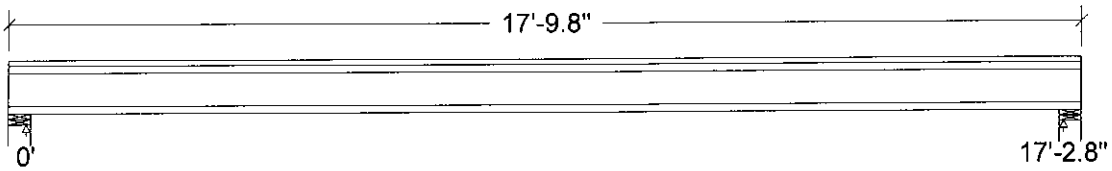
Design Check Calculation Sheet

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	172		172
Live	345		345
Factored:			
Total	732		732
Bearing:			
Resistance			
Joist	1893		1893
Support	10891		10891
Des ratio			
Joist	0.39		0.39
Support	0.07		0.07
Load case	#2		#2
Length	4-3/8		4-3/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
Kd	1.00		1.00
KB support	1.00		1.00
fcp sup	769		769
Kzcp sup	1.15		1.15

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

Nordic 9-1/2" NI-80 Floor joist @ 12" o.c.

Supports: All - Lumber Wall, No.1/No.2
Total length: 17'-9.8"; 3/4" nailed and glued OSB sheathing with 1/2" gypsum ceiling
This section PASSES the design code check.

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

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	Vf = 732	Vr = 1895	lbs	Vf/Vr = 0.39
Moment(+)	Mf = 3155	Mr = 8958	lbs-ft	Mf/Mr = 0.35
Perm. Defl'n	0.12 = <L/999	0.57 = L/360	in	0.21
Live Defl'n	0.24 = L/860	0.43 = L/480	in	0.56
Total Defl'n	0.36 = L/573	0.86 = L/240	in	0.42
Bare Defl'n	0.27 = L/755	0.57 = L/360	in	0.48
Vibration	Lmax = 17'-3	Lv = 18'-10	ft	
Defl'n	= 0.028	= 0.037	in	0.78

Additional Data:

FACTORS:	f/E	KD	KH	KZ	KL	KT	KS	KN	LC#
Vr	1895	1.00	1.00	-	-	-	-	-	#2
Mr+	8958	1.00	1.00	-	1.000	-	-	-	#2
EI	324.1 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:  EIeff =    375e06 lb-in2  K=  4.94e06 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.
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NORDIC STRUCTURES

COMPANY
TAMARACK LUMBER
3269 NORTH SERVICE ROAD
BURLINGTON, ON
by CZ
Dec. 29, 2017 08:09

PROJECT
J8-3RD FL.wwb

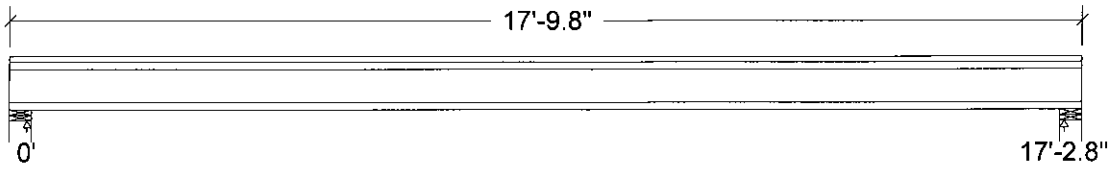
Design Check Calculation Sheet

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) :



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Total	732		732
Bearing:			
Resistance			
Joist	1893		1893
Support	10891		10891
Des ratio			
Joist	0.39		0.39
Support	0.07		0.07
Load case	#2		#2
Length	4-3/8		4-3/8
Min req'd	1-3/4		1-3/4
Stiffener	No		No
Kd	1.00		1.00
KB support	1.00		1.00
fcp sup	769		769
Kzcp sup	1.15		1.15

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

Nordic 9-1/2" NI-80 Floor joist @ 12" o.c.

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

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EI	324.1 million		-	-	-	-	-	-	#2

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 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
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```

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Boise Cascade

Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

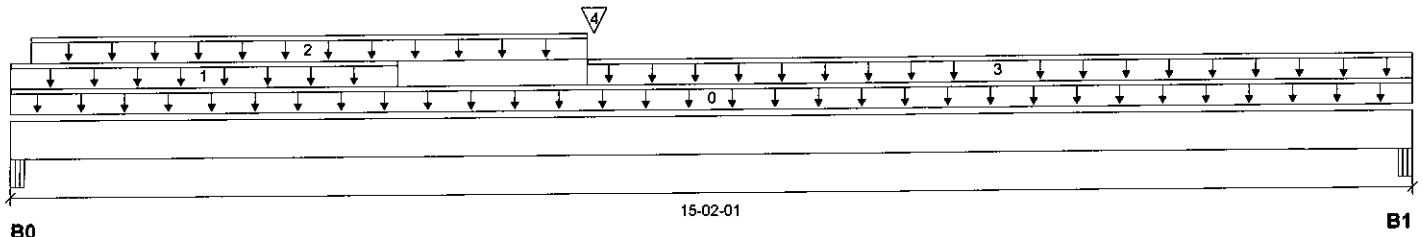
1st Floor\Flush Beams\B47(i5602)

BC CALC® Design Report
Build 6215
Job name:
Address:
City, Province, Postal Code: ANC...TER
Customer:
Code reports: CCMC 12472-R

Dry | 1 span | No cant.

January 2, 2018 15:27:17

File name: 111 WILSON ST E BLOCK B.mmdl
Description: 1st Floor\Flush Beams\B47(i5602)
Specifier:
Designer: CZ
Company:



Total Horizontal Product Length = 15-02-01

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2-5/8"	1,535 / 0	1,001 / 0		
B1, 2-5/8"	773 / 0	573 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	15-02-01		10			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	04-02-03	240	120			n\a
2	FC14 Floor Material	Unf. Lin. (lb/ft)	L	00-02-10	06-02-10	27	14			n\a
3	FC14 Floor Material	Unf. Lin. (lb/ft)	L	06-02-10	15-02-00	53	27			n\a
4	B48(i5597)	Conc. Pt. (lbs)	L	06-03-08	06-03-08	658	603			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	11,445 ft-lbs	23,220 ft-lbs	49.3 %	1	06-03-08
End Shear	2,964 lbs	11,571 lbs	25.6 %	1	01-00-02
Total Load Deflection	L/305 (0.584")	n\a	78.7 %	4	07-03-05
Live Load Deflection	L/534 (0.334")	n\a	67.5 %	5	07-03-05
Max Defl.	0.584"	n\a	n\a	4	07-03-05
Span / Depth	18.8				

Bearing Supports

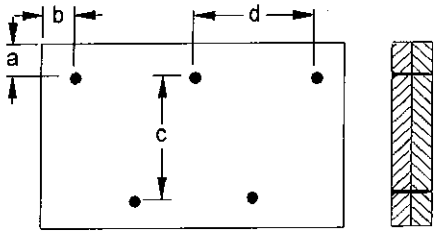
		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Beam	2-5/8" x 3-1/2"	3,554 lbs	72.5 %	31.7 %	Unspecified
B1	Beam	2-5/8" x 3-1/2"	1,876 lbs	38.2 %	16.7 %	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-00-00.
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
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.

Job name:		File name:	111 WILSON ST E BLOCK B.mmdl
Address:		Description:	1st Floor\Flush Beams\B47(i5602)
City, Province, Postal Code:	ANC...TER	Specifier:	
Customer:		Designer:	CZ
Code reports:	CCMC 12472-R	Company:	

Connection Diagram



a minimum = 2" c = 5-1/2"
b minimum = 3" d = 24"

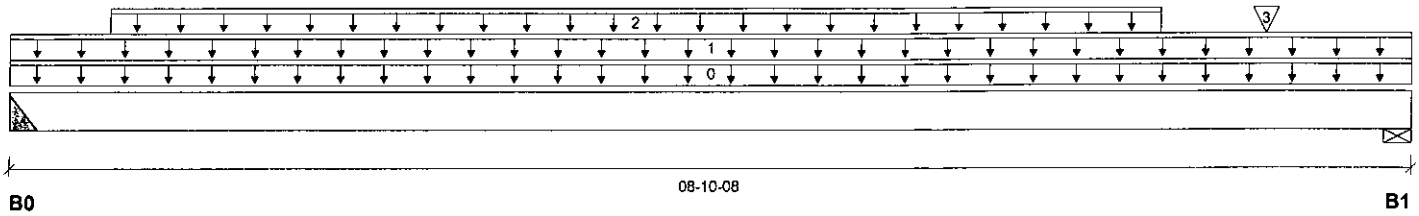
Calculated Side Load = 114.8 lb/ft
Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.
Connectors are: 3-1/4 in. Pneumatic Gun Nails

Disclosure

BC CALC® Design Report | Dry | 1 span | No cant. | January 2, 2018 15:27:17

Build 6215

Job name:		File name:	111 WILSON ST E BLOCK B.mmdl
Address:		Description:	1st Floor\Flush Beams\B48(i5597)
City, Province, Postal Code:	ANC...TER	Specifier:	
Customer:		Designer:	CZ
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 08-10-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2"	664 / 0	609 / 0		
B1, 5-1/2"	724 / 0	658 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-10-08		5			00-00-00
1	User Load	Unf. Lin. (lb/ft)	L	00-00-00	08-10-08		60			n\a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-07-08	07-03-08	180	90			n\a
3	J4(i5773)	Conc. Pt. (lbs)	L	07-11-08	07-11-08	184	92			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	4,059 ft-lbs	11,610 ft-lbs	35.0 %	1	03-11-08
End Shear	1,681 lbs	5,785 lbs	29.0 %	1	00-11-08
Total Load Deflection	L/685 (0.147")	n\a	35.0 %	4	04-03-08
Live Load Deflection	L/999 (0.079")	n\a	n\a	5	04-03-08
Max Defl.	0.147"	n\a	n\a	4	04-03-08
Span / Depth	10.6				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Hanger	2" x 1-3/4"	1,758 lbs	n\a	41.2 %	HUS1.81/10
B1	Wall/Plate	5-1/2" x 1-3/4"	1,908 lbs	37.1 %	16.2 %	Unspecified

Cautions

Hanger model HUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

Notes

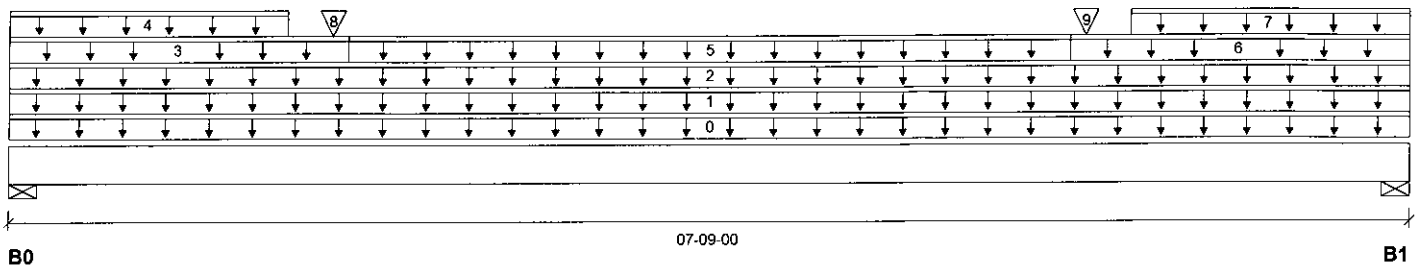
Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume unbraced length of Top: 00-00-00, Bottom: 00-00-00.
Hanger Manufacturer: Unassigned
Resistance Factor phi has been applied to all presented results per 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

Disclosure

BC CALC® Design Report | Dry | 1 span | No cant. | January 2, 2018 15:27:17

Build 6215

Job name:		File name:	111 WILSON ST E BLOCK B.mmdl
Address:		Description:	1st Floor\Flush Beams\B5(i4790)
City, Province, Postal Code:	ANC...TER	Specifier:	
Customer:		Designer:	CZ
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 07-09-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	301 / 0	575 / 0	606 / 0	
B1, 5-1/2"	300 / 0	574 / 0	603 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-09-00		10			00-00-00
1	low roof	Unf. Lin. (lb/ft)	L	00-00-00	07-09-00	33	30	78		n\a
2	FC6 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	07-09-00	12	6			n\a
3	E76(i1404)	Unf. Lin. (lb/ft)	L	00-00-00	01-10-08		81			n\a
4	E76(i1404)	Unf. Lin. (lb/ft)	L	00-00-00	01-06-08	33	30	78		n\a
5	E75(i1517)	Unf. Lin. (lb/ft)	L	01-10-08	05-10-08		61			n\a
6	E74(i1402)	Unf. Lin. (lb/ft)	L	05-10-08	07-09-00		81			n\a
7	E74(i1402)	Unf. Lin. (lb/ft)	L	06-02-08	07-09-00	33	30	78		n\a
8	E76(i1404)	Conc. Pt. (lbs)	L	01-09-08	01-09-08	78	79	184		n\a
9	E74(i1402)	Conc. Pt. (lbs)	L	05-11-08	05-11-08	76	78	180		n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	2,359 ft-lbs	23,220 ft-lbs	10.2 %	13	03-10-08
End Shear	1,192 lbs	11,571 lbs	10.3 %	13	01-03-00
Total Load Deflection	L/999 (0.032")	n\a	n\a	45	03-10-08
Live Load Deflection	L/999 (0.018")	n\a	n\a	61	03-10-08
Max Defl.	0.032"	n\a	n\a	45	03-10-08
Span / Depth	8.8				

Bearing Supports

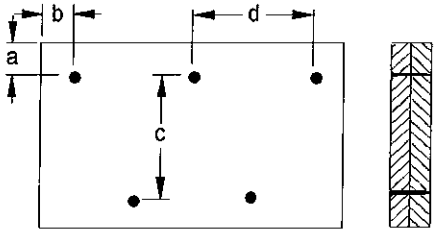
		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate	5-1/2" x 3-1/2"	1,777 lbs	17.3 %	7.6 %	Unspecified
B1	Wall/Plate	5-1/2" x 3-1/2"	1,773 lbs	17.2 %	7.5 %	Unspecified

Job name:		File name:	111 WILSON ST E BLOCK B.mmdl
Address:		Description:	1st Floor\Flush Beams\B5(i4790)
City, Province, Postal Code:	ANC...TER	Specifier:	
Customer:		Designer:	CZ
Code reports:	CCMC 12472-R	Company:	

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.
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 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.

Connection Diagram



a minimum = 2" c = 5-1/2"
b minimum = 3" d = 24"

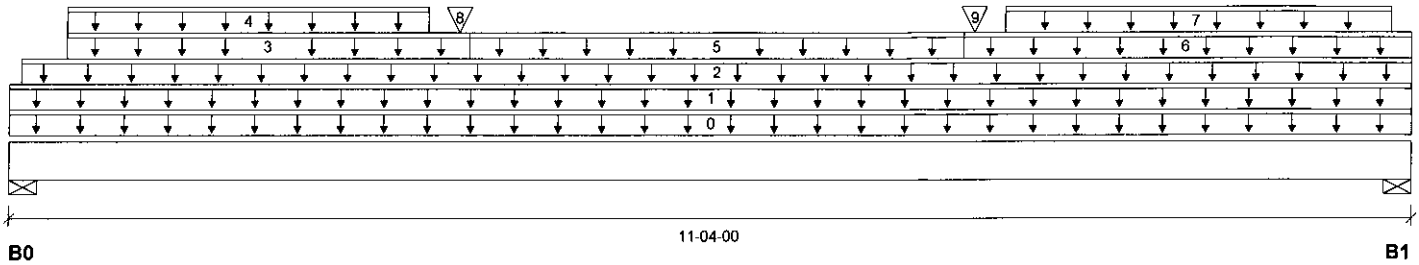
Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.
Member has no side loads.
Connectors are: 16d Sinker Nails

Disclosure

1st Floor\Flush Beams\B5A(i6079)

BC CALC® Design Report — Dry | 1 span | No cant. — January 2, 2018 15:27:17
Build 6215

Job name:		File name:	111 WILSON ST E BLOCK B.mmdl
Address:		Description:	1st Floor\Flush Beams\B5A(i6079)
City, Province, Postal Code:	ANC...TER	Specifier:	
Customer:		Designer:	CZ
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 11-04-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 5-1/2"	1,486 / 0	3,151 / 0	3,261 / 0	
B1, 5-1/2"	1,526 / 0	3,260 / 0	3,358 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	11-04-00		14			00-00-00
1	FC10 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	11-04-00	25	12			n\a
2	low roof	Unf. Lin. (lb/ft)	L	00-01-02	11-04-00	33	30	78		n\a
3	E132(i1728)	Unf. Lin. (lb/ft)	L	00-05-08	03-08-08		81			n\a
4	E132(i1728)	Unf. Lin. (lb/ft)	L	00-05-08	03-04-08	218	457	531		n\a
5	E147(i4041)	Unf. Lin. (lb/ft)	L	03-08-08	07-08-08		61			n\a
6	E148(i4043)	Unf. Lin. (lb/ft)	L	07-08-08	11-04-00		81			n\a
7	E148(i4043)	Unf. Lin. (lb/ft)	L	08-00-08	11-02-00	218	457	531		n\a
8	E132(i1728)	Conc. Pt. (lbs)	L	03-07-08	03-07-08	513	1,084	1,250		n\a
9	E148(i4043)	Conc. Pt. (lbs)	L	07-09-08	07-09-08	504	1,066	1,228		n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	21,611 ft-lbs	36,222 ft-lbs	59.7 %	13	05-05-08
End Shear	7,900 lbs	17,356 lbs	45.5 %	13	01-03-00
Total Load Deflection	L/275 (0.46")	n\a	87.3 %	45	05-08-08
Live Load Deflection	L/492 (0.257")	n\a	73.2 %	61	05-08-08
Max Defl.	0.46"	n\a	n\a	45	05-08-08
Span / Depth	13.3				

Bearing Supports

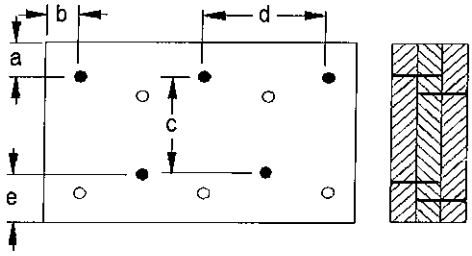
		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate	5-1/2" x 5-1/4"	9,574 lbs	62.1 %	27.2 %	Unspecified
B1	Wall/Plate	5-1/2" x 5-1/4"	9,875 lbs	64.0 %	28.0 %	Unspecified

Job name:		File name:	111 WILSON ST E BLOCK B.mmdl
Address:		Description:	1st Floor\Flush Beams\B5A(i6079)
City, Province, Postal Code:	ANC...TER	Specifier:	
Customer:		Designer:	CZ
Code reports:	CCMC 12472-R	Company:	

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.
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 design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.
Nailing schedule applies to both sides of the member.
Member has no side loads.

Connection Diagram

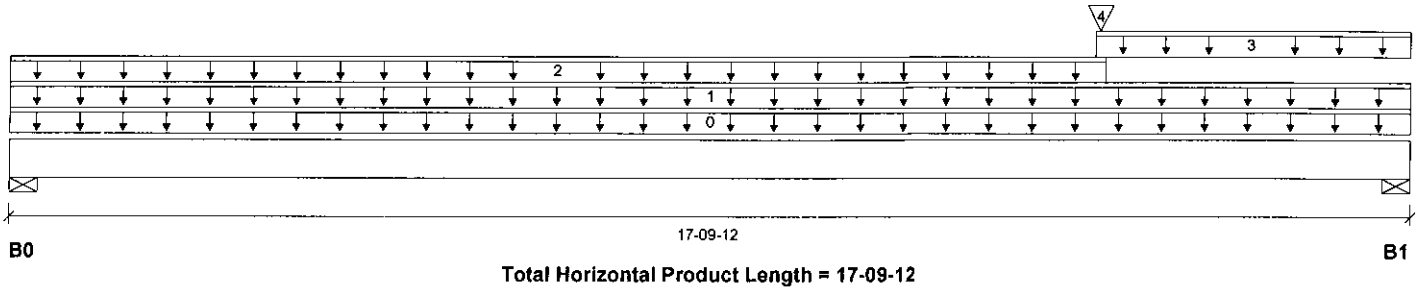


a minimum = 2"
b minimum = 3"
c = 4-1/2"
d = 24"
e minimum = 3"

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.
Nailing schedule applies to both sides of the member.
Member has no side loads.
Connectors are: 16d Sinker Nails

Disclosure

Job name:		File name:	111 WILSON ST E BLOCK B.mmdl
Address:		Description:	1st Floor\Flush Beams\B6(i4343)
City, Province, Postal Code:	ANC...TER	Specifier:	
Customer:		Designer:	CZ
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 17-09-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	766 / 0	473 / 0		
B1, 4-3/8"	1,978 / 0	1,089 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	17-09-12		10			00-00-00
1	FC4 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	17-09-12	25	12			n\a
2	FC4 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	13-11-06	30	15			n\a
3	User Load	Unf. Lin. (lb/ft)	L	13-09-12	17-09-12	240	120			n\a
4	B8(i4383)	Conc. Pt. (lbs)	L	13-10-08	13-10-08	899	468			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	11,222 ft-lbs	23,220 ft-lbs	48.3 %	1	13-05-00
End Shear	3,649 lbs	11,571 lbs	31.5 %	1	16-07-14
Total Load Deflection	L/257 (0.805")	n\a	93.6 %	4	09-05-08
Live Load Deflection	L/406 (0.509")	n\a	88.7 %	5	09-05-08
Max Defl.	0.805"	n\a	n\a	4	09-05-08
Span / Depth	21.7				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate	4-3/8" x 3-1/2"	1,740 lbs	21.3 %	9.3 %	Unspecified
B1	Wall/Plate	4-3/8" x 3-1/2"	4,328 lbs	52.9 %	23.2 %	Unspecified

Notes

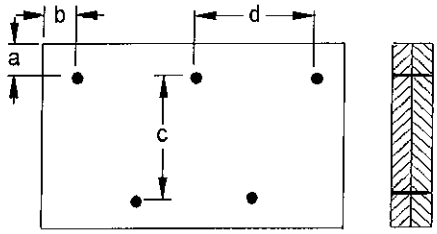
Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume member is fully braced.
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States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

BC CALC® Design Report | Dry | 1 span | No cant. | January 2, 2018 15:27:17

Build 6215

Job name:		File name:	111 WILSON ST E BLOCK B.mmdl
Address:		Description:	1st Floor\Flush Beams\B6(i4343)
City, Province, Postal Code:	ANC...TER	Specifier:	
Customer:		Designer:	CZ
Code reports:	CCMC 12472-R	Company:	

Connection Diagram

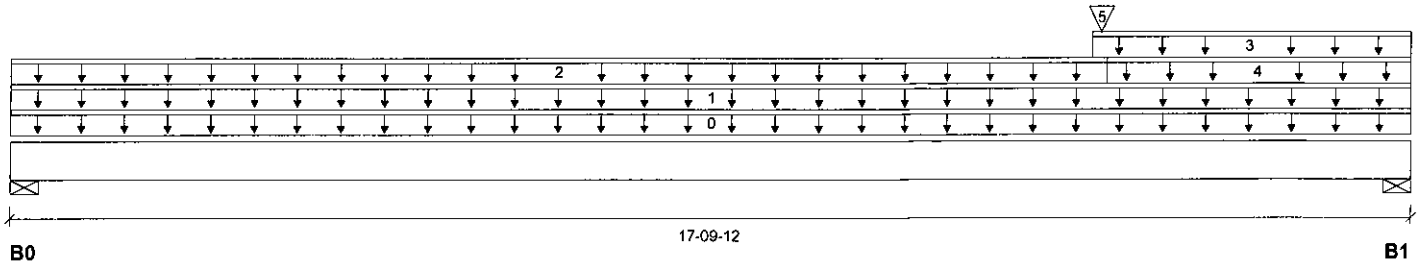


a minimum = 2" c = 5-1/2"
b minimum = 3" d = 24"

Calculated Side Load = 108.5 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: 3-1/4 in. Pneumatic Gun Nails

Disclosure

Job name:		File name:	111 WILSON ST E BLOCK B.mmdl
Address:		Description:	1st Floor\Flush Beams\B7(i4409)
City, Province, Postal Code:	ANC...TER	Specifier:	
Customer:		Designer:	CZ
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 17-09-12

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 4-3/8"	535 / 0	382 / 0		
B1, 4-3/8"	1,026 / 0	832 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	17-09-12		10			00-00-00
1	FC4 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	17-09-12	15	7			n\a
2	FC4 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	13-11-06	24	12			n\a
3	User Load	Unf. Lin. (lb/ft)	L	13-09-00	17-09-12		60			n\a
4	FC4 Floor Material	Unf. Lin. (lb/ft)	L	13-11-06	17-09-12	6	3			n\a
5	B8(i4383)	Conc. Pt. (lbs)	L	13-10-08	13-10-08	947	492			n\a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	8,372 ft-lbs	23,220 ft-lbs	36.1 %	1	13-09-00
End Shear	2,428 lbs	11,571 lbs	21.0 %	1	16-07-14
Total Load Deflection	L/345 (0.598")	n\a	69.6 %	4	09-05-01
Live Load Deflection	L/585 (0.353")	n\a	61.6 %	5	09-07-07
Max Defl.	0.598"	n\a	n\a	4	09-05-01
Span / Depth	21.7				

Bearing Supports

		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Wall/Plate	4-3/8" x 3-1/2"	1,279 lbs	15.6 %	6.8 %	Unspecified
B1	Wall/Plate	4-3/8" x 3-1/2"	2,579 lbs	31.5 %	13.8 %	Unspecified

Notes

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

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

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

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.

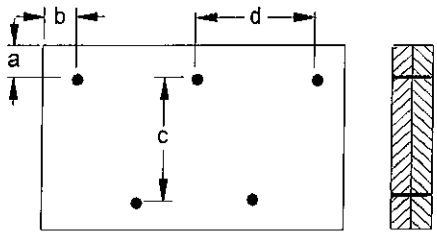
Design based on Dry Service Condition.

Importance Factor : Normal Part code : Part 9

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.

Job name:		File name:	111 WILSON ST E BLOCK B.mmdl
Address:		Description:	1st Floor\Flush Beams\B7(i4409)
City, Province, Postal Code:	ANC...TER	Specifier:	
Customer:		Designer:	CZ
Code reports:	CCMC 12472-R	Company:	

Connection Diagram



a minimum = 2" c = 5-1/2"
b minimum = 3" d = 24"

Calculated Side Load = 114.3 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: 3-1/4 in. Pneumatic Gun Nails

Disclosure

Boise Cascade

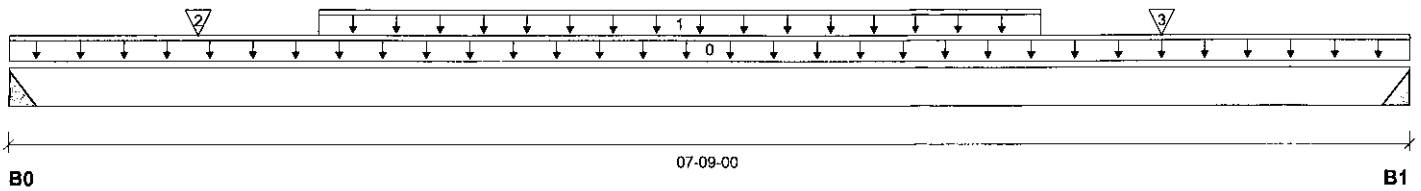
Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

1st Floor\Flush Beams\B8(i4383)

BC CALC® Design Report | Dry | 1 span | No cant. | January 2, 2018 15:27:17

Build 6215

Job name:		File name:	111 WILSON ST E BLOCK B.mmdl
Address:		Description:	1st Floor\Flush Beams\B8(i4383)
City, Province, Postal Code:	ANC...TER	Specifier:	
Customer:		Designer:	CZ
Code reports:	CCMC 12472-R	Company:	



Total Horizontal Product Length = 07-09-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B0, 2"	947 / 0	492 / 0		
B1, 2"	899 / 0	468 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-09-00		5			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-08-08	05-08-08	276	138			n\a
2	J1(i4389)	Conc. Pt. (lbs)	L	01-00-08	01-00-08	348	174			n\a
3	J1(i4370)	Conc. Pt. (lbs)	L	06-04-08	06-04-08	394	197			n\a

Controls Summary	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	4,285 ft-lbs	11,610 ft-lbs	36.9 %	1	03-08-08
End Shear	2,031 lbs	5,785 lbs	35.1 %	1	00-11-08
Total Load Deflection	L/999 (0.122")	n\a	n\a	4	03-10-08
Live Load Deflection	L/999 (0.08")	n\a	n\a	5	03-10-08
Max Defl.	0.122"	n\a	n\a	4	03-10-08
Span / Depth	9.5				

Bearing Supports		Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B0	Hanger	2" x 1-3/4"	2,037 lbs	n\a	47.7 %	HUS1.81/10
B1	Hanger	2" x 1-3/4"	1,933 lbs	n\a	45.3 %	HUS1.81/10

Cautions

Hanger model HUS1.81/10 and seat length were input by the user. Hanger has not been analyzed for adequate capacity.

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

Disclosure