

**2nd Floor\Dropped Beams\DB1-3(i7745)**

BC CALC® Member Report

Dry | 1 span | No cant.

March 16, 2020 13:55:38

Build 6766

Job name:

File name: NHZ010 CARDINAL A R ...9 FLOOR LAYOUT.mmdl

Address:

Description: 2nd Floor\Dropped Beams\DB1-3(i7745)

City, State, Zip:

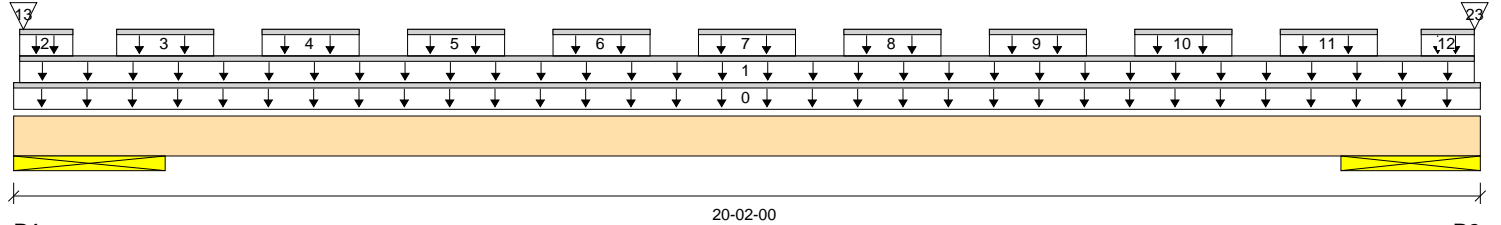
Specifier:

Customer: H & H Homes

Designer:

Code reports: ESR-1040

Company:



Total Horizontal Product Length = 20-02-00

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

Bearing	Live	Dead	Snow	Wind	Roof Live
B1, 25"	326 / 0	1,620 / 0		99 / 568	538 / 0
B2, 23"	320 / 0	1,594 / 0		98 / 561	530 / 0

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	100%	90%	115%	160%	Roof Live 125%	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	20-02-00	Top		18				00-00-00
1	Rim2(i7883)	Unf. Lin. (lb/ft)	L	00-01-00	20-01-00	Top	32	93				n/a
2	Rim2(i7883)	Unf. Lin. (lb/ft)	L	00-01-00	00-09-12	Top		96			128	n/a
3	Rim2(i7883)	Unf. Lin. (lb/ft)	L	01-05-00	02-09-00	Top		65			71	n/a
4	Rim2(i7883)	Unf. Lin. (lb/ft)	L	03-05-00	04-09-00	Top		70			73	n/a
5	Rim2(i7883)	Unf. Lin. (lb/ft)	L	05-05-00	06-09-00	Top		68			70	n/a
6	Rim2(i7883)	Unf. Lin. (lb/ft)	L	07-05-00	08-09-00	Top		69			70	n/a
7	Rim2(i7883)	Unf. Lin. (lb/ft)	L	09-05-00	10-09-00	Top		66			77	n/a
8	Rim2(i7883)	Unf. Lin. (lb/ft)	L	11-05-00	12-09-00	Top		69			70	n/a
9	Rim2(i7883)	Unf. Lin. (lb/ft)	L	13-05-00	14-09-00	Top		68			70	n/a
10	Rim2(i7883)	Unf. Lin. (lb/ft)	L	15-05-00	16-09-00	Top		70			73	n/a
11	Rim2(i7883)	Unf. Lin. (lb/ft)	L	17-05-00	18-09-00	Top		65			71	n/a
12	Rim2(i7883)	Unf. Lin. (lb/ft)	L	19-04-04	20-01-00	Top		96			128	n/a
13	-	Conc. Pt. (lbs)	L	00-01-10	00-01-10	Top					11	n/a
23	-	Conc. Pt. (lbs)	L	20-01-01	20-01-01	Top					11	n/a

**Controls Summary**

	Value	% Allowable	Duration	Case	Location
Pos. Moment	6,260 ft-lbs	19.6%	100%	1	10-01-00
End Shear	1,387 lbs	11.7%	100%	1	17-03-02
Total Load Deflection	L/826 (0.237")	29.1%	n/a	42	10-01-00
Live Load Deflection	L/999 (0.069")	n/a	n/a	171	10-01-00
Max Defl.	0.237"	15.8%	n/a	42	10-01-00
Span / Depth	16.5				
Dist. Load (B1)	323.06 lb/ft	0.7%	100%		
Dist. Load (B2)	323.06 lb/ft	0.7%	100%		
Conc. Load (B1)	28 lbs	0.2%	100%		
Conc. Load (B2)	28 lbs	0.2%	100%		

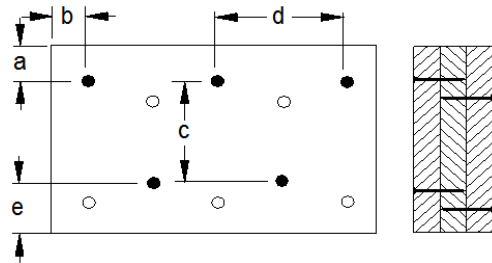
**Bearing Supports**

	Dim. (LxW)	Value	% Allow Support	% Allow Member	Material
B1	Wall/Plate 25" x 5-1/4"	2,313 lbs	2.4%	2.3%	Unspecified
B2	Wall/Plate 23" x 5-1/4"	2,276 lbs	2.6%	2.5%	Unspecified

**Notes**

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Design meets arbitrary (1.5") Maximum Total load deflection criteria.  
 Design meets arbitrary (1") Maximum live load deflection criteria.  
 Calculations assume member is fully braced.  
 BC CALC® analysis is based on IBC 2012.  
 Wind loads determined from building geometry were used in selected product's verification.  
 Design based on Dry Service Condition.  
 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: Full Length of Member**



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

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**2nd Floor\Flush Beams\FB1-2(i7823)**

BC CALC® Member Report

Dry | 1 span | No cant.

March 16, 2020 13:55:38

Build 6766

Job name:

File name: NHZ010 CARDINAL A R ...9 FLOOR LAYOUT.mmdl

Address:

Description: 2nd Floor\Flush Beams\FB1-2(i7823)

City, State, Zip:

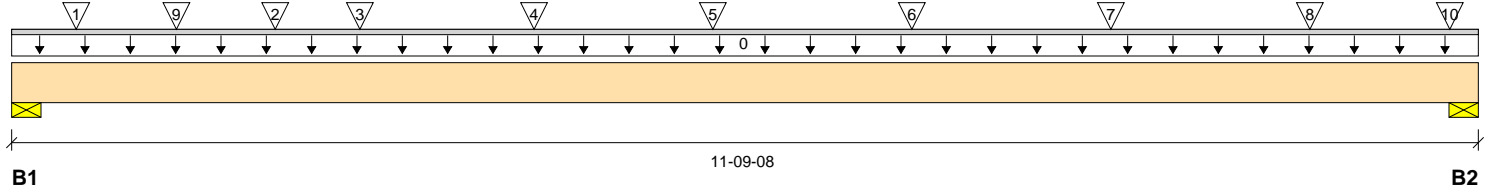
Specifier:

Customer: H & H Homes

Designer:

Code reports: ESR-1040

Company:



Total Horizontal Product Length = 11-09-08

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

Bearing	Live	Dead	Snow	Wind	Roof Live
B1, 3-1/2"	3,983 / 0	1,830 / 0			
B2, 5-1/2"	3,765 / 0	1,899 / 0		16 / 447	86 / 0

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 100%	Dead 90%	Snow 115%	Wind 160%	Roof Live 125%	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	11-09-08	Top		14				00-00-00
1	FJ-8(i7837)	Conc. Pt. (lbs)	L	00-06-04	00-06-04	Top	554	187				n/a
2	FJ-7(i7804)	Conc. Pt. (lbs)	L	02-01-07	02-01-07	Top	412	140				n/a
3	-	Conc. Pt. (lbs)	L	02-09-10	02-09-10	Top	881	406				n/a
4	-	Conc. Pt. (lbs)	L	04-02-06	04-02-06	Top	1,008	564				n/a
5	-	Conc. Pt. (lbs)	L	05-07-10	05-07-10	Top	1,079	467				n/a
6	-	Conc. Pt. (lbs)	L	07-02-14	07-02-14	Top	1,137	493				n/a
7	-	Conc. Pt. (lbs)	L	08-10-01	08-10-01	Top	1,137	493				n/a
8	-	Conc. Pt. (lbs)	L	10-05-04	10-05-04	Top	1,050	483				n/a
9	FJ-5(i7774)	Conc. Pt. (lbs)	L	01-03-14	01-03-14	Top	490	215				n/a
10	E28(i1570)	Conc. Pt. (lbs)	L	11-06-12	11-06-12	Top		113			86	n/a

**Controls Summary**

	Value	% Allowable	Duration	Case	Location
Pos. Moment	16,519 ft-lbs	56.9%	100%	1	05-07-10
End Shear	5,172 lbs	55.6%	100%	1	10-02-00
Total Load Deflection	L/585 (0.229")	41.0%	n/a	1	05-10-01
Live Load Deflection	L/864 (0.155")	41.7%	n/a	100	05-10-01
Max Defl.	0.229"	15.3%	n/a	1	05-10-01
Span / Depth	9.6				

**Bearing Supports**

	Dim. (LxW)	Value	% Allow Support	% Allow Member	Material
B1	Wall/Plate 3-1/2" x 3-1/2"	5,812 lbs	111.6%	63.3%	Unspecified
B2	Wall/Plate 5-1/2" x 3-1/2"	5,664 lbs	69.2%	39.2%	Unspecified

**Cautions**

Bearing B1 cannot support a load of 5,812 lbs.

**2nd Floor\Flush Beams\FB1-2(i7823)**

BC CALC® Member Report

Dry | 1 span | No cant.

March 16, 2020 13:55:38

Build 6766

Job name:

File name: NHZ010 CARDINAL A R ...9 FLOOR LAYOUT.mmdl

Address:

Description: 2nd Floor\Flush Beams\FB1-2(i7823)

City, State, Zip:

Specifier:

Customer: H & H Homes

Designer:

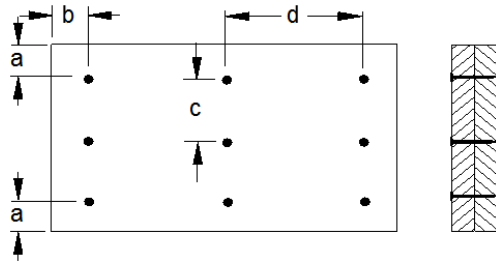
Code reports: ESR-1040

Company:

**Notes**

- Design meets Code minimum (L/240) Total load deflection criteria.
- Design meets Code minimum (L/360) Live load deflection criteria.
- Design meets arbitrary (1.5") Maximum Total load deflection criteria.
- Design meets arbitrary (1") Maximum live load deflection criteria.
- Calculations assume member is fully braced.
- BC CALC® analysis is based on IBC 2012.
- Wind loads determined from building geometry were used in selected product's verification.
- Design based on Dry Service Condition.
- 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.

**Connection Diagram: Full Length of Member**



a minimum = 2"      c = 5"  
 b minimum = 3"      d = 12"

Calculated Side Load = 493.1 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 Box Nails

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**2nd Floor\Flush Beams\FB2(i7852)**

BC CALC® Member Report

Dry | 1 span | No cant.

March 16, 2020 13:55:38

Build 6766

Job name:

File name: NHZ010 CARDINAL A R ...9 FLOOR LAYOUT.mmdl

Address:

Description: 2nd Floor\Flush Beams\FB2(i7852)

City, State, Zip:

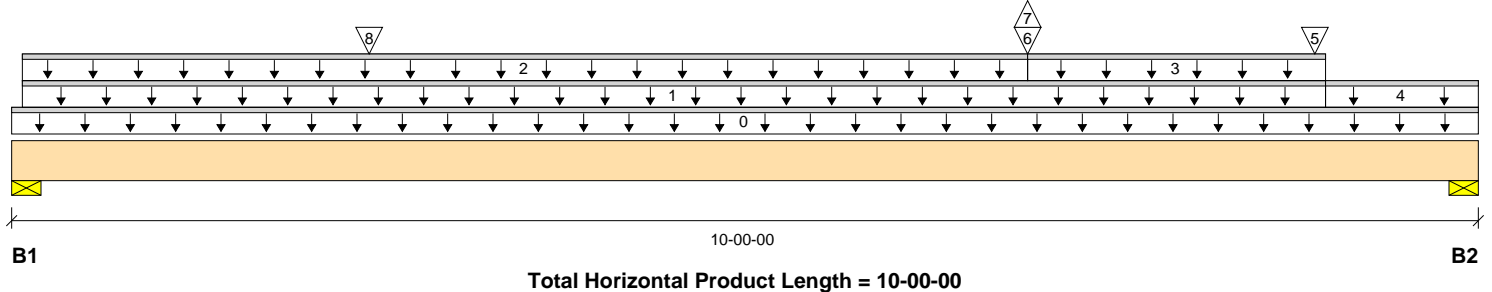
Specifier:

Customer: H & H Homes

Designer:

Code reports: ESR-1040

Company:



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

Bearing	Live	Dead	Snow	Wind	Roof Live
B1, 3-1/2"	402 / 26	215 / 0			
B2, 4-1/2"	848 / 63	375 / 0			

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 100%	Dead 90%	Snow 115%	Wind 160%	Roof Live 125%	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-00-00	Top		7				00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-14	08-11-08	Top	22	6				n\ a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-14	06-11-02	Top	17	4				n\ a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	06-11-02	08-11-08	Top	32	8				n\ a
4	FC2 Floor Material	Unf. Lin. (lb/ft)	L	08-11-08	10-00-00	Top	33	8				n\ a
5	FJ-21(i7800)	Conc. Pt. (lbs)	L	08-10-10	08-10-10	Top	190	66				n\ a
6	FB3(i7801)	Conc. Pt. (lbs)	L	06-11-02	06-11-02	Top	645	301				n\ a
7	FB3(i7801)	Conc. Pt. (lbs)	L	06-11-02	06-11-02	Top	-89					n\ a
8	NB11(i1609)	Conc. Pt. (lbs)	L	02-05-04	02-05-04	Top		48				n\ a

**Controls Summary**

	Value	% Allowable	Duration	Case	Location
Pos. Moment	2,591 ft-lbs	17.8%	100%	1	06-11-02
End Shear	1,102 lbs	23.7%	100%	1	08-05-08
Total Load Deflection	L/999 (0.045")	n\ a	n\ a	1	05-02-15
Live Load Deflection	L/999 (0.031")	n\ a	n\ a	3	05-04-10
Max Defl.	0.045"	n\ a	n\ a	1	05-02-15
Span / Depth	8.1				

**Bearing Supports**

	Dim. (LxW)	Value	% Allow Support	% Allow Member	Material
B1	Wall/Plate 3-1/2" x 1-3/4"	617 lbs	23.7%	13.4%	Unspecified
B2	Wall/Plate 4-1/2" x 1-3/4"	1,223 lbs	36.5%	20.7%	Unspecified

**Notes**

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Design meets arbitrary (1.5") Maximum Total load deflection criteria.  
 Design meets arbitrary (1") Maximum live load deflection criteria.  
 Calculations assume member is fully braced.  
 BC CALC® analysis is based on IBC 2012.  
 Design based on Dry Service Condition.

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**2nd Floor\Flush Beams\FB3(i7609)**

BC CALC® Member Report

Dry | 1 span | No cant.

March 16, 2020 13:55:38

Build 0

Job name:

File name: NHZ010 CARDINAL A R ...9 FLOOR LAYOUT.mmdl

Address:

Description: 2nd Floor\Flush Beams\FB3(i7609)

City, State, Zip:

Specifier:

Customer:

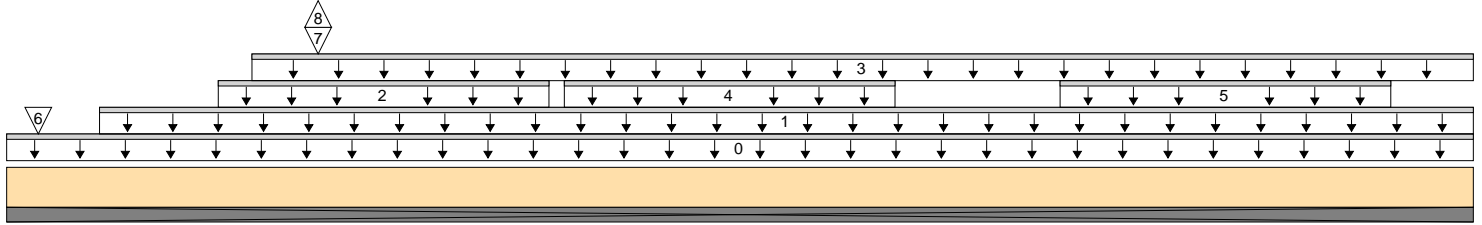
H & H Homes

Designer:

Code reports:

ESR-1040

Company:



Total Horizontal Product Length = 05-11-00

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Roof Live	Tributary
							100%	90%	115%	160%	125%	
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	05-11-00	Top		7				00-00-00
1	E29(i1569)	Unf. Lin. (lb/ft)	L	00-04-08	05-11-00	Top		81				n/a
2	E29(i1569)	Unf. Lin. (lb/ft)	L	00-10-04	02-02-04	Top		23			25	n/a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-11-14	05-11-00	Top	40	10				n/a
4	E29(i1569)	Unf. Lin. (lb/ft)	L	02-03-00	03-07-00	Top		64			63	n/a
5	E29(i1569)	Unf. Lin. (lb/ft)	L	04-03-00	05-07-00	Top		69			73	n/a
6	-	Conc. Pt. (lbs)	L	00-01-09	00-01-09	Top	21	136			56	n/a
7	-	Conc. Pt. (lbs)	L	01-03-01	01-03-01	Top		1,619			1,441	n/a
8	-	Conc. Pt. (lbs)	L	01-03-01	01-03-01	Top					-9	n/a

**Controls Summary**

	Value	% Allowable	Duration	Case	Location
Dist. Load	250.26 lb/ft	1.6%	100%		
Conc. Load	3,060 lbs	66.6%	100%		

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**2nd Floor\Flush Beams\FB3(i7801)**

BC CALC® Member Report

Dry | 1 span | No cant.

March 16, 2020 13:55:38

Build 6766

Job name:

File name: NHZ010 CARDINAL A R ...9 FLOOR LAYOUT.mmdl

Address:

Description: 2nd Floor\Flush Beams\FB3(i7801)

City, State, Zip:

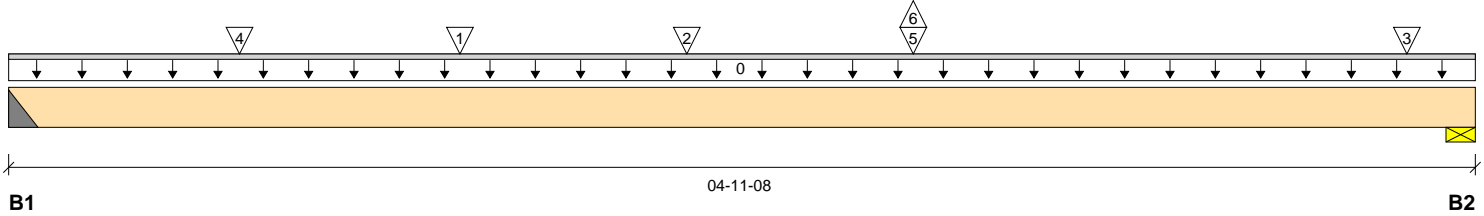
Specifier:

Customer: H & H Homes

Designer:

Code reports: ESR-1040

Company:



Total Horizontal Product Length = 04-11-08

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

Bearing	Live	Dead	Snow	Wind	Roof Live
B1, 2"	669 / 14	349 / 0			
B2, 9-7/8"	1,396 / 46	651 / 0			

**Load Summary**

Tag	Description	Load Type	Ref.	Start	End	Loc.	100%	90%	115%	160%	Roof Live 125%	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-11-08	Top		7				00-00-00
1	FJ-20(i7602)	Conc. Pt. (lbs)	L	01-06-05	01-06-05	Top	91	23				n/a
2	FJ-10-2(i7842)	Conc. Pt. (lbs)	L	02-03-08	02-03-08	Top	514	373				n/a
3	FJ-6(i7826)	Conc. Pt. (lbs)	L	04-08-11	04-08-11	Top	507	208				n/a
4	FJ-17(i7874)	Conc. Pt. (lbs)	L	00-09-06	00-09-06	Top	196	81				n/a
5	-	Conc. Pt. (lbs)	L	03-00-11	03-00-11	Top	749	278				n/a
6	-	Conc. Pt. (lbs)	L	03-00-11	03-00-11	Top	-60					n/a

**Controls Summary**

	Value	% Allowable	Duration	Case	Location
Pos. Moment	1,702 ft-lbs	11.7%	100%	1	02-03-08
End Shear	1,193 lbs	25.6%	100%	1	02-11-10
Total Load Deflection	L/999 (0.006")	n/a	n/a	1	02-02-15
Live Load Deflection	L/999 (0.004")	n/a	n/a	3	02-02-15
Max Defl.	0.006"	n/a	n/a	1	02-02-15
Span / Depth	3.5				

**Bearing Supports**

	Dim. (LxW)	Value	% Allow Support	% Allow Member	Material
B1	Hanger 2" x 1-3/4"	1,018 lbs	87.4%	38.8%	IUS 1.81/14
B2	Wall/Plate 9-7/8" x 1-3/4"	2,048 lbs	27.9%	15.8%	Unspecified

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**Cautions**

Header for the hanger IUS1.81/14 at B1 is a Single 1-3/4" x 14" VERSA-STRAND® RIM. Hanger IUS1.81/14 requires (12) 10dx1.5 face nails, (2) 10dx1.5 joist nails.

**Notes**

Design meets Code minimum (L/240) Total load deflection criteria.  
 Design meets Code minimum (L/360) Live load deflection criteria.  
 Design meets arbitrary (1.5") Maximum Total load deflection criteria.  
 Design meets arbitrary (1") Maximum live load deflection criteria.  
 Calculations assume member is fully braced.  
 Hanger Manufacturer: Simpson Strong-Tie, Inc.  
 BC CALC® analysis is based on IBC 2012.  
 Design based on Dry Service Condition.

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