Structural Calculations

Project Title: Kozitza Residence
Address: 09/01 Royal Scot Sub
Location: Donnelly, Idaho

Job #: 2023-4982

SNAKE RIVER
E N G I N E E R I N G

For Kozitza Residence only

PROFESSIONAL ENGINEER
LICENSED
19373
07/05/2023
STATE OF IDAHO
ANDREW AITCHISON

Prepared in accordance with 2018 IBC. Calculations expire by: *07/05/2024*

SITE SPECIFIC DESIGN CRITERIA:

Snow Criteria:

Roof Load (P_f)	**150 psf**	
Ground Load (P_g)	**150 psf**	
Exposure Factor (C_e)	**1.0**	Partially
Thermal Factor (C_t)	**1.0**	Typical
Importance (I_s)	**1.0**	

Wind Criteria:

Wind Speed (V_3)	**115 mph**	
Wind Exposure	**C**	Open Terrain
Wind Importance (I_w)	**1.0**	
Building Category	**II**	

Seismic Criteria:

Site Class	**D**	Stiff Soil

Ss	**0.48**	Fa	**1.42**	
S1	**0.15**	Fv	**2.22**	
S_{DS}	**0.45**	S_{D1}	**0.22**	
Risk Category	**II**	Other		
Seismic Importance (I_E)	**1.0**			
Seismic Design Category (SDC)	**D**			

Seismic Criteria (continued):

Wall Material	Design Base Shear	Response Coeff., R	
OSB	.08Wp	6.5	Typ @ Ext
GYP	.27Wp	2	Typ @ Int
CANT COL	.36Wp	1.5	

Soil Criteria:

Brg. Strength	**1500 psf**

STRUCTURE SPECIFIC DESIGN CRITERIA:

Live Loads:

Typ Residential	**40 psf**
Garage (P.V.)	**50 psf**
Sleeping Area's	**30 psf**

Roof Dead Loads:

Deck	1.5
Insulation	2.0
Roofing	3.0
Joist	2.5
Ceiling	3.0
Misc	4.5
TOTAL	**17 psf**

Exterior Wall Dead Loads:

Studs	2.0
Siding	2.5
Insulation	0.5
Gyp. Board	2.5
Sheating	1.5
Misc	3.0
TOTAL	**12 psf**

Floor Dead Loads:

Deck	2.5
Joist	2.0
Ceiling	2.0
Flooring	2.5
Misc	3.0
TOTAL	**12 psf**

Interior Wall Dead Loads:

Studs	2.0
Gyp. Board	2.5
Misc	3.0
TOTAL	**8 psf**

Deck Dead Load

Decking	4.4
Joist	2.0
	0.0
Misc	3.0
TOTAL	**10 psf**

WIND ANALYSIS: Low-rise Building - Based on IBC / ASCE 7

INPUT DATA

Exposure category (B, C or D, ASCE 7-16 26.7.3)		C	
Importance factor (ASCE 7-16 Table 1.5-2)	I_w =	1.00	for all Category
Basic wind speed (ASCE 7-16 26.5.1 or 2018 IBC)	V =	115	*mph*
Topographic factor (ASCE 7-16 26.8 & Table 26.8-1)	K_{zt} =	1.00	Flat
Building height to ridge	h_r =	*26.67 ft*	ft
Building height to eave	h_e =	*19.16 ft*	ft
Building width	B =	*40.00 ft*	ft
Building length	L =	*81.00 ft*	ft
Overhang sloped width	O_h =	*3.00 ft*	ft
Effective area of components (or Solar Panel area)	A =	*27.0 ft²*	ft², <== Overhang? (Yes or No): Yes
Enclosed? (Y/N)		y	
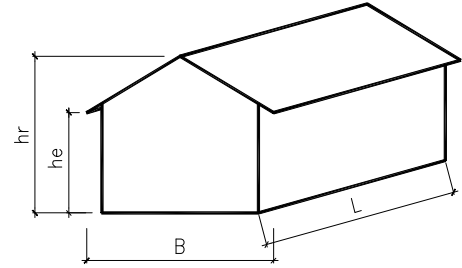
ANALYSIS

Velocity pressure

$$q_h = 0.00256 \, K_z \, K_{zt} \, K_d \, K_e \, V^2 \qquad = \qquad 26.71 \quad psf$$

where: q_h = velocity pressure at mean roof height, h. (Eq. 26.10-1 page 268)

K_z = velocity pressure exposure coefficient evaluated at height, h, (Tab. 26.10-1, pg 2 =   **0.93**

K_d = wind directionality factor. (Tab. 26.6-1, for building, page 266)   =   **0.85**

h = mean roof height   =   **22.92** ft

K_e = ground elevation factor. (*1.0* per Sec. 26.9, page 268)   ***< 60 ft, [Satisfactory]***   (ASCE 7-16 26.2.1)

< Min (L, B), [Satisfactory]   (ASCE 7-16 26.2.2)

Design pressures for MWFRS

$p = q_h \, [(G \, C_{pf}) - (G \, C_{pi})]$

where: p = pressure in appropriate zone. (Eq. 28.3-1, page 311). p_{min} = **16**   psf (ASCE 7-16 28.3.4)

$G \, C_{pf}$ = product of gust effect factor and external pressure coefficient, see table below. (Fig. 28.3-1, page 312 & 313)

$G \, C_{pi}$ = product of gust effect factor and internal pressure coefficient.(Tab. 26.13-1, Enclosed Building, page 271)

   =   **0.18**   or   **-0.18**

a = width of edge strips, Fig 28.3-1, page 312, MAX[MIN(0.1B, 0.1L, 0.4h), MIN(0.04B, 0.04L), 3] =   **4.00**   ft
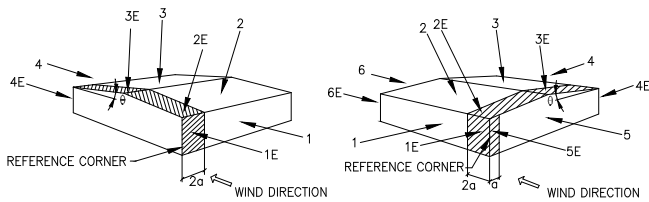
Net Pressures (psf), Basic Load Cases

Surface	Roof angle q = 18.43			Roof angle q = 18.43		
	$G \, C_{pf}$	Net Press. W/		$G \, C_{pf}$	Net Press. W/	
		$(+GC_{pi})$	$(-GC_{pi})$		$(+GC_{pi})$	$(-GC_{pi})$
1	0.52	8.99	18.60	-0.45	-16.83	-7.21
2	-0.69	-23.24	-13.62	-0.69	-23.24	-13.62
3	-0.47	-17.32	-7.71	-0.37	-14.69	-5.07
4	-0.42	-15.90	-6.29	-0.45	-16.83	-7.21
5				0.40	5.88	15.49
6				-0.29	-12.55	-2.94
1E	0.78	16.03	25.64	-0.48	-17.63	-8.01
2E	-1.07	-33.39	-23.77	-1.07	-33.39	-23.77
3E	-0.67	-22.79	-13.18	-0.53	-18.96	-9.35
4E	-0.62	-21.32	-11.70	-0.48	-17.63	-8.01
5E				0.61	11.48	21.10
6E				-0.43	-16.29	-6.68

Net Pressures (psf), Torsional Load Cases

Surface	Roof angle q = 18.43		
	$G \, C_{pf}$	Net Press. W/	
		$(+GC_{pi})$	$(-GC_{pi})$
1T	0.52	2.25	4.65
2T	-0.69	-5.81	-3.41
3T	-0.47	-4.33	-1.93
4T	0.00	-3.98	-1.57

Surface	Roof angle q = 0.00		
	$G \, C_{pf}$	Net Press. W/	
		$(+GC_{pi})$	$(-GC_{pi})$
5T	0.40	1.47	3.87
6T	-0.29	-3.14	-0.73

+ / - Wind Pressure   64%

Load Case A (Transverse)   Load Case B (Longitudinal)   Load Case A (Transverse)   Load Case B (Longitudinal)
Basic Load Cases   **Torsional Load Cases**
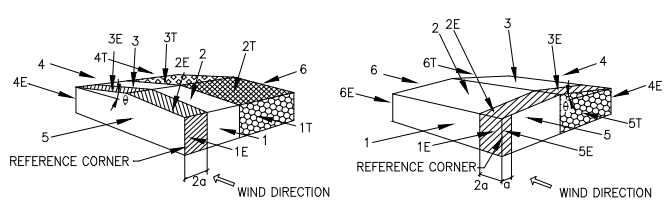
Design pressures for components and cladding

$p = q_h[(G C_p) - (G C_{pi})]$

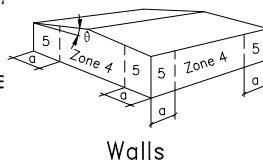where: p = pressure on component. (Eq. 30.3-1, pg 33

p_{min} =   16.00   psf (ASCE 7-16 30.2.2)

$G C_p$ =   1.00   external pressure coefficie
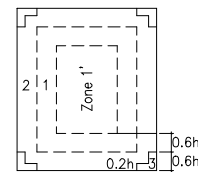
see table below. (ASCE 7-16 30.3.2)

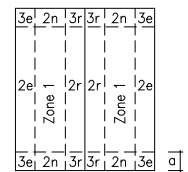q =   18.43 $^{\circ}$

$p_{overhang}$ =   **-92.14**   psf

(ASCE 7-16 28.3.3)

Walls

Roof $_{\theta \leq 7°}$ Roof $_{\theta > 7°}$

	Effective Area (ft²)	Zone **1**		Zone **1'**		Zone **2**		Zone **2e**		Zone **2n**		Zone **2r**	
Comp. & Cladding Coeffs.		GC_p	$- GC_p$	GC_p	$- GC_p$	GC_p	$- GC_p$	GC_p	$- GC_p$	GC_p	$- GC_p$	GC_p	$- GC_p$
	533	0.30	-0.80	0.30	-0.80	0.30	-2.20	0.30	-0.80	0.30	-1.00	0.30	-1.00
	Effective Area (ft²)	Zone **3**		Zone **3e**		Zone **3r**		Zone **4**		Zone **5**			
		GC_p	$- GC_p$	GC_p	$- GC_p$	GC_p	$- GC_p$	GC_p	$- GC_p$	GC_p	$- GC_p$		
	27	0.30	-2.50	0.30	-2.50	0.30	-1.80	0.99	-1.09	0.99	-1.38		

	Zone **1**		Zone **1'**		Zone **2**		Zone **2e**		Zone **2n**		Zone **2r**	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Comp. & Cladding Pressures	3.20	-16.56	3.20	-16.56	3.20	-53.95	3.20	-16.56	3.20	-21.90	3.20	-21.90
	Zone **3**		Zone **3e**		Zone **3r**		Zone **4**		Zone **5**			
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	*(Max Pressure*	
	3.20	-61.96	3.20	-61.96	3.20	-43.27	21.62	-24.29	21.62	-32.03	***61.96*** *psf)*	

LOAD CASE 'A' FACTORED LOADS	
$0.6*W_r = (Z_2 + Z_3) * 0.6 =$	**3.5 psf**
$0.6*W_{rE} = (Z_{2E} + Z_{3E}) * 0.6 =$	**6.4 psf**
$0.6*W_w = (Z_1 + Z_4) * 0.6 =$	**14.9 psf**
$0.6*W_{wE} = (Z_{1E} + Z4E) * 0.6 =$	**22.4 psf**

LOAD CASE 'B' FACTORED LOADS	
$0.6*W_r = (Z_2 + Z_3) * 0.6 =$	**5.1 psf**
$0.6*W_{rE} = (Z_{2E} + Z_{3E}) * 0.6 =$	**8.7 psf**
$0.6*W_w = (Z_5 + Z_6) * 0.6 =$	**11.1 psf**
$0.6*W_{wE} = (Z_{5E} + Z_{6E}) * 0.6 =$	**16.7 psf**

ROOF COMPONENTS FACTORED LOAD	
$0.6*Z_{r,c\&c} =$	**13.1 psf**

WALL COMPONENTS FACTORED LOAD	
$0.6*Z_{w,c\&c} =$	**14.6 psf**

OSB SEISMIC LOADING ANALYSIS
IBC / ASCE 7: Equivalent Lateral Force (ELF) Procedure:

INPUT DATA

Typical floor height:	h =	**9**	ft
Typical floor weight:	w_x =	**55.1**	kips
Number of floors:	n =	**2**	
Importance factor (ASCE 11.5.1):	I_e =	1.00	
Design spectral response:	S_{DS} =	0.45	g
	S_{D1} =	0.22	g
Mapped spectral resp.:	S_1 =	0.15	g
Period Parameter, C_t :			
(ASCE Tab 12.8-2):	C_t =	**0.020**	
Resp. coefficient: (ASCE Tab. 12.2.1):	R =	6.5	
Seismic design category:	SDC =	D	
	h_n =	26.7	ft

DESIGN SUMMARY

$C_s = 1.2 * S_{DS} / (R / I_e)$ =	0.0833		**<= Applicable**
Period Parameter, x =	0.75	, ASCE Tab 12.8-2	
Period: $T_a = C_t (h_n)^x$ =	0.23	sec, ASCE 12.8.2.1	
$C_s < S_{D1} / [(R / I_e) T_a]$ =	0.1415	, ASCE Tab 12.8.1.1	**<= Not Applicable**
$C_s > 0.044 S_{DS} I_e$ =	0.0199	, ASCE Tab 12.8.1.1	**<= Not Applicable**
$C_s > 0.5 S_1 / (R / I_e)$ =	0.0112	, ASCE Tab 12.8.1.1	**<= Not Applicable**
k =	1.81	, (ASCE 12.8.3, page 91)	

$V = C_s W =$ **0.0833** W

$0.7 * V =$ **0.0583** W

$W =$ **110** kips, total

SEISMIC COMPONENT & ANCHORING ANALYSIS
Out-of-plane seismic force for wall design (ASCE 7, Sec.12.11.1)

$$w_{1,seismic} = MAX\left(0.4 I S_{DS} W_p \ , 0.1 W_p\right) \quad = \quad \textbf{0.2} \ W_p = \quad \textbf{0.2} \ \text{psf} \quad \textbf{<= USE FOR DIAPHRAGMS}$$

Where : W_p = **1.0** psf , I_e = 1.00

(CBC / IBC Tab. 1604.5 & ASCE 7 Tab. 1.5-2)

Out-of-plane seismic force for anchorage design

For seismic design category A & B, any diaphragm (ASCE 7 Sec. 12.11.2)

$$F_{anch,seismic} = MAX\left[0.4 S_{DS} I W_p \frac{(h+h_p)^2}{2h} \ , \ 0.1 W_p \frac{(h+h_p)^2}{2h} \ , \ 400 S_{DS} I \ , \ F_{min}\right] =$$

Where : F_{min} = **0.16** plf, **1.69** W_p = **180** plf (Horizontal) **<= Not Applicable**

(ASCE 7 Sec. 12.11.2 & 11.7.3)

For seismic design category C and above, flexible diaphragm (ASCE 7 Sec. 12.11.2.1)

$$F_{anch,seismic} = MAX\left[0.8 S_{DS} I W_p \frac{(h+h_p)^2}{2h} \ , \ 0.1 W_p \frac{(h+h_p)^2}{2h} \ , \ 400 S_{DS} I \ , \ F_{min}\right] =$$

= **3.39** W_p = **180** plf (Horizontal) **<= Applicable**

For connections (ASCE 7 Sec. 12.11.2.1)

$F_{conn,seismic}$ = $MAX [0.133 S_{DS} w_p , 0.5 w_p]$ = **0.5** W_p = **0.5** plf (Horizontal)

GYP SEISMIC LOADING ANALYSIS

IBC / ASCE 7: Equivalent Lateral Force (ELF) Procedure:

INPUT DATA

Typical floor height:	h =	**9**	ft
Typical floor weight:	w_x =	**55.1**	kips
Number of floors:	n =	**2**	
Importance factor (ASCE 11.5.1):	I_e =	1.00	
Design spectral response:	S_{DS} =	0.45	g
	S_{D1} =	0.22	g
Mapped spectral resp.:	S_1 =	0.15	g
Period Parameter, C_t:			
(ASCE Tab 12.8-2):	C_t =	**0.020**	
Resp. coefficient: (ASCE Tab. 12.2.1):	R =	2	
Seismic design category:	SDC =	D	
	h_n =	26.7	ft

DESIGN SUMMARY

$C_s = 1.2 * S_{DS} / (R / I_e)$ =	0.2707		**<= Applicable**
Period Parameter, x =	*0.75*	, ASCE Tab 12.8-2	
Period: $T_a = C_t (h_n)^x$ =	*0.23*	sec, ASCE 12.8.2.1	
$C_s < S_{D1} / [(R / I_e) T_a]$ =	*0.4599*	, ASCE Tab 12.8.1.1	**<= Not Applicable**
$C_s > 0.044 S_{DS} I_e$ =	*0.0199*	, ASCE Tab 12.8.1.1	**<= Not Applicable**
$C_s > 0.5 S_1 / (R / I_e)$ =	*0.0365*	, ASCE Tab 12.8.1.1	**<= Not Applicable**
k =	*1.81*	, (ASCE 12.8.3, page 91)	

$$V = C_s W = \mathbf{0.2707} \ W$$

$$0.7 * V = \mathbf{0.1895} \ W$$

$$W = \mathbf{110} \quad kips, \ total$$

SEISMIC COMPONENT & ANCHORING ANALYSIS

Out-of-plane seismic force for wall design (ASCE 7, Sec.12.11.1)

$$w_{1,seismic} = MAX \left(0.4 I S_{DS} W_P \ , 0.1 W_P \right) \quad = \quad \mathbf{0.2} \ W_p = \quad \mathbf{0.2} \ psf \quad \textbf{\textit{<= USE FOR DIAPHRAGMS}}$$

Where : W_p = **1.0** psf , I_e = 1.00

(CBC / IBC Tab. 1604.5 & ASCE 7 Tab. 1.5-2)

Out-of-plane seismic force for anchorage design

For seismic design category A & B, any diaphragm (ASCE 7 Sec. 12.11.2)

$$F_{anch,seismic} = MAX \left[0.4 S_{DS} I W_p \frac{(h+h_p)^2}{2h} \ , \ 0.1 W_p \frac{(h+h_p)^2}{2h} \ , \ 400 S_{DS} I \ , \ F_{min} \right] =$$

Where : F_{min} = **0.16** plf,   **1.69** W_p = **180** plf (Horizontal)   **<= Not Applicable**

(ASCE 7 Sec. 12.11.2 & 11.7.3)

For seismic design category C and above, flexible diaphragm (ASCE 7 Sec. 12.11.2.1)

$$F_{anch,seismic} = MAX \left[0.8 S_{DS} I W_p \frac{(h+h_p)^2}{2h} \ , \ 0.1 W_p \frac{(h+h_p)^2}{2h} \ , \ 400 S_{DS} I \ , \ F_{min} \right] =$$

= **3.39** W_p = **180** plf (Horizontal) **<= Applicable**

For connections (ASCE 7 Sec. 12.11.2.1)

$$F_{conn,seismic} = MAX [0.133 S_{DS} w_p , 0.5 w_p] = \mathbf{0.5} \ W_p = \mathbf{0.5} \ plf \ (Horizontal)$$

WIND / SEISMIC SHEAR FORCE CALCULATIONS:

From ASCE 7-16 Wind & Seismic Loading Analysis

Wall Line	Roof / Floor					Wall					Load above		*C_s (Wp)	=	Loading		
	Wind Force (psf)	Diaph. Weight	Wr, We truss trib (ft)	Area W (ft)	Area L (ft)	Wind Force (psf)	Wall DL (psf)	Wall ht (ft)	wall line dist (ft)	Upr. Flr Wall ht (ft)	Wind (#)	Seismic (#)			Wind Force (kips)	Seismic Force (kips)	Lateral Control
X1-1	9.6	55	17.7	40.0	78.0	16.4	12.0	9.0	40.0				0.06	=	4.87	5.21	Seismic
X2-1	9.6	55	17.7	40.0	50.0	16.4	12.0	9.0	40.0				0.06	=	4.87	3.43	Wind
X3-1	9.6	55	9.0	26.0	29.5	17.2	12.0	10.5	26.0				0.06	=	1.47	0.90	Wind
Y1-1	9.6	55	17.7	51.5	40.0	16.1	12.0	9.0	51.5				0.06	=	6.23	3.60	Wind
Y2-1	9.6	55	17.7	51.5	40.0	16.1	12.0	9.0	51.5				0.06	=	8.82	5.69	Wind
	9.6	55	9.0	29.5	40.0	17.0	12.0	10.5	29.5				0.06	=			
Y3-1	9.6	55	9.0	29.5	40.0	17.0	12.0	10.5	29.5				0.06	=	2.59	2.09	Wind

SHEAR WALL CALCULATIONS:						
	X1-1	**X1-1**	**X2-1**	**X3-1**	**Y1-1**	**Y2-1**
Shear Wall Forces						
Total length of wall	60.00 ft	18.00 ft	50.00 ft	29.50 ft	11.00 ft	35.50 ft
Total length of shear wall $L =$	60.00 ft	18.00 ft	50.00 ft	29.50 ft	11.00 ft	28.00 ft
Total length of full ht seg. $L_w =$	31.50 ft	15.00 ft	24.58 ft	14.50 ft	3.50 ft	21.00 ft
height of shear wall $H =$	9.00 ft	10.50 ft	9.00 ft	10.50 ft	9.00 ft	9.00 ft
Maximum opening height $H' =$	9.00 ft	2.00 ft	8.00 ft	10.50 ft	8.00 ft	2.00 ft
Total force at top of wall $V_1 =$	3529 lbs	1681 lbs	4871 lbs	1469 lbs	3116 lbs	8821 lbs
Self weight $w_{DL\,self} =$	108 plf	126 plf	108 plf	126 plf	108 plf	108 plf
Applied dead load $w_{DL\,above} =$	40 plf	40 plf	40 plf	40 plf	40 plf	40 plf
Prefered OSB thickness in	7/16	7/16	7/16	7/16	7/16	7/16
Prefered Gyp thickness in	1/2	1/2	1/2	1/2	1/2	1/2
Wall Connected to Concrete $y/n =$	Y	Y	Y	Y	Y	Y
Shear Wall Segments						
	2.75	7.50	3.50	3.00	1.75	4.75
	2.75	7.50	7.00	3.00	1.75	4.75
	13.00		10.83	5.00		11.50
	4.00		3.25	3.50		
	4.00					
	5.00					
Shear Transfer to Concrete						
$T =$	Not Req'd	102 lbs	Not Req'd	Not Req'd	3500 lbs	2125 lbs
1/2 Anchor Bolts @	72 '' O.C.	72 '' O.C.	72 '' O.C.	72 '' O.C.		48 '' O.C.
Provide:	Code Min.	Code Min.	Code Min.	Code Min.		A4
Min # of 1/2 Anchor Bolts	(4) Min	(2) Min	(5) Min	(2) Min		(9) Min
Load From Above	0.00	0.00	0.00	0.00	0.00	0.00
		Perp. Wall			HD3	HD1
Shear Resisting System						
Force Calculated	218.48	112.04	366.09	204.37	890.41	420.03
	OSB	**OSB**	**OSB**	**OSB**	**B.F.**	**OSB**
Min Shear Wall Segment:	2.57 ft	3.00 ft	2.57 ft	3.00 ft	1.33 ft	2.57 ft
Provide: $Va=$	**SW1**	**SW1**	**SW2**	**SW1**	**4400**	**SW3**
Min Shear Wall Segment:						
Provide: $Va=$						
Blocking / Nailing Framing Attachment						
Blocking Unit Shear	59 plf	93 plf	97 plf	50 plf	567 plf	248 plf
Blocking	**NONE**	**NONE**	**NONE**	**NONE**	**B3**	**B1**
Nailing	**See SCHED**	**See SCHED**	**See SCHED**	**See SCHED**	**T3**	**T1**
Unit Base Shear						
% of full height segments $\%fh = L_w/L =$	0.525	0.833	0.492	0.492	0.318	0.750
% of maximum opening height $\%oh = H'/H =$	1.000	0.190	0.889	1.000	0.889	0.222
Shear cap adj factor $SCAF =$	0.51	1.00	0.54	0.50	0.47	1.00
Unit base shear $vbase\ V_1/L_w =$	112 plf	112 plf	198 plf	101 plf	890 plf	420 plf
Effective unit base shear $vreq=vbase/SCAF=$	218 plf	112 plf	366 plf	204 plf	1902 plf	420 plf
Ovrtrn. mo. Ttl. length of wall $OTM =$	61.9 k-ft	17.6 k-ft	81.0 k-ft	31.1 k-ft	14.0 k-ft	79.4 k-ft
Shear wall adjustment factor						
Resist moment total L. of wall $RM =$	266.0 k-ft	26.9 k-ft	184.7 k-ft	72.1 k-ft	0.2 k-ft	57.9 k-ft
$r=$	0.5250	0.9633	0.5210	0.4915	0.3443	0.9310
$C_O=$	0.5128	1.0769	0.5413	0.4958	0.4681	1.0909

SHEAR WALL CALCULATIONS:

Y3-1

Shear Wall Forces

Total length of wall		26.00 ft				
Total length of shear wall	L =	26.00 ft				
Total length of full ht seg.	L_w =	14.50 ft				
height of shear wall	H =	10.50 ft				
Maximum opening height	H' =	6.67 ft				
Total force at top of wall	V_1 =	2588 lbs				
Self weight	$w_{DL\ self}$ =	126 plf				
Applied dead load	$w_{DL\ above}$ =	40 plf				
Prefered OSB thickness	in	7/16				
Prefered Gyp thickness	in	1/2				
Wall Connected to Concrete	y/n =	Y				

Shear Wall Segments

	6.50					
	4.00					
	4.00					

Shear Transfer to Concrete

T =	306 lbs					
1/2 Anchor Bolts @	72 '' O.C.					
Provide:	Code Min.					
Min # of 1/2 Anchor Bolts	(3) Min					
Load From Above	0.00					
Holdown	Perp. Wall					

Shear Resisting System

Force Calculated	249.96					
	OSB					
Min Shear Wall Segment:	3.00 ft					
Provide: Va=	**SW1**					
Min Shear Wall Segment:						
Provide: Va=						

Blocking / Nailing Framing Attachment

Blocking Unit Shear	100 plf					
Blocking	**NONE**					
Nailing	**See SCHED**					

Unit Base Shear

% of full height segments	%fh = L_w/L =	0.558				
% of maximum opening height	%oh = H'/H =	0.635				
Shear cap adj factor	SCAF =	0.71				
Unit base shear	vbase V_1/L_w =	178 plf				
Effective unit base shear	vreq=v_{base}/SCAF=	250 plf				
Ovrtrn. mo. Ttl. length of wall	OTM =	38.1 k-ft				

Shear wall adjustment factor

Resist moment total L. of wall	RM =	56.0 k-ft				
	r=	0.6650				
	C_O=	0.7140				

4.4k → N8 N17   N19 N20

N10A N16   N26 N32

N9 N15   N25 N31

N8A N14   N24 N30

N7 N13   N23 N29

N6 N12   N22 N28

N5 N11   N21 N27

N1 N10   N17A N18
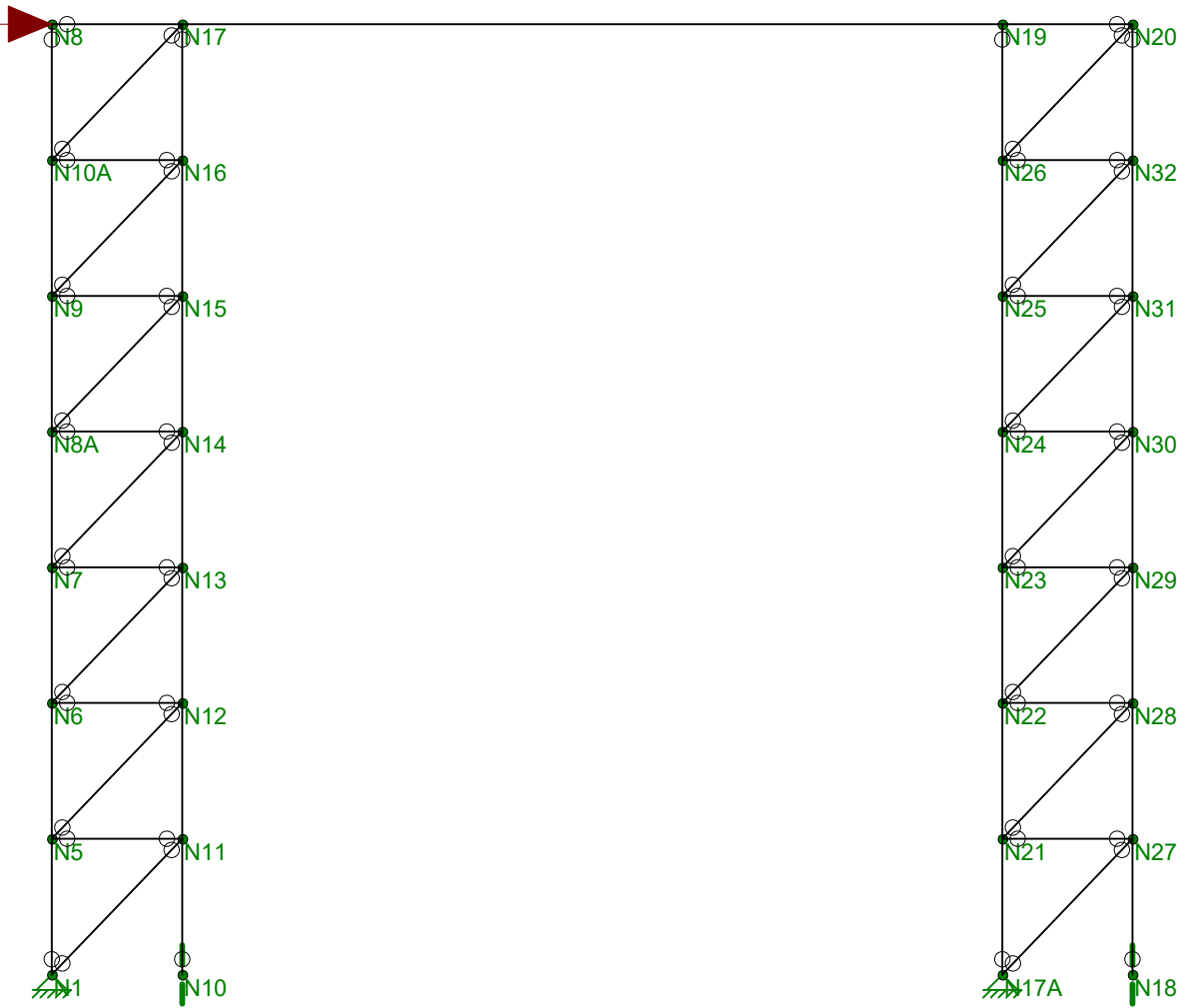
Loads: BLC 1, Wind Load
Envelope Only Solution

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G									
H									

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9bj Y´cdY´A U¦]a i a ´A Ya VYf´GYW`]cb˙:cfW`g`f´cbh`]bi YX˛

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9bj Y´cdY´A Ya VYf´9bX´FYUW`]cbg

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Roof Framing , RB1
1 piece(s) 6 3/4" x 18" 24F-V4 DF Glulam
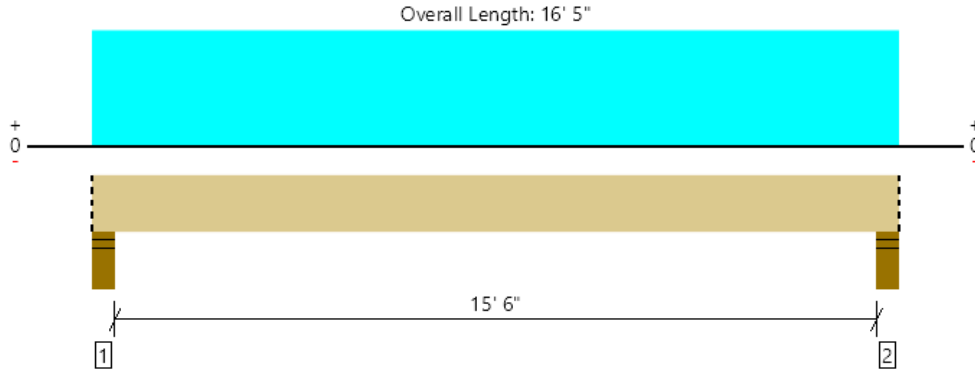
Overall Length: 16' 5"

15' 6"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	18748 @ 4"	23203 (5.50")	Passed (81%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	14275 @ 1' 11 1/2"	24685	Passed (58%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	70823 @ 8' 2 1/2"	80603	Passed (88%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.475 @ 8' 2 1/2"	0.788	Passed (L/398)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.536 @ 8' 2 1/2"	1.050	Passed (L/353)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume factor of 0.96 that was calculated using length L = 15' 9".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	5.50"	5.50"	4.44"	2126	16622	18748	Blocking
2 - Stud wall - DF	5.50"	5.50"	4.44"	2126	16622	18748	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	16' 5" o/c	
Bottom Edge (Lu)	16' 5" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 16' 5"	N/A	29.5	--	
1 - Uniform (PSF)	0 to 16' 5" (Front)	13' 6"	17.0	150.0	Default Load

ForteWEB Software Operator	Job Notes
Trevor Steelsmith 07/05/23 Snake River Engineering (208) 453-6512 trevor@snakeriverengineering.com	

Weyerhaeuser

Roof Framing , RB2
1 piece(s) 5 1/8" x 12" 24F-V4 DF Glulam
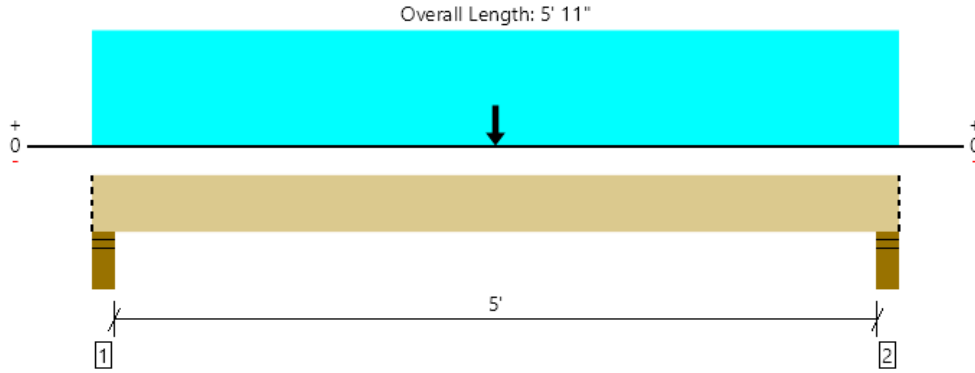
Overall Length: 5' 11"

5'

1 2

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	10653 @ 4"	17617 (5.50")	Passed (60%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	10023 @ 1' 5 1/2"	12495	Passed (80%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	26097 @ 2' 11 1/2"	28290	Passed (92%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.070 @ 2' 11 1/2"	0.262	Passed (L/900)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.079 @ 2' 11 1/2"	0.350	Passed (L/797)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 5' 3".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	5.50"	5.50"	3.33"	1233	9420	10653	Blocking
2 - Stud wall - DF	5.50"	5.50"	3.33"	1233	9420	10653	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 11" o/c	
Bottom Edge (Lu)	5' 11" o/c	

- Maximum allowable bracing intervals based on applied load.

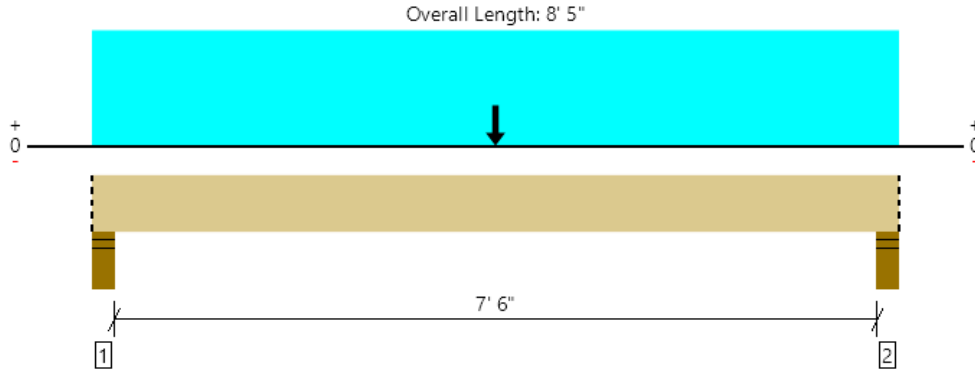| Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 5' 11"	N/A	14.9	--	
1 - Uniform (PSF)	0 to 5' 11" (Front)	2' 6"	17.0	150.0	Default Load
2 - Point (lb)	2' 11 1/2" (Front)	N/A	2126	16622	Linked from: RB1, Support 1

ForteWEB Software Operator	Job Notes
Trevor Steelsmith 07/05/23 Snake River Engineering (208) 453-6512 trevor@snakeriverengineering.com	

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Weyerhaeuser

Roof Framing , RB3
1 piece(s) 5 1/8" x 15" 24F-V4 DF Glulam

Overall Length: 8' 5"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	11210 @ 4"	17617 (5.50")	Passed (64%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	10464 @ 1' 8 1/2"	15618	Passed (67%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	39599 @ 4' 2 1/2"	44203	Passed (90%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.119 @ 4' 2 1/2"	0.387	Passed (L/781)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.135 @ 4' 2 1/2"	0.517	Passed (L/690)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 7' 9".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	5.50"	5.50"	3.50"	1320	9889	11210	Blocking
2 - Stud wall - DF	5.50"	5.50"	3.50"	1320	9889	11210	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' 5" o/c	
Bottom Edge (Lu)	8' 5" o/c	

- Maximum allowable bracing intervals based on applied load.

| Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 8' 5"	N/A	18.7	--	
1 - Uniform (PSF)	0 to 8' 5" (Front)	2' 6"	17.0	150.0	Default Load
2 - Point (lb)	4' 2 1/2" (Front)	N/A	2126	16622	Linked from: RB1, Support 1

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Trevor Steelsmith 07/05/23 Snake River Engineering (208) 453-6512 trevor@snakeriverengineering.com	

Weyerhaeuser

Roof Framing , Outlookers
1 piece(s) 2 x 6 DF No.2 @ 24" OC
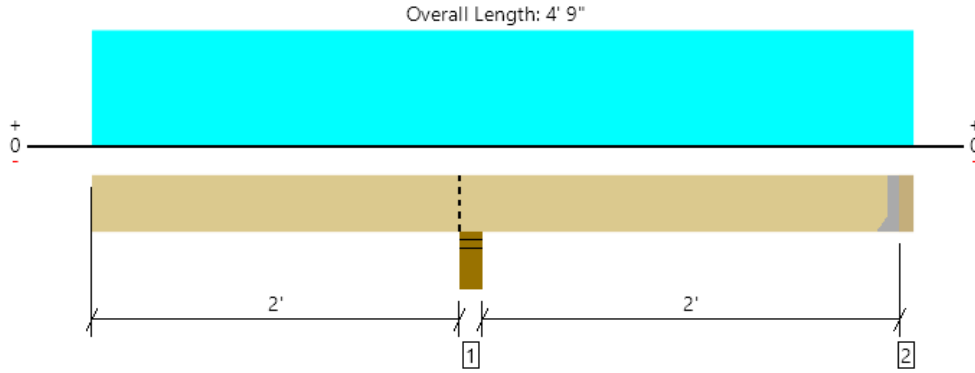
Overall Length: 4' 9"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1489 @ 2' 2 3/4"	5156 (5.50")	Passed (29%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	515 @ 1' 6 1/2"	1139	Passed (45%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	-830 @ 2' 2 3/4"	975	Passed (85%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.104 @ 0	0.223	Passed (2L/514)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.115 @ 0	0.297	Passed (2L/464)	--	1.0 D + 1.0 S (Alt Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Overhang deflection criteria: LL (2L/240) and TL (2L/180).
- Left cantilever length exceeds 1/3 member length or 1/2 back span length. Additional bracing should be considered.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	5.50"	5.50"	1.59"	152	1338	1489	Blocking
2 - Hanger on 5 1/2" DF beam	3.50"	Hanger¹	1.50"	10	255/-80	265/-70	See note ¹

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' 6" o/c	
Bottom Edge (Lu)	4' 6" o/c	

- Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	LU26	1.50"	N/A	6-10dx1.5	4-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 4' 9"	24"	17.0	150.0	Default Load

Weyerhaeuser Notes

ForteWEB Software Operator	Job Notes
Trevor Steelsmith 07/05/23 Snake River Engineering (208) 453-6512 trevor@snakeriverengineering.com	

Weyerhaeuser

Roof Framing , Deck Beam Worst Case
1 piece(s) 6 3/4" x 13 1/2" 24F-V4 DF Glulam
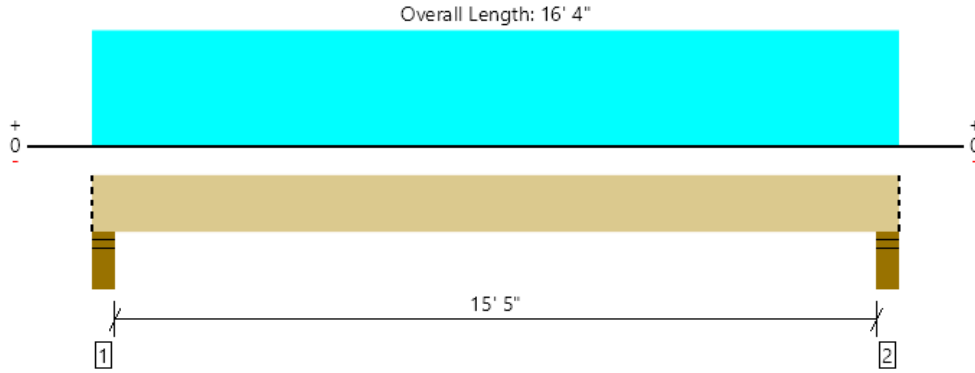
Overall Length: 16' 4"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	9728 @ 4"	23203 (5.50")	Passed (42%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	7842 @ 1' 7"	18514	Passed (42%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	36545 @ 8' 2"	46687	Passed (78%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.571 @ 8' 2"	0.783	Passed (L/329)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.648 @ 8' 2"	1.044	Passed (L/290)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume factor of 0.99 that was calculated using length L = 15' 8".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	5.50"	5.50"	2.31"	1153	8575	9728	Blocking
2 - Stud wall - DF	5.50"	5.50"	2.31"	1153	8575	9728	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	16' 4" o/c	
Bottom Edge (Lu)	16' 4" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 16' 4"	N/A	22.1	--	
1 - Uniform (PSF)	0 to 16' 4" (Front)	7'	17.0	150.0	Default Load

ForteWEB Software Operator	Job Notes
Trevor Steelsmith 07/05/23 Snake River Engineering (208) 453-6512 trevor@snakeriverengineering.com	

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MEMBER REPORT

Floor Framing, FB3
2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL
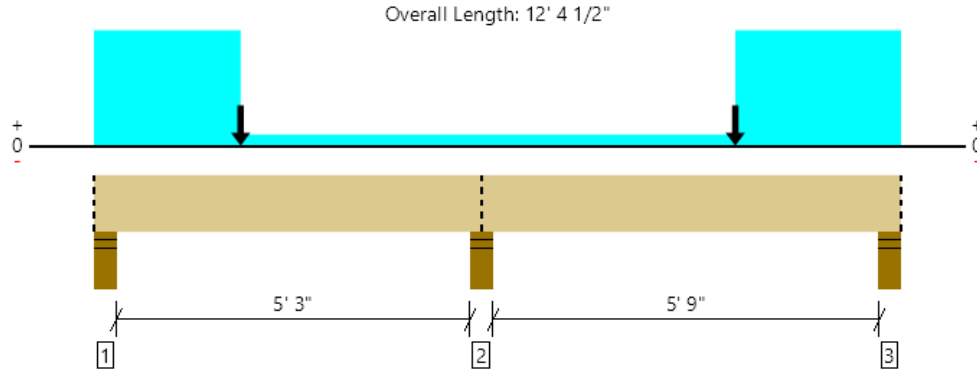
All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	12064 @ 5' 11 1/4"	12031 (5.50")	Passed (100%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	6192 @ 1' 5 3/8"	9081	Passed (68%)	1.15	1.0 D + 1.0 S (Alt Spans)
Moment (Ft-lbs)	13529 @ 9' 10"	20525	Passed (66%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.089 @ 9' 10"	0.153	Passed (L/820)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.102 @ 9' 10"	0.305	Passed (L/722)	--	1.0 D + 1.0 S (Alt Spans)

System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Factored	
1 - Stud wall - DF	5.50"	5.50"	3.17"	912	112/-17	6024	6936	Blocking
2 - Stud wall - DF	5.50"	5.50"	5.51"	1638	293	10426	12064	Blocking
3 - Stud wall - DF	5.50"	5.50"	3.14"	938	120/-12	5927	6865	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	10' o/c	
Bottom Edge (Lu)	12' 5" o/c	

- Maximum allowable bracing intervals based on applied load.

| Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 12' 4 1/2"	N/A	12.1	--	--	
1 - Uniform (PSF)	0 to 2' 3" (Front)	2' 6"	17.0	-	150.0	Default Load
2 - Point (lb)	2' 3" (Front)	N/A	1320	-	9889	Linked from: RB3, Support 1
3 - Uniform (PSF)	0 to 12' 4 1/2" (Front)	1'	12.0	40.0	-	Default Load
4 - Uniform (PSF)	9' 10" to 12' 4 1/2" (Front)	2' 6"	17.0	-	150.0	Default Load
5 - Uniform (PSF)	0 to 2' 3" (Front)	9'	8.0	-	-	Default Load
6 - Uniform (PSF)	9' 10" to 12' 4 1/2" (Front)	9'	8.0	-	-	Default Load
7 - Point (lb)	9' 10" (Front)	N/A	1320	-	9889	Linked from: RB3, Support 1

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Trevor Steelsmith 07/05/23 Snake River Engineering (208) 453-6512 trevor@snakeriverengineering.com	

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Floor Framing, FB4
1 piece(s) 8 3/4" x 18" 24F-V4 DF Glulam
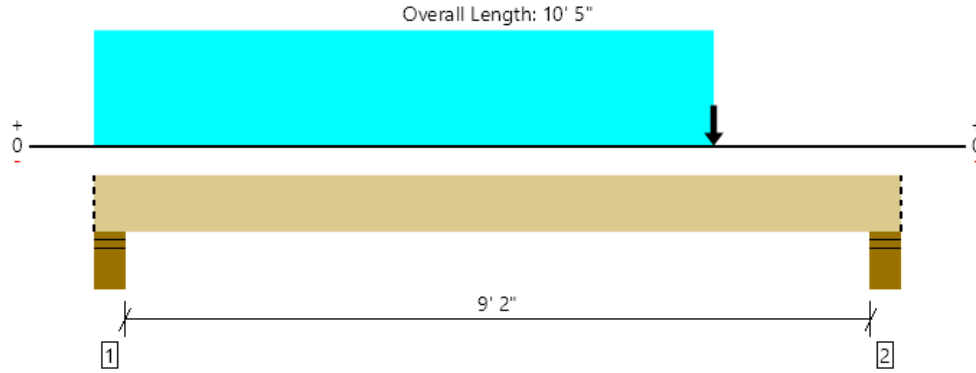
All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	27393 @ 9' 11"	41016 (7.50")	Passed (67%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	27311 @ 8' 3 1/2"	31999	Passed (85%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	52396 @ 8'	107182	Passed (49%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.073 @ 5' 8 7/16"	0.235	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.086 @ 5' 8 3/16"	0.471	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume factor of 0.99 that was calculated using length L = 9' 5".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	7.50"	7.50"	1.72"	1755	7627	9382	Blocking
2 - Stud wall - DF	7.50"	7.50"	5.01"	3785	23607	27393	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	10' 5" o/c	
Bottom Edge (Lu)	10' 5" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 10' 5"	N/A	38.3	--	
1 - Uniform (PSF)	0 to 8' (Front)	2' 6"	17.0	150.0	Default Load
2 - Uniform (PSF)	0 to 8' (Front)	9'	12.0	-	Default Load
3 - Point (lb)	8' (Front)	N/A	2163	14054	Linked from: FB6, Support 1
4 - Point (lb)	8' (Front)	N/A	1775	14180	Linked from: FB5, Support 2

Weyerhaeuser Notes

ForteWEB Software Operator	Job Notes
Trevor Steelsmith 07/05/23 Snake River Engineering (208) 453-6512 trevor@snakeriverengineering.com	

Weyerhaeuser

Floor Framing, FB5
1 piece(s) 5 1/2" x 18" 24F-V4 DF Glulam
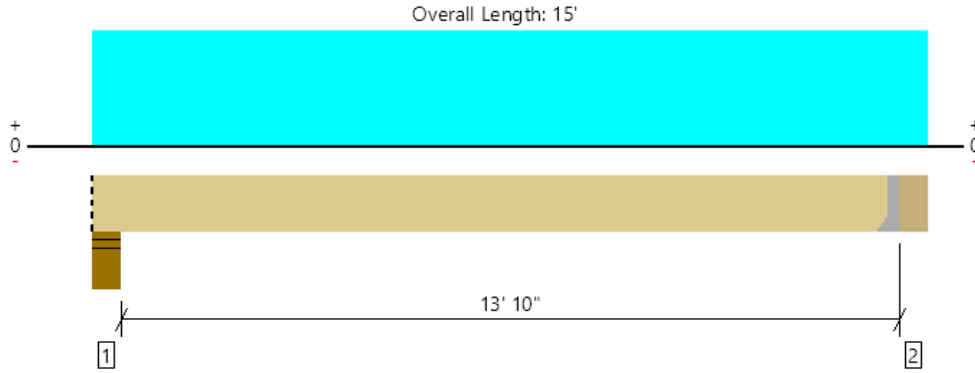
Overall Length: 15'

13' 10"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	14737 @ 14' 5"	14737 (4.12")	Passed (100%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	11570 @ 12' 11"	20114	Passed (58%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	51426 @ 7' 5 1/4"	67850	Passed (76%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.333 @ 7' 5 1/4"	0.349	Passed (L/503)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.375 @ 7' 5 1/4"	0.698	Passed (L/447)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume factor of 0.99 that was calculated using length L = 13' 11 1/2".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	7.00"	7.00"	4.57"	1759	13945	15705	Blocking
2 - Hanger on 18" DF beam	7.00"	Hanger¹	4.12"	1775	14180	15955	See note ¹

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	14' 5" o/c	
Bottom Edge (Lu)	14' 5" o/c	

- Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie

Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	HHGU5.50-SDS H=18	5.25"	N/A	44-SDS25212	28-SDS25212	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 14' 5"	N/A	24.1	--	
1 - Uniform (PSF)	0 to 15' (Front)	12' 6"	17.0	150.0	Default Load

Weyerhaeuser Notes

ForteWEB Software Operator	Job Notes
Trevor Steelsmith 07/05/23 Snake River Engineering (208) 453-6512 trevor@snakeriverengineering.com	

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Weyerhaeuser

Floor Framing, FB6
1 piece(s) 5 1/8" x 13 1/2" 24F-V4 DF Glulam

Overall Length: 9' 2"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	14189 @ 7"	14189 (4.26")	Passed (100%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	10260 @ 1' 8 1/2"	14057	Passed (73%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	28821 @ 4' 7 3/4"	35805	Passed (80%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.157 @ 4' 7 3/4"	0.203	Passed (L/622)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.181 @ 4' 7 3/4"	0.406	Passed (L/538)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 8' 1 1/2".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 13 1/2" DF beam	7.00"	Hanger¹	4.26"	2163	14054	16216	See note ¹
2 - Beam - DF	7.00"	7.00"	4.93"	2114	13676	15790	None

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' 7" o/c	
Bottom Edge (Lu)	8' 7" o/c	

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HHGU5.25-SDS H=13.5	5.25"	N/A	44-SDS25212	28-SDS25212	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	7" to 9' 2"	N/A	16.8	--	
1 - Uniform (PSF)	0 to 9' 2" (Front)	20' 2"	17.0	150.0	Default Load
2 - Uniform (PSF)	0 to 9' 2" (Front)	9'	12.0	-	Default Load

Weyerhaeuser Notes

ForteWEB Software Operator	Job Notes
Trevor Steelsmith 07/05/23 Snake River Engineering (208) 453-6512 trevor@snakeriverengineering.com	

Weyerhaeuser

Floor Framing, Upper Floor Joists
1 piece(s) 11 7/8" TJI® 110 @ 24" OC
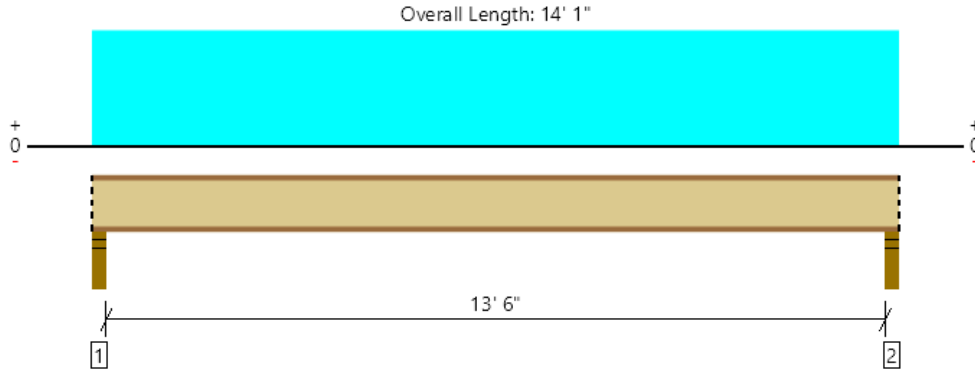
Overall Length: 14' 1"

13' 6"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	732 @ 2 1/2"	1375 (3.50")	Passed (53%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	702 @ 3 1/2"	1560	Passed (45%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2428 @ 7' 1/2"	3160	Passed (77%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.211 @ 7' 1/2"	0.342	Passed (L/779)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.274 @ 7' 1/2"	0.683	Passed (L/599)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	43	40	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	3.50"	3.50"	1.75"	169	563	732	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.75"	169	563	732	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 7" o/c	
Bottom Edge (Lu)	14' 1" o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

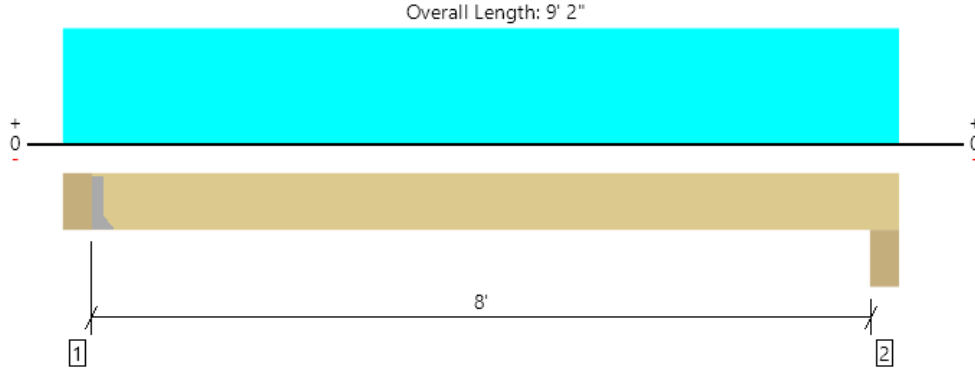| Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 14' 1"	24"	12.0	40.0	Default Load

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Trevor Steelsmith 07/05/23 Snake River Engineering (208) 453-6512 trevor@snakeriverengineering.com	

Weyerhaeuser

5/5/2023 7:51:01 PM UTC
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ForteWEB v3.5, Engine: V8.2.5.1, Data: V8.1.3.6
File Name: 2023-4982 Kozita Residence
Page 12 / 19

Floor Framing, Upper Floor Joists 2
1 piece(s) 11 7/8" TJI ® 110 @ 24" OC

Overall Length: 7' 1"

6' 6"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	342 @ 6' 9 1/2"	910 (1.75")	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	342 @ 6' 9 1/2"	1560	Passed (22%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	563 @ 3' 6"	3160	Passed (18%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.017 @ 3' 6"	0.165	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.023 @ 3' 6"	0.329	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	63	40	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	3.50"	3.50"	1.75"	84	280	364	Blocking
2 - Hanger on 11 7/8" DF beam	3.50"	Hanger¹	1.75" / - ²	86	287	373	See note ¹

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.
- ² Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 10" o/c	
Bottom Edge (Lu)	6' 10" o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	IUS1.81/11.88	2.00"	N/A	10-10dx1.5	2-Strong-Grip	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 7' 1"	24"	12.0	40.0	Default Load

Weyerhaeuser Notes

ForteWEB Software Operator	Job Notes
Trevor Steelsmith 07/05/23 Snake River Engineering (208) 453-6512 trevor@snakeriverengineering.com	

Weyerhaeuser

Floor Framing, Deck Floor Joists
1 piece(s) 2 x 10 DF No.2 @ 12" OC
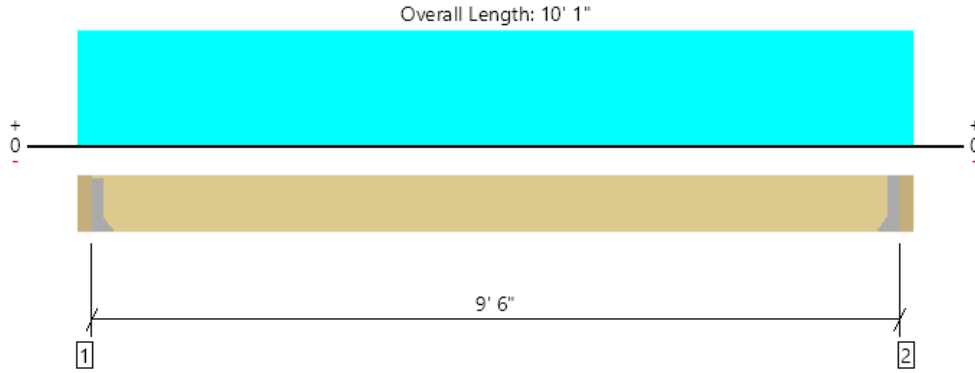
Overall Length: 10' 1"

9' 6"

1   2

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	770 @ 3 1/2"	1406 (1.50")	Passed (55%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	645 @ 1' 3/4"	1915	Passed (34%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1828 @ 5' 1/2"	2334	Passed (78%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.174 @ 5' 1/2"	0.237	Passed (L/656)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.188 @ 5' 1/2"	0.475	Passed (L/608)	--	1.0 D + 1.0 S (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Hanger on 9 1/4" DF beam	3.50"	Hanger¹	1.50"	61	756	817	See note ¹
2 - Hanger on 9 1/4" DF beam	3.50"	Hanger¹	1.50"	61	756	817	See note ¹

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger

- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 9" o/c	
Bottom Edge (Lu)	9' 6" o/c	

- Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LU28	1.50"	N/A	8-10dx1.5	6-10dx1.5	
2 - Face Mount Hanger	LU28	1.50"	N/A	8-10dx1.5	6-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

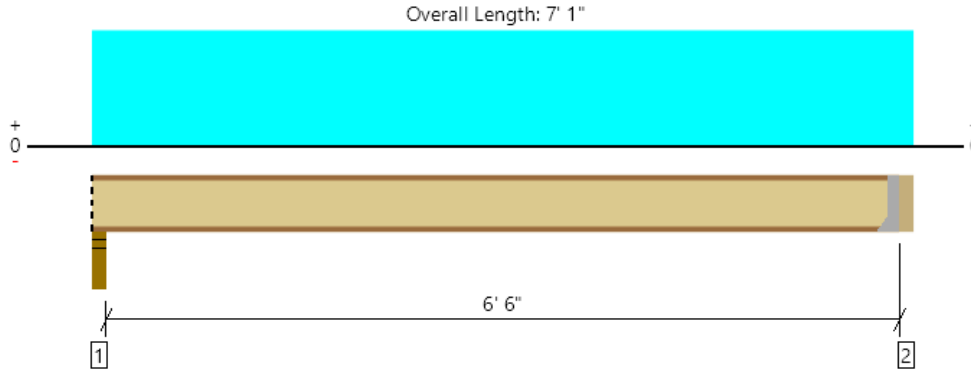| Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 10' 1"	12"	12.0	150.0	Default Load

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Trevor Steelsmith 07/05/23 Snake River Engineering (208) 453-6512 trevor@snakeriverengineering.com	

Weyerhaeuser

Floor Framing, Worst Case Deck Beam
1 piece(s) 6 x 10 DF No.2
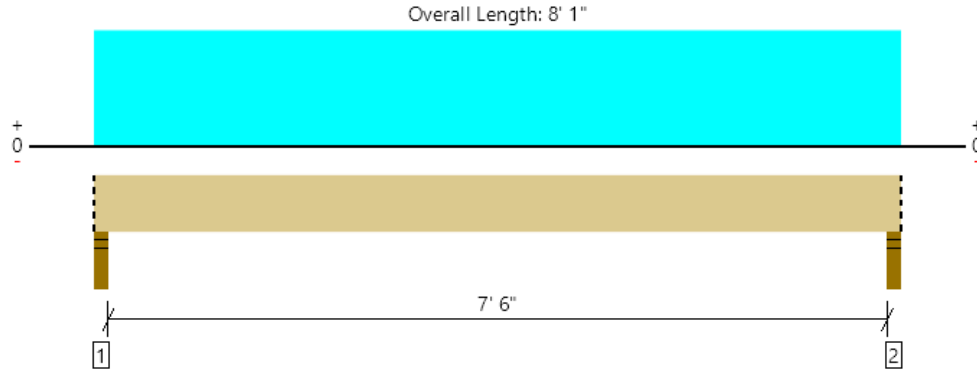
Overall Length: 8' 1"

7' 6"

1   2

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3327 @ 2"	12031 (3.50")	Passed (28%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2435 @ 1' 1"	6810	Passed (36%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	6181 @ 4' 1/2"	6937	Passed (89%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.119 @ 4' 1/2"	0.194	Passed (L/780)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.131 @ 4' 1/2"	0.387	Passed (L/711)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Lumber grading provisions must be extended over the length of the member per NDS 4.2.5.5.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	3.50"	3.50"	1.50"	296	3031	3327	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	296	3031	3327	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' 1" o/c	
Bottom Edge (Lu)	8' 1" o/c	

- Maximum allowable bracing intervals based on applied load.

| Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 8' 1"	N/A	13.2	--	
1 - Uniform (PSF)	0 to 8' 1" (Front)	5'	12.0	150.0	Default Load

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator.

ForteWEB Software Operator	Job Notes
Trevor Steelsmith 07/05/23 Snake River Engineering (208) 453-6512 trevor@snakeriverengineering.com	

Weyerhaeuser

FORTEWEB®

Floor Framing, Main Floor Framing
1 piece(s) 9 1/2" TJI® 110 @ 24" OC
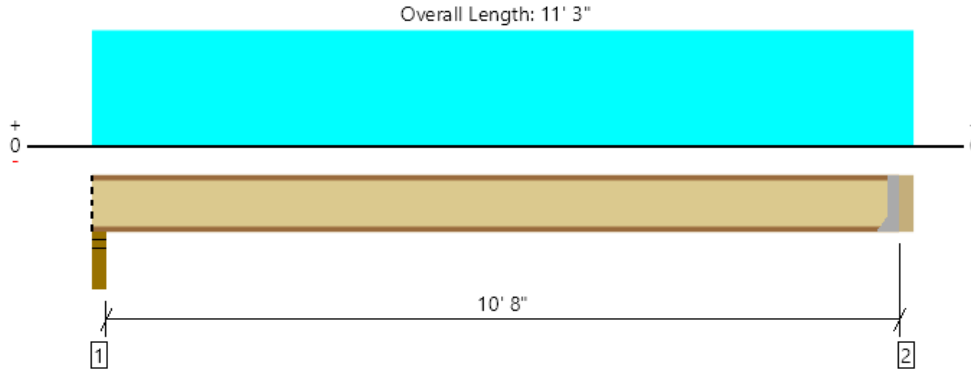
Overall Length: 11' 3"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	559 @ 10' 11 1/2"	910 (1.75")	Passed (61%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	559 @ 10' 11 1/2"	1220	Passed (46%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1502 @ 5' 7"	2500	Passed (60%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.139 @ 5' 7"	0.269	Passed (L/930)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.180 @ 5' 7"	0.538	Passed (L/715)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	41	40	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - DF	3.50"	3.50"	1.75"	134	447	581	Blocking
2 - Hanger on 9 1/2" DF beam	3.50"	Hanger¹	1.75" / - ²	136	453	589	See note ¹

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.
- ² Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' o/c	
Bottom Edge (Lu)	11' o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	IUS1.81/9.5	2.00"	N/A	8-10dx1.5	2-Strong-Grip	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

| Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 11' 3"	24"	12.0	40.0	Default Load

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Trevor Steelsmith 07/05/23 Snake River Engineering (208) 453-6512 trevor@snakeriverengineering.com	

Weyerhaeuser

Deck Framing Update 7.5.2023, Roof: Drop Beam
1 piece(s) 6 3/4" x 13 1/2" 24F-V4 DF Glulam
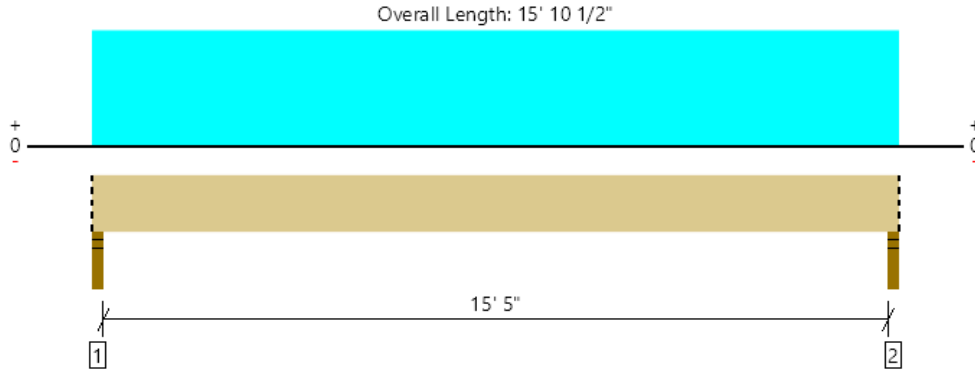
Overall Length: 15' 10 1/2"

15' 5"

1   2

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	9455 @ 1 1/4"	11602 (2.75")	Passed (81%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	7842 @ 1' 4 1/4"	18514	Passed (42%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	36545 @ 7' 11 1/4"	46687	Passed (78%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.571 @ 7' 11 1/4"	0.783	Passed (L/329)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.648 @ 7' 11 1/4"	1.044	Passed (L/290)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Critical positive moment adjusted by a volume/size factor of 0.99 that was calculated using length L = 15' 8".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	2.75"	2.75"	2.24"	1120	8334	9455	Blocking
2 - Stud wall - DF	2.75"	2.75"	2.24"	1120	8334	9455	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	15' 11" o/c	
Bottom Edge (Lu)	15' 11" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 15' 10 1/2"	N/A	22.1	--	
1 - Uniform (PSF)	0 to 15' 10 1/2" (Front)	7'	17.0	150.0	Default Load

Weyerhaeuser Notes

ForteWEB Software Operator	Job Notes
Trevor Steelsmith 07/05/23 Snake River Engineering (208) 453-6512 trevor@snakeriverengineering.com	

Weyerhaeuser

Deck Framing Update 7.5.2023, floor beam
1 piece(s) 6 x 10 DF No.2
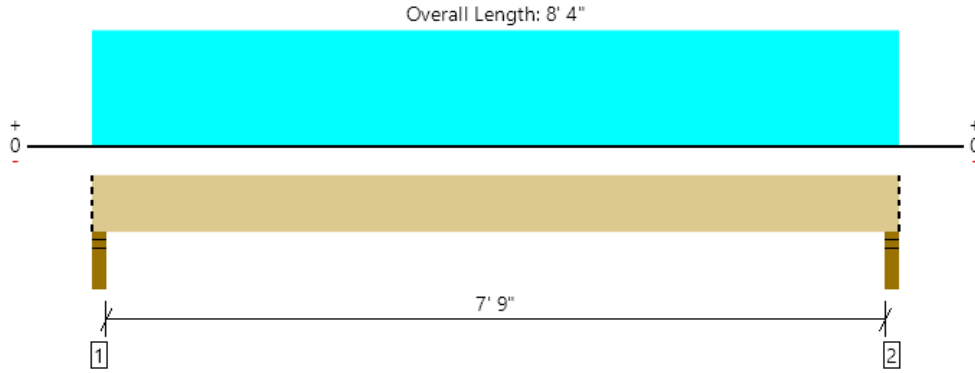
Overall Length: 8' 4"

7' 9"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1868 @ 2"	12031 (3.50")	Passed (16%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1382 @ 1' 1"	6810	Passed (20%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3586 @ 4' 2"	6937	Passed (52%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.068 @ 4' 2"	0.200	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.081 @ 4' 2"	0.400	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Lumber grading provisions must be extended over the length of the member per NDS 4.2.5.5.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	3.50"	3.50"	1.50"	305	1562	1868	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	305	1562	1868	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' 4" o/c	
Bottom Edge (Lu)	8' 4" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 8' 4"	N/A	13.2	--	
1 - Uniform (PSF)	0 to 8' 4" (Front)	5'	12.0	75.0	Default Load

Weyerhaeuser Notes

ForteWEB Software Operator	Job Notes
Trevor Steelsmith 07/05/23 Snake River Engineering (208) 453-6512 trevor@snakeriverengineering.com	

Weyerhaeuser

Deck Framing Update 7.5.2023, Copy of floor beam
1 piece(s) 4 x 10 DF No.2
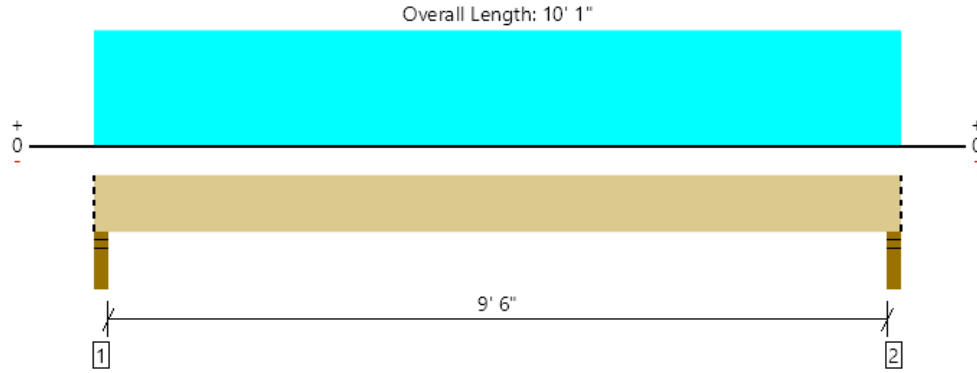
Overall Length: 10' 1"

9' 6"

1   2

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	919 @ 2"	7656 (3.50")	Passed (12%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	725 @ 1' 3/4"	4468	Passed (16%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2165 @ 5' 1/2"	5166	Passed (42%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.083 @ 5' 1/2"	0.244	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.100 @ 5' 1/2"	0.488	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	3.50"	3.50"	1.50"	162	756	919	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	162	756	919	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	10' 1" o/c	
Bottom Edge (Lu)	10' 1" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 10' 1"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 10' 1" (Front)	2'	12.0	75.0	Default Load

ForteWEB Software Operator	Job Notes
Trevor Steelsmith 07/05/23 Snake River Engineering (208) 453-6512 trevor@snakeriverengineering.com	

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Deck Framing Update 7.5.2023, Floor: Joist
1 piece(s) 2 x 10 DF No.2 @ 12" OC
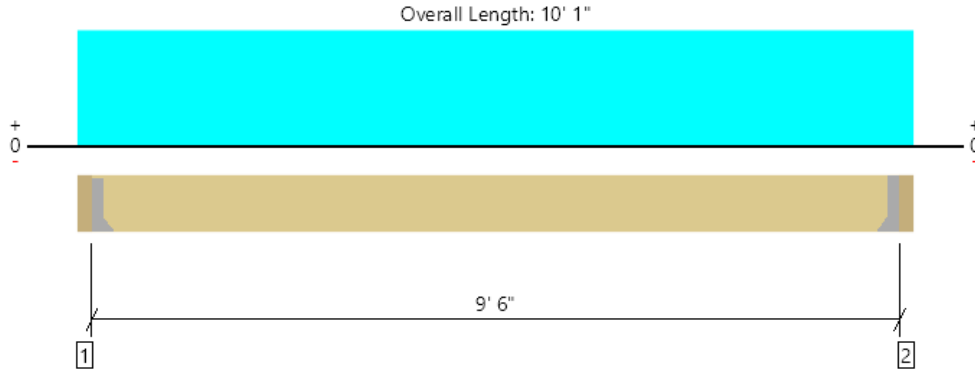
Overall Length: 10' 1"

9' 6"

All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	413 @ 3 1/2"	1406 (1.50")	Passed (29%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	346 @ 1' 3/4"	1915	Passed (18%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	981 @ 5' 1/2"	2334	Passed (42%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.087 @ 5' 1/2"	0.237	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.101 @ 5' 1/2"	0.475	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			
	Total	Available	Required	Dead	Snow	Factored	Accessories
1 - Hanger on 9 1/4" DF beam	3.50"	Hanger¹	1.50"	61	378	439	See note ¹
2 - Hanger on 9 1/4" DF beam	3.50"	Hanger¹	1.50"	61	378	439	See note ¹

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 6" o/c	
Bottom Edge (Lu)	9' 6" o/c	

- Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LU28	1.50"	N/A	8-10dx1.5	6-10dx1.5	
2 - Face Mount Hanger	LU28	1.50"	N/A	8-10dx1.5	6-10dx1.5	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

| Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 10' 1"	12"	12.0	75.0	Default Load

Weyerhaeuser Notes

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Trevor Steelsmith 07/05/23 Snake River Engineering (208) 453-6512 trevor@snakeriverengineering.com	

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Deck Framing Update 7.5.2023, Copy of floor beam
1 piece(s) 6 x 8 DF No.2
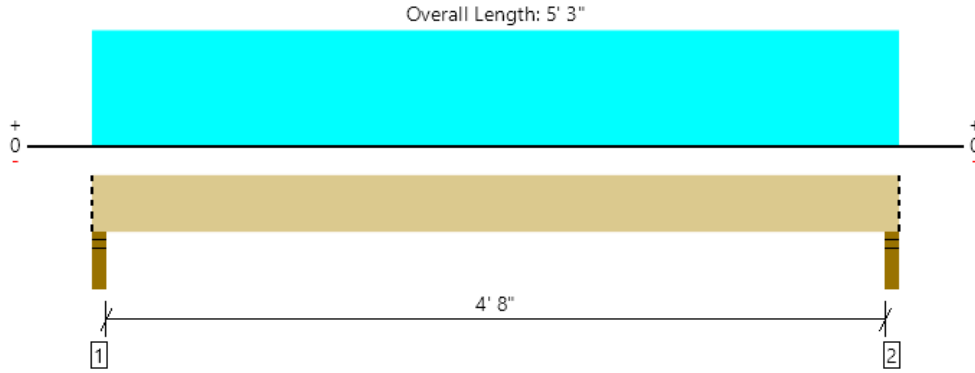
All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1398 @ 2"	12031 (3.50")	Passed (12%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	910 @ 11"	5376	Passed (17%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1609 @ 2' 7 1/2"	3706	Passed (43%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.024 @ 2' 7 1/2"	0.123	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.028 @ 2' 7 1/2"	0.246	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Factored	
1 - Stud wall - DF	3.50"	3.50"	1.50"	216	1181	1398	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.50"	216	1181	1398	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 3" o/c	
Bottom Edge (Lu)	5' 3" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 5' 3"	N/A	10.4	--	
1 - Uniform (PSF)	0 to 5' 3" (Front)	6'	12.0	75.0	Default Load

Weyerhaeuser Notes

ForteWEB Software Operator	Job Notes
Trevor Steelsmith 07/05/23 Snake River Engineering (208) 453-6512 trevor@snakeriverengineering.com	

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7/5/2023 4:29:58 PM UTC
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ForteWEB v3.6, Engine: V8.3.0.43, Data: V8.1.4.1
File Name: 2023-4982 Kozita Residence
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WOOD HEADER ALLOWABLE LOADS (kips/ft)

Load Duration Factor: *1.15* **Top Chord Bracing:** *2'-0" O.C.*

LVL Grade: *2.0E* **Max TL Deflection:** *L/240, 0.75in*

Repetitive Stress Increase: *No*

Header Type	Header Span										
	2'	3'	4'	5'	6'	8'	10'	12'	14'	16'	18'
(2) 2x4 DF Stud	1.15	0.69	0.29	0.22	0.12	NA	NA	NA	NA	NA	NA
(3) 2x4 DF Stud	1.84	1.04	0.46	0.35	0.18	NA	NA	NA	NA	NA	NA
(2) 2x6 DF #2	3.34	1.44	0.83	0.48	0.36	0.20	0.12	NA	NA	NA	NA
(3) 2x6 DF #2	5.06	2.19	1.27	0.72	0.55	0.30	0.18	0.13	NA	NA	NA
(2) 2x8 DF #2	5.41	2.30	1.27	0.80	0.59	0.32	0.20	0.14	0.09	NA	NA
(3) 2x8 DF #2	8.74	3.39	2.19	1.18	0.97	0.53	0.33	0.23	0.16	0.12	NA
(2) 2x10 DF #2	8.05	3.39	1.96	1.18	0.89	0.48	0.31	0.21	0.15	0.10	NA
(3) 2x10 DF #2	13.23	5.18	3.22	1.80	1.38	0.82	0.52	0.36	0.25	0.20	0.15
(2) 2x12 DF #2	10.81	4.83	2.65	1.60	1.15	0.67	0.41	0.29	0.21	0.15	0.12
(3) 2x12 DF #2	17.94	7.02	4.49	2.40	1.96	1.10	0.70	0.48	0.35	0.26	0.21
(2) 1-3/4x7-1/4 LVL	13.80	6.79	3.80	2.40	1.61	0.94	0.52	0.30	0.18	0.12	NA
(3) 1-3/4x7-1/4 LVL	20.70	10.47	5.64	3.50	2.53	1.38	0.79	0.45	0.28	0.17	NA
(2) 1-3/4x9-1/2 LVL	24.73	10.47	5.64	3.75	2.65	1.50	0.92	0.63	0.39	0.24	0.15
(3) 1-3/4x9-1/2 LVL	37.15	17.25	8.51	6.00	4.03	2.30	1.38	0.95	0.60	0.37	0.22
(2) 1-3/4x11-7/8 LVL	40.71	17.25	8.86	6.00	4.49	2.53	1.61	1.12	0.82	0.53	0.32
(3) 1-3/4x11-7/8 LVL	61.30	24.15	13.23	8.75	6.67	3.80	2.42	1.61	1.15	0.79	0.48
(2) 1-3/4x14 LVL	56.47	24.15	12.54	8.00	5.75	3.45	2.19	1.50	1.13	0.86	0.54
(3) 1-3/4x14 LVL	85.10	28.75	18.86	12.00	8.63	5.29	3.34	2.30	1.61	1.27	0.81

Beam Calculations

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	21	7	0	3.33		
							3,911.0 plf
Dead Load	-	357.0	84.0	0.0	40.0	481.0 plf	
Live / Snow Load	0	3150.0	280.0	0.0	-	3,430.0 plf	

Description:	3.0 ft Opening	9.5 ft Opening	2.3 ft Opening					
Header Callout	(2)9-1/2" LVL 2.0E	5.25x18 DF/DF 24F - V4	(2)2x12 DF-L No. 2					
Trimmers	(2) 2x6 DF-L No. 2	(4) 2x6 DF-L No. 2	(2) 2x6 DF-L No. 2					
King Studs	(1) 2x6 DF-L No. 2	(1) 2x6 DF-L No. 2	(1) 2x6 DF-L No. 2					

Wood Design

Species	LVL	DF/DF	DF-L					
Grade	2.0E	24F - V4	No. 2					
Width	3.50 in	5.25 in	3.00 in					
Depth	9.50 in	18.00 in	11.25 in					

Reaction

Dead Load	721 lbs	2,285 lbs	541 lbs					
Live Load	5,145 lbs	16,293 lbs	3,859 lbs					

Load

l_u	3.0 ft	9.5 ft	2.3 ft					
l_e	6.2 ft	19.6 ft	4.6 ft					

Adjustment Factors

Cd	1.15	1.15	1.15					
CF	1.1	1	1					

Material Properties

Fb	2,900 psi	2,400 psi	900 psi					
Fv	285 psi	265 psi	180 psi					
E	2,000,000 psi	1,850,000 psi	1,600,000 psi					
Emin	1,016,535 psi	950,000 psi	580,000 psi					

Calculated Prop.

A	33.25 in^2	94.50 in^2	33.75 in^2					
I	250.07 in^4	2,551.50 in^4	355.96 in^4					
S	52.65 in^3	283.50 in^3	63.28 in^3					
RB	7.58	12.38	8.34					
Emin'	1,016,535 psi	950,000 psi	580,000 psi					
FbE	21,210 psi	7,433 psi	10,011 psi					
Fb*	3,669 psi	2,760 psi	1,035 psi					
CL	1	1	1					

Shear and Moment

M	52,798 lb-in	529,446 lb-in	29,699 lb-in					
V	5,866 lbs	18,577 lbs	4,400 lbs					

Stress

fb	1,003 psi	1,868 psi	469 psi					
Fb'	3,631 psi	2,684 psi	1,029 psi					
fb/Fb'	0.28	0.70	0.46					
fv	265 psi	295 psi	196 psi					
Fv'	328 psi	305 psi	207 psi					
fv/Fv'	0.81	0.97	0.94					
Max Ratio	0.81	0.97	0.94					
	Pass	Pass	Pass					

Deflection

ΔTL	0.01 in	0.15 in	0.00 in					
	L/2,526	L/751	L/6,818					
ΔLL	0.01 in	0.13 in	0.00 in					
	L/2,880	L/856	L/7,775					
	Pass	Pass	Pass					

Beam Calculations

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	7	0	0	3.33		
							1,209.0 plf
Dead Load	-	119.0	0.0	0.0	40.0	159.0 plf	
Live / Snow Load	0	1050.0	0.0	0.0	-	1,050.0 plf	

Description:	4.0 ft Opening	8.0 ft Opening	7.0 ft Opening				
Header Callout	(2)2x8 DF-L No. 2	(2)9-1/2" LVL 2.0E	(2)9-1/2" LVL 2.0E				
Trimmers	(1) 2x6 DF-L No. 2	(2) 2x6 DF-L No. 2	(2) 2x6 DF-L No. 2				
King Studs	(1) 2x6 DF-L No. 2	(1) 2x6 DF-L No. 2	(1) 2x6 DF-L No. 2				

Wood Design

Species	DF-L	LVL	LVL				
Grade	No. 2	2.0E	2.0E				
Width	3.00 in	3.50 in	3.50 in				
Depth	7.25 in	9.50 in	9.50 in				

Reaction

Dead Load	318 lbs	636 lbs	556 lbs				
Live Load	2,100 lbs	4,200 lbs	3,675 lbs				

Load

l_u	4.0 ft	8.0 ft	7.0 ft				
l_e	8.2 ft	15.4 ft	13.8 ft				

Adjustment Factors

Cd	1.15	1.15	1.15				
CF	1.2	1.1	1.1				

Material Properties

F_b	900 psi	2,900 psi	2,900 psi				
F_v	180 psi	285 psi	285 psi				
E	1,600,000 psi	2,000,000 psi	2,000,000 psi				
Emin	580,000 psi	1,016,535 psi	1,016,535 psi				

Calculated Prop.

A	21.75 in^2	33.25 in^2	33.25 in^2				
I	95.27 in^4	250.07 in^4	250.07 in^4				
S	26.28 in^3	52.65 in^3	52.65 in^3				
RB	8.92	11.98	11.33				
Emin'	580,000 psi	1,016,535 psi	1,016,535 psi				
FbE	8,738 psi	8,503 psi	9,509 psi				
Fb*	1,242 psi	3,669 psi	3,669 psi				
CL	1	1	1				

Shear and Moment

M	29,015 lb-in	116,060 lb-in	88,859 lb-in				
V	2,418 lbs	4,836 lbs	4,231 lbs				

Stress

f_b	1,104 psi	2,205 psi	1,688 psi				
F_b'	1,232 psi	3,542 psi	3,562 psi				
fb/Fb'	0.90	0.62	0.47				
f_v	167 psi	218 psi	191 psi				
F_v'	207 psi	328 psi	328 psi				
fv/Fv'	0.81	0.67	0.58				
Max Ratio	0.90	0.67	0.58				
	Pass	Pass	Pass				

Deflection

Δ_{TL}	0.05 in	0.22 in	0.13 in				
	L/1,051	L/431	L/643				
Δ_{LL}	0.04 in	0.19 in	0.11 in				
	L/1,210	L/496	L/741				
	Pass	Pass	Pass				

Beam Calculations

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	7	0	0	3.33		
							1,209.0 plf
Dead Load	-	119.0	0.0	0.0	40.0	159.0 plf	
Live / Snow Load	0	1050.0	0.0	0.0	-	1,050.0 plf	

Description:	9.5 ft Opening						

Header Callout	(2)11-7/8" LVL 2.0E						
Trimmers	(2) 2x6 DF-L No. 2						
King Studs	(1) 2x6 DF-L No. 2						

Wood Design

Species	LVL						
Grade	2.0E						
Width	3.50 in						
Depth	11.88 in						

Reaction

Dead Load	755 lbs						
Live Load	4,988 lbs						

Load

lu	9.5 ft						
le	18.5 ft						

Adjustment Factors

Cd	1.15						
CF	1						

Material Properties

Fb	2,900 psi						
Fv	285 psi						
E	2,000,000 psi						
Emin	1,016,535 psi						

Calculated Prop.

A	41.56 in^2						
I	488.41 in^4						
S	82.26 in^3						
RB	14.65						
Emin'	1,016,535 psi						
FbE	5,683 psi						
Fb*	3,335 psi						
CL	1						

Shear and Moment

M	163,663 lb-in						
V	5,743 lbs						

Stress

fb	1,990 psi						
Fb'	3,141 psi						
fb/Fb'	0.63						
fv	207 psi						
Fv'	328 psi						
fv/Fv'	0.63						
Max Ratio	0.63						
	Pass						

Deflection

ΔTL	0.23 in						
	L/503						
ΔLL	0.20 in						
	L/579						
	Pass						

Beam Calculations

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	15.5	0	0	3.33		2,628.5 plf
Dead Load	-	263.5	0.0	0.0	40.0	303.5 plf	
Live / Snow Load	0	2325.0	0.0	0.0	-	2,325.0 plf	

Description:	9.5 ft Opening						
Header Callout	5.25x13.5 DF/DF 24F - V4						
Trimmers	(3) 2x6 DF-L No. 2						
King Studs	(1) 2x6 DF-L No. 2						

Wood Design

Species	DF/DF
Grade	24F - V4
Width	5.25 in
Depth	13.50 in

Reaction

Dead Load	1,441 lbs
Live Load	11,044 lbs

Load

l_u	9.5 ft
l_e	18.9 ft

Adjustment Factors

C_d	1.15
C_F	1

Material Properties

F_b	2,400 psi
F_v	265 psi
E	1,850,000 psi
E_{min}	950,000 psi

Calculated Prop.

A	70.88 in^2
I	1,076.41 in^4
S	159.47 in^3
RB	10.53
E_{min}'	950,000 psi
FbE	10,284 psi
Fb*	2,760 psi
CL	1

Shear and Moment

M	355,828 lb-in
V	12,485 lbs

Stress

f_b	2,231 psi
F_b'	2,711 psi
f_b/F_b'	0.82
f_v	264 psi
F_v'	305 psi
f_v/F_v'	0.87
Max Ratio	0.87
	Pass

Deflection

Δ_{TL}	0.24 in
	L/471
Δ_{LL}	0.21 in
	L/533
	Pass

Beam Calculations

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	12.165	0	0	3.33		
							2,071.5 plf
Dead Load	-	206.8	0.0	0.0	40.0	246.8 plf	
Live / Snow Load	0	1824.8	0.0	0.0	-	1,824.8 plf	

Description:	3.0 ft Opening						
Header Callout	(2)2x10 DF-L No. 2						
Trimmers	(2) 2x6 DF-L No. 2						
King Studs	(1) 2x6 DF-L No. 2						

Wood Design

Species	DF-L						
Grade	No. 2						
Width	3.00 in						
Depth	9.25 in						

Reaction

Dead Load	370 lbs						
Live Load	2,737 lbs						

Load

lu	3.0 ft						
le	6.2 ft						

Adjustment Factors

Cd	1.15						
CF	1.1						

Material Properties

Fb	900 psi						
Fv	180 psi						
E	1,600,000 psi						
Emin	580,000 psi						

Calculated Prop.

A	27.75 in^2						
I	197.86 in^4						
S	42.78 in^3						
RB	8.73						
Emin'	580,000 psi						
FbE	9,131 psi						
Fb*	1,139 psi						
CL	1						

Shear and Moment

M	27,965 lb-in						
V	3,107 lbs						

Stress

fb	654 psi						
Fb'	1,131 psi						
fb/Fb'	0.58						
fv	168 psi						
Fv'	207 psi						
fv/Fv'	0.81						
Max Ratio	0.81						
	Pass						

Deflection

ΔTL	0.01 in						
	L/3,019						
ΔLL	0.01 in						
	L/3,427						
	Pass						

Beam Calculations

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	11.5	0	0	3.33		
							1,960.5 plf
Dead Load	-	195.5	0.0	0.0	40.0	235.5 plf	
Live / Snow Load	0	1725.0	0.0	0.0	-	1,725.0 plf	

Description:	3.0 ft Opening						
Header Callout	(2)2x8 DF-L No. 2						
Trimmers	(2) 2x6 DF-L No. 2						
King Studs	(1) 2x6 DF-L No. 2						

Wood Design

Species	DF-L	
Grade	No. 2	
Width	3.00 in	
Depth	7.25 in	

Reaction

Dead Load	353 lbs	
Live Load	2,588 lbs	

Load

lu	3.0 ft	
le	6.2 ft	

Adjustment Factors

Cd	1.15	
CF	1.2	

Material Properties

Fb	900 psi	
Fv	180 psi	
E	1,600,000 psi	
Emin	580,000 psi	

Calculated Prop.

A	21.75 in^2	
I	95.27 in^4	
S	26.28 in^3	
RB	7.73	
Emin'	580,000 psi	
FbE	11,650 psi	
Fb*	1,242 psi	
CL	1	

Shear and Moment

M	26,466 lb-in	
V	2,941 lbs	

Stress

fb	1,007 psi	
Fb'	1,235 psi	
fb/Fb'	0.82	
fv	203 psi	
Fv'	207 psi	
fv/Fv'	0.98	
Max Ratio	0.98	
	Pass	

Deflection

ΔTL	0.02 in	
	L/1,536	
ΔLL	0.02 in	
	L/1,746	
	Pass	

Beam Calculations

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	3	0	0	3.33		
							541.0 plf
Dead Load	-	51.0	0.0	0.0	40.0	91.0 plf	
Live / Snow Load	0	450.0	0.0	0.0	-	450.0 plf	

Description:	12.0 ft Opening	3.0 ft Opening						
Header Callout	(2)11-7/8" LVL 2.0E	(2)2x6 DF-L No. 2						
Trimmers	(1) 2x6 DF-L No. 2	(1) 2x6 DF-L No. 2						
King Studs	(2) 2x6 DF-L No. 2	(1) 2x6 DF-L No. 2						

Wood Design

Species	LVL	DF-L						
Grade	2.0E	No. 2						
Width	3.50 in	3.00 in						
Depth	11.88 in	5.50 in						

Reaction

Dead Load	546 lbs	136 lbs						
Live Load	2,700 lbs	675 lbs						

Load

lu	12.0 ft	3.0 ft						
le	22.5 ft	6.2 ft						

Adjustment Factors

Cd	1.15	1.15						
CF	1	1.3						

Material Properties

Fb	2,900 psi	900 psi						
Fv	285 psi	180 psi						
E	2,000,000 psi	1,600,000 psi						
Emin	1,016,535 psi	580,000 psi						

Calculated Prop.

A	41.56 in^2	16.50 in^2						
I	488.41 in^4	41.59 in^4						
S	82.26 in^3	15.13 in^3						
RB	16.19	6.73						
Emin'	1,016,535 psi	580,000 psi						
FbE	4,655 psi	15,357 psi						
Fb*	3,335 psi	1,346 psi						
CL	1	1						

Shear and Moment

M	116,847 lb-in	7,303 lb-in						
V	3,246 lbs	811 lbs						

Stress

fb	1,420 psi	483 psi						
Fb'	3,046 psi	1,339 psi						
fb/Fb'	0.47	0.36						
fv	117 psi	74 psi						
Fv'	328 psi	207 psi						
fv/Fv'	0.36	0.36						
Max Ratio	0.47	0.36						
	Pass	Pass						

Deflection

ΔTL	0.26 in	0.01 in						
	L/557	L/2,430						
ΔLL	0.21 in	0.01 in						
	L/670	L/2,921						
	Pass	Pass						

Beam Calculations

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	15.995	0	0	3.33		
							2,711.1 plf
Dead Load	-	271.9	0.0	0.0	40.0	311.9 plf	
Live / Snow Load	0	2399.3	0.0	0.0	-	2,399.3 plf	

Description:	3.0 ft Opening						

Header Callout	(3)2x8 DF-L No. 2						
Trimmers	(1) 2x6 DF-L No. 2						
King Studs	(1) 2x6 DF-L No. 2						

Wood Design

Species	DF-L						
Grade	No. 2						
Width	4.50 in						
Depth	7.25 in						

Reaction

Dead Load	468 lbs						
Live Load	3,599 lbs						

Load

lu	3.0 ft						
le	6.2 ft						

Adjustment Factors

Cd	1.15						
CF	1.2						

Material Properties

Fb	900 psi						
Fv	180 psi						
E	1,600,000 psi						
Emin	580,000 psi						

Calculated Prop.

A	32.63 in^2						
I	142.90 in^4						
S	39.42 in^3						
RB	5.15						
Emin'	580,000 psi						
FbE	26,214 psi						
Fb*	1,242 psi						
CL	1						

Shear and Moment

M	36,600 lb-in						
V	4,067 lbs						

Stress

fb	928 psi						
Fb'	1,239 psi						
fb/Fb'	0.75						
fv	187 psi						
Fv'	207 psi						
fv/Fv'	0.90						
Max Ratio	0.90						
	Pass						

Deflection

Δ_{TL}	0.02 in						
	L/1,666						
Δ_{LL}	0.02 in						
	L/1,882						
	Pass						

WOOD TALL WALL & KING STUD ALLOWABLE LOADS (plf):

Load Duration Factor: *1.6*   Max Deflection: *L/180*
Max Vert. Load: *50 lbs*

King Stud	Height						
	12'	*14'*	*16'*	*18'*	*20'*	*22'*	*24'*
(1) 2x4 Stud	12.8	NA	NA	NA	NA	NA	NA
(2) 2x4 Stud	25.6	NA	NA	NA	NA	NA	NA
(3) 2x4 Stud	38.4	NA	NA	NA	NA	NA	NA
(1) 2x6 DF #2	57.0	35.8	*24.1*	16.9	NA	NA	NA
(2) 2x6 DF #2	114.0	*71.6*	*48.2*	33.8	NA	NA	NA
(3) 2x6 DF #2	171.0	*107.4*	*72.3*	50.7	NA	NA	NA
(1) 2x8 DF #2	130.0	81.7	55.0	38.7	28.2	21.2	16.3
(2) 2x8 DF #2	260.0	163.4	110.0	77.4	56.4	42.4	32.6
(3) 2x8 DF #2	390.0	245.1	165.0	116.1	84.6	63.6	48.9
(1) 2x6 LSL	67.8	42.7	28.5	20.0	14.7	NA	NA
(2) 2x6 LSL	135.6	85.4	57.0	40.0	29.4	NA	NA
(3) 2x6 LSL	203.4	128.1	85.5	60.0	44.1	NA	NA
(1) 2x8 LSL	155.0	98.3	65.5	46.0	33.5	25.2	19.5
(2) 2x8 LSL	310.0	196.6	131.0	92.0	67.0	50.4	39.0
(3) 2x8 LSL	465.0	294.9	196.5	138.0	100.5	75.6	58.5

*NOTE 1: this table combined with trimmer table to determine combined stress on each common wall stud.
*NOTE 2: allowable loads are interpolated at heights not in 2' increments.

WOOD TRIMMER ALLOWABLE LOADS (kips):

Load Duration Factor: *1.0*   Weak Axis Braced: *Y*
Eccentricity: *0"*

Trimmer Type	Height						
	8'	*10'*	*12'*	*14'*	*16'*	*18'*	*20'*
(1) 2x4 Stud	2.4	1.7	1.2	NA	NA	NA	NA
(2) 2x4 Stud	4.9	3.4	2.4	NA	NA	NA	NA
(3) 2x4 Stud	7.1	5.0	3.6	NA	NA	NA	NA
(1) 2x6 DF #2	5.1	5.1	5.0	3.8	3.0	NA	NA
(2) 2x6 DF #2	10.3	10.3	10.1	*7.7*	*6.0*	NA	NA
(3) 2x6 DF #2	15.4	15.4	15.1	*11.6*	*9.1*	NA	NA
(1) 2x8 DF #2	6.7	6.7	6.7	6.7	6.4	5.3	4.4
(2) 2x8 DF #2	13.5	13.5	13.5	13.5	12.9	10.6	8.8
(3) 2x8 DF #2	20.3	20.3	20.3	20.3	19.4	15.9	13.2

*NOTE 1: this table combined with king stud table to determine combined stress on each common wall stud.
*NOTE 2: allowable loads are interpolated at heights not in 2' increments.

TALL WALL CALCULATIONS:

This spreadsheet is used for designing a stud wall according to the NDS.

Description:	9' Tall Wall	9' Tall Wall	10.5' Tall Wall	King Stud (12' Max Opening)	King Stud (9.5' Max Opening)	
Type:	2x Lumber (2"-4")	2x Lumber (2"-4")	2x Lumber (2"-4")	2x Lumber (2"-4")	2x Lumber (2"-4")	
Species:	DF-L	DF-L	DF-L	DF-L	DF-L	
Grade:	No. 2	No. 2	No. 2	No. 2	No. 2	
Nominal width, t =	(1) 2	(1) 2	(1) 2	(2) 2	(1) 2	
Actual width =	1.50 in	1.50 in	1.50 in	3.00 in	1.50 in	
Nominal depth, d =	6	6	6	6	6	
Actual depth =	5.50 in	5.50 in	5.50 in	5.50 in	5.50 in	
Span, L =	9.000 ft	9.000 ft	10.500 ft	10.500 ft	9.000 ft	
w/o Plates	8.750 ft	8.750 ft	10.250 ft	10.250 ft	8.750 ft	
Stud spacing, s =	12 in	16 in	16 in	82 in	67 in	
Lat. Pressure, w_{wind} =	14.58 psf	14.58 psf	14.58 psf	14.58 psf	14.58 psf	
Axial load, P =	4168 lbs	5335 lbs	2783 lbs	50 lbs	50 lbs	
Eccentricity, e =	0 in	0 in	0 in	0 in	0 in	
K_{cE} =	0.3	0.3	0.3	0.3	0.3	
c =	0.8	0.8	0.8	0.8	0.8	
w =	14.6 plf	19.4 plf	19.4 plf	99.9 plf	81.7 plf	
Fb	900 psi	900 psi	900 psi	900 psi	900 psi	
Fv	180 psi	180 psi	180 psi	180 psi	180 psi	
Fc-prll	1,350 psi	1,350 psi	1,350 psi	1,350 psi	1,350 psi	
Fc-perp	625 psi	625 psi	625 psi	625 psi	625 psi	
C_d	1.60	1.60	1.60	1.60	1.60	
$C_{F,Fb}$	1.30	1.30	1.30	1.30	1.30	
$C_{F,Fcprll}$	1.10	1.10	1.10	1.10	1.10	
C_r	1.15	1.15	1.15	1.00	1.00	
C_p	0.47	0.47	0.36	0.36	0.47	
C_H	1.00	1.00	1.00	1.00	1.00	
C_b	1.07	1.07	1.07	1.07	1.07	
E	1,600,000 psi	1,600,000 psi	1,600,000 psi	1,600,000 psi	1,600,000 psi	
Emin	580,000 psi	580,000 psi	580,000 psi	580,000 psi	580,000 psi	

Allowable Stress:

		9' Tall Wall	9' Tall Wall	10.5' Tall Wall	King Stud (12' Max Opening)	King Stud (9.5' Max Opening)	
F'_b =	$F_b C_d C_F C_r$ =	2153 psi	2153 psi	2153 psi	1872 psi	1872 psi	
F'_v =	$F'_v C_d C_H$ =	288 psi	288 psi	288 psi	288 psi	288 psi	
F^*_c =	$F_c C_d C_F$ =	2376 psi	2376 psi	2376 psi	2376 psi	2376 psi	
F_{cE} =	$(K_{cE} E')/(l_e/d)2$ =	1317 psi	1317 psi	960 psi	960 psi	1317 psi	
F'_c =	$F_c C_d C_F C_p$ =	1118 psi	1118 psi	862 psi	862 psi	1118 psi	
$F'_{c\,perp}$ =	$F_{c\,perp} Cb$ =	668 psi	668 psi	668 psi	668 psi	668 psi	
E' =	E =	1600000 psi	1600000 psi	1600000 psi	1600000 psi	1600000 psi	
	F_{bE} =	2712 psi	2712 psi	2315 psi	9259 psi	2712 psi	
Slenderness Ratio:		≤ 50 OK	≤ 50 OK	≤ 50 OK	≤ 50 OK	≤ 50 OK	
	R_B =	16	16	17	9	16	
Bending:		≤ F'b OK	≤ F'b OK	≤ F'b OK	≤ F'b OK	≤ F'b OK	
M =	$w L^2/8 + P e/12$ =	139 ft-lbs	186 ft-lbs	255 ft-lbs	1312 ft-lbs	782 ft-lbs	
f_b =	M/S =	221 psi	295 psi	405 psi	1041 psi	1240 psi	
	S =	8 in³	8 in³	8 in³	15 in³	8 in³	
Shear:		≤ F'v OK	≤ F'v OK	≤ F'v OK	≤ F'v OK	≤ F'v OK	
V =	w L/2 =	64 lbs	85 lbs	100 lbs	512 lbs	357 lbs	
f_v =	1.5 V/A =	12 psi	15 psi	18 psi	47 psi	65 psi	
	A =	8 in²	8 in²	8 in²	17 in²	8 in²	
Compression:		≤ F'c OK	≤ F'c OK	≤ F'c OK	≤ F'c OK	≤ F'c OK	
f_c =	P/A =	505 psi	647 psi	337 psi	3 psi	6 psi	
Compression (perp.):		≤ F'c OK	≤ F'c OK	≤ F'c OK	≤ F'c OK	≤ F'c OK	
$f_{c\,perp}$ =	P/A =	505 psi	647 psi	337 psi	3 psi	6 psi	
Combined:		≤ 1.0 OK	≤ 1.0 OK	≤ 1.0 OK			
(fc/Fc)2 + {fb/[Fb(1-(fc/FcE)]} =		0.37	0.60	0.44			
Deflection:		> 180 OK	> 180 OK	> 180 OK	> 180 OK	> 180 OK	
D = 22.5 w L^4/E' I =		0.06 in	0.08 in	0.15 in	0.37 in	0.32 in	
	I =	21 in^4	21 in^4	21 in^4	42 in^4	21 in^4	
	SPAN /	1817	1363	848	330	324	

UNBRACED WOOD COLUMN ALLOWABLE LOADS (kips)

| Column Type | Unbraced Height | | | | | | | Compression Perp. To Grain |
	8'	10'	12'	14'	16'	18'	20'	
(2) 2x4 DF #2	4.50	3.00	2.10	SR	SR	SR	SR	6.50
(3) 2x4 DF #2	8.80	5.90	4.20	3.20	SR	SR	SR	9.80
4x4 DF #2	7.00	4.60	3.30	2.40	SR	SR	SR	7.60
(2) 2x6 DF #2	7.20	4.70	3.30	SR	SR	SR	SR	10.30
(3) 2x6 DF #2	20.40	14.70	10.70	8.00	6.20	4.90	SR	15.40
6x6 DF #2	18.00	15.70	13.00	10.50	8.50	6.90	5.70	18.90
6x8 DF #2	24.50	21.40	17.80	14.30	11.60	9.40	7.80	25.70
6x10 DF #2	31.40	27.10	22.50	18.20	14.70	12.00	9.90	32.60
8x8 DF #2	36.60	34.60	31.90	28.50	24.90	21.30	18.20	35.20
8x10 DF #2	46.30	43.90	40.40	36.20	31.50	27.00	23.10	44.50
8x12 DF #2	56.20	53.10	49.00	43.80	38.10	32.70	28.00	53.40
10x10 DF #2	60.50	58.80	56.50	53.40	49.60	45.20	40.50	56.40

Wood Column

Project File: 05 Beams.ec6

DESCRIPTION: RB2 BEARING

Code References

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2018

General Information

Analysis Method	Allowable Stress Design		Wood Section Name	**6x8**
End Fixities	Top & Bottom Pinned		Wood Grading/Manuf.	Graded Lumber
Overall Column Height	21.75 ft		Wood Member Type	Sawn

(Used for non-slender calculations)

			Exact Width	**5.50** in
Wood Species	Douglas Fir-Larch		Exact Depth	**7.50** in
Wood Grade	No.2		Area	41.250 in^2

Allow Stress Modification Factors

Fb +	750 psi	Fv	170 psi	Cf or Cv for Bending 1.0
		Ix	193.359 in^4	Cf or Cv for Compression 1.0
Fb -	750 psi	Ft	475 psi	Cf or Cv for Tension 1.0
		Iy	103.984 in^4	
Fc - Prll	700 psi	Density	31.21 pcf	Cm : Wet Use Factor 1.0
Fc - Perp	625 psi			Ct : Temperature Fact 1.0
				Cfu : Flat Use Factor 1.0
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial	Kf : Built-up columns 1.0 *NDS 15.3.2*
Basic	1300	1300	1300 ksi	Use Cr : Repetitive ? No
Minimum	470	470		

Brace condition for deflection (buckling) along columns :
- X-X (width) axis :   Fully braced against buckling ABOUT Y-Y Axis
- Y-Y (depth) axis :   Unbraced Length for buckling ABOUT X-X Axis = 21.75 f

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 194.453 lbs * Dead Load Factor
AXIAL LOADS . . .
     Axial Load at 21.750 ft, D = 1.230, S = 9.420 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio =	**0.9155 : 1**
Load Combination	+D+S
Governing NDS Forumla	Comp Only, fc/Fc'
Location of max.above base	0.0 ft
At maximum location values are .	
Applied Axial	10.844 k
Applied Mx	0.0 k-ft
Applied My	0.0 k-ft
Fc : Allowable	287.166 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y	0.0 k	Bottom along Y-Y	0.0 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Lateral Deflections . . .

Along Y-Y   0.0 in   at   0.0 ft   above base
   for load combination : n/a
Along X-X   0.0 in   at   0.0 ft   above base
   for load combination : n/a

PASS Maximum Shear Stress Ratio =	**0.0 : 1**
Load Combination	+0.60D
Location of max.above base	21.750 ft
Applied Design Shear	0.0 psi
Allowable Shear	272.0 psi

Other Factors used to calculate allowable stresses . . .

	Bending	Compression	Tension

Load Combination Results

Load Combination	C_D	C_P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.900	0.438	0.1251	PASS	0.0 ft	0.0	PASS	21.750 ft
+D+S	1.150	0.357	0.9155	PASS	0.0 ft	0.0	PASS	21.750 ft
+D+0.750S	1.150	0.357	0.7167	PASS	0.0 ft	0.0	PASS	21.750 ft
+0.60D	1.600	0.266	0.06965	PASS	0.0 ft	0.0	PASS	21.750 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction **k** @ Base	@ Top	Y-Y Axis Reaction @ Base	@ Top	Axial Reaction @ Base	My - End Moments **k-ft** @ Base	@ Top	Mx - End Moments @ Base	@ Top
D Only					1.424				
+D+S					10.844				
+D+0.750S					8.489				

Wood Column	Project File: 05 Beams.ec6
LIC# : KW-06013353, Build:20.23.2.14	SNAKE RIVER ENGINEERING	(c) ENERCALC INC 1983-2022

DESCRIPTION: RB2 BEARING

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction @ Base	@ Top	k	Y-Y Axis Reaction @ Base	@ Top	Axial Reaction @ Base	My - End Moments @ Base	k-ft @ Top	Mx - End Moments @ Base	@ Top
+0.60D						0.855				
S Only						9.420				

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+S	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750S	0.0000 in	0.000 ft	0.000 in	0.000 ft
+0.60D	0.0000 in	0.000 ft	0.000 in	0.000 ft
S Only	0.0000 in	0.000 ft	0.000 in	0.000 ft

Sketches

Wood Column

Project File: 05 Beams.ec6

DESCRIPTION: FB4 BEARING

Code References

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2018

General Information

Analysis Method	Allowable Stress Design		Wood Section Name	**8x8**
End Fixities	Top & Bottom Pinned		Wood Grading/Manuf.	Graded Lumber
Overall Column Height	9 ft		Wood Member Type	Sawn

(Used for non-slender calculations)

			Exact Width	**7.50** in
Wood Species	Douglas Fir-Larch		Exact Depth	**7.50** in
Wood Grade	No.2		Area	56.250 in^2

Allow Stress Modification Factors

Fb +	750 psi	Fv	170 psi	Cf or Cv for Bending	1.0
Fb -	750 psi	Ft	475 psi	Cf or Cv for Compression	1.0
Fc - Prll	700 psi	Density	31.21 pcf	Cf or Cv for Tension	1.0
Fc - Perp	625 psi			Cm : Wet Use Factor	1.0

Ix = 263.672 in^4
Iy = 263.672 in^4

		Ct : Temperature Fact	1.0
		Cfu : Flat Use Factor	1.0

E : Modulus of Elasticity . . .

	x-x Bending	y-y Bending	Axial		
				Kf : Built-up columns	1.0 NDS 15.3.2
Basic	1300	1300	1300 ksi	Use Cr : Repetitive ?	No
Minimum	470	470			

Brace condition for deflection (buckling) along columns :
X-X (width) axis :   Unbraced Length for buckling ABOUT Y-Y Axis = 9 ft, K
Y-Y (depth) axis :   Unbraced Length for buckling ABOUT X-X Axis = 9 ft, K

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 109.723 lbs * Dead Load Factor
AXIAL LOADS . . .
    Axial Load at 9.0 ft, D = 4.078, S = 26.091 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio =   **0.7521 : 1**
   Load Combination   +D+S
   Governing NDS Forumla   Comp Only, fc/Fc'
   Location of max.above base   0.0 ft
   At maximum location values are .
     Applied Axial   30.279 k
     Applied Mx   0.0 k-ft
     Applied My   0.0 k-ft
     Fc : Allowable   715.71 psi

Maximum SERVICE Lateral Load Reactions . .
Top along Y-Y   0.0 k   Bottom along Y-Y   0.0 k
Top along X-X   0.0 k   Bottom along X-X   0.0 k

Maximum SERVICE Load Lateral Deflections . . .
Along Y-Y   0.0 in   at   0.0 ft   above base
   for load combination : n/a
Along X-X   0.0 in   at   0.0 ft   above base
   for load combination : n/a

Other Factors used to calculate allowable stresses . . .

	Bending	Compression	Tension

PASS Maximum Shear Stress Ratio =   **0.0 : 1**
   Load Combination   +0.60D
   Location of max.above base   9.0 ft
   Applied Design Shear   0.0 psi
   Allowable Shear   272.0 psi

Load Combination Results

Load Combination	C D	C P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.900	0.917	0.1288	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+S	1.150	0.889	0.7521	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+0.750S	1.150	0.889	0.5901	PASS	0.0 ft	0.0	PASS	9.0 ft
+0.60D	1.600	0.833	0.04788	PASS	0.0 ft	0.0	PASS	9.0 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction @ Base	**k** @ Top	Y-Y Axis Reaction @ Base	@ Top	Axial Reaction @ Base	My - End Moments @ Base	**k-ft** @ Top	Mx - End Moments @ Base	@ Top
D Only					4.188				
+D+S					30.279				
+D+0.750S					23.756				

Wood Column

Project File: 05 Beams.ec6

DESCRIPTION: FB4 BEARING

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction k @ Base	@ Top	Y-Y Axis Reaction @ Base	@ Top	Axial Reaction @ Base	My - End Moments k-ft @ Base	@ Top	Mx - End Moments @ Base	@ Top
+0.60D					2.513				
S Only					26.091				

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+S	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.750S	0.0000 in	0.000 ft	0.000 in	0.000 ft
+0.60D	0.0000 in	0.000 ft	0.000 in	0.000 ft
S Only	0.0000 in	0.000 ft	0.000 in	0.000 ft

Sketches

Pole Soil Bearing Pressure

Axial Load

2600 pounds

Design Soil Bearing Pressure

1500 psf

Skin Friction (Soil to Concrete)

250 psf

Height of Pole Embedment

0 inches

Diameter of Concrete Footing

18 inches

Allowable Axial Load

2651 pounds
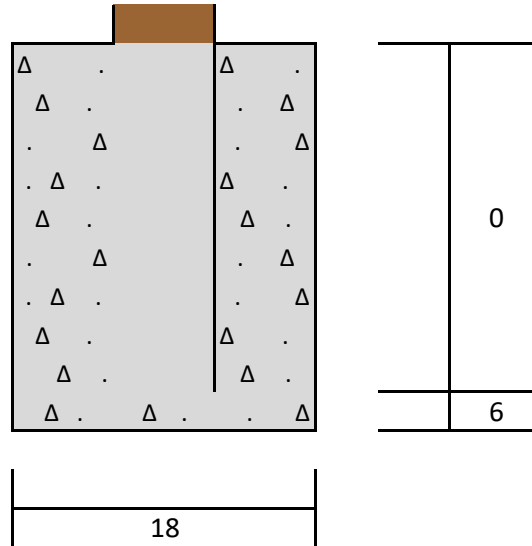
0

6

18

2651	>	2600
	OK	

Individual Footing Design

Program: *Continuous Footing*

Soil Bearing Pressure: *1500psf*

Roof				
Roof Dead	(17psf)	(6.0ft)	=	**102plf**
Snow Live	(150psf)	(6.0ft)	=	**900plf**

Upper Floor				
Floor Dead	(12psf)	(.0ft)	=	**plf**
Floor Live	(40psf)	(.0ft)	=	**plf**

Main Floor				
Floor Dead	(12psf)	(4.0ft)	=	**48plf**
Floor Live	(40psf)	(4.0ft)	=	**160plf**

Deck Cover				
Roof Dead	(17psf)	(.0ft)	=	**plf**
Snow Live	(150psf)	(.0ft)	=	**plf**

Deck Floor				
Floor Dead	(12psf)	(.0ft)	=	**plf**
Snow Live	(150psf)	(.0ft)	=	**plf**

Misc					
Wall Load:	(12psf)	(10.5ft)		=	**126plf**
Conc Stem:	(145pcf)	(2 x .5ft)		=	**145plf**
Misc Load:	(.0ft)	(.0ft)	(.0ft)	=	**plf**

	1321plf

Use Footing Width:	**12**	**x**	**8**	**in**
W/		**(2)**	**#4**	**Cont.**

Individual Footing Design

Program: *Continuous Footing*

Soil Bearing Pressure: *1500psf*

Roof				
Roof Dead	(17psf)	(21.2ft)	=	**360plf**
Snow Live	(150psf)	(21.2ft)	=	**3174plf**

Upper Floor				
Floor Dead	(12psf)	(.0ft)	=	**plf**
Floor Live	(40psf)	(.0ft)	=	**plf**

Main Floor				
Floor Dead	(12psf)	(7.0ft)	=	**84plf**
Floor Live	(40psf)	(7.0ft)	=	**280plf**

Deck Cover				
Roof Dead	(17psf)	(.0ft)	=	**plf**
Snow Live	(150psf)	(.0ft)	=	**plf**

Deck Floor				
Floor Dead	(12psf)	(.0ft)	=	**plf**
Snow Live	(150psf)	(.0ft)	=	**plf**

Misc					
Wall Load:	(12psf)	(10.5ft)		=	**126plf**
Conc Stem:	(145pcf)	(2 x .5ft)		=	**145plf**
Misc Load:	(.0ft)	(.0ft)	(.0ft)	=	**plf**

3889plf

Use Footing Width:	**36**	**x**	**10**	**in**
W/		**(3)**	**#4**	**Cont.**

Individual Footing Design

Program: *Continuous Footing*

Soil Bearing Pressure: *1500psf*

Roof				
Roof Dead	(17psf)	(22.0ft)	=	**374plf**
Snow Live	(150psf)	(22.0ft)	=	**3300plf**

Upper Floor				
Floor Dead	(12psf)	(.0ft)	=	**plf**
Floor Live	(40psf)	(.0ft)	=	**plf**

Main Floor				
Floor Dead	(12psf)	(1.0ft)	=	**12plf**
Floor Live	(40psf)	(1.0ft)	=	**40plf**

Deck Cover				
Roof Dead	(17psf)	(.0ft)	=	**plf**
Snow Live	(150psf)	(.0ft)	=	**plf**

Deck Floor				
Floor Dead	(12psf)	(5.0ft)	=	**60plf**
Snow Live	(150psf)	(5.0ft)	=	**750plf**

Misc					
Wall Load:	(12psf)	(10.5ft)		=	**126plf**
Conc Stem:	(145pcf)	(2 x .5ft)		=	**145plf**
Misc Load:	(.0ft)	(.0ft)	(.0ft)	=	**plf**

4767plf

Use Footing Width:	**48**	**x**	**10**	**in**
W/		**(4)**	**#4**	**Cont.**

Individual Footing Design

Program: *Continuous Footing*

Soil Bearing Pressure: *1500psf*

Roof				
Roof Dead	(17psf)	(7.0ft)	=	**119plf**
Snow Live	(150psf)	(7.0ft)	=	**1050plf**

Upper Floor				
Floor Dead	(12psf)	(.0ft)	=	**plf**
Floor Live	(40psf)	(.0ft)	=	**plf**

Main Floor				
Floor Dead	(12psf)	(1.0ft)	=	**12plf**
Floor Live	(40psf)	(1.0ft)	=	**40plf**

Deck Cover				
Roof Dead	(17psf)	(.0ft)	=	**plf**
Snow Live	(150psf)	(.0ft)	=	**plf**

Deck Floor				
Floor Dead	(12psf)	(1.0ft)	=	**12plf**
Snow Live	(150psf)	(1.0ft)	=	**150plf**

Misc				
Wall Load:	(12psf)	(10.5ft)	=	**126plf**
Conc Stem:	(145pcf)	(2 x .5ft)	=	**145plf**
Misc Load:	(.0ft)	(.0ft) (.0ft)	=	**plf**

1614plf

Use Footing Width:	**16**	x	**8**	**in**
W/		**(2)**	**#4**	**Cont.**

Individual Footing Design

Program: Continuous Footing

Soil Bearing Pressure: *1500psf*

Roof				
Roof Dead	*(17psf)*	*(12.2ft)*	=	**207plf**
Snow Live	*(150psf)*	*(12.2ft)*	=	**1824plf**

Upper Floor				
Floor Dead	*(12psf)*	*(.0ft)*	=	**plf**
Floor Live	*(40psf)*	*(.0ft)*	=	**plf**

Main Floor				
Floor Dead	*(12psf)*	*(.0ft)*	=	**plf**
Floor Live	*(40psf)*	*(.0ft)*	=	**plf**

Deck Cover				
Roof Dead	*(17psf)*	*(.0ft)*	=	**plf**
Snow Live	*(150psf)*	*(.0ft)*	=	**plf**

Deck Floor				
Floor Dead	*(12psf)*	*(3.1ft)*	=	**38plf**
Snow Live	*(150psf)*	*(3.1ft)*	=	**469plf**

Misc					
Wall Load:	*(12psf)*	*(10.5ft)*		=	**126plf**
Conc Stem:	*(145pcf)*	*(2 x .5ft)*		=	**145plf**
Misc Load:	*(.0ft)*	*(.0ft)*	*(.0ft)*	=	**plf**

2808plf

Use Footing Width:	**30**	**x**	**10**	**in**
W/		**(3)**	**#4**	**Cont.**

Individual Footing Design

Program: *Continuous Footing*

Soil Bearing Pressure: *1500psf*

Roof				
Roof Dead	(17psf)	(11.2ft)	=	**190plf**
Snow Live	(150psf)	(11.2ft)	=	**1674plf**

Upper Floor				
Floor Dead	(12psf)	(.0ft)	=	**plf**
Floor Live	(40psf)	(.0ft)	=	**plf**

Main Floor				
Floor Dead	(12psf)	(.0ft)	=	**plf**
Floor Live	(40psf)	(.0ft)	=	**plf**

Deck Floor				
Floor Dead	(12psf)	(.0ft)	=	**plf**
Snow Live	(150psf)	(.0ft)	=	**plf**

Misc				
Wall Load:	(12psf)	(10.5ft)	=	**126plf**
Conc Stem:	(145pcf)	(2 x .5ft)	=	**145plf**
Misc Load:	(.0ft)	(.0ft) (.0ft)	=	**plf**

	2135plf

Use Footing Width:	**24**	**x**	**8**	**in**
W/		**(2)**	**#4**	**Cont.**

Individual Footing Design

Program: *Continuous Footing*

Soil Bearing Pressure: *1500psf*

Roof				
Roof Dead	(17psf)	(3.0ft)	=	**51plf**
Snow Live	(150psf)	(3.0ft)	=	**450plf**

Upper Floor				
Floor Dead	(12psf)	(1.0ft)	=	**12plf**
Floor Live	(40psf)	(1.0ft)	=	**40plf**

Main Floor				
Floor Dead	(12psf)	(1.0ft)	=	**12plf**
Floor Live	(40psf)	(1.0ft)	=	**40plf**

Deck Cover				
Roof Dead	(17psf)	(5.0ft)	=	**85plf**
Snow Live	(150psf)	(5.0ft)	=	**750plf**

Deck Floor				
Floor Dead	(30psf)	(5.0ft)	=	**150plf**
Snow Live	(150psf)	(5.0ft)	=	**750plf**

Misc					
Wall Load:	(12psf)	(10.5ft)		=	**126plf**
Conc Stem:	(145pcf)	(2 x .5ft)		=	**145plf**
Misc Load:	(.0ft)	(.0ft)	(.0ft)	=	**plf**

2531plf

Use Footing Width:	**24**	**x**	**8**	**in**
W/		**(2)**	**#4**	**Cont.**

PAD FOOTING DESIGN CAPACITIES:

Soil Bearing (1500 psf)					
Dimensions (Inches)			Capacity	# of Bars	Min. Col. Size
72 x	72	x 12	47,500 lbs	10	3.5 sq.
66 x	66	x 12	39,750 lbs	8	3.5 sq.
60 x	60	x 10	33,450 lbs	6	3.5 sq.
54 x	54	x 10	27,000 lbs	5	3.5 sq.
48 x	48	x 8	21,500 lbs	4	3.5 sq.
42 x	42	x 8	16,500 lbs	4	3.5 sq.
36 x	36	x 8	12,000 lbs	4	3.5 sq.
30 x	30	x 8	8,350 lbs	3	3.5 sq.
24 x	24	x 8	5,300 lbs	2	3.5 sq.
18 x	18	x 8	2,900 lbs	2	3.5 sq.

Bars to be 3 1/2" from bottom of pad. Evenly space in both directions.

CONT. FOOTING DESIGN CAPACITIES:

Soil Bearing (1500 psf)			
Dimensions (Inches)		Capacity	# of Bars
60	x 10	6,850 plf	6
54	x 10	6,200 plf	5
48	x 10	5,500 plf	4
42	x 10	4,750 plf	4
36	x 10	4,000 plf	3
30	x 10	3,400 plf	3
24	x 8	2,800 plf	2
18	x 8	2,100 plf	2
16	x 8	1,850 plf	2
12	x 8	1,350 plf	2

Bars to be 3 1/2" from bottom of footing.