



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Structural Calculations

Project Title: Hawkins Residence

Location: Valley County, Idaho

Job #: 2025-9936



Disclaimer:

1. Calculations are not to be used for determining lengths of structural members.
2. Calculations are single use and location specific to property listed above.
3. Calculations shall not to be reproduced, reused, or altered in any way.
4. Calculations based on drawings received prior to stamp date. Any changes made after stamp date must be reviewed and approved by Engineer of Record prior to construction.
5. All work to conform to all local, state, and national codes.

Prepared in accordance with 2018 IBC. Calculations expire by: **7/8/2026**



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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	
S _s	0.51	F _a	1.39
S ₁	0.15	F _v	2.19
S _{DS}	0.47	S _{DS1}	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	.09Wp	6.5	Typ @ Ext
GYP	.28Wp	2	Typ @ Int
Cant. Col.	.38Wp	1.5	

Soil Criteria:

Brg. Strength	1500 psf
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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

Roof not engineered for Tile, Slate or Concrete.

Exterior Wall Dead Loads:

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

Floor Dead Loads:

Deck	2.5
Joist	7.0
Ceiling	2.0
Flooring	2.5
Misc	3.0
TOTAL	17 psf

Floor joists not engineered for concrete overlay.

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

Deck not engineered for hot tub loading.

Deck not engineered for concrete overlay.



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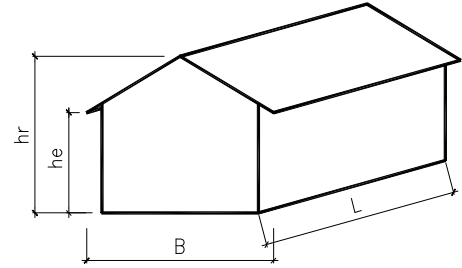
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WIND ANALYSIS: Low-rise Building - Based on IBC / ASCE 7

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	$h_r =$	25.23 ft	ft
Building height to eave	$h_e =$	10.00 ft	ft
Building width	$B =$	115.36 ft	ft
Building length	$L =$	119.58 ft	ft
Overhang sloped width	$O_h =$	3.00 ft	ft
Effective area of components (or Solar Panel area)	$A =$	33.3 ft ²	ft ² , <== Overhang? (Yes or No): Yes
Enclosed? (Y/N)		y	



ANALYSIS

Velocity pressure

$$q_h = 0.00256 K_z K_{zt} K_d K_e V^2 = 25.27 \text{ psf}$$

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 266) = 0.88

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

h = mean roof height = 17.62 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).

$p_{min} = 16 \text{ psf}$ (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] = 7.05 ft

Net Pressures (psf), Basic Load Cases

Surface	Roof angle $q = 14.04$			Roof angle $q = 14.04$		
	$G C_{pf}$	Net Press. W/		$G C_{pf}$	Net Press. W/	
		(+GC _{pi})	(-GC _{pi})		(+GC _{pi})	(-GC _{pi})
1	0.48	7.54	16.64	-0.45	-15.92	-6.82
2	-0.69	-21.98	-12.89	-0.69	-21.98	-12.89
3	-0.44	-15.57	-6.48	-0.37	-13.90	-4.80
4	-0.37	-14.01	-4.91	-0.45	-15.92	-6.82
5				0.40	5.56	14.66
6				-0.29	-11.88	-2.78
1E	0.72	13.76	22.86	-0.48	-16.68	-7.58
2E	-1.07	-31.59	-22.49	-1.07	-31.59	-22.49
3E	-0.63	-20.38	-11.28	-0.53	-17.94	-8.84
4E	-0.56	-18.61	-9.51	-0.48	-16.68	-7.58
5E				0.61	10.87	19.96
6E				-0.43	-15.41	-6.32

Net Pressures (psf), Torsional Load Cases

Surface	Roof angle $q = 14.04$		
	$G C_{pf}$	Net Press. W/	
		(+GC _{pi})	(-GC _{pi})
1T	0.48	1.88	4.16
2T	-0.69	-5.50	-3.22
3T	-0.44	-3.89	-1.62
4T	0.00	-3.50	-1.23
Surface	Roof angle $q = 0.00$		
	$G C_{pf}$	Net Press. W/	
		(+GC _{pi})	(-GC _{pi})
5T	0.40	1.39	3.66
6T	-0.29	-2.97	-0.69

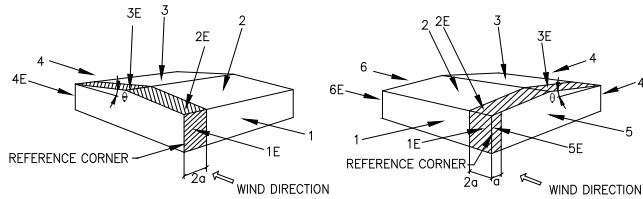
+ / - Wind Pressure 65%



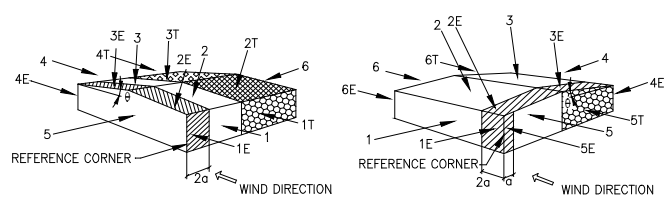
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Load Case A (Transverse) Load Case B (Longitudinal)
Basic Load Cases



Load Case A (Transverse) Load Case B (Longitudinal)
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)

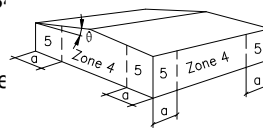
$p_{min} = 16.00$ psf (ASCE 7-16 30.2.2)

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

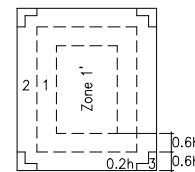
$q = 14.04$ °

$p_{overhang} = -87.18$ psf

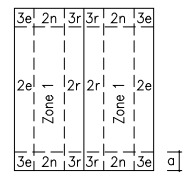
(ASCE 7-16 28.3.3)



Walls



Roof $\theta \leq 7^\circ$



Roof $\theta > 7^\circ$

Comp. & Cladding Coeffs.	Effective Area (ft ²)	Zone 1		Zone 1'		Zone 2		Zone 2e		Zone 2n		Zone 2r	
		GC _p	- GC _p	GC _p	- GC _p	GC _p	- GC _p	GC _p	- GC _p	GC _p	- GC _p	GC _p	- GC _p
	4436	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 (ft ²)	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		
33	0.30	-2.50	0.30	-2.50	0.30	-1.80	0.99	-1.09	0.99	-1.37			

Comp. & Cladding Pressures	Zone 1		Zone 1'		Zone 2		Zone 2e		Zone 2n		Zone 2r	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
	12.13	-24.76	12.13	-24.76	12.13	-60.14	12.13	-24.76	12.13	-29.82	12.13	-29.82
	Zone 3		Zone 3e		Zone 3r		Zone 4		Zone 5		(Max Pressure 67.72 psf)	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative		
	12.13	-67.72	12.13	-67.72	12.13	-50.03	29.46	-31.98	29.46	-39.20		

LOAD CASE 'A' FACTORED LOADS

$$\begin{aligned} 0.6 * W_r &= (Z_2 + Z_3) * 0.6 = & \mathbf{3.8 \text{ psf}} \\ 0.6 * W_{re} &= (Z_{2e} + Z_{3e}) * 0.6 = & \mathbf{6.7 \text{ psf}} \\ 0.6 * W_w &= (Z_1 + Z_4) * 0.6 = & \mathbf{12.9 \text{ psf}} \\ 0.6 * W_{we} &= (Z_{1e} + Z_{4e}) * 0.6 = & \mathbf{19.4 \text{ psf}} \end{aligned}$$

LOAD CASE 'B' FACTORED LOADS

$$\begin{aligned} 0.6 * W_r &= (Z_2 + Z_3) * 0.6 = & \mathbf{4.9 \text{ psf}} \\ 0.6 * W_{re} &= (Z_{2e} + Z_{3e}) * 0.6 = & \mathbf{8.2 \text{ psf}} \\ 0.6 * W_w &= (Z_5 + Z_6) * 0.6 = & \mathbf{10.5 \text{ psf}} \\ 0.6 * W_{we} &= (Z_{5e} + Z_{6e}) * 0.6 = & \mathbf{15.8 \text{ psf}} \end{aligned}$$

ROOF COMPONENTS FACTORED LOAD

$$0.6 * Z_{r,c\&c} = \mathbf{17.9 \text{ psf}}$$

WALL COMPONENTS FACTORED LOAD

$$0.6 * Z_{w,c\&c} = \mathbf{19.2 \text{ psf}}$$



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OSB SEISMIC LOADING ANALYSIS

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

INPUT DATA

Typical floor height: $h = 10$ ft
Typical floor weight: $w_x = 234.5$ kips
Number of floors: $n = 1$
Importance factor (ASCE 11.5.1): $I_e = 1.00$
Design spectral response: $S_{DS} = 0.47$ 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
 $h_n = 25.2$ ft

DESIGN SUMMARY

$C_s = 1.2 * S_{DS} / (R / I_e) = 0.0870$ <= 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
 $C_s < S_{D1} / [(R / I_e) T_a] = 0.1518$, ASCE Tab 12.8.1.1 <= Not Applicable
 $C_s > 0.044 S_{DS} I_e = 0.0207$, ASCE Tab 12.8.1.1 <= Not Applicable
 $C_s > 0.5 S_1 / (R / I_e) = 0.0117$, ASCE Tab 12.8.1.1 <= Not Applicable
 $k = 2.20$, (ASCE 12.8.3, page 91)
 $V = C_s W = 0.0870$ W
 $0.7 * V = 0.0609$ W
 $W = 235$ kips, total

SEISMIC COMPONENT & ANCHORING ANALYSIS

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

$$k_a = 1.0 + \frac{L_f}{100} \quad (12.11-2)$$

Lf: 10 ft ka: 1.1

$$F_p = 0.4 S_{DS} k_a I_e W_p \quad (12.11-1) = 2.5 \text{ psf} \quad \leq \text{USE FOR O.O.P. WALL}$$

Where: $W_p = 12.0$ psf, $I_e = 1.00$

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

$$F_{px} = 0.4 S_{DS} I_e W_{px} \quad (12.10-3) = 3.2 \text{ psf} \quad \leq \text{USE FOR ROOF FRAMING UPLIFT}$$

Where: $W_{px} = 17.0$ psf,



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WIND / SEISMIC SHEAR FORCE CALCULATIONS:

From ASCE 7-16 Wind & Seismic Loading Analysis

Wall Line	Roof / Floor						Wall					Load above		*C _s (W/p)	=	Loading		
	Wind Force (psf)	Diaph. Weight	Wtr, 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	15.2	57.0	101.5		14.5	12.0	10.0	57.0				0.06	=	6.24	10.02	Seismic
X2-1	9.6	55	15.2	57.0	101.5		14.5	12.0	10.0	57.0				0.06	=	6.24	10.02	Seismic
X3-1	9.6	55	15.2	38.0	57.0		15.3	12.0	10.0	38.0				0.06	=	4.23	3.87	Wind
X4-1	9.6	55	15.2	38.0	57.0		15.3	12.0	10.0	38.0				0.06	=	4.23	3.87	Wind
Y1-1	9.6	55	15.2	101.5	51.0		13.8	12.0	10.0	101.5				0.06	=	10.93	9.33	Wind
Y2-1	9.6	55	15.2	101.5	51.0		13.8	12.0	10.0	101.5				0.06	=	10.93	9.33	Wind
Y3-1	9.6	55	15.2	57.0	38.0		14.5	12.0	10.0	57.0				0.06	=	6.24	4.01	Wind
Y4-1	9.6	55	15.2	57.0	38.0		14.5	12.0	10.0	57.0				0.06	=	6.24	4.01	Wind
X1-0	0.0	26	0.0	1.0	58.0		19.4	12.0	10.0	1.0	6.0	6.24	10.02	0.06	=	4.12	6.54	Seismic



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SHEAR WALL CALCULATIONS:

	X1-1	X1-1	X1-1	X2-1	X2-1	X2-1
Shear Wall Forces						
Number of Panels	2	1	1	1	1	1
Total length of wall	101.50 ft	101.50 ft	101.50 ft	89.38 ft	89.38 ft	89.38 ft
Total length of shear wall	L = 1.73 ft	3.00 ft	10.75 ft	2.67 ft	3.12 ft	41.00 ft
Total length of full ht seg.	L _w = 1.73 ft	3.00 ft	10.75 ft	2.67 ft	3.12 ft	23.65 ft
height of shear wall	H = 10.00 ft	8.00 ft	10.00 ft	9.00 ft	10.00 ft	10.00 ft
Maximum opening height	H' = 0.00 ft	0.00 ft	0.00 ft	0.00 ft	0.00 ft	10.00 ft
Total force at top of wall	V ₁ = 1005 lbs	1747 lbs	6260 lbs	1990 lbs	776 lbs	5882 lbs
Self weight	W _{DL self} = 120 plf	96 plf	120 plf	108 plf	120 plf	120 plf
Applied dead load	W _{DL above} = 68 plf	68 plf	68 plf	68 plf	68 plf	68 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 = N	N	Y	Y	Y	Y
Shear Wall Segments						
	1.73	3.00	10.75	2.67	3.12	7.26
						2.89
						13.50
Shear Transfer to Concrete						
T =	3500 lbs	4511 lbs	5217 lbs	3500 lbs	2311 lbs	583 lbs
			12 " O.C.		36 " O.C.	72 " O.C.
Provide:			A1		A3	Code Min.
Min # of 1/2 Anchor Bolts			(7) Min		(2) Min	(6) Min
Load From Above	0.00	0.00	0.00	0.00	0.00	0.00
Holddown	S3	S4	HD3	HD3	HD2	HD1
Shear Resisting System						
Force Calculated	580.65	582.33	582.33	745.24	248.72	459.23
	P.F.	OSB	OSB	P.F.	OSB	OSB
Min Shear Wall Segment:	1.33 ft	2.29 ft	2.86 ft	1.33 ft	2.86 ft	2.86 ft
Provide: V _a =	1006	SW4	SW4	2371	SW1	SW3
Min Shear Wall Segment:						
Provide: V _a =						
Blocking / Nailing Framing Attachment						
Blocking Unit Shear	20 plf	17 plf	62 plf	22 plf	9 plf	66 plf
Blocking	NONE	NONE	NONE	NONE	NONE	NONE
Nailing	See SCHED	See SCHED	See SCHED	See SCHED	See SCHED	See SCHED
Unit Base Shear						
% of full height segments	%f _h = L _w /L =	1.000	1.000	1.000	1.000	0.577
% of maximum opening height	%o _h = H'/H =	0.000	0.000	0.000	0.000	1.000
Shear cap adj factor	SCAF =	1.00	1.00	1.00	1.00	0.54
Unit base shear	v _{base} V ₁ /L _w =	581 plf	582 plf	582 plf	745 plf	249 plf
Effective unit base shear	v _{req} = v _{base} /SCAF =	581 plf	582 plf	582 plf	745 plf	459 plf
Ovrtrn. mo. of shrt. pnl	OTM =	10.0 k-ft	14.0 k-ft	62.6 k-ft	17.9 k-ft	108.6 k-ft
Shear wall adjustment factor						
Resist moment of shrt panel	RM =	0.3 k-ft	0.7 k-ft	10.9 k-ft	0.6 k-ft	0.9 k-ft
	r =	1.0000	1.0000	1.0000	1.0000	0.5768
	C ₀ =	1.0000	1.0000	1.0000	1.0000	0.5416



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SHEAR WALL CALCULATIONS:

		X2-1				
Shear Wall Forces						
Number of Panels		2				
Total length of wall		89.38 ft				
Total length of shear wall	L =	2.75 ft				
Total length of full ht seg.	L _w =	2.75 ft				
height of shear wall	H =	10.00 ft				
Maximum opening height	H' =	0.00 ft				
Total force at top of wall	V ₁ =	684 lbs				
Self weight	w _{DL self} =	120 plf				
Applied dead load	w _{DL above} =	68 plf				
Preferred OSB thickness	in	7/16				
Preferred Gyp thickness	in	1/2				
Wall Connected to Concrete	y/n =	Y				
Shear Wall Segments						
		2.75				
Shear Transfer to Concrete						
	T =	2332 lbs				
1/2 Anchor Bolts @		24 " O.C.				
Provide:		A2				
Min # of 1/2 Anchor Bolts		(2) Min				
Load From Above		0.00				
Holddown		HD2				
Shear Resisting System						
Force Calculated		248.72				
		OSB				
Min Shear Wall Segment:		2.86 ft				
Provide: Va=		SW1				
Min Shear Wall Segment:						
Provide: Va=						
Blocking / Nailing Framing Attachment						
Blocking Unit Shear		15 plf				
Blocking		NONE				
Nailing		See SCHED				
Unit Base Shear						
% of full height segments	%fh = L _w /L =	1.000				
% of maximum opening height	%oh = H'/H =	0.000				
Shear cap adj factor	SCAF =	1.00				
Unit base shear	v _{base} V ₁ /L _w =	249 plf				
Effective unit base shear	v _{req} =v _{base} /SCAF=	249 plf				
Ovrtn. mo. Ttl. length of wall	OTM =	6.8 k-ft				
Shear wall adjustment factor						
Resist moment total L. of wall	RM =	0.7 k-ft				
	r=	1.0000				
	C ₀ =	1.0000				



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SHEAR WALL CALCULATIONS:

	X3-1	X4-1	Y1-1	Y1-1	Y2-1	Y2-1
Shear Wall Forces						
Number of Panels	1	1	1	1	1	1
Total length of wall	57.00 ft	61.34 ft	40.00 ft	40.00 ft	51.00 ft	51.00 ft
Total length of shear wall L =	57.00 ft	55.88 ft	23.00 ft	1.50 ft	13.42 ft	1.46 ft
Total length of full ht seg. L _w =	26.83 ft	18.33 ft	16.50 ft	1.50 ft	9.42 ft	1.46 ft
height of shear wall H =	10.00 ft	10.00 ft	10.00 ft	9.00 ft	10.00 ft	9.00 ft
Maximum opening height H' =	10.00 ft	10.00 ft	10.00 ft	0.00 ft	2.00 ft	0.00 ft
Total force at top of wall V ₁ =	4235 lbs	4235 lbs	9491 lbs	1438 lbs	9649 lbs	1280 lbs
Self weight w _{DL self} =	120 plf	120 plf	120 plf	108 plf	120 plf	108 plf
Applied dead load w _{DL above} =	68 plf	77 plf	68 plf	68 plf	242 plf	68 plf
Preferred OSB thickness in	7/16	7/16	7/16	7/16	7/16	7/16
Preferred 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						
	5.25	6.83	3.50	1.50	3.96	1.46
	3.58	4.50	5.50		5.46	
	5.00	7.00	7.50			
	4.00					
	5.00					
	4.00					
Shear Transfer to Concrete						
T =	Not Req'd	Not Req'd	5555 lbs	3500 lbs	9813 lbs	3500 lbs
1/2 Anchor Bolts @	72 " O.C.	72 " O.C.	48 " O.C.		12 " O.C.	
Provide:	Code Min.	Code Min.	A4		A1	
Min # of 1/2 Anchor Bolts	(5) Min	(5) Min	(10) Min		(10) Min	
Load From Above	0.00	0.00	0.00	0.00	0.00	0.00
			HD3	HD3	HD6	HD3
Shear Resisting System						
Force Calculated	324.93	541.37	900.35	958.70	1024.29	876.96
	OSB	OSB	OSB	P.F.	OSB	P.F.
Min Shear Wall Segment:	2.86 ft	2.86 ft	2.86 ft	1.33 ft	2.86 ft	1.33 ft
Provide: V _a =	SW1	SW2	SW4	1454	SW5	1320
Min Shear Wall Segment:						
Provide: V _a =						
Blocking / Nailing Framing Attachment						
Blocking Unit Shear	74 plf	69 plf	237 plf	36 plf	189 plf	25 plf
Blocking	NONE	NONE	B1	NONE	B1	NONE
Nailing	See SCHED	See SCHED	T1	See SCHED	T1	See SCHED
Unit Base Shear						
% of full height segments %f _h = L _w /L =	0.471	0.328	0.717	1.000	0.702	1.000
% of maximum opening height %o _h = H'/H =	1.000	1.000	1.000	0.000	0.200	0.000
Shear cap adj factor SCAF =	0.49	0.43	0.64	1.00	1.00	1.00
Unit base shear v _{base} V ₁ /L _w =	158 plf	231 plf	575 plf	959 plf	1024 plf	877 plf
Effective unit base shear v _{req} =v _{base} /SCAF =	325 plf	541 plf	900 plf	959 plf	1024 plf	877 plf
Ovrtrn. mo. Ttl. length of wall OTM =	87.2 k-ft	99.3 k-ft	20.1 k-ft	12.9 k-ft	40.6 k-ft	11.5 k-ft
Shear wall adjustment factor						
Resist moment total L. of wall RM =	305.4 k-ft	306.7 k-ft	1.2 k-ft	0.2 k-ft	2.8 k-ft	0.2 k-ft
r =	0.4707	0.3281	0.7174	1.0000	0.9217	1.0000
C _o =	0.4858	0.4267	0.6389	1.0000	1.1354	1.0000



**524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512**

**Completed by: JDJ
Review/Check: ARA**

**Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho**

SHEAR WALL CALCULATIONS:

	Y3-1	Y4-1	Y4-1	X1-0	X1-0	X1-0
Shear Wall Forces						
Number of Panels	1	1	1	1	2	1
Total length of wall	30.00 ft	36.00 ft	36.00 ft	56.00 ft	56.00 ft	56.00 ft
Total length of shear wall	L = 30.00 ft	10.00 ft	26.00 ft	1.84 ft	1.58 ft	2.92 ft
Total length of full ht seg.	L _w = 26.08 ft	10.00 ft	16.00 ft	1.84 ft	1.58 ft	2.92 ft
height of shear wall	H = 10.00 ft	10.00 ft	10.00 ft	9.00 ft	9.00 ft	10.00 ft
Maximum opening height	H' = 8.00 ft	0.00 ft	0.00 ft	0.00 ft	0.00 ft	0.00 ft
Total force at top of wall	V ₁ = 6238 lbs	2399 lbs	3839 lbs	1209 lbs	899 lbs	3537 lbs
Self weight	W _{DL self} = 120 plf	120 plf	120 plf	108 plf	108 plf	120 plf
Applied dead load	W _{DL above} = 34 plf	68 plf	68 plf	34 plf	34 plf	34 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						
	7.00	10.00	4.00	1.84	1.58	2.92
	7.50		4.00			
	11.58		4.00			
			4.00			
Shear Transfer to Concrete						
T =	1235 lbs	1835 lbs	16 lbs	7000 lbs	3500 lbs	16503 lbs
1/2 Anchor Bolts @	72 " O.C.	60 " O.C.	72 " O.C.			12 " O.C.
Provide:	Code Min.	A5	Code Min.			A1
Min # of 1/2 Anchor Bolts	(6) Min	(3) Min	(4) Min			(4) Min
Load From Above	0.00	0.00	0.00	3500.00	0.00	4511.00
Holdown	HD1	HD1	Perp. Wall	HD4	HD3	HD7
Shear Resisting System						
Force Calculated	282.94	239.92	239.92	657.08	569.08	1212.72
	OSB	OSB	OSB	P.F.	P.F.	OSB
Min Shear Wall Segment:	2.86 ft	2.86 ft	2.86 ft	1.33 ft	1.33 ft	2.86 ft
Provide: Va =	SW1	SW1	SW1	1234	903	SW5
Min Shear Wall Segment:						
Provide: Va =						
Blocking / Nailing Framing Attachment						
Blocking Unit Shear	208 plf	67 plf	107 plf	22 plf	32 plf	63 plf
Blocking	B1	NONE	NONE	NONE	NONE	NONE
Nailing	T1	See SCHED	See SCHED	See SCHED	See SCHED	See SCHED
Unit Base Shear						
% of full height segments	%fh = L _w /L =	0.869	1.000	0.615	1.000	1.000
% of maximum opening height	%oh = H'/H =	0.800	0.000	0.000	0.000	0.000
Shear cap adj factor	SCAF =	0.85	1.00	1.00	1.00	1.00
Unit base shear	vbase V ₁ /L _w =	239 plf	240 plf	240 plf	657 plf	569 plf
Effective unit base shear	vreq=v _{base} /SCAF =	283 plf	240 plf	240 plf	657 plf	569 plf
Ovrtrn. mo. Ttl. length of wall	OTM =	73.8 k-ft	24.0 k-ft	38.4 k-ft	10.9 k-ft	8.1 k-ft
		35.4 k-ft				
Shear wall adjustment factor						
Resist moment total L. of wall	RM =	69.3 k-ft	9.4 k-ft	63.5 k-ft	0.2 k-ft	0.2 k-ft
	r =	0.8927	1.0000	0.9999	1.0000	1.0000
	C ₀ =	0.8454	1.0000	1.6247	1.0000	1.0000



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Steel Column

Project File: Steel Moment Frame.ec6

LIC#: KW-06013353, Build:20.24.10.03

Snake River Engineering

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Moment Frame Column

Code References

Calculations per AISC 360-16, IBC 2018, CBC 2019, SDPWS 2015
Load Combinations Used : IBC 2021

General Information

Steel Section Name :	W6x12	Overall Column Height	12.0 ft
Analysis Method :	Allowable Strength	Top & Bottom Fixity	Top Pinned, Bottom Fixed
Steel Stress Grade		Brace condition :	
Fy : Steel Yield	36.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 12.0 ft, K = 0.65	
E : Elastic Bending Modulus	29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 12.0 ft, K = 0.65	

Applied Loads

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

Column self weight included : 145.010 lbs * Dead Load Factor

AXIAL LOADS . . .

Axial: Axial Load at 12.0 ft, D = 1.650, S = 14.80 k

BENDING LOADS . . .

LATERAL: Lat. Point Load at 12.0 ft creating Mx-x, W = 5.40 k

MOMENT CONNECTION: Lat. Point Load at 12.0 ft creating Mx-x, W = 35.0 k

MOMENT CONNECTION: Lat. Point Load at 11.50 ft creating Mx-x, W = -35.0 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.7277** : 1
 Load Combination +D+0.750S+0.450W
 Location of max.above base 11.436 ft
 At maximum location values are . . .
 Pa : Axial 12.895 k
 Pn / Omega : Allowable 44.272 k
 Ma-x : Applied -7.320 k-ft
 Mn-x / Omega : Allowable 14.910 k-ft
 Ma-y : Applied 0.0 k-ft
 Mn-y / Omega : Allowable 4.168 k-ft

Maximum Load Reactions . .
 Top along X-X 0.0 k
 Bottom along X-X 0.0 k
 Top along Y-Y 7.586 k
 Bottom along Y-Y 2.186 k

Maximum Load Deflections . . .
 Along Y-Y -0.2506 in at 8.054 ft above base
 for load combination : W Only
 Along X-X 0.0 in at 0.0 ft above base
 for load combination :

PASS Maximum Shear Stress Ratio **0.9858** : 1
 Load Combination +D+0.60W
 Location of max.above base 11.517 ft
 At maximum location values are . . .
 Va : Applied 19.688 k
 Vn / Omega : Allowable 19.971 k

Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios			Cbz	Cby	KxLx/Rx	KyLy/Ry	Maximum Shear Ratios		
	Stress Ratio	Status	Location					Stress Ratio	Status	Location
D Only	0.041	PASS	0.00 ft	2.07	1.00	37.59	101.96	0.000	PASS	0.00 ft
+D+S	0.375	PASS	0.00 ft	2.07	1.00	37.59	101.96	0.000	PASS	0.00 ft
+D+0.750S	0.291	PASS	0.00 ft	2.07	1.00	37.59	101.96	0.000	PASS	0.00 ft
+D+0.60W	0.675	PASS	11.44 ft	2.07	1.00	37.59	101.96	0.986	PASS	11.52 ft
+D+0.450W	0.511	PASS	11.44 ft	2.07	1.00	37.59	101.96	0.739	PASS	11.52 ft
+D+0.750S+0.450W	0.728	PASS	11.44 ft	2.07	1.00	37.59	101.96	0.739	PASS	11.52 ft
+0.60D+0.60W	0.667	PASS	11.44 ft	2.07	1.00	37.59	101.96	0.986	PASS	11.52 ft
+0.60D	0.024	PASS	0.00 ft	2.07	1.00	37.59	101.96	0.000	PASS	11.52 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction		X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base		@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	1.795										
+D+S	16.595										
+D+0.750S	12.895										
+D+0.60W	1.795					-1.312	4.552	5.241			



**524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512**

**Completed by: JDJ
Review/Check: ARA**

**Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho**

Steel Column

Project File: Steel Moment Frame.ec6

LIC#: KW-06013353, Build:20.24.10.03

Snake River Engineering

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Moment Frame Column

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction @ Base	X-X Axis Reaction @ Base @ Top	k	Y-Y Axis Reaction @ Base @ Top	Mx - End Moments @ Base @ Top	k-ft	My - End Moments @ Base @ Top
+D+0.450W	1.795			-0.984 3.414	3.931		
+D+0.750S+0.450W	12.895			-0.984 3.414	3.931		
+0.60D+0.60W	1.077			-1.312 4.552	5.241		
+0.60D	1.077						
S Only	14.800						
W Only				-2.186 7.586	8.735		

Extreme Reactions

Item	Extreme Value	Axial Reaction @ Base	X-X Axis Reaction @ Base @ Top	k	Y-Y Axis Reaction @ Base @ Top	Mx - End Moments @ Base @ Top	k-ft	My - End Moments @ Base @ Top
Axial @ Base	Maximum	16.595						
"	Minimum				-2.186 7.586	8.735		
Reaction, X-X Axis Base	Maximum	1.795						
"	Minimum	1.795						
Reaction, Y-Y Axis Base	Maximum	1.795						
"	Minimum				-2.186 7.586			8.735
Reaction, X-X Axis Top	Maximum	1.795						
"	Minimum	1.795						
Reaction, Y-Y Axis Top	Maximum	1.795						
"	Minimum	1.795						
Moment, X-X Axis Base	Maximum		8.735		-2.186 7.586	8.735		
"	Minimum	1.795						
Moment, Y-Y Axis Base	Maximum	1.795						
"	Minimum	1.795						
Moment, X-X Axis Top	Maximum	1.795						
"	Minimum	1.795						
Moment, Y-Y Axis Top	Maximum	1.795						
"	Minimum	1.795						

Maximum Deflections for Load Combinations

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	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
+D+0.60W	0.0000 in	0.000 ft	-0.150 in	8.054 ft
+D+0.450W	0.0000 in	0.000 ft	-0.113 in	8.054 ft
+D+0.750S+0.450W	0.0000 in	0.000 ft	-0.113 in	8.054 ft
+0.60D+0.60W	0.0000 in	0.000 ft	-0.150 in	8.054 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
W Only	0.0000 in	0.000 ft	-0.251 in	8.054 ft

Steel Section Properties : W6x12

Depth	=	6.030 in	I xx	=	22.10 in^4	J	=	0.090 in^4
Web Thick	=	0.230 in	S xx	=	7.31 in^3	Cw	=	24.70 in^6
Flange Width	=	4.000 in	R xx	=	2.490 in			
Flange Thick	=	0.280 in	Zx	=	8.300 in^3			
Area	=	3.550 in^2	I yy	=	2.990 in^4			
Weight	=	12.084 plf	S yy	=	1.500 in^3	Wno	=	5.750 in^2
Kdesign	=	0.530 in	R yy	=	0.918 in	Sw	=	1.610 in^4
K1	=	0.563 in	Zy	=	2.320 in^3	Qf	=	1.520 in^3
rts	=	1.080 in				Qw	=	4.080 in^3
Ycg	=	0.000 in						



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
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Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Steel Column

Project File: Steel Moment Frame.ec6

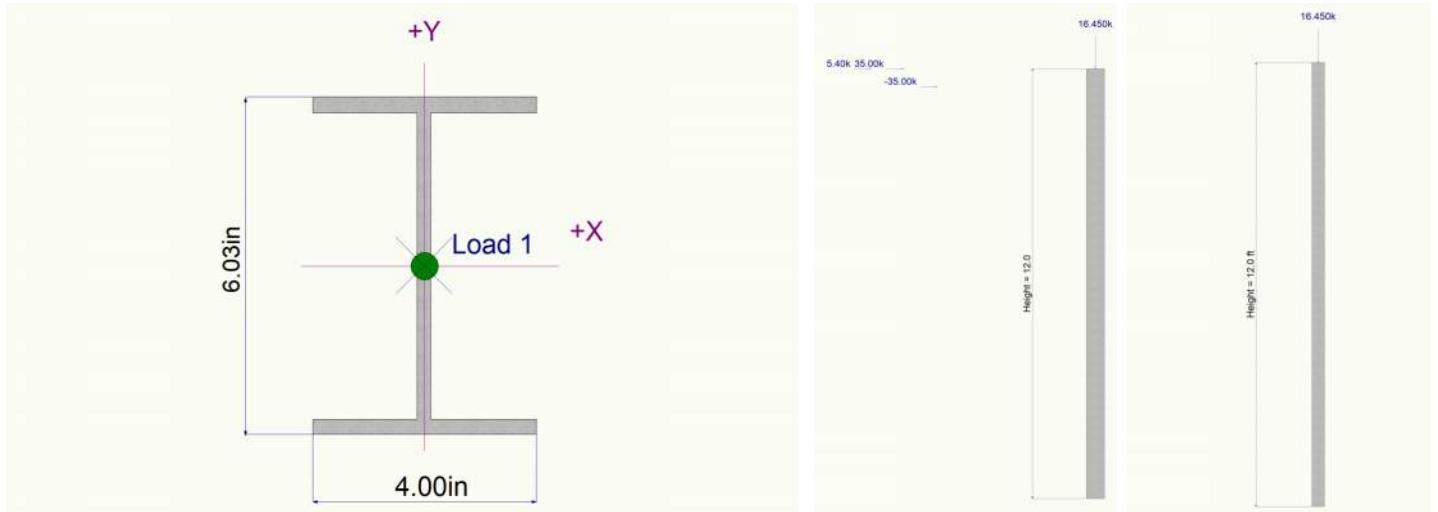
LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Moment Frame Column

Sketches





524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Steel Beam

Project File: Steel Moment Frame.ec6

LIC#: KW-06013353, Build:20.24.10.03

Snake River Engineering

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Moment Frame Beam

CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16

Load Combination Set : IBC 2021

Material Properties

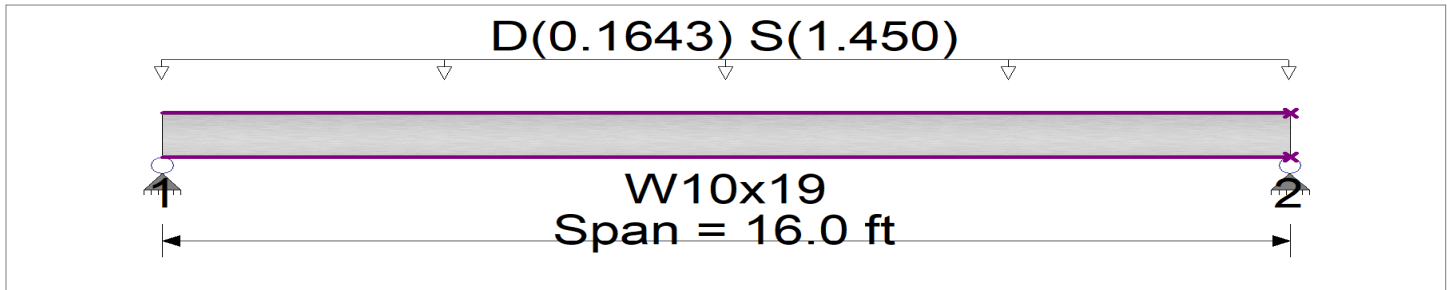
Analysis Method : Allowable Strength Design

Fy : Steel Yield : 50.0 ksi

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

E: Modulus : 29,000.0 ksi

Bending Axis : Major Axis Bending



Applied Loads

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

Beam self weight NOT internally calculated and added

Uniform Load : D = 0.0170, S = 0.150 ksf, Tributary Width = 9.667 ft, (Roof)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =		0.959 : 1	Maximum Shear Stress Ratio =		0.253 : 1
Section used for this span		W10x19	Section used for this span		W10x19
Ma : Applied		51.660 k-ft	Va : Applied		12.915 k
Mn / Omega : Allowable		53.892 k-ft	Vn/Omega : Allowable		51.0 k
Load Combination		+D+S	Load Combination		+D+S
Span # where maximum occurs		Span # 1	Location of maximum on span		0.000 ft
Span # where maximum occurs		Span # 1	Span # where maximum occurs		Span # 1
Maximum Deflection					
Max Downward Transient Deflection		0.768 in	Ratio =	249	>=240. Span: 1 : S Only
Max Upward Transient Deflection		0 in	Ratio =	0	<240.0 n/a
Max Downward Total Deflection		0.856 in	Ratio =	224	>=180 Span: 1 : +D+S
Max Upward Total Deflection		0 in	Ratio =	0	<180 n/a

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios		Summary of Moment Values							Summary of Shear Values		
Segment Length	Span #	M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
D Only													
Dsgn. L = 16.00 ft	1	0.098	0.026	5.26		5.26	90.00	53.89	1.00	1.00	1.31	76.50	51.00
+D+S													
Dsgn. L = 16.00 ft	1	0.959	0.253	51.66		51.66	90.00	53.89	1.00	1.00	12.92	76.50	51.00
+D+0.750S													
Dsgn. L = 16.00 ft	1	0.743	0.196	40.06		40.06	90.00	53.89	1.00	1.00	10.02	76.50	51.00
+0.60D													
Dsgn. L = 16.00 ft	1	0.059	0.015	3.16		3.16	90.00	53.89	1.00	1.00	0.79	76.50	51.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.8563	8.046		0.0000	0.000

Vertical Reactions

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	12.915	12.915
Max Upward from Load Combinations	12.915	12.915
Max Upward from Load Cases	11.600	11.600
D Only	1.315	1.315
+D+S	12.915	12.915
+D+0.750S	10.015	10.015
+0.60D	0.789	0.789
S Only	11.600	11.600



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

2D Frame

Project File: Steel Moment Frame.ec6

LIC# : KW-06013353, Build:20.25.02.26

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

Code References

Calculations per NDS 2018, IBC 2018, CBC 2019
Load Combinations Used : IBC 2018

Joints...

Joint Label	Joint Coordinates		X Translational Restraint	Y Translational Restraint	Z Rotational Restraint	Joint Temp deg F
	X ft	Y ft				
1	0.0	0.0	Restrained	Restrained	Restrained	0
2	0.0	10.0	Unrestrained	Unrestrained	Restrained	0
3	13.0	10.0	Unrestrained	Unrestrained	Restrained	0
4	13.0	0.0	Restrained	Restrained	Restrained	0

Members...

Member Label	Property Label	Endpoint Joints		Member Length ft	Releases Specify Connectivity of Member Ends to Joints					
		I Joint	J Joint		x	I End y	z (rotation)	x	J End y	z (rotation)
A	Column	1	2	10.000	Unreleased	Unreleased	Unreleased	Unreleased	Unreleased	Unreleased
B	Beam	2	3	13.000	Unreleased	Unreleased	Unreleased	Unreleased	Unreleased	Unreleased
C	Column	3	4	10.000	Unreleased	Unreleased	Unreleased	Unreleased	Unreleased	Unreleased

Member Stress Check Data...

Member Label	Unbraced Lengths		Slenderness Factors		AISC Bending & Stability Factors	
	Lu : z ft	Lu : y	K : z	K : y	Cm	Cb
A	10.000	10.000	1.00	1.00	Internal	Internal
B	13.000	13.000	1.00	1.00	Internal	Internal
C	10.000	10.000	1.00	1.00	Internal	Internal

Materials...

Member Label	Youngs ksi	Density kcf	Thermal in/deg	Yield ksi
Default	1.00	0.000	0.000000	1.00
Steel	29,000.00	0.490	0.000007	50.00
Wood	1,800.00	0.035	0.000000	0.00

Wood Material Data...

Wood, Not Defined, Density= 35.0pcf, FbT= 1000psi, FbC= 1000psi, Fv= 1000psi, Ft= 1000, Fc= 400psi, E Bend XX= 1800ksi, E BendMin XX= 1800ksi, E Beny YY= 1800ksi, E BendMin YY= 1800ksi, E Axial= 1800ksi, Species= , Grade= Any, Class=

Member Sections...

Prop Label	Group Tag	Material	Area	Depth	Width	Ixx	Iyy
Default	Group	Default	1.0 in^2	0.0 in	0.0 in	1.0 in^4	1.0 in^4
W6x12	Column	Steel	3.550 in^2	6.030 in	4.0 in	22.10 in^4	2.990 in^4
W8x13	Beam	Steel	3.840 in^2	7.990 in	4.0 in	39.60 in^4	2.730 in^4

Joint Loads....

Note: Loads labeled "Global Y" act downward (in "-Y" direction)

Joint Label	Load Direction	Load Magnitude						
		Dead	Roof Live	Live	Snow	Seismic	Wind	Earth
2	Global X						3.0	k

Stress/Strength Load Combinations

IBC 2018

Load Combination Description	Cd	Load Combination Factors								
		Dead	0.2*Sds* Seismic	Roof Live	Live	Snow	Wind	Seismic	Rho	Earth
+D+H	0.9	1.0								1.0
+D+L+H	1	1.0			1.0					1.0
+D+Lr+H	1.25	1.0		1.0						1.0
+D+S+H	1.15	1.0				1.0				1.0
+D+0.750Lr+0.750L+H	1.25	1.0		0.750	0.750					1.0
+D+0.750L+0.750S+H	1.15	1.0			0.750	0.750				1.0



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

2D Frame

Project File: Steel Moment Frame.ec6

LIC# : KW-06013353, Build:20.25.02.26

SNAKE RIVER ENGINEERING

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Stress/Strength Load Combinations

IBC 2018

Load Combination Description	Cd	Load Combination Factors								
		Dead	0.2*Sds* Seismic	Roof Live	Live	Snow	Wind	Seismic	Rho	Earth
+D+0.60W+H	1.6	1.0					0.60			1.0
+D+0.70E+H	0.9	1.0						0.70		1.0
+D+0.750Lr+0.750L+0.450W+H	1.6	1.0		0.750	0.750		0.450			1.0
+D+0.750L+0.750S+0.450W+H	1.6	1.0			0.750	0.750	0.450			1.0
+D+0.750L+0.750S+0.5250E+H	1.15	1.0			0.750	0.750		0.5250		1.0
+0.60D+0.60W+0.60H	1.6	0.60					0.60			0.60
+0.60D+0.70E+0.60H	0.9	0.60						0.70		0.60

Reaction Load Combinations

IBC 2018

Load Combination Description	Load Combination Factors						
	Dead	Roof Live	Live	Snow	Wind	Seismic	Earth
+D+H	1.0						1.0
+D+L+H	1.0		1.0				1.0
+D+Lr+H	1.0	1.0					1.0
+D+S+H	1.0			1.0			1.0
+D+0.750Lr+0.750L+H	1.0	0.750	0.750				1.0
+D+0.750L+0.750S+H	1.0		0.750	0.750			1.0
+D+0.60W+H	1.0				0.60		1.0
+D+0.70E+H	1.0					0.70	1.0
+D+0.750Lr+0.750L+0.450W+H	1.0	0.750	0.750		0.450		1.0
+D+0.750L+0.750S+0.450W+H	1.0		0.750	0.750	0.450		1.0
+D+0.750L+0.750S+0.5250E+H	1.0		0.750	0.750		0.5250	1.0
+0.60D+0.60W+0.60H	0.60				0.60		0.60
+0.60D+0.70E+0.60H	0.60					0.70	0.60
D Only	1.0						
Lr Only		1.0					
L Only			1.0				
S Only				1.0			
W Only					1.0		
E Only						1.0	
H Only							1.0

Deflection Load Combinations

IBC 2018

Load Combination Description	Load Combination Factors						
	Dead	Roof Live	Live	Snow	Wind	Seismic	Earth
+D+H	1.0						1.0
+D+L+H	1.0		1.0				1.0
+D+Lr+H	1.0	1.0					1.0
+D+S+H	1.0			1.0			1.0
+D+0.750Lr+0.750L+H	1.0	0.750	0.750				1.0
+D+0.750L+0.750S+H	1.0		0.750	0.750			1.0
+D+0.60W+H	1.0				0.60		1.0
+D+0.70E+H	1.0					0.70	1.0
+D+0.750Lr+0.750L+0.450W+H	1.0	0.750	0.750		0.450		1.0
+D+0.750L+0.750S+0.450W+H	1.0		0.750	0.750	0.450		1.0
+D+0.750L+0.750S+0.5250E+H	1.0		0.750	0.750		0.5250	1.0
+0.60D+0.60W+0.60H	0.60				0.60		0.60
+0.60D+0.70E+0.60H	0.60					0.70	0.60
D Only	1.0						
Lr Only		1.0					
L Only			1.0				
S Only				1.0			
W Only					1.0		
E Only						1.0	
H Only							1.0



**524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512**

**Completed by: JDJ
Review/Check: ARA**

**Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho**

2D Frame

Project File: Steel Moment Frame.ec6

LIC# : KW-06013353, Build:20.25.02.26

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Extreme Joint Displacements

Only Load Combinations giving maximum values are listed

Joint Label	Joint Displacements		
	X in	Y in	Z Radians
1 Max	0.0 W Only	0.0	0.0 +0.450W
1 Min	0.0 +0.450W	0.0	0.0 W Only
2 Max	0.3381 W Only	0.0 W Only	0.0 +0.450W
2 Min	0.1521 +0.450W	0.0 +0.450W	0.0 W Only
3 Max	0.3360 W Only	0.0 +0.450W	0.0 +0.450W
3 Min	0.1512 +0.450W	0.0 W Only	0.0 W Only
4 Max	0.0 W Only	0.0	0.0 +0.450W
4 Min	0.0 +0.450W	0.0	0.0 W Only

Extreme Joint Reactions

Only Load Combinations giving maximum values are listed

Joint Label	Joint Reactions		
	X k	Y k	Z k-ft
1 Max	-0.6771 +0.450W	0.0 +0.450W	7.523 W Only
1 Min	-1.505 W Only	0.0 W Only	3.385 +0.450W
2 Max			7.523 W Only
2 Min			3.385 +0.450W
3 Max			7.477 W Only
3 Min			3.365 +0.450W
4 Max	-0.6729 +0.450W	0.0 W Only	7.477 W Only
4 Min	-1.495 W Only	0.0 +0.450W	3.365 +0.450W

Extreme Member End Forces

Only Load Combinations giving maximum values are listed

Member Label	Member "I" End Forces			Member "J" End Forces		
	Axial k	Shear k	Moment k-ft	Axial k	Shear k	Moment k-ft
A Max	0.0	0.9028 +0.60W	4.514 +0.60W	0.0 +0.60W	0.0	4.514 +0.60W
A Min	0.0 +0.60W	0.0	0.0	0.0	-0.9028 +0.60W	0.0
B Max	0.8972 +0.60W	0.0	0.0	0.0	0.0 +0.60W	0.0
B Min	0.0	0.0 +0.60W	-0.000020 +0.60W	-0.8972 +0.60W	0.0	-0.000020 +0.60W
C Max	0.0 +0.60W	0.8972 +0.60W	4.486 +0.60W	0.0	0.0	4.486 +0.60W
C Min	0.0	0.0	0.0	0.0 +0.60W	-0.8972 +0.60W	0.0



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

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Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

2D Frame

Project File: Steel Moment Frame.ec6

LIC# : KW-06013353, Build:20.25.02.26

SNAKE RIVER ENGINEERING

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Extreme Member Forces

Only Load Combinations giving maximum values are listed

Mmbr Label	Axial	Dist from "I" Joint	Moment	Dist from "I" Joint	Shear	Dist from "I" Joint
A Max	0.0k	0.0 ft	4.514 k-ft	0.0 ft	0.9028 k	0.0 ft
A Min	0.0k	0.0 ft	-4.514 k-ft	10.0 ft	0.6771 k	0.0 ft
B Max	-0.6729k	0.0 ft	0.0 k-ft	0.0 ft	0.0 k	0.0 ft
B Min	-0.8972k	0.0 ft	0.0 k-ft	0.0 ft	0.0 k	0.0 ft
C Max	0.0k	0.0 ft	4.486 k-ft	0.0 ft	0.8972 k	0.0 ft
C Min	0.0k	0.0 ft	-4.486 k-ft	10.0 ft	0.6729 k	0.0 ft

Member Stress Checks...

Stress Checks per AISC 360-16 & NDS 2018

Member Label	Section Label	Material	Max. Axial + Bending Stress Ratios				Max. Shear Stress Ratios			
			Load Combination	Ratio	Status	Dist (ft)	Load Combination	Ratio	Status	Dist (ft)
A	Column	Steel	+0.60W	0.322	PASS	10.00	+0.60W	0.033	PASS	0.00
B	Beam	Steel	+0.60W	0.027	PASS	0.00	+0.60W	0.000	PASS	0.00
C	Column	Steel	+0.60W	0.320	PASS	0.00	+0.60W	0.032	PASS	0.00



524 CLEVELAND BLVD. #230
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Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

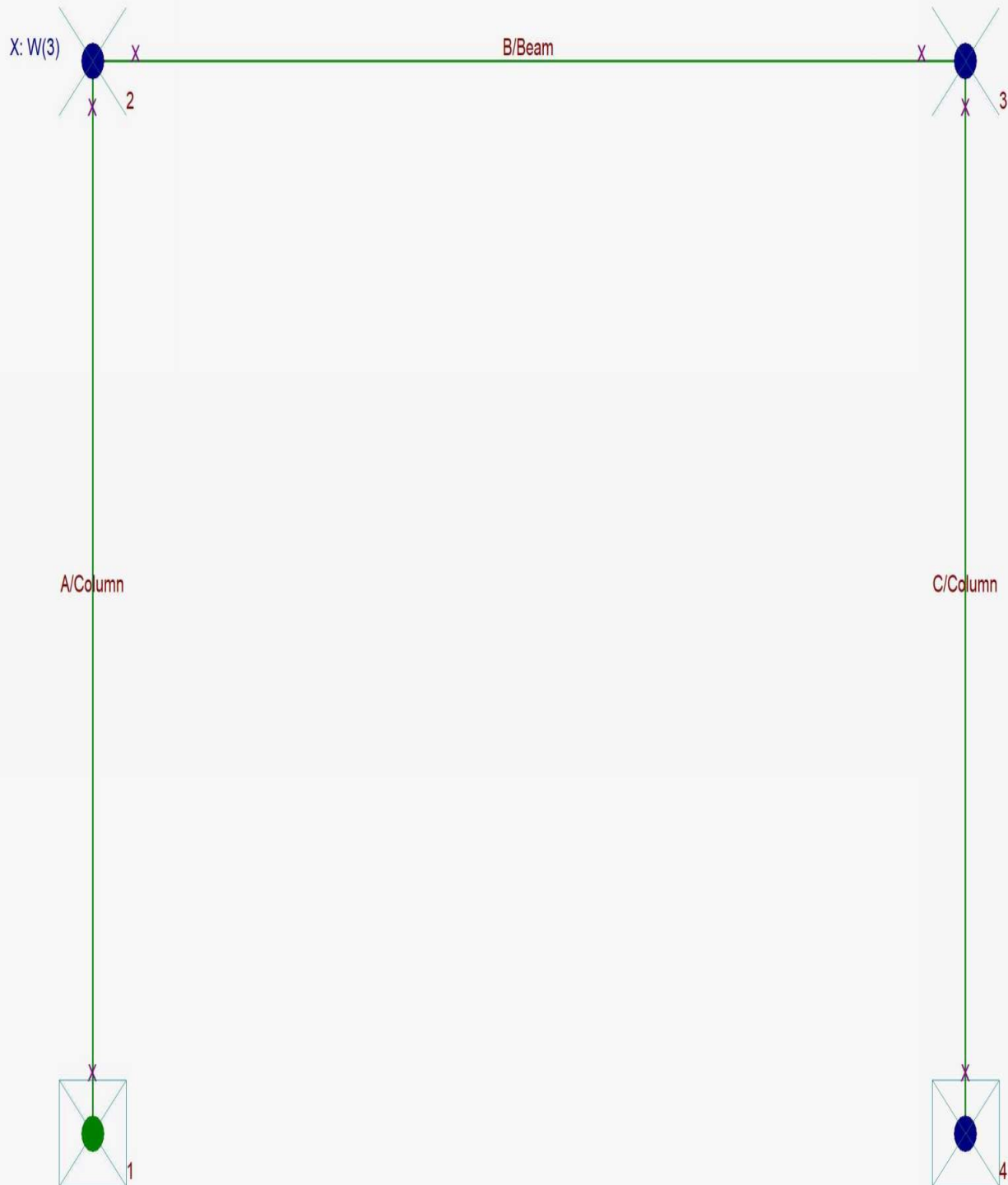
2D Frame

Project File: Steel Moment Frame.ec6

LIC# : KW-06013353, Build:20.25.02.26

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524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Steel Base Plate

Project File: Steel Moment Frame.ec6

LIC# : KW-06013353, Build:20.25.02.26

Snake River Engineering

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Base Plate

Code Reference:

Calculations per AISC Design Guide # 1, IBC 2018, CBC 2019

Load Combination Set : IBC 2018

General Information

Material Properties

AISC Design Method 0.0

Steel Plate F_y = 36 ksi

Concrete Support f'_c = 3 ksi

Assumed Bearing Area Full Bearing

Ω_c : ASD Safety Factor

2.31

Nominal Bearing F_p per J8

ksi

Column & Plate

Column Properties

Steel Section W6x12

Depth 6.03 in Area 3.55 in²

Width 4 in I_{xx} in⁴

Flange Thickness 0.28 in I_{yy} in⁴

Web Thickness 0.23 in

Plate Dimensions

N : Length 12 in

B : Width 12 in

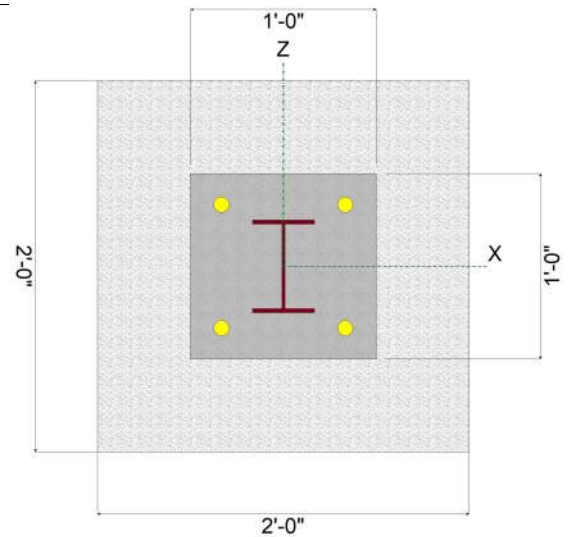
Thickness 0.6250 in

Support Dimensions

Width along "X" 24.0 in

Length along "Z" 24.0 in

Column assumed welded to base plate

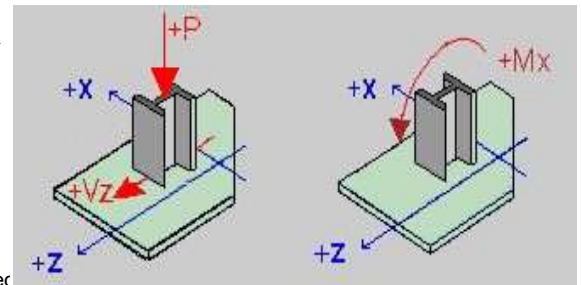


Applied Loads

	P-Y	V-Z	M-X
D : Dead Load	0.50 k	k	k-ft
L : Live	k	k	k-ft
Lr : Roof Live	k	k	k-ft
S : Snow	1.0 k	k	k-ft
W : Wind	k	k	5.0 k-ft
E : Earthquake	k	k	k-ft
H : Lateral Earth	k	k	k-ft

"P" = Gravity load, "+" sign is downward. Moments create higher soil pressure at +Z edge

"+" Shears push plate towards +Z edge



Anchor Bolts

Anchor Bolt or Rod Description 5/8"

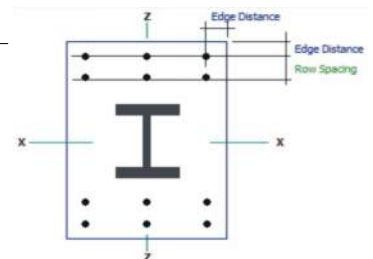
Max of Tension or Pullout Capacity..... k

Shear Capacity..... k

Edge distance : bolt to plate..... 2.0 in

Number of Bolts in each Row..... 2

Number of Bolt Rows..... 1





524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Steel Base Plate

Project File: Steel Moment Frame.ec6

LIC# : KW-06013353, Build:20.25.02.26

SNAKE RIVER ENGINEERING

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DESCRIPTION: Base Plate

GOVERNING DESIGN LOAD CASE SUMMARY

Plate Design Summary

Design Method 0.0

Governing Load Combinat 0.0

Governing Load Case Typ 0.0

Governing STRESS RATIO

Design Plate Size 0.0

Pa : Axial Load 0.0 k

Ma : Moment 0.0 k-ft

Ma : Max. Moment 0.0 k-in

fb : Max. Bending Stress 0.0 ksi

Fb : Allowable : 0.0 0.0 ksi

Bending Stress Ratio 0.0

Bending Stress OK

fu : Max. Plate Bearing Stress 0.0 ksi

Fp : Allowable : 0.0 ksi

Bearing Stress Ratio 0.0

Bearing Stress OK



524 CLEVELAND BLVD. #230
Caldwell, IDAHO 83605
(208) 453-6512

Completed by: JDJ

Review/Check: ARA

Project:

Address:

Phone:

E-mail:

Project Name: Hawkins Residence

SRE Project #: 2025-0936 1

City and State: Valley County, Idaho

1. Project information

Project description:

Location:

Design name: Design

Comment:

2. Input Data & Anchor Parameters

General

Design method: ACI 318-19

Units: Imperial units

Anchor Information:

Anchor type: Cast-in-place

Material: F1554 Grade 36

Diameter (inch): 0.750

Effective Embedment depth, h_{ef} (inch): 4.125

Anchor category: -

Anchor ductility: Yes

h_{min} (inch): 5.63

c_{min} (inch): 4.50

s_{min} (inch): 4.50

Base Material

Concrete: Normal-weight

Concrete thickness, h (inch): 12.00

State: Uncracked

Compressive strength, f'_c (psi): 2500

Reinforcement condition: B tension, B shear

Supplemental edge reinforcement: No

Reinforcement provided at corners: No

Ignore concrete breakout in tension: No

Ignore concrete breakout in shear: No

Ignore 6do requirement: No

Build-up grout pad: No

Base Plate

Length x Width x Thickness (inch): 12.00 x 12.00 x 0.63

Recommended Anchor

Anchor Name: J- or L-Bolt - 3/4"Ø J- or L-Bolt, F1554 Gr. 36





524 CLEVELAND BLVD. #230
Caldwell, Idaho 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA
Project:
Address:
Phone:
E-mail:

Project Name: Hayden Residence
SRE Project #: 2025-09362
City and State: Valley County, Idaho

Load and Geometry

Load factor source: ACI 318 Section 5.3

Load combination: not set

Seismic design: No

Anchors subjected to sustained tension: Not applicable

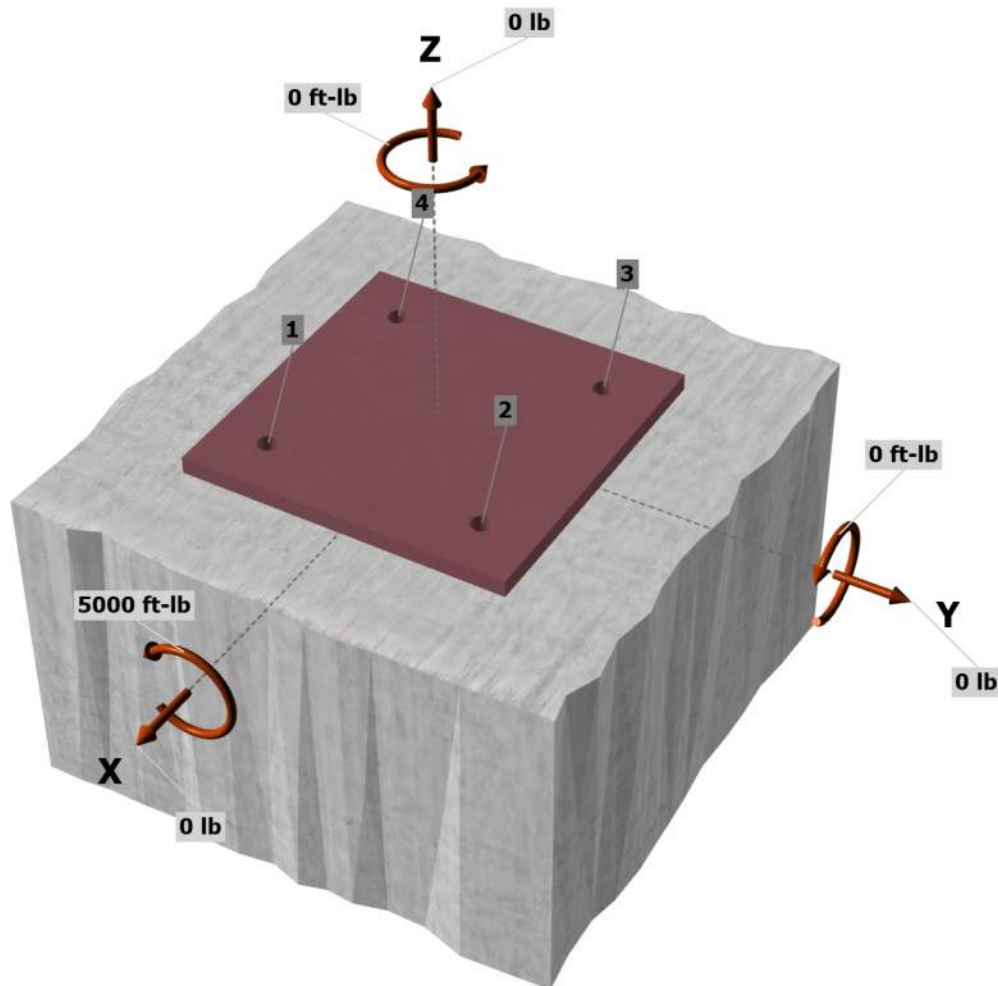
Apply entire shear load at front row: No

Anchors only resisting wind and/or seismic loads: No

Strength level loads:

N_{ua} [lb]: 0
 V_{uax} [lb]: 0
 V_{uay} [lb]: 0
 M_{ux} [ft-lb]: 5000
 M_{uy} [ft-lb]: 0
 M_{uz} [ft-lb]: 0

<Figure 1>



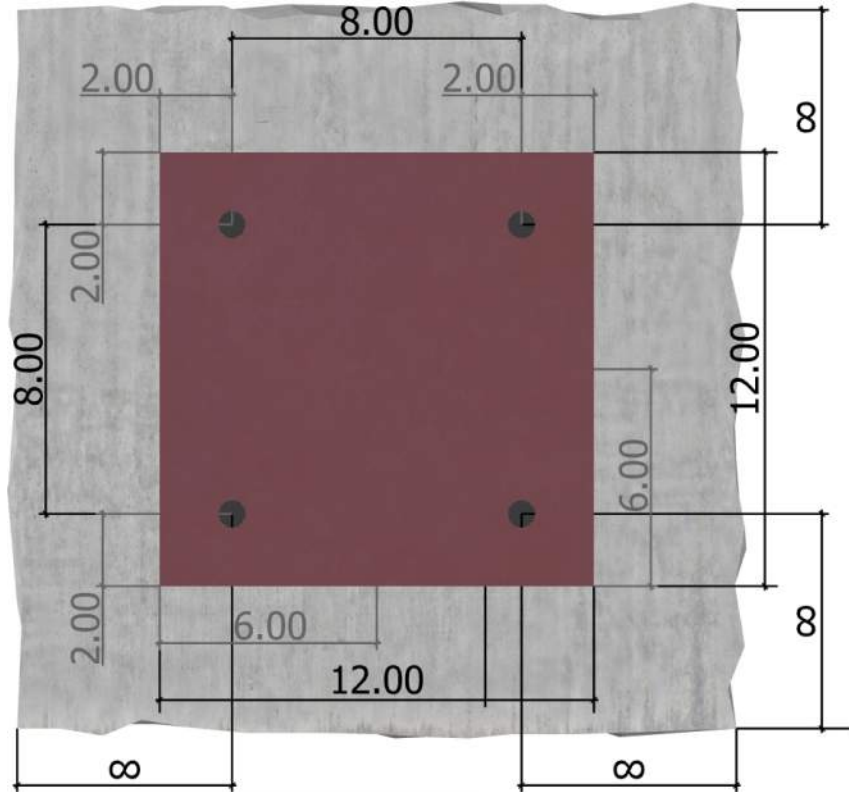


524 CLEVELAND BLVD. #230
Caldwell, Idaho 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA
Project:
Address:
Phone:
E-mail:

Project Name: Hayden Residence
SRE Project #: 2025-09363
City and State: Valley County, Idaho

<Figure 2>

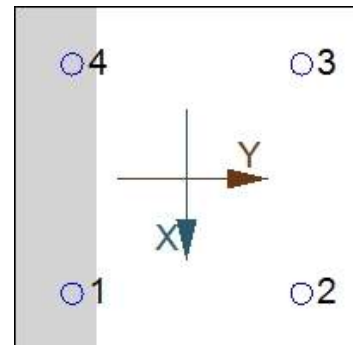


3. Resulting Anchor Forces

Anchor	Tension load, N_{ua} (lb)	Shear load x, V_{uax} (lb)	Shear load y, V_{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb)
1	0.0	0.0	0.0	0.0
2	3314.9	0.0	0.0	0.0
3	3314.9	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0
Sum	6629.7	0.0	0.0	0.0

Maximum concrete compression strain (‰): 0.09
Maximum concrete compression stress (psi): 388
Resultant tension force (lb): 6630
Resultant compression force (lb): 6630
Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00
Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.00

<Figure 3>





524 CLEVELAND BLVD. #230
COLDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ

Review/Check: ARA

Project:

Address:

Phone:

E-mail:

Project Name: Hawkins Residence

SRE Project #: 2025-09364

City and State: Valley County, Idaho

4. Steel Strength of Anchor in Tension (Sec. 17.6.1)

N_{sa} (lb)	ϕ	ϕN_{sa} (lb)
19370	0.75	14528

5. Concrete Breakout Strength of Anchor in Tension (Sec. 17.6.2)

$$N_b = k_c \lambda_a \sqrt{f'_c} h_{ef}^{1.5} \text{ (Eq. 17.6.2.2.1)}$$

k_c	λ_a	f'_c (psi)	h_{ef} (in)	N_b (lb)
24.0	1.00	2500	4.125	10053

$$\phi N_{cbg} = \phi (A_{Nc} / A_{Nco}) \Psi_{ec,N} \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b \text{ (Sec. 17.5.1.2 \& Eq. 17.6.2.1a)}$$

A_{Nc} (in ²)	A_{Nco} (in ²)	$c_{a,min}$ (in)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	ϕN_{cbg} (lb)
252.14	153.14	-	1.000	1.000	1.25	1.000	10053	0.70	14484

6. Pullout Strength of Anchor in Tension (Sec. 17.6.3)

$$fN_{pn} = fY_{c,P} N_p = fY_{c,P} 0.9 f'_c e_h d_a \text{ (Sec. 17.5.1.2, Eq. 17.6.3.1 \& 17.6.3.2.2b)}$$

$\Psi_{c,P}$	f'_c (psi)	d_a (in)	$e_h = 3d_a$ (in)	ϕ	ϕN_{pn} (lb)
1.4	2500	0.75	2.25	0.70	3721



524 CLEVELAND BLVD. #230
COLDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA
Project:
Address:
Phone:
E-mail:

Project Name: Hawk Ridge
SRE Project #: 2025-0936
City and State: Valley County, Idaho

11. Results

Interaction of Tensile and Shear Forces (Sec. 17.8)

Tension	Factored Load, N_{ua} (lb)	Design Strength, ϕN_n (lb)	Ratio	Status
Steel	3315	14528	0.23	Pass
Concrete breakout	6630	14484	0.46	Pass
Pullout	3315	3721	0.89	Pass (Governs)

3/4"Ø J- or L-Bolt, F1554 Gr. 36 with hef = 4.125 inch meets the selected design criteria.

12. Warnings

- Designer must exercise own judgement to determine if this design is suitable.



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Header Calculations (H1 (1))

	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:	3.5 ft Opening	4.0 ft Opening	5.0 ft Opening	6.0 ft Opening	7.0 ft Opening	10.0 ft Opening	15.5 ft Opening	16.0 ft Opening
Header Callout	(2)2x6 DF-L No. 2	(2)2x6 DF-L No. 2	(2)2x8 DF-L No. 2	(2)2x8 DF-L No. 2	(2)2x10 DF-L No. 2	(3)9.25 LVL 2.0E	(3)11.25 LVL 2.0E	(3)11.25 LVL 2.0E
Trimmers	(1) 2x6 DF-L No. 2	(1) 2x6 DF-L No. 2	(1) 2x6 DF-L No. 2	(1) 2x6 DF-L No. 2	(1) 2x6 DF-L No. 2	(1) 2x6 DF-L No. 2	(1) 2x6 DF-L No. 2	(1) 2x6 DF-L No. 2

Wood Design								
Species	DF-L	DF-L	DF-L	DF-L	DF-L	LVL	LVL	LVL
Grade	No. 2	No. 2	No. 2	No. 2	No. 2	2.0E	2.0E	2.0E
Width	3.00 in	3.00 in	3.00 in	3.00 in	3.00 in	5.25 in	5.25 in	5.25 in
Depth	5.50 in	5.50 in	7.25 in	7.25 in	9.25 in	9.25 in	11.25 in	11.25 in

Reaction								
Dead Load	159 lbs	182 lbs	227 lbs	273 lbs	318 lbs	455 lbs	705 lbs	728 lbs
Live Load	788 lbs	900 lbs	1,125 lbs	1,350 lbs	1,575 lbs	2,250 lbs	3,488 lbs	3,600 lbs

Load								
l _v	3.5 ft	4.0 ft	5.0 ft	6.0 ft	7.0 ft	10.0 ft	15.5 ft	16.0 ft
l _e	7.1 ft	7.9 ft	10.0 ft	11.6 ft	13.7 ft	18.6 ft	28.5 ft	29.4 ft

Adjustment Factors								
C _d	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
C _F	1.3	1.3	1.2	1.2	1.1	1.1	1	1

Material Properties								
F _b	900 psi	900 psi	900 psi	900 psi	900 psi	2,900 psi	2,900 psi	2,900 psi
F _v	180 psi	180 psi	180 psi	180 psi	180 psi	285 psi	285 psi	285 psi
E	1,600,000 psi	1,600,000 psi	1,600,000 psi	1,600,000 psi	1,600,000 psi	2,000,000 psi	2,000,000 psi	2,000,000 psi
E _{min}	580,000 psi	580,000 psi	580,000 psi	580,000 psi	580,000 psi	1,016,535 psi	1,016,535 psi	1,016,535 psi

Calculated Prop.								
A	16.50 in ²	16.50 in ²	21.75 in ²	21.75 in ²	27.75 in ²	48.56 in ²	59.06 in ²	59.06 in ²
I	41.59 in ⁴	41.59 in ⁴	95.27 in ⁴	95.27 in ⁴	197.86 in ⁴	346.26 in ⁴	622.92 in ⁴	622.92 in ⁴
S	15.13 in ³	15.13 in ³	26.28 in ³	26.28 in ³	42.78 in ³	74.87 in ³	110.74 in ³	110.74 in ³
RB	7.21	7.61	9.81	10.59	13.01	8.66	11.82	12.01
E _{min}	580,000 psi	580,000 psi	580,000 psi	580,000 psi	580,000 psi	1,016,535 psi	1,016,535 psi	1,016,535 psi
F _{bE}	13,405 psi	12,021 psi	7,227 psi	6,211 psi	4,112 psi	16,274 psi	8,733 psi	8,460 psi
F _b *	1,346 psi	1,346 psi	1,242 psi	1,242 psi	1,139 psi	3,669 psi	3,335 psi	3,335 psi
CL	1	1	1	1	1	1	1	1

Shear and Moment								
M	9,940 lb-in	12,983 lb-in	20,286 lb-in	29,212 lb-in	39,761 lb-in	81,144 lb-in	194,948 lb-in	207,729 lb-in
V	947 lbs	1,082 lbs	1,352 lbs	1,623 lbs	1,893 lbs	2,705 lbs	4,192 lbs	4,328 lbs

Stress								
f _b	657 psi	858 psi	772 psi	1,112 psi	929 psi	1,084 psi	1,760 psi	1,876 psi
F _b '	1,338 psi	1,337 psi	1,229 psi	1,227 psi	1,118 psi	3,617 psi	3,239 psi	3,235 psi
f _b /F _b '	0.49	0.64	0.63	0.91	0.83	0.30	0.54	0.58
f _v	86 psi	98 psi	93 psi	112 psi	102 psi	84 psi	106 psi	110 psi
F _v '	207 psi	207 psi	207 psi	207 psi	207 psi	328 psi	328 psi	328 psi
f _v /F _v '	0.42	0.48	0.45	0.54	0.49	0.25	0.32	0.34
Max Ratio	0.49	0.64	0.63	0.91	0.83	0.30	0.54	0.58
	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

Deflection								
Δ _{T_L}	0.03 in	0.05 in	0.05 in	0.10 in	0.09 in	0.18 in	0.56 in	0.64 in
	L/1,530	L/1,025	L/1,202	L/696	L/910	L/683	L/330	L/300
Δ _{LL}	0.02 in	0.04 in	0.04 in	0.09 in	0.08 in	0.15 in	0.47 in	0.53 in
	L/1,840	L/1,232	L/1,445	L/836	L/1,094	L/821	L/397	L/360
	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Header Calculations (H1 (2))

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	17	0	0	3.33		2,879.0 plf
Dead Load	-	289.0	0.0	0.0	40.0	329.0 plf	
Live / Snow Load	0	2550.0	0.0	0.0	-	2,550.0 plf	

Description:	5.0 ft Opening							
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Header Callout	(3) 9.25 LVL 2.0E							
Trimmers	(2) 2x6 DF-L No. 2							

Wood Design								
Species	LVL							
Grade	2.0E							
Width	5.25 in							
Depth	9.25 in							

Reaction								
Dead Load	822 lbs							
Live Load	6,375 lbs							

Load								
lu	5.0 ft							
le	10.3 ft							

Adjustment Factors								
Cd	1.15							
CF	1.1							

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

Calculated Prop.								
A	48.56 in ²							
I	346.26 in ⁴							
S	74.87 in ³							
RB	6.44							
Emin'	1,016,535 psi							
FbE	29,408 psi							
Fb*	3,669 psi							
CL	1							

Shear and Moment								
M	107,961 lb-in							
V	7,197 lbs							

Stress								
fb	1,442 psi							
Fb'	3,643 psi							
fb/Fb'	0.40							
fv	222 psi							
Fv'	328 psi							
fv/Fv'	0.68							
Max Ratio	0.68							
	Pass							

Deflection								
ΔTL	0.06 in							
	L/1,026							
ΔLL	0.05 in							
	L/1,159							
	Pass							



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Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Header Calculations (H1 (3))

	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:	2.5 ft Opening	9.5 ft Opening						
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Header Callout	(2)2x10 DF-L No. 2	(3)14 LVL 2.0E						
Trimmers	(2) 2x6 DF-L No. 2	(3) 2x6 DF-L No. 2						

Wood Design								
Species	DF-L	LVL						
Grade	No. 2	2.0E						
Width	3.00 in	5.25 in						
Depth	9.25 in	14.00 in						

Reaction								
Dead Load	379 lbs	1,441 lbs						
Live Load	2,906 lbs	11,044 lbs						

Load								
lu	2.5 ft	9.5 ft						
le	5.2 ft	19.0 ft						

Adjustment Factors								
Cd	1.15	1.15						
CF	1.1	1						

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

Calculated Prop.								
A	27.75 in^2	73.50 in^2						
I	197.86 in^4	1,200.50 in^4						
S	42.78 in^3	171.50 in^3						
RB	7.97	10.76						
Emin'	580,000 psi	1,016,535 psi						
FbE	10,958 psi	10,541 psi						
Fb*	1,139 psi	3,335 psi						
CL	1	1						

Shear and Moment								
M	24,642 lb-in	355,828 lb-in						
V	3,286 lbs	12,485 lbs						

Stress								
fb	576 psi	2,075 psi						
Fb'	1,132 psi	3,262 psi						
fb/Fb'	0.51	0.64						
fv	178 psi	255 psi						
Fv'	207 psi	328 psi						
fv/Fv'	0.86	0.78						
Max Ratio	0.86	0.78						
	Pass	Pass						

Deflection								
ΔTL	0.01 in	0.20 in						
	L/4,111	L/568						
ΔLL	0.01 in	0.18 in						
	L/4,648	L/642						
	Pass	Pass						



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City and State: Valley County, Idaho

Header Calculations (H1 (4))

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	21.25	0	0	3.33		3,588.7 plf
Dead Load	-	361.3	0.0	0.0	40.0	401.2 plf	
Live / Snow Load	0	3187.5	0.0	0.0	-	3,187.5 plf	

Description:	4.5 ft Opening							
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Header Callout	(2) 11.25 LVL 2.0E							
Trimmers	(3) 2x6 DF-L No. 2							

Wood Design								
Species	LVL							
Grade	2.0E							
Width	3.50 in							
Depth	11.25 in							

Reaction								
Dead Load	903 lbs							
Live Load	7,172 lbs							

Load								
lu	4.5 ft							
le	9.3 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	39.38 in ²							
I	415.28 in ⁴							
S	73.83 in ³							
RB	10.11							
Emin'	1,016,535 psi							
FbE	11,941 psi							
Fb*	3,335 psi							
CL	1							

Shear and Moment								
M	109,007 lb-in							
V	8,075 lbs							

Stress								
fb	1,476 psi							
Fb'	3,273 psi							
fb/Fb'	0.45							
fv	308 psi							
Fv'	328 psi							
fv/Fv'	0.94							
Max Ratio	0.94							
	Pass							

Deflection								
ΔTL	0.04 in							
	L/1,355							
ΔLL	0.04 in							
	L/1,525							
	Pass							



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Header Calculations (H1 (5))

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	15.875	0	0	3.33		2,691.1 plf
Dead Load	-	269.9	0.0	0.0	40.0	309.8 plf	
Live / Snow Load	0	2381.3	0.0	0.0	-	2,381.3 plf	

Description:	3.0 ft Opening	6.0 ft Opening						
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Header Callout	(3)2x8 DF-L No. 2	(3)9.25 LVL 2.0E						
Trimmers	(1) 2x6 DF-L No. 2	(2) 2x6 DF-L No. 2						

Wood Design								
Species	DF-L	LVL						
Grade	No. 2	2.0E						
Width	4.50 in	5.25 in						
Depth	7.25 in	9.25 in						

Reaction								
Dead Load	465 lbs	930 lbs						
Live Load	3,572 lbs	7,144 lbs						

Load								
lu	3.0 ft	6.0 ft						
le	6.2 ft	12.1 ft						

Adjustment Factors								
Cd	1.15	1.15						
CF	1.2	1.1						

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

Calculated Prop.								
A	32.63 in^2	48.56 in^2						
I	142.90 in^4	346.26 in^4						
S	39.42 in^3	74.87 in^3						
RB	5.15	6.98						
Emin'	580,000 psi	1,016,535 psi						
FbE	26,214 psi	25,049 psi						
Fb*	1,242 psi	3,669 psi						
CL	1	1						

Shear and Moment								
M	36,330 lb-in	145,319 lb-in						
V	4,037 lbs	8,073 lbs						

Stress								
fb	922 psi	1,941 psi						
Fb'	1,239 psi	3,638 psi						
fb/Fb'	0.74	0.53						
fv	186 psi	249 psi						
Fv'	207 psi	328 psi						
fv/Fv'	0.90	0.76						
Max Ratio	0.90	0.76						
	Pass	Pass						

Deflection								
ΔTL	0.02 in	0.11 in						
	L/1,678	L/635						
ΔLL	0.02 in	0.10 in						
	L/1,897	L/718						
	Pass	Pass						



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Header Calculations (H1 (6))

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	6	0	0	3.33		1,042.0 plf
Dead Load	-	102.0	0.0	0.0	40.0	142.0 plf	
Live / Snow Load	0	900.0	0.0	0.0	-	900.0 plf	

Description:	3.0 ft Opening	5.0 ft Opening	6.0 ft Opening					
Header Callout	(3)2x6 DF-L No. 2	(3)2x8 DF-L No. 2	(3)2x10 DF-L No. 2					
Trimmers	(1) 2x6 DF-L No. 2	(1) 2x6 DF-L No. 2	(1) 2x6 DF-L No. 2					

Wood Design								
Species	DF-L	DF-L	DF-L					
Grade	No. 2	No. 2	No. 2					
Width	4.50 in	4.50 in	4.50 in					
Depth	5.50 in	7.25 in	9.25 in					

Reaction								
Dead Load	213 lbs	355 lbs	426 lbs					
Live Load	1,350 lbs	2,250 lbs	2,700 lbs					

Load								
lu	3.0 ft	5.0 ft	6.0 ft					
le	6.2 ft	10.0 ft	12.1 ft					

Adjustment Factors								
Cd	1.15	1.15	1.15					
CF	1.3	1.2	1.1					

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

Calculated Prop.								
A	24.75 in^2	32.63 in^2	41.63 in^2					
I	62.39 in^4	142.90 in^4	296.79 in^4					
S	22.69 in^3	39.42 in^3	64.17 in^3					
RB	4.49	6.54	8.14					
Emin'	580,000 psi	580,000 psi	580,000 psi					
FbE	34,554 psi	16,261 psi	10,500 psi					
Fb*	1,346 psi	1,242 psi	1,139 psi					
CL	1	1	1					

Shear and Moment								
M	14,066 lb-in	39,074 lb-in	56,266 lb-in					
V	1,563 lbs	2,605 lbs	3,126 lbs					

Stress								
fb	620 psi	991 psi	877 psi					
Fb'	1,343 psi	1,237 psi	1,132 psi					
fb/Fb'	0.46	0.80	0.77					
fv	95 psi	120 psi	113 psi					
Fv'	207 psi	207 psi	207 psi					
fv/Fv'	0.46	0.58	0.54					
Max Ratio	0.46	0.80	0.77					
	Pass	Pass	Pass					

Deflection								
ΔTL	0.02 in	0.06 in	0.06 in					
	L/1,892	L/936	L/1,125					
ΔLL	0.02 in	0.06 in	0.06 in					
	L/2,191	L/1,084	L/1,303					
	Pass	Pass	Pass					



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City and State: Valley County, Idaho

Header Calculations (H1 (7))

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	5	0	0	3.33		875.0 plf
Dead Load	-	85.0	0.0	0.0	40.0	125.0 plf	
Live / Snow Load	0	750.0	0.0	0.0	-	750.0 plf	

Description:	3.0 ft Opening	10.0 ft Opening						
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Header Callout	(2)2x6 DF-L No. 2	(2)11.25 LVL 2.0E						
Trimmers	(1) 2x6 DF-L No. 2	(2) 2x6 DF-L No. 2						

Wood Design								
Species	DF-L	LVL						
Grade	No. 2	2.0E						
Width	3.00 in	3.50 in						
Depth	5.50 in	11.25 in						

Reaction								
Dead Load	187 lbs	625 lbs						
Live Load	1,125 lbs	3,750 lbs						

Load								
lu	3.0 ft	10.0 ft						
le	6.2 ft	19.1 ft						

Adjustment Factors								
Cd	1.15	1.15						
CF	1.3	1						

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

Calculated Prop.								
A	16.50 in^2	39.38 in^2						
I	41.59 in^4	415.28 in^4						
S	15.13 in^3	73.83 in^3						
RB	6.73	14.51						
Emin'	580,000 psi	1,016,535 psi						
FbE	15,357 psi	5,791 psi						
Fb*	1,346 psi	3,335 psi						
CL	1	1						

Shear and Moment								
M	11,812 lb-in	131,244 lb-in						
V	1,312 lbs	4,375 lbs						

Stress								
fb	781 psi	1,778 psi						
Fb'	1,339 psi	3,148 psi						
fb/Fb'	0.58	0.56						
fv	119 psi	167 psi						
Fv'	207 psi	328 psi						
fv/Fv'	0.58	0.51						
Max Ratio	0.58	0.56						
	Pass	Pass						

Deflection								
ΔTL	0.02 in	0.24 in						
	L/1,502	L/506						
ΔLL	0.02 in	0.20 in						
	L/1,753	L/591						
	Pass	Pass						



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Header Calculations (H1 (8))

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	14.25	0	0	3.33		
Dead Load	-	242.3	0.0	0.0	40.0	282.2 plf	2,419.7 plf
Live / Snow Load	0	2137.5	0.0	0.0	-	2,137.5 plf	

Description:	3.0 ft Opening	4.0 ft Opening						
Header Callout	(3)2x8 DF-L No. 2	(3)2x10 DF-L No. 2						
Trimmers	(1) 2x6 DF-L No. 2	(2) 2x6 DF-L No. 2						

Wood Design								
Species	DF-L	DF-L						
Grade	No. 2	No. 2						
Width	4.50 in	4.50 in						
Depth	7.25 in	9.25 in						

Reaction								
Dead Load	423 lbs	564 lbs						
Live Load	3,206 lbs	4,275 lbs						

Load								
lu	3.0 ft	4.0 ft						
le	6.2 ft	8.2 ft						

Adjustment Factors								
Cd	1.15	1.15						
CF	1.2	1.1						

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

Calculated Prop.								
A	32.63 in^2	41.63 in^2						
I	142.90 in^4	296.79 in^4						
S	39.42 in^3	64.17 in^3						
RB	5.15	6.72						
Emin'	580,000 psi	580,000 psi						
FbE	26,214 psi	15,409 psi						
Fb*	1,242 psi	1,139 psi						
CL	1	1						

Shear and Moment								
M	32,666 lb-in	58,073 lb-in						
V	3,630 lbs	4,839 lbs						

Stress								
fb	829 psi	905 psi						
Fb'	1,239 psi	1,134 psi						
fb/Fb'	0.67	0.80						
fv	167 psi	174 psi						
Fv'	207 psi	207 psi						
fv/Fv'	0.81	0.84						
Max Ratio	0.81	0.84						
	Pass	Pass						

Deflection								
ΔTL	0.02 in	0.03 in						
	L/1,867	L/1,635						
ΔLL	0.02 in	0.03 in						
	L/2,113	L/1,851						
	Pass	Pass						



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Header Calculations (H1 (9))

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	14.25	0	0	3.33		2,419.7 plf
Dead Load	-	242.3	0.0	0.0	40.0	282.2 plf	
Live / Snow Load	0	2137.5	0.0	0.0	-	2,137.5 plf	

Description:	3.0 ft Opening	15.5 ft Opening						
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Header Callout	(2)2x10 DF-L No. 2	6.75x18 DF/DF 24F - V4						
Trimmers	(2) 2x6 DF-L No. 2	(4) 2x6 DF-L No. 2						

Wood Design								
Species	DF-L	DF/DF						
Grade	No. 2	24F - V4						
Width	3.00 in	6.75 in						
Depth	9.25 in	18.00 in						

Reaction								
Dead Load	423 lbs	2,187 lbs						
Live Load	3,206 lbs	16,566 lbs						

Load								
lu	3.0 ft	15.5 ft						
le	6.2 ft	29.8 ft						

Adjustment Factors								
Cd	1.15	1.15						
CF	1.1	1						

Material Properties								
Fb	900 psi	2,400 psi						
Fv	180 psi	265 psi						
E	1,600,000 psi	1,850,000 psi						
Emin	580,000 psi	950,000 psi						

Calculated Prop.								
A	27.75 in^2	121.50 in^2						
I	197.86 in^4	3,280.50 in^4						
S	42.78 in^3	364.50 in^3						
RB	8.73	11.88						
Emin'	580,000 psi	950,000 psi						
FbE	9,131 psi	8,079 psi						
Fb*	1,139 psi	2,760 psi						
CL	1	1						

Shear and Moment								
M	32,666 lb-in	872,003 lb-in						
V	3,630 lbs	18,753 lbs						

Stress								
fb	764 psi	2,392 psi						
Fb'	1,131 psi	2,693 psi						
fb/Fb'	0.68	0.89						
fv	196 psi	232 psi						
Fv'	207 psi	305 psi						
fv/Fv'	0.95	0.76						
Max Ratio	0.95	0.89						
	Pass	Pass						

Deflection								
ΔTL	0.01 in	0.52 in						
	L/2,584	L/359						
ΔLL	0.01 in	0.46 in						
	L/2,926	L/407						
	Pass	Pass						



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Header Calculations (H1 (10))

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	14.25	0	0	3.33		2,419.7 plf
Dead Load	-	242.3	0.0	0.0	40.0	282.2 plf	
Live / Snow Load	0	2137.5	0.0	0.0	-	2,137.5 plf	

Description:	3.0 ft Opening	15.5 ft Opening						
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Header Callout	(2)2x10 DF-L No. 2	6.75x18 DF/DF 24F - V4						
Trimmers	(2) 2x6 DF-L No. 2	(4) 2x6 DF-L No. 2						

Wood Design								
Species	DF-L	DF/DF						
Grade	No. 2	24F - V4						
Width	3.00 in	6.75 in						
Depth	9.25 in	18.00 in						

Reaction								
Dead Load	423 lbs	2,187 lbs						
Live Load	3,206 lbs	16,566 lbs						

Load								
lu	3.0 ft	15.5 ft						
le	6.2 ft	29.8 ft						

Adjustment Factors								
Cd	1.15	1.15						
CF	1.1	1						

Material Properties								
Fb	900 psi	2,400 psi						
Fv	180 psi	265 psi						
E	1,600,000 psi	1,850,000 psi						
Emin	580,000 psi	950,000 psi						

Calculated Prop.								
A	27.75 in^2	121.50 in^2						
I	197.86 in^4	3,280.50 in^4						
S	42.78 in^3	364.50 in^3						
RB	8.73	11.88						
Emin'	580,000 psi	950,000 psi						
FbE	9,131 psi	8,079 psi						
Fb*	1,139 psi	2,760 psi						
CL	1	1						

Shear and Moment								
M	32,666 lb-in	872,003 lb-in						
V	3,630 lbs	18,753 lbs						

Stress								
fb	764 psi	2,392 psi						
Fb'	1,131 psi	2,693 psi						
fb/Fb'	0.68	0.89						
fv	196 psi	232 psi						
Fv'	207 psi	305 psi						
fv/Fv'	0.95	0.76						
Max Ratio	0.95	0.89						
	Pass	Pass						

Deflection								
ΔTL	0.01 in	0.52 in						
	L/2,584	L/359						
ΔLL	0.01 in	0.46 in						
	L/2,926	L/407						
	Pass	Pass						



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Header Calculations (H1 (11))

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	12	0	0	3.33		
Dead Load	-	204.0	0.0	0.0	40.0	244.0 plf	2,044.0 plf
Live / Snow Load	0	1800.0	0.0	0.0	-	1,800.0 plf	

Description:	3.0 ft Opening	15.5 ft Opening						
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Header Callout	(2)2x10 DF-L No. 2	6.75x16.5 DF/DF 24F - V4						
Trimmers	(2) 2x6 DF-L No. 2	(3) 2x6 DF-L No. 2						

Wood Design	Species	DF-L	DF/DF					
	Grade	No. 2	24F - V4					
	Width	3.00 in	6.75 in					
	Depth	9.25 in	16.50 in					

Reaction	Dead Load	366 lbs	1,891 lbs					
	Live Load	2,700 lbs	13,950 lbs					

Load	lu	3.0 ft	15.5 ft					
	le	6.2 ft	29.4 ft					

Adjustment Factors	Cd	1.15	1.15					
	CF	1.1	1					

Material Properties	Fb	900 psi	2,400 psi					
	Fv	180 psi	265 psi					
	E	1,600,000 psi	1,850,000 psi					
	Emin	580,000 psi	950,000 psi					

Calculated Prop.	A	27.75 in^2	111.38 in^2					
	I	197.86 in^4	2,526.82 in^4					
	S	42.78 in^3	306.28 in^3					
	RB	8.73	11.30					
	Emin'	580,000 psi	950,000 psi					
	FbE	9,131 psi	8,926 psi					
	Fb*	1,139 psi	2,760 psi					
	CL	1	1					

Shear and Moment	M	27,593 lb-in	736,592 lb-in					
	V	3,066 lbs	15,841 lbs					

Stress	fb	645 psi	2,405 psi					
	Fb'	1,131 psi	2,701 psi					
	fb/Fb'	0.57	0.89					
	fv	166 psi	213 psi					
	Fv'	207 psi	305 psi					
	fv/Fv'	0.80	0.70					
	Max Ratio	0.80	0.89					
		Pass	Pass					

Deflection	ΔTL	0.01 in	0.57 in					
		L/3,059	L/328					
	ΔLL	0.01 in	0.50 in					
		L/3,474	L/372					
		Pass	Pass					



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
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Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Header Calculations (H1 (12))

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	25.75	0	0	3.33		4,340.2 plf
Dead Load	-	437.8	0.0	0.0	40.0	477.7 plf	
Live / Snow Load	0	3862.5	0.0	0.0	-	3,862.5 plf	

Description:	4.5 ft Opening							
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Header Callout	(3) 9.25 LVL 2.0E							
Trimmers	(2) 2x6 DF-L No. 2							

Wood Design								
Species	LVL							
Grade	2.0E							
Width	5.25 in							
Depth	9.25 in							

Reaction								
Dead Load	1,075 lbs							
Live Load	8,691 lbs							

Load								
lu	4.5 ft							
le	9.3 ft							

Adjustment Factors								
Cd	1.15							
CF	1.1							

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

Calculated Prop.								
A	48.56 in ²							
I	346.26 in ⁴							
S	74.87 in ³							
RB	6.11							
Emin'	1,016,535 psi							
FbE	32,675 psi							
Fb*	3,669 psi							
CL	1							

Shear and Moment								
M	131,834 lb-in							
V	9,765 lbs							

Stress								
fb	1,761 psi							
Fb'	3,646 psi							
fb/Fb'	0.48							
fv	302 psi							
Fv'	328 psi							
fv/Fv'	0.92							
Max Ratio	0.92							
	Pass							

Deflection								
ΔTL	0.06 in							
	L/934							
ΔLL	0.05 in							
	L/1,049							
	Pass							



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City and State: Valley County, Idaho

Header Calculations (H1 (13))

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	2	7.25	3	13.334		1,162.3 plf
Dead Load	-	34.0	123.3	30.0	160.0	347.3 plf	
Live / Snow Load	0	300.0	290.0	225.0	-	815.0 plf	

Description:	3.0 ft Opening	9.8 ft Opening						
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Header Callout	(2)2x6 DF-L No. 2	(3)9.25 LVL 2.0E						
Trimmers	(1) 2x6 DF-L No. 2	(2) 2x6 DF-L No. 2						

Wood Design								
Species	DF-L	LVL						
Grade	No. 2	2.0E						
Width	3.00 in	5.25 in						
Depth	5.50 in	9.25 in						

Reaction								
Dead Load	521 lbs	1,693 lbs						
Live Load	1,223 lbs	3,973 lbs						

Load								
lu	3.0 ft	9.8 ft						
le	6.2 ft	18.2 ft						

Adjustment Factors								
Cd	1.15	1.15						
CF	1.3	1.1						

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

Calculated Prop.								
A	16.50 in^2	48.56 in^2						
I	41.59 in^4	346.26 in^4						
S	15.13 in^3	74.87 in^3						
RB	6.73	8.56						
Emin'	580,000 psi	1,016,535 psi						
FbE	15,357 psi	16,638 psi						
Fb*	1,346 psi	3,669 psi						
CL	1	1						

Shear and Moment								
M	15,690 lb-in	165,731 lb-in						
V	1,743 lbs	5,666 lbs						

Stress								
fb	1,037 psi	2,214 psi						
Fb'	1,339 psi	3,618 psi						
fb/Fb'	0.77	0.61						
fv	158 psi	175 psi						
Fv'	207 psi	328 psi						
fv/Fv'	0.77	0.53						
Max Ratio	0.77	0.61						
	Pass	Pass						

Deflection								
ΔTL	0.03 in	0.34 in						
	L/1,131	L/343						
ΔLL	0.02 in	0.24 in						
	L/1,613	L/489						
	Pass	Pass						



524 CLEVELAND BLVD. #230
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City and State: Valley County, Idaho

Header Calculations (H1 (14))

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	2	3.5	6.125	13.334		1,214.1 plf
Dead Load	-	34.0	59.5	61.3	160.0	314.8 plf	
Live / Snow Load	0	300.0	140.0	459.4	-	899.4 plf	

Description:	16.0 ft Opening							
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Header Callout	6.75x13.5 DF/DF 24F - V4							
Trimmers	(2) 2x6 DF-L No. 2							

Wood Design								
Species	DF/DF							
Grade	24F - V4							
Width	6.75 in							
Depth	13.50 in							

Reaction								
Dead Load	2,518 lbs							
Live Load	7,195 lbs							

Load								
lu	16.0 ft							
le	29.5 ft							

Adjustment Factors								
Cd	1.15							
CF	1							

Material Properties								
Fb	2,400 psi							
Fv	265 psi							
E	1,850,000 psi							
Emin	950,000 psi							

Calculated Prop.								
A	91.13 in ²							
I	1,383.96 in ⁴							
S	205.03 in ³							
RB	10.23							
Emin'	950,000 psi							
FbE	10,885 psi							
Fb*	2,760 psi							
CL	1							

Shear and Moment								
M	466,227 lb-in							
V	9,713 lbs							

Stress								
fb	2,274 psi							
Fb'	2,715 psi							
fb/Fb'	0.84							
fv	160 psi							
Fv'	305 psi							
fv/Fv'	0.52							
Max Ratio	0.84							
	Pass							

Deflection								
ΔTL	0.70 in							
	L/275							
ΔLL	0.52 in							
	L/371							
	Pass							



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
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City and State: Valley County, Idaho

Header Calculations (H1 (15))

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	2	10	4	13.334		1,404.0 plf
Dead Load	-	34.0	170.0	40.0	160.0	404.0 plf	
Live / Snow Load	0	300.0	400.0	300.0	-	1,000.0 plf	

Description:	8.8 ft Opening							
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Header Callout	(2) 9.25 LVL 2.0E							
Trimmers	(2) 2x6 DF-L No. 2							

Wood Design								
Species	LVL							
Grade	2.0E							
Width	3.50 in							
Depth	9.25 in							

Reaction								
Dead Load	1,768 lbs							
Live Load	4,375 lbs							

Load								
lu	8.8 ft							
le	16.6 ft							

Adjustment Factors								
Cd	1.15							
CF	1.1							

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

Calculated Prop.								
A	32.38 in^2							
I	230.84 in^4							
S	49.91 in^3							
RB	12.26							
Emin'	1,016,535 psi							
FbE	8,122 psi							
Fb*	3,669 psi							
CL	1							

Shear and Moment								
M	161,242 lb-in							
V	6,143 lbs							

Stress								
fb	3,231 psi							
Fb'	3,533 psi							
fb/Fb'	0.91							
fv	285 psi							
Fv'	328 psi							
fv/Fv'	0.87							
Max Ratio	0.91							
	Pass							

Deflection								
ΔTL	0.40 in							
	L/262							
ΔLL	0.29 in							
	L/368							
	Pass							



524 CLEVELAND BLVD. #230
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Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Header Calculations (H1 (2))

	Additional Drift	Roof	Floor	Deck	Wall	Total Load	Total Load
Trib	0.0	17	0	0	3.33		
Dead Load	-	289.0	0.0	0.0	40.0	329.0 plf	2,879.0 plf
Live / Snow Load	0	2550.0	0.0	0.0	-	2,550.0 plf	

Description:	4.5 ft Opening	5.0 ft Opening						
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Header Callout	(3) 7.25 LVL 2.0E	(3) 7.25 LVL 2.0E						
Trimmers	(2) 2x6 DF-L No. 2	(2) 2x6 DF-L No. 2						

Wood Design								
Species	LVL	LVL						
Grade	2.0E	2.0E						
Width	5.25 in	5.25 in						
Depth	7.25 in	7.25 in						

Reaction								
Dead Load	740 lbs	822 lbs						
Live Load	5,738 lbs	6,375 lbs						

Load								
lu	4.5 ft	5.0 ft						
le	9.1 ft	10.0 ft						

Adjustment Factors								
Cd	1.15	1.15						
CF	1.2	1.2						

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

Calculated Prop.								
A	38.06 in^2	38.06 in^2						
I	166.72 in^4	166.72 in^4						
S	45.99 in^3	45.99 in^3						
RB	5.37	5.61						
Emin'	1,016,535 psi	1,016,535 psi						
FbE	42,247 psi	38,791 psi						
Fb*	4,002 psi	4,002 psi						
CL	1	1						

Shear and Moment								
M	87,448 lb-in	107,961 lb-in						
V	6,478 lbs	7,197 lbs						

Stress								
fb	1,901 psi	2,347 psi						
Fb'	3,981 psi	3,979 psi						
fb/Fb'	0.48	0.59						
fv	255 psi	284 psi						
Fv'	328 psi	328 psi						
fv/Fv'	0.78	0.87						
Max Ratio	0.78	0.87						
	Pass	Pass						

Deflection								
ΔTL	0.08 in	0.12 in						
	L/678	L/494						
ΔLL	0.07 in	0.11 in						
	L/765	L/558						
	Pass	Pass						



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CALDWELL, IDAHO 83605
(208) 453-6512

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Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

TALL WALL CALCULATIONS:

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

Description:

	12' Tall Wall	King Stud (4.5' Max Opening)	12' Trimmer	14' Tall Wall	King Stud (4.5' Max Opening)	14' Trimmer
Type:	2x Lumber (2"-4")	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	DF-L
Grade:	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2
Nominal width, t =	(2) 2	(2) 2	(2) 2	(2) 2	(2) 2	(2) 2
Actual width =	3.00 in	3.00 in	3.00 in	3.00 in	3.00 in	3.00 in
Nominal depth, d =	6	6	6	6	6	6
Actual depth =	5.50 in	5.50 in	5.50 in	5.50 in	5.50 in	5.50 in
Span, L =	12.000 ft	12.000 ft	12.000 ft	14.000 ft	14.000 ft	14.000 ft
w/o Plates	11.750 ft	11.750 ft	11.750 ft	13.750 ft	13.750 ft	13.750 ft
Stud spacing, s =	16 in	37 in	16 in	16 in	37 in	16 in
Lat. Pressure, w_{wind} =	19.19 psf	19.19 psf	5.00 psf	19.19 psf	19.19 psf	5.00 psf
Axial load, P =	5734 lbs	50 lbs	9676 lbs	4732 lbs	50 lbs	7985 lbs
Eccentricity, e =	0 in	0 in	0 in	0 in	0 in	0 in
K_{CE} =	0.3	0.3	0.3	0.3	0.3	0.3
c =	0.8	0.8	0.8	0.8	0.8	0.8
w =	25.6 plf	59.6 plf	6.7 plf	25.6 plf	59.6 plf	6.7 plf
F_b	900 psi	900 psi	900 psi	900 psi	900 psi	900 psi
F_v	180 psi	180 psi	180 psi	180 psi	180 psi	180 psi
F_{c-prll}	1,350 psi	1,350 psi	1,350 psi	1,350 psi	1,350 psi	1,350 psi
F_{c-perp}	625 psi	625 psi	625 psi	625 psi	625 psi	625 psi
C_d	1.60	1.60	1.15	1.60	1.60	1.15
$C_{F,Fb}$	1.30	1.30	1.30	1.30	1.30	1.30
$C_{F,Fcprll}$	1.10	1.10	1.10	1.10	1.10	1.10
C_r	1.15	1.00	1.00	1.15	1.00	1.00
C_p	0.28	0.28	0.38	0.21	0.21	0.29
C_H	1.00	1.00	1.00	1.00	1.00	6.00
C_b	1.07	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	1,600,000 psi
E_{min}	580,000 psi	580,000 psi	580,000 psi	580,000 psi	580,000 psi	580,000 psi
Allowable Stress:						
$F'_b = F_b C_d C_F C_r$	2153 psi	1872 psi	1346 psi	2153 psi	1872 psi	1346 psi
$F'_v = F_v C_d C_H$	288 psi	288 psi	207 psi	288 psi	288 psi	1242 psi
$F'_c = F_c C_d C_F$	2376 psi	2376 psi	1708 psi	2376 psi	2376 psi	1708 psi
$F'_{CE} = (K_{CE} E')/(l/d)^2$	730 psi	730 psi	730 psi	533 psi	533 psi	533 psi
$F'_c = F_c C_d C_F C_p$	676 psi	676 psi	650 psi	506 psi	506 psi	493 psi
$F'_{c-perp} = F_{c-perp} C_b$	668 psi	668 psi	668 psi	668 psi	668 psi	668 psi
$E' = E$	1600000 psi	1600000 psi	1600000 psi	1600000 psi	1600000 psi	1600000 psi
$F_{bE} =$	8077 psi	8077 psi	8077 psi	6902 psi	6902 psi	6902 psi
Slenderness Ratio:	< 50 OK	< 50 OK	< 50 OK	< 50 OK	< 50 OK	< 50 OK
$R_b =$	9	9	9	10	10	10
Bending:	< F'b OK	< F'b OK	< F'b OK	< F'b OK	< F'b OK	< F'b OK
$M = w L^2/8 + P e/12 =$	442 ft-lbs	1028 ft-lbs	115 ft-lbs	605 ft-lbs	1408 ft-lbs	158 ft-lbs
$f_b = M/S =$	350 psi	816 psi	91 psi	480 psi	1117 psi	125 psi
$S =$	15 in ³	15 in ³	15 in ³	15 in ³	15 in ³	15 in ³
Shear:	< F'v OK	< F'v OK	< F'v OK	< F'v OK	< F'v OK	< F'v OK
$V = w L/2 =$	150 lbs	350 lbs	39 lbs	176 lbs	410 lbs	34 lbs
$f_v = 1.5 V/A =$	14 psi	32 psi	4 psi	16 psi	37 psi	3 psi
$A =$	17 in ²	17 in ²	17 in ²	17 in ²	17 in ²	17 in ²
Compression:	< F'c OK	< F'c OK	< F'c OK	< F'c OK	< F'c OK	< F'c OK
$f_c = P/A =$	347 psi	3 psi	586 psi	287 psi	3 psi	484 psi
Compression (perp.):	< F'c OK	< F'c OK	< F'c OK	< F'c OK	< F'c OK	< F'c OK
$f_{c-perp} = P/A =$	347 psi	3 psi	586 psi	287 psi	3 psi	484 psi
Combined:	< 1.0 OK			< 1.0 OK		
$((f_c/F_c) + ((f_b/F_b)(1 - (f_c/F_cE)))) =$	0.57			0.80		
Deflection:	> 180 OK	> 180 OK	> 180 OK	> 180 OK	> 180 OK	> 180 OK
$D = 22.5 w L^4/E' I =$	0.16 in	0.38 in	0.04 in	0.31 in	0.72 in	0.08 in
$I =$	42 in ⁴	42 in ⁴	42 in ⁴	42 in ⁴	42 in ⁴	42 in ⁴
SPAN /	855	367	3282	534	229	2048



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
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Completed by: JDJ
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Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

TALL WALL CALCULATIONS:

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

Description:

	11' Tall Wall	King Stud (9.5' Max Opening)	11' Trimmer	King Stud (2.5' Max Opening)	11' Trimmer	King Stud (10' Max Opening)
Type:	2x Lumber (2"-4")	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	DF-L
Grade:	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2
Nominal width, t =	(1) 2	(2) 2	(3) 2	(1) 2	(1) 2	(2) 2
Actual width =	1.50 in	3.00 in	4.50 in	1.50 in	1.50 in	3.00 in
Nominal depth, d =	6	6	6	6	6	6
Actual depth =	5.50 in	5.50 in	5.50 in	5.50 in	5.50 in	5.50 in
Span, L =	11.000 ft	11.000 ft	11.000 ft	11.000 ft	11.000 ft	11.000 ft
w/o Plates	10.750 ft	10.750 ft	10.750 ft	10.750 ft	10.750 ft	10.750 ft
Stud spacing, s =	16 in	67 in	16 in	25 in	16 in	70 in
Lat. Pressure, w_{wind} =	19.19 psf	19.19 psf	5.00 psf	19.19 psf	5.00 psf	19.19 psf
Axial load, P =	3451 lbs	50 lbs	12295 lbs	50 lbs	3236 lbs	50 lbs
Eccentricity, e =	0 in	0 in	0 in	0 in	0 in	0 in
K_{CE} =	0.3	0.3	0.3	0.3	0.3	0.3
c =	0.8	0.8	0.8	0.8	0.8	0.8
w =	25.6 plf	107.5 plf	6.7 plf	40.4 plf	6.7 plf	112.3 plf
F_b	900 psi	900 psi	900 psi	900 psi	900 psi	900 psi
F_v	180 psi	180 psi	180 psi	180 psi	180 psi	180 psi
F_{c-prll}	1,350 psi	1,350 psi	1,350 psi	1,350 psi	1,350 psi	1,350 psi
F_{c-perp}	625 psi	625 psi	625 psi	625 psi	625 psi	625 psi
C_d	1.60	1.60	1.15	1.60	1.15	1.60
$C_{F,Fb}$	1.30	1.30	1.30	1.30	1.30	1.30
$C_{F,Fcprll}$	1.10	1.10	1.10	1.10	1.10	1.10
C_r	1.15	1.00	1.00	1.00	1.00	1.00
C_p	0.33	0.33	0.44	0.33	0.44	0.33
C_H	1.00	1.00	1.00	1.00	1.00	6.00
C_b	1.07	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	1,600,000 psi
E_{min}	580,000 psi	580,000 psi	580,000 psi	580,000 psi	580,000 psi	580,000 psi
Allowable Stress:						
$F'_b = F_b C_d C_F C_r$	2153 psi	1872 psi	1346 psi	1872 psi	1346 psi	1872 psi
$F'_v = F_v C_d C_H$	288 psi	288 psi	207 psi	288 psi	207 psi	1728 psi
$F'_c = F_c C_d C_F$	2376 psi	2376 psi	1708 psi	2376 psi	1708 psi	2376 psi
$F'_{CE} = (K_{CE} E') / (l/d)^2$	873 psi	873 psi	873 psi	873 psi	873 psi	873 psi
$F'_c = F_c C_d C_F C_p$	793 psi	793 psi	754 psi	793 psi	754 psi	793 psi
$F'_{c-perp} = F_{c-perp} C_b$	668 psi	668 psi	668 psi	668 psi	668 psi	668 psi
$E' = E$	1600000 psi	1600000 psi	1600000 psi	1600000 psi	1600000 psi	1600000 psi
$F_{bE} =$	2207 psi	8829 psi	19865 psi	2207 psi	2207 psi	8829 psi
Slenderness Ratio:	< 50 OK	< 50 OK	< 50 OK	< 50 OK	< 50 OK	< 50 OK
$R_b =$	18	9	6	18	18	9
Bending:	< F'b OK	< F'b OK	< F'b OK	< F'b OK	< F'b OK	< F'b OK
$M = w L^2 / 8 + P e / 12$	370 ft-lbs	1554 ft-lbs	96 ft-lbs	583 ft-lbs	96 ft-lbs	1623 ft-lbs
$f_b = M / S$	586 psi	1233 psi	51 psi	926 psi	153 psi	1288 psi
$S =$	8 in ³	15 in ³	23 in ³	8 in ³	8 in ³	15 in ³
Shear:	< F'v OK	< F'v OK	< F'v OK	< F'v OK	< F'v OK	< F'v OK
$V = w L / 2$	138 lbs	578 lbs	36 lbs	217 lbs	36 lbs	103 lbs
$f_v = 1.5 V / A$	25 psi	53 psi	2 psi	39 psi	7 psi	9 psi
$A =$	8 in ²	17 in ²	25 in ²	8 in ²	8 in ²	17 in ²
Compression:	< F'c OK	< F'c OK	< F'c OK	< F'c OK	< F'c OK	< F'c OK
$P / A =$	418 psi	3 psi	497 psi	6 psi	392 psi	3 psi
Compression (perp.):	< F'c OK	< F'c OK	< F'c OK	< F'c OK	< F'c OK	< F'c OK
$P / A =$	418 psi	3 psi	497 psi	6 psi	392 psi	3 psi
Combined:	< 1.0 OK					
$(f_c / F_c) + (f_b / [F_b (1 - (f_c / F_c) E)]) =$	0.80					
Deflection:	> 180 OK	> 180 OK	> 180 OK	> 180 OK	> 180 OK	> 180 OK
$D = 22.5 w L^4 / E' I =$	0.23 in	0.49 in	0.02 in	0.36 in	0.06 in	0.51 in
$I =$	21 in ⁴	42 in ⁴	62 in ⁴	21 in ⁴	21 in ⁴	42 in ⁴
SPAN /	558	266	6428	354	2143	254



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

TALL WALL CALCULATIONS:

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

Description:

	12' Tall Wall	King Stud (10' Max Opening)	12' Trimmer	11' Tall Wall	King Stud (7.25' Max Opening)	11' Trimmer
Type:	2x Lumber (2"-4")	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	DF-L
Grade:	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2
Nominal width, t =	(1) 2	(2) 2	(1) 2	(1) 2	(2) 2	(1) 2
Actual width =	1.50 in	3.00 in	1.50 in	1.50 in	3.00 in	1.50 in
Nominal depth, d =	6	6	6	6	6	6
Actual depth =	5.50 in	5.50 in	5.50 in	5.50 in	5.50 in	5.50 in
Span, L =	12.000 ft	12.000 ft	12.000 ft	11.000 ft	11.000 ft	11.000 ft
w/o Plates	11.750 ft	11.750 ft	11.750 ft	10.750 ft	10.750 ft	10.750 ft
Stud spacing, s =	16 in	70 in	16 in	16 in	54 in	16 in
Lat. Pressure, w_{wind} =	19.19 psf	19.19 psf	5.00 psf	19.19 psf	19.19 psf	5.00 psf
Axial load, P =	891 lbs	50 lbs	3340 lbs	2004 lbs	50 lbs	2630 lbs
Eccentricity, e =	0 in	0 in	0 in	0 in	0 in	0 in
K_{CE} =	0.3	0.3	0.3	0.3	0.3	0.3
c =	0.8	0.8	0.8	0.8	0.8	0.8
w =	25.6 plf	112.3 plf	6.7 plf	25.6 plf	86.0 plf	6.7 plf
F_b	900 psi	900 psi	900 psi	900 psi	900 psi	900 psi
F_v	180 psi	180 psi	180 psi	180 psi	180 psi	180 psi
F_{c-prll}	1,350 psi	1,350 psi	1,350 psi	1,350 psi	1,350 psi	1,350 psi
F_{c-perp}	625 psi	625 psi	625 psi	625 psi	625 psi	625 psi
C_d	1.60	1.60	1.15	1.60	1.60	1.15
$C_{F,Fb}$	1.30	1.30	1.30	1.30	1.30	1.30
$C_{F,Fcprll}$	1.10	1.10	1.10	1.10	1.10	1.10
C_r	1.15	1.00	1.00	1.15	1.00	1.00
C_p	0.28	0.28	0.38	0.33	0.33	0.44
C_H	1.00	1.00	1.00	1.00	1.00	6.00
C_b	1.07	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	1,600,000 psi
E_{min}	580,000 psi	580,000 psi	580,000 psi	580,000 psi	580,000 psi	580,000 psi
Allowable Stress:						
$F'_b = F_b C_d C_F C_r$	2153 psi	1872 psi	1346 psi	2153 psi	1872 psi	1346 psi
$F'_v = F_v C_d C_H$	288 psi	288 psi	207 psi	288 psi	288 psi	1242 psi
$F'_c = F_c C_d C_F$	2376 psi	2376 psi	1708 psi	2376 psi	2376 psi	1708 psi
$F'_{CE} = (K_{CE} E') / (l/d)^2$	730 psi	730 psi	730 psi	873 psi	873 psi	873 psi
$F'_c = F_c C_d C_F C_p$	676 psi	676 psi	650 psi	793 psi	793 psi	754 psi
$F'_{c-perp} = F_{c-perp} C_b$	668 psi	668 psi	668 psi	668 psi	668 psi	668 psi
$E' = E$	1600000 psi	1600000 psi	1600000 psi	1600000 psi	1600000 psi	1600000 psi
$F_{bE} =$	2019 psi	8077 psi	2019 psi	2207 psi	8829 psi	2207 psi
Slenderness Ratio:	< 50 OK	< 50 OK	< 50 OK	< 50 OK	< 50 OK	< 50 OK
$R_g =$	19	9	19	18	9	18
Bending:	< F'b OK	< F'b OK	< F'b OK	< F'b OK	< F'b OK	< F'b OK
$M = w L^2 / 8 + P e / 12$	442 ft-lbs	1939 ft-lbs	115 ft-lbs	370 ft-lbs	1242 ft-lbs	96 ft-lbs
$f_b = M / S$	701 psi	1538 psi	183 psi	586 psi	985 psi	153 psi
$S =$	8 in ³	15 in ³	8 in ³	8 in ³	15 in ³	8 in ³
Shear:	< F'v OK	< F'v OK	< F'v OK	< F'v OK	< F'v OK	< F'v OK
$V = w L / 2$	150 lbs	660 lbs	39 lbs	138 lbs	462 lbs	27 lbs
$f_v = 1.5 V / A$	27 psi	60 psi	7 psi	25 psi	42 psi	5 psi
$A =$	8 in ²	17 in ²	8 in ²	8 in ²	17 in ²	8 in ²
Compression:	< F'c OK	< F'c OK	< F'c OK	< F'c OK	< F'c OK	< F'c OK
$f_c = P / A$	108 psi	3 psi	405 psi	243 psi	3 psi	319 psi
Compression (perp.):	< F'c OK	< F'c OK	< F'c OK	< F'c OK	< F'c OK	< F'c OK
$f_{c-perp} = P / A$	108 psi	3 psi	405 psi	243 psi	3 psi	319 psi
Combined:	< 1.0 OK			< 1.0 OK		
$(f_c / F_c) + (f_b / [F_b (1 - (f_c / F_c) E)]) =$	0.41			0.47		
Deflection:	> 180 OK	> 180 OK	> 180 OK	> 180 OK	> 180 OK	> 180 OK
$D = 22.5 w L^4 / E' I =$	0.33 in	0.72 in	0.09 in	0.23 in	0.39 in	0.06 in
$I =$	21 in ⁴	42 in ⁴	21 in ⁴	21 in ⁴	42 in ⁴	21 in ⁴
SPAN /	428	195	1641	558	332	2143



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

TALL WALL CALCULATIONS:

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

Description:

	20' Tall Wall	King Stud (16' Max Opening)	King Stud (16' Max Opening)	19.6' Trimmer	King Stud (14.5' Max Opening)	King Stud (10' Max Opening)
Type:	2x Lumber (2"-4")	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	DF-L
Grade:	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2
Nominal width, t =	(1) 2	(6) 2	(3) 2	(1) 2	(6) 2	(2) 2
Actual width =	1.50 in	9.00 in	4.50 in	1.50 in	9.00 in	3.00 in
Nominal depth, d =	8	8	8	8	8	8
Actual depth =	7.25 in	7.25 in	7.25 in	7.25 in	7.25 in	7.25 in
Span, L =	20.000 ft	19.600 ft	15.500 ft	19.600 ft	19.500 ft	15.500 ft
w/o Plates	19.750 ft	19.350 ft	15.250 ft	19.350 ft	19.250 ft	15.250 ft
Stud spacing, s =	16 in	106 in	106 in	16 in	97 in	70 in
Lat. Pressure, w _{wind} =	19.19 psf	19.19 psf	19.19 psf	5.00 psf	19.19 psf	19.19 psf
Axial load, P =	445 lbs	50 lbs	50 lbs	2672 lbs	50 lbs	50 lbs
Eccentricity, e =	0 in	0 in	0 in	0 in	0 in	0 in
K _{CE} =	0.3	0.3	0.3	0.3	0.3	0.3
c =	0.8	0.8	0.8	0.8	0.8	0.8
w =	25.6 plf	169.9 plf	169.9 plf	6.7 plf	155.5 plf	112.3 plf
F _b	900 psi	900 psi	900 psi	900 psi	900 psi	900 psi
F _v	180 psi	180 psi	180 psi	180 psi	180 psi	180 psi
F _{c-prll}	1,350 psi	1,350 psi	1,350 psi	1,350 psi	1,350 psi	1,350 psi
F _{c-perp}	625 psi	625 psi	625 psi	625 psi	625 psi	625 psi
C _d	1.60	1.60	1.60	1.15	1.60	1.60
C _{F,Fb}	1.20	1.20	1.20	1.20	1.20	1.20
C _{F,Fcprll}	1.05	1.05	1.05	1.05	1.05	1.05
C _r	1.15	1.00	1.00	1.00	1.00	1.00
C _p	0.19	0.20	0.31	0.27	0.20	0.31
C _H	1.00	1.00	1.00	1.00	1.00	6.00
C _b	1.00	1.00	1.00	1.00	1.00	1.00
E	1,600,000 psi	1,600,000 psi	1,600,000 psi	1,600,000 psi	1,600,000 psi	1,600,000 psi
E _{min}	580,000 psi	580,000 psi	580,000 psi	580,000 psi	580,000 psi	580,000 psi
Allowable Stress:						
F' _b = F _b C _d C _F C _r	1987 psi	1728 psi	1728 psi	1242 psi	1728 psi	1728 psi
F' _v = F _v C _d C _H	288 psi	288 psi	288 psi	207 psi	288 psi	1728 psi
F' _c = F _c C _d C _F	2268 psi	2268 psi	2268 psi	1630 psi	2268 psi	2268 psi
F' _{CE} = (K _{CE} E')/(l _e /d)2	449 psi	468 psi	753 psi	468 psi	473 psi	753 psi
F' _c = F _c C _d C _F C _b	429 psi	446 psi	693 psi	436 psi	450 psi	693 psi
F' _{c-perp} = F _{c-perp} C _b	625 psi	625 psi	625 psi	625 psi	625 psi	625 psi
E' = E	1600000 psi	1600000 psi	1600000 psi	1600000 psi	1600000 psi	1600000 psi
F _{DE} =	911 psi	33488 psi	10623 psi	930 psi	33662 psi	4721 psi
Slenderness Ratio:	< 50 OK	< 50 OK	< 50 OK	< 50 OK	< 50 OK	< 50 OK
R _B =	28	5	8	27	5	12
Bending:	< F' _b OK	< F' _b OK	< F' _b OK	< F' _b OK	< F' _b OK	< F' _b OK
M = w L ² /8 + P e/12 =	1248 ft-lbs	7952 ft-lbs	4939 ft-lbs	312 ft-lbs	7204 ft-lbs	3266 ft-lbs
f _b = M/S =	1139 psi	1210 psi	1504 psi	285 psi	1096 psi	1491 psi
S =	13 in ³	79 in ³	39 in ³	13 in ³	79 in ³	26 in ³
Shear:	< F' _v OK	< F' _v OK	< F' _v OK	< F' _v OK	< F' _v OK	< F' _v OK
w L/2 =	253 lbs	1644 lbs	1296 lbs	65 lbs	1497 lbs	146 lbs
f _v = 1.5 V/A =	35 psi	38 psi	60 psi	9 psi	34 psi	10 psi
A =	11 in ²	65 in ²	33 in ²	11 in ²	65 in ²	22 in ²
Compression:	< F' _c OK	< F' _c OK	< F' _c OK	< F' _c OK	< F' _c OK	< F' _c OK
f _c = P/A =	41 psi	1 psi	2 psi	246 psi	1 psi	2 psi
Compression (perp.):	< F' _c OK	< F' _c OK	< F' _c OK	< F' _c OK	< F' _c OK	< F' _c OK
f _{c-perp} = P/A =	41 psi	1 psi	2 psi	246 psi	1 psi	2 psi
Combined:	< 1.0 OK					
((f _c /F' _c)2 + (f _b /[F' _b (1-(f _c /F' _c)2)]) =	0.64					
Deflection:	> 180 OK	> 180 OK	> 180 OK	> 180 OK	> 180 OK	> 180 OK
D = 22.5 w L ⁴ /E' I =	1.15 in	1.17 in	0.90 in	0.28 in	1.05 in	0.90 in
I =	48 in ⁴	286 in ⁴	143 in ⁴	48 in ⁴	286 in ⁴	95 in ⁴
SPAN /	206	198	202	842	220	204



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

TALL WALL CALCULATIONS:

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

Description:

	12' Tall Wall	King Stud (9' Max Opening)	12' Trimmer	King Stud (6.42' Max Opening)	King Stud (16' Max Opening)	12.58' Trimmer
Type:	2x Lumber (2"-4")	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	DF-L
Grade:	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2
Nominal width, t =	(1) 2	(2) 2	(2) 2	(2) 2	(4) 2	(2) 2
Actual width =	1.50 in	3.00 in	3.00 in	3.00 in	6.00 in	3.00 in
Nominal depth, d =	6	6	6	6	6	6
Actual depth =	5.50 in	5.50 in	5.50 in	5.50 in	5.50 in	5.50 in
Span, L =	12.000 ft	12.000 ft	12.000 ft	12.000 ft	12.580 ft	12.580 ft
w/o Plates	11.750 ft	11.750 ft	11.750 ft	11.750 ft	12.330 ft	12.330 ft
Stud spacing, s =	16 in	64 in	16 in	49 in	106 in	16 in
Lat. Pressure, w_{wind} =	19.19 psf	19.19 psf	5.00 psf	19.19 psf	19.19 psf	5.00 psf
Axial load, P =	2672 lbs	50 lbs	9018 lbs	50 lbs	50 lbs	6680 lbs
Eccentricity, e =	0 in	0 in	0 in	0 in	0 in	0 in
K_{CE} =	0.3	0.3	0.3	0.3	0.3	0.3
c =	0.8	0.8	0.8	0.8	0.8	0.8
w =	25.6 plf	102.7 plf	6.7 plf	78.0 plf	169.9 plf	6.7 plf
F_b	900 psi	900 psi	900 psi	900 psi	900 psi	900 psi
F_v	180 psi	180 psi	180 psi	180 psi	180 psi	180 psi
F_{c-prll}	1,350 psi	1,350 psi	1,350 psi	1,350 psi	1,350 psi	1,350 psi
F_{c-perp}	625 psi	625 psi	625 psi	625 psi	625 psi	625 psi
C_d	1.60	1.60	1.15	1.60	1.60	1.15
$C_{F,Fb}$	1.30	1.30	1.30	1.30	1.30	1.30
$C_{F,Fcprll}$	1.10	1.10	1.10	1.10	1.10	1.10
C_r	1.15	1.00	1.00	1.00	1.00	1.00
C_p	0.28	0.28	0.38	0.28	0.26	0.35
C_H	1.00	1.00	1.00	1.00	1.00	6.00
C_b	1.07	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	1,600,000 psi
E_{min}	580,000 psi	580,000 psi	580,000 psi	580,000 psi	580,000 psi	580,000 psi
Allowable Stress:						
$F'_b = F_b C_d C_F C_r$	2153 psi	1872 psi	1346 psi	1872 psi	1872 psi	1346 psi
$F'_v = F_v C_d C_H$	288 psi	288 psi	207 psi	288 psi	288 psi	1242 psi
$F'_c = F_c C_d C_F$	2376 psi	2376 psi	1708 psi	2376 psi	2376 psi	1708 psi
$F'_{CE} = (K_{CE} E') / (l/d)^2$	730 psi	730 psi	730 psi	730 psi	663 psi	663 psi
$F'_c = F_c C_d C_F C_p$	676 psi	676 psi	650 psi	676 psi	620 psi	599 psi
$F'_{c-perp} = F_{c-perp} C_b$	668 psi	668 psi	668 psi	668 psi	668 psi	668 psi
$E' = E$	1600000 psi	1600000 psi	1600000 psi	1600000 psi	1600000 psi	1600000 psi
$F_{bE} =$	2019 psi	8077 psi	8077 psi	30790 psi	7697 psi	
Slenderness Ratio:	< 50 OK	< 50 OK	< 50 OK	< 50 OK	< 50 OK	< 50 OK
$R_b =$	19	9	9	9	5	10
Bending:	< F'b OK	< F'b OK	< F'b OK	< F'b OK	< F'b OK	< F'b OK
$M = w L^2 / 8 + P e / 12$	442 ft-lbs	1773 ft-lbs	115 ft-lbs	1346 ft-lbs	3229 ft-lbs	127 ft-lbs
$f_b = M / S$	701 psi	1407 psi	91 psi	1068 psi	1281 psi	101 psi
$S =$	8 in ³	15 in ³	15 in ³	15 in ³	30 in ³	15 in ³
Shear:	< F'v OK	< F'v OK	< F'v OK	< F'v OK	< F'v OK	< F'v OK
$V = w L / 2$	150 lbs	604 lbs	39 lbs	458 lbs	1048 lbs	31 lbs
$f_v = 1.5 V / A$	27 psi	55 psi	4 psi	42 psi	48 psi	3 psi
$A =$	8 in ²	17 in ²	17 in ²	17 in ²	33 in ²	17 in ²
Compression:	< F'c OK	< F'c OK	< F'c OK	< F'c OK	< F'c OK	< F'c OK
$f_c = P / A$	324 psi	3 psi	547 psi	3 psi	2 psi	405 psi
Compression (perp.):	< F'c OK	< F'c OK	< F'c OK	< F'c OK	< F'c OK	< F'c OK
$f_{c-perp} = P / A$	324 psi	3 psi	547 psi	3 psi	2 psi	405 psi
Combined:	< 1.0 OK					
$(f_c / F_c) + (f_b / [F_b (1 - (f_c / F_c) E)]) =$	0.81					
Deflection:	> 180 OK	> 180 OK	> 180 OK	> 180 OK	> 180 OK	> 180 OK
$D = 22.5 w L^4 / E' I =$	0.33 in	0.66 in	0.04 in	0.50 in	0.66 in	0.05 in
$I =$	21 in ⁴	42 in ⁴	42 in ⁴	42 in ⁴	83 in ⁴	42 in ⁴
SPAN /	428	213	3282	281	223	2840

**PASS**

DATE:	5/17/2022			COMPANY:	SMC Design	
STRUCALC BUILD:	StruCalc Pro			DESIGNED BY:	Stephen Curtis	
CUSTOMER:				REVIEWED BY:	Stephen Curtis	
PROJ. ADDRESS:	--			PROJECT NAME:	25-003 Hawkins	
	--					
LEVEL:	Roof			LOADING:	ASD	
MEMBER NAME:	Outlookers			CODE:	2018 International Building Code	
MEMBER TYPE:	ROOF RAFTER			NDS:	2018 NDS	
MATERIAL:	Solid Sawn					
Douglas Fir-Larch	No. 2	(1) 1.5 X 7.25	16 (in) O.C.	DRY		

BEAM PROPERTIES

Start (ft): 0 End (ft): 7 Member Slope (in): 2.86/12 Actual Length (ft): 7.2 Roof Pitch (in): 2.86/12 O.C. Spacing (in): 16

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
10.88	47.63	2.04	2.48	1	0.5	1

STRENGTH PROPERTIES

	F _b (psi)	F _t (psi)	F _v (psi)	F _c (psi)	F _c ⊥ (psi)	E (psi) x10 ³	E _{min} (psi) x10 ³
Base Values	900	575	180	1350	625	1600	580
Adjusted Values	1242	690	180	1418	625	1600	580
C _M	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1
C _i	1	1	1	1	1	1	1
C _F	1.2	1.2	1	1.05	1	1	1

Bending Adjustment Factors C_{fu} = 1 C_r = 1.15**BEAM DATA**

		Unbraced Length (ft)		Beam End				
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	4	0	4	0.9533334				
2	3	0	3	0.715				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (54.4%)	94.3	207.0	3.99	D+S	1.15
Bending Stress Y (psi)	PASS (30.6%)	920.8	1325.9	3.99	D+S	1.15
Deflection Y (in)	PASS (76.5%)	0.097	0.411 (=L/180)	7	S	
Compressive Stress (psi)	PASS (99.1%)	14.1	1601.2	4.06	D+S	1.15
Tensile Stress (psi)	PASS (98.1%)	15.0	793.5	3.99	D+S	1.15
Bearing Stress (psi)	PASS (76.3%)	158.5	667.6	4	D+S	1.15
Bending-Compression (Unit)	PASS (34.8%)	0.65	1.00	4.06	D+S	1.15
Bending-Tension (Unit)	PASS (33.6%)	0.66	1.00	3.99	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	18	180	198
B	123	1259	1382
C	0	0	0

Reaction Location

A

B

C

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CONNECTORS

(All connectors are Simpson Strong-Tie connectors)*

Support A	Model	Type	Adequacy (%)	Header Fastening (in)	Joist Nails (in)	Nailer Thickness (in)
Primary	LUS26	Hanger	68.84	(4) 0.148 x 3	(4) 0.148 x 3	N/A

Hanger at support A has seat sloped 0 degrees, skewed 0 degrees.

WSR = web stiffeners required

*Capacity values are adjusted based on specific gravity when members use grades other than those specified in Simpson Strong-Tie's capacity tables.

**LOAD LIST**

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb/ft ²)	Uniform	150	150	0	7	Snow	Y
Uniform (lb/ft)	Uniform	17	17	0	7	Dead	Y
Self Weight (lb/ft)	-	2.48	2.48	0	7	Dead	Y

**PASS**

DATE:	5/17/2022			COMPANY:	SMC Design	
STRUCALC BUILD:	StruCalc Pro			DESIGNED BY:	Stephen Curtis	
CUSTOMER:				REVIEWED BY:	Stephen Curtis	
PROJ. ADDRESS:	--			PROJECT NAME:	25-003 Hawkins	
	--					
LEVEL:	Roof			LOADING:	ASD	
MEMBER NAME:	Rafters #1			CODE:	2018 International Building Code	
MEMBER TYPE:	ROOF RAFTER			NDS:	2018 NDS	
MATERIAL:	Solid Sawn					
Douglas Fir-Larch	No. 2	(1) 1.5 X 9.25	24 (in) O.C.	DRY		

BEAM PROPERTIES

Start (ft): 0 End (ft): 11 Member Slope (in): 0/12 Actual Length (ft): 11 Roof Pitch (in): 0/12 O.C. Spacing (in): 24

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
13.88	98.93	2.6	3.16	1	0.5	1

STRENGTH PROPERTIES

	F _b (psi)	F _t (psi)	F _v (psi)	F _c (psi)	F _c ⊥ (psi)	E (psi) x10 ³	E _{min} (psi) x10 ³
Base Values	900	575	180	1350	625	1600	580
Adjusted Values	1138	632	180	1350	625	1600	580
C _M	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1
C _i	1	1	1	1	1	1	1
C _F	1.1	1.1	1	1	1	1	1

Bending Adjustment Factors C_{fu} = 1 C_r = 1.15**BEAM DATA**

		Unbraced Length (ft)		Beam End				
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	8	0	8	0				
2	3	0	3	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (21.1%)	163.4	207.0	7.92	D+S	1.15
Bending Stress Y (psi)	PASS (14.7%)	1117.4	1309.3	3.41	D+S	1.15
Deflection Y (in)	PASS (78.2%)	0.116	0.533 (=L/180)	3.74	S	
Bearing Stress (psi)	PASS (29.8%)	485.7	692.0	8	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	128	1031	1159
B	281	2269	2550
C	0	0	0

Reaction Location

A B C

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft ²)	Uniform	150	150	0	11	Snow	Y
Uniform (lbf/ft ²)	Uniform	17	17	0	11	Dead	Y
Self Weight (lbf/ft)	-	3.16	3.16	0	11	Dead	Y

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**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design		
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis		
CUSTOMER:		REVIEWED BY:	Stephen Curtis		
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins		
	--				
LEVEL:	Roof	LOADING:	ASD		
MEMBER NAME:	Rafters #2	CODE:	2018 International Building Code		
MEMBER TYPE:	ROOF RAFTER	NDS:	2018 NDS		
MATERIAL:	I-Joists				
Weyerhaeuser	TJI 560	(1) 20	16 (in) O.C.	DRY	

BEAM PROPERTIES

Start (ft): 0 End (ft): 27 Member Slope (in): 3/12 Actual Length (ft): 27.83 Roof Pitch (in): 3/12 O.C. Spacing (in): 16

						End Rcap	End Rcap	End Rcap	End Rcap	Int Rcap	Int Rcap	Int Rcap	Int Rcap
El x 10 ⁶	BSW	Lams	K x 10 ⁶	Mcap	Vcap	1.75 NS	3.5 NS	1.75 WS	3.5 WS	3.5 NS	5.25 NS	3.5 WS	5.25 WS
(lbf-in ²)	(lbf/ft)		(lbf)	(lbf-ft)	(lbf)	(lbf)	(lbf)	(lbf)	(lbf)	(lbf)	(lbf)	(lbf)	(lbf)
2064	5.1	1	5.3	16165	3345	1265	1725	1740	2200	3000	3455	3475	3930

BEAM DATA

		Unbraced Length (ft)		Beam End
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)
1	3	0	3	0.75
2	20	0	20	5
3	4	0	4	1

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Force (lbf)	PASS (40.0%)	2306.4	3846.8	22.95	D+S	1.15
Bending Moment (lbf-ft)	PASS (44.7%)	10277.6	18589.8	12.69	D+S	1.15
Deflection Y (in)	PASS (63.5%)	0.151	0.412 (=L/180)	0	S	
Bearing Load (lbf)	PASS (3.6%)	3326.5	3450.0	23	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Z axis	DEAD	SNOW	TOTAL
A	1	12	13
B	0	-5	-5
C	0	-1	-1
D	-1	-7	-8
Y axis			
A	0	1	1
B	367	2644	3011
C	405	2923	3328
D	0	-3	-3

Reaction Location WS-Web Stiffener Required NSR-No Stiffener Required

A	B	C	D
NSR	NSR	NSR	NSR

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft ²)	Uniform	150	150	0	27	Snow	Y
Uniform (lbf/ft ²)	Uniform	17	17	0	27	Dead	Y
Self Weight (lbf/ft)	-	5.1	5.1	0	27	Dead	Y

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**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design		
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis		
CUSTOMER:		REVIEWED BY:	Stephen Curtis		
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins		
	--				
LEVEL:	Roof	LOADING:	ASD		
MEMBER NAME:	Rafters #3	CODE:	2018 International Building Code		
MEMBER TYPE:	ROOF RAFTER	NDS:	2018 NDS		
MATERIAL:	I-Joists				
Weyerhaeuser	TJI 560	(1) 20	16 (in) O.C.	DRY	

BEAM PROPERTIES

Start (ft): 0 End (ft): 23.5 Member Slope (in): 3/12 Actual Length (ft): 24.22 Roof Pitch (in): 3/12 O.C. Spacing (in): 16

						End Rcap	End Rcap	End Rcap	End Rcap	Int Rcap	Int Rcap	Int Rcap	Int Rcap
El x 10 ⁶	BSW	Lams	K x 10 ⁶	Mcap	Vcap	1.75 NS	3.5 NS	1.75 WS	3.5 WS	3.5 NS	5.25 NS	3.5 WS	5.25 WS
(lb-ft-in ²)	(lb-ft)		(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)
2064	5.1	1	5.3	16165	3345	1265	1725	1740	2200	3000	3455	3475	3930

BEAM DATA

		Unbraced Length (ft)		Beam End
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)
1	3	0	3	0.75
2	20.5	0	20.5	5.125

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Force (lb-ft)	PASS (38.3%)	2371.7	3846.8	3.055	D+S	1.15
Bending Moment (lb-ft)	PASS (36.4%)	11814.2	18589.8	13.395	D+S	1.15
Deflection Y (in)	PASS (56.6%)	0.179	0.412 (=L/180)	0	S	
Bearing Load (lb-ft)	PASS (6.9%)	2355.4	2530.0	23.5	D+S	1.15

REACTIONS

Units for V: lb-ft Units for M: lb-ft

Z axis	DEAD	SNOW	TOTAL
A	0	7	7
B	0	-7	-7
C	0	0	0

Y axis

A	0	2	2
B	385	2774	3159
C	287	2068	2355

Reaction Location WS-Web Stiffener Required NSR-No Stiffener Required

A	B	C
NSR	NSR	NSR

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb-ft/ft ²)	Uniform	150	150	0	23.5	Snow	Y
Uniform (lb-ft/ft ²)	Uniform	17	17	0	23.5	Dead	Y
Self Weight (lb-ft/ft)	-	5.1	5.1	0	23.5	Dead	Y

**PASS**

DATE:	5/17/2022			COMPANY:	SMC Design	
STRUCALC BUILD:	StruCalc Pro			DESIGNED BY:	Stephen Curtis	
CUSTOMER:				REVIEWED BY:	Stephen Curtis	
PROJ. ADDRESS:	--			PROJECT NAME:	25-003 Hawkins	
	--					
LEVEL:	Roof			LOADING:	ASD	
MEMBER NAME:	Rafters #4			CODE:	2018 International Building Code	
MEMBER TYPE:	ROOF RAFTER			NDS:	2018 NDS	
MATERIAL:	I-Joists					
Weyerhaeuser	TJI 560	(1) 20	16 (in) O.C.	DRY		

BEAM PROPERTIES

Start (ft): 0 End (ft): 23.5 Member Slope (in): 3/12 Actual Length (ft): 24.22 Roof Pitch (in): 3/12 O.C. Spacing (in): 16

						End Rcap	End Rcap	End Rcap	End Rcap	Int Rcap	Int Rcap	Int Rcap	Int Rcap
El x 10 ⁶	BSW	Lams	K x 10 ⁶	Mcap	Vcap	1.75 NS	3.5 NS	1.75 WS	3.5 WS	3.5 NS	5.25 NS	3.5 WS	5.25 WS
(lb-ft-in ²)	(lb-ft)		(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)
2064	5.1	1	5.3	16165	3345	1265	1725	1740	2200	3000	3455	3475	3930

BEAM DATA

		Unbraced Length (ft)		Beam End
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)
1	3	0	3	0.75
2	20.5	0	20.5	5.125

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Force (lb-ft)	PASS (38.3%)	2371.7	3846.8	3.055	D+S	1.15
Bending Moment (lb-ft)	PASS (36.4%)	11814.2	18589.8	13.395	D+S	1.15
Deflection Y (in)	PASS (56.6%)	0.179	0.412 (=L/180)	0	S	
Bearing Load (lb-ft)	PASS (6.9%)	2355.4	2530.0	23.5	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Z axis	DEAD	SNOW	TOTAL
A	0	7	7
B	0	-7	-7
C	0	0	0

Y axis

A	0	2	2
B	385	2774	3159
C	287	2068	2355

Reaction Location WS-Web Stiffener Required NSR-No Stiffener Required

A	B	C
NSR	NSR	NSR

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb-ft ²)	Uniform	150	150	0	23.5	Snow	Y
Uniform (lb-ft ²)	Uniform	17	17	0	23.5	Dead	Y
Self Weight (lb-ft)	-	5.1	5.1	0	23.5	Dead	Y

**PASS**

DATE:	5/17/2022			COMPANY:	SMC Design	
STRUCALC BUILD:	StruCalc Pro			DESIGNED BY:	Stephen Curtis	
CUSTOMER:				REVIEWED BY:	Stephen Curtis	
PROJ. ADDRESS:	--			PROJECT NAME:	25-003 Hawkins	
	--					
LEVEL:	Roof			LOADING:	ASD	
MEMBER NAME:	Rafters #5			CODE:	2018 International Building Code	
MEMBER TYPE:	ROOF RAFTER			NDS:	2018 NDS	
MATERIAL:	I-Joists					
Weyerhaeuser	TJI 560	(1) 20	16 (in) O.C.	DRY		

BEAM PROPERTIES

Start (ft): 0 End (ft): 14.5 Member Slope (in): 3/12 Actual Length (ft): 14.95 Roof Pitch (in): 3/12 O.C. Spacing (in): 16

						End Rcap	End Rcap	End Rcap	End Rcap	Int Rcap	Int Rcap	Int Rcap	Int Rcap
El x 10 ⁶	BSW	Lams	K x 10 ⁶	Mcap	Vcap	1.75 NS	3.5 NS	1.75 WS	3.5 WS	3.5 NS	5.25 NS	3.5 WS	5.25 WS
(lb-ft-in ²)	(lb-ft)		(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)
2064	5.1	1	5.3	16165	3345	1265	1725	1740	2200	3000	3455	3475	3930

BEAM DATA

		Unbraced Length (ft)		Beam End
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)
1	11.5	0	11.5	2.875
2	3	0	3	0.75

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Force (lb-ft)	PASS (63.9%)	1388.3	3846.8	11.455	D+S	1.15
Bending Moment (lb-ft)	PASS (81.9%)	3372.1	18589.8	5.365	D+S	1.15
Deflection Y (in)	PASS (95.6%)	0.035	0.790 (=L/180)	5.655	S	
Bearing Load (lb-ft)	PASS (36.5%)	1258.8	1983.8	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Z axis	DEAD	SNOW	TOTAL
A	0	1	1
B	0	0	0
C	0	-2	-2

Y axis

A	153	1105	1258
B	262	1884	2146
C	0	0	0

Reaction Location WS-Web Stiffener Required NSR-No Stiffener Required

A		B	C
NSR		NSR	NSR

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb-ft ²)	Uniform	150	150	0	14.5	Snow	Y
Uniform (lb-ft ²)	Uniform	17	17	0	14.5	Dead	Y
Self Weight (lb-ft)	-	5.1	5.1	0	14.5	Dead	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design		
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis		
CUSTOMER:		REVIEWED BY:	Stephen Curtis		
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins		
	--				
LEVEL:	Roof	LOADING:	ASD		
MEMBER NAME:	Rafters #6	CODE:	2018 International Building Code		
MEMBER TYPE:	ROOF RAFTER	NDS:	2018 NDS		
MATERIAL:	I-Joists				
Weyerhaeuser	TJI 560	(1) 20	16 (in) O.C.	DRY	

BEAM PROPERTIES

Start (ft): 0 End (ft): 28 Member Slope (in): 3/12 Actual Length (ft): 28.86 Roof Pitch (in): 3/12 O.C. Spacing (in): 16

						End Rcap	End Rcap	End Rcap	End Rcap	Int Rcap	Int Rcap	Int Rcap	Int Rcap
El x 10 ⁶	BSW	Lams	K x 10 ⁶	Mcap	Vcap	1.75 NS	3.5 NS	1.75 WS	3.5 WS	3.5 NS	5.25 NS	3.5 WS	5.25 WS
(lb-ft-in ²)	(lb-ft)		(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)
2064	5.1	1	5.3	16165	3345	1265	1725	1740	2200	3000	3455	3475	3930

BEAM DATA

		Unbraced Length (ft)		Beam End
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)
1	3	0	3	0.75
2	13.5	0	13.5	3.375
3	11.5	0	11.5	2.875

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Force (lb-ft)	PASS (55.3%)	1717.7	3846.8	16.24	D+S	1.15
Bending Moment (lb-ft)	PASS (76.6%)	4353.0	18589.8	16.52	D+S	1.15
Deflection Y (in)	PASS (95.1%)	0.020	0.412 (=L/180)	0	S	
Bearing Load (lb-ft)	PASS (10.8%)	3563.1	3996.3	16.5	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Z axis	DEAD	SNOW	TOTAL
A	0	1	1
B	0	-1	-1
C	0	0	0
D	0	0	0
Y axis			
A	0	0	0
B	249	1793	2042
C	434	3129	3563
D	118	850	968

Reaction Location WS-Web Stiffener Required NSR-No Stiffener Required

A	B	C	D
NSR	NSR	NSR	NSR

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb-ft/ft ²)	Uniform	150	150	0	28	Snow	Y
Uniform (lb-ft/ft ²)	Uniform	17	17	0	28	Dead	Y
Self Weight (lb-ft/ft)	-	5.1	5.1	0	28	Dead	Y

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PASS

DATE:	5/17/2022			COMPANY:	SMC Design	
STRUCALC BUILD:	StruCalc Pro			DESIGNED BY:	Stephen Curtis	
CUSTOMER:				REVIEWED BY:	Stephen Curtis	
PROJ. ADDRESS:	--			PROJECT NAME:	25-003 Hawkins	
	--					
LEVEL:	Roof			LOADING:	ASD	
MEMBER NAME:	Rafters #7			CODE:	2018 International Building Code	
MEMBER TYPE:	ROOF RAFTER			NDS:	2018 NDS	
MATERIAL:	I-Joists					
Weyerhaeuser	TJI 560	(1) 20	16 (in) O.C.	DRY		

BEAM PROPERTIES

Start (ft): 0 End (ft): 14.5 Member Slope (in): 3/12 Actual Length (ft): 14.95 Roof Pitch (in): 3/12 O.C. Spacing (in): 16

						End Rcap	End Rcap	End Rcap	End Rcap	Int Rcap	Int Rcap	Int Rcap	Int Rcap
El x 10 ⁶	BSW	Lams	K x 10 ⁶	Mcap	Vcap	1.75 NS	3.5 NS	1.75 WS	3.5 WS	3.5 NS	5.25 NS	3.5 WS	5.25 WS
(lb-ft-in ²)	(lb-ft)		(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)
2064	5.1	1	5.3	16165	3345	1265	1725	1740	2200	3000	3455	3475	3930

BEAM DATA

		Unbraced Length (ft)		Beam End
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)
1	3	0	3	0.75
2	11.5	0	11.5	2.875

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Force (lb-ft)	PASS (63.9%)	1388.4	3846.8	3.045	D+S	1.15
Bending Moment (lb-ft)	PASS (81.9%)	3371.4	18589.8	9.135	D+S	1.15
Deflection Y (in)	PASS (94.3%)	0.024	0.412 (=L/180)	0	S	
Bearing Load (lb-ft)	PASS (36.6%)	1258.2	1983.8	14.5	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	0	0	0
B	262	1884	2146
C	153	1105	1258

Reaction Location WS-Web Stiffener Required NSR-No Stiffener Required

A	B	C
NSR	NSR	NSR

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb-ft ²)	Uniform	150	150	0	14.5	Snow	Y
Uniform (lb-ft ²)	Uniform	17	17	0	14.5	Dead	Y
Self Weight (lb-ft)	-	5.1	5.1	0	14.5	Dead	Y

**PASS**

DATE:	5/17/2022			COMPANY:	SMC Design	
STRUCALC BUILD:	StruCalc Pro			DESIGNED BY:	Stephen Curtis	
CUSTOMER:				REVIEWED BY:	Stephen Curtis	
PROJ. ADDRESS:	--			PROJECT NAME:	25-003 Hawkins	
	--					
LEVEL:	Roof			LOADING:	ASD	
MEMBER NAME:	Rafters #8			CODE:	2018 International Building Code	
MEMBER TYPE:	ROOF RAFTER			NDS:	2018 NDS	
MATERIAL:	I-Joists					
Weyerhaeuser	TJI 360	(1) 20	16 (in) O.C.	DRY		

BEAM PROPERTIES

Start (ft): 0 End (ft): 16 Member Slope (in): 3/12 Actual Length (ft): 16.49 Roof Pitch (in): 3/12 O.C. Spacing (in): 16

						End Rcap	End Rcap	End Rcap	End Rcap	Int Rcap	Int Rcap	Int Rcap	Int Rcap
El x 10 ⁶	BSW	Lams	K x 10 ⁶	Mcap	Vcap	1.75 NS	3.5 NS	1.75 WS	3.5 WS	3.5 NS	5.25 NS	3.5 WS	5.25 WS
(lbf-in ²)	(lbf/ft)		(lbf)	(lbf-ft)	(lbf)	(lbf)	(lbf)	(lbf)	(lbf)	(lbf)	(lbf)	(lbf)	(lbf)
1376	4	1	4.5	10515	2660	1080	1505	1440	1865	2460	3000	2815	3360

BEAM DATA

		Unbraced Length (ft)		Beam End
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)
1	16	0	16	4

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Force (lbf)	PASS (40.7%)	1813.3	3059.0	0	D+S	1.15
Bending Moment (lbf-ft)	PASS (38.2%)	7476.6	12092.3	8	D+S	1.15
Deflection Y (in)	PASS (78.7%)	0.235	1.100 (=L/180)	8	S	
Bearing Load (lbf)	PASS (12.9%)	1869.1	2144.8	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	220	1649	1869
B	220	1649	1869

Reaction Location WS-Web Stiffener Required NSR-No Stiffener Required

A

B

NSR

NSR

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft ²)	Uniform	150	150	0	16	Snow	Y
Uniform (lbf/ft ²)	Uniform	17	17	0	16	Dead	Y
Self Weight (lbf/ft)	-	4	4	0	16	Dead	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #1	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	AISC:	AISC 360-16
MATERIAL:	Steel		
W Shapes	W21x166	A992-50	

BEAM PROPERTIES

Start (ft): 0 End (ft): 43 Member Slope (in): 0/12 Actual Length (ft): 43

Es x 10 ³	Fy x 10 ³	Fu x 10 ³	Area	Depth	tw	tf	bf	Ix	Iy	Zx	Zy	J	Cw
(psi)	(psi)	(psi)	(in ²)	(in)	(in)	(in)	(in)	(in ⁴)	(in ⁴)	(in ³)	(in ³)	(in ⁴)	(in ⁶)
29000	50	65	48.8	22.5	0.75	1.36	12.4	4280	435	432	108	23.6	48500

DESIGN PROPERTIES

Lp	Lr	Flange	Web	Flange	Web		
(in)	(in)	Flexure	Flexure	Compression	Compression	Cv	Cv_WA
127	479	Compact	Compact	Non-Slender	Non-Slender	1	1

BEAM DATA

		Unbraced Length		Beam End									
Span	Length (ft)	Top	Bottom	Elev. Diff	Pnt/ι	Pnc/ι	Mn/ι	Mn-OOP/ι	Vn/ι	Vn-OOP/ι	Cb	Cb-OOP	
1	43	0	43	0	0	0	0	0	0	0	0	0	

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Shear Force Y (lbf)	PASS (82.3%)	-59809.1	337500.0	43	G2-1	D+S
Moment Y (lbf-ft)	PASS (40.3%)	642946.6	1077844.0	21.5	F2-1	D+S
Deflection Y (in)	PASS (49.2%)	1.456	2.867 (=L/180)	21.5		S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	9294	50515	59809
B	9294	50515	59809

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	166	166	0	43	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Trusses #2	C	-21.24999	-21.24999	0	43	Dead	Y
Uniform (lbf/ft)	Trusses #2	C	-187.4999	-187.4999	0	43	Snow	Y
Uniform (lbf/ft)	Trusses #3	B	287.5315	287.5315	0	43	Dead	Y
Uniform (lbf/ft)	Trusses #3	B	2537.032	2537.032	0	43	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #2	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 5.5 X 27	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 22 Member Slope (in): 0/12 Actual Length (ft): 22

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
148.5	9021.38	374.34	33.87	1	0.5	1

STRENGTH PROPERTIES

	F _{bx} +	F _{bx} -	F _{by}	F _t	F _{vx}	F _{vy}	F _c	F _c ⊥	E _x	E _{xmin}	E _y	E _{ymin}
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End				
		Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	22	0	22	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (19.1%)	246.5	304.8	0	D+S	1.15
Bending Stress Y (psi)	PASS (19.4%)	2028.6	2515.4	10.78	D+S	1.15
Deflection Y (in)	PASS (63.1%)	0.541	1.467 (=L/180)	11	S	
Bearing Stress (psi)	PASS (12.0%)	493.0	560.0	22	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	2677	21729	24406
B	2256	18079	20335

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	33.87	33.87	0	22	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Outlookers	B	91.99392	91.99392	0	22	Dead	Y
Uniform (lbf/ft)	Outlookers	B	944.4833	944.4833	0	22	Snow	Y
Uniform (lbf/ft)	Trusses #1	A	77.35	77.35	0	22	Dead	Y

Linked Load List CONT.								
Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Trusses #1	A	682.5	682.5	0	22	Snow	Y
Point (lbf)	Girder #6	A	463.2945	-	1	-	Dead	Y
Point (lbf)	Girder #6	A	4016.59	-	1	-	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #3	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	AISC:	AISC 360-16
MATERIAL:	Steel		
W Shapes	W12x170	A992-50	

BEAM PROPERTIES

Start (ft): 0 End (ft): 28 Member Slope (in): 0/12 Actual Length (ft): 28

Es x 10 ³	Fy x 10 ³	Fu x 10 ³	Area	Depth	tw	tf	bf	Ix	Iy	Zx	Zy	J	Cw
(psi)	(psi)	(psi)	(in ²)	(in)	(in)	(in)	(in)	(in ⁴)	(in ⁴)	(in ³)	(in ³)	(in ⁴)	(in ⁶)
29000	50	65	50	14	0.96	1.56	12.6	1650	517	275	126	35.6	20100

DESIGN PROPERTIES

Lp	Lr	Flange	Web	Flange	Web		
(in)	(in)	Flexure	Flexure	Compression	Compression	Cv	Cv_WA
136	942	Compact	Compact	Non-Slender	Non-Slender	1	1

BEAM DATA

		Unbraced Length		Beam End								
Span	Length (ft)	Top	Bottom	Elev. Diff	Pnt/ι	Pnc/ι	Mn/ι	Mn-OOP/ι	Vn/ι	Vn-OOP/ι	Cb	Cb-OOP
1	28	0	28	0	0	0	0	0	0	0	0	0

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Shear Force Y (lbf)	PASS (85.3%)	39405.4	268800.0	0	G2-1	D+S
Moment Y (lbf-ft)	PASS (59.8%)	275838.1	686127.8	14	F2-1	D+S
Deflection Y (in)	PASS (63.2%)	0.687	1.867 (=L/180)	14		S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	6149	33256	39405
B	6149	33256	39405

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	170	170	0	28	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Trusses #3	C	230.9683	230.9683	0	28	Dead	Y
Uniform (lbf/ft)	Trusses #3	C	2037.956	2037.956	0	28	Snow	Y
Uniform (lbf/ft)	Trusses #4	A	38.25	38.25	0	28	Dead	Y
Uniform (lbf/ft)	Trusses #4	A	337.5	337.5	0	28	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #4	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 8.75 X 19.5	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 22.5 Member Slope (in): 0/12 Actual Length (ft): 22.5

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
170.62	5406.68	1088.62	38.91	1	0.5	1

STRENGTH PROPERTIES

	F _{bx} +	F _{bx} -	F _{by}	F _t	F _{vx}	F _{vy}	F _c	F _c ⊥	E _x	E _{xmin}	E _y	E _{ymin}
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End				
		Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	22.5	0	22.5	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (62.2%)	115.3	304.8	0	D+S	1.15
Bending Stress Y (psi)	PASS (35.5%)	1596.9	2475.1	11.25	D+S	1.15
Deflection Y (in)	PASS (60.0%)	0.600	1.500 (=L/180)	11.25	S	
Bearing Stress (psi)	PASS (51.3%)	272.6	560.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	1729	11391	13120
B	1729	11391	13120

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	38.91	38.91	0	22.5	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Trusses #4	B	114.75	114.75	0	22.5	Dead	Y
Uniform (lbf/ft)	Trusses #4	B	1012.5	1012.5	0	22.5	Snow	Y

7/22/25

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**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #5	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 5.5 X 15	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 9.5 Member Slope (in): 0/12 Actual Length (ft): 9.5

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
82.5	1546.88	207.97	18.82	1	0.5	1

STRENGTH PROPERTIES

	F _{bx} +	F _{bx} -	F _{by}	F _t	F _{vx}	F _{vy}	F _c	F _c ⊥	E _x	E _{xmin}	E _y	E _{ymin}
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End				
		Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	9.5	0	9.5	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (65.7%)	104.6	304.8	0	D+S	1.15
Bending Stress Y (psi)	PASS (71.2%)	795.3	2760.0	4.75	D+S	1.15
Deflection Y (in)	PASS (88.9%)	0.071	0.633 (=L/180)	4.75	S	
Bearing Stress (psi)	PASS (66.0%)	190.3	560.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	666	5089	5755
B	666	5089	5755

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	18.82	18.82	0	9.5	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Trusses #5	B	121.4286	121.4286	0	9.5	Dead	Y
Uniform (lbf/ft)	Trusses #5	B	1071.429	1071.429	0	9.5	Snow	Y

7/22/25

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**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #6	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 6.75 X 15	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 14 Member Slope (in): 0/12 Actual Length (ft): 14

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
101.25	1898.44	384.43	23.09	1	0.5	1

STRENGTH PROPERTIES

	F _{bx} +	F _{bx} -	F _{by}	F _t	F _{vx}	F _{vy}	F _c	F _c ⊥	E _x	E _{xmin}	E _y	E _{ymin}
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1
Bending Adjustment Factors	C _{vr} = 1											

BEAM DATA

Span	Length (ft)	Unbraced Length (ft)		Beam End		CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
		Top	Bottom	Elev. Diff (ft)					
1	11.5	0	11.5	0					
2	2.5	0	2.5	0					

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (17.5%)	251.5	304.8	11.48	D+S	1.15
Bending Stress Y (psi)	PASS (41.5%)	1598.4	2734.4	5.04	D+S	1.15
Deflection Y (in)	PASS (74.8%)	0.193	0.767 (=L/180)	5.46	S	
Bearing Stress (psi)	PASS (18.2%)	458.3	560.0	11.5	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	1457	11890	13347
B	3264	26122	29386
C	1	12	13

Reaction Location

A

B

C

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	23.09	23.09	0	14	Dead	Y

Linked Load List								
Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Trusses #10	B	266.5592	266.5592	0	14	Dead	Y
Uniform (lbf/ft)	Trusses #10	B	2351.987	2351.987	0	14	Snow	Y
Point (lbf)	Beam #5	A	666.1608	-	13.75	-	Dead	Y
Point (lbf)	Beam #5	A	5089.288	-	13.75	-	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #7	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 5.125 X 15	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 9 Member Slope (in): 0/12 Actual Length (ft): 9

Area	Ix	Iy	BSW	Lams	G	Kcr
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
76.88	1441.41	168.26	17.53	1	0.5	1

STRENGTH PROPERTIES

	Fbx+	Fbx-	Fby	Ft	Fvx	Fvy	Fc	Fc _⊥	Ex	Exmin	Ey	Eymin
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End		CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
		Top	Bottom	Elev. Diff (ft)					
1	9	0	9	0					

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (12.3%)	267.3	304.8	9	D+S	1.15
Bending Stress Y (psi)	PASS (36.0%)	1765.4	2760.0	4.68	D+S	1.15
Deflection Y (in)	PASS (76.3%)	0.142	0.600 (=L/180)	4.59	S	
Bearing Stress (psi)	PASS (13.2%)	486.0	560.0	9	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	1169	10213	11382
B	1404	12294	13698

Reaction Location

A

B

CONNECTORS

(All connectors are Simpson Strong-Tie connectors)*

Support A	Model	Type	Adequacy (%)	Header Fastening (in)	Joist Nails (in)	Nailer Thickness (in)
Primary	HGU5.25-SDS	Hanger	13.52	(36) 1/4 x 2.5 SDS	(24) 1/4 x 2.5 SDS	N/A

Hanger at support A has seat sloped 0 degrees, skewed 0 degrees.

WSR = web stiffeners required

*Capacity values are adjusted based on specific gravity when members use grades other than those specified in Simpson Strong-Tie's capacity tables.

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LOAD LIST							
Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Trapezoidal (lbf/ft)	Trapezoidal	862.5	2250	0	9	Snow	Y
Trapezoidal (lbf/ft)	Trapezoidal	97.75	255	0	9	Dead	Y
Self Weight (lbf/ft)	-	17.53	17.53	0	9	Dead	Y

Linked Load List								
Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Outlookers	B	91.99392	91.99392	0	9	Dead	Y
Uniform (lbf/ft)	Outlookers	B	944.4833	944.4833	0	9	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #8	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 8.75 X 24	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 15 Member Slope (in): 0/12 Actual Length (ft): 15

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
210	10080	1339.84	47.89	1	0.5	1

STRENGTH PROPERTIES

	F _{bx} +	F _{bx} -	F _{by}	F _t	F _{vx}	F _{vy}	F _c	F _c ⊥	E _x	E _{xmin}	E _y	E _{ymin}
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End				
		Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	15	0	15	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (44.0%)	170.6	304.8	15	D+S	1.15
Bending Stress Y (psi)	PASS (42.9%)	1441.1	2524.6	6.9	D+S	1.15
Deflection Y (in)	PASS (80.8%)	0.192	1.000 (=L/180)	7.5	S	
Bearing Stress (psi)	PASS (11.4%)	496.2	560.0	15	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	2637	16342	18979
B	2828	21053	23881

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Trapezoidal (lbf/ft)	Trapezoidal	153	17	0	15	Dead	Y
Trapezoidal (lbf/ft)	Trapezoidal	0	825	0	6	Snow	Y
Trapezoidal (lbf/ft)	Trapezoidal	825	150	6	15	Snow	Y
Self Weight (lbf/ft)	-	47.89	47.89	0	15	Dead	Y

Linked Load List								
Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Trusses #7	B	242.2503	242.2503	5.5	15	Dead	Y
Uniform (lbf/ft)	Trusses #7	B	2137.497	2137.497	5.5	15	Snow	Y
Point (lbf)	Beam #7	A	1168.621	-	5.5	-	Dead	Y
Point (lbf)	Beam #7	A	10212.68	-	5.5	-	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #9	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 6.75 X 12	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 27 Member Slope (in): 0/12 Actual Length (ft): 27

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
81	972	307.55	18.47	1	0.5	1

STRENGTH PROPERTIES

	F _{bx} +	F _{bx} -	F _{by}	F _t	F _{vx}	F _{vy}	F _c	F _c ⊥	E _x	E _{xmin}	E _y	E _{ymin}
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End		CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
		Top	Bottom	Elev. Diff (ft)					
1	16	0	16	0					
2	11	0	11	0					

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (39.1%)	185.6	304.8	15.93	D+S	1.15
Bending Stress Y (psi)	PASS (5.3%)	1910.7	2018.3	15.93	D+S	1.15
Deflection Y (in)	PASS (59.9%)	0.428	1.067 (=L/180)	7.29	S	
Bearing Stress (psi)	PASS (17.6%)	493.1	598.2	16	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	SNOW	TOTAL
A	710	6	6073	6789
B	1917	17	16390	18324
C	355	3	3038	3396

Reaction Location

A

B

C

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Uniform	1	1	0	27	Live	Y
Self Weight (lbf/ft)	-	18.47	18.47	0	27	Dead	Y

Linked Load List								
Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb/ft)	Outlookers	B	91.99392	91.99392	0	27	Dead	Y
Uniform (lb/ft)	Outlookers	B	944.4833	944.4833	0	27	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #10	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Structural Composite Lumber		
Weyerhaeuser	2.0E Microlam LVL	(3) 1.75 X 11.25	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 8.5 Member Slope (in): 0/12 Actual Length (ft): 8.5

Area	I _x	I _y	BSW	Lams	C _{fn}	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
59.06	622.92	15.07	17.23	3	7.35	1

STRENGTH PROPERTIES

	F _b (psi)	F _t (psi)	F _v (psi)	F _c (psi)	F _c ⊥ (psi)	E (psi) x10 ³	E _{min} (psi) x10 ³
Base Values	2600	1895	285	2510	750	2000	1016.535
Adjusted Values	2600	1895	285	2510	750	2000	1017
C _M	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1

Bending Adjustment Factors C_V = 1.01 C_r = 1 Volume factor is applied on a load combination basis And is Not reflected in the adjusted values**BEAM DATA**

		Unbraced Length (ft)		Beam End				
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	8.5	0	8.5	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (21.1%)	258.7	327.8	0	D+S	1.15
Bending Stress Y (psi)	PASS (22.2%)	2345.7	3016.4	4.25	D+S	1.15
Deflection Y (in)	PASS (64.4%)	0.202	0.567 (=L/180)	4.25	S	
Bearing Stress (psi)	PASS (13.8%)	646.8	750.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	SNOW	TOTAL
A	1103	4	9084	10191
B	1103	4	9084	10191

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Uniform	1	1	0	8.5	Live	Y
Self Weight (lbf/ft)	-	17.23	17.23	0	8.5	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Trusses #7	C	242.2495	242.2495	0	8.5	Dead	Y
Uniform (lbf/ft)	Trusses #7	C	2137.5	2137.5	0	8.5	Snow	Y

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**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #11	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Solid Sawn		
Douglas Fir-Larch	Select Structural	(1) 3.5 X 7.25	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 3.5 Member Slope (in): 0/12 Actual Length (ft): 3.5

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lb/ft)			Creep Factor
25.38	111.15	25.9	5.79	1	0.5	1

STRENGTH PROPERTIES

	F _b (psi)	F _t (psi)	F _v (psi)	F _c (psi)	F _c ⊥ (psi)	E (psi) x10 ³	E _{min} (psi) x10 ³
Base Values	1500	1000	180	1700	625	1900	690
Adjusted Values	1950	1200	180	1785	625	1900	690
C _M	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1
C _i	1	1	1	1	1	1	1
C _F	1.3	1.2	1	1.05	1	1	1

Bending Adjustment Factors C_{fu} = 0.86C_r = 1**BEAM DATA**

		Unbraced Length (ft)		Beam End				
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	3.5	0	3.5	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (47.9%)	107.8	207.0	0	D+S	1.15
Bending Stress Y (psi)	PASS (72.1%)	624.6	2242.5	1.75	D+S	1.15
Deflection Y (in)	PASS (93.5%)	0.015	0.233 (=L/180)	1.75	S	
Bearing Stress (psi)	PASS (84.8%)	94.8	625.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	SNOW	TOTAL
A	171	2	1653	1826
B	171	2	1653	1826

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb/ft)	Uniform	1	1	0	3.5	Live	Y
Self Weight (lb/ft)	-	5.79	5.79	0	3.5	Dead	Y

Linked Load List								
Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Outlookers	B	91.99392	91.99392	0	3.5	Dead	Y
Uniform (lbf/ft)	Outlookers	B	944.4833	944.4833	0	3.5	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #12	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Solid Sawn		
Douglas Fir-Larch	Select Structural	(1) 5.5 X 9.5	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 3.5 Member Slope (in): 0/12 Actual Length (ft): 3.5

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lb/ft)			Creep Factor
52.25	392.96	131.71	11.92	1	0.5	1

STRENGTH PROPERTIES

	F _b (psi)	F _t (psi)	F _v (psi)	F _c (psi)	F _c ⊥ (psi)	E (psi) x10 ³	E _{min} (psi) x10 ³
Base Values	1600	950	170	1100	625	1600	580
Adjusted Values	1600	950	170	1100	625	1600	580
C _M	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1
C _i	1	1	1	1	1	1	1
C _F	1	1	1	1	1	1	1

Bending Adjustment Factors C_{fu} = 0.86C_r = 1**BEAM DATA**

		Unbraced Length (ft)		Beam End				
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	3.5	0	3.5	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (48.2%)	101.3	195.5	0	D+S	1.15
Bending Stress Y (psi)	PASS (75.7%)	447.8	1840.0	1.75	D+S	1.15
Deflection Y (in)	PASS (95.9%)	0.010	0.233 (=L/180)	1.75	S	
Bearing Stress (psi)	PASS (31.6%)	427.6	625.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	SNOW	TOTAL
A	378	2	3150	3530
B	378	2	3150	3530

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb/ft)	Uniform	1	1	0	3.5	Live	Y
Self Weight (lb/ft)	-	11.92	11.92	0	3.5	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb/ft)	Trusses #8	C	203.9998	203.9998	0	3.5	Dead	Y
Uniform (lb/ft)	Trusses #8	C	1799.996	1799.996	0	3.5	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #13	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Structural Composite Lumber		
Weyerhaeuser	2.0E Microlam LVL	(3) 1.75 X 11.25	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 9.5 Member Slope (in): 0/12 Actual Length (ft): 9.5

Area	I _x	I _y	BSW	Lams	C _{fn}	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lb/ft)			Creep Factor
59.06	622.92	15.07	17.23	3	7.35	1

STRENGTH PROPERTIES

	F _b (psi)	F _t (psi)	F _v (psi)	F _c (psi)	F _c ⊥ (psi)	E (psi) x10 ³	E _{min} (psi) x10 ³
Base Values	2600	1895	285	2510	750	2000	1016.535
Adjusted Values	2600	1895	285	2510	750	2000	1017
C _M	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1

Bending Adjustment Factors C_V = 1.01 C_r = 1 Volume factor is applied on a load combination basis And is Not reflected in the adjusted values**BEAM DATA**

		Unbraced Length (ft)		Beam End				
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	9.5	0	9.5	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (25.6%)	243.8	327.8	0	D+S	1.15
Bending Stress Y (psi)	PASS (18.1%)	2470.8	3016.4	4.75	D+S	1.15
Deflection Y (in)	PASS (58.2%)	0.265	0.633 (=L/180)	4.75	S	
Bearing Stress (psi)	PASS (18.7%)	609.6	750.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	SNOW	TOTAL
A	1051	5	8550	9606
B	1051	5	8550	9606

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb/ft)	Uniform	1	1	0	9.5	Live	Y
Self Weight (lb/ft)	-	17.23	17.23	0	9.5	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb/ft)	Trusses #8	C	203.9998	203.9998	0	9.5	Dead	Y
Uniform (lb/ft)	Trusses #8	C	1799.996	1799.996	0	9.5	Snow	Y

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**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #14	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Solid Sawn		
Douglas Fir-Larch	Select Structural	(1) 5.5 X 9.5	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 3.5 Member Slope (in): 0/12 Actual Length (ft): 3.5

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lb/ft)			Creep Factor
52.25	392.96	131.71	11.92	1	0.5	1

STRENGTH PROPERTIES

	F _b (psi)	F _t (psi)	F _v (psi)	F _c (psi)	F _c ⊥ (psi)	E (psi) x10 ³	E _{min} (psi) x10 ³
Base Values	1600	950	170	1100	625	1600	580
Adjusted Values	1600	950	170	1100	625	1600	580
C _M	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1
C _i	1	1	1	1	1	1	1
C _F	1	1	1	1	1	1	1

Bending Adjustment Factors C_{fu} = 0.86C_r = 1**BEAM DATA**

		Unbraced Length (ft)		Beam End				
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	3.5	0	3.5	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (48.2%)	101.3	195.5	0	D+S	1.15
Bending Stress Y (psi)	PASS (75.7%)	447.8	1840.0	1.75	D+S	1.15
Deflection Y (in)	PASS (95.9%)	0.010	0.233 (=L/180)	1.75	S	
Bearing Stress (psi)	PASS (31.6%)	427.6	625.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	SNOW	TOTAL
A	378	2	3150	3530
B	378	2	3150	3530

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb/ft)	Uniform	1	1	0	3.5	Live	Y
Self Weight (lb/ft)	-	11.92	11.92	0	3.5	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb/ft)	Trusses #8	C	203.9998	203.9998	0	3.5	Dead	Y
Uniform (lb/ft)	Trusses #8	C	1799.996	1799.996	0	3.5	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #15	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 8.75 X 19.5	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 18 Member Slope (in): 0/12 Actual Length (ft): 18

Area	Ix	Iy	BSW	Lams	G	Kcr
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
170.62	5406.68	1088.62	38.91	1	0.5	1

STRENGTH PROPERTIES

	Fbx+	Fbx-	Fby	Ft	Fvx	Fvy	Fc	Fc _⊥	Ex	Exmin	Ey	Eymin
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End				
		Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	18	0	18	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (32.8%)	204.8	304.8	18	D+S	1.15
Bending Stress Y (psi)	PASS (10.4%)	2268.8	2531.0	9	D+S	1.15
Deflection Y (in)	PASS (54.1%)	0.551	1.200 (=L/180)	9	S	
Bearing Stress (psi)	PASS (36.6%)	355.0	560.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	2880	20419	23299
B	2880	20419	23299

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	38.91	38.91	0	18	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Rafters #1	B	140.5282	140.5282	0	18	Dead	Y
Uniform (lbf/ft)	Rafters #1	B	140.5282	140.5282	0	18	Dead	Y
Uniform (lbf/ft)	Rafters #1	B	1134.375	1134.375	0	18	Snow	Y

Linked Load List CONT.

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Rafters #1	B	1134.375	1134.375	0	18	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #16	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Structural Composite Lumber		
Weyerhaeuser	2.0E Microlam LVL	(2) 1.75 X 11.25	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 7 Member Slope (in): 0/12 Actual Length (ft): 7

Area	I _x	I _y	BSW	Lams	C _{fn}	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
39.38	415.28	10.05	11.48	2	7.35	1

STRENGTH PROPERTIES

	F _b (psi)	F _t (psi)	F _v (psi)	F _c (psi)	F _c ⊥ (psi)	E (psi) x10 ³	E _{min} (psi) x10 ³
Base Values	2600	1895	285	2510	750	2000	1016.535
Adjusted Values	2600	1895	285	2510	750	2000	1017
C _M	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1

Bending Adjustment Factors C_V = 1.01 C_r = 1 Volume factor is applied on a load combination basis And is Not reflected in the adjusted values**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End				
		Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	7	0	7	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (16.4%)	273.9	327.8	0	D+S	1.15
Bending Stress Y (psi)	PASS (30.9%)	2084.4	3016.4	3.5	D+S	1.15
Deflection Y (in)	PASS (76.5%)	0.110	0.467 (=L/180)	3.36	S	
Bearing Stress (psi)	PASS (8.7%)	684.9	750.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	SNOW	TOTAL
A	757	4	6435	7196
B	400	4	3285	3689

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Uniform	1	1	0	7	Live	Y
Self Weight (lbf/ft)	-	11.48	11.48	0	7	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Trusses #8	B	204.0003	204.0003	0	3.5	Dead	Y
Uniform (lbf/ft)	Trusses #8	B	1799.997	1799.997	0	3.5	Snow	Y
Point (lbf)	7/22/25 Girder #2	B	361.7031	-	3.5	-	Dead	Y

Linked Load List CONT.

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Point (lbf)	Girder #2	B	3419.108	-	3.5	-	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #17	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 5.125 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 10 Member Slope (in): 0/12 Actual Length (ft): 10

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
92.25	2490.75	201.92	21.04	1	0.5	1

STRENGTH PROPERTIES

	F _{bx} +	F _{bx} -	F _{by}	F _t	F _{vx}	F _{vy}	F _c	F _c ⊥	E _x	E _{xmin}	E _y	E _{ymin}
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End				
		Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	10	0	10	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (8.1%)	280.0	304.8	0	D+S	1.15
Bending Stress Y (psi)	PASS (32.4%)	1867.0	2760.0	5	D+S	1.15
Deflection Y (in)	PASS (76.9%)	0.154	0.667 (=L/180)	5	S	
Bearing Stress (psi)	PASS (20.0%)	448.1	560.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	1848	15375	17223
B	1848	15375	17223

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Uniform	975	975	0	10	Snow	Y
Uniform (lbf/ft)	Uniform	110.5	110.5	0	10	Dead	Y
Self Weight (lbf/ft)	-	21.04	21.04	0	10	Dead	Y

Linked Load List								
Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Trusses #9	B	237.9993	237.9993	0	10	Dead	Y
Uniform (lbf/ft)	Trusses #9	B	2100	2100	0	10	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #18	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 5.5 X 15	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 12.5 Member Slope (in): 0/12 Actual Length (ft): 12.5

Area	Ix	Iy	BSW	Lams	G	Kcr
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
82.5	1546.88	207.97	18.82	1	0.5	1

STRENGTH PROPERTIES

	Fbx+	Fbx-	Fby	Ft	Fvx	Fvy	Fc	Fc _⊥	Ex	Exmin	Ey	Eymin
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End				
		Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	12.5	0	12.5	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (22.6%)	235.9	304.8	0	D+S	1.15
Bending Stress Y (psi)	PASS (14.5%)	2359.4	2760.0	6.25	D+S	1.15
Deflection Y (in)	PASS (56.2%)	0.365	0.833 (=L/180)	6.25	S	
Bearing Stress (psi)	PASS (23.4%)	429.0	560.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	SNOW	TOTAL
A	1427	6	11550	12983
B	1427	6	11550	12983

Reaction Location

A

B

CONNECTORS

(All connectors are Simpson Strong-Tie connectors)*

Support A	Model	Type	Adequacy (%)	Header Fastening (in)	Joist Nails (in)	Nailer Thickness (in)
Primary	HGU5.62-SDS	Hanger	1.39	(36) 1/4 x 2.5 SDS	(24) 1/4 x 2.5 SDS	N/A

Hanger at support A has seat sloped 0 degrees, skewed 0 degrees.

WSR = web stiffeners required

*Capacity values are adjusted based on specific gravity when members use grades other than those specified in Simpson Strong-Tie's capacity tables.

7/22/25



LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb/ft)	Uniform	1	1	0	12.5	Live	Y
Self Weight (lb/ft)	-	18.82	18.82	0	12.5	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb/ft)	Trusses #10	C	209.4401	209.4401	0	12.5	Dead	Y
Uniform (lb/ft)	Trusses #10	C	1848.001	1848.001	0	12.5	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #19	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	AISC:	AISC 360-16
MATERIAL:	Steel		
W Shapes	W24x84	A992-50	

BEAM PROPERTIES

Start (ft): 0 End (ft): 34 Member Slope (in): 0/12 Actual Length (ft): 34

Es x 10 ³	Fy x 10 ³	Fu x 10 ³	Area	Depth	tw	tf	bf	Ix	Iy	Zx	Zy	J	Cw
(psi)	(psi)	(psi)	(in ²)	(in)	(in)	(in)	(in)	(in ⁴)	(in ⁴)	(in ³)	(in ³)	(in ⁴)	(in ⁶)
29000	50	65	24.7	24.1	0.47	0.77	9.02	2370	94.4	224	32.6	3.7	12800

DESIGN PROPERTIES

Lp	Lr	Flange	Web	Flange	Web		
(in)	(in)	Flexure	Flexure	Compression	Compression	Cv	Cv_WA
83	244	Compact	Compact	Non-Slender	Slender	1	1

BEAM DATA

		Unbraced Length		Beam End								
Span	Length (ft)	Top	Bottom	Elev. Diff	Pnt/ft	Pnc/ft	Mn/ft	Mn-OOP/ft	Vn/ft	Vn-OOP/ft	Cb	Cb-OOP
1	34	0	34	0	0	0	0	0	0	0	0	0

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Shear Force Y (lbf)	PASS (84.1%)	-35970.8	226540.0	34	G2-1	D+S
Moment Y (lbf-ft)	PASS (31.5%)	383054.6	558882.2	12.58	F2-1	D+S
Deflection Y (in)	PASS (58.2%)	0.948	2.267 (=L/180)	16.66		S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	SNOW	TOTAL
A	4709	21	27682	32412
B	5015	19	30956	35990

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Uniform	1	1	0	34	Live	Y
Self Weight (lbf/ft)	-	84	84	0	34	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Trusses #11	B	163.3702	163.3702	12	34	Dead	Y
Uniform (lbf/ft)	Trusses #11	B	1441.501	1441.501	12	34	Snow	Y
Point (lbf)	Beam #17	A	1847.694	-	12	-	Dead	Y
Point (lbf)	Beam #17	A	15375	-	12	-	Snow	Y
Point (lbf)	Beam #18	B	1426.599	-	12	-	Dead	Y
Point (lbf)	Beam #18	B	6.25	-	12	-	Live	Y
Point (lbf)	Beam #18	B	11550.01	-	12	-	Snow	Y

7/22/25

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**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #20	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Structural Composite Lumber		
Weyerhaeuser	2.0E Microlam LVL	(3) 1.75 X 9.25	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 8 Member Slope (in): 0/12 Actual Length (ft): 8

Area	I _x	I _y	BSW	Lams	C _{fn}	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lb/ft)			Creep Factor
48.56	346.26	12.39	14.16	3	7.35	1

STRENGTH PROPERTIES

	F _b (psi)	F _t (psi)	F _v (psi)	F _c (psi)	F _c ⊥ (psi)	E (psi) x10 ³	E _{min} (psi) x10 ³
Base Values	2600	1895	285	2510	750	2000	1016.535
Adjusted Values	2600	1895	285	2510	750	2000	1017
C _M	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1

Bending Adjustment Factors C_V = 1.04 C_r = 1 Volume factor is applied on a load combination basis And is Not reflected in the adjusted values**BEAM DATA**

		Unbraced Length (ft)		Beam End				
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	8	0	8	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (39.0%)	200.0	327.8	0	D+S	1.15
Bending Stress Y (psi)	PASS (33.0%)	2076.0	3097.8	4	D+S	1.15
Deflection Y (in)	PASS (64.0%)	0.192	0.533 (=L/180)	4	S	
Bearing Stress (psi)	PASS (45.2%)	411.2	750.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	SNOW	TOTAL
A	710	4	5766	6480
B	710	4	5766	6480

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb/ft)	Uniform	1	1	0	8	Live	Y
Self Weight (lb/ft)	-	14.16	14.16	0	8	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb/ft)	Trusses #11	B	163.3702	163.3702	0	8	Dead	Y
Uniform (lb/ft)	Trusses #11	B	1441.501	1441.501	0	8	Snow	Y

7/22/25

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**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #21	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Structural Composite Lumber		
Weyerhaeuser	2.0E Microlam LVL	(3) 1.75 X 11.25	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 8 Member Slope (in): 0/12 Actual Length (ft): 8

Area	I _x	I _y	BSW	Lams	C _{fn}	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lb/ft)			Creep Factor
59.06	622.92	15.07	17.23	3	7.35	1

STRENGTH PROPERTIES

	F _b (psi)	F _t (psi)	F _v (psi)	F _c (psi)	F _c ⊥ (psi)	E (psi) x10 ³	E _{min} (psi) x10 ³
Base Values	2600	1895	285	2510	750	2000	1016.535
Adjusted Values	2600	1895	285	2510	750	2000	1017
C _M	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1

Bending Adjustment Factors C_V = 1.01 C_r = 1 Volume factor is applied on a load combination basis And is Not reflected in the adjusted values**BEAM DATA**

		Unbraced Length (ft)		Beam End				
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	8	0	8	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (14.2%)	281.1	327.8	0	D+S	1.15
Bending Stress Y (psi)	PASS (20.5%)	2399.0	3016.4	4	D+S	1.15
Deflection Y (in)	PASS (66.2%)	0.180	0.533 (=L/180)	4	S	
Bearing Stress (psi)	PASS (37.5%)	468.5	750.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	SNOW	TOTAL
A	1331	4	9739	11074
B	1331	4	9739	11074

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Uniform	1	1	0	8	Live	Y
Self Weight (lbf/ft)	-	17.23	17.23	0	8	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Rafters #4	C	215.3527	215.3527	0	8	Dead	Y
Uniform (lbf/ft)	Rafters #4	C	1551.16	1551.16	0	8	Snow	Y
Uniform (lbf/ft)	Trusses #11	A	100.13	100.13	0	8	Dead	Y

Linked Load List CONT.

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Trusses #11	A	883.4998	883.4998	0	8	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #22	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 8.75 X 39	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 31 Member Slope (in): 0/12 Actual Length (ft): 31

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
341.25	43253.44	2177.25	77.83	1	0.5	1

STRENGTH PROPERTIES

	F _{bx} +	F _{bx} -	F _{by}	F _t	F _{vx}	F _{vy}	F _c	F _c ⊥	E _x	E _{xmin}	E _y	E _{ymin}
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End				
		Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	31	0	31	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (32.8%)	204.7	304.8	31	D+S	1.15
Bending Stress Y (psi)	PASS (7.2%)	2074.6	2236.5	14.57	D+S	1.15
Deflection Y (in)	PASS (65.1%)	0.721	2.067 (=L/180)	15.5	S	
Bearing Stress (psi)	PASS (9.2%)	508.5	560.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	SNOW	TOTAL
A	6002	14	36266	42282
B	6416	5	40156	46577

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Uniform	1	1	0	12	Live	Y
Self Weight (lbf/ft)	-	77.83	77.83	0	31	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Rafters #3	C	215.3527	215.3527	0	31	Dead	Y
Uniform (lbf/ft)	Rafters #3	C	1551.16	1551.16	0	31	Snow	Y
Uniform (lbf/ft)	Trusses #11	A	100.13	100.13	12	31	Dead	Y
Uniform (lbf/ft)	Trusses #11	A	883.4998	883.4998	12	31	Snow	Y
Point (lbf)	Beam #18	A	1426.599	-	12	-	Dead	Y
Point (lbf)	Beam #18	A	6.25	-	12	-	Live	Y
Point (lbf)	Beam #18	A	11550.01	-	12	-	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #23	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(5) 6.75 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 12 Member Slope (in): 0/12 Actual Length (ft): 12

Area	Ix	Iy	BSW	Lams	G	Kcr
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
607.5	16402.5	2306.6	138.55	5	0.5	1

STRENGTH PROPERTIES

	Fbx+	Fbx-	Fby	Ft	Fvx	Fvy	Fc	Fc _⊥	Ex	Exmin	Ey	Eymin
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End		CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
		Top	Bottom	Elev. Diff (ft)					
1	9	0	9	0					
2	3	0	3	0					

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (92.9%)	21.6	304.8	9	D+S	1.15
Bending Stress Y (psi)	PASS (96.6%)	92.0	2726.7	3.96	D+S	1.15
Deflection Y (in)	PASS (99.1%)	0.005	0.600 (=L/180)	4.32	S	
Bearing Stress (psi)	PASS (37.0%)	376.6	598.2	9	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	1339	5651	6990
B	2678	11302	13980
C	0	0	0

Reaction Location

A

B

C

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	138.55	138.55	0	12	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Rafters #5	B	196.1809	196.1809	0	12	Dead	Y
Uniform (lbf/ft)	Rafters #5	B	1412.766	1412.766	0	12	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #24	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 6.75 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 12 Member Slope (in): 0/12 Actual Length (ft): 12

Area	Ix	Iy	BSW	Lams	G	Kcr
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
121.5	3280.5	461.32	27.71	1	0.5	1

STRENGTH PROPERTIES

	Fbx+	Fbx-	Fby	Ft	Fvx	Fvy	Fc	Fc _⊥	Ex	Exmin	Ey	Eymin
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End		CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
		Top	Bottom	Elev. Diff (ft)					
1	9	0	9	0					
2	3	0	3	0					

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (44.5%)	169.0	304.8	9	D+S	1.15
Bending Stress Y (psi)	PASS (73.6%)	721.1	2726.7	3.96	D+S	1.15
Deflection Y (in)	PASS (92.7%)	0.044	0.600 (=L/180)	4.32	S	
Bearing Stress (psi)	PASS (22.7%)	432.7	560.0	9	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	1433	9520	10953
B	2865	19041	21906
C	0	0	0

Reaction Location

A B C

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	27.71	27.71	0	12	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Rafters #4	C	215.3527	215.3527	0	12	Dead	Y
Uniform (lbf/ft)	Rafters #4	C	1551.16	1551.16	0	12	Snow	Y
Uniform (lbf/ft)	Rafters #5	A	115.0816	115.0816	0	12	Dead	Y
Uniform (lbf/ft)	Rafters #5	A	828.9044	828.9044	0	12	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #25	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 6.75 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 17.5 Member Slope (in): 0/12 Actual Length (ft): 17.5

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
121.5	3280.5	461.32	27.71	1	0.5	1

STRENGTH PROPERTIES

	F _{bx} +	F _{bx} -	F _{by}	F _t	F _{vx}	F _{vy}	F _c	F _c ⊥	E _x	E _{xmin}	E _y	E _{ymin}
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End				
		Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	14.5	0	14.5	0				
2	3	0	3	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (28.0%)	219.3	304.8	14.35	D+S	1.15
Bending Stress Y (psi)	PASS (27.6%)	1900.4	2625.8	7	D+S	1.15
Shear Stress X (psi)	PASS (99.8%)	0.5	264.5	14.35	D+S	1.15
Bending Stress X (psi)	PASS (99.4%)	10.8	1666.6	7	D+S	1.15
Deflection Y (in)	PASS (53.5%)	0.186	0.400 (=L/180)	17.5	S	
Deflection X (in)	PASS (99.1%)	0.004	0.400 (=L/180)	17.5	S	
Bearing Stress (psi)	PASS (10.7%)	500.1	560.0	14.5	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	2198	14440	16638
B	3344	21974	25318
C	0	0	0
X axis			
A	0	35	35
B	0	54	54
C	0	0	0

Reaction Location

A

7/22/25

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C

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	27.71	27.71	0	17.5	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Rafters #4	B	288.9634	288.9634	0	17.5	Dead	Y
Uniform (lbf/ft)	Rafters #4	B	-5.08889	-5.08889	0	17.5	Snow	X
Uniform (lbf/ft)	Rafters #4	B	2080.758	2080.758	0	17.5	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #26	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 6.75 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 17.5 Member Slope (in): 0/12 Actual Length (ft): 17.5

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
121.5	3280.5	461.32	27.71	1	0.5	1

STRENGTH PROPERTIES

	F _{bx} +	F _{bx} -	F _{by}	F _t	F _{vx}	F _{vy}	F _c	F _c ⊥	E _x	E _{xmin}	E _y	E _{ymin}
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1
Bending Adjustment Factors	C _{vr} = 1											

BEAM DATA

Span	Length (ft)	Unbraced Length (ft)		Beam End		CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
		Top	Bottom	Elev. Diff (ft)					
1	14.5	0	14.5	0					
2	3	0	3	0					

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (77.4%)	69.0	304.8	14.35	D+S	1.15
Bending Stress Y (psi)	PASS (77.2%)	597.7	2625.8	7	D+S	1.15
Deflection Y (in)	PASS (85.7%)	0.057	0.400 (=L/180)	17.5	S	
Bearing Stress (psi)	PASS (71.9%)	157.3	560.0	14.5	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	807	4426	5233
B	1228	6735	7963
C	0	0	0

Reaction Location

A

B

C

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	27.71	27.71	0	17.5	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Rafters #6	D	88.54538	88.54538	0	17.5	Dead	Y
Uniform (lbf/ft)	Rafters #6	D	637.7818	637.7818	0	17.5	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #27	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 6.75 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 15.5 Member Slope (in): 0/12 Actual Length (ft): 15.5

Area	Ix	Iy	BSW	Lams	G	Kcr
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
121.5	3280.5	461.32	27.71	1	0.5	1

STRENGTH PROPERTIES

	Fbx+	Fbx-	Fby	Ft	Fvx	Fvy	Fc	Fc _⊥	Ex	Exmin	Ey	Eymin
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1
Bending Adjustment Factors	C _{vr} = 1											

BEAM DATA

Span	Length (ft)	Unbraced Length (ft)		Beam End		CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
		Top	Bottom	Elev. Diff (ft)					
1	12.5	0	12.5	0					
2	3	0	3	0					

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (28.8%)	217.0	304.8	12.4	D+S	1.15
Bending Stress Y (psi)	PASS (42.0%)	1541.9	2657.8	5.89	D+S	1.15
Deflection Y (in)	PASS (69.5%)	0.122	0.400 (=L/180)	15.5	S	
Bearing Stress (psi)	PASS (8.5%)	512.5	560.0	12.5	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	2082	13821	15903
B	3397	22550	25947
C	0	0	0

Reaction Location

A

B

C

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	27.71	27.71	0	15.5	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Rafters #6	C	325.7747	325.7747	0	15.5	Dead	Y
Uniform (lbf/ft)	Rafters #6	C	2346.517	2346.517	0	15.5	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #28	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 6.75 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 9.5 Member Slope (in): 0/12 Actual Length (ft): 9.5

Area	Ix	Iy	BSW	Lams	G	Kcr
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
121.5	3280.5	461.32	27.71	1	0.5	1

STRENGTH PROPERTIES

	Fbx+	Fbx-	Fby	Ft	Fvx	Fvy	Fc	Fc _⊥	Ex	Exmin	Ey	Eymin
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End		CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
		Top	Bottom	Elev. Diff (ft)					
1	6.5	0	6.5	0					
2	3	0	3	0					

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (75.3%)	75.1	304.8	6.46	D+S	1.15
Bending Stress Y (psi)	PASS (89.4%)	223.0	2111.5	6.46	D+S	1.15
Deflection Y (in)	PASS (98.9%)	0.005	0.433 (=L/180)	2.85	S	
Bearing Stress (psi)	PASS (61.8%)	213.9	560.0	6.5	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	549	3440	3989
B	1489	9337	10826
C	0	0	0

Reaction Location

A

B

C

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	27.71	27.71	0	9.5	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Rafters #6	B	186.7551	186.7551	0	9.5	Dead	Y
Uniform (lbf/ft)	Rafters #6	B	1344.989	1344.989	0	9.5	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #29	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 6.75 X 24	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 13 Member Slope (in): 0/12 Actual Length (ft): 13

Area	Ix	Iy	BSW	Lams	G	Kcr
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
162	7776	615.09	36.95	1	0.5	1

STRENGTH PROPERTIES

	Fbx+	Fbx-	Fby	Ft	Fvx	Fvy	Fc	Fc _⊥	Ex	Exmin	Ey	Eymin
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End		CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
		Top	Bottom	Elev. Diff (ft)					
1	13	0	13	0					

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (7.1%)	283.0	304.8	13	D+S	1.15
Bending Stress Y (psi)	PASS (37.1%)	1651.9	2628.3	6.89	D+S	1.15
Shear Stress X (psi)	PASS (99.9%)	0.3	264.5	0	D+S	1.15
Bending Stress X (psi)	PASS (99.6%)	7.1	1667.1	6.5	D+S	1.15
Deflection Y (in)	PASS (80.2%)	0.172	0.867 (=L/180)	6.63	S	
Bearing Stress (psi)	PASS (14.9%)	476.7	560.0	13	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	3303	22764	26067
B	3647	26922	30569
X axis			
A	0	33	33
B	0	33	33

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	36.95	36.95	0	13	Dead	Y
	7/22/25						

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Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Rafters #3	B	288.9634	288.9634	0	13	Dead	Y
Uniform (lbf/ft)	Rafters #3	B	-5.08889	-5.08889	0	13	Snow	X
Uniform (lbf/ft)	Rafters #3	B	2080.758	2080.758	0	13	Snow	Y
Uniform (lbf/ft)	Rafters #8	B	164.9242	164.9242	0	11	Dead	Y
Uniform (lbf/ft)	Rafters #8	B	1236.932	1236.932	0	11	Snow	Y
Point (lbf)	Girder #4	B	899.1998	-	11	-	Dead	Y
Point (lbf)	Girder #4	B	9029.486	-	11	-	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #30	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 6.75 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 9.5 Member Slope (in): 0/12 Actual Length (ft): 9.5

Area	Ix	Iy	BSW	Lams	G	Kcr
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
121.5	3280.5	461.32	27.71	1	0.5	1

STRENGTH PROPERTIES

	Fbx+	Fbx-	Fby	Ft	Fvx	Fvy	Fc	Fc _⊥	Ex	Exmin	Ey	Eymin
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End				
		Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	9.5	0	9.5	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (9.9%)	274.6	304.8	9.5	D+S	1.15
Bending Stress Y (psi)	PASS (37.3%)	1729.5	2760.0	4.75	D+S	1.15
Shear Stress X (psi)	PASS (99.9%)	0.3	264.5	0	D+S	1.15
Bending Stress X (psi)	PASS (99.7%)	5.0	1667.0	4.75	D+S	1.15
Deflection Y (in)	PASS (80.0%)	0.127	0.633 (=L/180)	4.75	S	
Bearing Stress (psi)	PASS (21.5%)	439.4	560.0	9.5	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	2293	16840	19133
B	2609	19634	22243
X axis			
A	0	24	24
B	0	24	24

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	27.71	27.71	0	9.5	Dead	Y

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Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Rafters #3	B	288.9634	288.9634	0	9.5	Dead	Y
Uniform (lbf/ft)	Rafters #3	B	-5.08889	-5.08889	0	9.5	Snow	X
Uniform (lbf/ft)	Rafters #3	B	2080.758	2080.758	0	9.5	Snow	Y
Uniform (lbf/ft)	Trusses #12	C	235.268	235.268	2.5	9.5	Dead	Y
Uniform (lbf/ft)	Trusses #12	C	2075.894	2075.894	2.5	9.5	Snow	Y
Point (lbf)	Girder #3	B	246.5	-	2.5	-	Dead	Y
Point (lbf)	Girder #3	B	2175	-	2.5	-	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #31	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 5.5 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 8.5 Member Slope (in): 0/12 Actual Length (ft): 8.5

Area	Ix	Iy	BSW	Lams	G	Kcr
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
99	2673	249.56	22.58	1	0.5	1

STRENGTH PROPERTIES

	Fbx+	Fbx-	Fby	Ft	Fvx	Fvy	Fc	Fc _⊥	Ex	Exmin	Ey	Eymin
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End		CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
		Top	Bottom	Elev. Diff (ft)					
1	8.5	0	8.5	0					

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (4.8%)	290.1	304.8	0	D+S	1.15
Bending Stress Y (psi)	PASS (40.8%)	1633.0	2760.0	4.25	D+S	1.15
Shear Stress X (psi)	PASS (99.9%)	0.3	264.5	0	D+S	1.15
Bending Stress X (psi)	PASS (99.6%)	6.1	1667.2	4.25	D+S	1.15
Deflection Y (in)	PASS (83.0%)	0.096	0.567 (=L/180)	4.25	S	
Bearing Stress (psi)	PASS (17.1%)	464.1	560.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	2238	16907	19145
B	2046	15210	17256
X axis			
A	0	22	22
B	0	22	22

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	22.58	22.58	0	8.5	Dead	Y
	7/22/25						

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Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Rafters #3	B	288.9634	288.9634	0	8.5	Dead	Y
Uniform (lbf/ft)	Rafters #3	B	-5.08889	-5.08889	0	8.5	Snow	X
Uniform (lbf/ft)	Rafters #3	B	2080.758	2080.758	0	8.5	Snow	Y
Uniform (lbf/ft)	Trusses #13	C	218.0578	218.0578	0	7.5	Dead	Y
Uniform (lbf/ft)	Trusses #13	C	1924.04	1924.04	0	7.5	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #32	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 6.75 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 18.5 Member Slope (in): 0/12 Actual Length (ft): 18.5

Area	Ix	Iy	BSW	Lams	G	Kcr
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
121.5	3280.5	461.32	27.71	1	0.5	1

STRENGTH PROPERTIES

	Fbx+	Fbx-	Fby	Ft	Fvx	Fvy	Fc	Fc _⊥	Ex	Exmin	Ey	Eymin
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End		CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
		Top	Bottom	Elev. Diff (ft)					
1	4	0	4	0					
2	2	0	2	0					
3	12.5	0	12.5	0					

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (31.5%)	208.8	304.8	6.105	D+S	1.15
Bending Stress Y (psi)	PASS (41.2%)	1184.4	2012.8	5.92	D+S	1.15
Deflection Y (in)	PASS (89.0%)	0.092	0.833 (=L/180)	12.95	S	
Bearing Stress (psi)	PASS (41.5%)	327.5	560.0	6	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	0	0	0
B	280	1849	2129
C	3813	24927	28740
D	1238	7931	9169

Reaction Location

A B C D

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	27.71	27.71	0	18.5	Dead	Y

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Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Rafters #2	B	275.3323	275.3323	0	17.5	Dead	Y
Uniform (lbf/ft)	Rafters #2	B	1983.228	1983.228	0	17.5	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #33	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 6.75 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 18 Member Slope (in): 0/12 Actual Length (ft): 18

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
121.5	3280.5	461.32	27.71	1	0.5	1

STRENGTH PROPERTIES

	F _{bx} +	F _{bx} -	F _{by}	F _t	F _{vx}	F _{vy}	F _c	F _c ⊥	E _x	E _{xmin}	E _y	E _{ymin}
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1
Bending Adjustment Factors	C _{vr} = 1											

BEAM DATA

Span	Length (ft)	Unbraced Length (ft)		Beam End		CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
		Top	Bottom	Elev. Diff (ft)					
1	3.5	0	3.5	0					
2	2	0	2	0					
3	12.5	0	12.5	0					

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (23.4%)	233.3	304.8	5.58	D+S	1.15
Bending Stress Y (psi)	PASS (34.6%)	1319.3	2018.3	5.58	D+S	1.15
Deflection Y (in)	PASS (87.7%)	0.103	0.833 (=L/180)	12.42	S	
Bearing Stress (psi)	PASS (29.4%)	395.4	560.0	5.5	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	0	0	0
B	-225	-1485	-1710
C	4561	30132	34693
D	1636	10811	12447

Reaction Location

A	B	C	D
---	---	---	---

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	27.71	27.71	0	18	Dead	Y

7/22/25

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Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Rafters #2	C	304.1057	304.1057	0	18	Dead	Y
Uniform (lbf/ft)	Rafters #2	C	2192.102	2192.102	0	18	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #34	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Structural Composite Lumber		
Weyerhaeuser	2.0E Microlam LVL	(2) 1.75 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 19.5 Member Slope (in): 0/12 Actual Length (ft): 19.5

Area	I _x	I _y	BSW	Lams	C _{fn}	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
63	1701	16.08	18.38	2	7.35	1

STRENGTH PROPERTIES

	F _b (psi)	F _t (psi)	F _v (psi)	F _c (psi)	F _{c⊥} (psi)	E (psi) x10 ³	E _{min} (psi) x10 ³
Base Values	2600	1895	285	2510	750	2000	1016.535
Adjusted Values	2600	1895	285	2510	750	2000	1017
C _M	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1

Bending Adjustment Factors C_V = 0.95C_r = 1 Volume factor is applied on a load combination basis And is Not reflected in the adjusted values**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End				
		Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	3	0	3	0				
2	16.5	0	16.5	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (69.8%)	99.0	327.8	2.925	D+S	1.15
Bending Stress Y (psi)	PASS (82.5%)	392.5	2238.7	3.12	D+S	1.15
Deflection Y (in)	PASS (97.4%)	0.010	0.400 (=L/180)	0	S	
Bearing Stress (psi)	PASS (64.6%)	265.5	750.0	3	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	0	0	0
B	752	5288	6040
C	102	900	1002

Reaction Location

A B C

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Uniform	150	150	3	19.5	Snow	Y
Self Weight (lbf/ft)	-	18.38	18.38	0	19.5	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb/ft)	Rafters #9	A	165	165	0	3	Dead	Y
Uniform (lb/ft)	Rafters #9	A	1237.5	1237.5	0	3	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design		
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis		
CUSTOMER:		REVIEWED BY:	Stephen Curtis		
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins		
	--				
LEVEL:	Roof	LOADING:	ASD		
MEMBER NAME:	Rafters #9	CODE:	2018 International Building Code		
MEMBER TYPE:	ROOF RAFTER	NDS:	2018 NDS		
MATERIAL:	I-Joists				
Weyerhaeuser	TJI 360	(1) 20	16 (in) O.C.	DRY	

BEAM PROPERTIES

Start (ft): 0 End (ft): 16.5 Member Slope (in): 0/12 Actual Length (ft): 16.5 Roof Pitch (in): 0/12 O.C. Spacing (in): 16

						End Rcap	End Rcap	End Rcap	End Rcap	Int Rcap	Int Rcap	Int Rcap	Int Rcap
El x 10 ⁶	BSW	Lams	K x 10 ⁶	Mcap	Vcap	1.75 NS	3.5 NS	1.75 WS	3.5 WS	3.5 NS	5.25 NS	3.5 WS	5.25 WS
(lb-ft-in ²)	(lb-ft)		(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)	(lb-ft)
1376	4	1	4.5	10515	2660	1080	1505	1440	1865	2460	3000	2815	3360

BEAM DATA

		Unbraced Length (ft)		Beam End
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)
1	16.5	0	16.5	0

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Force (lb-ft)	PASS (38.9%)	1870.0	3059.0	0	D+S	1.15
Bending Moment (lb-ft)	PASS (36.2%)	7713.8	12092.3	8.25	D+S	1.15
Deflection Y (in)	PASS (78.0%)	0.242	1.100 (=L/180)	8.25	S	
Bearing Load (lb-ft)	PASS (12.8%)	1870.0	2144.8	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	220	1650	1870
B	220	1650	1870

Reaction Location WS-Web Stiffener Required NSR-No Stiffener Required

A

B

NSR

NSR

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb-ft/ft ²)	Uniform	150	150	0	16.5	Snow	Y
Uniform (lb-ft/ft ²)	Uniform	17	17	0	16.5	Dead	Y
Self Weight (lb-ft/ft)	-	4	4	0	16.5	Dead	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Roof	LOADING:	ASD
MEMBER NAME:	Beam #35	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Structural Composite Lumber		
Weyerhaeuser	2.0E Microlam LVL	(3) 1.75 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 18.5 Member Slope (in): 0/12 Actual Length (ft): 18.5

Area	I _x	I _y	BSW	Lams	C _{fn}	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
94.5	2551.5	24.12	27.56	3	7.35	1

STRENGTH PROPERTIES

	F _b (psi)	F _t (psi)	F _v (psi)	F _c (psi)	F _c ⊥ (psi)	E (psi) x10 ³	E _{min} (psi) x10 ³
Base Values	2600	1895	285	2510	750	2000	1016.535
Adjusted Values	2600	1895	285	2510	750	2000	1017
C _M	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1

Bending Adjustment Factors C_V = 0.95C_r = 1 Volume factor is applied on a load combination basis And is Not reflected in the adjusted values**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End				
		Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	6	0	6	0				
2	12.5	0	12.5	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (29.8%)	230.2	327.8	5.92	D+S	1.15
Bending Stress Y (psi)	PASS (9.0%)	2573.6	2829.5	5.92	D+S	1.15
Deflection Y (in)	PASS (43.8%)	0.450	0.800 (=L/180)	0	S	
Bearing Stress (psi)	PASS (3.5%)	724.0	750.0	6	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	0	0	0
B	3748	24759	28507
C	565	3412	3977

Reaction Location

A B C

LOAD LIST

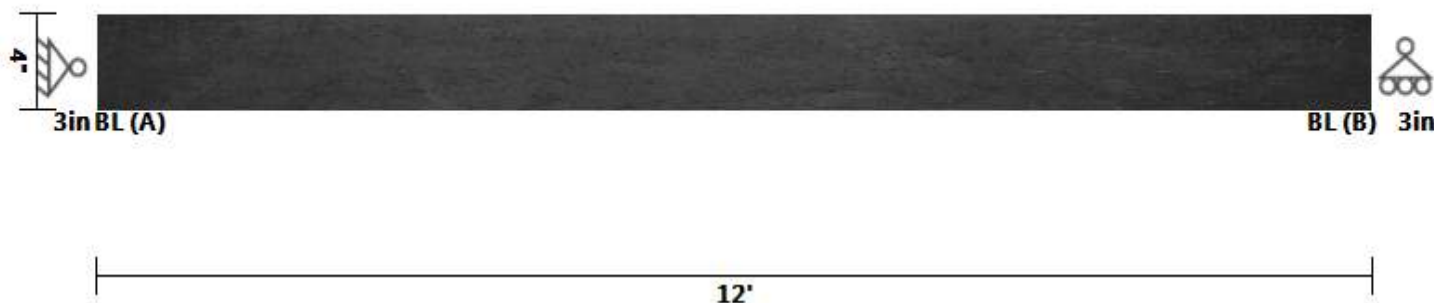
Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	27.56	27.56	0	18.5	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Rafters #8	A	164.9242	164.9242	0	18.5	Dead	Y
Uniform (lbf/ft)	Rafters #8	A	1236.932	1236.932	0	18.5	Snow	Y
Point (lbf)	Beam #34	B	751.7303	-	0	-	Dead	Y
Point (lbf)	Beam #34	B	5287.501	-	0	-	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Headers - 1st Level	LOADING:	ASD
MEMBER NAME:	Column Bm #19-2	CODE:	2018 International Building Code
MEMBER TYPE:	COLUMN	AISC:	AISC 360-16
MATERIAL:	Steel		
HSS Square	HSS4x4x.188	A500 Gr.B-46	

Column Bm #19-2 DIAGRAM**COLUMN PROPERTIES**

Start (ft): 0 End (ft): 12

Es x10 ³	Fy x10 ³	Fu x10 ³	Area	Ix	Iy	Zx	Zy	J	Cw
(psi)	(psi)	(psi)	(in ²)	(in ⁴)	(in ⁴)	(in ³)	(in ³)	(in ⁴)	(in ⁶)
29000	46	58	2.58	6.21	6.21	3.67	3.67	10	0

DESIGN PROPERTIES

Lp	Lr	Flange	Web	Flange	Web	Cv	Cv_WA
(in)	(in)	Flexure	Flexure	Compression	Compression		
176	4575	Compact	Compact	Non-Slender	Non-Slender	1	1

COLUMN DATA

		Unbraced Length		Column End							
Span	Length (ft)	Top	Bottom	Elev. Diff	Pnt/u	Pnc/u	Mn/u	Mn-OOP/u	Vn/u	Vn-OOP/u	Cb
1	12	0	0	0	0	0	0	0	0	0	0

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Compressive Force (lbf)	PASS (24.0%)	36083.9	47485.3	0	E3-1	D+S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Z axis	DEAD	LIVE	SNOW	TOTAL
A	5128	19	30956	36103
B	0	0	0	0

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	9.42	9.42	0	12	Dead	Z

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Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Axial (lbf)	Beam #19	B	-5014.967	-5014.967	12	12	Dead	Z
Axial (lbf)	Beam #19	B	-19.20589	-19.20589	12	12	Live	Z
Axial (lbf)	Beam #19	B	-30955.89	-30955.89	12	12	Snow	Z

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Headers - 1st Level	LOADING:	ASD
MEMBER NAME:	Header #10	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	AISC:	AISC 360-16
MATERIAL:	Steel		
MC Shapes	MC4x13.8	A992-50	

BEAM PROPERTIES

Start (ft): 0 End (ft): 16 Member Slope (in): 0/12 Actual Length (ft): 16

Es x 10 ³	Fy x 10 ³	Fu x 10 ³	Area	Depth	tw	tf	bf	Ix	Iy	Zx	Zy	J	Cw
(psi)	(psi)	(psi)	(in ²)	(in)	(in)	(in)	(in)	(in ⁴)	(in ⁴)	(in ³)	(in ³)	(in ⁴)	(in ⁶)
29000	50	65	4.03	4	0.5	0.5	2.5	8.85	2.13	5.53	2.4	0.373	4.84

DESIGN PROPERTIES

Lp	Lr	Flange	Web	Flange	Web		
(in)	(in)	Flexure	Flexure	Compression	Compression	Cv	Cv_WA
31	326	Compact	Compact	Non-Slender	Non-Slender	1	1

BEAM DATA

		Unbraced Length		Beam End									
Span	Length (ft)	Top	Bottom	Elev. Diff	Pnt/ι	Pnc/ι	Mn/ι	Mn-OOP/ι	Vn/ι	Vn-OOP/ι	Cb	Cb-OOP	
1	16	0	16	0	0	0	0	0	0	0	0	0	

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Shear Force Y (lbf)	PASS (99.2%)	270.4	35928.1	0	G2-1	D
Moment Y (lbf-ft)	PASS (92.2%)	1081.6	13797.4	8	F2-1	D
Deflection Y (in)	PASS (81.8%)	0.194	1.067 (=L/180)	8		D+L

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	TOTAL
A	270	270
B	270	270

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Uniform	20	20	0	16	Dead	Y
Self Weight (lbf/ft)	-	13.8	13.8	0	16	Dead	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Headers - 1st Level	LOADING:	ASD
MEMBER NAME:	Column Bm #29-1	CODE:	2018 International Building Code
MEMBER TYPE:	COLUMN	NDS:	2018 NDS
MATERIAL:	Solid Sawn		
Douglas Fir-Larch	No. 2	(1) 9.5 X 9.5	DRY

Column Bm #29-1 DIAGRAM**COLUMN PROPERTIES**

Start (ft): 0 End (ft): 12

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lb/ft)			Creep Factor
90.25	678.76	678.76	20.58	1	0.5	1

STRENGTH PROPERTIES

	F _b (psi)	F _t (psi)	F _v (psi)	F _c (psi)	F _c ⊥ (psi)	E (psi) x10 ³	E _{min} (psi) x10 ³
Base Values	750	475	170	700	625	1300	470
Adjusted Values	750	475	170	700	625	1300	470
C _M	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1
C _i	1	1	1	1	1	1	1
C _F	1	1	1	1	1	1	1

Bending Adjustment Factors C_{fu} = 1 C_r = 1**COLUMN DATA**

		Unbraced Length (ft)		Column End					
Span	Length (ft)	X	Y	Offset	CP	Ke (X Axis)	Ke (Y Axis)	KeL/d (X Axis)	KeL/d (Y Axis)
1	12	10	1	0	12.63	1.26			

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Compressive Stress (psi)	PASS (99.5%)	2.7	591.7	0	D	0.9

REACTIONS			Units for V: lbf	Units for M: lbf-ft
Z axis	DEAD	TOTAL		
A	247	247		
B	0	0		

Reaction Location

AB

LOAD LIST							
Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	20.58	20.58	0	12	Dead	Z

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Floor - 1st Level	LOADING:	ASD
MEMBER NAME:	Beam #36	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Solid Sawn		
Douglas Fir-Larch	No. 2	(1) 3.5 X 9.25	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 4.5 Member Slope (in): 0/12 Actual Length (ft): 4.5

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lb/ft)			Creep Factor
32.38	230.84	33.05	7.38	1	0.5	1

STRENGTH PROPERTIES

	F _b (psi)	F _t (psi)	F _v (psi)	F _c (psi)	F _c ⊥ (psi)	E (psi) x10 ³	E _{min} (psi) x10 ³
Base Values	900	575	180	1350	625	1600	580
Adjusted Values	1080	632	180	1350	625	1600	580
C _M	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1
C _i	1	1	1	1	1	1	1
C _F	1.2	1.1	1	1	1	1	1

Bending Adjustment Factors C_{fu} = 1 C_r = 1**BEAM DATA**

		Unbraced Length (ft)		Beam End				
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	4.5	4	4.5	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (42.4%)	103.8	180.0	4.5	D+L	1
Bending Stress Y (psi)	PASS (43.6%)	605.7	1073.0	2.25	D+L	1
Deflection Y (in)	PASS (91.7%)	0.025	0.300 (=L/180)	2.25	D+L	
Bearing Stress (psi)	PASS (81.4%)	116.3	625.0	0	D+L	1

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	TOTAL
A	604	1635	2239
B	604	1635	2239

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb/ft)	Uniform	1	1	0	4.5	Live	Y
Self Weight (lb/ft)	-	7.38	7.38	0	4.5	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Joists #2	B	261.2355	261.2355	0	4.5	Dead	Y
Uniform (lbf/ft)	Joists #2	B	725.6541	725.6541	0	4.5	Live	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Floor - 1st Level	LOADING:	ASD
MEMBER NAME:	Beam #37	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Solid Sawn		
Douglas Fir-Larch	Select Structural	(1) 3.5 X 9.25	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 4.5 Member Slope (in): 0/12 Actual Length (ft): 4.5

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
32.38	230.84	33.05	7.38	1	0.5	1

STRENGTH PROPERTIES

	F _b (psi)	F _t (psi)	F _v (psi)	F _c (psi)	F _c ⊥ (psi)	E (psi) x10 ³	E _{min} (psi) x10 ³
Base Values	1500	1000	180	1700	625	1900	690
Adjusted Values	1800	1100	180	1700	625	1900	690
C _M	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1
C _i	1	1	1	1	1	1	1
C _F	1.2	1.1	1	1	1	1	1

Bending Adjustment Factors C_{fu} = 0.86C_r = 1**BEAM DATA**

		Unbraced Length (ft)		Beam End				
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	4.5	0	4.5	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (58.4%)	75.0	180.0	4.5	D+L	1
Bending Stress Y (psi)	PASS (75.7%)	437.7	1800.0	2.25	D+L	1
Deflection Y (in)	PASS (95.0%)	0.015	0.300 (=L/180)	2.25	D+L	
Bearing Stress (psi)	PASS (78.9%)	132.1	625.0	0	D+L	1

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	TOTAL
A	441	1178	1619
B	441	1178	1619

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	7.38	7.38	0	4.5	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb/ft)	Joists #3	B	188.4075	188.4075	0	4.5	Dead	Y
Uniform (lb/ft)	Joists #3	B	523.3544	523.3544	0	4.5	Live	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Floor - 1st Level	LOADING:	ASD
MEMBER NAME:	Beam #38	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 5.5 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 19.5 Member Slope (in): 0/12 Actual Length (ft): 19.5

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
99	2673	249.56	22.58	1	0.5	1

STRENGTH PROPERTIES

	F _{bx} +	F _{bx} -	F _{by}	F _t	F _{vx}	F _{vy}	F _c	F _c ⊥	E _x	E _{xmin}	E _y	E _{ymin}
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End				
		Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	19.5	0	19.5	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (54.8%)	119.9	265.0	0	D+L	1
Bending Stress Y (psi)	PASS (32.4%)	1558.2	2305.4	9.75	D+L	1
Deflection Y (in)	PASS (57.8%)	0.549	1.300 (=L/180)	9.75	D+L	
Bearing Stress (psi)	PASS (53.3%)	261.5	560.0	0	D+L	1

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	TOTAL
A	2256	5655	7911
B	2256	5655	7911

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	22.58	22.58	0	19.5	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Joists #6	B	43.2	43.2	0	19.5	Dead	Y
Uniform (lbf/ft)	Joists #6	B	120	120	0	19.5	Live	Y
Uniform (lbf/ft)	Joists #7	A	165.6	165.6	0	19.5	Dead	Y

Linked Load List CONT.

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Joists #7	A	460	460	0	19.5	Live	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Floor - 1st Level	LOADING:	ASD
MEMBER NAME:	Beam #39	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Structural Composite Lumber		
Weyerhaeuser	2.0E Microlam LVL	(2) 1.75 X 11.25	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 11 Member Slope (in): 0/12 Actual Length (ft): 11

Area	Ix	Iy	BSW	Lams	Cfn	Kcr
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
39.38	415.28	10.05	11.48	2	7.35	1

STRENGTH PROPERTIES

	Fb (psi)	Ft (psi)	Fv (psi)	Fc (psi)	Fc _⊥ (psi)	E (psi) x10 ³	Emin (psi) x10 ³
Base Values	2600	1895	285	2510	750	2000	1016.535
Adjusted Values	2600	1895	285	2510	750	2000	1017
C _M	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1

Bending Adjustment Factors C_V = 1.01 C_r = 1 Volume factor is applied on a load combination basis And is Not reflected in the adjusted values**BEAM DATA**

		Unbraced Length (ft)		Beam End				
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	11	0	11	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (53.1%)	133.7	285.0	0	D+L	1
Bending Stress Y (psi)	PASS (40.2%)	1568.7	2622.9	5.5	D+L	1
Deflection Y (in)	PASS (65.5%)	0.253	0.733 (=L/180)	5.5	D+L	
Bearing Stress (psi)	PASS (75.7%)	182.3	750.0	0	D+L	1

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	TOTAL
A	974	2536	3510
B	974	2536	3510

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Uniform	1	1	0	11	Live	Y
Self Weight (lbf/ft)	-	11.48	11.48	0	11	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Joists #9	A	165.6	165.6	0	11	Dead	Y
Uniform (lbf/ft)	Joists #9	A	460	460	0	11	Live	Y

7/22/25

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**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Floor - 1st Level	LOADING:	ASD
MEMBER NAME:	Beam #40	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 8.75 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 40.5 Member Slope (in): 0/12 Actual Length (ft): 40.5

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
157.5	4252.5	1004.88	35.92	1	0.5	1

STRENGTH PROPERTIES

	F _{bx} +	F _{bx} -	F _{by}	F _t	F _{vx}	F _{vy}	F _c	F _c ⊥	E _x	E _{xmin}	E _y	E _{ymin}
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1
Bending Adjustment Factors	C _{vr} = 1											

BEAM DATA

Span	Length (ft)	Unbraced Length (ft)		Beam End		CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
		Top	Bottom	Elev. Diff (ft)					
1	20.5	0	20.5	0					
2	20	0	20	0					

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (49.7%)	133.4	265.0	20.655	D+L	1
Bending Stress Y (psi)	PASS (20.5%)	1252.9	1576.9	20.655	D+L	1
Deflection Y (in)	PASS (83.2%)	0.223	1.333 (=L/180)	31.59	D+L	
Bearing Stress (psi)	PASS (10.1%)	538.0	598.2	20.5	D+L	1

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	TOTAL
A	4112	4606	8718
B	7717	18176	25893
C	2048	5073	7121

Reaction Location

A

B

C

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	35.92	35.92	0	40.5	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Joists #7	B	165.6	165.6	0	20.5	Dead	Y
Uniform (lbf/ft)	Joists #7	B	460	460	0	20.5	Live	Y
Uniform (lbf/ft)	Joists #8	A	57.59999	57.59999	0	20.5	Dead	Y
Uniform (lbf/ft)	Joists #8	A	160	160	0	20.5	Live	Y
Uniform (lbf/ft)	Joists #9	B	165.6	165.6	20.5	32	Dead	Y
Uniform (lbf/ft)	Joists #9	B	460	460	20.5	32	Live	Y
Uniform (lbf/ft)	Joists #10	C	133.5993	133.5993	32	40.5	Dead	Y
Uniform (lbf/ft)	Joists #10	C	371.1092	371.1092	32	40.5	Live	Y
Uniform (lbf/ft)	Joists #15	A	151.2	151.2	20.5	32	Dead	Y
Uniform (lbf/ft)	Joists #15	A	420	420	20.5	32	Live	Y
Uniform (lbf/ft)	Joists #16	A	79.2	79.2	32	40.5	Dead	Y
Uniform (lbf/ft)	Joists #16	A	220	220	32	40.5	Live	Y
Point (lbf)	Beam #49	B	2394.922	-	1.5	-	Dead	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Floor - 1st Level	LOADING:	ASD
MEMBER NAME:	Beam #41	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 6.75 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 14 Member Slope (in): 0/12 Actual Length (ft): 14

Area	Ix	Iy	BSW	Lams	G	Kcr
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
121.5	3280.5	461.32	27.71	1	0.5	1

STRENGTH PROPERTIES

	Fbx+	Fbx-	Fby	Ft	Fvx	Fvy	Fc	Fc _⊥	Ex	Exmin	Ey	Eymin
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End		CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
		Top	Bottom	Elev. Diff (ft)					
1	1	0	1	0					
2	13	0	13	0					

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (72.4%)	84.2	304.8	14	D+S	1.15
Bending Stress Y (psi)	PASS (73.0%)	725.6	2685.0	7.56	D+S	1.15
Deflection Y (in)	PASS (89.2%)	0.014	0.133 (=L/180)	0	S	
Bearing Stress (psi)	PASS (64.2%)	214.4	598.2	1	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	0	0	0
B	3789	4170	7959
C	3248	3574	6822

Reaction Location

A B C

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	27.71	27.71	0	14	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Deck Joists #2	B	474.95	474.95	0	14	Dead	Y
Uniform (lbf/ft)	Deck Joists #2	B	553.125	553.125	0	14	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Floor - 1st Level	LOADING:	ASD
MEMBER NAME:	Beam #42	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 6.75 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 20.5 Member Slope (in): 0/12 Actual Length (ft): 20.5

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
121.5	3280.5	461.32	27.71	1	0.5	1

STRENGTH PROPERTIES

	F _{bx} +	F _{bx} -	F _{by}	F _t	F _{vx}	F _{vy}	F _c	F _c ⊥	E _x	E _{xmin}	E _y	E _{ymin}
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End				
		Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	20.5	0	20.5	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (73.7%)	80.1	304.8	20.5	D+S	1.15
Bending Stress Y (psi)	PASS (57.7%)	1094.5	2584.6	10.25	D+S	1.15
Deflection Y (in)	PASS (82.5%)	0.240	1.367 (=L/180)	10.25	S	
Bearing Stress (psi)	PASS (68.8%)	174.7	560.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	2835	3652	6487
B	2835	3652	6487

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	27.71	27.71	0	20.5	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Deck Joists #3	B	248.9	248.9	0	20.5	Dead	Y
Uniform (lbf/ft)	Deck Joists #3	B	356.25	356.25	0	20.5	Snow	Y

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**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Floor - 1st Level	LOADING:	ASD
MEMBER NAME:	Beam #43	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 6.75 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 11 Member Slope (in): 0/12 Actual Length (ft): 11

Area	Ix	Iy	BSW	Lams	G	Kcr
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
121.5	3280.5	461.32	27.71	1	0.5	1

STRENGTH PROPERTIES

	Fbx+	Fbx-	Fby	Ft	Fvx	Fvy	Fc	Fc _⊥	Ex	Exmin	Ey	Eymin
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End				
		Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	11	0	11	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (83.4%)	50.7	304.8	0	D+S	1.15
Bending Stress Y (psi)	PASS (86.5%)	371.9	2750.6	5.5	D+S	1.15
Deflection Y (in)	PASS (96.8%)	0.023	0.733 (=L/180)	5.5	D+L	
Bearing Stress (psi)	PASS (80.2%)	110.7	560.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	2304	1805	4109
B	2304	1805	4109

Reaction Location

A

B

CONNECTORS

(All connectors are Simpson Strong-Tie connectors)*

Support B	Model	Type	Adequacy (%)	Header Fastening (in)	Joist Nails (in)	Nailer Thickness (in)
Primary	HUC414-2 (Min)	Hanger	16.5	(20) 1/4 x 1.75 Titen 2	(8) 0.162 x 3.5	N/A

Hanger at support B has seat sloped 0 degrees, skewed 0 degrees.

WSR = web stiffeners required

*Capacity values are adjusted based on specific gravity when members use grades other than those specified in Simpson Strong-Tie's capacity tables.

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LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	27.71	27.71	0	11	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Deck Joists #5	B	391.125	391.125	0	11	Dead	Y
Uniform (lbf/ft)	Deck Joists #5	B	328.125	328.125	0	11	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Floor - 1st Level	LOADING:	ASD
MEMBER NAME:	Beam #44	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 5.125 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 13 Member Slope (in): 0/12 Actual Length (ft): 13

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
92.25	2490.75	201.92	21.04	1	0.5	1

STRENGTH PROPERTIES

	F _{bx} +	F _{bx} -	F _{by}	F _t	F _{vx}	F _{vy}	F _c	F _c ⊥	E _x	E _{xmin}	E _y	E _{ymin}
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End				
		Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	13	0	13	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (83.0%)	51.8	304.8	0	D+S	1.15
Bending Stress Y (psi)	PASS (83.7%)	448.5	2760.0	6.5	D+S	1.15
Deflection Y (in)	PASS (95.8%)	0.036	0.867 (=L/180)	6.5	S	
Bearing Stress (psi)	PASS (79.8%)	112.9	560.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	1537	1645	3182
B	1537	1645	3182

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	21.04	21.04	0	13	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Deck Joists #1	B	215.4937	215.4937	0	13	Dead	Y
Uniform (lbf/ft)	Deck Joists #1	B	253.125	253.125	0	13	Snow	Y

7/22/25

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**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Floor - 1st Level	LOADING:	ASD
MEMBER NAME:	Beam #45	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 5.5 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 12.5 Member Slope (in): 0/12 Actual Length (ft): 12.5

Area	Ix	Iy	BSW	Lams	G	Kcr
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
99	2673	249.56	22.58	1	0.5	1

STRENGTH PROPERTIES

	Fbx+	Fbx-	Fby	Ft	Fvx	Fvy	Fc	Fc _⊥	Ex	Exmin	Ey	Eymin
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End				
		Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	12.5	0	12.5	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (90.4%)	29.1	304.8	12.5	D+S	1.15
Bending Stress Y (psi)	PASS (85.0%)	413.6	2760.0	7	D+S	1.15
Deflection Y (in)	PASS (97.0%)	0.025	0.833 (=L/180)	6.5	D+L	
Bearing Stress (psi)	PASS (88.6%)	63.6	560.0	12.5	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	SNOW	TOTAL
A	818	6	724	1548
B	1002	6	921	1929

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Uniform	1	1	0	12.5	Live	Y
Self Weight (lbf/ft)	-	22.58	22.58	0	12.5	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Point (lbf)	Beam #44	B	1537.466	-	7	-	Dead	Y
Point (lbf)	Beam #44	B	1645.312	-	7	-	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Floor - 1st Level	LOADING:	ASD
MEMBER NAME:	Beam #46	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 8.75 X 21	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 21 Member Slope (in): 0/12 Actual Length (ft): 21

Area	Ix	Iy	BSW	Lams	G	Kcr
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
183.75	6752.81	1172.36	41.91	1	0.5	1

STRENGTH PROPERTIES

	Fbx+	Fbx-	Fby	Ft	Fvx	Fvy	Fc	Fc _⊥	Ex	Exmin	Ey	Eymin
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End				
		Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	21	0	21	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (50.6%)	150.6	304.8	21	D+S	1.15
Bending Stress Y (psi)	PASS (27.0%)	1807.0	2473.9	10.5	D+S	1.15
Deflection Y (in)	PASS (77.0%)	0.322	1.400 (=L/180)	10.5	D+L	
Bearing Stress (psi)	PASS (31.6%)	383.3	560.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	SNOW	TOTAL
A	9390	9056	18446
B	9390	9056	18446

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	41.91	41.91	0	21	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Deck Joists #3	A	248.9	248.9	0	21	Dead	Y
Uniform (lbf/ft)	Deck Joists #3	A	356.25	356.25	0	21	Snow	Y
Uniform (lbf/ft)	Deck Joists #4	B	603.45	603.45	0	21	Dead	Y

Linked Load List CONT.

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Deck Joists #4	B	506.25	506.25	0	21	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Floor - 1st Level	LOADING:	ASD
MEMBER NAME:	Beam #47	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Glulams		
Stress Class Rated 24F-1.8E	24F-V4 DF/DF	(1) 5.125 X 21	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 14 Member Slope (in): 0/12 Actual Length (ft): 14

Area	I _x	I _y	BSW	Lams	G	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
107.62	3955.22	235.57	24.55	1	0.5	1

STRENGTH PROPERTIES

	F _{bx} +	F _{bx} -	F _{by}	F _t	F _{vx}	F _{vy}	F _c	F _c ⊥	E _x	E _{xmin}	E _y	E _{ymin}
	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)	(psi)
Base Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
Adjusted Values	2400	1850	1450	1100	265	230	1650	650	1800000	950000	1600000	850000
C _M	1	1	1	1	1	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1	1	1	1	1	1

Bending Adjustment Factors C_{vr} = 1**BEAM DATA**

Span	Length (ft)	Unbraced Length (ft)		Beam End				
		Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	14	0	14	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (51.0%)	149.3	304.8	0	D+S	1.15
Bending Stress Y (psi)	PASS (25.4%)	2028.5	2717.8	6.02	D+S	1.15
Deflection Y (in)	PASS (86.1%)	0.130	0.933 (=L/180)	6.72	D+L	
Bearing Stress (psi)	PASS (32.1%)	380.0	560.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	SNOW	TOTAL
A	5537	7	5175	10719
B	4196	7	3881	8084

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	Uniform	1	1	0	14	Live	Y
Self Weight (lbf/ft)	-	24.55	24.55	0	14	Dead	Y

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Point (lbf)	Beam #46	A	9389.708	-	6	-	Dead	Y
Point (lbf)	Beam #46	A	9056.25	-	6	-	Snow	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Floor - 1st Level	LOADING:	ASD
MEMBER NAME:	Beam #49	CODE:	2018 International Building Code
MEMBER TYPE:	ROOF BEAM	NDS:	2018 NDS
MATERIAL:	Structural Composite Lumber		
Weyerhaeuser	2.0E Microlam LVL	(1) 1.75 X 18	DRY

BEAM PROPERTIES

Start (ft): 0 End (ft): 12.5 Member Slope (in): 0/12 Actual Length (ft): 12.5

Area	I _x	I _y	BSW	Lams	C _{fn}	K _{cr}
(in ²)	(in ⁴)	(in ⁴)	(lbf/ft)			Creep Factor
31.5	850.5	8.04	9.19	1	7.35	1

STRENGTH PROPERTIES

	F _b (psi)	F _t (psi)	F _v (psi)	F _c (psi)	F _c ⊥ (psi)	E (psi) x10 ³	E _{min} (psi) x10 ³
Base Values	2600	1895	285	2510	750	2000	1016.535
Adjusted Values	2600	1895	285	2510	750	2000	1017
C _M	1	1	1	1	1	1	1
C _T	1	1	1	1	1	1	1

Bending Adjustment Factors C_V = 0.95C_r = 1 Volume factor is applied on a load combination basis And is Not reflected in the adjusted values**BEAM DATA**

		Unbraced Length (ft)		Beam End				
Span	Length (ft)	Top	Bottom	Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	12.5	0	12.5	0				

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR CD
Shear Stress Y (psi)	PASS (55.5%)	114.0	256.5	0	D	0.9
Bending Stress Y (psi)	PASS (57.1%)	950.4	2214.4	6.25	D	0.9
Deflection Y (in)	PASS (85.2%)	0.124	0.833 (=L/180)	6.25	D+L	
Bearing Stress (psi)	PASS (66.8%)	248.8	750.0	0	D	0.9

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	TOTAL
A	2395	2395
B	2395	2395

Reaction Location

A

B

CONNECTORS

(All connectors are Simpson Strong-Tie connectors)*

Support B	Model	Type	Adequacy (%)	Header Fastening (in)	Joist Nails (in)	Nailer Thickness (in)
Primary	MIU1.81/14	Hanger	16.06	(22) 0.162 x 3.5	(2) 0.148 x 1.5	N/A

Hanger at support B has seat sloped 0 degrees, skewed 0 degrees.

WSR = web stiffeners required

*Capacity values are adjusted based on specific gravity when members use grades other than those specified in Simpson Strong-Tie's capacity tables.

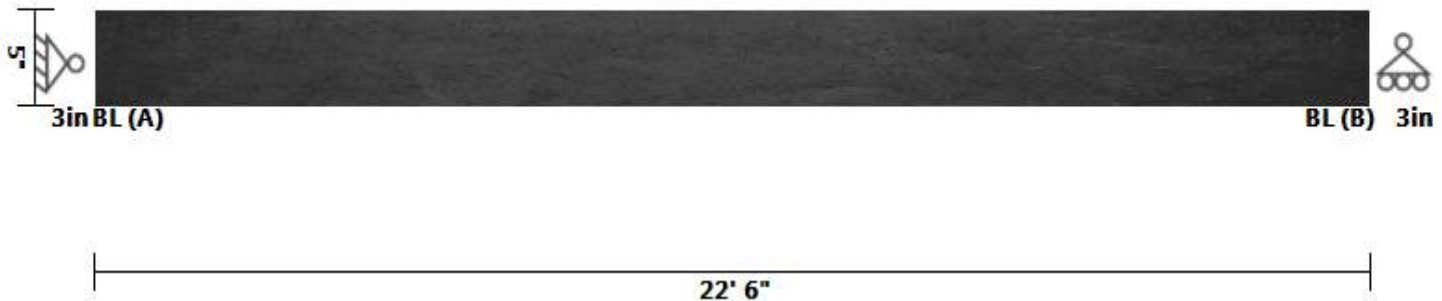


LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lb/ft)	Uniform	374	374	0	12.5	Dead	Y
Self Weight (lb/ft)	-	9.19	9.19	0	12.5	Dead	Y

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Headers - Basement	LOADING:	ASD
MEMBER NAME:	Column 19-1	CODE:	2018 International Building Code
MEMBER TYPE:	COLUMN	AISC:	AISC 360-16
MATERIAL:	Steel		
HSS Square	HSS5x5x.313	A500 Gr.B-46	

Column 19-1 DIAGRAM**COLUMN PROPERTIES**

Start (ft): 0 End (ft): 22.5

Es x10 ³	Fy x10 ³	Fu x10 ³	Area	Ix	Iy	Zx	Zy	J	Cw
(psi)	(psi)	(psi)	(in ²)	(in ⁴)	(in ⁴)	(in ³)	(in ³)	(in ⁴)	(in ⁶)
29000	46	58	5.26	19	19	9.16	9.16	31.2	0

DESIGN PROPERTIES

Lp	Lr	Flange	Web	Flange	Web	Cv	Cv_WA
(in)	(in)	Flexure	Flexure	Compression	Compression		
218	5754	Compact	Compact	Non-Slender	Non-Slender	1	1

COLUMN DATA

		Unbraced Length		Column End								
Span	Length (ft)	Top	Bottom	Elev. Diff	Pnt/ι	Pnc/ι	Mn/ι	Mn-OOP/ι	Vn/ι	Vn-OOP/ι	Cb	Cb-OOP
1	22.5	0	0	0	0	0	0	0	0	0	0	0

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Compressive Force (lbf)	PASS (16.2%)	32820.9	39151.3	0	E3-1	D+S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Z axis	DEAD	LIVE	SNOW	TOTAL
A	5139	21	27682	32842
B	0	0	0	0

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	19.08	19.08	0	22.5	Dead	Z

7/22/25

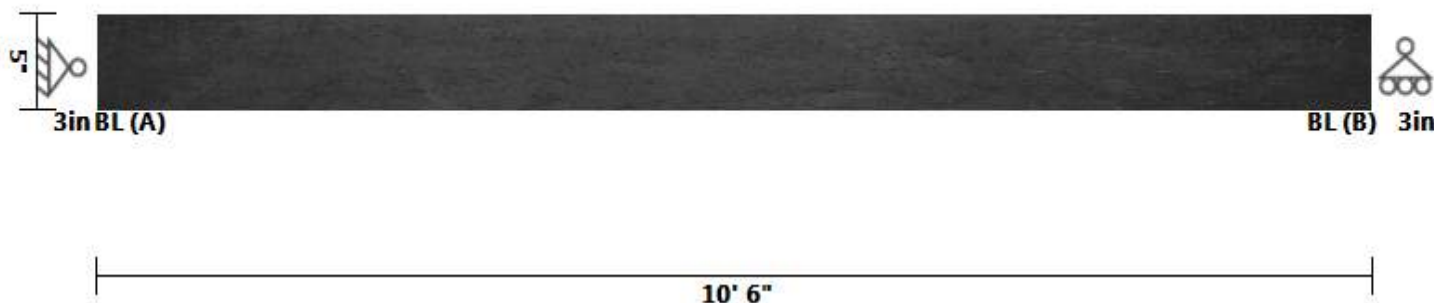
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Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Axial (lbf)	Beam #19	A	-4709.474	-4709.474	22.5	22.5	Dead	Z
Axial (lbf)	Beam #19	A	-21.04412	-21.04412	22.5	22.5	Live	Z
Axial (lbf)	Beam #19	A	-27682.14	-27682.14	22.5	22.5	Snow	Z

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Headers - Basement	LOADING:	ASD
MEMBER NAME:	Column Bm #1-1	CODE:	2018 International Building Code
MEMBER TYPE:	COLUMN	AISC:	AISC 360-16
MATERIAL:	Steel		
HSS Square	HSS5x5x.188	A500 Gr.B-46	

Column Bm #1-1 DIAGRAM**COLUMN PROPERTIES**

Start (ft): 0 End (ft): 10.5

Es x10 ³	Fy x10 ³	Fu x10 ³	Area	Ix	Iy	Zx	Zy	J	Cw
(psi)	(psi)	(psi)	(in ²)	(in ⁴)	(in ⁴)	(in ³)	(in ³)	(in ⁴)	(in ⁶)
29000	46	58	3.28	12.6	12.6	5.89	5.89	19.9	0

DESIGN PROPERTIES

Lp	Lr	Flange	Web	Flange	Web	Cv	Cv_WA
(in)	(in)	Flexure	Flexure	Compression	Compression		
220	5671	Compact	Compact	Non-Slender	Non-Slender	1	1

COLUMN DATA

		Unbraced Length		Column End								
Span	Length (ft)	Top	Bottom	Elev. Diff	Pnt/ι	Pnc/ι	Mn/ι	Mn-OOP/ι	Vn/ι	Vn-OOP/ι	Cb	Cb-OOP
1	10.5	0	0	0	0	0	0	0	0	0	0	0

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Compressive Force (lbf)	PASS (14.6%)	59934.7	70211.5	0	E3-1	D+S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Z axis	DEAD	SNOW	TOTAL
A	9420	50515	59935
B	0	0	0

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	11.97	11.97	0	10.5	Dead	Z

7/22/25

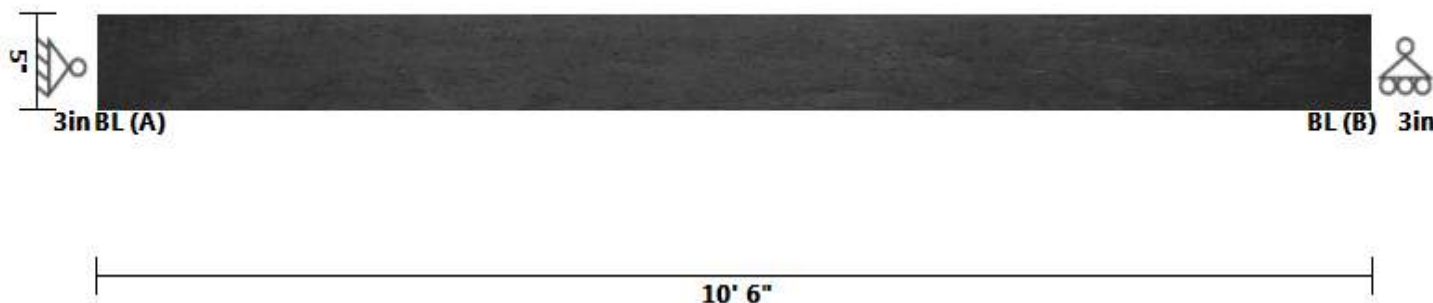
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Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Axial (lbf)	Beam #1	A	-9294.053	-9294.053	10.5	10.5	Dead	Z
Axial (lbf)	Beam #1	A	-50514.94	-50514.94	10.5	10.5	Snow	Z

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Headers - Basement	LOADING:	ASD
MEMBER NAME:	Column Bm #1-2	CODE:	2018 International Building Code
MEMBER TYPE:	COLUMN	AISC:	AISC 360-16
MATERIAL:	Steel		
HSS Square	HSS5x5x.188	A500 Gr.B-46	

Column Bm #1-2 DIAGRAM**COLUMN PROPERTIES**

Start (ft): 0 End (ft): 10.5

Es x10 ³	Fy x10 ³	Fu x10 ³	Area	Ix	Iy	Zx	Zy	J	Cw
(psi)	(psi)	(psi)	(in ²)	(in ⁴)	(in ⁴)	(in ³)	(in ³)	(in ⁴)	(in ⁶)
29000	46	58	3.28	12.6	12.6	5.89	5.89	19.9	0

DESIGN PROPERTIES

Lp	Lr	Flange	Web	Flange	Web	Cv	Cv_WA
(in)	(in)	Flexure	Flexure	Compression	Compression		
220	5671	Compact	Compact	Non-Slender	Non-Slender	1	1

COLUMN DATA

		Unbraced Length		Column End								
Span	Length (ft)	Top	Bottom	Elev. Diff	Pnt/ι	Pnc/ι	Mn/ι	Mn-OOP/ι	Vn/ι	Vn-OOP/ι	Cb	Cb-OOP
1	10.5	0	0	0	0	0	0	0	0	0	0	0

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Compressive Force (lbf)	PASS (14.6%)	59934.7	70211.5	0	E3-1	D+S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Z axis	DEAD	SNOW	TOTAL
A	9420	50515	59935
B	0	0	0

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	11.97	11.97	0	10.5	Dead	Z
7/22/25							

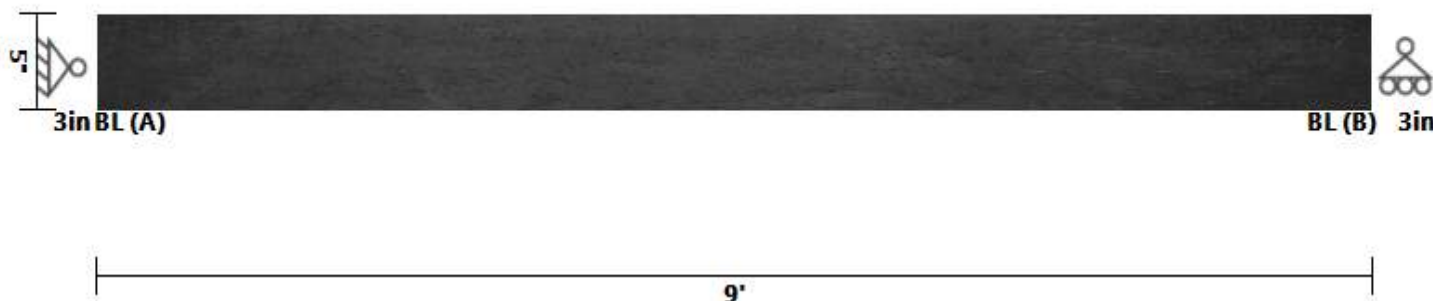
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Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Axial (lbf)	Beam #1	B	-9294.053	-9294.053	10.5	10.5	Dead	Z
Axial (lbf)	Beam #1	B	-50514.94	-50514.94	10.5	10.5	Snow	Z

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Headers - Basement	LOADING:	ASD
MEMBER NAME:	Column Bm #3-1	CODE:	2018 International Building Code
MEMBER TYPE:	COLUMN	AISC:	AISC 360-16
MATERIAL:	Steel		
HSS Square	HSS5x5x.188	A500 Gr.B-46	

Column Bm #3-1 DIAGRAM**COLUMN PROPERTIES**

Start (ft): 0 End (ft): 9

Es x10 ³	Fy x10 ³	Fu x10 ³	Area	Ix	Iy	Zx	Zy	J	Cw
(psi)	(psi)	(psi)	(in ²)	(in ⁴)	(in ⁴)	(in ³)	(in ³)	(in ⁴)	(in ⁶)
29000	46	58	3.28	12.6	12.6	5.89	5.89	19.9	0

DESIGN PROPERTIES

Lp	Lr	Flange	Web	Flange	Web	Cv	Cv_WA
(in)	(in)	Flexure	Flexure	Compression	Compression		
220	5671	Compact	Compact	Non-Slender	Non-Slender	1	1

COLUMN DATA

		Unbraced Length		Column End							
Span	Length (ft)	Top	Bottom	Elev. Diff	Pnt/ι	Pnc/ι	Mn/ι	Mn-OOP/ι	Vn/ι	Vn-OOP/ι	Cb
1	9	0	0	0	0	0	0	0	0	0	0

PASS-FAIL

PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Compressive Force (lbf) PASS (46.4%)	39513.2	73657.1	0	E3-1	D+S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Z axis	DEAD	SNOW	TOTAL
A	6257	33256	39513
B	0	0	0

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	11.97	11.97	0	9	Dead	Z

7/22/25

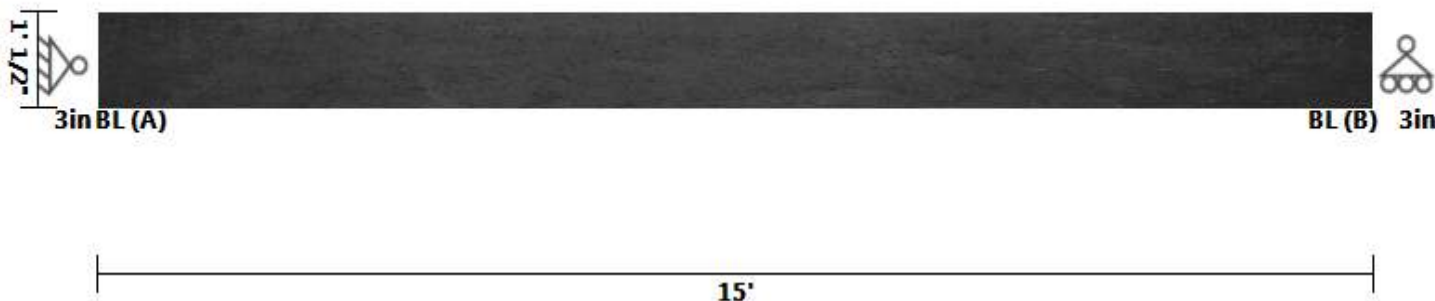
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Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Axial (lbf)	Beam #3	A	-6149.056	-6149.056	9	9	Dead	Z
Axial (lbf)	Beam #3	A	-33256.38	-33256.38	9	9	Snow	Z

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Headers - Basement	LOADING:	ASD
MEMBER NAME:	Column Bm #23-2	CODE:	2018 International Building Code
MEMBER TYPE:	COLUMN	AISC:	AISC 360-16
MATERIAL:	Steel		
W Shapes	W12x35	A992-50	

Column Bm #23-2 DIAGRAM**COLUMN PROPERTIES**

Start (ft): 0 End (ft): 15

Es x 10 ³	Fy x 10 ³	Fu x 10 ³	Area	Depth	tw	tf	bf	Ix	Iy	Zx	Zy	J	Cw
(psi)	(psi)	(psi)	(in ²)	(in)	(in)	(in)	(in)	(in ⁴)	(in ⁴)	(in ³)	(in ³)	(in ⁴)	(in ⁶)
29000	50	65	10.3	12.5	0.3	0.52	6.56	285	24.5	51.2	11.5	0.741	879

DESIGN PROPERTIES

Lp	Lr	Flange	Web	Flange	Web	Cv	Cv_WA
(in)	(in)	Flexure	Flexure	Compression	Compression		
65	200	Compact	Compact	Non-Slender	Slender	1	1

COLUMN DATA

		Unbraced Length		Column End									
Span	Length (ft)	Top	Bottom	Elev. Diff	Pnt/ι	Pnc/ι	Mn/ι	Mn-OOP/ι	Vn/ι	Vn-OOP/ι	Cb	Cb-OOP	
1	15	0	0	0	0	0	0	0	0	0	0	0	

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Compressive Force (lbf)	PASS (83.6%)	18613.3	113322.1	0	E3-1	D+S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Z axis	DEAD	SNOW	TOTAL
A	5506	13107	18613
B	0	0	0

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	35	35	0	15	Dead	Z

7/22/25

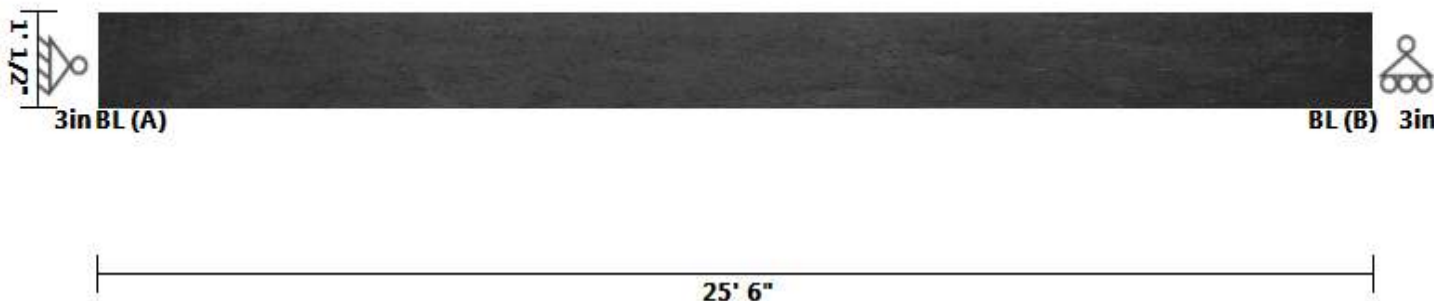
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Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Axial (lbf)	Beam #23	B	-2677.868	-2677.868	15	15	Dead	Z
Axial (lbf)	Beam #23	B	-11302.12	-11302.12	15	15	Snow	Z
Axial (lbf)	Beam #43	B	-2303.595	-2303.595	15	15	Dead	Z
Axial (lbf)	Beam #43	B	-1804.688	-1804.688	15	15	Snow	Z

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Headers - Basement	LOADING:	ASD
MEMBER NAME:	Column Bm #24-2	CODE:	2018 International Building Code
MEMBER TYPE:	COLUMN	AISC:	AISC 360-16
MATERIAL:	Steel		
W Shapes	W12x35	A992-50	

Column Bm #24-2 DIAGRAM**COLUMN PROPERTIES**

Start (ft): 0 End (ft): 25.5

Es x 10 ³	Fy x 10 ³	Fu x 10 ³	Area	Depth	tw	tf	bf	Ix	Iy	Zx	Zy	J	Cw
(psi)	(psi)	(psi)	(in ²)	(in)	(in)	(in)	(in)	(in ⁴)	(in ⁴)	(in ³)	(in ³)	(in ⁴)	(in ⁶)
29000	50	65	10.3	12.5	0.3	0.52	6.56	285	24.5	51.2	11.5	0.741	879

DESIGN PROPERTIES

Lp	Lr	Flange	Web	Flange	Web		
(in)	(in)	Flexure	Flexure	Compression	Compression	Cv	Cv_WA
65	200	Compact	Compact	Non-Slender	Slender	1	1

COLUMN DATA

		Unbraced Length		Column End									
Span	Length (ft)	Top	Bottom	Elev. Diff	Pnt/ι	Pnc/ι	Mn/ι	Mn-OOP/ι	Vn/ι	Vn-OOP/ι	Cb	Cb-OOP	
1	25.5	0	0	0	0	0	0	0	0	0	0	0	

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Compressive Force (lbf)	PASS (70.5%)	33393.3	113322.1	0	E3-1	D+S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Z axis	DEAD	SNOW	TOTAL
A	8897	24497	33394
B	0	0	0

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	35	35	0	25.5	Dead	Z

7/22/25

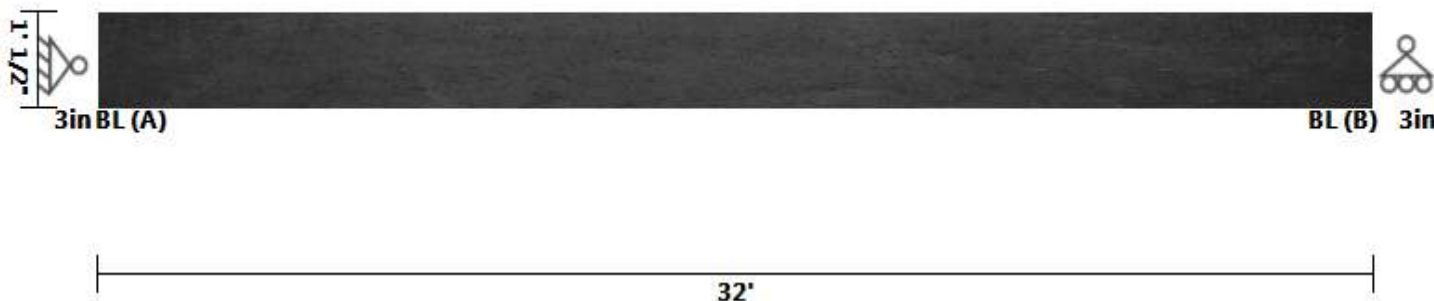
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Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Axial (lbf)	Beam #24	B	-2865.158	-2865.158	25.5	25.5	Dead	Z
Axial (lbf)	Beam #24	B	-19040.51	-19040.51	25.5	25.5	Snow	Z
Axial (lbf)	Beam #42	B	-2835.258	-2835.258	25.5	25.5	Dead	Z
Axial (lbf)	Beam #42	B	-3651.562	-3651.562	25.5	25.5	Snow	Z
Axial (lbf)	Beam #43	A	-2303.596	-2303.596	25.5	25.5	Dead	Z
Axial (lbf)	Beam #43	A	-1804.688	-1804.688	25.5	25.5	Snow	Z

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Headers - Basement	LOADING:	ASD
MEMBER NAME:	Column Bm #25-2	CODE:	2018 International Building Code
MEMBER TYPE:	COLUMN	AISC:	AISC 360-16
MATERIAL:	Steel		
W Shapes	W12x35	A992-50	

Column Bm #25-2 DIAGRAM**COLUMN PROPERTIES**

Start (ft): 0 End (ft): 32

Es x 10 ³	Fy x 10 ³	Fu x 10 ³	Area	Depth	tw	tf	bf	Ix	Iy	Zx	Zy	J	Cw
(psi)	(psi)	(psi)	(in ²)	(in)	(in)	(in)	(in)	(in ⁴)	(in ⁴)	(in ³)	(in ³)	(in ⁴)	(in ⁶)
29000	50	65	10.3	12.5	0.3	0.52	6.56	285	24.5	51.2	11.5	0.741	879

DESIGN PROPERTIES

Lp	Lr	Flange	Web	Flange	Web	Cv	Cv_WA
(in)	(in)	Flexure	Flexure	Compression	Compression		
65	200	Compact	Compact	Non-Slender	Slender	1	1

COLUMN DATA

		Unbraced Length		Column End									
Span	Length (ft)	Top	Bottom	Elev. Diff	Pnt/ι	Pnc/ι	Mn/ι	Mn-OOP/ι	Vn/ι	Vn-OOP/ι	Cb	Cb-OOP	
1	32	0	0	0	0	0	0	0	0	0	0	0	

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Compressive Force (lbf)	PASS (22.2%)	41001.8	52680.7	0	E3-1	D+S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Z axis	DEAD	LIVE	SNOW	TOTAL
A	11495	7	29506	41008
B	0	0	0	0
X axis				
A	0	0	0	0
B	0	0	-54	-54

Reaction Location

A

7/22/25

B

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LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lb/ft)	-	35	35	0	32	Dead	Z

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Axial (lbf)	Beam #25	B	-3344.186	-3344.186	32	32	Dead	Z
Axial (lbf)	Beam #25	B	-21973.52	-21973.52	32	32	Snow	Z
Point (lbf)	Beam #25	B	53.74047	-	32	-	Snow	X
Axial (lbf)	Beam #42	A	-2835.258	-2835.258	32	32	Dead	Z
Axial (lbf)	Beam #42	A	-3651.562	-3651.562	32	32	Snow	Z
Axial (lbf)	Beam #47	B	-4195.984	-4195.984	32	32	Dead	Z
Axial (lbf)	Beam #47	B	-7.000001	-7.000001	32	32	Live	Z
Axial (lbf)	Beam #47	B	-3881.25	-3881.25	32	32	Snow	Z

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Headers - Basement	LOADING:	ASD
MEMBER NAME:	Column Bm #26-2	CODE:	2018 International Building Code
MEMBER TYPE:	COLUMN	AISC:	AISC 360-16
MATERIAL:	Steel		
W Shapes	W12x35	A992-50	

Column Bm #26-2 DIAGRAM**28' 6"****COLUMN PROPERTIES**

Start (ft): 0 End (ft): 28.5

Es x 10 ³	Fy x 10 ³	Fu x 10 ³	Area	Depth	tw	tf	bf	Ix	Iy	Zx	Zy	J	Cw
(psi)	(psi)	(psi)	(in ²)	(in)	(in)	(in)	(in)	(in ⁴)	(in ⁴)	(in ³)	(in ³)	(in ⁴)	(in ⁶)
29000	50	65	10.3	12.5	0.3	0.52	6.56	285	24.5	51.2	11.5	0.741	879

DESIGN PROPERTIES

Lp	Lr	Flange	Web	Flange	Web	Cv	Cv_WA
(in)	(in)	Flexure	Flexure	Compression	Compression		
65	200	Compact	Compact	Non-Slender	Slender	1	1

COLUMN DATA

Unbraced Length		Column End											
Span	Length (ft)	Top	Bottom	Elev. Diff	Pnt/u	Pnc/u	Mn/u	Mn-OOP/u	Vn/u	Vn-OOP/u	Cb	Cb-OOP	
1	28.5	0	0	0	0	0	0	0	0	0	0	0	

PASS-FAIL

PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Compressive Force (lbf) PASS (78.8%)	15782.4	74499.5	0	E3-1	D+S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Z axis	DEAD	SNOW	TOTAL
A	5473	10309	15782
B	0	0	0

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	35	35	0	28.5	Dead	Z

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Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Axial (lbf)	Beam #26	B	-1227.703	-1227.703	28.5	28.5	Dead	Z
Axial (lbf)	Beam #26	B	-6735.192	-6735.192	28.5	28.5	Snow	Z
Axial (lbf)	Beam #41	C	-3247.963	-3247.963	28.5	28.5	Dead	Z
Axial (lbf)	Beam #41	C	-3574.042	-3574.042	28.5	28.5	Snow	Z

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Headers - Basement	LOADING:	ASD
MEMBER NAME:	Column Bm #27-2	CODE:	2018 International Building Code
MEMBER TYPE:	COLUMN	AISC:	AISC 360-16
MATERIAL:	Steel		
W Shapes	W12x35	A992-50	

Column Bm #27-2 DIAGRAM**25' 6"****COLUMN PROPERTIES**

Start (ft): 0 End (ft): 25.5

Es x 10 ³	Fy x 10 ³	Fu x 10 ³	Area	Depth	tw	tf	bf	Ix	Iy	Zx	Zy	J	Cw
(psi)	(psi)	(psi)	(in ²)	(in)	(in)	(in)	(in)	(in ⁴)	(in ⁴)	(in ³)	(in ³)	(in ⁴)	(in ⁶)
29000	50	65	10.3	12.5	0.3	0.52	6.56	285	24.5	51.2	11.5	0.741	879

DESIGN PROPERTIES

Lp	Lr	Flange	Web	Flange	Web	Cv	Cv_WA
(in)	(in)	Flexure	Flexure	Compression	Compression		
65	200	Compact	Compact	Non-Slender	Slender	1	1

COLUMN DATA

Unbraced Length		Column End											
Span	Length (ft)	Top	Bottom	Elev. Diff	Pnt/ι	Pnc/ι	Mn/ι	Mn-OOP/ι	Vn/ι	Vn-OOP/ι	Cb	Cb-OOP	
1	25.5	0	0	0	0	0	0	0	0	0	0	0	

PASS-FAIL

PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Compressive Force (lbf) PASS (80.6%)	36721.9	189025.2	0	E3-1	D+S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Z axis	DEAD	LIVE	SNOW	TOTAL
A	9081	6	27641	36728
B	0	0	0	0

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	35	35	0	25.5	Dead	Z

7/22/25

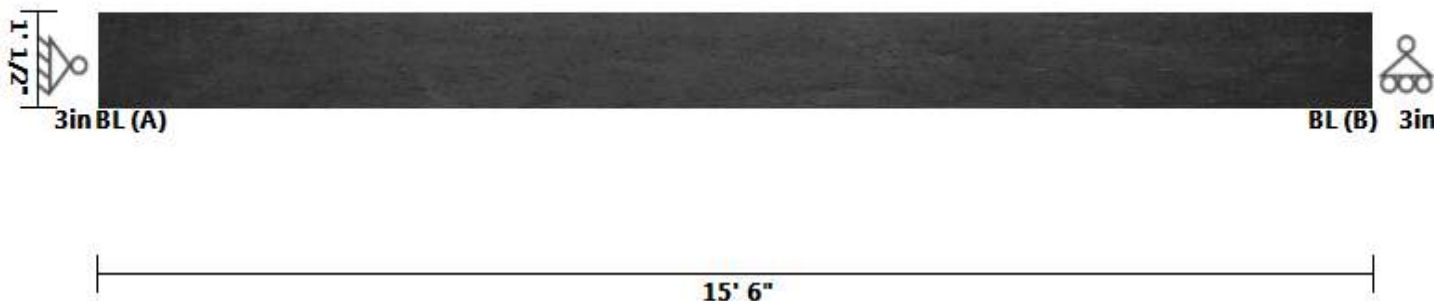
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Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Axial (lbf)	Beam #27	B	-3396.994	-3396.994	25.5	25.5	Dead	Z
Axial (lbf)	Beam #27	B	-22550.03	-22550.03	25.5	25.5	Snow	Z
Axial (lbf)	Beam #41	B	-3789.212	-3789.212	25.5	25.5	Dead	Z
Axial (lbf)	Beam #41	B	-4169.684	-4169.684	25.5	25.5	Snow	Z
Axial (lbf)	Beam #45	B	-1002.1	-1002.1	25.5	25.5	Dead	Z
Axial (lbf)	Beam #45	B	-6.249998	-6.249998	25.5	25.5	Live	Z
Axial (lbf)	Beam #45	B	-921.3748	-921.3748	25.5	25.5	Snow	Z

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Headers - Basement	LOADING:	ASD
MEMBER NAME:	Column Bm #28-2	CODE:	2018 International Building Code
MEMBER TYPE:	COLUMN	AISC:	AISC 360-16
MATERIAL:	Steel		
W Shapes	W12x35	A992-50	

Column Bm #28-2 DIAGRAM**COLUMN PROPERTIES**

Start (ft): 0 End (ft): 15.5

Es x 10 ³	Fy x 10 ³	Fu x 10 ³	Area	Depth	tw	tf	bf	Ix	Iy	Zx	Zy	J	Cw
(psi)	(psi)	(psi)	(in ²)	(in)	(in)	(in)	(in)	(in ⁴)	(in ⁴)	(in ³)	(in ³)	(in ⁴)	(in ⁶)
29000	50	65	10.3	12.5	0.3	0.52	6.56	285	24.5	51.2	11.5	0.741	879

DESIGN PROPERTIES

Lp	Lr	Flange	Web	Flange	Web		
(in)	(in)	Flexure	Flexure	Compression	Compression	Cv	Cv_WA
65	200	Compact	Compact	Non-Slender	Slender	1	1

COLUMN DATA

Unbraced Length		Column End										
Span	Length (ft)	Top	Bottom	Elev. Diff	Pnt/ι	Pnc/ι	Mn/ι	Mn-OOP/ι	Vn/ι	Vn-OOP/ι	Cb	Cb-OOP
1	15.5	0	0	0	0	0	0	0	0	0	0	0

PASS-FAIL

PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Compressive Force (lbf) PASS (86.3%)	14551.5	106128.9	0	E3-1	D+S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Z axis	DEAD	SNOW	TOTAL
A	3569	10983	14552
B	0	0	0

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	35	35	0	15.5	Dead	Z

7/22/25

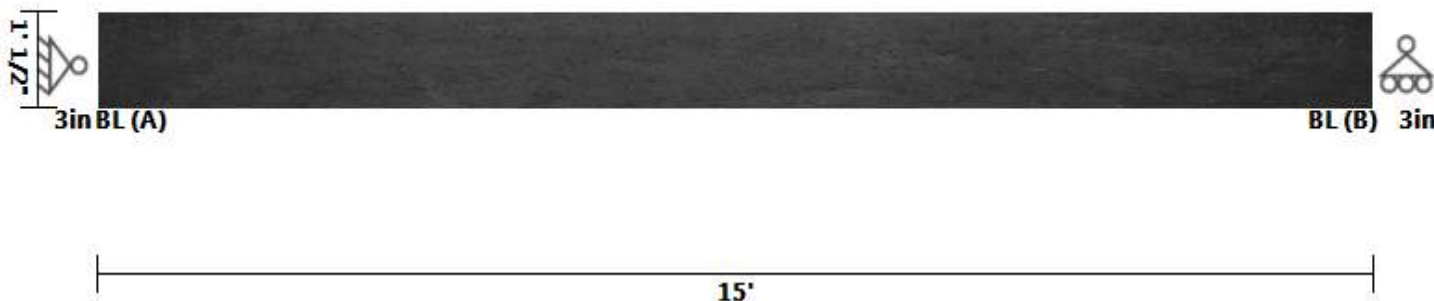
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Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Axial (lbf)	Beam #28	B	-1488.886	-1488.886	15.5	15.5	Dead	Z
Axial (lbf)	Beam #28	B	-9337.327	-9337.327	15.5	15.5	Snow	Z
Axial (lbf)	Beam #44	A	-1537.466	-1537.466	15.5	15.5	Dead	Z
Axial (lbf)	Beam #44	A	-1645.312	-1645.312	15.5	15.5	Snow	Z

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Headers - Basement	LOADING:	ASD
MEMBER NAME:	Column Bm #32-1	CODE:	2018 International Building Code
MEMBER TYPE:	COLUMN	AISC:	AISC 360-16
MATERIAL:	Steel		
W Shapes	W12x35	A992-50	

Column Bm #32-1 DIAGRAM**COLUMN PROPERTIES**

Start (ft): 0 End (ft): 15

Es x 10 ³	Fy x 10 ³	Fu x 10 ³	Area	Depth	tw	tf	bf	Ix	Iy	Zx	Zy	J	Cw
(psi)	(psi)	(psi)	(in ²)	(in)	(in)	(in)	(in)	(in ⁴)	(in ⁴)	(in ³)	(in ³)	(in ⁴)	(in ⁶)
29000	50	65	10.3	12.5	0.3	0.52	6.56	285	24.5	51.2	11.5	0.741	879

DESIGN PROPERTIES

Lp	Lr	Flange	Web	Flange	Web		
(in)	(in)	Flexure	Flexure	Compression	Compression	Cv	Cv_WA
65	200	Compact	Compact	Non-Slender	Slender	1	1

COLUMN DATA

		Unbraced Length		Column End									
Span	Length (ft)	Top	Bottom	Elev. Diff	Pnt/ι	Pnc/ι	Mn/ι	Mn-OOP/ι	Vn/ι	Vn-OOP/ι	Cb	Cb-OOP	
1	15	0	0	0	0	0	0	0	0	0	0	0	

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Compressive Force (lbf)	PASS (97.7%)	2653.1	113322.1	0	E3-1	D+S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Z axis	DEAD	SNOW	TOTAL
A	805	1849	2654
B	0	0	0

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	35	35	0	15	Dead	Z

7/22/25

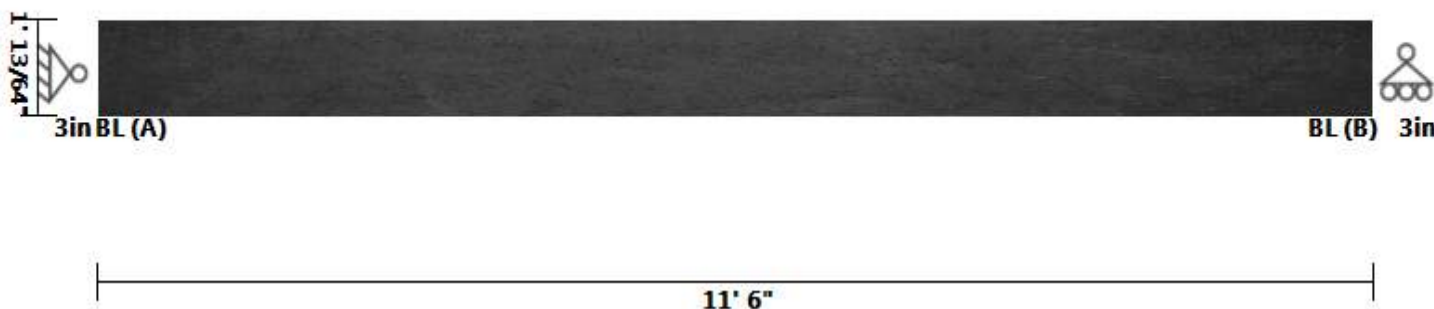
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Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Axial (lbf)	Beam #32	B	-279.501	-279.501	15	15	Dead	Z
Axial (lbf)	Beam #32	B	-1848.637	-1848.637	15	15	Snow	Z

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Headers - Basement	LOADING:	ASD
MEMBER NAME:	Column Bm #33-1	CODE:	2018 International Building Code
MEMBER TYPE:	COLUMN	AISC:	AISC 360-16
MATERIAL:	Steel		
W Shapes	W12x26	A992-50	

Column Bm #33-1 DIAGRAM**COLUMN PROPERTIES**

Start (ft): 0 End (ft): 11.5

Es x 10 ³	Fy x 10 ³	Fu x 10 ³	Area	Depth	tw	tf	bf	Ix	Iy	Zx	Zy	J	Cw
(psi)	(psi)	(psi)	(in ²)	(in)	(in)	(in)	(in)	(in ⁴)	(in ⁴)	(in ³)	(in ³)	(in ⁴)	(in ⁶)
29000	50	65	7.65	12.2	0.23	0.38	6.49	204	17.3	37.2	8.17	0.3	607

DESIGN PROPERTIES

Lp	Lr	Flange	Web	Flange	Web		
(in)	(in)	Flexure	Flexure	Compression	Compression	Cv	Cv_WA
64	179	Compact	Compact	Non-Slender	Slender	1	1

COLUMN DATA

		Unbraced Length		Column End									
Span	Length (ft)	Top	Bottom	Elev. Diff	Pnt/u	Pnc/u	Mn/u	Mn-OOP/u	Vn/u	Vn-OOP/u	Cb	Cb-OOP	
1	11.5	0	0	0	0	0	0	0	0	0	0	0	

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Compressive Force (lbf)	PASS (99.9%)	74.2	124363.7	0	E3-1	D
Tensile Force (lbf)	PASS (99.3%)	1709.9	229041.9	11.5	D2-1	D+S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Z axis	DEAD	SNOW	TOTAL
A	74	-1485	-1411
B	0	0	0

Reaction Location

A

B

LOAD LIST

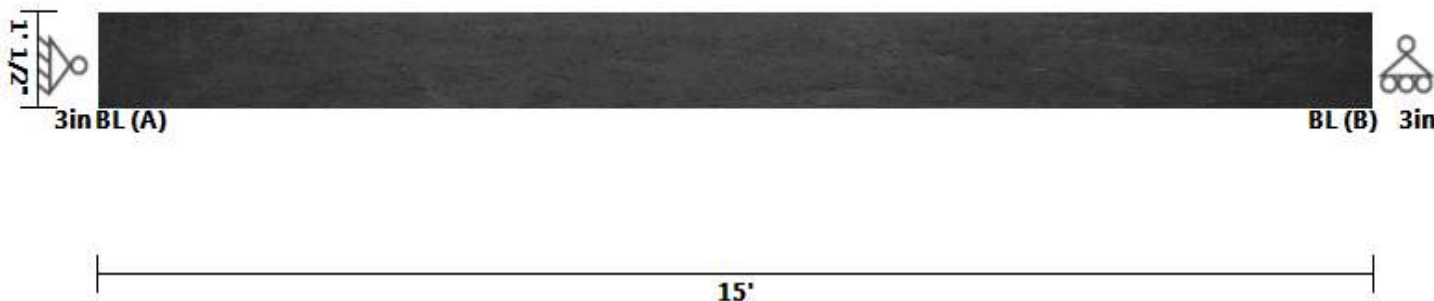
Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	7/22/25	26	26	0	11.5	Dead	Z

Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Axial (lbf)	Beam #33	B	224.793	224.793	11.5	11.5	Dead	Z
Axial (lbf)	Beam #33	B	1485.067	1485.067	11.5	11.5	Snow	Z

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Headers - Basement	LOADING:	ASD
MEMBER NAME:	Column Bm #32-2	CODE:	2018 International Building Code
MEMBER TYPE:	COLUMN	AISC:	AISC 360-16
MATERIAL:	Steel		
W Shapes	W12x35	A992-50	

Column Bm #32-2 DIAGRAM**COLUMN PROPERTIES**

Start (ft): 0 End (ft): 15

Es x 10 ³	Fy x 10 ³	Fu x 10 ³	Area	Depth	tw	tf	bf	Ix	Iy	Zx	Zy	J	Cw
(psi)	(psi)	(psi)	(in ²)	(in)	(in)	(in)	(in)	(in ⁴)	(in ⁴)	(in ³)	(in ³)	(in ⁴)	(in ⁶)
29000	50	65	10.3	12.5	0.3	0.52	6.56	285	24.5	51.2	11.5	0.741	879

DESIGN PROPERTIES

Lp	Lr	Flange	Web	Flange	Web		
(in)	(in)	Flexure	Flexure	Compression	Compression	Cv	Cv_WA
65	200	Compact	Compact	Non-Slender	Slender	1	1

COLUMN DATA

		Unbraced Length		Column End									
Span	Length (ft)	Top	Bottom	Elev. Diff	Pnt/и	Pnc/и	Mn/и	Mn-OOP/и	Vn/и	Vn-OOP/и	Cb	Cb-OOP	
1	15	0	0	0	0	0	0	0	0	0	0	0	

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Compressive Force (lbf)	PASS (74.2%)	29265.1	113322.1	0	E3-1	D+S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Z axis	DEAD	SNOW	TOTAL
A	4338	24927	29265
B	0	0	0

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	35	35	0	15	Dead	Z

7/22/25

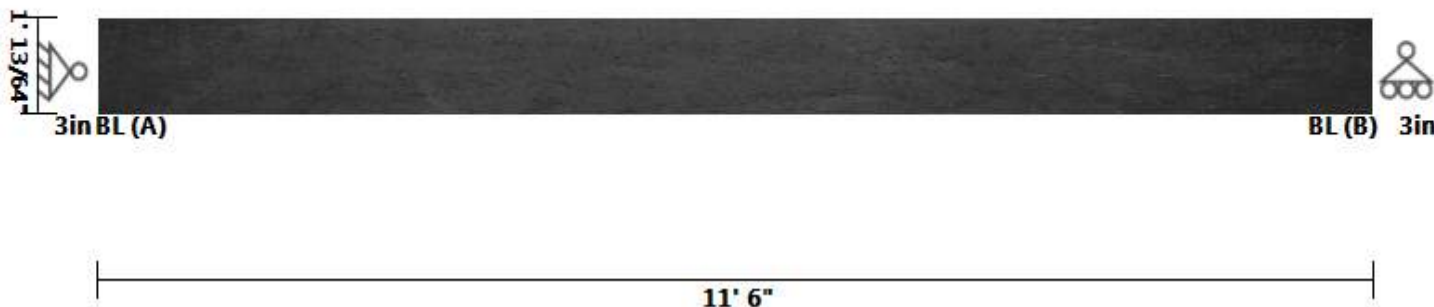
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Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Axial (lbf)	Beam #32	C	-3813.421	-3813.421	15	15	Dead	Z
Axial (lbf)	Beam #32	C	-24926.64	-24926.64	15	15	Snow	Z

**PASS**

DATE:	5/17/2022	COMPANY:	SMC Design
STRUCALC BUILD:	StruCalc Pro	DESIGNED BY:	Stephen Curtis
CUSTOMER:		REVIEWED BY:	Stephen Curtis
PROJ. ADDRESS:	--	PROJECT NAME:	25-003 Hawkins
	--		
LEVEL:	Headers - Basement	LOADING:	ASD
MEMBER NAME:	Column Bm #33-2	CODE:	2018 International Building Code
MEMBER TYPE:	COLUMN	AISC:	AISC 360-16
MATERIAL:	Steel		
W Shapes	W12x26	A992-50	

Column Bm #33-2 DIAGRAM**COLUMN PROPERTIES**

Start (ft): 0 End (ft): 11.5

Es x 10 ³	Fy x 10 ³	Fu x 10 ³	Area	Depth	tw	tf	bf	Ix	Iy	Zx	Zy	J	Cw
(psi)	(psi)	(psi)	(in ²)	(in)	(in)	(in)	(in)	(in ⁴)	(in ⁴)	(in ³)	(in ³)	(in ⁴)	(in ⁶)
29000	50	65	7.65	12.2	0.23	0.38	6.49	204	17.3	37.2	8.17	0.3	607

DESIGN PROPERTIES

Lp	Lr	Flange	Web	Flange	Web		
(in)	(in)	Flexure	Flexure	Compression	Compression	Cv	Cv_WA
64	179	Compact	Compact	Non-Slender	Slender	1	1

COLUMN DATA

		Unbraced Length		Column End									
Span	Length (ft)	Top	Bottom	Elev. Diff	Pnt/u	Pnc/u	Mn/u	Mn-OOP/u	Vn/u	Vn-OOP/u	Cb	Cb-OOP	
1	11.5	0	0	0	0	0	0	0	0	0	0	0	

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Compressive Force (lbf)	PASS (76.6%)	29039.1	124363.7	0	E3-1	D+S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Z axis	DEAD	SNOW	TOTAL
A	4112	24927	29039
B	0	0	0

Reaction Location

A

B

LOAD LIST

Type	Name	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Self Weight (lbf/ft)	-	26	26	0	11.5	Dead	Z

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Linked Load List

Type	Member	Support	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Axial (lbf)	Beam #32	C	-3813.421	-3813.421	11.5	11.5	Dead	Z
Axial (lbf)	Beam #32	C	-24926.64	-24926.64	11.5	11.5	Snow	Z



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

CF (1) Individual Footing Design

Program: *Continuous Footing*

Soil Bearing Pressure: 1500psf

<i>Roof</i>			
Roof Dead	(17psf)	(16.0ft)	= 272plf
Snow Live	(150psf)	(16.0ft)	= 2400plf

<i>Misc</i>			
Wall Load:	(12psf)	(10.0ft)	= 120plf
Conc Stem:	(145pcf)	(2 x .5ft)	= 145plf
Misc Load:	(.0ft)	(.0ft) (.0ft)	= plf

2937plf

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



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

CF (2) Individual Footing Design

Program: *Continuous Footing*

Soil Bearing Pressure: 1500psf

<i>Roof</i>			
Roof Dead	(17psf)	(8.0ft)	= 136plf
Snow Live	(150psf)	(8.0ft)	= 1200plf

<i>Misc</i>			
Wall Load:	(12psf)	(10.0ft)	= 120plf
Conc Stem:	(145pcf)	(2 x .5ft)	= 145plf
Misc Load:	(.0ft)	(.0ft) (.0ft)	= plf

1601plf

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



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

CF (3) Individual Footing Design

Program: *Continuous Footing*

Soil Bearing Pressure: 1500psf

<i>Roof</i>			
Roof Dead	(17psf)	(14.3ft)	= 242plf
Snow Live	(150psf)	(14.3ft)	= 2138plf

<i>Main Floor</i>			
Floor Dead	(17psf)	(1.0ft)	= 17plf
Floor Live	(40psf)	(1.0ft)	= 40plf

<i>Misc</i>			
Wall Load:	(12psf)	(10.0ft)	= 120plf
Conc Stem:	(145pcf)	(2 x .5ft)	= 145plf
Misc Load:	(.0ft)	(.0ft) (.0ft)	= plf

2662plf

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



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

CF (4) Individual Footing Design

Program: *Continuous Footing*

Soil Bearing Pressure: 1500psf

<i>Roof</i>			
Roof Dead	(17psf)	(12.0ft)	= 204plf
Snow Live	(150psf)	(12.0ft)	= 1800plf

<i>Main Floor</i>			
Floor Dead	(17psf)	(1.0ft)	= 17plf
Floor Live	(40psf)	(1.0ft)	= 40plf

<i>Misc</i>			
Wall Load:	(12psf)	(11.0ft)	= 132plf
Conc Stem:	(145pcf)	(2 x .5ft)	= 145plf
Misc Load:	(.0ft)	(.0ft) (.0ft)	= plf

2298plf

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



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

CF (5) Individual Footing Design

Program: *Continuous Footing*

Soil Bearing Pressure: 1500psf

<i>Roof</i>			
Roof Dead	(17psf)	(8.9ft)	= 151plf
Snow Live	(150psf)	(8.9ft)	= 1331plf

<i>Main Floor</i>			
Floor Dead	(17psf)	(7.3ft)	= 123plf
Floor Live	(40psf)	(7.3ft)	= 290plf

<i>Misc</i>			
Wall Load:	(12psf)	(11.0ft)	= 132plf
Conc Stem:	(145pcf)	(2 x .5ft)	= 145plf
Misc Load:	(.0ft)	(.0ft) (.0ft)	= plf

1882plf

Use Footing Width:	18	x	8	in
W/	(2)	#4	Cont.	



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

CF (6) Individual Footing Design

Program: *Continuous Footing*

Soil Bearing Pressure: 1500psf

<i>Main Floor</i>				
Floor Dead	(17psf)	(18.3ft)	=	312plf
Floor Live	(40psf)	(18.3ft)	=	733plf

<i>Misc</i>				
Wall Load:	(12psf)	(10.0ft)	=	120plf
Conc Stem:	(145pcf)	(x .5ft)	=	plf
Misc Load:	(.0ft)	(.0ft)	(.0ft)	= plf

1165plf

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



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

CF (7) Individual Footing Design

Program: *Continuous Footing*

Soil Bearing Pressure: 1500psf

<i>Roof</i>				
Roof Dead	(17psf)	(16.0ft)	=	272plf
Snow Live	(150psf)	(16.0ft)	=	2400plf

<i>Main Floor</i>				
Floor Dead	(17psf)	(1.0ft)	=	17plf
Floor Live	(40psf)	(1.0ft)	=	40plf

<i>Deck Floor</i>				
Floor Dead	(17psf)	(1.0ft)	=	17plf
Snow Live	(75psf)	(1.0ft)	=	75plf

<i>Misc</i>				
Wall Load:	(12psf)	(21.5ft)	=	258plf
Conc Stem:	(145pcf)	(2 x .5ft)	=	145plf
Misc Load:	(.0ft)	(.0ft)	(.0ft)	= plf

3109plf

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



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
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Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

CF (8) Individual Footing Design

Program: *Continuous Footing*

Soil Bearing Pressure: 1500psf

<i>Roof</i>				
Roof Dead	(17psf)	(25.8ft)	=	438plf
Snow Live	(150psf)	(25.8ft)	=	3863plf

<i>Main Floor</i>				
Floor Dead	(17psf)	(1.0ft)	=	17plf
Floor Live	(40psf)	(1.0ft)	=	40plf

<i>Deck Floor</i>				
Floor Dead	(17psf)	(1.0ft)	=	17plf
Snow Live	(75psf)	(1.0ft)	=	75plf

<i>Misc</i>				
Wall Load:	(12psf)	(21.5ft)	=	258plf
Conc Stem:	(145pcf)	(2 x .5ft)	=	145plf
Misc Load:	(.0ft)	(.0ft)	(.0ft)	= plf

4737plf

Use Footing Width:	42	x	10	in
W/	(4)		#4	Cont.



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
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Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

CF (9) Individual Footing Design

Program: *Continuous Footing*

Soil Bearing Pressure: 1500psf

<i>Roof</i>			
Roof Dead	(17psf)	(2.0ft)	= 34plf
Snow Live	(150psf)	(2.0ft)	= 300plf

<i>Main Floor</i>			
Floor Dead	(17psf)	(8.0ft)	= 136plf
Floor Live	(40psf)	(8.0ft)	= 320plf

<i>Deck Floor</i>			
Floor Dead	(17psf)	(7.0ft)	= 119plf
Snow Live	(75psf)	(7.0ft)	= 525plf

<i>Misc</i>			
Wall Load:	(12psf)	(21.5ft)	= 258plf
Conc Stem:	(145pcf)	(2 x .5ft)	= 145plf
Misc Load:	(.0ft)	(.0ft) (.0ft)	= plf

1550plf

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



524 CLEVELAND BLVD. #230
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Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

CF (10) Individual Footing Design

Program: *Continuous Footing*

Soil Bearing Pressure: 1500psf

<i>Roof</i>			
Roof Dead	(17psf)	(20.8ft)	= 353plf
Snow Live	(150psf)	(20.8ft)	= 3113plf

<i>Main Floor</i>			
Floor Dead	(17psf)	(12.4ft)	= 211plf
Floor Live	(40psf)	(12.4ft)	= 496plf

<i>Misc</i>			
Wall Load:	(12psf)	(21.5ft)	= 258plf
Conc Stem:	(145pcf)	(x .5ft)	= plf
Misc Load:	(.0ft)	(.0ft) (.0ft)	= plf

3934plf

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



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Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

CF (11) Individual Footing Design

Program: *Continuous Footing*

Soil Bearing Pressure: 1500psf

<i>Roof</i>			
Roof Dead	(17psf)	(11.8ft)	= 200plf
Snow Live	(150psf)	(11.8ft)	= 1763plf

<i>Main Floor</i>			
Floor Dead	(17psf)	(5.1ft)	= 87plf
Floor Live	(40psf)	(5.1ft)	= 204plf

<i>Misc</i>			
Wall Load:	(12psf)	(21.5ft)	= 258plf
Conc Stem:	(145pcf)	(2 x .5ft)	= 145plf
Misc Load:	(.0ft)	(.0ft) (.0ft)	= plf

2452plf

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



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City and State: Valley County, Idaho

Pad Footing Design Capacities

Soil Bearing (1500 psf)					Min. Column Size
Dimensions (Inches)			Capacity	# of Bars	
84	x	84 x 14	64,300 lbs	10	8. sq.
72	x	72 x 12	47,500 lbs	8	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.



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Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Cantilevered Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #13(F7)

Code Reference:

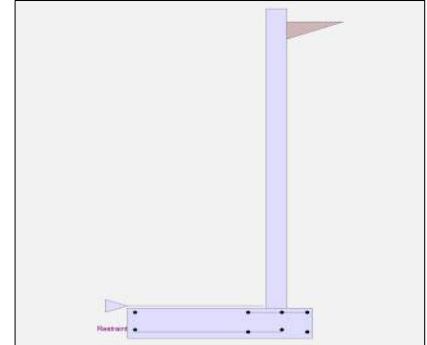
Calculations per

Criteria

Retained Height	=	11.00 ft
Wall height above soil	=	0.50 ft
Slope Behind Wall	=	0.00
Height of Soil over Toe	=	0.00 in
Water table above bottom of footing	=	0.0 ft

Soil Data

Allow Soil Bearing	=	1,500.0 psf
Equivalent Fluid Pressure Method		
Active Heel Pressure	=	32.0 psf/ft
	=	
Passive Pressure	=	250.0 psf/ft
Soil Density, Heel	=	110.00 pcf
Soil Density, Toe	=	110.00 pcf
Footing Soil Friction	=	0.400
Soil height to ignore for passive pressure	=	12.00 in



Surcharge Loads

Surcharge Over Heel	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	0.0
Used for Sliding & Overturning		

Axial Load Applied to Stem

Axial Dead Load	=	154.0 lbs
Axial Live Load	=	300.0 lbs
Axial Load Eccentricity	=	0.0 in

Lateral Load Applied to Stem

Lateral Load	=	0.0 #/ft
...Height to Top	=	0.00 ft
...Height to Bottom	=	0.00 ft
Load Type	=	Wind (W) (Service Level)
Wind on Exposed Stem	=	0.0 psf (Strength Level)

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type	=	Spread Footing
Base Above/Below Soil at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300



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City and State: Valley County, Idaho

Cantilevered Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #13(F7)

Design Summary

Wall Stability Ratios

Overtuning	=	1.57	OK
Slab Resists All Sliding !			
Global Stability	=	1.17	
Total Bearing Load	=	4,462	lbs
...resultant ecc.	=	13.30	in
Eccentricity outside middle third			
Soil Pressure @ Toe	=	1,291	psf OK
Soil Pressure @ Heel	=	0	psf OK
Allowable	=	1,500	psf
Soil Pressure Less Than Allowable			
ACI Factored @ Toe	=	1,807	psf
ACI Factored @ Heel	=	0	psf
Footing Shear @ Toe	=	29.3	psi OK
Footing Shear @ Heel	=	9.7	psi OK
Allowable	=	75.0	psi

Sliding Calcs

Lateral Sliding Force	=	2,368.4	lbs
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Vertical component of active lateral soil pressure IS
NOT considered in the calculation of soil bearing

Load Factors

Building Code	
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

Stem Construction

Design Height Above Ftg

ft =	Stem OK		
0.00			
Wall Material Above "Ht"	=	Concrete	
Design Method	=	SD	SD
Thickness	=	8.00	
Rebar Size	=	# 5	
Rebar Spacing	=	8.00	
Rebar Placed at	=	Edge	

Design Data

fb/FB + fa/Fa	=	0.962
---------------	---	-------

Total Force @ Section

Service Level	lbs =	
Strength Level	lbs =	3,097.6

Moment....Actual

Service Level	ft-# =	
Strength Level	ft-# =	11,357.9

Moment.....Allowable	=	11,799.2
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Shear.....Actual

Service Level	psi =	
Strength Level	psi =	41.7
Shear.....Allowable	psi =	55.3
Anet (Masonry)	in2 =	
Wall Weight	psf =	100.0
Rebar Depth 'd'	in =	6.19

Masonry Data

f'm	psi =	
Fs	psi =	
Solid Grouting	=	
Modular Ratio 'n'	=	
Equiv. Solid Thick.	=	
Masonry Block Type	=	
Masonry Design Method	=	ASD

Concrete Data

f'c	psi =	2,500.0
Fy	psi =	60,000.0



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Project Name: Hawkins Residence
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City and State: Valley County, Idaho

Cantilevered Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

Snake River Engineering

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #13(F7)

Concrete Stem Rebar Area Details

Bottom Stem	Vertical Reinforcing	Horizontal Reinforcing
As (based on applied moment) :	0.4301 in ² /ft	
0.0018bh : 0.0018(12)(8) :	0.1728 in ² /ft	Horizontal Reinforcing Options :
	=====	One layer of : Two layers of :
Required Area :	0.4301 in ² /ft	#4@ 13.89 in #4@ 27.78 in
Provided Area :	0.465 in ² /ft	#5@ 21.53 in #5@ 43.06 in
Maximum Area :	0.8382 in ² /ft	#6@ 30.56 in #6@ 61.11 in

Footing Data

Toe Width	=	4.50 ft
Heel Width	=	1.50
Total Footing Width	=	6.00
Footing Thickness	=	14.00 in

f_c = 2,500 psi F_y = 60,000 psi
Footing Concrete Density = 150.00 pcf
Min. As % = 0.0018
Cover @ Top 2.00 @ Btm. = 3.00 in

Footing Design Results

	Toe	Heel	
Factored Pressure	= 1,807	0	psf
Mu' : Upward	= 13,461	7	ft-#
Mu' : Downward	= 2,126	577	ft-#
Mu: Design	= 11,334	570	ft-#
φ Mn	= 21,219	23,311	ft-#
Actual 1-Way Shear	= 29.34	9.74	psi
Allow 1-Way Shear	= 46.09	44.73	psi
Toe Reinforcing	= # 5 @ 8.00 in		
Heel Reinforcing	= # 5 @ 8.00 in		
Key Reinforcing	= None Spec'd		
Footing Torsion, Tu	=	0.00	ft-lbs
Footing Allow. Torsion, φ Tn	=	0.00	ft-lbs

If torsion exceeds allowable, provide supplemental design for footing torsion.

Other Acceptable Sizes & Spacings

Toe: #4@ 7.27 in, #5@ 11.27 in, #6@ 16.00 in, #7@ 21.82 in, #8@ 28.73 in, #9@ 36.37 in, #10@ 46.20 in

Heel: #4@ 7.93 in, #5@ 12.30 in, #6@ 17.46 in, #7@ 23.80 in, #8@ 31.34 in, #9@ 39.68 in, #10@ 50.39 in

Key: No key defined

Min footing T&S reinf Area 1.81 in²
Min footing T&S reinf Area per foot 0.30 in²/ft

If one layer of horizontal bars:

#4@ 7.94 in
#5@ 12.30 in
#6@ 17.46 in

If two layers of horizontal bars:

#4@ 15.87 in
#5@ 24.60 in
#6@ 34.92 in

Cantilevered Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #13(F7)

Summary of Overturning & Resisting Forces & Moments

.....OVERTURNING.....				RESISTING.....			
Item	Force lbs	Distance ft	Moment ft-#		Force lbs	Distance ft	Moment ft-#
HL Act Pres (ab water tbl)	2,368.4	4.06	9,605.4	Soil Over HL (ab. water tbl)	1,008.3	5.58	5,629.9
HL Act Pres (be water tbl)				Soil Over HL (bel. water tbl)		5.58	5,629.9
Hydrostatic Force				Water Table			
Buoyant Force =				Sloped Soil Over Heel =			
Surcharge over Heel =				Surcharge Over Heel =			
Surcharge Over Toe =				Adjacent Footing Load =			
Adjacent Footing Load =				Axial Dead Load on Stem =	154.0	4.83	744.3
Added Lateral Load =				* Axial Live Load on Stem =	300.0	4.83	1,450.0
Load @ Stem Above Soil =				Soil Over Toe =			
=				Surcharge Over Toe =			
				Stem Weight(s) =	1,150.0	4.83	5,558.3
				Earth @ Stem Transitions =			
Total =	2,368.4	O.T.M. =	9,605.4	Footing Weight =	1,050.0	3.00	3,150.0
				Key Weight =		4.83	
				Vert. Component =			
Resisting/Overturning Ratio		=	1.57	Total =	3,362.3 lbs	R.M.=	15,082.5
Vertical Loads used for Soil Pressure =		4,462.5 lbs		* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.			

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Overturning Resistance.

Tilt

Horizontal Deflection at Top of Wall due to settlement of soil

(Deflection due to wall bending not considered)

Soil Spring Reaction Modulus	250.0	pci
Horizontal Defl @ Top of Wall (approximate only)	0.069	in

The above calculation is not valid if the heel soil bearing pressure exceeds that of the toe, because the wall would then tend to rotate into the retained soil.



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City and State: Valley County, Idaho

Cantilevered Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #13(F7)

Rebar Lap & Embedment Lengths Information

Stem Design Segment: Bottom

Stem Design Height: 0.00 ft above top of footing

Lap Splice length for #5 bar specified in this stem design segment (25.4.2.4a) =

23.40 in

Development length for #5 bar specified in this stem design segment =

18.00 in

Hooked embedment length into footing for #5 bar specified in this stem design segment =

8.27 in

As Provided =

0.4650 in²/ft

As Required =

0.4301 in²/ft



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Cantilevered Retaining Wall

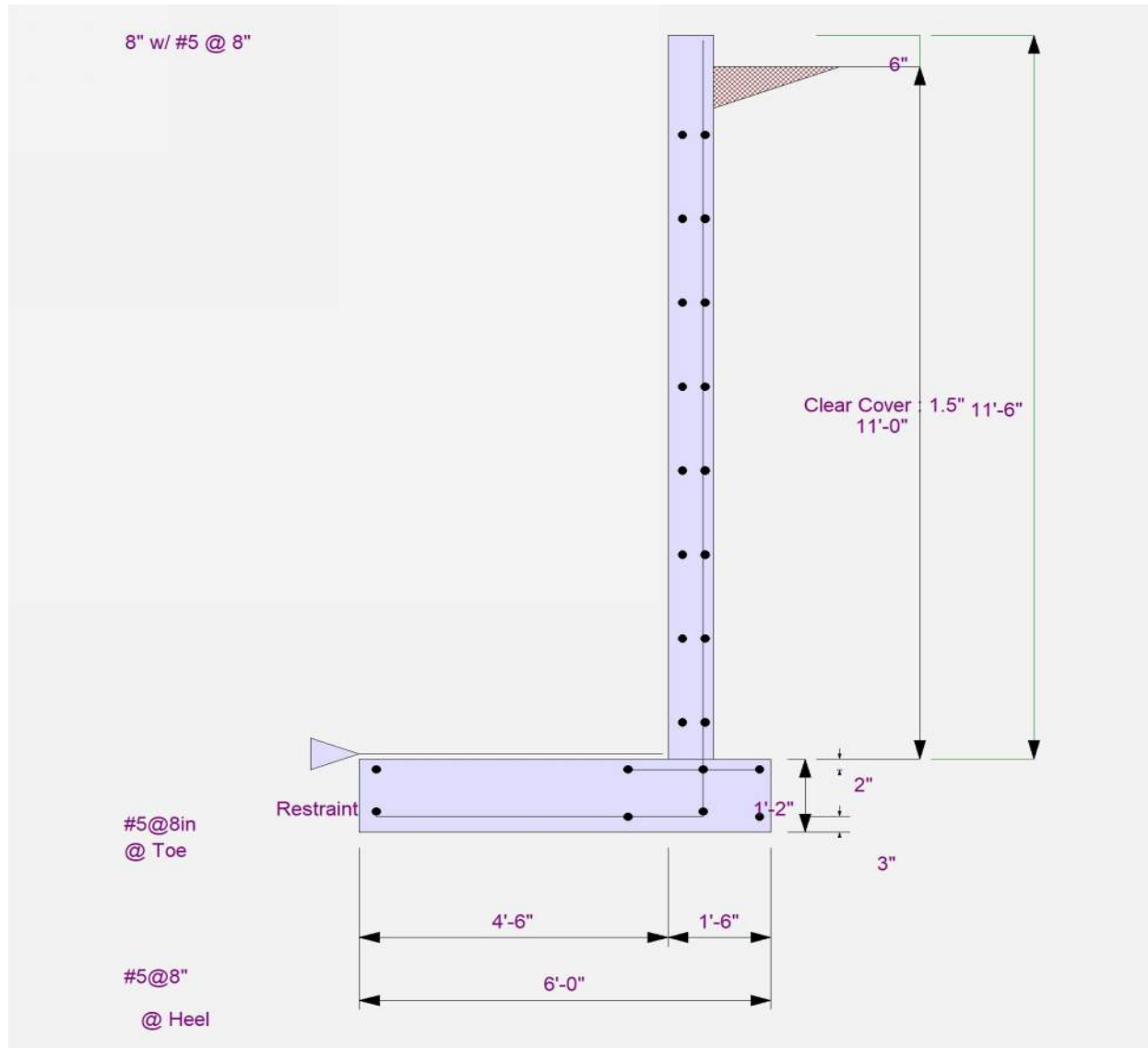
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LIC# : KW-06013353, Build:20.24.10.03

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DESCRIPTION: Footing #13(F7)





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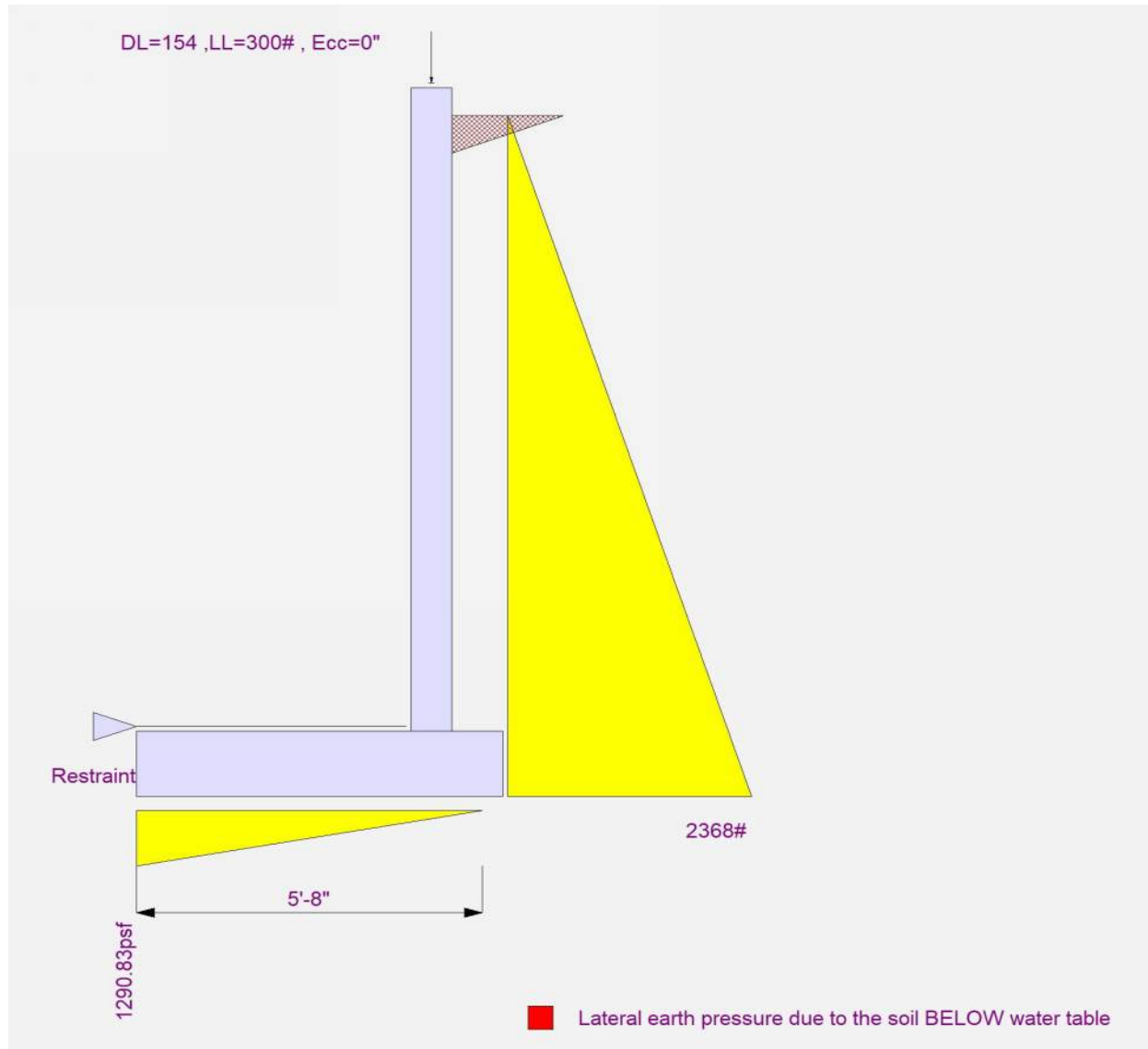
Project File: 25-003 Hawkins (1).ec6

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DESCRIPTION: Footing #13(F7)





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DESCRIPTION: Footing #2(F15)

Code Reference:

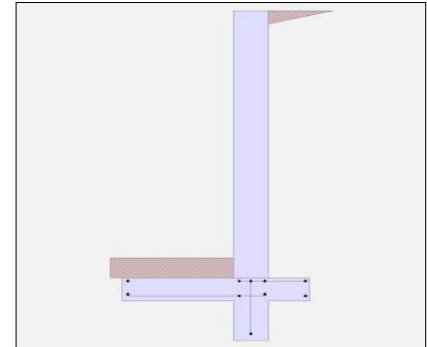
Calculations per

Criteria

Retained Height	=	13.50 ft
Wall height above soil	=	0.00 ft
Slope Behind Wall	=	0.00
Height of Soil over Toe	=	12.00 in
Water table above bottom of footing	=	0.0 ft

Soil Data

Allow Soil Bearing	=	1,500.0 psf
Equivalent Fluid Pressure Method		
Active Heel Pressure	=	32.0 psf/ft
	=	
Passive Pressure	=	250.0 psf/ft
Soil Density, Heel	=	110.00 pcf
Soil Density, Toe	=	110.00 pcf
Footing Soil Friction	=	0.400
Soil height to ignore for passive pressure	=	12.00 in



Surcharge Loads

Surcharge Over Heel	=	0.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	0.0
Used for Sliding & Overturning		

Axial Load Applied to Stem

Axial Dead Load	=	0.0 lbs
Axial Live Load	=	0.0 lbs
Axial Load Eccentricity	=	0.0 in

Lateral Load Applied to Stem

Lateral Load	=	0.0 #/ft
...Height to Top	=	0.00 ft
...Height to Bottom	=	0.00 ft
Load Type	=	Wind (W) (Service Level)
Wind on Exposed Stem	=	0.0 psf (Strength Level)

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type	=	Spread Footing
Base Above/Below Soil at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Cantilevered Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #2(F15)

Design Summary

Wall Stability Ratios

Overtuning = 2.65 OK
Sliding = 1.52 OK
Global Stability = 1.63

Total Bearing Load = 9,607 lbs
...resultant ecc. = 6.48 in

Eccentricity within middle third

Soil Pressure @ Toe = 1,406 psf OK
Soil Pressure @ Heel = 596 psf OK
Allowable = 1,500 psf

Soil Pressure Less Than Allowable

ACI Factored @ Toe = 1,969 psf
ACI Factored @ Heel = 834 psf
Footing Shear @ Toe = 40.2 psi OK
Footing Shear @ Heel = 13.1 psi OK
Allowable = 82.2 psi

Sliding Calcs

Lateral Sliding Force = 3,441.8 lbs
less 100% Passive Force = 2,045.1 lbs
less 100% Friction Force = 3,203.5 lbs
Added Force Req'd = 0.0 lbs OK
...for 1.5 Stability = 0.0 lbs OK

Vertical component of active lateral soil pressure IS
NOT considered in the calculation of soil bearing

Load Factors

Building Code
Dead Load 1.200
Live Load 1.600
Earth, H 1.600
Wind, W 1.600
Seismic, E 1.000

Stem Construction

Design Height Above Ftg ft = 0.00
Wall Material Above "Ht" = Concrete
Design Method = SD SD SD
Thickness = 18.00
Rebar Size = # 5
Rebar Spacing = 8.00
Rebar Placed at = Edge

Design Data

fb/FB + fa/Fa = 0.641

Total Force @ Section

Service Level lbs =
Strength Level lbs = 4,665.6

Moment....Actual

Service Level ft-# =
Strength Level ft-# = 20,995.2

Moment.....Allowable = 32,724.2

Shear.....Actual

Service Level psi =
Strength Level psi = 24.0

Shear.....Allowable psi = 35.1

Anet (Masonry) in2 =

Wall Weight psf = 225.0

Rebar Depth 'd' in = 16.19

Masonry Data

f'm psi =
Fs psi =
Solid Grouting =
Modular Ratio 'n' =
Equiv. Solid Thick. =
Masonry Block Type =
Masonry Design Method = ASD

Concrete Data

f'c psi = 2,500.0
Fy psi = 60,000.0



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City and State: Valley County, Idaho

Cantilevered Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

Snake River Engineering

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DESCRIPTION: Footing #2(F15)

Concrete Stem Rebar Area Details

Bottom Stem	Vertical Reinforcing	Horizontal Reinforcing
As (based on applied moment) :	0.294 in ² /ft	
0.0018bh : 0.0018(12)(18) :	0.3888 in ² /ft	Horizontal Reinforcing Options :
	=====	One layer of : Two layers of :
Required Area :	0.3888 in ² /ft	#4@ 6.17 in #4@ 12.35 in
Provided Area :	0.465 in ² /ft	#5@ 9.57 in #5@ 19.14 in
Maximum Area :	2.1929 in ² /ft	#6@ 13.58 in #6@ 27.16 in

Footing Data

Toe Width	=	4.75 ft
Heel Width	=	3.25
Total Footing Width	=	8.00
Footing Thickness	=	14.00 in
Key Width	=	18.00 in
Key Depth	=	24.00 in
Key Distance from Toe	=	4.75 ft
f _c =	3,000 psi	F _y = 60,000 psi
Footing Concrete Density	=	150.00 pcf
Min. As %	=	0.0018
Cover @ Top	2.00	@ Btm.= 3.00 in

Footing Design Results

	Toe	Heel	Key	
Factored Pressure	= 1,969	834		psf
Mu' : Upward	= 19,678	1,404		ft-#
Mu' : Downward	= 3,858	3,050		ft-#
Mu: Design	= 15,820	1,646	4,455	ft-#
φ Mn	= 21,410	23,502	17,879	ft-#
Actual 1-Way Shear	= 40.23	13.11	32.36	psi
Allow 1-Way Shear	= 50.49	49.00	53.46	psi
Toe Reinforcing	= # 5 @ 8.00 in			
Heel Reinforcing	= # 5 @ 8.00 in			
Key Reinforcing	= # 5 @ 8.00 in			
Footing Torsion, Tu	=	0.00 ft-lbs		
Footing Allow. Torsion, φ Tn	=	0.00 ft-lbs		

If torsion exceeds allowable, provide supplemental design for footing torsion.

Other Acceptable Sizes & Spacings

Toe: #4@ 5.71 in, #5@ 8.85 in, #6@ 12.57 in, #7@ 17.14 in, #8@ 22.57 in, #9@ 28.57 in, #10@ 36.28 in

Heel: #4@ 7.93 in, #5@ 12.30 in, #6@ 17.46 in, #7@ 23.80 in, #8@ 31.34 in, #9@ 39.68 in, #10@ 50.39 in

Key: #4@ 6.17 in, #5@ 9.56 in, #6@ 13.58 in, #7@ 1

Min footing T&S reinf Area 2.42 in²
Min footing T&S reinf Area per foot 0.30 in²/ft

If one layer of horizontal bars:

#4@ 7.94 in
#5@ 12.30 in
#6@ 17.46 in

If two layers of horizontal bars:

#4@ 15.87 in
#5@ 24.60 in
#6@ 34.92 in



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SRE Project #: 2025-9936
City and State: Valley County, Idaho

Cantilevered Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #2(F15)

Summary of Overturning & Resisting Forces & Moments

	OVERTURNING.....				RESISTING.....		
Item	Force lbs	Distance ft	Moment ft-#		Force lbs	Distance ft	Moment ft-#
HL Act Pres (ab water tbl)	3,441.8	4.89	16,826.5	Soil Over HL (ab. water tbl)	2,598.8	7.13	18,516.1
HL Act Pres (be water tbl)				Soil Over HL (bel. water tbl)		7.13	18,516.1
Hydrostatic Force				Water Table			
Buoyant Force	=			Sloped Soil Over Heel	=		
Surcharge over Heel	=			Surcharge Over Heel	=		
Surcharge Over Toe	=			Adjacent Footing Load	=		
Adjacent Footing Load	=			Axial Dead Load on Stem	=		
Added Lateral Load	=			* Axial Live Load on Stem	=		
Load @ Stem Above Soil	=			Soil Over Toe	=	522.5	2.38
				Surcharge Over Toe	=		1,240.9
				Stem Weight(s)	=	3,037.5	5.50
				Earth @ Stem Transitions	=		16,706.3
				Footing Weight	=	1,400.0	4.00
				Key Weight	=	450.0	5.50
				Vert. Component	=		2,475.0

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Overturning Resistance.

Tilt

Horizontal Deflection at Top of Wall due to settlement of soil

(Deflection due to wall bending not considered)

Soil Spring Reaction Modulus 250.0 pci
Horizontal Defl @ Top of Wall (approximate only) 0.066 in

The above calculation is not valid if the heel soil bearing pressure exceeds that of the toe, because the wall would then tend to rotate into the retained soil.



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City and State: Valley County, Idaho

Cantilevered Retaining Wall

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LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #2(F15)

Rebar Lap & Embedment Lengths Information

Stem Design Segment: Bottom

Stem Design Height: 0.00 ft above top of footing

Lap Splice length for #5 bar specified in this stem design segment (25.4.2.4a) =

23.40 in

Development length for #5 bar specified in this stem design segment =

18.00 in

Hooked embedment length into footing for #5 bar specified in this stem design segment =

7.87 in

As Provided =

0.4650 in²/ft

As Required =

0.3920 in²/ft



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Cantilevered Retaining Wall

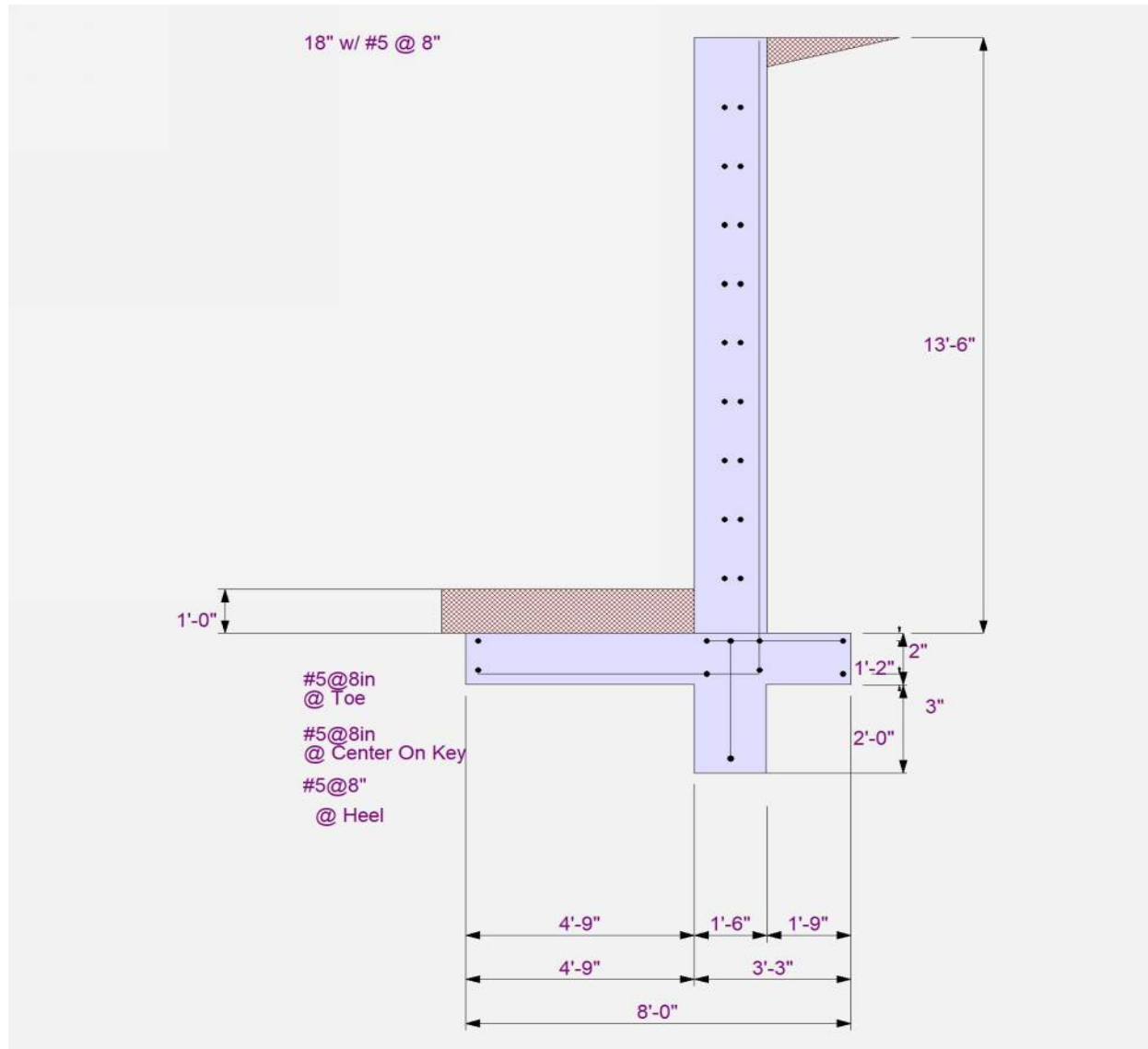
Project File: 25-003 Hawkins (1).ec6

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SNAKE RIVER ENGINEERING

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DESCRIPTION: Footing #2(F15)





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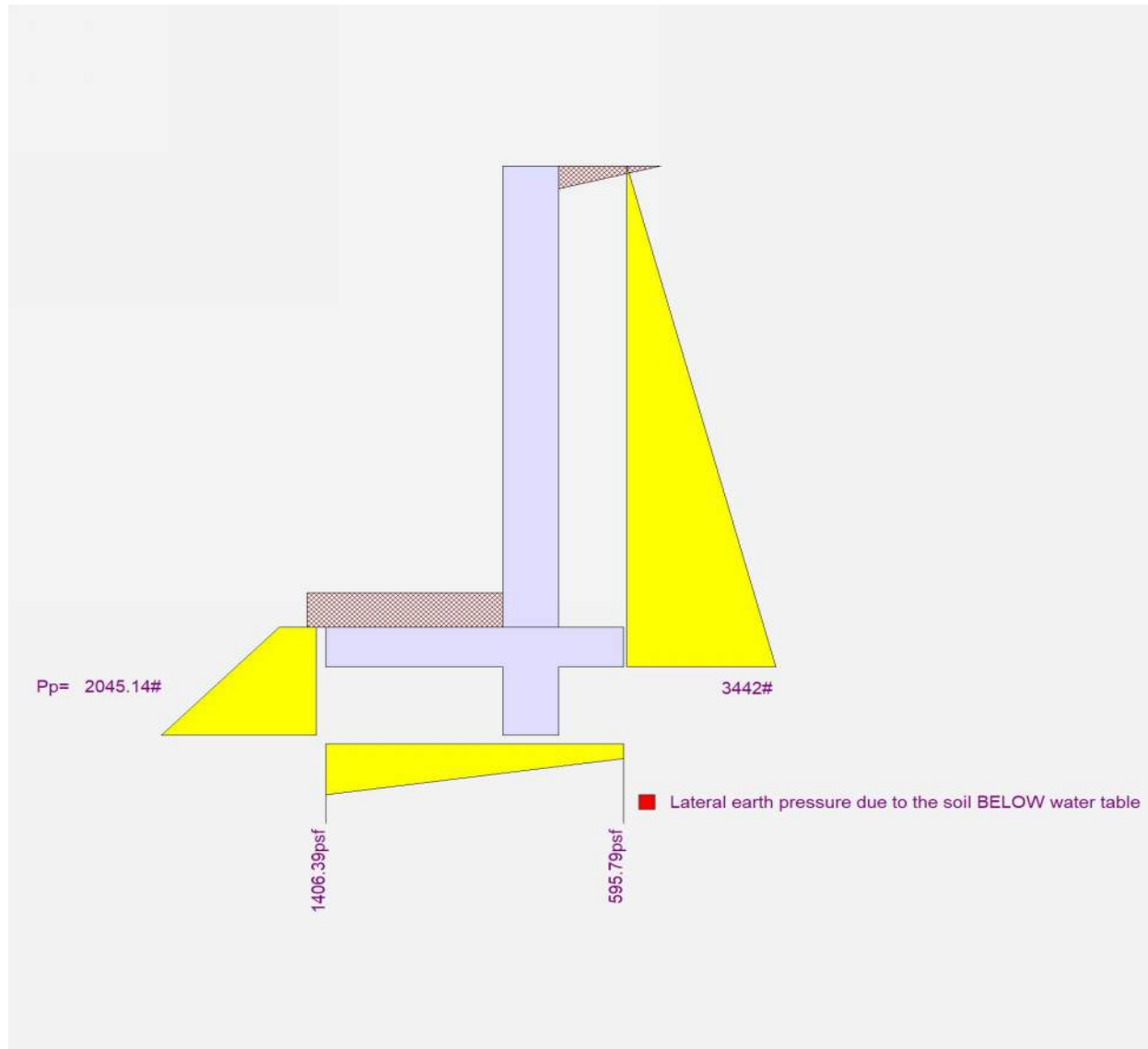
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SNAKE RIVER ENGINEERING

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DESCRIPTION: Footing #2(F15)





524 CLEVELAND BLVD. #230
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(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #14(F8)

Code Reference:

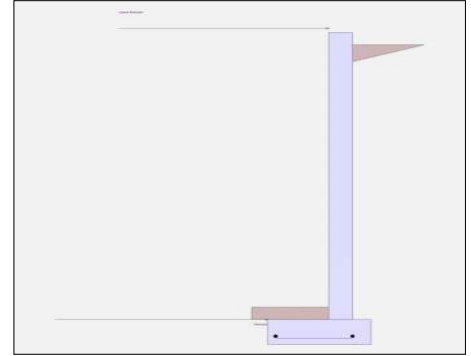
Calculations per

Criteria

Retained Height	=	11.0 ft
Wall height above soil	=	0.50 ft
Total Wall Height	=	11.50 ft
Top Support Height	=	11.50 ft
Slope Behind Wall	=	0
Height of Soil over Toe	=	6 in

Soil Data

Allow Soil Bearing	=	2000 psf
Equivalent Fluid Pressure Method	=	
At-Rest Heel Pressure	=	32.0 psf/ft
	=	0.0 psf/ft
Passive Pressure	=	250.0 psf/ft
Soil Density	=	110 pcf
Footing Soil Frictior	=	0.4 psf
Soil height to ignore for passive pressure	=	12 in



Surcharge Loads

Surcharge Over Heel	=	psf
>>>Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	psf
Used for Sliding & Overturning		

Axial Load Applied to Stem

Axial Dead Load	=	326.20 lbs
Axial Live Load	=	2,115.0 lbs
Axial Load Eccentricity	=	in

Earth Pressure Seismic Load

Uniform Lateral Load Applied to Stem

Lateral Load	=	#/ft
...Height to Top	=	ft
...Height to Bottom	=	ft
Load Type	=	Wind (W) (Service Level)
Wind on Exposed Stem	=	0.00 psf (Strength Level)
Wind acts left-to-right toward retention side.		
K_h Soil Density Multiplier	=	0.2 g

Adjacent Footing Load

Adjacent Footing Load	=	lbs
Footing Width	=	ft
Eccentricity	=	in
Wall to Ftg CL Dist	=	ft
Footing Type	=	Line Load
Base Above/Below Soil at Back of Wall	=	ft
Poisson's Ratio	=	0.3
Added seismic per unit area	=	0.0 psf

Design Summary

Total Bearing Load	=	4,894.53 lbs
...resultant ecc.	=	0.0 in
Soil Pressure @ Toe	=	1,506.01 psf OK
Soil Pressure @ Heel	=	1,506.01 psf OK
Allowable	=	psf
Soil Pressure Less Than Allowable		
ACI Factored @ Toe	=	2,067.52 psf
ACI Factored @ Heel	=	2,067.52 psf
Footing Shear @ Toe	=	22.296 psi OK
Footing Shear @ Heel	=	2.117 psi OK
Allowable	=	75.0 psi
Reaction at Top	=	357.108 lbs
Reaction at Bottom	=	1,945.89 lbs

Sliding Calcs

Lateral Sliding Force	=	1,945.89 lbs
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Vertical component of active lateral soil pressure IS NOT considered in the calculation of soil bearing

Concrete Stem Construction

Thickness	=	8.00 in
Wall Weight	=	100.0 psf
Stem is FIXED to top of footing		
F_y	=	60000 psi
f'_c	=	2,500.0 psi

	@ Top Support	Mmax Between Top & Base	@ Base of Wall
	Stem OK	Stem OK	Stem OK
Design Height Above Ftg	= 11.50 ft	6.327 ft	0.00 ft
Rebar Size	= # 5	# 5	# 5
Rebar Spacing	= 16.00 in	16.00 in	16.00 in
Rebar Placed at	= Center	Center	Edge
Rebar Depth 'd'	= 4.0 in	4.0 in	5.688 in
Design Data			
$f_b/FB + f_a/Fa$	=	0.537	0.842
M_uActual	=	0.0 ft-#	2,093.66 ft-#
$M_n * \Phi$Allowable	=	3,897.96 ft-#	3,897.96 ft-#
Shear Force @ this height	=	572.97 lbs	2,524.63 lbs
Shear.....Actual	=	11.937 psi	36.991 psi
Shear.....Allowable	=	50.759 psi	45.140 psi

Load Factors

Building Code	
Dead Load	1.200
Live Load	1.600
Earth. H	1.600
Wind, V 22/25	1.000
Seismic, E	1.000



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

Snake River Engineering

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #14(F8)

Footing Strengths & Dimensions

Toe Width	=	2.0 ft
Heel Width	=	1.250
Total Footing Width	=	3.250
Footing Thickness	=	12.0 in

f'_c =	2,500.0 psi	F_y =	60000 psi
Footing Concrete Density	=	150 pcf	
Min. As %	=	0.0018	
Cover @ Top	=	2 in	@ Btm.= 3 in

Footing Design Results

	Toe	Heel	
Factored Pressure	= 2,067.52	2,067.52	psf
μ' : Upward	= 4,135.04		ft-#
μ' : Downward	= 492.0		ft-#
μ : Design	= 3,643	-74	ft-#
Actual 1-Way Shear	= 22.296	2.117	psi
Allow 1-Way Shear	= 39.196	40.0	psi

Other Acceptable Sizes & Spacings:

Toe: # 5 @ 16.00 in	-or-	#4@ 9.25 in, #5@ 14.35 in, #6@ 20.37 in, #7@ 27.1
Heel: None Spec'd	-or-	$\phi M_n = \phi * 5 * \lambda * \sqrt{f'_c} * S_m$

Min footing T&S reinf Area	0.84	in ²
Min footing T&S reinf Area per foot	0.26	in ² /ft
If one layer of horizontal bars:	If two layers of horizontal bars:	
#4@ 9.26 in	#4@	18.52 in
#5@ 14.35 in	#5@	28.70 in
#6@ 20.37 in	#6@	40.74 in

Summary of Forces on Footing : Slab RESISTS sliding, stem is FIXED at footing

Forces acting on footing for soil pressure

>>> Sliding Forces are restrained by the adjacent slab

Load & Moment Summary For Footing : For Soil Pressure Calcs

Moment @ Top of Footing Applied from Stem	=	-2,980.42 ft-#
Surcharge Over Heel	= 0.0 lbs	0.0 ft
Adjacent Footing Load	= 0.0 lbs	0.0 ft
Axial Dead Load on Stem	= 2,441.20 lbs	2.333 ft
Soil Over Toe	= 110.0 lbs	1.0 ft
Surcharge Over Toe	= 0.0 lbs	0.0 ft
Stem Weight	= 1,150.0 lbs	2.333 ft
Soil Over Heel	= 705.83 lbs	2.958 ft
Footing Weight	= 487.50 lbs	1.625 ft
Total Vertical Force	= 4,894.53 lbs	Base Moment = 8,389.32 ft-#

Stem is specified to be fixed to footing, and top restraint is assumed to react out any tendency for moment at the footing/soil interface, so uniform soil pressure is assumed.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.



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City and State: Valley County, Idaho

Restrained Retaining Wall

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LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #14(F8)

Rebar Lap & Embedment Lengths Information



524 CLEVELAND BLVD. #230
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Restrained Retaining Wall

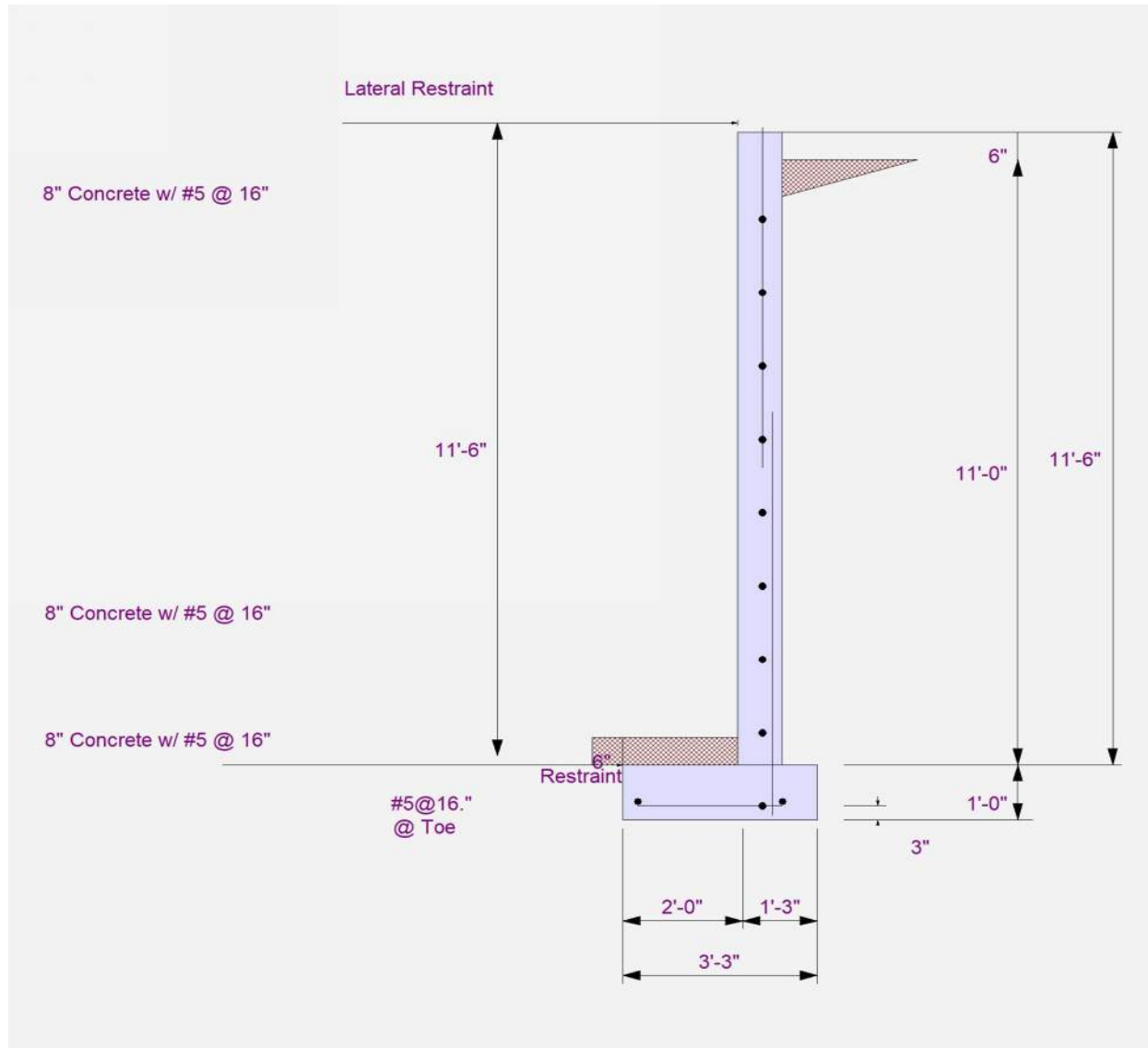
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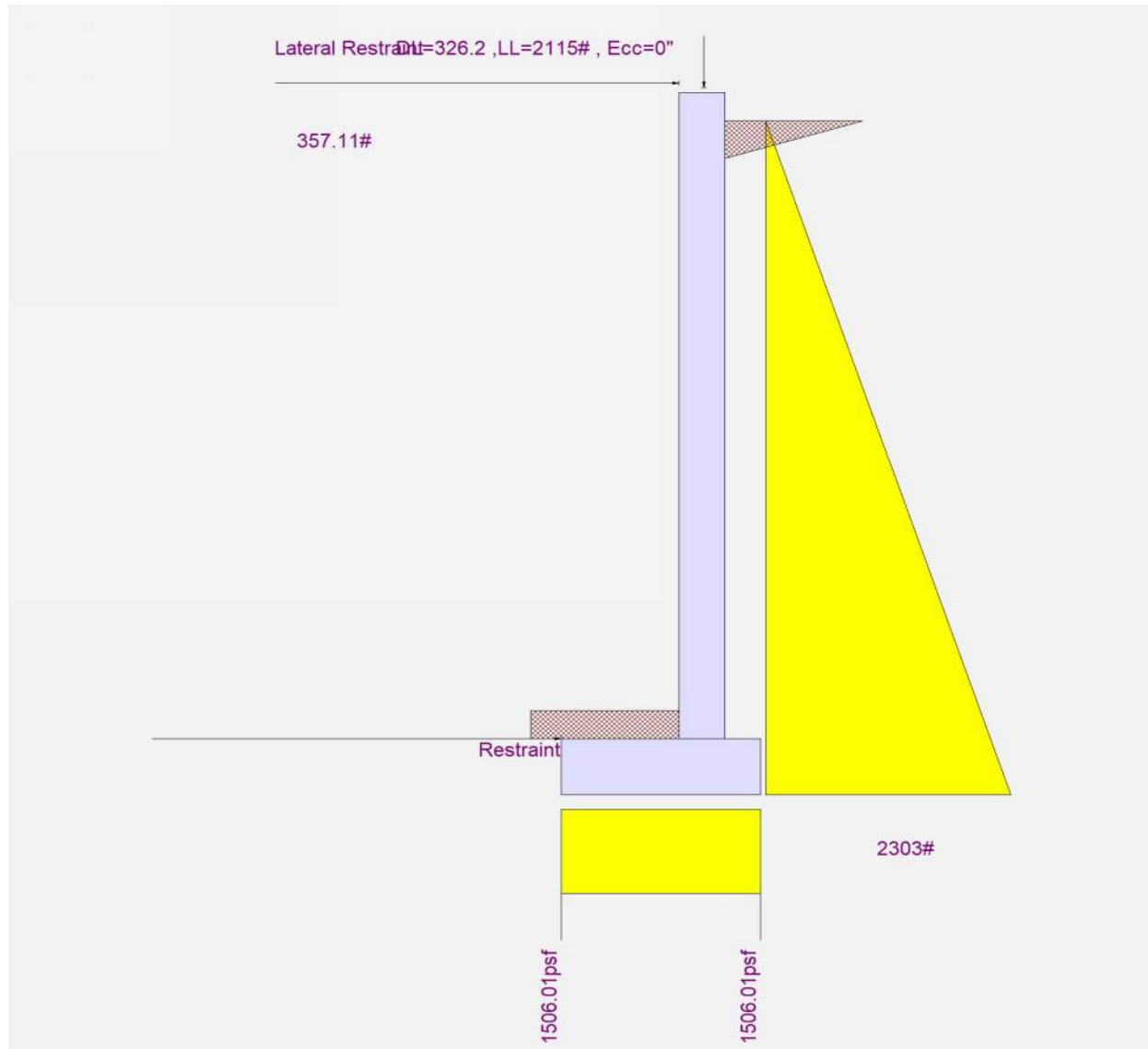
Project File: 25-003 Hawkins (1).ec6

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Restrained Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

Snake River Engineering

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #15(F9)

Code Reference:

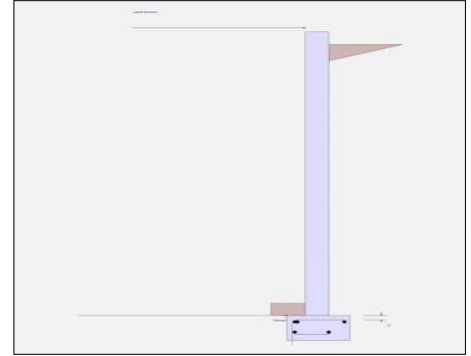
Calculations per

Criteria

Retained Height	=	11.0 ft
Wall height above soil	=	0.50 ft
Total Wall Height	=	11.50 ft
Top Support Height	=	11.50 ft
Slope Behind Wall	=	0
Height of Soil over Toe	=	6 in

Soil Data

Allow Soil Bearing	=	2000 psf
Equivalent Fluid Pressure Method		
At-Rest Heel Pressure	=	32.0 psf/ft
	=	0.0 psf/ft
Passive Pressure	=	250.0 psf/ft
Soil Density	=	110 pcf
Footing Soil Frictior	=	0.4 psf
Soil height to ignore for passive pressure	=	12 in



Surcharge Loads

Surcharge Over Heel	=	psf
>>>Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	psf
Used for Sliding & Overturning		

Axial Load Applied to Stem

Axial Dead Load	=	17.0 lbs
Axial Live Load	=	40.0 lbs
Axial Load Eccentricity	=	in

Earth Pressure Seismic Load

Uniform Lateral Load Applied to Stem

Lateral Load	=	#/ft
...Height to Top	=	ft
...Height to Bottom	=	ft
Load Type	=	Wind (W) (Service Level)
Wind on Exposed Stem	=	0.00 psf (Strength Level)
Wind acts left-to-right toward retention side.		
K_h Soil Density Multiplier	=	0.2 g

Adjacent Footing Load

Adjacent Footing Load	=	lbs
Footing Width	=	ft
Eccentricity	=	in
Wall to Ftg CL Dist	=	ft
Footing Type		Line Load
Base Above/Below Soil at Back of Wall	=	ft
Poisson's Ratio	=	0.3
Added seismic per unit area	=	0.0 psf

Design Summary

Total Bearing Load	=	2,350.33 lbs
...resultant ecc.	=	0.0 in
Soil Pressure @ Toe	=	1,175.17 psf OK
Soil Pressure @ Heel	=	1,175.17 psf OK
Allowable	=	psf
Soil Pressure Less Than Allowable		
ACI Factored @ Toe	=	0.0 psf
ACI Factored @ Heel	=	0.0 psf
Footing Shear @ Toe	=	0.0 psi OK
Footing Shear @ Heel	=	0.0 psi OK
Allowable	=	75.0 psi
Reaction at Top	=	357.108 lbs
Reaction at Bottom	=	1,945.89 lbs

Sliding Calcs

Lateral Sliding Force	=	1,945.89 lbs
-----------------------	---	--------------

Vertical component of active lateral soil pressure IS
NOT considered in the calculation of soil bearing

Load Factors

Building Code	
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W 22/25	1.000
Seismic, E	1.000

Concrete Stem Construction

Thickness	=	8.00 in
Fy	=	60000 psi
Wall Weight	=	100.0 psf
f'c	=	2,500.0 psi
Stem is FIXED to top of footing		

	@ Top Support	Mmax Between Top & Base	@ Base of Wall
	Stem OK	Stem OK	Stem OK
Design Height Above Ftg	= 11.50 ft	6.327 ft	0.00 ft
Rebar Size	= # 5	# 5	# 5
Rebar Spacing	= 16.00 in	16.00 in	16.00 in
Rebar Placed at	= Edge	Center	Edge
Rebar Depth 'd'	= 5.688 in	4.0 in	5.688 in
Design Data			
fb/FB + fa/Fa	=	0.537	0.842
Mu....Actual	= 0.0 ft-#	2,093.66 ft-#	4,768.68 ft-#
Mn * Phi.....Allowable	= 5,663.51 ft-#	3,897.96 ft-#	5,663.51 ft-#
Shear Force @ this height	= 572.97 lbs		2,524.63 lbs
Shear.....Actual	= 8.395 psi		36.991 psi
Shear.....Allowable	= 45.140 psi		45.140 psi



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #15(F9)

Footing Strengths & Dimensions

Toe Width	=	1.66666666 ft
Heel Width	=	.33333333
Total Footing Width	=	2.0
Footing Thickness	=	12.0 in

f'c = 2,500.0 psi Fy = 60000 psi
Footing Concrete Density = 150 pcf
Min. As % = 0.0018
Cover @ Top = 2 in @ Btm. = 3 in

Footing Design Results

		<u>Toe</u>	<u>Heel</u>	
Factored Pressure	=	0.0	0.0	psf
Mu' : Upward	=	0.0		ft-#
Mu' : Downward	=	0.0		ft-#
Mu: Design	=	0	0	ft-#
Actual 1-Way Shear	=	0.0	0.0	psi
Allow 1-Way Shear	=	40.642	39.192	psi

Other Acceptable Sizes & Spacings:

Toe: # 5 @ 14.35 in -or- #4@ 9.25 in, #5@ 14.35 in, #6@ 20.37 in, #7@ 27.1 in
Heel: # 5 @ 14.35 in -or- #4@ 9.25 in, #5@ 14.35 in, #6@ 20.37 in, #7@ 27.1 in

Min footing T&S reinf Area 0.52 in²
Min footing T&S reinf Area per foot 0.26 in² /ft
If one layer of horizontal bars: If two layers of horizontal bars:
#4@ 9.26 in #4@ 18.52 in
#5@ 14.35 in #5@ 28.70 in
#6@ 20.37 in #6@ 40.74 in

Summary of Forces on Footing : Slab RESISTS sliding, stem is FIXED at footing

Forces acting on footing for soil pressure

>>> Sliding Forces are restrained by the adjacent slab

Load & Moment Summary For Footing : For Soil Pressure Calcs

Moment @ Top of Footing Applied from Stem	=	-2,980.42 ft-#
Surcharge Over Heel	=	0.0 lbs 0.0 ft 0.0 ft-#
Adjacent Footing Load	=	0.0 lbs 0.0 ft 0.0 ft-#
Axial Dead Load on Stem	=	57.0 lbs 1.0 ft 57.0 ft-#
Soil Over Toe	=	36.667 lbs 0.3333 ft 12.222 ft-#
Surcharge Over Toe	=	0.0 lbs 0.0 ft 0.0 ft-#
Stem Weight	=	1,150.0 lbs 1.0 ft 1,150.0 ft-#
Soil Over Heel	=	806.67 lbs 1.667 ft 1,344.44 ft-#
Footing Weight	=	300.0 lbs 1.0 ft 300.0 ft-#
Total Vertical Force	=	2,350.33 lbs Base Moment = -116.758 ft-#

Stem is specified to be fixed to footing, and top restraint is assumed to react out any tendency for moment at the footing/soil interface, so uniform soil pressure is assumed.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #15(F9)

Rebar Lap & Embedment Lengths Information



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

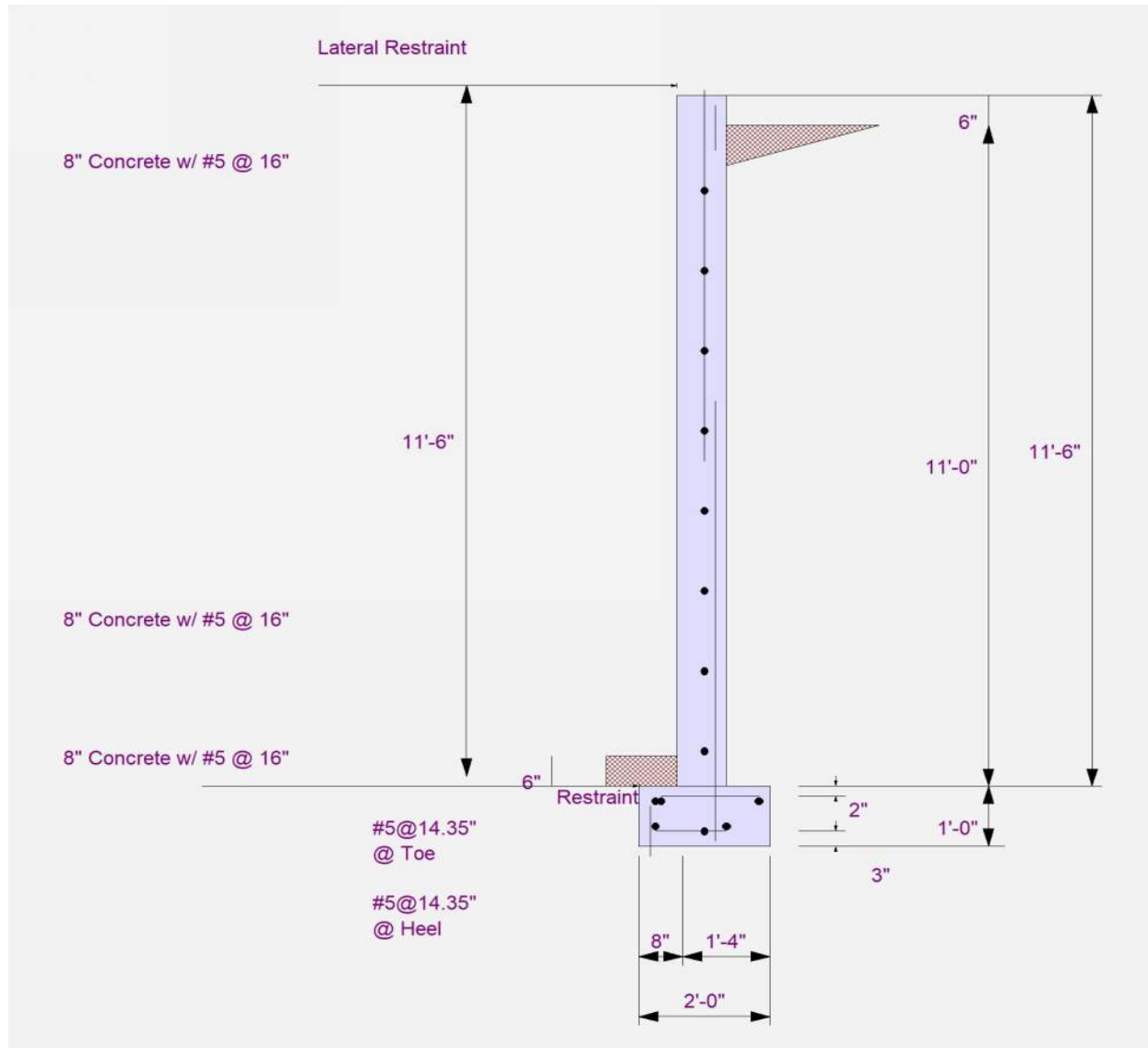
Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #15(F9)





524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

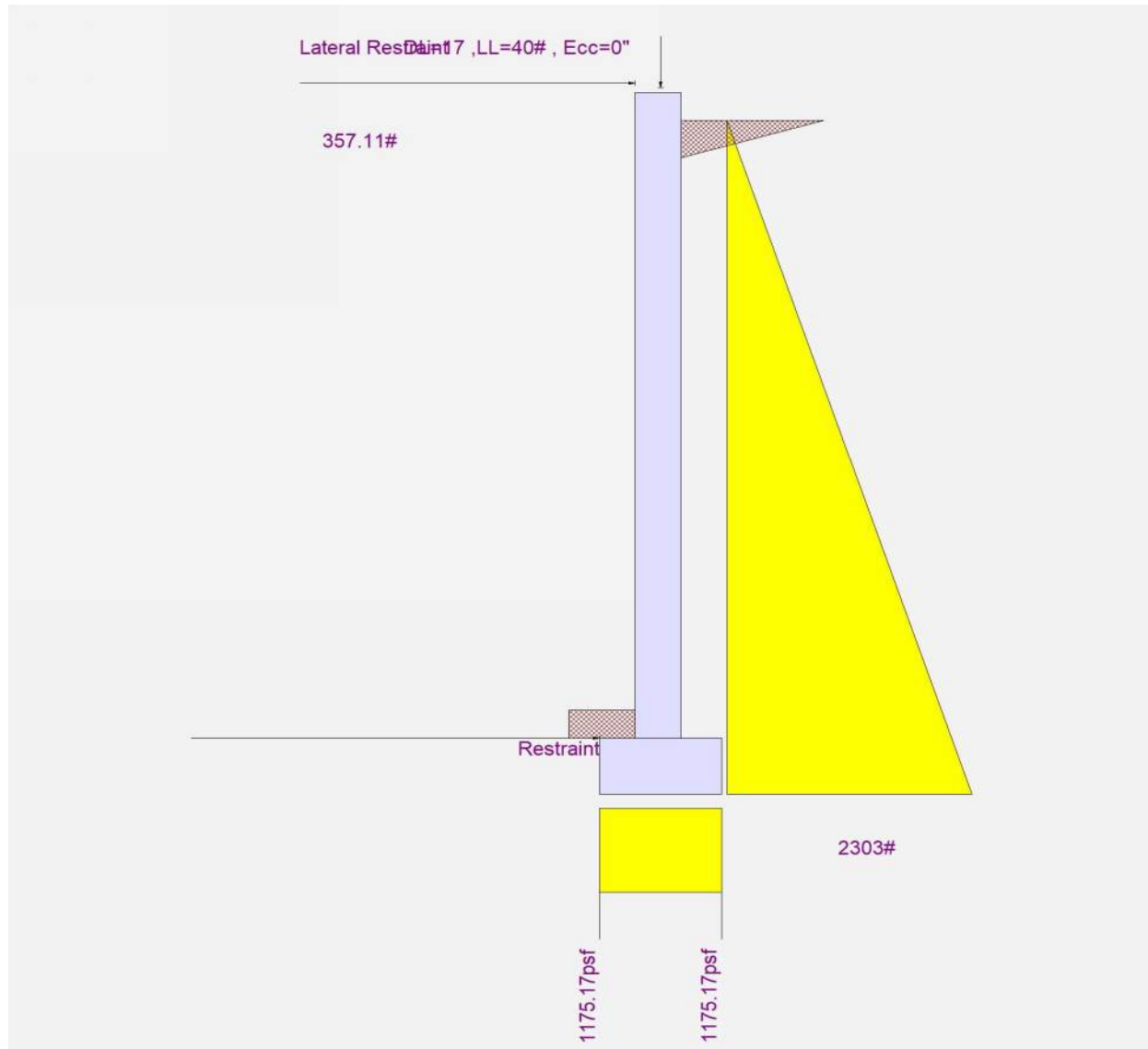
Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #15(F9)





524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

Snake River Engineering

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #16(F10)

Code Reference:

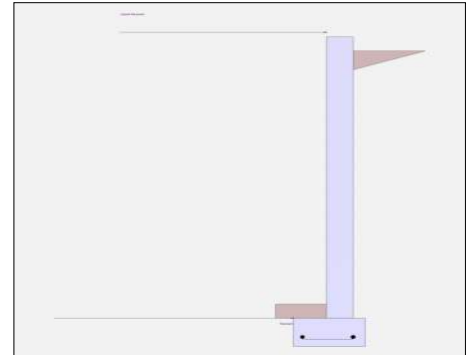
Calculations per

Criteria

Retained Height	=	9.50 ft
Wall height above soil	=	0.50 ft
Total Wall Height	=	10.0 ft
Top Support Height	=	10 ft
Slope Behind Wall	=	0
Height of Soil over Toe	=	6 in

Soil Data

Allow Soil Bearing	=	2000 psf
Equivalent Fluid Pressure Method		
At-Rest Heel Pressure	=	32.0 psf/ft
	=	0.0 psf/ft
Passive Pressure	=	250.0 psf/ft
Soil Density	=	110 pcf
Footing Soil Frictior	=	0.4 psf
Soil height to ignore for passive pressure	=	12 in



Surcharge Loads

Surcharge Over Heel	=	psf
>>>Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	psf
Used for Sliding & Overturning		

Axial Load Applied to Stem

Axial Dead Load	=	170.0 lbs
Axial Live Load	=	1,445.0 lbs
Axial Load Eccentricity	=	in

Earth Pressure Seismic Load

Uniform Lateral Load Applied to Stem

Lateral Load	=	#/ft
...Height to Top	=	ft
...Height to Bottom	=	ft
Load Type	=	Wind (W) (Service Level)
Wind on Exposed Stem	=	0.00 psf (Strength Level)
Wind acts left-to-right toward retention side.		
K_h Soil Density Multiplier	=	0.2 g

Adjacent Footing Load

Adjacent Footing Load	=	lbs
Footing Width	=	ft
Eccentricity	=	in
Wall to Ftg CL Dist	=	ft
Footing Type		Line Load
Base Above/Below Soil at Back of Wall	=	ft
Poisson's Ratio	=	0.3
Added seismic per unit area	=	0.0 psf

Design Summary

Total Bearing Load	=	3,318.33 lbs
...resultant ecc.	=	0.0 in
Soil Pressure @ Toe	=	1,659.17 psf OK
Soil Pressure @ Heel	=	1,659.17 psf OK
Allowable	=	psf
Soil Pressure Less Than Allowable		
ACI Factored @ Toe	=	2,280.0 psf
ACI Factored @ Heel	=	2,280.0 psf
Footing Shear @ Toe	=	5.386 psi OK
Footing Shear @ Heel	=	2.350 psi OK
Allowable	=	75.0 psi
Reaction at Top	=	262.896 lbs
Reaction at Bottom	=	1,500.10 lbs

Sliding Calcs

Lateral Sliding Force	=	1,500.10 lbs
-----------------------	---	--------------

Vertical component of active lateral soil pressure IS
NOT considered in the calculation of soil bearing

Load Factors

Building Code	
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W 22/25	1.000
Seismic, E	1.000

Concrete Stem Construction

Thickness	=	8.00 in
Fy	=	60000 psi
Wall Weight	=	100.0 psf
f'c	=	2,500.0 psi
Stem is FIXED to top of footing		

	@ Top Support	Mmax Between Top & Base	@ Base of Wall
	Stem OK	Stem OK	Stem OK
Design Height Above Ftg	= 10 ft	5.462 ft	0.00 ft
Rebar Size	= # 5	# 5	# 5
Rebar Spacing	= 16.00 in	16.00 in	16.00 in
Rebar Placed at	= Edge	Edge	Edge
Rebar Depth 'd'	= 5.188 in	2.188 in	5.188 in
Design Data			
fb/FB + fa/Fa	=	0.677	0.602
Mu....Actual	= 0.0 ft-#	1,354.32 ft-#	3,093.93 ft-#
Mn * Phi.....Allowable	= 5,140.38 ft-#	2,001.63 ft-#	5,140.38 ft-#
Shear Force @ this height	= 422.234 lbs		1,888.17 lbs
Shear.....Actual	= 6.783 psi		30.332 psi
Shear.....Allowable	= 46.546 psi		46.546 psi



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

Snake River Engineering

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #16(F10)

Footing Strengths & Dimensions

Toe Width	=	1.0 ft
Heel Width	=	1.0
Total Footing Width	=	2.0
Footing Thickness	=	12.0 in

f'_c = 2,500.0 psi F_y = 60000 psi
Footing Concrete Density = 150 pcf
Min. As % = 0.0018
Cover @ Top = 2 in @ Btm. = 3 in

Footing Design Results

	Toe	Heel	
Factored Pressure	= 2,280.0	2,280.0	psf
μ_u : Upward	= 1,140.0		ft-#
μ_u : Downward	= 123.0		ft-#
μ_u : Design	= 1,017	-47	ft-#
Actual 1-Way Shear	= 5.386	2.350	psi
Allow 1-Way Shear	= 40.0	40.0	psi

Other Acceptable Sizes & Spacings:

Toe: # 5 @ 18.00 in -or- $\phi M_n = \phi * 5 * \lambda * \sqrt{f'_c} * S_m$
Heel: None Spec'd -or- $\phi M_n = \phi * 5 * \lambda * \sqrt{f'_c} * S_m$

Min footing T&S reinf Area 0.52 in²
Min footing T&S reinf Area per foot 0.26 in² /ft
If one layer of horizontal bars: If two layers of horizontal bars:
#4@ 9.26 in #4@ 18.52 in
#5@ 14.35 in #5@ 28.70 in
#6@ 20.37 in #6@ 40.74 in

Summary of Forces on Footing : Slab RESISTS sliding, stem is FIXED at footing

Forces acting on footing for soil pressure

>>> Sliding Forces are restrained by the adjacent slab

Load & Moment Summary For Footing : For Soil Pressure Calcs

Moment @ Top of Footing Applied from Stem	=	-1,933.70 ft-#
Surcharge Over Heel	= 0.0 lbs 0.0 ft	0.0 ft-#
Adjacent Footing Load	= 0.0 lbs 0.0 ft	0.0 ft-#
Axial Dead Load on Stem	= 1,615.0 lbs 1.333 ft	2,153.33 ft-#
Soil Over Toe	= 55.0 lbs 0.50 ft	27.50 ft-#
Surcharge Over Toe	= 0.0 lbs 0.0 ft	0.0 ft-#
Stem Weight	= 1,000.0 lbs 1.333 ft	1,333.33 ft-#
Soil Over Heel	= 348.333 lbs 1.833 ft	638.61 ft-#
Footing Weight	= 300.0 lbs 1.0 ft	300.0 ft-#
Total Vertical Force	= 3,318.33 lbs	Base Moment = 2,519.07 ft-#

Stem is specified to be fixed to footing, and top restraint is assumed to react out any tendency for moment at the footing/soil interface, so uniform soil pressure is assumed.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #16(F10)

Rebar Lap & Embedment Lengths Information



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

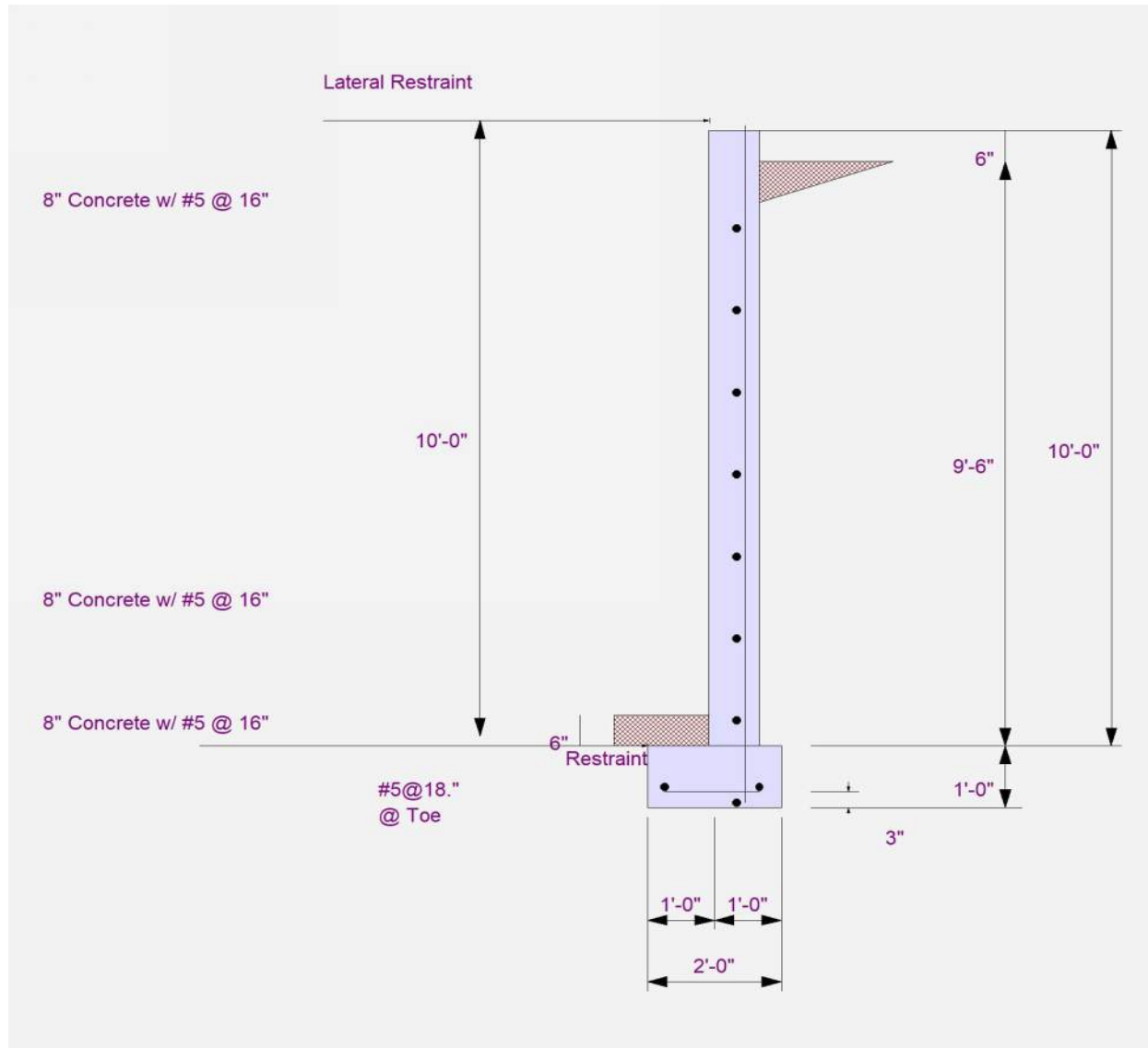
Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #16(F10)





524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
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Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

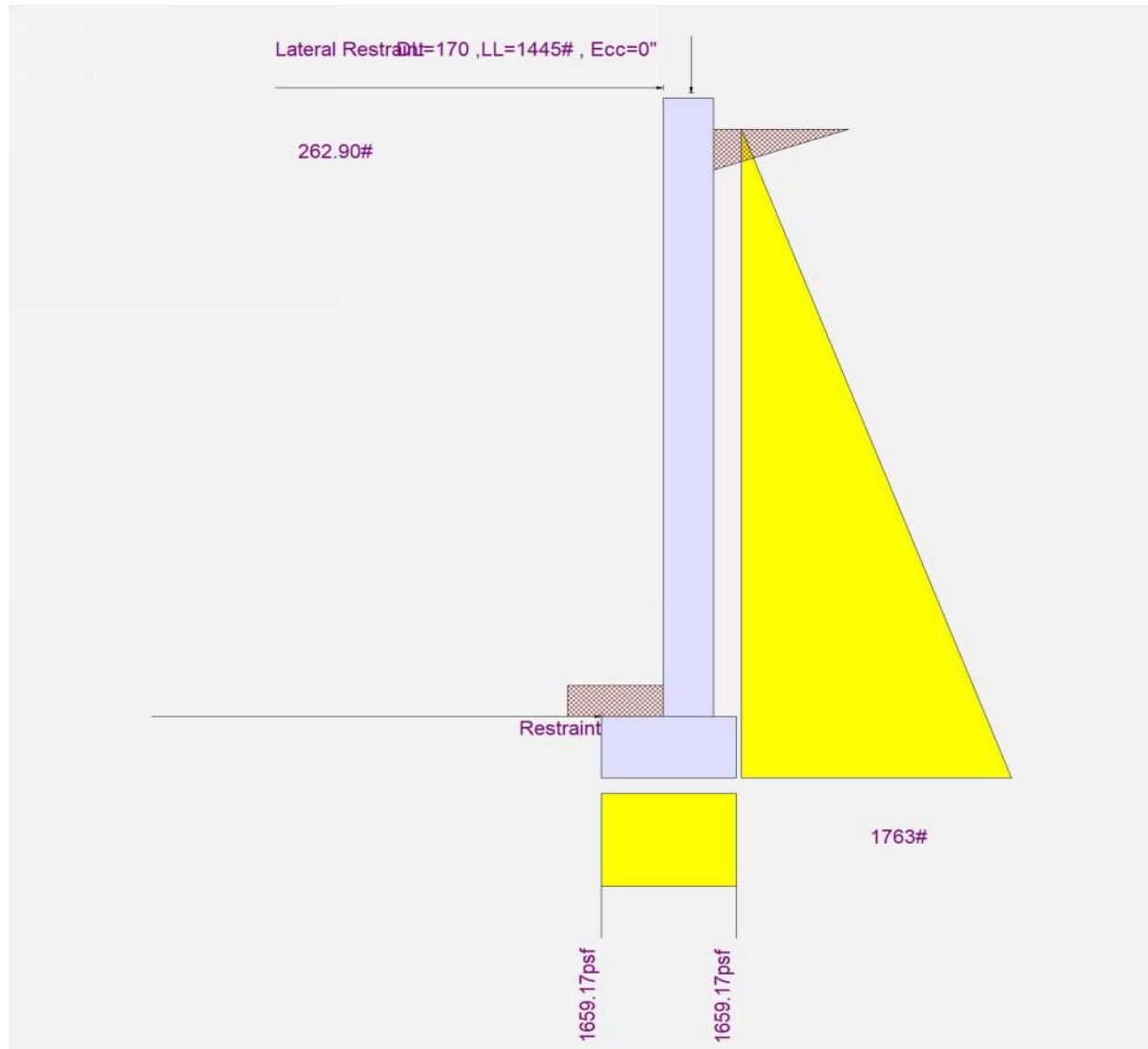
Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #16(F10)





524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

Snake River Engineering

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #30(F13)

Code Reference:

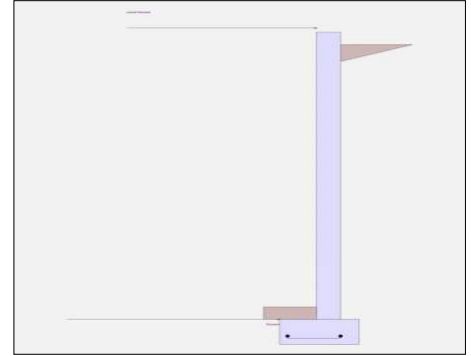
Calculations per

Criteria

Retained Height	=	11.0 ft
Wall height above soil	=	0.50 ft
Total Wall Height	=	11.50 ft
Top Support Height	=	11.50 ft
Slope Behind Wall	=	0
Height of Soil over Toe	=	6 in

Soil Data

Allow Soil Bearing	=	2000 psf
Equivalent Fluid Pressure Method	=	32.0 psf/ft
At-Rest Heel Pressure	=	0.0 psf/ft
Passive Pressure	=	250.0 psf/ft
Soil Density	=	110 pcf
Footing Soil Frictior	=	0.4 psf
Soil height to ignore for passive pressure	=	12 in



Surcharge Loads

Surcharge Over Heel	=	psf
>>>Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	psf
Used for Sliding & Overturning		

Axial Load Applied to Stem

Axial Dead Load	=	170.0 lbs
Axial Live Load	=	1,237.0 lbs
Axial Load Eccentricity	=	in

Earth Pressure Seismic Load

Uniform Lateral Load Applied to Stem

Lateral Load	=	#/ft
...Height to Top	=	ft
...Height to Bottom	=	ft
Load Type	=	Wind (W) (Service Level)
Wind on Exposed Stem	=	0.00 psf (Strength Level)
Wind acts left-to-right toward retention side.		
K_h Soil Density Multiplier	=	0.2 g

Adjacent Footing Load

Adjacent Footing Load	=	lbs
Footing Width	=	ft
Eccentricity	=	in
Wall to Ftg CL Dist	=	ft
Footing Type	=	Line Load
Base Above/Below Soil at Back of Wall	=	ft
Poisson's Ratio	=	0.3
Added seismic per unit area	=	0.0 psf

Design Summary

Total Bearing Load	=	3,706.58 lbs
...resultant ecc.	=	0.0 in
Soil Pressure @ Toe	=	1,482.63 psf OK
Soil Pressure @ Heel	=	1,482.63 psf OK
Allowable	=	psf
Soil Pressure Less Than Allowable		
ACI Factored @ Toe	=	1,977.08 psf
ACI Factored @ Heel	=	1,977.08 psf
Footing Shear @ Toe	=	8.735 psi OK
Footing Shear @ Heel	=	1.677 psi OK
Allowable	=	75.0 psi
Reaction at Top	=	357.108 lbs
Reaction at Bottom	=	1,945.89 lbs

Sliding Calcs

Lateral Sliding Force	=	1,945.89 lbs
-----------------------	---	--------------

Vertical component of active lateral soil pressure IS NOT considered in the calculation of soil bearing

Load Factors

Building Code	
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W 22/25	1.000
Seismic, E	1.000

Concrete Stem Construction

Thickness	=	8.00 in
Wall Weight	=	100.0 psf
Stem is FIXED to top of footing		
F_y	=	60000 psi
f'_c	=	2,500.0 psi

	@ Top Support	Mmax Between Top & Base	@ Base of Wall
	Stem OK	Stem OK	Stem OK
Design Height Above Ftg	= 11.50 ft	6.327 ft	0.00 ft
Rebar Size	= # 5	# 5	# 5
Rebar Spacing	= 16.00 in	16.00 in	16.00 in
Rebar Placed at	= Edge	Edge	Edge
Rebar Depth 'd'	= 4.938 in	2.438 in	4.938 in
Design Data			
$f_b/FB + f_a/Fa$	=	0.925	0.977
M_uActual	= 0.0 ft-#	2,093.66 ft-#	4,768.68 ft-#
$M_n * \Phi$Allowable	= 4,878.82 ft-#	2,263.20 ft-#	4,878.82 ft-#
Shear Force @ this height	= 572.97 lbs		2,524.63 lbs
Shear.....Actual	= 9.670 psi		42.610 psi
Shear.....Allowable	= 47.319 psi		47.319 psi



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #30(F13)

Footing Strengths & Dimensions

Toe Width	=	1.250 ft
Heel Width	=	1.250
Total Footing Width	=	2.50
Footing Thickness	=	12.0 in

f'_c = 2,500.0 psi F_y = 60000 psi
Footing Concrete Density = 150 pcf
Min. As % = 0.0018
Cover @ Top = 2 in @ Btm. = 3 in

Footing Design Results

	Toe	Heel	
Factored Pressure	= 1,977.08	1,977.08	psf
μ' : Upward	= 1,544.59		ft-#
μ' : Downward	= 192.188		ft-#
μ : Design	= 1,352	-59	ft-#
Actual 1-Way Shear	= 8.735	1.677	psi
Allow 1-Way Shear	= 40.0	40.0	psi

Other Acceptable Sizes & Spacings:

Toe: # 5 @ 18.00 in -or- $\phi M_n = \phi * 5 * \lambda * \sqrt{f'_c} * S_m$
Heel: None Spec'd -or- $\phi M_n = \phi * 5 * \lambda * \sqrt{f'_c} * S_m$

Min footing T&S reinf Area 0.65 in²
Min footing T&S reinf Area per foot 0.26 in² /ft
If one layer of horizontal bars: If two layers of horizontal bars:
#4@ 9.26 in #4@ 18.52 in
#5@ 14.35 in #5@ 28.70 in
#6@ 20.37 in #6@ 40.74 in

Summary of Forces on Footing : Slab RESISTS sliding, stem is FIXED at footing

Forces acting on footing for soil pressure

>>> Sliding Forces are restrained by the adjacent slab

Load & Moment Summary For Footing : For Soil Pressure Calcs

Moment @ Top of Footing Applied from Stem	=	-2,980.42 ft-#
Surcharge Over Heel	= 0.0 lbs 0.0 ft	0.0 ft-#
Adjacent Footing Load	= 0.0 lbs 0.0 ft	0.0 ft-#
Axial Dead Load on Stem	= 1,407.0 lbs 1.583 ft	2,227.75 ft-#
Soil Over Toe	= 68.750 lbs 0.6250 ft	42.969 ft-#
Surcharge Over Toe	= 0.0 lbs 0.0 ft	0.0 ft-#
Stem Weight	= 1,150.0 lbs 1.583 ft	1,820.83 ft-#
Soil Over Heel	= 705.83 lbs 2.208 ft	1,558.72 ft-#
Footing Weight	= 375.0 lbs 1.250 ft	468.750 ft-#
Total Vertical Force	= 3,706.58 lbs Base Moment =	3,138.59 ft-#

Stem is specified to be fixed to footing, and top restraint is assumed to react out any tendency for moment at the footing/soil interface, so uniform soil pressure is assumed.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #30(F13)

Rebar Lap & Embedment Lengths Information



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

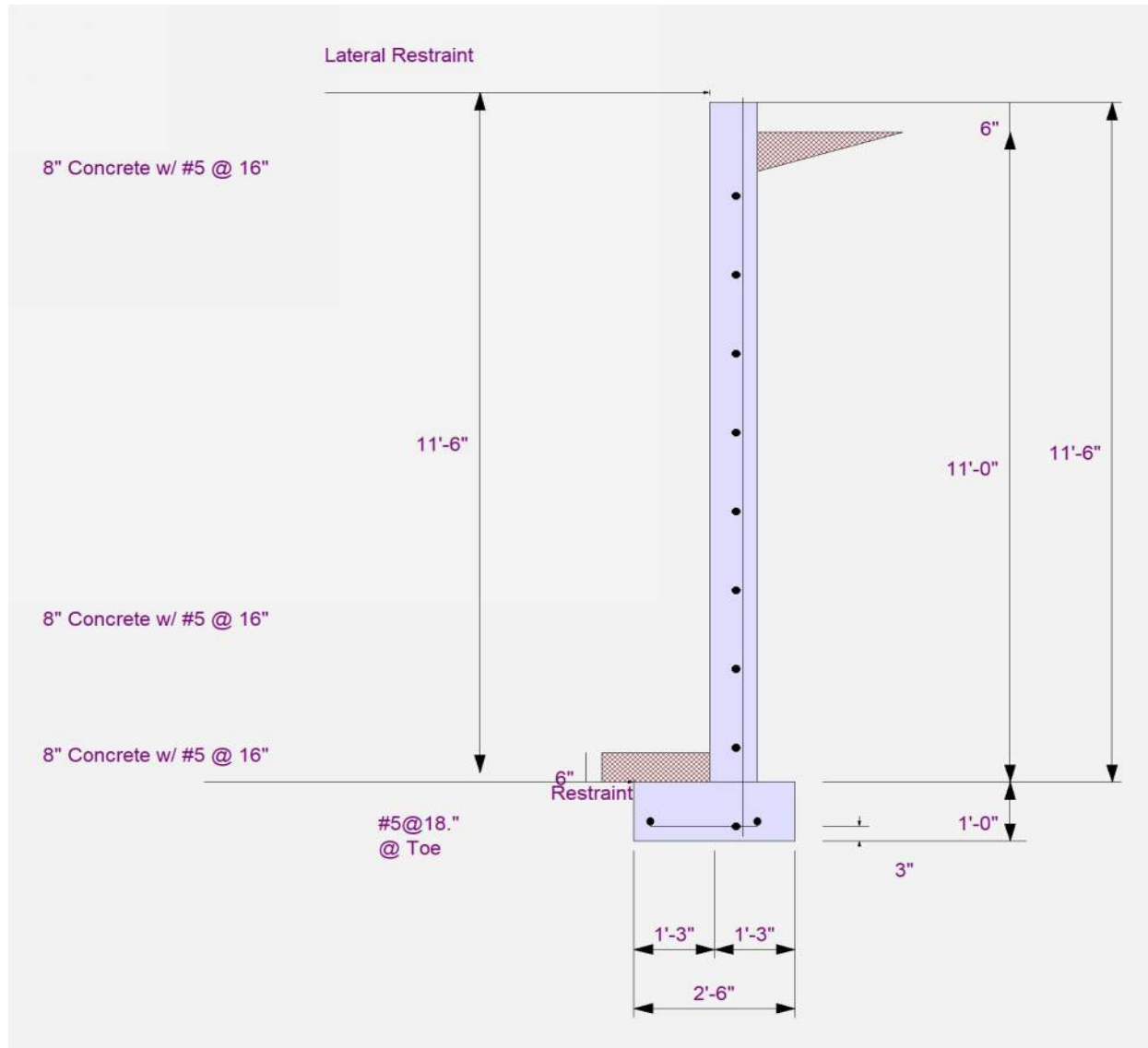
Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #30(F13)





524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

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Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

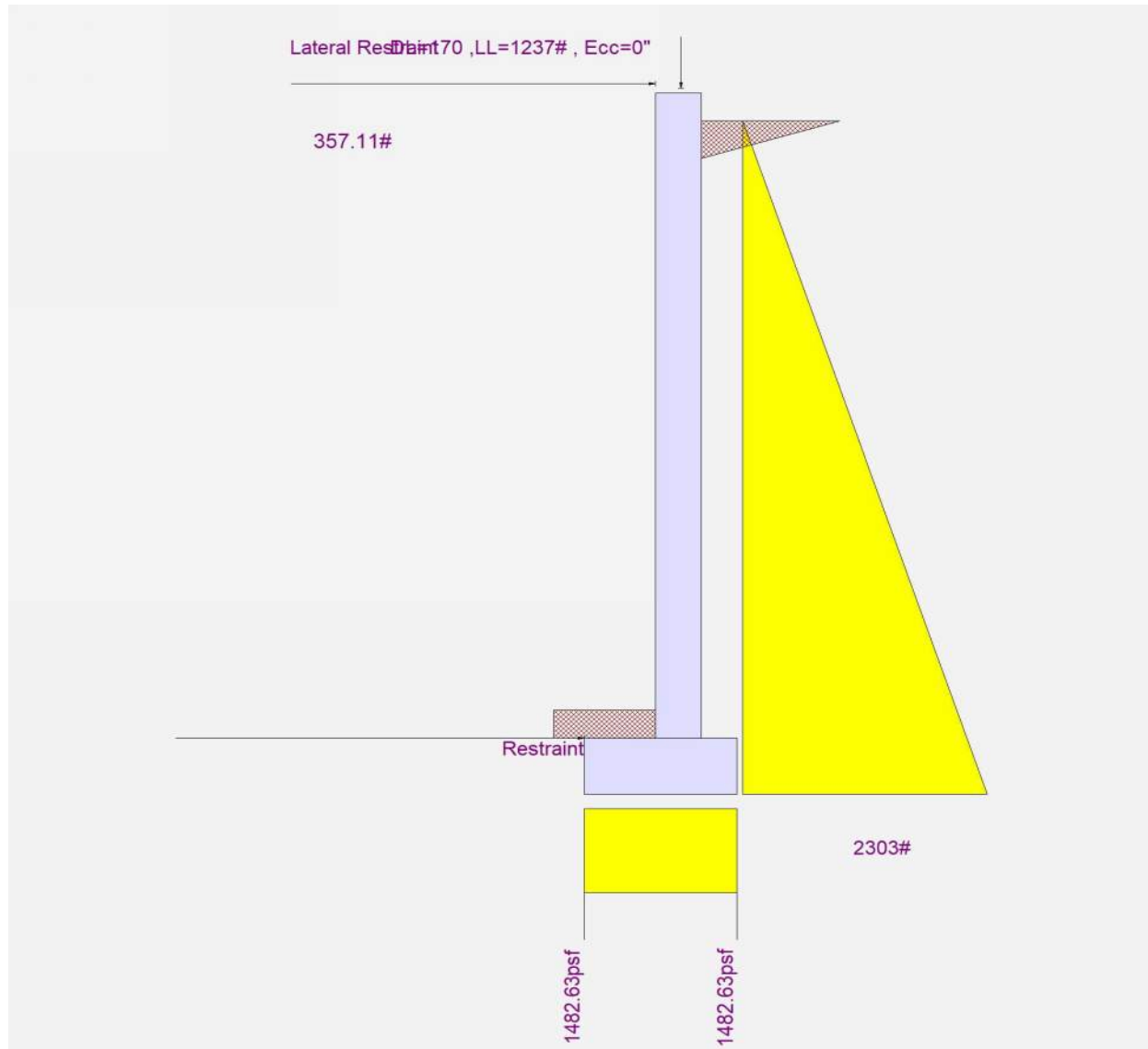
Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #30(F13)





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Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

Snake River Engineering

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #17(F11)

Code Reference:

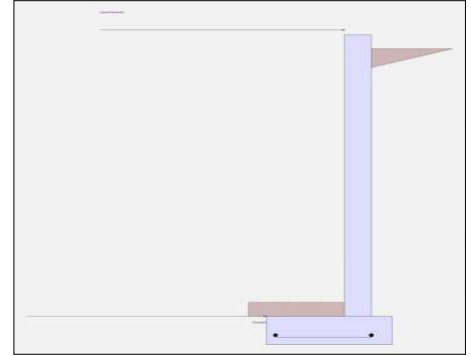
Calculations per

Criteria

Retained Height	=	9.50 ft
Wall height above soil	=	0.50 ft
Total Wall Height	=	10.0 ft
Top Support Height	=	10 ft
Slope Behind Wall	=	0
Height of Soil over Toe	=	6 in

Soil Data

Allow Soil Bearing	=	2,000.0 psf
Equivalent Fluid Pressure Method		
At-Rest Heel Pressure	=	32.0 psf/ft
	=	0.0 psf/ft
Passive Pressure	=	250.0 psf/ft
Soil Density	=	110 pcf
Footing Soil Frictior	=	0.4 psf
Soil height to ignore for passive pressure	=	12 in



Surcharge Loads

Surcharge Over Heel	=	psf
>>>Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	psf
Used for Sliding & Overturning		

Axial Load Applied to Stem

Axial Dead Load	=	418.0 lbs
Axial Live Load	=	2,470.0 lbs
Axial Load Eccentricity	=	in

Earth Pressure Seismic Load

Uniform Lateral Load Applied to Stem

Lateral Load	=	#/ft
...Height to Top	=	ft
...Height to Bottom	=	ft
Load Type	=	Wind (W) (Service Level)
Wind on Exposed Stem	=	0.00 psf (Strength Level)
Wind acts left-to-right toward retention side.		
K_h Soil Density Multiplier	=	0.2 g

Adjacent Footing Load

Adjacent Footing Load	=	lbs
Footing Width	=	ft
Eccentricity	=	in
Wall to Ftg CL Dist	=	ft
Footing Type		Line Load
Base Above/Below Soil at Back of Wall	=	ft
Poisson's Ratio	=	0.3
Added seismic per unit area	=	0.0 psf

Design Summary

Total Bearing Load	=	5,146.33 lbs
...resultant ecc.	=	0.0 in
Soil Pressure @ Toe	=	1,470.38 psf OK
Soil Pressure @ Heel	=	1,470.38 psf OK
Allowable	=	psf
Soil Pressure Less Than Allowable		
ACI Factored @ Toe	=	2,046.74 psf
ACI Factored @ Heel	=	2,046.74 psf
Footing Shear @ Toe	=	26.360 psi OK
Footing Shear @ Heel	=	2.979 psi OK
Allowable	=	75.0 psi
Reaction at Top	=	262.896 lbs
Reaction at Bottom	=	1,500.10 lbs

Sliding Calcs

Lateral Sliding Force	=	1,500.10 lbs
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Concrete Stem Construction

Thickness	=	8.00 in
Wall Weight	=	100.0 psf
Stem is FIXED to top of footing		
F_y	=	60000 psi
f'_c	=	2,500.0 psi

	@ Top Support	Mmax Between Top & Base	@ Base of Wall
	Stem OK	Stem OK	Stem OK
Design Height Above Ftg	= 10 ft	5.462 ft	0.00 ft
Rebar Size	= # 5	# 5	# 5
Rebar Spacing	= 16.00 in	16.00 in	16.00 in
Rebar Placed at	= Center	Center	Center
Rebar Depth 'd'	= 4.0 in	4.0 in	4.0 in
Design Data			
$f_b/FB + f_a/Fa$	=	0.347	0.794
M_uActual	=	0.0 ft-#	1,354.32 ft-#
$M_n * \Phi$Allowable	=	3,897.96 ft-#	3,897.96 ft-#
Shear Force @ this height	=	422.234 lbs	1,888.17 lbs
Shear.....Actual	=	8.797 psi	39.337 psi
Shear.....Allowable	=	50.759 psi	50.759 psi

Vertical component of active lateral soil pressure IS NOT considered in the calculation of soil bearing

Load Factors

Building Code	
Dead Load	1.200
Live Load	1.600
Earth. H	1.600
Wind, V 22/25	1.000
Seismic, E	1.000



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #17(F11)

Footing Strengths & Dimensions

Toe Width	=	2.250 ft
Heel Width	=	1.250
Total Footing Width	=	3.50
Footing Thickness	=	12.0 in

f'_c = 2,500.0 psi F_y = 60000 psi
Footing Concrete Density = 150 pcf
Min. As % = 0.0018
Cover @ Top = 2 in @ Btm. = 3 in

Footing Design Results

	Toe	Heel	
Factored Pressure	= 2,046.74	2,046.74	psf
μ_u : Upward	= 5,180.82		ft-#
μ_u : Downward	= 622.69		ft-#
μ_u : Design	= 4,558	-104	ft-#
Actual 1-Way Shear	= 26.360	2.979	psi
Allow 1-Way Shear	= 39.196	40.0	psi

Other Acceptable Sizes & Spacings:

Toe: # 5 @ 16.00 in -or- #4@ 9.25 in, #5@ 14.35 in, #6@ 20.37 in, #7@ 27.1 in
Heel: None Spec'd -or- $\phi M_n = \phi * 5 * \lambda * \sqrt{f'_c} * S_m$

Min footing T&S reinf Area 0.91 in²
Min footing T&S reinf Area per foot 0.26 in² /ft
If one layer of horizontal bars: If two layers of horizontal bars:
#4@ 9.26 in #4@ 18.52 in
#5@ 14.35 in #5@ 28.70 in
#6@ 20.37 in #6@ 40.74 in

Summary of Forces on Footing : Slab RESISTS sliding, stem is FIXED at footing

Forces acting on footing for soil pressure

>>> Sliding Forces are restrained by the adjacent slab

Load & Moment Summary For Footing : For Soil Pressure Calcs

Moment @ Top of Footing Applied from Stem	=	-1,933.70 ft-#
Surcharge Over Heel	= 0.0 lbs 0.0 ft	0.0 ft-#
Adjacent Footing Load	= 0.0 lbs 0.0 ft	0.0 ft-#
Axial Dead Load on Stem	= 2,888.0 lbs 2.583 ft	7,460.67 ft-#
Soil Over Toe	= 123.750 lbs 1.125 ft	139.219 ft-#
Surcharge Over Toe	= 0.0 lbs 0.0 ft	0.0 ft-#
Stem Weight	= 1,000.0 lbs 2.583 ft	2,583.33 ft-#
Soil Over Heel	= 609.58 lbs 3.208 ft	1,955.75 ft-#
Footing Weight	= 525.0 lbs 1.750 ft	918.75 ft-#
Total Vertical Force	= 5,146.33 lbs Base Moment =	11,124.0 ft-#

Stem is specified to be fixed to footing, and top restraint is assumed to react out any tendency for moment at the footing/soil interface, so uniform soil pressure is assumed.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #17(F11)

Rebar Lap & Embedment Lengths Information



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

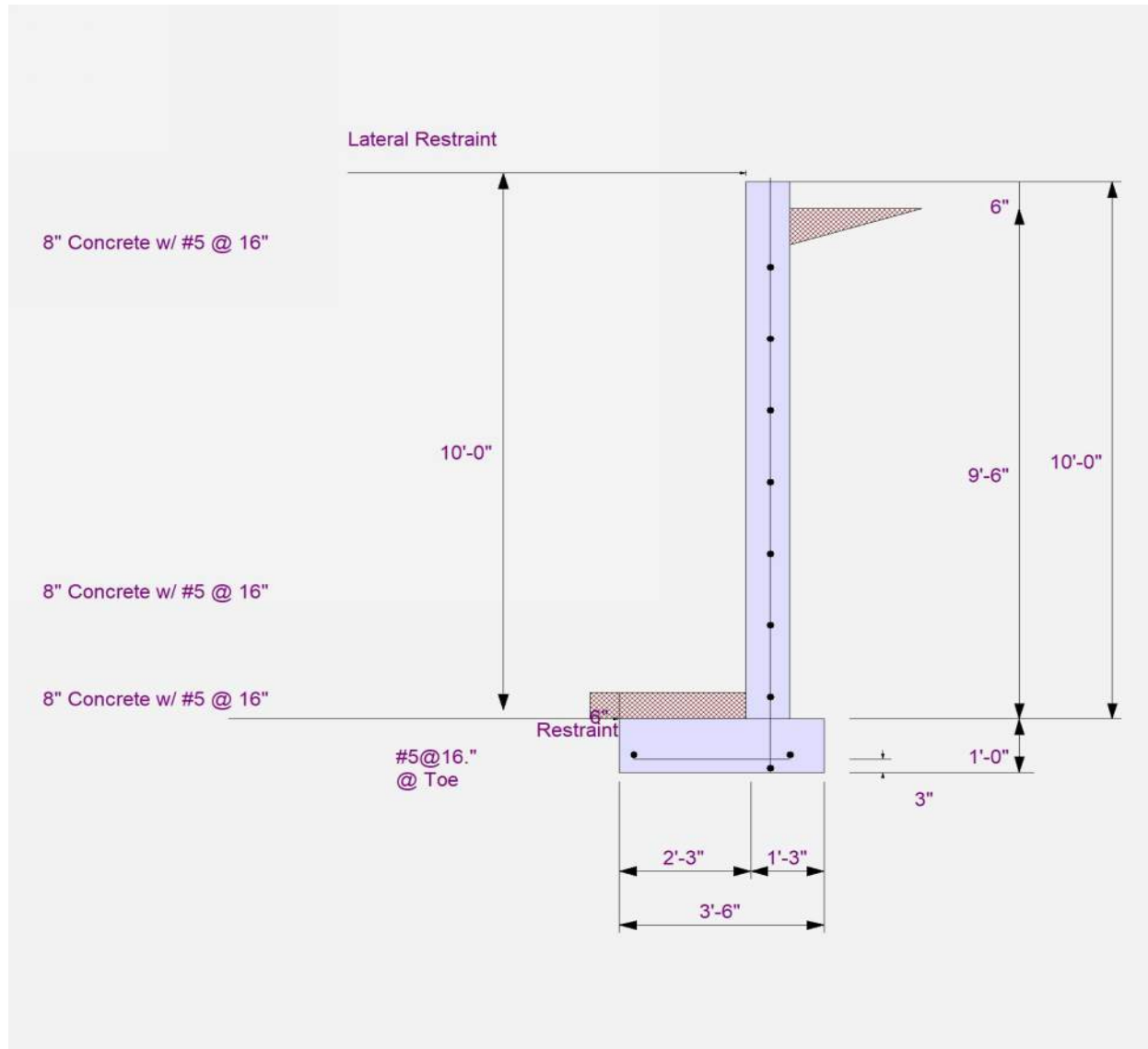
Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #17(F11)





524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

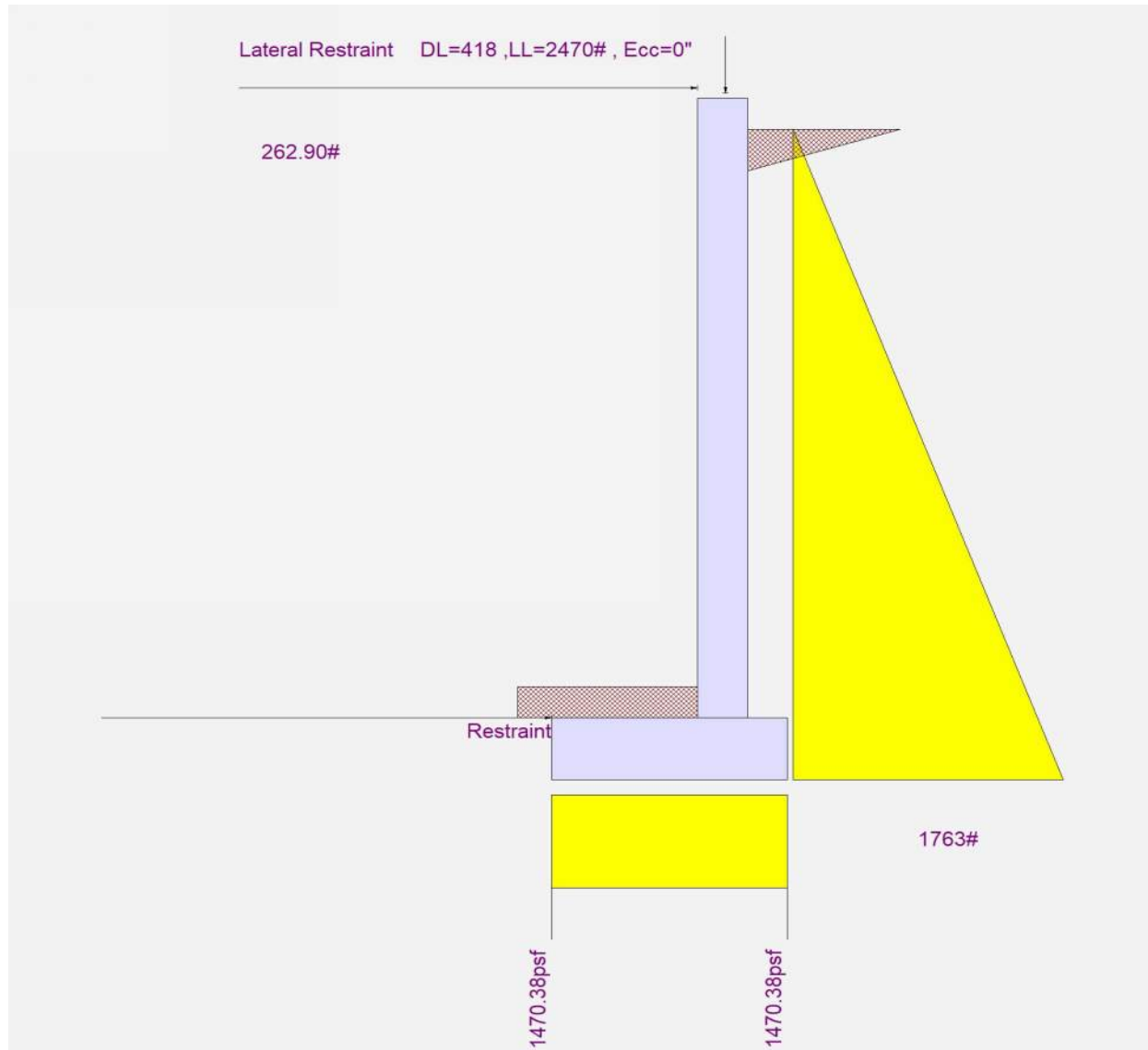
Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #17(F11)





524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #29(F12)

Code Reference:

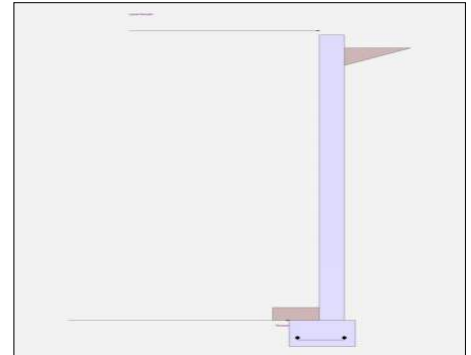
Calculations per

Criteria

Retained Height	=	10.50 ft
Wall height above soil	=	0.50 ft
Total Wall Height	=	11.0 ft
Top Support Height	=	11.0 ft
Slope Behind Wall	=	0
Height of Soil over Toe	=	6 in

Soil Data

Allow Soil Bearing	=	2000 psf
Equivalent Fluid Pressure Method		
At-Rest Heel Pressure	=	32.0 psf/ft
	=	0.0 psf/ft
Passive Pressure	=	250.0 psf/ft
Soil Density	=	110 pcf
Footing Soil Frictior	=	0.4 psf
Soil height to ignore for passive pressure	=	12 in



Surcharge Loads

Surcharge Over Heel	=	psf
>>>Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	psf
Used for Sliding & Overturning		

Axial Load Applied to Stem

Axial Dead Load	=	300.0 lbs
Axial Live Load	=	412.0 lbs
Axial Load Eccentricity	=	in

Earth Pressure Seismic Load

Uniform Lateral Load Applied to Stem

Lateral Load	=	#/ft
...Height to Top	=	ft
...Height to Bottom	=	ft
Load Type	=	Wind (W) (Service Level)
Wind on Exposed Stem	=	0.00 psf (Strength Level)
Wind acts left-to-right toward retention side.		
K_h Soil Density Multiplier	=	0.2 g

Adjacent Footing Load

Adjacent Footing Load	=	lbs
Footing Width	=	ft
Eccentricity	=	in
Wall to Ftg CL Dist	=	ft
Footing Type		Line Load
Base Above/Below Soil at Back of Wall	=	ft
Poisson's Ratio	=	0.3
Added seismic per unit area	=	0.0 psf

Design Summary

Total Bearing Load	=	2,552.0 lbs
...resultant ecc.	=	0.0 in
Soil Pressure @ Toe	=	1,276.0 psf OK
Soil Pressure @ Heel	=	1,276.0 psf OK
Allowable	=	psf
Soil Pressure Less Than Allowable		
ACI Factored @ Toe	=	1,613.60 psf
ACI Factored @ Heel	=	1,613.60 psf
Footing Shear @ Toe	=	3.621 psi OK
Footing Shear @ Heel	=	0.1322 psi OK
Allowable	=	75.0 psi
Reaction at Top	=	324.105 lbs
Reaction at Bottom	=	1,790.90 lbs

Sliding Calcs

Lateral Sliding Force	=	1,790.90 lbs
-----------------------	---	--------------

Vertical component of active lateral soil pressure IS
NOT considered in the calculation of soil bearing

Load Factors

Building Code	
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W 22/25	1.000
Seismic, E	1.000

Concrete Stem Construction

Thickness	=	8.00 in
Fy	=	60000 psi
Wall Weight	=	100.0 psf
f'c	=	2,500.0 psi
Stem is FIXED to top of footing		

	@ Top Support	Mmax Between Top & Base	@ Base of Wall
	Stem OK	Stem OK	Stem OK
Design Height Above Ftg	= 11.0 ft	6.052 ft	0.00 ft
Rebar Size	= # 5	# 5	# 5
Rebar Spacing	= 16.00 in	16.00 in	16.00 in
Rebar Placed at	= Edge	Center	Edge
Rebar Depth 'd'	= 5.188 in	4.0 in	5.188 in
Design Data			
fb/FB + fa/Fa	=	0.468	0.809
Mu....Actual	= 0.0 ft-#	1,823.27 ft-#	4,156.56 ft-#
Mn * Phi.....Allowable	= 5,140.38 ft-#	3,897.96 ft-#	5,140.38 ft-#
Shear Force @ this height	= 520.17 lbs		2,302.23 lbs
Shear.....Actual	= 8.356 psi		36.984 psi
Shear.....Allowable	= 46.546 psi		46.546 psi



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #29(F12)

Footing Strengths & Dimensions

Toe Width	=	1.0 ft
Heel Width	=	1.0
Total Footing Width	=	2.0
Footing Thickness	=	12.0 in

f'_c = 2,500.0 psi F_y = 60000 psi
Footing Concrete Density = 150 pcf
Min. As % = 0.0018
Cover @ Top = 2 in @ Btm. = 3 in

Footing Design Results

	Toe	Heel	
Factored Pressure	= 1,613.60	1,613.60	psf
μ_u : Upward	= 806.80		ft-#
μ_u : Downward	= 123.0		ft-#
μ_u : Design	= 684	-3	ft-#
Actual 1-Way Shear	= 3.621	0.1322	psi
Allow 1-Way Shear	= 40.0	40.0	psi

Other Acceptable Sizes & Spacings:

Toe: # 5 @ 18.00 in -or- $\phi M_n = \phi * 5 * \lambda * \sqrt{f'_c} * S_m$
Heel: None Spec'd -or- $\phi M_n = \phi * 5 * \lambda * \sqrt{f'_c} * S_m$

Min footing T&S reinf Area 0.52 in²
Min footing T&S reinf Area per foot 0.26 in² /ft
If one layer of horizontal bars: If two layers of horizontal bars:
#4@ 9.26 in #4@ 18.52 in
#5@ 14.35 in #5@ 28.70 in
#6@ 20.37 in #6@ 40.74 in

Summary of Forces on Footing : Slab RESISTS sliding, stem is FIXED at footing

Forces acting on footing for soil pressure

>>> Sliding Forces are restrained by the adjacent slab

Load & Moment Summary For Footing : For Soil Pressure Calcs

Moment @ Top of Footing Applied from Stem	=	-2,597.85 ft-#
Surcharge Over Heel	= 0.0 lbs 0.0 ft	0.0 ft-#
Adjacent Footing Load	= 0.0 lbs 0.0 ft	0.0 ft-#
Axial Dead Load on Stem	= 712.0 lbs 1.333 ft	949.33 ft-#
Soil Over Toe	= 55.0 lbs 0.50 ft	27.50 ft-#
Surcharge Over Toe	= 0.0 lbs 0.0 ft	0.0 ft-#
Stem Weight	= 1,100.0 lbs 1.333 ft	1,466.67 ft-#
Soil Over Heel	= 385.0 lbs 1.833 ft	705.83 ft-#
Footing Weight	= 300.0 lbs 1.0 ft	300.0 ft-#
Total Vertical Force	= 2,552.0 lbs	Base Moment = 851.48 ft-#

Stem is specified to be fixed to footing, and top restraint is assumed to react out any tendency for moment at the footing/soil interface, so uniform soil pressure is assumed.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #29(F12)

Rebar Lap & Embedment Lengths Information

Restrained Retaining Wall

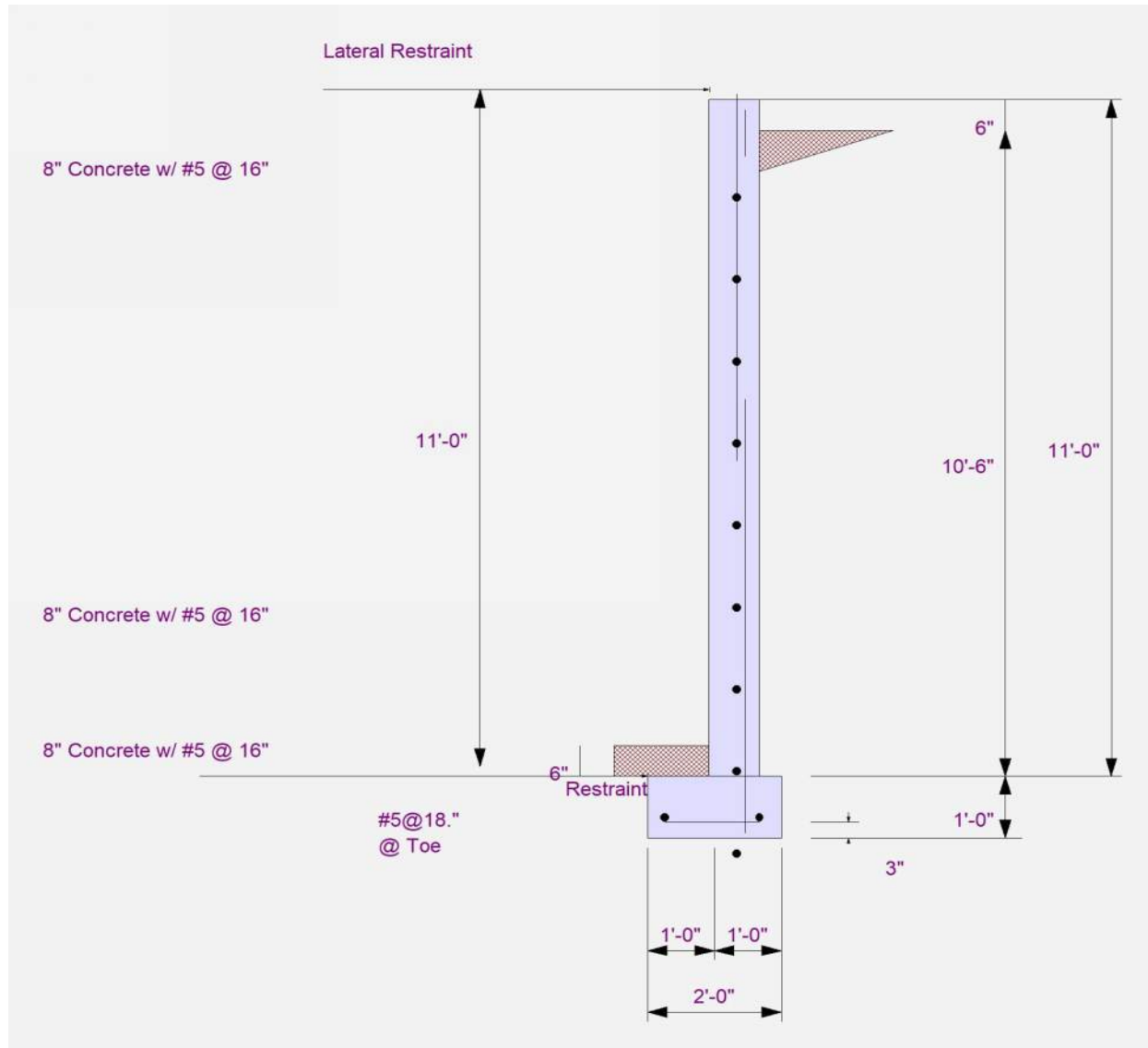
Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #29(F12)





524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

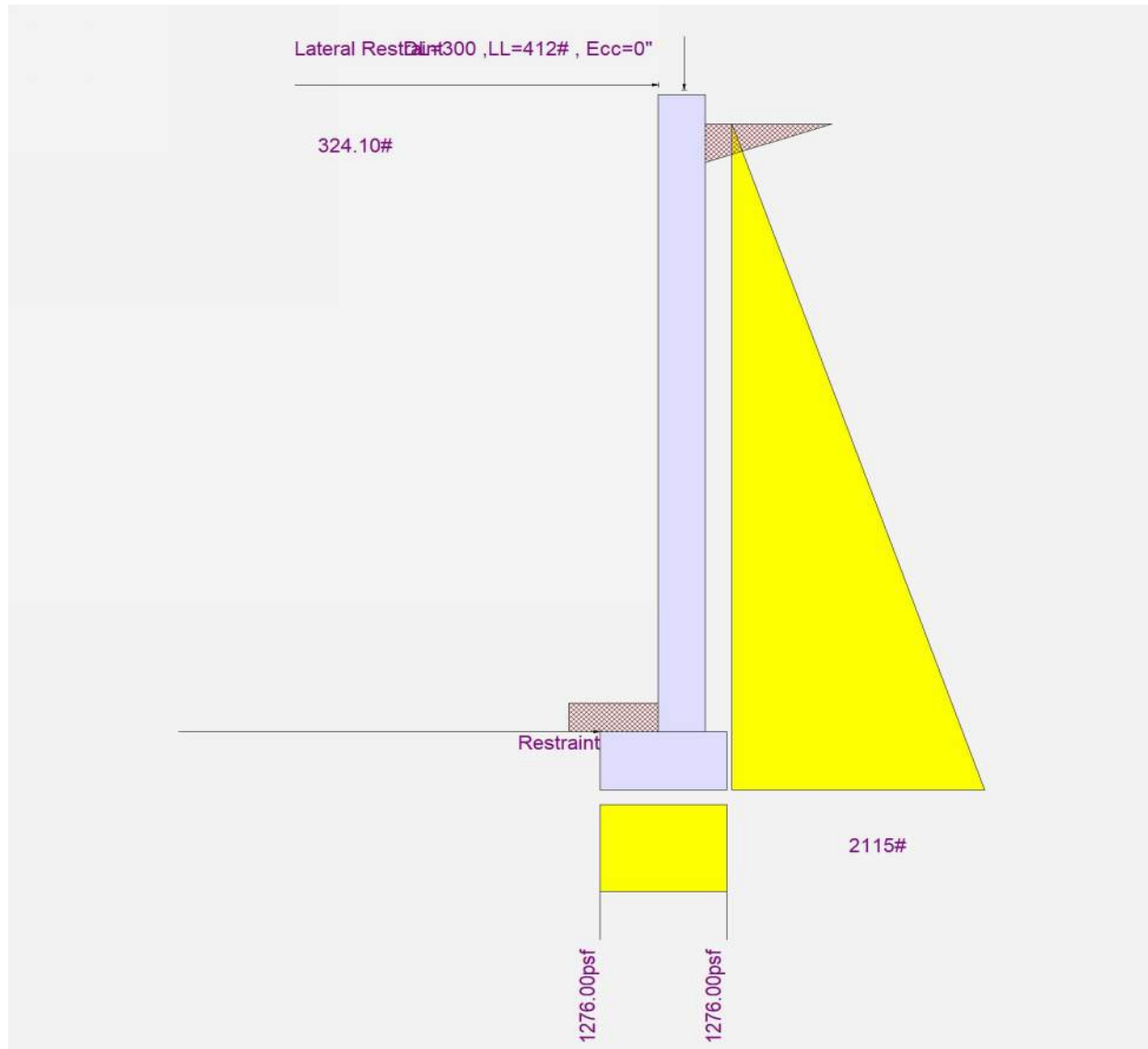
Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #29(F12)





524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

Snake River Engineering

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #32(F14)

Code Reference:

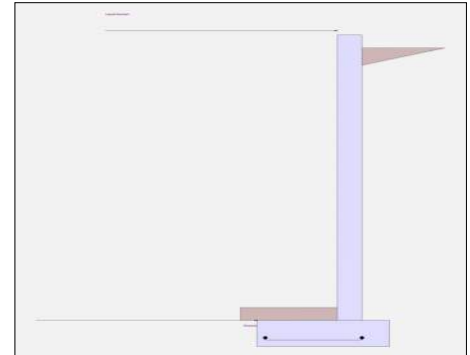
Calculations per

Criteria

Retained Height	=	10.50 ft
Wall height above soil	=	0.50 ft
Total Wall Height	=	11.0 ft
Top Support Height	=	11.0 ft
Slope Behind Wall	=	0
Height of Soil over Toe	=	6 in

Soil Data

Allow Soil Bearing	=	2000 psf
Equivalent Fluid Pressure Method		
At-Rest Heel Pressure	=	32.0 psf/ft
	=	0.0 psf/ft
Passive Pressure	=	250.0 psf/ft
Soil Density	=	110 pcf
Footing Soil Frictior	=	0.4 psf
Soil height to ignore for passive pressure	=	12 in



Surcharge Loads

Surcharge Over Heel	=	psf
>>>Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	psf
Used for Sliding & Overturning		

Axial Load Applied to Stem

Axial Dead Load	=	426.0 lbs
Axial Live Load	=	2,590.0 lbs
Axial Load Eccentricity	=	in

Earth Pressure Seismic Load

Uniform Lateral Load Applied to Stem

Lateral Load	=	#/ft
...Height to Top	=	ft
...Height to Bottom	=	ft
Load Type	=	Wind (W) (Service Level)
Wind on Exposed Stem	=	0.00 psf (Strength Level)
Wind acts left-to-right toward retention side.		
K_h Soil Density Multiplier	=	0.2 g

Adjacent Footing Load

Adjacent Footing Load	=	lbs
Footing Width	=	ft
Eccentricity	=	in
Wall to Ftg CL Dist	=	ft
Footing Type		Line Load
Base Above/Below Soil at Back of Wall	=	ft
Poisson's Ratio	=	0.3
Added seismic per unit area	=	0.0 psf

Design Summary

Total Bearing Load	=	5,816.0 lbs
...resultant ecc.	=	0.0 in
Soil Pressure @ Toe	=	1,454.0 psf OK
Soil Pressure @ Heel	=	1,454.0 psf OK
Allowable	=	psf
Soil Pressure Less Than Allowable		
ACI Factored @ Toe	=	2,003.80 psf
ACI Factored @ Heel	=	2,003.80 psf
Footing Shear @ Toe	=	29.947 psi OK
Footing Shear @ Heel	=	3.040 psi OK
Allowable	=	75.0 psi
Reaction at Top	=	324.105 lbs
Reaction at Bottom	=	1,790.90 lbs

Sliding Calcs

Lateral Sliding Force	=	1,790.90 lbs
-----------------------	---	--------------

Vertical component of active lateral soil pressure IS NOT considered in the calculation of soil bearing

Load Factors

Building Code	
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W 22/25	1.000
Seismic, E	1.000

Concrete Stem Construction

Thickness	=	8.00 in
Fy	=	60000 psi
Wall Weight	=	100.0 psf
f'c	=	2,500.0 psi
Stem is FIXED to top of footing		

	@ Top Support	Mmax Between Top & Base	@ Base of Wall
	Stem OK	Stem OK	Stem OK
Design Height Above Ftg	= 11.0 ft	6.052 ft	0.00 ft
Rebar Size	= # 5	# 5	# 5
Rebar Spacing	= 16.00 in	16.00 in	16.00 in
Rebar Placed at	= Edge	Edge	Edge
Rebar Depth 'd'	= 5.188 in	2.188 in	5.188 in
Design Data			
fb/FB + fa/Fa	=	0.911	0.809
Mu....Actual	= 0.0 ft-#	1,823.27 ft-#	4,156.56 ft-#
Mn * Phi.....Allowable	= 5,140.38 ft-#	2,001.63 ft-#	5,140.38 ft-#
Shear Force @ this height	= 520.17 lbs		2,302.23 lbs
Shear.....Actual	= 8.356 psi		36.984 psi
Shear.....Allowable	= 46.546 psi		46.546 psi



524 CLEVELAND BLVD. #230
CALDWELL, IDAHO 83605
(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #32(F14)

Footing Strengths & Dimensions

Toe Width	=	2.50 ft
Heel Width	=	1.50
Total Footing Width	=	4.0
Footing Thickness	=	12.0 in

f'_c = 2,500.0 psi F_y = 60000 psi
Footing Concrete Density = 150 pcf
Min. As % = 0.0018
Cover @ Top = 2 in @ Btm. = 3 in

Footing Design Results

	Toe	Heel	
Factored Pressure	= 2,003.80	2,003.80	psf
μ_u : Upward	= 6,261.88		ft-#
μ_u : Downward	= 768.75		ft-#
μ_u : Design	= 5,493	-152	ft-#
Actual 1-Way Shear	= 29.947	3.040	psi
Allow 1-Way Shear	= 39.196	40.0	psi

Other Acceptable Sizes & Spacings:

Toe: # 5 @ 16.00 in -or- #4@ 9.25 in, #5@ 14.35 in, #6@ 20.37 in, #7@ 27.1 in
Heel: None Spec'd -or- $\phi M_n = \phi * 5 * \lambda * \sqrt{f'_c} * S_m$

Min footing T&S reinf Area 1.04 in²
Min footing T&S reinf Area per foot 0.26 in² /ft
If one layer of horizontal bars: If two layers of horizontal bars:
#4@ 9.26 in #4@ 18.52 in
#5@ 14.35 in #5@ 28.70 in
#6@ 20.37 in #6@ 40.74 in

Summary of Forces on Footing : Slab RESISTS sliding, stem is FIXED at footing

Forces acting on footing for soil pressure

>>> Sliding Forces are restrained by the adjacent slab

Load & Moment Summary For Footing : For Soil Pressure Calcs

Moment @ Top of Footing Applied from Stem	=	-2,597.85 ft-#
Surcharge Over Heel	= 0.0 lbs 0.0 ft	0.0 ft-#
Adjacent Footing Load	= 0.0 lbs 0.0 ft	0.0 ft-#
Axial Dead Load on Stem	= 3,016.0 lbs 2.833 ft	8,545.33 ft-#
Soil Over Toe	= 137.50 lbs 1.250 ft	171.875 ft-#
Surcharge Over Toe	= 0.0 lbs 0.0 ft	0.0 ft-#
Stem Weight	= 1,100.0 lbs 2.833 ft	3,116.67 ft-#
Soil Over Heel	= 962.50 lbs 3.583 ft	3,448.96 ft-#
Footing Weight	= 600.0 lbs 2.0 ft	1,200.0 ft-#
Total Vertical Force	= 5,816.0 lbs Base Moment =	13,885.0 ft-#

Stem is specified to be fixed to footing, and top restraint is assumed to react out any tendency for moment at the footing/soil interface, so uniform soil pressure is assumed.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.



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(208) 453-6512

Completed by: JDJ
Review/Check: ARA

Project Name: Hawkins Residence
SRE Project #: 2025-9936
City and State: Valley County, Idaho

Restrained Retaining Wall

Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #32(F14)

Rebar Lap & Embedment Lengths Information

Restrained Retaining Wall

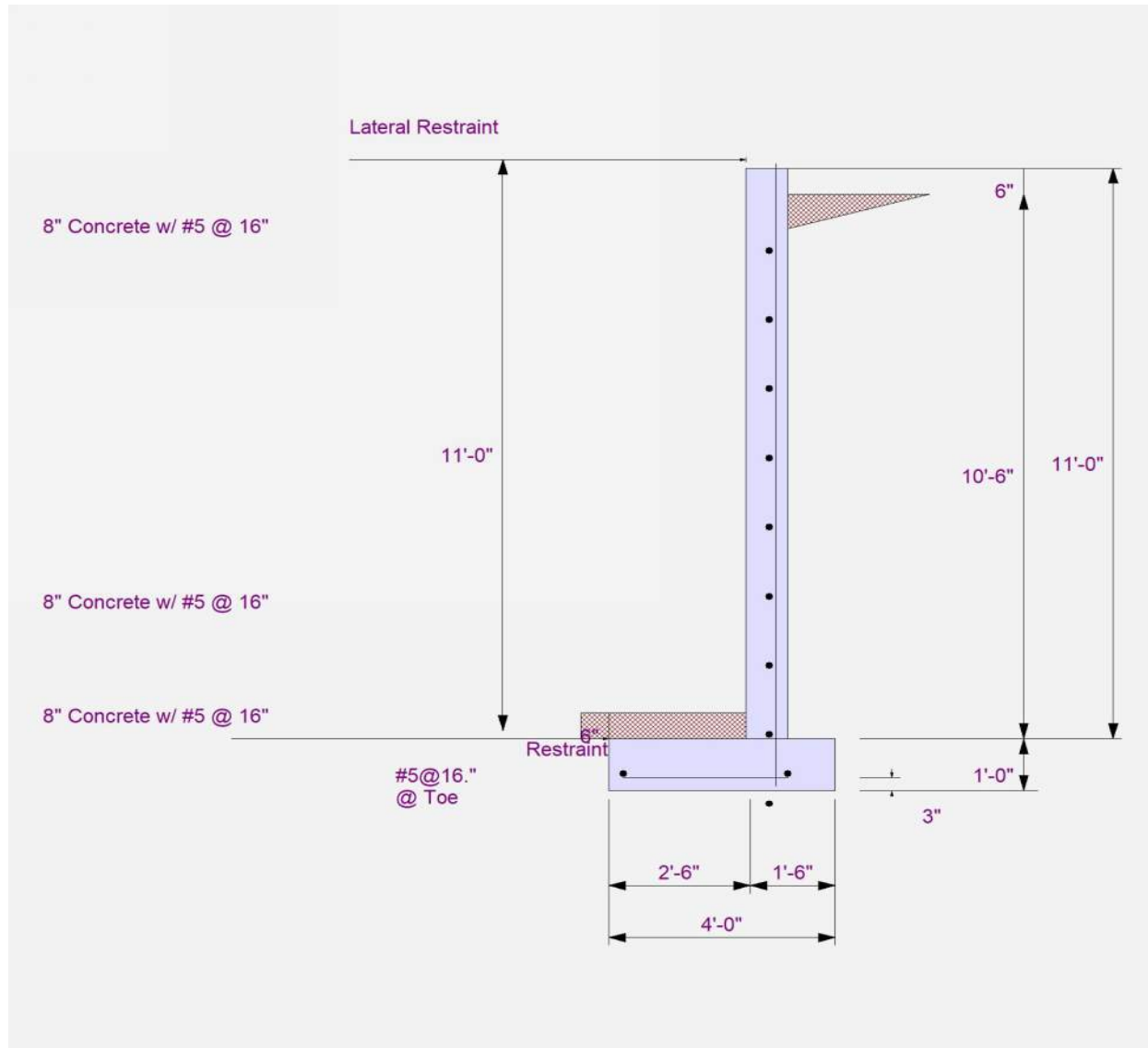
Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

SNAKE RIVER ENGINEERING

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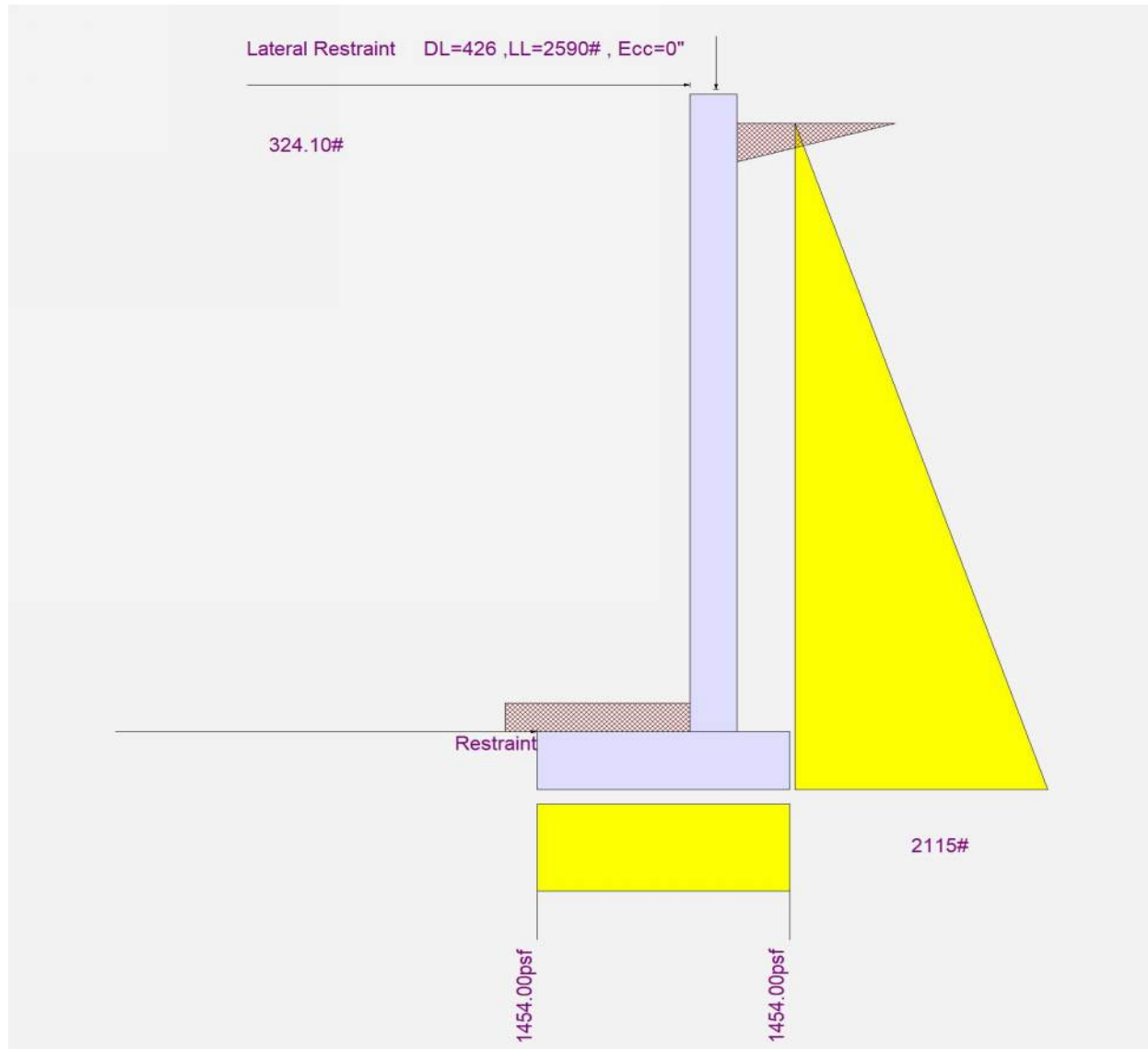
Project File: 25-003 Hawkins (1).ec6

LIC# : KW-06013353, Build:20.24.10.03

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(c) ENERCALC, LLC 1982-2025

DESCRIPTION: Footing #32(F14)

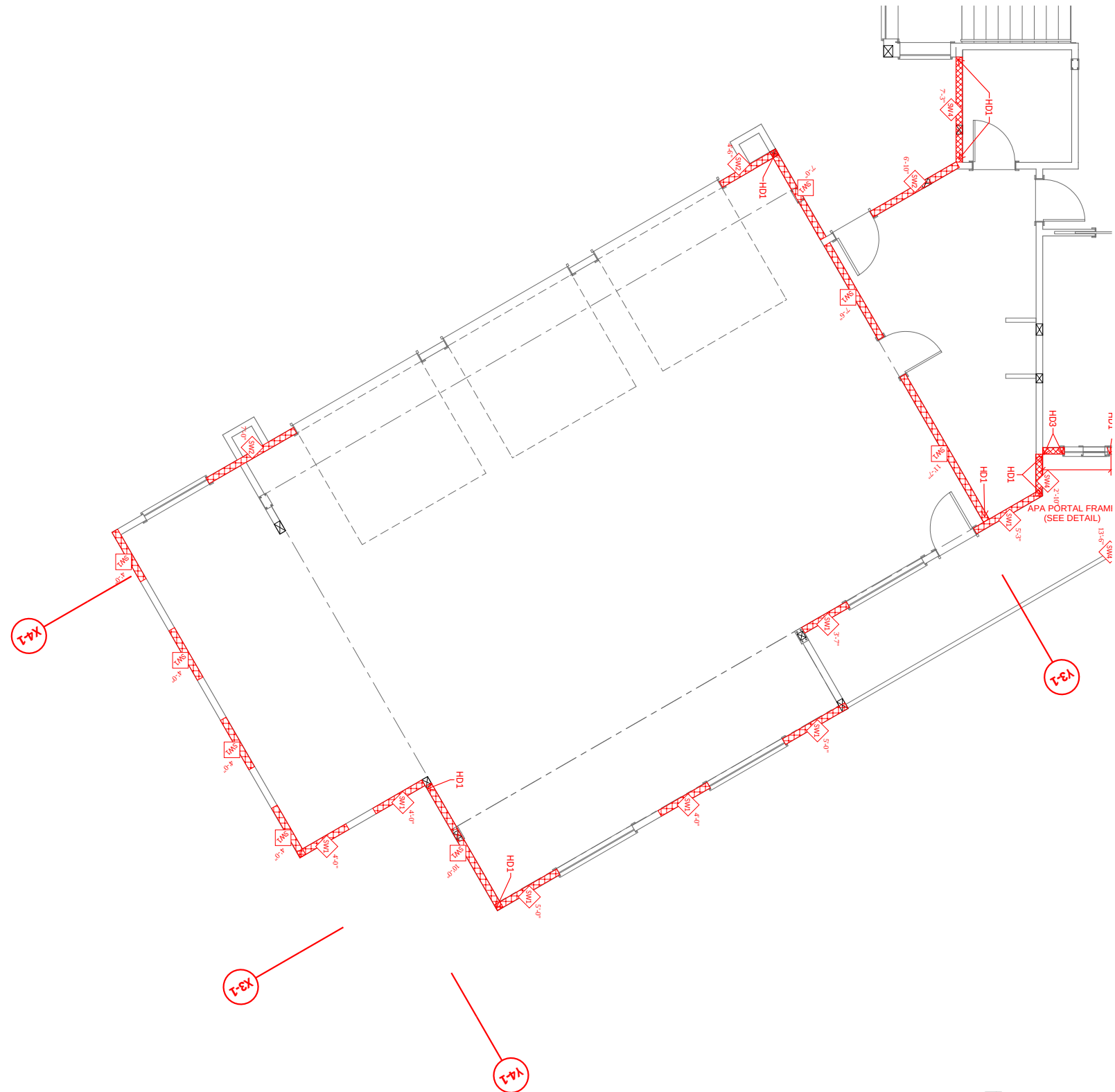




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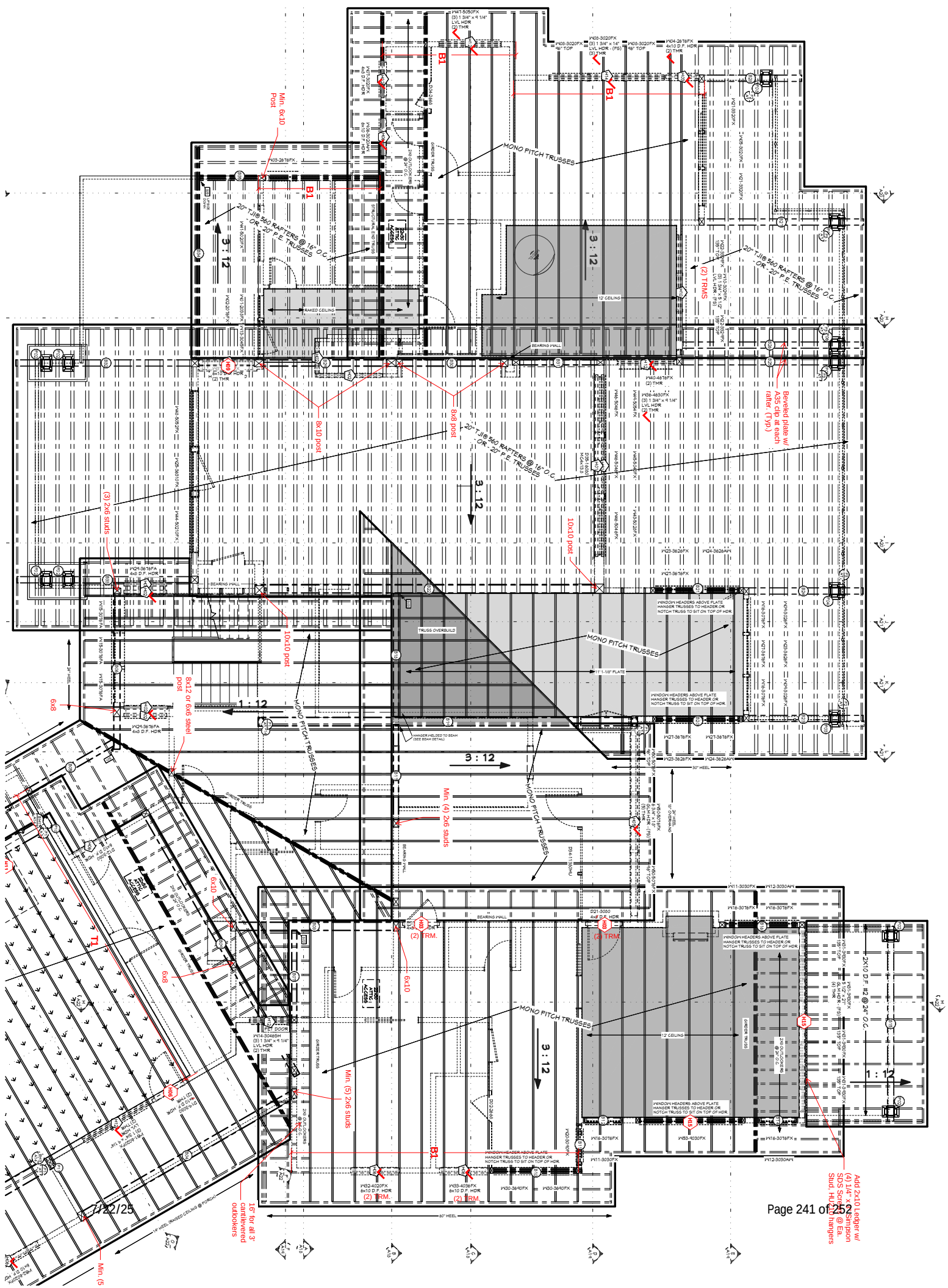


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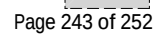
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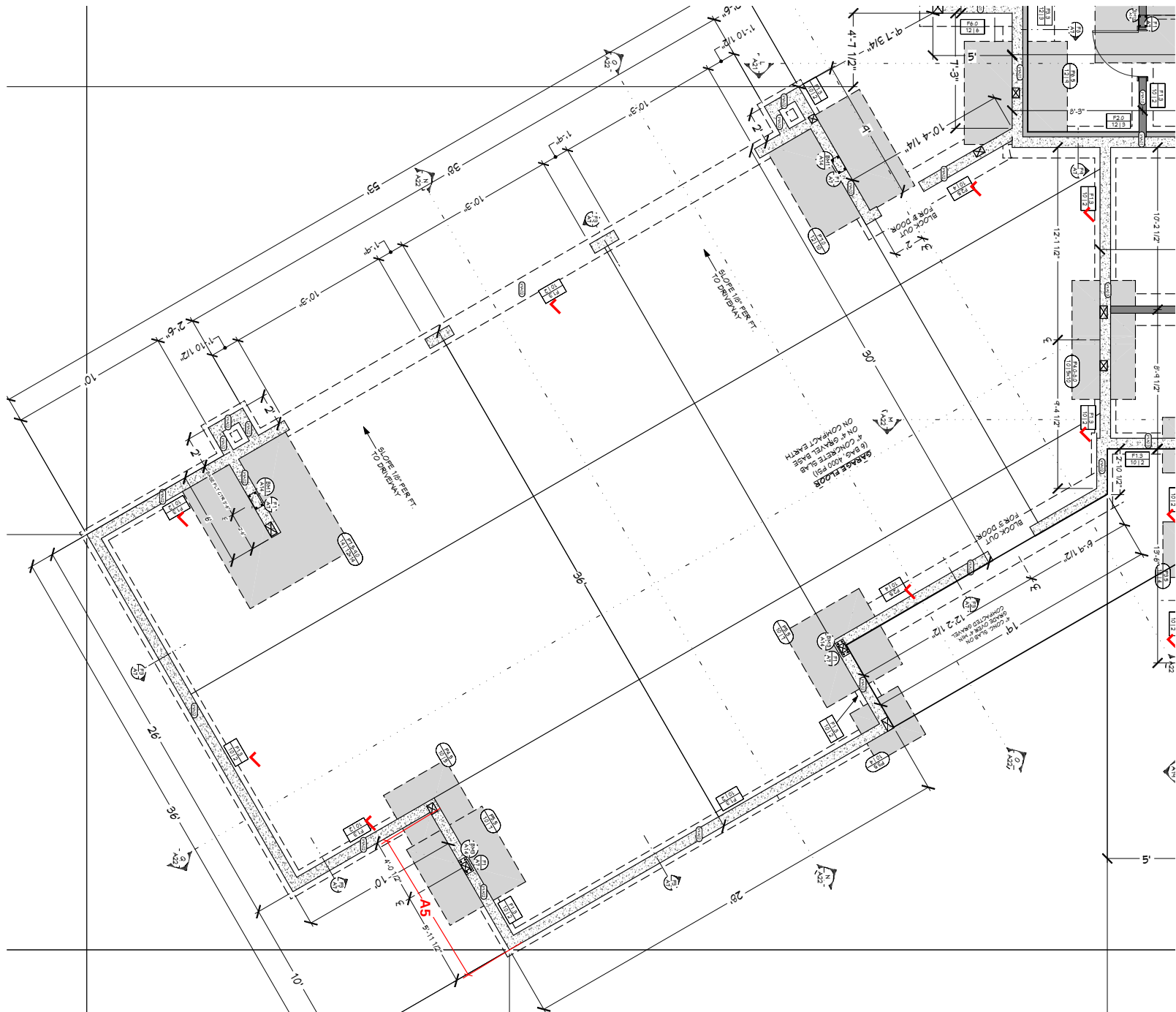


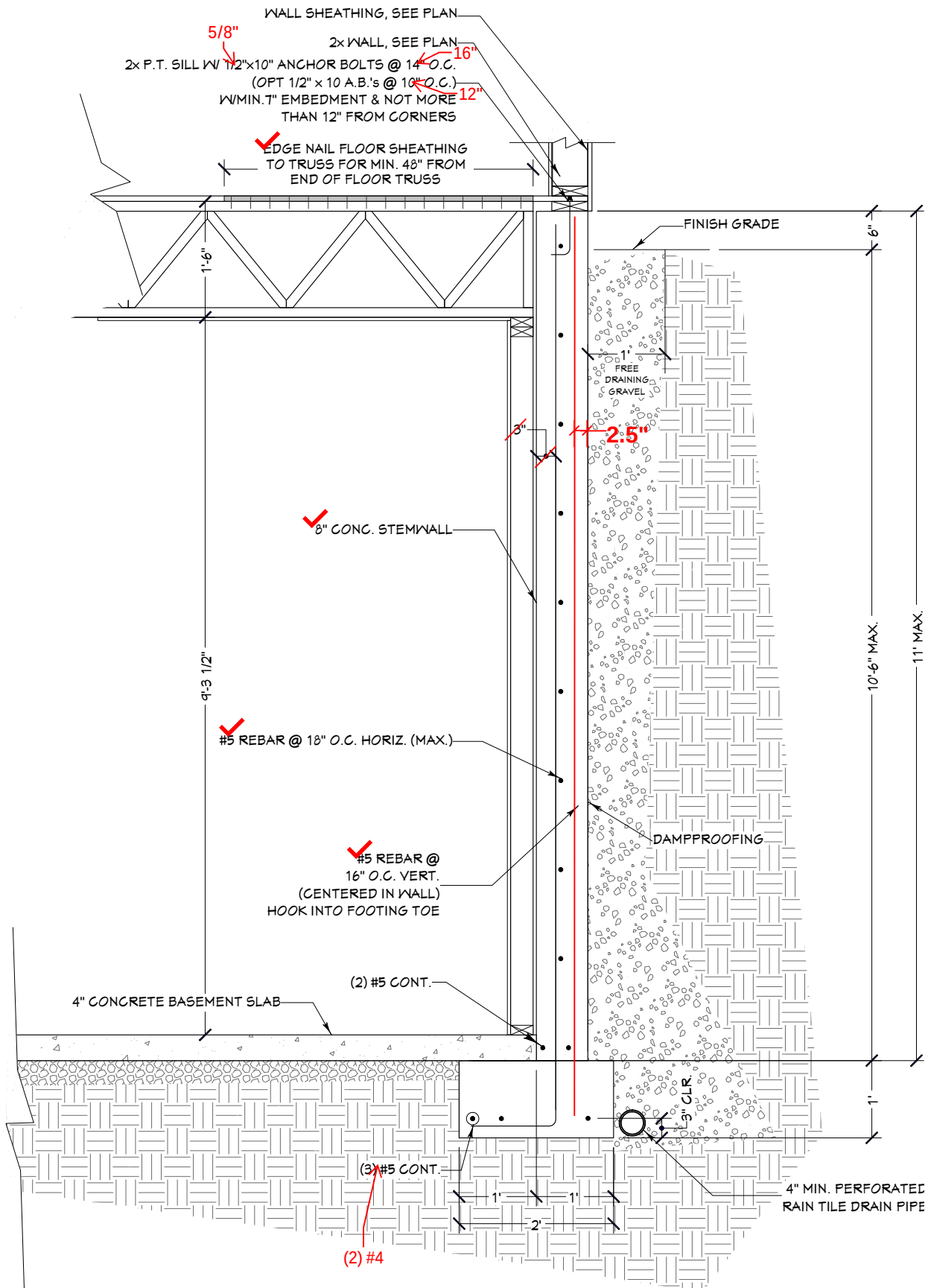


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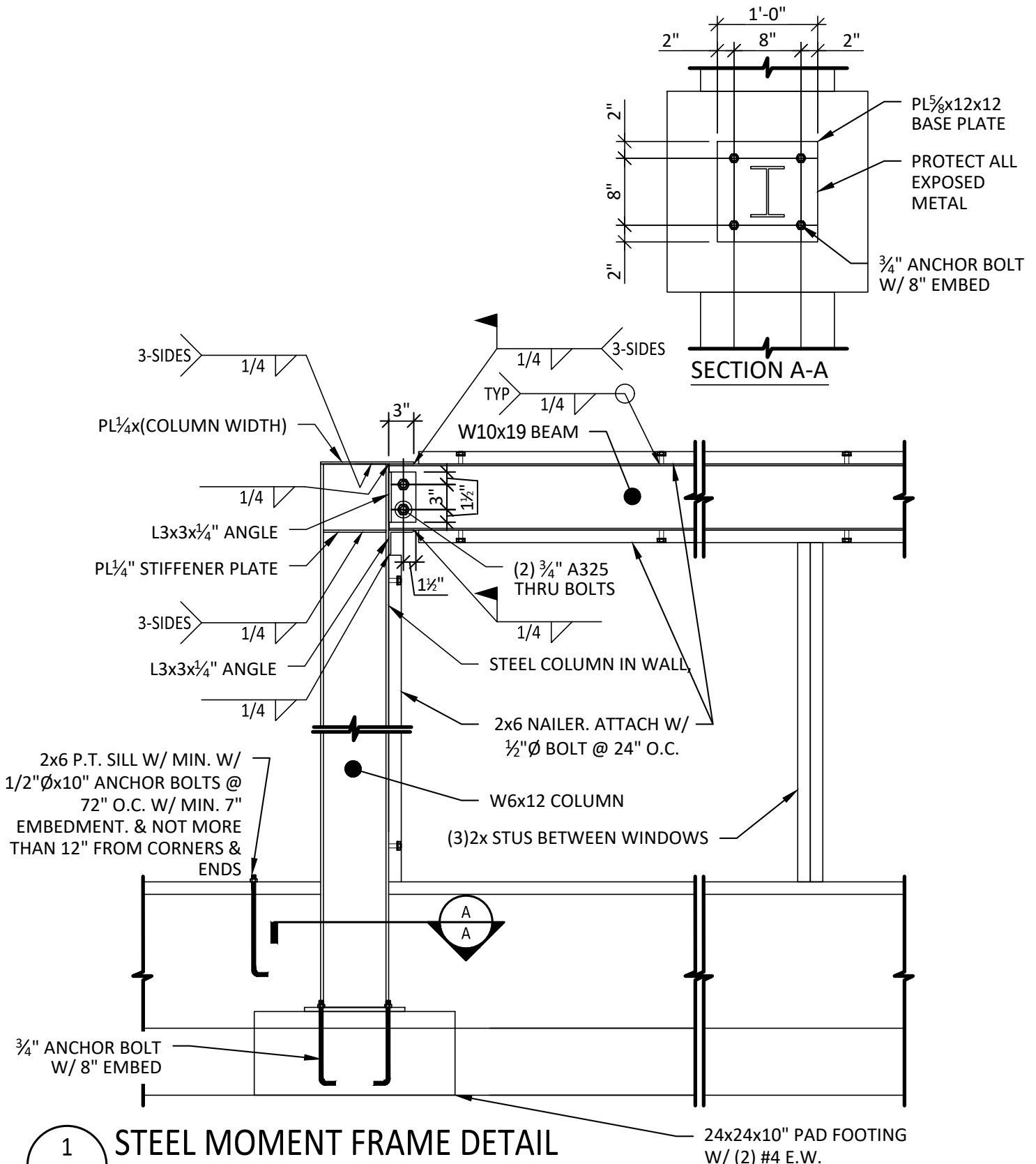
F12 RESTRAINED FOUNDATION DETAIL
3/4 IN = 1 FT



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BEAM SCHEDULE						
NO.	FLR.	PLY(S)	NOTES	CTR. LG +/-	MIN BRG	T.O. BEAM
B01	1	1	(B-01) 12 3/8 X 22 1/2 - W21X166 A992-50	43'		11'-11 5/8"
B02	1	1	(B-02) 5 1/2 X 27 GLULAM	20'-8 1/2"		12'-4 1/8"
B03	1	1	(B-03) 12 5/8 X 14 - W12X170 A992-50	27'-11"		10'-1"
B04	1	1	(B-04) 8 3/4 X 19 1/2 GLULAM	22'-3 3/8"		11'-8 5/8"
B05	1	1	(B-05) 6 3/4 X 15 GLULAM	9'-0 1/8"		10'-1 1/8"
B06	1	1	(B-06) 6 3/4 X 15 GLULAM	14'-5 1/4"		10'-1 1/8"
B07	1	1	(B-07) 5 1/2 X 15 GLULAM	8'-3 1/4"		11'-7 1/8"
B08	1	1	(B-08) 8 3/4 X 24 GLULAM	15'		12'-1 1/8"
B09	1	1	(B-09) 6 3/4 X 12 GLULAM OR GIRDER TRUSS	27'-3 1/8"		11'-1 1/8"
B10	1	3	(B-10) 1 3/4 X 11 1/4 MICROLLAM LVL	8'-2 3/8"		11'-0 3/8"
B11	1	1	(B-11) 4X8 D.F. #2	3'-7 1/2"		10'-8 3/8"
B12	1	1	(B-12) 6X10 D.F. #2	3'-6"		12'-10 5/8"
B13	1	3	(B-13) 1 3/4 X 11 1/4 MICROLLAM LVL	9'-4"		13'-0 3/8"
B14	1	1	(B-14) 6X10 D.F. #2	3'-6"		12'-10 5/8"
B15	1	1	(B-15) 6 3/4 X 19 1/2 GLULAM	17'-6"		12'-4 5/8"
B16	1	3	(B-16) 1 3/4 X 11 1/4 MICROLLAM LVL	7'-6"		13'-0 3/8"
B17	1	1	(B-17) 5 1/2 X 18 GLULAM	9'-2"		12'-4 1/8"
B18	1	1	(B-18) 5 1/2 X 15 GLULAM	11'-0 1/2"		12'-4 1/8"
B19	1	1	(B-19) 9 X 24 1/8 - W24X84 A992-50	34'		12'-2 3/4"
B20	1	3	(B-20) 1 3/4 X 9 1/4 MICROLLAM LVL	8'		11'-10 3/8"
B21	1	3	(B-21) 1 3/4 X 11 1/4 MICROLLAM LVL	8'-3"		12'-0 3/8"
B22	1	1	(B-22) 8 3/4 X 9 GLULAM	31'-2 3/4"		14'-4 1/8"
B23	1	1	(B-23) 6 3/4 X 18 GLULAM	10'-8 1/2"		11'-10 1/2"
B24	1	1	(B-24) 6 3/4 X 18 GLULAM	10'-8 1/2"		14'-8 3/4"
B25	1	1	(B-25) 6 3/4 X 18 GLULAM	16'-8 1/2"		19'-0 1/2"
B26	1	1	(B-26) 6 3/4 X 18 GLULAM	16'-8 1/2"		16'-7 1/4"
B27	1	1	(B-27) 6 3/4 X 18 GLULAM	14'-9"		13'-10 1/4"
B28	1	1	(B-28) 6 3/4 X 18 GLULAM	9'-1 7/8"		10'-7 1/2"
B29	1	1	(B-29) 6 3/4 X 24 GLULAM	12'-8 1/4"		14'-1 1/8"
B30	1	1	(B-30) 6 3/4 X 12 GLULAM	10'-0 3/8"		13'-1 1/8"
B31	1	1	(B-31) 5 1/2 X 18 GLULAM	8'-2 3/8"		13'-7 1/8"
B32	1	1	(B-32) 6 3/4 X 18 GLULAM	16'-2 1/2"		19'-10"
B33	1	1	(B-33) 6 3/4 X 18 GLULAM	16'-3"		14'-11 3/4"
B34	1	2	(B-34) 1 3/4 X 12 MICROLLAM LVL	19'-7 3/4"		16'-3"
B35	1	3	(B-35) 1 3/4 X 18 MICROLLAM LVL	16'-2 3/4"		12'-1 3/8"
B36	0	1	(B-36) 4X10 D.F. #2	4'-7"		-0'-9 5/8"
B37	0	1	(B-37) 4X10 D.F. #2	4'-4"		-0'-9 5/8"
B38	0	1	(B-38) 5 1/2 X 18 GLULAM	19'-4"		-0'-9 7/8"
B39	0	2	(B-39) 1 3/4 X 11 1/4 MICROLLAM LVL	11'-0 1/4"		-0'-7 5/8"
B40	0	1	(B-40) 8 3/4 X 18 GLULAM	40'-5 1/4"		-0'-7 7/8"
B41	0	1	(B-41) 6 3/4 X 18 GLULAM	12'-4 3/4"		-0'-4"
B42	0	1	(B-42) 6 3/4 X 18 GLULAM	21'-3 3/4"		-0'-4"
B43	0	1	(B-43) 6 3/4 X 18 GLULAM	10'-4 3/4"		-0'-4"
B44	0	1	(B-44) 6 3/4 X 18 GLULAM	11'-7"		-0'-8"
B45	0	1	(B-45) 5 1/2 X 18 GLULAM	12'-0 7/8"		-0'-8"
B46	0	1	(B-46) 8 3/4 X 21 GLULAM	20'-6 1/4"		-0'-7 3/4"
B47	0	1	(B-47) 5 1/8 X 21 GLULAM	14'-0 7/8"		-0'-7 3/4"
B48	0	1	(B-48) 1 3/4 X 18 MICROLLAM LVL	12'-3 7/8"		-0'-0 7/8"
B49	0	5	(B-49CS) 4X10 D.F. #2 (CRANL SPACE HDRS) (1-PLY)	3'-6"		-0'-4 5/8"

POST SCHEDULE			
NO.	QTY	FLR.	NOTES
P01	1	0	6X6 D.F. #2
P02	6	1	COLUMN BM 15
P03	1	1	COLUMN BM 23-2
P04	1	1	COLUMN BM 24-2
P05	1	1	COLUMN BM 25-2
P06	1	1	COLUMN BM 26-2
P07	1	1	COLUMN BM 27-2
P08	1	1	COLUMN BM 28-2
P09	1	1	POST - BM 1-1
P10	1	1	POST - BM 1-2
P11	1	1	POST - BM 3-1
P12	1	1	POST - BM 3-2
P13	1	1	POST - BM 19-1
P14	1	1	POST - BM 19-2

HEADER SCHEDULE	
NO.	TYPE
H01	(1) 2 1/2 X 4 C-CHANNEL
H02	(1) 4X8 D.F.
H03	(1) 4X10 D.F.
H04	(1) 5 1/2 X 21 GLM
H05	(1) 6 3/4 X 18 GLM
H06	(1) 6X10 D.F.
H07	(1) 8 3/4 X 16 GLM
H08	(2) 1 3/4 X 9 1/4 LVL
H09	(2) 1 3/4 X 11 1/4 LVL
H10	(3) 1 3/4 X 5 1/2 LVL
H11	(3) 1 3/4 X 7 1/4 LVL
H12	(3) 1 3/4 X 9 1/4 LVL
H13	(3) 1 3/4 X 11 1/4 LVL
H14	(3) 1 3/4 X 14 LVL

HANGER SCHEDULE					
CALLOUT	MODEL	TOP NAILS	SEAT LG.	MEMBER NAILS	FACE NAILS
S01	HGLT6 H=15 SKR30	N/A	2.50"	(12) N54A 1/4" X 2-1/2" BRT	(6) N54A
S02	HHGU55.25-SD5	N/A	2.50"	(28) 1/4 X 2.5 SD5	(44) 1/4 X 2.5 SD5
S03	HHGU55.62-SD5	N/A	2.50"	(28) 1/4 X 2.5 SD5	(44) 1/4 X 2.5 SD5
S04	HHGU59.00-SD5	N/A	2.50"	(28) 1/4 X 2.5 SD5	(44) 1/4 X 2.5 SD5
S05	HHU55.50/10	N/A	2.50"	(10) 0.162 X 3.5	(30) 0.162 X 3.5
S06	HUC414-2	N/A	2.50"	(8) 0.162 X 3.5	(20) 1/4 X 1.75 TITEN 2
S07	MIU1.81/14	N/A	2.00"	(2) 0.148 X 1.5	(22) 0.162 X 3.5

PAD FOOTING SCHEDULE			
CALLOUT	FOOTING SIZE	REINFORCEMENT	QTY
	24" X 24" X 10"	(3) #4 REBAR E.W.	1
	30" X 30" X 10"	(3) #4 REBAR E.W.	1
	36" X 36" X 10"	(10) #4 REBAR E.W.	1
	42" X 42" X 10"	(4) #4 REBAR E.W.	5
	48" X 48" X 10"	(5) #4 REBAR E.W.	7
	48" X 72" X 10"	(5X8) #4 REBAR GRID	1
	48" X 96" X 10"	(5X10) #4 REBAR GRID	1
	54" X 54" X 10"	(5) #4 REBAR E.W.	7
	54" X 72" X 10"	(5X7) #4 REBAR GRID	1
	60" X 60" X 10"	(6) #4 REBAR E.W.	1
	60" X 66" X 10"	(6X7) #4 REBAR GRID	1
	66" X 66" X 10"	(7) #4 REBAR E.W.	6
	72" X 72" X 12"	(8) #4 REBAR E.W.	4
	72" X 90" X 12"	(8X10) #4 REBAR GRID	1
	78" X 78" X 10"	(9) #4 REBAR E.W.	1
	78" X 78" X 12"	(10) #4 REBAR E.W.	1
	78" X 78" X 12"	(9) #4 REBAR E.W.	1
	84" X 84" X 12"	(10) #4 REBAR E.W.	2
	108" X 90" X 14"	(12X14) #4 REBAR GRID	1

CONTINUOUS FOOTING SCHEDULE (ALL FOOTINGS
"F1.3" UNO)

CALLOUT	FOOTING SIZE	REINFORCEMENT
	16" X 10"	(2) #4 CONT. REBAR
	24" X 10"	(3) #4 CONT. REBAR
	24" X 12"	(3) #4 CONT. REBAR
	30" X 10"	(4) #4 CONT. REBAR
	30" X 12"	(4) #4 CONT. REBAR
	36" X 10"	(4) #4 CONT. REBAR
	39" X 12"	(3) #5 CONT. REBAR
	42" X 12"	(5) #4 CONT. REBAR



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OSB SHEAR WALL SCHEDULE:

MARK	SHEATHING	SIDES OF WALL	SHEET NAILING PERIMETER / FIELD		SHEET STAPLING PERIMETER / FIELD	BLKG	NAILING (UNO) BOTTOM PLATE INTO RIM
SW1	7/16" APA RATED	1	8d @ 6 / 12	OR	16ga x 1-1/2" @ 3 / 12 (NOT FOR WALLS >10')	YES	(2) 16d NAILS PER 16" BAY
SW2	7/16" APA RATED	1	8d @ 4 / 12	OR	16ga x 1-1/2" @ 2 / 12 (NOT FOR WALLS >10')	YES	(3) 16d NAILS PER 16" BAY
SW4	7/16" APA RATED	1	8d @ 2 / 12	(4x STUDS @ SHEATHING PERIMETER)		YES	(4) SDS SCREWS PER 16" BAY
SW5	7/16" APA RATED	2	8d @ 3 / 12			YES	(5) SDS SCREWS PER 16" BAY

TYP. NOTES:

- 1 ALL SHEATHING PANEL EDGES SHALL BE BLOCKED UNO
- 2 PROVIDE SAME NAILING PATTERN ABOVE AND BELOW OPENINGS AS ADJACENT SHEAR PANEL.
- 3 ALL EXTERIOR WALLS SHALL BE SHEARWALL "SW1" WITHOUT BLKG UNO
- 4 FASTEN GABLE/RIM TO SHEAR WALLS BELOW W/ 10d TOENAILS @ 12" O.C. UNO
- 5 FASTEN TRUSS HEELS TO SHEAR WALLS W/ H2.5A AND (2) 10d TOENAILS @ EACH
- 6 GYP BOARD SHEAR WALLS MAY BE SUBSTITUTED WITH AN SW1 SHEAR WALL @ CONTRACTOR'S OPTION
- 7 WALL SHEATHING CAN BE APPLIED TO EITHER SIDE OF THE WALL. (UNLESS NOTED OTHERWISE)

BLOCKING KEY NOTES:

MARK	DESCRIPTION
B1	- FULL HEIGHT BLOCKING BETWEEN EVERY OTHER TRUSS BAYS W/ (6)10d TOENAILS FROM BLOCKING TO TOP PLATE, NAIL ROOF SHEATHING TO BLOCKING 3" O.C.

TYP. NOTES:

- 1 FASTEN GABLE/RIM TO SHEAR WALLS BELOW W/ 10d TOENAILS @ 12" O.C. UNO
- 2 FASTEN TRUSS HEELS TO SHEAR WALLS W/ H2.5A AND (2) 10d TOENAILS @ EACH

GABLE / DRAG TRUSS OR RIM KEY NOTES:

T1	- ATTACH GABLE / DRAG TRUSS OR RIM TO TOP PLATE W/ 10d TOENAILS @ 6" O.C., EDGE NAIL SHEATHING ABOVE TO TRUSS OR RIM
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HOLDOWN SCHEDULE:

MARK	STRAP TYPE	STRAP FASTENERS	# OF STUDS	ANCHOR BOLT TYPE	# OF STUDS	ANCHOR BOLT FASTENERS
HD1	LSTD8 OR LSTD8RJ W/ RIM	(20) 16d SINKERS	2 OR	DTT2Z W/1/2"Øx10"	2	(8) 1/4"x1-1/2" SDS
HD2	STHD10 OR STHD10RJ W/ RIM	(24) 16d SINKERS	2 OR	HDU2- SDS2.5 W/ SB5/8x24 OR PAB5 @ INT. PONY WALLS	2	(6) 1/4"x2-1/2" SDS
HD3	STHD14 OR STHD14RJ W/ RIM	(30) 16d SINKERS	2 OR	HDU5-SDS2.5 W/ SB5/8x24 OR PAB5 @ INT. PONY WALLS	2	(14) 1/4"x2-1/2" SDS
HD6	-			HDU14-SDS2.5 W/ SB1x30 OR PAB8H @ INT. PONY WALLS	4	(36) 1/4"x2-1/2" SDS
HD7	Note: Posts to be No. 1 and better			HD19-SDS2.5 W/ PAB10	4	(5) 1" BOLTS

STRAP SCHEDULE:

(STRAP / ALL THREAD TO CLEAR SPAN ACROSS RIM TO WALL BELOW)

MARK	STRAP TYPE	STRAP FASTENERS	# OF STUDS	BOLT TYPE	# OF STUDS	BOLT FASTENERS
S3	MSTC52	(48) 16d SINKERS	2 OR	HDU5-SDS2.5 W/ 5/8"Ø ALL THREAD	2	(14) 1/4"x2-1/2" SDS
S4	MSTC66	(68) 16d SINKERS	2 OR	HDU8-SDS2.5 W/ 7/8"Ø ALL THREAD	3	(20) 1/4"x2-1/2" SDS

ANCHOR BOLT KEY NOTES:

A1	-	1/2"Ø ANCHOR BOLTS @ 12" O.C.
A3	-	1/2"Ø ANCHOR BOLTS @ 36" O.C.
A4	-	1/2"Ø ANCHOR BOLTS @ 48" O.C.
A5	-	1/2"Ø ANCHOR BOLTS @ 60" O.C.