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#20035

Structural Calculations For:

FOO RESIDENCE

AT

3453 74th Ave SE
Mercer Island, WA 98040

01/08/2021

Client: Jimmy and Shannon Foo
2820 29th Ave. W
Seattle, WA 98199

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LATERAL CALCULATIONS

Foo Residence

3453 74th Ave SE, Mercer Island, WA 98040, USA

Latitude, Longitude: 47.57840179999999, -122.2396407

Date	5/7/2020, 11:49:30 AM
Design Code Reference Document	ASCE7-10
Risk Category	II
Site Class	D - Stiff Soil

Type	Value	Description
S_S	1.397	MCE_R ground motion. (for 0.2 second period)
S_1	0.538	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.397	Site-modified spectral acceleration value
S_{M1}	0.806	Site-modified spectral acceleration value
S_{DS}	0.932	Numeric seismic design value at 0.2 second SA
S_{D1}	0.538	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	D	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	1.5	Site amplification factor at 1.0 second
PGA	0.576	MCE_G peak ground acceleration
F_{PGA}	1	Site amplification factor at PGA
PGA_M	0.576	Site modified peak ground acceleration
T_L	6	Long-period transition period in seconds
SsRT	1.397	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	1.458	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	2.867	Factored deterministic acceleration value. (0.2 second)
S1RT	0.538	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.576	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	1.187	Factored deterministic acceleration value. (1.0 second)
PGAd	1.103	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.959	Mapped value of the risk coefficient at short periods
C_{R1}	0.934	Mapped value of the risk coefficient at a period of 1 s

SHEET TITLE: **2015 IBC SEISMIC OVERVIEW**
CT PROJECT # : 20035 Foo Residence

Step #				2015 IBC	ASCE 7-10
1.	OCCUPANCY CATEGORY	TYPE =	II	Table 1604.5	Table 1.5-1
2.	IMPORTANCE FACTOR	I_E =	1.00	Section 1613.1 -> ASCE	Table 1.5-2
3.	Site Class - Per Geo. Engr.	S.C. =	D	Section 1613.3.5 Table 1613.3.3(2)	Section 11.4.2 / Ch. 20 Table 20.3-1
4.	0.2 Sec. Spectral Response	S_S =	1.40	Figure 1613.3.1(1)	Figure 22-1
5.	1.0 Sec. Spectral Response	S_1 =	0.54	Figure 1613.3.1(2)	Figure 22-2
6.	Site Coefficient (short period)	F_a =	1.00	Figure 1613.3.3(1)	Table 11.4-1
7.	Site Coefficient (1.0 second)	Fv =	1.50	Figure 1613.3.3(2)	Table 11.4-2
	$S_{MS} = F_a * S_S$	S_{MS} =	1.40	EQ 16-37	EQ 11.4-1
	$S_{M1} = F_v * S_1$	S_{M1} =	0.81	EQ 16-38	EQ 11.4-2
	$S_{DS} = 2/3 * S_{MS}$	S_{DS} =	0.93	EQ 16-39	EQ 11.4-3
	$S_{D1} = 2/3 * S_{M1}$	S_{D1} =	0.54	EQ 16-40	EQ 11.4-4
8.	Seismic Design Category 0.2s	SDC_S =	D	Table 1613.3.5(1)	Table 11.6-1
9.	Seismic Design Category 1.0s	SDC_1 =	D	Table 1613.3.5(2)	Table 11.6-2
10.	Seismic Design Category	SDC =	D	Max.	Max.
11.	Wood structural panels	---	---	N/A	Table 12.2-1
12.	Response Modification Coef.	R =	6.5	N/A	Table 12.2-1
13.	Overstrength Factor	Ω_0 =	3.0	N/A	Table 12.2-1
14.	Deflection Amplification Factor	C_D =	4.0	N/A	Table 12.2-1
15.	Plan Structural Irregularities	---	No	N/A	Table 12.3-1
16.	Vertical Structural Irregularities	---	No	N/A	Table 12.3-2
17.	Permitted Procedure	Equiv. Lateral Force		---	Table 12.6-1

SHEET TITLE: **2015 IBC EQUIVALENT LATERAL FORCE PROCEDURE PER ASCE 7-10**
CT PROJECT # : 20035 Foo Residence

S_{DS} =	0.93	h_n =	18.00 (ft)	
S_{D1} =	0.54	x =	0.75	ASCE 7-10 (Table 12.8-2)
R =	6.5	C_t =	0.020	ASCE 7-10 (Table 12.8-2)
I_E =	1.0	T =	0.175	ASCE 7-10 (EQ 12.8-7)
S_1 =	0.54	k =	1	ASCE 7-10 (Section 12.8.3)
		T_L =	16	ASCE 7-10 (Section 11.4.5: Figure 22-15)

$C_S = S_{DS} / (R/I_E)$		0.143 W	ASCE 7-10 (EQ 12.8-2)
$C_S = S_{D1} / (T^*(R/I_E))$	*(for $T \le T_L$)*	0.474 W	ASCE 7-10 (EQ 12.8-3) (MAX.)
$C_S = (S_{D1} * T_L)/ (T^2*(R/I_E))$	*(for $T \ge T_L$)*	0.000 W	ASCE 7-10 (EQ 12.8-4) (MAX.)
C_S = 0.01		0.010 W	ASCE 7-10 (EQ 12.8-5) (MIN.)
$C_S = (0.5\ S_1)/(R/I_E)$		0.041 W	ASCE 7-10 (EQ 12.8-6) (MIN.if S1> 0.6g)

CONTROLLING DESIGN BASE SHEAR = 0.143 W

VERTICAL DISTRIBUTION OF SEISMIC FORCES PER ASCE 7-10 SECTION 12.8.3

DIAPHR. LEVEL	Story Height	Elevation (ft)	Height h_i (ft)	AREA (sqft)	DL (ksf)	w_i (kips)	$w_i * h_i^k$ (kips)	(EQ 12.8-11) (EQ 12.8-12) $C_{vx} = \frac{w_x * h_x^k}{\sum w_i * h_i^k}$	DESIGN Vi	SUM DESIGN Vi
Roof	---	18.00	18.00	3707	0.025	92.675	1668.2	0.63	**11.72**	11.72
1st	7.00	11.00	11.00	3572	0.025	89.3	982.3	0.37	**6.90**	18.62
0	11.00	0.00	0.00			0	0.0	0.00	**0.00**	18.62
	0.00	0.00								
					SUM =	182.0	2650.5	1.00	**18.62**	
					E = V =	**26.07**				
					E/1.4 =	**18.62**				

SHEET TITLE: **MAIN WIND FORCE RESISTING SYSTEM USING LOADS FROM ASCE 7-10 CHAPTER 28, PART 2**
CT PROJECT # : 20035 Foo Residence

	F-B	S-S		ASCE 7-10	2015 IBC
Ridge Elevation (ft) =	31.50	31.50	ft.		
Roof Plate Ht. =	18.00	18.00			
Roof Mean Ht. =	24.75	24.75	ft.	---	---
Building Width =	96.0	62.0	ft.		
Basic Wind Speed $_{3\ Sec.\ Gust}$ =	110	110	mph	Fig. 26.5-1A thru C	Figure 1609A-C
Exposure=	C	C			
Roof Type=	Gable	Gable			
$p_{S30\ A}$ =	21.6	21.6	psf	Figure 28.6-1	
$p_{S30\ B}$ =	14.8	14.8	psf	Figure 28.6-1	
$p_{S30\ C}$ =	17.2	17.2	psf	Figure 28.6-1	
$p_{S30\ D}$ =	11.8	11.8	psf	Figure 28.6-1	
λ =	1.35	1.35		Figure 28.6-1	
K_{zt} =	1.60	1.60		Section 26.8	
windward/lee=	1.00	1.00			
$\lambda * K_{zt} *$ Iw * windward/lee :	2.16	2.16			
$p_S = \lambda * Kzt * I * p_{s30}$ =				(Eq. 28.6-1)	
$p_{S\ A}$ =	**46.66**	**46.66**	psf	(Eq. 28.6-1)	
$p_{S\ B}$ =	**31.97**	**31.97**	psf	(Eq. 28.6-1)	
$p_{S\ C}$ =	**37.15**	**37.15**	psf	(Eq. 28.6-1)	
$p_{S\ D}$ =	**25.49**	**25.49**	psf	(Eq. 28.6-1)	
$p_{S\ A\ and\ C\ average}$ =	41.9	41.9	psf		
$p_{S\ B\ and\ D\ average}$ =	28.7	28.7	psf		
a =	6.2	6.2		Figure 28.6-1	
2a =	12.4	12.4			
width - 2*2a =	71.2	37.2			

MAIN WIND - ASCE 7-10 CHAPTER 28 PART 2					**Areas (F-B)**					**Areas (S-S)**				**(F-B)**	**(S-S)**		**Wind (F-B)**		**Wind (S-S)**	
						1.00		1.00			1.00		1.00	**10 psf min.**	**16 psf min.**					
DIAPHR. LEVEL	Story Height	Elevation (ft)	Height hi (ft)		h (ft)	A_A (sq. ft)	A_B (sq. ft)	A_C (sq. ft)	A_D (sq. ft)	A_A (sq. ft)	A_B (sq. ft)	A_C (sq. ft)	A_D (sq. ft)	**wind per 6.1.4.1**	**wind per 6.1.4.1**		WIND Vi (F-B)	SUM V (F-B)	WIND Vi (S-S)	SUM V (S-S)
		31.50			13.5	0	334.8	0	961.2	0	334.8	0	502.2							
Roof	---	18.00	18.00		3.5	86.8	0	249.2	0	86.8	0	130.2	0	26.1	16.9		48.51	48.51	32.39	32.39
1st	7.00	11.00	11.00		9.0	223.2	0	640.8	0	223.2	0	334.8	0	13.8	8.9		34.22	82.73	22.85	55.24
0	11.00	0.00	0.00			0	0	0	0	0	0	0	0	0.0	0.0		0.00		0.00	
0	0.00	0.00																		
								A_F =	2496			A_F =	1612	39.9	25.8		**V (F-B)=**	**82.73**	**V (S-S)=**	**55.24**
														kips	**kips**			**kips**		**kips**

SHEET TITLE: **MAIN WIND FORCE RESISTING SYSTEM USING LOADS FROM ASCE 7-10 CHAPTER 28, PART 1**
CT PROJECT # : 20035 Foo Residence

MAIN WIND - 7-10 CHAPTER 28 PART 1				**Wind (F-B)**		**Wind (S-S)**		**Min/Part 2 (Max.)**		**Min/Part 2 (Max.)**	
								Wind (F-B)		**Wind (S-S)**	
DIAPHR. LEVEL	Story Height	Elevation (ft)	Height hi (ft)	DESIGN Vi (F-B)	SUM V (F-B)	DESIGN Vi (S-S)	SUM V (S-S)	LRFD Vi (F-B)	SUM V (F-B)	LRFD Vi (S-S)	SUM V (S-S)
Roof	---	18.00	18.00	0.00	0.00	0.00	0.00	48.51	48.51	32.39	32.39
1st	7.00	11.00	11.00	0.00	0.00	0.00	0.00	34.22	82.73	22.85	55.24
0	11.00	0.00									
				V (F-B)=	**0.00 kips**	**V (S-S)=**	**0.00 kips**	**V (F-B)=**	**82.73 kips**	**V (S-S)=**	**55.24 kips**

DESIGN WIND - Min./Part 2/Part 1 ASD				**Wind (F-B)**			**Wind (S-S)**		
DIAPHR. LEVEL	Story Height	Elevation (ft)	Height hi (ft)	**LRFD Vi (F-B)**	**DESIGN Vi**	**SUM V (F-B)**	**LRFD Vi (S-S)**	**DESIGN Vi**	**SUM V (S-S)**
Roof	7.00	10	10	**48.51**	**29.11**	**29.11**	**32.39**	**19.43**	**19.43**
1st	11.00	0	0	**34.22**	**20.53**	**49.64**	**22.85**	**13.71**	**33.15**
0	0.00	0							
				V (F-B)=		**49.64 kips**	**V (S-S)=**		**33.15 kips**

SHEET TITLE: **LATERAL F-B (front to back)**

CT PROJECT # : 20035 Foo Residence

Diaph. Level: **Roof**

Panel Height = 8 ft.

Max. aspect = 3.5 SDPWS-15 Table 4.3.4

Min. Lwall = 2.29 ft.

Seismic V i = 11.72 kips

Sum Seismic V i = 11.72 kips

Design Wind F-B V i = 29.11 kips

Sum Wind F-B V i = 29.11 kips

Grid	ID	T.A. (sqft)	Lwall (ft)	$L_{DL\ eff.}$ (ft)	C_0 per SDPWS-15 Table 4.3.3.5	w dl (klf)	Wind V level (kip)	Wind V abv. (kip)	E.Q. V level (kip)	E.Q. V abv. (kip)	ρ ($\rho =$ **1.00**)	*2w/h*	E.Q. *v i* (plf)	**E.Q. Type**	**Wind Type**	Wind *v i* (plf)	E.Q. OTM (kip-ft)	E.Q. R_{OTM} (kip-ft)	E.Q. U_{net} (kip)	E.Q. U_{sum} (kip)	Wind OTM (kip-ft)	Wind R_{OTM} (kip-ft)	Wind U_{net} (kip)	Wind U_{sum} (kip)	**Max. U_{sum} (kip)**
Ext	A*	318.88	4.0	19.0	1.00	0.15	2.50	0.00	1.01	0.00	1.00	1.00	252	~~**P4**~~	~~**P2**~~	626	8.07	5.13	0.88	0.88	20.03	3.80	4.87	4.87	~~**4.87**~~
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Int	B	837.06	10.5	12.5	1.00	0.15	6.57	0.00	2.65	0.00	1.00	1.00	252	**P4**	**P2**	626	21.17	8.86	1.25	1.25	52.58	6.56	4.68	4.68	**4.68**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Int	C	797.2	10.0	12.0	1.00	0.15	6.26	0.00	2.52	0.00	1.00	1.00	252	**P4**	**P2**	626	20.17	8.10	1.29	1.29	50.07	6.00	4.72	4.72	**4.72**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	D	617.83	7.8	9.8	1.00	0.15	4.85	0.00	1.95	0.00	1.00	1.00	252	**P4**	**P2**	626	15.63	5.10	1.49	1.49	38.81	3.78	4.95	4.95	**4.95**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	E	1136	14.3	16.3	1.00	0.15	8.92	0.00	3.59	0.00	1.00	1.00	252	**P4**	**P2**	626	28.74	15.63	0.96	0.96	71.36	11.58	4.40	4.40	**4.40**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
	3707	3707.0	46.5		46.5 = L eff.		29.11	0.00	11.72	0.00															
							ΣV_{wind}	29.11	ΣV_{EQ}	11.72															

Notes: * denotes a wall with force transfer

SHEET TITLE: **LATERAL F-B (front to back)**
CT PROJECT # : 20035 Foo Residence

Diaph. Level: **1st**
Panel Height = 11 ft.
Max. aspect = 3.5 SDPWS-15 Table 4.3.4
Min. Lwall = 3.14 ft.

Seismic V i = 6.90 kips
Sum Seismic V i = 18.62 kips

Design Wind F-B V i = 20.53 kips
Sum Wind F-B V i = 49.64 kips

Grid	ID	T.A. (sqft)	Lwall (ft)	$L_{DL\ eff.}$ (ft)	C_0 (per SDPWS-15 Table 4.3.3.5)	w dl (klf)	Wind V level (kip)	Wind V abv. (kip)	E.Q. V level (kip)	E.Q. V abv. (kip)	ρ (ρ = **1.00**)	2w/h	E.Q. v i (plf)	**E.Q. Type**	**Wind Type**	Wind v i (plf)	E.Q. OTM (kip-ft)	E.Q. R_{OTM} (kip-ft)	E.Q. U_{net} (kip)	E.Q. U_{sum} (kip)	Wind OTM (kip-ft)	Wind R_{OTM} (kip-ft)	Wind U_{net} (kip)	Wind U_{sum} (kip)	**Max. U_{sum} (kip)**
Ext	A	950.72	17.5	19.5	1.00	0.15	5.46	7.75	1.84	3.12	1.00	1.00	283	**P4**	**P2**	755	54.53	23.03	1.87	1.87	145.33	17.06	7.62	7.62	**7.62**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	B	814.9	15.0	15.0	1.00	0.25	4.68	6.64	1.57	2.67	1.00	1.00	283	**P4**	**P2**	755	46.74	25.31	1.49	1.49	124.57	18.75	7.38	7.38	**7.38**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Int	C	611.18	11.3	13.3	1.00	0.25	3.51	4.98	1.18	2.01	1.00	1.00	283	**P4**	**P2**	755	35.05	16.77	1.73	1.73	93.43	12.42	7.65	7.65	**7.65**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	D	434.62	8.0	8.0	1.00	0.25	2.50	3.54	0.84	1.43	1.00	1.00	283	**P4**	**P2**	755	24.93	7.20	2.42	2.42	66.44	5.33	8.33	8.33	**8.33**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	E	760.58	14.0	14.0	1.00	0.25	4.37	6.20	1.47	2.50	1.00	1.00	283	**P4**	**P2**	755	43.62	22.05	1.55	1.55	116.26	16.33	7.06	7.06	**7.06**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	-0.12	-0.12	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
	3572	3572.0	65.8		65.8	= L eff.	20.53	29.11	6.90	11.72	1.00														
							ΣV_{wind}	49.64	ΣV_{EQ}	18.62															

Notes: * denotes a wall with force transfer

SHEET TITLE: **LATERAL S-S (side to side)**
CT PROJECT # : 20035 Foo Residence

Diaph. Level: **Roof**
Panel Height = 8 ft.
Max. aspect = 3.5 SDPWS-15 Table 4.3.4
Min. Lwall = 2.29 ft.

Seismic V i = 11.72 kips
Sum Seismic V i = 11.72 kips

Design Wind F-B V i = 19.43 kips
Sum Wind F-B V i = 19.43 kips

					per SDPWS-15 Table 4.3.3.5		Wind	Wind	E.Q.	E.Q.	$\rho =$	**1.00**	E.Q.	**E.Q.**	**Wind**	Wind	E.Q.	E.Q.	E.Q.	E.Q.	Wind	Wind	Wind	Wind	**Max.**
Wall	ID	T.A. (sqft)	Lwall (ft)	$L_{DL\ eff.}$ (ft)	C_0	w dl (klf)	V level (kip)	V abv. (kip)	V level (kip)	V abv. (kip)	ρ	*2w/h*	*v i* (plf)	**Type**	**Type**	*v i* (plf)	OTM (kip-ft)	R_{OTM} (kip-ft)	U_{net} (kip)	U_{sum} (kip)	OTM (kip-ft)	R_{OTM} (kip-ft)	U_{net} (kip)	U_{sum} (kip)	**U_{sum} (kip)**
Ext	1	915.02	9.8	11.8	1.00	0.15	4.80	0.00	2.89	0.00	1.00	1.00	297	**P4**	**P3**	492	23.15	7.73	1.70	1.70	38.38	5.73	3.59	3.59	**3.59**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	2	398.85	4.3	5.3	1.00	0.15	2.09	0.00	1.26	0.00	1.00	1.00	297	**P4**	**P3**	492	10.09	1.51	2.40	2.40	16.73	1.12	4.36	4.36	**4.36**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Int	3	539.63	5.8	7.8	1.00	0.15	2.83	0.00	1.71	0.00	1.00	1.00	297	**P4**	**P3**	492	13.65	3.01	2.09	2.09	22.63	2.23	4.01	4.01	**4.01**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Int	4	492.7	5.3	7.3	1.00	0.15	2.58	0.00	1.56	0.00	1.00	1.00	297	**P4**	**P3**	492	12.46	2.57	2.16	2.16	20.66	1.90	4.09	4.09	**4.09**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	5	351.93	3.8	5.8	1.00	0.15	1.84	0.00	1.11	0.00	1.00	0.94	317	**P4**	**P3**	492	8.90	1.46	2.42	2.42	14.76	1.08	4.44	4.44	**4.44**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	6	563.09	6.0	8.0	1.00	0.15	2.95	0.00	1.78	0.00	1.00	1.00	297	**P4**	**P3**	492	14.24	3.24	2.06	2.06	23.62	2.40	3.98	3.98	**3.98**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	7	445.78	4.8	5.8	1.00	0.15	2.34	0.00	1.41	0.00	1.00	1.00	297	**P4**	**P3**	492	11.28	1.84	2.31	2.31	18.70	1.37	4.24	4.24	**4.24**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
	3707	3707.0	39.5		39.5 = L eff.		19.43	0.00	11.72	0.00															
							ΣV_{wind}	19.43	ΣV_{EQ}	11.72															

Notes: * denotes a wall with force transfer

SHEET TITLE: **LATERAL S-S (side to side)**
CT PROJECT # : 20035 Foo Residence

Diaph. Level: **1st**
Panel Height = 11 ft.
Max. aspect = 3.5 SDPWS-15 Table 4.3.4
Min. Lwall = 3.14 ft.

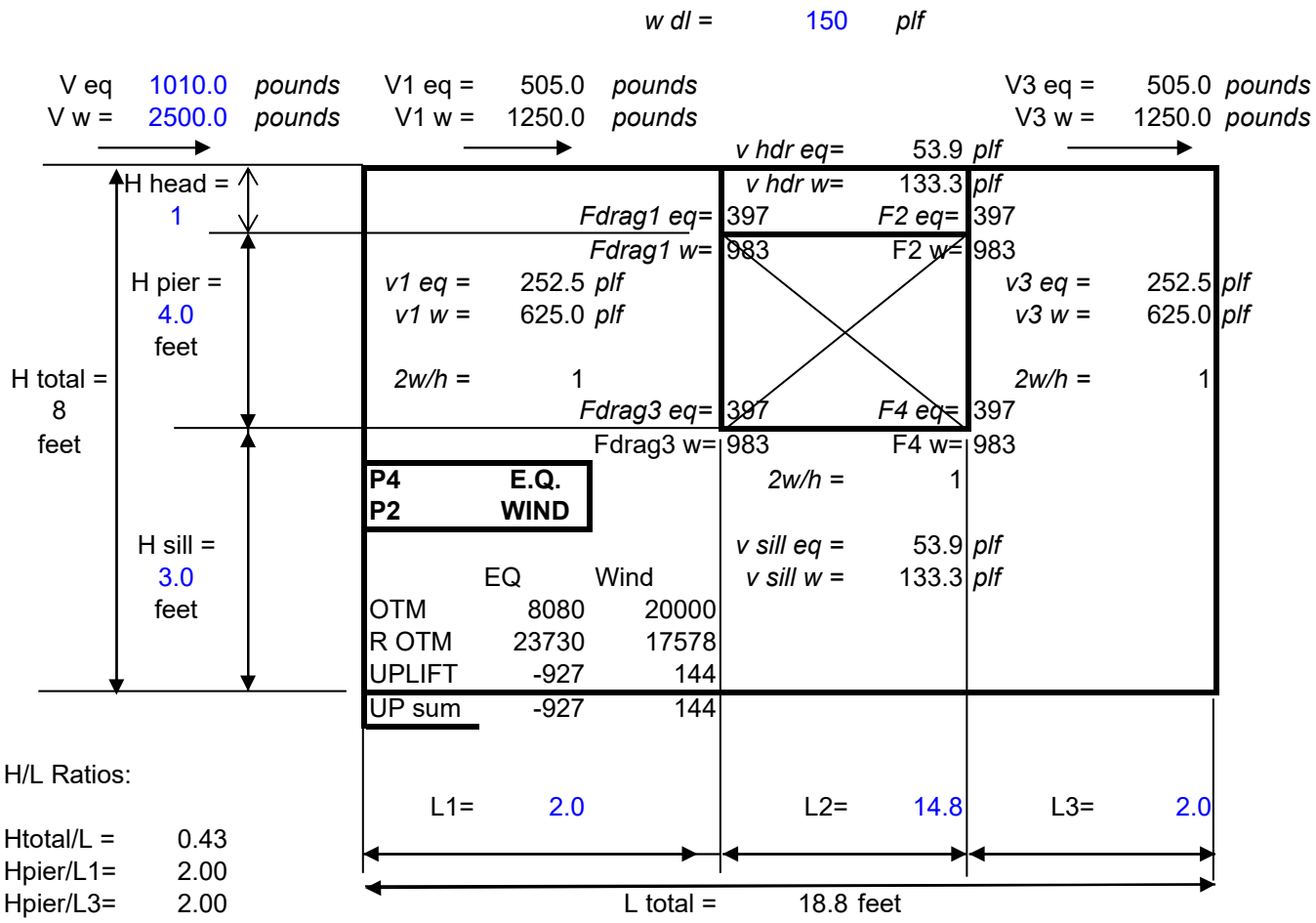
Seismic V i = 6.90 kips
Sum Seismic V i = 18.62 kips

Design Wind F-B V i = 13.71 kips
Sum Wind F-B V i = 33.15 kips

Wall	ID	T.A. (sqft)	Lwall (ft)	$L_{DL\ eff.}$ (ft)	C_0 (per SDPWS-15 Table 4.3.3.5)	w dl (klf)	Wind V level (kip)	Wind V abv. (kip)	E.Q. V level (kip)	E.Q. V abv. (kip)	ρ = **1.00** ρ	*2w/h*	E.Q. *v i* (plf)	**E.Q. Type**	**Wind Type**	Wind *v i* (plf)	E.Q. OTM (kip-ft)	E.Q. R_{OTM} (kip-ft)	E.Q. U_{net} (kip)	E.Q. U_{sum} (kip)	Wind OTM (kip-ft)	Wind R_{OTM} (kip-ft)	Wind U_{net} (kip)	Wind U_{sum} (kip)	**Max. U_{sum} (kip)**
Ext	1	611	9.8	9.8	1.00	0.25	2.35	3.32	1.18	2.01	1.00	1.00	327	**P3**	**P3**	581	35.04	10.69	2.68	2.68	62.37	7.92	5.99	5.99	**5.99**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	—	—	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	2	940	15.0	15.0	1.00	0.25	3.61	5.11	1.82	3.08	1.00	1.00	327	**P3**	**P3**	581	53.91	25.31	2.00	2.00	95.95	18.75	5.39	5.39	**5.39**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	—	—	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	3	1065.3	17.0	19.0	1.00	0.25	4.09	5.80	2.06	3.50	1.00	1.00	327	**P3**	**P3**	581	61.10	36.34	1.52	1.52	#####	26.92	5.01	5.01	**5.01**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	—	—	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	4	329	5.3	7.3	1.00	0.25	1.26	1.79	0.64	1.08	1.00	0.95	342	**P3**	**P3**	581	18.87	4.28	3.18	3.18	33.58	3.17	6.63	6.63	**6.63**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	5	250.67	4.0	6.0	1.00	0.25	0.96	1.36	0.48	0.82	1.00	0.73	449	**P2**	**P3**	581	14.38	2.70	3.50	3.50	25.59	2.00	7.08	7.08	**7.08**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	6	376	6.0	8.0	1.00	0.25	1.44	2.05	0.73	1.23	1.00	1.00	327	**P3**	**P3**	581	21.56	5.40	3.03	3.03	38.38	4.00	6.45	6.45	**6.45**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	—	—	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	~~**0.00**~~
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	—	—	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	—	—	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	~~**0.00**~~
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	—	—	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	—	—	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	~~**0.00**~~
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
	3572	3572.0	57.0		57.0 = L eff.		13.71	19.43	6.90	11.72															
							ΣV_{wind}	33.15	ΣV_{EQ}	18.62															

Notes: * denotes a wall with force transfer

JOB #: 20035
ID: **A**



SHEET TITLE: **2015 IBC SEISMIC OVERVIEW**
CT PROJECT # : 20035 Foo Residence Shed

Step #				2015 IBC	ASCE 7-10
1.	OCCUPANCY CATEGORY	TYPE =	II	Table 1604.5	Table 1.5-1
2.	IMPORTANCE FACTOR	I_E =	1.00	Section 1613.1 -> ASCE	Table 1.5-2
3.	Site Class - Per Geo. Engr.	S.C. =	D	Section 1613.3.5 Table 1613.3.3(2)	Section 11.4.2 / Ch. 20 Table 20.3-1
4.	0.2 Sec. Spectral Response	S_S =	1.40	Figure 1613.3.1(1)	Figure 22-1
5.	1.0 Sec. Spectral Response	S_1 =	0.54	Figure 1613.3.1(2)	Figure 22-2
6.	Site Coefficient (short period)	F_a =	1.00	Figure 1613.3.3(1)	Table 11.4-1
7.	Site Coefficient (1.0 second)	Fv =	1.50	Figure 1613.3.3(2)	Table 11.4-2
	$S_{MS} = F_a * S_S$	S_{MS} =	1.40	EQ 16-37	EQ 11.4-1
	$S_{M1} = F_v * S_1$	S_{M1} =	0.81	EQ 16-38	EQ 11.4-2
	$S_{DS} = 2/3 * S_{MS}$	S_{DS} =	0.93	EQ 16-39	EQ 11.4-3
	$S_{D1} = 2/3 * S_{M1}$	S_{D1} =	0.54	EQ 16-40	EQ 11.4-4
8.	Seismic Design Category 0.2s	SDC_S =	D	Table 1613.3.5(1)	Table 11.6-1
9.	Seismic Design Category 1.0s	SDC_1 =	D	Table 1613.3.5(2)	Table 11.6-2
10.	Seismic Design Category	SDC =	D	Max.	Max.
11.	Wood structural panels	---	---	N/A	Table 12.2-1
12.	Response Modification Coef.	R =	6.5	N/A	Table 12.2-1
13.	Overstrength Factor	Ω_0 =	3.0	N/A	Table 12.2-1
14.	Deflection Amplification Factor	C_D =	4.0	N/A	Table 12.2-1
15.	Plan Structural Irregularities	---	No	N/A	Table 12.3-1
16.	Vertical Structural Irregularities	---	No	N/A	Table 12.3-2
17.	Permitted Procedure	Equiv. Lateral Force		---	Table 12.6-1

SHEET TITLE: **2015 IBC EQUIVALENT LATERAL FORCE PROCEDURE PER ASCE 7-10**
CT PROJECT # : 20035 Foo Residence Shed

S_{DS} =	0.93	h_n =	11.00	(ft)	
S_{D1} =	0.54	x =	0.75	ASCE 7-10 (Table 12.8-2)	
R =	6.5	C_t =	0.020	ASCE 7-10 (Table 12.8-2)	
I_E =	1.0	T =	0.121	ASCE 7-10 (EQ 12.8-7)	
S_1 =	0.54	k =	1	ASCE 7-10 (Section 12.8.3)	
		T_L =	16	ASCE 7-10 (Section 11.4.5: Figure 22-15)	

$C_S = S_{DS} / (R/I_E)$		0.143 W	ASCE 7-10 (EQ 12.8-2)	
$C_S = S_{D1} / (T^*(R/I_E))$	*(for $T \le T_L$)*	0.685 W	ASCE 7-10 (EQ 12.8-3) (MAX.)	
$C_S = (S_{D1} * T_L)/ (T^2*(R/I_E))$	*(for $T \ge T_L$)*	0.000 W	ASCE 7-10 (EQ 12.8-4) (MAX.)	
$C_S = 0.01$		0.010 W	ASCE 7-10 (EQ 12.8-5) (MIN.)	
$C_S = (0.5\ S_1)/(R/I_E)$		0.041 W	ASCE 7-10 (EQ 12.8-6) (MIN.if S1> 0.6g)	

CONTROLLING DESIGN BASE SHEAR = 0.143 W

VERTICAL DISTRIBUTION OF SEISMIC FORCES PER ASCE 7-10 SECTION 12.8.3

DIAPHR. LEVEL	Story Height	Elevation (ft)	Height h_i (ft)	AREA (sqft)	DL (ksf)	w_i (kips)	$w_i * h_i^k$ (kips)	(EQ 12.8-11) (EQ 12.8-12) $C_{vx} = \frac{w_x * h_x^k}{\sum w_i * h_i^k}$	DESIGN Vi	SUM DESIGN Vi
Roof	---	11.00	11.00	120	0.025	3	33.0	1.00	**0.31**	0.31
1st	11.00	0.00	0.00	0	0.000	0	0.0	0.00	**0.00**	0.31
0	0.00	0.00	0.00			0	0.0	0.00	**0.00**	0.31
	0.00	0.00								
					SUM =	3.0	33.0	1.00	**0.31**	
					E = V =	**0.43**				
					E/1.4 =	**0.31**				

SHEET TITLE: **MAIN WIND FORCE RESISTING SYSTEM USING LOADS FROM ASCE 7-10 CHAPTER 28, PART 2**
CT PROJECT # : 20035 Foo Residence Shed

	F-B	S-S		ASCE 7-10	2015 IBC
Ridge Elevation (ft) =	12.25	12.25	ft.		
Roof Plate Ht. =	11.00	11.00			
Roof Mean Ht. =	11.63	11.63	ft.	---	---
Building Width =	10.0	12.0	ft.		
Basic Wind Speed $_{3\ Sec.\ Gust}$ =	110	110	mph	Fig. 26.5-1A thru C	Figure 1609A-C
Exposure=	C	C			
Roof Type=	Gable	Gable			
$p_{S30\ A}$ =	19.2	19.2	psf	Figure 28.6-1	
$p_{S30\ B}$ =	-10.0	-10.0	psf	Figure 28.6-1	
$p_{S30\ C}$ =	12.7	12.7	psf	Figure 28.6-1	
$p_{S30\ D}$ =	-5.9	-5.9	psf	Figure 28.6-1	
λ =	1.35	1.35		Figure 28.6-1	
K_{zt} =	1.60	1.60		Section 26.8	
windward/lee =	1.00	1.00			
$\lambda * K_{zt} *$ Iw * windward/lee :	2.16	2.16			
$p_S = \lambda * Kzt * I * p_{s30}$ =				(Eq. 28.6-1)	
$p_{S\ A}$ =	**41.47**	**41.47**	psf	(Eq. 28.6-1)	
$p_{S\ B}$ =	**-21.60**	**-21.60**	psf	(Eq. 28.6-1)	
$p_{S\ C}$ =	**27.43**	**27.43**	psf	(Eq. 28.6-1)	
$p_{S\ D}$ =	**-12.74**	**-12.74**	psf	(Eq. 28.6-1)	
$p_{S\ A\ and\ C\ average}$ =	34.5	34.5	psf		
$p_{S\ B\ and\ D\ average}$ =	-17.2	-17.2	psf		
a =	3	3		Figure 28.6-1	
2a =	6	6			
width - 2*2a =	-2	0			

MAIN WIND - ASCE 7-10 CHAPTER 28 PART 2					**Areas (F-B)**					**Areas (S-S)**				**(F-B)**	**(S-S)**	**Wind (F-B)**		**Wind (S-S)**	
						1.00		1.00			1.00		1.00	**10 psf min.**	**16 psf min.**				
DIAPHR. LEVEL	Story Height	Elevation (ft)	Height hi (ft)	h (ft)	A_A (sq. ft)	A_B (sq. ft)	A_C (sq. ft)	A_D (sq. ft)	A_A (sq. ft)	A_B (sq. ft)	A_C (sq. ft)	A_D (sq. ft)	**wind per 6.1.4.1**	**wind per 6.1.4.1**	WIND Vi (F-B)	SUM V (F-B)	WIND Vi (S-S)	SUM V (S-S)
		12.25		1.3	0	15	0	-2.5	0	15	0	0						
Roof	---	11.00	11.00	5.5	66	0	-11	0	66	0	0	0	1.1	1.3	2.14	2.14	2.41	2.41
1st	11.00	0.00	0.00	5.5	66	0	-11	0	66	0	0	0	0.9	1.1	2.44	4.58	2.74	5.15
0	0.00	0.00	0.00		0	0	0	0	0	0	0	0	0.0	0.0	0.00		0.00	
0	0.00	0.00																
							A_F =	122.5			A_F =	147	2.0	2.4	**V (F-B)=**	**4.58**	**V (S-S)=**	**5.15**
													kips	**kips**		**kips**		**kips**

SHEET TITLE: **MAIN WIND FORCE RESISTING SYSTEM USING LOADS FROM ASCE 7-10 CHAPTER 28, PART 1**
CT PROJECT # : 20035 Foo Residence Shed

MAIN WIND - 7-10 CHAPTER 28 PART 1				Wind (F-B)		Wind (S-S)		Min/Part 2 (Max.) Wind (F-B)		Min/Part 2 (Max.) Wind (S-S)	
DIAPHR. LEVEL	Story Height	Elevation (ft)	Height hi (ft)	DESIGN Vi (F-B)	SUM V (F-B)	DESIGN Vi (S-S)	SUM V (S-S)	LRFD Vi (F-B)	SUM V (F-B)	LRFD Vi (S-S)	SUM V (S-S)
Roof	---	11.00	11.00	0.00	0.00	0.00	0.00	2.14	2.14	2.41	2.41
1st	11.00	0.00	0.00	0.00	0.00	0.00	0.00	2.44	4.58	2.74	5.15
0	0.00	0.00									
				V (F-B)=	**0.00 kips**	**V (S-S)=**	**0.00 kips**	**V (F-B)=**	**4.58 kips**	**V (S-S)=**	**5.15 kips**

DESIGN WIND - Min./Part 2/Part 1 ASD				Wind (F-B)			Wind (S-S)		
DIAPHR. LEVEL	Story Height	Elevation (ft)	Height hi (ft)	**LRFD Vi (F-B)**	**DESIGN Vi**	**SUM V (F-B)**	**LRFD Vi (S-S)**	**DESIGN Vi**	**SUM V (S-S)**
Roof	11.00	10	10	**2.14**	**1.29**	**1.29**	**2.41**	**1.45**	**1.45**
1st	0.00	0	0	**2.44**	**1.46**	**2.75**	**2.74**	**1.64**	**3.09**
0	0.00	0							
				V (F-B)=		**2.75 kips**	**V (S-S)=**		**3.09 kips**

SHEET TITLE: **LATERAL F-B (front to back)**
CT PROJECT # : 20035 Foo Residence Shed 1

Diaph. Level: **Roof**
Panel Height = 11 ft.
Max. aspect = 3.5 SDPWS-15 Table 4.3.4
Min. Lwall = 3.14 ft.

Seismic V i = 0.31 kips
Sum Seismic V i = 0.31 kips

Design Wind F-B V i = 1.29 kips
Sum Wind F-B V i = 2.75 kips

Grid	ID	T.A. (sqft)	Lwall (ft)	$L_{DL\ eff.}$ (ft)	per SDPWS-15 Table 4.3.3.5 C_0	w dl (klf)	Wind V level (kip)	Wind V abv. (kip)	E.Q. V level (kip)	E.Q. V abv. (kip)	ρ= **1.30** ρ	2w/h	E.Q. v i (plf)	**E.Q. Type**	**Wind Type**	Wind v i (plf)	E.Q. OTM (kip-ft)	E.Q. R_{OTM} (kip-ft)	E.Q. U_{net} (kip)	E.Q. U_{sum} (kip)	Wind OTM (kip-ft)	Wind R_{OTM} (kip-ft)	Wind U_{net} (kip)	Wind U_{sum} (kip)	**Max. U_{sum} (kip)**
Ext	A	38.585	3.0	4.0	1.00	0.15	0.88	0.00	0.10	0.00	1.00	0.55	78	**P6TN**	**P6**	294	1.41	0.81	0.26	0.26	9.72	0.60	3.91	3.91	**3.91**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	B	81.415	6.3	7.3	1.00	0.15	1.86	0.00	0.21	0.00	1.30	1.00	43	**P6TN**	**P6**	294	2.98	3.13	-0.03	-0.03	20.50	2.32	3.21	3.21	**3.21**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
	120	120.0	9.3		9.3	= L eff.	2.75	0.00	0.31	0.00															
							ΣV_{wind}	2.75	ΣV_{EQ}	0.31															

Notes: * denotes a wall with force transfer

SHEET TITLE: **LATERAL S-S (side to side)**
CT PROJECT # : 20035 Foo Residence Shed 1

Diaph. Level: **Roof**
Panel Height = 11 ft.
Max. aspect = 3.5 SDPWS-15 Table 4.3.4
Min. Lwall = 3.14 ft.

Seismic V i = 0.31 kips
Sum Seismic V i = 0.31 kips

Design Wind F-B V i = 1.45 kips
Sum Wind F-B V i = 3.09 kips

Wall	ID	T.A. (sqft)	Lwall (ft)	$L_{DL\ eff.}$ (ft)	per SDPWS-15 Table 4.3.3.5 C_0	w dl (klf)	Wind V level (kip)	Wind V abv. (kip)	E.Q. V level (kip)	E.Q. V abv. (kip)	ρ = **1.30** ρ	2w/h	E.Q. v i (plf)	**E.Q. Type**	**Wind Type**	Wind v i (plf)	E.Q. OTM (kip-ft)	E.Q. R_{OTM} (kip-ft)	E.Q. U_{net} (kip)	E.Q. U_{sum} (kip)	Wind OTM (kip-ft)	Wind R_{OTM} (kip-ft)	Wind U_{net} (kip)	Wind U_{sum} (kip)	**Max. U_{sum} (kip)**
Ext	1	120	10.0	10.0	1.00	0.15	3.09	0.00	0.31	0.00	1.30	1.00	40	**P6TN**	**P6**	309	4.39	6.75	-0.25	-0.25	33.99	5.00	3.11	3.11	**3.11**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
	120	120.0	10.0		10.0 = L eff.		3.09	0.00	0.31	0.00															
							ΣV_{wind}	3.09	ΣV_{EQ}	0.31															

Notes: * denotes a wall with force transfer

SHEET TITLE: **LATERAL F-B (front to back)**
CT PROJECT # : 20035 Foo Residence Shed 2

Diaph. Level: **Roof**
Panel Height = 11 ft.
Max. aspect = 3.5 SDPWS-15 Table 4.3.4
Min. Lwall = 3.14 ft.

Seismic V i = 0.31 kips
Sum Seismic V i = 0.31 kips

Design Wind F-B V i = 1.29 kips
Sum Wind F-B V i = 2.75 kips

Grid	ID	T.A. (sqft)	Lwall (ft)	$L_{DL\ eff.}$ (ft)	C_0 (per SDPWS-15 Table 4.3.3.5)	w dl (klf)	Wind V level (kip)	Wind V abv. (kip)	E.Q. V level (kip)	E.Q. V abv. (kip)	ρ (ρ = **1.00**)	*2w/h*	E.Q. *v i* (plf)	**E.Q. Type**	**Wind Type**	Wind *v i* (plf)	E.Q. OTM (kip-ft)	E.Q. R_{OTM} (kip-ft)	E.Q. U_{net} (kip)	E.Q. U_{sum} (kip)	Wind OTM (kip-ft)	Wind R_{OTM} (kip-ft)	Wind U_{net} (kip)	Wind U_{sum} (kip)	**Max. U_{sum} (kip)**
Ext	A	99.31	12.0	12.0	1.00	0.15	2.27	0.00	0.25	0.00	1.00	1.00	21	**P6TN**	**P6**	189	2.80	9.72	-0.61	-0.61	25.01	7.20	1.57	1.57	**1.57**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	B	20.69	2.5	3.5	1.00	0.15	0.47	0.00	0.05	0.00	1.00	0.45	47	**P6TN**	**P6**	189	0.58	0.59	0.00	0.00	5.21	0.44	2.60	2.60	**2.60**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
	120	120.0	14.5		14.5 = L eff.		2.75	0.00	0.31	0.00															
							ΣV_{wind}	2.75	ΣV_{EQ}	0.31															

Notes: * denotes a wall with force transfer

SHEET TITLE: **LATERAL S-S (side to side)**
CT PROJECT # : 20035 Foo Residence Shed 2

Diaph. Level: **Roof**
Panel Height = 11 ft.
Max. aspect = 3.5 SDPWS-15 Table 4.3.4
Min. Lwall = 3.14 ft.

Seismic V i = 0.31 kips
Sum Seismic V i = 0.31 kips

Design Wind F-B V i = 1.45 kips
Sum Wind F-B V i = 3.09 kips

Wall	ID	T.A. (sqft)	Lwall (ft)	$L_{DL\ eff.}$ (ft)	C_0 (per SDPWS-15 Table 4.3.3.5)	w dl (klf)	Wind V level (kip)	Wind V abv. (kip)	E.Q. V level (kip)	E.Q. V abv. (kip)	ρ ($\rho =$ **1.30**)	2w/h	E.Q. v i (plf)	**E.Q. Type**	**Wind Type**	Wind v i (plf)	E.Q. OTM (kip-ft)	E.Q. R_{OTM} (kip-ft)	E.Q. U_{net} (kip)	E.Q. U_{sum} (kip)	Wind OTM (kip-ft)	Wind R_{OTM} (kip-ft)	Wind U_{net} (kip)	Wind U_{sum} (kip)	**Max. U_{sum} (kip)**
Ext	1	120	10.0	10.0	1.00	0.15	3.09	0.00	0.31	0.00	1.30	1.00	40	**P6TN**	**P6**	309	4.39	6.75	-0.25	-0.25	33.99	5.00	3.11	3.11	**3.11**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
	120	120.0	10.0		10.0 = L eff.		3.09	0.00	0.31	0.00															
							ΣV_{wind}	3.09	ΣV_{EQ}	0.31															

Notes: * denotes a wall with force transfer

CT ENGINEERING
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(206) 285-4512
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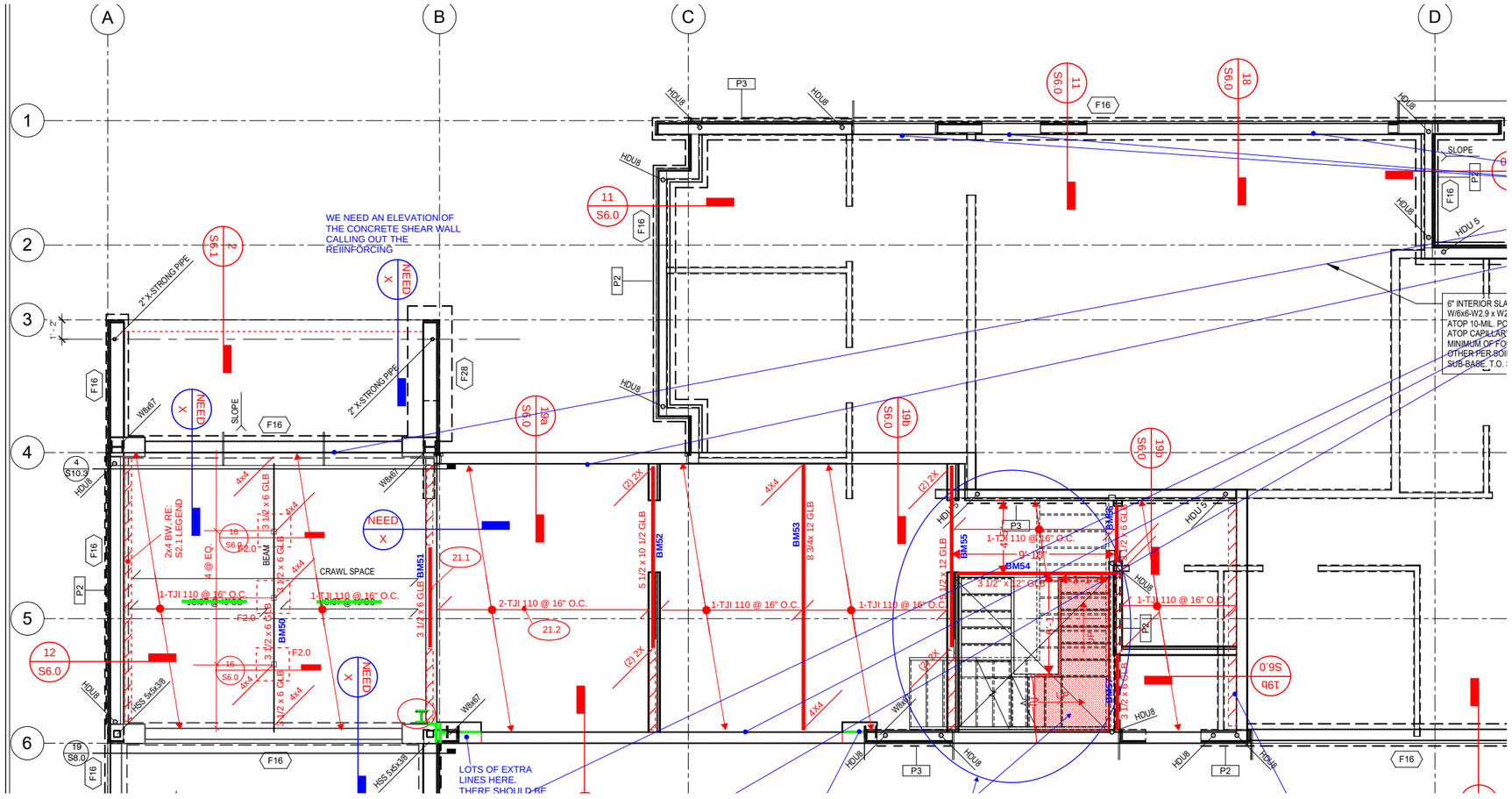
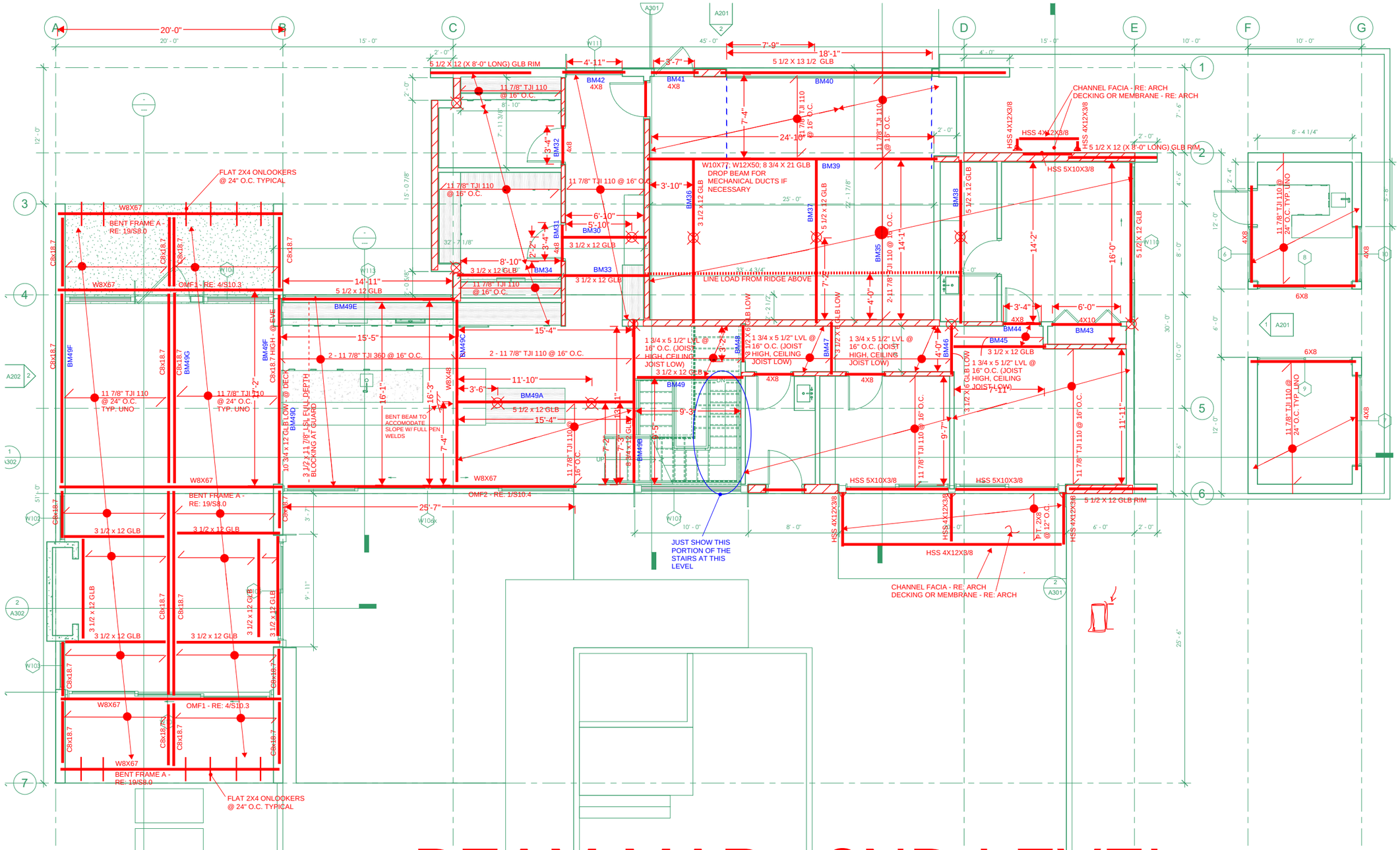
GRAVITY CALCULATIONS

NOTE TO REVIEWER: SOME BEAM SIZES SHOWN IN THE SUBMITTAL SET VARY FROM THE SIZES SHOWN IN THE SUMMARY BELOW. SIZES SHOWN IN THE STRUCTURAL DRAWINGS ARE THE INTENDED SIZES. INTENT FOR THE BEAM MAP INCLUDED BELOW IS FOR EASE OF IDENTIFYING WHERE THE BEAM MARKS ARE, NOT TO IDENTIFY THE INTENDED BEAM SIZES.

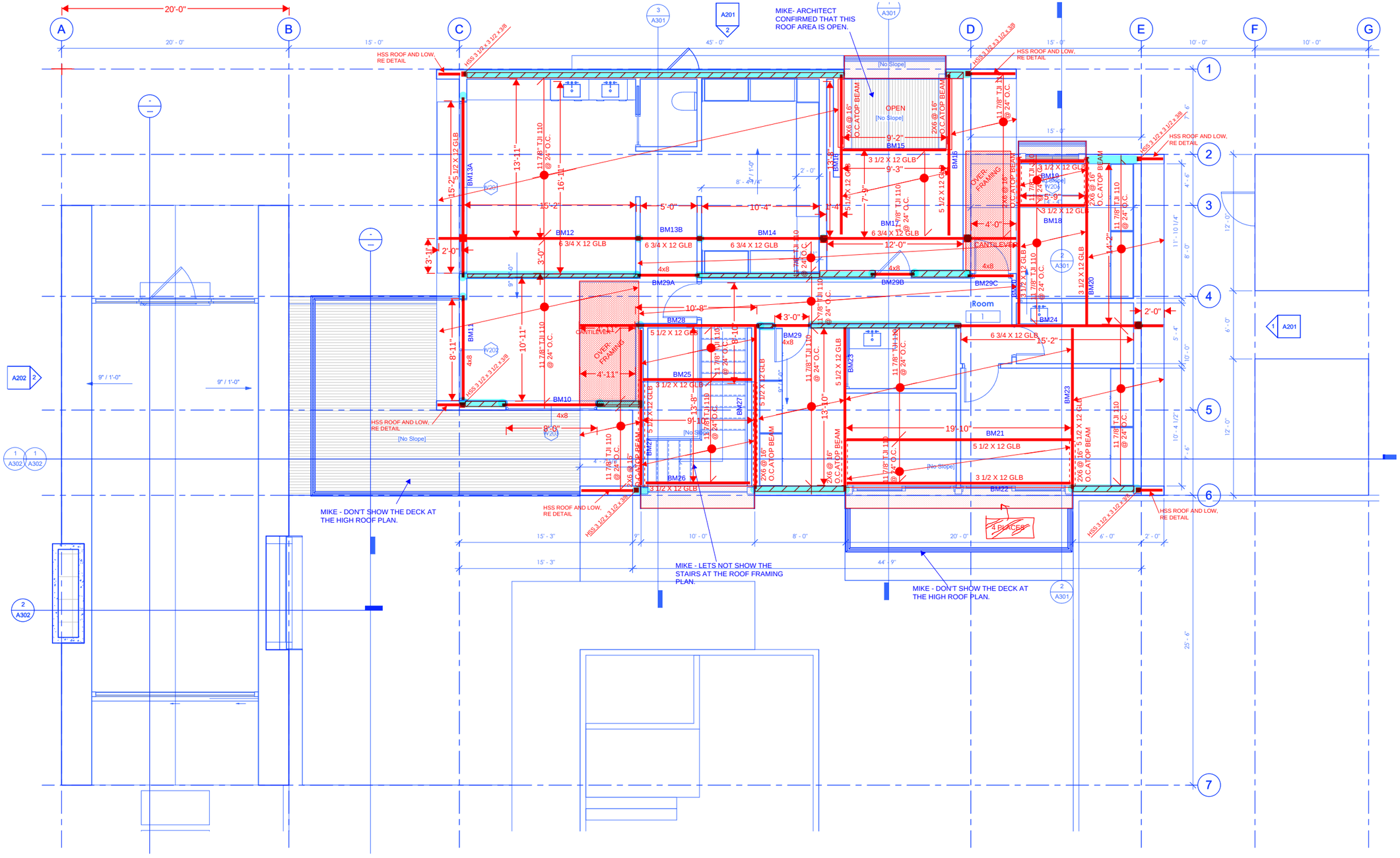


BEAM MAP - BASEMENT LEVEL



BEAM MAP - 2ND LEVEL

FLOOR PLAN - LEVEL 1
1/4" = 1'-0"

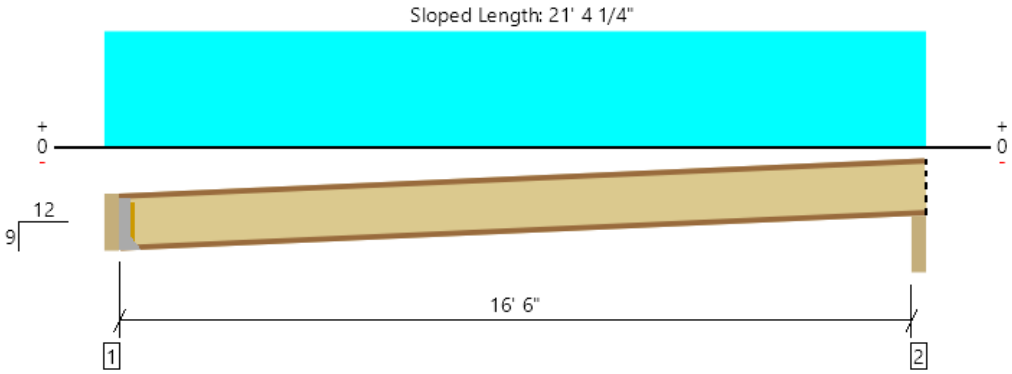


BEAM MAP - ROOF LEVEL

Roof Level			
Member Name	Results	Current Solution	Comments
1 110 TYP Roof: Joist	Passed	1 piece(s) 11 7/8" TJI® 110 @ 24" OC	Web Stiffeners Required
BM10 Wall: Header	Passed	1 piece(s) 4 x 8 Hem-Fir No. 2	
BM11 Wall: Header	Passed	1 piece(s) 4 x 8 Hem-Fir No. 2	
BM12 Roof: Drop Beam	Passed	1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam	
BM13A Roof: Drop Beam	Passed	1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam	
BM13B Roof: Drop Beam	Passed	1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam	
BM14 Roof: Drop Beam	Passed	1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam	
BM15 Roof: Drop Beam	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
BM16 Roof: Drop Beam	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
BM17Roof: Drop Beam	Passed	1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam	
BM18 Roof: Drop Beam	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
BM19 Roof: Drop Beam	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
BM20 Roof: Drop Beam	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
BM21 Roof: Drop Beam	Passed	1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam	
BM22 Roof: Drop Beam	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
BM23 Roof: Drop Beam	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
BM24 Roof: Drop Beam	Passed	1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam	
BM25 Roof: Drop Beam	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
BM26 Roof: Drop Beam	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
BM27 Roof: Drop Beam	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
BM28 Roof: Drop Beam	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
BM29 Wall: Header	Passed	1 piece(s) 4 x 8 Hem-Fir No. 2	
BM29A Wall: Header	Passed	1 piece(s) 4 x 8 Hem-Fir No. 2	
BM29B Wall: Header	Passed	1 piece(s) 4 x 8 Hem-Fir No. 2	
BM29C Wall: Header	Passed	1 piece(s) 4 x 8 Hem-Fir No. 2	

2nd Level			
Member Name	Results	Current Solution	Comments
1-110 DECK Floor: Joist	Passed	1 piece(s) 11 7/8" TJI® 110 @ 16" OC	
2-110 DECK Floor: Joist	Passed	2 piece(s) 11 7/8" TJI® 110 @ 16" OC	
1-360 DECK Floor: Joist	Passed	1 piece(s) 11 7/8" TJI® 360 @ 16" OC	
2 - 360 DECK Floor: Joist	Passed	2 piece(s) 11 7/8" TJI® 360 @ 16" OC	
BM30Floor: Flush Beam	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
bm31 Wall: Header	Passed	1 piece(s) 4 x 8 Hem-Fir No. 2	
BM32 Wall: Header	Passed	1 piece(s) 4 x 8 Hem-Fir No. 2	
BM33 Floor: Flush Beam	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
BM34 Floor: Flush Beam	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
BM35 Floor: Joist	Passed	2 piece(s) 11 7/8" TJI® 110 @ 16" OC	
BM36 Floor: Flush Beam	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
BM37 Floor: Flush Beam	Passed	1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam	
BM38 Floor: Flush Beam	Passed	1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam	
BM39 Floor: Flush Beam	Passed	1 piece(s) 8 3/4" x 21" 24F-V4 DF Glulam	
BM40 Wall: Header	Passed	1 piece(s) 5 1/2" x 13 1/2" 24F-V4 DF Glulam	
BM41 Wall: Header	Passed	1 piece(s) 4 x 8 Hem-Fir No. 2	
BM42 Wall: Header	Passed	1 piece(s) 4 x 8 Hem-Fir No. 2	
BM43 Wall: Header	Passed	1 piece(s) 4 x 10 Hem-Fir No. 2	
BM44 Wall: Header	Passed	1 piece(s) 4 x 8 Hem-Fir No. 2	
BM45 Floor: Flush Beam	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
BM46 Floor: Flush Beam	Passed	1 piece(s) 3 1/2" x 6" 24F-V4 DF Glulam	
BM47 Floor: Flush Beam	Passed	1 piece(s) 3 1/2" x 6" 24F-V4 DF Glulam	
BM48 Floor: Flush Beam	Passed	1 piece(s) 3 1/2" x 6" 24F-V4 DF Glulam	
BM49 Floor: Flush Beam	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
BM49A Floor: Flush Beam	Passed	1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam	
BM49B Floor: Flush Beam	Passed	1 piece(s) 8 3/4" x 12" 24F-V4 DF Glulam	
BM49C Floor: Flush Beam	Passed	1 piece(s) 8 3/4" x 15" 24F-V4 DF Glulam	
BM49D Floor: Flush Beam	Passed	1 piece(s) 8 3/4" x 13 1/2" 24F-V4 DF Glulam	
BM49E Floor: Drop Beam	Passed	1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam	
BM49F Floor: Flush Beam	Passed	1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam	
1st Level			
Member Name	Results	Current Solution	Comments
1-110 16" O.C. TYP Floor: Joist	Passed	1 piece(s) 11 7/8" TJI® 110 @ 16" OC	
2-110 16" O.C. TYP Floor: Joist	Passed	2 piece(s) 11 7/8" TJI® 110 @ 16" OC	
BM50 Floor: Drop Beam	Passed	1 piece(s) 3 1/2" x 6" 24F-V4 DF Glulam	
BM51 Floor: Drop Beam	Passed	1 piece(s) 3 1/2" x 6" 24F-V4 DF Glulam	
BM52 Floor: Drop Beam	Passed	1 piece(s) 5 1/2" x 10 1/2" 24F-V4 DF Glulam	
BM53 Floor: Drop Beam	Passed	1 piece(s) 8 3/4" x 12" 24F-V4 DF Glulam	
BM54 Floor: Drop Beam	Passed	1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam	
BM55 Floor: Drop Beam	Passed	1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam	

Roof Level, 1 110 TYP Roof: Joist
1 piece(s) 11 7/8" TJI® 110 @ 24" OC



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

Member Length : 21' 8 3/4"

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 9/12

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	850 @ 16' 10 1/2"	1047 (1.75")	Passed (81%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	829 @ 3 1/2"	1794	Passed (46%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3438 @ 8' 7"	3634	Passed (95%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.529 @ 8' 7"	0.691	Passed (L/470)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	1.058 @ 8' 7"	1.036	Passed (L/235)	--	1.0 D + 1.0 S (All Spans)

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 2' 11" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 21' o/c based on loads applied, unless detailed otherwise.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Hanger on 11 7/8" HF beam	3.50"	Hanger[1]	- / 1.75" [2]	426	429	855	Web Stiffeners, See note [1]
2 - Beveled Plate - HF	3.50"	3.50"	1.75"	425	425	850	Blocking

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

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LSSR1.81Z	1.88"	N/A	14-10dx2.5	12-10dx1.5	Web Stiffeners

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 17' 1"	24"	20.0	25.0	Default Load

Weyerhaeuser Notes

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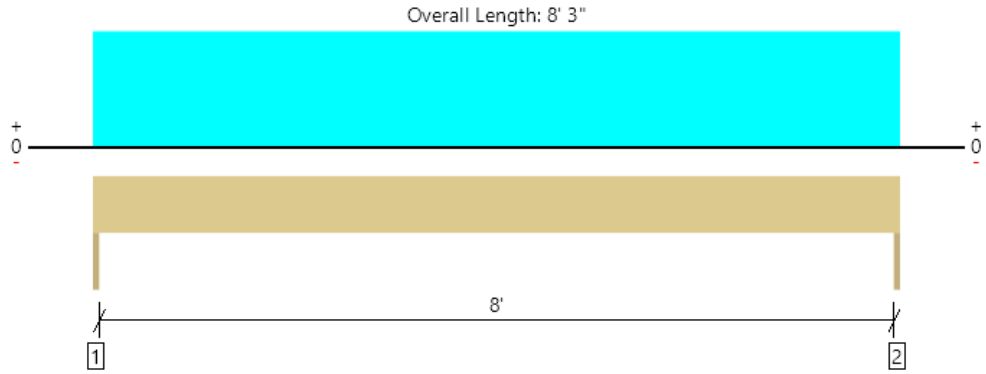
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

Roof Level, BM10 Wall: Header
1 piece(s) 4 x 8 Hem-Fir No. 2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1233 @ 0	2126 (1.50")	Passed (58%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1015 @ 8 3/4"	2918	Passed (35%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	2543 @ 4' 1 1/2"	3247	Passed (78%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.117 @ 4' 1 1/2"	0.165	Passed (L/845)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.216 @ 4' 1 1/2"	0.313	Passed (L/459)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/5/16").
- Top Edge Bracing (Lu): Top compression edge must be braced at 8' 3" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 8' 3" o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - HF	1.50"	1.50"	1.50"	563	670	1233	None
2 - Trimmer - HF	1.50"	1.50"	1.50"	563	670	1233	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 8' 3"	N/A	6.4	--	
1 - Uniform (PSF)	0 to 8' 3"	6' 6"	20.0	25.0	Default Load

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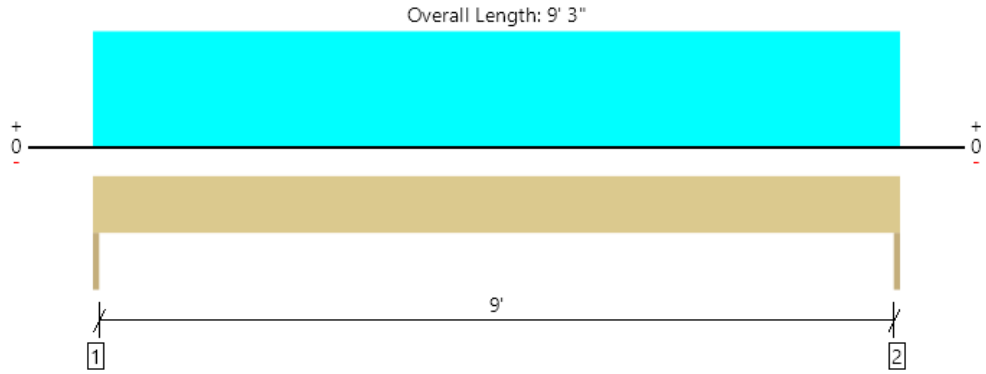
The product application, input design loads, dimensions and support information have been provided by BJM

Roof Level, BM11 Wall: Header
1 piece(s) 4 x 8 Hem-Fir No. 2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	446 @ 0	2126 (1.50")	Passed (21%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	376 @ 8 3/4"	2918	Passed (13%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1031 @ 4' 7 1/2"	3247	Passed (32%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.057 @ 4' 7 1/2"	0.185	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.110 @ 4' 7 1/2"	0.313	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/5/16").
- Top Edge Bracing (Lu): Top compression edge must be braced at 9' 3" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 9' 3" o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - HF	1.50"	1.50"	1.50"	215	231	446	None
2 - Trimmer - HF	1.50"	1.50"	1.50"	215	231	446	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 9' 3"	N/A	6.4	--	
1 - Uniform (PSF)	0 to 9' 3"	2'	20.0	25.0	Default Load

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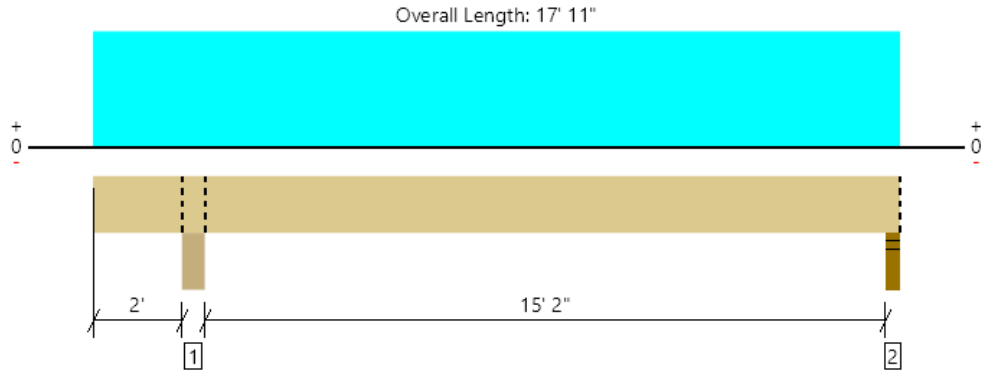
The product application, input design loads, dimensions and support information have been provided by BJM

Roof Level, BM12 Roof: Drop Beam
1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3112 @ 17' 9"	7796 (3.50")	Passed (40%)	--	1.0 D + 1.0 S (Alt Spans)
Shear (lbs)	2667 @ 3' 5 1/2"	13409	Passed (20%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	11641 @ 10' 1 5/16"	30360	Passed (38%)	1.15	1.0 D + 1.0 S (All Spans)
Neg Moment (Ft-lbs)	-990 @ 2' 2 3/4"	23403	Passed (4%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.190 @ 10' 3/16"	0.517	Passed (L/981)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.352 @ 10' 5/16"	0.776	Passed (L/529)	--	1.0 D + 1.0 S (Alt Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 17' 11" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 17' 11" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 15' 3 7/16".
- Critical negative moment adjusted by a volume factor of 1.00 that was calculated using length L = 2' 6 9/16".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Column - HF	5.50"	5.50"	1.50"	1888	2157	4045	Blocking
2 - Stud wall - HF	3.50"	3.50"	1.50"	1445	1667	3112	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 17' 11"	N/A	16.0	--	
1 - Uniform (PSF)	0 to 17' 11" (Front)	8' 6"	20.0	25.0	Default Load

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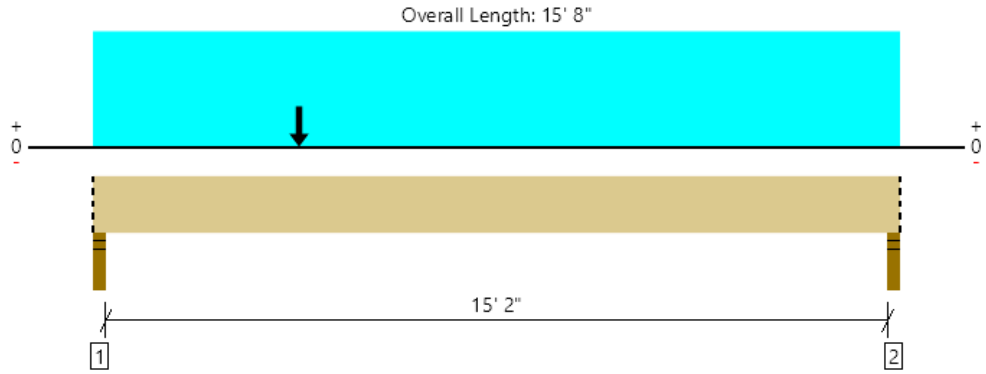
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Roof Level, BM13A Roof: Drop Beam
1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4211 @ 1 1/2"	6683 (3.00")	Passed (63%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	4023 @ 1' 3"	13409	Passed (30%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	15112 @ 4'	30360	Passed (50%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.206 @ 7' 2 11/16"	0.514	Passed (L/897)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.396 @ 7' 2 7/8"	0.771	Passed (L/467)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 15' 8" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 15' 8" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 15' 5".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - HF	3.00"	3.00"	1.89"	2009	2202	4211	Blocking
2 - Stud wall - HF	3.00"	3.00"	1.50"	1070	1130	2200	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 15' 8"	N/A	16.0	--	
1 - Uniform (PSF)	0 to 15' 8" (Front)	3'	20.0	25.0	Default Load
2 - Point (lb)	4' (Front)	N/A	1888	2157	Linked from: BM12 Roof: Drop Beam, Support 1

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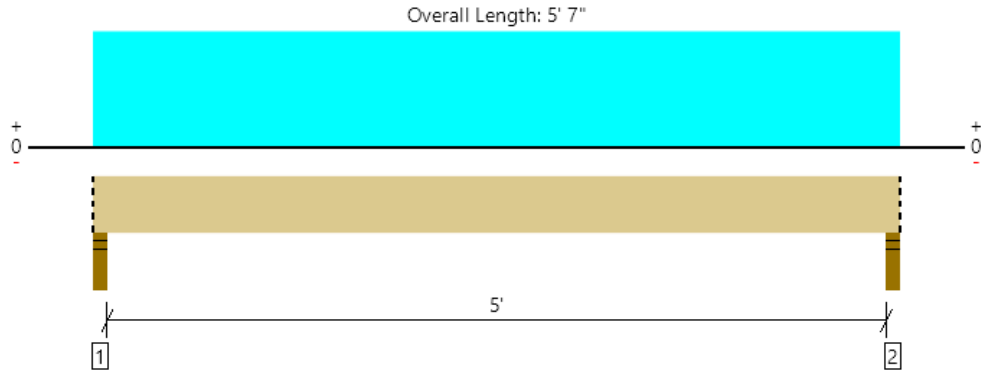
The product application, input design loads, dimensions and support information have been provided by BJM

Roof Level, BM13B Roof: Drop Beam

1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1113 @ 2"	7796 (3.50")	Passed (14%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	598 @ 1' 3 1/2"	13409	Passed (4%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	1373 @ 2' 9 1/2"	30360	Passed (5%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.003 @ 2' 9 1/2"	0.175	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.005 @ 2' 9 1/2"	0.262	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 5' 7" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 5' 7" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 5' 3".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - HF	3.50"	3.50"	1.50"	519	593	1112	Blocking
2 - Stud wall - HF	3.50"	3.50"	1.50"	519	593	1112	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 5' 7"	N/A	16.0	--	
1 - Uniform (PSF)	0 to 5' 7" (Front)	8' 6"	20.0	25.0	Default Load

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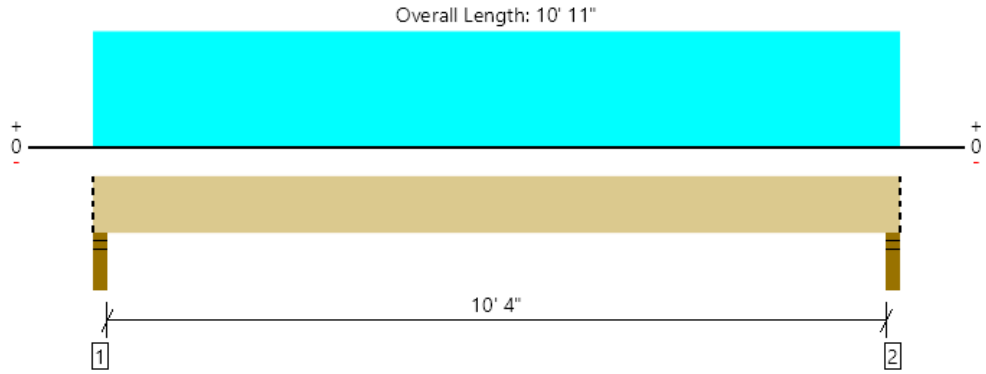
The product application, input design loads, dimensions and support information have been provided by BJM

Roof Level, BM14 Roof: Drop Beam
1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2175 @ 2"	7796 (3.50")	Passed (28%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1661 @ 1' 3 1/2"	13409	Passed (12%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	5580 @ 5' 5 1/2"	30360	Passed (18%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.042 @ 5' 5 1/2"	0.353	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.079 @ 5' 5 1/2"	0.529	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 10' 11" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 10' 11" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 10' 7".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - HF	3.50"	3.50"	1.50"	1015	1160	2175	Blocking
2 - Stud wall - HF	3.50"	3.50"	1.50"	1015	1160	2175	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 10' 11"	N/A	16.0	--	
1 - Uniform (PSF)	0 to 10' 11" (Front)	8' 6"	20.0	25.0	Default Load

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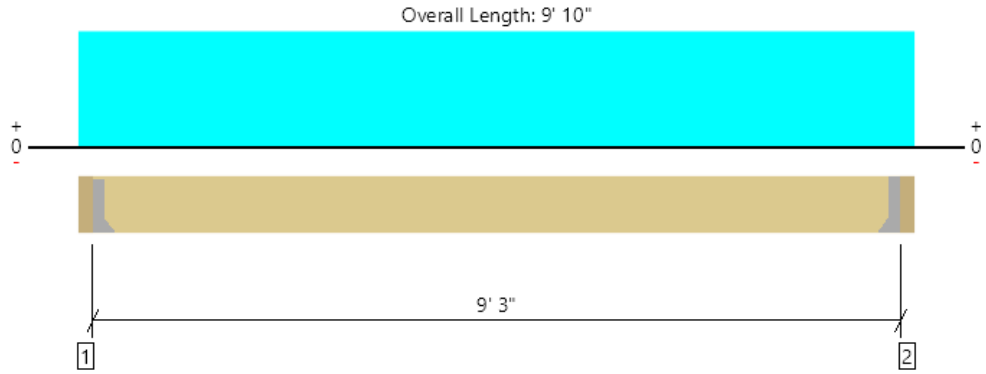
The product application, input design loads, dimensions and support information have been provided by BJM

Roof Level, BM15 Roof: Drop Beam
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	880 @ 3 1/2"	3413 (1.50")	Passed (26%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	690 @ 1' 3 1/2"	8533	Passed (8%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	2034 @ 4' 11"	19320	Passed (11%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.018 @ 4' 11"	0.308	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.035 @ 4' 11"	0.463	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 9' 3" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 9' 3" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 9' 3".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	441	492	933	See note [1]
2 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	441	492	933	See note [1]

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

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS410	2.00"	N/A	8-10d	6-10d	
2 - Face Mount Hanger	LUS410	2.00"	N/A	8-10d	6-10d	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 9' 6 1/2"	N/A	10.2	--	
1 - Uniform (PSF)	0 to 9' 10" (Front)	4'	20.0	25.0	Default Load

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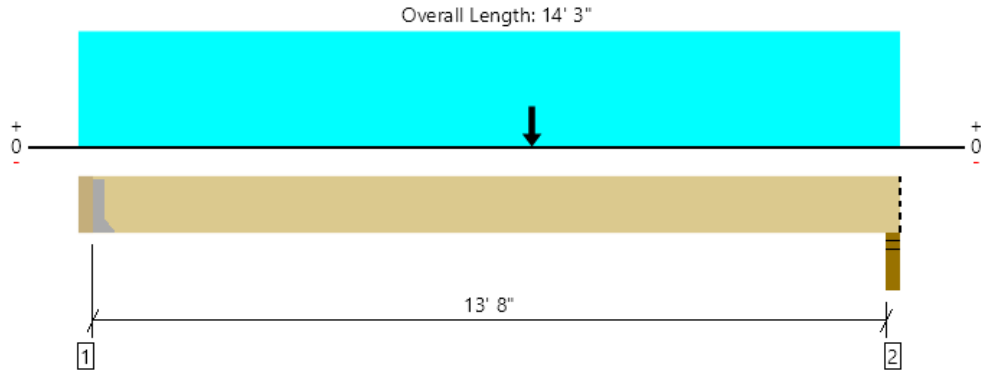
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

Roof Level, BM16 Roof: Drop Beam
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1119 @ 3 1/2"	3413 (1.50")	Passed (33%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1083 @ 12' 11 1/2"	8533	Passed (13%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	5562 @ 7' 9"	19320	Passed (29%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.096 @ 7' 3 1/4"	0.460	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.186 @ 7' 3 3/16"	0.690	Passed (L/889)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 14' o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 14' o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 13' 9 1/2".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	560	585	1145	See note [1]
2 - Stud wall - HF	3.50"	3.50"	1.50"	593	619	1212	Blocking

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

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS410	2.00"	N/A	8-10d	6-10d	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 14' 3"	N/A	10.2	--	
1 - Uniform (PSF)	0 to 14' 3" (Front)	2'	20.0	25.0	Default Load
2 - Point (lb)	7' 9" (Front)	N/A	441	492	Linked from: BM15 Roof: Drop Beam, Support 1

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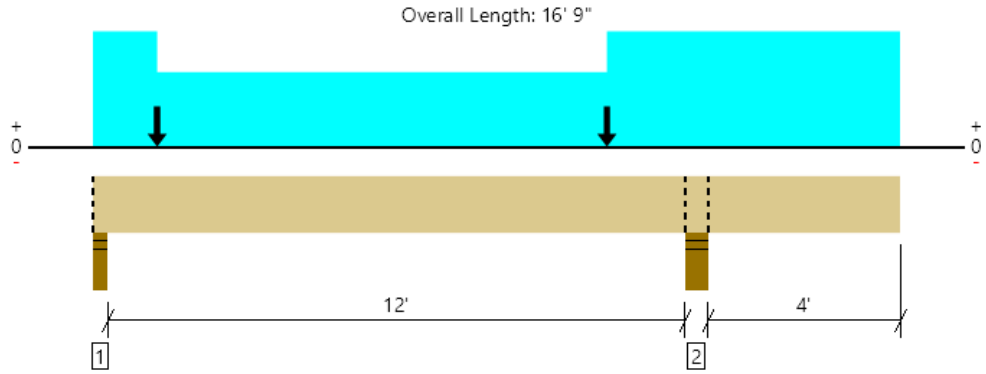
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

Roof Level, BM17Roof: Drop Beam
1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4922 @ 12' 6 1/4"	12251 (5.50")	Passed (40%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2747 @ 11' 3 1/2"	13409	Passed (20%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	5648 @ 5' 9 15/16"	30360	Passed (19%)	1.15	1.0 D + 1.0 S (Alt Spans)
Neg Moment (Ft-lbs)	-3564 @ 12' 6 1/4"	23403	Passed (15%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.062 @ 6' 3 1/16"	0.412	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.110 @ 6' 2 3/16"	0.618	Passed (L/999+)	--	1.0 D + 1.0 S (Alt Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 16' 9" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 16' 9" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 11' 5 3/4".
- Critical negative moment adjusted by a volume factor of 1.00 that was calculated using length L = 5' 5".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - HF	3.50"	3.50"	1.50"	1341	1519	2860	Blocking
2 - Stud wall - HF	5.50"	5.50"	2.21"	2335	2587	4922	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 16' 9"	N/A	16.0	--	
1 - Uniform (PSF)	0 to 1' 4" (Front)	8' 6"	20.0	25.0	Default Load
2 - Uniform (PSF)	1' 4" to 10' 8" (Front)	5' 6"	20.0	25.0	
3 - Uniform (PSF)	10' 8" to 16' 9" (Front)	8' 6"	20.0	25.0	
4 - Point (lb)	1' 4" (Front)	N/A	560	585	Linked from: BM16 Roof: Drop Beam, Support 1
5 - Point (lb)	10' 8" (Front)	N/A	560	585	Linked from: BM16 Roof: Drop Beam, Support 1

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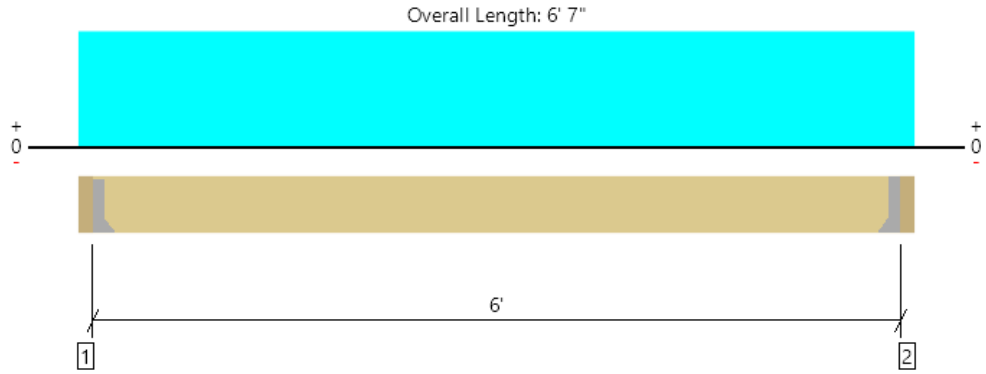
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

Roof Level, BM18 Roof: Drop Beam
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	976 @ 3 1/2"	3413 (1.50")	Passed (29%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	650 @ 1' 3 1/2"	8533	Passed (8%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	1463 @ 3' 3 1/2"	19320	Passed (8%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.006 @ 3' 3 1/2"	0.200	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.010 @ 3' 3 1/2"	0.300	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 6' o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 6' o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 6'.
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	491	576	1067	See note [1]
2 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	491	576	1067	See note [1]

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

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS410	2.00"	N/A	8-10d	6-10d	
2 - Face Mount Hanger	LUS410	2.00"	N/A	8-10d	6-10d	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 6' 3 1/2"	N/A	10.2	--	
1 - Uniform (PSF)	0 to 6' 7" (Front)	7'	20.0	25.0	Default Load

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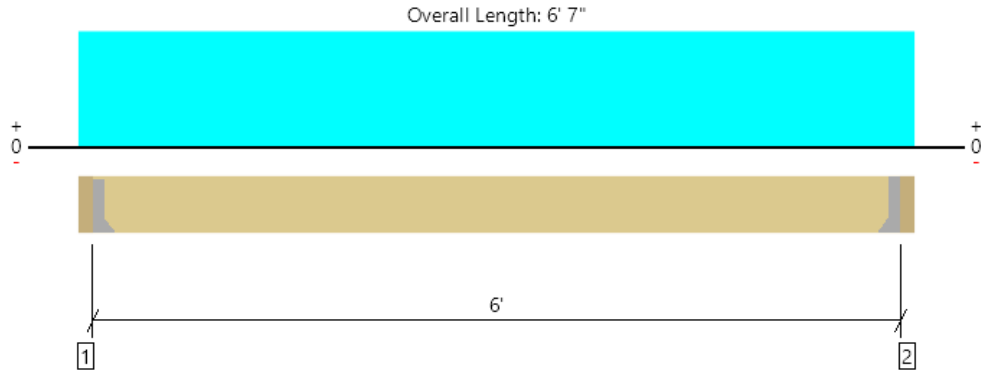
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

Roof Level, BM19 Roof: Drop Beam
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	301 @ 3 1/2"	3413 (1.50")	Passed (9%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	200 @ 1' 3 1/2"	8533	Passed (2%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	451 @ 3' 3 1/2"	19320	Passed (2%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.002 @ 3' 3 1/2"	0.200	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.003 @ 3' 3 1/2"	0.300	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 6' o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 6' o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 6'.
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Hanger on 12" SPF beam	3.50"	Hanger[1]	1.50"	162	165	327	See note [1]
2 - Hanger on 12" SPF beam	3.50"	Hanger[1]	1.50"	162	165	327	See note [1]

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

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS410	2.00"	N/A	8-10d	6-10d	
2 - Face Mount Hanger	LUS410	2.00"	N/A	8-10d	6-10d	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 6' 3 1/2"	N/A	10.2	--	
1 - Uniform (PSF)	0 to 6' 7" (Front)	2'	20.0	25.0	Default Load

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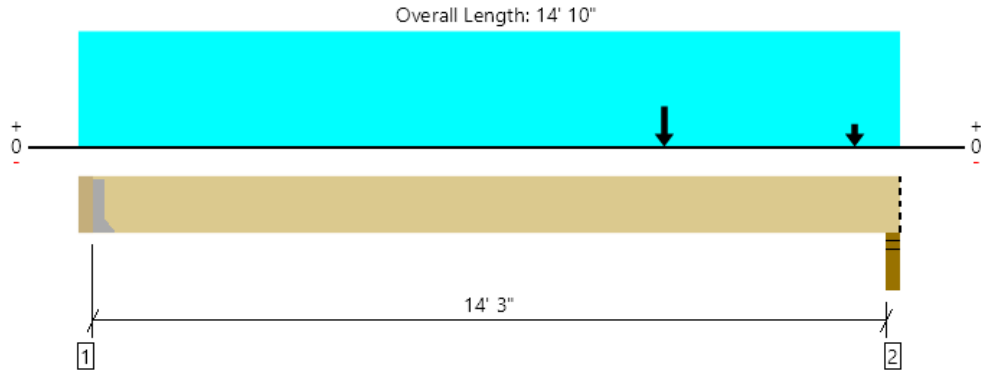
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

Roof Level, BM20 Roof: Drop Beam
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1807 @ 14' 8"	4961 (3.50")	Passed (36%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1527 @ 13' 6 1/2"	8533	Passed (18%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	5443 @ 10' 6"	19320	Passed (28%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.108 @ 7' 10 1/4"	0.479	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.209 @ 7' 10 1/16"	0.719	Passed (L/824)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 14' 7" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 14' 7" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 14' 4 1/2".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	522	549	1071	See note [1]
2 - Stud wall - HF	3.50"	3.50"	1.50"	872	934	1806	Blocking

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

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS410	2.00"	N/A	8-10d	6-10d	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 14' 10"	N/A	10.2	--	
1 - Uniform (PSF)	0 to 14' 10" (Front)	2'	20.0	25.0	Default Load
2 - Point (lb)	14' (Front)	N/A	162	165	Linked from: BM19 Roof: Drop Beam, Support 1
3 - Point (lb)	10' 6" (Front)	N/A	491	576	Linked from: BM18 Roof: Drop Beam, Support 1

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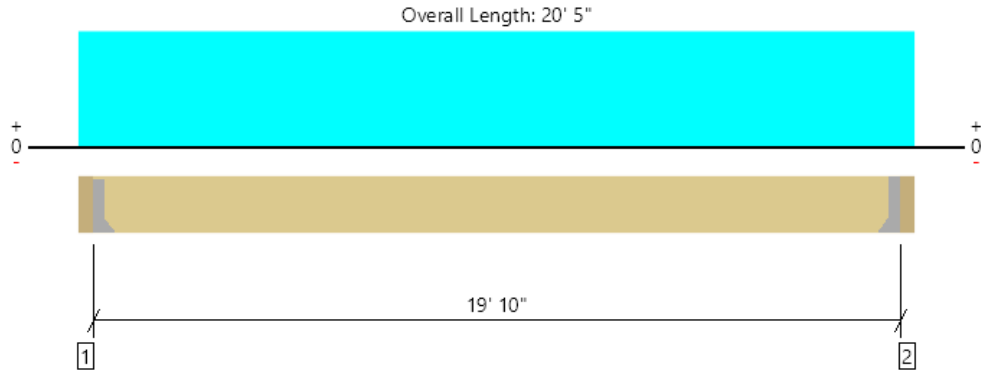
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

Roof Level, BM21 Roof: Drop Beam
1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3283 @ 3 1/2"	5363 (1.50")	Passed (61%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2952 @ 1' 3 1/2"	13409	Passed (22%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	16277 @ 10' 2 1/2"	30319	Passed (54%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.427 @ 10' 2 1/2"	0.661	Passed (L/557)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.808 @ 10' 2 1/2"	0.992	Passed (L/294)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 19' 10" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 19' 10" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 19' 10".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	1588	1786	3374	See note [1]
2 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	1588	1786	3374	See note [1]

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

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	MGU5.62-SDS H=12	4.50"	N/A	24-SDS25212	16-SDS25212	
2 - Face Mount Hanger	MGU5.62-SDS H=12	4.50"	N/A	24-SDS25212	16-SDS25212	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 20' 1 1/2"	N/A	16.0	--	
1 - Uniform (PSF)	0 to 20' 5" (Front)	7'	20.0	25.0	Default Load

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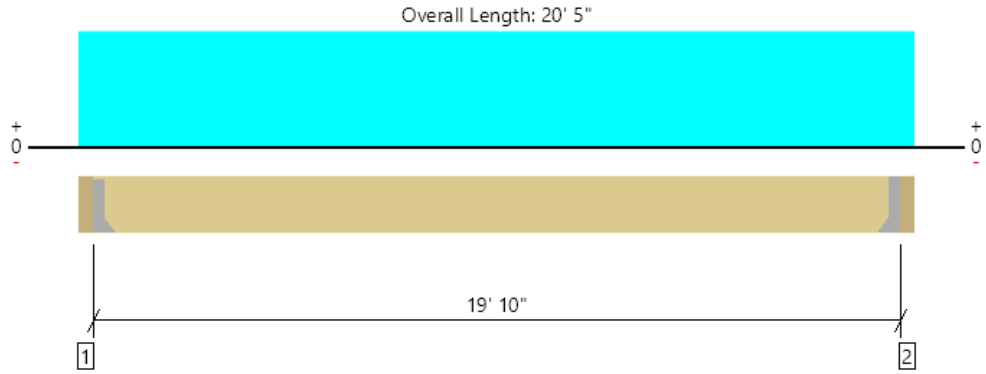
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

Roof Level, BM22 Roof: Drop Beam
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	994 @ 3 1/2"	3413 (1.50")	Passed (29%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	894 @ 1' 3 1/2"	8533	Passed (10%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	4927 @ 10' 2 1/2"	19320	Passed (26%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.192 @ 10' 2 1/2"	0.661	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.385 @ 10' 2 1/2"	0.992	Passed (L/619)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 19' 10" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 19' 10" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 19' 10".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	510	510	1020	See note [1]
2 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	510	510	1020	See note [1]

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

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS410	2.00"	N/A	8-10d	6-10d	
2 - Face Mount Hanger	LUS410	2.00"	N/A	8-10d	6-10d	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 20' 1 1/2"	N/A	10.2	--	
1 - Uniform (PSF)	0 to 20' 5" (Front)	2'	20.0	25.0	Default Load

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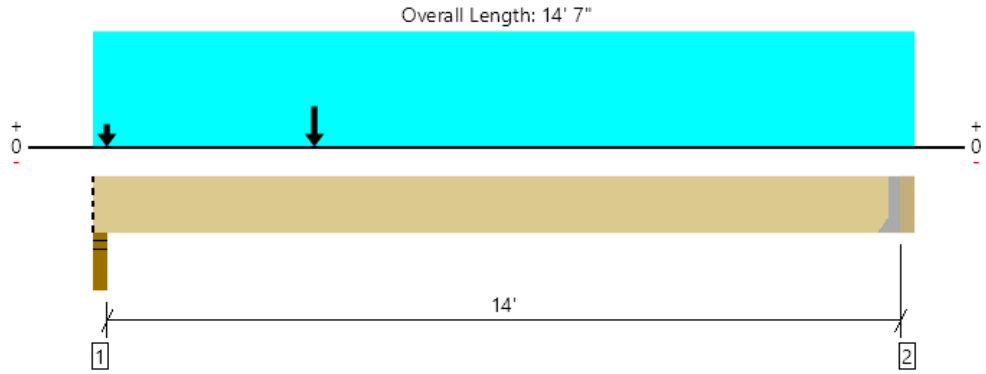
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

Roof Level, BM23 Roof: Drop Beam
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4203 @ 2"	4961 (3.50")	Passed (85%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	3053 @ 1' 3 1/2"	8533	Passed (36%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	11400 @ 4'	19320	Passed (59%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.198 @ 6' 8 1/16"	0.471	Passed (L/858)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.379 @ 6' 8 3/16"	0.706	Passed (L/447)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 14' 4" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 14' 4" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 14' 1 1/2".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - HF	3.50"	3.50"	2.96"	2030	2173	4203	Blocking
2 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	797	852	1649	See note [1]

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

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	LUS410	2.00"	N/A	8-16d	6-16d	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 14' 3 1/2"	N/A	10.2	--	
1 - Uniform (PSF)	0 to 14' 7" (Front)	2'	20.0	25.0	Default Load
2 - Point (lb)	3" (Front)	N/A	510	510	Linked from: BM22 Roof: Drop Beam, Support 1
3 - Point (lb)	4' (Front)	N/A	1588	1786	Linked from: BM21 Roof: Drop Beam, Support 1

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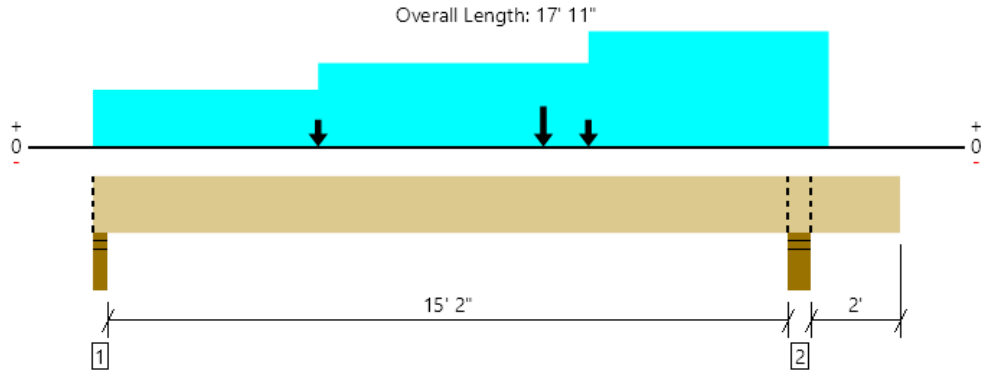
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

Roof Level, BM24 Roof: Drop Beam
1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4944 @ 2"	7796 (3.50")	Passed (63%)	--	1.0 D + 1.0 S (Alt Spans)
Shear (lbs)	5629 @ 14' 5 1/2"	13409	Passed (42%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	24911 @ 9' 7 3/4"	30360	Passed (82%)	1.15	1.0 D + 1.0 S (All Spans)
Neg Moment (Ft-lbs)	-173 @ 15' 8 1/4"	23403	Passed (1%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.393 @ 8' 1 3/8"	0.517	Passed (L/474)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.742 @ 8' 1 3/8"	0.776	Passed (L/251)	--	1.0 D + 1.0 S (Alt Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240). Upward deflection on right cantilever exceeds overhang deflection criteria.
- Top Edge Bracing (Lu): Top compression edge must be braced at 17' 11" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 17' 11" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 15' 6".
- Critical negative moment adjusted by a volume factor of 1.00 that was calculated using length L = 2' 3 1/16".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - HF	3.50"	3.50"	2.22"	2334	2609	4943	Blocking
2 - Stud wall - HF	5.50"	5.50"	3.09"	3235	3645	6880	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 17' 11"	N/A	16.0	--	
1 - Uniform (PSF)	0 to 5' (Front)	7'	20.0	25.0	Default Load
2 - Uniform (PSF)	5' to 11' (Front)	10' 3"	20.0	25.0	
3 - Uniform (PSF)	11' to 16' 4" (Front)	14' 2"	20.0	25.0	
4 - Point (lb)	5' (Front)	N/A	522	549	Linked from: BM20 Roof: Drop Beam, Support 1
5 - Point (lb)	11' (Front)	N/A	522	549	Linked from: BM20 Roof: Drop Beam, Support 1
6 - Point (lb)	10' (Front)	N/A	797	852	Linked from: BM23 Roof: Drop Beam, Support 2

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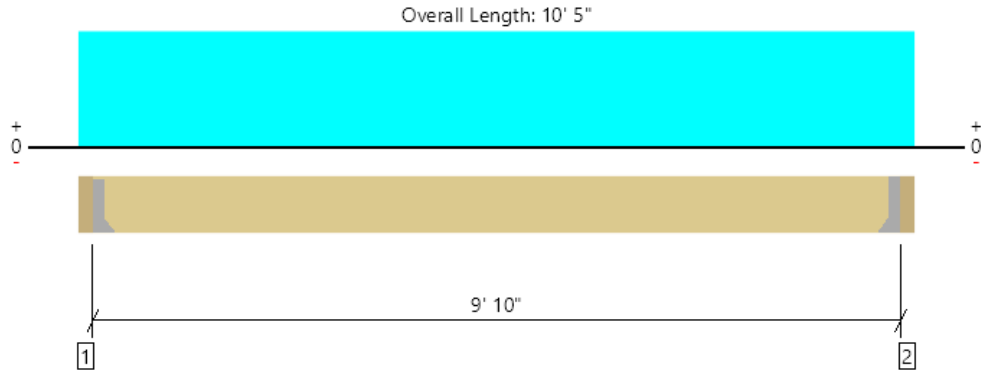
The product application, input design loads, dimensions and support information have been provided by BJM

Roof Level, BM25 Roof: Drop Beam
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1599 @ 3 1/2"	3413 (1.50")	Passed (47%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1274 @ 1' 3 1/2"	8533	Passed (15%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	3931 @ 5' 2 1/2"	19320	Passed (20%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.041 @ 5' 2 1/2"	0.328	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.075 @ 5' 2 1/2"	0.492	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 9' 10" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 9' 10" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 9' 10".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	779	911	1690	See note [1]
2 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	779	911	1690	See note [1]

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

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS410	2.00"	N/A	8-16d	6-16d	
2 - Face Mount Hanger	LUS410	2.00"	N/A	8-16d	6-16d	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 10' 1 1/2"	N/A	10.2	--	
1 - Uniform (PSF)	0 to 10' 5" (Front)	7'	20.0	25.0	Default Load

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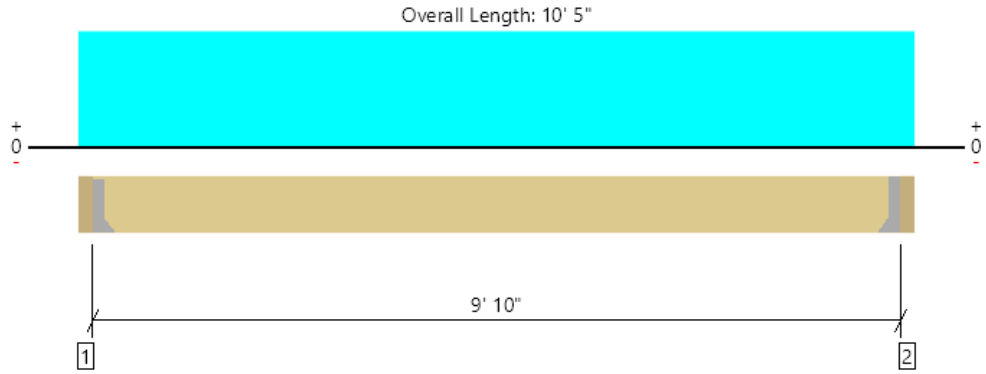
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

Roof Level, BM26 Roof: Drop Beam
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1046 @ 3 1/2"	3413 (1.50")	Passed (31%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	833 @ 1' 3 1/2"	8533	Passed (10%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	2571 @ 5' 2 1/2"	19320	Passed (13%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.026 @ 5' 2 1/2"	0.328	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.049 @ 5' 2 1/2"	0.492	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 9' 10" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 9' 10" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 9' 10".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	519	586	1105	See note [1]
2 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	519	586	1105	See note [1]

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

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS410	2.00"	N/A	8-10d	6-10d	
2 - Face Mount Hanger	LUS410	2.00"	N/A	8-10d	6-10d	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 10' 1 1/2"	N/A	10.2	--	
1 - Uniform (PSF)	0 to 10' 5" (Front)	4' 6"	20.0	25.0	Default Load

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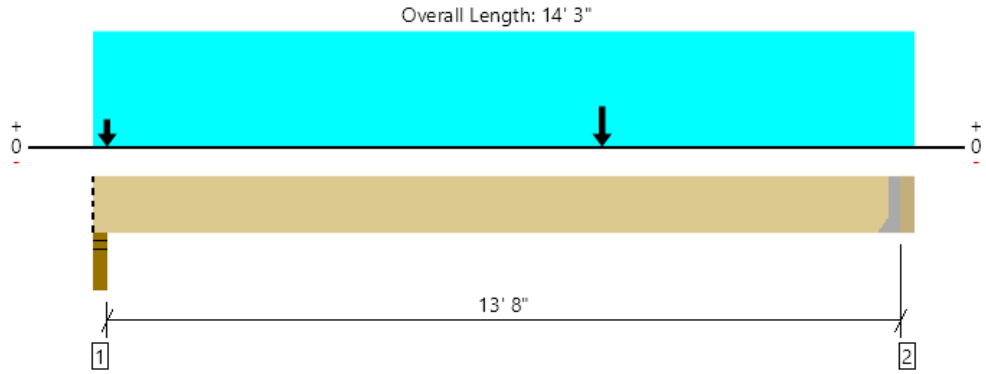
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

Roof Level, BM27 Roof: Drop Beam
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1763 @ 13' 11 1/2"	3413 (1.50")	Passed (52%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1663 @ 12' 11 1/2"	8533	Passed (19%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	7616 @ 8' 11"	19320	Passed (39%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.131 @ 7' 4 3/4"	0.460	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.249 @ 7' 4 5/8"	0.690	Passed (L/664)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 14' o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 14' o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 13' 9 1/2".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - HF	3.50"	3.50"	1.71"	1158	1272	2430	Blocking
2 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	852	937	1789	See note [1]

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

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	LUS410	2.00"	N/A	8-16d	6-16d	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 13' 11 1/2"	N/A	10.2	--	
1 - Uniform (PSF)	0 to 14' 3" (Front)	2'	20.0	25.0	Default Load
2 - Point (lb)	3" (Front)	N/A	519	586	Linked from: BM26 Roof: Drop Beam, Support 1
3 - Point (lb)	8' 11" (Front)	N/A	779	911	Linked from: BM25 Roof: Drop Beam, Support 1

Weyerhaeuser Notes

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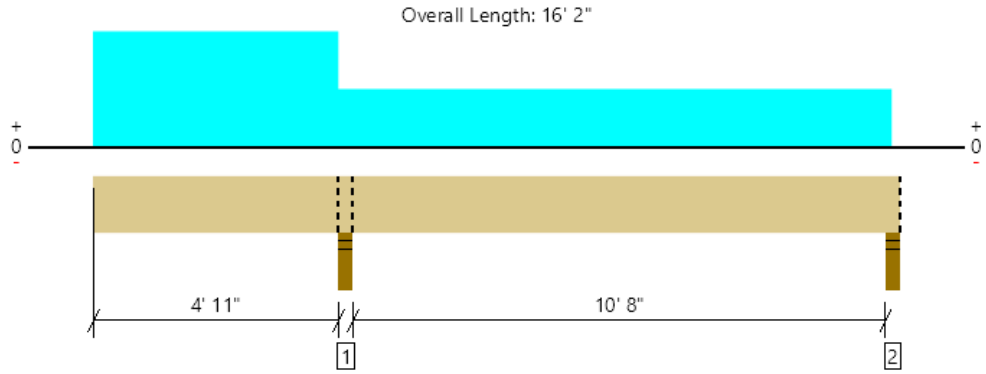
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

Roof Level, BM28 Roof: Drop Beam
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3722 @ 5' 3/4"	4961 (3.50")	Passed (75%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1626 @ 3' 11"	8533	Passed (19%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	1537 @ 12' 2 3/8"	19320	Passed (8%)	1.15	1.0 D + 1.0 S (Alt Spans)
Neg Moment (Ft-lbs)	-5319 @ 5' 3/4"	14893	Passed (36%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.107 @ 0	0.338	Passed (2L/999+)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.170 @ 0	0.506	Passed (2L/716)	--	1.0 D + 1.0 S (Alt Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 16' 2" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 16' 2" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 7' 7 1/4".
- Critical negative moment adjusted by a volume factor of 1.00 that was calculated using length L = 9' 7 5/8".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - HF	3.50"	3.50"	2.63"	1721	2001	3722	Blocking
2 - Stud wall - HF	3.50"	3.50"	1.50"	327	483	810	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 16' 2"	N/A	10.2	--	
1 - Uniform (PSF)	0 to 4' 11" (Front)	9'	20.0	25.0	Default Load
2 - Uniform (PSF)	4' 11" to 16' (Front)	4' 6"	20.0	25.0	

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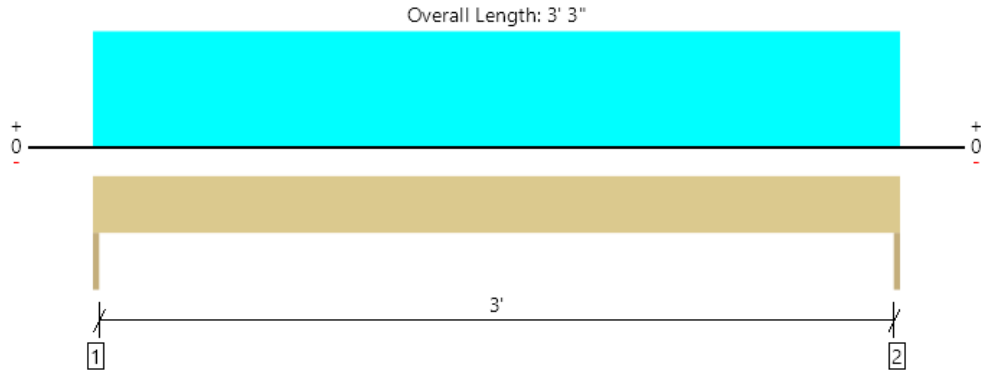
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Roof Level, BM29 Wall: Header
1 piece(s) 4 x 8 Hem-Fir No. 2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	669 @ 0	2126 (1.50")	Passed (31%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	369 @ 8 3/4"	2918	Passed (13%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	543 @ 1' 7 1/2"	3247	Passed (17%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.004 @ 1' 7 1/2"	0.065	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.007 @ 1' 7 1/2"	0.162	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 3' 3" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 3' 3" o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - HF	1.50"	1.50"	1.50"	303	366	669	None
2 - Trimmer - HF	1.50"	1.50"	1.50"	303	366	669	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 3"	N/A	6.4	--	
1 - Uniform (PSF)	0 to 3' 3"	9'	20.0	25.0	Default Load

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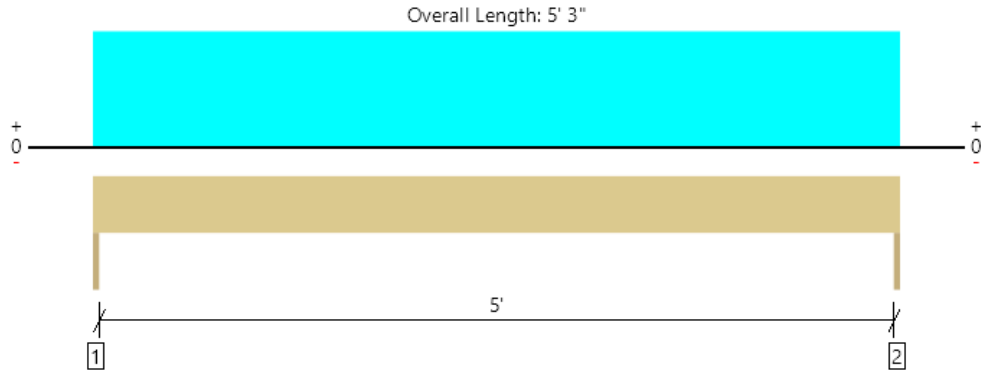
The product application, input design loads, dimensions and support information have been provided by BJM

Roof Level, BM29A Wall: Header
1 piece(s) 4 x 8 Hem-Fir No. 2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	489 @ 0	2126 (1.50")	Passed (23%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	353 @ 8 3/4"	2918	Passed (12%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	642 @ 2' 7 1/2"	3247	Passed (20%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.012 @ 2' 7 1/2"	0.105	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.022 @ 2' 7 1/2"	0.262	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 5' 3" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 5' 3" o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - HF	1.50"	1.50"	1.50"	227	263	490	None
2 - Trimmer - HF	1.50"	1.50"	1.50"	227	263	490	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 5' 3"	N/A	6.4	--	
1 - Uniform (PSF)	0 to 5' 3"	4'	20.0	25.0	Default Load

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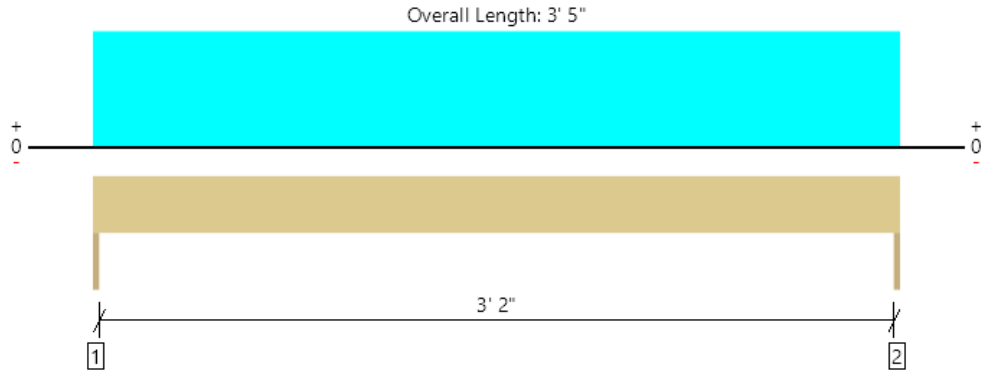
The product application, input design loads, dimensions and support information have been provided by BJM

Roof Level, BM29B Wall: Header
1 piece(s) 4 x 8 Hem-Fir No. 2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	318 @ 0	2126 (1.50")	Passed (15%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	183 @ 8 3/4"	2918	Passed (6%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	272 @ 1' 8 1/2"	3247	Passed (8%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.002 @ 1' 8 1/2"	0.068	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.004 @ 1' 8 1/2"	0.171	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 3' 5" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 3' 5" o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - HF	1.50"	1.50"	1.50"	148	171	319	None
2 - Trimmer - HF	1.50"	1.50"	1.50"	148	171	319	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 5"	N/A	6.4	--	
1 - Uniform (PSF)	0 to 3' 5"	4'	20.0	25.0	Default Load

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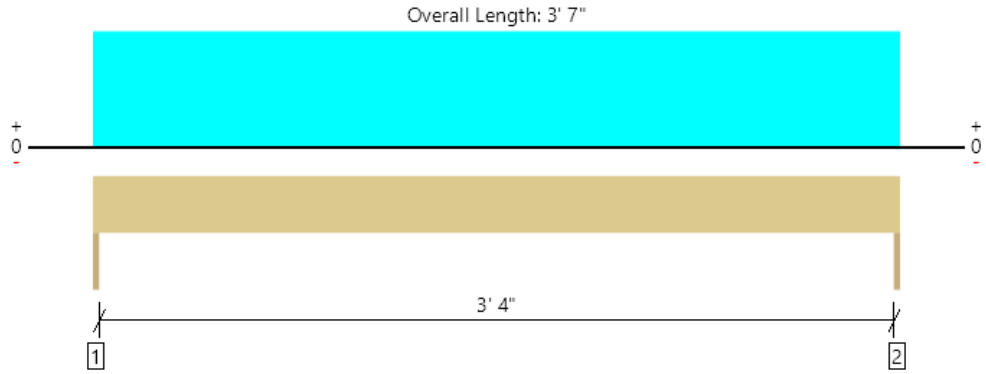
The product application, input design loads, dimensions and support information have been provided by BJM

Roof Level, BM29C Wall: Header
1 piece(s) 4 x 8 Hem-Fir No. 2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	334 @ 0	2126 (1.50")	Passed (16%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	198 @ 8 3/4"	2918	Passed (7%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	299 @ 1' 9 1/2"	3247	Passed (9%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.003 @ 1' 9 1/2"	0.072	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.005 @ 1' 9 1/2"	0.179	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 3' 7" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 3' 7" o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Trimmer - HF	1.50"	1.50"	1.50"	155	179	334	None
2 - Trimmer - HF	1.50"	1.50"	1.50"	155	179	334	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 7"	N/A	6.4	--	
1 - Uniform (PSF)	0 to 3' 7"	4'	20.0	25.0	Default Load

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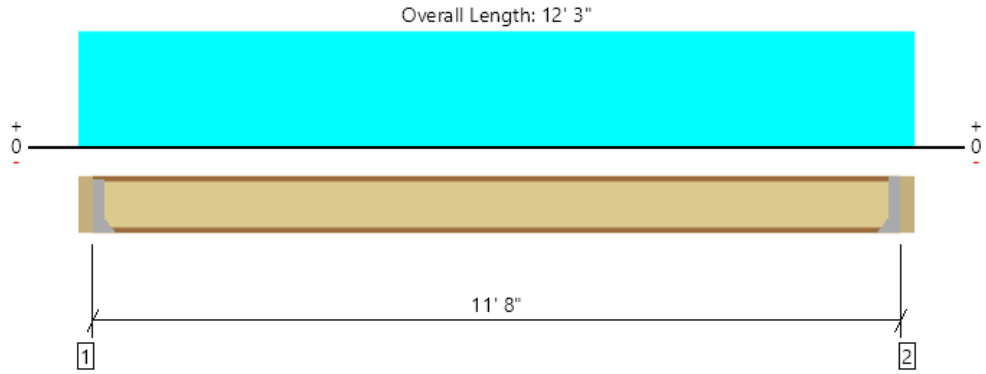
The product application, input design loads, dimensions and support information have been provided by BJM

2nd Level, 1-110 DECK Floor: Joist
1 piece(s) 11 7/8" TJI® 110 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	731 @ 3 1/2"	910 (1.75")	Passed (80%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	731 @ 3 1/2"	1560	Passed (47%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2132 @ 6' 1 1/2"	3160	Passed (67%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.131 @ 6' 1 1/2"	0.233	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.202 @ 6' 1 1/2"	0.583	Passed (L/694)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
TJ-Pro™ Rating	55	55	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 3' 9" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 11' 8" o/c based on loads applied, unless detailed otherwise.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Hanger on 11 7/8" HF beam	3.50"	Hanger[1]	1.75" / - [2]	278	490	204	972	See note [1]
2 - Hanger on 11 7/8" HF beam	3.50"	Hanger[1]	1.75" / - [2]	278	490	204	972	See note [1]

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.
- [2] Required Bearing Length / Required Bearing Length with Web Stiffeners

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

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 12' 3"	16"	34.0	60.0	25.0	Default Load

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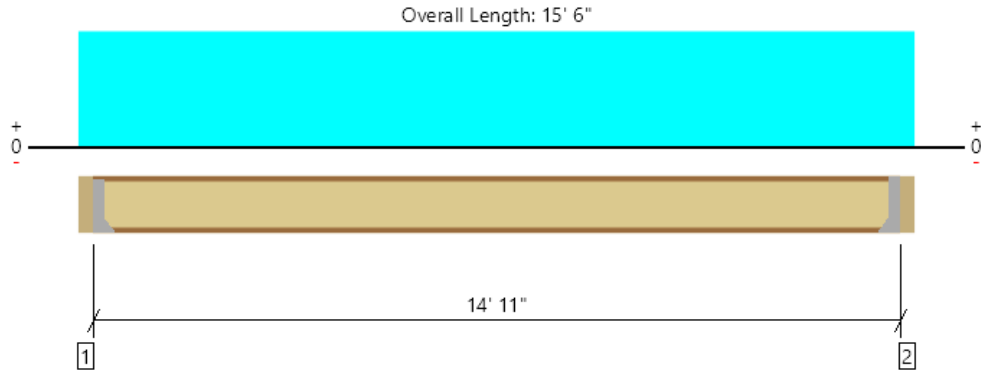
ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

2nd Level, 2-110 DECK Floor: Joist
2 piece(s) 11 7/8" TJI® 110 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	935 @ 3 1/2"	1820 (1.75")	Passed (51%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	935 @ 3 1/2"	3120	Passed (30%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3486 @ 7' 9"	6320	Passed (55%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.175 @ 7' 9"	0.298	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.268 @ 7' 9"	0.746	Passed (L/669)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
TJ-Pro™ Rating	55	55	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 4' 3" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 14' 11" o/c based on loads applied, unless detailed otherwise.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Hanger on 11 7/8" HF beam	3.50"	Hanger[1]	1.75" / - [2]	351	620	258	1229	See note [1]
2 - Hanger on 11 7/8" HF beam	3.50"	Hanger[1]	1.75" / - [2]	351	620	258	1229	See note [1]

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.
- [2] Required Bearing Length / Required Bearing Length with Web Stiffeners

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS3.56/11.88	2.00"	N/A	12-10d	2-Strong-Grip	
2 - Face Mount Hanger	IUS3.56/11.88	2.00"	N/A	12-10d	2-Strong-Grip	

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 15' 6"	16"	34.0	60.0	25.0	Default Load

Weyerhaeuser Notes

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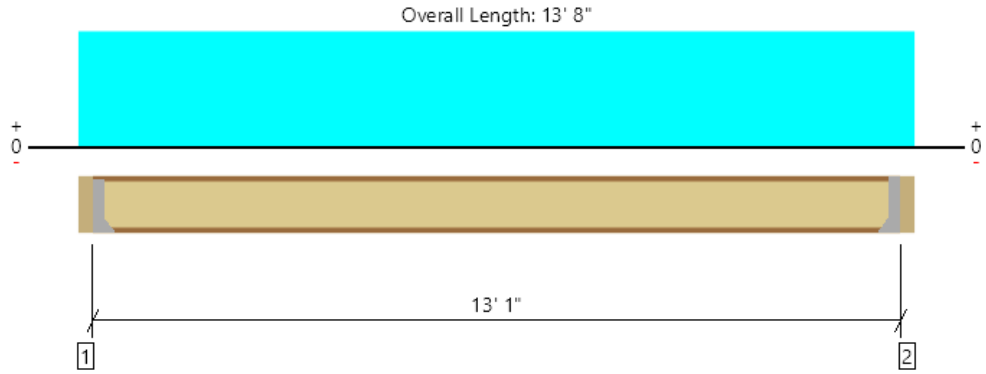
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

2nd Level, 1-360 DECK Floor: Joist
1 piece(s) 11 7/8" TJI® 360 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	820 @ 3 1/2"	1080 (1.75")	Passed (76%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	820 @ 3 1/2"	1705	Passed (48%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2682 @ 6' 10"	6180	Passed (43%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.145 @ 6' 10"	0.262	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.223 @ 6' 10"	0.654	Passed (L/704)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
TJ-Pro™ Rating	55	55	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 5' 8" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 13' 1" o/c based on loads applied, unless detailed otherwise.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Hanger on 11 7/8" HF beam	3.50"	Hanger[1]	1.75" / - [2]	310	547	228	1085	See note [1]
2 - Hanger on 11 7/8" HF beam	3.50"	Hanger[1]	1.75" / - [2]	310	547	228	1085	See note [1]

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.
- [2] Required Bearing Length / Required Bearing Length with Web Stiffeners

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS2.37/11.88	2.00"	N/A	10-10d	2-Strong-Grip	
2 - Face Mount Hanger	IUS2.37/11.88	2.00"	N/A	10-10d	2-Strong-Grip	

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 13' 8"	16"	34.0	60.0	25.0	Default Load

Weyerhaeuser Notes

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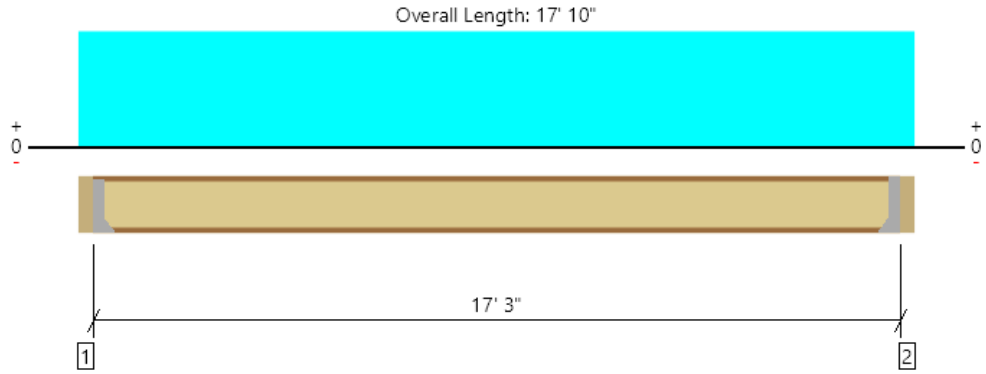
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

2nd Level, 2 - 360 DECK Floor: Joist
2 piece(s) 11 7/8" TJI® 360 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1081 @ 3 1/2"	2160 (1.75")	Passed (50%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1081 @ 3 1/2"	3410	Passed (32%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4662 @ 8' 11"	12360	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.211 @ 8' 11"	0.345	Passed (L/982)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.323 @ 8' 11"	0.863	Passed (L/640)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
TJ-Pro™ Rating	55	55	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 6' 1" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 17' 3" o/c based on loads applied, unless detailed otherwise.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Hanger on 11 7/8" HF beam	3.50"	Hanger[1]	1.75" / - [2]	404	713	297	1414	See note [1]
2 - Hanger on 11 7/8" HF beam	3.50"	Hanger[1]	1.75" / - [2]	404	713	297	1414	See note [1]

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.
- [2] Required Bearing Length / Required Bearing Length with Web Stiffeners

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	Connector not found	N/A	N/A	N/A	N/A	
2 - Face Mount Hanger	MIU4.75/11	2.50"	N/A	20-10d	2-10dx1.5	

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 17' 10"	16"	34.0	60.0	25.0	Default Load

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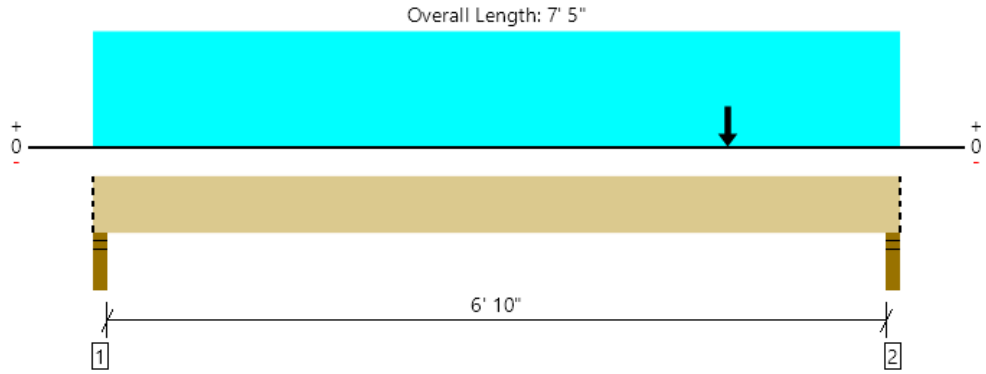
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

2nd Level, BM30Floor: Flush Beam
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3581 @ 7' 3"	4961 (3.50")	Passed (72%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	3511 @ 6' 1 1/2"	8533	Passed (41%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	5006 @ 5' 10"	19320	Passed (26%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.018 @ 4' 1 5/8"	0.142	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.038 @ 4' 1 1/16"	0.354	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 7' 5" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 7' 5" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 7' 1".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - HF	3.50"	3.50"	1.50"	595	193	452	1240	Blocking
2 - Stud wall - HF	3.50"	3.50"	2.53"	1773	193	1808	3774	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 7' 5"	N/A	10.2	--	--	
1 - Uniform (PSF)	0 to 7' 5" (Front)	1' 3 5/8"	34.0	40.0	-	Default Load
2 - Point (lb)	5' 10" (Top)	N/A	1445	-	1667	Linked from: BM12 Roof: Drop Beam, Support 2
3 - Point (lb)	5' 10" (Front)	N/A	519	-	593	Linked from: BM13B Roof: Drop Beam, Support 1

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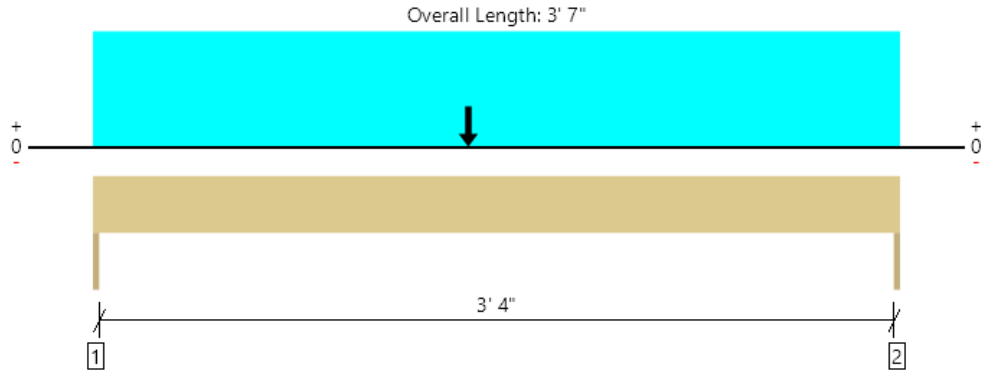
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

2nd Level, bm31 Wall: Header
1 piece(s) 4 x 8 Hem-Fir No. 2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1626 @ 0	2126 (1.50")	Passed (76%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1136 @ 8 3/4"	2538	Passed (45%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1776 @ 1' 8"	2823	Passed (63%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.012 @ 1' 9 1/2"	0.072	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.027 @ 1' 9 1/2"	0.179	Passed (L/999+)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 3' 7" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 3' 7" o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - HF	1.50"	1.50"	1.50"	878	748	242	1868	None
2 - Trimmer - HF	1.50"	1.50"	1.50"	837	735	210	1782	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 7"	N/A	6.4	--	--	
1 - Uniform (PSF)	0 to 3' 7"	9'	34.0	40.0	-	Default Load
2 - Point (lb)	1' 8"	N/A	595	193	452	Linked from: BM30Floor: Flush Beam, Support 1

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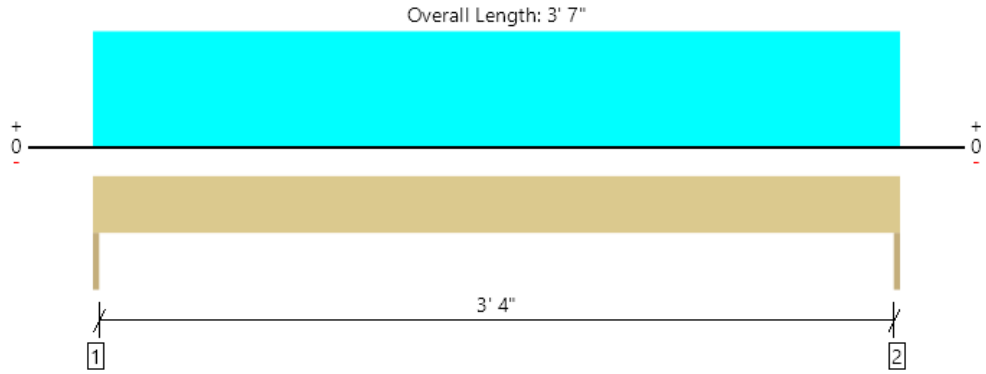
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

2nd Level, BM32 Wall: Header
1 piece(s) 4 x 8 Hem-Fir No. 2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1205 @ 0	2126 (1.50")	Passed (57%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	714 @ 8 3/4"	2538	Passed (28%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1079 @ 1' 9 1/2"	2823	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.009 @ 1' 9 1/2"	0.072	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.017 @ 1' 9 1/2"	0.179	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 3' 7" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 3' 7" o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - HF	1.50"	1.50"	1.50"	560	645	1205	None
2 - Trimmer - HF	1.50"	1.50"	1.50"	560	645	1205	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 3' 7"	N/A	6.4	--	
1 - Uniform (PSF)	0 to 3' 7"	9'	34.0	40.0	Default Load

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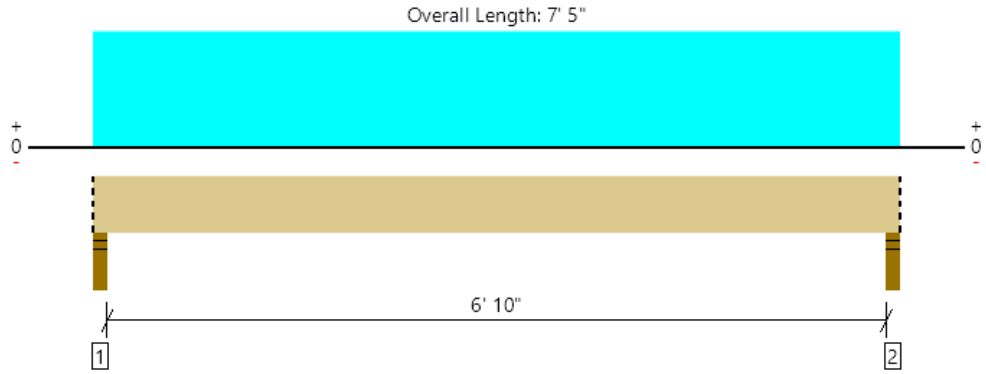
The product application, input design loads, dimensions and support information have been provided by BJM

2nd Level, BM33 Floor: Flush Beam
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	406 @ 2"	4961 (3.50")	Passed (8%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	257 @ 1' 3 1/2"	7420	Passed (3%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	667 @ 3' 8 1/2"	16800	Passed (4%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.003 @ 3' 8 1/2"	0.142	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.007 @ 3' 8 1/2"	0.354	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 7' 5" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 7' 5" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 7' 1".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - HF	3.50"	3.50"	1.50"	214	193	15	422	Blocking
2 - Stud wall - HF	3.50"	3.50"	1.50"	202	193	-	395	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 7' 5"	N/A	10.2	--	--	
1 - Uniform (PSF)	0 to 7' 5" (Front)	1' 3 5/8"	34.0	40.0	-	Default Load
2 - Uniform (PSF)	0 (Front)	7' 1"	20.0	-	25.0	

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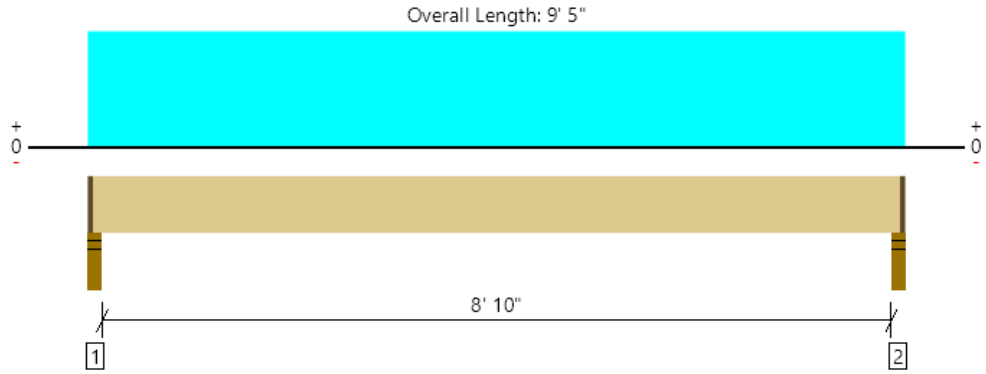
The product application, input design loads, dimensions and support information have been provided by BJM

2nd Level, BM34 Floor: Flush Beam
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1718 @ 2"	3189 (2.25")	Passed (54%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1275 @ 1' 3 1/2"	8533	Passed (15%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	3849 @ 4' 8 1/2"	19320	Passed (20%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.030 @ 4' 8 1/2"	0.182	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.063 @ 4' 8 1/2"	0.454	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 9' 3" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 9' 3" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 9' 1".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - HF	3.50"	2.25"	1.50"	922	245	834	2001	1 1/4" Rim Board
2 - Stud wall - HF	3.50"	2.25"	1.50"	922	245	834	2001	1 1/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	1 1/4" to 9' 3 3/4"	N/A	10.2	--	--	
1 - Uniform (PSF)	0 to 9' 5" (Front)	1' 3 5/8"	34.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 9' 5" (Front)	7' 1"	20.0	-	25.0	

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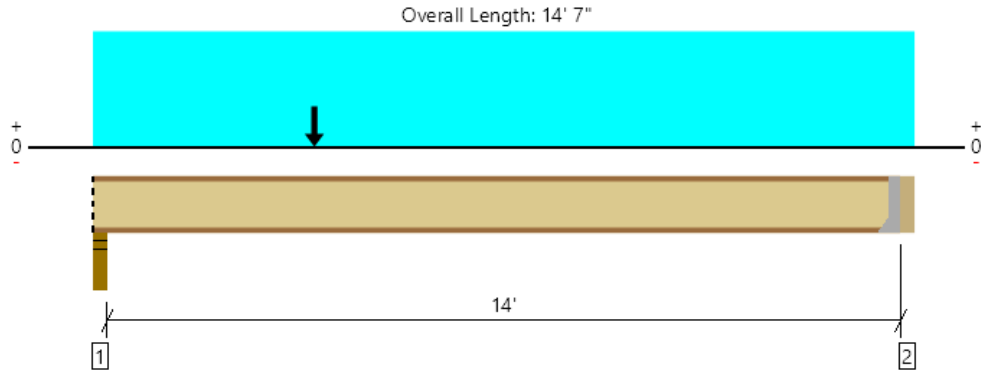
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

2nd Level, BM35 Floor: Joist
2 piece(s) 11 7/8" TJI® 110 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	723 @ 14' 3 1/2"	1820 (1.75")	Passed (40%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	763 @ 3 1/2"	3120	Passed (24%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2647 @ 6' 11 5/8"	6320	Passed (42%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.088 @ 7' 3"	0.282	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.177 @ 7' 2 1/4"	0.704	Passed (L/952)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	57	55	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 4' 11" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 14' 4" o/c based on loads applied, unless detailed otherwise.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - HF	3.50"	3.50"	1.75"	405	387	95	887	Blocking
2 - Hanger on 11 7/8" HF beam	3.50"	Hanger[1]	1.75" / - [2]	360	391	35	786	See note [1]

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

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	IUS3.56/11.88	2.00"	N/A	12-10d	2-Strong-Grip	

Vertical Loads	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 14' 7"	16"	34.0	40.0	-	Default Load
2 - Point (lb)	4'	N/A	104	-	130	

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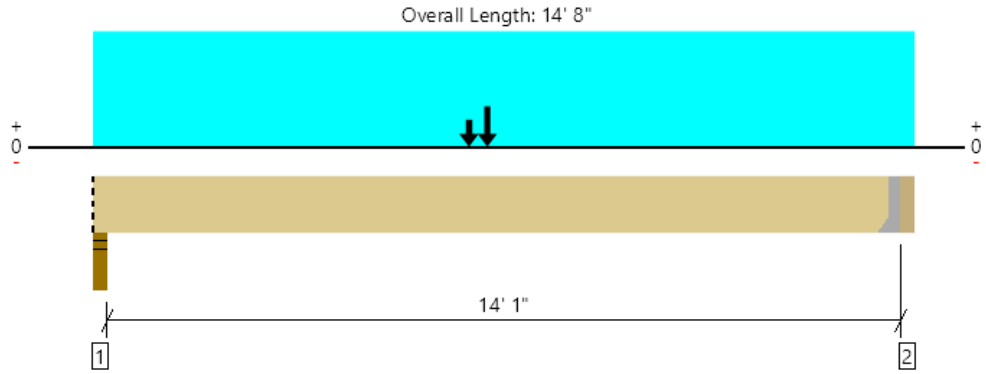
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

2nd Level, BM36 Floor: Flush Beam
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2060 @ 14' 4 1/2"	3413 (1.50")	Passed (60%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	2039 @ 1' 3 1/2"	8533	Passed (24%)	1.15	1.0 D + 0.75 L + 0.75 S (All Spans)
Pos Moment (Ft-lbs)	12886 @ 7' 2"	19320	Passed (67%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.199 @ 7' 2 7/16"	0.284	Passed (L/856)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.430 @ 7' 2 9/16"	0.710	Passed (L/397)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 14' 5" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 14' 5" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 14' 2 1/2".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - HF	3.50"	3.50"	1.53"	1194	388	903	2485	Blocking
2 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	1151	394	850	2395	See note [1]

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

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	LUS414	2.00"	N/A	10-16d	6-16d	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 14' 4 1/2"	N/A	10.2	--	--	
1 - Uniform (PSF)	0 to 14' 8" (Top)	1' 4"	34.0	40.0	-	Default Load
2 - Point (lb)	6' 10" (Front)	N/A	519	-	593	Linked from: BM13B Roof: Drop Beam, Support 2
3 - Point (lb)	7' 2" (Front)	N/A	1015	-	1160	Linked from: BM14 Roof: Drop Beam, Support 1

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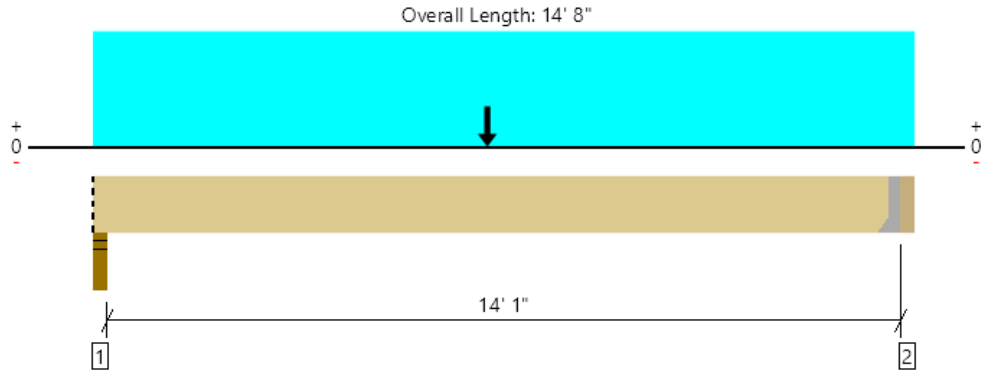
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

2nd Level, BM37 Floor: Flush Beam
1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2917 @ 14' 4 1/2"	5363 (1.50")	Passed (54%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2921 @ 1' 3 1/2"	13409	Passed (22%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	19429 @ 7' 2"	30360	Passed (64%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.194 @ 7' 2 15/16"	0.284	Passed (L/879)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.404 @ 7' 2 15/16"	0.710	Passed (L/422)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 14' 5" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 14' 5" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 14' 2 1/2".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - HF	3.50"	3.50"	1.50"	1642	388	1359	3389	Blocking
2 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	1610	394	1320	3324	See note [1]

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

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	HU612	2.50"	N/A	22-16d	8-16d	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 14' 4 1/2"	N/A	16.0	--	--	
1 - Uniform (PSF)	0 to 14' 8" (Front)	1' 4"	34.0	40.0	-	Default Load
2 - Point (lb)	7' 2" (Front)	N/A	1015	-	1160	Linked from: BM14 Roof: Drop Beam, Support 2
3 - Point (lb)	7' 2" (Front)	N/A	1341	-	1519	Linked from: BM17Roof: Drop Beam, Support 1

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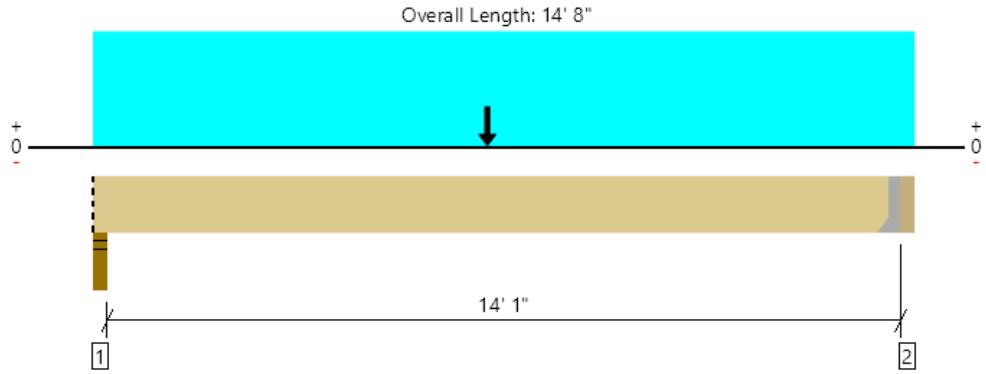
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

2nd Level, BM38 Floor: Flush Beam
1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2861 @ 14' 4 1/2"	5363 (1.50")	Passed (53%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	2864 @ 1' 3 1/2"	13409	Passed (21%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	19028 @ 7' 2"	30360	Passed (63%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.187 @ 7' 2 15/16"	0.284	Passed (L/910)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.396 @ 7' 2 15/16"	0.710	Passed (L/431)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 14' 5" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 14' 5" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 14' 2 1/2".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - HF	3.50"	3.50"	1.50"	1631	388	1312	3331	Blocking
2 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	1600	394	1275	3269	See note [1]

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

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	HU612	2.50"	N/A	22-16d	8-16d	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 14' 4 1/2"	N/A	16.0	--	--	
1 - Uniform (PSF)	0 to 14' 8" (Front)	1' 4"	34.0	40.0	-	Default Load
2 - Point (lb)	7' 2" (Front)	N/A	2335	-	2587	Linked from: BM17Roof: Drop Beam, Support 2

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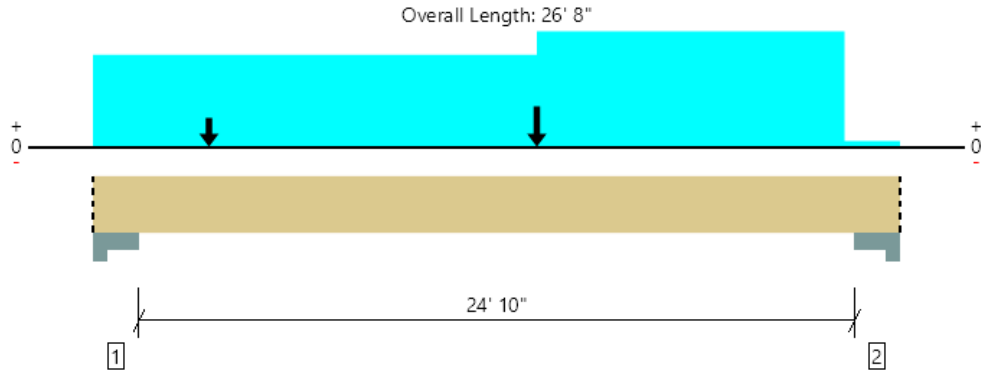
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

2nd Level, BM39 Floor: Flush Beam
1 piece(s) 8 3/4" x 21" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	14665 @ 9 1/2"	62563 (11.00")	Passed (23%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	12302 @ 24'	32463	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	91064 @ 14' 8"	113259	Passed (80%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.425 @ 13' 6"	0.502	Passed (L/709)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.834 @ 13' 5"	1.254	Passed (L/361)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 26' 8" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 26' 8" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 0.88 that was calculated using length L = 25' 1".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Column Cap - steel	11.00"	11.00"	2.58"	7498	7167	1337	16002	Blocking
2 - Column Cap - steel	11.00"	11.00"	2.36"	6143	7259	833	14235	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 26' 8"	N/A	44.7	--	--	
1 - Uniform (PSF)	0 to 14' 8" (Top)	10' 9"	34.0	40.0	-	Default Load
2 - Uniform (PSF)	14' 8" to 24' 10" (Top)	10' 9"	34.0	60.0	-	
3 - Uniform (PLF)	0 to 26' 8" (Front)	N/A	23.0	29.0	-	
4 - Point (lb)	3' 10" (Front)	N/A	1151	394	850	Linked from: BM36 Floor: Flush Beam, Support 2
5 - Point (lb)	14' 8" (Front)	N/A	1610	394	1320	Linked from: BM37 Floor: Flush Beam, Support 2

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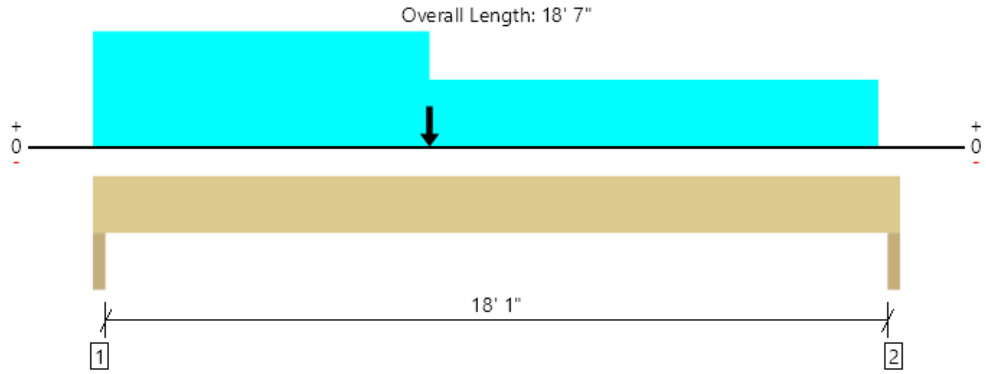
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

2nd Level, BM40 Wall: Header
1 piece(s) 5 1/2" x 13 1/2" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5339 @ 1 1/2"	10725 (3.00")	Passed (50%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	4066 @ 1' 4 1/2"	13118	Passed (31%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	22733 @ 7' 9"	33237	Passed (68%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.286 @ 9' 1 1/8"	0.367	Passed (L/769)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.693 @ 9' 3/16"	0.917	Passed (L/317)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 18' 7" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 18' 7" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 0.99 that was calculated using length L = 18' 4".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - HF	3.00"	3.00"	1.50"	3093	1555	1440	6088	None
2 - Trimmer - HF	3.00"	3.00"	1.50"	2124	1777	535	4436	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 18' 7"	N/A	18.0	--	--	
1 - Uniform (PSF)	0 to 7' 9"	3' 7"	34.0	40.0	-	Default Load
2 - Uniform (PSF)	7' 9" to 18' 1"	3' 7"	34.0	60.0	-	
3 - Point (lb)	7' 9"	N/A	1000	-	-	1" THICK STEEL PLATE ALLOWANCE ABOVE
4 - Uniform (PSF)	0 to 7' 9"	7'	20.0	-	25.0	
5 - Point (lb)	7' 9"	N/A	593	-	619	Linked from: BM16 Roof: Drop Beam, Support 2

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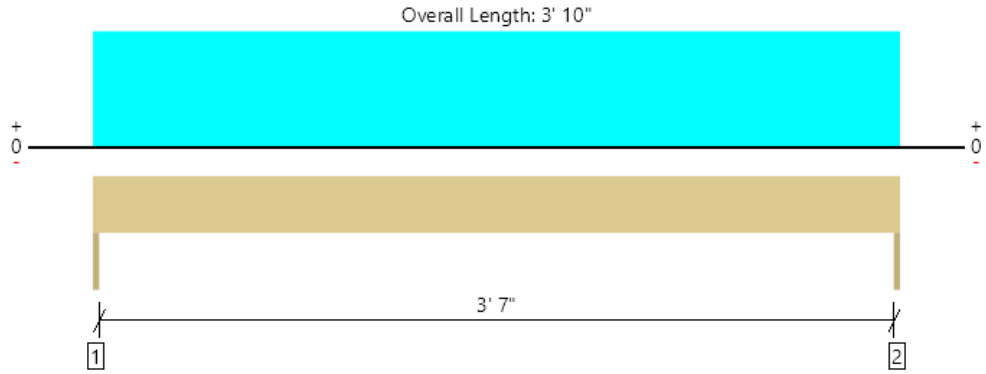
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

2nd Level, BM41 Wall: Header
1 piece(s) 4 x 8 Hem-Fir No. 2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	534 @ 0	2126 (1.50")	Passed (25%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	323 @ 8 3/4"	2538	Passed (13%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	499 @ 1' 11"	2823	Passed (18%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.005 @ 1' 11"	0.077	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.009 @ 1' 11"	0.192	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 3' 10" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 3' 10" o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - HF	1.50"	1.50"	1.50"	259	275	17	551	None
2 - Trimmer - HF	1.50"	1.50"	1.50"	246	275	-	521	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 3' 10"	N/A	6.4	--	--	
1 - Uniform (PSF)	0 to 3' 10"	3' 7"	34.0	40.0	-	Default Load
2 - Uniform (PSF)	0	8'	20.0	-	25.0	

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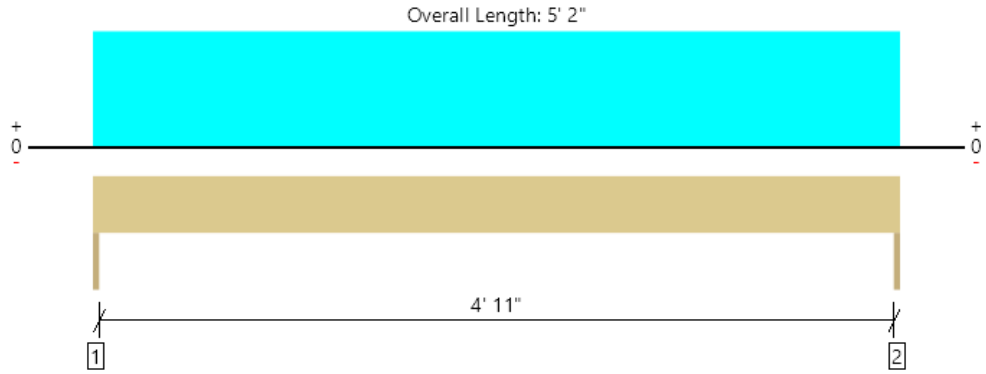
The product application, input design loads, dimensions and support information have been provided by BJM

2nd Level, BM42 Wall: Header
1 piece(s) 4 x 8 Hem-Fir No. 2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1074 @ 0	2126 (1.50")	Passed (51%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	771 @ 8 3/4"	2918	Passed (26%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	1387 @ 2' 7"	3247	Passed (43%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.022 @ 2' 7"	0.103	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.046 @ 2' 7"	0.258	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 5' 2" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 5' 2" o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Trimmer - HF	1.50"	1.50"	1.50"	557	138	517	1212	None
2 - Trimmer - HF	1.50"	1.50"	1.50"	557	138	517	1212	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 5' 2"	N/A	6.4	--	--	
1 - Uniform (PSF)	0 to 5' 2"	1' 4"	37.0	40.0	-	Default Load
2 - Uniform (PSF)	0 to 5' 2"	8'	20.0	-	25.0	

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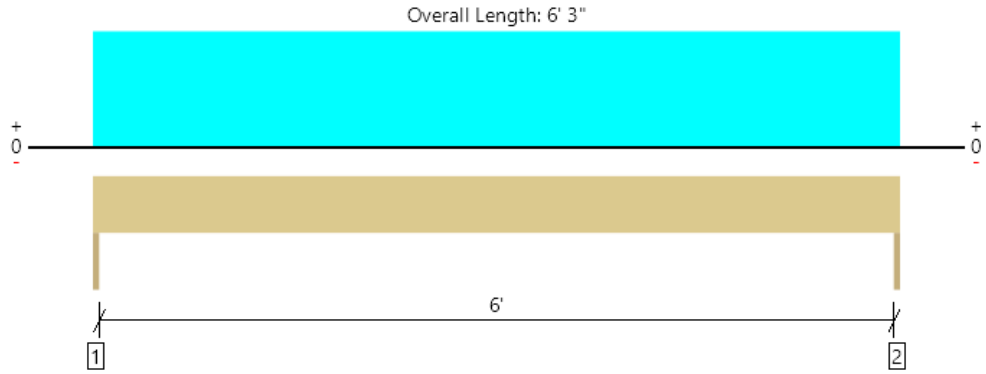
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

2nd Level, BM43 Wall: Header
1 piece(s) 4 x 10 Hem-Fir No. 2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1876 @ 0	2126 (1.50")	Passed (88%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1338 @ 10 3/4"	3238	Passed (41%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2931 @ 3' 1 1/2"	4242	Passed (69%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.037 @ 3' 1 1/2"	0.125	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.069 @ 3' 1 1/2"	0.313	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 6' 3" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 6' 3" o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - HF	1.50"	1.50"	1.50"	876	1000	1876	None
2 - Trimmer - HF	1.50"	1.50"	1.50"	876	1000	1876	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 6' 3"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 6' 3"	8'	34.0	40.0	Default Load

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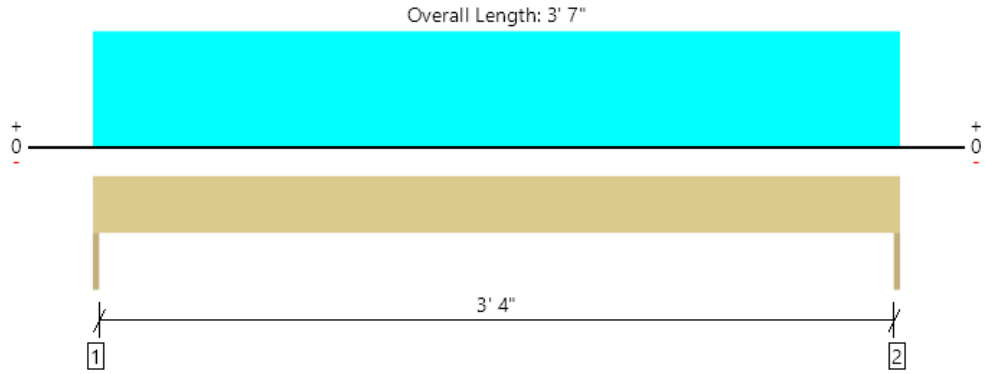
The product application, input design loads, dimensions and support information have been provided by BJM

2nd Level, BM44 Wall: Header
1 piece(s) 4 x 8 Hem-Fir No. 2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1072 @ 0	2126 (1.50")	Passed (50%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	636 @ 8 3/4"	2538	Passed (25%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	960 @ 1' 9 1/2"	2823	Passed (34%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.008 @ 1' 9 1/2"	0.072	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.015 @ 1' 9 1/2"	0.179	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 3' 7" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 3' 7" o/c based on loads applied, unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - HF	1.50"	1.50"	1.50"	499	573	1072	None
2 - Trimmer - HF	1.50"	1.50"	1.50"	499	573	1072	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 3' 7"	N/A	6.4	--	
1 - Uniform (PSF)	0 to 3' 7"	8'	34.0	40.0	Default Load

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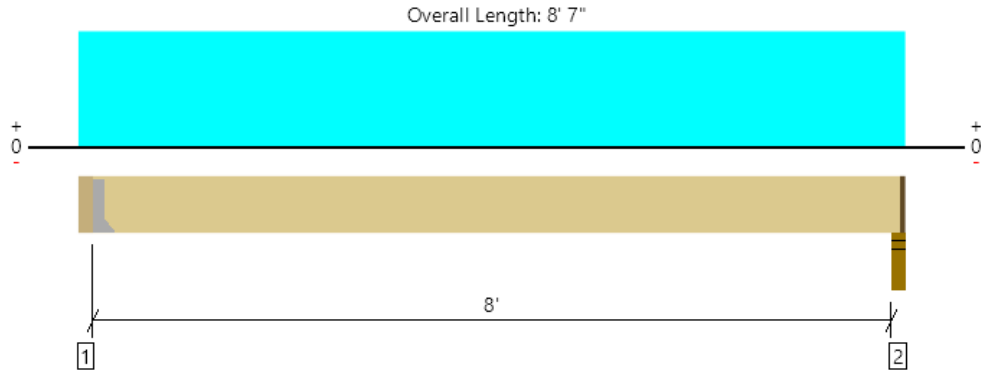
The product application, input design loads, dimensions and support information have been provided by BJM

2nd Level, BM45 Floor: Flush Beam
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2179 @ 8' 5"	3189 (2.25")	Passed (68%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1618 @ 1' 3 1/2"	7420	Passed (22%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	4359 @ 4' 4 1/4"	16800	Passed (26%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.030 @ 4' 4 1/4"	0.162	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.057 @ 4' 4 1/4"	0.406	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 8' 2" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 8' 2" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 8' 1 1/2".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	1078	1219	2297	See note [1]
2 - Stud wall - HF	3.50"	2.25"	1.54"	1049	1184	2233	1 1/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HHUS410	3.00"	N/A	30-10d	10-10d	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	3 1/2" to 8' 5 3/4"	N/A	10.2	--	
1 - Uniform (PSF)	0 to 8' 7" (Front)	7'	34.0	40.0	Default Load

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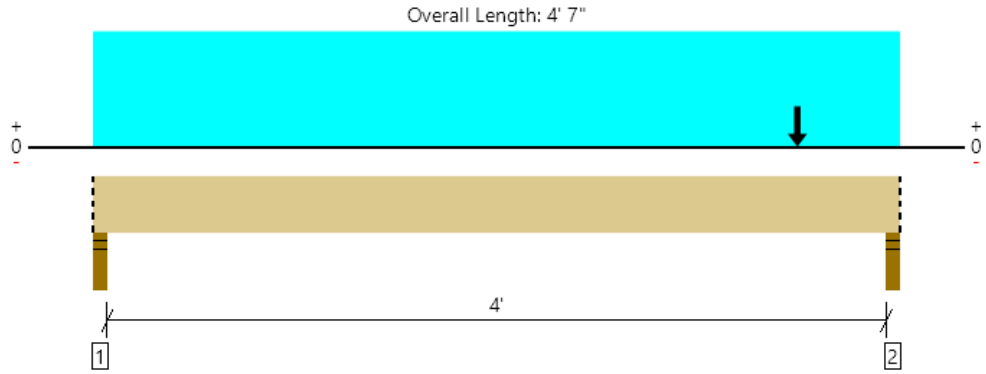
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

2nd Level, BM46 Floor: Flush Beam
1 piece(s) 3 1/2" x 6" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2960 @ 4' 5"	4961 (3.50")	Passed (60%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1696 @ 3' 9 1/2"	3710	Passed (46%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	1419 @ 2' 10 1/2"	4200	Passed (34%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.022 @ 2' 4 9/16"	0.085	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.041 @ 2' 4 9/16"	0.213	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 4' 7" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 4' 7" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 4' 3".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - HF	3.50"	3.50"	1.50"	520	593	1113	Blocking
2 - Stud wall - HF	3.50"	3.50"	2.09"	1387	1573	2960	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 4' 7"	N/A	5.1	--	
1 - Uniform (PSF)	0 to 4' 7" (Front)	5' 2"	34.0	40.0	Default Load
2 - Point (lb)	4' (Front)	N/A	1078	1219	Linked from: BM45 Floor: Flush Beam, Support 1

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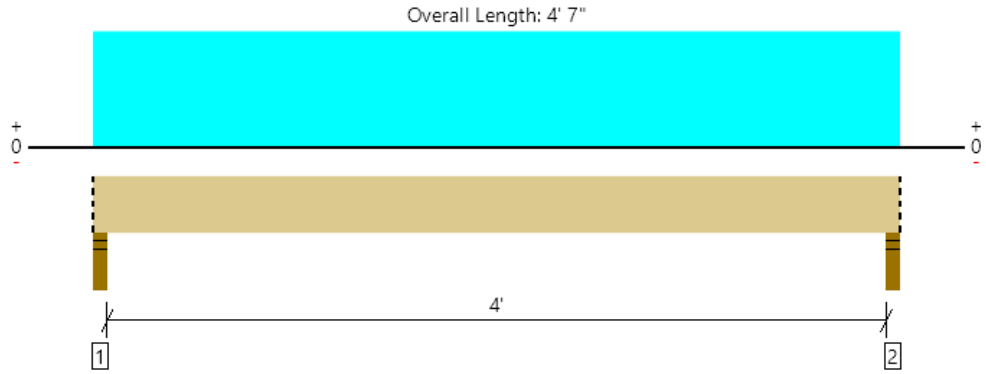
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

2nd Level, BM47 Floor: Flush Beam
1 piece(s) 3 1/2" x 6" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1538 @ 2"	4961 (3.50")	Passed (31%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1007 @ 9 1/2"	3710	Passed (27%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	1515 @ 2' 3 1/2"	4200	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.023 @ 2' 3 1/2"	0.085	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.043 @ 2' 3 1/2"	0.213	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 4' 7" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 4' 7" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 4' 3".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - HF	3.50"	3.50"	1.50"	713	825	1538	Blocking
2 - Stud wall - HF	3.50"	3.50"	1.50"	713	825	1538	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 4' 7"	N/A	5.1	--	
1 - Uniform (PSF)	0 to 4' 7" (Front)	9'	34.0	40.0	Default Load

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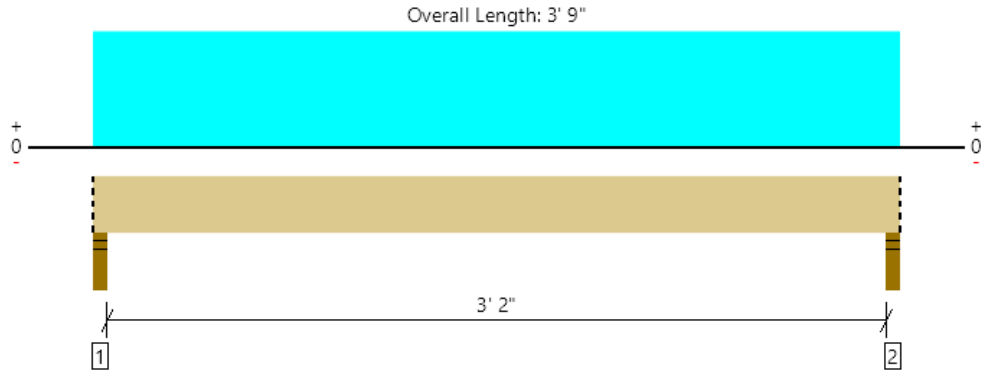
The product application, input design loads, dimensions and support information have been provided by BJM

2nd Level, BM48 Floor: Flush Beam
1 piece(s) 3 1/2" x 6" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1258 @ 2"	4961 (3.50")	Passed (25%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	727 @ 9 1/2"	3710	Passed (20%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	979 @ 1' 10 1/2"	4200	Passed (23%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.010 @ 1' 10 1/2"	0.068	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.018 @ 1' 10 1/2"	0.171	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 3' 9" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 3' 9" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 3' 5".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - HF	3.50"	3.50"	1.50"	583	675	1258	Blocking
2 - Stud wall - HF	3.50"	3.50"	1.50"	583	675	1258	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 3' 9"	N/A	5.1	--	
1 - Uniform (PSF)	0 to 3' 9" (Front)	9'	34.0	40.0	Default Load

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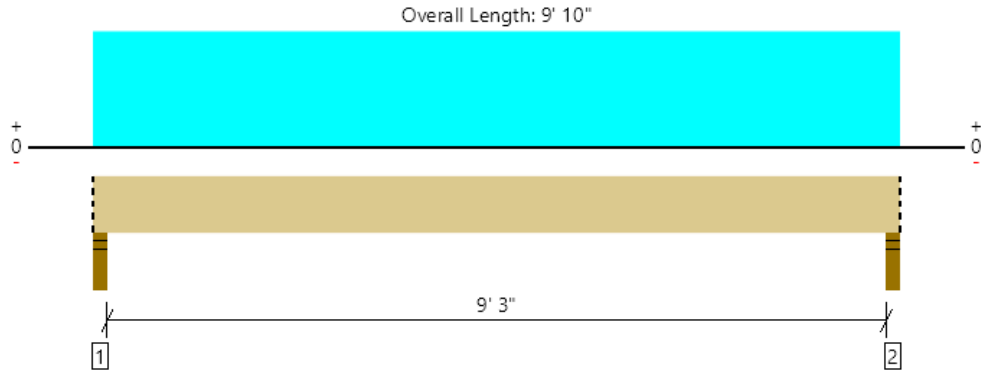
The product application, input design loads, dimensions and support information have been provided by BJM

2nd Level, BM49 Floor: Flush Beam
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1869 @ 2"	4961 (3.50")	Passed (38%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1378 @ 1' 3 1/2"	7420	Passed (19%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	4289 @ 4' 11"	16800	Passed (26%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.040 @ 4' 11"	0.190	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.077 @ 4' 11"	0.475	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 9' 10" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 9' 10" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 9' 6".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - HF	3.50"	3.50"	1.50"	886	983	1869	Blocking
2 - Stud wall - HF	3.50"	3.50"	1.50"	886	983	1869	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 9' 10"	N/A	10.2	--	
1 - Uniform (PSF)	0 to 9' 10" (Front)	5'	34.0	40.0	Default Load

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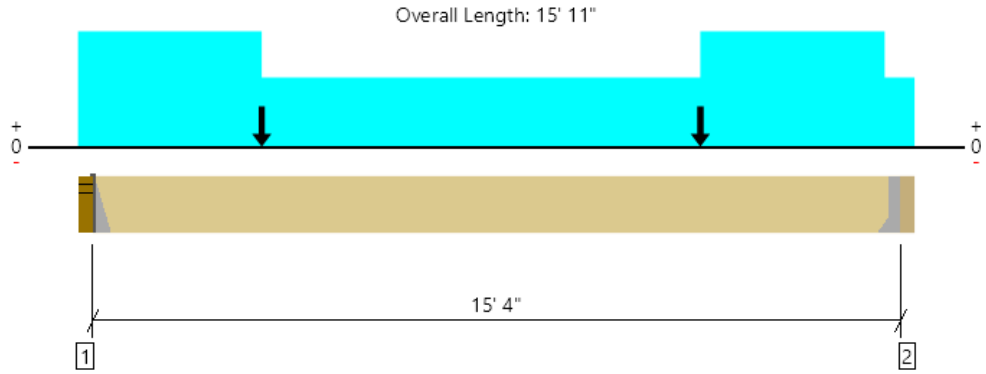
The product application, input design loads, dimensions and support information have been provided by BJM

2nd Level, BM49A Floor: Flush Beam
1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5163 @ 3 1/2"	5363 (1.50")	Passed (96%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	4154 @ 14' 7 1/2"	11660	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	17117 @ 8' 1/2"	26400	Passed (65%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.282 @ 7' 11 3/4"	0.307	Passed (L/652)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.539 @ 7' 11 3/4"	0.767	Passed (L/341)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 15' 4" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 15' 4" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 15' 4".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Hanger on HF studWall	3.50"	Hanger[1]	1.50"	2569	2388	1331	6288	See note [1]
2 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	2489	2387	1234	6110	See note [1]

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

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Top Mount Hanger	Connector not found	N/A	N/A	N/A	N/A	
2 - Face Mount Hanger	MGU5.62-SDS H=12	4.50"	N/A	24-SDS25212	16-SDS25212	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 15' 7 1/2"	N/A	16.0	--	--	
1 - Uniform (PSF)	0 to 15' 11" (Front)	5'	34.0	60.0	-	Default Load
2 - Uniform (PSF)	0 to 3' 6" (Front)	7'	20.0	-	25.0	
3 - Uniform (PSF)	11' 10" to 15' 4" (Front)	7'	20.0	-	25.0	
4 - Point (lb)	3' 6" (Front)	N/A	563	-	670	Linked from: BM10 Wall: Header, Support 1
5 - Point (lb)	11' 10" (Front)	N/A	563	-	670	Linked from: BM10 Wall: Header, Support 2

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

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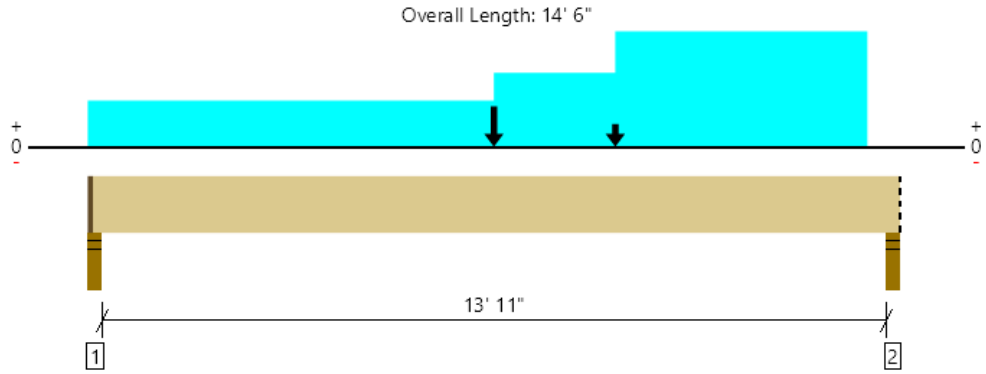
The product application, input design loads, dimensions and support information have been provided by BJM

2nd Level, BM49B Floor: Flush Beam
1 piece(s) 8 3/4" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	6585 @ 2"	7973 (2.25")	Passed (83%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	7929 @ 13' 2 1/2"	18550	Passed (43%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	36543 @ 7' 3"	41411	Passed (88%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.269 @ 7' 5 3/16"	0.283	Passed (L/631)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.531 @ 7' 5 1/16"	0.708	Passed (L/320)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 14' 5" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 14' 5" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 0.99 that was calculated using length L = 14' 2".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - HF	3.50"	2.25"	1.86"	3275	3348	617	7240	1 1/4" Rim Board
2 - Stud wall - HF	3.50"	3.50"	2.43"	4201	4416	617	9234	Blocking

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	1 1/4" to 14' 6"	N/A	25.5	--	--	
1 - Uniform (PSF)	0 to 7' 3" (Front)	5'	34.0	40.0	-	Default Load
2 - Uniform (PSF)	7' 3" to 9' 5" (Front)	8'	34.0	40.0	-	
3 - Uniform (PSF)	9' 5" to 13' 11" (Front)	12' 6"	34.0	40.0	-	
4 - Point (lb)	7' 3" (Front)	N/A	2489	2387	1234	Linked from: BM49A Floor: Flush Beam, Support 2
5 - Point (lb)	9' 5" (Front)	N/A	886	983	-	Linked from: BM49 Floor: Flush Beam, Support 1

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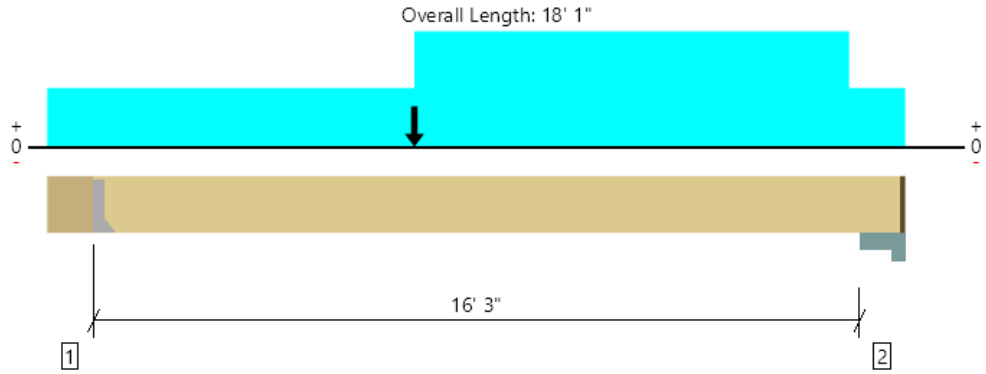
The product application, input design loads, dimensions and support information have been provided by BJM

2nd Level, BM49C Floor: Flush Beam
1 piece(s) 8 3/4" x 15" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	11403 @ 11"	11403 (2.00")	Passed (100%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	10909 @ 15' 11"	23188	Passed (47%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	57728 @ 8' 3 13/16"	62366	Passed (93%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.333 @ 9' 15/16"	0.327	Passed (L/590)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.611 @ 9' 7/8"	0.819	Passed (L/322)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 17' 1" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 17' 1" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 0.95 that was calculated using length L = 16' 4 1/2".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Hanger on 15" HF beam	11.00"	Hanger[1]	2.00"	5303	6789	1036	13128	See note [1]
2 - Column Cap - steel	11.00"	9.75"	2.31"	5883	7319	1007	14209	1 1/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HHGU9.00-SDS H=15	5.25"	N/A	44-SDS25212	28-SDS25212	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	11" to 17' 11 3/4"	N/A	31.9	--	--	
1 - Uniform (PSF)	0 to 18' 1" (Front)	8'	34.0	60.0	-	Default Load
2 - Uniform (PSF)	7' 4" to 16' 10" (Front)	8'	34.0	40.0	-	
3 - Uniform (PSF)	7' 4" to 16' 10" (Front)	3'	20.0	-	25.0	
4 - Point (lb)	7' 4" (Front)	N/A	2569	2388	1331	Linked from: BM49A Floor: Flush Beam, Support 1

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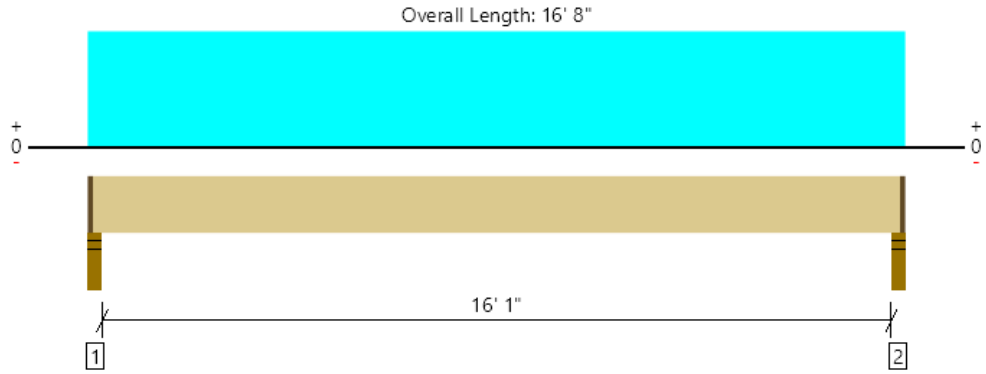
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

2nd Level, BM49D Floor: Flush Beam
1 piece(s) 8 3/4" x 13 1/2" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	6671 @ 2"	7973 (2.25")	Passed (84%)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Shear (lbs)	5400 @ 1' 5"	20869	Passed (26%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	26035 @ 8' 4"	51065	Passed (51%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.253 @ 8' 4"	0.327	Passed (L/775)	--	1.0 D + 0.75 L + 0.75 S (All Spans)
Total Load Defl. (in)	0.402 @ 8' 4"	0.817	Passed (L/488)	--	1.0 D + 0.75 L + 0.75 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 16' 6" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 16' 6" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 0.96 that was calculated using length L = 16' 4".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - HF	3.50"	2.25"	1.88"	2503	4000	1667	8170	1 1/4" Rim Board
2 - Stud wall - HF	3.50"	2.25"	1.88"	2503	4000	1667	8170	1 1/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	1 1/4" to 16' 6 3/4"	N/A	28.7	--	--	
1 - Uniform (PSF)	0 to 16' 8" (Front)	8'	34.0	60.0	25.0	Default Load

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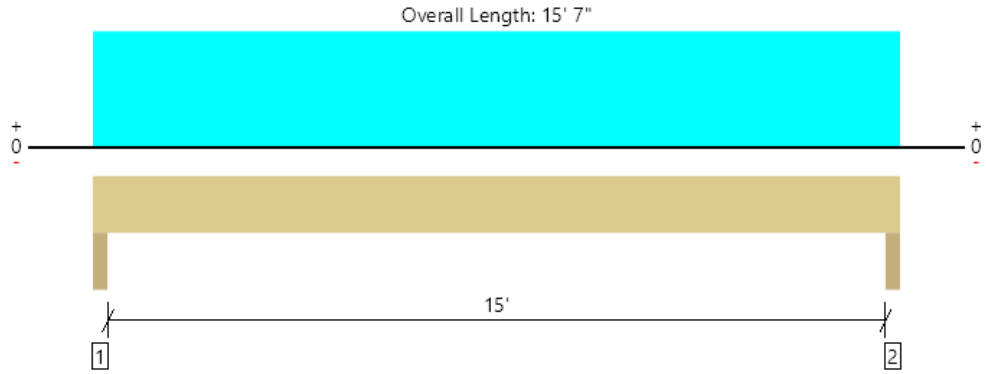
The product application, input design loads, dimensions and support information have been provided by BJM

2nd Level, BM49E Floor: Drop Beam
1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1102 @ 2"	12513 (3.50")	Passed (9%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	919 @ 1' 3 1/2"	11660	Passed (8%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	4110 @ 7' 9 1/2"	26400	Passed (16%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.068 @ 7' 9 1/2"	0.305	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.121 @ 7' 9 1/2"	0.762	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 15' 7" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 15' 7" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 15' 3".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - HF	3.50"	3.50"	1.50"	478	623	1101	None
2 - Trimmer - HF	3.50"	3.50"	1.50"	478	623	1101	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 15' 7"	N/A	16.0	--	
1 - Uniform (PSF)	0 to 15' 7" (Front)	1' 4"	34.0	60.0	Default Load

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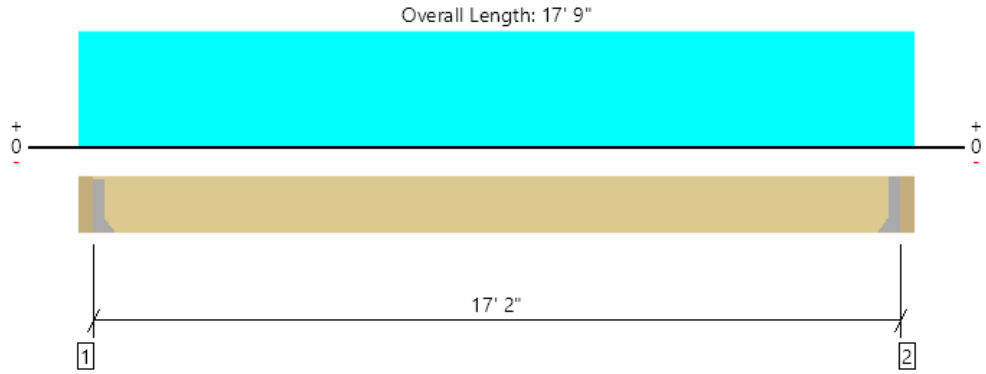
The product application, input design loads, dimensions and support information have been provided by BJM

2nd Level, BM49F Floor: Flush Beam
1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2069 @ 3 1/2"	5363 (1.50")	Passed (39%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1828 @ 1' 3 1/2"	13409	Passed (14%)	1.15	1.0 D + 1.0 S (All Spans)
Pos Moment (Ft-lbs)	8879 @ 8' 10 1/2"	30360	Passed (29%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.171 @ 8' 10 1/2"	0.343	Passed (L/999+)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.330 @ 8' 10 1/2"	0.858	Passed (L/624)	--	1.0 D + 1.0 S (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 17' 2" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 17' 2" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 17' 2".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	1025	1109	2134	See note [1]
2 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	1025	1109	2134	See note [1]

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

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	HU610	2.50"	N/A	18-10d	8-10d	
2 - Face Mount Hanger	HU610	2.50"	N/A	18-10d	8-10d	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	3 1/2" to 17' 5 1/2"	N/A	16.0	--	
1 - Uniform (PSF)	0 to 17' 9" (Front)	5'	20.0	25.0	Default Load

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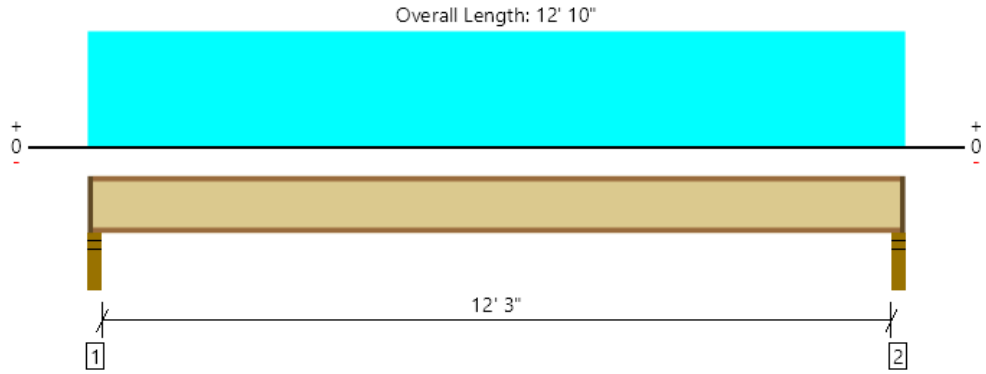
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

1st Level, 1-110 16" O.C. TYP Floor: Joist
1 piece(s) 11 7/8" TJI® 110 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	623 @ 2 1/2"	1041 (2.25")	Passed (60%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	604 @ 3 1/2"	1560	Passed (39%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1901 @ 6' 5"	3160	Passed (60%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.112 @ 6' 5"	0.248	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.207 @ 6' 5"	0.621	Passed (L/720)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	55	55	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 4' 1" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 12' 8" o/c based on loads applied, unless detailed otherwise.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Panel (24" Span Rating) that is nailed down.
- Additional considerations for the TJ-Pro™ Rating include: bridging or blocking at max. 8' o.c., Pour Flooring Overlay.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - HF	3.50"	2.25"	1.75"	291	342	633	1 1/4" Rim Board
2 - Stud wall - HF	3.50"	2.25"	1.75"	291	342	633	1 1/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 12' 10"	16"	34.0	40.0	Default Load

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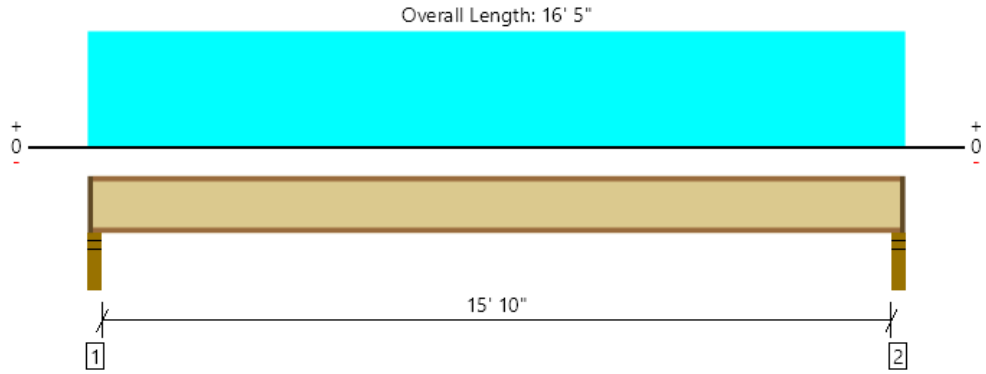
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

1st Level, 2-110 16" O.C. TYP Floor: Joist
2 piece(s) 11 7/8" TJI® 110 @ 16" OC



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	800 @ 2 1/2"	2083 (2.25")	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	781 @ 3 1/2"	3120	Passed (25%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3157 @ 8' 2 1/2"	6320	Passed (50%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.151 @ 8' 2 1/2"	0.320	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.279 @ 8' 2 1/2"	0.800	Passed (L/688)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	55	55	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 4' 6" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 16' 3" o/c based on loads applied, unless detailed otherwise.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Panel (24" Span Rating) that is nailed down.
- Additional considerations for the TJ-Pro™ Rating include: bridging or blocking at max. 8' o.c., Pour Flooring Overlay.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - HF	3.50"	2.25"	1.75"	372	438	810	1 1/4" Rim Board
2 - Stud wall - HF	3.50"	2.25"	1.75"	372	438	810	1 1/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 16' 5"	16"	34.0	40.0	Default Load

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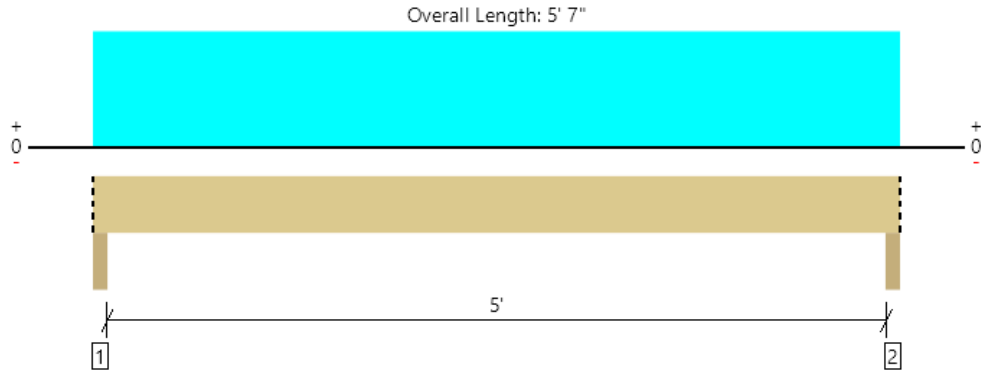
The product application, input design loads, dimensions and support information have been provided by BJM

1st Level, BM50 Floor: Drop Beam
1 piece(s) 3 1/2" x 6" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2080 @ 2"	7963 (3.50")	Passed (26%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1490 @ 9 1/2"	3710	Passed (40%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	2567 @ 2' 9 1/2"	4200	Passed (61%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.060 @ 2' 9 1/2"	0.105	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.112 @ 2' 9 1/2"	0.262	Passed (L/561)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 5' 7" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 5' 7" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 5' 3".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Column - SPF	3.50"	3.50"	1.50"	963	1117	2080	Blocking
2 - Column - SPF	3.50"	3.50"	1.50"	963	1117	2080	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 5' 7"	N/A	5.1	--	
1 - Uniform (PSF)	0 to 5' 7" (Front)	10'	34.0	40.0	Default Load

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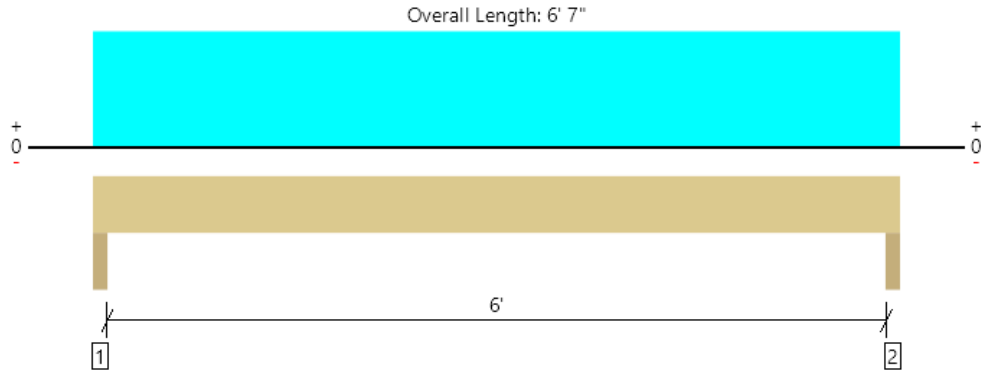
The product application, input design loads, dimensions and support information have been provided by BJM

1st Level, BM51 Floor: Drop Beam
1 piece(s) 3 1/2" x 6" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2453 @ 2"	7963 (3.50")	Passed (31%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1863 @ 9 1/2"	3710	Passed (50%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	3638 @ 3' 3 1/2"	4200	Passed (87%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.121 @ 3' 3 1/2"	0.125	Passed (L/619)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.226 @ 3' 3 1/2"	0.313	Passed (L/332)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 6' 7" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 6' 7" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 6' 3".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - HF	3.50"	3.50"	1.50"	1136	1317	2453	None
2 - Trimmer - HF	3.50"	3.50"	1.50"	1136	1317	2453	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 6' 7"	N/A	5.1	--	
1 - Uniform (PSF)	0 to 6' 7" (Front)	10'	34.0	40.0	Default Load

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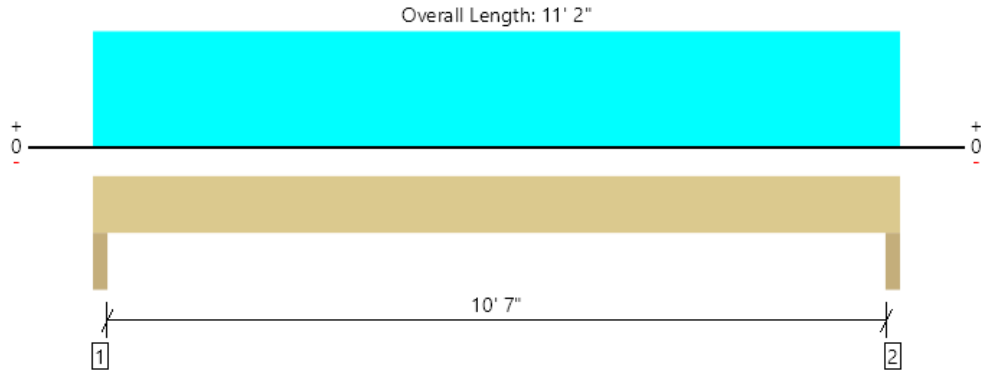
The product application, input design loads, dimensions and support information have been provided by BJM

1st Level, BM52 Floor: Drop Beam
1 piece(s) 5 1/2" x 10 1/2" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4623 @ 2"	12513 (3.50")	Passed (37%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	3657 @ 1' 2"	10203	Passed (36%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	12147 @ 5' 7"	20213	Passed (60%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.143 @ 5' 7"	0.217	Passed (L/911)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.269 @ 5' 7"	0.542	Passed (L/484)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 11' 2" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 11' 2" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 10' 10".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - HF	3.50"	3.50"	1.50"	2167	2457	4624	None
2 - Trimmer - HF	3.50"	3.50"	1.50"	2167	2457	4624	None

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 11' 2"	N/A	14.0	--	
1 - Uniform (PSF)	0 to 11' 2" (Front)	11'	34.0	40.0	Default Load

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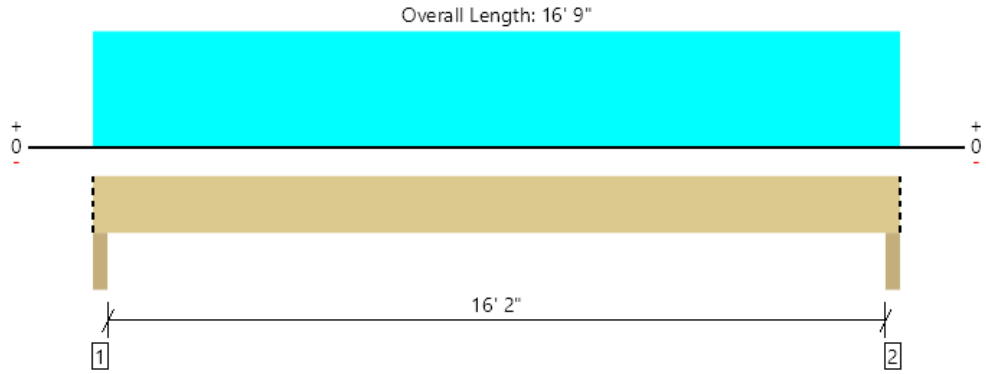
The product application, input design loads, dimensions and support information have been provided by BJM

1st Level, BM53 Floor: Drop Beam
1 piece(s) 8 3/4" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5606 @ 2"	19906 (3.50")	Passed (28%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	4741 @ 1' 3 1/2"	18550	Passed (26%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	22548 @ 8' 4 1/2"	40805	Passed (55%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.251 @ 8' 4 1/2"	0.328	Passed (L/786)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.482 @ 8' 4 1/2"	0.821	Passed (L/408)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 16' 9" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 16' 9" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 0.97 that was calculated using length L = 16' 5".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Column - HF	3.50"	3.50"	1.50"	2691	2915	5606	Blocking
2 - Column - HF	3.50"	3.50"	1.50"	2691	2915	5606	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 16' 9"	N/A	25.5	--	
1 - Uniform (PSF)	0 to 16' 9" (Front)	8' 8 3/8"	34.0	40.0	Default Load

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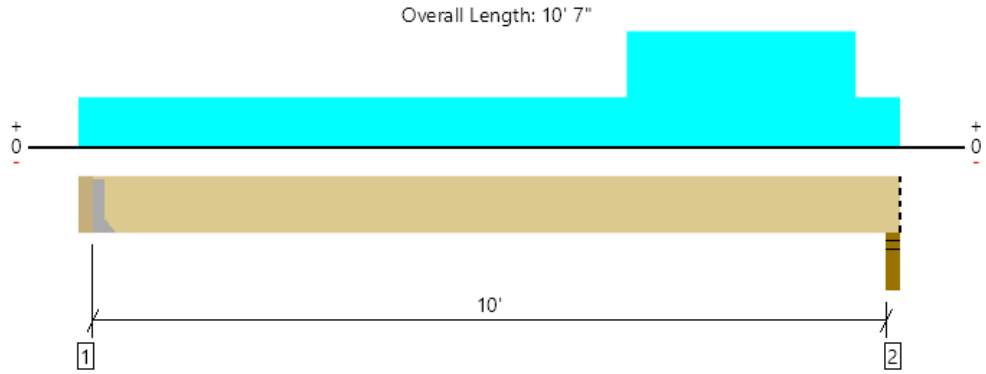
The product application, input design loads, dimensions and support information have been provided by BJM

1st Level, BM54 Floor: Drop Beam
1 piece(s) 3 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1021 @ 3 1/2"	3413 (1.50")	Passed (30%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1078 @ 9' 3 1/2"	7420	Passed (15%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	2948 @ 6' 13/16"	16800	Passed (18%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.031 @ 5' 6"	0.203	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.060 @ 5' 5 15/16"	0.506	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 10' 4" o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 10' 4" o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 10' 1 1/2".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Hanger on 12" HF beam	3.50"	Hanger[1]	1.50"	519	550	1069	See note [1]
2 - Stud wall - HF	3.50"	3.50"	1.50"	701	762	1463	Blocking

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

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	LUS410	2.00"	N/A	8-10d	6-10d	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	3 1/2" to 10' 7"	N/A	10.2	--	
1 - Uniform (PSF)	0 to 10' 7" (Top)	2' 3"	34.0	40.0	Default Load
2 - Uniform (PSF)	7' to 10' (Top)	3'	34.0	40.0	

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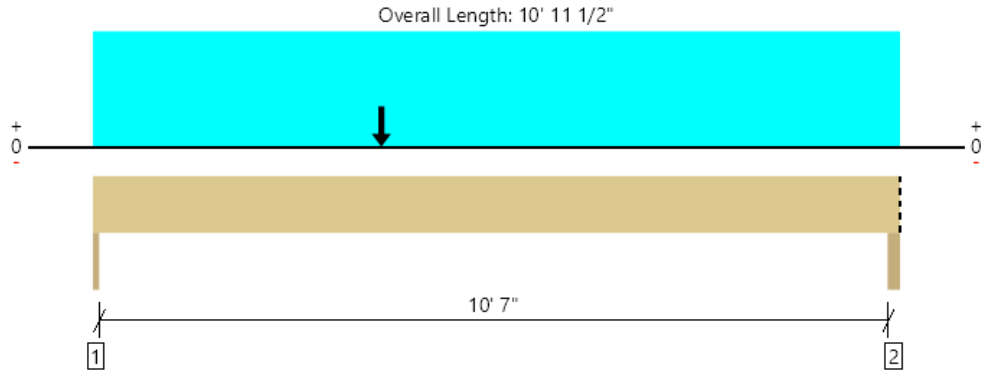
The product application, input design loads, dimensions and support information have been provided by BJM

ForteWEB Software Operator	Job Notes
Benjamin J. McCann CT Engineering Inc. (206) 285-4512 bmccann@ctengineering.com	

Weyerhaeuser

1st Level, BM55 Floor: Drop Beam
1 piece(s) 5 1/2" x 12" 24F-V4 DF Glulam



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4577 @ 0	5363 (1.50")	Passed (85%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	3768 @ 1' 1 1/2"	11660	Passed (32%)	1.00	1.0 D + 1.0 L (All Spans)
Pos Moment (Ft-lbs)	12746 @ 4' 10 9/16"	26400	Passed (48%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.098 @ 5' 4 3/16"	0.217	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.187 @ 5' 4 3/16"	0.542	Passed (L/695)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/600) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 11' o/c based on loads applied, unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 11' o/c based on loads applied, unless detailed otherwise.
- Critical positive moment adjusted by a volume factor of 1.00 that was calculated using length L = 10' 10".
- The effects of positive or negative camber have not been accounted for when calculating deflection.
- The specified glulam is assumed to have its strong laminations at the bottom of the beam. Install with proper side up as indicated by the manufacturer.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Trimmer - HF	1.50"	1.50"	1.50"	2168	2409	4577	None
2 - Column - HF	3.00"	3.00"	1.50"	2066	2305	4371	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 10' 11 1/2"	N/A	16.0	--	
1 - Uniform (PSF)	0 to 10' 11 1/2" (Top)	9' 6"	34.0	40.0	Default Load
2 - Point (lb)	3' 11" (Front)	N/A	519	550	Linked from: BM54 Floor: Drop Beam, Support 1

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ForteWEB Software Operator	Job Notes
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STEEL FRAME CALCULATIONS

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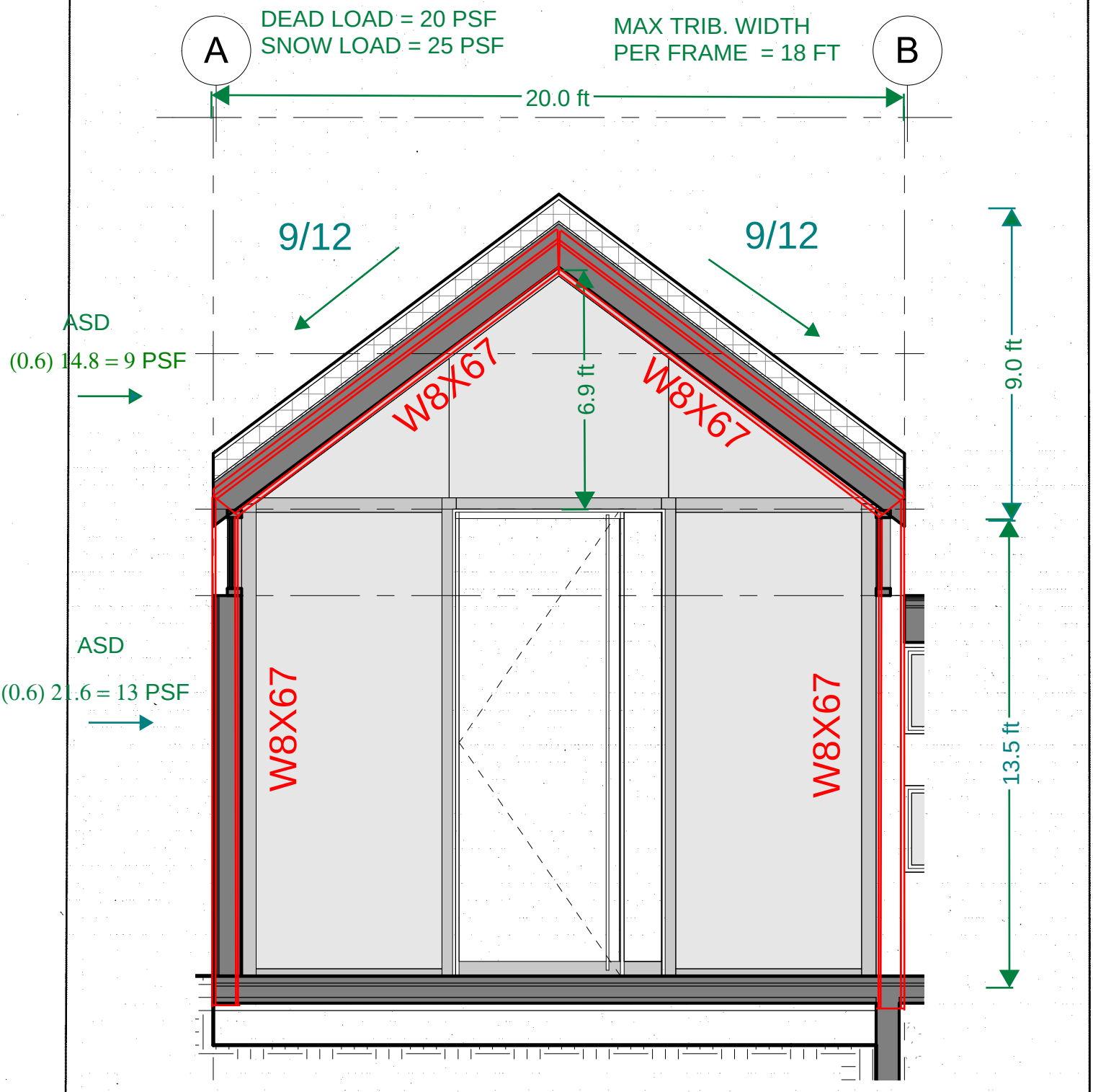
Project: FOO FRAMES Date:

Client: Page Number:



Mercer Island Wind Exposure and Wind Speed-Up (Topographic Effect)

by Development Services Group (DSG), City of Mercer Island
April 2009

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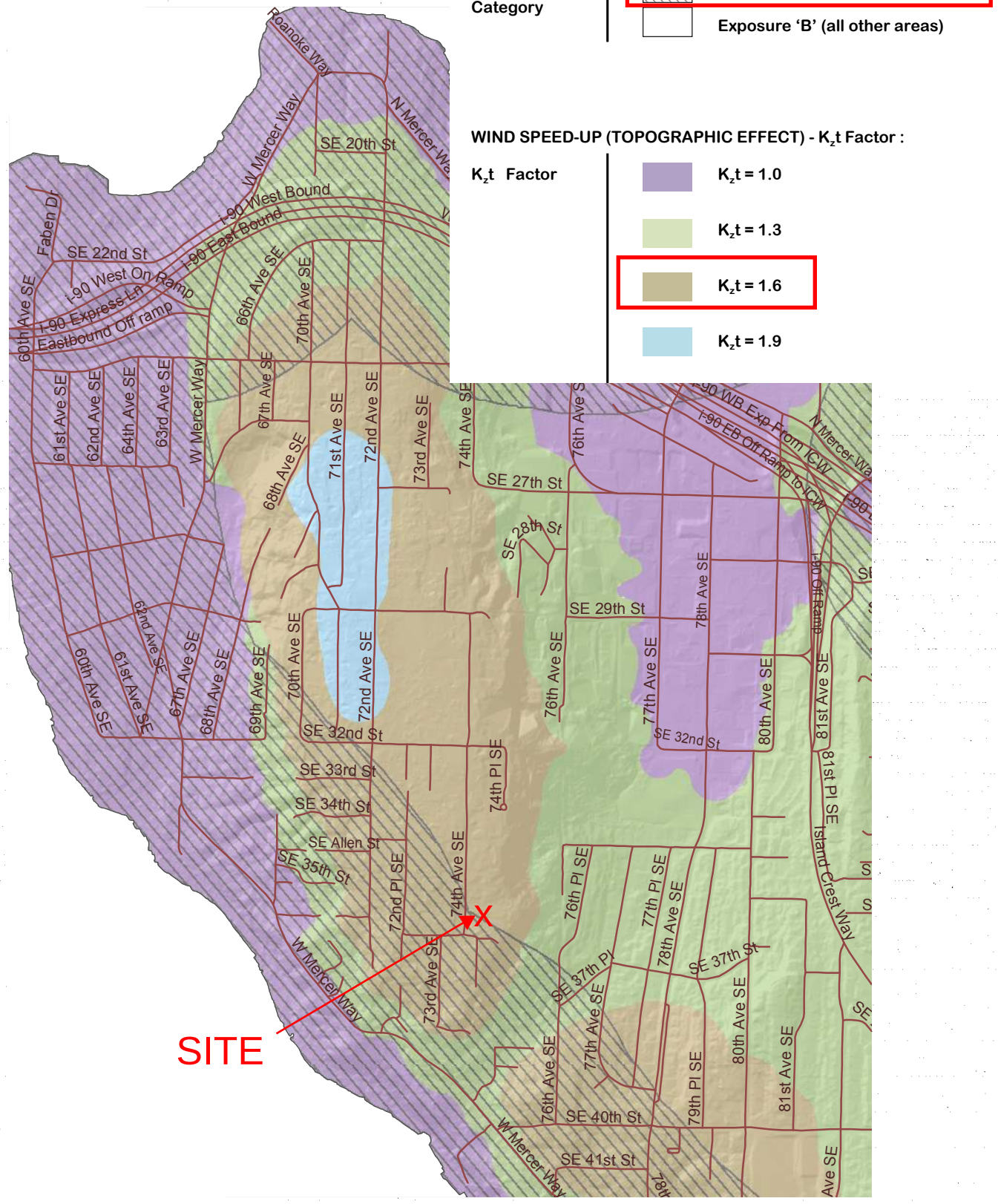
COPY



C T ENGINEERING
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Project: Foo Frames Date: 5-25-2020

Client: Page Number:

WIND LOADS - MAIN WIND FORCE RESISTING SYSTEM

Simplified Design Wind Pressure ASCE 7-10, Section 28.6

Wind Criteria:

Risk Category, I, II, III or IV =	II		Table 1.5-1 of ASCE 7-10
Basic Wind Speed	110	MPH	Figure 26.5-1A, B or C of ASCE 7-10
Exposure	C		
Average roof height	18.00	ft.	
Roof angle	30° to 45°		
K_{zt} =	1.60		Section 26.8 and Figure 26.8-1 of ASCE 7-10
λ=	1.29		

Minimum wind pressure, p_s, Zones A and C = +16 PSF, Zones B and D = +8 PSF, with p_s for Zones E, F, G and H =0 psf. (Section 26.6.4 of ASCE 7-10)

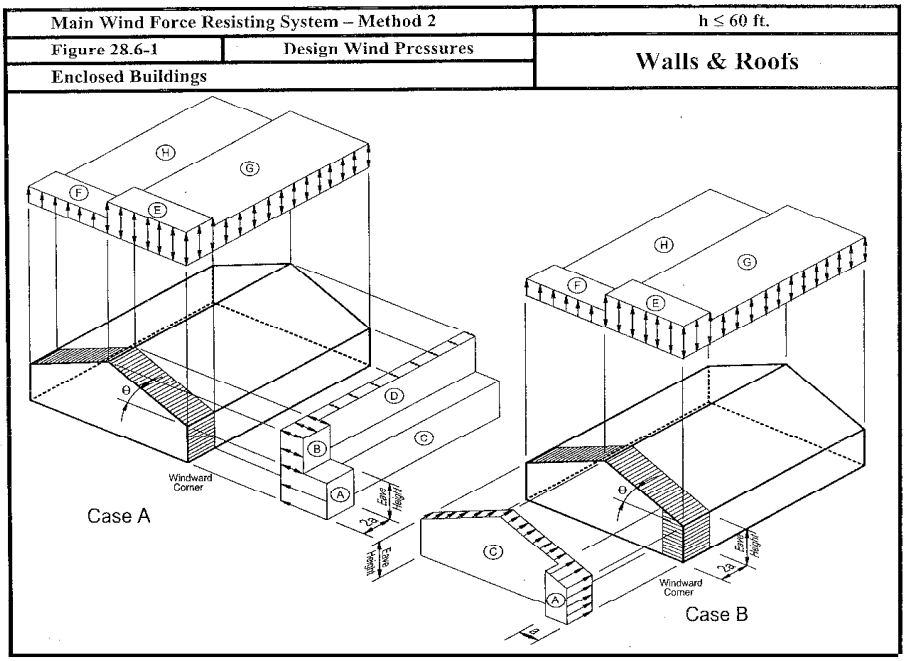
$P_S = \lambda * K_{zt} * p_{S30}$

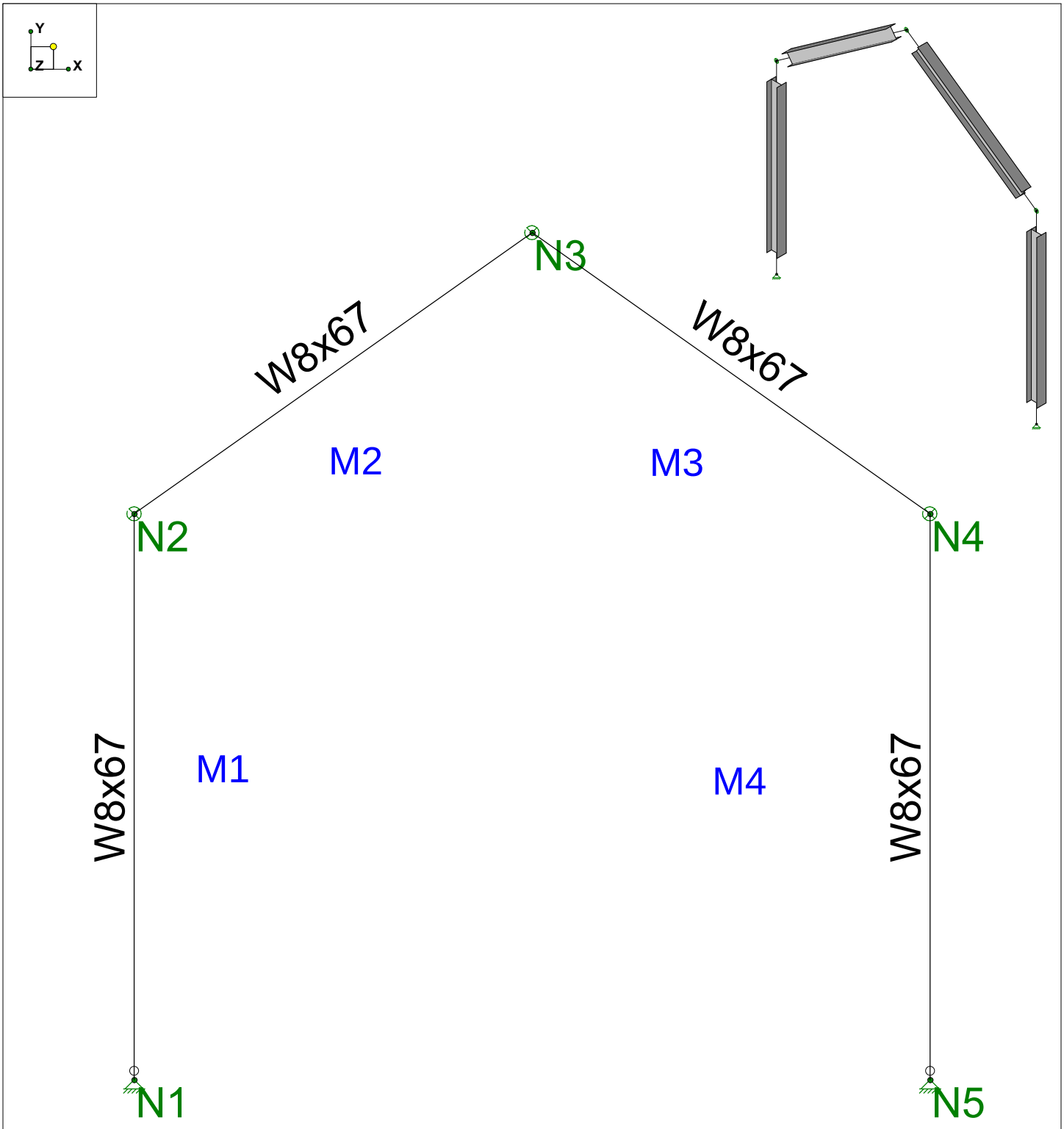
ASD

(0.6) 21.6 = 13 PSF →

(0.6) 14.8 = 9 PSF →

	Load Case 1				Load Case 2			
Zone	p_{s30}		P_S		ps30		PS	
A	21.60	PSF	44.58	PSF	21.60	PSF	44.58	PSF
B	14.80	PSF	30.55	PSF	14.80	PSF	30.55	PSF
C	17.20	PSF	35.50	PSF	17.20	PSF	35.50	PSF
D	11.80	PSF	24.36	PSF	11.80	PSF	24.36	PSF
E	1.70	PSF	3.51	PSF	8.30	PSF	17.13	PSF
F	-13.10	PSF	-27.04	PSF	-6.50	PSF	-13.42	PSF
G	0.60	PSF	1.24	PSF	7.20	PSF	14.86	PSF
H	-11.30	PSF	-23.32	PSF	-4.60	PSF	-9.49	PSF
E_{OH}	-7.60	PSF	-15.69	PSF	-7.60	PSF	-15.69	PSF
G_{OH}	-8.70	PSF	-17.96	PSF	-8.70	PSF	-17.96	PSF





CT Engineering		
STG	Foo Frames	June 4, 2020 at 8:23 AM
20035	max load middle frame	Foo frames W8x67.r2d

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	I (90,270) [i...	I (0,180) [in4]
1	HR1A	W8x67	Column	Wide Flange	A500 Gr.B R...	Typical	19.7	88.6	272
2	HR2	W8x67	Beam	Wide Flange	A500 Gr.B R...	Typical	19.7	88.6	272

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Temp [F]
1	N1	0	0	0
2	N2	0	13.75	0
3	N3	9.665	20.58	0
4	N4	19.33	13.75	0
5	N5	19.33	0	0

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Rotation[k-ft/rad]
1	N1	Reaction	Reaction	
2	N2			Reaction
3	N3			Reaction
4	N4			Reaction
5	N5	Reaction	Reaction	

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lb-out[ft]	Lb-in[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	K-out	K-in	Cb	Function
1	M1	HR1A	13.75			Lb out						Lateral
2	M2	HR2	11.835			Lb out						Lateral
3	M3	HR2	11.835			Lb out						Lateral
4	M4	HR1A	13.75			Lb out						Lateral

Joint Loads and Enforced Displacements (BLC 1 : Dead Load)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft...
1	N3	L	Y	-7.2

Joint Loads and Enforced Displacements (BLC 2 : Snow Load)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft...
1	N3	L	Y	-9

Joint Loads and Enforced Displacements (BLC 3 : Wind Load)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft...
1	N2	L	X	5.17

Member Distributed Loads (BLC 1 : Dead Load)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F,...	Start Location[ft,%]	End Location[ft,%]
1	M2	Y	0	0	0	0
2	M1	Y	0	0	0	0
3	M1	Y	0	0	0	0
4	M2	Y	-.04	-.04	0	0
5	M3	Y	-.04	-.04	0	0

Member Distributed Loads (BLC 2 : Snow Load)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F,...	Start Location[ft,%]	End Location[ft,%]
1	M2	Y	-.05	-.05	0	%100
2	M3	Y	-.05	-.05	0	%100

Load Combination Design

	Description	ASIF	CD	Service	Hot Roll...	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless
1					Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	IBC 16-8		.9	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	IBC 16-9			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	IBC 16-10 (a)		1.25	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	IBC 16-10 (b)		1.15	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	IBC 16-10 (c)		1.15	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	IBC 16-11 (a)		1.25	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	IBC 16-11 (b)		1.15	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	IBC 16-11 (c)		1.15	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	IBC 16-12 (a)		1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	IBC 16-12 (b)		1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	IBC 16-13 (a)		1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	IBC 16-13 (b)		1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14	IBC 16-13 (c)		1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
15	IBC 16-14 (a)		1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16	IBC 16-14 (b)		1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
17	IBC 16-14 (c)		1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
18	IBC 16-15		1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
19	IBC 16-16		1.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Moment [k-ft]	LC
1	N1	max	.648	5	9.165	5	0	2
2		min	-1.462	18	2.444	18	0	2
3	N2	max	0	2	0	2	40.184	13
4		min	0	2	0	2	13.976	2
5	N3	max	0	2	0	2	0	18
6		min	0	2	0	2	0	2
7	N4	max	0	2	0	2	16.792	18
8		min	0	2	0	2	-31.445	5
9	N5	max	-.288	2	9.165	5	0	2
10		min	-1.755	10	2.444	18	0	2
11	Totals:	max	0	2	18.33	5		
12		min	-3.102	10	4.888	18		

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Rotation [rad]	LC
1	N1	max	0	18	0	18	0	2
2		min	0	5	0	5	0	2
3	N2	max	.352	18	0	18	0	2
4		min	-.156	5	-.003	5	0	13
5	N3	max	.374	10	-.033	18	0	2
6		min	0	2	-.227	5	0	18
7	N4	max	.423	10	0	18	0	5
8		min	.069	2	-.003	5	0	18
9	N5	max	0	10	0	18	0	2
10		min	0	2	0	5	0	2

Envelope Member Section Forces

	Member	Sec		Axial[k]	LC	Shear[k]	LC	Moment[k-ft]	LC
1	M1	1	max	9.165	5	1.462	18	0	2
2			min	2.444	18	-.648	5	0	2
3		2	max	9.165	5	1.462	18	2.229	5
4			min	2.444	18	-.648	5	-5.027	18
5		3	max	9.165	5	1.462	18	4.458	5
6			min	2.444	18	-.648	5	-10.053	18
7		4	max	9.165	5	1.462	18	6.687	5
8			min	2.444	18	-.648	5	-15.08	18
9		5	max	9.165	5	1.462	18	8.916	5
10			min	2.444	18	-.648	5	-20.107	18
11	M2	1	max	5.909	13	7.111	5	40.36	5
12			min	2.586	2	1.05	18	5.754	18
13		2	max	5.777	13	6.893	5	19.644	5
14			min	2.518	2	.992	18	2.734	18
15		3	max	5.644	13	6.676	5	-.114	18
16			min	2.45	2	.934	18	-.429	5
17		4	max	5.512	13	6.458	5	-2.791	18
18			min	2.381	2	.876	18	-19.859	5
19		5	max	5.38	13	6.241	5	-5.296	18
20			min	2.313	2	.818	18	-38.645	5
21	M3	1	max	5.38	13	-.818	18	-5.296	18
22			min	2.313	2	-6.241	5	-38.645	5
23		2	max	5.512	13	-.876	18	-2.791	18
24			min	2.381	2	-6.458	5	-19.859	5
25		3	max	5.644	13	-.934	18	-.114	18
26			min	2.45	2	-6.676	5	-.429	5
27		4	max	5.777	13	-.992	18	19.644	5
28			min	2.518	2	-6.893	5	2.734	18
29		5	max	5.909	13	-1.05	18	40.36	5
30			min	2.586	2	-7.111	5	5.754	18
31	M4	1	max	9.165	5	1.755	10	24.131	10
32			min	2.444	18	.288	2	3.962	2
33		2	max	9.165	5	1.755	10	18.098	10
34			min	2.444	18	.288	2	2.972	2
35		3	max	9.165	5	1.755	10	12.065	10
36			min	2.444	18	.288	2	1.981	2
37		4	max	9.165	5	1.755	10	6.033	10
38			min	2.444	18	.288	2	.991	2
39		5	max	9.165	5	1.755	10	0	2
40			min	2.444	18	.288	2	0	2

Envelope Maximum Member Section Forces

	Member		Axial[k]	Loc[ft]	LC	Shear[k]	Loc[ft]	LC	Moment[k-ft]	Loc[ft]	LC
1	M1	max	9.165	0	5	1.462	0	18	8.916	13.75	5
2		min	2.444	0	18	-.648	0	5	-20.107	13.75	18
3	M2	max	5.909	0	13	7.111	0	5	40.36	0	5
4		min	2.313	11.835	2	.818	11.835	18	-38.645	11.835	5
5	M3	max	5.909	11.835	13	-.818	0	18	40.36	11.835	5
6		min	2.313	0	2	-7.111	11.835	5	-38.645	0	5
7	M4	max	9.165	0	5	1.755	0	10	24.131	0	10
8		min	2.444	0	18	.288	0	2	0	13.75	2

Envelope Member End Reactions

	Member	Membe...		Axial[k]	LC	Shear[k]	LC	Moment[k-ft]	LC
1	M1	I	max	9.165	5	1.462	18	0	2
2			min	2.444	18	-.648	5	0	2
3		J	max	9.165	5	1.462	18	8.916	5
4			min	2.444	18	-.648	5	-20.107	18
5	M2	I	max	5.909	13	7.111	5	40.36	5
6			min	2.586	2	1.05	18	5.754	18
7		J	max	5.38	13	6.241	5	-5.296	18
8			min	2.313	2	.818	18	-38.645	5
9	M3	I	max	5.38	13	-.818	18	-5.296	18
10			min	2.313	2	-6.241	5	-38.645	5
11		J	max	5.909	13	-1.05	18	40.36	5
12			min	2.586	2	-7.111	5	5.754	18
13	M4	I	max	9.165	5	1.755	10	24.131	10
14			min	2.444	18	.288	2	3.962	2
15		J	max	9.165	5	1.755	10	0	2
16			min	2.444	18	.288	2	0	2

Envelope AISC 14th(360-10): ASD Steel Code Checks

	Member	Shape	Code Ch...	Loc[ft]	LC	Shear C...	Loc[ft]	LC	Pnc/om [k]	Pnt/om [k]	Mn/om [k-ft]	Cb	Eqn
1	M1	W8x67	- P-Delta...										
2	M2	W8x67	- P-Delta...										
3	M3	W8x67	- P-Delta...										
4	M4	W8x67	- P-Delta...										

Envelope Member Section Deflections Service

	Member	Sec		x [in]	LC	y [in]	LC	L/y' Ratio	LC
1	M1	1	max	0	2	0	2	NC	2
2			min	0	2	0	2	NC	2
3		2	max	0	18	.057	5	NC	2
4			min	0	5	-.129	18	4057.787	18
5		3	max	0	18	.107	5	NC	2
6			min	-.002	5	-.241	18	2536.117	18
7		4	max	0	18	.142	5	NC	2
8			min	-.002	5	-.321	18	2898.42	18
9		5	max	0	18	.156	5	NC	2
10			min	-.003	5	-.352	18	NC	2
11	M2	1	max	.287	18	.087	5	NC	2
12			min	-.129	5	-.204	18	NC	2
13		2	max	.287	18	.042	5	NC	18
14			min	-.13	5	-.21	18	3144.465	5
15		3	max	.287	18	-.022	2	7332.588	18
16			min	-.13	5	-.232	10	1032.51	5
17		4	max	.287	18	-.063	2	4423.407	18
18			min	-.131	5	-.271	13	620.089	5
19		5	max	.286	18	-.082	2	3718.942	18
20			min	-.131	5	-.304	13	520.143	5
21	M3	1	max	.347	10	.189	18	NC	10
22			min	.058	2	-.186	5	520.143	5
23		2	max	.347	10	.195	18	NC	10
24			min	.058	2	-.142	5	620.089	5
25		3	max	.347	10	.208	18	7546.248	18
26			min	.058	2	-.05	5	1032.51	5
27		4	max	.346	10	.228	10	7075.046	2

Envelope Member Section Deflections Service (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	L/y' Ratio	LC
28			min	.058	2	.019	2	813.872	13
29		5	max	.346	10	.243	10	NC	2
30			min	.058	2	.039	2	679.031	13
31	M4	1	max	.003	5	.423	10	NC	2
32			min	0	18	.069	2	NC	2
33		2	max	.002	5	.385	10	NC	2
34			min	0	18	.063	2	2415.091	10
35		3	max	.002	5	.289	10	NC	2
36			min	0	18	.048	2	2113.205	10
37		4	max	0	5	.154	10	NC	2
38			min	0	18	.025	2	3381.128	10
39		5	max	0	2	0	2	NC	2
40			min	0	2	0	2	NC	2

Envelope Beam Deflections

	Member Label	Span		Location [ft]	y' [in]	(n) L'/y' Ratio	LC
1	M2	1	max	.37	-.096	NC	13
2		1	min	11.835	-.186	1040	5
3	M3	1	max	11.465	.227	NC	13
4		1	min	0	-.186	1040	5

Envelope Beam Deflection Checks

	Be...	Design Rule	Span	Defl [in]	Ratio	LC	Defl [in]	Ratio	LC	Defl [in]	Ratio	LC
1	M2	Typical	1	N/A	N/A	N/A	-.121	2340	2(DL)	N/A	N/A	N/A
2	M3	Typical	1	N/A	N/A	N/A	-.121	2340	2(DL)	N/A	N/A	N/A

SUPPLEMENTAL CALCULATIONS
ADDED 01/09.2021

Foo Residence

3453 74th Ave SE, Mercer Island, WA 98040, USA

Latitude, Longitude: 47.57840179999999, -122.2396407

Date	5/7/2020, 11:49:30 AM
Design Code Reference Document	ASCE7-10
Risk Category	II
Site Class	D - Stiff Soil

Type	Value	Description
S_S	1.397	MCE_R ground motion. (for 0.2 second period)
S_1	0.538	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.397	Site-modified spectral acceleration value
S_{M1}	0.806	Site-modified spectral acceleration value
S_{DS}	0.932	Numeric seismic design value at 0.2 second SA
S_{D1}	0.538	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	D	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	1.5	Site amplification factor at 1.0 second
PGA	0.576	MCE_G peak ground acceleration
F_{PGA}	1	Site amplification factor at PGA
PGA_M	0.576	Site modified peak ground acceleration
T_L	6	Long-period transition period in seconds
SsRT	1.397	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	1.458	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	2.867	Factored deterministic acceleration value. (0.2 second)
S1RT	0.538	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.576	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	1.187	Factored deterministic acceleration value. (1.0 second)
PGAd	1.103	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.959	Mapped value of the risk coefficient at short periods
C_{R1}	0.934	Mapped value of the risk coefficient at a period of 1 s

SHEET TITLE: **2015 IBC SEISMIC OVERVIEW**
CT PROJECT # : 20035 Foo Residence

Step #				2015 IBC	ASCE 7-10
1.	OCCUPANCY CATEGORY	TYPE =	II	Table 1604.5	Table 1.5-1
2.	IMPORTANCE FACTOR	I_E =	1.00	Section 1613.1 -> ASCE	Table 1.5-2
3.	Site Class - Per Geo. Engr.	S.C. =	D	Section 1613.3.5 Table 1613.3.3(2)	Section 11.4.2 / Ch. 20 Table 20.3-1
4.	0.2 Sec. Spectral Response	S_S =	1.40	Figure 1613.3.1(1)	Figure 22-1
5.	1.0 Sec. Spectral Response	S_1 =	0.54	Figure 1613.3.1(2)	Figure 22-2
6.	Site Coefficient (short period)	F_a =	1.00	Figure 1613.3.3(1)	Table 11.4-1
7.	Site Coefficient (1.0 second)	Fv =	1.50	Figure 1613.3.3(2)	Table 11.4-2
	$S_{MS} = F_a * S_S$	S_{MS} =	1.40	EQ 16-37	EQ 11.4-1
	$S_{M1} = F_v * S_1$	S_{M1} =	0.81	EQ 16-38	EQ 11.4-2
	$S_{DS} = 2/3 * S_{MS}$	S_{DS} =	0.93	EQ 16-39	EQ 11.4-3
	$S_{D1} = 2/3 * S_{M1}$	S_{D1} =	0.54	EQ 16-40	EQ 11.4-4
8.	Seismic Design Category 0.2s	SDC_S =	D	Table 1613.3.5(1)	Table 11.6-1
9.	Seismic Design Category 1.0s	SDC_1 =	D	Table 1613.3.5(2)	Table 11.6-2
10.	Seismic Design Category	SDC =	D	Max.	Max.
11.	Wood structural panels	---	---	N/A	Table 12.2-1
12.	Response Modification Coef.	R =	6.5	N/A	Table 12.2-1
13.	Overstrength Factor	Ω_0 =	3.0	N/A	Table 12.2-1
14.	Deflection Amplification Factor	C_D =	4.0	N/A	Table 12.2-1
15.	Plan Structural Irregularities	---	No	N/A	Table 12.3-1
16.	Vertical Structural Irregularities	---	No	N/A	Table 12.3-2
17.	Permitted Procedure	Equiv. Lateral Force		---	Table 12.6-1

SHEET TITLE: **2015 IBC EQUIVALENT LATERAL FORCE PROCEDURE PER ASCE 7-10**
CT PROJECT # : 20035 Foo Residence

S_{DS} =	0.93	h_n =	18.00 (ft)	
S_{D1} =	0.54	x =	0.75	ASCE 7-10 (Table 12.8-2)
R =	6.5	C_t =	0.020	ASCE 7-10 (Table 12.8-2)
I_E =	1.0	T =	0.175	ASCE 7-10 (EQ 12.8-7)
S_1 =	0.54	k =	1	ASCE 7-10 (Section 12.8.3)
		T_L =	16	ASCE 7-10 (Section 11.4.5: Figure 22-15)

$C_S = S_{DS} / (R/I_E)$		0.143 W	ASCE 7-10 (EQ 12.8-2)
$C_S = S_{D1} / (T^*(R/I_E))$	*(for $T \le T_L$)*	0.474 W	ASCE 7-10 (EQ 12.8-3) (MAX.)
$C_S = (S_{D1} * T_L)/ (T^2*(R/I_E))$	*(for $T \ge T_L$)*	0.000 W	ASCE 7-10 (EQ 12.8-4) (MAX.)
C_S = 0.01		0.010 W	ASCE 7-10 (EQ 12.8-5) (MIN.)
$C_S = (0.5\ S_1)/(R/I_E)$		0.041 W	ASCE 7-10 (EQ 12.8-6) (MIN.if S1> 0.6g)

CONTROLLING DESIGN BASE SHEAR = 0.143 W

VERTICAL DISTRIBUTION OF SEISMIC FORCES PER ASCE 7-10 SECTION 12.8.3

DIAPHR. LEVEL	Story Height	Elevation (ft)	Height h_i (ft)	AREA (sqft)	DL (ksf)	w_i (kips)	$w_i * h_i^k$ (kips)	(EQ 12.8-11) (EQ 12.8-12) $C_{vx} = \frac{w_x * h_x^k}{\sum w_i * h_i^k}$	DESIGN Vi	SUM DESIGN Vi
Roof	---	18.00	18.00	3707	0.025	92.675	1668.2	0.63	**11.72**	11.72
1st	7.00	11.00	11.00	3572	0.025	89.3	982.3	0.37	**6.90**	18.62
0	11.00	0.00	0.00			0	0.0	0.00	**0.00**	18.62
	0.00	0.00								
					SUM =	182.0	2650.5	1.00	**18.62**	
					E = V =	**26.07**				
					E/1.4 =	**18.62**				

SHEET TITLE: **MAIN WIND FORCE RESISTING SYSTEM USING LOADS FROM ASCE 7-10 CHAPTER 28, PART 2**
CT PROJECT # : 20035 Foo Residence

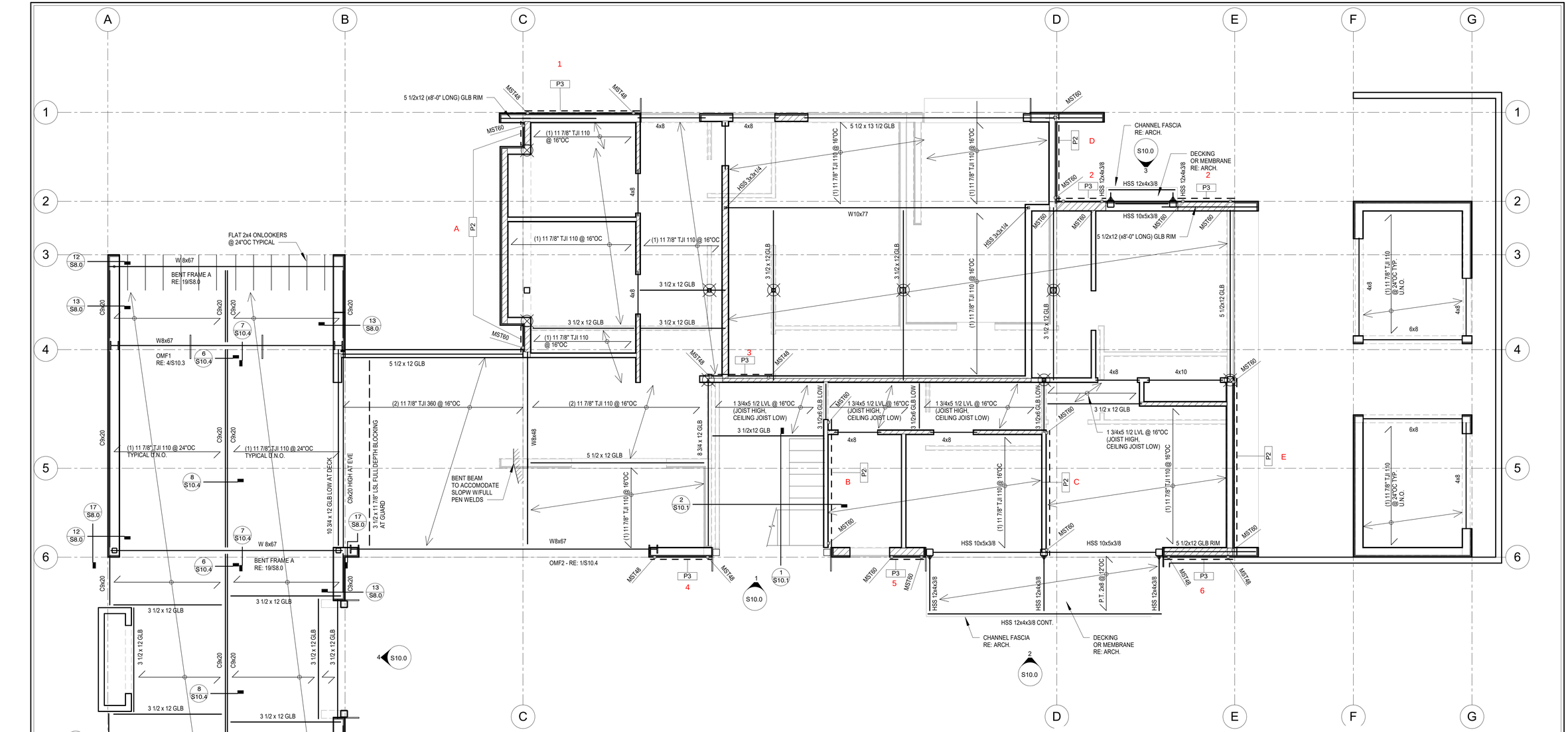
	F-B	S-S		ASCE 7-10	2015 IBC
Ridge Elevation (ft) =	31.50	31.50	ft.		
Roof Plate Ht. =	18.00	18.00			
Roof Mean Ht. =	24.75	24.75	ft.	---	---
Building Width =	96.0	62.0	ft.		
Basic Wind Speed $_{3\ Sec.\ Gust}$ =	110	110	mph	Fig. 26.5-1A thru C	Figure 1609A-C
Exposure=	C	C			
Roof Type=	Gable	Gable			
$p_{S30\ A}$ =	21.6	21.6	psf	Figure 28.6-1	
$p_{S30\ B}$ =	14.8	14.8	psf	Figure 28.6-1	
$p_{S30\ C}$ =	17.2	17.2	psf	Figure 28.6-1	
$p_{S30\ D}$ =	11.8	11.8	psf	Figure 28.6-1	
λ =	1.35	1.35		Figure 28.6-1	
K_{zt} =	1.60	1.60		Section 26.8	
windward/lee=	1.00	1.00			
$\lambda * K_{zt} *$ Iw * windward/lee :	2.16	2.16			
$p_S = \lambda * Kzt * I * p_{s30}$ =				(Eq. 28.6-1)	
$p_{S\ A}$ =	**46.66**	**46.66**	psf	(Eq. 28.6-1)	
$p_{S\ B}$ =	**31.97**	**31.97**	psf	(Eq. 28.6-1)	
$p_{S\ C}$ =	**37.15**	**37.15**	psf	(Eq. 28.6-1)	
$p_{S\ D}$ =	**25.49**	**25.49**	psf	(Eq. 28.6-1)	
$p_{S\ A\ and\ C\ average}$ =	41.9	41.9	psf		
$p_{S\ B\ and\ D\ average}$ =	28.7	28.7	psf		
a =	6.2	6.2		Figure 28.6-1	
2a =	12.4	12.4			
width - 2*2a =	71.2	37.2			

MAIN WIND - ASCE 7-10 CHAPTER 28 PART 2					**Areas (F-B)**					**Areas (S-S)**				**(F-B)**	**(S-S)**		**Wind (F-B)**		**Wind (S-S)**	
						1.00			1.00		1.00			1.00	**10 psf min.**	**16 psf min.**				
DIAPHR. LEVEL	Story Height	Elevation (ft)	Height hi (ft)		h (ft)	A_A (sq. ft)	A_B (sq. ft)	A_C (sq. ft)	A_D (sq. ft)	A_A (sq. ft)	A_B (sq. ft)	A_C (sq. ft)	A_D (sq. ft)	**wind per 6.1.4.1**	**wind per 6.1.4.1**		WIND Vi (F-B)	SUM V (F-B)	WIND Vi (S-S)	SUM V (S-S)
		31.50			13.5	0	334.8	0	961.2	0	334.8	0	502.2							
Roof	---	18.00	18.00		3.5	86.8	0	249.2	0	86.8	0	130.2	0	26.1	16.9		48.51	48.51	32.39	32.39
1st	7.00	11.00	11.00		9.0	223.2	0	640.8	0	223.2	0	334.8	0	13.8	8.9		34.22	82.73	22.85	55.24
0	11.00	0.00	0.00			0	0	0	0	0	0	0	0	0.0	0.0		0.00		0.00	
0	0.00	0.00																		
								A_F =	2496			A_F =	1612	39.9	25.8		**V (F-B)=**	**82.73**	**V (S-S)=**	**55.24**
														kips	**kips**			**kips**		**kips**

SHEET TITLE: **MAIN WIND FORCE RESISTING SYSTEM USING LOADS FROM ASCE 7-10 CHAPTER 28, PART 1**
CT PROJECT # : 20035 Foo Residence

MAIN WIND - 7-10 CHAPTER 28 PART 1				Wind (F-B)		Wind (S-S)		Min/Part 2 (Max.) Wind (F-B)		Min/Part 2 (Max.) Wind (S-S)	
DIAPHR. LEVEL	Story Height	Elevation (ft)	Height hi (ft)	DESIGN Vi (F-B)	SUM V (F-B)	DESIGN Vi (S-S)	SUM V (S-S)	LRFD Vi (F-B)	SUM V (F-B)	LRFD Vi (S-S)	SUM V (S-S)
Roof	---	18.00	18.00	0.00	0.00	0.00	0.00	48.51	48.51	32.39	32.39
1st	7.00	11.00	11.00	0.00	0.00	0.00	0.00	34.22	82.73	22.85	55.24
0	11.00	0.00									
				V (F-B)=	**0.00 kips**	**V (S-S)=**	**0.00 kips**	**V (F-B)=**	**82.73 kips**	**V (S-S)=**	**55.24 kips**

DESIGN WIND - Min./Part 2/Part 1 ASD				Wind (F-B)			Wind (S-S)		
DIAPHR. LEVEL	Story Height	Elevation (ft)	Height hi (ft)	**LRFD Vi (F-B)**	**DESIGN Vi**	**SUM V (F-B)**	**LRFD Vi (S-S)**	**DESIGN Vi**	**SUM V (S-S)**
Roof	7.00	10	10	**48.51**	**29.11**	**29.11**	**32.39**	**19.43**	**19.43**
1st	11.00	0	0	**34.22**	**20.53**	**49.64**	**22.85**	**13.71**	**33.15**
0	0.00	0							
				V (F-B)=		**49.64 kips**	**V (S-S)=**		**33.15 kips**



FRAMING LEGEND

- FB — FLUSH BEAM
- DB — DROPPED BEAM
- HR — HEADER - SEE 6/S9.0
- GLB — GLUED-LAMINATED BEAM
- GT — GIRDER TRUSS
- ③ — INDICATES NO. OF BUNDLED STUDS PROVIDE (2) TYP. U.N.O.
- 4X4 — POST TYPE PER PLAN CONTINUE TO FOUNDATION OR BEAM BELOW
- BEAM/JOIST HANGER PER PLAN/SCHEDULE
- BEARING WALL PER SCHEDULE
- P6 — WOOD PANEL SHEARWALL PER SCHEDULE: 14/S1.1
- P6 — SHEARWALL WITH FORCE TRANSFER DETAIL: 8/S1.2 NOTE: SHEATHING BELOW WINDOW NOT SHOWN ON PLAN FOR CLARITY
- LSTHD8 / LSTHD8 — HOLDOWN PER SCHEDULE: 10/S1.2 LOCATED AT BOTTOM OF WALL SHOWN
- OVER FRAMING AT ROOF

Note: ALL SECTION CUTS ARE TYPICAL

FRAMING NOTES

1. PROVIDE 6x10 FOR ALL EXTERIOR HEADERS U.N.O. PER PLAN.
2. RE: 1/S9.0 FOR INTERIOR HEADERS U.N.O. PER PLAN.
3. RE: NOTES S1.0 FOR FRAMING SPECIES AND GRADE, HANGERS, SHEATHING, NAILS, GLB'S AND ENGINEERED LUMBER SPECIFICATIONS ETC..
4. ALL BEAMS AND HEADERS SHALL HAVE A MINIMUM OF (1) FULL HEIGHT STUD EACH END (KING STUD) FOR BRACING.
5. ALL EXTERIOR WALLS ARE P6 SHEARWALLS U.N.O. PER PLAN.
6. SEE SHEET S9.0, S9.1 FOR TYPICAL FRAMING DETAILS.
7. ALL EXTERIOR WALLS ARE 2x6 AT 16"O.C.

   ALL INTERIOR WALLS ARE 2x4 AT 16"O.C. MINIMUM - PROVIDE 2x6 AT 16"O.C. WHERE ARCHITECT SPECIFIES 2x6 CONSTRUCTION.

FRAMING KEY NOTES

22.1 22.2 22.3 22.4 22.5 22.6

GRAPHIC SCALE

-4' 0' 2' 4' 8'

(1 inch = 4 foot)

SCALE: 1/4" = 1'-0"

1 Level 2 Floor Framing Plan

CT ENGINEERING INC.
Structural Engineers
180 Nickerson Street Suite 302 Seattle, WA 98109
206.285.4512 (V) 206.285.0618 (F)
www.ctengineering.com

06/11/20

No.	REVISION	DATE

JOB #: 20035
ENG: BJM
CAD: JMA
SCALE: As indicated

KEY ISSUE DATES:
SD: SD
DD: DD
CD: CD
PERMIT: 06.11.2020
OTHER: BID

Level 2 Framing Plan - Low Roof

Foo Residence
3453 74th Ave SE
Mercer Island, WA 98040

S2.2

6/11/2020 2:47:33 PM
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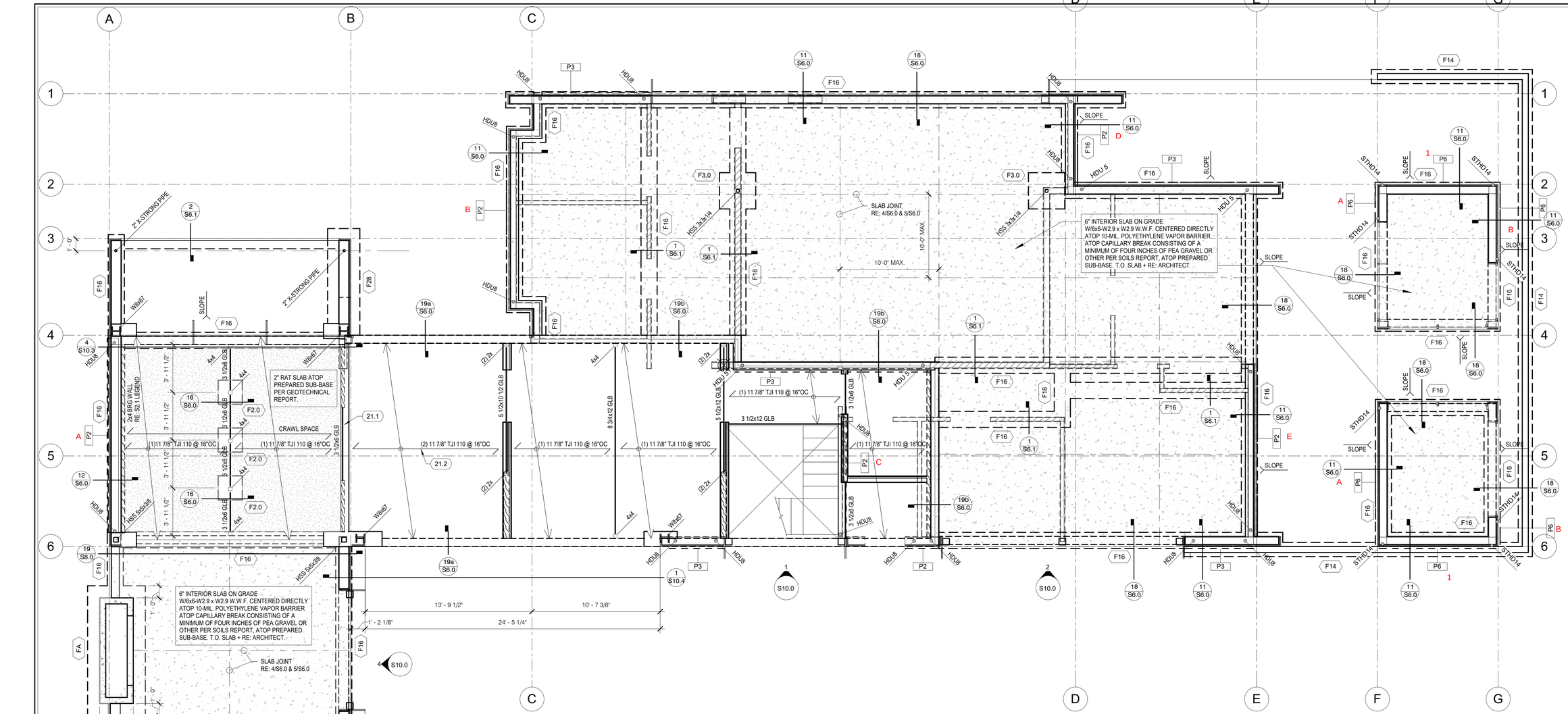


FOUNDATION LEGEND

- F1 — SEE FOOTING TYPE THIS SHEET
- (-3'-0") — TOP OF FOOTING ELEVATION
- 2'-0" — TOP OF CONCRETE ELEVATION
- S.J. — SHRINKAGE CONTROL JOINT PER DETAIL 4/S6.0
- C.J. — CONSTRUCTION JOINT PER DETAIL 5/S6.0
- S — STEPPED FOOTING PER DETAIL 6/S6.0
- SLOPE — SLOPE SLAB 1/4" PER FOOT U.N.O. PER PLAN
- HDU 2 — HOLDOWNS INDICATED ON THE FOUNDATION PLAN ARE SHOWN HALFTONE FOR REFERENCE ONLY. REFER TO THE S1.2 SHEET FOR SPECIFICS OF EMBEDDED ITEMS RELATED TO HOLDOWNS.

Note:
ALL SECTION CUTS ARE TYPICAL

FOUNDATION NOTES

1. ALL SOIL BEARING SURFACES ARE SUBJECT TO INSPECTION AND APPROVAL BY THE GEOTECHNICAL ENGINEER PRIOR TO REINFORCING AND CONCRETE PLACEMENT.
2. CENTER INTERIOR FOOTINGS ON WALLS OR COLUMNS TYPICAL U.N.O.
3. VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
4. SEE ARCHITECTURAL PLANS FOR WALL LOCATIONS.
5. CONCRETE WALLS ARE 8" THICK TYPICAL U.N.O.
6. SEE SHEET S2.2 FOR WOOD FRAMING LEGEND, NOTES, AND SCHEDULES.
7. PROVIDE 4" DIAMETER PERFERATED FOOTING DRAINS AT PERIMETER OF FOUNDATIONS TYPICAL. PROVIDE 4" DIAMETER TIGHTLINES FOR DOWNSPOUTS.

FOUNDATION KEY NOTES

- 21.1 — 6'-0" WIDE ACCESS OPENING ALLOWED.
- 21.2 — OPTION TO USE 1-TJI 110 @ 16"O.C. PROVIDED ANOTHER 8 3/4" x 12" BEAM IS ADDED IN THE NORTH SOUTH DIRECTION IN THE BASEMENT, CUTTING THE MAXIMUM JOIST SPAN DOWN TO 12'-3".
- 21.3 —
- 21.4 —
- 21.5 —

FOUNDATION SCHEDULE

MARK	DEPTH	WIDTH	LENGTH	REINFORCING	DETAILS
F10	12"	1'-0"	RE: PLAN	(2) #5 CONT. BOTTOM	-
F16 (EXT)	10"	1'-6"	RE: PLAN	(2) #5 CONT. BOTTOM	11 & 12 / S6.0
F16 (INT)	12"	1'-6"	RE: PLAN	(1) #5 TOP & BOTTOM	1 / S6.1
F2.0	12"	2'-0"	2'-0"	(3) #5 EACH WAY BOTTOM	7 / S6.0
F3.0	12"	3'-0"	3'-0"	(4) #5 EACH WAY BOTTOM	7 / S6.0
F4.0	12"	4'-0"	4'-0"	(5) #5 EACH WAY BOTTOM	7 / S6.0
FA	24"	RE: PLAN	RE: PLAN	#5 AT 6"OC SHORT AND LONG BOTTOM	-

NOTE:
PLANS PREPARED USING ARCHITECTURAL BACKGROUNDS RECEIVED 06/04/2020.

GRAPHIC SCALE
-4' 0' 2' 4' 8'
(1 inch = 4 foot)

SCALE: 1/4" = 1'-0"
1 Level 1 Framing-Fdn Plan

6/11/2020 2:47:32 PM
M:\20035 Foo Residence\STRUCT\20035 Foo Residence IR20).rvt

CT ENGINEERING INC.
Structural Engineers
180 Nickerson Street Suite 302 Seattle, WA 98109
206.285.4512 (V) 206.285.0618 (F)
www.ctengineering.com

06/11/20

No.	REVISION	DATE

JOB #: 20035
ENG: BJM
CAD: JMA
SCALE: As indicated

KEY ISSUE DATES:
SD: SD
DD: DD
CD: CD
PERMIT: 06.11.2020
OTHER: BD

Level 1 Framing - Fdn Plan

Foo Residence
3453 74th Ave SE
Mercer Island, WA 98040

S2.1

SHEET TITLE: **LATERAL F-B (front to back)**
CT PROJECT # : 20035 Foo Residence

Diaph. Level: **Roof**
Panel Height = 8 ft.
Max. aspect = 3.5 SDPWS-15 Table 4.3.4
Min. Lwall = 2.29 ft.

Seismic V i = 11.72 kips
Sum Seismic V i = 11.72 kips

Design Wind F-B V i = 29.11 kips
Sum Wind F-B V i = 29.11 kips

Grid	ID	T.A. (sqft)	Lwall (ft)	$L_{DL\ eff.}$ (ft)	C_0 (per SDPWS-15 Table 4.3.3.5)	w dl (klf)	Wind V level (kip)	Wind V abv. (kip)	E.Q. V level (kip)	E.Q. V abv. (kip)	ρ (ρ = **1.00**)	*2w/h*	E.Q. *v i* (plf)	**E.Q. Type**	**Wind Type**	Wind *v i* (plf)	E.Q. OTM (kip-ft)	E.Q. R_{OTM} (kip-ft)	E.Q. U_{net} (kip)	E.Q. U_{sum} (kip)	Wind OTM (kip-ft)	Wind R_{OTM} (kip-ft)	Wind U_{net} (kip)	Wind U_{sum} (kip)	**Max. U_{sum} (kip)**
Ext	A*	318.88	4.0	19.0	1.00	0.15	2.50	0.00	1.01	0.00	1.00	1.00	252	~~**P4**~~	~~**P2**~~	626	8.07	5.13	0.88	0.88	20.03	3.80	4.87	4.87	~~**4.87**~~
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Int	B	837.06	10.5	12.5	1.00	0.15	6.57	0.00	2.65	0.00	1.00	1.00	252	**P4**	**P2**	626	21.17	8.86	1.25	1.25	52.58	6.56	4.68	4.68	**4.68**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Int	C	797.2	10.0	12.0	1.00	0.15	6.26	0.00	2.52	0.00	1.00	1.00	252	**P4**	**P2**	626	20.17	8.10	1.29	1.29	50.07	6.00	4.72	4.72	**4.72**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	D	617.83	7.8	9.8	1.00	0.15	4.85	0.00	1.95	0.00	1.00	1.00	252	**P4**	**P2**	626	15.63	5.10	1.49	1.49	38.81	3.78	4.95	4.95	**4.95**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	E	1136	14.3	16.3	1.00	0.15	8.92	0.00	3.59	0.00	1.00	1.00	252	**P4**	**P2**	626	28.74	15.63	0.96	0.96	71.36	11.58	4.40	4.40	**4.40**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
	3707	3707.0	46.5		46.5 = L eff.		29.11	0.00	11.72	0.00															

ΣV_{wind} 29.11 ΣV_{EQ} 11.72

Notes: * denotes a wall with force transfer

SHEET TITLE: **LATERAL F-B (front to back)**
CT PROJECT # : 20035 Foo Residence

Diaph. Level: **1st**
Panel Height = 11 ft.
Max. aspect = 3.5 SDPWS-15 Table 4.3.4
Min. Lwall = 3.14 ft.

Seismic V i = 6.90 kips
Sum Seismic V i = 18.62 kips

Design Wind F-B V i = 20.53 kips
Sum Wind F-B V i = 49.64 kips

Grid	ID	T.A. (sqft)	Lwall (ft)	$L_{DL\ eff.}$ (ft)	C_0 (per SDPWS-15 Table 4.3.3.5)	w dl (klf)	Wind V level (kip)	Wind V abv. (kip)	E.Q. V level (kip)	E.Q. V abv. (kip)	ρ (ρ = 1.00)	*2w/h*	E.Q. *v i* (plf)	**E.Q. Type**	**Wind Type**	Wind *v i* (plf)	E.Q. OTM (kip-ft)	E.Q. R_{OTM} (kip-ft)	E.Q. U_{net} (kip)	E.Q. U_{sum} (kip)	Wind OTM (kip-ft)	Wind R_{OTM} (kip-ft)	Wind U_{net} (kip)	Wind U_{sum} (kip)	**Max. U_{sum} (kip)**
Ext	A	950.72	17.5	19.5	1.00	0.15	5.46	7.75	1.84	3.12	1.00	1.00	283	**P4**	**P2**	755	54.53	23.03	1.87	1.87	145.33	17.06	7.62	7.62	**7.62**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	B	814.9	15.0	15.0	1.00	0.25	4.68	6.64	1.57	2.67	1.00	1.00	283	**P4**	**P2**	755	46.74	25.31	1.49	1.49	124.57	18.75	7.38	7.38	**7.38**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Int	C	611.18	11.3	13.3	1.00	0.25	3.51	4.98	1.18	2.01	1.00	1.00	283	**P4**	**P2**	755	35.05	16.77	1.73	1.73	93.43	12.42	7.65	7.65	**7.65**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	D	434.62	8.0	8.0	1.00	0.25	2.50	3.54	0.84	1.43	1.00	1.00	283	**P4**	**P2**	755	24.93	7.20	2.42	2.42	66.44	5.33	8.33	8.33	**8.33**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	E	760.58	14.0	14.0	1.00	0.25	4.37	6.20	1.47	2.50	1.00	1.00	283	**P4**	**P2**	755	43.62	22.05	1.55	1.55	116.26	16.33	7.06	7.06	**7.06**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	-0.12	-0.12	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
	3572	3572.0	65.8		65.8 = L eff.		20.53	29.11	6.90	11.72	1.00														
							ΣV_{wind}	49.64	ΣV_{EQ}	18.62															

Notes: * denotes a wall with force transfer

SHEET TITLE: **LATERAL S-S (side to side)**
CT PROJECT # : 20035 Foo Residence

Diaph. Level: **Roof**
Panel Height = 8 ft.
Max. aspect = 3.5 SDPWS-15 Table 4.3.4
Min. Lwall = 2.29 ft.

Seismic V i = 12.17 kips
Sum Seismic V i = 12.17 kips

Design Wind F-B V i = 19.43 kips
Sum Wind F-B V i = 19.43 kips

Wall	ID	T.A. (sqft)	Lwall (ft)	$L_{DL\ eff.}$ (ft)	C_0	w dl (klf)	Wind V level (kip)	Wind V abv. (kip)	E.Q. V level (kip)	E.Q. V abv. (kip)	ρ	ρ = **1.00** 2w/h	E.Q. v_i (plf)	**E.Q. Type**	**Wind Type**	Wind v_i (plf)	E.Q. OTM (kip-ft)	E.Q. R_{OTM} (kip-ft)	E.Q. U_{net} (kip)	E.Q. U_{sum} (kip)	Wind OTM (kip-ft)	Wind R_{OTM} (kip-ft)	Wind U_{net} (kip)	Wind U_{sum} (kip)	**Max. U_{sum} (kip)**
						per SDPWS-15 Table 4.3.3.5																			
Ext	1	1040.1	9.8	11.8	1.00	0.15	5.45	0.00	3.41	0.00	1.00	1.00	350	**P3**	**P3**	559	27.31	7.73	2.16	2.16	43.62	5.73	4.17	4.17	**4.17**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	2	453.37	4.3	5.3	1.00	0.15	2.38	0.00	1.49	0.00	1.00	1.00	350	**P3**	**P3**	559	11.91	1.51	2.90	2.90	19.01	1.12	5.00	5.00	**5.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Int	3	613.39	5.8	7.8	1.00	0.15	3.22	0.00	2.01	0.00	1.00	1.00	350	**P3**	**P3**	559	16.11	3.01	2.58	2.58	25.73	2.23	4.62	4.62	**4.62**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Int	4	560.05	5.3	7.3	1.00	0.15	2.94	0.00	1.84	0.00	1.00	1.00	350	**P3**	**P3**	559	14.71	2.57	2.65	2.65	23.49	1.90	4.71	4.71	**4.71**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	5	400.04	3.8	5.8	1.00	0.15	2.10	0.00	1.31	0.00	1.00	0.94	374	**P3**	**P3**	559	10.51	1.46	2.94	2.94	16.78	1.08	5.09	5.09	**5.09**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	6	640.06	6.0	8.0	1.00	0.15	3.36	0.00	2.10	0.00	1.00	1.00	350	**P3**	**P3**	559	16.81	3.24	2.54	2.54	26.84	2.40	4.58	4.58	**4.58**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
	3707	3707.0	34.8		34.8	= L eff.	19.43	0.00	12.17	0.00															
							ΣV_{wind}	19.43	ΣV_{EQ}	12.17															

Notes: * denotes a wall with force transfer

SHEET TITLE: **LATERAL S-S (side to side)**
CT PROJECT # : 20035 Foo Residence

Diaph. Level: **1st**
Panel Height = 11 ft.
Max. aspect = 3.5 SDPWS-15 Table 4.3.4
Min. Lwall = 3.14 ft.

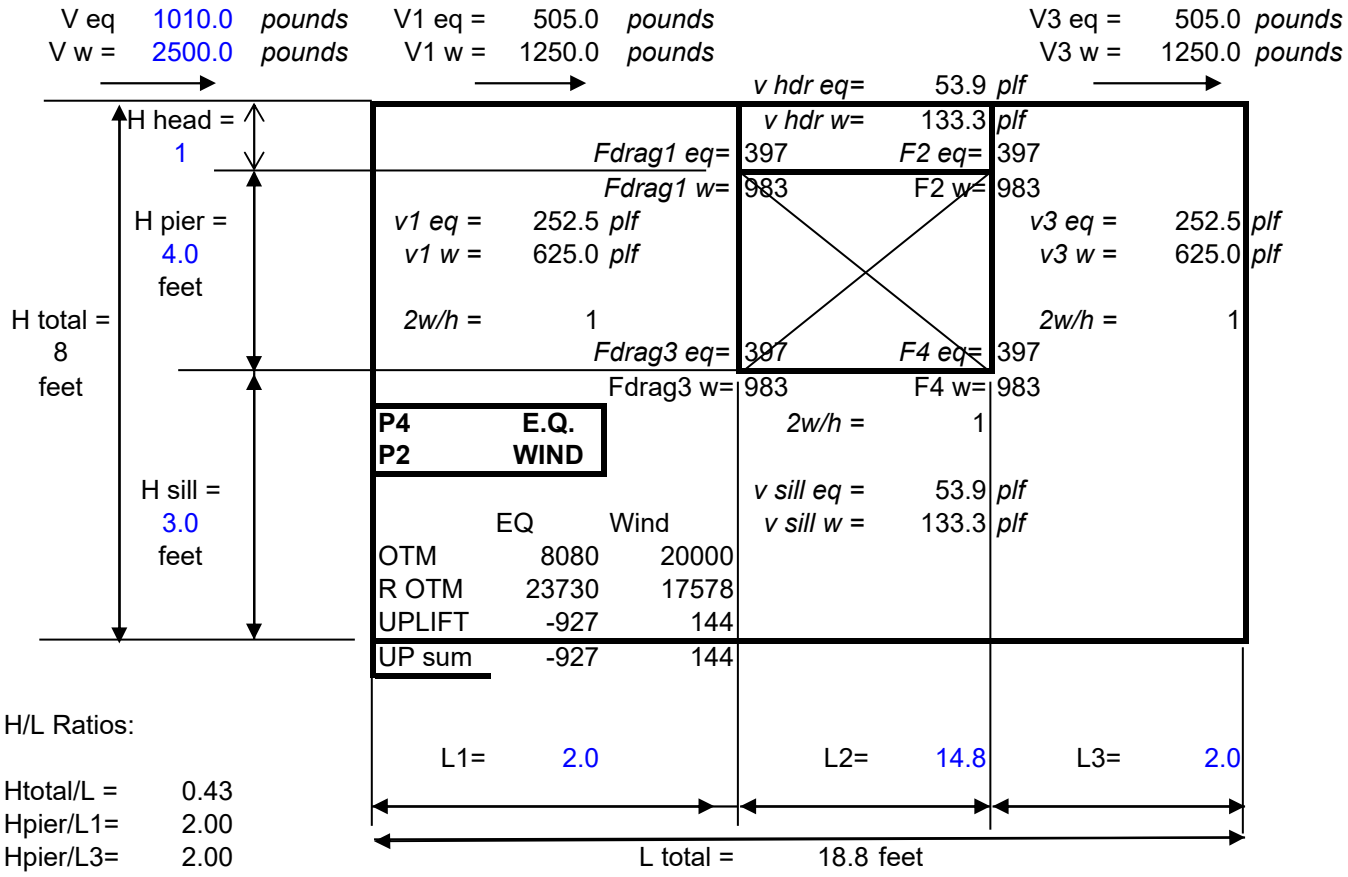
Seismic V i = 6.90 kips
Sum Seismic V i = 18.62 kips

Design Wind F-B V i = 13.71 kips
Sum Wind F-B V i = 33.15 kips

Wall	ID	T.A. (sqft)	Lwall (ft)	$L_{DL\ eff.}$ (ft)	C_0	w dl (klf)	Wind V level (kip)	Wind V abv. (kip)	E.Q. V level (kip)	E.Q. V abv. (kip)	ρ = **1.00**	2w/h	E.Q. v i (plf)	**E.Q. Type**	**Wind Type**	Wind v i (plf)	E.Q. OTM (kip-ft)	E.Q. R_{OTM} (kip-ft)	E.Q. U_{net} (kip)	E.Q. U_{sum} (kip)	Wind OTM (kip-ft)	Wind R_{OTM} (kip-ft)	Wind U_{net} (kip)	Wind U_{sum} (kip)	**Max. U_{sum} (kip)**
				per SDPWS-15 Table 4.3.3.5																					
Ext	1	611	9.8	9.8	1.00	0.25	2.35	3.32	1.18	2.01	1.00	1.00	327	**P3**	**P3**	581	35.04	10.69	2.68	2.68	62.37	7.92	5.99	5.99	**5.99**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	2	940	15.0	15.0	1.00	0.25	3.61	5.11	1.82	3.08	1.00	1.00	327	**P3**	**P3**	581	53.91	25.31	2.00	2.00	95.95	18.75	5.39	5.39	**5.39**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	3	1065.3	17.0	19.0	1.00	0.25	4.09	5.80	2.06	3.50	1.00	1.00	327	**P3**	**P3**	581	61.10	36.34	1.52	1.52	#####	26.92	5.01	5.01	**5.01**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	4	329	5.3	7.3	1.00	0.25	1.26	1.79	0.64	1.08	1.00	0.95	342	**P3**	**P3**	581	18.87	4.28	3.18	3.18	33.58	3.17	6.63	6.63	**6.63**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	5	250.67	4.0	6.0	1.00	0.25	0.96	1.36	0.48	0.82	1.00	0.73	449	**P2**	**P3**	581	14.38	2.70	3.50	3.50	25.59	2.00	7.08	7.08	**7.08**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	6	376	6.0	8.0	1.00	0.25	1.44	2.05	0.73	1.23	1.00	1.00	327	**P3**	**P3**	581	21.56	5.40	3.03	3.03	38.38	4.00	6.45	6.45	**6.45**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
	3572	3572.0	57.0		57.0 = L eff.		13.71	19.43	6.90	11.72															
							ΣV_{wind}	33.15	ΣV_{EQ}	18.62															

Notes: * denotes a wall with force transfer

JOB #: 20035
ID: **A**



H/L Ratios:

Htotal/L =	0.43
Hpier/L1=	2.00
Hpier/L3=	2.00

SHEET TITLE: **2015 IBC SEISMIC OVERVIEW**
CT PROJECT # : 20035 Foo Residence Shed

Step #				2015 IBC	ASCE 7-10
1.	OCCUPANCY CATEGORY	TYPE =	II	Table 1604.5	Table 1.5-1
2.	IMPORTANCE FACTOR	I_E =	1.00	Section 1613.1 -> ASCE	Table 1.5-2
3.	Site Class - Per Geo. Engr.	S.C. =	D	Section 1613.3.5 Table 1613.3.3(2)	Section 11.4.2 / Ch. 20 Table 20.3-1
4.	0.2 Sec. Spectral Response	S_S =	1.40	Figure 1613.3.1(1)	Figure 22-1
5.	1.0 Sec. Spectral Response	S_1 =	0.54	Figure 1613.3.1(2)	Figure 22-2
6.	Site Coefficient (short period)	F_a =	1.00	Figure 1613.3.3(1)	Table 11.4-1
7.	Site Coefficient (1.0 second)	Fv =	1.50	Figure 1613.3.3(2)	Table 11.4-2
	$S_{MS} = F_a * S_S$	S_{MS} =	1.40	EQ 16-37	EQ 11.4-1
	$S_{M1} = F_v * S_1$	S_{M1} =	0.81	EQ 16-38	EQ 11.4-2
	$S_{DS} = 2/3 * S_{MS}$	S_{DS} =	0.93	EQ 16-39	EQ 11.4-3
	$S_{D1} = 2/3 * S_{M1}$	S_{D1} =	0.54	EQ 16-40	EQ 11.4-4
8.	Seismic Design Category 0.2s	SDC_S =	D	Table 1613.3.5(1)	Table 11.6-1
9.	Seismic Design Category 1.0s	SDC_1 =	D	Table 1613.3.5(2)	Table 11.6-2
10.	Seismic Design Category	SDC =	D	Max.	Max.
11.	Wood structural panels	---	---	N/A	Table 12.2-1
12.	Response Modification Coef.	R =	6.5	N/A	Table 12.2-1
13.	Overstrength Factor	Ω_0 =	3.0	N/A	Table 12.2-1
14.	Deflection Amplification Factor	C_D =	4.0	N/A	Table 12.2-1
15.	Plan Structural Irregularities	---	No	N/A	Table 12.3-1
16.	Vertical Structural Irregularities	---	No	N/A	Table 12.3-2
17.	Permitted Procedure	Equiv. Lateral Force		---	Table 12.6-1

SHEET TITLE: **2015 IBC EQUIVALENT LATERAL FORCE PROCEDURE PER ASCE 7-10**
CT PROJECT # : 20035 Foo Residence Shed

S_{DS} =	0.93	h_n =	11.00 (ft)	
S_{D1} =	0.54	x =	0.75	ASCE 7-10 (Table 12.8-2)
R =	6.5	C_t =	0.020	ASCE 7-10 (Table 12.8-2)
I_E =	1.0	T =	0.121	ASCE 7-10 (EQ 12.8-7)
S_1 =	0.54	k =	1	ASCE 7-10 (Section 12.8.3)
		T_L =	16	ASCE 7-10 (Section 11.4.5: Figure 22-15)

$C_S = S_{DS} / (R/I_E)$		0.143 W	ASCE 7-10 (EQ 12.8-2)
$C_S = S_{D1} / (T^*(R/I_E))$	*(for $T \le T_L$)*	0.685 W	ASCE 7-10 (EQ 12.8-3) (MAX.)
$C_S = (S_{D1} * T_L)/ (T^2*(R/I_E))$	*(for $T \ge T_L$)*	0.000 W	ASCE 7-10 (EQ 12.8-4) (MAX.)
$C_S = 0.01$		0.010 W	ASCE 7-10 (EQ 12.8-5) (MIN.)
$C_S = (0.5\ S_1)/(R/I_E)$		0.041 W	ASCE 7-10 (EQ 12.8-6) (MIN.if S1> 0.6g)

CONTROLLING DESIGN BASE SHEAR = 0.143 W

VERTICAL DISTRIBUTION OF SEISMIC FORCES PER ASCE 7-10 SECTION 12.8.3

DIAPHR. LEVEL	Story Height	Elevation (ft)	Height h_i (ft)	AREA (sqft)	DL (ksf)	w_i (kips)	$w_i * h_i^k$ (kips)	(EQ 12.8-11) (EQ 12.8-12) $C_{vx} = \frac{w_x * h_x^k}{\sum w_i * h_i^k}$	DESIGN Vi	SUM DESIGN Vi
Roof	---	11.00	11.00	120	0.025	3	33.0	1.00	**0.31**	0.31
1st	11.00	0.00	0.00	0	0.000	0	0.0	0.00	**0.00**	0.31
0	0.00	0.00	0.00			0	0.0	0.00	**0.00**	0.31
	0.00	0.00								
					SUM =	3.0	33.0	1.00	**0.31**	
					E = V =	**0.43**				
					E/1.4 =	**0.31**				

SHEET TITLE: **MAIN WIND FORCE RESISTING SYSTEM USING LOADS FROM ASCE 7-10 CHAPTER 28, PART 2**
CT PROJECT # : 20035 Foo Residence Shed

	F-B	S-S		ASCE 7-10	2015 IBC
Ridge Elevation (ft) =	12.25	12.25	ft.		
Roof Plate Ht. =	11.00	11.00			
Roof Mean Ht. =	11.63	11.63	ft.	---	---
Building Width =	10.0	12.0	ft.		
Basic Wind Speed $_{3\ Sec.\ Gust}$ =	110	110	mph	Fig. 26.5-1A thru C	Figure 1609A-C
Exposure=	C	C			
Roof Type=	Gable	Gable			
$p_{S30\ A}$ =	19.2	19.2	psf	Figure 28.6-1	
$p_{S30\ B}$ =	-10.0	-10.0	psf	Figure 28.6-1	
$p_{S30\ C}$ =	12.7	12.7	psf	Figure 28.6-1	
$p_{S30\ D}$ =	-5.9	-5.9	psf	Figure 28.6-1	
λ =	1.35	1.35		Figure 28.6-1	
K_{zt} =	1.60	1.60		Section 26.8	
windward/lee =	1.00	1.00			
$\lambda * K_{zt} *$ Iw * windward/lee :	2.16	2.16			
$p_S = \lambda * Kzt * I * p_{s30}$ =				(Eq. 28.6-1)	
$p_{S\ A}$ =	**41.47**	**41.47**	psf	(Eq. 28.6-1)	
$p_{S\ B}$ =	**-21.60**	**-21.60**	psf	(Eq. 28.6-1)	
$p_{S\ C}$ =	**27.43**	**27.43**	psf	(Eq. 28.6-1)	
$p_{S\ D}$ =	**-12.74**	**-12.74**	psf	(Eq. 28.6-1)	
$p_{S\ A\ and\ C\ average}$ =	34.5	34.5	psf		
$p_{S\ B\ and\ D\ average}$ =	-17.2	-17.2	psf		
a =	3	3		Figure 28.6-1	
2a =	6	6			
width - 2*2a =	-2	0			

MAIN WIND - ASCE 7-10 CHAPTER 28 PART 2					**Areas (F-B)**					**Areas (S-S)**				**(F-B)**	**(S-S)**	**Wind (F-B)**		**Wind (S-S)**	
						1.00		1.00			1.00		1.00	**10 psf min.**	**16 psf min.**				
DIAPHR. LEVEL	Story Height	Elevation (ft)	Height hi (ft)	h (ft)	A_A (sq. ft)	A_B (sq. ft)	A_C (sq. ft)	A_D (sq. ft)	A_A (sq. ft)	A_B (sq. ft)	A_C (sq. ft)	A_D (sq. ft)	**wind per 6.1.4.1**	**wind per 6.1.4.1**	WIND Vi (F-B)	SUM V (F-B)	WIND Vi (S-S)	SUM V (S-S)
		12.25		1.3	0	15	0	-2.5	0	15	0	0						
Roof	---	11.00	11.00	5.5	66	0	-11	0	66	0	0	0	1.1	1.3	2.14	2.14	2.41	2.41
1st	11.00	0.00	0.00	5.5	66	0	-11	0	66	0	0	0	0.9	1.1	2.44	4.58	2.74	5.15
0	0.00	0.00	0.00		0	0	0	0	0	0	0	0	0.0	0.0	0.00		0.00	
0	0.00	0.00																
							A_F =	122.5			A_F =	147	2.0	2.4	**V (F-B)=**	**4.58**	**V (S-S)=**	**5.15**
													kips	**kips**		**kips**		**kips**

SHEET TITLE: **MAIN WIND FORCE RESISTING SYSTEM USING LOADS FROM ASCE 7-10 CHAPTER 28, PART 1**
CT PROJECT # : 20035 Foo Residence Shed

MAIN WIND - 7-10 CHAPTER 28 PART 1				Wind (F-B)		Wind (S-S)		Min/Part 2 (Max.) Wind (F-B)		Min/Part 2 (Max.) Wind (S-S)	
DIAPHR. LEVEL	Story Height	Elevation (ft)	Height hi (ft)	DESIGN Vi (F-B)	SUM V (F-B)	DESIGN Vi (S-S)	SUM V (S-S)	LRFD Vi (F-B)	SUM V (F-B)	LRFD Vi (S-S)	SUM V (S-S)
Roof	---	11.00	11.00	0.00	0.00	0.00	0.00	2.14	2.14	2.41	2.41
1st	11.00	0.00	0.00	0.00	0.00	0.00	0.00	2.44	4.58	2.74	5.15
0	0.00	0.00									
				V (F-B)=	**0.00 kips**	**V (S-S)=**	**0.00 kips**	**V (F-B)=**	**4.58 kips**	**V (S-S)=**	**5.15 kips**

DESIGN WIND - Min./Part 2/Part 1 ASD				Wind (F-B)			Wind (S-S)		
DIAPHR. LEVEL	Story Height	Elevation (ft)	Height hi (ft)	**LRFD Vi (F-B)**	**DESIGN Vi**	**SUM V (F-B)**	**LRFD Vi (S-S)**	**DESIGN Vi**	**SUM V (S-S)**
Roof	11.00	10	10	**2.14**	**1.29**	**1.29**	**2.41**	**1.45**	**1.45**
1st	0.00	0	0	**2.44**	**1.46**	**2.75**	**2.74**	**1.64**	**3.09**
0	0.00	0							
				V (F-B)=		**2.75 kips**	**V (S-S)=**		**3.09 kips**

SHEET TITLE: **LATERAL F-B (front to back)**
CT PROJECT # : 20035 Foo Residence Shed 1

Diaph. Level: **Roof**
Panel Height = 11 ft.
Max. aspect = 3.5 SDPWS-15 Table 4.3.4
Min. Lwall = 3.14 ft.

Seismic V i = 0.31 kips
Sum Seismic V i = 0.31 kips

Design Wind F-B V i = 1.29 kips
Sum Wind F-B V i = 2.75 kips

Grid	ID	T.A. (sqft)	Lwall (ft)	$L_{DL\ eff.}$ (ft)	C_0 (per SDPWS-15 Table 4.3.3.5)	w dl (klf)	Wind V level (kip)	Wind V abv. (kip)	E.Q. V level (kip)	E.Q. V abv. (kip)	ρ	$\rho =$ **1.30** *2w/h*	E.Q. *v i* (plf)	**E.Q. Type**	**Wind Type**	Wind *v i* (plf)	E.Q. OTM (kip-ft)	E.Q. R_{OTM} (kip-ft)	E.Q. U_{net} (kip)	E.Q. U_{sum} (kip)	Wind OTM (kip-ft)	Wind R_{OTM} (kip-ft)	Wind U_{net} (kip)	Wind U_{sum} (kip)	**Max. U_{sum} (kip)**
Ext	A	38.585	3.0	4.0	1.00	0.15	0.88	0.00	0.10	0.00	1.00	0.55	78	**P6TN**	**P6**	294	1.41	0.81	0.26	0.26	9.72	0.60	3.91	3.91	**3.91**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	B	81.415	6.3	7.3	1.00	0.15	1.86	0.00	0.21	0.00	1.30	1.00	43	**P6TN**	**P6**	294	2.98	3.13	-0.03	-0.03	20.50	2.32	3.21	3.21	**3.21**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
	120	120.0	9.3		9.3 = L eff.		2.75	0.00	0.31	0.00															
							ΣV_{wind}	2.75	ΣV_{EQ}	0.31															

Notes: * denotes a wall with force transfer

SHEET TITLE: **LATERAL S-S (side to side)**
CT PROJECT # : 20035 Foo Residence Shed 1

Diaph. Level: **Roof**
Panel Height = 11 ft.
Max. aspect = 3.5 SDPWS-15 Table 4.3.4
Min. Lwall = 3.14 ft.

Seismic V i = 0.31 kips
Sum Seismic V i = 0.31 kips

Design Wind F-B V i = 1.45 kips
Sum Wind F-B V i = 3.09 kips

					per SDPWS-15 Table 4.3.3.5		Wind	Wind	E.Q.	E.Q.	$\rho =$ **1.30**		E.Q.	**E.Q.**	**Wind**	Wind	E.Q.	E.Q.	E.Q.	E.Q.	Wind	Wind	Wind	Wind	**Max.**
Wall	ID	T.A.	Lwall	$L_{DL\ eff.}$	C_0	w dl	V level	V abv.	V level	V abv.		*2w/h*	*v i*	**Type**	**Type**	*v i*	OTM	R_{OTM}	U_{net}	U_{sum}	OTM	R_{OTM}	U_{net}	U_{sum}	**U_{sum}**
		(sqft)	(ft)	(ft)		(klf)	(kip)	(kip)	(kip)	(kip)	ρ		(plf)			(plf)	(kip-ft)	(kip-ft)	(kip)	(kip)	(kip-ft)	(kip-ft)	(kip)	(kip)	**(kip)**
Ext	1	120	10.0	10.0	1.00	0.15	3.09	0.00	0.31	0.00	1.30	1.00	40	**P6TN**	**P6**	309	4.39	6.75	-0.25	-0.25	33.99	5.00	3.11	3.11	**3.11**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
	120	120.0	10.0		10.0 = L eff.		3.09	0.00	0.31	0.00															
							ΣV_{wind}	3.09	ΣV_{EQ}	0.31															

Notes: * denotes a wall with force transfer

SHEET TITLE: **LATERAL F-B (front to back)**
CT PROJECT # : 20035 Foo Residence Shed 2

Diaph. Level: **Roof**
Panel Height = 11 ft.
Max. aspect = 3.5 SDPWS-15 Table 4.3.4
Min. Lwall = 3.14 ft.

Seismic V i = 0.31 kips
Sum Seismic V i = 0.31 kips

Design Wind F-B V i = 1.29 kips
Sum Wind F-B V i = 2.75 kips

Grid	ID	T.A. (sqft)	Lwall (ft)	$L_{DL\ eff.}$ (ft)	C_0 (per SDPWS-15 Table 4.3.3.5)	w dl (klf)	Wind V level (kip)	Wind V abv. (kip)	E.Q. V level (kip)	E.Q. V abv. (kip)	ρ (ρ = **1.00**)	*2w/h*	E.Q. *v i* (plf)	**E.Q. Type**	**Wind Type**	Wind *v i* (plf)	E.Q. OTM (kip-ft)	E.Q. R_{OTM} (kip-ft)	E.Q. U_{net} (kip)	E.Q. U_{sum} (kip)	Wind OTM (kip-ft)	Wind R_{OTM} (kip-ft)	Wind U_{net} (kip)	Wind U_{sum} (kip)	**Max. U_{sum} (kip)**
Ext	A	99.31	12.0	12.0	1.00	0.15	2.27	0.00	0.25	0.00	1.00	1.00	21	**P6TN**	**P6**	189	2.80	9.72	-0.61	-0.61	25.01	7.20	1.57	1.57	**1.57**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Ext	B	20.69	2.5	3.5	1.00	0.15	0.47	0.00	0.05	0.00	1.00	0.45	47	**P6TN**	**P6**	189	0.58	0.59	0.00	0.00	5.21	0.44	2.60	2.60	**2.60**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
	120	120.0	14.5		14.5 = L eff.		2.75	0.00	0.31	0.00															
							ΣV_{wind}	2.75	ΣV_{EQ}	0.31															

Notes: * denotes a wall with force transfer

SHEET TITLE: **LATERAL S-S (side to side)**
CT PROJECT # : 20035 Foo Residence Shed 2

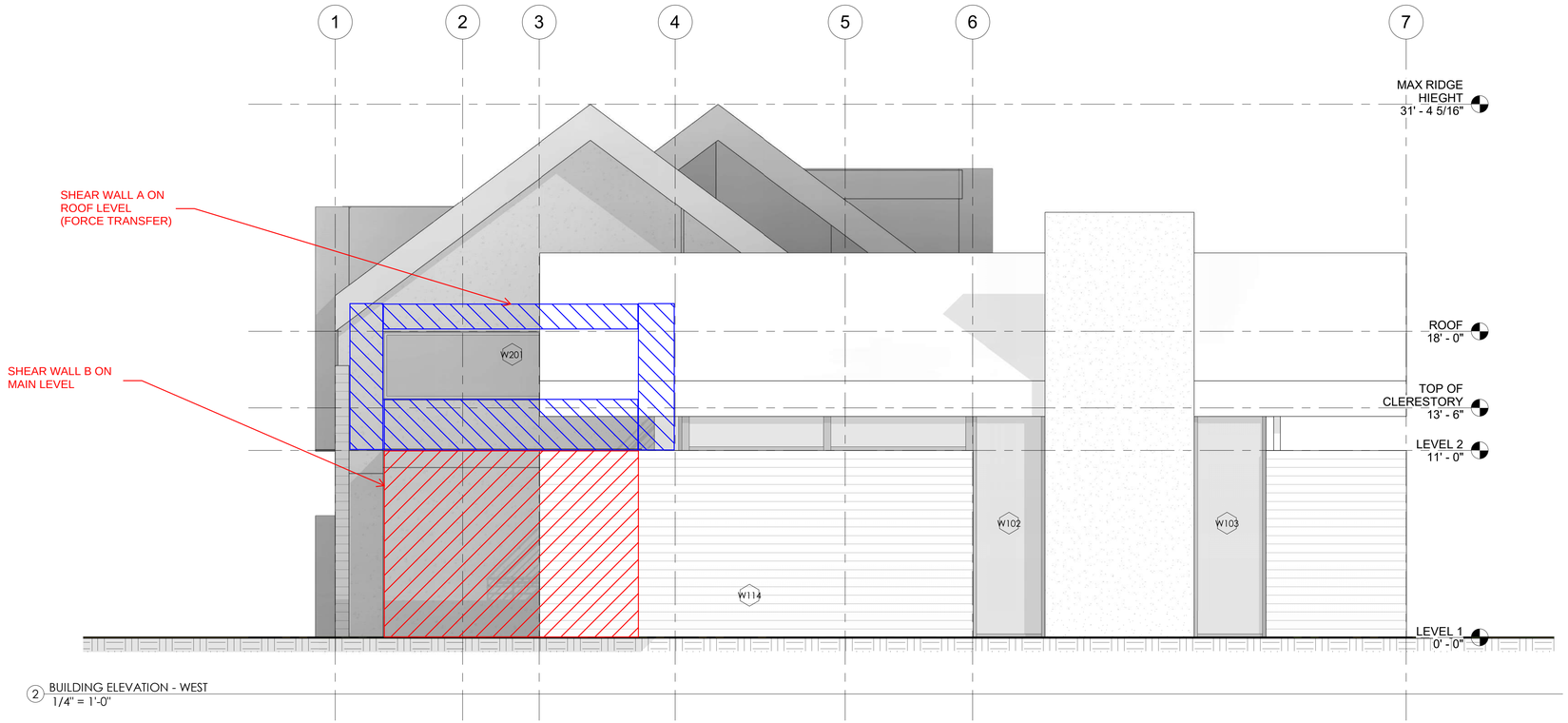
Diaph. Level: **Roof**
Panel Height = 11 ft.
Max. aspect = 3.5 SDPWS-15 Table 4.3.4
Min. Lwall = 3.14 ft.

Seismic V i = 0.31 kips
Sum Seismic V i = 0.31 kips

Design Wind F-B V i = 1.45 kips
Sum Wind F-B V i = 3.09 kips

Wall	ID	T.A. (sqft)	Lwall (ft)	$L_{DL\ eff.}$ (ft)	C_0 (per SDPWS-15 Table 4.3.3.5)	w dl (klf)	Wind V level (kip)	Wind V abv. (kip)	E.Q. V level (kip)	E.Q. V abv. (kip)	ρ (ρ = **1.30**)	*2w/h*	E.Q. *v i* (plf)	**E.Q. Type**	**Wind Type**	Wind *v i* (plf)	E.Q. OTM (kip-ft)	E.Q. R_{OTM} (kip-ft)	E.Q. U_{net} (kip)	E.Q. U_{sum} (kip)	Wind OTM (kip-ft)	Wind R_{OTM} (kip-ft)	Wind U_{net} (kip)	Wind U_{sum} (kip)	**Max. U_{sum} (kip)**
Ext	1	120	10.0	10.0	1.00	0.15	3.09	0.00	0.31	0.00	1.30	1.00	40	**P6TN**	**P6**	309	4.39	6.75	-0.25	-0.25	33.99	5.00	3.11	3.11	**3.11**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
-	-	0	0.0	0.0	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0	---	---	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
	120	120.0	10.0		10.0	= L eff.	3.09	0.00	0.31	0.00															
							ΣV_{wind}	3.09	ΣV_{EQ}	0.31															

Notes: * denotes a wall with force transfer



2 BUILDING ELEVATION - WEST
1/4" = 1'-0"

SB

Anchor Bolt

This product is preferable to similar connectors because of (a) easier installation, (b) higher loads, (c) lower installed cost, or a combination of these features.

The SB anchor bolt offers an anchorage solution for our holdowns that call for a ⅝"-diameter, a ⅞"-diameter and a 1"-diameter anchor.

SB anchor bolts are code listed by ICC-ES under the 2012/2015/2018 IBC and IRC.

Features:

- Identification on the bolt head showing embedment angle and model
- Sweep geometry to optimize position in form
- Rolled thread for higher tensile capacity
- Hex nuts and plate washer fixed in position
- Available in HDG for additional corrosion resistance

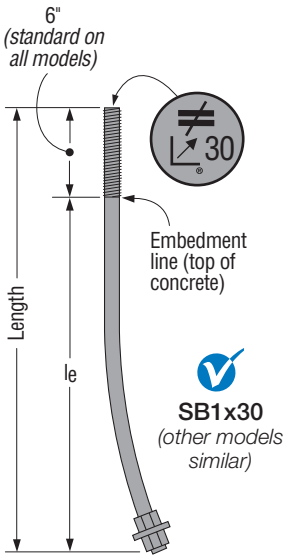
Material: ASTM F1554, Grade 36

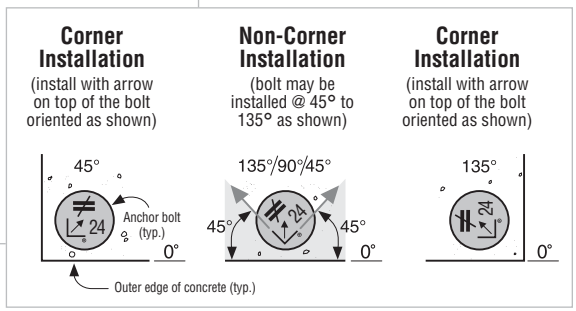
Finish: None. May be ordered HDG; contact Simpson Strong-Tie.

Installation:

- SB is only for concrete applications poured monolithically except where noted.
- Top nuts and washers for holdown attachment are not supplied with the SB; install standard nuts, couplers and/or washers as required.
- On HDG SB anchors, chase the threads to use standard nuts or couplers or use overtapped products in accordance with ASTM A563, for example Simpson Strong-Tie NUT⅝-OST, NUT⅞-OST and NUT1-OST, CNW⅝-OST, CNW⅞-OST and CNW1-OST.
- Install SB before the concrete pour using AnchorMate® anchor bolt holders. Install the SB per the plan view detail.
- Minimum concrete compressive strength is 2,500 psi.
- When rebar is required it does not need to be tied to the SB.

Codes: See p. 12 for Code Reference Key Chart





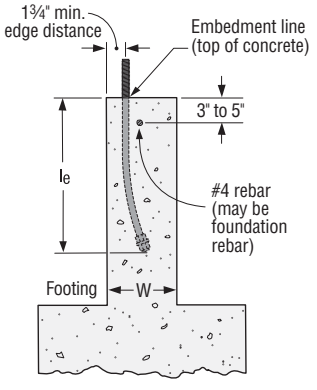
Plan View of SB Placement in Concrete

These products are available with additional corrosion protection. For more information, see p. 15.

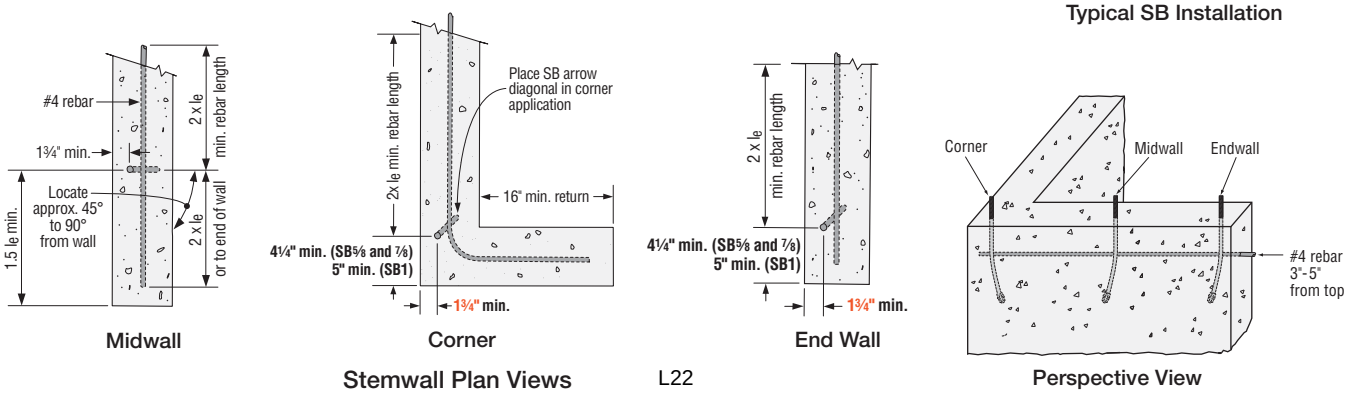
SB Bolts at Stemwall

Model No.	Dimensions (in.)				Allowable Tension Loads						Code Ref.
	Stemwall Width	Dia.	Length	Min. Embed. (l_e)	Wind and SDC A&B			SDC C–F			
					Midwall	Corner	End Wall	Midwall	Corner	End Wall	
SB5/8X24	6	⅝	24	18	6,675	6,550	6,550	6,675	5,730	5,730	IBC, FL, LA
SB7/8X24	8	⅞	24	18	10,055	8,980	6,550	8,795	7,855	5,730	
SB1X30	8	1	30	24	13,110	9,505	6,930	11,470	8,315	6,065	

1. Rebar is required at the top of stem wall foundations, but is not required for slab-on-grade edge and garage curb, or stem wall garage front installations.
2. Minimum end distances for SB bolts are as shown in graphics.
3. To obtain LRFD values, multiply ASD seismic load values by 1.4 and wind load values by 1.67 (1.6 for 2012 IBC).
4. Per Section 1613 of the IBC, detached one- and two-story dwellings in SDC C may use "Wind and SDC A&B" allowable loads.
5. Midwall loads apply when anchor is 1.5 l_e or greater from the end. For bolts acting in tension simultaneously, the minimum bolt center-to-center spacing is 3 l_e.
6. Full catalog loads apply for two-pour installation for slab-on-grade: edge.



Typical SB Installation



Stemwall Plan Views

Perspective View

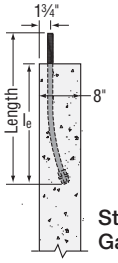
Anchor Bolt (cont.)

These products are available with additional corrosion protection. For more information, see p. 15.

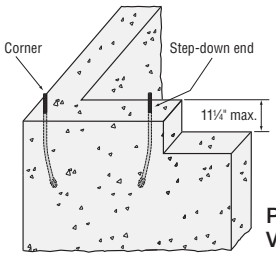
SB Bolts at Stemwall: Garage Front

Model No.	Dimensions (in.)				Allowable Tension Loads				Code Ref.
	Stemwall Width	Diameter	Length	Min. Embed. (l_e)	Wind and SDC A&B		SDC C–F		
					Step-Down End	Corner	Step-Down End	Corner	
SB7/8X24	8	7/8	24	18	6,935	7,355	6,070	6,435	IBC, FL, LA
SB1X30	8	1	30	24	10,850	9,400	9,495	8,030	

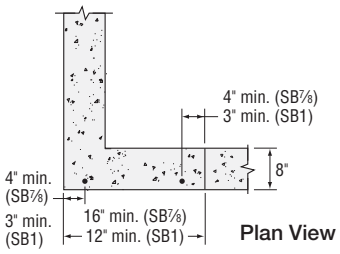
1. Rebar is required at the top of stem wall foundations, but is not required for slab-on-grade edge and garage curb, or stem wall garage front installations.
2. Minimum end distances for SB bolts are as shown in graphics.
3. To obtain LRFD values, multiply ASD seismic load values by 1.4 and wind load values by 1.67 (1.6 for 2012 IBC).
4. Per Section 1613 of the IBC, detached one- and two-story dwellings in SDC C may use "Wind and SDC A&B" allowable loads.
5. Midwall loads apply when anchor is 1.5 l_e or greater from the end. For bolts acting in tension simultaneously, the minimum bolt center-to-center spacing is 3 l_e.



Stemwall Garage Front



Perspective View

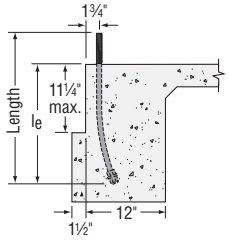


Plan View

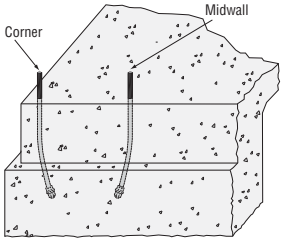
SB Bolts at Slab on Grade: Edge

Model No.	Dimensions (in.)				Allowable Tension Loads				Code Ref.
	Footing Width	Diameter	Length	Min. Embed. (l_e)	Wind and SDC A&B		SDC C–F		
					Midwall	Corner	Midwall	Corner	
SB5/8X24	12	5/8	24	18	6,675	6,550	6,675	5,730	IBC, FL, LA
SB7/8X24	12	7/8	24	18	13,080	11,650	12,320	10,190	
SB1X30	12	1	30	24	17,080	14,960	16,300	13,090	

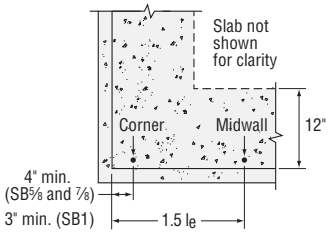
1. Rebar is required at the top of stem wall foundations, but is not required for slab-on-grade edge and garage curb, or stem wall garage front installations.
2. Minimum end distances for SB bolts are as shown in graphics.
3. To obtain LRFD values, multiply ASD seismic load values by 1.4 and wind load values by 1.67 (1.6 for 2012 IBC).
4. Per Section 1613 of the IBC, detached one- and two-story dwellings in SDC C may use "Wind and SDC A&B" allowable loads.
5. Midwall loads apply when anchor is 1.5 l_e or greater from the end. For bolts acting in tension simultaneously, the minimum bolt center-to-center spacing is 3 l_e.
6. Full catalog loads apply for two-pour installation for slab-on-grade: edge.



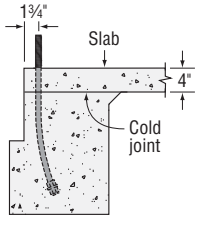
Slab Edge



Perspective View



Plan View



Two-Pour Installation

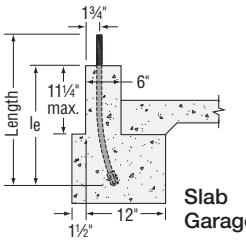
Anchor Bolt (cont.)

These products are available with additional corrosion protection. For more information, see p. 15.

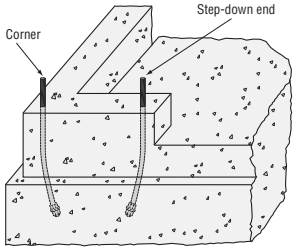
SB Bolts at Slab on Grade: Garage Curb

Model No.	Dimensions (in.)				Allowable Tension Loads				Code Ref.
	Curb Width	Diameter	Length	Min. Embed. (l_e)	Wind and SDC A&B		SDC C–F		
					Step-Down End	Corner	Step-Down End	Corner	
SB7/8X24	6	⅞	24	18	8,805	10,635	7,705	9,305	IBC, FL, LA
SB1X30	6	1	30	24	14,960	14,960	13,090	13,090	

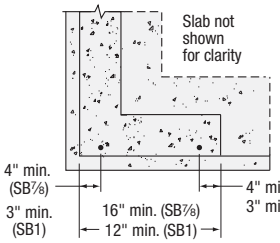
1. Rebar is required at the top of stem wall foundations, but is not required for slab-on-grade edge and garage curb, or stem wall garage front installations.
2. Minimum end distances for SB bolts are as shown in graphics.
3. To obtain LRFD values, multiply ASD seismic load values by 1.4 and wind load values by 1.67 (1.6 for 2012 IBC).
4. Per Section 1613 of the IBC, detached one- and two-story dwellings in SDC C may use "Wind and SDC A&B" allowable loads.



Slab Garage Curb



Perspective View



Plan View

HRS/ST/HTP/LSTA/LSTI/MST/MSTA/MSTC/MSTI

Strap Ties

Straps are designed to transfer tension loads in a wide variety of applications.

HRS — Heavy strap designed for installation on the edge of 2x members. The HRS416Z installs with Strong-Drive® SDS Heavy-Duty Connector screws.

HTP — Heavy tie plate designed for installation on the side of 2x4 or larger members.

LSTA and MSTA — Designed for use on the edge of 2x members, with a nailing pattern that reduces the potential for splitting.

LSTI and MSTI — Light and medium straps that are suitable where pneumatic-nailing is necessary through diaphragm decking and wood chord open-web trusses.

MST — High-capacity strap that can be installed with either nails or bolts. Suitable for double 2x member connections or greater.

MSTC — High-capacity strap that utilizes a staggered nail pattern to help minimize wood splitting. Nail slots have been countersunk to provide a lower nail head profile.

Finish: Galvanized. Some products are available in stainless steel, ZMAX® coating or black powder coat (add PC to sku); contact Simpson Strong-Tie. See Corrosion Information, pp. 13–15.

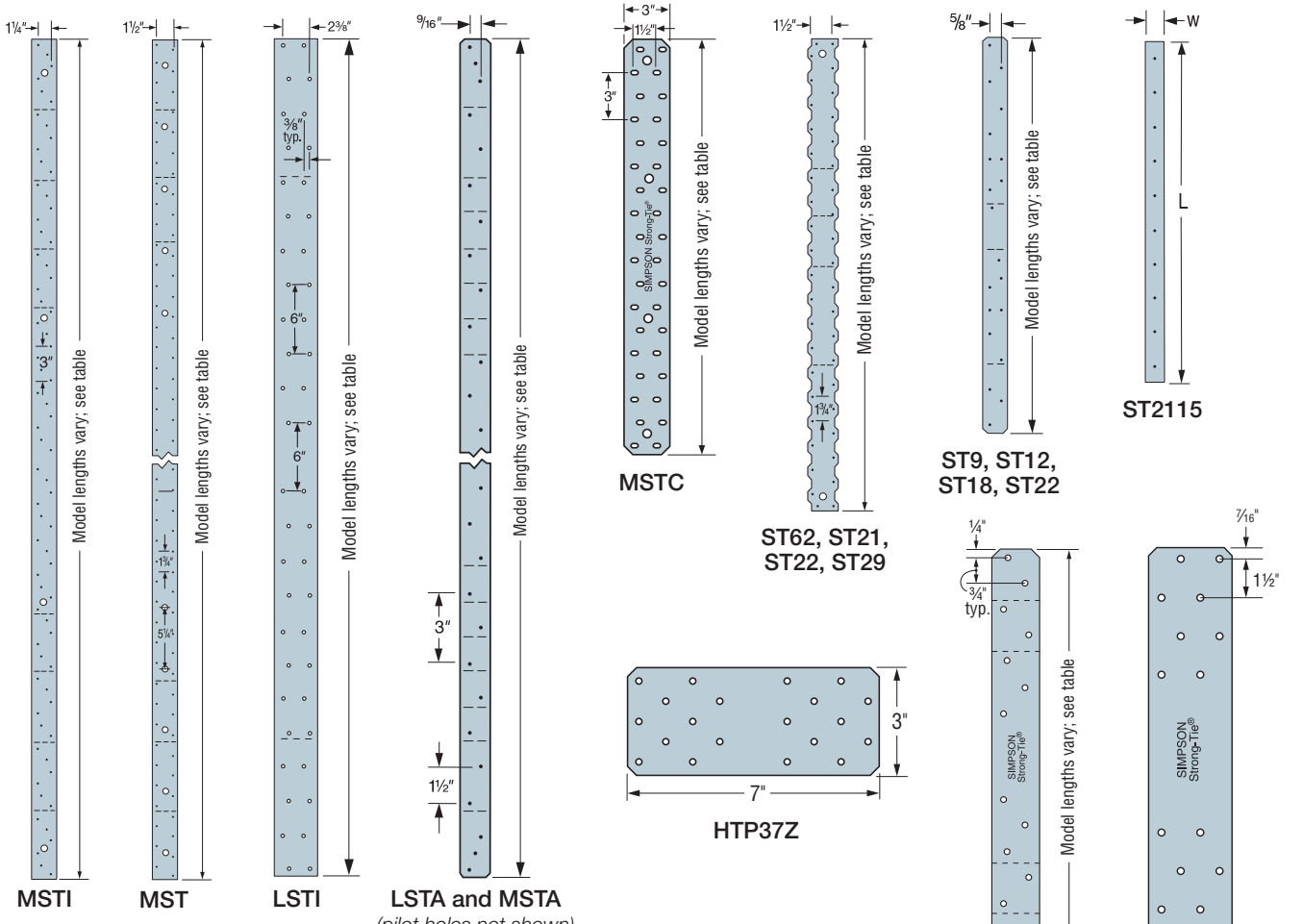
Installation: Use all specified fasteners; see General Notes

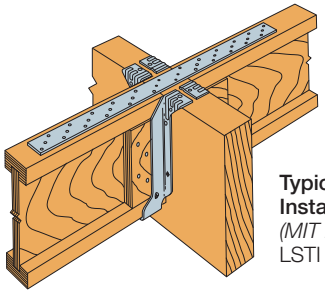
Options: Special sizes can be made to order; contact Simpson Strong-Tie

Codes: See p. 12 for Code Reference Key Chart

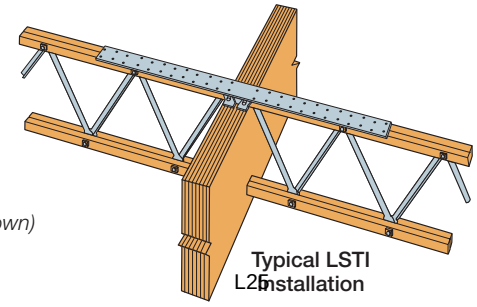
MSTC and RPS meet code requirements for reinforcing cut members (16 gauge) at top plate and RPS at sill plate.
International Residential Code® — 2012/2015/2018 R602.6.1
International Building Code® — 2012/2015/2018 2308.9.8

(For RPS, refer to p. 303.)

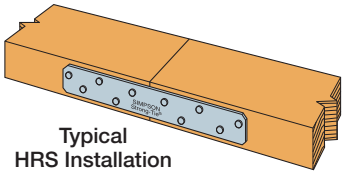




Typical MSTI Installation
(MIT hanger shown)
LSTI similar



Typical LSTI Installation



Typical HRS Installation

Strap Ties (cont.)

Codes: See p. 12 for Code Reference Key Chart

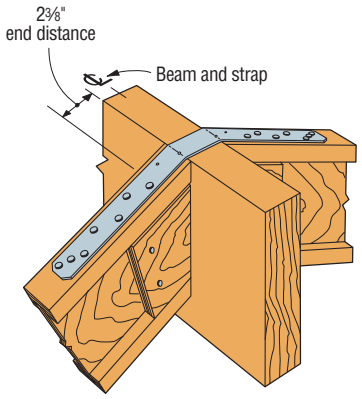
These products are available with additional corrosion protection. For more information, see p. 15.

SS For stainless-steel fasteners, see p. 21.

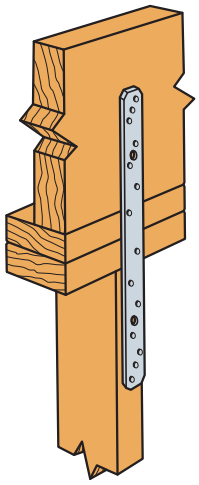
SD Many of these products are approved for installation with Strong-Drive® SD Connector screws. See pp. 335–337 for more information.

Model No.	Ga.	Dimensions (in.)		Fasteners (Total) (in.)	Allowable Tension Loads (DF/SP)	Allowable Tension Loads (SPF/HF)	Code Ref.
		W	L		(160)	(160)	
ST2115	20	¾	16⅝	(10) 0.162 x 2½	660	660	IBC, FL, LA
LSTA9		1¼	9	(8) 0.148 x 2½	740	635	
LSTA12		1¼	12	(10) 0.148 x 2½	925	795	
LSTA15		1¼	15	(12) 0.148 x 2½	1,110	955	
LSTA18		1¼	18	(14) 0.148 x 2½	1,235	1,115	
LSTA21		1¼	21	(16) 0.148 x 2½	1,235	1,235	
LSTA24		1¼	24	(18) 0.148 x 2½	1,235	1,235	
LSTA30	18	1¼	30	(22) 0.148 x 2½	1,640	1,640	
LSTA36		1¼	36	(24) 0.148 x 2½	1,640	1,640	
MSTA9		1¼	9	(8) 0.148 x 2½	750	650	
SS MSTA12		1¼	12	(10) 0.148 x 2½	940	810	
MSTA15		1¼	15	(12) 0.148 x 2½	1,130	970	
SS MSTA18		1¼	18	(14) 0.148 x 2½	1,315	1,135	
MSTA21		1¼	21	(16) 0.148 x 2½	1,505	1,295	
SS MSTA24		1¼	24	(18) 0.148 x 2½	1,640	1,460	
MSTA30	16	1¼	30	(22) 0.148 x 2½	2,050	1,825	
SS MSTA36		1¼	36	(26) 0.148 x 2½	2,050	2,050	
MSTA49		1¼	49	(26) 0.148 x 2½	2,020	2,020	FL, LA
ST9		1¼	9	(8) 0.162 x 2½	885	765	IBC, FL, LA
ST12		1¼	11⅝	(10) 0.162 x 2½	1,105	955	
ST18		1¼	17¾	(14) 0.162 x 2½	1,420	1,335	
ST22		1¼	21⅝	(18) 0.162 x 2½	1,420	1,420	
HRS6	12	1⅜	6	(6) 0.148 x 2½	605	530	FL, LA
HRS8		1⅜	8	(10) 0.148 x 2½	1,010	880	
HRS12		1⅜	12	(14) 0.148 x 2½	1,415	1,230	
ST292	20	2⅛	9⅝	(12) 0.162 x 2½	1,260	1,120	IBC, FL, LA
ST2122		2⅛	12¹³⁄₁₆	(16) 0.162 x 2½	1,530	1,510	
ST2215		2⅛	16⅝	(20) 0.162 x 2½	1,875	1,875	
ST6215	16	2⅛	16⅝	(20) 0.162 x 2½	2,090	1,910	
ST6224		2⅛	23⅝	(28) 0.162 x 2½	2,535	2,535	
ST6236	14	2⅛	33¹³⁄₁₆	(40) 0.162 x 2½	3,845	3,845	
MSTI26	12	2⅛	26	(26) 0.148 x 1½	2,745	2,380	
MSTI36		2⅛	36	(36) 0.148 x 1½	3,800	3,295	
MSTI48		2⅛	48	(48) 0.148 x 1½	5,070	4,390	
MSTI60		2⅛	60	(60) 0.148 x 1½	5,070	5,070	
MSTI72		2⅛	72	(72) 0.148 x 1½	5,070	5,070	
HTP37Z	16	3	7	(20) 0.148 x 1½	1,850	1,600	LA
MSTC28		3	28¼	(36) 0.148 x 3¼	3,460	2,990	IBC, FL, LA
MSTC40		3	40¼	(52) 0.148 x 3¼	4,735	4,315	
MSTC52		3	52¼	(62) 0.148 x 3¼	4,735	4,735	
MSTC66	14	3	65¾	(76) 0.148 x 3¼	5,850	5,850	
MSTC78		3	77¾	(76) 0.148 x 3¼	5,850	5,850	
HRS416Z	12	3¼	16	(16) ¼ x 1½ SDS	2,835	2,305	—
LSTI49	18	3¾	49	(32) 0.148 x 1½	2,970	2,560	IBC, FL, LA
LSTI73		3¾	73	(48) 0.148 x 1½	4,205	3,840	

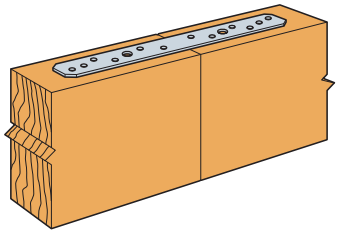
1. See pp. 260–261 for Straps and Ties General Notes.
2. **Fasteners:** Nail dimensions in the table are listed diameter by length. See pp. 21–22 for fastener information.



Typical LSTA Installation
(hanger not shown)
Bend strap one time only, max. 12/12 joist pitch.



Typical LSTA18 Installation



Typical MSTA15 Installation

CT ENGINEERING INC.
Project: For Residence
Client:
Date: 20035 F00. 01/06/2021
Page Number:
180 Nickerson St.
Suite 302
Seattle, WA
98109
(206) 285-4512
FAX:
(206) 285-0618

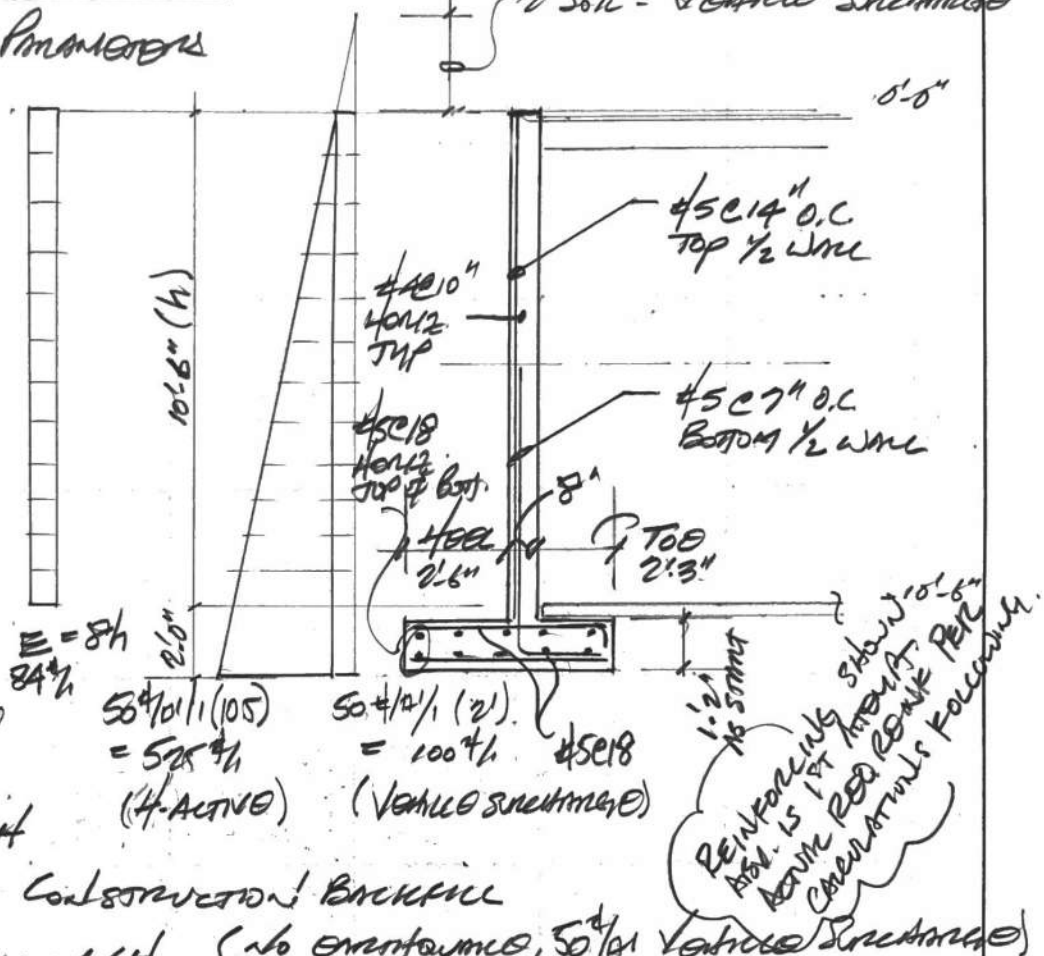
Basement Wall Design

Geotechnical Design Parameters

θ_{all} = 3000 psf

Passive Resistance = 350 pcf (includes FS = 1.5)

Friction = 0.35 (includes FS = 1.5)



$U = 0.90 + 1.0E + 1.6H$

Load Case #1 - Construction / Backfill

$U = 1.6H$ (No Overturning, 50#/ft Vertical Surcharge)

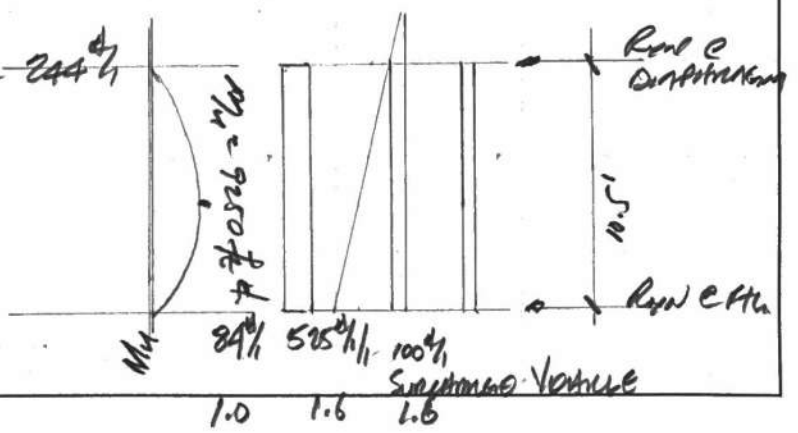
Load Case #2 - Permanent Load Case (Tension Int. Face)
Non-Cantilevered Type of Wall

$M_u = 1.0E + 1.6H$

$84\#/ft(1.0) + 100\#/ft(1.6) = 244\#/ft$

+

$525(1.6) = 840\#/ft$



CT ENGINEERING INC.

180 Nickerson St.
Suite 302
Seattle, WA
98109
(206) 285-4512
FAX:
(206) 285-0618

20035
FOO

Project: Foo Residence

Date: 01/06/2021

Client:

Page Number:

Basement Wall Design (Cont)

Attempt #5 @ 12" o.c. (Int. Face)
(Load Case #2 – After Const)

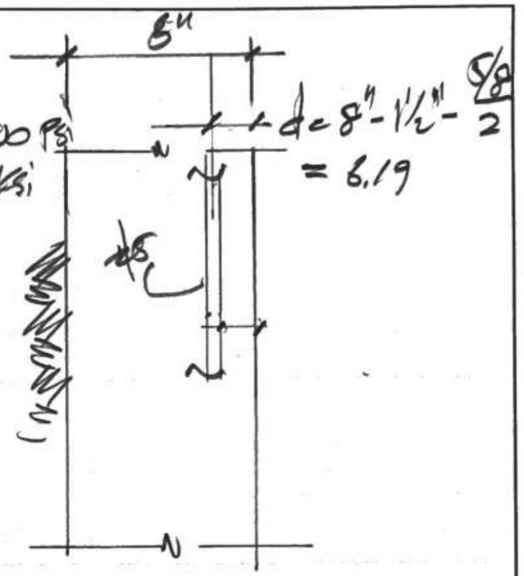
$M_u = 9250$ ft# $\left(\frac{12 in}{1 ft}\right) = 111,000$ #"

$a = \frac{A_s f_y}{.85 f'_c b} = \frac{.31 (60)}{.85 (2.5) 12"} = .729$

Soil Face

$f'_c = 2500$ psi
$f_y = 60$ ksi

$d = 8" - 1\frac{1}{2}" - \frac{5/8}{2}$
$= 6.19$



$M_n = A_s f_y (d - a/2) = .31\square" (60 ksi)(6.19 - \frac{.729}{2})$
$= 108,354$ #"

$\phi M_n > M_u$

$\phi M_n = .9 (108,354$ #"$) = 97,518$ #" $< M_u$ NG

1.14 Factor
$.31(1.14) = .35$
$A\#6 = .44$

Attempt #5 @ 10" o.c. $A_s = 12/10 (.31) = .372$ □"/'

$a = \frac{.372 \square"/' (60 psi)}{.85 (2.5)(12")} = .875"$

$M_n = .372\square" (60 ksi)(6.19 - \frac{.875"}{2}) = 128,396$ #"

$\phi M_n = .9 (128,396$ #"$) = 115,556$ #" $> 111,000$ #"

∴ Provide #5 @ 10" o.c. Vert. Int Face

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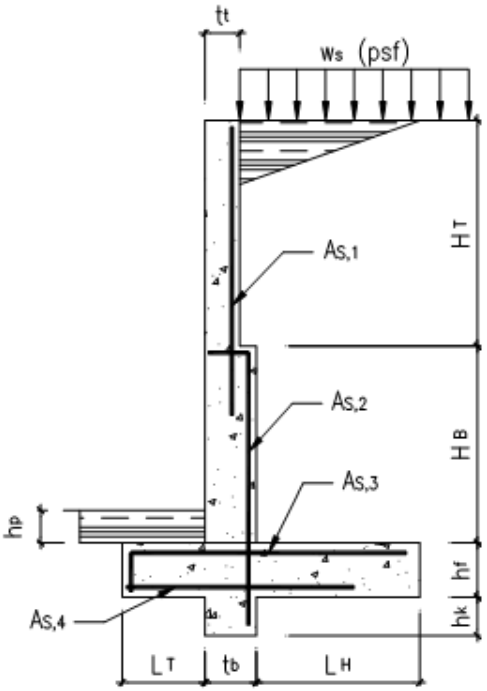
Retaining Wall Design Based on ACI 318-14

INPUT DATA & DESIGN SUMMARY

CONCRETE STRENGTH	f_c'	=	2.5	ksi
REBAR YIELD STRESS	f_y	=	60	ksi
LATERAL SOIL PRESSURE	P_a	=	50	pcf (equivalent fluid pressure)
PASSIVE PRESSURE	P_p	=	350	psf / ft
BACKFILL SPECIFIC WEIGHT	γ_b	=	100	pcf
SURCHARGE WEIGHT	w_s	=	15	psf
FRICTION COEFFICIENT	μ	=	0.35	
ALLOW SOIL PRESSURE	Q_a	=	3	ksf
THICKNESS OF TOP STEM	t_t	=	8	in
THICKNESS OF KEY & STEM	t_b	=	8	in
TOE WIDTH	L_T	=	3.3	ft
HEEL WIDTH	L_H	=	3	ft
HEIGHT OF TOP STEM	H_T	=	5.25	ft
HEIGHT OF BOT. STEM	H_B	=	5.25	ft
FOOTING THICKNESS	h_f	=	14	in
KEY DEPTH	h_k	=	0	in
SOIL OVER TOE	h_p	=	6	in

TOP STEM VERT. REINF. ($A_{s,1}$)	#	6	@	14	in o.c., at soil face
$A_{s,1}$ LOCATION (0=at soil face, 1=at middle, 2=at each face)				0	at soil face
TOP STEM HORIZ. REINF. (ACI 11.1.4)	#	4	@	12	in o.c., at soil face
BOT. STEM VERT. REINF. ($A_{s,2}$)	#	6	@	7	in o.c., at soil face
$A_{s,2}$ LOCATION (0=at soil face, 1=at middle, 2=at each face)				0	at soil face
BOT. STEM HORIZ. REINF. (ACI 11.1.4)	#	4	@	12	in o.c., at soil face
TOP REINF.OF FOOTING ($A_{s,3}$)	#	5	@	14	in
BOT. REINF.OF FOOTING ($A_{s,4}$)	#	5	@	14	in



WALL DESIGN IS GOOD - SLIDING RESISTED BY BASEMENT SLAB

[THE WALL DESIGN IS INADEQUATE.]

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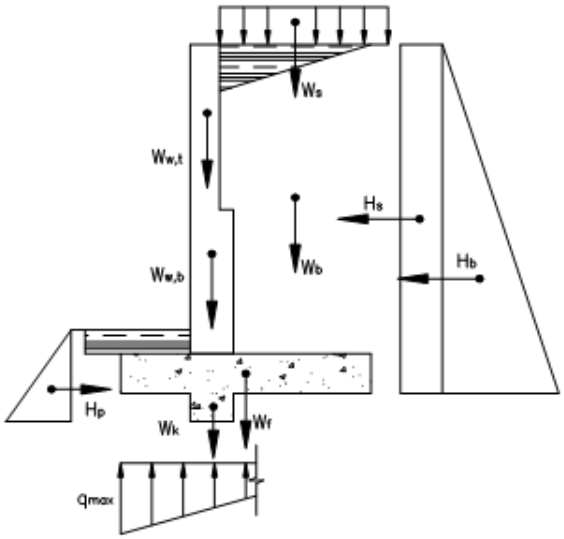
ANALYSIS

SERVICE LOADS

$H_b = 0.5\ P_a (H_T + H_B + h_f)^2$	=	3.40	kips
$H_s = w_s\ P_a (H_T + H_B + h_f) / \gamma_b$	=	0.09	kips
$H_p = 0.5\ P_p (h_p + h_f + h_k)^2$	=	0.49	kips
$W_s = w_s (L_H + t_b - t_t)$	=	0.05	kips
$W_b = [H_T (L_H + t_b - t_t) + H_B L_H]\ \gamma$	=	3.15	kips
$W_f = h_f (L_H + t_b + L_T)\ \gamma_c$	=	1.22	kips
$W_k = h_k\ t_b\ \gamma_c$	=	0.00	kips
$W_{w,t} = t_t\ H_T\ \gamma_c$	=	0.53	kips
$W_{w,b} = t_b\ H_B\ \gamma_c$	=	0.53	kips



FACTORED LOADS

$\gamma H_b = 1.6\ H_b$	=	5.44	kips
$\gamma H_s = 1.6\ H_s$	=	0.14	kips
$\gamma W_s = 1.6\ W_s$	=	0.07	kips
$\gamma W_b = 1.2\ W_b$	=	3.78	kips
$\gamma W_f = 1.2\ W_f$	=	1.46	kips
$\gamma W_k = 1.2\ W_k$	=	0.00	kips
$\gamma W_{w,t} = 1.2\ W_{w,t}$	=	0.63	kips
$\gamma W_{w,b} = 1.2\ W_{w,b}$	=	0.63	kips

OVERTURNING MOMENT

	H	γH	y	H y	γH y
H_b	3.40	5.44	3.89	13.23	21.17
H_s	0.09	0.14	5.83	0.51	0.82
Σ	3.49	5.58		**13.74**	21.99

RESISTING MOMENT

	W	γW	x	W x	γW x
W_s	0.05	0.07	5.47	0.25	0.39
W_b	3.15	3.78	5.47	17.22	20.66
W_f	1.22	1.46	3.48	4.25	5.10
W_k	0.00	0.00	3.63	0.00	0.00
$W_{w,t}$	0.53	0.63	3.63	1.91	2.29
$W_{w,b}$	0.53	0.63	3.63	1.91	2.29
Σ	5.46	6.58		**25.53**	30.73

M_{HP} = 0.27 ft-kips/ft

OVERTURNING FACTOR OF SAFETY (1806.1)

$$SF = \frac{\Sigma Wx + M_{HP}}{\Sigma Hy} = 1.877 > 1.5$$

[Satisfactory]

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CHECK SOIL BEARING CAPACITY (ACI 318 13.3.1.1)

$L = L_T + t_b + L_H$ = 6.97 ft

$e = \frac{L}{2} - \frac{\Sigma M_R - \Sigma M_O - M_{HP}}{\Sigma W}$ = 1.38 ft

$$q_{MAX} = \begin{cases} \dfrac{\Sigma W\left(1+\dfrac{6e}{L}\right)}{BL}, & for \quad e \le \dfrac{L}{6} \\ \dfrac{2\Sigma W}{3B(0.5L-e)}, & for \quad e > \dfrac{L}{6} \end{cases}$$

= 1.73 ksf < Q_a **[Satisfactory]**

CHECK FLEXURE CAPACITY, $A_{s,1}$ & $A_{s,2}$, FOR STEM (ACI 318 13, 21, & 22)

		At top stem		At base of bottom stem	
$M_u = \gamma\left(\frac{P_a y^3}{6} + \frac{P_a y^2 w_s}{2\gamma_b}\right)$	=	2.09	ft-kips ,	16.10	ft-kips
$P_u = \gamma W_w$	=	0.63	kips ,	1.26	kips
$\phi M_n = \phi\left[A_S f_y\left(d - \frac{A_S f_y - P_u}{1.7 b f'_c}\right)\right]$	=	8.81	ft-kips ,	16.16	ft-kips
		>	M_u	>	M_u
		[Satisfactory]		**[Satisfactory]**	
where d	=	5.63	in ,	5.63	in
b	=	12	in ,	12	in
ϕ	=	0.9	(ACI 318 21.2)	0.9	(ACI 318 21.2)
A_s	=	0.37714	in^2 ,	0.754286	in^2
ρ	=	0.006		0.011	
$\rho_{MAX} = \frac{0.85\beta_1 f'_c}{f_y}\frac{\varepsilon_u}{\varepsilon_u + \varepsilon_t}$	=	0.013		0.013	
		>	ρ	>	ρ
		[Satisfactory]		**[Satisfactory]**	
$\rho_{MIN} = 0.0018\frac{t}{d}$	=	0.003		0.003	
		<	ρ	<	ρ
		[Satisfactory]		**[Satisfactory]**	

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CHECK SHEAR CAPACITY FOR STEM (ACI 318 13.2.7.2 & 22.5)

$$V = \gamma\left(\frac{P_a y^2}{2} + \frac{w_s P_a y}{\gamma_b}\right)$$

$$\phi V_n = 2\phi bd\sqrt{f'_c}$$

	At top stem	At base of bottom stem
V =	1.17 kips ,	4.54 kips
ϕV_n =	5.06 kips ,	5.06 kips
	> V_u	> V_u
	[Satisfactory]	**[Satisfactory]**

where ϕ = 0.75 (ACI 318 21.2)

CHECK HEEL FLEXURE CAPACITY, $A_{s,3}$, FOR FOOTING (ACI 318 13.2.7.1, 21, & 22)

$$\rho_{MAX} = \frac{0.85\beta_1 f'_c}{f_y}\frac{\varepsilon_u}{\varepsilon_u + \varepsilon_t} = 0.013 \qquad \rho_{MIN} = \frac{0.0018}{2}\frac{h_f}{d} = 0.001$$

$$M_{u,3} = \begin{cases} \frac{L_H}{2}\left(\gamma_{w_s} + \gamma_{w_b} + \frac{L_H}{L}\gamma_{w_f}\right) - \frac{\left(q_{u,3} + 2q_{u,heel}\right)bL_H^2}{6}, & for \quad e_u \le \frac{L}{6} \\ \frac{L_H}{2}\left(\gamma_{w_s} + \gamma_{w_b} + \frac{L_H}{L}\gamma_{w_f}\right) - \frac{q_{u,3}bS^2}{6}, & for \quad e_u > \frac{L}{6} \end{cases} = 6.72 \text{ ft-kips}$$

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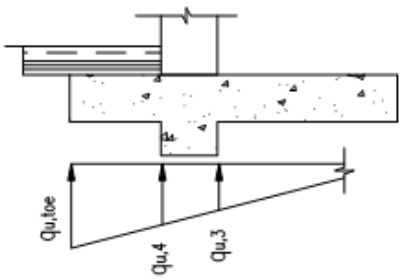
$$\rho = \frac{0.85 f'_c \left(1 - \sqrt{1 - \frac{M_{u,3}}{0.383 b d^2 f'_c}}\right)}{f_y} = 0.001$$



where d = 12.19 in $q_{u,\,toe}$ = 3.30 ksf
e_u = 2.15 ft $q_{u,\,heel}$ = n/a ksf
S = 0.02 ft $q_{u,\,3}$ = 0.02 ksf

$(A_{s,3})_{required}$ = 0.15 in² / ft < $A_{s,3}$ **[Satisfactory]**

CHECK TOE FLEXURE CAPACITY, $A_{s,4}$, FOR FOOTING (ACI 318 13.2.7.1, 21, & 22)

$$\rho_{MAX} = \frac{0.85 \beta_1 f'_c}{f_y} \frac{\varepsilon_u}{\varepsilon_u + \varepsilon_t} = 0.013 \qquad \rho_{MIN} = MIN\left(\frac{4}{3}\rho,\ \frac{0.0018}{2}\frac{h_f}{d}\right) = 0.001$$

$$M_{u,4} = \frac{\left(q_{u,4} + 2q_{u,toe}\right) b L_T^2}{6} - \frac{L_T^2}{2L}\gamma w_f = 11.86 \text{ ft-kips}$$

where d = 10.69 in
$q_{u,\,4}$ = 0.57 ksf

$$\rho = \frac{0.85 f'_c \left(1 - \sqrt{1 - \frac{M_{u,4}}{0.383 b d^2 f'_c}}\right)}{f_y} = 0.002$$

$(A_{s,4})_{required}$ = 0.25 in² / ft < $A_{s,4}$ **[Satisfactory]**

CHECK SLIDING CAPACITY (2015 IBC 1807.2.3)

SLIDING IS RESISTED BY BASEMENT SLAB

1.5 (H_b + H_s) = 5.24 kips > H_p + μ ΣW = 2.40 kips

[Unsatisfactory]