

SHEAR WALL CALCULATIONS

ASCE 7-10 WIND PRESSURES									
K_z	(VELOCITY Y PRESSUR	K_d	(WIND DIREC TIONA LITY	K_v	(TOPPROGR FACTO	SQUARE OF: V (ASCE 7-10 BASIC WIND SPEED IN MPH, 3-SECOND GUST)			
QZ LRFD (ASCE7-10 WIND PRESSURE AT MEAN ROOF HEIGHT IN PSF)	-	COEFFEC ENT)	APHIC FACTOR)	R)	Exposure Class	110 B			
30.8848208	0.00256	0.85	1.38	0.85					

UPLIFT		
EW	NS	
V3 (lbs)	2,409	4,336

Seismic Weights				
	Length (average)	Width (ave	Dead Load (psf)	Seismic mass on and above (lbs)
LEVEL 2	20	20	10	10000
ROOF	20	20	15	6000

LEVEL 1: EW					LEVEL 1: NS				
WIND CALCULATIONS					WIND CALCULATIONS				
Length of Structure (NS)	20 ft				Length of Structure (EW)	20 ft			
Width of Structure (EW)	20 ft				Width of Structure (NS)	20 ft			
Average Structure Height (above level 1)	12 ft				Average Structure Height (above level 2)	12 ft			
Torsional Loading	0 lbs				Torsional Loading	0 lbs			
Wind Lateral Load (before torsion)	7412.308992 lbs				Wind Lateral Load (before torsion)	7412.308992 lbs			
LRFD Wind Lateral Load	7,412 lbs				LRFD Wind Lateral Load	7,412 lbs			
SEISMIC CALCULATIONS					SEISMIC CALCULATIONS				
IMPORTANCE FACTOR	1.00				IMPORTANCE FACTOR	1.00			
Liquefaction Susceptibility	VERY LOW				Liquefaction Susceptibility	VERY LOW			
Seismic Design Category	D	Ss	1.274 G		Seismic Design Category	D	Ss	1.274 G	
Site Class	D	Fa	1.6		Site Class	D	Fa	1.6	
S0s (as per NEHEP PROVISIONS ALTERNATIVE 4.6.1)	2/3F5s	1.358933			S0s (as per NEHEP PROVISIONS ALTERNATIVE 4.6.1)	2/3F5s	1.358933		
Response Modification Factor Table A4.3.1	R	6.5			Response Modification Factor Table A4.3.1	R	6.5		
Seismic Weight of Structure (LEVEL 2)	W	10,000 lbs			Seismic Weight of Structure (LEVEL 2)	W	10,000 lbs		
Torsional Loading		0 lbs			Torsional Loading		1960 lbs		
Seismic Base Shear	V=1.25S0sW/R	5,227 lbs			Seismic Base Shear	V=1.25S0sW/R	5,227 lbs		

ROOF: (V3, EW)					ROOF: (V3, NS)				
WIND CALCULATIONS					WIND CALCULATIONS				
Length of Structure (NS)	20 ft				Length of Structure (EW)	36 ft			
Width of Structure (EW)	36 ft				Width of Structure (NS)	20 ft			
Average Structure Height (above level 1)	3 ft				Average Structure Height (above level 1)	3 ft			
Torsional Loading	0 lbs				Torsional Loading	0 lbs			
Wind Lateral Load (before torsion)	1853.077248 lbs				Wind Lateral Load (before torsion)	3335.539046 lbs			
LRFD Wind Lateral Load	1,853 lbs				LRFD Wind Lateral Load	3,336 lbs			
SEISMIC CALCULATIONS					SEISMIC CALCULATIONS				
IMPORTANCE FACTOR	1.00				IMPORTANCE FACTOR	1.00			
Liquefaction Susceptibility	VERY LOW				Liquefaction Susceptibility	VERY LOW			
Seismic Design Category	D	Ss	1.274 G		Seismic Design Category	D	Ss	1.274 G	
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Response Modification Factor Table A4.3.1	R	6.5			Response Modification Factor Table A4.3.1	R	6.5		
Seismic Weight of Structure (LEVEL 2)	W	6,000 lbs			Seismic Weight of Structure (LEVEL 2)	W	6,000 lbs		
Torsional Loading		0 lbs			Torsional Loading		1176 lbs		
Seismic Base Shear	V=1.25S0sW/R	3,136 lbs			Seismic Base Shear	V=1.25S0sW/R	3,136 lbs		

LATERAL FORCES SUMMARY				
REDUNDENCY FACTOR				
LEVEL#	1.3	1.3 if torsional structure		
	EW	NS		
1.0 Seismic Lateral Load (Max)	1	6,795	6,795	lbs
1.0 Wind Lateral Load (max)	R	9,536	9,536	lbs
1.0 Seismic Lateral Load (Max)	R	4,077	4,077	lbs
1.0 Wind Lateral Load (max)	R	2,409	4,336	lbs

UPLIFT ON ROOF JOISTS	
Width of Structure	20 ft
Roof eaves	1.5 ft
O.C. Spacing of joist/truss	16 in
Wind Uplift	-23.163 psf
Uplift per joist or truss	-355.17 lbs

FS SHEAR EACH WALL LEVEL													
	Wind (lbs/ft)	Seismic (lbs/ft)	Total SW Length (ft)	Ga (kip: # OF SW lines	DIRECTION	LEVEL	FS WIND	FS SEISMIC	Cub (L for 16" O.C. Segment	Shortest SW in (lbs), MAX(Wind, Seismic)	min. # of each line	# of Vertical Anchorage (lbs), MAX(Wind, Seismic)	
SW2 Shearwall Capacity: 15/32 wood structural panels, 10d nails, 2" O.C.	2155	1540	4	14	2	NS	1st FLOOR	1,4313	1,4505495	0.8	4	1	4310
SW2 Shearwall Capacity: 15/32 wood structural panels, 10d nails, 3" O.C.	1680	1200	18	14	1	EW	1st FLOOR	2,51058	2,5431711	0.8	15	1	896
SW2 Shearwall Capacity: 15/32 wood structural panels, 10d nails, 2" O.C.	2155	1540	6	14	2	NS	2nd FLOOR	4,771	3,6263736	0.8	4	1	4310
SW2 Shearwall Capacity: 15/32 wood structural panels, 10d nails, 3" O.C.	1680	1200	15	14	1	EW	2nd FLOOR	8,36862	3,5321821	0.8	15	1	896

SHEAR ANCHORAGE		
	EW	NS
BASE SHEAR	9,636	9,636
Capacity of 5/8" ANCHORS, 7" EMBEDMENT, PLATE WASHERS (1500 lbs ASD, 2.16 format conversion factor, .85 phi)	2809.08	
O.C. Spacing	6	6
Wall Length	20	20
# of walls (2 if both sides of structure)	1	2
Capacity	12172.68	24345.36
FS	1.26325009	5.063

SHEAR HARDWARE PONEY WALL - 1st FLOOR WALLS			
	EW	NS	
SHEAR	9,636	9,636	
Capacity of LTP4, LTP5 framing plates	530		
O.C. Spacing	2	2	
Wall Length	18	4	
# of walls (2 if both sides of structure)	2	2	
Capacity	5300	1590	
FS	1.100041316	0.3300124	

SHEAR HARDWARE PONEY WALL - 2nd FLOOR WALLS			
	EW	NS	
SHEAR	2,409	4,336	
Capacity of LTP4 framing plates	575		
O.C. Spacing	3	1.5	
Wall Length	15	6	
# of walls (2 if both sides of structure)	2	2	
Capacity	3450	2875	
FS	2.864258626	1.32605	