STRUCTURAL CALCULATIONS
for
ANNA ROBERTS
at
347 SHUE ROAD
BROADWAY, NC 27505
for
EVOLUTION DRAFTING LLC

BY: **JACOB PROCTOR, P.E.**
Professional Engineer

NC Firm License No.COA #P-0742

PROJECT #: **U6489.0090.251**

DATE: **July 2, 2025**

DESIGNED BY HEE; CHECKED BY KSA

Note:
The calculations presented in this package are intended for a single use at the location indicated above, for the client listed above. These calculations shall not be reproduced, reused, "card filed", sold to a third party, or altered in any way without the written authorization of Vector Structural Engineering, LLC and Evolution Drafting LLC.

Design Criteria:

General:

Code: Structural design is based upon the North Carolina Building Code, 2018 Edition (2015 IBC)
Risk Category: II

Wind Criteria: ASCE7-10

Analysis Procedure: ASCE 7-10, Chapter 27 - Directional Procedure
Basic Wind Speed - Ultimate (mph): 120 (3-sec gust)
Wind Exposure: B

Seismic Criteria:

Analysis Procedure: ASCE 7-10, Equivalent Lateral Force Procedure
Site Class: D(efault)
Seismic Importance Factor, I_E: 1.0
Mapped Spectral Response Accelerations:
S_S = 0.136 S_1 = 0.066
S_{DS} = 0.145 S_{D1} = 0.106
Seismic Design Category: B
Seismic Force Resisting System: Wood Shearwalls
Seismic Response Coefficient, C_s: 0.022
Seismic Base Shear, V (k): 0.2

Snow Load:

Ground Snow Load, p_g (psf): 15
Snow Importance Factor, I_S: 1
Flat Roof Snow Load, p_f (psf): 11
Sloped Roof Snow Load, p_s (psf): 11

Live Loads:

Roof Live Load (psf): 20
Floor Live Load (psf): 40

General Notes:

- The contractor shall verify dimensions, conditions and elevations before starting work. The engineer shall be notified immediately if any discrepancies are found.
- The typical notes and details shall apply in all cases unless specifically detailed elsewhere. Where no detail is shown, the construction shall be as shown for other similar work and as required by the building code.
- These calculations are limited to the structural members shown in these calculations only. The connection of the members shown in these calculations to any existing structure shall be by others.
- The contractor shall be responsible for compliance with local construction safety orders. Approval of shop drawings by the architect or structural engineer shall not be construed as accepting this responsibility.
- All structural framing members shall be adequately shored and braced during erection and until full lateral and vertical support is provided by adjoining members.

Wood Construction:

- All dimensional lumber shall be Southern Yellow Pine #2 or equal
- All wood timbers shall be Southern Yellow Pine #1 5X And Larger Or Equal
- Wood construction code checks are per the National Design Specification for Wood Construction (NDS) and Standard for Design of Timber Frame Structures (TFEC 1)

Foundation / Concrete:

- All concrete mixing, placement, forming, and reinforcing installation shall be performed in accordance with the requirements of “Building Code Requirements for Reinforced Concrete”, ACI 318, latest applicable edition.
- Foundation concrete shall have a minimum compressive strength of 4000 psi at 28 days.
- Cement for all concrete shall be Type II with a minimum of 6% entrained air. Maximum aggregate size shall be 3/4".
- Reinforcing steel shall be per ASTM A615 Gr. 60, U.N.O.
- Foundation design is based upon presumptive soil capacities. Vector Structural Engineering, LLC strongly recommends independent soils testing be performed by a licensed geotechnical engineer to verify soil capacites, slope stability, and any other related soil parameters.

PROJECT: Anna Roberts **JOB NO.:** U6489.0090.251 **SUBJECT:** GRAVITY LOADS

			Increase due to pitch	Original loading
ROOF				
ROOF PITCH/12		4		
ASPHALT SHINGLES		4.22	1.05	4.00
1/2" PLYWOOD		1.58	1.05	1.50
FRAMING		3.00		
INSULATION		2.00		
1/2" GYPSUM CLG.		2.20		
M, E & MISC		2.30		
FUTURE SOLAR		3.00		
	DL	18.30		
	LL	20.00		
	SNOW	11.00		
SNOW INCLUDED IN LATERAL		0.0		
2ND FLOOR (WHERE OCCURS)				
FLOOR COVERING		1.00		
3/4" T&G PLYWOOD		2.30		
MFG TRUSSES / FRAMING		2.00		
INSULATION		1.00		
1/2" GYPSUM CEILING		2.20		
PARTITION		2.00		
M, E & MISC.		1.50		
OTHER		0.00		
	DL	12.00		
	LL	40.00		
EXTERIOR WALLS				
STUCCO/SIDING		3.50		
2x6 FRAMING W/3 PLATES		1.30		
INSULATION		1.00		
1/2" GYPSUM		2.20		
1/2" PLYWOOD		1.50		
OTHER		0.50		
	DL	10.00		
OVERFILL				
ASPHALT SHINGLES		4.00		
1/2" PLYWOOD		1.50		
RAFTERS & MISC		3.50		
OTHER		0.00		
	DL	9.00		
	LL	20.00		

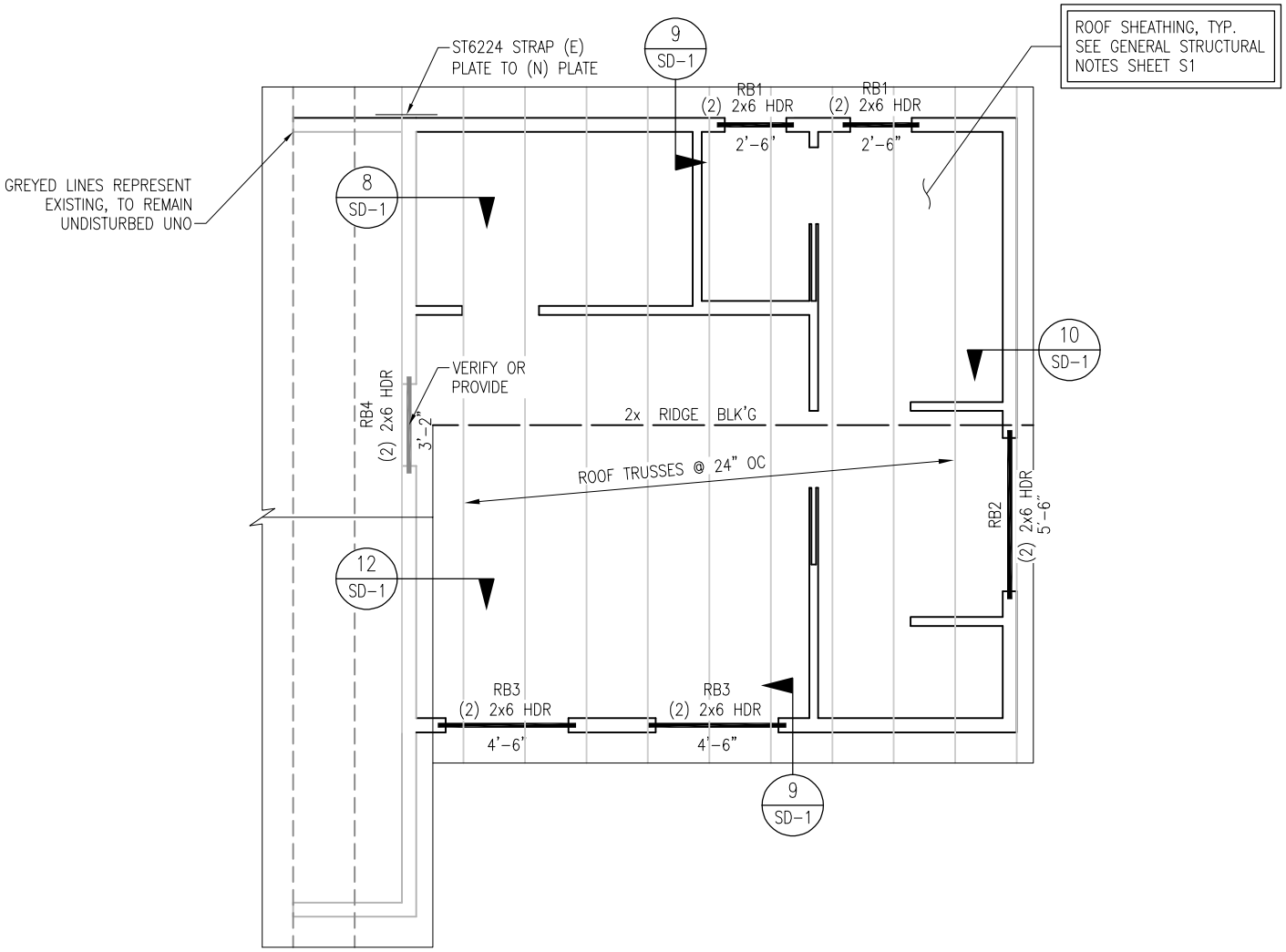
TYPICAL ROOF OVERBUILD MAX SPAN TABLE

Grade	Size	Spacing (ft)	L_{max} (ft)
DFL#2	2X4	2	6.20
DFL#2	2X6	2	9.80
DFL#2	2X8	2	13.00
DFL#2	2X10	2	16.00

C_r	C_D	$C_{F,V}$	M_{allow} (ft-lb)	V_{allow} (lb)	Ctrl'g factor
1.15	1.25	1.50	482	382	TL def
1.15	1.25	1.30	1030	601	TL def
1.15	1.25	1.20	1653	792	TL def
1.15	1.25	1.10	2466	1011	Moment

BEAM KEYPLAN

Beam and header lengths shown on this keyplan are for design purposes only and do not represent actual beam or header lengths nor rough opening sizes. For project dimensions refer to the architectural drawings.



PROJECT: Anna Roberts **JOB NO.:** U6489.0090.251 **SUBJECT:** BEAMS

DESIGN LOADS:

Load Types:	Snow*I_S	Live	Dead
Roof	11	20	18
Floor		40	12
Wall			10

Add .2*S_{DS} to dead load? No 0 =.2*S_{DS}

Load Combinations:

LC 2: D+L
LC 3: D+(Lr or S)
LC 4: D+.75L+.75(Lr or S)

CRITERIA (L/)	D_{TL}	D_{LL}	D_{DL}	$D_{Lr/S}$
$A_{(BLANK)}$	240	360		240
B	240	480		240
C	600		800	240

Abbrev	GRADES		F_{bxx} (psi)	F_{vxx} (psi)	E_{xx} (psi)		g (lb/ft^3)
SYP#2	Southern Yellow Pine #2		750	175	1400000		34.3
SYP#1 5x	Southern Yellow Pine #1 5x A		1,350	160	1500000		34.3
SYP#1	Southern Yellow Pine #1		1,000	175	1600000		34.3
24F-V4	Glue Laminated Timber 24F-V		2,400	265	1800000		39.9
24F-V8	Glue Laminated Timber 24F-V		2,400	265	1800000		39.9
LVL (2.0)	MICROLLAM LVL (2.0E)		2,600	285	2000000		41.8
LVL (2.1)	MICROLLAM LVL (2.1E)		2,600	285	2100000		41.8
LSL	TIMBERSTRAND LSL (1.3E)		1,700	400	1300000		41.8
PSL	PARALLAM PSL (2.0E)		2,900	290	2000000		41.8
STL36	GRADE 36 STEEL		21,600	14,400	29,000,000		490
STL46	GRADE 46 STEEL		27,700	16,500	29,000,000		490
STL50	GRADE 50 STEEL		30,000	12,934	29,000,000		490

Label	Length 'L' (ft)	Roof Trib (ft)	Floor Trib (ft)	Wall Trib (ft)	Add'l Live Load (plf)	Add'l Lr/S Load (plf)	Add'l Dead Load (plf)	Point Load From	React (A,B)	Dist 'a' (ft)	Point Live Load 'P_{LL}' (lb)	Point Roof Load '$P_{Lr/S}$' (lb)	Point Dead Load 'P_{DL}' (lb)	# PLIES	Grade	Size	"BM/HDR"	D CRITERIA	C_r	C_D	$C_{F,V,}C_L$	R_a (lb)	R_b (lb)	M_{max} (ft-lb)	M_{allow} (ft-lb)	V_{max} (lb)	V_{allow} (lb)	D_{TL} (in)	$D_{TLallow}$ (in)	D_{LL} (in)	$D_{LLallow}$ (in)	$D_{Lr/S}$ (in)	$D_{Lr/Sallow}$ (in)	GLB Camb	Check
RB1	2.5	11.1												(2)	SYP#2	2X6	H		1.00	1.25	1.28	530	530	331	1510	336	2406	0.006	0.125		0.083	0.003	0.125		0.22 M
RB2	5.5	1.5												(2)	SYP#2	2X6	H		1.00	1.25	1.28	168	168	230	1510	140	2406	0.022	0.275		0.183	0.011	0.275		0.15 M
RB3	4.5	11.1												(2)	SYP#2	2X6	H		1.00	1.25	1.28	958	958	1078	1510	763	2406	0.067	0.225		0.150	0.035	0.225		0.71 M
RB4	3.2	2												(2)	SYP#2	2X6	H		1.00	1.25	1.28	128	128	102	1510	91	2406	0.003	0.160		0.107	0.002	0.160		0.07 M

PROJECT: Anna Roberts **JOB NO.:** U6489.0090.251 **SUBJECT:** STUDS & OTHER MEMBERS

DESIGN LOADS (psf)

	Dead	Live	Snow*Is
Roof	18	20	11
Floor	12	40	
Exterior Wall	10		
Interior Wall	8		

Design Wind Speed	120
Wind Exposure	B

LOADING PARAMETERS	Label:	Typical Ext.	1 KS - 5'	2 KS - 14'
Wind/Wall Tributary (ft)		1.33	3.17	7.67
Bending Axis		Strong	Strong	Strong
Roof Tributary (ft)		11.1	11.1	11.1
Floor Tributary (ft)				
Additional Dead Load (lbs)				
Additional Floor Live Load (lbs)				
Additional Roof Live Load (lbs)				
Additional Snow Load (lbs)				
Location for Wind Loading		C&C Zone 5	C&C Zone 5	C&C Zone 5
Mean Roof Height (ft)		15	15	15
Axial Loads (lbs):				
Dead		319	759	1838
Floor Live		0	0	0
Roof Live		295	703	1702
Snow		162	386	936
Bending Load (plf):				
Wind		43.1	102.5	224.6
MEMBER PROPERTIES				
Strong-Axis Unbraced Length, l_1 (ft)		8	8	8
Weak-Axis Unbraced Length, l_2 (ft)		1	1	1
Compression Edge Unbraced Length, l_u (ft)		1	1	1
Grade		SYPSTUD	SYPSTUD	SYPSTUD
Size		2x6	2x6	2x6
Quantity of Members		1	1	2
SPECIAL CONDITIONS				
Moisture Category		Normal	Normal	Normal
Temperature Category		≤100°	≤100°	≤100°
Incising?		No	No	No
Repetitive Member Category		Rep. (Special)	Rep. (Special)	Rep. (Special)
Finish Type		Brittle	Brittle	Brittle
SECTION PROPERTIES				
Width, b (in)		1.5	1.5	1.5
Depth, d (in)		5.5	5.5	5.5
Moment of Inertia, I (in^4)		20.796875	20.796875	20.796875
Section Modulus, S (in^3)		7.5625	7.5625	7.5625
DESIGN VALUES				
F_{bx} (psi)		450	450	450
F_{by} (psi)		450	450	450
F_c (psi)		725	725	725
E_{xx} (psi)		1300000	1300000	1300000
E_{yy} (psi)		1300000	1300000	1300000
E_{minxx} (psi)		470000	470000	470000
E_{minyy} (psi)		470000	470000	470000
RESULTS				
D+L		6%	15%	18%
D+Lr		10%	25%	30%
D+S		9%	20%	25%
D+0.75L+0.75Lr		9%	22%	26%
D+0.75L+0.75S		8%	19%	23%
D+0.6W		35%	88%	99%
D+0.75L+0.42W+0.75Lr		26%	68%	78%
D+0.75L+0.42W+0.75S		25%	65%	74%
Deflection Limit (L/)		240	240	240
Deflection (L/)		2101	883	806
Column Slenderness, l_e/d		17.5	17.5	17.5
Beam Slenderness, R_B		7.8	7.8	7.8
Unity Check		**35%**	**88%**	**99%**

PROJECT: Anna Roberts **JOB NO.:** U6489.0090.251 **SUBJECT:** FOOTINGS AND FOUNDATIONS

FOOTINGS

Assumed Soil Bearing Pressure	q=	1500	psf
Footing Embedment/Frost Depth	d_f=	12	in
Soil Weight	W_s=	110	pcf
Wall Width	wwall=	3.5	in
Col Width	wcol=	5.5	in
Slab Thickness	t_s=	4	in

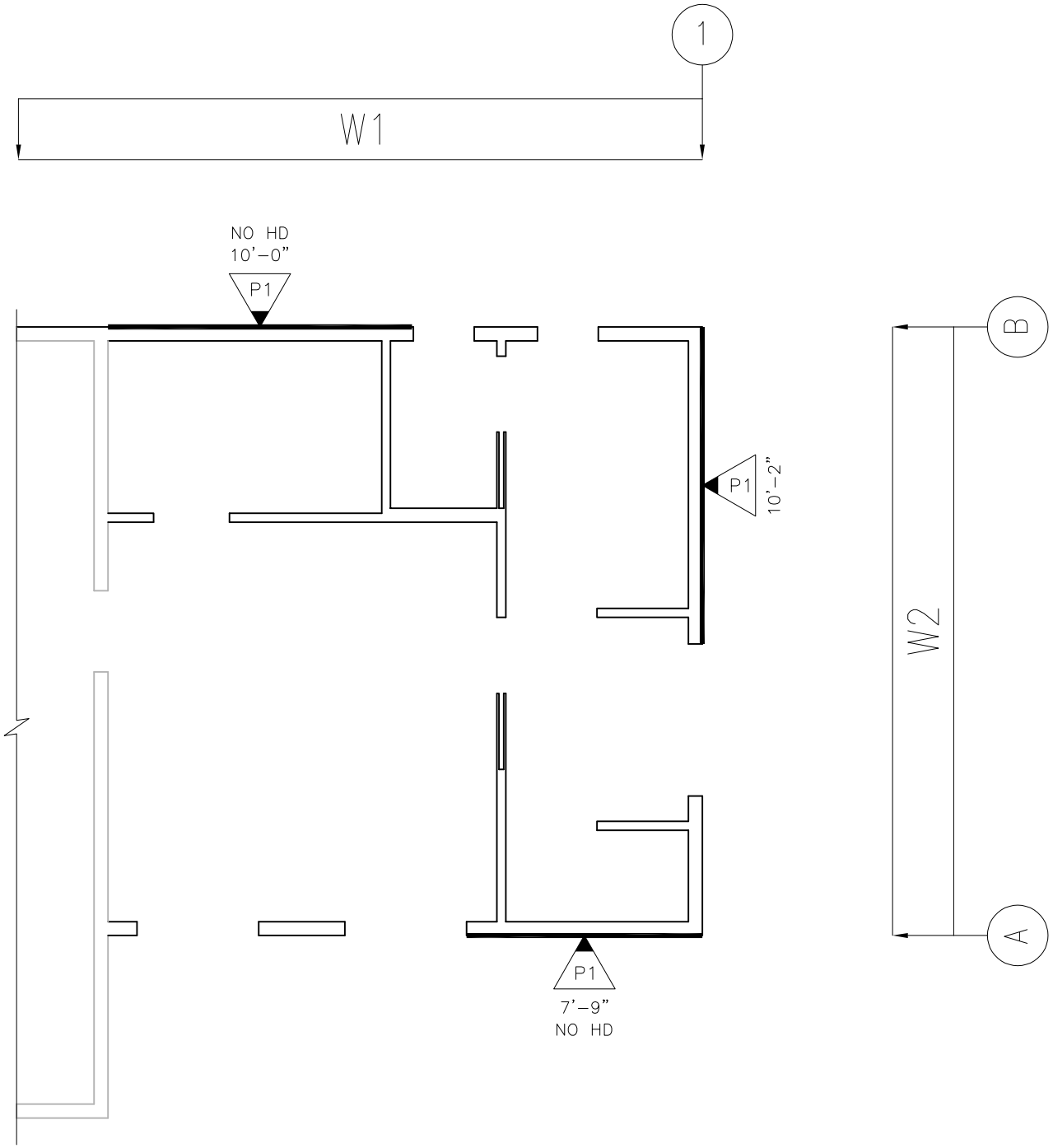
Continuous Footings:

Title	Width (in)		Depth (in)	Loads (plf)	#4 Bars Lengthwise	Alt Bar Size	# of Bars Lengthwise	Ext Uplift Weight (plf)	Int Uplift Weight (plf)
CF1.00	12		10	1,500	2			139	169
CF1.33	16		10	2,000	2			186	226
CF1.50	18		10	2,250	2			209	254

Spread Footings:

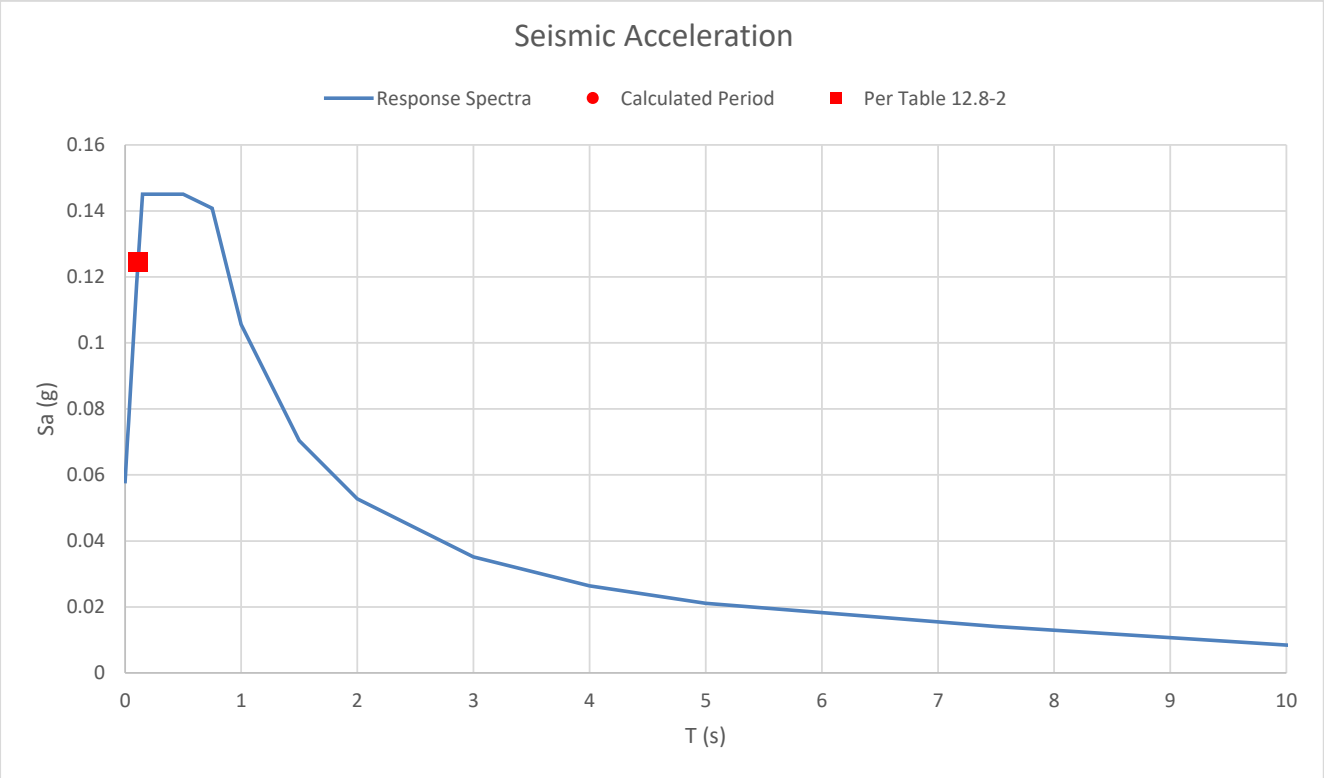
Title	Width (in)	Length (in)	Depth (in)	Loads (kip)	#4 Bars Lengthwise	Alt Bar Size	# of Bars Lengthwise	Ext Uplift Weight (lbs)	Int Uplift Weight (lbs)
F2.00	24	24	10	6.00	3			557	677
F2.50	30	30	10	9.38	3			870	1057
F3.00	36	36	12	13.50	4			1305	1740
F3.50	42	42	12	18.38	5			1776	2368
F4.00	48	48	12	24.00	6			2320	3093
F4.50	54	54	14	30.38	7			3426	4404
F5.00	60	60	14	37.50	8			4229	5438
F5.50	66	66	16	45.38	10			5848	7310

SHEAR WALL KEYPLAN



Seismic Parameters (ASCE 7-10 Chapters 11, 12, & 22)

Site Class:	D	S. 11.4.2	N =	1	S. 12.8.2.1	Determination of SDC:		
R =	6.5	T. 12.2-1	C_t =	0.02	T. 12.8-2	Per Table 11.6-1:	A	
S_s =	0.136	F. 22-1	h_n (ft) =	10	S. 12.8.2.1	Per Table 11.6-2:	B	
S_1 =	0.066	F. 22-2	x =	0.75	T. 12.8-2	SDC:	B	S. 11.6
F_a =	1.6	T. 11.4-1	T =		Calculated	I_E =	1.00	T. 1.5-2
F_v =	2.4	T. 11.4-2	T_a =	0.112	E. 12.8-7	C_{SMAX}=	0.144	E. 12.8-4,5
S_{MS} =	0.22	E. 11.4-1	T_0=	0.15	S. 11.4.5	C_S=	0.022	E. 12.8-2
SM1 =	0.16	E. 11.4-2	Ts=	0.728	S. 11.4.5	C_{SMIN}=	0.010	E. 12.8-6,7
S_{DS} =	0.145	E. 11.4-3	C_U=	1.69	T. 12.8-1	$C_{SCONTROL}$=	0.022	S. 12.8.1.1
S_{DI} =	0.106	E. 11.4-4	T_L=	8	F. 22-12	$C_{SCONTROL}$*.7=	0.016	S. 2.4.1
Risk Category:	II		S_a=	0.125	S. 11.4.5	Seismic Analysis Req'd?	No	IBC 1613.1
						Perform Seismic Analysis?	No	

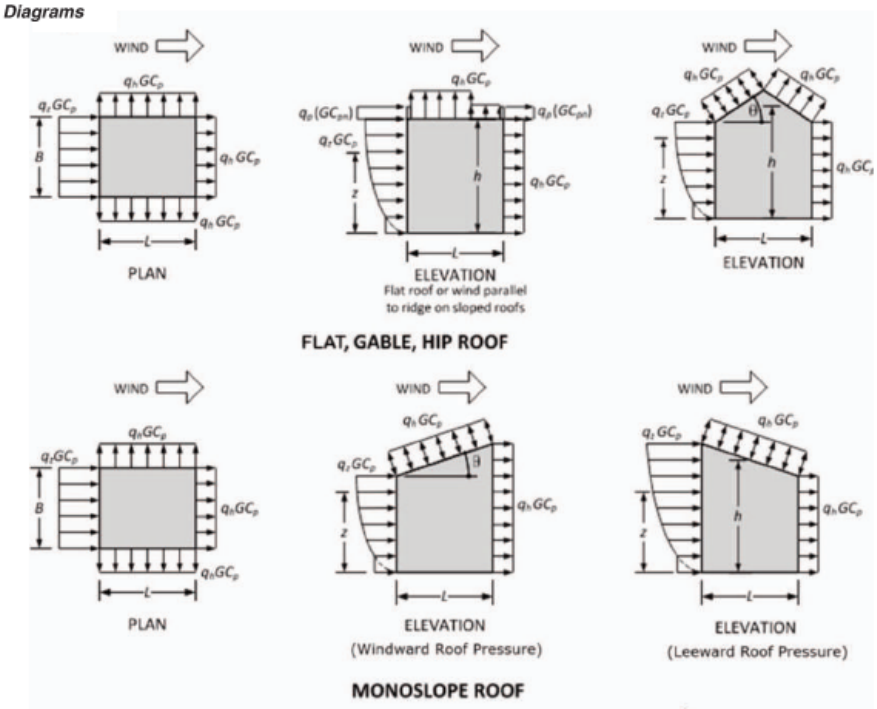


Wind Parameters (ASCE 7-10 Chapter 26)

MAIN WIND FORCE RESISTING SYSTEM DIRECTIONAL METHOD FIGURE 27.3-1

Risk Category:	II	Greatest Mean Roof Height, h (ft):	15	L/B (long)	L/B (tran)
Basic Wind Speed (mph):	120	Building Length (ft):	20	1	1
Exposure Category:	B	Building Width (ft):	20	h/L (long)	h/L (tran)
K_{zt}:	1.00	Enclosure Type:	Enclosed	0.75	0.75
	1.00	Gcpi:	0.18		
Gust Effect Factor, G:	0.85	Velocity Press. Exposure Coefficient, K_h:	0.57		
		Structure Type:	Building - MWFRS		
		Main Ridge to Long Direction:	Parallel to		
		Wind Directionality Factor, K_d:	0.85		
		Velocity Pressure, q_h [psf]:	21.19	$p = qK_dGC_p - qK_dGC_{pi}$	

Diagrams



PROJECT: Anna Roberts **JOB NO.:** U6489.0090.251 **SUBJECT:** LINE LOADS

Roof DL	18	psf
Seismic		
Snow	0	psf
Floor DL	12	psf
Wall DL	10	psf
Period, T	0.11	sec

Level Descriptions

ASCE7 12.8.3
k= 1
$\Sigma w_i h_i^k$= 104000

Label	Height (ft)	$W_{control}$ (lb)	V_{norm} (lb)	V_{redist} (lb)	Redist Fact
Roof	10	10400	232	232	1.00
		0	0	0	1.00
		0	0	0	1.00
		0	0	0	1.00
		0	0	0	1.00

Total Weight (lb)	10400
Total Base Shear (lb)	232

Estimated Total Weight in Longitudinal Direction	10400
Estimated Total Weight in Transverse Direction	10400
Percent difference in estimated weights	0.0%

Seismic Line Loads

Label	Width	Level	Direction	Number of times to include	Roof Trib (ft)	Floor Trib (ft)	Wall Trib Height (ft)	Ext Wall Length (ft)	Other Weight (lb/ft)	Total Weight (lb/ft)	Total Force (lb/ft)	Cvx - Redist Factor	Revised Force (lb/ft)	Force Redist to 1
ω1	20	Roof	TRANS	1	20		4	80		520	12	1.00	12	NO
ω2	20	Roof	LONG	1	20		4	80		520	12	1.00	12	NO

Wind Line Loads

Label	Roof Pitch /12	'h' Mean Roof Height at level (ft)	Total Exposed Roof Area (sqft)	'z' Average Wall Elevation (ft)	Total Exposed Wall Area (sqft)	'z' Top of Parapet Elevation (ft)	Total Exposed Parapet Area (sqft)	Wind Direction to Main Ridge	Windward only?	Roof Type	Parapet Condition	Roof Force (plf)	Wall Force (plf)	Parapet Force (plf)	Total Force (plf)
ω1	4	10.0	82.0	4.0	80.0			Normal	N	Gable/Hip		32.8	79.6		112.4
ω2	0	10.0	0.0	4.0	80.0			Parallel	Y	Gable/Hip			64.0		64.0

VECTOR ENGINEERS

PROJECT: PROJECT NAME **JOB NO.:** U64 **SUBJECT:** SHEAR WALL SHEET EXPLANATION

Global ρ value applied

Calculated ρ values and controlling locations

Aspect ratio limits

Loads applied along line, as calculated previously

Diaphragm shear calculations

PERF/ FTAO wall calcs where applicable

$\rho_{Applied}$ =	1
Min Diaphragm Width (ft) =	20
Allowable Seismic Aspect Ratio =	3.5
Allowable Wind Aspect Ratio =	3.5
Comb. Overstrength Factors: (Ω-0.5)/1.2 =	2.08

ρ_i	Loc
1.00	A-1ST
1.00	A-2ND

ρ calculated in acc… Section 12.3.4.1

Roof DL (psf) = 44 (includes seismic snow where occurs)
Floor DL (psf) = 12

LINE: A **1ST STORY** R=6.5 **Timber Framed Shearwall Calculations**

Line Loads (plf)				Loads from above					Applied Loads (plf)		Diaphragm Shear, R=6.5 (plf)					Perf/FTAO Wall Info			
Load	Trib w (ft)	Span (ft)	Line	%	Location	0.7E (lbs)	0.6W (lbs)	ρ*Seis	Wind	Drag (ft)	Seis (max vs. allow)		Wind (max vs. allow)			(Not Applicable)			
ωI	33.5	67		1.00	Offset	0	0	0.0	68.1	8	0	166	285	232					
	0			1.00	Offset	0	0	0.0	0.0	8	0		0						
				1.00	Above	0	0												
					Total	0	**2280**												

Plate h (ft)= 8 Include Ω for irregularities (above)? No
Max opening height (ft)= 8
Apply aspect ratio reduction? Yes 100% Perforated SW? No Shear Length (ft)= 8 Story V (lbs)= 0
Opening elevation Force Transfer @ Openings? No Wall DL (psf)= 10 Max allow. drift (in) 1.92

Total seismic shear applied at level, for calculating ρ

Amplified seismic deflection of wall

Selection of wall type, 'No' for both means a segmented wall

Shear-Wall Length (ft)	$Roof_{DL}$ 'w' (ft)	$Floor_{DL}$ 'w' (ft)	$Other_{DL}$ 'w' (plf)	Tension From Above (lb)	Wall Type	Sill Type	Holdown Strap	HD Capacity (Stem/floor config)	OTM (**wind**, seismic) (ft-lb)	(0.6-.2SDs) *RM (ft-lb)	Aspect Ratio	Aspect Ratio Reduc.	Seis. Shear (plf)	Seis. Wall Cap. (plf)	Wind Shear (plf)	Wind Wall Cap. (plf)	Sill Plate Cap. (plf)	Tension (lb)	HD Capacity	Max Shear-Wall Δ 1.0E (in)
5	2				P1	S1	STHD10	8"-Midwall	**11402**	870	1.60	1.00	0	260	285	365	388	2106	4195	0.47
3	2				P1	S1	HDU2		**6841**	313	2.67	0.75	0	195	285	274	388	2176	3075	0.66

Information on individual wall piers

Applied unit shears and unit shear capacities (reduced where appropriate)

Add'l Comments: Max: 0.66

LINE: A **1ST STORY** R=6.5 **Timber Framed Shearwall Calculations**

Line Loads (plf)				Loads from above					Applied Loads (plf)		Diaphra…					Perf/FTAO Wall Info			
Load	Trib w (ft)	Span (ft)	Line	%	Location	0.7E (lbs)	0.6W (lbs)	ρ*Seis	Wind	Drag (ft)	Seis (ma…		allow)			Ltotal (ft)	20	Rdl (ft)	2
ωI	15	30		1.00	Offset	0	0	57.9	59.4	20	0	166						DL (plf)	168
	0			1.00	Offset	0	0	0.0	0.0	20	0					Wall type	P1	Opening (ft)	12
				1.00	Above	0	0									HD	STHD10	8"-Corner	
					Total	868	**891**									T (lb)	-649	HD cap	2940

Perforated or FTAO calculations

Co factor when applicable

Plate h (ft)= 8 Include Ω for irregularities (above)? No
Max opening height (ft)= 3
Apply aspect ratio reduction? Yes 50% Perforated SW? No Shear Length (ft)= 8 Story V (lbs)= 173
Opening elevation 2 Force Transfer @ Openings? Yes Wall DL (psf)= 10 Max allow. drift (in) 1.9…

Hold down information for global wall overturning

Seis (plf) 109 Cap (plf) 260
Wind (plf) 111 Cap (plf) 365
Strap (lb) 428 Δ (in) N/A
Strap Type CS16 1705

Required only for FTAO method

Shear-Wall Length (ft)	$Roof_{DL}$ 'w' (ft)	$Floor_{DL}$ 'w' (ft)	$Other_{DL}$ 'w' (plf)	Tension From Above (lb)	Wall Type	Sill Type	Holdown Strap	HD Capacity (Stem/floor config)	OTM (**wind**, seismic) (ft-lb)	(0.6-.2SDs) *RM (ft-lb)	Aspect Ratio	Aspect Ratio Reduc.	Seis. Shear (plf)	Seis. Wall Cap. (plf)	Wind Shear (plf)	Wind Cap.	HD Capacity	Max Shear-Wall Δ 1.0E (in)
3		PERF/FTAO SHEAR-WALL CALCULATIONS APPLY - SEE ABOVE									1.00	1.00						
5											0.60	1.00						

Length of full-height segements in PERF/FTAO

Maximum unit shear and strap forces calculated by Diekmann method for FTAO walls

Add'l Comments: Max:

PROJECT: Anna Roberts **JOB NO.:** U6489.0090.251 **SUBJECT:** SHEAR WALLS

$\rho_{Applied}$ =	1
Min Diaphragm Width (ft) =	20
Allowable Seismic Aspect Ratio =	3.5
Allowable Wind Aspect Ratio =	3.5
Comb. Overstrength Factors: (Ω-0.5)/1.2=	2.08

ρ_i	Loc	Fp/Fx
1.00	1-1ST	1.30

Roof DL (psf) = 18 (includes seismic snow where occurs)
Floor DL (psf) = 12

ρ calculated in accordance with ASCE7- 10 Section 12.3.4.1
No Exception in ASCE 7 12.3.4.2b met?

LINE: 1 1ST STORY — R=6.5 — Timber Framed Shearwall Calculations

Line Loads (plf)			Loads from above					Applied Loads (plf)		Diaphragm Shear, R=6.5 (plf)			Perf/FTAO Wall Info
Load	Trib w (ft)	Span (ft)	Line	%	Location	0.7E (lbs)	0.6W (lbs)	ρ*Seis	Wind	Drag (ft)	Seis (max vs. allow)	Wind (max vs. allow)	(Not Applicable)
ω1	10	20		1.00	Offset				67.4	10.42	166	65 / 232	
				1.00	Offset					10.42			
				1.00	Above								
					Total		674						

Plate h (ft)= 8 — Include Ω for irregularities (above)? No
Max opening height (ft)= 8
Apply aspect ratio reduction? Yes — 100% Perforated SW? No — Shear Length (ft)= 10.42 — Story V (lbs)=
Opening elevation — Force Transfer @ Openings? No — Wall DL (psf)= 10 — Max allow. drift (in) 1.92

Shear-Wall Length (ft)	$Roof_{DL}$ 'w' (ft)	$Floor_{DL}$ 'w' (ft)	$Other_{DL}$ 'w' (plf)	Tension From Above (lb)	Wall Type	Sill Type	Holdown Strap	HD Capacity (Stem/floor config)	OTM (**wind**, seismic) (ft-lb)	(0.6-.2SDs)*RM (ft-lb)	Aspect Ratio	Aspect Ratio Reduc.	Seis. Shear (plf)	Seis. Wall Cap. (plf)	Wind Shear (plf)	Wind Wall Cap. (plf)	Sill Plate Cap. (plf)	Tension (lb)	HD Capacity	Max Shear-Wall Δ 1.0E (in)
10.42	1.5				P1		NO HD	8"-Corner	**5395**	3485	0.77	1.00		260	65	365		183	200	

Add'l Comments: Max:

LINE: B 1ST STORY — R=6.5 — Timber Framed Shearwall Calculations

Line Loads (plf)			Loads from above					Applied Loads (plf)		Diaphragm Shear, R=6.5 (plf)			Perf/FTAO Wall Info
Load	Trib w (ft)	Span (ft)	Line	%	Location	0.7E (lbs)	0.6W (lbs)	ρ*Seis	Wind	Drag (ft)	Seis (max vs. allow)	Wind (max vs. allow)	(Not Applicable)
ω2	10	20		1.00	Offset				38.4	10	166	38 / 232	
				1.00	Offset					10			
				1.00	Above								
					Total		384						

Plate h (ft)= 8 — Include Ω for irregularities (above)? No
Max opening height (ft)= 8
Apply aspect ratio reduction? Yes — 100% Perforated SW? No — Shear Length (ft)= 10 — Story V (lbs)=
Opening elevation — Force Transfer @ Openings? No — Wall DL (psf)= 10 — Max allow. drift (in) 1.92

Shear-Wall Length (ft)	$Roof_{DL}$ 'w' (ft)	$Floor_{DL}$ 'w' (ft)	$Other_{DL}$ 'w' (plf)	Tension From Above (lb)	Wall Type	Sill Type	Holdown Strap	HD Capacity (Stem/floor config)	OTM (**wind**, seismic) (ft-lb)	(0.6-.2SDs)*RM (ft-lb)	Aspect Ratio	Aspect Ratio Reduc.	Seis. Shear (plf)	Seis. Wall Cap. (plf)	Wind Shear (plf)	Wind Wall Cap. (plf)	Sill Plate Cap. (plf)	Tension (lb)	HD Capacity	Max Shear-Wall Δ 1.0E (in)
10	11.1				P1		NO HD		**3072**	8394	0.80	1.00		260	38	365		-532	200	

Add'l Comments: Max:

LINE: A 1ST STORY — R=6.5 — Timber Framed Shearwall Calculations

Line Loads (plf)			Loads from above					Applied Loads (plf)		Diaphragm Shear, R=6.5 (plf)			Perf/FTAO Wall Info
Load	Trib w (ft)	Span (ft)	Line	%	Location	0.7E (lbs)	0.6W (lbs)	ρ*Seis	Wind	Drag (ft)	Seis (max vs. allow)	Wind (max vs. allow)	(Not Applicable)
ω2	10	20		1.00	Offset				38.4	7.75	166	50 / 232	
				1.00	Offset					7.75			
				1.00	Above								
					Total		384						

Plate h (ft)= 8 — Include Ω for irregularities (above)? No
Max opening height (ft)= 8
Apply aspect ratio reduction? Yes — 100% Perforated SW? No — Shear Length (ft)= 7.75 — Story V (lbs)=
Opening elevation — Force Transfer @ Openings? No — Wall DL (psf)= 10 — Max allow. drift (in) 1.92

Shear-Wall Length (ft)	$Roof_{DL}$ 'w' (ft)	$Floor_{DL}$ 'w' (ft)	$Other_{DL}$ 'w' (plf)	Tension From Above (lb)	Wall Type	Sill Type	Holdown Strap	HD Capacity (Stem/floor config)	OTM (**wind**, seismic) (ft-lb)	(0.6-.2SDs)*RM (ft-lb)	Aspect Ratio	Aspect Ratio Reduc.	Seis. Shear (plf)	Seis. Wall Cap. (plf)	Wind Shear (plf)	Wind Wall Cap. (plf)	Sill Plate Cap. (plf)	Tension (lb)	HD Capacity	Max Shear-Wall Δ 1.0E (in)
7.75	11.1				P1		NO HD		**3072**	5042	1.03	1.00		260	50	365		-254	200	

Add'l Comments: Max: