Freeman Design Group inc

Engineers Contractors Designers

April 13, 2004

Columbia County Building Dept.
Lake City, FL. 32055

RE: Verlene Griffen Residence

To Whom it may Concern:

I have conducted a field inspection of the existing foundation and have included calculations to verify no uplift reactions occur at the top of slab as per drawings from Brian Crawford and Nicholas P. Giesler. The existing foundation was built assuming masonry walls. Vertical reinforcing is located only at the corners and at each end of openings. The spacing is more than the minimum 8'-0" spacing allowed in some locations. I certify that no uplift occurs along the top of stemwall, and no additional reinforcing shall be required. The sill plate shall be anchored with ½" anchor bolts set into Simpson SET22 epoxy with 5" embedment at 48" o.c. and 6" from corners. If you have any questions, please call me at (386) 758-4209.

Sincerely,

William H. Freeman, P.E.
President

409 East Duval St., Suite 3 ~ Lake City, Florida 32055 ~ (386) 758-4209

Verlene Griffin Residence

DEAD LOADS

Sample Wall	
Framing	1.0
gyp brd 2 sides	5.0
Finish	1.0
Insulation	1.0
Misc	1.0
	=====
	9.0

Sample Roof	
Framing	2.5
Insulation	2.0
Gyp Ceiling	3.0
Plywood	2.5
Bldg Paper	1.0
Shingles	5.0
Misc	2.0
	=====
	18.0

WIND LOAD - IBC 2000 (ASCE7-98),

110 mph, Exposure B, I=1.00, Mean Roof Height = 12.10 ft
Kzt at Base = 1
Kd = 0.85 , Roof Slope 26.60 degrees
Enclosed Building, GCpi = 0.18

Main Wind Force Resisting System with Gable Roof

Building Width = 80.0 ft ; Building Breadth = 40.0 ft ; Ridge Parallel to Width
Building Frequency Normal to Width = 2.0 Hz ; Building Frequency Normal to Breadth = 2.0 Hz
Gust Factor for Wind Normal to Width (80.0 ft Dim'n) G=0.85
Gust Factor for Wind Normal to Breadth (40.0 ft Dim'n) G=0.85
q(h) =15.13 psf ; K(h) =0.57 ; q(h)*GCpi =2.72 psf

Wind Pressures (psf) by Zone
Zone 1 - Windward Wall

Height (ft)	Kz	qz (psf)	Cp	Wind Normal to Width Max	Wind Normal to Width Min	Wind Normal to Breadth Max	Wind Normal to Breadth Min
0 - 12.1	0.57	15.13	0.80	13.0	7.6	13.0	7.6

Zone 2 - Sloped Windward Roof
Wind Normal to Width

Max/Min	Cp	p (psf)
Max	0.28	6.3
Min	-0.21	-5.5

Zones 2- Windward Roof at Flat Portion Parallel to Ridge
Wind Normal to Breadth

Distance to Windward Edge	Tributary Area 100 Cp	100 Max	100 Min	200 Cp	200 Max	200 Min	1000 Cp	1000 Max	1000 Min
< h/2	-0.90	-8.9	-14.3	-0.90	-8.9	-14.3	-0.90	-8.9	-14.3
< h	-0.90	-8.9	-14.3	-0.90	-8.9	-14.3	-0.90	-8.9	-14.3
< 2h	-0.50	-3.7	-9.2	-0.50	-3.7	-9.2	-0.50	-3.7	-9.2
> 2h	-0.30	-1.1	-6.6	-0.30	-1.1	-6.6	-0.30	-1.1	-6.6

Zone	Wind Normal to	Max/Min	Cp	p (psf)

3 - Leeward Roof	Width	Max	-0.60	-5.0
		Min		-10.4
4 - Leeward Wall	Width	Max	-0.50	-3.7
		Min		-9.2
	Breadth	Max	-0.30	-1.1
		Min		-6.6
5 & 6 - Sidewalls	Width	Max	-0.70	-6.3
		Min		-11.7
	Breadth	Max	-0.70	-6.3
		Min		-11.7

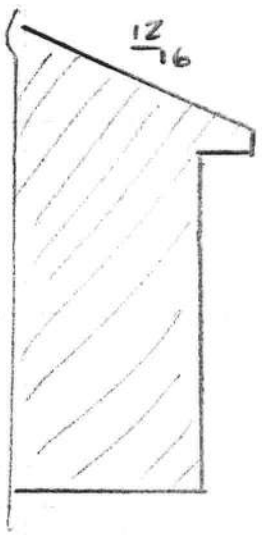
Zone 7 - Bottom Face of Unenclosed Overhangs at Roof Elevation	Wind Normal to	Cp	p (psf)
	Width	0.8	10.3
	Breadth	0.8	10.3

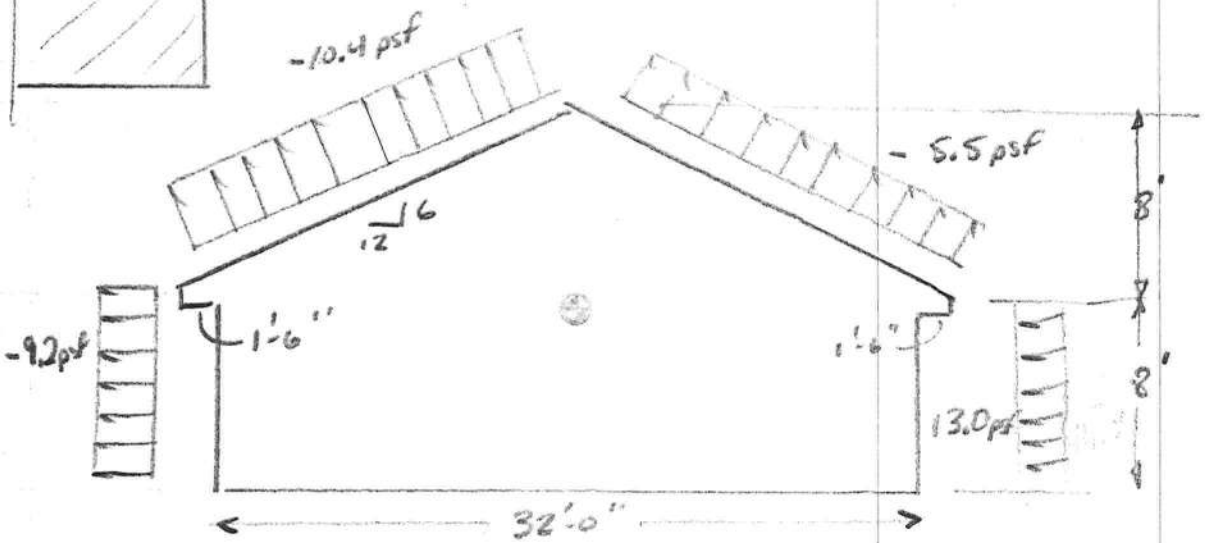
WALLS $p = q\,GC_p - q_i\,(GC_{pi})$

FROM COMPUTER PRINTOUT
MAX. PRESSURE = 13.0 psf
MIN. PRESSURE = 7.6 psf

ROOF

FROM COMPUTER PRINTOUT
MAX PRESSURE = 6.3 psf
MIN PRESSURE = -5.5 psf





ROOF UPLIFT

LEEWARD = $10.4\text{ psf}\,(19.56)\left(\frac{12}{13.42}\right) = 181.9$ plf

WINDWARD $5.5\,(19.56)\left(\frac{12}{13.42}\right) = 96.2$ plf

WALL OVERTURN

WINDWARD $13.0\text{ psf}\,(8) = 104$ plf

LEEWARD $9.2\,(8) = 73.6$ plf

ROOF OVERTURN

LEEWARD $10.4\,(19.56)\left(\frac{6}{13.42}\right) = 90.9$ plf

WINDWARD $5.5\,(19.56)\left(\frac{6}{13.42}\right) = 48.1$ plf

OVERTURNING MOMENT

$\Sigma M = 0$

$$\frac{181.9(8) + 96.2(24) + 90.9(12) + 48.1(12) + 104(4) + 96.2(4)}{32}$$

$= 194$ plf

William H. Freeman
4/12/04

DEAD LOAD

WALL = 8'(9.0 psf) = 72 plf

ROOF = 32'/2 (18 psf) = 288 plf

TOTAL LOAD of WALL + ROOF = 320 plf

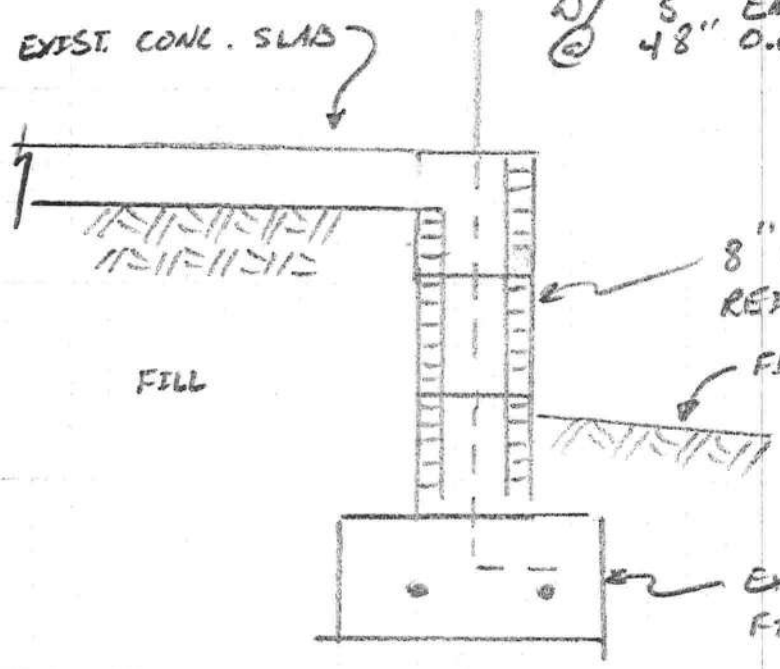
TOTAL LOAD @ TOP of SLAB = 320 plf − 194 plf

= 165 plf DOWNWARD

∴ NO UPLIFT OCCURS @ TOP of SLAB

NO ADDITIONAL REINFORCING REQUIRED.

NOTE:
REMOVE #5 PROTRUDING ABOVE SLAB AND SECURE P.T. 2x PLATE w/ ANCHOR BOLTS (1/2" MIN) IN SIMPSON SET 22 EPOXY w/ 5" EMBEDMENT IN CONC. @ 48" O.C. AND 6" FROM CORNER



AS BUILT FOOTING

Request our Anchor Systems Catalog for complete information.

Simpson Strong-Tie now offers two types of high-strength adhesive anchoring cartridge systems. Epoxy-Tie adhesives are two-component, low-odor, 1:1 ratio, 100% solids epoxy based adhesives. Simpson's new Acrylic-Tie is a two-component, 10:1 ratio, acrylic based adhesive. Acrylic-Tie's innovative chemistry allows easy dispensing, cure at temperatures down to 0° F, as well as fast cure at temperatures at or above 40°F. Both systems feature simultaneous dispensing of resin and hardener/initiator through a static mixing nozzle *(except SET-PAC)*.

APPLICATION: • Surfaces to receive adhesive should be clean.
- For epoxy products, the base material temperature must be 40° F or above at the time of application. For best results the adhesive should be 70-80° F at the time of application.
- For Acrylic-Tie the base material must be 0°F or above at the time of installation.
- To warm cold epoxy cartridges before use, place them in a uniformly heated area for a sufficient time to allow epoxy to warm completely. Do not immerse the cartridges in water to facilitate warming.
- Mixed epoxy material in the nozzle can harden in 5-7 min. at 40° F. Mixed epoxy material can harden in SET-PAC or the nozzle in 5-7 min.

INSTALLATION ***(Epoxy-Tie and Acrylic-Tie)***: • Drill hole to specified diameter and depth. Always wear safety glasses.
- Remove dust from the hole with oil-free compressed air. Clean with nylon brush and blow out remaining dust. Dust left in the hole will reduce the adhesive's holding capacity.
- Before using, dispense a bead of adhesive off to the side to check for proper mixing, indicated by a uniform gray color. Fill hole halfway, starting from the bottom of the hole to avoid air pockets. Withdraw nozzle as hole fills up.
- Anchors must be clean and oil-free. Insert anchor, turning slowly until the anchor hits the bottom of the hole. Do not disturb during cure time.

CODES: • ICBO ER-5279 (SET); ER-4945 (ET); ER-5791 (AT); City of L.A. RR 25279 (SET); RR25185 and RR 25120 (ET); RR 25459 (AT); SBCCI 9706 (SET); 94145 (ET).

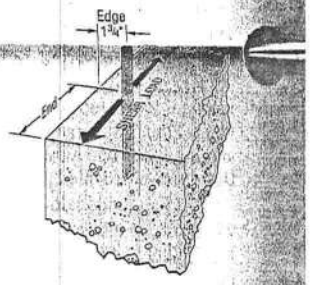
Cure Time

Base Material Temp	0°F	26°F	40°F	60°F	80°F	100°F
AT	24 hrs	8 hrs	4 hrs	1 hr	25 min	20 min
SET	—	—	72 hrs	24 hrs	20 hrs	16 hrs
ET	—	—	72 hrs	24 hrs	24 hrs	12 hrs

Sill Plate Shear Loads (SET/ET/AT) Based on Concrete Edge Distance

Stud Dia	Drill Bit Dia	Min Embed	Edge Dist	End Dist	Avg. Ult Shear Load	Allow. Shear Load f'c ≥ 2000 psi
Load Applied Parallel to Concrete Edge						
½	⅝	4¼	1¾	8½	8496	2125
⅝	¾	5	1¾	10	8857	2215

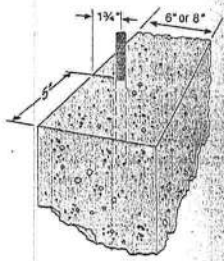
1. The allowable load for the anchor will be the lesser of the wood bearing capacity or concrete strength.



Edge and end distances for threaded rod in concrete slab corner condition

Tension Loads for Threaded Rod Anchors in Concrete Foundation Stemwall Installation

Stud Dia	Drill Bit Dia	Min Embed	Min Wall Thickness	Min Edge Dist	Min End Dist	Avg Ult Tension Load	Allowable Tension Load f'c ≥ 2000 psi (100)	Allowable Tension Load f'c ≥ 2000 psi (133)
SET								
⅝	¾	10	6	1¾	5	23000	5750	7665
⅞	1	15	8	1¾	5	33600	8400	11200
ET								
⅝	¾	9½	6	1¾	5	10720	2680	3565
		12	6	1¾	5	16160	4040	5375
⅞	1	12½	8	1¾	5	17000	4250	5650
		15½	8	1¾	5	23340	5835	7760



Edge and end distances for threaded rod in concrete stemwall corner installation

Tension and Shear Loads for Threaded Rod Anchors in Concrete

Rod Dia. in.	SET/ET Drill Bit Dia. in.	AT Drill Bit Dia. in.	Embed. Depth in.	Tension Load Based on Bond Strength f'c >= 2000 psi Concrete						Shear Load Based on Conc. Edge Distance	Load Based on Steel Strength A307 (SAE 1018)	
				SET		ET		AT			Tension	Shear
				Ave. Ult. lbs.	Allow. lbs.	Ave. Ult. lbs.	Allow. lbs.	Ave. Ult. lbs.	Allow. lbs.	Allow. lbs.	Allow. lbs.	Allow. lbs.
⅜	½	7/16	1¾	1,900	475	—	—	3,362	840	1,145	2,105	1,085
			3½	10,200	2,550	8,777	2,195	8,937	2,235	1,385		
			4½	10,613	2,655	—	—	10,411	2,605	1,385		
½	⅝	9/16	2⅛	7,216	1,805	—	—	5,252	1,315	1,750	3,750	1,930
			4¼	17,700	4,425	15,368	3,840	16,668	4,165	2,500		
			6	18,556	4,640	—	—	19,182	4,795	2,500		
⅝	¾	11/16	2½	6,780	1,695	—	—	8,495	2,125	3,605	5,875	3,025
			5	26,700	6,680	22,877	5,720	—	—	3,925		
			5½	—	—	—	—	26,025	6,505	3,925		
			9⅜	33,402	8,350	—	—	31,683	7,920	3,925		
¾	⅞	13/16	3⅜	15,456	3,865	—	—	12,991	3,250	5,090	8,460	4,360
			6¾	42,100	10,525	35,459	8,865	37,616	9,405	5,090		
			11¼	47,634	11,910	—	—	42,381	10,595	5,090		
⅞	1	1	3⅞	19,120	4,780	—	—	14,206	3,550	6,870	11,500	5,925
			7¾	49,160	12,290	43,596	10,900	42,848	10,710	7,720		
			13 ⅛	66,679	16,670	—	—	55,148	13,785	7,720		
1	1⅛	1 1/16	4½	20,076	5,020	—	—	20,797	5,200	7,630	15,025	7,740
			9	60,060	15,015	47,333	11,835	60,504	15,125	8,465		
			15	82,401	20,600	—	—	82,529	20,630	8,465		
1¼	1⅜	1 5/16	5⅝	35,858	8,965	—	—	32,368	8,090	12,595	23,490	12,100
			11¼	77,045	19,260	78,748	19,685	72,363	18,090	16,145		
			18¾	122,681	30,670	—	—	126,500	31,625	16,440		

10, 22 & 56 oz SET

5, 8, 13 & 30 oz AT

1. The allowable tension loads based on bond strength and the allowable shear loads based on concrete edge distance are based on a safety factor of 4.0.
2. The allowable tension load is the lesser of the allowable load based on bond strength and the allowable load based on steel strength.
3. The allowable shear load is the lesser of the allowable load based on concrete edge distance and the allowable load based on steel strength.
4. The allowable loads may be increased by 33 1/3 percent for short-term loading due to wind or seismic forces with no further increase allowed.
5. Anchors are not permitted for use in conjunction with fire-resistive construction. Exceptions are: (1) Anchors resist wind or seismic loading only (2) For other than wind or seismic loading, special consideration is given to fire exposure conditions.
6. Anchors are not permitted to resist tension forces in overhead or wall installations unless proper consideration is given to fire-exposure and elevated temperature conditions.
7. The tabled values are for concrete edge distance of 1½ x embedment and spacing of 4 x embedment.
8. See the *Simpson Anchor Systems* catalog for reduced edge distance and reduced spacing requirements, allowable load adjustment for temperature and other important information.