LOGAR
DESIGNS INC

P.O. Box 690, Newman, CA 95360.
Phone: 669-253-0101
Email: admin@logardesign.com

Structural Calculations

For:
INTERIOR REMODEL
Into a 1-Story Structure
At:
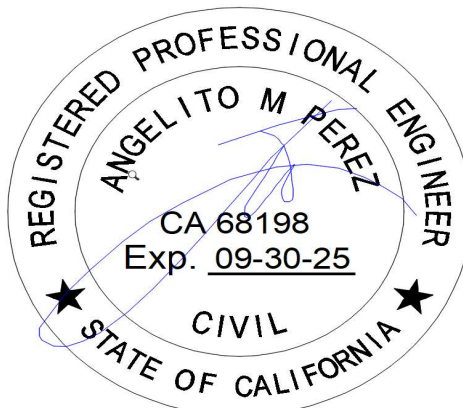Residence: 4456 Gina St, Fremont, CA 94538

Prepared for
Jose

May 2, 2024

Job Number: LGRAS24014

Rev. 1

REGISTERED PROFESSIONAL ENGINEER
ANGELITO M PEREZ
CA 68198
Exp. 09-30-25
CIVIL
STATE OF CALIFORNIA

Angelito M Perez P.E.

Professional Enginner, CA 68198
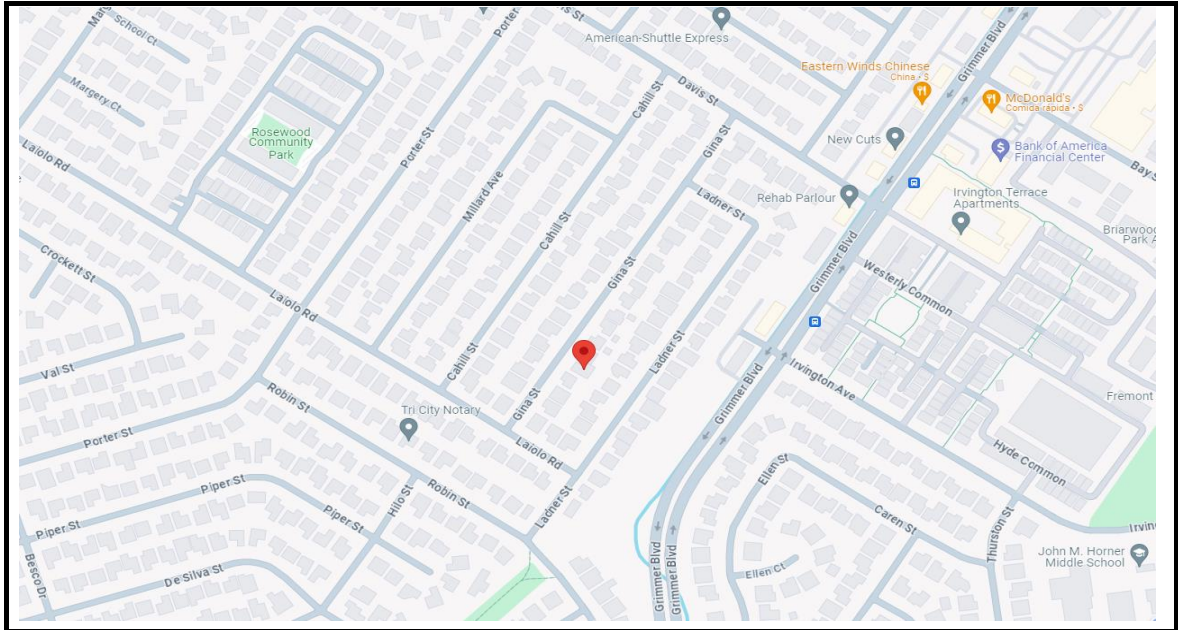
P.O. Box 690,

NEWMAN, CA. 95360.

Phone: 669-253-0101

Email: admin@logardesign.com

For:

INTERIOR REMODEL

Residence:

4456 Gina St, Fremont, CA 94538

Source.: Google Maps

Date: 15/03/2024

Projet No.: LGRAS24014

VECINITY MAPS

ELEVATION VIEW OF SITE

For:

INTERIOR REMODEL

Residence:

4456 Gina St, Fremont, CA 94538

Date: 15/03/2024

Projet No.: LGRAS24014

VERTICAL LOADING

ROOFING		

A. Roof Dead Load:

Typical Roof Slope 2 :12

Roofing - Asphalt	8.00	psf
1/2" Plywood/Sheathing	1.50	psf
Rafters 4x @ 24 oc V.I.F.	2.80	psf
Insulation	1.00	psf
Gypsum Ceiling	2.50	psf
Misc.	1.00	psf
	16.80	psf
Adj. for slope	**18.00**	psf

B. Roof Live Load: **20.00** psf per IBC

EXTERIOR WALL		
Gypsum	2.50	psf
Studs	1.00	psf
Insulation	1.00	psf
Plywood & Misc.	2.50	psf
Stucco	10.00	psf
	17.00	psf

INTERIOR WALL		
Gypsum	2.50	psf
Studs	1.00	psf
Insulation	1.00	psf
Misc.	1.00	psf
Gypsum	2.50	psf
	8.00	psf

Rev.0

4456 Gina St, Fremont, CA 94538, EE. UU.

Latitude, Longitude: 37.5319577, -121.9710263
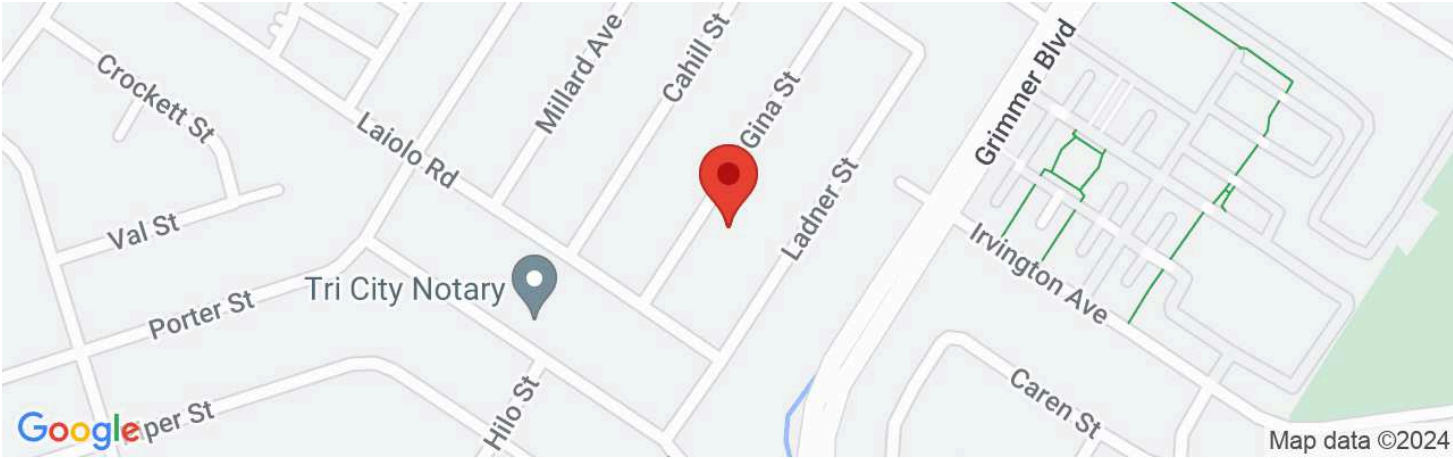
Date	12/3/2024, 09:17:24
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
S_S	2.129	MCE$_R$ ground motion. (for 0.2 second period)
S_1	0.82	MCE$_R$ ground motion. (for 1.0s period)
S_{MS}	2.555	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.703	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1.2	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.894	MCE$_G$ peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	1.073	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	3.052	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	3.321	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	2.129	Factored deterministic acceleration value. (0.2 second)
S1RT	1.13	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	1.248	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.82	Factored deterministic acceleration value. (1.0 second)
PGAd	0.894	Factored deterministic acceleration value. (Peak Ground Acceleration)
PGA_{UH}	1.256	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration
C_{RS}	0.919	Mapped value of the risk coefficient at short periods
C_{R1}	0.905	Mapped value of the risk coefficient at a period of 1 s
C_V	1.5	Vertical coefficient

Rev.0

P.O. Box 690,

NEWMAN, CA. 95360.

Phone: 669-253-0101

Email: admin@logardesign.com

For:

INTERIOR REMODEL

Residence:

4456 Gina St, Fremont, CA 94538

Date: 15/03/2024

Projet No.: LGRAS24014

Bldg Story: 1	Site Class: Class D
Latitude: 37.5319577	Height, h: 10.8
Longitude: -121.9710263	Response Modification Coefficient R: 6.5
Type of Framing System: Bearing Wall	Importance factor I: 1.0
Type of Occupancy: Category II	

11.4.1 Mapped Acceleration Parameters

SS= 2.129 g = spectral response acceleration parameter at short periods

S1= 0.820 g = spectral response acceleration parameter at a period of 1 s

11.4.3 Site Coefficients and Adjusted MCE Spectral Resoponse Acceleration Parameters

SMS= Fa*SS

Fa= 1.2 = short-period site coefficient (at 0.2 s-period) from Table 11.4-1

SMS= 2.55 g = spectral response acceleration at short periods adjusted for site class effects

SM1= Fv*S1

Fv= 1.50 = short-period site coefficient (at 0.1 s-period) from Table 11.4-2

SM1= 1.23 g = spectral response acceleration at short periods adjusted for site class effects

11.4.4 Design Spectral Acceleration Parameters

SDS= (2/3)*SMS =(2/3)*2.5548

SDS= 1.70 g = spectral response acceleration at short periods adjusted for site class effects

SD1= (2/3)*SM1=(2/3)*1.23

SD1= 0.82 g = spectral response acceleration at short periods adjusted for site class effects

11.4.5 Design Response Spectrum

T=Ta= $(Ct)*(h)^x$

Ct= 0.02 = building period coefficient

x= 0.75 = building period coefficient

Ta= 0.12 s = approximate fundamental period of the building

12.8.1.1 Calculation of Seismic Response Coefficient

Cs= S_{DS} / (R / I)   (Equation 12.8-2)

Cs= 0.262 g = seismic response coefficient

Check Cs not exceeding the following values:

1.) Cs1 S_{D1} / T (R / I) for T < T_L (equation 12.8-3)

Cs1= 1.062 g   Okay

2.) Cs2   0.01 = seismic response coefficient (equation 12.8-5)

3.) Cs3   0.5 S_1 / (R / I)   (Equation 12.8-6)

Cs3= 0.063 g   Okay

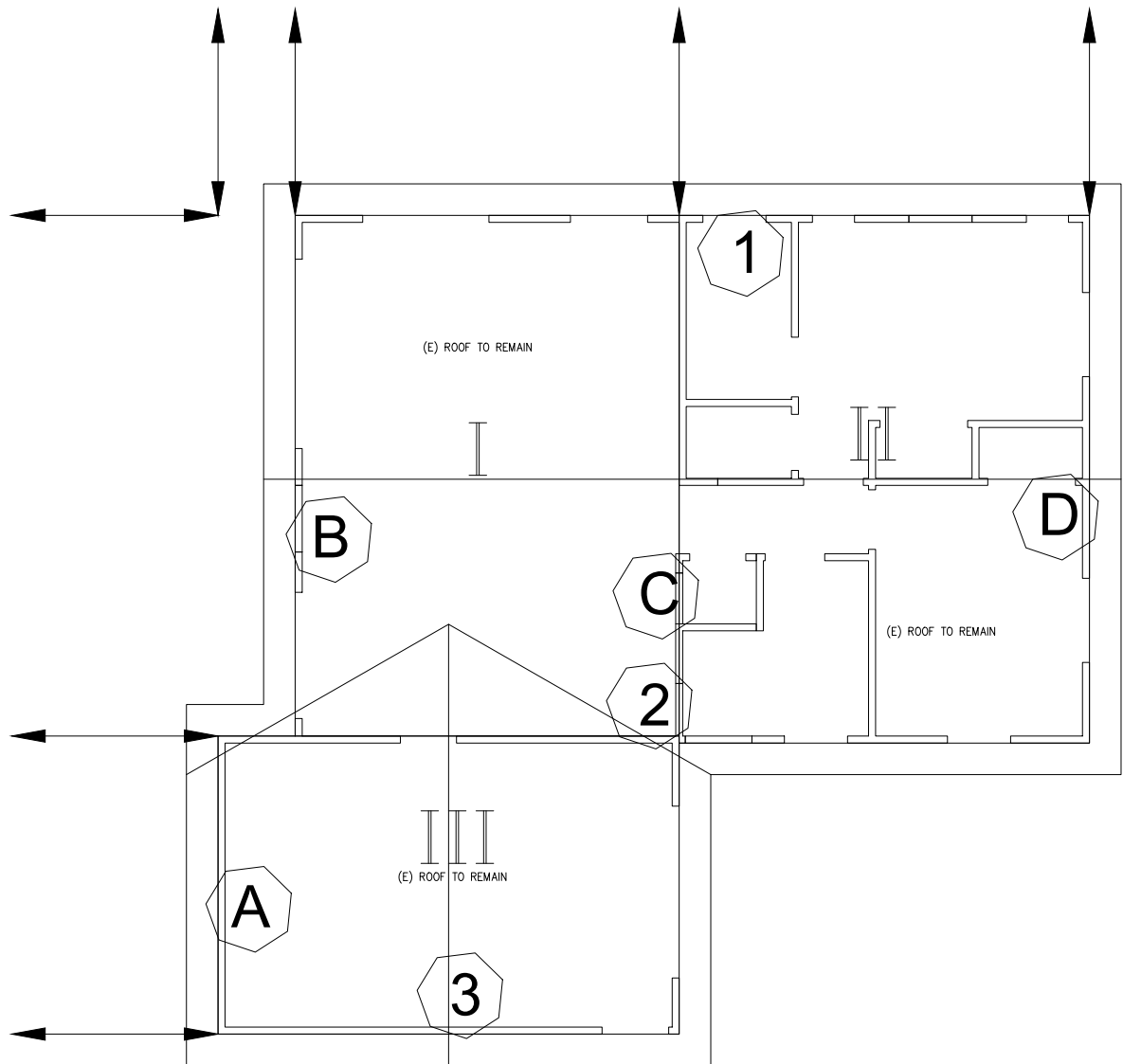**Seismic Coefficient, Cs= 0.262 g = seismic response coefficient**

W= the total dead load of the building (on following page)

V= C_s W

Rev.0

P.O. Box 690, Newman, CA 95360.
EMAIL: admin@logardesigns.com
TEL: (669) 253 0101

LOGAR
DESIGNS INC

Project:4456 Gina St, Fremont, CA 94538

Date:03/14/24

LATERAL ANALYSIS

(E) ROOF TO REMAIN

1

B

D

C

2

(E) ROOF TO REMAIN

A

(E) ROOF TO REMAIN

3

P.O. Box 690,

NEWMAN, CA. 95360.

Phone: 669-253-0101

Email: admin@logardesign.com

For:

Date: 02/05/2024

INTERIOR REMODEL

Residence: Projet No.: LGRAS24014

4456 Gina St, Fremont, CA 94538

Transverse & Longitudinal Lateral Loadings

Tributary Building Weights:

Weight of Roof:	18 psf	1500 sf			27000 lbs
Weight of Exterior Walls:	17 psf	160.0 ft	8 ft	0.5	10880 lbs
Weight of Interior Walls:	8 psf	94.0 ft	8 ft	0.5	3008 lbs
				Total Weight	**40888 lbs**

C_s (Per ASCE 7, Sec. 12.8-1.1)

C_s =	0.262

Seismic Base Shear: $V = C_s \cdot W \cdot \rho$ (Per ASCE 7, Eq. 12.8-1)

V =	0.7	0.262	40888 lbs	1.3
V =	**9750 lbs**			

AREAS FOR GRID LINES

AREA I	452 sf
AREA II	489 sf
AREA III	310 sf
Σ=	1251 sf

Transverse Loading $V_{East-West}$ =   9750 lbs   /   1251 sf

$V_{East-West}$ =   7.8 psf

				SW Length	Nailing Sched			Factor
Line 1:	7.8 psf	471 sf	3667 lbs	7.75 ft	3 in	3	473 plf	
Line 2:	7.8 psf	626 sf	4875 lbs					
Line 3:	7.8 psf	155 sf	1208 lbs					
	Σ=	1251 sf	Σ= 9750 lbs					

Longitudinal Loading $V_{North-South}$ =   9750 lbs   /   1251 sf

$V_{North-South}$ =   7.8 psf

Line A:	7.8 psf	155 sf	1208 lbs
Line B:	7.8 psf	226 sf	1761 lbs
Line C:	7.8 psf	626 sf	4875 lbs
Line D:	7.8 psf	245 sf	1906 lbs
	Σ=	1251 sf	Σ= 9750 lbs

Shearwall Stability:

		SW Ht.	SW Ht*FORCE	(/0.7)	(Ω=2.5)	
Line 1:	473 plf	8.0 ft	3784 lbs	5406 lbs	13514 lbs	Use Simpson HDU4 w/4x4" Post; Cap. = 4565 lbs.

Rev.1

SHEAR WALL SCHEDULE

MARK	SHEAR WALL CONNECTION — MATERIAL	PLYWOOD NAILING	SHEAR TRANSFER NOTE #11 — NAILING OR CLIPS (T.N.)	SILL PLATE CONNECTIONS (SEE NOTE #9 @ EXISTING CONCRETE) — NAILING (S.N.) FOR 2x SOLE PLATE ONLY	ANCHOR BOLTS (A.B.'S) REMARKS: SHEAR BOLTS	SHEAR WALL CAPACITY (#/') NOTE #12
1	3/8" CDX PLYWOOD P.I.: 24/0 *	8d AT 6" O.C. E.N. 8d AT 12" O.C. F.N.	16d AT 5" O.C. OR A35 @ 16" O.C. OR LTP4 AT 24" O.C.	16d AT 5" O.C.	5/8"ø A.B. AT 4'-0" O.C.	260
2	3/8" CDX PLYWOOD P.I.: 24/0 *	8d AT 4" O.C. E.N. 8d AT 12" O.C. F.N.	16d AT 3" O.C. OR A35 @ 12" O.C. OR LTP4 AT 20" O.C.		5/8"ø A.B. AT 3'-3" O.C.	380
3	3/8" CDX PLYWOOD P.I.: 24/0 **	8d AT 3" O.C. E.N. 8d AT 12" O.C. F.N.	A35 @ 10" O.C. OR LTP4 AT 16" O.C.		5/8"ø A.B. AT 2'-4" O.C.	490
4	3/8" CDX PLYWOOD P.I.: 24/0 **	8d AT 2" O.C. E.N. 8d AT 12" O.C. F.N.	A35 @ 10" O.C. OR LTP4 AT 12" O.C.		5/8"ø A.B. AT 1'-8" O.C.	636
5	1/2" CDX PLYWOOD P.I.: 24/0 **	10d AT 2" O.C. E.N. 10d AT 12" O.C. F.N.	2-A35 @ 12" O.C. OR LTP4 AT 10" O.C.		5/8"ø A.B. AT 1'-6" O.C.	770
6	1/2" STR. PLYWOOD P.I.: 24/0 **	10d AT 2" O.C. E.N. 10d AT 12" O.C. F.N.	2-A35 @ 12" O.C. OR LTP4 AT 8" O.C.		5/8"ø A.B. AT 1'-4" O.C.	870
3/3	3/8" CDX PLYWOOD ** EACH SIDE P.I.: 24/0	8d AT 3" O.C. E.N. 8d AT 12" O.C. F.N.	2-A35 @ 12" O.C. OR LTP4 AT 8" O.C.		5/8"ø A.B. AT 1'-2" O.C.	980
4/4	3/8" CDX PLYWOOD ** EACH SIDE P.I.: 24/0	8d AT 2" O.C. E.N. 8d AT 12" O.C. F.N.	NOTE #10 LTP4 AT 12" O.C. EACH SIDE, STAGGER		5/8"ø A.B. AT 11" O.C.	1272
6/6	1/2" STRUCT I PLYWOOD** EACH SIDE P.I.: 24/0	10d AT 2" O.C. E.N. 10d AT 12" O.C. F.N.	NOTE #10 LTP4 AT 8" O.C. EACH SIDE, STAGGER		5/8"ø A.B. AT 8" O.C.	1740

Rev.1

Project: 4456 Gina St, Fremont, CA 94538

Date: 03/14/24

(E) ROOF TO REMAIN

TL=4360#

RIDGE BEAM_A

TL=4360#

(E) ROOF TO REMAIN

(E) ROOF TO REMAIN
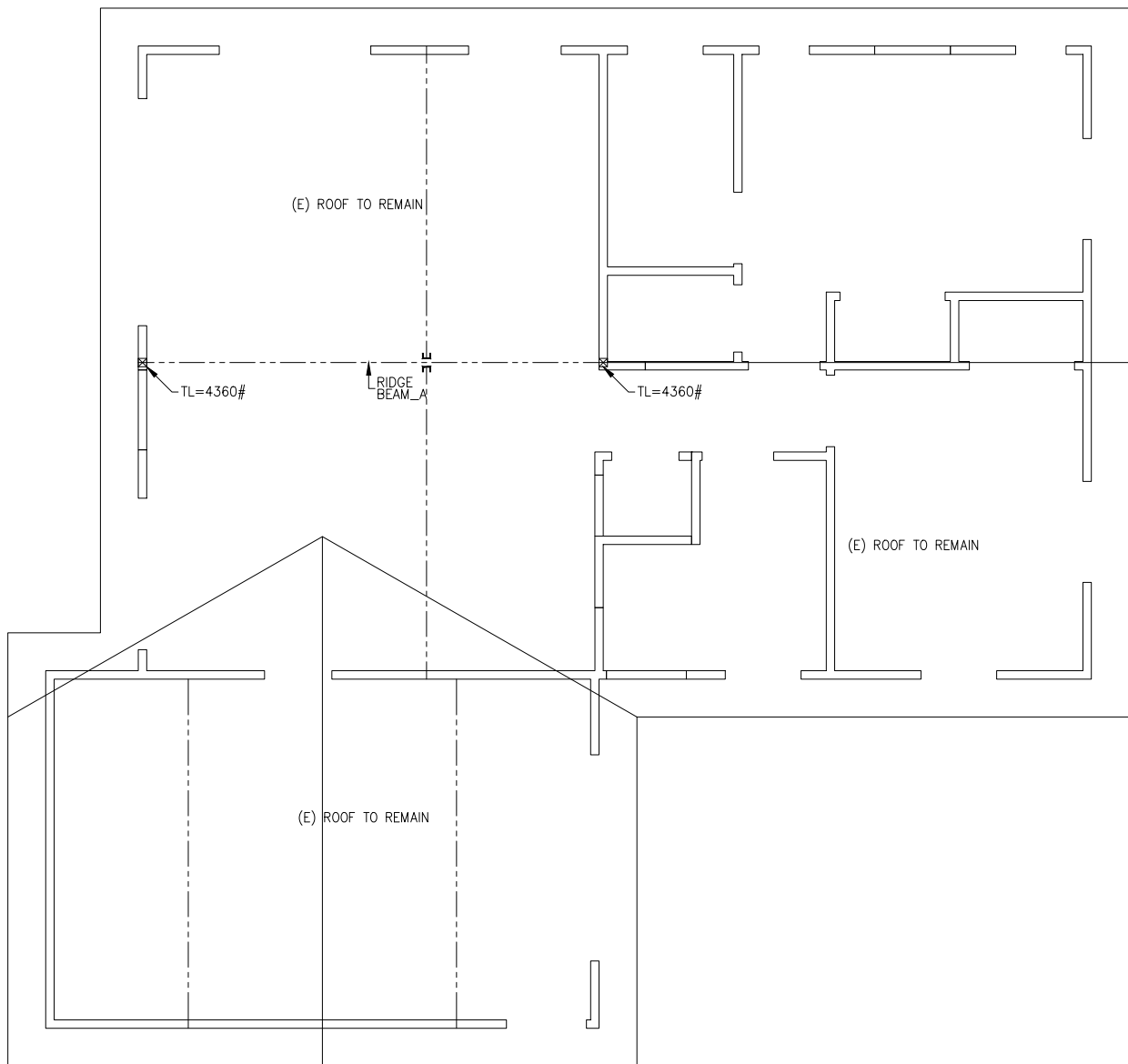
*STRUCTURAL MEMBERS (CHECK LIST)
*LOADS TO SUPPORTS (CHECK LIST)

Rev.0

Roof Members, Ridge Beam_A
1 piece(s) 3 1/2" x 11 7/8" 2.2E Parallam® PSL

Overall Length: 18' 7"
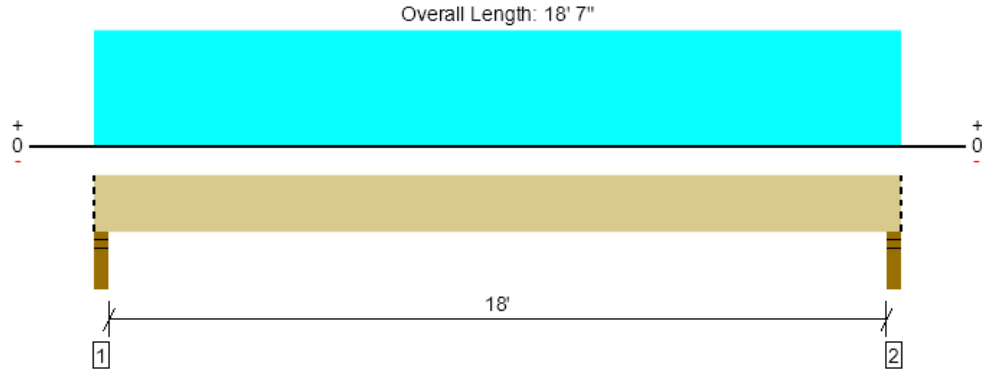
Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	4358 @ 2"	7656 (3.50")	Passed (57%)	--	1.0 D + 1.0 Lr (All Spans)
Shear (lbs)	3757 @ 1' 3 3/8"	10044	Passed (37%)	1.25	1.0 D + 1.0 Lr (All Spans)
Moment (Ft-lbs)	19525 @ 9' 3 1/2"	24878	Passed (78%)	1.25	1.0 D + 1.0 Lr (All Spans)
Live Load Defl. (in)	0.583 @ 9' 3 1/2"	0.913	Passed (L/376)	--	1.0 D + 1.0 Lr (All Spans)
Total Load Defl. (in)	1.139 @ 9' 3 1/2"	1.217	Passed (L/192)	--	1.0 D + 1.0 Lr (All Spans)

Member Length : 18' 7"
System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2021
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Roof Live	Factored	
1 - Stud wall - DF	3.50"	3.50"	1.99"	2128	2230	4358	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.99"	2128	2230	4358	Blocking

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

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	18' 7" o/c	
Bottom Edge (Lu)	18' 7" o/c	

- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Roof Live (1.25)	Comments
0 - Self Weight (PLF)	0 to 18' 7"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 18' 7" (Front)	12'	18.0	20.0	Roof Load

Weyerhaeuser Notes

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards. Weyerhaeuser Engineered Lumber Products have been evaluated by ICC-ES under evaluation reports ESR-1153 and ESR-1387 and/or tested in accordance with applicable ASTM standards. For current code evaluation reports, Weyerhaeuser product literature and installation details refer to www.weyerhaeuser.com/woodproducts/document-library.

The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Ismael Arcos Structural Engineering (408) 659-5580 i.arcos@gd-se.com Rev.0	

Weyerhaeuser

3/14/2024 6:19:04 PM UTC
ForteWEB v3.7, Engine: V8.4.0.40, Data: V8.1.5.0
File Name: 4456 Gina St, Fremont, CA 94538
Page 2 / 4

P.O. Box 690,
NEWMAN, CA. 95360.
Phone: 669-253-0101
Email: admin@logardesign.com

For:
INTERIOR REMODEL
Residence:
4456 Gina St, Fremont, CA 94538
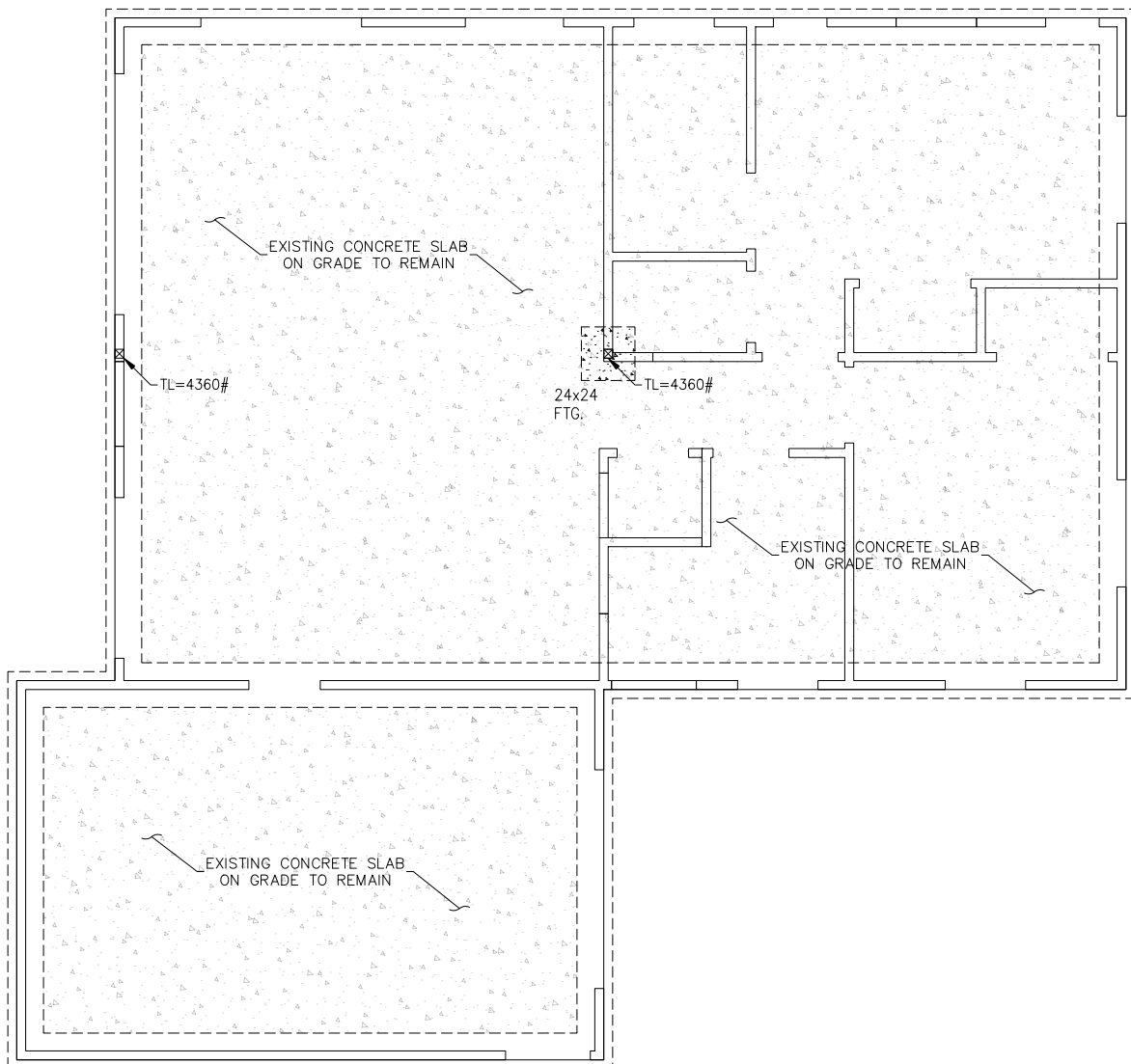
Date: 15/03/2024
Projet No.: LGRAS24014

Allowable Point Loads on Doug Fir Wood Posts / Columns

Post Size (inches)	Height (feet)	L_e / d (in / in)	F_{CE} (psi)	C_P	$F_C p^{erp}$ (psi)	F_C^{prll} (psi)	Area of post (in^2)	P_{ALLOW} (lbs)
4 x 4	8	27.4	634	0.41	625	1350	12.25	6810
	9	30.9	501	0.34	625	1350	12.25	5568
	10	34.3	406	0.28	625	1350	12.25	4612
	11	37.7	335	0.23	625	1350	12.25	3870
	12	41.1	282	0.20	625	1350	12.25	3287
	13	44.6	240	0.17	625	1350	12.25	2824
	14	48.0	207	0.15	625	1350	12.25	2450
4 x 6	8	27.4	634	0.41	625	1350	19.25	10701
	9	30.9	501	0.34	625	1350	19.25	8750
	10	34.3	406	0.28	625	1350	19.25	7247
	11	37.7	335	0.23	625	1350	19.25	6081
	12	41.1	282	0.20	625	1350	19.25	5165
	13	44.6	240	0.17	625	1350	19.25	4437
	14	48.0	207	0.15	625	1350	19.25	3849
4 x 8	8	27.4	634	0.41	625	1350	25.38	14106
	9	30.9	501	0.34	625	1350	25.38	11535
	10	34.3	406	0.28	625	1350	25.38	9553
	11	37.7	335	0.23	625	1350	25.38	8016
	12	41.1	282	0.20	625	1350	25.38	6809
	13	44.6	240	0.17	625	1350	25.38	5849
	14	48.0	207	0.15	625	1350	25.38	5074

LOGAR
DESIGNS INC

EXISTING CONCRETE SLAB
ON GRADE TO REMAIN

TL=4360#

TL=4360#

24x24
FTG.

EXISTING CONCRETE SLAB
ON GRADE TO REMAIN

EXISTING CONCRETE SLAB
ON GRADE TO REMAIN

*STRUCTURAL MEMBERS (CHECK LIST)
*LOADS TO SUPPORTS (CHECK LIST)

For: Date: 15/03/2024

INTERIOR REMODEL

Residence: Projet No.:   LGRAS24014

4456 Gina St, Fremont, CA 94538

ALLOWABLE LOAD ON SQUARE PAD FOOTING

SOIL BEARING CAPACITY =   **1,500 PSF**

P1 = ABP x FOOTING SIZE

P2 = WEIGHT OF FOOTING

     DENSITY CONCRETE= 150

P ALLOW = ALLOWABLE CONCENTRATED LOAD ON FOOTING(NOT INCLUDING FOOTING WEIGHT)

MARK	FOOTING SIZE (DIAMETER FEET)	FOOTING THICK (INCH)	P1 (LBS)	P2 (LBS)	P ALLOW WITH FOOTING WEIGHT	P ALLOW WITHOUT FOOTING WEIGHT
1	1.5	18	3375	506	2869	3375
2	2	18	6000	900	5100	6000
3	2.5	18	9375	1406	7969	9375
4	3	18	13500	2025	11475	13500
5	3.5	18	18375	2756	15619	18375
6	4	18	24000	3600	20400	24000
7	4.5	18	30375	4556	25819	30375

LOGAR DESIGNS INC

EXISTING FOUNDATION CHECK CAPACITY

Property soil:
SOIL BEARING CAPACITY = 1500 psf
Angle, Φ= 60°
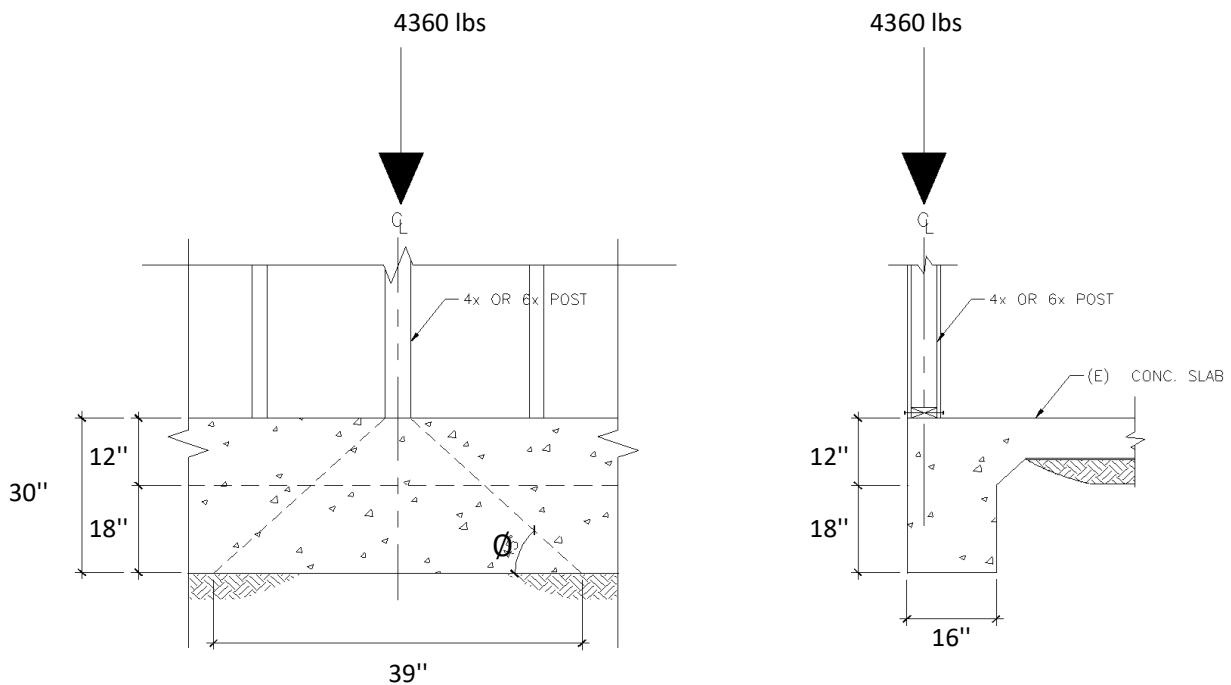
Actuating load :
Pu= 4360 lbs

Property Post:
size post : 4'' x 4''
Dimensions Footing:
height 1: 12'' V.I.F.
height 2: 18'' V.I.F.
Width: 16'' V.I.F.

4360 lbs

4360 lbs

30"
12"
18"
39''

4x OR 6x POST
Φ

12"
18"
16''

4x OR 6x POST
(E) CONC. SLAB

Area=   39/12*16/12 =   4.3 ft^2

$$f = \frac{P}{A} = \frac{4360 \text{ lbs}}{4.3 \text{ ft}^2}$$ 1006 psf

1006 psf < 1500 psf OK

Rev.0