

STRUCTURAL CALCULATIONS

FOR

THE DESIGN OF A RESIDENTIAL REMODEL

AT

33130 Ridge Drive
Running Springs, CA 92382

Client:

DOMINGO SALAZAR
1670 Pleasant Hill Dr.
Chino Hills, CA 91709

Prepared by:



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JOB 33130 Ridge Rd, Rancho Santa
 SHEET NO. 1 OF 1
 CALCULATED BY SP DATE 7/1/2012
 CHECKED BY _____ DATE _____
 SCALE _____

LOADING

Roof

Roofing	5.0
Sheathing	1.5
Framing	2.8
Gyp. Bld.	2.8
Misc	1.9
DL	14.0
LL	20 -
SL	- 75
TL	34.0 89.0 psf

$$\left\{ \begin{array}{l} C_t = 1.0 \quad (\text{ASCE 2010, Table 7.3-2}) \\ C_s = 0.80 \quad (\text{ " Fig. 7.4-1}) \end{array} \right.$$

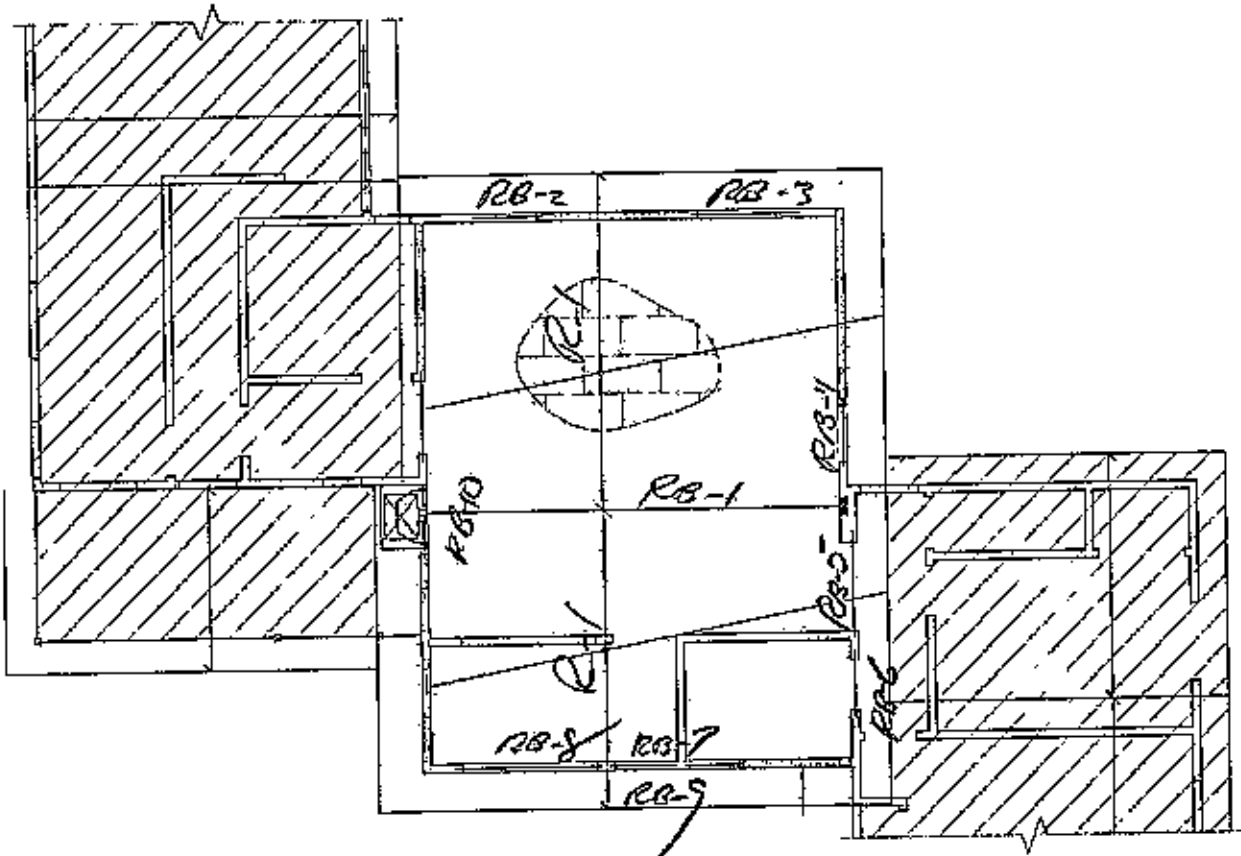
$$\therefore SL = 75 \times 0.8 = 60 \text{ psf}$$

$$TL = 14 + 60 = 74 \text{ psf}$$

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JOB 33130 Ridge Rd., Raining Spring
 SHEET NO. 2 OF 2
 CALCULATED BY AS DATE May 2022
 CHECKED BY _____ DATE _____
 SCALE _____

Roof Framing



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JOB: 38100 Ridge Rd, Reming Park
 SHEET NO. 3 OF 3
 CALCULATED BY: AS DATE: May 2022
 CHECKED BY: _____ DATE: _____
 SCALE: _____

R-1

$$w = 74, \quad L = 13.5'$$

$$M = wL^2/8 = 1686$$

$$S = \frac{M \times 12}{1138 \times 1.15} = 15.5$$

$$V = wL/2 = 500$$

$$d = \frac{1.5V}{180 \times 1.15} = 3.6$$

$$I = 57.2$$

use 2x10@10'

R-1

$$w = 2 \times 500 = 1000, \quad L = 21.75'$$

$$M = 59133$$

$$\div 1.15 = 51411$$

$$V = 10875 \div 1.15 = 9456$$

$$I_{20} = 2315$$

P8L 5 1/4 x 18

$$\begin{cases} M_a = 65495 \\ V_a = 18270 \\ I = 2082 \end{cases}$$

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JOB 33130 Ridge Rd, R.S.
SHEET NO. 7 OF
CALCULATED BY SH DATE Jun 2012
CHECKED BY DATE
SCALE

RB-2

$$w = 500$$

$$L = 3.5'$$

$$M = 766$$

$$S = 7.1$$

$$V = 875$$

$$A = 7.3$$

4x6

RB-3

$$w = 500$$

$$L = 5.5'$$

$$M = 1391$$

$$S = 17.5$$

$$V = 1375$$

$$A = 11.5$$

4x6

RB-4

$$w = 13 \times 8' = 104$$

$$L = 3.5'$$

4x6

RB-5

$$w = 104$$

$$L = 5.5'$$

4x6

RB-6

Same as RB-4

RB-7

Same as RB-2

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JOB 33/30 Ridge Rd., RS
 SHEET NO. 5 OF 5
 CALCULATED BY AS DATE Jun 2022
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Ro-8

$$w = 50$$

$$L = 7.5'$$

$$M = 3516$$

$$S = 32.5$$

$$V = 1875$$

$$A = 15.6$$

4x10

Ro-9

$$w = 8 \times 12' + 58 \times 20 \frac{1}{2} = 680$$

$$L = 4.5'$$

$$M = 1519$$

$$V = 1350$$

4x6

Ro-10

$$w = 100$$

$$L = 7'$$

$$P = 10875$$

$$M = 11075$$

$$V = 5638$$

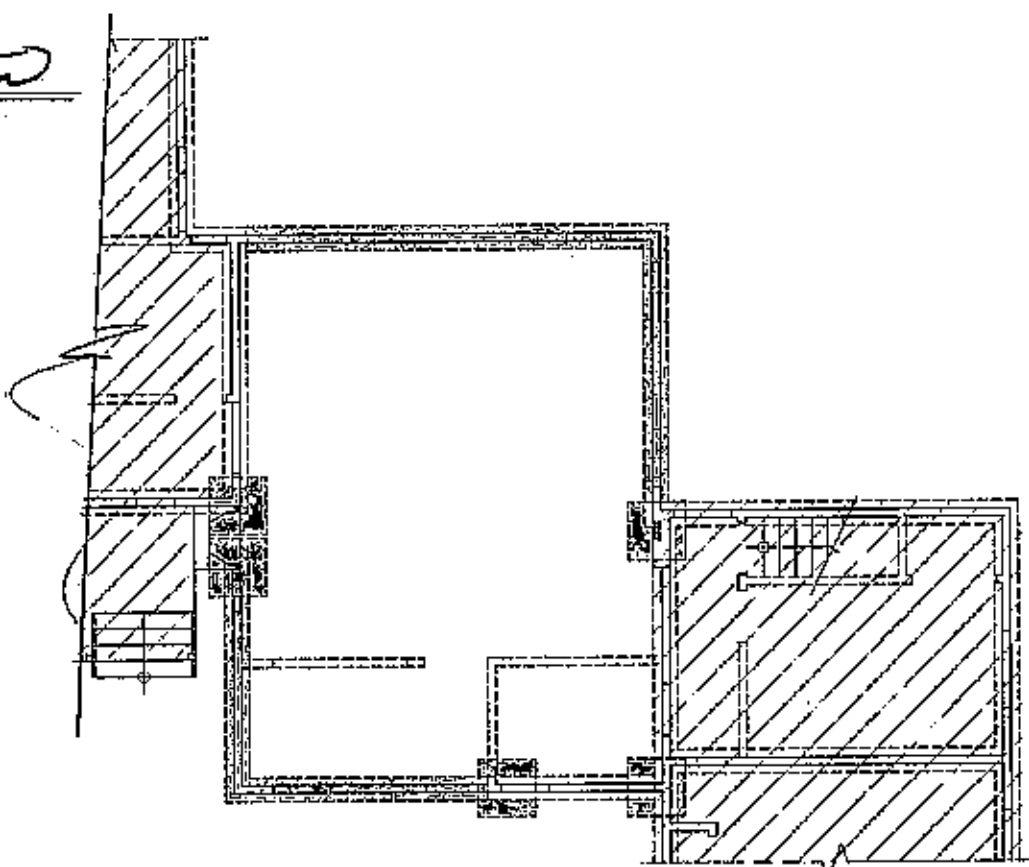
PSL 3 1/2 x 9 1/4

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DATE _____

SCALE

Foundation



- walks

$$W = 500 + 18 \times 8 + 50 \times 6 \frac{1}{2} = 754$$

$$\therefore \beta_{FTS} = \frac{75.4}{1.582} < 10$$

as $\frac{1240}{F15}$

Pt

RBI

$$R = 1087.5 \text{ 元}$$

$$\therefore A_{173} = 7.25 \text{ o'}$$

RB-10

R-5288

$$A_{1/2} = 3.8$$

$$\frac{3000}{100}$$

2-6" sep

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 SCALE

LATERAL ANALYSIS

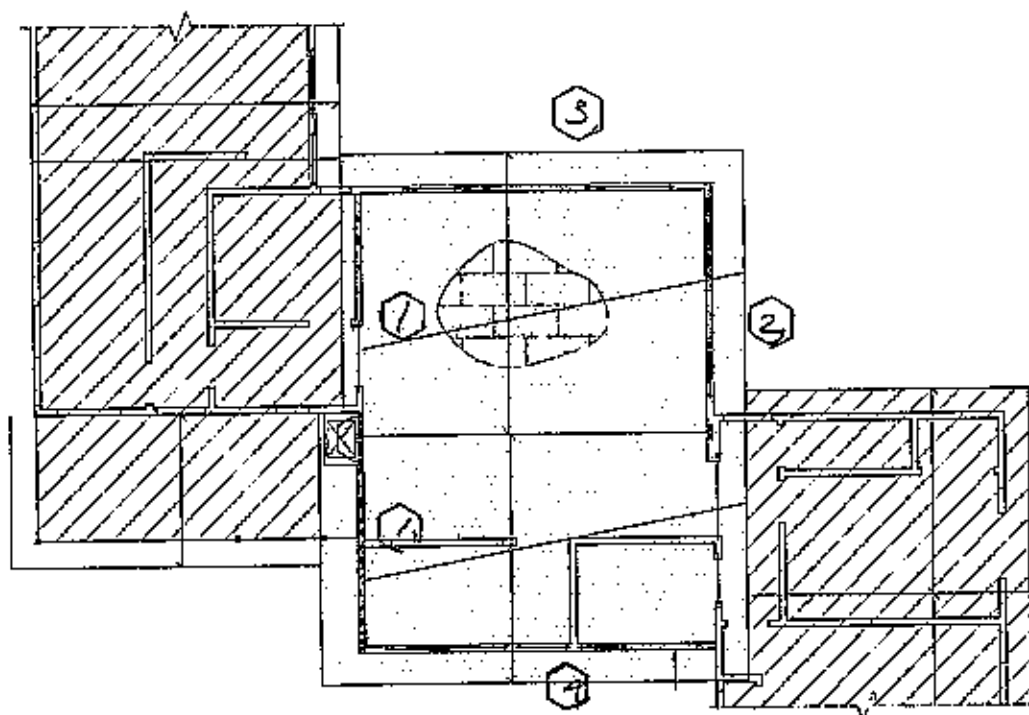
- Seismic

For analysis, see p. 12

$$\therefore V = 0.70 \times 0.1508 \times 1.3 \times 1.3$$

$$= 0.14 W_{DL}$$

- Shear Wall



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Project Title:
Engineer:
Project ID:
Project Descr:

12

ASCE Seismic Base Shear

File: Ridge Rd.ecb
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DESCRIPTION: Seismic analysis

Seismic analysis

Risk Category

Calculations per ASCE 7-16

Risk Category of Building or Other Structure: "II": All Buildings and other structures except those listed as Category I, III, and IV ASCE 7-16, Page 4, Table 1.5-1

Seismic Importance Factor = 1 ASCE 7-16, Page 5, Table 1.5-2
ASCE 7-16 11.4.2

Max. Ground Motions, 5% Damping:
 $S_B = 1.6775$ g, 0.2 sec response
 $S_1 = 0.7198$ g, 1.0 sec response
 Latitude = 34.206 deg North
 Longitude = 117.105 deg West
 Location: Running Springs, CA 92382

Conforms to ASCE 7 Section 12.8.1.3: Regular structure with period of 0.5 s or less, SDS limited to max of 0.7*SDS or 1.0 for calculation of Cs.

Site Class, Site Coeff. and Design Category

Site Classification "D": Shear Wave Velocity 600 to 1,200 ft/sec = D ASCE 7-16 Table 20.3-1

Site Coefficients F_a & F_v $F_a = 1.00$ ASCE 7-16 Table 11.4-1 & 11.4-2
 (using straight-line interpolation from table values) $F_v = 1.70$

Maximum Considered Earthquake Acceleration $S_{MS} = F_a * S_s = 1.500$ ASCE 7-16 Eq. 11.4-1
 $S_{M1} = F_v * S_1 = 1.224$ ASCE 7-16 Eq. 11.4-2

Design Spectral Acceleration $S_{DS} = S_{MS}^{2/3} = 1.000$ ASCE 7-16 Eq. 11.4-3
 $S_{D1} = S_{M1}^{2/3} = 0.816$ ASCE 7-16 Eq. 11.4-4

Seismic Design Category = D ASCE 7-16 Table 11.6-1 & -2

Resisting System

ASCE 7-16 Table 12.2-1

Basic Seismic Force Resisting System... Bearing Wall Systems
 15. Light-frame (wood) walls sheathed w/wood structural panels rated for shear resistance.

Response Modification Coefficient "R" = 6.50 Building height Limits:
 System Overstrength Factor "Wo" = 2.50 Category "A & B" Limit: No Limit
 Deflection Amplification Factor "Cd" = 4.00 Category "C" Limit: No Limit
 Category "D" Limit: Limit = 65
 Category "E" Limit: Limit = 65
 Category "F" Limit: Limit = 65

NOTE! See ASCE 7-16 for all applicable footnotes.

Lateral Force Procedure

ASCE 7-16 Section 12.8.2

Equivalent Lateral Force Procedure

The "Equivalent Lateral Force Procedure" is being used according to the provisions of ASCE 7-16 12.8

Determine Building Period

Use ASCE 12.8-7

Structure Type for Building Period Calculation: All Other Structural Systems

"Cl" value = 0.020 "hn": Height from base to highest level = 12.0 ft
 "x" value = 0.75
 "Ta": Approximate fundamental period using Eq. 12.8-7: $T_a = C_t * (hn)^x = 0.129$ sec
 "TL": Long-period transition period per ASCE 7-16 Maps 22-14 -> 22-17 8.000 sec

Building Period "Ta" Calculated from Approximate Method selected = 0.129 sec

"Cs" Response Coefficient

ASCE 7-16 Section 12.8.1.1

S_{DS} : Short Period Design Spectral Response = 1.000 From Eq. 12.8-2, Preliminary Cs = 0.154
 "R": Response Modification Factor = 6.50 From Eq. 12.8-3 & 12.8-4, Cs need not exceed = 0.973
 "I": Seismic Importance Factor = 1 From Eq. 12.8-5 & 12.8-6, Cs not be less than = 0.055

User has selected ASCE 12.8.1.3: Regular structure, Cs: Seismic Response Coefficient = 0.1538

Less than 5 Stories and with $T \leq 0.5$ sec, so $S_s \leq 1.5$ for Cs calculation

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JOB 32/32 Ridge Rd., R.S.
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$$\frac{1}{2} \sqrt{\frac{1}{2}}$$

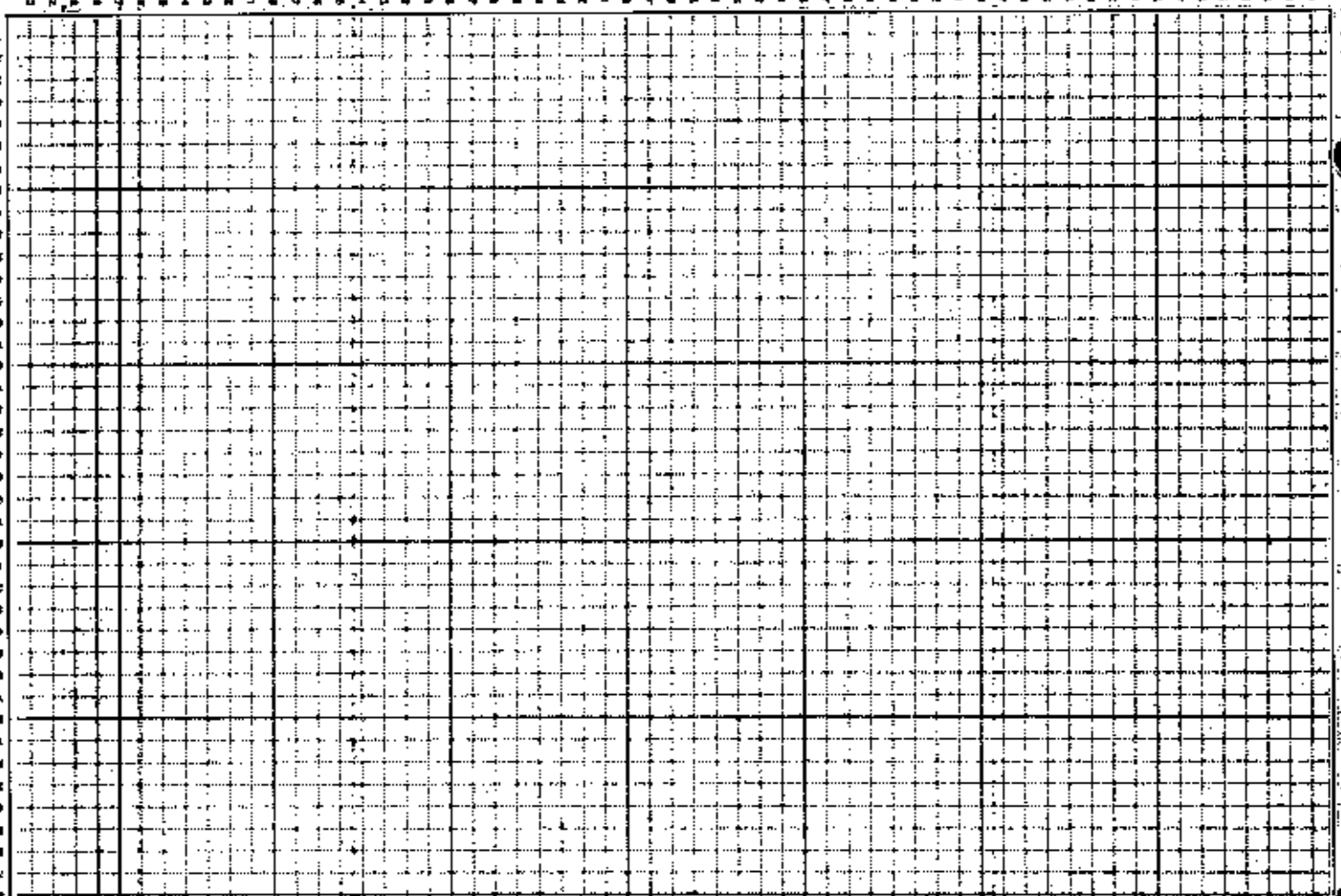
Ad 2:

1/2 1/2
1/2 1/2

Hou2

$\frac{1}{2} \times \frac{1}{2}$

H₂O₂



$$V = 1828$$

$$V = \frac{1}{1} = 305$$

$$DIM = 1828 \times 8 =$$

$$14624$$

$$R_{12} (13 \times 8 + 95 + 100) (6 \frac{1}{2} \times 0.6 - 322)$$

$$11095$$

$$C = 1 = 1902$$

$$H_{102}$$

$$\frac{1.5 \times 10^4}{2.5 \times 10^4}$$

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