PART 2 OF 2

BLD19- 3889 PC1

THESE ATTACHMENTS ARE PART OF THE APPROVED PLANS
DO NOT REMOVE THEM

PROJECT NO. CORCORAN RESIDENCE
FIRE DAMAGE RECONSTRUCTION

DATE: August 26, 2019

Reviewed for Code Compliance
County of Sonoma
PRMD
SEP 09 2019
Resiliency Permit Center

SEISMIC DESIGN

Client Name: CORCORANS
Address: 96 DORCHESTER
City/State/Zip SANTA ROSA, CA

SEP 09 2019
PRMD
RESILIENCY PERMIT CENTER

PERMIT #

ENGINEERING CALCULATIONS

1) Seismic Coefficients (SEA of CA)
2) Seismic Coefficients (ASCE 7 Hazards Report)
3) Determine Cs for Seismic
4) Determine Wind Load (Seismic governs)
5) Building Weight
6) Distribution of Building Weight
7) Determine Seismic Loads
8) Distribute Seismic Loads

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SAN LEANDRO, CA 94577-4536

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REGISTERED PROFESSIONAL ENGINEER
WILLIS JOHN NAPHAN
No. 29526
Exp. 3/31/21
CIVIL
STATE OF CALIFORNIA

OFFICE

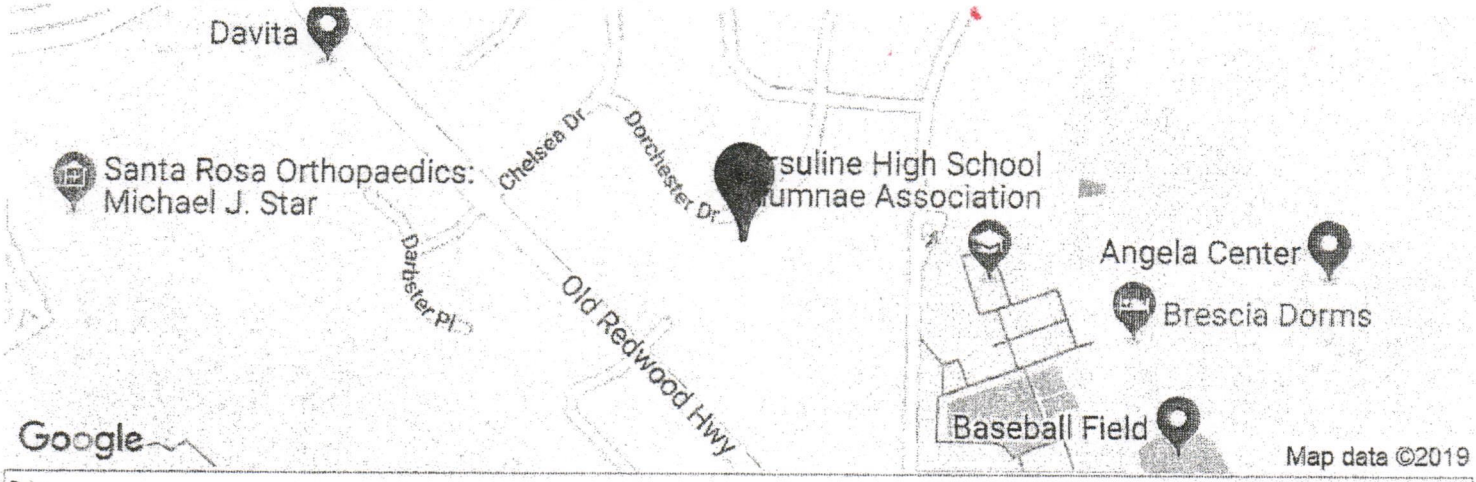
OK

OSHPD

96 Dorchester Dr, Santa Rosa

96 Dorchester Dr, Santa Rosa, CA 95403, USA

Latitude, Longitude: 38.49494139999999, -122.74358999999998

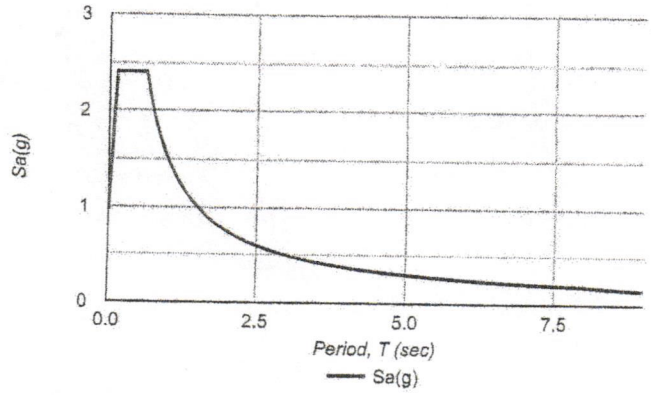


Date	8/1/2019, 4:15:35 PM
Design Code Reference Document	ASCE7-10
Risk Category	II
Site Class	D - Stiff Soil

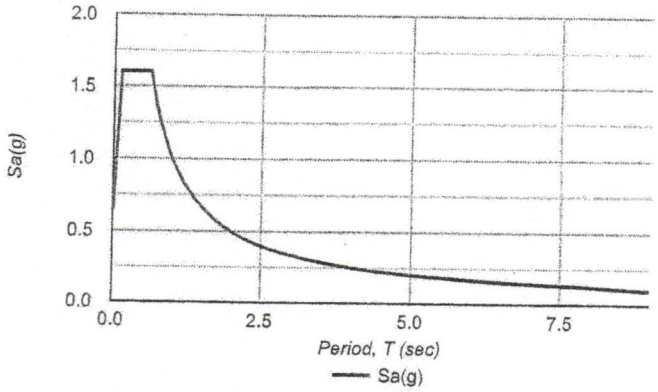
Type	Value	Description
S_S	2.405	MCE_R ground motion. (for 0.2 second period)
S_1	1	MCE_R ground motion. (for 1.0s period)
S_{MS}	2.405	Site-modified spectral acceleration value
S_{M1}	1.5	Site-modified spectral acceleration value
S_{DS}	1.603	Numeric seismic design value at 0.2 second SA
S_{D1}	1	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	E	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	1.5	Site amplification factor at 1.0 second
PGA	0.928	MCE_G peak ground acceleration
F_{PGA}	1	Site amplification factor at PGA
PGA_M	0.928	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	2.88	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	3.067	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	2.405	Factored deterministic acceleration value. (0.2 second)
S1RT	1.179	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	1.281	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	1	Factored deterministic acceleration value. (1.0 second)
PGAd	0.928	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.939	Mapped value of the risk coefficient at short periods
C_{R1}	0.92	Mapped value of the risk coefficient at a period of 1 s

MCER Response Spectrum



Design Response Spectrum

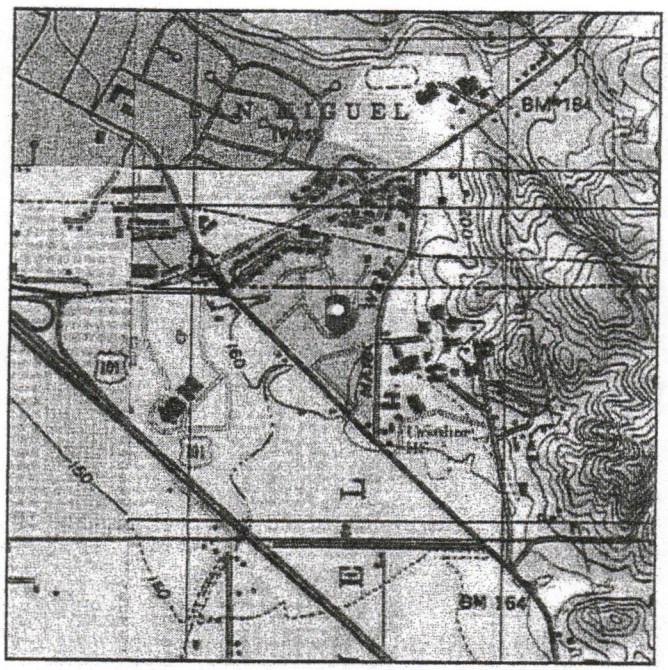


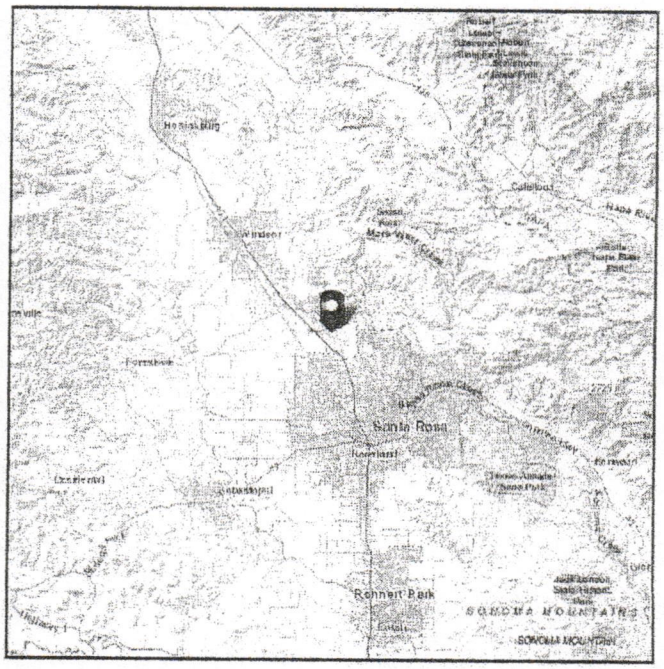
ASCE 7 Hazards Report

Address:
96 Dorchester Dr
Santa Rosa, California
95403

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 164.68 ft (NAVD 88)
Latitude: 38.495089
Longitude: -122.743621



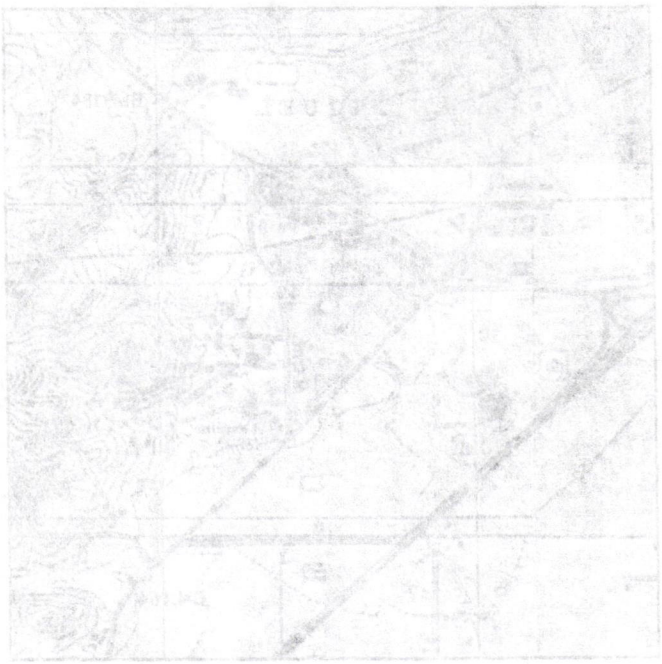


ASCE 7 Hazards Report

Address:
80 Dorchester Dr
Santa Rosa, California
95403

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 364.88 ft (NAVD 88)
Latitude: 38.448089
Longitude: -122.724527



ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

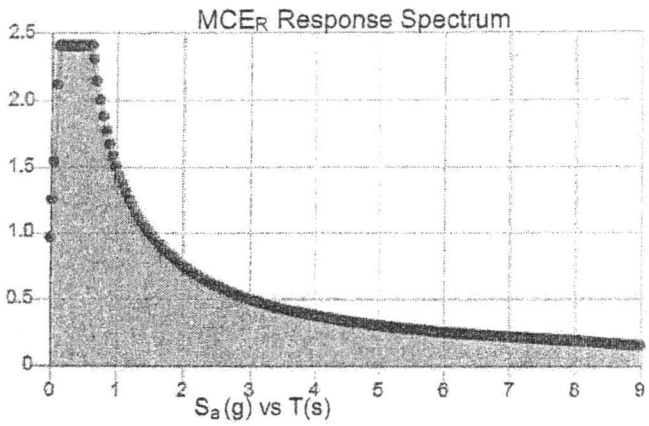
Seismic

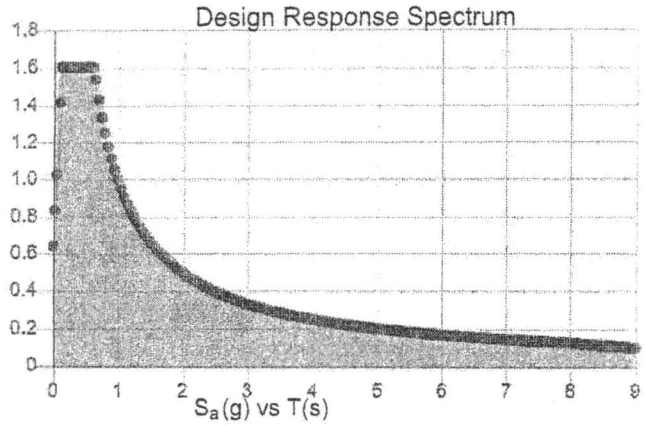
Site Soil Class: D - Stiff Soil

Results:

S_S :	2.405	S_{DS} :	1.604
S_1 :	1	S_{D1} :	1
F_a :	1	T_L :	8
F_v :	1.5	PGA :	0.928
S_{MS} :	2.405	PGA_M :	0.928
S_{M1} :	1.5	F_{PGA} :	1
		I_e :	1

Seismic Design Category E





Data Accessed: Thu Aug 01 2019

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Seismic

$V = C_s W$

$C_s = S_{DS} / (R/I)$

$R = 6.5$

$T_a = C_t h^x$

$C_t = 0.02$
$x = 0.75$
$h = 20$

$T_a = 0.02 (20)^{0.75} = 0.19$

$T_L = 8$

$T < T_L$

$C_{s(max)} = S_{D1} / T (R/I)$
$= 1/(0.19) 6.5/1$
$= 0.80$

$C_{s(min)} = 0.55 (S_1) / R(1)$ $\quad S_1 = 1 > 0.6g$
$= 0.55 (1) / 6.5 = 0.08$

$S_{DS} = 1.603$

$\underline{C_s =}$ $1.603 / 6.5 = \underline{0.25}$

$0.80 > 0.25 > 0.08$ ok

$\underline{C_s = 0.25}$

Wind

1) Risk Category II
2) Basic Wind Speed V, $v_{ult} = 110$ mph
3) $K_d = 0.85$
4) Exposure Category C
5) Topographic Factor $K_{zT} = 1.0$ (Sec 26.8.2)
6) Enclosure Classification: II (Risk Category)
7) Internal Pressure Classification $R = 1.0$
8) $K_z = 0.90$
9) Determine Velocity Pressure

$$q = 0.00256 (K_z)(K_{zt}) K_d V^2$$

$K_d = 0.85$

$K_{zT} = 1.0$

$K_z = 0.85$

$$q = 0.00256(0.85)(1)(0.85)(110)^2 = 22 \text{ lbs/sf}$$

For Leeward pressure use

$$p_s = \lambda K_{zT} (p_{30})$$

$\lambda = 1.29$ $K_{zT} = 1.0$

$P_{30} = 22$ lbs/sf

$$p_s = 22(1.29)\,1.0 = 28 \text{ lbs/sf}$$

96 DORCHESTER
SANTA ROSA

FIRST FLOOR WALLS

exterior wall line	length	heigth	unit weight	total weight
1	39	9	7	2457
2	39	9	7	2457
3	32	10	7	2240
4	32	10	7	2240
5				0
6				0
7				0
8				0
A	19	9	7	1197
B	33	9	7	2079
C				0
D				0
E	52	10	7	3640
F				0
G				0
H				0
1st fl interior walls	89	9	6	4806
roof over first floor	area	weight		
	252	15		3780
SECOND FLOOR	area	weight		
	1186	10		11860
			TOTAL 1ST FL	36756

SECOND FLOOR WALLS

exterior wall line	length	heigth	unit weight	total weight
1	29.5	9	7	1858.5
2	29.5	9	7	1858.5
3	29	8	7	1624
4	29	8	7	1624
5				0
6				0
7				0
8				0
A				0
B	52	9	7	3276
C				0
D				0
E	52	9	7	3276
F				0
G				0

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SANTA ROSA

H				0	
roof over second floor	area	weight			
	1900	15		28500	
2nd fl interior walls	89	9	6	4806	
				TOTAL 2ND FL	46823
TOTAL BUILDING WEIGHT				83579	

2nd Story

Roof	1900 SF 15 lbs/SF		28500 lbs
Line 1	9.5 (29.5) (15)	=	4204 lbs
Line 2	[9.5 (29.5) + 15 (29)] 15	=	10729 lbs
Line 3	15.5 (29) 15	=	6743 lbs
Line B	(6743 + 10729 + 4204)/2	=	10838 lbs
Line F			10838 lbs

Interior Walls (2nd Flr) 4806 lbs (Total)

Line 1	4806/3	=	1602 lbs
Line 2			1602 "
Line 3			1602 "
Line B	4806/2		2403 lbs
Line F	"		2403 "

Exterior Walls (2nd Flr)

Line 1	1859 lbs
Line 2	1859 lbs
Line 3	1624 "
Line 4	1624 "
Line B	3276 "
Line F	3276 "

2nd Floor Framing

Line 1	9.5 (29.5) (10) =	2803 lbs
Line 2	24 (29.5) (10) =	7080 lbs
Line 4	15.5 (29) (10) =	4495 lbs

1st Floor

Line 1	2457/2 =	1229 lbs
Line 2	2457/2 =	1229 "
Line 3	2240/2 =	1120 "
Line 4	2240/2 =	1120 "
Line A	1197/2	599 "
Line B	2079/2	1040 "
Line F	3640/2	1820 "

Line 1			Line 2			Line 3			Line 4		
	4204			10729			6743			1624	
	1602			1602			1602			4495	
	1859			1859			1624			1120	
(2)	2803	10468	(2)	7080	21270	(2)		9969	(2)		7239
(1)	1229	11697	(1)	1229	22499	(1)	1120	11089	(1)		

Line A	Line B			Line F		
599		10838			10838	
		2403			2403	
	(2)	3276	16517	(2)	3276	16517
	(1)	1040	- 17557	(1)	1820	- 18337

$C_s = 0.25$

			Seismic (0.25W)
Line 1	2nd/Flr	10468	2617
Line 1	1st/Flr	11697	2924
Line 2	2nd Flr	21270	5318
Line 2	1st Flr	22499	5625
Line 3	2nd Flr	9969	2492
Line 3	1st Flr	11089	2772
Line 4	2nd Flr	7239	1810
Line 4	1st Flr	7239	1810
Line A	1st Flr	599	150
Line B	2nd Flr	16517	4129
Line B	1st Flr	17557	4389
Line F	2nd Flr	16517	4129
Line F	1st Flr	18337	4584

Walls

1st	8, 9, 10	6.0 + 7.5 + 5.0 = 18.5	2924 / 18.5 =	153 lb/ft
"	11, 12	2 + 2 = 4	5625/4 =	1406 "
"	13	6	2772/6 =	462 "
"	14, 15	8 + 8 = 16	1810/16 =	113 "
"	1	6	150/6 =	25 "
"	2, 3	7 + 2 = 9	4389/9	488 "
"	4, 5, 6, 7	2 + 2 + 2 + 2 = 8	4584/8 =	573 "