DLF ENGINEERS INC.

P.O Box 717, Windsor, CA 95492 • (707) 838-1505 • Fax # (707) 838-1970
E-mail: dlfeng@dlfengineers.com

ENGINEERING CALCULATION SHEET

CUSTOMER _____

LOCATION _____

SHEET NO. Cover
JOB NO. 3133.2.115
DATE 4-24-15
BY RB CHK'D _____

FIELD VINEYARDS
ENTRY GATE FOUNDATION
27801 RIVER RUNO
CLOVERDALE, CA

CONTENTS	SHEETS
CALCULATIONS	1-6

REGISTERED PROFESSIONAL ENGINEER
DAVID FRUM
C 45688
CIVIL
STATE OF CALIFORNIA

STAMP CA

EXP 12-31-16

SHTS 1-6

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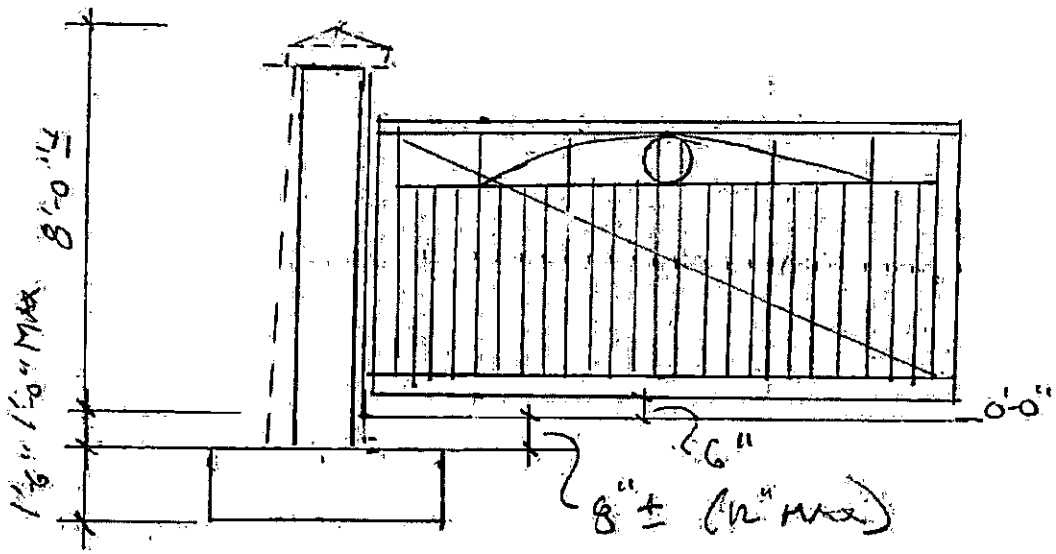
ENGINEERING CALCULATION SHEET

SHEET NO. 1 of 6
CUSTOMER
JOB NO.
LOCATION
DATE
BY CHK'D

ENTRY GATE

CODE CBC 2013



USE 16" CMU BLOCK
W/ STONE VENEER
GATE IS STEEL SEE NEXT SHEET WT = ± 700#

WIND LOAD TO ONE SIDE USE SIM TO MONUMENT SIGN

30.4 psf x .6 = 18.3 psf (ASD)

$F_p = 0.4 S_{DS} I_w$
$= 0.4(1.204)(1.0)$
$= 0.482\ w$ (use)

$\therefore F_p = \frac{0.482}{1.4} = 0.34 w_p$ ASD

w - 16" CMU = 168 psf + 40(2)
= 248 psf

$F_p = 0.344(248)$
= 86 psf GOVERNS
+ GATE WT.

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ENGINEERING CALCULATION SHEET

SHEET NO. 2
CUSTOMER
JOB NO.
LOCATION
DATE
BY CHK'D

GATE WEIGHT. HT. 6' x 12'-2"

USE 3x3x1/4

TOP RAIL	HSS 3x3x 5/16	10.6 PLF x 12.17 = 129
BOT RAIL	HSS 6x3x 1/4	14 PLF x 12.17 = 171
SIDE RAIL	HSS 6x3x 1/4	14 PLF x 6x2 = 168
PICKETS	1/2" SQ x 6' @6" oc	.9 PLF x2 (6x12) = 130

MISC	PL 4x4x1/4	1.2# x 5	6
	PL 5/8" x 9x9	15#	15
	PL LUGS 12x12x1/4	3.5	3.5
ROD & TURN BUCKLE 3/4"		1.5 PLF x 13' = 20#	20#
			44.5
			52#
			648#

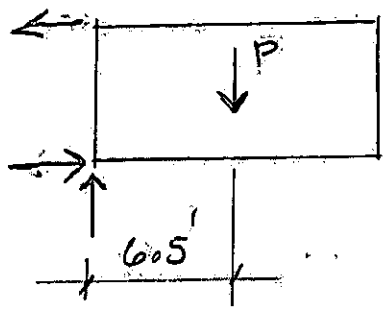
USE 700#

USE 1000# GATE

∴ VERTICAL LOAD ON BOT PLATE = 1000#

$T = C = \frac{1000\,(6.5)}{5'}$

$= 1300^{\#}$



SHEAR ON 1" ϕ ROD/BOLT

$V_{ALL} = 6000^{\#}$ OK

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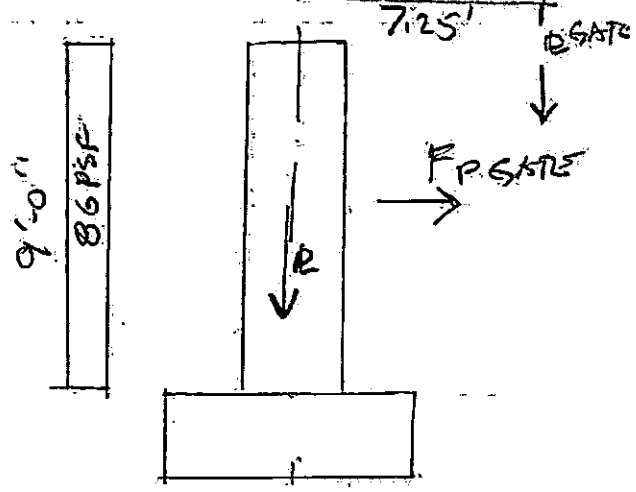
ENGINEERING CALCULATION SHEET

SHEET NO. 3
JOB NO.
DATE
BY CHK'D

CUSTOMER
LOCATION



$F_p = 86$ psf

$w = 86 \times 2 = 172$ plf

$F_{p\,GATE} = 0.344(700)$
$= 241^{\#}$

$\Sigma F_p = 241 + 172(9)$
$= 1789^{\#}$ SAY @ 4.5' ABOVE FTG.

$M_{OT} = \overset{F_p}{1800}\left(\frac{9}{2} + 1.5\right) + \overset{M\,℄}{700(7.25')}$

$= 10800^{1\text{-}\#} + 5075^{1\text{-}\#}$

$= 15875^{1\text{-}\#}$

CMU ℄ $= 168 \times 1.33 \times 9$
$= 2010^{\#}$
STONE $= 40 \times 4 \times 9$
$= 1440^{\#}$
GATE $= 700$
$\Sigma\ 4150^{\#}$

$M_{℄} = 700(7.25)$
$= 5075^{1\text{-}\#}$

$M_{u\,EQ} = 10.8 \times 1.4 = 15.12$

$M_{RESIT} = 0.6\left[(2010 + 1440)3' + 700(2') + 16 \times 6(2)(150)\frac{6}{2}\right]$

(COL & STONE; GATE; FTG)

$= 26490^{1\text{-}\#}$

$a = \dfrac{26490 - 15875}{(2010 + 1440 + 700 + 10800)} = 0.71'$

$\Sigma 14950$

$\therefore q_{max} = \frac{2}{3}\frac{P}{a} = \frac{2}{3}\frac{(14950)}{.71} = \frac{14037\ PLF}{6'} = 2340\ psf > 1500 \times 1.33$ 2000 psf

TRY 7'-0" SQ

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ENGINEERING CALCULATION SHEET

SHEET NO. 4
CUSTOMER
JOB NO:
DATE
LOCATION
BY CHK'D

@ 7'-0" SQ PAD

$M_{REST} = 0.6\left[(2010 + 1440)3.5 + 700(2.5) + 7 \times 7 \times (1.5)(150)\frac{7}{2}\right]$

$= 31448^{1-k}$

$e = \frac{31448 - 15875}{(2010 + 1440 + 700 + 11025)} = 1.03'$

$\Sigma = 15175$

$\therefore q_{max} = \frac{2}{3}\frac{(15175)}{1.03} = \frac{9858}{7} = 1410\ psf < 2000\ psf$

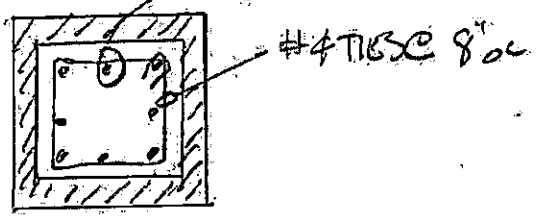
$\therefore$ OK

USE 7' SQ x 1.5 DEEP PAD
W/ (8) #4 E.W. BOT.

M on CMU

$= 700(7.25') = 5075^{1-k}$

$M_{EQ} = 10800^{1-k}$ $\quad \Sigma = 15875^{1-k}$



USE (3) #6 BARS EA FACE

$f'_c = 1500$ psi

16" PILASTER BLOCK

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ENGINEERING CALCULATION SHEET

5

4/24/2015

Masonry Bending Stress Check

Load Duration Factor	1	
Special Inspection	1	1 = SI, 2 = No SI
f'm =	1500	
M =	15875	ft-lbs.
Wall Thk =	15.625	
Edge or Ctr =	1	1 = Edge 2 = center
d =	13.25	in. (Wall Thk - 2 - bar diameter/2)
b =	16	in.
Rebar size =	6	60 = Fy ksi
spacing =	8	
As =	0.66	$in.^2$ / ft
As =	0.88	$in.^2$ / wall width
Ro =	0.004151	
n =	25.77778	
nRo =	0.107002	
k =	0.367817	
j =	0.877394	
2/jk =	6.197305	

fb =	420.29 psi
fs =	18620.94 psi

Allowable Stress

495.00	= Fb psi
24000.00	= Fs psi

6/6

Company Info	Project Info	
DLF Engineers	Project:	Field Vineyard
420 Hudson Street; Suite F	Location:	
Healdsburg, CA, 95448		Cloverdale, CA
Phone: (707) 838-1505	Client:	
Fax: (707) 838-1970	Job No.:	3133.1.1.14
E-mail: dave@dlfengineers.com	Footing Id:	F2 Gate footing

FOUNDATION PARAMETERS

Concrete Ultimate Compressive Strength, f'c	2.50 ksi
Concrete Type	HardRock
Concrete Cover	3.0 in.
Steel Ultimate Strength, Fy	40.0 ksi
Column Size	6.00 in. by 6.00 in.
Allowable Soil Bearing Strength	1.500 ksf
Wind Load Soil Bearing Strength, (1.33 increase)	1.995 ksf
Seismic Load Soil Bearing Strength, (1.33 increase)	1.995 ksf
Footing Width	**7.00 ft.**
Footing Length	**7.00 ft.**
Footing Depth	**18.00 in.**
Punching Shear Stress	**19.95 psi**
Beam Shear Stress	**3.63 psi**
Reinforcing Standards per	**ASTM-A615**
Longitudinal Bottom Reinforcement Required for Strength	**.26 in² (2-#4)**
Transverse Bottom Reinforcement Required for Strength	**.12 in² (1-#4)**
Gravity Only Soil Bearing	**.265 ksf**
Wind Load Soil Bearing	**.265 ksf**
Seismic Load Soil Bearing	**.489 ksf**

LOADING PARAMETERS - FACTORED LOAD CASES CONSIDERED:

1.4DL
1.2DL + 1.6LL
1.2DL + 1.6LL + 1.6SL
1.2DL + 1.0LL + 1.0WL
1.2DL + 1.0LL + 1.0EQ
0.9DL + 1.0WL
0.9DL + 1.0EQ

UNFACTORED LOADS:

Load Case	FY, (kips)	MX, (ft-kips)	MZ, (ft-kips)
Dead Load	4.20	0.00	5.10
Live Load	0.00	0.00	0.00
Wind Load	0.00	0.00	0.00
Earthquake	0.00	0.00	15.12
Other Loads	0.00	0.00	0.00