



**SIGN COMPANY:
Raleigh Signs
SIGN PROJECT:
Piney Grove Self Storage**



NOV 02 2021

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JOB NUMBER
21380

WIND LOADS

Sign Company *Raleigh Signs*
 Job Name *Piney Grove Self Storage* Vultimate = 115 mph
 Job Number *21380* 0 Vnominal = Vult x sq rt 0.6 = 88 mph

Note # 1 Basic Wind Speed is the 3 second gust @ 33 ft.above ground, exposure

Basic Wind Speed= 90 mph
 Exposure= C flat terrain, generally open for 1/2 mile.
 Cq= 1.2 signs, flagpoles and lightpoles

Note #4 Cq= Pressure Coefficient Kz

Calculation of Design Wind Pressures 0.85

Height (ft):	(qs)	(G)	(Cf)	= Wind Pressure	0.94	0.98
15	17.6	0.85	1.2	18.0 psf	1.04	1.09
20	15.9	0.85	1.2	16.2 psf	1.13	1.17
25	16.6	0.85	1.2	16.9 psf	1.21	1.24
30	17.3	0.85	1.2	17.6 psf	1.26	1.31
40	18.3	0.85	1.2	18.7 psf		
60	23.4	0.85	1.2	23.9 psf		
80	25.1	0.85	1.2	25.6 psf		
100	21.3	0.85	1.2	21.8 psf		
120	21.9	0.85	1.2	22.3 psf		
160	22.2	0.85	1.2	22.7 psf		
200	23.1	0.85	1.2	23.6 psf		
300	15.0	0.85	1.2	15.3 psf		
400	15.0	0.85	1.2	15.3 psf		

Note # 5 Design Wind Pressu

Seismic Load Comparison

Seismic Zone= 1
 Z= 0.1
 I= 1.0 standard structures
 Cp= 2.0
 Wp= 15.0 psf, typical sign box with structure
 Fp= (Z)(I)(Cp)(Wp)= 2.3 psf **Design Base Shear**

Note: Less than wind pressure above, so seismic not a factor and wind governs calculations

Note # 2 Signs use a Wind Importance Factor, (Iw) of 1.0

Note # 3 Not Applicable

Seismic Use Group
 Spectral response coefficients Sds = .17 Sd1 = .04
 Site class D
 Basic seismic force resisting system from Table 1617.6 #7



ALUM COLUMN DESIGN

Sign Company *Raleigh Signs* Job Number:
Job Name. Piney Grove Self Stor 21380

Areas Subject to Wind Forces

Description	Height (ft)	Width (ft)	Area (sqft)	Centroid (ft)	Wind (psf)
1) top	4.00	6.00	24.00	7.5	18.0
2) columns	5.50	1.50	8.25	2.8	18.0
3) bottom					
4)					
5)					
6)					
7)					
8)					

Calculation of Design Forces at Critical Heights

y (ft)	M (#')	V (#)	y (ft)	M (#')	V (#)
@ grade	3,648	581	20.63		
30.00			72.50		
11.30			72.50		

Column Support Design Table

# of Cols	Column Type (P, TS)	Column Size	Length (ft)	Start Elev (ft)	End Elev (ft)	Sleeve Depth (in)	S act (in^3)	fb (ksi)
1	ts	3XX.19	14.00	-4.00	10.00	N/A	1.73	25.3
	p	#DIV/0!	5.00	6.10	11.10	#DIV/0!	#DIV/0!	#DIV/0!
	p	#DIV/0!	9.33	11.30	20.63	#DIV/0!	#DIV/0!	#DIV/0!
		FALSE		72.50	72.50		FALSE	#DIV/0!
		FALSE		72.50	72.50		FALSE	#DIV/0!
		FALSE		72.50	72.50		FALSE	#DIV/0!

Allowable Bending Stresses

Column Type	Column Size	Criteria	Stress increase factor=	1.00
ts	3XX.19	b/t <190/sqr(Fy)	so... Fb= 0.66Fy	30.4 ksi
p	#DIV/0!	d/t #DIV/0!	so... Fb= #DIV/0!	#DIV/0! ksi
p	#DIV/0!	d/t #DIV/0!	so... Fb= #DIV/0!	#DIV/0! ksi
	FALSE	help #N/A	so... Fb= #N/A	#N/A ksi
	FALSE	help #N/A	so... Fb= #N/A	#N/A ksi
	FALSE	help #N/A	so... Fb= #N/A	#N/A ksi



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LATERAL BEARING PIER AND CAISSON FOOTINGS

Sign Company *Raleigh Signs*
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# Footings=	1	Moment/Footing, M=	3,648	lb-ft
Pass lat soil res, q=	150 psf	Composite Centroid, h=	6.28	ft
		Equiv Concentrated Load, P= M/h=	581	lb

3000 PSI
CONCRETE

Rectangular Pier

Width, W= 3.0 ft, parallel to sign face
Length, L= 3.0 ft, perpendicular to sign face
Depth, D= $(A/2)(1 + \text{SQRT}(1 + (4.36h)/A)) = 4.4$ ft

$S1 = (2)(q)(D/3) = 596$ psf
 $b = \text{SQRT}(W^2 + L^2) = 4.2$ ft
 $A = (2.34)(P) / (S1)(b) = 1.1$

Round Caisson

Diameter, b= 2.00 ft, round augered hole
Depth, D= $(A/2)(1 + \text{SQRT}(1 + (4.36h)/A)) = 4.20$ ft

$S1 = (q)(2)(D/3) = 426$ psf
 $A = (2.34 P) / (S1)(b) = 1.59$

Foundation Bearing Check

Allowable Bearing Pressure=	1,500	psf			
	<i>Square</i>		<i>Round</i>		
Sign Wt=	1,100	lb	Sign Wt=	200	lb
Base Wt=	5,914	lb	Base Wt=	1,978	lb
Area=	9.0	sq ft	Area=	3.1	sq ft
q max=	779	psf, soil	q max=	693	psf, soil
	OK, with depth increase			OK, with depth increase	

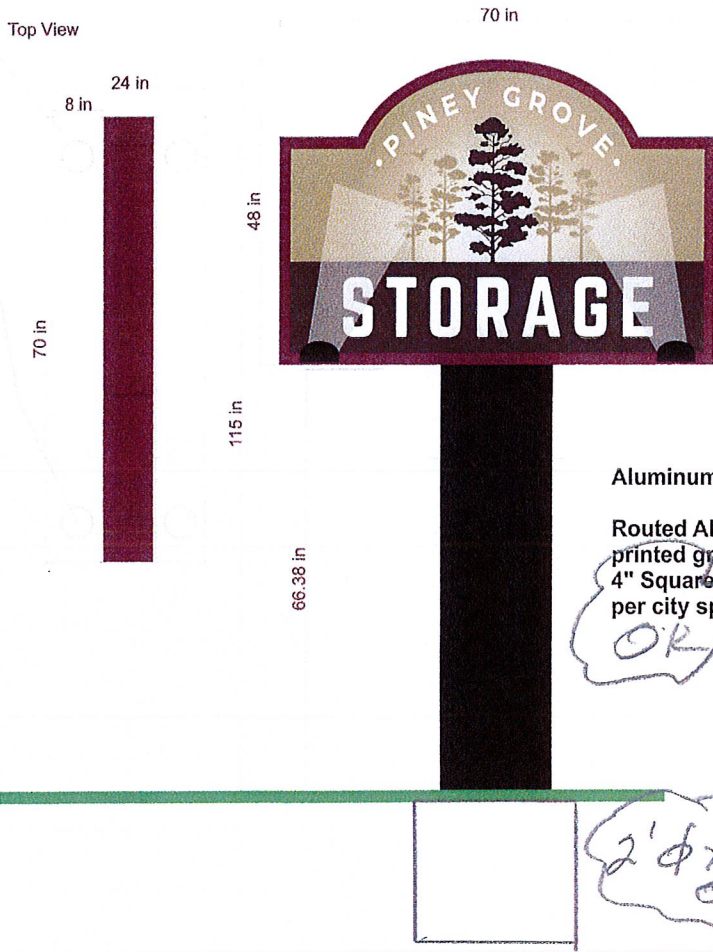
Concrete Volume

Outside Width of Column= 3 in
 Depth of Column in Footing= 4.5 ft

Volume of Concrete per Footing= 0.4 cubic yards (+-)
Total Order Volume of Concrete= 0.4 cubic yards (+-)



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Aluminum Ground Sign

Routed Aluminum sign panel with digitally printed graphics. Panel to be supported by one 4" Square aluminum post. Post to have 18" skirt/sleeve per city spec. Post will be direct buried with concrete.

OK

2' x 4' DEEP
OK

Project: Ground Sign
 Client: Priney Grove Storage
 Contact: Kelly Moore
 Phone:
 Email:

Description:
 QTY: 1
 Size: Shown
 Material: ACM/Alum
 Colors: Printed

Client Approval:
 Name: _____
 Date: _____

Landlord Approval:
 Name: _____
 Date: _____

Sign Type:

RALEIGH SIGN DESIGN
 5316 Shadow Valley Rd
 Holly Springs, NC 27540
 919-244-1802

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