APPENDIX B

Laboratory

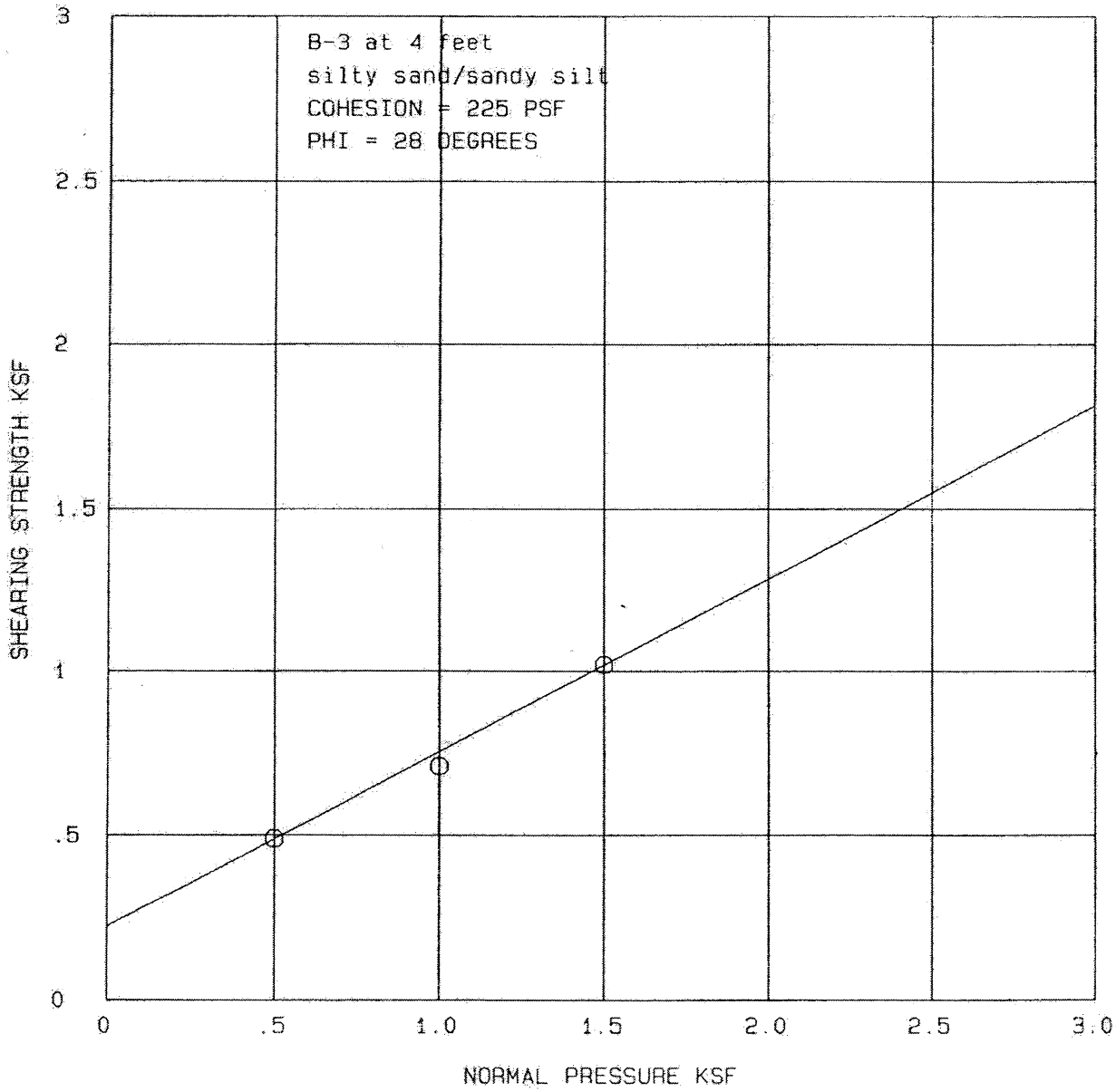
ATTACHMENT NO. 4.8

APPENDIX

SHEAR TEST DIAGRAM

J.O. A-2743-04

DATE 7-30-04



PLATE

ATTACHMENT NO. 4.19

APPENDIX

BEARING VALUE ANALYSIS

J.O. A-2743-04 DATE 7-30-04

COHESION = 225 PSF GAMA = 120 PCF PHI = 28 DEGREES

DEPTH OF FOOTING = 1.5 FEET

BREADTH OF FOOTING = 1.25 FEET

FOOTING TYPE = CONTINUOUS

BEARING CAPACITY FACTORS

Nc = 25.8 Nq = 14.7 Ng = 13.2

FOOTING COEFFICIENTS

K1 = 1 K2 = .5

REFERENCE. TERZAGHI & PECK: 1967: 'SOIL MECHANICS IN ENGINEERING PRACTICE': PAGES 217 TO 225.

FORMULA

ULIMATE BEARING = (K1 * Nc * C) + (K2 * GA * Ng * B) + (Nq * GA * D) = 9446

ALLOWABLE BEARING = ULTIMATE BEARING / 3 = 3148.7

THE ALLOWABLE BEARING VALUE SHOULD NOT EXCEED 3148.7 PSF. DESIGN SHOULD CONSIDER EXPANSION INDEX.

PLATE

ATTACHMENT NO. 4.20

APPENDIX

BEARING VALUE ANALYSIS

J.O. A-2743-04 DATE 7-30-04

COHESION = 225 PSF GAMA = 125 PCF PHI = 28 DEGREES

DEPTH OF FOOTING = 2 FEET

BREADTH OF FOOTING = 2 FEET

FOOTING TYPE = SQUARE

BEARING CAPACITY FACTORS

Nc = 25.8 Nq = 14.7 Ng = 13.2

FOOTING COEFFICIENTS

K1 = 1.2 K2 = .4

REFERENCE: TERZAGHI & PECK, 1967, 'SOIL MECHANICS IN ENGINEERING PRACTICE', PAGES 217 TO 225.

FORMULA

ULIMATE BEARING = (K1 * Nc * C) + (K2 * GA * Ng * B) + (Nq * GA * D) = 11967.8

$$\text{ALLOWABLE BEARING} = \frac{\text{ULTIMATE BEARING}}{3} = 3989.3$$

THE ALLOWABLE BEARING VALUE SHOULD NOT EXCEED 3989.3 PSF. DESIGN SHOULD CONSIDER EXPANSION INDEX.

PLATE

ATTACHMENT NO. 4.21

APPENDIX

TEMPORARY BACKCUT STABILITY

J.O. A-2743-04 DATE 7-30-04

COHESION = 225 PSF GAMA = 125 PCF PHI = 28 DEGREES

CUT HEIGHT = 5 FEET

SOIL TYPE = Siltysand/sandy silt

BACKFILL ASSUMED TO BE LEVEL

PORE PRESSURE NOT CONSIDERED

FORMULA

$$\text{SAFETY FACTOR} = \frac{(C * L) + (GA * AREA * COS(Z) * TAN(PHI))}{GA * AREA * SIN(Z)} = 1.95$$

$$Z = 45 + (PHI/2)$$

SINCE THE SAFETY FACTOR OF 1.95 IS GREATER THAN THE REQUIRED 1.25, THE TEMPORARY EXCAVATION IS CONSIDERED TO BE STABLE. THIS IS WITH A LEVEL AREA EQUAL TO THE LENGTH OF THE VERTICAL CUT ABOVE THE CUT.

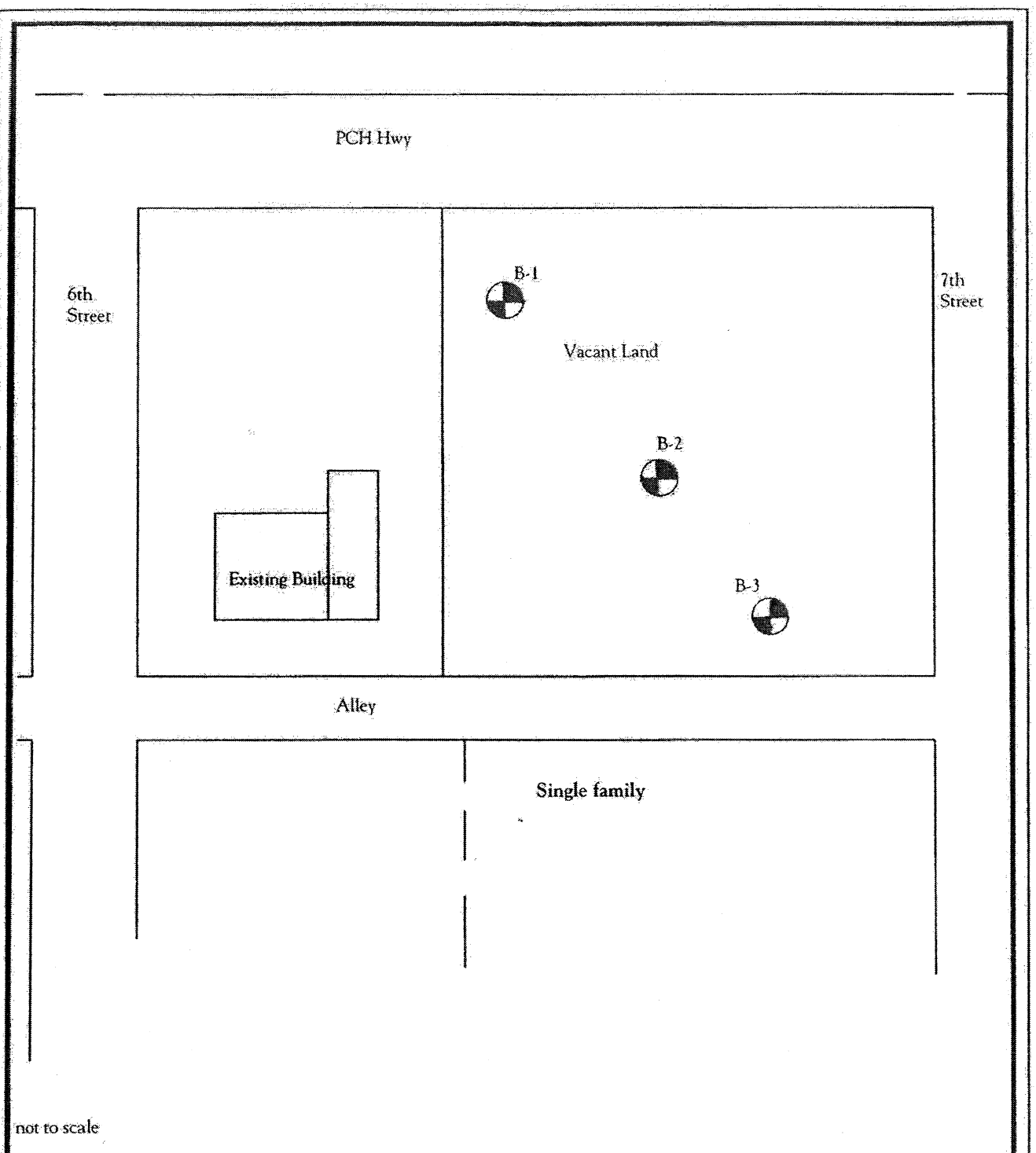
PLATE

ATTACHMENT NO. 4.22

APPENDIX C

References

ATTACHMENT NO. 4.23



Approximate Layout Plan, 612-620 PCH Hwy, Huntington Beach, CA

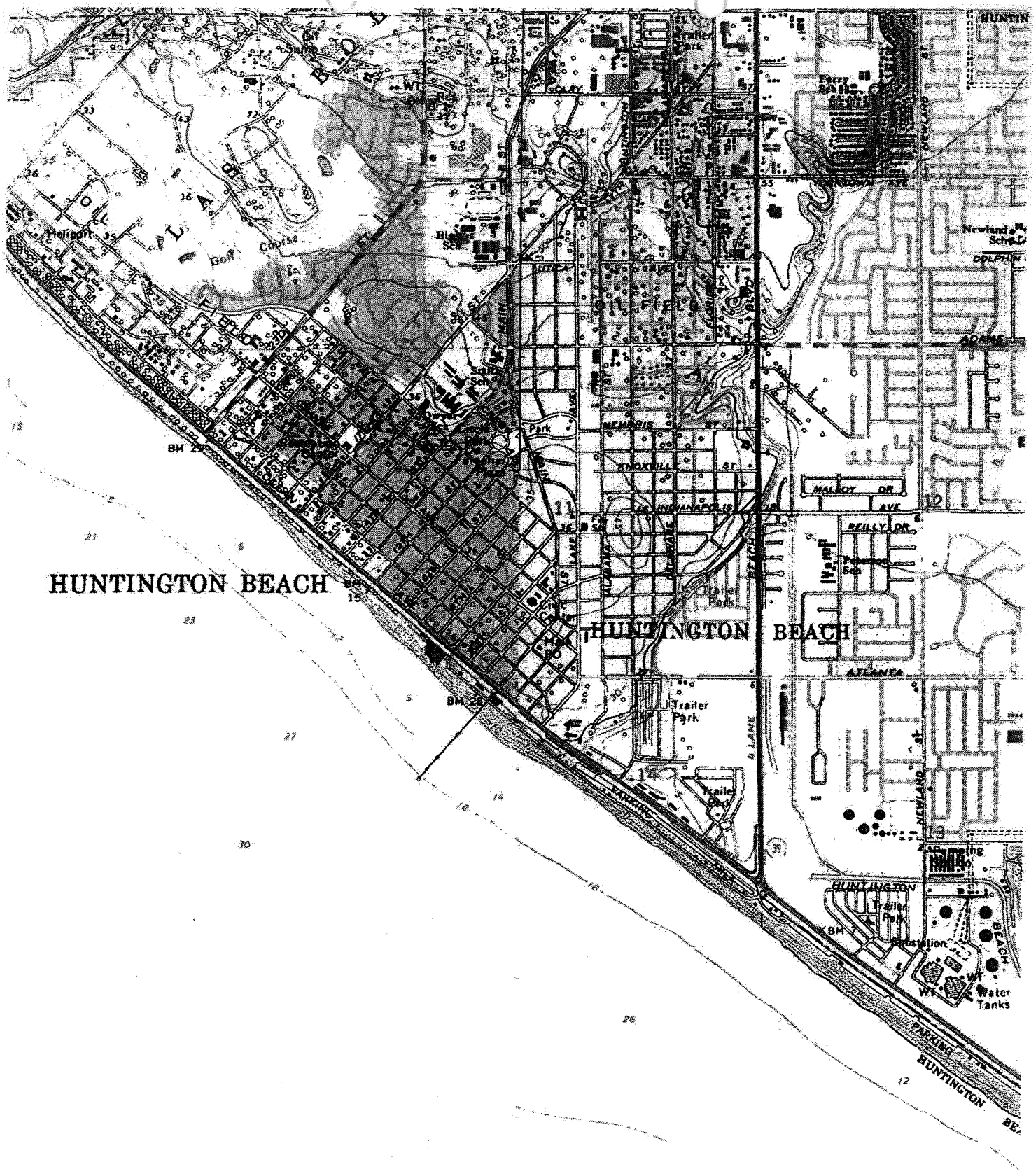
Soil PACIFIC Inc.

Tel. 714/ 879 1203 Fax. 714/ 879 48 12

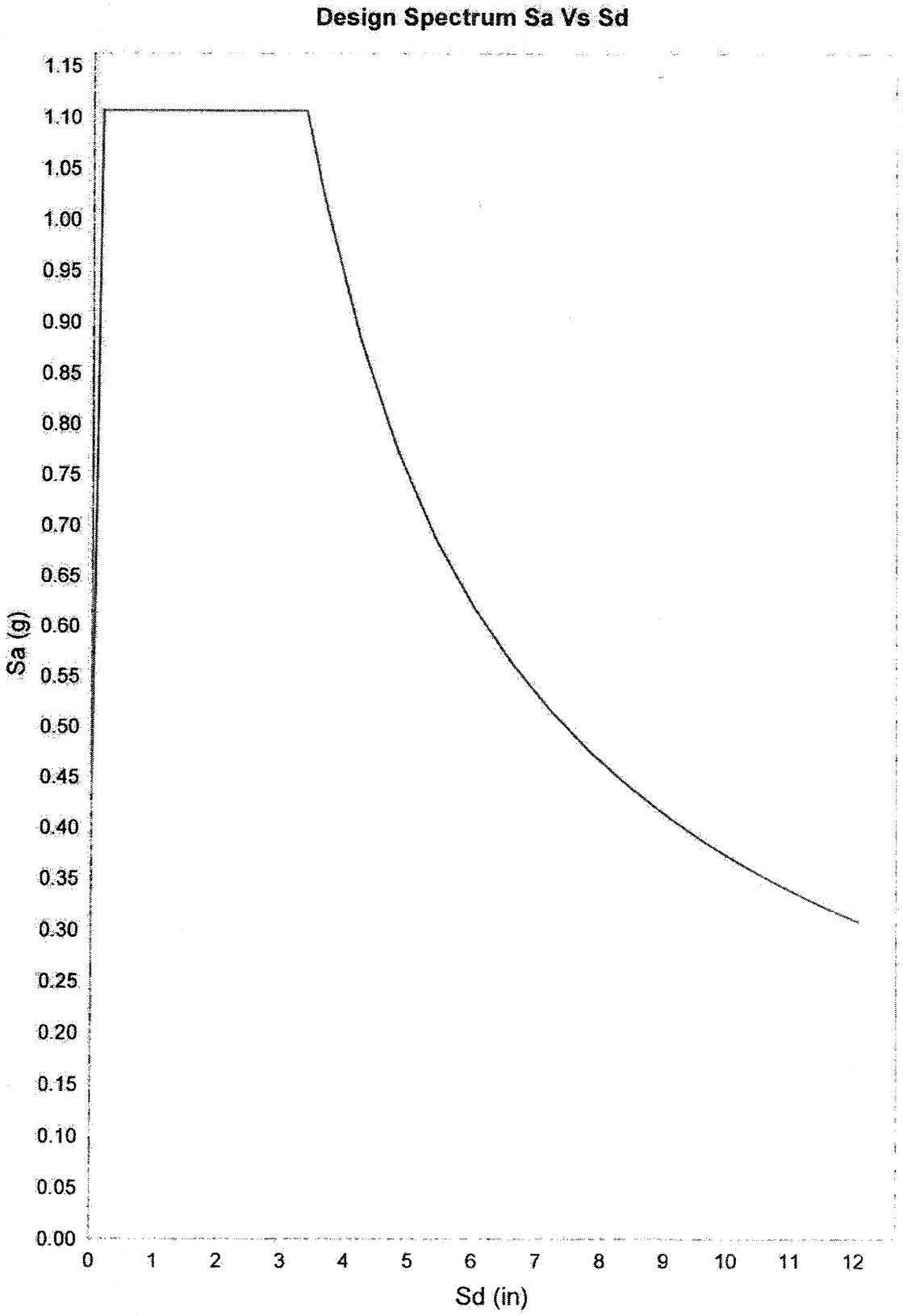
Date: July 2004

Plate No.: A-1-1

ATTACHMENT NO. 4.24



ATTACHMENT NO. 4.25



ATTACHMENT NO. 4.26

Seismic Coefficients and Liquefaction Potential

The following table provides the most recent seismic coefficients and seismic data in accordance with requirements included in the 2007 California Building Code of Regulations

ITEM	VALUE	REFERENCE
Site Longitude (Decimal-degrees)	-118.003	Google Earth
Site Latitude (Decimal-degrees)	33.658	Google Earth
Site Class	D	Table 1613.5.2
Seismic Design Category	D	2007 CBC Table 1613 (5.6)
Mapped Spectral Response Acceleration-Short Period (0.2 Sec) -S_s	1.660	2007 CBC Figure 1613.5 (3)
Mapped Spectral Response Acceleration-1 Second Period- S_1	0.617	2007 CBC Figure 1613.5 (4)
Short Period Site Coefficient – F_a	1.0	2007 CBC Table 1613.5.3 (1)
Long Period Site Coefficient – F_v	1.5	2007 CBC Table 1613.5.3 (2)
Adjusted Spectral Response Acceleration @ 0.2 Sec. Period (S_{MS})	1.660	2007 CBC Equation 16-37
Adjusted Spectral Response Acceleration @1Sec. Period (S_{M1})	0.926	2007 CBC Equation 16-38
Design Spectral Response Acceleration @ 0.2 Sec. Period (S_{DS})	1.107	2007 CBC Equation 16-39
Design Spectral Response Acceleration @1Sec. Period (S_{D1})	0.617	2007 CBC Equation 16-40

Project Number:A-2743

ATTACHMENT NO. 4.27

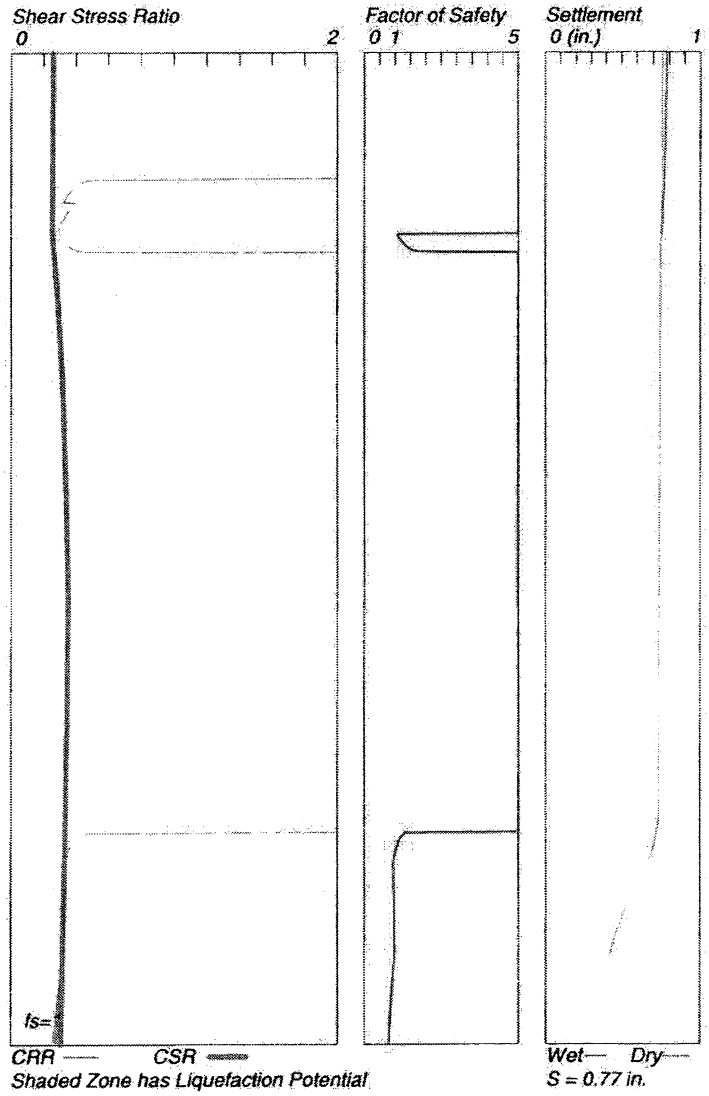
LIQUEFACTION ANALYSIS

612-620 Pacific Coast Hwy, Huntington Beach

Hole No.=B-1 Water Depth=10 ft Surface Elev.=30

Magnitude=7.4
Acceleration=0.4g

(ft)	Raw SPT	Unit Weight	Fines %	Soil Description
0	20	130	20	Silty sand
	22	130	25	Silty sand
10	14	130	38	Silt, Sandy Silt
	44	130	61	Silty sand
20	47	130	48	Silty sand
	36	130	35	Silty sand
30	50	130	10	Sand
	41	125	3	Sand
40	44	125	8	Sand
	35	125	10	Sand with some silt
50	38	125	8	Sand with some silt
	34	125	8	Sand with trace of silt
60				
70				



LiquefyPro CivilTech Software USA www.civiltech.com

ATTACHMENT NO. 4.28

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LIQUEFACTION ANALYSIS CALCULATION SHEET
Version 4.3
Copyright by CivilTech Software
www.civiltech.com
(425) 453-6488 Fax (425) 453-5848

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Input File Name: \\MAIN\SharedDocs\a-2743-04.liq
Title: 512-620 Pacific Coast Hwy, Huntington Beach
Subtitle: A-2743-04

Input Data:

Surface Elev.=30
Hole No.=B-1
Depth of Hole=55.0 ft
Water Table during Earthquake= 10.0 ft
Water Table during In-Situ Testing= 15.0 ft
Max. Acceleration=0.4 g
Earthquake Magnitude=7.4
fs=1, Plot one CSR (fs=1)

Hammer Energy Ratio, Ce=1
Borehole Diameter, Cb=1.05
Sampeling Method, Cs=1
SPT Fines Correction Method: Idriss/Seed (SPT only)
Settlement Analysis Method: Tokimatsu / Seed
Fines Correction for Liquefaction: Idriss/Seed (SPT only)
Fine Correction for Settlement: During Liq. Correction
Average Input Data: Smooth*
* Recommended Options

Depth ft	SPT	Gamma pcf	Fines %
0.0	20.0	130.0	20.0
5.0	22.0	130.0	25.0
10.0	14.0	130.0	38.0
15.0	44.0	130.0	61.0
20.0	47.0	130.0	48.0
25.0	36.0	130.0	35.0
30.0	50.0	130.0	10.0
35.0	41.0	125.0	3.0
40.0	44.0	125.0	8.0
45.0	35.0	125.0	10.0
50.0	38.0	125.0	8.0
55.0	34.0	125.0	8.0

Output Results: (Interval = 5.00 ft)

CSR Calculation:

Depth ft	gamma pcf	sigma tsf	gamma' pcf	sigma' tsf	rd	CSR	fs (user)	CSRfs w/fs
0.00	130.0	0.000	130.0	0.000	1.00	0.26	1.0	0.26
5.00	130.0	0.325	130.0	0.325	0.99	0.26	1.0	0.26
10.00	130.0	0.650	67.6	0.650	0.98	0.25	1.0	0.25
15.00	130.0	0.975	67.6	0.819	0.97	0.30	1.0	0.30
20.00	130.0	1.300	67.6	0.988	0.95	0.33	1.0	0.33
25.00	130.0	1.625	67.6	1.157	0.94	0.34	1.0	0.34
30.00	130.0	1.950	67.6	1.326	0.93	0.36	1.0	0.36
35.00	125.0	2.269	62.6	1.489	0.89	0.35	1.0	0.35
40.00	125.0	2.581	62.6	1.645	0.85	0.35	1.0	0.35
45.00	125.0	2.894	62.6	1.802	0.81	0.34	1.0	0.34
50.00	125.0	3.206	62.6	1.958	0.77	0.33	1.0	0.33
55.00	125.0	3.519	62.6	2.115	0.73	0.31	1.0	0.31

CSR is based on water table at 10.0 during earthquake

CRR Calculation from SPT or BPT data:

Depth ft	SPT	Cebs	Cr	sigma'	Cn	(N1)60	Fines %	d(N1)60	(N1)60f	CRR7.5
0.00	20.00	1.05	0.75	0.000	1.70	32.52	20.0	5.74	32.52	2.00
5.00	22.00	1.05	0.75	0.325	1.70	37.13	25.0	7.68	37.13	2.00
10.00	14.00	1.05	0.85	0.650	1.24	23.60	38.0	8.10	23.60	0.26
15.00	44.00	1.05	0.95	0.975	1.01	58.34	61.0	13.89	58.34	2.00
20.00	47.00	1.05	0.95	1.144	0.93	57.60	48.0	13.77	57.60	2.00
25.00	36.00	1.05	0.95	1.313	0.87	42.61	35.0	11.27	42.61	2.00
30.00	50.00	1.05	1.00	1.482	0.82	44.93	10.0	1.80	44.93	2.00
35.00	41.00	1.05	1.00	1.645	0.78	33.57	3.0	0.00	33.57	2.00
40.00	44.00	1.05	1.00	1.801	0.75	35.16	8.0	0.73	35.16	2.00
45.00	35.00	1.05	1.00	1.958	0.71	27.70	10.0	1.44	27.70	0.34
50.00	38.00	1.05	1.00	2.114	0.69	28.09	8.0	0.65	28.09	0.35
55.00	34.00	1.05	1.00	2.271	0.66	24.29	8.0	0.60	24.29	0.27

ATTACHMENT NO 4.29

CRR is based on [illegible] cable at 15.0 during in situ testing

Factor of Safety, - Earthquake Magnitude= 7.4:

Depth ft	sigC' tsf	CRR7.5 tsf	Ksigma	CRRv	MSF	CRRm	CSRfs w/fs	F.S. CRRm/CSRfs
0.00	0.00	2.00	1.00	2.00	1.03	2.07	0.26	5.00
5.00	0.21	2.00	1.00	2.00	1.03	2.07	0.26	5.00
10.00	0.42	0.26	1.00	0.26	1.03	0.27	0.25	1.07
15.00	0.63	2.00	1.00	2.00	1.03	2.07	0.30	5.00
20.00	0.74	2.00	1.00	2.00	1.03	2.07	0.33	5.00
25.00	0.85	2.00	1.00	2.00	1.03	2.07	0.34	5.00
30.00	0.96	2.00	1.00	2.00	1.03	2.07	0.36	5.00
35.00	1.07	2.00	1.00	1.99	1.03	2.06	0.35	5.00
40.00	1.17	2.00	0.98	1.96	1.03	2.03	0.35	5.00
45.00	1.27	0.34	0.96	0.32	1.03	0.33	0.34	0.99 *
50.00	1.37	0.35	0.95	0.33	1.03	0.34	0.33	1.04
55.00	1.48	0.27	0.94	0.25	1.03	0.26	0.31	0.84 *

* F.S.<1: Liquefaction Potential Zone. (If above water table: F.S.=5)
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

CPT convert to SPT for Settlement Analysis:
Fines Correction for Settlement Analysis:

Depth ft	Ic	qc/N60	qc1 tsf	(N1)60	Fines %	d(N1)60	(N1)60s
0.00	-	-	-	32.52	20.0	0.00	32.52
5.00	-	-	-	37.13	25.0	0.00	37.13
10.00	-	-	-	23.60	38.0	0.00	23.60
15.00	-	-	-	58.34	61.0	0.00	58.34
20.00	-	-	-	57.60	48.0	0.00	57.60
25.00	-	-	-	42.61	35.0	0.00	42.61
30.00	-	-	-	44.93	10.0	0.00	44.93
35.00	-	-	-	33.57	3.0	0.00	33.57
40.00	-	-	-	35.16	8.0	0.00	35.16
45.00	-	-	-	27.70	10.0	0.00	27.70
50.00	-	-	-	28.09	8.0	0.00	28.09
55.00	-	-	-	24.29	8.0	0.00	24.29

(N1)60 has been fines corrected in liquefaction analysis

Settlement of Saturated Sands:
Settlement Analysis Method: Tokimatsu / Seed

Depth ft	CSRfs w/fs	F.S.	Fines %	(N1)60s	Dr %	ec %	dsz in.	dsv in.	S in.
54.95	0.31	0.84	8.0	24.33	78.44	1.058	0.006	0.006	0.006
50.00	0.33	1.04	8.0	28.09	85.89	0.238	0.001	0.423	0.429
45.00	0.34	0.99	10.0	27.70	85.09	0.540	0.003	0.243	0.672
40.00	0.35	5.00	8.0	35.16	100.00	0.000	0.000	0.066	0.738
35.00	0.35	5.00	3.0	33.57	98.74	0.000	0.000	0.000	0.738
30.00	0.36	5.00	10.0	44.93	100.00	0.000	0.000	0.000	0.738
25.00	0.34	5.00	35.0	42.61	100.00	0.000	0.000	0.000	0.738
20.00	0.33	5.00	48.0	57.60	100.00	0.000	0.000	0.000	0.738
15.00	0.30	5.00	61.0	58.34	100.00	0.000	0.000	0.000	0.738
10.00	0.25	1.07	38.0	23.60	77.08	0.193	0.001	0.007	0.745

Settlement of Saturated Sands=0.745 in.
qc1 and (N1)60 is after fines correction in liquefaction analysis
dsz is per each segment: dz=0.05 ft
dsv is per each print interval: dv=5 ft
S is cumulated settlement at this depth

Settlement of Dry Sands:

dsz in.	Depth ft / dsv in.	sigma' tsf / S in.	sigC' tsf	(N1)60s	CSRfs w/fs	Gmax tsf	g*Ge/Gm	g_eff	ec7.5 %	Cec	ec %
	9.95	0.65	0.42	23.75	0.25	832.6	2.0E-4	0.0324	0.0255	1.03	0.0263
3.2E-4	0.000	0.000									
	5.00	0.33	0.21	37.13	0.26	684.9	1.2E-4	0.0204	0.0078	1.03	0.0081
9.7E-5	0.020	0.020									
	0.00	0.00	0.00	32.52	0.26	3.6	7.2E-7	0.0010	0.0005	1.03	0.0005
6.3E-6	0.007	0.027									

Settlement of Dry Sands=0.027 in.
dsz is per each segment: dz=0.05 ft
dsv is per each print interval: dv=5 ft
S is cumulated settlement at this depth

Total Settlement of Saturated and Dry Sands=0.773 in.
Differential Settlement=0.386 to 0.510 in.

Units Depth = ft, Stress or Pressure = tsf (atm), Unit Weight = pcf, Settlement = in.

ATTACHMENT NO. 4.30