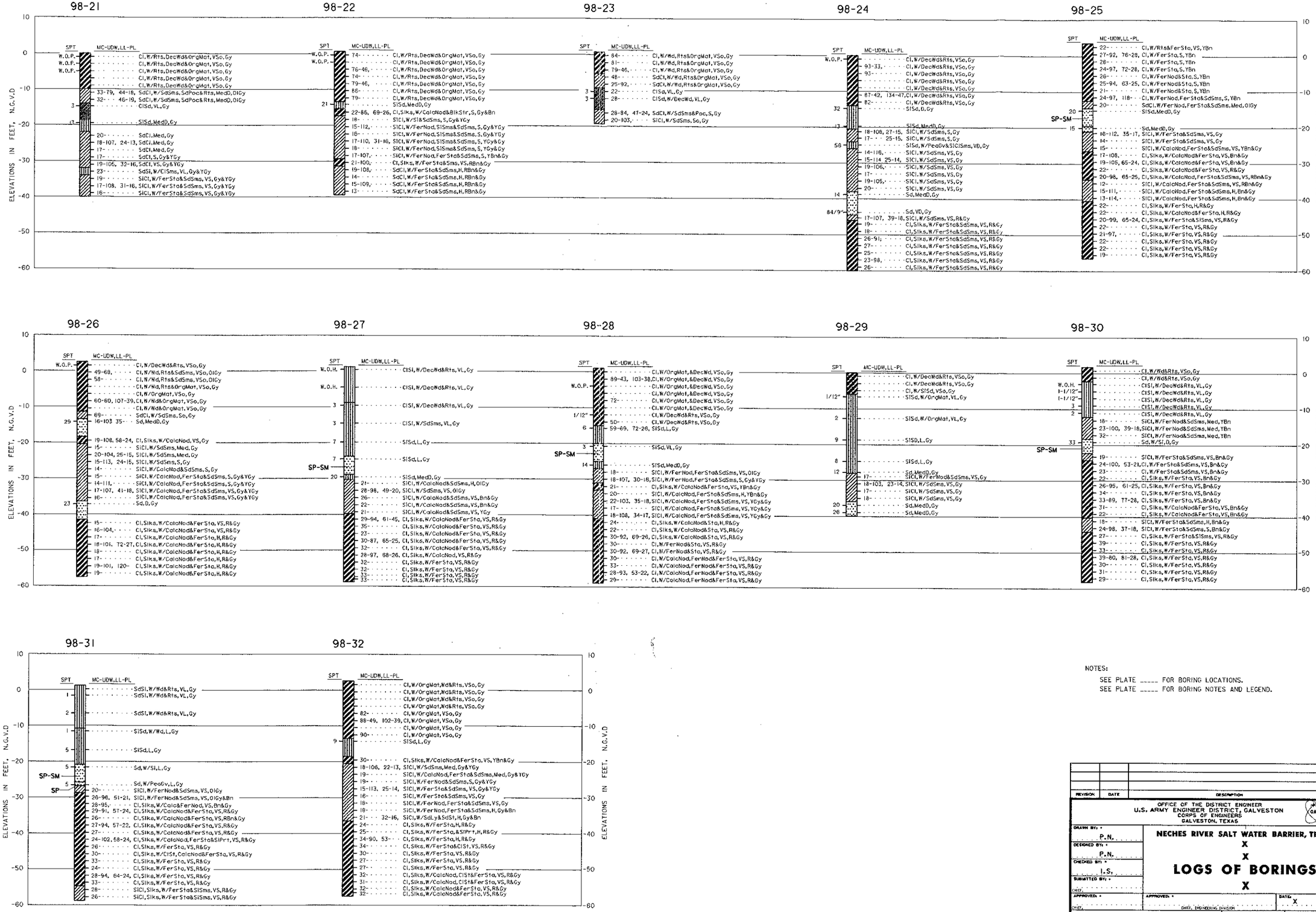
SUMMARY OF UNCONFINED COMPRESSION TEST RESULTS
NECHES RIVER SALT WATER BARRIER
BEAUMONT, TEXAS
TABLE-

BORING NO.	DEPTH (FT.)	DENSITY DATA Moisture Cont. %	DENSITY DATA Dry Wt (pcf)	MECHANICAL ANALYSIS Gvl.	MECHANICAL ANALYSIS Sand	MECHANICAL ANALYSIS Fine	ATTERBURG LIMITS L.L.	ATTERBURG LIMITS P.L.	% STRAIN @ MAX. STRESS	UNCON. COMP. STR (pcf)	CLASSIFICATION
98-21	24-26	18.2	106.6	0	18	82	24.0	13.0	3.9	630	Sandy Clay, Medium stiff, Gray
98-21	30-32	18.9	105.0	0	16	84	32.0	16.0	4.6	2090	Sandy Clay, Very stiff, Gray & yellowish gray
98-22	24-26	16.9	110.0	0	16	84	31.0	16.0	6	1980	Silty Clay, W / silt & sand seams,Very stiff, Gray & yellowish gray
98-23	16-18	27.9	84.9	0	14	86	47.0	24.0	4.3	1270	Silty Clay, W / sand seams & sand pockets, Stiff, Gray
98-24	10-12	41.7	77.8	0	1	99	134.0	47.0	3.6	90	Clay, W / decayed wood & roots, Very soft, Gray
98-24	28-30	14.7	114.1	0	8	92	25.0	14.0	10.5	2170	Silty Clay, W / sand seams, Very stiff, Gray
98-24	44.5-46	17.0	107.0	0	12	88	39.0	18.0	7.5	2000	Silty Clay, W / sand seams, Very stiff, Red & Gray
98-25	32-34	19.0	104.8	-	-	-	65.0	24.0	3.2	2220	Clay, W / calc nod & fer stains, slks, Very stiff, Brown & gray
98-25	40-42	15.3	111.4	-	-	-	-	-	3.4	3660	Clay, W / calc nod, fer stains, & sd sms, Very stiff, Reddish brown & gray
98-26	25-27	19.5	104.4	0	2	98	25.0	15.0	5	560	Silty Clay, W / sand seams, Medium stiff, Gray
98-26	35-37	16.8	106.6	0	7	93	41.0	18.0	4	2010	Silty Clay, W / sand seams, stiff, Gray
98-35	6.5-8	17.5	111.7	-	-	-	33.0	17.0	6.8	1370	Silty Clay, Stiff, Gray
98-40	14-16	76.4	43.9	-	-	-	-	-	2.1	70	Clay, W / decayed wood roots & organic material, Very soft, Gray
98-40	22-24	20.5	102.2	0	3	97	47.0	20.0	3.6	2030	Silty Clay, W / sand seams, Very stiff, Olive gray
98-40	32-34	25.5	94.5	-	-	-	-	-	3.3	2190	Clay, W / fer stains, slks,Very stiff, Reddish brown & gray
98-42	14-16	37.6	81.0	0	4	95	63.0	25.0	2.5	1060	Clay, W / fer nod & fer stains, Stiff,Yellowish brown



NOTES:

SEE PLATE _____ FOR BORING LOCATIONS.

SEE PLATE _____ FOR BORING NOTES AND LEGEND.

REVISION	DATE	DESCRIPTION	BY

OFFICE OF THE DISTRICT ENGINEER
U.S. ARMY ENGINEER DISTRICT, GALVESTON
CORPS OF ENGINEERS
GALVESTON, TEXAS

DRAWN BY: * P.N.
DESIGNED BY: * P.N.
CHECKED BY: * I.S.
SUBMITTED BY: *
CHIEF,
APPROVED: *
CHIEF,
APPROVED: *
CHIEF, ENGINEERING DIVISION
DATE: X
SPEC. DATE:

NECHES RIVER SALT WATER BARRIER, TEXAS
X
X
LOGS OF BORINGS
X

* AS REQUIRED BY ENGINEER CIRCULAR NO. 1110-1-8152 !

SCALE: AS SHOWN

Prepared under the direction of
Nicholas J. Buechler, Lt. Col. (P), C.E.,
District Engineer

DRAWING NUMBER X
SHEET X OF X FILE NO. X

EXHIBIT

DESIGN FILE: ¢DESIGN¢SPECIFICATION¢ CREATED BY: ¢USERNAME¢ ON: ¢¢DATE¢¢ AT: ¢TIME¢

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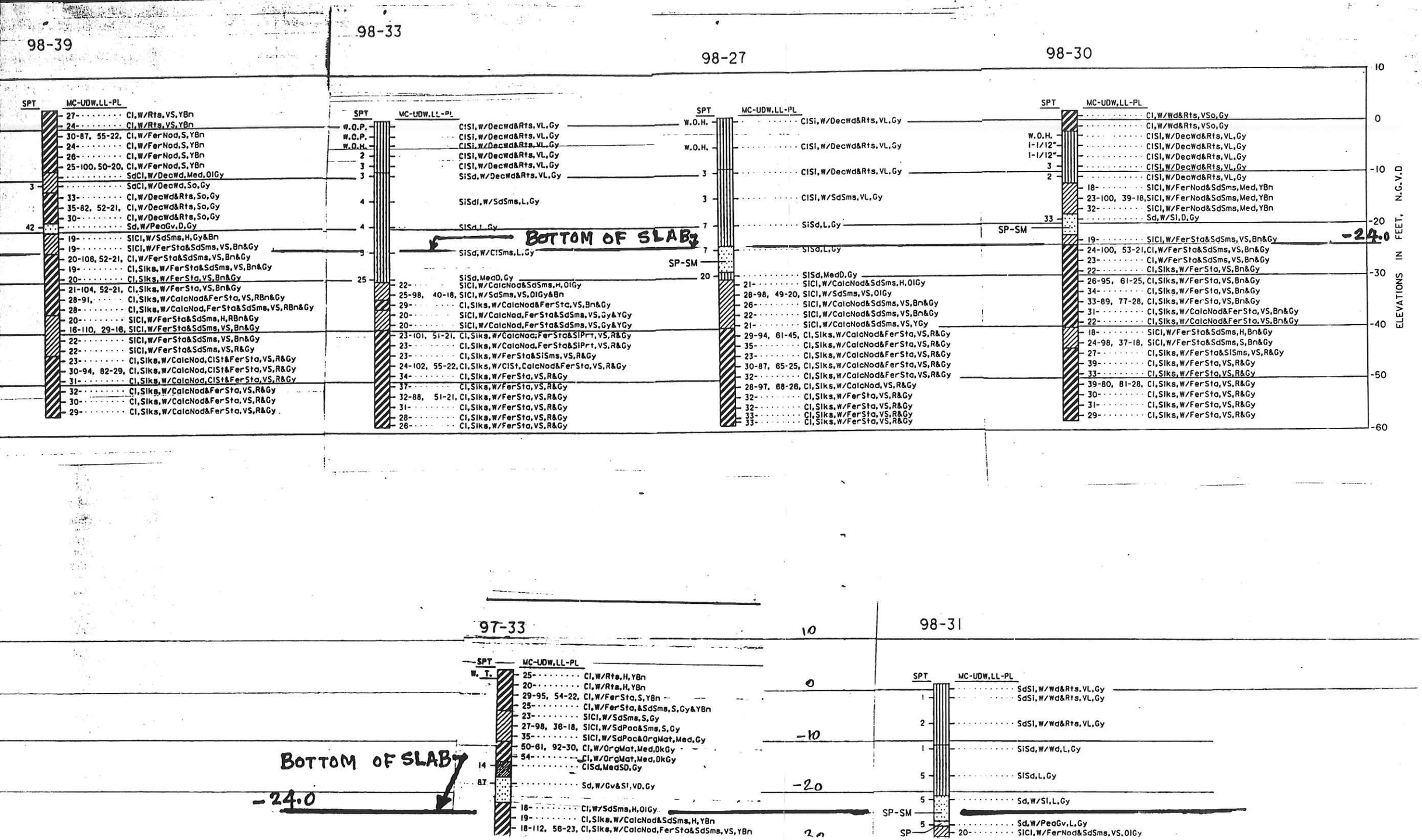

98-39
SPT
MC-UDW,LL-PL
27- Cl,W/Rts,VS,YBn
24- Cl,W/Rts,VS,YBn
30-87, 55-22, Cl,W/FerNod,S,YBn
24- Cl,W/FerNod,S,YBn
26- Cl,W/FerNod,S,YBn
25-100, 50-20, Cl,W/FerNod,S,YBn
SdCl,W/DecWd,Med,OlGy
3 SdCl,W/DecWd,So,Gy
33- Cl,W/DecWd&Rts,So,Gy
35-82, 52-21, Cl,W/DecWd&Rts,So,Gy
30- Cl,W/DecWd&Rts,So,Gy
42 Sd,W/PeaGv,D,Gy
19- SICl,W/SdSms,H,Gy&Bn
19- SICl,W/FerSta&SdSms,VS,Bn&Gy
20-106, 52-21, Cl,W/FerSta&SdSms,VS,Bn&Gy
19- Cl,Slks,W/FerSta&SdSms,VS,Bn&Gy
20- Cl,Slks,W/FerSta,VS,Bn&Gy
21-104, 52-21, Cl,Slks,W/FerSta,VS,Bn&Gy
28-91, Cl,Slks,W/CalcNod&FerSta,VS,RBn&Gy
28- Cl,Slks,W/CalcNod,FerSta&SdSms,VS,RBn&Gy
20- SICl,W/FerSta&SdSms,H,RBn&Gy
16-110, 29-16, SICl,W/FerSta&SdSms,VS,Bn&Gy
22- SICl,W/FerSta&SdSms,VS,Bn&Gy
22- SICl,W/FerSta&SdSms,VS,R&Gy
23- Cl,Slks,W/CalcNod,ClSt&FerSta,VS,R&Gy
30-94, 82-29, Cl,Slks,W/CalcNod,ClSt&FerSta,VS,R&Gy
31- Cl,Slks,W/CalcNod,ClSt&FerSta,VS,R&Gy
32- Cl,Slks,W/CalcNod&FerSta,VS,R&Gy
30- Cl,Slks,W/CalcNod&FerSta,VS,R&Gy
29- Cl,Slks,W/CalcNod&FerSta,VS,R&Gy
98-33
SPT
MC-UDW,LL-PL
W.O.P. ClSI,W/DecWd&Rts,VL,Gy
W.O.P. ClSI,W/DecWd&Rts,VL,Gy
W.O.H. ClSI,W/DecWd&Rts,VL,Gy
2 ClSI,W/DecWd&Rts,VL,Gy
3 ClSI,W/DecWd&Rts,VL,Gy
3 SiSd,W/DecWd&Rts,VL,Gy
4 SiSdI,W/SdSms,L,Gy
4 SiSd,L,Gy
BOTTOM OF SLAB
9 SiSd,W/ClSms,L,Gy
25 SiSd,MedD,Gy
22- SICl,W/CalcNod&SdSms,H,OlGy
25-98, 40-18, SICl,W/SdSms,VS,OlGy&Bn
29- Cl,Slks,W/CalcNod&FerSta,VS,Bn&Gy
20- SICl,W/CalcNod,FerSta&SdSms,VS,Gy&YGy
20- SICl,W/CalcNod,FerSta&SdSms,VS,Gy&YGy
23-101, 51-21, Cl,Slks,W/CalcNod,FerSta&SlPrt,VS,R&Gy
23- Cl,Slks,W/CalcNod,FerSta&SlPrt,VS,R&Gy
23- Cl,Slks,W/FerSta&SlSms,VS,R&Gy
24-102, 55-22, Cl,Slks,W/ClSt,CalcNod&FerSta,VS,R&Gy
34- Cl,Slks,W/FerSta,VS,R&Gy
37- Cl,Slks,W/FerSta,VS,R&Gy
32-88, 51-21, Cl,Slks,W/FerSta,VS,R&Gy
31- Cl,Slks,W/FerSta,VS,R&Gy
28- Cl,Slks,W/FerSta,VS,R&Gy
26- Cl,Slks,W/FerSta,VS,R&Gy
98-27
SPT
MC-UDW,LL-PL
W.O.H. ClSI,W/DecWd&Rts,VL,Gy
W.O.H. ClSI,W/DecWd&Rts,VL,Gy
3 ClSI,W/DecWd&Rts,VL,Gy
3 ClSI,W/SdSms,VL,Gy
7 SiSd,L,Gy
7 SiSd,L,Gy
SP-SM
20 SISd,MedD,Gy
21- SICl,W/CalcNod&SdSms,H,OlGy
28-98, 49-20, SICl,W/SdSms,VS,OlGy
26- SICl,W/CalcNod&SdSms,VS,Bn&Gy
22- SICl,W/CalcNod&SdSms,VS,Bn&Gy
21- SiCl,W/CalcNod&SdSms,VS,YGy
29-94, 61-45, Cl,Slks,W/CalcNod&FerSta,VS,R&Gy
35- Cl,Slks,W/CalcNod&FerSta,VS,R&Gy
23- Cl,Slks,W/CalcNod&FerSta,VS,R&Gy
30-87, 65-25, Cl,Slks,W/CalcNod&FerSta,VS,R&Gy
32- Cl,Slks,W/CalcNod&FerSta,VS,R&Gy
28-97, 68-26, Cl,Slks,W/CalcNod,VS,R&Gy
32- Cl,Slks,W/FerSta,VS,R&Gy
32- Cl,Slks,W/FerSta,VS,R&Gy
33- Cl,Slks,W/FerSta,VS,R&Gy
33- Cl,Slks,W/FerSta,VS,R&Gy
98-30
SPT
MC-UDW,LL-PL
Cl,W/Wd&Rts,VSo,Gy
Cl,W/Wd&Rts,VSo,Gy
W.O.H. ClSI,W/DecWd&Rts,VL,Gy
1-1/12" ClSI,W/DecWd&Rts,VL,Gy
1-1/12" ClSI,W/DecWd&Rts,VL,Gy
3 ClSI,W/DecWd&Rts,VL,Gy
2 ClSI,W/DecWd&Rts,VL,Gy
18- SICl,W/FerNod&SdSms,Med,YBn
23-100, 39-18, SICl,W/FerNod&SdSms,Med,YBn
32- SICl,W/FerNod&SdSms,Med,YBn
33 Sd,W/SI,D,Gy
SP-SM
19- SICl,W/FerSta&SdSms,VS,Bn&Gy
24-100, 53-21, Cl,W/FerSta&SdSms,VS,Bn&Gy
23- Cl,W/FerSta&SdSms,VS,Bn&Gy
22- Cl,Slks,W/FerSta,VS,Bn&Gy
26-95, 61-25, Cl,Slks,W/FerSta,VS,Bn&Gy
34- Cl,Slks,W/FerSta,VS,Bn&Gy
33-89, 77-28, Cl,Slks,W/FerSta,VS,Bn&Gy
31- Cl,Slks,W/CalcNod&FerSta,VS,Bn&Gy
22- Cl,Slks,W/CalcNod&FerSta,VS,Bn&Gy
18- SiCl,W/FerSta&SdSms,H,Bn&Gy
24-98, 37-18, SiCl,W/FerSta&SdSms,S,Bn&Gy
27- Cl,Slks,W/FerSta&SlSms,VS,R&Gy
39- Cl,Slks,W/FerSta,VS,R&Gy
33- Cl,Slks,W/FerSta,VS,R&Gy
39-80, 81-28, Cl,Slks,W/FerSta,VS,R&Gy
30- Cl,Slks,W/FerSta,VS,R&Gy
31- Cl,Slks,W/FerSta,VS,R&Gy
29- Cl,Slks,W/FerSta,VS,R&Gy
-24.0
10
0
-10
-20
-30
-40
-50
-60
ELEVATIONS IN FEET, N.G.V.D
97-33
SPT
MC-UDW,LL-PL
W. T.
25- Cl,W/Rts,H,YBn
20- Cl,W/Rts,H,YBn
29-95, 54-22, Cl,W/FerSta,S,YBn
25- Cl,W/FerSta,&SdSms,S,Gy&YBn
23- SICl,W/SdSms,S,Gy
27-98, 36-18, SICl,W/SdPoc&Sms,S,Gy
35- SICl,W/SdPoc&OrgMat,Med,Gy
50-61, 92-30, Cl,W/OrgMat,Med,DkGy
54- Cl,W/OrgMat,Med,DkGy
14 ClSd,MedSD,Gy
87 Sd,W/Gv&SI,VD,Gy
BOTTOM OF SLAB
-24.0
18- Cl,W/SdSms,H,OlGy
19- Cl,Slks,W/CalcNod&SdSms,H,YBn
18-112, 56-23, Cl,Slks,W/CalcNod,FerSta&SdSms,VS,YBn
10
0
-10
-20
98-31
SPT
MC-UDW,LL-PL
1 SdSI,W/Wd&Rts,VL,Gy
SdSi,W/Wd&Rts,VL,Gy
2 SdSI,W/Wd&Rts,VL,Gy
1 SiSd,W/Wd,L,Gy
5 SISd,L,Gy
5 Sd,W/SI,L,Gy
SP-SM
5 Sd,W/PeaGv,L,Gy
SP 20- SICl,W/FerNod&SdSms,VS,OlGy

DESIGN FILE: DGNSPECIFICATION$$$

HP 12x53 Batter 1H : 2V

Prepared by: Ishaq Syed 9 Oct. 1998

PILE CAPACITY TABLE

Elevation	Depth Below Top of Pile (Ft)	Capacity Mode	BORING Nos.					
			98-30	98-31		98-27	98-39	97-33
			Ultimate Pile Capacity in Tons					
-30	8	Compression	2.2	2		**4.1**		1.9
		Tension	0.6	0.6		**0.43**		0.48
-40	18	Compression	7.8	7.9		**13.71**		13.58
		Tension	3.6	3.7		**4.06**		4.28
-50	28	Compression	14.4	13.5		**14.93**		15.4
		Tension	8.3	7.4		**7.88**		8.76
-60	38	Compression	19.7	24.4		**20.23**		21.11
		Tension	12	12.2		**11.7**		12.91
-70	48	Compression	25.4	26.8		**25.8**		26.88
		Tension	16	17		**15.6**		17.06
-80	58	Compression	31	32.4		**30.8**		32.64
		Tension	20	21		**19.2**		21.21

CASE B

Borings Nos. 98-30 and 98-31 are located on the east end of the Tainter Gate structure, and 98-39 and 97-33 are located on the west side of the structure.

SOIL TYPE	Material Strata			
	98-30	98-31	98-39	97-33
CH, SIK, V/S	El. -24 to -40 = 16'	El -24 to -55 = 31'	El. -24 to -34 = 10'	El. -24 to -3 = 10'
CL, V/S	El. -40 to -44 = 4'	El. -55 to 65 = 10'	El. -34 to -44 = 10'	El. -34 to -4 = 8'
CH, SIK, V/S	El. -44 to 60 = 16'	—	El -44 to -60 16'	El. -42 to -60 18'

Boring No. 98-30

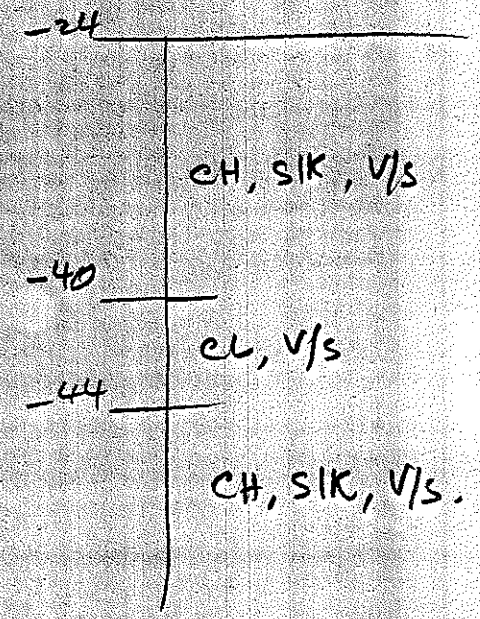
HP12x53, Batter 1H:2V.

PILE CAPACITY **ENTER ALL RED VALUES**

If pile is round 0, if square 1	1	
Pile Diameter	12.045	inches, BUTT
	11.78	inches, TIP
Assume Pile Length	68	feet
Top Surface Elev	-24	feet
Batter	63.4	degrees
Water Elev.	2	
Unit weight of Pile	62.4	pcf

Dc = # * B	=	15
Critical Depth Elevation	=	-39
Tip Elevation	=	-85

	Stratum Number	Bouyant Density pcf	Strength Prop Delta Fric. Ang. phi*delt	Strata Cohesion psf	Adhesion Reduction Factor	Coef Ear Prs. Kc	Coef Ear. Prs. Kt	Terzaghi Nc	Terzaghi Nq	Bottom Elev. -24
Clay CH V/stiff	1	57	13.3	0	0	1.25	0.9	9	7.5	-25
	1	57	13.3	0	0	1.25	0.9	9	7.5	-26
	1	57	13.3	0	0	1.25	0.9	9	7.5	-27
	1	57	13.3	0	0	1.25	0.9	9	7.5	-28
	1	57	13.3	0	0	1.25	0.9	9	7.5	-29
	1	57	13.3	0	0	1.25	0.9	9	7.5	-30
	1	57	13.3	0	0	1.25	0.9	9	7.5	-31
	1	57	13.3	0	0	1.25	0.9	9	7.5	-32
	1	57	13.3	0	0	1.25	0.9	9	7.5	-33
	1	57	13.3	0	0	1.25	0.9	9	7.5	-34
	1	57	13.3	0	0	1.25	0.9	9	7.5	-35
	1	57	13.3	0	0	1.25	0.9	9	7.5	-36
	1	57	13.3	0	0	1.25	0.9	9	7.5	-37
	1	57	13.3	0	0	1.25	0.9	9	7.5	-38
	1	57	13.3	0	0	1.25	0.9	9	7.5	-39
	1	57	13.3	0	0	1.25	0.9	9	7.5	-40



Clay CL	2	62	18.2	0	0	1.25	0.9	9	18	-41
V/stiff	2	62	18.2	0	0	1.25	0.9	9	18	-42
	2	62	18.2	0	0	1.25	0.9	9	18	-43
	2	62	18.2	0	0	1.25	0.9	9	18	-44
Clay CH	3	57	13.3	0	0	1.25	0.9	9	7.5	-45
V/stiff	3	57	13.3	0	0	1.25	0.9	9	7.5	-46
	3	57	13.3	0	0	1.25	0.9	9	7.5	-47
	3	57	13.3	0	0	1.25	0.9	9	7.5	-48
	3	57	13.3	0	0	1.25	0.9	9	7.5	-49
	3	57	13.3	0	0	1.25	0.9	9	7.5	-50
	3	57	13.3	0	0	1.25	0.9	9	7.5	-51
	3	57	13.3	0	0	1.25	0.9	9	7.5	-52
	3	57	13.3	0	0	1.25	0.9	9	7.5	-53
	3	57	13.3	0	0	1.25	0.9	9	7.5	-54
	3	57	13.3	0	0	1.25	0.9	9	7.5	-55
	3	57	13.3	0	0	1.25	0.9	9	7.5	-56
	3	57	13.3	0	0	1.25	0.9	9	7.5	-57
	3	57	13.3	0	0	1.25	0.9	9	7.5	-58
	3	57	13.3	0	0	1.25	0.9	9	7.5	-59
	3	57	13.3	0	0	1.25	0.9	9	7.5	-60
	3	57	13.3	0	0	1.25	0.9	9	7.5	-61
	3	57	13.3	0	0	1.25	0.9	9	7.5	-62
	3	57	13.3	0	0	1.25	0.9	9	7.5	-63
	2	57	13.3	0	0	1.25	0.9	9	7.5	-64
	3	57	13.3	0	0	1.25	0.9	9	7.5	-65
	3	57	13.3	0	0	1.25	0.9	9	7.5	-66
	3	57	13.3	0	0	1.25	0.9	9	7.5	-67
	3	57	13.3	0	0	1.25	0.9	9	7.5	-68
	3	57	13.3	0	0	1.25	0.9	9	7.5	-69
	3	57	13.3	0	0	1.25	0.9	9	7.5	-70
	3	57	13.3	0	0	1.25	0.9	9	7.5	-71
	3	57	13.3	0	0	1.25	0.9	9	7.5	-72
	3	57	13.3	0	0	1.25	0.9	9	7.5	-73
	3	57	13.3	0	0	1.25	0.9	9	7.5	-74

Pile Capacity		Skin	Tip	Total
Compresion (lbs)	=	61645	6180	67824
Compresion (ton)	=	30.82	3.09	33.91
Tension (lbs)	=	44384		44384
Tension (ton)	=	22.19		22.19

Construction condition - Batter; 1H:2V

Weight of pile lbs	Dc Equiv. Bottom	Dist. From pile tip L	Average Pile Dia. inches	Pile Length in Sublayer	Total Surface in sub layer (ft^2)	Tip Area (ft^2)	Cohesionless Calculations: stress at bottom	stress for skin friction w/ Dc	avg-stress psf w/Dc	avg - su psf	comp. fs=kcsu	tension fs=ktSu
	-24						0	0				
0	-25	60.5	12.02	1.12	4.48	0.96	57	57	28.5	7	8	6
0	-26	59.5	12.01	1.12	4.48	0.96	114	114	85.5	20	25	18
0	-27	58.5	12.01	1.12	4.48	0.96	171	171	142.5	34	42	30
0	-28	57.5	12.00	1.12	4.48	0.96	228	228	199.5	47	59	42
0	-29	56.5	12.00	1.12	4.47	0.96	285	285	256.5	61	76	55
0	-30	55.5	12.00	1.12	4.47	0.96	342	342	313.5	74	93	67
0	-31	54.5	11.99	1.12	4.47	0.96	399	399	370.5	88	109	79
0	-32	53.5	11.99	1.12	4.47	0.96	456	456	427.5	101	126	91
0	-33	52.5	11.98	1.12	4.47	0.96	513	513	484.5	115	143	103
0	-34	51.5	11.98	1.12	4.47	0.96	570	570	541.5	128	160	115
0	-35	50.5	11.98	1.12	4.46	0.96	627	627	598.5	141	177	127
0	-36	49.5	11.97	1.12	4.46	0.96	684	684	655.5	155	194	139
0	-37	48.5	11.97	1.12	4.46	0.96	741	741	712.5	168	211	152
0	-38	47.5	11.97	1.12	4.46	0.96	798	798	769.5	182	227	164
0	-39	46.5	11.96	1.12	4.46	0.96	855	855	826.5	195	244	176
0	-39	45.5	11.96	1.12	4.46	0.96	912	855	855	202	253	182

0	-39	44.5	11.95	1.12	4.46	0.96	974	855	855	281	351	253
0	-39	43.5	11.95	1.12	4.45	0.96	1036	855	855	281	351	253
0	-39	42.5	11.95	1.12	4.45	0.96	1098	855	855	281	351	253
0	-39	41.5	11.94	1.12	4.45	0.96	1160	855	855	281	351	253
0	-39	40.5	11.94	1.12	4.45	0.96	1217	855	855	202	253	182
0	-39	39.5	11.93	1.12	4.45	0.96	1274	855	855	202	253	182
0	-39	38.5	11.93	1.12	4.45	0.96	1331	855	855	202	253	182
0	-39	37.5	11.93	1.12	4.45	0.96	1388	855	855	202	253	182
0	-39	36.5	11.92	1.12	4.44	0.96	1445	855	855	202	253	182
0	-39	35.5	11.92	1.12	4.44	0.96	1502	855	855	202	253	182
0	-39	34.5	11.91	1.12	4.44	0.96	1559	855	855	202	253	182
0	-39	33.5	11.91	1.12	4.44	0.96	1616	855	855	202	253	182
0	-39	32.5	11.91	1.12	4.44	0.96	1673	855	855	202	253	182
0	-39	31.5	11.90	1.12	4.44	0.96	1730	855	855	202	253	182
0	-39	30.5	11.90	1.12	4.44	0.96	1787	855	855	202	253	182
0	-39	29.5	11.89	1.12	4.43	0.96	1844	855	855	202	253	182
0	-39	28.5	11.89	1.12	4.43	0.96	1901	855	855	202	253	182
0	-39	27.5	11.89	1.12	4.43	0.96	1958	855	855	202	253	182
0	-39	26.5	11.88	1.12	4.43	0.96	2015	855	855	202	253	182
0	-39	25.5	11.88	1.12	4.43	0.96	2072	855	855	202	253	182
0	-39	24.5	11.88	1.12	4.43	0.96	2129	855	855	202	253	182
0	-39	23.5	11.87	1.12	4.43	0.96	2186	855	855	202	253	182
0	-39	22.5	11.87	1.12	4.42	0.96	2243	855	855	202	253	182
0	-39	21.5	11.86	1.12	4.42	0.96	2300	855	855	202	253	182
0	-39	20.5	11.86	1.12	4.42	0.96	2357	855	855	202	253	182
0	-39	19.5	11.86	1.12	4.42	0.96	2414	855	855	202	253	182
0	-39	18.5	11.85	1.12	4.42	0.96	2471	855	855	202	253	182
0	-39	17.5	11.85	1.12	4.42	0.96	2528	855	855	202	253	182
0	-39	16.5	11.84	1.12	4.42	0.96	2585	855	855	202	253	182
0	-39	15.5	11.84	1.12	4.41	0.96	2642	855	855	202	253	182
0	-39	14.5	11.84	1.12	4.41	0.96	2699	855	855	202	253	182
0	-39	13.5	11.83	1.12	4.41	0.96	2756	855	855	202	253	182
0	-39	12.5	11.83	1.12	4.41	0.96	2813	855	855	202	253	182
0	-39	11.5	11.82	1.12	4.41	0.96	2870	855	855	202	253	182

Pile Capacity		Skin	Tip	Pile Weight	Total
Compresion (lbs)	=	61645	6179.53	0	67824
Compresion (ton)	=	30.82	3.09	0.00	33.91
Tension (lbs)	=	44384		0	44384
Tension (ton)	=	22.19		0.00	22.19

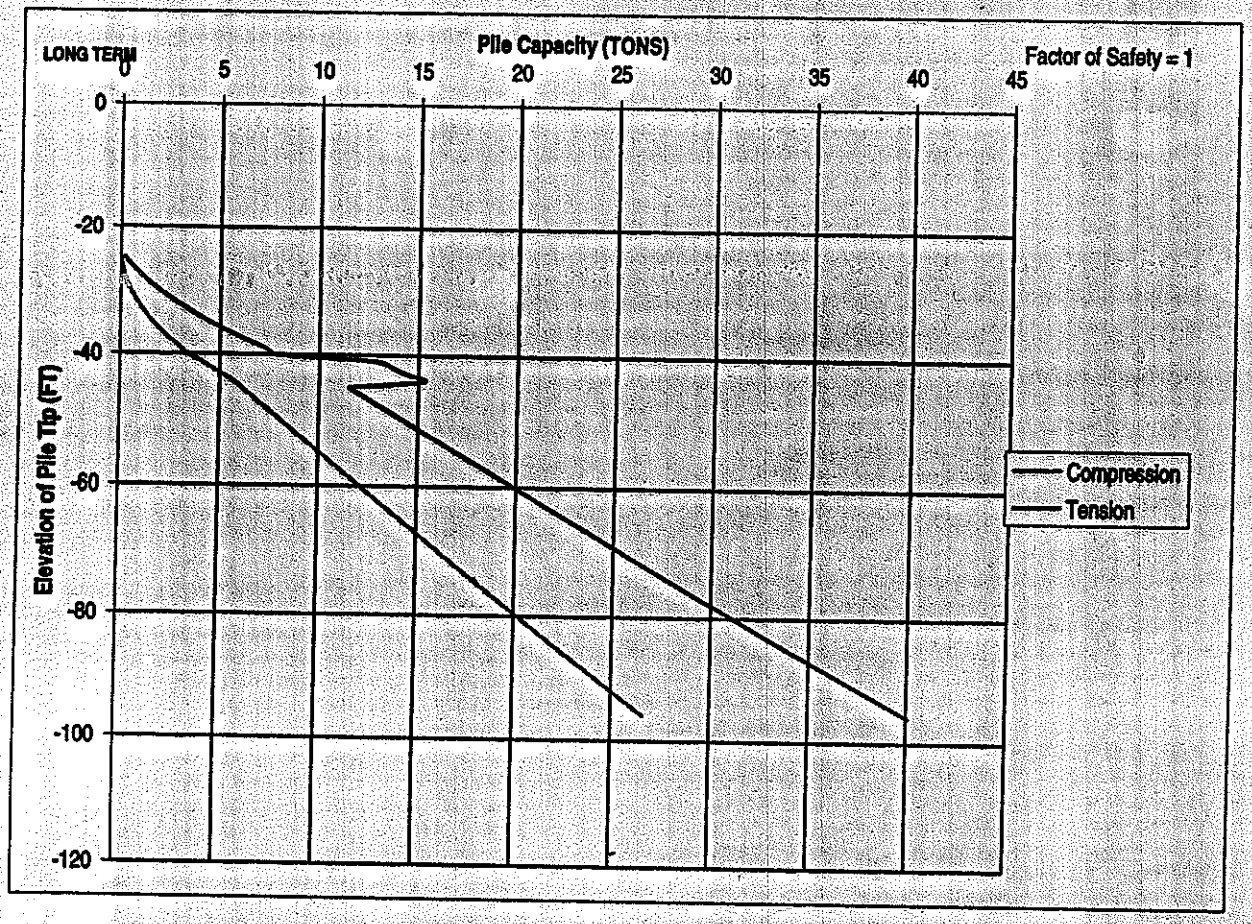
		Cohesionless			Cohesive		
Stratum Number	Bottom Elevation	Qskin Comp.	Qskin Tension	End Bearing	Qskin	End Bearing	End Bearing
	-24	lbs	lbs	lbs	lbs	lbs	lbs
1	-25	38	27	411.9687	0	0	0
1	-26	113	81	823.9374	0	0	0
1	-27	188	136	1235.906	0	0	0
1	-28	264	190	1647.875	0	0	0
1	-29	339	244	2059.843	0	0	0
1	-30	414	298	2471.812	0	0	0
1	-31	489	352	2883.781	0	0	0
1	-32	565	406	3295.75	0	0	0
1	-33	640	461	3707.718	0	0	0
1	-34	715	515	4119.687	0	0	0
1	-35	790	569	4531.656	0	0	0
1	-36	865	622	4943.624	0	0	0
1	-37	939	676	5355.593	0	0	0
1	-38	1014	730	5767.562	0	0	0
1	-39	1089	784	6179.53	0	0	0
1	-40	1126	811	6179.53	0	0	0

Pile Length	Capacity Comp	Tension	Pile tip Elev
	33.91	22.19	-85
1	0.224684	0.013463	-25
2	0.486558	0.053704	-26
3	0.785691	0.120772	-27
4	1.122085	0.214666	-28
5	1.121627	0.214337	-28
6	1.495149	0.334963	-29
7	1.905928	0.482416	-30
8	2.353966	0.656694	-31
9	2.839262	0.857799	-32
10	3.361818	1.085731	-33
11	3.921634	1.340489	-34
12	4.518708	1.622074	-35
13	5.153043	1.930486	-36
14	5.824636	2.265725	-37
15	5.823181	2.264677	-37
16	6.5319	2.626646	-38

2	-41	1566	1127	14830.87	0	0	0	17	7.277878	3.015441	-39
2	-42	1565	1127	14830.87	0	0	0	18	7.836628	3.417742	-40
2	-43	1565	1127	14830.87	0	0	0	19	12.93823	3.976413	-41
2	-44	1564	1126	14830.87	0	0	0	20	13.71459	4.535394	-42
3	-45	1124	810	6179.53	0	0	0	21	14.49133	5.09464	-43
3	-46	1124	809	6179.53	0	0	0	22	15.26838	5.654118	-44
3	-47	1124	809	6179.53	0	0	0	23	11.50311	6.057605	-45
3	-48	1123	809	6179.53	0	0	0	24	11.50073	6.055891	-45
3	-49	1123	808	6179.53	0	0	0	25	12.06104	6.459318	-46
3	-50	1123	808	6179.53	0	0	0	26	12.62141	6.862783	-47
3	-51	1122	808	6179.53	0	0	0	27	13.18182	7.266279	-48
3	-52	1122	808	6179.53	0	0	0	28	13.74227	7.669805	-49
3	-53	1121	807	6179.53	0	0	0	29	14.30276	8.073358	-50
3	-54	1121	807	6179.53	0	0	0	30	14.86328	8.476931	-51
3	-55	1121	807	6179.53	0	0	0	31	15.42383	8.880527	-52
3	-56	1120	807	6179.53	0	0	0	32	15.98441	9.284142	-53
3	-57	1120	806	6179.53	0	0	0	33	16.54501	9.687775	-54
3	-58	1120	806	6179.53	0	0	0	34	16.54188	9.685522	-54
3	-59	1119	806	6179.53	0	0	0	35	17.10242	10.08911	-55
3	-60	1119	806	6179.53	0	0	0	36	17.66299	10.49272	-56
3	-61	1118	805	6179.53	0	0	0	37	18.22358	10.89635	-57
3	-62	1118	805	6179.53	0	0	0	38	18.78419	11.29999	-58
3	-63	1118	805	6179.53	0	0	0	39	19.34482	11.70364	-59
2	-64	1117	805	6179.53	0	0	0	40	19.90547	12.10731	-60
3	-65	1117	804	6179.53	0	0	0	41	20.46613	12.51098	-61
3	-66	1117	804	6179.53	0	0	0	42	21.02681	12.91467	-62
3	-67	1116	804	6179.53	0	0	0	43	21.02331	12.91215	-62
3	-68	1116	803	6179.53	0	0	0	44	21.58395	13.31581	-63
3	-69	1116	803	6179.53	0	0	0	45	22.1446	13.71948	-64
3	-70	1115	803	6179.53	0	0	0	46	22.70527	14.12316	-65
3	-71	1115	803	6179.53	0	0	0	47	23.26594	14.52685	-66
3	-72	1114	802	6179.53	0	0	0	48	23.82663	14.93055	-67
3	-73	1114	802	6179.53	0	0	0	49	24.38734	15.33425	-68
3	-74	1114	802	6179.53	0	0	0	50	24.94805	15.73796	-69

98-30

pile2a


LONG TERM
Pile Capacity (TONS)
Factor of Safety = 1
0
5
10
15
20
25
30
35
40
45
0
-20
-40
-60
-80
-100
-120
Elevation of Pile Tip (FT)
Compression
Tension

Mark, 27 ~~20~~ August 1998

The soil parameters were determined for the northeast and southeast walls, at the Neches River Saltwater Barrier structure, based on the boring logs and laboratory testing. These two locations are separated by about 100 feet but there is a noticeable difference in the soil strata and the strength. The thickness of cohesionless material on the southeast side is less than the thickness on the northeast side. Also, sand layer dips deeper westward.

Because of the variation in the soil strata, I recommend adopting the same design for both walls using the worst foundation condition.

ISHAQ SYED

NECHES RIVER SALTWATER BARRIER
BEAUMONT, TEXAS

SOILS PARAMETERS AT SOUTH EAST WING WALL

BORING No. 98-30

Layer No. 1, Elevation -20.0 to -22.0 NGVD: Sand and Silty sand, Dense

	Short Term Shear Strength	Long Term Shear Strength
γ_{moist} = 110 pcf	$\phi = 32^o$	$\phi = 32^o$
$\gamma_{bouyant}$ = 47 pcf	c = 0 psf	c = 0 psf

Pile Design Parameters (See EM 1110-2-2906 for definitions)
$\delta = 0.9\ \phi$ for concrete, 0.8 for timber; $N_q = 30$; $K_c = 1.75$; $K_t = 0.6$

Layer No. 2, Elevation –22.0 to –24.0 NGVD: Silty Clay, V/stiff

	Short Term Shear Strength	Long Term Shear Strength
γ_{moist} = 120 pcf	$\phi = 0^o$	$\phi = 26^o$
$\gamma_{bouyant}$ = 57 pcf	c = 2,000 psf	c = 0 psf

Pile Design Parameters (See EM 1110-2-2906 for definitions)
$\delta = 0.9\ \phi$ for concrete, 0.8 for timber ; $N_q = 18$; $K_c = 1.25$; $K_t = 0.9$; $\alpha = 0.5$

Layer No. 3, Elevation -24.0 to -28.0 NGVD: Clay, V/stiff

	Short Term Shear Strength	Long Term Shear Strength
γ_{moist} = 120 pcf	$\phi = 0^o$	$\phi = 24^o$
$\gamma_{bouyant}$ = 57pcf	c = 2,000 psf	c = 0 psf

Pile Design Parameters (See EM 1110-2-2906 for definitions)
$\delta = 0.9\ \phi$ for concrete, 0.8 for timber ; $N_q = 12.0$; $K_c = 1.25$; $K_t = 0.9$; $\alpha = 0.5$

Layer No. 4, Elevation -28.0 to -40.0 NGVD: Clay, V/stiff (slikensided)

	Short Term Shear Strength	Long Term Shear Strength
γ_{moist} = 119 pcf	$\phi = 0^o$	$\phi = 17^o$
$\gamma_{bouyant}$ = 56pcf	c = 1,800 psf	c = 0 psf

Layer No. 5, Elevation -40.0 to -44.0 NGVD: Silty Clay, stiff to hard

	Short Term Shear Strength	Long Term Shear Strength
γ_{moist} = 120 pcf	$\phi = 0^o$	$\phi = 24^o$
$\gamma_{bouyant}$ = 57 pcf	c = 1,800 psf	c = 0 psf

Pile Design Parameters:
$\delta = 0.9\ \phi$ for concrete, 0.8 for timber ; $N_q = 12.0$; $K_c = 1.25$; $K_t = 0.9$; $\alpha = 0.5$

Layer No. 6, Elevation -44.0 to -60.0 NGVD: Clay, V/stiff (slikensided)

Soil Paramerters similar to Layer No. 4

HP 12x53 Batter 1H : 2V (Adopted)

Prepared by: Ishaq Syed 9 Oct. 1998

PILE CAPACITY TABLE

Elevation	Depth Below Top of Pile (Ft)	Capacity Mode	BORING Nos.					
			98-30	98-31		98-27	98-39	97-33
			Ultimate Pile Capacity in Tons					
-30	8	Compression	2.2	2		**4.1**		1.9
		Tension	0.6	0.6		**0.43**		0.48
-40	18	Compression	7.8	7.9		**13.71**		13.58
		Tension	3.6	3.7		**4.06**		4.28
-50	28	Compression	14.4	13.5		**14.93**		15.4
		Tension	8.3	7.4		**7.88**		8.76
-60	38	Compression	19.7	24.4		**20.23**		21.11
		Tension	12	12.2		**11.7**		12.91
-70	48	Compression	25.4	26.8		**25.8**		26.88
		Tension	16	17		**15.6**		17.06
-80	58	Compression	31	32.4		**30.8**		32.64
		Tension	20	21		**19.2**		21.21

Boring No. 98-30

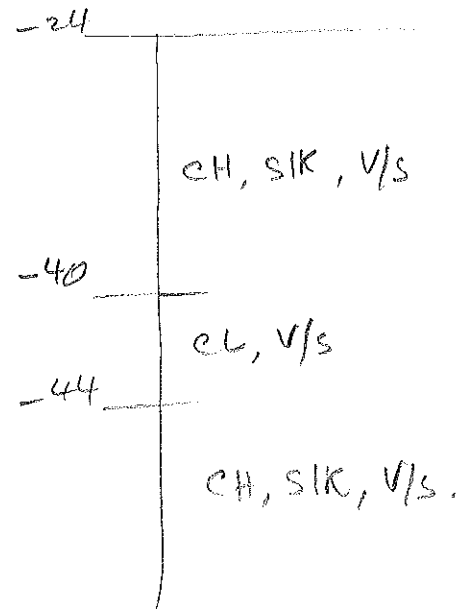
HP 12x53, Batter 1H:2V.

PILE CAPACITY **ENTER ALL RED VALUES**

If pile is round 0, if square 1	1	
Pile Diameter	12.045	inches, BUTT
	11.78	inches, TIP
Assume Pile Length	68	feet
Top Surface Elev	-24	feet
Batter	63.4	degrees
Water Elev.	2	
Unit weight of Pile	62.4	pcf

Dc = # * B	=	15

Critical Depth Elevation	=	-39
Tip Elevation	=	-85



	Stratum Number	Bouyant Density pcf	Strength Prop Delta Fric, Ang. phi*delt	Strata Cohesion psf	Adhesion Reduction Factor	Coef Ear Prs. Kc	Coef Ear. Prs. Kt	Terzaghi Nc	Terzaghi Nq	Bottom Elev. -24
Clay CH V/stiff	1	57	13.3	0	0	1.25	0.9	9	7.5	-25
	1	57	13.3	0	0	1.25	0.9	9	7.5	-26
	1	57	13.3	0	0	1.25	0.9	9	7.5	-27
	1	57	13.3	0	0	1.25	0.9	9	7.5	-28
	1	57	13.3	0	0	1.25	0.9	9	7.5	-29
	1	57	13.3	0	0	1.25	0.9	9	7.5	-30
	1	57	13.3	0	0	1.25	0.9	9	7.5	-31
	1	57	13.3	0	0	1.25	0.9	9	7.5	-32
	1	57	13.3	0	0	1.25	0.9	9	7.5	-33
	1	57	13.3	0	0	1.25	0.9	9	7.5	-34
	1	57	13.3	0	0	1.25	0.9	9	7.5	-35
	1	57	13.3	0	0	1.25	0.9	9	7.5	-36
	1	57	13.3	0	0	1.25	0.9	9	7.5	-37
	1	57	13.3	0	0	1.25	0.9	9	7.5	-38
	1	57	13.3	0	0	1.25	0.9	9	7.5	-39
	1	57	13.3	0	0	1.25	0.9	9	7.5	-40

Clay CL	2	62	18.2	0	0	1.25	0.9	9	18	-41
V/stiff	2	62	18.2	0	0	1.25	0.9	9	18	-42
	2	62	18.2	0	0	1.25	0.9	9	18	-43
	2	62	18.2	0	0	1.25	0.9	9	18	-44
Clay CH	3	57	13.3	0	0	1.25	0.9	9	7.5	-45
V/stiff	3	57	13.3	0	0	1.25	0.9	9	7.5	-46
	3	57	13.3	0	0	1.25	0.9	9	7.5	-47
	3	57	13.3	0	0	1.25	0.9	9	7.5	-48
	3	57	13.3	0	0	1.25	0.9	9	7.5	-49
	3	57	13.3	0	0	1.25	0.9	9	7.5	-50
	3	57	13.3	0	0	1.25	0.9	9	7.5	-51
	3	57	13.3	0	0	1.25	0.9	9	7.5	-52
	3	57	13.3	0	0	1.25	0.9	9	7.5	-53
	3	57	13.3	0	0	1.25	0.9	9	7.5	-54
	3	57	13.3	0	0	1.25	0.9	9	7.5	-55
	3	57	13.3	0	0	1.25	0.9	9	7.5	-56
	3	57	13.3	0	0	1.25	0.9	9	7.5	-57
	3	57	13.3	0	0	1.25	0.9	9	7.5	-58
	3	57	13.3	0	0	1.25	0.9	9	7.5	-59
	3	57	13.3	0	0	1.25	0.9	9	7.5	-60
	3	57	13.3	0	0	1.25	0.9	9	7.5	-61
	3	57	13.3	0	0	1.25	0.9	9	7.5	-62
	3	57	13.3	0	0	1.25	0.9	9	7.5	-63
	2	57	13.3	0	0	1.25	0.9	9	7.5	-64
	3	57	13.3	0	0	1.25	0.9	9	7.5	-65
	3	57	13.3	0	0	1.25	0.9	9	7.5	-66
	3	57	13.3	0	0	1.25	0.9	9	7.5	-67
	3	57	13.3	0	0	1.25	0.9	9	7.5	-68
	3	57	13.3	0	0	1.25	0.9	9	7.5	-69
	3	57	13.3	0	0	1.25	0.9	9	7.5	-70
	3	57	13.3	0	0	1.25	0.9	9	7.5	-71
	3	57	13.3	0	0	1.25	0.9	9	7.5	-72
	3	57	13.3	0	0	1.25	0.9	9	7.5	-73
	3	57	13.3	0	0	1.25	0.9	9	7.5	-74

Pile Capacity		Skin	Tip	Total
Compresion (lbs)	=	61645	6180	67824
Compresion (ton)	=	30.82	3.09	33.91
Tension (lbs)	=	44384		44384
Tension (ton)	=	22.19		22.19

Construction condition - Batter; 1H:2V

Weight of pile lbs	Dc Equiv. Bottom -24	Dist. From pile tip L	Average Pile Dia. inches	Pile Length in Sublayer	Total Surface in sub layer (ft^2)	Tip Area (ft^2)	Cohesionless Calculations: stress at bottom 0	stress for skin friction w/ Dc 0	avg-stress psf w/Dc	avg - su psf	comp. fs=kcsu	tension fs=ktSu
0	-25	60.5	12.02	1.12	4.48	0.96	57	57	28.5	7	8	6
0	-26	59.5	12.01	1.12	4.48	0.96	114	114	85.5	20	25	18
0	-27	58.5	12.01	1.12	4.48	0.96	171	171	142.5	34	42	30
0	-28	57.5	12.00	1.12	4.48	0.96	228	228	199.5	47	59	42
0	-29	56.5	12.00	1.12	4.47	0.96	285	285	256.5	61	76	55
0	-30	55.5	12.00	1.12	4.47	0.96	342	342	313.5	74	93	67
0	-31	54.5	11.99	1.12	4.47	0.96	399	399	370.5	88	109	79
0	-32	53.5	11.99	1.12	4.47	0.96	456	456	427.5	101	126	91
0	-33	52.5	11.98	1.12	4.47	0.96	513	513	484.5	115	143	103
0	-34	51.5	11.98	1.12	4.47	0.96	570	570	541.5	128	160	115
0	-35	50.5	11.98	1.12	4.46	0.96	627	627	598.5	141	177	127
0	-36	49.5	11.97	1.12	4.46	0.96	684	684	655.5	155	194	139
0	-37	48.5	11.97	1.12	4.46	0.96	741	741	712.5	168	211	152
0	-38	47.5	11.97	1.12	4.46	0.96	798	798	769.5	182	227	164
0	-39	46.5	11.96	1.12	4.46	0.96	855	855	826.5	195	244	176
0	-39	45.5	11.96	1.12	4.46	0.96	912	855	855	202	253	182

0	-39	44.5	11.95	1.12	4.46	0.96	974	855	855	281	351	253
0	-39	43.5	11.95	1.12	4.45	0.96	1036	855	855	281	351	253
0	-39	42.5	11.95	1.12	4.45	0.96	1098	855	855	281	351	253
0	-39	41.5	11.94	1.12	4.45	0.96	1160	855	855	281	351	253
0	-39	40.5	11.94	1.12	4.45	0.96	1217	855	855	202	253	182
0	-39	39.5	11.93	1.12	4.45	0.96	1274	855	855	202	253	182
0	-39	38.5	11.93	1.12	4.45	0.96	1331	855	855	202	253	182
0	-39	37.5	11.93	1.12	4.45	0.96	1388	855	855	202	253	182
0	-39	36.5	11.92	1.12	4.44	0.96	1445	855	855	202	253	182
0	-39	35.5	11.92	1.12	4.44	0.96	1502	855	855	202	253	182
0	-39	34.5	11.91	1.12	4.44	0.96	1559	855	855	202	253	182
0	-39	33.5	11.91	1.12	4.44	0.96	1616	855	855	202	253	182
0	-39	32.5	11.91	1.12	4.44	0.96	1673	855	855	202	253	182
0	-39	31.5	11.90	1.12	4.44	0.96	1730	855	855	202	253	182
0	-39	30.5	11.90	1.12	4.44	0.96	1787	855	855	202	253	182
0	-39	29.5	11.89	1.12	4.43	0.96	1844	855	855	202	253	182
0	-39	28.5	11.89	1.12	4.43	0.96	1901	855	855	202	253	182
0	-39	27.5	11.89	1.12	4.43	0.96	1958	855	855	202	253	182
0	-39	26.5	11.88	1.12	4.43	0.96	2015	855	855	202	253	182
0	-39	25.5	11.88	1.12	4.43	0.96	2072	855	855	202	253	182
0	-39	24.5	11.88	1.12	4.43	0.96	2129	855	855	202	253	182
0	-39	23.5	11.87	1.12	4.43	0.96	2186	855	855	202	253	182
0	-39	22.5	11.87	1.12	4.42	0.96	2243	855	855	202	253	182
0	-39	21.5	11.86	1.12	4.42	0.96	2300	855	855	202	253	182
0	-39	20.5	11.86	1.12	4.42	0.96	2357	855	855	202	253	182
0	-39	19.5	11.86	1.12	4.42	0.96	2414	855	855	202	253	182
0	-39	18.5	11.85	1.12	4.42	0.96	2471	855	855	202	253	182
0	-39	17.5	11.85	1.12	4.42	0.96	2528	855	855	202	253	182
0	-39	16.5	11.84	1.12	4.42	0.96	2585	855	855	202	253	182
0	-39	15.5	11.84	1.12	4.41	0.96	2642	855	855	202	253	182
0	-39	14.5	11.84	1.12	4.41	0.96	2699	855	855	202	253	182
0	-39	13.5	11.83	1.12	4.41	0.96	2756	855	855	202	253	182
0	-39	12.5	11.83	1.12	4.41	0.96	2813	855	855	202	253	182
0	-39	11.5	11.82	1.12	4.41	0.96	2870	855	855	202	253	182

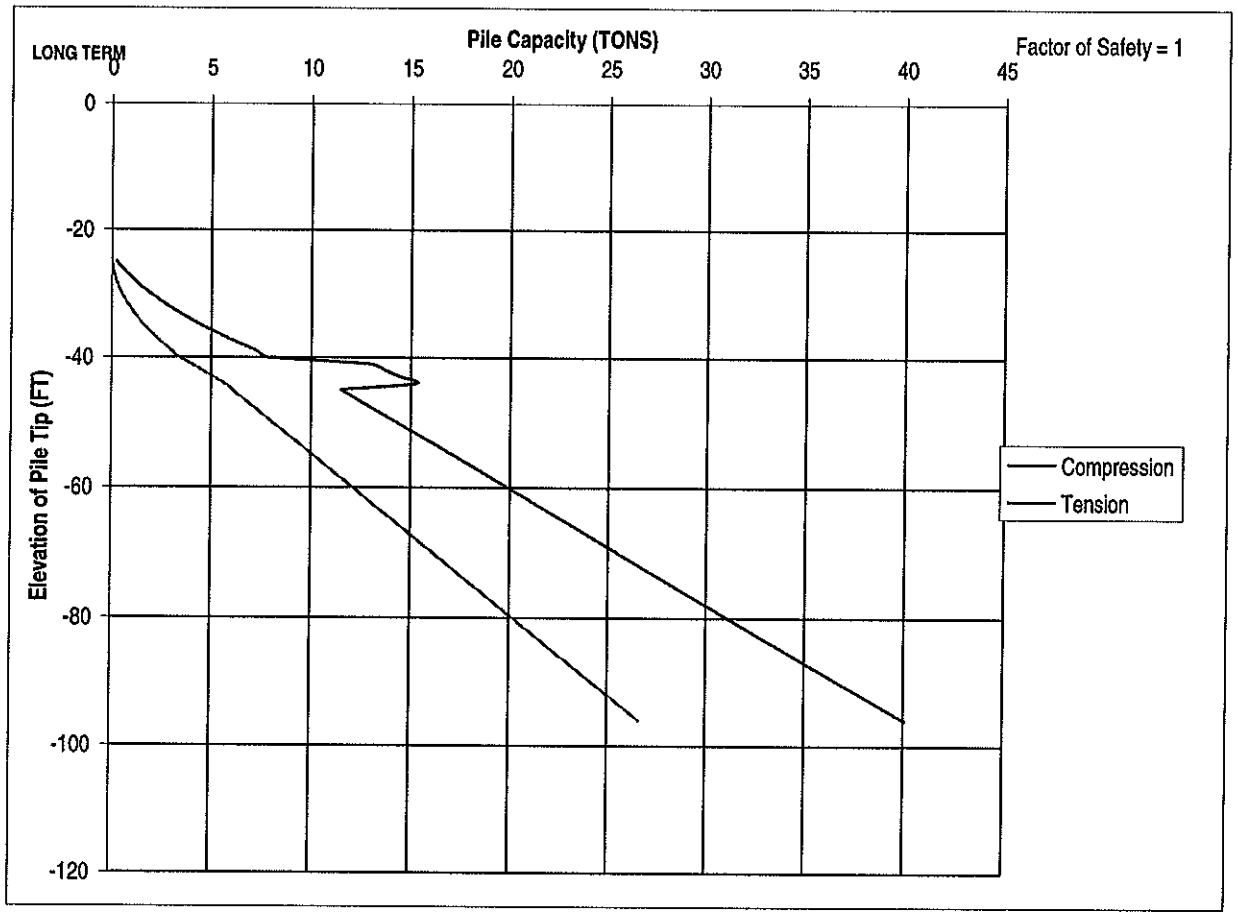
Pile Capacity		Skin	Tip	Pile Weight	Total
Compresion (lbs)	=	61645	6179.53	0	67824
Compresion (ton)	=	30.82	3.09	0.00	33.91
Tension (lbs)	=	44384		0	44384
Tension (ton)	=	22.19		0.00	22.19

		Cohesionless			Cohesive		
Stratum Number	Bottom Elevation	Qskin Comp. lbs	Qskin Tension lbs	End Bearing lbs	Qskin lbs	End Bearing lbs	End Bearing lbs
	-24						
1	-25	38	27	411.9687	0	0	0
1	-26	113	81	823.9374	0	0	0
1	-27	188	136	1235.906	0	0	0
1	-28	264	190	1647.875	0	0	0
1	-29	339	244	2059.843	0	0	0
1	-30	414	298	2471.812	0	0	0
1	-31	489	352	2883.781	0	0	0
1	-32	565	406	3295.75	0	0	0
1	-33	640	461	3707.718	0	0	0
1	-34	715	515	4119.687	0	0	0
1	-35	790	569	4531.656	0	0	0
1	-36	865	622	4943.624	0	0	0
1	-37	939	676	5355.593	0	0	0
1	-38	1014	730	5767.562	0	0	0
1	-39	1089	784	6179.53	0	0	0
1	-40	1126	811	6179.53	0	0	0

Pile Length	Capacity Comp	Tension	Pile tip Elev
	33.91	22.19	-85
1	0.224684	0.013463	-25
2	0.486558	0.053704	-26
3	0.785691	0.120772	-27
4	1.122085	0.214666	-28
5	1.121627	0.214337	-28
6	1.495149	0.334963	-29
7	1.905928	0.482416	-30
8	2.353966	0.656694	-31
9	2.839262	0.857799	-32
10	3.361818	1.085731	-33
11	3.921634	1.340489	-34
12	4.518708	1.622074	-35
13	5.153043	1.930486	-36
14	5.824636	2.265725	-37
15	5.823181	2.264677	-37
16	6.5319	2.626646	-38

2	-41	1566	1127	14830.87	0	0	0	17	7.277878	3.015441	-39
2	-42	1565	1127	14830.87	0	0	0	18	7.836628	3.417742	-40
2	-43	1565	1127	14830.87	0	0	0	19	12.93823	3.976413	-41
2	-44	1564	1126	14830.87	0	0	0	20	13.71459	4.535394	-42
3	-45	1124	810	6179.53	0	0	0	21	14.49133	5.09464	-43
3	-46	1124	809	6179.53	0	0	0	22	15.26838	5.654116	-44
3	-47	1124	809	6179.53	0	0	0	23	11.50311	6.057605	-45
3	-48	1123	809	6179.53	0	0	0	24	11.50073	6.055891	-45
3	-49	1123	808	6179.53	0	0	0	25	12.06104	6.459319	-46
3	-50	1123	808	6179.53	0	0	0	26	12.62141	6.862783	-47
3	-51	1122	808	6179.53	0	0	0	27	13.18182	7.266279	-48
3	-52	1122	808	6179.53	0	0	0	28	13.74227	7.669805	-49
3	-53	1121	807	6179.53	0	0	0	29	14.30276	8.073356	-50
3	-54	1121	807	6179.53	0	0	0	30	14.86328	8.476931	-51
3	-55	1121	807	6179.53	0	0	0	31	15.42383	8.880527	-52
3	-56	1120	807	6179.53	0	0	0	32	15.98441	9.284142	-53
3	-57	1120	806	6179.53	0	0	0	33	16.54501	9.687775	-54
3	-58	1120	806	6179.53	0	0	0	34	16.54188	9.685522	-54
3	-59	1119	806	6179.53	0	0	0	35	17.10242	10.08911	-55
3	-60	1119	806	6179.53	0	0	0	36	17.66299	10.49272	-56
3	-61	1118	805	6179.53	0	0	0	37	18.22358	10.89635	-57
3	-62	1118	805	6179.53	0	0	0	38	18.78419	11.29999	-58
3	-63	1118	805	6179.53	0	0	0	39	19.34482	11.70364	-59
2	-64	1117	805	6179.53	0	0	0	40	19.90547	12.10731	-60
3	-65	1117	804	6179.53	0	0	0	41	20.46613	12.51098	-61
3	-66	1117	804	6179.53	0	0	0	42	21.02681	12.91467	-62
3	-67	1116	804	6179.53	0	0	0	43	21.02331	12.91215	-62
3	-68	1116	803	6179.53	0	0	0	44	21.58395	13.31581	-63
3	-69	1116	803	6179.53	0	0	0	45	22.1446	13.71948	-64
3	-70	1115	803	6179.53	0	0	0	46	22.70527	14.12316	-65
3	-71	1115	803	6179.53	0	0	0	47	23.26594	14.52685	-66
3	-72	1114	802	6179.53	0	0	0	48	23.82663	14.93055	-67
3	-73	1114	802	6179.53	0	0	0	49	24.38734	15.33425	-68
3	-74	1114	802	6179.53	0	0	0	50	24.94805	15.73796	-69

98-30


LONG TERM
Pile Capacity (TONS)
Factor of Safety = 1
0
5
10
15
20
25
30
35
40
45
0
-20
-40
-60
-80
-100
-120
Elevation of Pile Tip (FT)
Compression
Tension

Boring No. 98-30

HP 14x73, Batter 1H:2V

Long Term condition

PILE CAPACITY **ENTER ALL RED VALUES**

If pile is round 0, if square 1	1	
Pile Diameter	13.61	inches, BUTT
	14.58	inches, TIP
Assume Pile Length	68	feet
Top Surface Elev	-24	feet
Batter	63.4	degrees
Water Elev.	2	
Unit weight of Pile	62.4	pcf

Dc = # * B	=	15
Critical Depth Elevation	=	-39
Tip Elevation	=	-85

	Stratum Number	Bouyant Density pcf	Strength Prop Delta Fric, Ang. phi*delt	Strata Cohesion psf	Adhesion Reduction Factor	Coef Ear Prs. Kc	Coef Ear. Prs. Kt	Terzaghi Nc	Terzaghi Nq	Bottom Elev. -24
Clay CH	1	57	13.3	0	0	1.25	0.9	9	7.5	-25
V/stiff	1	57	13.3	0	0	1.25	0.9	9	7.5	-26
	1	57	13.3	0	0	1.25	0.9	9	7.5	-27
	1	57	13.3	0	0	1.25	0.9	9	7.5	-28
	1	57	13.3	0	0	1.25	0.9	9	7.5	-29
	1	57	13.3	0	0	1.25	0.9	9	7.5	-30
	1	57	13.3	0	0	1.25	0.9	9	7.5	-31
	1	57	13.3	0	0	1.25	0.9	9	7.5	-32
	1	57	13.3	0	0	1.25	0.9	9	7.5	-33
	1	57	13.3	0	0	1.25	0.9	9	7.5	-34
	1	62	13.3	0	0	1.25	0.9	9	7.5	-35
	1	62	13.3	0	0	1.25	0.9	9	7.5	-36
	1	62	13.3	0	0	1.25	0.9	9	7.5	-37
	1	62	13.3	0	0	1.25	0.9	9	7.5	-38
	1	62	13.3	0	0	1.25	0.9	9	7.5	-39
	1	62	13.3	0	0	1.25	0.9	9	7.5	-40

Clay CL	2	62	18.2	0	0	1.25	0.9	9	18	-41
V/stiff	2	62	18.2	0	0	1.25	0.9	9	18	-42
	2	62	18.2	0	0	1.25	0.9	9	18	-43
	2	62	18.2	0	0	1.25	0.9	9	18	-44
Clay CH	3	57	13.3	0	0	1.25	0.9	9	7.5	-45
V/stiff	3	57	13.3	0	0	1.25	0.9	9	7.5	-46
	3	57	13.3	0	0	1.25	0.9	9	7.5	-47
	3	57	13.3	0	0	1.25	0.9	9	7.5	-48
	3	57	13.3	0	0	1.25	0.9	9	7.5	-49
	3	57	13.3	0	0	1.25	0.9	9	7.5	-50
	3	57	13.3	0	0	1.25	0.9	9	7.5	-51
	3	57	13.3	0	0	1.25	0.9	9	7.5	-52
	3	57	13.3	0	0	1.25	0.9	9	7.5	-53
	3	57	13.3	0	0	1.25	0.9	9	7.5	-54
	3	57	13.3	0	0	1.25	0.9	9	7.5	-55
	3	57	13.3	0	0	1.25	0.9	9	7.5	-56
	3	57	13.3	0	0	1.25	0.9	9	7.5	-57
	3	57	13.3	0	0	1.25	0.9	9	7.5	-58
	3	57	13.3	0	0	1.25	0.9	9	7.5	-59
	3	57	13.3	0	0	1.25	0.9	9	7.5	-60
	3	57	13.3	0	0	1.25	0.9	9	7.5	-61
	3	57	13.3	0	0	1.25	0.9	9	7.5	-62
	3	57	13.3	0	0	1.25	0.9	9	7.5	-63
	2	57	13.3	0	0	1.25	0.9	9	7.5	-64
	3	57	13.3	0	0	1.25	0.9	9	7.5	-65
	3	57	13.3	0	0	1.25	0.9	9	7.5	-66
	3	57	13.3	0	0	1.25	0.9	9	7.5	-67
	3	57	13.3	0	0	1.25	0.9	9	7.5	-68
	3	57	13.3	0	0	1.25	0.9	9	7.5	-69
	3	57	13.3	0	0	1.25	0.9	9	7.5	-70
	3	57	13.3	0	0	1.25	0.9	9	7.5	-71
	3	57	13.3	0	0	1.25	0.9	9	7.5	-72
	3	57	13.3	0	0	1.25	0.9	9	7.5	-73
	3	57	13.3	0	0	1.25	0.9	9	7.5	-74

Pile Capacity		Skin	Tip	Total
Compresion (lbs)	=	75548	9743	85291
Compresion (ton)	=	37.77	4.87	42.65
Tension (lbs)	=	54394		54394
Tension (ton)	=	27.20		27.20

Construction condition - Batter; 1H:2V

Weight of pile lbs	Dc Equiv. Bottom -24	Dist. From pile tip L	Average Pile Dia. inches	Pile Length in Sublayer	Total Surface in sub layer (ft^2)	Tip Area (ft^2)	Cohesionless Calculations: stress at bottom 0	stress for skin friction w/ Dc 0	avg-stress psf w/Dc	avg - su psf	comp. fs=kcsu	tension fs=ktSu
0	-25	60.5	13.72	1.12	5.11	1.48	57	57	28.5	7	8	6
0	-26	59.5	13.73	1.12	5.12	1.48	114	114	85.5	20	25	18
0	-27	58.5	13.75	1.12	5.12	1.48	171	171	142.5	34	42	30
0	-28	57.5	13.76	1.12	5.13	1.48	228	228	199.5	47	59	42
0	-29	56.5	13.77	1.12	5.13	1.48	285	285	256.5	61	76	55
0	-30	55.5	13.79	1.12	5.14	1.48	342	342	313.5	74	93	67
0	-31	54.5	13.80	1.12	5.15	1.48	399	399	370.5	88	109	79
0	-32	53.5	13.82	1.12	5.15	1.48	456	456	427.5	101	126	91
0	-33	52.5	13.83	1.12	5.16	1.48	513	513	484.5	115	143	103
0	-34	51.5	13.85	1.12	5.16	1.48	570	570	541.5	128	160	115
0	-35	50.5	13.86	1.12	5.17	1.48	632	632	601	142	178	128
0	-36	49.5	13.87	1.12	5.17	1.48	694	694	663	157	196	141
0	-37	48.5	13.89	1.12	5.18	1.48	756	756	725	171	214	154
0	-38	47.5	13.90	1.12	5.18	1.48	818	818	787	186	233	167
0	-39	46.5	13.92	1.12	5.19	1.48	880	880	849	201	251	181
0	-39	45.5	13.93	1.12	5.19	1.48	942	880	880	208	260	187

0	-39	44.5	13.95	1.12	5.20	1.48	1004	880	880	289	362	260
0	-39	43.5	13.96	1.12	5.20	1.48	1066	880	880	289	362	260
0	-39	42.5	13.97	1.12	5.21	1.48	1128	880	880	289	362	260
0	-39	41.5	13.99	1.12	5.21	1.48	1190	880	880	289	362	260
0	-39	40.5	14.00	1.12	5.22	1.48	1247	880	880	208	260	187
0	-39	39.5	14.02	1.12	5.23	1.48	1304	880	880	208	260	187
0	-39	38.5	14.03	1.12	5.23	1.48	1361	880	880	208	260	187
0	-39	37.5	14.05	1.12	5.24	1.48	1418	880	880	208	260	187
0	-39	36.5	14.06	1.12	5.24	1.48	1475	880	880	208	260	187
0	-39	35.5	14.07	1.12	5.25	1.48	1532	880	880	208	260	187
0	-39	34.5	14.09	1.12	5.25	1.48	1589	880	880	208	260	187
0	-39	33.5	14.10	1.12	5.26	1.48	1646	880	880	208	260	187
0	-39	32.5	14.12	1.12	5.26	1.48	1703	880	880	208	260	187
0	-39	31.5	14.13	1.12	5.27	1.48	1760	880	880	208	260	187
0	-39	30.5	14.14	1.12	5.27	1.48	1817	880	880	208	260	187
0	-39	29.5	14.16	1.12	5.28	1.48	1874	880	880	208	260	187
0	-39	28.5	14.17	1.12	5.28	1.48	1931	880	880	208	260	187
0	-39	27.5	14.19	1.12	5.29	1.48	1988	880	880	208	260	187
0	-39	26.5	14.20	1.12	5.29	1.48	2045	880	880	208	260	187
0	-39	25.5	14.22	1.12	5.30	1.48	2102	880	880	208	260	187
0	-39	24.5	14.23	1.12	5.31	1.48	2159	880	880	208	260	187
0	-39	23.5	14.24	1.12	5.31	1.48	2216	880	880	208	260	187
0	-39	22.5	14.26	1.12	5.32	1.48	2273	880	880	208	260	187
0	-39	21.5	14.27	1.12	5.32	1.48	2330	880	880	208	260	187
0	-39	20.5	14.29	1.12	5.33	1.48	2387	880	880	208	260	187
0	-39	19.5	14.30	1.12	5.33	1.48	2444	880	880	208	260	187
0	-39	18.5	14.32	1.12	5.34	1.48	2501	880	880	208	260	187
0	-39	17.5	14.33	1.12	5.34	1.48	2558	880	880	208	260	187
0	-39	16.5	14.34	1.12	5.35	1.48	2615	880	880	208	260	187
0	-39	15.5	14.36	1.12	5.35	1.48	2672	880	880	208	260	187
0	-39	14.5	14.37	1.12	5.36	1.48	2729	880	880	208	260	187
0	-39	13.5	14.39	1.12	5.36	1.48	2786	880	880	208	260	187
0	-39	12.5	14.40	1.12	5.37	1.48	2843	880	880	208	260	187
0	-39	11.5	14.42	1.12	5.37	1.48	2900	880	880	208	260	187

Pile Capacity		Skin	Tip	Pile Weight	Total
Compresion (lbs)	=	75548	9743.085	0	85291
Compresion (ton)	=	37.77	4.87	0.00	42.65
Tension (lbs)	=	54394		0	54394
Tension (ton)	=	27.20		0.00	27.20

		Cohesionless			Cohesive		
Stratum Number	Bottom Elevation	Qskin Comp.	Qskin Tension	End Bearing	Qskin	End Bearing	End Bearing
	-24	lbs	lbs	lbs	lbs	lbs	lbs
1	-25	43	31	631.0862	0	0	0
1	-26	129	93	1262.172	0	0	0
1	-27	216	155	1893.259	0	0	0
1	-28	302	218	2524.345	0	0	0
1	-29	389	280	3155.431	0	0	0
1	-30	476	343	3786.517	0	0	0
1	-31	563	406	4417.603	0	0	0
1	-32	651	468	5048.69	0	0	0
1	-33	738	531	5679.776	0	0	0
1	-34	826	595	6310.862	0	0	0
1	-35	918	661	6997.307	0	0	0
1	-36	1013	730	7683.751	0	0	0
1	-37	1109	799	8370.196	0	0	0
1	-38	1205	868	9056.64	0	0	0
1	-39	1302	937	9743.085	0	0	0
1	-40	1350	972	9743.085	0	0	0

Pile Length	Capacity Comp	Tension	Pile tip Elev
	42.65	27.20	-85
1	0.337668	0.01593	-25
2	0.720348	0.064268	-26
3	1.147785	0.144832	-27
4	1.619981	0.257622	-28
5	1.621655	0.258828	-28
6	2.139091	0.40419	-29
7	2.701291	0.581783	-30
8	3.308253	0.791605	-31
9	3.959976	1.033655	-32
10	4.656459	1.307932	-33
11	5.397702	1.614435	-34
12	6.213384	1.954606	-35
13	7.077821	2.329881	-36
14	7.990996	2.740247	-37
15	7.996328	2.744086	-37
16	8.95873	3.189895	-38

2	-41	1880	1354	23383.4	0	0	0	17	9.969856	3.670786	-39
2	-42	1882	1355	23383.4	0	0	0	18	10.66163	4.168862	-40
2	-43	1884	1356	23383.4	0	0	0	19	18.44837	4.864803	-41
2	-44	1886	1358	23383.4	0	0	0	20	19.41332	5.559563	-42
3	-45	1357	977	9743.085	0	0	0	21	20.37685	6.25331	-43
3	-46	1359	978	9743.085	0	0	0	22	21.33918	6.946182	-44
3	-47	1360	979	9743.085	0	0	0	23	15.20448	7.439716	-45
3	-48	1361	980	9743.085	0	0	0	24	15.21329	7.446062	-45
3	-49	1363	981	9743.085	0	0	0	25	15.89907	7.93982	-46
3	-50	1364	982	9743.085	0	0	0	26	16.58464	8.433433	-47
3	-51	1366	983	9743.085	0	0	0	27	17.27004	8.926918	-48
3	-52	1367	984	9743.085	0	0	0	28	17.95528	9.420288	-49
3	-53	1368	985	9743.085	0	0	0	29	18.64037	9.913554	-50
3	-54	1370	986	9743.085	0	0	0	30	19.32533	10.40673	-51
3	-55	1371	987	9743.085	0	0	0	31	20.01018	10.89982	-52
3	-56	1373	988	9743.085	0	0	0	32	20.69492	11.39283	-53
3	-57	1374	989	9743.085	0	0	0	33	21.37957	11.88578	-54
3	-58	1375	990	9743.085	0	0	0	34	21.39123	11.89417	-54
3	-59	1377	991	9743.085	0	0	0	35	22.07609	12.38727	-55
3	-60	1378	992	9743.085	0	0	0	36	22.76085	12.8803	-56
3	-61	1379	993	9743.085	0	0	0	37	23.44553	13.37327	-57
3	-62	1381	994	9743.085	0	0	0	38	24.13012	13.86618	-58
3	-63	1382	995	9743.085	0	0	0	39	24.81465	14.35903	-59
2	-64	1384	996	9743.085	0	0	0	40	25.4991	14.85184	-60
3	-65	1385	997	9743.085	0	0	0	41	26.18349	15.3446	-61
3	-66	1386	998	9743.085	0	0	0	42	26.86783	15.83732	-62
3	-67	1388	999	9743.085	0	0	0	43	26.88089	15.84673	-62
3	-68	1389	1000	9743.085	0	0	0	44	27.56538	16.33956	-63
3	-69	1391	1001	9743.085	0	0	0	45	28.24981	16.83235	-64
3	-70	1392	1002	9743.085	0	0	0	46	28.93419	17.3251	-65
3	-71	1393	1003	9743.085	0	0	0	47	29.61851	17.81782	-66
3	-72	1395	1004	9743.085	0	0	0	48	30.30279	18.3105	-67
3	-73	1396	1005	9743.085	0	0	0	49	30.98702	18.80314	-68
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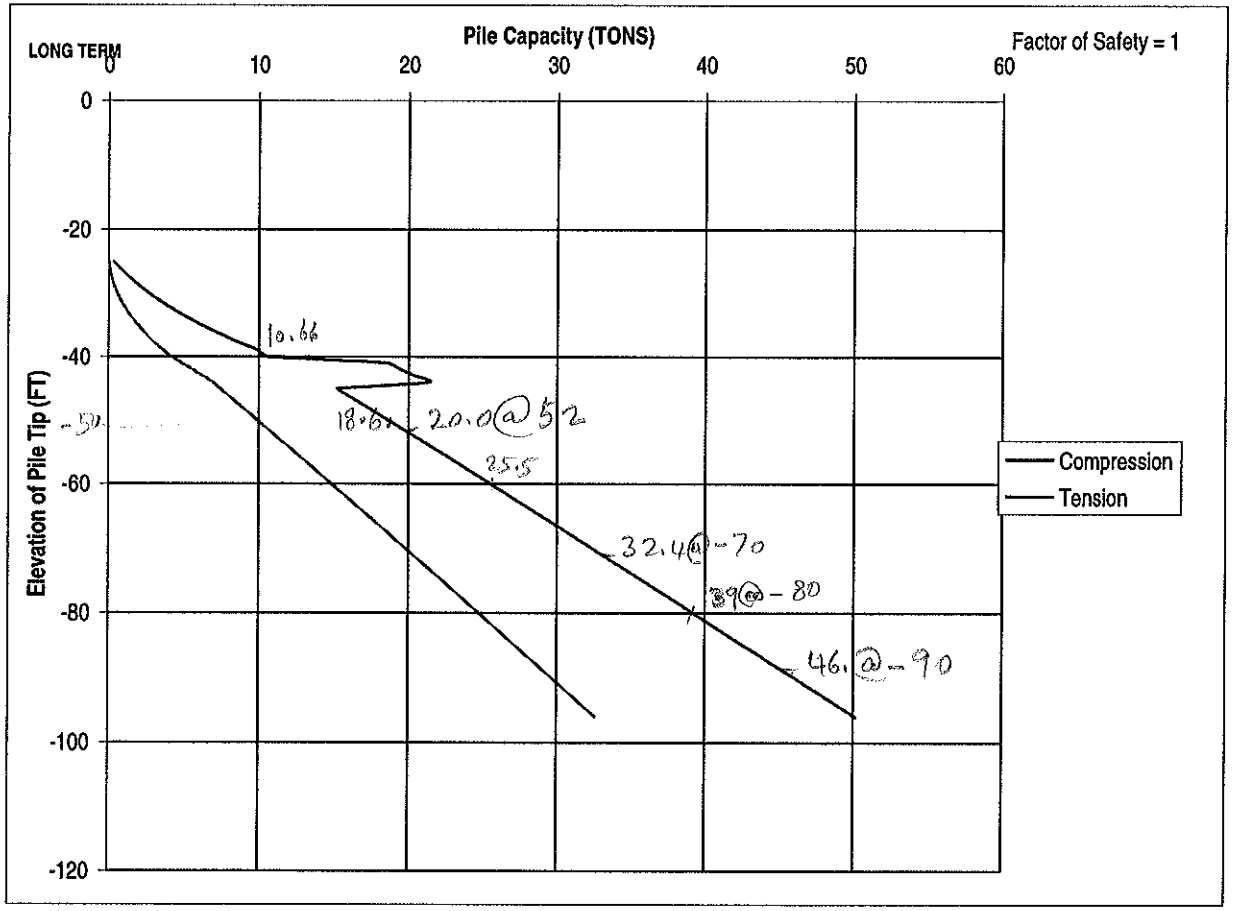
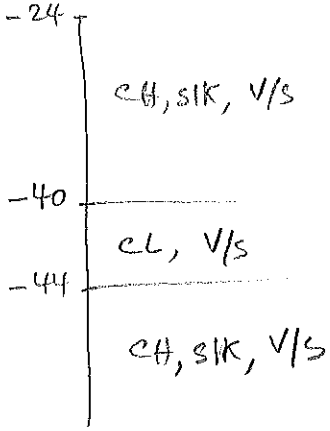
Boring No. 98-30





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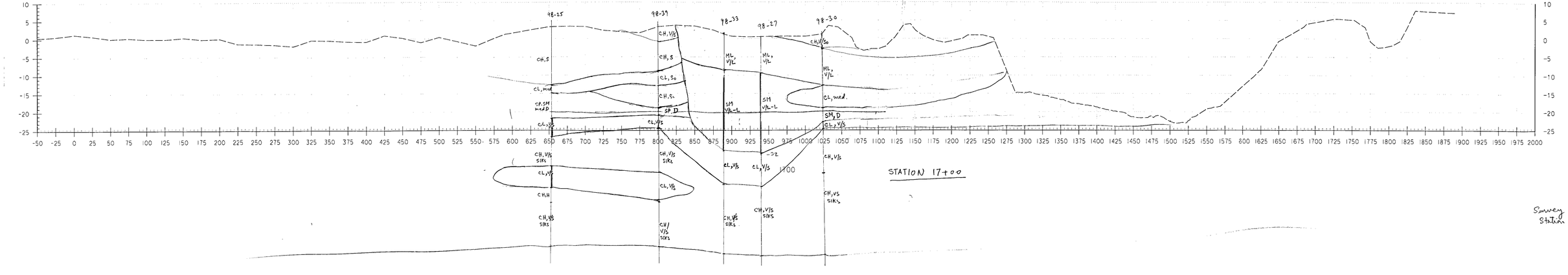
98-35



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