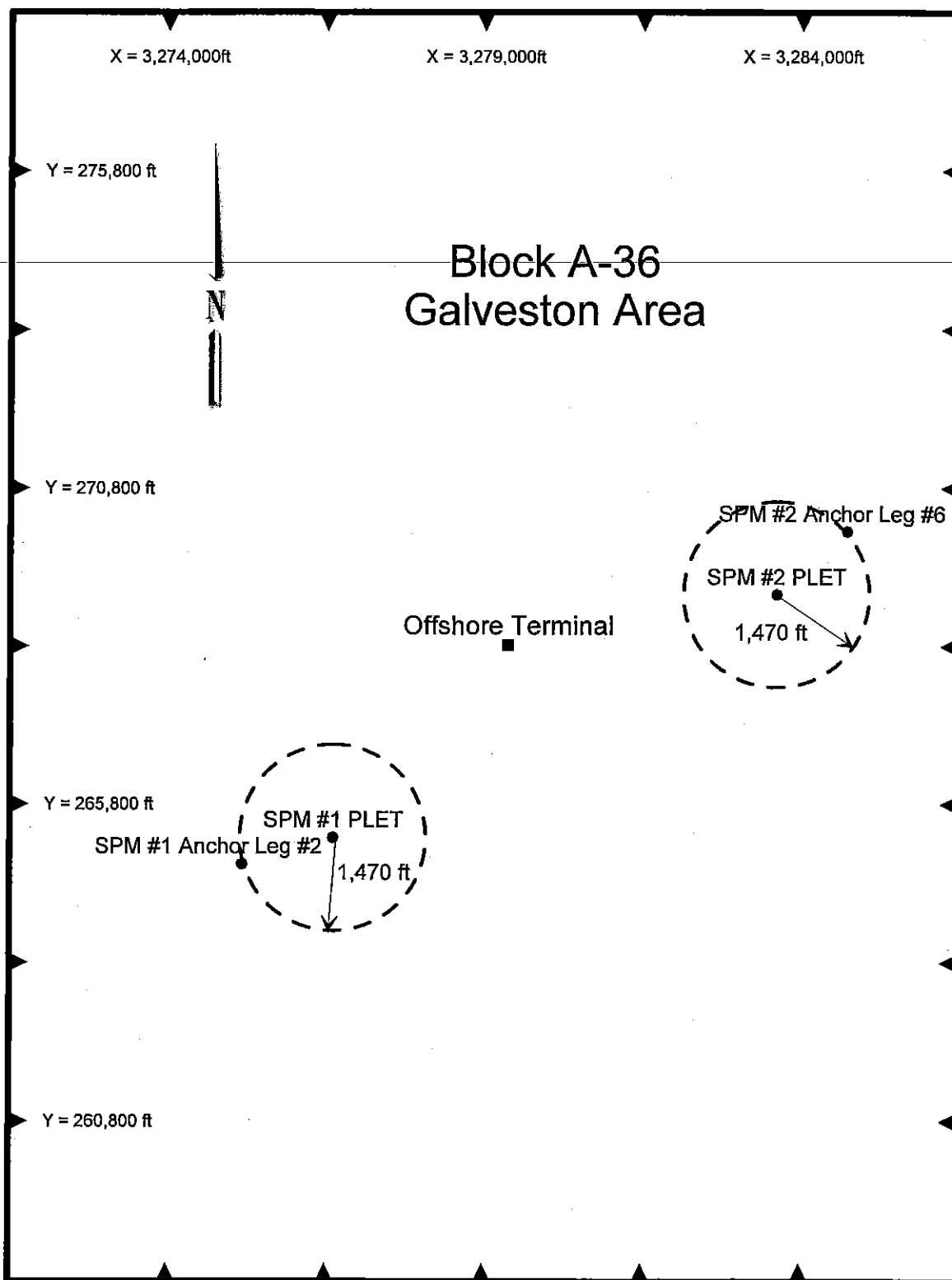


8/18/08
Date:

Drawn By: JH

Date: 8/13/08
Date: 8/18/08

Checked By: [Signature]
Approved By: [Signature]



Projection: Texas South Central Zone Coordinates

PLAN OF BORINGS

Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area

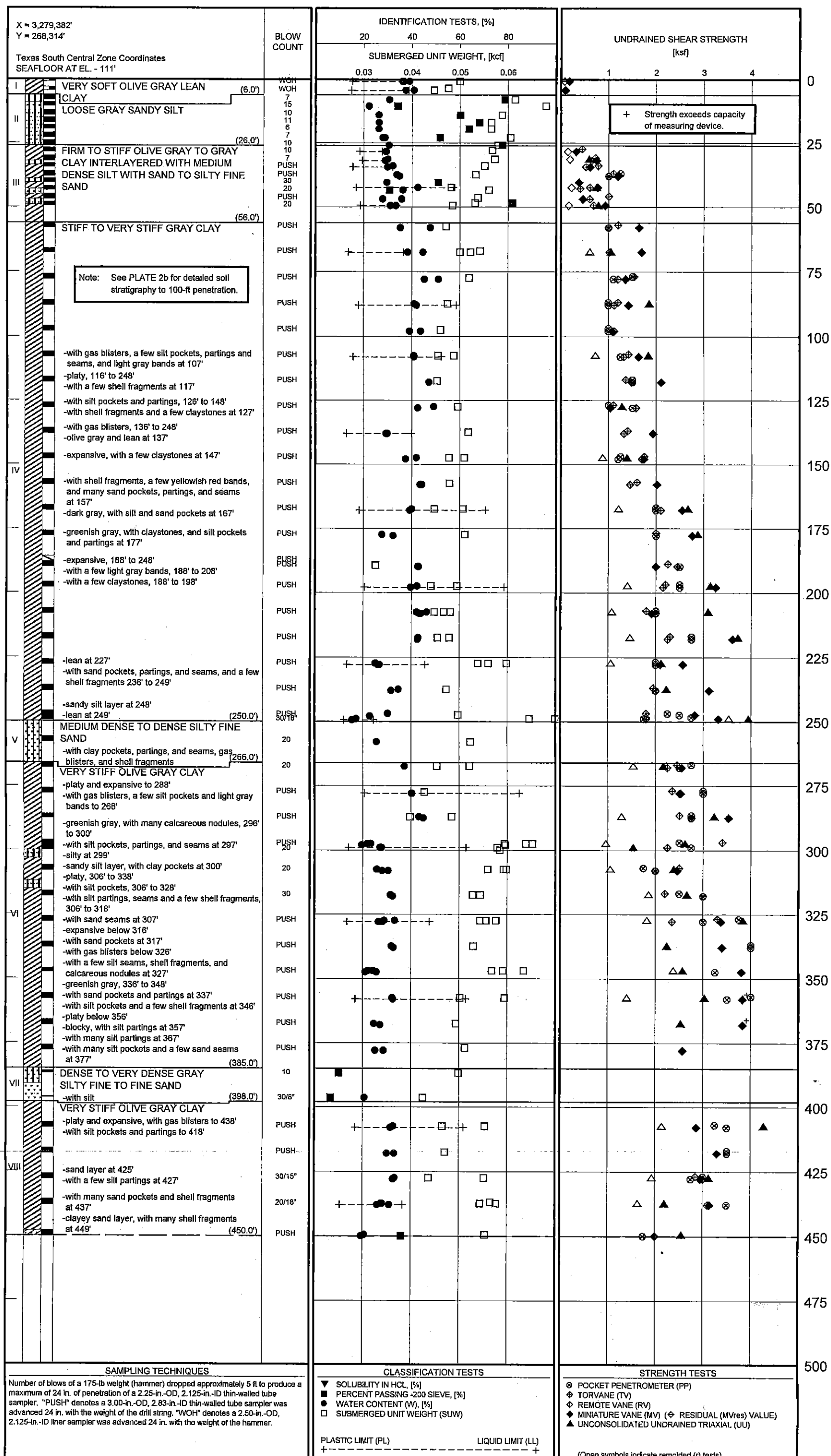


Date: 8/76

Report No. 0201-6500

Penetration Below Seafloor, [feet]

Penetration Below Seafloor, [feet]

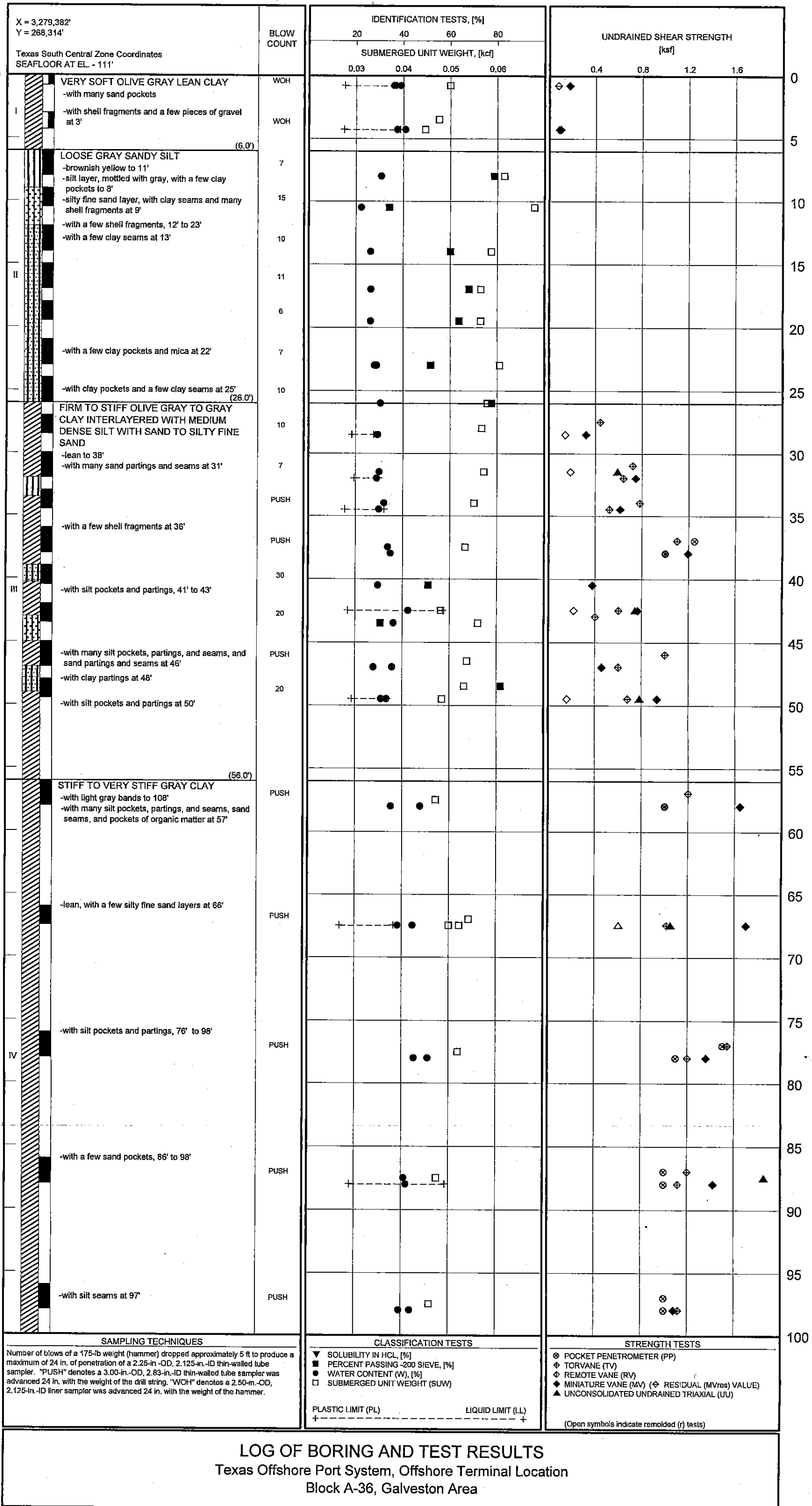


Report No. 0201-6500

Penetration Below Seafloor, [feet]

Penetration Below Seafloor, [feet]

PLATE 2b

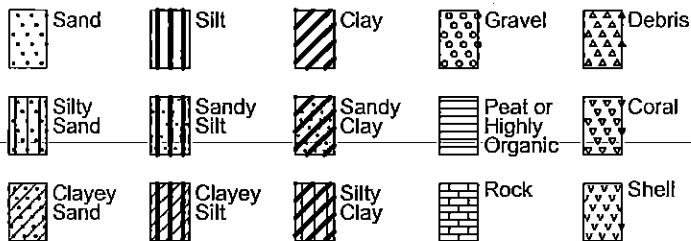


LOG OF BORING AND TEST RESULTS
Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area

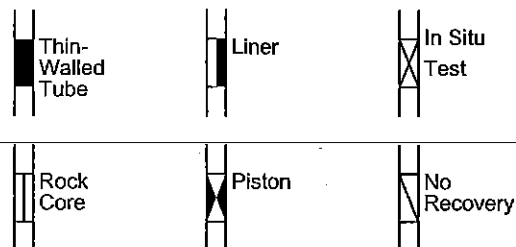


TERMS AND SYMBOLS USED ON BORING LOG

SOIL TYPES



SAMPLER TYPES



SOIL GRAIN SIZE

U.S. STANDARD SIEVE

6"	3"	3/4"	4	10	40	200		
BOULDERS	COBBLES	GRAVEL		SAND			SILT	CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE		
152	76.2	19.1	4.76	2.00	0.420	0.075	0.002	
SOIL GRAIN SIZE IN MILLIMETERS								

STRENGTH OF COHESIVE SOILS⁽¹⁾

Consistency	Undrained Shear Strength, Kips Per Sq Ft
Very Soft.....	less than 0.25
Soft.....	0.25 to 0.50
Firm.....	0.50 to 1.00
Stiff.....	1.00 to 2.00
Very Stiff.....	2.00 to 4.00
Hard.....	greater than 4.00

DENSITY OF GRANULAR SOILS^(2,3)

Descriptive Term	*Relative Density, %
Very Loose.....	less than 15
Loose.....	15 to 35
Medium Dense.....	35 to 65
Dense.....	65 to 85
Very Dense.....	greater than 85

*Estimated from sampler driving record

SOIL STRUCTURE⁽¹⁾

Slickensided.....	Having planes of weakness that appear slick and glossy. The degree of slickensidedness depends upon the spacing of slickensides and the ease of breaking along these planes.
Fissured.....	Containing shrinkage or relief cracks, often filled with fine sand or silt, usually more or less vertical.
Pocket.....	Inclusion of material of different texture that is smaller than the diameter of the sample.
Parting.....	Inclusion less than 1/8 inch thick extending through the sample.
Seam.....	Inclusion 1/8 inch to 3 inches thick extending through the sample.
Layer.....	Inclusion greater than 3 inches thick extending through the sample.
Laminated.....	Soil sample composed of alternating partings or seams of different soil types.
Interlayered.....	Soil sample composed of alternating layers of different soil types.
Intermixed.....	Soil sample composed of pockets of different soil types and layered or laminated structure is not evident.
Calcareous.....	Having appreciable quantities of carbonate.

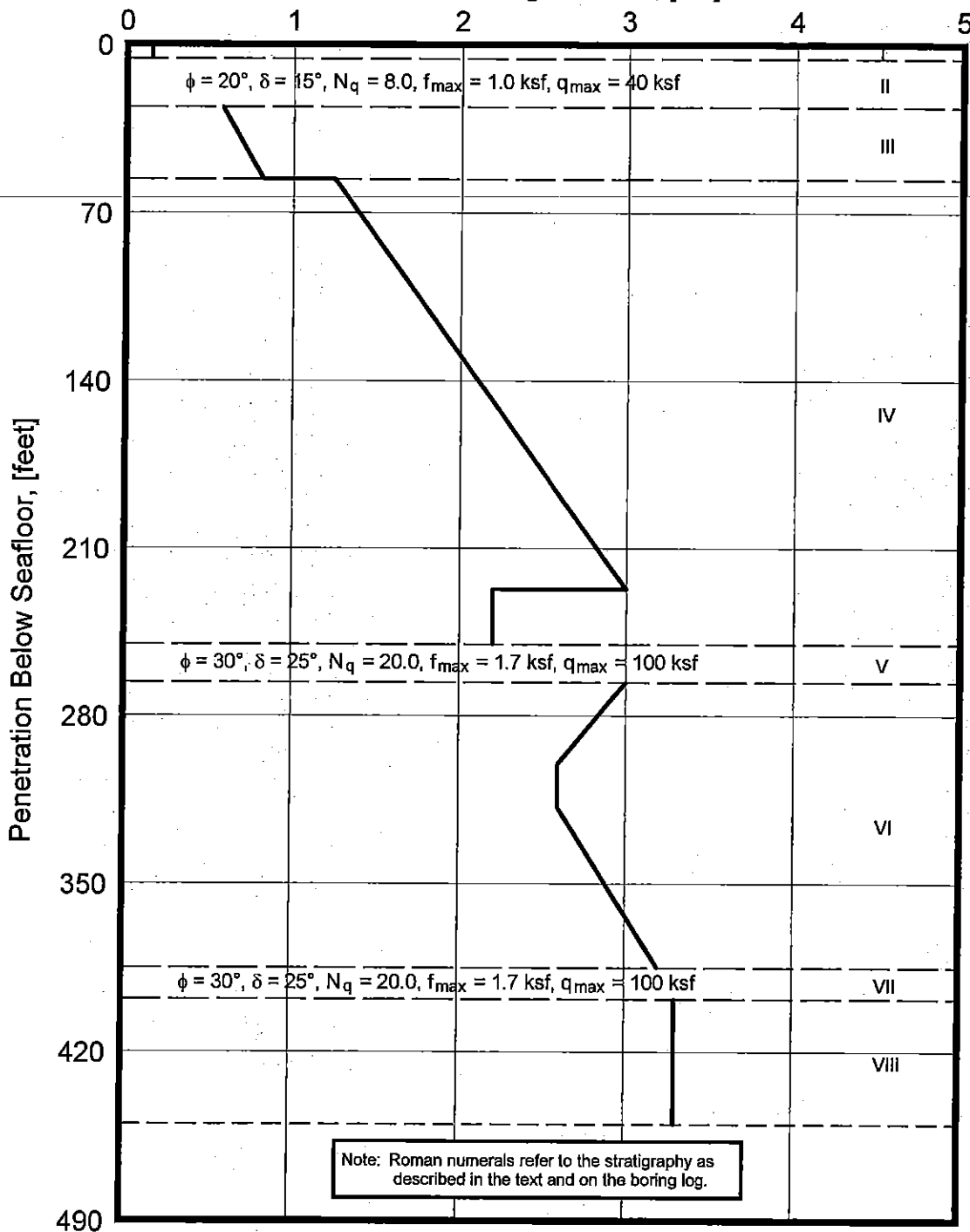
REFERENCES:

- (1) ASTM D 2488
- (2) ASCE Manual 56 (1976)
- (3) ASTM D 2049

Information on each boring log is a compilation of subsurface conditions and soil or rock classifications obtained from the field as well as from laboratory testing of samples. Strata have been interpreted by commonly accepted procedures. The stratum lines on the log may be transitional and approximate in nature. Water level measurements refer only to those observed at the times and places indicated in the text, and may vary with time, geologic condition or construction activity.



Shear Strength Profile, [ksf]

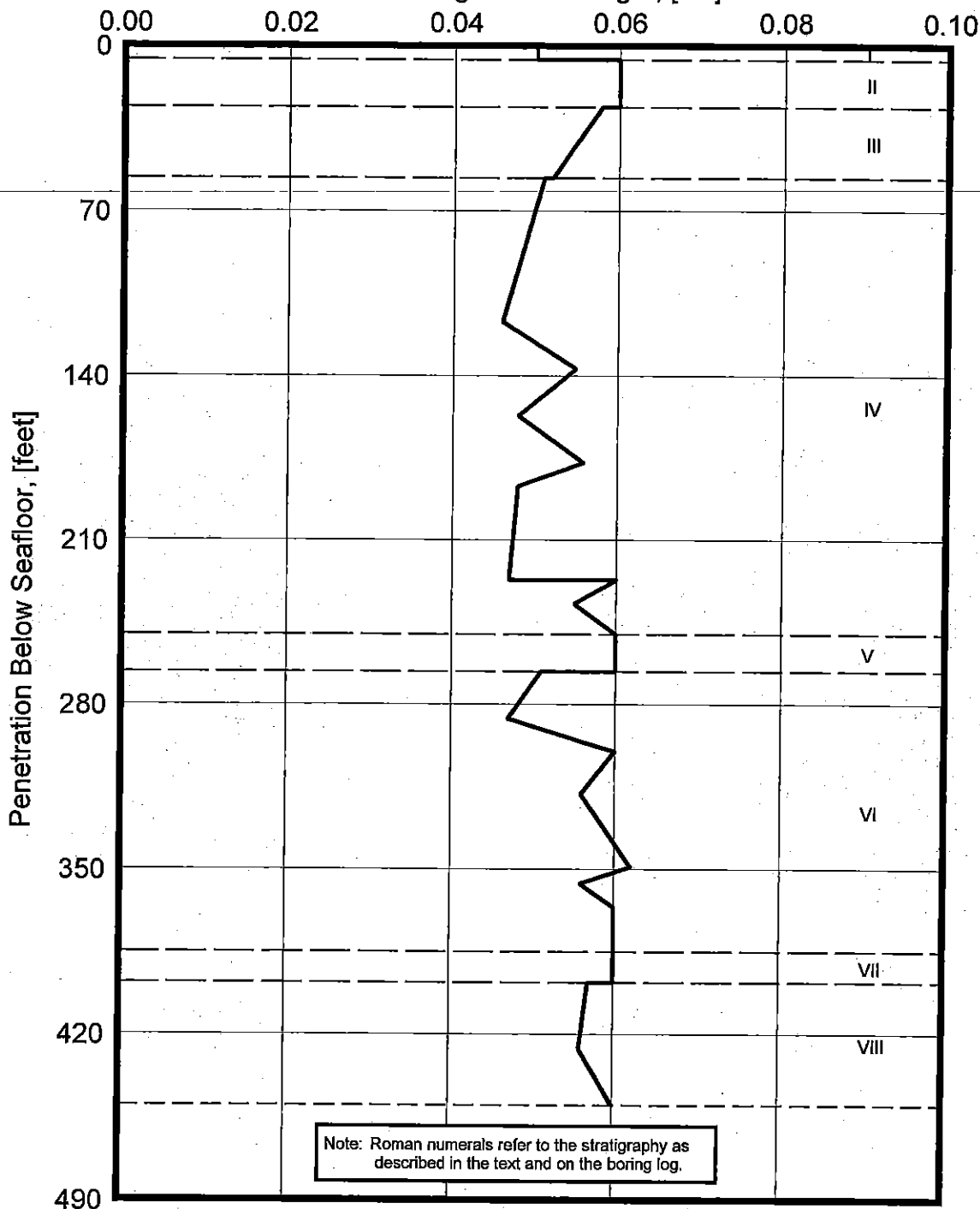


DESIGN STRENGTH PARAMETERS

Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area



Submerged Unit Weight, [kcf]



DESIGN SUBMERGED UNIT WEIGHT

Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area



Date: 8/5/08

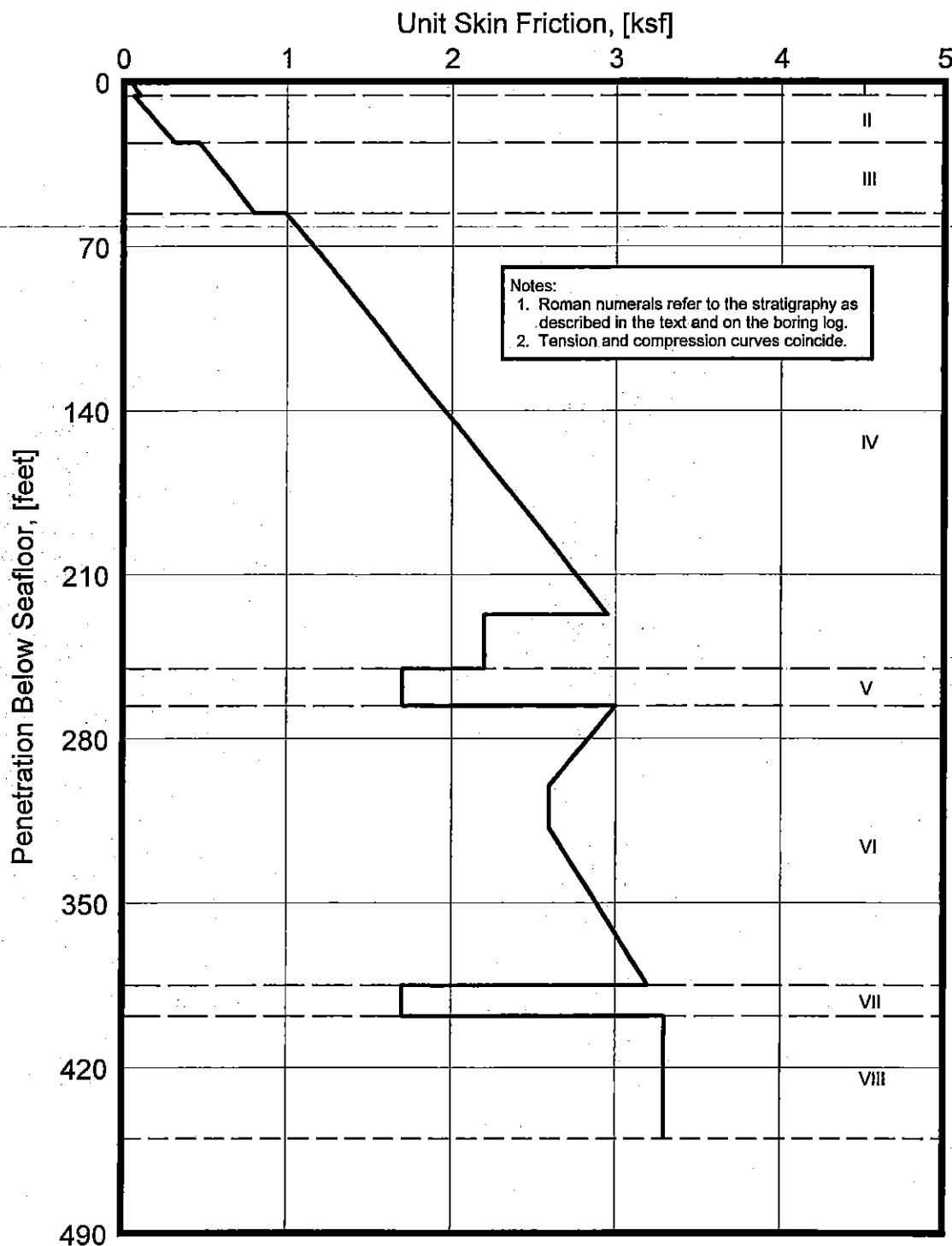
Drawn By: AW

Date: 8-5-08

Checked By: S.W.L.

Date: 8/7/08

Approved By: M

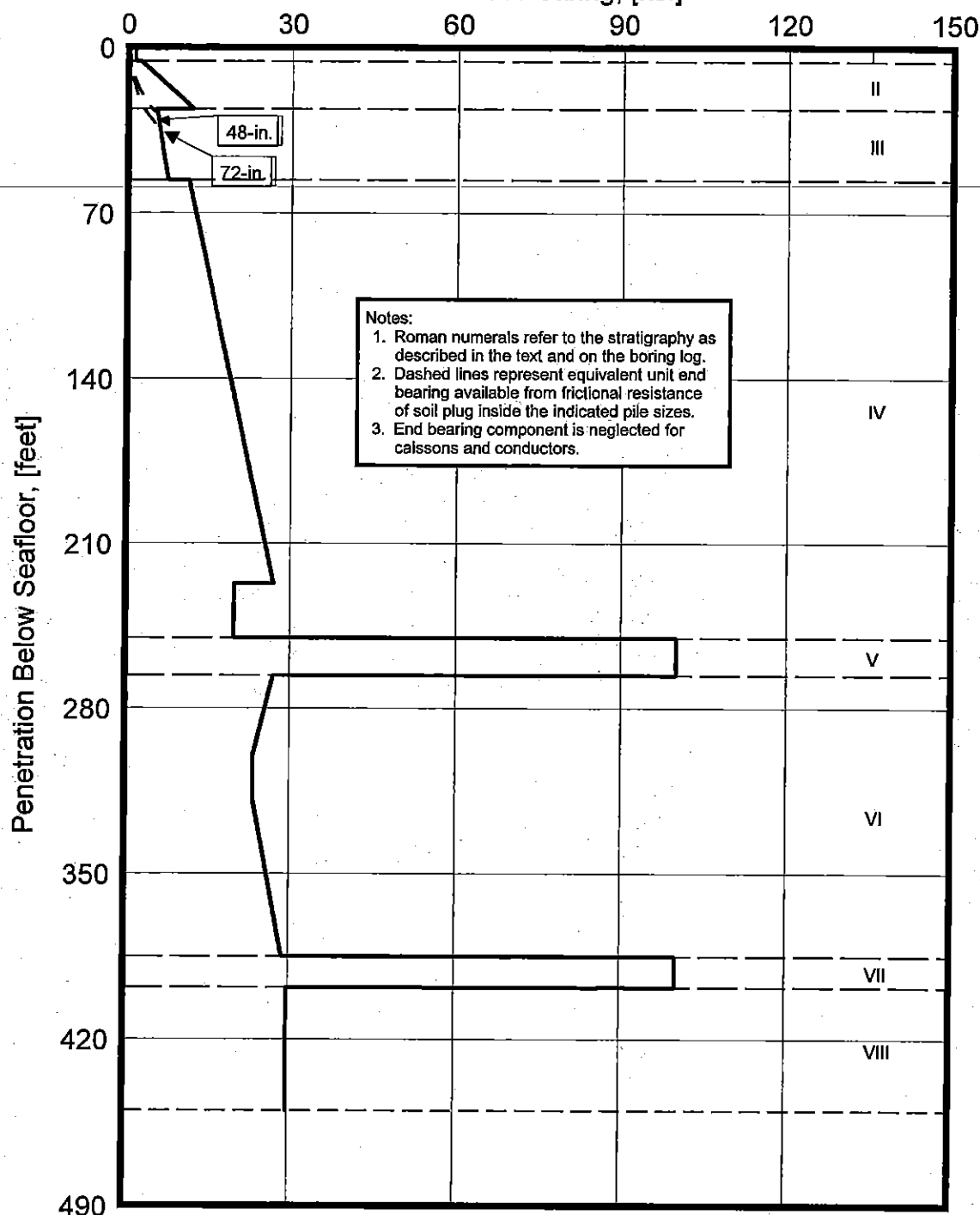


UNIT SKIN FRICTION
API RP 2A (2000) Method

Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area



Unit End Bearing, [ksf]



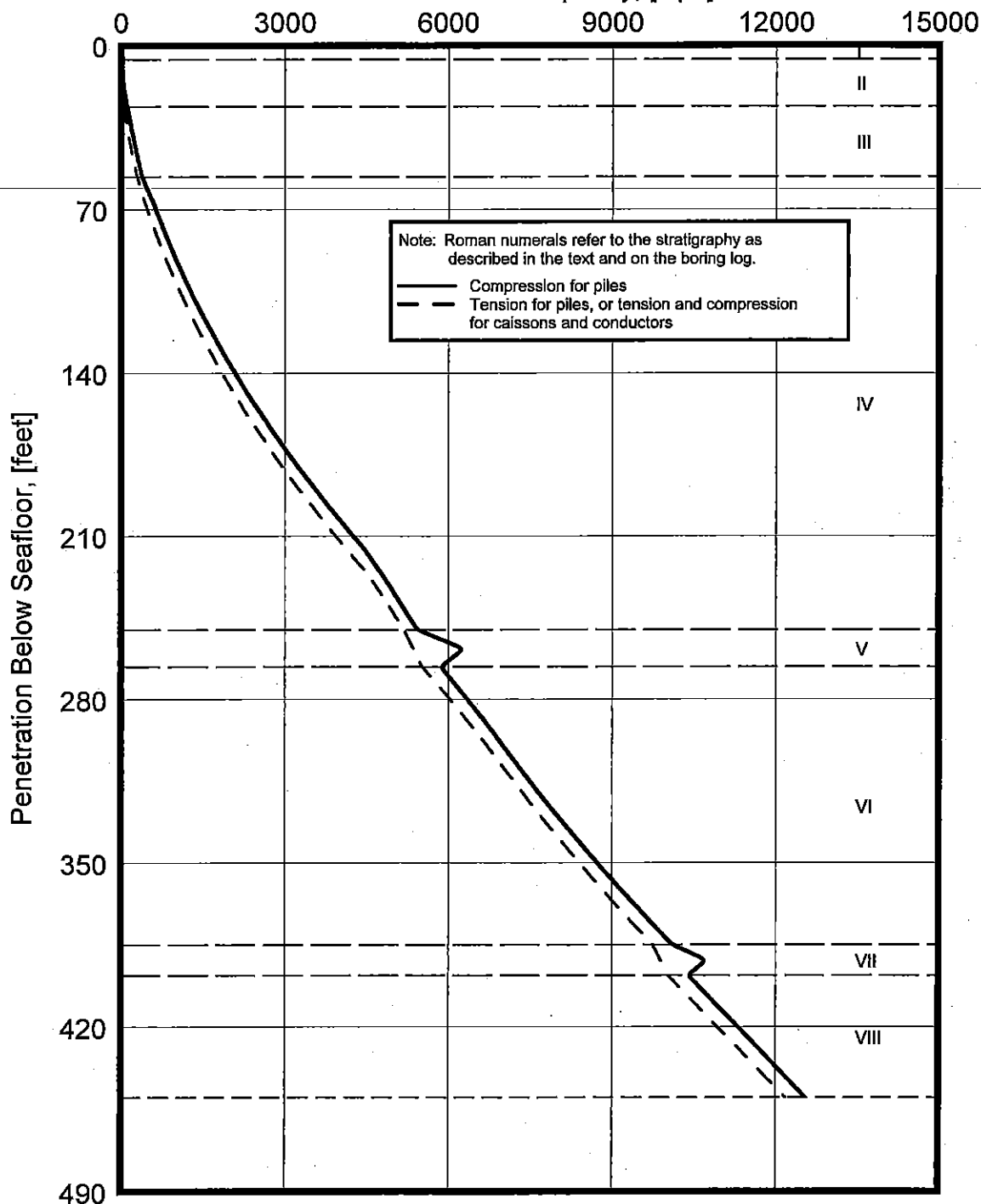
UNIT END BEARING
API RP 2A (2000) Method

Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area



Date: 8/5/08
Drawn By: HJ
Date: 8-5-08
Checked By: EML
Approved By: PL

Ultimate Axial Capacity, [kips]



ULTIMATE AXIAL CAPACITY

API RP 2A (2000) Method

48-in.-Diameter Driven Pipe Piles

Texas Offshore Port System, Offshore Terminal Location

Block A-36, Galveston Area



Date: 8/5/08

Drawn By: JAW

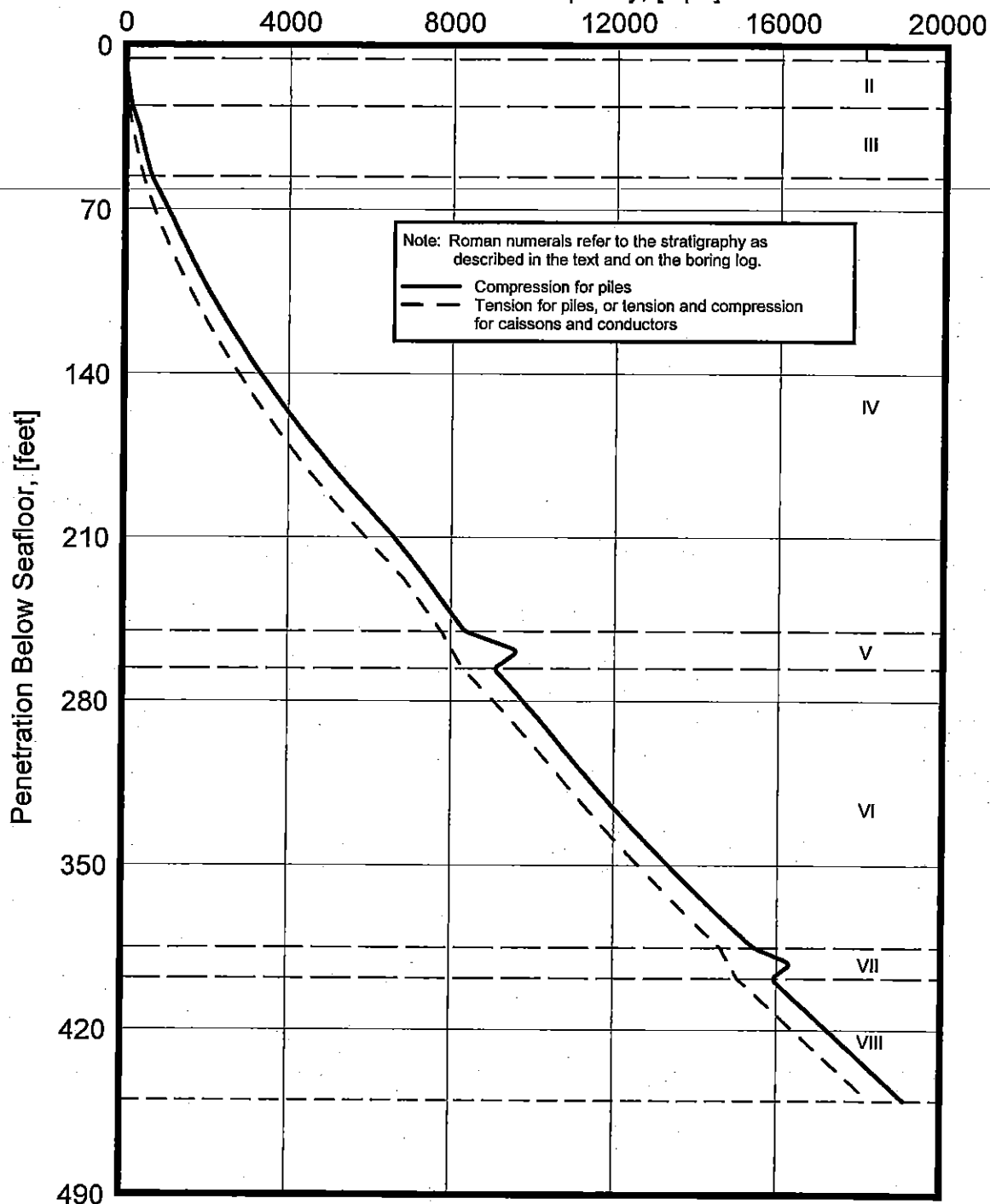
Date: 8-5-08

Checked By: BNL

Date: 8/7/08

Approved By: Jm

Ultimate Axial Capacity, [kips]



ULTIMATE AXIAL CAPACITY

API RP 2A (2000) Method

72-in.-Diameter Driven Pipe Piles

Texas Offshore Port System, Offshore Terminal Location

Block A-36, Galveston Area



Date: 8/5/08
 Drawn By: HJD
 Date: 8-5-08
 Date: 8/7/08
 Checked By: BML
 Approved By: [Signature]

Date: 8/5/08

Drawn By: AN

Date: 8-5-08

Checked By: BNU

Date: 8/1/08

Approved By: DA

PENETRATION BELOW MUDLINE (feet)	CURVE POINTS								
		1	2	3	4	5	6	7	8
0.0	t	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00
1.0	t	0.00	0.02	0.03	0.04	0.05	0.06	0.05	0.05
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00
3.0	t	0.00	0.02	0.04	0.06	0.07	0.07	0.07	0.07
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00
6.0	t	0.00	0.03	0.05	0.08	0.10	0.11	0.10	0.10
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00
6.0	t	0.00	0.06	0.06					
	z	0.00	0.10	48.00					
26.0	t	0.00	0.32	0.32					
	z	0.00	0.10	48.00					
26.0	t	0.00	0.14	0.23	0.35	0.42	0.47	0.42	0.42
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00
56.0	t	0.00	0.24	0.40	0.60	0.72	0.80	0.72	0.72
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00
56.0	t	0.00	0.30	0.50	0.74	0.89	0.99	0.89	0.89
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00
117.0	t	0.00	0.51	0.85	1.27	1.52	1.69	1.52	1.52
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00
137.0	t	0.00	0.58	0.96	1.44	1.73	1.92	1.73	1.73
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00
157.0	t	0.00	0.65	1.08	1.62	1.94	2.16	1.94	1.94
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00
177.0	t	0.00	0.72	1.20	1.79	2.15	2.39	2.15	2.15
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00
187.0	t	0.00	0.75	1.25	1.88	2.26	2.51	2.26	2.26
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00
227.0	t	0.00	0.89	1.48	2.21	2.66	2.95	2.66	2.66
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00
227.0	t	0.00	0.66	1.10	1.65	1.98	2.20	1.98	1.98
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00
250.0	t	0.00	0.66	1.10	1.65	1.98	2.20	1.98	1.98
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00
250.0	t	0.00	1.70	1.70					
	z	0.00	0.10	48.00					
266.0	t	0.00	1.70	1.70					
	z	0.00	0.10	48.00					
266.0	t	0.00	0.90	1.50	2.25	2.70	3.00	2.70	2.70
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00

Notes: 1. "t" is mobilized soil-pile adhesion, [ksf].
 2. "z" is axial pile displacement, [in.].
 3. Data for tension and compression coincide.

AXIAL LOAD TRANSFER DATA (T-Z DATA)

API RP 2A (2000) Method
 48-in.-Diameter Driven Pipe Piles
 Texas Offshore Port System, Offshore Terminal Location
 Block A-36, Galveston Area





Date: 8/5/08

Drawn By: AD

Date: 8-5-08

Checked By: BWC

Date: 8/7/08

Approved By: M

PENETRATION BELOW MUDLINE (feet)	CURVE POINTS								
		1	2	3	4	5	6	7	8
300.0	t	0.00	0.78	1.30	1.95	2.34	2.60	2.34	2.34
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00
318.0	t	0.00	0.78	1.30	1.95	2.34	2.60	2.34	2.34
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00
385.0	t	0.00	0.96	1.60	2.40	2.88	3.20	2.88	2.88
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00
385.0	t	0.00	1.70	1.70					
	z	0.00	0.10	48.00					
398.0	t	0.00	1.70	1.70					
	z	0.00	0.10	48.00					
398.0	t	0.00	0.99	1.65	2.47	2.97	3.30	2.97	2.97
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00
450.0	t	0.00	0.99	1.65	2.47	2.97	3.30	2.97	2.97
	z	0.00	0.08	0.15	0.27	0.38	0.48	0.96	48.00

- Notes: 1. "t" is mobilized soil-pile adhesion, [ksf].
2. "z" is axial pile displacement, [in.].
3. Data for tension and compression coincide.

**AXIAL LOAD TRANSFER DATA
(T-Z DATA)**

API RP 2A (2000) Method
48-in.-Diameter Driven Pipe Piles
Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area



8/5/08
Date:

AW
Drawn By:

8-5-08
Date:

Checked By: BNL
Approved By: DN

PENETRATION BELOW MUDLINE (feet)	CURVE POINTS							
		1	2	3	4	5	6	7
100.0	Q	0	48	96	144	173	192	192
	z	0.00	0.10	0.62	2.02	3.50	4.80	48.00
215.0	Q	0	81	163	244	293	325	325
	z	0.00	0.10	0.62	2.02	3.50	4.80	48.00
227.0	Q	0	62	124	187	224	249	249
	z	0.00	0.10	0.62	2.02	3.50	4.80	48.00
250.0	Q	0	62	124	187	224	249	249
	z	0.00	0.10	0.62	2.02	3.50	4.80	48.00
258.0	Q	0	230	460	691	829	921	921
	z	0.00	0.10	0.62	2.02	3.50	4.80	48.00
266.0	Q	0	85	170	254	305	339	339
	z	0.00	0.10	0.62	2.02	3.50	4.80	48.00
300.0	Q	0	74	147	221	265	294	294
	z	0.00	0.10	0.62	2.02	3.50	4.80	48.00
318.0	Q	0	74	147	221	265	294	294
	z	0.00	0.10	0.62	2.02	3.50	4.80	48.00
385.0	Q	0	90	181	271	326	362	362
	z	0.00	0.10	0.62	2.02	3.50	4.80	48.00
392.0	Q	0	204	407	611	733	815	815
	z	0.00	0.10	0.62	2.02	3.50	4.80	48.00
398.0	Q	0	93	187	280	336	373	373
	z	0.00	0.10	0.62	2.02	3.50	4.80	48.00
450.0	Q	0	93	187	280	336	373	373
	z	0.00	0.10	0.62	2.02	3.50	4.80	48.00

Notes: 1. "Q" is mobilized end bearing capacity, [kips].
2. "z" is axial tip displacement, [in.].

AXIAL LOAD TRANSFER DATA (Q-Z DATA)

API RP 2A (2000) Method
48-in.-Diameter Driven Pipe Piles
Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area





Date: 8/15/08

Drawn By: JAW

Date: 8-5-08

Checked By: BWC
Approved By: JN

PENETRATION BELOW MUDLINE (feet)	CURVE POINTS								
		1	2	3	4	5	6	7	8
0.0	t	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00
1.0	t	0.00	0.02	0.03	0.04	0.05	0.06	0.05	0.05
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00
3.0	t	0.00	0.02	0.04	0.06	0.07	0.07	0.07	0.07
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00
6.0	t	0.00	0.03	0.05	0.08	0.10	0.11	0.10	0.10
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00
6.0	t	0.00	0.06	0.06					
	z	0.00	0.10	72.00					
26.0	t	0.00	0.32	0.32					
	z	0.00	0.10	72.00					
26.0	t	0.00	0.14	0.23	0.35	0.42	0.47	0.42	0.42
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00
56.0	t	0.00	0.24	0.40	0.60	0.72	0.80	0.72	0.72
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00
56.0	t	0.00	0.30	0.50	0.74	0.89	0.99	0.89	0.89
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00
117.0	t	0.00	0.51	0.85	1.27	1.52	1.69	1.52	1.52
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00
137.0	t	0.00	0.58	0.96	1.44	1.73	1.92	1.73	1.73
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00
157.0	t	0.00	0.65	1.08	1.62	1.94	2.16	1.94	1.94
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00
177.0	t	0.00	0.72	1.20	1.79	2.15	2.39	2.15	2.15
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00
187.0	t	0.00	0.75	1.25	1.88	2.26	2.51	2.26	2.26
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00
227.0	t	0.00	0.89	1.48	2.21	2.66	2.95	2.66	2.66
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00
227.0	t	0.00	0.66	1.10	1.65	1.98	2.20	1.98	1.98
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00
250.0	t	0.00	0.66	1.10	1.65	1.98	2.20	1.98	1.98
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00
250.0	t	0.00	1.70	1.70					
	z	0.00	0.10	72.00					
266.0	t	0.00	1.70	1.70					
	z	0.00	0.10	72.00					
266.0	t	0.00	0.90	1.50	2.25	2.70	3.00	2.70	2.70
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00

- Notes: 1. "t" is mobilized soil-pile adhesion, [ksf].
 2. "z" is axial pile displacement, [in.].
 3. Data for tension and compression coincide.

AXIAL LOAD TRANSFER DATA (T-Z DATA)

API RP 2A (2000) Method
 72-in.-Diameter Driven Pipe Piles
 Texas Offshore Port System, Offshore Terminal Location
 Block A-36, Galveston Area





Date: 8/5/08

Drawn By: AW

Date: 8-5-08

Checked By: BAC

Date: 8/7/08

Approved By: PL

PENETRATION BELOW MUDLINE (feet)	CURVE POINTS								
		1	2	3	4	5	6	7	8
300.0	t	0.00	0.78	1.30	1.95	2.34	2.60	2.34	2.34
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00
318.0	t	0.00	0.78	1.30	1.95	2.34	2.60	2.34	2.34
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00
385.0	t	0.00	0.96	1.60	2.40	2.88	3.20	2.88	2.88
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00
385.0	t	0.00	1.70	1.70					
	z	0.00	0.10	72.00					
398.0	t	0.00	1.70	1.70					
	z	0.00	0.10	72.00					
398.0	t	0.00	0.99	1.65	2.47	2.97	3.30	2.97	2.97
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00
450.0	t	0.00	0.99	1.65	2.47	2.97	3.30	2.97	2.97
	z	0.00	0.12	0.22	0.41	0.58	0.72	1.44	72.00

- Notes: 1. "t" is mobilized soil-pile adhesion, [ksf].
2. "z" is axial pile displacement, [in.].
3. Data for tension and compression coincide.

**AXIAL LOAD TRANSFER DATA
(T-Z DATA)**

API RP 2A (2000) Method
72-in.-Diameter Driven Pipe Piles
Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area





Date: 8/5/08

Drawn By: JHJ

Date: 8-5-08

Checked By: BUC
Approved By: JHJ

PENETRATION BELOW MUDLINE (feet)	CURVE POINTS							
		1	2	3	4	5	6	7
100.0	Q	0	108	216	324	389	433	433
	z	0.00	0.14	0.94	3.02	5.26	7.20	72.00
209.0	Q	0	179	358	537	645	717	717
	z	0.00	0.14	0.94	3.02	5.26	7.20	72.00
227.0	Q	0	140	280	420	504	560	560
	z	0.00	0.14	0.94	3.02	5.26	7.20	72.00
250.0	Q	0	140	280	420	504	560	560
	z	0.00	0.14	0.94	3.02	5.26	7.20	72.00
258.0	Q	0	392	784	1176	1411	1568	1568
	z	0.00	0.14	0.94	3.02	5.26	7.20	72.00
266.0	Q	0	191	382	573	687	763	763
	z	0.00	0.14	0.94	3.02	5.26	7.20	72.00
300.0	Q	0	165	331	496	595	662	662
	z	0.00	0.14	0.94	3.02	5.26	7.20	72.00
318.0	Q	0	165	331	496	595	662	662
	z	0.00	0.14	0.94	3.02	5.26	7.20	72.00
385.0	Q	0	204	407	611	733	814	814
	z	0.00	0.14	0.94	3.02	5.26	7.20	72.00
392.0	Q	0	376	751	1127	1352	1502	1502
	z	0.00	0.14	0.94	3.02	5.26	7.20	72.00
398.0	Q	0	210	420	630	756	840	840
	z	0.00	0.14	0.94	3.02	5.26	7.20	72.00
450.0	Q	0	210	420	630	756	840	840
	z	0.00	0.14	0.94	3.02	5.26	7.20	72.00

Notes: 1. "Q" is mobilized end bearing capacity, [kips].
2. "z" is axial tip displacement, [in.].

AXIAL LOAD TRANSFER DATA (Q-Z DATA)

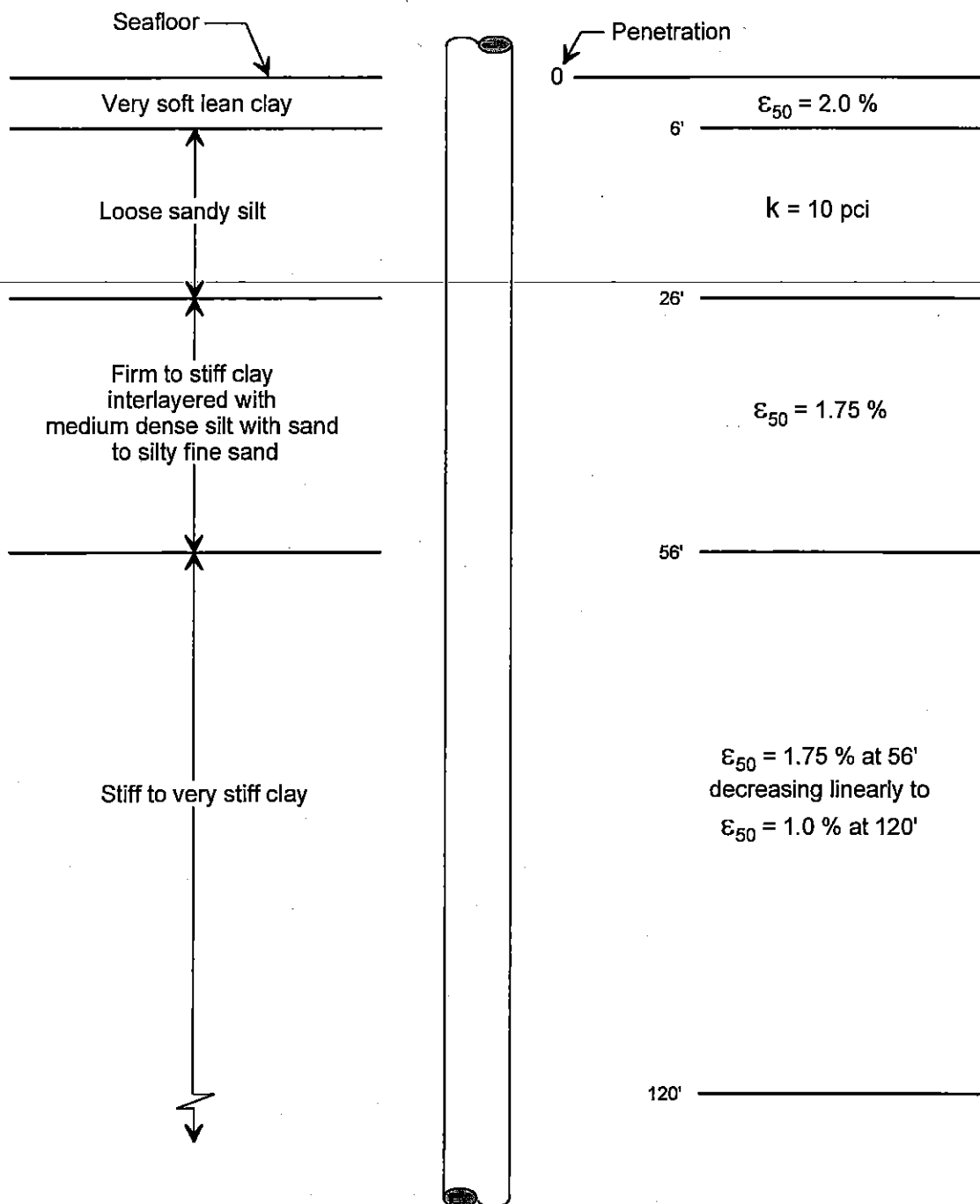
API RP 2A (2000) Method

72-in.-Diameter Driven Pipe Piles

Texas Offshore Port System, Offshore Terminal Location

Block A-36, Galveston Area





Notes:

1. ϵ_{50} is axial strain at half of peak deviator stress for cohesive soils.
2. Soil strength parameters are shown on Plate 4.
3. Submerged unit weight profile is shown on Plate 5.
4. k is the modulus of horizontal subgrade reaction for granular soils.

STRATIGRAPHY AND PARAMETERS FOR P-Y DATA

Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area



Drawn By: JMS
Date: 9/10/14

Checked By: JMS
Date: 9/10/14
Approved By: JMS
Date: 9/10/14

Date: 8/5/08

Drawn By: AW

Date: 8-5-08

Checked By: BWC

Date: 8/7/08

Approved By: [Signature]

PENETRATION BELOW MUDLINE (feet)	CURVE POINTS								
		1	2	3	4	5	6	7	8
0.0	p y	0 0.00	23 0.06	35 0.24	51 0.72	75 2.40	108 7.20	0 36.00	0 48.00
3.0	p y	0 0.00	33 0.06	50 0.24	74 0.72	109 2.40	157 7.20	36 36.00	36 48.00
6.0	p y	0 0.00	43 0.06	66 0.24	98 0.72	144 2.40	207 7.20	95 36.00	95 48.00
6.0	p y	0 0.00	72 0.10	121 0.18	159 0.27	200 0.40	229 0.61	239 0.89	242 48.00
10.0	p y	0 0.00	167 0.14	279 0.26	368 0.37	463 0.55	529 0.85	552 1.23	557 48.00
14.0	p y	0 0.00	295 0.18	491 0.32	648 0.46	815 0.69	933 1.07	972 1.55	982 48.00
18.0	p y	0 0.00	455 0.22	758 0.39	1000 0.56	1258 0.83	1440 1.29	1500 1.86	1515 48.00
22.0	p y	0 0.00	647 0.25	1079 0.45	1424 0.65	1791 0.97	2050 1.50	2136 2.16	2158 48.00
26.0	p y	0 0.00	873 0.29	1455 0.51	1920 0.74	2415 1.11	2764 1.71	2880 2.47	2909 48.00
26.0	p y	0 0.00	256 0.06	393 0.21	581 0.63	854 2.10	1230 6.30	1196 31.50	1196 48.00
27.0	p y	0 0.00	265 0.06	406 0.21	600 0.63	882 2.10	1270 6.30	1270 48.00	
56.0	p y	0 0.00	369 0.06	566 0.21	836 0.63	1230 2.10	1771 6.30	1771 48.00	
56.0	p y	0 0.00	562 0.06	862 0.21	1275 0.63	1875 2.10	2700 6.30	2700 48.00	
120.0 (and below)	p y	0 0.00	857 0.03	1314 0.12	1943 0.36	2857 1.20	4115 3.60	4115 48.00	

Notes: 1. "p" is soil resistance, [lb/in.].
2. "y" is lateral deflection, [in.].

P-Y DATA
(CYCLIC LOADING)
API RP 2A (2000) Method
48-in.-Diameter Driven Pipe Piles
Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area



Date: 8/5/08

Drawn By: AW

Date: 8-5-08

Checked By: BWC
Approved By: a

PENETRATION BELOW MUDLINE (feet)	CURVE POINTS								
		1	2	3	4	5	6	7	8
0.0	p y	0 0.00	34 0.10	52 0.36	76 1.08	112 3.60	162 10.80	0 54.00	0 72.00
6.0	p y	0 0.00	62 0.10	95 0.36	140 1.08	206 3.60	297 10.80	124 54.00	124 72.00
6.0	p y	0 0.00	93 0.13	156 0.24	205 0.34	258 0.51	296 0.79	308 1.14	311 72.00
12.0	p y	0 0.00	273 0.20	455 0.35	600 0.50	755 0.75	864 1.16	900 1.67	909 72.00
19.0	p y	0 0.00	575 0.26	958 0.46	1265 0.67	1591 1.00	1821 1.54	1898 2.22	1917 72.00
26.0	p y	0 0.00	977 0.32	1629 0.57	2150 0.83	2704 1.24	3095 1.91	3225 2.76	3258 72.00
26.0	p y	0 0.00	337 0.09	517 0.31	764 0.94	1124 3.15	1619 9.45	1282 47.25	1282 72.00
30.0	p y	0 0.00	382 0.09	586 0.31	866 0.94	1274 3.15	1835 9.45	1629 47.25	1629 72.00
35.0	p y	0 0.00	440 0.09	675 0.31	998 0.94	1467 3.15	2112 9.45	2112 72.00	
56.0	p y	0 0.00	554 0.09	849 0.31	1255 0.94	1845 3.15	2657 9.45	2657 72.00	
56.0	p y	0 0.00	844 0.09	1294 0.31	1912 0.94	2812 3.15	4050 9.45	4050 72.00	
120.0 (and below)	p y	0 0.00	1286 0.05	1972 0.18	2915 0.54	4286 1.80	6172 5.40	6172 72.00	

Notes: 1. "p" is soil resistance, [lb/in.].
2. "y" is lateral deflection, [in.].

P-Y DATA
(CYCLIC LOADING)
API RP 2A (2000) Method
72-in.-Diameter Driven Pipe Piles
Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area



FIELD OPERATIONS

Drilling Procedures

A drilling rig mounted on a suitable offshore platform was used to perform the boring. The drilling platform is usually an anchored or dynamically positioned vessel or a mobile drilling platform. The borehole is advanced with open hole, wet rotary techniques, using a drag bit attached to the drill pipe. A combination of fresh water gel and weight materials mixed with salt water are used as necessary to suspend and remove drill cuttings and to provide lateral pressure to support the sides of the borehole. A brief chronological Summary of Field Operations is presented on Plate A-1.

Sampling Procedures

Samples are obtained through the open bore of the drill pipe. Cohesive samples are generally obtained by the push sampling technique, and granular samples by the percussion technique.

Push samples are taken by lowering the sample tube into the soil formation with the weight of the drill pipe. After the boring is drilled to the desired depth, the drill bit is raised from the borehole bottom, and the sampler is allowed to fall through the drill pipe until it rests on a catch ring above the drill bit. The sampler is then pushed about 24 to 30 in. into the soil by lowering the drill string. The sampler is retrieved by pulling it out of the soil formation with the drill pipe and then raising it to the deck using an overshot retrieving device attached to a wireline. After retrieving the sampler, the boring is advanced and the sampling procedure is repeated. Samples obtained in this fashion are noted by "PUSH" on the boring log.

Percussion samples are obtained by advancing the sampler tube with a hammer and slide assembly, which is lowered to the desired sampling depth. The hammer, a 175-lb sliding weight, is repeatedly raised approximately 5 ft and dropped, to achieve a maximum penetration of 24 in. or a maximum of 30 blows. The number of blows required to achieve 24-in. penetration, or the penetration for a maximum of 30 blows, is recorded on the boring log.

Samples recovered with the liner sampler are advanced 24 in. into the formation with the weight of the hammer and slide assembly. Liner samples are noted as "WOH" on the boring log.

Water Depth Measuring Procedures

The water depth measurements are usually taken at the boring location by one or more of the following methods: (1) the vessel's echo sounder, (2) an electronic bottom sensor, (3) pressure transducer located in the bottom sensor and (4) the first sample recovery during the coring operation. An initial water depth is estimated using the vessel's echo sounder. After the initial water depth estimate is made, a bottom sensor is used to more accurately measure the water depth. The bottom sensor is an electronic seafloor sensor that is operated on an electric cable and latches into the drill bit. The drill string is slowly lowered to the seafloor until the electronic sensor signals that its tip has contacted the soil. The bottom sensor contains a pressure transducer that provides an independent water depth measurement. This pressure transducer measurement also checks the pipe tally length used for the bottom sensor measurement. The water depths obtained from these methods are then confirmed by recovery of the first soil sample. The Cavins wireline counter is used in conjunction with the sampling equipment to obtain the mudline sample. The water depth measurement thought to be most representative is indicated on the boring log. After completing the soil boring, a confirmatory water depth measurement is sometimes taken. The coring vessel is repositioned, and the water depth is confirmed. Some variations in these procedures may occur due to available equipment and conditions at the time of the boring.



FIELD AND LABORATORY TESTING

A summary of the field and laboratory test results is presented on Plate A-2. In the field, each sample is extruded from the sampler and carefully examined, classified, and tested by the soil technician or field engineer. Representative portions of each recovered sample are appropriately packaged for shipment to the laboratory in Houston. The test procedures, which are in general accordance with ASTM Standards (2006), are described in the following paragraphs.

Classification Tests

The classification tests, performed to verify field soil classifications, are assigned to granular and cohesive soils. These data are tabulated on the Summary of Test Results, and most results are also plotted on the Log of Boring and Test Results.

For cohesive samples, plastic and liquid limits are determined to provide information for soil classification. Water content and density determinations are made for soil compression test specimens.

For granular samples, classification tests are directed toward determining grain size. Grain-size analyses performed include sieve analysis and/or the percent material passing the No. 200 sieve. These values are presented on the Summary of Test Results.

Strength Tests

The undrained shear strength of cohesive samples is obtained from Torvane, pocket penetrometer, miniature vane, and unconsolidated-undrained triaxial compression tests. The results are tabulated on the Summary of Test Results and are plotted on the boring log.

The Torvane is a small, hand-operated device consisting of a metal disc with thin, radial vanes projecting from one face. The disc is pressed against a flat surface of the soil until the vanes are fully embedded and is rotated through a torsion spring until the soil is sheared. The device is calibrated to indicate shear strength of the soil directly from the rotation of the torsion spring.

The pocket penetrometer is a small, hand-held device consisting of a flat-faced cylindrical plunger and spring encased in a cylindrical housing. The plunger is pressed against a flat soil surface, compressing the spring until the soil experiences a punching type bearing failure. The penetrometer is calibrated to indicate shear strength of the soil directly from compression of the spring.

The miniature vane test is used to measure the undrained shear strength of cohesive soils. In this test, a small, 4-bladed vane is inserted into either an undisturbed or remolded cohesive specimen. Torque is applied to the vane through a calibrated spring until soil shear failure occurs. The undrained shear strength is determined by multiplying the rotation, in degrees, by the spring constant.

In the unconsolidated-undrained triaxial compression test, either an undisturbed or remolded soil specimen is enclosed in a thin rubber membrane and subjected to a confining pressure of at least the computed effective overburden pressure. The specimen is then loaded axially to failure at a nearly constant rate of strain without allowing drainage. The undrained shear strength of cohesive soils is computed as one-half the maximum observed deviator stress. Normalized stress-strain curves from undisturbed UU triaxial compression tests are presented on Plate A-



<u>Date</u>	<u>Time</u>		<u>Description of Activities</u>
	<u>From</u>	<u>To</u>	
June 25, 2008	****	1920	Arrive in Block A-36, Galveston Area aboard the vessel <i>R/V Seaprobe</i> .
	1920	2015	Set 4-pt anchors.
	****	2000	Conduct pre-shift safety meeting.
	2015	2025	Rig up to drill and sample.
	****	2025	Estimate water depth of 106 ft with vessel's echo sounder and 112 ft using wireline technique.
	2025	2050	Perform scanning sonar survey
	2045	2130	Run drill pipe to mudline.
	****	2130	Measure water depth of 111 ft with the bottom sensor/pipe tally and 109.3 ft with pressure transducer.
	2130	2400	Drill and sample.
	****	2330	Conduct pre-shift safety meeting.
June 26, 2008	0000	1200	Drill and sample.
	****	0455	Reposition vessel. Vessel moved 13 ft off location due to strong currents.
	****	1125	Conduct pre-shift safety meeting.
	****	1135	Conduct fire drill.
	1200	1220	Repair grating on drill floor.
	1220	1715	Drill and sample. Boring terminated at 450-ft penetration.
	1715	2020	Pull pipe above mudline and reposition vessel.
	****	2020	Measure supplemental water depth of 111 ft with the bottom sensor/pipe tally and 109.6 ft with pressure transducer.
	2020	2100	Pull drill pipe to deck and secure equipment for travel.
	2100	2145	Pull anchors.
	2145	****	Depart location.

SUMMARY OF FIELD OPERATIONS

Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area



Checked By: LAS Date: 8/6/08
 Approved By: or Date: 8/7/08

Drawn By: Tomoi Date: 8/6/08

Summary of Test Results

Job No.: 0201-6500 06-Aug-2008 (Ver. #5)
 Boring: Texas Offshore Port System, Offshore Terminal Location
 Block: A-36
 Area: Galveston

Sample No.	Depth (ft)	Identification Tests						Strength Estimate (ksf)		Miniature Vane Tests (ksf)			Compression Tests								
		Liquidity Index	Liquid Limit (%)	Plastic Limit (%)	Moisture Content (%)	Submerged Unit Weight (pcf)	Passing No. 200 Sieve	Penetrometer	Torvane	Undisturbed	Remolded	Residual	Type Test	Moisture Content (%)	Confining Pressure (psf)	Undisturbed Strength (ksf)	Remolded Strength (ksf)	E ₅₀ Strain (%)	Submerged Unit Weight (pcf)	Failure Strain (%)	Type of Failure
1	0.80	1.08	37	15	39																
1	0.80				37						0.08										
1	0.80				36	50				0.18		0.08									
2	3.50					48															
3	4.30	.95	39	15	37																
3	4.30										0.09										
3	4.30				41	45				0.10											
4	8.00				31	61	79														
5	10.50				22	68	34														
6	14.00				26	59	60														
7	17.00				26	57	68														
8	19.50				26	56	64														
9	23.00				28																
9	23.00				29	60	52														
10	26.00				30	58	78														
11	27.50								0.44												
12	28.00					57															
13	28.50				29						0.14										
13	28.50	1.15	28	18	29																
13	28.50				29					0.32											
14	31.00								0.72												
15	31.50										0.19										

NOTES:

TYPE OF TEST
 U - Unconfined Compression
 UU- Unconsolidated-Undrained Triaxial
 CU- Consolidated-Undrained Triaxial

TYPE OF FAILURE
 A - Bulge
 B - Single Shear Plane
 C - Multiple Shear Plane
 D - Vertical Fracture

Plus Signs [+] denote tests which exceeded the capacity of the measuring device.

 NP = Non Plastic Material



Checked By: *JTS* Date: *8/6/08*
 Approved By: *AL* Date: *8/7/08*

Drawn By: *Uomo* Date: *8/6/08*

Summary of Test Results

Job No.: 0201-6500

06-Aug-2008 (Ver. #5)

Boring: Texas Offshore Port System, Offshore Terminal Location

Block: A-36

Area: Galveston

Sample No.	Depth (ft)	Identification Tests						Strength Estimate (ksf)		Miniature Vane Tests (ksf)			Compression Tests								
		Liquidity Index	Liquid Limit (%)	Plastic Limit (%)	Moisture Content (%)	Submerged Unit Weight (pcf)	Passing No. 200 Sieve	Penetrometer	Torvane	Undisturbed	Remolded	Residual	Type Test	Moisture Content (%)	Confining Pressure (psf)	Undisturbed Strength (ksf)	Remolded Strength (ksf)	E ₅₀ Strain (%)	Submerged Unit Weight (pcf)	Failure Strain (%)	Type of Failure
15	31.50												UU	30	120	0.59		2.2	57	18	A
16	32.00	.92	30	19	29				0.64	0.75											
17	33.50																				
18	34.00				32	55			0.78												
19	34.50	.87	32	15	30				0.52	0.61											
20	37.00							1.25	1.10												
21	37.50				34	53															
22	38.00				35			1.00	1.00	1.19											
23	40.50				29		51			0.38											
24	42.50										0.22										
24	42.50	.64	57	17	42				0.60	0.77			UU		119	0.74		1.5	48	6	A
25	43.00								0.40												
26	43.50				36	56	31														
27	46.00								1.00												
28	46.50					54															
29	47.00				36																
29	47.00				28				0.60	0.46											
30	48.50					53	82														
31	49.00																				
32	49.50	.97	34	19	33				0.68	0.93			UU	31	120	0.78		5.1	48	21	A
32	49.50										0.16										
33	57.00								1.20												

NOTES:

TYPE OF TEST

U - Unconfined Compression
 UU- Unconsolidated-Undrained Triaxial
 CU- Consolidated-Undrained Triaxial

TYPE OF FAILURE

A - Bulge
 B - Single Shear Plane
 C - Multiple Shear Plane
 D - Vertical Fracture

Plus Signs [+] denote tests which exceeded the capacity of the measuring device.

NP = Non Plastic Material



Checked By: *LS*
Approved By: *DL*

Date: 8/6/08
Date: 8/6/08

Drawn By: *Tromel* Date: 8/6/08

Summary of Test Results

Job No.: 0201-6500

06-Aug-2008 (Ver. #5)

Boring: Texas Offshore Port System, Offshore Terminal Location

Block: A-36

Area: Galveston

Sample No.	Depth (ft)	Identification Tests						Strength Estimate (ksf)		Miniature Vane Tests (ksf)			Compression Tests								
		Liquidity Index	Liquid Limit (%)	Plastic Limit (%)	Moisture Content (%)	Submerged Unit Weight (pcf)	Passing No. 200 Sieve	Panetrometer	Torvane	Undisturbed	Remolded	Residual	Type Test	Moisture Content (%)	Confining Pressure (psf)	Undisturbed Strength (ksf)	Remolded Strength (ksf)	E ₅₀ Strain (%)	Submerged Unit Weight (pcf)	Failure Strain (%)	Type of Failure
34	57.50					47															
35	58.00				48			1.00	1.00	1.64											
35	58.00				35																
36	66.50																				
37	67.00					54															
38	67.50	1.08	36	14	38				1.02	1.70			UU		120		0.61		52		
38	67.50												UU	45	121	1.05		1.7	50	19	AC
39	77.00							1.50	1.54												
40	77.50					52															
41	78.00				45			1.10	1.20	1.36											
41	78.00				51																
42	87.00							1.00	1.20												
43	87.50												UU	41	120	1.86		1.3	47	5	AC
44	88.00	.59	59	18	42			1.00	1.12	1.42											
45	97.00							1.00													
46	97.50					46															
47	98.00				44			1.00	1.12	1.08											
47	98.00				39																
48	107.00								1.42												
49	107.50												UU		118		0.73		49		
49	107.50												UU	41	120	1.84		1.0	45	3	AB
50	108.00	.69	52	16	41			1.25	1.32	1.64											

NOTES:

TYPE OF TEST

U - Unconfined Compression
UU- Unconsolidated-Undrained Triaxial
CU- Consolidated-Undrained Triaxial

TYPE OF FAILURE

A - Bulge
B - Single Shear Plane
C - Multiple Shear Plane
D - Vertical Fracture

Plus Signs [+] denote tests which exceeded the capacity of the measuring device.

NP = Non Plastic Material



Checked By: *JS*
 Approved By: *a*

Date: 8/6/08
 Date: 8/6/08

Drawn By: *Panel*

Date: 8/6/08

Report No. 0201-6500

Summary of Test Results

Job No.: 0201-6500

06-Aug-2008 (Ver. #5)

Boring: Texas Offshore Port System, Offshore Terminal Location

Block: A-36

Area: Galveston

Sample No.	Depth (ft)	Identification Tests						Strength Estimate (ksf)		Miniature Vane Tests (ksf)			Compression Tests								
		Liquidity Index	Liquid Limit (%)	Plastic Limit (%)	Moisture Content (%)	Submerged Unit Weight (pcf)	Passing No. 200 Sieve	Penetrometer	Torvane	Undisturbed	Remolded	Residual	Type Test	Moisture Content (%)	Confining Pressure (psf)	Undisturbed Strength (ksf)	Remolded Strength (ksf)	E ₅₀ Strain (%)	Submerged Unit Weight (pcf)	Failure Strain (%)	Type of Failure
51	117.00							1.50	1.36												
52	117.50					45															
53	118.00				47			1.50	1.48	2.10											
54	127.00							1.00	1.10												
55	127.50												UU	49	118	1.28		1.2	50	5	A
56	128.00				42			1.50	1.58	1.04											
57	137.00								1.40												
58	137.50					52															
59	138.00				29				1.32	1.93											
59	138.00	.63	40	13	30																
60	147.00							1.25	1.75												
61	147.50												UU	42	119	1.39		1.5	48	7	B
61	147.50												UU		119		0.88		51		
62	148.00				37			1.20	1.70	1.74											
63	157.00								1.60												
64	157.50					48															
65	158.00				44				1.45	2.02											
65	158.00				43																
66	167.00							2.00													
67	167.50												UU	40	119	2.67		1.5	45	5	B
67	167.50												UU		117		1.21		51		
68	168.00	.40	71	18	39			2.00	2.10	2.55											

NOTES:

TYPE OF TEST

U - Unconfined Compression
 UU- Unconsolidated-Undrained Triaxial
 CU- Consolidated-Undrained Triaxial

TYPE OF FAILURE

A - Bulge
 B - Single Shear Plane
 C - Multiple Shear Plane
 D - Vertical Fracture

Plus Signs [+] denote tests which exceeded the capacity of the measuring device.

NP = Non Plastic Material

PLATE A-2d



Checked By: *LS*
Approved By: *me*

Date: 8/6/08
Date: 8/7/08

Drawn By: *Remel*

Date: 8/6/08

Summary of Test Results

Job No.: 0201-6500

06-Aug-2008 (Ver. #5)

Boring: Texas Offshore Port System, Offshore Terminal Location

Block: A-36

Area: Galveston

Sample No.	Depth (ft)	Identification Tests						Strength Estimate (ksf)		Miniature Vane Tests (ksf)			Compression Tests								
		Liquidity Index	Liquid Limit (%)	Plastic Limit (%)	Moisture Content (%)	Submerged Unit Weight (pcf)	Passing No. 200 Sieve	Penetrometer	Torvane	Undisturbed	Remolded	Residual	Type Test	Moisture Content (%)	Confining Pressure (psi)	Undisturbed Strength (ksf)	Remolded Strength (ksf)	ϵ_{50} Strain (%)	Submerged Unit Weight (pcf)	Failure Strain (%)	Type of Failure
69	177.00								2.00												
70	177.50												UU	28	119	2.87		2.3	51	9	AB
71	178.00				32			2.00		2.76											
72	189.00								2.25												
73	189.50					33															
74	190.00				43																
74	190.00				43			2.50	2.45	2.00											
75	197.00							2.50	2.20												
76	197.50												UU	42	120	3.14		1.1	44	3	B
76	197.50												UU		118		1.40		49		
77	198.00	.33	78	21	40			2.50	2.15	3.25											
78	207.00							2.00	1.80												
79	207.50					45							UU	46	120	3.10		0.9	48	3	C
79	207.50												UU	42	120		1.08		47		
80	208.00				43			2.00	2.00	1.91											
80	208.00				44																
81	217.00							2.75	2.30												
82	217.50												UU		120		1.46		48		
82	217.50												UU	43	118	3.72		1.2	45	3	AC
83	218.00				43			2.75	2.25	3.61											
84	227.00							2.00													
85	227.50					54							UU	25	120	2.11		1.7	56	8	A

NOTES:

TYPE OF TEST

U - Unconfined Compression
UU- Unconsolidated-Undrained Triaxial
CU- Consolidated-Undrained Triaxial

TYPE OF FAILURE

A - Bulge
B - Single Shear Plane
C - Multiple Shear Plane
D - Vertical Fracture

Plus Signs [+] denote tests which exceeded the capacity of the measuring device.

NP = Non Plastic Material



Checked By: *24* Date: *8/6/08*
 Approved By: *on* Date: *8/6/08*

Drawn By: *Tomol* Date: *8/6/08*

Summary of Test Results

Job No.: 0201-6500

06-Aug-2008 (Ver. #5)

Boring: Texas Offshore Port System, Offshore Terminal Location

Block: A-36

Area: Galveston

Sample No.	Depth (ft)	Identification Tests						Strength Estimate (ksf)		Miniature Vane Tests (ksf)			Compression Tests								
		Liquidity Index	Liquid Limit (%)	Plastic Limit (%)	Moisture Content (%)	Submerged Unit Weight (pcf)	Passing No. 200 Sieve	Penetrometer	Torvane	Undisturbed	Remolded	Residual	Type Test	Moisture Content (%)	Confining Pressure (psi)	Undisturbed Strength (ksf)	Remolded Strength (ksf)	E _{so} Strain (%)	Submerged Unit Weight (pcf)	Failure Strain (%)	Type of Failure
103	286.50							2.75	2.50												
104	287.00												UU		118		1.29		48		
104	287.00												UU	43	119	3.23		1.9	40	7	B
105	287.50				45			2.75	2.75	3.53											
106	297.00							2.50	3.40												
107	297.50					59							UU	22	120		0.96		65		
107	297.50												UU	23	120	2.62		6.2	64	20	A
108	298.00				20	60															
109	299.00	.27	63	14	27			2.75	2.25				UU	28	121	1.53		1.7	58	16	B
110	299.50																				
111	300.00					58															
112	307.00							1.75	2.50												
113	307.50					59							UU	26	120		1.05		60		
113	307.50												UU	26	121	2.39		1.7	56	15	A
114	308.00				31																
114	308.00				28			2.00	2.00	2.47											
115	317.00							2.50	2.20												
116	317.50					53							UU		119		1.86		54		
116	317.50												UU	31	118	2.66		1.7	53	7	B
117	318.00				32			3.00	3.00												
118	327.00							3.75	3.30												
119	327.50					56							UU	29	120		1.82		58		

NOTES:

TYPE OF TEST

U - Unconfined Compression
 UU- Unconsolidated-Undrained Triaxial
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TYPE OF FAILURE

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 C - Multiple Shear Plane
 D - Vertical Fracture

Plus Signs [+] denote tests which exceeded the capacity of the measuring device.

NP = Non Plastic Material



Checked By: *LS*
Approved By: *DL*

Date: 8/6/08
Date: 8/6/08

Drawn By: *Tamai* Date: 8/6/08

Summary of Test Results

Job No.: 0201-6500

06-Aug-2008 (Ver. #5)

Boring: Texas Offshore Port System, Offshore Terminal Location

Block: A-36

Area: Galveston

Sample No.	Depth (ft)	Identification Tests						Strength Estimate (ksf)		Miniature Vane Tests (ksf)			Compression Tests								
		Liquidity Index	Liquid Limit (%)	Plastic Limit (%)	Moisture Content (%)	Submerged Unit Weight (pcf)	Passing No. 200 Sieve	Penetrometer	Torvane	Undisturbed	Remolded	Residual	Type Test	Moisture Content (%)	Confining Pressure (psi)	Undisturbed Strength (ksf)	Remolded Strength (ksf)	50 Strain (%)	Submerged Unit Weight (pcf)	Failure Strain (%)	Type of Failure
119	327.50												UU	33	120	3.84		1.8	54	7	AB
120	328.00	.38	48	13	26																
120	328.00				28			3.00	2.35	3.38											
121	337.00							4.00													
122	337.50												UU	32	120	2.24		1.7	53	5	B
123	338.00				33			4.00		3.40											
124	346.50																				
125	347.00												UU	24	120	2.57		1.7	59	11	A
125	347.00					57							UU	22	120		2.38		63		
126	347.50				26																
126	347.50				21			3.25		3.80											
127	357.00							4.00													
128	357.50												UU		120		1.40		59		
128	357.50												UU	32	120	3.03		2.7	50	8	A
129	358.00	.34	63	17	32			3.50		3.83 +											
130	367.00																				
131	367.50												UU	25	120	2.53		3.1	49	12	B
132	368.00				27					3.83 +											
133	377.00					51															
134	377.50																				
135	378.00				29																
135	378.00				25					2.57											

NOTES:

TYPE OF TEST

U - Unconfined Compression
UU- Unconsolidated-Undrained Triaxial
CU- Consolidated-Undrained Triaxial

TYPE OF FAILURE

A - Bulge
B - Single Shear Plane
C - Multiple Shear Plane
D - Vertical Fracture

Plus Signs [+] denote tests which exceeded the capacity of the measuring device.

NP = Non Plastic Material



Checked By: *lar*
Approved By: *DN*

Date: *8/6/08*
Date: *8/7/08*

Drawn By: *T.emoi* Date: *8/6/08*

Summary of Test Results

Job No.: 0201-6500

06-Aug-2008 (Ver. #5)

Boring: Texas Offshore Port System, Offshore Terminal Location

Block: A-36

Area: Galveston

Sample No.	Depth (ft)	Identification Tests						Strength Estimate (ksf)		Miniature Vane Tests (ksf)			Compression Tests								
		Liquidity Index	Liquid Limit (%)	Plastic Limit (%)	Moisture Content (%)	Submerged Unit Weight (pcf)	Passing No. 200 Sieve	Penetrometer	Torvane	Undisturbed	Remolded	Residual	Type Test	Moisture Content (%)	Confining Pressure (psf)	Undisturbed Strength (ksf)	Remolded Strength (ksf)	E _{so} Strain (%)	Submerged Unit Weight (pcf)	Failure Strain (%)	Type of Failure
136	386.80					50	10														
137	396.40				21	42	7														
138	407.00							3.25													
139	407.50											UU	33	120	4.28		2.9	47	8	B	
139	407.50											UU		121		2.14		55			
140	408.00	.32	62	17	31			3.50		2.87											
141	417.00							3.50													
142	417.50					47															
143	418.00				33			3.50		3.29											
143	418.00				30																
144	427.00							3.00	2.85												
145	427.50											UU		121		1.94		55			
145	427.50											UU	33	119	3.13		4.1	44	15	C	
146	428.00				33			2.75	3.00	2.95											
147	437.00					57															
148	437.50											UU	28	120	2.20		0.9	54	9	AB	
148	437.50											UU	28	120		1.64		58			
149	438.00				26			3.50	3.10	3.15											
149	438.00	.79	37	11	31																
150	449.00																				
151	449.50											UU	21	120	2.56		8.8	55	20	A	
152	450.00				19		36	1.75		2.00											

NOTES:

TYPE OF TEST

U - Unconfined Compression
UU- Unconsolidated-Undrained Triaxial
CU- Consolidated-Undrained Triaxial

TYPE OF FAILURE

A - Bulge
B - Single Shear Plane
C - Multiple Shear Plane
D - Vertical Fracture

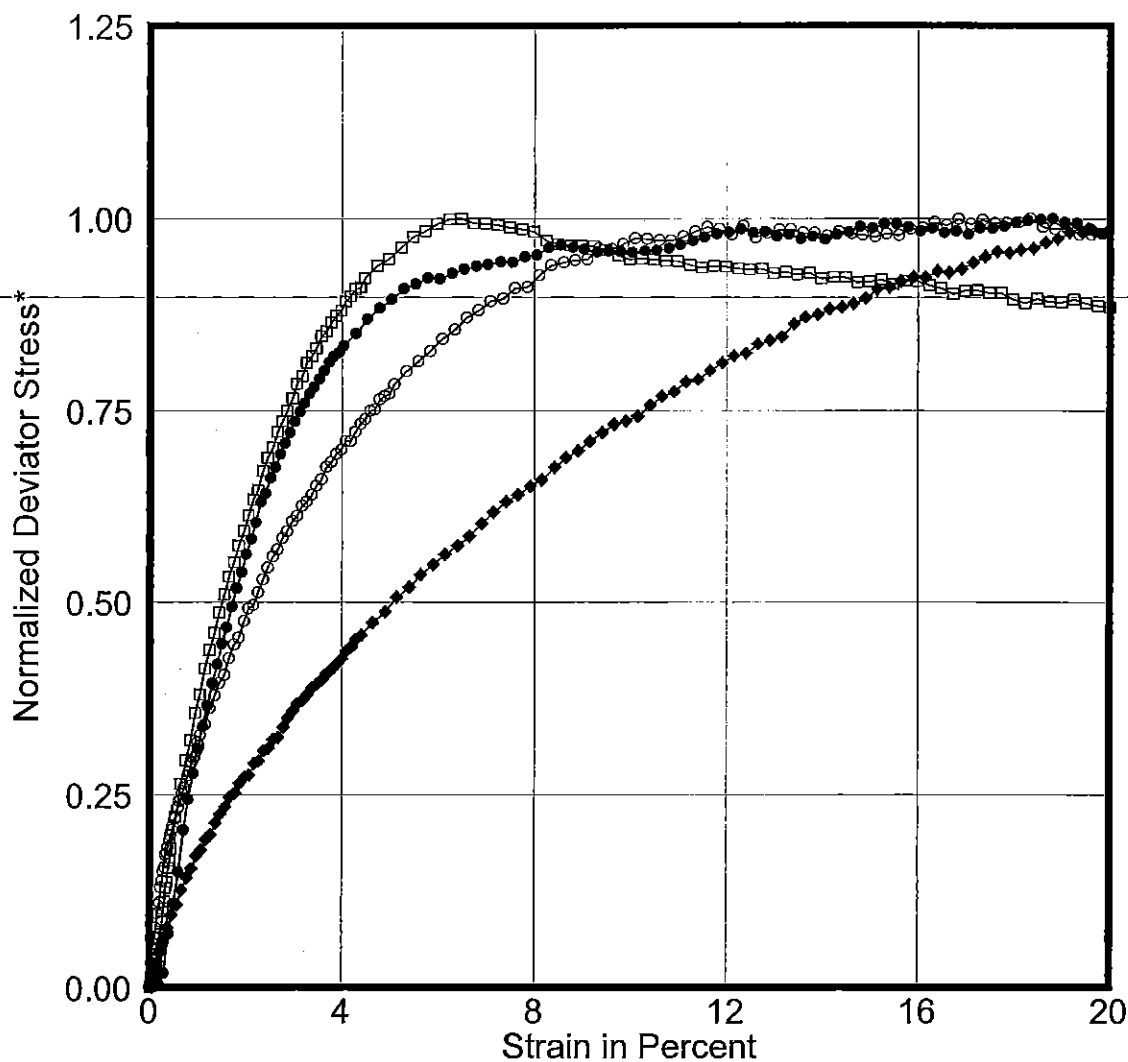
Plus Signs [+] denote tests which exceeded the capacity of the measuring device.

NP = Non Plastic Material



Date: 8/5/08

Drawn By: TCM/ol



Curve	Sample No.	Depth [ft]	Test Type	Confining Pressure [psi]	Maximum Deviator Stress [ksf]	ϵ_{50} [%]
○—○	15	31.50	UU	119.6	1.18	2.2
□—□	24	42.50	UU	118.7	1.49	1.5
◆—◆	32	49.50	UU	119.8	1.57	5.1
●—●	38	67.50	UU	121.1	2.11	1.7

* Normalized with respect to maximum deviator stress.

STRESS-STRAIN CURVES

Unconsolidated-Undrained Triaxial Compression Test

Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area



Date: 8/5/08

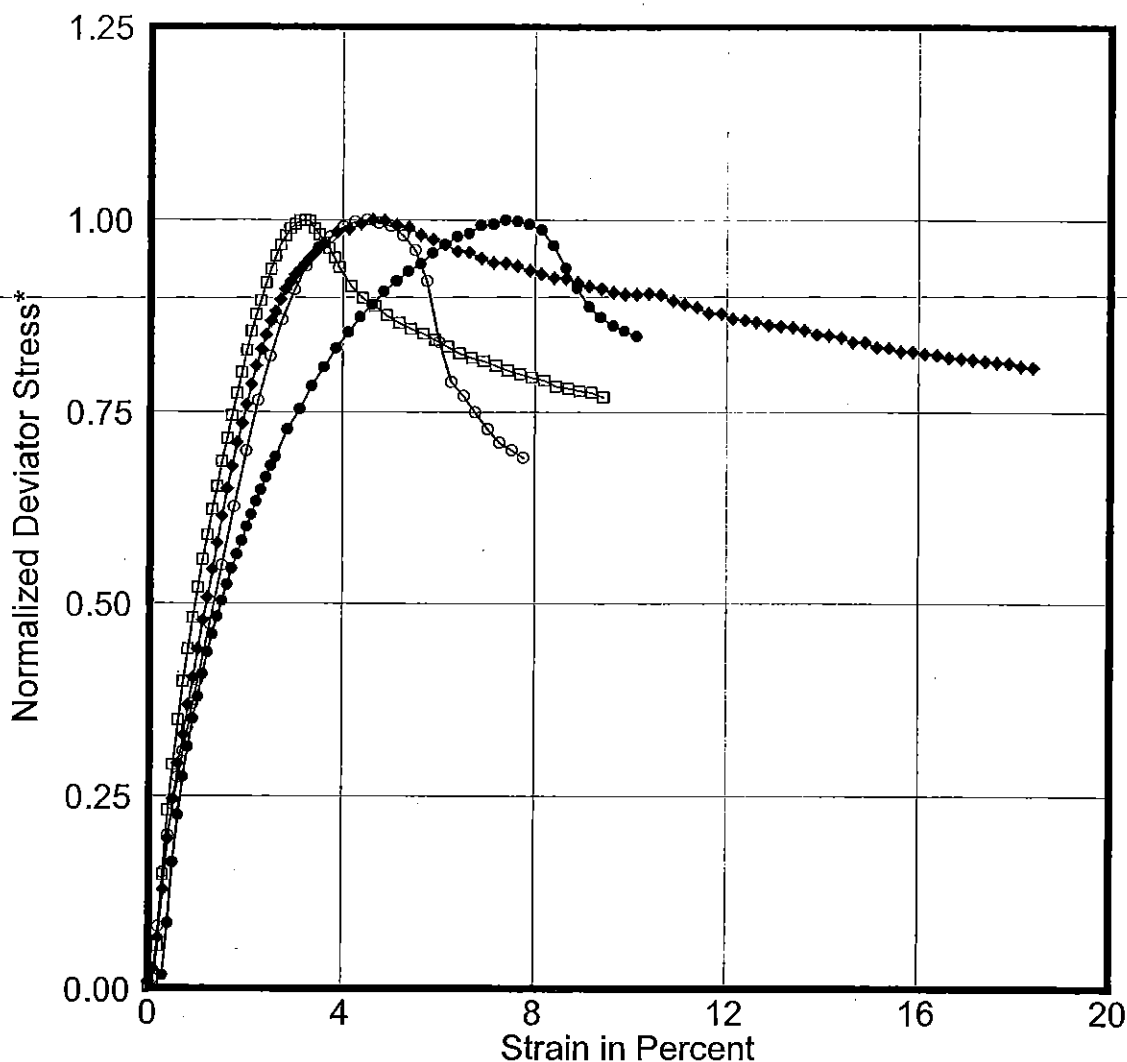
Drawn By: T. M. G.

Date: 8/5/08

Checked By: H.W.

Date: 8/1/08

Approved By: H.W.



Curve	Sample No.	Depth [ft]	Test Type	Confining Pressure [psi]	Maximum Deviator Stress [ksf]	ϵ_{50} [%]
○—○	43	87.50	UU	119.7	3.72	1.3
□—□	49	107.50	UU	120.0	3.67	1.0
◆—◆	55	127.50	UU	118.4	2.57	1.2
●—●	61	147.50	UU	118.8	2.78	1.5

* Normalized with respect to maximum deviator stress.

STRESS-STRAIN CURVES

Unconsolidated-Undrained Triaxial Compression Test

Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area



Date: 8/5/08

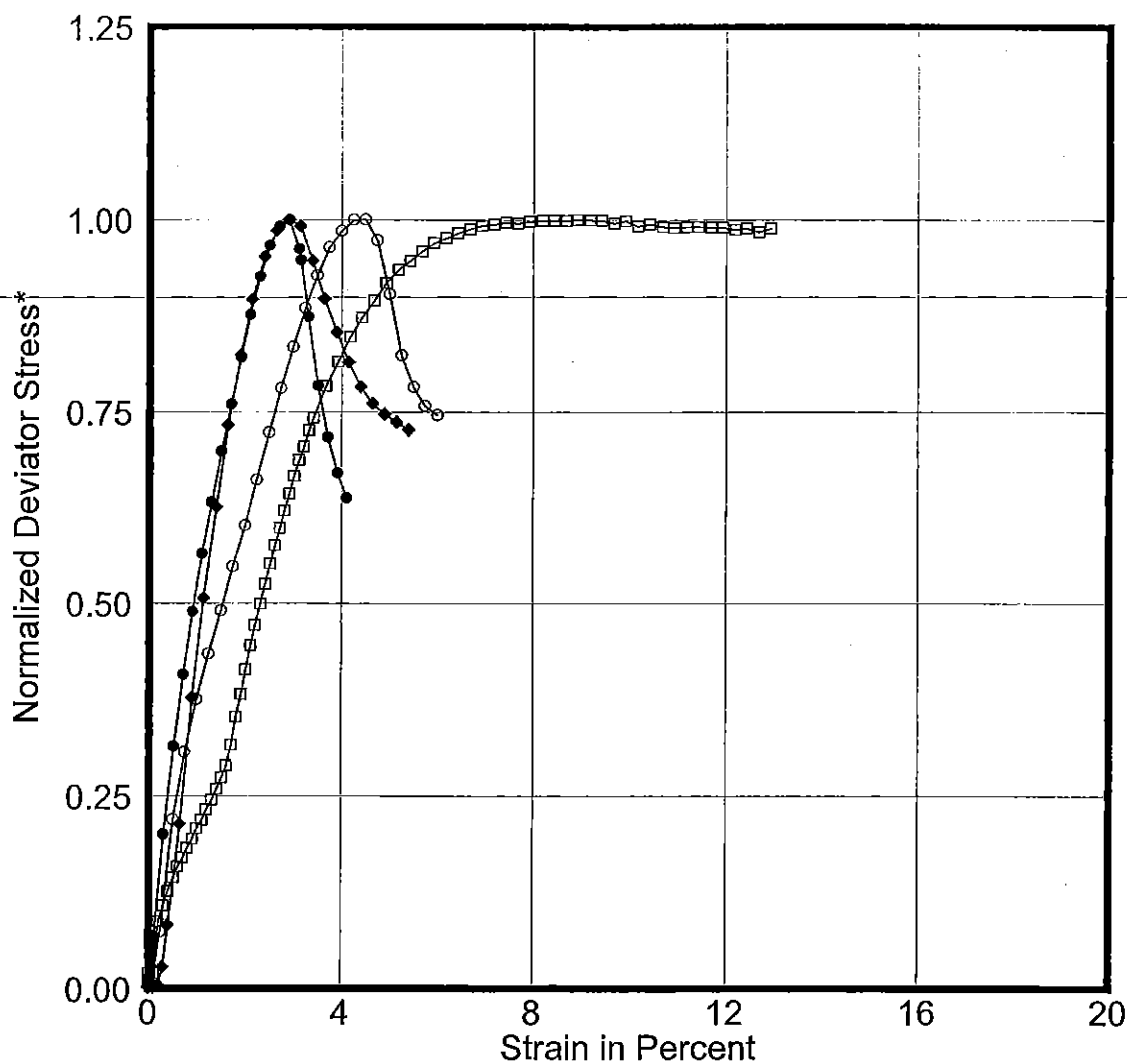
Drawn By: TPO-2061

Date: 8/5/08

Checked By: HW

Date: 8/13

Approved By: M



Curve	Sample No.	Depth [ft]	Test Type	Confining Pressure [psi]	Maximum Deviator Stress [ksf]	ϵ_{50} [%]
○—○	67	167.50	UU	119.2	5.34	1.5
□—□	70	177.50	UU	119.0	5.75	2.3
◆—◆	76	197.50	UU	119.5	6.29	1.1
●—●	79	207.50	UU	120.3	6.19	0.9

* Normalized with respect to maximum deviator stress.

STRESS-STRAIN CURVES

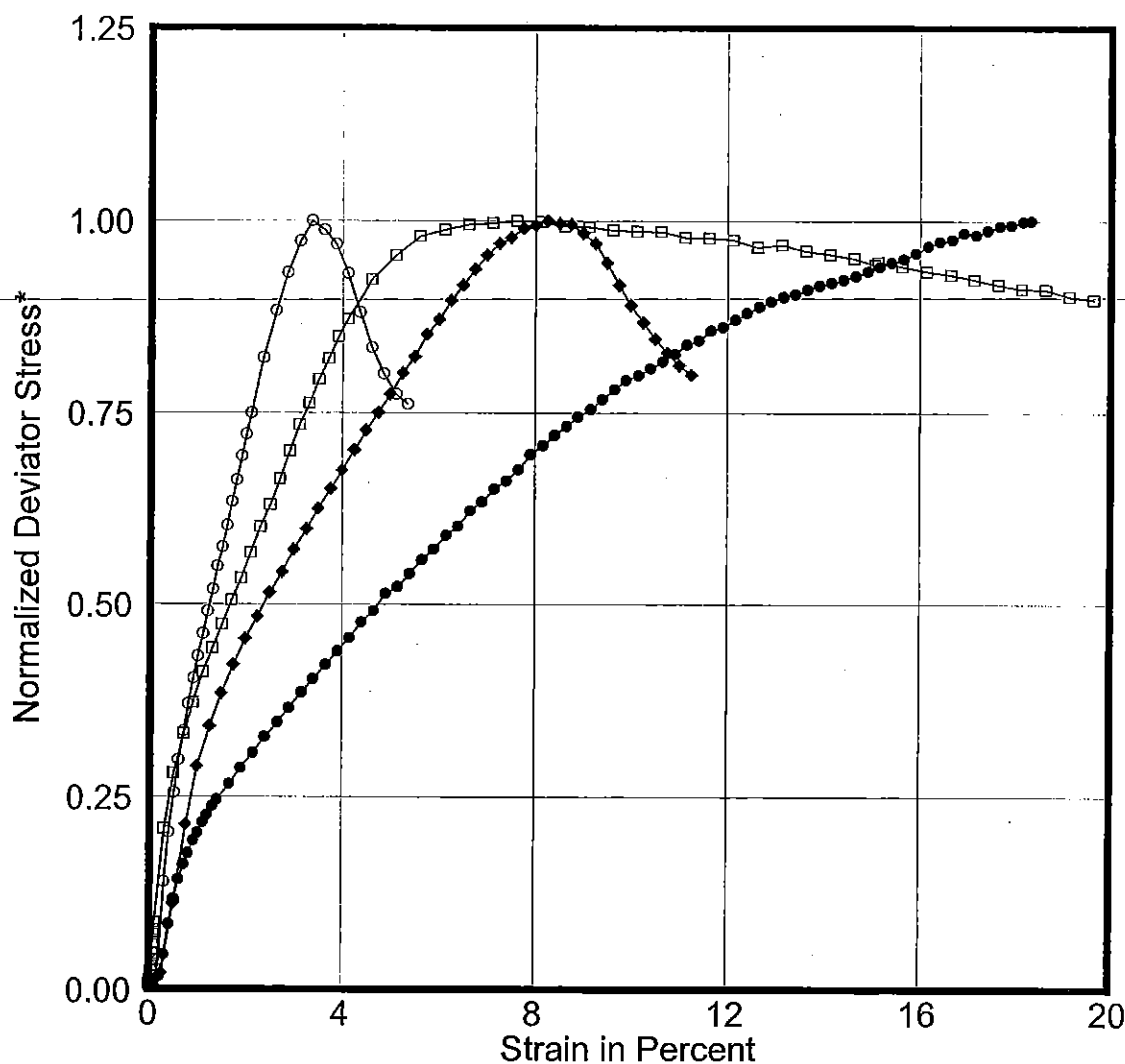
Unconsolidated-Undrained Triaxial Compression Test

Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area



Date: 8/15/08

Drawn By: T. Wong



Date: 8/15/08

Date: 8/17/08

Checked By: Hw

Approved By: PC

Curve	Sample No.	Depth [ft]	Test Type	Confining Pressure [psi]	Maximum Deviator Stress [ksf]	E50 [%]
○—○	82	217.50	UU	117.6	7.44	1.2
□—□	85	227.50	UU	120.1	4.23	1.7
◆—◆	88	237.50	UU	119.2	4.46	2.4
●—●	94	249.00	UU	120.7	7.89	4.8

* Normalized with respect to maximum deviator stress.

STRESS-STRAIN CURVES

Unconsolidated-Undrained Triaxial Compression Test

Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area



Date: 8/5/08

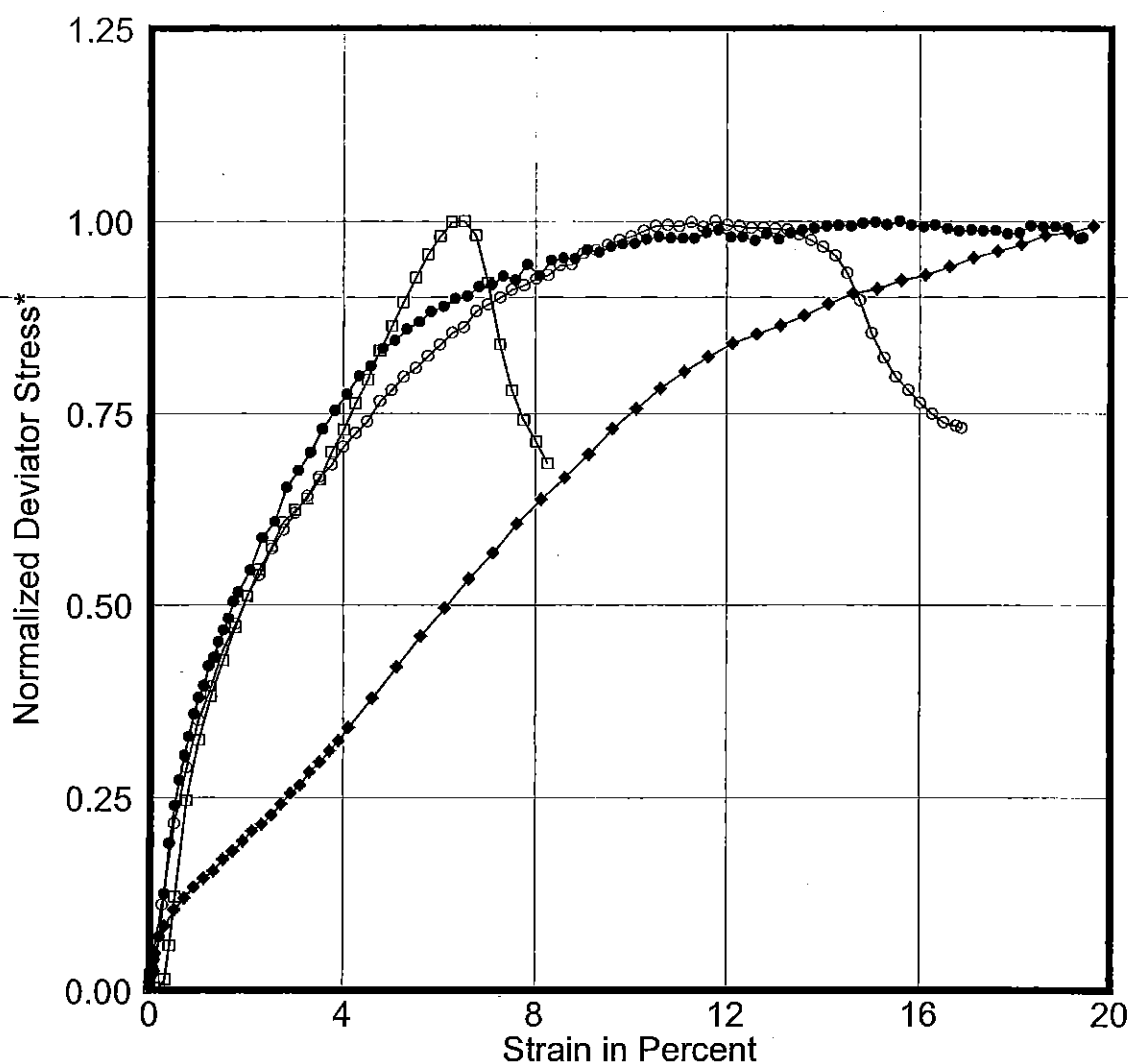
Drawn By: K. M. J.

Date: 8/5/08

Date: 8/7/08

Checked By: HFW

Approved By: [Signature]



Curve	Sample No.	Depth [ft]	Test Type	Confining Pressure [psi]	Maximum Deviator Stress [ksf]	ϵ_{50} [%]
○—○	98	267.50	UU	120.4	4.33	1.9
□—□	104	287.00	UU	119.0	6.45	1.9
◆—◆	107	297.50	UU	120.1	5.24	6.2
●—●	109	299.00	UU	120.5	3.07	1.7

* Normalized with respect to maximum deviator stress.

STRESS-STRAIN CURVES

Unconsolidated-Undrained Triaxial Compression Test

Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area



Date: 8/5/08

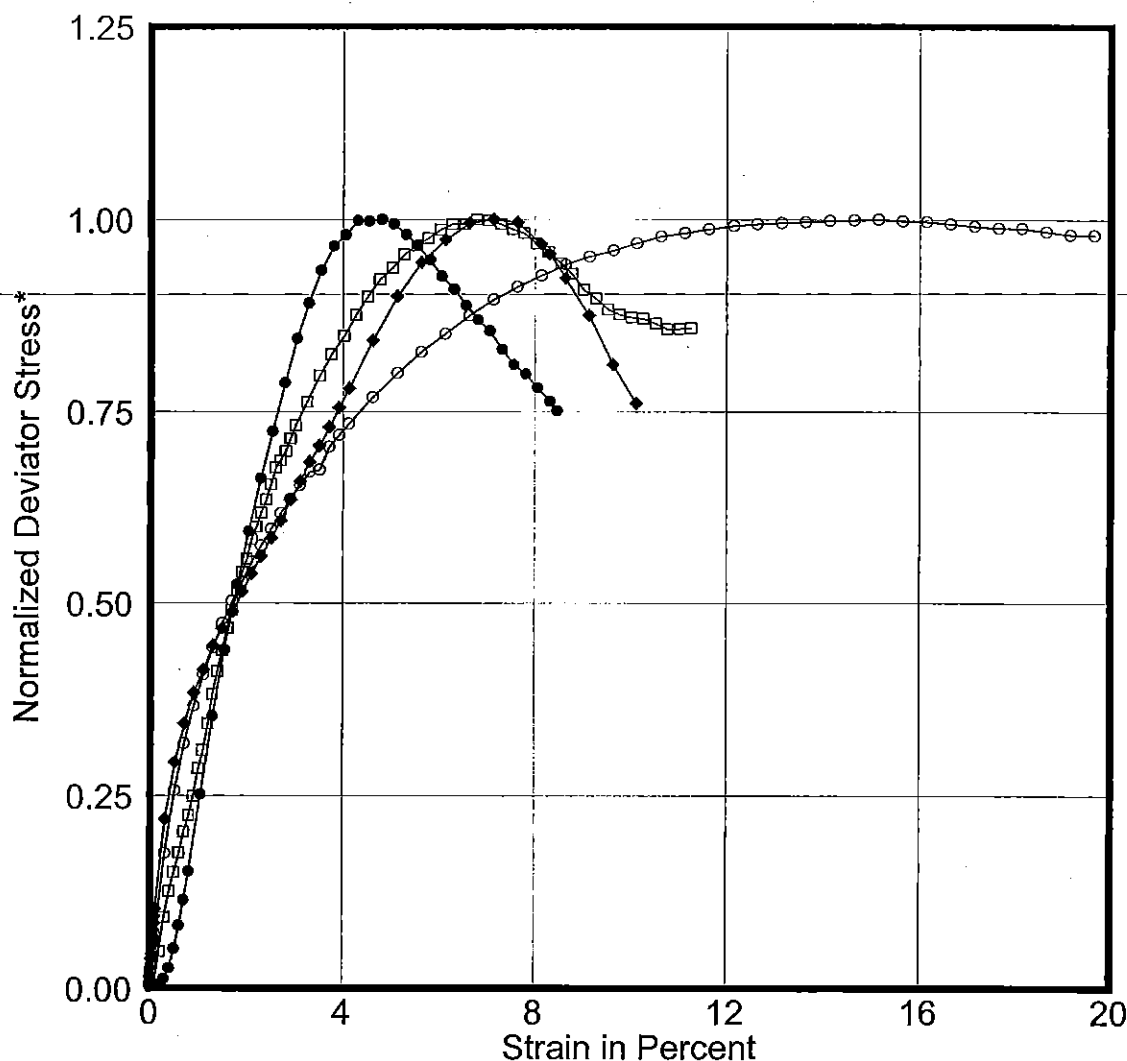
Drawn By: T. M. S. I.

Date: 8/5/08

Checked By: H. W.

Date: 8/26

Approved By: A.



Curve	Sample No.	Depth [ft]	Test Type	Confining Pressure [psi]	Maximum Deviator Stress [ksf]	ϵ_{50} [%]
○—○	113	307.50	UU	120.6	4.77	1.7
□—□	116	317.50	UU	118.3	5.33	1.7
◆—◆	119	327.50	UU	120.2	7.67	1.8
●—●	122	337.50	UU	120.2	4.48	1.7

* Normalized with respect to maximum deviator stress.

STRESS-STRAIN CURVES

Unconsolidated-Undrained Triaxial Compression Test

Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area



Date: 8/5/08

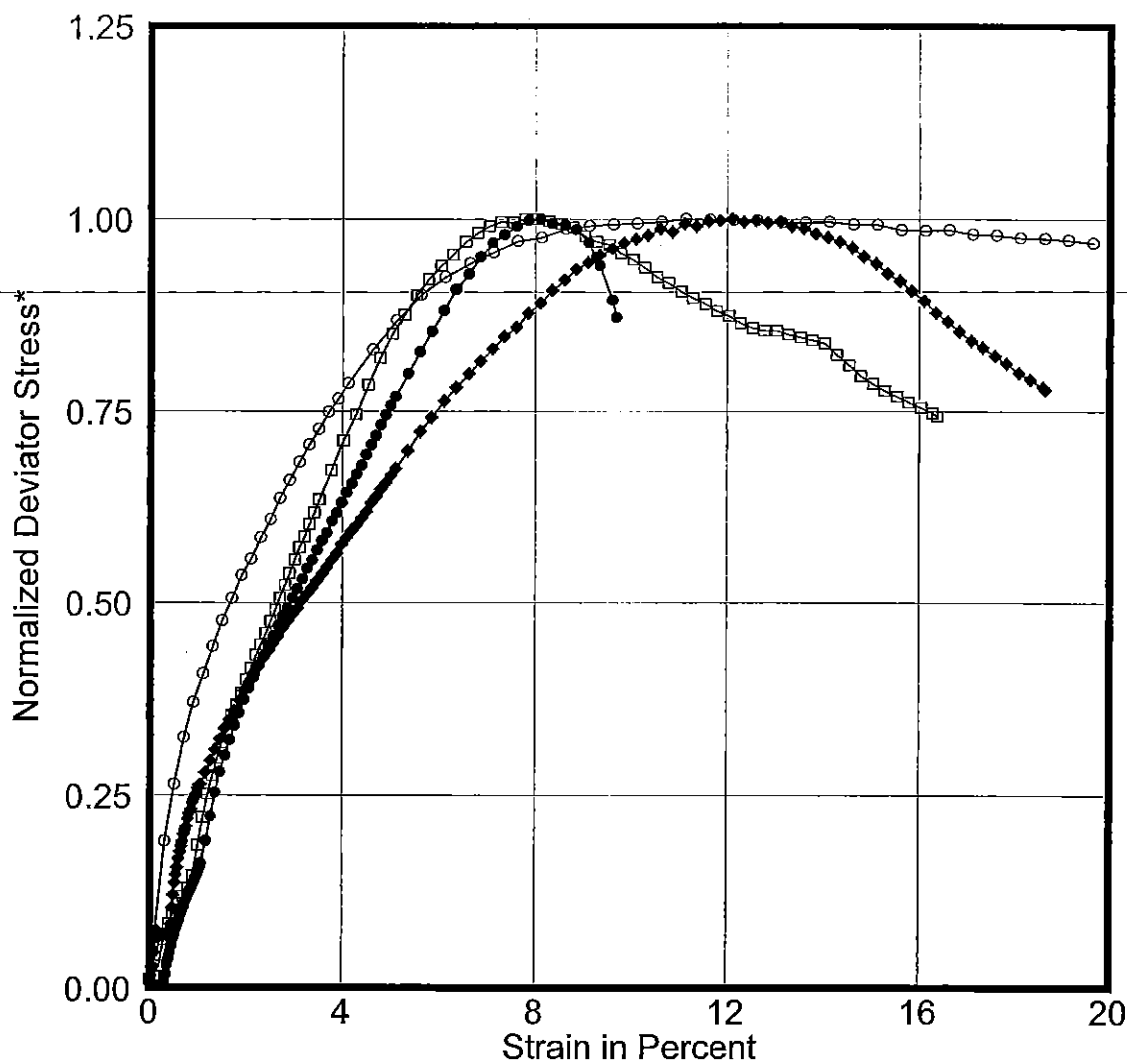
Drawn By: T-mol

Date: 8/5/08

Date: 8/7/08

Checked By: [Signature]

Approved By: [Signature]



Curve	Sample No.	Depth [ft]	Test Type	Confining Pressure [psi]	Maximum Deviator Stress [ksf]	ϵ_{50} [%]
○—○	125	347.00	UU	120.1	5.14	1.7
□—□	128	357.50	UU	120.3	6.06	2.7
◆—◆	131	367.50	UU	120.1	5.06	3.1
●—●	139	407.50	UU	120.4	8.56	2.9

* Normalized with respect to maximum deviator stress.

STRESS-STRAIN CURVES

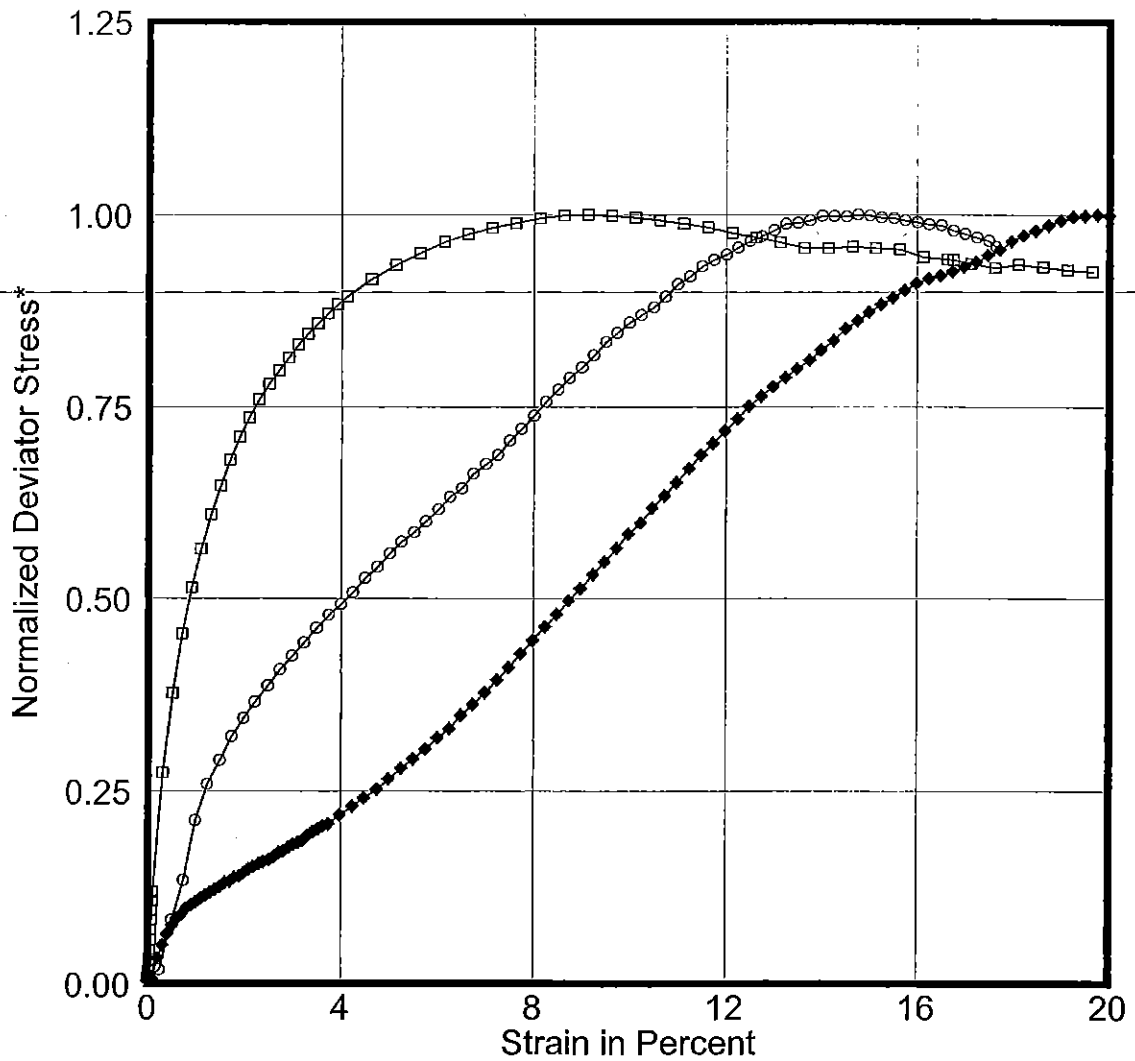
Unconsolidated-Undrained Triaxial Compression Test

Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area



Date: 8/5/08

Drawn By: T. Ornel



Curve	Sample No.	Depth [ft]	Test Type	Confining Pressure [psi]	Maximum Deviator Stress [ksf]	ϵ_{50} [%]
○—○	145	427.50	UU	119.5	6.25	4.1
□—□	148	437.50	UU	120.3	4.40	0.9
◆—◆	151	449.50	UU	119.5	5.11	8.8

* Normalized with respect to maximum deviator stress.

STRESS-STRAIN CURVES

Unconsolidated-Undrained Triaxial Compression Test

Texas Offshore Port System, Offshore Terminal Location
Block A-36, Galveston Area





Date: 7/18/08

Drawn By: T. Wang

Density	Soil Description	Soil-Pile Friction Angle, δ Degrees	Limiting Skin Friction Values kips/ft ² (kPa)	N_q	Limiting Unit End Bearing Values kips/ft ² (MPa)
Very Loose Loose Medium	Sand Sand-Silt* Silt	15	1.0 (47.8)	8	40 (1.9)
Loose Medium Dense	Sand Sand-Silt* Silt	20	1.4 (67.0)	12	60 (2.9)
Medium Dense	Sand Sand-Silt*	25	1.7 (81.3)	20	100 (4.8)
Dense Very Dense	Sand Sand-Silt*	30	2.0 (95.7)	40	200 (9.6)
Dense Very Dense	Gravel Sand	35	2.4 (114.8)	50	250 (12.0)

* Sand-Silt includes those soils with significant fractions of both sand and silt. Strength values generally increase with increasing sand fractions and decrease with increasing silt fractions.

Note: API RP 2A notes that the parameters listed above are intended as guidelines only. Where detailed information, such as in situ cone tests, strength tests on high quality samples, model tests, or pile driving performance is available, other values may be justified.

Date:

Date:

Checked By:

Approved By:

SUMMARY OF RECOMMENDED DESIGN PARAMETERS (API RP 2A, 2000) FOR COHESIONLESS SILICEOUS SOILS



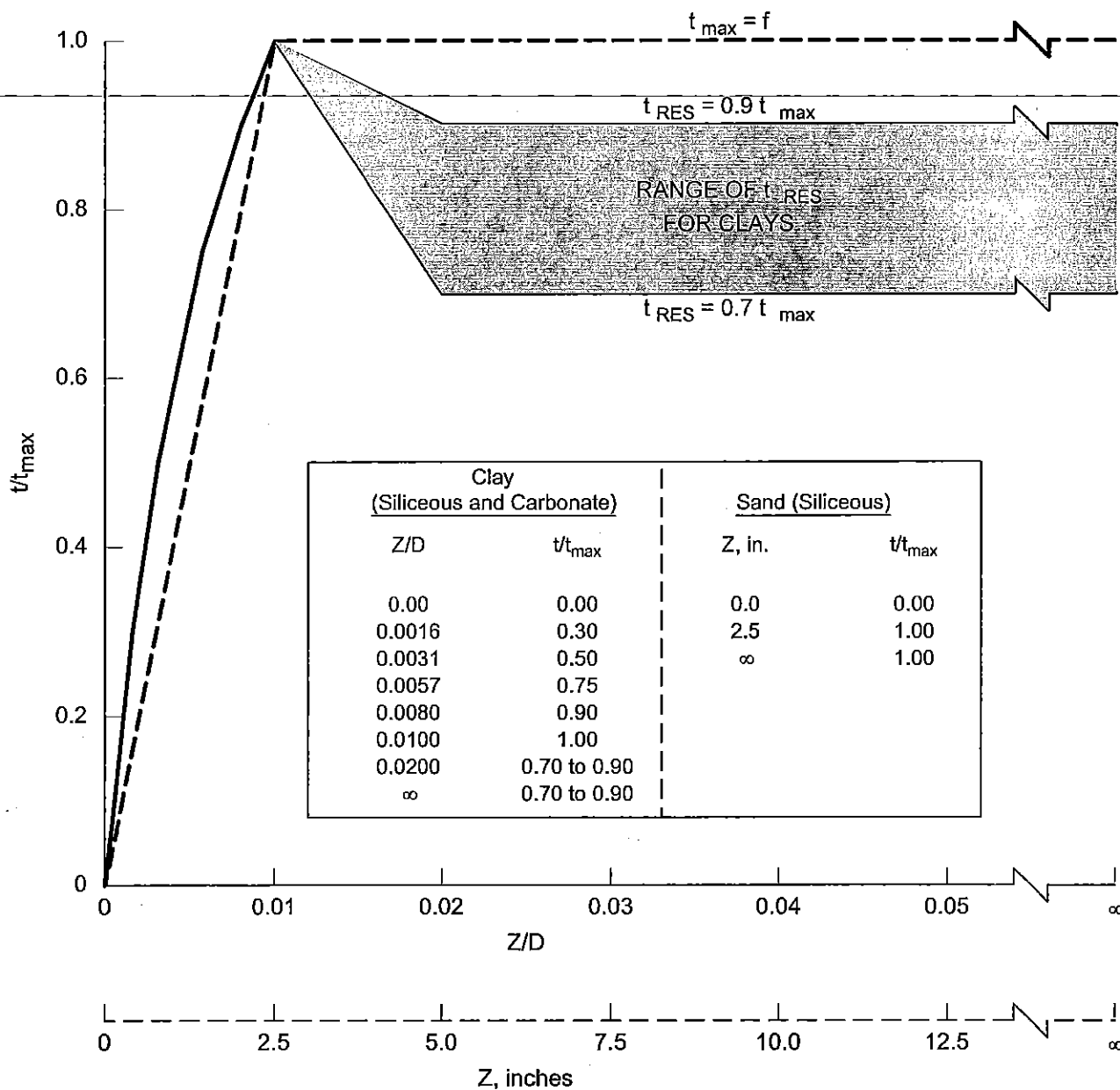
Date: 7/14/08

Drawn By: TCO

Date: 8/1/08

Checked By: [Signature]

Approved By: [Signature]

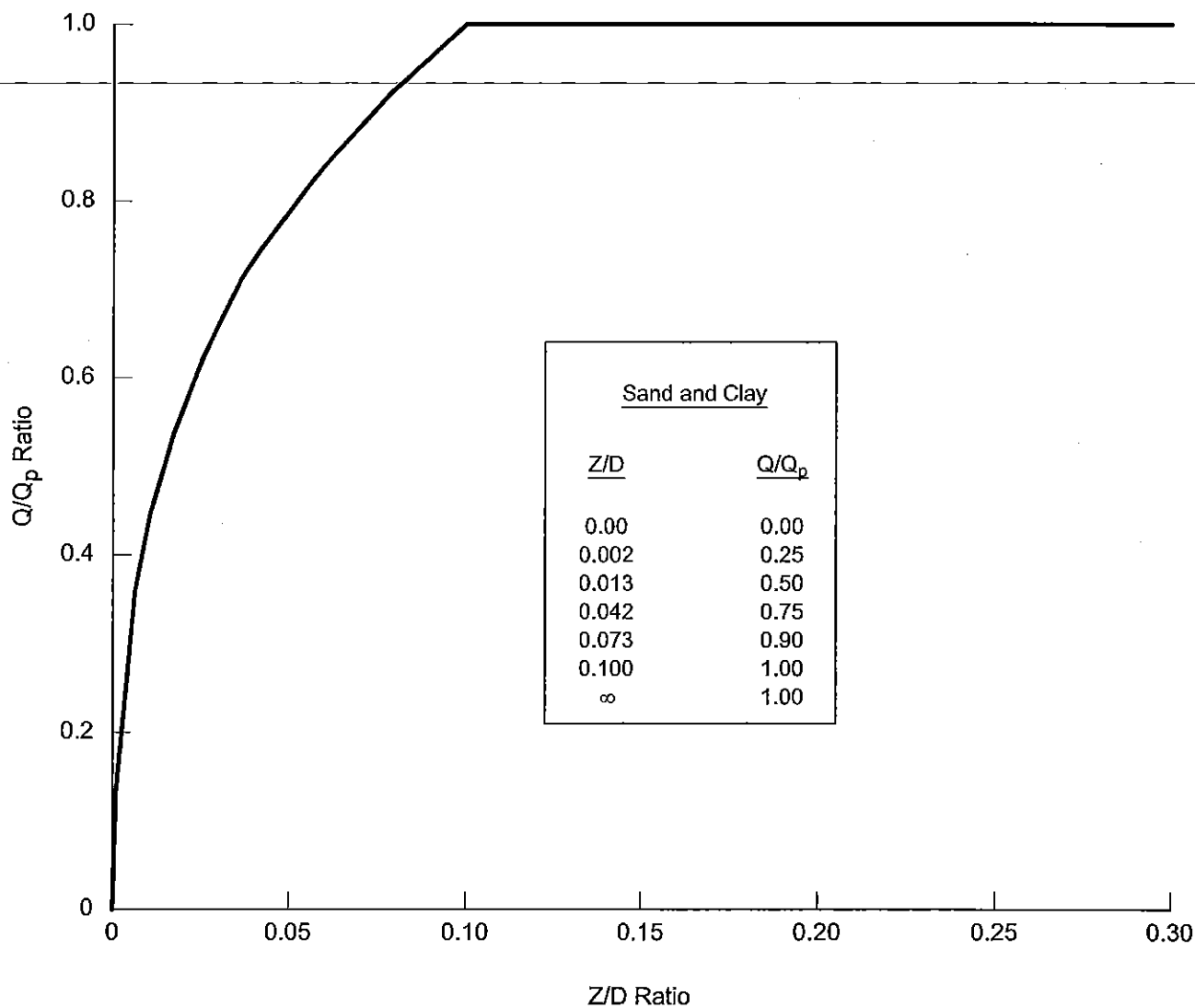


TYPICAL SIDE LOAD TRANSFER (t-z) CURVES



Date: 7/18/08

Drawn By: T. H. H. H.



TYPICAL PILE TIP LOAD TRANSFER (Q-z) CURVES



Date: 11/18/08

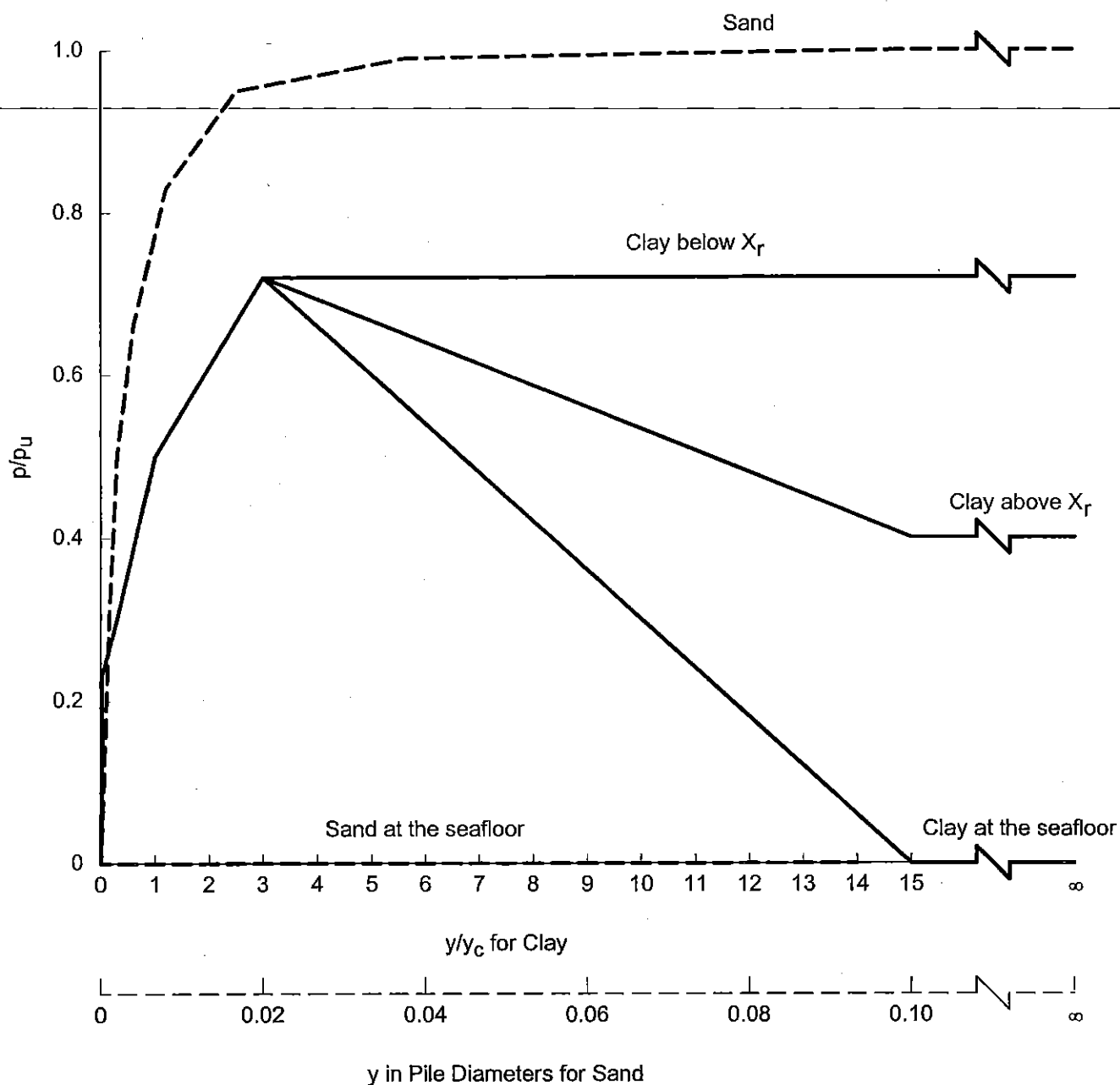
Drawn By: J. Cantrell

Date: 8/1/03

Date: 8/1/03

Checked By: J. Cantrell

Approved By: J. Cantrell



TYPICAL LATERAL LOAD - PILE DEFLECTION (p-y) CURVES



GAA36

Final Soil Boring	
X=	3,278,382.04'
Y=	268,313.78'
Lat.	28° 30' 40.767"N
Lon.	85° 00' 56.521"W

CORE

6,333.77'

6,953.78'

GRID NORTH

I HEREBY CERTIFY THAT THE ABOVE FINAL SOIL BORING POSITION IS CORRECT.

NOTES:

1) SURVEYED COORDINATES TRANSFORMED FROM NAD83 (GPS DATUM) TO NAD27 (CHART DATUM) USING NADCON VERSION 2.1.

ENTERPRISE FIELD SERVICES, LLC

**FINAL SOIL BORING
NO LEASE NUMBER (PLATFORM CENTER)
BLOCK A36
GALVESTON AREA
GULF OF MEXICO**

FUGRO CHANCE INC.

268 Dallas St., Lafayette, Louisiana 70503-3501 (337) 237-1336



GEODEIC DATUM: NAD27
PROJECTION: TEXAS SOUTH CENTRAL
GRID UNITS: US SURVEY FEET

SCALE 0 2,000'
IN FEET

Job No.: 08-01927

Date: 7/8/08

Drawn: TCG

Chart: Of: 1 1

DIGITAL COPY
ORIGINAL PLAT SIGNED 7/8/08

REG. PROFESSIONAL LAND SURVEYOR NO. 4803
STATE OF LOUISIANA

Printed: 7/8/08

Dwgfile: D:\WellPermit\TX\GA\Permit\A36_CORE_NoLease_0801927