Control Page

FO-7.5.3-04.1

STANDARD PENETRATION TEST REPORT

SOIL INVESTIGATION J. RAY McDERMOTT SECOND STAGE, ALTAMIRA PORT, MEXICO

GEOGRUPO® "Calidad Nuestro Servicio"	*J. RAY Mc DERMOTT INTERNACIONAL, INC.*		
	TITLE: STANDARD PENETRATION TEST REPORT		
REFERENCE: 1650 GMS	*PROJECT:* SOIL INVESTIGATION J. RAY McDERMOTT SECOND STAGE, ALTAMIRA PORT, MEXICO		
MADE BY: Elías Uribe Jiménez, P.E., Ms.E. Cedula: 5130070	*LOCATION:* ALTAMIRA PORT, TAMAULIPAS, MEXICO		
CHECKED BY: Pedro Ramírez Molina, P.E. Cedula: 3018470	*RECEIVED:* RAFAEL CANSECO YEBRA, P.E.		*DATE:* 8-MAY-09
APPROVED BY: Gerardo Gallo Aguilar, P.E. Cedula: 1072743	*N° OF CONTROL:* DIC-07/09	*REVISION N°:* 0	*PAGES:* 117

REVISION 02

The interpretation of the obtained results of the standard penetration test for both cohesive and granular soils is made from empiric correlations (Reference 3 y 4) shown below that provide an approximate value of the shear strength or relative compactness, depending on the number of blows.

Table 2. Correlation: Shear Strength in Clay

Consistency			Very Soft	Soft	Medium	Stiff	Very Stiff	Hard
	Symbol	Unit						
SPT	N_{SPT}	--	0-2	2-4	4-8	8-16	16-32	>32
UCS*	q_u	pcf	0-500	500-1000	1000-2000	2000-4000	4000-8000	>8000
Shear Strength	C_u	psf	0-250	250-500	500-1000	1000-2000	2000-4000	>4000
Unit Weight Saturated	γ	pcf	<100	100-120	100-130	120-130	120-140	>130

** UCS – Unconfined Compressive Strength*

Table 3. Correlation: Relative Density of Sand

Compactness			Very Loose	Loose	Medium	Dense	Very Dense
	Symbol	Unit					
SPT*	N_{SPT}	--	0-4	4-10	10-30	30-50	>50
Relative Density	Dr	%	0-15	15-35	35-65	65-85	85-100
Friction	ϕ	Deg	<28	28-30	30-36	36-41	>42
Unit Weight							
Moist	γ	pcf	<100	95-125	110-130	110-140	>130
Submerged	γ	pcf	<60	55-65	60-70	65-85	>75

** SPT – Standard Penetration Test*

Table 4. Correlation: Estimating soil modulus from N

Soil type	E (ksf)
Silts, sandy silts, sligtly cohesive mixtures	$8N_1$
Clean fine to medium sands and slightly silty sands	$14N_1$
Coarse sands and sands with little gravel	$20N_1$
Sandy gravel and gravels	$24N_1$

N_1: Standard penetration resistance corrected for effects of overburden pressure (blows/ft)

ANNEX I
FIGURE REPORT

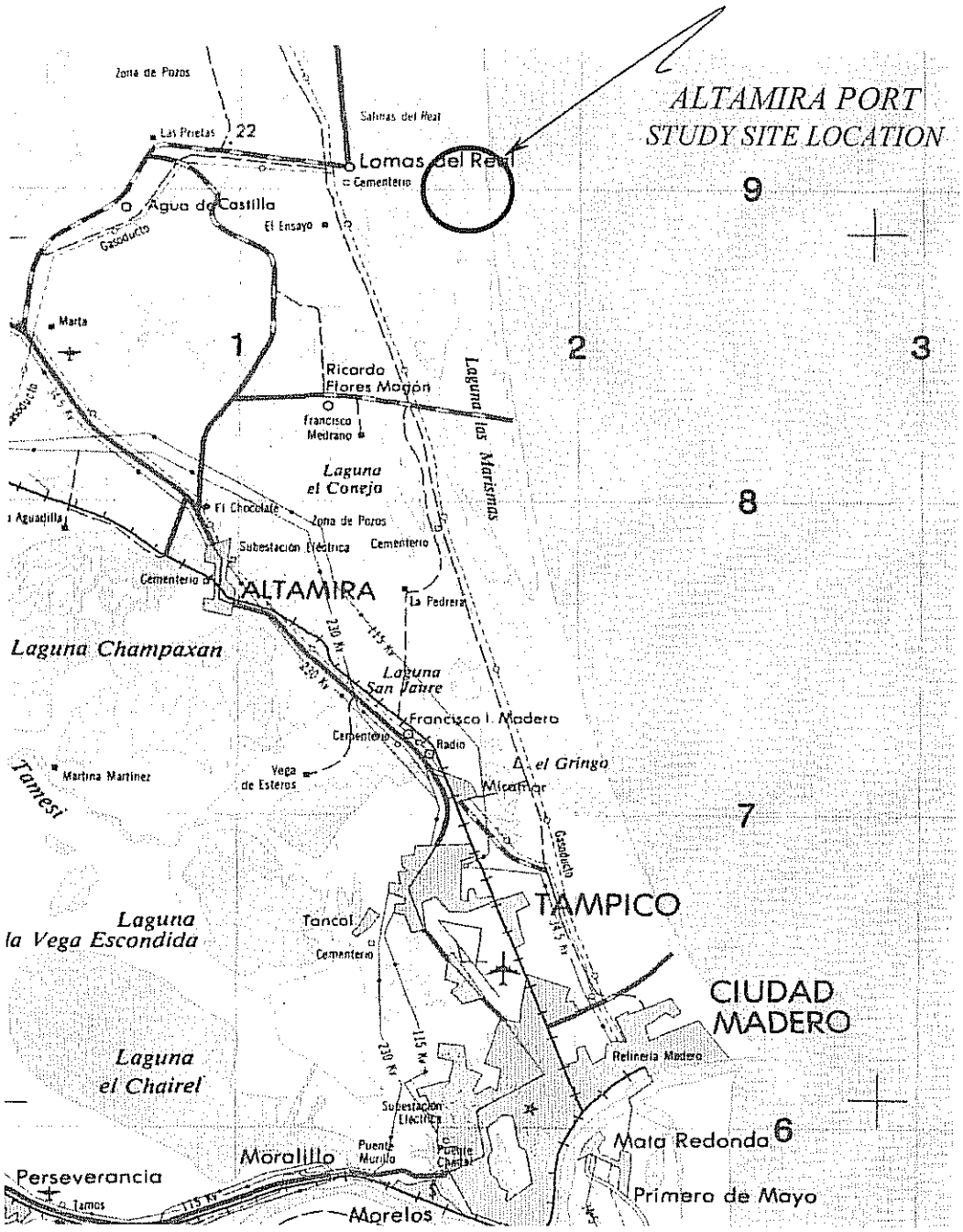


Figure 1. *Study site location*

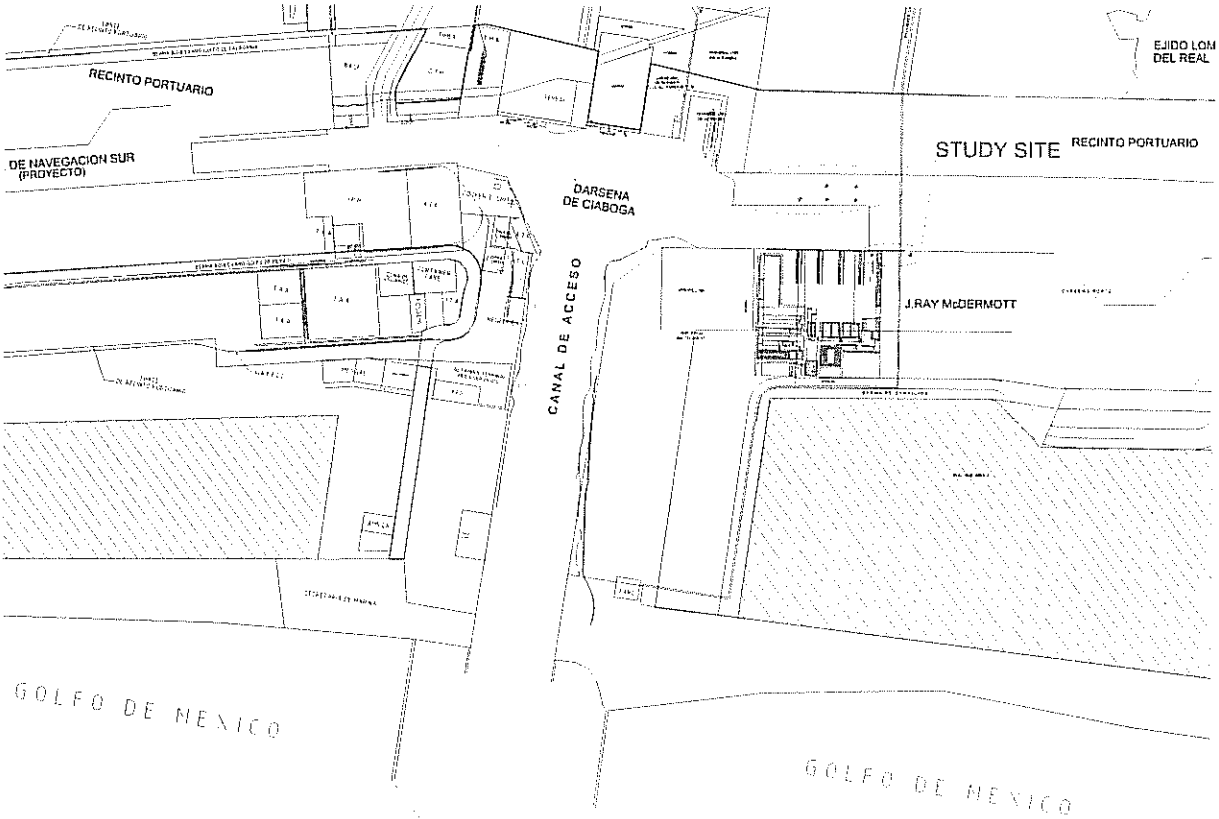


Figure 2. *Location of the study site inside of the Industrial Altamira Port*

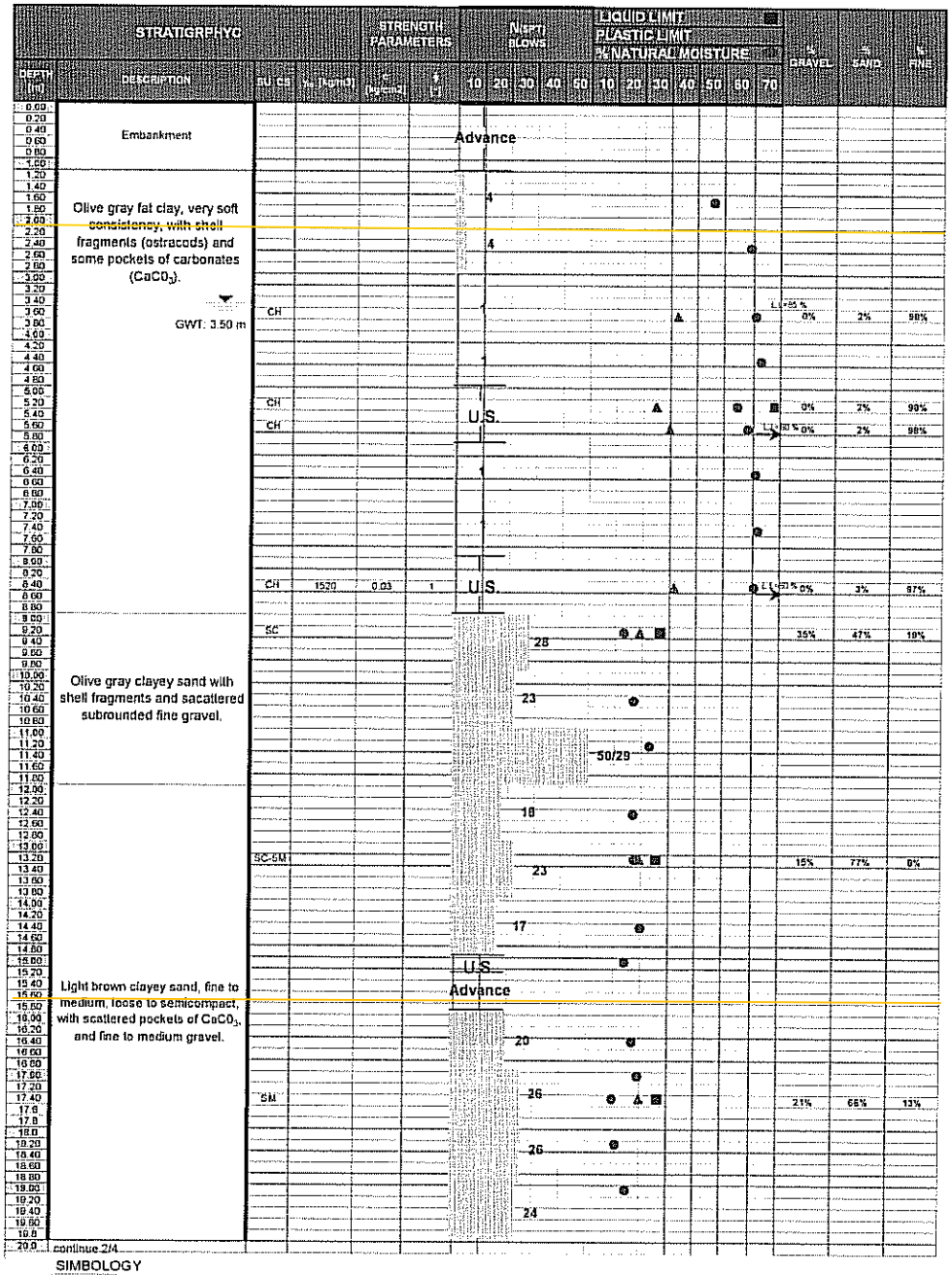
Figure 3. *Location of field works (SPT boreholes-U.D. sampling)*

BORING LOG PROFILE

PROJECT: PATIO DE FABRICACIÓN DE PLATAFORMAS MARINAS
Co. J. RAY Mc DERMOTT, INC
AT'N: RAFAEL CANSECO

BOREHOLE SPT-1
PROYECT DEPTH: 62.35 m

LOCATION: SEE LAYOUT
B.H. LEVEL: G.L.
PAGE: 1/4



SIMBOLOGY

G.W.T.	Ground water table
D.S.	Disturbed sample
U.S.	Undisturbed sample
cp	Cohesion determined by pocket penetrometer
qu	Unconfined compression strength
cuu	Cohesion determined by unconsolidated undrained triaxial compression (uu)
ϕuu	Friction angle in triaxial uu
VRS	California Bearing Ratio
Exp VRS	Expanssion determined in CBR

Figure 4. Boring log profile SPT-1 (continue)

BORING LOG PROFILE

PROJECT: PATIO DE FABRICACIÓN DE PLATAFORMAS MARINAS
Co. J. RAY Mc DERMOTT, INC
ATN: RAFAEL CANSECO

BOREHOLE SPT-1
PROYECT DEPTH: 62.35 m

LOCATION: SEE LAYOUT
B.H. LEVEL: G.L.
PAGE: 2/4

DEPTH (m)	DESCRIPTION	STRATIGRAPHYC	Su cu	γ (kg/m3)	STRENGTH PARAMETERS c (kg/cm2)	φ (°)	N° BLOWS 10 20 30 40 50	LIQUID LIMIT PLASTIC LIMIT % NATURAL MOISTURE 10 20 30 40 50 60 70	% GRAVEL	% SAND	% FINE
20.00	Light brown sand, fine to medium, semicompact, with shell fragments and sacattered subrounded fine gravel.						25				
20.20											
20.40											
20.60											
20.80											
21.00							24				
21.20											
21.40											
21.60											
21.80											
22.00							26				
22.20											
22.40											
22.60											
22.80											
23.00	Greenish light brown clay, very rigid, with pockets of $CaCO_3$.	CH					30		0%	3%	97%
23.20											
23.40											
23.60											
23.80											
24.00		CH					U.S.		0%	3%	97%
24.20											
24.40							Advance				
24.60											
24.80											
25.00							25				
25.20											
25.40											
25.60											
25.80											
26.00							25				
26.20											
26.40											
26.60											
26.80											
27.00							22				
27.20											
27.40											
27.60											
27.80											
28.00							34				
28.20											
28.40											
28.60											
28.80											
29.00							35				
29.20											
29.40											
29.60											
29.80											
30.00	Olive gray clay, very rigid to hard, with scattered fine gravels and pockets of CaC03.	CH					34		0%	1%	99%
30.20											
30.40											
30.60											
30.80											
31.00							39				
31.20											
31.40											
31.60											
31.80											
32.00							41				
32.20											
32.40											
32.60											
32.80											
33.00							37				
33.20											
33.40											
33.60											
33.80											
34.00											
34.20											
34.40											
34.60		CH					39		0%	3%	97%
34.80											
35.00											
35.20											
35.40							36				
35.60											
35.80											
36.00											
36.20											
36.40							36				
36.60											
36.80											
37.00											
37.20											
37.40							33				
37.60											
37.80											
38.00											
38.20											
38.40							38				
38.60											
38.80											
39.00											
39.20											
39.40							40				
39.60											
39.80											
40.00	continue 3/4										

SIMBOLOGY

G.W.T.	Ground water table
D.S.	Disturbed sample
U.S.	Undisturbed sample
cp	Cohesion determined by pocket penetrometer
qu	Unconfined compression strength
cuu	Cohesion determined by unconsolidated undrained triaxial compression (uu)
φuu	Friction angle in triaxial uu
VRS	California Bearing Ratio
Exp VRS	Expanssion determined in CBR

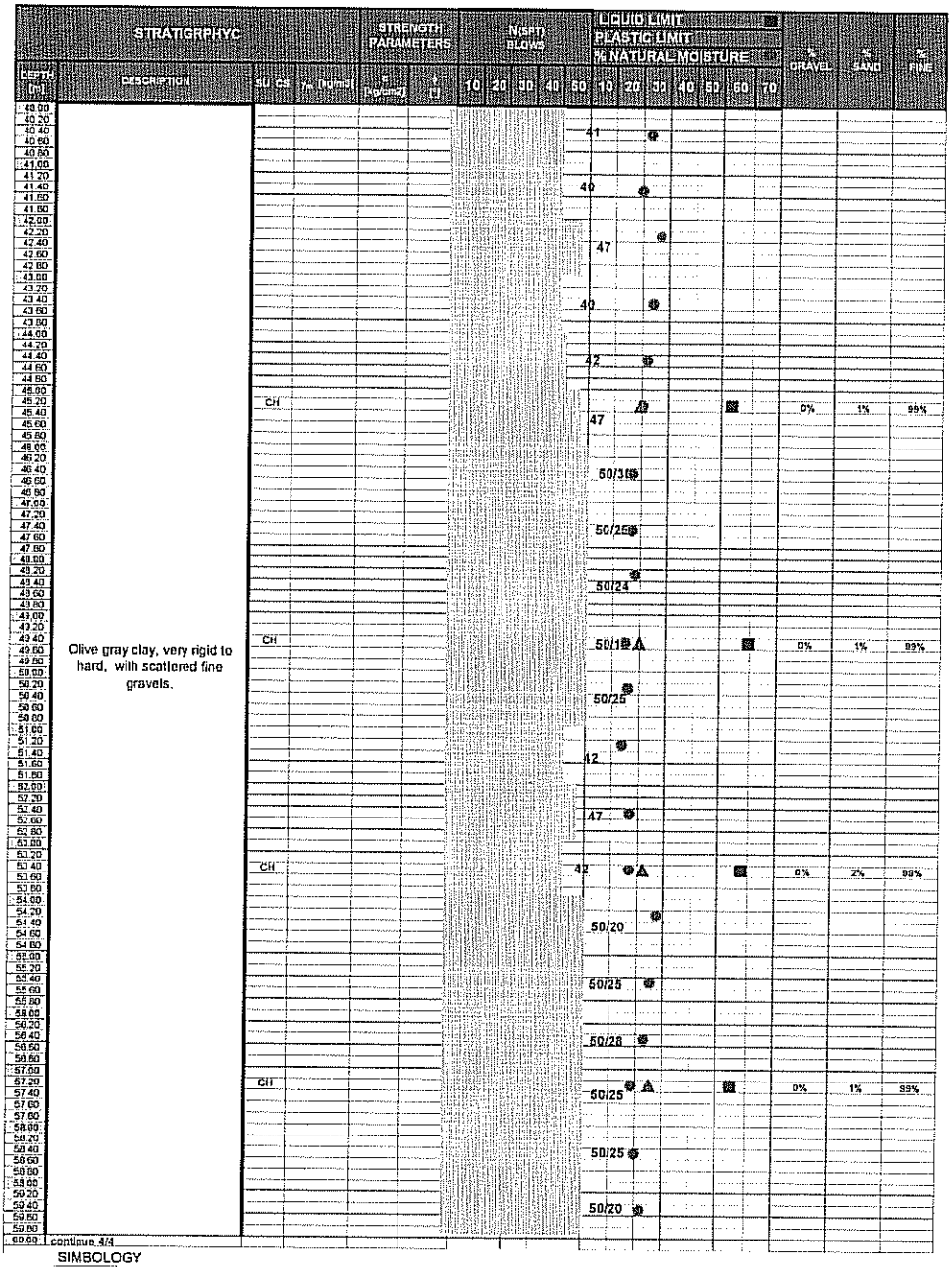
Figure 4. Boring log profile SPT-1 (continue)

BORING LOG PROFILE

PROJECT: PATIO DE FABRICACIÓN DE PLATAFORMAS MARINAS
Co. J. RAY Mc DERMOTT, INC
ATN: RAFAEL CANSECO

BOREHOLE SPT-1
PROYECT DEPTH: 62.35 m

LOCATION: SEE LAYOUT
B.H. LEVEL: G.L.
PAGE: 3/4



SIMBOLOGY

G.W.T.	Ground water table
D.S.	Disturbed sample
U.S.	Undisturbed sample
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qu	Unconfined compression strength
cuu	Cohesion determined by unconsolidated undrained triaxial compression (uu)
φuu	Friction angle in triaxial uu
VRS	California Bearing Ratio
Exp VRS	Expanssion determined in CBR

Figure 4. *Boring log profile SPT-1 (continue)*

BORING LOG PROFILE

PROJECT: PATIO DE FABRICACIÓN DE PLATAFORMAS MARINAS
Co. J. RAY Mc DERMOTT, INC
AT'N: RAFAEL CANSECO

BOREHOLE SPT-1
PROYECT DEPTH: 62.35 m

LOCATION: SEE LAYOUT
B.H. LEVEL: G.L.
PAGE: 4/4

DEPTH (m)	DESCRIPTION	SU CS	qu (kg/cm2)	C (kg/cm2)	ϕ (°)	NIGHT BLOWS 10 20 30 40 50	LIQUID LIMIT / PLASTIC LIMIT / % NATURAL MOISTURE 10 20 30 40 50 60 70	% GRAVEL	% SAND	% FINE
60.00										
60.20										
60.40										
60.60										
60.80										
61.00	Olive gray clay, very rigid to hard, with scattered fine gravels.	CH					50/25	0%	3%	97%
61.20										
61.40										
61.60										
61.80										
62.00							50/25			
62.20										
62.40										
62.60										
62.80	END OF BOREHOLE									
63.00										
63.20										
63.40										
63.60										
63.80										
64.00										
64.20										
64.40										
64.60										
64.80										
65.00										

SIMBOLOGY

G.W.T.	Ground water table
D.S.	Disturbed sample
U.S.	Undisturbed sample
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qu	Unconfined compression strength
CUU	Cohesion determined by unconsolidated undrained triaxial compression (uu)
ϕuu	Friction angle in triaxial uu
VRS	California Bearing Ratio
Exp VRS	Expanssion determined in CBR

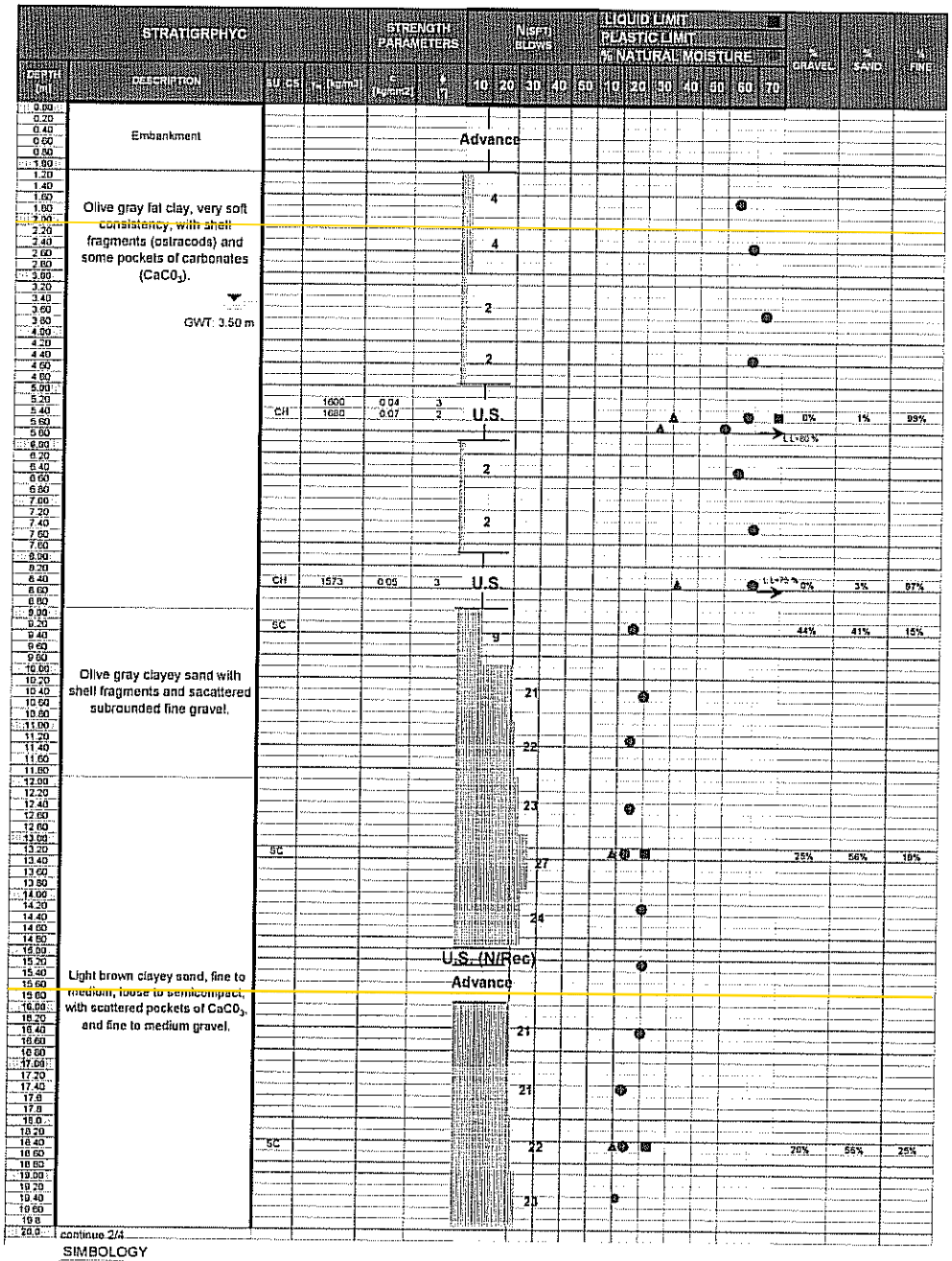
Figure 4. *Boring log profile SPT-1 (continuation)*

BORING LOG PROFILE

PROJECT: PATIO DE FABRICACIÓN DE PLATAFORMAS MARINAS
Co. J. RAY Mc DERMOTT, INC
AT'N: RAFAEL CANSECO

BOREHOLE SPT-2
PROYECT DEPTH: 62.40 m

LOCATION: SEE LAYOUT
B.H. LEVEL: G.L.
PAGE: 1/4



SIMBOLOGY

G.W.T.	Ground water table
D.S.	Disturbed sample
U.S.	Undisturbed sample
cp	Cohesion determined by pocket penetrometer
qu	Unconfined compression strength
cuu	Cohesion determined by unconsolidated undrained triaxial compression (uu)
ϕuu	Friction angle in triaxial uu
VRS	California Bearing Ratio
Exp VRS	Expansion determined in CBR

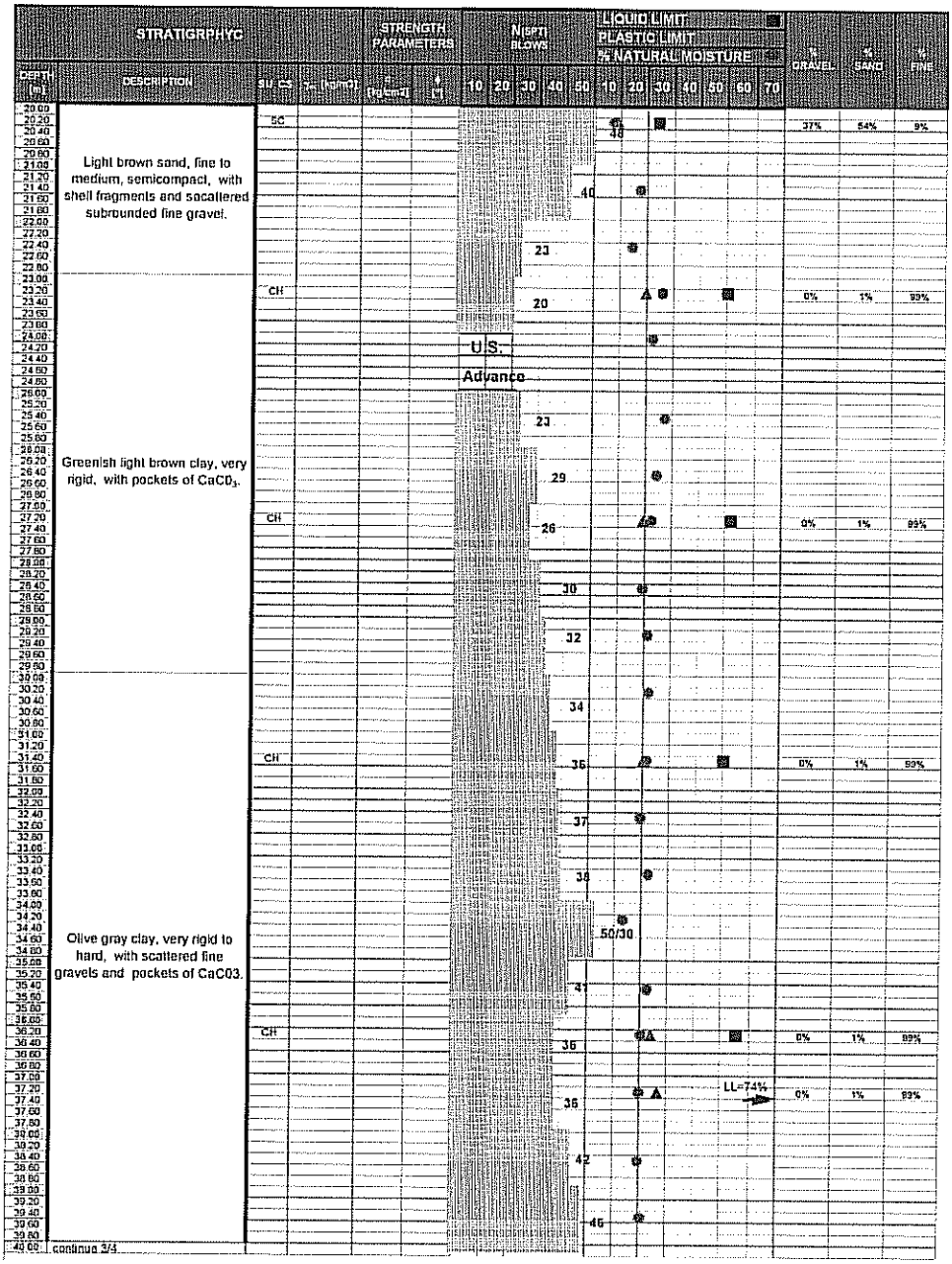
Figure 5. Boring log profile SPT-2 (continue)

BORING LOG PROFILE

PROJECT: PATIO DE FABRICACIÓN DE PLATAFORMAS MARINAS
Co. J. RAY Mc DERMOTT, INC
AT'N: RAFAEL CANSECO

BOREHOLE SPT-2
PROYECT DEPTH: 62.40 m

LOCATION: SEE LAYOUT
B.H. LEVEL: G.L.
PAGE: 2/4



SIMBOLOGY

G.W.T.	Ground water table
D.S.	Disturbed sample
U.S.	Undisturbed sample
cp	Cohesion determined by pocket penetrometer
qu	Unconfined compression strength
cuu	Cohesion determined by unconsolidated undrained triaxial compression (uu)
φuu	Friction angle in triaxial uu
VRS	California Bearing Ratio
Exp VRS	Expanssion determined in CBR

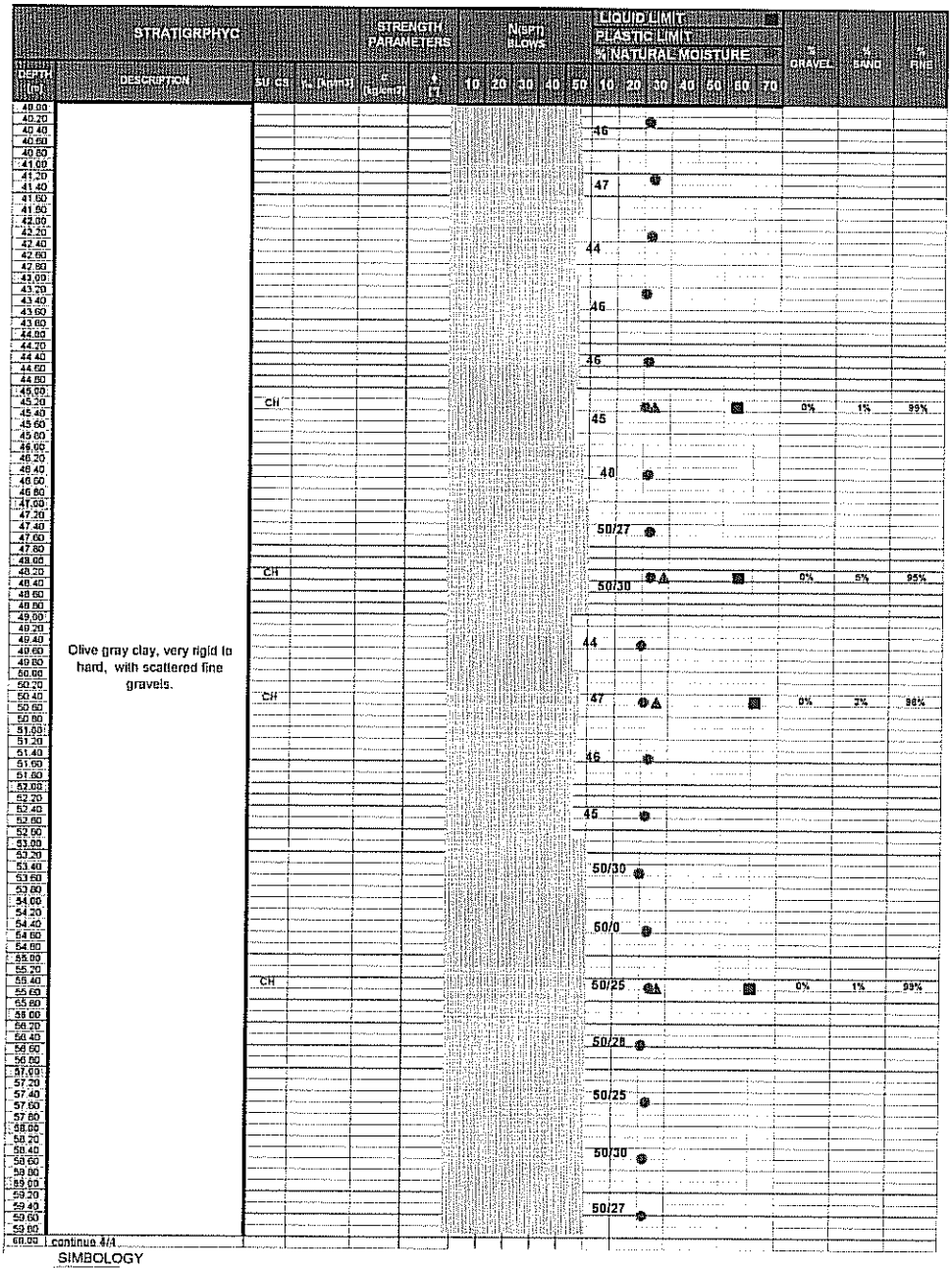
Figure 5. *Boring log profile SPT-2 (continue)*

BORING LOG PROFILE

PROJECT: PATIO DE FABRICACIÓN DE PLATAFORMAS MARINAS
Co. J. RAY Mc DERMOTT, INC
AT'N: RAFAEL CANSECO

BOREHOLE SPT-2
PROYECT DEPTH: 62.40 m

LOCATION: SEE LAYOUT
B.H. LEVEL: G.L.
PAGE: 3/4



SIMBOLOGY

G.W.T.	Ground water lable
D.S.	Disturbed sample
U.S.	Undisturbed sample
cp	Cohesion determined by pocket penetrometer
qu	Unconfined compression strength
cuu	Cohesion determined by unconsolidated undrained triaxial compression (uu)
ϕuu	Friction angle in triaxial uu
VRS	California Bearing Ratio
Exp VRS	Expanssion determined in CBR

Figure 5. *Boring log profile SPT-2 (continue)*

BORING LOG PROFILE

PROJECT: PATIO DE FABRICACIÓN DE PLATAFORMAS MARINAS
Co. J. RAY Mc DERMOTT, INC
AT'N: RAFAEL CANSECO

BOREHOLE SPT-2
PROYECT DEPTH: 62.40 m

LOCATION: SEE LAYOUT
B.H. LEVEL: G.L.
PAGE: 4/4

DEPTH (m)	DESCRIPTION	SUCS	γ_m (kg/m³)	C (kg/cm²)	φ (°)	N SPT BLOWS 10 20 30 40 50	LIQUID LIMIT / PLASTIC LIMIT / % NATURAL MOISTURE 10 20 30 40 50 60 70	% GRAVEL	% SAND	% FINE
60.00	Olive gray clay, very rigid to hard, with scattered fine gravels.						50/22			
60.20										
60.40										
60.60										
60.80							50/28			
61.00										
61.20										
61.40										
61.60										
61.80							50/25			
62.00										
62.20										
62.40										
62.60										
62.80	END OF BOREHOLE									
63.00										
63.20										
63.40										
63.60										
63.80										
64.00										
64.20										
64.40										
64.60										
64.80										
65.00										

SIMBOLOGY

G.W.T.	Ground water table
D.S.	Disturbed sample
U.S.	Undisturbed sample
cp	Cohesion determined by pocket penetrometer
qu	Unconfined compression strength
cuu	Cohesion determined by unconsolidated undrained triaxial compression (uu)
ϕuu	Friction angle in triaxial uu
VRS	California Bearing Ratio
Exp VRS	Expanssion determined in CBR

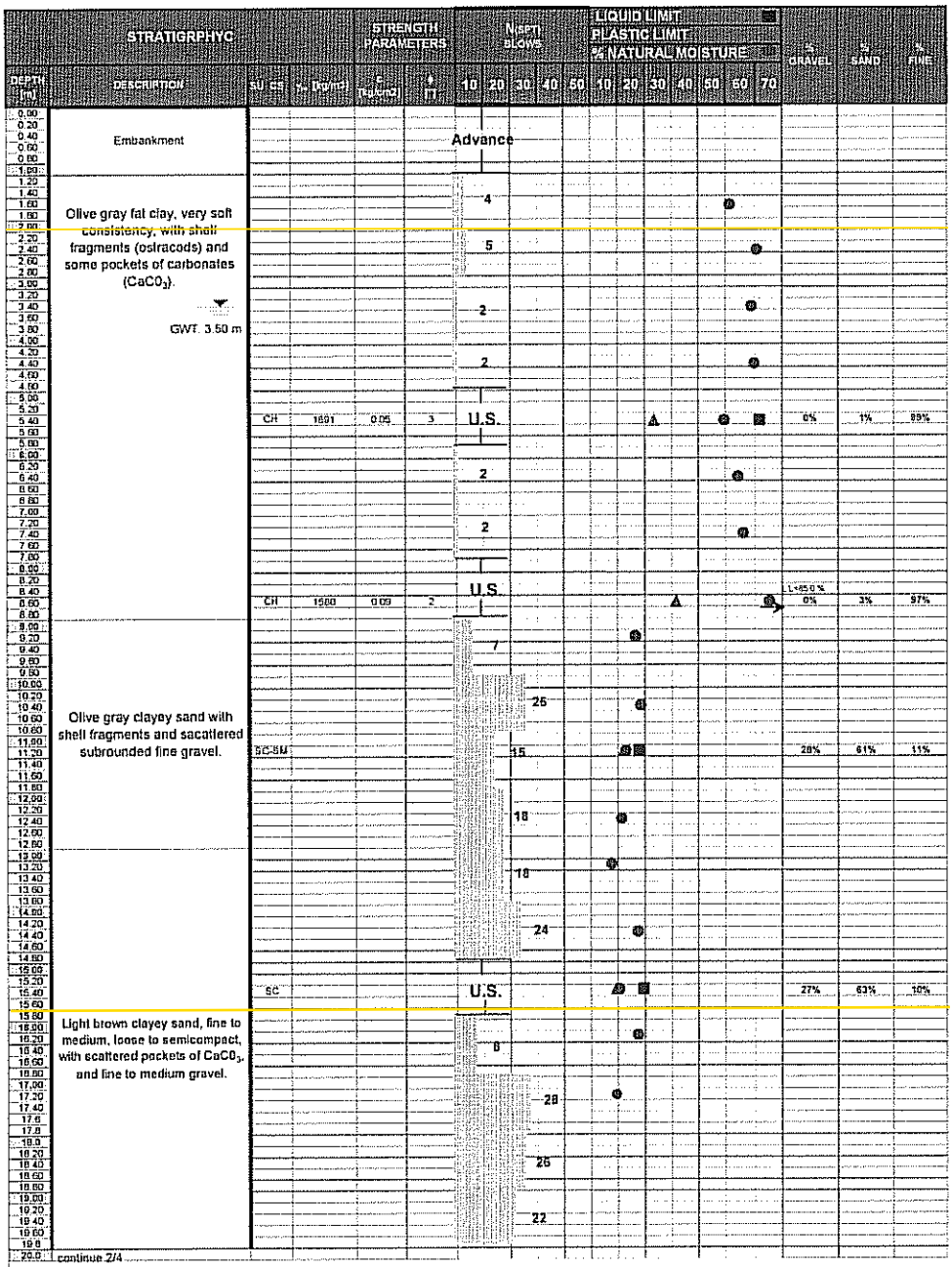
Figure 5. *Boring log profile SPT-2 (continuation)*

BORING LOG PROFILE

PROJECT: PATIO DE FABRICACIÓN DE PLATAFORMAS MARINAS
Co. J. RAY Mc DERMOTT, INC
AT'N: RAFAEL CANSECO

BOREHOLE SPT-3
PROYECT DEPTH: 62.60 m

LOCATION: SEE LAYOUT
B.H. LEVEL: G.L.
PAGE: 1/4



SIMBOLOGY

G.W.T.	Ground water table
D.S.	Disturbed sample
U.S.	Undisturbed sample
cp	Cohesion determined by pocket penetrometer
qu	Unconfined compression strength
cuu	Cohesion determined by unconsolidated undrained triaxial compression (uu)
ϕuu	Friction angle in triaxial uu
VRS	California Bearing Ratio
Exp VRS	Expanssion determined in CBR

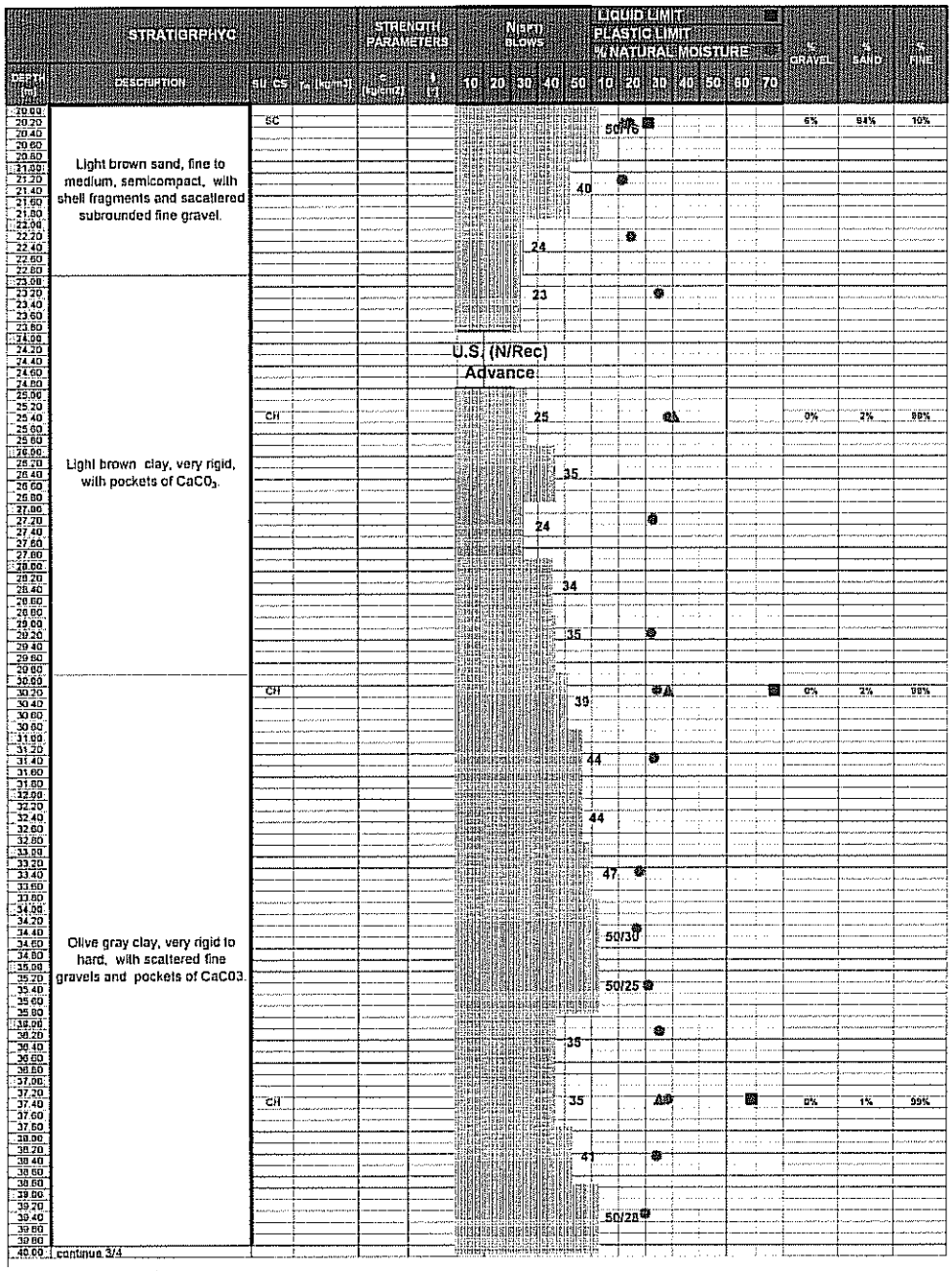
Figure 6. *Boring log profile SPT-3 (continue)*

BORING LOG PROFILE

PROJECT: PATIO DE FABRICACIÓN DE PLATAFORMAS MARINAS
Co. J. RAY Mc DERMOTT, INC
ATN: RAFAEL CANSECO

BOREHOLE SPT-3
PROYECT DEPTH: 62.60 m

LOCATION: SEE LAYOUT
B.H. LEVEL: G.L.
PAGE: 2/4



SIMBOLOGY

G.W.T.	Ground water table
D.S.	Disturbed sample
U.S.	Undisturbed sample
cp	Cohesion determined by pocket penetrometer
qu	Unconfined compression strength
cuu	Cohesion determined by unconsolidated undrained triaxial compression (uu)
ϕuu	Friction angle in triaxial uu
VRS	California Bearing Ratio
Exp VRS	Expanssion determined in CBR

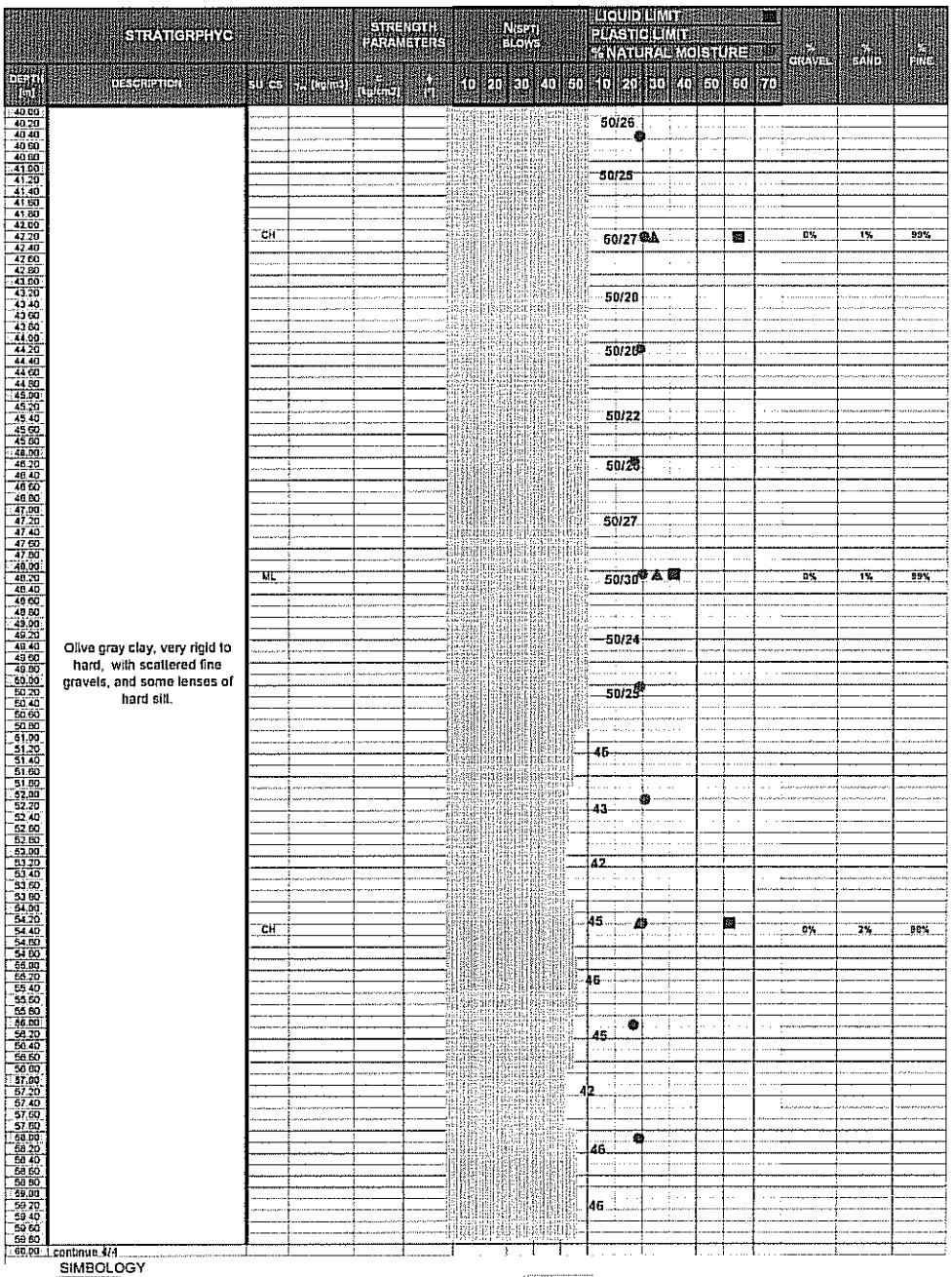
Figure 6. *Boring log profile SPT-3 (continue)*

BORING LOG PROFILE

PROJECT: PATIO DE FABRICACIÓN DE PLATAFORMAS MARINAS
Co. J. RAY Mc DERMOTT, INC
ATN: RAFAEL CANSECO

BOREHOLE SPT-3
PROYECT DEPTH: 62.60 m

LOCATION: SEE LAYOUT
B.H. LEVEL: G.L.
PAGE: 3/4



SIMBOLOGY

G.W.T.	Ground water table
D.S.	Disturbed sample
U.S.	Undisturbed sample
cp	Cohesion determined by pocket penetrometer
qu	Unconfined compression strength
cuu	Cohesion determined by unconsolidated undrained triaxial compression (uu)
ϕuu	Friction angle in triaxial uu
VRS	California Bearing Ratio
Exp VRS	Expanssion determined in CBR

Figure 6. *Boring log profile SPT-3 (continue)*

BORING LOG PROFILE

PROJECT: PATIO DE FABRICACIÓN DE PLATAFORMAS MARINAS — BOREHOLE SPT-3 — LOCATION: SEE LAYOUT
Co. J. RAY Mc DERMOTT, INC — B.H. LEVEL: G.L.
ATN: RAFAEL CANSECO — PROYECT DEPTH: 62.60 m — PAGE: 4/4

DEPTH (m)	DESCRIPTION	SU. CS	γ (kg/m3)	STRENGTH PARAMETERS C (kg/cm2)	STRENGTH PARAMETERS ϕ	N° BLOWS 10 20 30 40 50	LIQUID LIMIT / PLASTIC LIMIT / % NATURAL MOISTURE 10 20 30 40 50 60 70	% GRAVEL	% SAND	% FINE
60.00	Olive gray clay, very rigid to hard, with scattered fine gravels.	CH					48 ● ▲ → LL=68.5 %	0%	0%	100%
60.20										
60.40										
60.60										
60.80										
61.00							47 ●			
61.20										
61.40										
61.60										
61.80										
62.00							46 ●			
62.20										
62.40										
62.60										
62.80	END OF BOREHOLE									
63.00										
63.20										
63.40										
63.60										
63.80										
64.00										
64.20										
64.40										
64.60										
64.80										
65.00										

SIMBOLOGY

G.W.T.	Ground water table
D.S.	Disturbed sample
U.S.	Undisturbed sample
cp	Cohesion determined by pocket penetrometer
qu	Unconfined compression strength
cuu	Cohesion determined by unconsolidated undrained triaxial compression (uu)
ϕuu	Friction angle in triaxial uu
VRS	California Bearing Ratio
Exp VRS	Expanssion determined in CBR

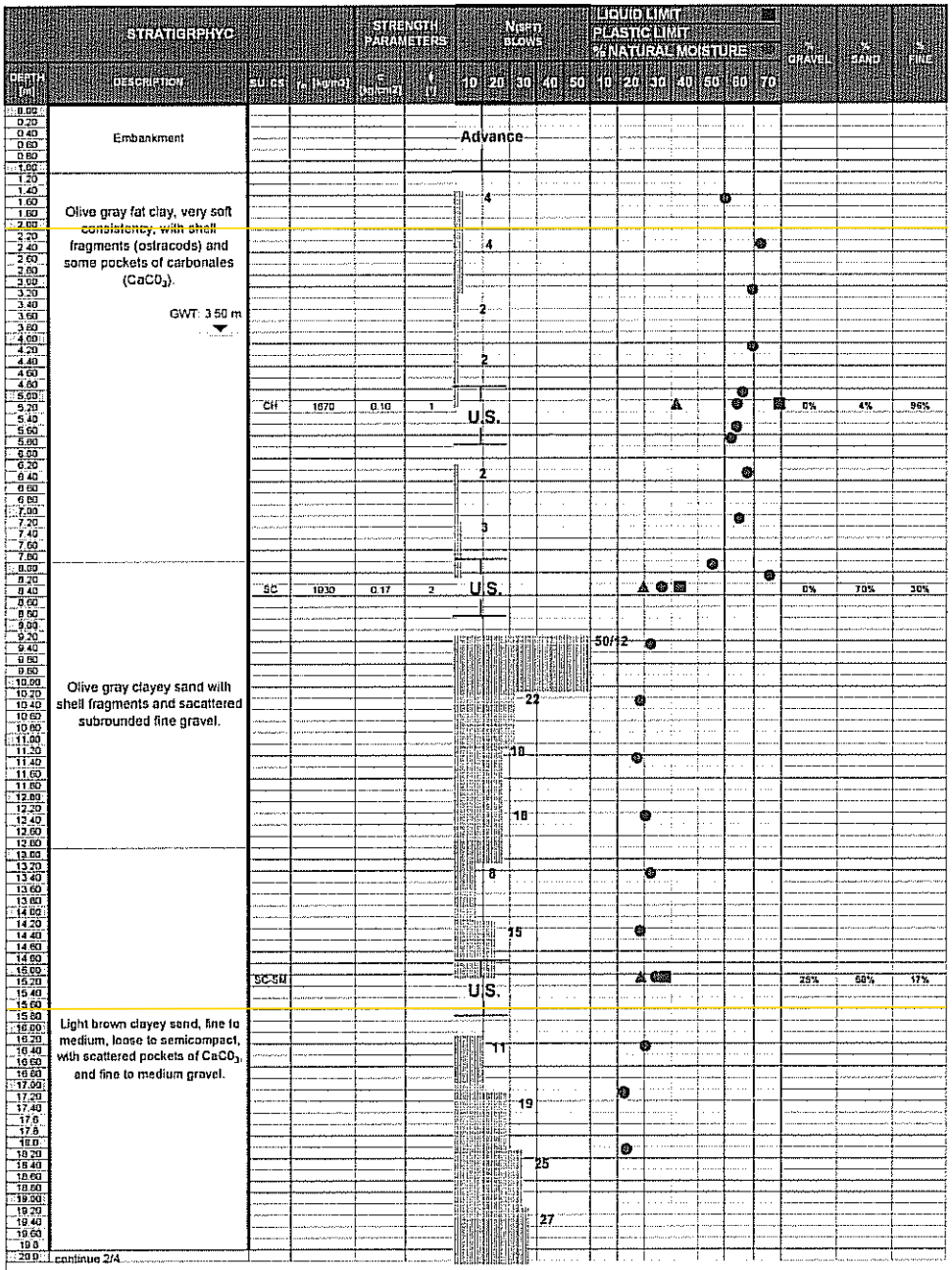
Figure 6. *Boring log profile SPT-3 (continuation)*

BORING LOG PROFILE

PROJECT: PATIO DE FABRICACIÓN DE PLATAFORMAS MARINAS
Co. J. RAY Mc DERMOTT, INC
AT'N: RAFAEL CANSECO

BOREHOLE SPT-4
PROYECT DEPTH: 62.45 m

LOCATION: SEE LAYOUT
B.H. LEVEL: G.L.
PAGE: 1/4



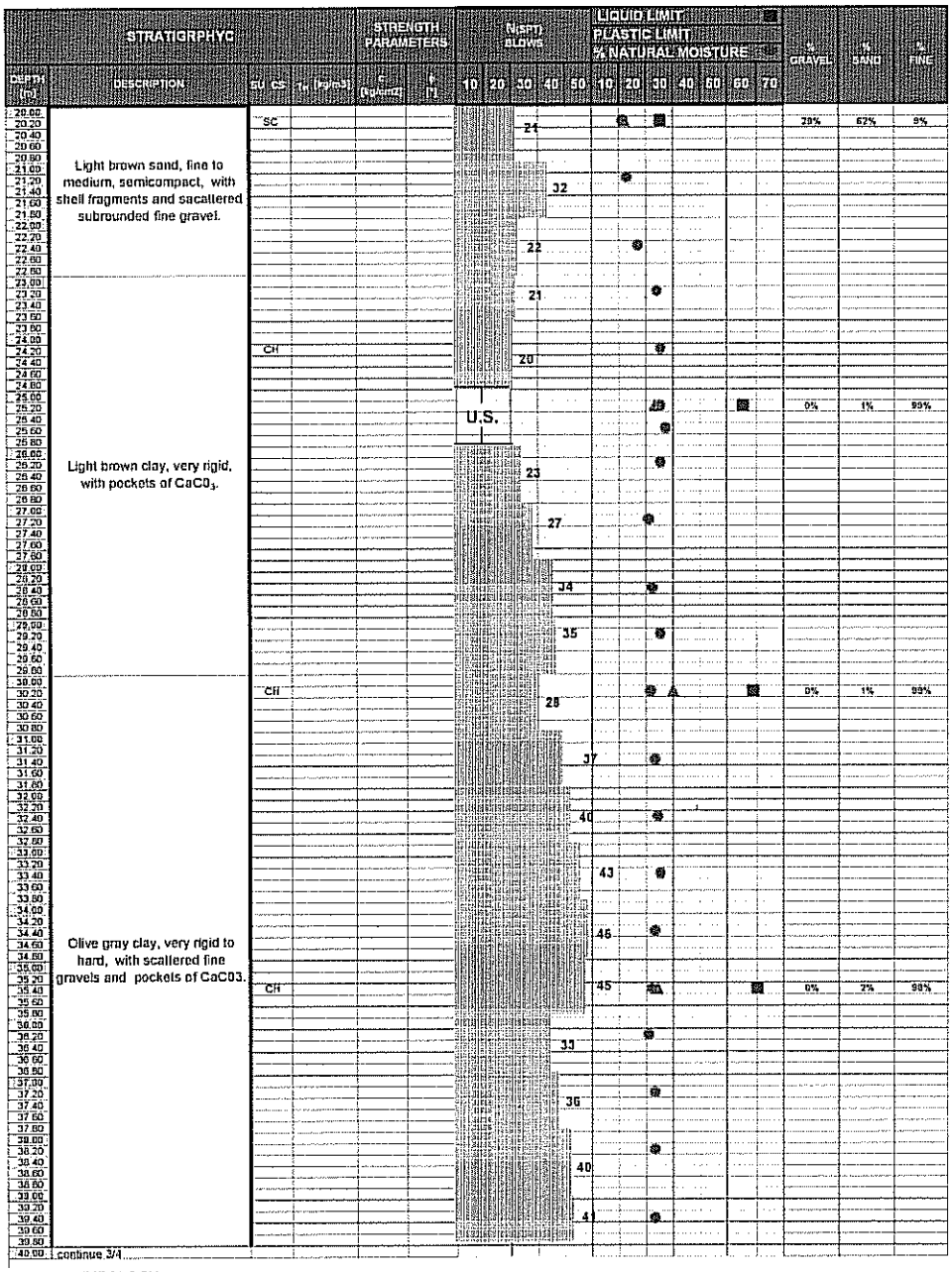
SIMBOLOGY

G.W.T.	Ground water table
D.S.	Disturbed sample
U.S.	Undisturbed sample
cp	Cohesion determined by pocket penetrometer
qu	Unconfined compression strength
cuu	Cohesion determined by unconsolidated undrained triaxial compression (uu)
φuu	Friction angle in triaxial uu
VRS	California Bearing Ratio
Exp VRS	Expanssion determined in CBR

Figure 7. *Boring log profile SPT-4 (continue)*

BORING LOG PROFILE

PROJECT: PATIO DE FABRICACIÓN DE PLATAFORMAS MARINAS
Co. J. RAY Mc DERMOTT, INC
ATN: RAFAEL CANSECO
BOREHOLE SPT-4
PROYECT DEPTH: 62.45 m
LOCATION: SEE LAYOUT
B.H. LEVEL: G.L.
PAGE: 2/4



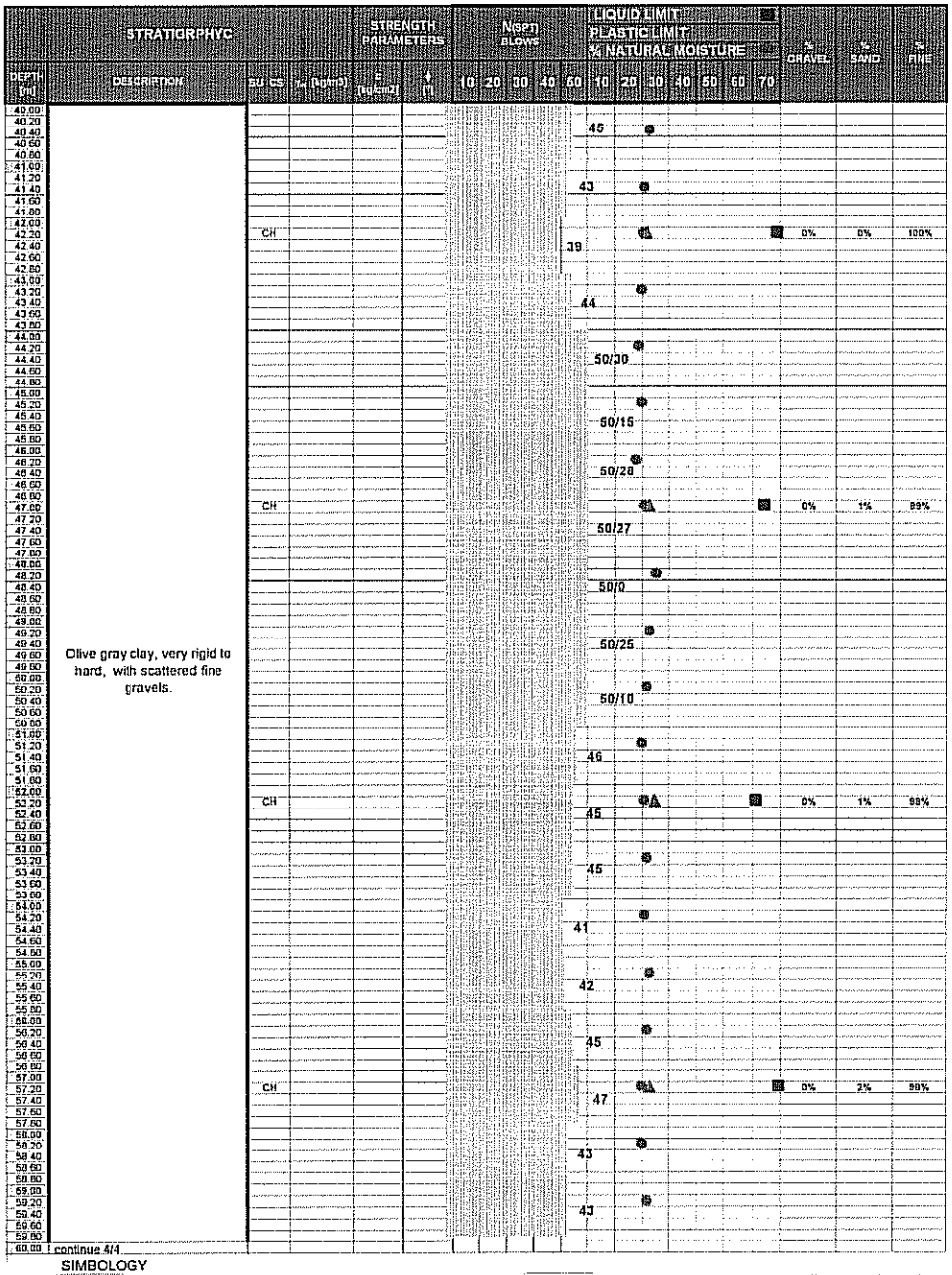
SIMBOLOGY

G.W.T.	Ground water table
D.S.	Disturbed sample
U.S.	Undisturbed sample
cp	Cohesion determined by pocket penetrometer
qu	Unconfined compression strength
cuu	Cohesion determined by unconsolidated undrained triaxial compression (uu)
φuu	Friction angle in triaxial uu
VRS	California Bearing Ratio
Exp VRS	Expanssion determined in CBR

Figure 7. Boring log profile SPT-4 (continue)

BORING LOG PROFILE

PROJECT: PATIO DE FABRICACIÓN DE PLATAFORMAS MARINAS — **BOREHOLE SPT-4** — **LOCATION:** SEE LAYOUT
Co. J. RAY Mc DERMOTT, INC — **B.H. LEVEL:** G.L.
ATN: RAFAEL CANSECO — **PROYECT DEPTH:** 62.45 m — **PAGE:** 3/4



SIMBOLOGY

G.W.T.	Ground water table
D.S.	Disturbed sample
U.S.	Undisturbed sample
cp	Cohesion determined by pocket penetrometer
qu	Unconfined compression strenglh
cuu	Cohesion determined by unconsolidated undrained triaxial compression (uu)
φuu	Friction angle in triaxial uu
VRS	California Bearing Ratio
Exp VRS	Expanssion determined in CBR

Figure 7. *Boring log profile SPT-4 (continue)*

BORING LOG PROFILE

PROJECT: PATIO DE FABRICACIÓN DE PLATAFORMAS MARINAS — **BOREHOLE SPT-4** — **LOCATION:** SEE LAYOUT
Co. J. RAY Mc DERMOTT, INC — **B.H. LEVEL:** G.L.
AT'N: RAFAEL CANSECO — **PROYECT DEPTH:** 62.45 m — **PAGE:** 4/4

DEPTH [m]	DESCRIPTION	SU. CS.	γ [kg/m3]	STRENGTH PARAMETERS c [kg/cm2]	φ [°]	N(SPT) BLOWS 10 20 30 40 50	LIQUID LIMIT / PLASTIC LIMIT / % NATURAL MOISTURE 10 20 30 40 50 60 70	% GRAVEL	% SAND	% FINE
60.00	Olive gray clay, very rigid to hard, with scattered fine gravels.	CH					45	0%	3%	97%
60.20										
60.40										
60.60										
60.80										
61.00							47			
61.20										
61.40										
61.60										
61.80										
62.00							47			
62.20										
62.40										
62.60										
62.80	END OF BOREHOLE									
63.00										
63.20										
63.40										
63.60										
63.80										
64.00										
64.20										
64.40										
64.60										
64.80										
65.00										

SIMBOLOGY

G.W.T.	Ground water table
D.S.	Disturbed sample
U.S.	Undisturbed sample
cp	Cohesion determined by pocket penetrometer
qu	Unconfined compression strength
cuu	Cohesion determined by unconsolidated undrained triaxial compression (uu)
φuu	Friction angle in triaxial uu
VRS	California Bearing Ratio
Exp VRS	Expanssion determined in CBR

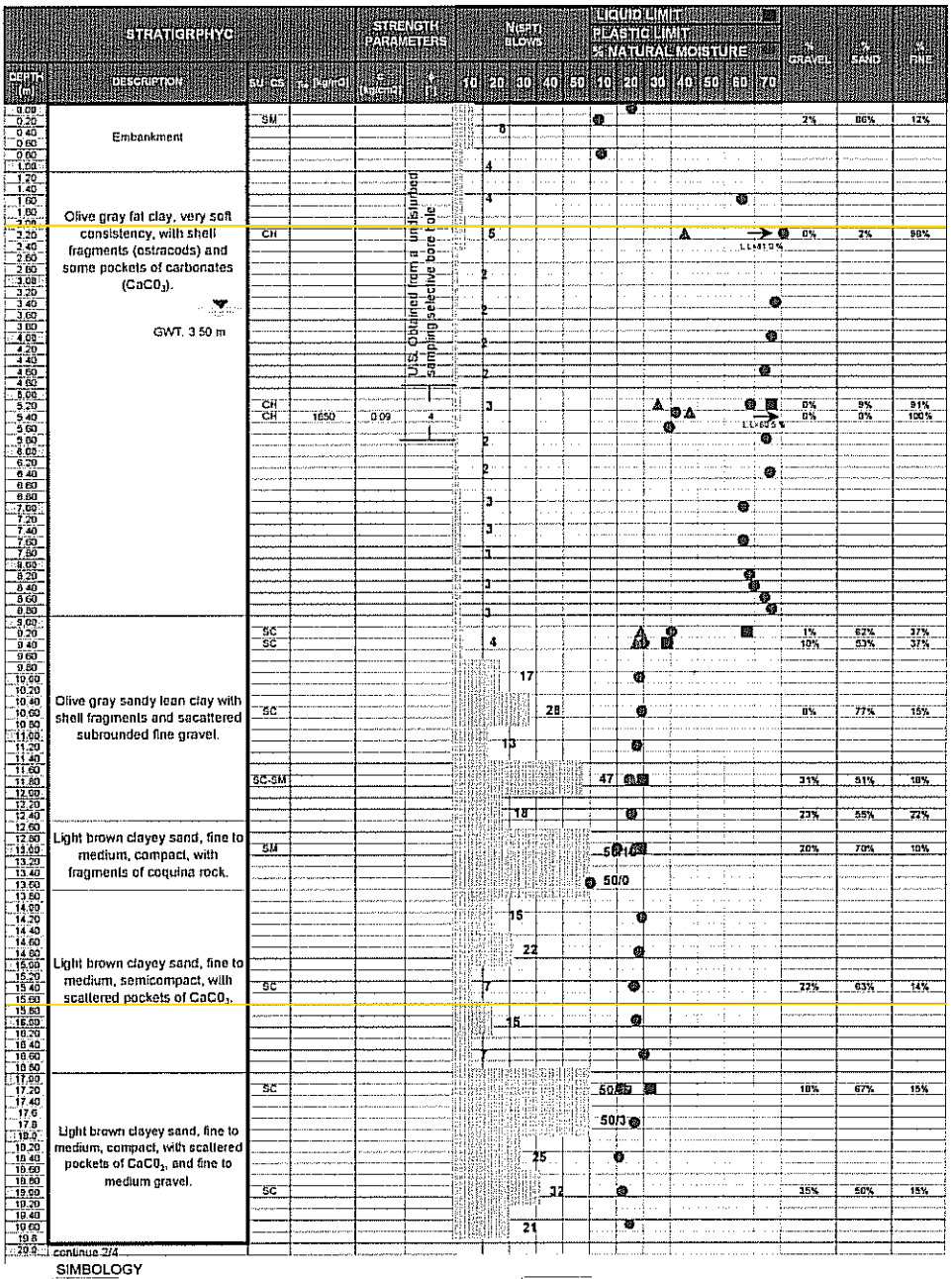
Figure 7. *Boring log profile SPT-4 (continuation)*

BORING LOG PROFILE

PROJECT: PATIO DE FABRICACIÓN DE PLATAFORMAS MARINAS
Co. J. RAY Mc DERMOTT, INC
AT'N: RAFAEL CANSECO

BOREHOLE SPT-5
PROYECT DEPTH: 62.60 m

LOCATION: SEE LAYOUT
B.H. LEVEL: G.L.
PAGE: 1/4



SIMBOLOGY

G.W.T.	Ground water table	cuu	Cohesion determined by unconsolidated undrained triaxial compression (uu)
D.S.	Disturbed sample	ϕuu	Friction angle in triaxial uu
U.S.	Undisturbed sample	VRS	California Bearing Ratio
cp	Cohesion determined by pocket penetrometer	Exp VRS	Expanssion determined in CBR
qu	Unconfined compression strength		

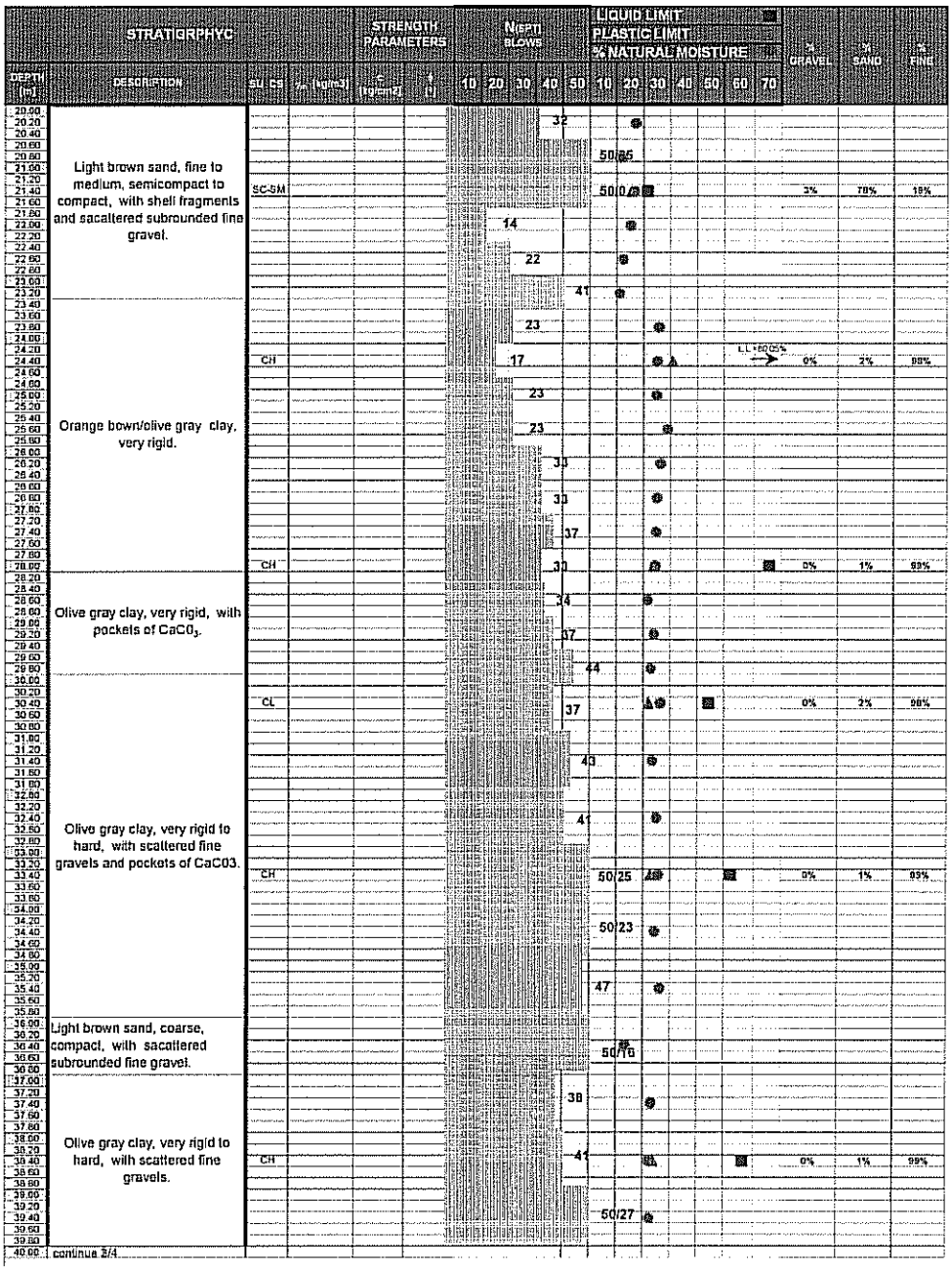
Figure 8. Boring log profile SPT-5 (continue)

BORING LOG PROFILE

PROJECT: PATIO DE FABRICACIÓN DE PLATAFORMAS MARINAS
Co. J. RAY Mc DERMOTT, INC
ATN: RAFAEL CANSECO

BOREHOLE SPT-5
PROYECT DEPTH: 62.60 m

LOCATION: SEE LAYOUT
B.H. LEVEL: G.L.
PAGE: 2/4



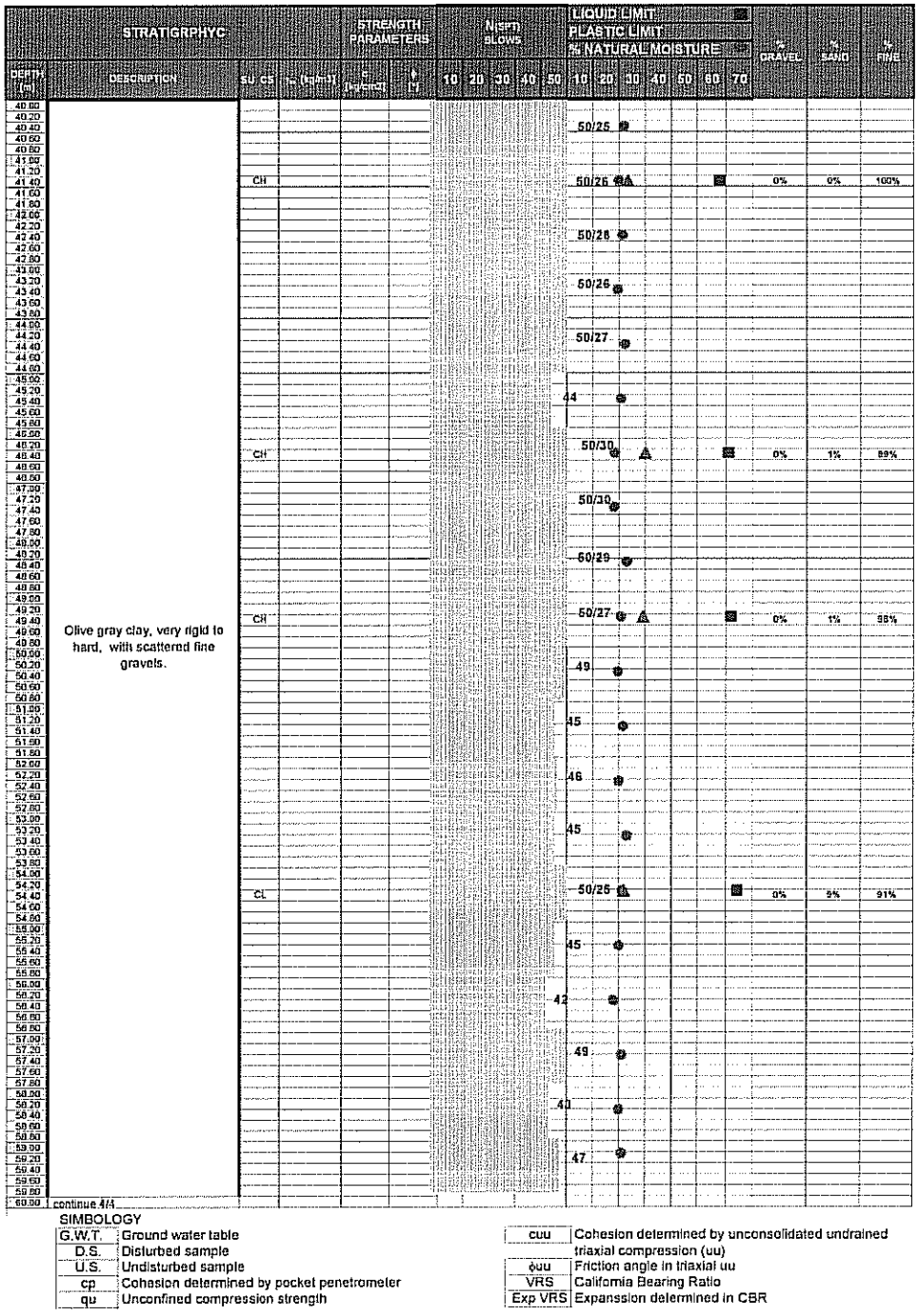
SIMBOLOGY

G.W.T.	Ground water table	cuu	Cohesion determined by unconsolidated undrained triaxial compression (uu)
D.S.	Disturbed sample		
U.S.	Undisturbed sample	φuu	Friction angle in triaxial uu
cp	Cohesion determined by pocket penetrometer	VRS	California Bearing Ratio
qu	Unconfined compression strength	Exp VRS	Expansion determined in CBR

Figure 8. Boring log profile SPT-5 (continue)

BORING LOG PROFILE

PROJECT: PATIO DE FABRICACIÓN DE PLATAFORMAS MARINAS
Co. J. RAY Mc DERMOTT, INC
AT'N: RAFAEL CANSECO
BOREHOLE SPT-5
PROYECT DEPTH: 62.60 m
LOCATION: SEE LAYOUT
B.H. LEVEL: G.L.
PAGE: 3/4



SIMBOLOGY

G.W.T.	Ground water table
D.S.	Disturbed sample
U.S.	Undisturbed sample
cp	Cohesion determined by pocket penetrometer
qu	Unconfined compression strength
cuu	Cohesion determined by unconsolidated undrained triaxial compression (uu)
ϕuu	Friction angle in triaxial uu
VRS	California Bearing Ratio
Exp VRS	Expanssion delermined in CBR

Figure 8. *Boring log profile SPT-5 (continue)*

BORING LOG PROFILE

PROJECT: PATIO DE FABRICACIÓN DE PLATAFORMAS MARINAS — **BOREHOLE** SPT-5 — **LOCATION:** SEE LAYOUT
Co. J. RAY Mc DERMOTT, INC — **B.H. LEVEL:** G.L.
ATN: RAFAEL CANSECO — **PROYECT DEPTH:** 62.60 m — **PAGE:** 4/4

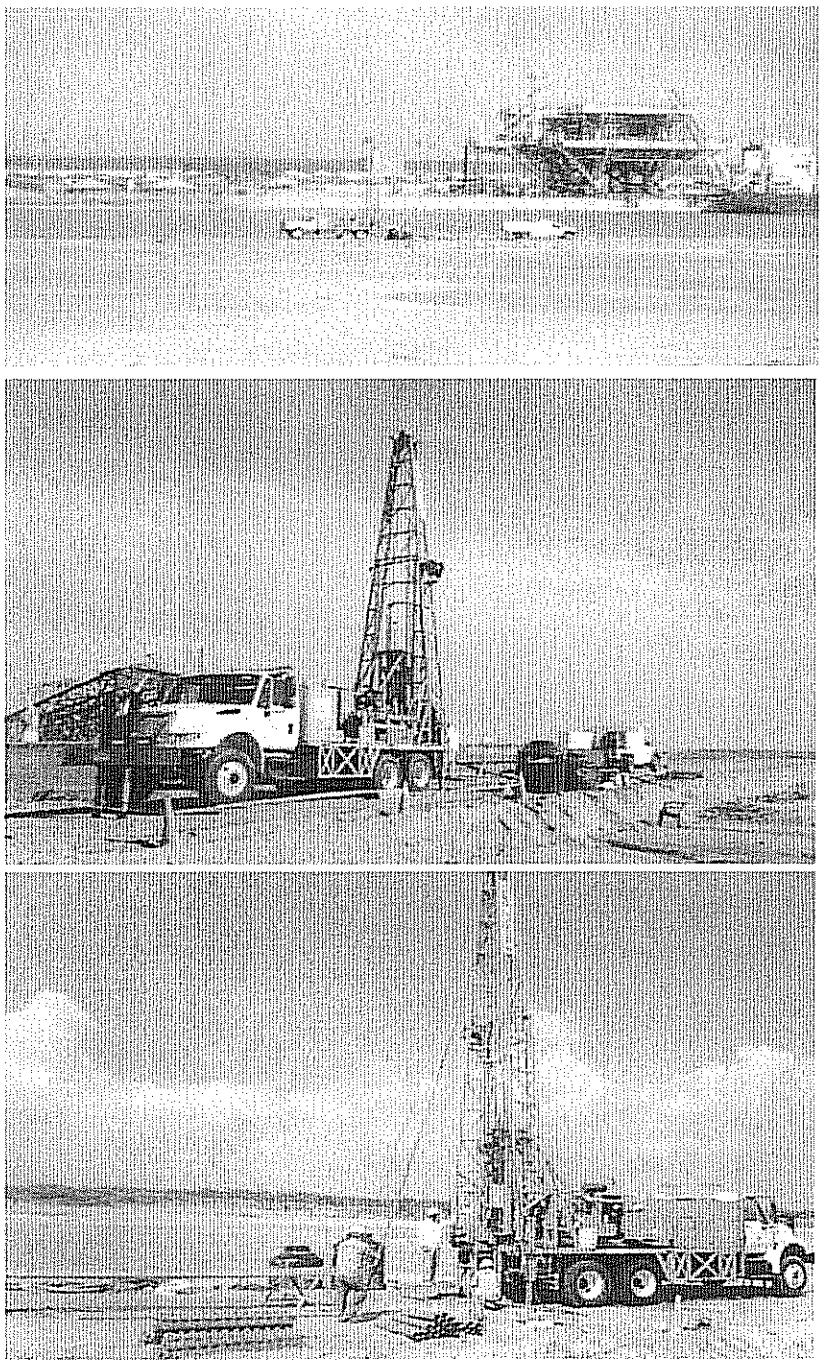
DEPTH (m)	STRATIGRPHYC DESCRIPTION	SU. CS	% (γ/γw)	STRENGTH PARAMETERS c (kg/cm2)	ϕ	N(SPT) BLOWS 10 20 30 40 50	LIQUID LIMIT / PLASTIC LIMIT / % NATURAL MOISTURE 10 20 30 40 50 60 70	% GRAVEL	% SAND	% FINE
60.00										
60.20										
60.40	Olive gray clay, very rigid to hard, with scattered fine gravels.	CH					48	0%	1%	99%
60.60										
60.80										
61.00										
61.20										
61.40							48			
61.60										
61.80										
62.00										
62.20										
62.40							47			
62.60										
62.80	END OF BOREHOLE									
63.00										
63.20										
63.40										
63.60										
63.80										
64.00										
64.20										
64.40										
64.60										
64.80										
65.00										

SIMBOLOGY

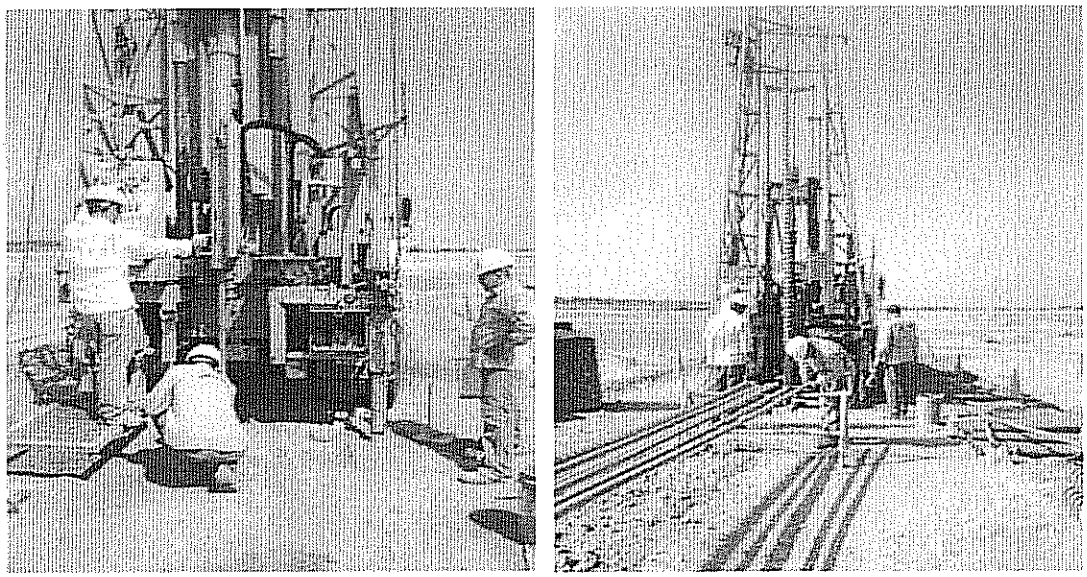
G.W.T.	Ground water table	cuu	Cohesion determined by unconsolidated undrained triaxial compression (uu)
D.S.	Disturbed sample	ϕuu	Friction angle in triaxial uu
U.S.	Undisturbed sample	VRS	California Bearing Ratio
cp	Cohesion determined by pocket penetrometer	Exp VRS	Expanssion determined in CBR
qu	Unconfined compression strength		

Figure 8. *Boring log profile SPT-5 (continuation)*

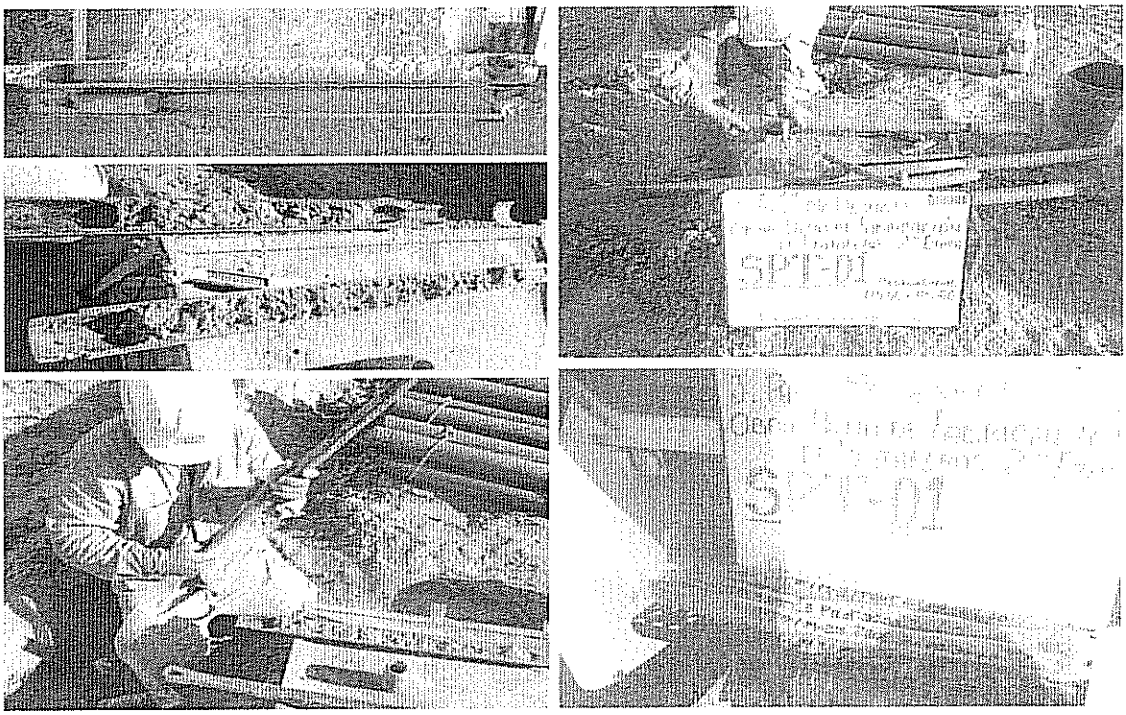
ANNEX II
PHOTOGRAPHIC REPORT



Photos 1 to 3. *Location and execution of the SPT-1 borehole.*



Photos 4 and 5. *Aspects of the execution of the SPT-1 borehole.*



Photos 6 to 11. *Aspects of the soils samples from the SPT-1 borehole.*

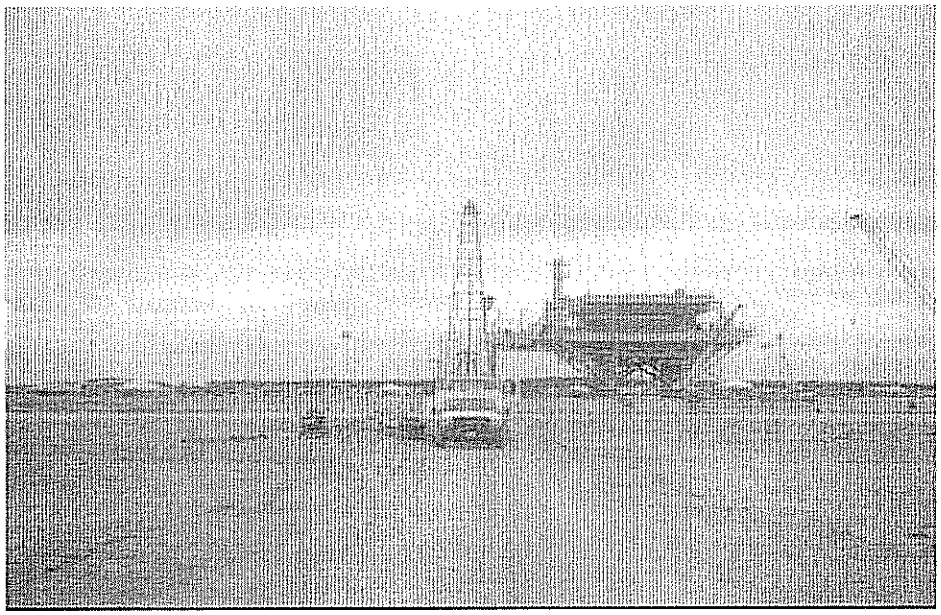
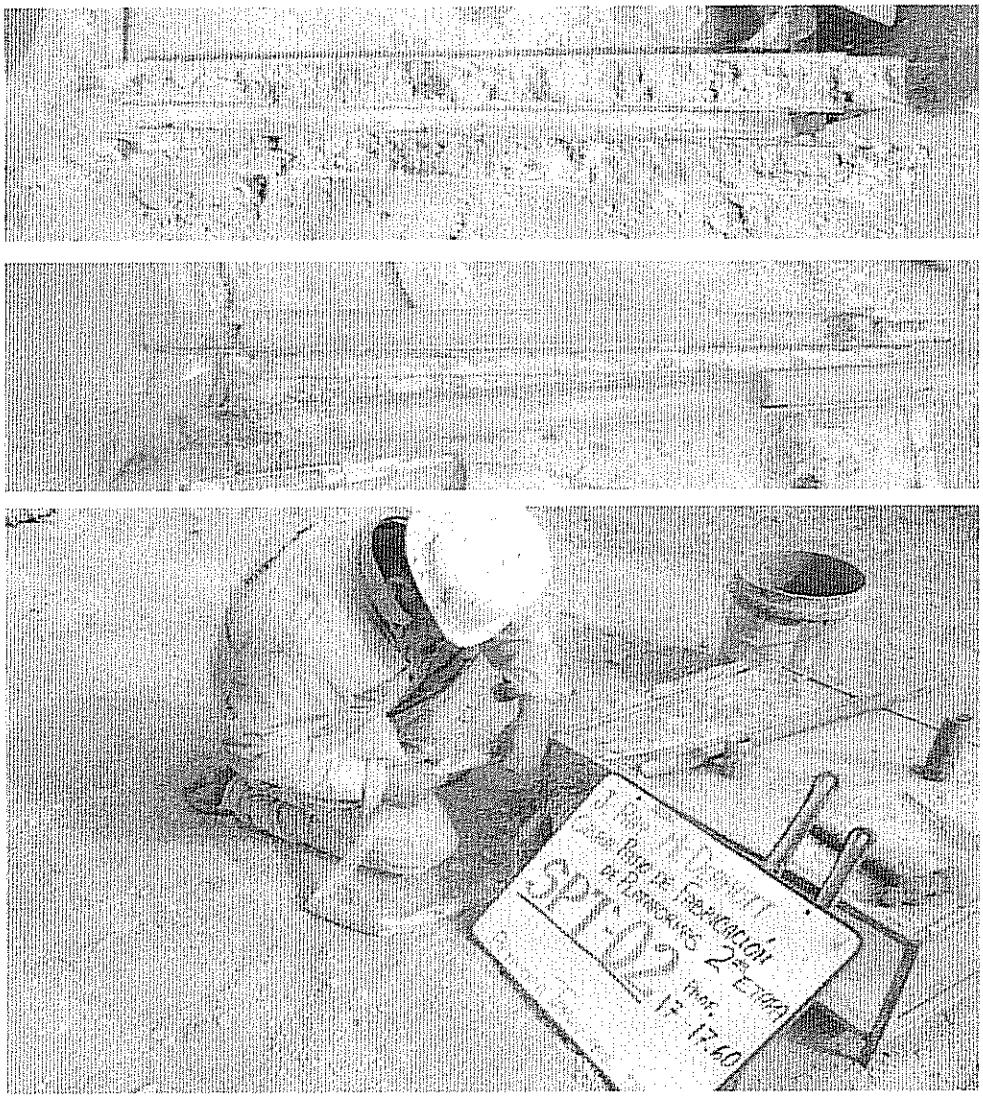


Photo 12. *Location of the SPT-2 borehole.*

Photos 13 to 15. *Aspect of the execution of the SPT-2 borehole.*



Photos 16 to 18. *Aspects of the soils samples from the SPT-2 borehole.*

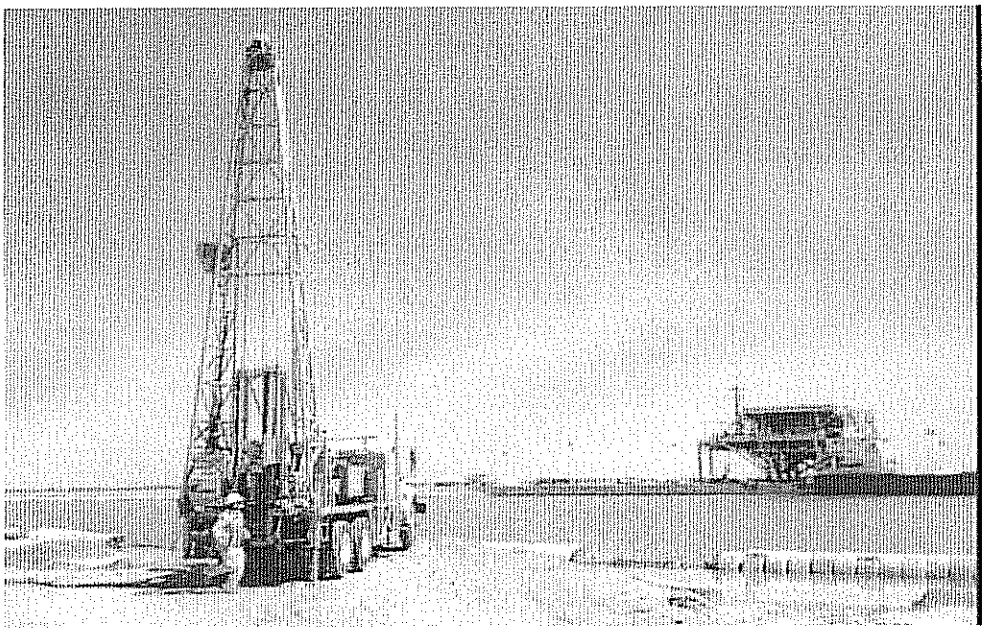


Photo 19. *Location of the SPT-3 borehole.*

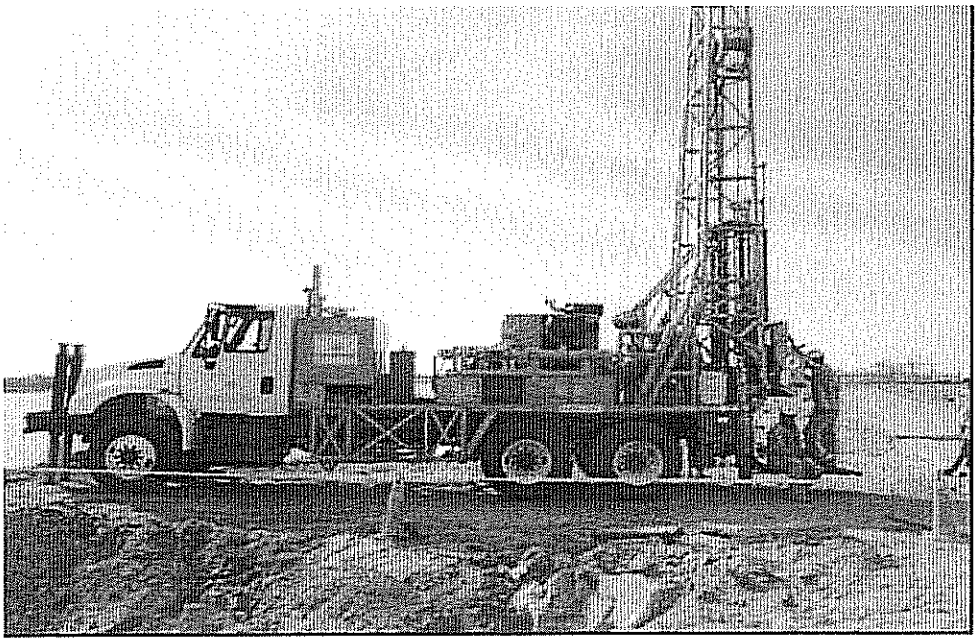


Photo 20. *Aspect of the execution of the SPT-3 borehole.*

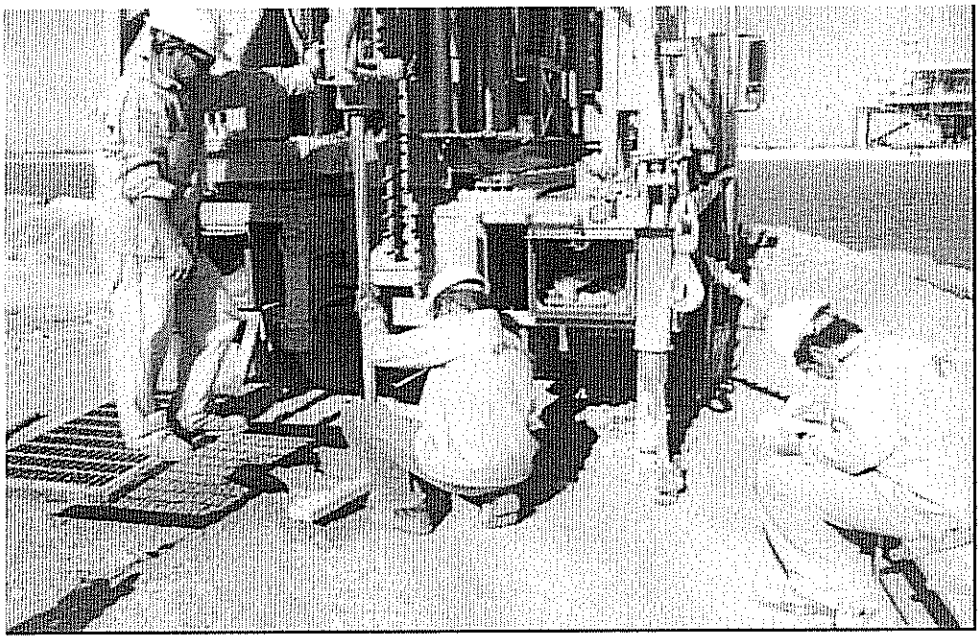
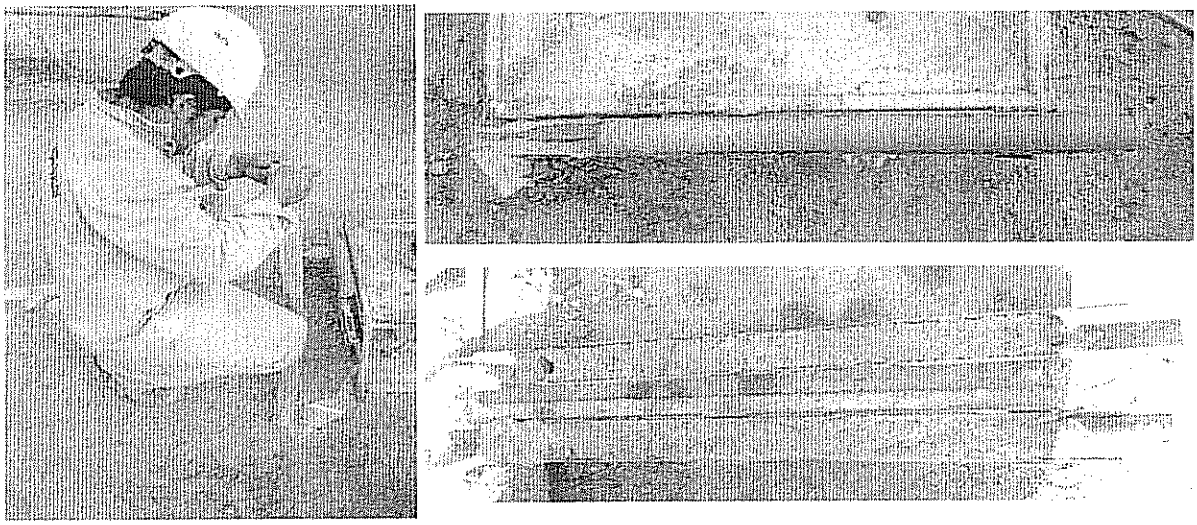
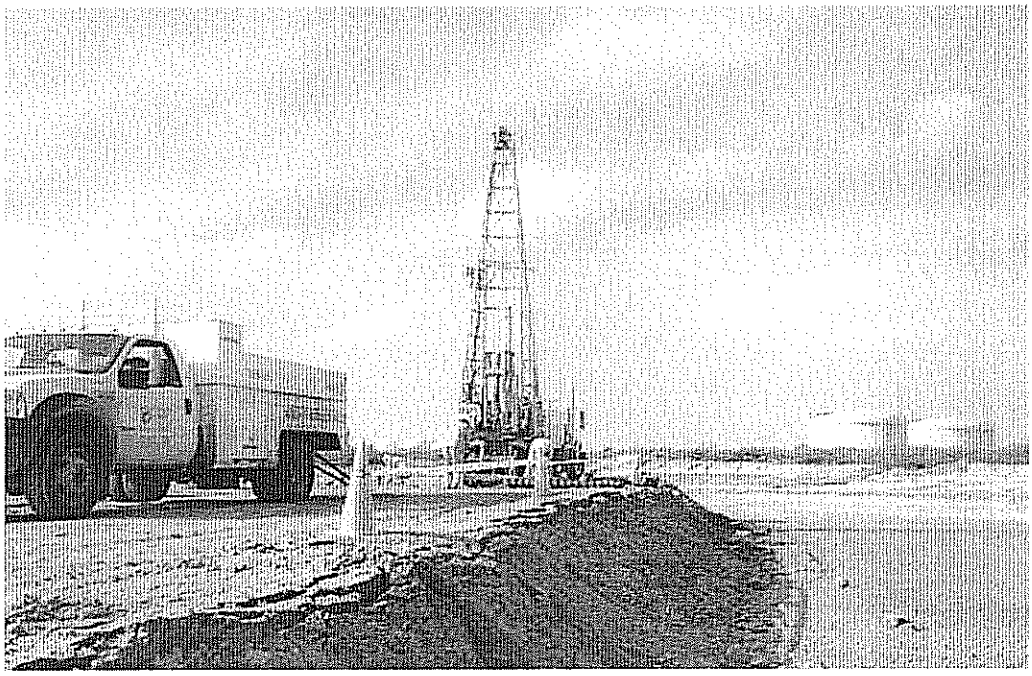
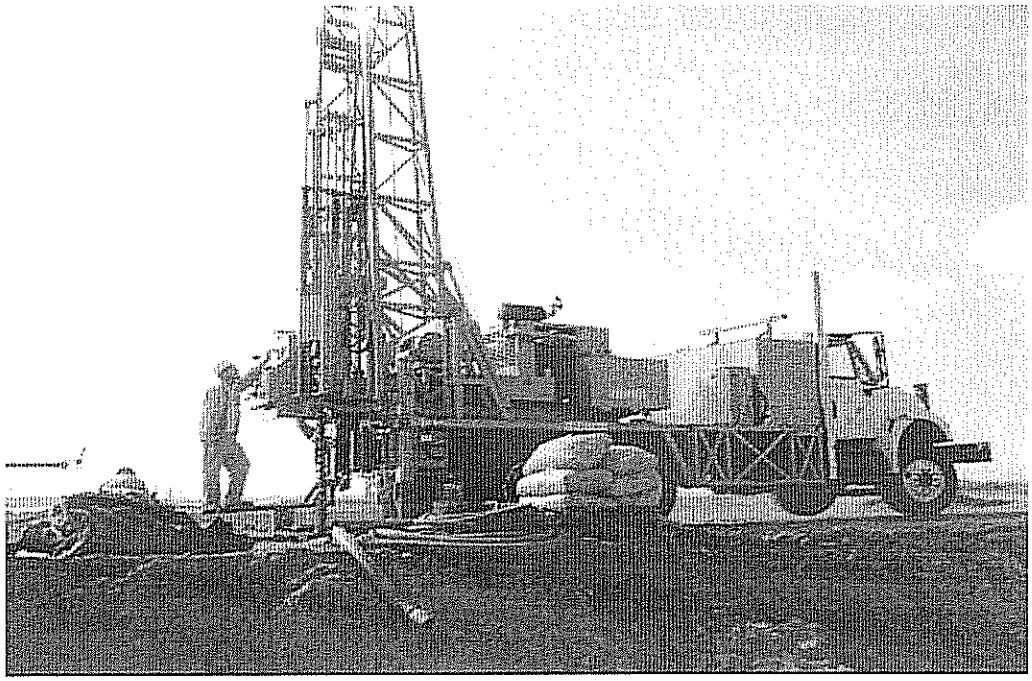


Photo 21. *Another aspect of the execution of the SPT-3 borehole.*



Photos 22 to 24. *Aspects of the soils samples from the SPT-3 borehole.*





Photos 25 and 26. *Location and execution of the SPT-4 borehole.*

Photo 27. *Another aspect during the execution of the SPT-4 borehole*

Photo 28. *Aspect of an undisturbed sample obtained from the borehole 4*

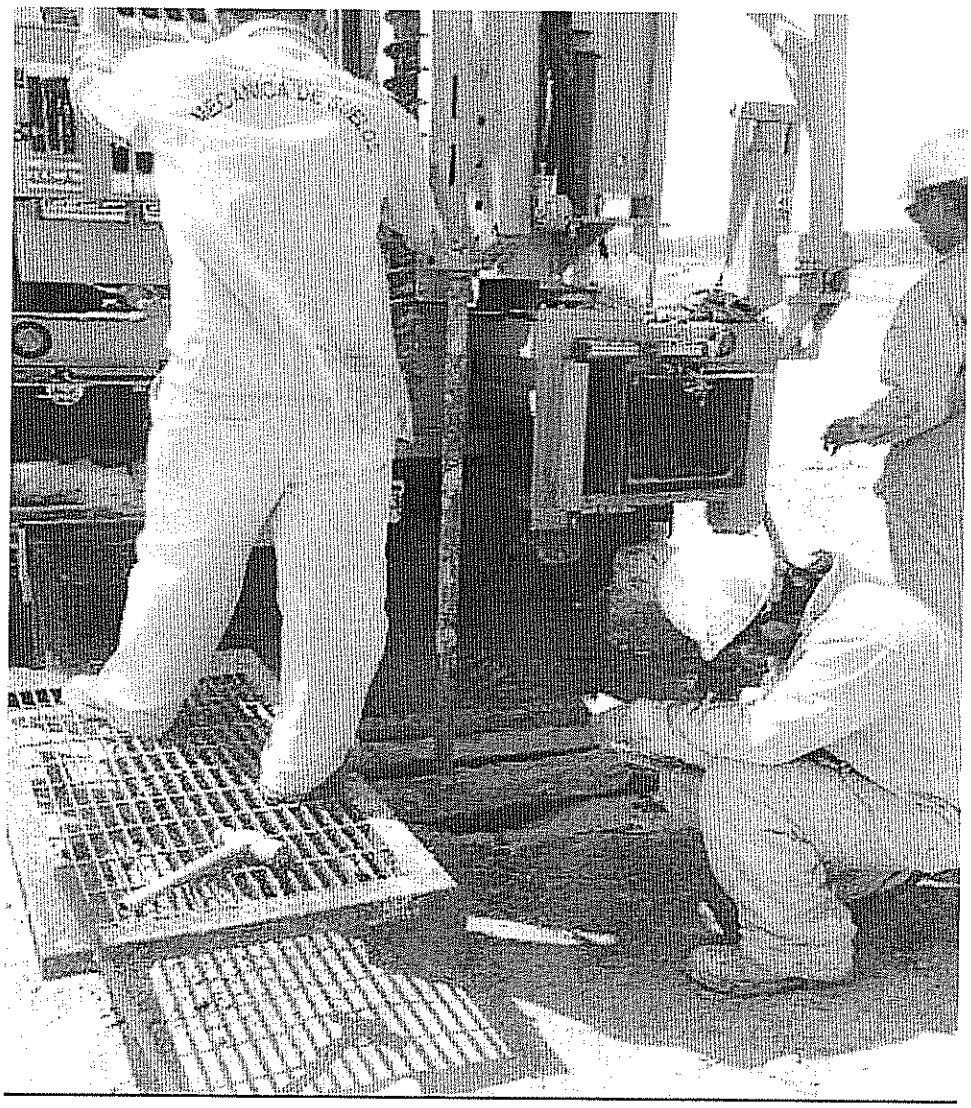
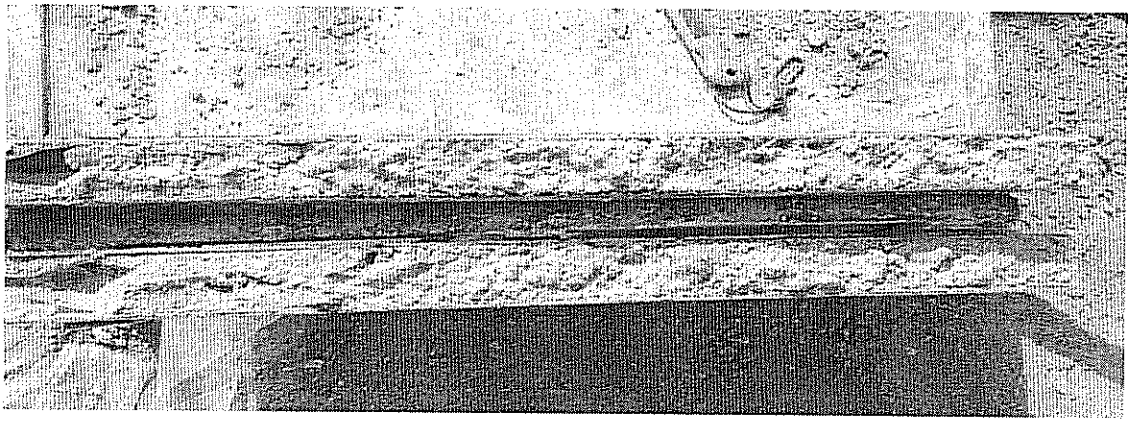
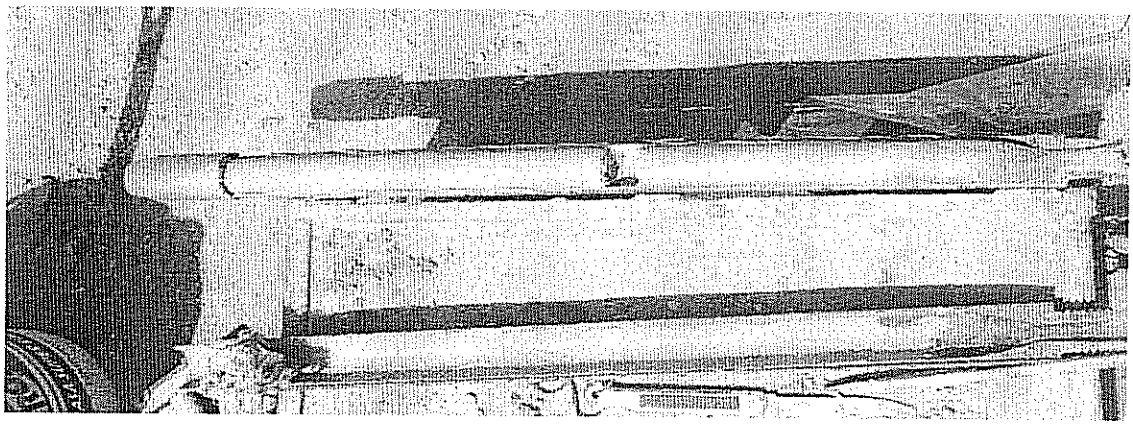
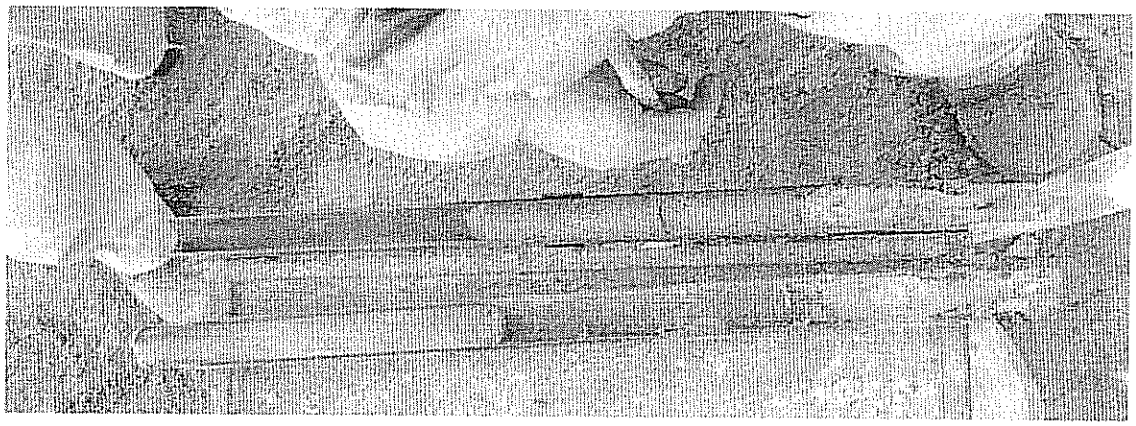


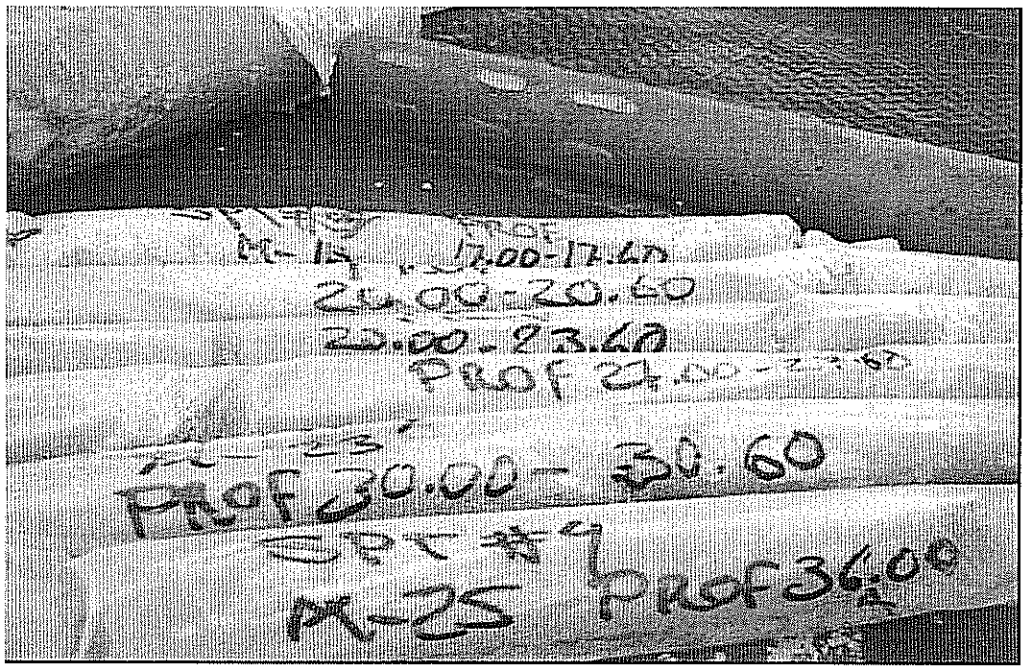
Photo 29. *Aspect of the execution of the standard penetration test in the SPT-4 borehole.*



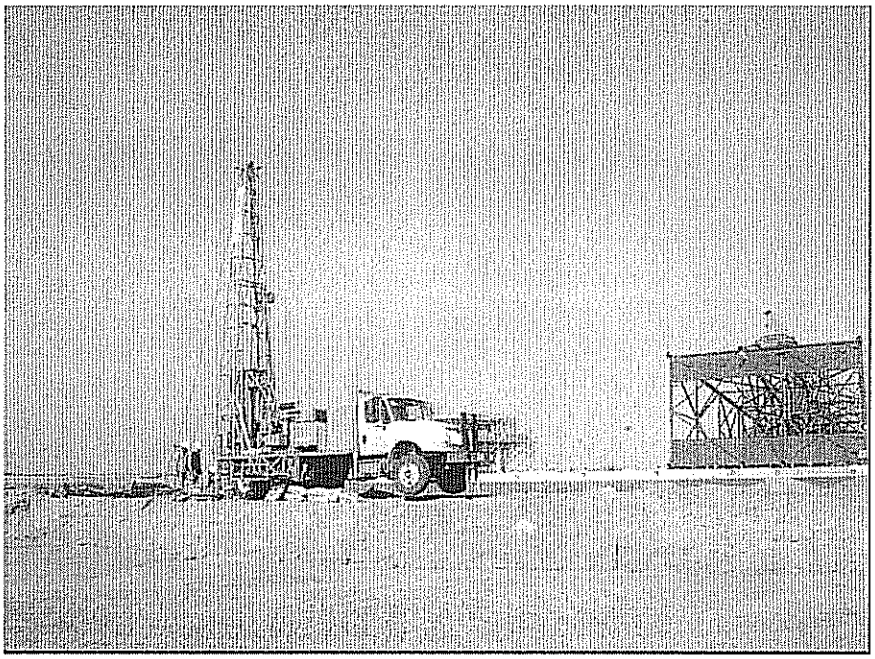


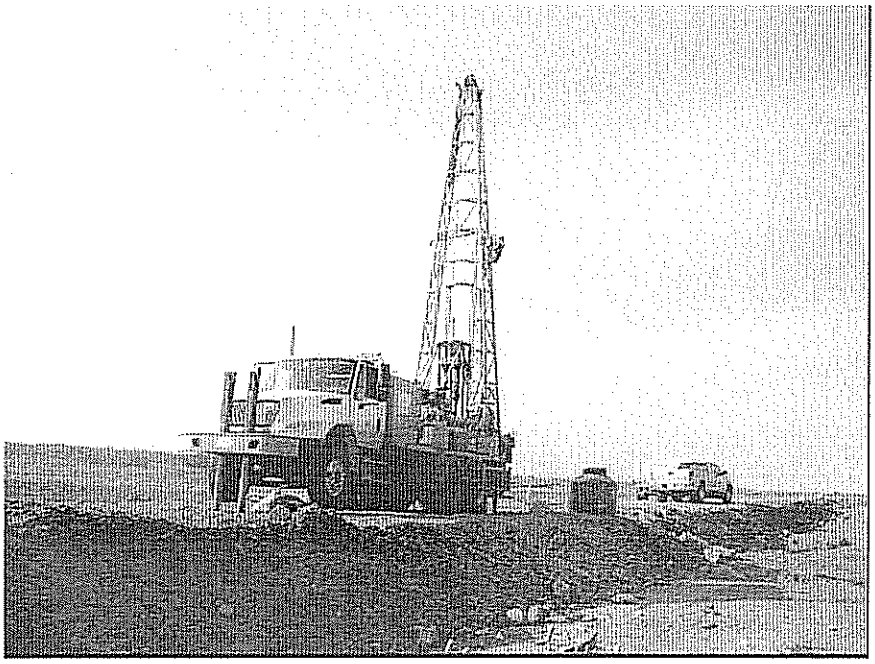


Photos 30 to 32. *Aspect of different disturbed samples obtained from the SPT-4 borehole.*



Photos 33 and 34. *Aspect of disturbed and undisturbed samples obtained from the borehole 4, properly identified.*





Photos 35 and 36. *Location of the SPT-5 borehole.*

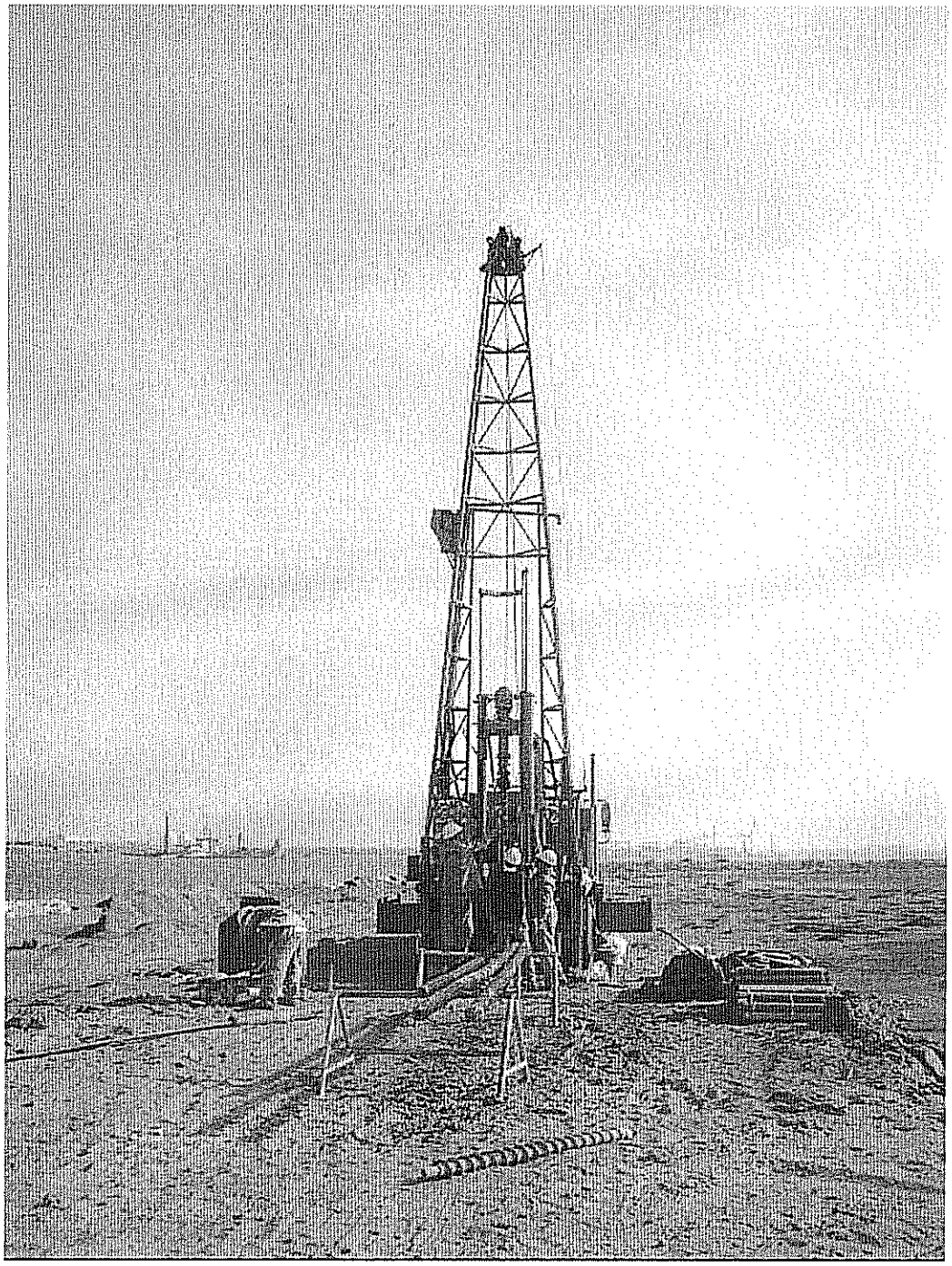


Photo 37. *Aspect during the execution of the SPT-5 borehole.*

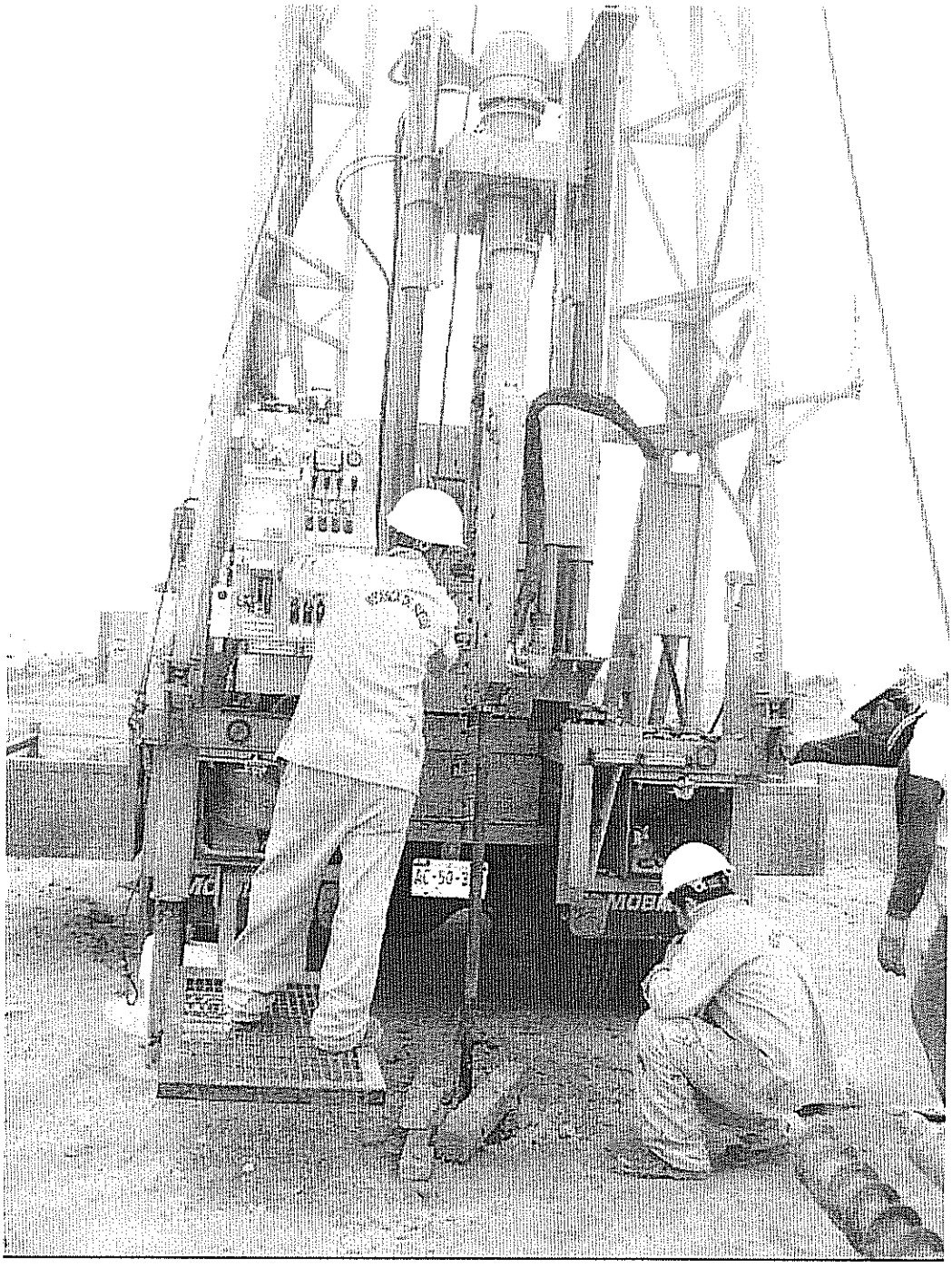


Photo 38. *Another aspect during the execution of the SPT – 5.*

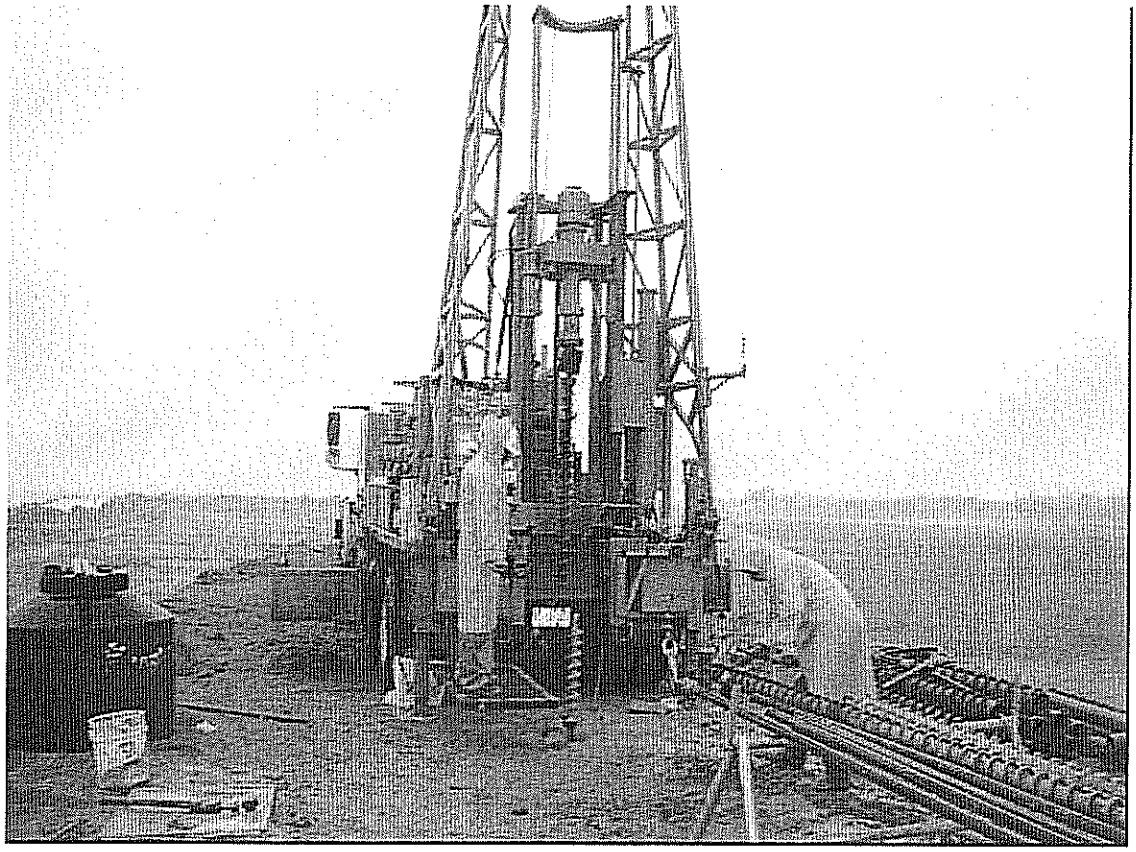
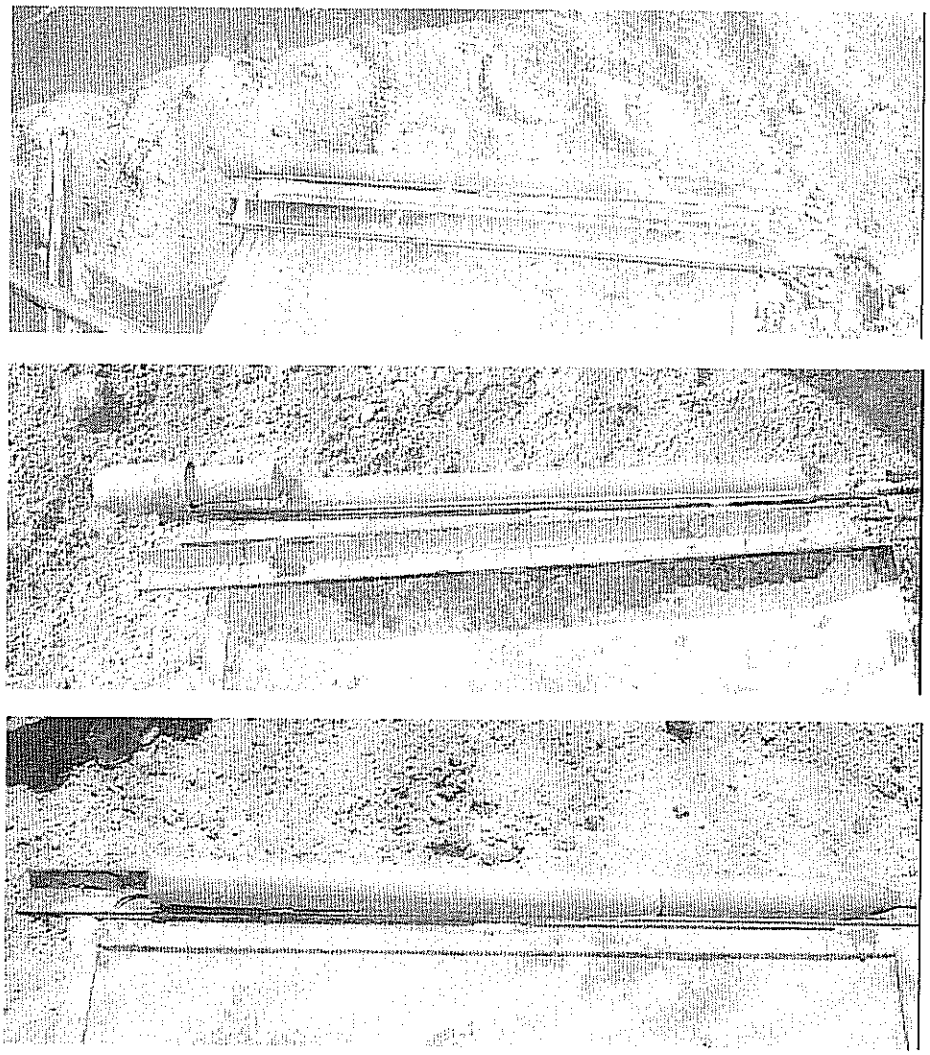
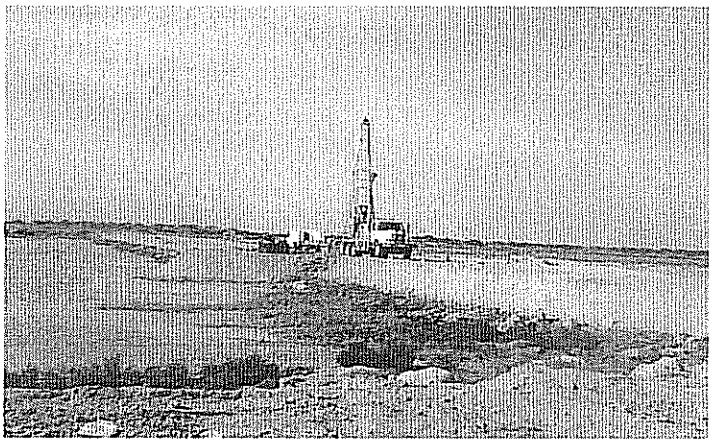


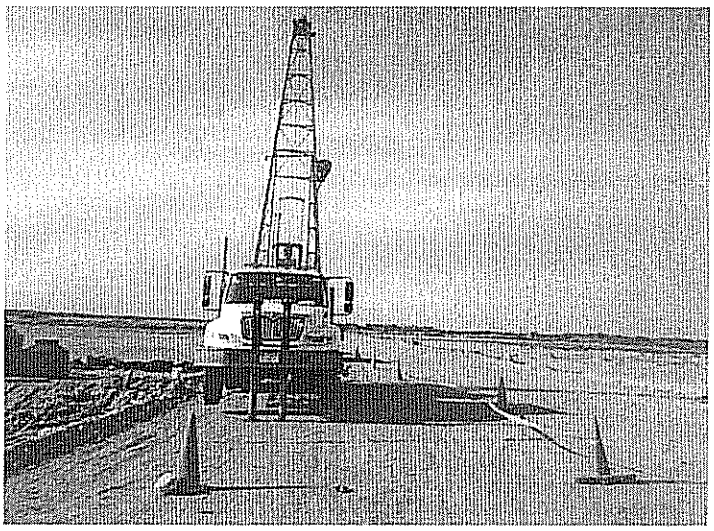
Photo 39. *Another aspect during the execution of the SPT –5.*

***Photo 40**. Aspect during the visual and handily classification of soil sample.*



Photos 41 to 43. *Different aspects of a disturbed samples from the SPT – 5.*





Photos 44 to 46. *Location of the SPT-6 borehole*