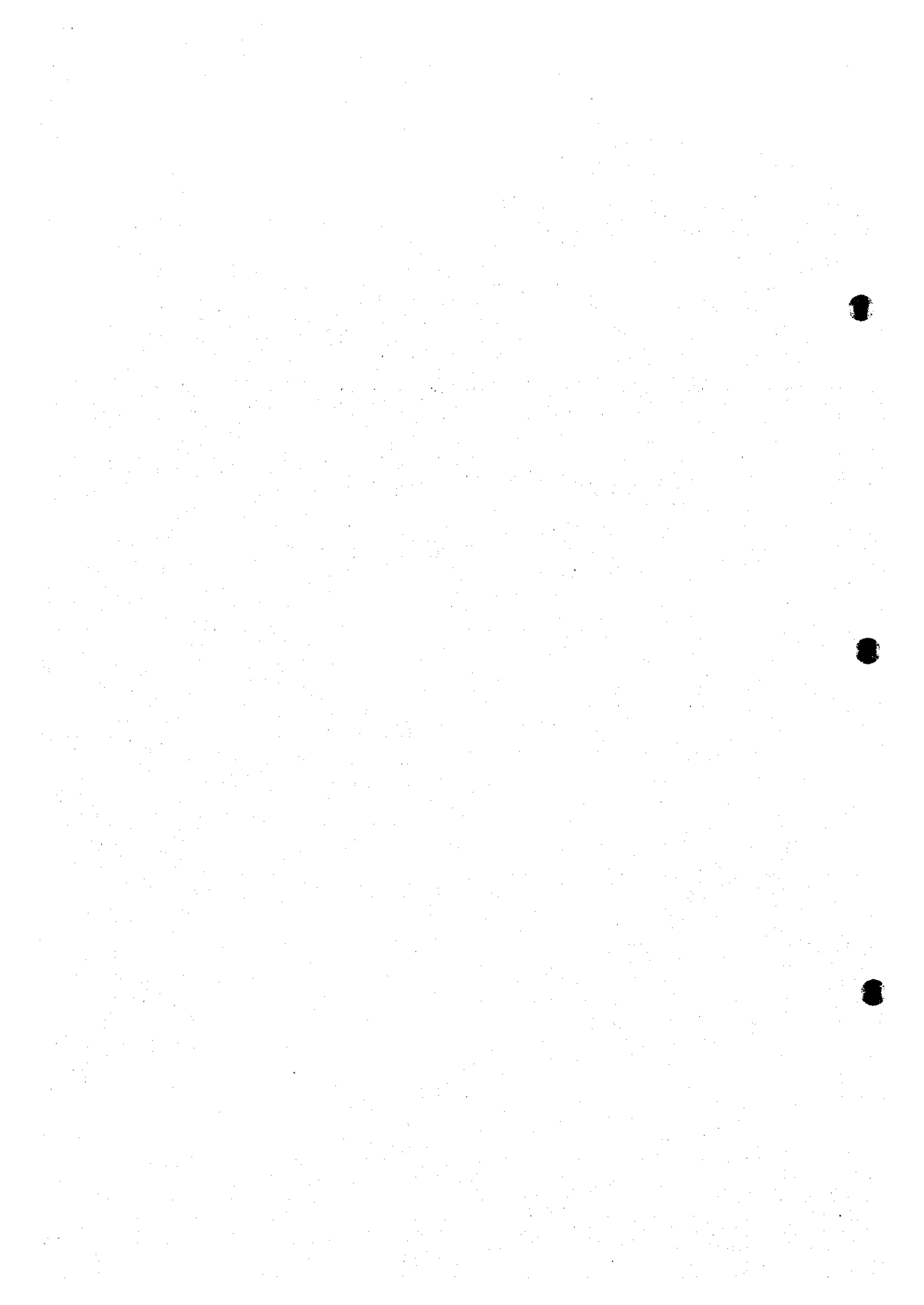


Sección J

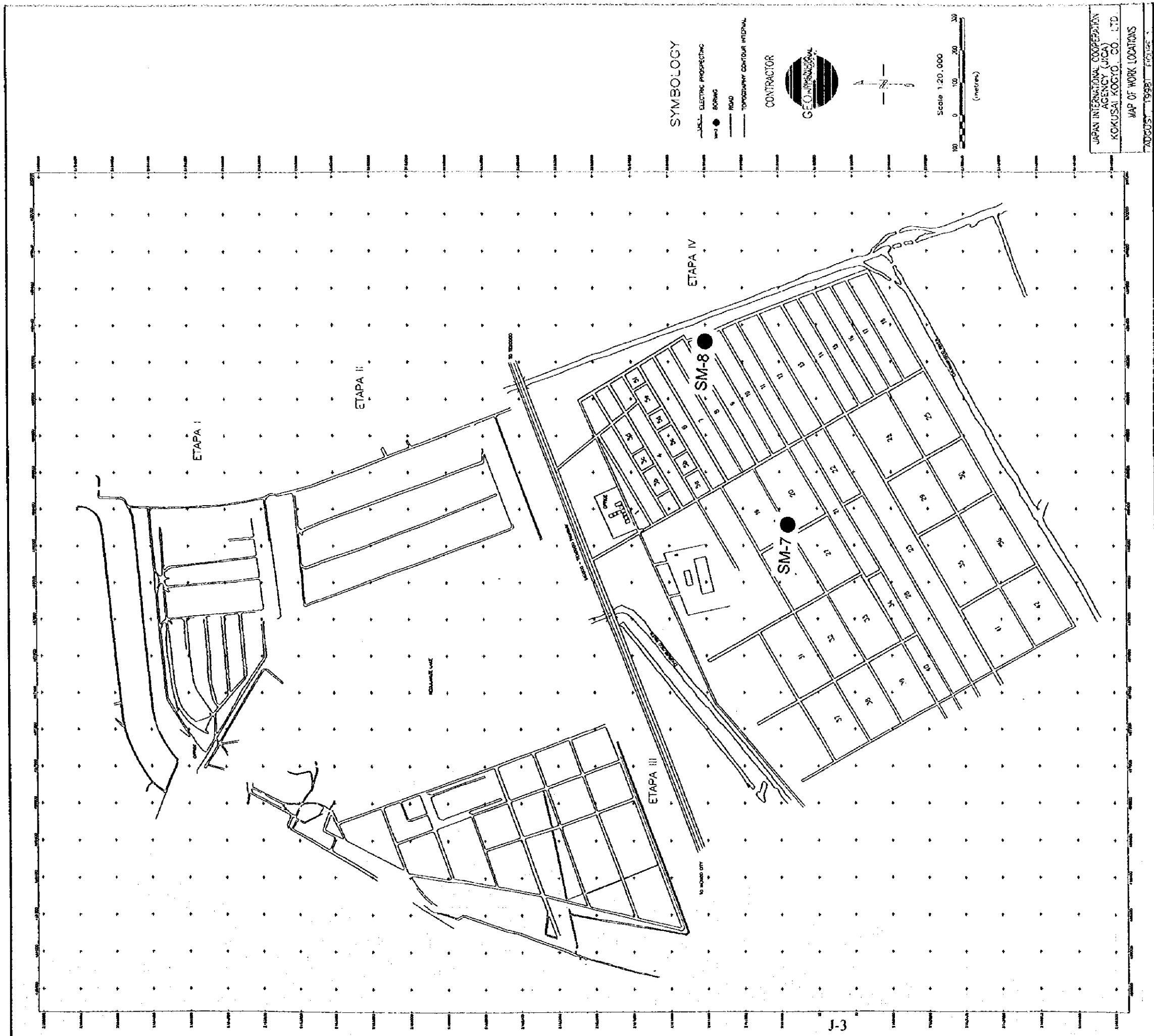
*Estudio de Geología
(Bordo Poniente Etapas IV y V)*



BP ETAPA IV

Resumen de Resultados

	SM-7 8.00-9.00m	SM-7 15.00-16.00m	SM-8 16.00-17.00m	SM-8 32.00-33.00m	SM-8 42.00-43.00m
Densidad de solidos	2.48	2.632	2.52	2.54	2.54
Peso volumetrico (tonm3)	1.13	1.26	1.18	1.18	1.67
Relacion de vacios	4.037	5.139	10.399	6.28	4.837
Grado de saturacion (%)	102.996	97.7	102.1	100	98.6
Contenido de agua (%)	167.7	238	421.3	247.7	187.2
Limite liquido (%)	256	158.3	365.3	270	169.4
Limite plastico (%)	126.7	35	175.9	94.7	76.8
Indice de plasticidad (%)	129.3	112.6	189.4	175.3	92.6
Triaxial no drenada no consolidada Cohesion (ton/m)	0.3	0.2	1.4	0.9	1.1
Ang. de friccion interna (PHI) en grados	2	9	4	0	11
Compresion simple (ton/m2)	0	2.3	2.03	1.73	8.4
Granulometria	100F	100F	100F	100F	
Consolidacion	1.456	3.825	6.395	5.033	3.392



JAPAN INTERNATIONAL COOPERATION
 AGENCY (JICA)
 KOKUSAI KOGYO CO., LTD.
 MAP OF WORK LOCATIONS
 AUGUST 1998

STANDARD PENETRATION TEST (No. of Blows)	N	WATER CONTENT (%) ● LIQUID LIMIT ▲ PLASTIC LIMIT	SPECIFIC GRAVITY γ _m UNIT WEIGHT (Ton/m ³) e VOID RATION C _w DEGREE OF SATURATION (%)	DRAIN SIZE (G) GRAVEL (S) SAND (F) FINES (%)	STRENGTH TESTING (ton/m ²)		UNIFIED SOIL CLASSIFICATION SYSTEM (U. S. C. S.)
					qu	C	
0							
1	35						ROAD (GRAVEL AND SAND)
2	1						
3	1/60						
4	PH						
5	PH						
6	PH						
7	PH						
8	50	▲	2.68 1.13 102.9		100	0.0 0.3 2	GRAY GREENISH CLAY AND DARK GRAY LOW CONSISTENCY AND FETID ODOR
9	7						
10							(CH)

S I M B O L O G I A

GRAVEL
 SAND
 SILT
 CLAY
 ORGANIC MATTER
 FILLER
 ROCK

Pe = STANDARD PENETRATION TEST
 Sh = SAMPLE WITH SHELBY
 ● = ROLLER BIT
 ▲ = MORE THAN 50 BLOWS
 N.T. = SURFACE LEVEL
 W.L. = WATER LEVEL

N = NUMBER OF BLOWS STANDARD PENETRATION TEST 30 cm
 PH = OWN WEIGHT OF TOOL
 NR = NO RECOVERED SAMPLE

JAPA INTERNATIONAL COOPERATION AGENCY (JICA) KOKUSAI KOGYO, CO., LTD.	
BORDO PONIENTE FINAL DISPOSAL SITE	
COUNTRY	MEXICO, D. F.
BORING HOLE	
W.L.	0.05 m
SM=7	FIGURE
	20

STANDARD PENETRATION TEST (No. OF BLOWS)	N	WATER CONTENT ● LIQUID LIMIT ▲ PLASTIC LIMIT (%)	Ss		GRAIN SIZE (G) GRAVEL (S) SAND (F) FINES (%)	STRENGTH TESTING (ton/m ²)		UNIFIED SOIL CLASSIFICATION SYSTEM (U. S. C. S.)
			γ _m	VOID RATION G _w DEGREE OF SATURATION (%)		QU	TRIXIAL UNDRAINED C	
10 20 30 40 50		100 200						LENDS SAND
	PH							BROWN REDDISH CLAY AND GRAY GREENISH WITH ORGANIC NODULES LOW CONSISTENCY AND FETID ODOR
	PH							
	PH							
	PH							
	PH							FRACTURE FILL WITH LIGHT GRAY CLAY
	PH							(C-4)
	PH							
	PH							
	PH							GRAY GREENISH CLAY LOW CONSISTENCY AND FETID ODOR
	1/60							
	PH							
	PH							
	PH							

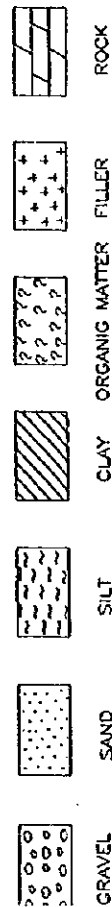
JAPA INTERNATIONAL COOPERATION AGENCY (JICA) KOKUSAI KOGYO, CO., LTD.	
BORDO PONIENTE FINAL DISPOSAL SITE	
COUNTRY	MEXICO, D.F.
BORING HOLE SM-7	
w.l.	0.03 m
N.T.	
FIGURE 2 b	

■ SAND
 ■ SILT
 ■ CLAY
 ■ ORGANIC MATTER
 ■ FILLER
 ■ ROCK

P₀ = STANDARD PENETRATION TEST
 Sh = SAMPLE WITH SHELBY
 = ROLLER BIT
 = MORE THAN 50 BLOWS
 N.T. = SURFACE LEVEL
 w.l. = WATER LEVEL

STANDARD PENETRATION TEST (No. OF BLOWS)	WATER CONTENT ○ LIQUID LIMIT ● PLASTIC LIMIT	Ss VOID RATIO Cw DEGREE OF SATURATION (%)	GRAIN SIZE (G) GRAVEL (S) SAND (F) FINES (%)	STRENGTH TESTING (ton/m ²)		UNIFIED SOIL CLASSIFICATION SYSTEM (U. S. C. S.)
				QU	CU	
10 20 30 40 50	100 200					
1/60						GRAY GREENISH CLAY LOW CONSISTENCY AND FETID ODOR
PH						
•						
1/60						
*						
PH						
*						
1/60						
*						
S _u						
1/60						
*						
1/60						
*						
1/45						
*						
1/60						
*						GREEN CLAY WITH VOLCANIC ASH LENSES FETID ODOR

JAPA INTERNATIONAL COOPERATION AGENCY (JICA) KOKUSAI KOGYO, CO., LTD.	
BORDO PONIENTE FINAL DISPOSAL SITE	
COUNTRY	MEXICO, D.F.
W.I.L.	0.03 m
BORING HOLE	SM-7
FIGURE	2 c



N = NUMBER OF BLOWS STANDART PENETRATION TEST 30 cm
 PH = OWN WEIGHT OF TOOL
 NR = NO RECOVERED SAMPLE
 Pe = STANDART PENETRATION TEST
 Sh = SAMPLE WITH SHELBY
 = ROLLER BIT
 MORE THAN 50 BLOWS
 N.T. = SURFACE LEVEL
 W.L. = WATER LEVEL

STANDARD PENETRATION TEST (No. OF BLOWS)		N	WATER CONTENT (%)		Ss SPECIFIC GRAVITY		GRAIN SIZE (G) GRAVEL (S) SAND (F) FINES	STRENGTH TESTING (Ton/m ²)		UNIFIED SOIL CLASSIFICATION SYSTEM (U. S. C. S.)	
10	20		30	40	50	W		PL	W _m		G _w
					100	200					
		1/60									
		*									
		1/60									
		*									
		1/60									
		*									
		PH									
		*									
		PH									
		*									
		PH									
		*									
		35/25									
		*									
		PH									

CONVENTIONAL SYMBOLS

- GRAVEL
- SAND
- SILT
- CLAY
- ORGANIC MATTER
- FILLER
- ROCK

- = ROLLER BIT
- = STANDARD PENETRATION TEST
- = SAMPLE WITH SHELBY
- = WATER LEVEL
- = MORE THAN 50 BLOWS
- = N.T.
- = SURFACE LEVEL

JAPA INTERNATIONAL COOPERATION AGENCY (JICA) KOKUSAI KOGYO, CO., LTD.	
BORDO PONIENTE FINAL DISPOSAL SITE	
COUNTRY	MEXICO, D. F.
BORING HOLE	SM-7
W.L.	0.03 m
N.T.	FIGURE 2d

END OF BORING HOLE
CASING END 6.00 m

BROWN REDDISH CLAY WITH SAND LENSES
LOW CONSISTENCY AND FETID ODOR

GRAY GREENISH CLAY LOW CONSISTENCY AND
FETID ODOR

GRAY GREENISH SILTY SAND HARD CONSISTENCY

GRAY GREENISH CLAYEY
LOW CONSISTENCY AND FETID ODOR

STANDARD PENETRATION TEST (No. OF BLOWS)	N	WATER CONTENT (%)		Ss SPECIFIC GRAVITY		GRAIN SIZE (G) GRAVEL (S) SAND (F) FINES (%)	STRENGTH TESTING (ton/m ²)		UNIFIED SOIL CLASSIFICATION SYSTEM (U. S. C. S.)
		LIQUID LIMIT (%)	PLASTIC LIMIT (%)	γ _m	γ _w		qu	CU	
10 20 30 40 50		100	200						
	25								ROAD (GRAVEL AND SAND)
	3								
	1/60								GRAY GREENISH CLAY WITH LENSES GRAY FINE SAND LOW CONSISTENCY AND FETID ODOR
	PH								
	PH								
	PH								
	PH								
	PH								
	SH								
	S								
	SH								
	PH								
									DARK GRAY SANDY CLAY LOW CONSISTENCY AND FETID ODOR

CONVENTIONAL SYMBOLS

- GRAVEL
- SAND
- SILT
- CLAY
- ORGANIC MATTER
- FILLER
- ROCK

- = ROLLER BIT
- = MORE THAN 50 BLOWS
- = STANDARD PENETRATION TEST
- = SAMPLE WITH SHELBY
- = SURFACE LEVEL
- = WATER LEVEL

JAPA INTERNATIONAL COOPERATION AGENCY (JICA) KOKUSAI KOGYO, CO., LTD.	
BORDO PONIENTE FINAL DISPOSAL SITE	
COUNTRY	BORING HOLE
MEXICO, D.F.	SM-8
W.L. 0.35 m	N.T.
	FIGURE
	30

STANDARD PENETRATION TEST (No. OF BLOWS)	WATER CONTENT ● LIQUID LIMIT △ PLASTIC LIMIT (%)	S _p SPECIFIC GRAVITY γ _m UNIT WEIGHT (Ton./m ³) ○ VOID RATION G _w DEGREE OF SATURATION (%)	GRAIN SIZE (G) GRAVEL (S) SAND (F) FINES (%)	STRENGTH TESTING (ton/m ²)		UNIFIED SOIL CLASSIFICATION SYSTEM (U. S. C. S.)
				q _u	UNDRAINED C φ	
10 20 30 40 50	100 200					BROWN REDDISH CLAY AND GRAY GREENISH WITH LIGHT GRAY SILT LENSES LOW CONSISTENCY AND FETID ODOR

CONVENTIONAL SYMBOLS

- GRAVEL
 - SAND
 - SILT
 - CLAY
 - ORGANIC MATTER
 - FILLER
 - ROCK
- = NUMBER OF BLOWS STANDARD PENETRATION TEST 30 cm
 - H = OWN WEIGHT OF TOOL
 - NR = NO RECOVERED SAMPLE
 - = ROLLER BIT
 - = MORE THAN 50 BLOWS
 - N.T. = SURFACE LEVEL
 - W.L. = WATER LEVEL

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) KOKUSAI KOGYO, CO., LTD.	
BORDD PONIENTE FINAL DISPOSAL SITE	
COUNTRY	MEXICO, D.F.
BORING HOLE	SIM-8
W.L.	0.35 m
N.T.	0.00 m
FIGURE	3c

STANDARD PENETRATION TEST (NO. OF BLOWS)	N	WATER CONTENT (%)	S _s SPECIFIC GRAVITY		GRAIN SIZE (G) GRAVEL (S) SAND (F) FINES (%)	STRENGTH TESTING (ton/m ²)		UNIFIED SOIL CLASSIFICATION SYSTEM (U. S. C. S.)
			γ _m VOID RATION	G _w DEGREE OF SATURATION (%)		qu	UNCONSOLIDATED UNDRAINED	
10 20 30 40 50	PH	100 200 300 400	S _s γ _m	G _w	G	C	ϕ	BROWN REDDISH CLAY AND GRAY GREENISH WITH LIGHT GRAY SILT LENSES LOW CONSISTENCY AND FETID ODOR
	*							
	Sh							
	Sh	●	2.54	1.18	6.28	100	1.73 0.9 0	
	PH							
	*							
	PH							
	*							
	PH							
	*							
	PH							
	*							
	PH							
	*							
	PH							
	*							

(CH)

CONVENTIONAL SYMBOLS

GRAVEL
 SAND
 SILT
 CLAY
 ORGANIC MATTER
 FILLER
 ROCK
 STANDARD PENETRATION TEST
 SAMPLE WITH SHELBY
 PENETRATION TEST 30 cm
 PENETRATION TEST 75 cm
 PENETRATION TEST 150 cm
 ROLLER BIT
 MORE THAN 50 BLOWS
 SURFACE LEVEL
 WATER LEVEL

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) KOKUSAI KOGYO, CO., LTD.	
BORDO PONIENTE FINAL DISPOSAL SITE	
COUNTRY	BORING HOLE
MEXICO, D.F.	SM-8
W.L. 0.35 m	N.T.
	FIGURE 3d

STANDARD PENETRATION TEST (No. OF BLOWS)	N	WATER CONTENT (%)		S _s SPECIFIC GRAVITY		GRAIN SIZE		STRENGTH TESTING		UNIFIED SOIL CLASSIFICATION SYSTEM (U. S. C. S.)
		LIQUID LIMIT	PLASTIC LIMIT	T _m UNIT WEIGHT (Ton/m ³)	VOID RATION	(G) GRAVEL	(S) SAND	(F) FINES (%)	(ton/m ²)	
10 20 30 40 50		100	200	S _s	G _w	G	S	F	q _u	TRIAxIAL UNDRAINED C
	PH									
	-									
	1/45									
	-									
	Sh	Δ	●	2.54	1.67	4.837	98.6		8.4	1.1
	37									
	-									
	PH									
	*									
	PH									
	*									
	PH									
	*									
	PH									
	*									
	PH									
	*									
	PH									
	*									

FINE SANDY (VOLCANIC ASH) WITH GRAVEL.
LOW CONSISTENCY FETID ODOR

GRAY GREENISH CLAY WITH LIGHT GRAY SILT
(VOLCANIC ASH)
LOW CONSISTENCY AND FETID ODOR

CONVENTIONAL SYMBOLS

- GRAVEL
- SAND
- SILT
- CLAY
- ORGANIC MATTER
- FILLER
- ROCK

- Pe = STANDARD PENETRATION TEST
- Sh = SAMPLE WITH SHELBY
- = OWN WEIGHT OF TOOL
- * = NO RECOVERED SAMPLE
- * = ROLLER BIT
- = MORE THAN 50 BLOWS
- N.T. = SURFACE LEVEL
- W.L. = WATER LEVEL

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) KOKUSAI KOGYO, CO., LTD.	
BORDO PONIENTE FINAL DISPOSAL SITE	
COUNTRY	MEXICO, D.F.
W.L.	0.35 m
FIGURE	SM-8
	N.T.
	3e

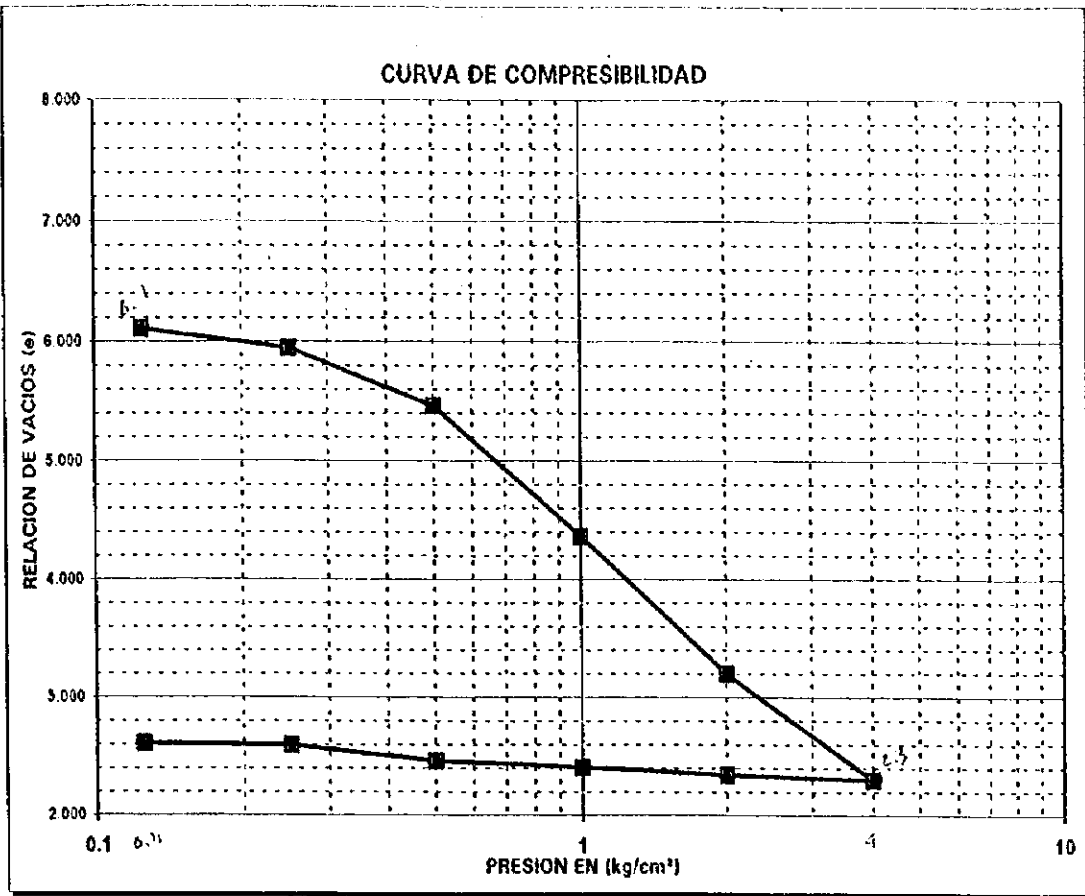
STANDARD PENETRATION TEST (No. OF BLOWS)	WATER CONTENT ● LIQUID LIMIT (%) ▲ PLASTIC LIMIT (%)	Ss γ _m e C _w	GRAIN SIZE (G) GRAVEL (S) SAND (F) FINES (%)	STRENGTH TESTING (ton/m ²)		UNIFIED SOIL CLASSIFICATION SYSTEM (U. S. C. S.)
				qu	CU	
10 20 30 40 50	100					
	PH					
	•					
	PH					
	•					
	Sh					
	Sh					
	35					
	•					FINE GRAY GREENISH SAND FROM STIFF TO HARD CONSISTENCY
	35					
	■					
	35/20					
	•					
	35/20					
	•					
	35/10					
	■					
	35/15					
	■					

END OF BORING HOLE
NO CASING USED

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) KOKUSAI KOGYO, CO., LTD.	
BORDO PONIENTE FINAL DISPOSAL SITE	
COUNTRY	MEXICO, D.F.
BORING HOLE	SM-8
W.L.	0.35 m
FIGURE	31

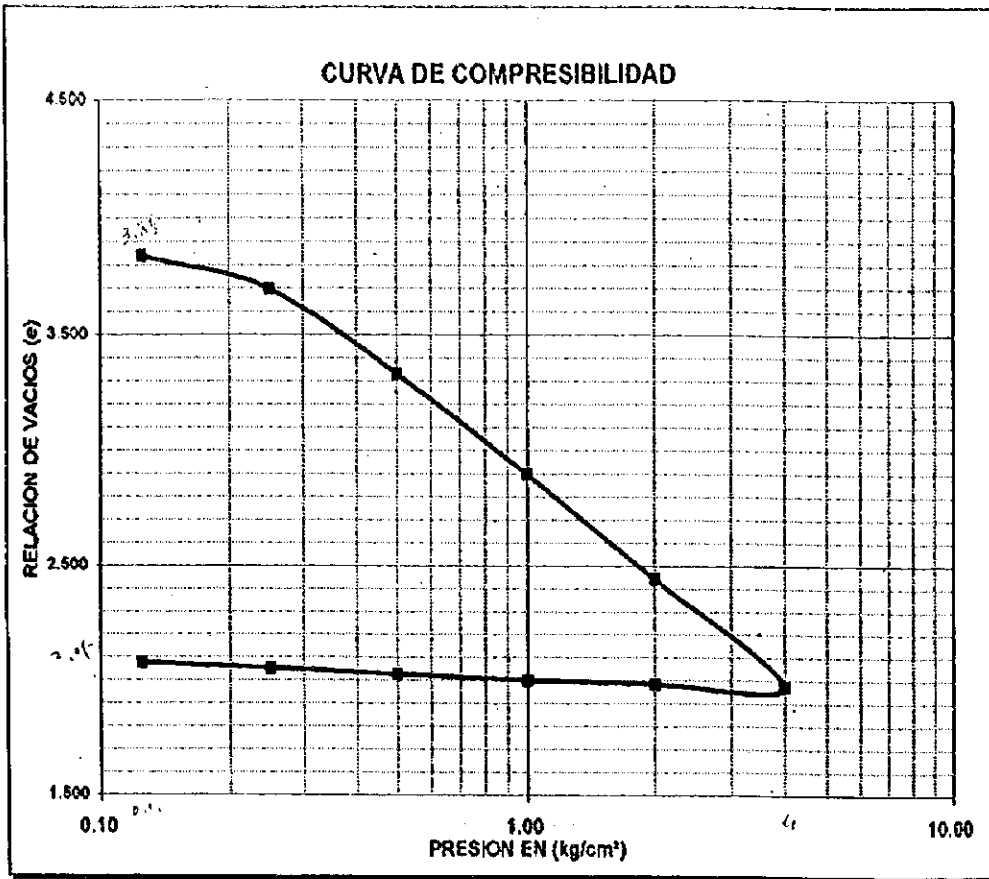
CONVENTIONAL SYMBOLS

- GRAVEL
- SAND
- SILT
- CLAY
- ORGANIC MATTER
- FILLER
- ROCK
- * = ROLLER BIT
- Pe = STANDARD PENETRATION TEST
- Sh = SAMPLE WITH SHELBY
- = NUMBER OF BLOWS STANDARD PENETRATION TEST 30 cm
- = OWN WEIGHT OF TOOL
- = NO RECOVERED SAMPLE
- = MORE THAN 50 BLOWS
- N.T. = SURFACE LEVEL
- W.L. = WATER LEVEL



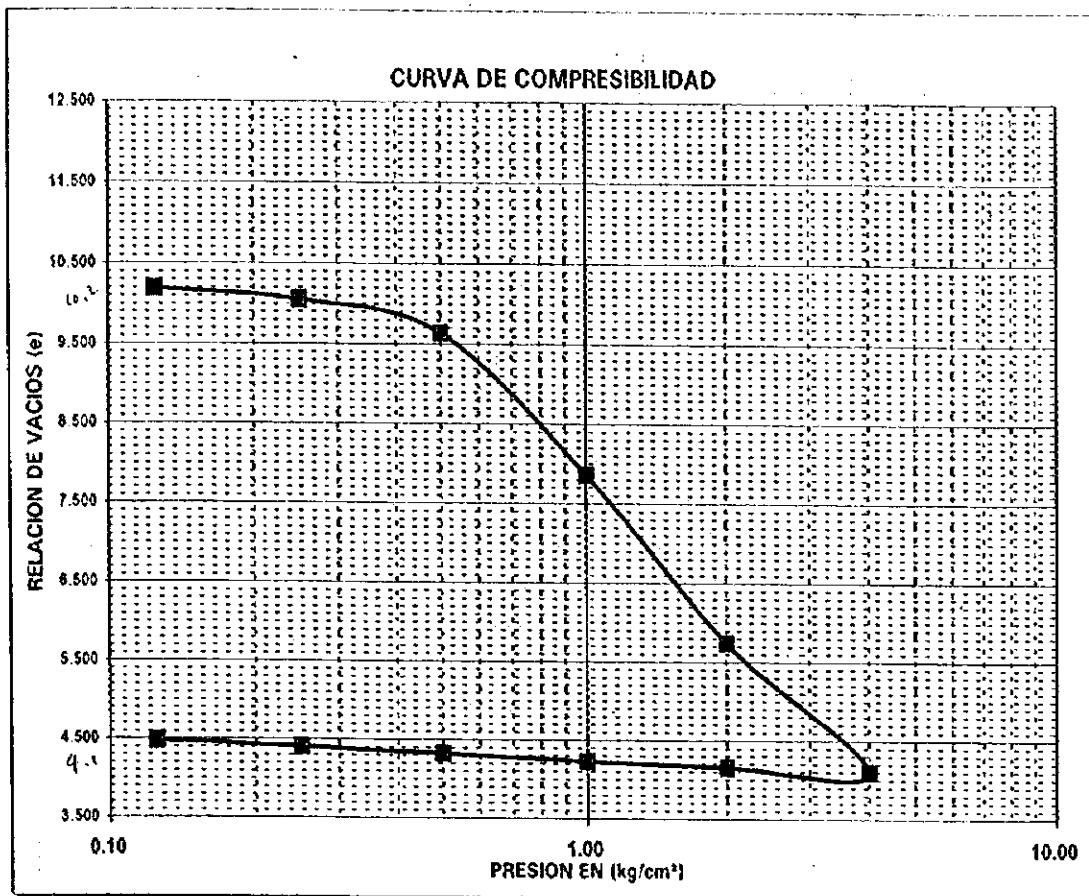
DATOS INICIALES				P _c	P
W%	S _s	e	G _w %	(kg/cm²)	(kg/cm²)
238.000	2.632	6.267	100.000		

PRUEBA	CONSOLIDACIÓN		
OBRA	BORDO PONIENTE ETAPA IV		
LUGAR	MEXICO D.F.	SONDEO	SM-7
PROF.	15,00-16,00 m	FIGURA	4



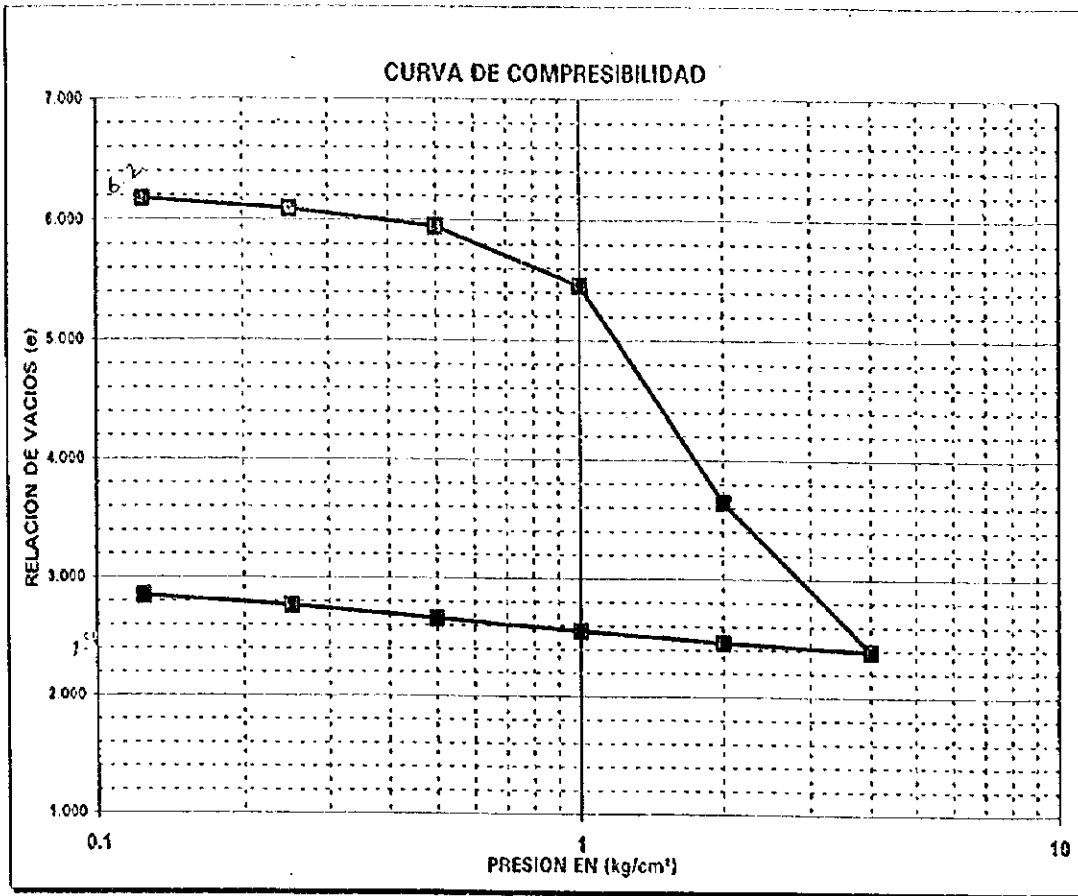
DATOS INICIALES				Pc	P
W%	Se	e	Gw %	(kg/cm²)	(kg/cm²)
167.677	2.480	4.037	102.996		

PRUEBA	CONSOLIDACIÓN	
OBRA	BORDO PONIENTE SECCIÓN IV	
LUGAR	MEXICO D.F.	SONDEO SM-7.
PROF.	8,00-9,00 m	FIGURA 5



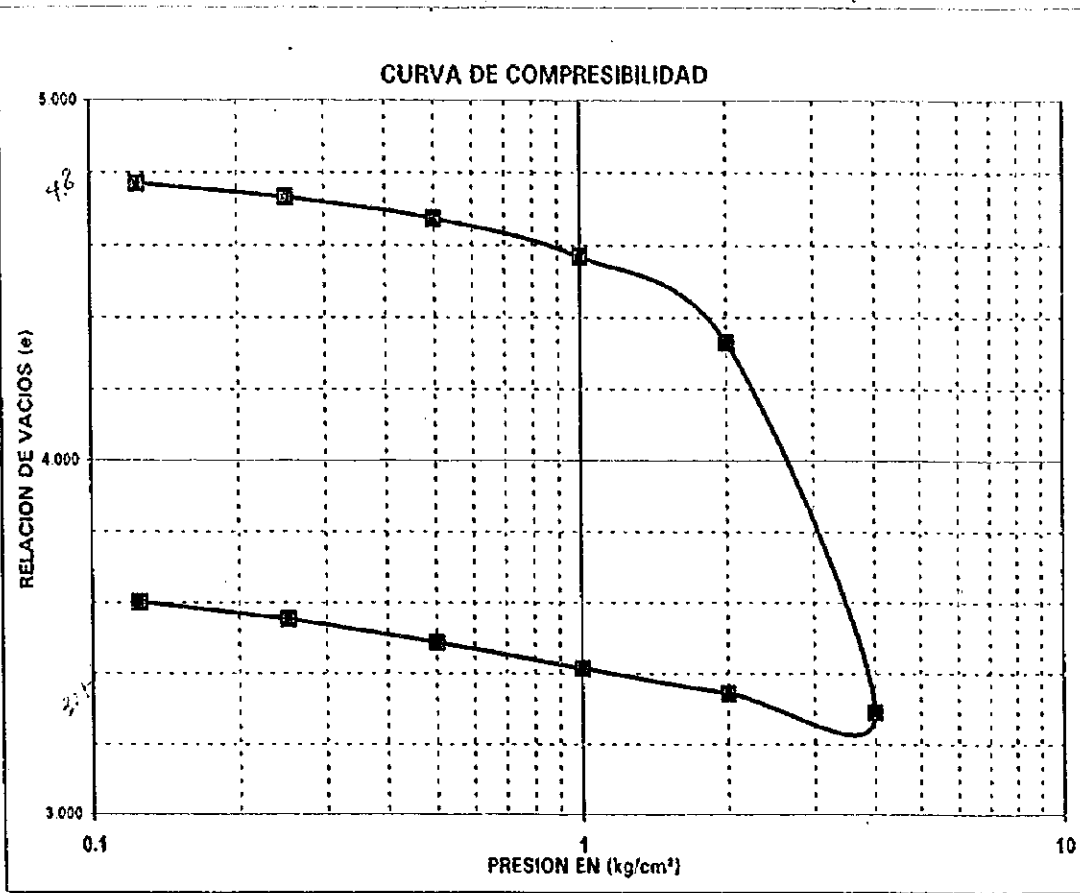
DATOS INICIALES				P _c	P
W%	S _s	e	G _w %	(kg/cm²)	(kg/cm²)
421.348	2.520	10.399	102.102		

PRUEBA	CONSOLIDACIÓN	
OBRA	BORDO PONIENTE ETAPA IV	
LUGAR	MEXICO D.F.	SONDEO SM-8
PROF.	16,00-17,00 m	FIGURA 6



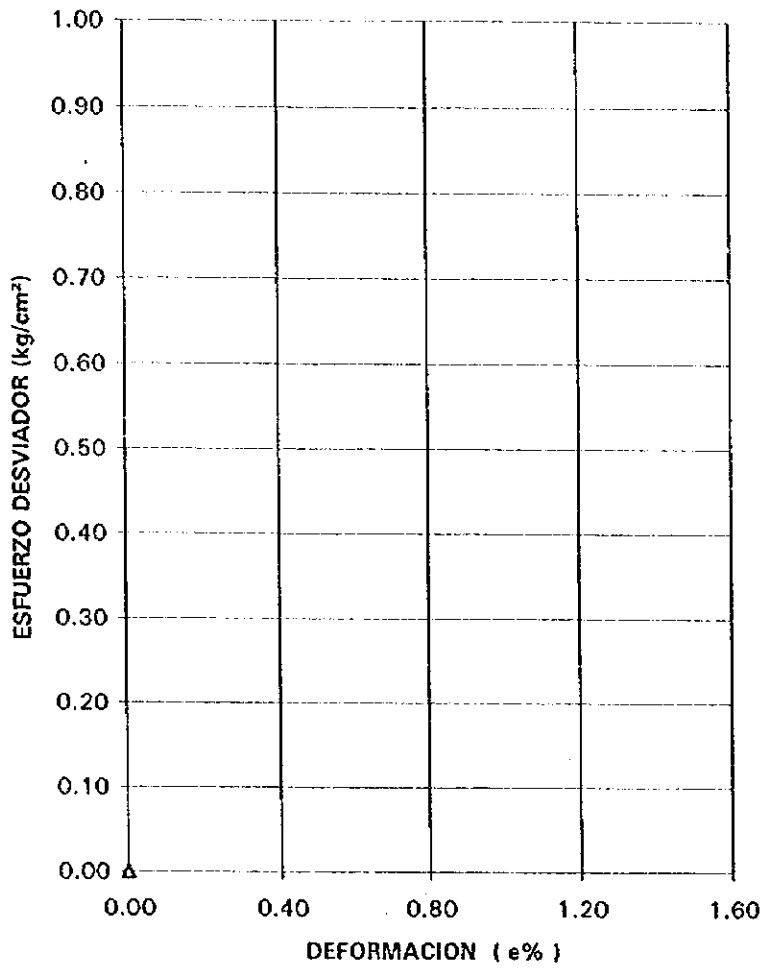
DATOS INICIALES				Pc	P
W%	Ss	e	Gw %	(kg/cm²)	(kg/cm²)
247.700	2.540	6.280	100.000		

PRUEBA	CONSOLIDACIÓN	
OBRA	BORDO PONIENTE ETAPA IV	
LUGAR	MEXICO D.F.	SONDEO SM-8
PROF.	32,00-33,00 m	FIGURA 7



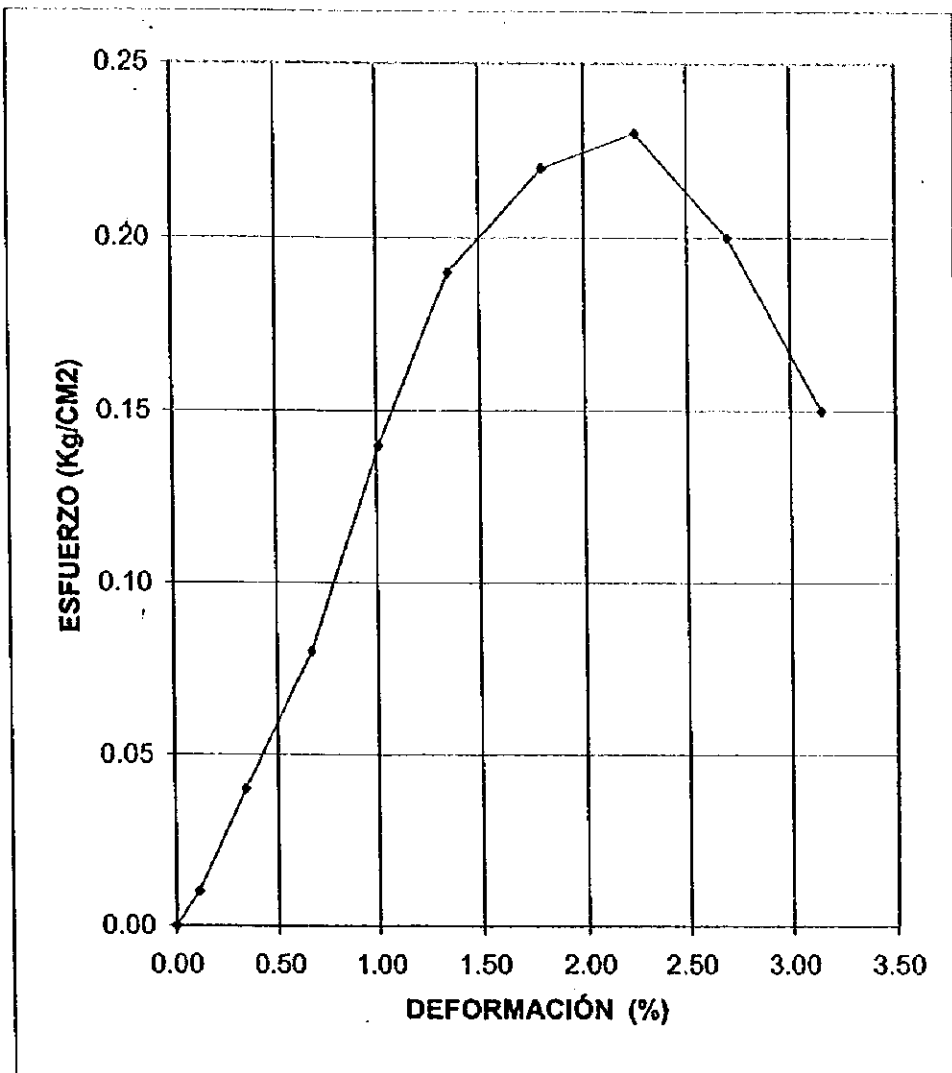
DATOS INICIALES				P _c	P
W%	S _s	e	G _w %	(kg/cm ²)	(kg/cm ²)
187.200	2.547	4.837	98.800		

PRUEBA	CONSOLIDACIÓN		
OBRA	BORDO PONIENTE ETAPA IV		
LUGAR	MEXICO D.F.	SONDEO	SM-8
PROF.	42,00-43,00 m	FIGURA	8



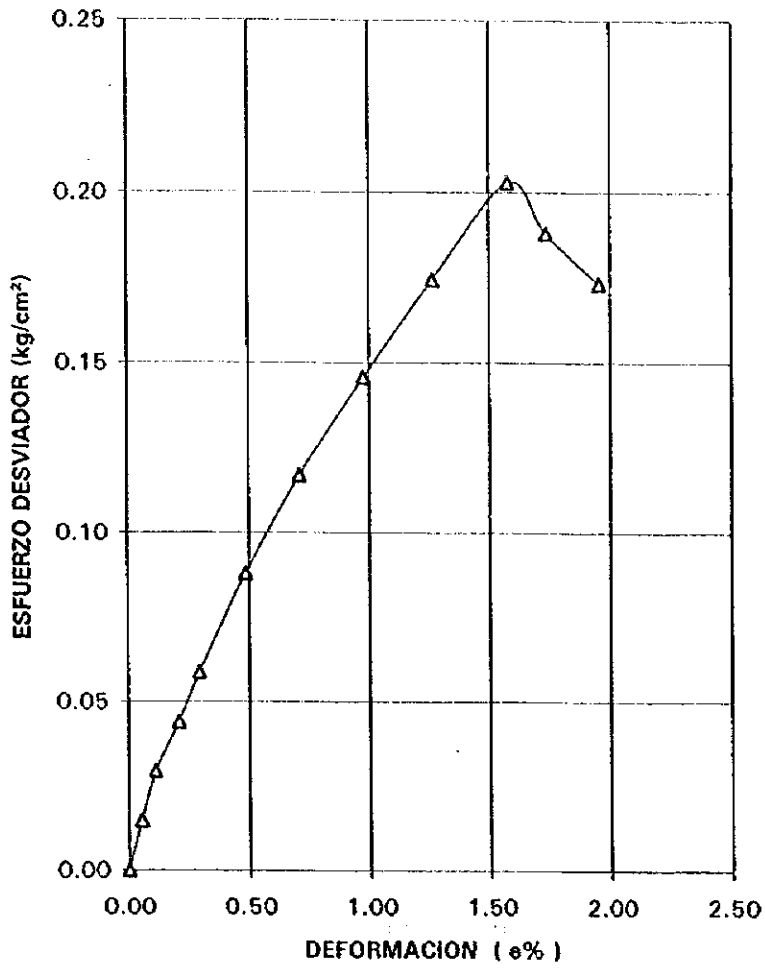
DATOS FINALES DEL ESPECIMEN	
e =	G = %
Pvhi = 1.226 T/m ³	Wi = 217.2 %
qu = 0.000 kg/cm ²	

PRUEBA:	COMPRESIÓN SIMPLE	
OBRA:	BRODO PONIENTE ETAPA IV	
LUGAR:	MEXICO D.F.	SONDEO: SM-7
PROF:	8.00 - 9.00 m	FIGURA: A3-1



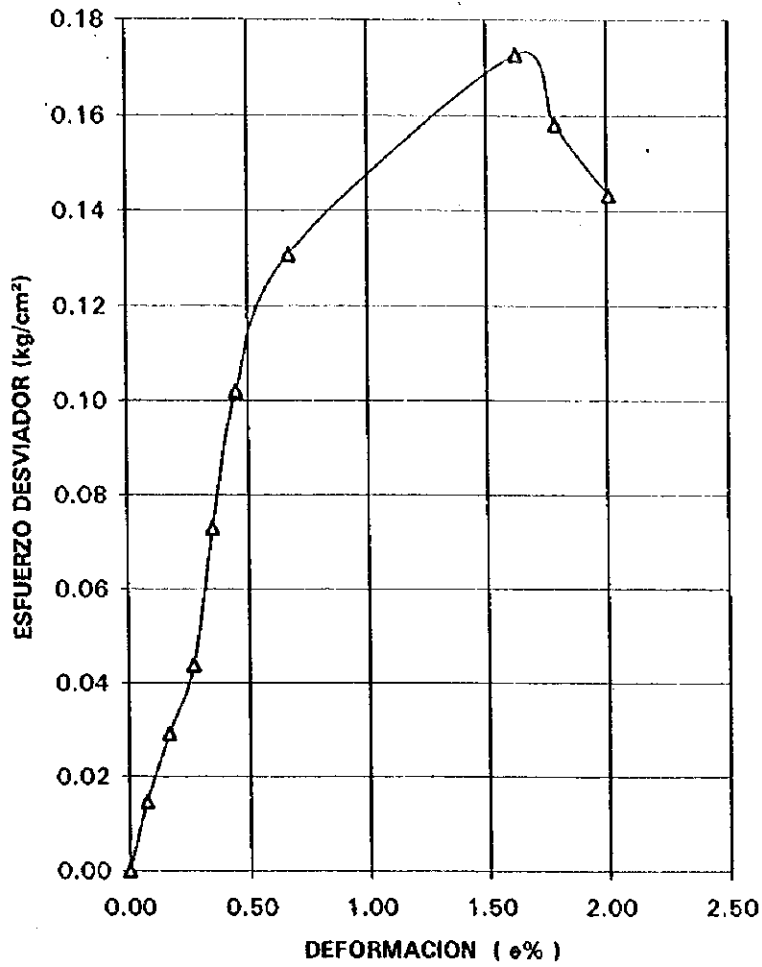
DATOS FINALES DEL ESPECIMEN	
e =	7.519
Pvhl =	1.191 T/m3
qu =	0.230 kg/cm2
G =	100.00 %
Wi =	285.6 %
Ss =	2.6

PRUEBA:	COMPRESIÓN SIMPLE	
OBRA:	BORDO PONIENTE ETAPA IV	
LUGAR:	MEXICO D.F.	SONDEO: SM-7
PROF:	15.00-16.00 m	FIGURA: A3-2



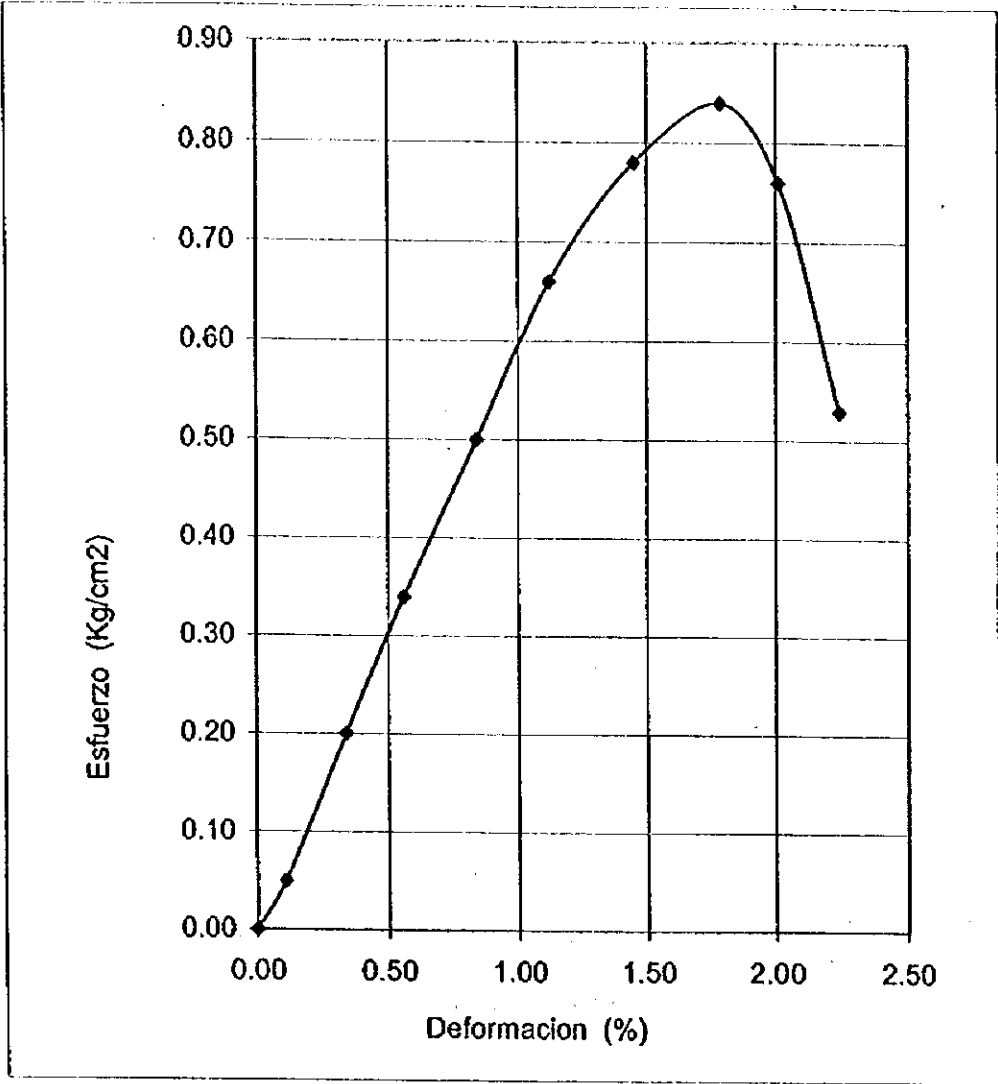
DATOS FINALES DEL ESPECIMEN	
e =	G = %
Pvhi = 1.164 T/m ³	Wi = 340.0 %
qu = 0.203 kg/cm ²	

PRUEBA	COMPRESIÓN SIMPLE		
OBRA	BRODO PONIENTE ETAPA IV		
LUGAR	MEXICO D.F.	SONDEO	SM-8
PROF:	16,00-17,00 m	FIGURA	A3-3



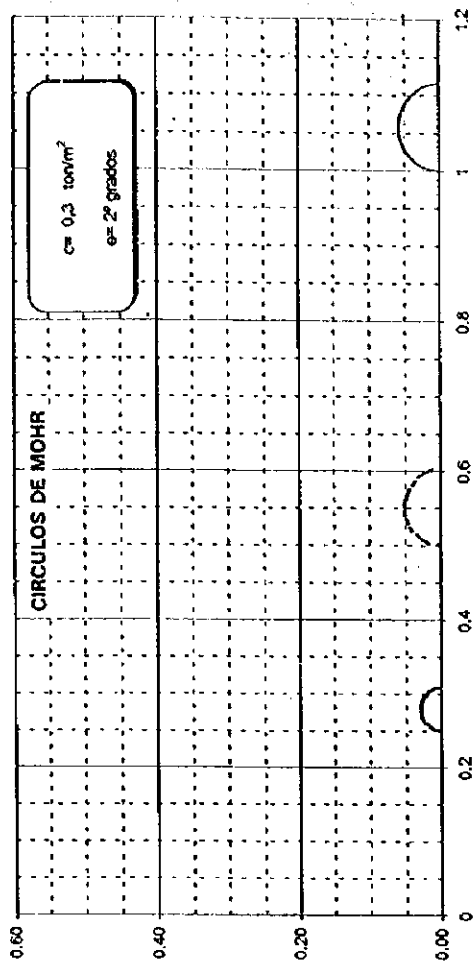
DATOS FINALES DEL ESPECIMEN	
$\epsilon =$	G = %
Pvhi = 1.194 T/m ³	Wl = 290.1 %
qu = 0.173 kg/cm ²	

PRUEBA:	COMPRESIÓN SIMPLE	
OBRA:	BRODO PONIENTE ETAPA IV	
LUGAR:	MEXICO D.F.	SONDEO SM-8
PROF:	32,00-33,00 m	FIGURA A3-4

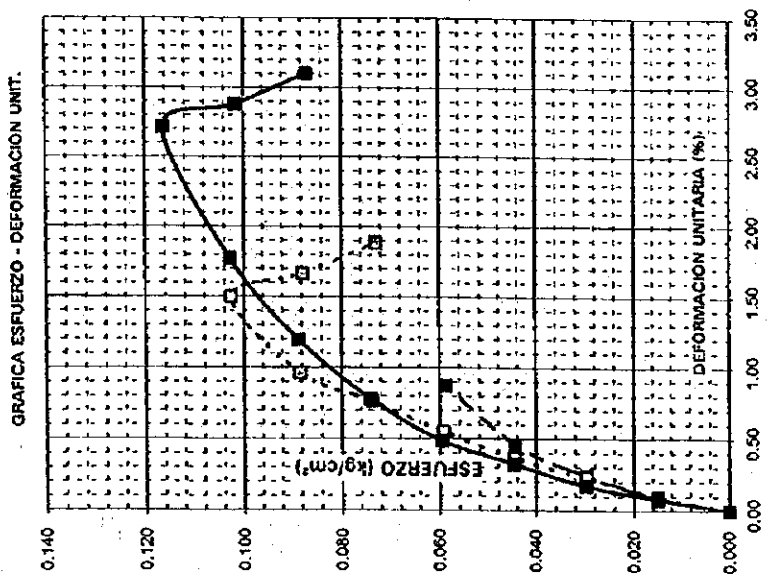


DATOS FINALES DEL ESPECIMEN			
e =	2.460	G =	98.00 %
Pvhi =	1.433 T/m3	Wi =	94.7 %
qu =	0.840 kg/cm2	Ss =	2.5

PRUEBA:	COMPRESIÓN SIMPLE		
OBRA:	BORDO PONIENTE ETAPA IV		
LUGAR:	MEXICO D.F.	SONDEO:	SM-8
PROF:	42,00-43,00 m	FIGURA:	A3-5

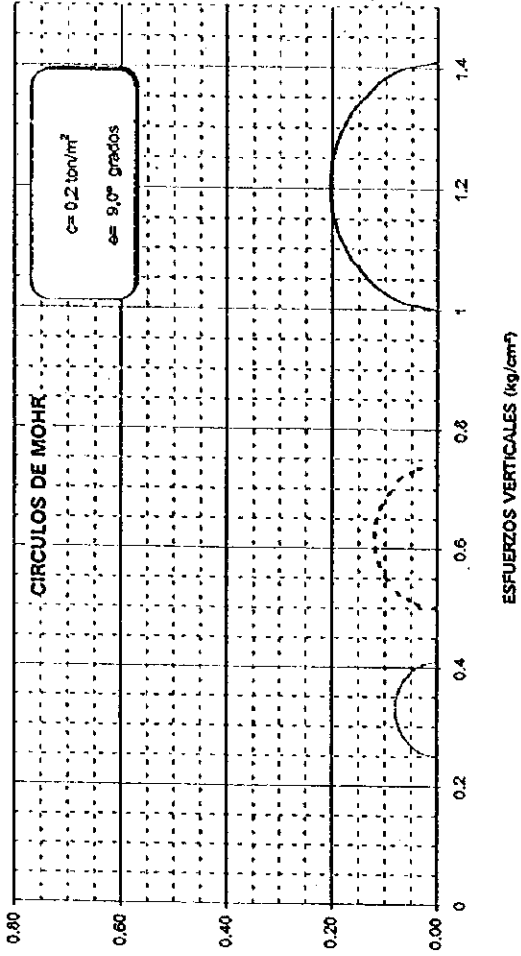
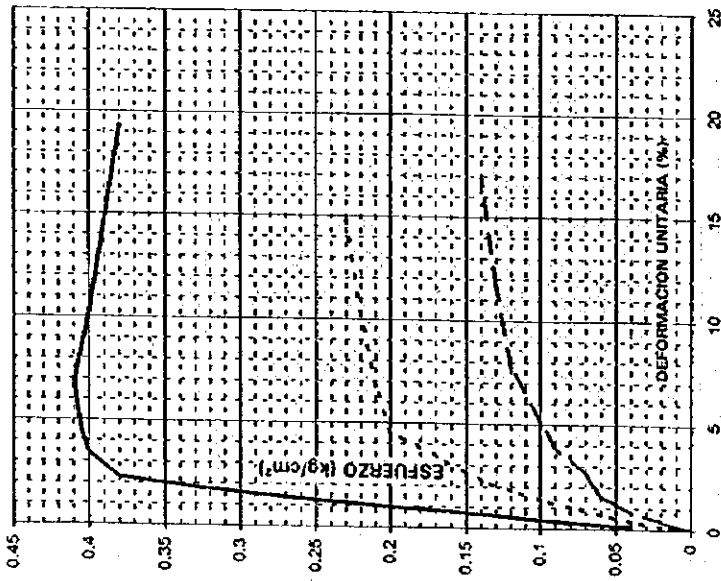


ENSAYO Num.	W I (%)	ei	Gwi (%)	PESO VOLUM. NATURAL (ton/m3)	PRESION CONF. (kg/cm²)	ESF. A LA FALLA (kg/cm²)
1	380.556			1.133	0.25	0.06
2	407.882			1.136	0.50	0.10
3	378.182			1.158	1.00	0.12



PRUEB	COMPRESION TRIAXIAL RAPIDA
OBRA	BORDO PONIENTE ETAPA IV
LUGAR	MEXICO D.F.
SONDEO	SM-7
PROF.	8,00-9,00 m
FIGURA	AS-5

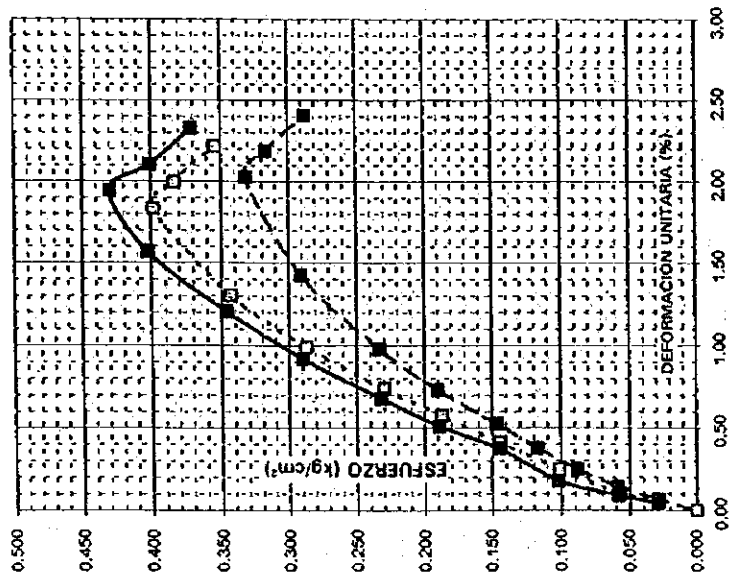
GRAFICA ESFUERZO - DEFORMACION UNIT.



ENSAYO Num.	W1 (%)	ei	Gwi (%)	PESO VOLUM. NATURAL (ton/m3)	PRESION CONF. (kg/cm²)	ESF. A LA FALLA (kg/cm²)
1	175.400	4.718	97.9	1.268	0.25	0.16
2	178.200	4.870	96.3	1.247	0.50	0.24
3	126.700	3.448	96.7	1.341	1.00	0.41

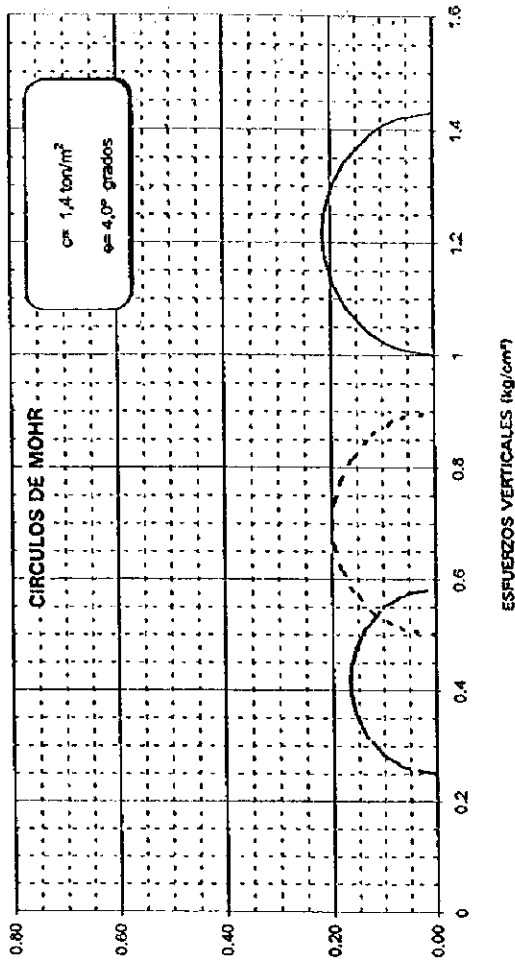
PRUEB	COMPRESION TRIAXIAL RAPIDA
OBRA	BORDO PONIENTE ETAPA IV
LUGAR	MEXICO D.F.
SONDEO	SM-7
PROF.	15.00-16.00 m
FIGURA	A3-7

GRAFICA ESFUERZO - DEFORMACION UNIT.



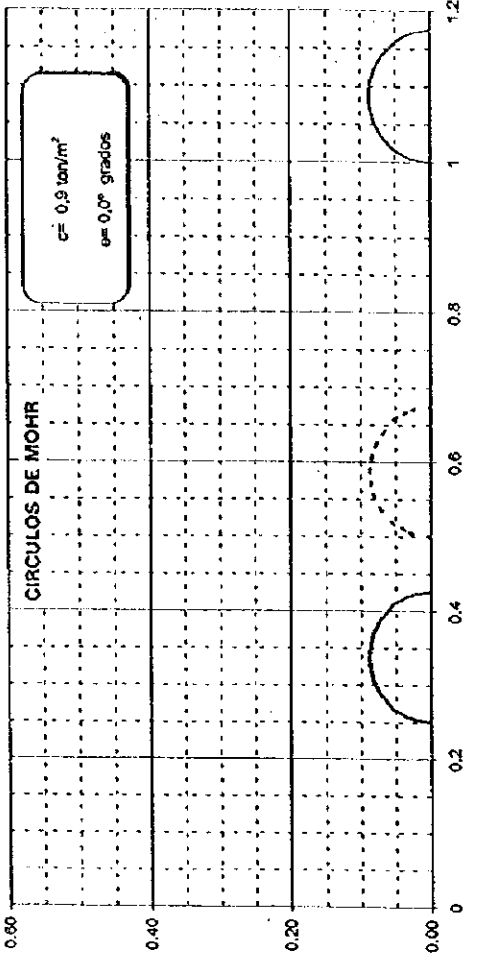
—■— 1.00
-○- 0.50
-△- 0.25

ESFUERZOS CORTANTES (kg/cm²)



ENSAYO	W l (%)	e l	G w l (%)	PESO VOLUM. NATURAL (ton/m³)	PRESION CONF. (kg/cm²)	ESF. A LA FALLA (kg/cm²)
Num. 1	323.256			1.181	0.25	0.33
2	321.073			1.169	0.50	0.40
3	329.688			1.179	1.00	0.43

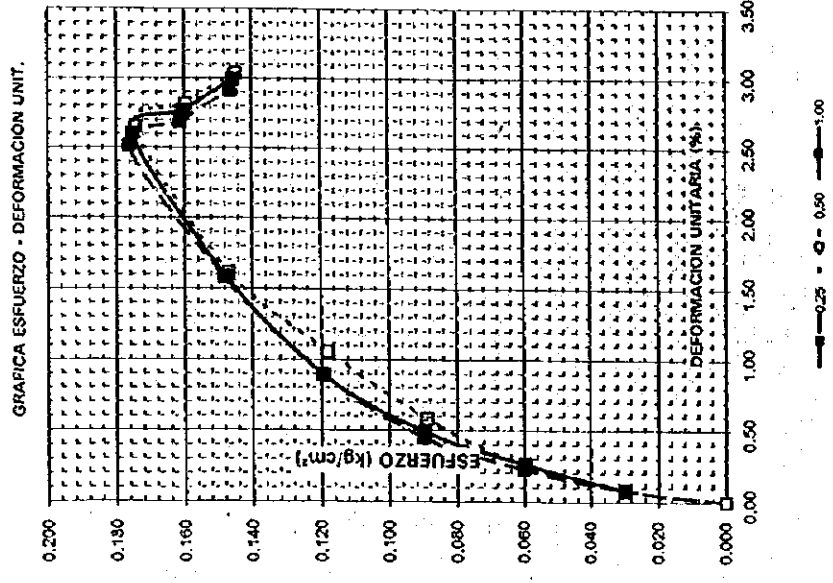
PRUEB	COMPRESION TRIAXIAL RAPIDA
OBRA	BRDO PONIENTE ETAPA IV
LUGAR	MEXICO D.F.
PROF.	16.00-17.00 m
SONDEO	SM-8
FIGURA	A3-8



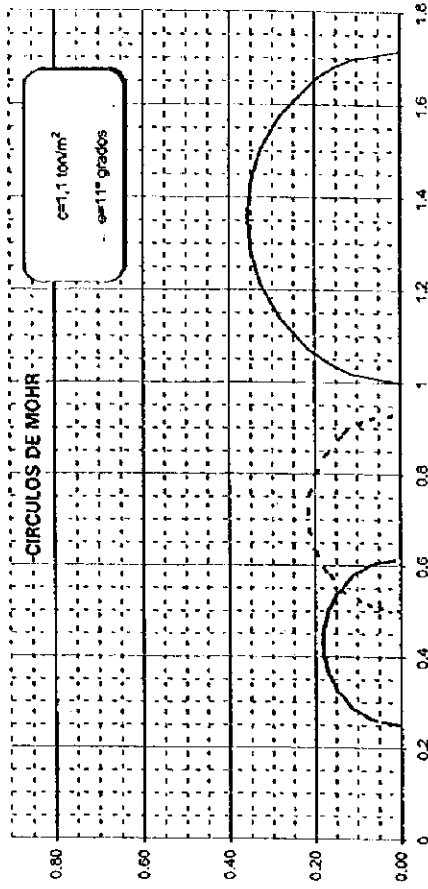
ESFUERZOS VERTICALES (kg/cm²)

ENSAYO	W _i (%)	e _i	G _{wi} (%)	PESO VOLUM. NATURAL (ton/m³)	PRESION CONF. (kg/cm²)	ESF. A LA FALLA (kg/cm²)
1	313.780			1.193	0.25	0.18
2	293.841			1.193	0.50	0.17
3	301.880			1.191	1.00	0.18

PRUEB	COMPRESION TRIAXIAL RAPIDA
OBRA:	BORDO PONIENTE ETAPA IV
LUGAR	MEXICO D.F.
PROF.	32,00-33,00 m
SONDEO	SMA-8
FIGURA	A3-9



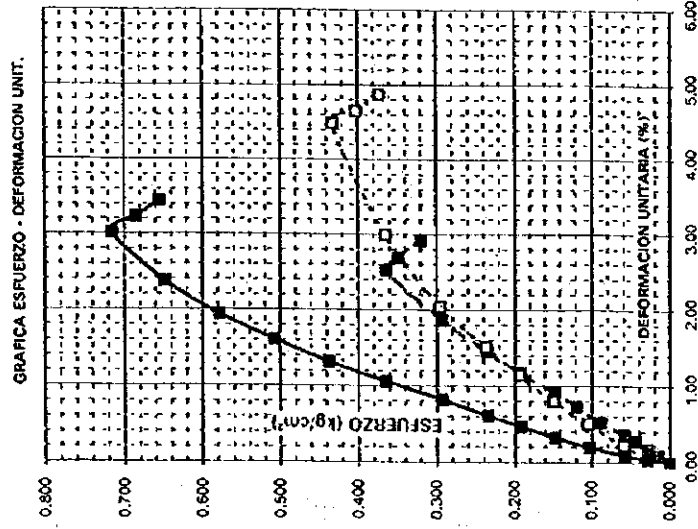
GRAPICA ESFUERZO - DEFORMACION UNIT.



ESFUERZOS VERTICALES (kg/cm²)

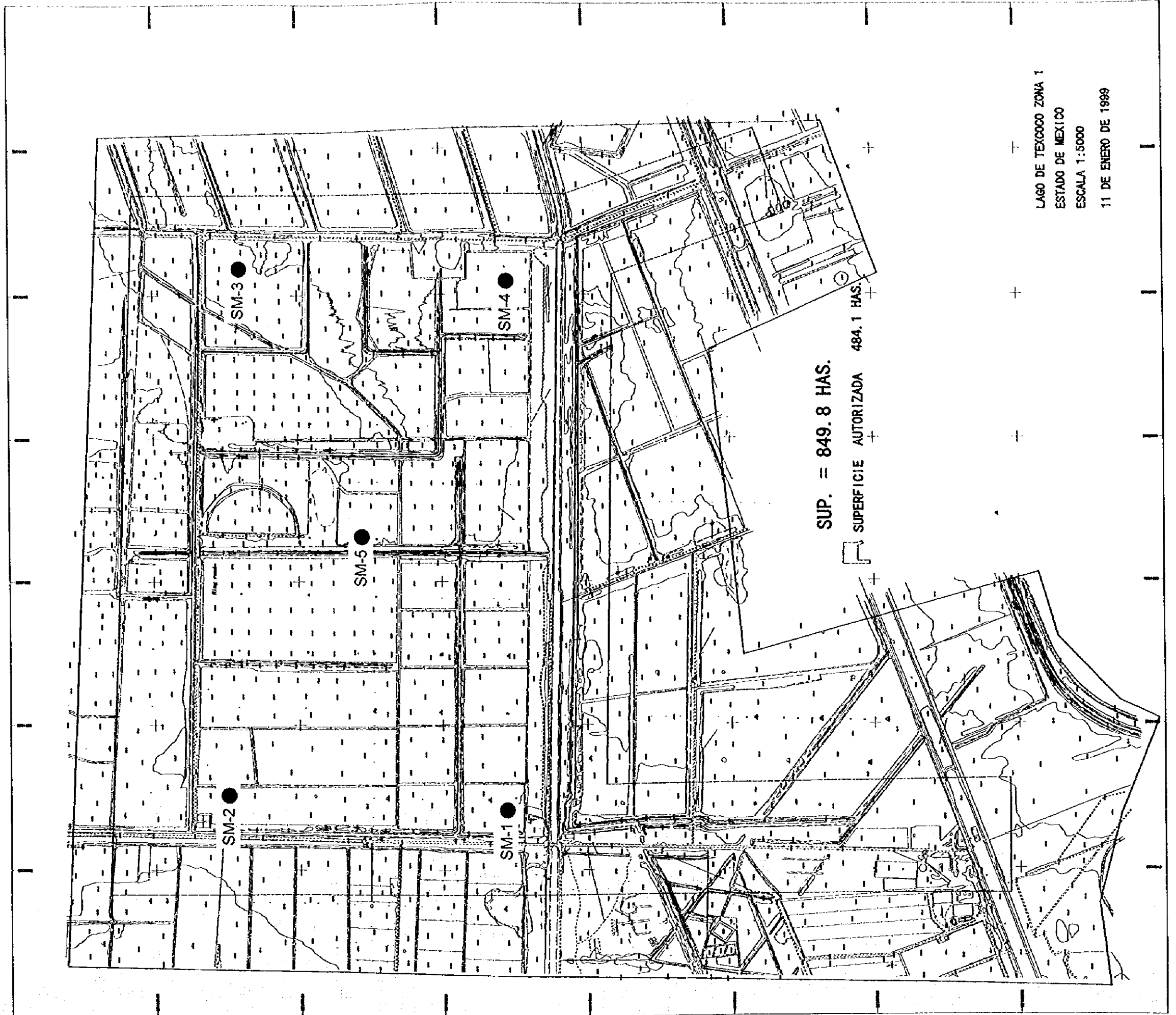
ESFUERZOS CORTANTES (kg/cm²)

ENSAYO	W _i (%)	e _i	G _{wi} (%)	PESO VOLUM. NATURAL (ton/m ³)	PRESION CONF. (kg/cm ²)	ESF. A LA FALLA (kg/cm ²)
1	38,647			1,673	0,25	0,36
2	201,316			1,278	0,50	0,43
3	141,221			1,358	1,00	0,72



PRUEB	COMPRESION TRIAXIAL RAPIDA
OBRA	BONDO PONIENTE ETAPA IV
LUGAR	MEXICO D.F.
PROF.	42,00-43,00m
	SONDEO SM-8
	FIGURA A3-10

BP ETAPA V



SUP. = 849.8 HAS.

☐ SUPERFICIE AUTORIZADA 484.1 HAS.

LAGO DE TEXCOCO ZONA 1
ESTADO DE MEXICO
ESCALA 1:5000
11 DE ENERO DE 1999

RESUMEN DE RESULTADOS

OBRA: BORDO XOCHILACA
 LOCALIZACION: ANTIGUO LAGO DE TEXCOCO
 DATOS OBTENIDOS DE LAS PRUEBAS DE LABORATORIO:

PRUEBA	SONDEO											
	SM-1	SM-1	SM-2	SM-2	SM-3	SM-3	SM-4	SM-4	SM-5	SM-5		
	36,10-36,70	39,70-40,30	6,00-7,00	31,30-34,30	4,40-5,40	12,00-12,60	3,00-3,90	18,90-19,50	12,00-12,90	18,60-19,20	24,00-24,60	55,00-55,60
DENSIDAD DE SOLIDOS	2,85	2,99	2,82	2,77	2,85	2,82	2,99	2,86	2,86	2,906	2,94	2,96
PESO VOLUMETRICO (Ton/m ³)	1,287	1,302	1,156	1,24	1,47	1,31	1,14	1,14	1,2	1,2	1,25	1,32
RELACION DE VACIOS	4,58	6,2	12,5	8,4	2,51	4,9	14,2	9,95	8,7	5,97	6,21	4,1
GRADO DE SATURACION (%)	95	103	103	106	83,4	99,8	100	97	99	97	98	92
CONTENIDO DE AGUA (%)	132	136	442,1	321,7	83,4	173,7	398	302	281	147	193	129
LIMITE LIQUIDO (%)	140,7	158,8	354	244,8	108,8	239	443	336	320	148	202	134
LIMITE PLASTICO (%)	31,7	33,4	29,8	32,7	34,2	33,8	78,8	33,2	32,7	23,6	24,1	31
INDICE DE PLASTICIDAD (%)	109	125,4	324,2	212,1	74,6	225,2	364,2	322,8	287,3	122,4	177,9	103
Triaxial no drenada no consolidada (UU)												
Cohesion (C) en Ton/m ²	9	0,4	1	2	0,03	0,16	0	0	0,05	1,4	0	5
Ang. de friccion interna (PHI) en grados	9	1	3	6	1	0	5	7	0,5	0,29	5	11
COMPRESION SIMPLE (T/m ²)	14,4	6,3	0	5,8	1	0,98	0,15	0,85	0,9	2,3	0,9	14,3
CONTENIDO DE FINOS (%)	99,6	98,4	95,8	92	99	94	78	83	77,5	99	97	99
Coeficiente de consolidacion (Cv, cm ² /seg)	0,02	0,009	0,002113	0,006691207	0,0071429	0,010526316	0,002333	0,006323226	0,07633942	0,019000125	0,00707607	0,129263333

RESISTENCIA A LA PENETRACION ESTANDAR. (NO DE COLPES)	N	CONTENIDO DE AGUA		Ss DENSIDAD DE SOLIDOS		GRANULOMETRIA :		PRUEBAS DE RESISTENCIA			CLASIFICACION (S.U.C.S.)	
		● LIMITE LIQUIDO	△ LIMITE PLASTICO	γ _m PESO VOLUMETRICO (TON/M ³)	γ _s RELACION DE VACIOS	(G) GRAVA	(S) ARENA	(F) FINOS	QU	C		β
0												ARCILLA CAFE CLARO DE CONSISTENCIA MUY BLANDA Y ARENA FINA EN POCA CANTIDAD.
1	1											ARCILLA GRIS OSCURO Y CAFE ROJIZO DE CONSISTENCIA MUY BLANDA Y ARENA FINA EN POCA CANTIDAD.
2	PH											
3	PH											
4	PH											
5	PH											
6	PH											ARCILLA GRIS CLARO DE CONSISTENCIA MUY BLANDA. CON PEQUENAS LENTES DE ARENA INTERCALADA.
7	PH											
8	PH											
9	PH											
10	PH											

**GEO INGENIERIA
INTERNACIONAL, S.A. DE C.V.**

OBRA : **BORDO PONIENTE**
ANTIGUO LAGO DE TEXCOCO

LUGAR : **SONDEO**
MEXICO. D.F. **SM-1**

N.A.F. **N.T.**
0.35 m **FIG. C**

S I M B O L O G I A

	GRAVA		ARENA		LIMO		ARCILLA MAT. ORGANICA RELLENO		ROCA
--	-------	--	-------	--	------	--	-------------------------------	--	------

N = NUMERO DE COLPES PARA PENETRAR 30 CM
 PH = PESO DE HERRAMIENTA
 NR = NO SE RECUPERO MUESTRA

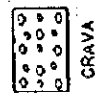
P₀ = PENETRACION ESTANDAR
 S₀ = MUESTRO CON TUBO SHELBY
 B₀ = MUESTRO CON BARRIL DENISON
 CA. CO. = CARBONATO DE CALCIO

♦ = AVANCE CON BROCA TRICONICA
 ▣ = MAYOR DE 50 COLPES
 N.T. = NIVEL DE TERRENO
 N.A.F. = NIVEL DE AGUAS FREATICAS

J.A.F.V. / 19

RESISTENCIA A LA PENETRACION ESTANDAR (NO DE GOLPES)	N	CONTENIDO DE AGUA		Ss DENSIDAD DE SOLIDOS		GRANULOMETRIA: (G) GRAVA (S) ARENA (F) FINOS	PRUEBAS DE RESISTENCIA		CLASIFICACION (S.U.C.S.)
		W _L	W _p	Y _m	G _w		QU	TRIAJAL FACIDA	
10	PH								ARCILLA GRIS CLARO Y CAFE CLARO DE CONSISTENCIA MUY BLANDA CON ARENA FINA EN POCA CANTIDAD.
11	PH								
12	PH								
13	PH								
14	PH								
15	PH								
16	PH								
17	PH								
18	PH								
19	PH								
20	PH								ARCILLA CAFE ROJIZO Y GRIS VERDOSA DE CONSISTENCIA MUY BLANDA.

S J M B O L O G I A



N = NUMERO DE GOLPES PARA PENETRAR 30 CM

Pe = PENETRACION ESTANDAR

Sh = MUESTRO CON TUBO SHELBY

BO = MUESTRO CON BARRIL DENISON

CA.CO. = CARBONATO DE CALCIO

* = AVANCE CON BROCA TRICONICA

■ MAYOR DE 50 GOLPES

N.T. = NIVEL DE TERRENO

N.A.F. = NIVEL DE AGUAS FREATICAS

GEO INGENIERIA INTERNACIONAL, S.A. DE C.V.	
OBRA : BORDO PONIENTE	ANTIGUO LAGO DE TEXCOCO
LUGAR : MEXICO, D.F.	SONDEO : SM-1
N.A.F. : 0.35 m	N.T. : FIG. D

RESISTENCIA A LA PENETRACION ESTANDAR. (NO DE GOLPES)	CONTENIDO DE AGUA LIMITE LIQUIDO LIMITE PLASTICO	DENSIDAD DE SOLIDOS γ_m PESO VOLUMETRICO (TON/M ³) RELACION DE VACIOS GRADO DE SATURACION (%)	GRANULOMETRIA : (G) GRAVA (S) ARENA (F) FINOS	PRUEBAS DE RESISTENCIA (TON/M ²)		CLASIFICACION (S.U.C.S.)
				QU	C	
N						
20						
21	PH					
22	PH					
23	SP					
24	1/60					
25	SP					ARCILLA VERDOSA DE CONSISTENCIA MUY BLANDA. CON PEQUENAS LENTES DE ARENA INTERCALADA.
26	PH					
27	PH					
28	PH					
29	PH					
30	PH					ARCILLA GRIS OSCURO DE CONSISTENCIA MUY BLANDA.

S I M B O L O G I A

GRAVA ARENA LIMO ARCILLA MAT. ORGANICA RELLENO ROCA

N = NUMERO DE GOLPES PARA PENETRAR 30 CM
 PH = PESO DE HERRAMIENTA
 NR = NO SE RECUPERO MUESTRA
 Pe = PENETRACION ESTANDAR
 Sh = MUESTRO CON TUBO SHELBY
 8D = MUESTRO CON BARRIL DENISON
 CA.CO. = CARBONATO DE CALCIO
 * = AVANCE CON BROCA TRICONICA
 MAYOR DE 50 GOLPES
 N.T. = NIVEL DE TERRENO
 N.A.F. = NIVEL DE AGUAS FREATICAS

CEO INGENIERIA INTERNACIONAL, S.A. DE C.V.

OBRA : BORDO PONIENTE
 ANTIGUO LAGO DE TEXCOCO

LUGAR : MEXICO, D.F. SONDEO : SM-1

N.A.F. : N.T. FIG. : C
 0.35 m

RESISTENCIA A LA PENETRACION ESTANDAR. (NO DE GOLPES)	N	CONTENIDO DE AGUA		DENSIDAD DE SOLIDOS		GRANULOMETRIA		PRUEBAS DE RESISTENCIA		CLASIFICACION (S.U.C.S.)
		LIMITE LIQUIDO		Wm PWS (100/m ³)		(C) GRAYA	(S) ARENA	QU	C	
		Wp	Wl	Ss	Wm	(F) FINOS	(C) GRAYA			
	PH									ARCILLA GRIS VERDOSA DE CONSISTENCIA MUY BLANDA Y ALTA PLASTICIDAD. DE LIMMO Y ARENA FINA DEL MISMO MATERIAL.
	PH									
	PH									
	PH									
	PH									
	PH									
	PH									
	PH									
	PH									
	PH									
	PH									ARCILLA GRIS OSCURO DE CONSISTENCIA MUY BLANDA.
	PH									
	PH									
	PH									
	PH									
	PH									
	PH									
	PH									
	PH									
	PH									

FIN DEL SONDEO

OBRA : BORDO PONIENTE	
ANTICUO LAGO DE TEXCOCO	
LUGAR :	SONDEO :
MEXICO, D.F.	SM-1
N.A.P.	N.T.
0.35 m	FIG.
	d

S I M B O L O G I A



N = NUMERO DE GOLPES PARA PENETRAR 30 CM
 PH = PESO DE HERRAMIENTA NR = NO SE RECUPERO MUESTRA
 Po = PENETRACION ESTANDAR
 Ss = MUESTREO CON TUBO SHELBY
 Bd = MUESTREO CON BARRIL DENISON
 Ca.co. = CARBONATO DE CALCIO

* = AVANCE CON BROCA TRICONICA
 = MAYOR DE 50 GOLPES
 N.T. = NIVEL DE TERRENO
 N.A.P. = NIVEL DE AGUAS FREATICAS

PROCEDECIA : LAGO DE TEXCOCO

SONDEO SM-1

MUESTRA M-57 sup.

PROF. (m) 36.10-36.70

0.000	12/01/99		13/01/99		14/01/99		15/01/99		16/01/99		17/01/99	
	TIEMPO Mn	L MICROM	TIEMPO Mn	L MICROM	TIEMPO Mn	L MICROM	TIEMPO Mn	L MICROM	TIEMPO Mn	L MICROM	TIEMPO Mn	L MICROM
APA-11	14:40	16.980	11:20	16.810	11:10	16.680	11:05	16.450	10:48	15.960	9:40	14.142
	0.1	16.900	0.1	16.770	0.1	16.650	0.1	16.370	0.1	15.880	0.1	13.980
	0.2	16.885	0.2	16.765	0.2	16.640	0.2	16.330	0.2	15.840	0.2	13.940
	0.3	16.875	0.3	16.760	0.3	16.630	0.3	16.300	0.3	15.800	0.3	13.880
	0.5	16.868	0.5	16.755	0.5	16.618	0.5	16.275	0.5	15.750	0.5	13.800
	1	16.858	1	16.745	1	16.601	1	16.245	1	15.680	1	13.540
	2	16.850	2	16.738	2	16.580	2	16.220	2	15.580	2	13.330
	5	16.840	5	16.733	5	16.562	5	16.190	5	15.457	5	12.735
	10	16.834	10	16.728	10	16.550	10	16.170	10	15.328	10	12.430
	15	16.831	15	16.725	15	16.538	15	16.155	15	15.210	15	12.130
	30	16.828	30	16.722	30	16.524	30	16.135	30	15.090	30	11.717
	60	16.824	60	16.716	60	16.512	60	16.115	60	14.938	60	11.470
	150	16.819	150	16.709	150	16.498	150	16.080	150	14.735	150	11.158
	330	16.815	300	16.700	300	16.480	300	16.050	300	14.500	300	10.910
	1240	16.810	500	16.690	500	16.463	540	15.995	680	14.250	600	10.700
			1430	16.680	1435	16.450	1423	15.960	1372	14.142	1435	10.588

DESCARGA		PRESION		e		A v		m v		Wm + anillo		H anillo (cm)		PVS (Kg/m3)	
18/01/99	tiempo	lec. mic	kg/cm ²	cm ² /kg	cm ² /kg	cm ² /kg	cm ² /kg	cm ² /kg	cm ² /kg	ANILLO	diam. anillo (cm)	Area (cm ²)	Vol (cm ³)	2H o (mm)	
4.000	9:30	10.588	0.125	0.3791	0.3791	0.0680	0.0680	278.47	2.000	145.87	8.100	51.530	103.060	2H o (mm)	1287
2.000	10:00	10.693	0.250	0.2899	0.2899	0.0524	0.0524	246.49	2.000	171.50	8.100	51.530	103.060	2H o (mm)	511
1.000	10:30	10.873	0.500	0.2564	0.2564	0.0467	0.0467	246.49	2.000	171.50	8.100	51.530	103.060	2H o (mm)	2.847
0.500	11:00	11.073	1.000	0.2732	0.2732	0.0503	0.0503	118.87	2.000	171.50	8.100	51.530	103.060	2H o (mm)	3.587
0.250	11:30	11.290	2.000	0.5068	0.5068	0.0958	0.0958	151.9	2.000	171.50	8.100	51.530	103.060	2H o (mm)	4.575
0.125	12:00	11.482	4.000	0.4953	0.4953	0.1035	0.1035	142.5	2.000	171.50	8.100	51.530	103.060	2H o (mm)	3.159
0.000	12:30	11.900	2.000	2.822	2.822			99.17	2.000	171.50	8.100	51.530	103.060	2H o (mm)	
			1.000	2.873	2.873			45.90	2.000	171.50	8.100	51.530	103.060	2H o (mm)	
			0.500	2.928	2.928			10.56	2.000	171.50	8.100	51.530	103.060	2H o (mm)	
			0.250	2.985	2.985			150.7	2.000	171.50	8.100	51.530	103.060	2H o (mm)	
			0.125	3.042	3.042				2.000	171.50	8.100	51.530	103.060	2H o (mm)	

Com. Nat. de Agua

W m + T (gr) 99.17

Wd + T (gr) 45.90

W T (gr) 10.56

W % 150.7

OBSERVACIONES :

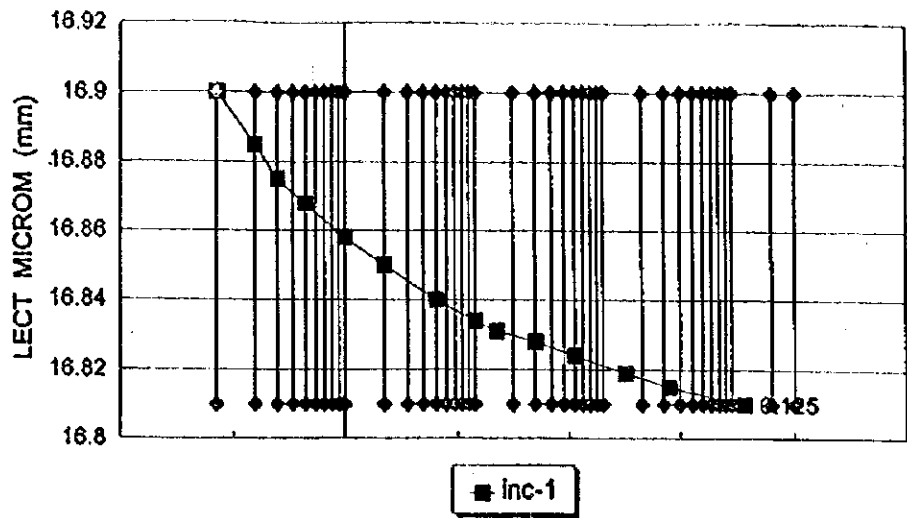
PROCEDENCIA :
 SONDEO SM-1
 MUESTRA M-57 sup.

LAGO DE TEXCOCO

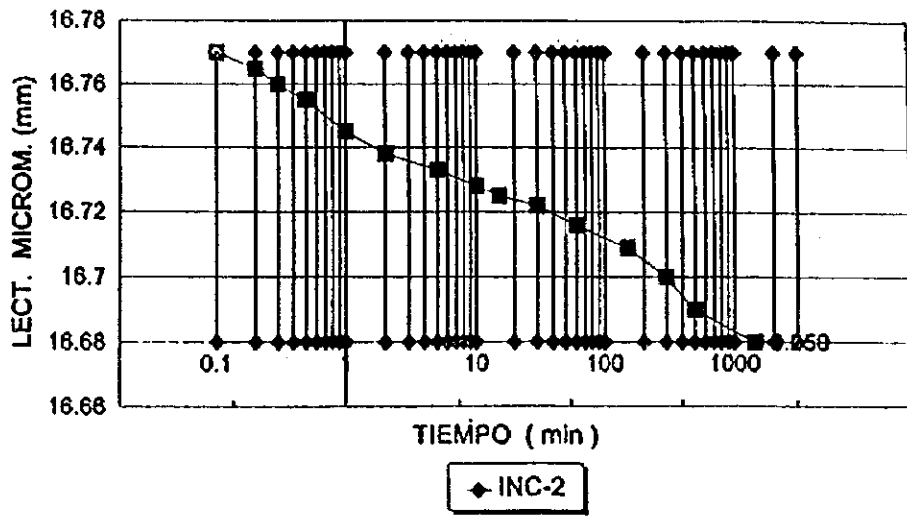
APA-11
 12/01/99

PROF. (m) 36.10-36.70

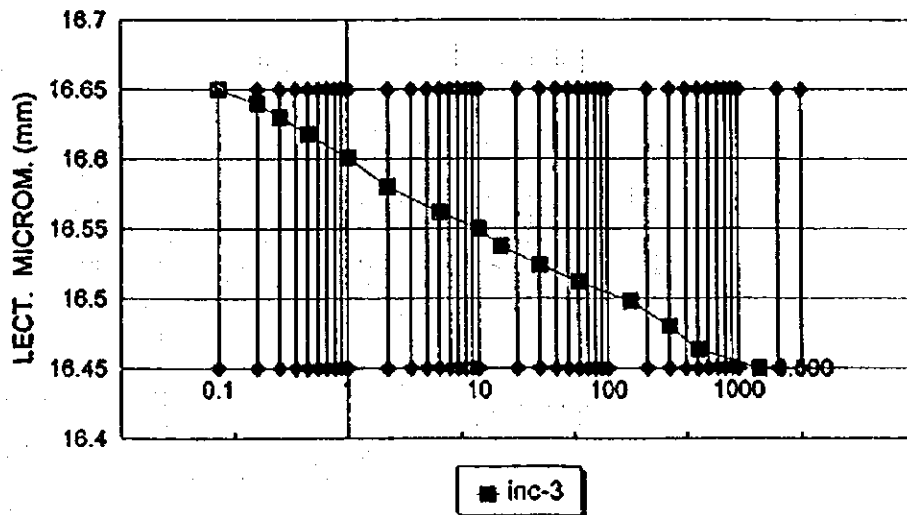
PRESION (Kg/cm²)
 0.125



PRESION (Kg/cm²)
 0.250



PRESION (Kg/cm²)
 0.500



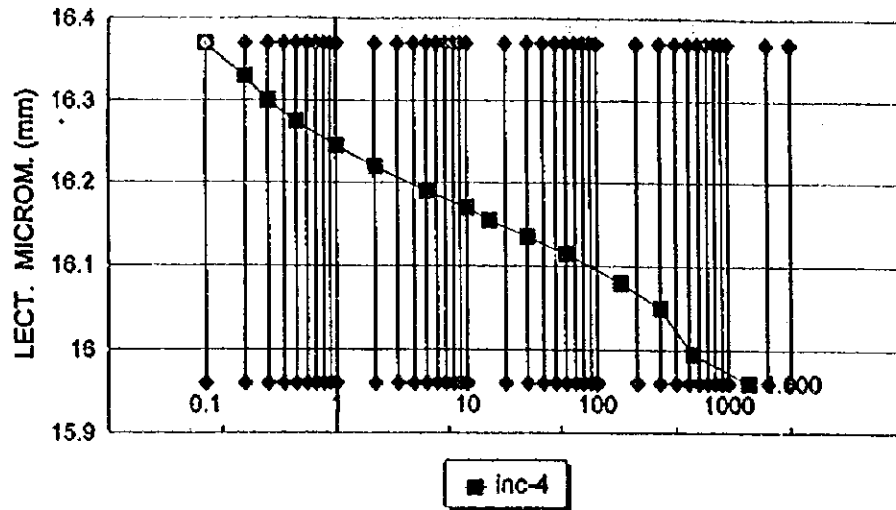
PROCEDENCIA :
 SONDEO SM-1
 MUESTRA M-57 sup.

LAGO DE TEXCOCO

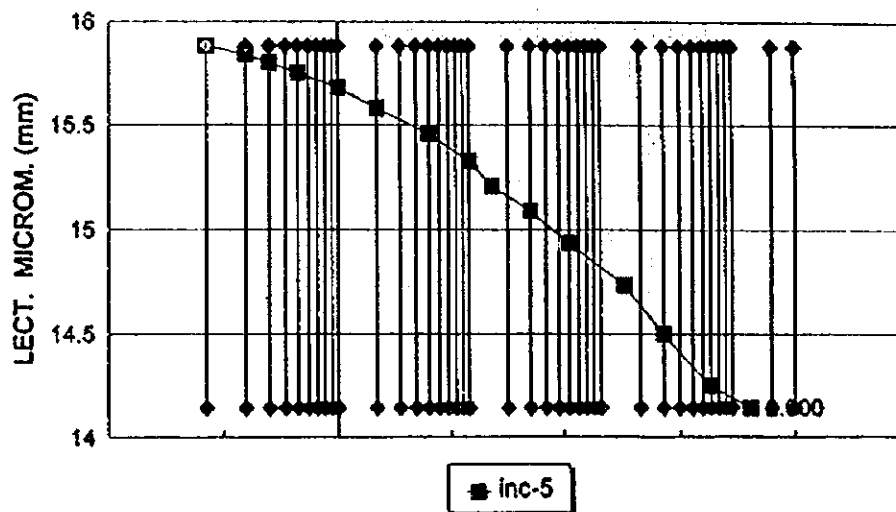
APA-11
 15/01/99

PROF. (m) 36.70-38.10

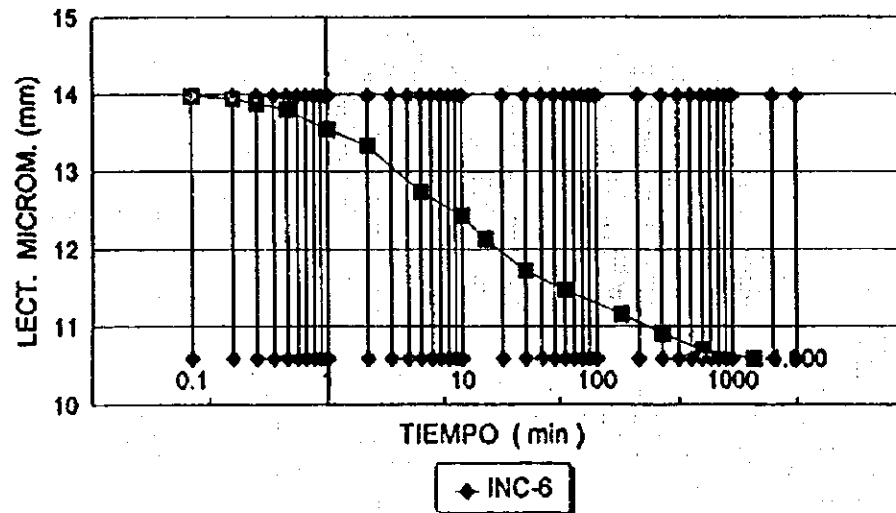
PRESION (Kg/cm²)
 1.000



PRESION (Kg/cm²)
 2.000



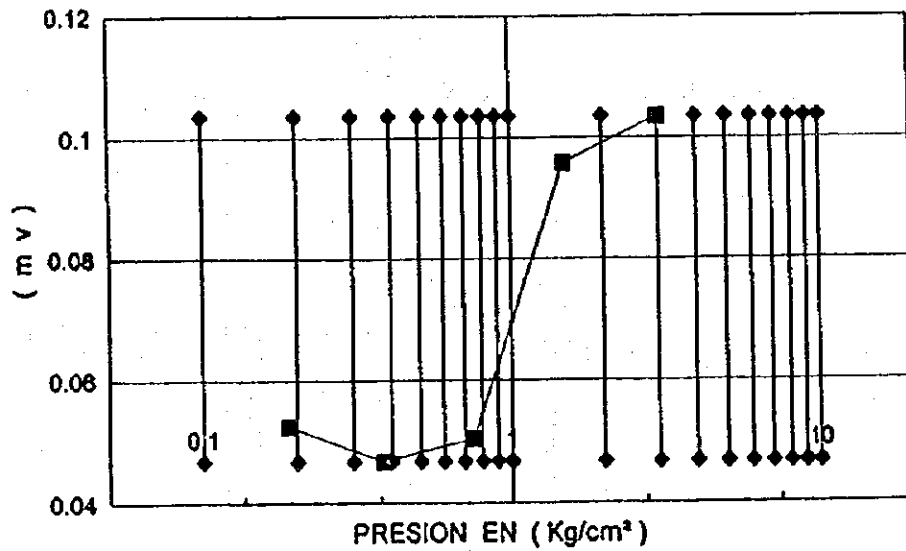
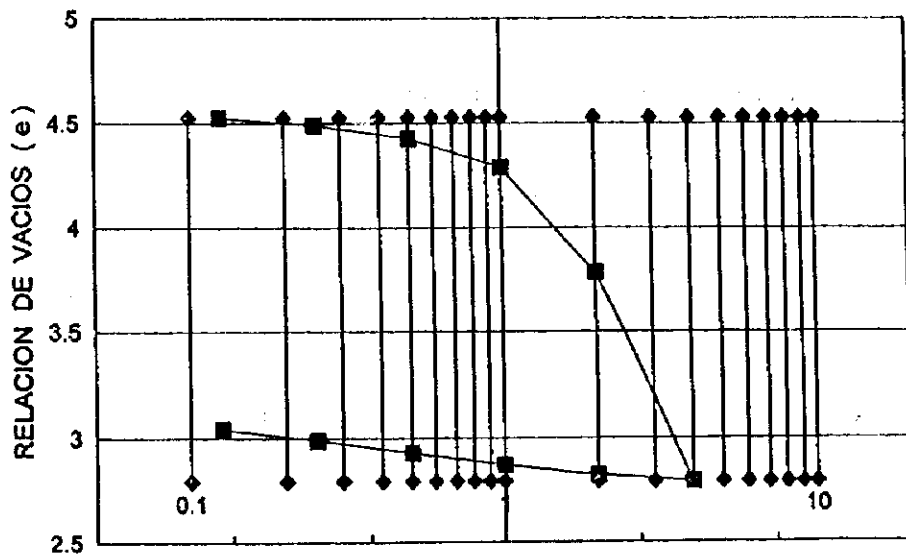
PRESION (Kg/cm²)
 4.000



CONSOLIDACION UNIDIMENSIONAL

PROCEDENCIA :	LAGO DE TEXCOCO								
SONDEO	SM-1								
MUESTRA	M-57 sup.								
PROF. (m)	36.10-36.70								
							FECH		
							12/01A		
W inc. %	151.9	e l	4.575	G I %	94.8	PVH (Kg/m3)	1287	S s	2.847
W fin. %	142.5	e l	3.159	G I %	128.4	PVS (Kg/m3)	511	P. max Kg/cm ²	4.000
CLASIF. :	Arcilla con mat. org. gris verdoso obsc.								

CURVA DE COMPRESIBILIDAD



Prueba de Consolidación unidimensional

Proyecto: EX-LAGO DE TEXCOCO

Sondeo: SM-1

Muestra: M-63

Prof.: 39.70-40.30

seg	min	hora	0.125		0.250		0.500		1.000		2.000	
			lec. mic. [mm]	δ [mm]	lec. mic. [mm]	δ [mm]	lec. mic. [mm]	δ [mm]	lec. mic. [mm]	δ [mm]	lec. mic. [mm]	δ [mm]
			Δp [kg/cm ²]: 0.125	Δp [kg/cm ²]: 0.125	Δp [kg/cm ²]: 0.250	Δp [kg/cm ²]: 0.250	Δp [kg/cm ²]: 0.500	Δp [kg/cm ²]: 0.500	Δp [kg/cm ²]: 1.000	Δp [kg/cm ²]: 1.000	Δp [kg/cm ²]: 2.000	Δp [kg/cm ²]: 2.000
			p [kg/cm ²]: 0.125	p [kg/cm ²]: 0.125	p [kg/cm ²]: 0.250	p [kg/cm ²]: 0.250	p [kg/cm ²]: 0.500	p [kg/cm ²]: 0.500	p [kg/cm ²]: 1.000	p [kg/cm ²]: 1.000	p [kg/cm ²]: 2.000	p [kg/cm ²]: 2.000
0			18.863	0	18.548	0	18.343	0	17.893	0	15.743	0
6			18.728	0.135	18.482	0.068	18.235	0.108	17.759	0.134	15.56	0.183
12			18.72	0.143	18.471	0.077	18.209	0.134	17.7	0.183	15.489	0.254
18			18.714	0.149	18.462	0.086	18.19	0.153	17.662	0.231	15.43	0.313
30			18.709	0.155	18.452	0.096	18.162	0.181	17.621	0.272	15.334	0.409
60	1		18.702	0.161	18.438	0.11	18.128	0.215	17.55	0.343	15.148	0.595
120	2		18.699	0.164	18.42	0.128	18.09	0.253	17.422	0.471	14.83	0.913
300	5		18.694	0.169	18.403	0.145	18.052	0.291	17.25	0.643	14.265	1.478
600	10		18.69	0.173	18.397	0.151	18.034	0.309	17.13	0.763	13.866	2.077
900	15		18.687	0.176	18.38	0.158	18.021	0.322	17.039	0.854	13.434	2.309
1800	30		18.684	0.179	18.37	0.168	18.001	0.342	16.865	1.028	12.97	2.773
3600	60	1	18.681	0.182	18.352	0.178	17.98	0.363	16.639	1.254	12.585	3.158
7200	120	2	18.68	0.183	18.361	0.187	17.962	0.381	16.521	1.372	12.46	3.283
10800	180	3	18.679	0.184	18.352	0.196	17.945	0.398	16.385	1.508	12.358	3.385
18000	300	5			18.343	0.205	17.928	0.415	16.23	1.663	12.258	3.485
21600	360	6							15.999	1.894	12.113	3.63
36000	600	10										
86400	1440	24										

Wmi + Anillo 340.7 gr
 Wanillo 213.2 gr
 Wmf + Anillo 312.1 gr
 Wd + Anillo 253.6 gr

Ww 86.90 gr
 Wd 40.60 gr

Altura Anillo 1.96 cm
 Diámetro 7.96 cm
 Área 50.01 cm²
 Volumen 98.03 cm³

Vs 17.65 cm³
 Vv 80.38 cm³
 e 4.553
 Gw 108.12 %

ω 214.04 %
 γ 1.30 ton/m³

Proyecto: EX-LAGO DE TEXCOCO

Sondeo: SM-1

Muestra: M-63

Prof.: 39.70-40.30

DESCARGA			
PRESION	TIEMPO	LECT. MICROM.	DEFORM.
Kg/cm2	min	mm	mm
4.000		11.963	0
2.000		12.111	-0.148
1.000		12.314	-0.203
0.500		12.53	-0.216
0.250		12.779	-0.249
0.125		12.952	-0.173
0		13.309	-0.357

PRESION	DEFORMA LINEAL	DEFORMA UNITARIA	ESPESOR COMPRIMIDO	2H ₀	e
(Kg / cm2)	(mm)	(%)	(mm)	(mm)	(---)
0	0	0	19.6	16.071	4.553
0.125	0.184	0.94	19.416	15.887	4.501
0.250	0.314	1.60	19.288	15.757	4.464
0.500	0.519	2.65	19.081	15.552	4.405
1.000	0.934	4.77	18.666	15.137	4.289
2.000	2.828	14.43	16.772	13.243	3.752
4.000	6.608	33.71	12.992	9.463	2.681
4.000	6.608	33.71	12.992	9.463	2.681
2.000	6.46	32.96	13.14	9.611	2.723
1.000	6.257	31.92	13.343	9.814	2.781
0.500	6.041	30.82	13.559	10.030	2.842
0.250	5.792	29.55	13.808	10.279	2.912
0.125	5.619	28.67	13.981	10.452	2.961
0	5.262	26.85	14.338	10.809	3.062

Peso de los Sólidos

Densidad de los sólidos

Area de la Probeta

Espeor de los Sólidos

Espeor Inicial

Ws = 40.60 gr.

Ss = 2.30

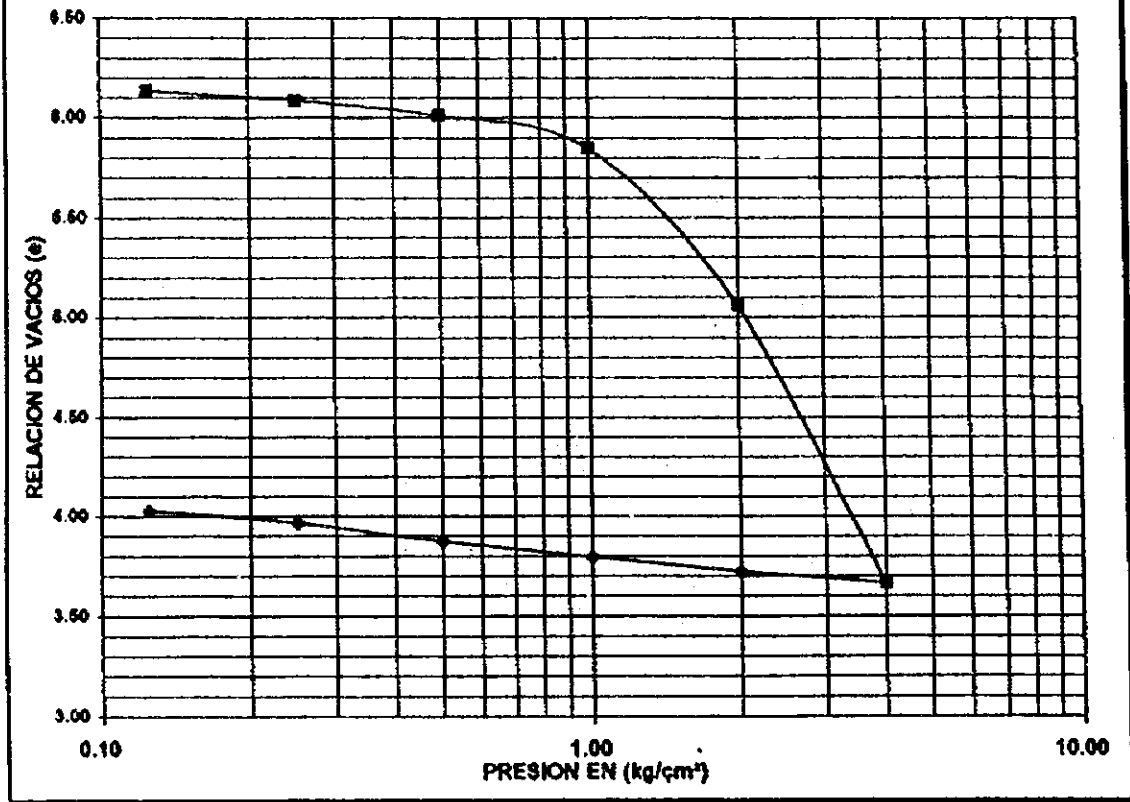
Ac = 50.01 cm2

W x Ss x AC = 3.529 mm

2H₀ = 19.6 mm

2Hi = 19.6 mm

CURVA DE COMPRESIBILIDAD



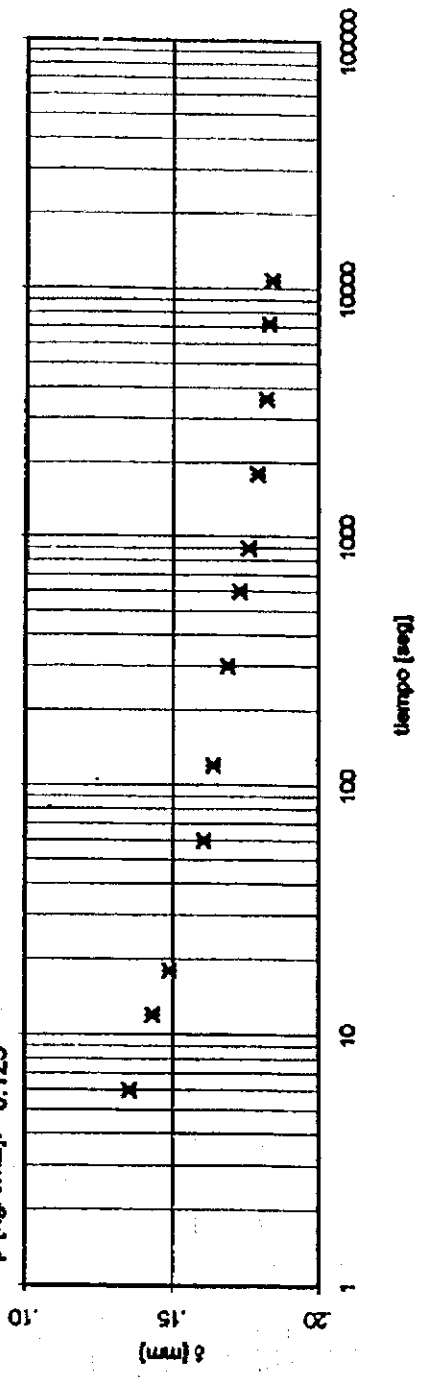
DATOS INICIALES				P _o	P _{vh}
W%	S _a	e	G _w %	(kg/cm²)	ton/m ³
213.514	2.990	6.202	102.942		1.302

PRUEBA		CONSOLIDACIÓN	
OBRA		EX-LAGO DE TEXCOCO	
LUGAR	MEXICO D.F.	SONDEO	SM-1
PROF.	39,70-40,30 m	FIGURA	

EX-LAGO DE
SM-1 39,70-40,30

Gráfica deformación-tiempo

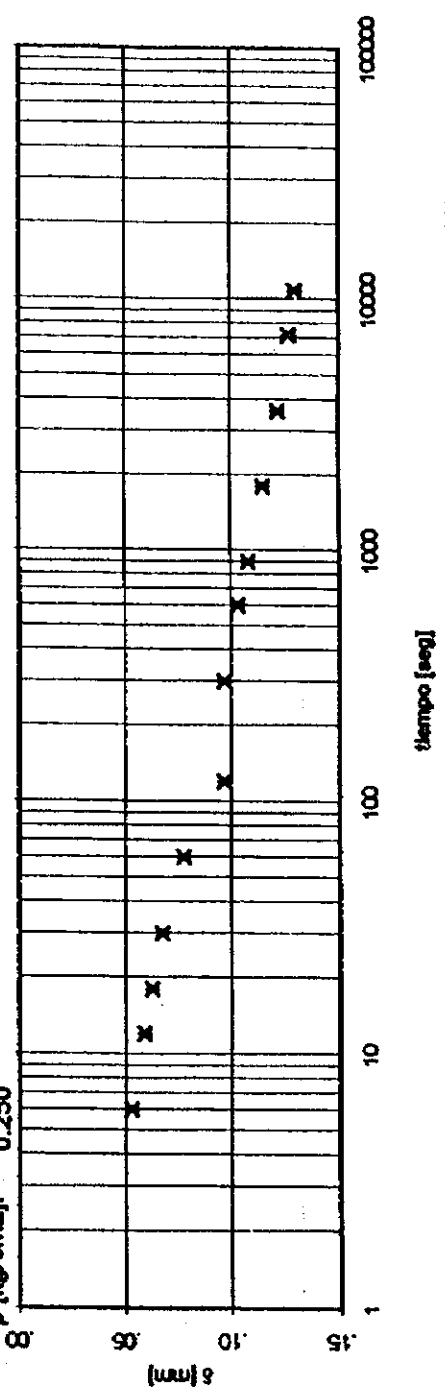
Dp [kg/cm2]: 0.125
P [kg/cm2]: 0.125

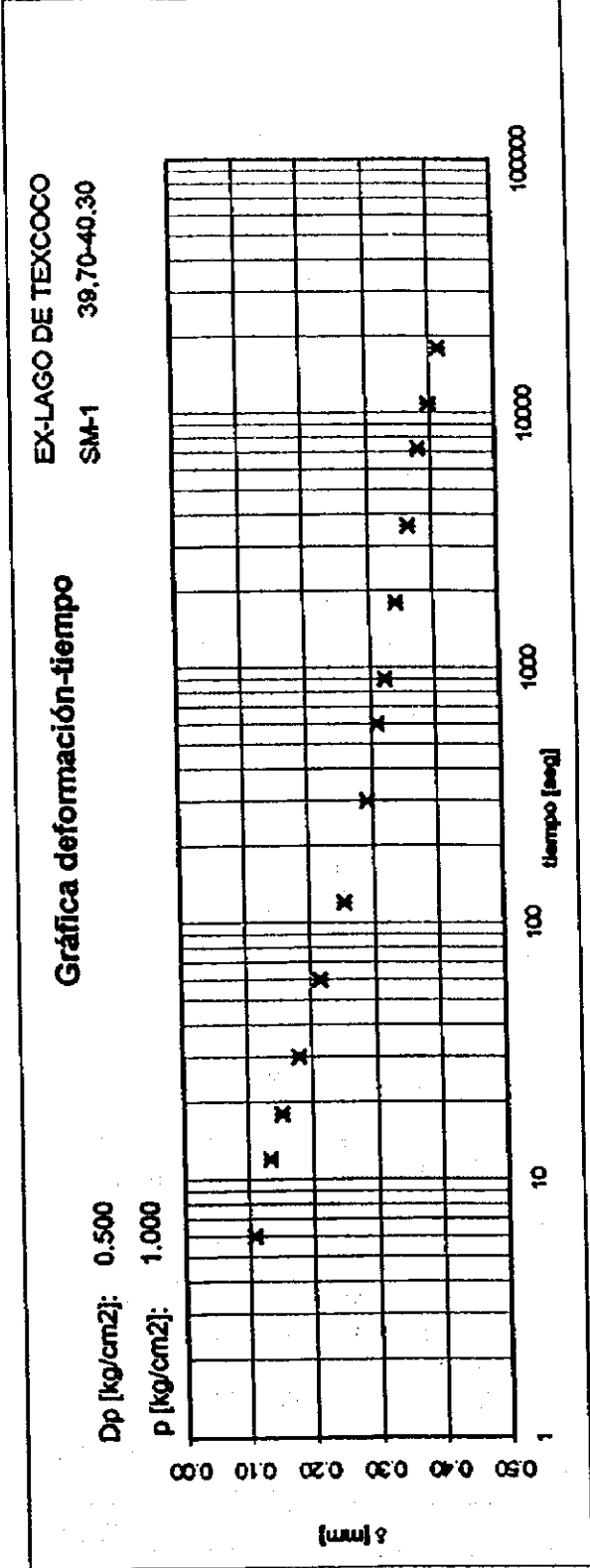
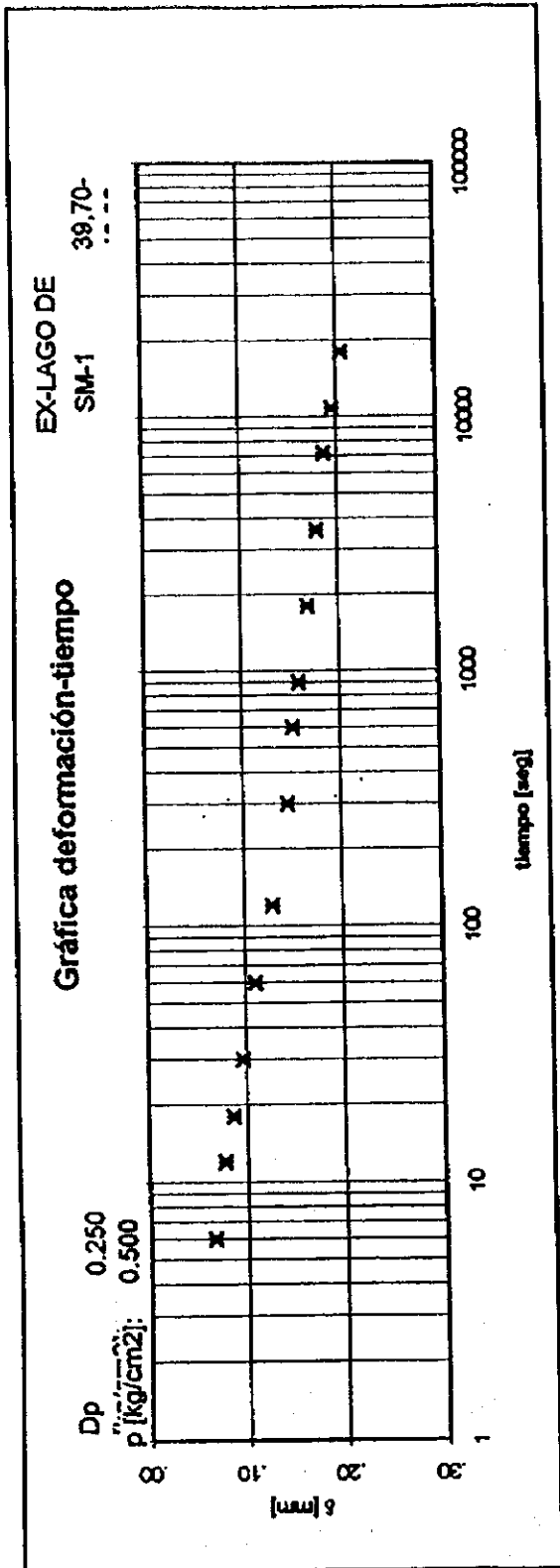


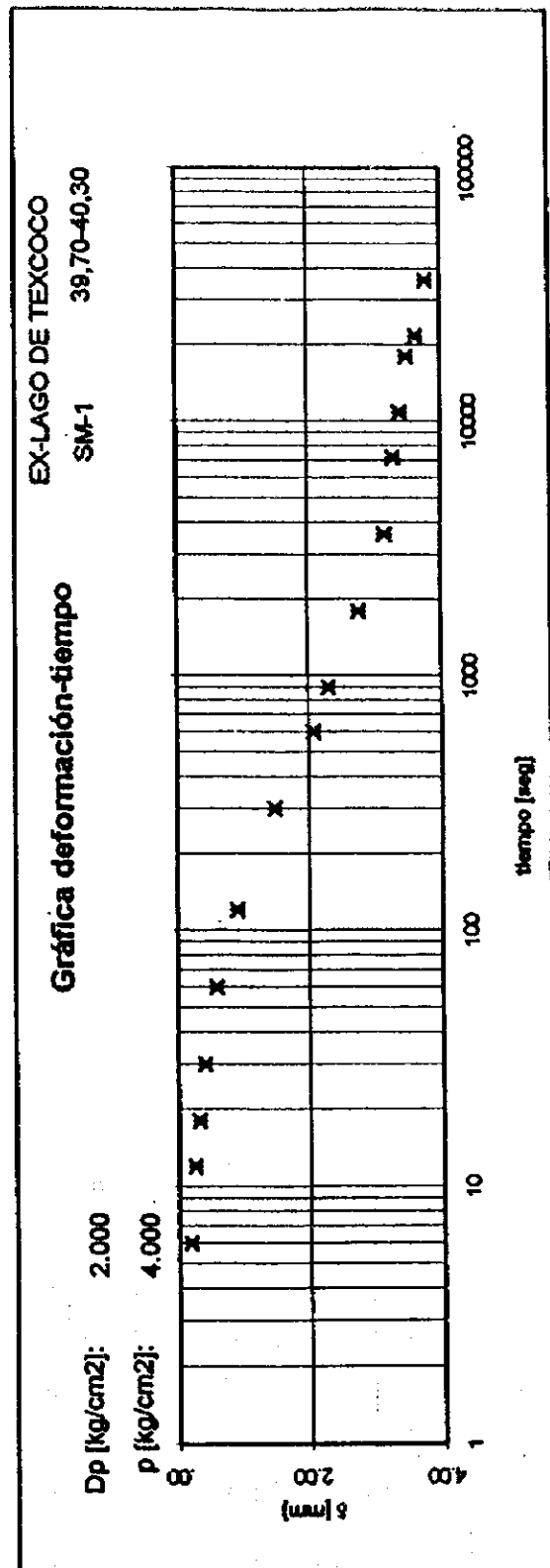
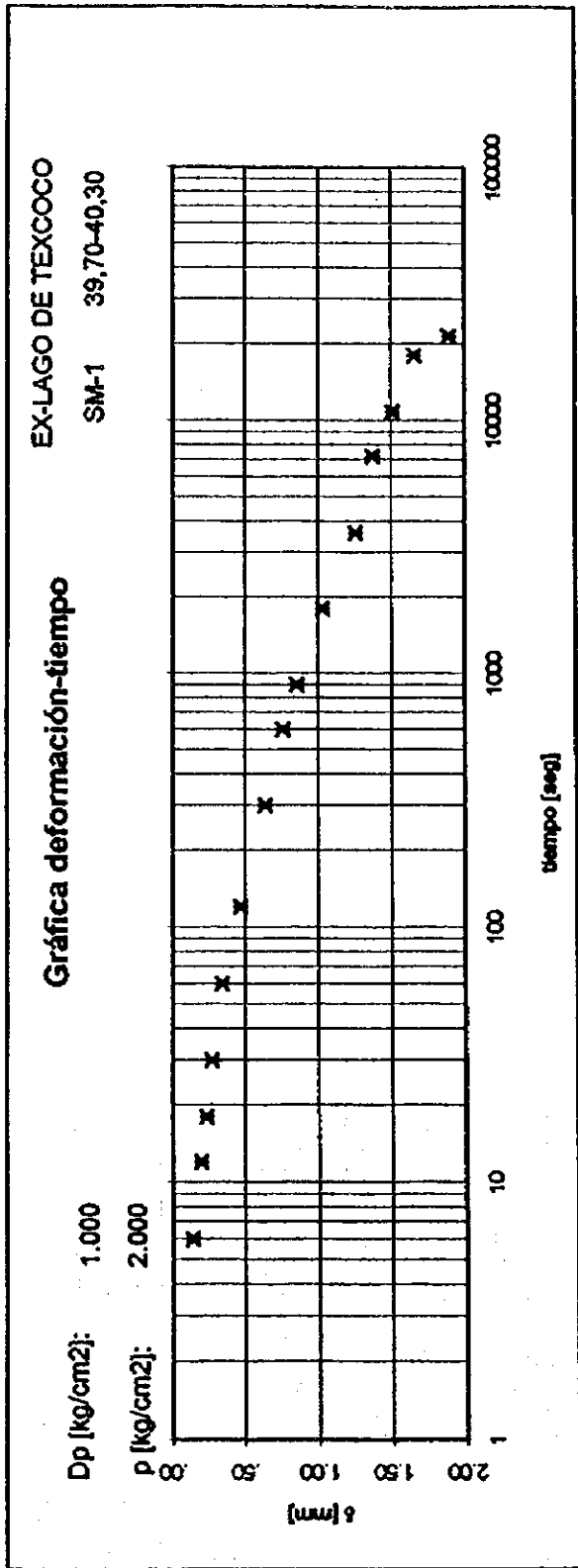
EX-LAGO DE TEXCOCO
SM-1 39,70-40,30

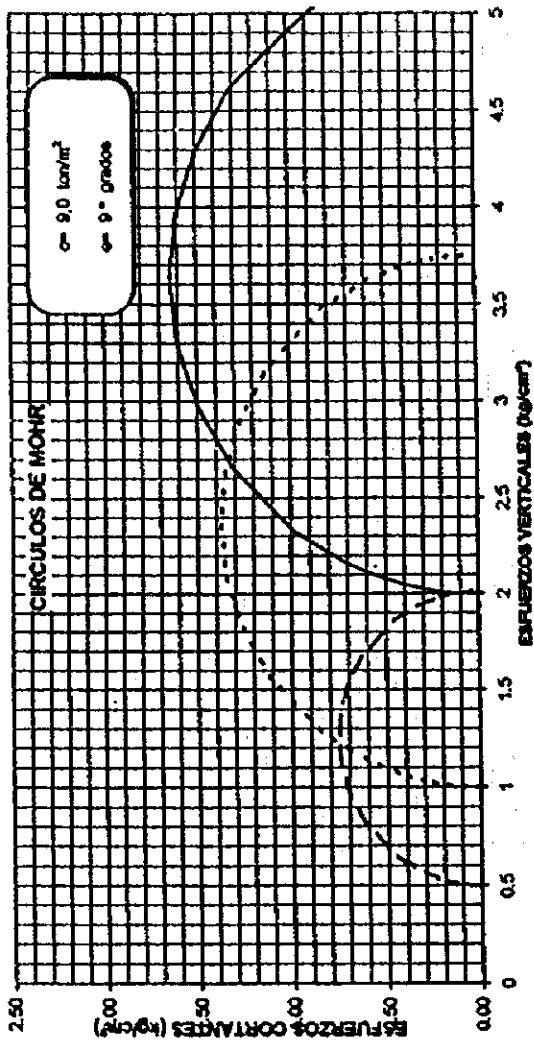
Gráfica deformación-tiempo

Dp 0.125
P [kg/cm2]: 0.250









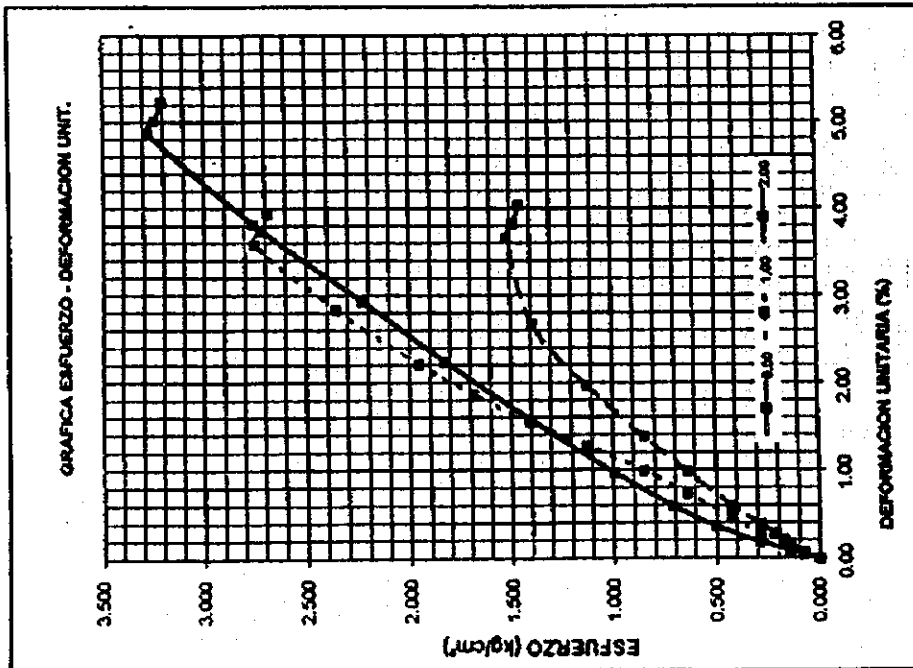
ENSAYO Num.	W1 (%)	d	OW1 (%)	PESO VOLUM. NATURAL (ton/m ³)	PRESION CONF. (kg/cm ²)	ESF. A LA FALLA (kg/cm ²)
1	36.120			1.682	0.50	1.51
2	38.485			1.720	1.00	2.75
3	35.152			1.720	2.00	3.27
PROMEDIO				1.710	Sp=2.65	

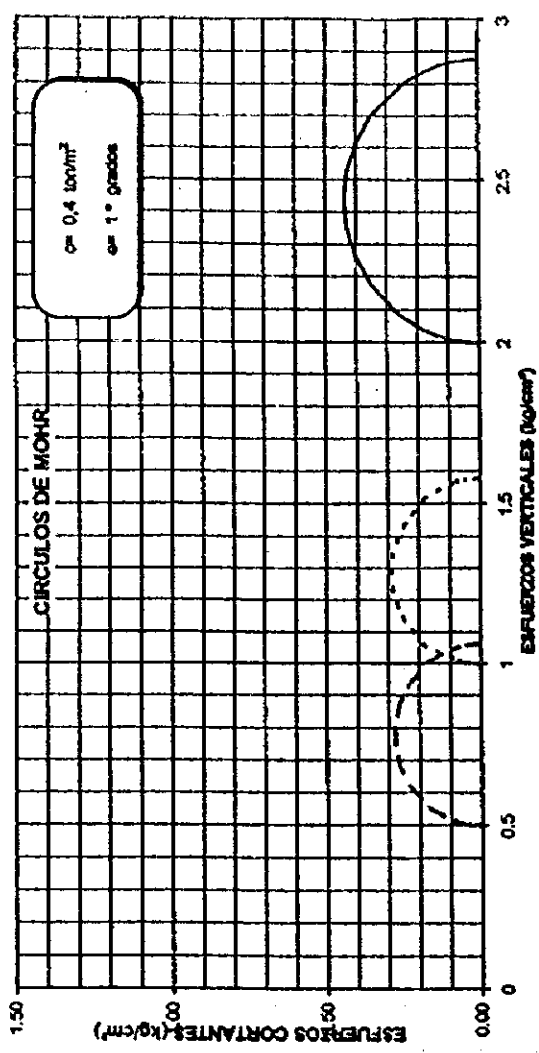
PRUEBA: COMPRESION TRIAXIAL RAPIDA

OBRA: BORDO XOCHIMACA ELLAGO DE TERCOCO

LUGAR: MEXICO D.F. SONDO: SM-1

prof.: 36,10-36,70 m. PUNTA:





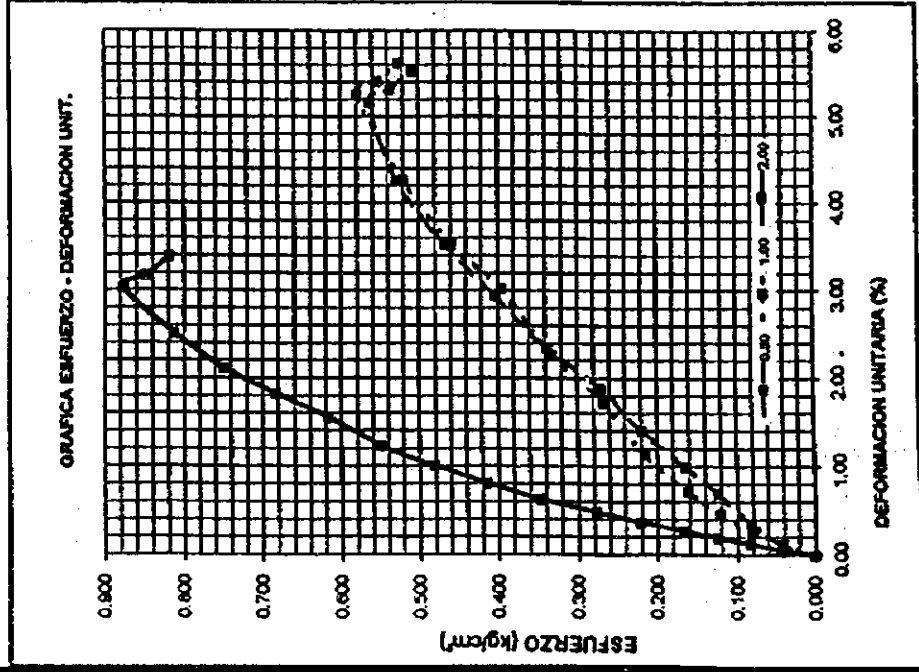
EMBAYO	W1 (%)	w	GM (%)	PESO VOLUM. NATURAL (ton/m ³)	PREMION CONF. (kg/cm ²)	ESF. ALA FALLA (kg/cm ²)
1	140.511			1.261	0.50	0.56
2	145.607			1.262	1.00	0.58
3	178.737			1.291	2.00	0.88
PROMEDIO	154.952			1.271		0.86

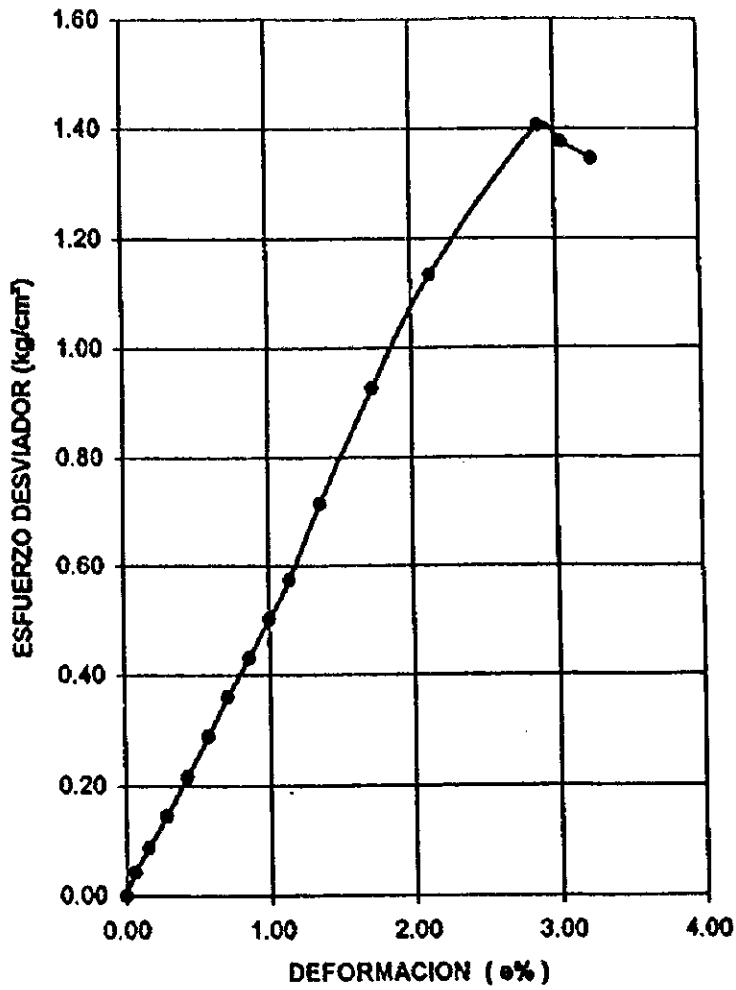
PRUEBA: COMPRESION TRIAXIAL BAPTIDA

OBRA: BORDO XOCHIMACA EX-LAGO DE TEIXCOCO

LUGAR: MEXICO D.F. SONDEO: SM-1

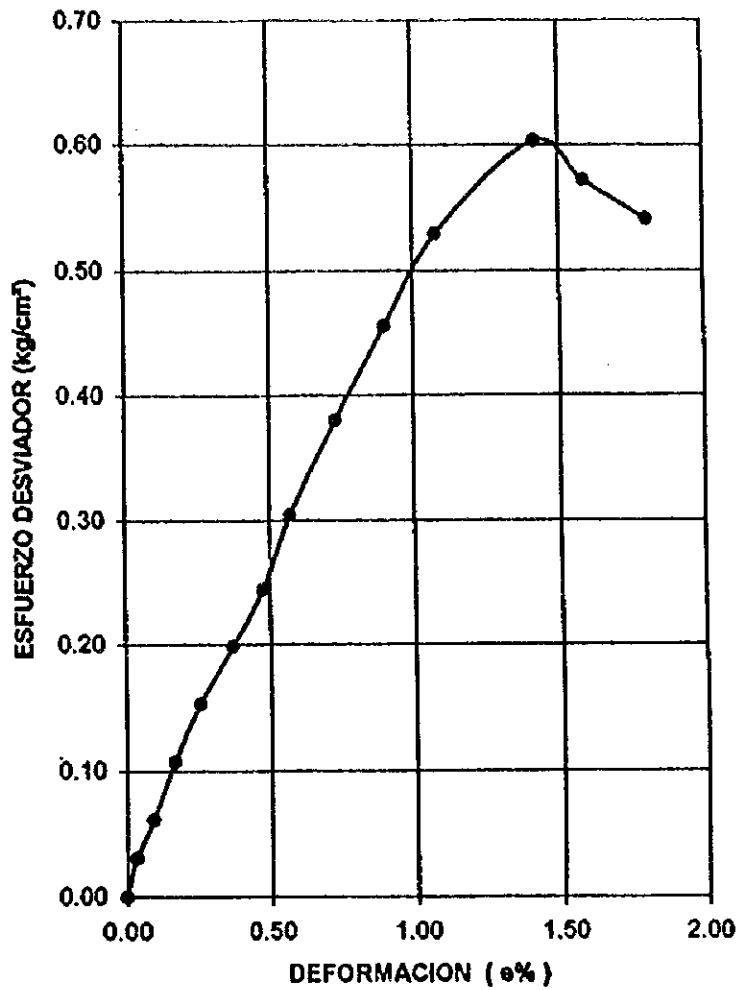
PROF. 3970-4030 M. FIGURA:





DATOS FINALES DEL ESPECIMEN	
ϵ^m	G^m %
P_{Ym} 1.717 T/m ³	W^m 33.7 %
q_u^m 1.408 kg/cm ²	

PRUEBA: COMPRESIÓN SIMPLE	
OBRA: BORDO XOCHIACA EX-LAGO DE TEXCOCO	
LUGAR: MEXICO D.F.	BONORO SM-1
PROP: 36,10-36,70 m.	FIGURA



DATOS FINALES DEL ESPECIMEN	
ϵ^u	G^u %
P_{vh} = 1.283 T/m ³	W^u = 173.8 %
q_u = 0.603 kg/cm ²	

PRUEBA:	COMPRESIÓN SIMPLE	
OBRA:	BORDO XOCHIACA EX-LAGO DE TEXCOCO	
LUGAR:	MEXICO D.F.	SONDEO SM-1
PROP:	39,70-40,30 m.	FIGURA

RESISTENCIA A LA PENETRACION ESTANDAR (NO DE GOLPES)	CONTENIDO DE AGUA ● LIMITE LIQUIDO ▲ LIMITE PLASTICO	S _w DENSIDAD DE SÓLIDOS Y _m PESO VOLUMETRICO (TON/M ³) * RELACION DE VACIOS C _w GRADO DE SATURACION (%)	GRANULOMETRIA: (G) GRAVA (S) ARENA (F) FINOS	PRUEBAS DE RESISTENCIA (TON/CM ²)			CLASIFICACION (S.U.C.S.)
				QU	C	β	
N							ARCILLA CAFE CLARO DE CONSISTENCIA MUY BLANDA Y MATERIA ORGANICA EN POCA CANTIDAD.
1	PH						ARCILLA CAFE ROJIZO DE CONSISTENCIA MUY BLANDA CON POCA ARENA FINA DEL MISMO MATERIAL.
2	PH						
3	PH						
4	PH						
5	PH						
6	PH						ARCILLA GRIS VERDOSA DE CONSISTENCIA MUY BLANDA Y ALTA PLASTICIDAD.
7	PH						
8	PH						
9	PH						
10	PH						

S I M B O L O G I A

- GRAVA
- ARENA
- LIMO
- ARCILLA MAT. ORGANICA RELLENO
- ROCA

N = NUMERO DE GOLPES PARA PENETRAR 30 CM
 PH = PESO DE HERRAMIENTA
 NR = NO SE RECUPERO MUESTRA

Pe = PENETRACION ESTANDAR
 SN = MUESTREO CON TUBO SHELBY
 BD = MUESTREO CON BARRIL DENISON
 CA. CO. = CARBONATO DE CALCIO

* = AVANCE CON BROCA TRICONICA
 > = MAYOR DE 50 GOLPES
 N.T. = NIVEL DE TERRENO
 N.A.F. = NIVEL DE AGUAS FREATICAS

GEO INGENIERIA INTERNACIONAL S.A. DE C.V.

OBRA: **BORDO PONIENTE**
 ANTIGUO LAGO DE TEXCOCO

LUGAR: **MEXICO. D.F.**
 SONDEO: **SM-2**

N.A. **0.90 m**
 N.T. **-**
 T.P.C. **-**

RESISTENCIA A LA PENETRACION ESTANDAR. (NO DE GOLPES)	CONTENIDO DE AGUA	S _a DENSIDAD DE SOLIDOS T _m PESO VOLUMETRICO (ton/m ³) e RELACION DE VACIOS G _w GRADO DE SATURACION (%)	GRANULOMETRIA : (G) GRAVA (S) ARENA (F) FINOS (%)	PRUEBAS DE RESISTENCIA (TON/CM ²)			CLASIFICACION (S.U.C.S.)
				QU	C	β	
10	PH						ARCILLA CAFE ROJIZO INTERCALADA CON ARCILLA CAFE CLARO. AMBAS DE CONSISTENCIA MUY BLANDA.
11	PH						
12	PH						ARCILLA GRIS VERDOSO DE CONSISTENCIA MUY BLANDA. CON ARENA FINA DEL MISMO COLOR EN MUY POCA CANTIDAD.
13	PH						
14	PH						
14	PH						
14	PH						
15	PH						
15	PH						
16	PH						
17	PH						
17	PH						
18	PH						
18	PH						
19	PH						
19	PH						
20	PH						

S I M B O L O G I A

GRAVA
 ARENA
 LIMO
 ARCILLA MAT. ORGANICA RELLENO
 ROCA

- N = NUMERO DE GOLPES PARA PENETRAR 30 CM
 PH = PESO DE HERRAMIENTA
 NR = NO SE RECUPERO MUESTRA
 P = PENETRACION ESTANDAR
 S = MUESTRO CON TUBO SHELBY
 BD = MUESTRO CON BARRIL DENISON
 CA. CO. = CARBONATO DE CALCIO
 * = AVANCE CON BROCA TRICONICA
 > = MAYOR DE 50 GOLPES
 N.T. = NIVEL DE TERRENO
 N.A.F. = NIVEL DE AGUAS FREATICAS

GEO INGENIERIA INTERNACIONAL S.A. DE C.V.
OBRA : BORDO PONIENTE
 ANTICUO LAGO DE TEXCOCO
LUGAR : SONDEO : SM-2
 MEXICO, D.F.
 N.A.F. N.T.
 0.90 m FIG. b

RESISTENCIA A LA PENETRACION ESTANDAR. (NO DE GOLPES)	N	CONTENIDO DE AGUA		DENSIDAD DE SUELOS			GRANULOMETRIA :		PROBAS DE RESISTENCIA		CLASIFICACION (S.U.C.S.)
		● LIMITE LIQUIDO	△ LIMITE PLASTICO	Y _m	Y _w	Y _d	Grava	Arena	QU	Q _u	
		W _L	W _P	54	54	54	(%)	(%)	(TON/CM ²)	(TON/CM ²)	
											ARCILLA GRIS VERDOSO Y CAFE ROJIZO DE CONSISTENCIA MUY BLANDA.
	PH										
	PH										
	PH										
	PH										
	PH										ARCILLA GRIS VERDOSO Y CAFE CLARO DE CONSISTENCIA MUY BLANDA.
	PH										
	PH										
	PH										
	PH										
	PH										
	PH										
	PH										
	PH										
	PH										
	PH										
	PH										
	PH										
	PH										
	PH										
	PH										

GEO INGENIERIA INTERNACIONAL, S.A. DE C.V.

OBRA : **BORDO PONIENTE**

ANTIGUO LAGO DE TEXCOCO

LUGAR : **MEXICO, D.F.**

SONDEO : **SM-2**

N.A.F. **0.90 m**

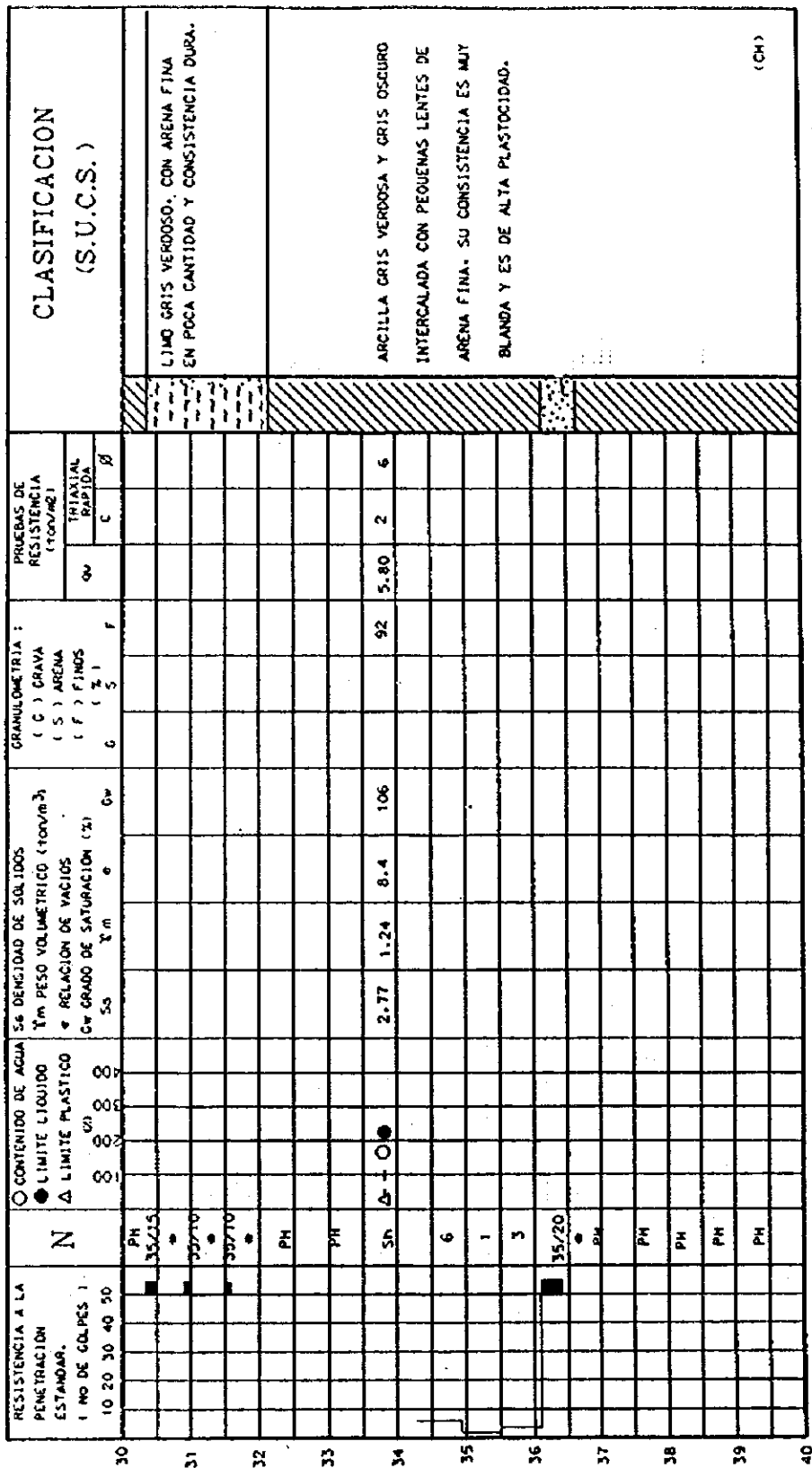
N.T. **FIG. C**

S I M B O L O G I A

	GRAVA		ARENA		LIMO		ARCILLA MAT. ORGANICA RELLENO		ROCA
--	-------	--	-------	--	------	--	-------------------------------	--	------

N = NUMERO DE GOLPES PARA PENETRAR 30 CM
 PH = PESO DE HERRAMIENTA NR = NO SE RECUPERO MUESTRA
 PO = PENETRACION ESTANDAR
 SN = MUESTRO CON TUBO SHELBY
 BD = MUESTRO CON BARRIL DENISON
 CA. CD. = CARBONATO DE CALCIO
 * = AVANCE CON BROCA TRICONICA
 > = MAYOR DE 50 GOLPES
 N.T. = NIVEL DE TERRENO
 N.A.F. = NIVEL DE AGUAS FREATICAS

J.A.F.V. / 19



FIN DEL SONDEO

GEO INGENIERIA INTERNACIONAL, S.A. DE C.V.	
OBRA : BORDO PONIENTE	SONDEO : SM-2
ANTIGUO LAGO DE TEXCOCO	
LUGAR : MEXICO, D.F.	N.T. FIG.
N.A.F. 0.90 m	N.T.

S I M B O L O G I A

- GRAVA
- ARENA
- LIMO
- ARCILLA MAT. ORGANICA RELLENO
- ROCA

N# = NUMERO DE GOLPES PARA PENETRAR 30 cm
 PH# = PESO DE HERRAMIENTA NR# = NO SE RECUPERO MUESTRA
 Pa = PENETRACION ESTANDAR
 SH = MUESTRO CON TUBO SHELBY
 BO = MUESTRO CON BARRIL DENISON
 CA.CO. = CARBONATO DE CALCIO
 N.T. = NIVEL DE TERRENO
 N.A.F. = NIVEL DE AGUAS FREATICAS

Prueba de Consolidación unidimensional

Proyecto: EX-LAGO DE TEXCOCO

Sondeo: SM-2

Muestra: M-11

Prof.: 6.00-7.00

seg	min	hora	0.125		0.125		0.250		0.250		0.500		0.500		1.000		1.000		2.000		2.000	
			lec. mic. [mm]	δ [mm]	lec. mic. [mm]	δ [mm]	lec. mic. [mm]	δ [mm]	lec. mic. [mm]	δ [mm]	lec. mic. [mm]	δ [mm]	lec. mic. [mm]	δ [mm]	lec. mic. [mm]	δ [mm]	lec. mic. [mm]	δ [mm]	lec. mic. [mm]	δ [mm]	lec. mic. [mm]	δ [mm]
0			20.165	0	19.837	0	19.47	0	18.129	0					12.749	0			9.766			
6			20.02	0.145	19.778	0.059	19.381	0.089	17.98	0.149					12.672	0.077			9.68		0.086	
12			20.008	0.159	19.783	0.074	19.352	0.118	17.933	0.196					12.644	0.105			9.653		0.113	
18			19.999	0.166	19.753	0.084	19.331	0.139	17.802	0.327					12.624	0.125			9.637		0.129	
30			19.987	0.178	19.73	0.107	19.304	0.166	17.843	0.286					12.59	0.159			9.605		0.161	
60	1		19.962	0.203	19.709	0.128	19.24	0.23	17.721	0.408					12.503	0.246			9.543		0.223	
120	2		19.941	0.224	19.67	0.167	19.15	0.32	17.5	0.628					12.375	0.374			9.448		0.318	
300	5		19.895	0.27	19.613	0.224	18.998	0.474	16.984	1.135					12.119	0.63			9.23		0.536	
600	10		19.88	0.285	19.581	0.256	18.868	0.602	16.499	1.63					11.82	0.929			8.99		0.776	
900	15		19.871	0.294	19.574	0.263	18.777	0.693	16.143	1.986					11.645	1.104			8.83		0.936	
1800	30		19.86	0.305	19.552	0.285	18.624	0.846	15.315	2.814					11.173	1.576			8.495		1.271	
3600	60	1	19.85	0.315	19.53	0.307	18.497	0.973	14.45	3.679					10.592	2.157			8.114		1.652	
7200	120	2	19.845	0.32	19.513	0.324	18.38	1.08	14.045	4.084					10.44	2.309			7.98		1.786	
10800	180	3	19.839	0.326	19.506	0.331	18.258	1.212	13.594	4.535					10.214	2.535			7.883		1.883	
18000	300	5					18.129	1.341	13.16	4.969					10.071	2.678			7.81		1.956	
21600	360	6													8.908	2.84						
36000	600	10																				
86400	1440	24																				

Wmi + Anillo	297.4	gr	Ww	92.10	gr	Altura Anillo	1.95	cm	Vs	8.96	cm ³
Wanillo	184.7	gr	Wd	20.60	gr	Diámetro	7.96	cm	Vv	88.57	cm ³
Wmf + Anillo	239.1	gr				Area	50.01	cm ²	e	9.889	%
Wd + Anillo	205.3	gr				Volumen	97.53	cm ³	Gw	103.98	%
						γ	1.16	ton/m ³			

Proyecto: EX-LAGO DE TEXCOCO

Sondeo: SM-2

Muestra: M-11

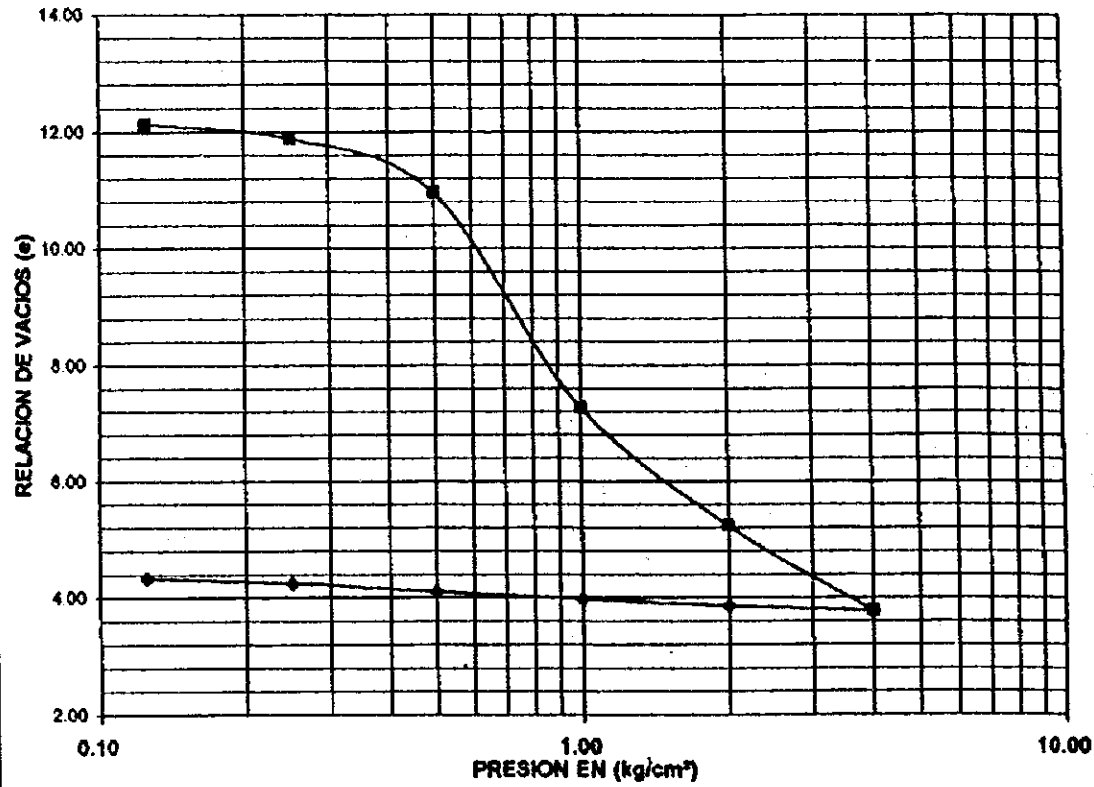
Prof.: 6,00-7,00

PRESION (Kg / cm2)	DEFORMA LINEAL	DEFORMA UNITARIA	ESPESOR COMPRESO	2H - 2Ho (mm)	e (-)
	(mm)	(%)	(mm)	(mm)	(-)
0	0	0	19.5	17.709	9.889
0.125	0.328	1.67	18.174	17.383	9.707
0.250	0.657	3.37	18.843	17.052	9.522
0.500	1.998	10.25	17.502	15.711	8.773
1.000	6.967	35.73	12.533	10.742	5.999
2.000	9.807	50.29	9.693	7.902	4.413
4.000	11.944	61.25	7.556	5.765	3.219
4.000	11.944	61.25	7.556	5.765	3.219
2.000	11.815	60.59	7.685	5.894	3.291
1.000	11.639	59.69	7.861	6.070	3.390
0.500	11.462	58.78	8.038	6.247	3.489
0.250	11.25	57.69	8.25	6.459	3.607
0.125	11.114	56.99	8.386	6.595	3.683
0	10.903	55.91	8.597	6.808	3.801

Peso de los Sólidos Ws = 20.60 gr.
 Densidad de los sólidos Ss = 2.30 cm2
 Area de la Probeta Ac = 50.01 mm
 Espesor de los Sólidos 2Ho = Ws x 10 / Ss x Ac 1.791 mm
 Espesor Inicial 2Hi = 19.5 mm

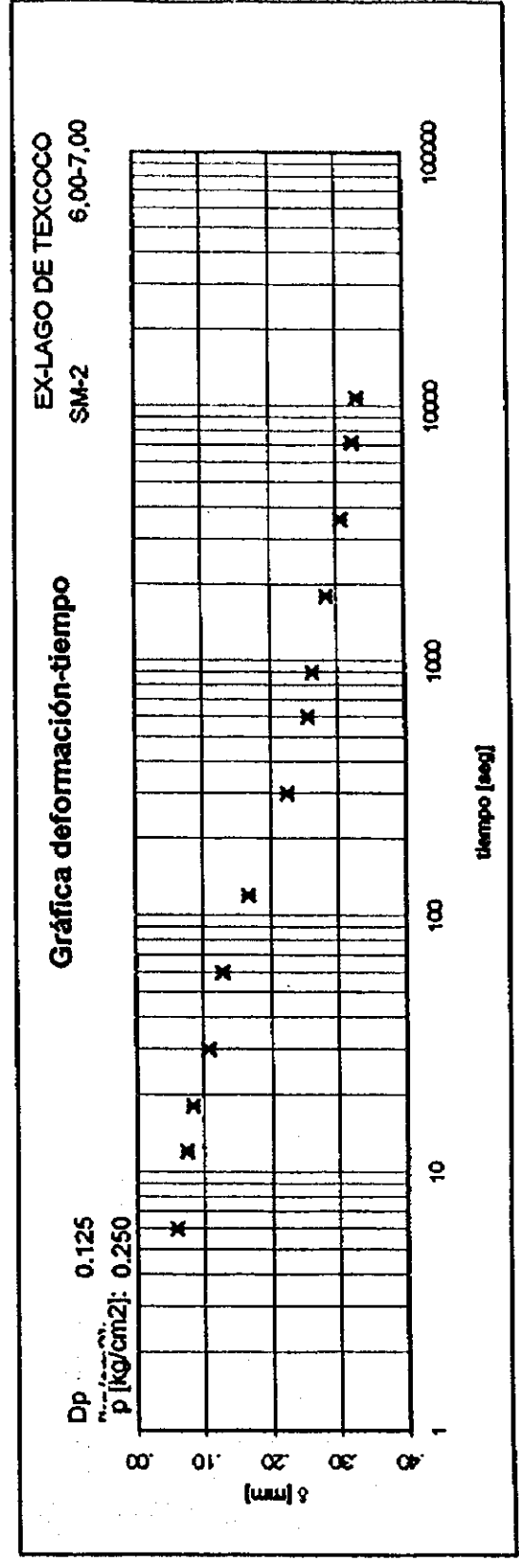
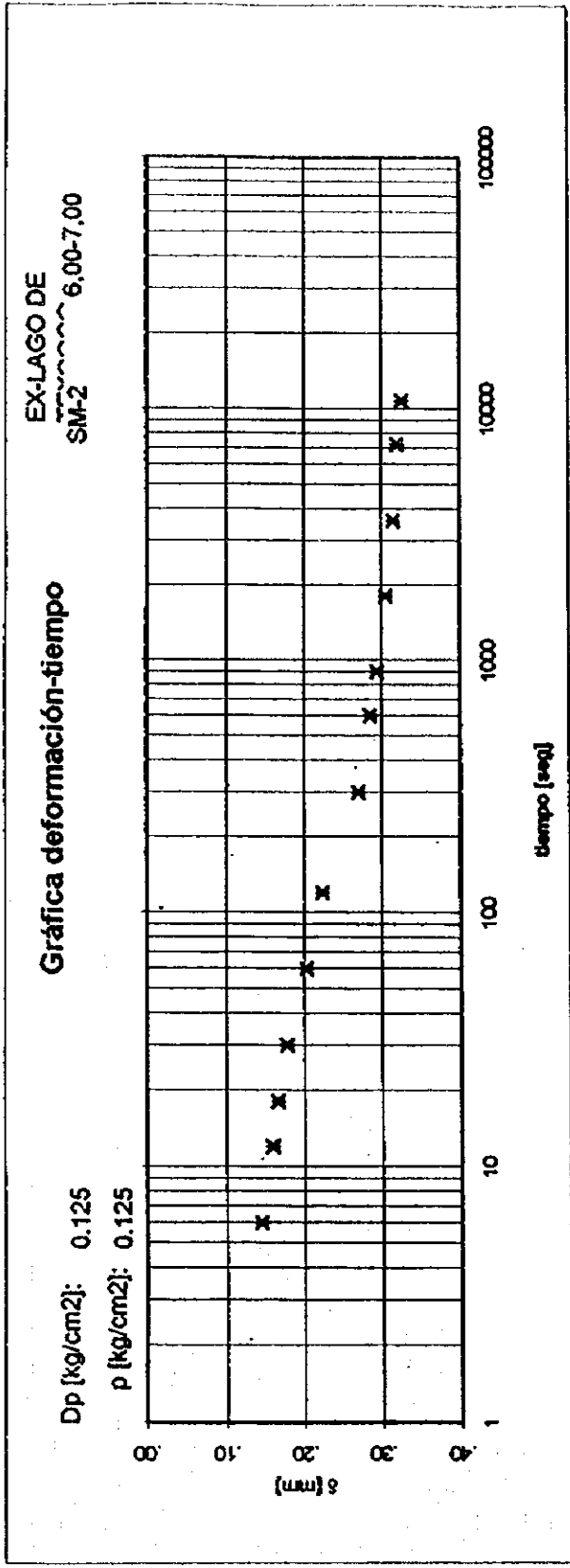
DESCARGA			
PRESION	TIEMPO	LECT. MICROM.	DEFORM.
Kg/cm2	min	mm	mm
4.000		7.629	0
2.000		7.758	-0.129
1.000		7.834	-0.176
0.500		8.111	-0.177
0.250		8.323	-0.212
0.125		8.459	-0.136
0		8.67	-0.211

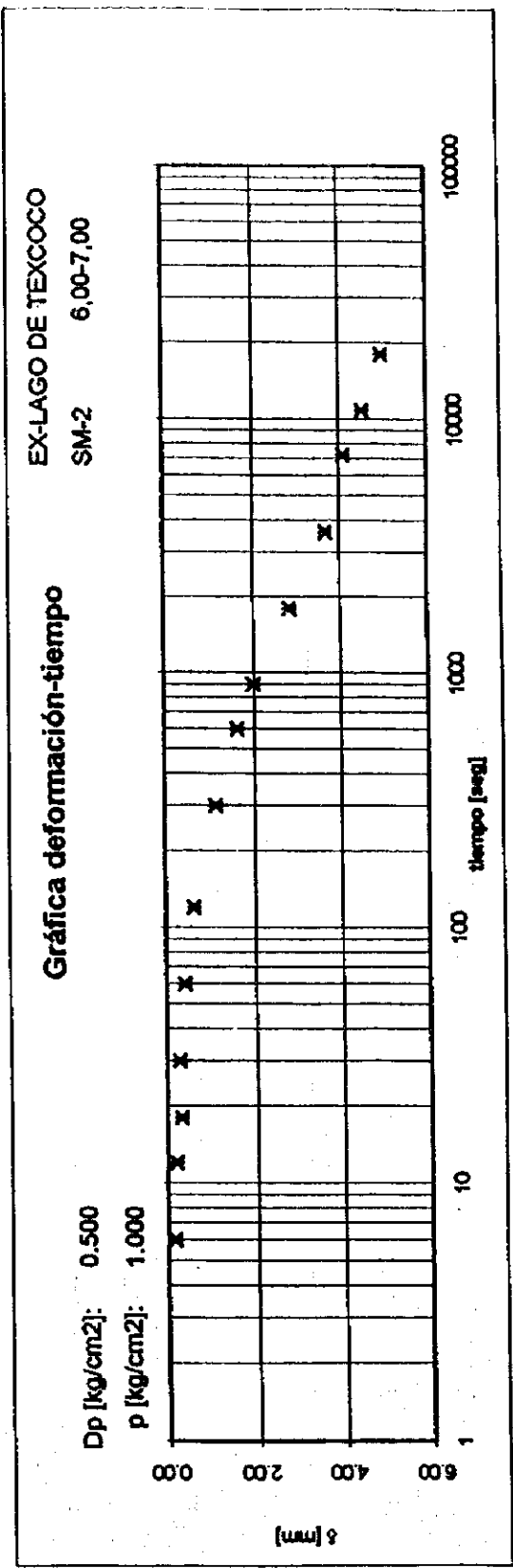
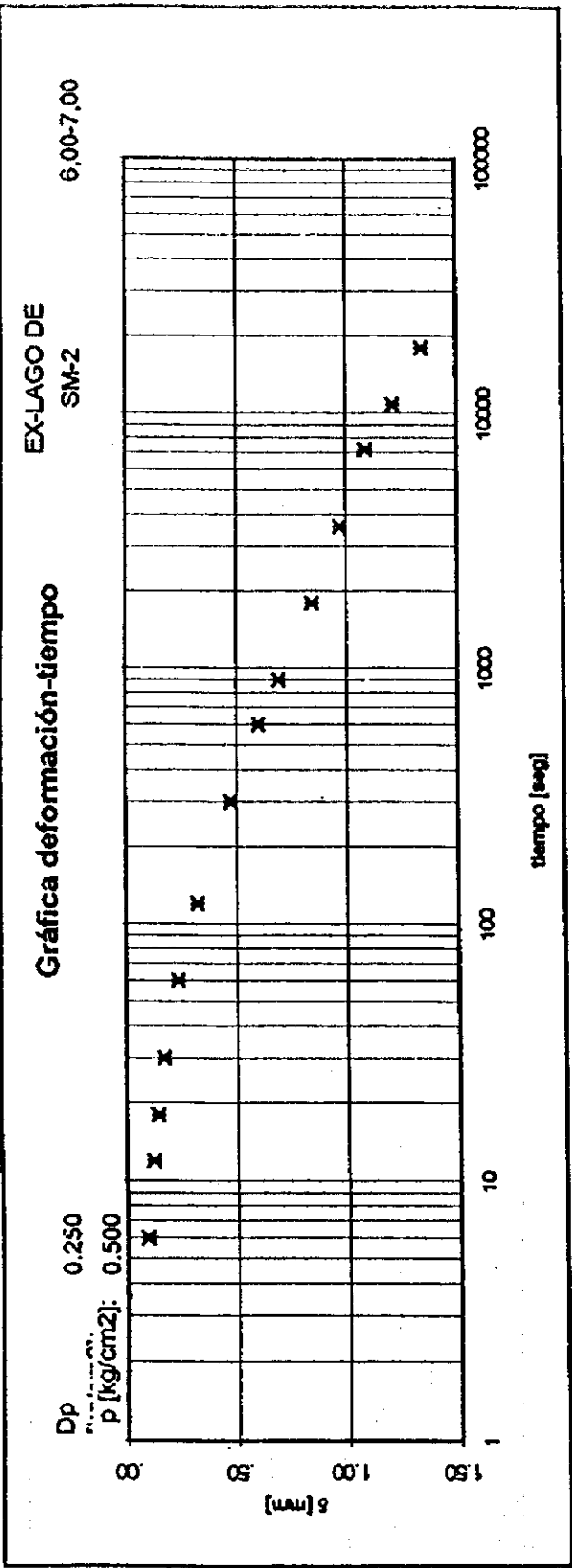
CURVA DE COMPRESIBILIDAD



DATOS INICIALES				Po	Pvhi=
W%	Se	e	Gw %	(kg/cm²)	ton/m3
447.067	2.820	12.351	102.080		1.156

PRUEBA	CONSOLIDACIÓN		
OBRA	EX-LAGO DE TEXCOCO		
LUGAR	MEXICO D.F.	SONDEO	SM-2
PROF.	6,00-6,700 m	FIGURA	

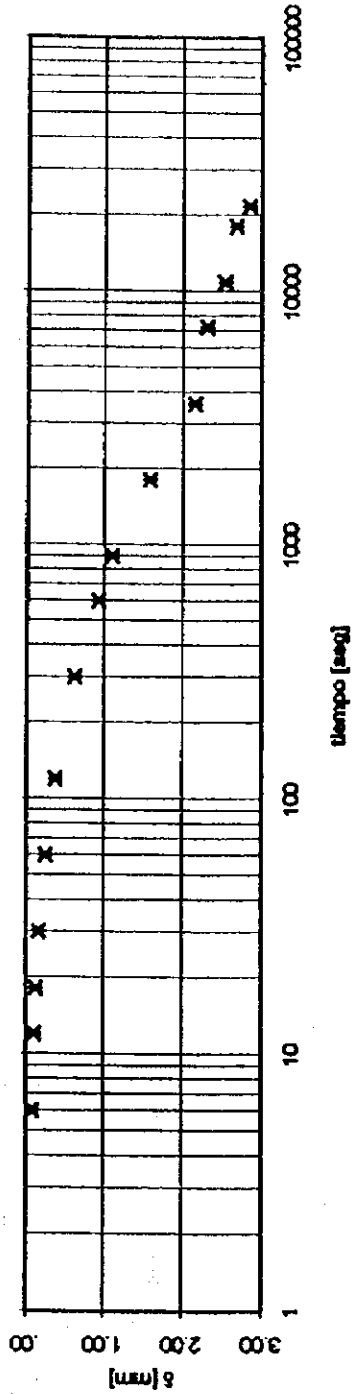




EX-LAGO DE TEXCOCO
SM-2 6,00-7,00

Gráfica deformación-tiempo

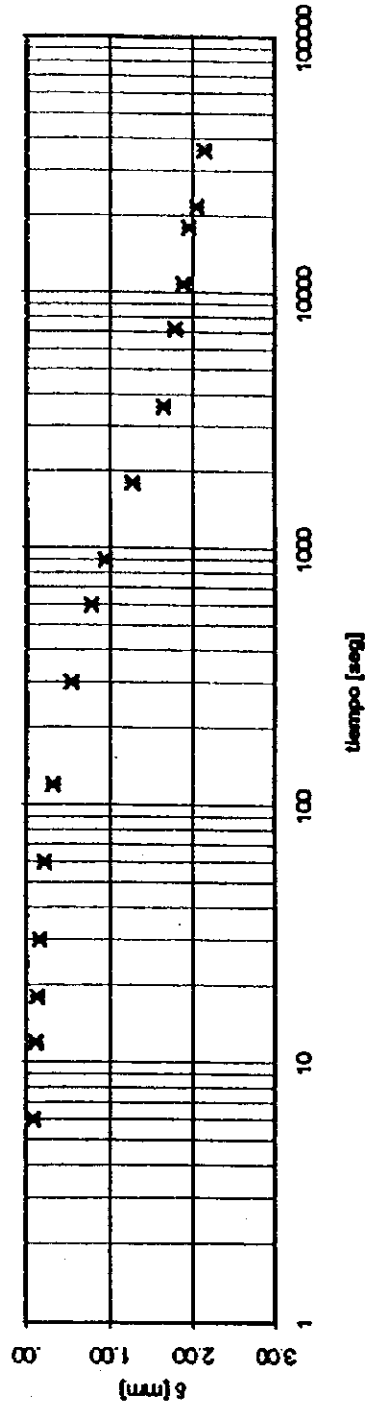
Dp [kg/cm2]: 1.000
p [kg/cm2]: 2.000



EX-LAGO DE TEXCOCO
SM-2 6,00-7,00

Gráfica deformación-tiempo

Dp [kg/cm2]: 2.000
p [kg/cm2]: 4.000



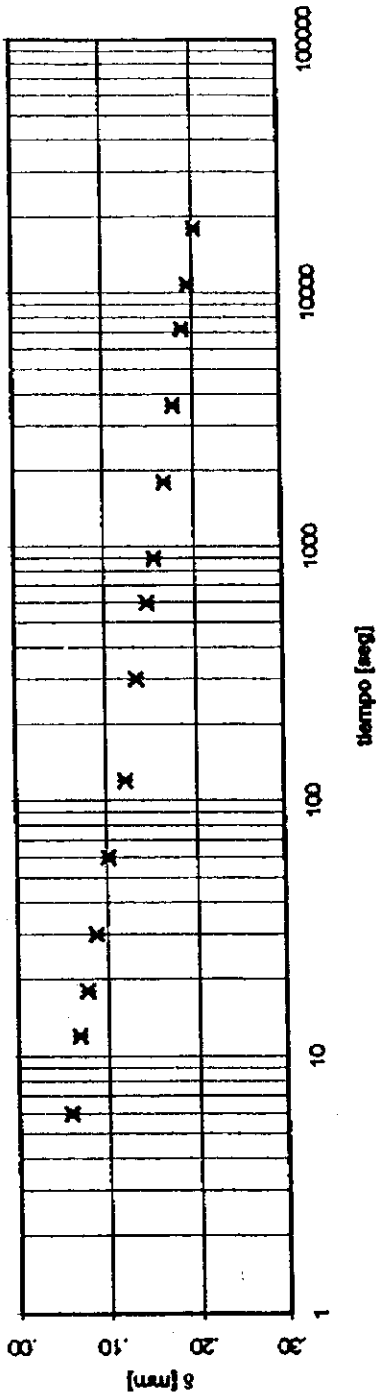
EX-LAGO DE TEXCOCO

SM-2 33,30-
34,30

Gráfica deformación-tiempo

Dp [kg/cm2]: 0.250

p [kg/cm2]: 0.500



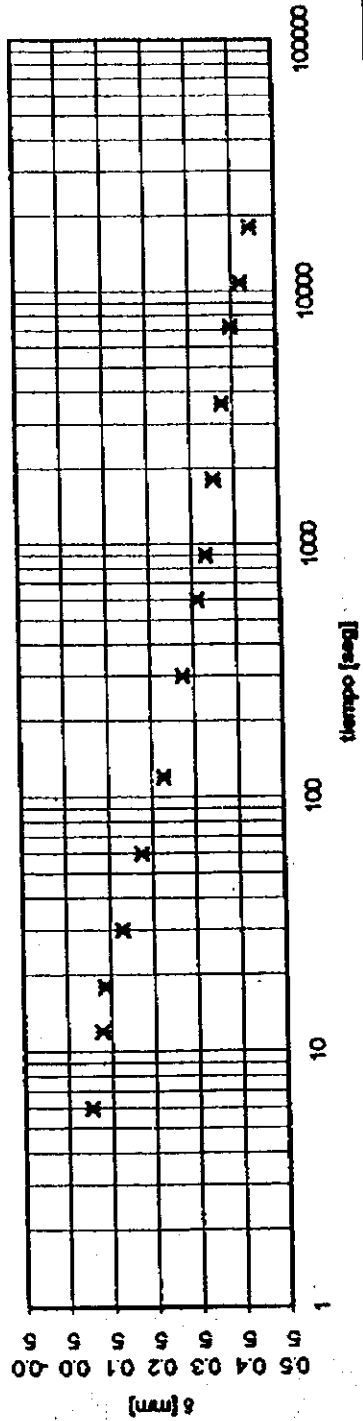
EX-LAGO DE TEXCOCO

SM-2 33,30-
34,30

Gráfica deformación-tiempo

Dp [kg/cm2]: 0.500

p [kg/cm2]: 1.000



Prueba de Consolidación unidimensional

Proyecto: EX-LAGO DE TEXCOCO

Sondeo: SM-2

Muestra: M-50

Prof.: 33.30-34.30

seg	min	hora	0.125		0.250		0.500		1.000		2.000	
			lec. mic. [mm]	δ [mm]	lec. mic. [mm]	δ [mm]	lec. mic. [mm]	δ [mm]	lec. mic. [mm]	δ [mm]	lec. mic. [mm]	δ [mm]
0			19.751	0	19.428	0	19.225	0	18.69	0	15.757	0
6			19.582	0.169	19.37	0.058	19.123	0.102	18.53	0.16	15.632	0.125
12			18.577	0.174	19.36	0.068	19.097	0.128	18.483	0.207	15.58	0.177
18			19.571	0.18	19.351	0.077	19.089	0.136	18.444	0.246	15.534	0.223
30			19.562	0.189	19.34	0.088	19.048	0.177	18.383	0.307	15.473	0.284
60	1		19.56	0.191	19.327	0.101	19.001	0.224	18.27	0.42	15.338	0.419
120	2		19.555	0.196	19.307	0.121	18.947	0.278	18.11	0.58	15.103	0.654
300	5		19.551	0.2	19.284	0.134	18.9	0.325	17.94	0.75	14.615	1.142
600	10		19.548	0.203	19.281	0.147	18.863	0.362	17.87	1.02	14.14	1.617
900	15		19.545	0.206	19.273	0.155	18.842	0.383	17.49	1.2	13.84	1.917
1800	30		19.543	0.208	19.261	0.167	18.82	0.405	17.219	1.471	13.138	2.619
3600	60	1	19.541	0.21	19.25	0.178	18.799	0.426	16.852	1.838	12.656	3.101
7200	120	2	19.54	0.211	19.24	0.188	18.778	0.447	16.659	2.031	12.27	3.487
10800	180	3	19.539	0.212	19.233	0.195	18.755	0.47	16.508	2.184	12.092	3.665
18000	300	5			19.225	0.203	18.732	0.493	16.31	2.38	11.96	3.797
21600	360	6							16.05	2.64	11.771	3.986
36000	600	10										
86400	1440	24										

Wmi + Anillo	307.2	gr	Ww	93.30	gr	Altura Anillo	1.97	cm	Vs	12.61	cm ³
Wanillo	184.9	gr	Wd	29.00	gr	Diámetro	7.97	cm	Vv	85.67	cm ³
Wmf + Anillo	272.9	gr				Area	49.89	cm ²	e	6.795	%
Wd + Anillo	213.9	gr				Volumen	98.28	cm ³	Gw	108.90	%
			ω	321.72	%	γ	1.24	ton/m ³			

Proyecto: EX-LAGO DE TEXCOCO

Sondeo: SM-2

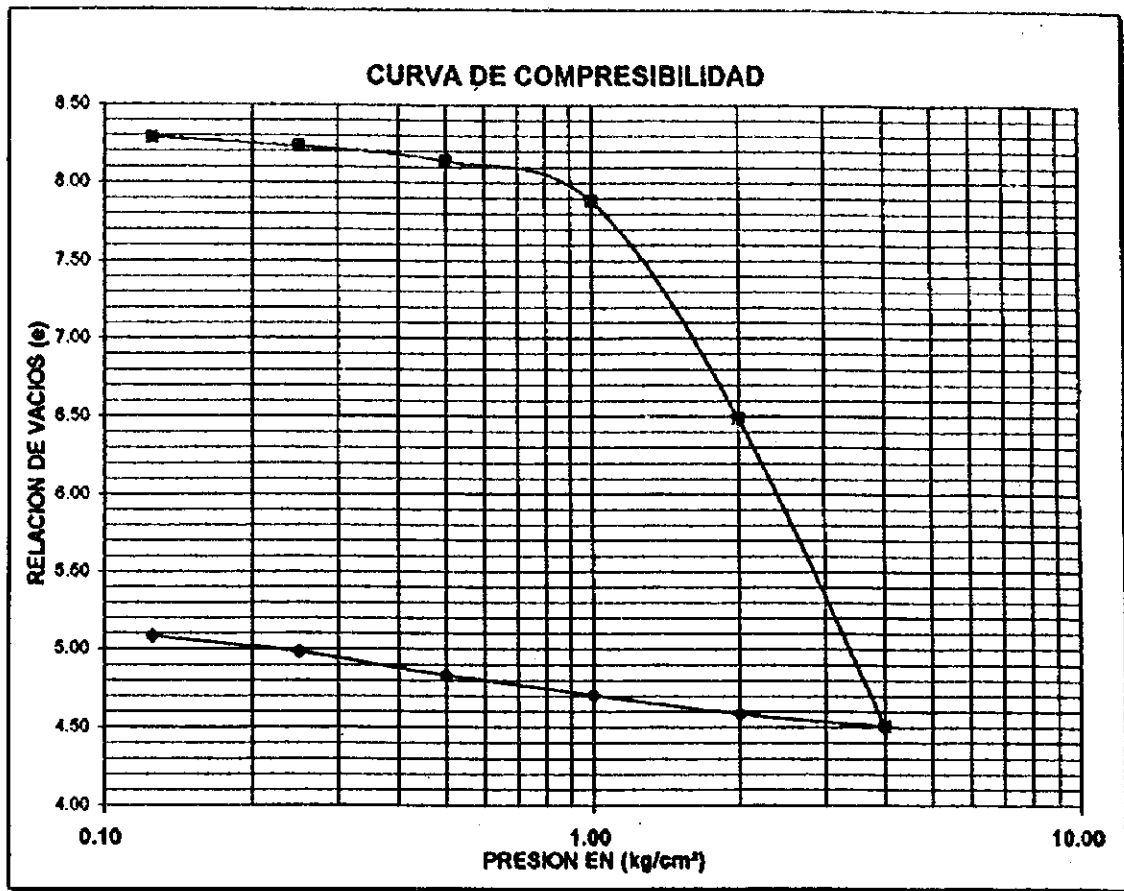
Muestra: M-50

Prof.: 33.30-34.30

DESCARGA			
PRESION	TIEMPO	LECT. MICROM.	DEFORM.
Kg/cm2	min	mm	mm
4.000		11.6	0
2.000		11.768	-0.168
1.000		12.024	-0.256
0.500		12.283	-0.259
0.250		12.606	-0.323
0.125		12.816	-0.21
0		13.146	-0.33

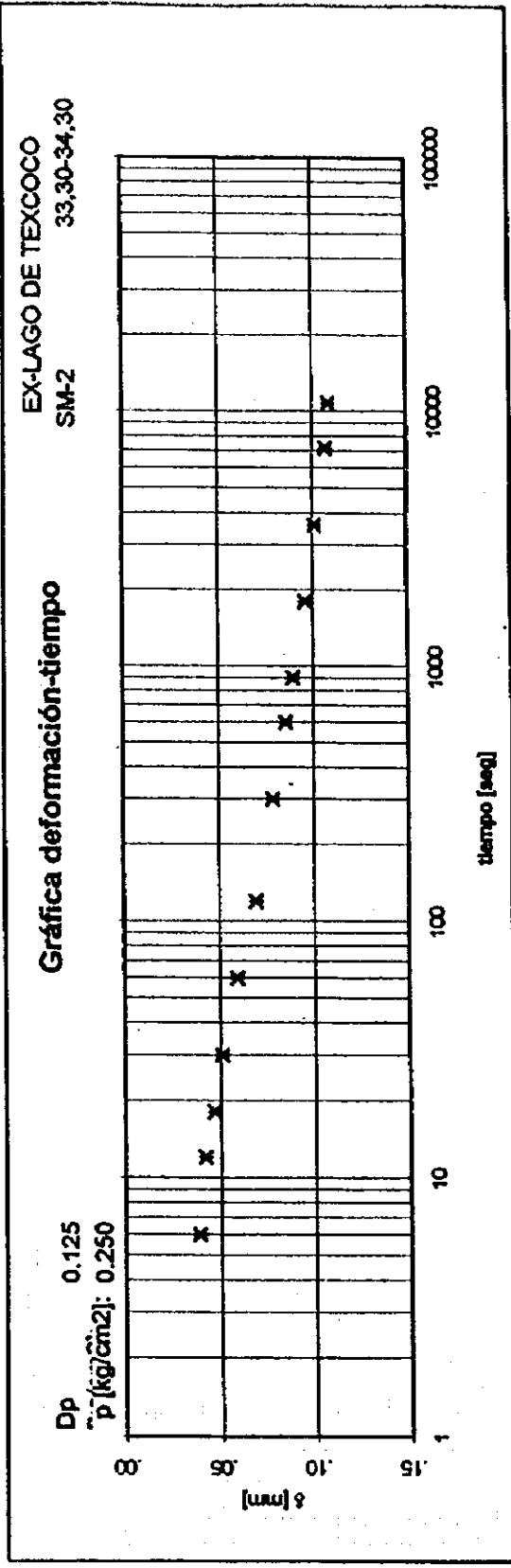
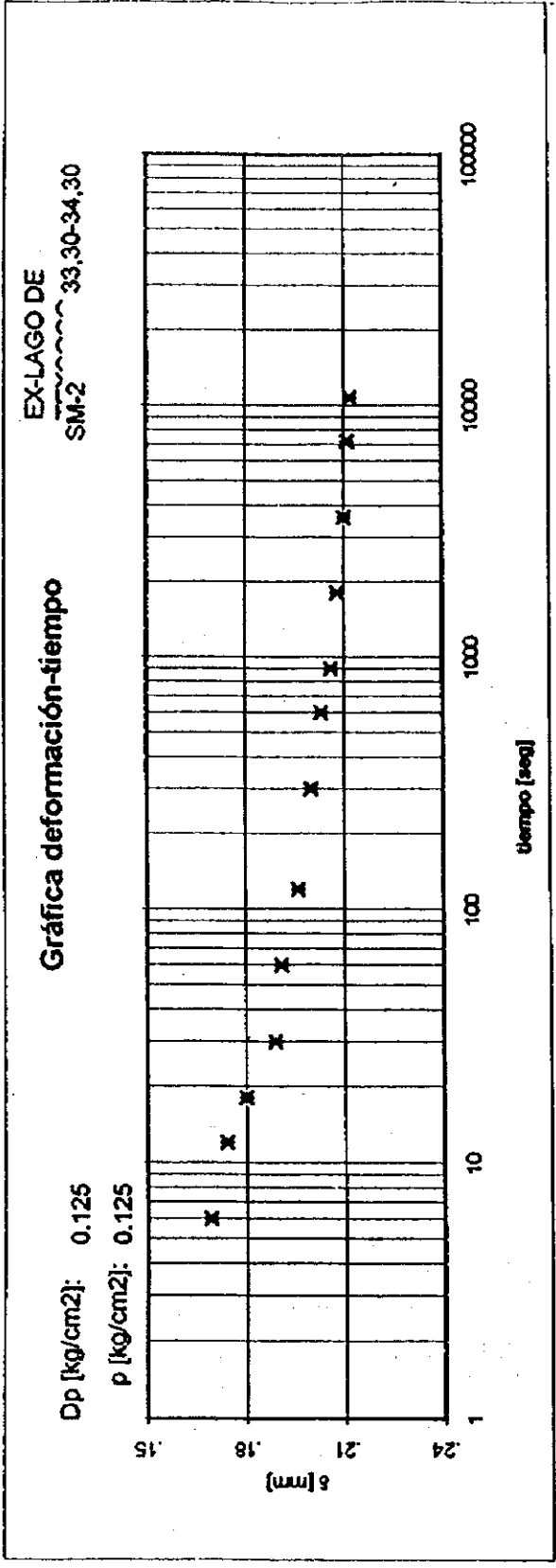
PRESION (Kg / cm2)	DEFORMA LINEAL (mm)	DEFORMA UNITARIA (%)	ESPESOR COMPRIMIDO (mm)	2H - 2Ho (mm)	e (---)
0	0	0	19.7	17.173	6.795
0.125	0.212	1.08	19.488	16.961	6.711
0.250	0.321	1.63	19.379	16.852	6.668
0.500	0.524	2.66	19.176	16.649	6.587
1.000	1.017	5.16	18.683	16.156	6.392
2.000	3.657	18.56	16.043	13.516	5.348
4.000	7.814	39.66	11.886	9.359	3.703
4.000	7.814	39.66	11.886	9.359	3.703
2.000	7.846	38.81	12.054	9.527	3.769
1.000	7.39	37.51	12.31	9.783	3.871
0.500	7.131	36.20	12.589	10.042	3.973
0.250	6.808	34.56	12.892	10.365	4.101
0.125	6.598	33.49	13.102	10.575	4.184
0	6.268	31.82	13.432	10.905	4.315

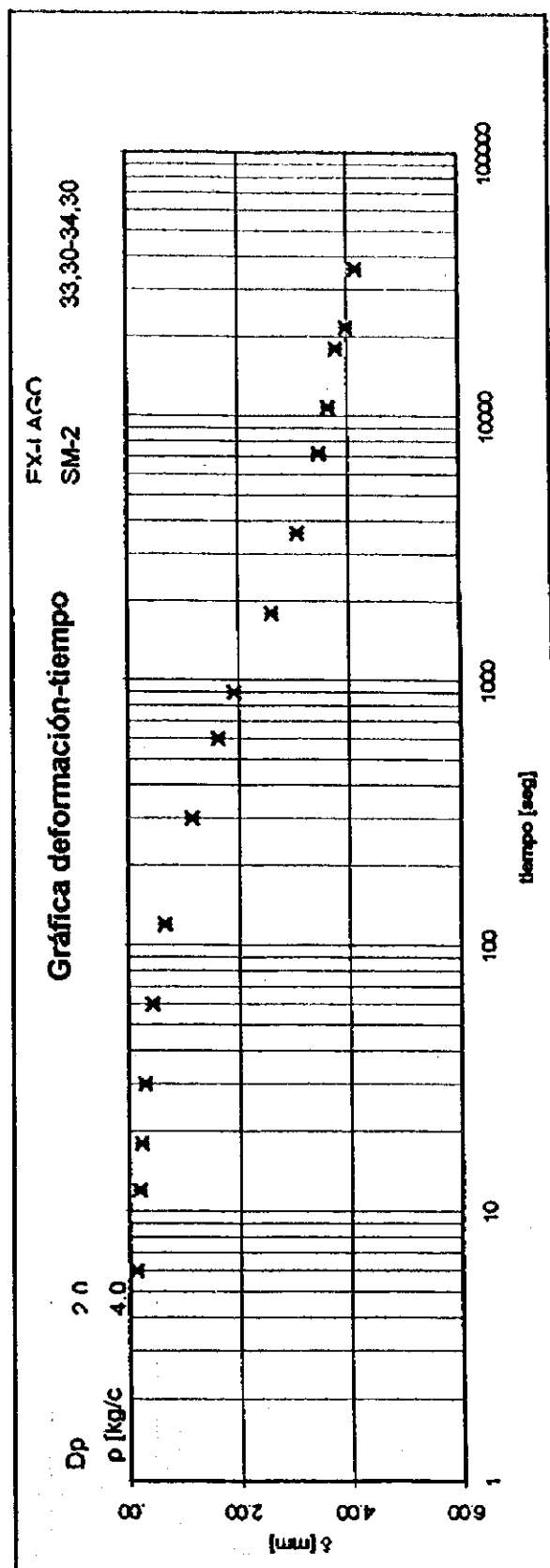
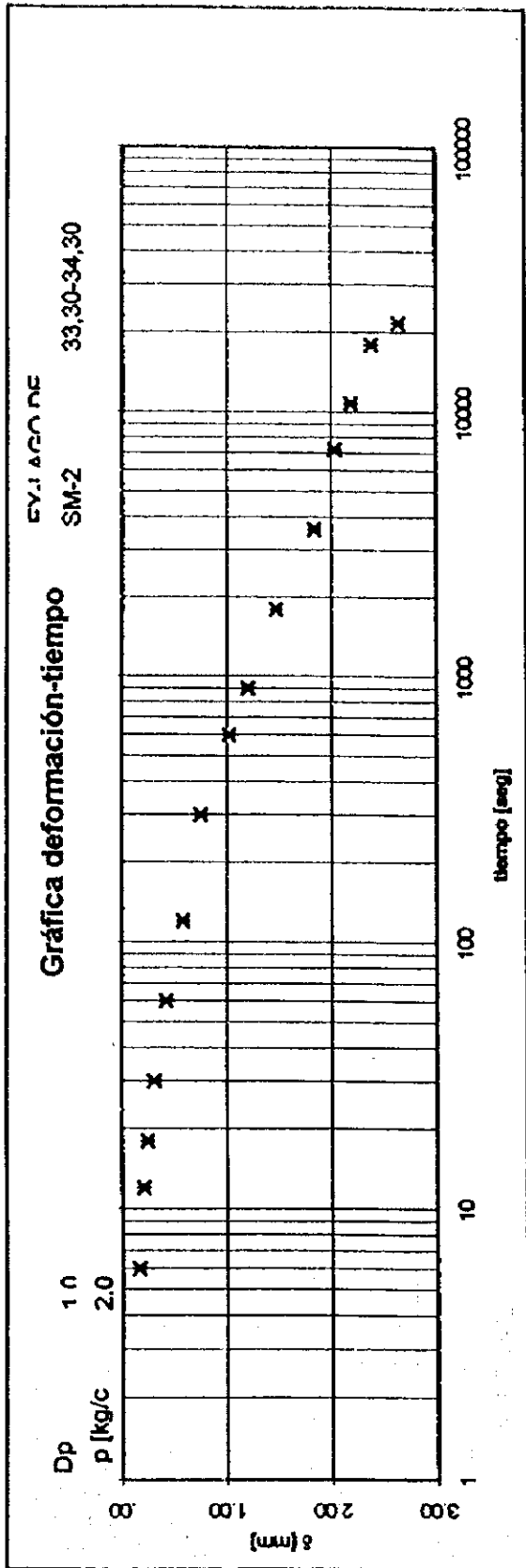
Peso de los Sólidos Ws = 29.00 gr.
 Densidad de los sólidos Ss = 2.30 cm2
 Area de la Probeta Ac = 49.89 mm
 Espesor de los Sólidos 2Ho = Ws x 10 w x Ss x Ac 2.527 mm
 Espesor inicial 2Hi = 19.7 mm

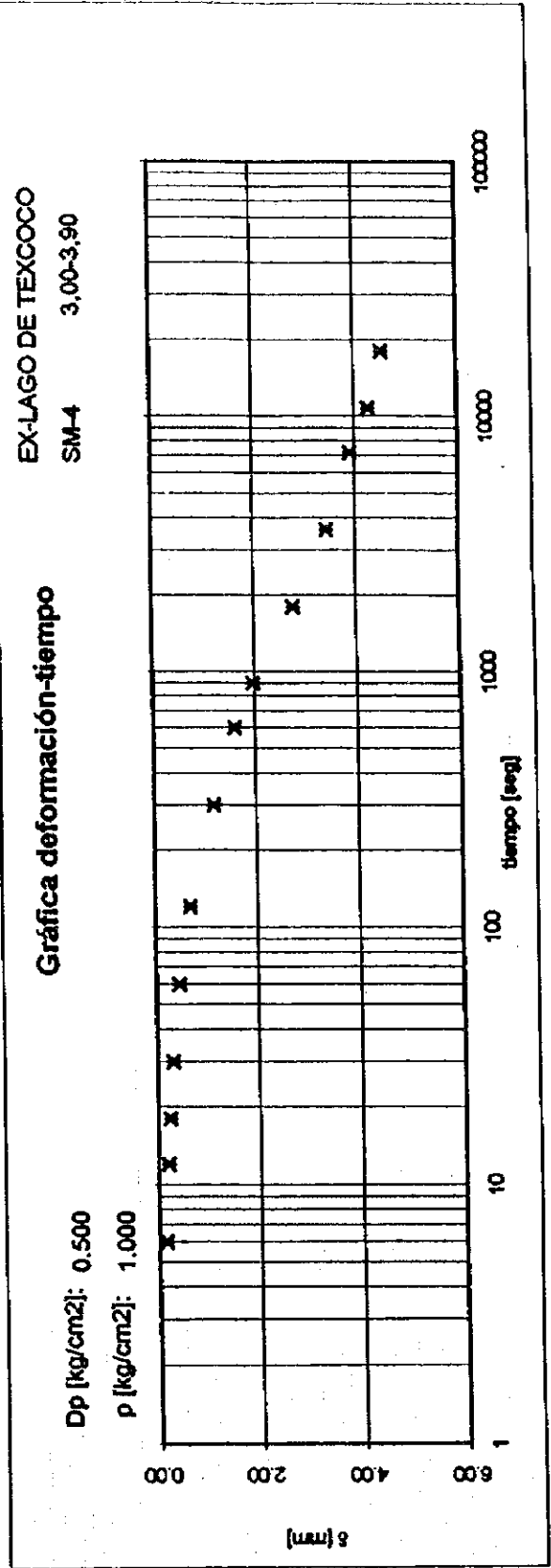
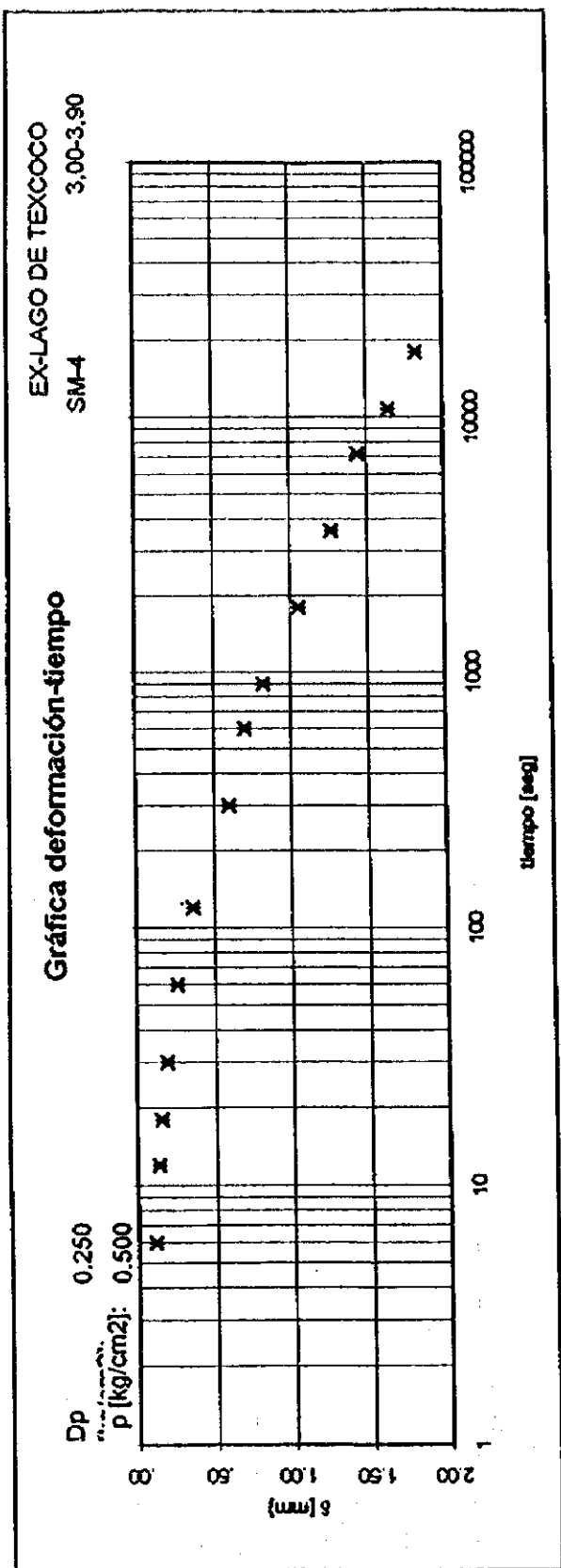


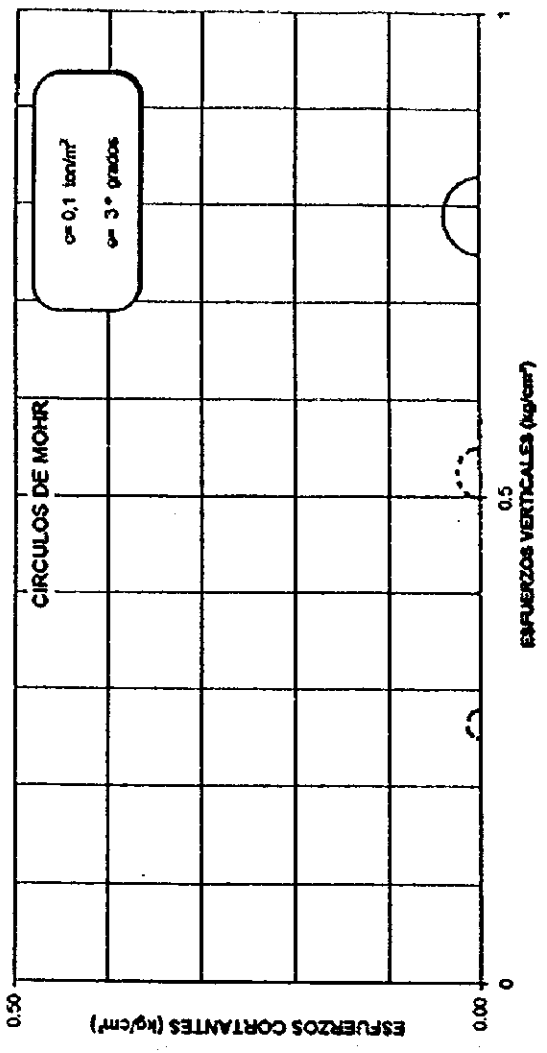
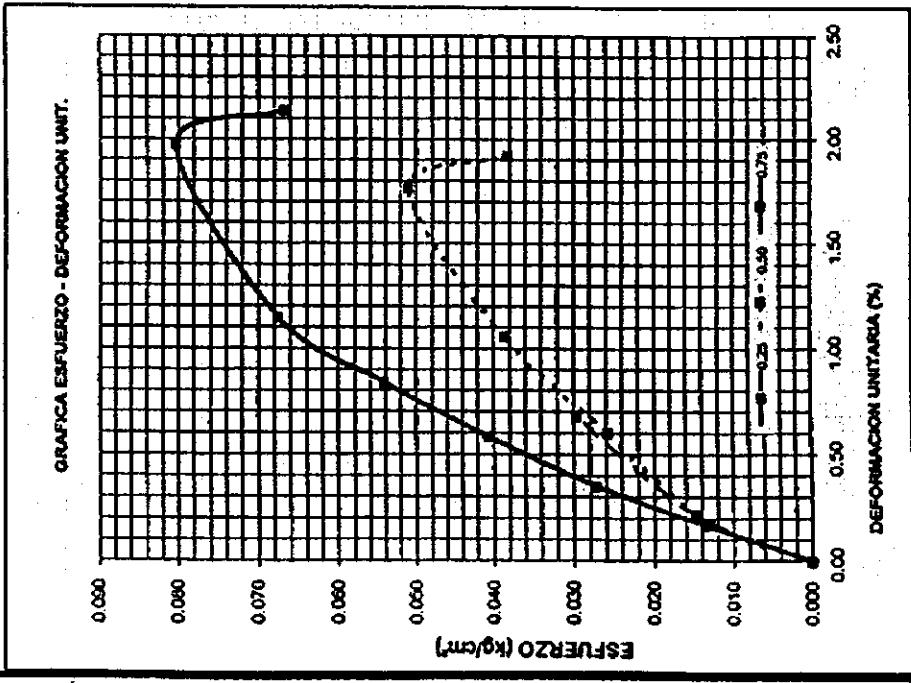
DATOS INICIALES				Pc	Pvhi
W%	Se	e	Gw %	(kg/cm²)	ton/m3
321.724	2.770	8.368	106.249		1.244

PRUEBA	CONSOLIDACIÓN	
OBRA	EX-LAGO DE TEXCOCO	
LUGAR	MEXICO D.F.	SONDEO SM-2
PROF.	33,30-34,30 m	FIGURA









ENSAJO	W1 (%)	el	OW1 (%)	PESO VOLUM. NATURAL (kg/m³)	FRESON CONF. (kg/cm²)	ESF. A LA FALLA (kg/cm²)
1	321.805			1.240	0.25	0.03
2	276.986			1.171	0.50	0.05
3	273.101			1.209	0.75	0.06
PROMEDIO	290.501			1.207		0.06

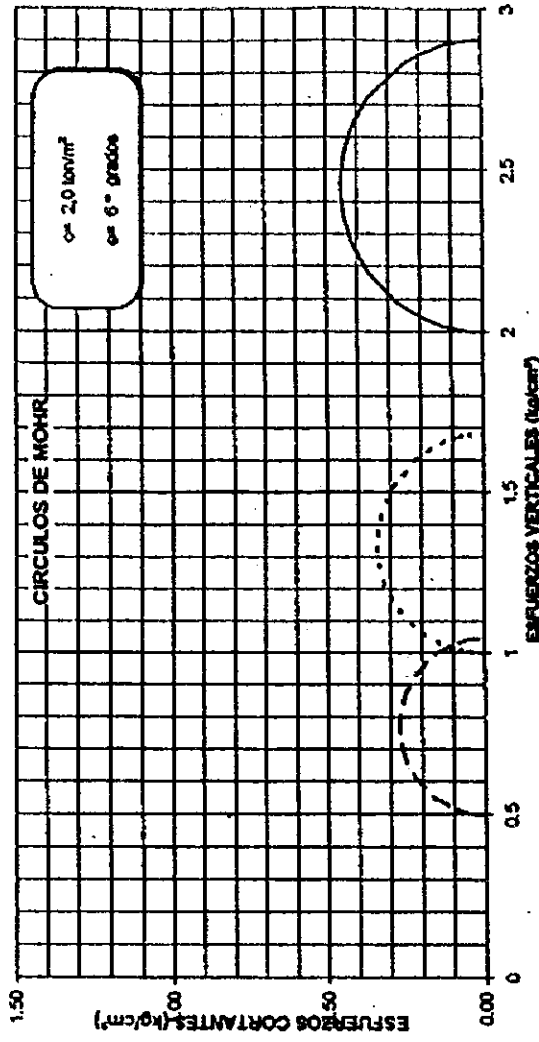
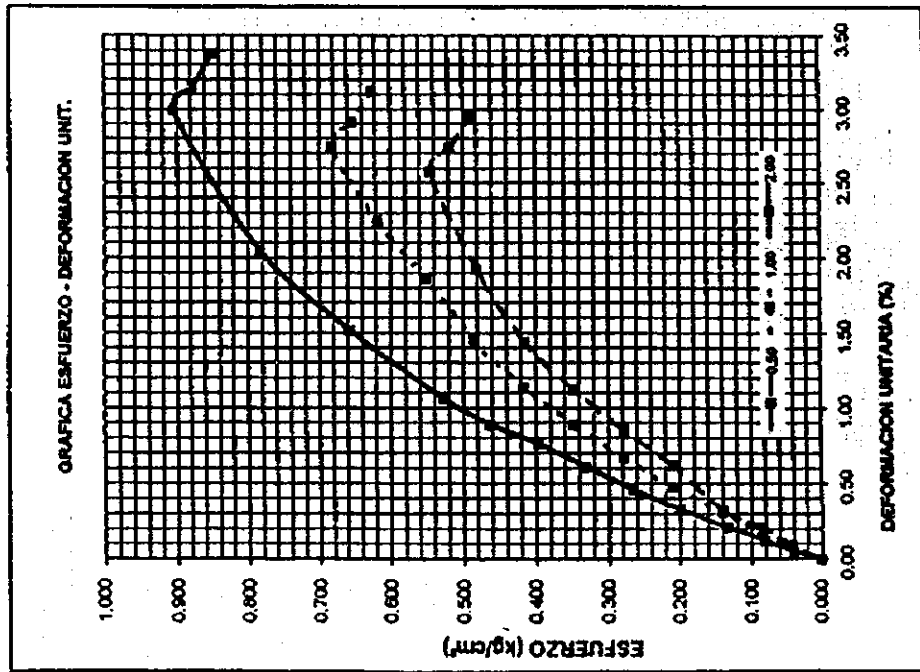
1.207 $S_{p=2,65}$

PRUEBA: COMPRESION TRIAXIAL RAPIDA

OBRA: BORDO XOCHIMILCO EX-LAGO DE TEXCOCO

LUGAR: MEXICO D.F. SONEDO SM-2

PROF. 6.00-7.00 m. NORMAL



ENSAYO	W1 (%)	ϕ	GW (%)	PESO VOLUM. NATURAL (ton/m ³)	PREMIO CONF. (kg/cm ²)	ESF. A LA FALLA (kg/cm ²)
NUM.						
1	211.222			1.262	0.50	0.55
2	209.091			1.244	1.00	0.68
3	211.605			1.256	2.00	0.90
PROMEDIO	210.638			1.254		$S_{\sigma} = 2.65$

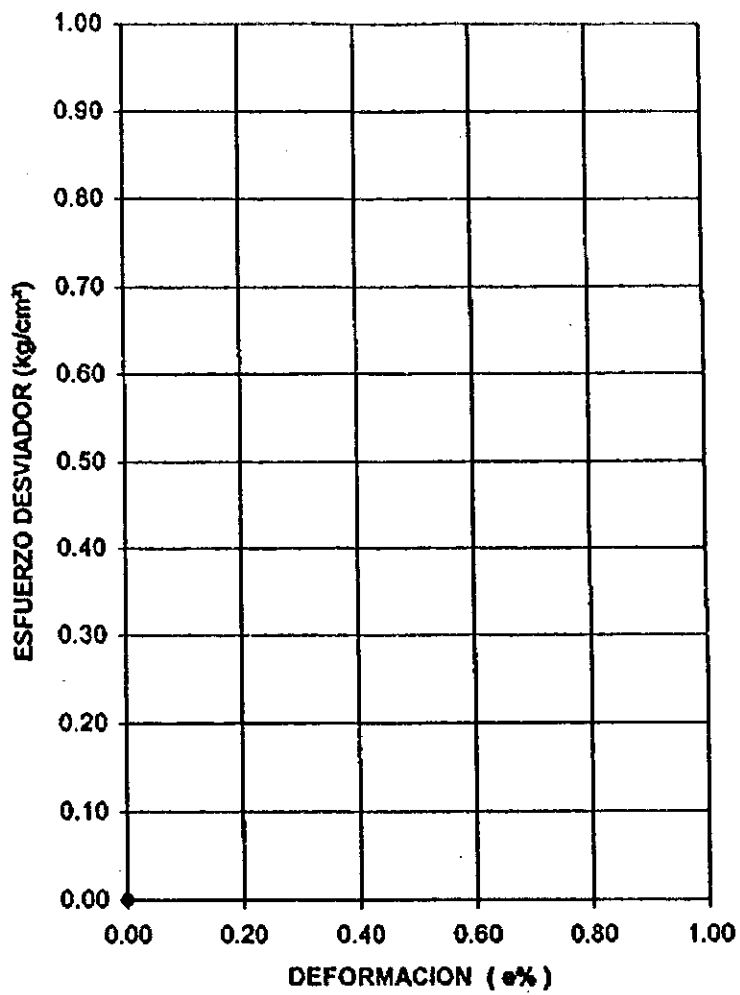
PRUEBA: COMPRESION TRIAXIAL RAPIDA

OBRA: BORDO XICHACA EX-LAGO DE TEXCOCO

LUGAR: MEXICO D.F. BORDO

PROF. 33,30-34,30

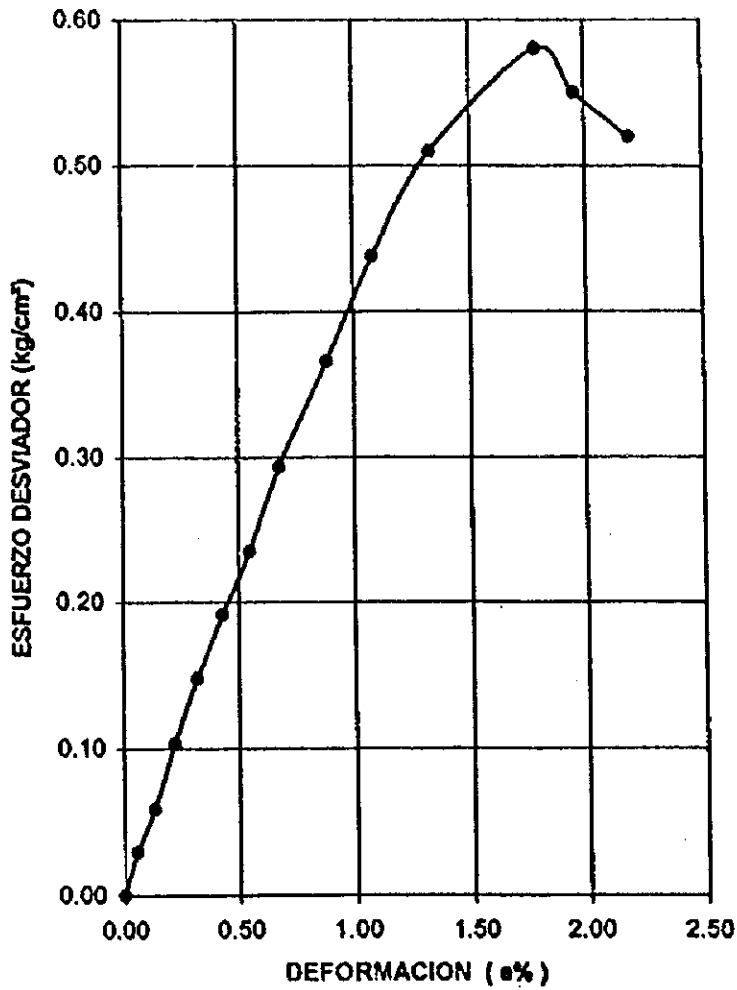
FIGURA: SM-2



DATOS FINALES DEL ESPECIMEN	
$\epsilon =$	$G =$ %
$P_{\text{Ml}} =$ 1.127 T/m ³	$W =$ 265.5 %
$q_u =$ 0.000 kg/cm ²	

NO PRESENTO CARGA

PRUEBA:	COMPRESIÓN SIMPLE	
OBRA:	BORDO XOCHIACA EX-LAGO DE TEXCOCO	
LUGAR:	MEXICO D.F.	SONDEO SM-2
PROP:	6,00-6,70 m.	FIGURA



DATOS FINALES DEL ESPECIMEN	
ϵ^*	G= %
PvH= 1.244 T/m ³	Wl= 197.8 %
qu= 0.580 kg/cm ²	

PRUEBA:	COMPRESIÓN SIMPLE	
OBRA:	BORDO XOCHIACA EX-LAGO DE TEXCOCO	
LUGAR:	MEXICO D.F.	SONDEO SM-2
PROP:	33,30-34,30 m.	FIGURA