COMUNE DI CASCIANA TERME LARI

Provincia di Pisa

NUOVO PIANO STRUTTURALE

Progettazione Urbanistica

Arch. Graziano Massetani
STUDIO MASSETANI Architettura & Urbanistica

Collaboratori:
Pianificatore Territoriale Luca Menguzzato

Indagini geologiche ed idrauliche
STUDIO GEOPROGETTI
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Dott. Geol. Alberto Frullini

Giovane Professionista
Dott. Geol. Roberto Mattei

STUDIO CROCE ENG.
Dott. Ing. Idr. Nicola Croce

Analisi agronomiche
P.F.M. S.r.l. Società tra professionisti
Dott. Agr. Guido Franchi
Dott. Agr. Federico Martinelli

Analisi socio-economiche
Dott. Alessio Falorni - Alfamark

Acustica e risparmio energetico
Prof. Ing. Fabio Fantozzi

Normative edilizie e urbanistiche
Dott. Avv. Piera Tonelli - Studio Gracili Associato

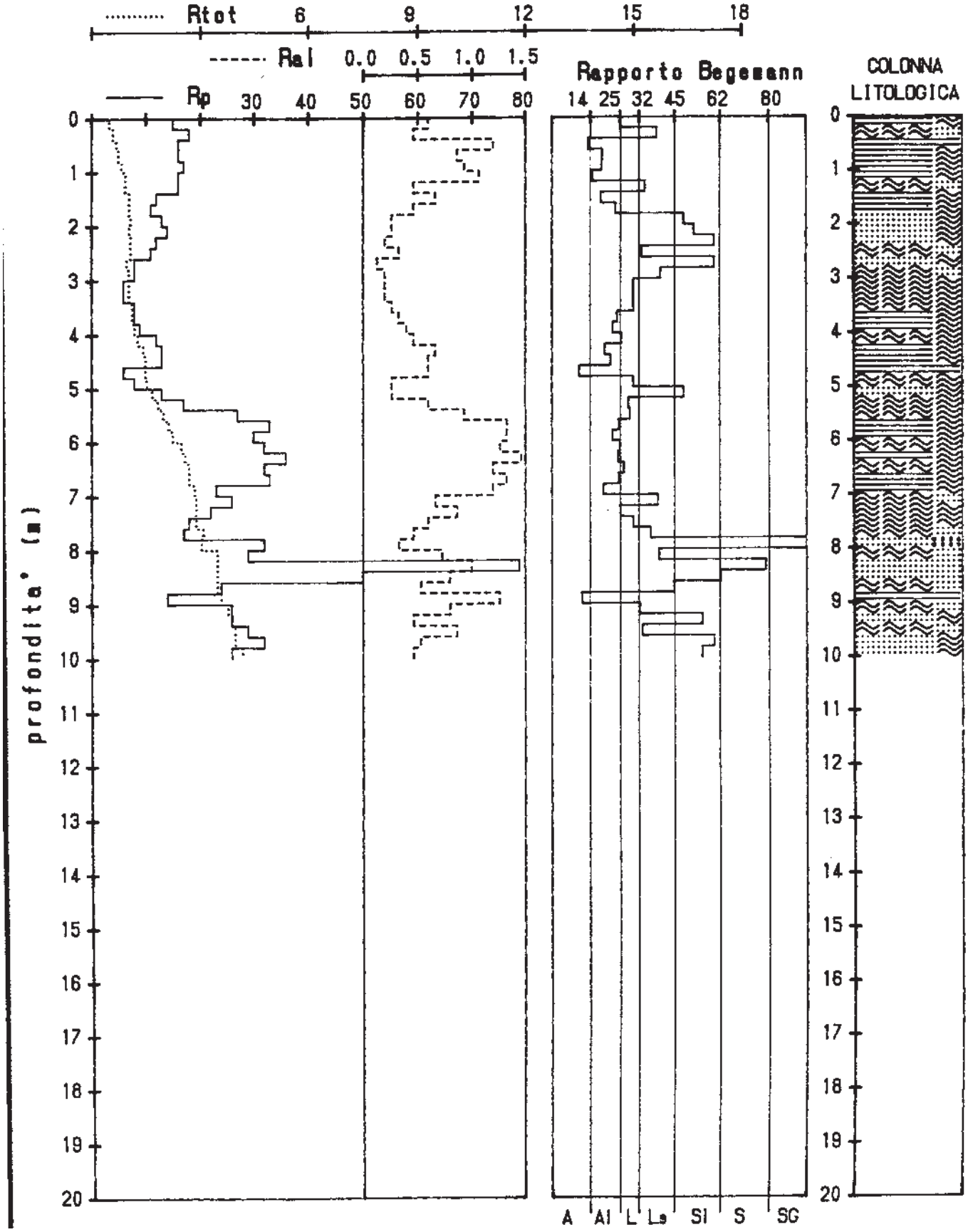
Responsabile del Procedimento:
Arch. Nicola Barsotti

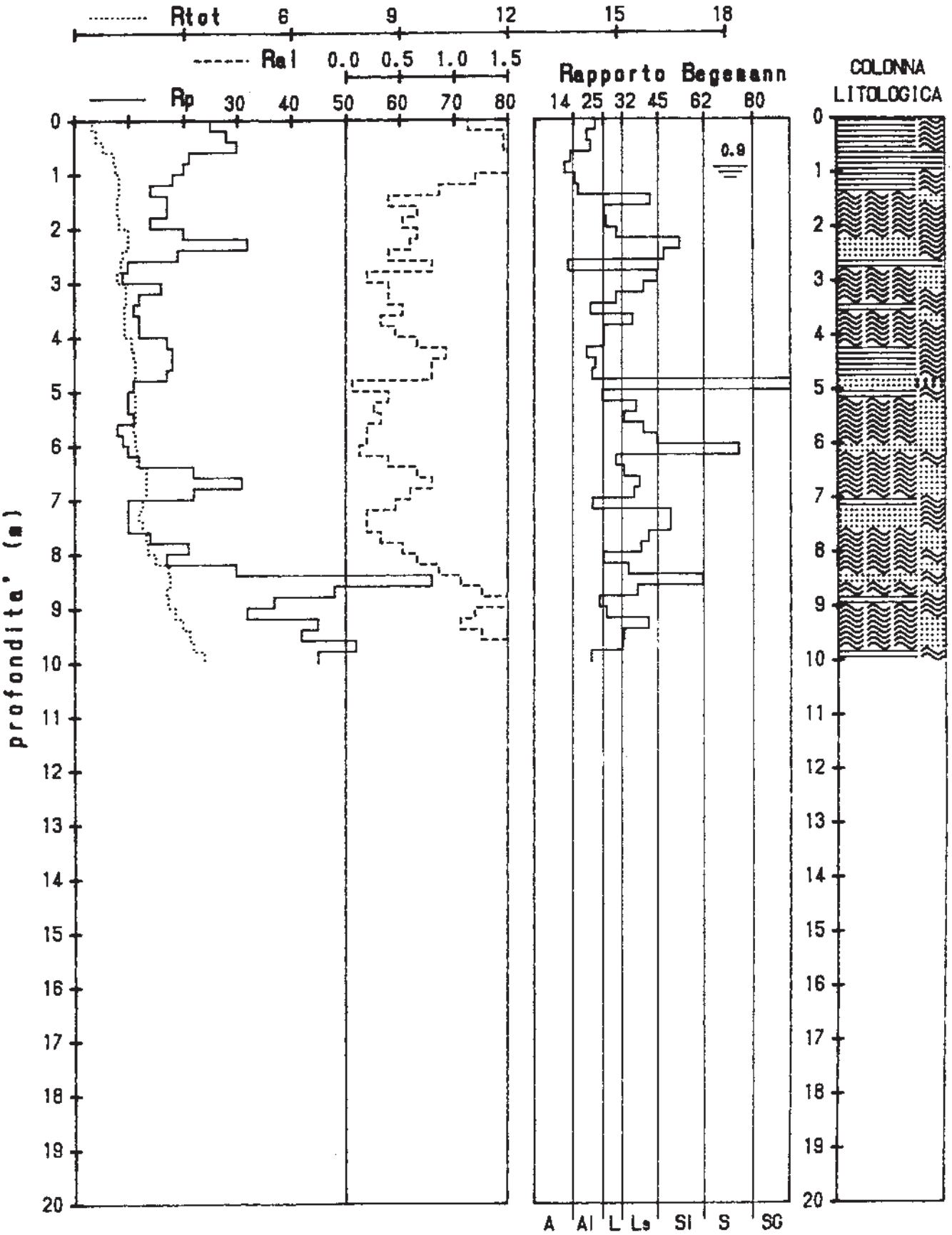
Garante dell'informazione e della partecipazione:
Geom. Simone Giovannelli

Adozione	Data: Maggio 2017
Approvazione	

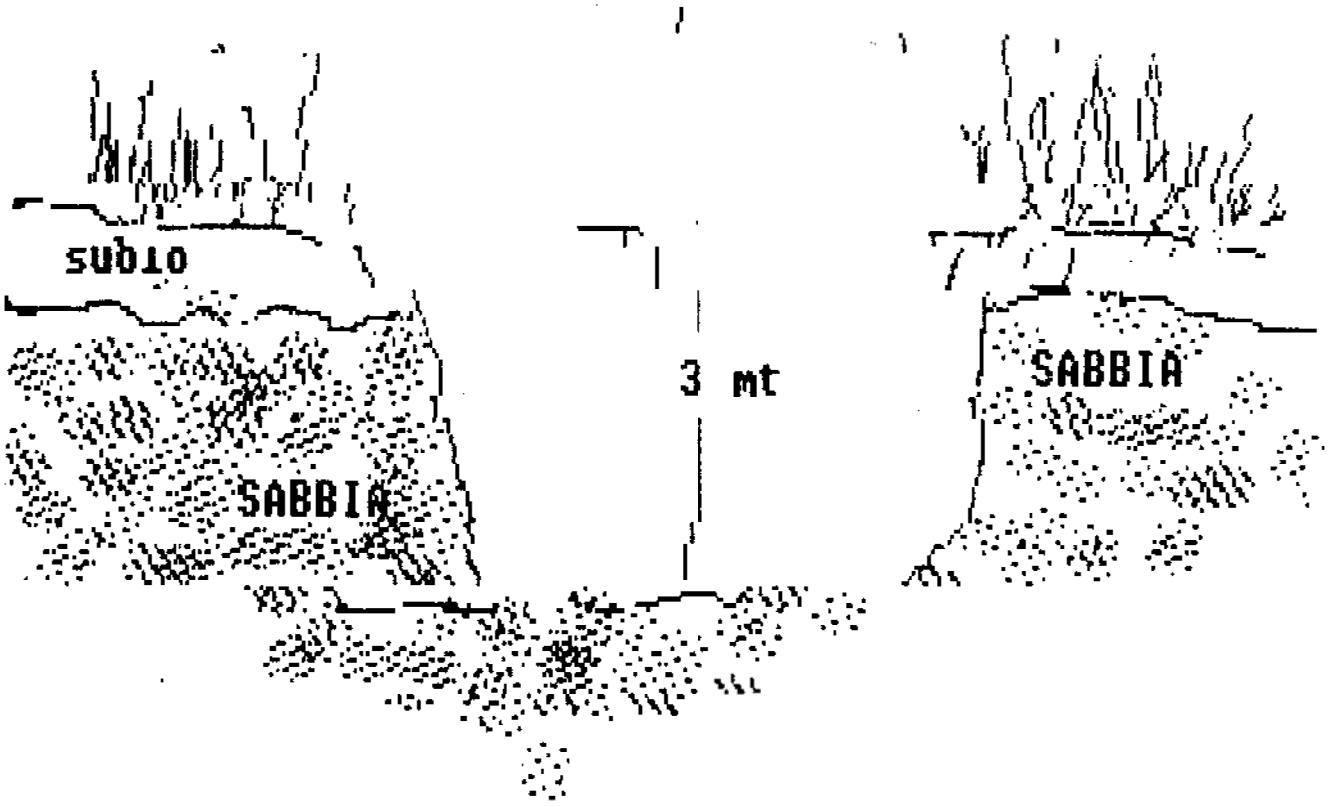
QC	**Indagini geologiche ai sensi del D.P.G.R. 25 ottobre 2011 n.53/R**
03	Allegato 1 - Database delle indagini geognostiche Parte 2

INDAGINI ESTRATTE DAL DATABASE DELLA PROVINCIA DI PISA


Rtot
6
9
12
15
18
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begessann
14
25
32
45
62
80
COLONNA LITOLOGICA
profondita' (m)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
Al
L
Ls
Sl
S
SG

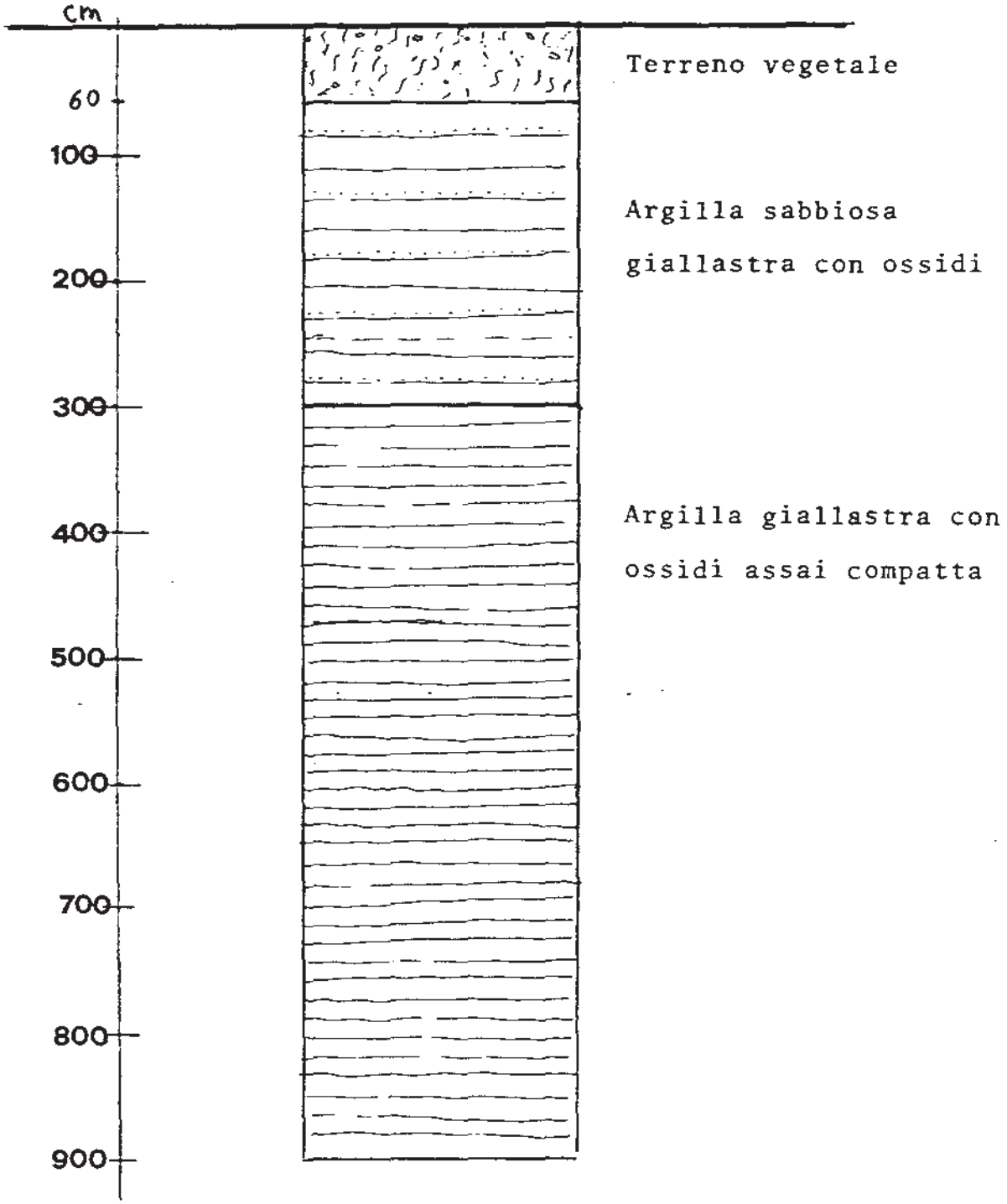

Rtot
6
9
12
15
18
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
0.9
COLONNA LITOLOGICA
profondita' (m)
A
Al
L
Ls
Sl
S
SG

SEZIONE DEL SAGGIO CON ESCAVATORE



PROFILO SAGGIO GEOLOGICO

0,00	
0,30	Terreno vegetale
0,60	Argilla compatta
2,50	Argilla mista a ghiaia e sabbia


cm
60
100
200
300
400
500
600
700
800
900
Terreno vegetale
Argilla sabbiosa
giallastra con ossidi
Argilla giallastra con
ossidi assai compatta

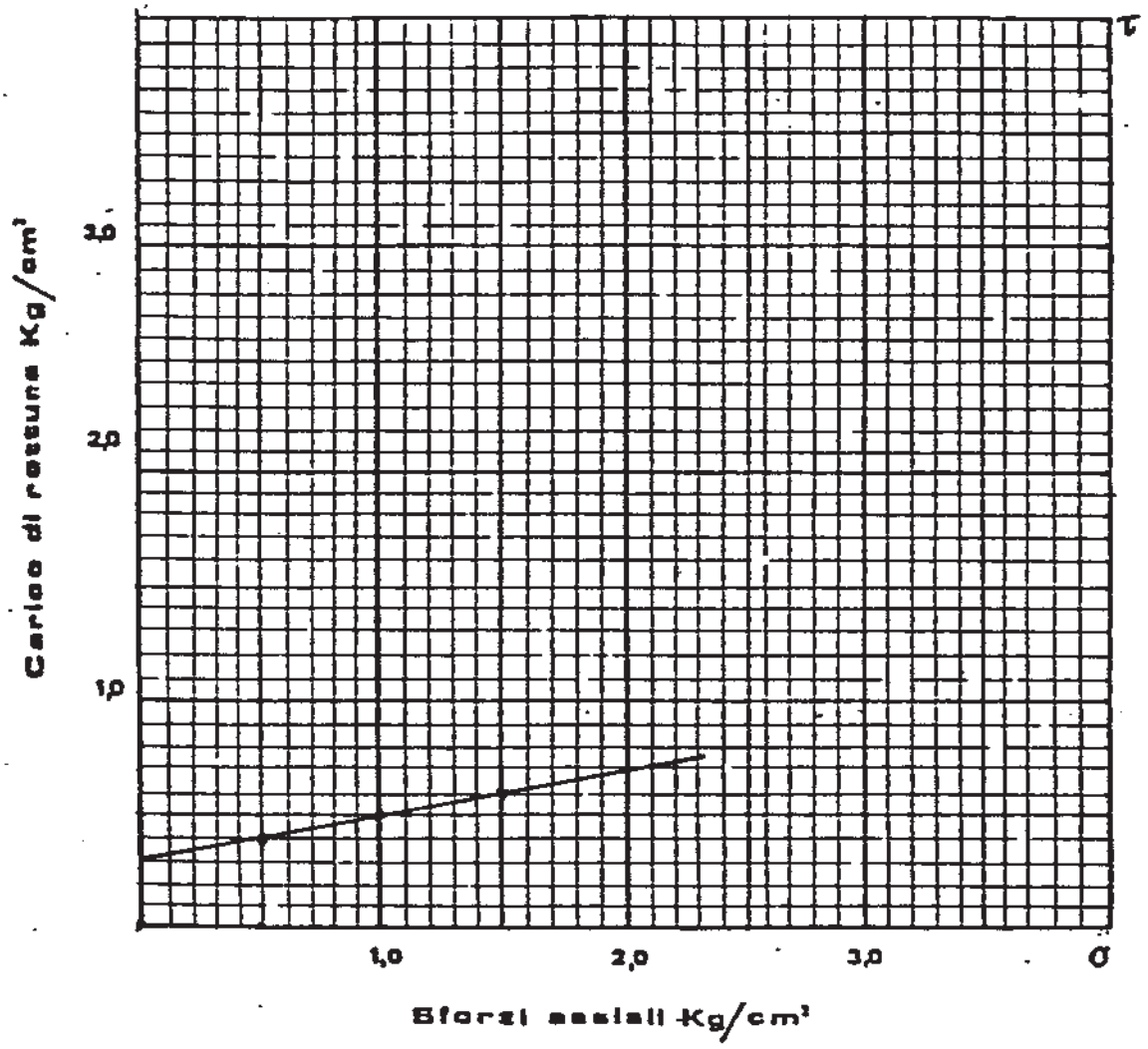
Sondaggio	Casine di Lari
Camp.	-1,50 ml
Peso spec.	1,855

Densita'	τ	σ	U%	φ = 10°
Assestam.	0,4	0,5		c = 0,300
	0,5	1		U% = 23,7
	0,62	1,5		

Condizioni di prova:

taglio rapido n.d.

terreno argilla giallastra sabbiosa plastica

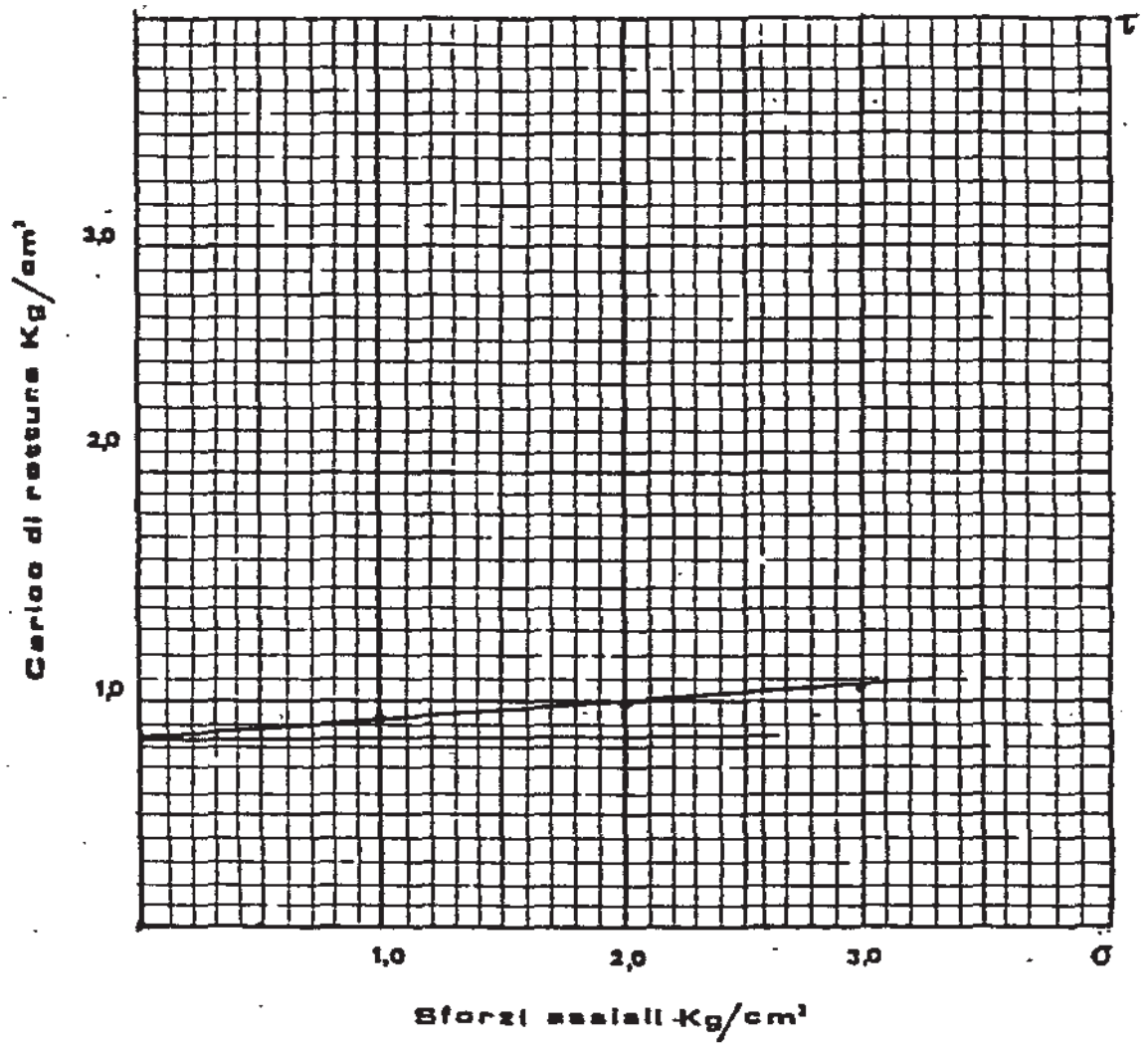


Sondag.	Casine di Lar
Camp.	-2,00 ml
Peso spec.	1,899

Densita'	τ	σ	U%	φ = 4°
Assestam.	0,92	1		c = 0,850
	0,98	2		U% =
	1,05	3		

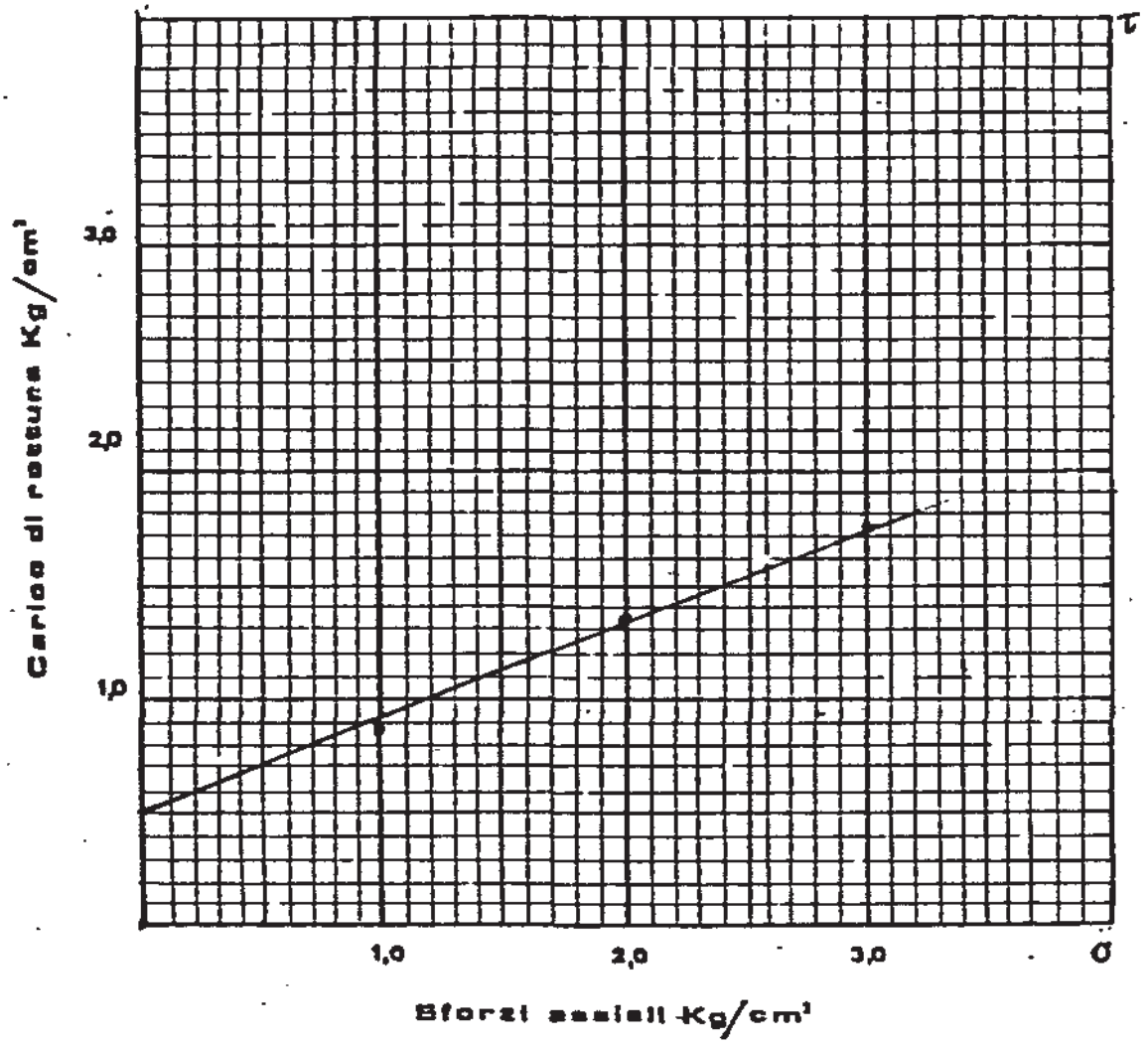
Condizioni di prova:
taglio rapido n.d.

terreno: argilla giallastra e grigia (sabbiosa) asciutta

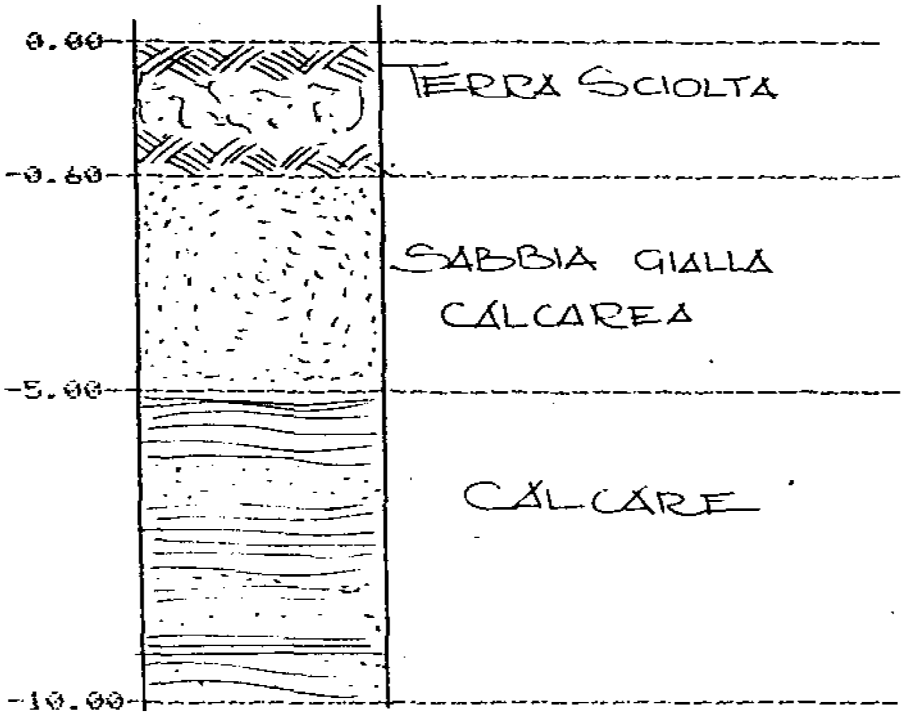


Sondaggio	Casine di Lari	Densita'	τ	σ	U%	φ = 22°	
Camp.	- 3,00 ml	Assestam.	0,88	1		c = 0,500	
Peso spec.	1,788		1,34	2		U% =	
			1,76	3			
		Condizioni di prova: taglio rapido n.d.					

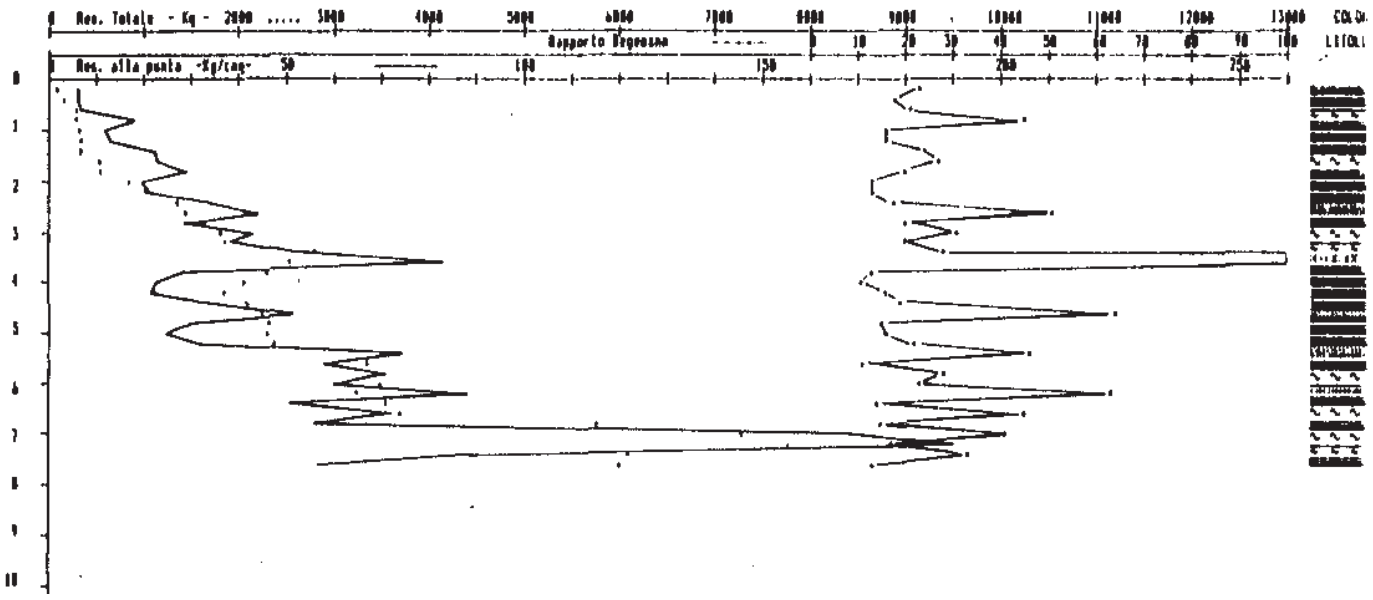
terreno: argilla giallastra e grigia con ossidi
con livelletti sabbiosi



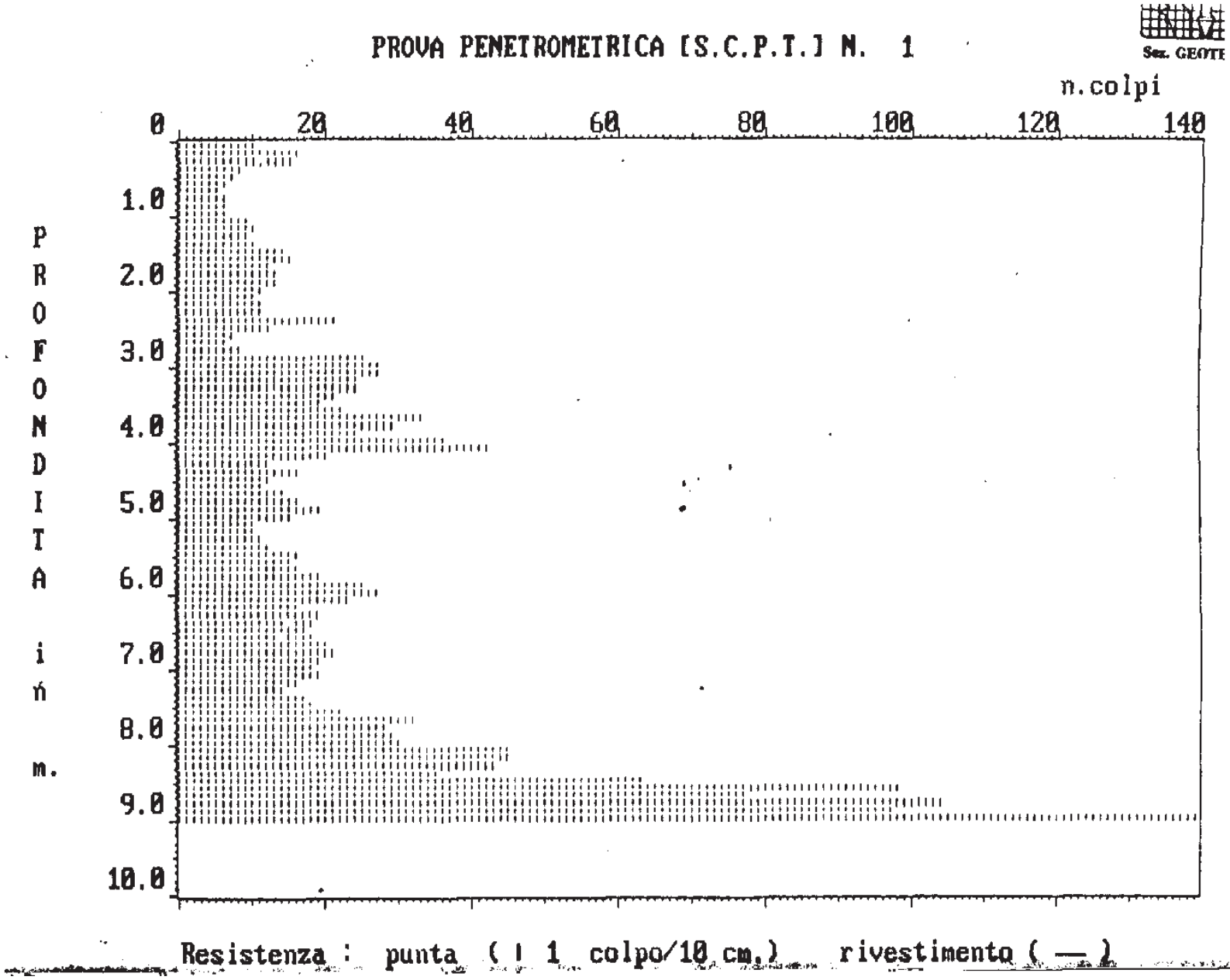
S E Z I O N E S T R A T I G R A F I C A



	lettura di campagna			valori derivati							
PROFONDITA' (metri)	Rpt (Kg)	Rat (Kg)	Rt (Kg)	Rat-Rpt (Kg)	Rat (kg/cmq)	Rp/Rat	Rt-Rpt (kg)	Fl (gradi)	Dr (%)	Cu (kg/cmq)	nr (cmq/t)
.2	60	100	90	40	.26	23	30			.24	25.93
.4	60	110	160	50	.33	10	100			.24	25.93
.6	70	120	290	50	.33	21	220			.20	23.81
.8	100	240	290	60	.4	15	110			.72	17.6
1	120	230	320	110	.73	16	200			.40	19.13
1.2	130	250	340	120	.8	16	210			.52	18.72
1.4	220	360	350	140	.93	24	110			.80	17.15
1.6	250	360	540	130	.86	27	310			.92	17.04
1.8	290	510	550	220	1.46	20	260			1.16	16.35
2	200	430	840	230	1.53	13	640			.8	17.36
2.2	210	450	1020	240	1.6	15	810			.84	17.25
2.4	340	630	1360	290	1.93	18	1020			1.36	15.59
2.6	440	570	1450	130	.86	51	1010	30	35		13.72
2.8	290	510	1650	220	1.46	20	1360			1.16	16.35
3	450	640	1820	210	1.4	31	1390			1.72	13.92
3.2	390	690	1860	300	2	20	1470			1.56	14.69
3.4	520	800	2000	280	1.86	20	2200			2.6	12.2
3.6	830	860	2540	30	.2	415	1710	37	54		0
3.8	290	630	2510	340	2.26	15	2020			1.36	16.35
4	230	540	2060	310	2.06	11	1030			.92	17.04
4.2	220	430	1860	210	1.4	16	1640			.80	17.15
4.4	330	590	2090	260	1.73	19	1760			1.32	15.75
4.6	510	650	2240	120	.8	64	1730	30	39		12.39
4.8	300	610	2320	310	2.06	15	2020			1.2	16.26
5	250	480	2300	230	1.53	16	2050			1	16.83
5.2	320	540	2370	220	1.46	22	2050			1.28	15.91
5.4	710	960	3500	240	1.6	46	2760	32	50		8.94
5.6	500	1340	3340	780	5.2	31	2760			2.9	11.14
5.8	700	1000	3540	300	2.33	28	2840			3.5	9.43
6	600	990	3400	390	2.6	23	2860			5	10.04
6.2	800	1690	3240	210	1.4	63	2360	35	56		7.56
6.4	510	1050	3550	540	3.6	14	3040			2.55	12.39
6.6	720	960	3690	240	1.6	45	2970			3.6	9.18
6.8	560	1110	5770	550	3.66	15	5210			2.8	13.5
7	1700	2320	7290	620	4.13	41	5590			8.5	3.92
7.2	1900	3570	7770	1670	11.13	17	5970			9.5	3.5
7.4	890	1300	6300	410	2.73	33	5210			4.45	7.47
7.6	570	1250	6000	660	4.4	13	5430			2.85	11.33
7.8											
8											

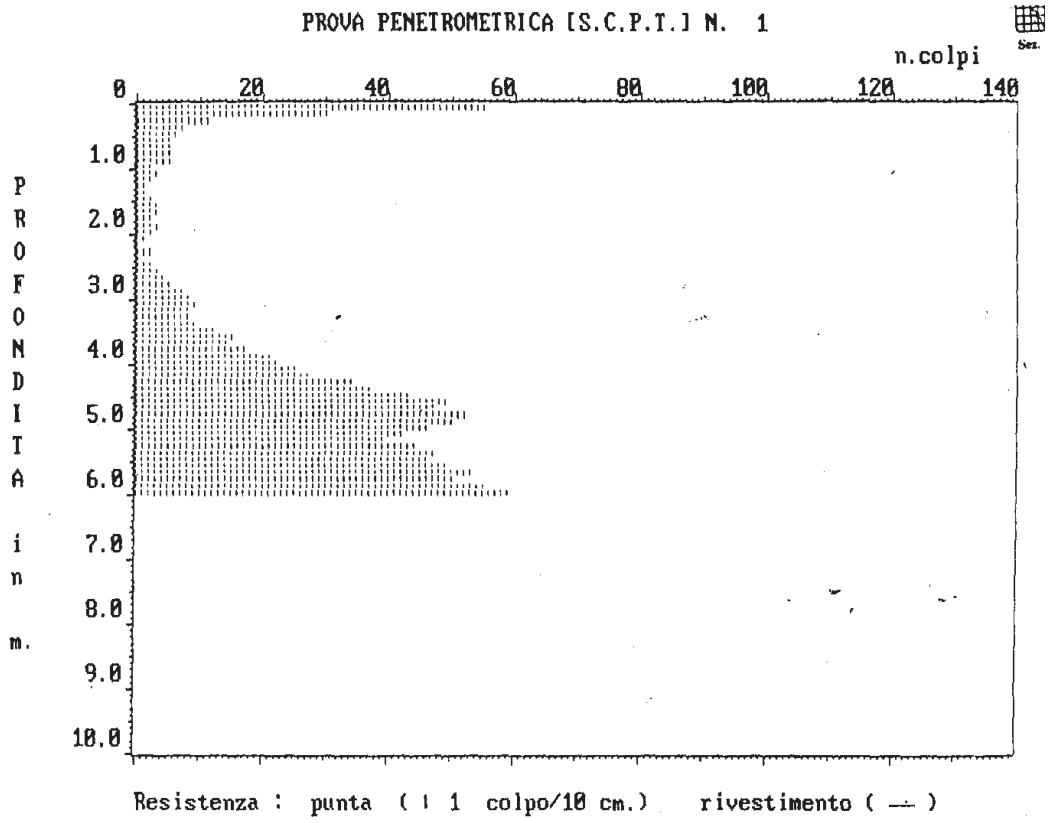


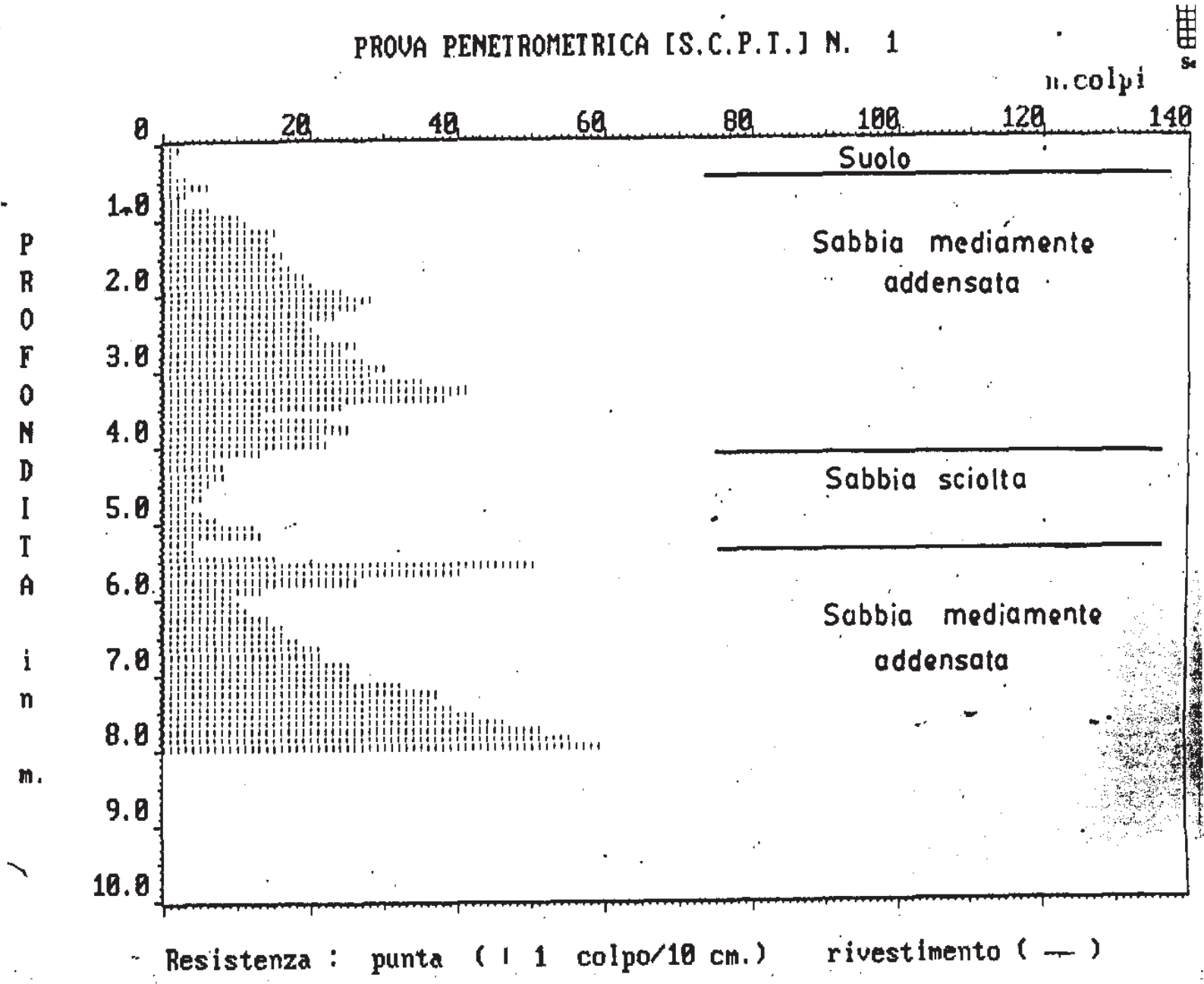
PROVA PENETROMETRICA [S.C.P.T.] N. 1



Resistenza alla punta

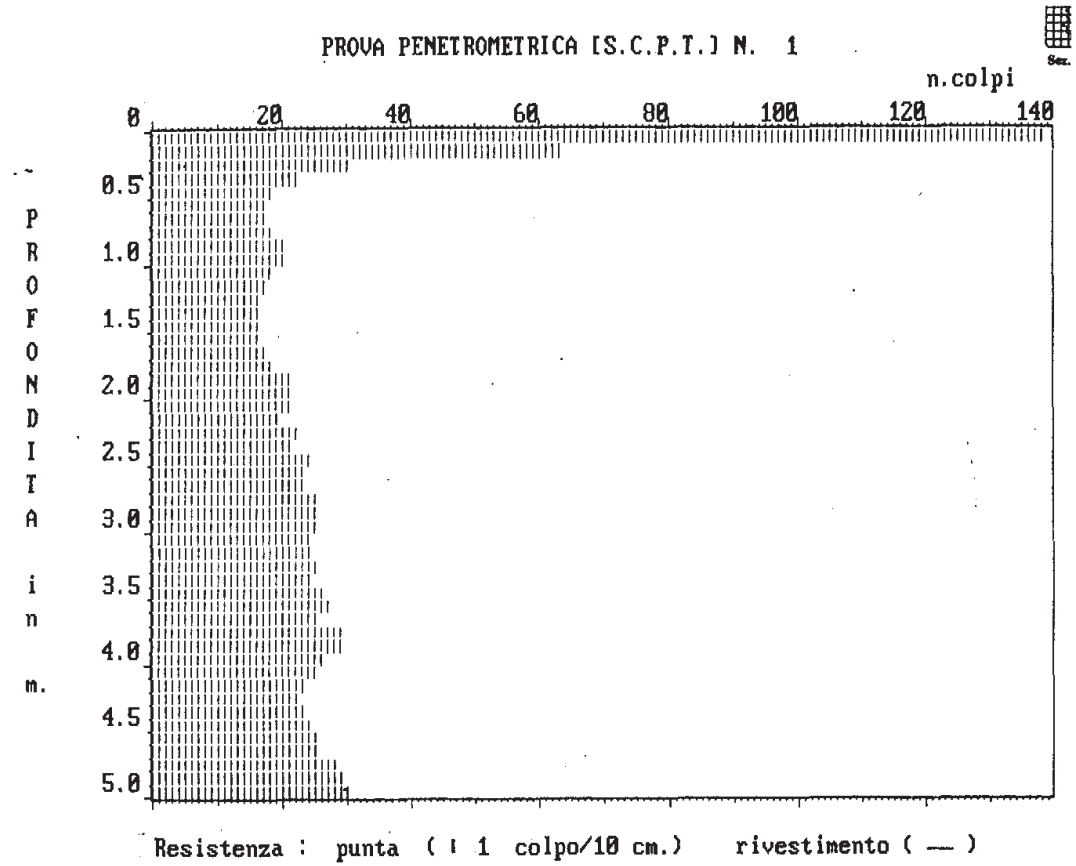
PROFONDITA' IN M.	N. COLPI ogni 10 cm.	RES. ROT. DIN. PUNTA Kg/N/cm².	PROFONDITA' IN M.	N. COLPI ogni 10 cm.	RES. ROT. DIN. PUNTA Kg/N/cm².
0.10	55	200	3.10	9	25
0.20	30	109	3.20	8	22
0.30	11	40	3.30	8	22
0.40	7	25	3.40	9	25
0.50	6	22	3.50	12	33
0.60	5	18	3.60	15	41
0.70	5	18	3.70	14	39
0.80	5	18	3.80	17	46
0.90	5	18	3.90	21	57
1.00	2	7	4.00	22	59
1.10	3	10	4.10	25	63
1.20	2	7	4.20	27	68
1.30	1	3	4.30	34	86
1.40	1	3	4.40	37	93
1.50	2	7	4.50	43	108
1.60	3	10	4.60	49	122
1.70	3	10	4.70	47	117
1.80	2	6	4.80	52	130
1.90	3	10	4.90	50	125
2.00	2	6	5.00	46	115
2.10	1	3	5.10	42	98
2.20	0	0	5.20	39	91
2.30	2	6	5.30	44	103
2.40	0	0	5.40	47	110
2.50	2	6	5.50	46	108
2.60	3	9	5.60	49	114
2.70	4	12	5.70	53	123
2.80	5	15	5.80	50	116
2.90	7	21	5.90	55	128
3.00	8	23	6.00	59	137

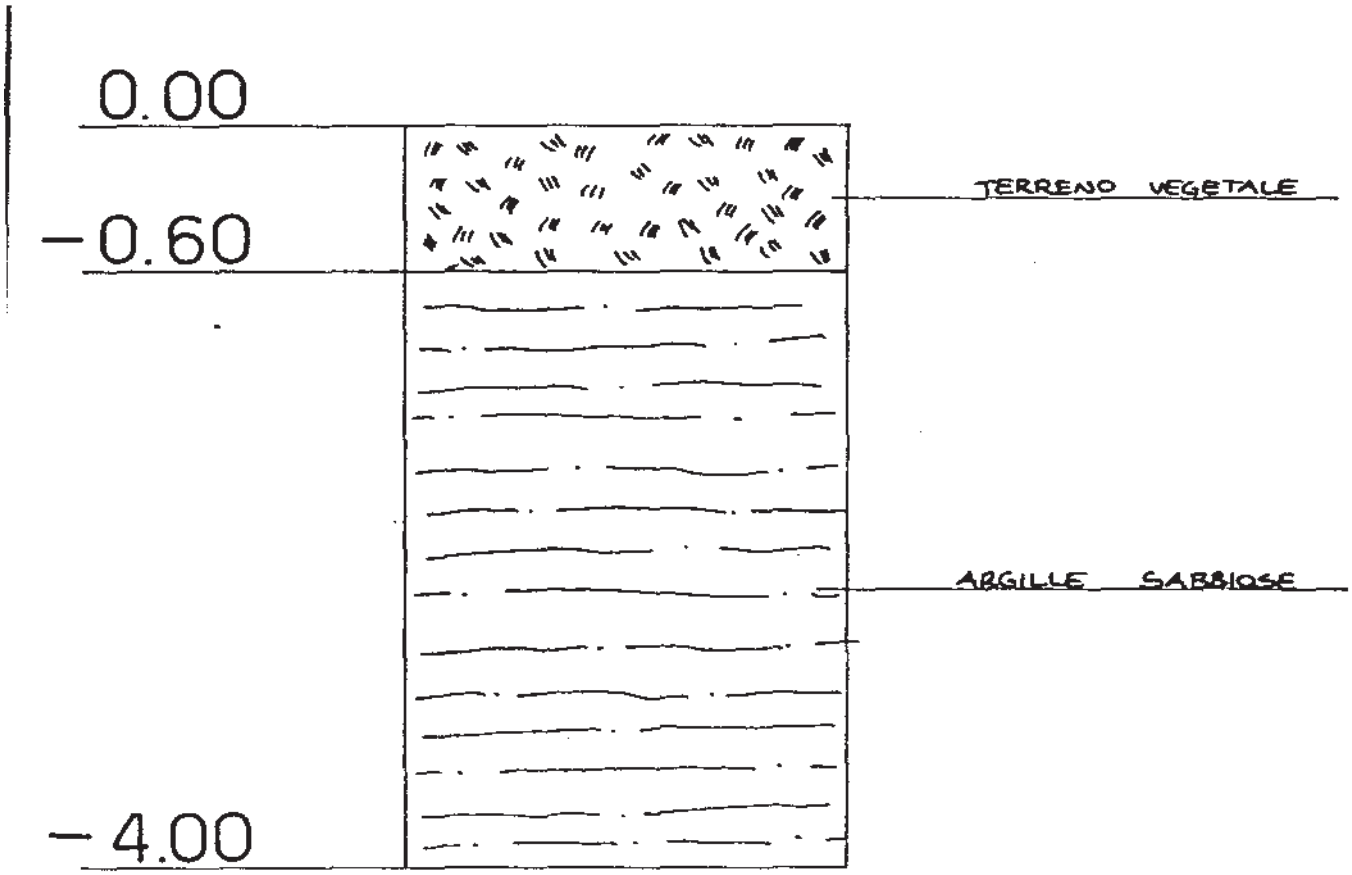



PROVA PENETROMETRICA [S.C.P.T.] N. 1
n.colpi
0
20
40
60
80
100
120
140
PROFONDITA in m.
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
Suolo
Sabbia mediamente addensata
Sabbia sciolta
Sabbia mediamente addensata
Resistenza : punta (I 1 colpo/10 cm.) rivestimento (—)

Resistenza alla punta

PROFONDITA' IN M.	N. COLPI ogni 10 cm.	RES. ROT. DIN. PUNTA Kg/cm².	PROFONDITA' IN M.	N. COLPI ogni 10 cm.	RES. ROT. DIN. PUNTA Kg/cm².
0.10	138	501	2.60	23	68
0.20	63	229	2.70	23	66
0.30	30	109	2.80	25	73
0.40	22	80	2.90	25	72
0.50	19	65	3.00	25	73
0.60	17	61	3.10	24	65
0.70	17	61	3.20	24	65
0.80	18	64	3.30	25	68
0.90	20	71	3.40	24	65
1.00	20	71	3.50	26	71
1.10	16	59	3.60	27	73
1.20	17	56	3.70	25	68
1.30	16	52	3.80	29	79
1.40	16	52	3.90	29	78
1.50	16	52	4.00	26	70
1.60	16	52	4.10	25	63
1.70	17	55	4.20	23	58
1.80	19	58	4.30	22	55
1.90	21	62	4.40	23	58
2.00	21	68	4.50	24	60
2.10	21	62	4.60	25	62
2.20	19	57	4.70	25	62
2.30	22	65	4.80	28	70
2.40	21	62	4.90	29	72
2.50	24	71	5.00	30	75

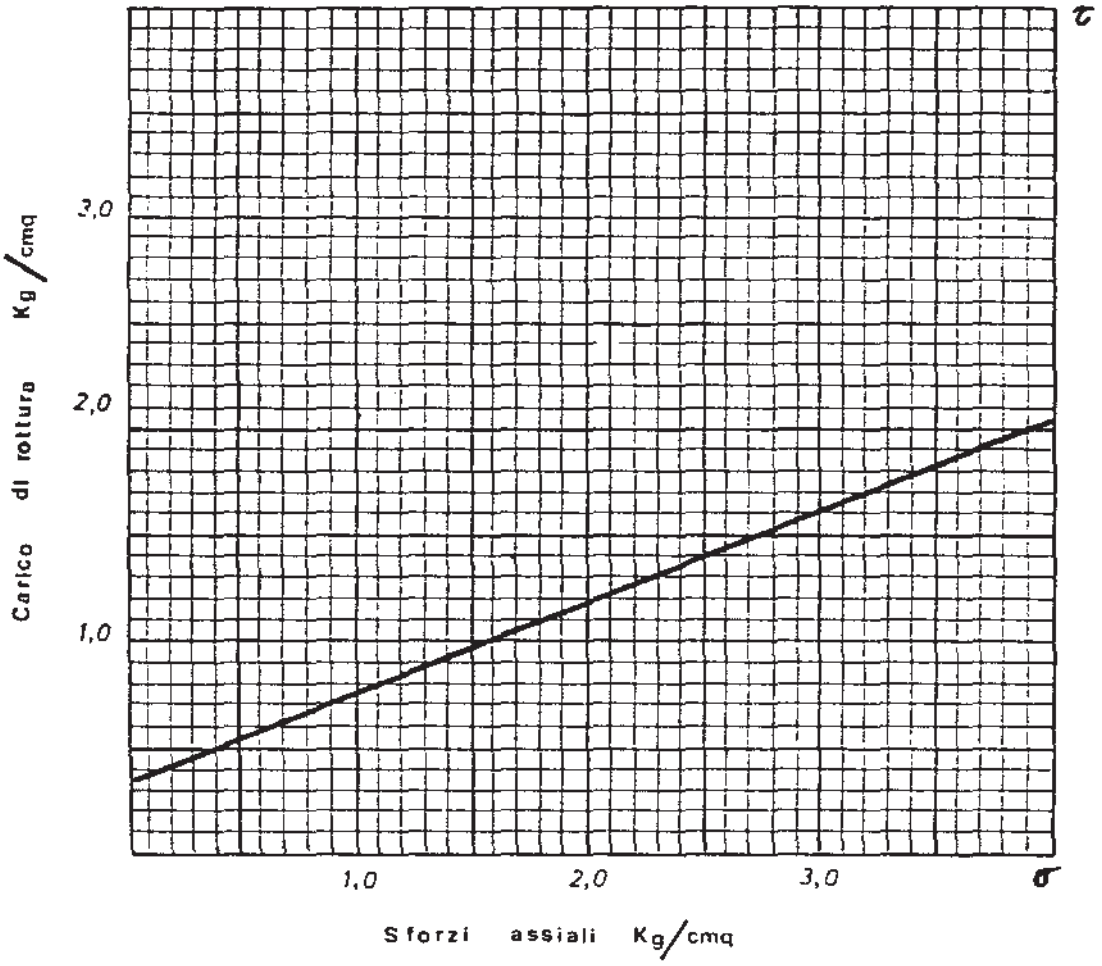



0.00
-0.60
-4.00
TERRENO VEGETALE
ARGILLE SABBIOSE

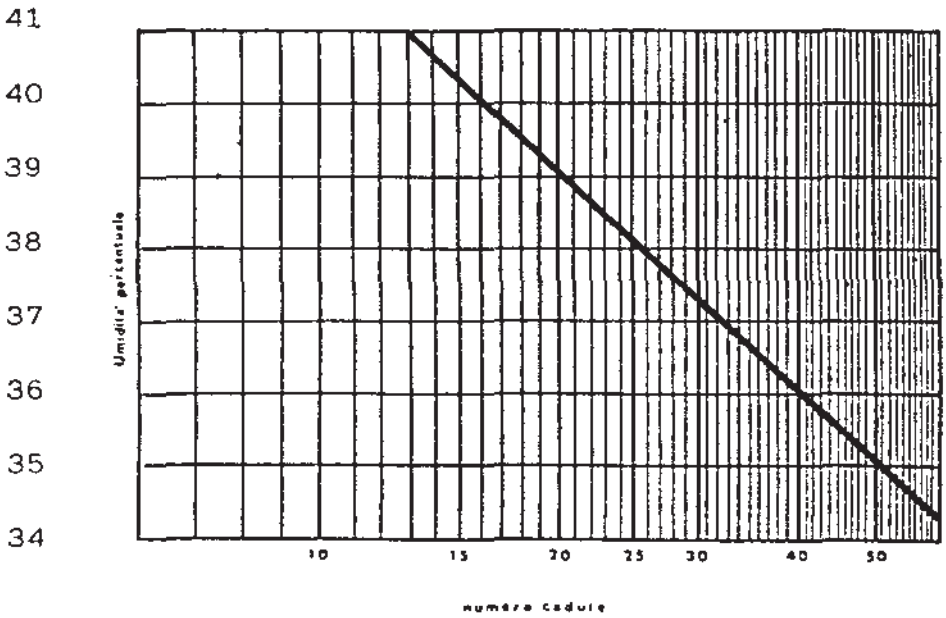
Sond.	
Camp.	N°1
Posiz. Prel.	-2,00m
Peso Spec.	1,90 kg/dm³
Fraz. Int.	
Prova Penetr.	
E.L.L.	kg/cm²

Densita'	τ	σ	u%	φ
				23°
Assestam.	0,79	1		c
	1,16	2		0,35 Kg/cm²
	1,57	3		u%
				16%

Condizioni di prova Taglio rapido non drenato non consolidato.
Velocità di taglio 1,27 mm/min.



LIMITE DI LIQUIDITA



GEOCANTIERI
Sez. GEOTECNICA

CAMPIONE N°1 -2,00m

PESO SPECIFICO = 1,90 Kg/dm³

LIMITE DI LIQUIDITA' Ll = 38%

UMIDITA' NATURALE Un = 16%

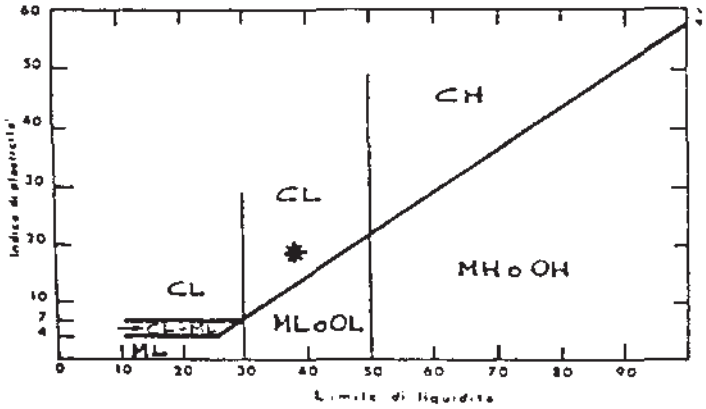
LIMITE DI PLASTICITA' Lp = 19%

INDICE DI CONSISTENZA $C = \frac{Ll - Un}{Ip}$ = 1,15

INDICE DI PLASTICITA' Ip = 19

LIMITE DI RITIRO Lr =

CARTA DI PLASTICITA'



ML - Limi inorganici e sabbie molto fini. Polvere di roccia. Sabbie fini limose o argillose a bassa plasticita

✱ CL - Argille inorganiche di bassa e media plasticita'. Argille ghiaiose, sabbiose, limose, argille magre

OL - Limi organici. Limi-argille organici a bassa plasticita'

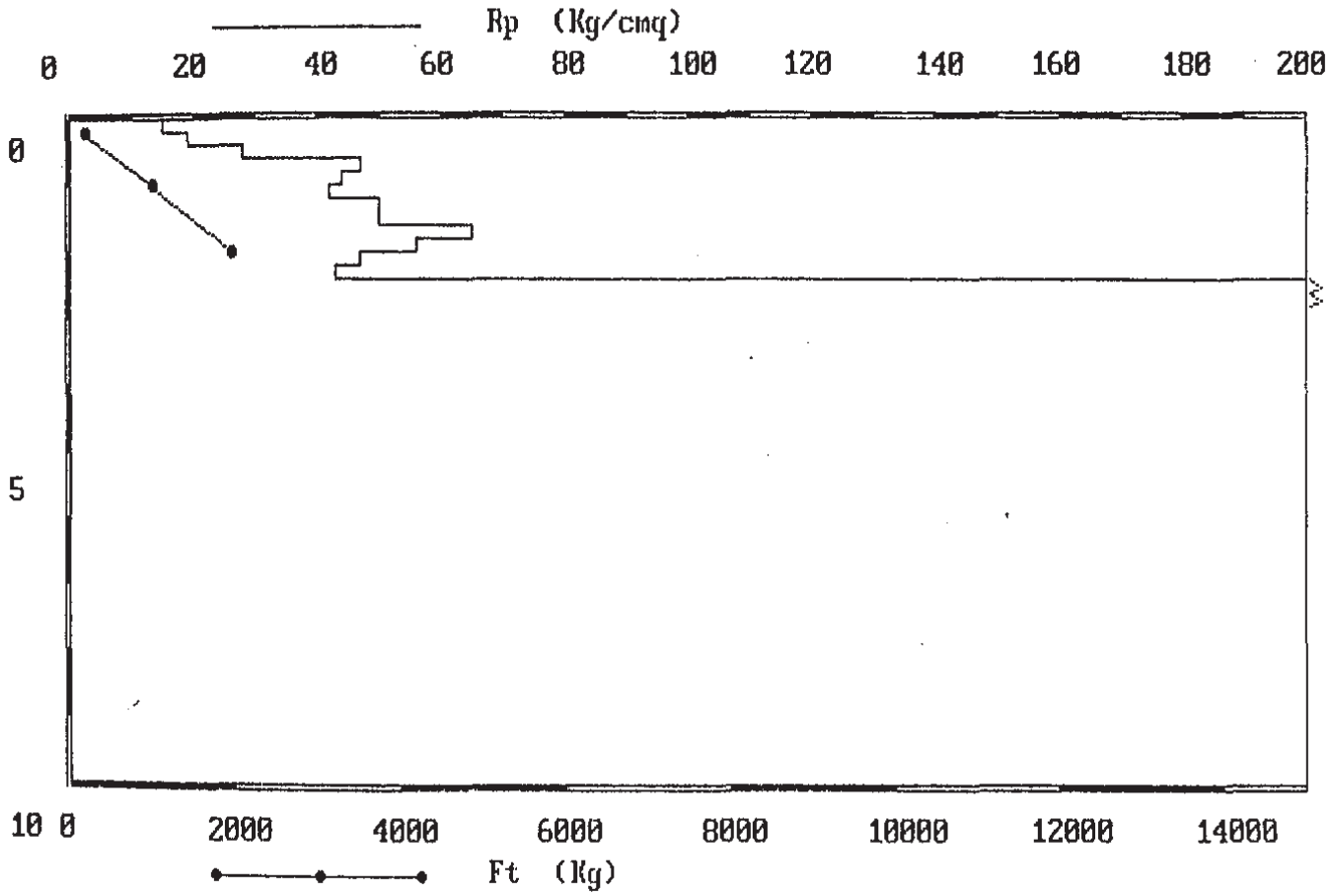
MH - Limi inorganici, sabbie fini e limi micacei o con materiale diatomaceo. Limi elastici

CH - Argille inorganiche ad alta plasticita. Argille grasse

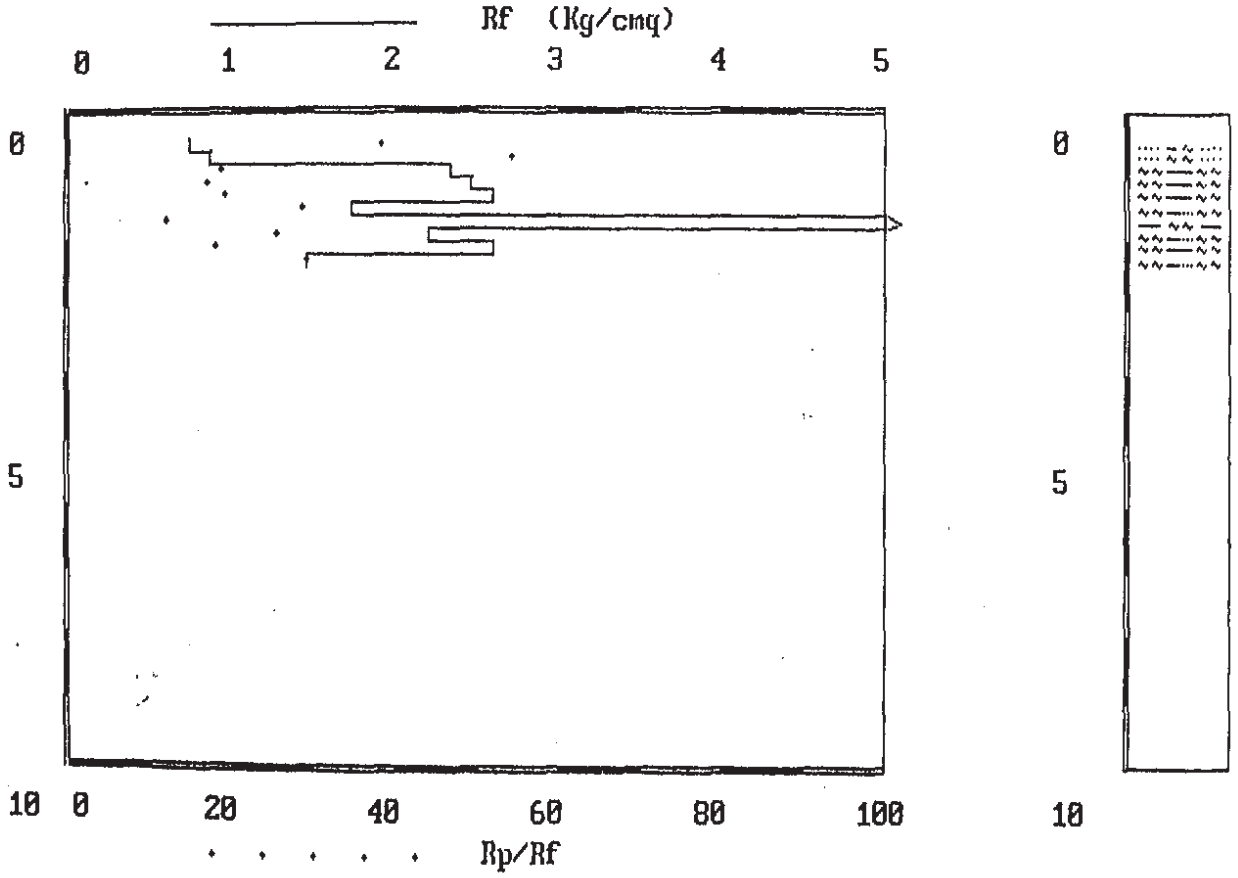
OH - Argille organiche di media ed alta plasticita'

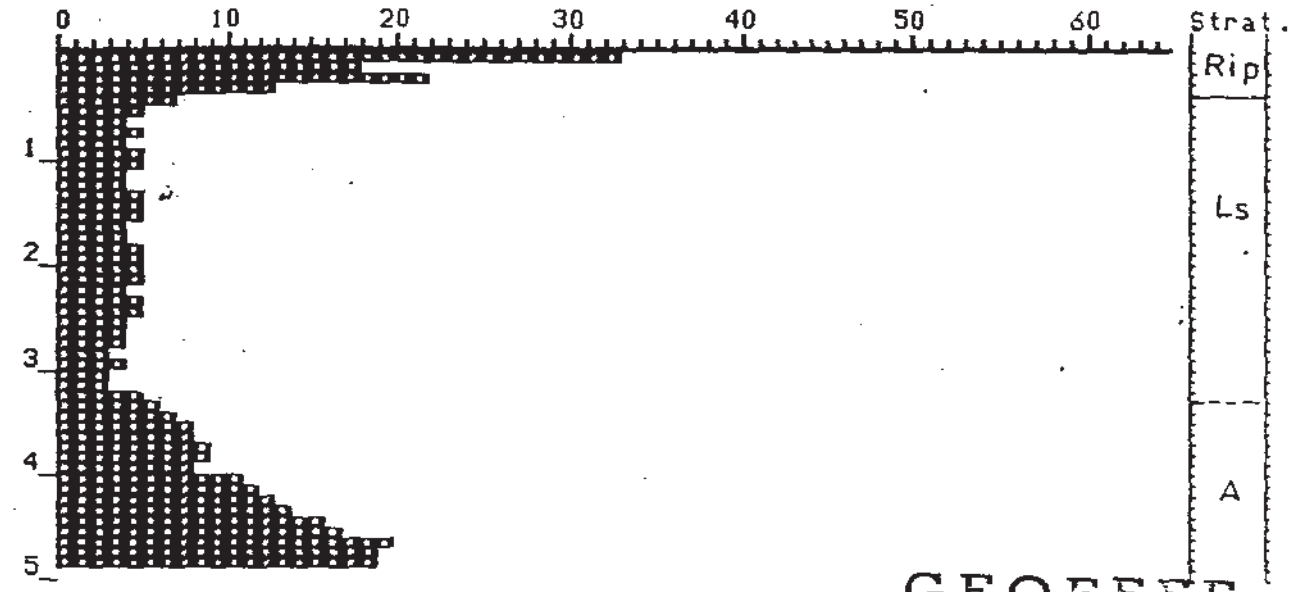
Classificazione adottata dal Bureau of reclamation

PROVA n° : 1 LOCALITA' : Parlascio - Casciana T. DATA : 27/07/90

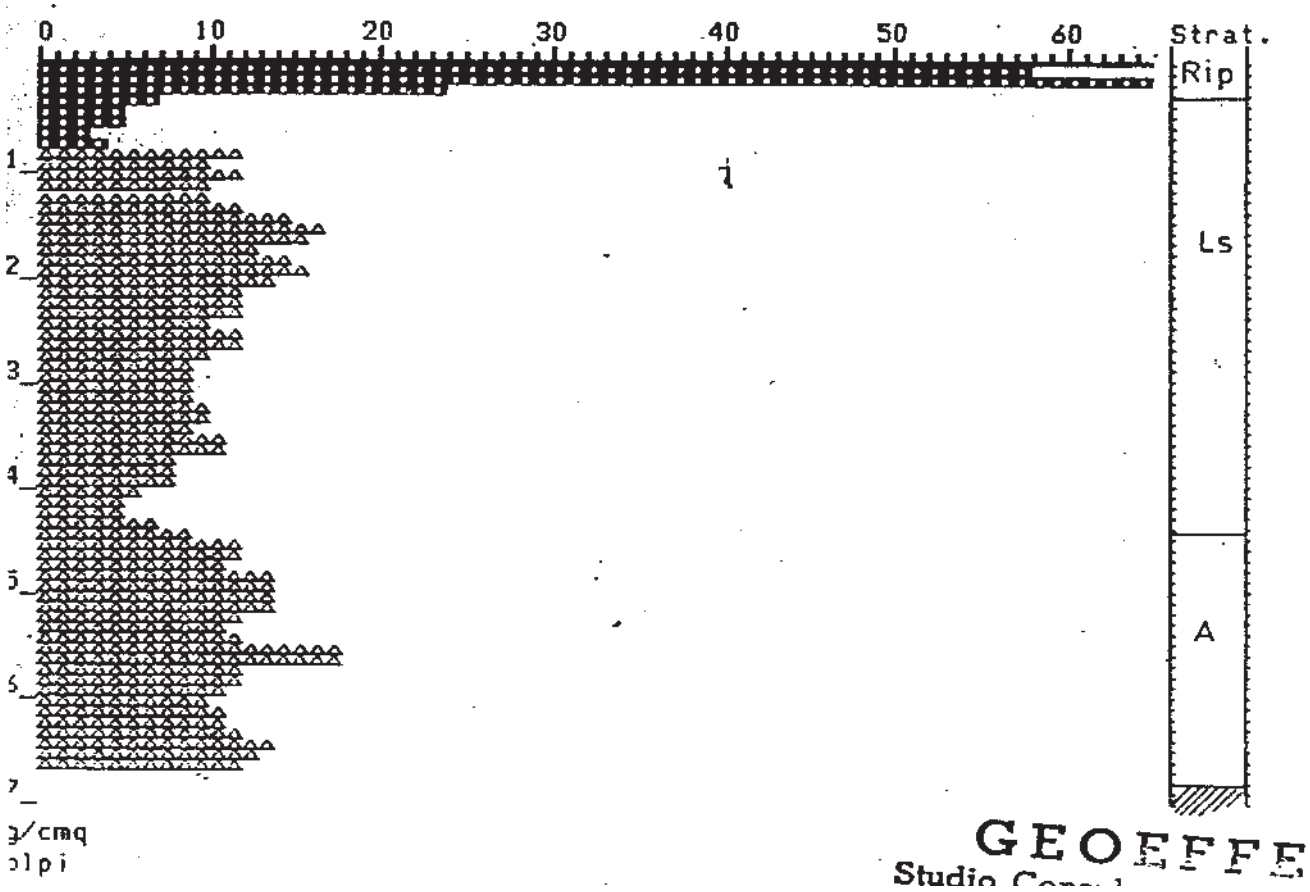


PROVA n° : 1 LOCALITA' : Parlascio - Casciana T. DATA : 27/07/90

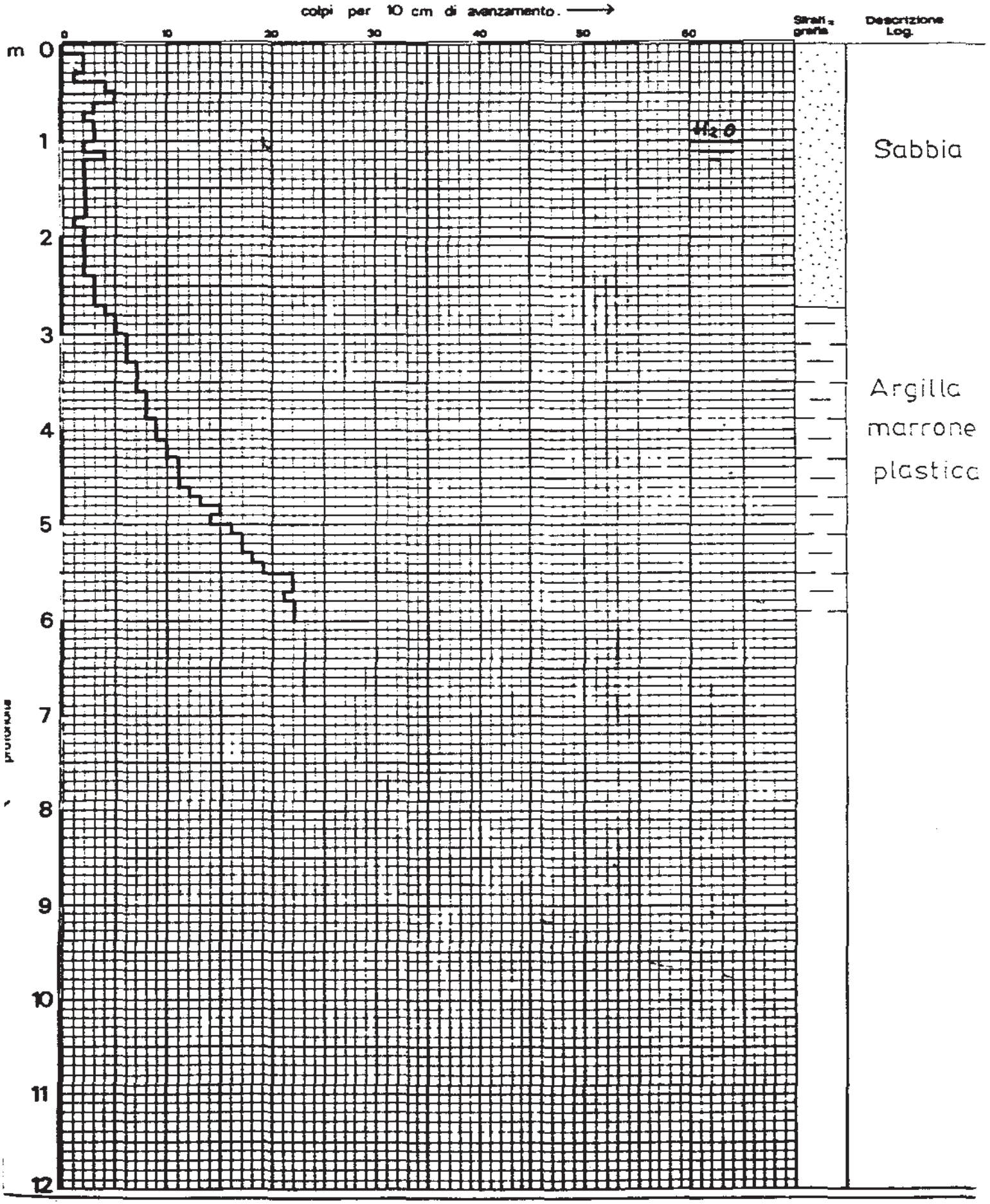


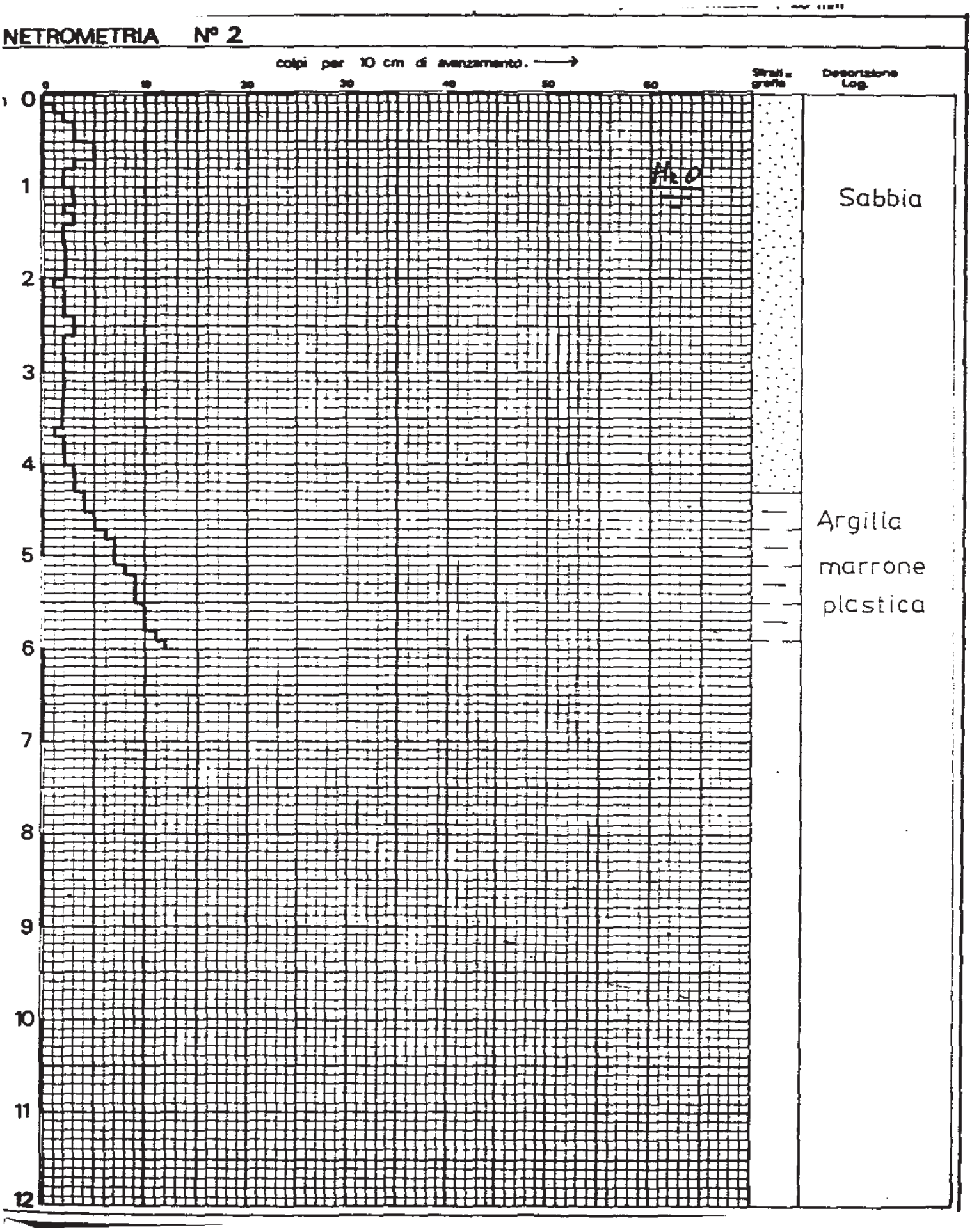


GEOEFFE
Studio Consulenza Geologica
050-65797 FAUGLIA (PI)

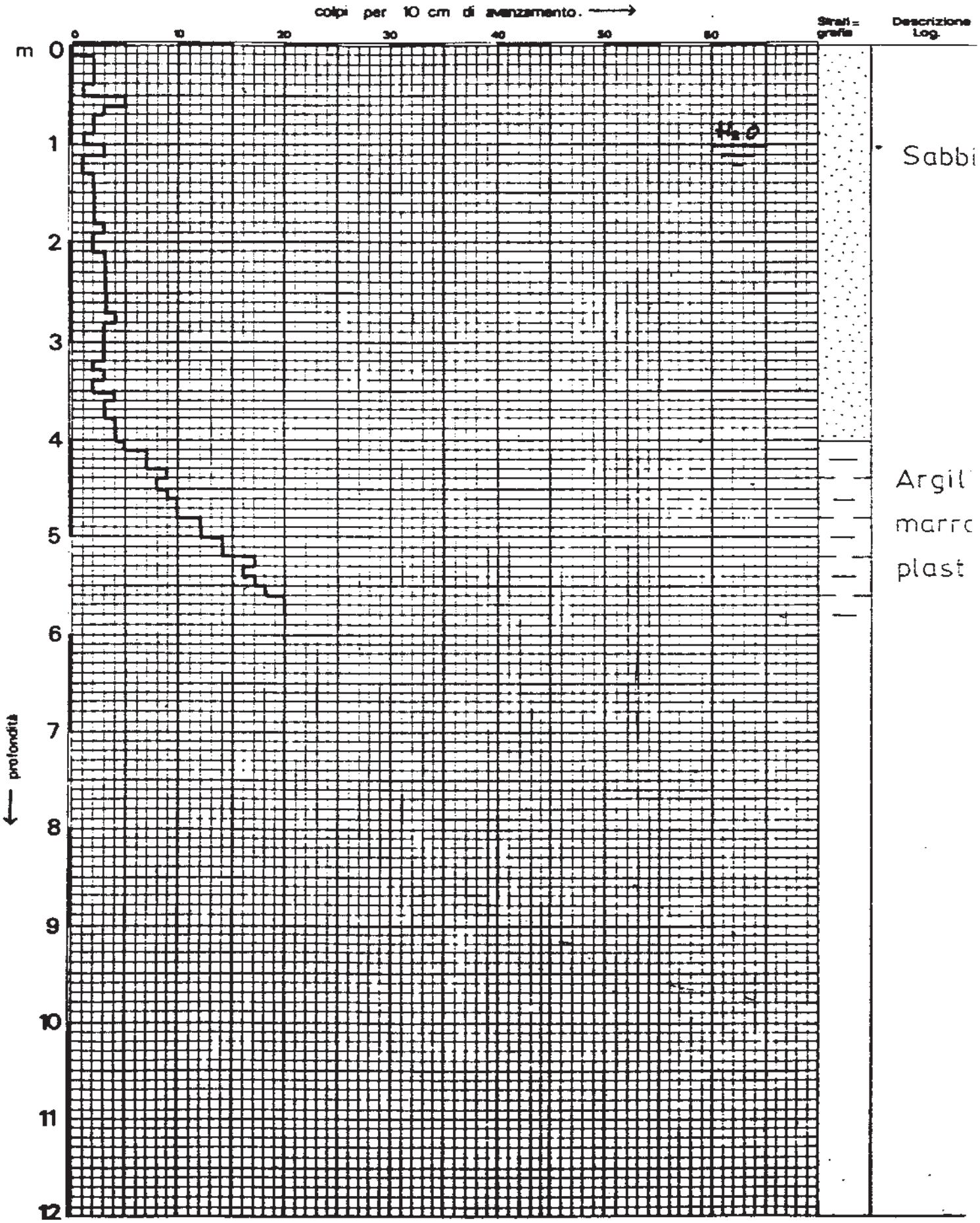

0
10
20
30
40
50
60
Strat.
Rip
Ls
A
1
2
3
4
5
6
7
g/cmq
olpi
GEOEFFE
Studio Consul

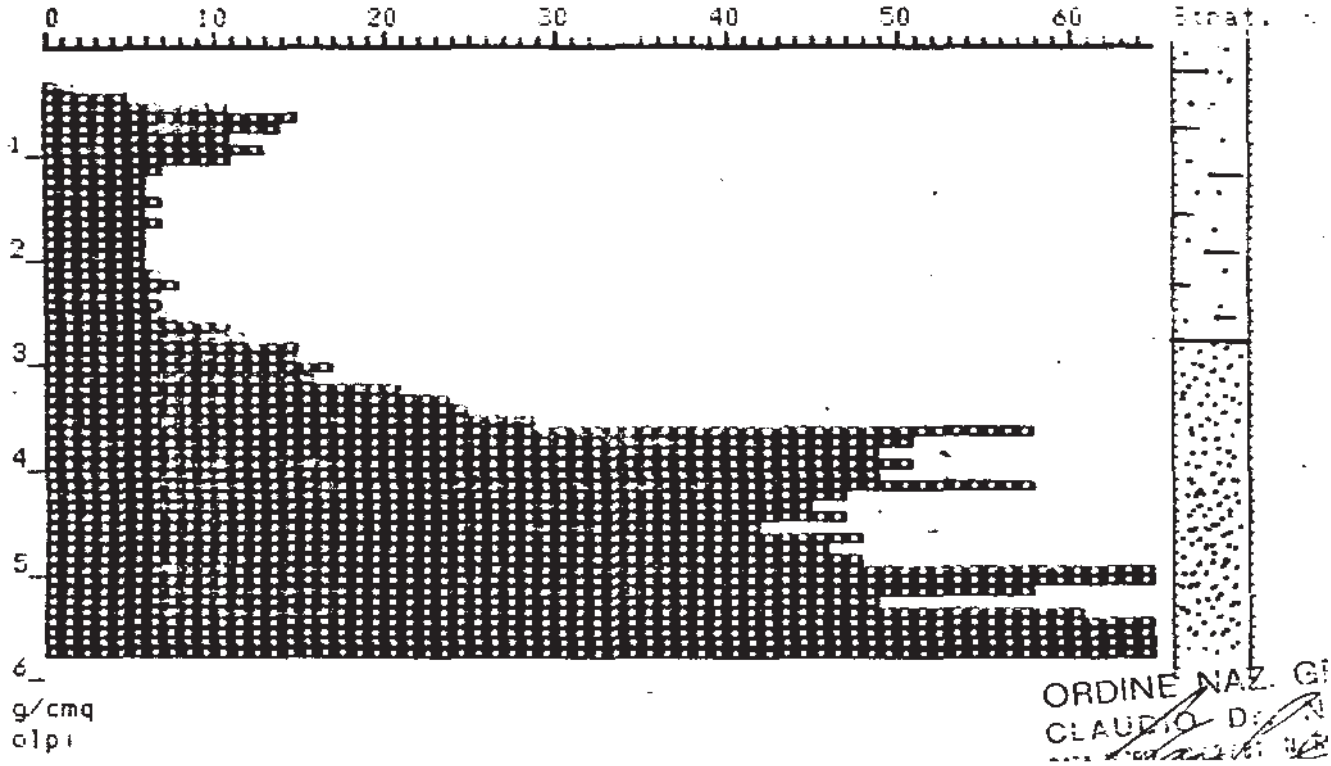
ENETROMETRIA N° 1

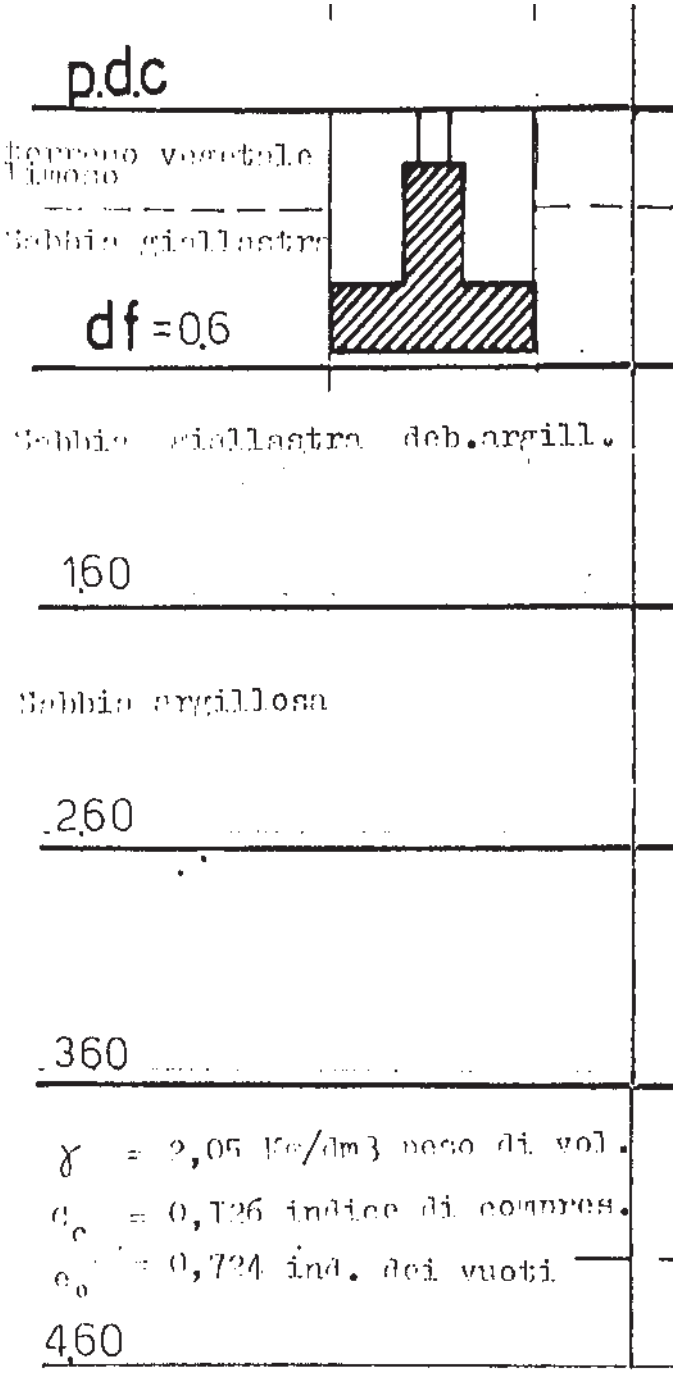



NETROMETRIA N° 2
colpi per 10 cm di avanzamento.
0
10
20
30
40
50
60
Strati-grafia
Descrizione Log.
0
1
2
3
4
5
6
7
8
9
10
11
12
H_2O
Sabbia
Argilla
marrone
plastica

PENETROMETRIA N° 3



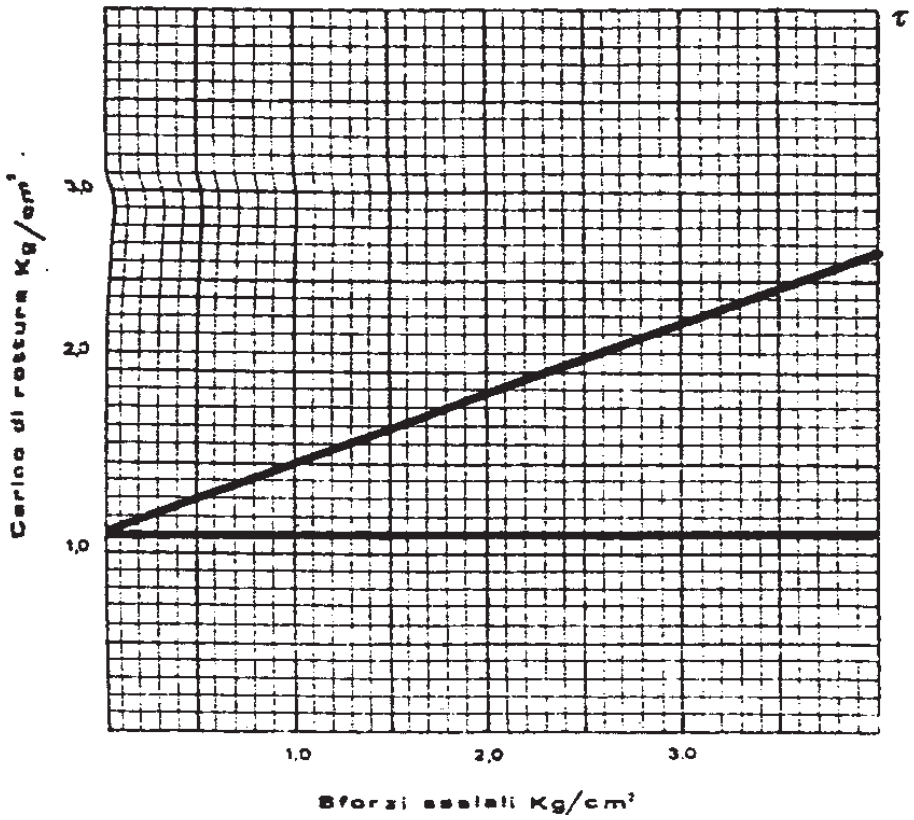


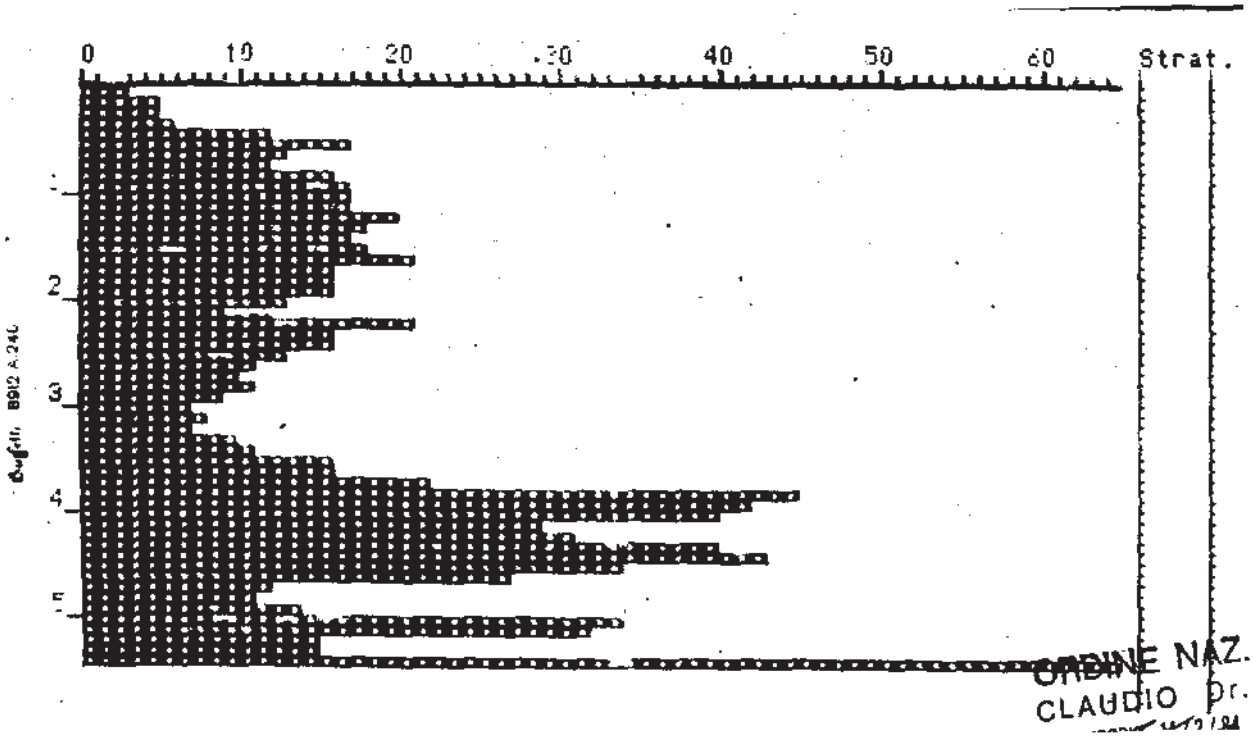


Sondag.		Densita'	τ	σ	U%	φ = 21°	
Camp.		Assestam.	1,500	1			
Posiz. prel.			1,870	2		a = 1,100	
Peso spec.	2,00 Kg/dm3		2,25	3		U% = 25	
Fraz. lod.							

Condizioni di prova:

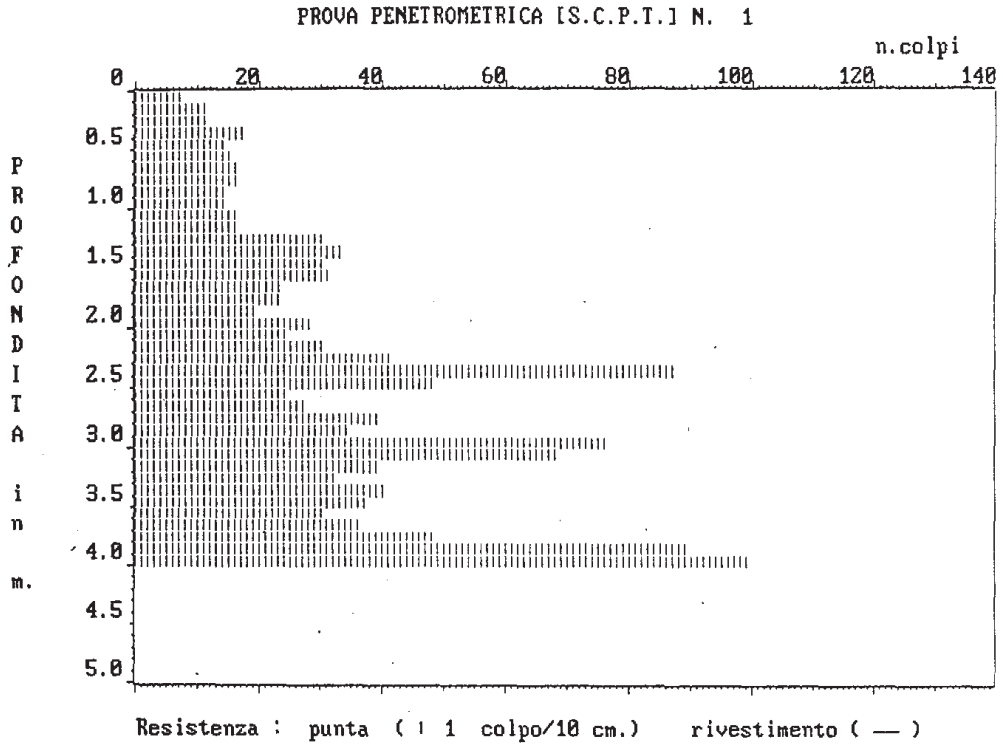
TAGLIO RAPIDO NON DRENATO.





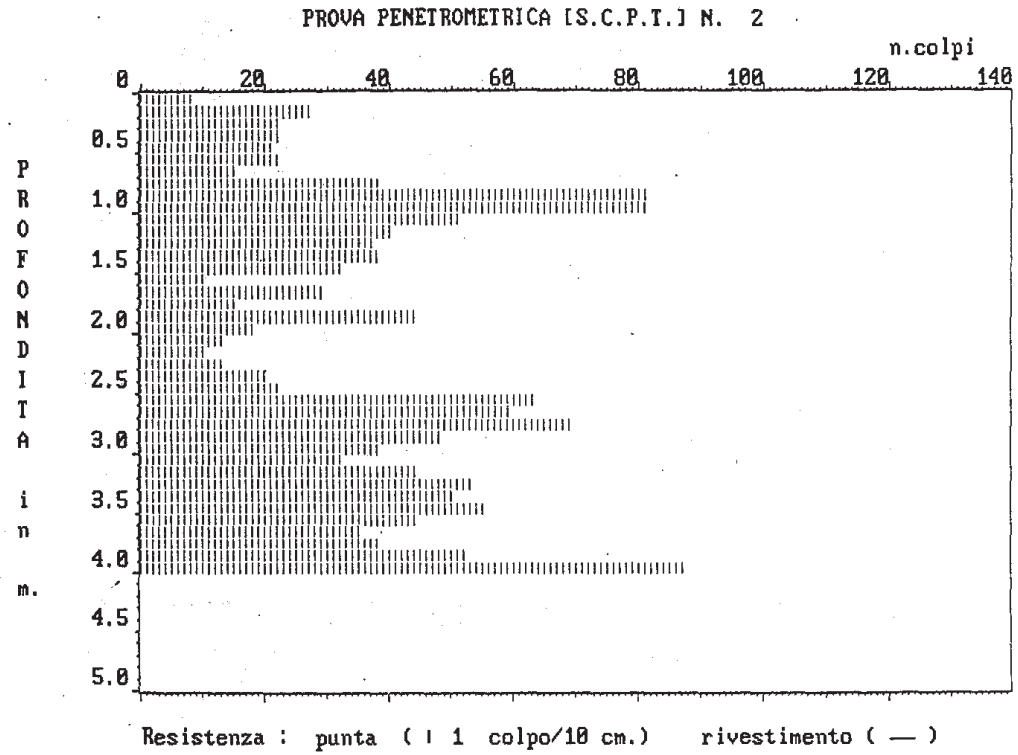
Resistenza alla punta

PROFONDITA' IN M.	N. COLPI ogni 10 cm.	RES. ROT. DIN. PUNTA Kg‡N/cm².	PROFONDITA' IN M.	N. COLPI ogni 10 cm.	RES. ROT. DIN. PUNTA Kg‡N/cm².
0.10	7	25	2.10	24	71
0.20	11	40	2.20	30	89
0.30	11	40	2.30	41	122
0.40	17	62	2.40	87	259
0.50	14	51	2.50	48	143
0.60	15	53	2.60	24	70
0.70	16	57	2.70	27	79
0.80	16	57	2.80	39	115
0.90	14	50	2.90	34	100
1.00	14	50	3.00	76	223
1.10	16	52	3.10	68	185
1.20	16	52	3.20	39	106
1.30	30	98	3.30	32	87
1.40	33	108	3.40	40	109
1.50	30	98	3.50	37	101
1.60	31	100	3.60	30	81
1.70	23	74	3.70	36	97
1.80	23	74	3.80	48	130
1.90	19	61	3.90	89	240
2.00	28	90	4.00	99	267

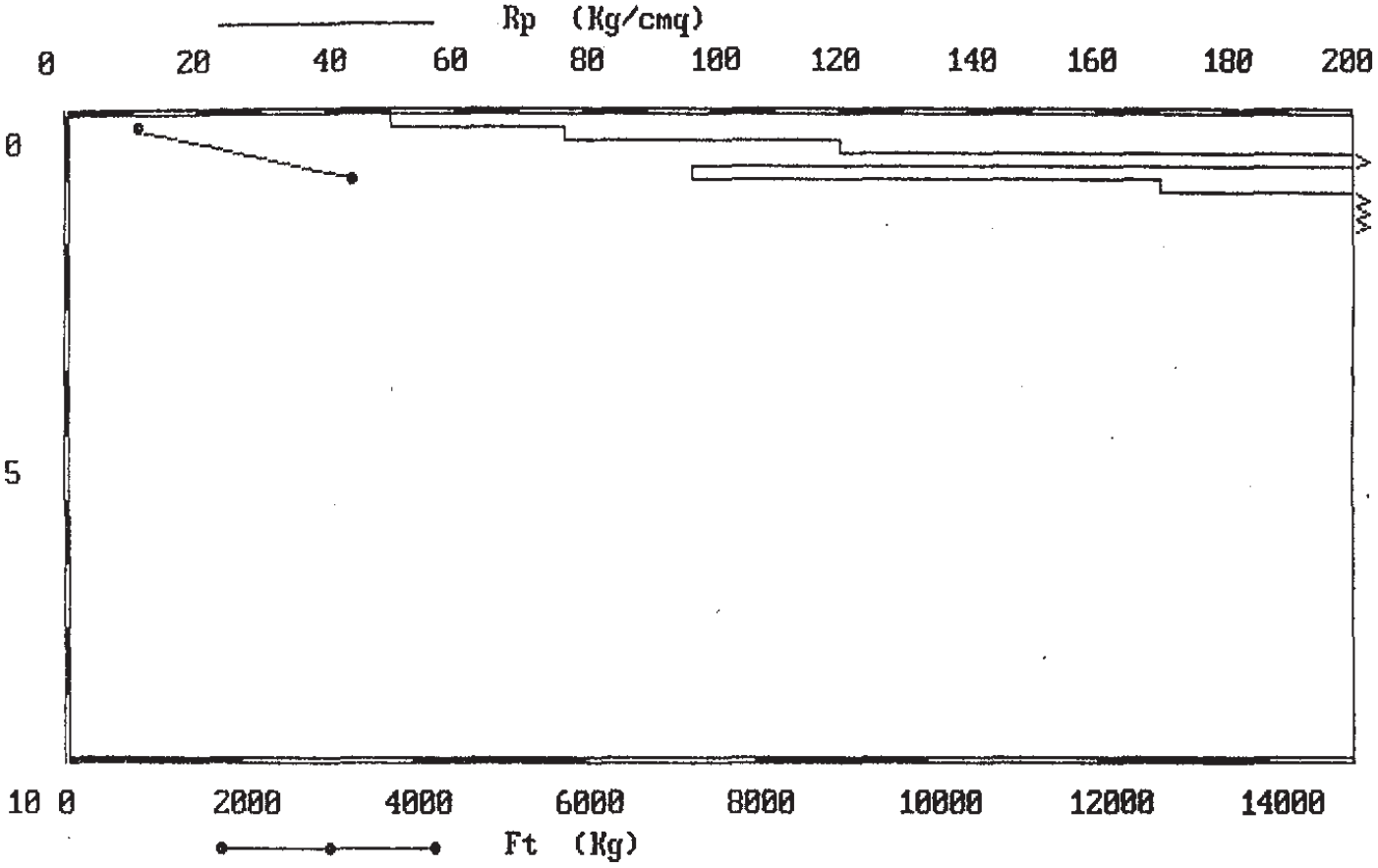


Resistenza alla punta

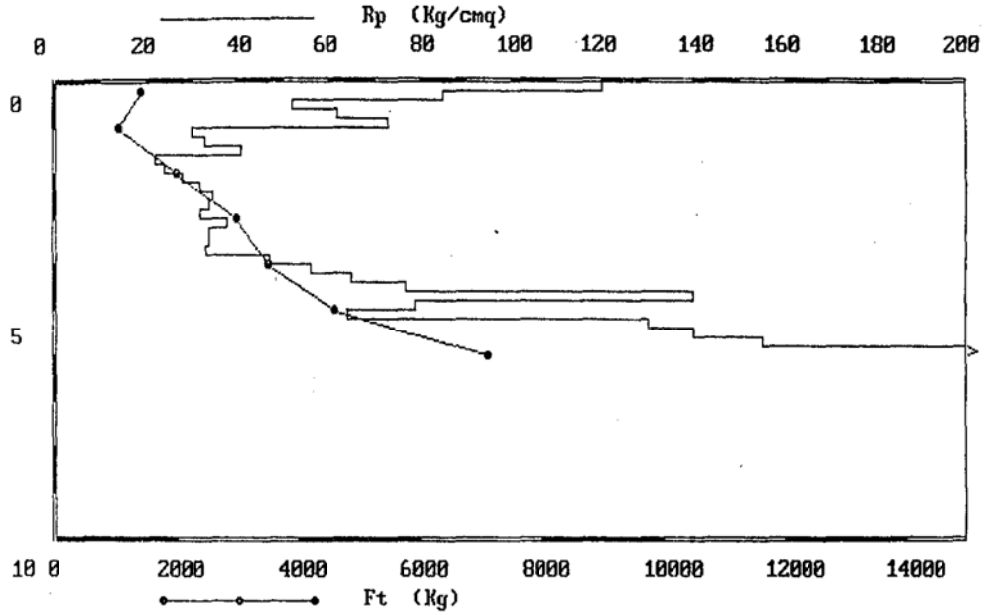
PROFONDITA' IN M.	N. COLPI ogni 10 cm.	RES. ROT. DIN. PUNTA Kg‡N/cm².	PROFONDITA' IN M.	N. COLPI ogni 10 cm.	RES. ROT. DIN. PUNTA Kg‡N/cm².
0.10	8	29	2.10	13	39
0.20	27	98	2.20	10	30
0.30	22	80	2.30	13	39
0.40	22	80	2.40	20	60
0.50	21	76	2.50	22	65
0.60	22	78	2.60	63	185
0.70	15	53	2.70	59	173
0.80	38	136	2.80	69	203
0.90	81	289	2.90	48	141
1.00	81	289	3.00	38	112
1.10	51	167	3.10	32	87
1.20	40	131	3.20	44	120
1.30	37	121	3.30	53	145
1.40	38	124	3.40	50	136
1.50	32	105	3.50	55	150
1.60	10	32	3.60	44	119
1.70	29	93	3.70	35	95
1.80	15	48	3.80	38	103
1.90	44	142	3.90	52	140
2.00	18	58	4.00	87	235

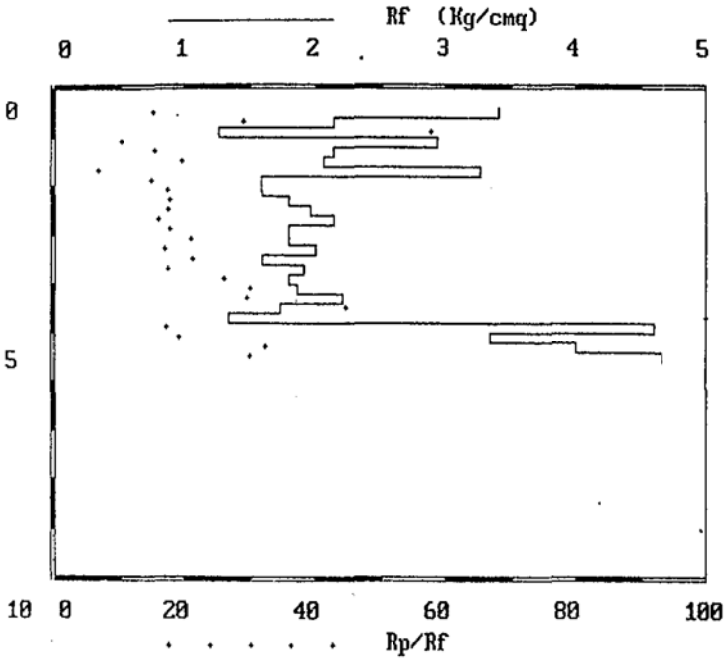


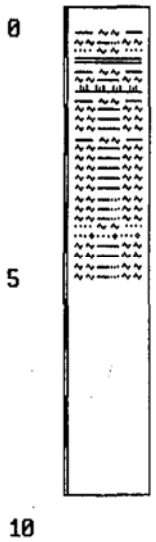
LETTURE DI CAMPAGNA				VALORI DERIVATI						
prof.	A	B	T	Rp	Rf	Rp/Rf	Ø	Dr	cu	mv
0.20	500	--	790	50.0	--	--	-	--	--	--
0.40	770	900	1600	77.0	0.87	88.85	35	42	0.00	0.009
0.60	1200	1690	2700	120.0	3.27	36.73	30	74	0.00	0.003
0.80	2400	2900	2300	240.0	3.33	72.00	36	70	0.00	0.003
1.00	970	1800	3300	97.0	5.53	17.53	0	0	3.88	0.003
1.20	1700	1900	3800	170.0	1.33	127.50	39	59	0.00	0.004
1.40	2500	--	4900	250.0	--	--	-	--	--	--
1.60	3500	--	5100	350.0	--	--	-	--	--	--
1.80	>2500	--	6800	>250	--	--	-	--	--	--



LETTURE DI CAMPAGNA				VALORI DERIVATI						
prof.	A	B	T	Rp	Rf	Rp/Rf	Ø	Dr	cu	mv
0.20	1200	--	1400	120.0	--	--	-	--	--	--
0.40	850	--	1200	85.0	--	--	-	--	--	--
0.60	520	1030	1200	52.0	3.40	15.29	0	0	2.60	0.008
0.80	620	940	1250	62.0	2.13	29.06	27	62	0.00	0.005
1.00	730	920	1050	73.0	1.27	57.63	33	53	0.00	0.009
1.20	300	740	1000	30.0	2.93	10.23	0	0	2.00	0.011
1.40	330	650	1090	33.0	2.13	15.47	0	0	1.65	0.012
1.60	410	720	1500	41.0	2.07	19.84	0	0	1.64	0.008
1.80	220	710	1740	22.0	3.27	6.73	0	0	2.20	0.011
2.00	240	480	2000	24.0	1.60	15.00	0	0	1.20	0.017
2.20	280	520	2400	28.0	1.60	17.50	0	0	1.12	0.012
2.40	320	590	2700	32.0	1.80	17.78	0	0	1.28	0.010
2.60	345	640	2850	34.5	1.97	17.54	0	0	1.38	0.010
2.80	340	660	2900	34.0	2.13	15.94	0	0	1.70	0.012
3.00	320	590	3000	32.0	1.80	17.78	0	0	1.28	0.010
3.20	380	650	2760	38.0	1.80	21.11	0	0	1.52	0.009
3.40	340	640	2800	34.0	2.00	17.00	0	0	1.36	0.010
3.60	340	580	3120	34.0	1.60	21.25	0	0	1.36	0.010
3.80	334	620	3200	33.4	1.91	17.52	0	0	1.34	0.010
4.00	470	740	3500	47.0	1.80	26.11	26	57	0.00	0.007
4.20	560	840	3700	56.0	1.87	30.00	27	60	0.00	0.006
4.40	650	980	4400	65.0	2.20	29.55	27	63	0.00	0.005
4.60	770	1030	5000	77.0	1.73	44.42	31	54	0.00	0.004
4.80	1400	1600	5000	140.0	1.33	105.00	37	56	0.00	0.005
5.00	790	1480	4600	79.0	4.60	17.17	0	0	3.16	0.004
5.20	640	1140	5800	64.0	3.33	19.20	0	0	2.56	0.005
5.40	1300	1900	6000	130.0	4.00	32.50	29	76	0.00	0.003
5.60	1400	2100	6500	140.0	4.67	30.00	28	78	0.00	0.002
5.80	1550	--	6800	155.0	--	--	-	--	--	--
6.00	>2500	--	7100	>250	--	--	-	--	--	--




Rf (Kg/cmq)
0
1
2
3
4
5
0
5
10
0
20
40
60
80
100
Rp/Rf

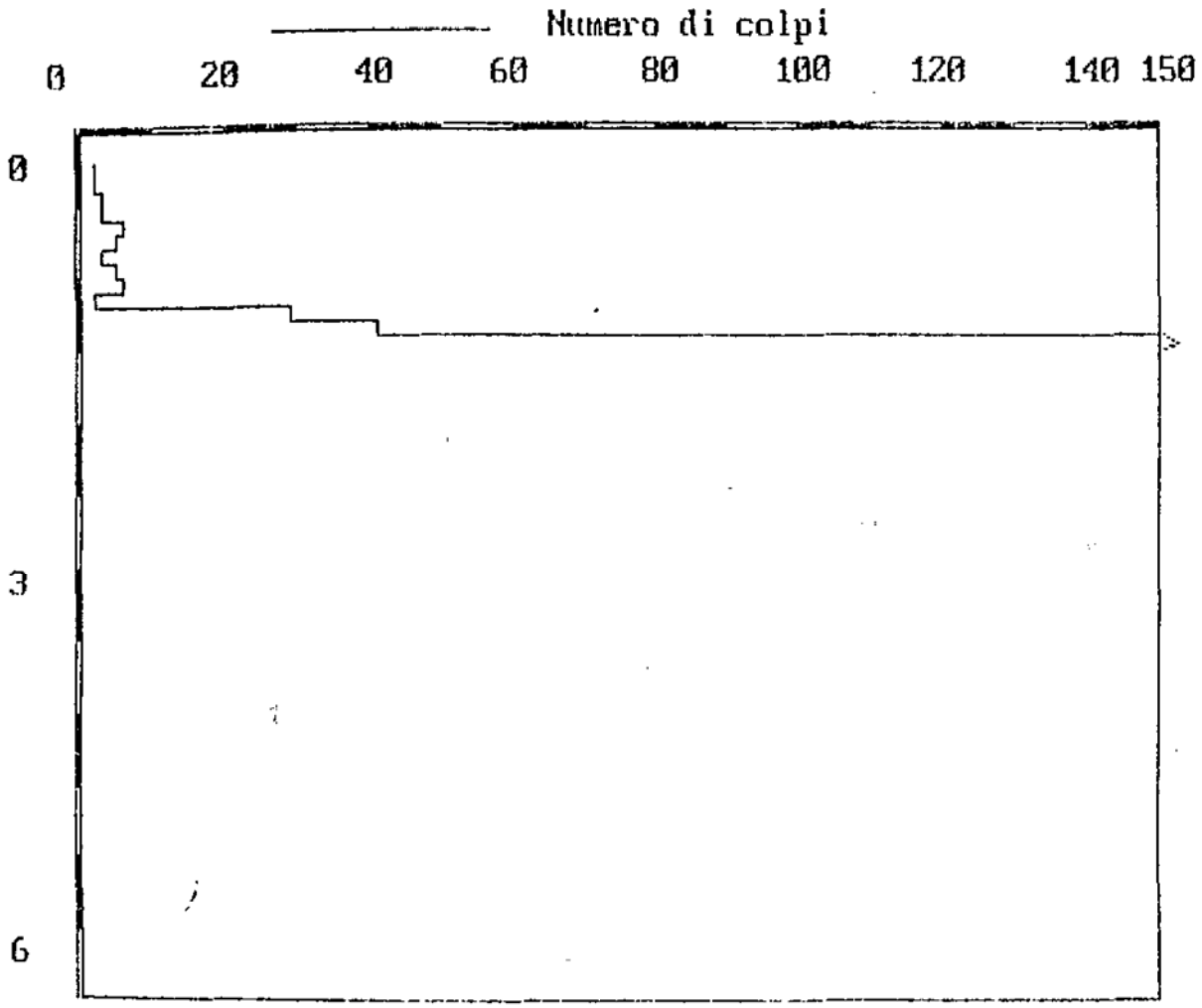

0
5
10

prof.	n	Rd
0.30	2.0	7.14
0.50	3.0	10.71
0.70	6.0	21.42
0.90	3.0	9.68
1.10	6.0	19.35
1.30	29.0	93.55
1.50	>150	483.87

prof.	n	Rd
0.40	2.0	7.11
0.60	3.0	10.71
0.80	5.0	17.86
1.00	5.0	16.13
1.20	2.0	6.45
1.40	41.0	132.26

Quota : p.c.

Livello di falda ?

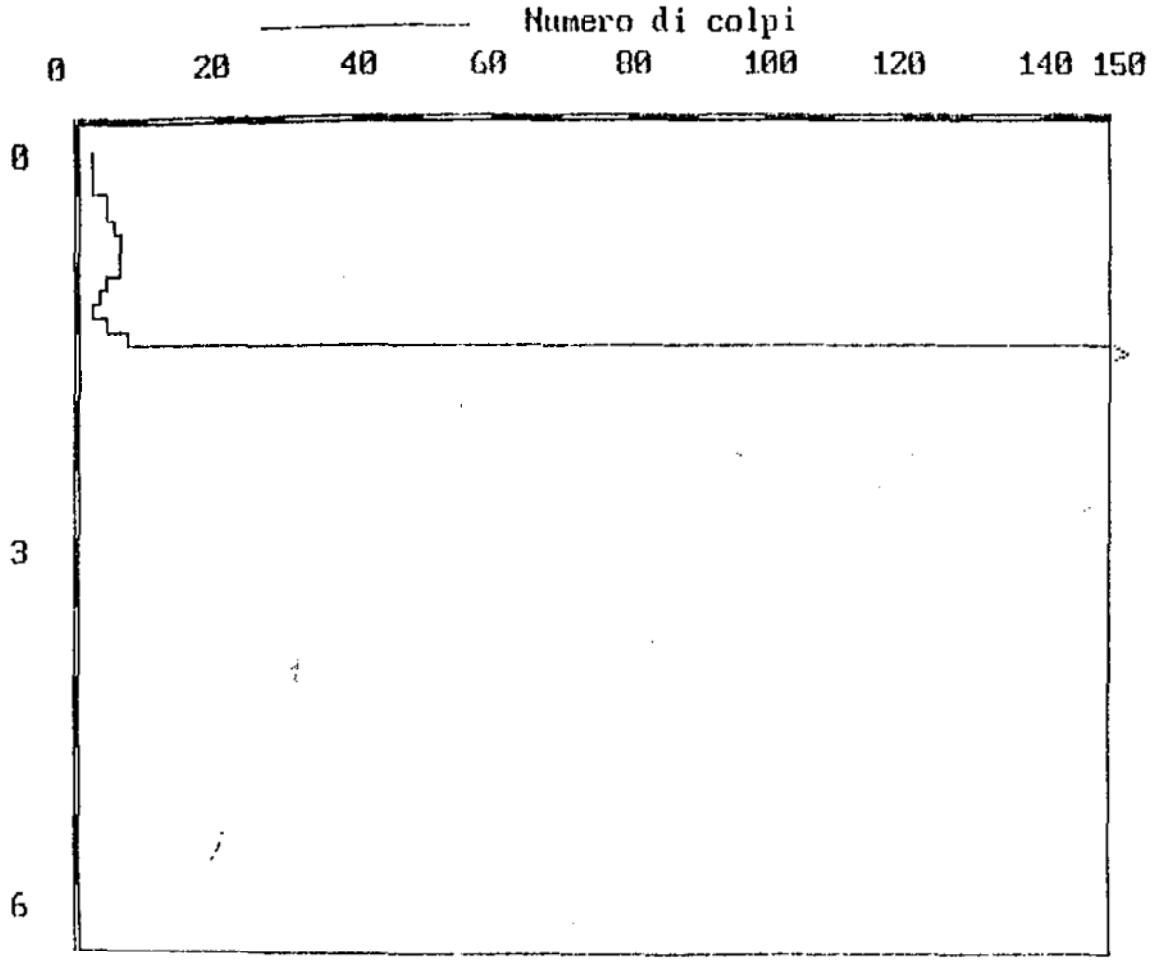


prof.	n	Rd
0.30	2.0	7.14
0.50	2.0	7.14
0.70	4.0	14.29
0.90	6.0	19.35
1.10	6.0	19.35
1.30	3.0	9.68
1.50	4.0	12.90
1.70	>150	483.87

prof.	n	Rd
0.40	2.0	7.14
0.60	4.0	14.29
0.80	5.0	17.86
1.00	6.0	19.35
1.20	4.0	12.90
1.40	2.0	6.45
1.60	7.0	22.58

Quota : p.c.

Livello di falda :

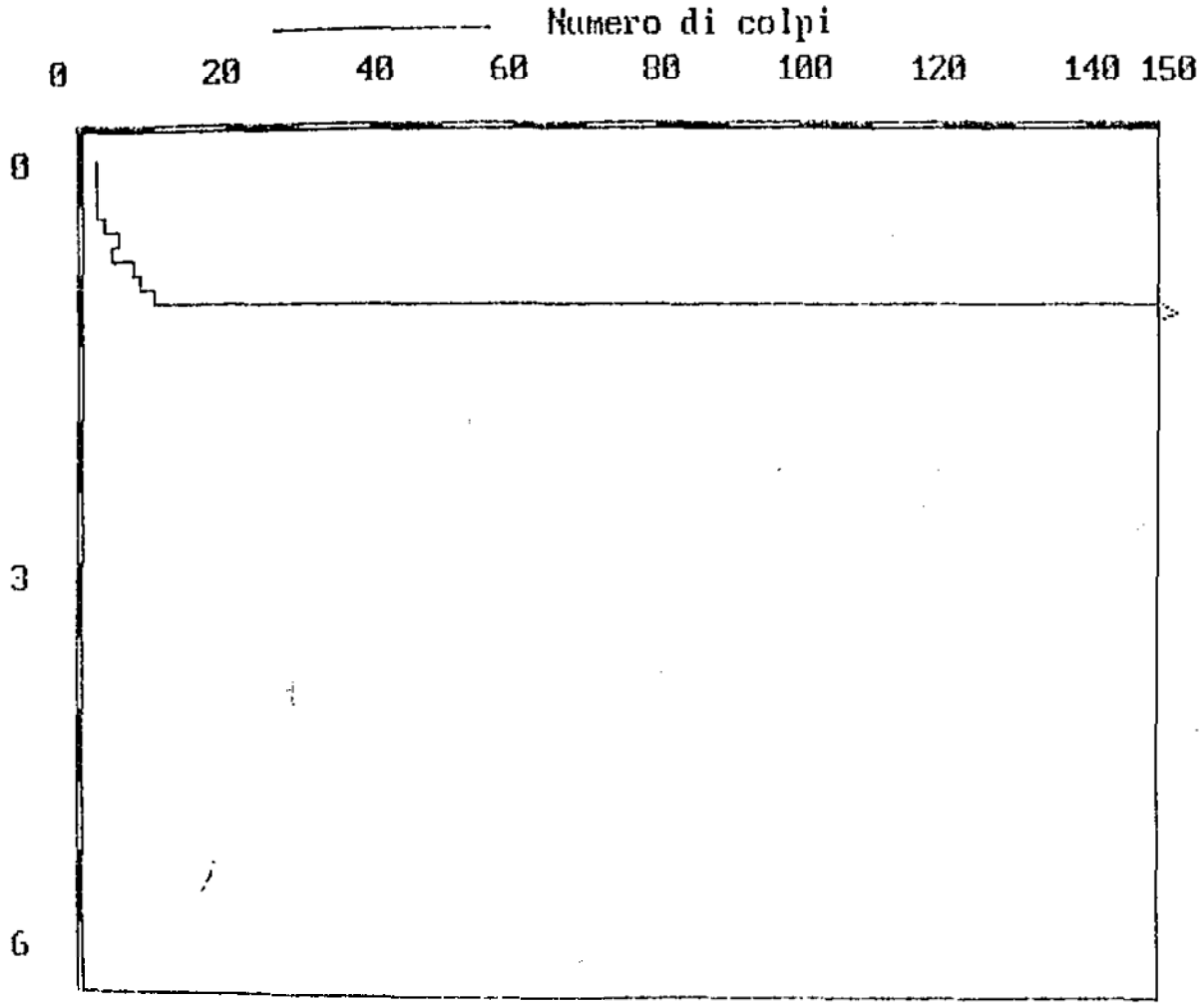


prof.	n	Rd
0.30	2.0	7.14
0.50	2.0	7.14
0.70	3.0	10.71
0.90	4.0	12.50
1.10	8.0	25.81
1.30	>150	483.87

prof.	n	Rd
0.40	2.0	7.14
0.60	2.0	7.14
0.80	5.0	17.86
1.00	7.0	22.53
1.20	10.0	32.26

Quota : p.c.

Livello di falda :



prof.	n	Rd
0.30	2.0	7.14
0.50	3.0	10.71
0.70	8.0	28.57
0.90	4.0	12.90
1.10	4.0	12.90
1.30	4.0	12.90
1.50	5.0	16.13
1.70	7.0	22.58
1.90	9.0	26.47
2.10	10.0	29.41
2.30	9.0	26.47
2.50	9.0	26.47
2.70	9.0	26.47
2.90	7.0	18.92
3.10	6.0	16.22
3.30	6.0	16.22
3.50	7.0	18.92
3.70	7.0	18.92
3.90	8.0	20.00
4.10	8.0	20.00
4.30	6.0	15.00
4.50	7.0	17.50
4.70	10.0	25.00
4.90	12.0	27.91
5.10	12.0	27.91
5.30	11.0	25.58
5.50	10.0	23.26
5.70	13.0	30.23
5.90	16.0	34.78
6.10	18.0	39.13
6.30	11.0	23.91
6.50	14.0	32.82
6.70	21.0	34.24
6.90	30.0	30.61

prof.	n	Rd
0.40	3.0	10.71
0.60	4.0	14.29
0.80	6.0	21.43
1.00	4.0	12.90
1.20	5.0	16.13
1.40	5.0	16.13
1.60	5.0	16.13
1.80	9.0	27.03
2.00	10.0	29.41
2.20	9.0	26.47
2.40	10.0	29.41
2.60	10.0	29.41
2.80	8.0	23.53
3.00	7.0	18.92
3.20	6.0	16.22
3.40	6.0	16.22
3.60	7.0	18.92
3.80	6.0	16.22
4.00	7.0	17.50
4.20	7.0	17.50
4.40	6.0	15.00
4.60	7.0	17.50
4.80	11.0	27.50
5.00	12.0	30.23
5.20	10.0	23.26
5.40	10.0	23.26
5.60	11.0	25.58
5.80	12.0	27.91
6.00	15.0	32.61
6.20	11.0	30.42
6.40	14.0	30.43
6.60	17.0	27.72
6.80	28.0	30.43
7.00	32.0	28.76

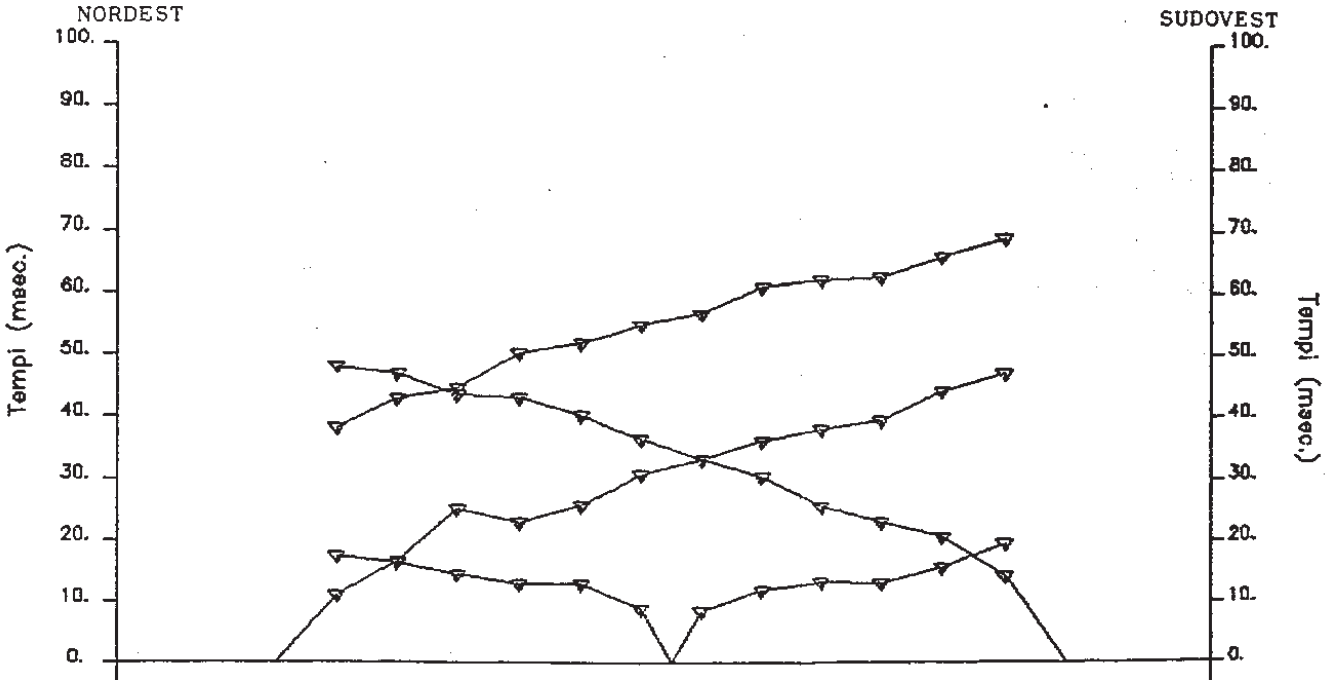
Quota : p.c.

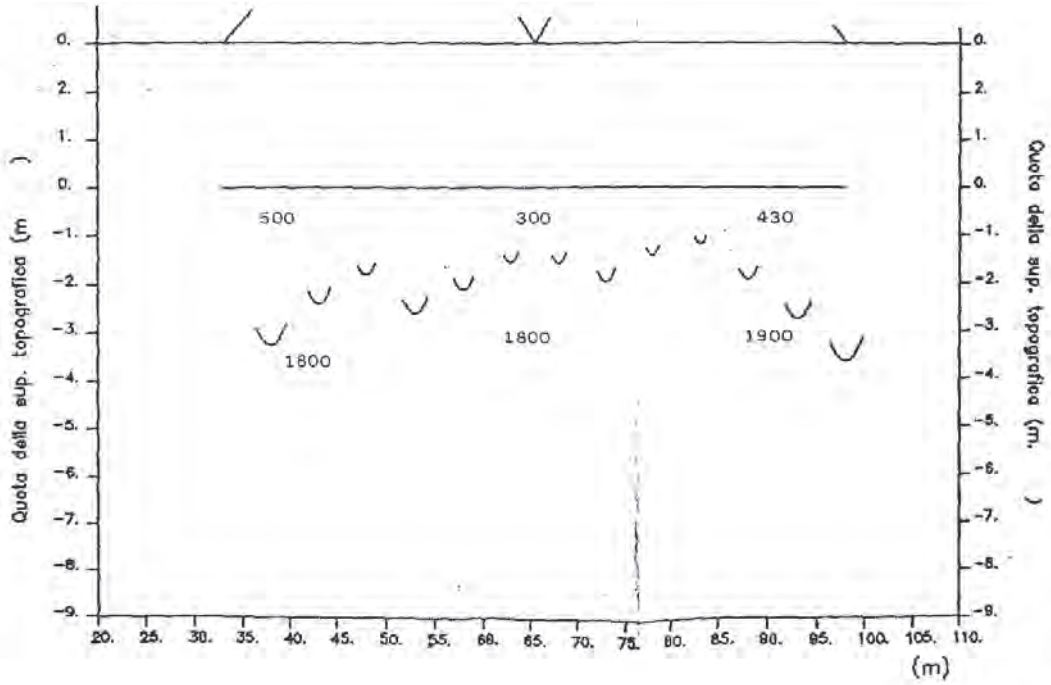
Livello di falda :

BASE SISMICA CASCIANA

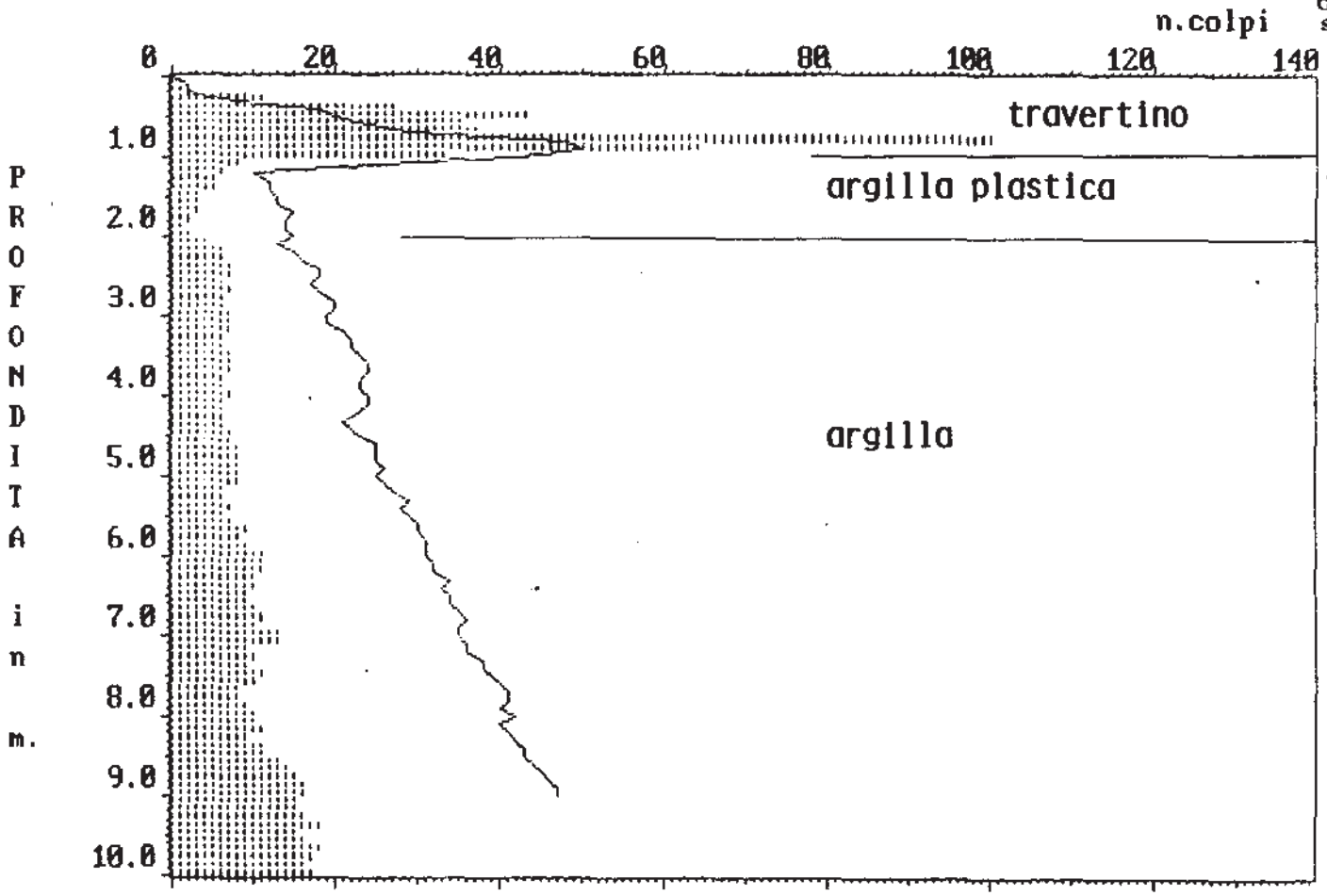
LEGENDA

- Tempi di primo arrivo ai geofoni
- Profilo topografico
- Limite di strato all'inviluppo degli archi
- 1200 Velocità sismica dello strato in (m/sec)
- Discontinuità strutturale
- Discontinuità di velocità sismica





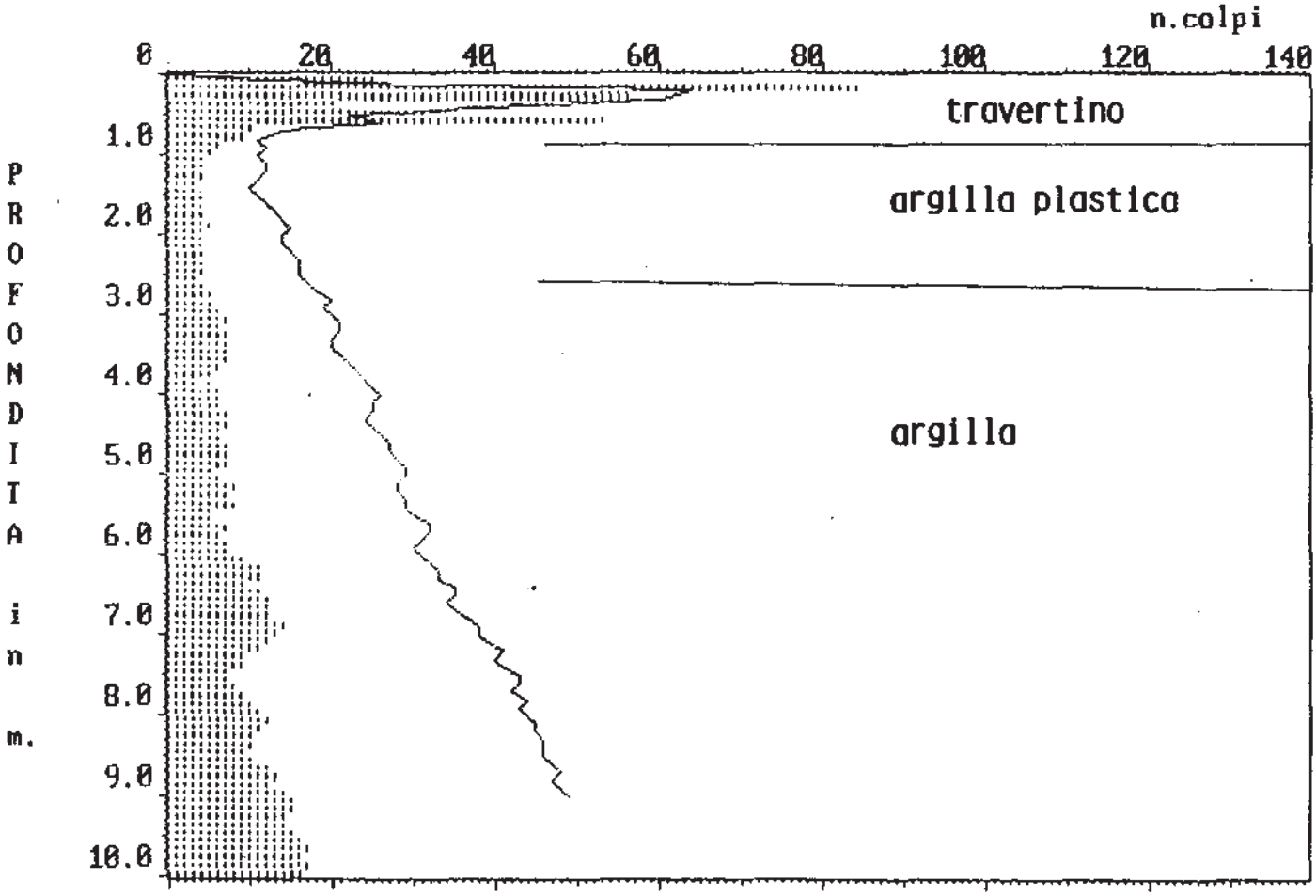
PROVA PENETROMETRICA [S.C.P.T.] N. 1



Resistenza : punta (| 1 colpo/10 cm.) rivestimento (—)

All.1

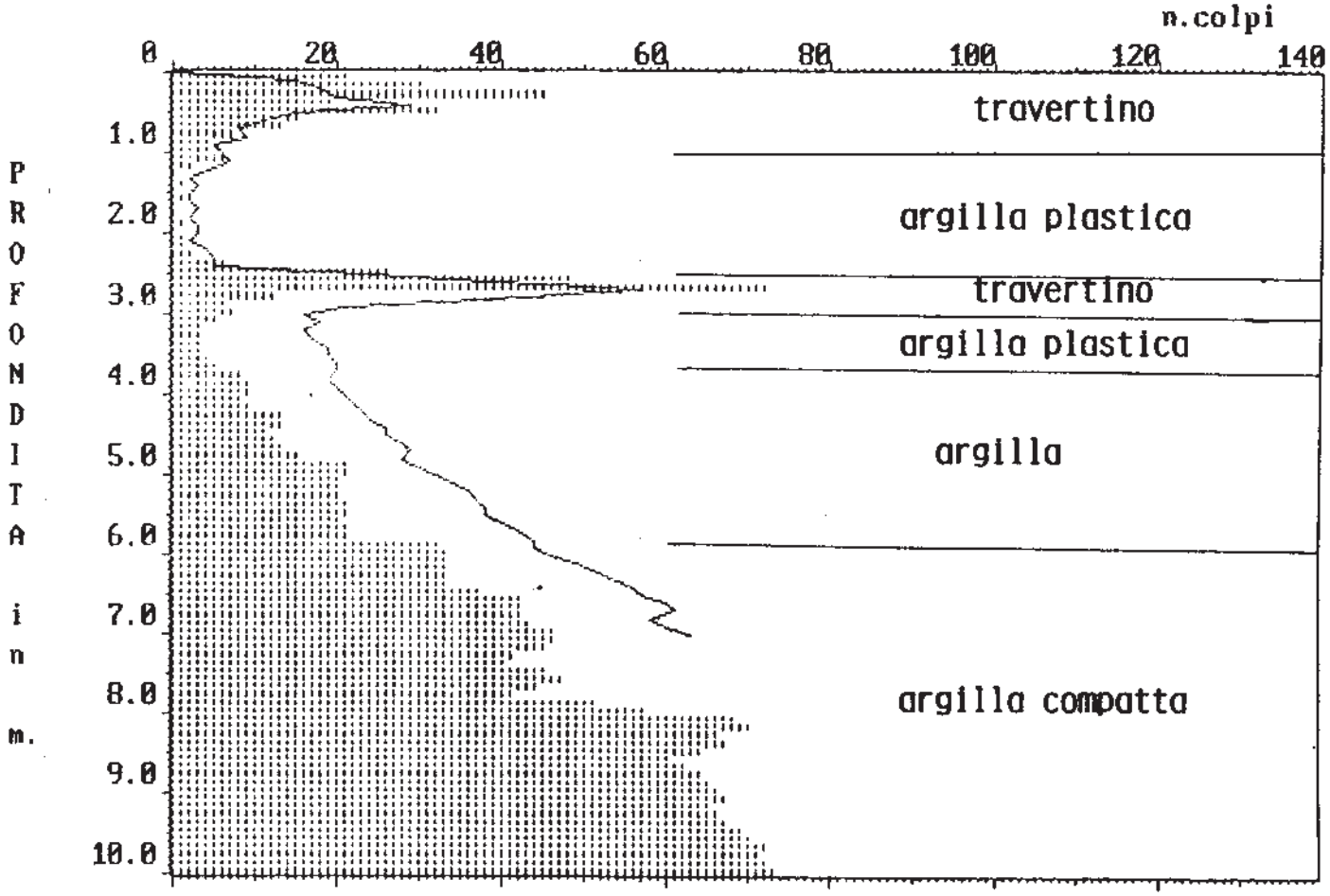
PROVA PENETROMETRICA [S.C.P.T.] N. 2



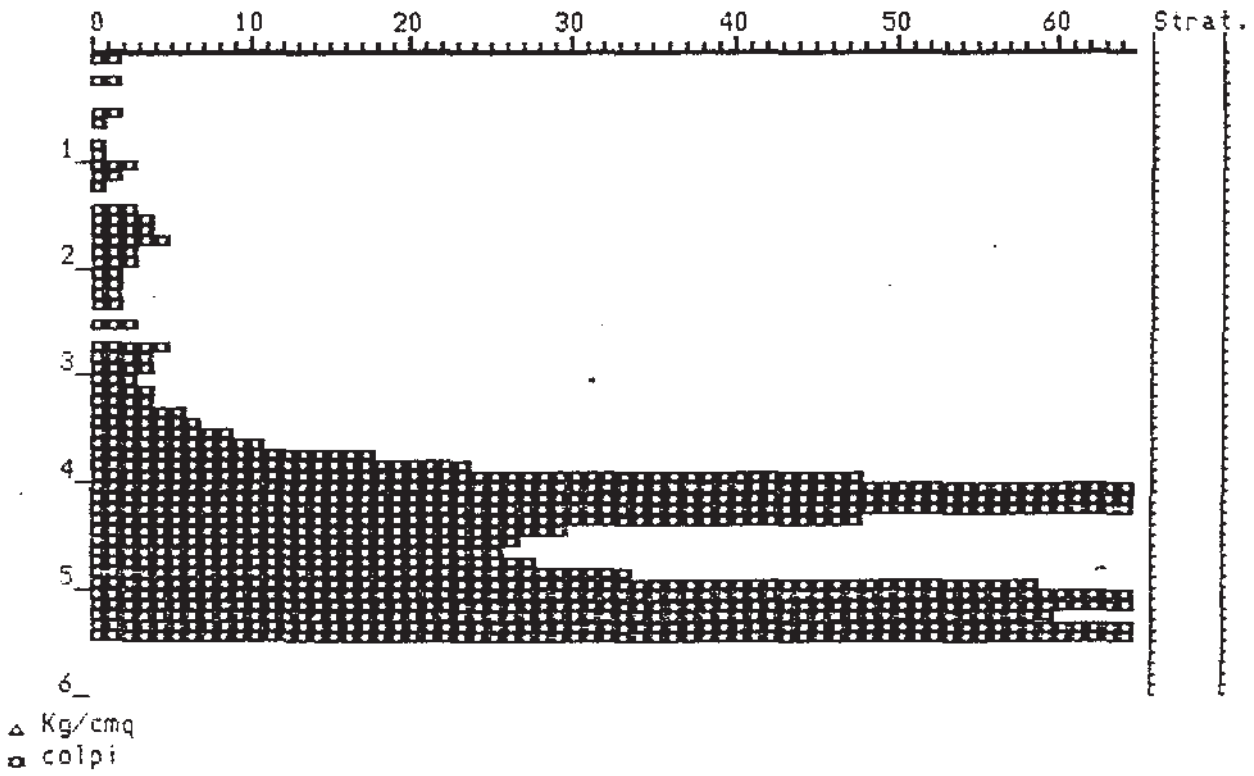
Resistenza : punta (ı 1 colpo/10 cm.) rivestimento (—)

All.2

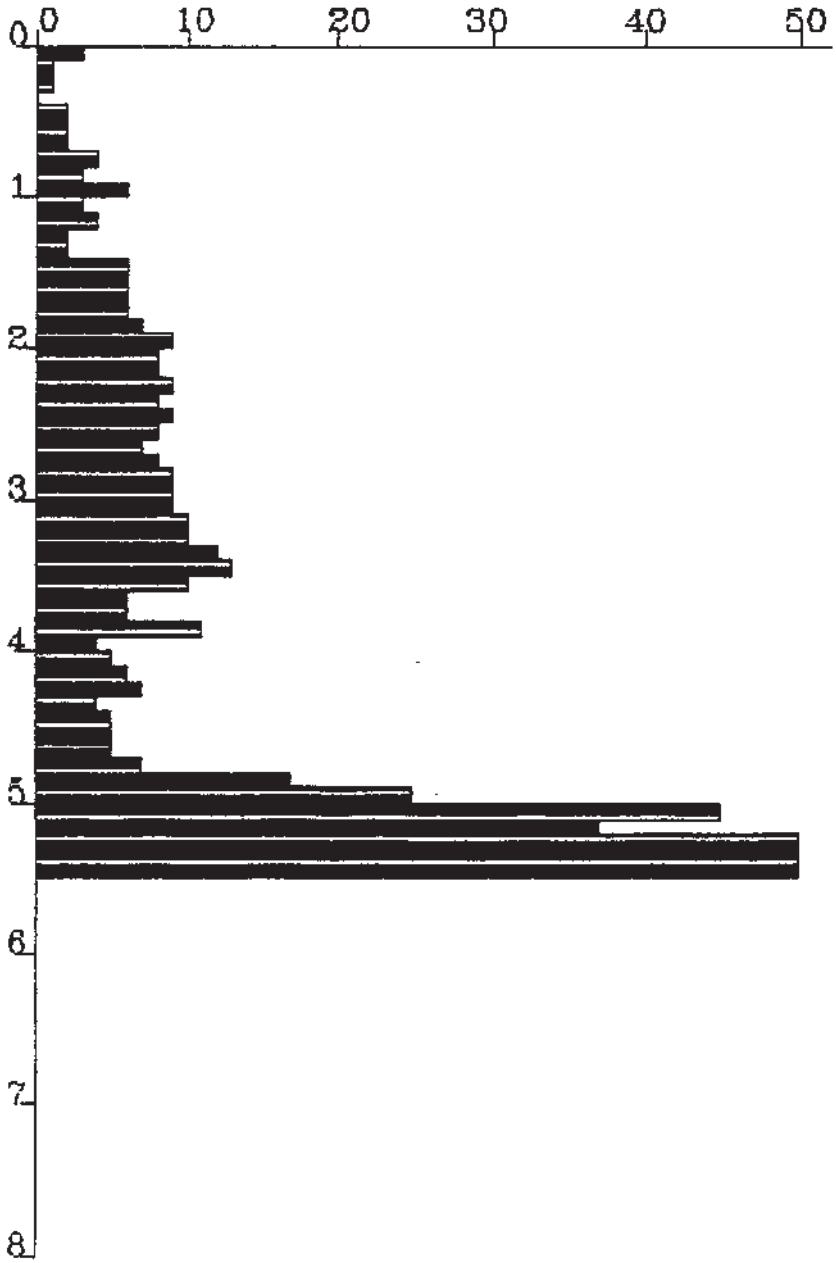
PROVA PENETROMETRICA [S.C.P.T.] N. 3



Resistenza : punta (ı 1 colpo/10 cm.) rivestimento (—) All.3


0
10
20
30
40
50
60
Strat.
1
2
3
4
5
6
Kg/cmq
colpi

Prova penetrometrica n.11
Localita' via XXV Luglio
Comune Lari
Committente
Data 15/01/93
H2o -

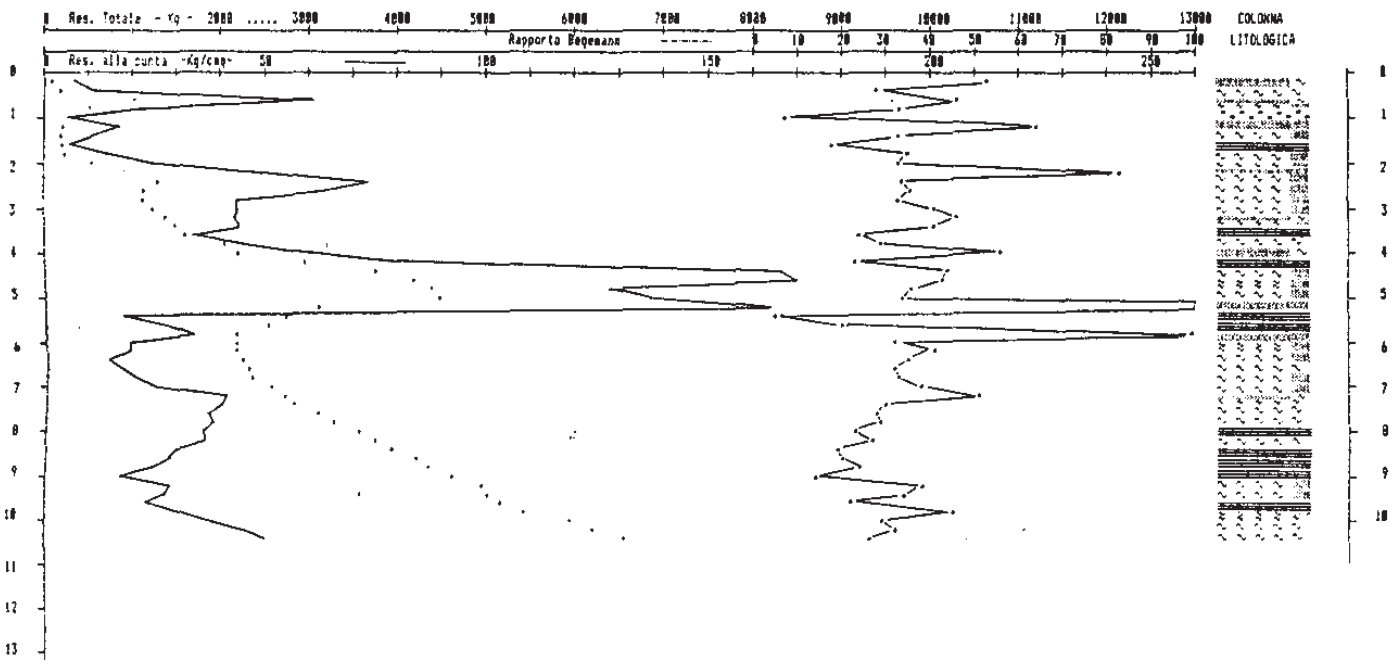


letture di campagna / valori derivati

PROFONDITA' [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]	Rat-Rpt [Kg]	Ral [Kg/cmq]	Rp/Ral	Rt-Rpt [Kg]	Fl [gradi]	Dr [%]	Cu [Kg/cmq]	nv [cmq/t]
.2	70	90	140	20	.13	53	30	25	7		23.01
.4	110	170	200	60	.4	20	90			.44	19.64
.6	610	810	1020	200	1.33	46	420	31	44		18.69
.8	320	320	510	100	.66	33	290			.80	17.15
1	60	190	390	130	.86	7	330			.24	25.93
1.2	170	210	220	40	.26	64	50	27	13		17.73
1.4	150	160	200	50	.33	33	90			.44	19.64
1.6	80	150	210	50	.33	18	150			.24	25.93
1.8	140	200	240	60	.4	35	100			.32	20.4
2	240	350	550	110	.73	23	310			.96	16.94
2.2	380	590	970	90	.6	83	420	35	28		17.57
2.4	720	1050	1290	320	2.13	35	560			3.65	9.04
2.6	650	990	1150	260	1.73	36	500			3.15	10.29
2.8	440	640	1120	200	1.32	33	480			1.76	13.72
3	440	600	1220	160	1.06	41	780			1.76	13.72
3.2	420	570	1360	140	.93	46	930	38	34		13.92
3.4	440	680	1490	140	1.06	41	1040			1.76	13.72
3.6	340	550	1590	210	1.4	25	1250			1.36	15.29
3.8	470	620	2040	150	1.33	29	1590			1.0	17.53
4	680	760	2190	160	1.06	56	1590	31	44		18.84
4.2	890	1520	2940	520	3.33	23	2140			4	8.3
4.4	1660	2220	3740	570	3.8	43	2080			6.3	4.81
4.6	1720	2290	4170	590	3.93	43	2470			6.5	3.93
4.8	1230	1820	4370	540	3.6	21	3490			6.1	5.2
5	1270	1900	4470	610	4.06	24	3200			6.93	4.84
5.2	1640	1820	2180	180	1.2	137	1460	41	75		4.84
5.4	180	280	2750	520	3.46	5	2550			.72	17.6
5.6	220	470	2520	200	1.33	20	2250			1.08	16.4
5.8	220	380	2160	50	.33	99	1830	34	38		15.75
6	190	250	2160	90	.6	32	1970			.76	17.47
6.2	190	260	2160	70	.46	41	1970			.76	17.47
6.4	140	280	2230	60	.4	35	2090			.36	18.4
6.6	170	250	2290	80	.53	32	2120			.60	17.75
6.8	200	290	2340	90	.6	33	2140			.8	17.36
7	220	320	2260	100	.66	30	2310			1	16.83
7.2	410	530	2720	120	.8	51	2310	30	33		14.2
7.4	490	680	2820	190	1.33	30	2430			1.6	14.5
7.6	570	870	3100	300	1.33	25	2530			1.40	15.86
7.8	590	860	3300	300	1.33	29	2990			1.32	14.87
8	560	890	3570	330	1.53	23	3210			1.44	15.24

letture di campagna / valori derivati

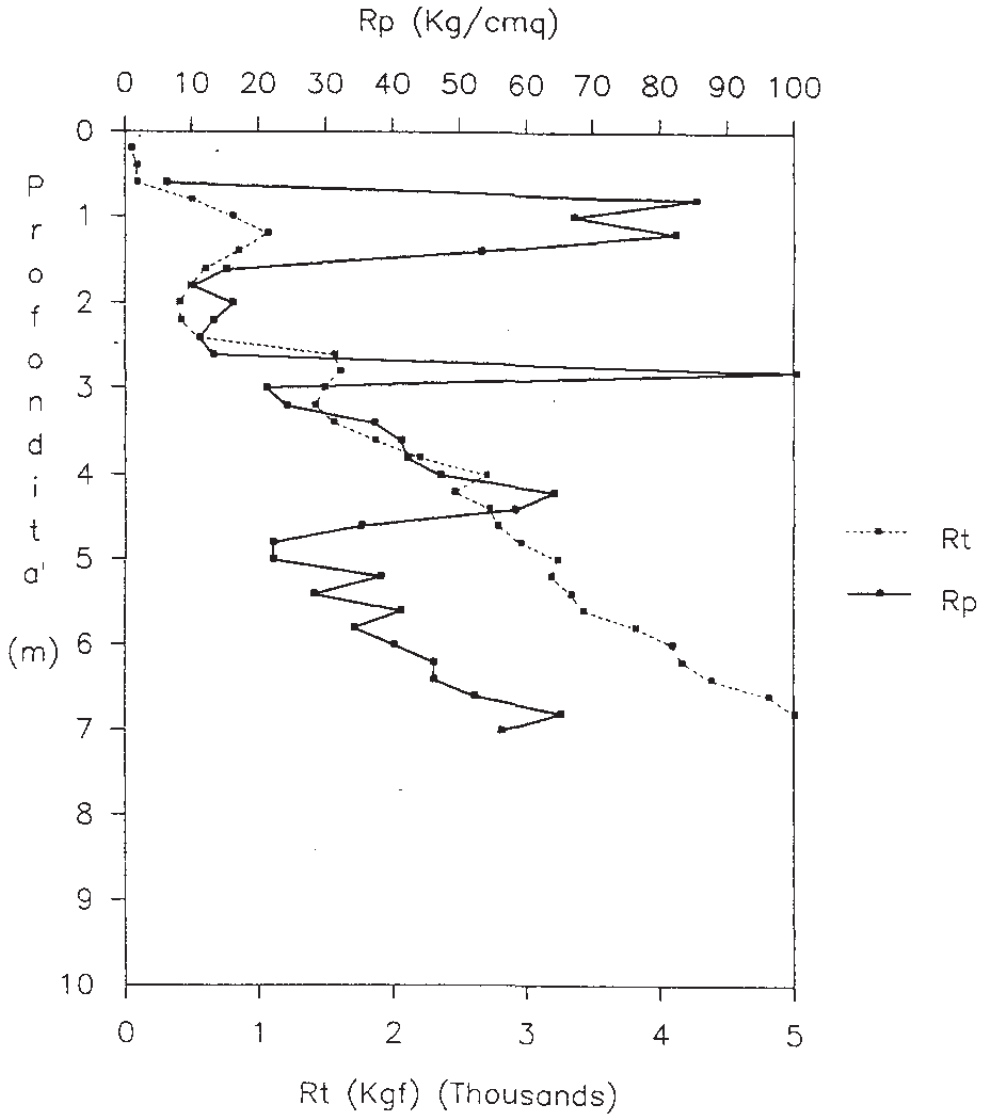
PROFONDITA' [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]	Rat-Rpt [Kg]	Ral [Kg/cmq]	Rp/Ral	Rt-Rpt [Kg]	Fl [gradi]	Dr [%]	Cu [Kg/cmq]	nv [cmq/t]
8.2	360	560	3700	200	1.33	27	3380			1.44	15.24
8.4	380	540	3930	240	1.6	19	3630			1.2	16.21
8.6	290	490	4200	210	1.4	20	3920			1.12	16.48
8.8	240	390	4340	150	1	24	4100			.96	16.94
9	170	350	4610	180	1.2	14	4440			.60	17.75
9.2	290	390	4940	110	.73	38	4660			1.12	16.48
9.4	270	290	5010	120	.8	34	4740			1.00	16.6
9.6	230	390	5160	160	1.06	22	4930			.92	17.04
9.8	300	480	5420	180	.66	45	5120			1.2	16.21
10	370	560	5940	190	1.26	29	5570			1.40	15.86
10.2	450	660	6200	210	1.4	32	5750			1.8	13.53
10.4	500	790	6550	290	1.93	26	6050			2.5	12.57
10.6											
10.8											
11											



Progetto: N.7 VILLETTE 7
Data: 03/11/91

Quota falda: - 2.0 m p.c.

PROFONDITA' [metri]	Rp [Kg/cmq]	Rl [Kg/cmq]	Rp/Rl	Rt [Kgf]	δ [Kg/dmc]	σev [Kg/cmq]	φ [gradi]	Dr [%]	Cu [Kg/cmq]	Mv [cmq/t]	Colonna Stratig
					parametri geotecnici stimati						
0.2					1,90	,04	-	-	-	-	
0.4					1,90	,08	-	-	-	-	
0.6	7,1	,1	107	101	1,64	,11	35	27	-	16,7	
0.8	86,3	1	86	513	2,03	,15	44	106	-	3,9	
1.0	68,3	,9	79	823	1,94	,19	43	93	-	4,9	
1.2	83,3	1,4	60	1083	2,02	,23	43	95	-	4,0	
1.4	54,3	1,1	51	863	1,87	,27	40	77	-	6,1	
1.6	16,3	1,9	8	613	1,59	,30	-	-	,64	22,7	
1.8	11,4	,5	24	504	1,90	,34	-	-	,44	21,8	
2.0	17,4	,3	65	424	1,69	,35	33	32	-	16,7	
2.2	14,4	,5	31	434	1,91	,37	-	-	,56	19,9	
2.4	12,4	,4	31	564	1,91	,39	-	-	,48	20,9	
2.6	14,4	,5	31	1584	1,91	,40	-	-	,56	19,9	
2.8	255,5	1,1	240	1625	2,30	,43	44	120	-	1,3	
3.0	22,5	1,8	13	1505	1,93	,45	-	-	,88	17,8	
3.2	25,5	,8	32	1435	1,73	,46	28	-	-	13,1	
3.4	38,5	,9	41	1575	1,79	,48	30	-	-	8,7	
3.6	42,5	1,3	34	1885	1,81	,50	30	-	-	7,8	
3.8	43,6	1,9	23	2216	1,97	,51	-	-	1,72	9,2	
4.0	48,6	1,6	30	2716	1,84	,53	30	-	-	6,9	
4.2	65,6	,9	70	2476	1,93	,55	38	67	-	5,1	
4.4	59,6	,7	81	2736	1,90	,57	37	63	-	5,6	
4.6	36,6	1,1	34	2806	1,78	,58	29	-	-	9,1	
4.8	23,8	1,9	12	2978	1,93	,60	-	-	,93	16,8	
5.0	23,8	1,9	12	3258	1,93	,62	-	-	,93	16,8	
5.2	39,8	2,1	19	3208	1,97	,64	-	-	1,57	10,1	
5.4	29,8	1	30	3358	1,75	,66	28	-	-	11,2	
5.6	42,8	1,5	29	3448	1,81	,67	30	-	-	7,8	
5.8	35,9	2	18	3839	1,96	,69	-	-	1,41	11,1	
6.0	41,9	1,5	29	4109	1,97	,71	-	-	1,65	9,5	
6.2	47,9	2,4	20	4179	1,98	,73	-	-	1,89	8,4	
6.4	47,9	2,1	23	4399	1,98	,75	-	-	1,89	8,4	
6.6	53,9	2,1	25	4879	2,00	,77	-	-	2,13	7,4	
6.8	67	2,5	27	5070	1,94	,79	31	-	-	5,0	
7.0	58	2,2	26		2,01	,81	-	-	2,29	6,9	



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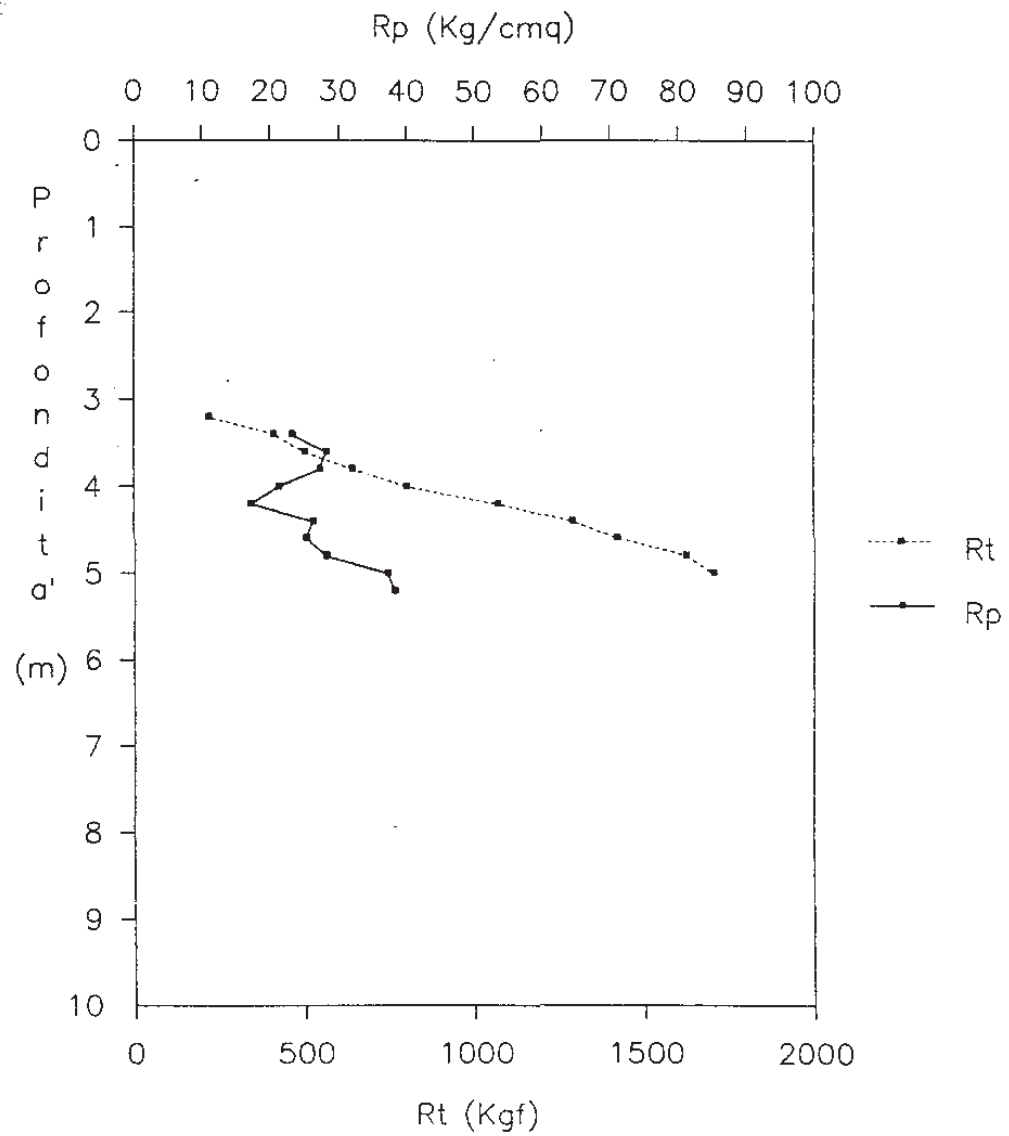
Quota falda: - 2.0 m p.c.

Data: 03/11/91

parametri geotecnici stimati

PROFONDITA' [metri]	Rp [Kg/cmq]	Rl [Kg/cmq]	Rp/Rl	Rt [Kgf]	δ [Kg/dmc]	σ_{ov} [Kg/cmq]	φ [gradi]	Dr [%]	c_u [Kg/cmq]	M_v [cmq/t]	Colonna Stratig.
0.2					1,90	,04	-	-	-	-	
0.4					1,90	,08	-	-	-	-	
0.6					1,90	,11	-	-	-	-	
0.8					1,90	,15	-	-	-	-	
1.0					1,90	,19	-	-	-	-	
1.2					1,90	,23	-	-	-	-	
1.4					1,90	,27	-	-	-	-	
1.6					1,90	,30	-	-	-	-	
1.8					1,90	,34	-	-	-	-	
2.0					1,90	,36	-	-	-	-	
2.2					1,90	,38	-	-	-	-	
2.4					1,90	,40	-	-	-	-	
2.6					1,90	,41	-	-	-	-	
2.8					1,90	,43	-	-	-	-	
3.0					1,90	,45	-	-	-	-	
3.2					1,90	,47	-	-	-	-	
3.4	24,5	,8	31	425	1,72	,48	-	-	,96	13,6	
3.6	29,5	,8	37	515	1,75	,50	28	-	-	11,3	
3.8	28,6	1,1	25	656	1,94	,52	-	-	1,12	14,0	
4.0	22,6	1,3	18	816	1,93	,53	-	-	,88	17,7	
4.2	18,6	,9	20	1086	1,92	,55	-	-	,72	19,6	
4.4	27,6	,9	32	1306	1,74	,57	28	-	-	12,1	
4.6	26,6	1	27	1436	1,94	,59	-	-	1,04	15,0	
4.8	29,8	1	30	1638	1,75	,60	28	-	-	11,2	
5.0	38,8	1,4	28	1718	1,96	,62	-	-	1,53	10,3	
5.2	39,8	1,5	27		1,97	,64	-	-	1,57	10,1	

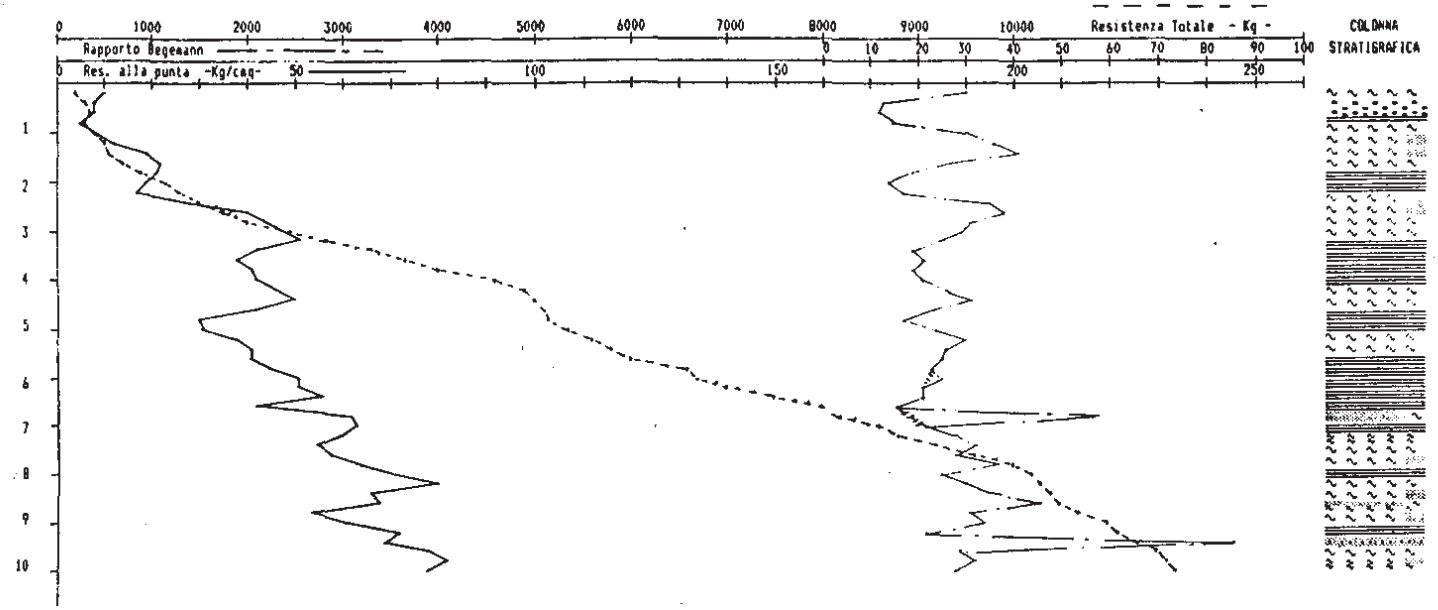


letture di campagna / valori derivati

PROFONDITA' [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]	Rat-Rpt [Kg]	Ral [Kg/cmq]	Rp/Ral	Rt-Rpt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	gv [cmq/t]
.2	100	150	200	50	.33	30	100			.4	20.3
.4	80	170	350	90	.6	13	220			.32	22.29
.6	80	180	350	100	.66	12	270			.32	22.29
.8	50	100	300	50	.33	15	250			.2	29
1	80	120	400	40	.26	30	320			.32	22.29
1.2	120	170	500	50	.33	36	380			.48	19.13
1.4	190	260	550	70	.46	41	360			.76	17.47
1.6	220	340	700	120	.8	27	480			.88	17.15
1.8	210	380	900	170	1.13	19	490			.84	17.25
2	190	400	1150	210	1.4	14	960			.76	17.47
2.2	170	320	1500	150	1	17	1130			.68	17.75
2.4	280	460	1500	180	.8	35	1220			1.12	16.48
2.6	400	560	1750	160	1.06	38	1350			1.6	14.5
2.8	440	650	2000	210	1.4	31	1560			1.76	13.72
3	490	740	2450	250	1.66	29	1960			2.45	12.76
3.2	530	810	2850	300	2	25	2340			2.55	12.39
3.4	420	760	3300	340	2.26	19	2880			1.68	14.11
3.6	380	650	3450	270	1.8	21	3270			1.52	14.87
3.8	410	740	4000	330	2.2	19	3590			1.64	14.3
4	420	720	4600	300	2	21	4180			1.68	14.11
4.2	460	730	4900	270	1.8	26	4440			2.3	13.33
4.4	500	740	5000	240	1.6	31	4500			2.5	12.57
4.6	420	690	5100	270	1.8	23	4680			1.68	14.11
4.8	380	560	5150	260	1.73	17	4850			1.2	16.21
5	310	500	5150	190	1.26	24	5040			1.24	16.44
5.2	380	570	5600	190	1.26	30	5220			1.52	14.87
5.4	410	650	5800	240	1.6	26	5390			1.64	14.3
5.6	410	660	6000	250	1.66	25	5590			1.64	14.3
5.8	450	750	6400	300	2	23	6150			1.8	13.55
6	510	810	6700	300	2	25	6390			2.55	12.39
6.2	510	870	7000	360	2.4	21	6490			2.55	12.39
6.4	560	960	7500	400	2.66	21	6940			2.8	11.5
6.6	420	820	8000	400	2.66	16	7580			1.68	14.11
6.8	420	780	8200	160	1.06	58	7580	31	43		10.53
7	630	1060	8600	430	2.86	22	7970			3.15	10.39
7.2	600	920	8800	320	2.13	28	8200			3	10.84
7.4	550	810	9200	260	1.73	32	8650			2.75	11.67
7.6	580	890	9600	310	2.06	28	9020			2.9	11.16
7.8	640	900	10000	260	1.73	37	9360			3.2	10.74
8	740	1140	10200	430	2.86	25	9460			3.55	9.3

letture di campagna / valori derivati

PROFONDITA' [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]	Rat-Rpt [Kg]	Ral [Kg/cmq]	Rp/Ral	Rt-Rpt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	gv [cmq/t]
8.2	800	1200	10300	400	2.66	30	9500			4	8.3
8.4	660	940	10400	280	1.86	35	9740			3.3	9.96
8.6	680	900	10500	220	1.46	46	9820	32	48		9.69
8.8	540	800	10700	260	1.73	31	10160			2.7	11.85
9	610	880	11000	270	1.8	34	10390			3.05	10.69
9.2	720	1210	11100	490	3.26	22	10380			3.6	9.18
9.4	690	810	11300	120	.8	86	10610	36	48		9.55
9.6	780	1180	11500	400	2.66	29	10720			3.9	8.5
9.8	820	1210	11600	390	2.6	32	10780			4.1	8.1
10	780	1200	11700	420	2.8	28	10920			3.9	8.5

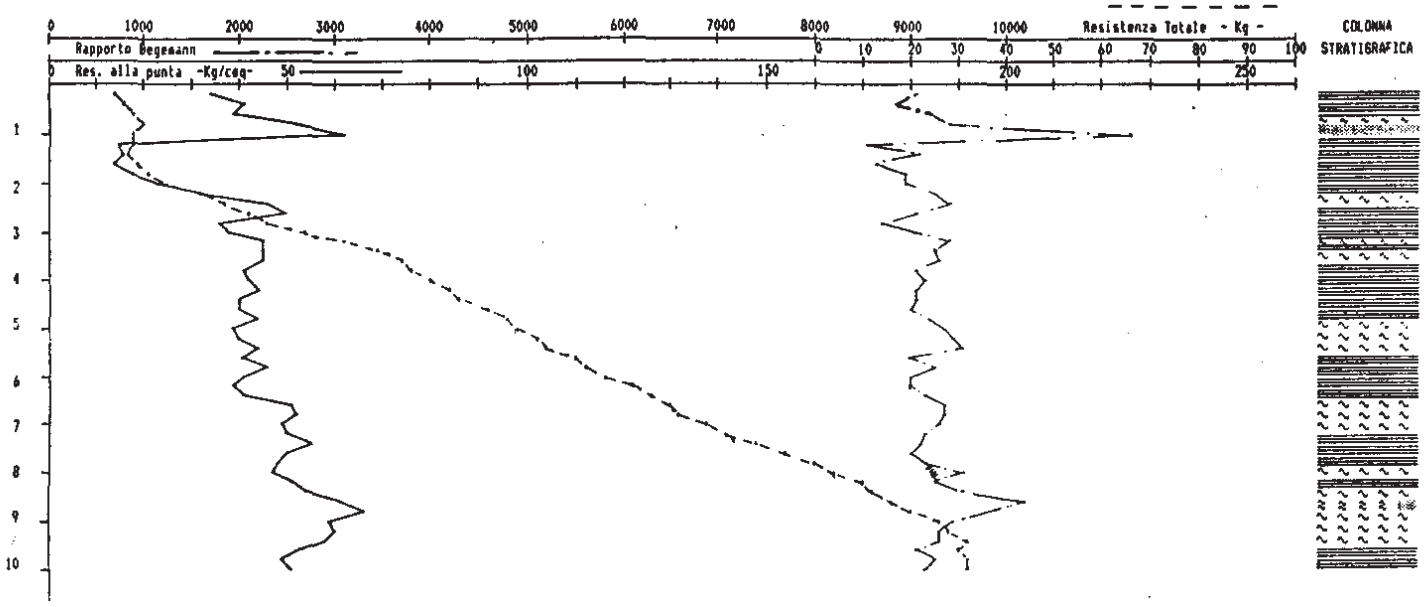


letture di campagna / valori derivati

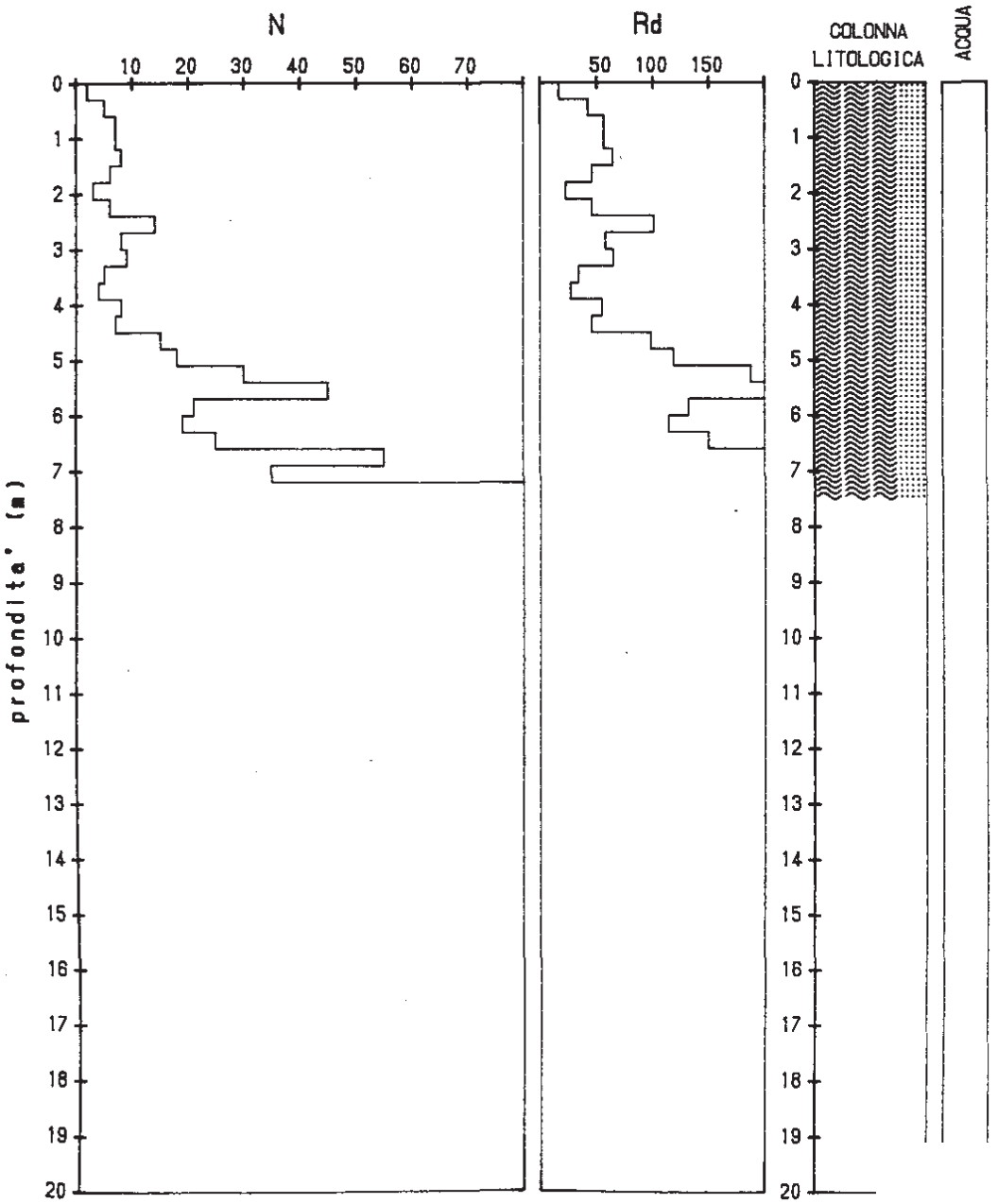
PROFONDITA' [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]	Rat-Rpt [Kg]	Ral [Kg/cmq]	Rp/Ral	Rt-Rpt [Kg]	Fl [gradi]	Dr [%]	Cu [Kg/cmq]	av [cmq/t]
.2	340	580	700	240	1.6	21	360			1.36	15.59
.4	410	780	800	270	2.46	17	390			1.64	14.3
.6	390	630	900	240	1.6	24	510			1.56	14.69
.8	520	800	1000	280	1.86	26	480			2.6	12.2
1	620	760	900	140	.93	66	280	31	45		10.53
1.2	150	360	900	210	1.4	11	750			.6	18.14
1.4	160	270	850	110	.73	22	690			.64	17.93
1.6	110	300	950	160	1.06	11	810			.36	18.4
1.8	180	320	1050	140	.93	19	870			.72	17.6
2	230	410	1250	180	1.2	19	1020			.92	17.04
2.2	330	530	1600	200	1.33	25	1270			1.32	15.75
2.4	440	710	1850	250	1.66	28	1390			2.3	13.33
2.6	500	850	2100	350	2.33	21	1600			2.5	12.57
2.8	360	740	2300	380	2.53	14	1940			1.44	15.24
3	380	650	2700	270	1.8	21	2320			1.52	14.87
3.2	450	690	3100	240	1.6	28	2650			1.8	13.53
3.4	450	720	3450	270	1.8	25	3000			1.8	13.33
3.6	450	710	3700	260	1.73	26	3250			1.8	13.53
3.8	410	700	3800	290	1.93	21	3390			1.64	14.3
4	420	700	4000	280	1.86	23	3580			1.68	14.11
4.2	440	750	4200	310	2.06	21	3760			1.76	13.72
4.4	400	690	4300	290	1.93	21	3900			1.6	14.5
4.6	400	700	4600	300	2	20	4200			1.6	14.5
4.8	440	720	4800	280	1.86	24	4360			1.76	13.72
5	390	610	4900	220	1.46	27	4510			1.56	14.69
5.2	400	610	5100	210	1.4	29	4700			1.6	14.5
5.4	440	650	5200	210	1.4	31	4760			1.76	13.72
5.6	410	720	5500	310	2.06	20	5090			1.64	14.3
5.8	460	740	5600	280	1.86	25	5140			2.3	13.33
6	410	710	5800	300	2	20	5390			1.64	14.3
6.2	390	680	6100	290	1.93	20	5710			1.56	14.69
6.4	410	680	6300	270	1.8	23	5890			1.64	14.3
6.6	510	790	6500	280	1.86	27	5990			2.55	12.39
6.8	520	810	6600	290	1.93	27	6080			2.6	12.2
7	490	770	6900	280	1.86	26	6410			2.45	12.76
7.2	500	830	7100	330	2.2	23	6600			2.5	12.57
7.4	550	920	7400	370	2.46	22	6850			2.75	11.67
7.6	500	880	7700	380	2.53	20	7200			2.5	12.57
7.8	480	790	8000	310	2.06	23	7520			2.4	12.95
8	470	700	8200	230	1.53	31	7730			2.35	13.14

letture di campagna / valori derivati

PROFONDITA' [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]	Rat-Rpt [Kg]	Ral [Kg/cmq]	Rp/Ral	Rt-Rpt [Kg]	Fl [gradi]	Dr [%]	Cu [Kg/cmq]	av [cmq/t]
8.2	510	820	8500	310	2.06	25	7990			2.55	12.39
8.4	540	800	8600	260	1.73	31	8060			2.7	11.85
8.6	610	820	8800	210	1.4	44	8190			3.05	10.69
8.8	660	930	9000	270	1.8	37	8340			3.3	9.96
9	590	900	9300	310	2.06	29	8710			2.95	11
9.2	600	940	9400	340	2.26	26	8800			3	10.84
9.4	580	920	9600	340	2.26	26	9020			2.9	11.16
9.6	530	900	9500	370	2.46	21	8970			2.65	12.02
9.8	490	780	9600	290	1.93	25	9110			2.45	12.76
10	510	840	9600	330	2.2	23	9090			2.55	12.39



Prof	N	Rd	Ø	Dr	Cu	mv
0.3	2	16.9	20	66	.	18.0
0.6	5	42.4	24	82	.	7.2
0.9	7	56.0	25	85	.	5.1
1.2	7	56.0	25	81	.	5.1
1.5	8	64.1	26	81	.	4.5
1.8	6	45.5	24	69	.	6.0
2.1	3	22.8	22	46	.	12.0
2.4	6	45.5	24	64	.	6.0
2.7	14	100.9	29	88	.	2.6
3.0	8	57.7	26	69	.	4.5
3.3	9	64.9	27	71	.	4.0
3.6	5	34.3	24	52	.	7.2
3.9	4	27.5	23	44	.	9.0
4.2	8	54.9	26	64	.	4.5
4.5	7	45.9	25	58	.	5.1
4.8	15	98.3	30	80	.	2.4
5.1	18	118.0	31	85	.	2.0
5.4	30	188.2	36	99	.	1.2
5.7	45	282.3	41	99	.	0.8
6.0	21	131.7	33	86	.	1.7
6.3	19	114.2	32	83	.	1.9
6.6	25	150.3	34	90	.	1.4
6.9	55	330.7	44	99	.	0.7
7.2	35	202.0	38	99	.	1.0
7.5	100	577.2	54	99	.	0.4

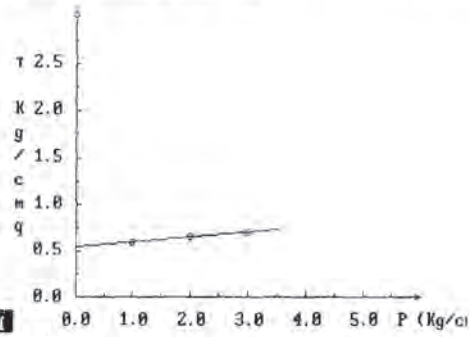


Il saggio n.1 è stato spinto fino alla profondità di 3,20 mt.; in tale saggio al di sotto dei primi 0,50 mt. di coltrato si ritrova quel materiale, presente come già detto anche nella zona adiacente, costituito da ciottoli di travertino in una matrice limo-argillosa, fino ad una profondità di circa 1,70 mt. dall'attuale p.d.c.
Segue quindi un livello di argilla dello spessore di circa 0,80 mt. che presenta un elevato grado di plasticità dovuto senza dubbio alla sua completa imbibizione da parte dell'acqua espulsa dal livello di travertino sovrastante.
Ancora argilla è presente anche al di sotto di tale livello, ma in questo caso siamo in presenza di un materiale compatto all'interno del quale è stato prelevato un campione indisturbato sottoposto in seguito ad analisi di laboratorio che confermano le buone caratteristiche meccaniche di tale terreno che presenta una coesione c=0,55 Kg/cmq, angolo d'attrito Φ=3° e Indice di Consistenza IC=1,04 (i risultati sono riportati negli allegati n.5 e 5bis).

TAGLIO RAPIDO NON DRENATO

Valori misurati

P Kg/cmq	τ Kg/cmq
1.000	0.590
2.000	0.650
3.000	0.690



δ = 3° c = 0.55 Kg/cmq

Sondaggio n° 1

Committente :

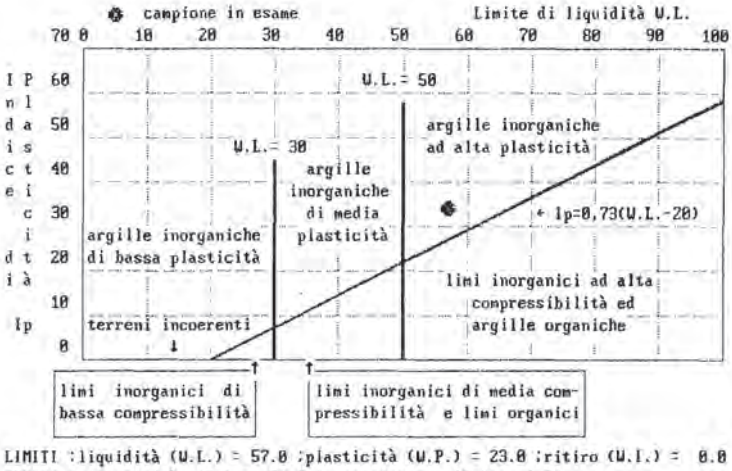
Cantiere : Casciana Terme (PI)

Campione n° 1 da mt. 3.00 a mt. 3.20

Umidità naturale = 21.73 %

Peso di volume = 2.050 kg/dmc

DIAGRAMMA DI PLASTICITA' di Casagrande



LIMITI : liquidità (W.L.) = 57.0 ; plasticità (W.P.) = 23.0 ; ritiro (W.I.) = 0.0
INDICI : plasticità (Ip) = 34.0 ; consistenza (Cr) = 1.04

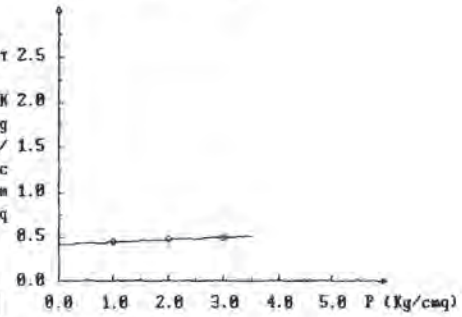
Il saggio n.2 è stato eseguito a pochi metri dal confine con Via delle Grotte; la successione stratigrafica è risultata analoga fino alla profondità di -1,60 mt. dal p.d.c. con, in ordine dall'alto verso il basso, coltrato, ciottoli di travertino in matrice limo-argillosa e argilla plastica. A tale profondità si è dovuto interrompere lo scavo a causa della presenza di un banco di travertino compatto che riteniamo rappresenti il tratto d'unione tra gli affioramenti menzionati precedentemente.

Il saggio n.3, eseguito a circa 14 mt. di distanza da S1 in direzione nord-est e spinto fino alla profondità di 3,00 mt., ha messo in evidenza una successione stratigrafica analoga anche se i vari livelli presentano spessori leggermente diversi; anche in questo caso nell'ultimo livello incontrato di argilla compatta è stato prelevato e sottoposto ad analisi di laboratorio un campione indisturbato (vedi all.n.7 e 7bis) che presenta caratteristiche meccaniche molto simili a quelle del precedente campione (c=0,62 Kg/cmq; Φ=2°; IC=0,96).

TAGLIO RAPIDO NON DRENATO

Valori misurati

P Kg/cmq	τ Kg/cmq
1.000	0.440
2.000	0.470
3.000	0.490



Φ = 1° **c = 0.42 Kg/cmq**

Sondaggio n° 2

Committente :

Cantiere : Casciana Terme (PI)

Campione n° 1 da mt. 1.00 a mt. 1.20

Umidità naturale = 27.14 %

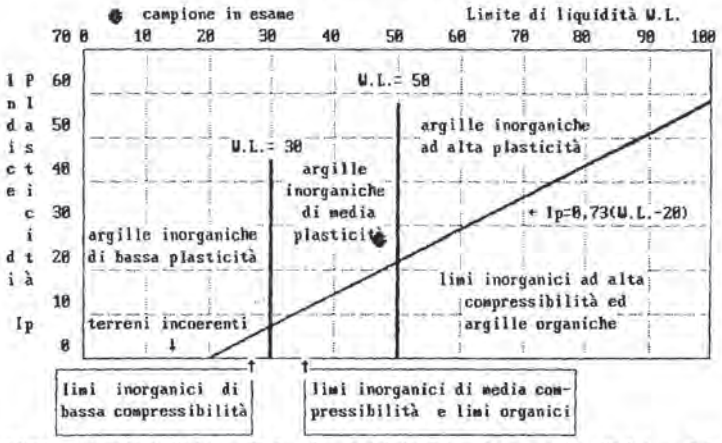
Peso di volume = 1.938 kg/dmc

ALLEGATO N.6

Sempre mediante l'ausilio dell'escavatore è stato possibile aggirare il banco di travertino che si interrompeva a poca distanza e quindi proseguire lo scavo; ciò ha permesso di definire lo spessore del banco stesso che è di circa 0,40 mt. e al di sotto del quale è di nuovo presente un livello conglomeratico di travertino (0,50 mt. circa) analogo a quello ritrovato più superficialmente.

Segue quindi argilla plastica fino alla profondità raggiunta (-3,00 dal p.d.c.).

DIAGRAMMA DI PLASTICITA' di Casagrande

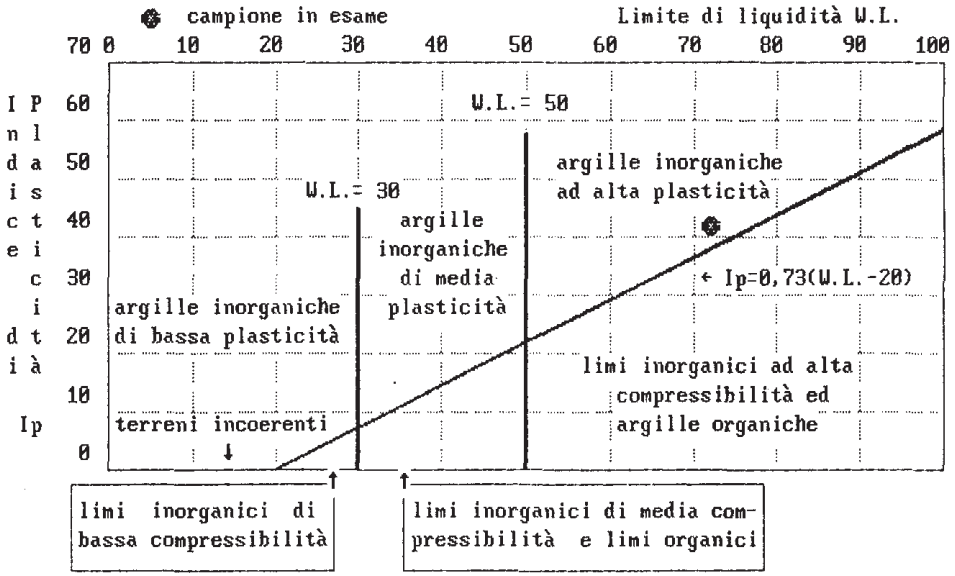


LIMITI : liquidità (W.L.) = 47.0 ; plasticità (W.P.) = 20.0 ; ritiro (W.I.) = 0.0

INDICI : plasticità (Ip) = 27.0 ; consistenza (Cr) = 0.74

ALL.6bis

DIAGRAMMA DI PLASTICITA' di Casagrande



LIMITI : liquidità (W.L.) = 72.0 ; plasticità (W.P.) = 30.0 ; ritiro (W.I.) = 0.0
INDICI : plasticità (Ip) = 42.0 ; consistenza (Cr) = 0.96

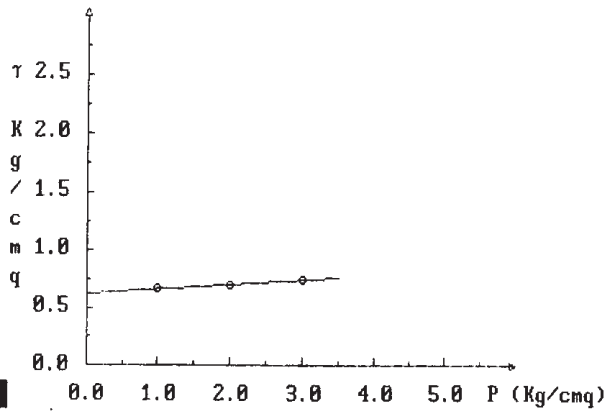
Il saggio n.3, eseguito a circa 14 mt. di distanza da S1 in direzione nord-est e spinto fino alla profondità di 3,00 mt., ha messo in evidenza una successione stratigrafica analoga anche se i vari livelli presentano spessori leggermente diversi; anche in questo caso nell'ultimo livello incontrato di argilla compatta è stato prelevato e sottoposto ad analisi di laboratorio un campione indisturbato (vedi all.n.7 e 7bis) che presenta caratteristiche meccaniche molto simili a quelle del precedente campione (c=0,62 Kg/cmq; Φ=2°; IC=0,96).

TAGLIO RAPIDO NON DRENATO

c.f. e p. I.V.A. 00451370 060 8

Valori misurati

P Kg/cmq	τ Kg/cmq
1.000	0.670
2.000	0.700
3.000	0.750



Φ = 2° c = 0.62 Kg/cmq

Sondaggio n° 3

Committente :

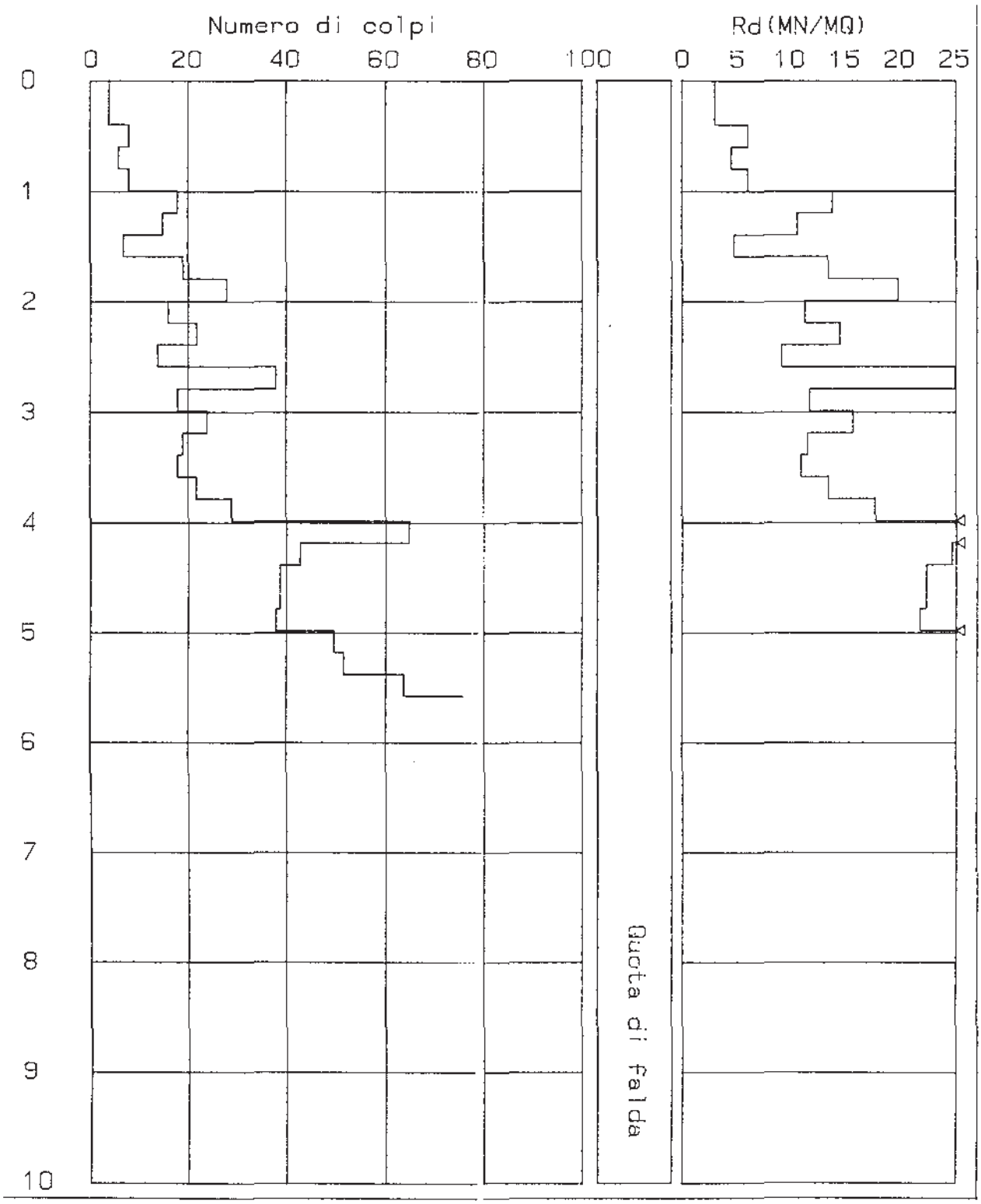
Cantiere : Casciana Terme (PI)

Campione n° 1 da mt. 2.80 a mt. 3.00

Umidità naturale = 31.65 %

Peso di volume = 1.900 kg/dmc

L'esecuzione del saggio n.4 ha permesso di stabilire la presenza di travertino compatto alla stessa profondità (da -1,60 mt. a -2,00 mt.) preceduto nei livelli superficiali da un assetto geostratigrafico del tutto analogo a quello del saggio n.2. Al di sotto del banco di travertino e fino alla profondità indagata (-2,50 mt. dal p.d.c.) si ritrova in questo caso argilla plastica.

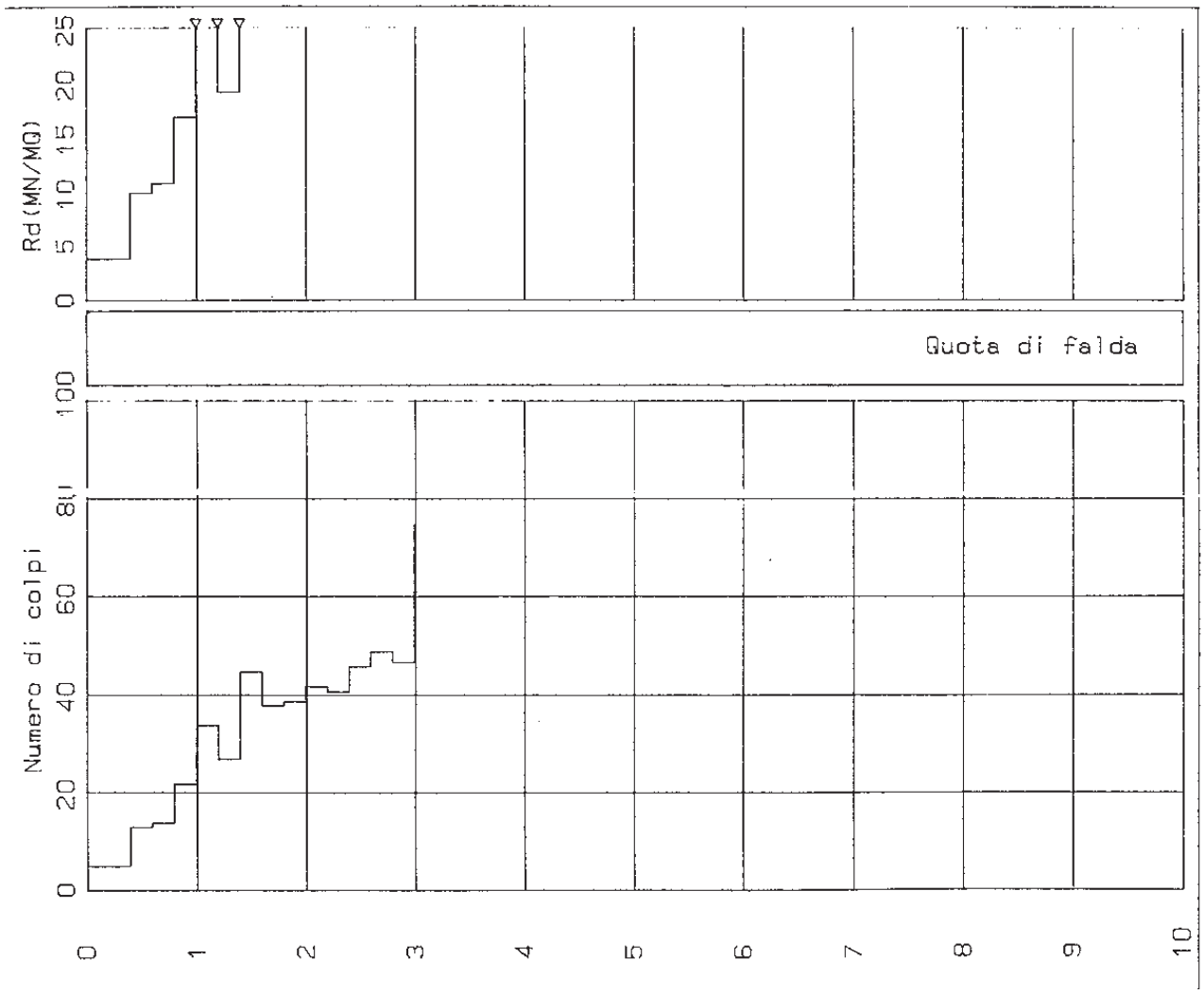

Numero di colpi
0
20
40
60
80
100
Rd(MN/MQ)
0
5
10
15
20
25
0
1
2
3
4
5
6
7
8
9
10
Quota di falda

ROVA PENETROMETRICA DINAMICA

CERTIFICATO N.RO : 104-AA CANTIERE :COSTRUZIONE DI FABBRICATO PER CIVILE ABITAZIONE 13

PROF.	NC	RD.	PROF.	NC	RD.	PROF.	NC	RD	PROF.	NC	RD
0.00	5	51.08									
0.20	5	51.08									
0.40	13	132.82									
0.60	14	143.04									
0.80	22	224.77									
1.00	34	347.37									
1.20	27	254.21									
1.40	45	423.69									
1.60	38	357.78									
1.80	39	367.20									
2.00	42	395.44									
2.20	41	357.94									
2.40	46	401.60									
2.60	49	427.79									
2.80	47	410.33									
3.00	75	654.78									

LEGGENDA : PROF. = PROFONDITA' DI INFISSIONE CM.
NC = NUMERO COLPI N.RO
RD = RESISTENZA DINAMICA dN/cmq



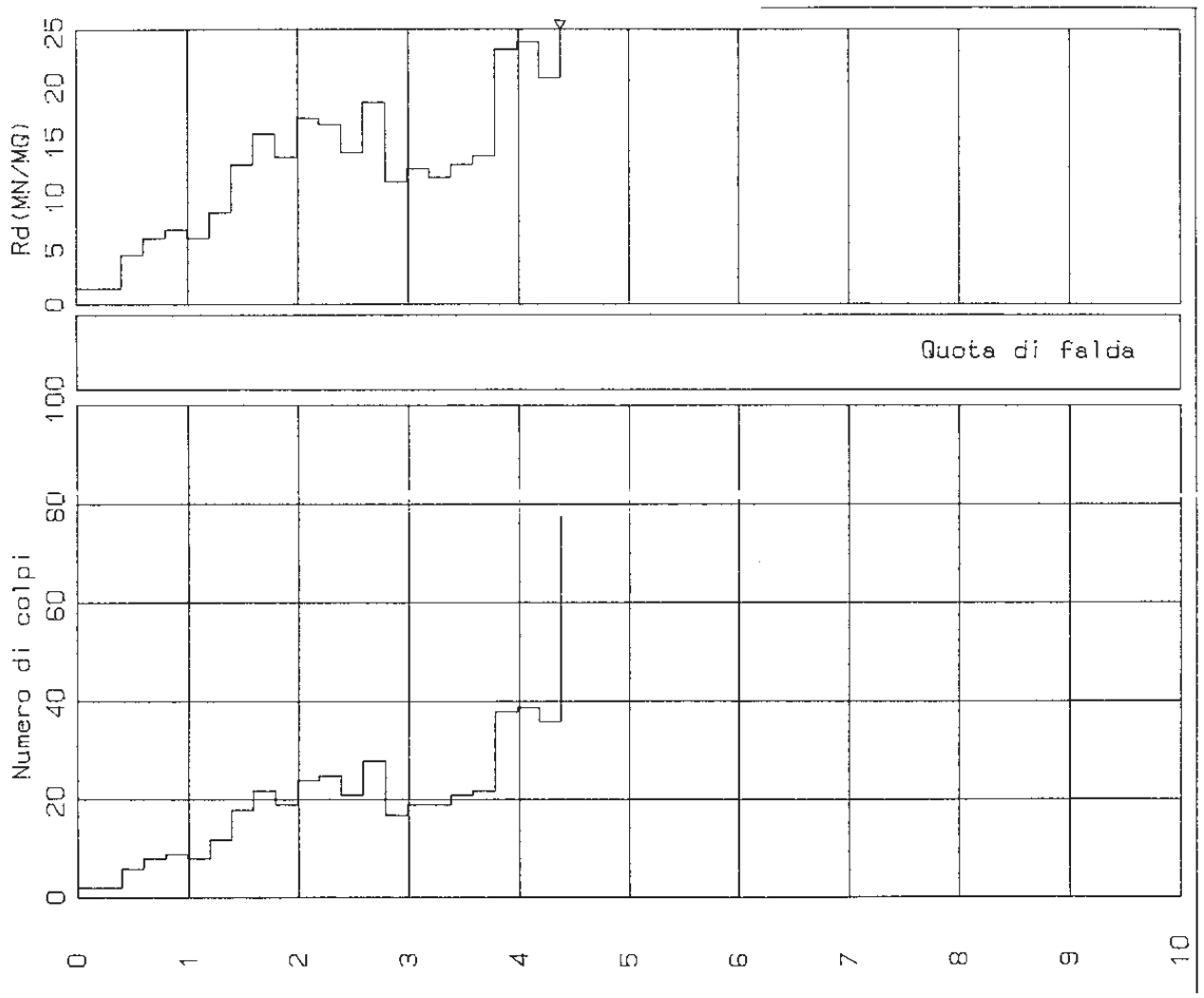
PROVA PENETROMETRICA DINAMICA

CERTIFICATO N.RO : 105-A8 CANTIERE :COSTRUZIONE DI FABBRICATO PER CIVILE ABITAZIONE

15

PROF.	NC	RD.	PROF.	NC	RD.	PROF.	NC	RD	PROF.	NC	RD
0.00	2	20.43									
0.20	2	20.43									
0.40	6	61.30									
0.60	8	81.73									
0.80	9	91.95									
1.00	8	81.73									
1.20	12	112.98									
1.40	18	169.48									
1.60	22	207.14									
1.80	19	178.89									
2.00	24	225.97									
2.20	25	218.26									
2.40	21	183.34									
2.60	28	244.45									
2.80	17	148.42									
3.00	19	165.88									
3.20	19	154.63									
3.40	21	170.90									
3.60	22	179.04									
3.80	38	309.25									
4.00	39	317.39									
4.20	36	274.37									
4.40	78	594.47									

LEGGENDA : PROF. = PROFONDITA' DI INFISSIONE CM.
NC = NUMERO COLPI N.RO
RD = RESISTENZA DINAMICA dN/cmq

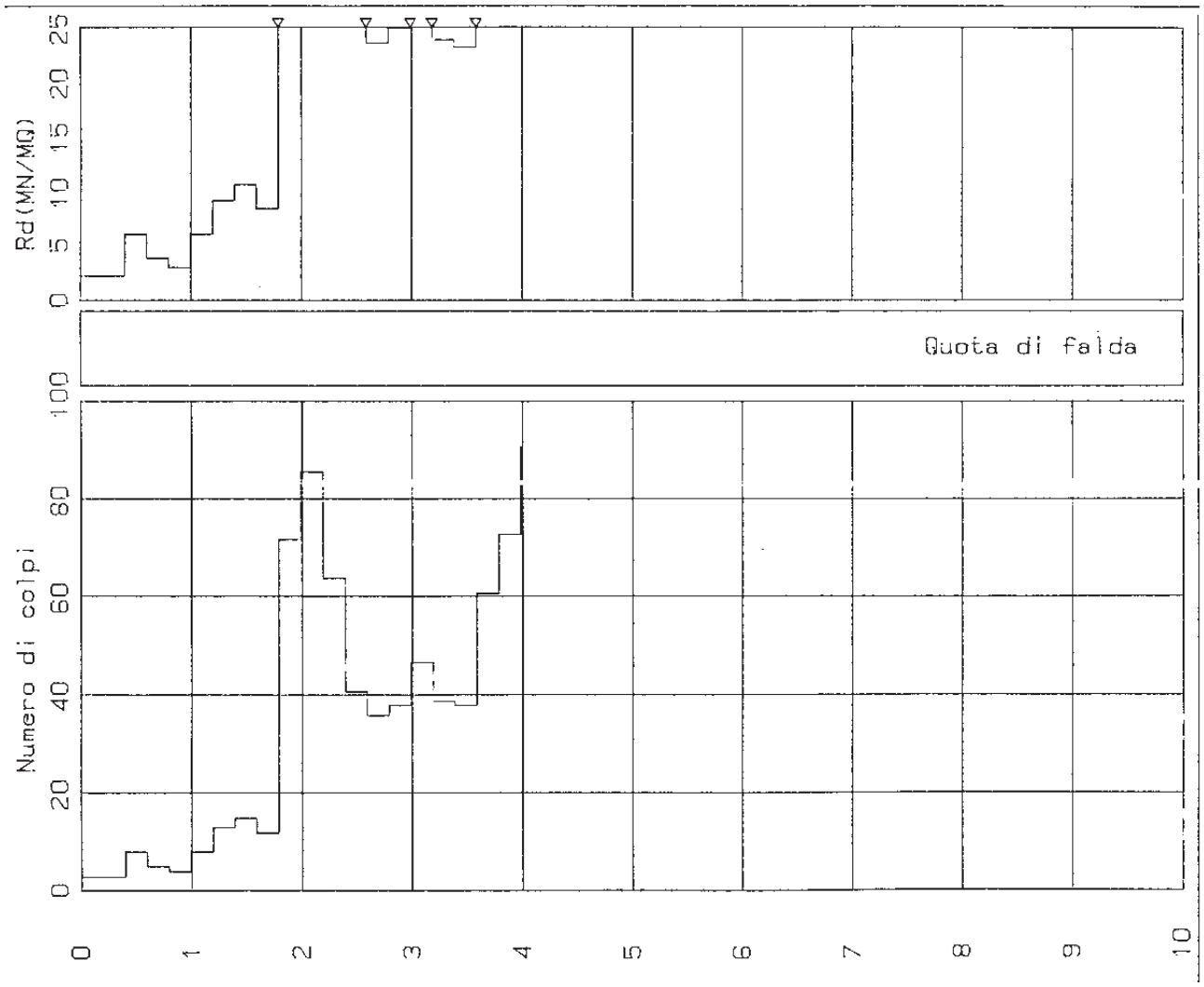


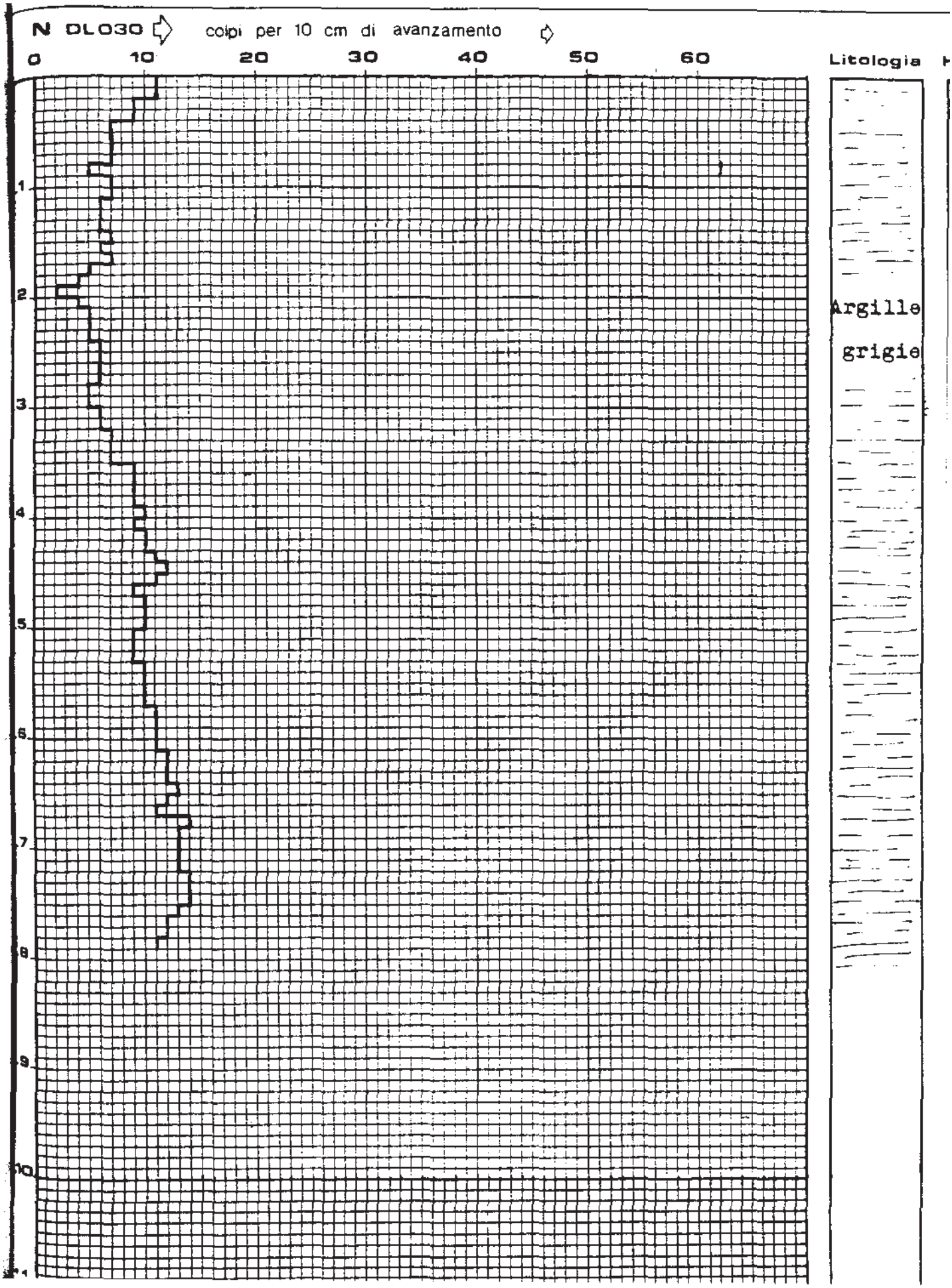
PROVA PENETROMETRICA DINAMICA

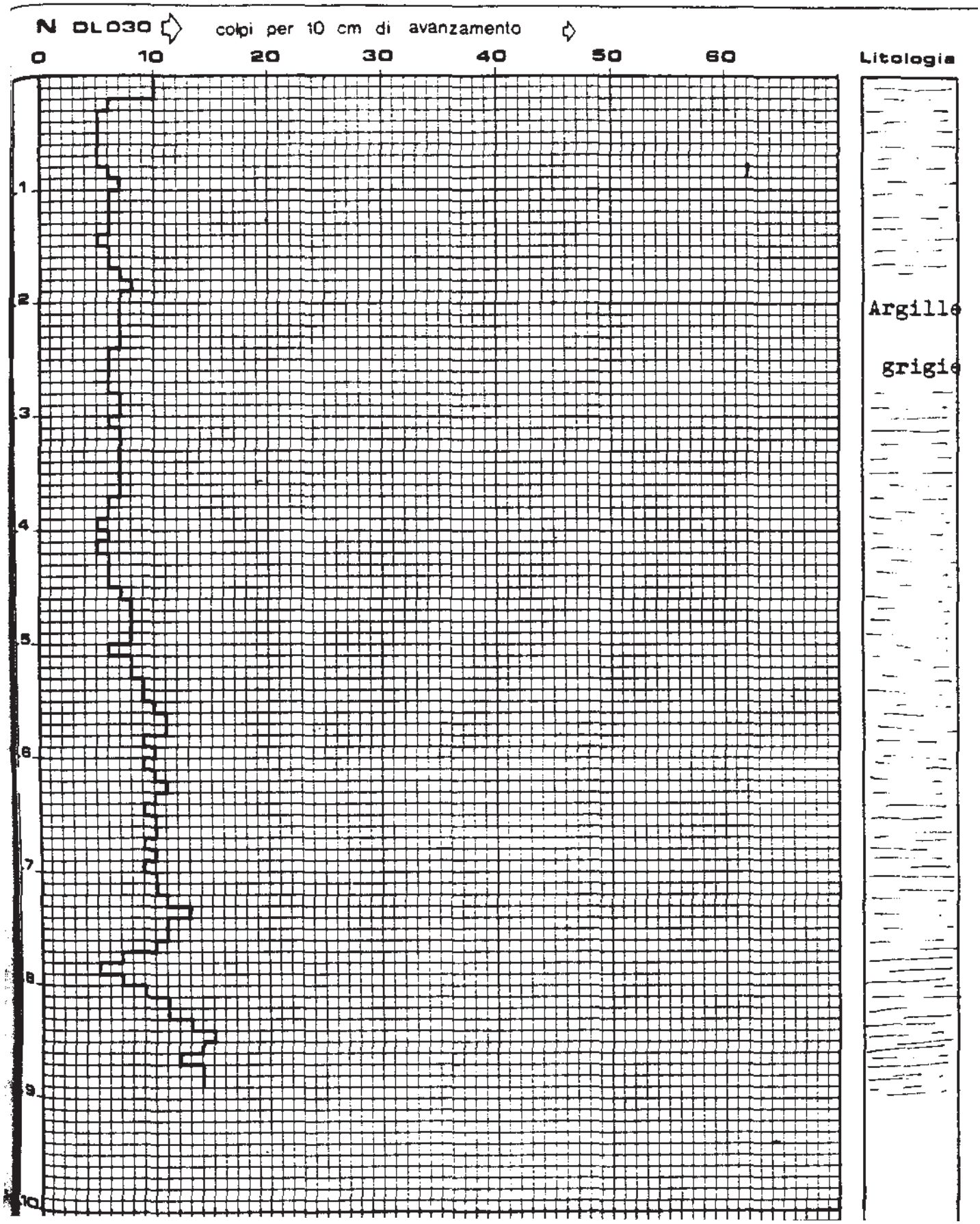
CERTIFICATO N.RO : 106-AA CANTIERE :COSTRUZIONE DI FABBRICATO PER CIVILE ABITAZIONE 17

PROF.	NC	RD.	PROF.	NC	RD.	PROF.	NC	RD	PROF.	NC	RD
0.00	3	30.65									
0.20	3	30.65									
0.40	8	81.73									
0.60	5	51.08									
0.80	4	40.87									
1.00	8	81.73									
1.20	13	122.40									
1.40	15	141.23									
1.60	12	112.98									
1.80	72	677.90									
2.00	86	809.71									
2.20	64	558.74									
2.40	41	357.94									
2.60	36	314.29									
2.80	38	331.75									
3.00	47	410.33									
3.20	39	317.39									
3.40	38	309.25									
3.60	61	496.44									
3.80	73	594.09									
4.00	91	740.58									

LEGGENDA : PROF. = PROFONDITA' DI INFISSIONE CM.
NC = NUMERO COLPI N.RO
RD = RESISTENZA DINAMICA dN/cmq




N DL030
colpi per 10 cm di avanzamento
0
10
20
30
40
50
60
Litologia
1
2
3
4
5
6
7
8
9
10
Argille
grigie


N DL030
colpi per 10 cm di avanzamento
0
10
20
30
40
50
60
Litologia
1
2
3
4
5
6
7
8
9
10
Argille
grigie

PROVA PENETROMETRICA STATICA

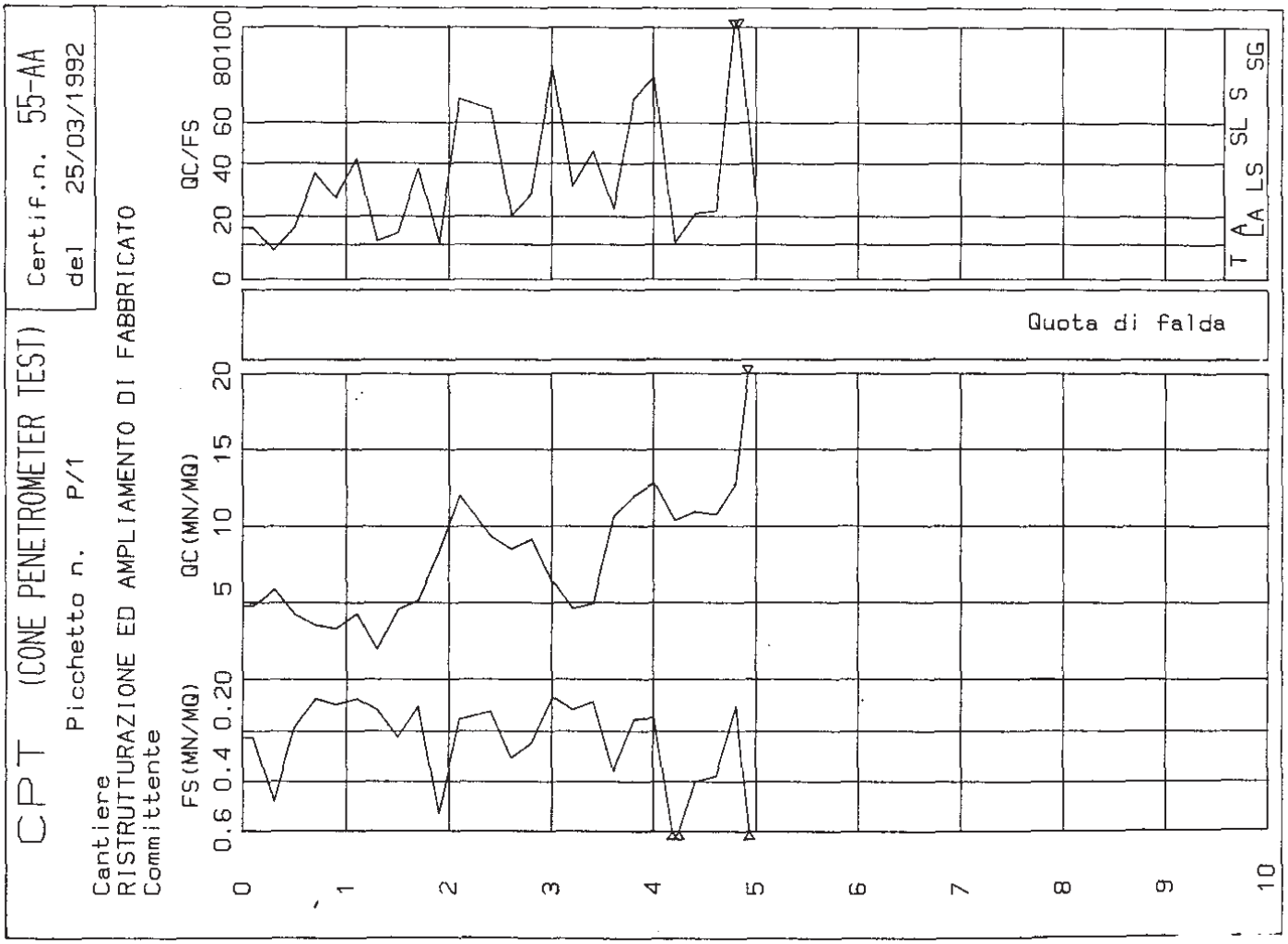
11

CERTIFICATO N.RO : 55-AA CANTIERE :RISTRUTTURAZIONE ED AMPLIAMENTO DI FABBRICATO

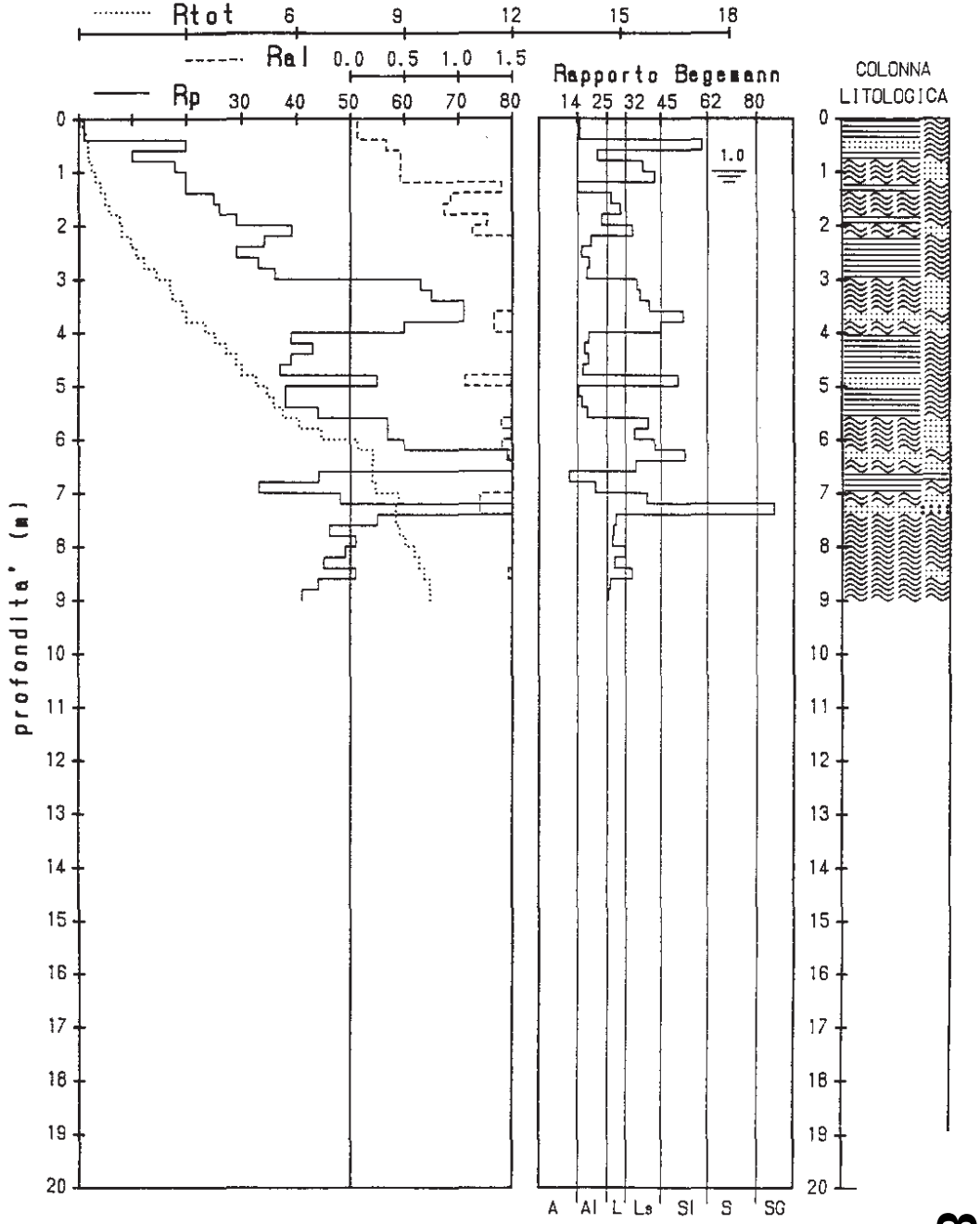
PROF.	QC	RL.	FS.	X	PROF.	QC	RL.	FS.	X	PROF.	QC	RL.	FS.	X
0.00	46	82	2.27	21.15										
0.20	46	82	2.27	21.15										
0.40	58	130	4.80	12.08										
0.60	42	71	1.93	21.76										
0.80	35	47	0.80	43.75										
1.00	53	46	1.00	53.00										
1.20	43	56	0.87	49.43										
1.40	20	38	1.20	16.67										
1.60	45	79	2.27	19.82										
1.80	51	68	1.13	45.13										
2.00	82	160	5.20	15.77										
2.20	118	142	1.60	73.75										
2.40	92	112	1.33	69.17										
2.60	84	131	3.13	26.84										
2.80	90	128	2.53	35.57										
3.00	63	74	0.73	86.30										
3.20	46	64	1.20	38.33										
3.40	49	63	0.93	52.69										
3.60	105	159	3.60	29.17										
3.80	118	142	1.60	73.75										
4.00	126	149	1.53	82.35										
4.20	102	199	6.47	15.77										
4.40	108	168	4.00	27.00										
4.60	106	162	3.73	28.42										
4.80	126	143	1.13	111.50										
5.00	250	380	8.67	28.84										

LEGENDA : PROF. = PROFONDITA DI INFISSIONE CM. FS = RESISTENZA SPECIFICA AL MANICOTTO dN/cmq
QC = RESISTENZA SPECIFICA ALLA PUNTA dN/cmq X = RAPPORTO QC/FS
RL = RESISTENZA LATERALE TOTALE dN/cmq

LITOLOGIA : T:TORBE A:ARGILLA LA:LIMI ARGILLOSI LS:LIMI SABBIOSI SL:SABBIE LIMOSE
S:SABBIE SG:SABBIE E GHIAIA AG:TERRENO AGRICOLO

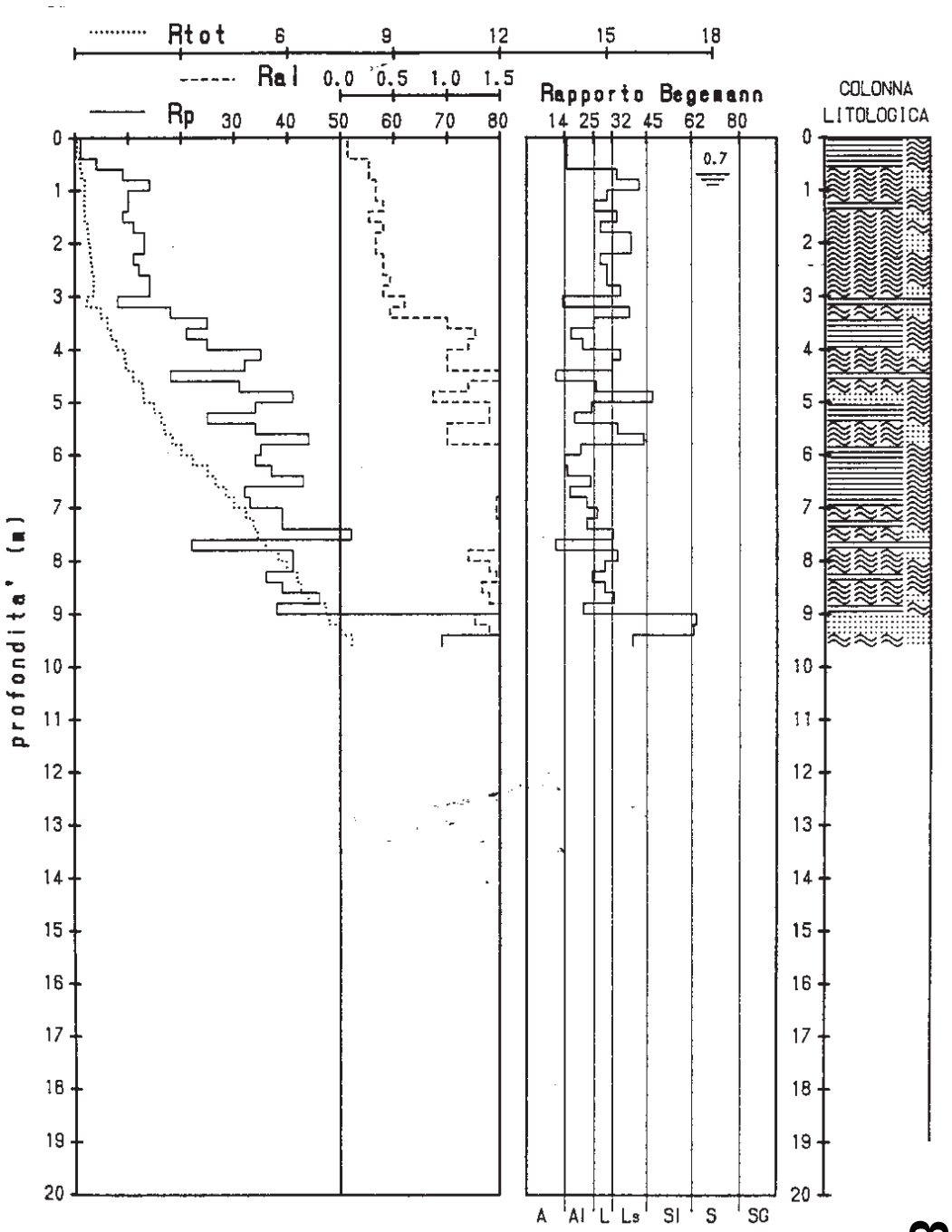


Prof	Rpt	Rat	Rtot	Rp	Ral	Rp/Ral	Fr	Ø	Dr	Cu	mv
0.2	10	20	90	1	0.07	15	6.67	.	.	0.04	200.0
0.4	10	20	190	1	0.07	15	6.67	.	.	0.04	200.0
0.6	200	250	260	20	0.33	60	1.67	25	63	.	25.0
0.8	100	170	270	10	0.47	21	4.67	.	.	0.50	20.0
1.0	180	250	360	18	0.47	39	2.59	23	48	.	18.5
1.2	200	270	480	20	0.47	43	2.33	24	49	.	16.7
1.4	200	410	630	20	1.40	14	7.00	.	.	1.00	10.0
1.6	250	390	750	25	0.93	27	3.73	.	.	1.25	10.0
1.8	260	390	860	26	0.87	30	3.33	.	.	1.30	9.6
2.0	290	480	1150	29	1.27	23	4.37	.	.	1.45	6.9
2.2	390	560	1210	39	1.13	34	2.91	27	62	.	8.5
2.4	340	610	1440	34	1.80	19	5.29	.	.	1.70	5.9
2.6	290	570	1590	29	1.87	16	6.44	.	.	1.45	6.9
2.8	330	600	1820	33	1.80	18	5.45	.	.	1.65	6.1
3.0	360	670	2160	36	2.07	17	5.74	.	.	1.80	5.6
3.2	630	890	2540	63	1.73	36	2.75	30	71	.	5.3
3.4	650	910	2620	65	1.73	37	2.67	30	71	.	5.1
3.6	710	970	2890	71	1.73	41	2.44	31	73	.	4.7
3.8	710	910	3000	71	1.33	53	1.88	34	72	.	7.0
4.0	600	800	3520	60	1.33	45	2.22	30	65	.	8.3
4.2	390	710	3780	39	2.13	18	5.47	.	.	1.95	5.1
4.4	430	810	4090	43	2.53	17	5.89	.	.	2.15	4.7
4.6	390	710	4350	39	2.13	18	5.47	.	.	1.95	5.1
4.8	370	710	4510	37	2.27	16	6.13	.	.	1.85	5.4
5.0	550	710	4900	55	1.07	52	1.94	31	58	.	9.1
5.2	380	770	5190	38	2.60	15	6.84	.	.	1.90	5.3
5.4	380	740	5370	38	2.40	16	6.32	.	.	1.90	5.3
5.6	440	810	5630	44	2.47	18	5.61	.	.	2.20	4.5
5.8	570	780	6080	57	1.40	41	2.46	29	56	.	5.8
6.0	570	810	6690	57	1.60	36	2.81	29	55	.	5.8
6.2	600	810	7710	60	1.40	43	2.33	30	56	.	5.6
6.4	790	1010	8120	79	1.47	54	1.86	35	65	.	6.3
6.6	910	1290	8110	91	2.53	36	2.78	34	70	.	3.7
6.8	440	1040	8100	44	4.80	11	9.09	.	.	2.20	5.7
7.0	330	570	8200	33	1.60	21	4.85	.	.	1.65	6.1
7.2	480	660	8840	48	1.20	40	2.50	28	45	.	6.9
7.4	1040	1220	8760	104	1.20	87	1.15	43	72	.	6.4
7.6	550	840	8770	55	1.93	28	3.52	.	.	2.75	4.5
7.8	460	710	8870	46	1.67	28	3.62	.	.	2.30	5.4
8.0	510	790	9030	51	1.87	27	3.66	.	.	2.55	4.9
8.2	490	720	9290	49	1.53	32	3.13	.	.	2.45	6.8
8.4	450	690	9410	45	1.60	28	3.56	.	.	2.25	5.6
8.6	510	730	9560	51	1.47	35	2.88	29	44	.	6.5
8.8	440	690	9710	44	1.67	26	3.79	.	.	2.20	5.7
9.0	410	650	9720	41	1.60	26	3.90	.	.	2.05	6.1



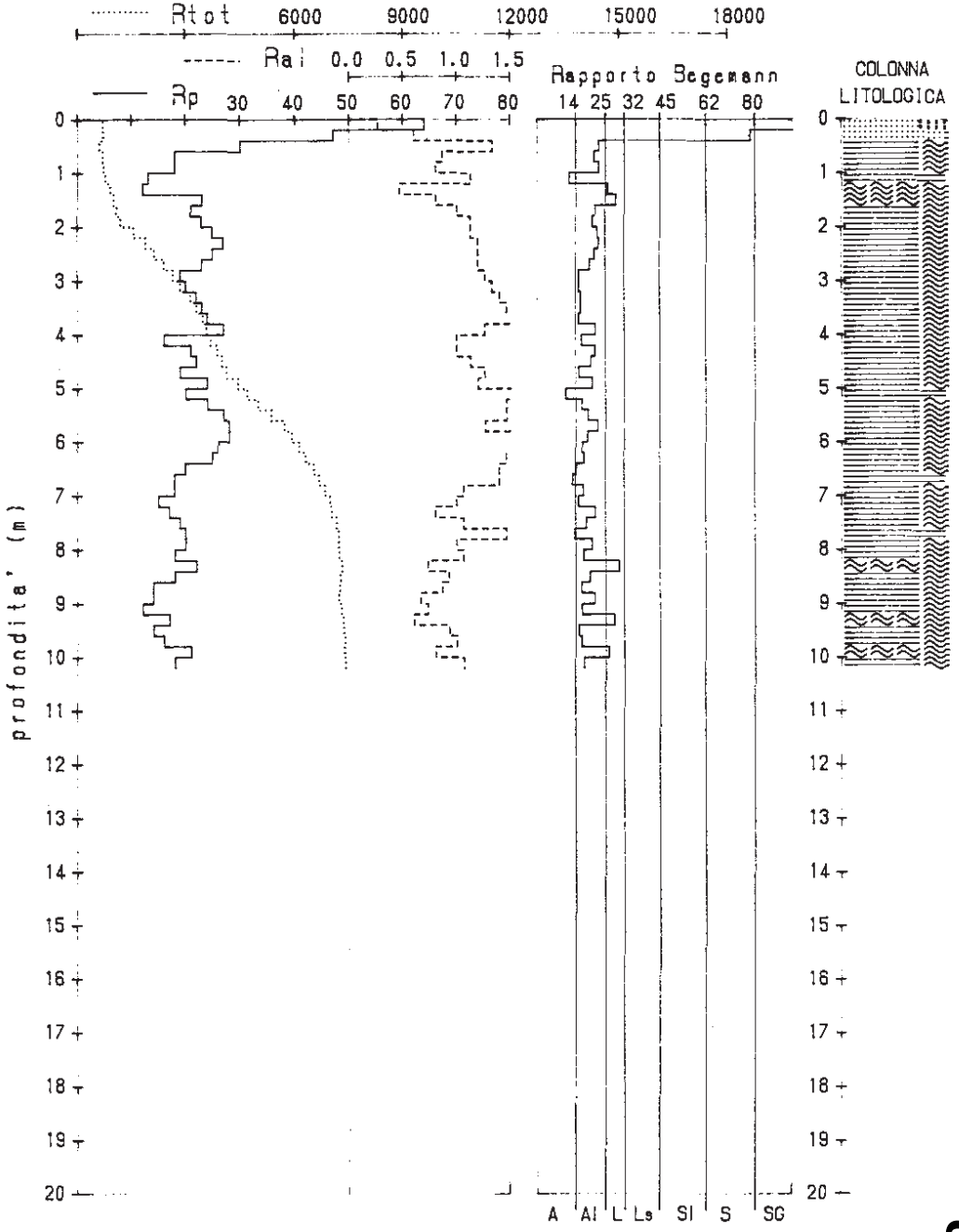
800

Prof	Rpt	Rat	Rtot	Rp	Ral	Rp/Ral	Fr	Ø	Dr	Cu	mv
0.2	10	20	50	1	0.07	15	6.67	.	.	0.04	200.0
0.4	10	20	30	1	0.07	15	6.67	.	.	0.04	200.0
0.6	40	80	150	4	0.27	15	6.67	.	.	0.20	50.0
0.8	90	130	180	9	0.27	34	2.96	20	30	.	37.0
1.0	140	190	280	14	0.33	42	2.38	23	42	.	23.8
1.2	100	150	260	10	0.33	30	3.33	.	.	0.50	25.0
1.4	100	160	260	10	0.40	25	4.00	.	.	0.50	25.0
1.6	90	130	270	9	0.27	34	2.96	20	18	.	37.0
1.8	110	170	350	11	0.40	27	3.64	.	.	0.55	22.7
2.0	130	160	370	13	0.33	39	2.56	22	27	.	25.6
2.2	130	180	430	13	0.33	39	2.56	22	25	.	25.6
2.4	110	170	460	11	0.40	27	3.64	.	.	0.55	22.7
2.6	120	180	480	12	0.40	30	3.33	.	.	0.60	20.0
2.8	140	210	530	14	0.47	30	3.33	.	.	0.70	17.9
3.0	140	200	510	14	0.40	35	2.86	23	21	.	23.8
3.2	80	170	330	8	0.60	13	7.50	.	.	0.40	31.3
3.4	180	250	730	18	0.47	39	2.59	23	27	.	18.5
3.6	250	400	920	25	1.00	25	4.00	.	.	1.25	10.0
3.8	210	400	1010	21	1.27	17	6.03	.	.	1.05	9.5
4.0	250	430	1160	25	1.20	21	4.80	.	.	1.25	8.0
4.2	350	500	1400	35	1.00	35	2.86	27	46	.	9.5
4.4	320	470	1430	32	1.00	32	3.13	.	.	1.60	10.4
4.6	180	430	1620	18	1.67	11	9.26	.	.	0.90	13.9
4.8	310	490	1890	31	1.20	26	3.87	.	.	1.55	6.1
5.0	410	540	1920	41	0.87	47	2.11	29	48	.	12.2
5.2	340	550	2230	34	1.40	24	4.12	.	.	1.70	5.9
5.4	250	460	2440	25	1.40	18	5.60	.	.	1.25	8.0
5.6	340	490	2530	34	1.00	34	2.94	26	39	.	9.8
5.8	440	590	2750	44	1.00	44	2.27	28	47	.	7.6
6.0	350	610	3000	35	1.73	20	4.95	.	.	1.75	5.7
6.2	340	700	3330	34	2.40	14	7.06	.	.	1.70	5.9
6.4	370	740	3750	37	2.47	15	6.67	.	.	1.85	5.4
6.6	430	700	3980	43	1.80	24	4.19	.	.	2.15	4.7
6.8	320	620	4280	32	2.00	16	6.25	.	.	1.60	6.3
7.0	330	550	4510	33	1.47	22	4.44	.	.	1.65	6.1
7.2	390	610	4840	39	1.47	27	3.76	.	.	1.95	6.4
7.4	390	650	5040	39	1.73	22	4.44	.	.	1.95	5.1
7.6	520	760	5160	52	1.60	32	3.08	.	.	2.60	6.4
7.8	220	530	5390	22	2.07	11	9.39	.	.	1.10	11.4
8.0	410	590	5750	41	1.20	34	2.93	27	38	.	6.1
8.2	410	620	5980	41	1.40	29	3.41	.	.	2.05	6.1
8.4	360	580	6270	36	1.47	25	4.07	.	.	1.80	6.9
8.6	390	590	6380	39	1.33	29	3.42	.	.	1.95	6.4
8.8	460	670	6590	46	1.40	33	3.04	28	40	.	7.2
9.0	380	650	7090	38	1.80	21	4.74	.	.	1.90	5.3
9.2	810	1000	7180	81	1.27	64	1.56	39	59	.	6.2
9.4	880	1090	7510	88	1.40	63	1.59	41	61	.	5.7
9.6	690	950	7820	69	1.73	40	2.51	31	52	.	4.8



Quota relativa :

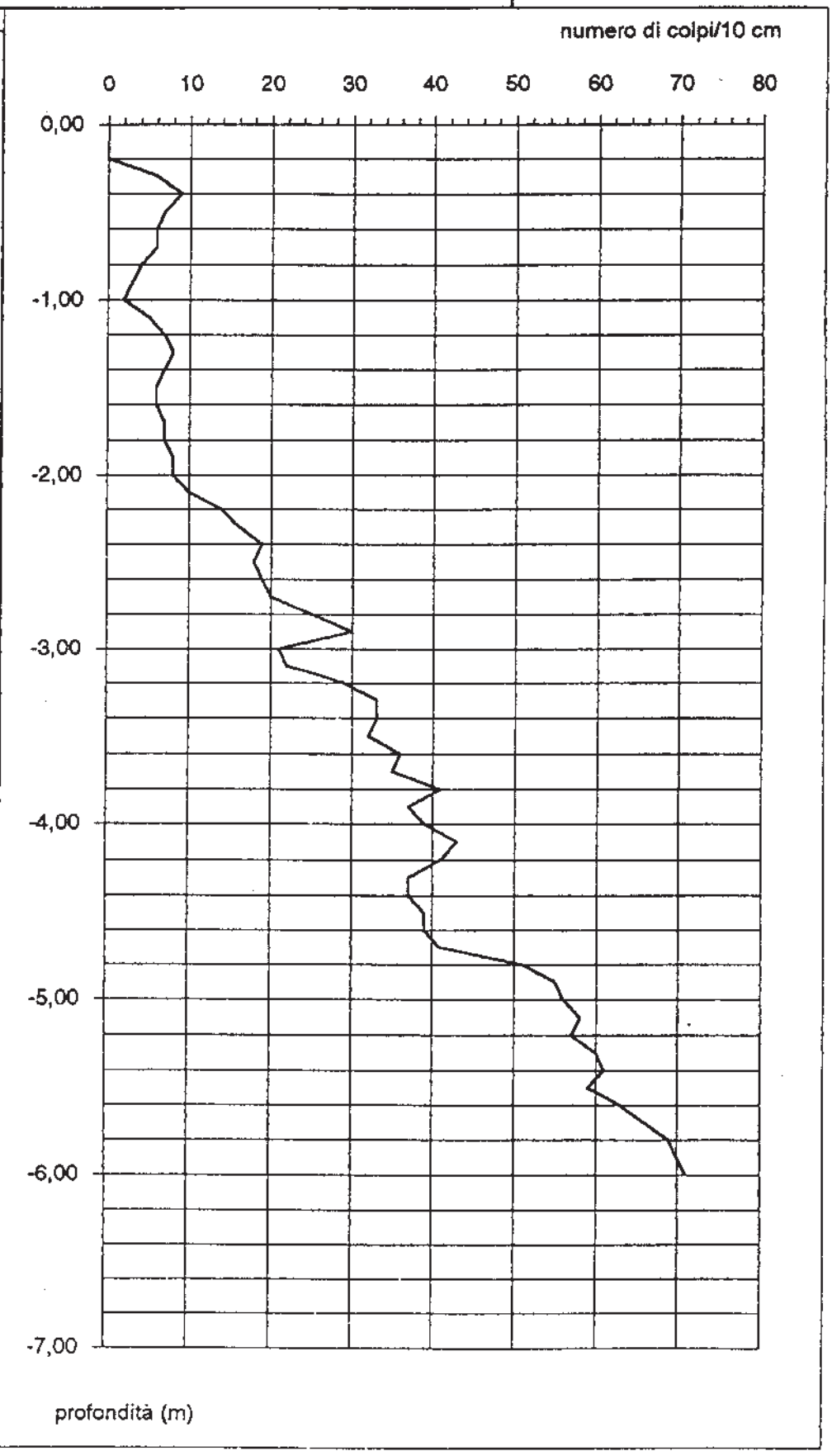
Prof	Rpt	Rat	Rtot	Rp	Ral	Rp/Ral	Fr	Ø	Dr	Cu	mv
0.2	640	680	700	64	0.27	240	0.42	37	99	.	10.4
0.4	470	560	710	47	0.60	78	1.28	34	99	.	10.6
0.6	300	500	610	30	1.33	22	4.44	.	.	1.50	6.7
0.8	180	310	690	18	0.87	21	4.81	.	.	0.90	11.1
1.0	180	300	730	18	0.80	22	4.44	.	.	0.90	11.1
1.2	130	300	770	13	1.13	11	8.72	.	.	0.65	19.2
1.4	120	190	910	12	0.47	26	3.89	.	.	0.60	20.8
1.6	230	350	1000	23	0.80	29	3.46	.	.	1.15	10.9
1.8	210	360	1090	21	1.00	21	4.76	.	.	1.05	9.5
2.0	230	400	1210	23	1.13	20	4.93	.	.	1.15	8.7
2.2	250	420	1560	25	1.13	22	4.53	.	.	1.25	8.0
2.4	270	450	1890	27	1.20	22	4.44	.	.	1.35	7.4
2.6	250	430	2130	25	1.20	21	4.80	.	.	1.25	8.0
2.8	230	410	2400	23	1.20	19	5.22	.	.	1.15	8.7
3.0	190	380	2660	19	1.27	15	6.67	.	.	0.95	10.5
3.2	200	400	2850	20	1.33	15	6.67	.	.	1.00	10.0
3.4	220	430	3140	22	1.40	16	6.36	.	.	1.10	9.1
3.6	230	450	3300	23	1.47	16	6.38	.	.	1.15	8.7
3.8	240	480	3470	24	1.60	15	6.67	.	.	1.20	8.3
4.0	270	460	3570	27	1.27	21	4.69	.	.	1.35	7.4
4.2	160	310	3690	16	1.00	16	6.25	.	.	0.80	12.5
4.4	210	360	3870	21	1.00	21	4.76	.	.	1.05	9.5
4.6	220	390	4010	22	1.13	19	5.15	.	.	1.10	9.1
4.8	190	380	4130	19	1.27	15	6.67	.	.	0.95	10.5
5.0	240	420	4440	24	1.20	20	5.00	.	.	1.20	8.3
5.2	200	490	4700	20	1.93	10	9.67	.	.	1.00	12.5
5.4	240	460	4990	24	1.47	16	6.11	.	.	1.20	8.3
5.6	270	490	5340	27	1.47	18	5.43	.	.	1.35	7.4
5.8	280	470	5700	28	1.27	22	4.52	.	.	1.40	7.1
6.0	280	510	5900	28	1.53	18	5.48	.	.	1.40	7.1
6.2	260	500	6130	26	1.60	16	6.15	.	.	1.30	7.7
6.4	250	470	6300	25	1.47	17	5.87	.	.	1.25	8.0
6.6	200	410	6530	20	1.40	14	7.00	.	.	1.00	10.0
6.8	180	390	6670	18	1.40	13	7.78	.	.	0.90	13.9
7.0	180	340	6830	18	1.07	17	5.93	.	.	0.90	11.1
7.2	150	300	6960	15	1.00	15	6.67	.	.	0.75	13.3
7.4	170	290	7010	17	0.80	21	4.71	.	.	0.85	11.8
7.6	190	350	7140	19	1.07	18	5.61	.	.	0.95	10.5
7.8	200	420	7200	20	1.47	14	7.33	.	.	1.00	10.0
8.0	200	350	7210	20	1.00	20	5.00	.	.	1.00	10.0
8.2	180	340	7220	18	1.07	17	5.93	.	.	0.90	11.1
8.4	220	330	7290	22	0.73	30	3.33	.	.	1.10	11.4
8.6	180	320	7250	18	0.93	19	5.19	.	.	0.90	11.1
8.8	140	270	7240	14	0.87	16	6.19	.	.	0.70	14.3
9.0	140	240	7210	14	0.67	21	4.76	.	.	0.70	14.3
9.2	120	230	7280	12	0.73	16	6.11	.	.	0.60	16.7
9.4	170	260	7320	17	0.60	28	3.53	.	.	0.85	14.7
9.6	140	280	7340	14	0.93	15	6.67	.	.	0.70	14.3
9.8	160	310	7370	16	1.00	16	6.25	.	.	0.80	12.5
10.0	210	330	7360	21	0.80	26	3.81	.	.	1.05	11.9



Profondità (m)	Litotipo
0,0 - 0,4	Terreno agricolo rimaneggiato e alterato
0,4 - 1,2	Argille e argille limose marrone ocra di consistenza da scarsa a media
1,2 - 3,5	Argille e argille limose marrone chiaro con smescolature color ocra, da mediamente a molto consistenti.

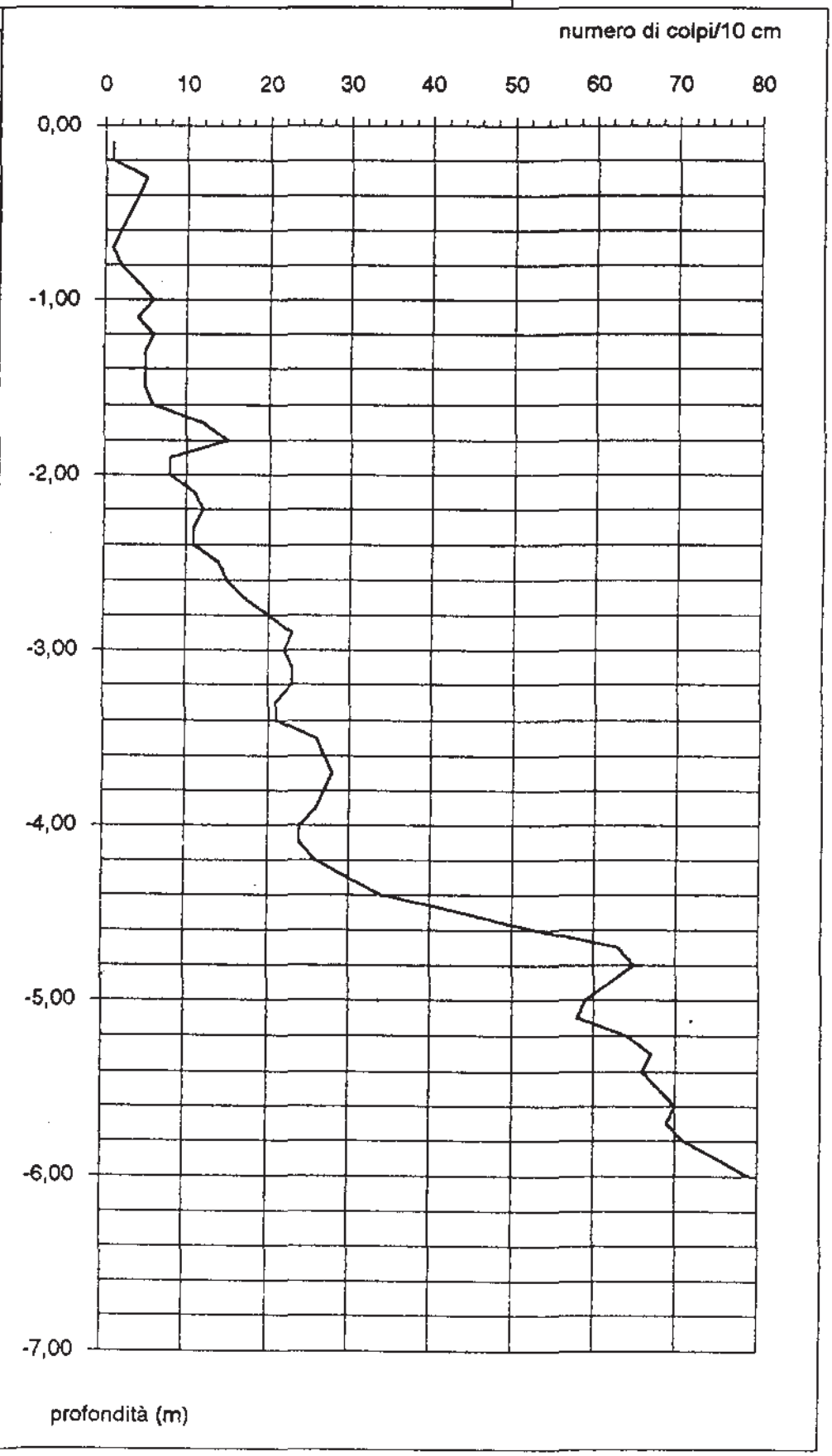
Località: Perignano, Lari, via
Comm.te:
Prova n°: 1

prof. (m)	N° colpi	rd
0,10	0	0,00
0,20	0	0,00
0,30	6	21,43
0,40	9	32,14
0,50	7	25,00
0,60	6	21,43
0,70	6	21,43
0,80	4	14,29
0,90	3	10,71
1,00	2	6,82
1,10	5	17,05
1,20	7	23,86
1,30	8	27,27
1,40	7	23,86
1,50	6	20,45
1,60	6	20,45
1,70	7	23,86
1,80	7	23,86
1,90	8	27,27
2,00	8	26,09
2,10	10	32,61
2,20	14	45,65
2,30	16	52,17
2,40	19	61,96
2,50	18	58,70
2,60	19	61,96
2,70	20	65,22
2,80	25	81,52
2,90	30	97,83
3,00	21	65,63
3,10	22	68,75
3,20	29	90,63
3,30	33	103,13
3,40	33	103,13
3,50	32	100,00
3,60	36	112,50
3,70	35	109,38
3,80	41	128,13
3,90	37	115,63
4,00	39	121,88
4,10	43	134,38
4,20	41	128,13
4,30	37	115,63
4,40	37	115,63
4,50	39	121,88
4,60	39	121,88
4,70	41	128,13
4,80	51	159,38
4,90	55	171,88
5,00	56	175,00
5,10	58	181,25
5,20	57	178,13
5,30	60	187,50
5,40	61	190,63
5,50	59	184,38
5,60	63	196,88
5,70	66	206,25
5,80	69	215,63
5,90	70	218,75
6,00	71	221,88



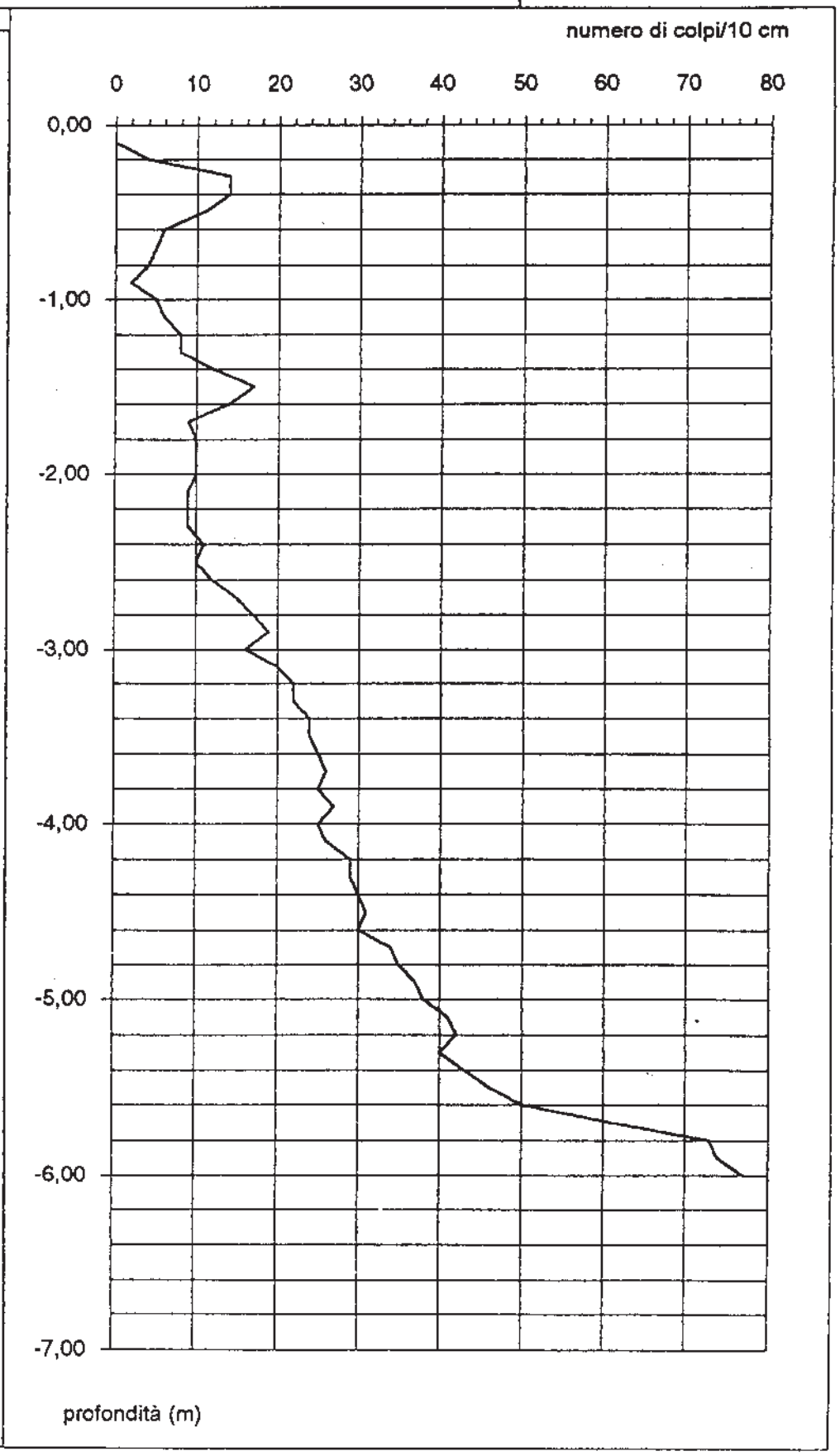
Località: Perignano, Lari, via
Comm.te:
Prova n°: 2

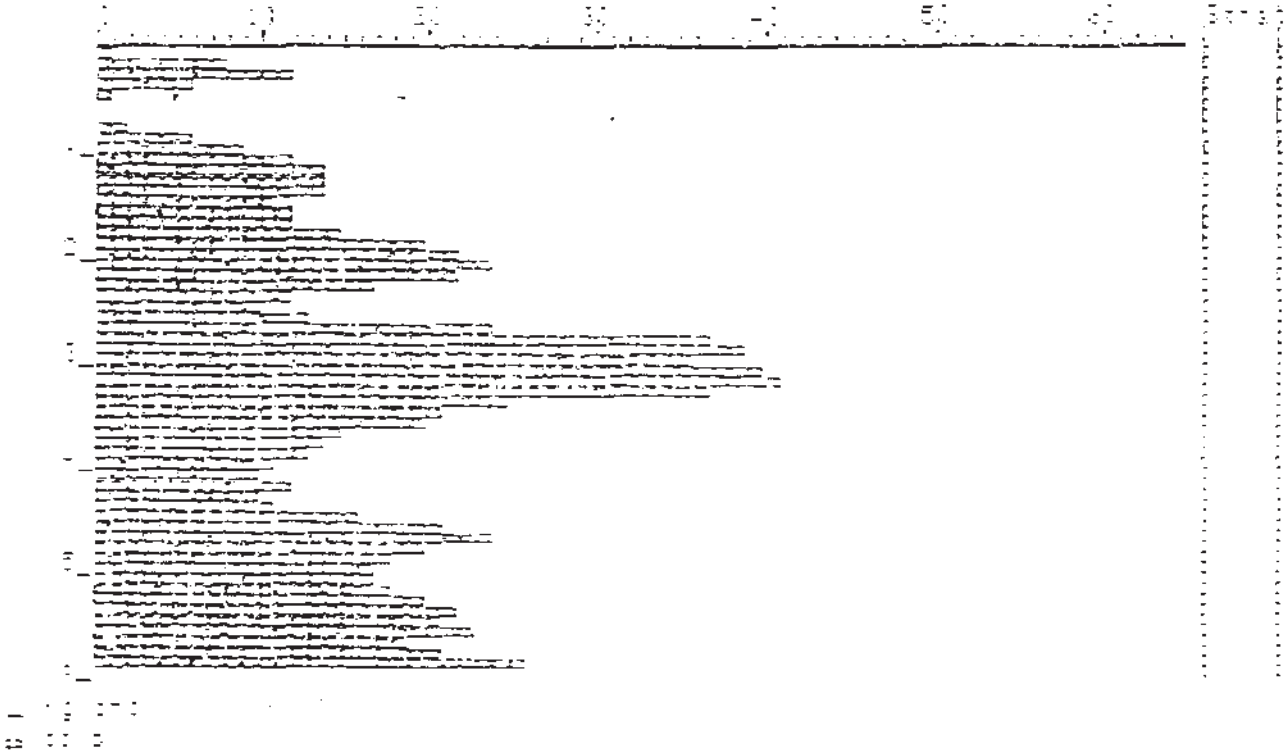
prof. (m)	N° colpi	rd
0,10	1	3,57
0,20	1	3,57
0,30	5	17,86
0,40	4	14,29
0,50	3	10,71
0,60	2	7,14
0,70	1	3,57
0,80	2	7,14
0,90	4	14,29
1,00	6	20,45
1,10	4	13,64
1,20	6	20,45
1,30	5	17,05
1,40	5	17,05
1,50	5	17,05
1,60	6	20,45
1,70	12	40,91
1,80	15	51,14
1,90	8	27,27
2,00	8	26,09
2,10	11	35,87
2,20	12	39,13
2,30	11	35,87
2,40	11	35,87
2,50	14	45,65
2,60	15	48,91
2,70	17	55,43
2,80	20	65,22
2,90	23	75,00
3,00	22	68,75
3,10	23	71,88
3,20	23	71,88
3,30	21	65,63
3,40	21	65,63
3,50	26	81,25
3,60	27	84,38
3,70	28	87,50
3,80	27	84,38
3,90	26	81,25
4,00	24	75,00
4,10	24	75,00
4,20	26	81,25
4,30	30	93,75
4,40	34	106,25
4,50	44	137,50
4,60	53	165,63
4,70	63	196,88
4,80	65	203,13
4,90	62	193,75
5,00	59	184,38
5,10	58	181,25
5,20	64	200,00
5,30	67	209,38
5,40	66	206,25
5,50	68	212,50
5,60	70	218,75
5,70	69	215,63
5,80	71	221,88
5,90	75	234,38
6,00	79	246,88

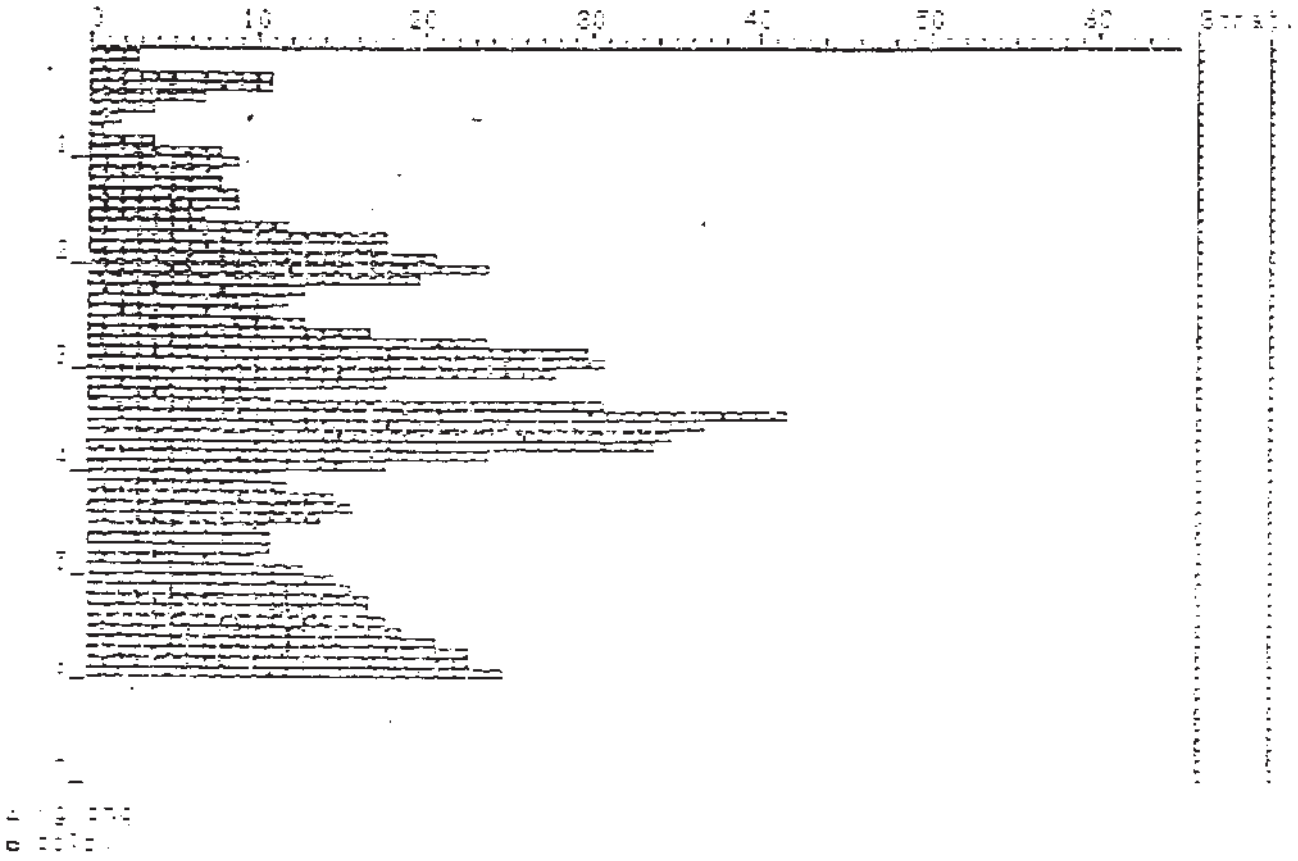


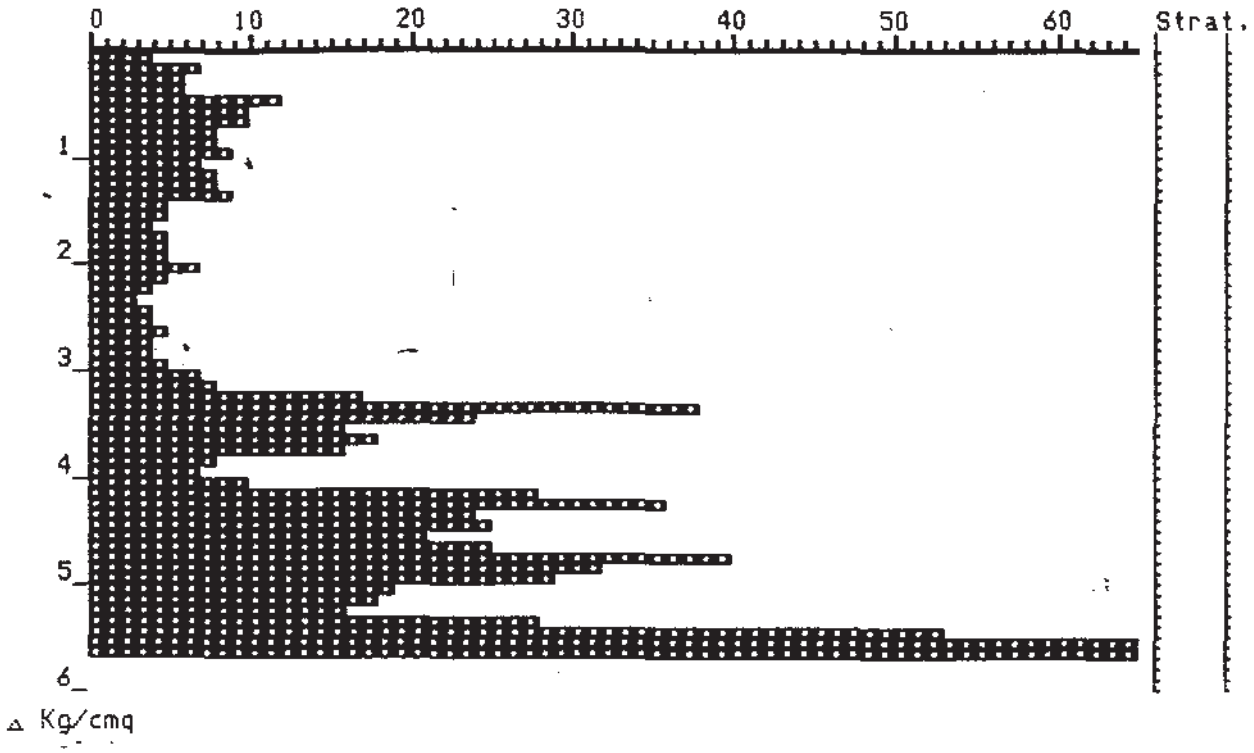
Località: Perignano, Lari, via
Comm.te:
Prova n°: 3

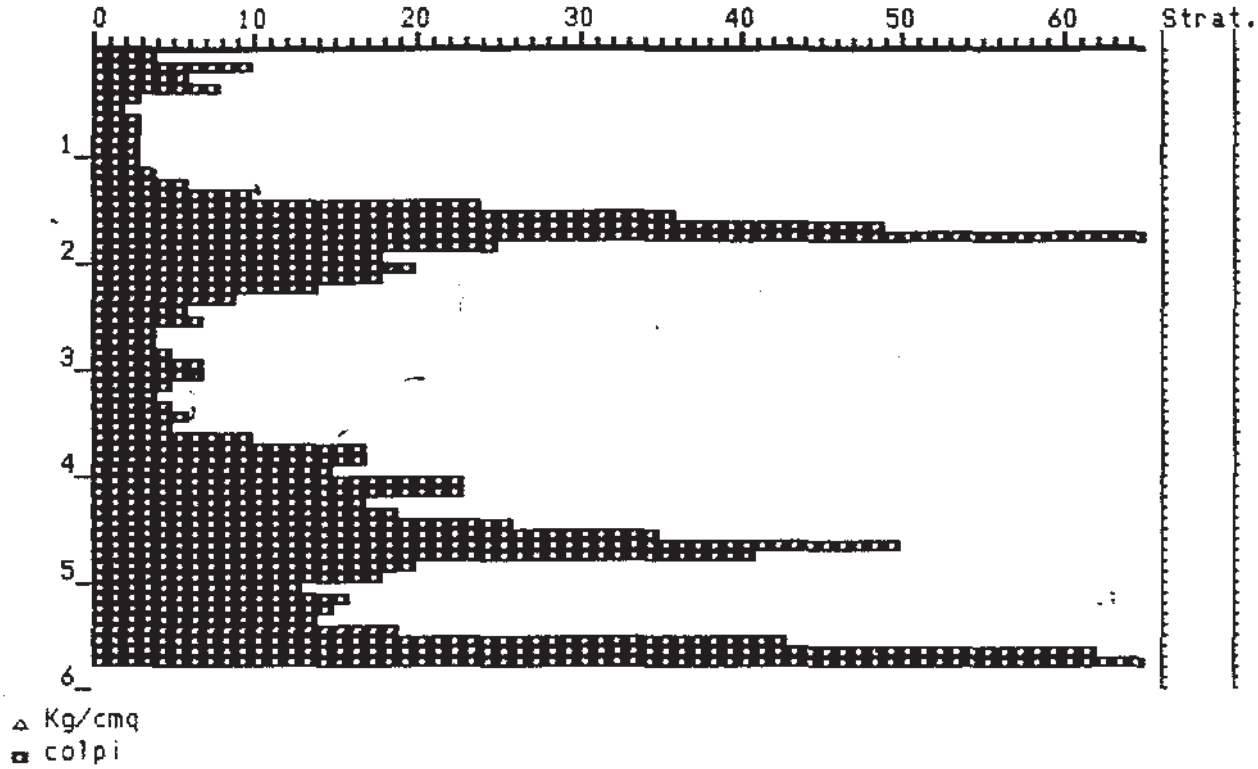
prof. (m)	N° colpi	rd
0,10	0	0,00
0,20	4	14,29
0,30	14	50,00
0,40	14	50,00
0,50	11	39,29
0,60	6	21,43
0,70	5	17,86
0,80	4	14,29
0,90	2	7,14
1,00	5	17,05
1,10	6	20,45
1,20	8	27,27
1,30	8	27,27
1,40	12	40,91
1,50	17	57,95
1,60	14	47,73
1,70	9	30,68
1,80	10	34,09
1,90	10	34,09
2,00	10	32,61
2,10	9	29,35
2,20	9	29,35
2,30	9	29,35
2,40	11	35,87
2,50	10	32,61
2,60	12	39,13
2,70	15	48,91
2,80	17	55,43
2,90	19	61,96
3,00	16	50,00
3,10	20	62,50
3,20	22	68,75
3,30	22	68,75
3,40	24	75,00
3,50	24	75,00
3,60	25	78,13
3,70	26	81,25
3,80	25	78,13
3,90	27	84,38
4,00	25	78,13
4,10	26	81,25
4,20	29	90,63
4,30	29	90,63
4,40	30	93,75
4,50	31	96,88
4,60	30	93,75
4,70	34	106,25
4,80	35	109,38
4,90	37	115,63
5,00	38	118,75
5,10	41	128,13
5,20	42	131,25
5,30	40	125,00
5,40	43	134,38
5,50	46	143,75
5,60	50	156,25
5,70	61	190,63
5,80	73	228,13
5,90	74	231,25
6,00	77	240,63








0
10
20
30
40
50
60
Strat.
1
2
3
4
5
6
Kg/cmq


0
10
20
30
40
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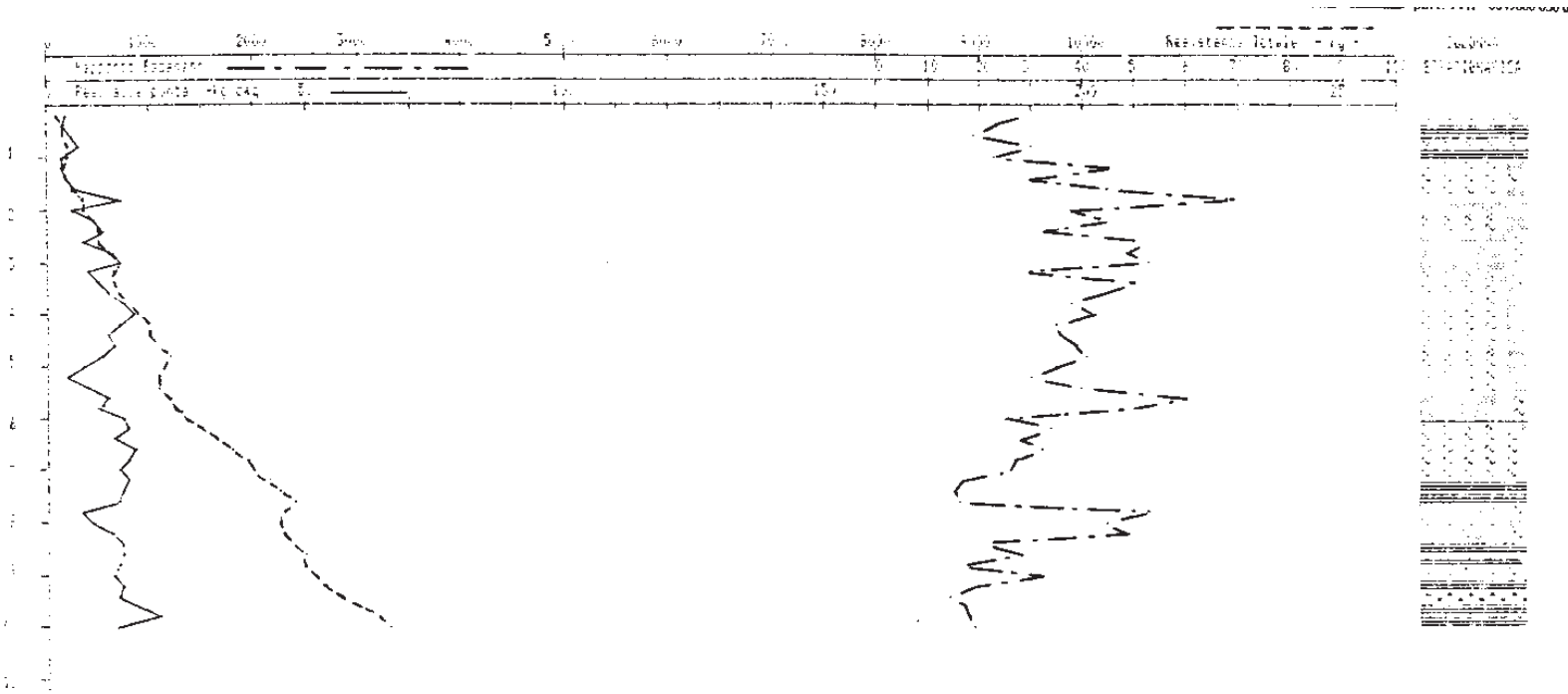
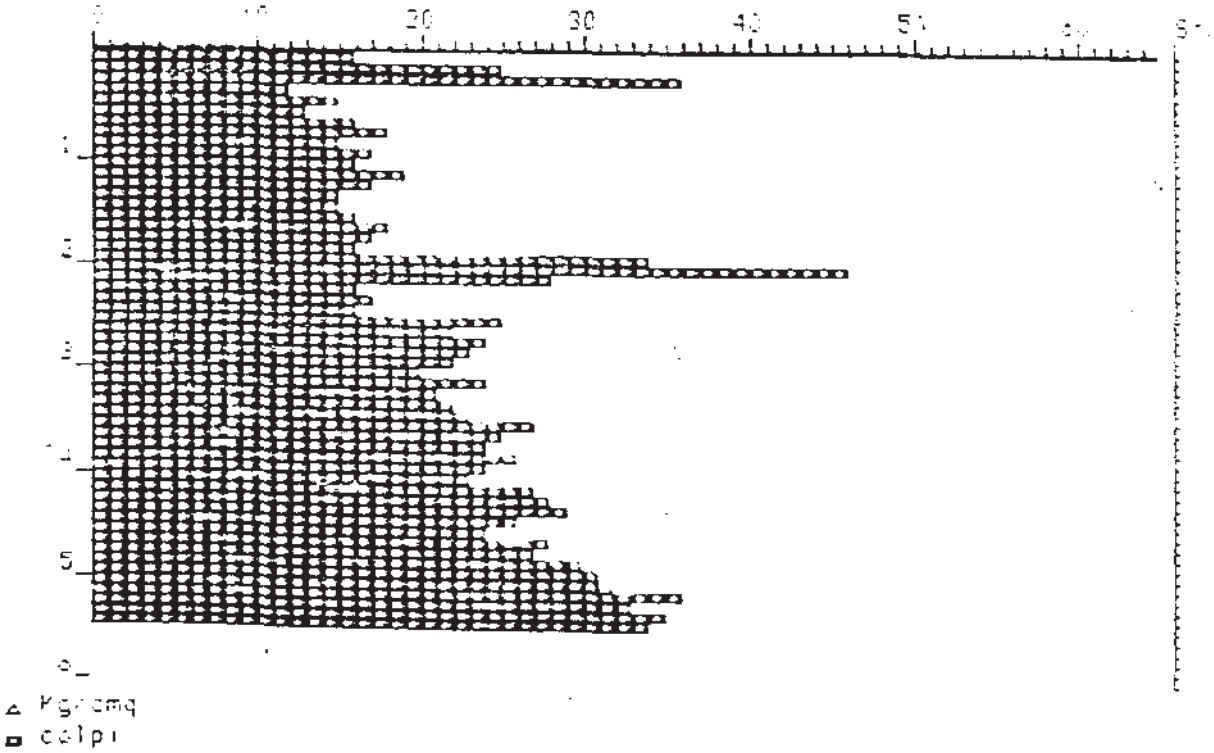
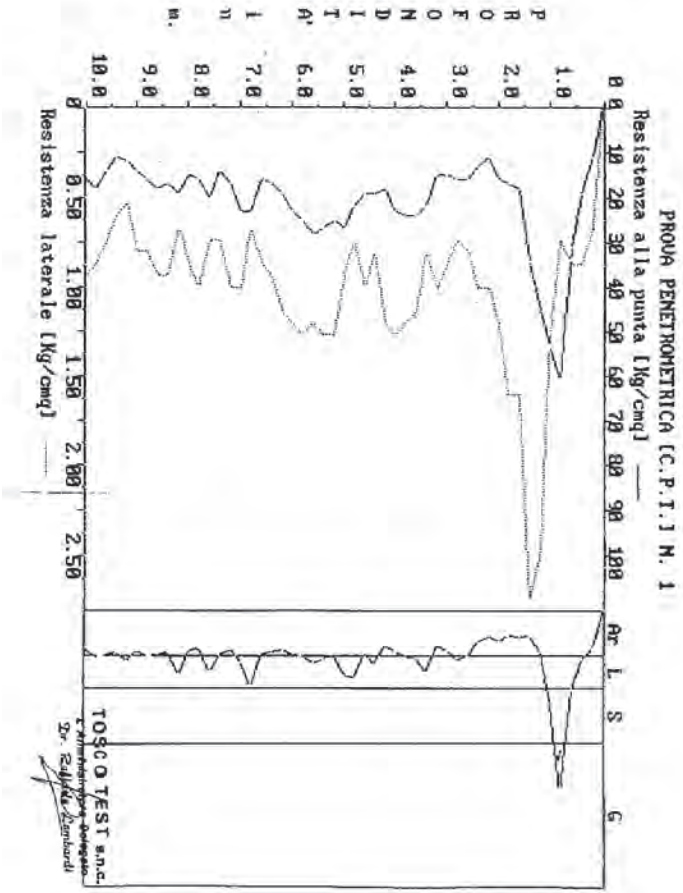
60
Strat.
1
2
3
4
5
6
Kg/cmq
colpi



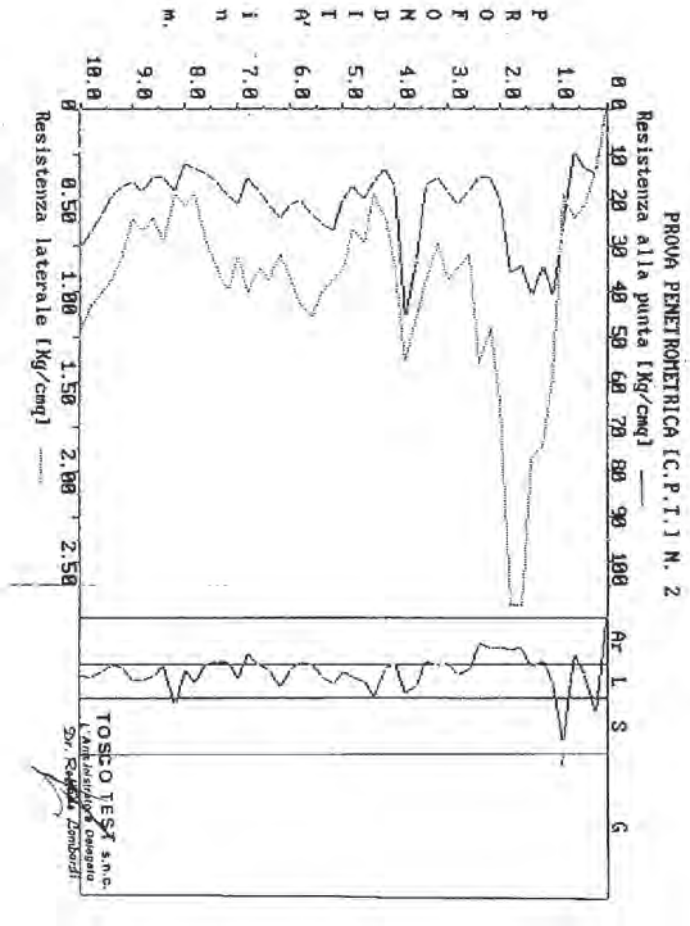

20
30
40
5
Kg/cmq
colpi



Valori di resistenza misurati

PROFONDITA' IN M.	RESISTENZA PUNTA [Kg/cmq]	RESISTENZA LATER. [Kg/cmq]	Rp/Rl
5.60	28	1.20	23
5.80	25	1.27	20
6.00	23	1.20	19
6.20	19	1.13	17
6.40	17	0.93	18
6.60	16	0.87	18
6.80	23	0.67	35
7.00	23	1.00	23
7.20	17	1.00	17
7.40	14	0.73	19
7.60	20	0.73	27
7.80	16	1.00	16
8.00	15	0.87	17
8.20	19	0.67	29
8.40	17	0.93	18
8.60	18	0.93	19
8.80	16	0.80	20
9.00	14	0.80	18
9.20	12	0.53	23
9.40	11	0.60	18
9.60	14	0.73	19
9.80	18	0.87	21
10.00	16	0.93	17

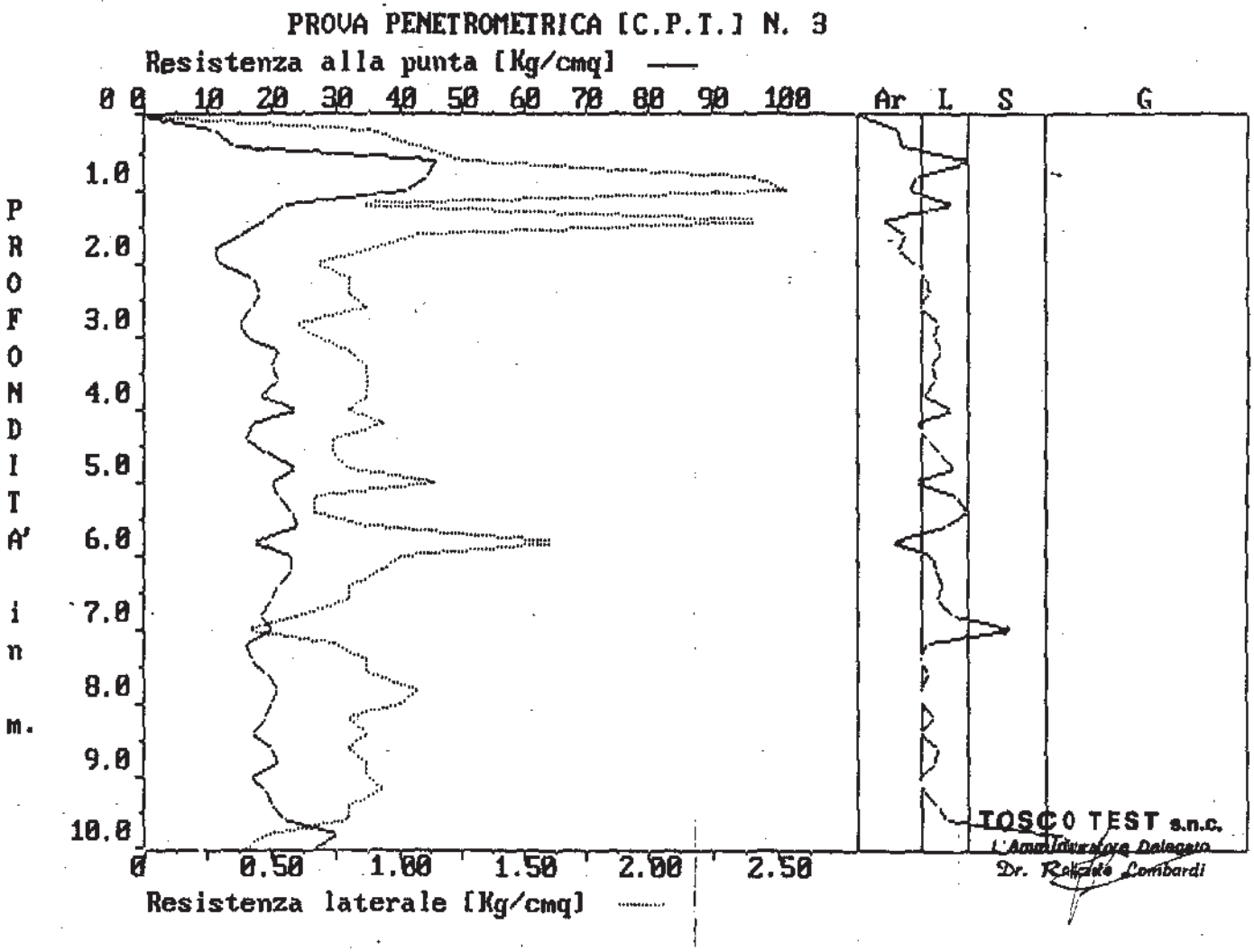
PROFONDITA' IN M.	RESISTENZA PUNTA [Kg/cmq]	RESISTENZA LATER. [Kg/cmq]	Rp/Rl
0.20	11	0.67	17
0.40	19	0.87	22
0.60	31	0.87	36
0.80	61	0.73	83
1.00	53	1.27	42
1.20	45	2.47	18
1.40	34	3.20	11
1.60	18	1.60	11
1.80	17	1.60	11
2.00	16	1.20	13
2.20	11	1.00	11
2.40	13	1.00	13
2.60	16	0.80	20
2.80	16	0.73	22
3.00	15	0.87	17
3.20	15	1.00	15
3.40	22	0.80	28
3.60	24	1.13	21
3.80	24	1.20	20
4.00	23	1.27	18
4.20	18	1.20	15
4.40	19	0.80	24
4.60	19	1.00	19
4.80	22	0.73	30
5.00	27	0.93	29
5.20	25	1.27	20
5.40	27	1.27	21

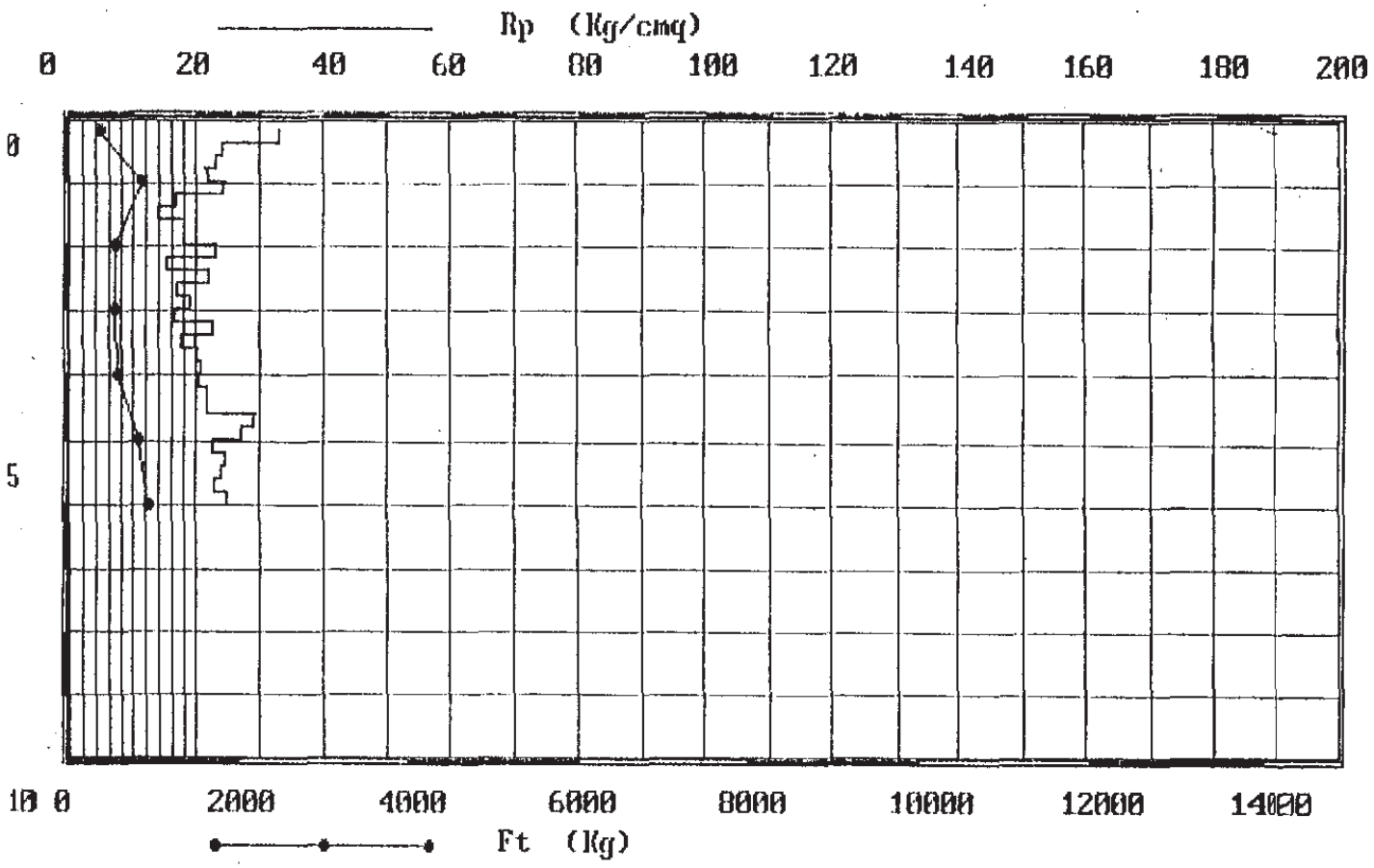


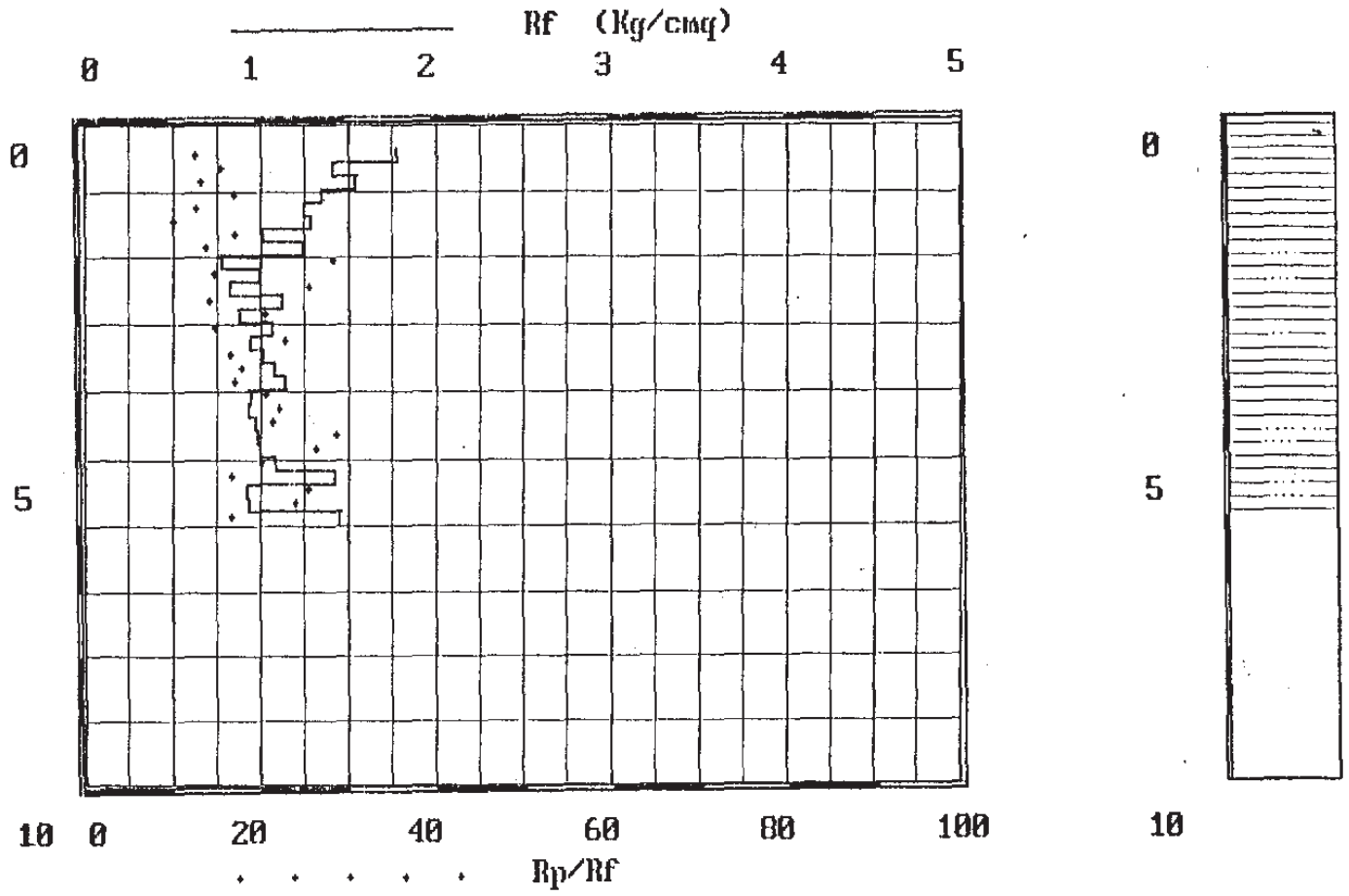
PROFONDITA' IN M.	RESISTENZA PUNTA [Kg/cmq]	RESISTENZA LATER. [Kg/cmq]	Rp/Rl
5.60	23	1.13	20
5.80	20	1.07	19
6.00	21	0.93	23
6.20	24	0.80	30
6.40	21	0.93	23
6.60	18	0.87	21
6.80	15	1.00	15
7.00	21	0.80	26
7.20	19	1.00	19
7.40	16	0.87	18
7.60	14	0.73	19
7.80	13	0.47	28
8.00	12	0.53	23
8.20	18	0.47	39
8.40	15	0.73	20
8.60	15	0.60	25
8.80	18	0.67	27
9.00	16	0.60	27
9.20	17	0.80	21
9.40	19	0.93	20
9.60	23	1.00	23
9.80	27	1.07	25
10.00	30	1.20	25

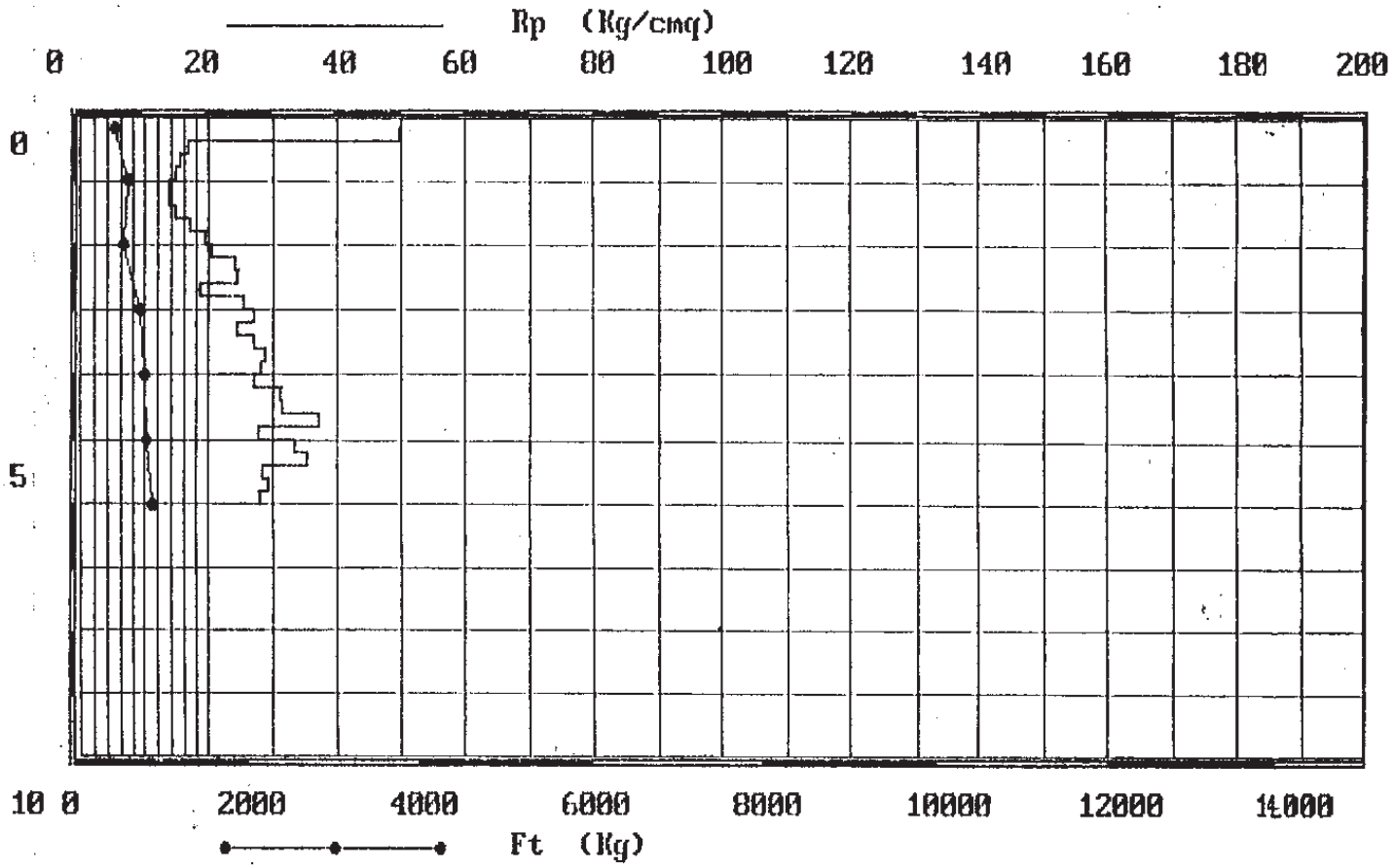
Valori di resistenza misurati

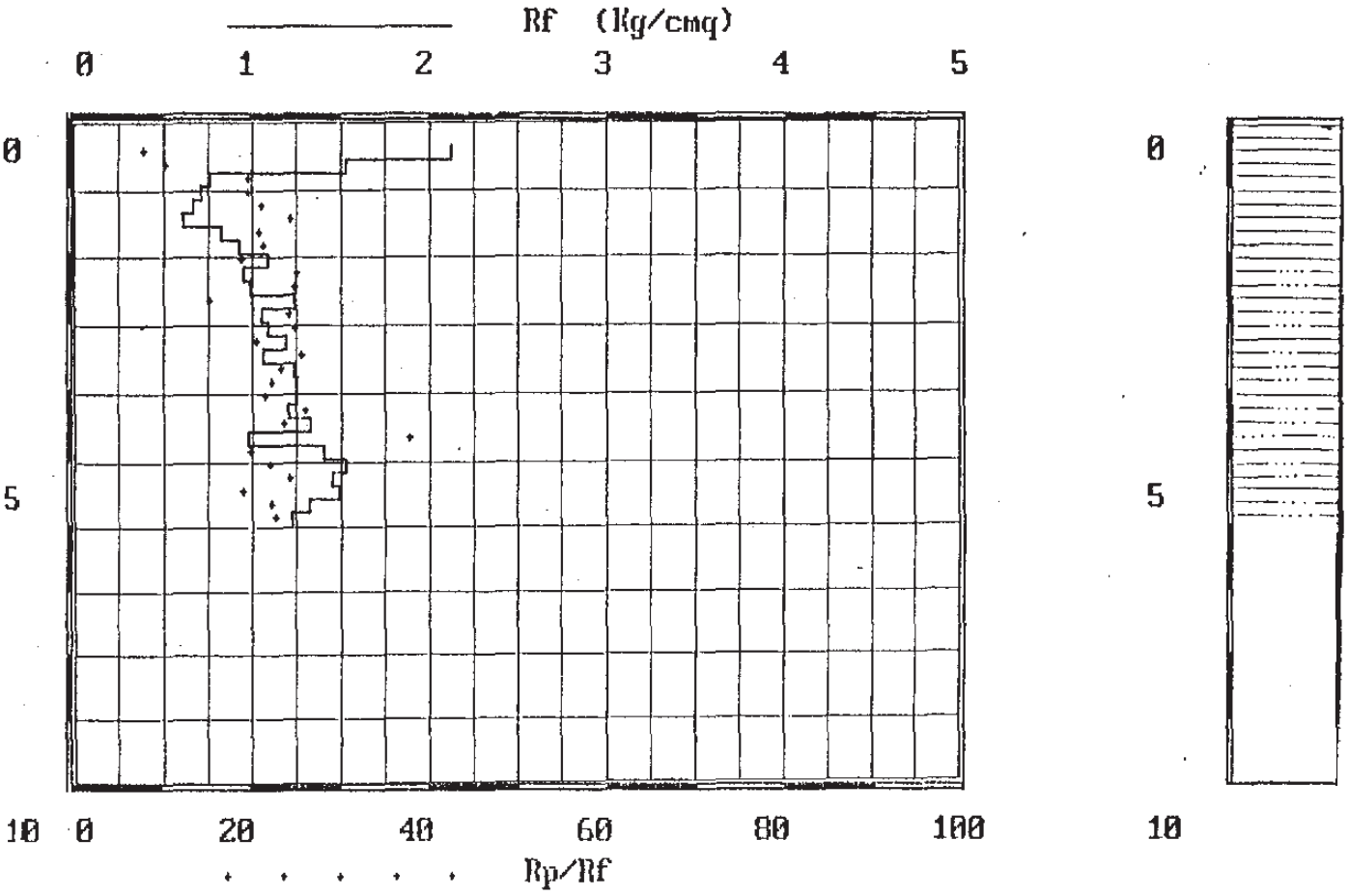
PROFONDITA' IN M.	RESISTENZA PUNTA [Kg/cmq]	RESISTENZA LATER. [Kg/cmq]	Rp/Rl
0.20	14	0.33	42
0.40	13	0.53	24
0.60	9	0.60	15
0.80	26	0.47	56
1.00	41	1.47	28
1.20	34	1.87	18
1.40	41	1.93	21
1.60	34	2.73	12
1.80	36	2.73	13
2.00	20	1.60	13
2.20	15	1.20	13
2.40	15	1.40	11
2.60	18	0.80	23
2.80	21	0.87	24
3.00	18	0.93	19
3.20	15	0.73	20
3.40	17	0.93	18
3.60	33	1.13	29
3.80	46	1.40	33
4.00	17	0.87	20
4.20	13	0.60	22
4.40	16	0.47	34
4.60	20	0.73	27
4.80	17	0.67	26
5.00	20	0.87	23
5.20	27	0.93	29
5.40	25	1.00	25

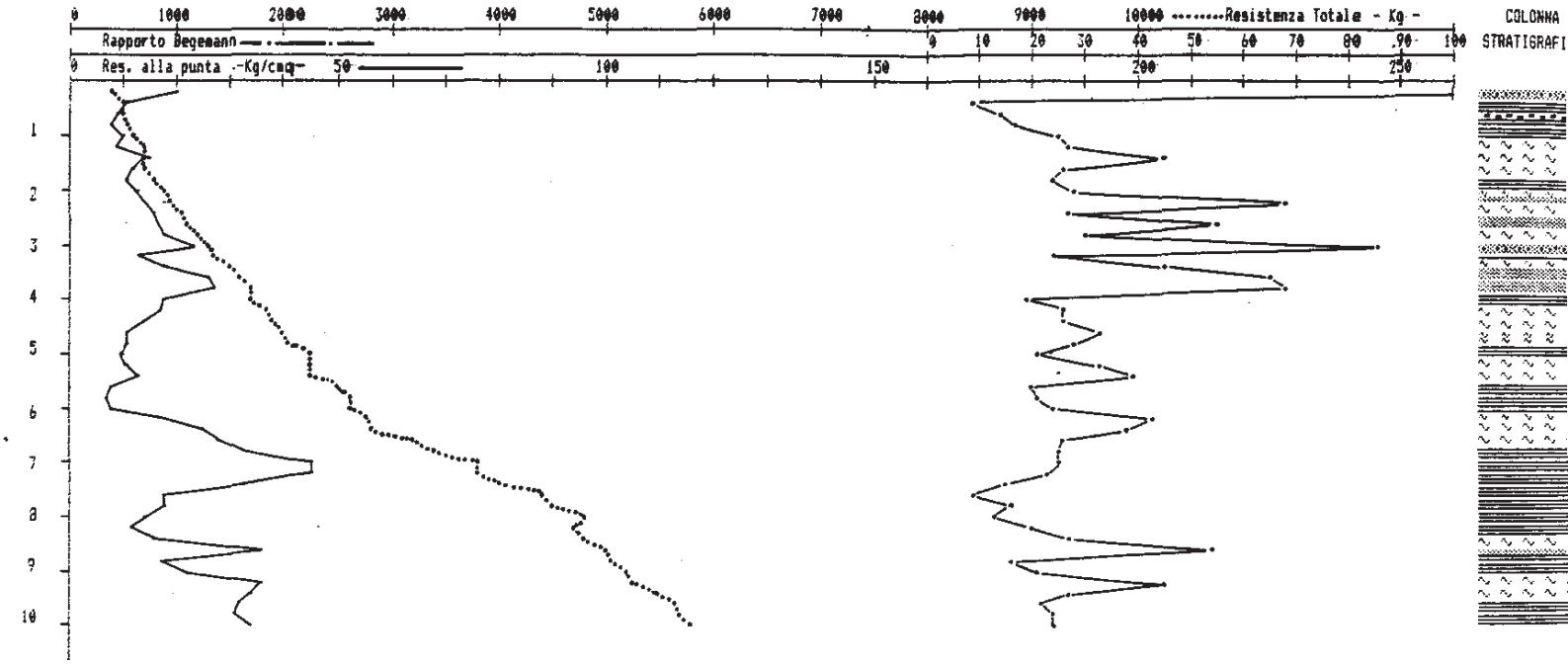

PROVA PENETROMETRICA [C.P.T.] N. 3
Resistenza alla punta [Kg/cmq]
0 10 20 30 40 50 60 70 80 90 100
Ar L S G
PROFONDITA' in m.
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
0 0.50 1.00 1.50 2.00 2.50
Resistenza laterale [Kg/cmq]
TOSCO TEST s.n.c.
L'Amministratore Delegato
Dr. Raffaele Lombardi

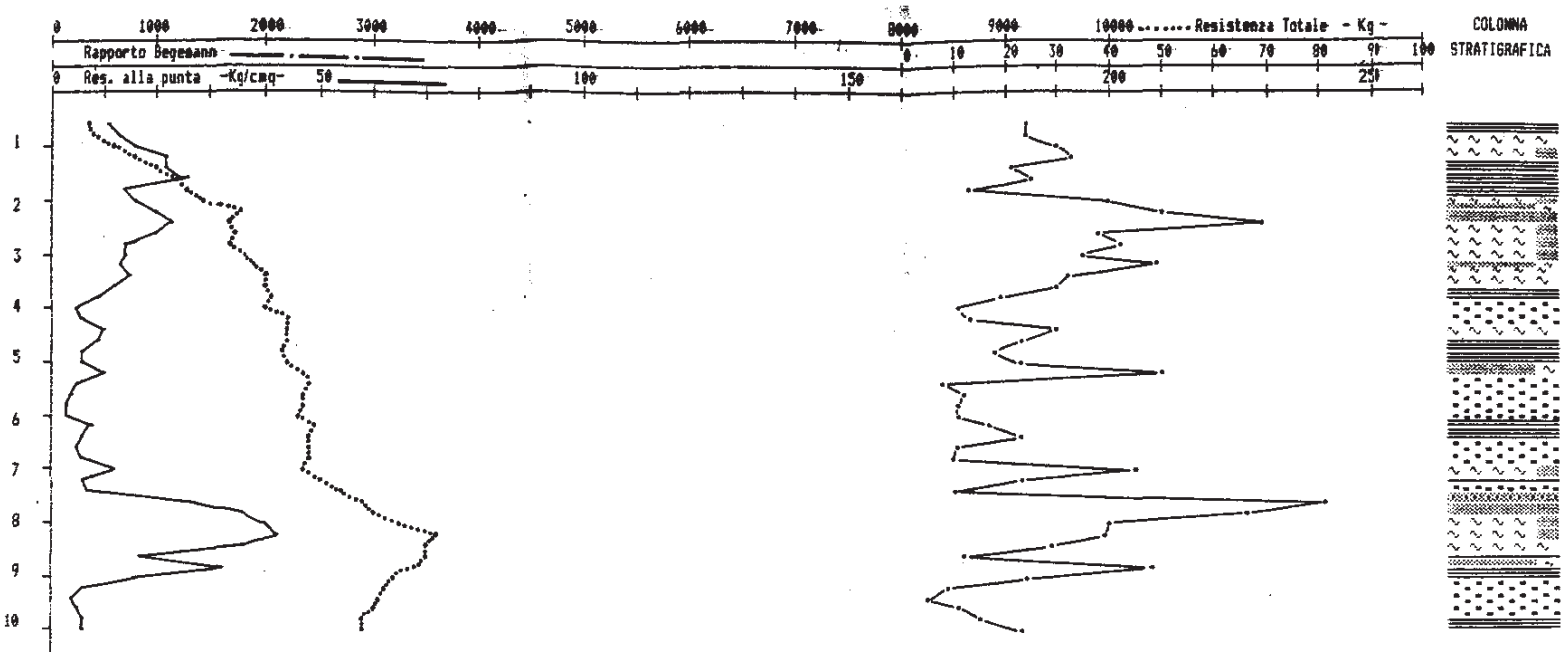

Rp (Kg/cmq)
0 20 40 60 80 100 120 140 160 180 200
0
5
10
0 2000 4000 6000 8000 10000 12000 14000
Ft (Kg)

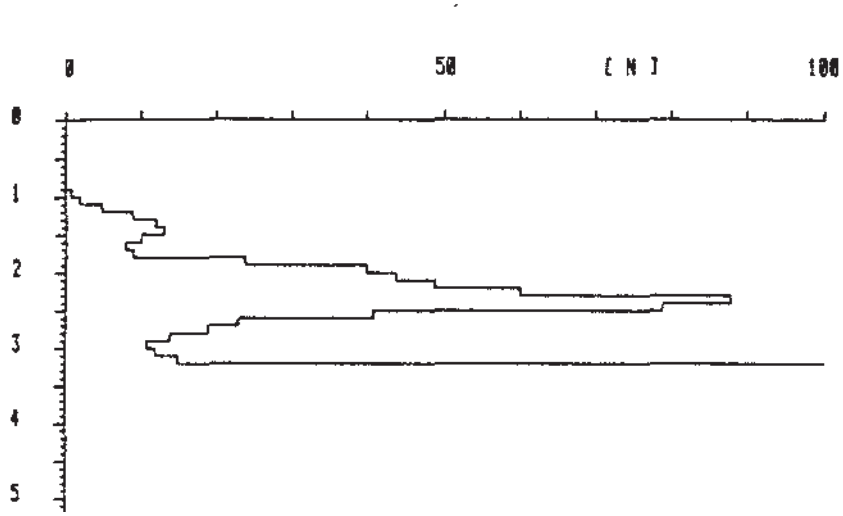

Rf (Kg/cmq)
0 1 2 3 4 5
0
5
10
0 20 40 60 80 100
Rp/Rf

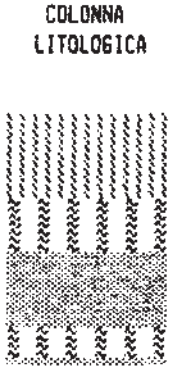

Rp (Kg/cmq)
0 20 40 60 80 100 120 140 160 180 200
0
5
10
0 2000 4000 6000 8000 10000 12000 14000
Ft (Kg)

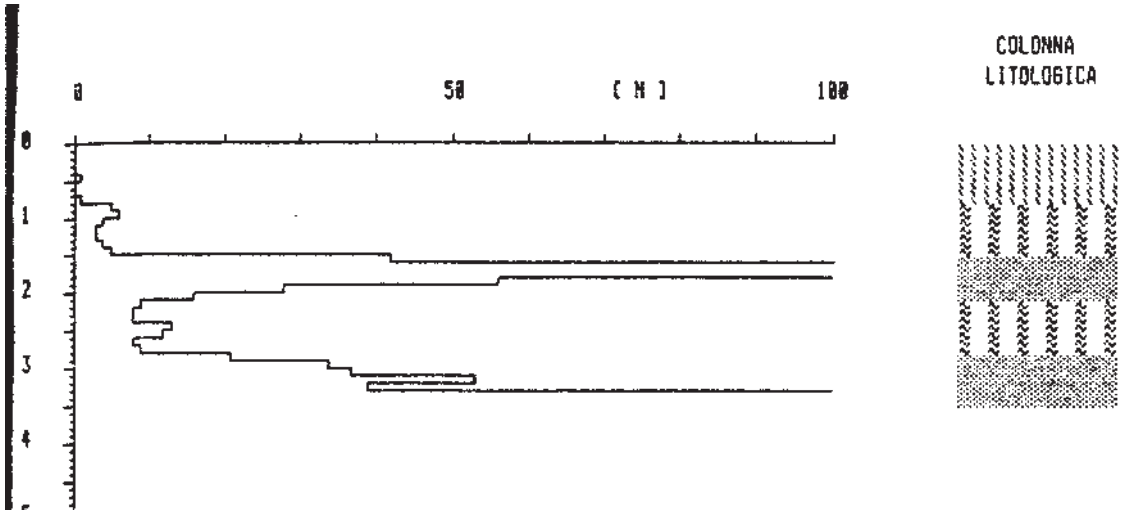

Rf (Kg/cmq)
0 1 2 3 4 5
0
5
10
0 20 40 60 80 100
Rp/Rf
0
5
10

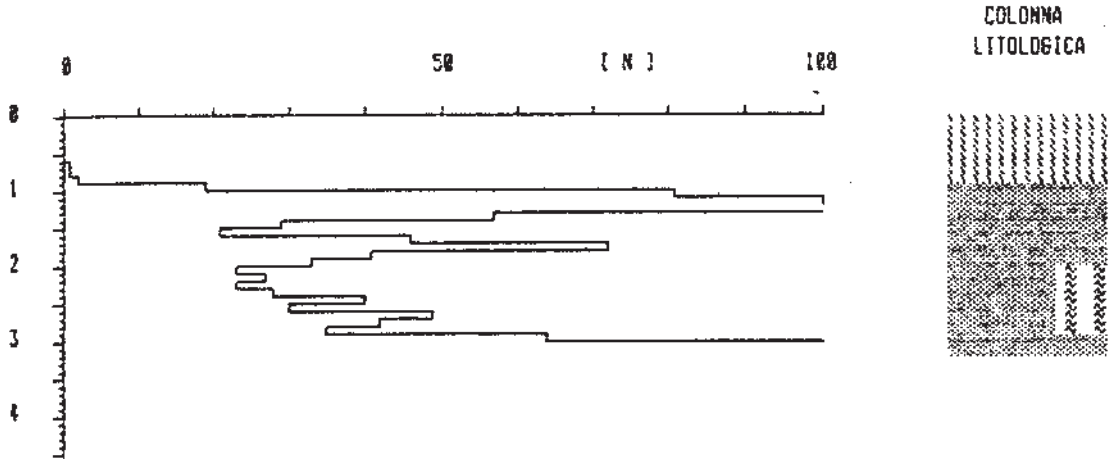

0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 ------Resistenza Totale - Kg -
Rapporto Begemann
0 10 20 30 40 50 60 70 80 90 100
0 Res. alla punta -Kg/cmq- 50 100 150 200 250
1
2
3
4
5
6
7
8
9
10
COLONNA
STRATIGRAFI

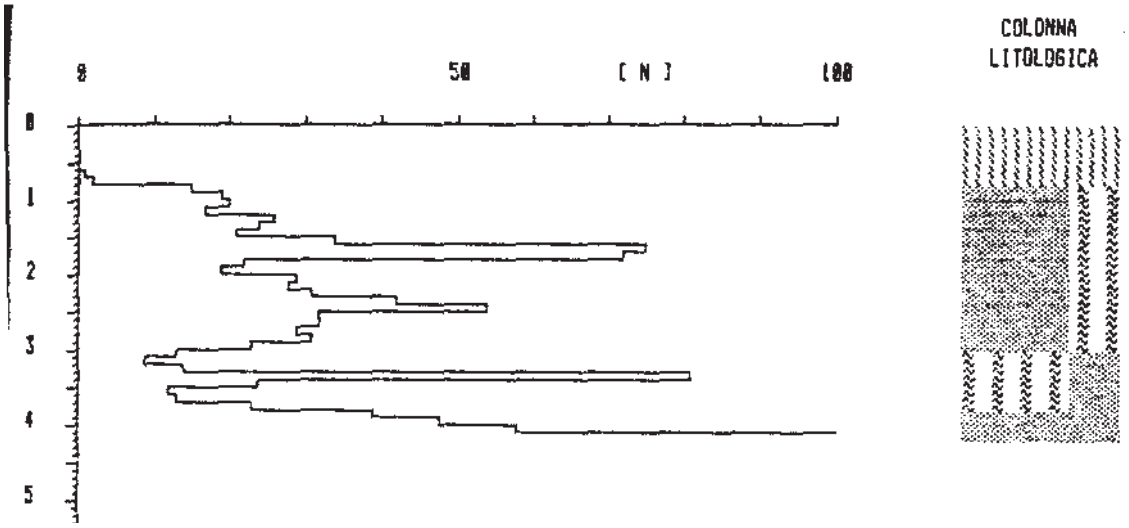

0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 Resistenza Totale - Kg -
Rapporto Begemann
0 10 20 30 40 50 60 70 80 90 100
0 Res. alla punta -Kg/cmq- 50 100 150 200 250
1
2
3
4
5
6
7
8
9
10
COLONNA STRATIGRAFICA

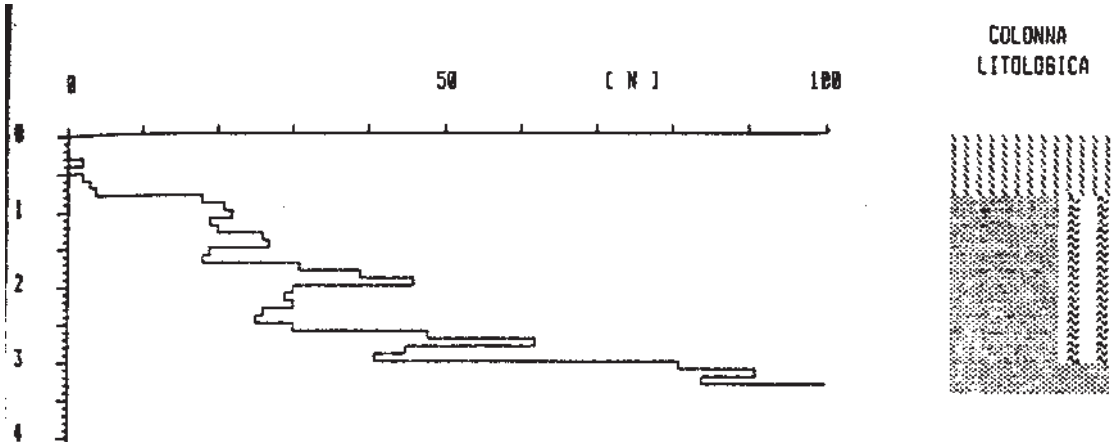

0
50
[N]
100
0
1
2
3
4
5


COLONNA
LITOLOGICA


0
50
[N]
100
0
1
2
3
4
COLONNA
LITOLOGICA


0
50
[N]
100
0
1
2
3
4
COLONNA
LITOLOGICA


0
50
[N]
100
0
1
2
3
4
5
COLONNA
LITOLOGICA

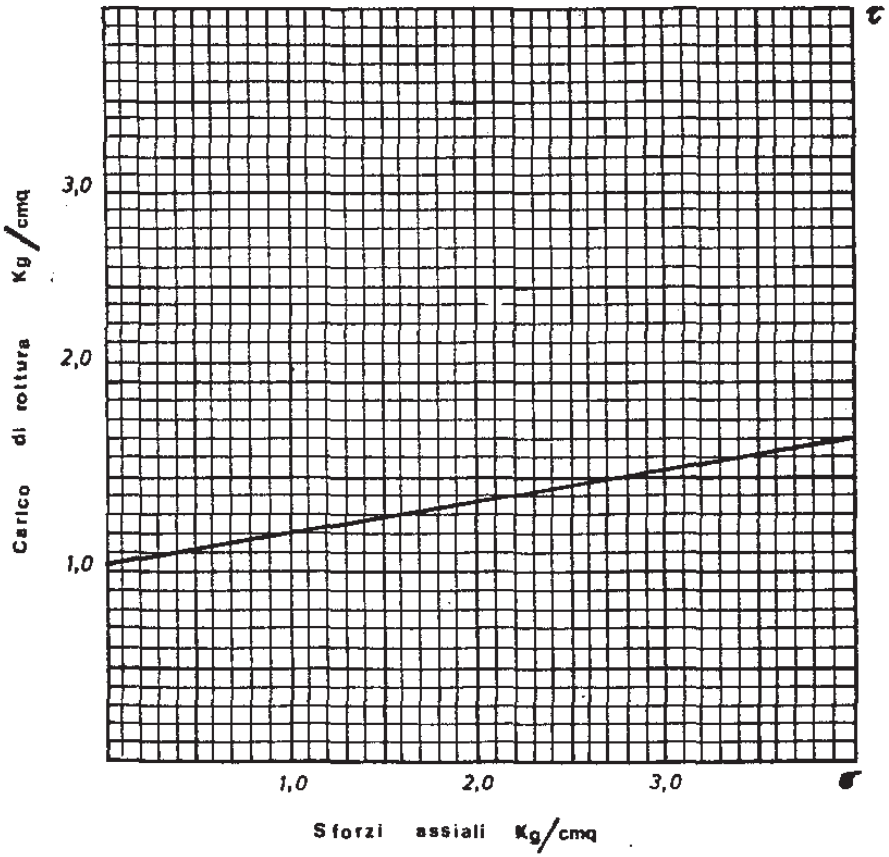

0
50
[N]
100
0
1
2
3
4
COLONNA
LITOLOGICA

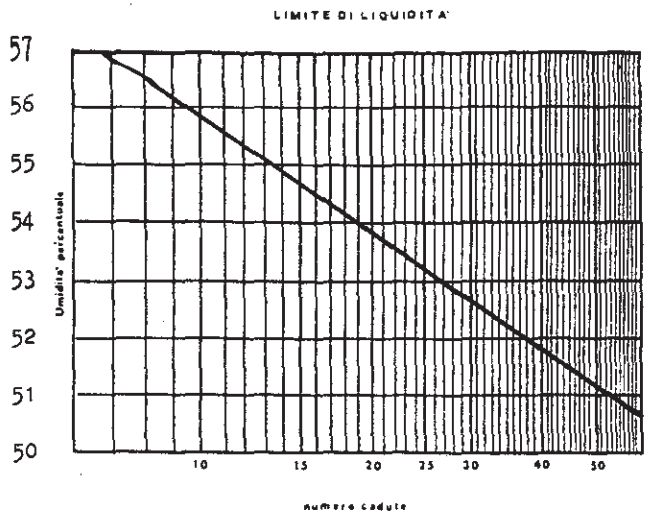
Sond.	N°1
Camp.	
Posiz. Prel.	3,00=3,40m
Peso Spec.	1,95 kg/dm³
Fraz. int.	
Prova Penetr.	
E.L.L.	kg/cm²

Densita'	τ	σ	u%	φ 9°
Assestam.	1,17	1		c 1,050 Kg/cm²
	1,38	2		u% 28%
	1,57	3		

Condizioni di prova

Taglio rapido non drenato non consolidato.
Velocità di prova 1,27 mm/min.





CAMPIONE S N°1 3,00=3,40m

PESO SPECIFICO = 1,95 Kg/dm³

LIMITE DI LIQUIDITA' Ll = 53%

UMIDITA' NATURALE Un = 28%

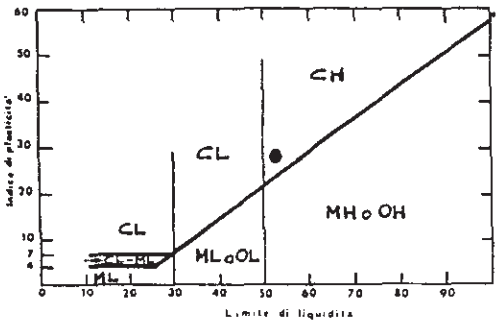
LIMITE DI PLASTICITA' Lp = 25%

INDICE DI CONSISTENZA $C = \frac{Ll - Un}{Ip}$ = 0,89

INDICE DI PLASTICITA' Ip = 28

LIMITE DI RITIRO Lr =

CARTA DI PLASTICITA'



ML - Limi inorganici e sabbie molto fini. Polvere di roccia. Sabbie fini limose e argillose a bassa plasticita'.

CL - Argille inorganiche di bassa e media plasticita'. Argille ghiaiose, sabbiose, limose, argille magre.

OL - Limi organici. Limi-argille organici a bassa plasticita'.

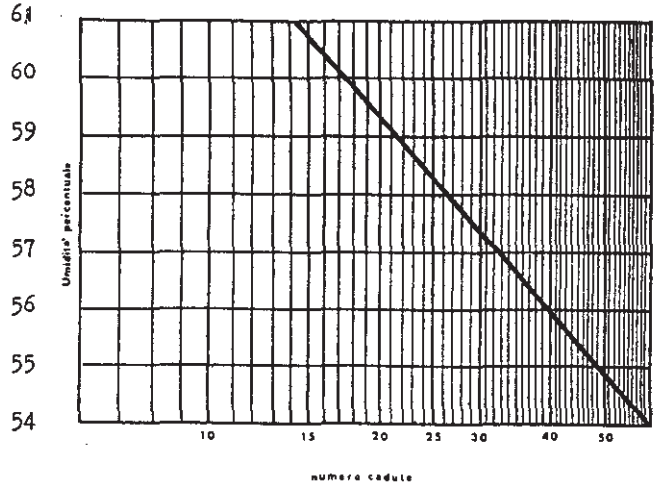
MH - Limi inorganici, sabbie fini e limi micacei o con materiale diatomaceo. Limi elastici.

● CH - Argille inorganiche ad alta plasticita. Argille grasse.

OH - Argille organiche di media ed alta plasticita'.

Classificazione adottata dal Bureau of reclamation

LIMITE DI LIQUIDITA'



CAMPIONE S N°2 2,10=2,30m

PESO SPECIFICO = 1,97 Kg/dm³

LIMITE DI LIQUIDITA' Ll = 58%

UMIDITA' NATURALE Un = 20%

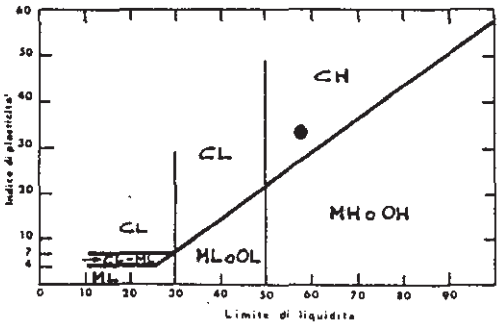
LIMITE DI PLASTICITA' Lp = 25%

INDICE DI CONSISTENZA $C = \frac{Ll - Un}{Ip} =$ 1,15

INDICE DI PLASTICITA' Ip = 33

LIMITE DI RITIRO Lr =

CARTA DI PLASTICITA'



ML - Limi inorganici e sabbie molto fini. Polvere di roccia. Sabbie fini limose e argillose a bassa plasticita'.

CL - Argille inorganiche di bassa e media plasticita'. Argille ghiaiose, sabbiose, limose, argille magre.

OL - Limi organici. Limi-argille organici a bassa plasticita'

MH - Limi inorganici, sabbie fini e limi micacei e con materiale diatomacee. Limi elastici.

CH - Argille inorganiche ad alta plasticita. Argille grasse.

OH - Argille organiche di media ed alta plasticita'.

Classificazione adottata dal Bureau of reclamation

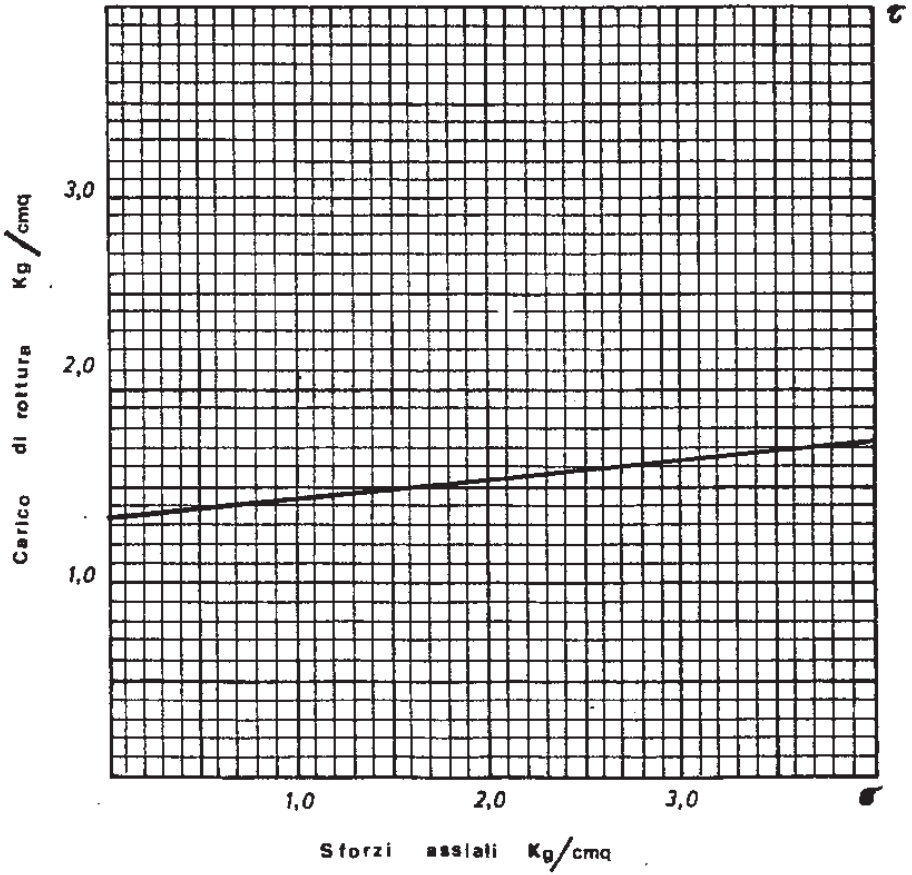
Sond.	N°2
Camp.	
Posiz. Prel.	2,10=2,30m
Peso Spec.	1,97 kg/dm³
Fraz. Int.	
Prova Penetr.	
E.L.L.	kg/cm²

Densita'	τ	σ	u%	φ 5°
Assestam.	1,40	1		c 1,350 Kg/cm²
	1,55	2		u% 20%
	1,66	3		

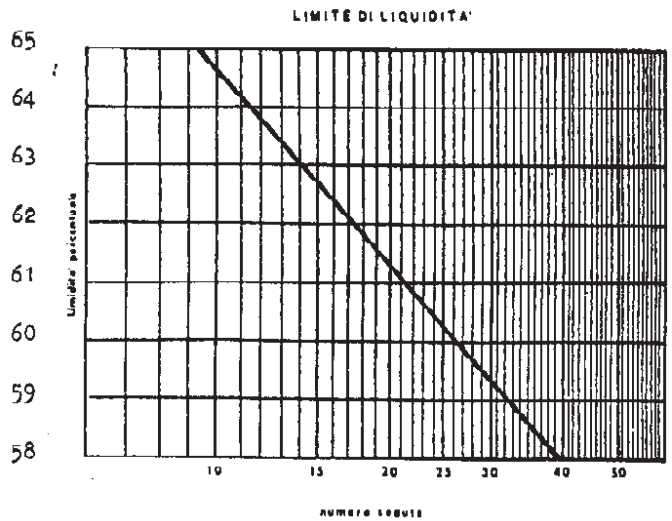
Condizioni di prova

Taglio rapido non drenato non consolidato.

Velocità di prova 1,27 mm/min.



606



CAMPIONE S N°3 1,50=1,70m

PESO SPECIFICO 2,03 Kg/dm³

LIMITE DI LIQUIDITA' Ll = 60%

UMIDITA' NATURALE Un = 29%

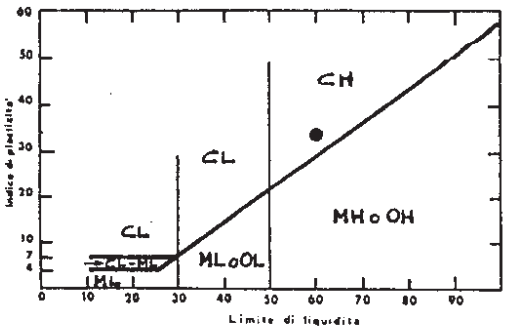
LIMITE DI PLASTICITA' Lp = 26%

INDICE DI CONSISTENZA Ic = $\frac{Ll - Un}{Ip}$ = 0,91

INDICE DI PLASTICITA' Ip = 34

LIMITE DI RITIRO Lr =

CARTA DI PLASTICITA'



ML - Limi inorganici e sabbie molto fini. Polvere di roccia. Sabbie fini limose e argillose a bassa plasticità.

CL - Argille inorganiche di bassa e media plasticità. Argille ghiaiose, sabbiose, limose, argille magre.

OL - Limi organici. Limi-argille organici a bassa plasticità.

MH - Limi inorganici, sabbie fini e limi micacei e con materiale diatomacea. Limi elastici.

● CH - Argille inorganiche ad alta plasticità. Argille grasse.

OH - Argille organiche di media ed alta plasticità.

Classificazione adottata dal Bureau of reclamation

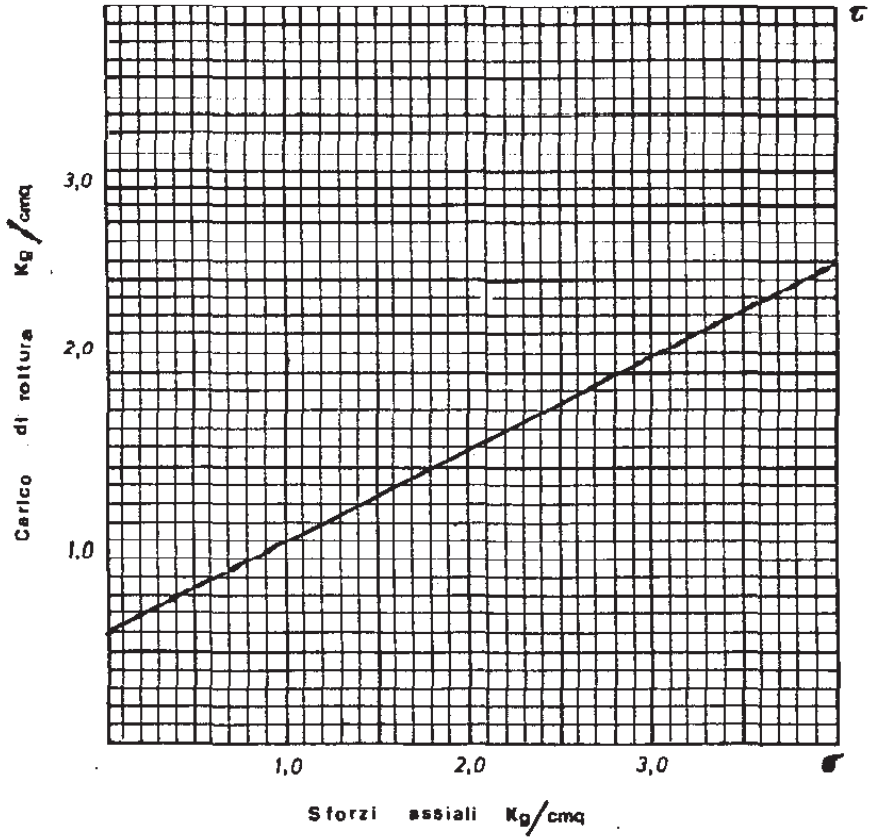
Sond.	N°3
Camp.	
Posiz. Prel.	1,50=1,70m
Peso Spec.	2,03 kg/dm³
Fraz. Int.	
Prova Penetr.	
E.L.L.	kg/cm²

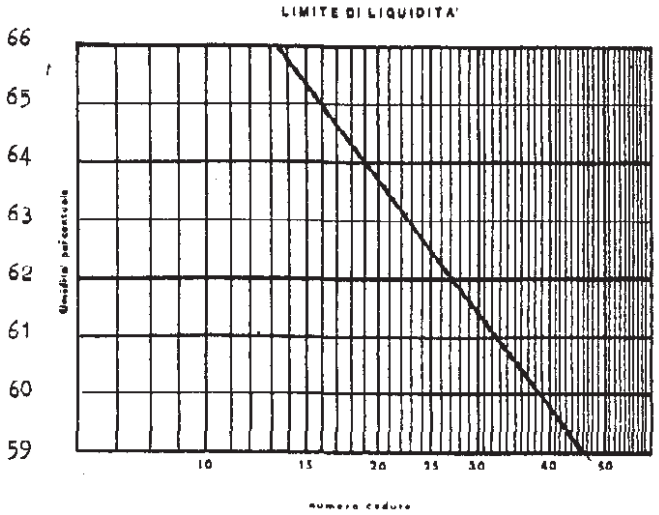
Densità	τ	σ	u%	φ 26°
Assestam.	1,09	1		c 0,600 Kg/cm²
	1,62	2		u%
	2,07	3		29%

Condizioni di prova

Taglio rapido non drenato non consolidato.

Velocità di prova 1,27 mm/min.





CAMPIONE S N°4

PESO SPECIFICO γ = 1,98 Kg/dm³

LIMITE DI LIQUIDITA' Ll = 63%

UMIDITA' NATURALE Un = 32%

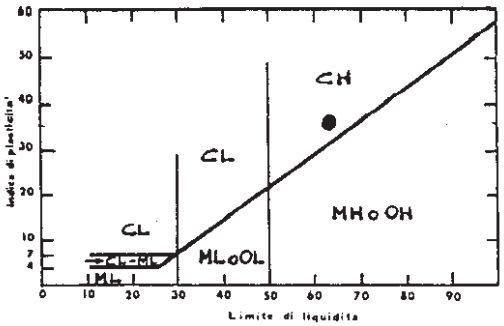
LIMITE DI PLASTICITA' Lp = 27%

INDICE DI CONSISTENZA Ic = $\frac{Ll - Un}{Ip}$ = 0,86

INDICE DI PLASTICITA' Ip = 36

LIMITE DI RITIRO Lr =

CARTA DI PLASTICITA'



ML - Limi inorganici e sabbie molto fini. Polvere di roccia. Sabbie fini limose o argilose a basse plasticità.

CL - Argille inorganiche di bassa e media plasticità. Argille ghiaiose, sabbiose, limose, argille magre.

OL - Limi organici. Limi-argille organici a bassa plasticità.

MH - Limi inorganici, sabbie fini e limi micacei o con materiale diatomaceo. Limi elastici.

● CH - Argille inorganiche ed alta plasticità. Argille grasse.

OH - Argille organiche di media ed alta plasticità.

Classificazione adattata dal Bureau of reclamation

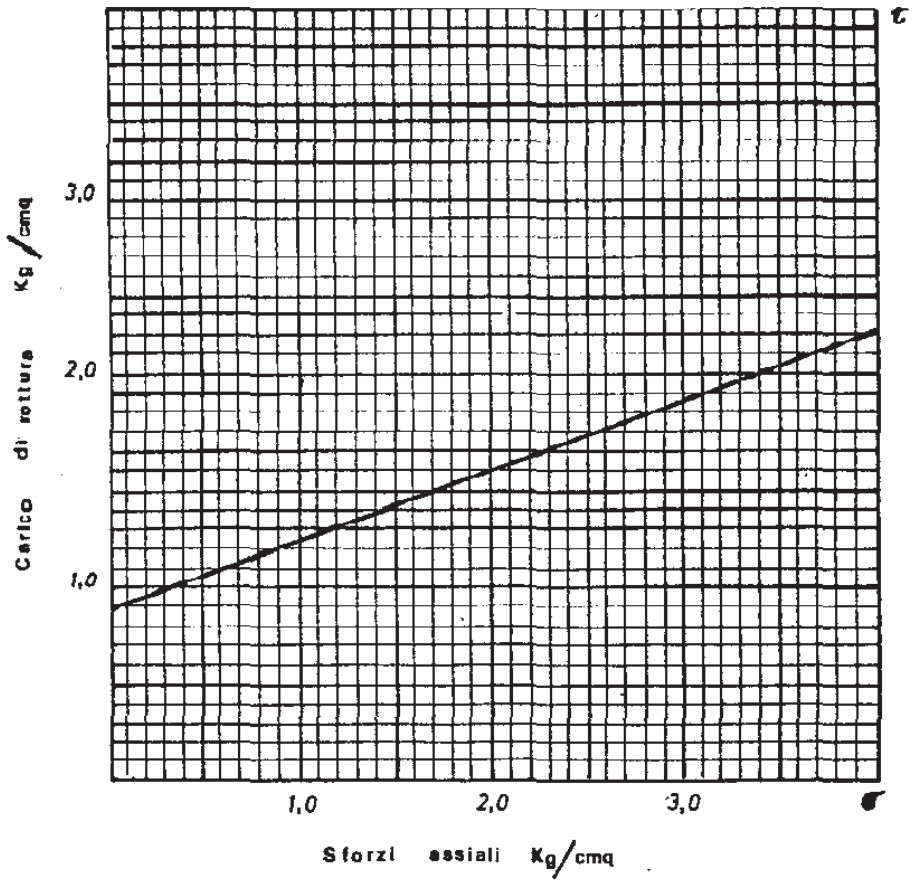
Sond.	N°4
Camp.	
Posiz. Prel.	
Peso Spec.	1,98 kg/dm³
Fraz. Int.	
Prova Penetr.	
E.L.L.	kg/cm²

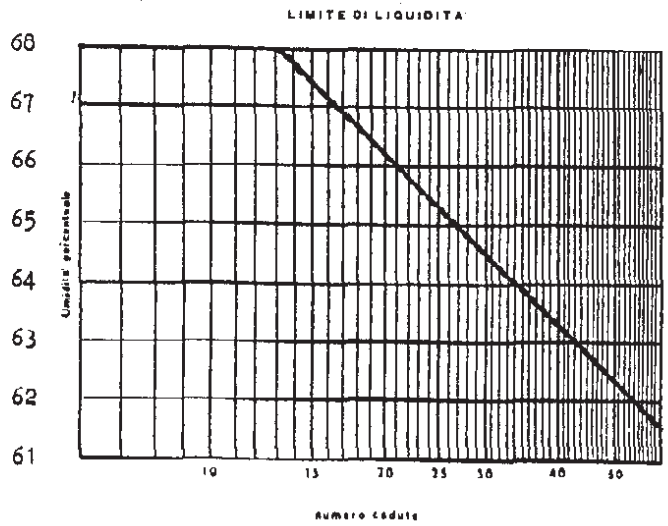
Densità'	τ	σ	u%	φ 20°
Assestam.	1,21	1		c 0,900 Kg/cm²
	1,63	2		
	1,93	3		Ll% 32%

Condizioni di prova

Taglio rapido non drenato non consolidato.

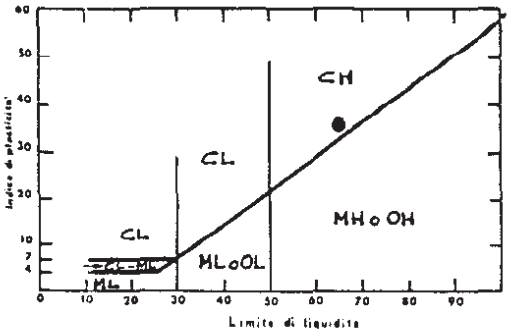
Velocità di prova 1,27 mm/min.





CAMPIONE	S N°5
LIMITE DI LIQUIDITA' Ll =	65%
LIMITE DI PLASTICITA' Lp =	29%
INDICE DI PLASTICITA' Ip =	36
PESO SPECIFICO =	1,95 Kg/dm³
UMIDITA' NATURALE Un =	34%
INDICE DI CONSISTENZA Ic = $\frac{Ll - Un}{Ip}$ =	0,86
LIMITE DI RITIRO Lr =	

CARTA DI PLASTICITA'



ML - Limi inorganici e sabbie molto fini. Polvere di roccia. Sabbia fini limose o argillose a bassa plasticita'

CL - Argille inorganiche di bassa e media plasticita'. Argille ghiaiose, sabbiose, limose, argille magre.

OL - Limi organici. Limi-argille organici a bassa plasticita'

MH - Limi inorganici, sabbie fini e limi micacei e con materiale diatomaceo. Limi elastici.

● CH - Argille inorganiche ed alta plasticita. Argille grasse.

OH - Argille organiche di media ed alta plasticita.

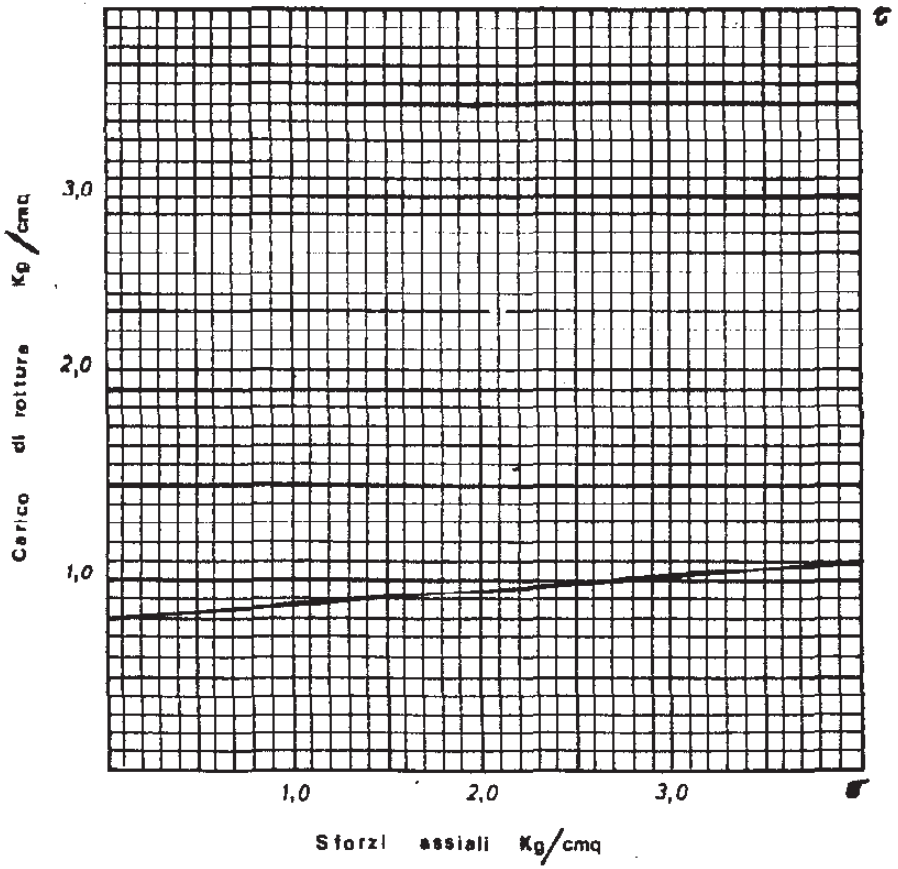
Classificazione adottata dal Bureau of reclamation

Sond.	N°5
Camp.	
Posiz. Prel.	
Peso Spec.	1,95 kg/dm³
Fraz. Int.	
Prova Penetr.	
E.L.L.	kg/cm²

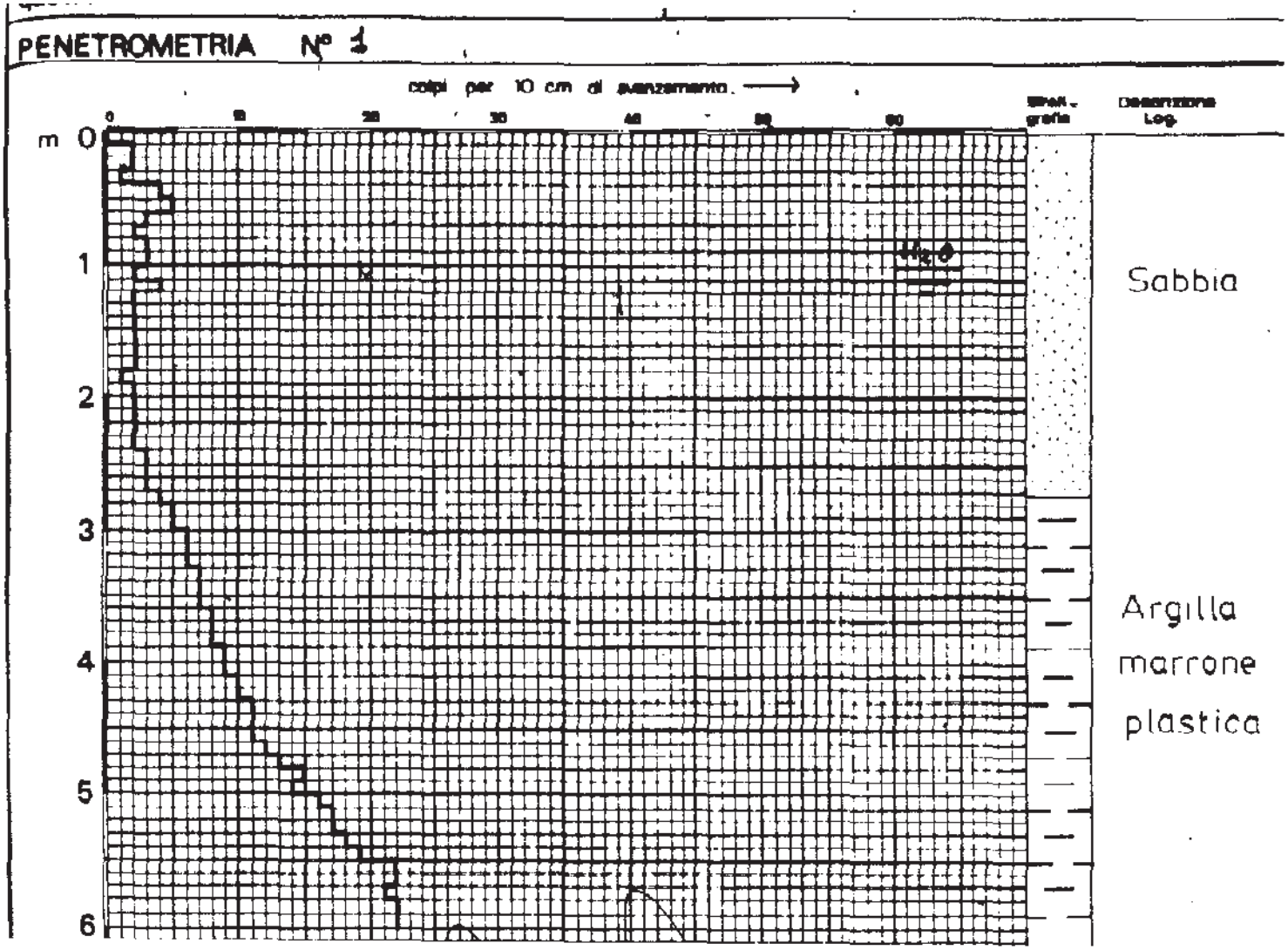
Densita'	τ	σ	u%	φ 5°
Assestam.	0,84	1		c 0,800 Kg/cm²
	0,97	2		u% 34%
	1,00	3		

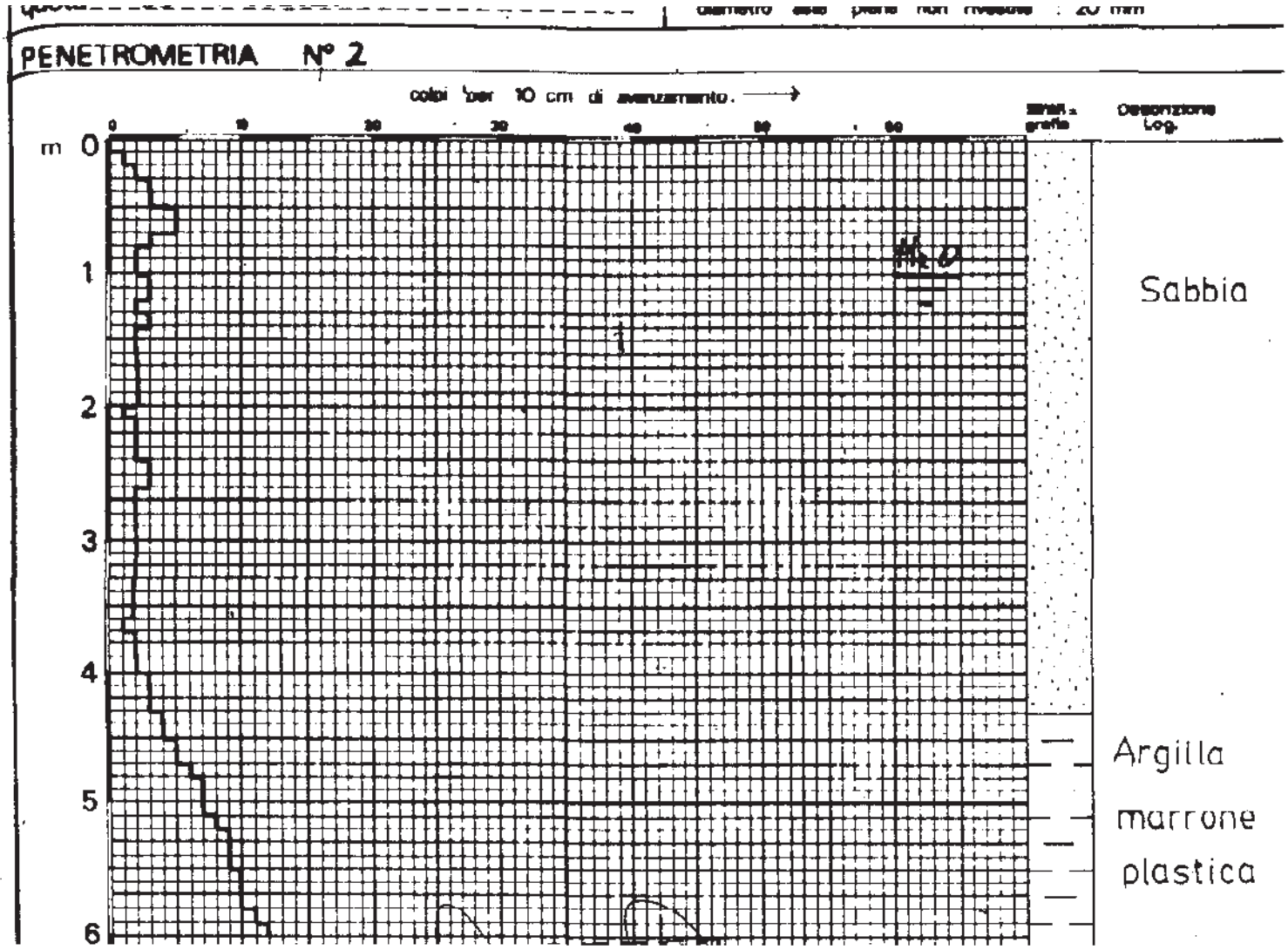
Condizioni di prova

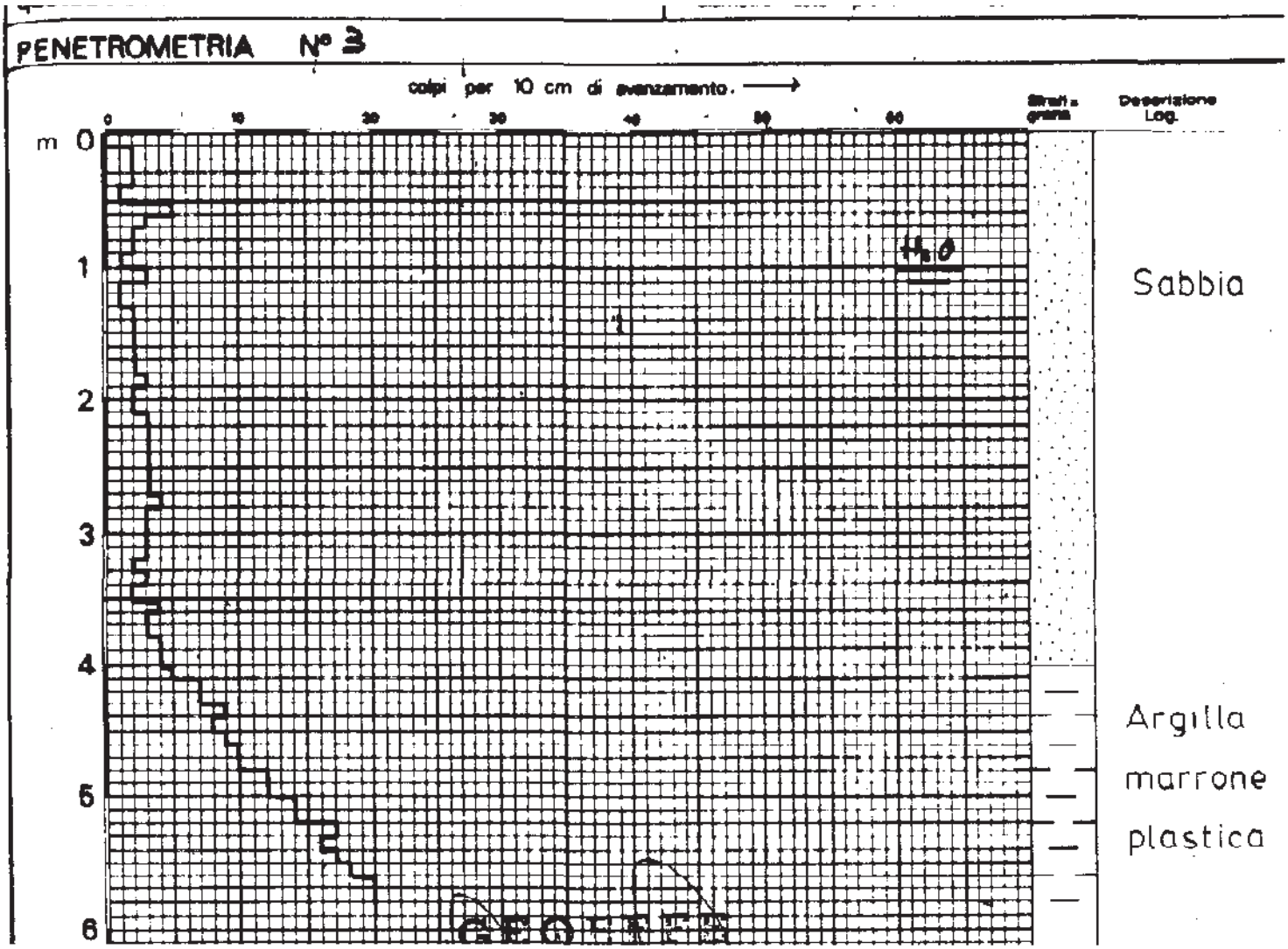
Taglio rapido non drenato non consolidato.
Velocità di prova 1,27 mm/min.

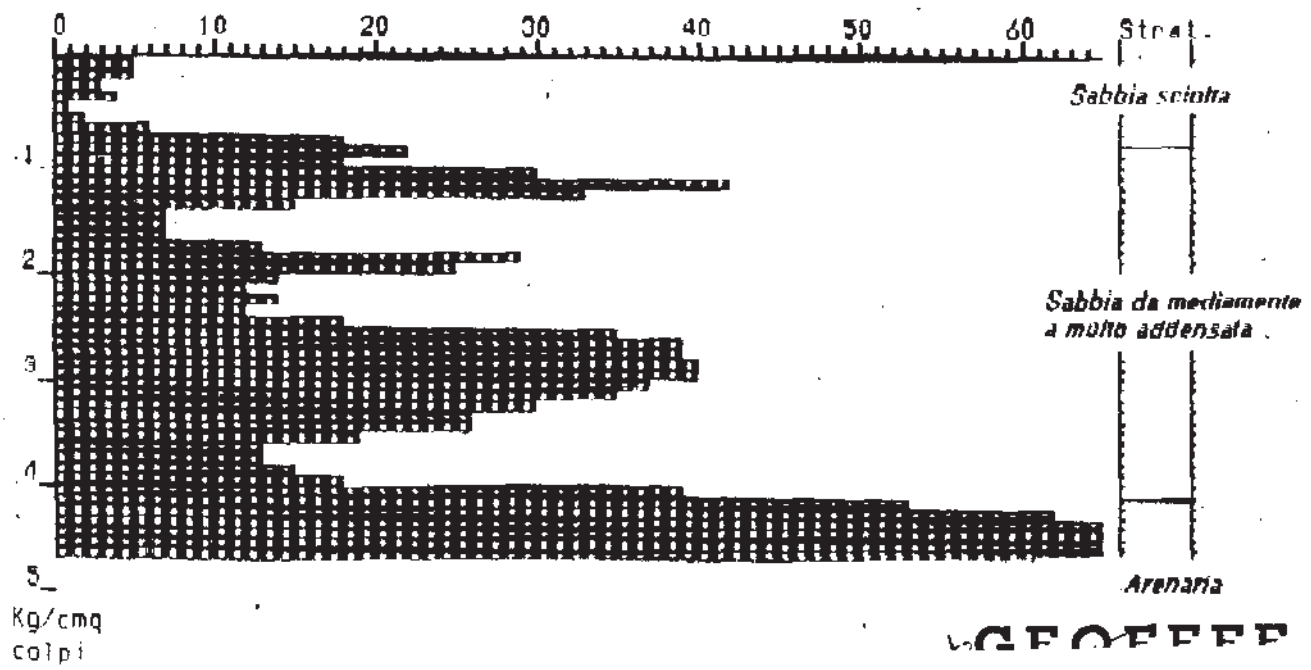


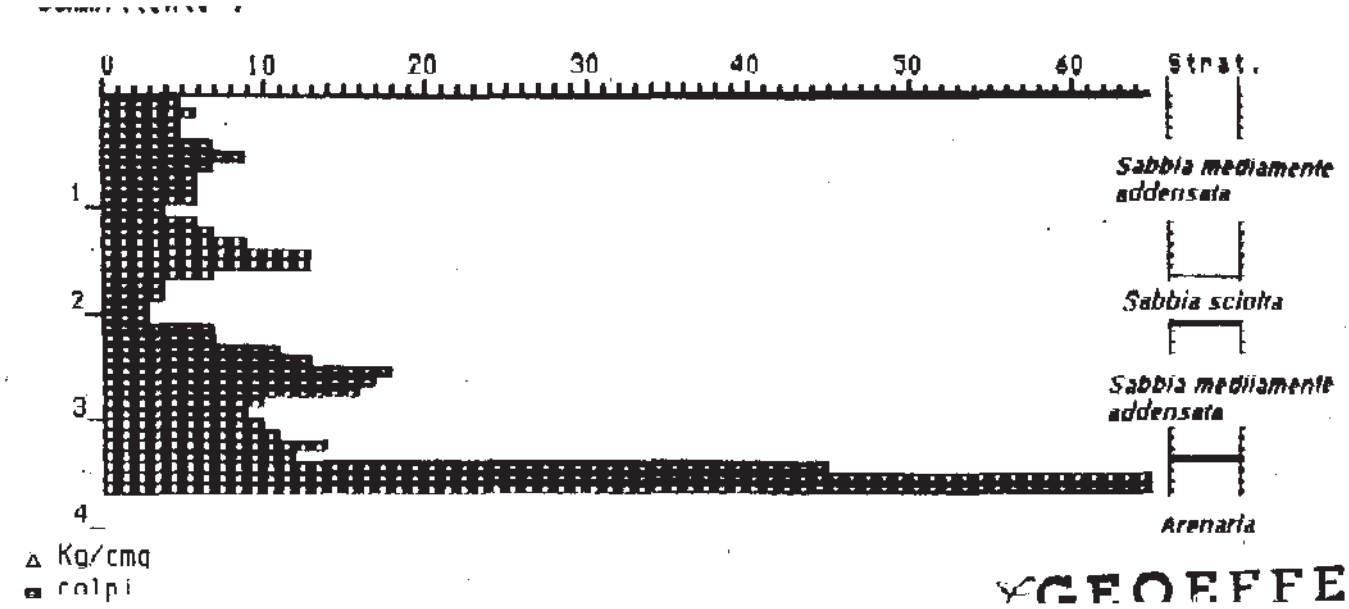
912

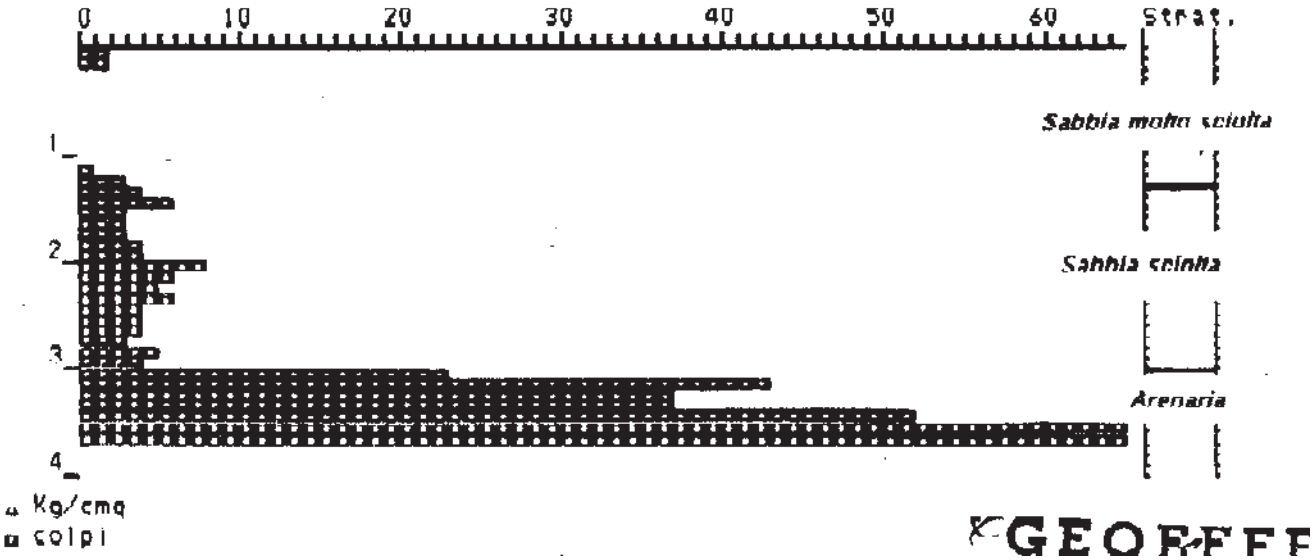

PENETROMETRIA N° 1
colpi per 10 cm di avanzamento
m
0
1
2
3
4
5
6
Sabbia
Argilla
marrone
plastica


PENETROMETRIA N° 2
colpi per 10 cm di avanzamento.
m 0
1
2
3
4
5
6
Sabbia
Argilla
marrone
plastica


PENETROMETRIA N° 3
colpi per 10 cm di avanzamento.
0
10
20
30
40
50
60
Strati-grafia
Descrizione Log.
m 0
1
2
3
4
5
6
Sabbia
Argilla
marrone
plastica

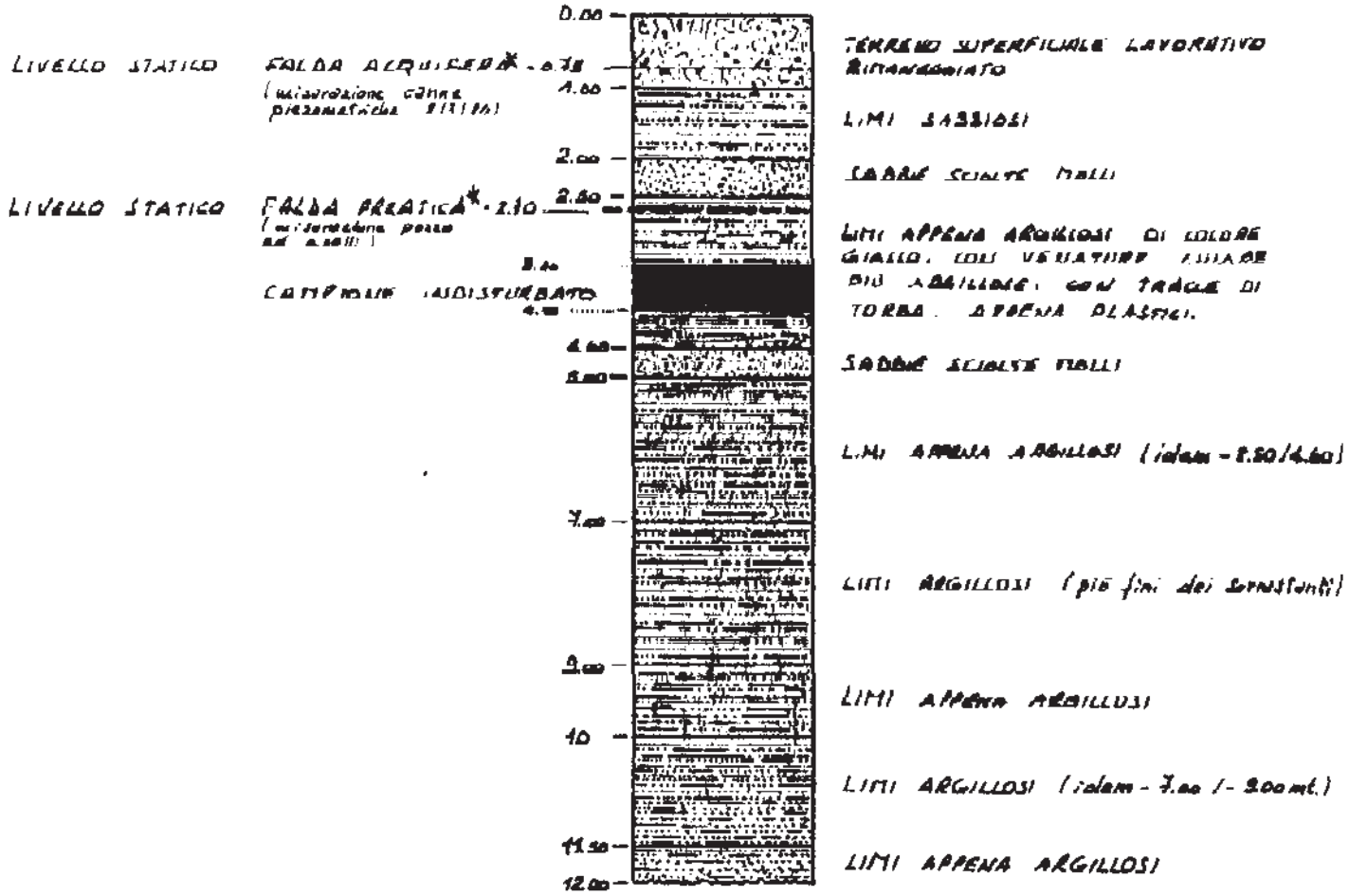

0
10
20
30
40
50
60
Strat.
Sabbia sciolta
Sabbia da mediamente a molto addensata
Arenaria
1
2
3
4
5
Kg/cmq
colpi


0
10
20
30
40
50
60
Strat.
1
2
3
4
Sabbia mediamente addensata
Sabbia sciolta
Sabbia mediamente addensata
Arenaria
Kg/cmq
colpi
GEOEFFE


0
10
20
30
40
50
60
Strat.
Sabbia molto sciolta
Sabbia sciolta
Arenaria
1
2
3
4
Kg/cmq
colpi
GEOFFE

STRATIGRAFIA del SONDAGGIO

scala 1:100



PRATICA PERIGNANO

CAMPIONE SonD. 1 m. 3.50-4.10

GRANULOMETRIA

SETACCIATURA

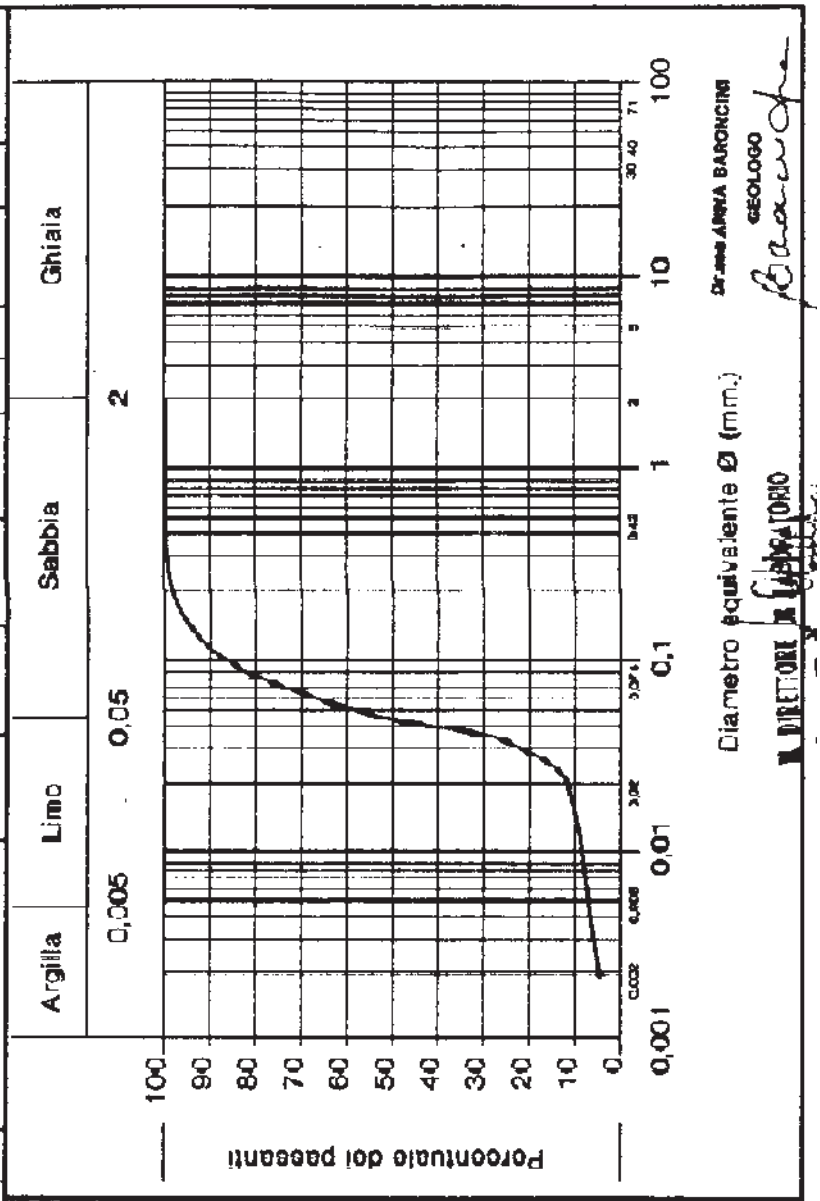
Setaccio (mm.)	Tratten.	Passante	Passante (%)
71			
40			
30			
10			
5			
2	/	447.27	100
1	0.07	447.20	99.9
0.42	0.33	446.87	99.9
0.180	10.49	436.38	97
0.075	112.00	324.38	72

parte eliminata: A = ____ C = ____ B = ____

Setaccio (mm.)	Trattenuto b	Trattenuto b B+C/B	A+B+C= (totale)	
Fondo				

B = ____ : C = ____

B+C = ____ : B+C/B = ____



Dr.ssa ANNA BAROCCINI GEOLOGO

IL DIRETTORE DI LABORATORIO

SEDIMENTAZIONE

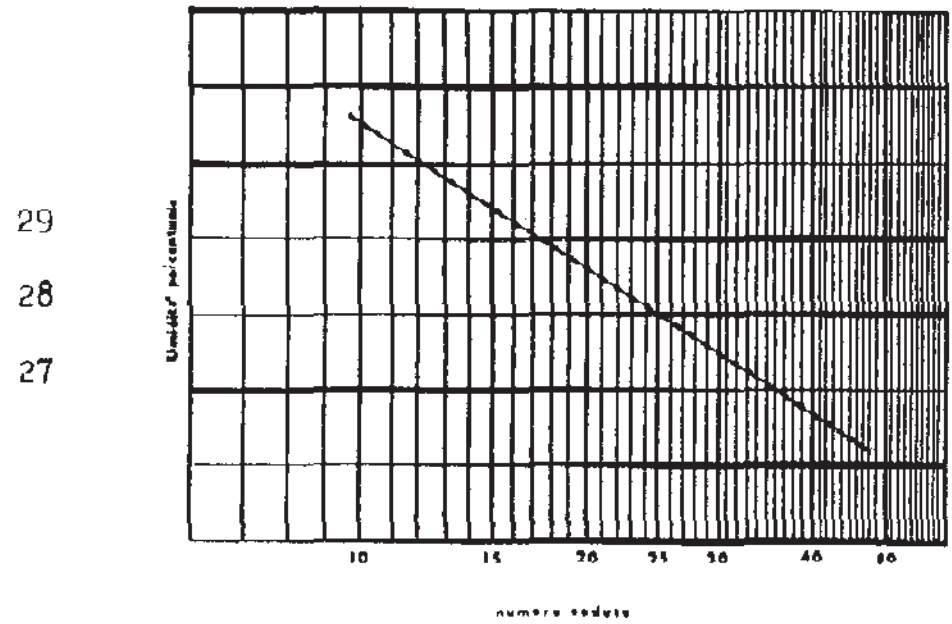
γ = 2,65 temp. = 23°C x = 0.01311

Inizio della sedimentazione il 7/3/84 alle ore 10.05

Prelievo (ad ore / dopo min.)	10.08	10.35	15.05				
Profondità H (cm.)	3	30	300				
Diametro equiv. D (mm.)	6.80	6.10	7.00				
Capsula n°	0,02	0,008	0,002				
Peso lordo	23	20	43				
Tara capsula	33.54	33.03	39.90				
Peso netto prelevato (p)	33.50	33.00	39.88				
% granuli a Ø < D (50 p − 0,4) · (%)/p	0.04	0.03	0.02				
	11	8	4				

TERGRAFICA - TEL. 0571/30004 - S. CROCE S/ARNO

LIMITE DI LIQUIDITA'



CAMPIONE Sond. 1 m. 3.50-4.10

PESO SPECIFICO = 2.07 Kg/dm3

LIMITE DI LIQUIDITA' Ll = 28

UMIDITA NATURALE UA = 18

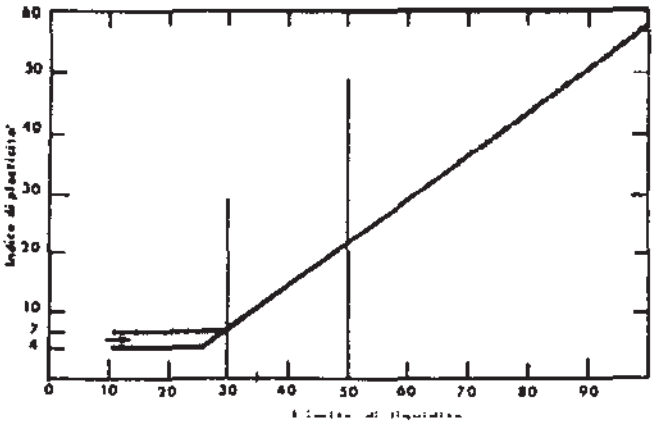
LIMITE DI PLASTICITA' Lp = 19

INDICE DI CONSISTENZA Ic = $\frac{Ll - UA}{Ip}$ =

INDICE DI PLASTICITA' Ip =

LIMITE DI RITIRO Lr =

CARTA DI PLASTICITA'



ML - Limi inorganici e sabbie molto fini. Polvere di roccia. Sabbie fini limose o argillose a bassa plasticita'

CL - Argille inorganiche di bassa e media plasticita'. Argille ghiaiose, sabbiose, limose, argille magre

OL - Limi organici. Limi-argille organici a bassa plasticita'

MH - Limi inorganici, sabbie fini o limi micacei o con materiale diatomaceo. Limi elastici.

CH - Argille inorganiche ad alta plasticita. Argille grasse.

OH - Argille organiche di media ad alta plasticita'.

Classificazione adottata dal Bureau of reclamation

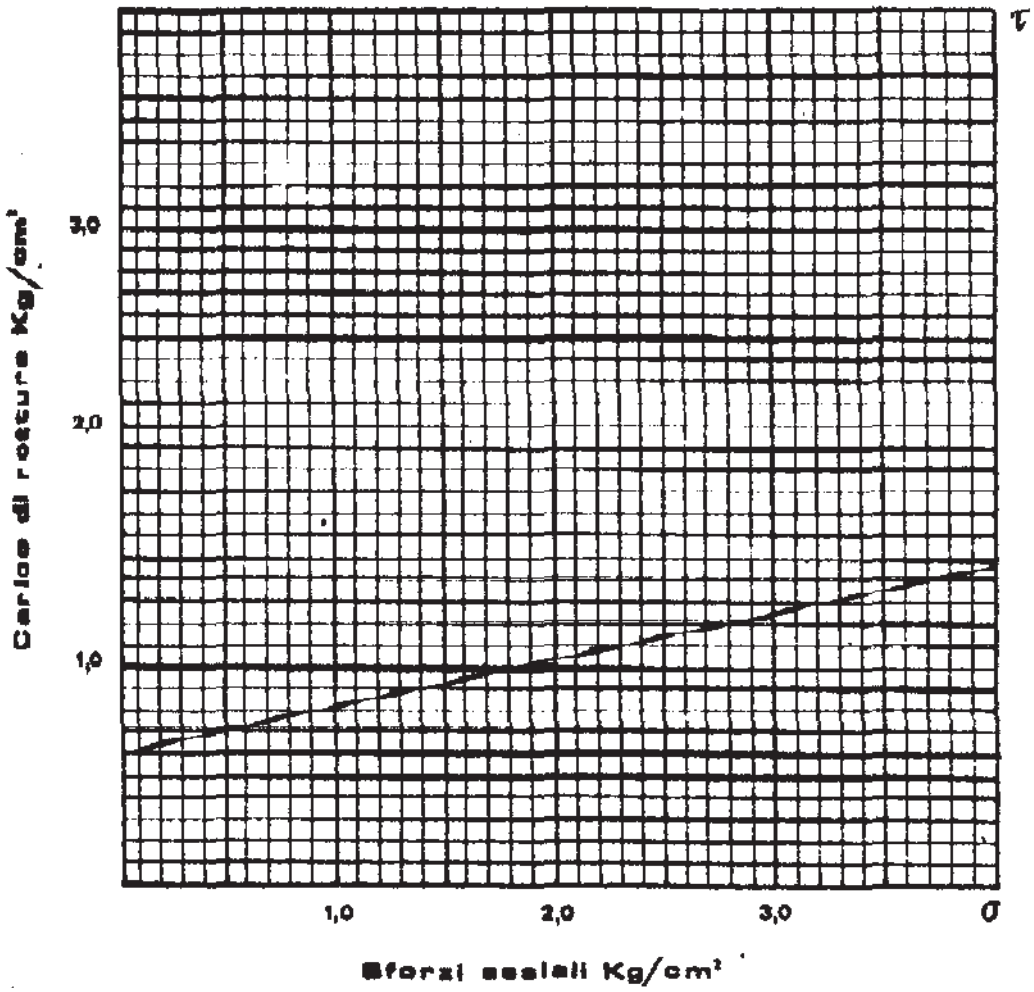
PERIGNANO

Sondag.	1
Camp.	
Posiz.	m. 3.50-4.10
Peso Spec.	2.07 Kg/dm3
Fraz.	

Densita'	τ	σ	U%	φ = 12
Assestam.	0.810	1.00		e = 0.600
	1.040	2.00	"	
	1.240	3.00		U% = 18

Condizioni di prova:

Taglio rapido non drenato.



PRATICA L/____

SONDAGGIO 1

CAMPIONE N° ____

PROF. (m) 3.50-4.10

DIMENSIONI SCATOLA

H = 2.000 ϕ = 5.000 Ω = 19.625

PESO SPECIFICO ASS. (γ) = 2.65 gr/cm³

PESO UMIDO FINALE = 78.46 gr

PESO SECCO FINALE (P.S) = 67.68 gr

ALTEZZA RIDOTTA $(2H_0)-(P.S.)/\gamma\Omega$ = 1.299

UMIDITÀ FINALE = 16 %

PRESSIONI (kg/cm²)	CEDIMENTI (mm)	ALTEZZE CALCOLATE (2 H)	ALTEZZE VUOTI (2H-2H₀)	INDICE VUOTI $\frac{2H-2H_0}{2H_0}$
0.000	0.00	2.000	0.701	0.539
0.250	0.10	1.990	0.691	0.532
0.500	0.26	1.964	0.665	0.512
1.000	0.35	1.929	0.630	0.485
2.000	0.37	1.892	0.593	0.456
4.000	0.39	1.853	0.554	0.426
8.000	0.41	1.812	0.513	0.395
16.000	0.43	1.769	0.470	0.362
8.000	0.05	1.774	0.475	0.365
4.000	0.06	1.780	0.481	0.370
2.000	0.08	1.788	0.489	0.376
1.000	0.10	1.798	0.499	0.384
0.500	✓			
0.250	0.13	1.816	0.516	0.397
0.100	0.19	1.825	0.526	0.405

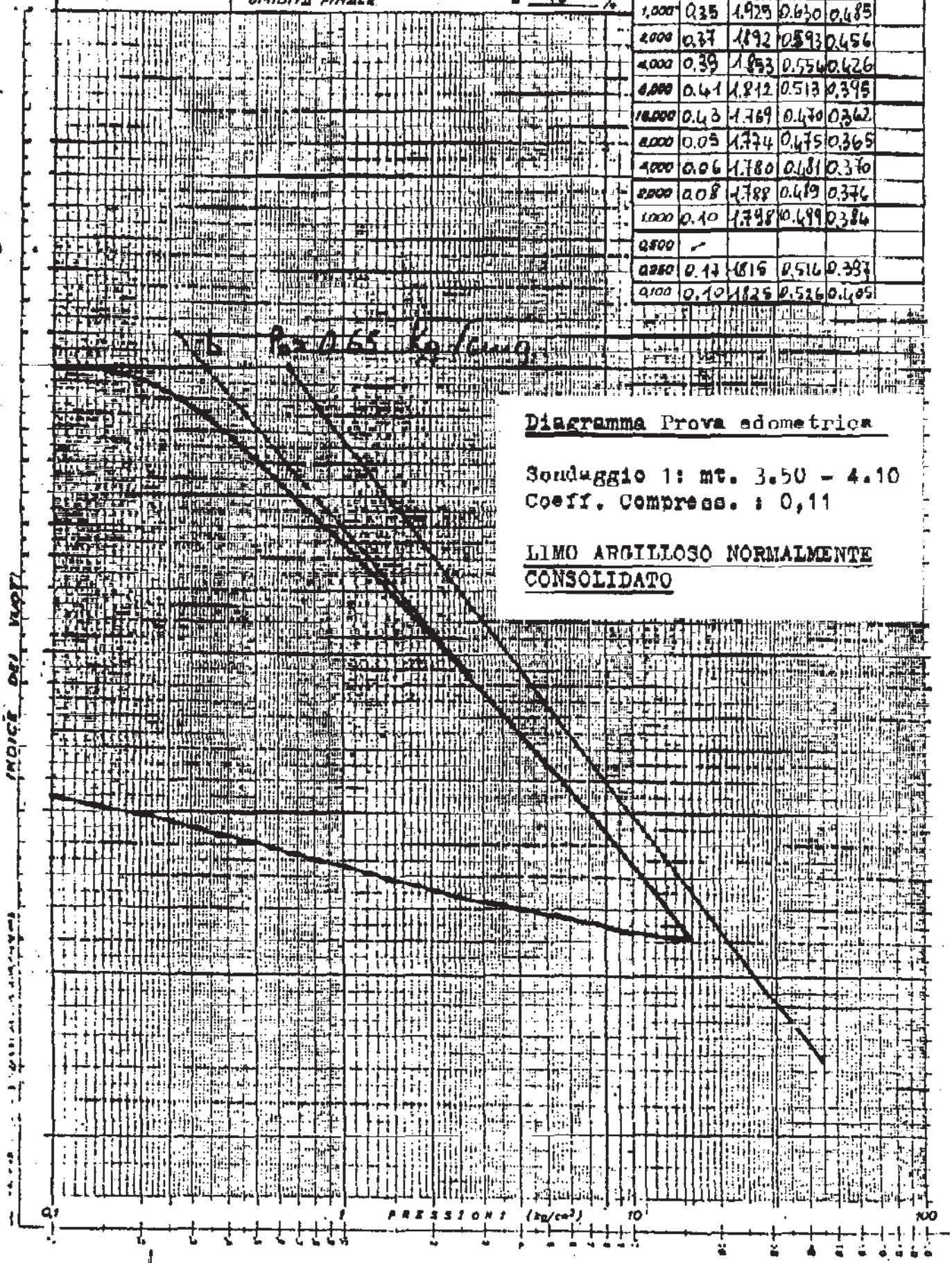
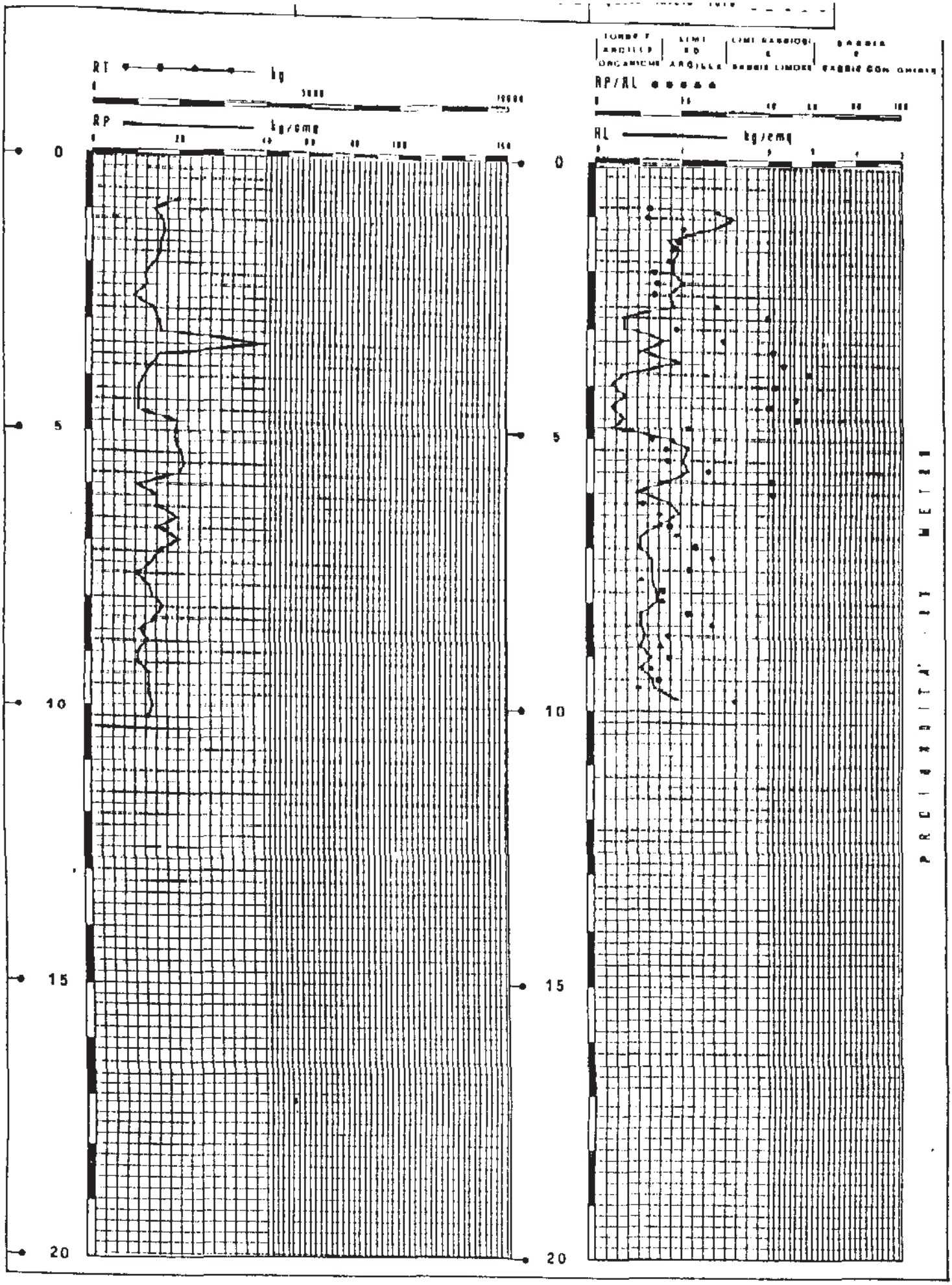
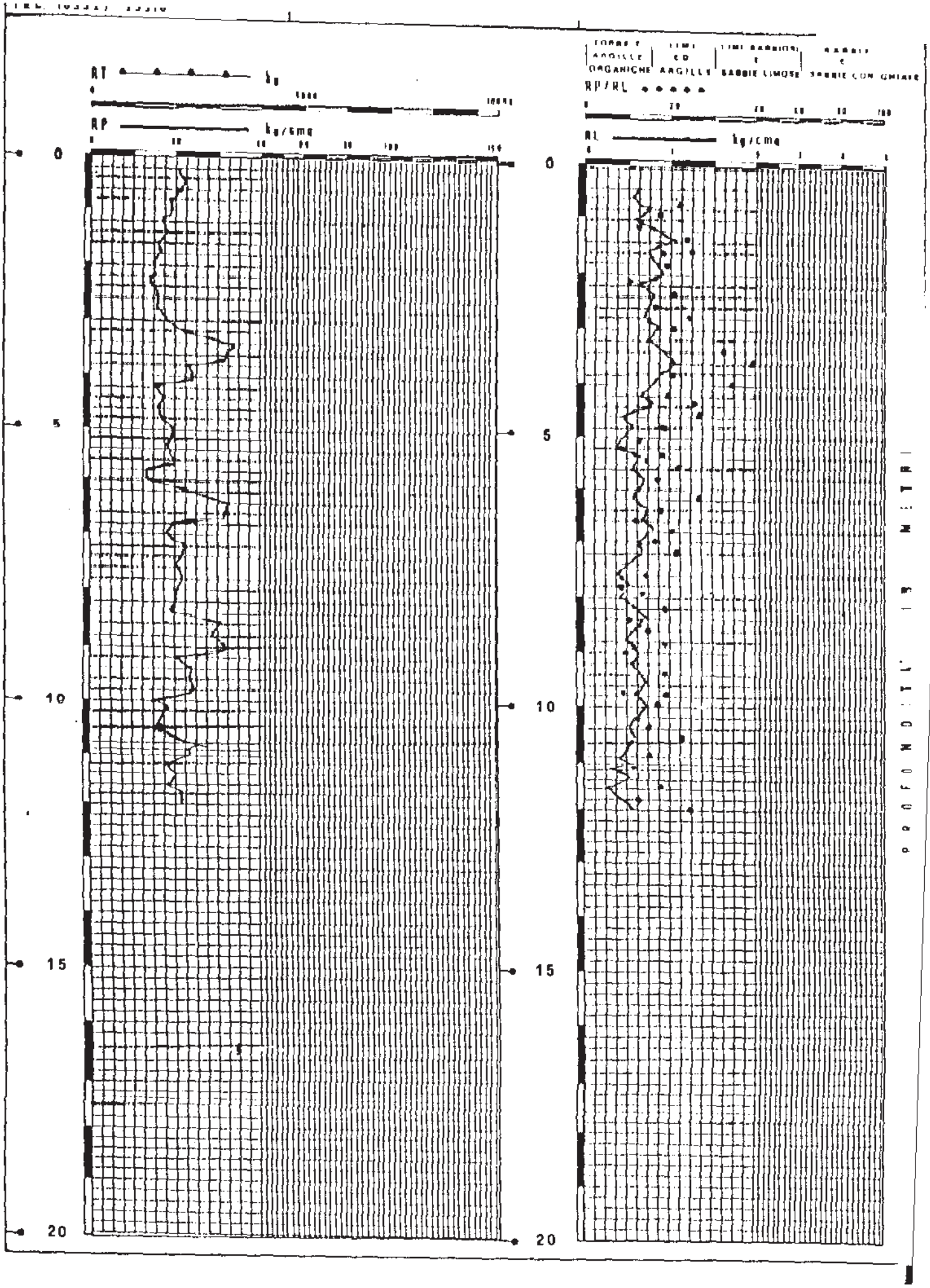


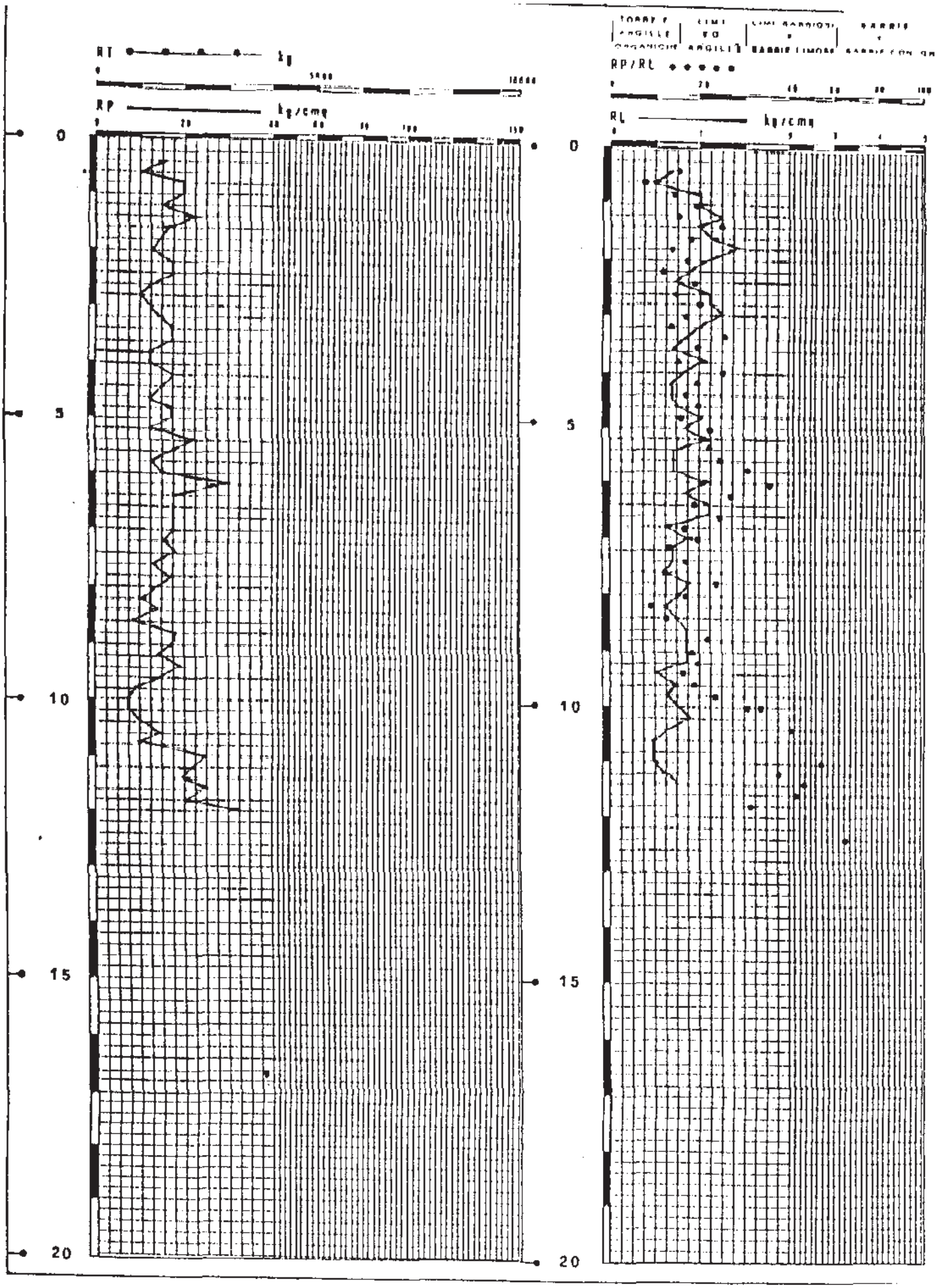
Diagramma Prova edometrica

Sondaggio 1: mt. 3.50 - 4.10
Coeff. Compress. : 0,11

LIMO ARGILLOSO NORMALMENTE CONSOLIDATO


RT
kg
RP
kg/cmq
RP/RL
RL
kg/cmq
0
5
10
15
20
PROFONDITA' IN METRI


RT
kg
RP
kg/cmq
RP/RL
RL
kg/cmq
ORGANICHE
ARGILLE
SABBIE LIMOSE
SABBIE CON GHIAIA
0
5
10
15
20
PROFONDITA' IN METRI

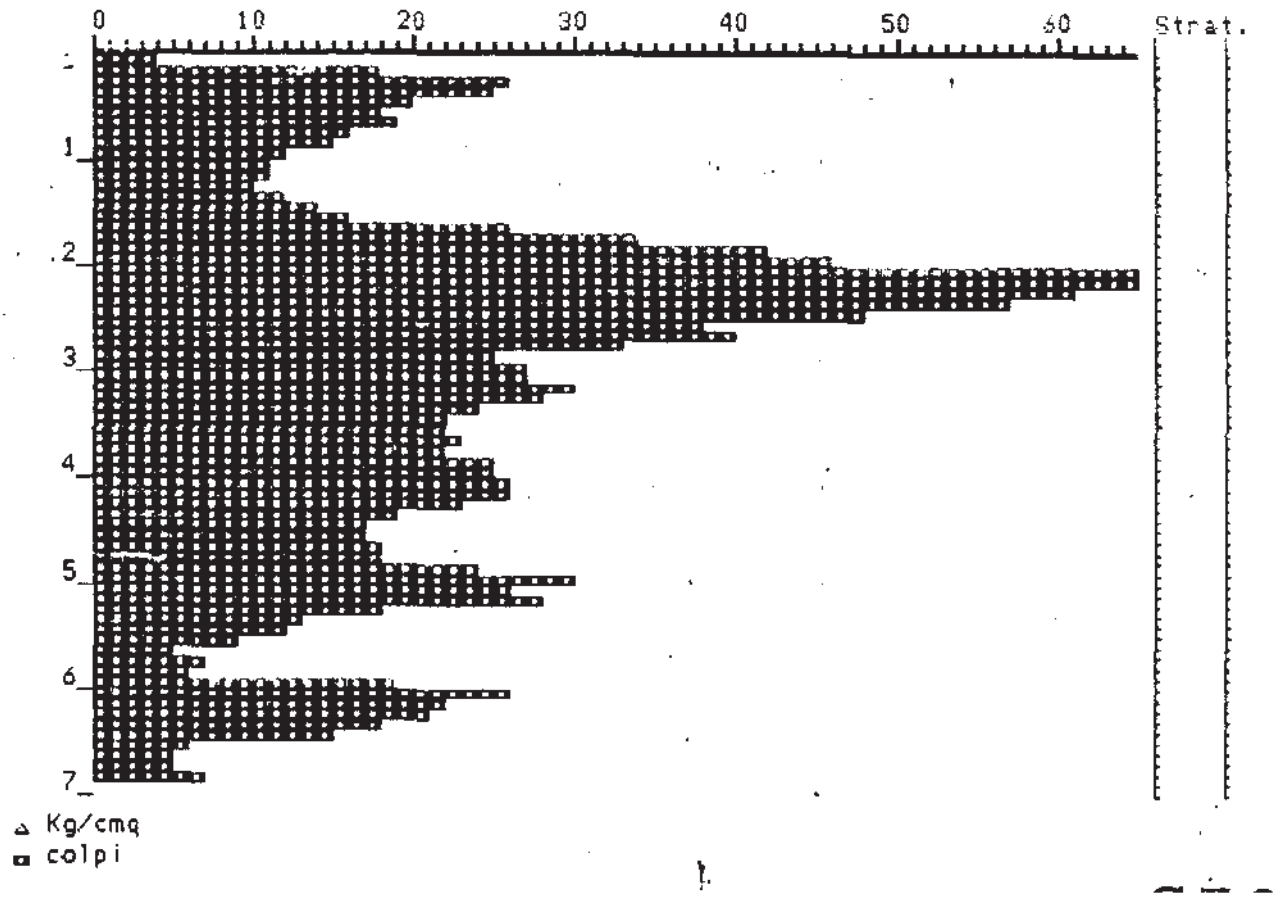

RT
kg
RP
kg/cmq
RP/RL
RL
kg/cmq
0
5
10
15
20

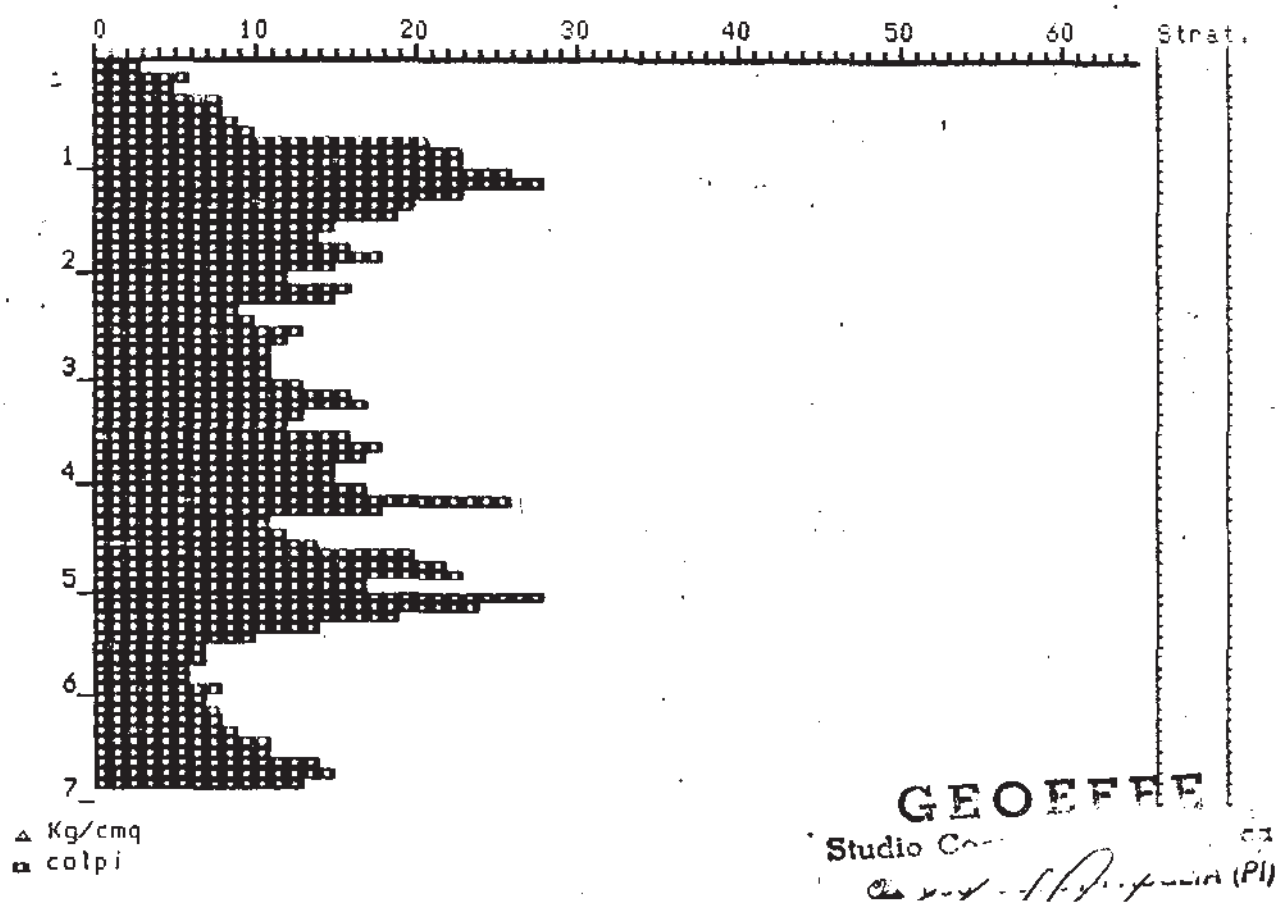
letture di campagna				valori derivati							
PROFONDITA' (metri)	Rpt (Kg)	Rat (Kg)	Rt (Kg)	Rat-Rpt (Kg)	Ral (Kg/cmq)	Rp/Ral	Rt-Rpt (Kg)	FI (gradi)	Dr (%)	Cu (Kg/cmq)	av (cmq/t)
.2											
.4											
.6											
.8	60	110	250	50	.33	18	190			.24	25.93
1	110	200	400	90	.6	18	290			.44	19.64
1.2	170	220	500	50	.33	51	330	25	15		17.75
1.4	130	200	550	70	.46	28	420			.52	18.72
1.6	80	140	600	60	.4	20	520			.32	22.29
1.8	160	220	650	60	.4	40	490			.64	17.93
2	180	260	700	80	.53	34	520			.72	17.6
2.2	220	330	800	110	.73	30	580			.88	17.15
2.4	250	420	1000	170	1.13	22	750			1	16.83
2.6	270	440	1150	170	1.13	24	880			1.88	16.6
2.8	240	470	1250	230	1.53	16	1010			.96	16.94
3	230	420	1650	190	1.26	18	1470			.92	17.84
3.2	300	520	2000	220	1.46	20	1760			1.2	16.21
3.4	240	460	2000	220	1.46	16	1760			.96	16.94
3.6	300	560	2500	260	1.73	17	2200			1.2	16.21
3.8	280	520	2700	240	1.6	18	2420			1.12	16.48
4	300	510	3000	210	1.4	21	2700			1.2	16.21
4.2	300	510	3300	210	1.4	21	3000			1.2	16.21
4.4	250	500	3400	250	1.66	15	3150			1	16.83
4.6	250	450	3600	200	1.33	19	3350			1	16.83
4.8	230	430	3800	200	1.33	17	3570			.92	17.84
5	300	500	4000	200	1.33	23	3700			1.2	16.21
5.2	320	520	4400	200	1.33	24	4080			1.28	15.91
5.4	290	550	4700	260	1.73	17	4410			1.16	16.35
5.6	290	490	4800	200	1.33	22	4510			1.16	16.35
5.8	320	510	5100	190	1.26	25	4780			1.28	15.91
6	290	560	5300	270	1.8	16	5010			1.16	16.35
6.2	250	520	5600	260	1.73	15	5340			1.04	16.72
6.4	240	480	5800	240	1.6	15	5560			.96	16.94
6.6	320	510	6000	190	1.26	25	5680			1.28	15.91
6.8	360	520	6200	160	1.06	34	5840			1.44	15.24
7	200	500	6400	220	1.46	19	6120			1.12	16.48
7.2	350	600	6600	250	1.66	21	6250			1.4	15.42
7.4	270	520	7000	250	1.66	16	6730			1.08	16.6
7.6	310	470	7200	160	1.06	29	6890			1.24	16.06
7.8	300	500	7500	200	1.33	23	7000			1.2	16.21
8	270	530	7400	260	1.4	12	7230			.68	17.75

letture di campagna				valori derivati							
PROFONDITA' (metri)	Rpt (Kg)	Rat (Kg)	Rt (Kg)	Rat-Rpt (Kg)	Ral (Kg/cmq)	Rp/Ral	Rt-Rpt (Kg)	FI (gradi)	Dr (%)	Cu (Kg/cmq)	av (cmq/t)
8.2	370	520	7250	150	1	37	6880			1.48	15.06
8.4	390	520	7300	130	.86	45	6910			1.56	14.69
8.6	430	500	7500	170	1.13	38	7070			1.72	13.92
8.8	450	570	7700	220	1.46	31	7250			1.8	13.53
9	470	510	7900	40	.26	176	7430	35	37		13.24
9.2	450	600	8000	230	1.53	29	7350			1.8	13.53
9.4	620	920	8000	300	2	31	7380			3.1	10.53
9.6	570	780	8500	210	1.4	41	7930			2.85	11.33
9.8	560	800	8700	240	1.6	35	8140			2.8	11.5
10	550	830	8900	280	1.86	29	8350			2.75	11.67

Letture di campagna				valori derivati							
PROFONDITA' [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]	Rat-Rpt [Kg]	Rat [Kg/cmq]	Rp/Rat	Rt-Rpt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	av [cmq/t]
.2											
.4											
.6											
.8	120	260	300								
1	230	350	600	140	.93	13	180			.48	19.13
1.2	300	460	850	120	.8	29	370			.92	17.84
1.4	270	490	900	160	1.04	28	550			1.2	16.21
1.6	150	310	850	220	1.47	18	630			1.08	16.6
1.8	100	220	800	160	1.04	14	700			.6	18.14
2	130	170	800	320	.8	13	700			.4	20.3
2.2	150	200	900	40	.26	49	670	25	12		18.72
2.4	170	260	1000	50	.33	45	750			.6	18.14
2.6	250	350	1100	90	.6	29	830			.68	17.75
2.8	200	360	1200	100	.66	38	850			1	16.83
3	220	360	1400	160	1.04	19	1000			.8	17.36
3.2	210	360	1600	140	.93	24	1100			.88	17.15
3.4	190	320	1850	150	1	21	1300			.84	17.25
3.6	180	310	2000	130	.86	22	1650			.76	17.47
3.8	160	260	2050	130	.86	21	1800			.72	17.6
4	180	260	2000	100	.66	24	1800			.64	17.93
4.2	160	310	2200	80	.53	34	1800			.72	17.6
4.4	190	320	2300	150	1	16	2000			.64	17.93
4.6	260	370	2500	130	.86	22	2100			.76	17.47
4.8	320	460	2700	110	.73	33	2240			1.04	16.72
5	320	510	2900	140	.93	34	2380			1.28	15.91
5.2	330	530	3400	190	1.26	25	2580			1.28	15.91
5.4	320	620	3800	200	1.33	25	3070			1.32	15.75
5.6	380	660	4200	290	1.93	17	3480			1.28	15.91
5.8	330	620	4600	280	1.86	20	3820			1.52	14.87
6	390	520	4900	290	1.93	17	4270			1.32	15.75
6.2	360	660	5200	130	.86	45	4500			1.56	14.69
6.4	300	660	5500	300	2	18	4840			1.44	15.24
6.6	270	530	5600	360	2.4	13	5200			1.2	16.21
6.8	330	520	6000	260	1.73	16	5330			1.08	16.6
7	390	520	6150	190	1.26	26	5670			1.32	15.75
7.2	300	400	6500	130	.86	45	5760			1.56	14.69
7.4	270	520	6700	300	2	15	6200			1.2	16.21
7.6	260	450	6700	250	1.66	16	6430			1.08	16.6
7.8	240	460	7000	170	1.13	25	6420			1.12	16.48
8	260	410	7100	220	1.46	16	6760			.96	16.94
				150	1	26	6840			1.04	16.72

Letture di campagna				valori derivati							
PROFONDITA' [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]	Rat-Rpt [Kg]	Rat [Kg/cmq]	Rp/Rat	Rt-Rpt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	av [cmq/t]
8.2	290	570	7200	280	1.86	16	6910			1.16	16.35
8.4	270	480	7250	210	1.4	19	6980			1.08	16.6
8.6	300	610	7200	310	2.06	15	6900			1.2	16.21
8.8	300	620	7500	320	2.13	14	7000			1.2	16.21
9	280	530	7500	250	1.66	17	7220			1.12	16.48
9.2	350	650	7700	320	2.13	15	7370			1.32	15.75
9.4	360	680	8000	320	2.13	17	7640			1.44	15.24
9.6	350	680	8200	330	2.2	16	7850			1.4	15.42
9.8	410	720	8400	310	2.06	20	7990			1.44	14.3
10	400	740	8550	340	2.26	18	8150			1.4	14.5


0
10
20
30
40
50
60
Strat.
1
2
3
4
5
6
7
Kg/cmq
colpi


0
10
20
30
40
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60
Strat.
1
2
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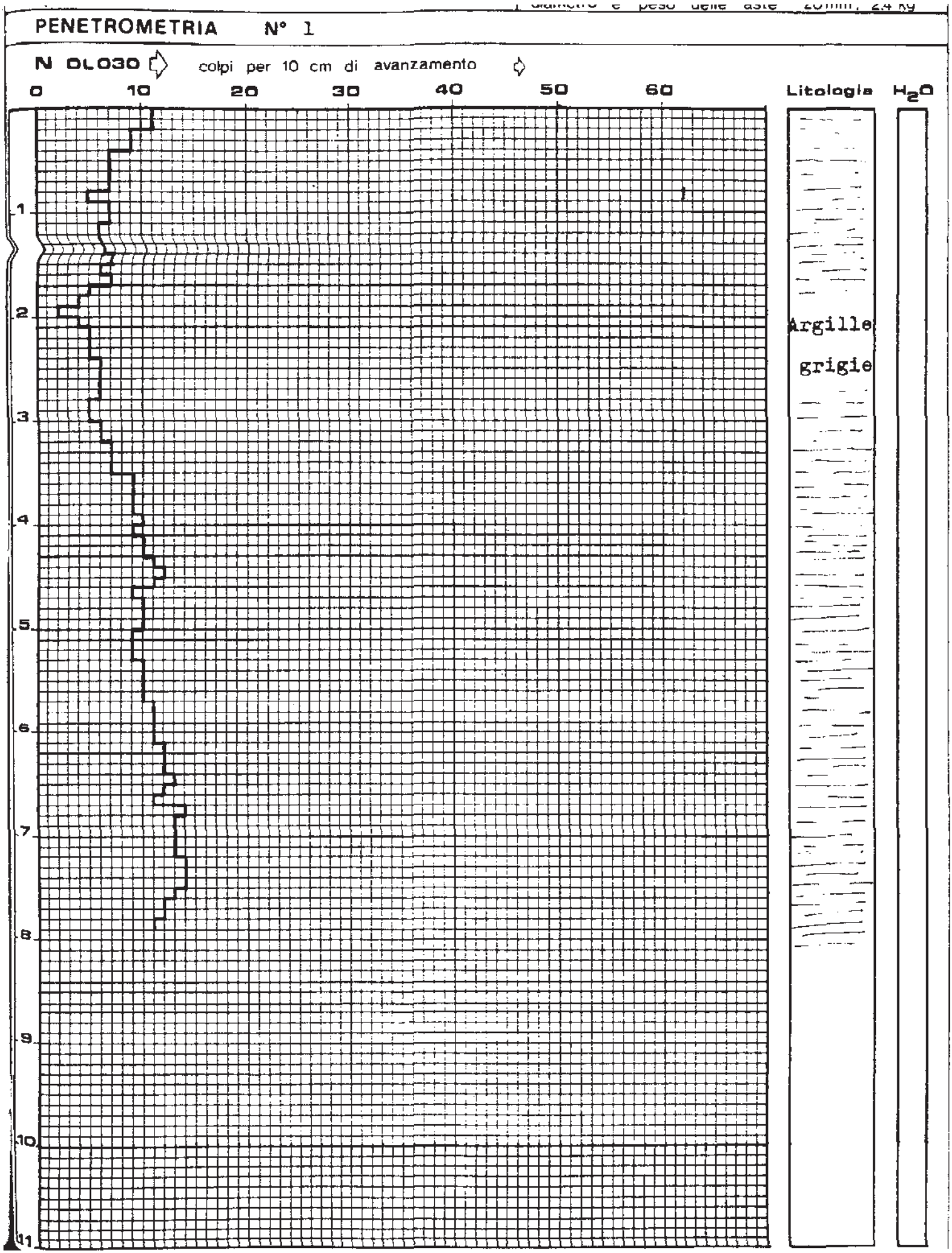
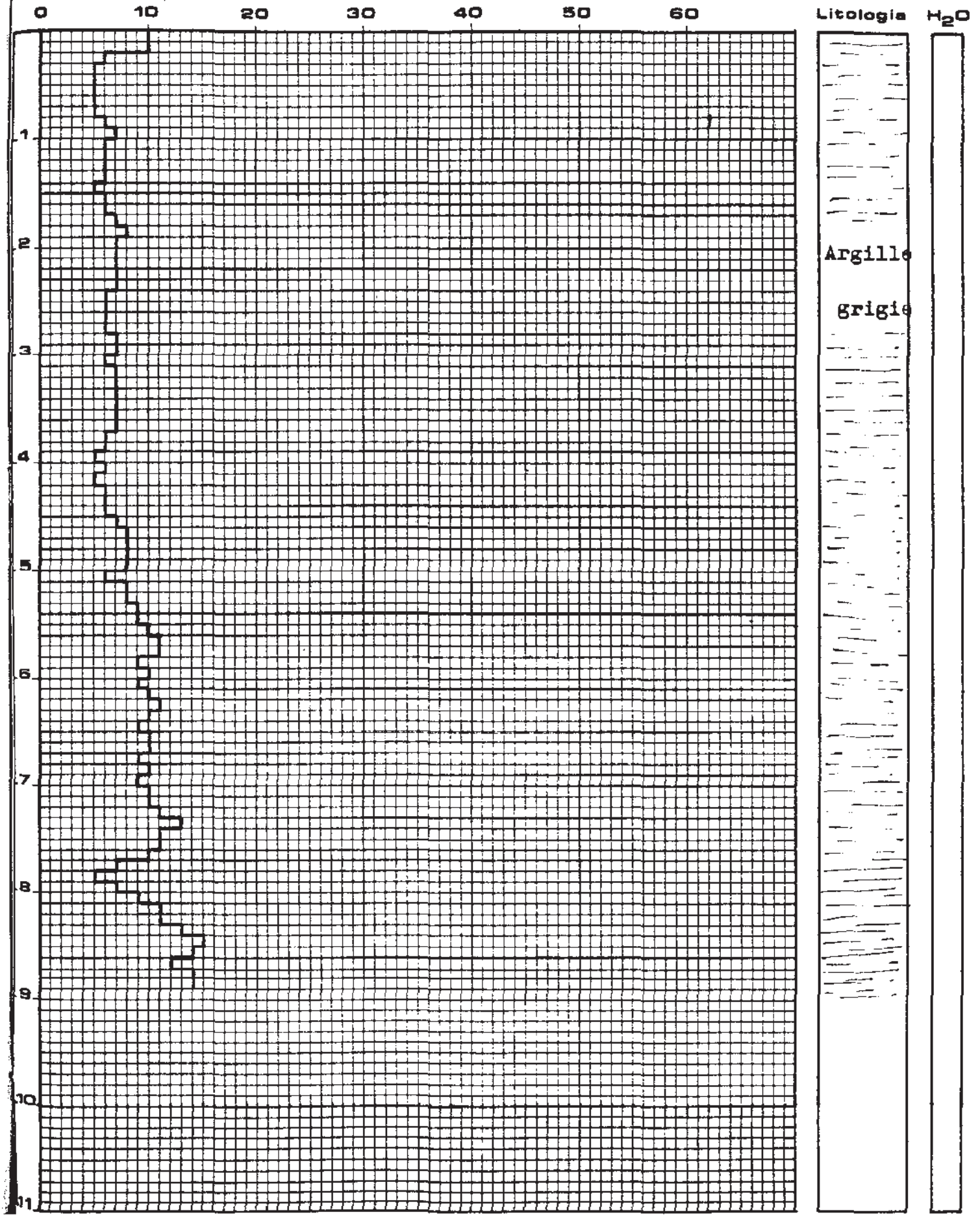
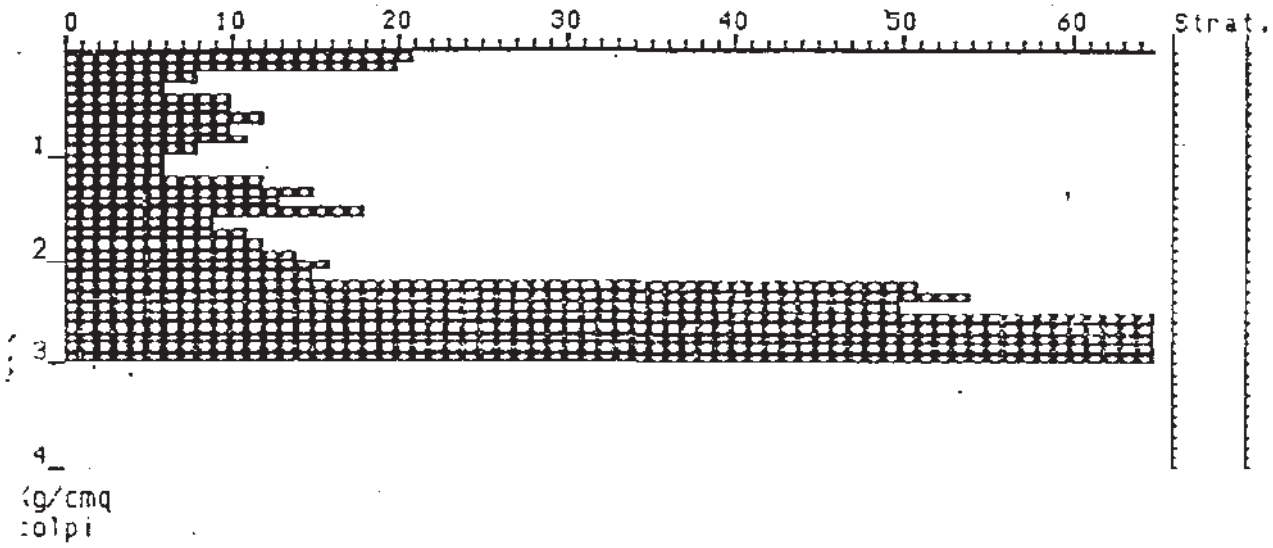
4
5
6
7
Kg/cmq
colpi
GEOEFFE
Studio C
(PI)


PENETROMETRIA N° 1
N 0L030
colpi per 10 cm di avanzamento
0
10
20
30
40
50
60
Litologia
H_2O
1
2
3
4
5
6
7
8
9
10
11
Argille
grigie

PENETROMETRIA N° 2

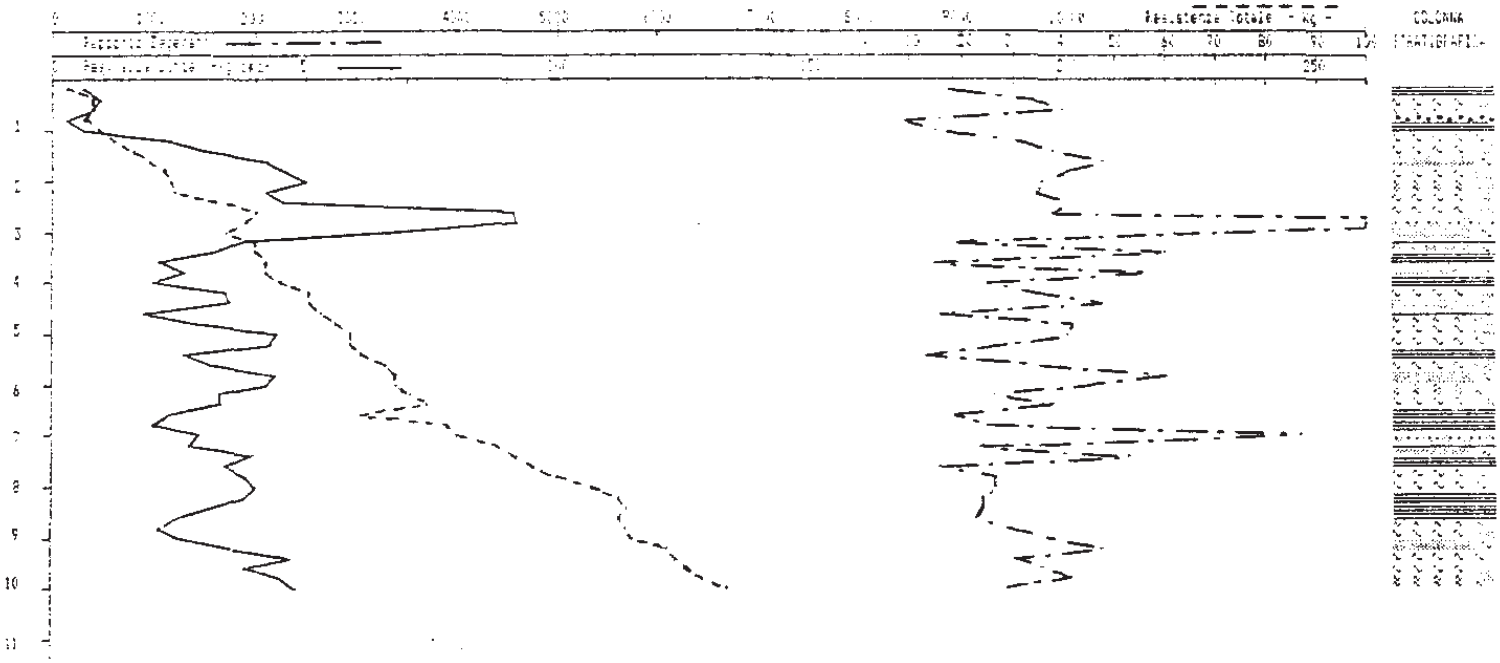
N DL030 ⇨ colpi per 10 cm di avanzamento ⇨

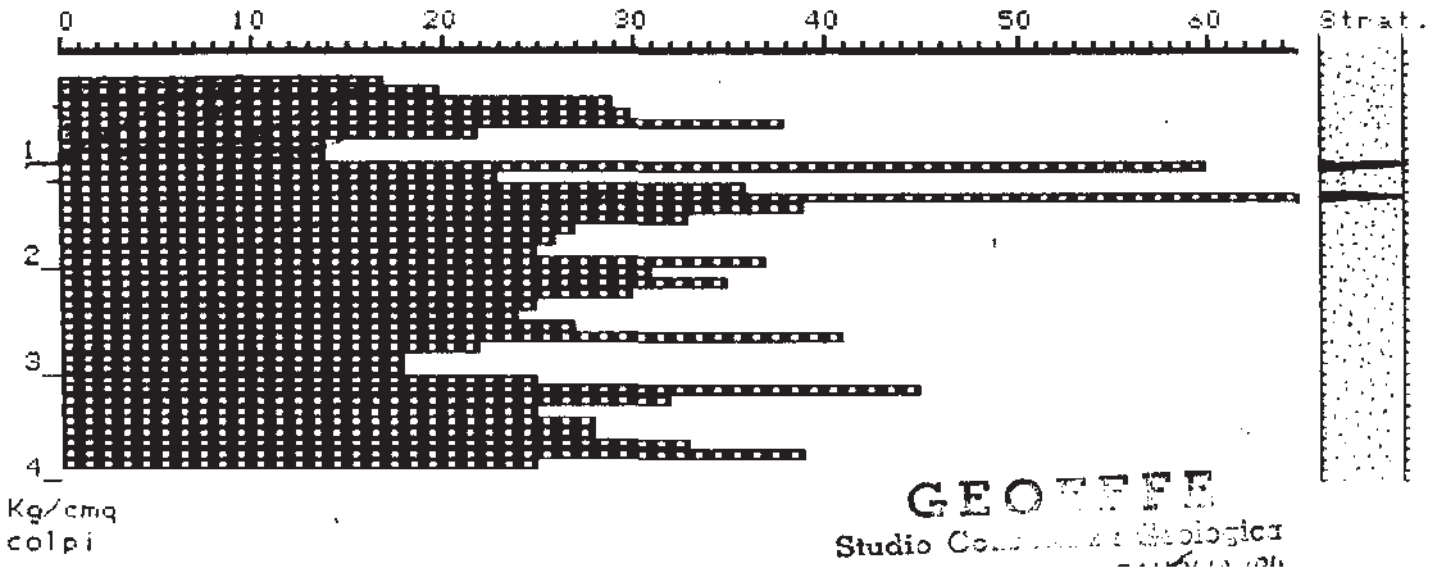


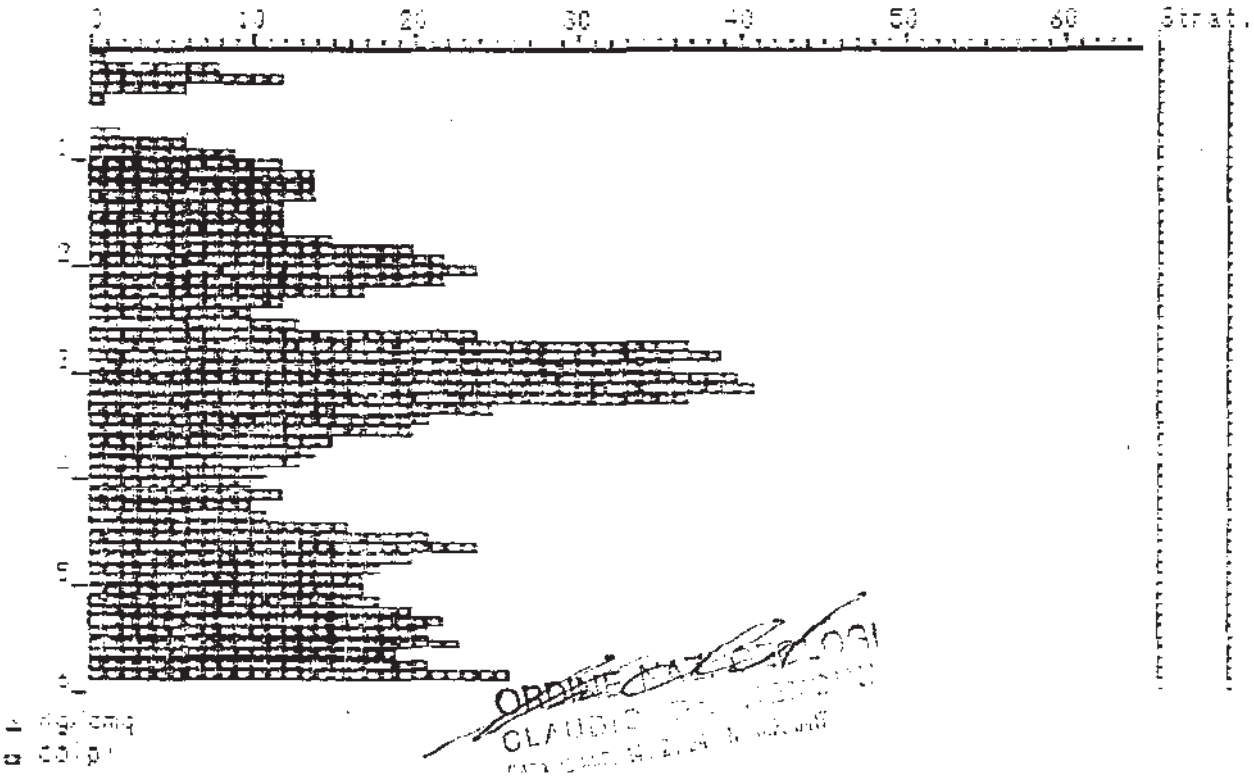

0
10
20
30
40
50
60
Strat.
1
2
3
4
(g/cmq
colpi

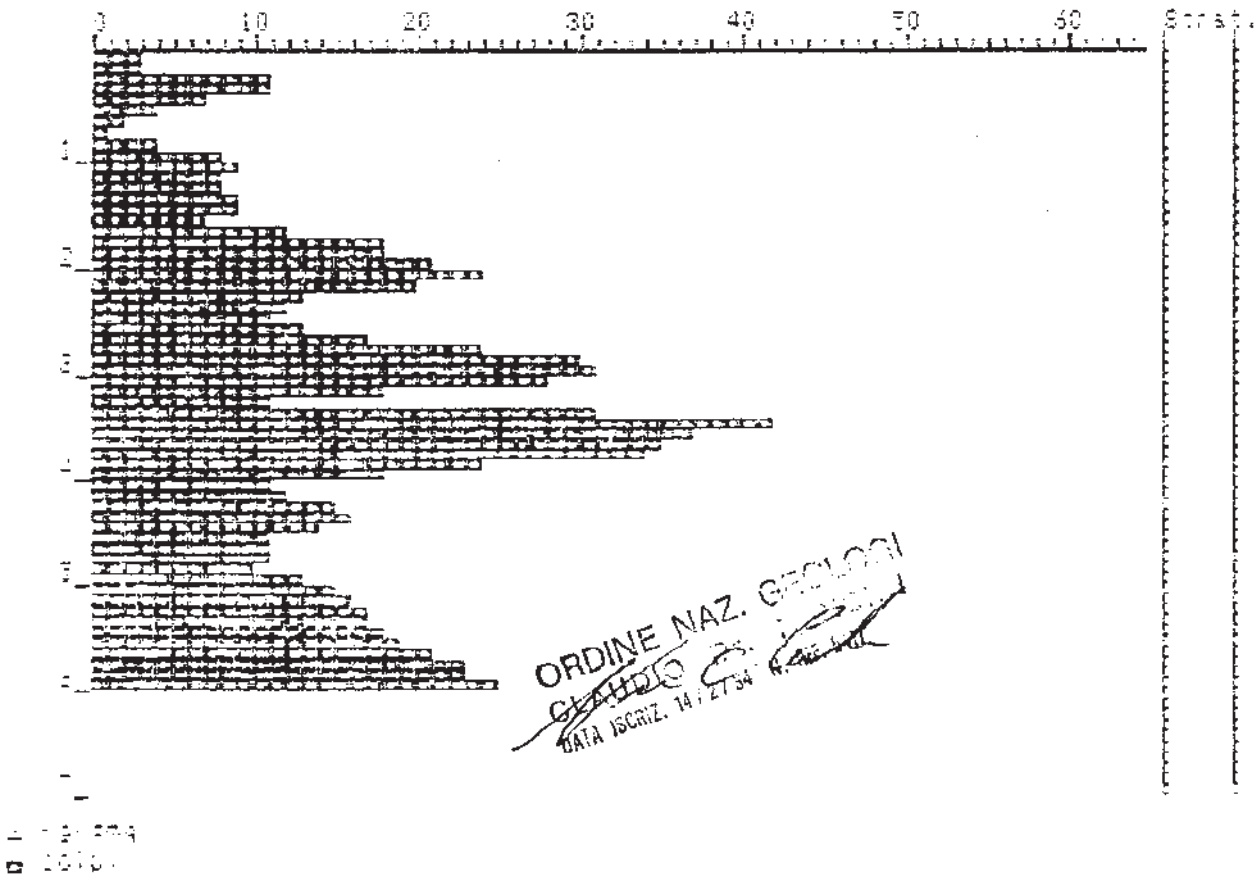
PROFONDITÀ [metri]	Rpt [kg]	Rst [kg]	Rt [kg]	Rst-Rpt [kg]	Rsl [kg/cm2]	Rsl/Rp	Rt-Rpt [kg]	Fl [g/cm2]	Ir [%]	Cu [kg/cm2]	Ev [cm/s]
.2	7	160	230	53	.1	35	130			.26	22.81
.4	50	80	250	30	.1	25	200			.2	29
.6	60	110	250	50	.13	18	290			.24	25.95
.8	60	110	250	50	.1	4[illegible]	270			.32	22.29
1	200	310	550	110	.23	27	350			.8	17.36
1.2	290	520	850	230	.66	45	460			1.56	14.69
1.4	560	720	1150	170	1.13	49	540	31	42		11.5
1.6	580	800	1450	220	1.46	40	670			2.9	11.16
1.8	850	1150	1800	280	1.86	46	650	33	55		7.82
2	880	1050	1700	170	1.13	38	820	32	56		7.56
2.2	520	1000	1[illegible]	470	2.13	17	1270			2.65	12.02
2.4	650	880	2150	230	1.53	42	1500			3.25	10.1
2.6	360	980	2500	620	2.13	31	1840			3.3	9.96
2.8	980	1230	2750	250	1.66	59	1770	32	60		6.79
3	850	1[illegible]	2850	370	2.46	34	1970			4.15	8
3.2	520	930	2650	310	2.06	25	2080			2.6	12.2
3.4	70[illegible]	480	2450	180	1.2	25	2150			1.2	16.21
3.6	160	280	2550	120	.8	20	2390			.64	17.93
3.8	170	250	2600	80	.53	32	2430			.68	17.75
4	160	230	2600	70	.46	34	2440			.64	17.93
4.2	210	290	2950	80	.53	19	2740			.64	17.25
4.4	240	340	3100	100	.66	36	2860			.96	16.94
4.6	240	390	3200	150	1	24	2960			.96	16.94
4.8	320	450	3200	120	.8	41	2870			1.32	15.75
5	320	410	3250	180	1.2	19	3020			.92	17.64
5.2	260	410	3250	150	1	26	3090			1.04	16.72
5.4	28	420	34[illegible]	130	.86	31	3121			1.12	16.48
5.6	320	440	3550	120	.8	40	3230			1.36	15.95
5.8	270	47	37[illegible]	190	1.26	25	3470			1.46	16.6
6	3.0	46	37[illegible]	150	1	31	3390			1.24	16.06
6.2	220	350	3[illegible]	130	.86	25	3650			.88	17.25
6.4	270	250	3[illegible]	20	.4	57	3670	27	2[illegible]		17.34
6.6	720	4[illegible]	41	30	.2	52	3790	29	26		15.38
6.8	3[illegible]	53	4[illegible]	120	.8	47	3860	2[illegible]	32		14.69
7	30	37	45[illegible]	30	.2	42	4120	3	2[illegible]		17.92
7.2	3[illegible]	6[illegible]	3[illegible]	30	.2	25	4[illegible]			2.0	12.57
7.4	3[illegible]	45	5[illegible]	30	.2	2[illegible]	4550			1.04	14.7
7.6	3[illegible]	6[illegible]	5[illegible]	120	1.[illegible]	19	4680			1.68	14.12
7.8	55	7[illegible]	6[illegible]	17	.1[illegible]	42	4850			2.75	11.67
8	3[illegible]	8[illegible]	7[illegible]	150	1.[illegible]	22	5[illegible]			2.6	11.5

	Letture di laboratorio			valori derivati							
PROFONDITA' [metri]	Rpt [kg]	Rat [kg]	Rt [kg]	Rat-Rpt [kg]	Rat [kg-cm2]	Rp/Rat	Rt-Rpt [kg]	Fs [grad.]	Gr [%]	Cu [kg/cm2]	Ev [kg/cm2]
8.2	7[illegible]	8[illegible]	[illegible]	470	[illegible]	32	5[illegible]			1.56	14.69
8.4	5[illegible]	8[illegible]	[illegible]	510	[illegible]	24	5850			2.0	12.57
8.6	5[illegible]	8[illegible]	[illegible]	380	1.8[illegible]	28	5730			2.6	12.2
8.8	5[illegible]	8[illegible]	[illegible]	280	1.8[illegible]	21	5900			1.6	14.5
9	4[illegible]	6[illegible]	[illegible]	240	1.[illegible]	26	[illegible]940			1.64	14.7
9.2	4[illegible]	6[illegible]	[illegible]	220	1.4[illegible]	31	[illegible]250			1.8	13.53
9.4	5[illegible]	7[illegible]	[illegible]	270	1.8	29	[illegible]380			2.6	12.2
9.6	5[illegible]	8[illegible]	7[illegible]	240	2.2[illegible]	23	[illegible]930			2.6	12.2
9.8	5[illegible]	8[illegible]	7[illegible]	350	2.33	21	[illegible]500			2.5	12.57
10	4[illegible]	7[illegible]	7[illegible]	300	2	23	7000			1.8	13.53




0
10
20
30
40
50
60
Strat.
1
2
3
4
Kg/cmq
colpi
GEO
Studio


0
10
20
30
40
50
60
Strat.

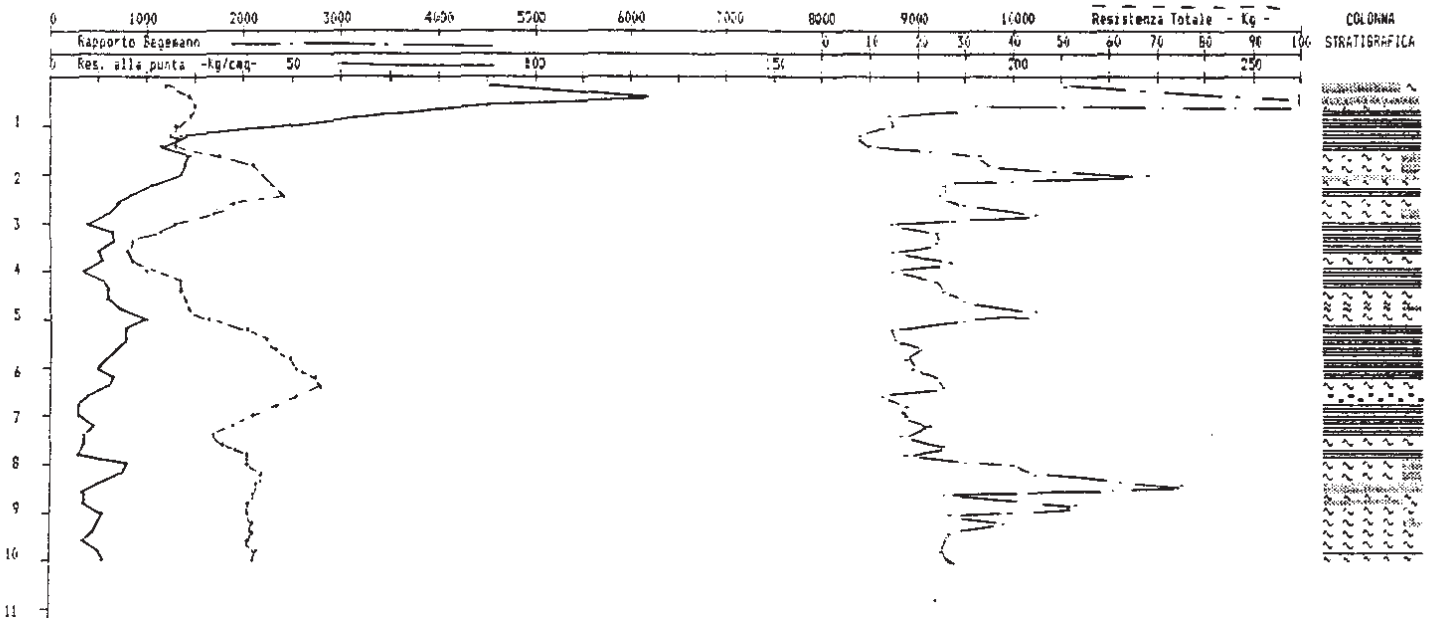


letture di campagna / valori derivati

PROFONDITA' [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]	Rat-Rpt [Kg]	Rai [Kg/cmq]	Rp/Rai	Rt-Rpt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	av [cmq/t]
.2	910	1150	1250	270	1.8	5	390	33	57		7.31
.4	1240	1400	1450	160	1.06	11	210	31	47		5.27
.6	990	1720	1500	820	2.3	12	600			4.5	7.29
.8	860	1360	1450	700	4.66	13	590			3.2	9.91
1	500	1000	1200	500	3.33	15	800			2.5	12.57
1.2	570	770	1250	200	1.33	8	980			1.08	16.6
1.4	230	590	1300	360	2.4	10	1070			.92	17.04
1.6	290	420	1750	130	.86	12	1460			1.16	16.25
1.8	280	400	2150	120	.8	15	1850			1.12	16.48
2	270	350	2200	80	.4	18	1930	29	23		16.6
2.2	210	330	2300	120	.8	26	2090			.84	17.28
2.4	170	270	2400	100	.66	25	2230			.68	17.78
2.6	140	210	1900	70	.46	53	1790			.56	18.4
2.8	120	160	1700	40	.26	45	1580			.48	19.15
3	80	160	1300	80	.53	15	1220			.32	22.29
3.2	130	210	1150	80	.53	24	1020			.52	18.72
3.4	130	210	850	80	.53	24	720			.52	18.72
3.6	150	190	800	100	.66	15	700			.4	20.3
3.8	110	170	850	60	.4	27	740			.44	19.64
4	70	140	1000	70	.46	15	930			.28	22.81
4.2	110	180	1250	70	.46	24	1240			.44	19.64
4.4	120	190	1250	70	.46	26	1230			.48	19.15
4.6	120	180	1400	60	.4	33	1280			.48	19.15
4.8	150	200	1450	50	.33	15	1300			.6	18.14
5	200	200	1650	100	.66	23	1450			.8	17.36
5.2	160	320	2050	160	1.06	15	1890			.64	17.92
5.4	160	310	2250	150	1	16	2090			.64	17.92
5.6	140	240	2250	100	.66	21	2210			.56	18.4
5.8	120	220	2500	100	.66	18	2380			.48	19.15
6	150	180	2550	80	.53	19	2450			.4	20.3
6.2	150	240	2350	90	.53	24	2620			.52	18.72
6.4	120	190	2300	70	.46	26	2620			.48	19.15
6.6	80	170	2550	90	.6	12	2470			.32	22.29
6.8	60	110	2350	50	.33	18	2290			.24	25.37
7	60	110	2150	50	.33	18	2040			.24	25.37
7.2	90	150	1900	60	.4	23	1810			.36	21.16
7.4	70	130	1750	60	.4	17	1620			.28	23.81
7.6	70	130	1600	60	.26	26	1530			.28	23.81
7.8	60	130	2050	70	.33	18	1900			.24	25.37
8	100	250	2050	60	1	60	1890			.64	17.92

letture di campagna / valori derivati

PROFONDITA [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]	Rat-Rpt [Kg]	Rai [Kg/cmq]	Rp/Rai	Rt-Rpt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	av [cmq/t]
8.2	150	200	2200	50	.33	45	2050			.6	18.14
8.4	100	120	2150	20	.13	75	2050	27	9		20.3
8.6	70	110	2100	40	.26	26	2030			.28	23.81
8.8	70	90	2050	20	.13	53	1980	25	7		23.81
9	110	170	2050	60	.4	27	1940			.44	19.64
9.2	100	140	2100	40	.26	38	2000			.4	20.3
9.4	90	140	2100	50	.33	27	2010			.36	21.16
9.6	70	110	2050	40	.26	26	1980			.28	23.81
9.8	100	160	2150	60	.4	25	2050			.4	20.3
10	110	170	2100	60	.4	27	1990			.44	19.64



letture di campagna

PROFONDITA' [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]
[illegible]	[illegible]	[illegible]	[illegible]

valori derivati

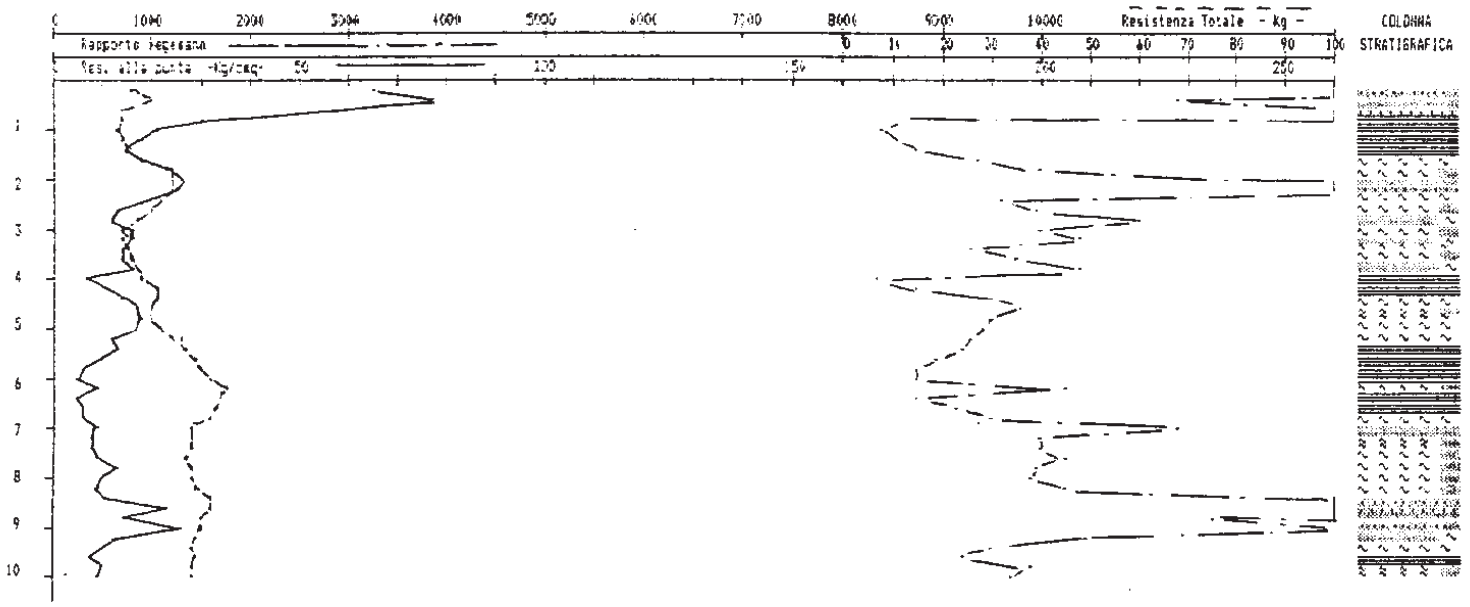
Rat-Rpt [Kg]	Rat [kg/cmq]	Rp/Rat	Rt-Rpt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	gv [cmq/t]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

letture di campagna

PROFONDITA' [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]
8.2	90	120	1450
8.4	110	120	1600
8.6	230	260	1600
8.8	150	180	1500
9	260	300	1500
9.2	130	170	1450
9.4	100	150	1400
9.6	80	130	1450
9.8	100	140	1400
10	90	130	1400

valori derivati

Rat-Rpt [Kg]	Rat [kg/cmq]	Rp/Rat	Rt-Rpt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	gv [cmq/t]
30	.2	45	1360			.36	21.16
40	.26	.65	1490	30	10		19.64
30	.2	115	1370	32	20		17.04
30	.2	75	1350	27	14		18.14
40	.26	96	1240	34	23		16.72
40	.26	49	1320	25	12		18.72
50	.33	30	1300			.4	20.3
50	.33	24	1370			.32	22.29
40	.26	38	1300			.4	20.3
40	.26	34	1310			.36	21.16

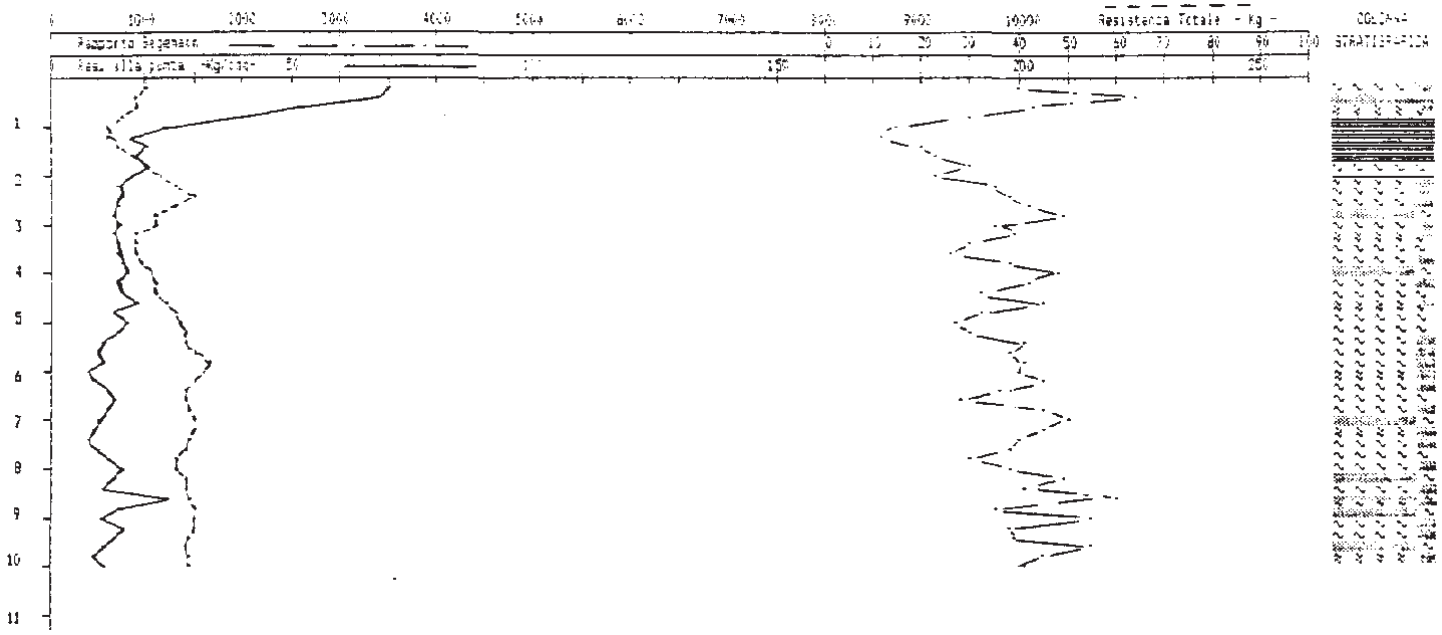


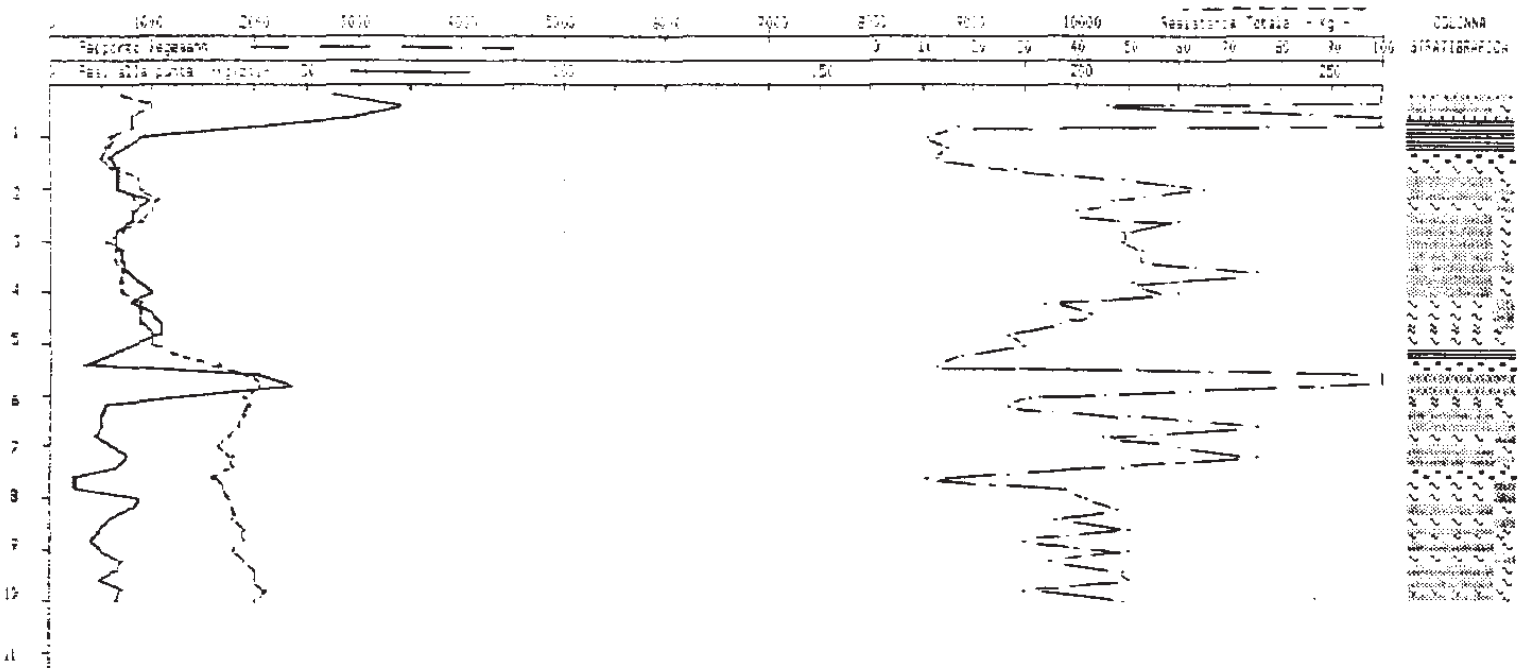
Letture di campagna — Valori derivati

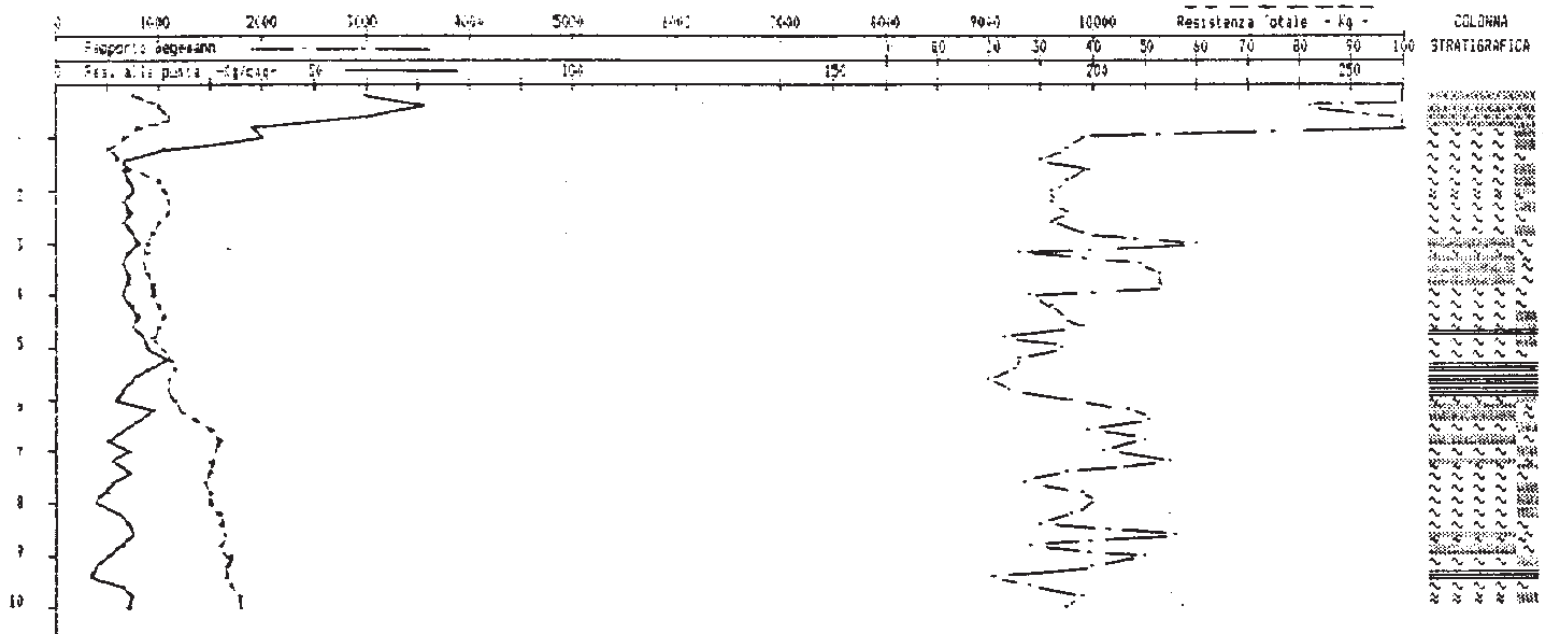
PROFONDITA' [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]	Rat-Rpt [Kg]	Rat [Kg/cmq]	Rp/Rat	Rt-Rpt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	av [cmq/t]
.2	740	760	1000	260	1.72	46	240			.13	9.33
.4	680	840	950	160	1.04	14	220	32	48		9.59
.6	520	760	920	180	1.2	43	380			.16	12.2
.8	600	840	950	240	1.53	32	350			.16	14.5
1	240	480	630	240	1.6	15	360			.96	16.98
1.2	170	380	600	210	1.4	12	420			.88	17.75
1.4	200	350	730	150	1	20	580			.8	17.36
1.6	150	300	700	120	.8	23	720			.72	17.6
1.8	200	300	1300	100	.66	30	860			.8	17.36
2	170	380	1150	210	.53	25	980			.88	17.75
2.2	140	300	1320	60	.4	35	1180			.56	18.4
2.4	150	310	1350	50	.4	38	1250			.6	18.14
2.6	140	190	1350	50	.33	42	1160			.56	18.4
2.8	130	130	1300	40	.26	49	970	25	12		18.72
3	140	240	1120	90	.4	25	940			.36	18.4
3.2	130	180	900	50	.33	39	770			.52	18.72
3.4	140	210	900	70	.46	30	760			.56	18.4
3.6	140	220	900	80	.53	26	760			.64	18.4
3.8	150	210	950	60	.4	38	800			.48	18.14
4	160	210	1050	50	.33	48	890	25	15		17.91
4.2	140	190	1100	50	.33	42	960			.36	18.4
4.4	150	220	1200	70	.46	32	950			.6	18.14
4.6	180	240	1230	60	.4	45	1020			.72	17.6
4.8	130	190	1300	60	.4	32	1170			.52	18.72
5	150	250	1350	80	.6	27	1190			.64	17.91
5.2	140	210	1400	70	.46	30	1260			.56	18.4
5.4	110	150	1400	40	.26	41	1290			.44	19.64
5.6	100	140	1350	40	.26	38	1100			.4	20.3
5.8	110	150	1350	40	.26	41	1240			.44	19.64
6	80	110	1400	30	.2	40	1320			.32	22.29
6.2	90	120	1350	30	.2	45	1410			.36	21.16
6.4	120	170	1400	50	.33	56	1280			.48	19.11
6.6	130	200	1400	70	.46	38	1270			.52	18.72
6.8	120	180	1450	60	.4	45	1330			.48	19.11
7	100	150	1500	50	.33	53	1400	25	9		20.3
7.2	90	130	1500	30	.2	45	1410			.36	21.16
7.4	80	110	1450	30	.2	45	1370			.32	22.29
7.6	120	160	1400	40	.26	38	1300			.3	20.7
7.8	130	180	1300	50	.33	39	1180			.48	19.11
8	150	210	1200	60	.4	38	1150			.6	18.14

Letture di campagna — Valori derivati

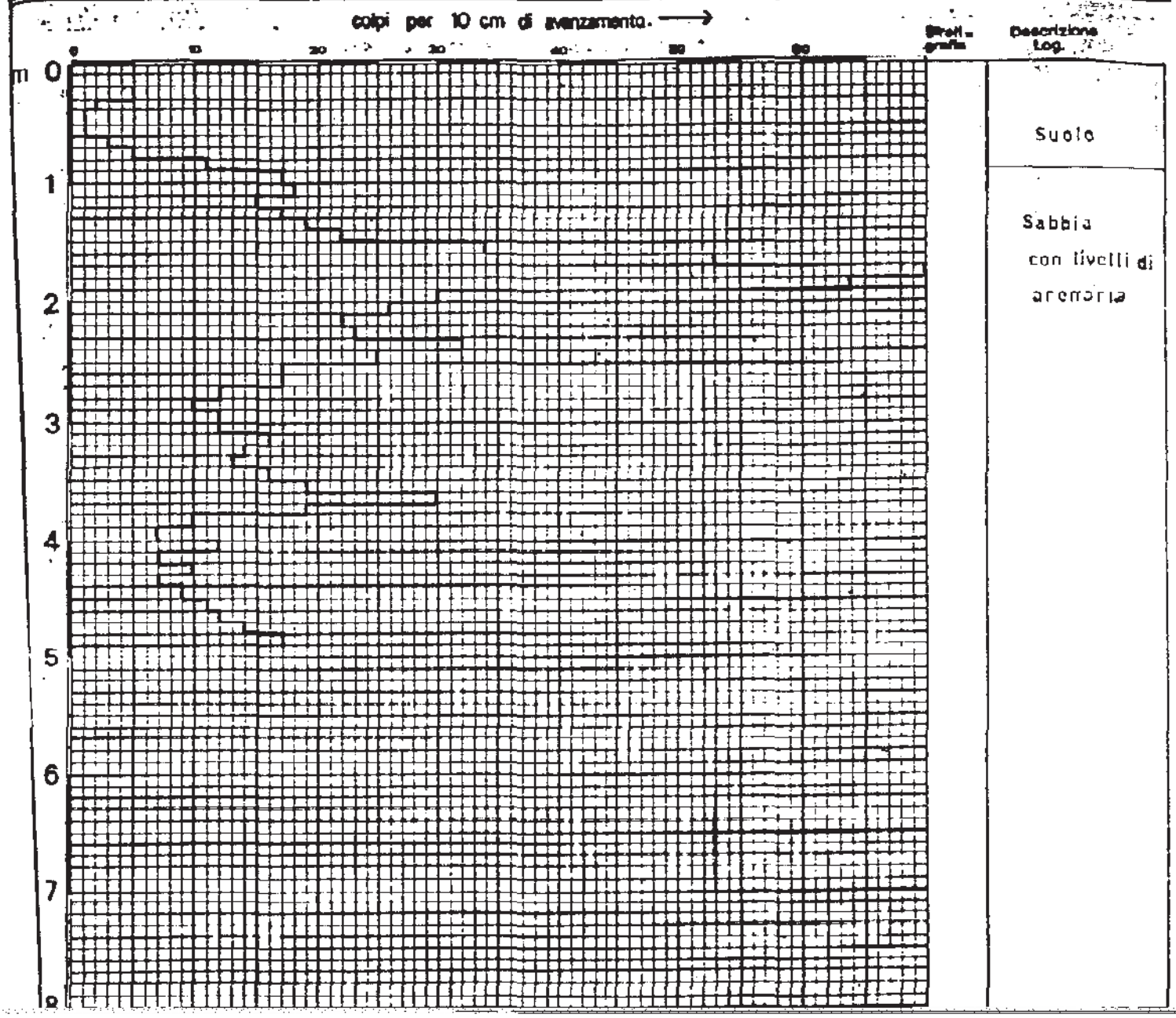
PROFONDITA' [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]	Rat-Rpt [Kg]	Rat [Kg/cmq]	Rp/Rat	Rt-Rpt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	av [cmq/t]
5.2	130	170	1400	40	.26	49	1270	25	12		18.72
5.4	110	150	1400	40	.26	41	1290			.44	19.64
5.6	240	300	1450	60	.4	60	1210	27	21		16.94
5.8	140	200	1500	60	.4	35	1360			.56	18.4
6	110	140	1500	30	.2	55	1390	25	10		19.64
6.2	150	210	1500	60	.4	38	1350			.6	18.14
6.4	130	180	1450	50	.33	39	1320			.52	18.72
6.6	130	140	1400	30	.2	55	1290	25	10		19.64
6.8	90	120	1450	30	.2	45	1360			.36	21.16
7	110	150	1450	40	.26	41	1340			.44	19.64




Resistenza Totale - Kg -
COLONNA
Rapporto Vegesann
Res. alla punta


Resistenza totale - Kg -
COLONNA STRATIGRAFICA

ENETROMETRIA N° 1



PENETROMETRIA STATICA

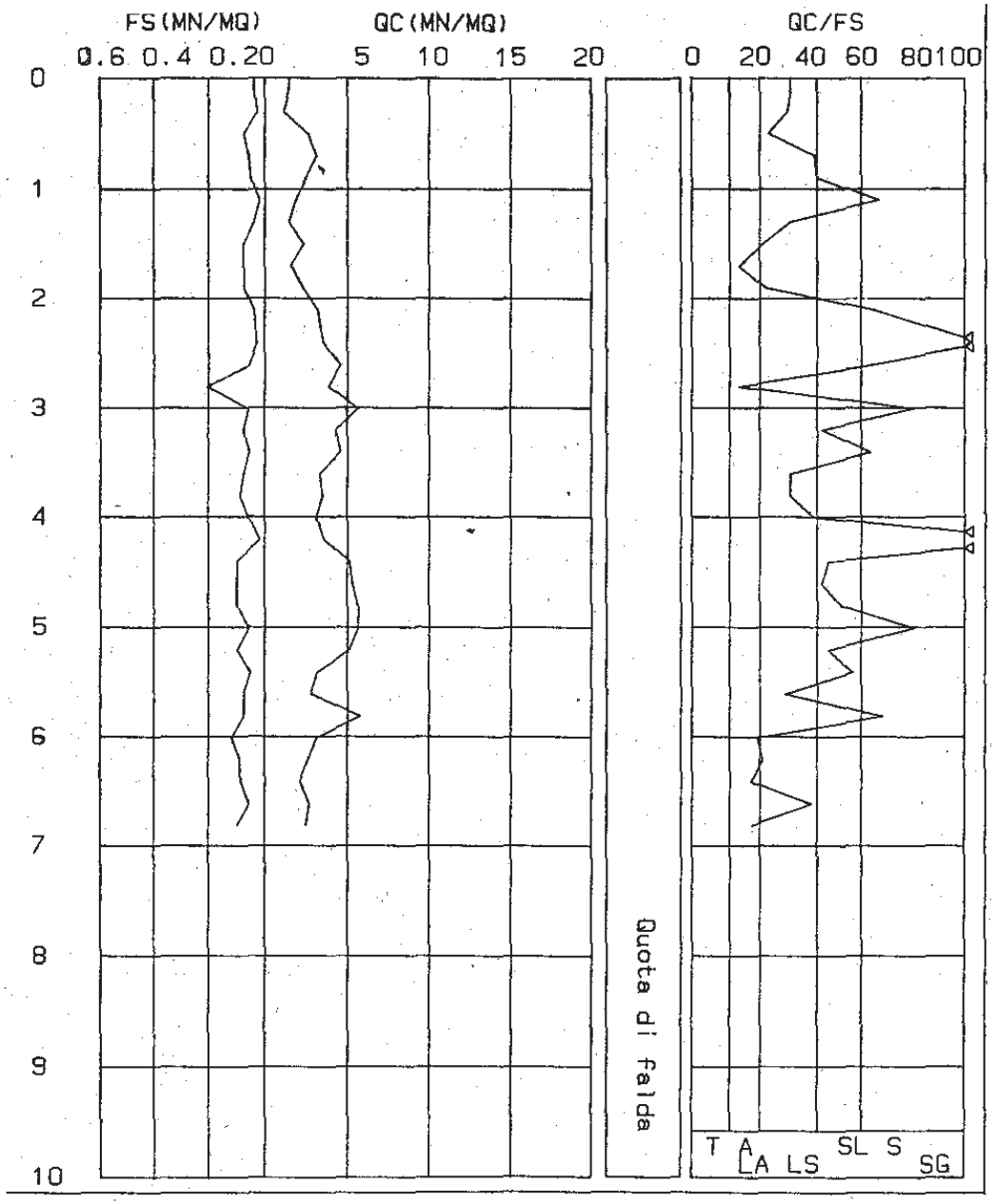
CERTIFICATO N.RO :- 56-AA CANTIERE :COSTRUZIONE DI VILLETTA UNIFAMILIARE

11

PROF.	QC	RL.	FS.	X	PROF.	QC	RL.	FS.	X	PROF.	QC	RL.	FS.	X
0.00	15	21	0.40	37.50										
0.20	15	21	0.40	37.50										
0.40	12	17	0.33	36.36										
0.60	26	39	0.87	29.89										
0.80	31	41	0.67	46.27										
1.00	25	33	0.53	47.17										
1.20	19	23	0.27	70.37										
1.40	15	21	0.40	37.50										
1.60	24	37	0.87	27.59										
1.80	16	29	0.87	18.39										
2.00	23	35	0.80	28.75										
2.20	32	39	0.47	68.09										
2.40	36	41	0.33	109.09										
2.60	45	55	0.67	67.16										
2.80	38	69	2.07	18.36										
3.00	56	66	0.67	83.58										
3.20	43	56	0.87	49.43										
3.40	45	55	0.67	67.16										
3.60	33	46	0.87	37.93										
3.80	35	49	0.93	37.63										
4.00	31	41	0.67	46.27										
4.20	36	40	0.27	133.33										
4.40	51	66	1.00	51.00										
4.60	53	69	1.07	49.53										
4.80	56	71	1.00	56.00										
5.00	56	66	0.67	83.58										
5.20	51	66	1.00	51.00										
5.40	32	40	0.53	60.38										
5.60	28	40	0.80	35.00										
5.80	57	69	0.80	71.25										
6.00	31	49	1.20	25.83										
6.20	26	40	0.93	27.96										
6.40	21	35	0.93	22.58										
6.60	27	36	0.60	45.00										
6.80	25	41	1.07	23.36										

LEGENDA : PROF. : PROFONDITA' DI INFISSIONE CM. FS : RESISTENZA SPECIFICA AL MANICOTTO dN/cmq
QC : RESISTENZA SPECIFICA ALLA PUNTA dN/cmq X : RAPPORTO QC/FS %
RL : RESISTENZA LATERALE TOTALE dN/cmq

LITOLOGIA : T=TORBE A=ARGILLA LA=LIMI ARGILLOSI LS=LIMI SABBIOSI SL=SABBIE LIMOSE
S=SABBIE SG=SABBIE E GHIAIA AG=TERRENO AGRICOLO



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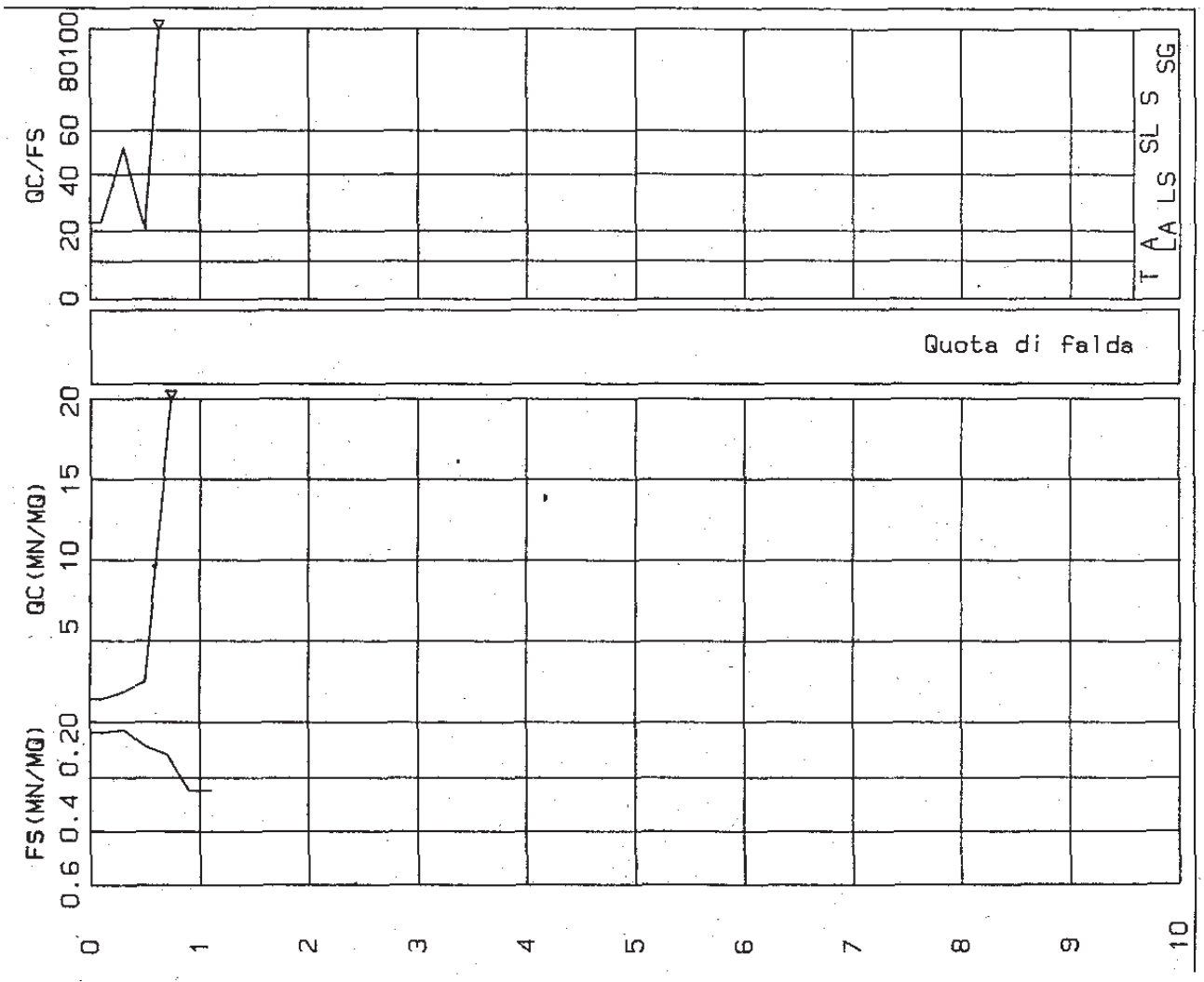
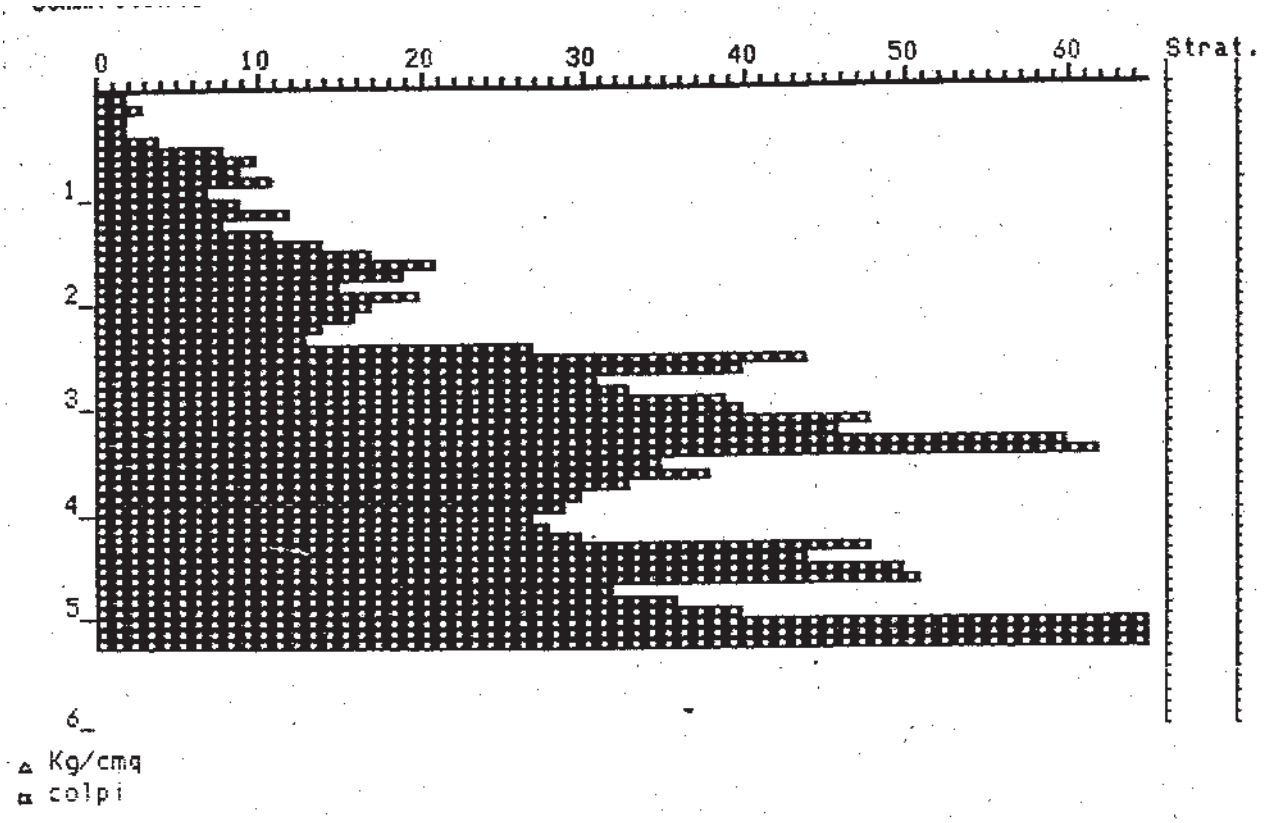
CERTIFICATO N.RO : 57-AA CANTIERE :COSTRUZIONE VILLETTA UNIFAMILIARE 13

PROF.	QC	RL.	FS.	X	PROF.	QC	RL.	FS.	X	PROF.	QC	RL.	FS.	X
0.00	14	21	0.47	29.79										
0.20	14	21	0.47	29.79										
0.40	19	24	0.33	57.58										
0.60	25	39	0.93	26.88										
0.80	172	190	1.20	143.33										
1.00	300	338	2.53	118.58										
1.20	300	338	2.53	118.58										

LEGENDA : PROF. = PROFONDITA' DI INFISSIONE CM. FS = RESISTENZA SPECIFICA AL MANICOTTO dN/cmq
QC = RESISTENZA SPECIFICA ALLA PUNTA dN/cmq X = RAPPORTO QC/FS %
RL = RESISTENZA LATERALE TOTALE dN/cmq

LITOLOGIA : T=TORBE A=ARGILLA LA=LIMI ARGILLOSI LS=LIMI SABBIOSI SL=SABBIE LIMOSE
S=SABBIE SG=SABBIE E GHIAIA AG=TERRENO AGRICOLO

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Strat.
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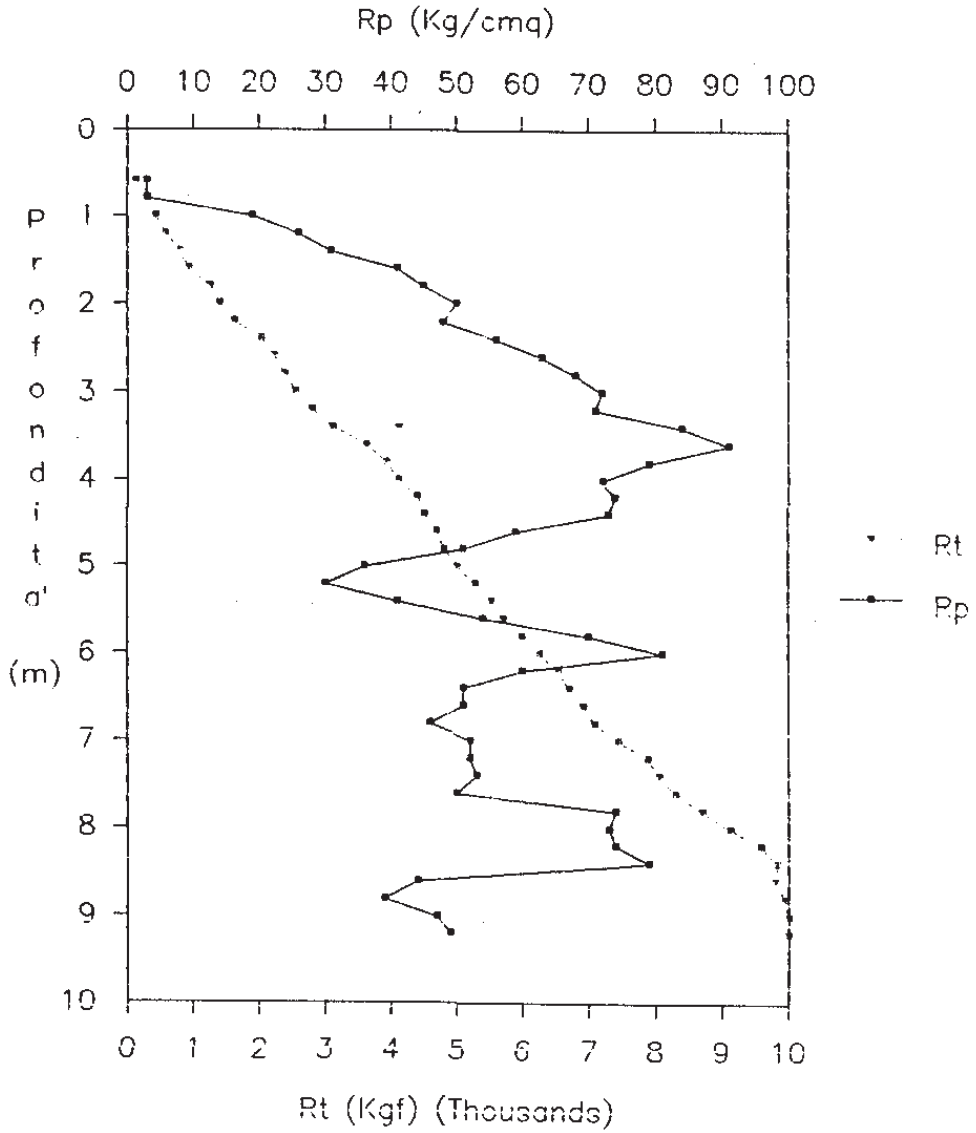
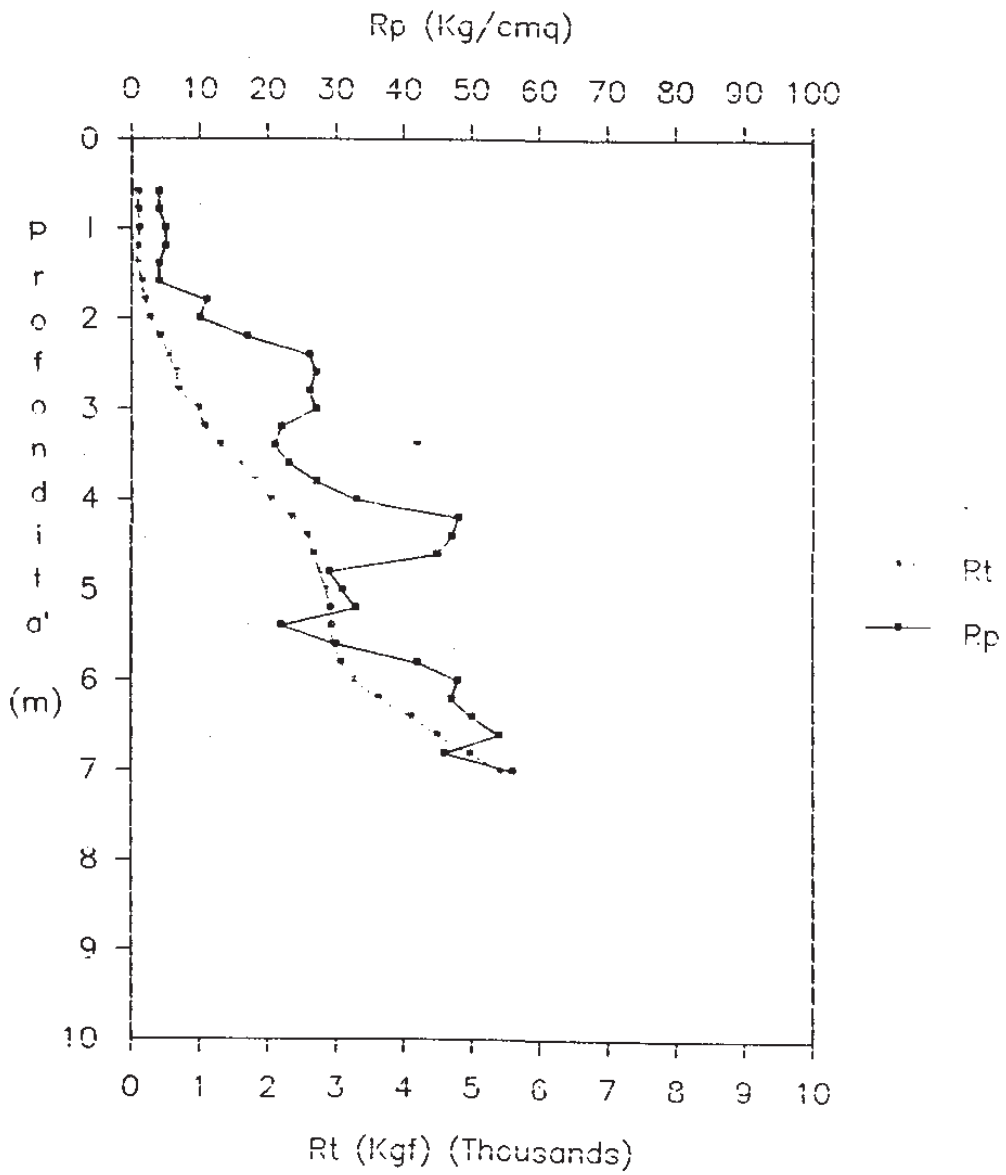
Kg/cmq
colpi



Penetrometria n 1

parametri geotecnici stimati

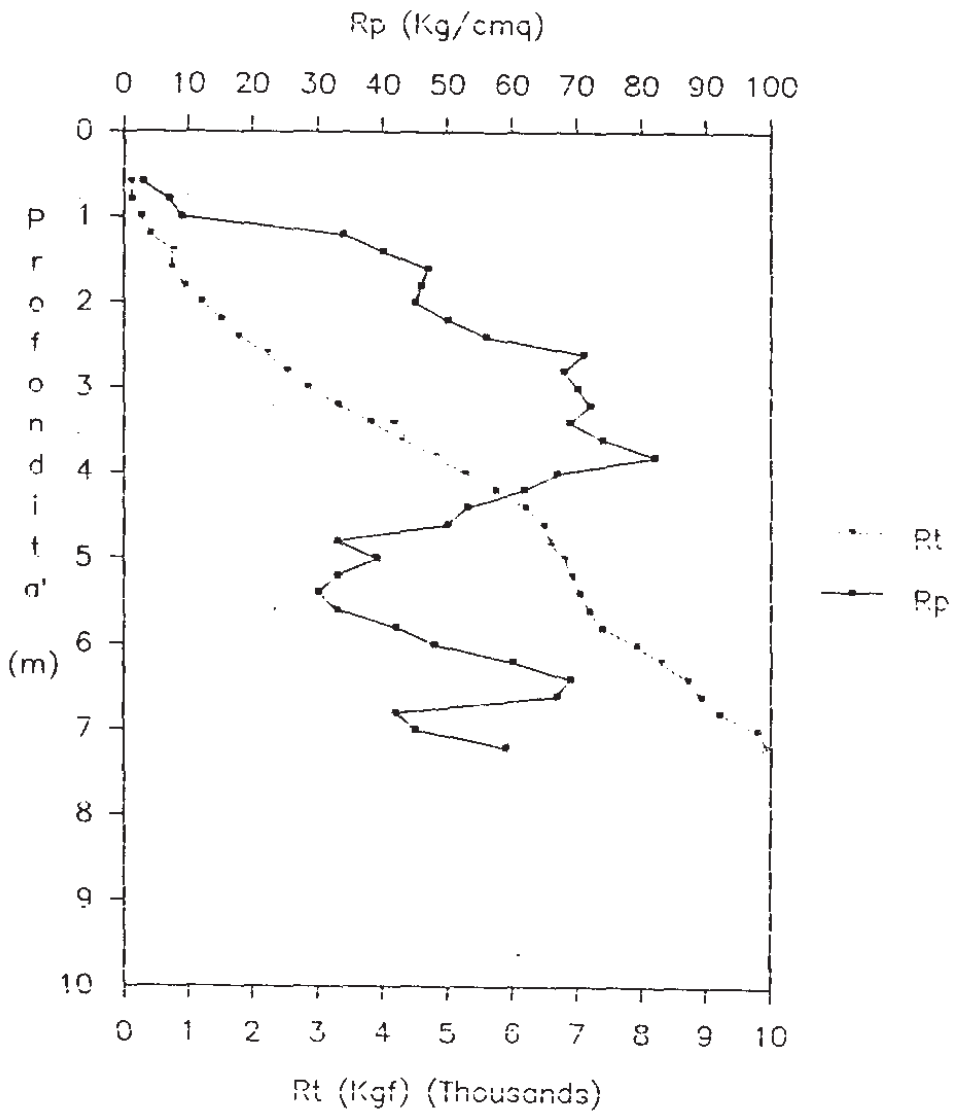
PROFONDITA' [metri]	Rp [Kg/cmq]	Rl [Kg/cmq]	Rp/Rl	Rt [Kgf]	δ [Kg/dmc]	σ_{vo} [Kg/cmq]	φ [gradi]	D_r [%]	c_u [Kg/cmq]	M_v [cmq/t]	Colonna Stratig.
0.2					1,80	,04	-	-	-	-	
0.4					1,80	,07	-	-	-	-	
0.6	3,1	,1	47	131	1,62	,10	-	-	,12	58,3	
0.8	3,3	,1	25	303	1,57	,14	-	-	,13	55,4	
1.0	19,3	,3	72	433	1,70	,17	38	52	-	16,7	
1.2	26,3	,6	44	583	1,73	,18	28	-	-	12,7	
1.4	31,3	,7	47	793	1,76	,20	29	-	-	10,6	
1.6	41,3	,7	56	933	1,81	,22	40	73	-	8,1	
1.8	45,4	1	45	1254	1,83	,23	30	-	-	7,3	
2.0	50,4	,8	63	1394	1,85	,25	40	76	-	6,6	
2.2	48,4	1,1	45	1624	1,84	,27	30	-	-	6,9	
2.4	56,4	,9	60	2034	1,88	,28	40	77	-	5,9	
2.6	63,4	1,2	53	2224	1,92	,30	41	80	-	5,3	
2.8	68,5	1,3	51	2385	1,94	,32	41	81	-	4,9	
3.0	72,5	1,5	47	2555	1,96	,34	32	-	-	4,6	
3.2	71,5	1,5	47	2805	1,96	,36	32	-	-	4,7	
3.4	84,5	1,3	63	3115	2,00	,38	41	85	-	3,9	
3.6	90,5	1,3	71	3625	2,05	,40	41	86	-	3,7	
3.8	78,6	2,4	33	3926	1,99	,42	32	-	-	4,2	
4.0	71,6	2,9	24	4116	2,04	,44	-	-	2,85	5,6	
4.2	73,6	2,1	36	4386	1,97	,46	32	-	-	4,5	
4.4	72,6	2	36	4516	1,96	,48	32	-	-	4,6	
4.6	58,6	2,3	25	4706	2,01	,50	-	-	2,32	6,8	
4.8	50,7	2,4	21	4817	1,99	,52	-	-	2,01	7,9	
5.0	35,7	1,7	21	5007	1,96	,54	-	-	1,41	11,2	
5.2	29,7	1,7	17	5287	1,94	,56	-	-	1,17	13,5	
5.4	40,7	1,1	38	5527	1,80	,57	30	-	-	8,2	
5.6	53,7	1,2	45	5707	1,87	,59	31	-	-	6,2	
5.8	69,9	1,7	40	5999	1,95	,61	32	-	-	4,8	
6.0	80,9	1,8	45	6269	2,00	,63	32	-	-	4,1	
6.2	59,9	1,2	50	6539	1,90	,65	37	61	-	5,6	
6.4	50,9	1,2	42	6709	1,85	,67	31	-	-	6,5	
6.6	50,9	1,5	35	6919	1,85	,68	31	-	-	6,5	
6.8	46	1,2	38	7090	1,83	,70	30	-	-	7,2	
7.0	52	1,7	31	7440	1,86	,72	31	-	-	6,4	
7.2	52	1,7	30	7880	1,86	,73	31	-	-	6,4	
7.4	53	1,9	27	8050	2,00	,75	-	-	2,09	7,5	
7.6	50	1,9	26	8300	1,99	,77	-	-	1,97	8	
7.8	74,2	1,7	43	8712	1,97	,79	32	-	-	4,5	
8.0	73,2	1,3	55	9122	1,97	,81	37	63	-	4,6	
8.2	74,2	1,5	51	9592	1,97	,83	36	62	-	4,5	
8.4	79,2	2,4	33	9832	2,00	,85	32	-	-	4,2	
8.6	44,2	2	22	9802	1,98	,87	-	-	1,73	9,0	
8.8	39,3	1,8	22	9933	1,97	,89	-	-	1,54	10,2	
9.0	47,3	,9	51	10093	1,84	,91	33	45	-	7,0	
9.2	49,3	1	49	10353	1,85	,92	33	46	-	6,8	



Penetrometria n 2

parametri geotecnici stimati

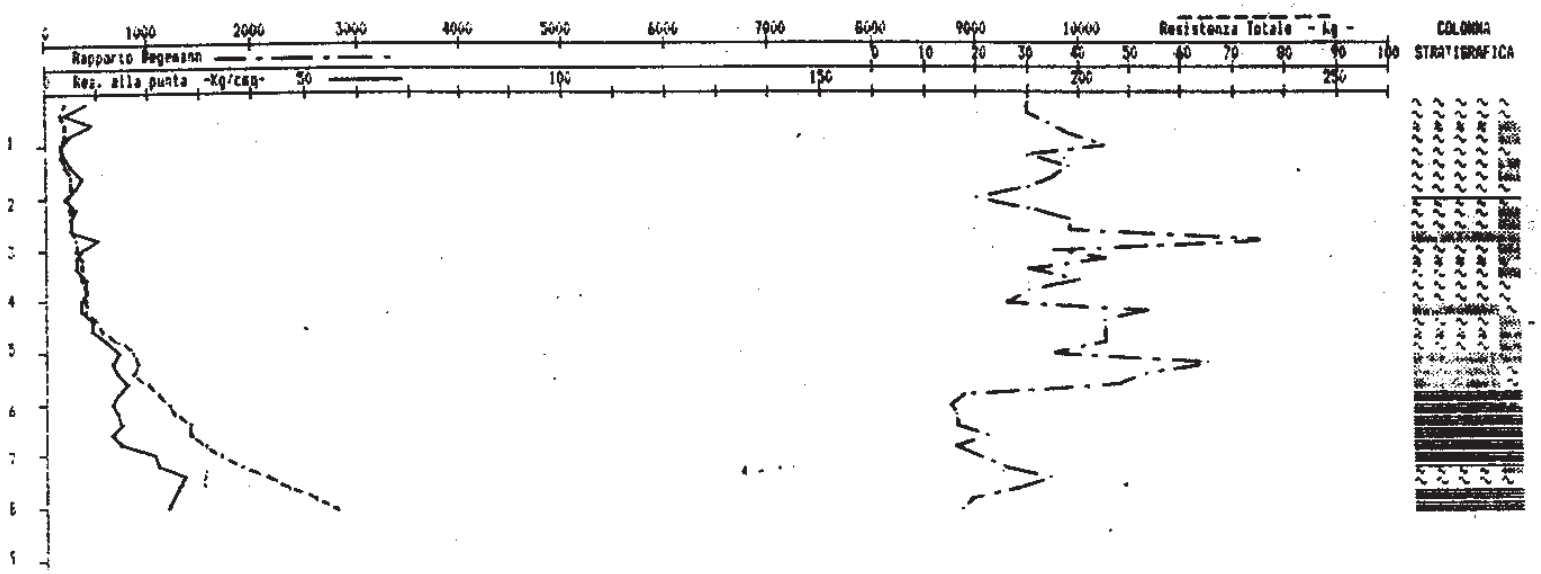
PROFONDITA' [metri]	Rp [Kg/cmq]	Rl [Kg/cmq]	Rp/Rl	Rt [Kgf]	δ [Kg/dmc]	σ_{vo} [Kg/cmq]	φ [gradi]	D_r [%]	c_u [Kg/cmq]	M_v [cmq/t]	Colonna Stratig.
0.2					1,80	,04	-	-	-	-	
0.4					1,80	,07	-	-	-	-	
0.6	4,1	,1	31	91	1,61	,10	-	-	,16	45,8	
0.8	4,3	,1	65	103	1,62	,12	32	8	-	16,7	
1.0	5,3	,1	80	113	1,63	,13	32	13	-	16,7	
1.2	5,3	,1	40	93	1,63	,14	-	-	,21	36,2	
1.4	4,3	,1	32	83	1,62	,15	-	-	,17	44,0	
1.6	4,3	,1	32	153	1,62	,17	-	-	,17	44,0	
1.8	11,4	,2	57	194	1,66	,18	35	34	-	16,7	
2.0	10,4	,2	52	274	1,65	,19	34	28	-	16,7	
2.2	17,4	,3	52	414	1,69	,21	36	44	-	16,7	
2.4	26,4	,5	57	534	1,73	,22	38	57	-	12,6	
2.6	27,4	,6	46	654	1,74	,24	28	-	-	12,2	
2.8	26,5	1	27	685	1,94	,25	-	-	1,05	15,1	
3.0	27,5	,7	41	975	1,74	,27	28	-	-	12,1	
3.2	22,5	,5	42	1065	1,71	,28	-	-	,89	14,8	
3.4	21,5	1,4	15	1305	1,93	,30	-	-	,85	18,6	
3.6	23,5	,9	27	1605	1,93	,32	-	-	,93	17,0	
3.8	26,6	1	27	1796	1,94	,34	-	-	1,05	15,0	
4.0	32,6	1,1	31	2036	1,76	,35	29	-	-	10,2	
4.2	47,6	,9	51	2346	1,84	,37	38	65	-	7,0	
4.4	46,6	1,5	30	2566	1,83	,39	30	-	-	7,2	
4.6	44,6	1,8	25	2666	1,98	,41	-	-	1,77	9,0	
4.8	28,7	,7	43	2757	1,74	,42	28	-	-	11,6	
5.0	30,7	,8	38	2847	1,75	,44	29	-	-	10,9	
5.2	32,7	,9	35	2917	1,76	,45	29	-	-	10,2	
5.4	21,7	,6	36	2927	1,71	,47	-	-	,85	15,4	
5.6	29,7	,7	45	2957	1,75	,49	28	-	-	11,2	
5.8	41,9	,7	63	3069	1,81	,50	36	54	-	8,0	
6.0	47,9	1,1	42	3269	1,84	,51	30	-	-	7,0	
6.2	46,9	1,4	34	3629	1,83	,53	30	-	-	7,1	
6.4	49,9	,9	58	4099	1,85	,55	37	58	-	6,7	
6.6	53,9	2,3	24	4489	2,00	,57	-	-	2,13	7,4	
6.8	46	1,5	30	4970	1,83	,58	30	-	-	7,2	
7.0	56	1,5	37	5430	1,88	,60	31	-	-	6,0	



Penetrometria n 3

parametri geotecnici stimati

PROFONDITA' (metri)	Rp (Kg/cmq)	Rl (Kg/cmq)	Rp/Rl	Rt (Kgf)	δ (Kg/dmc)	σ_{vo} (Kg/cmq)	φ (gradi)	D_r (%)	c_u (Kg/cmq)	m_v (cmq/t)	Colonna Stratig.
0.2					1.80	.04	-	-	-	-	
0.4					1.80	.07	-	-	-	-	
0.6	3,1	.1	47	111	1,62	.10	-	-	,12	58,3	
0.8	7,3	.2	37	113	1,64	.14	-	-	,29	27,9	
1.0	9,3	.2	47	263	1,65	.17	-	-	.37	23,4	
1.2	34,3	.4	86	613	1,77	.21	39	67	-	9,7	
1.4	40,3	.7	55	763	1,80	.24	39	69	-	8,3	
1.6	47,3	1,2	39	743	1,84	.28	30	-	-	7,0	
1.8	46,4	1,1	43	954	1,83	.31	30	-	-	7,2	
2.0	45,4	1,5	30	1204	1,83	.35	30	-	-	7,3	
2.2	50,4	1,4	36	1514	1,85	.39	31	-	-	6,6	
2.4	56,4	1,3	45	1784	1,88	.43	31	-	-	5,9	
2.6	71,4	2	36	2214	1,96	.47	32	-	-	4,7	
2.8	68,5	2,3	29	2525	1,94	.50	32	-	-	4,9	
3.0	70,5	2,5	28	2845	1,95	.54	32	-	-	4,7	
3.2	72,5	2,3	31	3305	1,96	.58	32	-	-	4,6	
3.4	69,5	2,4	29	3815	1,95	.62	32	-	-	4,8	
3.6	74,5	1,9	40	4295	1,97	.66	32	-	-	4,5	
3.8	81,6	2,8	29	4806	2,01	.70	32	-	-	4,1	
4.0	66,6	2,9	23	5266	2,03	.74	-	-	2,63	6,0	
4.2	61,6	2,7	23	5746	2,01	.78	-	-	2,43	6,5	
4.4	52,6	3,1	17	6206	1,99	.82	-	-	2,07	7,6	
4.6	49,6	2,9	17	6496	1,99	.86	-	-	1,95	8,1	
4.8	32,7	.9	35	6607	1,76	.90	29	-	-	10,2	
5.0	38,7	.9	41	6807	1,79	.93	30	-	-	8,6	
5.2	32,7	1,3	26	6927	1,95	.97	-	-	1,27	12,2	
5.4	29,7	.9	34	7057	1,75	1.01	28	-	-	11,2	
5.6	32,7	.9	35	7187	1,76	1.04	29	-	-	10,2	
5.8	41,9	1,1	37	7389	1,81	1,08	30	-	-	8,0	
6.0	47,9	1	48	7929	1,84	1.11	30	-	-	7,0	
6.2	59,9	1,2	50	8299	1,90	1,15	33	48	-	5,6	
6.4	68,9	1,4	49	8719	1,94	1,19	34	52	-	4,8	
6.6	66,9	2,5	26	8929	2,03	1,23	-	-	2,63	6,0	
6.8	42	1,6	26	9210	1,97	1,27	-	-	1,63	9,5	
7.0	45	1,5	29	9800	1,83	1,31	30	-	-	7,4	
7.2	59	1,8	33	9920	1,90	1,35	31	-	-	5,6	


1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
Resistenza Totale - Kg -
Rapporto Begemann
0
10
20
30
40
50
60
70
80
90
100
Res. alla punta -Kg/cmq-
50
100
150
200
250
COLONNA STRATIGRAFICA
1
2
3
4
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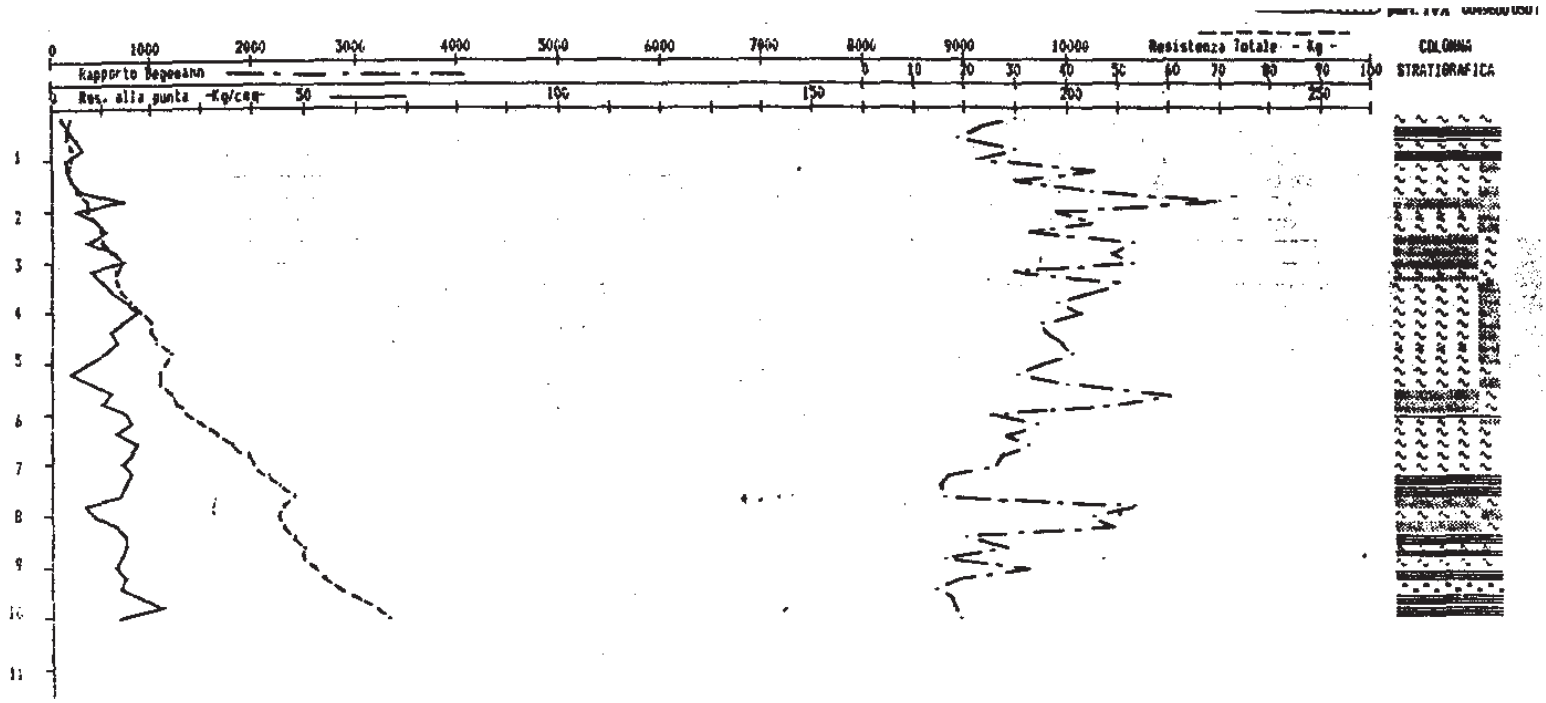
8
9


0
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10000
Resistenza Totale - Kg -
Rapporto Begemann
0
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60
70
80
90
100
Res. alla punta -Kg/cmq-
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200
250
COLONNA STRATIGRAFICA
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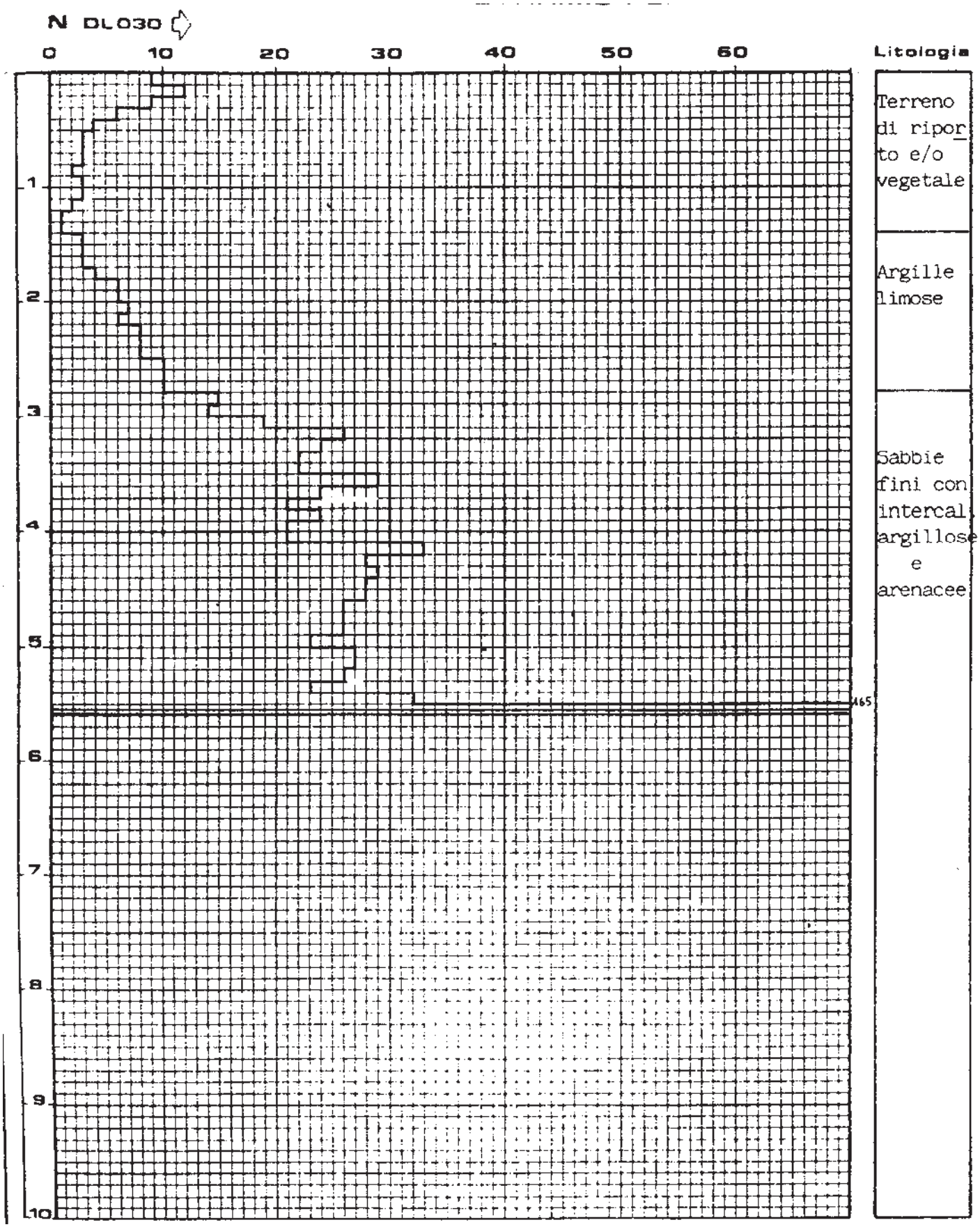
11


N DL030
0
10
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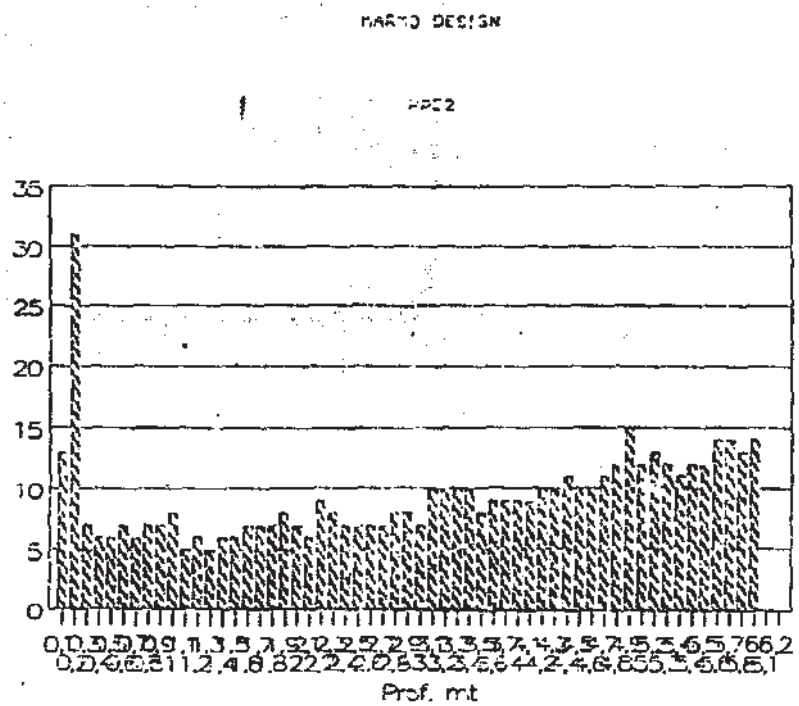
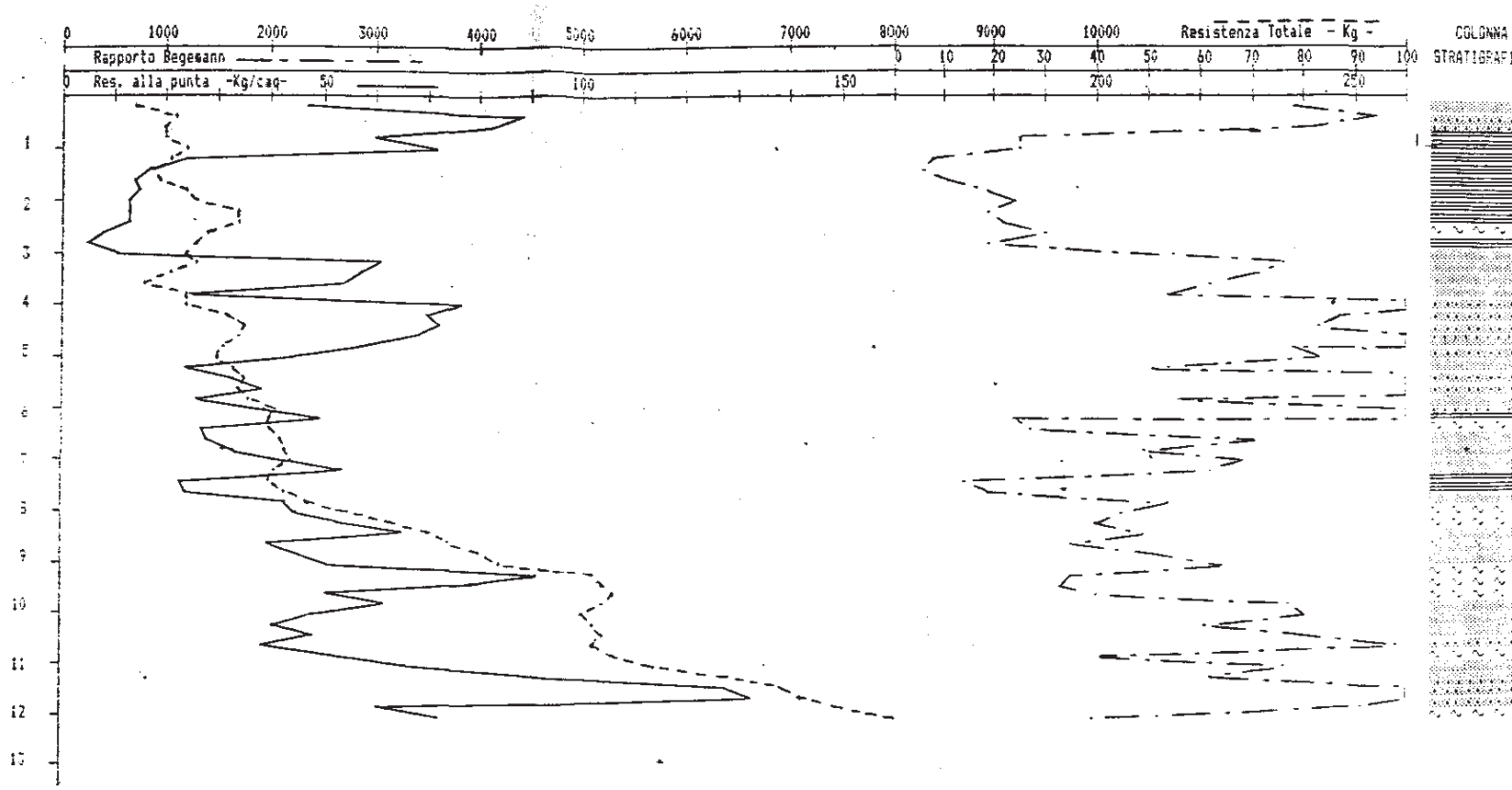
465
Litologia
Terreno di riporto e/o vegetale
Argille limose
Sabbie fini con intercal. argillose e arenacee

1818




0
1000
2000
3000
4000
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6000
7000
8000
9000
10000
Resistenza Totale - Kg -
Rapporto Begemann
0
10
20
30
40
50
60
70
80
90
100
Res. alla punta -Kg/cmq-
0
50
100
150
200
250
COLONNA
STRATIGRAFI
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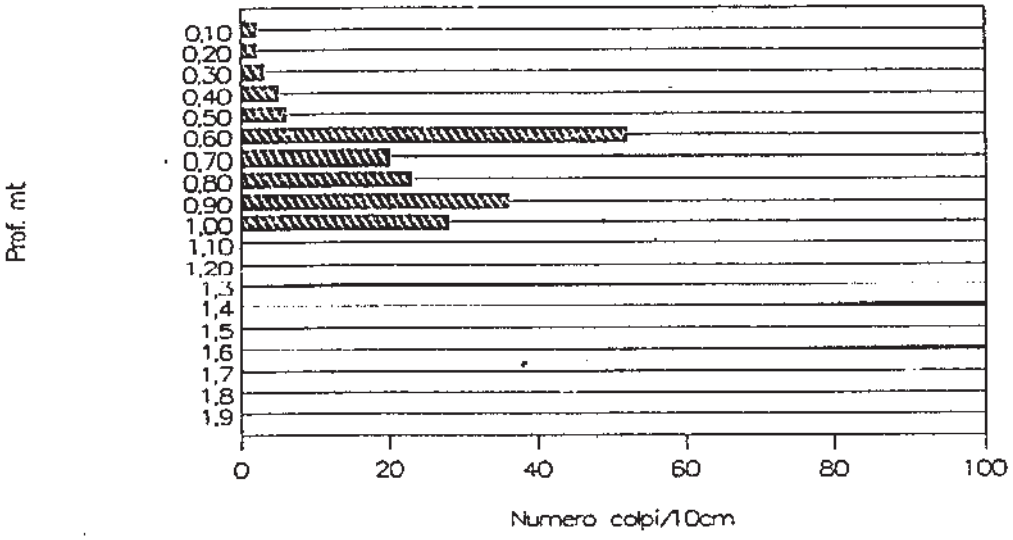
Prof. mt
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0,30
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0,50
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0,70
0,80
0,90
1,00
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1,20
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20
40
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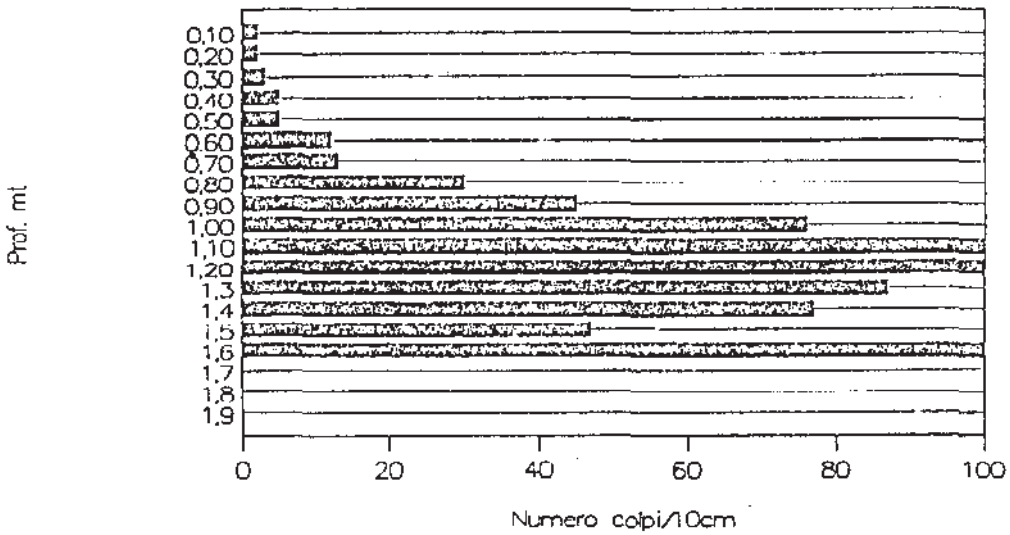
80
100
Numero colpi/10cm


Prof. mt
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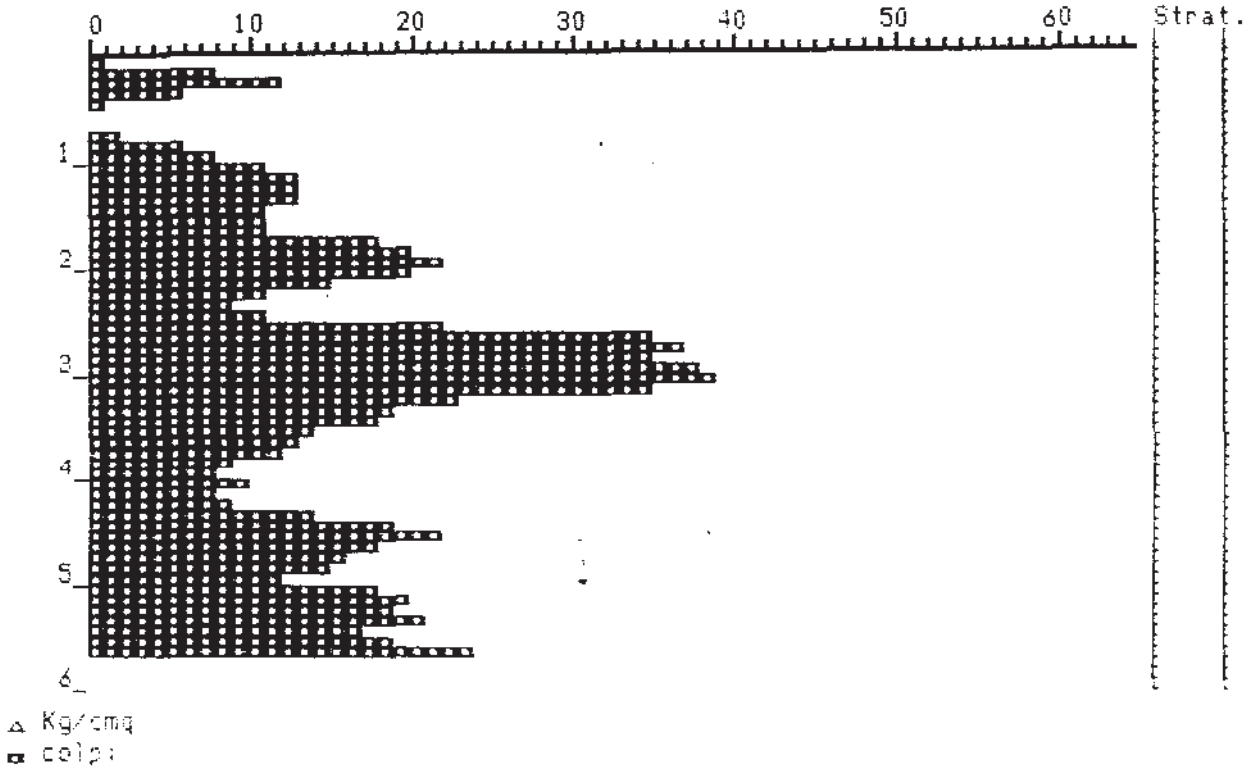
100
Numero colpi/10cm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Strat.
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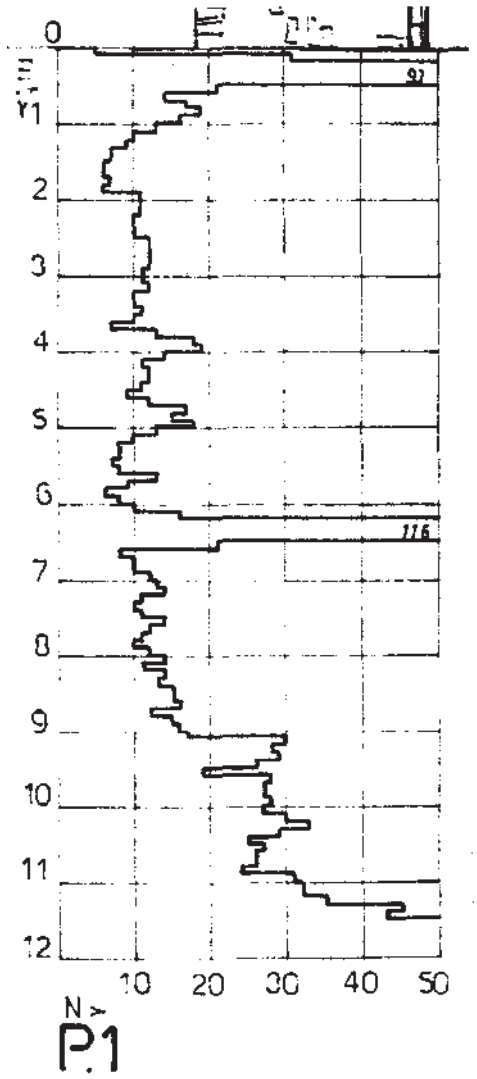
Kg/cmq
colpi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92
116
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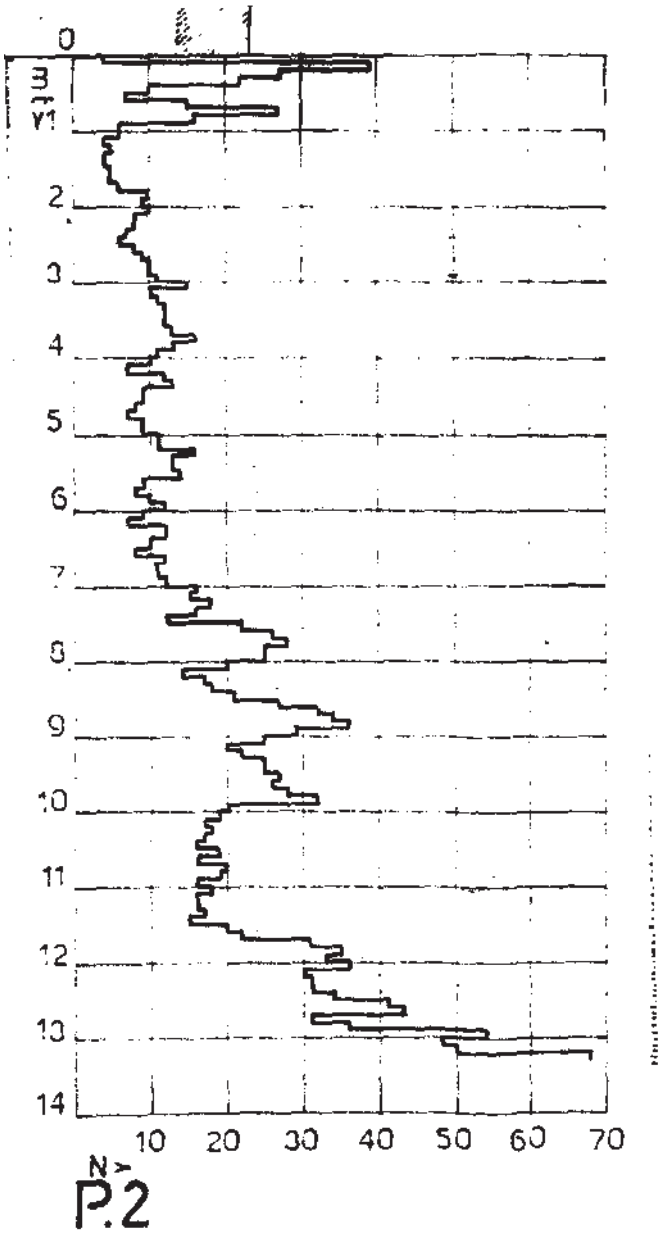
N >
P.1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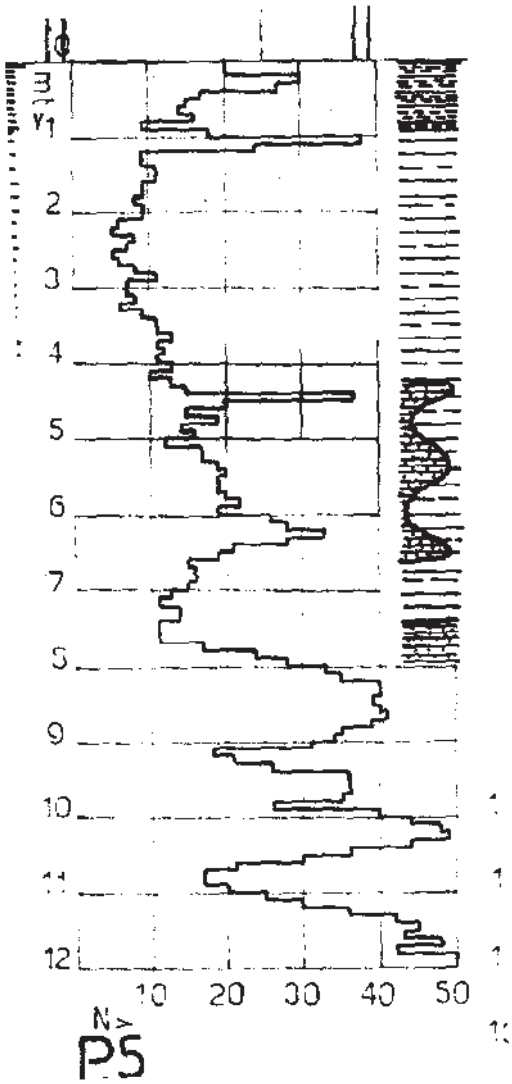
P.2


1
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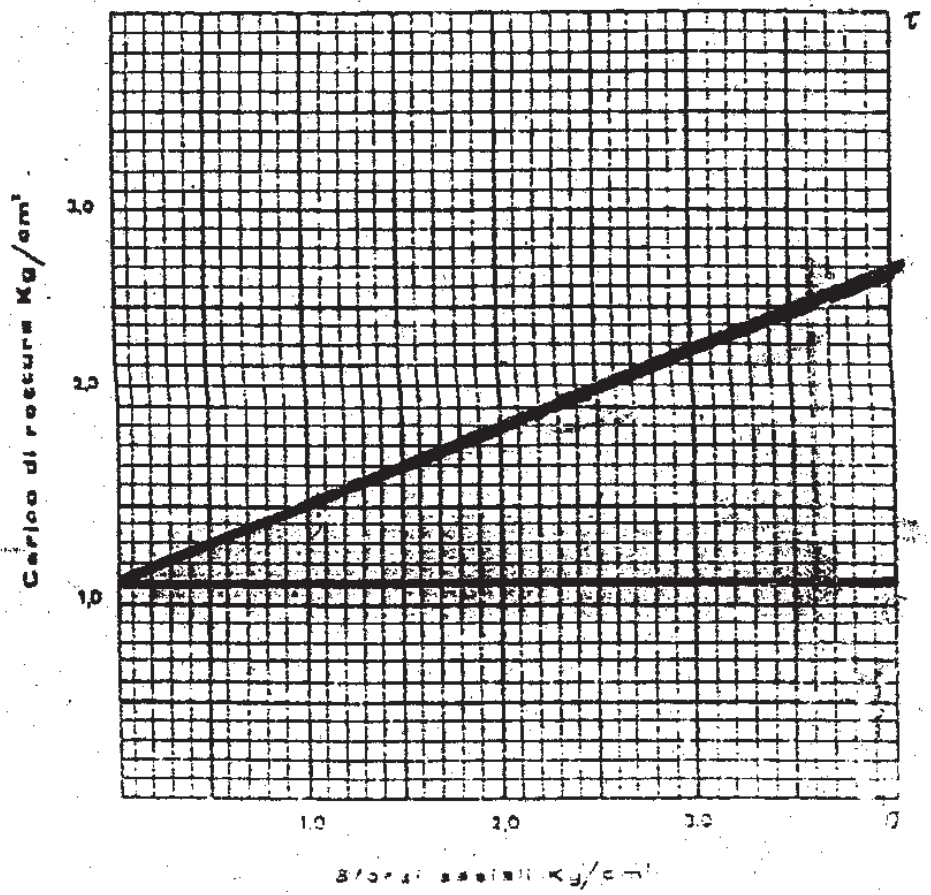
30
40
50
P5

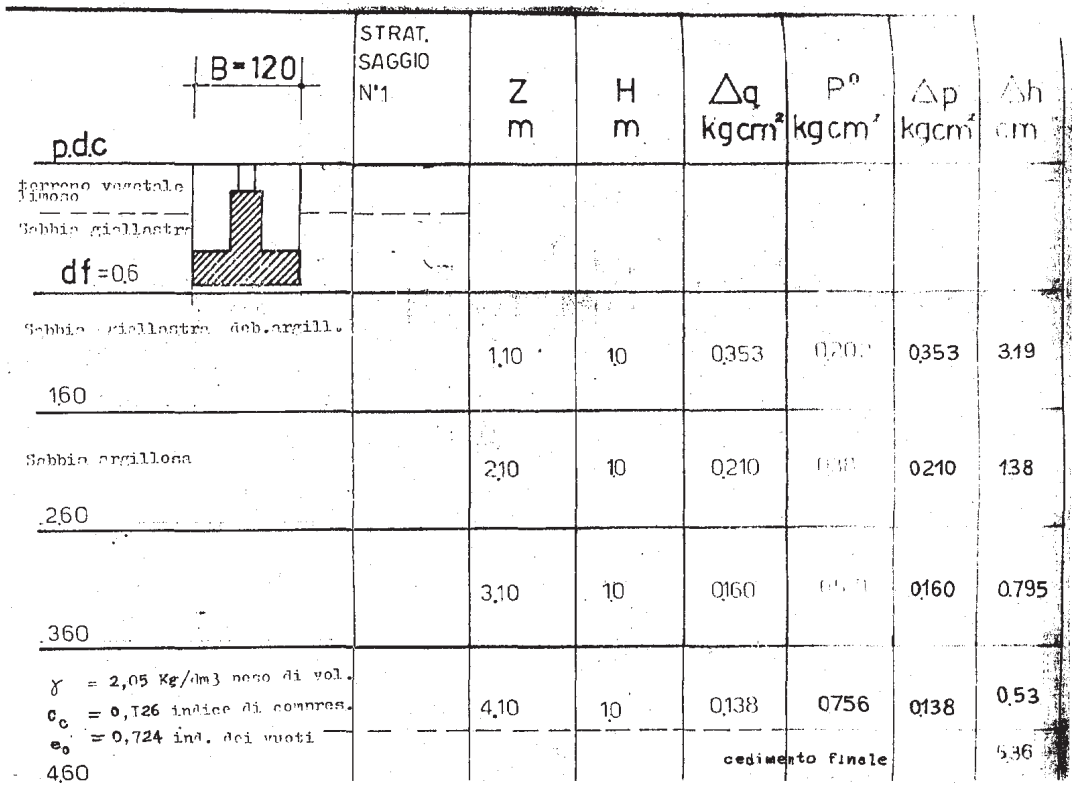
Sondag.	
Camp.	
Posiz. orizz.	
Peso spec.	2,00 Kr/dm3
Fraz. lot.	

Densita'	τ	σ	U%	φ = 21°
Assestam.	1,500	1		a = 1,100
	1,870	2		
	2,25	3		U% = 25

Condizioni di prova:

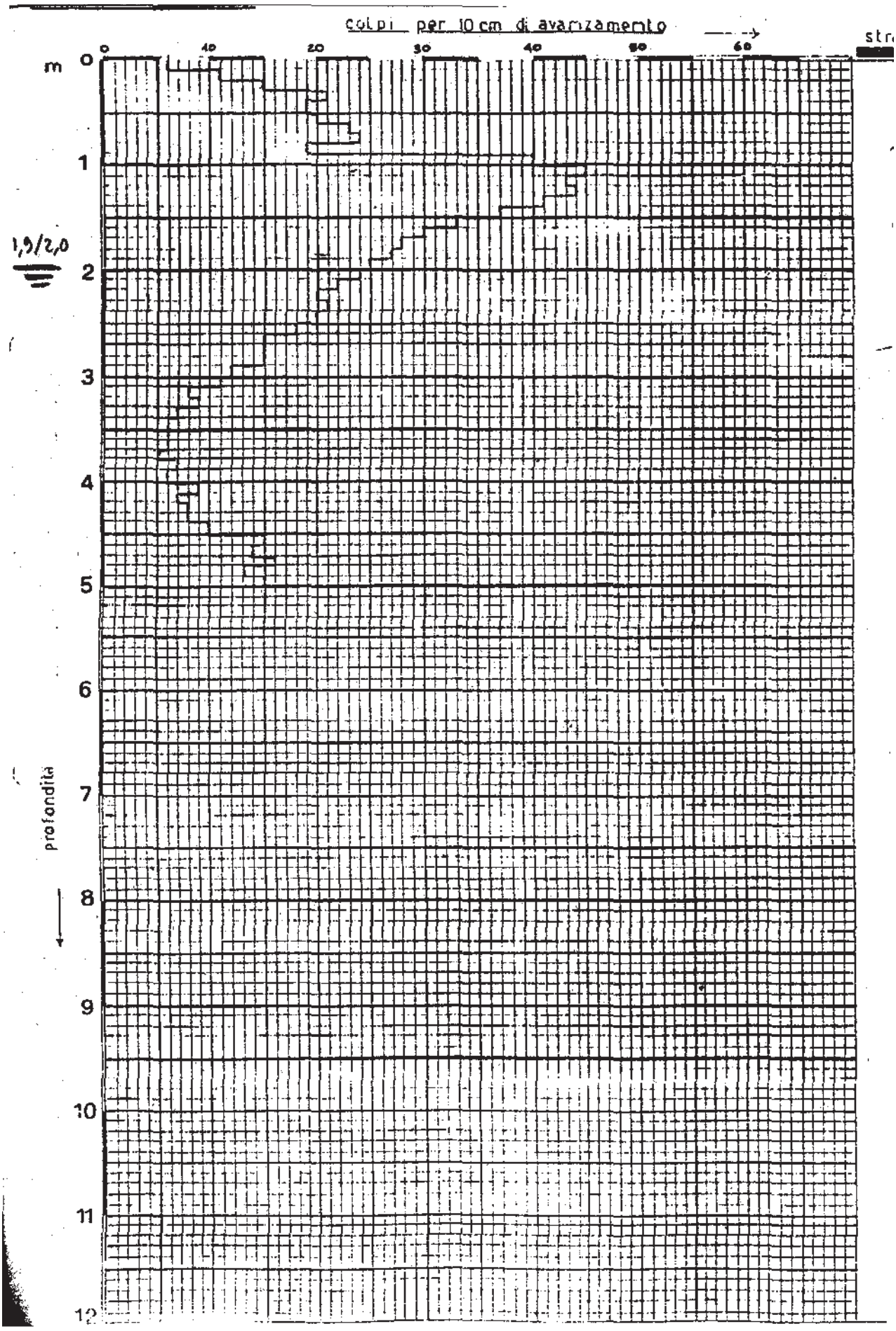
TAGLIO RAPIDO NON DRENATO.

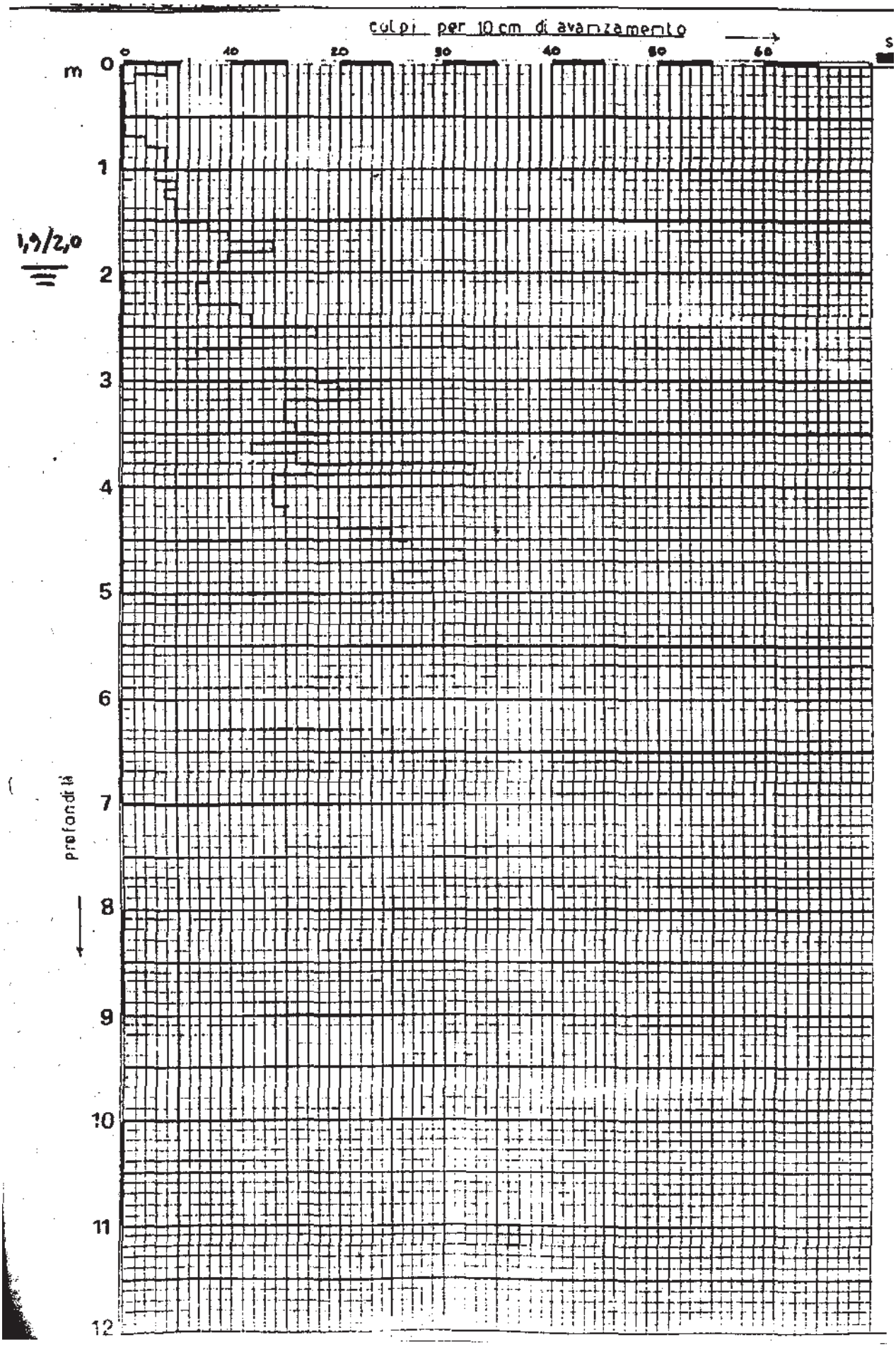


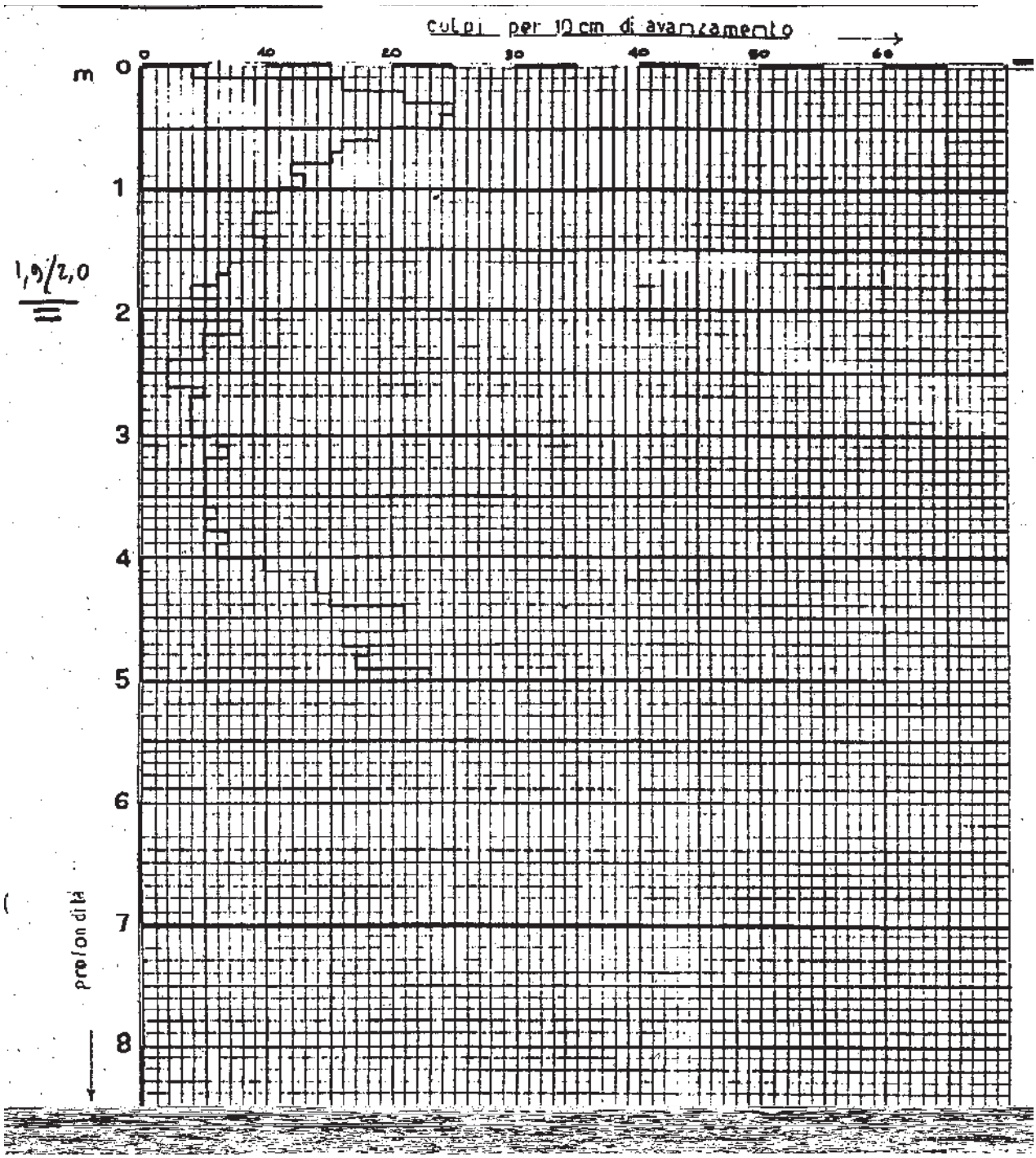


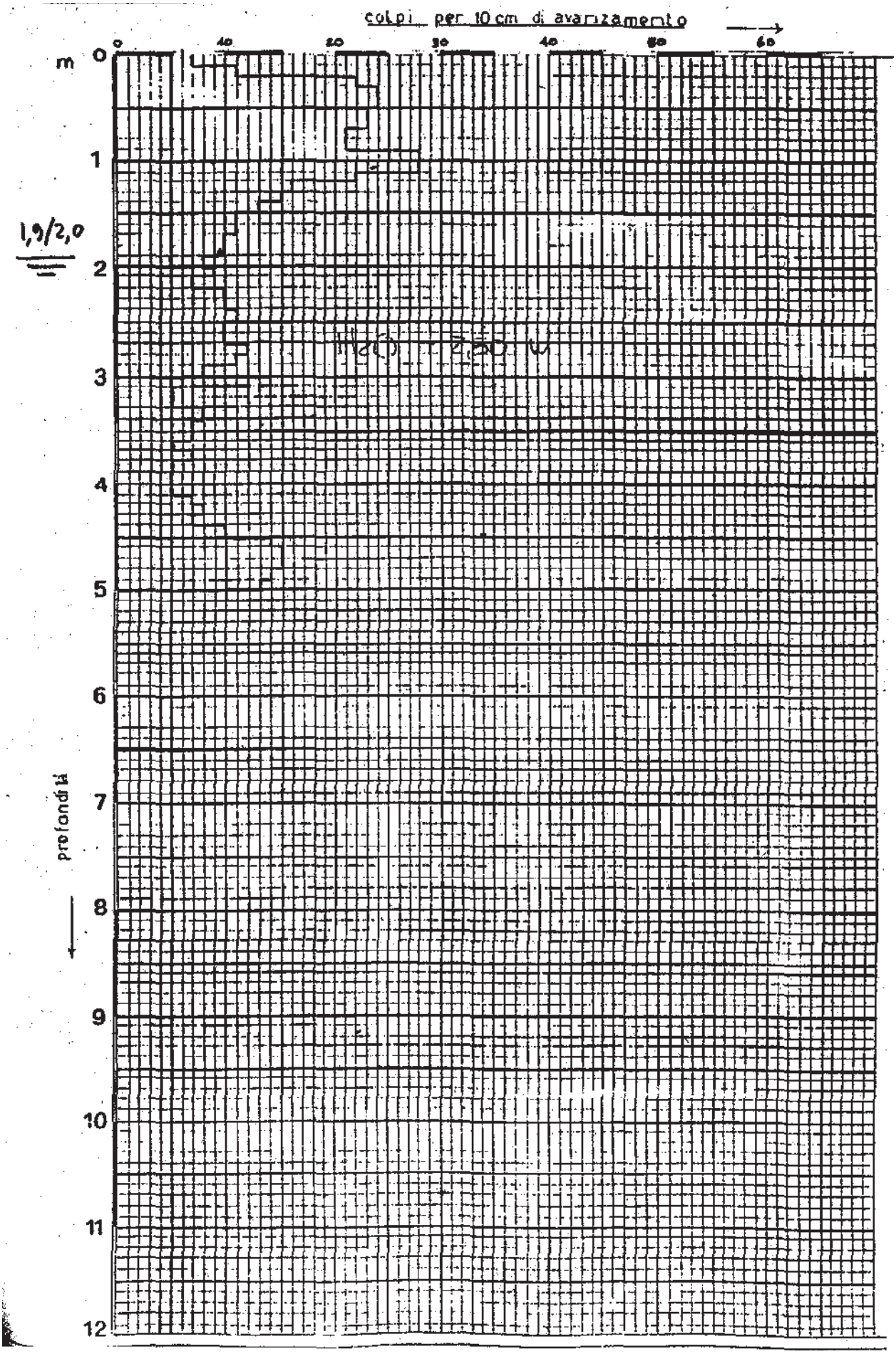
	STRAT. SAGGIO N°1	Z m	H m	Δq kg cm²	P° kg cm²	Δp kg cm²	Δh cm
terreno vegetale limoso							
Sabbia giallastra							
Sabbia giallastra deb.argill. 1,60		1,10	1,0	0,353	0,20[illegible]	0,353	3,19
Sabbia argillosa 2,60		2,10	1,0	0,210	[illegible]	0,210	1,38
3,60		3,10	1,0	0,160	[illegible]	0,160	0,795
γ = 2,05 Kg/dm3 peso di vol. c_c = 0,126 indice di compres. e_0 = 0,724 ind. dei vuoti 4,60		4,10	1,0	0,138	0,756	0,138	0,53
				cedimento finale			5,36

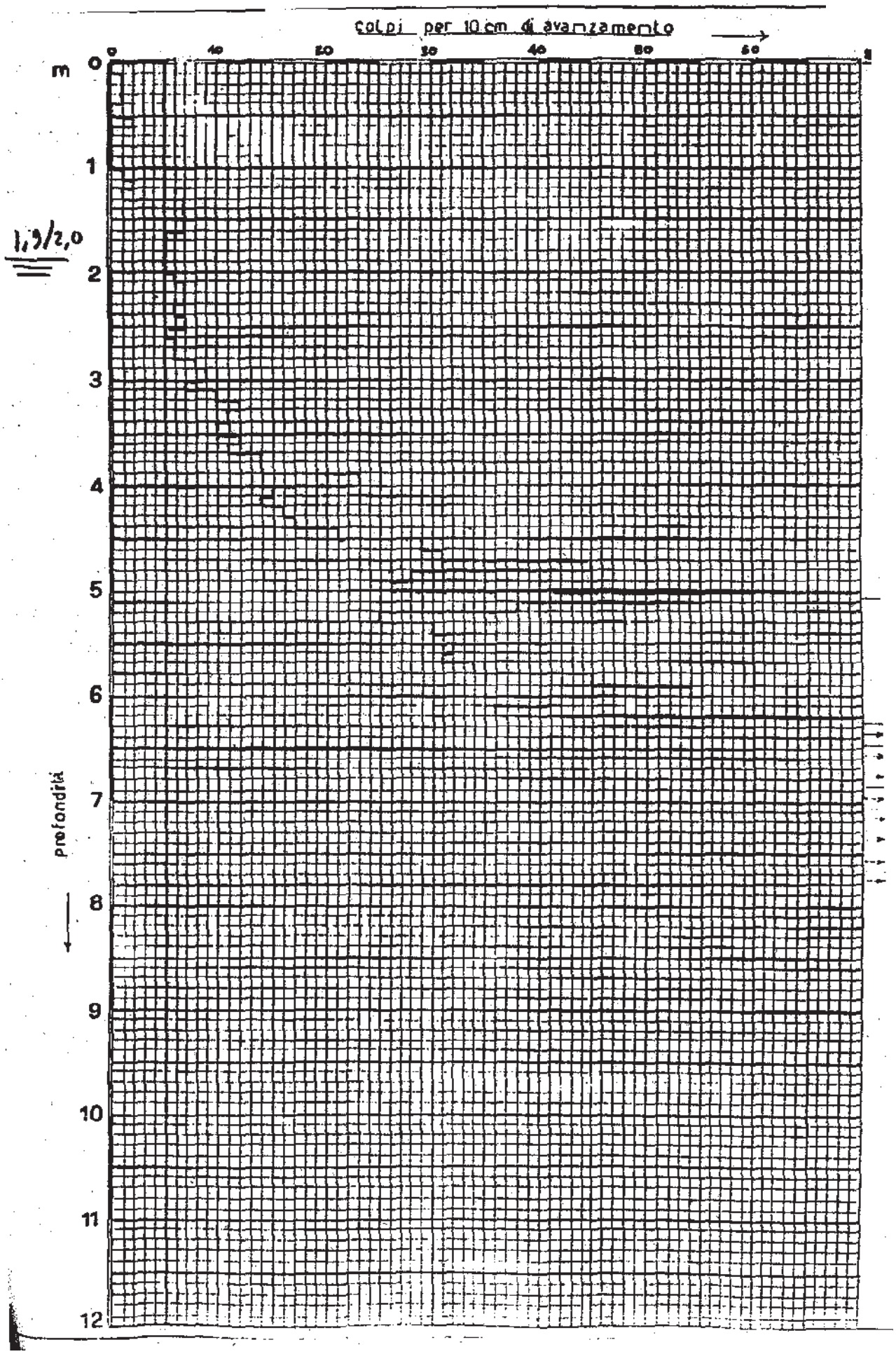
1867

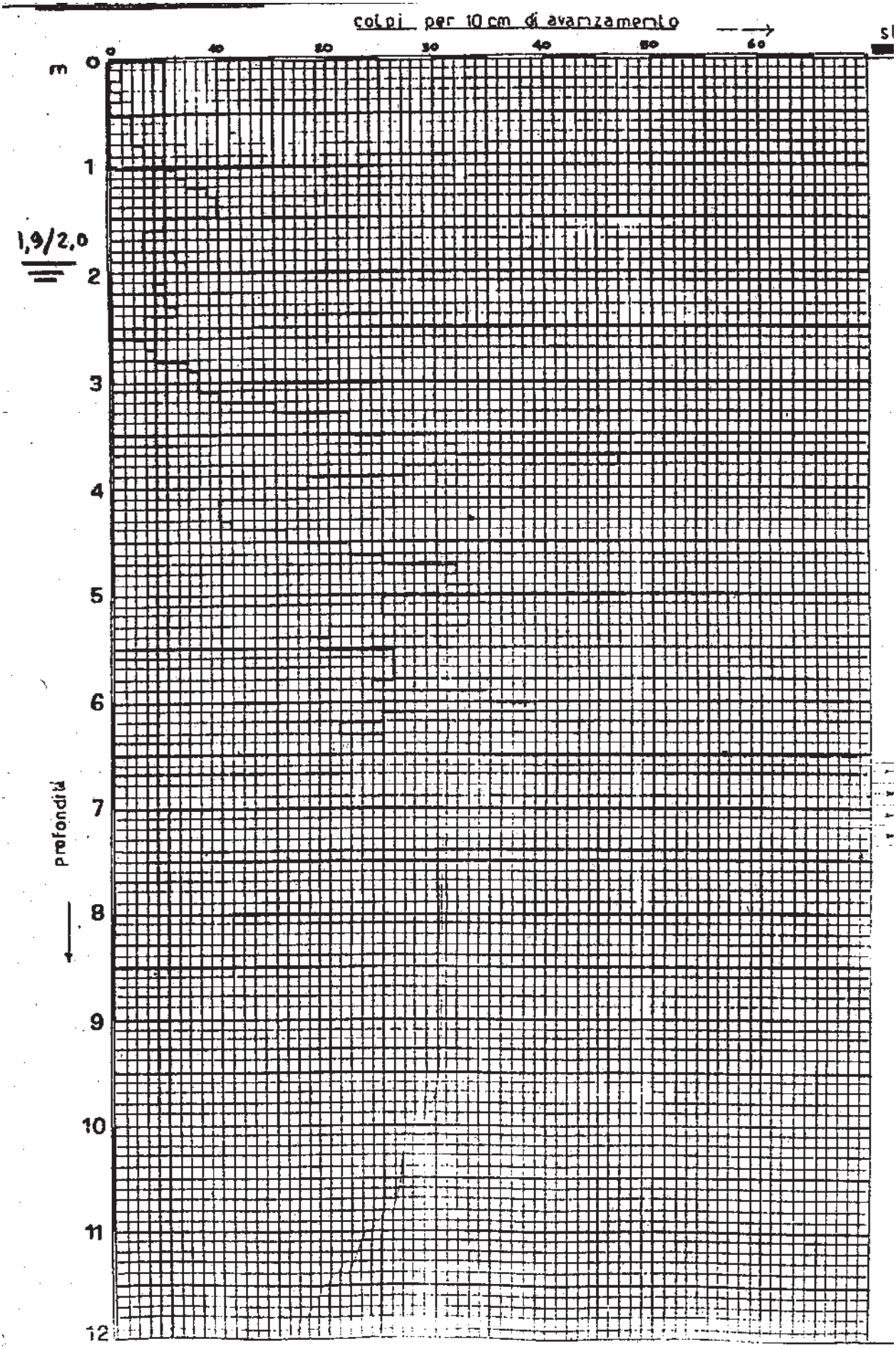

colpi per 10 cm di avanzamento
0
10
20
30
40
50
60
m
0
1
2
3
4
5
6
7
8
9
10
11
12
1,9/2,0
profondità


colpi per 10 cm di avanzamento
0
10
20
30
40
50
60
s
m
0
1
2
3
4
5
6
7
8
9
10
11
12
profondità
1,9/2,0


colpi per 10 cm di avanzamento
0
10
20
30
40
50
60
m
0
1
2
3
4
5
6
7
8
1,9/2,0
profondità


colpi per 10 cm di avanzamento
0
10
20
30
40
50
60
m
0
1
2
3
4
5
6
7
8
9
10
11
12
profondità
1,9/2,0
Hc 2,50 m


colpi per 10 cm di avanzamento
0
10
20
30
40
50
60
m
0
1
1,9/2,0
2
3
4
5
6
7
8
9
10
11
12
profondità

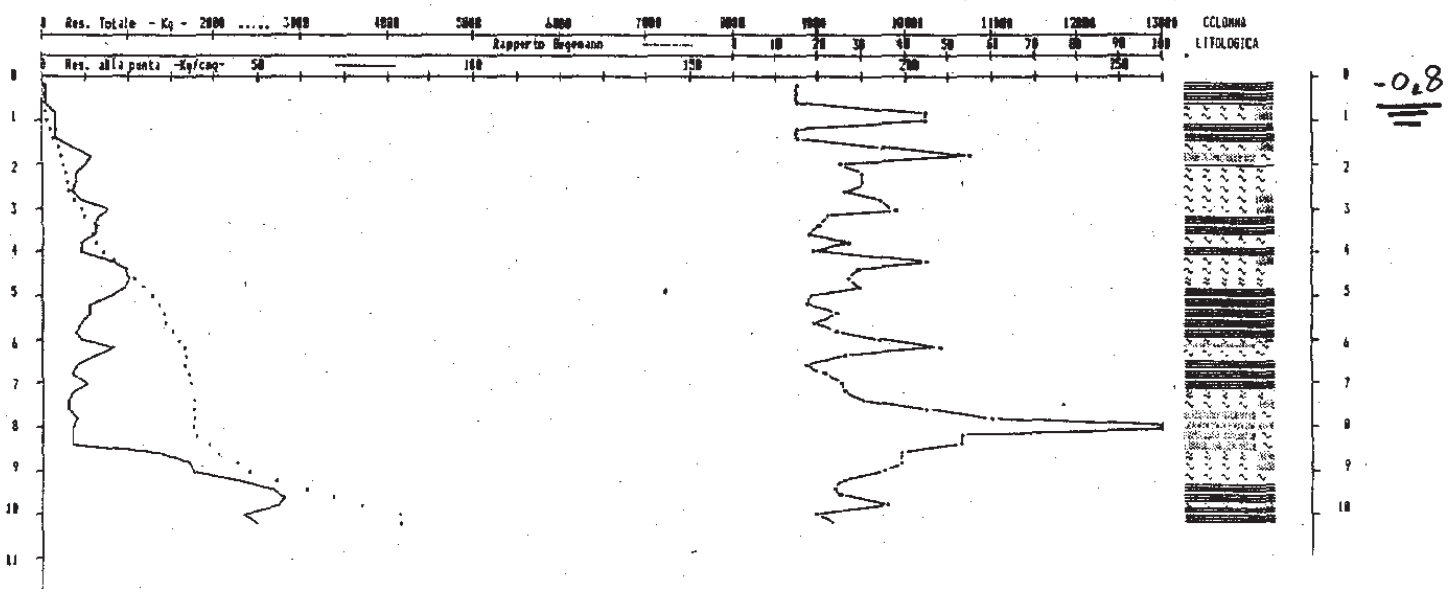

colpi per 10 cm di avanzamento
0
40
80
30
40
50
60
m
0
1
1,9/2,0
2
3
4
5
6
7
8
9
10
11
12
profondità

letture di campagna — valori derivati

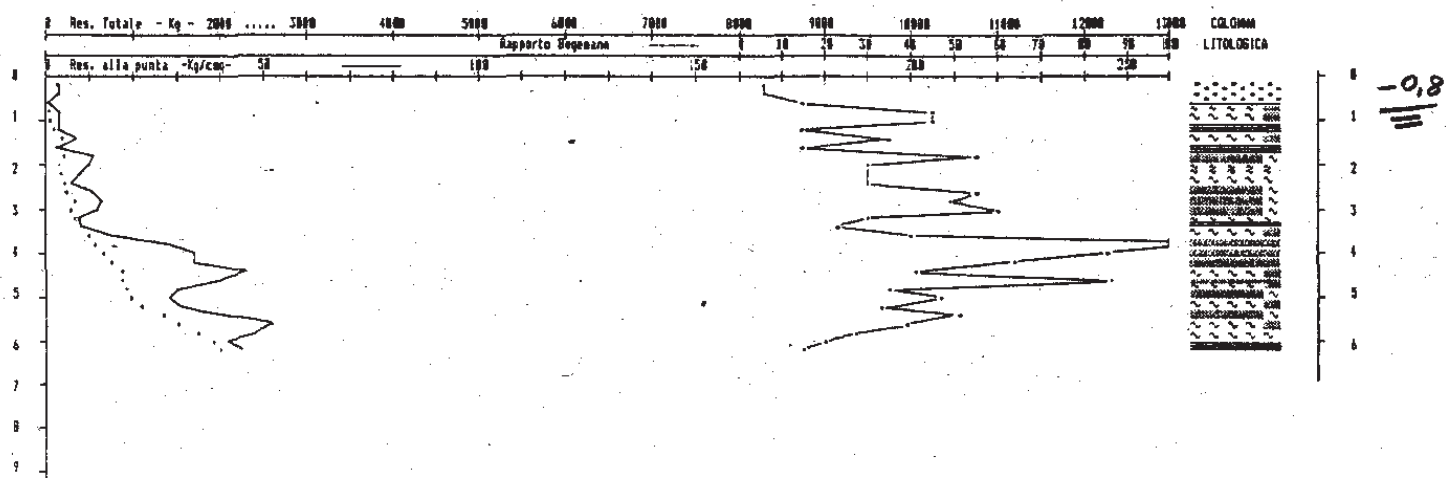
PROFONDITA' [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]	Rat-Rpt [Kg]	Ral [Kg/cmq]	Rp/Ral	Rt-Rpt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	av [cmq/t]
.2	10	20	30	10	.04	15	20			.04	107.97
.4	10	20	30	10	.04	15	20			.04	107.97
.6	10	20	40	10	.04	15	30			.04	107.97
.8	10	40	50	10	.04	15	20			.02	41.01
1	10	40	50	10	.04	15	30			.02	41.01
1.2	30	60	100	10	.2	15	70			.02	41.01
1.4	30	60	130	30	.2	15	100			.02	41.01
1.6	70	100	200	30	.2	15	130			.02	23.01
1.8	110	140	250	30	.2	15	110	25	10		19.44
2	100	150	250	60	.4	15	150			.4	28.2
2.2	80	120	270	40	.26	30	190			.32	22.29
2.4	80	120	270	40	.26	30	210			.32	22.29
2.6	70	130	200	40	.26	36	230			.28	23.01
2.8	70	150	200	40	.26	34	270			.34	21.16
3	150	210	460	60	.4	30	310			.6	19.14
3.2	130	220	490	90	.6	22	360			.52	16.72
3.4	120	210	430	90	.6	20	310			.48	15.12
3.6	120	220	500	100	.66	18	460			.40	19.13
3.8	90	140	420	50	.33	27	320			.36	20.16
4	90	140	500	70	.46	19	430			.36	21.16
4.2	150	200	610	50	.33	42	460			.6	18.18
4.4	170	290	970	100	.66	29	700			.74	17.47
4.6	200	310	1000	110	.73	27	800			.8	17.26
4.8	190	290	1100	100	.66	29	990			.74	17.47
5	160	290	1290	170	.86	19	1130			.64	17.95
5.2	110	230	1350	110	.66	17	1240			.44	19.64
5.4	110	140	1410	70	.46	21	1300			.44	19.64
5.6	90	150	1440	70	.46	19	1350			.36	21.16
5.8	80	150	1512	50	.33	24	1430			.32	22.29
6	90	150	1610	60	.4	24	1510			.36	21.16
6.2	160	210	1660	50	.33	48	1500	25	15		17.93
6.4	120	190	1660	70	.46	24	1560			.48	19.13
6.6	80	150	1670	70	.46	17	1590			.32	22.29
6.8	70	150	1710	80	.53	21	1640			.28	23.01
7	100	160	1720	60	.4	25	1620			.4	20.3
7.2	70	110	1750	40	.26	26	1680			.28	23.01
7.4	60	90	1770	30	.2	30	1710			.24	25.93
7.6	60	80	1770	20	.13	45	1710			.20	25.93
7.8	70	100	1780	30	.2	60	1700	25	8		20.29
8	70	80	1780	10	.06	105	1690	30	7		23.01

letture di campagna — valori derivati

PROFONDITA' [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]	Rat-Rpt [Kg]	Ral [Kg/cmq]	Rp/Ral	Rt-Rpt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	av [cmq/t]
8.2	70	90	1810	20	.13	53	1740	25	7		23.01
8.4	70	90	1960	20	.13	53	1890	25	7		23.01
8.6	260	360	2050	100	.66	39	1790			1.00	16.72
8.8	340	470	2260	130	.86	39	1920			1.36	15.59
9	350	500	2400	150	1	35	2050			1.4	15.42
9.2	460	730	2720	270	1.8	26	2260			2.3	13.33
9.4	530	860	3080	330	2.2	24	2550			2.65	12.02
9.6	560	900	3390	340	2.26	25	2830			2.8	11.5
9.8	550	780	3710	230	1.53	36	3160			2.75	11.67
10	470	820	4140	350	2.33	20	3670			2.35	13.14
10.2	500	820	4150	320	2.13	23	3650			2.5	12.37
10.4											
10.6											
10.8											
11											

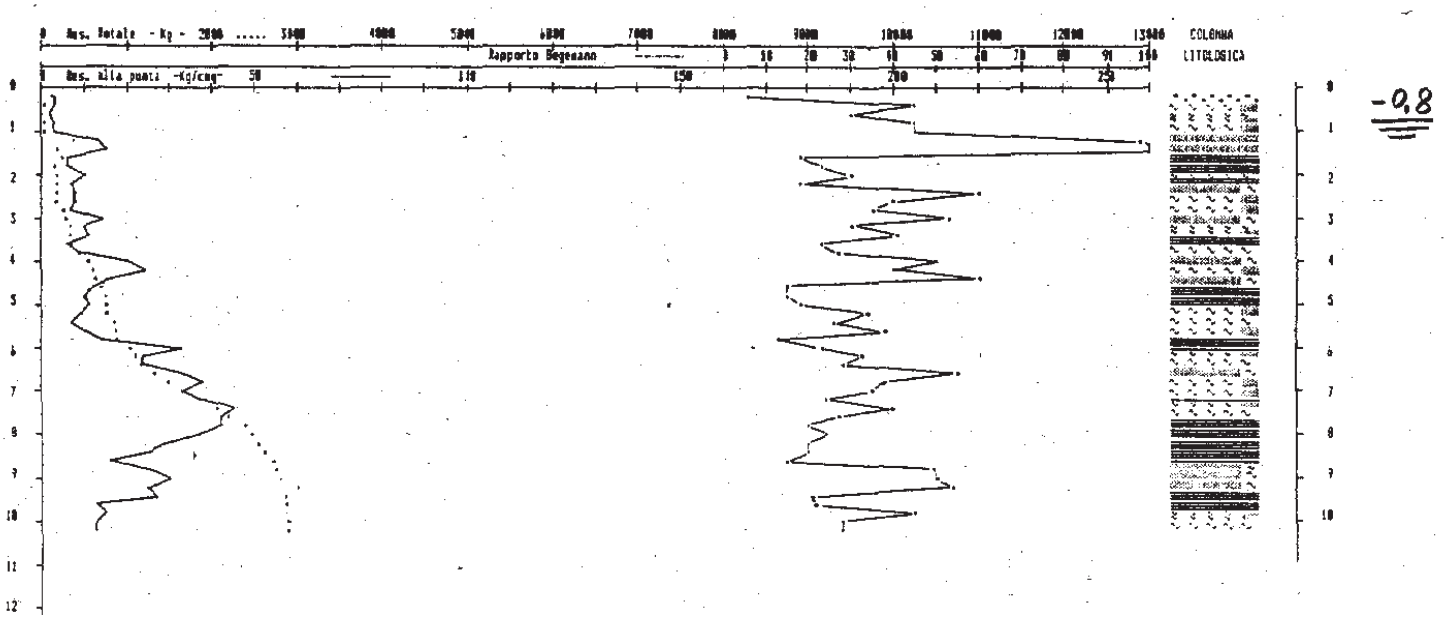


PROFONDITA' [metri]	letture di campagna: Rpt [Kg]	Rat [Kg]	Rt [Kg]	valori derivati: Rat-Rpt [Kg]	Ral [Kg/cmq]	Rp/Ral	Rt-Rpt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	gv [cmq/t]
.2	30	100	130	70	.46	6	100			.12	41.81
.4	30	100	130	70	.46	6	100			.12	41.81
.6	10	20	40	10	.06	15	30			.04	107.97
.8	30	40	50	10	.06	45	20			.12	41.81
1	30	40	60	10	.06	45	30			.12	41.81
1.2	30	60	100	30	.2	15	70			.12	41.81
1.4	70	100	200	30	.2	35	130			.28	23.81
1.6	30	60	130	30	.2	15	100			.12	41.81
1.8	110	140	220	30	.2	55	110	25	18		19.64
2	100	150	180	50	.33	32	80			.4	28.3
2.2	80	120	190	40	.26	30	110			.32	22.29
2.4	60	90	250	30	.2	30	170			.24	25.93
2.6	110	140	250	30	.2	55	140	25	18		19.64
2.8	130	170	340	40	.26	49	210	25	12		18.72
3	120	150	300	30	.2	60	180	25	13		19.13
3.2	90	120	340	40	.26	38	250			.32	22.29
3.4	90	150	420	60	.4	23	330			.36	21.16
3.6	160	220	500	60	.4	40	340			.44	17.93
3.8	200	310	580	30	.2	140	380	34	24		16.48
4	340	400	670	60	.4	85	330	34	28		15.59
4.2	340	420	770	80	.53	64	430	29	28		15.59
4.4	460	630	870	170	1.13	41	410			2.3	13.33
4.6	400	470	870	70	.46	86	470	34	32		14.5
4.8	300	430	920	130	.86	35	620			1.2	16.21
5	280	370	970	90	.6	47	690	29	24		16.48
5.2	310	450	1100	140	.93	33	790			1.24	16.06
5.4	410	530	1340	120	.8	51	930	30	33		14.3
5.6	520	720	1510	200	1.33	39	790			2.6	12.2
5.8	460	750	1750	270	1.8	27	1270			2.4	12.95
6	420	730	1920	310	2.06	20	1500			1.68	14.11
6.2	450	900	2000	450	3	15	1550			1.8	13.53
6.4											
6.6											
6.8											
7											



PROFONDITA' [metri]	Letture di campagna: Apt [Kg]	Ral [Kg]	Rt [Kg]	valori derivati: Ral-Apt [Kg]	Ral [Kg/cmq]	Rp/Ral	Rt-Apt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	av [cmq/t]
.2	30	100	130	70	.44	6	100			.32	41.01
.4	30	40	50	10	.06	43	20			.32	41.01
.6	20	30	40	10	.06	30	20			.08	50.22
.8	30	40	50	10	.06	43	20			.12	41.01
1	30	40	50	10	.06	43	20			.12	41.01
1.2	110	150	270	20	.12	90	200	30	12		18.72
1.4	150	170	490	20	.13	113	40	30	14		18.14
1.6	60	110	240	50	.33	18	180			.24	25.93
1.8	60	100	320	40	.26	23	90			.24	25.93
2	100	150	490	50	.33	30	90			.4	20.3
2.2	70	150	490	80	.4	18	120			.28	23.93
2.4	80	160	490	80	.53	10	-110	25	8		22.29
2.6	80	110	380	30	.2	40	180			.22	22.29
2.8	70	100	250	30	.2	33	150			.20	23.01
3	140	150	390	40	.26	53	140	25	13		18.4
3.2	100	150	520	50	.33	30	220			.4	20.3
3.4	110	150	520	40	.26	43	220			.40	19.44
3.6	60	100	250	40	.26	23	290			.24	25.93
3.8	90	140	450	50	.33	27	360			.36	21.16
4	200	300	560	100	.4	30	360	27	10		17.26
4.2	240	330	600	90	.6	40	360			.36	16.54
4.4	110	200	330	90	.26	60	470	25	13		17.93
4.6	120	240	690	120	.8	15	570			.48	19.13
4.8	100	200	750	100	.66	15	650			.4	20.3
5	110	200	760	90	.6	18	650			.40	19.54
5.2	90	130	770	40	.26	34	680			.26	21.16
5.4	70	110	850	40	.26	30	780			.28	22.39
5.6	100	140	870	40	.26	30	770			.4	20.3
5.8	140	200	900	160	1.06	13	760			.56	18.4
6	230	350	1020	220	1.46	13	790			1.32	15.75
6.2	240	350	1190	110	.73	33	840			.96	16.94
6.4	240	370	1170	130	.86	28	930			.96	16.94
6.6	320	420	1320	90	.6	53	1000	29	20		15.75
6.8	320	530	1500	150	1	30	1120			1.32	15.07
7	320	470	1650	140	.93	35	1330			1.32	15.75
7.2	370	690	1970	320	1.33	24	1550			1.48	13.86
7.4	450	630	2150	170	1.13	40	1610			1.8	13.33
7.6	420	650	2290	230	1.53	27	1890			1.68	14.17
7.8	420	730	2400	310	2.06	20	1980			1.68	14.11
8	570	640	2470	220	1.53	26	2000			1.40	13.89

PROFONDITA' [metri]	Letture di campagna: Apt [Kg]	Ral [Kg]	Rt [Kg]	valori derivati: Ral-Apt [Kg]	Ral [Kg/cmq]	Rp/Ral	Rt-Apt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	av [cmq/t]
8.2	280	490	2550	210	1.4	20	2270			1.12	16.40
8.4	250	440	2620	190	1.26	20	2370			1	16.83
8.6	160	320	2730	160	1.06	15	2570			.64	17.93
8.8	260	360	2750	80	.53	49	2490	29	23		16.72
9	300	390	2800	90	.6	50	2500	29	26		16.21
9.2	250	320	2820	70	.46	54	2570	29	22		16.63
9.4	270	460	2880	190	1.26	21	2610			1.00	16.6
9.6	130	220	2890	90	.6	22	2760			.52	18.72
9.8	150	200	2900	50	.33	45	2750			.6	18.14
10	130	200	2910	70	.46	28	2780			.52	18.72
10.2	130	200	2910	70	.46	28	2780			.52	18.72
10.4											
10.6											
10.8											
11											



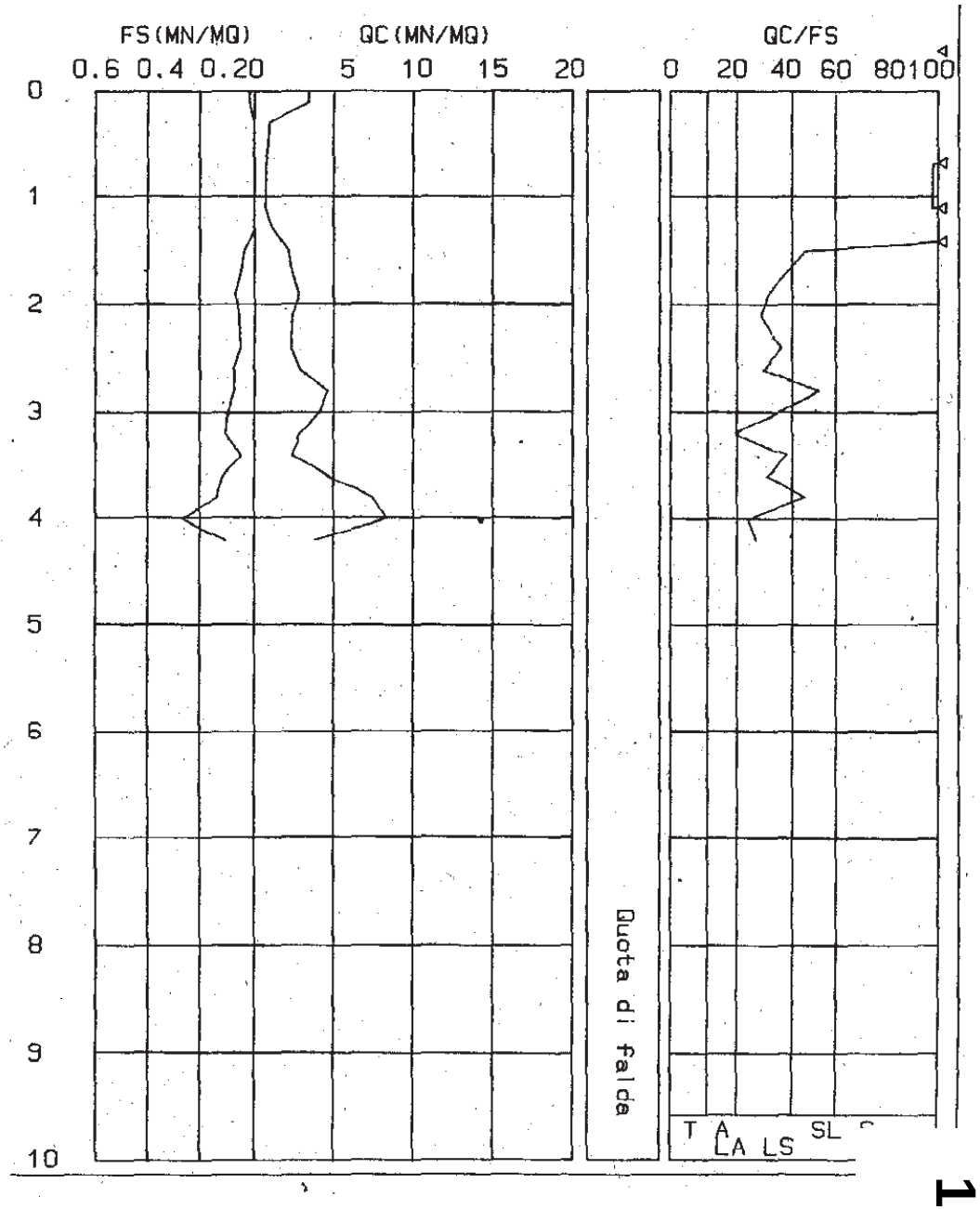
PROVA PENETROMETRICA STATICA

CERTIFICATO N.RO : 50-AM IMPIANTO :COSTRUZIONE DI FABBRICATO AD USO RICOVERO ATTREZZI AGRIC. II

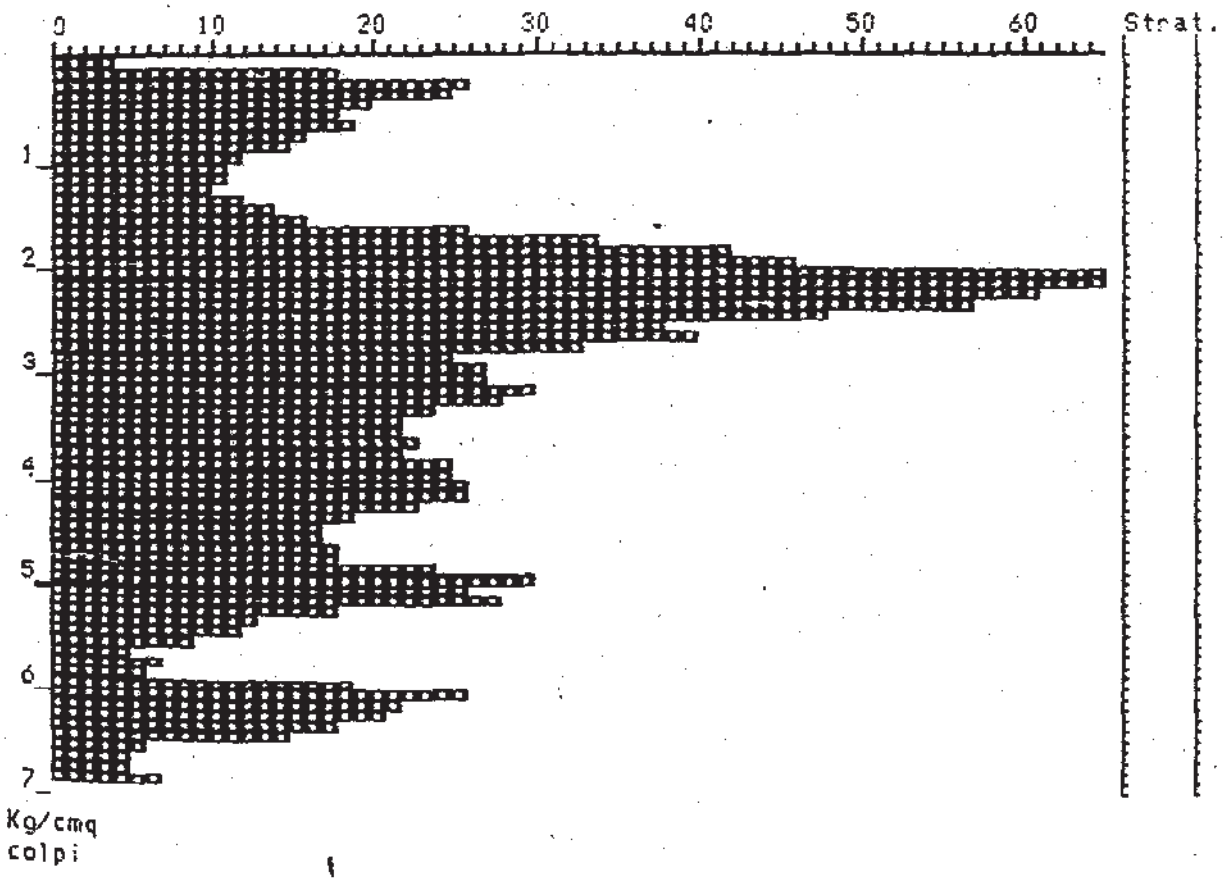
PROF.	QC	RL.	FS.	X	PROF.	QC	RL.	FS.	X	PROF.	QC	RL.	FS.	X
0.00	34	37	0.20	170.00										
0.20	34	37	0.20	170.00										
0.40	10	11	0.07	142.86										
0.60	9	10	0.07	128.57										
0.80	7	6	0.07	100.00										
1.00	7	8	0.07	100.00										
1.20	7	8	0.07	100.00										
1.40	12	13	0.07	171.43										
1.60	21	27	0.40	52.50										
1.80	24	32	0.53	45.28										
2.00	28	39	0.73	38.36										
2.20	24	34	0.67	35.82										
2.40	23	31	0.53	43.40										
2.60	29	41	0.80	36.25										
2.80	46	56	0.80	57.50										
3.00	41	56	1.00	41.00										
3.20	29	46	1.13	25.66										
3.40	24	32	0.53	45.28										
3.60	47	66	1.27	37.01										
3.80	74	95	1.40	52.86										
4.00	82	123	2.73	30.04										
4.20	38	55	1.13	33.63										

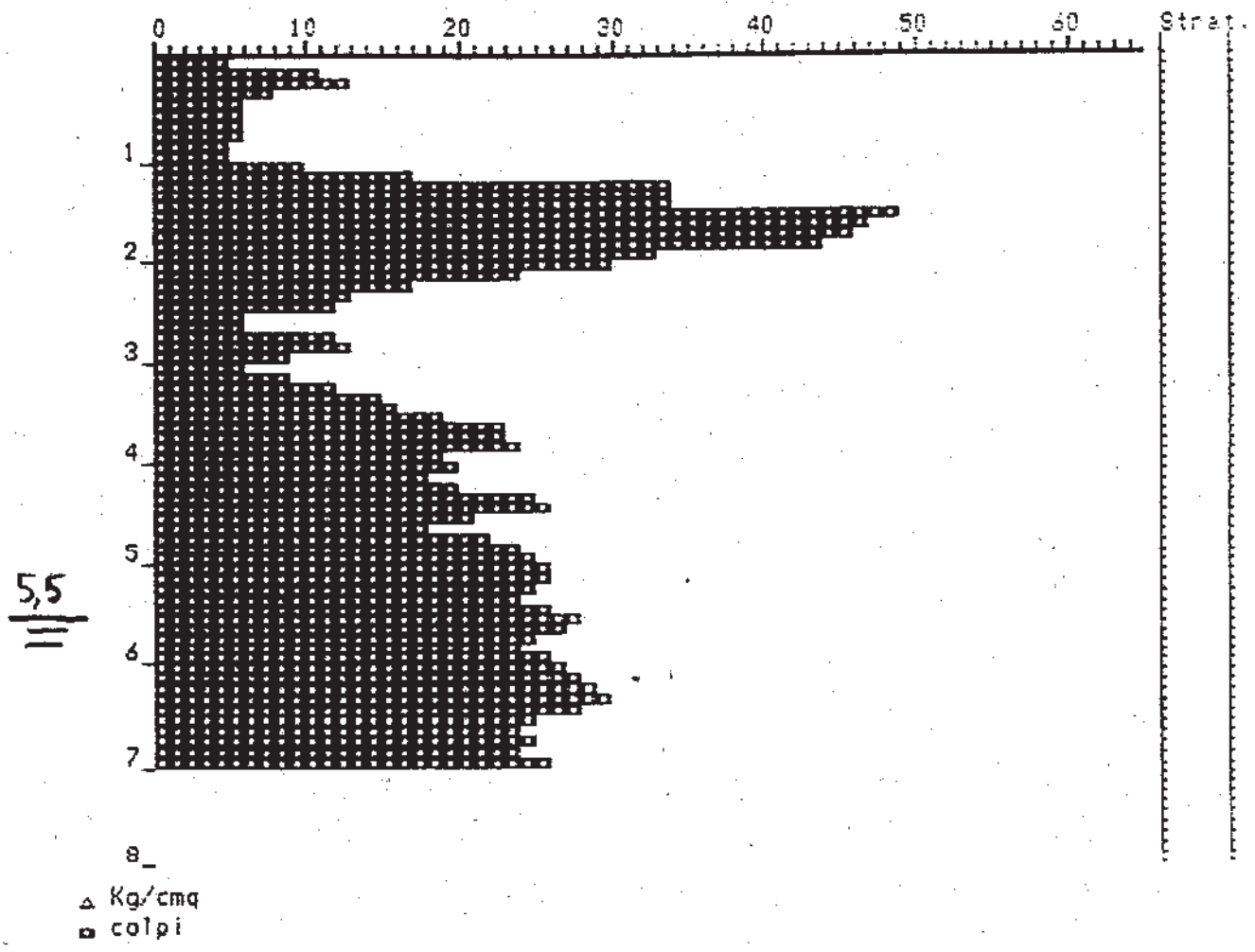
LEGENDA : PROF. = PROFONDITA' DI INFISSIONE cm. FS = RESISTENZA SPECIFICA AL MANICOTTO daN/cmq
QC = RESISTENZA SPECIFICA ALLA PUNTA daN/cmq X = RAPPORTO QC/FS %
RL = RESISTENZA LATERALE LOCALE daN/cmq

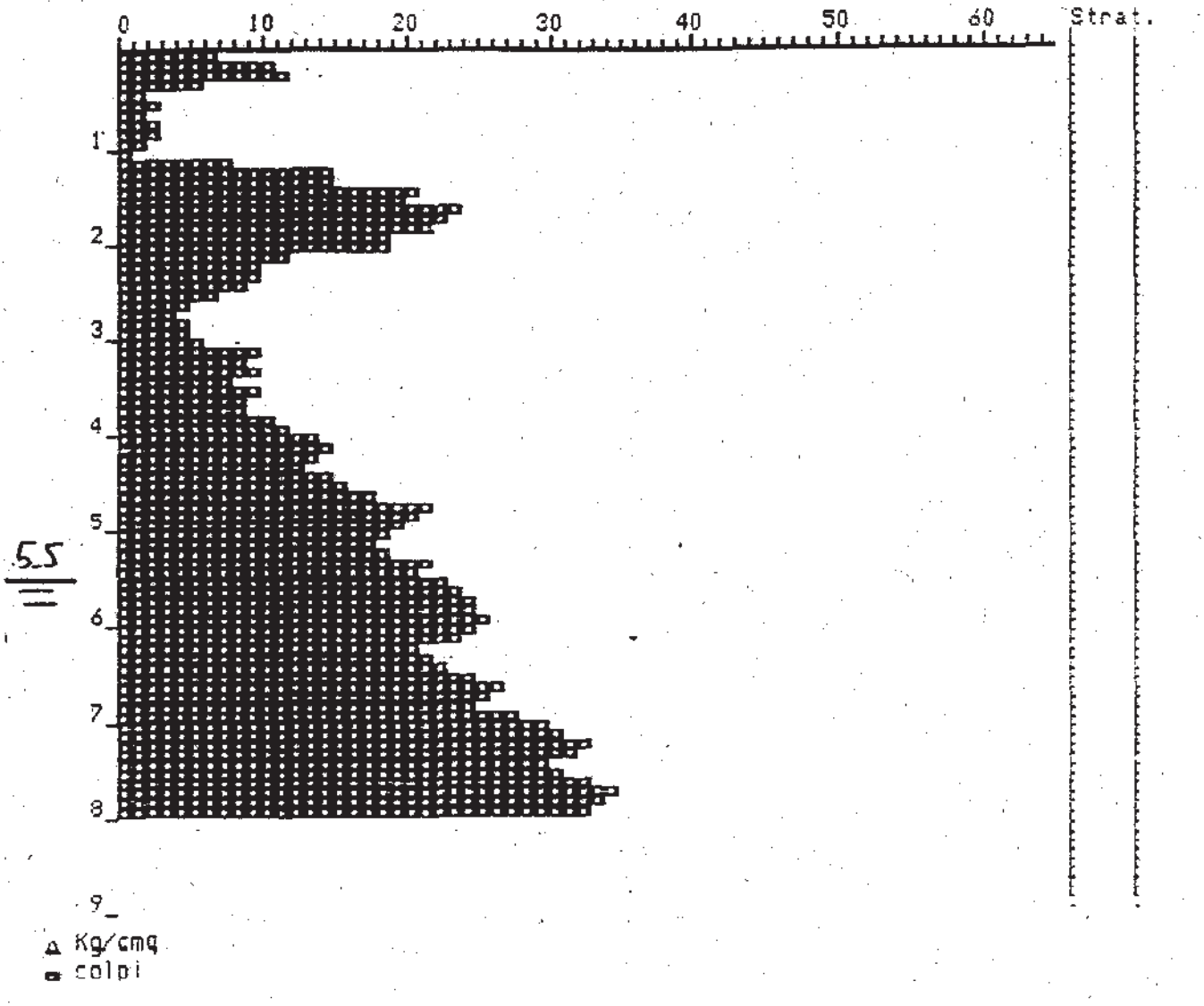
LITOLOGIA : T=TORBE A=ARGILLE LA=LIMI ARGILLOSI LS=LIMI SABBIOSI SL=SABBIE LIMOSE
S=SABBIE SG=SABBIE E GHIAIE AG=COPERTURA SUPERFICIALE



1878


0
10
20
30
40
50
60
Strat.
1
2
3
4
5
6
7
Kg/cmq
colpi


0
10
20
30
40
50
60
Strat.
1
2
3
4
5
6
7
8
5,5
Kg/cmq
colpi


0
10
20
30
40
50
60
Strat.
1
2
3
4
5
6
7
8
9
55
Kg/cmq
colpi

DATI	
Sondag.	
Camp.	
Posiz. pcal.	
Peso spec.	2,05 Kg/dm3
Frez. ind.	

Densita'	τ	σ	U%	φ = 12°
Assestam.	0,610	1		c = 0,400
	0,820	2		
	1,03	3		U% = 22

Condizioni di prova:

TAGLIO RAPIDO NON DRENATO

TRAVI ROVESCE

B=140

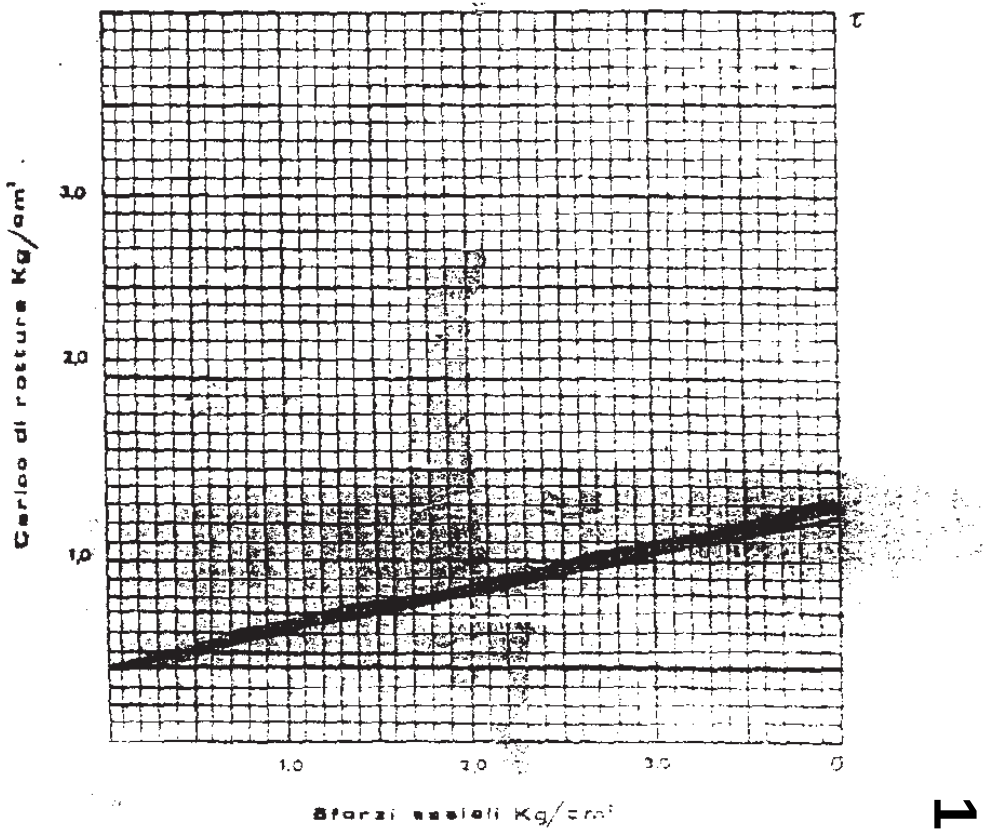
p.d.c.

	STRATIGRAFIA SAGGIO N° 1	Z m	H	Δq Kg/cmq	P₀ Kg/cmq	ΔP Kg/cmq	Δh cm
terreno veg. limoso							
sabbia gial. limosa Df= 150							
sabbia giallastra deb. argillosa 300		2,25	1,50	0,285	0,4013	0,263	2,275
sabbia argillosa 3,5 450		3,75	1,50	0,178	0,6687	0,164	0,989
3B DAL P.DI FOND. 600		5,25	1,50	0,130	0,9363	0,119	0,540

DATI : larghezza fondazione B = 140 cm
profondità " Df= 150 cm
carico di esercizio q = 0,923 Kg/cmq

CEDIMENTO FINALE = 3,80

SAGGIO N° 1 γ =2,05 Kg/dmc peso di volume
e_0 =0,640 indice dei vuoti
Cc =0,114 " di compressibilità



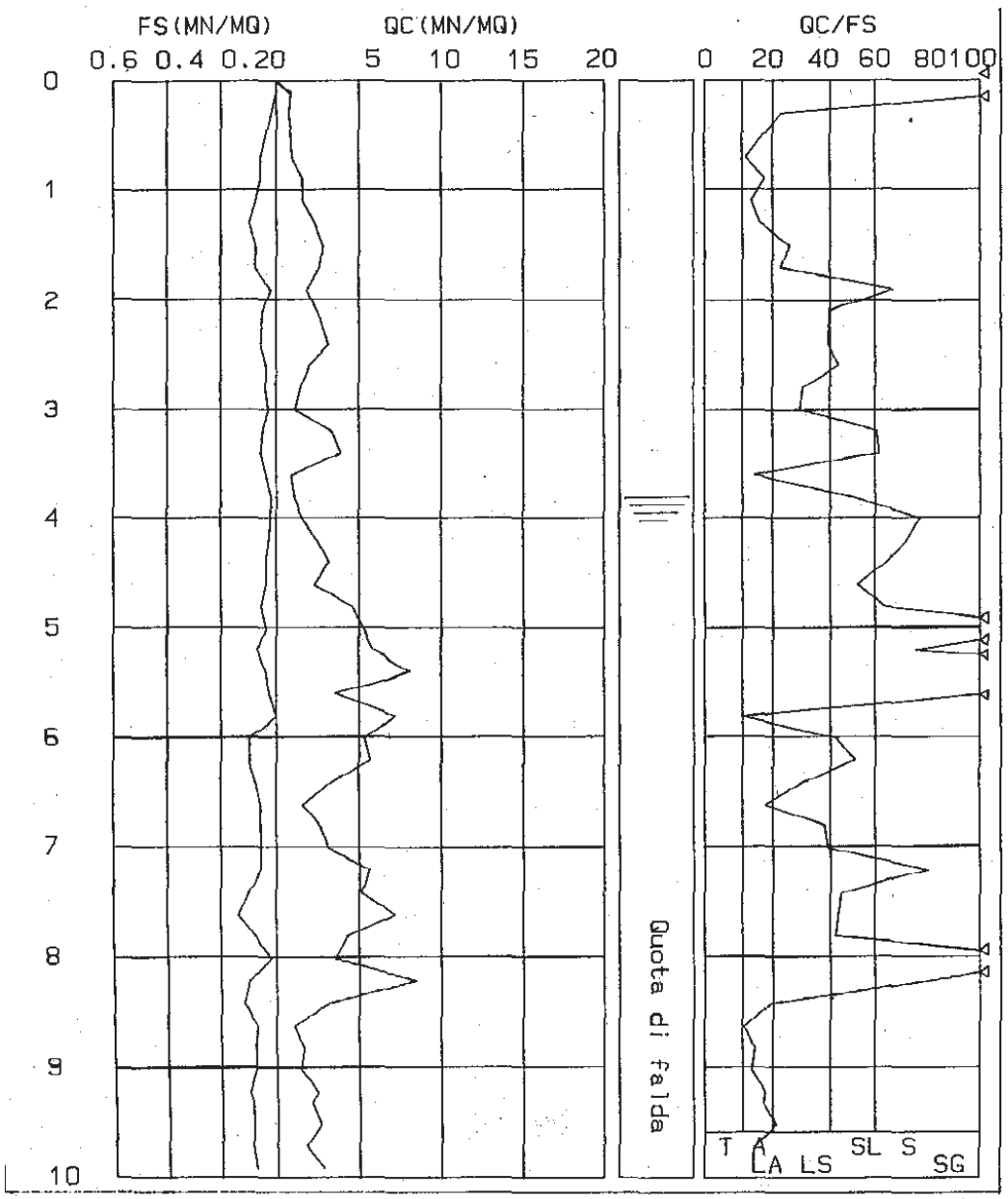
1889

CERTIFICATO N.RO : 51-AA CANTIERE :COSTRUZIONE FABBRICATO N' 6 ALLOGGI

PROF.	QC	RL.	FS.	X	PROF.	QC	RL.	FS.	X	PROF.	QC	RL.	FS.	X
0.20	9	10	0.07	128.57	10.20	27	42	1.00	27.00					
0.40	8	12	0.27	29.63	10.40	32	47	1.00	32.00					
0.60	9	15	0.40	22.50	10.60	21	35	0.93	22.58					
0.80	10	19	0.60	16.67	10.80	19	32	0.87	21.84					
1.00	16	26	0.67	23.88	11.00	18	30	0.80	22.50					
1.20	16	29	0.87	18.39										
1.40	23	39	1.07	21.50										
1.60	26	41	0.87	32.18										
1.80	26	39	0.87	29.89										
2.00	19	23	0.27	70.37										
2.20	25	33	0.53	47.17										
2.40	31	41	0.67	46.27										
2.60	20	26	0.40	50.00										
2.80	15	21	0.40	37.50										
3.00	12	17	0.33	36.36										
3.20	34	42	0.53	64.15										
3.40	39	48	0.60	65.00										
3.60	9	16	0.47	19.15										
3.80	11	14	0.20	55.00										
4.00	16	19	0.20	80.00										
4.20	25	30	0.33	75.76										
4.40	32	39	0.47	68.09										
4.60	23	29	0.40	57.50										
4.80	45	55	0.67	67.16										
5.00	52	58	0.40	130.00										
5.20	58	69	0.73	79.45										
5.40	80	87	0.47	170.21										
5.60	36	41	0.33	109.09										
5.80	71	72	0.07	1014.29										
6.00	53	69	1.07	49.53										
6.20	56	71	1.00	56.00										
6.40	33	46	0.67	37.93										
6.60	16	26	0.67	23.88										
6.80	27	36	0.60	45.00										
7.00	31	41	0.67	46.27										
7.20	56	66	0.67	83.58										
7.40	51	66	1.00	51.00										
7.60	71	92	1.40	50.71										
7.80	43	56	0.87	49.43										
8.00	36	40	0.27	133.33										
8.20	84	99	1.00	84.00										
8.40	31	49	1.20	25.83										
8.60	11	22	0.73	15.07										
8.80	17	30	0.87	19.54										
9.00	15	27	0.80	18.75										
9.20	25	41	1.07	23.36										
9.40	21	35	0.93	22.58										
9.60	26	40	0.93	27.96										
9.80	18	32	0.93	19.35										
10.00	28	40	0.80	35.00										

LEGENDA : PROF. = PROFONDITA' DI INFISSIONE CM. FS = RESISTENZA SPECIFICA AL MANICOTTO dN/cmq
QC = RESISTENZA SPECIFICA ALLA PUNTA dN/cmq X = RAPPORTO QC/FS %
RL = RESISTENZA LATERALE TOTALE dN/cmq

LITOLOGIA : T=TORBE A=ARGILLA LA=LIMI ARGILLOSI LS=LIMI SABBIOSI SL=SABBIE LIMOSE
S=SABBIE SG=SABBIE E GHIAIA AG=TERRENO AGRICOLO



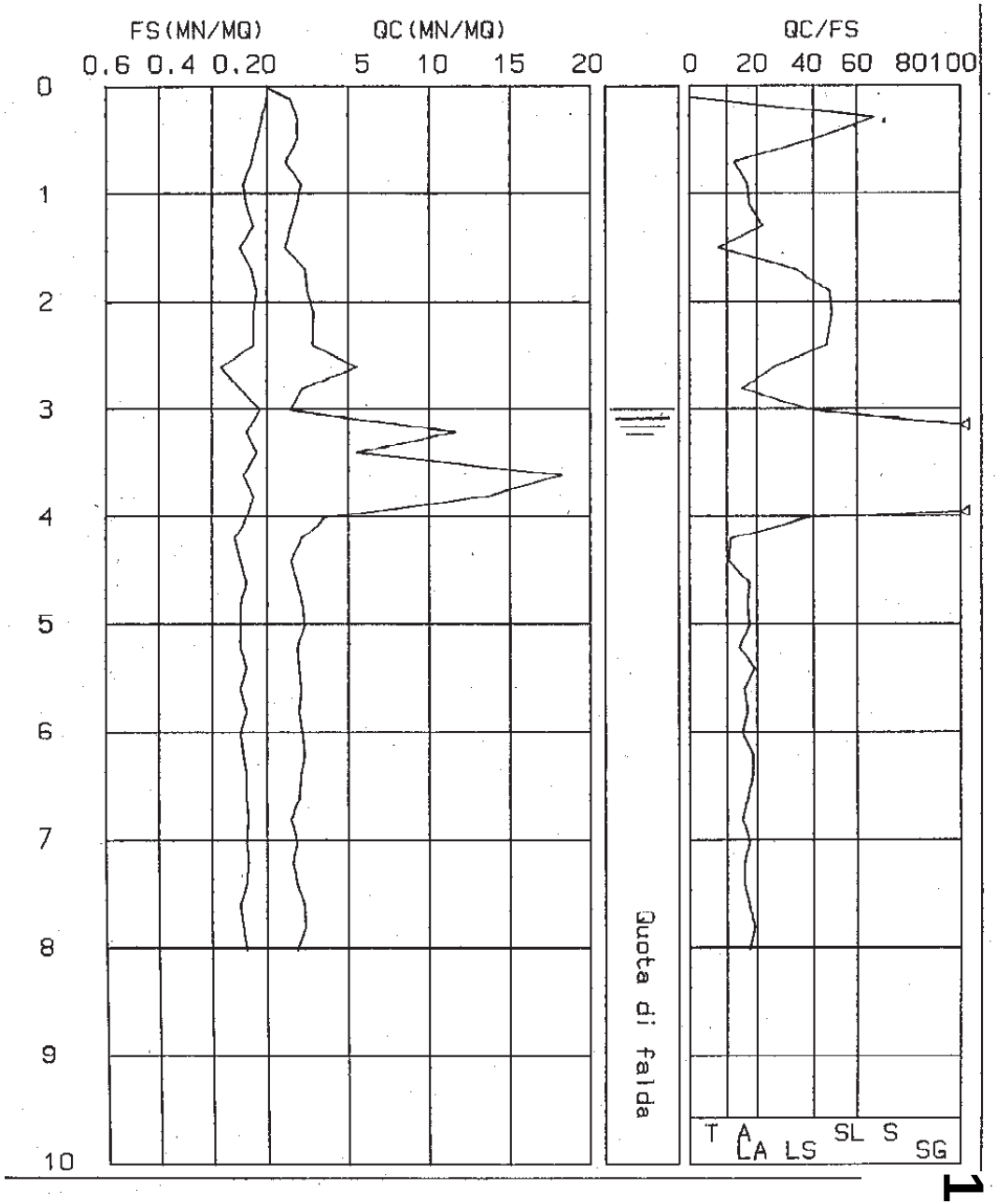
1890

CERTIFICATO N.RO: 52-AA CANTIERE :COSTRUZIONE FABBRICATO N° 6 ALLOGGI

PROF.	QC	RL.	FS.	X	PROF.	QC	RL.	FS.	X	PROF.	QC	RL.	FS.	X
0.20	14	14	0.00	0.00										
0.40	19	23	0.27	70.37										
0.60	19	25	0.40	47.50										
0.80	12	22	0.67	17.91										
1.00	21	35	0.93	22.58										
1.20	19	31	0.80	23.75										
1.40	15	23	0.53	28.30										
1.60	12	28	1.07	11.21										
1.80	24	33	0.60	40.00										
2.00	25	32	0.47	53.19										
2.20	29	37	0.53	54.72										
2.40	28	36	0.53	52.83										
2.60	55	80	1.67	32.93										
2.80	22	38	1.07	20.56										
3.00	15	20	0.33	45.45										
3.20	115	128	0.87	132.18										
3.40	55	62	0.47	117.02										
3.60	179	193	0.93	192.47										
3.80	133	141	0.53	250.94										
4.00	36	48	0.80	45.00										
4.20	21	40	1.27	16.54										
4.40	15	30	1.00	15.00										
4.60	19	31	0.80	23.75										
4.80	22	37	1.00	22.00										
5.00	23	38	1.00	23.00										
5.20	19	34	1.00	19.00										
5.40	20	32	0.80	25.00										
5.60	21	36	1.00	21.00										
5.80	20	33	0.87	22.99										
6.00	22	38	1.07	20.56										
6.20	23	37	0.93	24.73										
6.40	21	34	0.87	24.14										
6.60	20	33	0.87	22.99										
6.80	15	26	0.73	20.55										
7.00	19	31	0.80	23.75										
7.20	16	27	0.73	21.92										
7.40	19	32	0.87	21.84										
7.60	23	38	1.00	23.00										
7.80	24	36	0.93	25.81										
8.00	19	31	0.80	23.75										

LEGENDA : PROF. = PROFONDITA' DI INFISSIONE CM. FS = RESISTENZA SPECIFICA AL MANICOTTO dN/cmq
QC = RESISTENZA SPECIFICA ALLA PUNTA dN/cmq X = RAPPORTO QC/FS
RL = RESISTENZA LATERALE TOTALE dN/cmq

LITOLOGIA : T=TORBE A=ARGILLA LA=LIMI ARGILLOSI LS=LIMI SABBIOSI SL=SABBIE LIMOSE
S=SABBIE SG=SABBIE E GHIAIA AG=TERRENO AGRICOLO



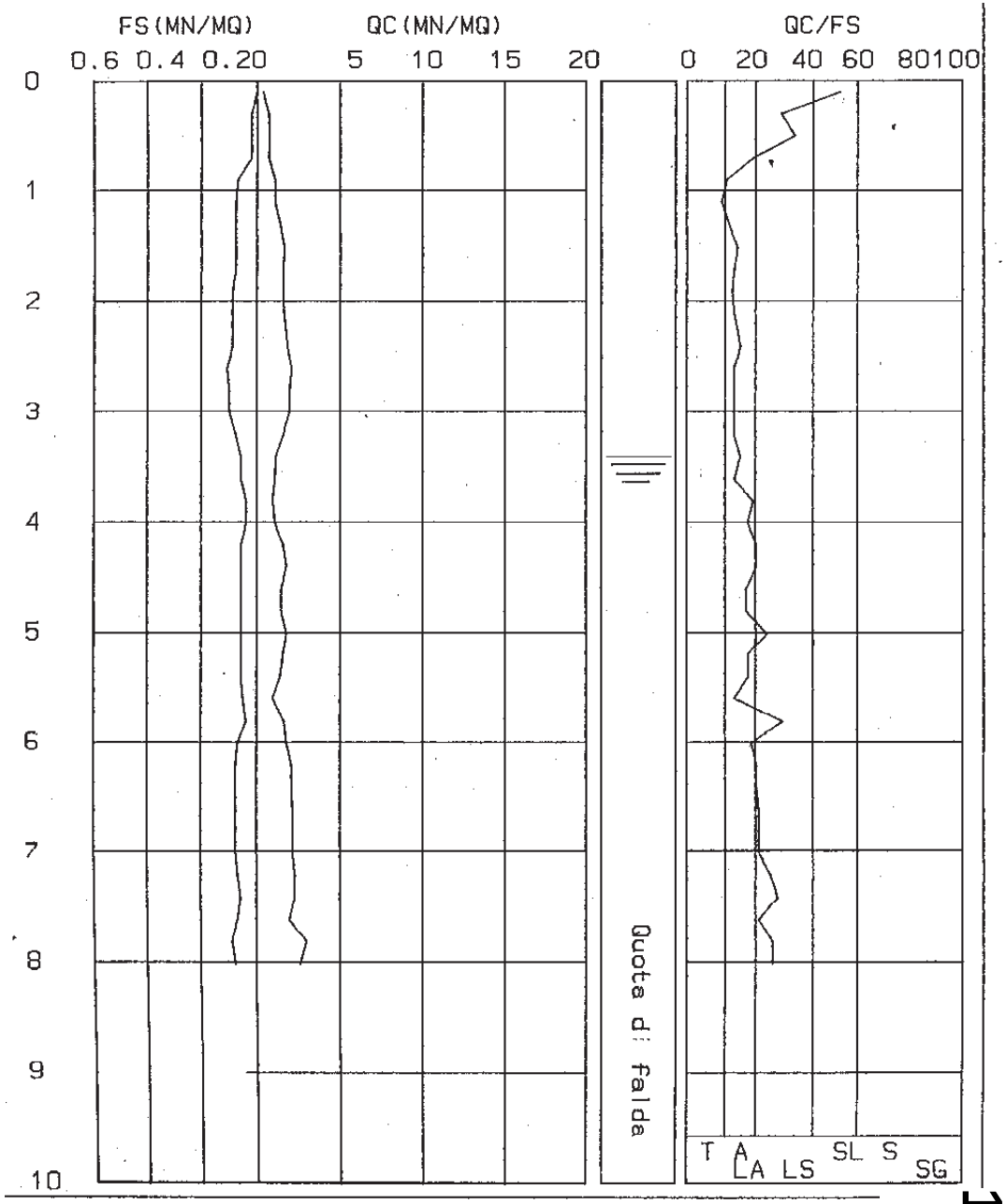
1891

CERTIFICATO N.RO : 53-AA CANTIERE :COSTRUZIONE FABBRICATO N° 6 ALLOGGI

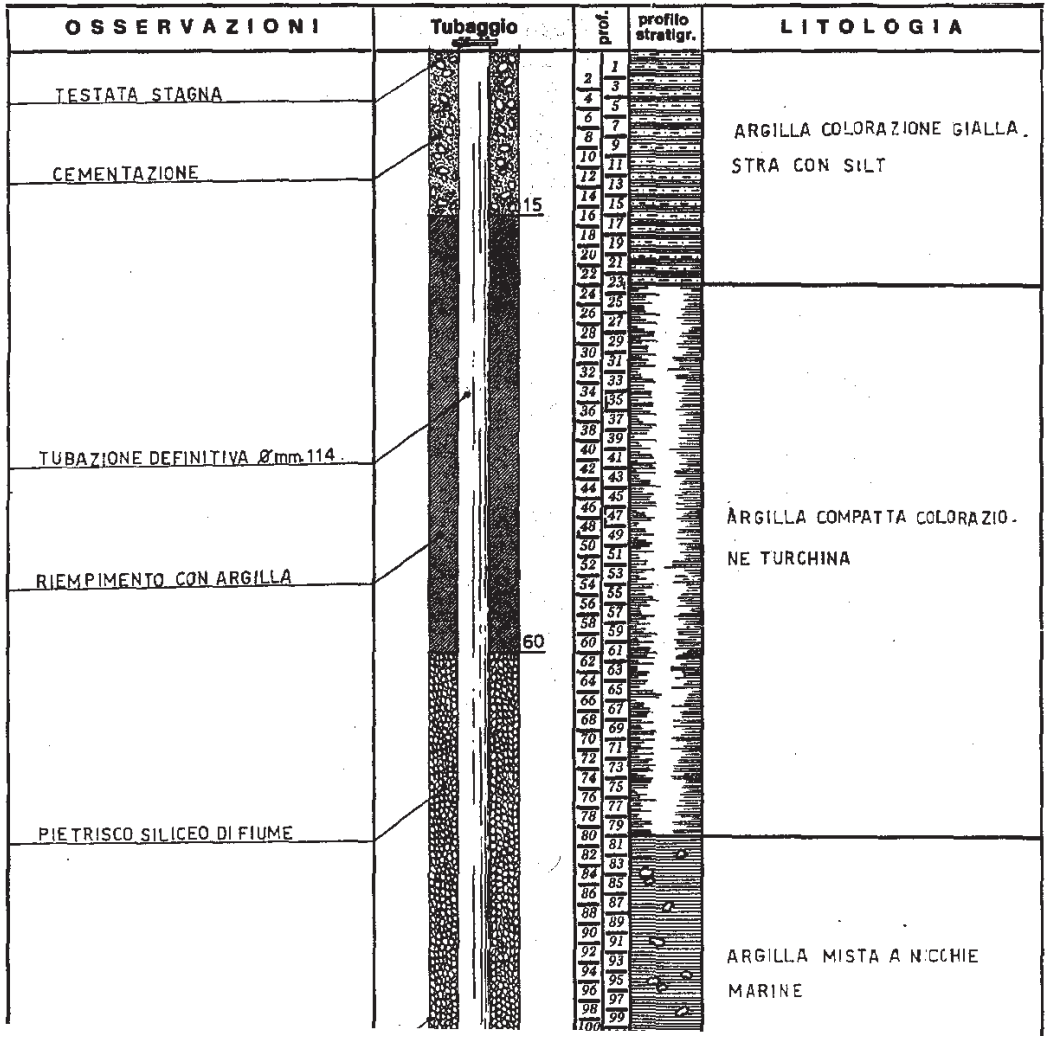
PROF.	QC	RL.	FS.	X	PROF.	QC	RL.	FS.	X	PROF.	QC	RL.	FS.	X
0.20	4	5	0.07	57.14										
0.40	7	10	0.20	35.00										
0.60	8	11	0.20	40.00										
0.80	7	11	0.27	25.93										
1.00	11	22	0.73	15.07										
1.20	11	23	0.80	13.75										
1.40	14	27	0.87	16.09										
1.60	17	30	0.87	19.54										
1.80	16	29	0.87	18.39										
2.00	16	30	0.93	17.20										
2.20	17	31	0.93	18.28										
2.40	19	33	0.93	20.43										
2.60	21	38	1.13	18.58										
2.80	20	36	1.07	18.69										
3.00	20	36	1.07	18.69										
3.20	16	29	0.87	18.39										
3.40	12	21	0.60	20.00										
3.60	11	20	0.60	18.33										
3.80	10	16	0.40	25.00										
4.00	11	18	0.47	23.40										
4.20	16	25	0.60	26.67										
4.40	18	28	0.67	26.87										
4.60	15	25	0.67	22.39										
4.80	15	25	0.67	22.39										
5.00	18	27	0.60	30.00										
5.20	16	26	0.67	23.88										
5.40	14	23	0.60	23.33										
5.60	10	18	0.53	18.87										
5.80	17	24	0.47	36.17										
6.00	18	29	0.73	24.66										
6.20	21	33	0.80	26.25										
6.40	21	33	0.80	26.25										
6.60	22	34	0.80	27.50										
6.80	22	34	0.80	27.50										
7.00	22	34	0.80	27.50										
7.20	23	34	0.73	31.51										
7.40	23	33	0.67	34.33										
7.60	20	31	0.73	27.40										
7.80	30	44	0.93	32.26										
8.00	26	38	0.80	32.50										

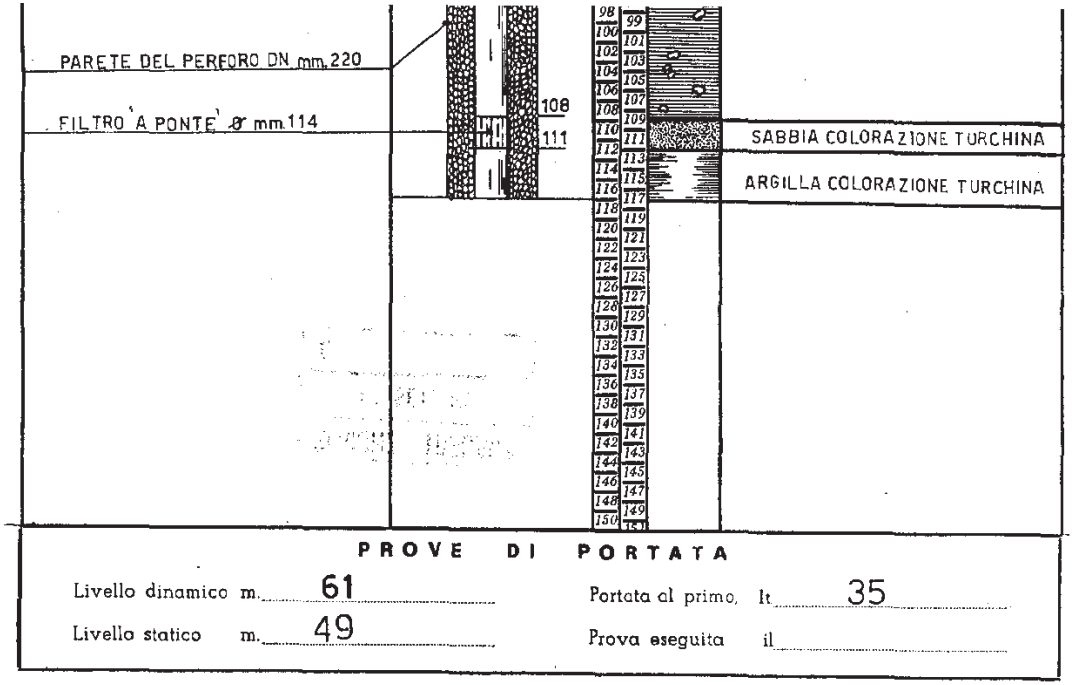
LEGENDA : PROF. = PROFONDITA' DI INFISSIONE CM. FS = RESISTENZA SPECIFICA AL MANICOTTO dN/cmq
QC = RESISTENZA SPECIFICA ALLA PUNTA dN/cmq X = RAPPORTO QC/FS %
RL = RESISTENZA LATERALE TOTALE dN/cmq

LITOLOGIA : T=TORBE A=ARGILLA LA=LIMI ARGILLOSI LS=LIMI SABBIOSI SL=SABBIE LIMOSE
S=SABBIE SG=SABBIE E GHIAIA AG=TERRENO AGRICOLO

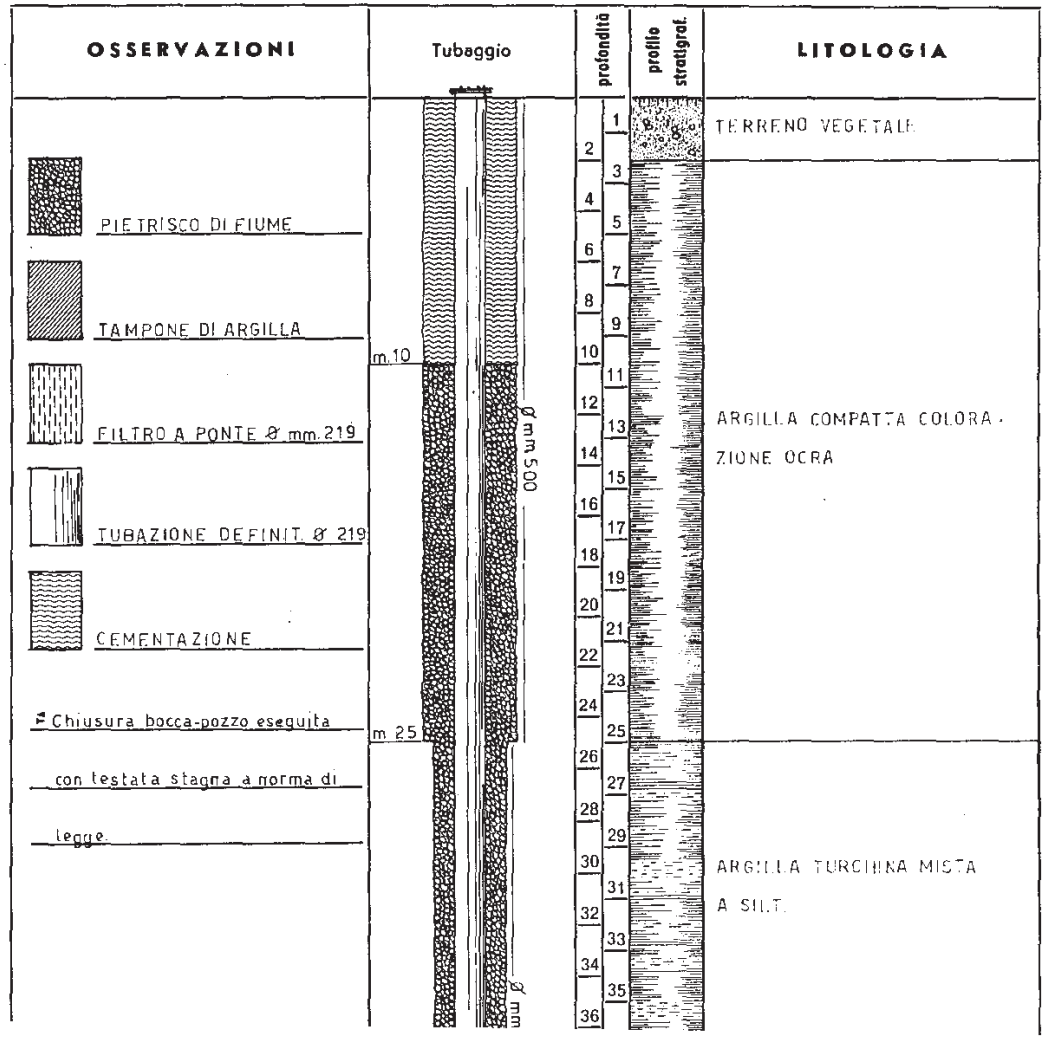


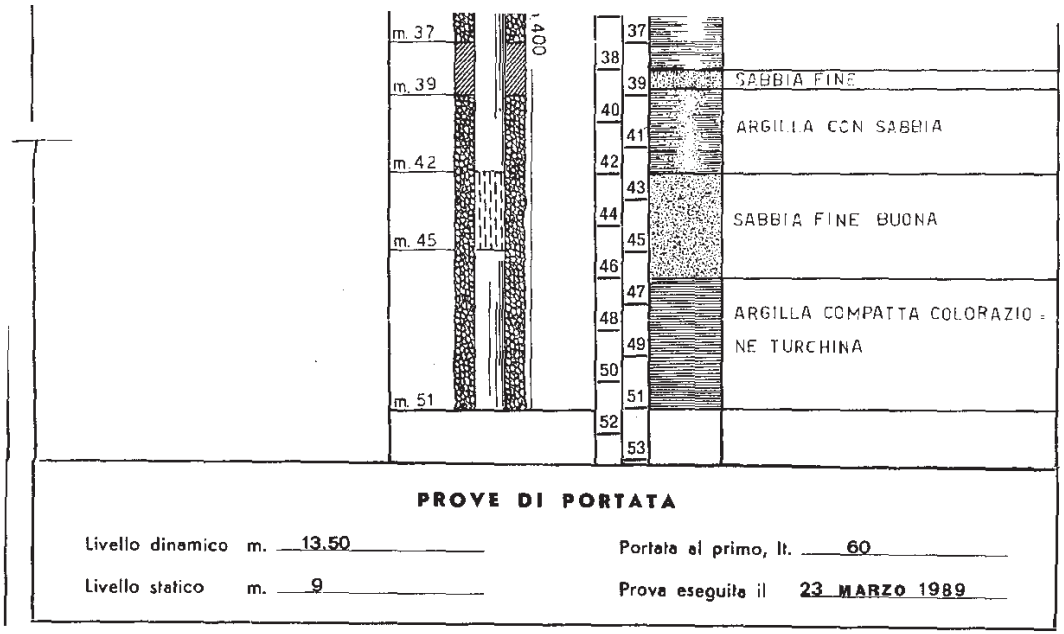
1892


OSSERVAZIONI
Tubaggio
prof.
profilo stratigr.
LITOLOGIA
TESTATA STAGNA
CEMENTAZIONE
TUBAZIONE DEFINITIVA Ø mm.114
RIEMPIMENTO CON ARGILLA
PIETRISCO SILICEO DI FIUME
15
60
ARGILLA COLORAZIONE GIALLASTRA CON SILT
ARGILLA COMPATTA COLORAZIONE TURCHINA
ARGILLA MISTA A NICCHIE MARINE


PARETE DEL PERFORO DN mm.220
FILTRO "A PONTE" Ø mm.114
108
111
SABBIA COLORAZIONE TURCHINA
ARGILLA COLORAZIONE TURCHINA
PROVE DI PORTATA
Livello dinamico m. 61
Livello statico m. 49
Portata al primo, lt 35
Prova eseguita il

2780





PROVE DI PORTATA

Livello dinamico m. 13.50

Livello statico m. 9

Portata al primo, lt. 60

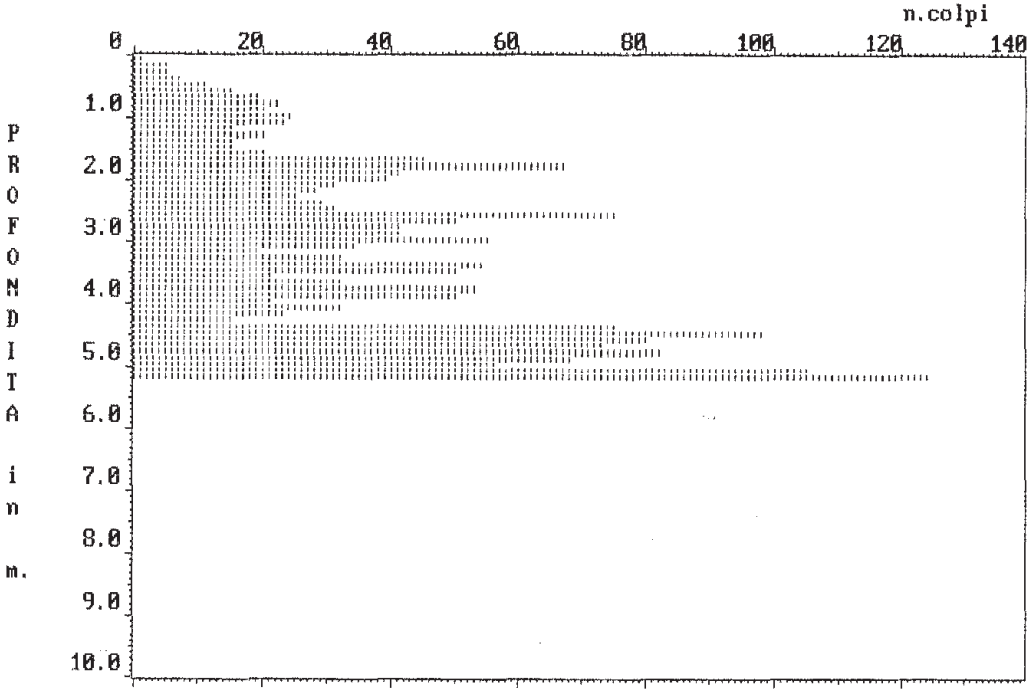
Prova eseguita il 23 MARZO 1989

2797

Resistenza alla punta

PROFONDITA' IN M.	N. COLPI ogni 10 cm.	RES. ROT. DIN. PUNTA Kg#N/cm².	PROFONDITA' IN M.	N. COLPI ogni 10 cm.	RES. ROT. DIN. PUNTA Kg#N/cm².
0.10	1	4	2.70	50	147
0.20	5	18	2.80	41	120
0.30	5	18	2.90	41	120
0.40	7	25	3.00	55	162
0.50	11	40	3.10	34	93
0.60	15	53	3.20	19	52
0.70	19	68	3.30	32	87
0.80	22	78	3.40	54	147
0.90	20	71	3.50	50	136
1.00	24	86	3.60	21	57
1.10	23	75	3.70	32	86
1.20	15	49	3.80	53	143
1.30	20	65	3.90	50	135
1.40	15	49	4.00	21	57
1.50	15	49	4.10	32	81
1.60	20	64	4.20	23	58
1.70	45	145	4.30	15	38
1.80	67	216	4.40	75	189
1.90	41	132	4.50	98	247
2.00	39	126	4.60	80	200
2.10	31	92	4.70	73	182
2.20	28	83	4.80	82	205
2.30	25	74	4.90	68	170
2.40	29	86	5.00	56	140
2.50	31	92	5.10	105	246
2.60	75	220	5.20	124	291

PROVA PENETROMETRICA [S.C.P.T.] N. 1



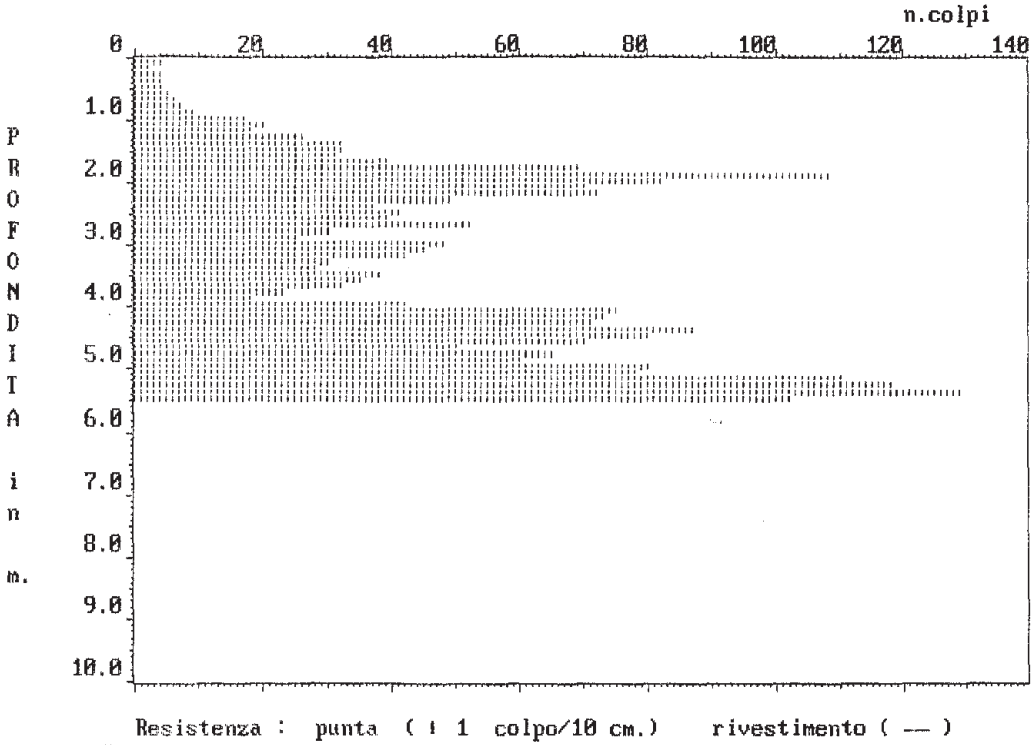
Resistenza : punta (I 1 colpo/10 cm.) rivestimento (—)

2902

Resistenza alla punta

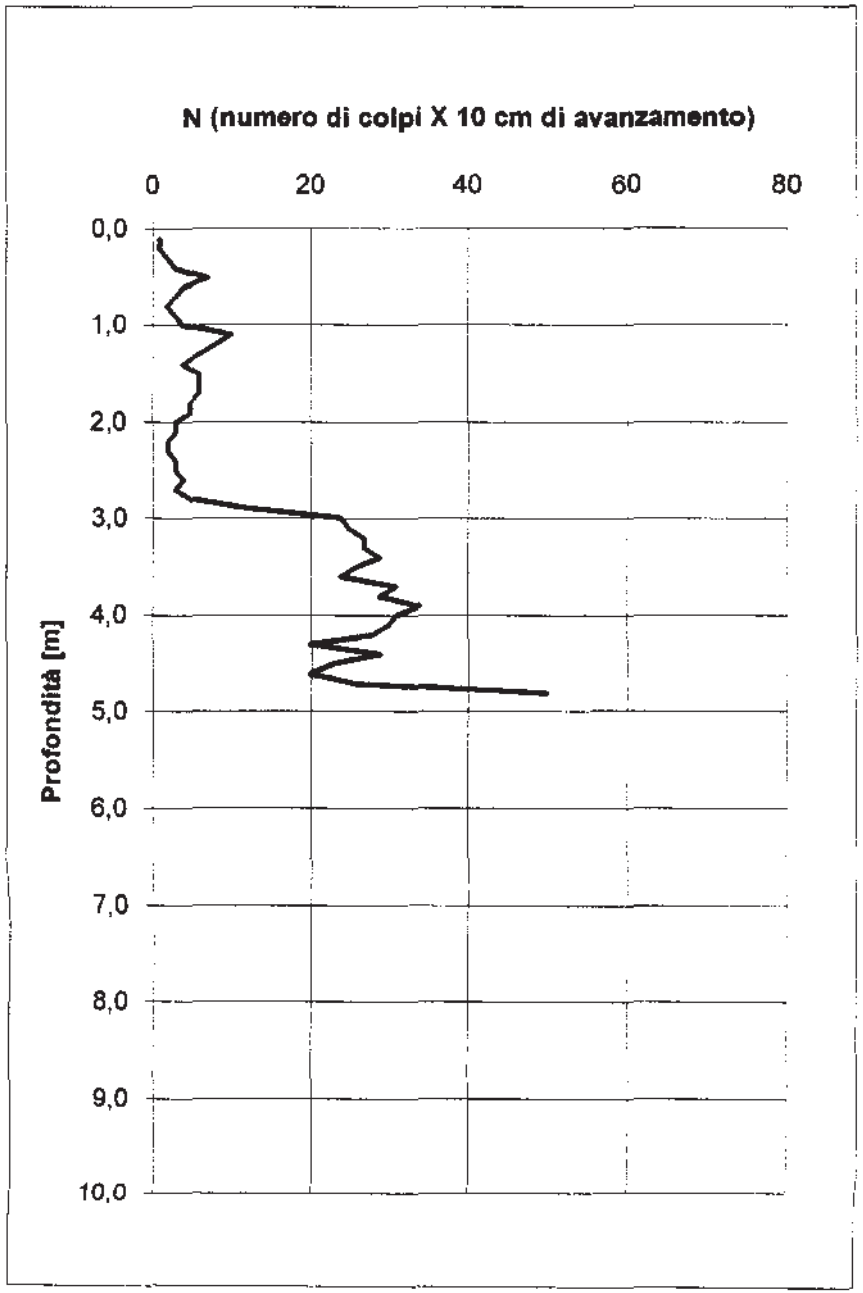
PROFONDITA' IN M.	N. COLPI ogni 10 cm.	RES. ROT. DIN. PUNTA Kg/N/cm².	PROFONDITA' IN M.	N. COLPI ogni 10 cm.	RES. ROT. DIN. PUNTA Kg/N/cm².
0.10	4	15	2.90	25	73
0.20	2	7	3.00	48	141
0.30	4	15	3.10	45	123
0.40	4	15	3.20	42	115
0.50	4	15	3.30	30	82
0.60	5	18	3.40	28	76
0.70	6	21	3.50	38	104
0.80	7	25	3.60	35	95
0.90	9	32	3.70	32	86
1.00	17	61	3.80	23	62
1.10	20	65	3.90	18	49
1.20	18	59	4.00	42	113
1.30	26	85	4.10	75	189
1.40	32	105	4.20	73	184
1.50	32	105	4.30	71	179
1.60	31	100	4.40	87	219
1.70	39	126	4.50	80	202
1.80	69	222	4.60	70	175
1.90	108	343	4.70	50	125
2.00	82	264	4.80	65	162
2.10	70	208	4.90	60	150
2.20	72	214	5.00	80	200
2.30	49	146	5.10	78	183
2.40	37	110	5.20	110	258
2.50	41	122	5.30	118	277
2.60	39	115	5.40	129	302
2.70	52	153	5.50	102	239
2.80	30	88			

PROVA PENETROMETRICA [S.C.P.T.] N. 2

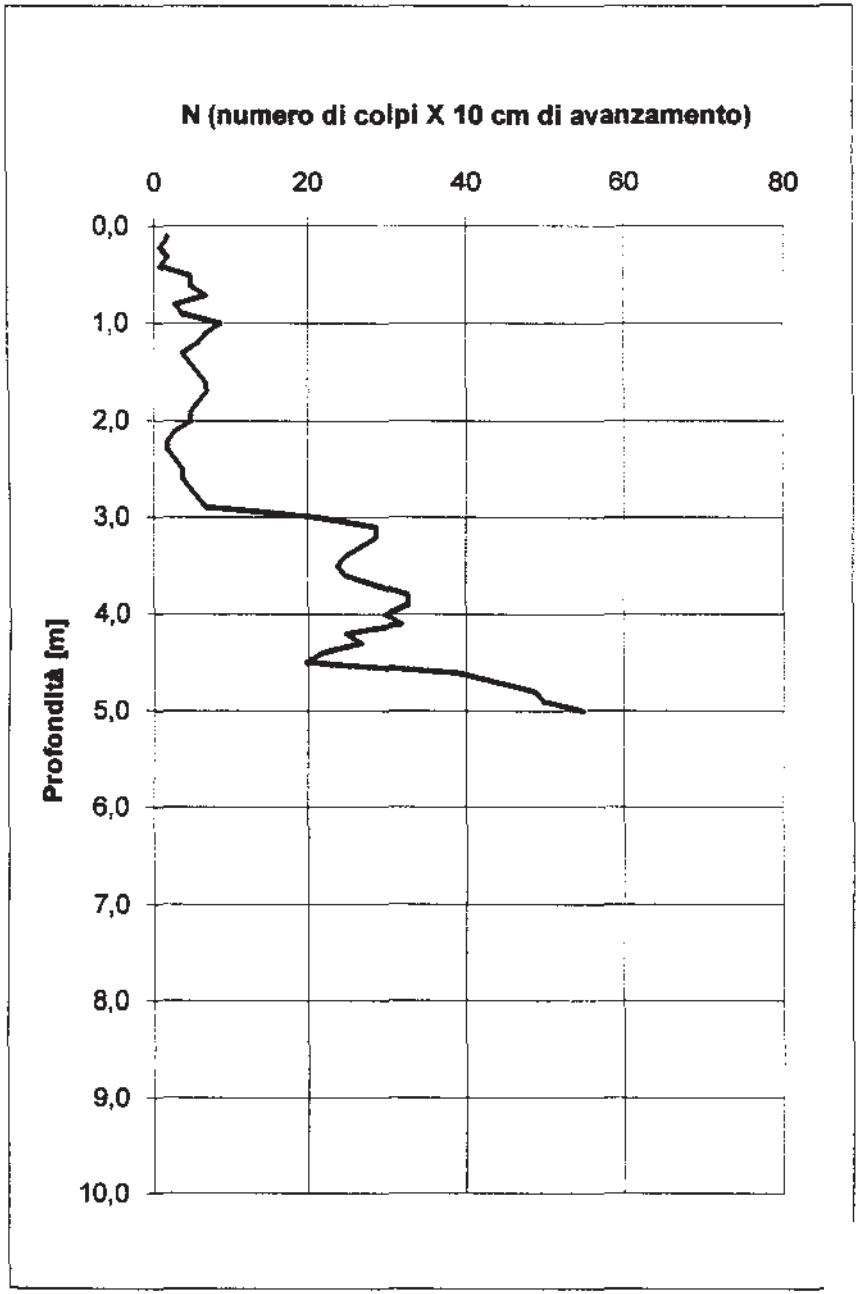


2903

Prof.	N	Rd	Nspt
0,1	1	4,0	1
0,2	1	4,0	1
0,3	2	8,0	2
0,4	3	12,0	2
0,5	7	28,1	5
0,6	4	16,0	3
0,7	3	12,0	2
0,8	2	8,0	2
0,9	3	12,0	2
1,0	4	16,0	3
1,1	10	40,1	8
1,2	8	32,1	6
1,3	6	24,1	5
1,4	4	16,0	3
1,5	6	24,1	5
1,6	6	24,1	5
1,7	6	24,1	5
1,8	5	20,0	4
1,9	5	20,0	4
2,0	3	12,0	2
2,1	3	12,0	2
2,2	2	8,0	2
2,3	2	8,0	2
2,4	3	12,0	2
2,5	3	12,0	2
2,6	4	16,0	3
2,7	3	12,0	2
2,8	5	20,0	4
2,9	12	48,1	9
3,0	24	96,2	18
3,1	25	100,2	19
3,2	27	108,2	20
3,3	27	108,2	20
3,4	29	116,3	22
3,5	26	104,2	20
3,6	24	96,2	18
3,7	31	124,3	23
3,8	29	116,3	22
3,9	34	136,3	26
4,0	31	124,3	23
4,1	30	120,3	23
4,2	28	112,2	21
4,3	20	80,2	15
4,4	29	116,3	22
4,5	23	92,2	17
4,6	20	80,2	15
4,7	26	104,2	20
4,8	50	200,4	38
4,9	-	-	-
5,0	-	-	-

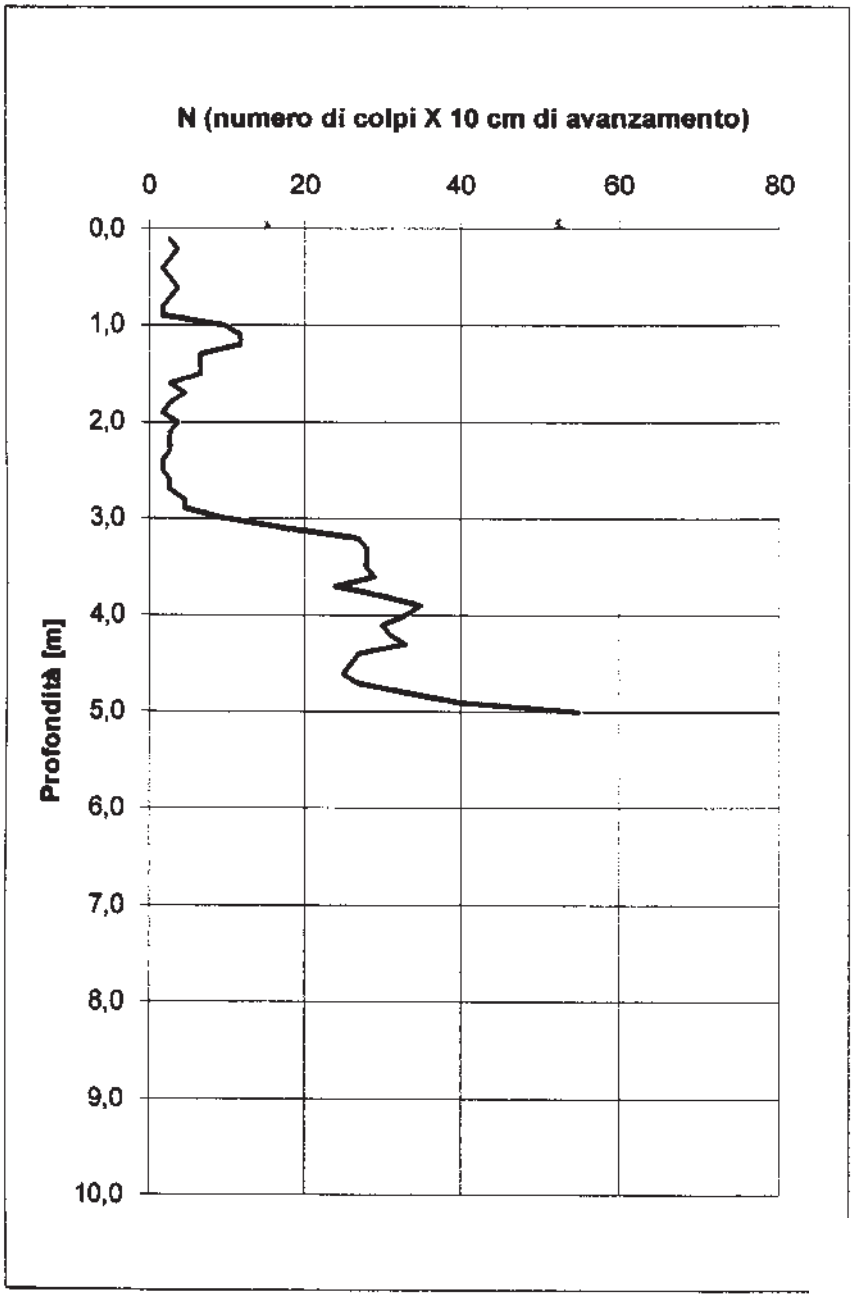


Prof.	N	Rd	Nspt	Prof.
0,1	2	8,0	2	5,1
0,2	1	4,0	1	5,2
0,3	2	8,0	2	5,3
0,4	1	4,0	1	5,4
0,5	5	20,0	4	5,5
0,6	5	20,0	4	5,6
0,7	7	28,1	5	5,7
0,8	3	12,0	2	5,8
0,9	4	16,0	3	5,9
1,0	9	36,1	7	6,0
1,1	7	28,1	5	6,1
1,2	6	24,1	5	6,2
1,3	4	16,0	3	6,3
1,4	5	20,0	4	6,4
1,5	6	24,1	5	6,5
1,6	7	28,1	5	6,6
1,7	7	28,1	5	6,7
1,8	6	24,1	5	6,8
1,9	5	20,0	4	6,9
2,0	5	20,0	4	7,0
2,1	3	12,0	2	7,1
2,2	2	8,0	2	7,2
2,3	2	8,0	2	7,3
2,4	3	12,0	2	7,4
2,5	4	16,0	3	7,5
2,6	4	16,0	3	7,6
2,7	5	20,0	4	7,7
2,8	6	24,1	5	7,8
2,9	7	28,1	5	7,9
3,0	21	84,2	16	8,0
3,1	29	116,3	22	8,1
3,2	29	116,3	22	8,2
3,3	27	108,2	20	8,3
3,4	25	100,2	19	8,4
3,5	24	96,2	18	8,5
3,6	25	100,2	19	8,6
3,7	29	116,3	22	8,7
3,8	33	132,3	25	8,8
3,9	33	132,3	25	8,9
4,0	30	120,3	23	9,0
4,1	32	128,3	24	9,1
4,2	25	100,2	19	9,2
4,3	27	108,2	20	9,3
4,4	22	88,2	17	9,4
4,5	20	80,2	15	9,5
4,6	39	156,3	30	9,6
4,7	44	176,4	33	9,7
4,8	49	196,4	37	9,8
4,9	50	200,4	38	9,9
5,0	55	220,5	42	10,0

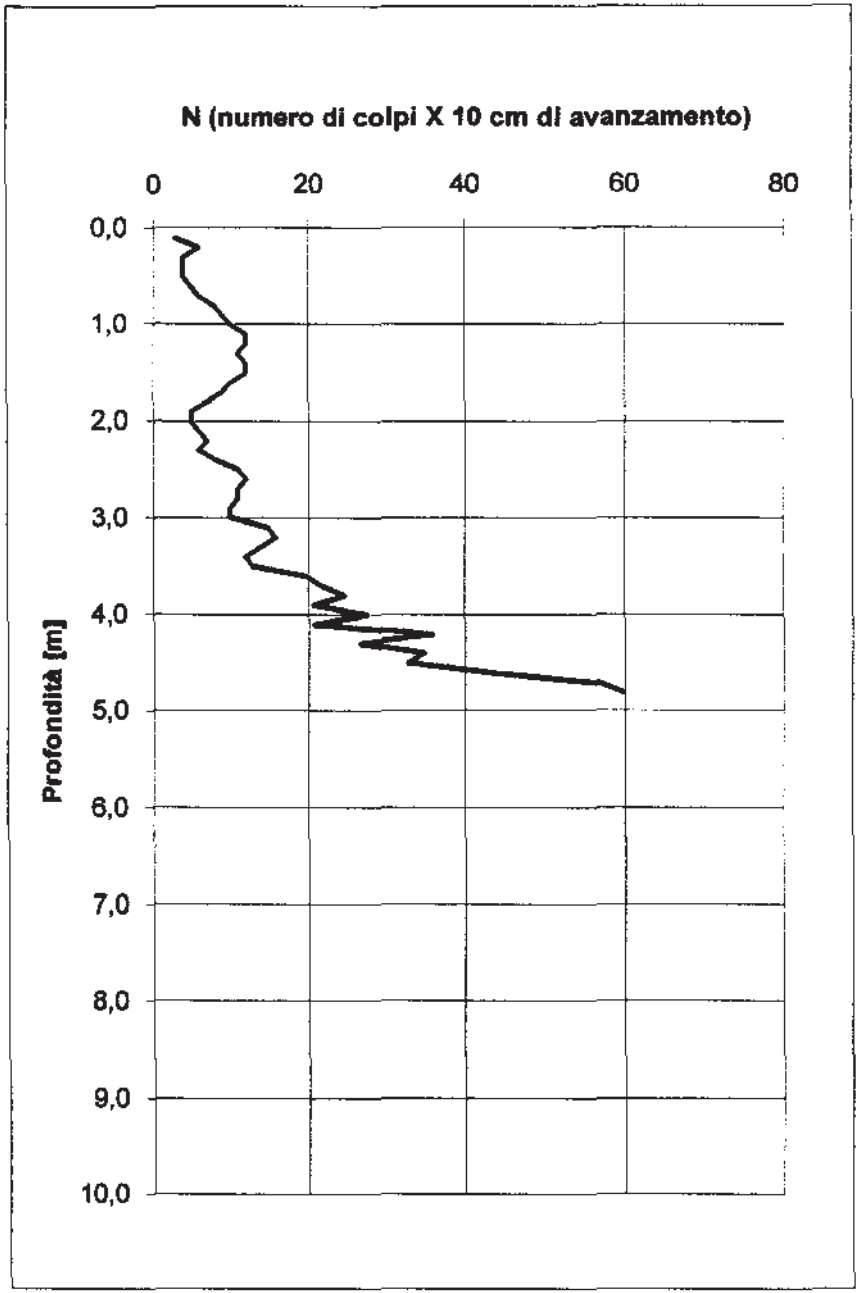


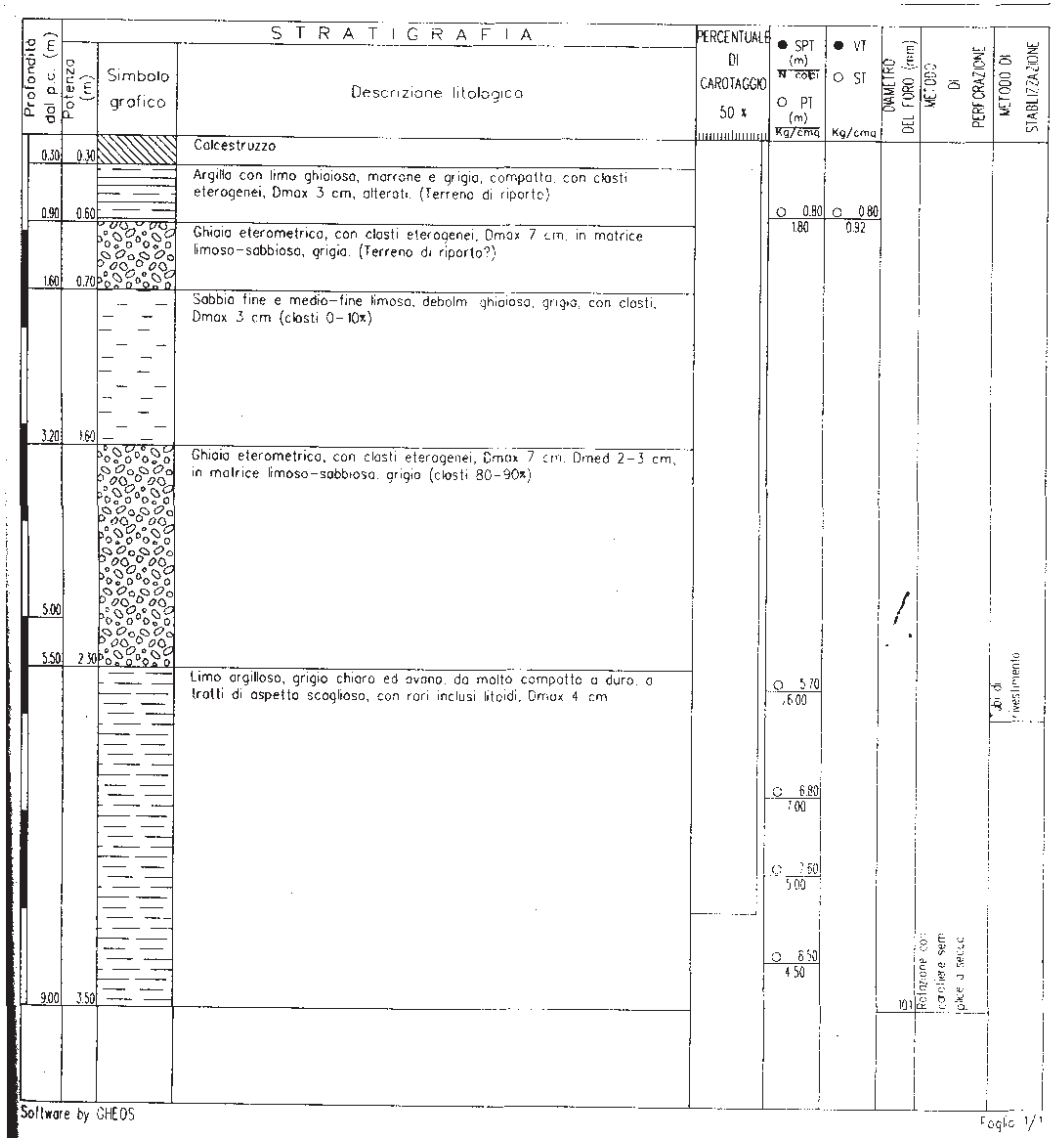
2976

Prof.	N	Rd	Nspt
0,1	3	12,0	2
0,2	4	16,0	3
0,3	3	12,0	2
0,4	2	8,0	2
0,5	3	12,0	2
0,6	4	16,0	3
0,7	3	12,0	2
0,8	2	8,0	2
0,9	2	8,0	2
1,0	10	40,1	8
1,1	12	48,1	9
1,2	12	48,1	9
1,3	7	28,1	5
1,4	7	28,1	5
1,5	7	28,1	5
1,6	3	12,0	2
1,7	5	20,0	4
1,8	3	12,0	2
1,9	2	8,0	2
2,0	4	16,0	3
2,1	3	12,0	2
2,2	3	12,0	2
2,3	3	12,0	2
2,4	2	8,0	2
2,5	2	8,0	2
2,6	3	12,0	2
2,7	3	12,0	2
2,8	5	20,0	4
2,9	5	20,0	4
3,0	10	40,1	8
3,1	18	72,2	14
3,2	27	108,2	20
3,3	28	112,2	21
3,4	28	112,2	21
3,5	28	112,2	21
3,6	29	116,3	22
3,7	24	96,2	18
3,8	30	120,3	23
3,9	35	140,3	27
4,0	33	132,3	25
4,1	30	120,3	23
4,2	31	124,3	23
4,3	33	132,3	25
4,4	27	108,2	20
4,5	26	104,2	20
4,6	25	100,2	19
4,7	27	108,2	20
4,8	33	132,3	25
4,9	40	160,4	30
5,0	55	220,5	42



Prof.	N	Rd	Nspt
0,1	3	12,0	2
0,2	6	24,1	5
0,3	4	16,0	3
0,4	4	16,0	3
0,5	4	16,0	3
0,6	5	20,0	4
0,7	6	24,1	5
0,8	8	32,1	6
0,9	9	36,1	7
1,0	10	40,1	8
1,1	12	48,1	9
1,2	12	48,1	9
1,3	11	44,1	8
1,4	12	48,1	9
1,5	12	48,1	9
1,6	10	40,1	8
1,7	9	36,1	7
1,8	7	28,1	5
1,9	5	20,0	4
2,0	5	20,0	4
2,1	6	24,1	5
2,2	7	28,1	5
2,3	6	24,1	5
2,4	8	32,1	6
2,5	11	44,1	8
2,6	12	48,1	9
2,7	11	44,1	8
2,8	11	44,1	8
2,9	10	40,1	8
3,0	10	40,1	8
3,1	15	60,1	11
3,2	16	64,1	12
3,3	14	56,1	11
3,4	12	48,1	9
3,5	13	52,1	10
3,6	20	80,2	15
3,7	22	88,2	17
3,8	25	100,2	19
3,9	21	84,2	16
4,0	28	112,2	21
4,1	21	84,2	16
4,2	36	144,3	27
4,3	27	108,2	20
4,4	35	140,3	27
4,5	33	132,3	25
4,6	44	176,4	33
4,7	57	228,5	43
4,8	60	240,5	45
4,9	-	-	-
5,0	-	-	-





Sond. ..: 1 Camp. ..: 1 Quota ..: 2,50 - 2,80 m

PROVA DI TAGLIO DIRETTO

Stato del campione .....: Ricostituito
Tipo della prova .....: Consolidata Drenata
Velocità di deformazione .....: v 0.0100 mm/min

Caratteristiche iniziali medie dei provini:
Massa volumica apparente umida ..: Pv 1.92 g/cm3
Umidità naturale .....: W 13.8 %

Dimensioni		Provino	1	2	3	4
Lato		mm	60.00	60.00	60.00	
Altezza		mm	19.60	19.60	19.60	

Consolidazione		Provino	1	2	3	4
Pressione verticale	σ	Kgf/cm²	1.00	2.00	3.00	
Tempo di consolidazione	t	h	24	48	72	
Cedimento finale	δf	mm	0.80	1.00	1.74	

Rottura		Provino	1	2	3	4
Sollecitazione tangenziale	τ	Kgf/cm²	0.66	1.32	1.76	
Deformazione trasversale	δt	mm	5.53	5.85	5.80	
Deformazione normale	δn	mm	0.38	0.33	0.30	
Umidità naturale finale	Wf	%	19.5	18.0	16.1	

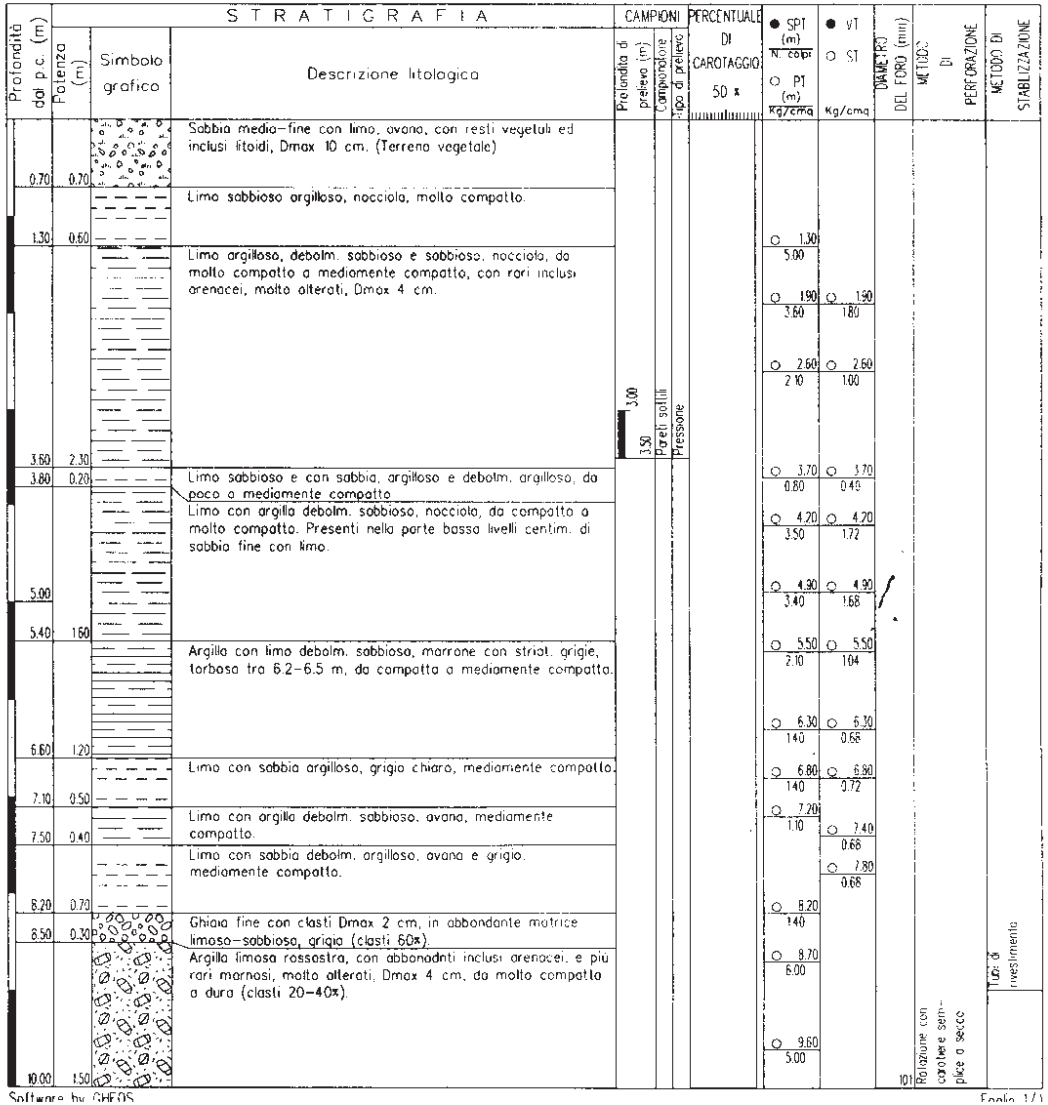
Angolo di attrito φ' : 28.7°

Coesione c' : 0.15 Kgf/cm²

Note

Le caratteristiche del campione hanno permesso solo la preparazione di provini ricostituiti.

3016



Sond. ..: 2 Camp. ..: 1 Quota ..: 3.0-3.5 m

PROVA DI TAGLIO DIRETTO

Stato del campione .....: Indisturbato
Tipo della prova .....: Consolidata Drenata
Velocità di deformazione .....: v 0.0100 mm/min

Caratteristiche iniziali medie dei provini:
Massa volumica apparente umida ..: Pv 2.04 g/cm3
Umidità naturale .....: W 24.0 %

Dimensioni		Provino	1	2	3	4
Lato		mm	60.00	60.00	60.00	
Altezza		mm	19.60	19.60	19.60	

Consolidazione		Provino	1	2	3	4
Pressione verticale	σ	Kgf/cm²	1.00	2.00	3.00	
Tempo di consolidazione	t	h	24	48	24	
Cedimento finale	δf	mm	0.34	0.64	0.99	

Rottura		Provino	1	2	3	4
Sollecitazione tangenziale	τ	Kgf/cm²	0.68	1.14	1.68	
Deformazione trasversale	δt	mm	3.19	1.95	3.57	
Deformazione normale	δn	mm	0.04	0.08	0.20	
Umidità naturale finale	Wf	%	24.4	23.4	22.5	

Angolo di attrito φ' : 26.4°

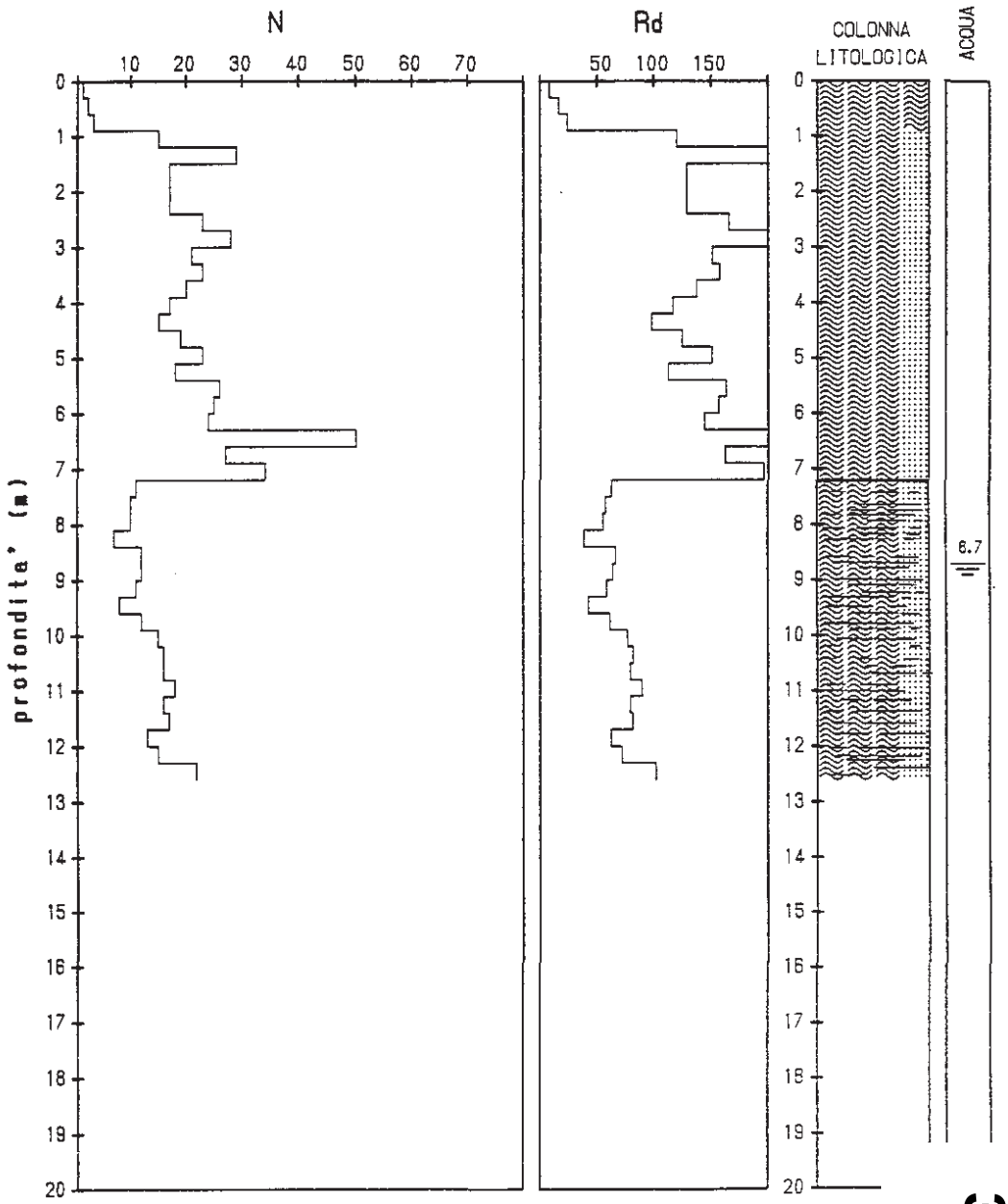
Coesione c' : 0.17 Kgf/cm²

1) Dichiarata dal laboratorio

3017

Prof	N	Rd	Ø	Dr	Cu	mv
0.3	1	8.5	.	.	0.1	36.0
0.6	2	16.9	.	.	0.1	18.0
0.9	3	24.0	.	.	0.2	12.0
1.2	15	120.1	30	96	.	2.4
1.5	29	232.2	36	99	.	1.2
1.8	17	129.0	31	93	.	2.1
2.1	17	129.0	31	91	.	2.1
2.4	17	129.0	31	89	.	2.1
2.7	23	165.8	34	96	.	1.6
3.0	28	201.9	35	99	.	1.3
3.3	21	151.4	33	90	.	1.7
3.6	23	157.9	34	91	.	1.6
3.9	20	137.3	32	85	.	1.8
4.2	17	116.7	31	79	.	2.1
4.5	15	98.3	30	74	.	2.4
4.8	19	124.6	32	80	.	1.9
5.1	23	150.8	34	85	.	1.6
5.4	18	112.9	31	77	.	2.0
5.7	26	163.1	35	87	.	1.4
6.0	25	156.8	34	85	.	1.4
6.3	24	144.3	34	83	.	1.5
6.6	50	300.6	42	99	.	0.7
6.9	27	162.3	35	85	.	1.3
7.2	34	196.3	38	91	.	1.1
7.5	11	63.5	28	56	.	3.3
7.8	10	57.7	27	53	.	3.6
8.1	10	55.5	27	52	.	3.6
8.4	7	38.9	25	41	.	5.1
8.7	12	66.6	28	56	.	3.0
9.0	12	64.2	28	56	.	3.0
9.3	11	58.8	28	53	.	3.3
9.6	8	42.8	26	43	.	4.5
9.9	12	61.9	28	55	.	3.0
10.2	15	77.3	30	61	.	2.4
10.5	16	82.5	30	63	.	2.3
10.8	16	79.7	30	63	.	2.3
11.1	18	89.6	31	66	.	2.0
11.4	16	79.7	30	62	.	2.3
11.7	17	81.8	31	63	.	2.1
12.0	13	62.6	29	55	.	2.8
12.3	15	72.2	30	59	.	2.4
12.6	22	102.5	33	70	.	1.6

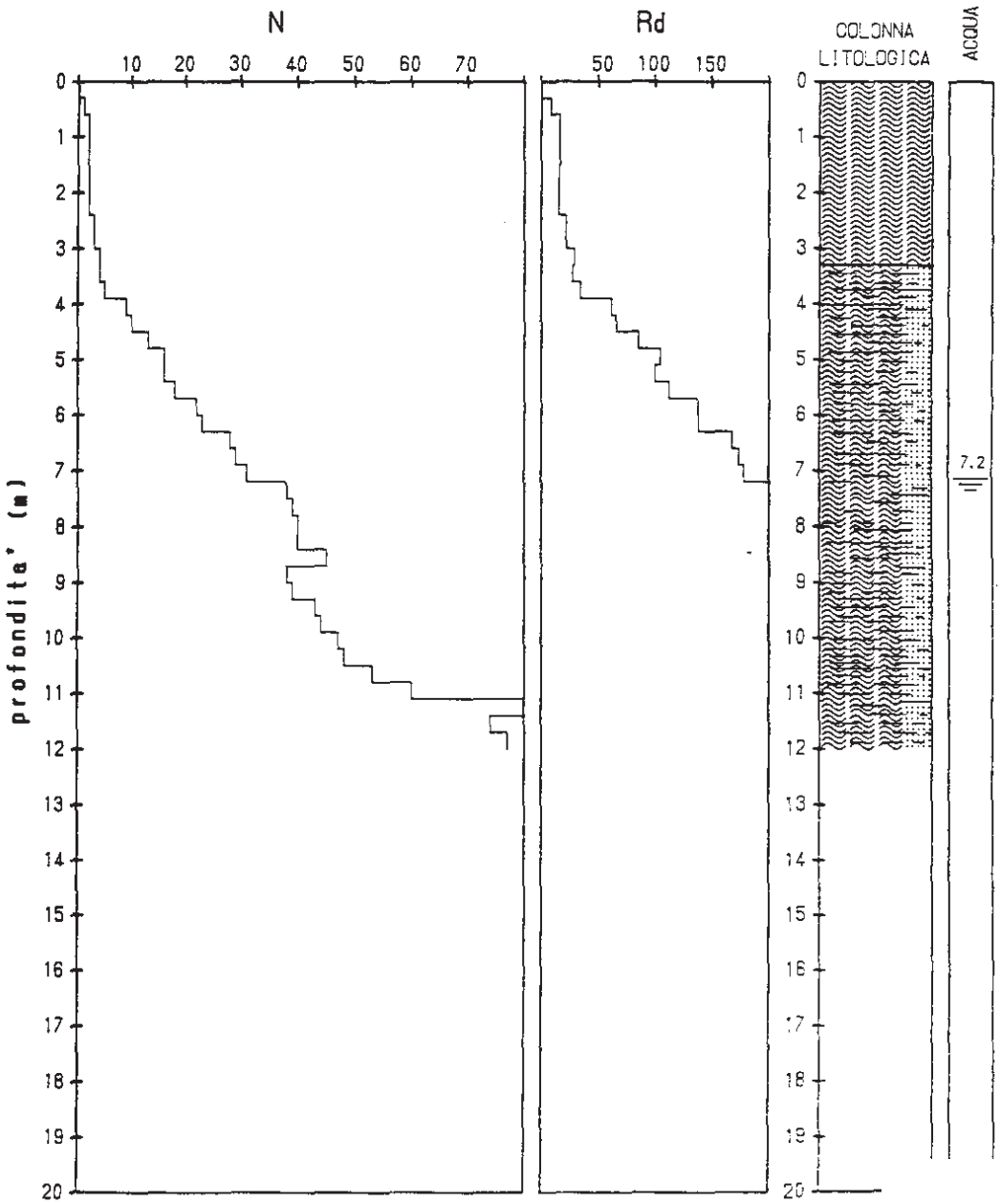
Prof	N	Rd	Ø	Dr	Cu	mv



3186

Prof	N	Rd	Ø	Dr	Cu	mv
0.3	0	0.0	.	.	.	.
0.6	1	8.5	.	.	0.1	36.0
0.9	2	16.0	.	.	0.1	18.0
1.2	2	16.0	.	.	0.1	16.0
1.5	2	16.0	.	.	0.1	18.0
1.8	2	15.2	.	.	0.1	18.0
2.1	2	15.2	.	.	0.1	18.0
2.4	2	15.2	.	.	0.1	18.0
2.7	3	21.6	.	.	0.2	12.0
3.0	3	21.6	.	.	0.2	12.0
3.3	4	28.8	.	.	0.3	9.0
3.6	4	27.5	23	38	.	9.0
3.9	5	34.3	24	44	.	7.2
4.2	9	61.6	27	60	.	4.0
4.5	10	65.6	27	62	.	3.6
4.8	13	85.2	29	69	.	2.8
5.1	16	104.9	30	74	.	2.3
5.4	16	100.4	30	73	.	2.3
5.7	16	112.9	31	76	.	2.0
6.0	22	138.0	33	81	.	1.6
6.3	23	136.3	34	81	.	1.6
6.6	28	168.3	35	87	.	1.3
6.9	29	174.3	36	87	.	1.2
7.2	31	178.9	37	88	.	1.2
7.5	38	219.3	39	94	.	0.9
7.8	39	225.1	39	94	.	0.9
8.1	40	222.0	39	94	.	0.9
8.4	40	222.0	39	94	.	0.9
8.7	45	249.8	41	97	.	0.8
9.0	38	203.2	39	92	.	0.9
9.3	39	208.5	39	92	.	0.9
9.6	43	229.9	40	95	.	0.8
9.9	44	226.9	41	95	.	0.8
10.2	47	242.3	42	97	.	0.8
10.5	48	247.5	42	97	.	0.8
10.8	53	263.9	43	99	.	0.7
11.1	60	298.7	45	99	.	0.6
11.4	87	433.1	51	99	.	0.4
11.7	74	356.2	48	99	.	0.5
12.0	77	370.6	49	99	.	0.5

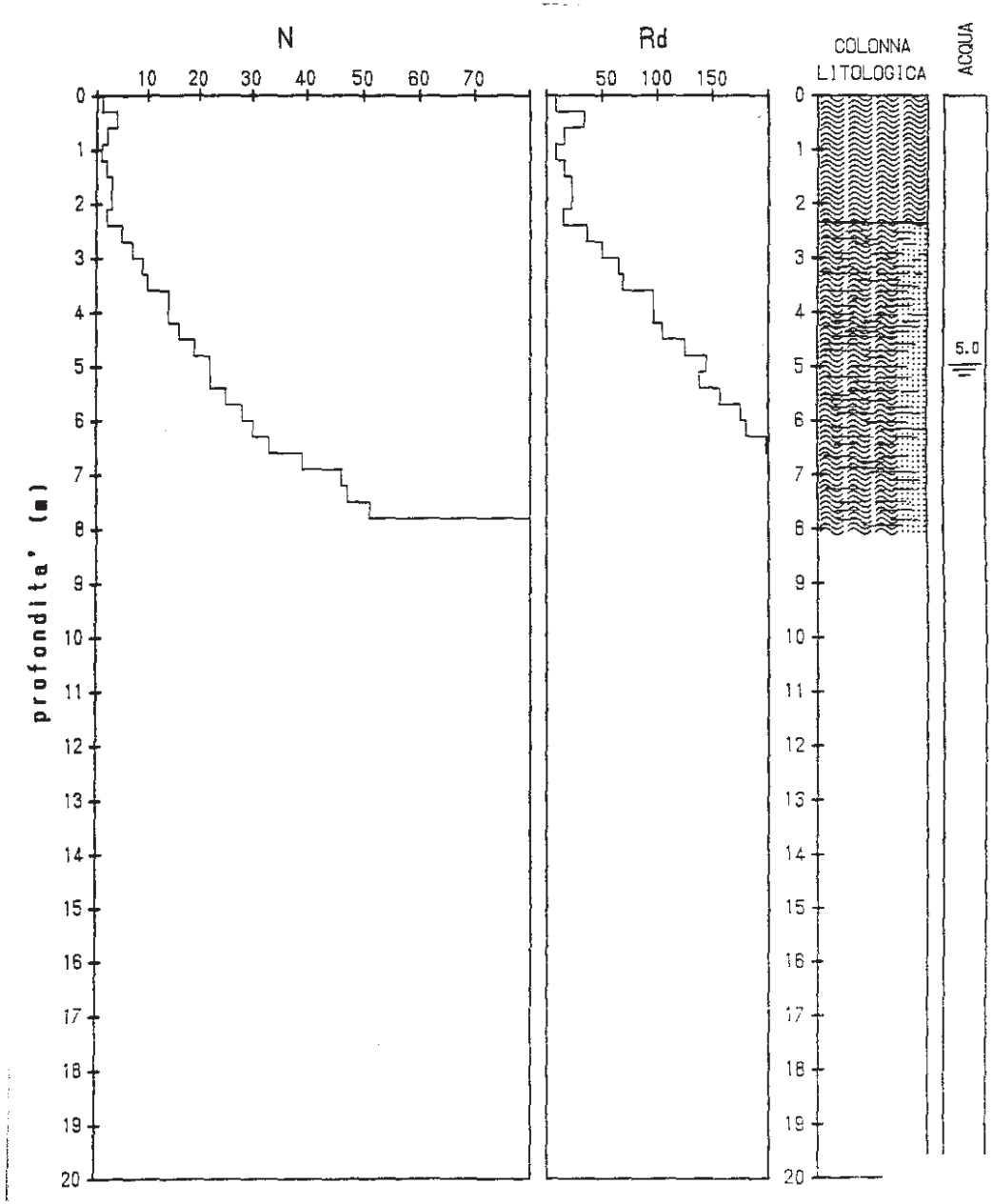
Prof	N	Rd	Ø	Dr	Cu	mv



3187

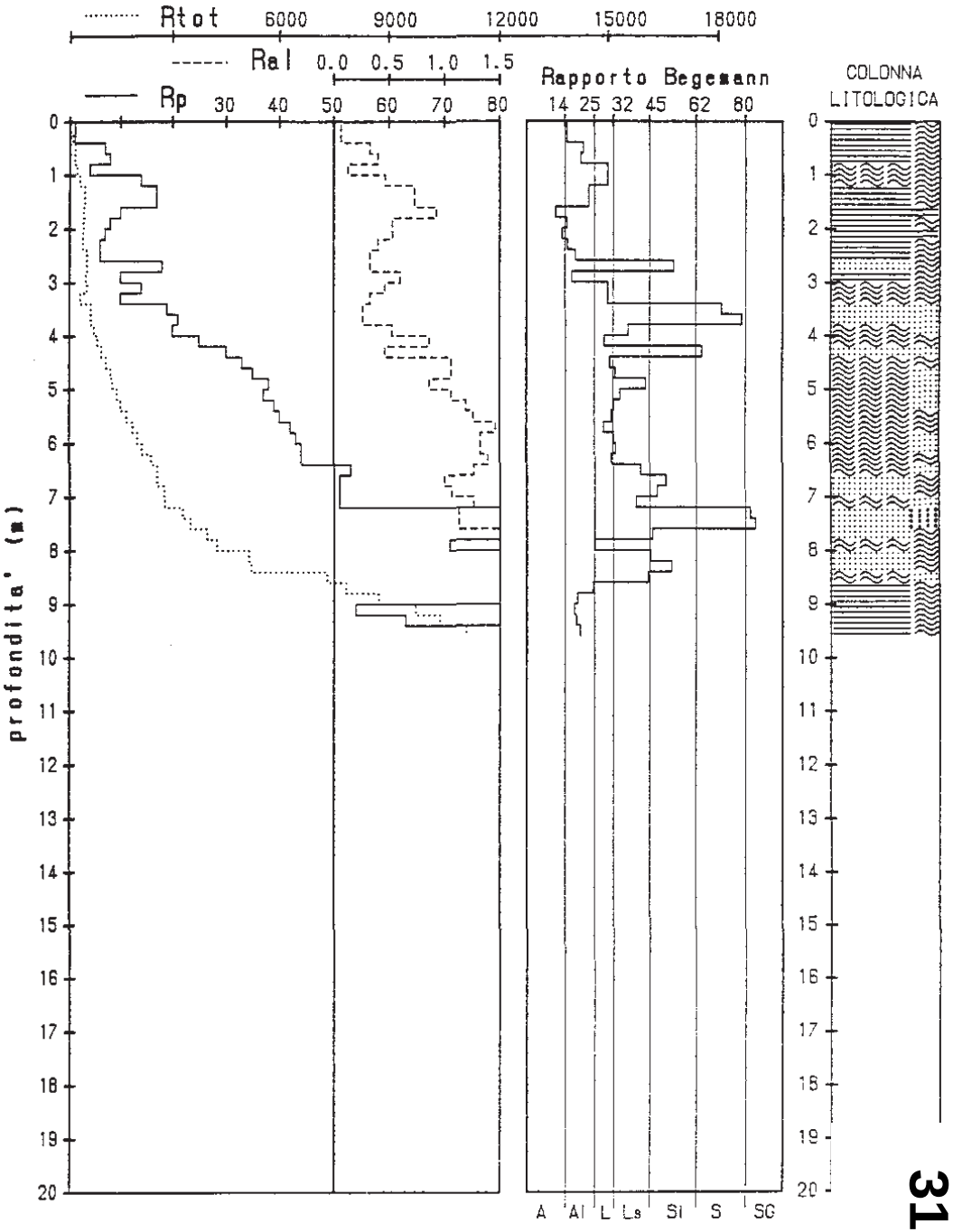
Prof	N	Rd	Ø	Dr	Cu	mv
0.3	1	8.5	.	.	0.1	36.0
0.6	4	33.9	.	.	0.3	9.0
0.9	2	16.0	.	.	0.1	18.0
1.2	1	8.0	.	.	0.1	36.0
1.5	2	16.0	.	.	0.1	18.0
1.8	3	22.8	.	.	0.2	12.0
2.1	3	22.8	.	.	0.2	12.0
2.4	2	15.2	.	.	0.1	18.0
2.7	5	36.0	24	50	.	7.2
3.0	7	50.5	25	58	.	5.1
3.3	9	64.9	27	64	.	4.0
3.6	10	68.7	27	66	.	3.6
3.9	14	96.1	29	75	.	2.6
4.2	14	96.1	29	73	.	2.6
4.5	16	104.9	30	76	.	2.3
4.8	19	124.6	32	80	.	1.9
5.1	22	144.2	33	84	.	1.6
5.4	22	138.0	33	83	.	1.6
5.7	25	156.6	34	86	.	1.4
6.0	28	175.6	35	89	.	1.3
6.3	30	180.4	36	91	.	1.2
6.6	33	198.4	37	93	.	1.1
6.9	39	234.5	39	97	.	0.9
7.2	46	265.5	41	99	.	0.8
7.5	47	271.3	42	99	.	0.8
7.8	51	294.4	43	99	.	0.7
8.1	95	527.3	53	99	.	0.4

Prof	N	Rd	Ø	Dr	Cu	mv

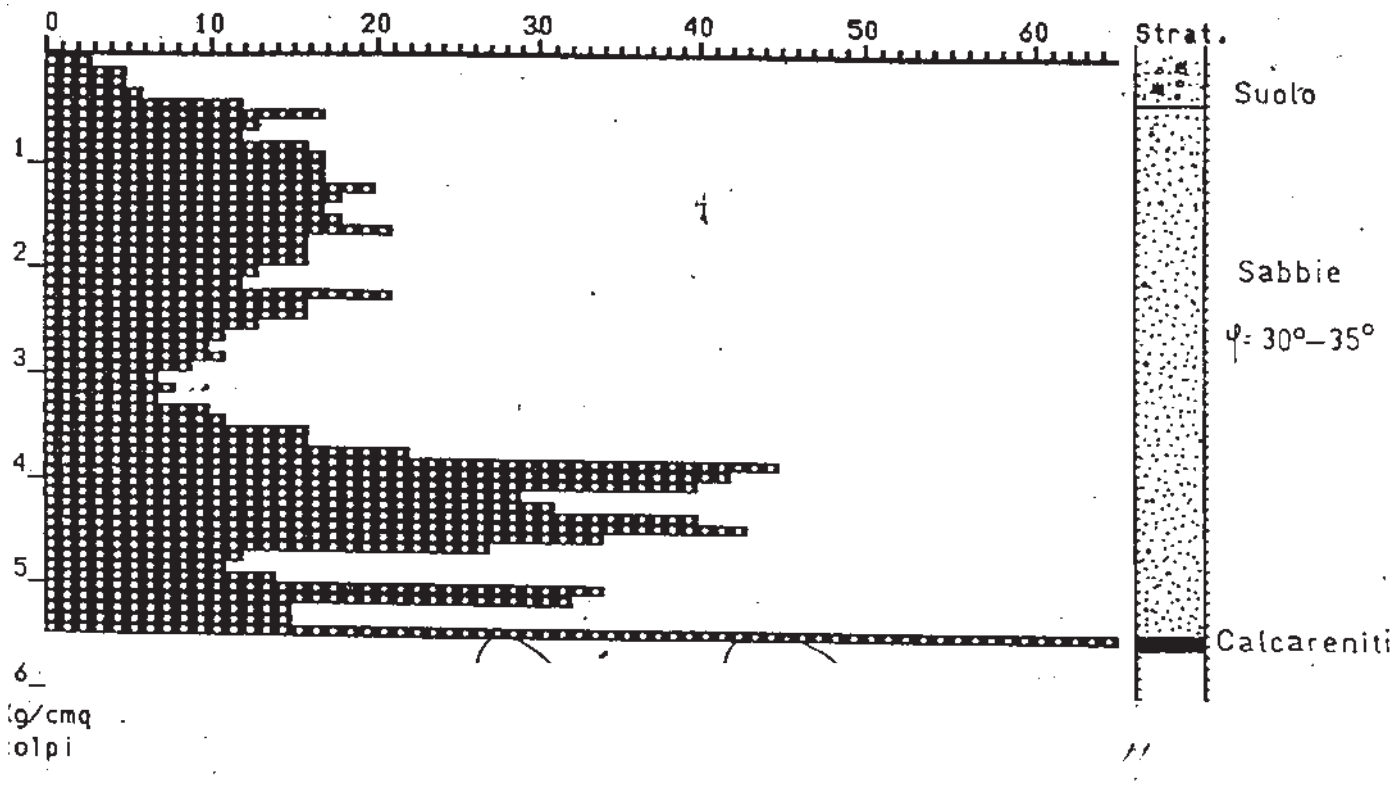


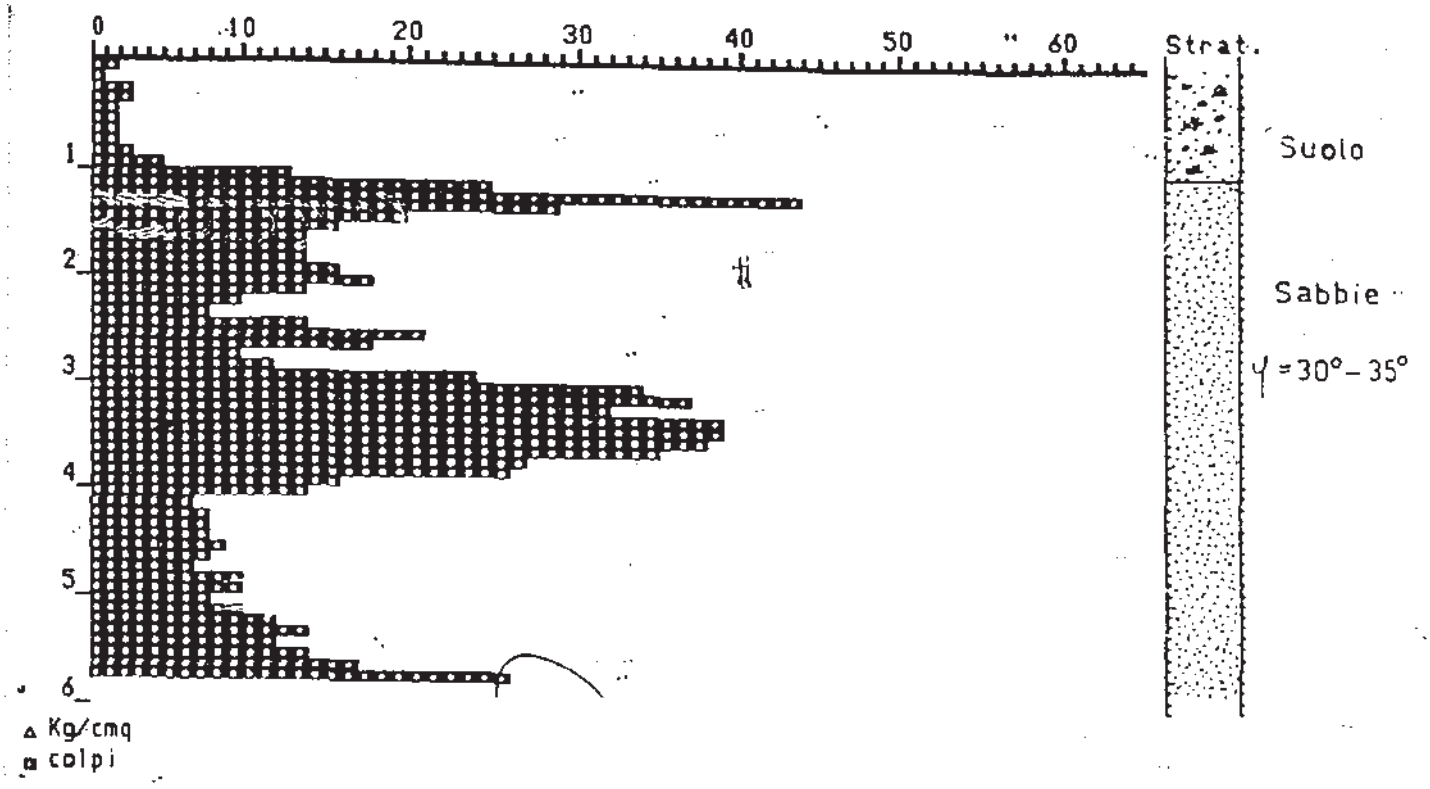
3188

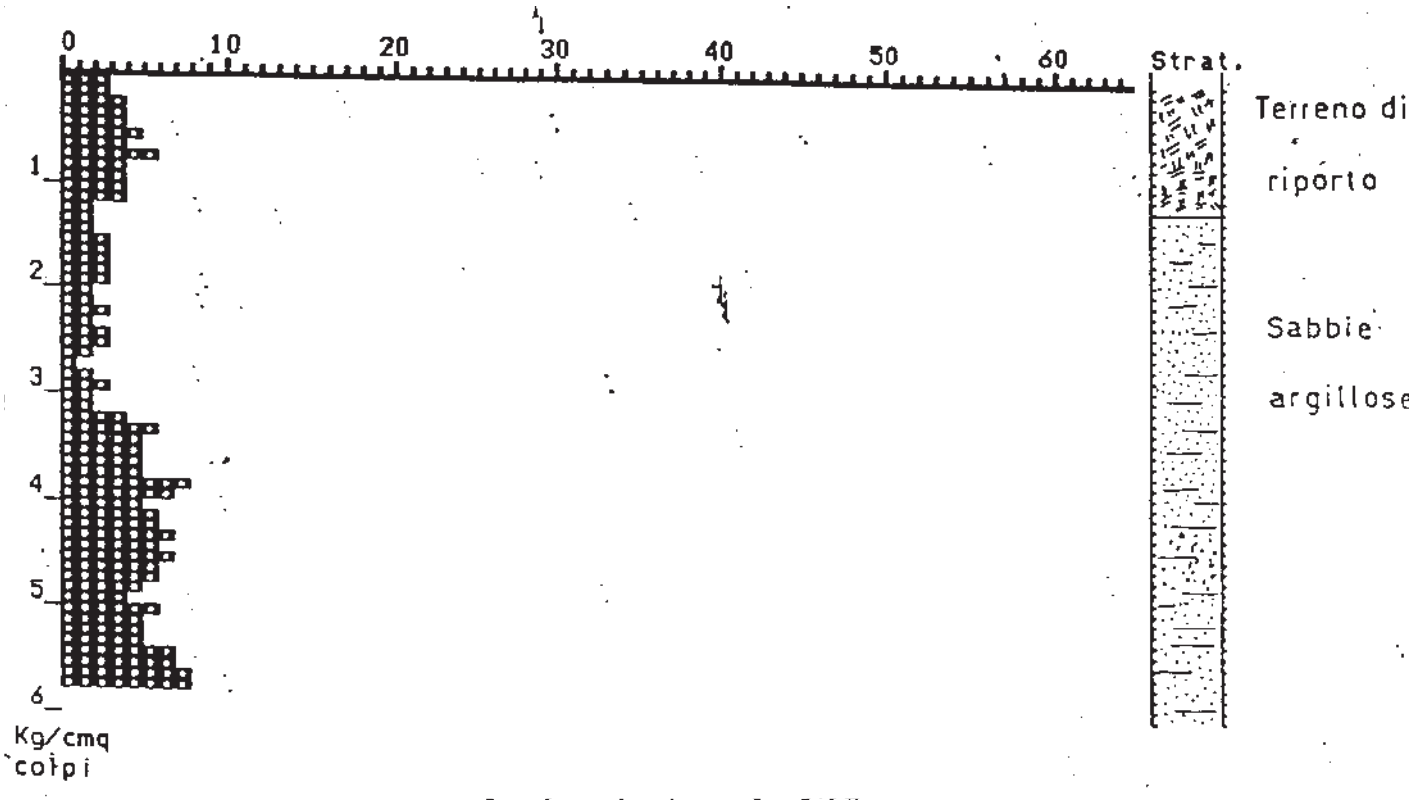
Prof	Rpt	Rat	Rtot	Rp	Ral	Rp/Ral	Fr	Ø	Dr	Cu	mv
0.2	10	20	160	1	0.07	15	6.67	.	.	0.04	200.0
0.4	10	20	100	1	0.07	15	6.67	.	.	0.04	200.0
0.6	70	120	150	7	0.33	21	4.76	.	.	0.35	28.6
0.8	80	140	160	8	0.40	20	5.00	.	.	0.40	25.0
1.0	40	60	230	4	0.13	30	3.33	.	.	0.20	62.5
1.2	140	210	300	14	0.47	30	3.33	.	.	0.70	17.9
1.4	170	280	460	17	0.73	23	4.31	.	.	0.85	11.8
1.6	170	280	450	17	0.73	23	4.31	.	.	0.85	11.8
1.8	100	240	430	10	0.93	11	9.33	.	.	0.50	25.0
2.0	80	160	410	8	0.53	15	6.67	.	.	0.40	25.0
2.2	70	150	400	7	0.53	13	7.62	.	.	0.35	35.7
2.4	60	120	390	6	0.40	15	6.67	.	.	0.30	33.3
2.6	60	110	510	6	0.33	18	5.56	.	.	0.30	33.3
2.8	180	230	510	18	0.33	54	1.85	24	34	.	27.8
3.0	100	190	490	10	0.60	17	6.00	.	.	0.50	20.0
3.2	140	210	510	14	0.47	30	3.33	.	.	0.70	17.9
3.4	100	150	520	10	0.33	30	3.33	.	.	0.50	25.0
3.6	190	230	630	19	0.27	71	1.40	27	30	.	26.3
3.8	210	250	640	21	0.27	79	1.27	27	33	.	23.8
4.0	200	280	720	20	0.53	37	2.67	24	30	.	16.7
4.2	250	380	830	25	0.87	29	3.47	.	.	1.25	10.0
4.4	300	370	950	30	0.47	64	1.56	30	42	.	16.7
4.6	330	490	1090	33	1.07	31	3.23	.	.	1.65	7.6
4.8	350	510	1220	35	1.07	33	3.05	27	45	.	9.5
5.0	380	510	1280	38	0.87	44	2.28	27	47	.	6.8
5.2	370	530	1410	37	1.07	35	2.88	27	45	.	9.0
5.4	390	570	1510	39	1.20	32	3.08	.	.	1.95	8.5
5.6	400	590	1690	40	1.27	32	3.17	.	.	2.00	8.3
5.8	420	640	1860	42	1.47	29	3.49	.	.	2.10	6.0
6.0	430	630	2000	43	1.33	32	3.10	.	.	2.15	7.8
6.2	440	640	2130	44	1.33	33	3.03	28	47	.	7.6
6.4	440	650	2410	44	1.40	31	3.18	.	.	2.20	5.7
6.6	530	720	2550	53	1.27	42	2.39	29	52	.	6.3
6.8	510	660	2550	51	1.00	51	1.96	31	50	.	9.8
7.0	510	670	2770	51	1.07	48	2.09	31	50	.	9.8
7.2	510	700	2780	51	1.27	40	2.48	29	49	.	6.5
7.4	930	1100	3290	93	1.13	82	1.22	41	69	.	7.2
7.6	950	1120	3500	95	1.13	84	1.19	42	70	.	7.0
7.8	1140	1510	3960	114	2.47	46	2.16	39	73	.	4.4
8.0	710	1130	4230	71	2.80	25	3.94	.	.	3.55	3.5
8.2	910	1210	5130	91	2.00	46	2.20	36	66	.	5.5
8.4	1100	1410	5200	110	2.07	53	1.88	39	72	.	4.5
8.6	1280	1710	7310	128	2.67	45	2.24	37	77	.	3.9
8.8	810	1300	7630	81	3.27	25	4.03	.	.	4.05	3.1
9.0	810	1450	8720	81	4.27	19	5.27	.	.	4.05	2.5
9.2	540	1000	9720	54	3.27	18	5.68	.	.	2.70	3.7
9.4	630	1140	10390	63	3.40	19	5.40	.	.	3.15	3.2
9.6	930	1630	11100	93	4.67	20	5.02	.	.	4.65	2.2



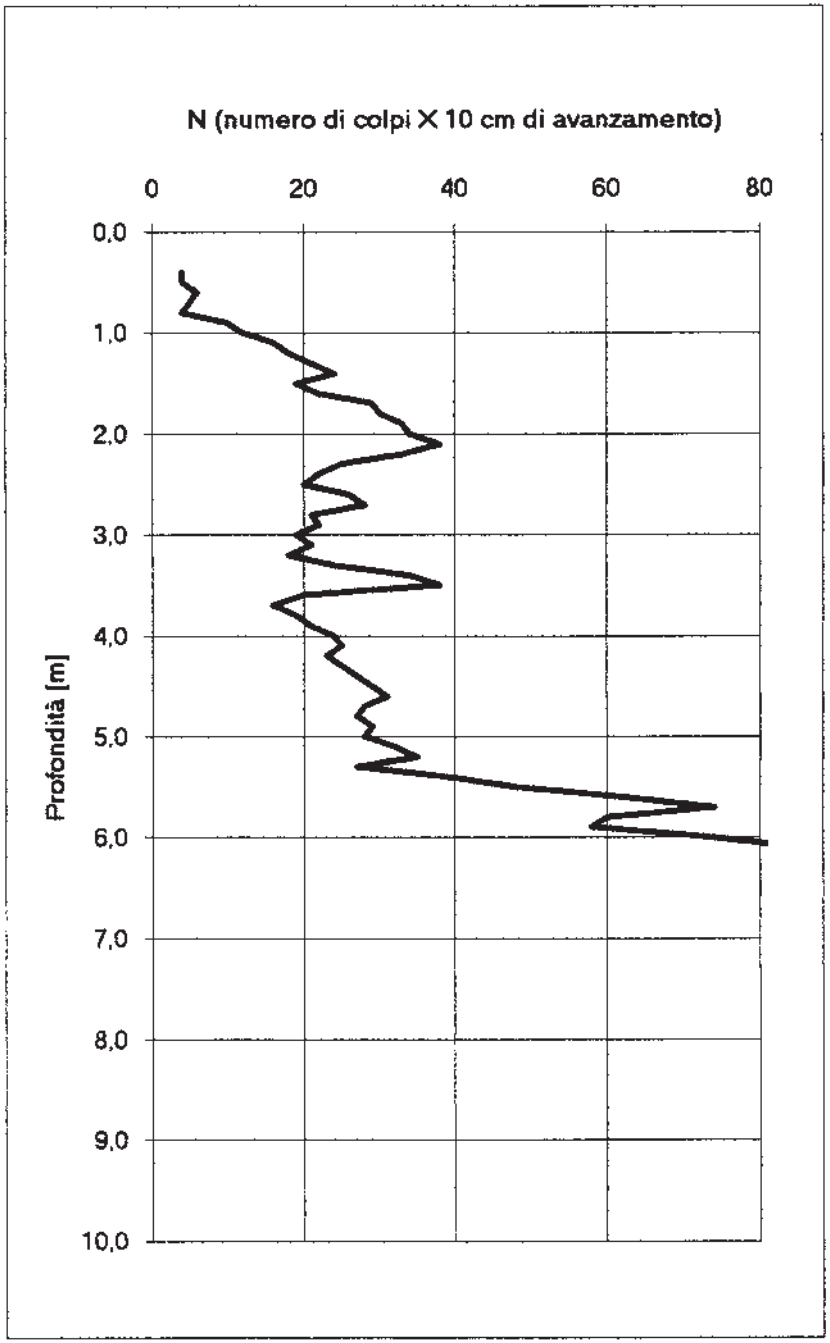
3189


0
10
20
30
40
50
60
Strat.
Suolo
Sabbie
φ= 30°–35°
Calcareniti
1
2
3
4
5
6
g/cmq
olpi


0
10
20
30
40
50
60
Strat.
1
2
3
4
5
6
Suolo
Sabbie
φ = 30° – 35°
Kg/cmq
colpi


0
10
20
30
40
50
60
1
2
3
4
5
6
Kg/cmq
colpi
Strat.
Terreno di riporto
Sabbie argillose

Prof.	N	Rd	Nspt	Prof.	N	Rd	Nspt
0,1	4	16,0	3	5,1	32	128,3	24
0,2	5	20,0	4	5,2	35	140,3	27
0,3	4	16,0	3	5,3	27	108,2	20
0,4	4	16,0	3	5,4	39	156,3	30
0,5	4	16,0	3	5,5	48	192,4	36
0,6	6	24,1	5	5,6	62	248,6	47
0,7	5	20,0	4	5,7	74	296,7	56
0,8	4	16,0	3	5,8	60	240,5	45
0,9	10	40,1	8	5,9	58	232,5	44
1,0	12	48,1	9	6,0	73	292,7	55
1,1	16	64,1	12	6,1	85	340,8	64
1,2	18	72,2	14	6,2	102	408,9	77
1,3	21	84,2	16	6,3	-	-	-
1,4	24	96,2	18	6,4	-	-	-
1,5	19	76,2	14	6,5	-	-	-
1,6	22	88,2	17	6,6	-	-	-
1,7	29	116,3	22	6,7	-	-	-
1,8	30	120,3	23	6,8	-	-	-
1,9	33	132,3	25	6,9	-	-	-
2,0	34	136,3	26	7,0	-	-	-
2,1	38	152,3	29	7,1	-	-	-
2,2	33	132,3	25	7,2	-	-	-
2,3	25	100,2	19	7,3	-	-	-
2,4	22	88,2	17	7,4	-	-	-
2,5	20	80,2	15	7,5	-	-	-
2,6	26	104,2	20	7,6	-	-	-
2,7	28	112,2	21	7,7	-	-	-
2,8	21	84,2	16	7,8	-	-	-
2,9	22	88,2	17	7,9	-	-	-
3,0	19	76,2	14	8,0	-	-	-
3,1	21	84,2	16	8,1	-	-	-
3,2	18	72,2	14	8,2	-	-	-
3,3	24	96,2	18	8,3	-	-	-
3,4	34	136,3	26	8,4	-	-	-
3,5	38	152,3	29	8,5	-	-	-
3,6	20	80,2	15	8,6	-	-	-
3,7	16	64,1	12	8,7	-	-	-
3,8	19	76,2	14	8,8	-	-	-
3,9	21	84,2	16	8,9	-	-	-
4,0	24	96,2	18	9,0	-	-	-
4,1	25	100,2	19	9,1	-	-	-
4,2	23	92,2	17	9,2	-	-	-
4,3	25	100,2	19	9,3	-	-	-
4,4	27	108,2	20	9,4	-	-	-
4,5	29	116,3	22	9,5	-	-	-
4,6	31	124,3	23	9,6	-	-	-
4,7	28	112,2	21	9,7	-	-	-
4,8	27	108,2	20	9,8	-	-	-
4,9	29	116,3	22	9,9	-	-	-
5,0	28	112,2	21	10,0	-	-	-



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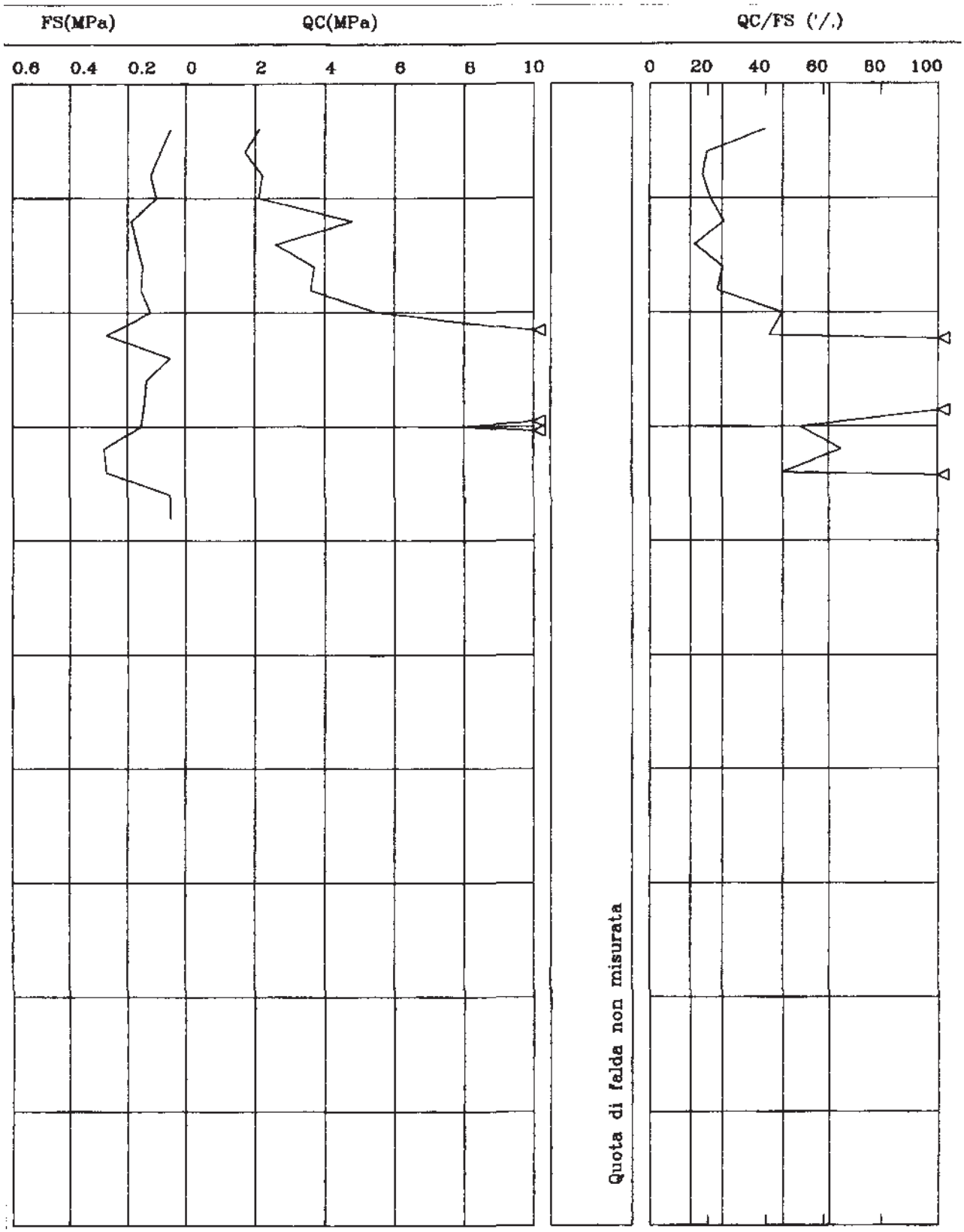
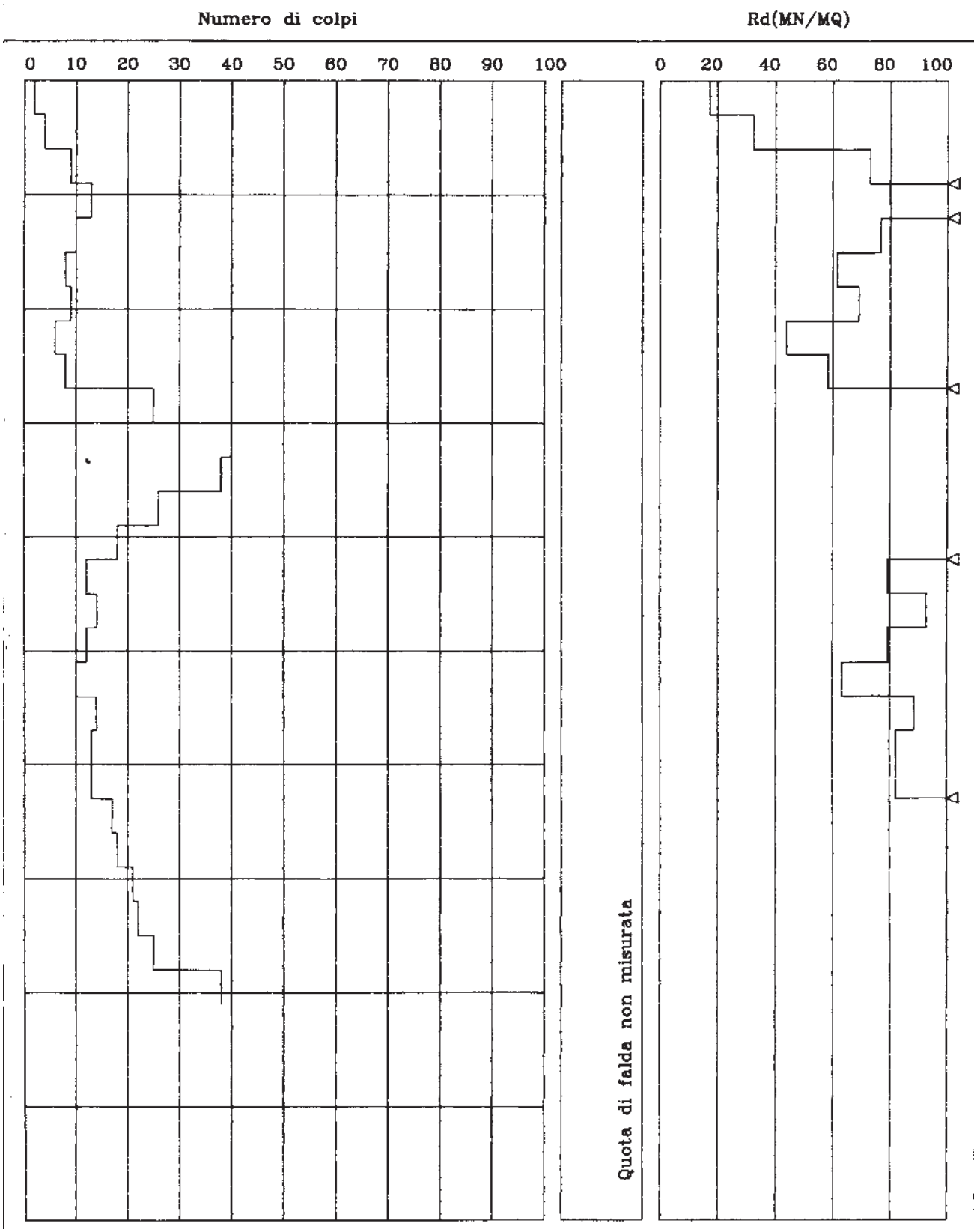
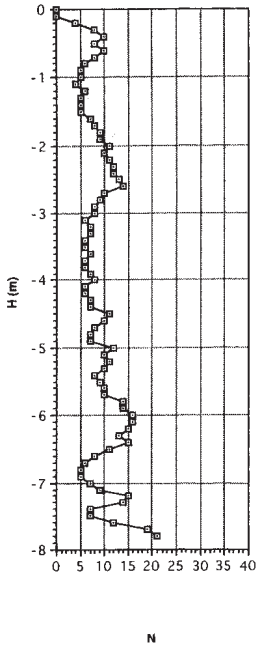
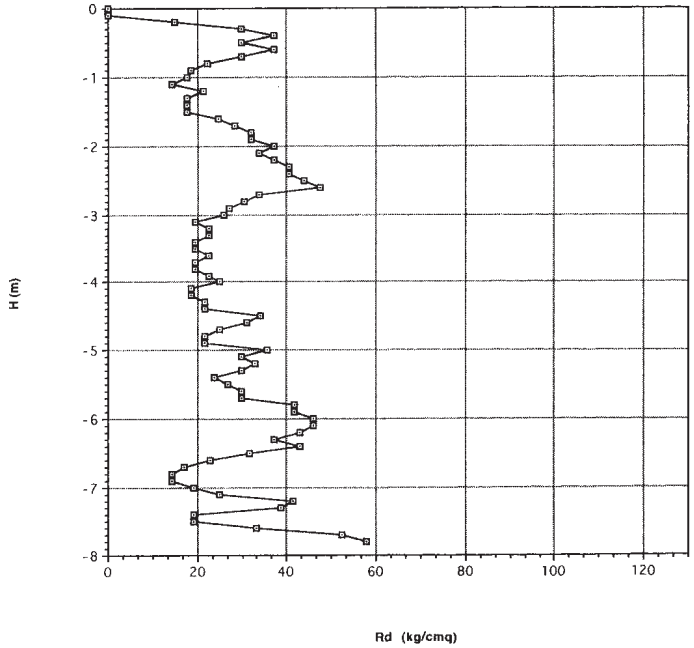

FS(MPa)
0.6
0.4
0.2
0
QC(MPa)
2
4
6
8
10
Quota di falda non misurata
QC/FS (%)
0
20
40
60
80
100


Numero di colpi
0 10 20 30 40 50 60 70 80 90 100
Quota di falda non misurata
Rd(MN/MQ)
0 20 40 60 80 100

	A	B	C	D	E	F
1	Profondità (m)	Numero colpi	Rd (kg/cmq)	Profondità (m)	Numero colpi	Rd (kg/cmq)
2	0,10	0	0,00	4,60	10	31,03
3	0,20	4	14,88	4,70	8	24,83
4	0,30	8	29,75	4,80	7	21,72
5	0,40	10	37,19	4,90	7	21,72
6	0,50	8	29,75	5,00	12	35,76
7	0,60	10	37,19	5,10	10	29,80
8	0,70	8	29,75	5,20	11	32,78
9	0,80	6	22,31	5,30	10	29,80
10	0,90	5	18,60	5,40	8	23,84
11	1,00	5	17,72	5,50	9	26,82
12	1,10	4	14,17	5,60	10	29,80
13	1,20	6	21,26	5,70	10	29,80
14	1,30	5	17,72	5,80	14	41,72
15	1,40	5	17,72	5,90	14	41,72
16	1,50	5	17,72	6,00	16	45,86
17	1,60	7	24,80	6,10	16	45,86
18	1,70	8	28,35	6,20	15	42,99
19	1,80	9	31,89	6,30	13	37,26
20	1,90	9	31,89	6,40	15	42,99
21	2,00	11	37,22	6,50	11	31,53
22	2,10	10	33,83	6,60	8	22,93
23	2,20	11	37,22	6,70	6	17,20
24	2,30	12	40,60	6,80	5	14,33
25	2,40	12	40,60	6,90	5	14,33
26	2,50	13	43,98	7,00	7	19,33
27	2,60	14	47,37	7,10	9	24,85
28	2,70	10	33,83	7,20	15	41,41
29	2,80	9	30,45	7,30	14	38,65
30	2,90	8	27,07	7,40	7	19,33
31	3,00	8	25,90	7,50	7	19,33
32	3,10	6	19,42	7,60	12	33,13
33	3,20	7	22,66	7,70	19	52,45
34	3,30	7	22,66	7,80	21	57,98
35	3,40	6	19,42	7,90		0,00
36	3,50	6	19,42	8,00		0,00
37	3,60	7	22,66	8,10		0,00
38	3,70	6	19,42	8,20		0,00
39	3,80	6	19,42	8,30		0,00
40	3,90	7	22,66	8,40		0,00
41	4,00	8	24,83	8,50		0,00
42	4,10	6	18,62	8,60		0,00
43	4,20	6	18,62	8,70		0,00
44	4,30	7	21,72	8,80		0,00
45	4,40	7	21,72	8,90		0,00
46	4,50	11	34,14	9,00		0,00





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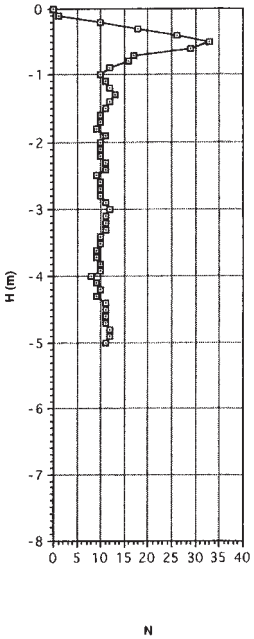
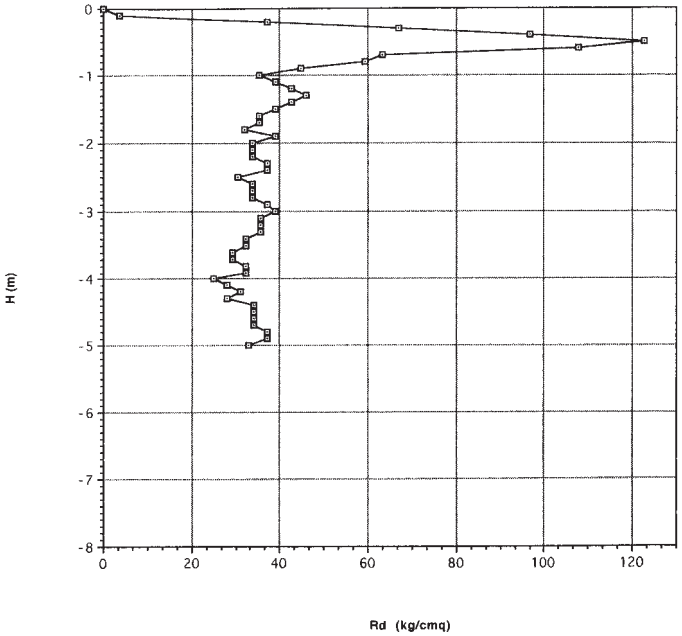
	A	B	C	D	E	F
1	Profondità (m)	Numero colpi	Rd (kg/cmq)	Profondità (m)	Numero colpi	Rd (kg/cmq)
2	0,10	1	3,72	4,60	11	34,14
3	0,20	10	37,19	4,70	11	34,14
4	0,30	18	66,94	4,80	12	37,24
5	0,40	26	96,69	4,90	12	37,24
6	0,50	33	122,73	5,00	11	32,78
7	0,60	29	107,85	5,10		0,00
8	0,70	17	63,22	5,20		0,00
9	0,80	16	59,50	5,30		0,00
10	0,90	12	44,63	5,40		0,00
11	1,00	10	35,43	5,50		0,00
12	1,10	11	38,98	5,60		0,00
13	1,20	12	42,52	5,70		0,00
14	1,30	13	46,06	5,80		0,00
15	1,40	12	42,52	5,90		0,00
16	1,50	11	38,98	6,00		0,00
17	1,60	10	35,43	6,10		0,00
18	1,70	10	35,43	6,20		0,00
19	1,80	9	31,89	6,30		0,00
20	1,90	11	38,98	6,40		0,00
21	2,00	10	33,83	6,50		0,00
22	2,10	10	33,83	6,60		0,00
23	2,20	10	33,83	6,70		0,00
24	2,30	11	37,22	6,80		0,00
25	2,40	11	37,22	6,90		0,00
26	2,50	9	30,45	7,00		0,00
27	2,60	10	33,83	7,10		0,00
28	2,70	10	33,83	7,20		0,00
29	2,80	10	33,83	7,30		0,00
30	2,90	11	37,22	7,40		0,00
31	3,00	12	38,85	7,50		0,00
32	3,10	11	35,61	7,60		0,00
33	3,20	11	35,61	7,70		0,00
34	3,30	11	35,61	7,80		0,00
35	3,40	10	32,37	7,90		0,00
36	3,50	10	32,37	8,00		0,00
37	3,60	9	29,14	8,10		0,00
38	3,70	9	29,14	8,20		0,00
39	3,80	10	32,37	8,30		0,00
40	3,90	10	32,37	8,40		0,00
41	4,00	8	24,83	8,50		0,00
42	4,10	9	27,93	8,60		0,00
43	4,20	10	31,03	8,70		0,00
44	4,30	9	27,93	8,80		0,00
45	4,40	11	34,14	8,90		0,00
46	4,50	11	34,14	9,00		0,00





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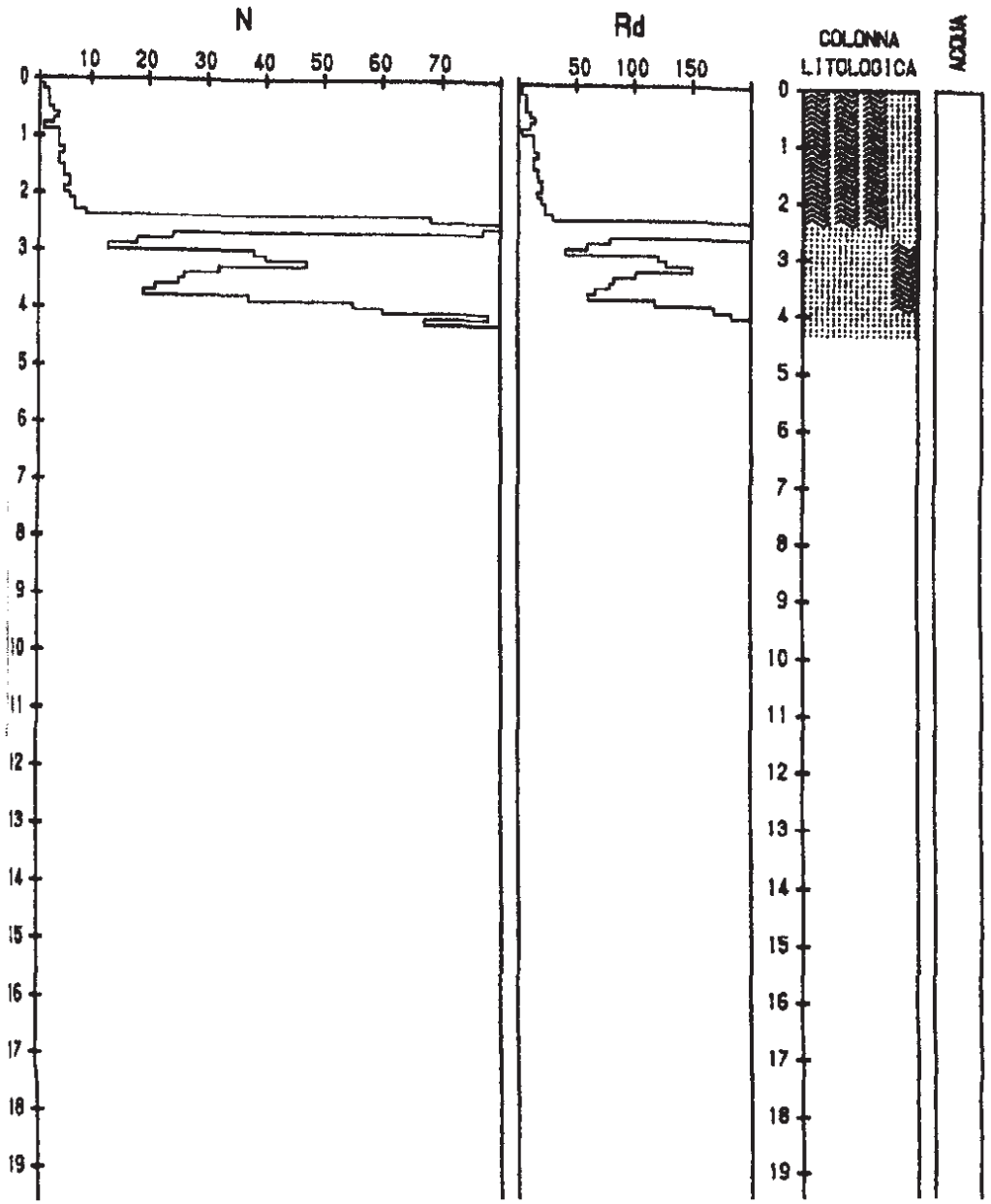

Prof	N	Rd	ø	Dr	Cu	mv
0.1	0	0.0	.	.	.	.
0.2	1	3.7	19	52	.	36.0
0.3	2	7.3	20	66	.	18.0
0.4	2	7.3	20	61	.	18.0
0.5	2	7.3	20	58	.	18.0
0.6	3	11.0	22	67	.	12.0
0.7	4	14.7	23	73	.	9.0
0.8	3	11.0	22	62	.	12.0
0.9	1	3.7	19	27	.	36.0
1.0	4	14.0	23	67	.	9.0
1.1	4	14.0	23	65	.	9.0
1.2	4	14.0	23	64	.	9.0
1.3	5	17.5	24	69	.	7.2
1.4	4	14.0	23	61	.	9.0
1.5	4	14.0	23	60	.	9.0
1.6	5	17.5	24	66	.	7.2
1.7	5	17.5	24	65	.	7.2
1.8	6	21.0	24	69	.	6.0
1.9	6	21.0	24	68	.	6.0
2.0	5	16.7	24	62	.	7.2
2.1	6	20.0	24	67	.	6.0
2.2	7	23.4	25	70	.	5.1
2.3	7	23.4	25	70	.	5.1
2.4	9	30.1	27	76	.	4.0
2.5	68	227.1	47	99	.	0.5
2.6	89	297.2	52	99	.	0.4
2.7	77	257.1	49	99	.	0.5
2.8	24	80.1	34	99	.	1.5
2.9	18	60.1	31	94	.	2.0
3.0	13	41.6	29	84	.	2.8
3.1	38	121.5	39	99	.	0.9
3.2	40	127.9	39	99	.	0.9
3.3	47	150.3	42	99	.	0.8
3.4	32	102.3	37	99	.	1.1
3.5	26	83.1	35	99	.	1.4
3.6	25	79.9	34	99	.	1.4
3.7	21	67.1	33	95	.	1.7
3.8	19	60.7	32	91	.	1.9
3.9	37	118.3	39	99	.	1.0
4.0	55	168.7	44	99	.	0.7
4.1	60	184.0	45	99	.	0.6
4.2	78	239.2	49	99	.	0.5
4.3	67	205.5	47	99	.	0.5
4.4	94	288.2	53	99	.	0.4

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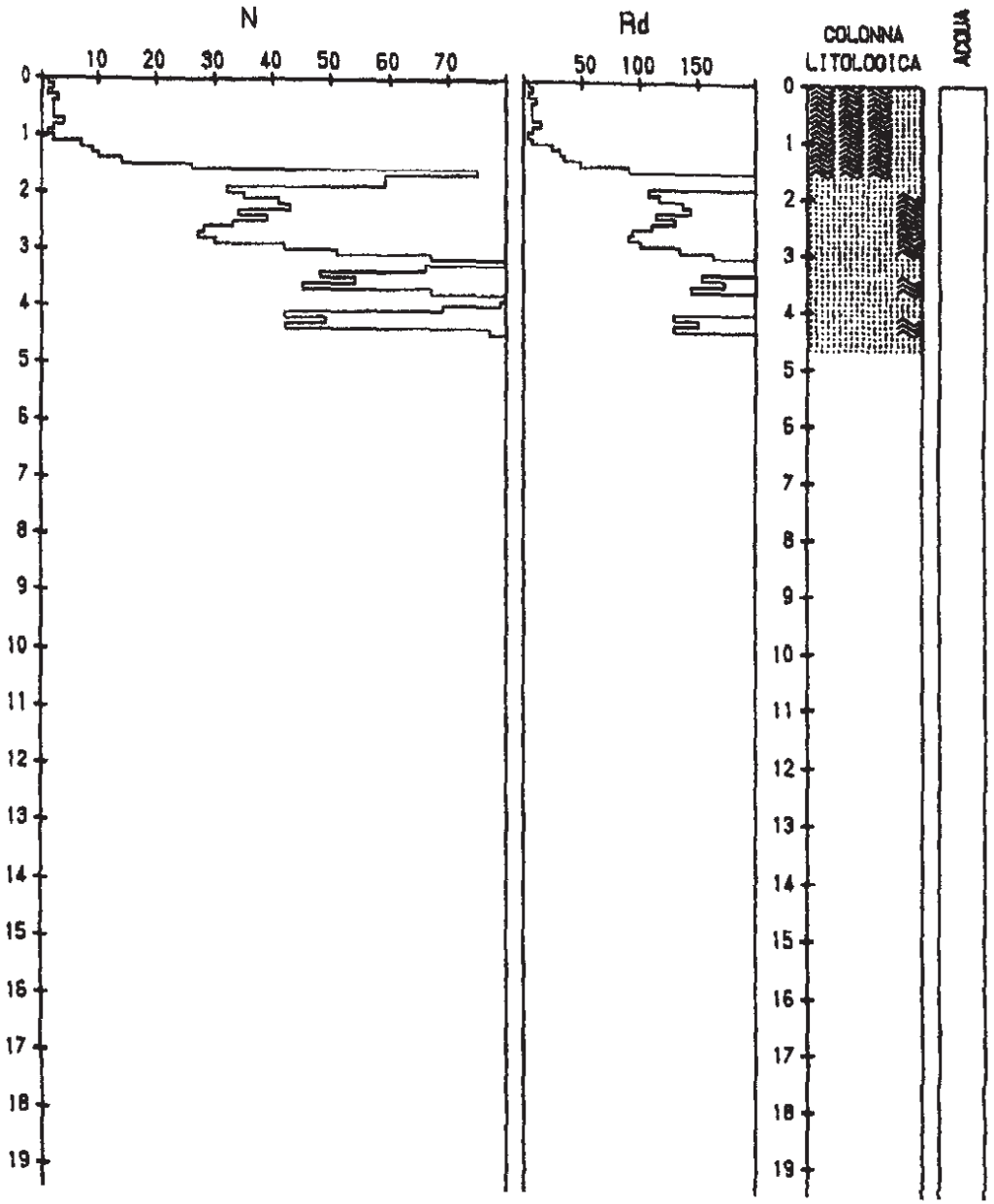

rof	N	Rd	ø	Dr	Cu	mv
0.1	1	3.7	19	64	.	36.0
0.2	2	7.3	20	73	.	18.0
0.3	1	3.7	19	45	.	36.0
0.4	3	11.0	22	74	.	12.0
0.5	2	7.3	20	58	.	18.0
0.6	2	7.3	20	55	.	18.0
0.7	2	7.3	20	52	.	18.0
0.8	4	14.7	23	71	.	9.0
0.9	2	7.3	20	48	.	18.0
1.0	1	3.5	19	25	.	36.0
1.1	2	7.0	20	44	.	18.0
1.2	7	24.5	25	81	.	5.1
1.3	9	31.5	27	87	.	4.0
1.4	10	35.0	27	89	.	3.6
1.5	14	48.9	29	98	.	2.6
1.6	26	90.9	35	99	.	1.4
1.7	75	262.1	49	99	.	0.5
1.8	59	206.2	45	99	.	0.6
1.9	59	206.2	45	99	.	0.6
2.0	32	106.9	37	99	.	1.1
2.1	35	116.9	38	99	.	1.0
2.2	41	136.9	40	99	.	0.9
2.3	43	143.6	40	99	.	0.8
2.4	34	113.5	38	99	.	1.1
2.5	39	130.2	39	99	.	0.9
2.6	33	110.2	37	99	.	1.1
2.7	28	93.5	35	99	.	1.3
2.8	27	90.2	35	99	.	1.3
2.9	30	100.2	36	99	.	1.2
3.0	42	134.3	40	99	.	0.9
3.1	51	163.1	43	99	.	0.7
3.2	67	214.2	47	99	.	0.5
3.3	85	271.8	51	99	.	0.4
3.4	66	211.0	46	99	.	0.5
3.5	48	153.5	42	99	.	0.8
3.6	54	172.6	43	99	.	0.7
3.7	45	143.9	41	99	.	0.8
3.8	67	214.2	47	99	.	0.5
3.9	88	281.3	51	99	.	0.4
4.0	79	242.2	49	99	.	0.5
4.1	69	211.6	47	99	.	0.5
4.2	42	128.8	40	99	.	0.9
4.3	49	150.3	42	99	.	0.7
4.4	42	128.8	40	99	.	0.9

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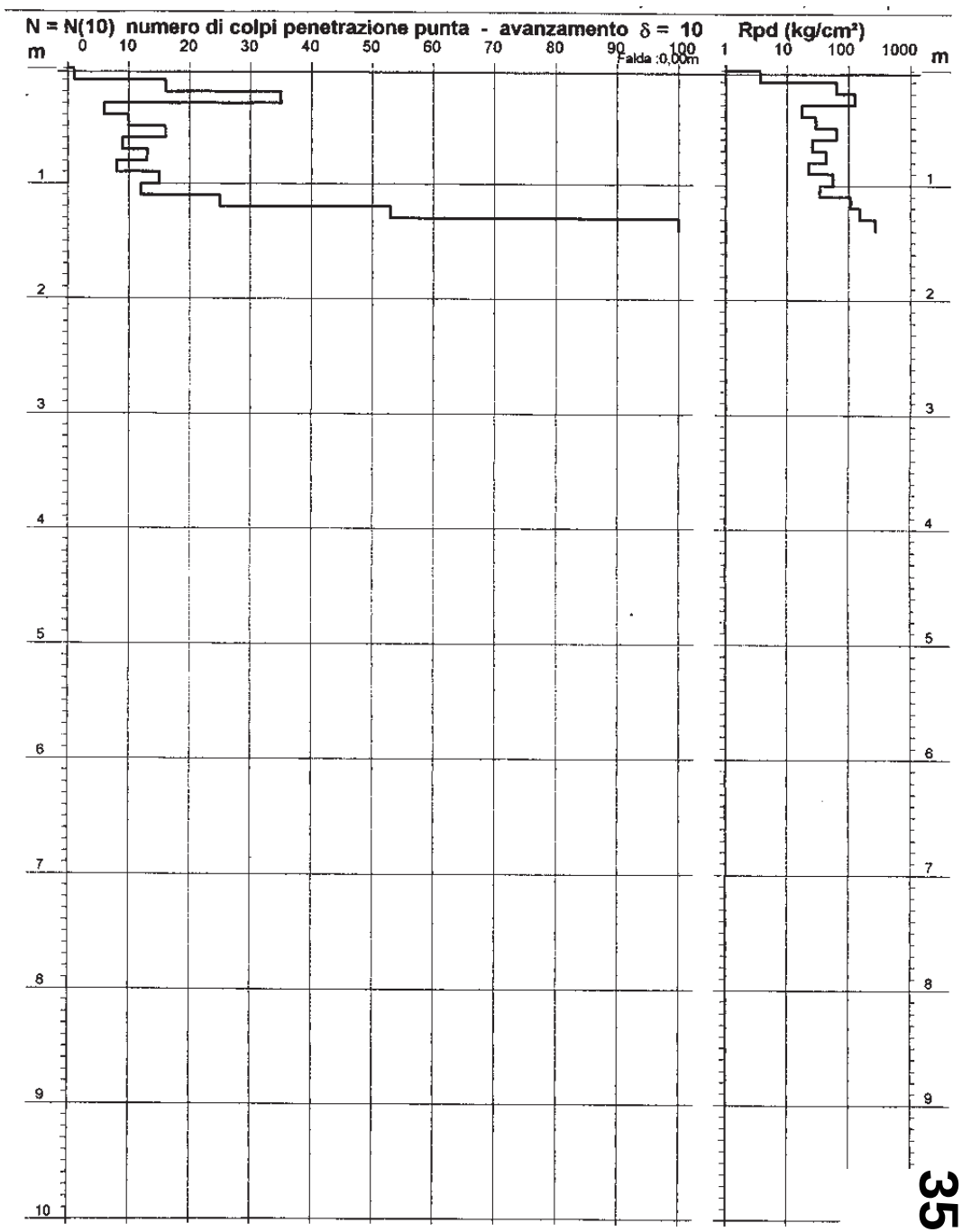
Prof.(m)	N(colpi p)	Rpd(kg/cm²)	N(colpi r)	asta	Prof.(m)	N(colpi p)	Rpd(kg/cm²)	N(colpi r)	asta
0,00 - 0,10	1	5,6	----	1	0,70 - 0,80	13	73,1	----	1
0,10 - 0,20	16	90,0	----	1	0,80 - 0,90	8	45,0	----	1
0,20 - 0,30	35	196,9	----	1	0,90 - 1,00	15	84,4	----	1
0,30 - 0,40	6	33,8	----	1	1,00 - 1,10	12	63,5	----	2
0,40 - 0,50	10	56,3	----	1	1,10 - 1,20	25	132,4	----	2
0,50 - 0,60	16	90,0	----	1	1,20 - 1,30	53	280,6	----	2
0,60 - 0,70	9	50,6	----	1	1,30 - 1,40	100	529,4	----	2



- PENETROMETRO DINAMICO tipo : **TG 30-20 4x4**
- M (massa battente)= **30,00** kg - H (altezza caduta)= **0,20** m - A (area punta)= **10,00** cm² - D(diam. punta)= **35,70** mm
- Numero Colpi Punta N = N(**10**) [δ = 10 cm] - Uso rivestimento / fanghi iniezione : **NO**

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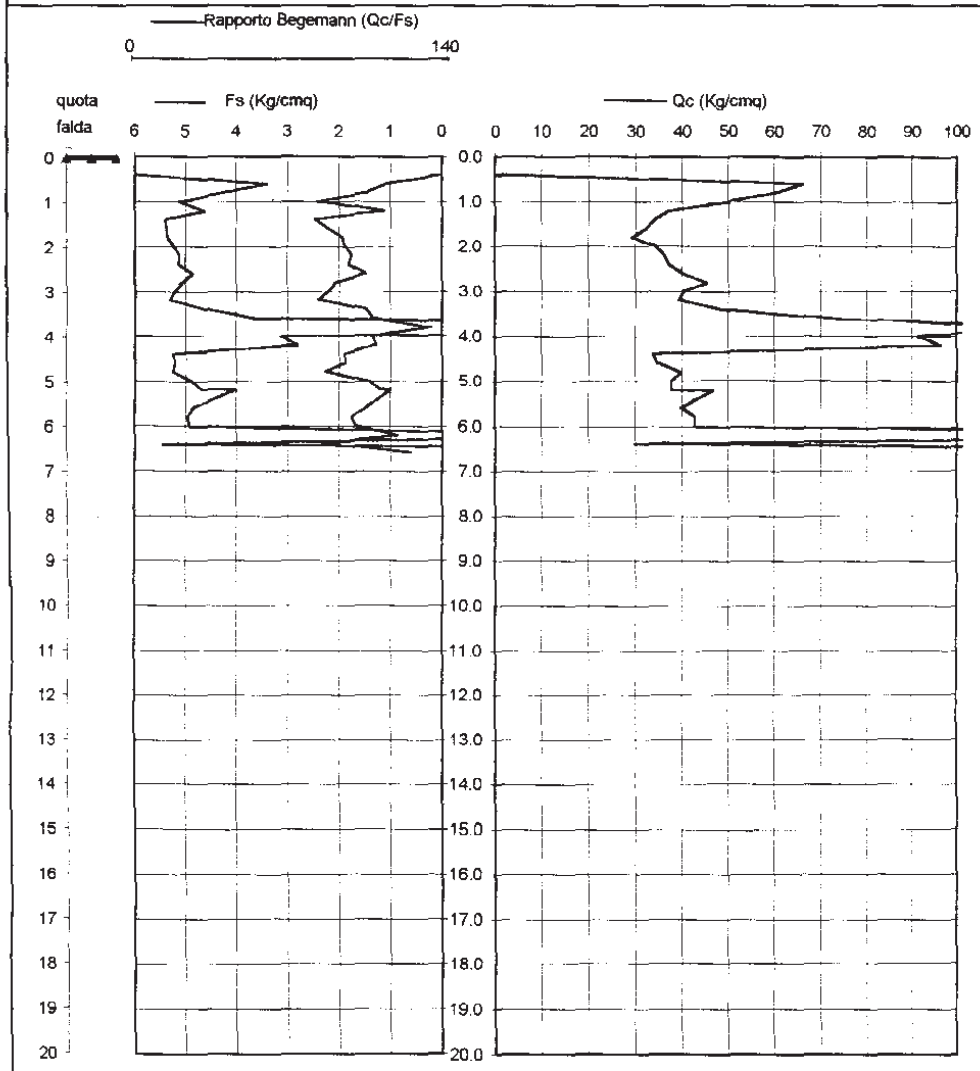
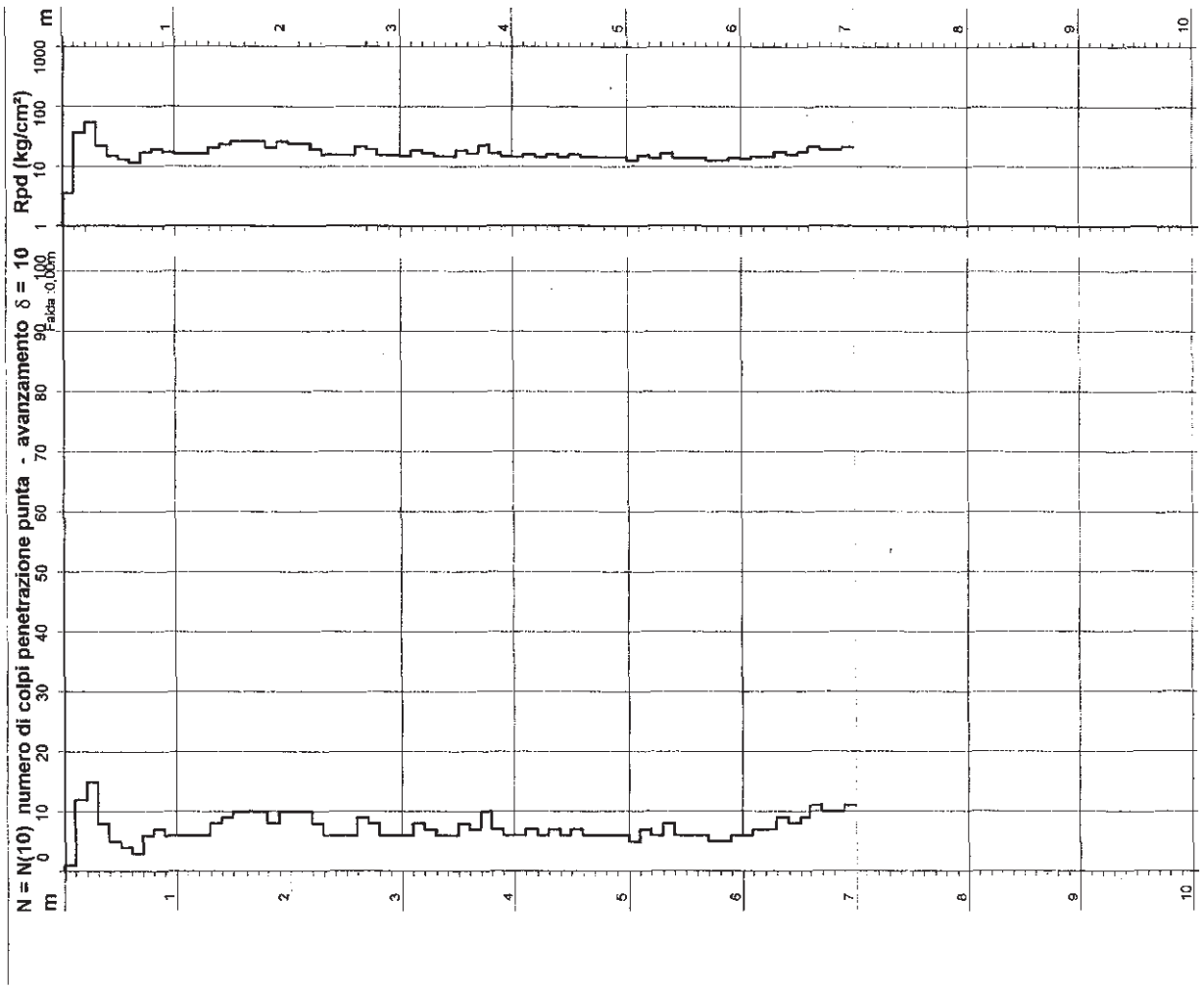
Prof. [metri]	Qc [Kg/cmq]	Fs Kg/cmq]	Qc/Fs	Rt [Kgf]	parametri geotecnici stimati γ [Kg/dmc]	σ'vo [Kg/cmq]	ϕ [gradi]	Dr [%]	Cu [Kg/cmq]	mv [cmq/t]	Colonna stratig.	litologia
0.2					1.80	0.04	-	-	-	-	non ril.	
0.4					1.80	0.07	-	-	-	-	non ril.	
0.6	66.1	1.1	62		1.93	0.11	44	100	-	5.0		sm
0.8	60.3	1.5	41		1.90	0.15	31	-	-	5.5		sl
1	50.3	2.4	21		1.99	0.19	-	-	2.00	8.0		sl
1.2	37.3	1.1	33		1.79	0.22	30	-	-	8.9		sl
1.4	34.3	2.5	14		1.95	0.26	-	-	1.36	11.7		a
1.6	32.3	2.2	15		1.95	0.30	-	-	1.28	12.4		a
1.8	29.4	1.9	15		1.94	0.34	-	-	1.16	13.6		a
2	34.4	1.9	18		1.95	0.38	-	-	1.36	11.6		a
2.2	36.4	1.7	21		1.96	0.42	-	-	1.44	11.0		a
2.4	37.4	1.8	21		1.96	0.46	-	-	1.48	10.7		a
2.6	40.4	1.5	28		1.97	0.50	-	-	1.60	9.9		sl
2.8	45.5	2.1	22		1.98	0.54	-	-	1.80	8.8		sl
3	40.5	2.2	18		1.97	0.58	-	-	1.60	9.9		a
3.2	39.5	2.4	16		1.97	0.62	-	-	1.56	10.1		a
3.4	48.5	1.5	33		1.84	0.65	30	-	-	6.9		sl
3.6	74.5	1.3	56		1.97	0.69	37	67	-	4.5		sm
3.8	119.7	0.2	598		2.10	0.73	39	82	-	2.8		ccc
4	91.7	1.3	69		2.06	0.78	38	71	-	3.6		sm
4.2	96.7	1.3	76		2.08	0.82	38	72	-	3.4		sm
4.4	33.7	1.9	18		1.95	0.86	-	-	1.31	11.9		a
4.6	34.7	1.9	19		1.95	0.90	-	-	1.35	11.5		a
4.8	39.8	2.3	18		1.97	0.93	-	-	1.55	10.1		a
5	37.8	1.4	27		1.96	0.97	-	-	1.47	10.6		a
5.2	37.8	1.2	31		1.79	1.01	30	-	-	8.8		sl
5.4	46.8	1.0	47		1.83	1.05	30	-	-	7.1		sl
5.6	39.8	1.5	27		1.97	1.09	-	-	1.55	10.1		sl
5.8	42.9	1.7	25		1.97	1.13	-	-	1.67	9.3		sl
6	42.9	1.7	26		1.97	1.16	-	-	1.67	9.3		sl
6.2	208.9	0.9	241		2.10	1.21	40	90	-	1.6		ccc
6.4	29.9	2.3	13		1.94	1.25	-	-	1.15	13.4		a
6.6	258.9	0.6	432		2.10	1.29	40	96	-	1.3		ccg
6.8												
7												
7.2												
7.4												
7.6												
7.8												
8												
8.2												
8.4												
8.6												
8.8												
9												
9.2												
9.4												
9.6												
9.8												
10												

PENETROMETRO STATICO: TG 73 200 KN PAGANI

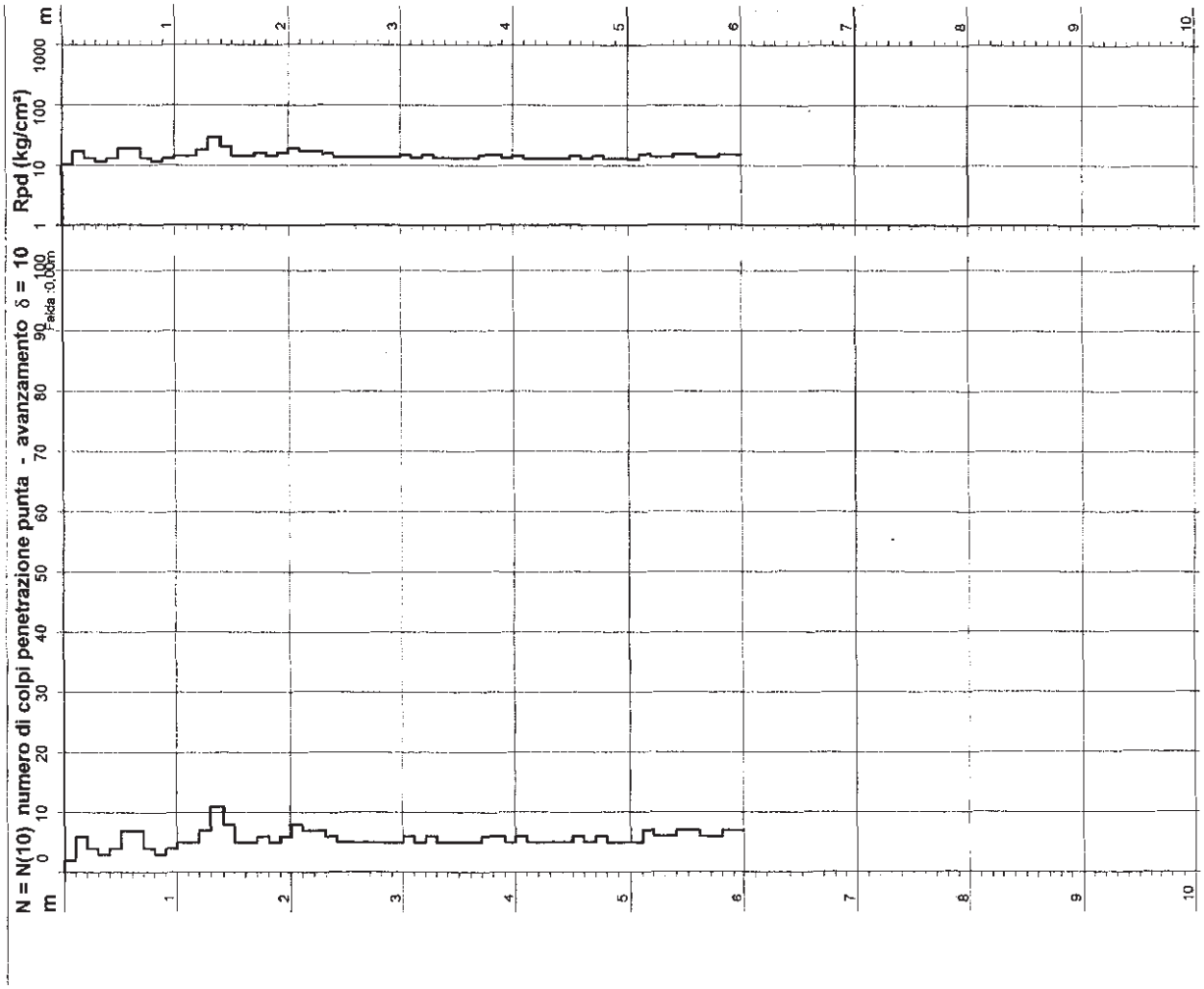


3617

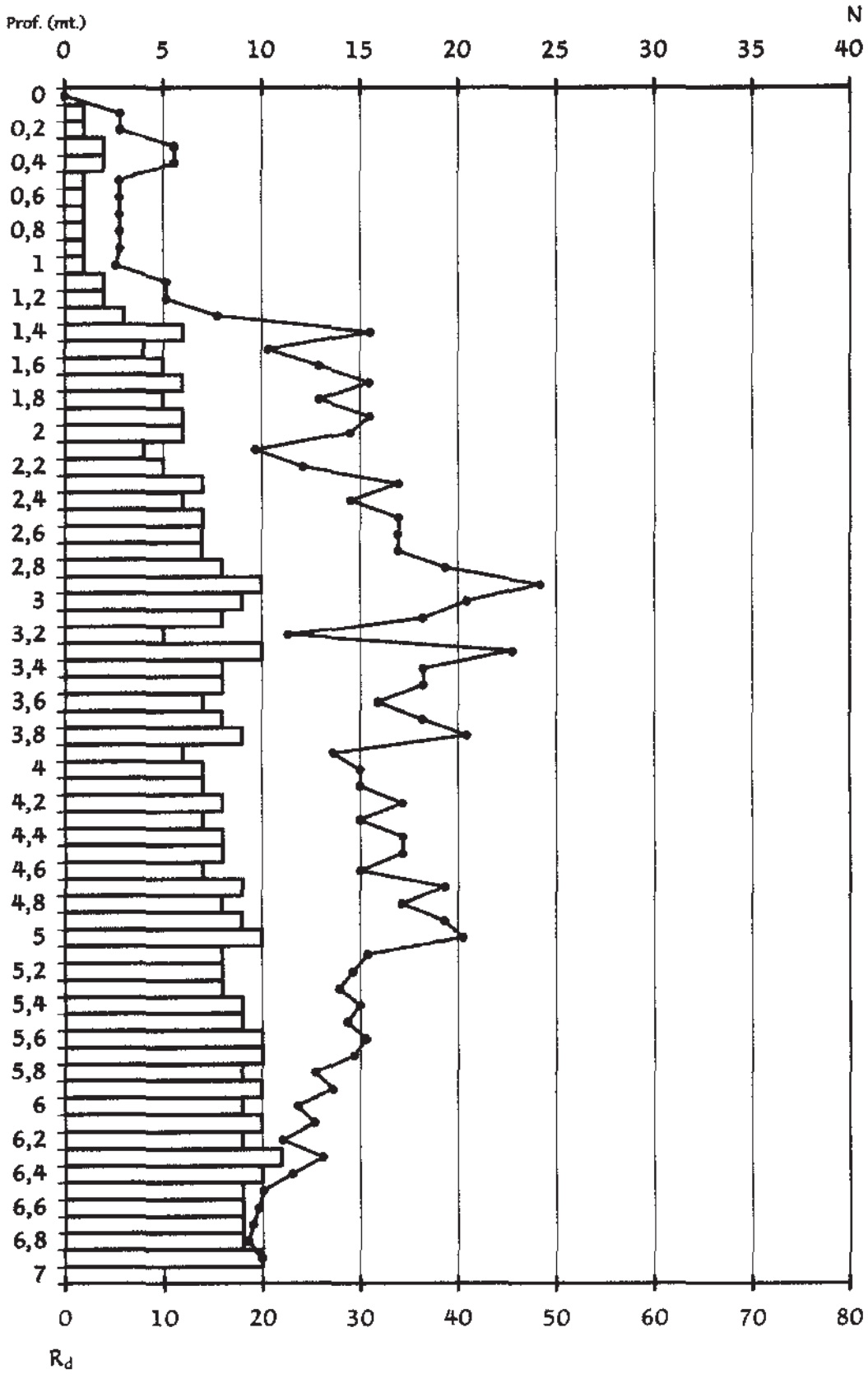
Prof.(m)	N(colpi p)	Rpd(kg/cm²)	N(colpi r)	asta	Prof.(m)	N(colpi p)	Rpd(kg/cm²)	N(colpi r)	asta
0,00 - 0,10	1	5,6	----	1	3,50 - 3,60	8	36,4	----	4
0,10 - 0,20	12	66,7	----	1	3,60 - 3,70	7	31,8	----	4
0,20 - 0,30	15	83,3	----	1	3,70 - 3,80	10	45,5	----	4
0,30 - 0,40	8	44,4	----	1	3,80 - 3,90	7	31,8	----	4
0,40 - 0,50	5	27,8	----	1	3,90 - 4,00	6	27,3	----	4
0,50 - 0,60	4	22,2	----	1	4,00 - 4,10	6	25,7	----	5
0,60 - 0,70	3	16,7	----	1	4,10 - 4,20	7	30,0	----	5
0,70 - 0,80	6	33,3	----	1	4,20 - 4,30	6	25,7	----	5
0,80 - 0,90	7	38,9	----	1	4,30 - 4,40	7	30,0	----	5
0,90 - 1,00	6	33,3	----	1	4,40 - 4,50	6	25,7	----	5
1,00 - 1,10	6	31,0	----	2	4,50 - 4,60	7	30,0	----	5
1,10 - 1,20	6	31,0	----	2	4,60 - 4,70	6	25,7	----	5
1,20 - 1,30	6	31,0	----	2	4,70 - 4,80	6	25,7	----	5
1,30 - 1,40	8	41,4	----	2	4,80 - 4,90	6	25,7	----	5
1,40 - 1,50	9	46,6	----	2	4,90 - 5,00	6	25,7	----	5
1,50 - 1,60	10	51,7	----	2	5,00 - 5,10	5	20,3	----	6
1,60 - 1,70	10	51,7	----	2	5,10 - 5,20	7	28,4	----	6
1,70 - 1,80	10	51,7	----	2	5,20 - 5,30	6	24,3	----	6
1,80 - 1,90	8	41,4	----	2	5,30 - 5,40	8	32,4	----	6
1,90 - 2,00	10	51,7	----	2	5,40 - 5,50	6	24,3	----	6
2,00 - 2,10	10	48,4	----	3	5,50 - 5,60	6	24,3	----	6
2,10 - 2,20	10	48,4	----	3	5,60 - 5,70	6	24,3	----	6
2,20 - 2,30	8	38,7	----	3	5,70 - 5,80	5	20,3	----	6
2,30 - 2,40	6	29,0	----	3	5,80 - 5,90	5	20,3	----	6
2,40 - 2,50	6	29,0	----	3	5,90 - 6,00	6	24,3	----	6
2,50 - 2,60	6	29,0	----	3	6,00 - 6,10	6	23,1	----	7
2,60 - 2,70	9	43,5	----	3	6,10 - 6,20	7	26,9	----	7
2,70 - 2,80	8	38,7	----	3	6,20 - 6,30	7	26,9	----	7
2,80 - 2,90	6	29,0	----	3	6,30 - 6,40	9	34,6	----	7
2,90 - 3,00	6	29,0	----	3	6,40 - 6,50	8	30,8	----	7
3,00 - 3,10	6	27,3	----	4	6,50 - 6,60	9	34,6	----	7
3,10 - 3,20	8	36,4	----	4	6,60 - 6,70	11	42,3	----	7
3,20 - 3,30	7	31,8	----	4	6,70 - 6,80	10	38,5	----	7
3,30 - 3,40	6	27,3	----	4	6,80 - 6,90	10	38,5	----	7
3,40 - 3,50	6	27,3	----	4	6,90 - 7,00	11	42,3	----	7

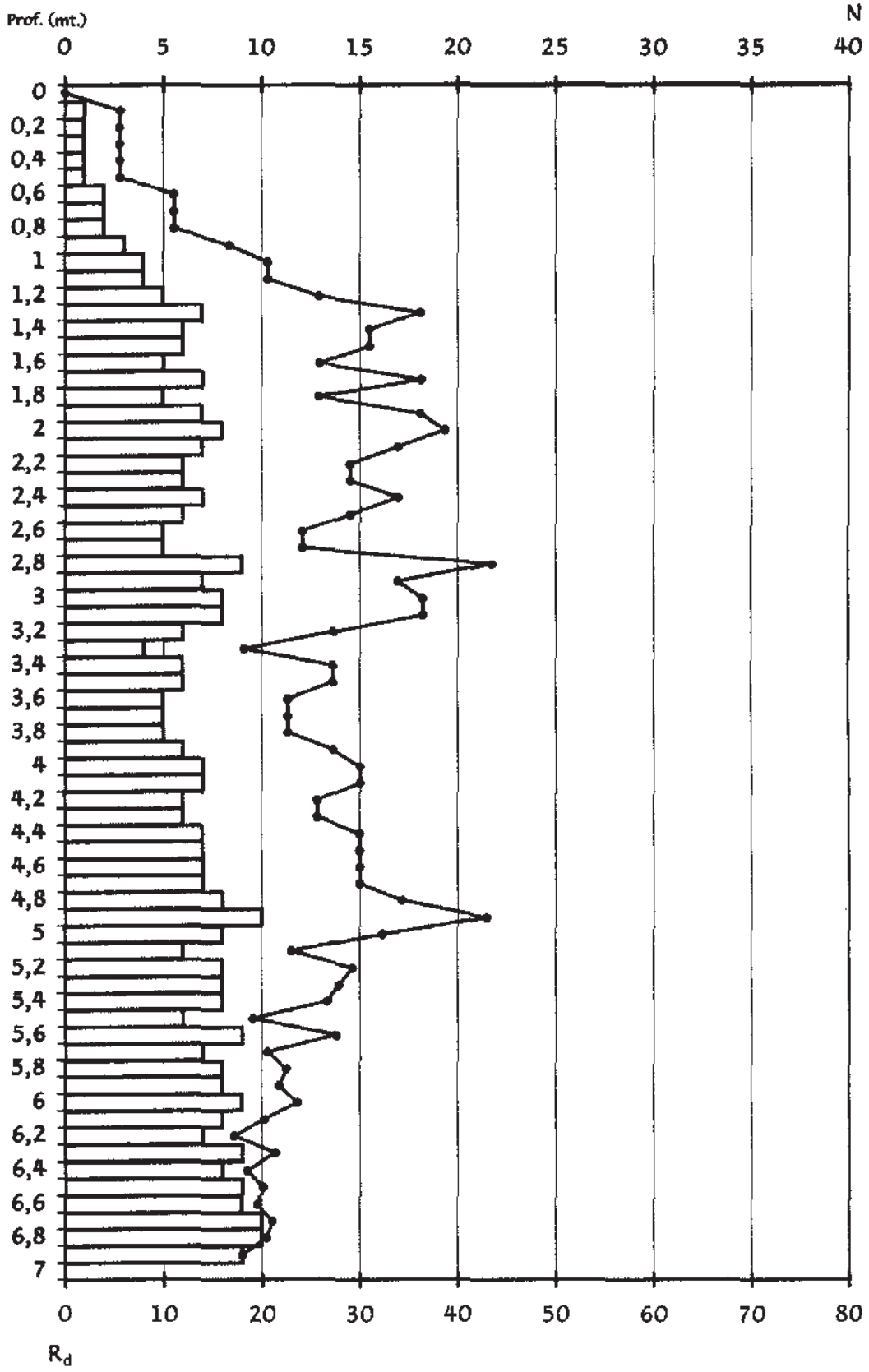


Prof.(m)	N(colpi p)	Rpd(kg/cm²)	N(colpi r)	asta	Prof.(m)	N(colpi p)	Rpd(kg/cm²)	N(colpi r)	
0,00 - 0,10	2	11,1	----	1	3,00 - 3,10	6	27,3	----	4
0,10 - 0,20	6	33,3	----	1	3,10 - 3,20	5	22,7	----	4
0,20 - 0,30	4	22,2	----	1	3,20 - 3,30	6	27,3	----	4
0,30 - 0,40	3	16,7	----	1	3,30 - 3,40	5	22,7	----	4
0,40 - 0,50	4	22,2	----	1	3,40 - 3,50	5	22,7	----	4
0,50 - 0,60	7	38,9	----	1	3,50 - 3,60	5	22,7	----	4
0,60 - 0,70	7	38,9	----	1	3,60 - 3,70	5	22,7	----	4
0,70 - 0,80	4	22,2	----	1	3,70 - 3,80	6	27,3	----	4
0,80 - 0,90	3	16,7	----	1	3,80 - 3,90	6	27,3	----	4
0,90 - 1,00	4	22,2	----	1	3,90 - 4,00	5	22,7	----	4
1,00 - 1,10	5	25,9	----	2	4,00 - 4,10	6	25,7	----	5
1,10 - 1,20	5	25,9	----	2	4,10 - 4,20	5	21,4	----	5
1,20 - 1,30	7	36,2	----	2	4,20 - 4,30	5	21,4	----	5
1,30 - 1,40	11	56,9	----	2	4,30 - 4,40	5	21,4	----	5
1,40 - 1,50	8	41,4	----	2	4,40 - 4,50	5	21,4	----	5
1,50 - 1,60	5	25,9	----	2	4,50 - 4,60	6	25,7	----	5
1,60 - 1,70	5	25,9	----	2	4,60 - 4,70	5	21,4	----	5
1,70 - 1,80	6	31,0	----	2	4,70 - 4,80	6	25,7	----	5
1,80 - 1,90	5	25,9	----	2	4,80 - 4,90	5	21,4	----	5
1,90 - 2,00	6	31,0	----	2	4,90 - 5,00	5	21,4	----	5
2,00 - 2,10	8	38,7	----	3	5,00 - 5,10	5	20,3	----	6
2,10 - 2,20	7	33,9	----	3	5,10 - 5,20	7	28,4	----	6
2,20 - 2,30	7	33,9	----	3	5,20 - 5,30	6	24,3	----	6
2,30 - 2,40	6	29,0	----	3	5,30 - 5,40	6	24,3	----	6
2,40 - 2,50	5	24,2	----	3	5,40 - 5,50	7	28,4	----	6
2,50 - 2,60	5	24,2	----	3	5,50 - 5,60	7	28,4	----	6
2,60 - 2,70	5	24,2	----	3	5,60 - 5,70	6	24,3	----	6
2,70 - 2,80	5	24,2	----	3	5,70 - 5,80	6	24,3	----	6
2,80 - 2,90	5	24,2	----	3	5,80 - 5,90	7	28,4	----	6
2,90 - 3,00	5	24,2	----	3	5,90 - 6,00	7	28,4	----	6

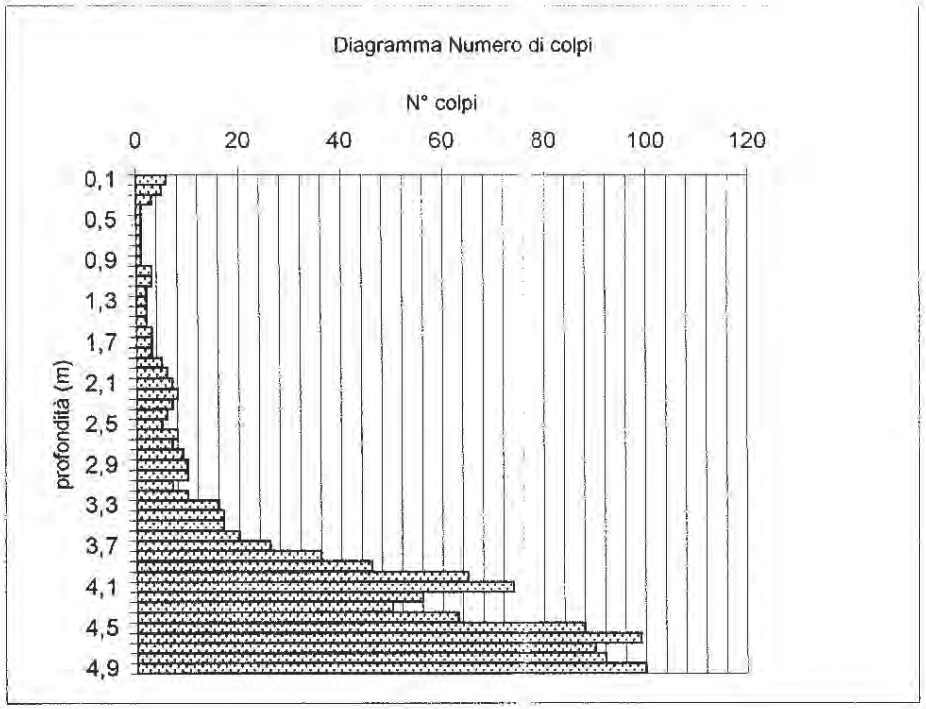


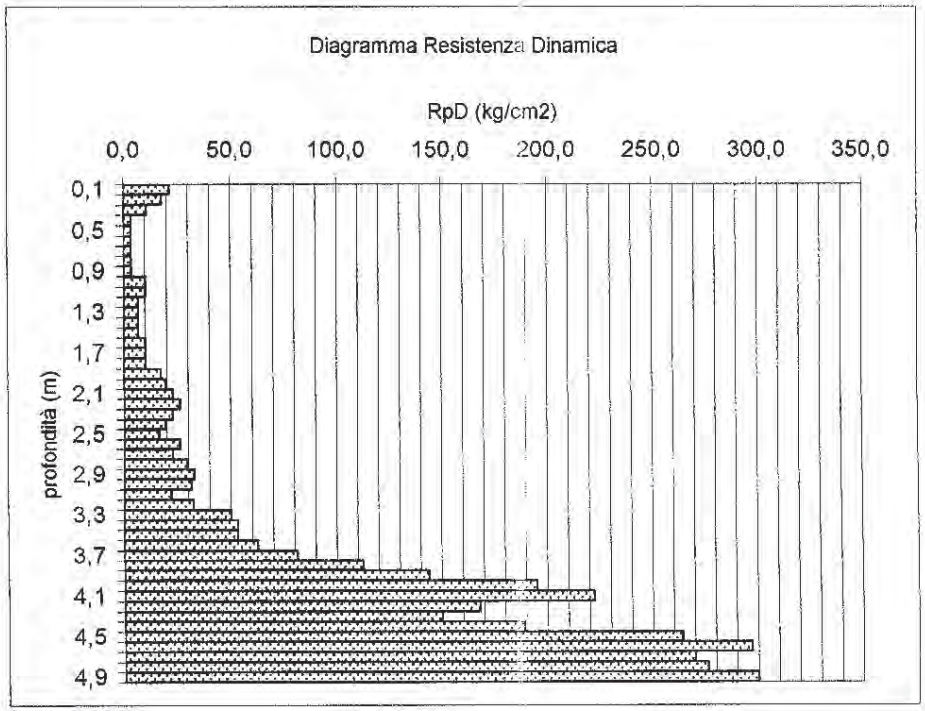
- PENETROMETRO DINAMICO tipo : TG 30-20 4x4
- M (massa battente)= 30,00 kg - H (altezza caduta)= 0,20 m - A (area punta)= 10,00 cm² - D(diam. punta)= 35,70 mm
- Numero Colpi Punta N = N(10) [δ = 10 cm] - Uso rivestimento / fanghi iniezione : NO


Prof. (mt.)
N
0
5
10
15
20
25
30
35
40
0
0,2
0,4
0,6
0,8
1
1,2
1,4
1,6
1,8
2
2,2
2,4
2,6
2,8
3
3,2
3,4
3,6
3,8
4
4,2
4,4
4,6
4,8
5
5,2
5,4
5,6
5,8
6
6,2
6,4
6,6
6,8
7
0
10
20
30
40
50
60
70
80
Rd


Prof. (mt.)
N
0
5
10
15
20
25
30
35
40
0
0,2
0,4
0,6
0,8
1
1,2
1,4
1,6
1,8
2
2,2
2,4
2,6
2,8
3
3,2
3,4
3,6
3,8
4
4,2
4,4
4,6
4,8
5
5,2
5,4
5,6
5,8
6
6,2
6,4
6,6
6,8
7
0
10
20
30
40
50
60
70
80
R_d

Prova penetrometrica dinamica n° 1



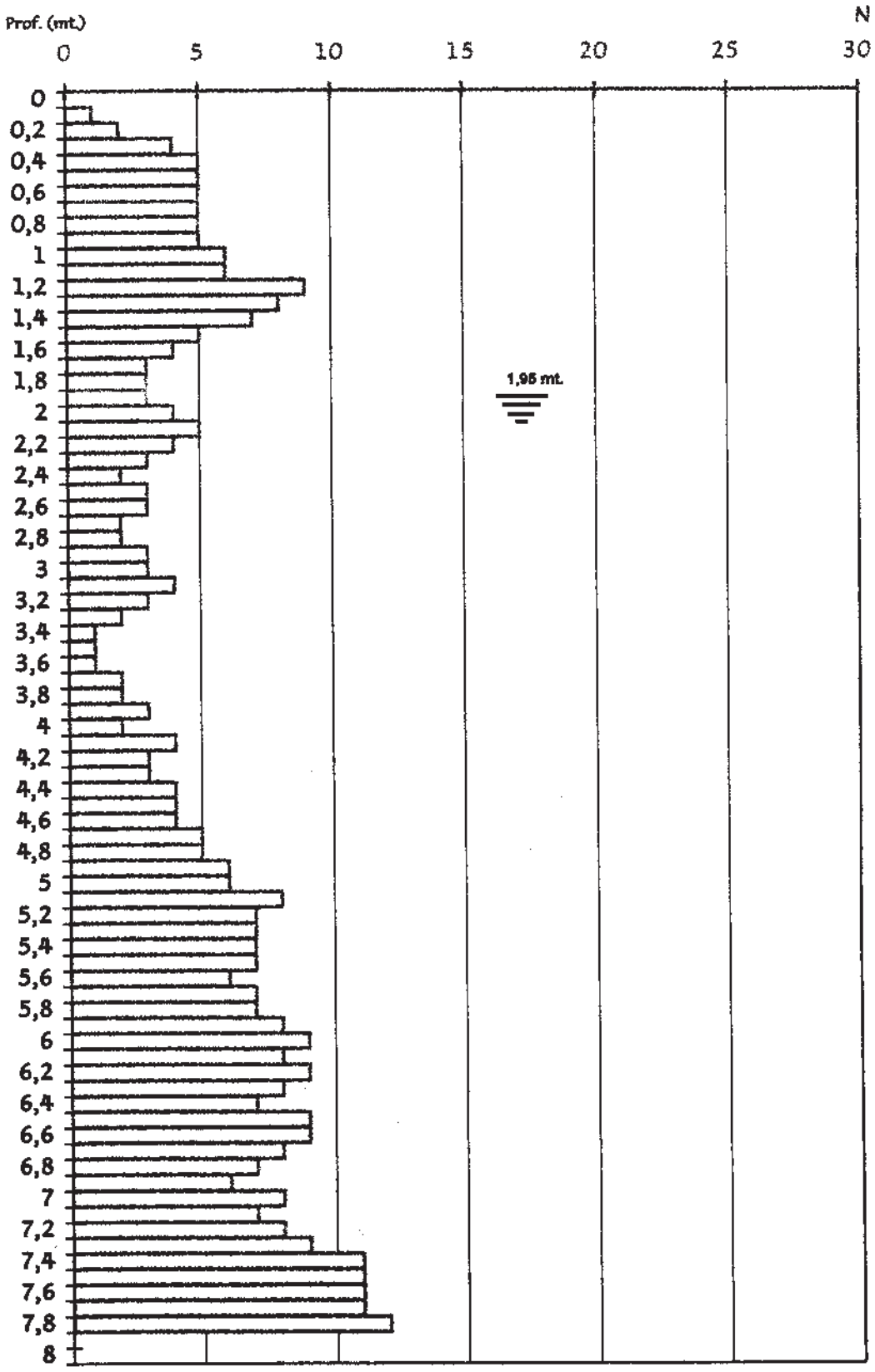


PROVA PENETROMETRICA DINAMICA N° 1
Tabella valori - resistenza

Penetrometro Dinamico tipo Medio - (DPM)
M: 30,0 kg - H: 0,20 m - A: 10,0 cmq - D: 35,7 mm
Cantiere: **Via Maremmana**
Località: **Lari (PI)**

uso rivestimento/fanghi iniezione: **NO**
N = N(10) δ = 10 cm
quota inizio: **piano campagna (108,7 m slm)**
prof. falda:1,80 m. da p.c. (?)
data: **18.05.02**

Profondità (m)	N° colpi	RpD (kg/cm2)	Profondità (m)	N° colpi	RpD (kg/cm2)
0,10	6	21,4	4,10	74	222,0
0,20	5	17,9	4,20	56	168,0
0,30	3	10,7	4,30	50	150,0
0,40	1	3,6	4,40	63	189,0
0,50	1	3,6	4,50	88	264,0
0,60	1	3,6	4,60	99	297,0
0,70	1	3,6	4,70	90	270,0
0,80	1	3,6	4,80	92	276,0
0,90	1	3,6	4,90	100	300,0
1,00	3	10,2			
1,10	3	10,2			
1,20	2	6,8			
1,30	2	6,8			
1,40	2	6,8			
1,50	2	6,8			
1,60	3	10,2			
1,70	3	10,2			
1,80	3	10,2			
1,90	5	17,2			
2,00	6	19,6			
2,10	7	22,8			
2,20	8	26,1			
2,30	7	22,8			
2,40	6	19,6			
2,50	5	16,3			
2,60	8	26,1			
2,70	7	22,8			
2,80	9	29,3			
2,90	10	32,6			
3,00	10	31,3			
3,10	7	21,9			
3,20	10	32,3			
3,30	16	50,0			
3,40	17	53,1			
3,50	17	53,1			
3,60	20	62,5			
3,70	26	81,3			
3,80	36	112,5			
3,90	46	143,8			
4,00	65	195,0			


Prof. (mt.)
N
0
5
10
15
20
25
30
0
0,2
0,4
0,6
0,8
1
1,2
1,4
1,6
1,8
2
2,2
2,4
2,6
2,8
3
3,2
3,4
3,6
3,8
4
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4,8
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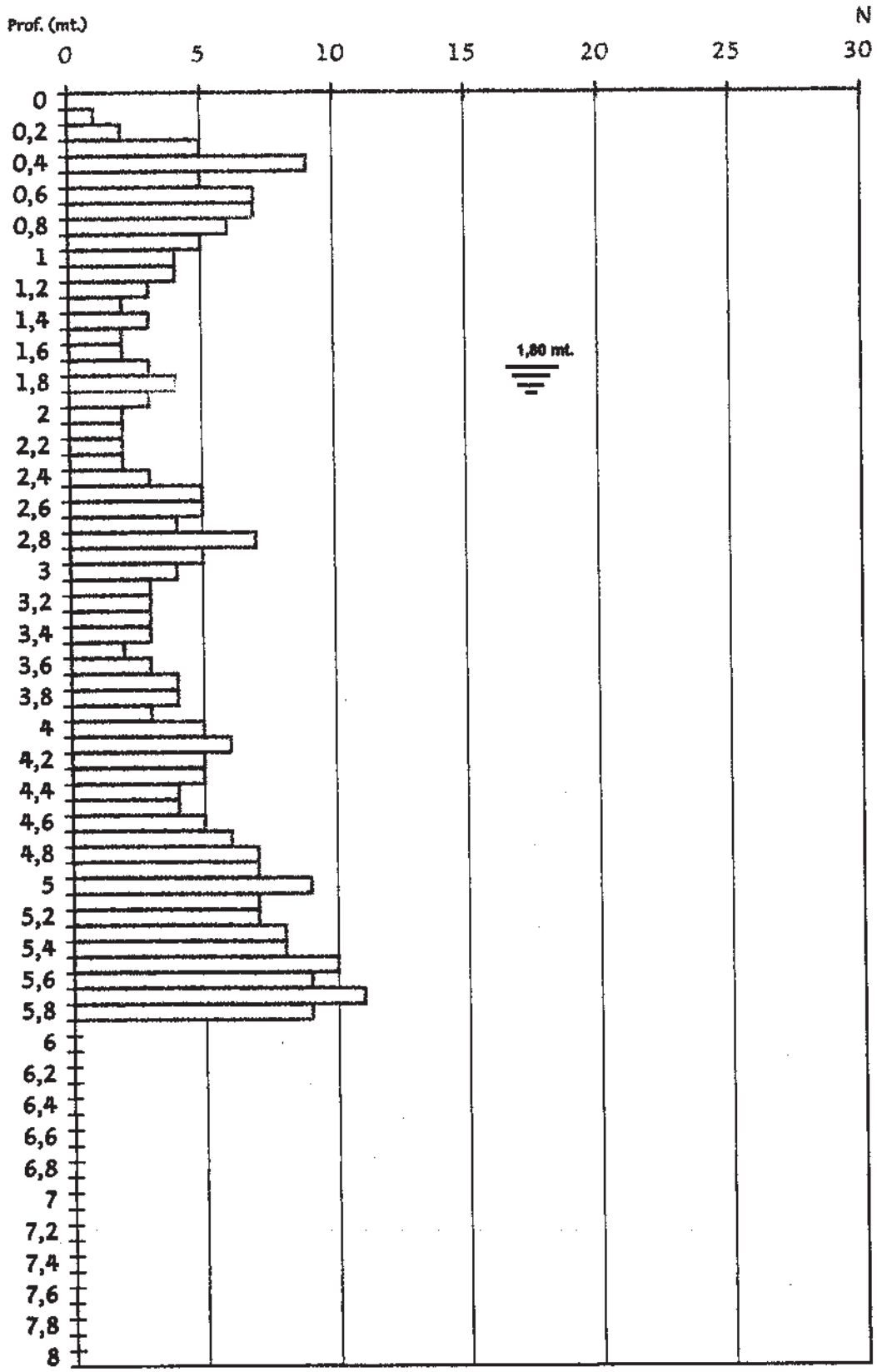
5,2
5,4
5,6
5,8
6
6,2
6,4
6,6
6,8
7
7,2
7,4
7,6
7,8
8
1,95 mt.


Prof. (mt.)
N
0
5
10
15
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25
30
0
0,2
0,4
0,6
0,8
1
1,2
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5,2
5,4
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7,2
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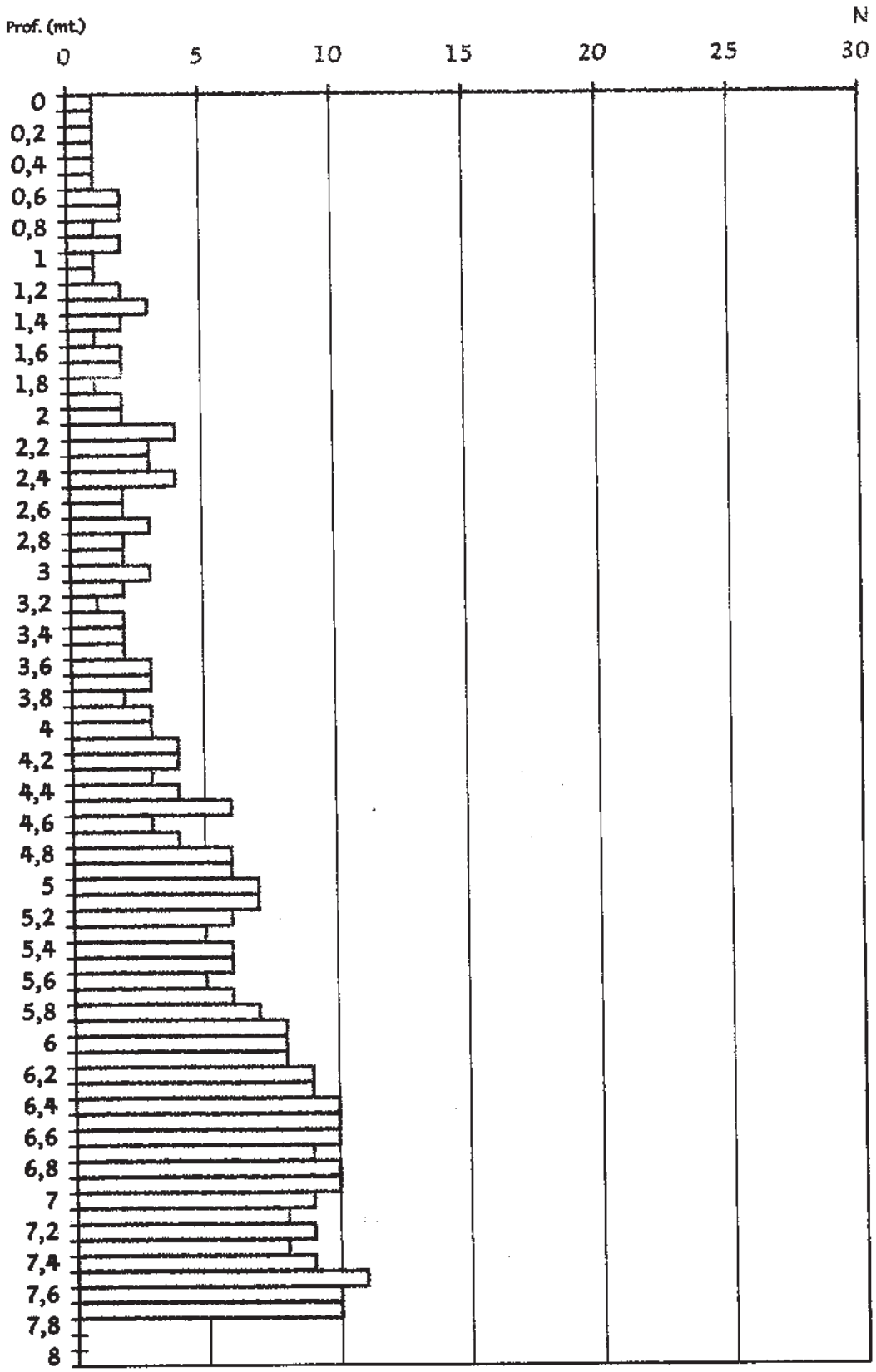
7,8
8
1,80 mt.


Prof. (mt.)
N
0
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30
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0,8
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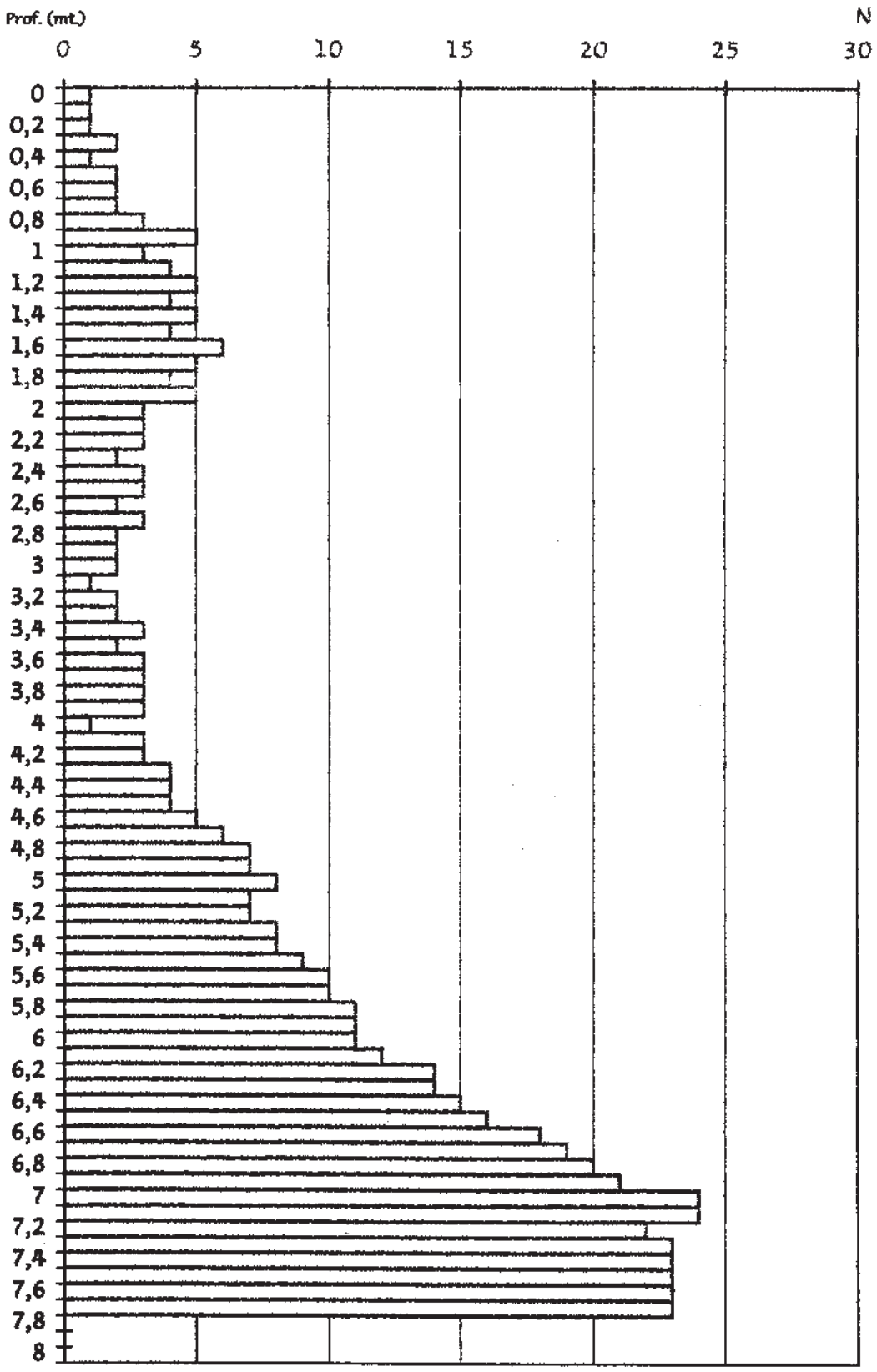
8


Prof. (mt.)
N
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1,8
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7,8
8

SONDAGGIO N° 1

DESCRIZIONE LITOTIPI

terreno vegetale sabbioso e limo-sabbioso misto a riporto

sabbia giallo nocciola

limo sabbioso giallo, debolmente plastico

limo argilloso e argilla giallo e nocciola con molti fossili e concrezioni

CAMPIONE N° 1

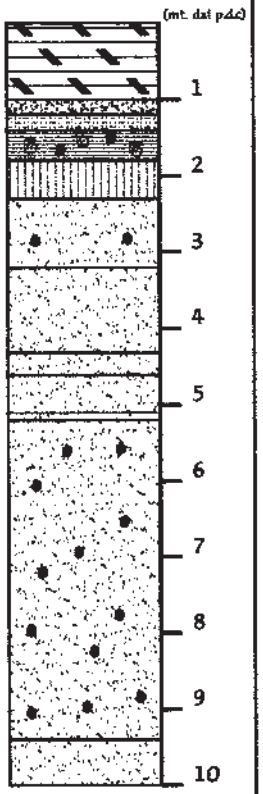
sabbia giallo-nocciola con trovanti

sabbia giallo-nocciola con livelli di arenaria

SABBIE (p3)
(Pliocene Inferiore e Medio)

sabbia e sabbia limosa giallo-nocciola con trovanti

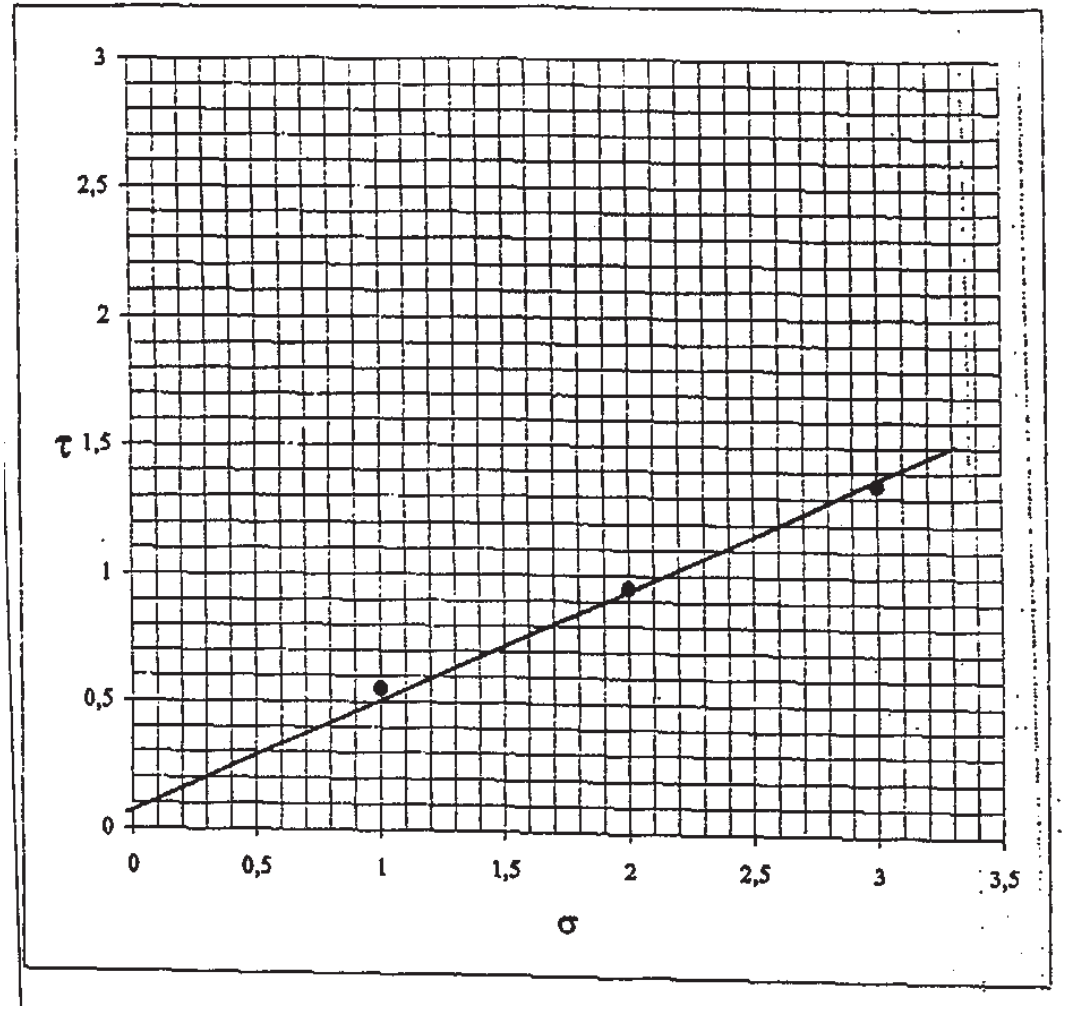
sabbia giallo-nocciola con trovanti



tà di prova 1 mm/min

carico	assiale	(Kg/cmq)	1	2	3
sforzo	a rottura	(Kg/cmq)	0,55	0,95	1,35

c	0,08	kg/cmq
ϕ	28	°



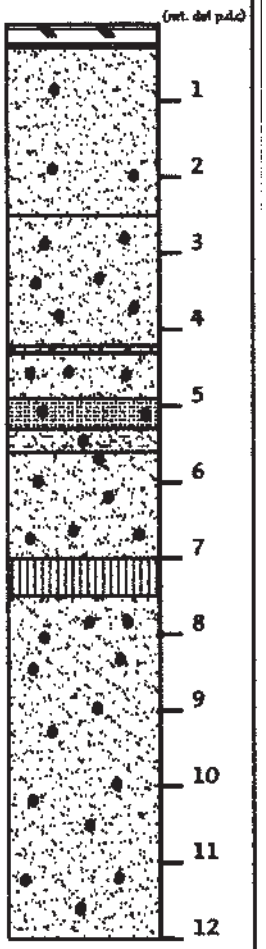
4303

SONDAGGIO N° 2

DESCRIZIONE LITOTIPI

SABBIE (p3)
(Pliocene inferiore e Medio)

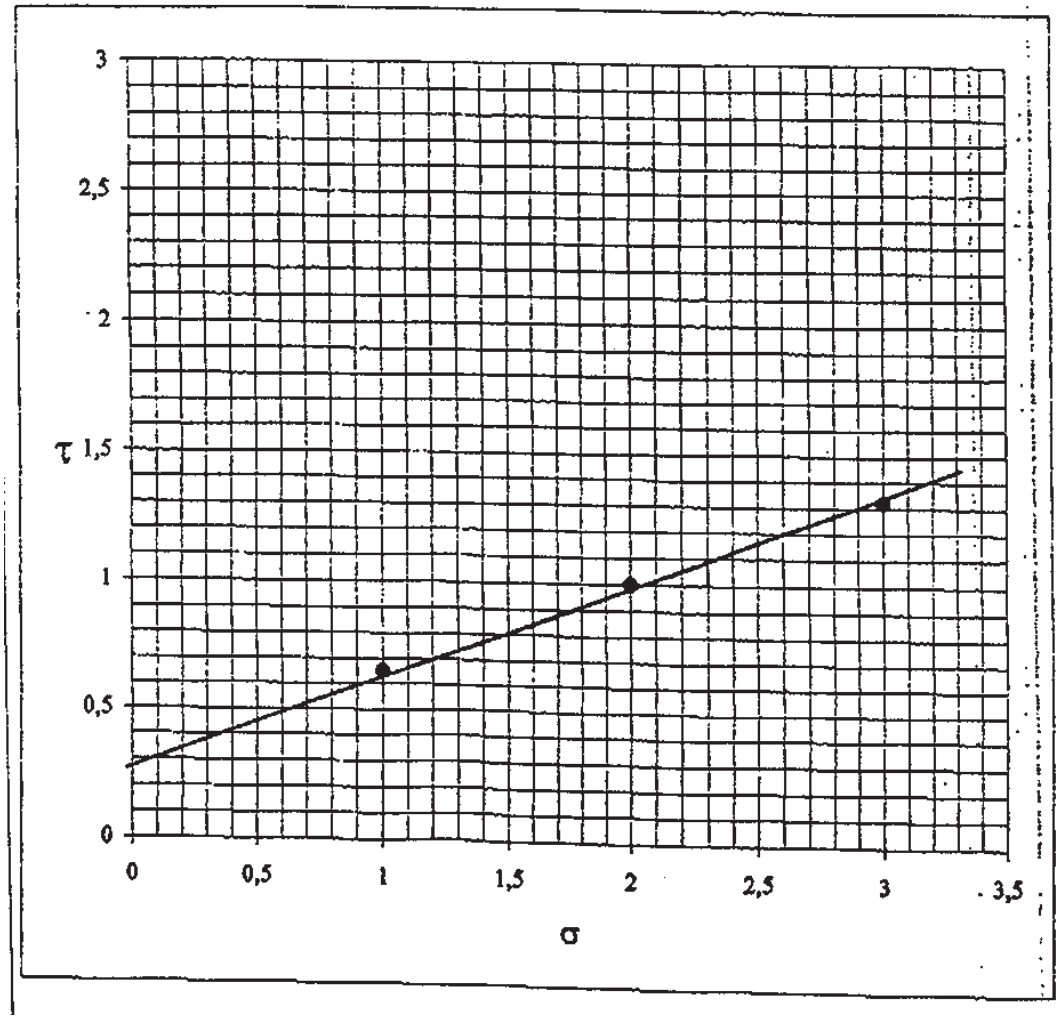
- terreno vegetale limo-sabbioso
- sabbia e sabbia limosa giallo-nocciola, con sporadici trovanti
- sabbia giallo-nocciola con trovanti, livelli di arenaria (4,20 mt.) e di argilla bianca beige (4,30 mt.)
- limo debolmente sabbioso, un po' plastico, con tracce carboniose, trovanti e livelli più sabbiosi
- sabbia limosa giallo-nocciola con trovanti
- sabbia giallo-nocciola con trovanti
- CAMPIONE N° 2
- sabbia giallo-nocciola con trovanti e tracce carboniose



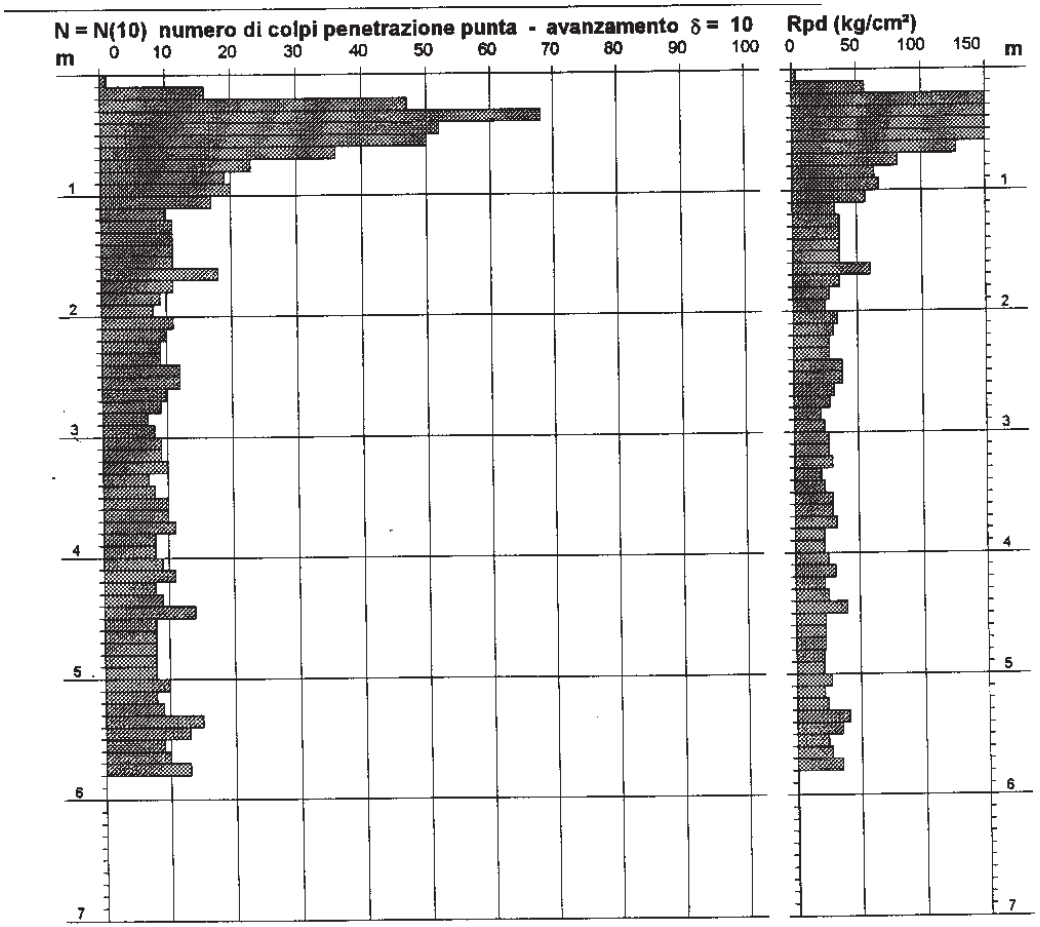
tà di prova 1 mm/min

carico	assiale	(Kg/cmq)	1	2	3
sforzo	a rottura	(Kg/cmq)	0,65	1,00	1,32

c	0,28	kg/cmq
ϕ	21	°



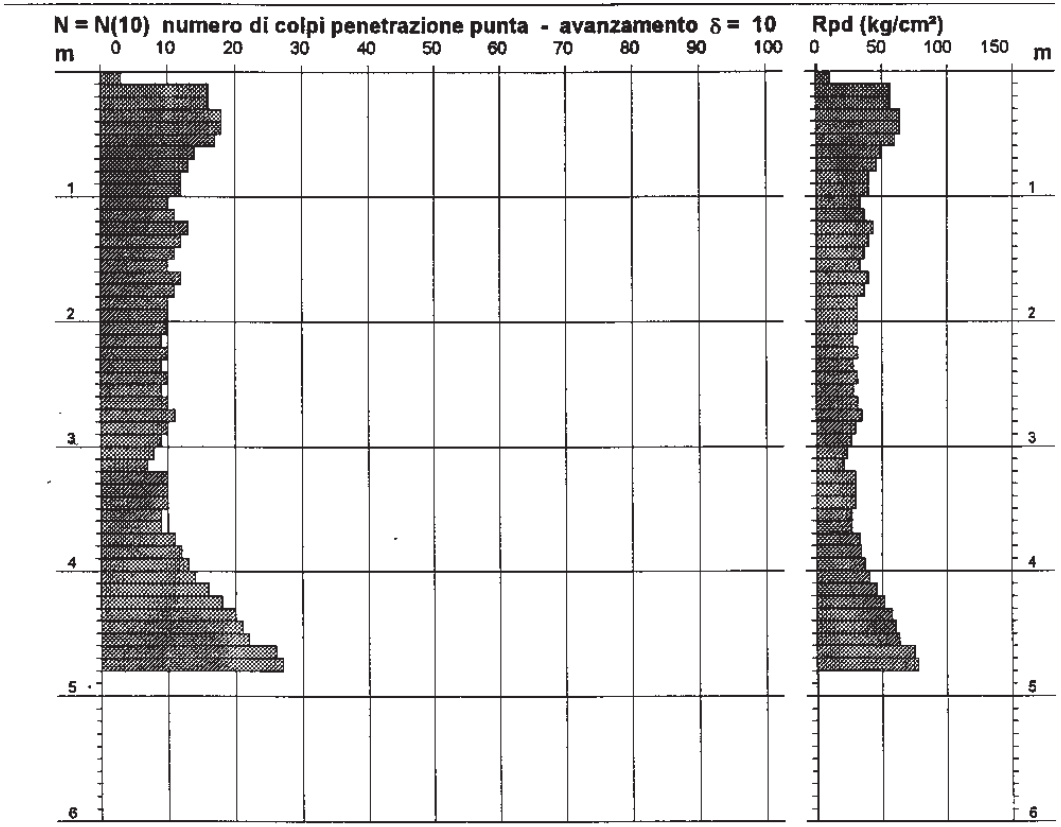
4304



Prof.(m)	N(colpi p)	Rpd(kg/cm²)	asta	Prof.(m)	N(colpi p)	Rpd(kg/cm²)	asta
0,00 - 0,10	1	3,5	1	2,90 - 3,00	8	24,1	4
0,10 - 0,20	16	56,5	1	3,00 - 3,10	9	27,1	4
0,20 - 0,30	47	166,1	1	3,10 - 3,20	9	27,1	4
0,30 - 0,40	68	240,3	1	3,20 - 3,30	10	30,1	4
0,40 - 0,50	52	183,8	1	3,30 - 3,40	7	21,1	4
0,50 - 0,60	50	176,7	1	3,40 - 3,50	8	24,1	4
0,60 - 0,70	36	127,2	1	3,50 - 3,60	10	30,1	4
0,70 - 0,80	23	81,3	1	3,60 - 3,70	10	30,1	4
0,80 - 0,90	19	63,5	2	3,70 - 3,80	11	33,2	4
0,90 - 1,00	20	66,8	2	3,80 - 3,90	8	23,0	5
1,00 - 1,10	17	56,8	2	3,90 - 4,00	8	23,0	5
1,10 - 1,20	10	33,4	2	4,00 - 4,10	9	25,9	5
1,20 - 1,30	11	36,8	2	4,10 - 4,20	11	31,6	5
1,30 - 1,40	11	36,8	2	4,20 - 4,30	8	23,0	5
1,40 - 1,50	11	36,8	2	4,30 - 4,40	9	25,9	5
1,50 - 1,60	11	36,8	2	4,40 - 4,50	14	40,2	5
1,60 - 1,70	18	60,2	2	4,50 - 4,60	8	23,0	5
1,70 - 1,80	11	36,8	2	4,60 - 4,70	8	23,0	5
1,80 - 1,90	9	28,5	3	4,70 - 4,80	8	23,0	5
1,90 - 2,00	8	25,4	3	4,80 - 4,90	8	22,0	6
2,00 - 2,10	11	34,9	3	4,90 - 5,00	8	22,0	6
2,10 - 2,20	10	31,7	3	5,00 - 5,10	10	27,4	6
2,20 - 2,30	9	28,5	3	5,10 - 5,20	8	22,0	6
2,30 - 2,40	9	28,5	3	5,20 - 5,30	9	24,7	6
2,40 - 2,50	12	38,0	3	5,30 - 5,40	15	41,2	6
2,50 - 2,60	12	38,0	3	5,40 - 5,50	13	35,7	6
2,60 - 2,70	10	31,7	3	5,50 - 5,60	9	24,7	6
2,70 - 2,80	9	28,5	3	5,60 - 5,70	10	27,4	6
2,80 - 2,90	7	21,1	4	5,70 - 5,80	13	35,7	6

- PENETROMETRO DINAMICO tipo : **DL-30 (60°)**
- M (massa battente)= **30,00** kg - H (altezza caduta)= **0,20** m - A (area punta)= **10,00** cm² - D(diam. punta)= :
- Numero Colpi Punta N = N(10) [δ = 10 cm] - Uso rivestimento / fanghi iniezione : **NO**

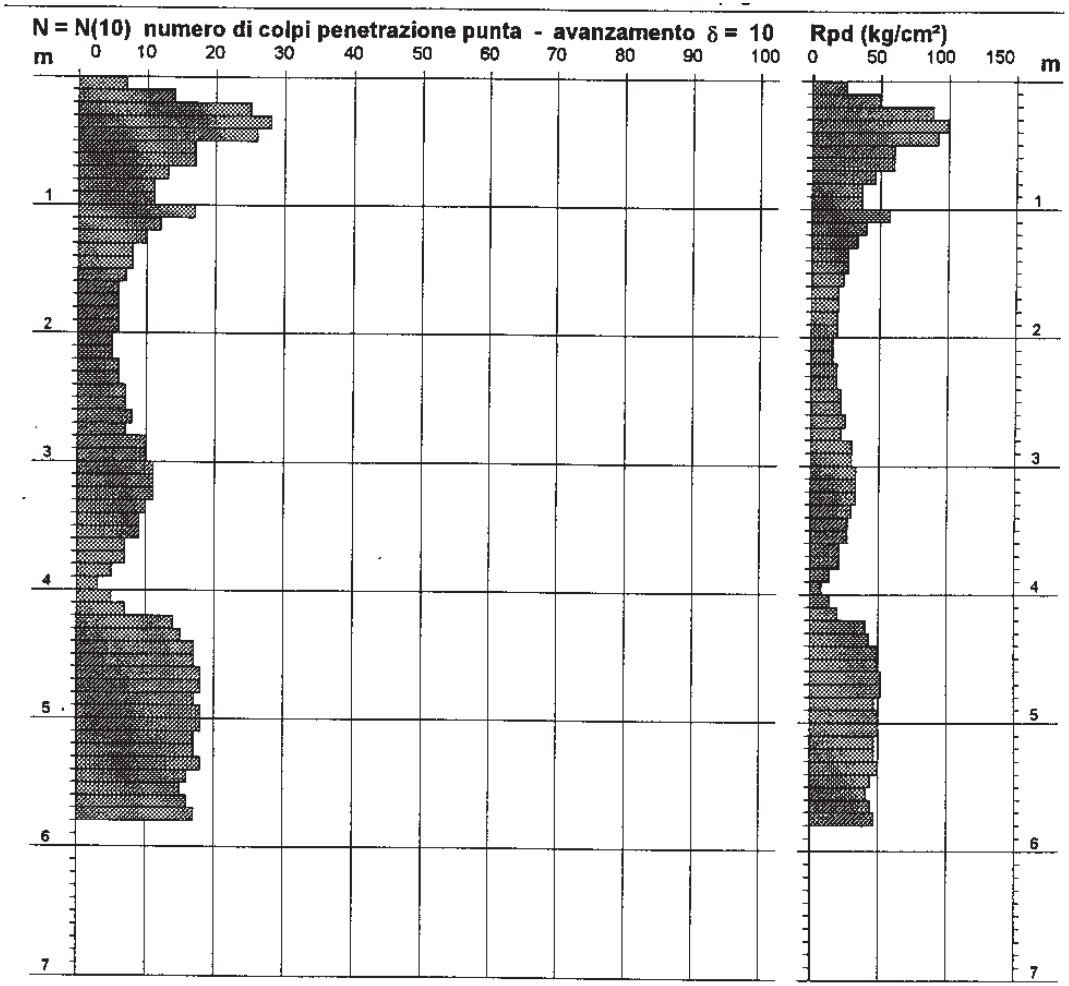
4313



Prof.(m)	N(colpi p)	Rpd(kg/cm²)	asta	Prof.(m)	N(colpi p)	Rpd(kg/cm²)	asta
0,00 - 0,10	3	10,6	1	2,40 - 2,50	10	31,7	3
0,10 - 0,20	16	56,5	1	2,50 - 2,60	9	28,5	3
0,20 - 0,30	16	56,5	1	2,60 - 2,70	10	31,7	3
0,30 - 0,40	18	63,6	1	2,70 - 2,80	11	34,9	3
0,40 - 0,50	18	63,6	1	2,80 - 2,90	10	30,1	4
0,50 - 0,60	17	60,1	1	2,90 - 3,00	9	27,1	4
0,60 - 0,70	14	49,5	1	3,00 - 3,10	8	24,1	4
0,70 - 0,80	13	45,9	1	3,10 - 3,20	7	21,1	4
0,80 - 0,90	12	40,1	2	3,20 - 3,30	10	30,1	4
0,90 - 1,00	12	40,1	2	3,30 - 3,40	10	30,1	4
1,00 - 1,10	10	33,4	2	3,40 - 3,50	10	30,1	4
1,10 - 1,20	11	36,8	2	3,50 - 3,60	9	27,1	4
1,20 - 1,30	13	43,4	2	3,60 - 3,70	9	27,1	4
1,30 - 1,40	12	40,1	2	3,70 - 3,80	11	33,2	4
1,40 - 1,50	11	36,8	2	3,80 - 3,90	12	34,5	5
1,50 - 1,60	10	33,4	2	3,90 - 4,00	13	37,4	5
1,60 - 1,70	12	40,1	2	4,00 - 4,10	14	40,2	5
1,70 - 1,80	11	36,8	2	4,10 - 4,20	16	46,0	5
1,80 - 1,90	10	31,7	3	4,20 - 4,30	18	51,7	5
1,90 - 2,00	10	31,7	3	4,30 - 4,40	20	57,5	5
2,00 - 2,10	10	31,7	3	4,40 - 4,50	21	60,3	5
2,10 - 2,20	9	28,5	3	4,50 - 4,60	22	63,2	5
2,20 - 2,30	10	31,7	3	4,60 - 4,70	26	74,7	5
2,30 - 2,40	9	28,5	3	4,70 - 4,80	27	77,6	5

- PENETROMETRO DINAMICO tipo : **DL-30 (60°)**
- M (massa battente)= **30,00** kg - H (altezza caduta)= **0,20** m - A (area punta)= **10,00** cm² - D(diam. punta)= **3**
- Numero Colpi Punta N = N(**10**) [δ = 10 cm] - Uso rivestimento / fanghi iniezione : **NO**

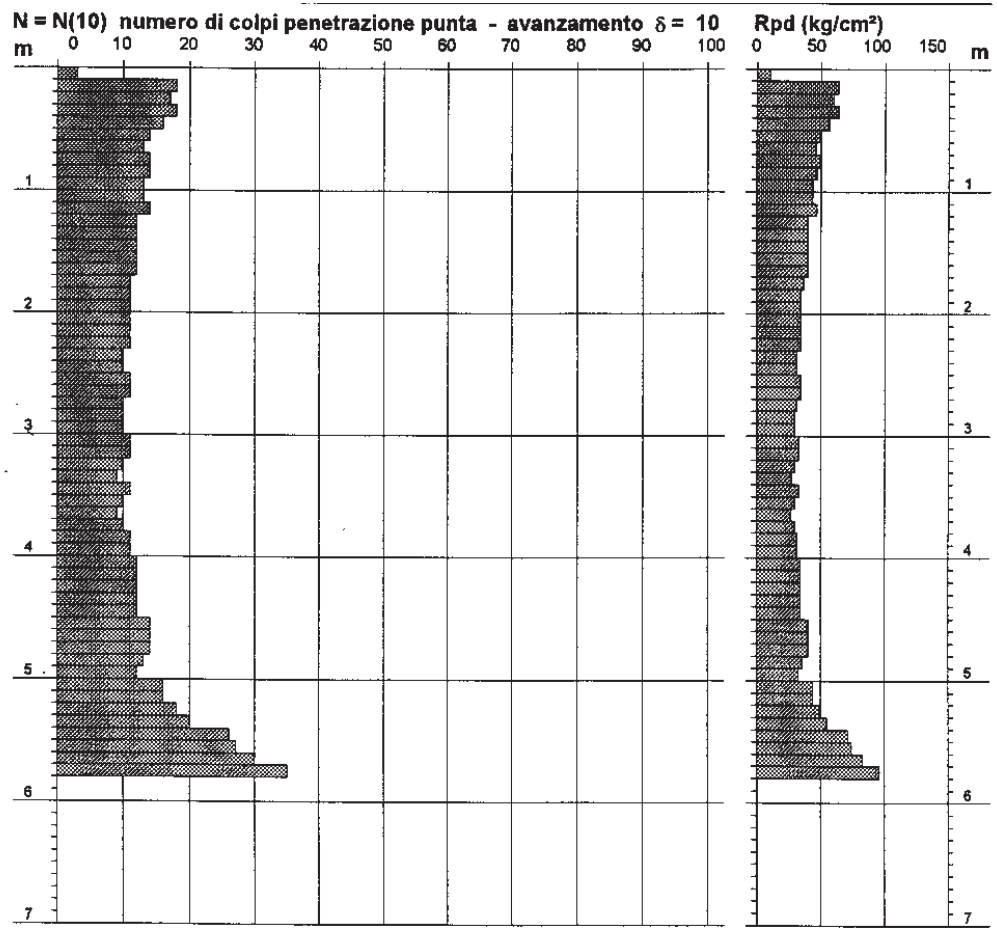
4314



Prof.(m)	N(colpi p)	Rpd(kg/cm²)	asta	Prof.(m)	N(colpi p)	Rpd(kg/cm²)	asta
0,00 - 0,10	7	24,7	1	2,90 - 3,00	10	30,1	4
0,10 - 0,20	14	49,5	1	3,00 - 3,10	11	33,2	4
0,20 - 0,30	25	88,4	1	3,10 - 3,20	11	33,2	4
0,30 - 0,40	28	99,0	1	3,20 - 3,30	11	33,2	4
0,40 - 0,50	26	91,9	1	3,30 - 3,40	10	30,1	4
0,50 - 0,60	17	60,1	1	3,40 - 3,50	9	27,1	4
0,60 - 0,70	17	60,1	1	3,50 - 3,60	9	27,1	4
0,70 - 0,80	13	45,9	1	3,60 - 3,70	7	21,1	4
0,80 - 0,90	11	36,8	2	3,70 - 3,80	7	21,1	4
0,90 - 1,00	11	36,8	2	3,80 - 3,90	5	14,4	5
1,00 - 1,10	17	56,8	2	3,90 - 4,00	3	8,6	5
1,10 - 1,20	12	40,1	2	4,00 - 4,10	5	14,4	5
1,20 - 1,30	10	33,4	2	4,10 - 4,20	7	20,1	5
1,30 - 1,40	8	26,7	2	4,20 - 4,30	14	40,2	5
1,40 - 1,50	8	26,7	2	4,30 - 4,40	15	43,1	5
1,50 - 1,60	7	23,4	2	4,40 - 4,50	17	48,8	5
1,60 - 1,70	6	20,1	2	4,50 - 4,60	17	48,8	5
1,70 - 1,80	6	20,1	2	4,60 - 4,70	18	51,7	5
1,80 - 1,90	6	19,0	3	4,70 - 4,80	18	51,7	5
1,90 - 2,00	6	19,0	3	4,80 - 4,90	17	46,7	6
2,00 - 2,10	5	15,8	3	4,90 - 5,00	18	49,4	6
2,10 - 2,20	5	15,8	3	5,00 - 5,10	18	49,4	6
2,20 - 2,30	6	19,0	3	5,10 - 5,20	17	46,7	6
2,30 - 2,40	6	19,0	3	5,20 - 5,30	17	46,7	6
2,40 - 2,50	7	22,2	3	5,30 - 5,40	18	49,4	6
2,50 - 2,60	7	22,2	3	5,40 - 5,50	16	43,9	6
2,60 - 2,70	8	25,4	3	5,50 - 5,60	15	41,2	6
2,70 - 2,80	7	22,2	3	5,60 - 5,70	16	43,9	6
2,80 - 2,90	10	30,1	4	5,70 - 5,80	17	46,7	6

- PENETROMETRO DINAMICO tipo : **DL-30 (60°)**
- M (massa battente)= **30,00** kg - H (altezza caduta)= **0,20** m - A (area punta)= **10,00** cm² - D(diam. punta)= **35.70** mm
- Numero Colpi Punta N = N(10) [δ = 10 cm] - Uso rivestimento / fanghi iniezione : **NO**

4315

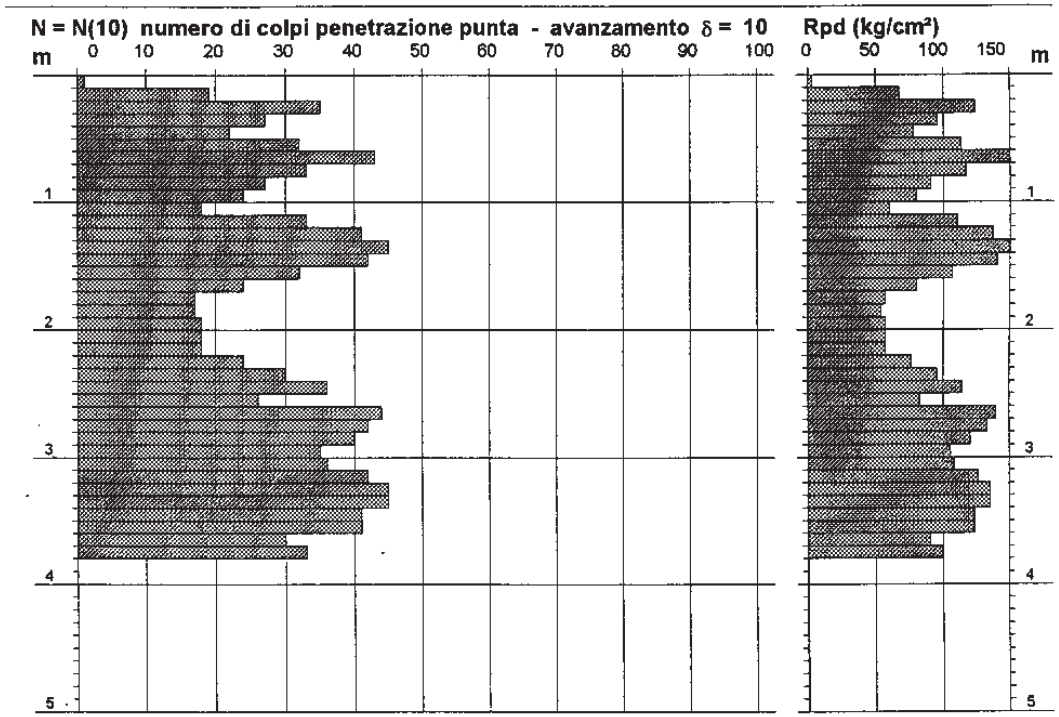


Prof.(m)	N(colpi p)	Rpd(kg/cm²)	asta	Prof.(m)	N(colpi p)	Rpd(kg/cm²)	asta
0,00 - 0,10	3	10,6	1	2,90 - 3,00	10	30,1	4
0,10 - 0,20	18	63,6	1	3,00 - 3,10	11	33,2	4
0,20 - 0,30	17	60,1	1	3,10 - 3,20	11	33,2	4
0,30 - 0,40	18	63,6	1	3,20 - 3,30	10	30,1	4
0,40 - 0,50	16	56,5	1	3,30 - 3,40	9	27,1	4
0,50 - 0,60	14	49,5	1	3,40 - 3,50	11	33,2	4
0,60 - 0,70	13	45,9	1	3,50 - 3,60	10	30,1	4
0,70 - 0,80	14	49,5	1	3,60 - 3,70	9	27,1	4
0,80 - 0,90	14	46,8	2	3,70 - 3,80	10	30,1	4
0,90 - 1,00	13	43,4	2	3,80 - 3,90	11	31,6	5
1,00 - 1,10	13	43,4	2	3,90 - 4,00	11	31,6	5
1,10 - 1,20	14	46,8	2	4,00 - 4,10	12	34,5	5
1,20 - 1,30	12	40,1	2	4,10 - 4,20	12	34,5	5
1,30 - 1,40	12	40,1	2	4,20 - 4,30	12	34,5	5
1,40 - 1,50	12	40,1	2	4,30 - 4,40	12	34,5	5
1,50 - 1,60	12	40,1	2	4,40 - 4,50	12	34,5	5
1,60 - 1,70	12	40,1	2	4,50 - 4,60	14	40,2	5
1,70 - 1,80	11	36,8	2	4,60 - 4,70	14	40,2	5
1,80 - 1,90	11	34,9	3	4,70 - 4,80	14	40,2	5
1,90 - 2,00	11	34,9	3	4,80 - 4,90	13	35,7	6
2,00 - 2,10	11	34,9	3	4,90 - 5,00	12	32,9	6
2,10 - 2,20	11	34,9	3	5,00 - 5,10	16	43,9	6
2,20 - 2,30	11	34,9	3	5,10 - 5,20	16	43,9	6
2,30 - 2,40	10	31,7	3	5,20 - 5,30	18	49,4	6
2,40 - 2,50	10	31,7	3	5,30 - 5,40	20	54,9	6
2,50 - 2,60	11	34,9	3	5,40 - 5,50	26	71,4	6
2,60 - 2,70	11	34,9	3	5,50 - 5,60	27	74,1	6
2,70 - 2,80	10	31,7	3	5,60 - 5,70	30	82,3	6
2,80 - 2,90	10	30,1	4	5,70 - 5,80	35	96,1	6

- PENETROMETRO DINAMICO tipo : **DL-30 (60°)**
- M (massa battente)= **30,00** kg - H (altezza caduta)= **0,20** m - A (area punta)= **10,00** cm² - D(diam. punta)= **35,70 mm**
- Numero Colpi Punta N = N(10) [δ = 10 cm] - Uso rivestimento / fanghi iniezione : **NO**

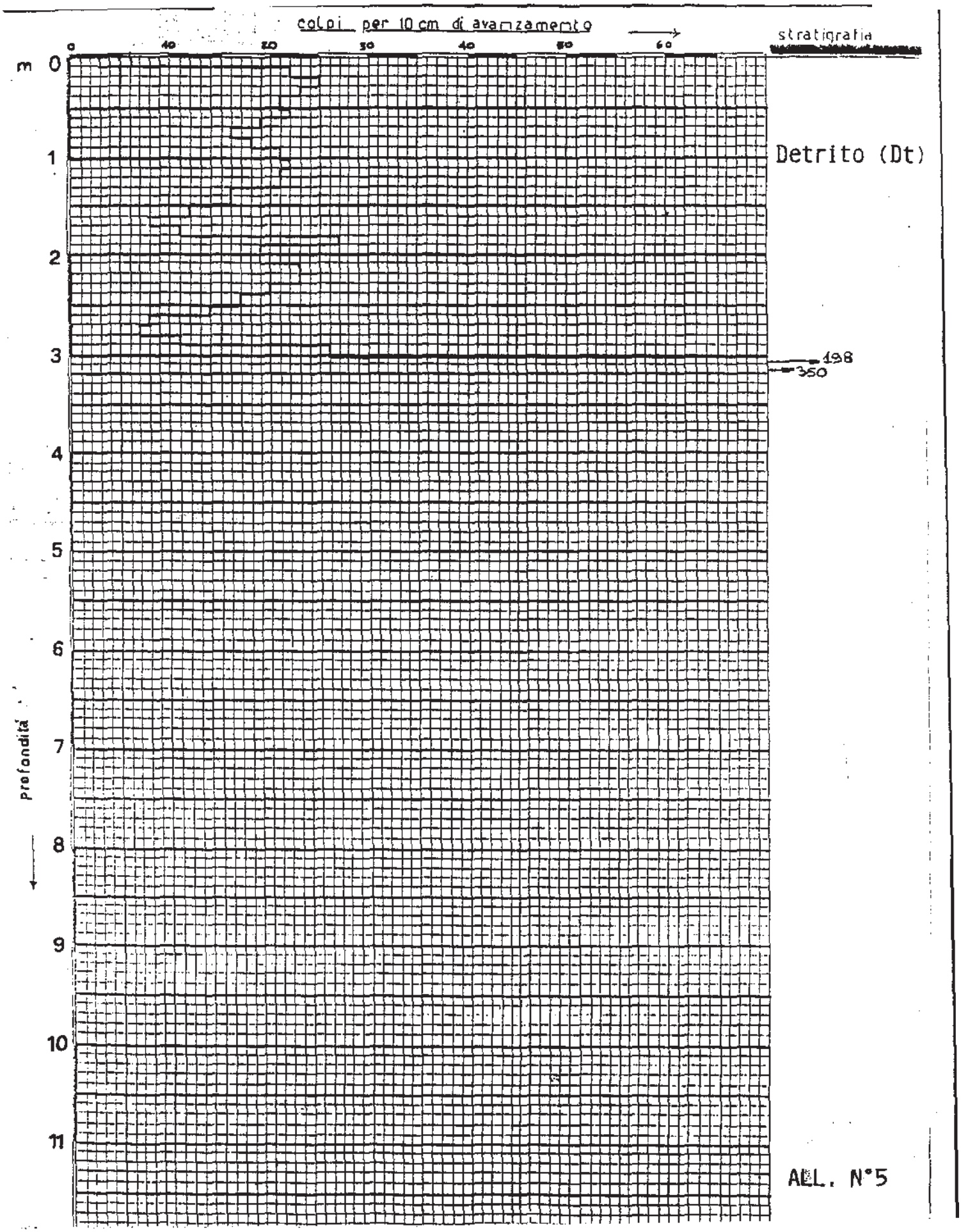
4316

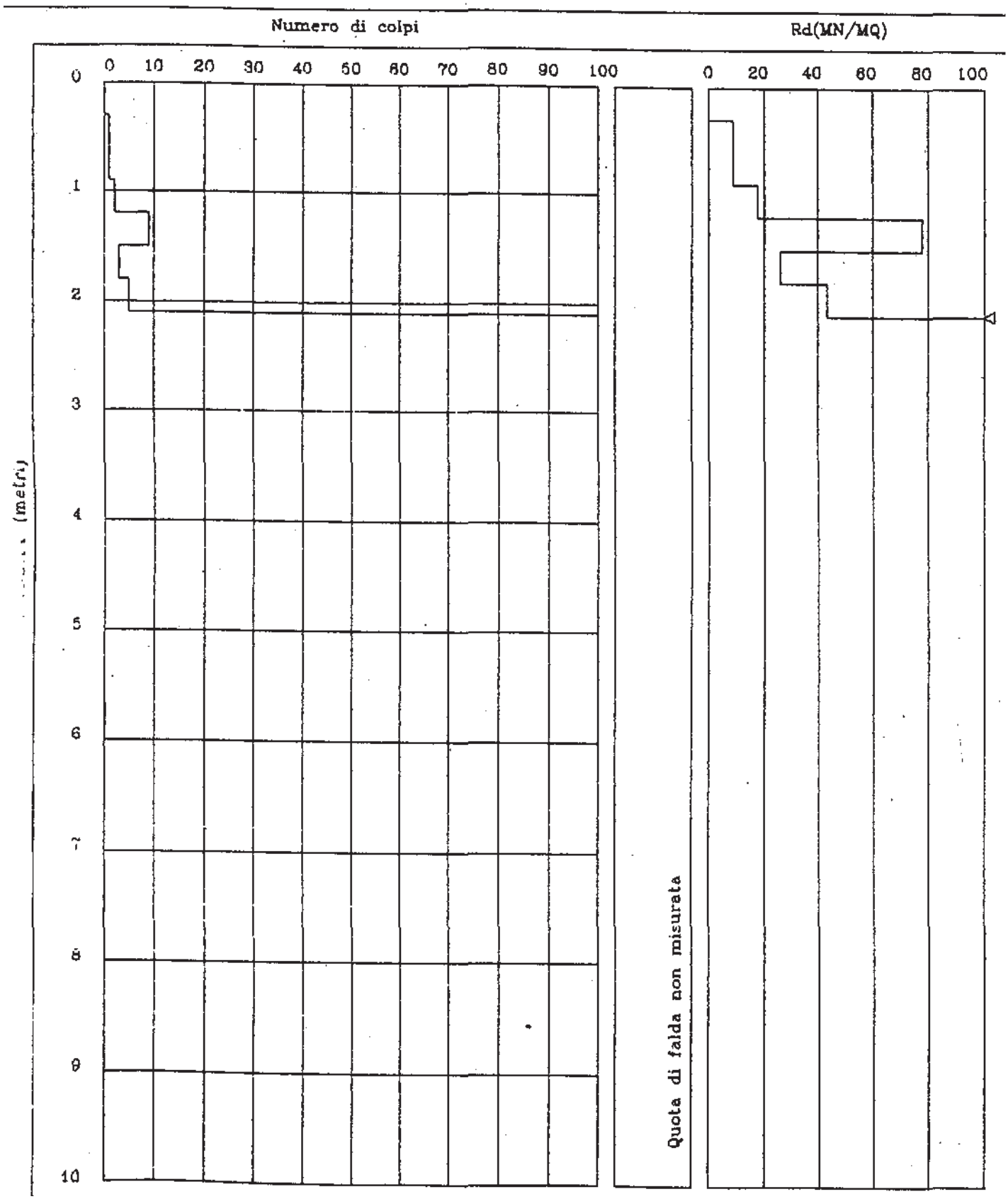
Prof.(m)	N(colpi p)	Rpd(kg/cm²)	asta	Prof.(m)	N(colpi p)	Rpd(kg/cm²)	asta
0,00 - 0,10	1	3,5	1	1,90 - 2,00	18	57,1	3
0,10 - 0,20	19	67,2	1	2,00 - 2,10	18	57,1	3
0,20 - 0,30	35	123,7	1	2,10 - 2,20	18	57,1	3
0,30 - 0,40	27	95,4	1	2,20 - 2,30	24	76,1	3
0,40 - 0,50	22	77,8	1	2,30 - 2,40	30	95,1	3
0,50 - 0,60	32	113,1	1	2,40 - 2,50	36	114,1	3
0,60 - 0,70	43	152,0	1	2,50 - 2,60	26	82,4	3
0,70 - 0,80	33	116,6	1	2,60 - 2,70	44	139,5	3
0,80 - 0,90	27	90,2	2	2,70 - 2,80	42	133,1	3
0,90 - 1,00	24	80,2	2	2,80 - 2,90	40	120,6	4
1,00 - 1,10	18	60,2	2	2,90 - 3,00	35	105,5	4
1,10 - 1,20	33	110,3	2	3,00 - 3,10	36	108,5	4
1,20 - 1,30	41	137,0	2	3,10 - 3,20	42	126,6	4
1,30 - 1,40	45	150,4	2	3,20 - 3,30	45	135,6	4
1,40 - 1,50	42	140,4	2	3,30 - 3,40	45	135,6	4
1,50 - 1,60	32	106,9	2	3,40 - 3,50	41	123,6	4
1,60 - 1,70	24	80,2	2	3,50 - 3,60	41	123,6	4
1,70 - 1,80	17	56,8	2	3,60 - 3,70	30	90,4	4
1,80 - 1,90	17	53,9	3	3,70 - 3,80	33	99,5	4



- PENETROMETRO DINAMICO tipo : **DL-30 (60°)**
- M (massa battente)= **30,00** kg - H (altezza caduta)= **0,20** m - A (area punta)= **10,00** cm² - D(diam. punta)= **35,70** mm
- Numero Colpi Punta N = N(10) [δ = 10 cm] - Uso rivestimento / fanghi iniezione : **NO**

4317


colpi per 10 cm di avanzamento
0
10
20
30
40
50
60
stratigrafia
m
0
1
2
3
4
5
6
7
8
9
10
11
profondità
Detrito (Dt)
198
350
ALL. N°5


Numero di colpi
0 10 20 30 40 50 60 70 80 90 100
Rd(MN/MQ)
0 20 40 60 80 100
0 1 2 3 4 5 6 7 8 9 10
(metri)
Quota di falda non misurata

	lettura di campagna			valori derivati							
PROFONDITA' [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]	Rat-Rpt [Kg]	Ral [Kg/cmq]	Rp/Ral	Rt-Rpt [Kg]	Fl [gradi]	Dr [%]	Cu [Kg/cmq]	av [cmq/t]
.2	120	200	200	80	.53	23	80			.48	19.13
.4	130	210	300	80	.53	24	170			.52	18.72
.6	140	210	300	70	.46	30	160			.56	18.4
.8	120	270	600	150	1	12	480			.48	19.13
1	300	460	1000	160	1.06	28	700			1.2	16.21
1.2	400	660	1500	260	1.73	23	1100			1.6	14.5
1.4	530	920	2000	390	2.6	20	1470			2.65	12.02
1.6	560	1080	2600	520	3.46	16	2040			2.8	11.5
1.8	530	1200	2900	670	4.46	12	2370			2.65	12.02
2	400	1110	3050	710	4.73	8	2650			1.6	14.5
2.2	360	920	3350	560	3.73	10	2990			1.44	15.24
2.4	330	760	3600	430	2.86	12	3270			1.32	15.75
2.6	300	650	3700	350	2.33	13	3400			1.2	16.21
2.8	300	580	3900	280	1.86	16	3500			1.2	16.21
3	290	530	4000	240	1.6	18	3710			1.16	16.35
3.2	320	560	4300	240	1.6	20	3980			1.28	15.91
3.4	310	520	4500	210	1.4	22	4190			1.24	16.06
3.6	320	540	4700	220	1.46	22	4380			1.28	15.91
3.8	360	530	4900	170	1.13	32	4540			1.44	15.24
4	370	550	5100	180	1.2	31	4730			1.48	15.06
4.2	550	860	5700	310	2.06	27	4750			2.75	11.67
4.4	480	800	5500	320	2.13	23	5020			2.4	12.95
4.6	440	760	5700	320	2.13	21	5260			1.76	13.72
4.8	450	760	5850	310	2.06	22	5350			1.8	13.53
5	460	800	5700	320	2.13	23	5220			2.4	12.95
5.2	470	790	5900	320	2.13	22	5630			2.35	13.14
5.4	500	810	6300	310	2.4	21	5800			2.5	12.57
5.6	510	820	6600	310	2.33	22	6090			2.55	12.39
5.8	510	[illegible]	6800	370	2.6	20	6290			2.55	12.39
6	520	810	7000	340	2.26	23	6420			2.6	12.2
6.2	520	[illegible]	7400	380	2.53	21	6880			2.6	12.2
6.4	550	[illegible]	7500	370	2.46	22	6950			2.75	11.67
6.6	560	[illegible]	7600	360	2.4	23	7040			2.8	11.5
6.8	560	[illegible]	7600	360	2.4	23	7040			2.8	11.5
7	530	[illegible]	7700	380	2.53	21	7170			2.65	12.02
7.2	530	[illegible]	7700	410	2.73	19	7170			2.65	12.02
7.4	490	[illegible]	[illegible]	360	2	24	7310			2.45	12.76
7.6	500	890	7950	390	2.6	19	7450			2.5	12.57
7.8	500	[illegible]	[illegible]	370	2.4	20	7570			2.45	12.76
8	490	[illegible]	[illegible]	370	2.4	19	7660			2.45	12.76

	lettura di campagna			valori derivati							
PROFONDITA' [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]	Rat-Rpt [Kg]	Ral [Kg/cmq]	Rp/Ral	Rt-Rpt [Kg]	Fl [gradi]	Dr [%]	Cu [Kg/cmq]	av [cmq/t]
8.2	510	900	8250	390	2.6	20	7740			2.55	12.39
8.4	620	1010	8400	390	2.6	24	7780			3.1	10.53
8.6	680	1120	8650	440	2.93	23	7970			3.4	9.69
8.8	590	1090	8750	500	3.33	18	8160			2.95	11
9	620	1130	9000	510	3.4	18	8380			3.1	10.53
9.2	700	1270	9250	570	3.8	18	8550			3.5	9.43
9.4	650	1110	9300	460	3.06	21	8650			3.25	10.1
9.6	590	990	9450	400	2.66	22	8860			2.95	11
9.8	550	970	9600	420	2.8	20	9050			2.75	11.67
10	600	1110	9700	510	3.4	18	9100			3	10.84

lettura di campagna				valori derivati							
PROFONDITA' [metri]	Rpt [Kg]	Ral [Kg]	Rt [Kg]	Ral-Rpt [Kg]	Ral [Kg/cmq]	Rp/Ral	Rt-Rpt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	mv [cmq/t]
.2	100	120	300	20	.13	75	200	27	9		20.3
.4	80	110	500	30	.2	40	420			.32	22.29
.6	90	130	600	40	.26	34	510			.36	21.16
.8	200	270	1000	70	.46	43	800			.8	17.36
1	720	980	1450	260	1.73	42	730			3.6	9.18
1.2	1060	1420	2300	360	2.4	44	1240			5.3	6.28
1.4	820	1320	2300	500	3.33	25	1480			4.1	8.1
1.6	540	920	2700	380	2.53	21	2160			2.7	11.85
1.8	510	1080	2800	570	3.8	13	2290			2.55	12.39
2	440	960	2850	520	3.46	13	2410			1.76	13.72
2.2	550	900	3050	350	2.33	24	2500			2.75	11.67
2.4	750	1100	3150	350	2.33	32	2400			3.75	8.83
2.6	650	1070	3300	420	2.8	23	2650			3.25	10.1
2.8	650	1050	3500	400	2.66	24	2850			3.25	10.1
3	650	1000	3800	350	2.33	28	3150			3.25	10.1
3.2	1180	1560	4300	380	2.53	47	3120	34	66		5.64
3.4	1160	1700	5000	540	3.6	32	3840			5.8	5.74
3.6	1420	1800	5050	380	2.53	56	3630	35	71		4.69
3.8	700	1300	5500	600	4	17	4800			3.5	9.43
4	660	1000	5600	340	2.26	29	4940			3.3	9.96
4.2	680	1000	5700	400	2.66	23	5100			3	10.84
4.4	580	850	5600	310	2.06	28	5020			2.9	11.16
4.6	480	790	5850	310	2.06	23	5370			2.4	12.95
4.8	460	810	5950	350	2.33	20	5490			2.3	13.33
5	500	900	6100	400	2.66	19	4600			2.5	12.57
5.2	480	880	6300	400	2.66	18	5820			2.4	12.95
5.4	510	990	6400	480	3.2	16	5890			2.55	12.39
5.6	450	790	6500	340	2.26	20	6050			1.8	13.53
5.8	450	920	6550	470	2.26	21	6170			2.4	12.95
6	510	950	6650	390	2.53	20	6590			2.55	12.39
6.2	620	1000	6750	380	2.53	24	6320			3.1	10.53
6.4	530	970	7150	470	2.8	22	6570			2.5	11.16
6.6	550	940	7250	390	2.53	21	6750			2.0	12.2
6.8	420	780	7400	360	2.4	17	6960			1.8	14.71
7	400	720	7700	320	2.13	15	7300			1.6	14.5
7.2	420	810	7800	390	2.6	16	7380			1.8	14.11
7.4	450	750	7900	300	2.26	20	7450			1.5	15.53
7.6	500	850	8100	350	2.06	24	7600			1.5	12.57
7.8	520	860	8200	360	2.46	21	7680			1.8	12.2
8	560	920	8450	360	2.4	23	7890			1.8	11.5

lettura di campagna				valori derivati							
PROFONDITA' [metri]	Rpt [Kg]	Ral [Kg]	Rt [Kg]	Ral-Rpt [Kg]	Ral [Kg/cmq]	Rp/Ral	Rt-Rpt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	mv [cmq/t]
8.2	600	960	8800	360	2.4	25	8000			3	10.84
8.4	620	1010	8750	390	2.6	24	8130			3.1	10.53
8.6	700	1110	8900	410	2.73	26	8200			3.5	9.43
8.8	660	1220	9200	560	3.73	18	8540			3.3	9.96
9	610	1150	9500	540	3.6	17	8890			3.05	10.69
9.2	700	1170	9650	490	3.26	21	8950			3.5	9.43
9.4	650	1070	9850	420	2.8	23	9200			3.25	10.1
9.6	740	1300	10100	560	3.73	20	9360			3.7	8.94
9.8	700	1260	10400	560	3.73	19	9700			3.5	9.43
10	680	1190	10600	510	3.4	20	9920			3.4	9.69

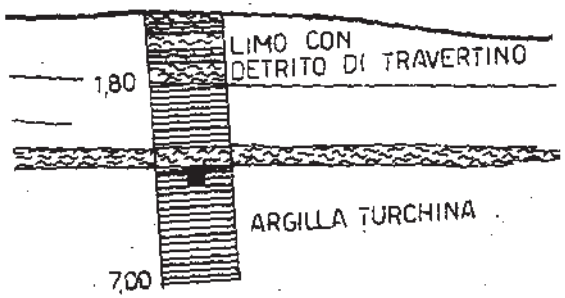
letture di campagna — valori derivati

PROFONDITA' [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]	Rat-Rpt [Kg]	Ral [Kg/cmq]	Kp/Ral	Rt-Rpt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	mv [cmq/t]
.2	120	200	300	80	.53	23	180			.48	19.13
.4	130	210	300	80	.53	24	170			.52	18.72
.6	160	200	400	40	.26	60	240	25	15		17.93
.8	280	440	1500	160	1.06	26	1220			1.12	16.48
1	1250	1450	1700	200	1.33	94	450	40	68		5.33
1.2	1000	1410	2400	410	2.73	37	1400			5	6.66
1.4	730	1460	2700	730	4.86	15	1970			3.65	9.06
1.6	600	1160	2600	560	3.73	16	2000			3	10.84
1.8	400	700	2700	300	2	20	2300			1.6	14.5
2	400	720	2800	320	2.13	19	2400			1.6	14.5
2.2	300	550	2850	250	1.66	18	2550			1.2	16.21
2.4	220	440	2600	220	1.46	15	2380			.88	17.15
2.6	210	360	2600	150	1	21	2390			.84	17.25
2.8	130	210	2500	80	.53	24	2370			.52	18.72
3	120	200	2400	80	.53	23	2280			.48	19.13
3.2	110	150	2300	40	.26	41	2190			.44	19.64
3.4	80	130	2600	50	.33	24	2520			.32	22.29
3.6	130	160	2600	30	.2	65	2470	27	12		18.72
3.8	120	170	2600	50	.33	36	2480			.48	19.13
4	120	160	2550	40	.26	45	2430			.48	19.13
4.2	150	200	2500	50	.33	45	2350			.6	18.14
4.4	120	210	2450	90	.6	20	2530			.48	19.13
4.6	140	200	2550	60	.4	35	2410			.56	18.4
4.8	150	220	2400	70	.46	28	2270			.52	18.72
5	150	220	2500	70	.46	32	2350			[illegible]	18.14
5.2	210	320	2400	110	.73	29	2240			.84	17.25
5.4	190	320	2500	130	.86	22	2410			.76	17.47
5.6	240	320	3000	60	.4	65	2840	29	20		16.72
5.8	260	310	3150	50	.33	78	2790	25	21		16.72
6	170	270	3250	100	.66	25	3080			.80	17.75
6.2	200	260	3250	60	.4	50	3050	27	19		17.36
6.4	140	210	3450	70	.46	30	3310			.56	16.4
6.6	140	190	3500	50	.33	42	3410			.56	16.4
6.8	120	170	2600	50	.33	36	2460			.48	19.13
7	100	170	2500	70	.2	50	2400	35	9		20.3
7.2	120	190	2600	70	.46	28	2480			.48	19.13
7.4	240	310	2500	70	.46	51	2460	37	21		18.94
7.6	280	300	2500	40	.26	98	2240	34	23		16.72
7.8	110	150	2400	80	.53	21	2290			.44	19.64
8	120	150	2400	30	.26	45	2280			.48	19.13

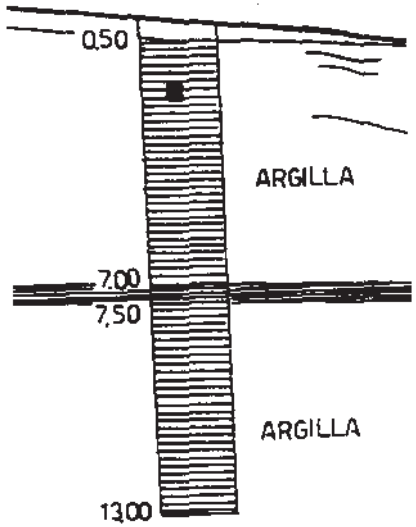
letture di campagna — valori derivati

PROFONDITA' [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]	Rat-Rpt [Kg]	Ral [Kg/cmq]	Kp/Ral	Rt-Rpt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	mv [cmq/t]
8.2	150	190	2500	40	.26	56	2350	25	14		18.14
8.4	150	200	2500	50	.33	45	2350			.6	18.14
8.6	140	210	2500	70	.46	30	2360			.56	18.4
8.8	130	180	2500	50	.33	39	2370			.52	18.72
9	140	200	2550	60	.4	35	2410			.56	18.4
9.2	140	210	2500	70	.46	30	2360			.56	18.4
9.4	160	230	2600	70	.46	34	2440			.64	17.93
9.6	150	210	2650	60	.4	38	2500			.6	18.14
9.8	140	210	2600	70	.46	30	2460			.56	18.4
10	150	200	2600	50	.33	45	2450			.6	18.14

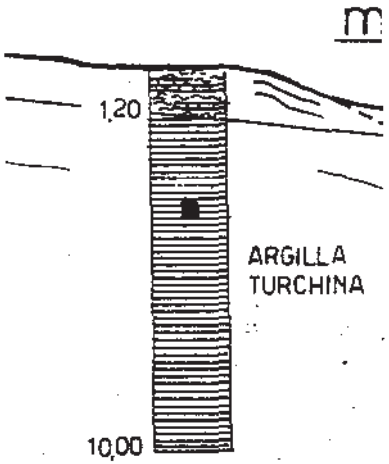
saggio 2



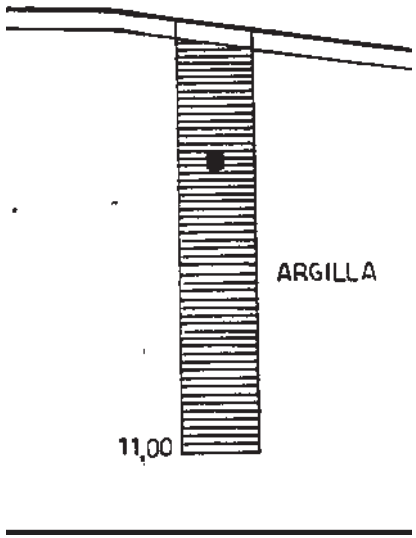
saggio 1



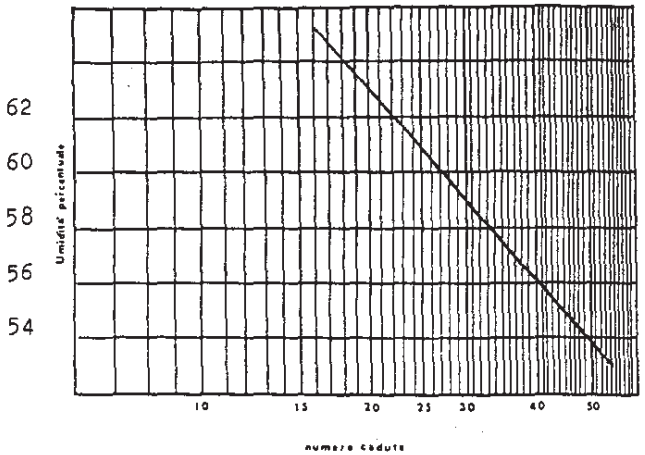
saggio 4



saggio 3



LIMITE DI LIQUIDITA'



CAMPIONE Sond. 1 m. 1.40-1.80

PESO SPECIFICO = 1.95 Kg/dm3

LIMITE DI LIQUIDITA' Ll = 61

UMIDITA' NATURALE Un = 29

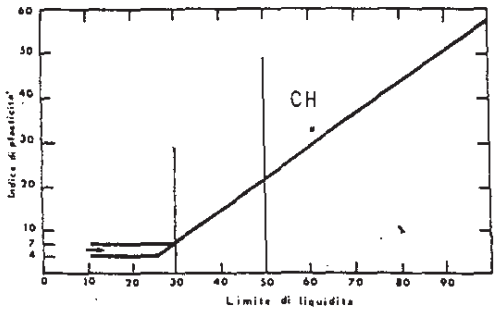
LIMITE DI PLASTICITA' Lp = 29

INDICE DI CONSISTENZA $C_c = \frac{Ll - Un}{Ip} =$

INDICE DI PLASTICITA' Ip = 32

LIMITE DI RITIRO Lr =

CARTA DI PLASTICITA'



ML - Limi inorganici e sabbie molto fini. Polvere di roccia. Sabbie fini limose o argillose a bassa plasticita'.

CL - Argille inorganiche di bassa e media plasticita'. Argille ghiaiose, sabbiose, limose, argille magre.

OL - Limi organici. Limi-argille organici a bassa plasticita'.

MH - Limi inorganici, sabbie fini e limi micacei o con materiale diatomaceo. Limi elastici.

CH - Argille inorganiche ad alta plasticita. Argille grasse.

OH - Argille organiche di media ad alta plasticita'.

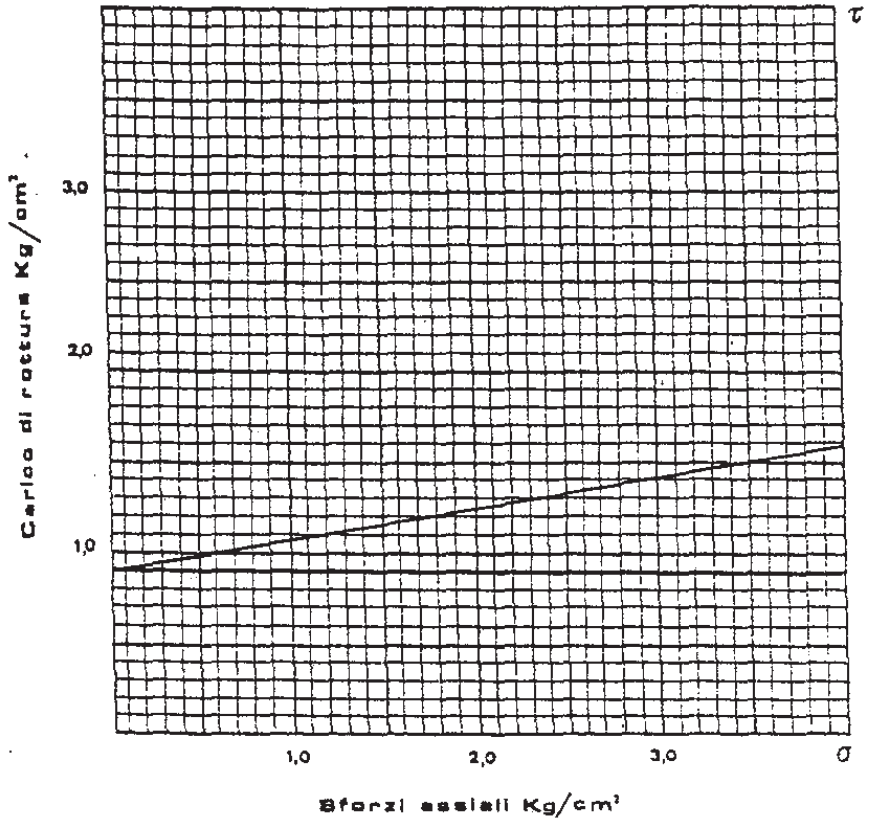
Classificazione adottata dal Bureau of reclamation

Sondag.	1
Camp.	
Posiz. prel.	m. 1.40-1.80
Peso spec.	1.95 Kg/dm3
Fraz. inf.	

Densita'	τ	σ	U%	φ = 10°
Assestam.	1.060	1.00		c = 0.900
	1.240	2.00		
	1.410	3.00		U% = 29

Condizioni di prova:

Taglio rapido non drenato.

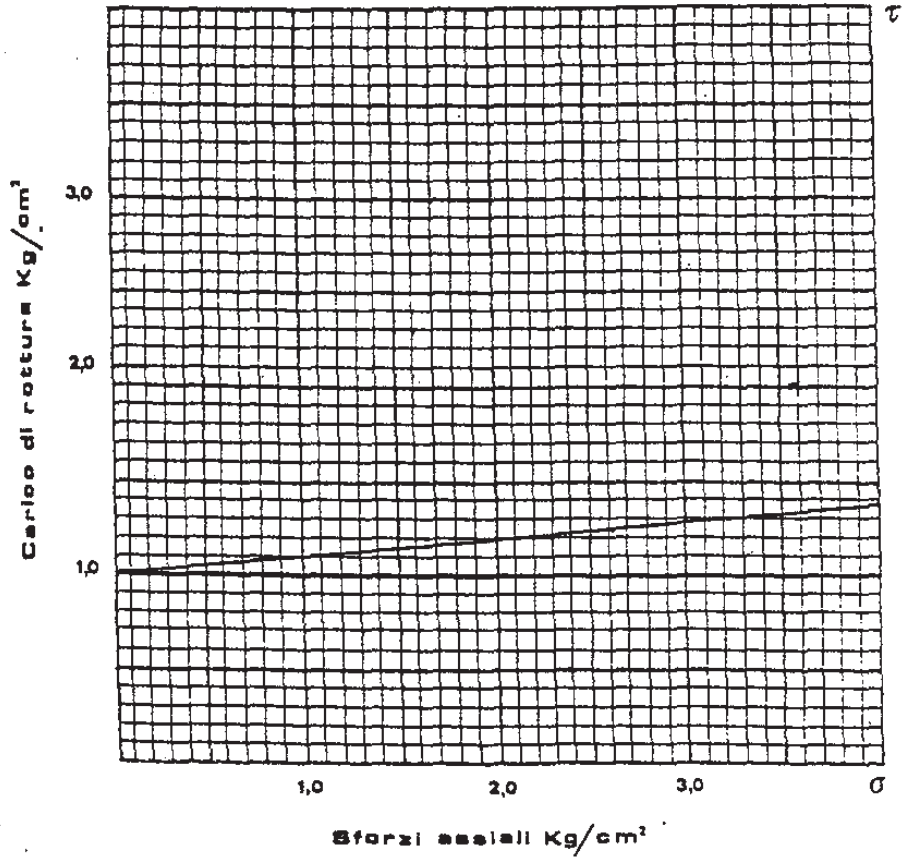


Sondag	3
Camp.	
Posiz. prel.	m. 3.40-4.00
Peso spec.	1.96 Kg/dm3
Fraz. inf.	

Densita'	τ	σ	U%	φ = 5°
Assestam.	1.100	1.00		c = 1.00
	1.190	2.00		
	1.280	3.00		U% = 27

Condizioni di prova:

Taglio rapido non drenato.

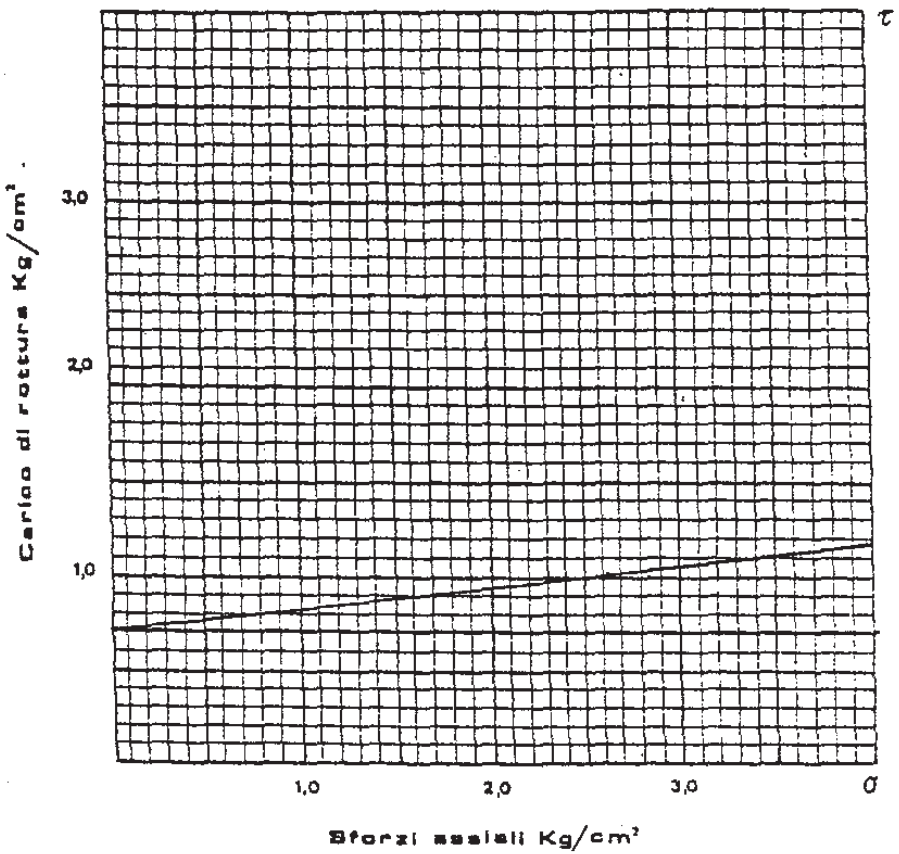


Sondag	2
Camp.	
Posiz. prel.	m. 4.00-4.60
Peso spec.	1.97 Kg/dm3
Fraz. inf.	

Densita'	τ	σ	U%	φ = 7°
Assestam.	0.820	1.00		c = 0.700
	0.940	2.00		
	1.050	3.00		U% = 31

Condizioni di prova:

Taglio rapido non drenato.

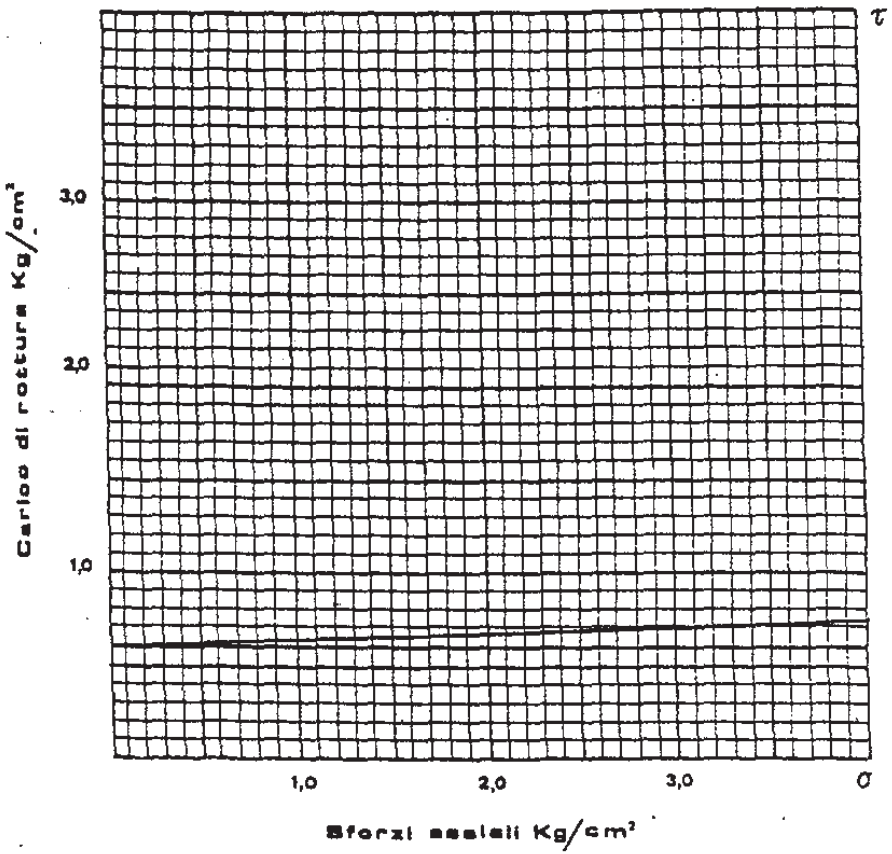


Sondag.	4
Camp.	
Posiz. prel.	m. 3.50-4.10
Peso spec.	1.94 Kg/dm3
Fraz. lod.	

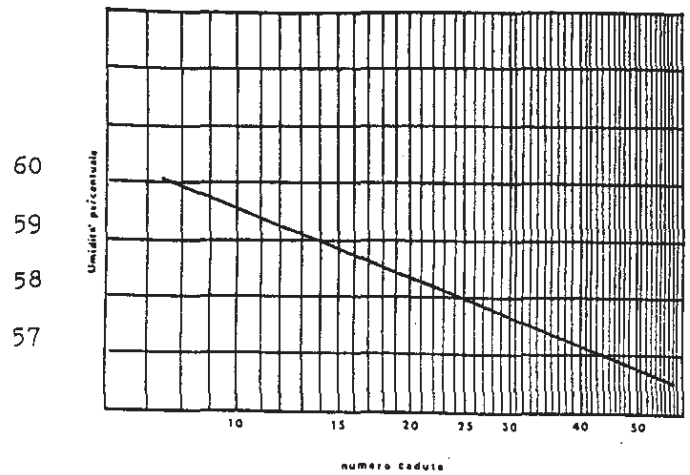
Densita'	τ	σ	U%	φ = 2°
	0.630	1.00		c = 0.600
Assestam.	0.660	2.00		U% = 28
	0.690	3.00		

Condizioni di prova:

Taglio rapido non drenato.



LIMITE DI LIQUIDITA'



CAMPIONE Sond. 3 m. 3.40-4.00

PESO SPECIFICO γ_s = 1.96 Kg/dm3

LIMITE DI LIQUIDITA' Li = 58

UMIDITA' NATURALE Un = 27

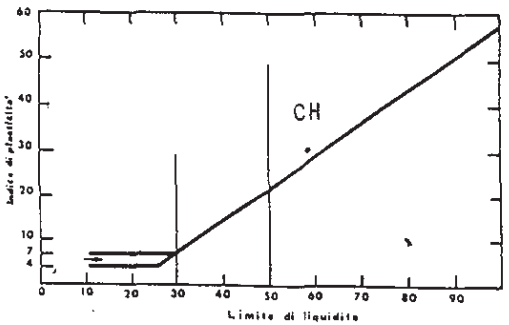
LIMITE DI PLASTICITA' Lp = 28

INDICE DI CONSISTENZA $C = \frac{Li - Un}{Ip}$ =

INDICE DI PLASTICITA' Ip = 30

LIMITE DI RITIRO Lr =

CARTA DI PLASTICITA'



ML - Limi inorganici e sabbie molto fini. Polvere di roccia. Sabbie fini limose e argillose a bassa plasticita'.

CL - Argille inorganiche di bassa e media plasticita'. Argille ghiaiose, sabbiose, limose, argille magre.

OL - Limi organici. Limi-argille organici a bassa plasticita'

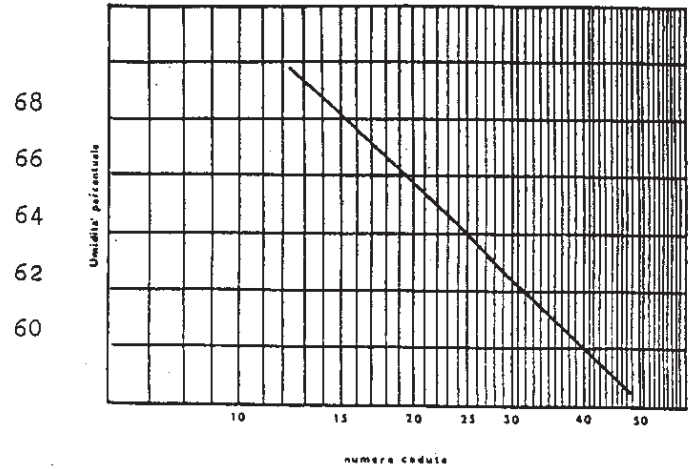
MH - Limi inorganici, sabbie fini e limi micacei e con materia diatomacea. Limi elastici.

CH - Argille inorganiche ad alta plasticita. Argille grasse.

OH - Argille organiche di media ed alta plasticita'.

Classificazione adottata dal Bureau of reclamation

LIMITE DI LIQUIDITA'



CAMPIONE Sond. 4 m. 3.50-4.10

PESO SPECIFICO = 1.94 Kg/dm3

LIMITE DI LIQUIDITA' Ll = 64

UMIDITA' NATURALE Un = 28

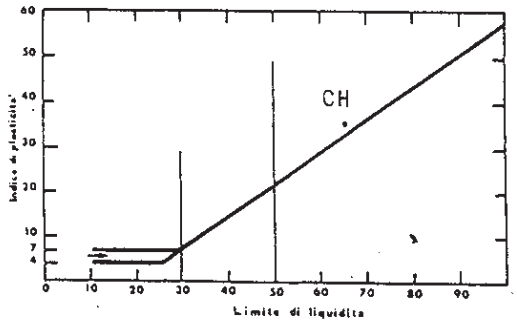
LIMITE DI PLASTICITA' Lp = 29

INDICE DI CONSISTENZA $C = \frac{Ll - Un}{Ip} =$

INDICE DI PLASTICITA' Ip = 35

LIMITE DI RITIRO Lr =

CARTA DI PLASTICITA'



ML - Limi inorganici e sabbie molto fini. Polvere di roccia. Sabbie fini limose e argillose a bassa plasticita'.

CL - Argille inorganiche di basse e media plasticita'. Argille ghiaiose, sabbiose, limose, argille magre.

OL - Limi organici. Limi-argille organici a bassa plasticita'.

MH - Limi inorganici, sabbie fini e limi micacei o con materiale diatomacee. Limi elastici.

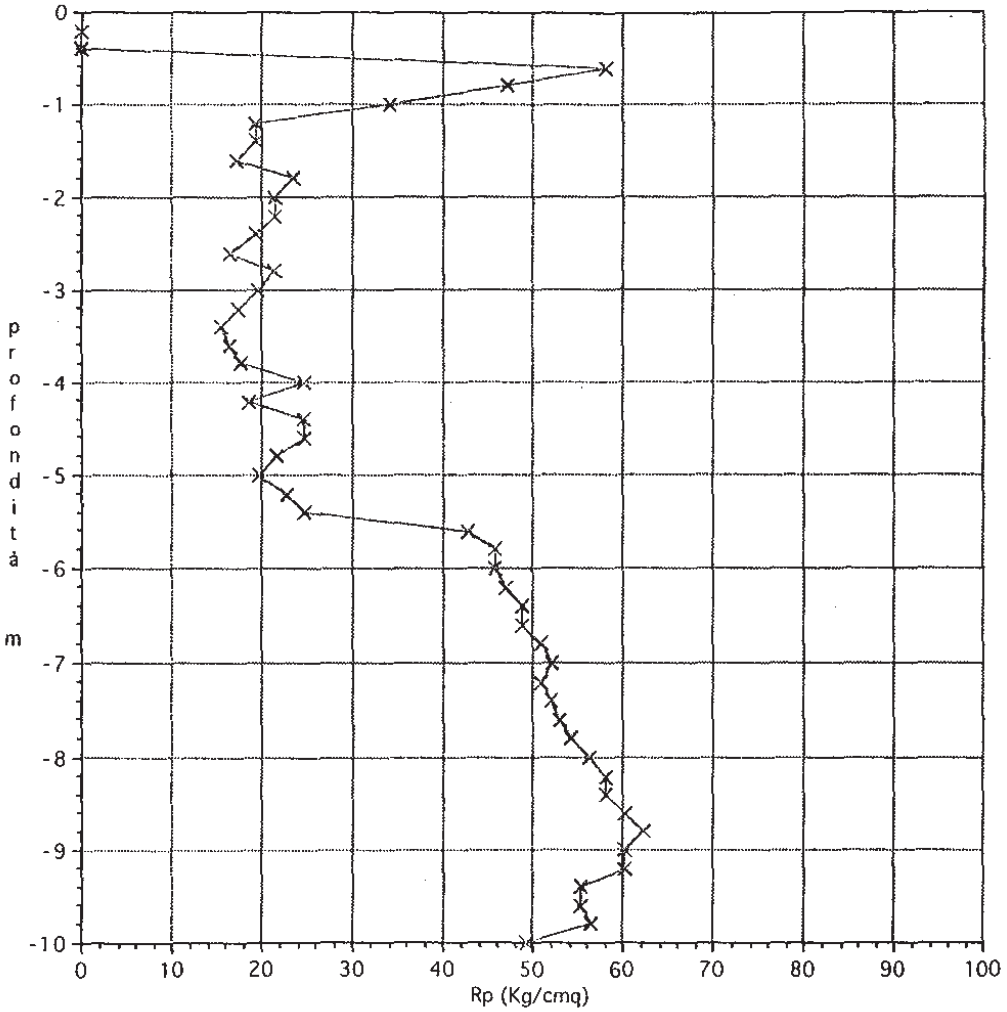
CH - Argille inorganiche ad alta plasticita. Argille grasse.

OH - Argille organiche di media ed alta plasticita'.

Classificazione adottata dal Bureau of reclamation

parametri geotecnici stimati

Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Qt [Kgf]	Gamma [Kg/dmc]	Sigma IV0 [Kg/cmq]	Fi [gradi]	D_R [%]	c_u [Kg/cmq]	m_v [cmq/t]	Colonna Stratig.
				1,80	,04	-	-	-	-	
				1,80	,07	-	-	-	-	
58,1	1,6	36	1190	1,89	,11	31	-	-	5,7	SL
47,3	2,4	20	1230	1,98	,15	-	-	1,89	8,5	A
34,3	2,3	15	880	1,95	,19	-	-	1,36	11,7	A
19,3	1,3	14	760	1,92	,23	-	-	,76	19,7	A
19,3	1,1	18	560	1,92	,27	-	-	,76	19,7	A
17,3	1,2	14	510	1,92	,30	-	-	,68	19,4	A
23,4	1,7	14	500	1,93	,34	-	-	,92	17,1	A
21,4	1,5	15	510	1,93	,38	-	-	,84	18,7	A
21,4	1,4	15	530	1,93	,42	-	-	,84	18,7	A
19,4	1,4	14	580	1,92	,46	-	-	,76	19,8	A
16,4	1,6	10	650	1,59	,49	-	-	,64	22,6	T
21,5	1	22	730	1,93	,53	-	-	,84	18,6	A
19,5	1	20	830	1,92	,57	-	-	,76	19,8	A
17,5	1,1	16	870	1,92	,60	-	-	,68	19,4	A
15,5	1	16	450	1,91	,64	-	-	,59	19,6	A
16,5	,9	19	1070	1,91	,68	-	-	,63	19,4	A
17,6	1	18	1190	1,92	,72	-	-	,68	19,4	A
24,6	1	25	1270	1,93	,76	-	-	,95	16,3	AL
18,6	1,3	15	1450	1,92	,80	-	-	,71	19,6	A
24,6	1,5	17	1510	1,93	,84	-	-	,95	16,3	A
24,6	1,7	15	1670	1,93	,87	-	-	,95	16,3	A
21,7	1,1	19	1760	1,93	,91	-	-	,83	18,4	A
19,7	1	20	1880	1,92	,95	-	-	,75	19,9	A
22,7	1,4	16	1980	1,93	,99	-	-	,87	17,6	A
24,7	1,9	13	2240	1,93	1,03	-	-	,95	16,2	A
42,7	2,3	19	2440	1,97	1,07	-	-	1,67	9,4	A
45,9	2,5	19	2560	1,98	1,11	-	-	1,79	8,7	A
45,9	2,5	19	2730	1,98	1,15	-	-	1,79	8,7	A
46,9	2,2	21	2890	1,98	1,19	-	-	1,83	8,5	AL
48,9	2,5	20	3040	1,99	1,23	-	-	1,91	8,2	A
48,9	2,6	19	3190	1,99	1,27	-	-	1,91	8,2	A
51	2,6	20	3370	1,99	1,31	-	-	1,99	7,8	A
52	2,6	20	3540	1,99	1,35	-	-	2,03	7,7	AL
51	2,7	19	3700	1,99	1,39	-	-	1,99	7,8	A
52	2,6	20	3850	1,99	1,43	-	-	2,02	7,7	AL
53	2,7	20	4020	2,00	1,47	-	-	2,06	7,5	AL
54,2	2,8	19	4160	2,00	1,51	-	-	2,11	7,4	A
56,2	2,9	20	4330	2,00	1,55	-	-	2,19	7,1	AL
58,2	2,9	20	4510	2,01	1,59	-	-	2,26	6,9	AL
58,2	3,2	18	4650	2,01	1,63	-	-	2,26	6,9	A
60,2	3,2	19	4820	2,01	1,67	-	-	2,34	6,6	A
62,3	3,2	19	4930	2,02	1,71	-	-	2,42	6,4	AL
60,3	3,2	19	5060	2,01	1,75	-	-	2,34	6,6	A
60,3	2,9	21	5180	2,01	1,79	-	-	2,34	6,6	AL
55,3	2,9	19	5300	2,00	1,83	-	-	2,14	7,2	A
55,3	3	18	5420	2,00	1,87	-	-	2,14	7,2	A
56,4	2,9	19	5520	2,00	1,91	-	-	2,18	7,1	A
49,4	3,1	16	5600	1,99	1,95	-	-	1,90	8,1	A



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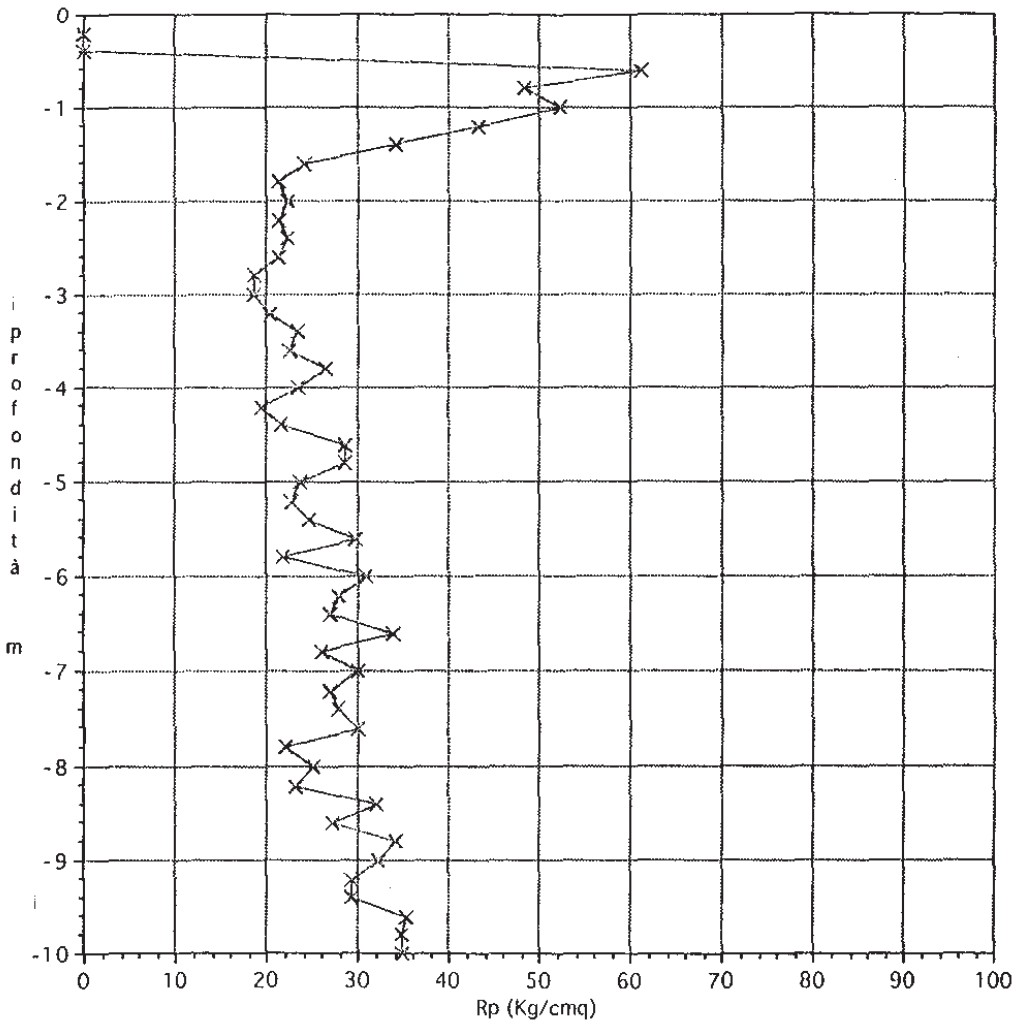
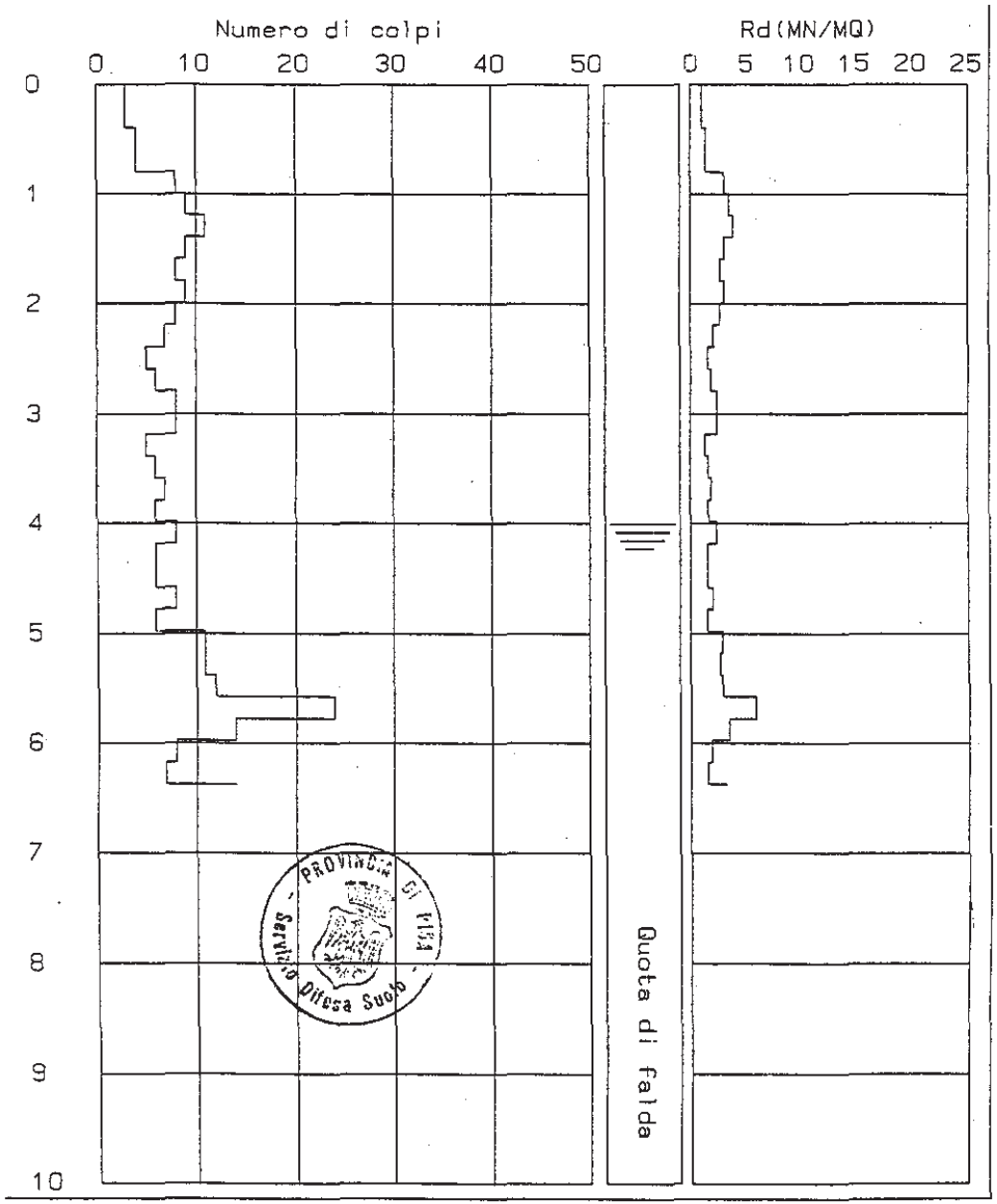
parametri geotecnici stimati

A'	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Qt [Kgf]	Gamma [Kg/dmc]	Sigma I/O [Kg/cmq]	Fi [gradi]	D_R [%]	c_u [Kg/cmq]	m_v [cmq/t]	Colonna Stratig.
					1,80	,04	-	-	-	-	
					1,80	,07	-	-	-	-	
	61,1	1,5	40	1040	1,91	,11	31	-	-	5,5	SL
	48,3	2,5	19	1160	1,99	,15	-	-	1,93	8,3	A
	52,3	1,5	34	1090	1,86	,19	31	-	-	6,4	SL
	43,3	1,9	23	1170	1,97	,23	-	-	1,72	9,2	AL
	34,3	3,1	11	1230	1,95	,27	-	-	1,36	11,7	A
	24,3	1,8	14	740	1,93	,30	-	-	,96	16,5	A
	21,4	1,3	17	590	1,93	,34	-	-	,84	18,7	A
	22,4	1,4	16	560	1,93	,38	-	-	,88	17,9	A
	21,4	1,3	16	550	1,93	,42	-	-	,84	18,7	A
	22,4	1,1	21	670	1,93	,46	-	-	,88	17,9	A
	21,4	1,2	18	800	1,93	,50	-	-	,84	18,7	A
	18,5	1,2	15	870	1,92	,54	-	-	,72	19,5	A
	18,5	1,2	15	920	1,92	,57	-	-	,72	19,5	A
	20,5	1,1	19	1000	1,92	,61	-	-	,80	19,5	A
	23,5	1,1	21	1040	1,93	,65	-	-	,91	17,0	A
	22,5	,9	24	1180	1,93	,69	-	-	,87	17,8	AL
	26,6	1	27	1260	1,94	,73	-	-	1,03	15,0	AL
	23,6	1	24	1310	1,93	,77	-	-	,91	16,9	AL
	19,6	1,1	18	1450	1,92	,81	-	-	,75	19,8	A
	21,6	1,1	19	1650	1,93	,84	-	-	,83	18,5	A
	28,6	1	29	1880	1,94	,88	-	-	1,11	14,0	AL
	28,7	1,1	25	1880	1,94	,92	-	-	1,11	13,9	AL
	23,7	1,1	22	2020	1,93	,96	-	-	,91	16,9	A
	22,7	1,5	15	2070	1,93	1,00	-	-	,87	17,6	A
	24,7	1,3	19	2140	1,93	1,04	-	-	,95	16,2	A
	29,7	1,3	22	2280	1,94	1,08	-	-	1,14	13,5	A
	21,9	1,7	13	2430	1,93	1,11	-	-	,83	18,3	A
	30,9	1,3	23	2540	1,95	1,15	-	-	1,19	12,9	AL
	27,9	1,7	16	2680	1,94	1,19	-	-	1,07	14,3	A
	26,9	1,3	20	2850	1,94	1,23	-	-	1,03	14,9	A
	33,9	1,1	30	2900	1,77	1,27	29	-	-	9,8	SL
	26	1,4	19	3100	1,94	1,30	-	-	,99	15,4	A
	30	1,3	23	3130	1,94	1,34	-	-	1,15	13,3	A
	27	,9	29	3270	1,94	1,38	-	-	1,02	14,8	AL
	28	1,6	18	3350	1,94	1,42	-	-	1,06	14,3	A
	30	1,5	20	3460	1,94	1,46	-	-	1,14	13,3	A
	22,2	1,3	18	3560	1,93	1,50	-	-	,83	18,0	A
	25,2	1,2	21	3610	1,93	1,54	-	-	,95	15,9	A
	23,2	1,3	18	3710	1,93	1,58	-	-	,86	17,2	A
	32,2	1,7	19	3810	1,95	1,62	-	-	1,22	12,4	A
	27,2	1,5	18	4010	1,94	1,65	-	-	1,02	14,7	A
	34,3	1,8	19	4130	1,95	1,69	-	-	1,30	11,7	A
	32,3	2,1	16	4220	1,95	1,73	-	-	1,22	12,4	A
	29,3	2	15	4320	1,94	1,77	-	-	1,10	13,7	A
	29,3	1,5	19	4440	1,94	1,81	-	-	1,10	13,7	A
	35,3	1,5	24	4570	1,96	1,85-	-	-	1,34	11,3	AL



PROF.	NC	RD.	PROF.	NC	RD.	PROF.	NC	RD	PROF.	NC	RD
0.00	3	15.63									
0.20	3	15.63									
0.40	4	20.83									
0.60	4	20.83									
0.80	8	41.67									
1.00	9	46.88									
1.20	11	51.43									
1.40	9	42.08									
1.60	8	37.41									
1.80	9	42.08									
2.00	8	37.41									
2.20	7	29.70									
2.40	5	21.21									
2.60	6	25.45									
2.80	8	33.94									
3.00	8	33.94									
3.20	5	19.41									
3.40	6	23.29									
3.60	7	27.17									
3.80	6	23.29									
4.00	8	31.06									
4.20	6	21.47									
4.40	6	21.47									
4.60	8	28.63									
4.80	6	21.47									
5.00	11	39.36									
5.20	11	36.51									
5.40	12	39.85									
5.60	24	79.65									
5.80	14	46.46									
6.00	8	26.55									
6.20	7	21.66									
6.40	14	43.32									

LEGGENDA : PROF. = PROFONDITA' DI INFISSIONE CM.
NC = NUMERO COLPI N.RO
RD = RESISTENZA DINAMICA DN/CMQ



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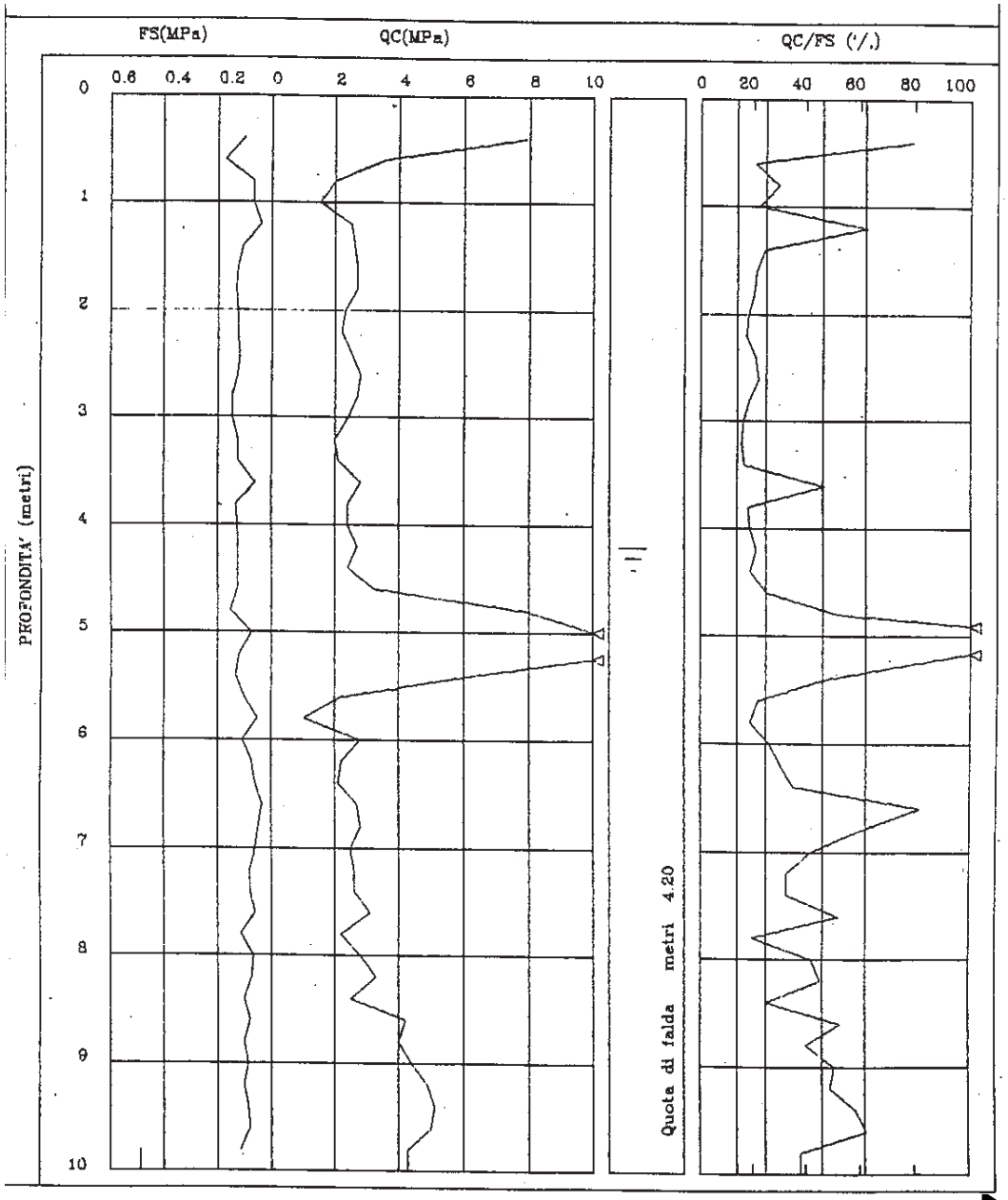
parametri geotecnici stimati

PROFONDITA' (metri)	Qc (Kg/cmq)	Fs (Kg/cmq)	Qc/Fs	Qt (Kgf)	δ (Kg/dmc)	σ_{ov} (Kg/cmq)	φ (gradi)	D_r (%)	c_u (Kg/cmq)	m_v (cmq/t)	Colonna Stratig.
0.2					1,80	,04	-	-	-	-	
0.4					1,80	,07	-	-	-	-	
0.6	79,1	1	79	850	2,00	,11	45	100	-	4,2	
0.8	36,3	1,8	20	920	1,96	,15	-	-	1,45	11,0	
1.0	20,3	,7	30	430	1,70	,19	-	-	,80	16,4	
1.2	15,3	,7	23	450	1,91	,22	-	-	,60	19,6	
1.4	25,3	,4	63	470	1,73	,26	37	52	-	13,2	
1.6	26,3	1,1	25	680	1,94	,30	-	-	1,04	15,2	
1.8	27,4	1,3	22	790	1,94	,34	-	-	1,08	14,6	
2.0	27,4	1,3	21	980	1,94	,37	-	-	1,08	14,6	
2.2	23,4	1,3	18	1110	1,93	,41	-	-	,92	17,1	
2.4	22,4	1,3	18	1290	1,93	,45	-	-	,88	17,9	
2.6	25,4	1,2	21	1510	1,93	,49	-	-	1,00	15,7	
2.8	28,5	1,3	22	1680	1,94	,53	-	-	1,12	14,0	
3.0	27,5	1,5	19	1870	1,94	,57	-	-	1,08	14,5	
3.2	24,5	1,5	17	2000	1,93	,61	-	-	,96	16,3	
3.4	20,5	1,3	16	2190	1,92	,64	-	-	,79	19,5	
3.6	21,5	1,3	17	2310	1,93	,68	-	-	,83	18,6	
3.8	27,6	,6	46	2510	1,74	,72	28	-	-	12,1	
4.0	23,6	1,3	18	2610	1,93	,76	-	-	,91	16,9	
4.2	23,6	1,3	19	2760	1,93	,80	-	-	,91	16,9	
4.4	26,6	1,3	21	2950	1,94	,81	-	-	1,03	15,0	
4.6	23,6	1,3	19	3140	1,93	,83	-	-	,91	16,9	
4.8	31,7	1,3	25	3240	1,95	,85	-	-	1,23	12,6	
5.0	78,7	1,5	51	6540	1,99	,87	37	63	-	4,2	
5.2	100,7	,7	137	6930	2,30	,90	38	71	-	3,3	
5.4	108,7	1,2	91	8020	2,10	,92	38	73	-	3,1	
5.6	61,7	1,3	46	6100	1,91	,94	31	-	-	5,4	
5.8	21,9	,7	30	4970	1,93	,96	-	-	,84	18,3	
6.0	9,9	,5	19	4340	1,90	,97	-	-	,36	23,5	
6.2	27,9	1,1	26	4300	1,94	,99	-	-	1,08	14,3	
6.4	21,9	,7	33	4340	1,71	1,01	-	-	,84	15,2	
6.6	20,9	,6	35	4400	1,70	1,02	-	-	,80	15,9	
6.8	27	,3	81	4410	1,74	1,04	29	23	-	12,3	
7.0	28	,5	60	4510	1,74	1,05	29	24	-	11,9	
7.2	25	,6	42	4610	1,73	1,07	28	-	-	13,3	
7.4	26	,8	33	4700	1,73	1,08	28	-	-	12,8	
7.6	26	,8	33	4860	1,73	1,09	28	-	-	12,8	
7.8	31,2	,6	52	4930	1,76	1,11	30	26	-	10,7	
8.0	22,2	1,1	20	5000	1,93	1,13	-	-	,84	18,0	
8.2	28,2	,7	42	5180	1,74	1,14	28	-	-	11,8	
8.4	33,2	,7	45	5250	1,77	1,16	29	-	-	10,0	
8.6	25,2	1	25	5450	1,93	1,18	-	-	,96	15,9	
8.8	42,2	,8	53	5530	1,81	1,19	31	35	-	7,9	
9.0	40,2	1	40	5700	1,80	1,21	30	-	-	8,3	
9.2	44,2	,9	51	5860	1,82	1,23	31	36	-	7,5	
9.4	49,2	1	49	6020	1,85	1,24	32	39	-	6,8	
9.6	51,2	,9	59	6130	1,86	1,26	32	40	-	6,5	
9.8	50,2	,8	63	6270	1,85	1,28	32	39	-	6,6	
10.0	43,2	1,1	38	6300	1,82	1,29	30	-	-	7,7	



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letture di campagna — valori derivati

PROFONDITA' [metri]	Rpt [Kg]	Rat [Kg]	Rt [Kg]	Rat-Rpt [Kg]	Ral [kg/cmq]	Rp/Ral	Rt-Rpt [Kg]	Fi [gradi]	Dr [%]	Cu [Kg/cmq]	av [cmq/t]
.2	120	200	200	80	.53	23	80			.48	19.13
.4	110	200	300	90	.6	18	190			.44	19.64
.6	120	230	500	110	.73	16	380			.48	19.13
.8	220	390	950	170	1.13	19	730			.88	17.15
1	180	340	1290	160	1.06	17	1020			.72	17.6
1.2	380	720	1500	340	2.26	17	1120			1.52	14.87
1.4	270	550	1700	280	1.93	14	1430			1.08	16.6
1.6	290	520	1850	230	1.53	19	1560			1.16	16.35
1.8	270	490	2000	220	1.46	18	1730			1.08	16.6
2	340	510	2150	170	1.13	30	1810			1.36	15.59
2.2	340	570	2400	230	1.53	22	2060			1.36	15.59
2.4	300	580	2600	260	1.73	17	2300			1.2	16.21
2.6	370	690	2750	270	1.53	24	2380			1.48	15.06
2.8	340	520	2900	180	1.2	28	2560			1.36	15.59
3	340	570	3050	230	1.53	22	2710			1.36	15.59
3.2	320	560	3350	240	1.6	20	3030			1.28	15.91
3.4	370	620	3500	250	1.66	22	3130			1.48	15.06
3.6	350	610	3600	260	1.73	20	3250			1.4	15.42
3.8	310	570	3650	260	1.73	18	3490			1.24	16.06
4	340	570	4000	230	1.53	22	3660			1.36	15.59
4.2	370	590	3900	220	1.46	25	3430			1.48	15.06
4.4	290	580	4300	270	1.8	16	4010			1.16	16.35
4.6	360	630	4500	270	1.8	20	4240			1.44	15.24
4.8	370	650	4850	280	1.86	20	4480			1.48	15.06
5	410	[illegible]	5150	270	1.8	23	4740			1.64	14.3
5.2	530	790	5500	260	1.73	31	4970			2.65	12.02
5.4	490	760	5750	270	1.8	27	5260			2.45	12.76
5.6	520	670	5900	345	2.26	23	5280			2.6	12.2
5.8	470	750	6100	330	2.33	18	5570			1.76	13.62
6	460	760	6300	300	2	23	5840			2.3	13.33
6.2	480	820	6500	340	2.26	21	6320			2.4	12.98
6.4	500	690	7000	300	2	25	6500			2.5	12.57
6.6	510	820	7200	310	2.06	25	6700			2.5	12.57
6.8	600	760	7600	360	2.4	25	7000			3	10.84
7	550	760	7700	330	2.2	22	7130			2.85	11.33
7.2	620	810	8100	340	2.26	39	7480			3.1	10.53
7.4	660	[illegible]	8250	310	2.1	27	7540			3.3	9.96
7.6	620	820	8400	360	2.4	24	7780			3.1	10.53
7.8	620	760	8700	390	2.6	26	8360			3.1	10.53
8	560	[illegible]	9400	380	2.53	22	8840			2.8	11.5

letture di campagna — valori derivati

PROFONDITA' [metri]	Rpt [kg]	Rat [kg]	Rt [kg]	Rat-Rpt [kg]	Ral [kg/cmq]	Rp/Ral	Rt-Rpt [Kg]	Fi [gradi]	Dr [%]	Cu [Kg/cmq]	av [cmq/t]
8.2	730	1100	9500	370	2.46	30	8770			3.65	9.06
8.4	670	1100	9400	430	2.86	23	8730			3.35	9.82
8.6	680	1120	9600	440	2.93	23	8920			3.4	9.69
8.8	700	1250	9800	550	3.66	19	9100			3.5	9.43
9	520	920	10800	400	2.66	19	10280			2.6	12.2
9.2	560	860	11000	300	2	28	10440			2.8	11.5
9.4	570	520	11200	350	2.33	24	10630			2.85	11.33
9.6	660	1010	11400	350	2.33	28	10740			3.3	9.96
9.8	650	1020	11600	370	2.46	26	10950			3.25	10.1
10	590	530	11900	340	2.26	26	11310			2.95	11

letture di campagna | valori derivati

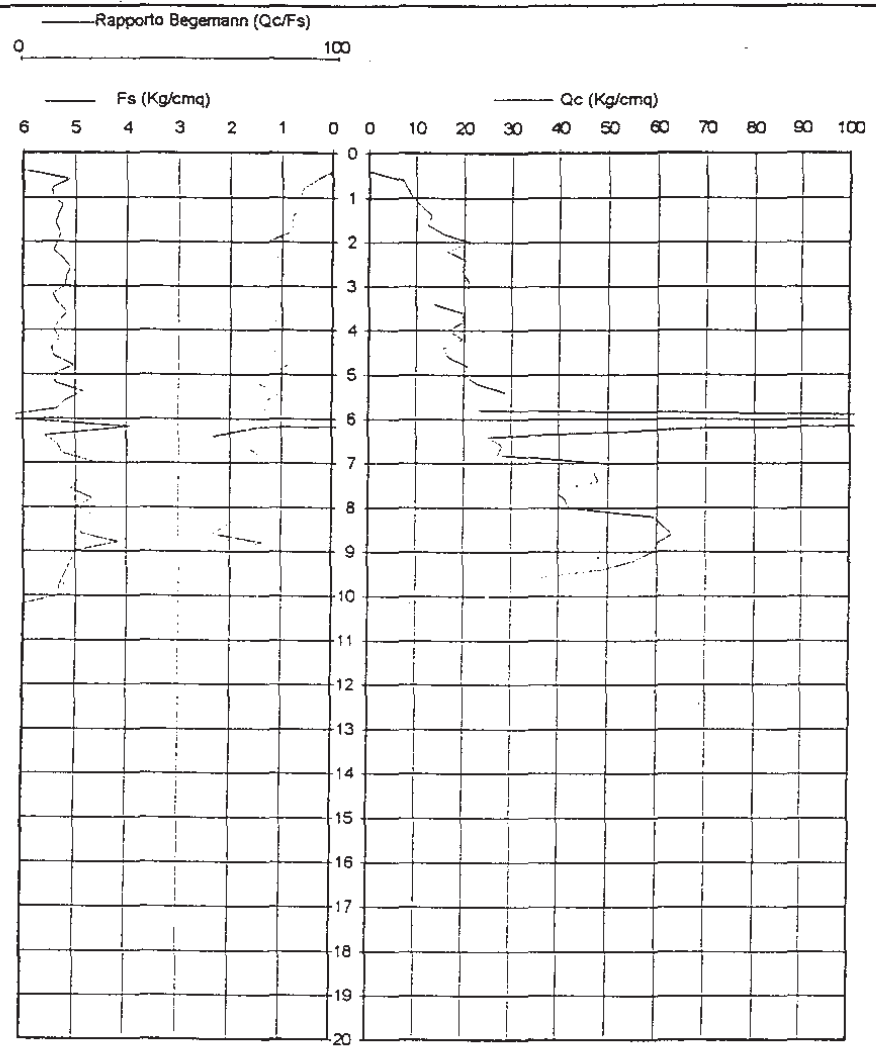
PROFONDITA' [metri]	Rpt [Kg]	Ral [kg]	Rt [kg]	Ral-Rpt [kg]	Ral [kg/cmq]	Rp/Ral	Rt-Rpt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	av [cmq/t]
.2	180	350	700	170	1.13	16	520			.72	17.6
.4	220	460	900	240	1.6	14	680			.88	17,15
.6	400	520	1100	120	.8	50	700	30	32		14.5
.8	600	900	1300	300	2	30	700			3	10.84
1	510	1020	1700	510	3.4	15	1190			2.55	12.39
1.2	410	1000	1600	590	3.93	10	1190			1.64	14.3
1.4	420	900	1450	480	3.2	13	1030			1.68	14.11
1.6	490	980	1350	490	3.26	15	860			2.45	12.76
1.8	420	860	1200	440	2.93	14	780			1.68	14.11
2	460	730	1100	270	1.8	26	640			2.3	13.33
2.2	400	710	1050	310	2.06	19	850			1.6	14.5
2.4	390	730	1000	340	2.26	17	610			1.56	14.69
2.6	380	610	1000	230	1.53	25	620			1.52	14.87
2.8	390	620	1100	230	1.53	25	710			1.56	14.69
3	460	740	1200	280	1.73	28	720			2.4	12.95
3.2	520	720	1300	200	1.33	39	780			2.6	12.2
3.4	460	760	1550	[illegible]	[illegible]	23	1090			2.3	13.33
3.6	470	740	1650	270	1.6	26	1180			2.35	13.14
3.8	410	[illegible]	1700	290	1.93	21	1290			1.64	14.3
4	360	670	1650	310	2.06	17	1490			1.44	15.24
4.2	450	750	2000	[illegible]	2	23	1550			1.8	13.53
4.4	460	[illegible]	2450	[illegible]	2.93	16	1990			2.3	13.33
4.6	570	[illegible]	2500	[illegible]	2.73	21	2030			2.85	11.33
4.8	450	[illegible]	2800	[illegible]	1.73	26	2350			1.8	13.53
5	440	[illegible]	2950	[illegible]	1.53	30	2460			1.76	13.72
5.2	410	[illegible]	3050	[illegible]	1.93	21	2640			1.64	14.3
5.4	390	[illegible]	3150	[illegible]	1.53	25	2760			1.56	14.69
5.6	440	[illegible]	3400	[illegible]	2.06	19	2960			1.76	13.72
5.8	[illegible]	[illegible]	3600	[illegible]	2.46	20	3100			2.0	13.57
6	[illegible]	[illegible]	3750	[illegible]	2.73	18	3260			2.05	13.36
6.2	[illegible]	[illegible]	400	[illegible]	[illegible]	16	3540			2.2	13.33
6.4	[illegible]	[illegible]	4150	[illegible]	[illegible]	21	3650			2.5	12.57
6.6	520	[illegible]	4300	[illegible]	2.46	21	3860			2.6	12.2
6.8	570	[illegible]	4450	[illegible]	2.93	24	4080			2.85	11.33
7	[illegible]	[illegible]	[illegible]	[illegible]	1.93	31	4350			2	13.84
7.2	550	[illegible]	[illegible]	[illegible]	[illegible]	36	4650			2.75	11,67
7.4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	25	4900			[illegible]	12.57
7.6	535	[illegible]	[illegible]	[illegible]	2.53	21	4970			2.68	12.02
7.8	620	[illegible]	[illegible]	[illegible]	[illegible]	26	5130			[illegible]	10.53
8	[illegible]	[illegible]	[illegible]	[illegible]	1.73	31	5350			3	10.84

letture di campagna | valori derivati

PROFONDITA' [metri]	Rpt [Kg]	Ral [kg]	Rt [kg]	Ral-Rpt [kg]	Ral [kg/cmq]	Rp/Ral	Rt-Rpt [Kg]	FI [gradi]	Dr [%]	Cu [Kg/cmq]	av [cmq/t]
8.2	680	[illegible]	[illegible]	330	2.2	30	5540			3.3	9.96
8.4	710	[illegible]	[illegible]	410	2.73	26	5790			3.55	9.3
8.6	620	[illegible]	[illegible]	370	2.46	25	6080			3,1	10.53
8.8	680	[illegible]	[illegible]	340	2.26	30	6320			3.4	9.69
9	720	[illegible]	[illegible]	340	2.26	32	6530			3.6	9.18
9.2	690	[illegible]	[illegible]	420	2.8	25	6810			3.45	9.55
9.4	770	[illegible]	[illegible]	410	2.73	28	6830			3.85	8.61
9.6	690	[illegible]	[illegible]	340	2.26	30	7110			3.45	9.55
9.8	620	[illegible]	[illegible]	350	2.33	27	7280			3.1	10.53
10	590	950	[illegible]	360	2.4	25	7510			2.95	11

Prof. [metri]	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Rt [Kgf]	parametri geotecnici stimati γ [Kg/dmc]	σ'vo [Kg/cmq]	ϕ [gradi]	Dr [%]	Cu [Kg/cmq]	mv [cmq/t]	Colonna stratig.
0.2					1.80	0.02	-	-	-	-	
0.4				51	1.80	0.03	-	-	-	-	
0.6	7.1	0.3	21	161	1.76	0.05	-	-	0.28	29.3	
0.8	8.3	0.6	14	183	1.51	0.06	-	-	0.33	41.4	
1	9.3	0.7	14	223	1.52	0.07	-	-	0.37	38.6	
1.2	11.3	0.6	19	303	1.90	0.09	-	-	0.45	21.9	
1.4	13.3	0.8	17	403	1.91	0.10	-	-	0.53	20.4	
1.6	12.3	0.8	15	563	1.91	0.12	-	-	0.49	21.0	
1.8	15.4	0.9	18	644	1.91	0.14	-	-	0.61	19.6	
2	21.4	1.3	17	714	1.93	0.16	-	-	0.85	18.7	
2.2	16.4	1.1	14	804	1.91	0.18	-	-	0.65	19.4	
2.4	20.4	1.1	19	864	1.92	0.20	-	-	0.81	19.6	
2.6	19.4	0.9	22	1034	1.92	0.21	-	-	0.77	19.8	
2.8	20.5	1.0	21	1355	1.92	0.23	-	-	0.81	19.5	
3	21.5	1.1	20	1165	1.93	0.25	-	-	0.85	18.6	
3.2	16.5	1.1	15	1175	1.91	0.27	-	-	0.65	19.4	
3.4	13.5	0.8	17	1285	1.91	0.29	-	-	0.53	20.3	
3.6	19.5	0.9	21	1475	1.92	0.31	-	-	0.77	19.8	
3.8	19.7	1.1	17	1557	1.92	0.32	-	-	0.77	19.9	
4	16.7	1.1	15	1647	1.91	0.34	-	-	0.65	19.4	
4.2	19.7	1.1	17	1717	1.92	0.36	-	-	0.77	19.9	
4.4	15.7	1.1	14	1827	1.59	0.37	-	-	0.61	23.7	
4.6	16.7	1.1	15	1977	1.91	0.39	-	-	0.65	19.4	
4.8	20.8	0.9	24	2068	1.92	0.41	-	-	0.81	19.2	
5	19.8	1.3	16	2198	1.92	0.43	-	-	0.77	19.9	
5.2	22.8	1.5	16	2368	1.93	0.45	-	-	0.89	17.6	
5.4	28.8	1.0	29	2428	1.94	0.47	-	-	1.13	13.9	
5.6	26.8	1.3	20	2618	1.94	0.48	-	-	1.05	14.9	
5.8	22.9	1.4	16	2719	1.93	0.50	-	-	0.90	17.5	
6	199.9	-13.2	-15	2999	2.32	0.53	-	-	7.98	2.0	
6.2	70.9	1.4	51	3179	1.95	0.55	38	70	-	4.7	
6.4	24.9	2.3	11	3069	1.93	0.57	-	-	0.97	14.9	
6.6	27.9	1.7	16	3259	1.94	0.59	-	-	1.09	14.3	
6.8	27.0	1.5	18	3470	1.94	0.60	-	-	1.06	14.8	
7	50.0	1.5	34	3660	1.85	0.62	31	-	-	6.7	
7.2	47.0	1.5	31	3840	1.84	0.64	30	-	-	7.1	
7.4	48.0	1.9	26	3890	1.98	0.66	-	-	1.90	8.3	
7.6	39.0	1.7	23	4190	1.96	0.68	-	-	1.53	10.2	
7.8	41.2	1.3	33	4372	1.81	0.69	30	-	-	8.1	
8	42.2	1.7	25	4642	1.97	0.71	-	-	1.66	9.5	
8.2	59.2	1.8	33	4932	1.90	0.73	31	-	-	5.6	
8.4	61.2	2.1	30	5112	1.91	0.75	31	-	-	5.4	
8.6	63.2	2.3	27	5432	2.02	0.77	-	-	2.50	6.3	
8.8	60.3	1.3	45	5643	1.90	0.79	31	-	-	5.5	
9	59.3	2.5	24	5803	2.01	0.81	-	-	2.34	6.7	
9.2	55.3	2.4	23	5933	2.00	0.83	-	-	2.18	7.2	
9.4	48.3	2.3	21	5763	1.99	0.85	-	-	1.90	8.3	
9.6	33.3	1.8	19	5833	1.95	0.87	-	-	1.30	12.0	
9.8	26.4	1.6	17	5954	1.94	0.88	-	-	1.02	15.1	
10	25.4	1.5	17		1.93	0.90	-	-	0.98	15.7	

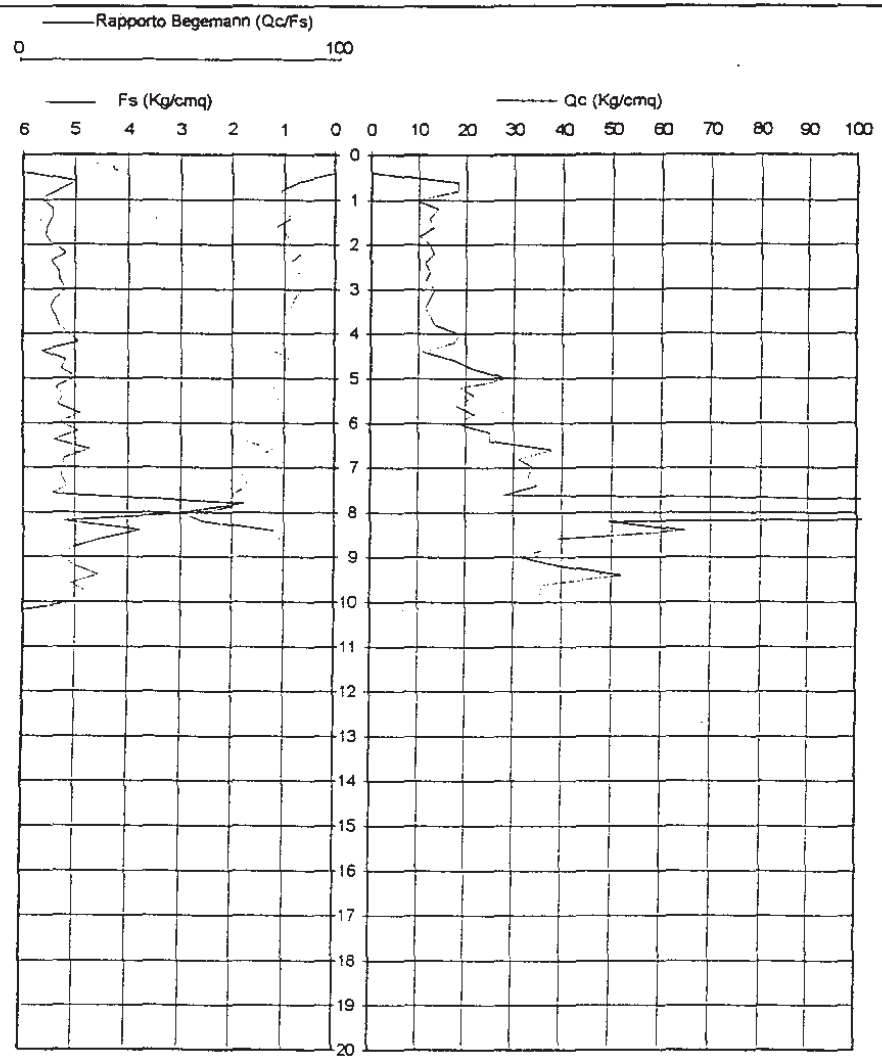
PENETROMETRO STATICO: TG 73 200 KN PAGANI



4501

Prof. [metri]	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Rt [Kgf]	parametri geotecnici stimati γ [Kg/dmc]	σ'_{vo} [Kg/cmq]	ϕ [gradi]	Dr [%]	Cu [Kg/cmq]	mv [cmq/t]	Colonna stratig.
0.2				81	1.80	0.02	-	-	-	-	
0.4				331	1.80	0.03	-	-	-	-	
0.6	18.1	0.7	25	401	1.92	0.05	-	-	0.72	19.5	
0.8	18.3	1.1	17	393	1.92	0.07	-	-	0.73	19.5	
1	9.3	1.1	9	353	1.52	0.08	-	-	0.37	38.6	
1.2	14.3	1.0	14	353	1.91	0.10	-	-	0.57	19.9	
1.4	12.3	0.9	14	413	1.55	0.11	-	-	0.49	30.2	
1.6	13.3	1.1	12	483	1.56	0.12	-	-	0.53	27.9	
1.8	10.4	0.9	11	544	1.53	0.13	-	-	0.41	35.6	
2	12.4	0.9	14	584	1.55	0.14	-	-	0.49	29.9	
2.2	13.4	0.7	20	654	1.91	0.16	-	-	0.53	20.3	
2.4	11.4	0.9	13	614	1.54	0.17	-	-	0.45	32.5	
2.6	12.4	0.7	17	714	1.91	0.19	-	-	0.49	20.9	
2.8	11.5	0.7	17	775	1.90	0.21	-	-	0.45	21.7	
3	13.5	0.7	20	855	1.91	0.22	-	-	0.53	20.3	
3.2	12.5	0.8	16	955	1.91	0.24	-	-	0.49	20.9	
3.4	11.5	0.9	13	1025	1.55	0.25	-	-	0.45	32.2	
3.6	12.5	0.8	16	1115	1.91	0.27	-	-	0.49	20.9	
3.8	13.7	0.8	17	1217	1.91	0.29	-	-	0.53	20.2	
4	18.7	0.9	22	1347	1.92	0.31	-	-	0.73	19.6	
4.2	17.7	0.7	26	1397	1.92	0.33	-	-	0.69	19.4	
4.4	10.7	1.2	9	1477	1.54	0.34	-	-	0.41	34.8	
4.6	17.7	0.9	20	1647	1.92	0.36	-	-	0.69	19.4	
4.8	21.8	1.2	18	1848	1.93	0.37	-	-	0.86	18.4	
5	28.8	1.1	25	1838	1.94	0.39	-	-	1.14	13.9	
5.2	18.8	1.2	16	1968	1.92	0.41	-	-	0.73	19.6	
5.4	21.8	1.1	19	2018	1.93	0.43	-	-	0.85	18.4	
5.6	17.8	1.1	17	2158	1.92	0.45	-	-	0.69	19.4	
5.8	21.9	0.8	27	2209	1.93	0.47	-	-	0.86	18.3	
6	17.9	1.0	18	2279	1.92	0.49	-	-	0.70	19.4	
6.2	24.9	0.9	27	2399	1.93	0.50	-	-	0.98	16.1	
6.4	24.9	1.7	14	2679	1.93	0.52	-	-	0.98	16.1	
6.6	37.9	1.2	32	2739	1.79	0.54	30	-	-	8.8	
6.8	31.0	1.6	19	2830	1.95	0.56	-	-	1.22	12.9	
7	34.0	1.8	19	3070	1.95	0.58	-	-	1.34	11.8	
7.2	33.0	1.8	18	3190	1.95	0.60	-	-	1.30	12.1	
7.4	35.0	1.7	21	3300	1.96	0.61	-	-	1.38	11.4	
7.6	28.0	2.0	14	3570	1.94	0.63	-	-	1.10	14.3	
7.8	184.2	1.8	102	5602	2.10	0.66	42	99	-	1.8	
8	258.2	3.0	86	4012	2.10	0.68	43	100	-	1.3	
8.2	49.2	2.5	19	4072	1.99	0.70	-	-	1.94	8.1	
8.4	65.2	1.2	54	3902	1.93	0.72	37	61	-	5.1	
8.6	39.2	1.1	37	3752	1.80	0.73	30	-	-	8.5	
8.8	37.3	1.6	23	3623	1.96	0.75	-	-	1.46	10.7	
9	31.3	1.7	18	3773	1.95	0.77	-	-	1.22	12.8	
9.2	40.3	1.7	24	4073	1.97	0.79	-	-	1.58	9.9	
9.4	52.3	1.5	36	4193	1.86	0.81	31	-	-	6.4	
9.6	36.3	1.6	23	4203	1.96	0.83	-	-	1.42	11.0	
9.8	35.4	1.1	31	4274	1.78	0.84	29	-	-	9.4	
10	37.4	1.4	27		1.96	0.86	-	-	1.46	10.7	

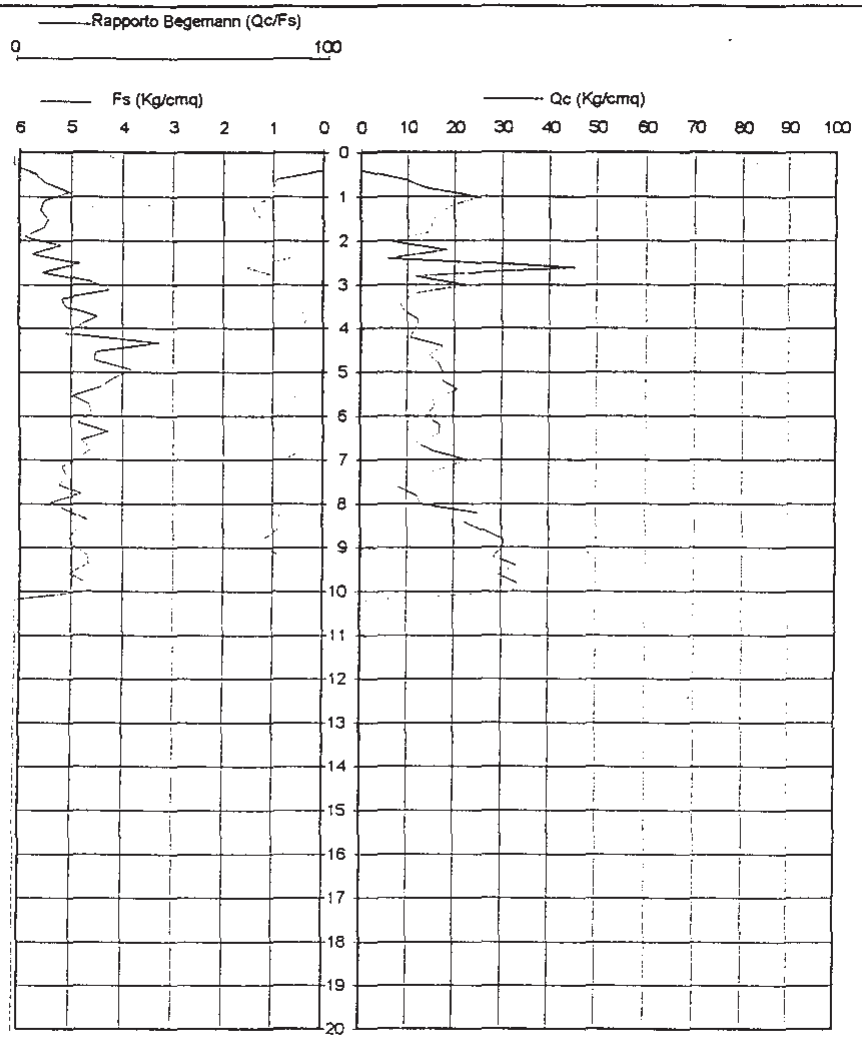
PENETROMETRO STATICO: TG 73 200 KN PAGANI

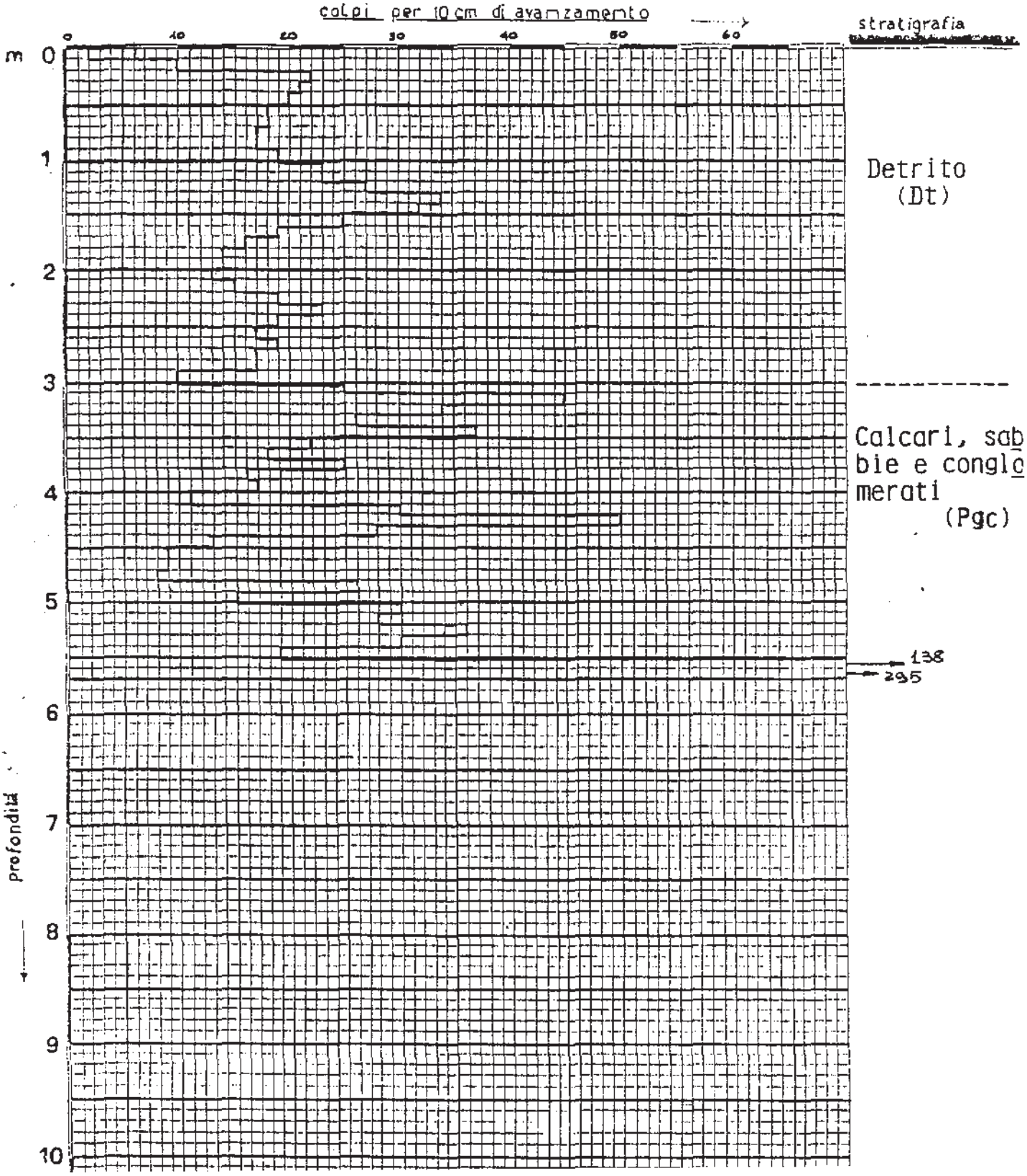


Quota falda: 2.0 m dal p.c.

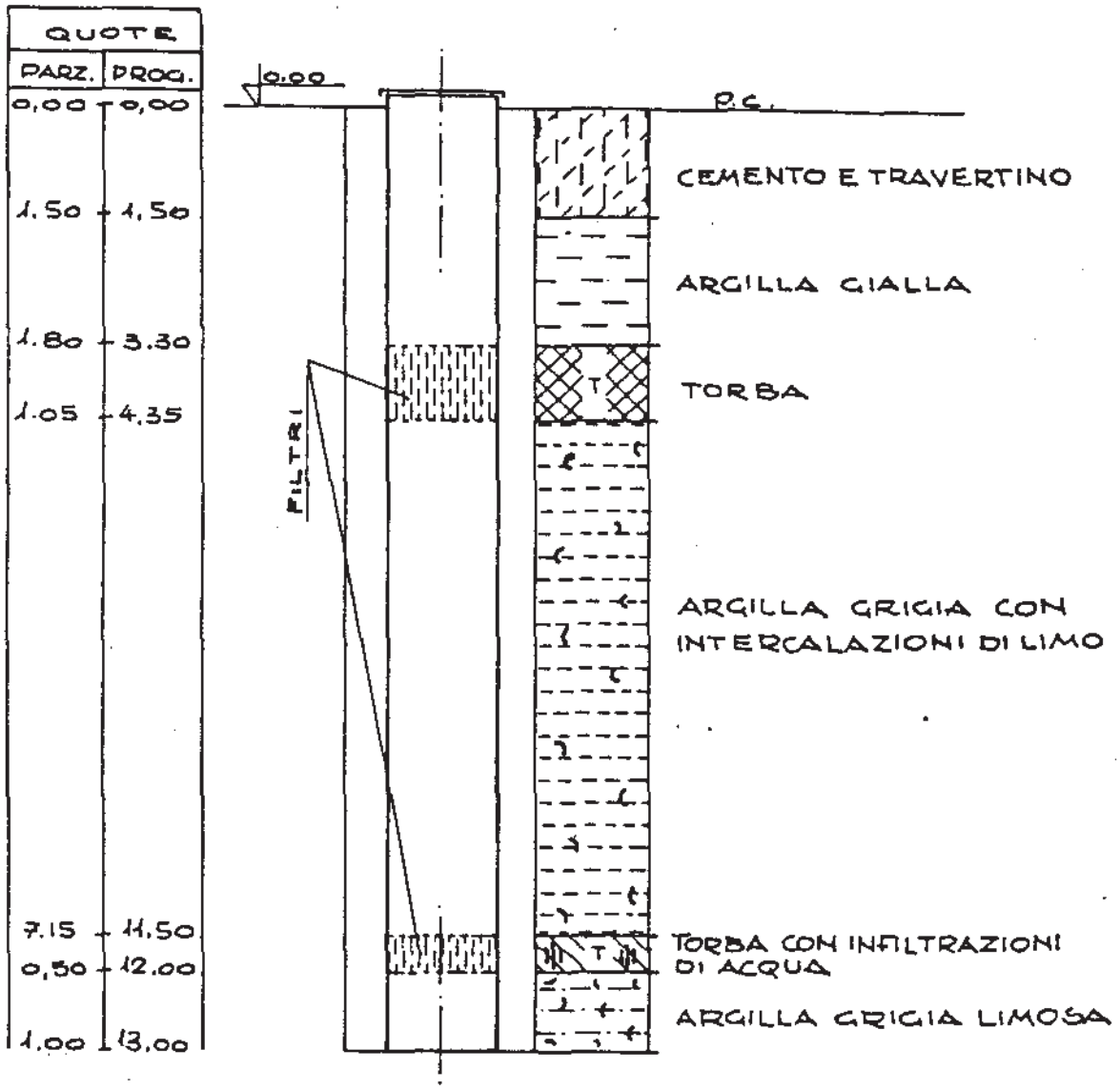
Prof. (metri)	Qc (Kg/cmq)	Fs (Kg/cmq)	Qc/Fs	Rt (Kgf)	parametri geotecnici stimati γ (Kg/dmc)	σ'vo (Kg/cmq)	ϕ (gradi)	Dr (%)	Cu (Kg/cmq)	mv (cmq/t)	Colonna stratig.
0.2				71	1.80	0.04	-	-	-	-	
0.4				271	1.80	0.07	-	-	-	-	
0.6	9.1	0.9	10	321	1.52	0.10	-	-	0.36	38.9	
0.8	14.3	1.0	14	373	1.91	0.14	-	-	0.56	19.9	
1	25.3	1.0	25	433	1.93	0.18	-	-	1.00	15.8	
1.2	19.3	1.4	14	473	1.92	0.22	-	-	0.76	19.7	
1.4	16.3	1.3	12	483	1.59	0.25	-	-	0.64	22.8	
1.6	15.3	1.0	15	623	1.91	0.29	-	-	0.60	19.6	
1.8	14.4	1.1	13	484	1.57	0.32	-	-	0.56	25.7	
2	5.4	1.2	4	504	1.48	0.33	-	-	0.20	56.2	
2.2	18.4	0.9	21	384	1.92	0.35	-	-	0.72	19.5	
2.4	5.4	0.7	8	414	1.48	0.36	-	-	0.20	56.2	
2.6	45.4	1.5	30	544	1.83	0.37	30	-	-	7.3	
2.8	11.5	0.9	12	475	1.55	0.38	-	-	0.45	32.2	
3	22.5	0.7	34	505	1.71	0.40	27	-	0.88	14.8	
3.2	11.5	0.3	43	465	1.66	0.41	-	-	0.44	20.3	
3.4	8.5	0.4	21	485	1.83	0.43	-	-	0.32	25.8	
3.6	9.5	0.4	24	545	1.88	0.45	-	-	0.36	24.1	
3.8	12.7	0.3	38	617	1.66	0.46	-	-	0.49	19.3	
4	11.7	0.4	29	687	1.90	0.48	-	-	0.45	21.5	
4.2	10.7	0.5	23	767	1.90	0.50	-	-	0.41	22.6	
4.4	17.7	0.3	66	827	1.69	0.51	31	24	-	0.9	
4.6	14.7	0.4	37	937	1.67	0.52	-	-	0.57	18.0	
4.8	16.8	0.5	36	1028	1.68	0.54	-	-	0.65	17.1	
5	17.8	0.3	53	1048	1.69	0.55	31	22	-	0.9	
5.2	17.8	0.4	44	1098	1.69	0.56	-	-	0.69	16.9	
5.4	20.8	0.5	39	1108	1.70	0.58	27	-	0.81	16.0	
5.6	15.8	0.6	26	1178	1.91	0.60	-	-	0.61	19.5	
5.8	15.9	0.5	34	1299	1.68	0.61	-	-	0.61	17.4	
6	13.9	0.4	35	1369	1.67	0.62	-	-	0.53	18.4	
6.2	16.9	0.6	28	1389	1.92	0.64	-	-	0.65	19.4	
6.4	16.9	0.4	42	1409	1.68	0.66	-	-	0.65	17.1	
6.6	11.9	0.4	30	1529	1.90	0.67	-	-	0.45	21.3	
6.8	16.0	0.5	34	1800	1.68	0.69	-	-	0.61	17.3	
7	23.0	0.8	29	1880	1.93	0.71	-	-	0.89	17.4	
7.2	17.0	0.8	21	1900	1.92	0.72	-	-	0.65	19.4	
7.4	11.0	0.5	24	1880	1.90	0.74	-	-	0.41	22.1	
7.6	8.0	0.4	20	2030	1.80	0.76	-	-	0.29	26.9	
7.8	12.2	0.4	30	2122	1.90	0.78	-	-	0.46	21.1	
8	13.2	0.8	16	2342	1.91	0.79	-	-	0.50	20.4	
8.2	25.2	1.0	25	2472	1.93	0.81	-	-	0.97	15.9	
8.4	22.2	0.7	33	2502	1.71	0.83	27	-	0.85	15.0	
8.6	26.2	0.9	28	2662	1.94	0.85	-	-	1.01	15.3	
8.8	30.3	1.2	25	2763	1.95	0.86	-	-	1.18	13.2	
9	30.3	1.1	27	2833	1.95	0.88	-	-	1.18	13.2	
9.2	28.3	0.9	33	3023	1.74	0.90	28	-	-	11.8	
9.4	33.3	1.0	33	3073	1.77	0.91	29	-	-	10.0	
9.6	29.3	1.2	24	3203	1.94	0.93	-	-	1.13	13.7	
9.8	33.4	1.1	31	3364	1.77	0.95	29	-	-	10.0	
10	32.4	0.9	35		1.76	0.96	29	-	-	10.3	

PENETROMETRO STATICO: TG 73 200 KN PAGANI

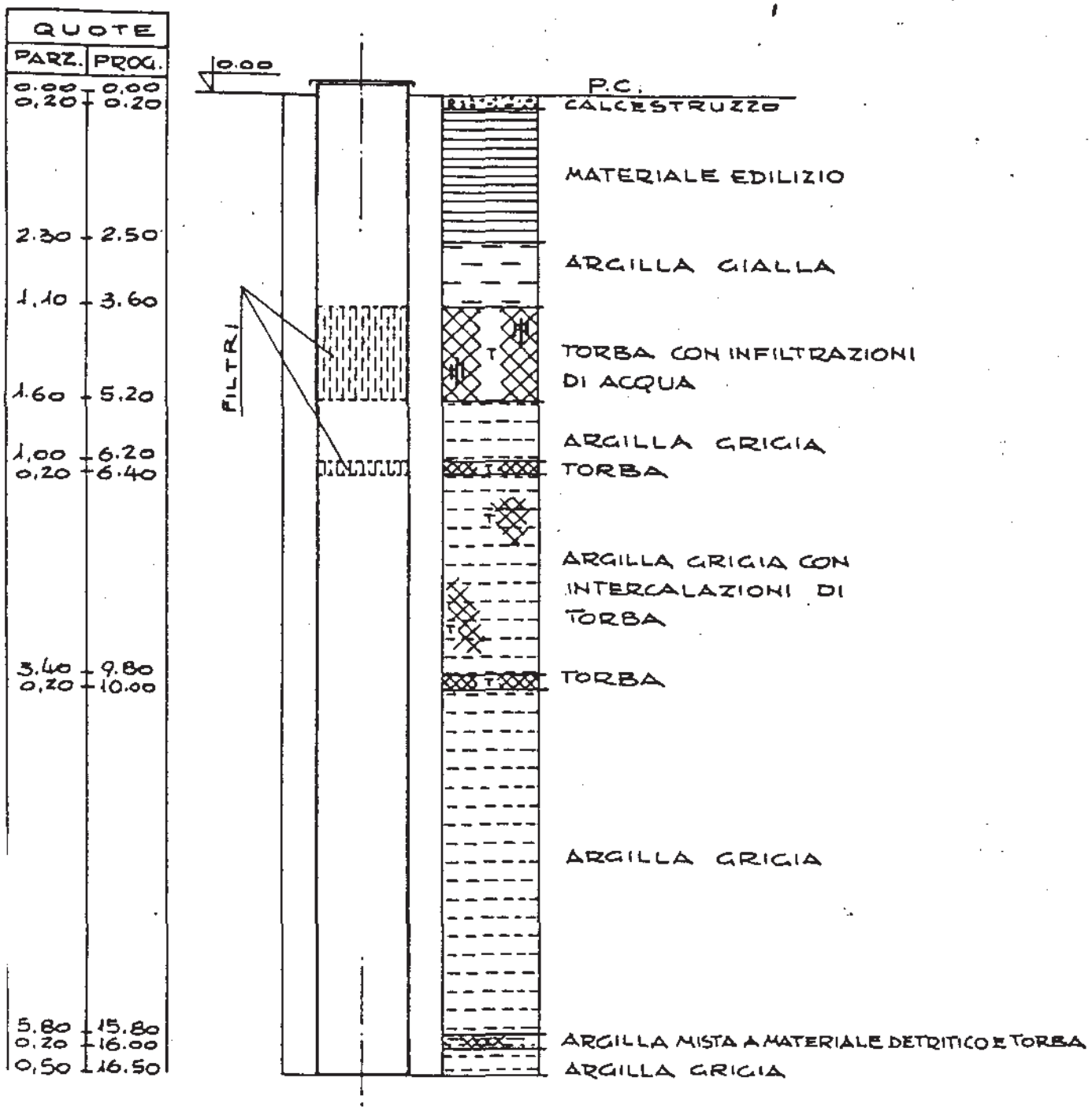



colpi per 10 cm di avanzamento
0
10
20
30
40
50
60
stratigrafia
m
0
1
2
3
4
5
6
7
8
9
10
profondità
Detrito
(Dt)
Calcari, sabbie e conglomerati
(Pgc)
138
295

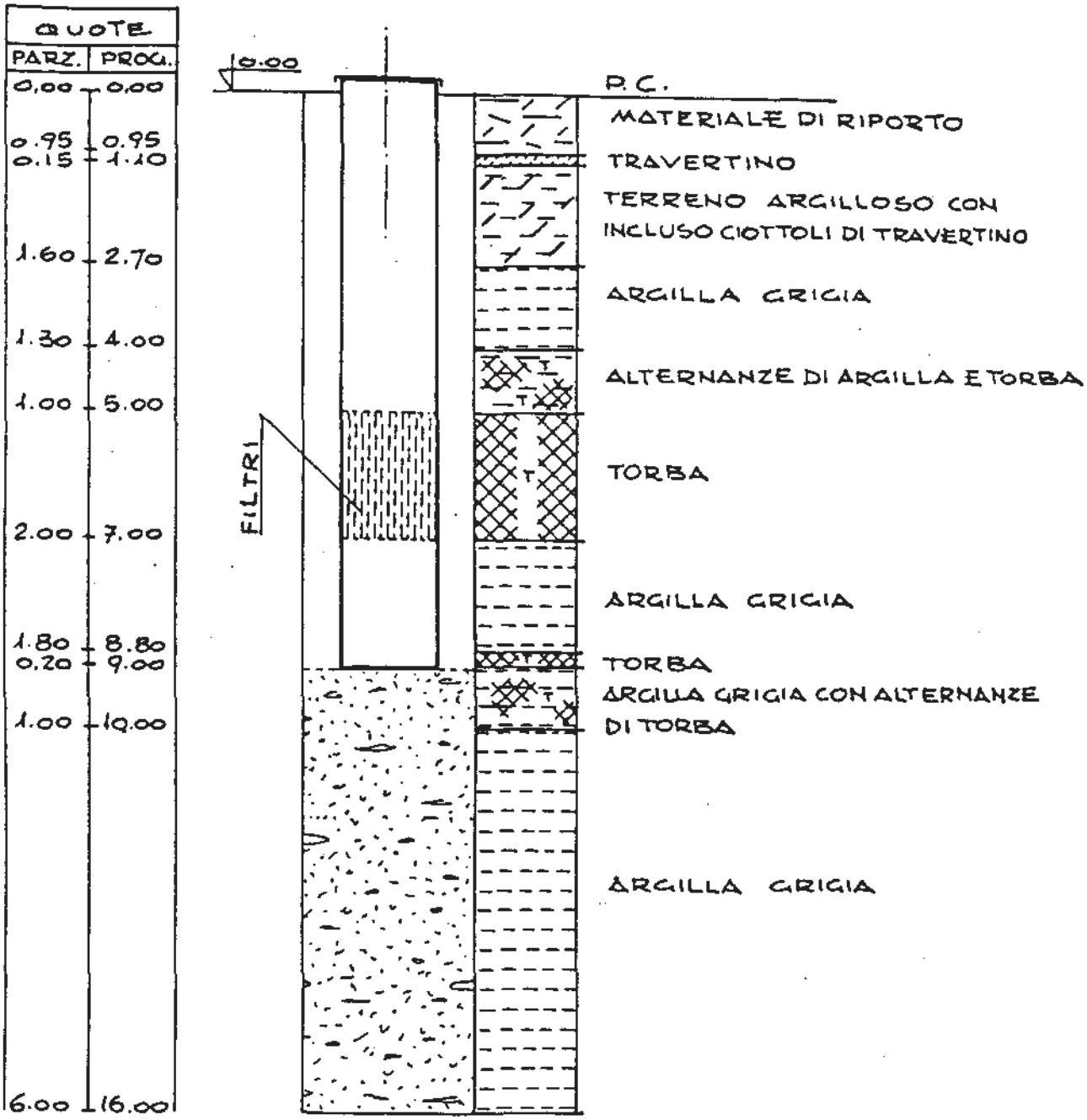
SONDAGGIO N°1



SONDAGGIO N° 2



SONDAGGIO Nº 3



SONDAGGIO Nº4

QUOTE	
PARZ.	PROG.
0.00	0,00
1.00	1.00
1.10	2.10
0.20	2.30
1.60	3.90
1.45	5.35
0.40	5.75
1.45	7.20
2.40	9.60
1.35	10.95
1.05	12.00
3,60	15,60
0,40	16,00
2.50	18.50

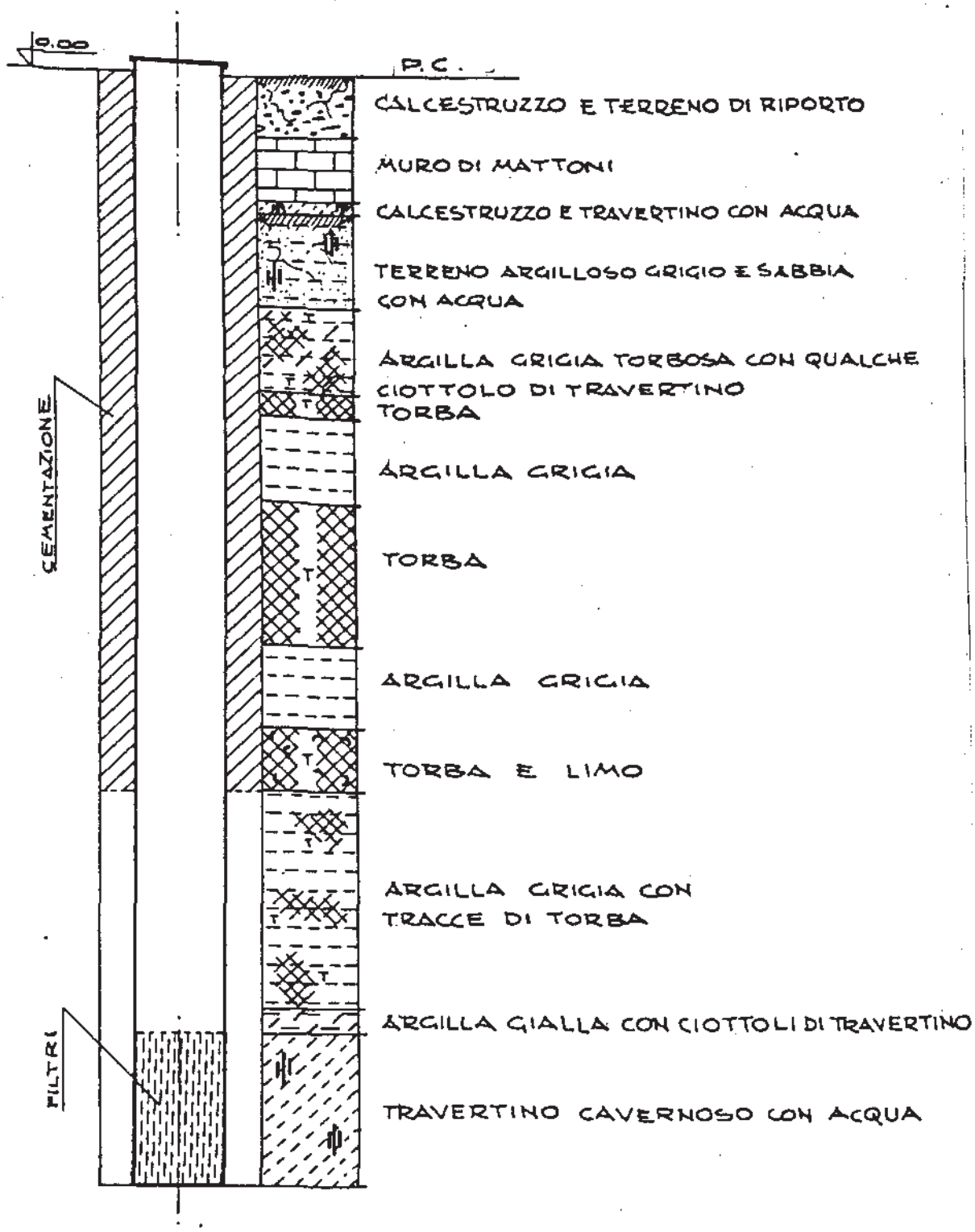
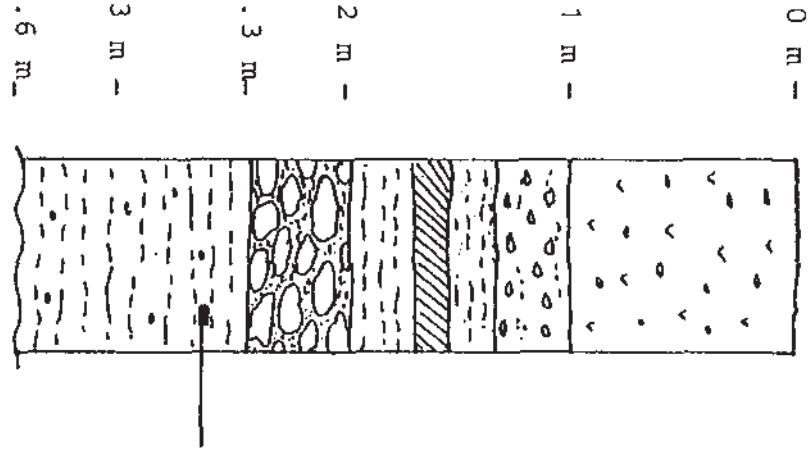
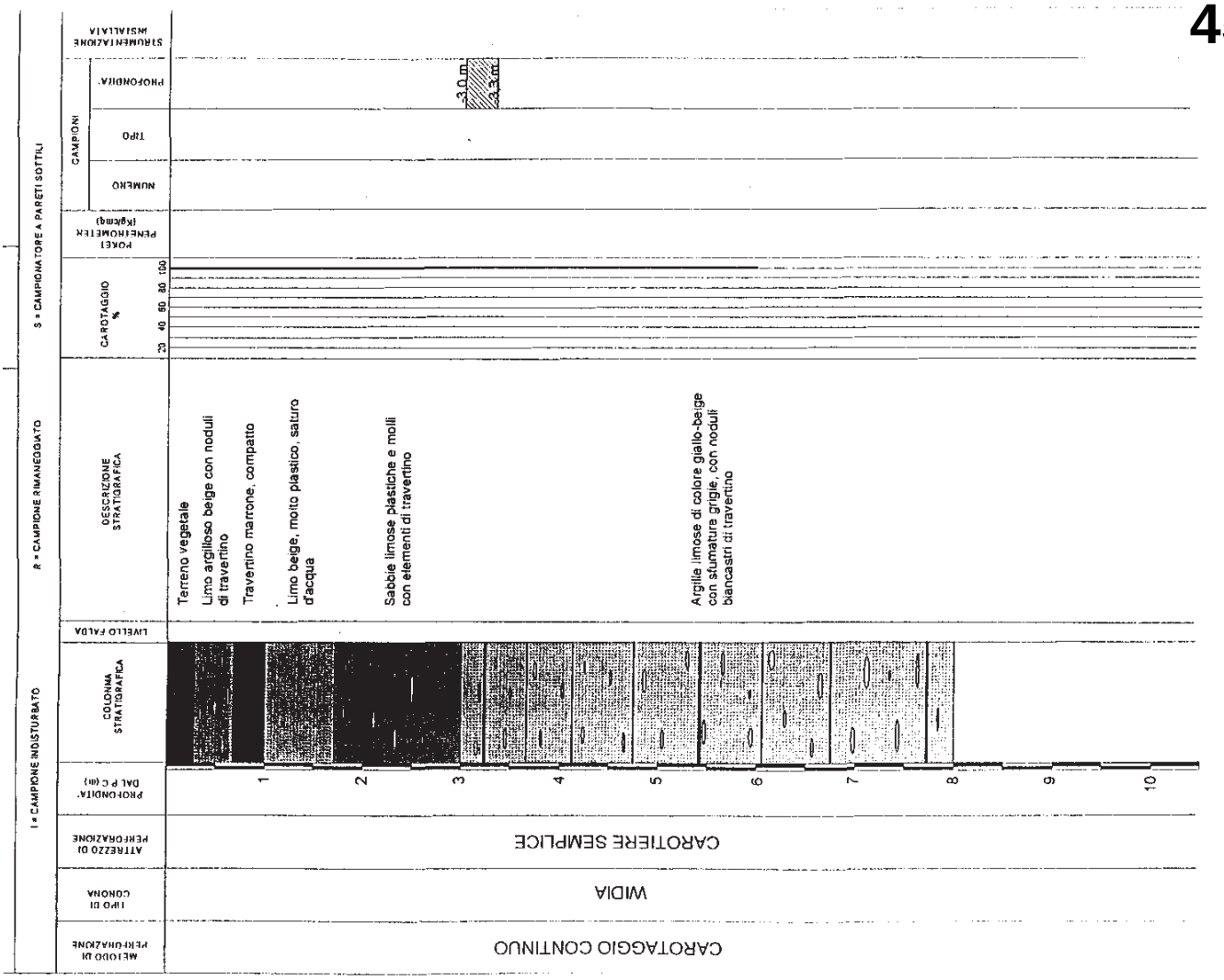


TABELLA RIASSUNTIVA DEI RISULTATI DELLE PROVE GEOTECNICHE DI LABORATORIO

Sondaggio	n.	1		
Campione	da m	2.5		
	a m	2.8		
Umidità naturale	%	20		
Peso di volume	t/mc	1.900		
Limite liquido	%	36		
Limite plastico	%	23		
Angolo di attrito int.	ϕ	15		
Coesione	Kg/cmq	0.725		
Prova edometrica		indice dei vuoti "e_0"		
carico	0.000	0.658		
	0.250	0.650		
	0.500	0.642		
	1.000	0.628		
	2.000	0.607		
	4.000	0.564		
	8.000	0.510		
	16.000	0.440		
scarico	8.000			
	4.000	0.464		
	2.000			
	1.000	0.489		
	0.500			
	0.250			
	0.100	0.527		



4504

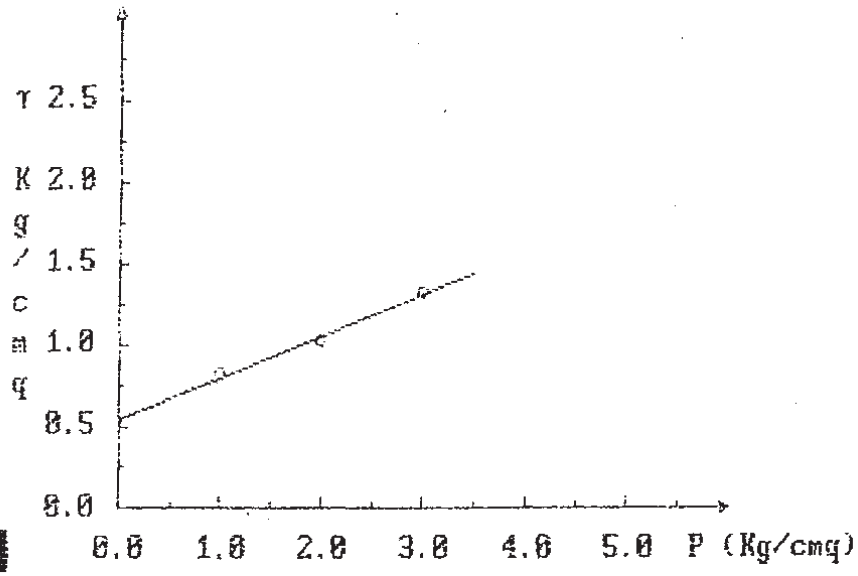


Partita I.V.A. 00451370506

TAGLIO RAPIDO NON DRENATO

Valori misurati

P Kg/cmq	τ Kg/cmq
1.000	0.820
2.000	1.030
3.000	1.330



φ = 14° **c = 0.53 Kg/cmq**

Sondaggio n° 1

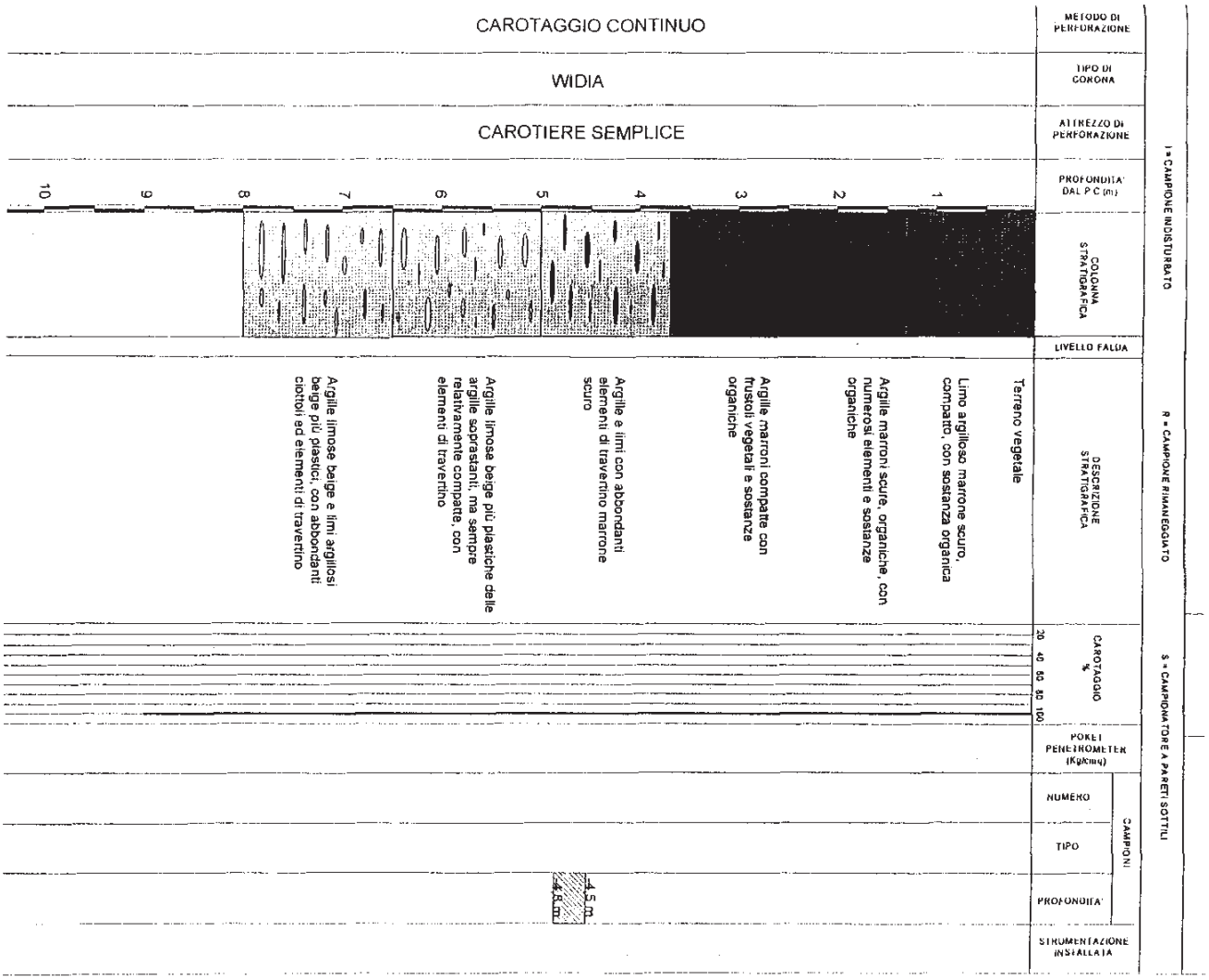
Committente :

Cantiere : Casciana Terme (PI)

Campione n° 1 da mt. 3.00 a mt. 3.50

Umidità naturale = 19.01 %

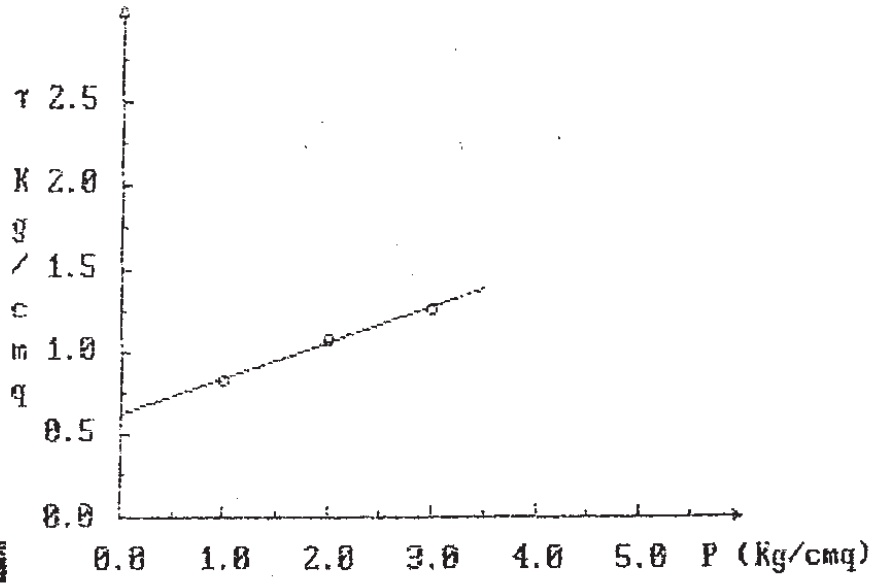
Peso di volume = 2.020 kg/dmc



TAGLIO RAPIDO NON DRENATO

Valori misurati

P Kg/cmq	τ Kg/cmq
1.000	0.820
2.000	1.070
3.000	1.260



φ = 12° **c = 0.62 Kg/cmq**

Sondaggio n°

Committente :

Cantiere : Casciana Terme (PI)

Campione n° 2 da mt. 4.50 a mt. 5.00

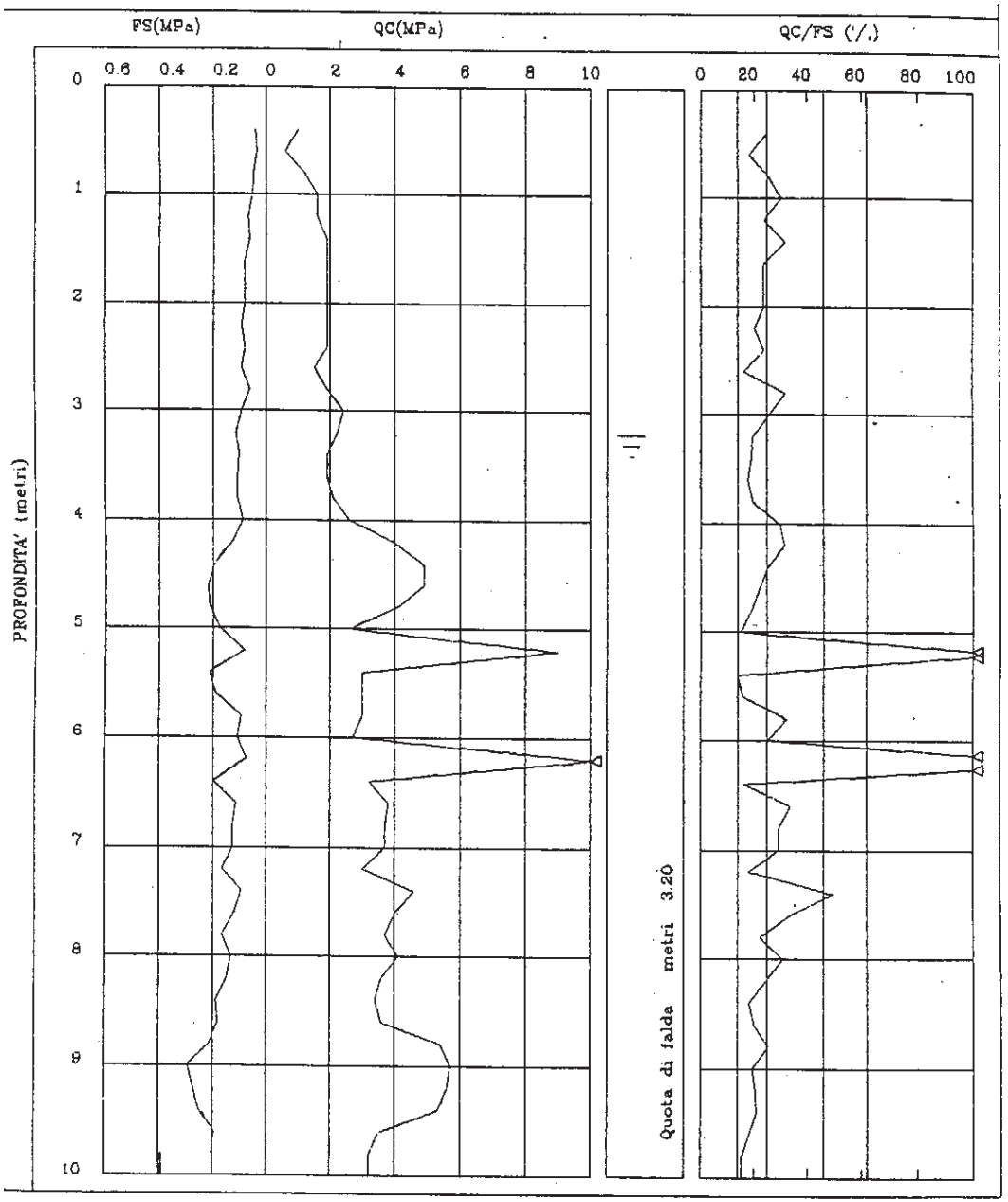
Umidità naturale = 23.89 %

Peso di volume = 1.980 kg/dmc

Profondità dal p.c.	Spessori (m)	Sezione terreno	Descrizione litologica	Campioni indistur.	Falda
0.20	0.20		Riempimento con ciottoli		
			Banchi sub-orizzontali di travertino poco fratturati. Gli allineamenti delle sottili fessure sono rivolti un poco in tutte le direzioni.		
10.0	9.80				

Profondità dal p.c.	Spessori (m)	Sezione terreno	Descrizione litologica	Campioni indistur.	Falda
0.20	0.20		Riempimento con ciottoli		
			Banchi sub-orizzontali di travertino poco fratturati. Gli allineamenti delle sottili fessure sono rivolti un poco in tutte le direzioni.		
10.0	9.80				

Profondità dal p.c.	Spessori (m)	Sezione terreno	Descrizione litologica	Campioni indistur.	Falda
0.20	0.20		Riempimento con ciottoli		
10.0	9.80		Banchi sub-orizzontali di travertino poco fratturati. Gli allineamenti delle sottili fessure sono rivolti un poco in tutte le direzioni.		



parametri geotecnici stimati

PROFONDITA' [metri]	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Qt [Kgf]	δ [Kg/dmc]	σ_{av} [Kg/cmq]	φ [gradi]	D_R [%]	c_u [Kg/cmq]	m_v [cmq/t]	Colonna Stratig.
0.2					1,80	,04	-	-	-	-	
0.4					1,80	,07	-	-	-	-	
0.6	10,1	,4	25	150	1,90	,11	-	-	,40	23,2	
0.8	6,3	,3	19	230	1,72	,14	-	-	,25	32,2	
1.0	12,3	,5	26	270	1,91	,18	-	-	,48	21,0	
1.2	16,3	,5	31	380	1,91	,22	-	-	,64	19,4	
1.4	16,3	,7	24	470	1,91	,26	-	-	,64	19,4	
1.6	19,3	,6	32	590	1,70	,29	-	-	,76	16,7	
1.8	19,4	,8	24	680	1,92	,33	-	-	,76	19,8	
2.0	19,4	,8	24	810	1,92	,37	-	-	,76	19,8	
2.2	19,4	,8	24	930	1,92	,41	-	-	,76	19,8	
2.4	19,4	,9	21	1090	1,92	,45	-	-	,76	19,8	
2.6	19,4	,8	24	1290	1,92	,48	-	-	,76	19,8	
2.8	15,5	,9	17	1290	1,91	,52	-	-	,60	19,6	
3.0	19,5	,6	33	1380	1,70	,56	-	-	,76	16,7	
3.2	24,5	,9	26	1500	1,93	,60	-	-	,96	16,3	
3.4	22,5	1,1	21	1650	1,93	,61	-	-	,88	17,8	
3.6	19,5	1	20	1760	1,92	,63	-	-	,75	19,8	
3.8	18,6	1,1	17	1820	1,92	,65	-	-	,72	19,6	
4.0	20,6	1,1	19	1890	1,92	,67	-	-	,80	19,4	
4.2	25,6	,9	30	2000	1,93	,69	-	-	1,00	15,6	
4.4	29,6	1,9	15	2300	1,94	,71	-	-	1,16	13,5	
4.6	48,6	1,9	25	2570	1,99	,73	-	-	1,91	8,2	
4.8	48,7	2,2	22	2770	1,99	,75	-	-	1,92	8,2	
5.0	40,7	2,1	19	2820	1,97	,77	-	-	1,60	9,8	
5.2	25,7	1,7	15	5450	1,93	,78	-	-	1,00	15,6	
5.4	89,7	,8	112	3430	2,05	,81	38	70	-	3,7	
5.6	29,7	2,1	14	4220	1,94	,82	-	-	1,16	13,5	
5.8	29,9	1,9	16	3210	1,94	,84	-	-	1,16	13,4	
6.0	29,9	,9	32	3180	1,75	,86	28	-	-	11,1	
6.2	26,9	1,1	25	3950	1,94	,88	-	-	1,04	14,9	
6.4	100,9	,7	138	3660	2,30	,90	38	71	-	3,3	
6.6	31,9	2	16	3900	1,95	,92	-	-	1,24	12,5	
6.8	38	1,1	34	3670	1,79	,94	30	-	-	8,8	
7.0	37	1,3	29	3780	1,79	,95	30	-	-	9,0	
7.2	37	1,3	29	3820	1,79	,97	30	-	-	9,0	
7.4	30	1,7	18	4000	1,94	,99	-	-	1,16	13,3	
7.6	46	,9	49	4350	1,83	1,00	33	42	-	7,2	
7.8	40,2	1,2	34	4320	1,80	1,02	30	-	-	8,3	
8.0	37,2	1,7	22	4410	1,96	1,04	-	-	1,45	10,8	
8.2	41,2	1,3	31	4610	1,81	1,06	30	-	-	8,1	
8.4	36,2	1,5	25	4670	1,96	1,08	-	-	1,40	11,0	
8.6	34,2	1,9	18	4890	1,95	1,09	-	-	1,32	11,7	
8.8	36,2	1,8	20	5090	1,96	1,11	-	-	1,40	11,0	
9.0	54,2	2,1	25	5230	2,00	1,13	-	-	2,12	7,4	
9.2	57,2	2,9	20	5460	2,00	1,15	-	-	2,24	7,0	
9.4	56,2	2,7	21	5500	2,00	1,17	-	-	2,20	7,1	
9.6	53,2	2,5	21	5610	2,00	1,19	-	-	2,08	7,5	
9.8	35,2	1,9	18	5620	1,96	1,21	-	-	1,36	11,4	
10.0	32,2	2,1	16	5700	1,95	1,23	-	-	1,24	12,4	

4507

m s.p.c.	L.S. H_2O	STRATIGRAFIA	DESCRIZIONE LITOLOGICA	CAMP. IND.	S.P.T.	P.P. Kg/cm²	TORV.	PERC. REC.	SIST. PIEZ.	OSSERVAZIONI
0			Terreno vegetale e/o di riporto, limo argilloso leggermente sabbioso con trovanti (travertino)					80%		
1				1.50		5 10				Misure di Pocket eseguite con punta da 10 mm
2			Argilla nocciola screziata grigiastra, talora limosa, poco plastica con rari calcinelli	2.00						
3						4 5 10 10 >11		100%		
4						9 10 >11				
5			Limo argilloso grigio compatto. (Livelli centimetrici nocciola)	4.80 5.00		>11 >11				
6			Argilla limosa grigia compatta, a tratti leggermente plastica.			9 5 8 11 >11		100%		
7						>11 11 >11				
8			Idem come sopra ma più scura			10 >11 >11 >11 >11 10 >11				
9								100%		
10			Argilla grigio scura compatta a tratti leggermente più plastica. A tratti limosa			10 6 8 >11				
11						7 >11 >11				
12						>11 >11 >11		100%		
13		F.F. -13.0m				>11				
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										

Campione disturbato Campione indisturbato

m s.p.c.	L.S. H_2O	STRATIGRAFIA	DESCRIZIONE LITOLOGICA	CAMP. IND.	S.P.T.	P.P. Kg/cm²	TORV.	PERC. REC.	SIST. PIEZ.	OSSERVAZIONI
0			Terreno vegetale e/o di riporto argilloso limoso, leggermente sabbioso con ciottoletti (travertino)			4 7		100%		Misure di Pocket eseguite con punta da 10 mm
1			Argilla limosa nocciola con passate più rossastre leggermente marnose	1.60						
2				2.00		>11 >11 >11 >11 >11		100%		
3			Idem ma con livelletti centimetrici più limosi							
4			Gessi con sabbione Argilla più plastica intercalata di gesso			6 7 10				
5			Argilla grigia da compatta a leggermente plastica con noduli gessosi e calcinelli			>11 6.3 11 >11				
6			Argilla grigio-scura con rari ciottoletti, compatta	5.80 6.20		>11 >11		100%		
7						10				
8			Argilla limosa compatta			>11 >11				
9						>11 >11				
10			Idem come sopra ma con tracce di lignite.			>11 >11		100%		
11						>11				
12						>11 >11				
13			Argilla limosa grigio-scura compatta, a tratti leggermente più limosa			>11 >11				
14						>11 >11		100%		
15						>11 >11				
16						>11				
17		F.F. -17.0m								
18										
19										
20										
21										
22										
23										
24										
25										

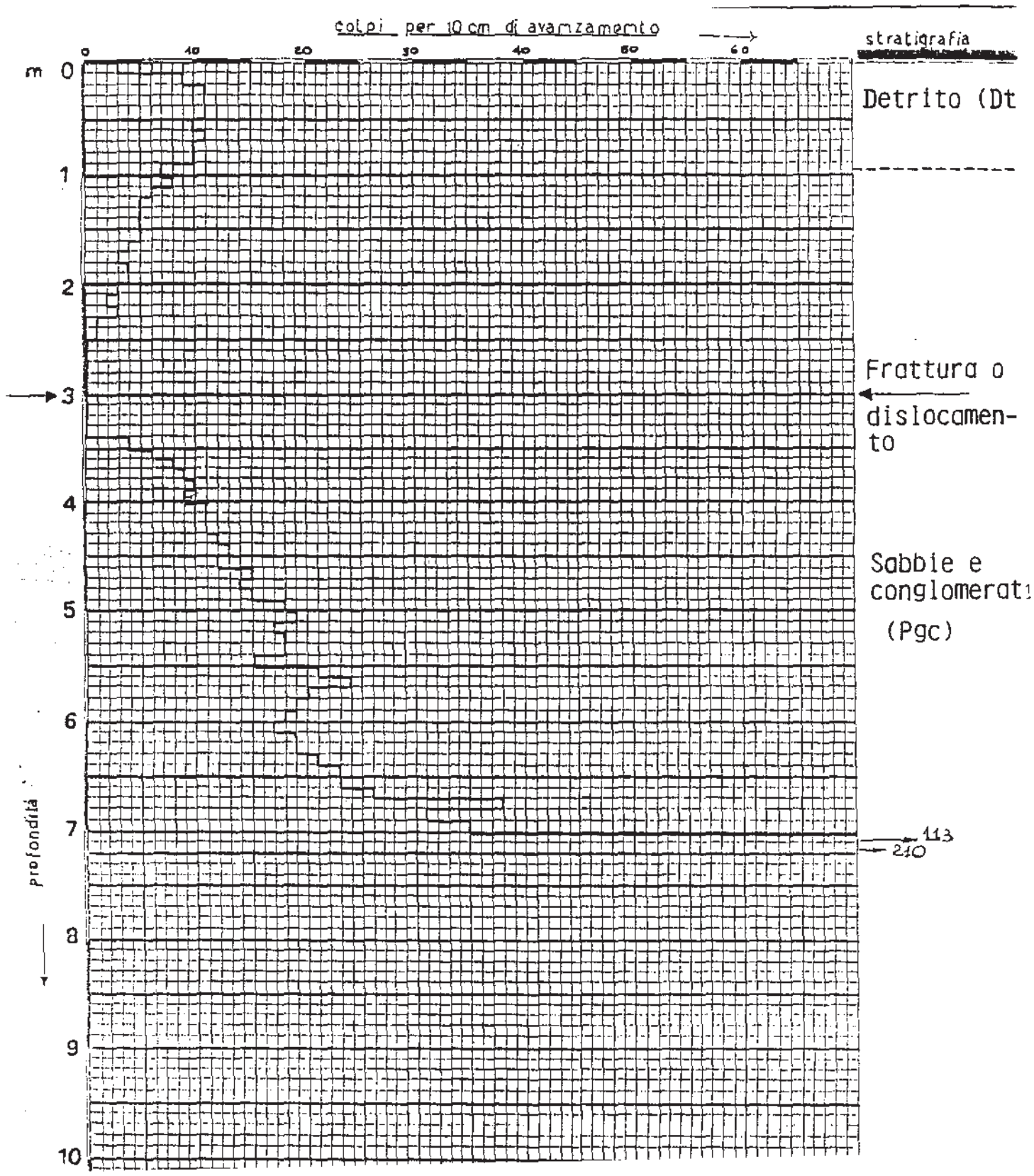
SCHDA001

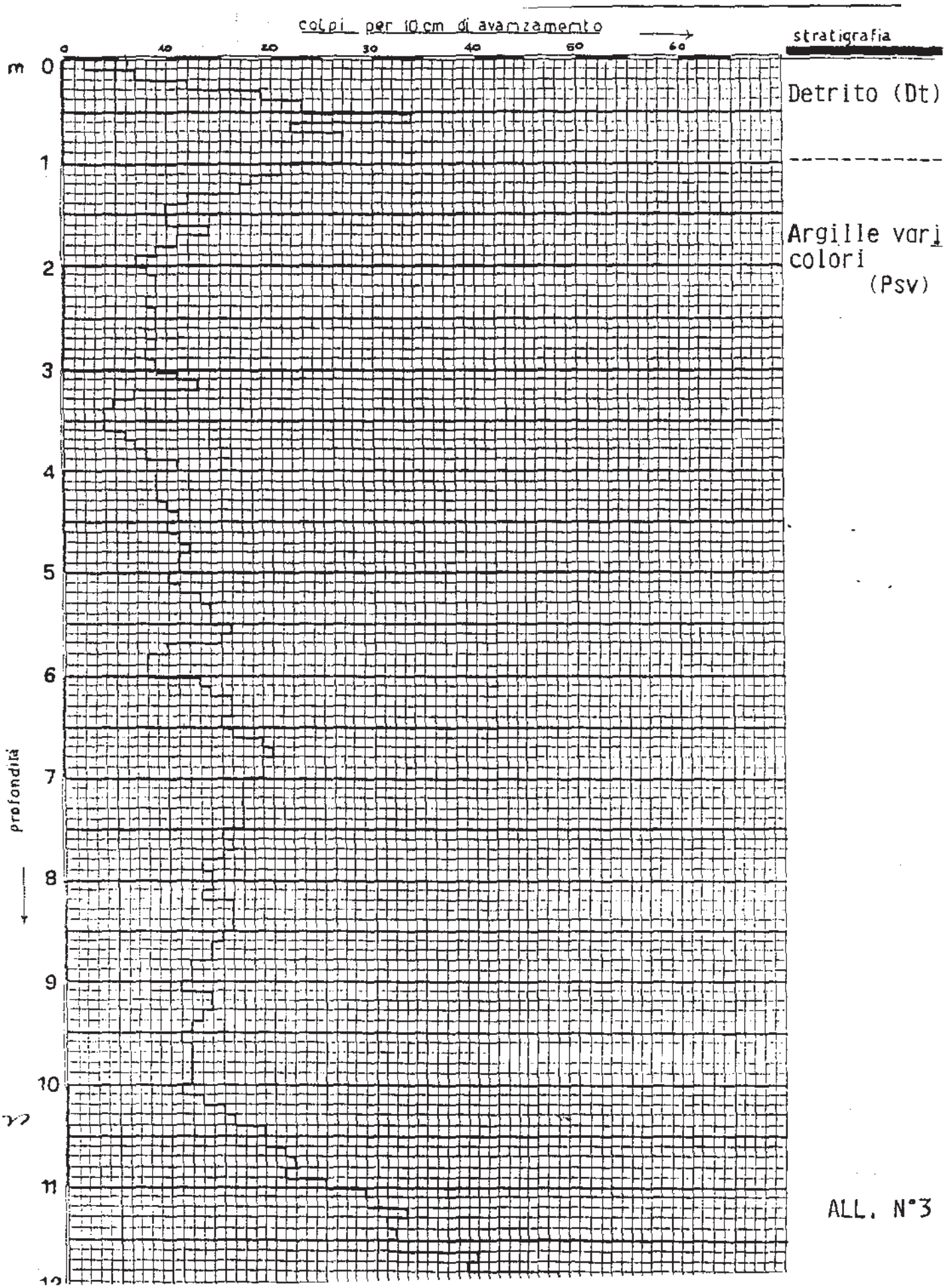
Campione disturbato Campione indisturbato

Tab. 1 – RIASSUNTO PARAMETRI GEOTECNICI

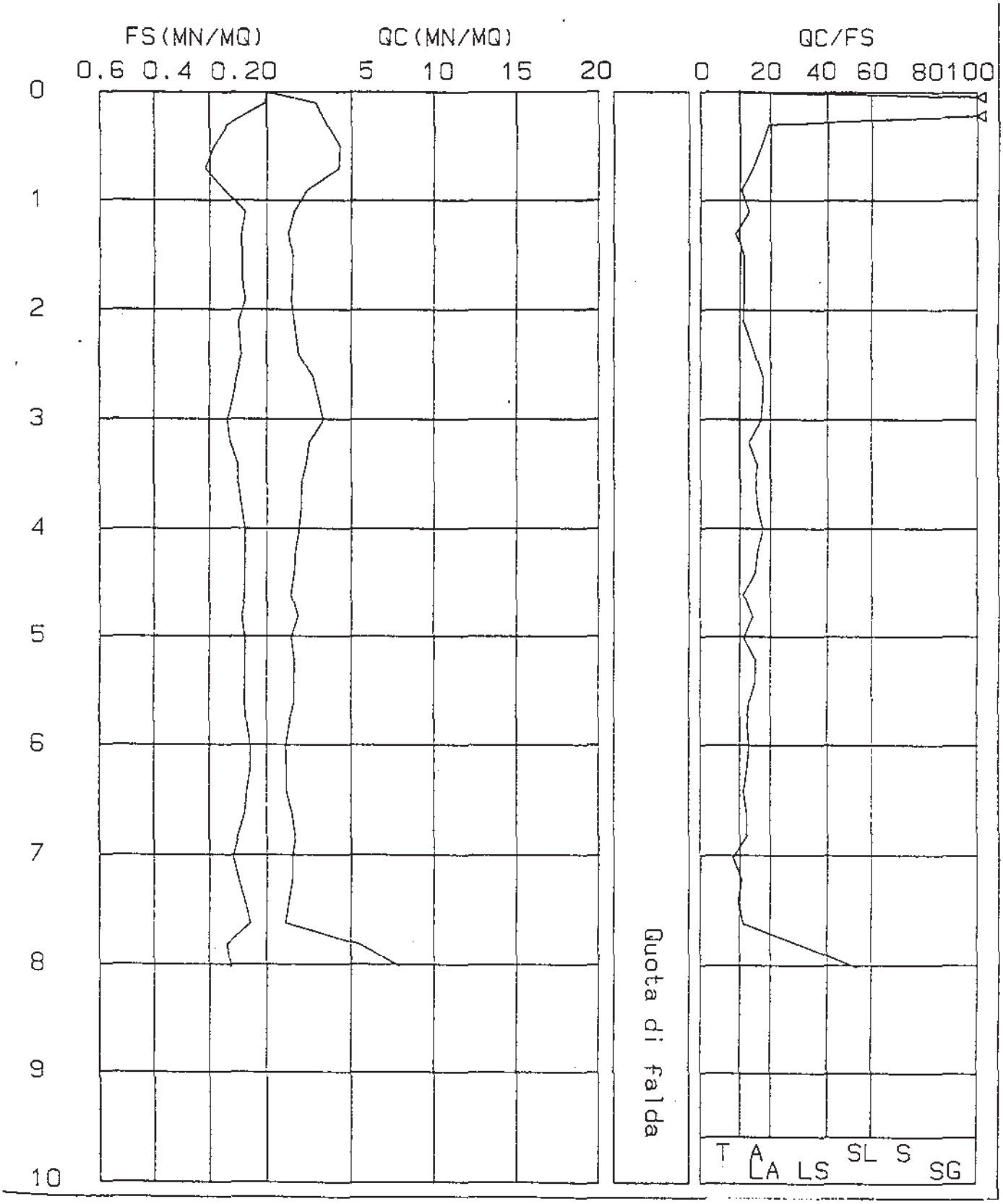
N. Sond.	N. Camp.	Prof. Camp. (m)	Interv. Provato	CARATTERISTICHE GEOTECNICHE																						
				Resist. Compr. Semplice Pocket Pen. (kg/cm²)	Resist. Taglio Torvane (kg/cm²)	Granulometria			WL	WP	IP	IC	W	γ_s	γ	Prove di taglio						Prova Edometrica			Prova E.L.L.
						Gh %	S %	L+A %	%	%	%		%	(g/cm³)	(g/cm³)	φ	φ'	φ^r	KPa C	KPa C'	KPa C^r	Cc	mv	Cv	KPa
S1	C1	1.5/2		6 – 10	–				44	26	19	1.19	21.4	2.68	2.00		26°			1.3			0.168		
S1	C2	6.00		8 – >11	–				40	22	18	1.04	21.3	2.719	2.006								X		
S2	C1	1.6/2		>11	–				41	22	19	0.91	23.7	2.656	1.965		26°			0.4			0.171		78.3
S2	C2	5.6/5.2		>11	–				43	22	21	0.84	25.3	2.657	1.942		24°			1.7			0.631		

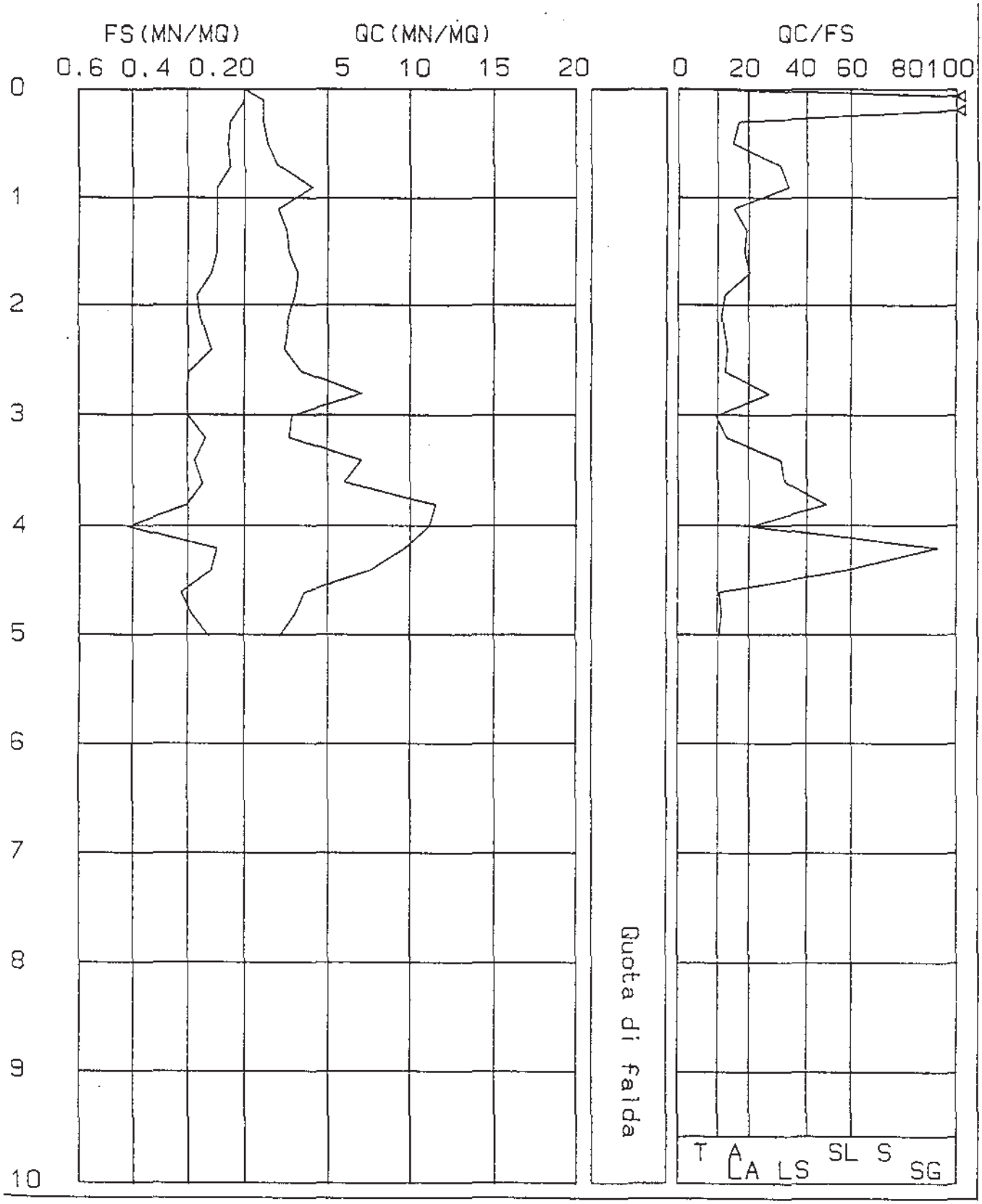
* $\sigma \cong 50$ KPa, valori di mv $\cong$ KPa^{-1}

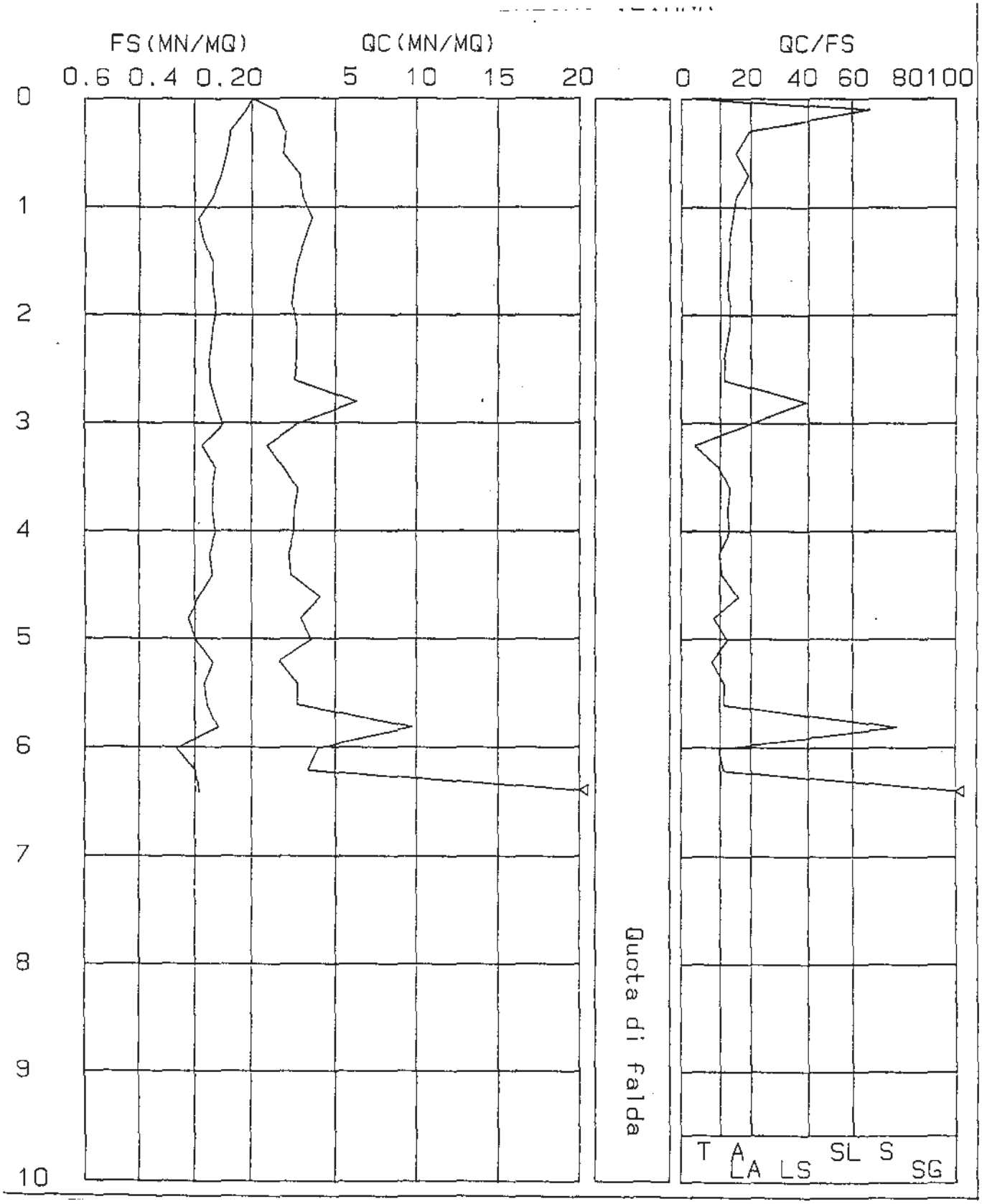

colpi per 10 cm di avanzamento
0
10
20
30
40
50
60
stratigrafia
m
0
1
2
3
4
5
6
7
8
9
10
profondità
Detrito (Dt
Frattura o
dislocamen-
to
Sabbie e
conglomerati
(Pgc)
113
210

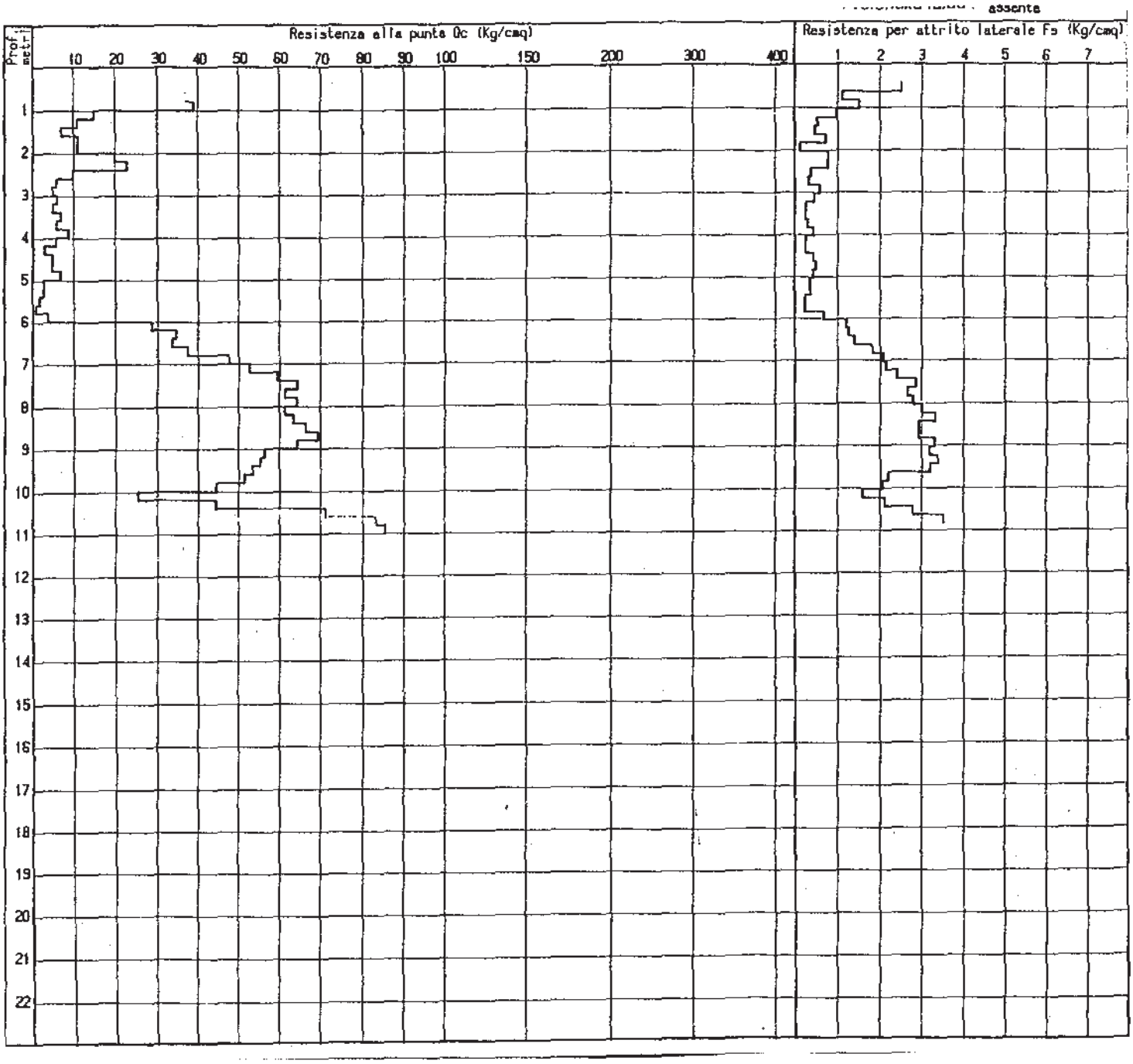

colpi per 10 cm di avanzamento
0
10
20
30
40
50
60
stratigrafia
m
0
1
2
3
4
5
6
7
8
9
10
11
12
profondità
Detrito (Dt)
Argille vari colori
(Psv)

ALL. N°3


FS(MN/MQ)
0.6 0.4 0.2
QC(MN/MQ)
0 5 10 15 20
QC/FS
0 20 40 60 80 100
0
1
2
3
4
5
6
7
8
9
10
Quota di falda
T A
LA LS
SL S
SG


FS (MN/MQ)
0.6 0.4 0.20
QC (MN/MQ)
5 10 15 20
QC/FS
0 20 40 60 80100
0
1
2
3
4
5
6
7
8
9
10
Quota di falda
T A
LA LS
SL S
SG


FS(MN/MQ)
0.6 0.4 0.20
QC(MN/MQ)
5 10 15 20
QC/FS
0 20 40 60 80100
0
1
2
3
4
5
6
7
8
9
10
Quota di falda
T
A
LA
LS
SL
S
SG


assente
Prof. metri
Resistenza alla punta Qc (Kg/cmq)
10 20 30 40 50 60 70 80 90 100 150 200 300 400
Resistenza per attrito laterale Fs (Kg/cmq)
1 2 3 4 5 6 7
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

letture di campagna — valori derivati

prof (m)	H2O	Rpt (Kg)	Rat (Kg)	Rtot (Kg)	Rp (Kg/cm2)	Ral (Kg/cm2)	Rp/Ral	ϕ (°)	Cu (Kg/cm2)	mv (cm2/h)	Tipo litologico
0,20		10	20	80	1	0,07	15		0,04	166,67	Argilla limosa
0,40		10	20	290	1	0,07	15		0,04	166,67	Argilla limosa
0,60		200	330	490	20	0,87	23		1,00	10,00	Argilla limosa
0,80		380	500	630	38	0,80	48	29		13,16	Sabbia limosa
1,00		190	490	620	19	2,00	10		0,95	13,16	Argilla
1,20		120	360	530	12	1,80	8		0,60	20,83	Argilla
1,40		160	340	480	16	1,20	13		0,80	15,63	Argilla
1,60		170	350	560	17	1,20	14		0,85	11,76	Argilla limosa
1,80		170	410	700	17	1,60	11		0,85	14,71	Argilla
2,00		200	450	700	20	1,67	12		1,00	12,50	Argilla
2,20		150	360	720	15	1,40	11		0,75	16,67	Argilla
2,40		160	350	720	16	1,27	13		0,80	15,63	Argilla
2,60		180	340	860	18	1,07	17		0,90	11,11	Argilla limosa
2,80		200	370	1.000	20	1,13	18		1,00	10,00	Argilla limosa
3,00		210	430	1.120	21	1,47	14		1,05	9,52	Argilla limosa
3,20		220	410	1.690	22	1,27	17		1,10	9,09	Argilla limosa
3,40		1.450	1.870	2.280	145	1,47	99	48		4,60	Sabbia con Ghiaia
3,60		790	1.320	2.760	79	3,53	22		3,95	2,53	Argilla limosa
3,80		430	830	2.090	43	2,67	16		2,15	4,65	Argilla limosa
4,00		230	590	2.070	23	2,40	10		1,15	10,87	Argilla
4,20	*****	270	480	2.200	27	1,40	19		1,35	7,41	Argilla limosa
4,40		370	560	2.510	37	1,27	29		1,85	6,76	Limo
4,60		360	630	3.530	36	1,80	20		1,80	5,56	Argilla limosa
4,80		370	640	3.280	37	1,80	21		1,85	5,41	Argilla limosa
5,00		350	710	3.420	35	2,40	15		1,75	5,71	Argilla limosa
5,20		420	700	3.620	42	1,87	23		2,10	4,76	Argilla limosa
5,40		350	800	3.930	35	3,00	12		1,75	7,14	Argilla
5,60		610	1.020	4.560	61	2,73	22		3,05	3,28	Argilla limosa
5,80		570	890	4.580	57	2,13	27		2,85	4,39	Limo
6,00		740	1.110	4.830	74	2,47	30		3,70	3,38	Limo
6,20		420	870	7.150	42	3,00	14		2,10	4,76	Argilla
6,40		1.120	1.320	7.550	112	1,33	84	44		5,95	Sabbia con Ghiaia
6,60		290	620	4.540	29	2,20	13		1,45	8,62	Argilla
6,80		290	410	4.490	29	0,80	36		1,45	11,49	Limo sabbioso
7,00		310	440	4.260	31	0,87	36		1,55	10,75	Limo sabbioso
7,20		290	390	4.320	29	0,67	44		1,45	11,49	Limo sabbioso
7,40		280	320	4.730	28	0,27	105	29		23,81	Sabbia con Ghiaia
7,60		210	320	5.060	21	0,73	29		1,05	11,90	Limo
7,80		370	520	5.370	37	1,00	37		1,85	9,01	Limo sabbioso
8,00		380	620	5.590	38	1,60	24		1,90	5,26	Argilla limosa
8,20		370	710	5.720	37	2,27	16		1,85	5,41	Argilla limosa
8,40		2.190	2.380	9.000	219	1,27	173	56		3,04	Sabbia con Ghiaia
8,60											
8,80											
9,00											
9,20											
9,40											
9,60											
9,80											
10,00											
10,20											
10,40											
10,60											
10,80											
11,00											
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13,20											
13,40											
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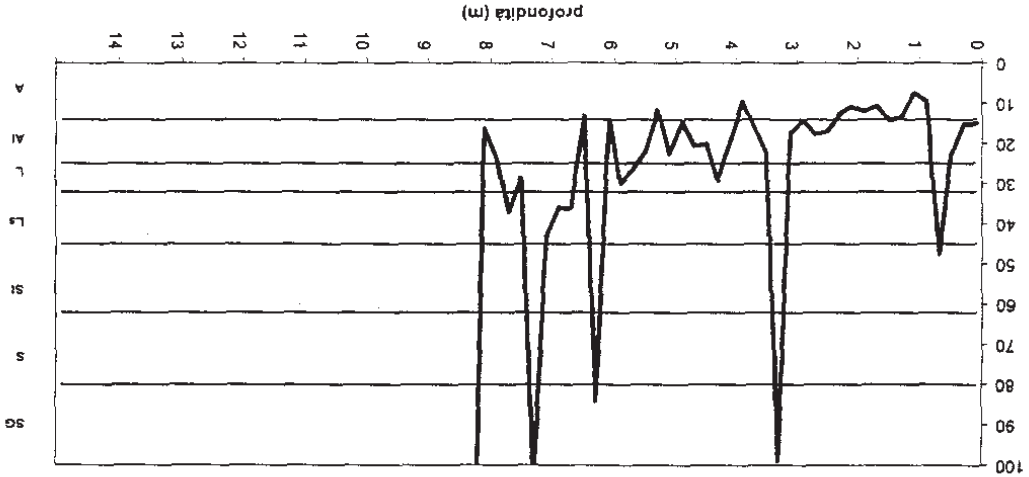
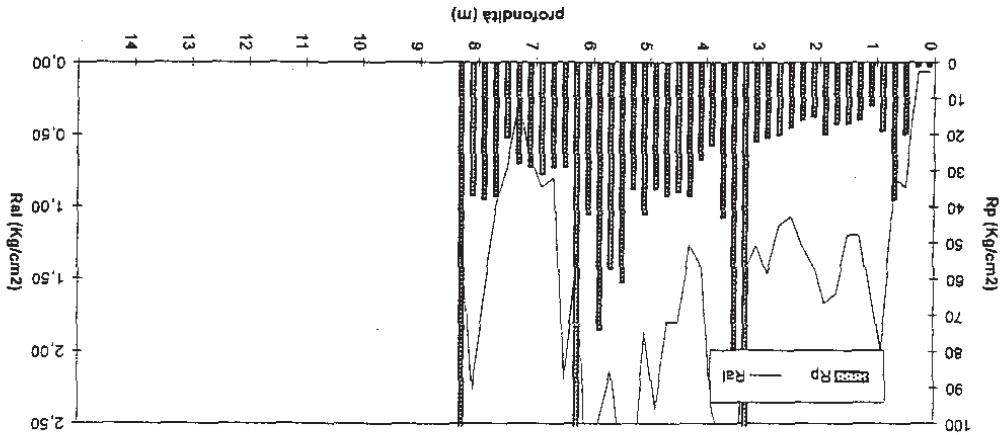
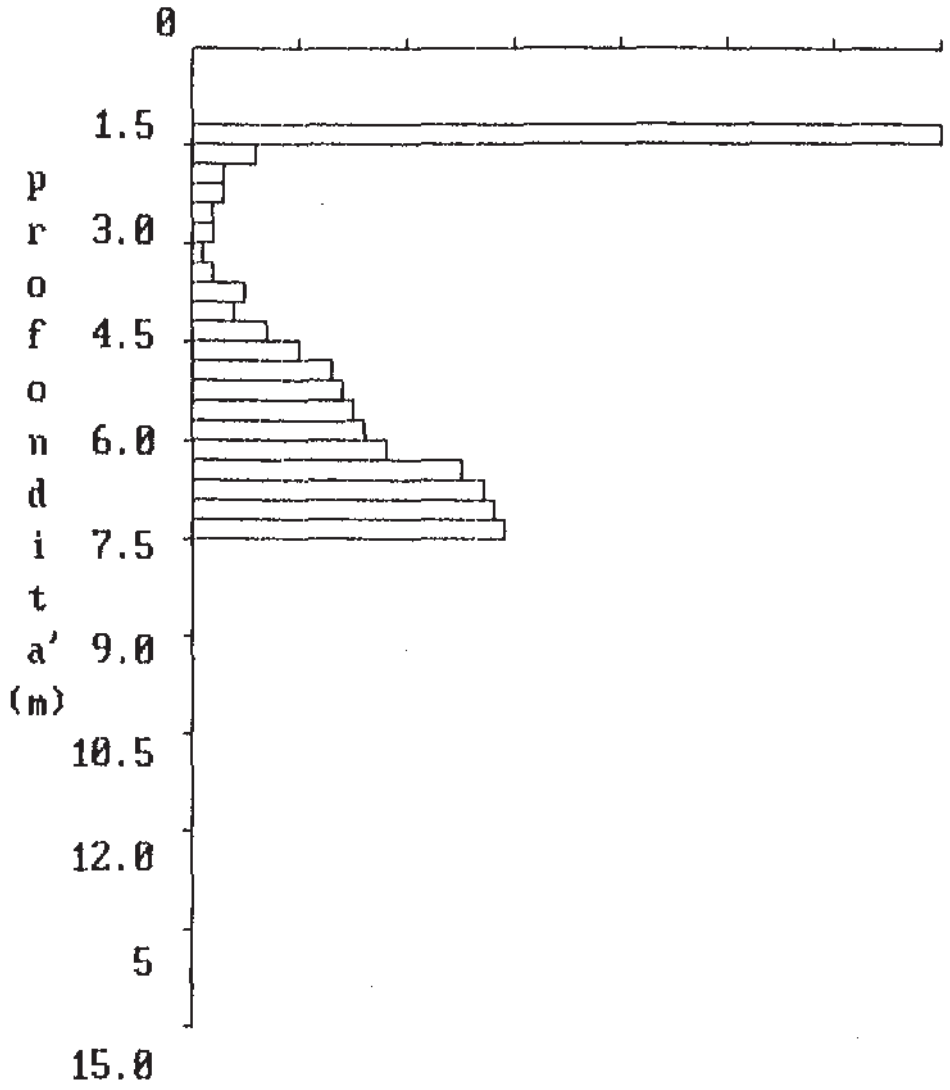
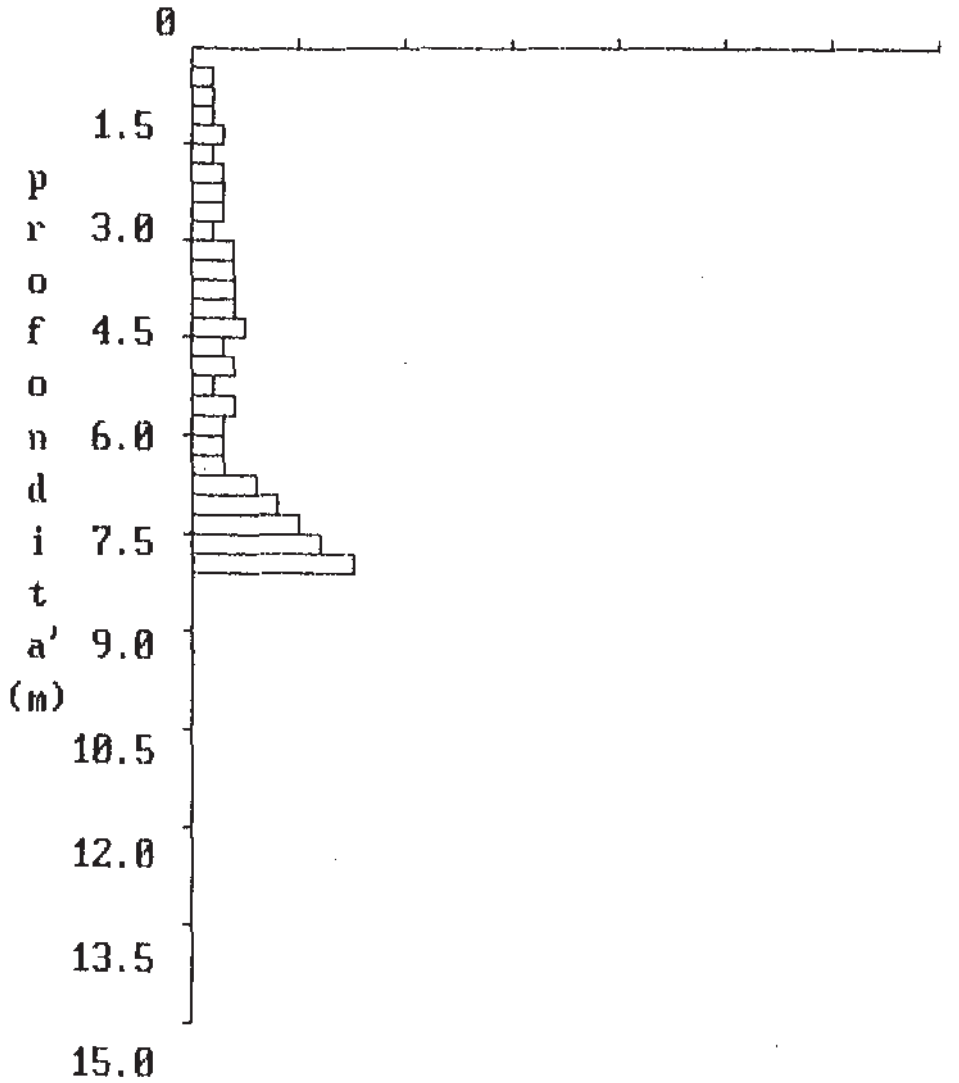
14,00											
14,20											
14,40											
14,60											
14,80											
15,00											

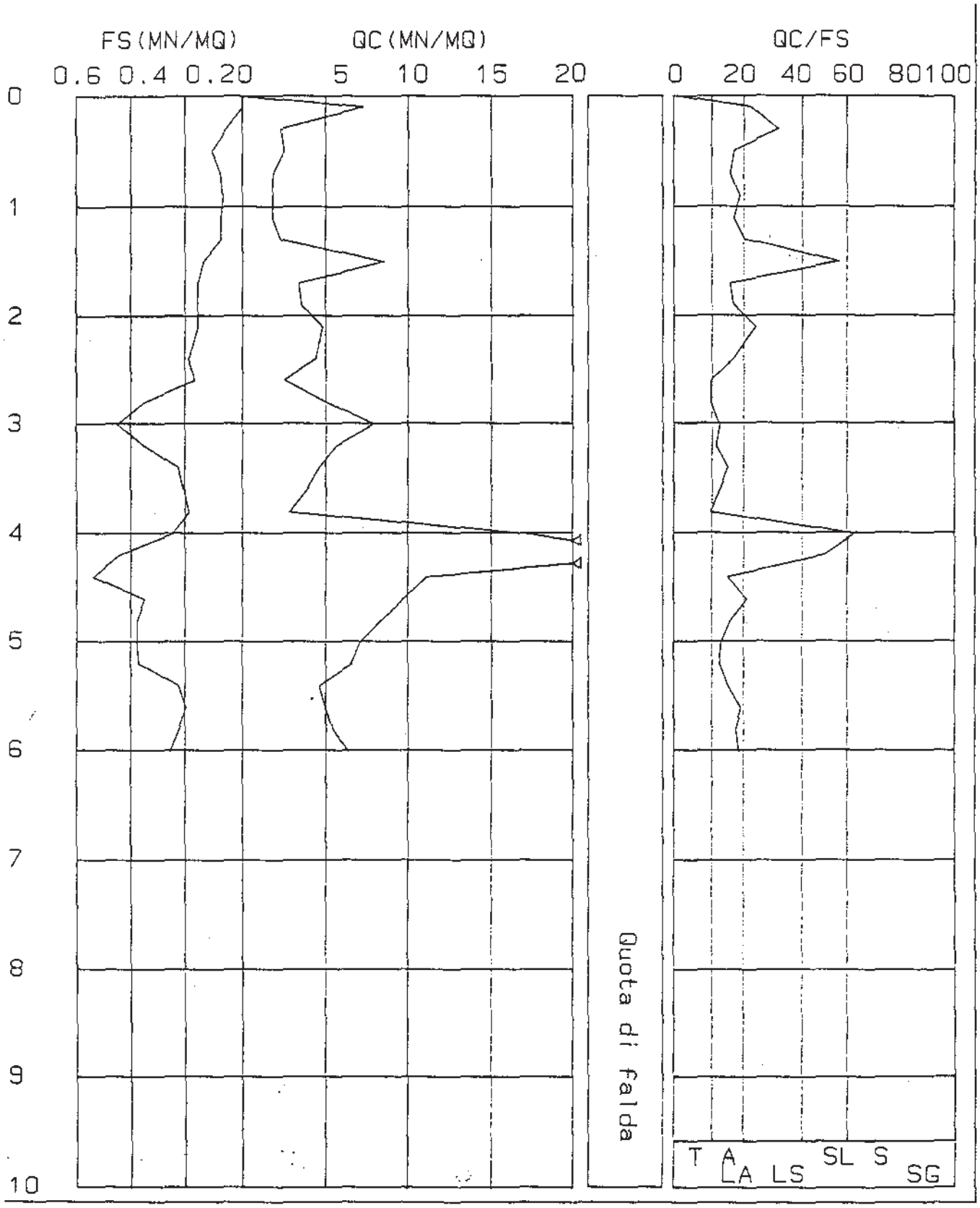


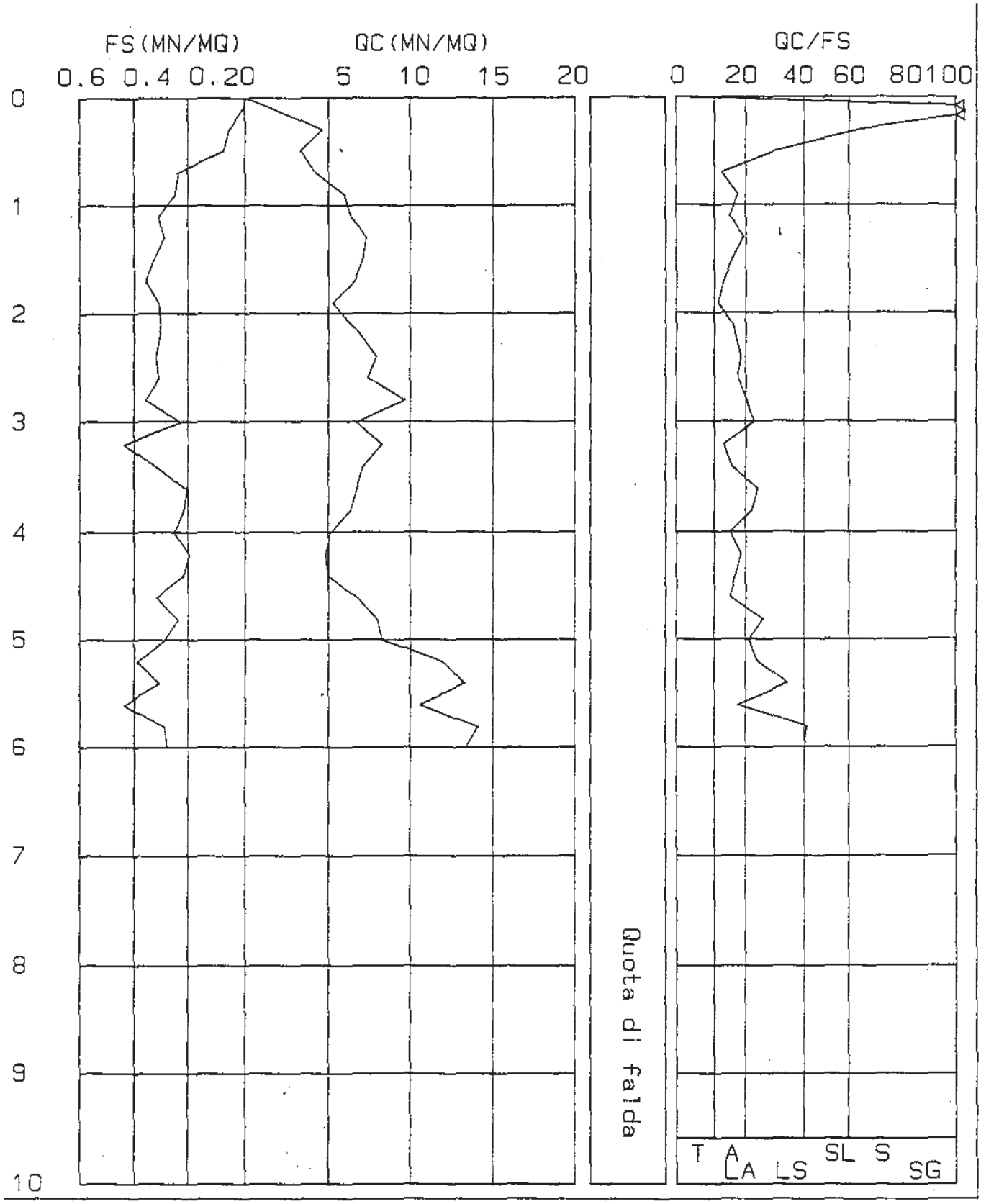


4513


0
1.5
3.0
4.5
6.0
7.5
9.0
10.5
12.0
5
15.0
profondità
(m)


0
1.5
3.0
4.5
6.0
7.5
9.0
10.5
12.0
13.5
15.0
profondità (m)

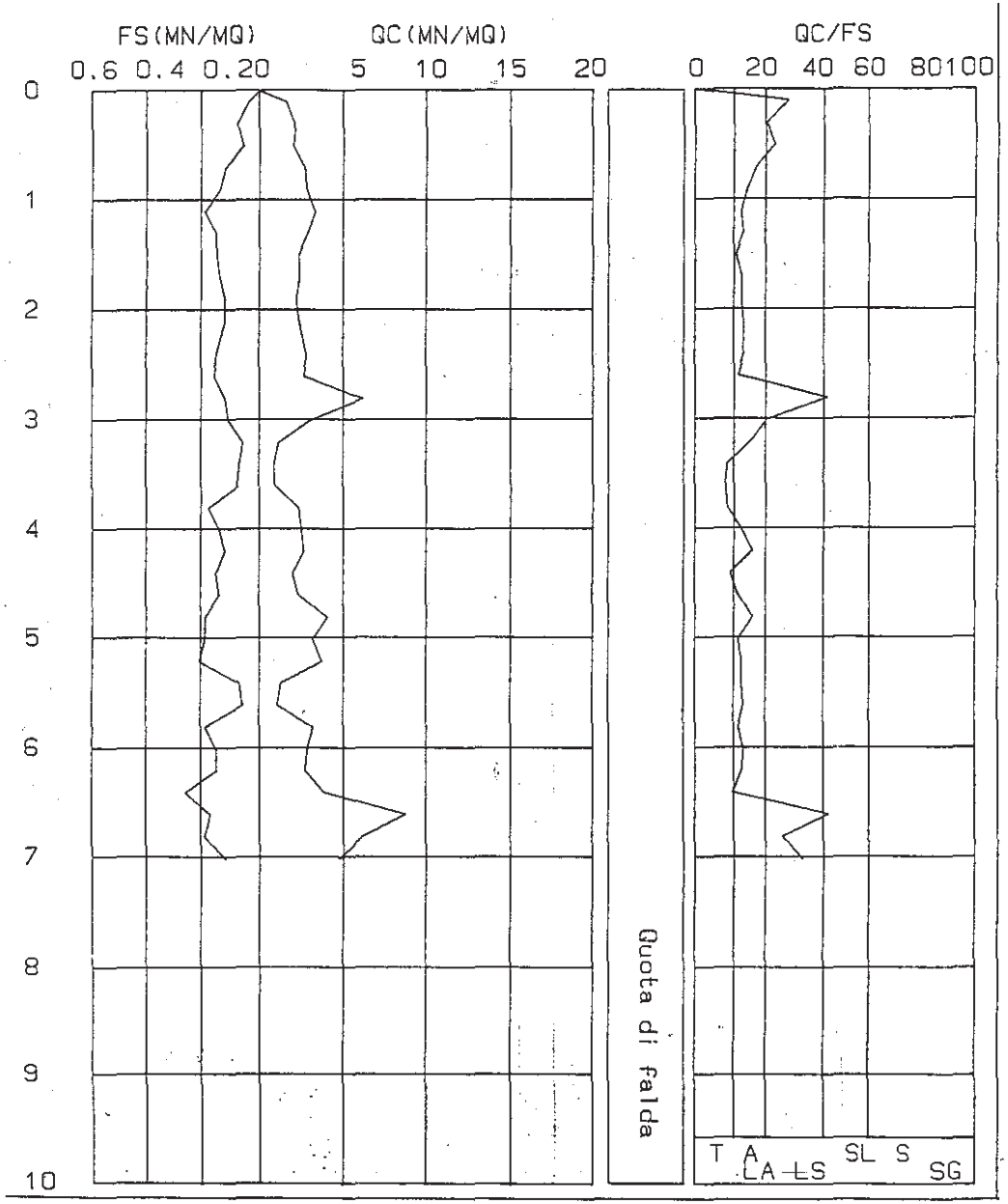

FS(MN/MQ)
0.6 0.4 0.20
QC(MN/MQ)
5 10 15 20
QC/FS
0 20 40 60 80100
0
1
2
3
4
5
6
7
8
9
10
Quota di falda
T
A
LA
LS
SL
S
SG


FS(MN/MQ)
0.6 0.4 0.20
QC(MN/MQ)
5 10 15 20
QC/FS
0 20 40 60 80100
0
1
2
3
4
5
6
7
8
9
10
Quota di falda
T A
CA LS
SL S
SG

PROF.	QC	RL.	FS.	X	PROF.	QC	RL.	FS.	X	PROF.	QC	RL.	FS.	X
0.00	1	1	0.00	0.00										
0.20	3	4	0.07	42.86										
0.40	13	18	0.33	39.39										
0.60	5	12	0.47	10.64										
0.80	2	6	0.27	7.41										
1.00	3	7	0.27	11.11										
1.20	14	20	0.40	35.00										
1.40	20	32	0.80	25.00										
1.60	29	46	1.13	25.66										
1.80	30	52	1.47	20.41										
2.00	36	54	1.20	30.00										
2.20	31	56	1.67	18.56										
2.40	44	68	1.60	27.50										
2.60	56	76	1.33	42.11										
2.80	38	78	2.67	14.23										
3.00	22	45	1.53	14.38										
3.20	36	67	2.07	17.39										
3.40	63	85	1.47	42.86										
3.60	66	89	1.53	43.14										
3.80	47	76	1.93	24.35										
4.00	53	71	1.20	44.17										
4.20	50	73	1.53	32.68										
4.40	38	67	1.93	19.69										
4.60	47	54	0.47	100.00										
4.80	29	48	1.27	22.83										
5.00	20	35	1.00	20.00										
5.20	33	55	1.47	22.45										
5.40	45	74	1.93	23.32										
5.60	22	38	1.07	20.56										
5.80	16	28	0.80	20.00										
6.00	14	27	0.87	16.09										
6.20	10	20	0.67	14.93										
6.40	48	61	0.87	55.17										
6.60	36	71	2.33	15.45										
6.80	20	38	1.20	16.67										
7.00	15	31	1.07	14.02										
7.20	10	21	0.73	13.70										
7.40	39	56	1.13	34.51										
7.60	21	38	1.13	18.58										
7.80	11	18	0.47	23.40										
8.00	16	28	0.80	20.00										

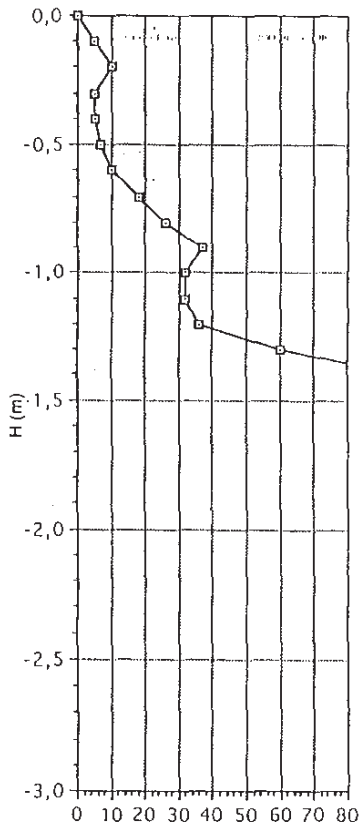
LEGENDA : PROF. = PROFONDITA' DI INFISSIONE CM. FS = RESISTENZA SPECIFICA AL MANICOTTO dN/cmq
QC = RESISTENZA SPECIFICA ALLA PUNTA dN/cmq X = RAPPORTO QC/FS %
RL = RESISTENZA LATERALE TOTALE dN/cmq

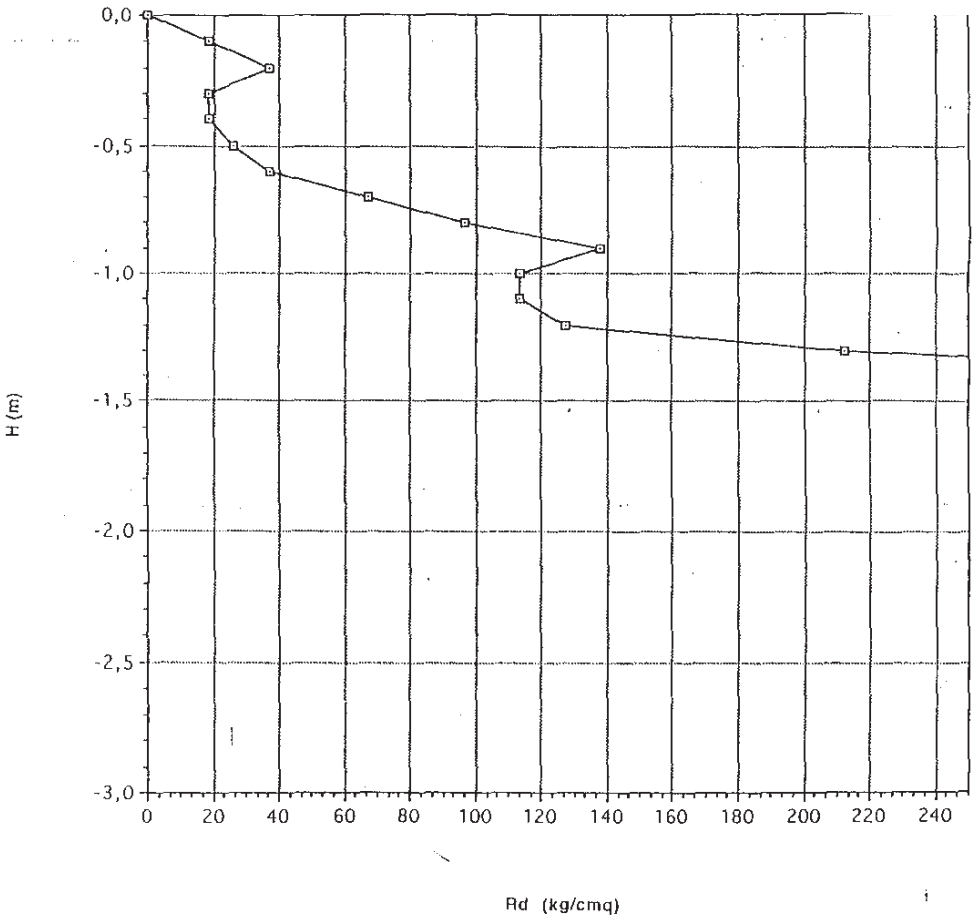
LITOLOGIA : T=TORBE A=ARGILLA LA=LIMI ARGILLOSI LS=LIMI SABBIOSI SL=SABBIE LIMOSE
S=SABBIE SG=SABBIE E GHIAIA AG=TERRENO AGRICOLO



4516

Ceppato
Prova 1

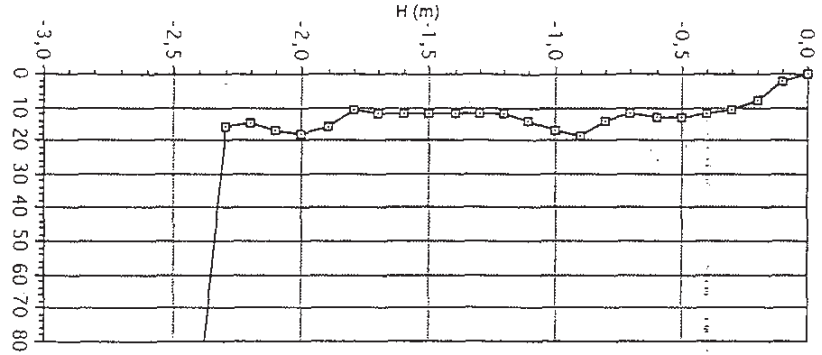




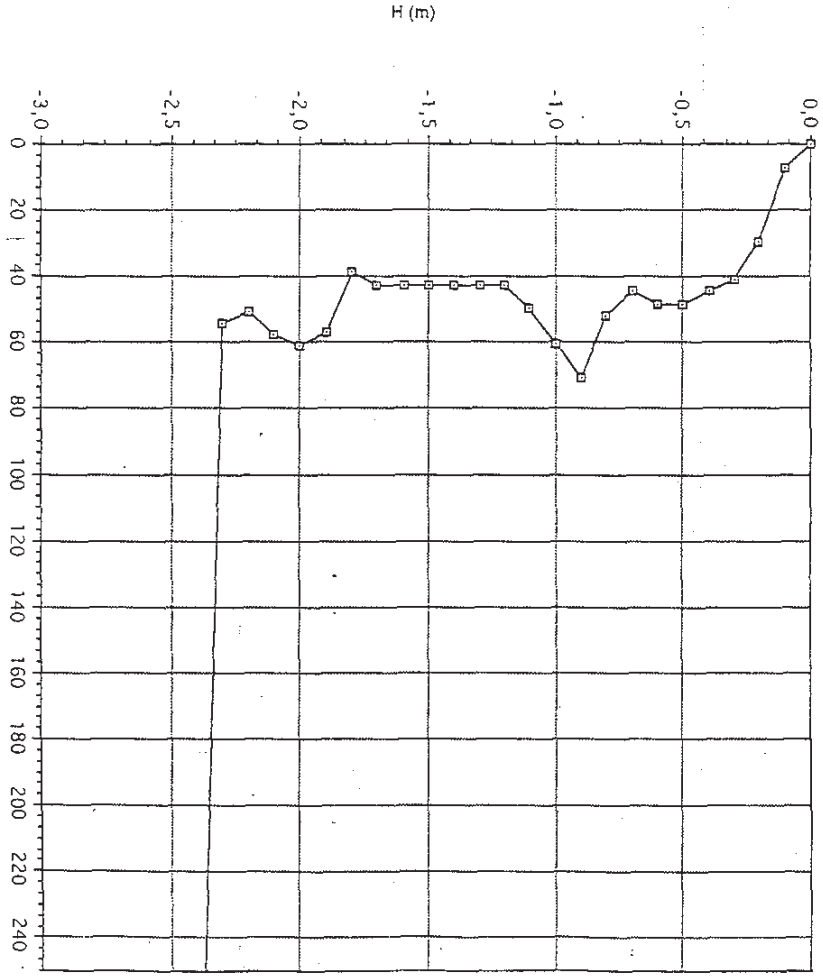
	A	B	C	D	E	F
1	Profondità (m)	Numero colpi	Rd (kg/cmq)	Profondità (m)	Numero colpi	Rd (kg/cmq)
2	0,10	5	18,60	4,60		0,00
3	0,20	10	37,19	4,70		0,00
4	0,30	5	18,60	4,80		0,00
5	0,40	5	18,60	4,90		0,00
6	0,50	7	26,03	5,00		0,00
7	0,60	10	37,19	5,10		0,00
8	0,70	18	66,94	5,20		0,00
9	0,80	26	96,69	5,30		0,00
10	0,90	37	137,60	5,40		0,00
11	1,00	32	113,39	5,50		0,00
12	1,10	32	113,39	5,60		0,00
13	1,20	36	127,56	5,70		0,00
14	1,30	60	212,60	5,80		0,00
15	1,40	100	354,33	5,90		0,00
16	1,50		0,00	6,00		0,00
17	1,60		0,00	6,10		0,00
18	1,70		0,00	6,20		0,00
19	1,80		0,00	6,30		0,00
20	1,90		0,00	6,40		0,00
21	2,00		0,00	6,50		0,00
22	2,10		0,00	6,60		0,00
23	2,20		0,00	6,70		0,00
24	2,30		0,00	6,80		0,00
25	2,40		0,00	6,90		0,00
26	2,50		0,00	7,00		0,00
27	2,60		0,00	7,10		0,00
28	2,70		0,00	7,20		0,00
29	2,80		0,00	7,30		0,00
30	2,90		0,00	7,40		0,00
31	3,00		0,00	7,50		0,00
32	3,10		0,00	7,60		0,00
33	3,20		0,00	7,70		0,00
34	3,30		0,00	7,80		0,00
35	3,40		0,00	7,90		0,00
36	3,50		0,00	8,00		0,00
37	3,60		0,00	8,10		0,00
38	3,70		0,00	8,20		0,00
39	3,80		0,00	8,30		0,00
40	3,90		0,00	8,40		0,00
41	4,00		0,00	8,50		0,00
42	4,10		0,00	8,60		0,00
43	4,20		0,00	8,70		0,00
44	4,30		0,00	8,80		0,00
45	4,40		0,00	8,90		0,00
46	4,50		0,00	9,00		0,00

	A	B	C	D	E	F
1	Profondità (m)	Numero colpi	Rd (kg/cmq)	Profondità (m)	Numero colpi	Rd (kg/cmq)
2	0,10	2	7,44	4,60		0,00
3	0,20	8	29,75	4,70		0,00
4	0,30	11	40,91	4,80		0,00
5	0,40	12	44,63	4,90		0,00
6	0,50	13	48,35	5,00		0,00
7	0,60	13	48,35	5,10		0,00
8	0,70	12	44,63	5,20		0,00
9	0,80	14	52,07	5,30		0,00
10	0,90	19	70,66	5,40		0,00
11	1,00	17	60,24	5,50		0,00
12	1,10	14	49,61	5,60		0,00
13	1,20	12	42,52	5,70		0,00
14	1,30	12	42,52	5,80		0,00
15	1,40	12	42,52	5,90		0,00
16	1,50	12	42,52	6,00		0,00
17	1,60	12	42,52	6,10		0,00
18	1,70	12	42,52	6,20		0,00
19	1,80	11	38,98	6,30		0,00
20	1,90	16	56,69	6,40		0,00
21	2,00	18	60,90	6,50		0,00
22	2,10	17	57,52	6,60		0,00
23	2,20	15	50,75	6,70		0,00
24	2,30	16	54,14	6,80		0,00
25	2,40	100	338,35	6,90		0,00
26	2,50		0,00	7,00		0,00
27	2,60		0,00	7,10		0,00
28	2,70		0,00	7,20		0,00
29	2,80		0,00	7,30		0,00
30	2,90		0,00	7,40		0,00
31	3,00		0,00	7,50		0,00
32	3,10		0,00	7,60		0,00
33	3,20		0,00	7,70		0,00
34	3,30		0,00	7,80		0,00
35	3,40		0,00	7,90		0,00
36	3,50		0,00	8,00		0,00
37	3,60		0,00	8,10		0,00
38	3,70		0,00	8,20		0,00
39	3,80		0,00	8,30		0,00
40	3,90		0,00	8,40		0,00
41	4,00		0,00	8,50		0,00
42	4,10		0,00	8,60		0,00
43	4,20		0,00	8,70		0,00
44	4,30		0,00	8,80		0,00
45	4,40		0,00	8,90		0,00
46	4,50		0,00	9,00		0,00

N



Ceppato
Prova 2



Rd (kg/cmq)

DATA: luglio 2000

I = CAMPIONE INDISTURBATO R = CAMPIONE RIMANEGGIATO S = CAMPIONATORE A PARETI SOTTILI

TODO PERFORAZIONE	TIPO DI CORONA	ATTREZZO DI PERFORAZIONE	PROFONDITA' DAL P.C. (m)	COLONNA STRATIGRAFICA	LIVELLO FALDA	DESCRIZIONE STRATIGRAFICA	CAROTAGGIO % (20 40 60 80)	POKET PENETROMETER (Kg/cm q)	CAMPIONI NUMERO	CAMPIONI TIPO	CAMPIONI PROFONDITA'	STRUMENTAZIONE INSTALLATA
CAROTAGGIO CONTINUO	WIDIA	CAROTIERE SEMPLICE	1			*Terreno vegetale*						
			2			*Sabbie argillose addensate con noduli e ciottoli di colore beige e bruno scuro. Sono presenti livelli di ciottoli rossastri in matrice argillosa*						
			3			*Sabbie beige con livelletti di conglomerati il tutto immerso in matrice argilloso-sabbiosa beige e marrone scura*			C1S1		2.50 3.00	
			4						C2S1		4.20 4.50	
			5									
			6			*Argilla grigia compatta omogenea*						
			7									
			8									
			9									
			10									
			11									
			12									
			13									
			14									
			15									
			16									
			17									
			18									
			19									
			20									

Stratigrafia del sondaggio S1

Cantiere : Casciana Terme (PI)

Campione n° prelevato da mt. a mt.

Peso campione umido = 79.710 gr.

Peso campione secco = 66.700 gr. Umidità finale = 18.01 %

FASE DI CARICO

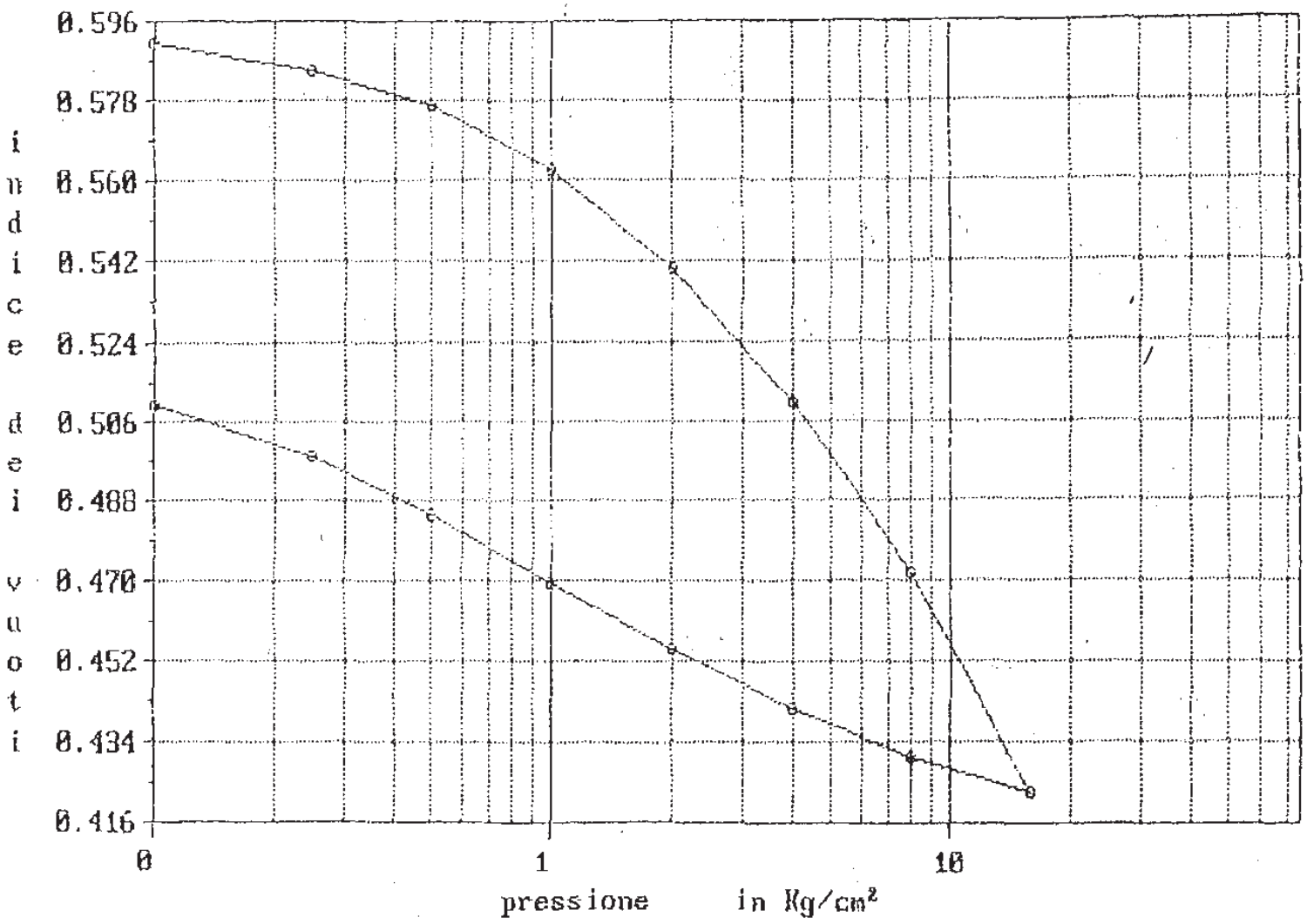
Pressione Kg/cm²	ΔH mm.	H mm.	H+Hs mm.	e	e%	av cm²/Kg	mv cm²/Kg
0.000	0.000	20.000	7.419	0.593	0.000	0.000	0.000
0.250	0.080	19.920	7.339	0.583	10.634	0.0254	0.0160
0.500	0.100	19.820	7.339	0.575	1.431	0.0318	0.0200
1.000	0.180	19.640	7.039	0.561	2.861	0.0284	0.0180
2.000	0.280	19.360	6.779	0.539	5.087	0.0223	0.0140
4.000	0.370	18.990	6.409	0.509	8.088	0.0147	0.0092
8.000	0.490	18.500	5.919	0.470	11.922	0.0097	0.0061
16.000	0.600	17.900	5.319	0.421	16.880	0.0062	0.0039

FASE DI SCARICO

Pressione Kg/cm²	ΔH mm.	H mm.	H+Hs mm.	e	e%	av cm²/Kg	mv cm²/Kg
8.000	0.100	17.900	5.319	0.429	16.055	—	—
4.000	0.140	18.120	5.539	0.440	14.943	—	—
2.000	0.170	18.290	5.709	0.454	13.591	—	—
1.000	0.190	18.470	5.889	0.468	12.161	—	—
0.500	0.190	18.660	6.079	0.483	10.651	—	—
0.250	0.170	18.830	6.249	0.497	9.299	—	—
0.100	0.150	18.980	6.399	0.509	8.107	—	—

INDICE DI COMPRESSIBILITA' Cc = 0.1065

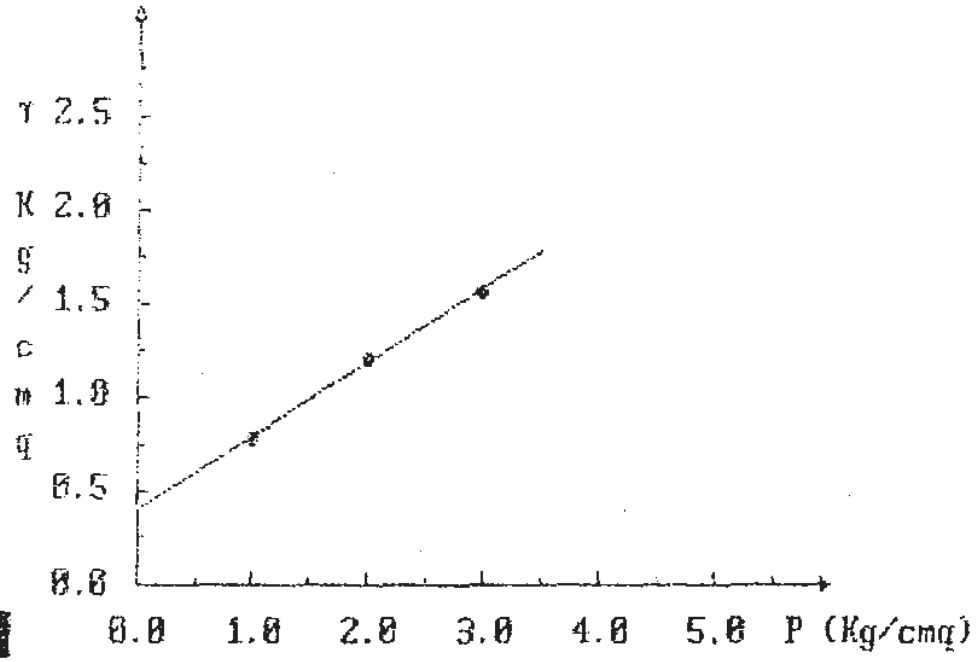
PROVA EDOMETRICA



TAGLIO RAPIDO NON DRENATO

Valori misurati

P Kg/cmq	τ Kg/cmq
1.000	0.770
2.000	1.190
3.000	1.560



φ = 22° **c = 0.39 Kg/cmq**

Sondaggio n° 1

Committente : Leonardo Engineering s.r.l. Cantiere : C.Terme loc. S.Martino

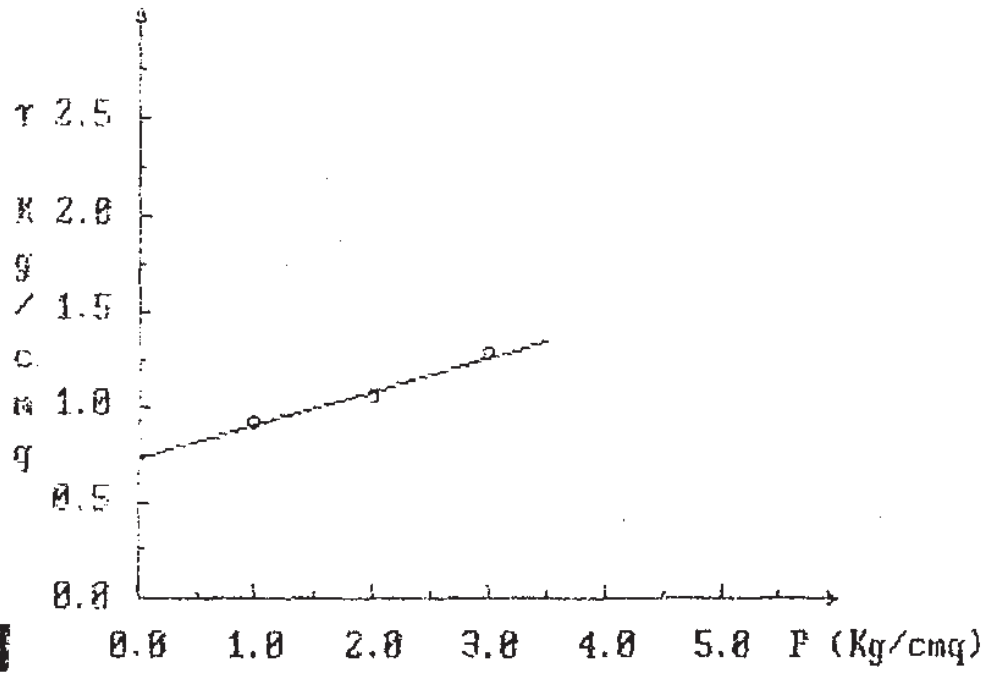
Campione n° 1 da mt. 2.50 a mt. 3.00

Umidità naturale = 21.01 % Peso di volume = 1.980 kg/dmc

TAGLIO RAPIDO NON DRENATO

Valori misurati

P Kg/cmq	T Kg/cmq
1.000	0.929
2.000	1.060
3.000	1.270



Φ = 10° **c = 0.72 Kg/cmq**

Sondaggio n° 1

Committente : Leonardo Engineering s.r.l. Cantiere : C.Terme loc. S.Martino

Campione n° 2 da mt. 4.28 a mt. 4.50

Umidità naturale = 22.12 % Peso di volume = 1.990 kg/dmc

Quota falda: m dal p.c.

Prof. [metri]	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Rt [Kgf]	parametri geotecnici stimati: γ [Kg/dmc]	σ'vo [Kg/cmq]	ϕ [gradi]	Dr [%]	Cu [Kg/cmq]	mv [cmq/t]	Colonna stratig.	litologia
0.2							-	-	-	-		
0.4							-	-	-	-		
0.6	14.0	0.9	15		1.91	0.04	-	-	0.56	20.0	======	a
0.8	8.0	0.7	11		1.51	0.07	-	-	0.32	42.2	######	aot
1	8.0	0.4	20		1.80	0.10	-	-	0.32	27.0	======	a
1.2	12.0	0.3	45		1.66	0.14	-	-	0.47	19.8	~~~~~~	l
1.4	16.0	0.5	34		1.68	0.17	-	-	0.63	17.4	~~~~~~	l
1.6	16.0	0.5	34		1.68	0.20	-	-	0.63	17.4	~~~~~~	l
1.8	14.0	0.5	30		1.91	0.24	-	-	0.55	20.0	===~~~	al
2	17.0	0.6	28		1.92	0.28	-	-	0.67	19.4	===~~~	al
2.2	17.0	0.7	26		1.92	0.32	-	-	0.67	19.4	===~~~	al
2.4	25.0	0.5	47		1.73	0.35	28	-	-	13.3	...~~~	sl
2.6	27.0	0.6	45		1.74	0.39	28	-	-	12.3	...~~~	sl
2.8	23.0	0.9	25		1.93	0.43	-	-	0.90	17.4	===~~~	al
3	36.5	1.1	34		1.78	0.46	29	-	-	9.1	...~~~	sl
3.2	40.5	1.2	34		1.80	0.50	30	-	-	8.2	...~~~	sl
3.4	42.5	1.8	24		1.97	0.54	-	-	1.68	9.4	===~~~	al
3.6	43.5	1.8	24		1.97	0.58	-	-	1.72	9.2	===~~~	al
3.8	43.7	1.8	24		1.97	0.62	-	-	1.72	9.2	===~~~	al
4	43.7	1.7	26		1.97	0.66	-	-	1.72	9.2	===~~~	al
4.2	43.7	1.6	27		1.97	0.70	-	-	1.72	9.2	===~~~	al
4.4	44.7	1.9	24		1.98	0.74	-	-	1.76	9.0	===~~~	al
4.6	41.7	1.1	39		1.81	0.77	30	-	-	8.0	...~~~	sl
4.8	42.8	1.7	26		1.97	0.81	-	-	1.68	9.4	===~~~	al
5	52.8	1.3	40		1.86	0.85	31	-	-	6.3	...~~~	sl
5.2	51.8	2.1	25		1.99	0.89	-	-	2.04	7.7	===~~~	al
5.4	55.8	2.6	21		2.00	0.93	-	-	2.19	7.2	===~~~	al
5.6	58.8	2.8	21		2.01	0.97	-	-	2.31	6.8	===~~~	al
5.8	59.9	3.1	20		2.01	1.01	-	-	2.36	6.7	===~~~	al
6	58.9	3.2	18		2.01	1.05	-	-	2.31	6.8	======	a
6.2	55.9	3.3	17		2.00	1.09	-	-	2.19	7.2	======	a
6.4	59.9	2.9	20		2.01	1.13	-	-	2.35	6.7	===~~~	al
6.6	59.9	3.0	20		2.01	1.17	-	-	2.35	6.7	===~~~	al
6.8	60.0	3.1	19		2.01	1.21	-	-	2.35	6.7	===~~~	al
7	63.0	3.3	19		2.02	1.25	-	-	2.47	6.3	===~~~	al
7.2	61.0	3.5	17		2.01	1.29	-	-	2.39	6.6	======	a
7.4	63.0	3.4	19		2.02	1.33	-	-	2.47	6.3	======	a
7.6	64.0	3.3	19		2.02	1.37	-	-	2.51	6.2	===~~~	al
7.8	65.2	3.3	20		2.02	1.41	-	-	2.55	6.1	===~~~	al
8												
8.2												
8.4												
8.6												
8.8												
9												
9.2												
9.4												
9.6												
9.8												
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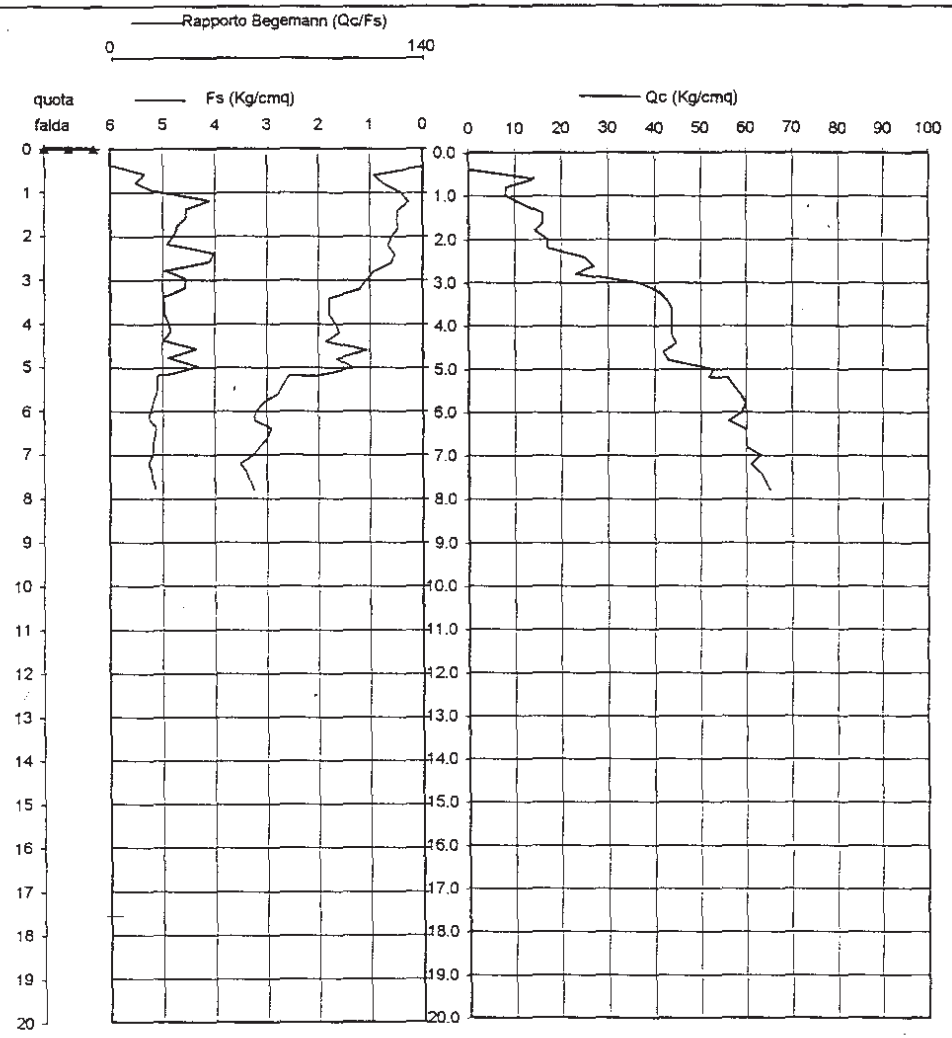
PENETROMETRO STATICO: TG 73 200 KN PAGANI

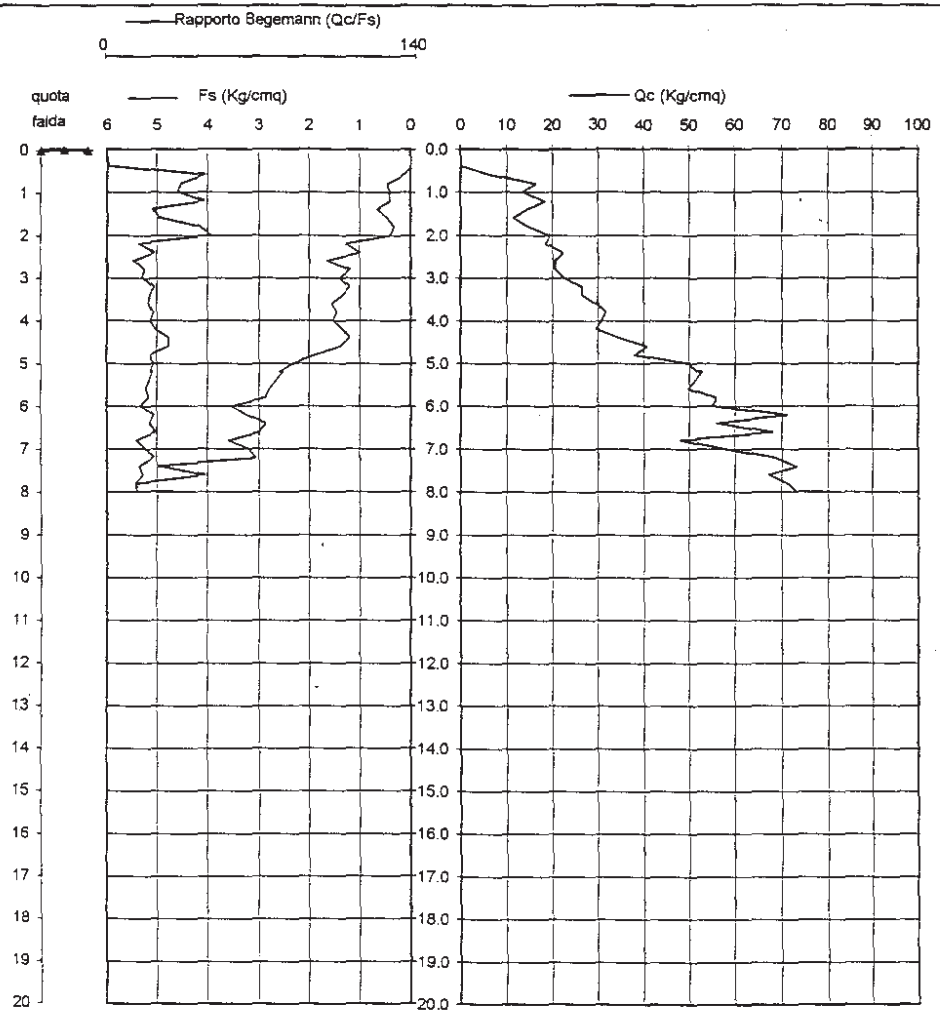


4519

Quota falda: m dal p.c.

Prof. [metri]	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Rt [Kgf]	γ [Kg/dmc]	σ'vo [Kg/cmq]	ϕ [gradi]	Dr [%]	Cu [Kg/cmq]	mv [cmq/t]	Colonna stratig.	lito_ logia
					parametri geotecnici stimati							
0.2					1.80	0.04	-	-	-	-	non ril.	
0.4					1.80	0.07	-	-	-	-	non ril.	
0.6	6.1	0.1	46		1.63	0.10	-	-	0.24	32.1		l
0.8	16.3	0.5	35		1.68	0.14	-	-	0.64	17.3		l
1	13.3	0.4	33		1.91	0.18	-	-	0.52	20.4		al
1.2	18.3	0.4	46		1.69	0.21	-	-	0.72	16.8		l
1.4	14.3	0.7	21		1.91	0.25	-	-	0.56	19.9		a
1.6	11.3	0.5	24		1.90	0.29	-	-	0.44	21.9		a
1.8	14.4	0.3	43		1.67	0.32	-	-	0.56	18.1		l
2	19.4	0.4	48		1.70	0.35	34	35	-	0.9		ss
2.2	18.4	1.3	15		1.92	0.39	-	-	0.72	19.5		a
2.4	22.4	1.0	22		1.93	0.43	-	-	0.88	17.9		a
2.6	20.4	1.7	12		1.92	0.47	-	-	0.80	18.2		a
2.8	20.5	1.2	17		1.92	0.51	-	-	0.80	19.5		a
3	22.5	1.4	16		1.93	0.55	-	-	0.88	17.8		a
3.2	26.5	1.2	22		1.94	0.58	-	-	1.04	15.1		a
3.4	26.5	1.3	20		1.94	0.62	-	-	1.04	15.1		a
3.6	29.5	1.5	19		1.94	0.66	-	-	1.15	13.6		a
3.8	31.7	1.5	22		1.95	0.70	-	-	1.24	12.6		a
4	30.7	1.5	20		1.95	0.74	-	-	1.20	13.1		a
4.2	29.7	1.3	22		1.94	0.78	-	-	1.15	13.5		a
4.4	34.7	1.2	29		1.95	0.82	-	-	1.35	11.5		al
4.6	40.7	1.4	29		1.80	0.85	30	-	-	8.2		sl
4.8	37.8	1.9	20		1.96	0.89	-	-	1.48	10.6		a
5	49.8	2.3	21		1.99	0.93	-	-	1.95	8.0		al
5.2	51.8	2.6	20		1.99	0.97	-	-	2.03	7.7		a
5.4	52.8	2.5	21		2.00	1.01	-	-	2.07	7.6		al
5.6	49.8	2.8	18		1.99	1.05	-	-	1.95	8.0		a
5.8	55.9	2.9	20		2.00	1.09	-	-	2.19	7.2		a
6	54.9	3.5	16		2.00	1.13	-	-	2.15	7.3		a
6.2	70.9	3.3	22		2.04	1.17	-	-	2.79	5.6		al
6.4	55.9	2.9	20		2.00	1.21	-	-	2.19	7.2		a
6.6	67.9	3.0	23		2.03	1.25	-	-	2.67	5.9		al
6.8	48.0	3.6	13		1.98	1.29	-	-	1.87	8.3		a
7	58.0	3.2	18		2.01	1.33	-	-	2.27	6.9		a
7.2	68.0	3.1	22		2.03	1.37	-	-	2.67	5.9		al
7.4	73.0	5.0	15		2.04	1.42	-	-	2.86	5.5		a
7.6	67.0	4.1	16		2.03	1.46	-	-	2.62	6.0		a
7.8	71.2	5.4	13		2.04	1.50	-	-	2.79	5.6		a
8	73.2	5.4	14		2.04	1.54	-	-	2.87	5.5		a
8.2	81.2	4.4	18		2.06	1.58	-	-	3.18	4.9		al
8.4												
8.6												
8.8												
9												
9.2												
9.4												
9.6												
9.8												
10												

PENETROMETRO STATICO: TG 73 200 KN PAGANI



Data: **Prova:** P.1
Committente: Cammilli Luca e Riccardo e Martolini Iva **Località:** Collemontanino
Tipologia intervento: Ristrutturazione ed ampliamento Fabbricato

m.	Qc (dN/cm^2)	Rl (dN/cm2)	Fs (dN/cm2)	Qc/Fs (%)
0.20	7	9	0.13	53.85
0.40	10	17	0.47	21.28
0.60	10	19	0.60	16.67
0.80	11	20	0.60	18.33
1.00	10	18	0.53	18.87
1.20	10	20	0.67	14.93
1.40	8	16	0.53	15.09
1.60	9	18	0.60	15.00
1.80	9	19	0.67	13.43
2.00	9	20	0.73	12.33
2.20	9	20	0.73	12.33
2.40	10	20	0.67	14.93
2.60	10	20	0.67	14.93
2.80	12	23	0.73	16.44
3.00	14	29	1.00	14.00
3.20	14	31	1.13	12.39
3.40	20	33	0.87	22.99
3.60	19	40	1.40	13.57
3.80	13	33	1.33	9.77
4.00	19	35	1.07	17.76
4.20	31	51	1.33	23.31
4.40	23	42	1.27	18.11
4.60	29	47	1.20	24.17
4.80	29	50	1.40	20.71
5.00	29	51	1.47	19.73
5.20	14	32	1.20	11.67
5.40	19	30	0.73	26.03
5.60	23	38	1.00	23.00
5.80	26	51	1.67	15.57
6.00	35	61	1.73	20.23
6.20	30	56	1.73	17.34
6.40	44	79	2.33	18.88
6.60	58	105	3.13	18.53
6.80	57	110	3.53	16.15
7.00	57	101	2.93	19.45

m.:Profondità; Qc:Resistenza alla Punta; Rl: Resistenza laterale totale; Fs:Resistenza specifica al Manicotto; Qc/Fs:Rapporto Begemann

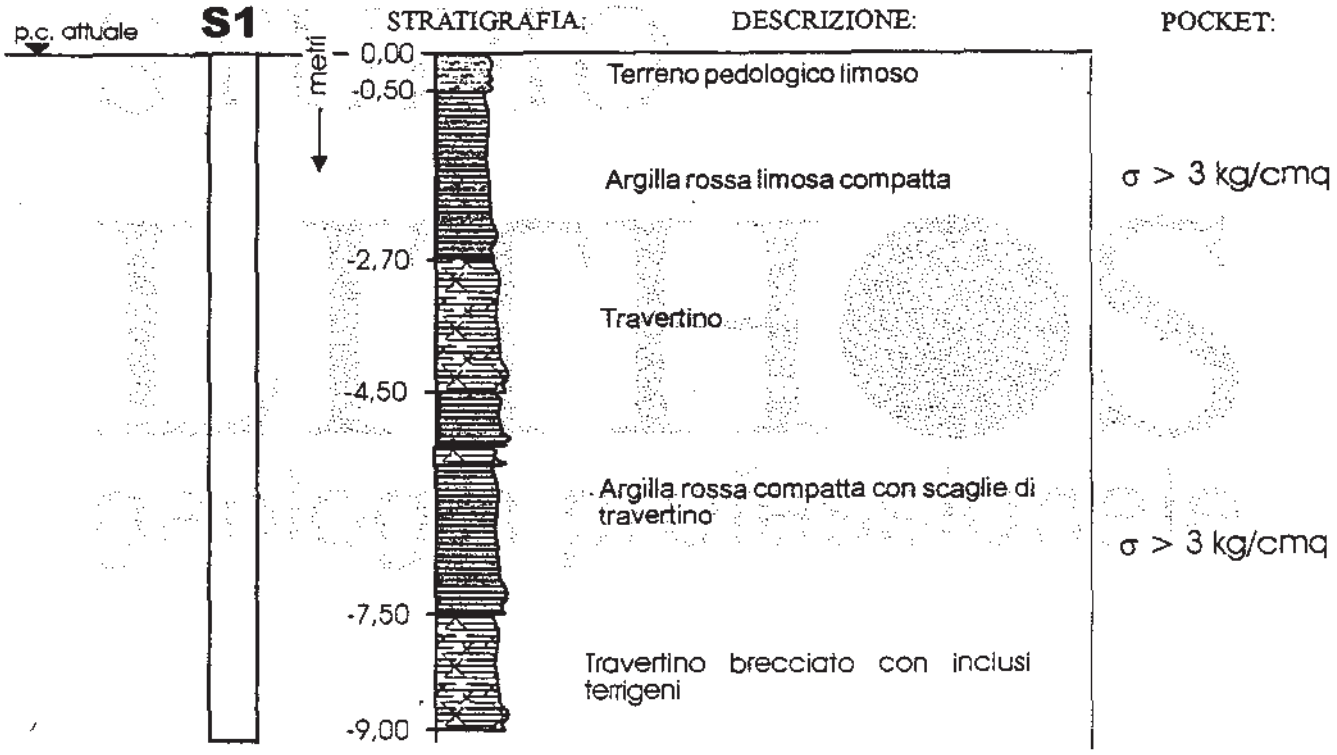
Data: **Prova:** P.2

Committente: Cammilli Luca e Riccardo e Martolini Iva **Località:** Collemontanino

Tipologia intervento: Ristrutturazione ed ampliamento Fabbricato

m.	Qc (dN/cm²)	Rl (dN/cm2)	Fs (dN/cm2)	Qc/Fs (%)
0.20	56	62	0.40	140.00
0.40	54	92	2.53	21.34
0.60	45	78	2.20	20.45
0.80	27	51	1.60	16.88
1.00	57	76	1.27	44.88
1.20	80	123	2.87	27.87
1.40	146	203	3.80	38.42
1.60	135	207	4.80	28.13
1.80	133	210	5.13	25.93
2.00	49	80	2.07	23.67
2.20	39	60	1.40	27.86
2.40	20	40	1.33	15.04
2.60	18	37	1.27	14.17
2.80	17	32	1.00	17.00
3.00	15	33	1.20	12.50
3.20	15	29	0.93	16.13
3.40	21	40	1.27	16.54
3.60	19	37	1.20	15.83
3.80	15	30	1.00	15.00
4.00	19	34	1.00	19.00
4.20	22	41	1.27	17.32
4.40	27	47	1.33	20.30
4.60	28	52	1.60	17.50
4.80	30	58	1.87	16.04
5.00	28	51	1.53	18.30
5.20	21	42	1.40	15.00
5.40	20	35	1.00	20.00
5.60	27	49	1.47	18.37
5.80	29	57	1.87	15.51
6.00	37	66	1.93	19.17
6.20	23	41	1.20	19.17
6.40	32	66	2.27	14.10
6.60	46	88	2.80	16.43
6.80	50	101	3.40	14.71
7.00	66	115	3.27	20.18

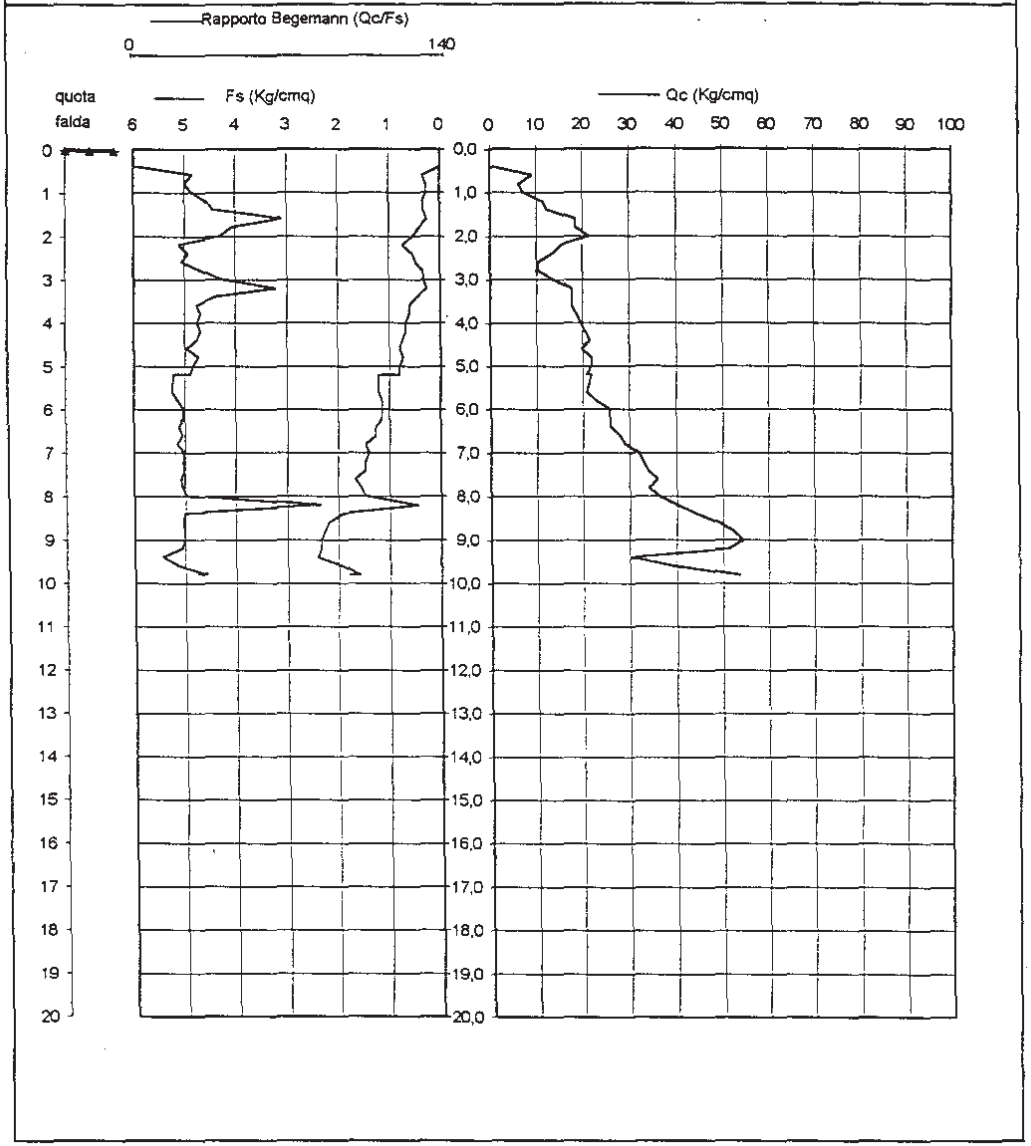
m.:Profondità; **Qc**:Resistenza alla Punta; **Rl**: Resistenza laterale totale; **Fs**:Resistenza specifica al Manicotto; **Qc/Fs**:Rapporto Begeman


p.c. attuale
S1
metri
STRATIGRAFIA:
DESCRIZIONE:
POCKET:
0,00
-0,50
-2,70
-4,50
-7,50
-9,00
Terreno pedologico limoso
Argilla rossa limosa compatta
σ > 3 kg/cmq
Travertino
Argilla rossa compatta con scaglie di travertino
σ > 3 kg/cmq
Travertino brecciato con inclusi terrigeni

Quota falda: m dal p.c.

Prof. [metri]	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Rt [Kgf]	γ [Kg/dmc]	σ'vo [Kg/cmq]	ϕ [gradi]	Dr [%]	Cu [Kg/cmq]	mv [cmq/t]	Colonna stratig.	lito_ logia
					parametri geotecnici stimati							
0.2					1.80	0.04	-	-	-	-	non ril.	
0.4					1.80	0.07	-	-	-	-	non ril.	
0.6	9.1	0.3	27		1.86	0.11	-	-	0.36	24.7		al
0.8	6.3	0.3	23		1.71	0.14	-	-	0.24	32.3		a
1	7.3	0.3	27		1.76	0.18	-	-	0.28	28.9		a
1.2	11.3	0.3	34		1.90	0.22	-	-	0.44	21.9		al
1.4	12.3	0.3	37		1.66	0.25	-	-	0.48	19.6		l
1.6	18.3	0.3	68		1.69	0.28	35	38	-	0.9		ss
1.8	18.4	0.4	46		1.69	0.32	-	-	0.72	16.8		l
2	21.4	0.5	40		1.71	0.35	27	-	-	15.6		sl
2.2	15.4	0.7	21		1.91	0.39	-	-	0.60	19.6		a
2.4	13.4	0.5	25		1.91	0.43	-	-	0.52	20.3		a
2.6	10.4	0.5	22		1.90	0.47	-	-	0.40	22.9		a
2.8	10.5	0.3	32		1.90	0.50	-	-	0.40	22.7		al
3	13.5	0.3	41		1.67	0.54	-	-	0.52	18.6		l
3.2	17.5	0.3	66		1.69	0.57	30	21	-	1.0		ss
3.4	17.5	0.5	38		1.69	0.61	-	-	0.68	16.9		l
3.6	17.5	0.6	29		1.92	0.64	-	-	0.68	19.4		al
3.8	18.7	0.6	31		1.69	0.68	-	-	0.72	16.7		l
4	19.7	0.7	29		1.92	0.72	-	-	0.76	19.9		al
4.2	20.7	0.7	31		1.70	0.75	27	-	-	16.1		sl
4.4	21.7	0.7	30		1.93	0.79	-	-	0.83	18.5		al
4.6	19.7	0.8	25		1.92	0.83	-	-	0.75	19.9		al
4.8	21.8	0.7	30		1.93	0.87	-	-	0.84	18.4		al
5	21.8	0.8	27		1.93	0.90	-	-	0.84	18.4		al
5.2	20.8	0.8	26		1.92	0.94	-	-	0.79	19.2		al
5.4	21.8	1.2	18		1.93	0.98	-	-	0.83	18.4		a
5.6	20.8	1.2	17		1.92	1.02	-	-	0.79	19.2		a
5.8	22.9	1.1	20		1.93	1.06	-	-	0.87	17.5		a
6	25.9	1.1	23		1.94	1.10	-	-	0.99	15.4		a
6.2	25.9	1.1	23		1.94	1.14	-	-	0.99	15.4		a
6.4	25.9	1.3	20		1.94	1.17	-	-	0.99	15.4		a
6.6	27.9	1.3	22		1.94	1.21	-	-	1.07	14.3		a
6.8	29.0	1.5	20		1.94	1.25	-	-	1.11	13.8		a
7	32.0	1.4	23		1.95	1.29	-	-	1.23	12.5		al
7.2	33.0	1.5	23		1.95	1.33	-	-	1.27	12.1		al
7.4	34.0	1.5	23		1.95	1.37	-	-	1.31	11.8		al
7.6	36.0	1.7	22		1.96	1.41	-	-	1.39	11.1		a
7.8	34.2	1.5	22		1.95	1.45	-	-	1.31	11.7		al
8	36.2	1.5	25		1.96	1.49	-	-	1.39	11.1		al
8.2	40.2	0.5	86		1.80	1.52	29	28	-	8.3		sm
8.4	44.2	1.9	23		1.98	1.56	-	-	1.70	9.1		al
8.6	49.2	2.2	22		1.99	1.60	-	-	1.90	8.1		al
8.8	52.3	2.3	23		1.99	1.64	-	-	2.03	7.6		al
9	54.3	2.3	23		2.00	1.68	-	-	2.10	7.4		al
9.2	51.3	2.3	22		1.99	1.72	-	-	1.98	7.8		al
9.4	30.3	2.4	13		1.95	1.76	-	-	1.14	13.2		a
9.6	39.3	1.9	20		1.97	1.80	-	-	1.50	10.2		a
9.8	53.4	1.6	33		1.87	1.84	31	-	-	6.2		sl
10	52.4	1.8	29		1.86	1.87	31	-	-	6.4		sl

PENETROMETRO STATICO: TG 73 200 KN PAGANI

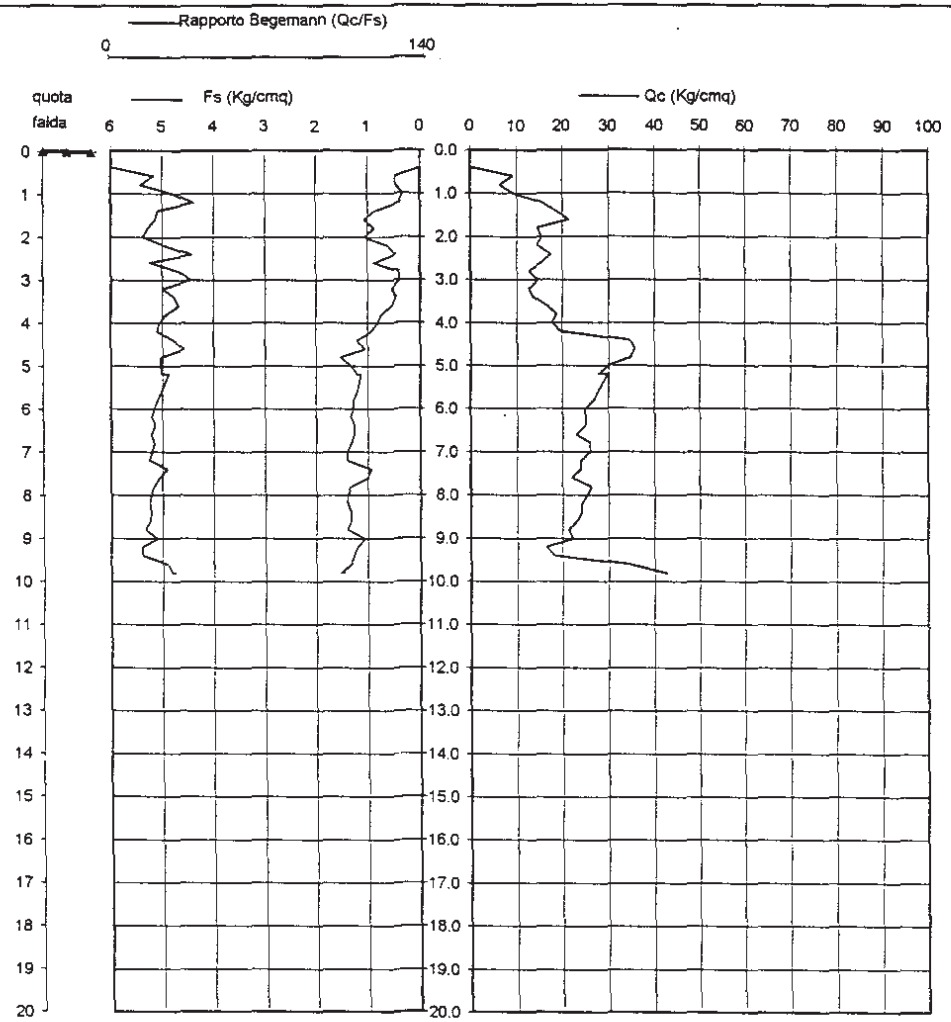


4522

Quota falda: m dal p.c.

Prof. [metri]	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Rt [Kgf]	parametri geotecnici stimati: γ [Kg/dmc]	σ'vo [Kg/cmq]	ϕ [gradi]	Dr [%]	Cu [Kg/cmq]	mv [cmq/t]	Colonna stratig.	litologia
0.2					1.80	0.04	-	-	-	-	non ril.	
0.4					1.80	0.07	-	-	-	-	non ril.	
0.6	9.1	0.5	20		1.86	0.11	-	-	0.36	24.7	======	a
0.8	6.3	0.5	13		1.49	0.14	-	-	0.24	50.1	######	aot
1	9.3	0.3	28		1.86	0.18	-	-	0.36	24.5	~~~~~~	al
1.2	15.3	0.4	38		1.68	0.21	-	-	0.60	17.7	~~~~~~	l
1.4	18.3	0.9	21		1.92	0.25	-	-	0.72	19.5	======	a
1.6	21.3	1.1	20		1.93	0.29	-	-	0.84	18.8	======	a
1.8	14.4	0.9	17		1.91	0.32	-	-	0.56	19.9	======	a
2	15.4	1.1	14		1.91	0.36	-	-	0.60	19.6	======	a
2.2	14.4	0.6	24		1.91	0.40	-	-	0.56	19.9	======	a
2.4	17.4	0.5	37		1.69	0.44	-	-	0.68	17.0	~~~~~~	l
2.6	15.4	0.9	18		1.91	0.47	-	-	0.60	19.6	======	a
2.8	12.5	0.4	31		1.91	0.51	-	-	0.48	20.9	~~~~~~	al
3	14.5	0.4	36		1.67	0.54	-	-	0.56	18.0	~~~~~~	l
3.2	12.5	0.5	23		1.91	0.58	-	-	0.48	20.9	======	a
3.4	13.5	0.5	29		1.91	0.62	-	-	0.52	20.3	~~~~~~	al
3.6	16.5	0.5	31		1.91	0.66	-	-	0.63	19.4	~~~~~~	al
3.8	18.7	0.7	25		1.92	0.70	-	-	0.72	19.6	~~~~~~	al
4	17.7	0.8	22		1.92	0.74	-	-	0.68	19.4	======	a
4.2	19.7	0.9	21		1.92	0.77	-	-	0.76	19.9	======	a
4.4	34.7	1.2	29		1.95	0.81	-	-	1.35	11.5	~~~~~~	al
4.6	35.7	1.1	33		1.78	0.85	29	-	-	9.4	~~~~~~	sl
4.8	34.8	1.5	23		1.96	0.89	-	-	1.36	11.5	~~~~~~	al
5	29.8	1.3	22		1.94	0.93	-	-	1.15	13.4	======	a
5.2	27.8	1.2	23		1.94	0.97	-	-	1.07	14.4	~~~~~~	al
5.4	29.8	1.1	26		1.94	1.00	-	-	1.15	13.4	~~~~~~	al
5.6	27.8	1.2	23		1.94	1.04	-	-	1.07	14.4	~~~~~~	al
5.8	26.9	1.3	21		1.94	1.08	-	-	1.03	14.9	======	a
6	24.9	1.3	20		1.93	1.12	-	-	0.95	16.1	======	a
6.2	24.9	1.3	19		1.93	1.16	-	-	0.95	16.1	======	a
6.4	24.9	1.3	20		1.93	1.20	-	-	0.95	16.1	======	a
6.6	22.9	1.3	18		1.93	1.24	-	-	0.87	17.5	======	a
6.8	26.0	1.3	20		1.94	1.28	-	-	0.99	15.4	======	a
7	26.0	1.4	19		1.94	1.31	-	-	0.99	15.4	======	a
7.2	24.0	1.4	17		1.93	1.35	-	-	0.91	16.6	======	a
7.4	24.0	0.9	26		1.93	1.39	-	-	0.91	16.6	~~~~~~	al
7.6	22.0	1.0	22		1.93	1.43	-	-	0.82	18.1	======	a
7.8	26.2	1.3	20		1.94	1.47	-	-	0.99	15.3	======	a
8	25.2	1.4	18		1.93	1.51	-	-	0.95	15.9	======	a
8.2	24.2	1.4	17		1.93	1.55	-	-	0.90	16.5	======	a
8.4	24.2	1.3	18		1.93	1.58	-	-	0.90	16.5	======	a
8.6	23.2	1.3	17		1.93	1.62	-	-	0.86	17.3	======	a
8.8	21.3	1.4	15		1.93	1.66	-	-	0.79	18.8	======	a
9	22.3	1.1	21		1.93	1.70	-	-	0.82	17.9	======	a
9.2	16.3	1.2	14		1.59	1.73	-	-	0.58	22.7	######	aot
9.4	18.3	1.3	14		1.92	1.77	-	-	0.66	19.5	======	a
9.6	34.3	1.3	26		1.95	1.81	-	-	1.30	11.7	~~~~~~	al
9.8	42.4	1.5	28		1.97	1.85	-	-	1.62	9.4	~~~~~~	al
10	42.4	1.5	29		1.81	1.89	30	-	-	7.9	~~~~~~	sl

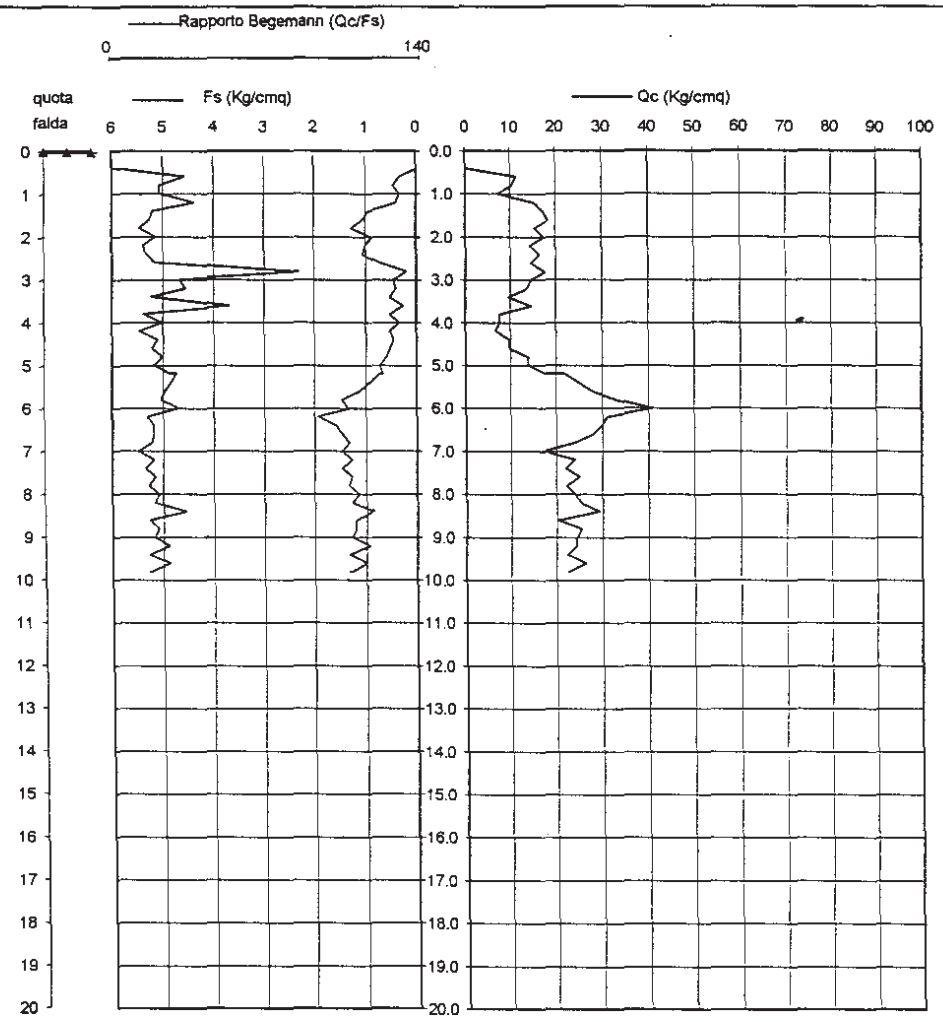
PENETROMETRO STATICO: TG 73 200 KN PAGANI



Quota falda: m dal p.c.

Prof. [metri]	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Rt [Kgf]	parametri geotecnici stimati γ [Kg/dmc]	σ'vo [Kg/cmq]	ϕ [gradi]	Dr [%]	Cu [Kg/cmq]	mv [cmq/t]	Colonna stratig.	lito_ logia
0.2					1.80	0.04	-	-	-	-	non ril.	
0.4					1.80	0.07	-	-	-	-	non ril.	
0.6	11.1	0.3	33		1.90	0.11	-	-	0.44	22.0	======~~~	al
0.8	10.3	0.5	22		1.90	0.15	-	-	0.40	23.0	======	a
1	7.3	0.3	22		1.76	0.18	-	-	0.28	28.9	======	a
1.2	15.3	0.4	38		1.68	0.22	-	-	0.60	17.7	~~~~~~	l
1.4	17.3	0.9	18		1.92	0.26	-	-	0.68	19.4	======	a
1.6	18.3	1.1	17		1.92	0.29	-	-	0.72	19.5	======	a
1.8	15.4	1.3	12		1.58	0.33	-	-	0.60	24.1	######	aot
2	17.4	0.9	20		1.92	0.36	-	-	0.68	19.4	======	a
2.2	14.4	1.0	14		1.91	0.40	-	-	0.56	19.9	======	a
2.4	16.4	1.1	15		1.91	0.44	-	-	0.64	19.4	======	a
2.6	14.4	0.7	20		1.91	0.48	-	-	0.56	19.9	======	a
2.8	17.5	0.2	88		1.69	0.51	31	24	-	1.0	:::::::::	ss
3	14.5	0.5	31		1.91	0.55	-	-	0.56	19.8	===~~~	al
3.2	13.5	0.4	34		1.67	0.58	-	-	0.52	18.6	~~~~~~	l
3.4	9.5	0.5	18		1.88	0.62	-	-	0.36	24.1	======	a
3.6	14.5	0.3	54		1.67	0.65	28	12	-	1.1	:::::::::	ss
3.8	7.7	0.5	14		1.51	0.68	-	-	0.28	43.5	######	aot
4	7.7	0.3	23		1.78	0.72	-	-	0.28	27.8	======	a
4.2	6.7	0.5	12		1.50	0.75	-	-	0.24	48.0	######	aot
4.4	9.7	0.5	21		1.88	0.79	-	-	0.35	23.9	======	a
4.6	9.7	0.5	18		1.88	0.83	-	-	0.35	23.9	======	a
4.8	13.8	0.6	23		1.91	0.86	-	-	0.52	20.1	======	a
5	13.8	0.7	19		1.91	0.90	-	-	0.52	20.1	======	a
5.2	17.8	0.7	27		1.92	0.94	-	-	0.67	19.4	===~~~	al
5.4	21.8	0.7	30		1.93	0.98	-	-	0.83	18.4	===~~~	al
5.6	27.8	1.1	25		1.94	1.02	-	-	1.07	14.4	===~~~	al
5.8	32.9	1.5	22		1.95	1.06	-	-	1.27	12.2	===~~~	al
6	40.9	1.3	31		1.80	1.09	30	-	-	8.1	::::~~~	sl
6.2	30.9	1.9	16		1.95	1.13	-	-	1.19	12.9	======	a
6.4	29.9	1.6	19		1.94	1.17	-	-	1.15	13.4	======	a
6.6	27.9	1.5	19		1.94	1.21	-	-	1.07	14.3	======	a
6.8	24.0	1.3	18		1.93	1.25	-	-	0.91	16.6	======	a
7	17.0	1.5	12		1.60	1.28	-	-	0.63	21.7	######	aot
7.2	24.0	1.3	19		1.93	1.32	-	-	0.91	16.6	======	a
7.4	22.0	1.5	15		1.93	1.36	-	-	0.83	18.1	======	a
7.6	25.0	1.3	20		1.93	1.40	-	-	0.95	16.0	======	a
7.8	22.2	1.3	17		1.93	1.43	-	-	0.83	18.0	======	a
8	24.2	1.1	21		1.93	1.47	-	-	0.91	16.5	======	a
8.2	25.2	1.3	20		1.93	1.51	-	-	0.95	15.9	======	a
8.4	29.2	0.9	34		1.75	1.55	28	-	-	11.4	::::~~~	sl
8.6	20.2	1.2	17		1.92	1.58	-	-	0.74	19.8	======	a
8.8	25.3	1.2	21		1.93	1.62	-	-	0.95	15.8	======	a
9	24.3	1.3	19		1.93	1.66	-	-	0.91	16.5	======	a
9.2	24.3	0.9	26		1.93	1.70	-	-	0.90	16.5	===~~~	al
9.4	22.3	1.3	17		1.93	1.74	-	-	0.82	17.9	======	a
9.6	26.3	1.0	26		1.94	1.78	-	-	0.98	15.2	===~~~	al
9.8	22.4	1.3	18		1.93	1.82	-	-	0.82	17.8	======	a
10	22.4	1.3	17		1.93	1.86	-	-	0.82	17.8	======	a

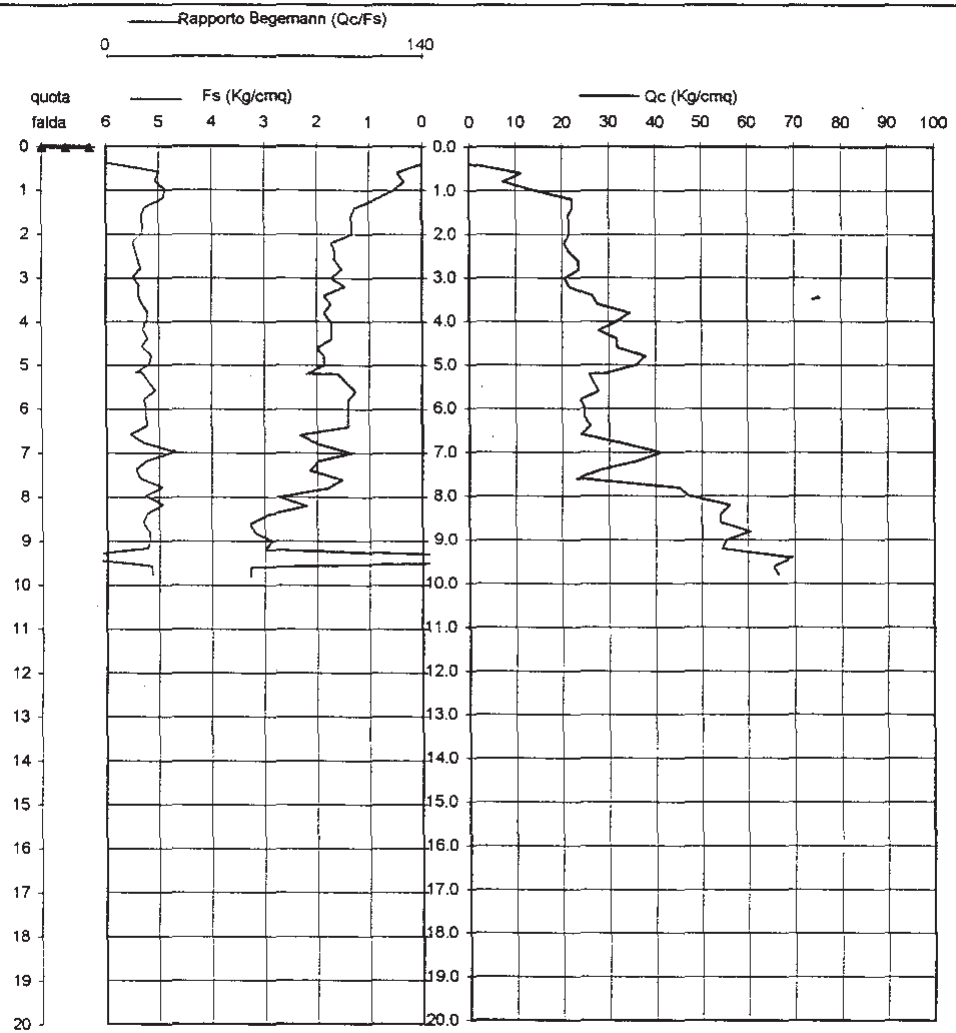
PENETROMETRO STATICO: TG 73 200 KN PAGANI



Quota falda: m dal p.c.

Prof. [metri]	Qc [Kg/cmq]	Fs Kg/cmq]	Qc/Fs	Rt [Kgf]	parametri geotecnici stimati γ [Kg/dmc]	σ'vo [Kg/cmq]	ϕ [gradi]	Dr [%]	Cu [Kg/cmq]	mv [cmq/t]	Colonna stratig.	litologia
0.2							-	-	-	-	non ril.	
0.4					1.80	0.04	-	-	-	-	non ril.	
0.6	11.1	0.5	24		1.90	0.07	-	-	0.44	22.0	======	a
0.8	7.3	0.3	22		1.76	0.11	-	-	0.29	28.9	======	a
1	14.3	0.5	27		1.91	0.15	-	-	0.56	19.9	===---	al
1.2	22.3	0.9	26		1.93	0.19	-	-	0.88	18.0	===---	al
1.4	22.3	1.3	18		1.93	0.22		-	0.88	18.0	======	a
1.6	21.3	1.3	16		1.93	0.26	-	-	0.84	18.8	======	a
1.8	21.4	1.3	16		1.93	0.30	-	-	0.84	18.7	======	a
2	21.4	1.3	16		1.93	0.34	-	-	0.84	18.7	======	a
2.2	20.4	1.7	12		1.92	0.38	-	-	0.80	18.2	======	a
2.4	21.4	1.7	13		1.93	0.42	-	-	0.84	18.7	======	a
2.6	23.4	1.7	14		1.93	0.46	-	-	0.92	17.1	======	a
2.8	23.5	1.5	15		1.93	0.49	-	-	0.92	17.0	======	a
3	20.5	1.7	12		1.92	0.53	-	-	0.80	18.0	======	a
3.2	21.5	1.5	15		1.93	0.57	-	-	0.84	18.6	======	a
3.4	26.5	1.9	14		1.94	0.61	-	-	1.04	15.1	======	a
3.6	27.5	1.7	16		1.94	0.65	-	-	1.07	14.5	======	a
3.8	34.7	1.9	19		1.95	0.69	-	-	1.36	11.5	======	a
4	31.7	1.7	18		1.95	0.73	-	-	1.24	12.6	======	a
4.2	27.7	1.7	16		1.94	0.77	-	-	1.08	14.5	======	a
4.4	31.7	1.7	18		1.95	0.80	-	-	1.23	12.6	======	a
4.6	31.7	2.0	16		1.95	0.84	-	-	1.23	12.6	======	a
4.8	37.8	1.9	20		1.96	0.88	-	-	1.48	10.6	======	a
5	35.8	1.9	19		1.96	0.92	-	-	1.39	11.2	======	a
5.2	28.8	2.2	13		1.94	0.96	-	-	1.11	13.9	======	a
5.4	25.8	1.6	16		1.94	1.00	-	-	0.99	15.5	======	a
5.6	27.8	1.3	22		1.94	1.04	-	-	1.07	14.4	======	a
5.8	23.9	1.4	17		1.93	1.08	-	-	0.91	16.7	======	a
6	24.9	1.4	18		1.93	1.12	-	-	0.95	16.1	======	a
6.2	24.9	1.4	18		1.93	1.15	-	-	0.95	16.1	======	a
6.4	25.9	1.4	19		1.94	1.19	-	-	0.99	15.4	======	a
6.6	23.9	2.3	10		1.93	1.23	-	-	0.91	15.5	======	a
6.8	33.0	2.0	17		1.95	1.27	-	-	1.27	12.1	======	a
7	41.0	1.3	31		1.81	1.31	30	-	-	8.1	===---	sl
7.2	36.0	2.0	18		1.96	1.35	-	-	1.39	11.1	======	a
7.4	28.0	2.1	13		1.94	1.38	-	-	1.07	14.3	======	a
7.6	23.0	1.5	15		1.93	1.42	-	-	0.86	17.4	======	a
7.8	45.2	1.8	25		1.98	1.46	-	-	1.75	8.9	===---	al
8	47.2	2.7	17		1.98	1.50	-	-	1.83	8.5	======	a
8.2	56.2	2.2	26		2.00	1.54	-	-	2.19	7.1	===---	al
8.4	54.2	2.9	18		2.00	1.58	-	-	2.10	7.4	======	a
8.6	54.2	3.3	17		2.00	1.62	-	-	2.10	7.4	======	a
8.8	60.3	3.2	19		2.01	1.66	-	-	2.35	6.6	======	a
9	55.3	2.9	19		2.00	1.70	-	-	2.14	7.2	======	a
9.2	54.3	3.0	18		2.00	1.74	-	-	2.10	7.4	======	a
9.4	69.3	-3.7	-19		2.03	1.78	-	-	2.70	5.3	======	a
9.6	65.3	3.3	20		2.02	1.82	-	-	2.54	6.1	===---	al
9.8	66.4	3.3	20		2.03	1.86	-	-	2.58	6.0	===---	al
10												

PENETROMETRO STATICO: TG 73 200 KN PAGANI



4523

Quota falda: m dal p.c.

Prof. [metri]	Qc [Kg/cmq]	Fs Kg/cmq]	Qc/Fs	Rt [Kgf]	parametri geotecnici stimati γ [Kg/dmc]	σ'vo [Kg/cmq]	ϕ [gradi]	Dr [%]	Cu [Kg/cmq]	mv [cmq/t]	Colonna stratig.	lito_ logia
0.2							-	-	-	-	non ril.	
0.4					1.80	0.04	-	-	-	-	non ril.	
0.6	13.1	0.5	25		1.91	0.07	-	-	0.52	20.5	======	a
0.8	15.3	0.7	23		1.91	0.11	-	-	0.61	19.6	======	a
1	15.3	1.2	13		1.58	0.14	-	-	0.60	24.3	######	aot
1.2	15.3	1.1	13		1.58	0.18	-	-	0.60	24.3	######	aot
1.4	15.3	1.2	13		1.58	0.21		-	0.60	24.3	######	aot
1.6	14.3	1.4	10		1.57	0.24	-	-	0.56	26.0	######	aot
1.8	17.4	1.2	14		1.92	0.28	-	-	0.68	19.4	======	a
2	25.4	1.3	20		1.93	0.32	-	-	1.00	15.8	======	a
2.2	27.4	1.7	16		1.94	0.35	-	-	1.08	14.6	======	a
2.4	26.4	2.1	13		1.94	0.39	-	-	1.04	15.2	======	a
2.6	27.4	1.5	19		1.94	0.43	-	-	1.08	14.6	======	a
2.8	23.5	1.5	16		1.93	0.47	-	-	0.92	17.0	======	a
3	23.5	1.7	14		1.93	0.51	-	-	0.92	17.0	======	a
3.2	23.5	1.1	21		1.93	0.55	-	-	0.92	17.0	======	a
3.4	19.5	1.5	13		1.92	0.59	-	-	0.76	19.8	======	a
3.6	20.5	1.5	13		1.92	0.62	-	-	0.80	19.5	======	a
3.8	27.7	2.9	10		1.94	0.66	-	-	1.08	13.4	======	a
4	39.7	1.1	37		1.80	0.70	30	-	-	8.4	~~~~~~	sl
4.2	36.7	1.7	22		1.96	0.74	-	-	1.44	10.9	~~~~~~	al
4.4	32.7	2.3	14		1.95	0.78	-	-	1.27	12.3	======	a
4.6	35.7	2.7	13		1.96	0.82	-	-	1.39	11.2	======	a
4.8	41.8	2.0	21		1.97	0.86	-	-	1.64	9.6	======	a
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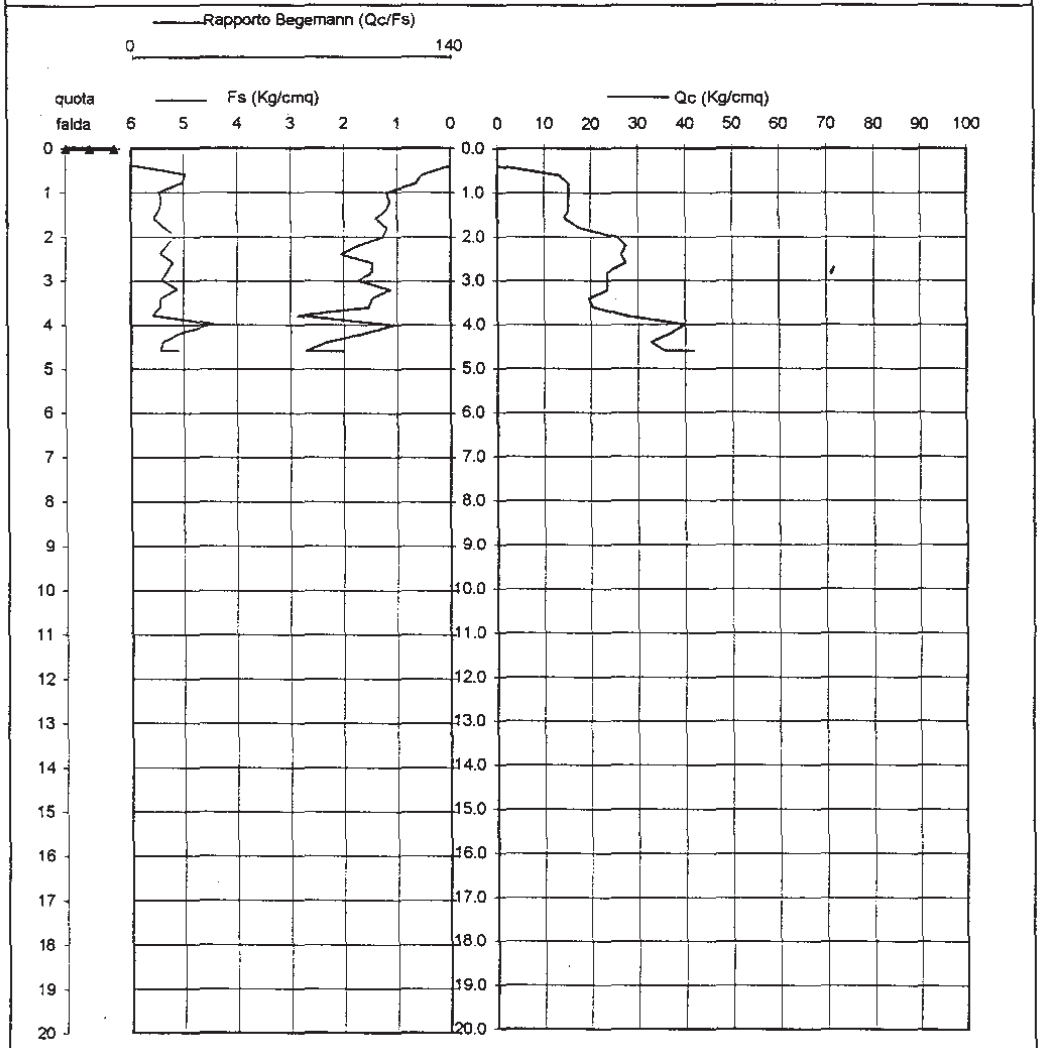
PENETROMETRO STATICO: TG 73 200 KN PAGANI



POZZETTO GEOGNOSTICO - PROVE IN SITU

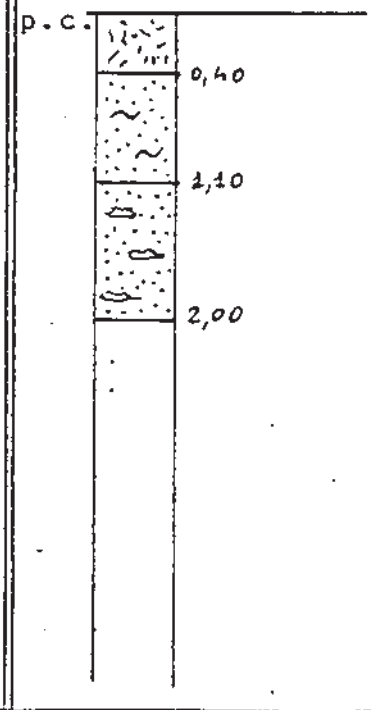
STRATIGRAFIA DEL TERRENO:

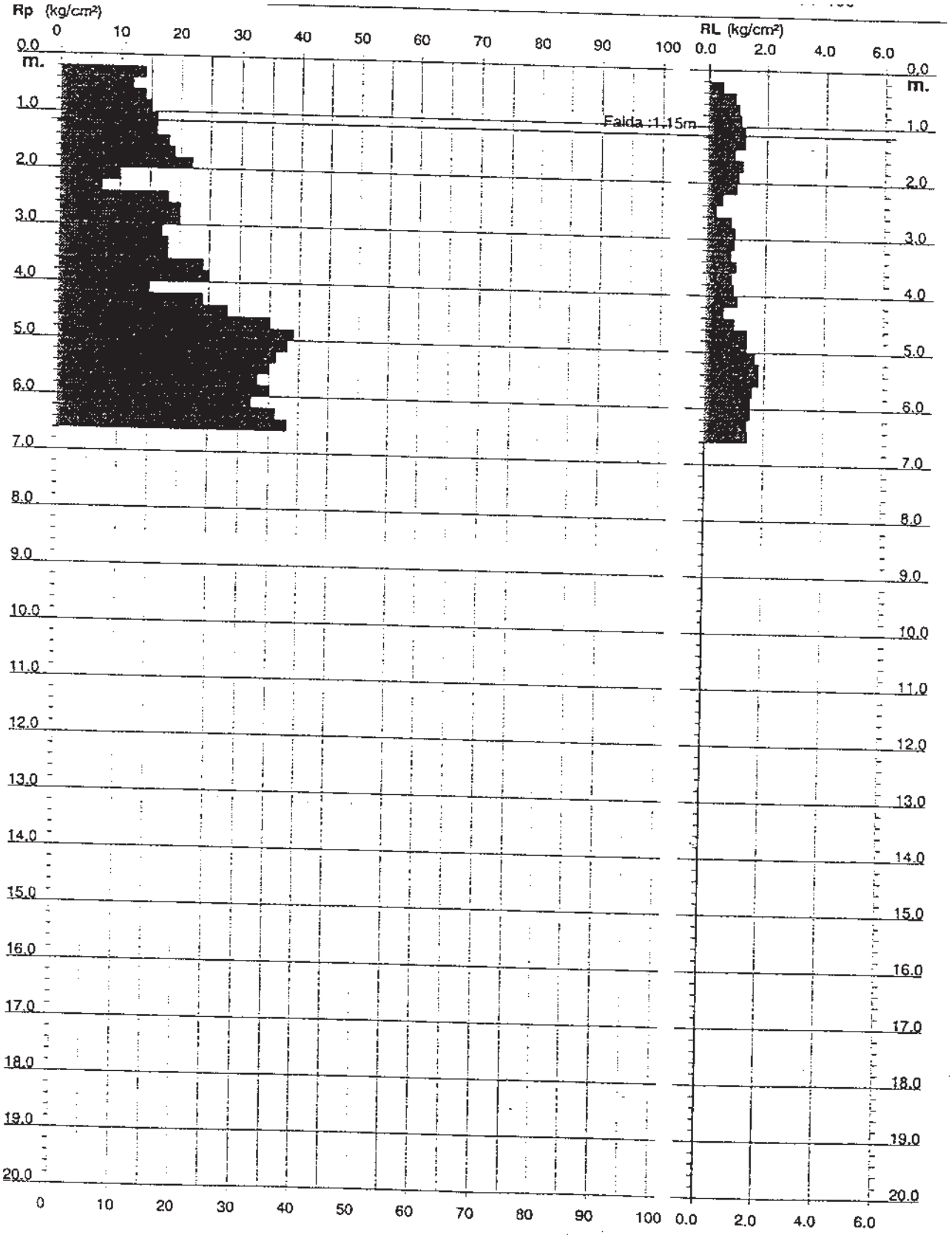
0,00 – 0,40 = Terreno vegetale color grigio-marrone

0,40 – 1,10 = Terreno sabbioso limoso color nocciola

1,10 – 2,00 = Sabbia color grigio-beige, con inclusioni di travertino

STRATIGRAFIA

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RL (kg/cm²)
0.0 2.0 4.0 6.0
m.
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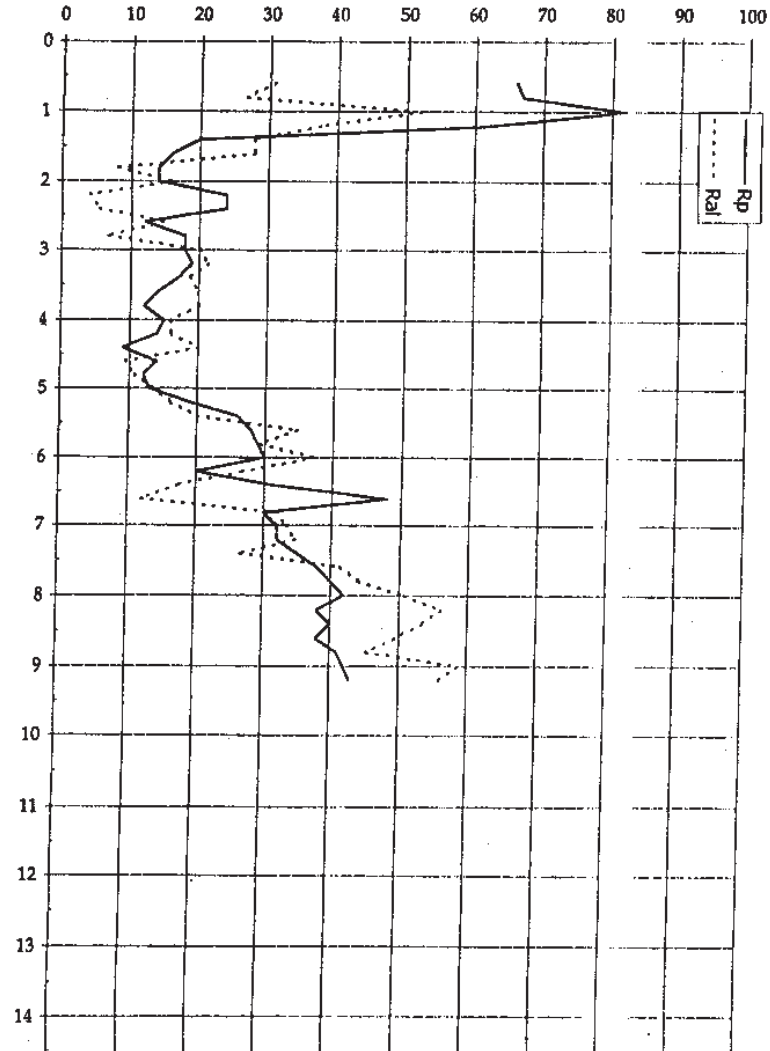
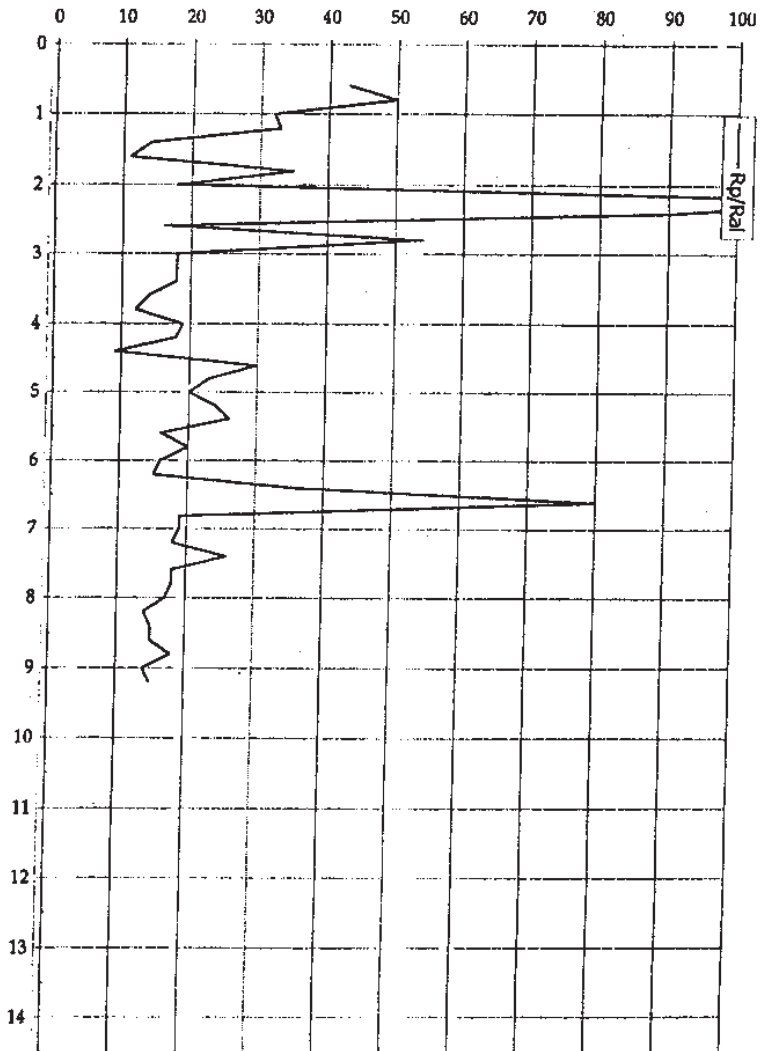
Falda :1.15m


Rp
Ral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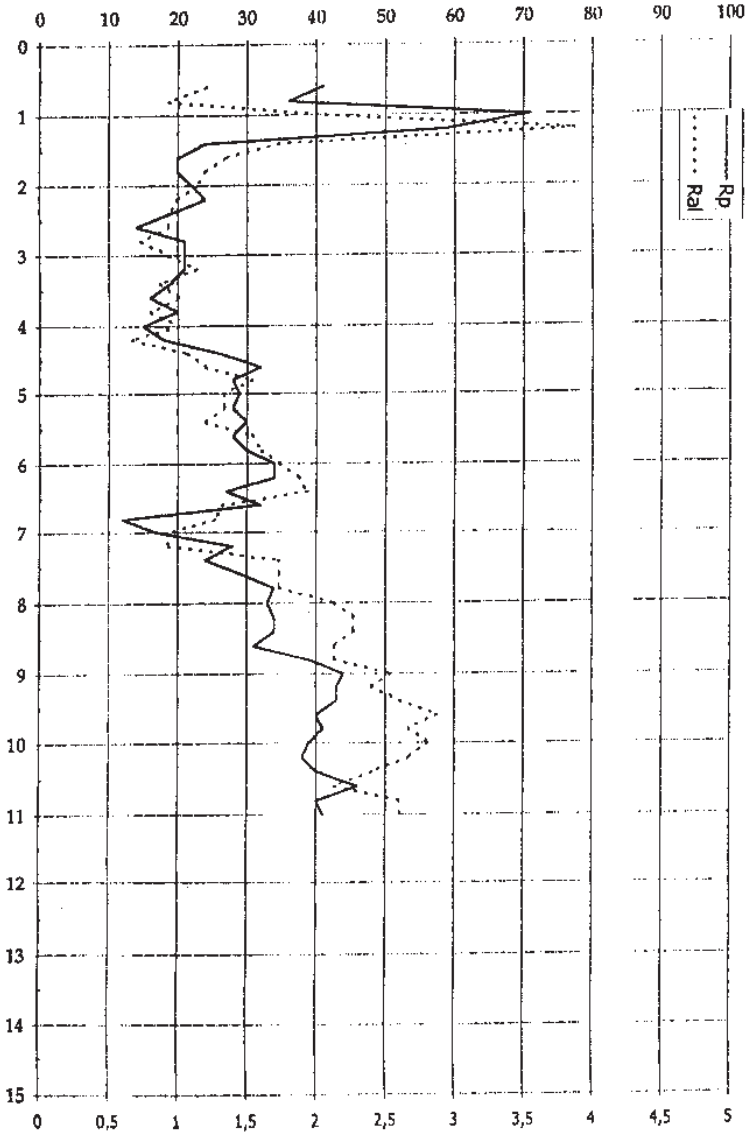
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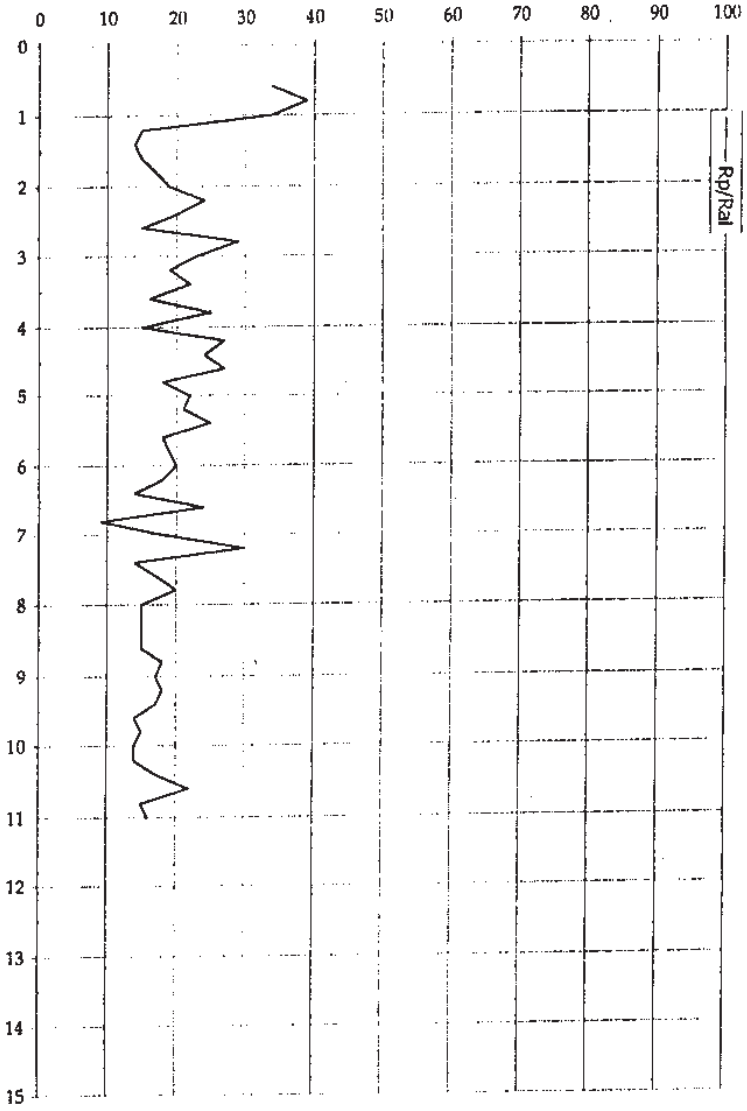
Rp
Ral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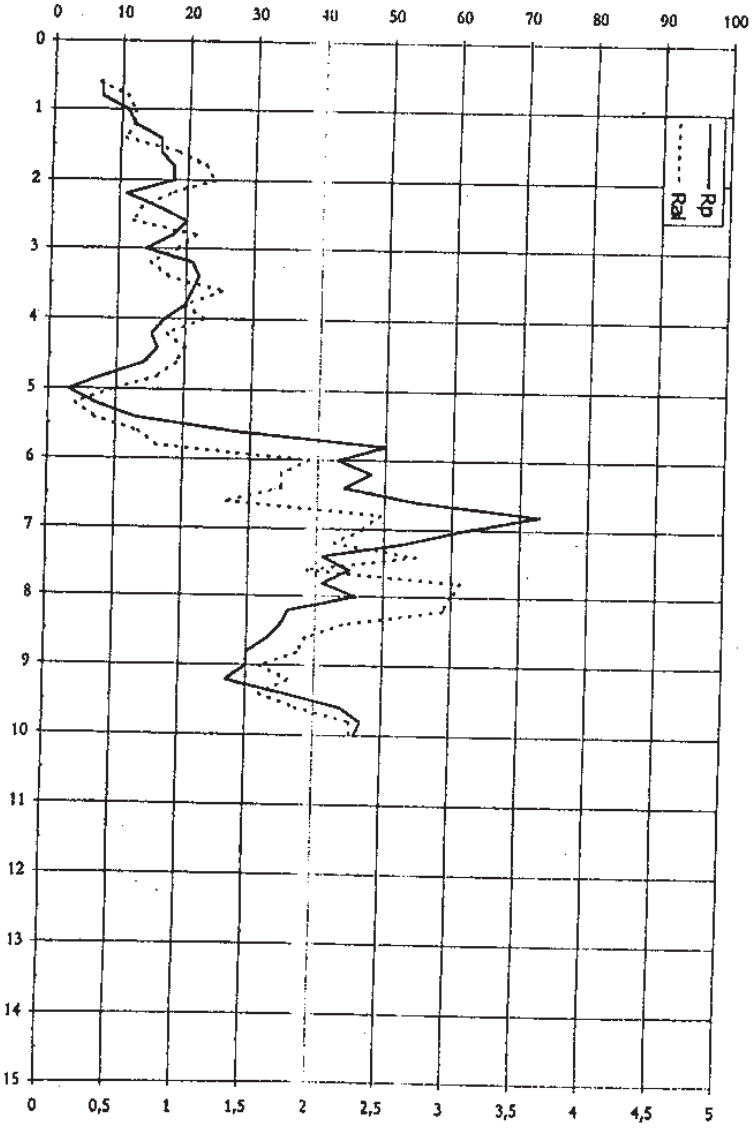
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Rp/Ral


Rp
Ral
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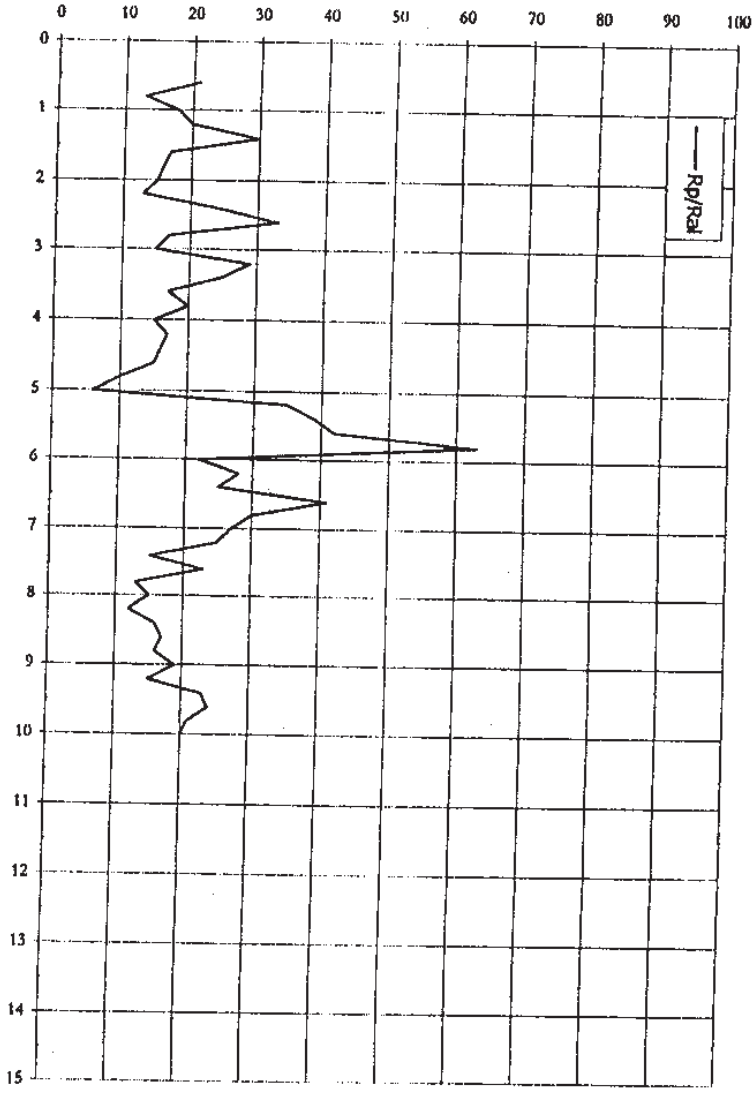
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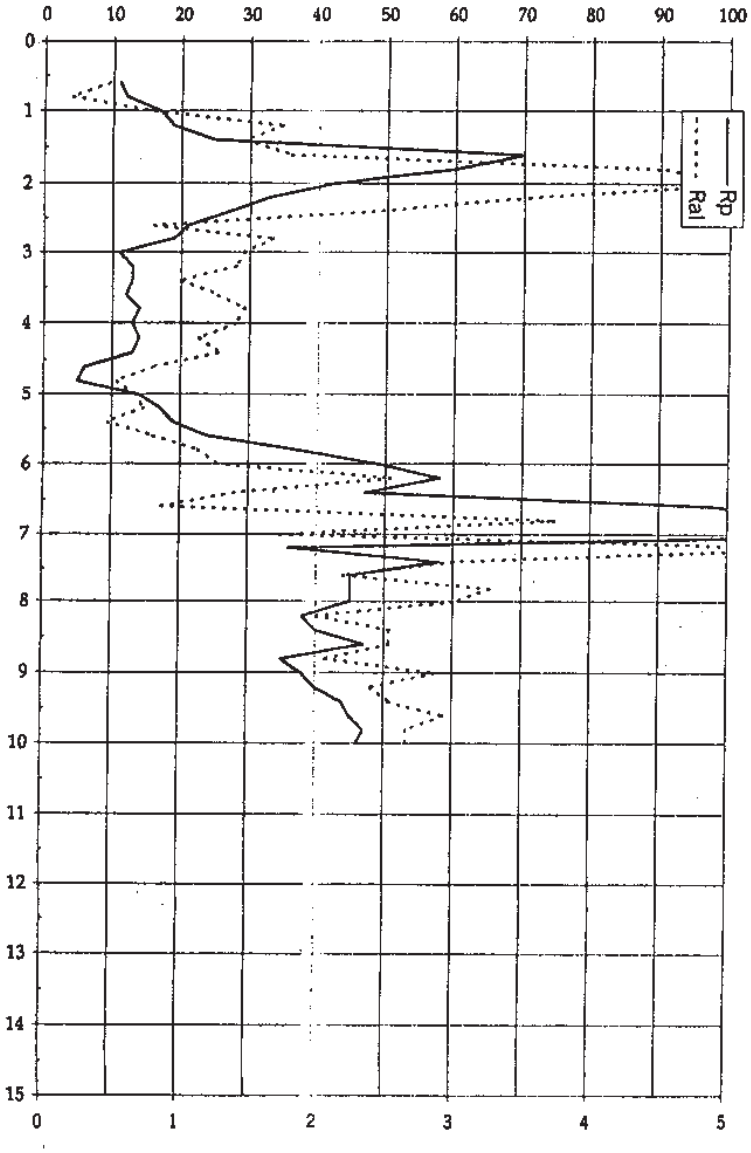
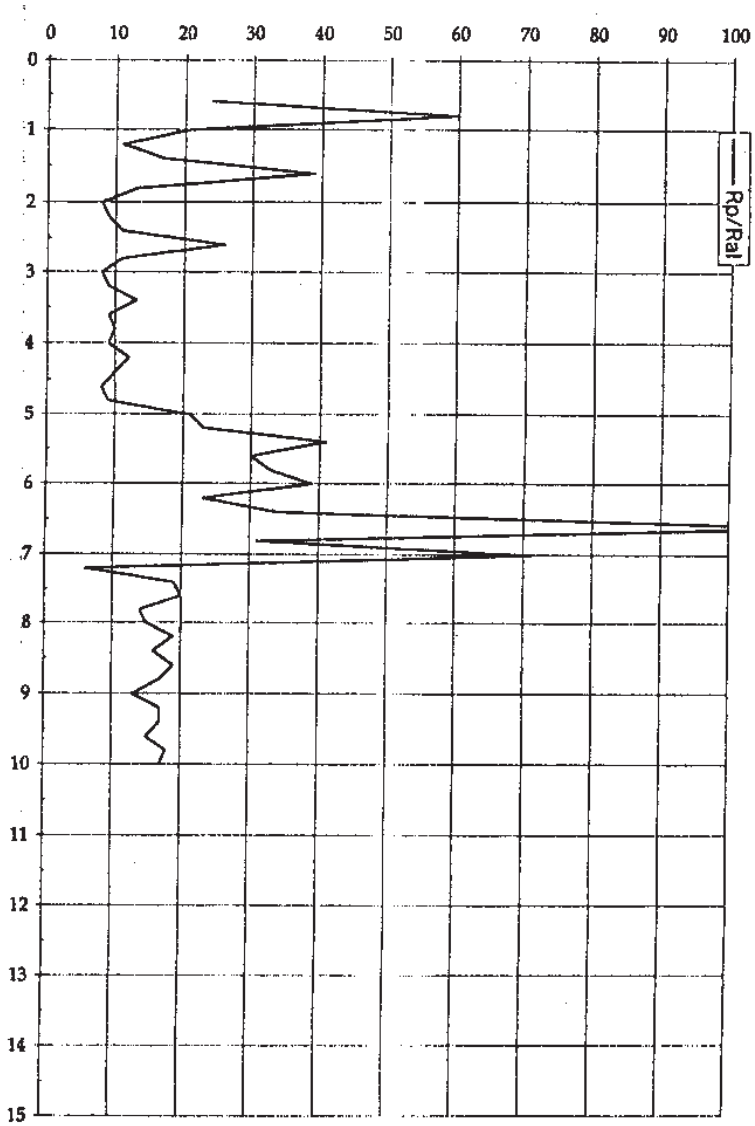
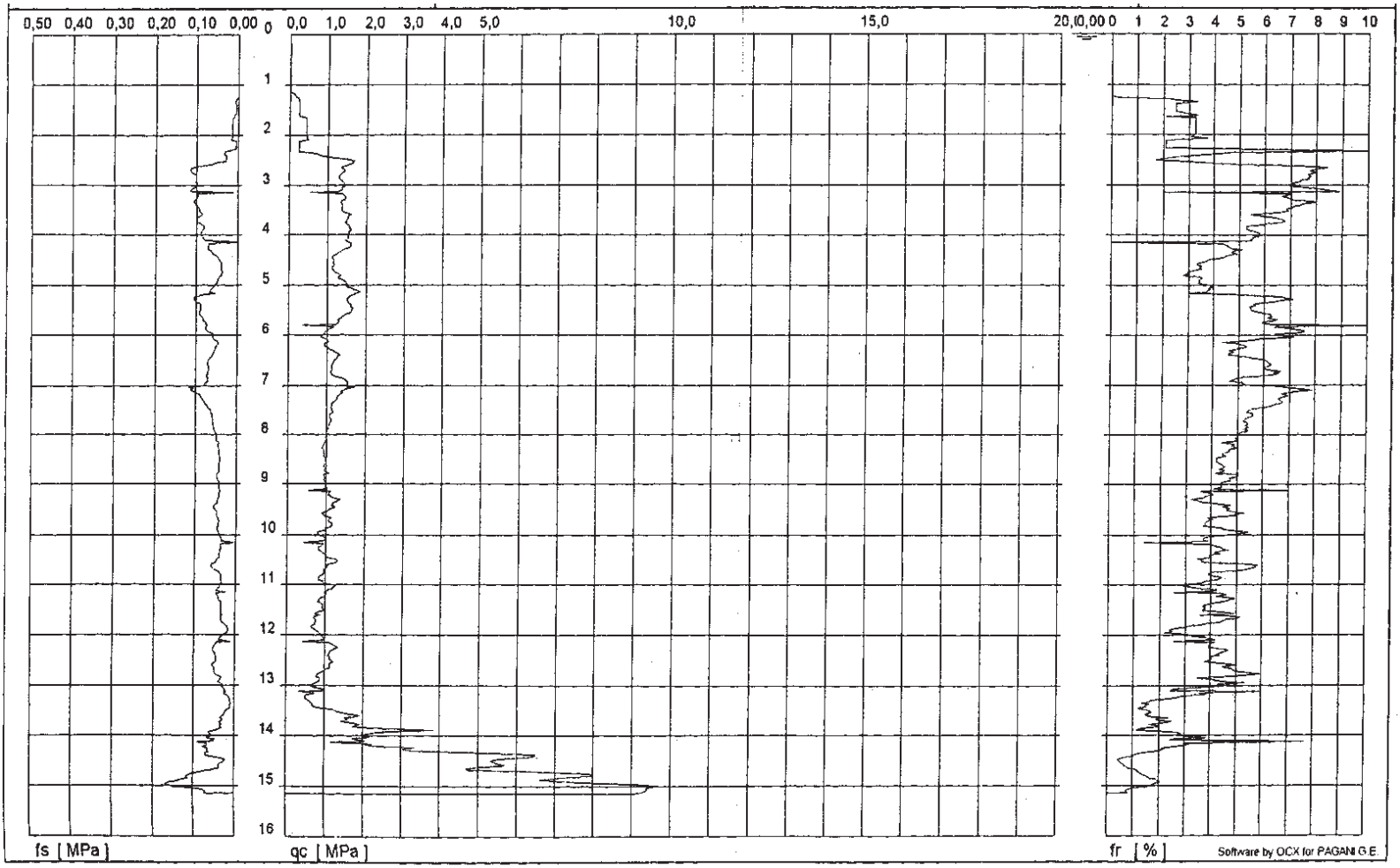

Rp
Ral


Rp/Ral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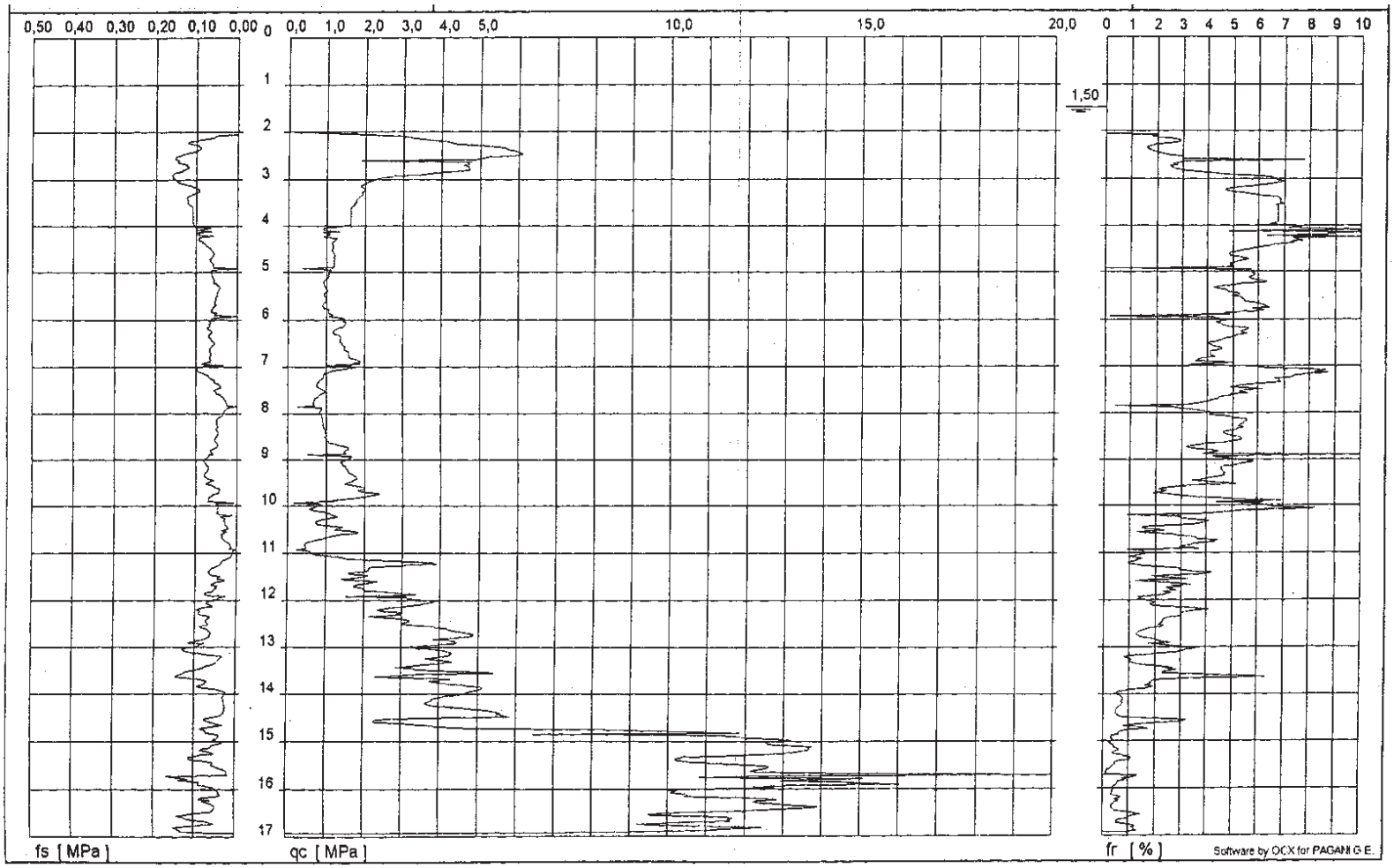
fr [%]
Software by OCX for PAGANI G.E.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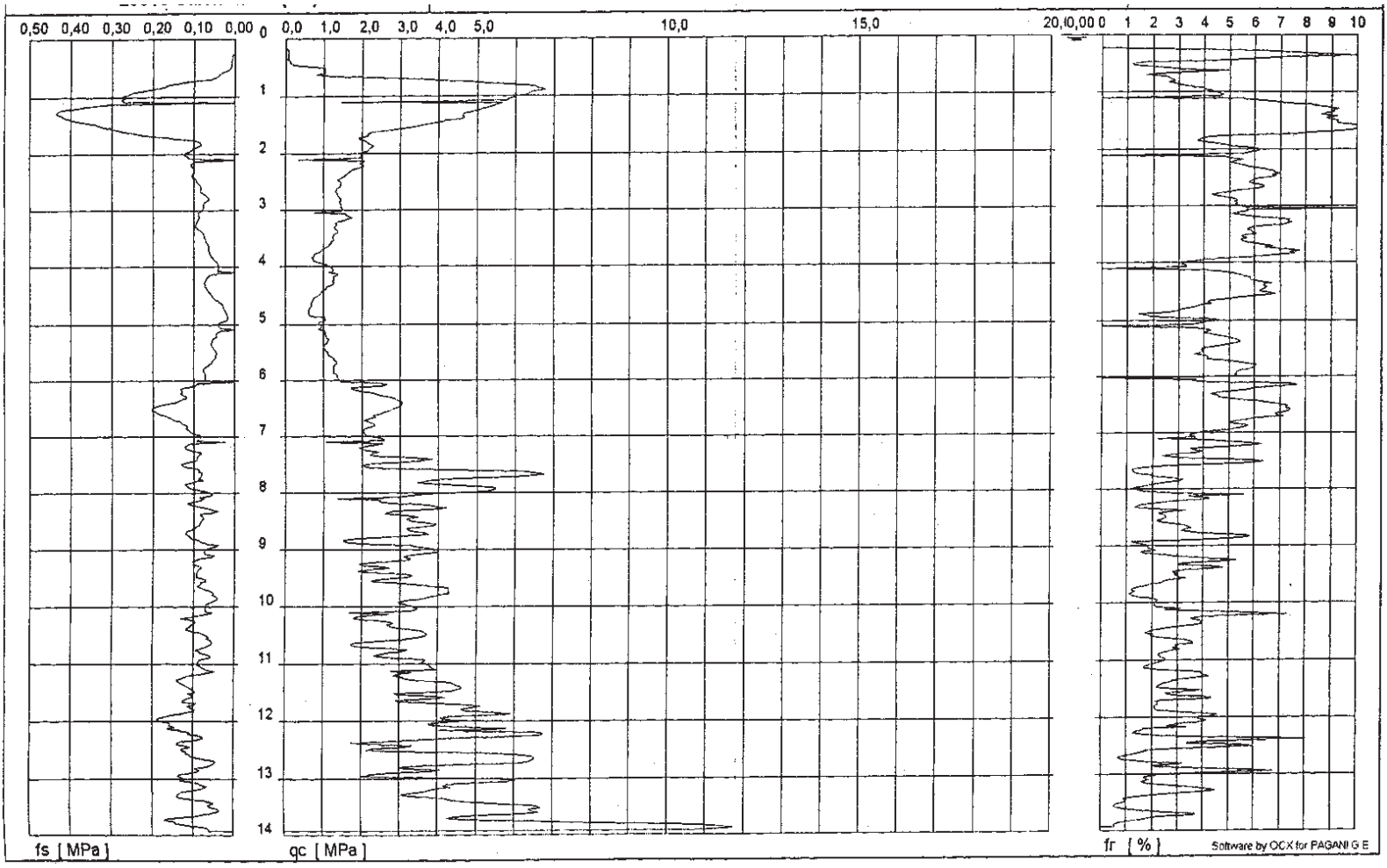
Software by OCX for PAGANI G.E.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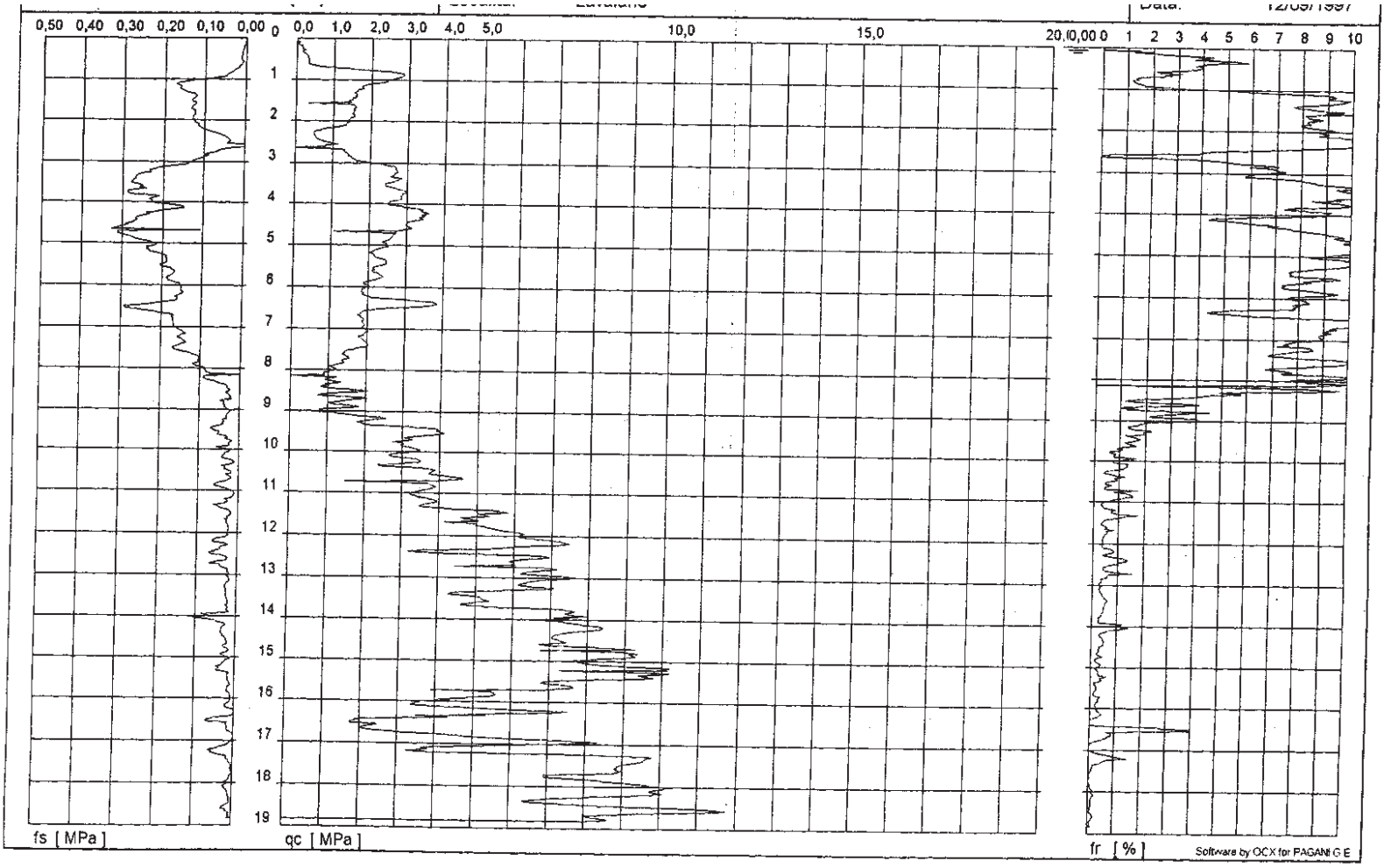
Software by OCX for PAGANI G E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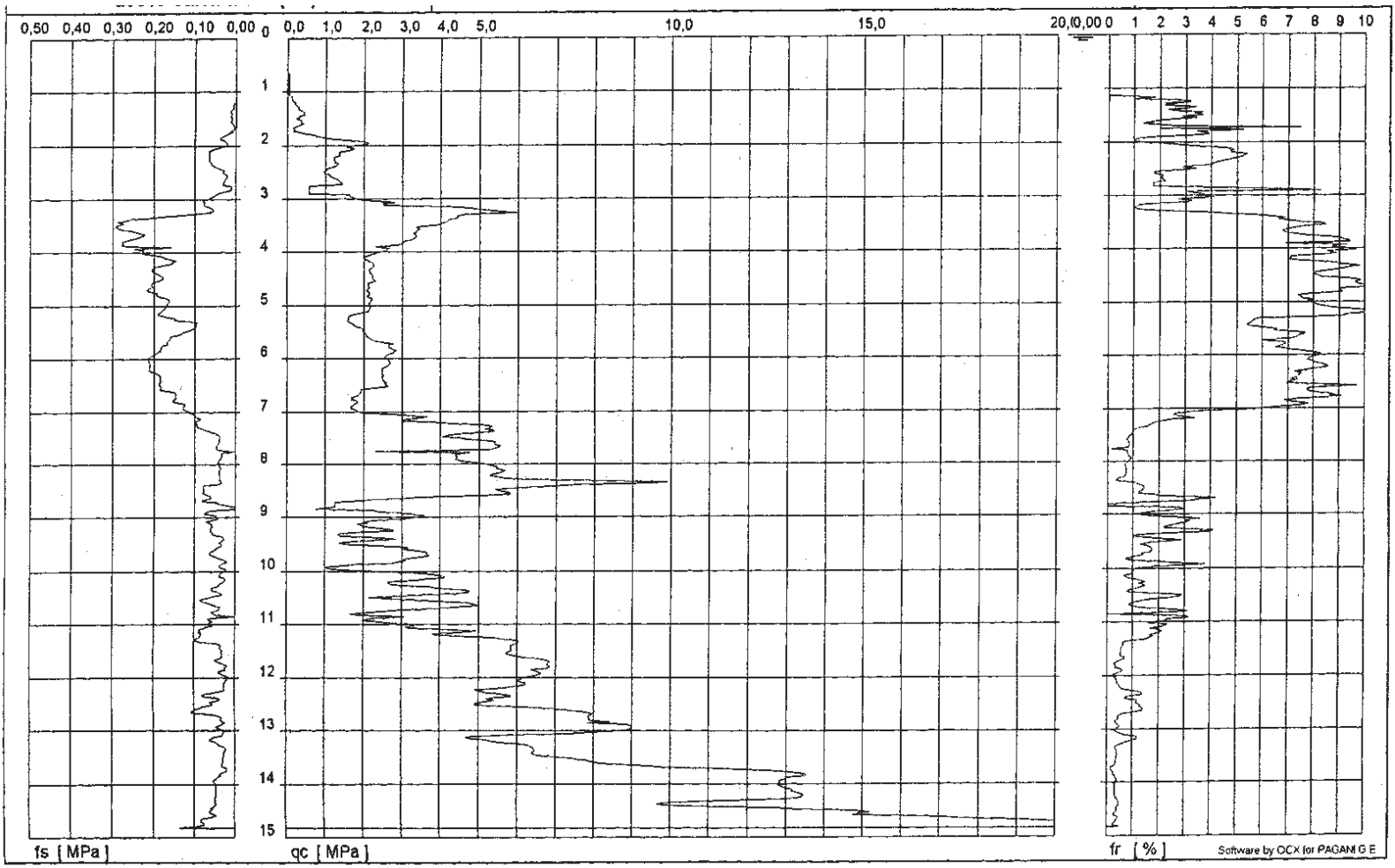
Software by OCX for PAGANI G E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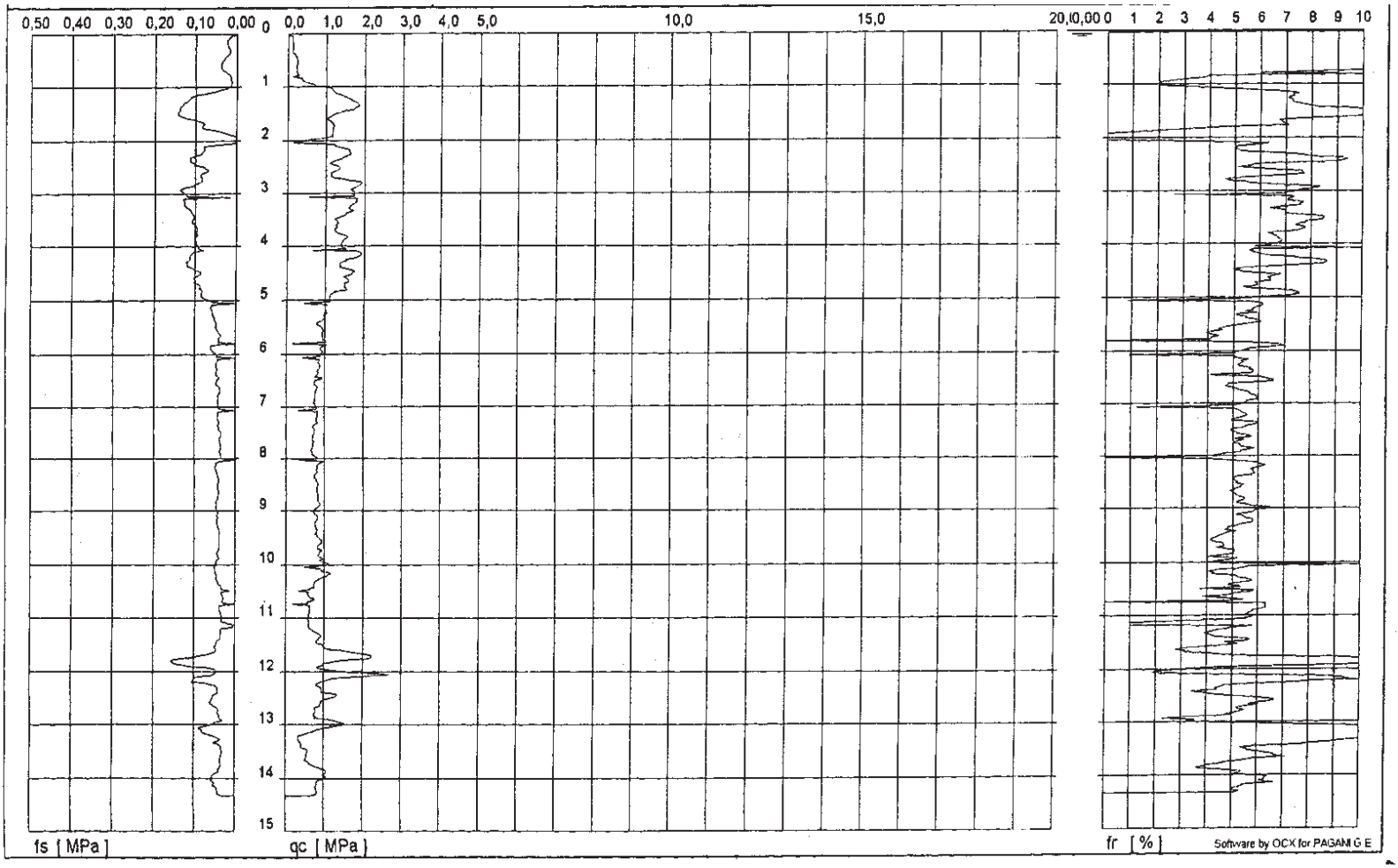
Software by OCX for PAGANI G E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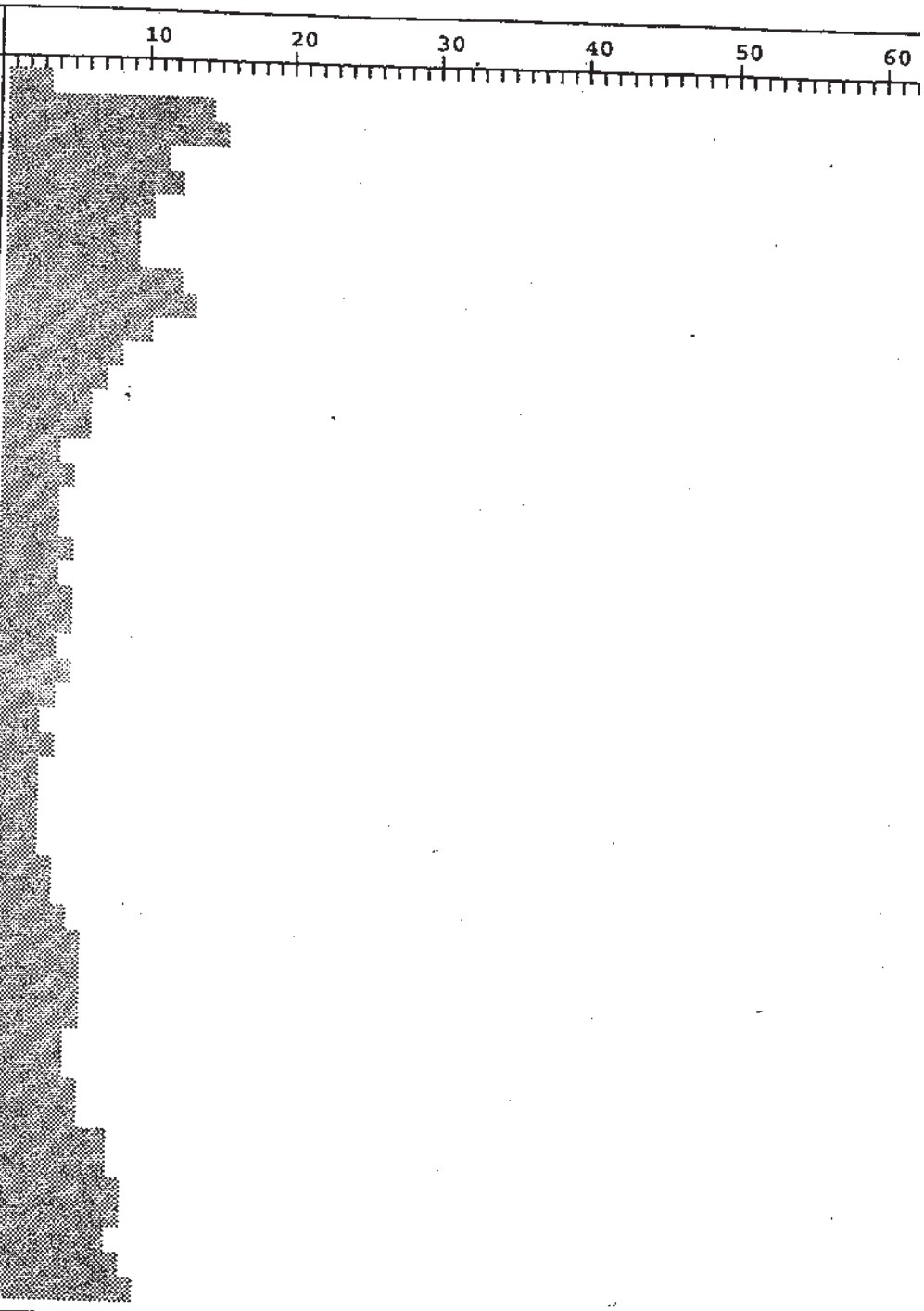
fs [MPa]
qc [MPa]
fr [%]
Software by OCX for PAGANI G E

PROVA PENETROMETRICA

N. 1

PROF.	N
0.10	3.0
0.20	14.0
0.30	15.0
0.40	11.0
0.50	12.0
0.60	10.0
0.70	9.0
0.80	9.0
0.90	12.0
1.00	13.0
1.10	10.0
1.20	8.0
1.30	7.0
1.40	6.0
1.50	6.0
1.60	4.0
1.70	5.0
1.80	4.0
1.90	4.0
2.00	5.0
2.10	4.0
2.20	5.0
2.30	5.0
2.40	4.0
2.50	5.0
2.60	4.0
2.70	3.0
2.80	4.0
2.90	3.0
3.00	3.0
3.10	3.0
3.20	3.0
3.30	4.0
3.40	4.0
3.50	5.0
3.60	6.0
3.70	6.0
3.80	6.0
3.90	6.0
4.00	5.0
4.10	5.0
4.20	6.0
4.30	6.0
4.40	8.0
4.50	8.0
4.60	9.0
4.70	9.0
4.80	8.0
4.90	9.0
5.00	10.0



PROVA PENETROMETRICA

N. 2

PROF.	N
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0.60	11.0
0.70	15.0
0.80	17.0
0.90	15.0
1.00	10.0
1.10	10.0
1.20	7.0
1.30	7.0
1.40	5.0
1.50	5.0
1.60	6.0
1.70	7.0
1.80	6.0
1.90	7.0
2.00	5.0
2.10	6.0
2.20	4.0
2.30	5.0
2.40	4.0
2.50	4.0
2.60	3.0
2.70	4.0
2.80	3.0
2.90	4.0
3.00	3.0
3.10	3.0
3.20	4.0
3.30	4.0
3.40	5.0
3.50	4.0
3.60	5.0
3.70	6.0
3.80	5.0
3.90	4.0
4.00	5.0
4.10	6.0
4.20	4.0
4.30	5.0
4.40	6.0
4.50	5.0
4.60	5.0
4.70	4.0
4.80	4.0
4.90	5.0
5.00	5.0
5.10	6.0
5.20	5.0
5.30	6.0
5.40	7.0
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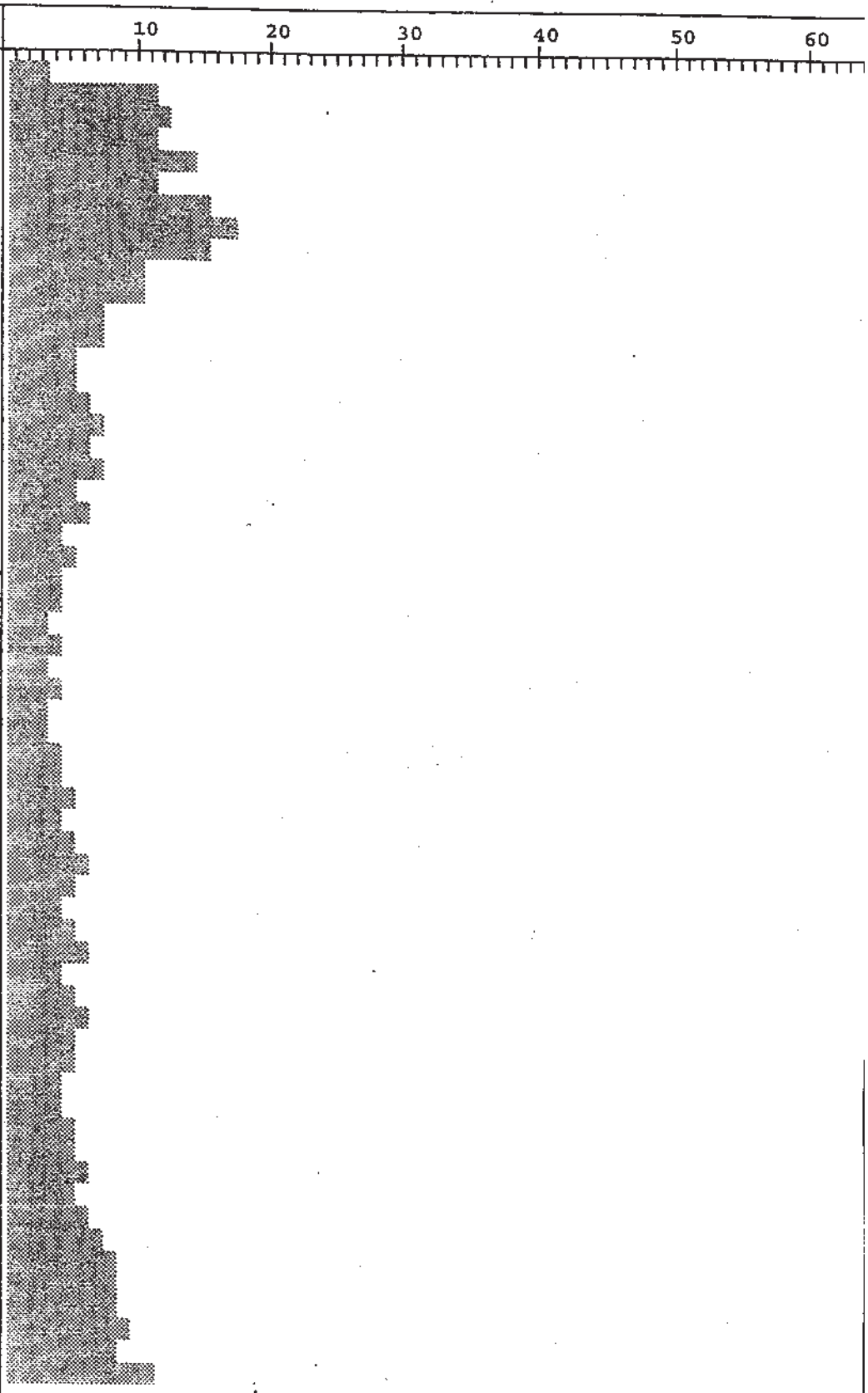
5.60	8.0
5.70	8.0
5.80	9.0
5.90	8.0
6.00	11.0



PROVA PENETROMETRICA

N. 3

PROF.	N
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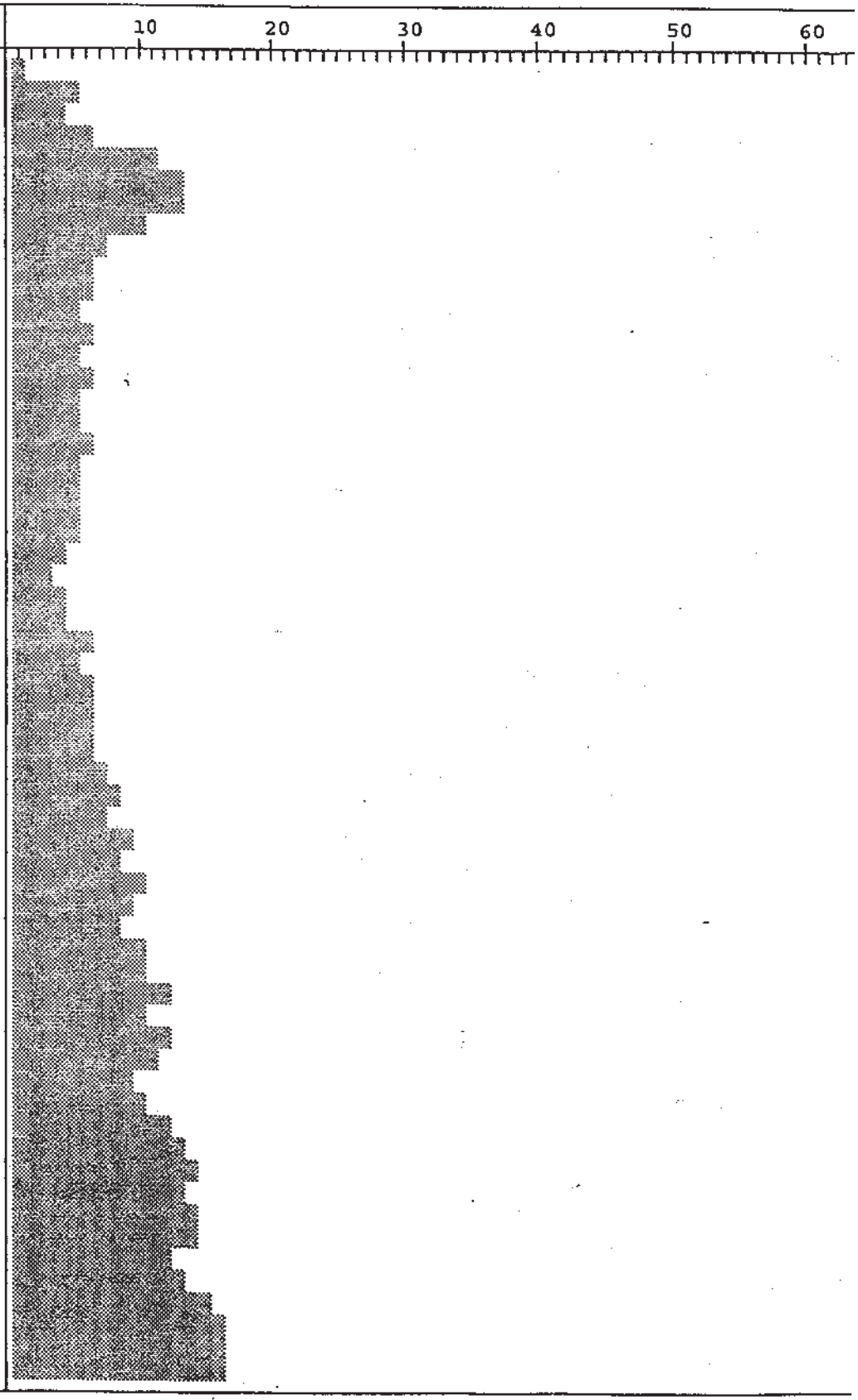
0.60	13.0
0.70	13.0
0.80	10.0
0.90	7.0
1.00	6.0
1.10	6.0
1.20	5.0
1.30	6.0
1.40	5.0
1.50	6.0
1.60	5.0
1.70	5.0
1.80	6.0
1.90	5.0
2.00	5.0
2.10	5.0
2.20	5.0
2.30	4.0
2.40	3.0
2.50	4.0
2.60	4.0
2.70	6.0
2.80	5.0
2.90	6.0
3.00	6.0
3.10	6.0
3.20	6.0
3.30	7.0
3.40	8.0
3.50	7.0
3.60	9.0
3.70	8.0
3.80	10.0
3.90	9.0
4.00	8.0
4.10	10.0
4.20	10.0
4.30	12.0
4.40	10.0
4.50	12.0
4.60	11.0
4.70	9.0
4.80	10.0
4.90	12.0
5.00	13.0
5.10	14.0
5.20	13.0
5.30	14.0
5.40	14.0
5.50	12.0
5.60	13.0
5.70	15.0
5.80	16.0
5.90	16.0
6.00	16.0



PROVA PENETROMETRICA

N. 4

PROF.	N
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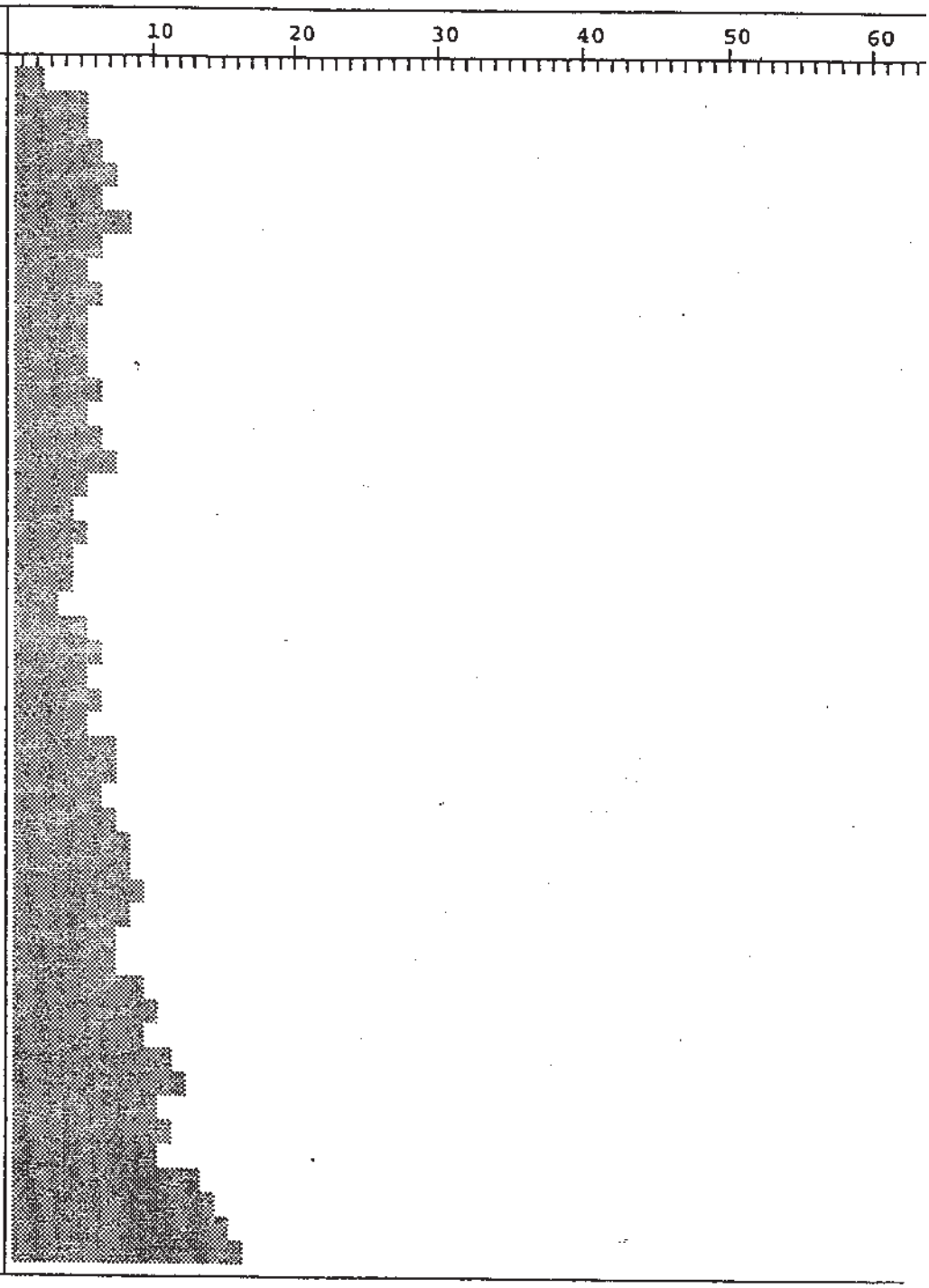
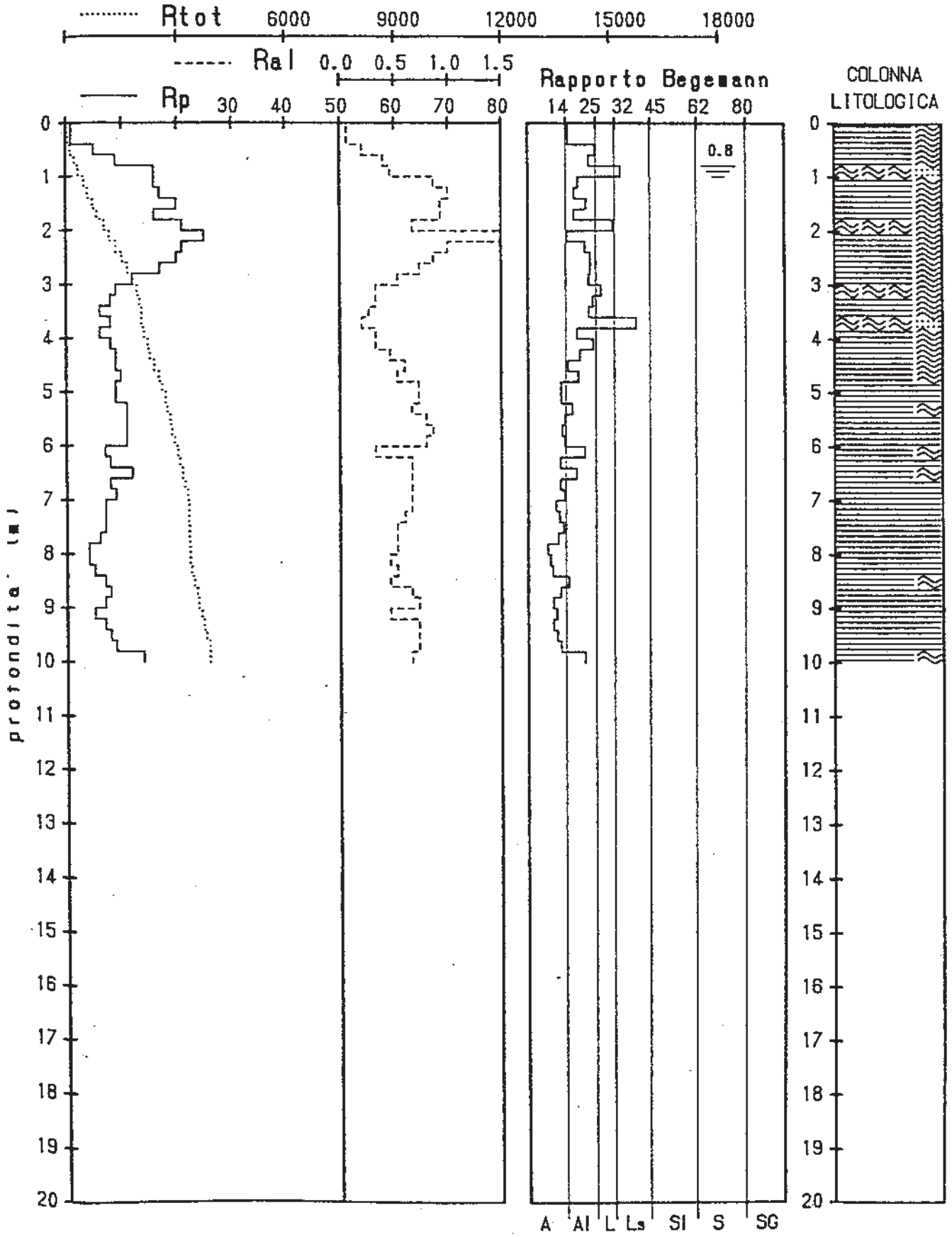
0.50	7.0
0.60	6.0
0.70	8.0
0.80	6.0
0.90	5.0
1.00	6.0
1.10	5.0
1.20	5.0
1.30	5.0
1.40	6.0
1.50	5.0
1.60	6.0
1.70	7.0
1.80	5.0
1.90	4.0
2.00	5.0
2.10	4.0
2.20	4.0
2.30	3.0
2.40	5.0
2.50	6.0
2.60	5.0
2.70	6.0
2.80	5.0
2.90	7.0
3.00	7.0
3.10	6.0
3.20	7.0
3.30	8.0
3.40	8.0
3.50	9.0
3.60	8.0
3.70	7.0
3.80	7.0
3.90	9.0
4.00	10.0
4.10	9.0
4.20	11.0
4.30	12.0
4.40	10.0
4.50	11.0
4.60	10.0
4.70	13.0
4.80	14.0
4.90	15.0
5.00	16.0




Rtot
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12000
15000
18000
Ral
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0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
0.8
COLONNA LITOLOGICA
profondita' (m)
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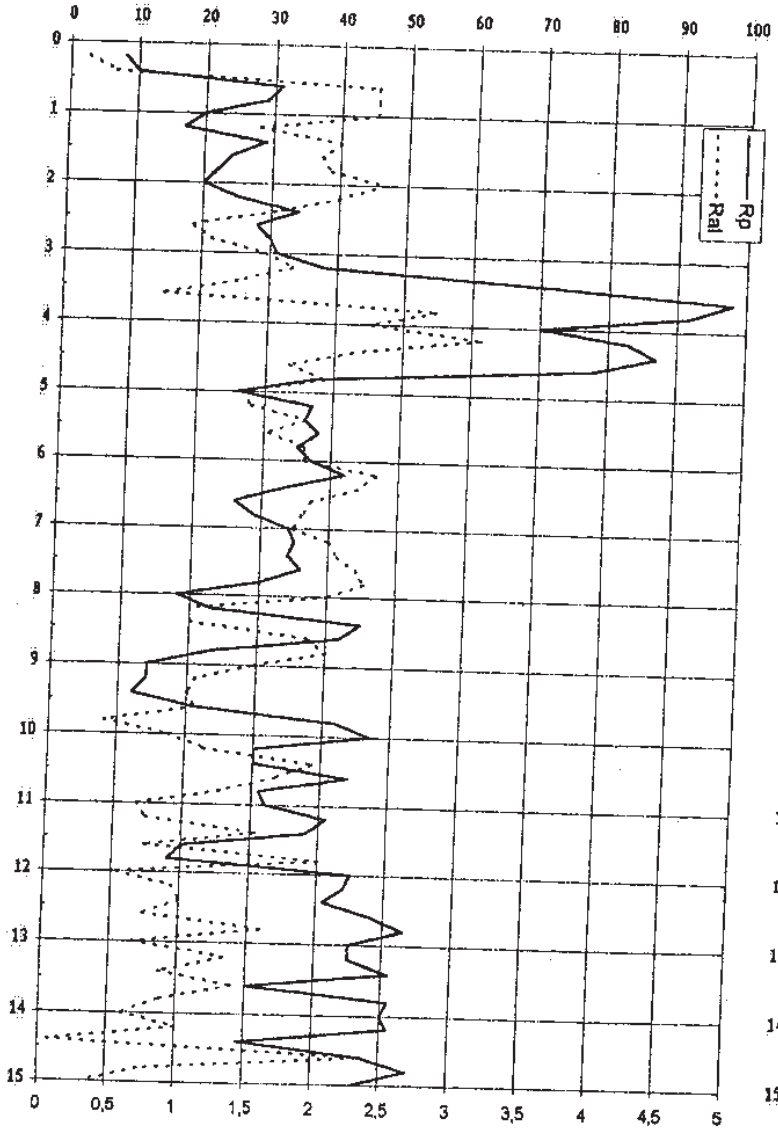
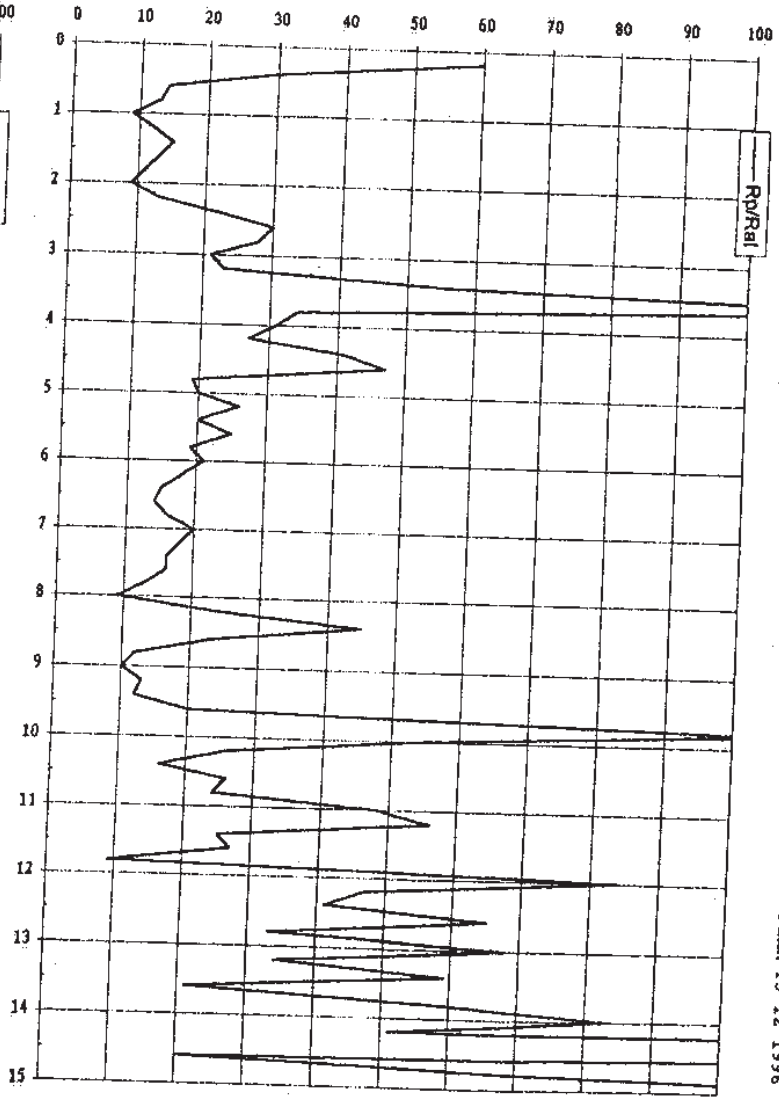
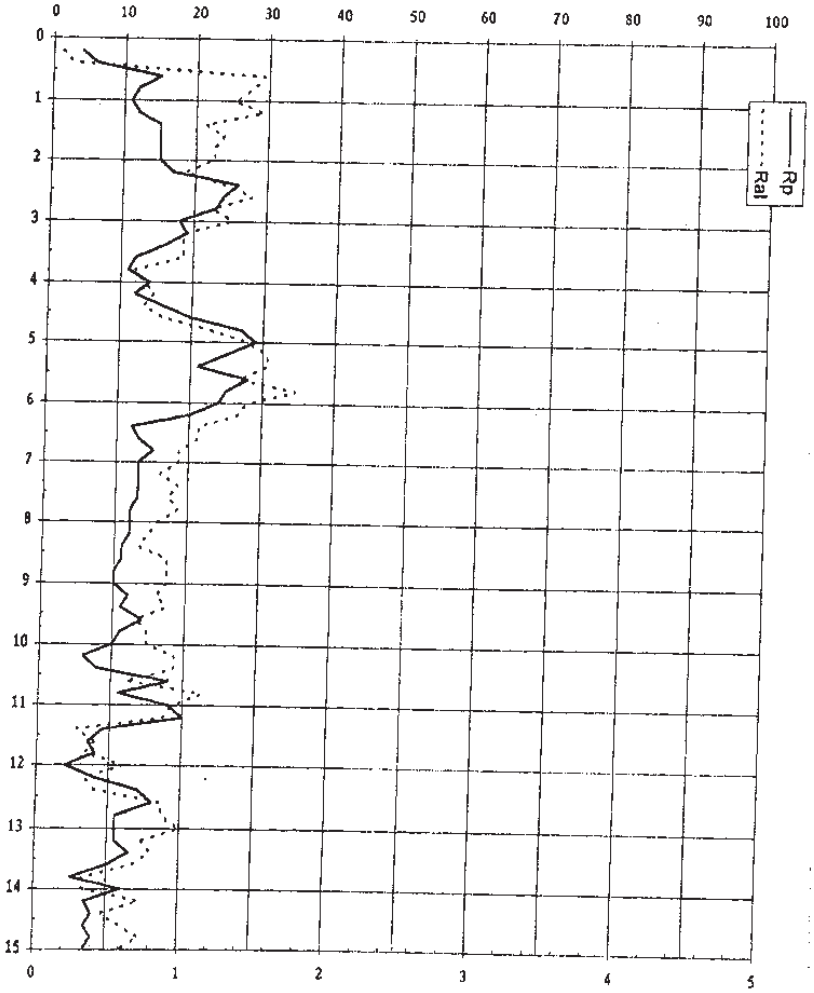
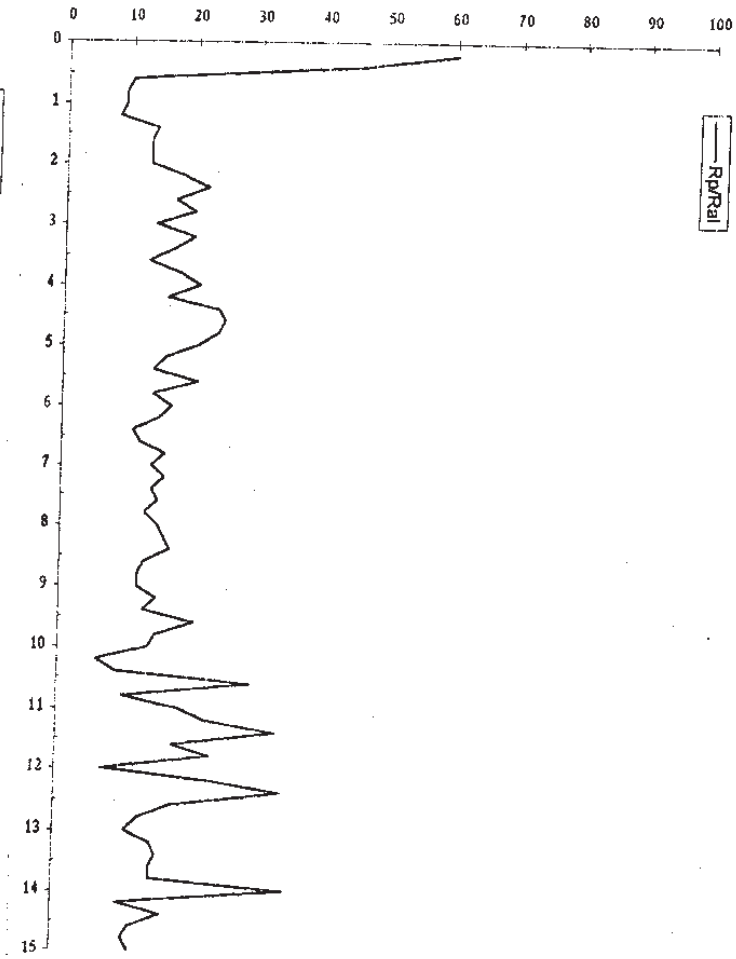
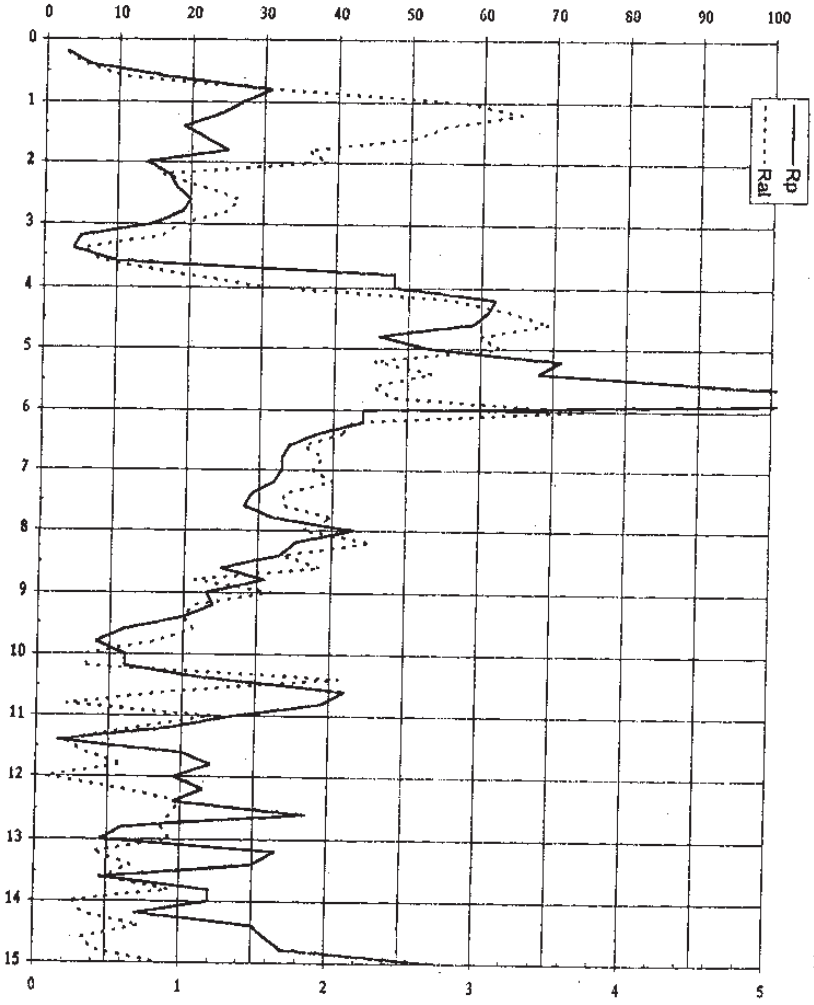




Data: 13 12 1996


Rp
Ral


Rp/Ral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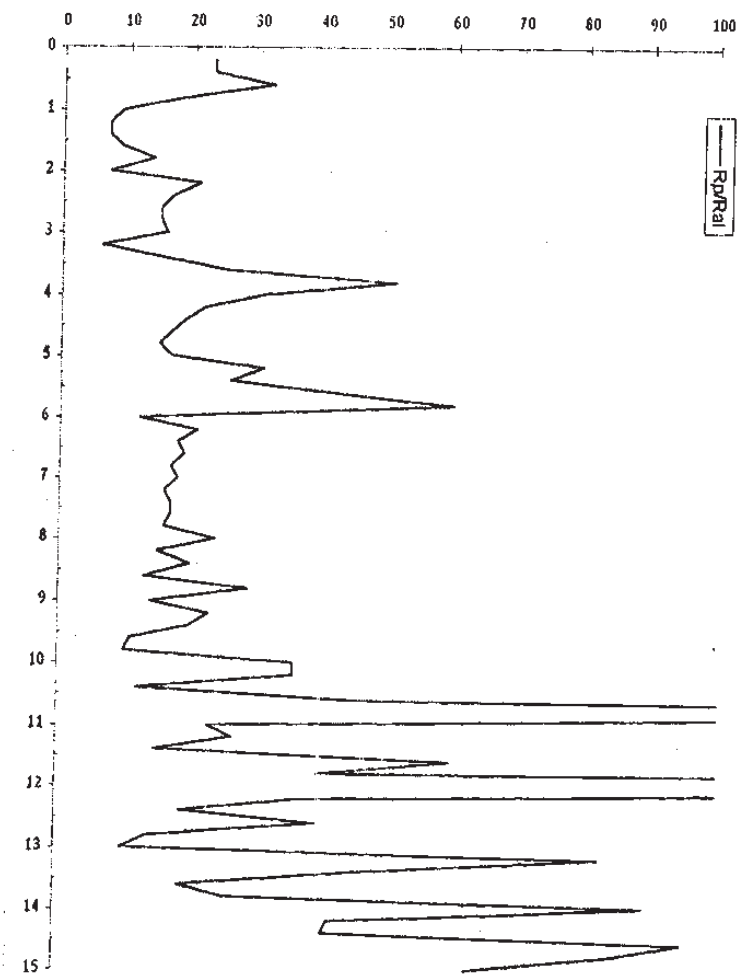
Ral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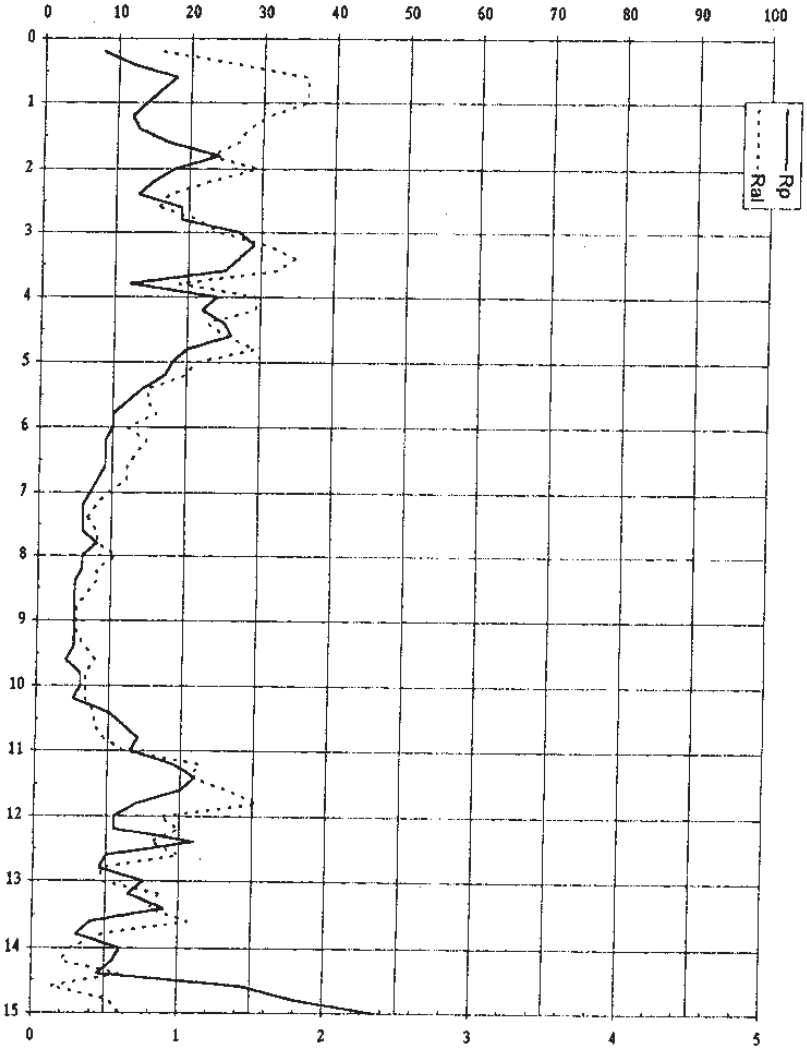
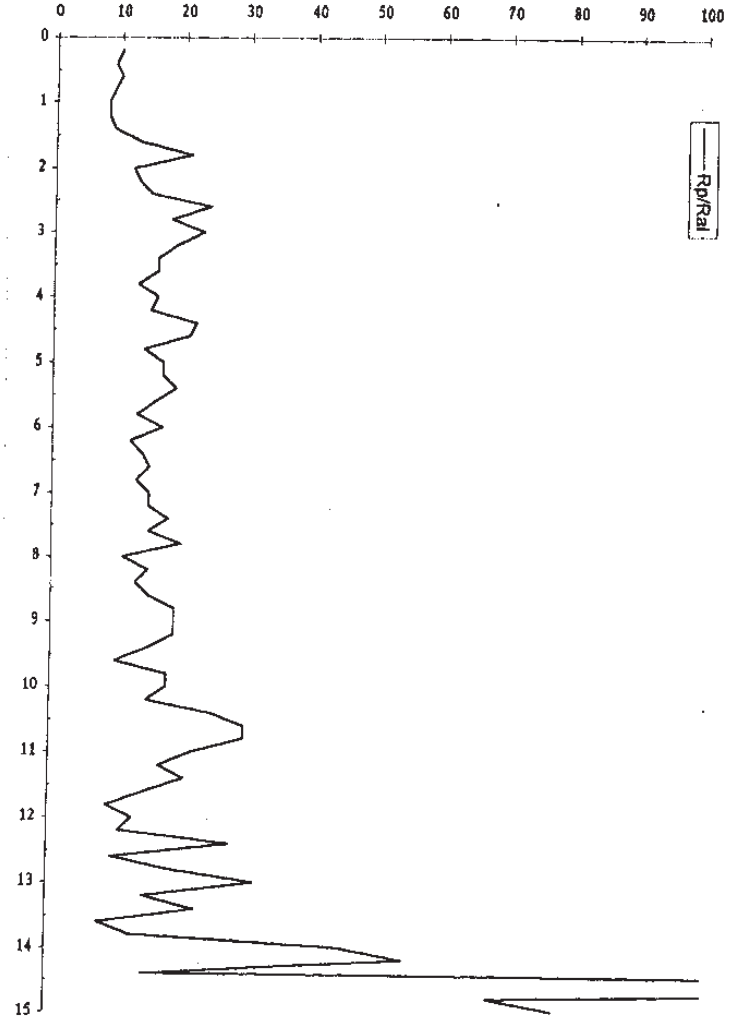
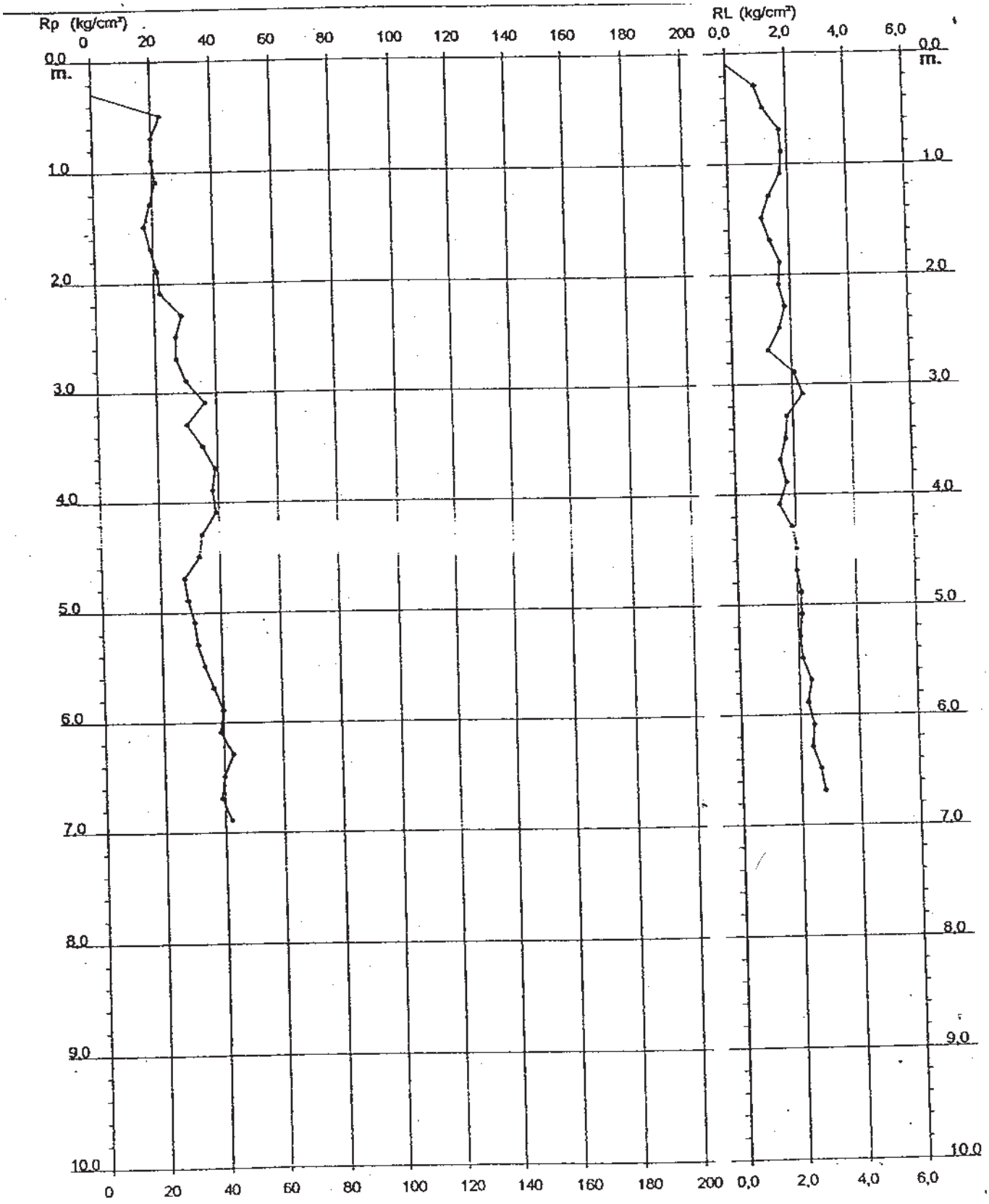
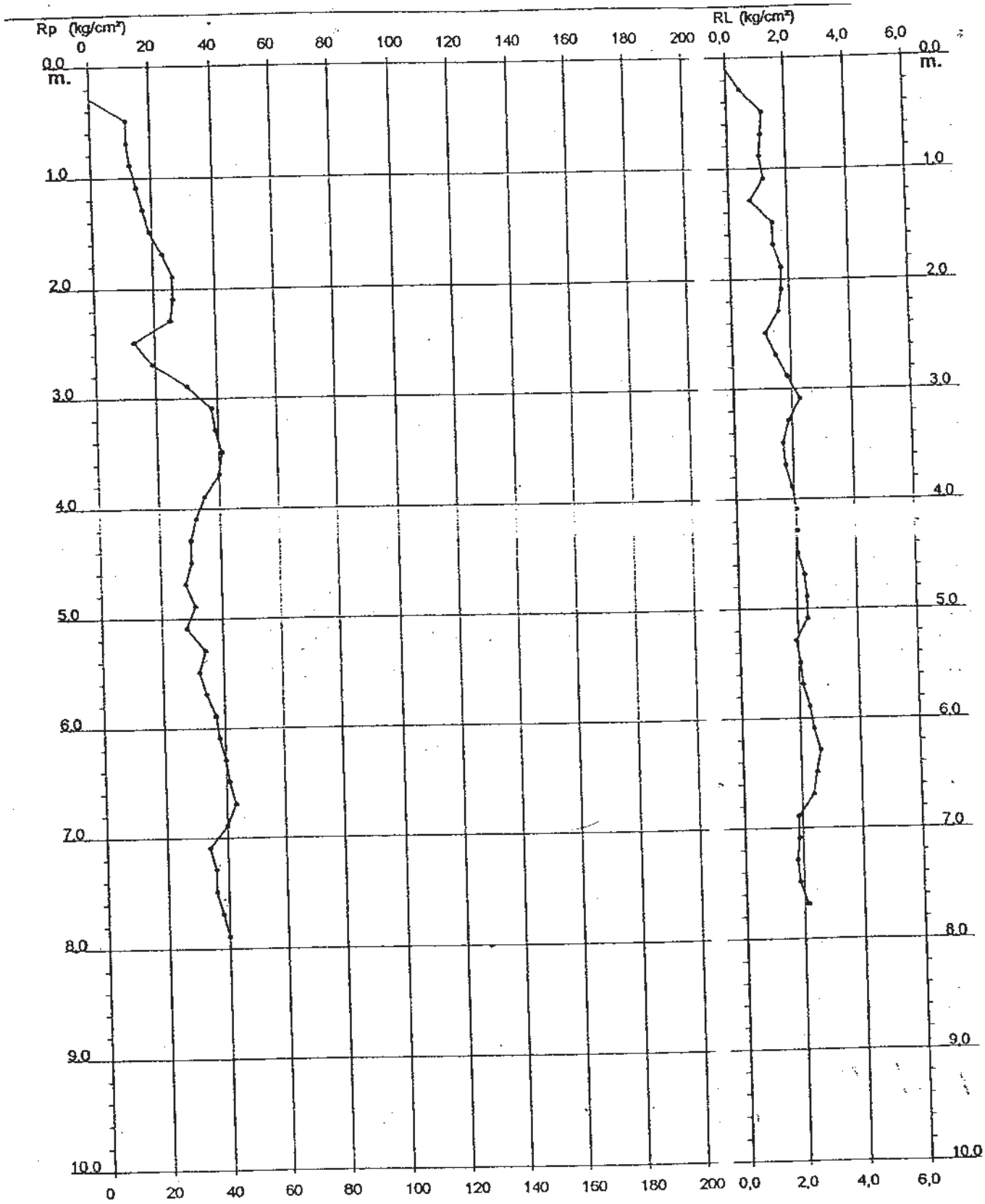

Rp
Ral


Rp/Ral

Rp
Ral

Rp/Ral


Rp (kg/cm²)
0 20 40 60 80 100 120 140 160 180 200
0,0 m.
1,0
2,0
3,0
4,0
5,0
6,0
7,0
8,0
9,0
10,0
RL (kg/cm²)
0,0 2,0 4,0 6,0


Rp (kg/cm²)
0 20 40 60 80 100 120 140 160 180 200
RL (kg/cm²)
0,0 2,0 4,0 6,0
0,0 m.
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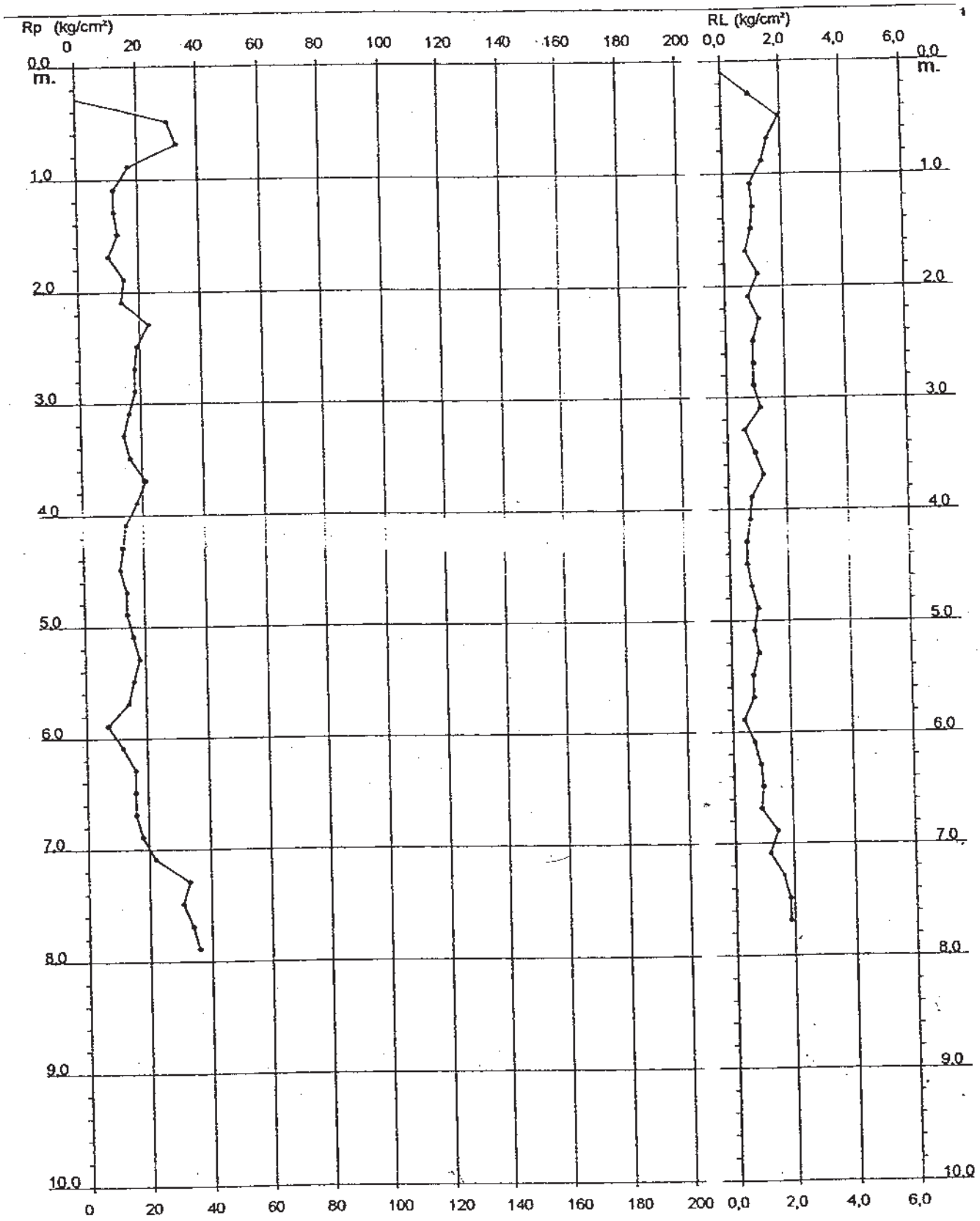
2,0
3,0
4,0
5,0
6,0
7,0
8,0
9,0
10,0


Rp (kg/cm²)
0 20 40 60 80 100 120 140 160 180 200
RL (kg/cm²)
0,0 2,0 4,0 6,0
0,0 m.
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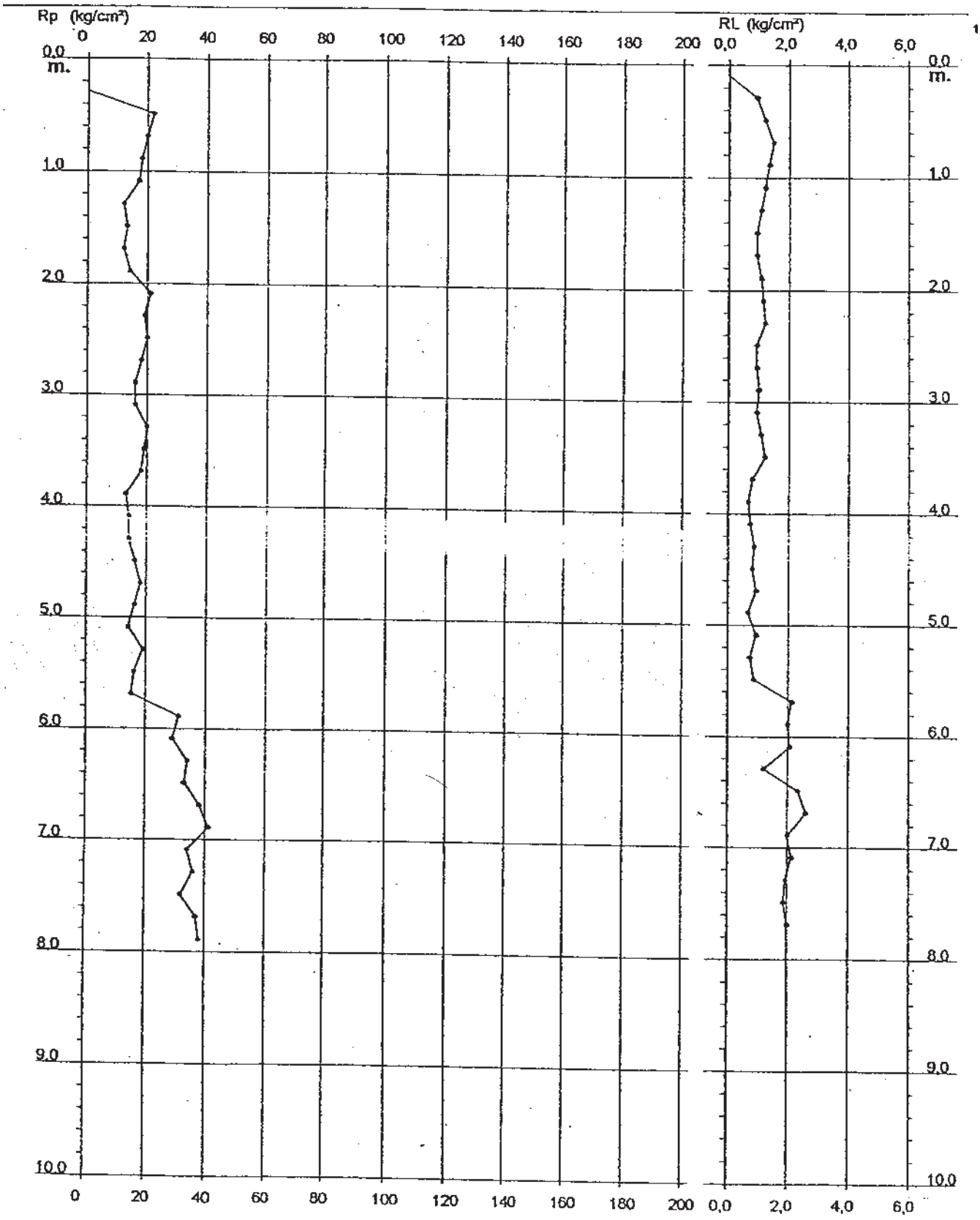
10,0


Rp (kg/cm²)
0 20 40 60 80 100 120 140 160 180 200
RL (kg/cm²)
0,0 2,0 4,0 6,0
0,0 m.
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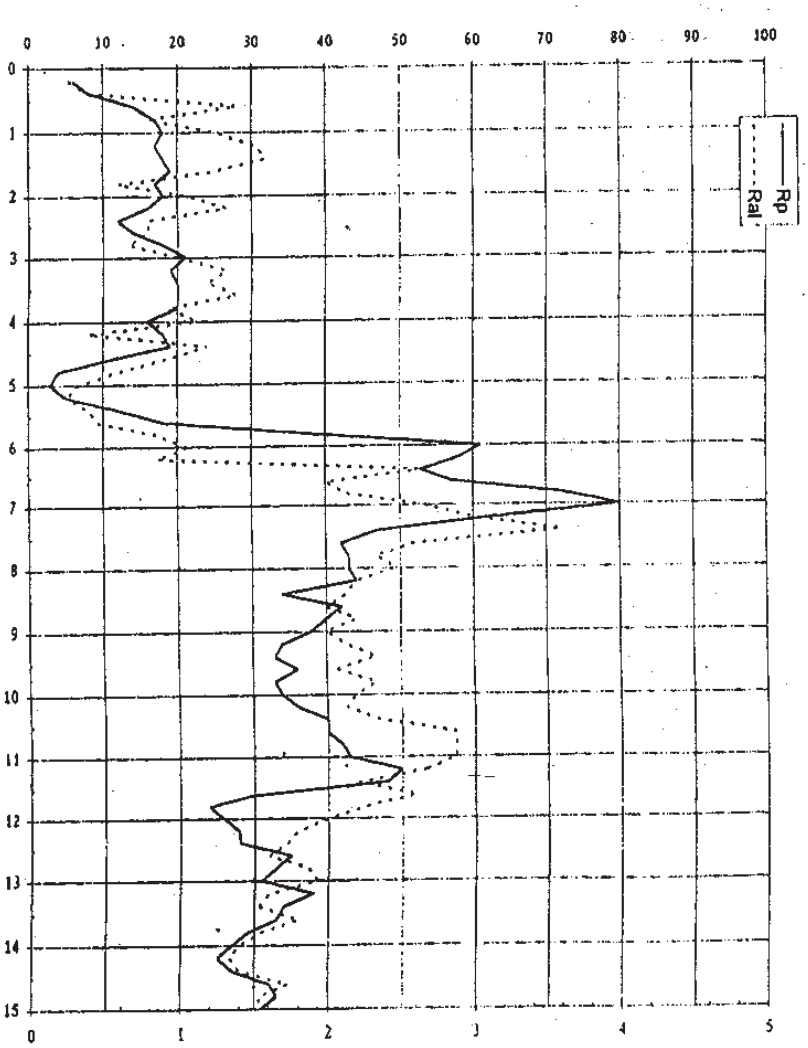
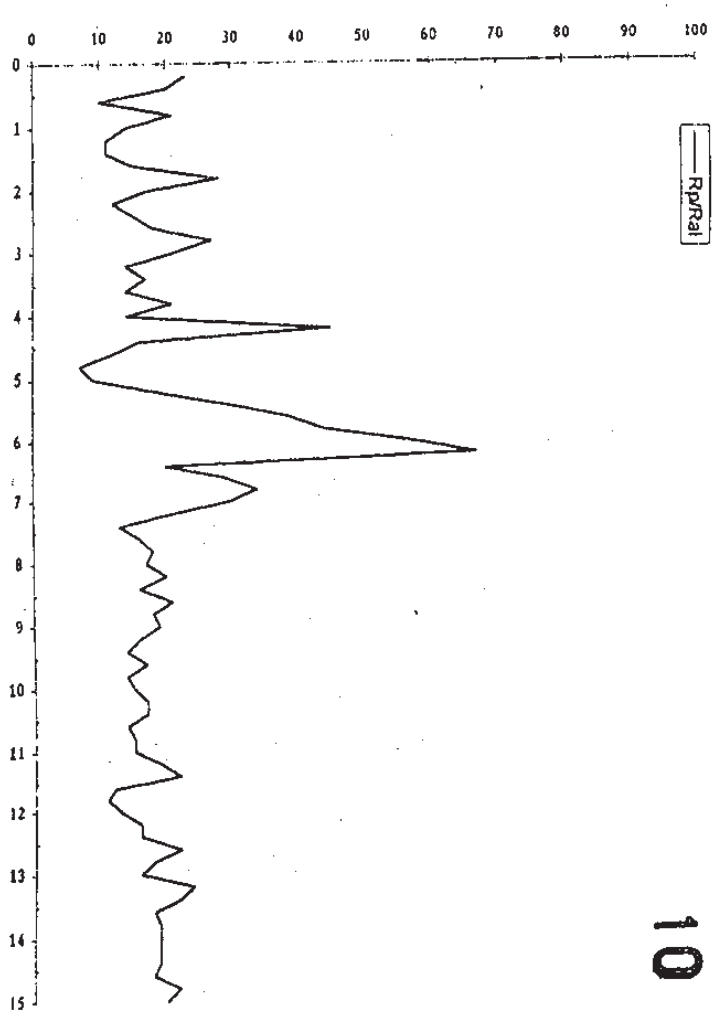
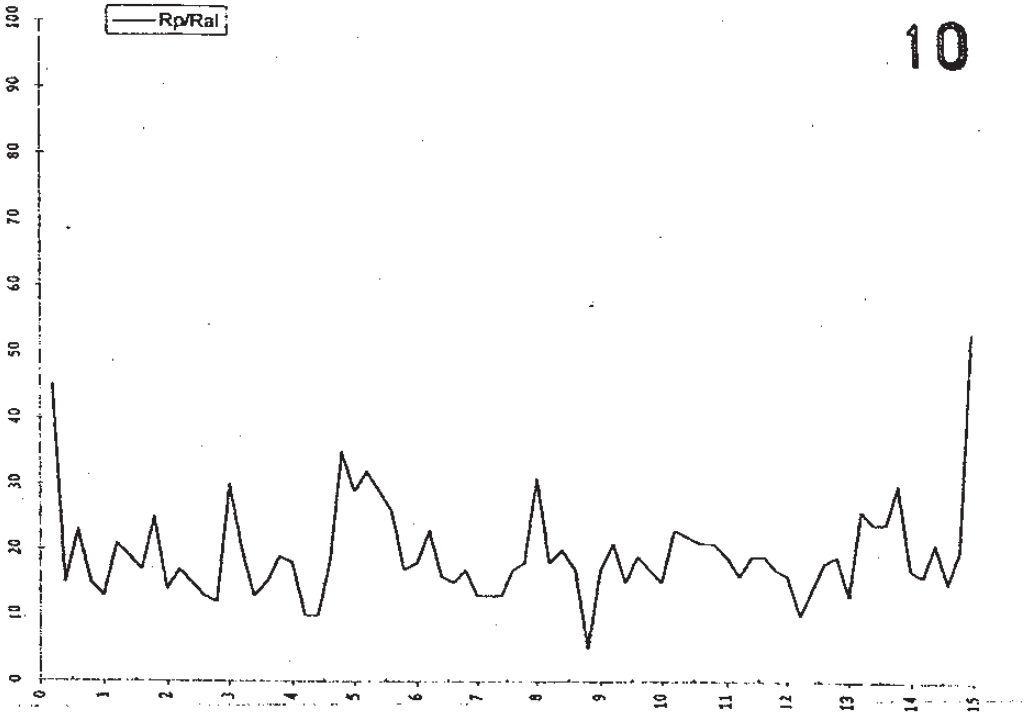
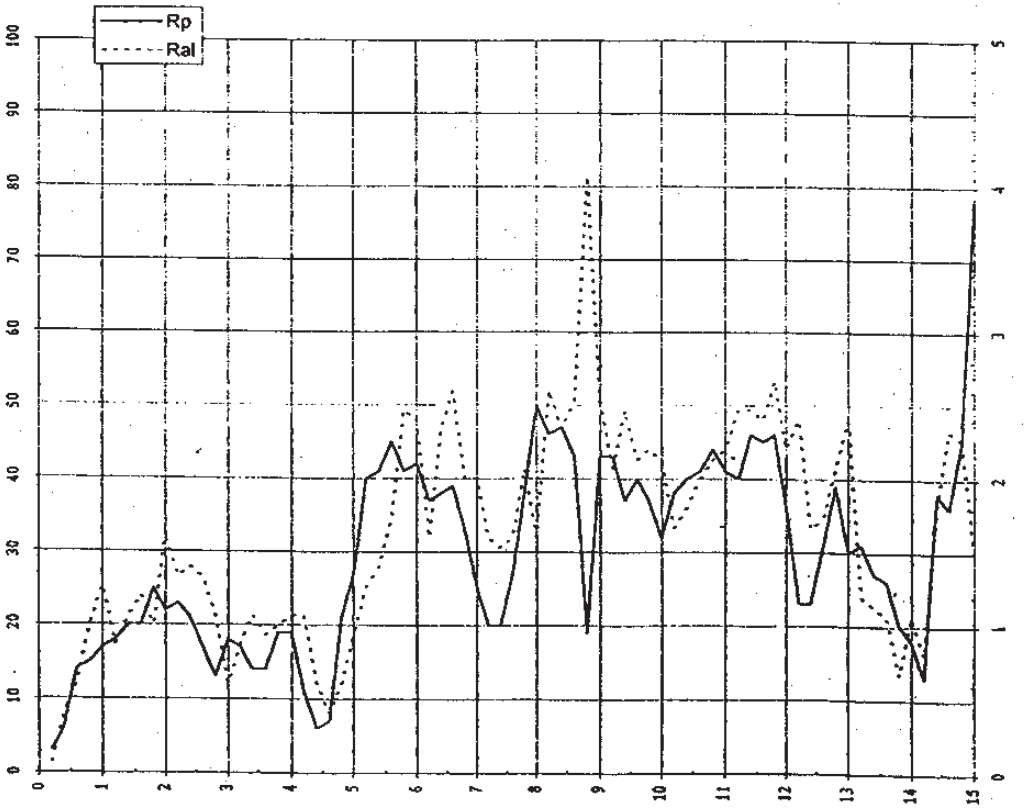
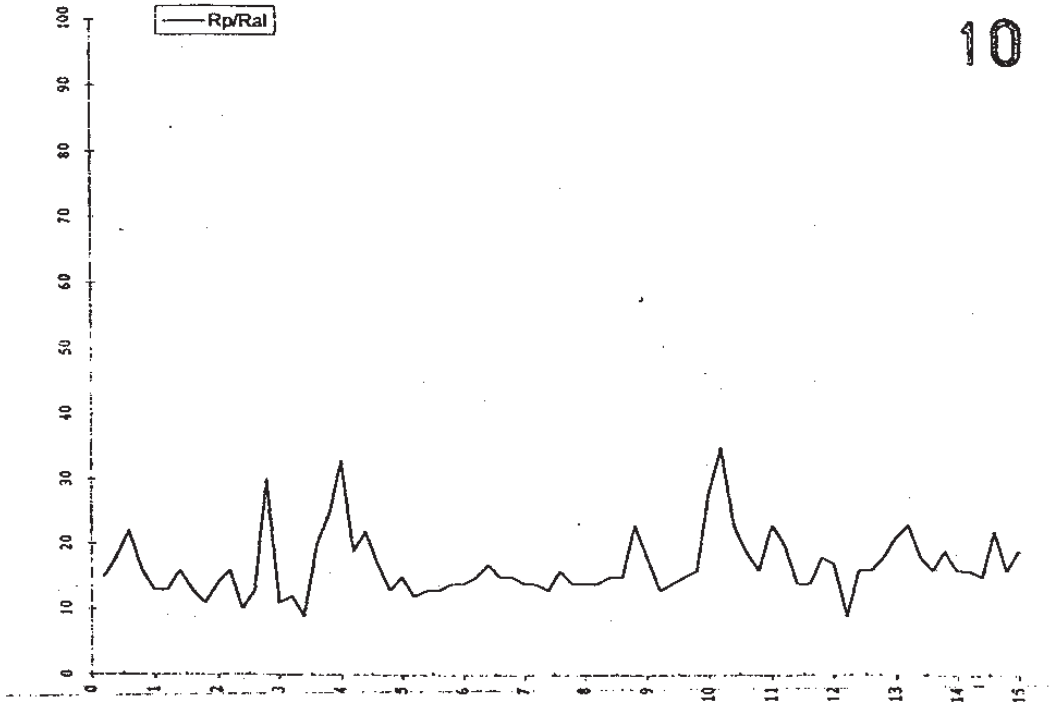




10


Rp/Ral


Rp
Ral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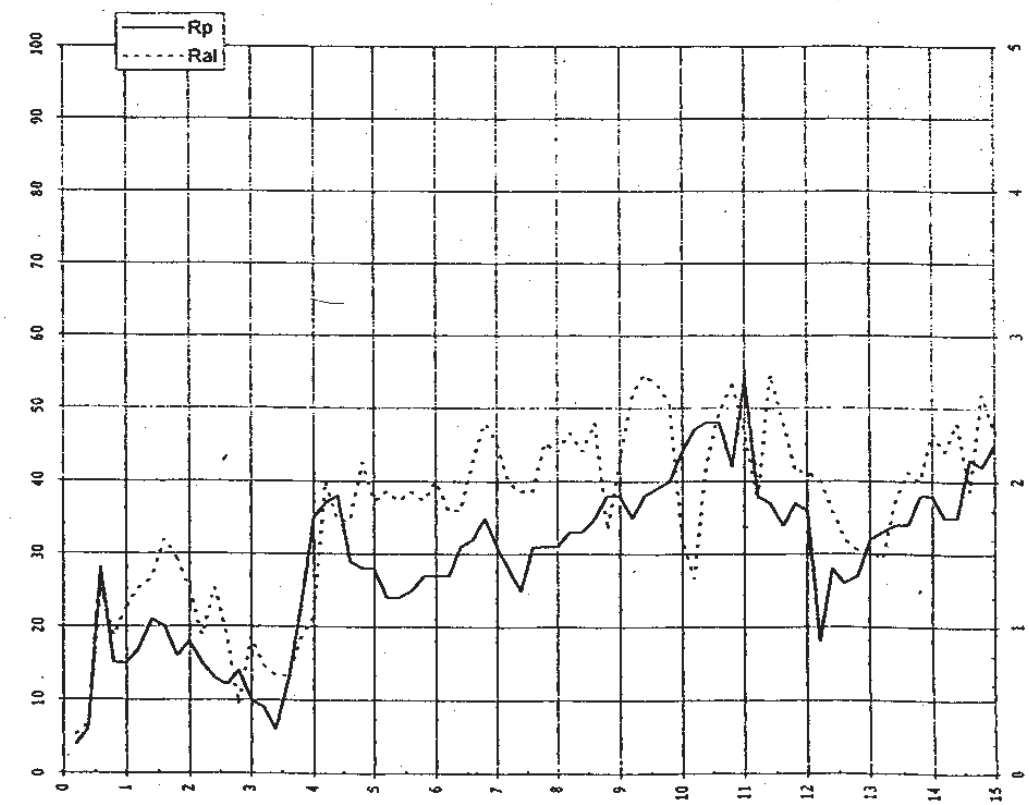
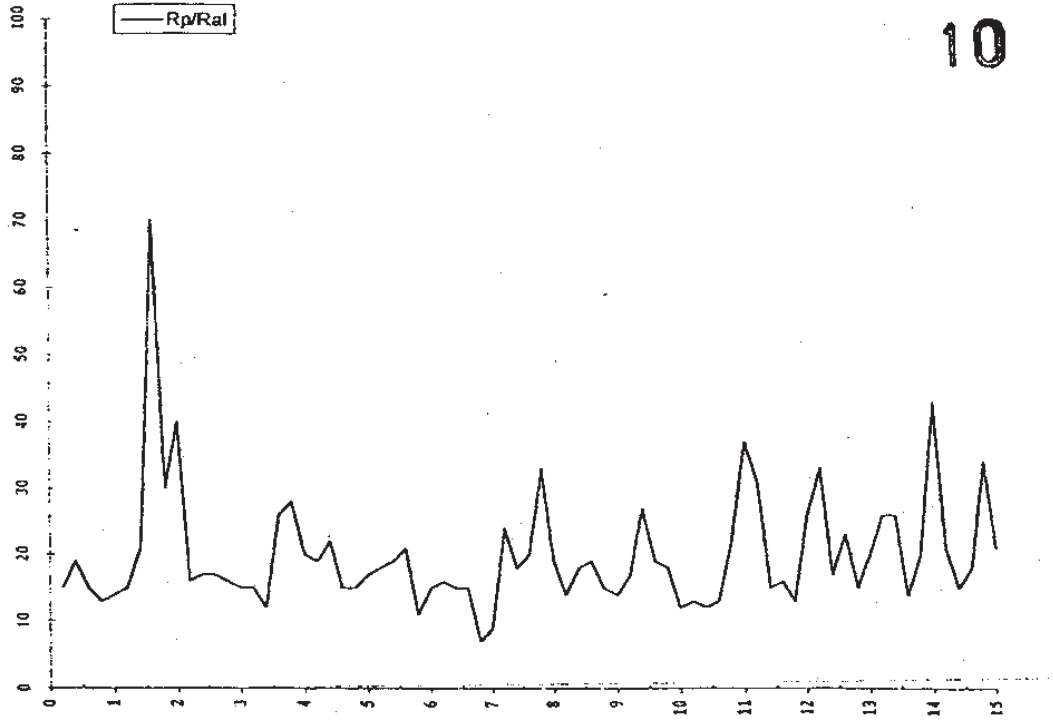

Rp
Ral


Rp/Ral
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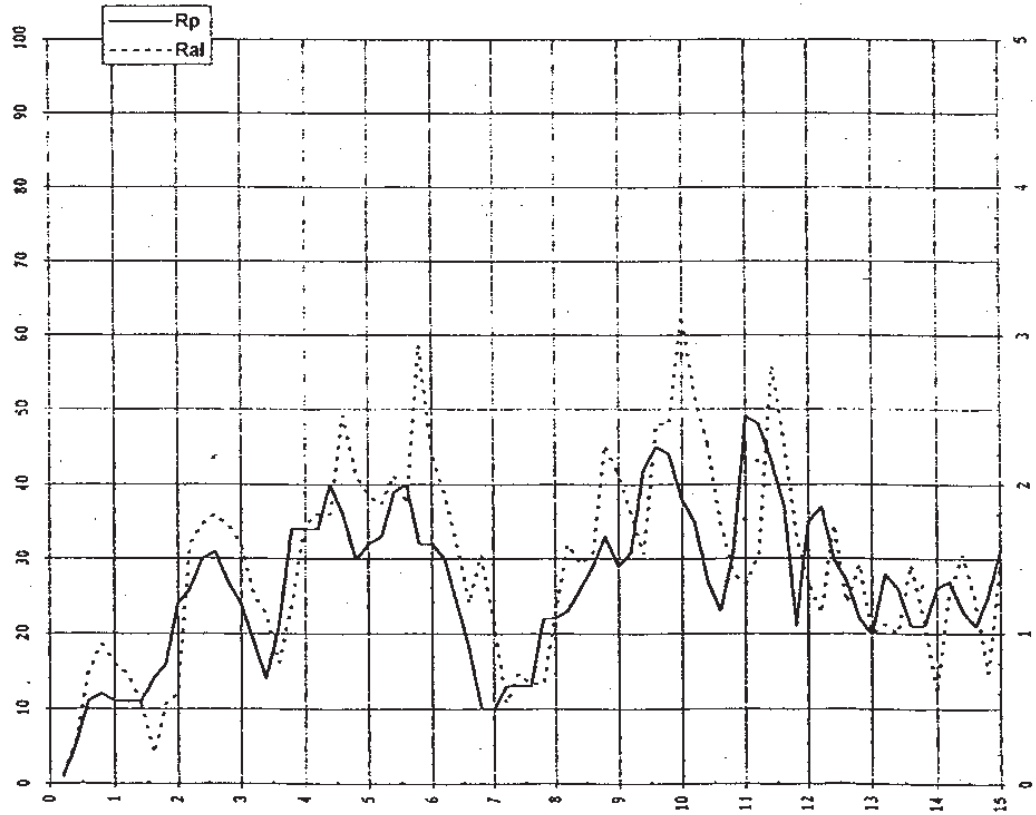
Rp
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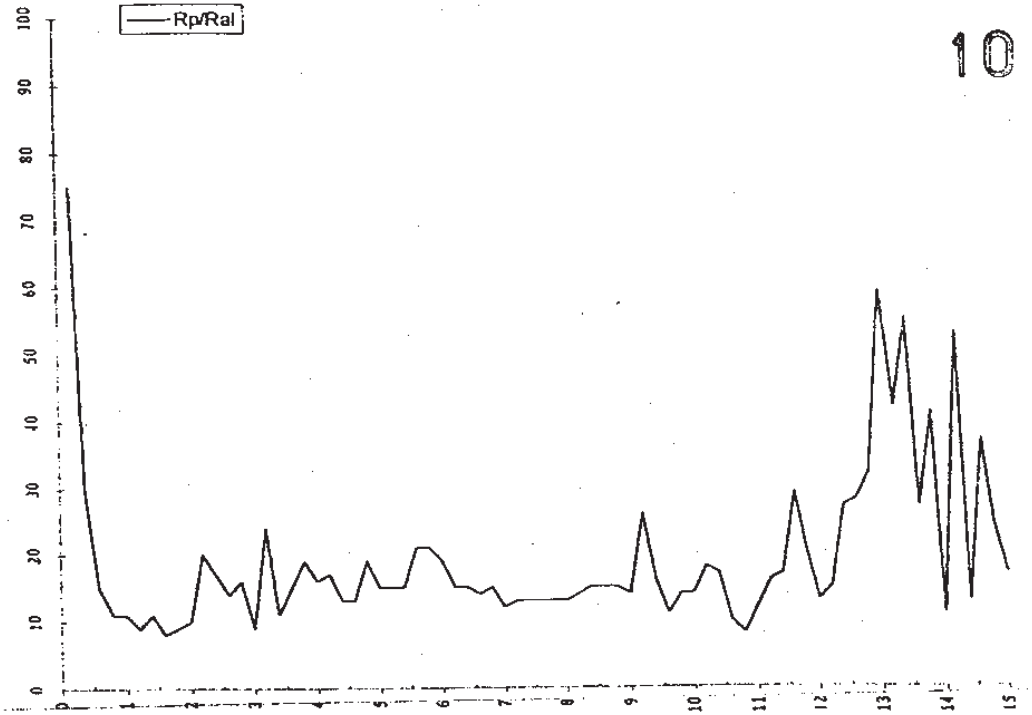
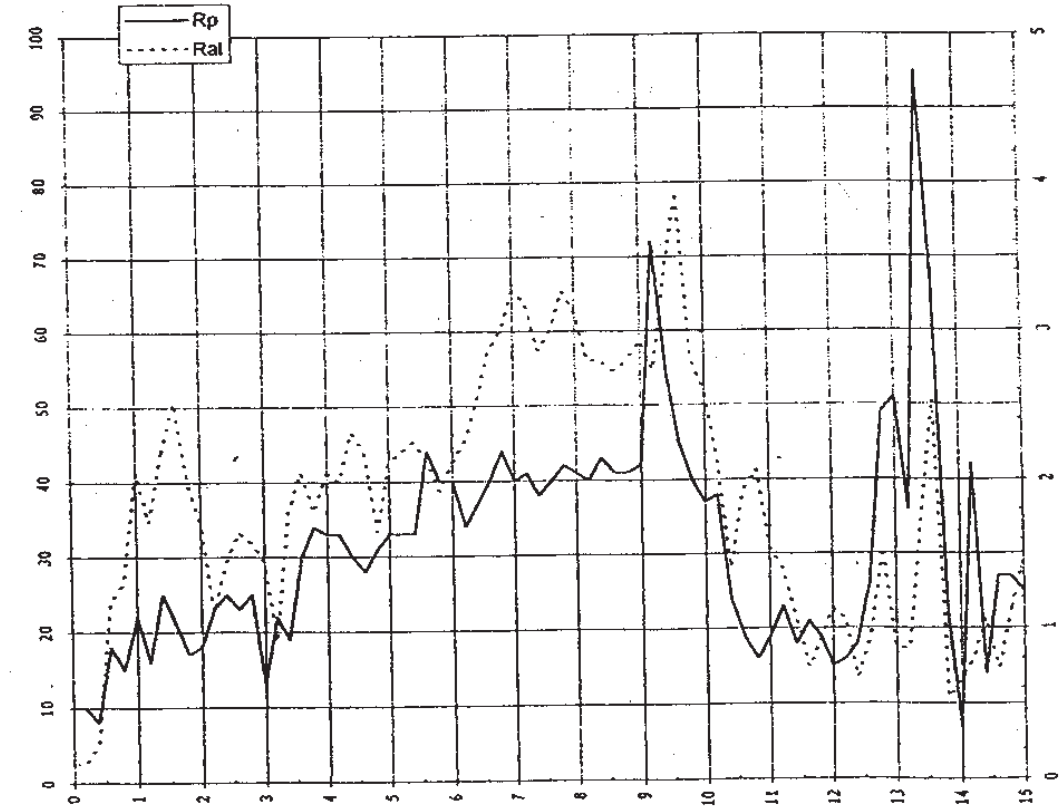
14
15


Rp/Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15


Rp
Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
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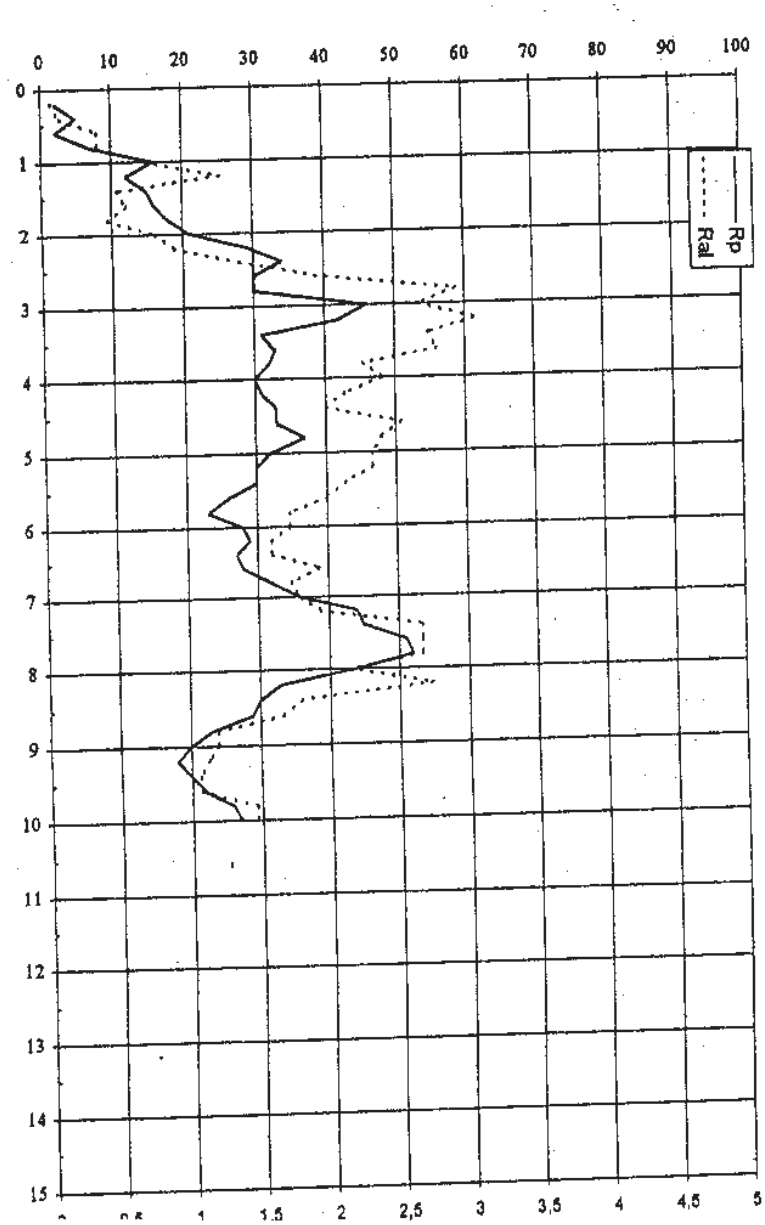
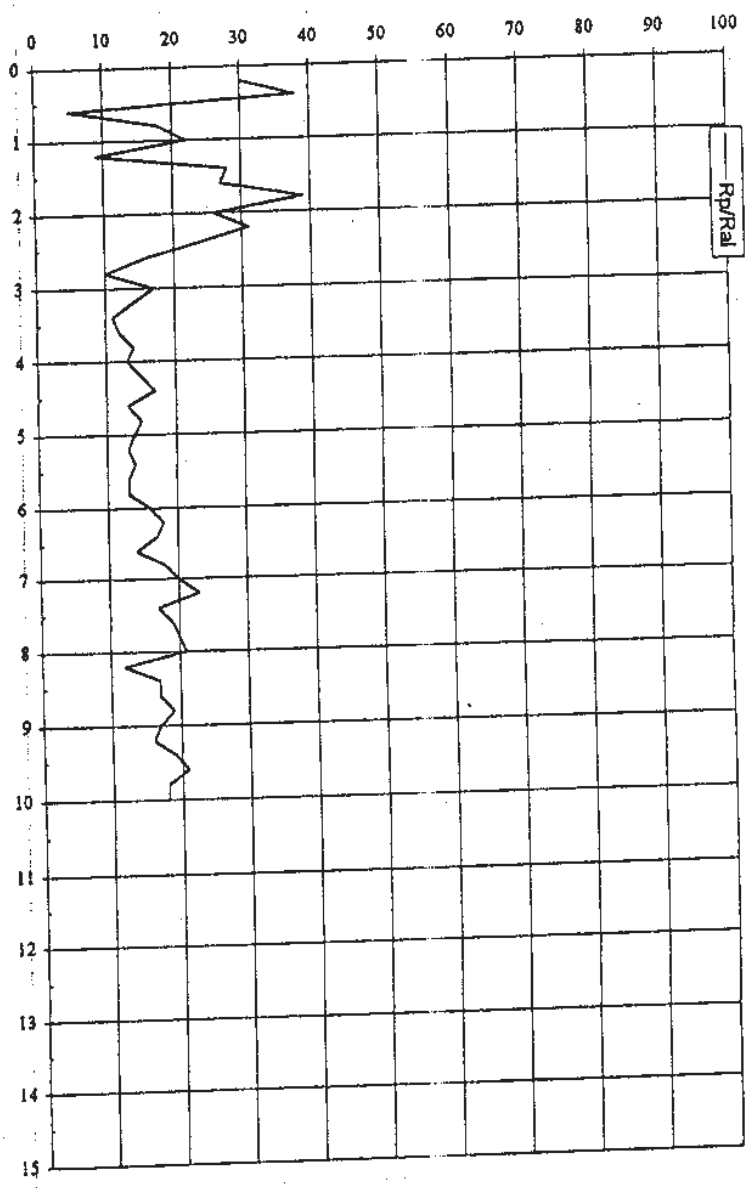
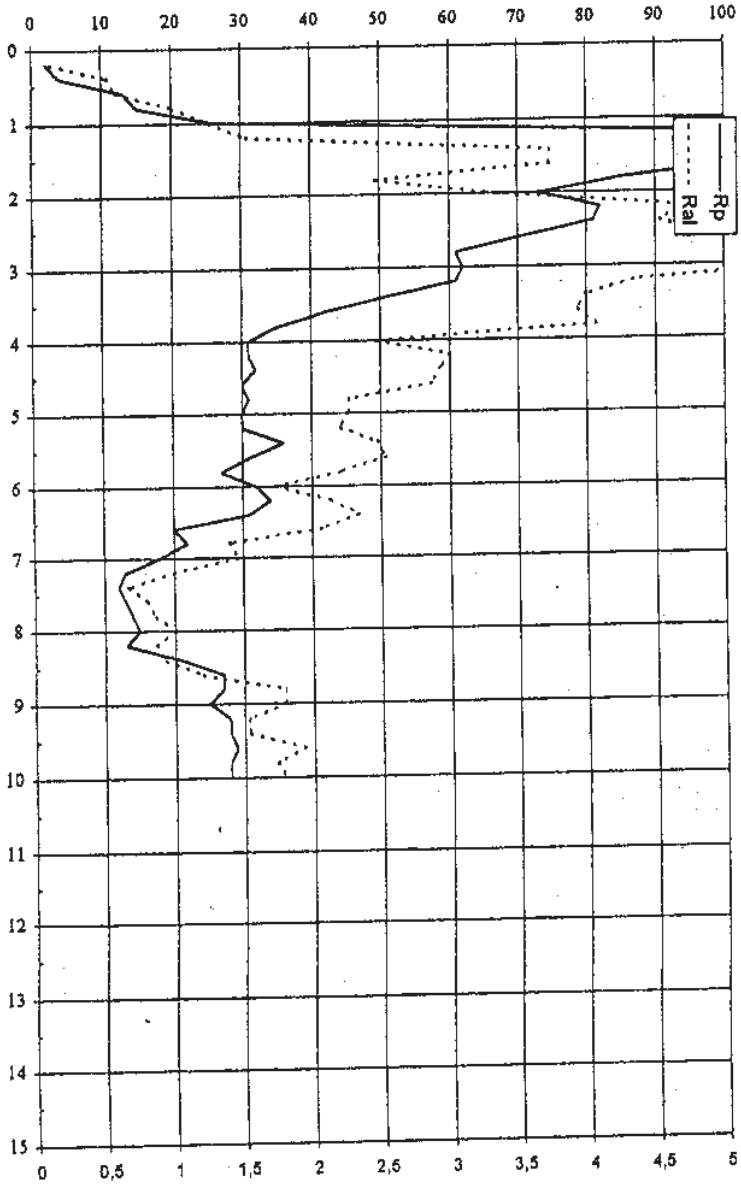
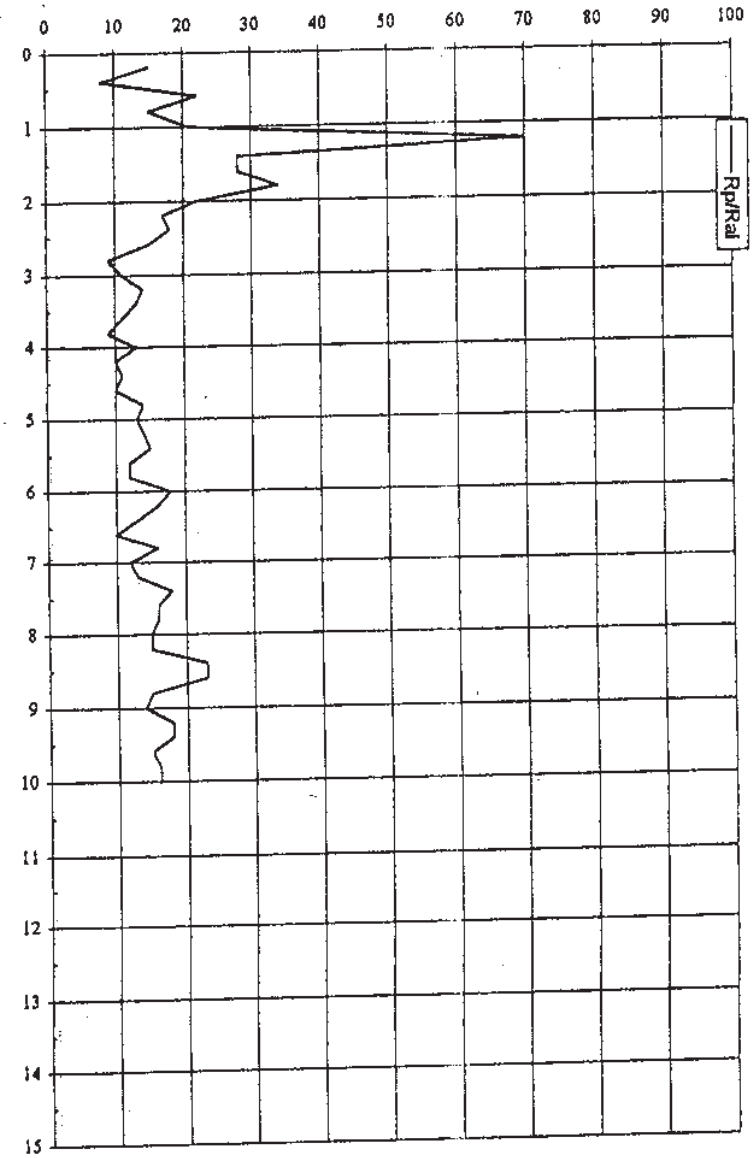
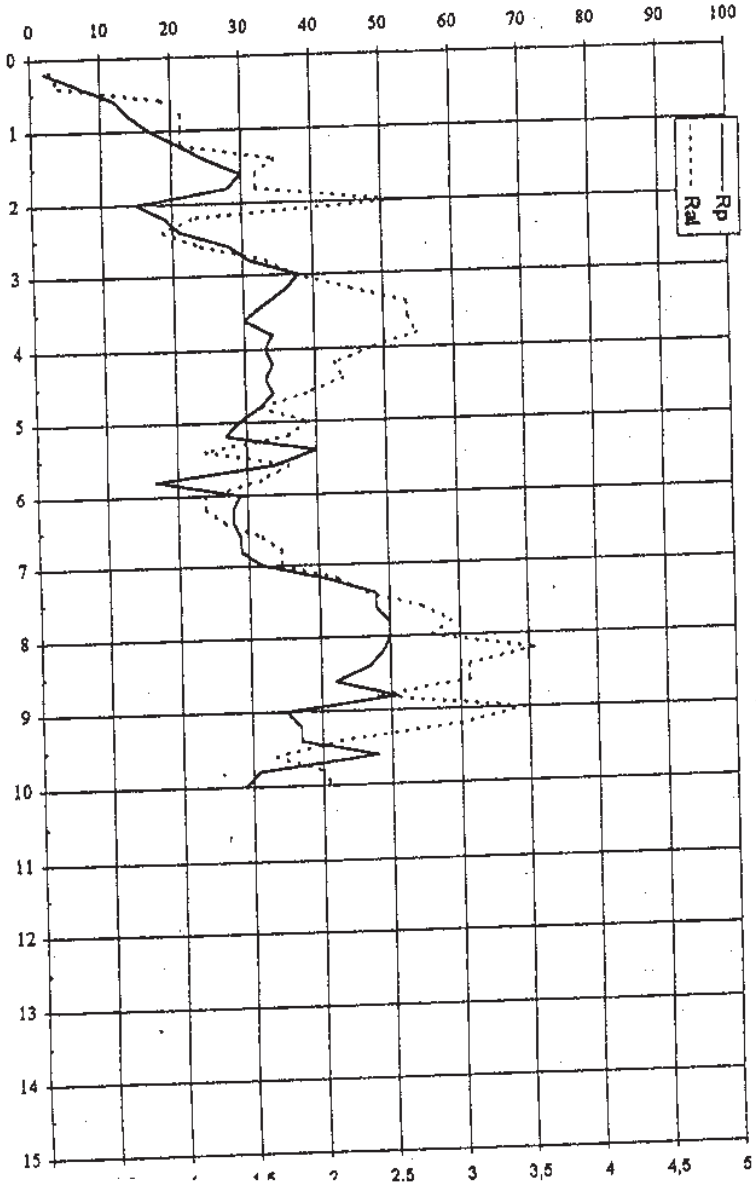
6
7
8
9
10
11
12
13
14
15
0
1
2
3
4
5

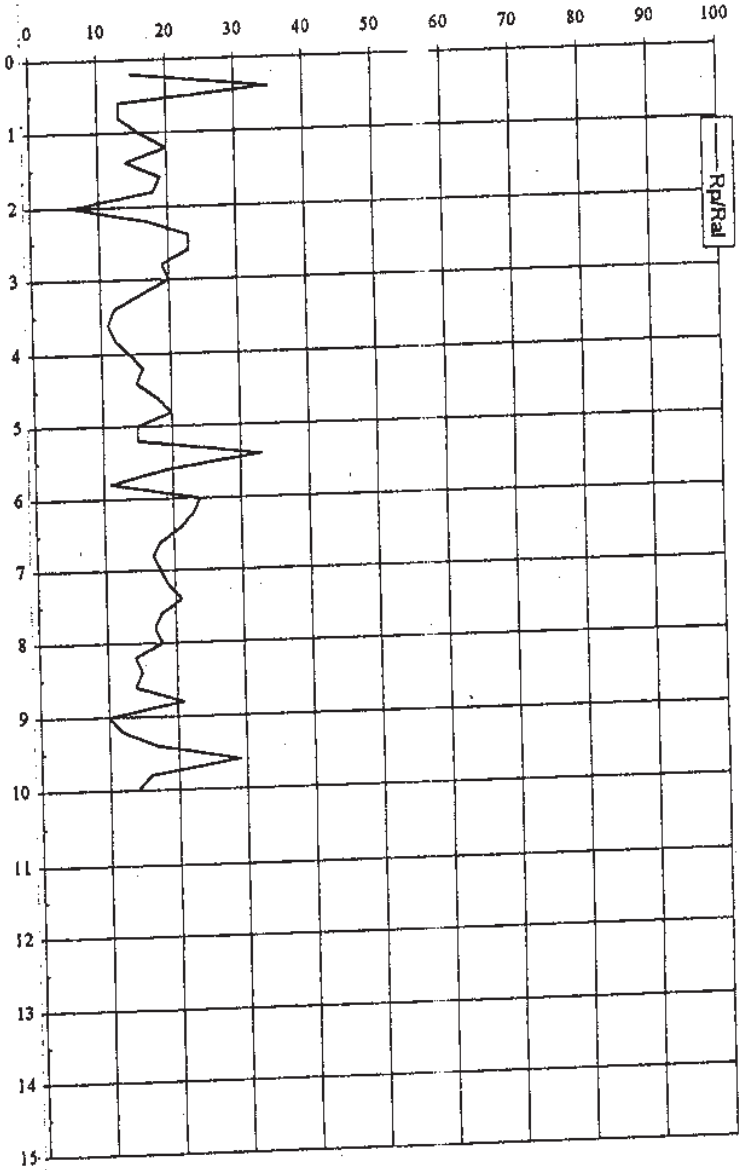

Rp
Ral

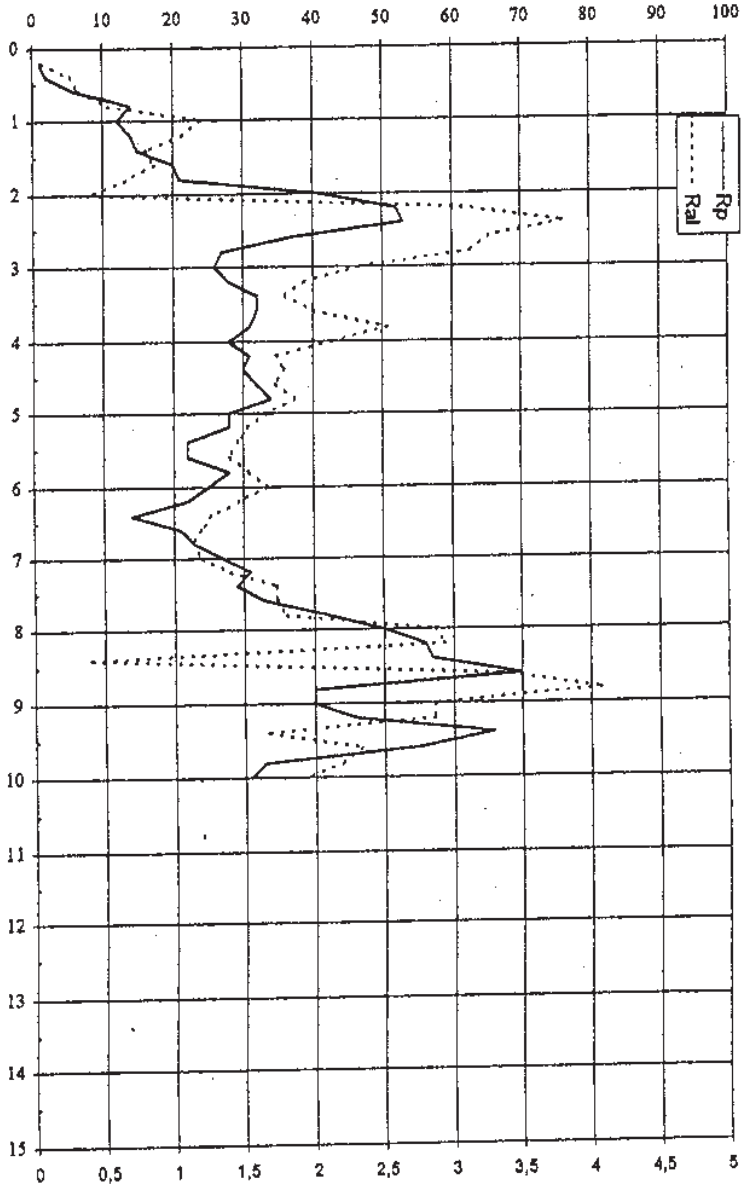

Rp/Ral

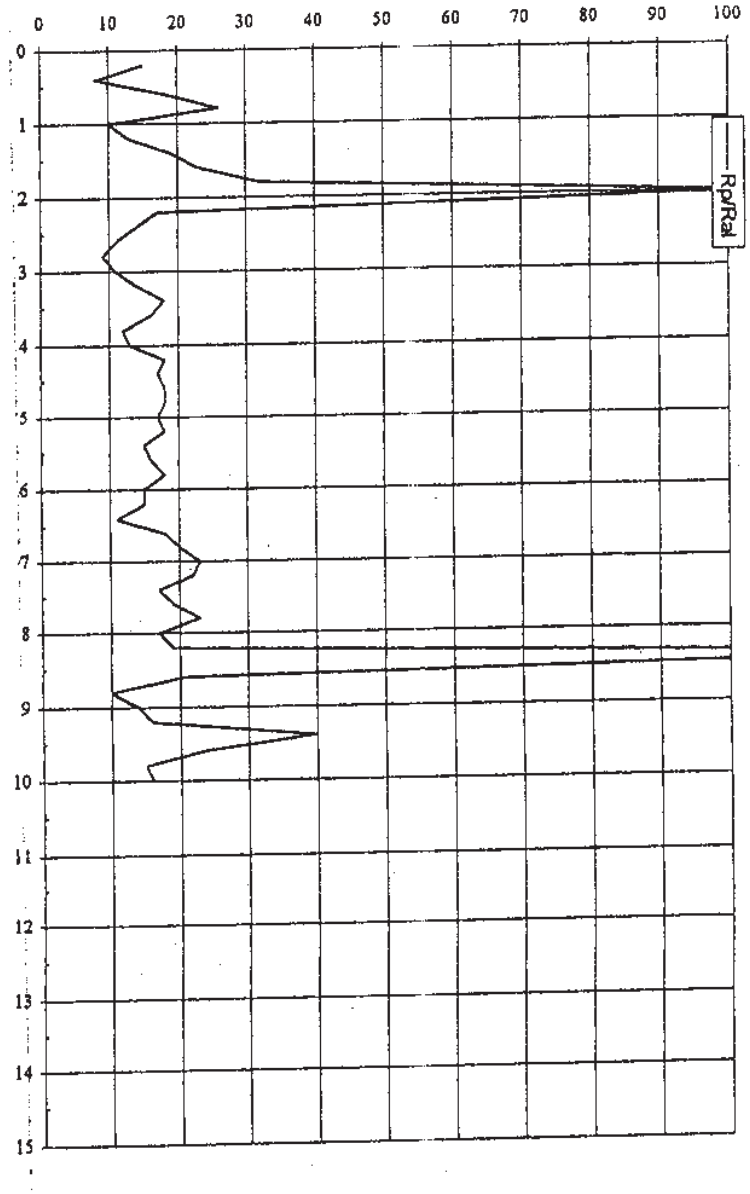

Rp
Ral
0 10 20 30 40 50 60 70 80 90 100
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
0 0,5 1 1,5 2 2,5 3 3,5 4 4,5 5


Rp/Ral
0 10 20 30 40 50 60 70 80 90 100
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15


Rp
Ral

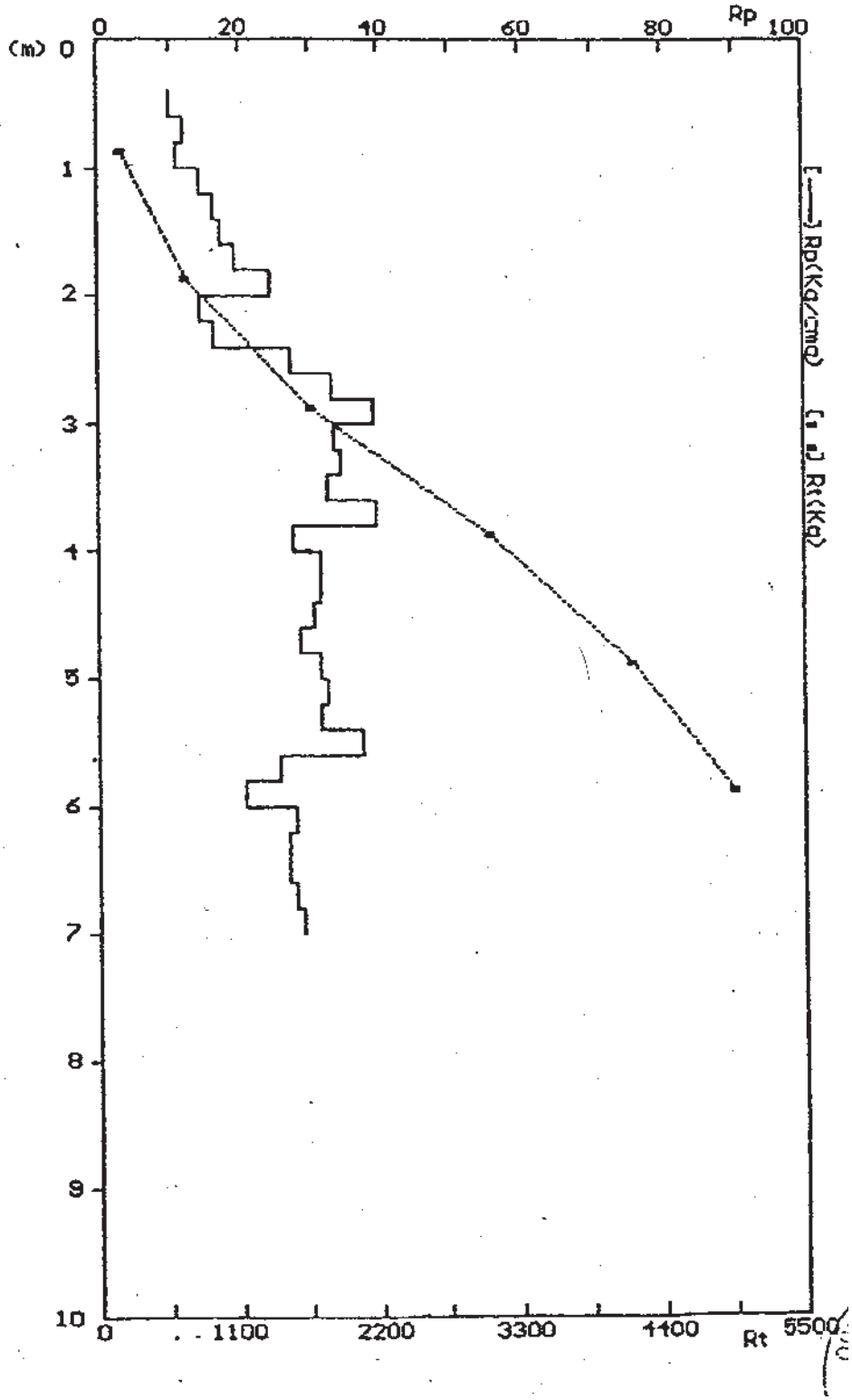

Rp/Ral


Rp
Ral


Rp/Ral

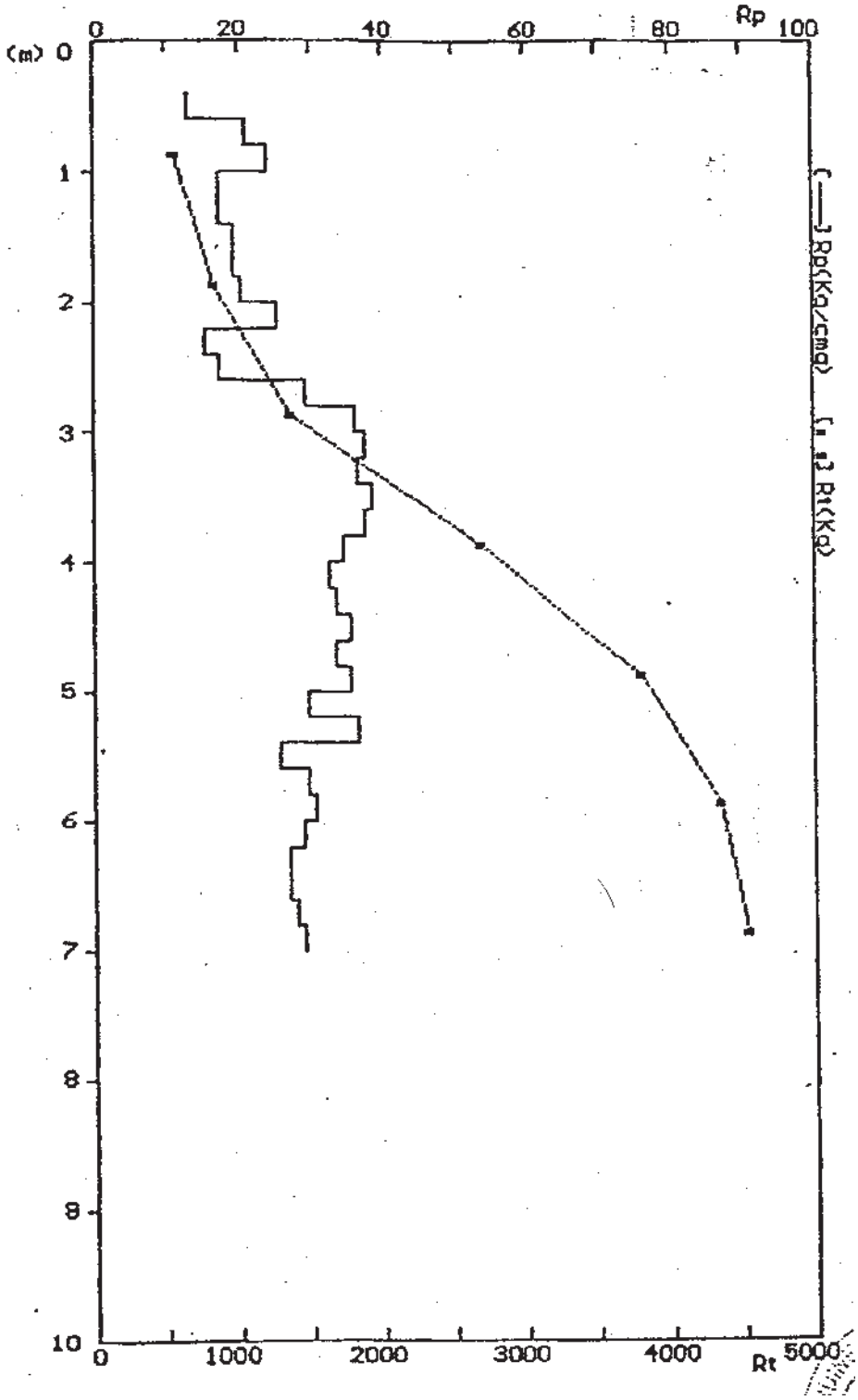
PENETROMETRIA STATICA n. 1

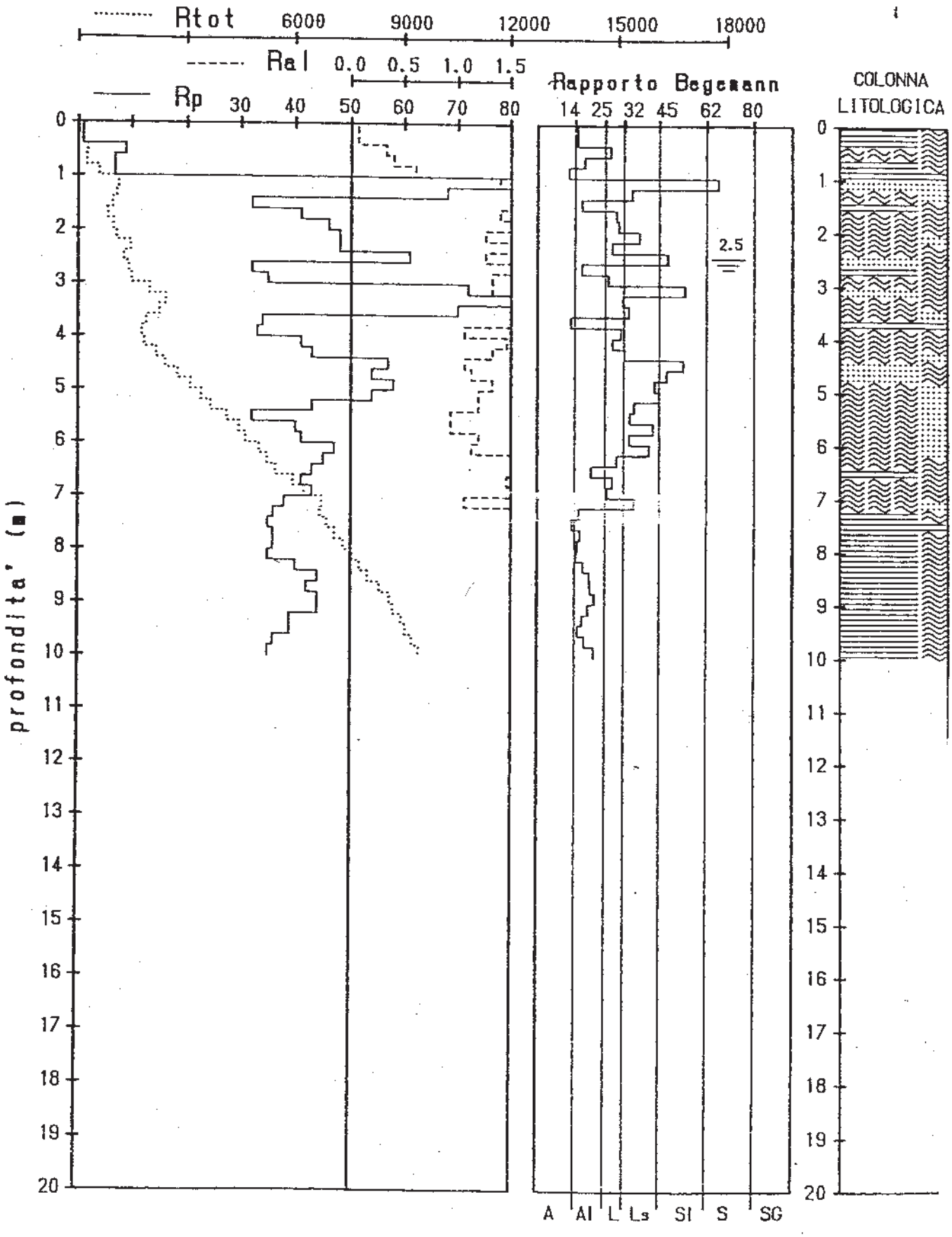
località : Lavaiano



PENETROMETRIA STATICA n. 2

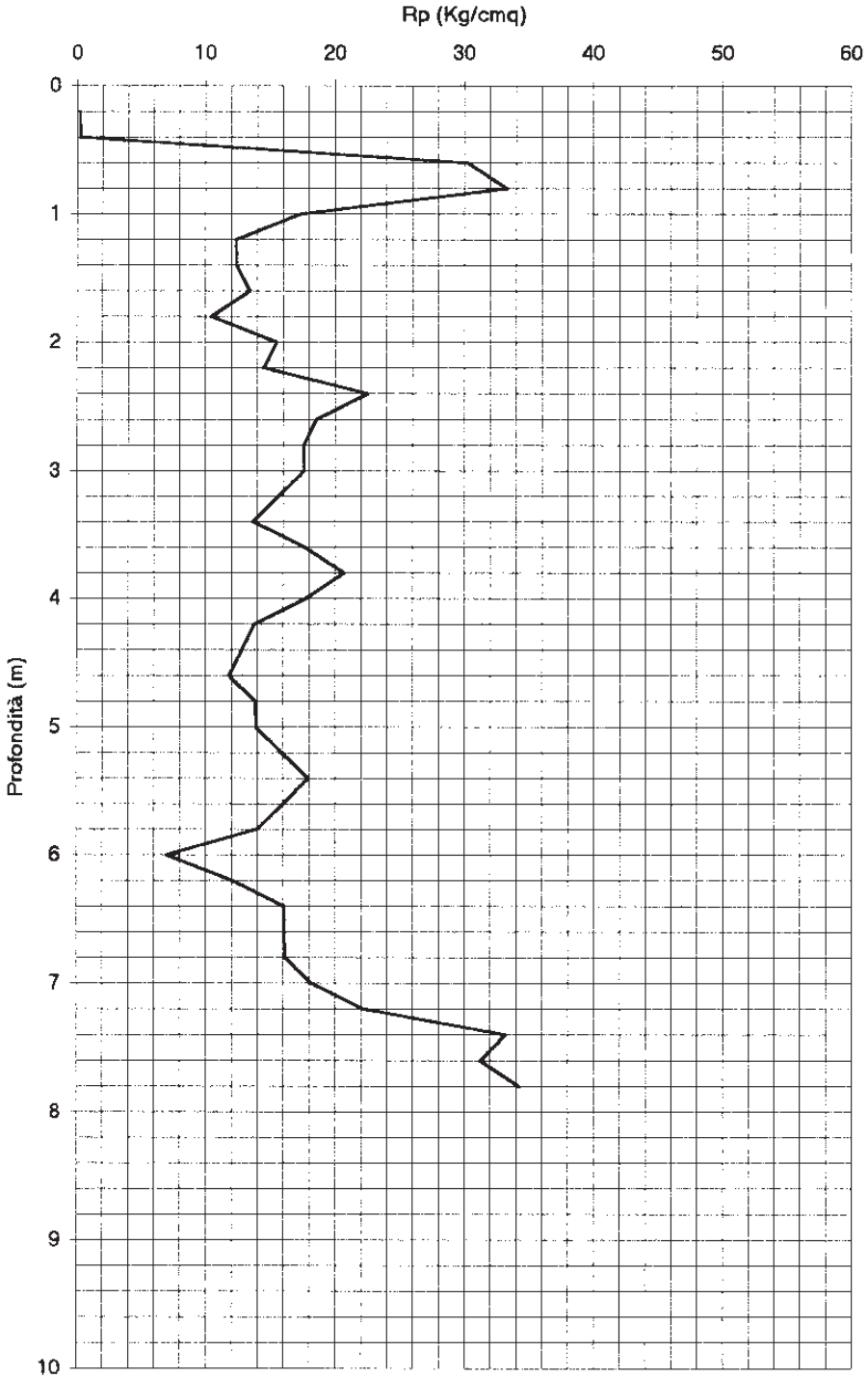
località : Lavaiano



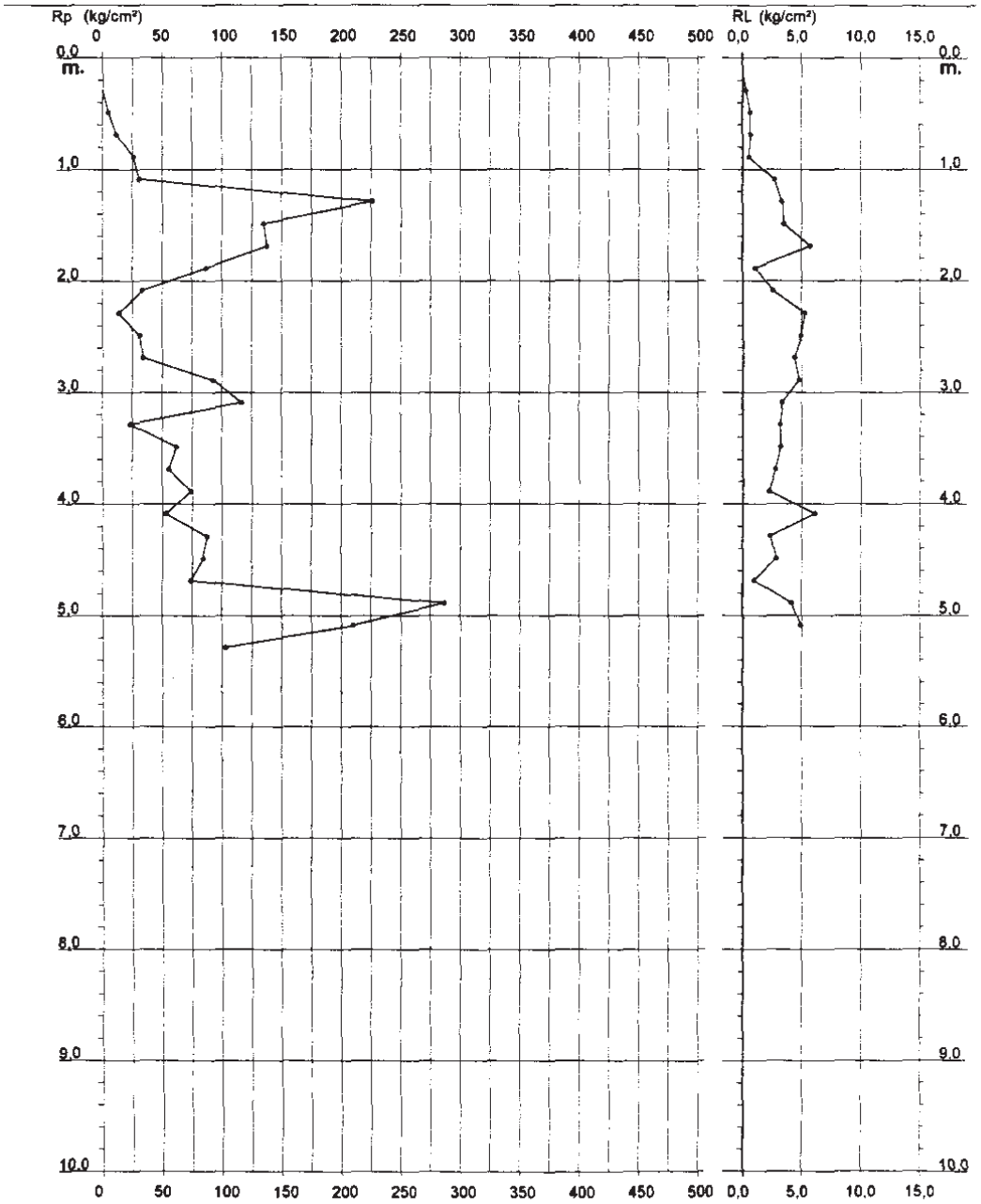

Rtot
6000
9000
12000
15000
18000
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
2.5
COLONNA
LITOLOGICA
profondita' (m)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
Al
L
Ls
Sl
S
SG

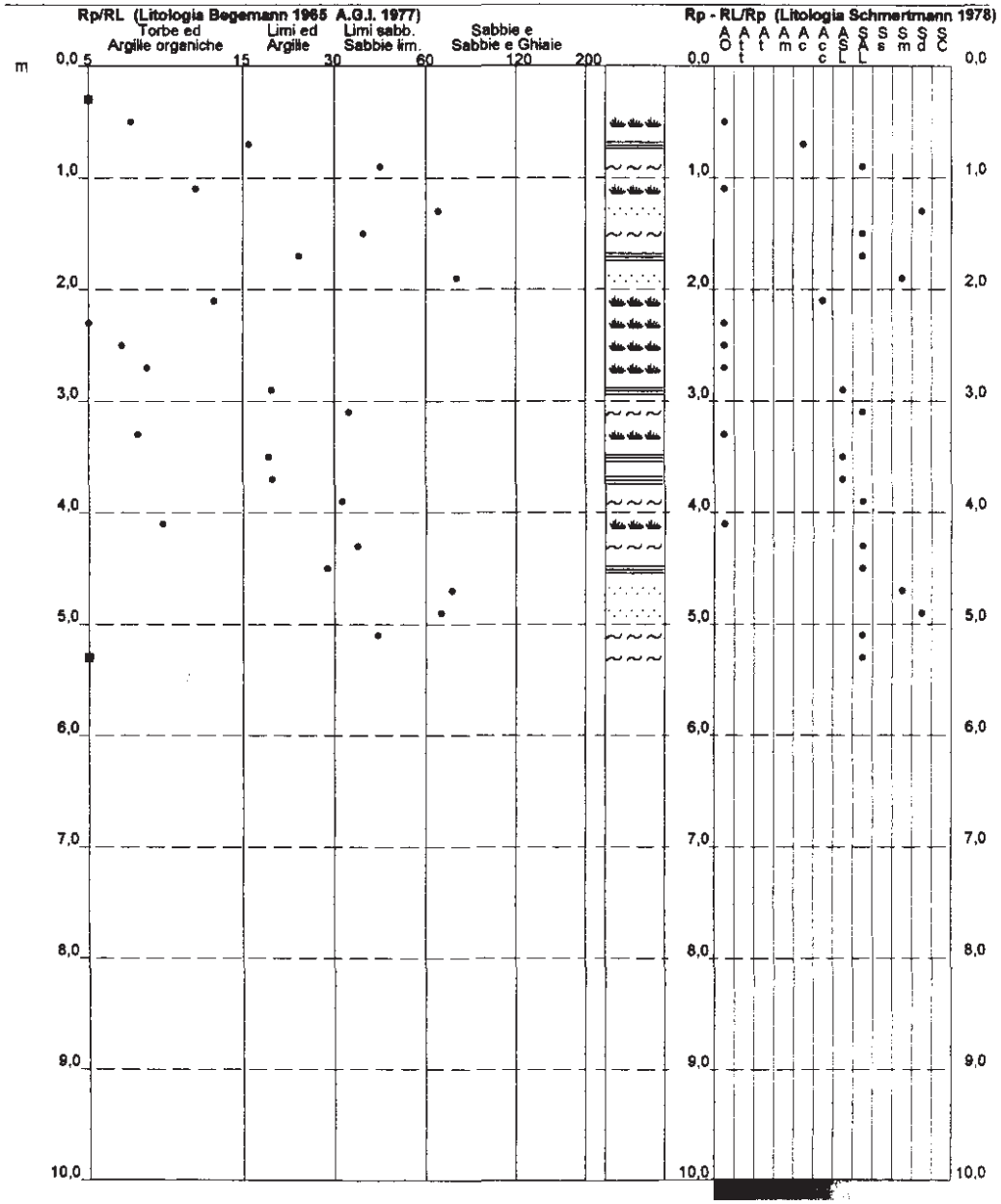
Profondità (m)	Rp (Kg/cmq)	Rf (Kg/cmq)	Rp/Rf	FR %	Litotipo (cl. secondo Searle)	Simb.	Comp.
0,2	-	-	-	-	-		
0,4	-	-	-	-	-		
0,6	30	0,9	32	3	SABBIA ARGILLOSO-LIMOSA		
0,8	33	1,9	18	6	LIMO ARGILLOSO		
1,0	17	1,5	12	8	ARGILLA LIMOSA		
1,2	12	1,3	9	11	ARGILLA		
1,4	12	0,9	14	7	ARGILLA LIMOSA		
1,6	13	1,0	13	7	ARGILLA LIMOSA		
1,8	10	0,9	11	9	ARGILLA		
2,0	15	0,7	23	4	LIMO ARGILLOSO-SABBIOSO		
2,2	14	1,1	14	7	ARGILLA LIMOSA		
2,4	23	0,8	28	4	LIMO ARGILLOSO-SABBIOSO		
2,6	19	1,1	17	6	LIMO ARGILLOSO		
2,8	18	0,9	20	5	LIMO ARGILLOSO		
3,0	18	0,9	19	5	LIMO ARGILLOSO		
3,2	16	0,9	18	6	LIMO ARGILLOSO		
3,4	14	1,1	13	8	ARGILLA LIMOSA		
3,6	18	0,6	30	3	LIMO ARGILLOSO-SABBIOSO		
3,8	21	0,9	22	4	LIMO ARGILLOSO		
4,0	18	1,2	15	7	ARGILLA LIMOSA		
4,2	14	0,8	17	6	LIMO ARGILLOSO		
4,4	13	0,7	18	6	LIMO ARGILLOSO		
4,6	12	0,6	20	5	LIMO ARGILLOSO		
4,8	14	0,6	23	4	LIMO ARGILLOSO-SABBIOSO		
5,0	14	0,7	21	5	LIMO ARGILLOSO		
5,2	16	0,9	18	5	LIMO ARGILLOSO		
5,4	18	0,8	23	4	LIMO ARGILLOSO		
5,6	16	0,9	17	6	LIMO ARGILLOSO		
5,8	14	0,7	21	5	LIMO ARGILLOSO		
6,0	7	0,7	11	9	ARGILLA		
6,2	12	0,4	30	3	LIMO ARGILLOSO-SABBIOSO		
6,4	16	0,7	24	4	LIMO ARGILLOSO-SABBIOSO		
6,6	16	0,9	17	6	LIMO ARGILLOSO		
6,8	16	1,0	16	6	LIMO ARGILLOSO		
7,0	18	0,9	20	5	LIMO ARGILLOSO		
7,2	22	1,4	16	6	ARGILLA LIMOSA		
7,4	33	1,2	28	4	LIMO ARGILLOSO-SABBIOSO		
7,6	31	1,6	20	5	LIMO ARGILLOSO		
7,8	34	1,8	19	5	LIMO ARGILLOSO		

Legenda		
	Simb.	Argille Argille limose/Limi argillosi Limi sabbiosi/Sabbie limose
	Comp.	Coesivo Granulare

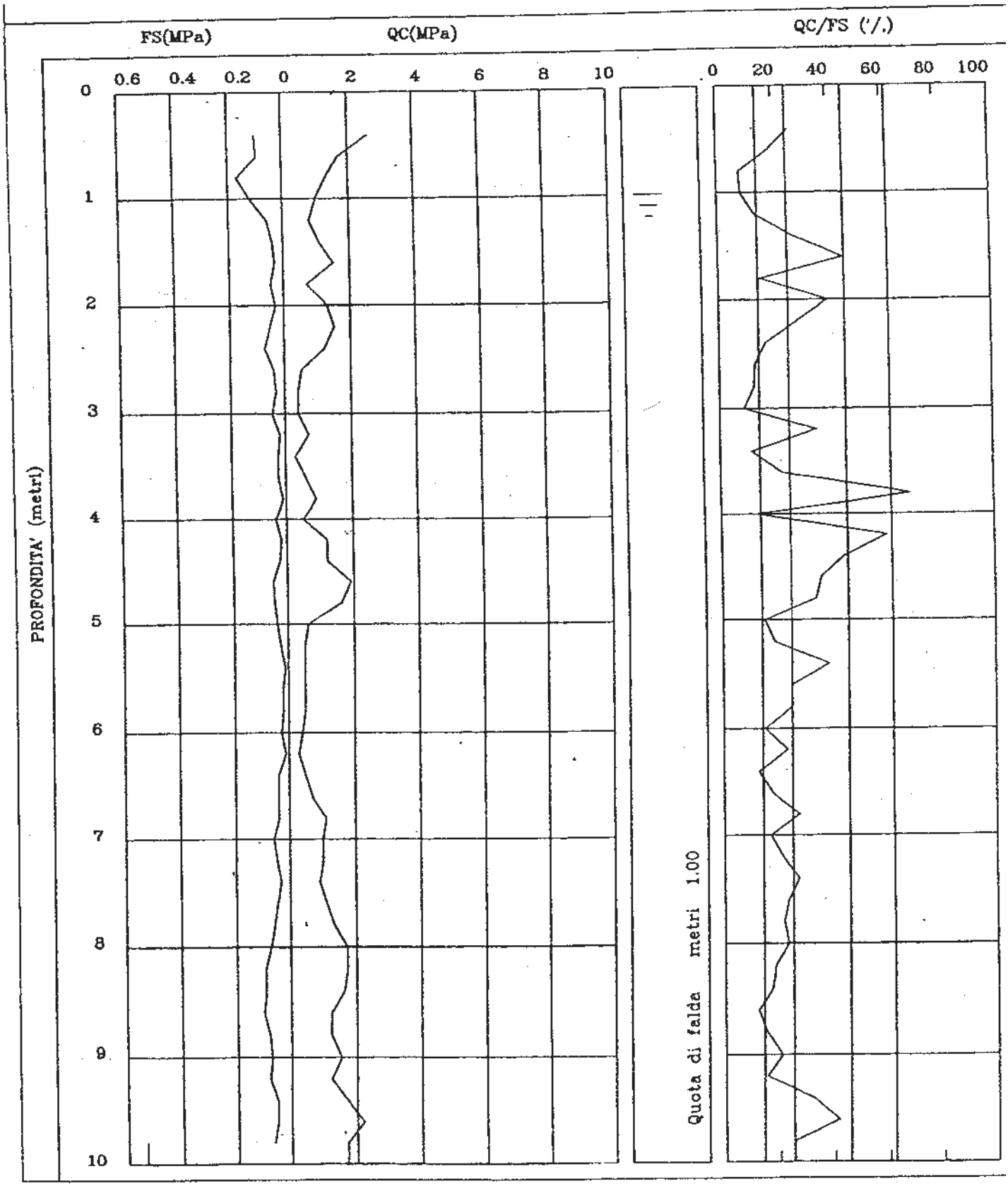


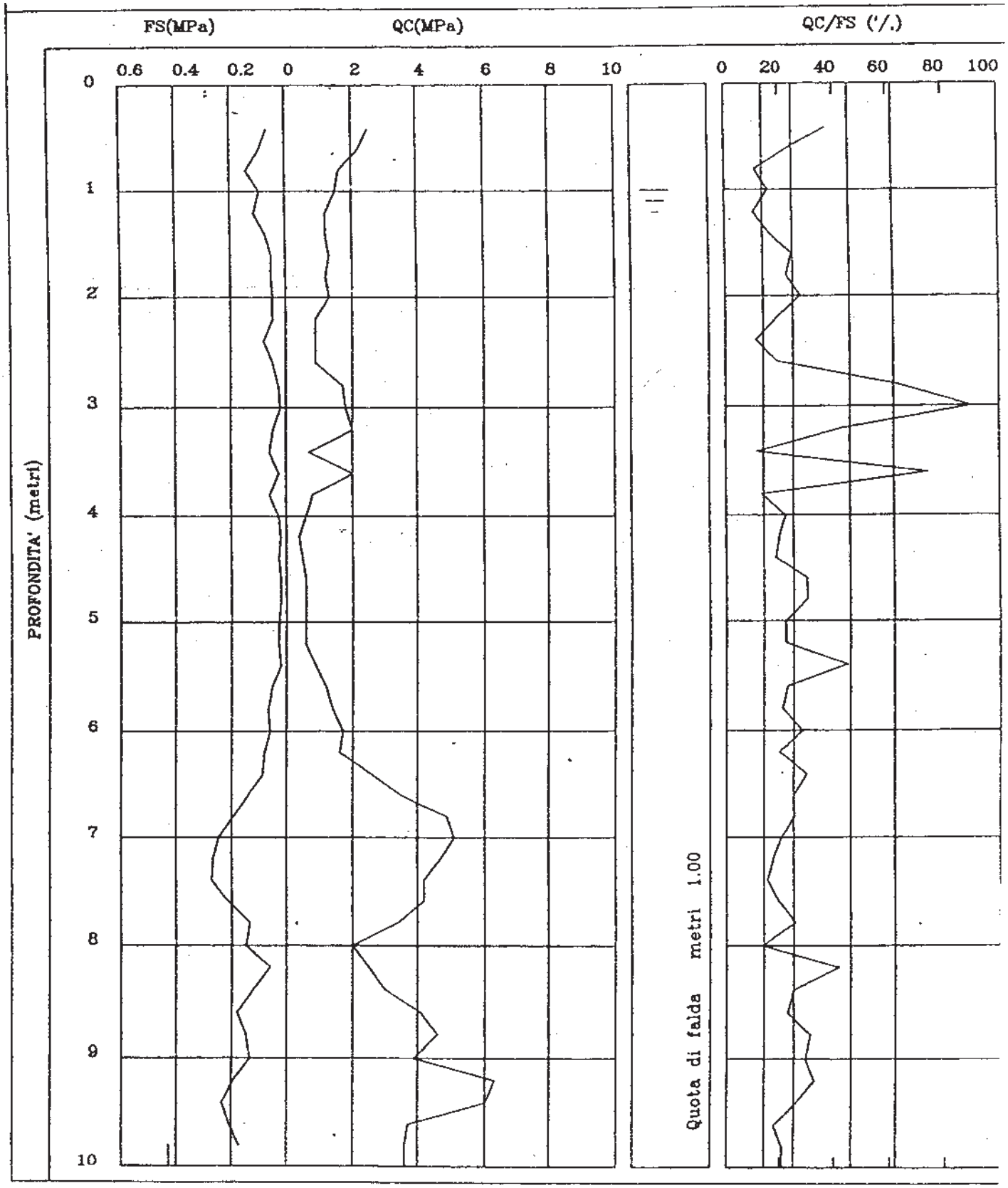
4786

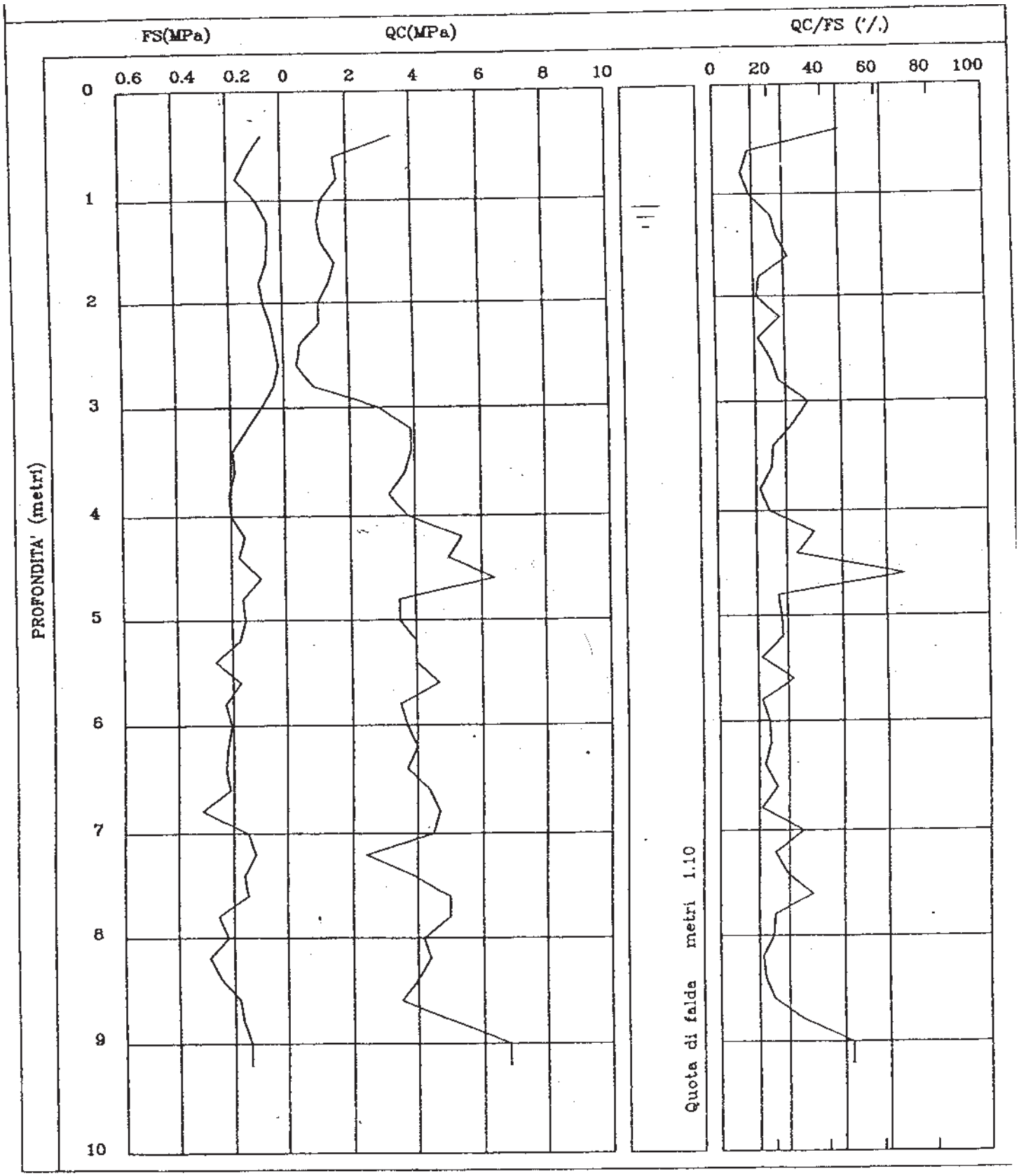

Rp (kg/cm²)
0 50 100 150 200 250 300 350 400 450 500
m.
0,0 1,0 2,0 3,0 4,0 5,0 6,0 7,0 8,0 9,0 10,0
RL (kg/cm²)
0,0 5,0 10,0 15,0

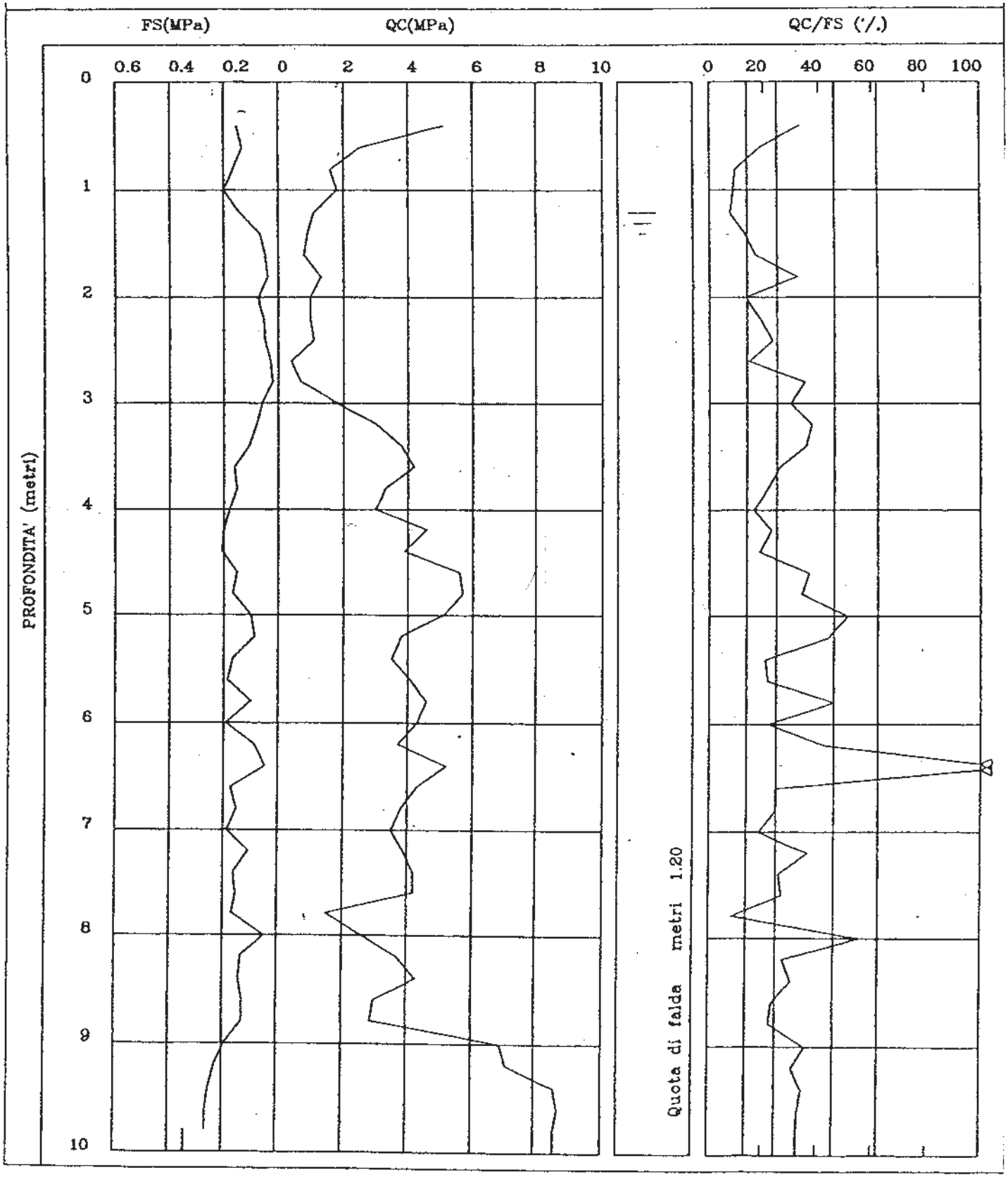

Rp/RL (Litologia Begemann 1965 A.G.I. 1977)
Torbe ed Argille organiche
Limi ed Argille
Limi sabb. Sabbie lim.
Sabbie e Sabbie e Ghiaie
m
0,0 5 15 30 60 120 200
Rp - RL/Rp (Litologia Schmertmann 1978)
AO AtL AtS AmS AcS AcL ASL ASS SsL SmS SdS SCS
0,0 1,0 2,0 3,0 4,0 5,0 6,0 7,0 8,0 9,0 10,0

4787


FS(MPa)
0.6
0.4
0.2
0
QC(MPa)
2
4
6
8
10
QC/FS (%)
0
20
40
60
80
100
PROFONDITA' (metri)
0
1
2
3
4
5
6
7
8
9
10
Quota di falda metri 1.00


FS(MPa)
QC(MPa)
QC/FS (%)
0.6 0.4 0.2 0 2 4 6 8 10
0 20 40 60 80 100
PROFONDITA' (metri)
0 1 2 3 4 5 6 7 8 9 10
Quota di falda metri 1.00


FS(MPa)
0.6
0.4
0.2
0
QC(MPa)
2
4
6
8
10
QC/FS (%)
0
20
40
60
80
100
PROFONDITA' (metri)
0
1
2
3
4
5
6
7
8
9
10
Quota di falda metri 1.10


FS(MPa)
QC(MPa)
QC/FS (%)
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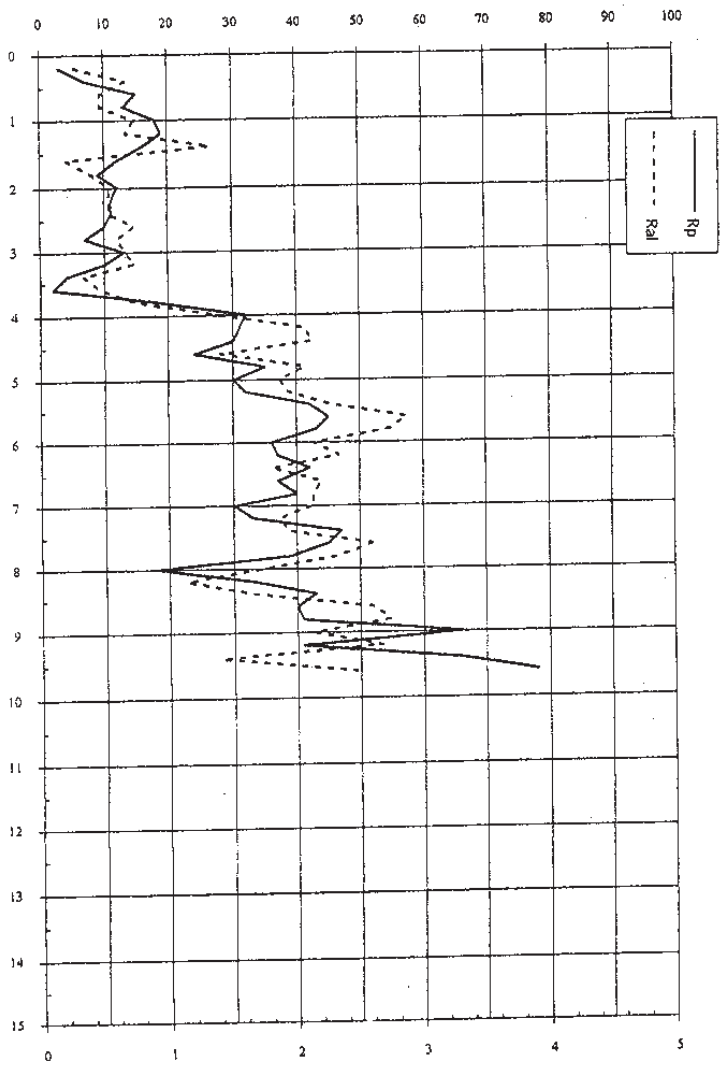
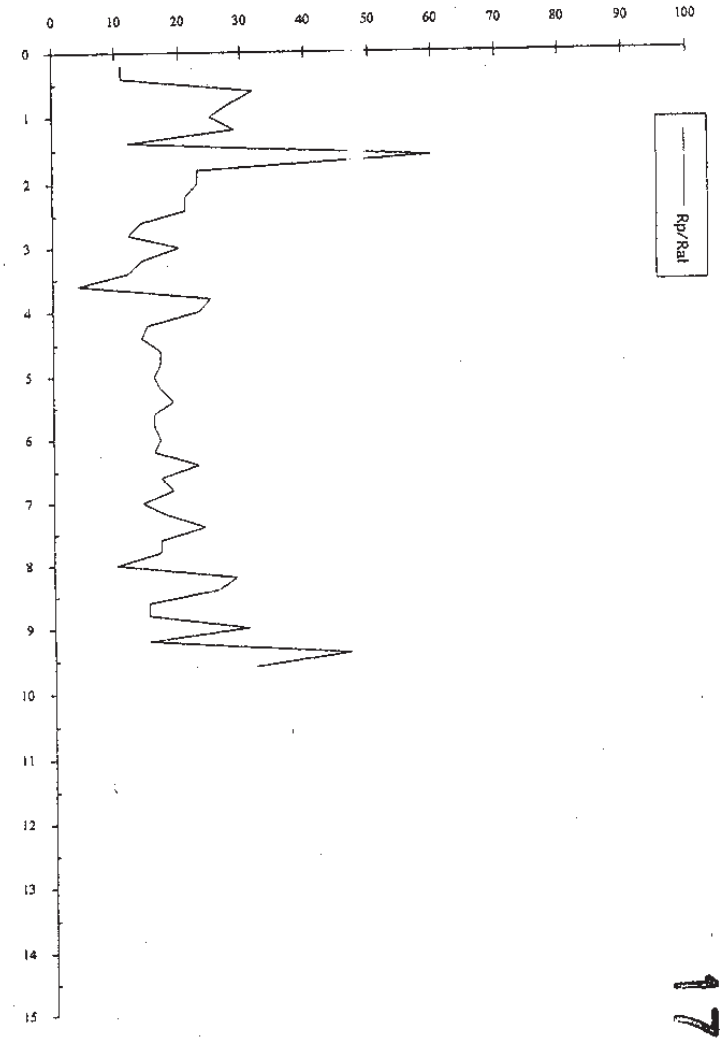
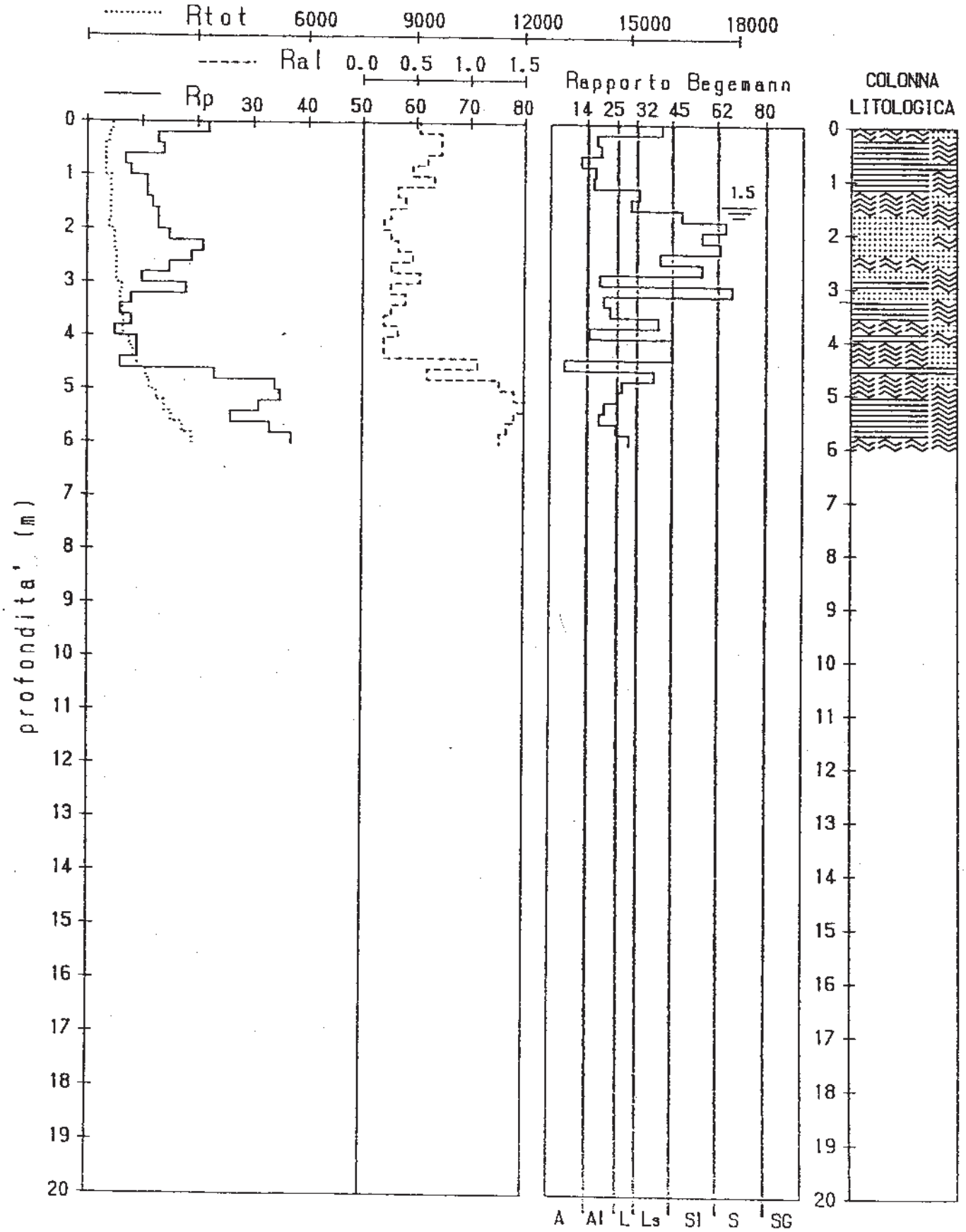
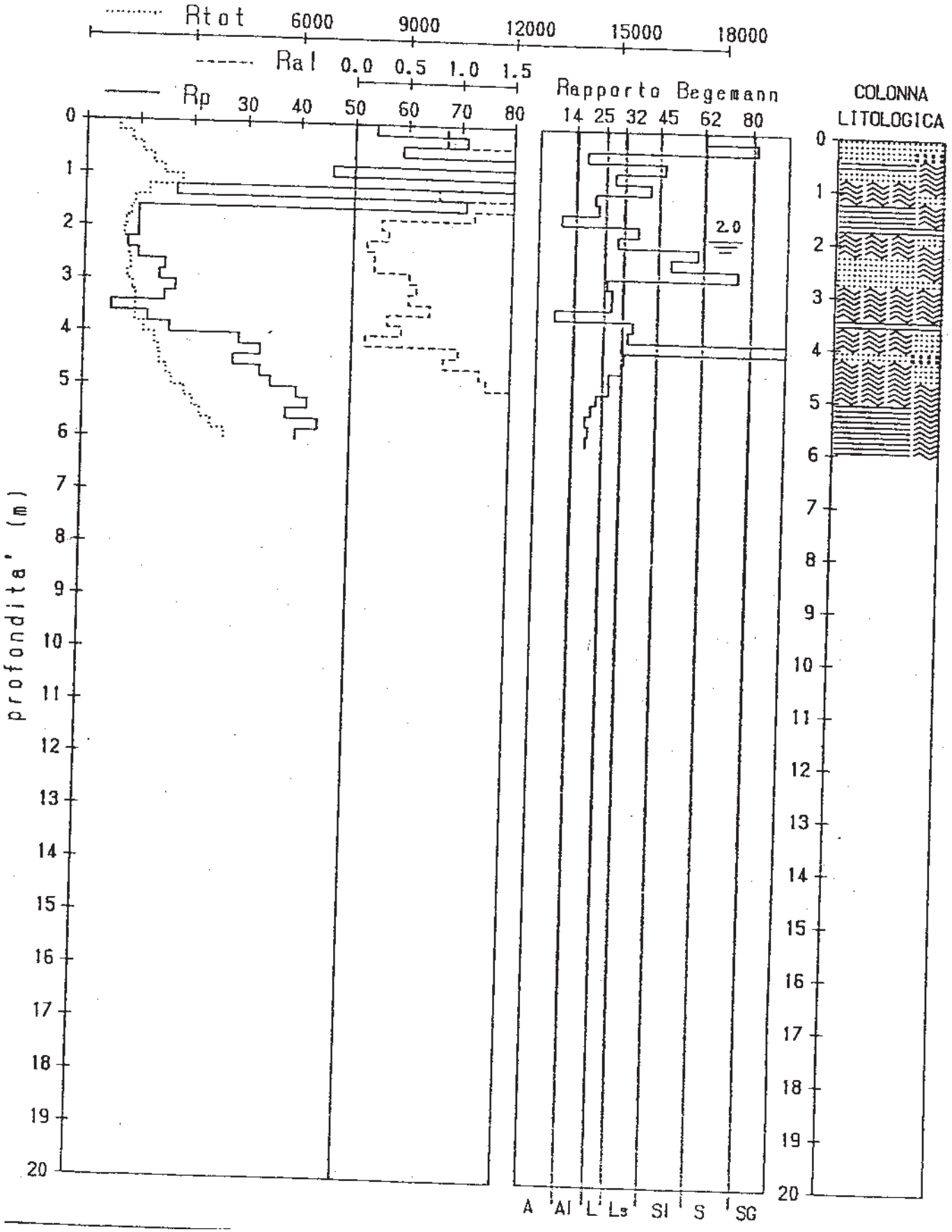
0 20 40 60 80 100
PROFONDITA' (metri)
0 1 2 3 4 5 6 7 8 9 10
Quota di falda metri 1.20

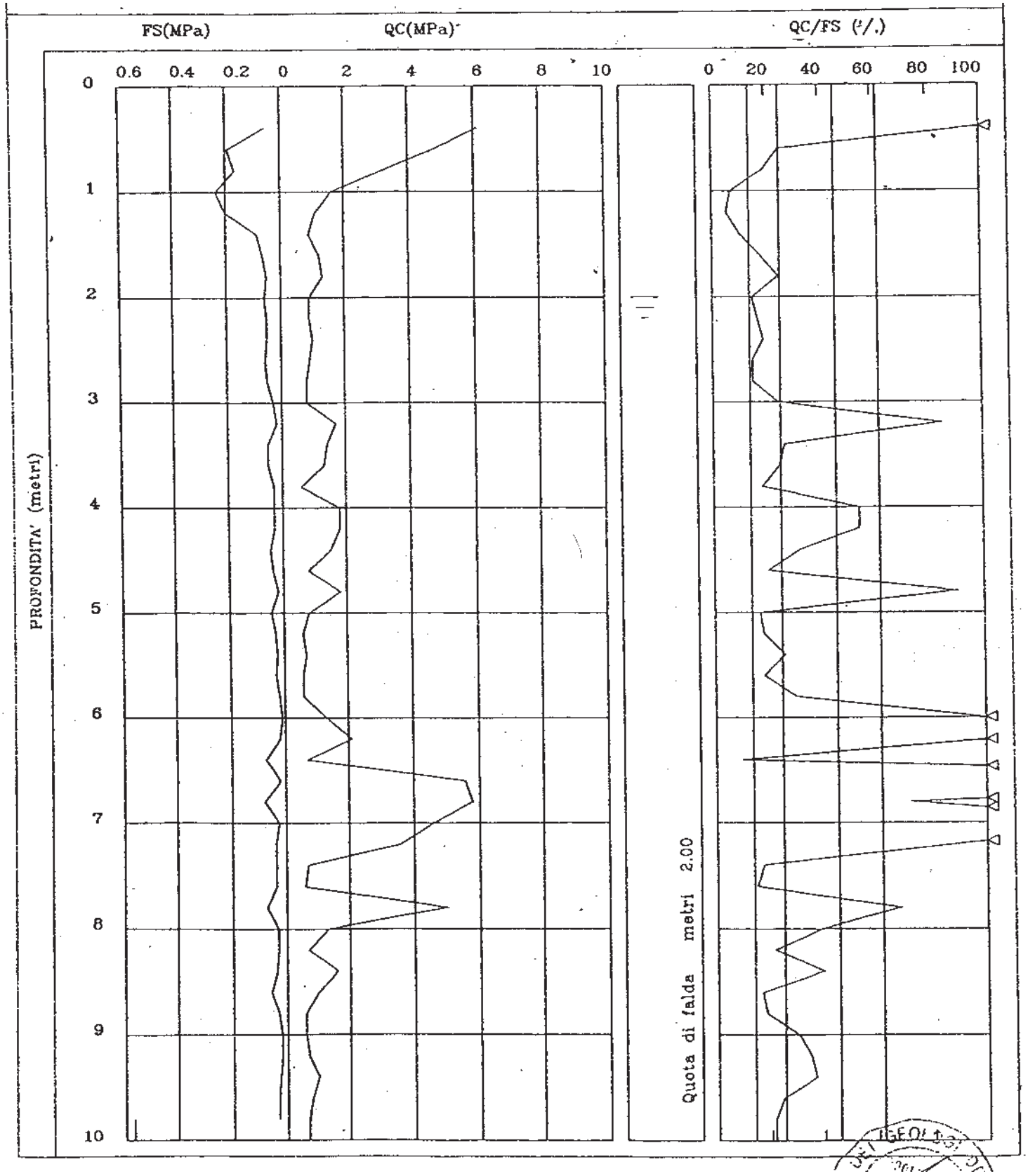


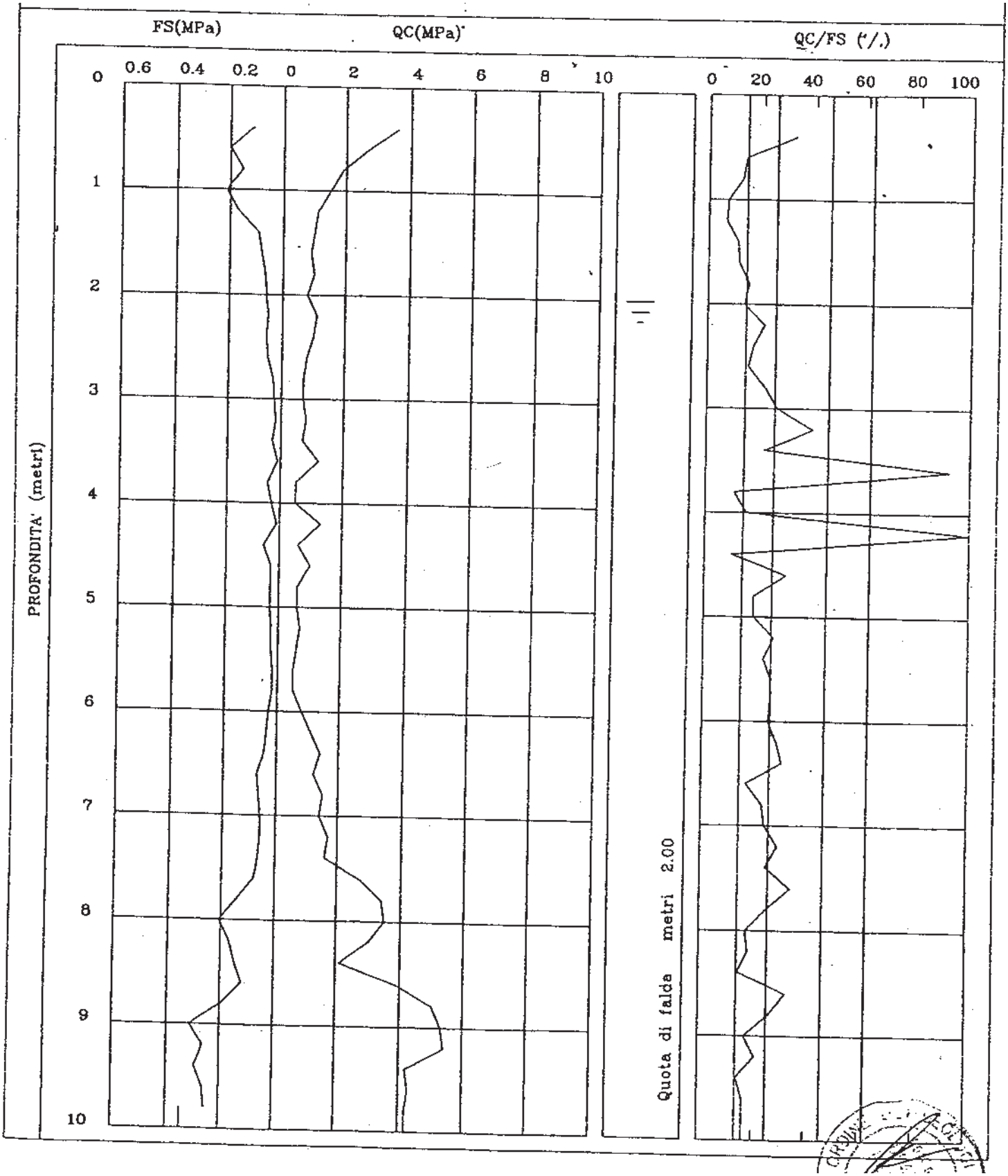


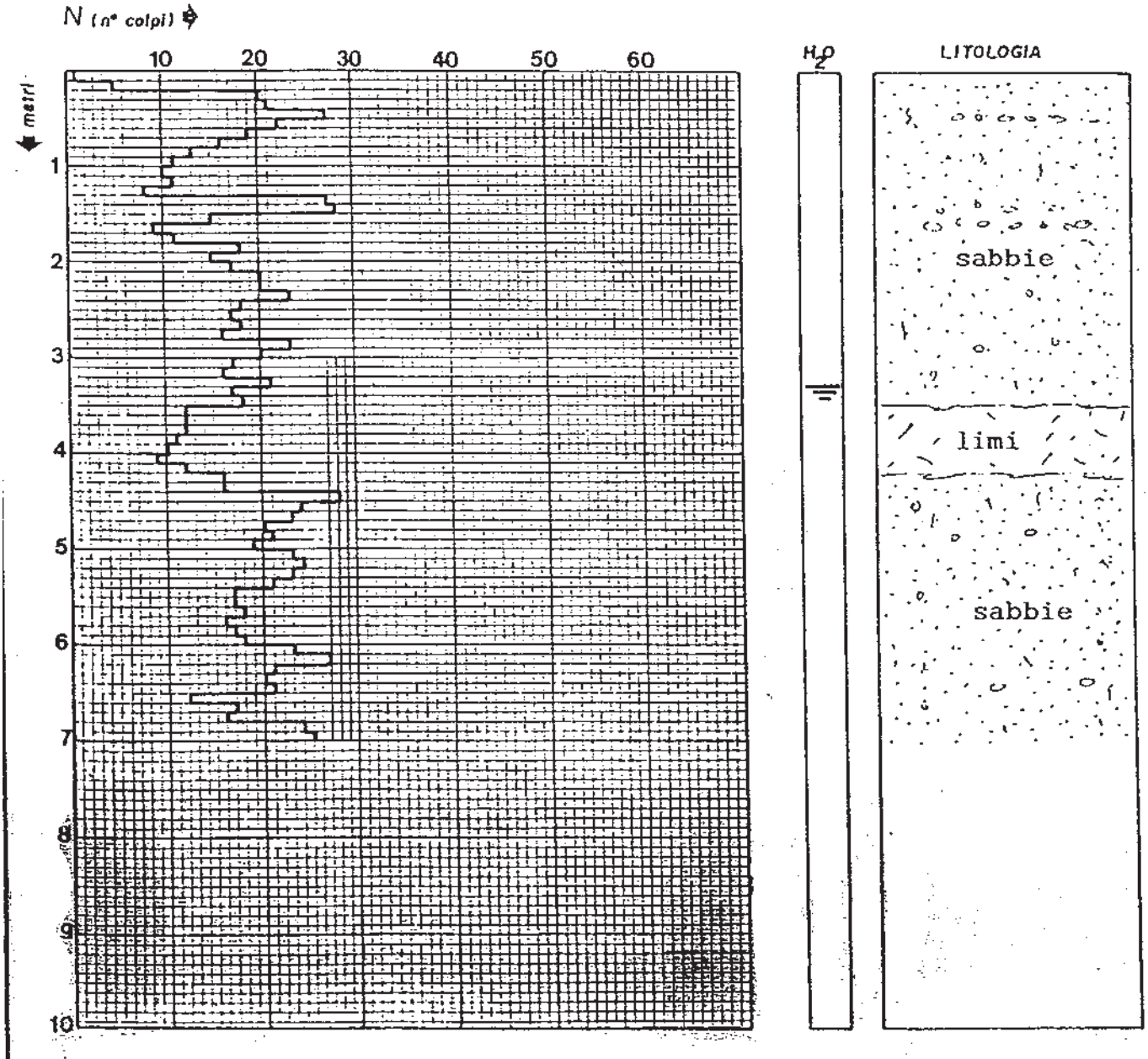
17


Rtot
6000
9000
12000
15000
18000
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
1.5
COLONNA LITOLOGICA
profondita' (m)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
Al
L
Ls
Sl
S
SG


Rtot
6000
9000
12000
15000
18000
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
2.0
COLONNA LITOLOGICA
profondita' (m)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
Al
L
Ls
Sl
S
SG


FS(MPa)
QC(MPa)
QC/FS (%)
0.6 0.4 0.2 0 2 4 6 8 10
0 20 40 60 80 100
PROFONDITA' (metri)
0 1 2 3 4 5 6 7 8 9 10
Quota di falda metri 2.00


FS(MPa)
QC(MPa)
QC/FS (%)
0.6
0.4
0.2
0
2
4
6
8
10
0
20
40
60
80
100
PROFONDITA' (metri)
0
1
2
3
4
5
6
7
8
9
10
Quota di falda metri 2.00

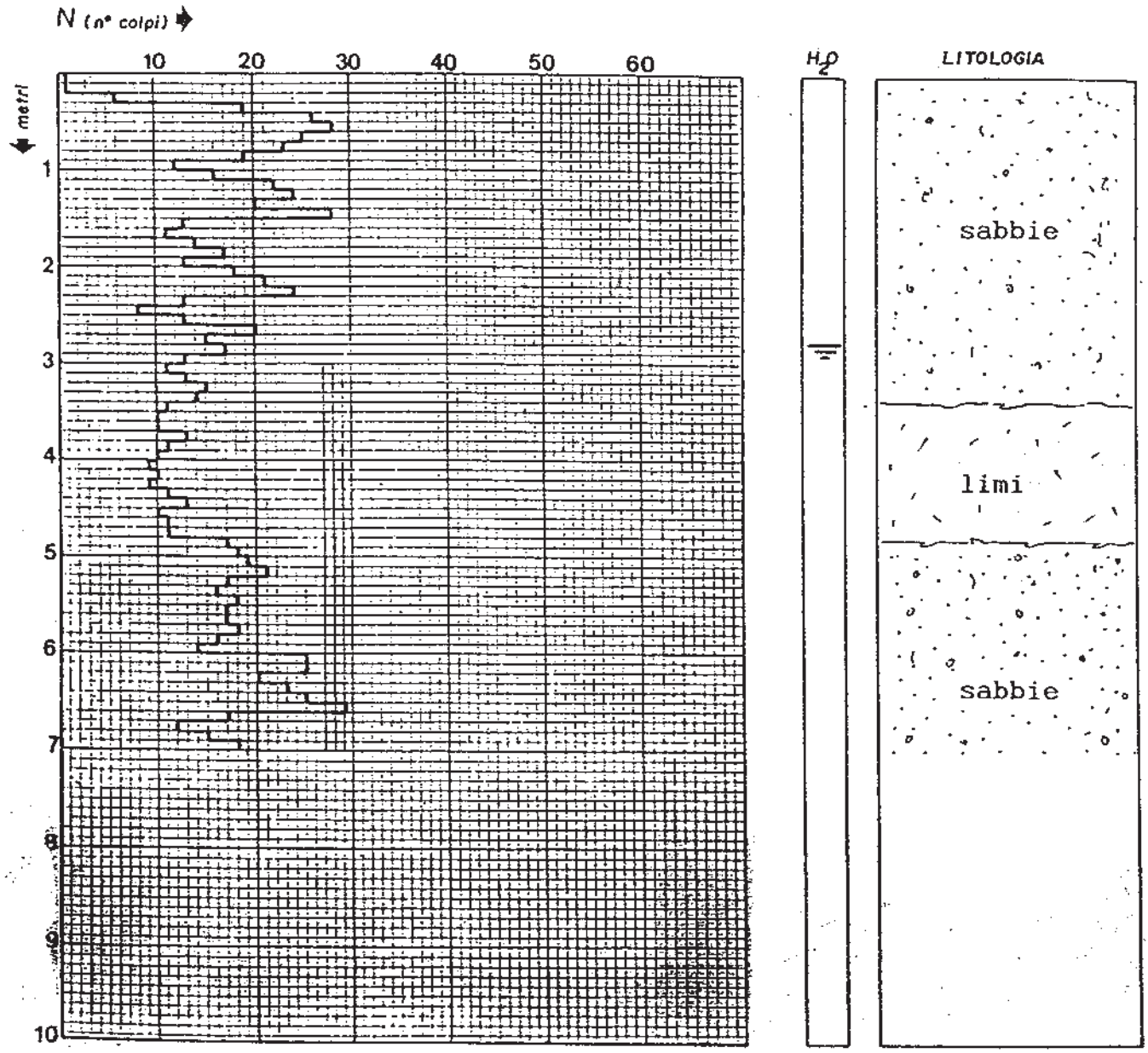


CARATTERISTICHE STRUMENTALI

P.O.M. – ISSMFE 1988

Maglio: peso = 30 Kg, altezza di caduta = 20 cm – Testata d'infissione: 13 Kg

Aste: peso = 2.9 Kg/m, Ø = 20 mm – Punta: apertura del cono = 60°, sezione = 10 cmq, Ø max = 35.7 mm, altezza della parte cilindrica = 9 mm – Avanzamento = 10 cm

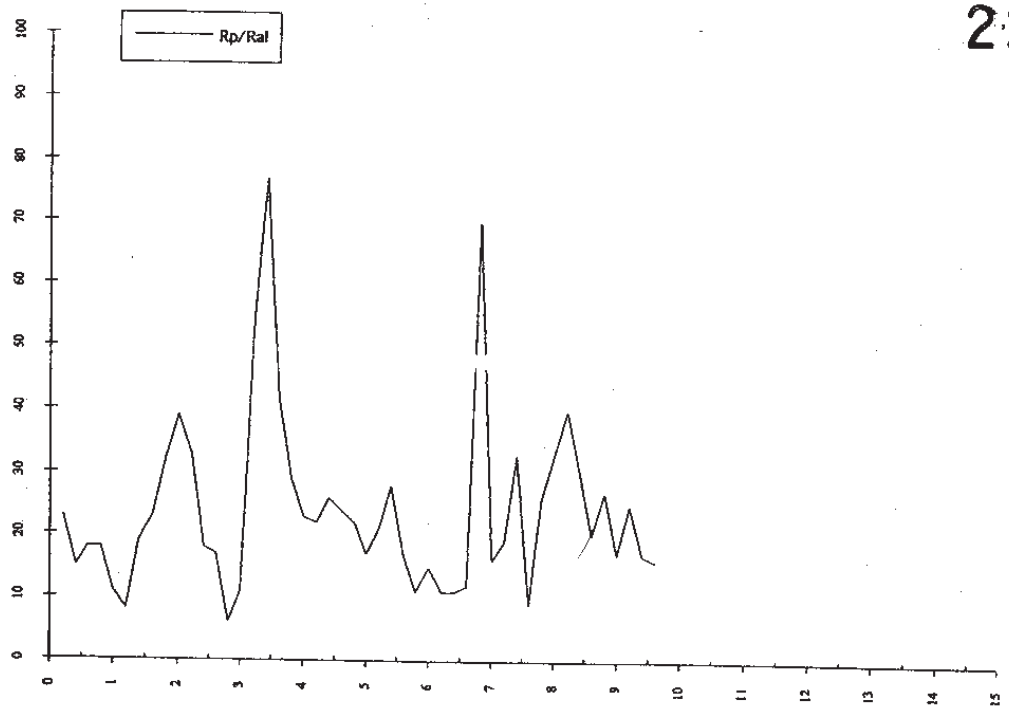


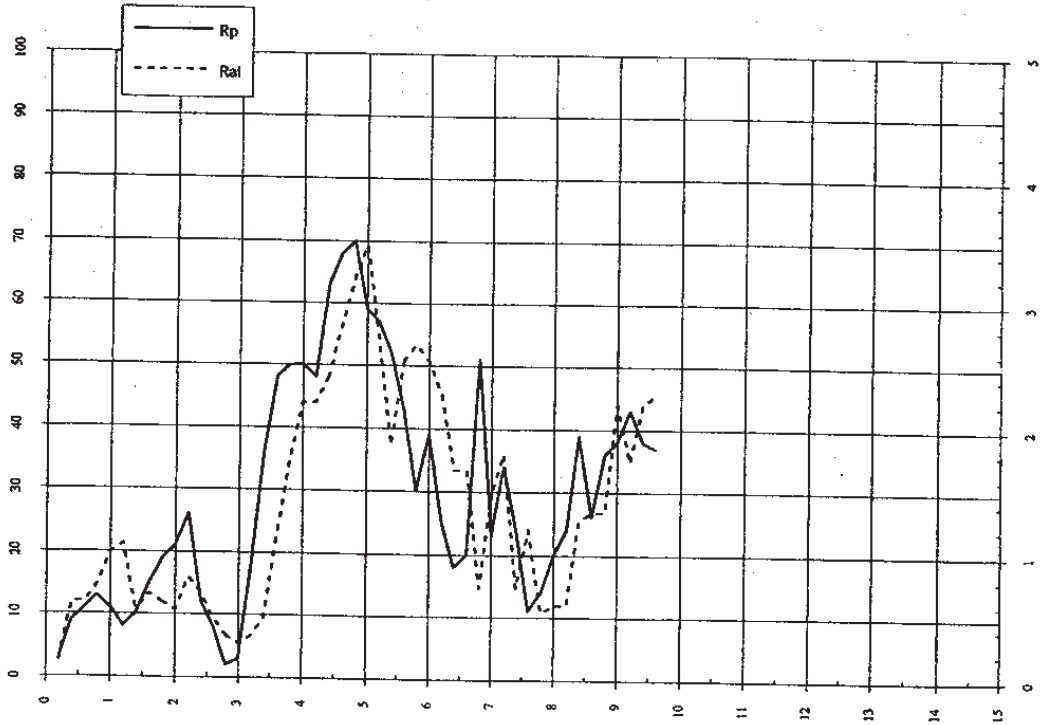
CARATTERISTICHE STRUMENTALI

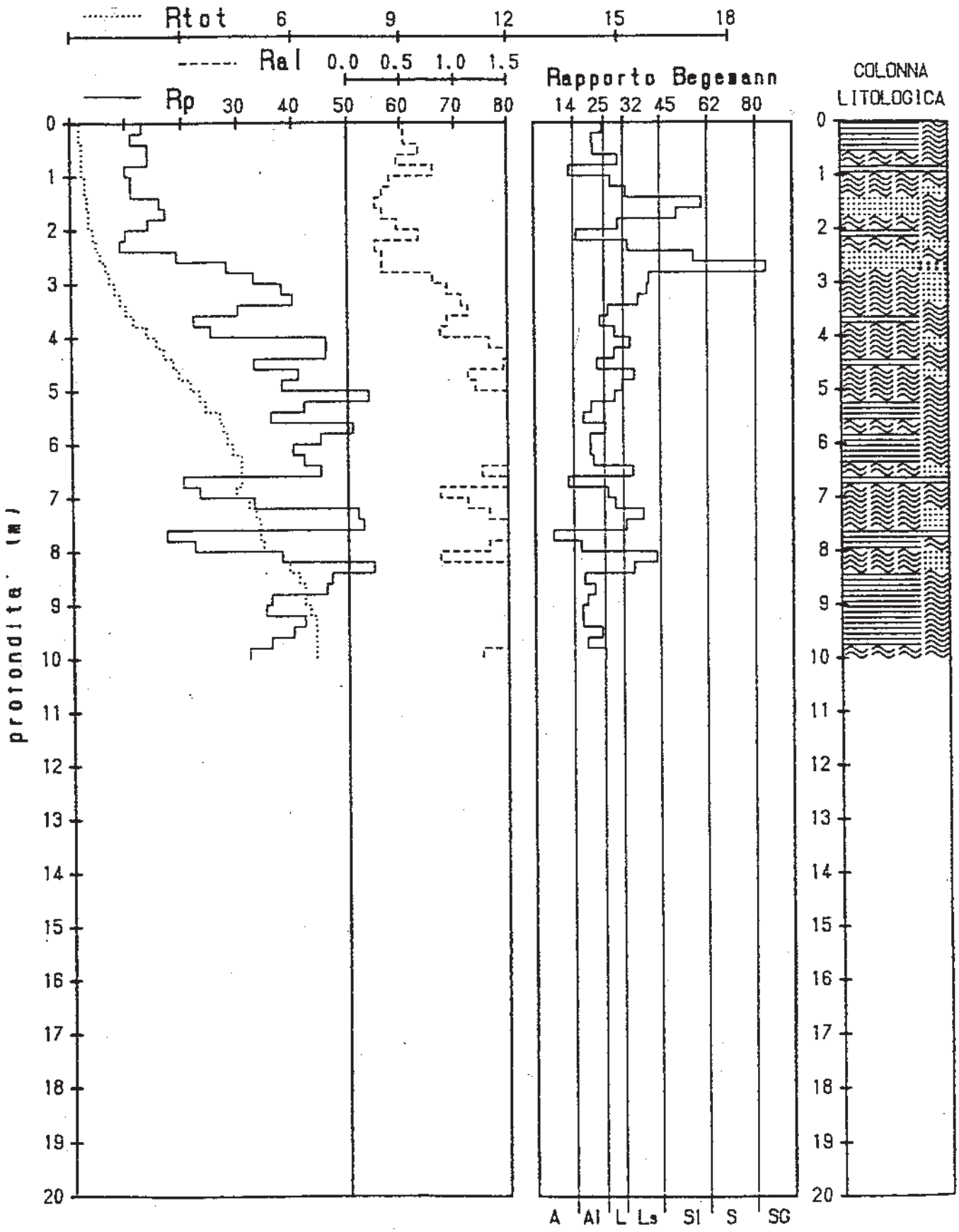
P.O.M. – ISSMFE 1988

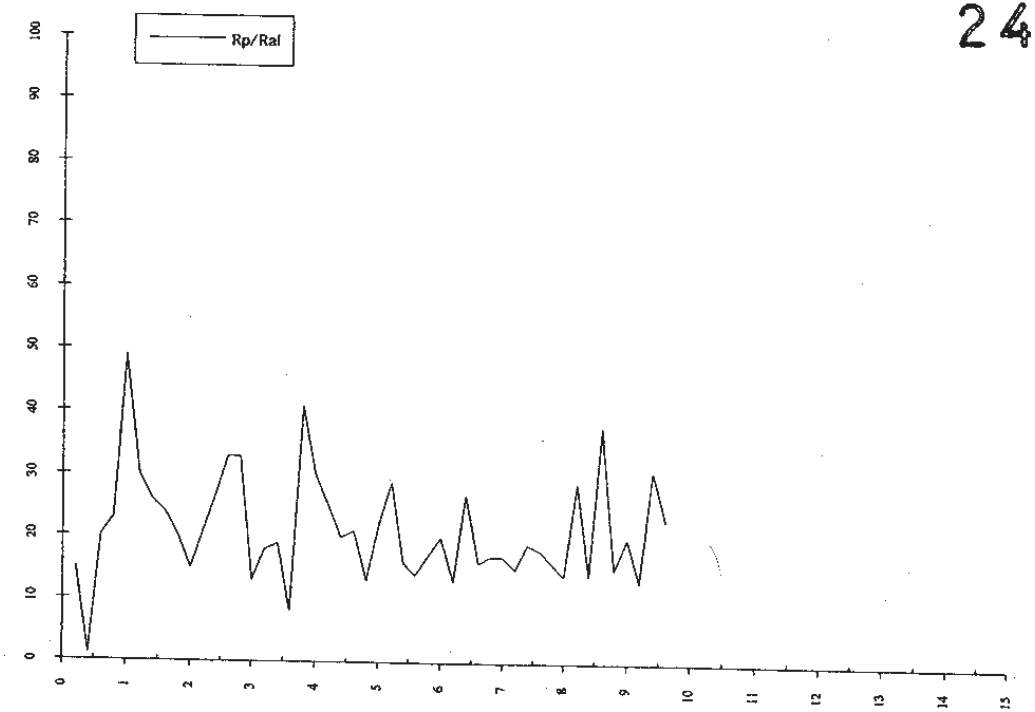
Maglio: peso = 30 Kg , altezza di caduta = 20 cm – Testata d'infissione: 13 Kg

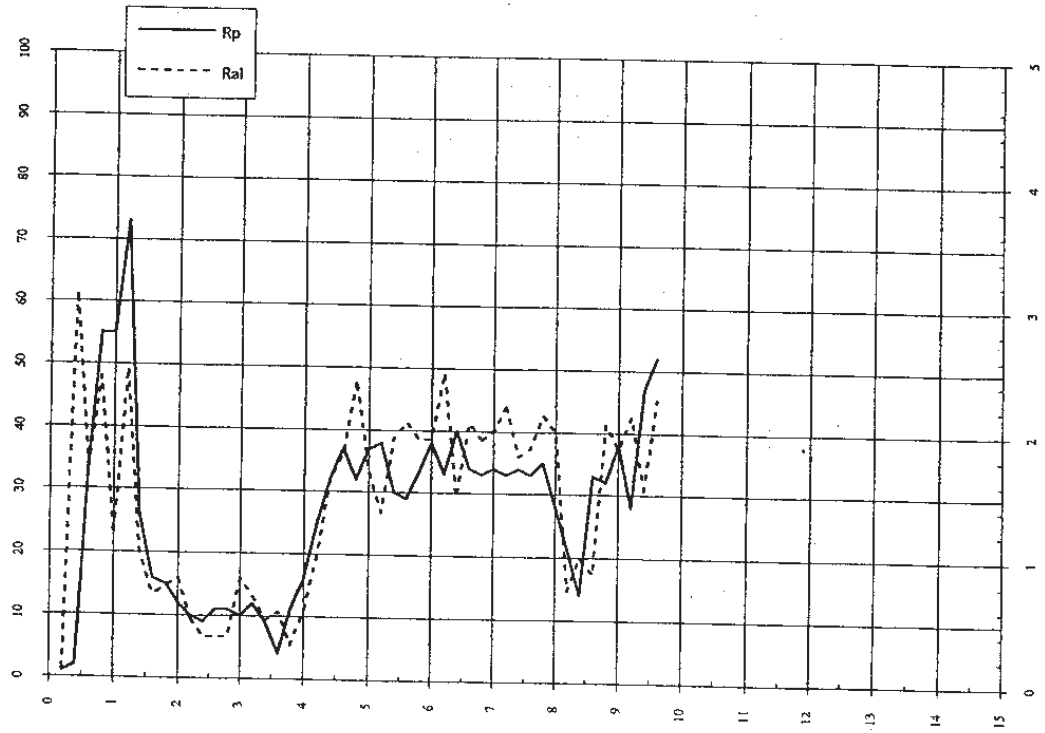
Aste: peso = 2.9 Kg/m , Ø = 20 mm – Punta: apertura del cono = 60°, sezione = 10 cmq , Ø max = 35.7 mm, altezza della parte cilindrica = 9 mm – Avanzamento = 10 cm

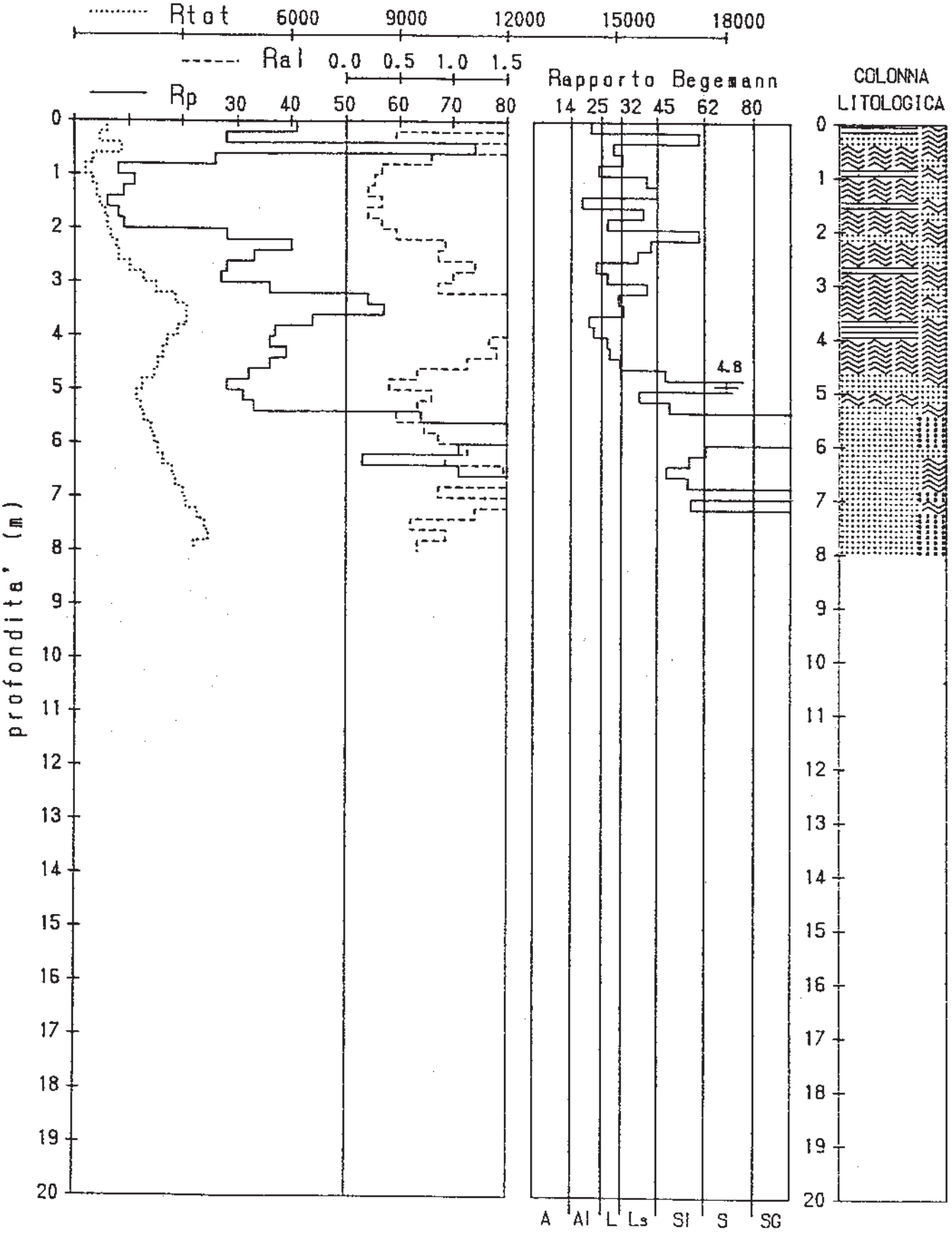

Rp/Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

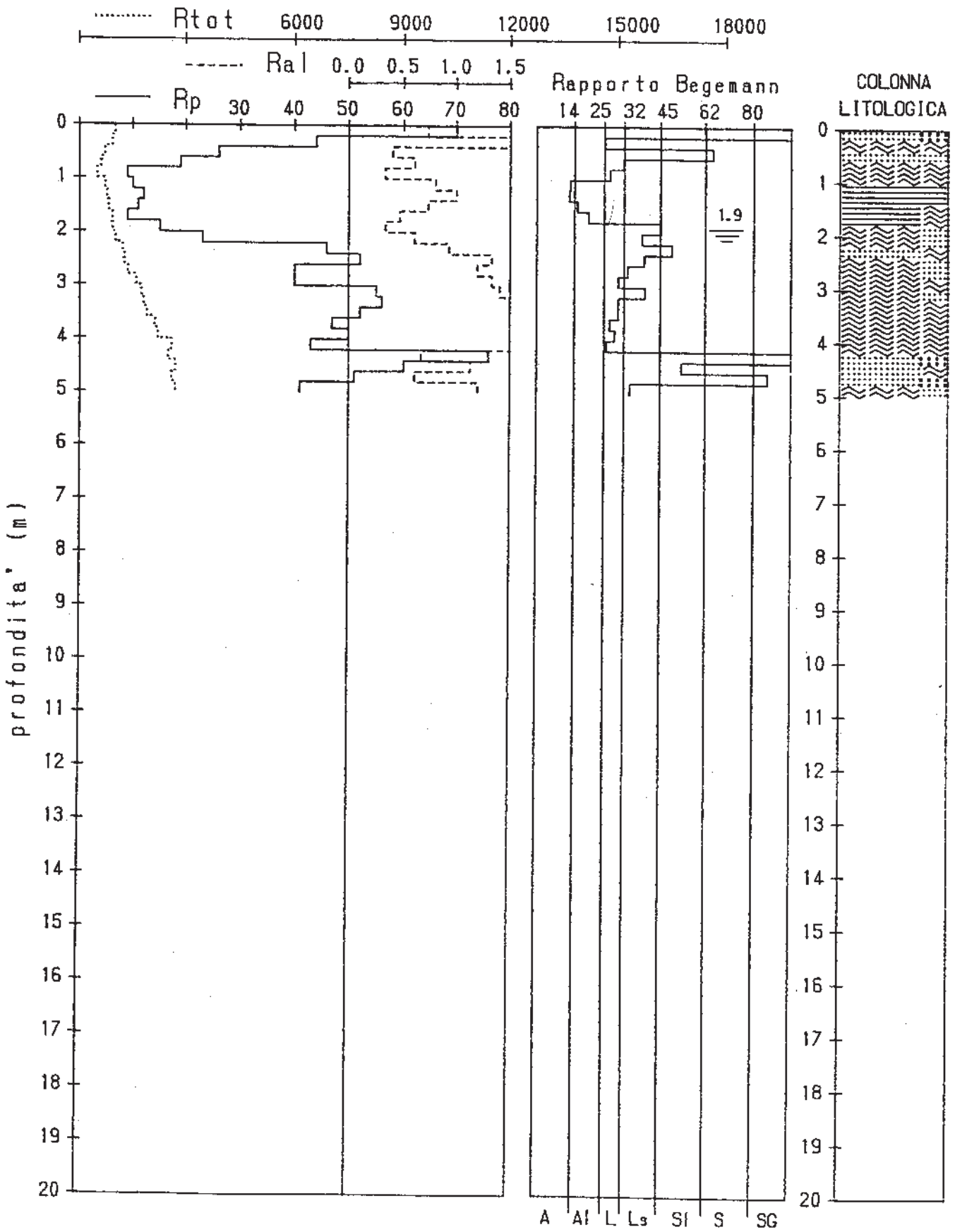

Rp
Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

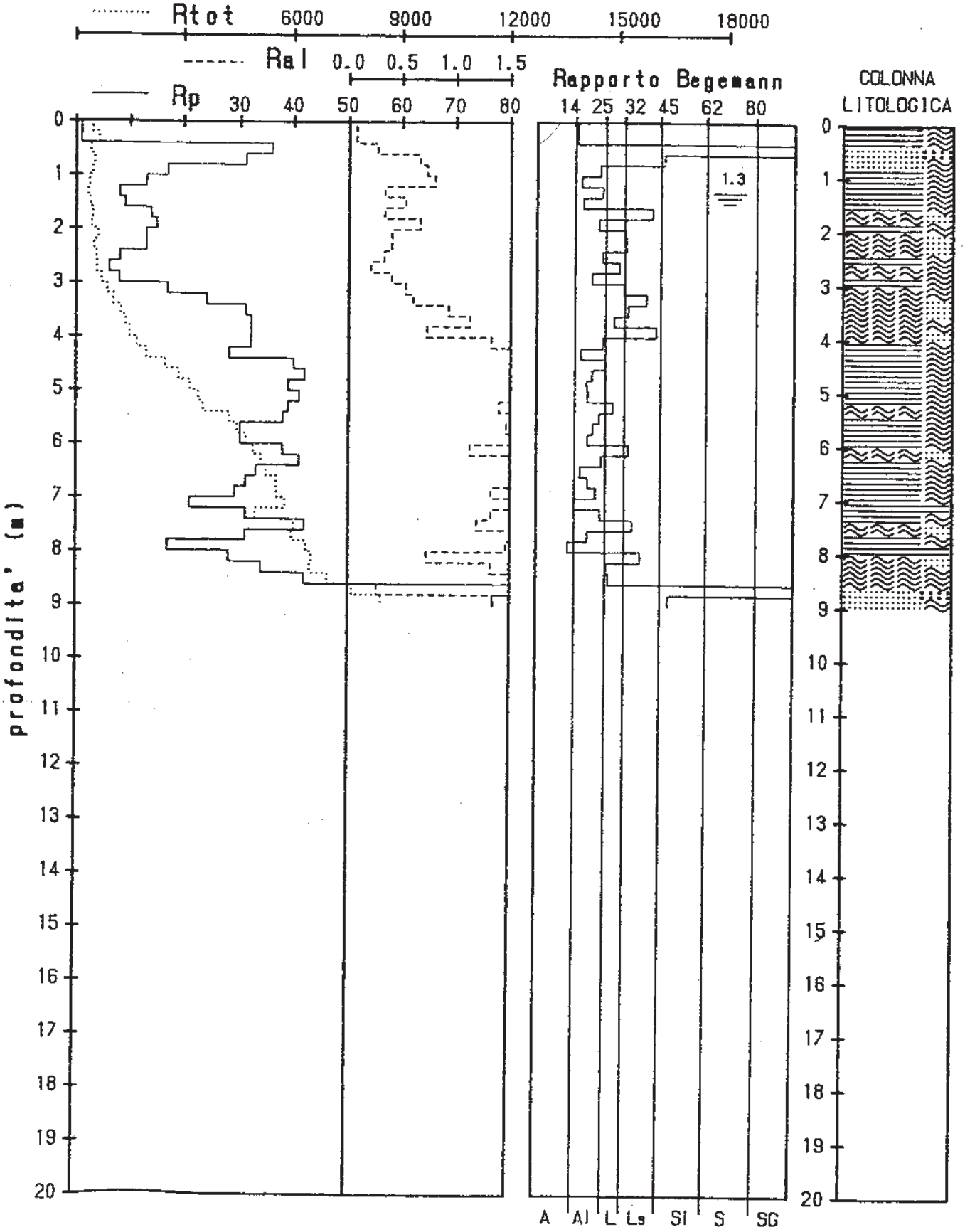

Rtot
6
9
12
15
18
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
COLONNA LITOLOGICA
profondita' (m)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
Al
L
Ls
Sl
S
SG

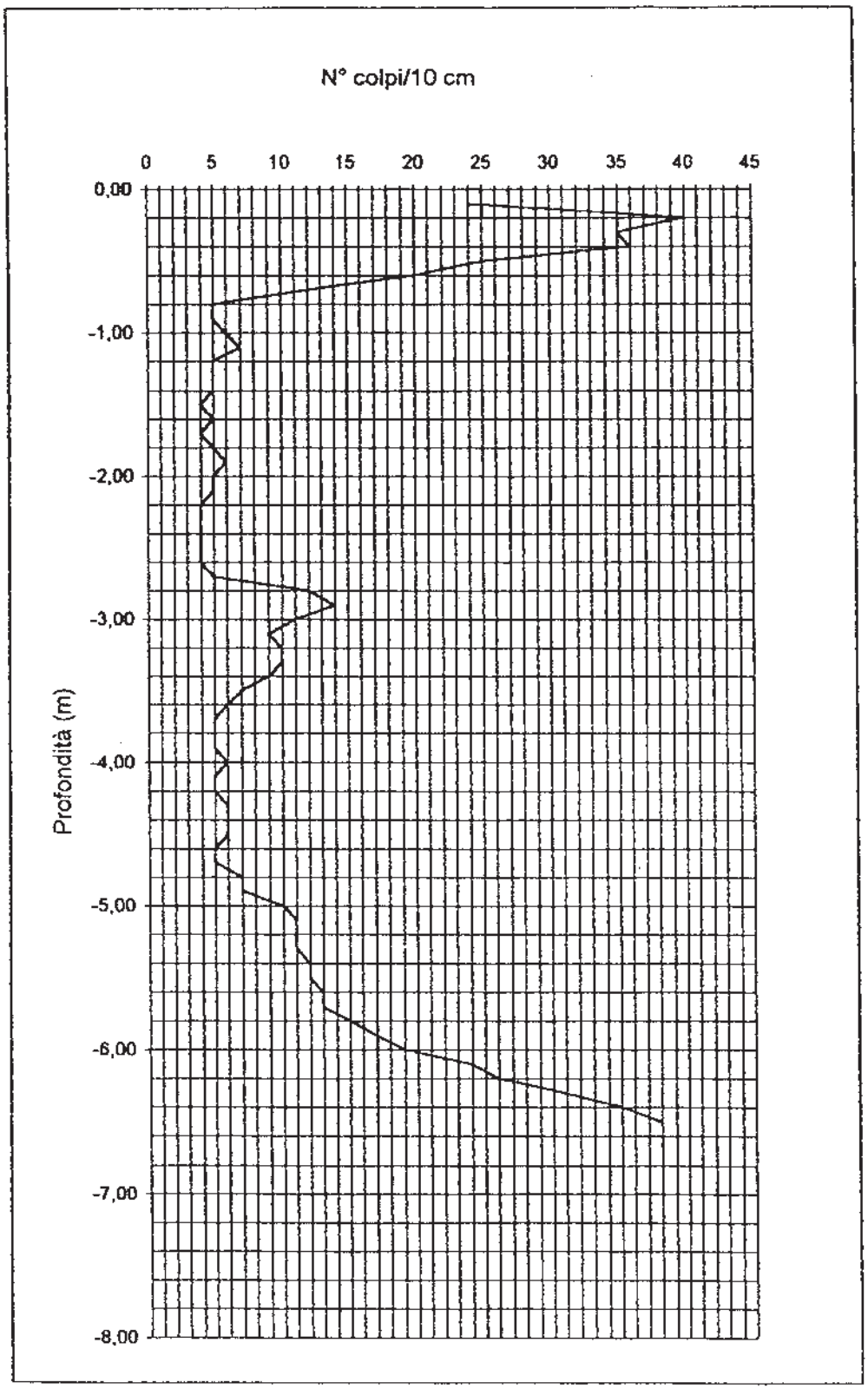

Rp/Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

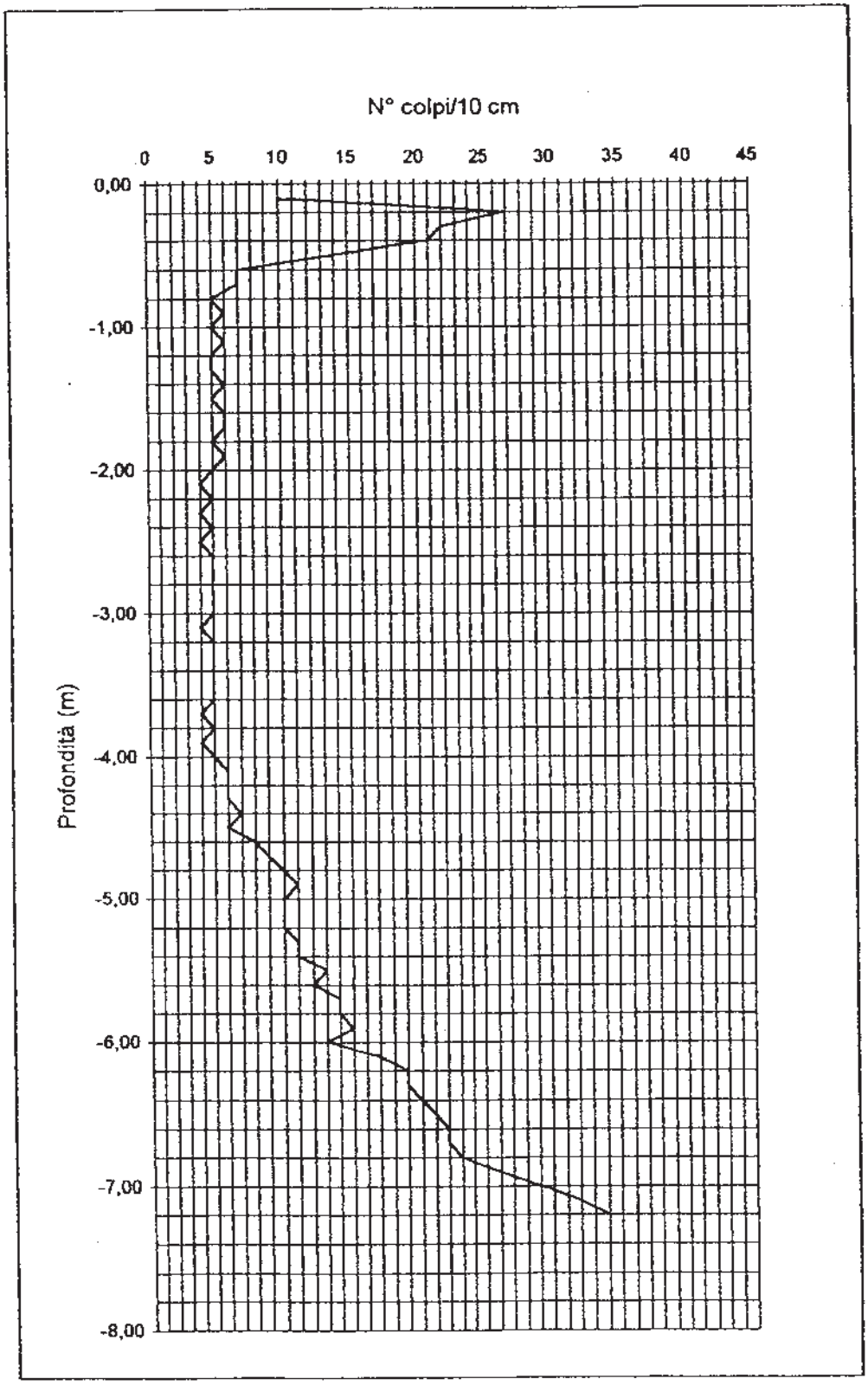

Rp
Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
0
1
2
3
4
5

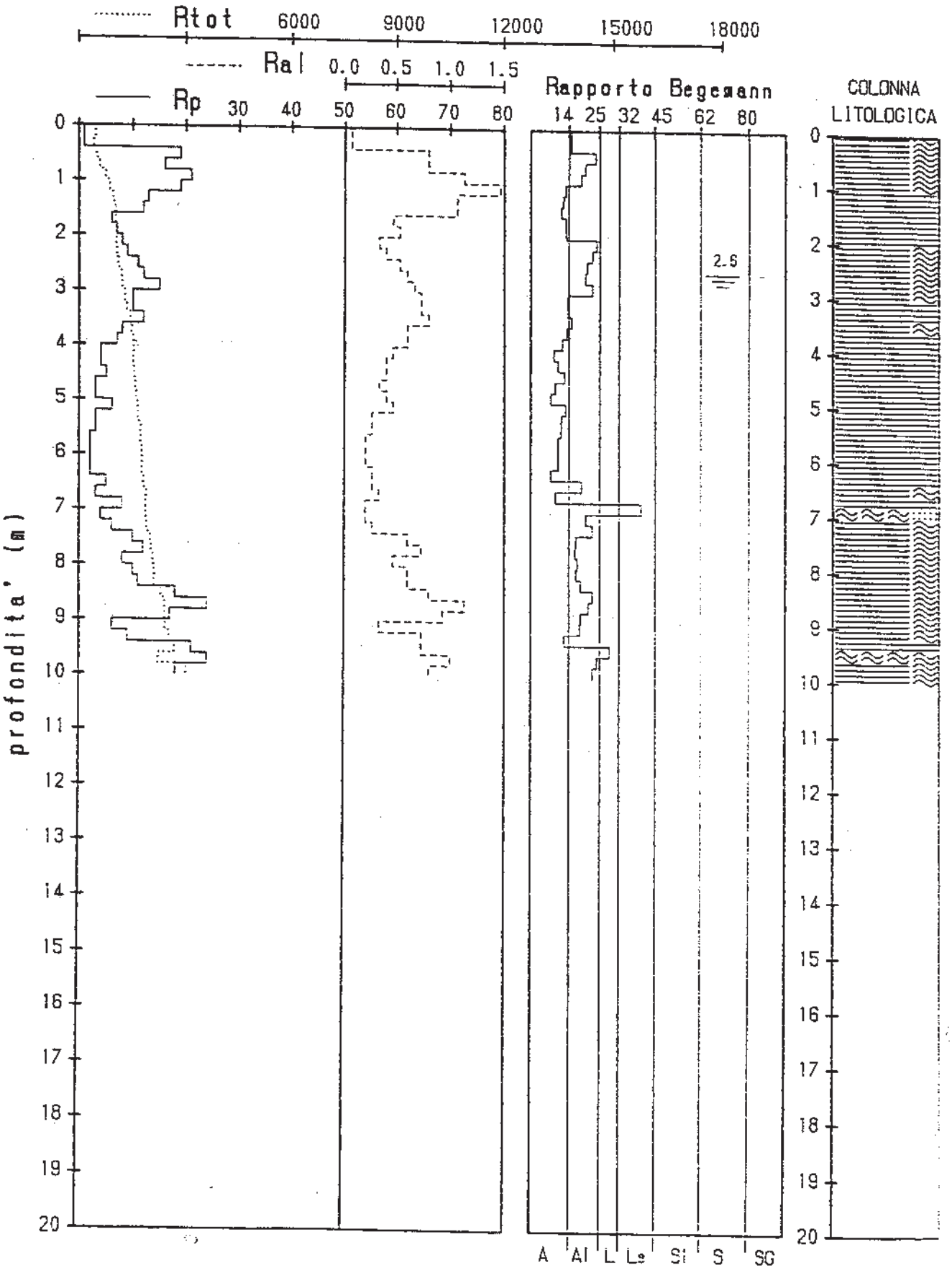

Rtot
6000
9000
12000
15000
18000
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
4.8
COLONNA LITOLOGICA
profondita' (m)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
Al
L
Ls
Sl
S
SG

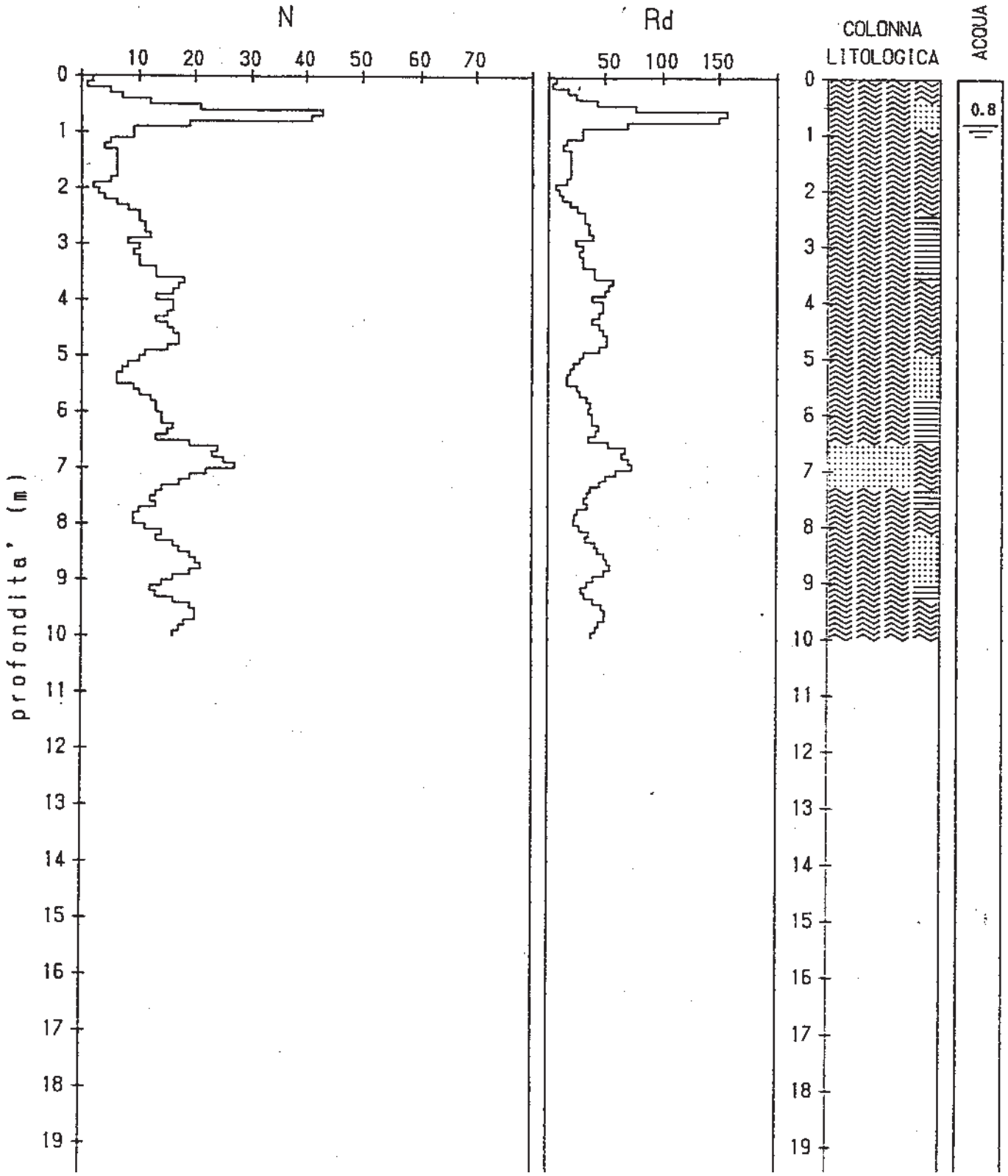

Rtot
6000
9000
12000
15000
18000
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
1.9
COLONNA LITOLOGICA
profondita' (m)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
Al
L
Ls
Sl
S
SG

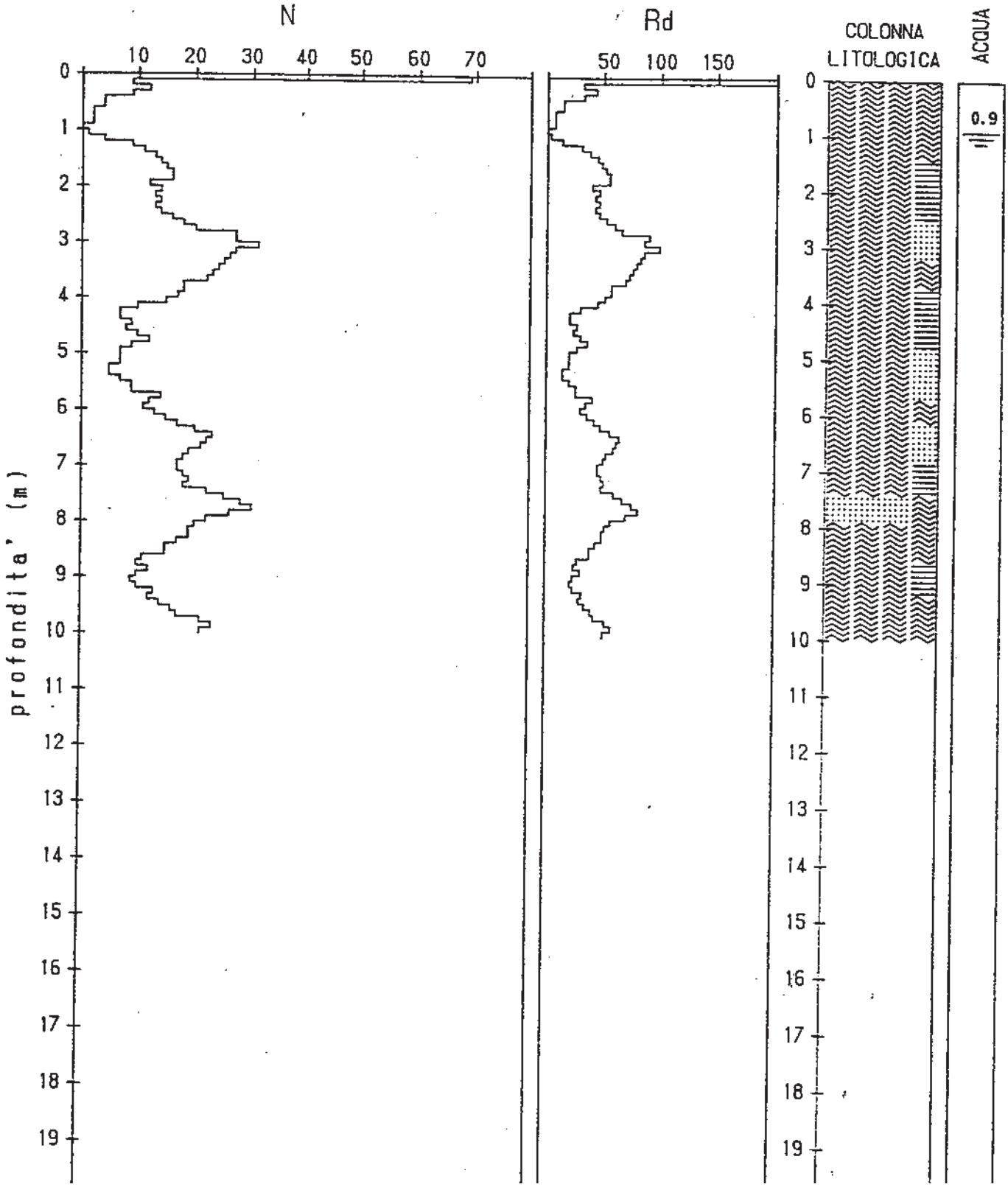

Rtot
6000
9000
12000
15000
18000
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
1.3
COLONNA LITOLOGICA
profondita' (m)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
Al
L
Ls
Sl
S
SG

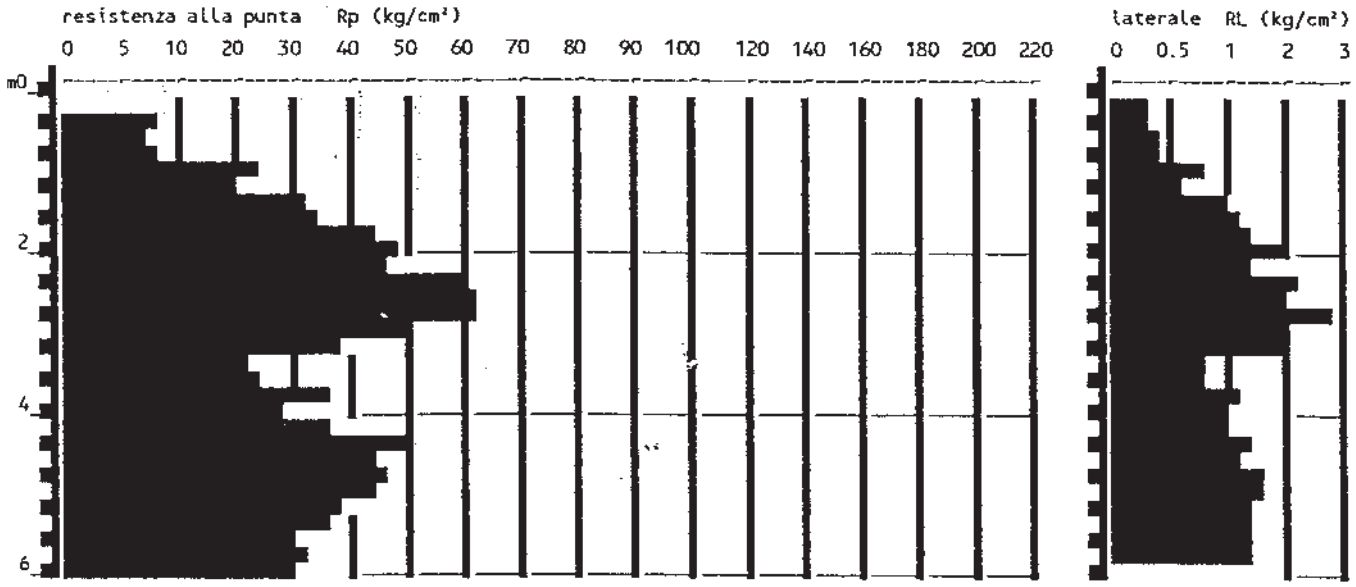

N° colpi/10 cm
0
5
10
15
20
25
30
35
40
45
0,00
-1,00
-2,00
-3,00
-4,00
-5,00
-6,00
-7,00
-8,00
Profondità (m)

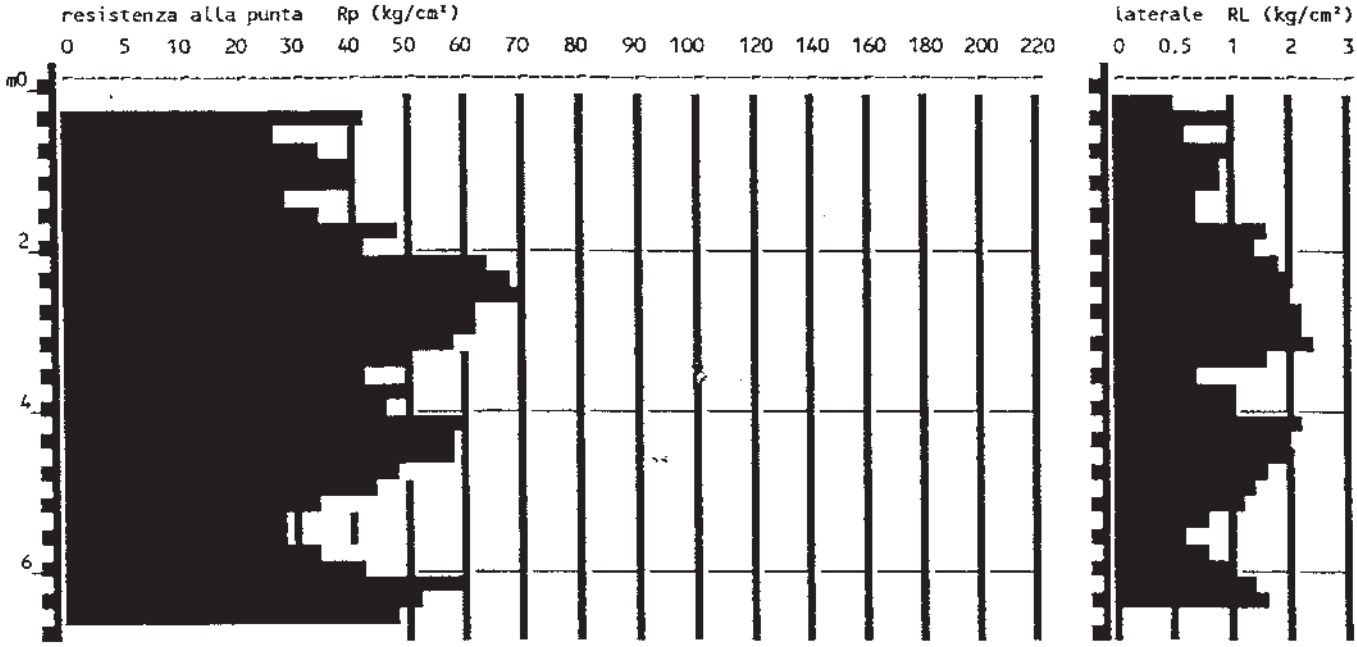

N° colpi/10 cm
0
5
10
15
20
25
30
35
40
45
0,00
-1,00
-2,00
-3,00
-4,00
-5,00
-6,00
-7,00
-8,00
Profondità (m)

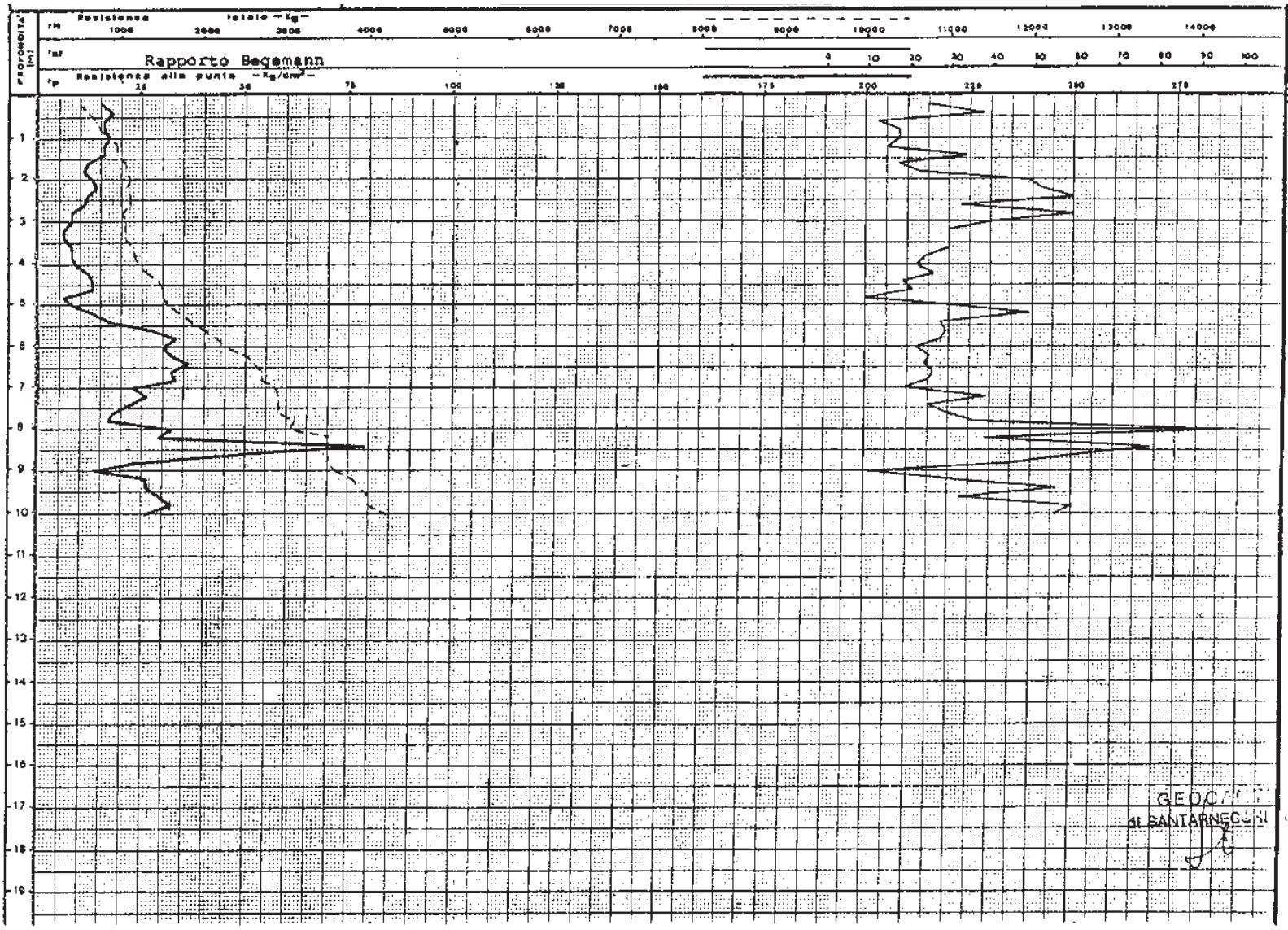

Rtot
6000
9000
12000
15000
18000
Ral
0.0 0.5 1.0 1.5
Rp
30 40 50 60 70 80
Rapporto Begemann
14 25 32 45 62 80
COLONNA LITOLOGICA
profondita' (m)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
2.6
A Al L Le Si S SG


N
10 20 30 40 50 60 70
Rd
50 100 150
COLONNA LITOLOGICA
ACQUA
0.8
profondita' (m)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19


N
10 20 30 40 50 60 70
Rd
50 100 150
COLONNA LITOLOGICA
ACQUA
0.9
profondita' (m)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

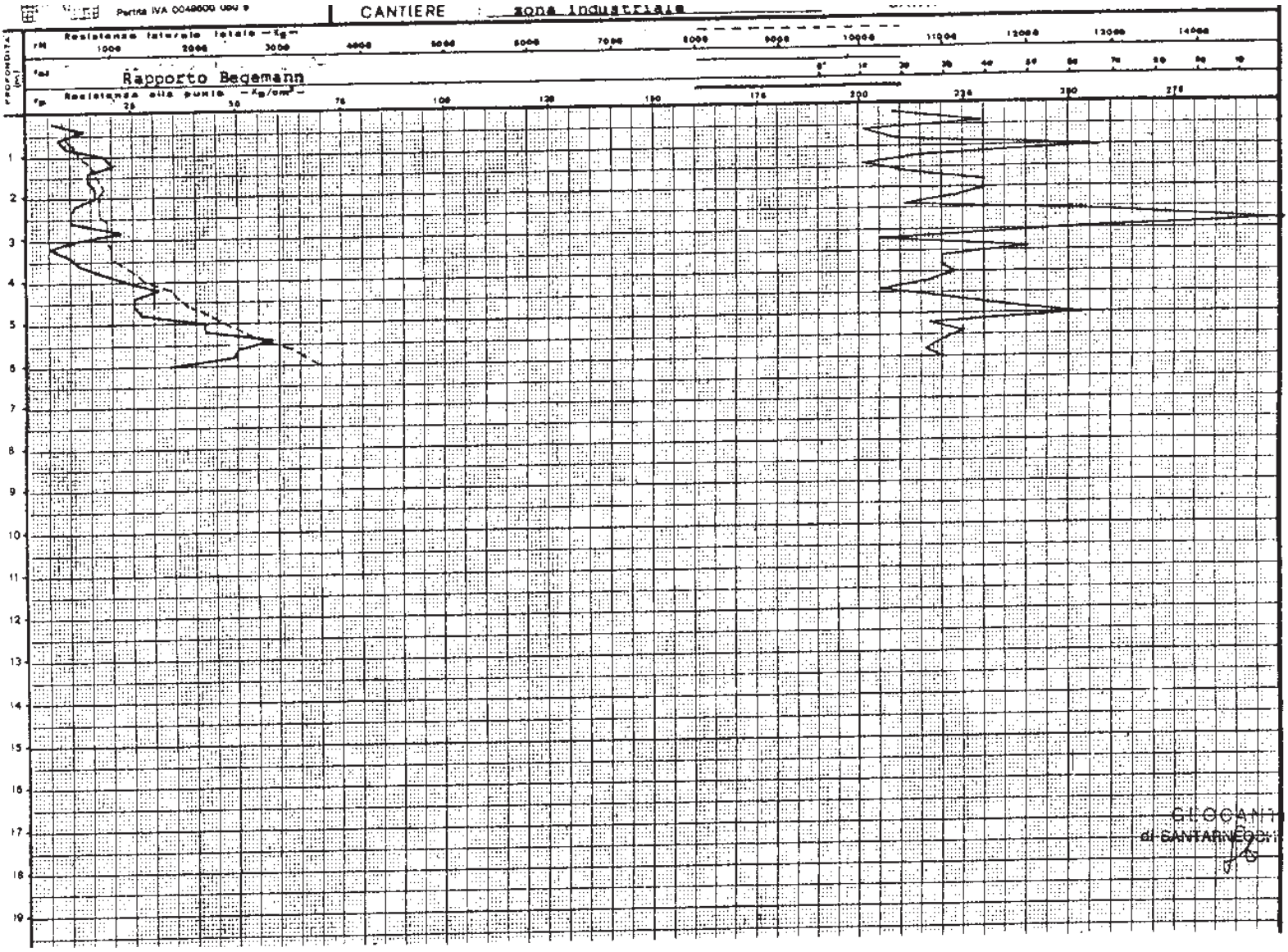

resistenza alla punta Rp (kg/cm²)
0 5 10 20 30 40 50 60 70 80 90 100 120 140 160 180 200 220
laterale RL (kg/cm²)
0 0.5 1 2 3
m0
2
4
6


resistenza alla punta Rp (kg/cm²)
0 5 10 20 30 40 50 60 70 80 90 100 120 140 160 180 200 220
laterale RL (kg/cm²)
0 0.5 1 2 3
m0
2
4
6

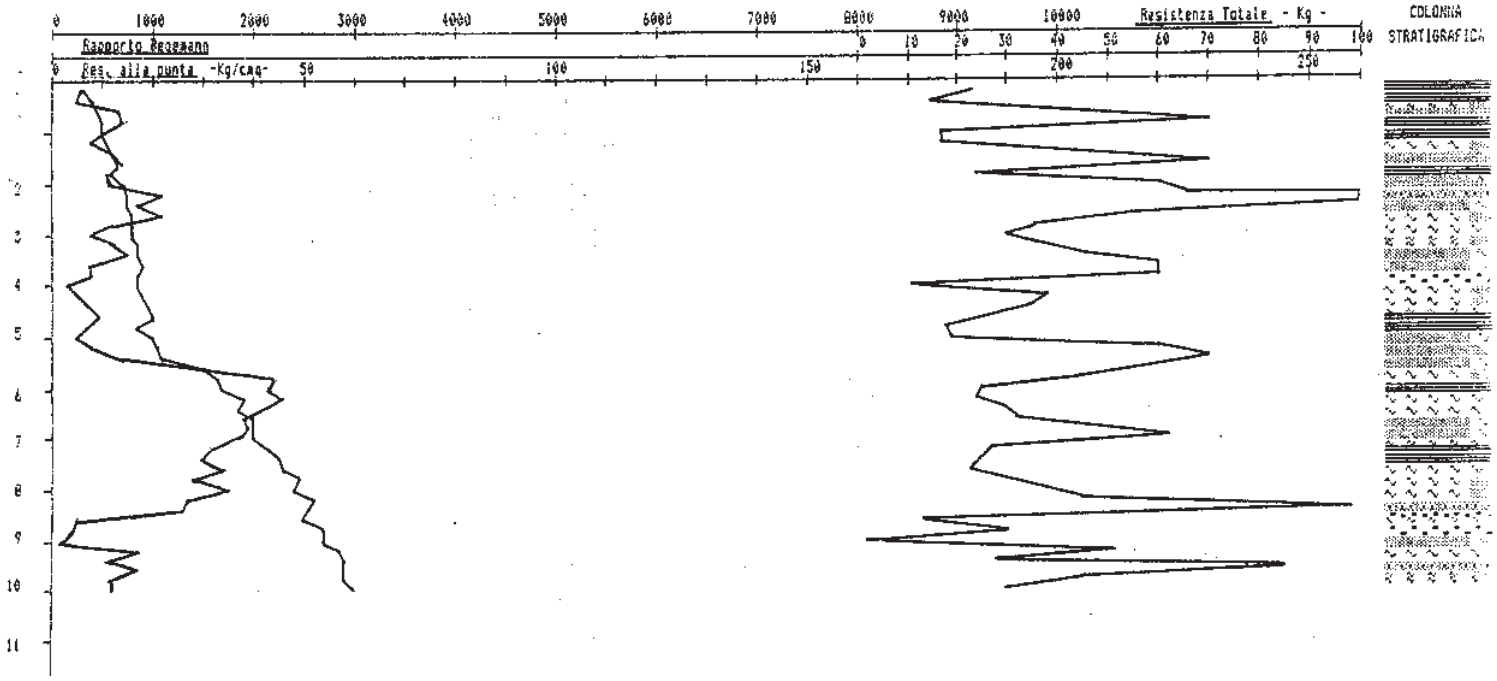

Rapporto Begemann
Resistenza totale - Kg -
Resistenza alla punta - Kg/cm² -
PROFONDITÀ (m)
GEOC
di SANTARNE

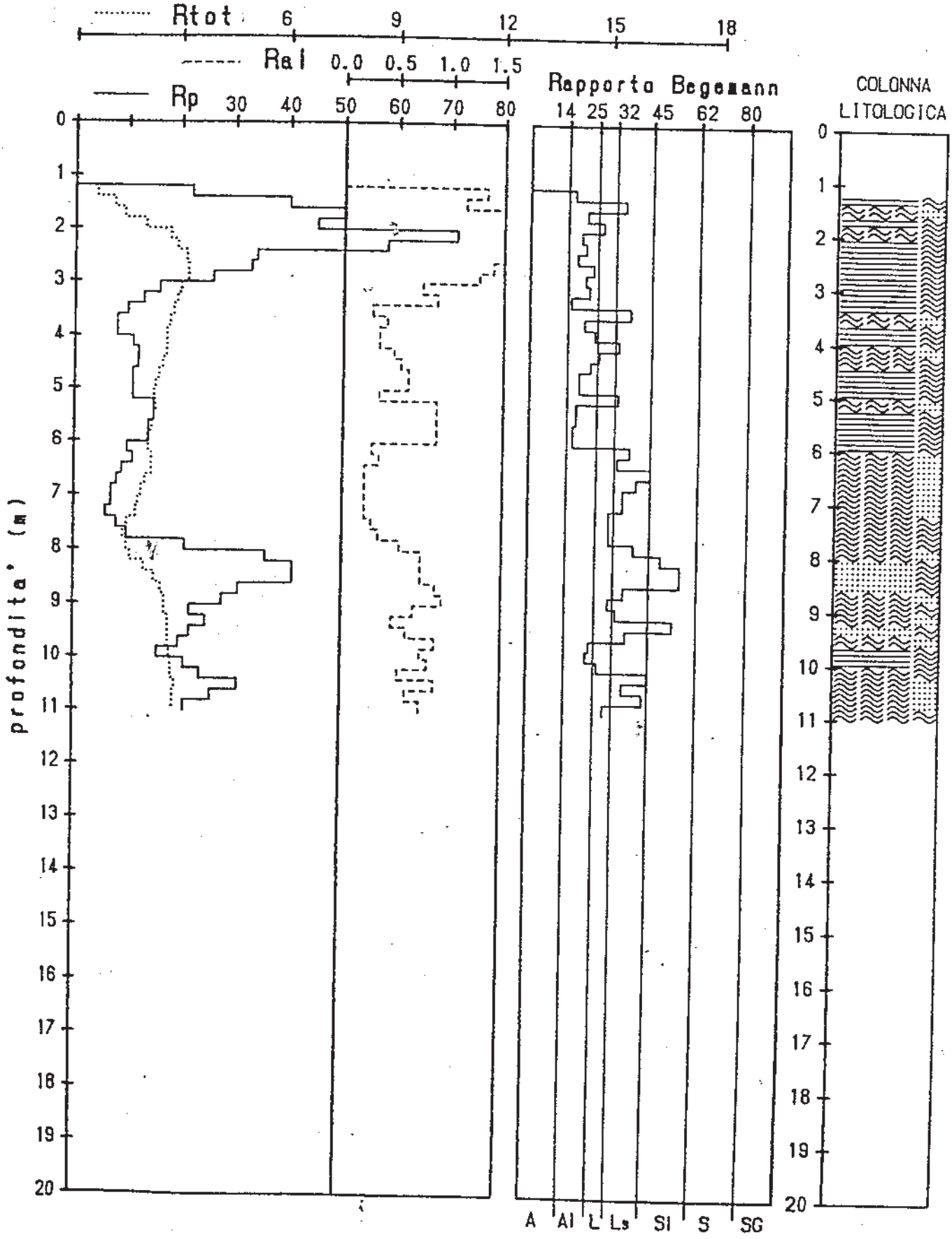
Partita IVA 00498000 000 9

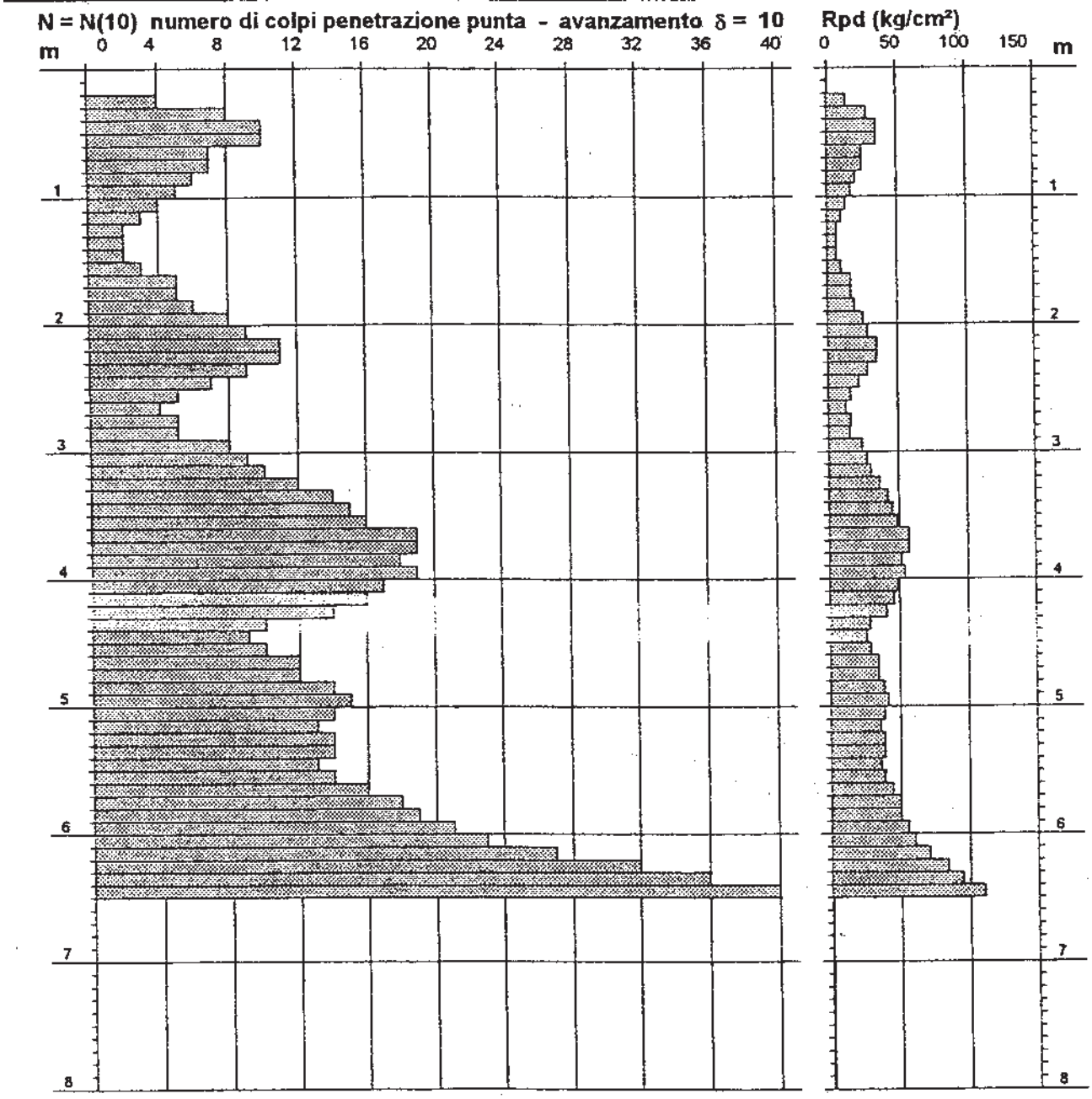
CANTIERE : zona industriale

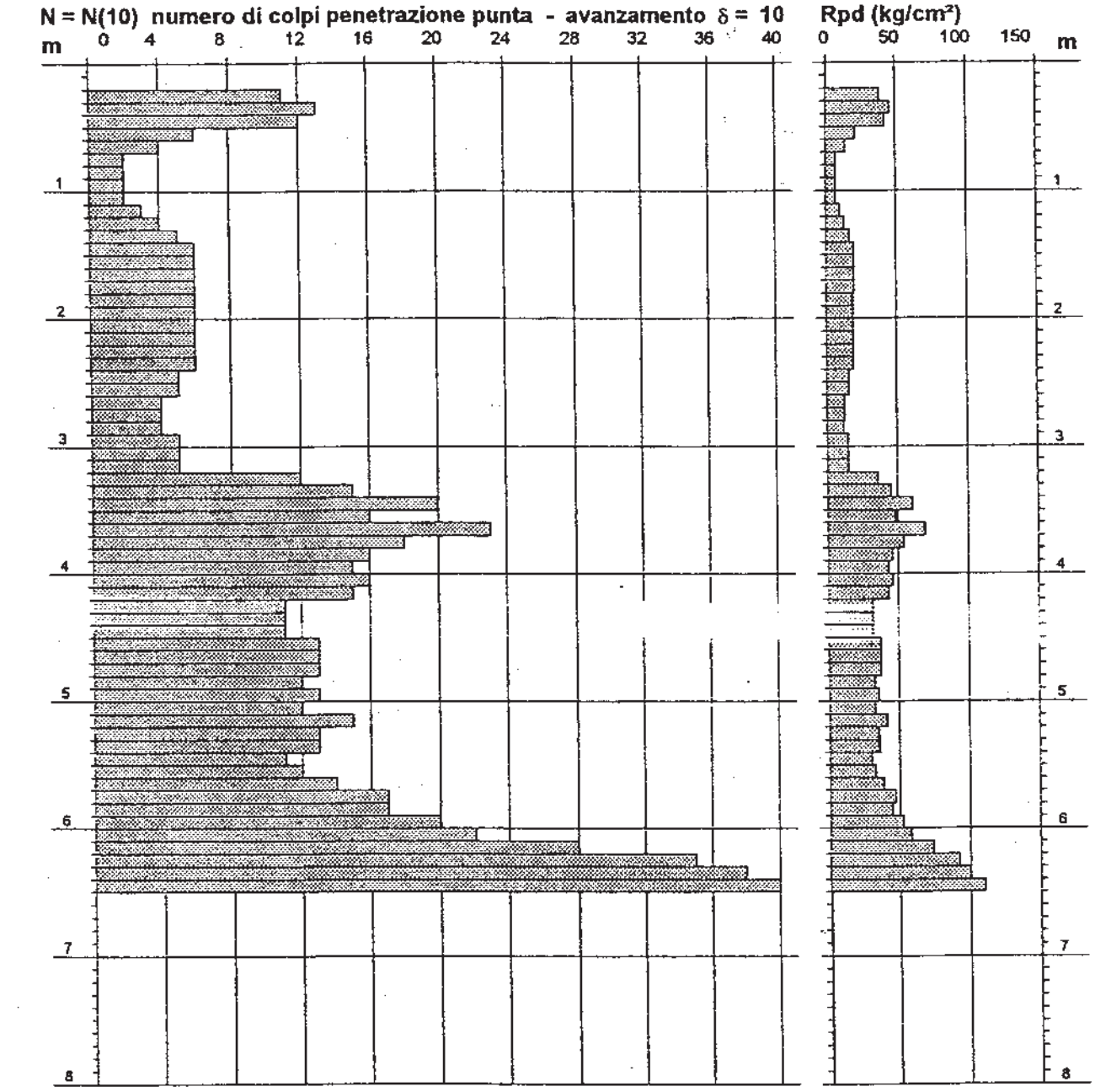


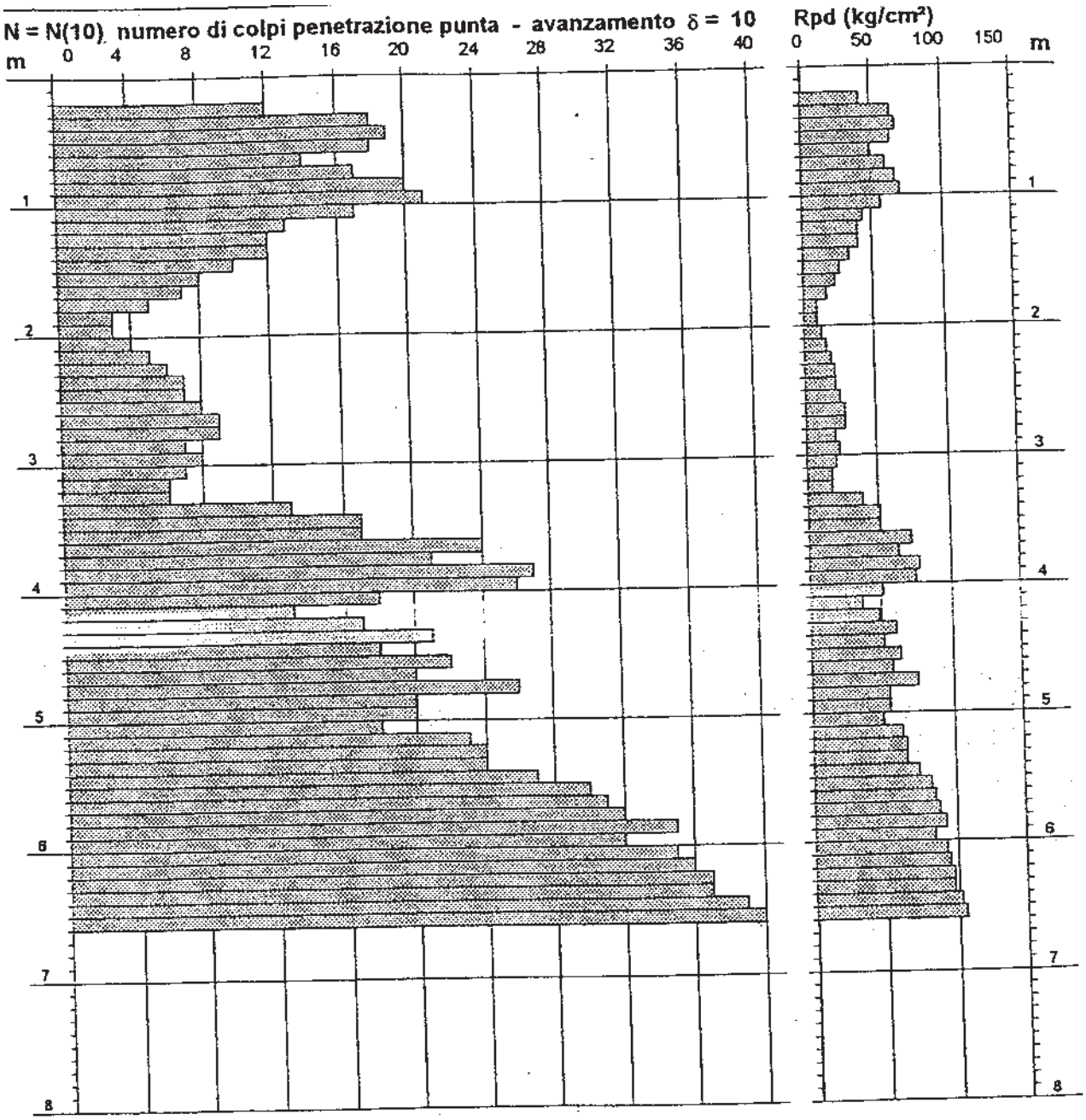
GEOCANTIERI
di SANTARNECCHI

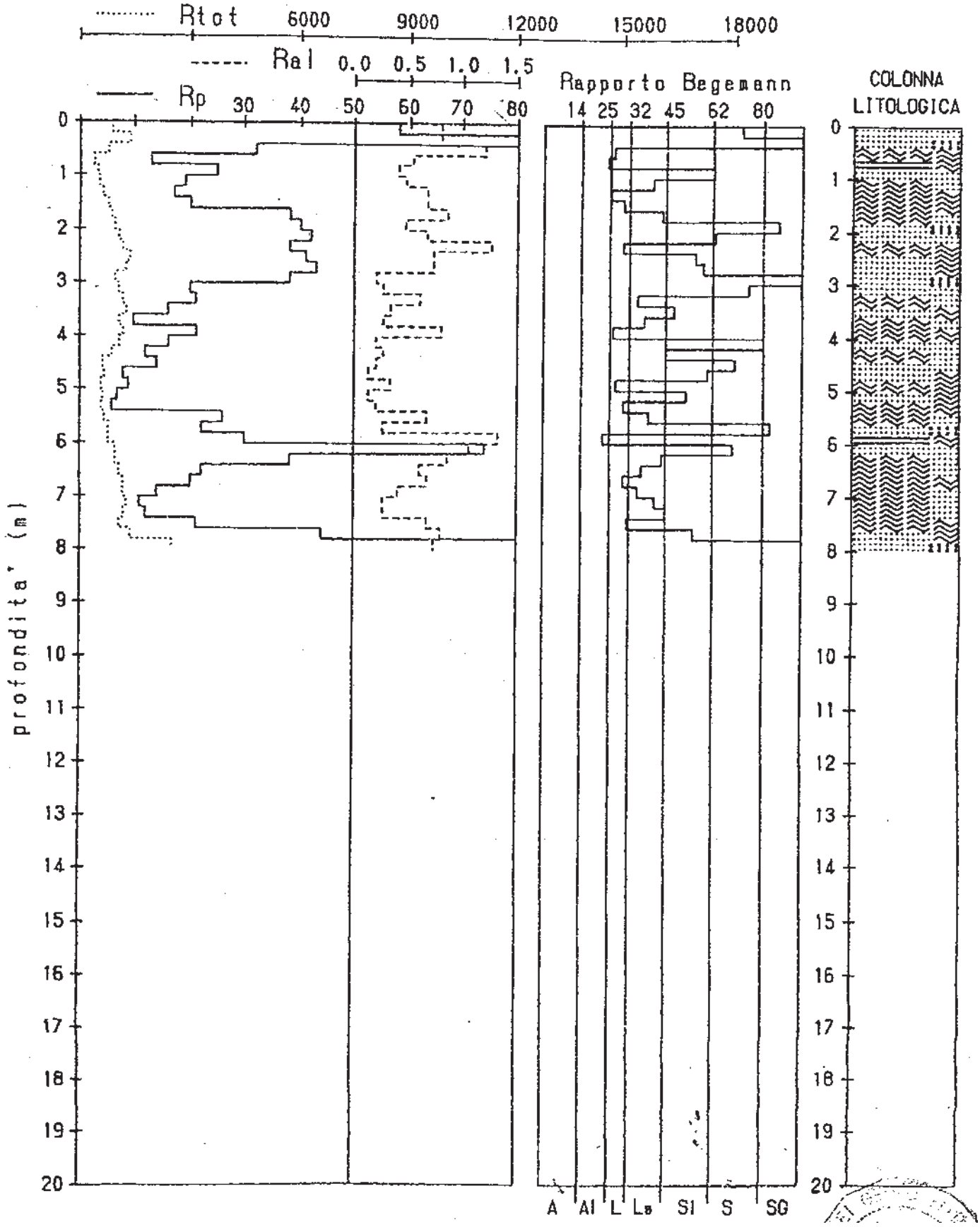

0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
Resistenza Totale - Kg -
Rapporto Begemann
0
10
20
30
40
50
60
70
80
90
100
Res. alla punta -Kg/cmq-
50
100
150
200
250
COLONNA
STRATIGRAFICA
2
3
4
5
6
7
8
9
10
11

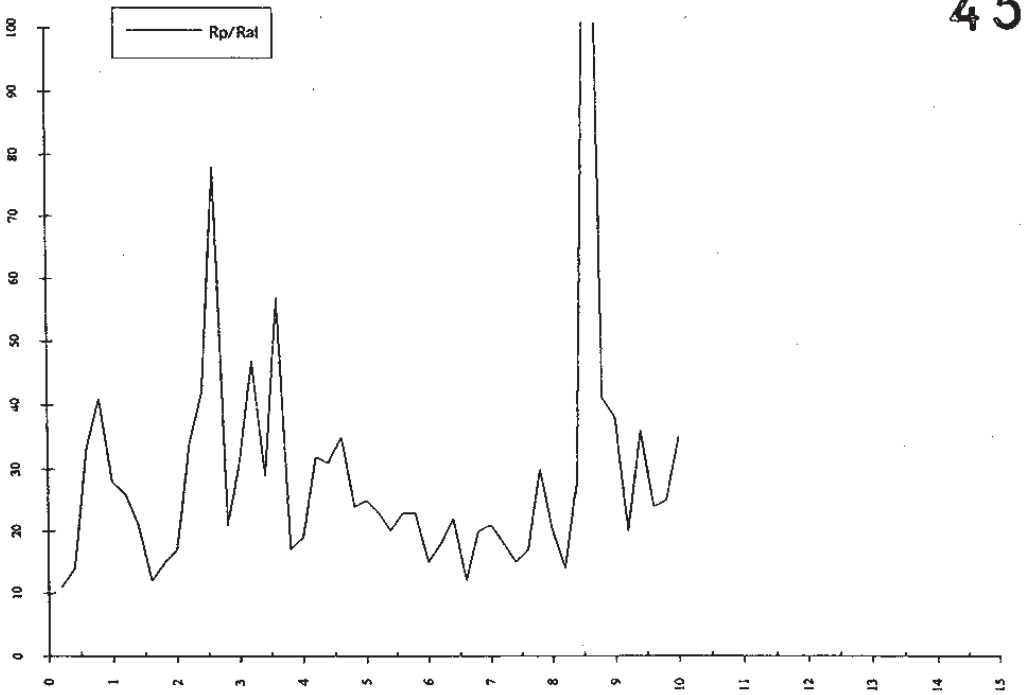

Rtot
6
9
12
15
18
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
COLONNA LITOLOGICA
profondita' (m)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
Al
L
Ls
Sl
S
SG

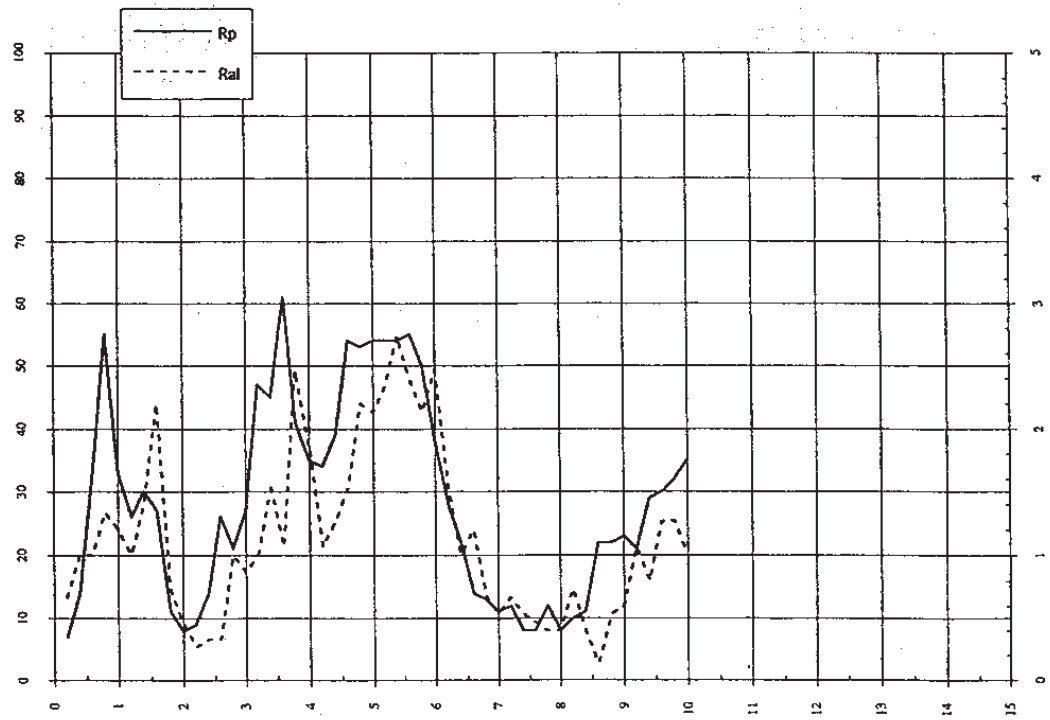

N = N(10) numero di colpi penetrazione punta - avanzamento δ = 10
m
0 4 8 12 16 20 24 28 32 36 40
Rpd (kg/cm²)
0 50 100 150
m
1
2
3
4
5
6
7
8

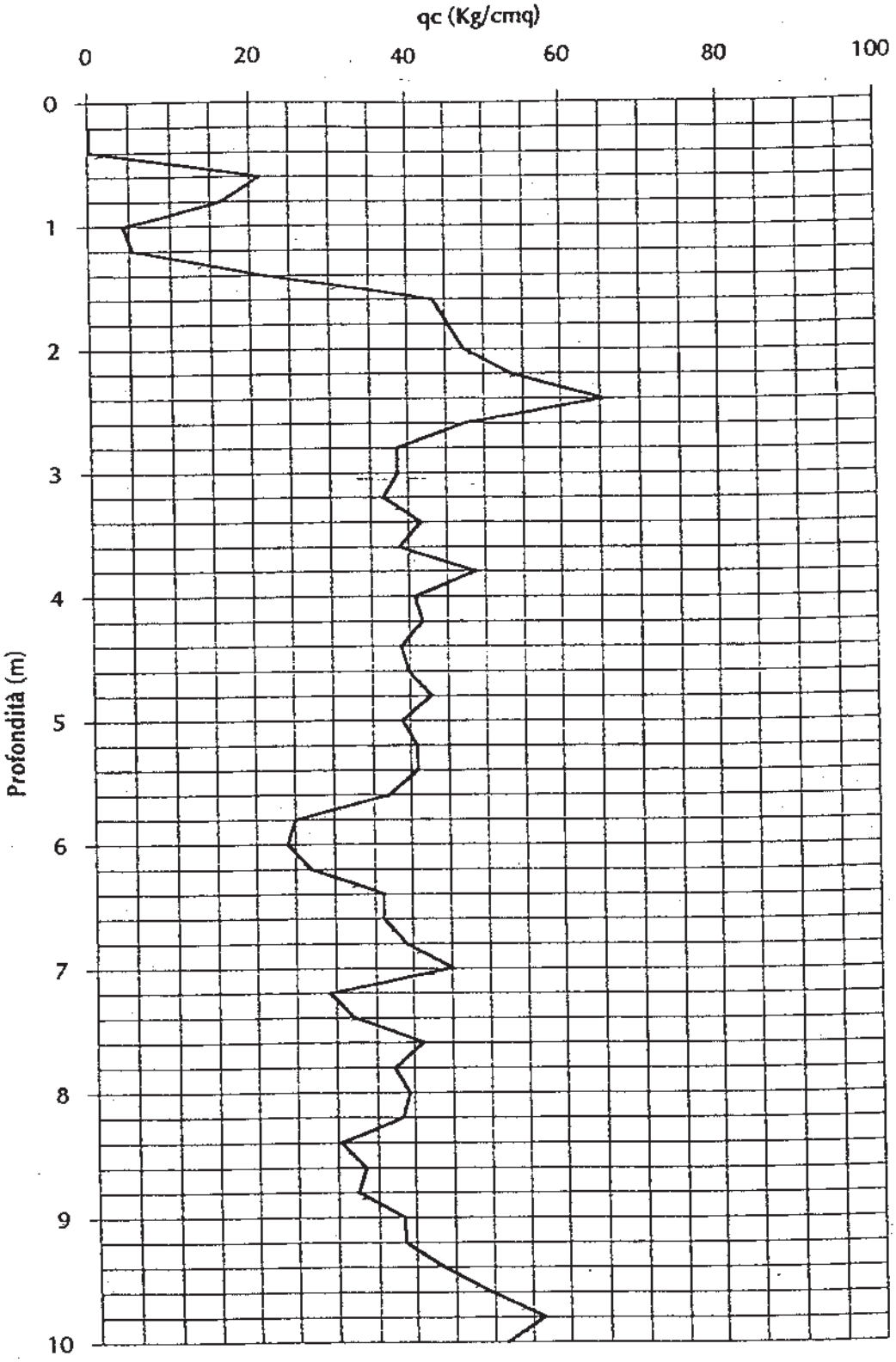

N = N(10) numero di colpi penetrazione punta - avanzamento δ = 10
m
0 4 8 12 16 20 24 28 32 36 40
Rpd (kg/cm²)
0 50 100 150
m
1
2
3
4
5
6
7
8

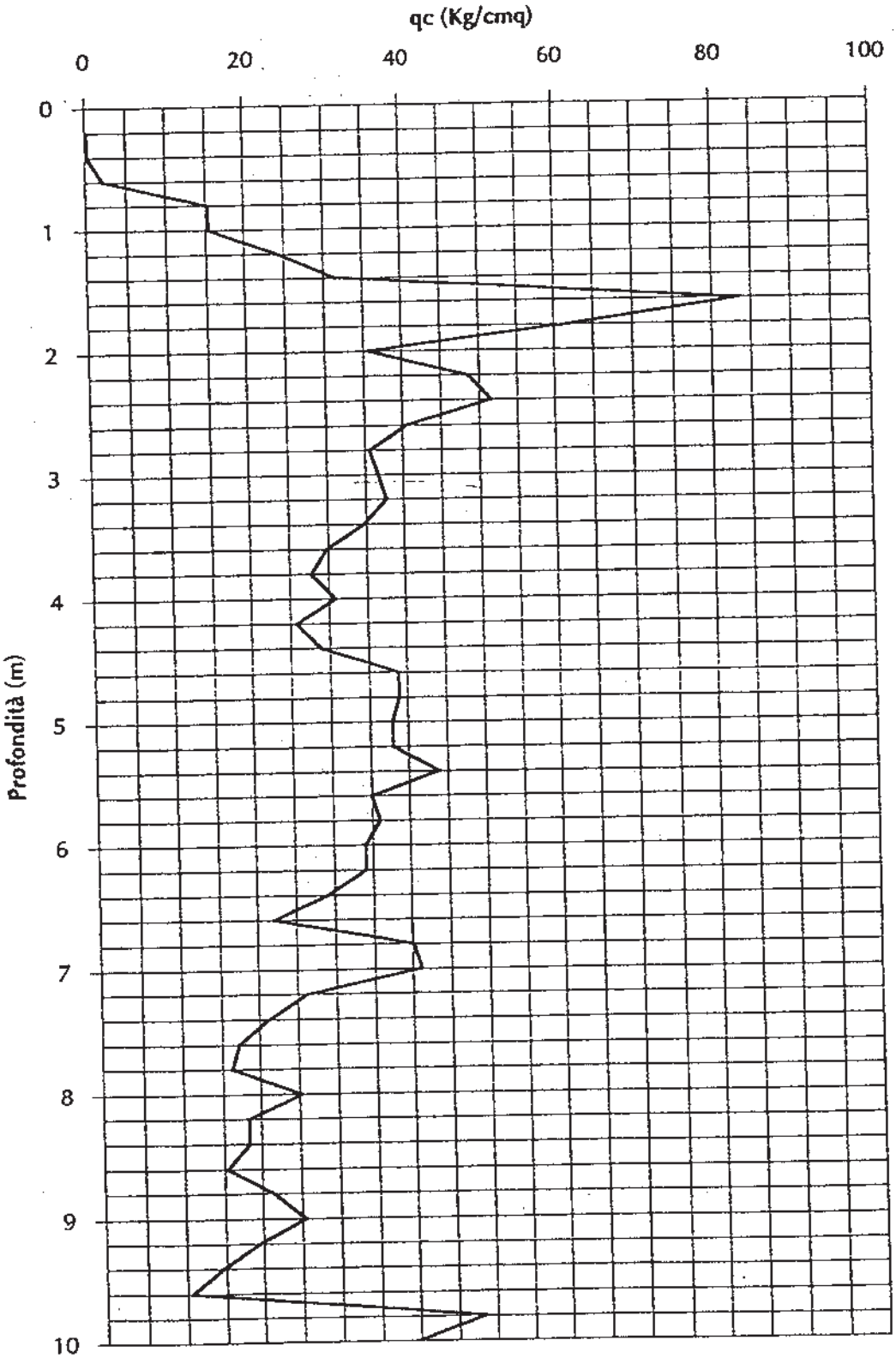

N = N(10) numero di colpi penetrazione punta - avanzamento δ = 10
m
0 4 8 12 16 20 24 28 32 36 40
1
2
3
4
5
6
7
8
Rpd (kg/cm²)
0 50 100 150
m
1
2
3
4
5
6
7
8

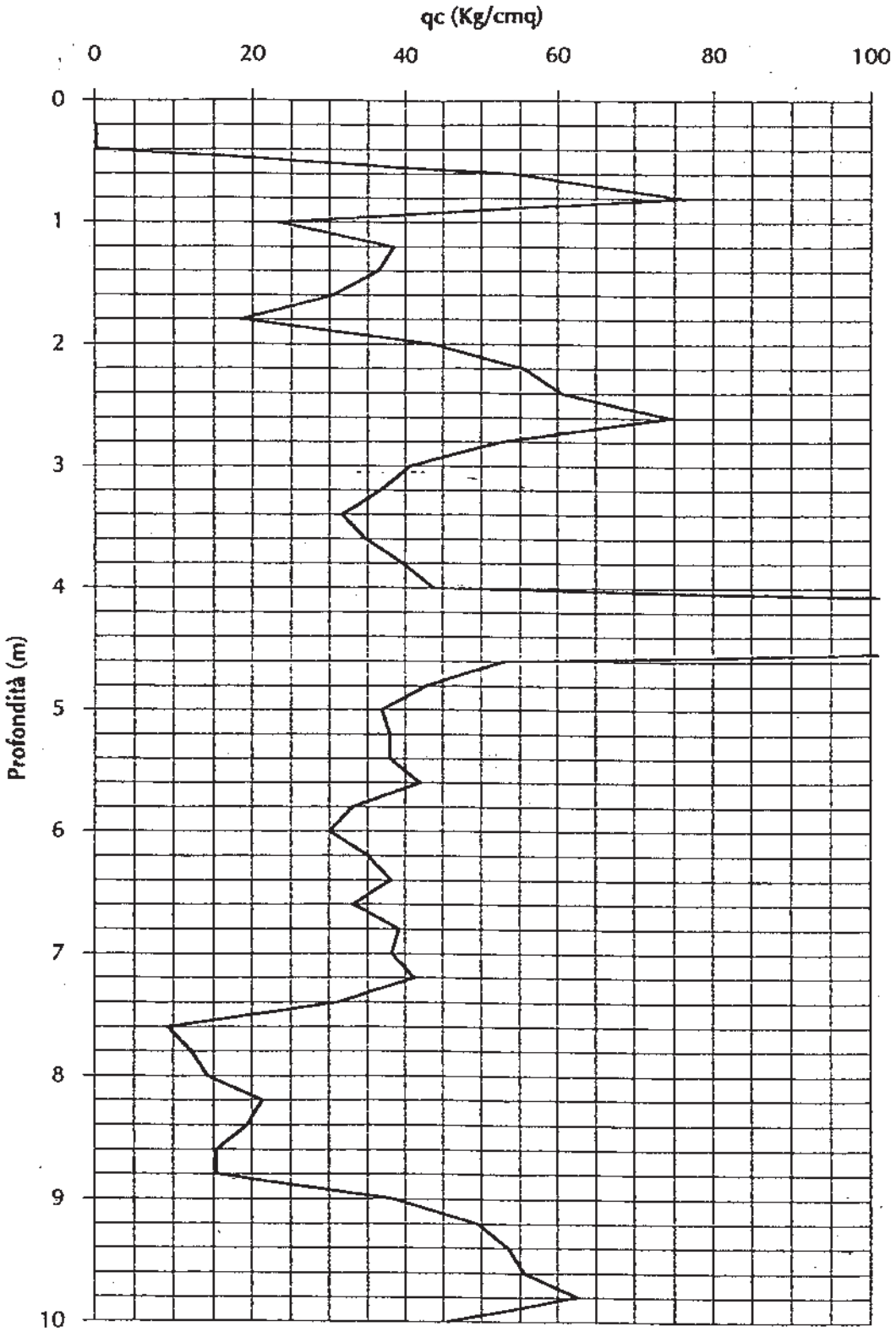

Rtot
6000
9000
12000
15000
18000
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
COLONNA LITOLOGICA
profondita' (m)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
Al
L
Lb
Sl
S
SG

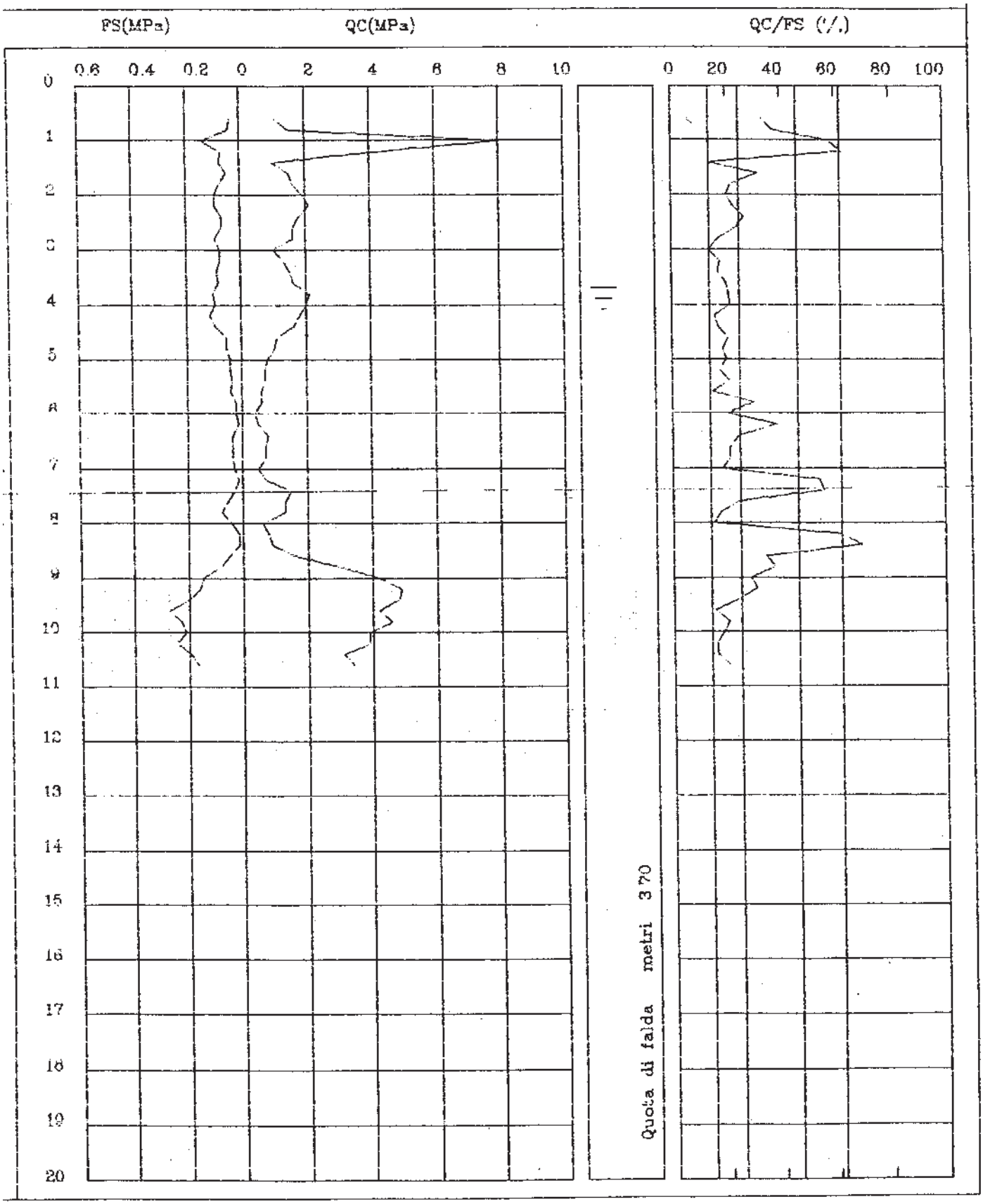

Rp/Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

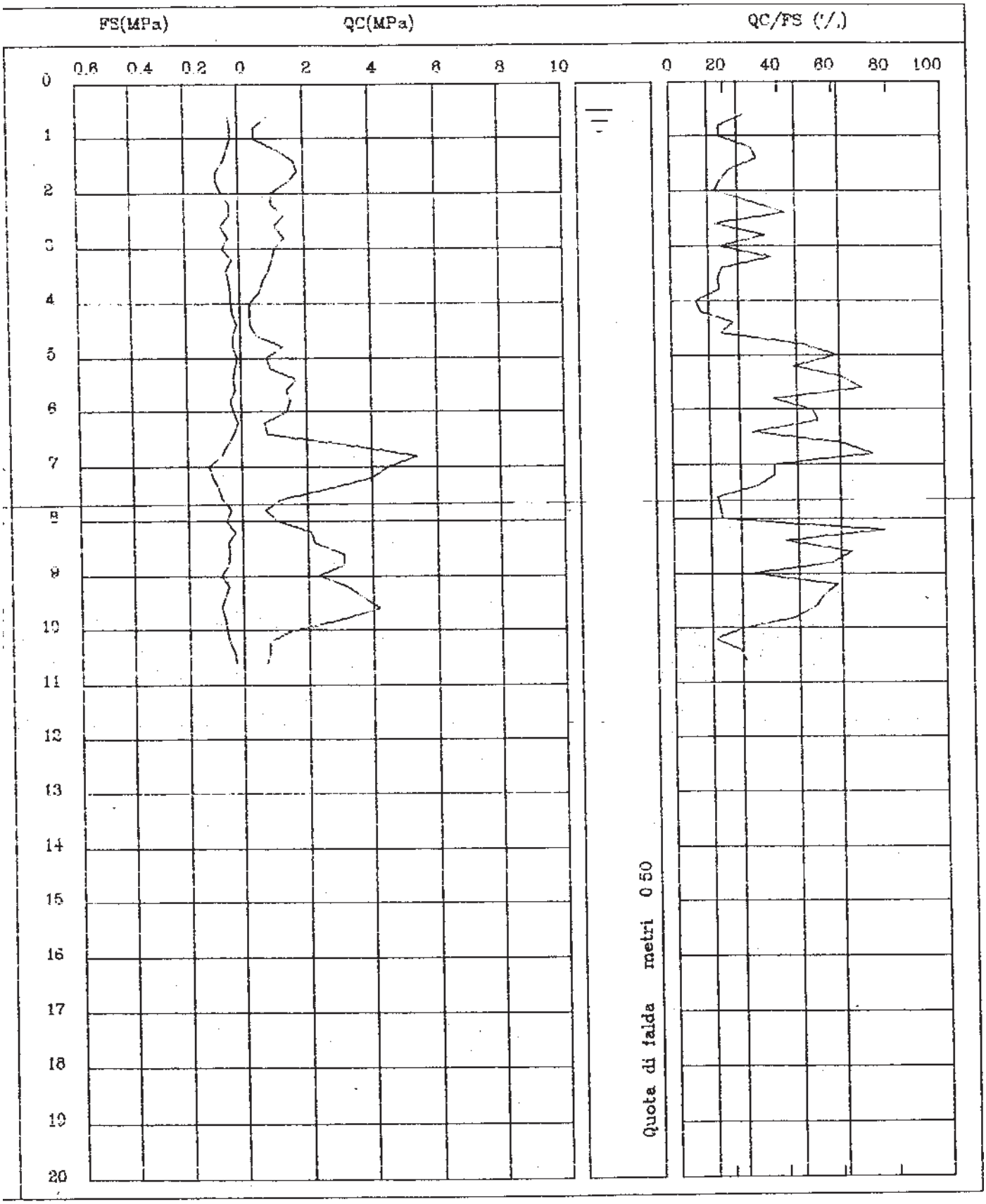

Rp
Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

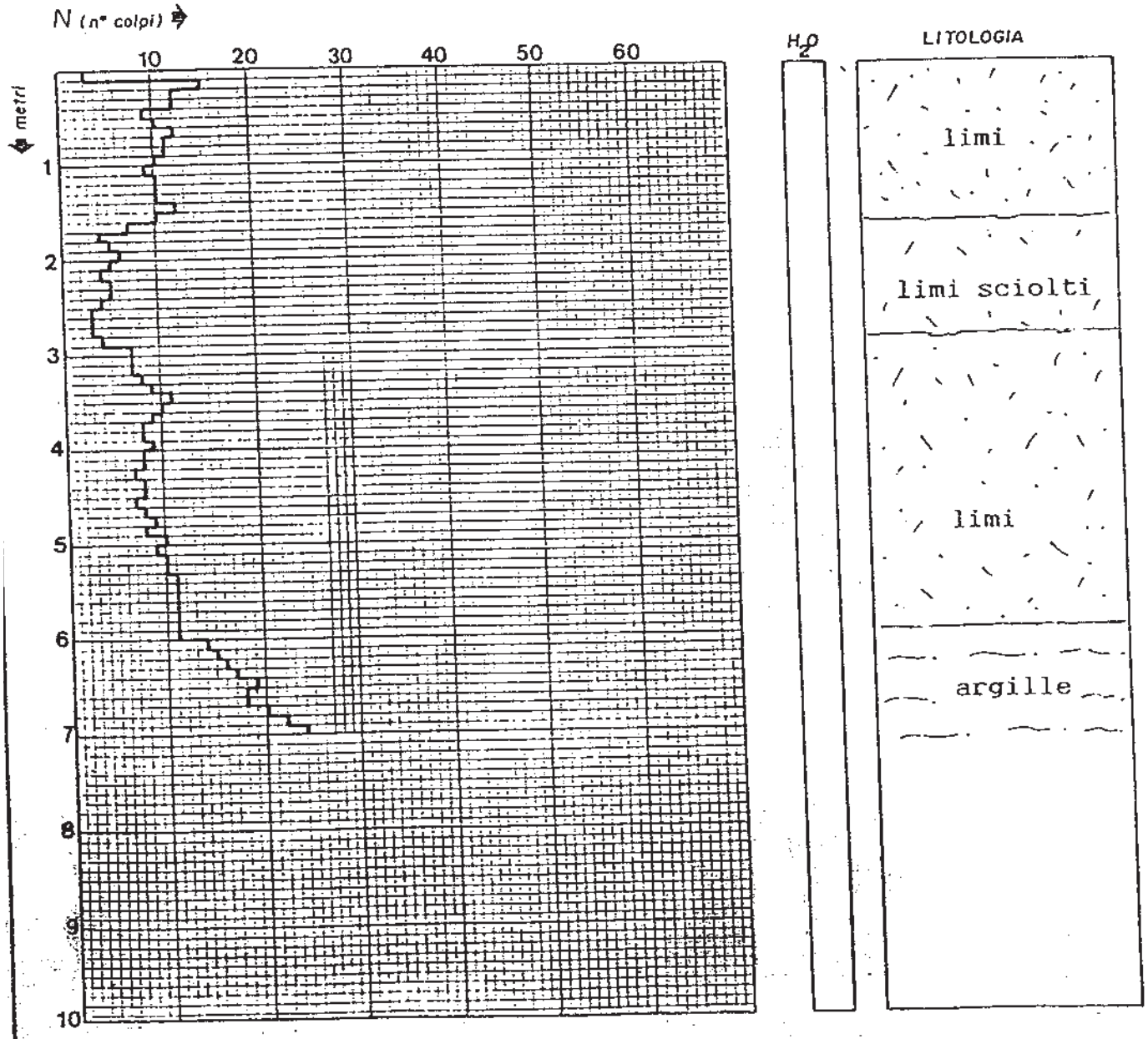

qc (Kg/cmq)
0
20
40
60
80
100
Profondità (m)
0
1
2
3
4
5
6
7
8
9
10


qc (Kg/cmq)
0
20
40
60
80
100
Profondità (m)
0
1
2
3
4
5
6
7
8
9
10


qc (Kg/cmq)
0
20
40
60
80
100
Profondità (m)
0
1
2
3
4
5
6
7
8
9
10


FS(MPa)
QC(MPa)
QC/FS (%)
0.6 0.4 0.2 0 2 4 6 8 10
0 20 40 60 80 100
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Quota di falda metri 3.70


FS(MPa)
QC(MPa)
QC/FS (%)
0.6 0.4 0.2 0 2 4 6 8 10
0 20 40 60 80 100
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Quota di falda metri 0.50

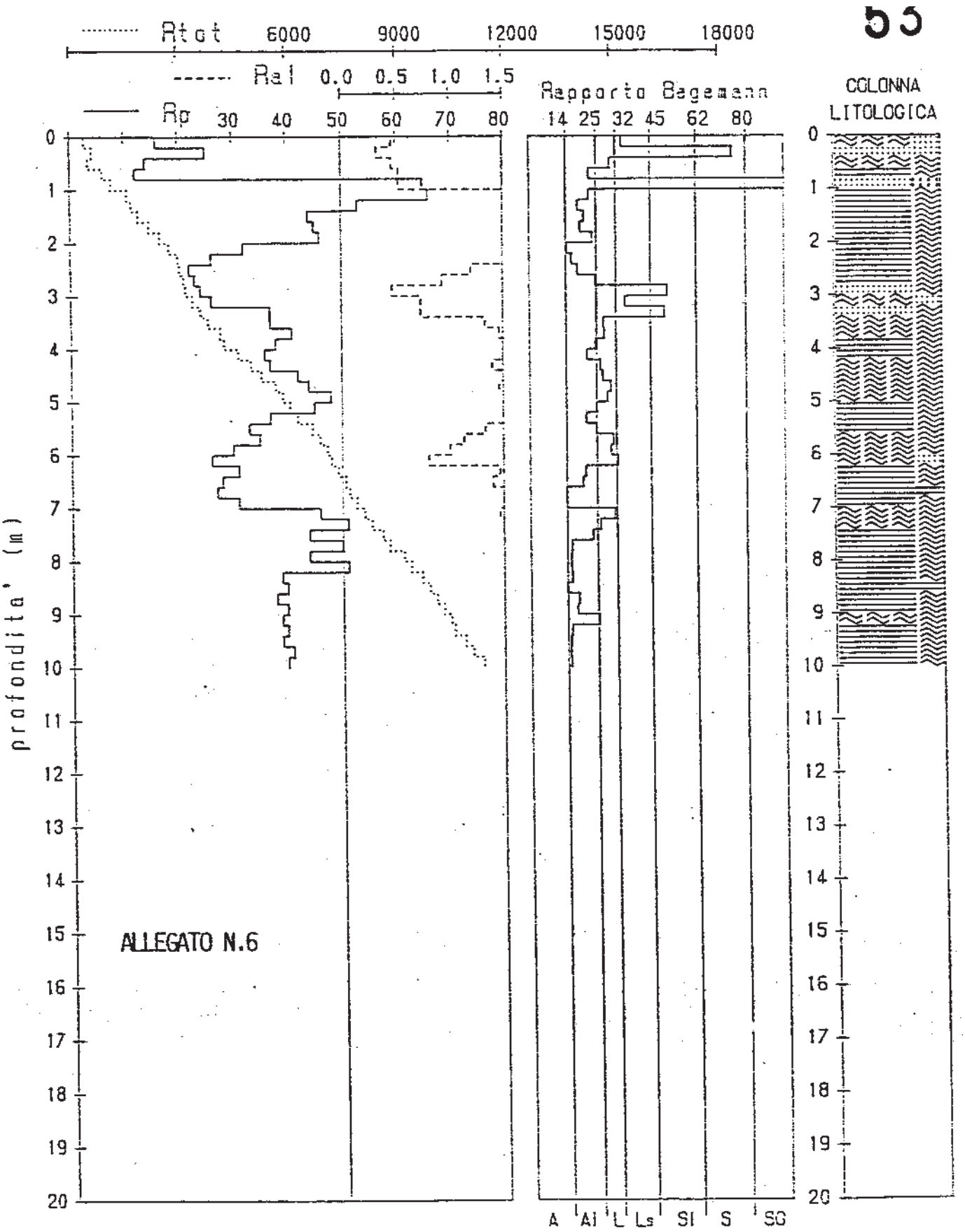


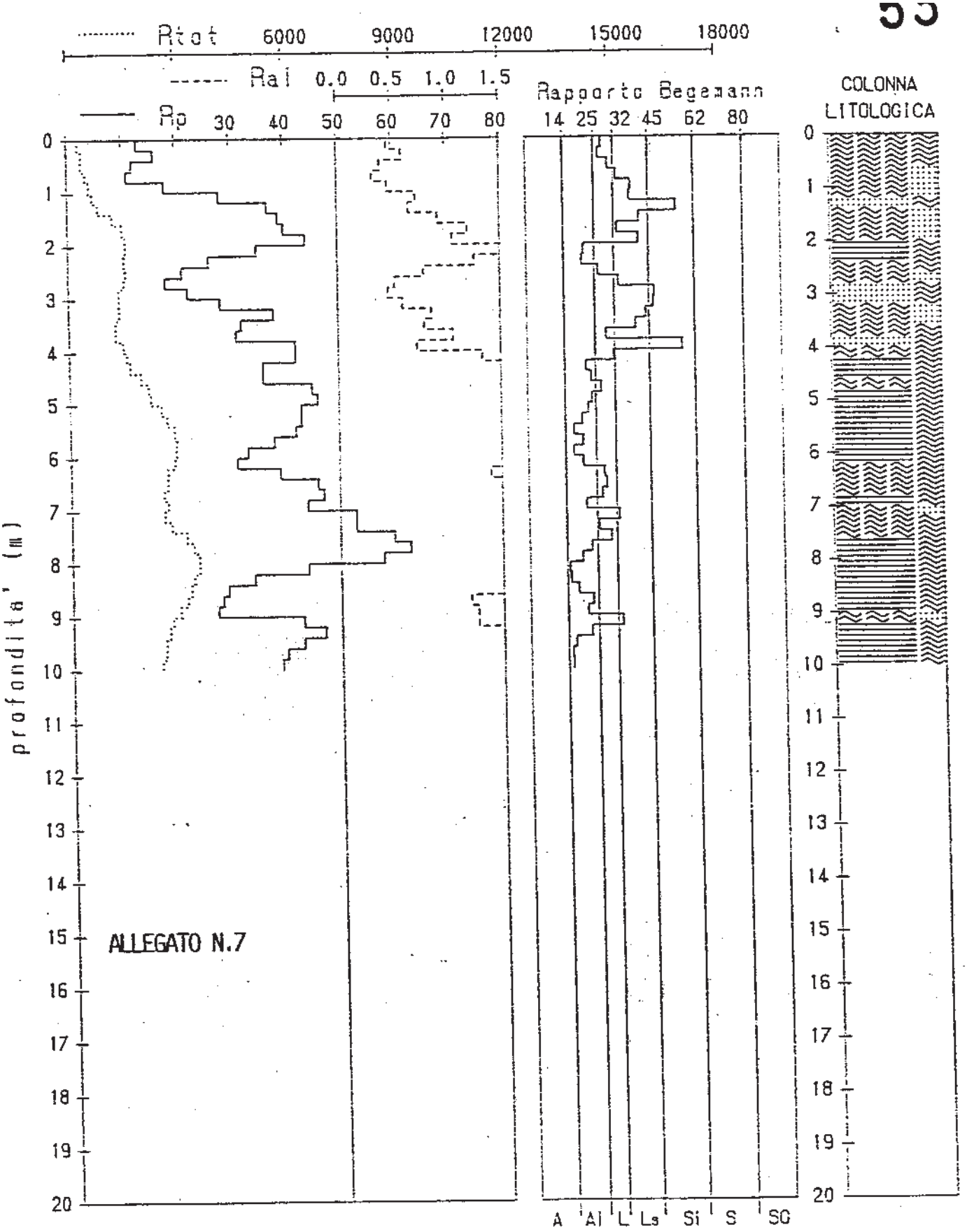
CARATTERISTICHE STRUMENTALI

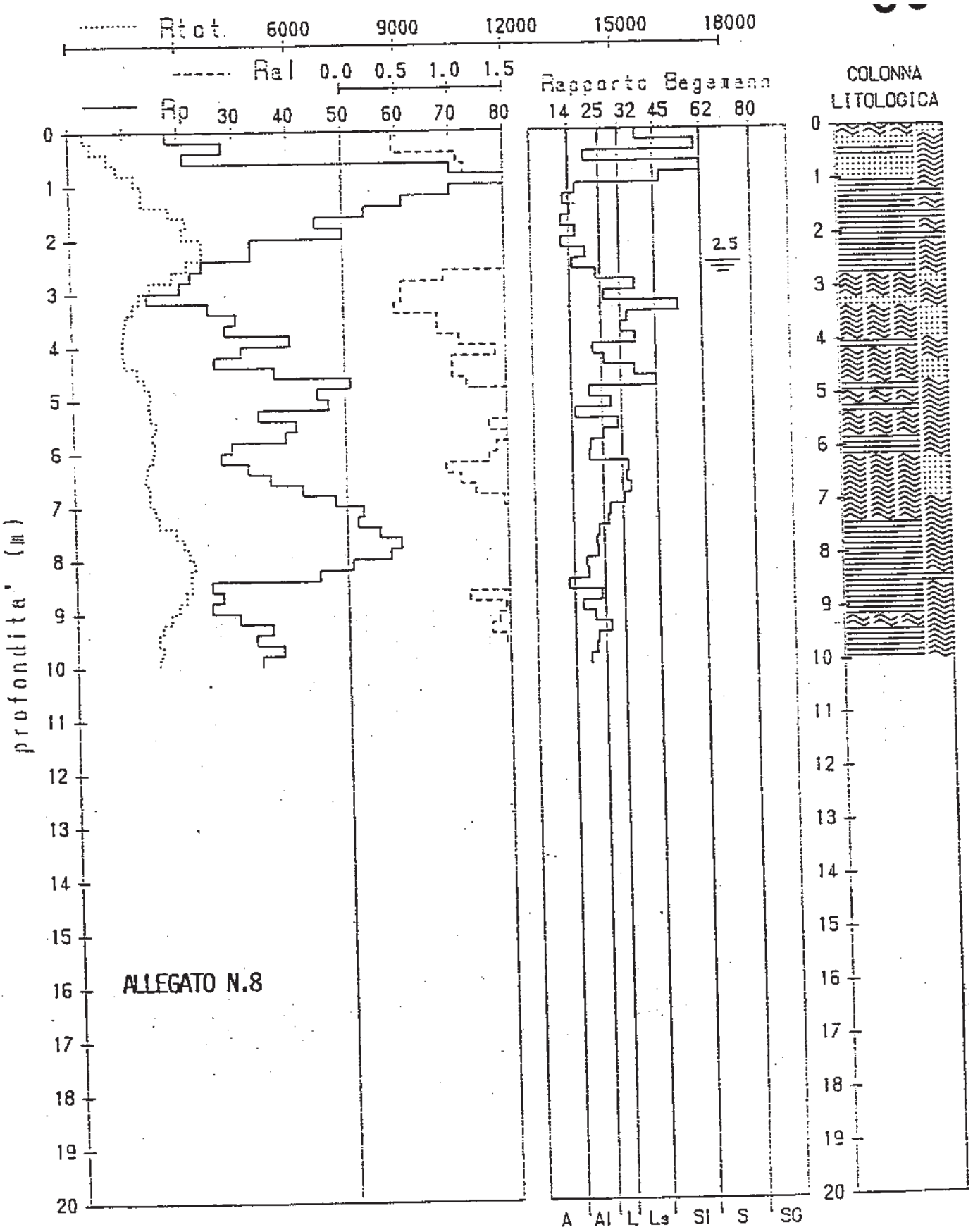
P.O.M. – ISSMFE 1988

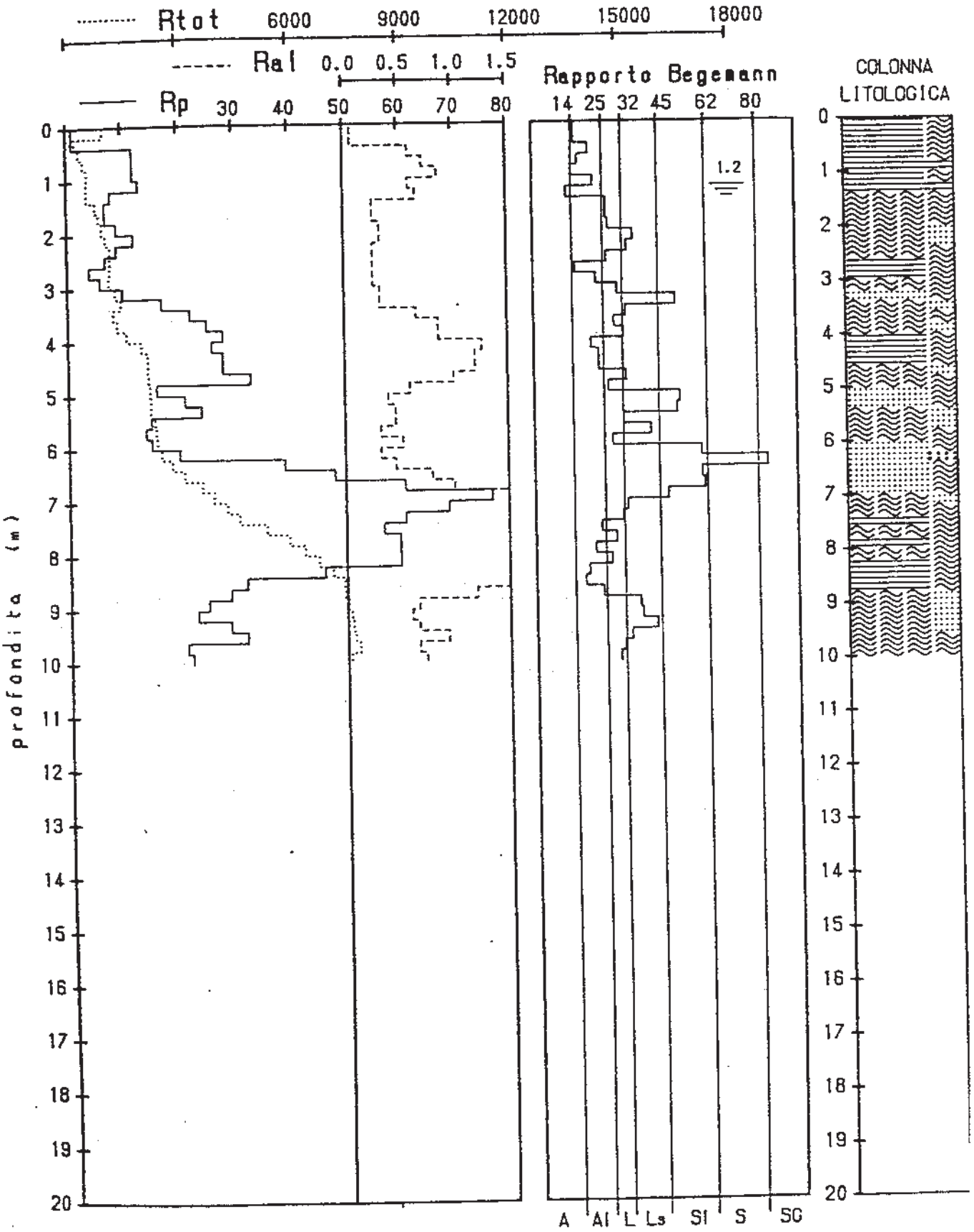
Maglio: peso = 30 Kg , altezza di caduta = 20 cm – Testata d'infissione: 13 Kg

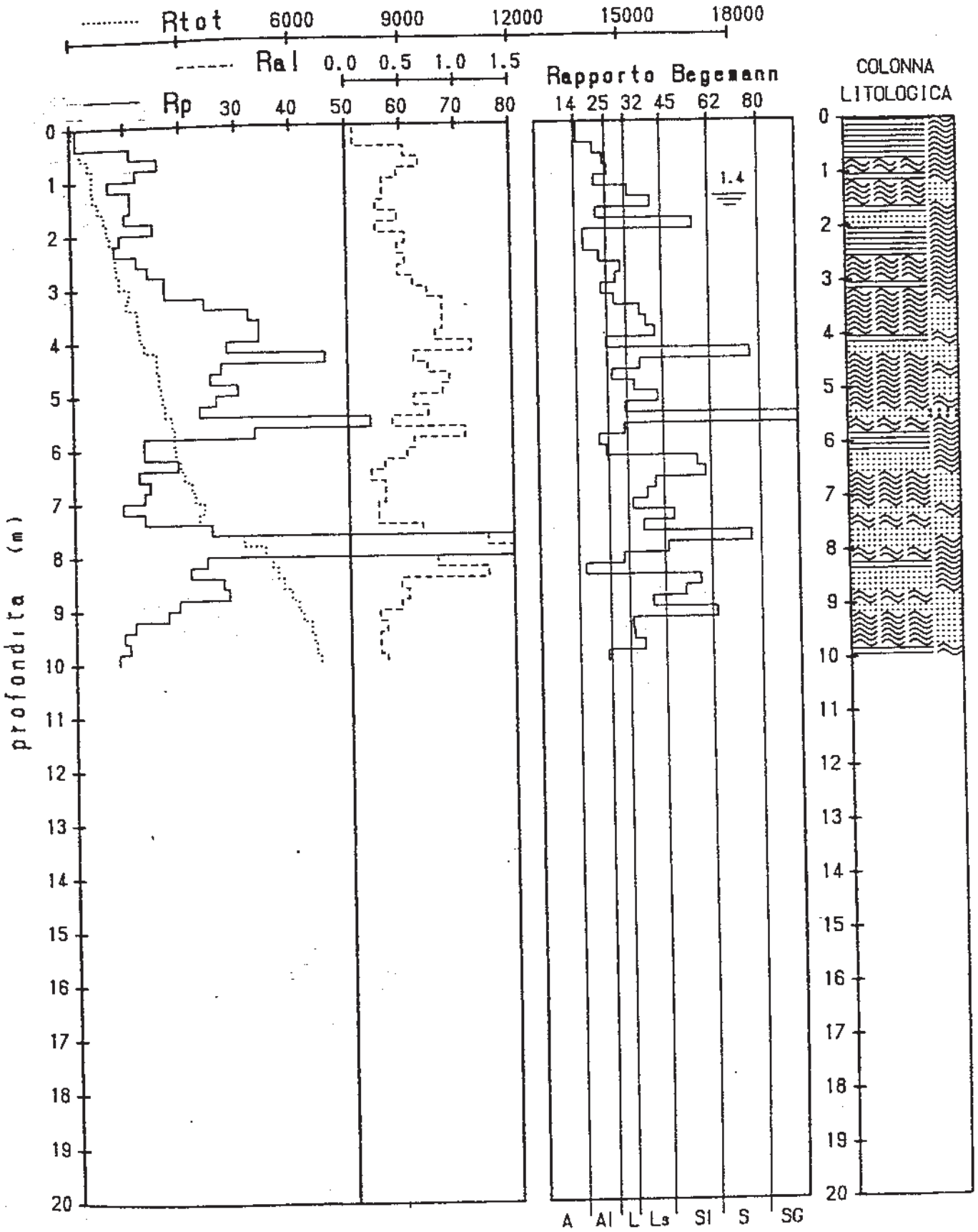
Aste: peso = 2.9 Kg/m , Ø = 20 mm – Punta: apertura del cono = 60°, sezione = 10 cmq , Ø max = 35.7 mm , altezza della parte cilindrica = 9 mm – Avanzamento = 10 cm

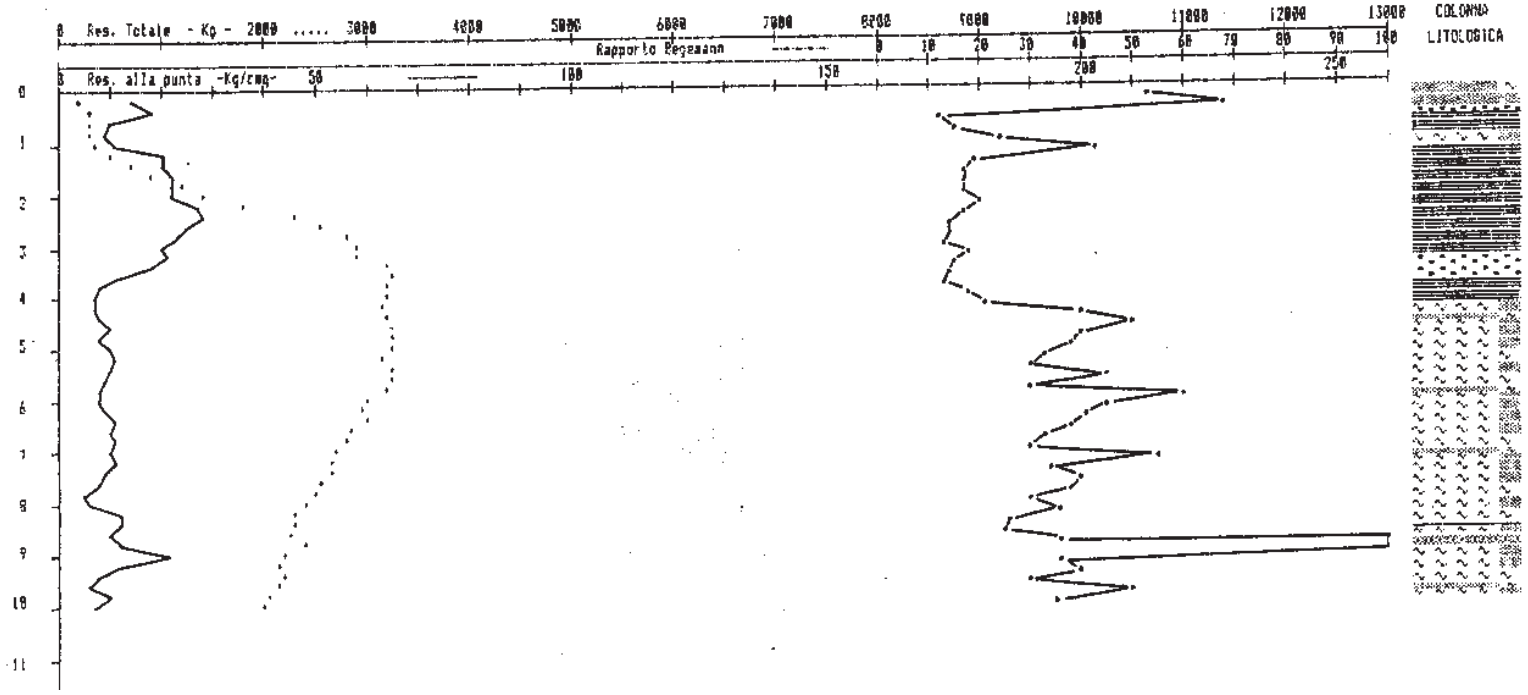

Rtot 6000 9000 12000 15000 18000
Ral 0.0 0.5 1.0 1.5
Rp 30 40 50 60 70 80
Rapporto Bagemann
14 25 32 45 62 80
COLONNA LITOLOGICA
profondita' (m)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
ALLEGATO N.6
A Al L Ls Sl S SG

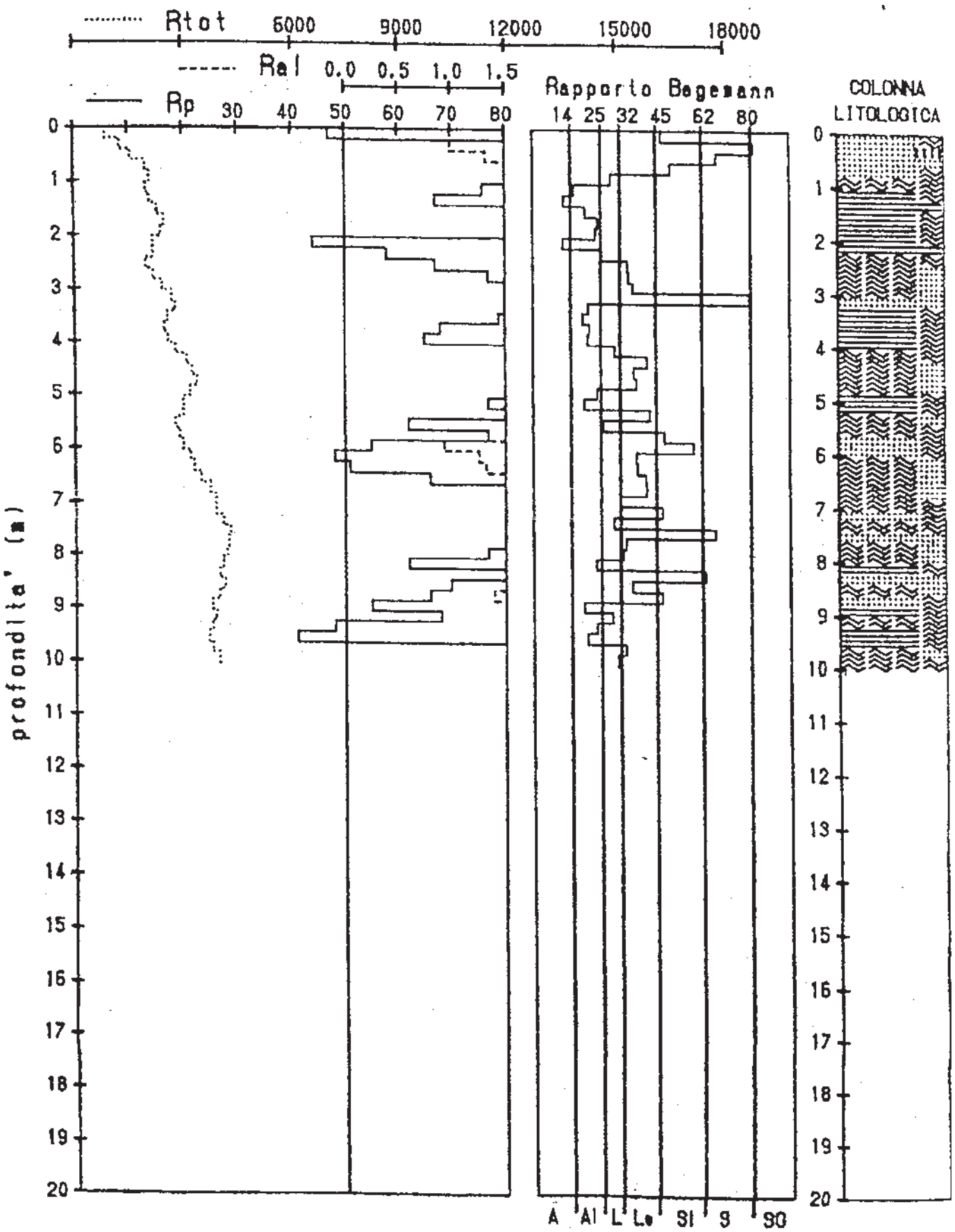

Rtot 6000 9000 12000 15000 18000
Rai 0.0 0.5 1.0 1.5
Rp 30 40 50 60 70 80
Rapporto Begemann
14 25 32 45 62 80
COLONNA LITOLOGICA
profondita' (m)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
A Al L Ls Si S SG
ALLEGATO N.7

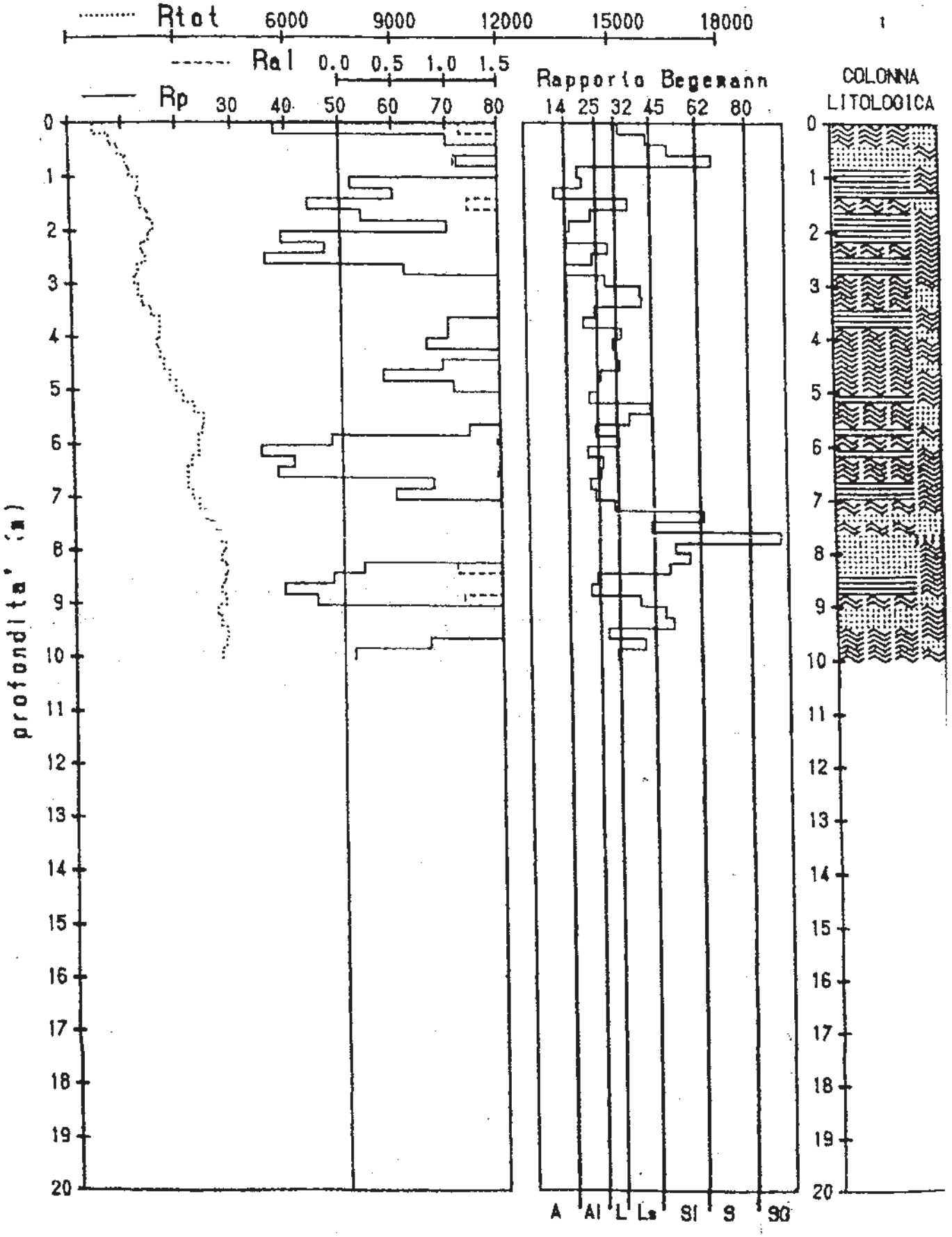

Rtot
6000
9000
12000
15000
18000
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
2.5
COLONNA LITOLOGICA
profondita' (m)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
Al
L
Ls
Sl
S
SG
ALLEGATO N.8


Rtot
6000
9000
12000
15000
18000
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
1.2
COLONNA LITOLOGICA
profondita (m)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
Al
L
Ls
Sl
S
SG


Rtot
6000
9000
12000
15000
18000
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
1.4
COLONNA LITOLOGICA
profondita (m)
A
Al
L
Ls
Sl
S
SG


Res. Totale - Kp -
Rapporto Begemann
Res. alla punta -Kg/cmq-
COLONNA LITOLOGICA


Rtot
6000
9000
12000
15000
18000
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Bagemann
14
25
32
45
62
80
COLONNA LITOLOGICA
profondita' (m)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
Al
L
Le
Sl
S
SG


Rtot
6000
9000
12000
15000
18000
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
COLONNA LITOLOGICA
profondita' (m)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
Al
L
Ls
Sl
S
SG

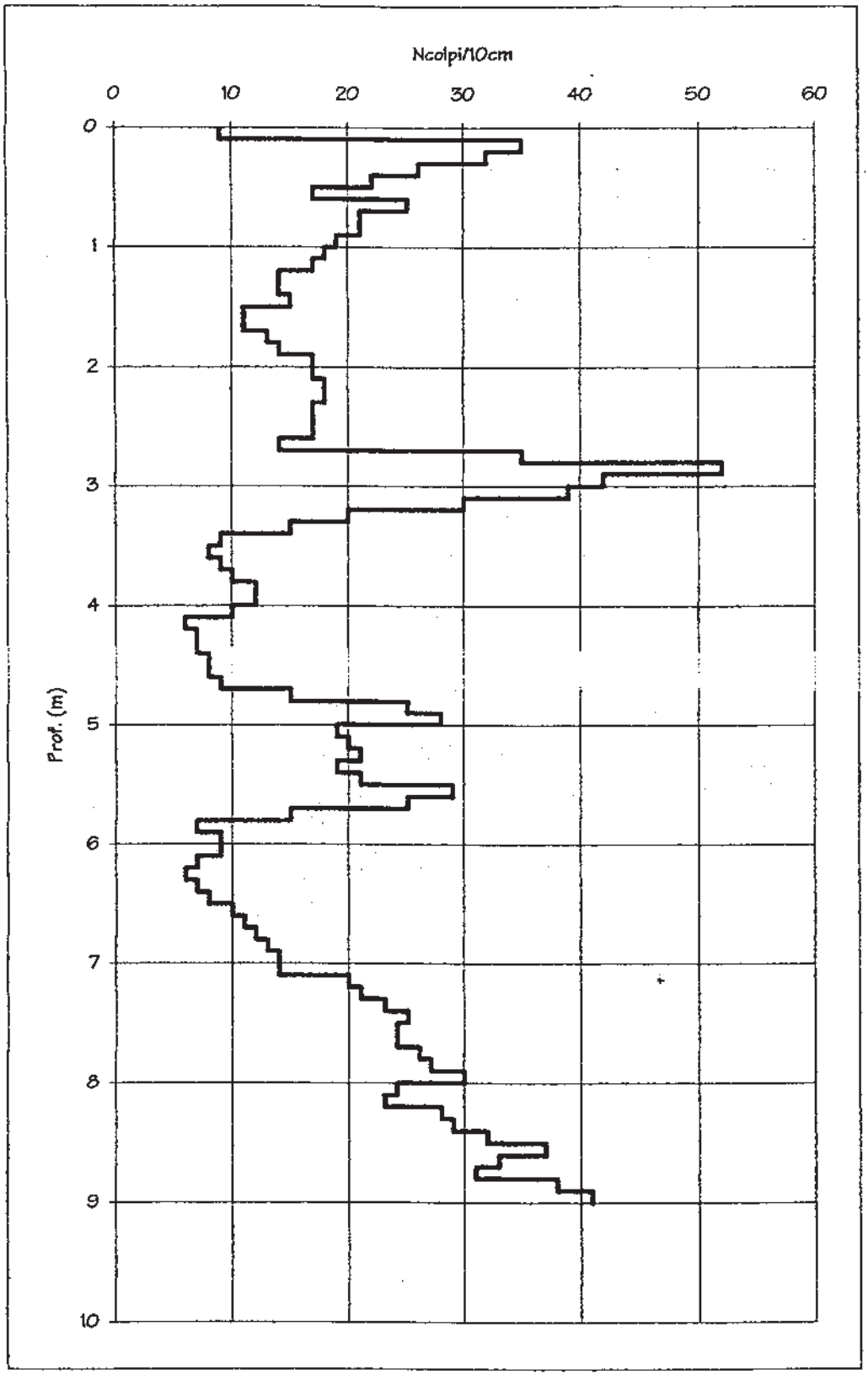
m.	Qc (dN/cm²)	Rl (dN/cm2)	Fs (dN/cm2)	Qc/Fs (%)
0,20	30	33	0,20	150,00
0,40	40	48	0,53	75,47
0,60	22	32	0,67	32,84
0,80	20	25	0,33	60,61
1,00	15	18	0,20	75,00
1,20	62	76	0,93	66,67
1,40	72	101	1,93	37,31
1,60	69	109	2,67	25,84
1,80	69	107	2,53	27,27
2,00	68	107	2,60	26,15
2,20	81	123	2,80	28,93
2,40	89	141	3,47	25,65
2,60	127	185	3,87	32,82
2,80	89	164	5,00	17,80
3,00	111	168	3,80	29,21
3,20	176	268	6,13	28,71
3,40	65	125	4,00	16,25
3,60	49	75	1,73	28,32
3,80	61	98	2,47	24,70
4,00	88	129	2,73	32,23
4,20	117	175	3,87	30,23
4,40	75	122	3,13	23,96
4,60	52	88	2,40	21,67
4,80	34	50	1,07	31,78
5,00	123	147	1,60	76,88
5,20	183	215	2,13	85,92
5,40	102	124	1,47	69,39
5,60	64	82	1,20	53,33
5,80	33	46	0,87	37,93
6,00	24	35	0,73	32,88
6,20	36	49	0,87	41,38
6,40	26	46	1,33	19,55
6,60	22	34	0,80	27,50
6,80	43	55	0,80	53,75
7,00	53	75	1,47	36,05
7,20	130	158	1,87	69,52
7,40	125	155	2,00	62,50
7,60	116	143	1,80	64,44
7,80	58	90	2,13	27,23
8,00	41	64	1,53	26,80
8,20	25	42	1,13	22,12
8,40	21	31	0,67	31,34
8,60	19	28	0,60	31,67
8,80	58	73	1,00	58,00
9,00	106	127	1,40	75,71
9,20	120	143	1,53	78,43
9,40	66	99	2,20	30,00
9,60	196	219	1,53	128,10
9,80	238	271	2,20	108,18
10,00	146	174	1,87	78,07
10,20	126	144	1,20	105,00

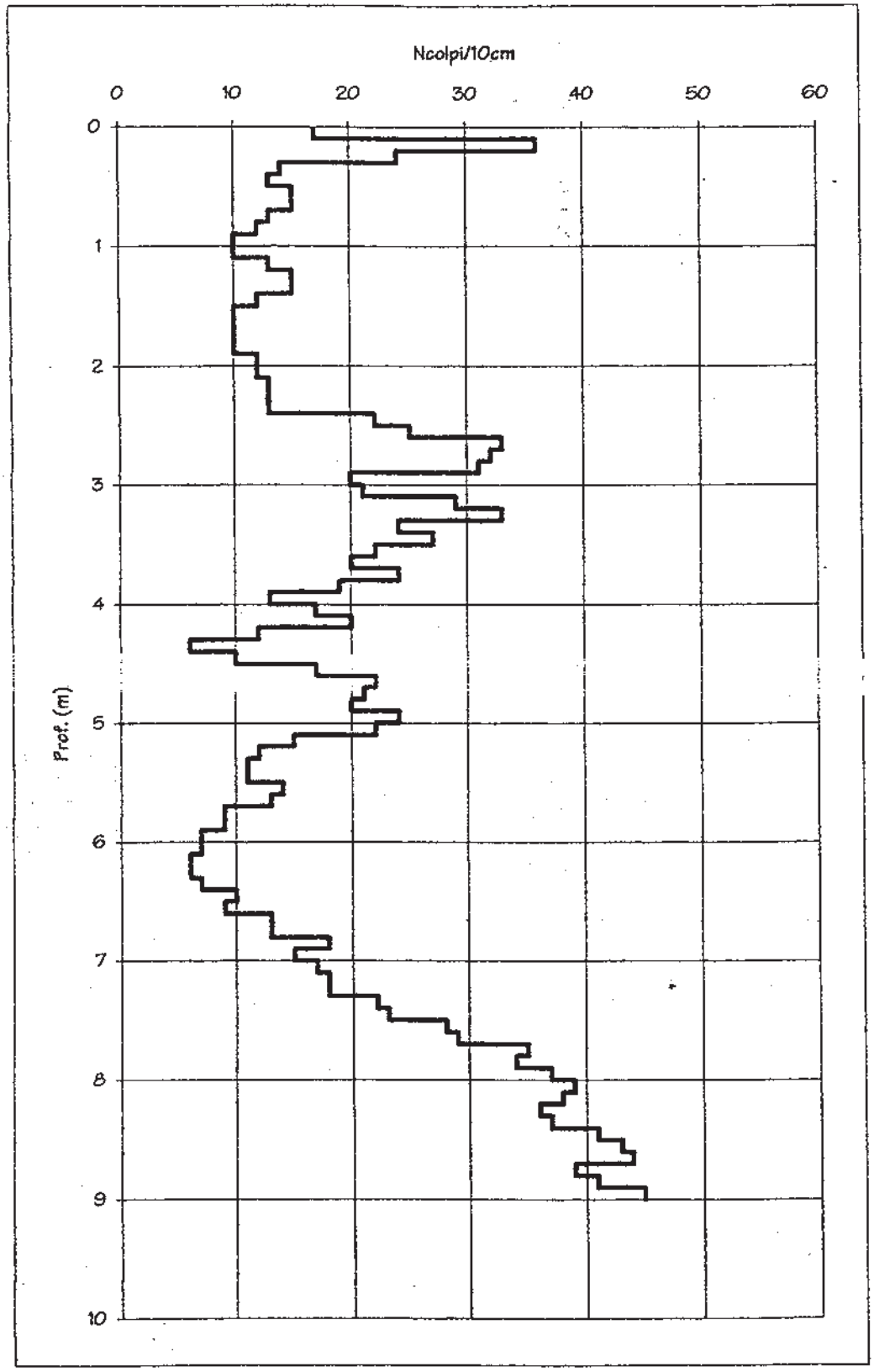
m.:Profondità; Qc:Resistenza alla Punta; Rl: Resistenza laterale totale; Fs:Resistenza specifica al Manicotto; Qc/Fs: Rapporto Begemann

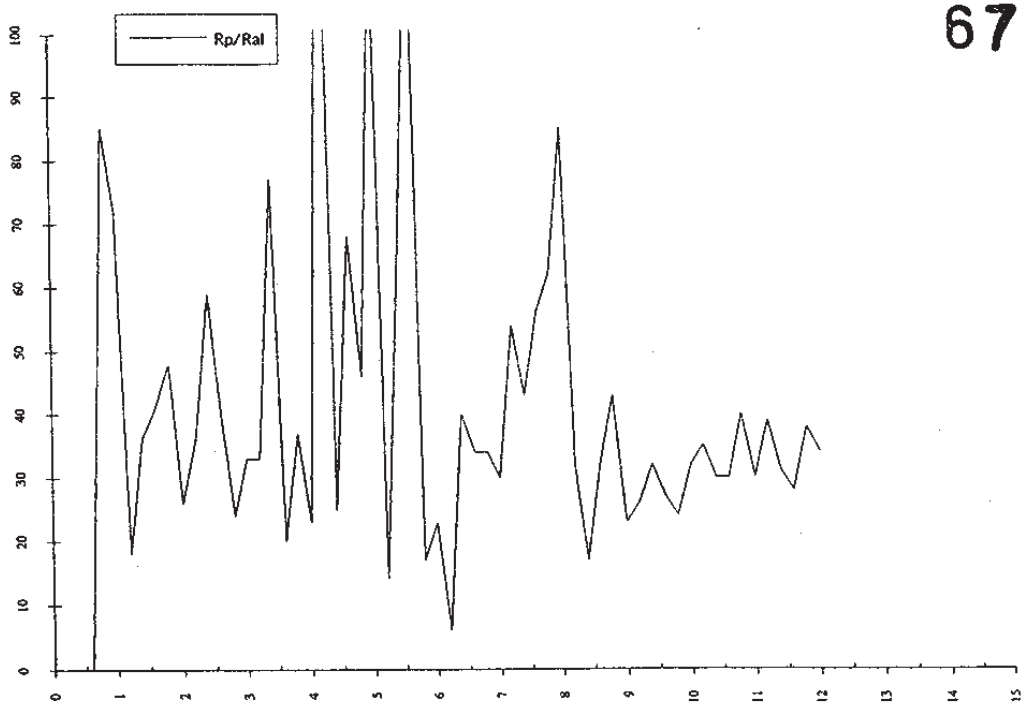
Committente: Costruzione Calamone

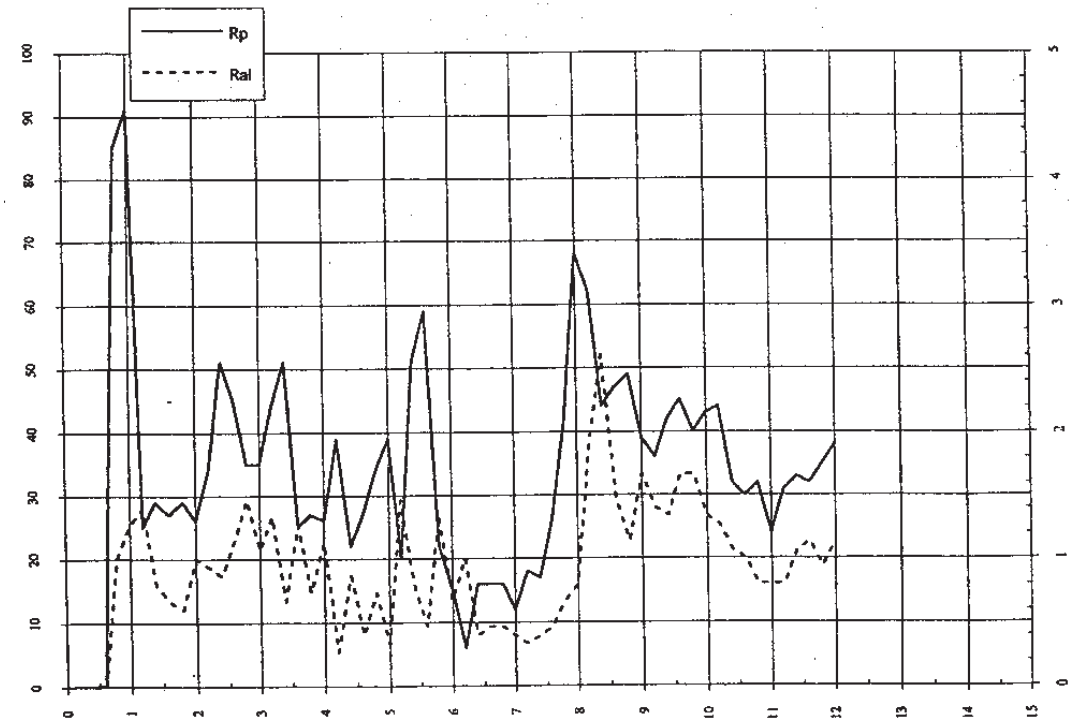
m.	Qc (dN/cm²)	Rl (dN/cm2)	Fs (dN/cm2)	Qc/Fs (%)
0,20	29	32	0,20	145,00
0,40	19	26	0,47	40,43
0,60	21	29	0,53	39,62
0,80	20	29	0,60	33,33
1,00	17	21	0,27	62,96
1,20	32	45	0,87	36,78
1,40	52	74	1,47	35,37
1,60	59	98	2,60	22,69
1,80	48	75	1,80	26,67
2,00	57	84	1,80	31,67
2,20	69	107	2,53	27,27
2,40	78	127	3,27	23,85
2,60	99	145	3,07	32,25
2,80	76	134	3,87	19,64
3,00	102	147	3,00	34,00
3,20	136	224	5,87	23,17
3,40	78	147	4,60	16,96
3,60	52	89	2,47	21,05
3,80	57	93	2,40	23,75
4,00	66	97	2,07	31,88
4,20	95	133	2,53	37,55
4,40	66	107	2,73	24,18
4,60	32	50	1,20	26,67
4,80	95	124	1,93	49,22
5,00	119	154	2,33	51,07
5,20	111	134	1,53	72,55
5,40	96	118	1,47	65,31
5,60	43	63	1,33	32,33
5,80	35	50	1,00	35,00
6,00	32	43	0,73	43,84
6,20	28	40	0,80	35,00
6,40	23	42	1,27	18,11
6,60	20	30	0,67	29,85
6,80	40	54	0,93	43,01
7,00	42	63	1,40	30,00
7,20	89	114	1,67	53,29
7,40	97	121	1,60	60,63
7,60	103	137	2,27	45,37
7,80	78	114	2,40	32,50
8,00	36	55	1,27	28,35
8,20	27	43	1,07	25,23
8,40	19	28	0,60	31,67
8,60	18	27	0,60	30,00
8,80	63	77	0,93	67,74
9,00	98	129	2,07	47,34
9,20	103	133	2,00	51,50
9,40	76	111	2,33	32,62
9,60	88	115	1,80	48,89
9,80	104	137	2,20	47,27
10,00	112	141	1,93	58,03
10,20	92	112	1,33	69,17

m.:Profondità; Qc:Resistenza alla Punta; Rl: Resistenza laterale totale; Fs:Resistenza specifica al Manicotto; Qc/Fs: Rapporto Begemann


Ncolpi/10cm
0
10
20
30
40
50
60
Prof. (m)
0
1
2
3
4
5
6
7
8
9
10


Ncolpi/10cm
0
10
20
30
40
50
60
0
1
2
3
4
5
6
7
8
9
10
Prof. (m)


Rp/Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15


Rp
Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
0
1
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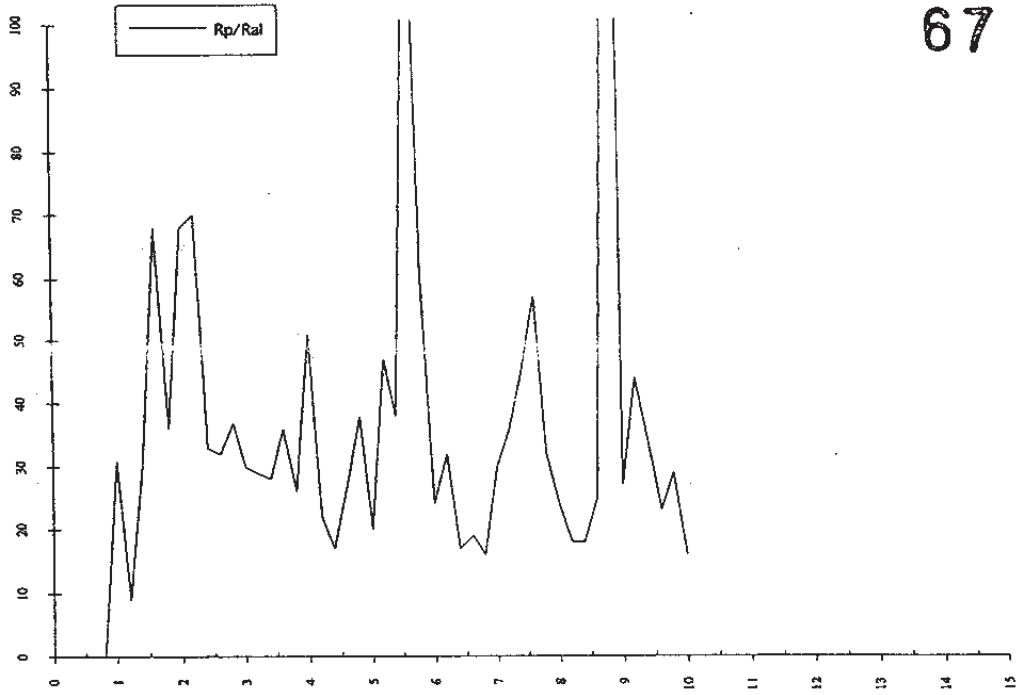
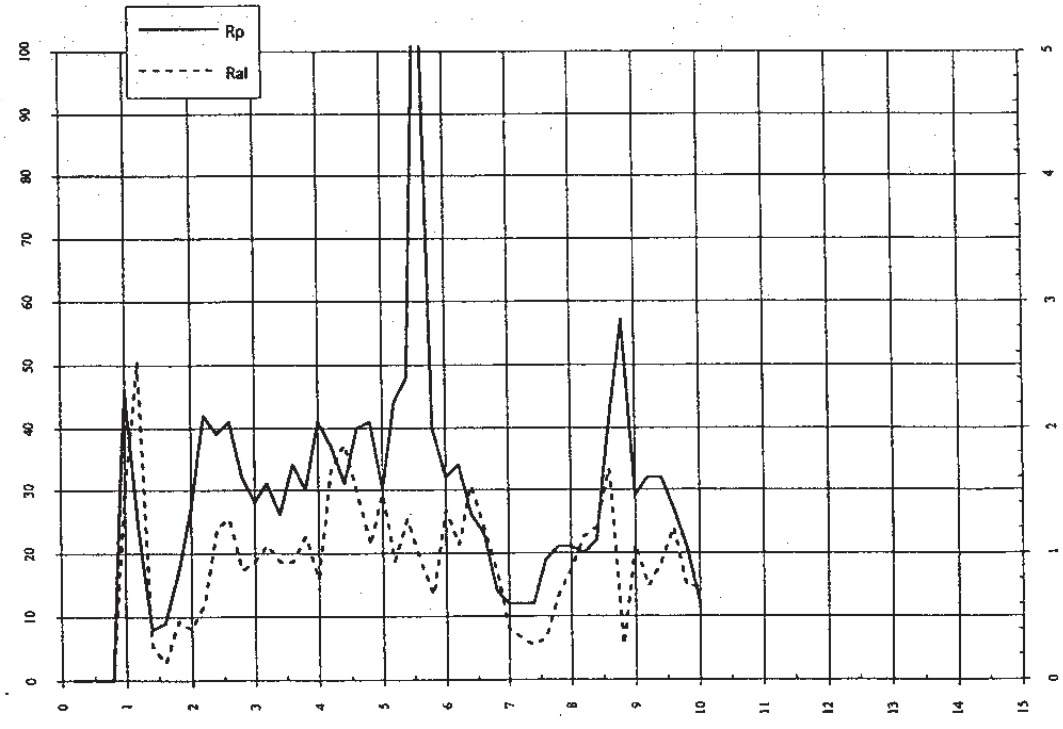
11
12
13
14
15


Rp/Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15


Rp
Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
0
1
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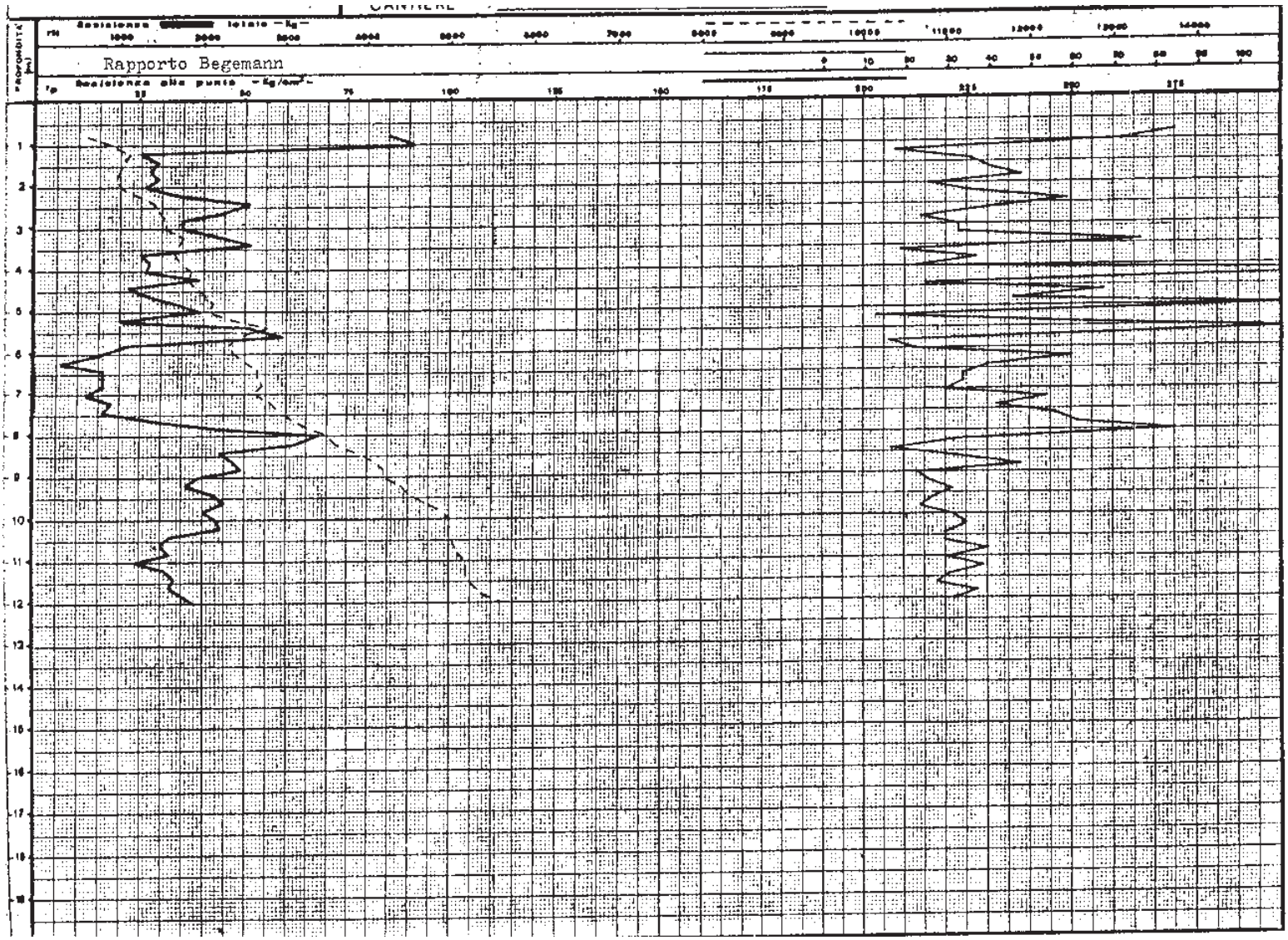
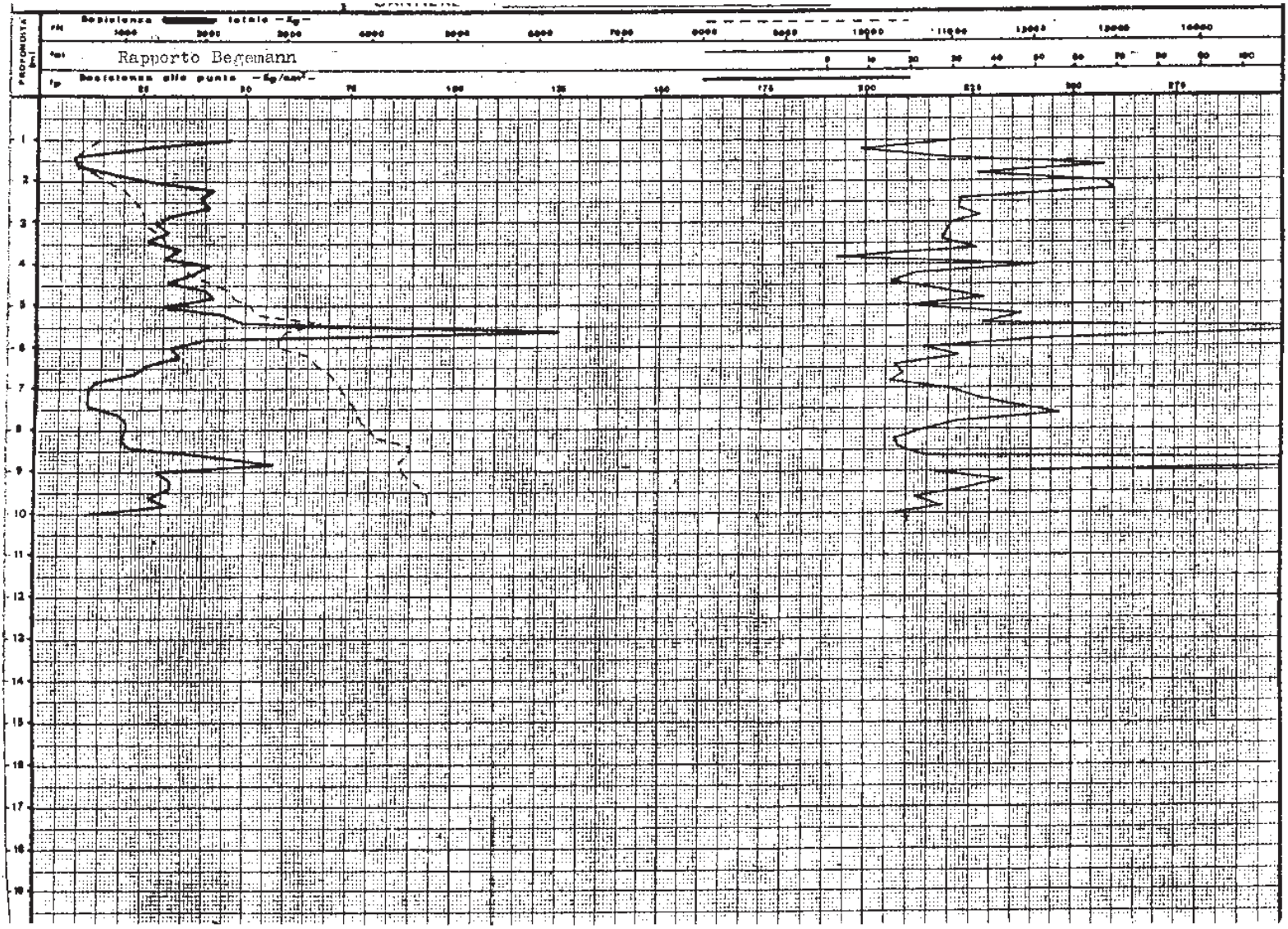
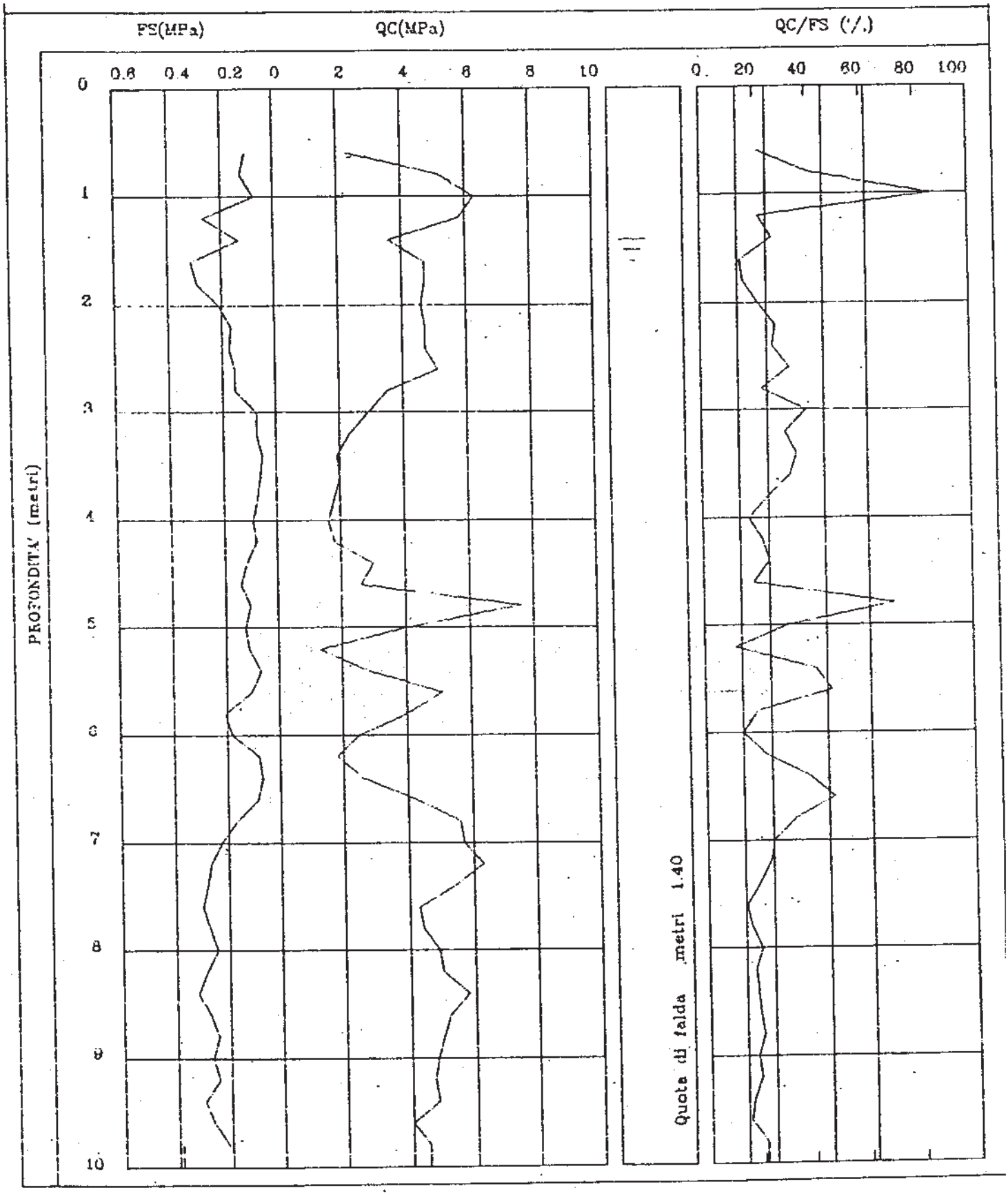
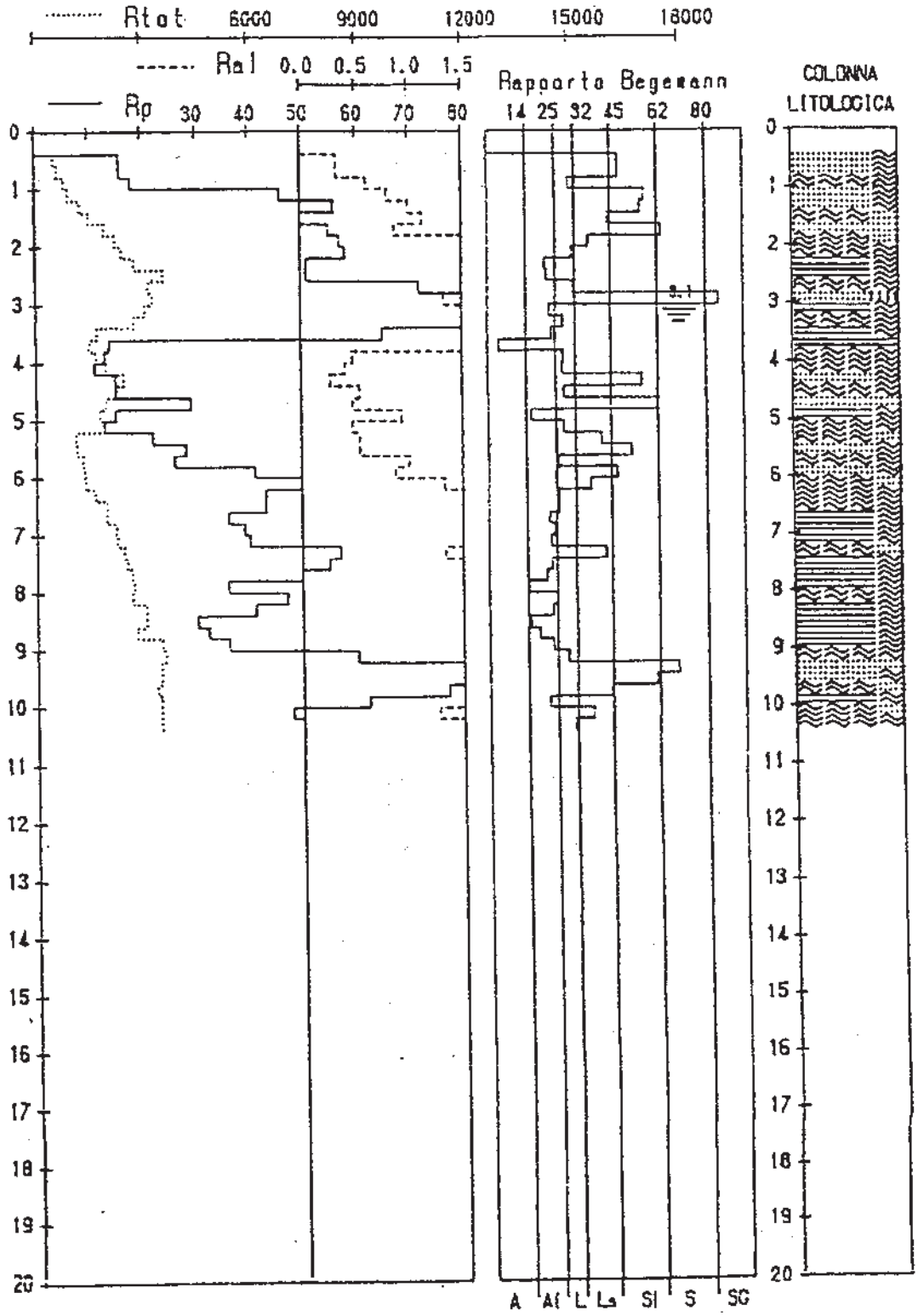
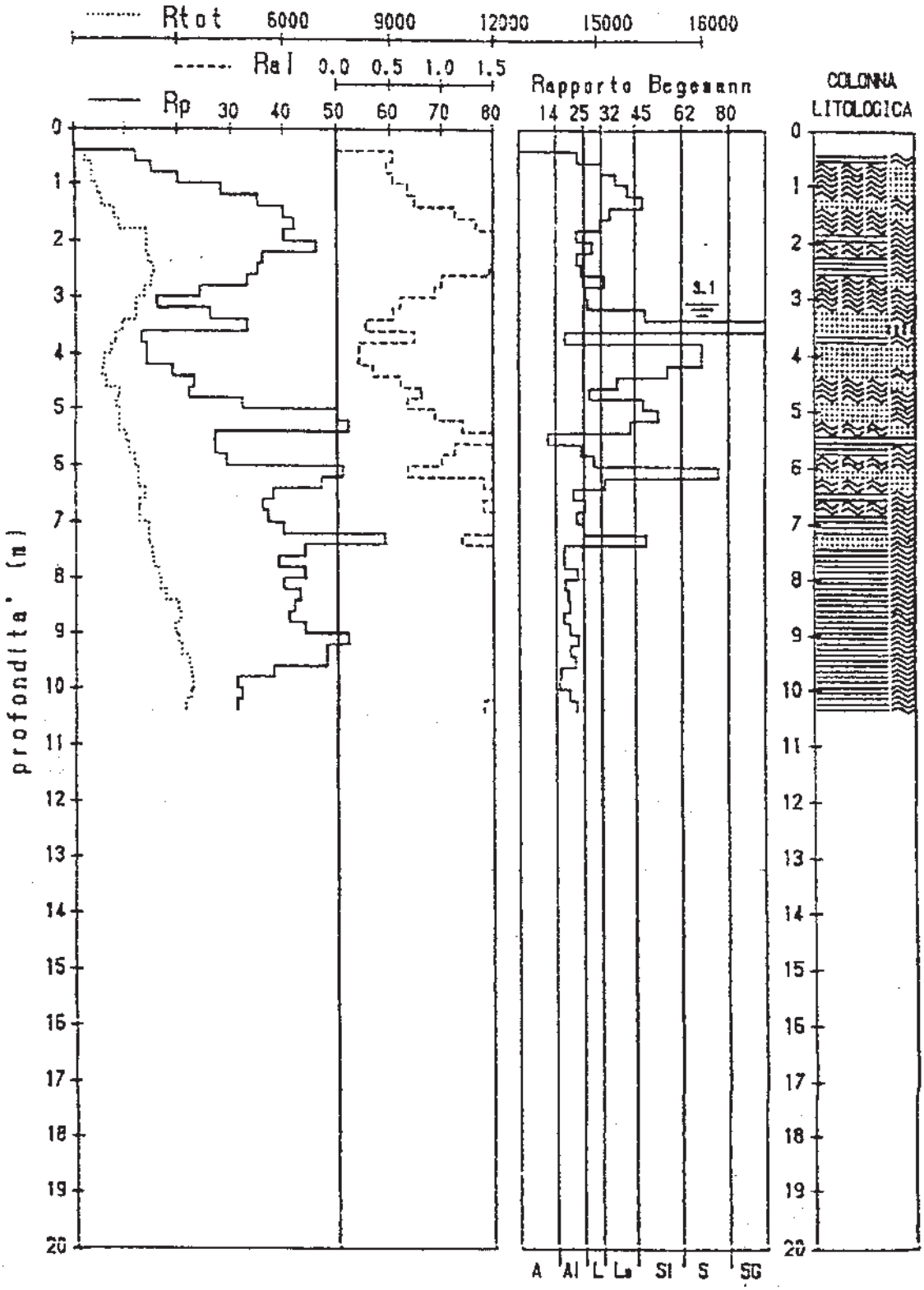
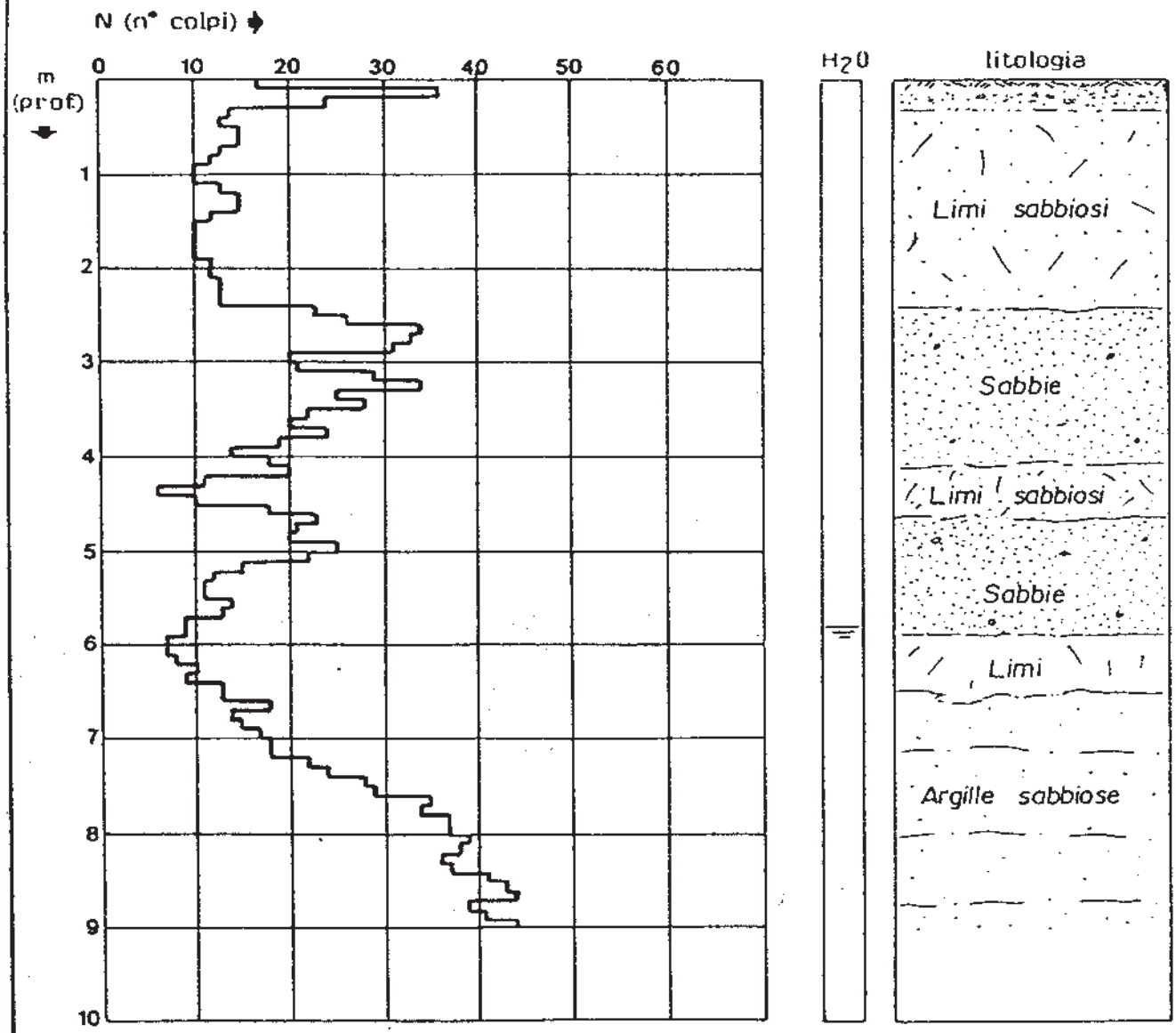

Rapporto Begemann


PROFONDITÀ
Resistenza totale
Rapporto Begemann
Resistenza alla punta


FS(MPa)
QC(MPa)
QC/FS (%)
0.6 0.4 0.2 0
2 4 6 8 10
0 20 40 60 80 100
PROFONDITA' (metri)
0
1
2
3
4
5
6
7
8
9
10
Quota di falda metri 1.40


Rtot
6000
9000
12000
15000
18000
Ral
0.0 0.5 1.0 1.5
Rp
30 40 50 60 70 80
Rapporto Begemann
14 25 32 45 62 80
COLONNA LITOLOGICA
A
Al
L
La
Sl
S
SG

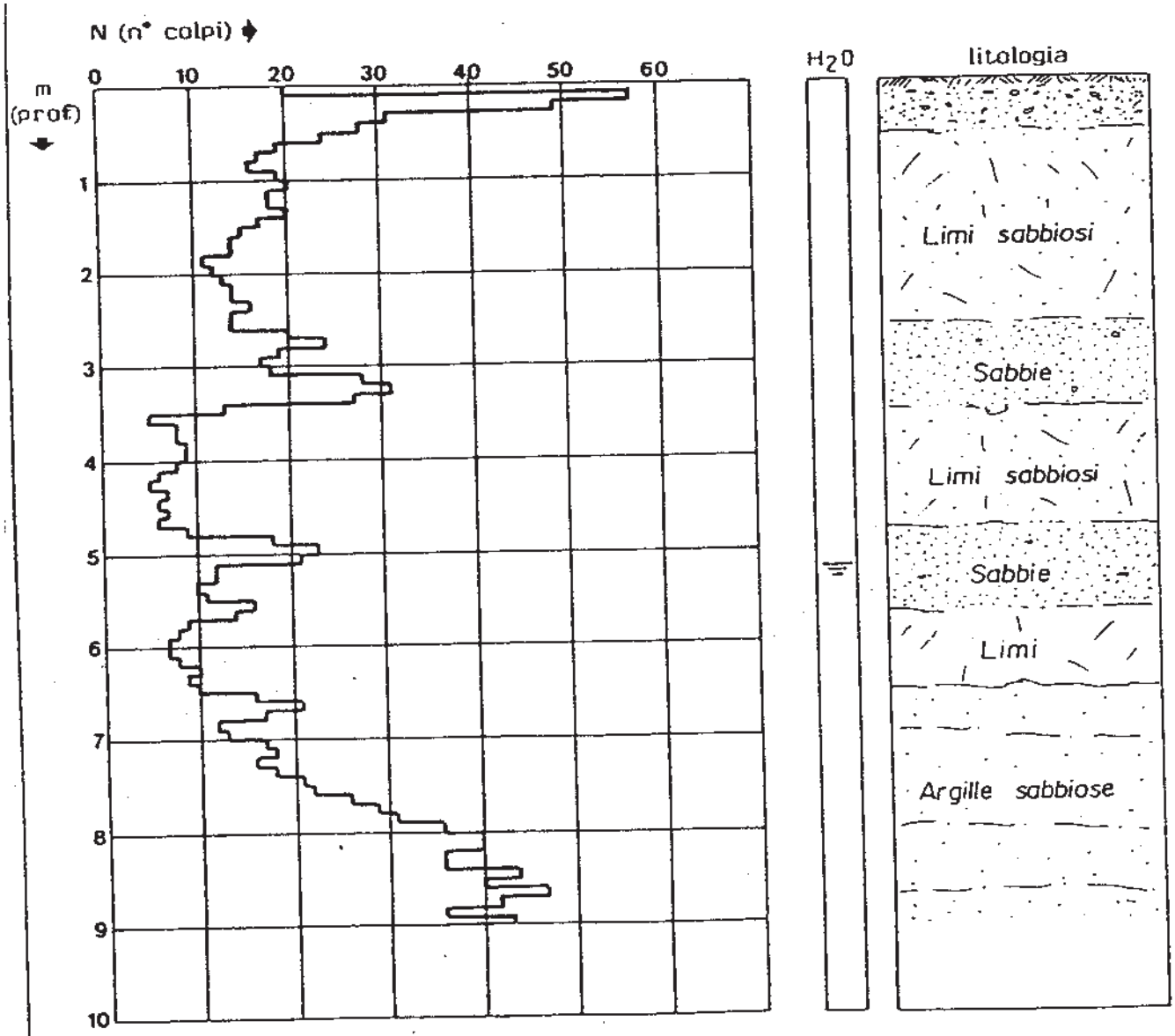

Rtot
6000
9000
12000
15000
16000
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
COLONNA LITOLOGICA
profondita' (m)
A
Al
L
La
Sl
S
SG



CARATTERISTICHE STRUMENTALI

PENETROMETRO DINAMICO MEDIO (ISSMFE 1988)

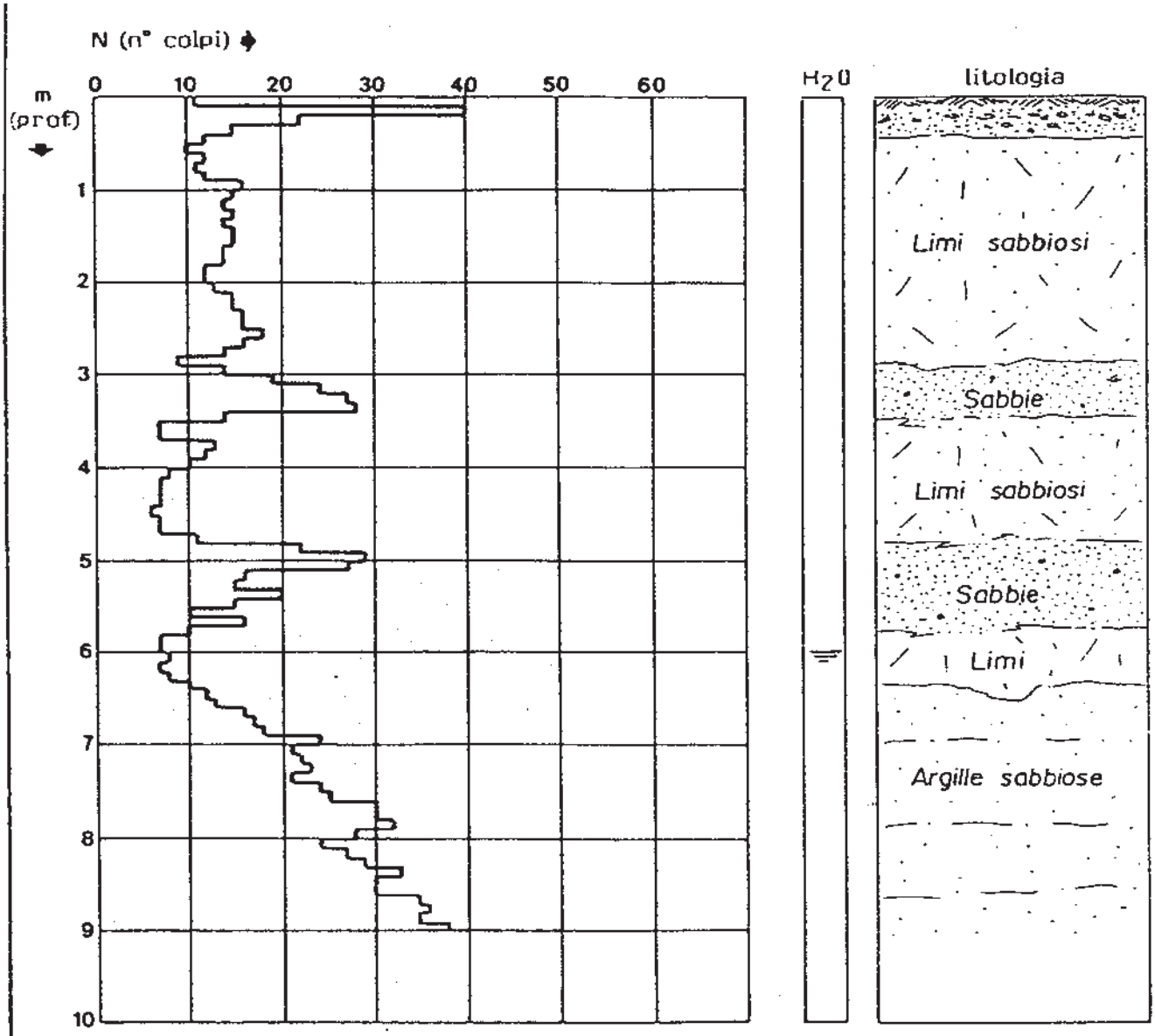
Maglio: peso=63 kg, altezza di caduta=20 cm - Testata d'infissione: 11 kg - Aste di sondaggio: peso=2,1 kg/m, Ø=20 mm - Punta conica: apertura del cono=60°, sezione=10 cm², Ø max=35,7 mm, altezza della parte cilindrica=7 mm - Avanzamento punta=10cm



CARATTERISTICHE STRUMENTALI

PENETROMETRO DINAMICO MEDIO (DSPHE 1986)

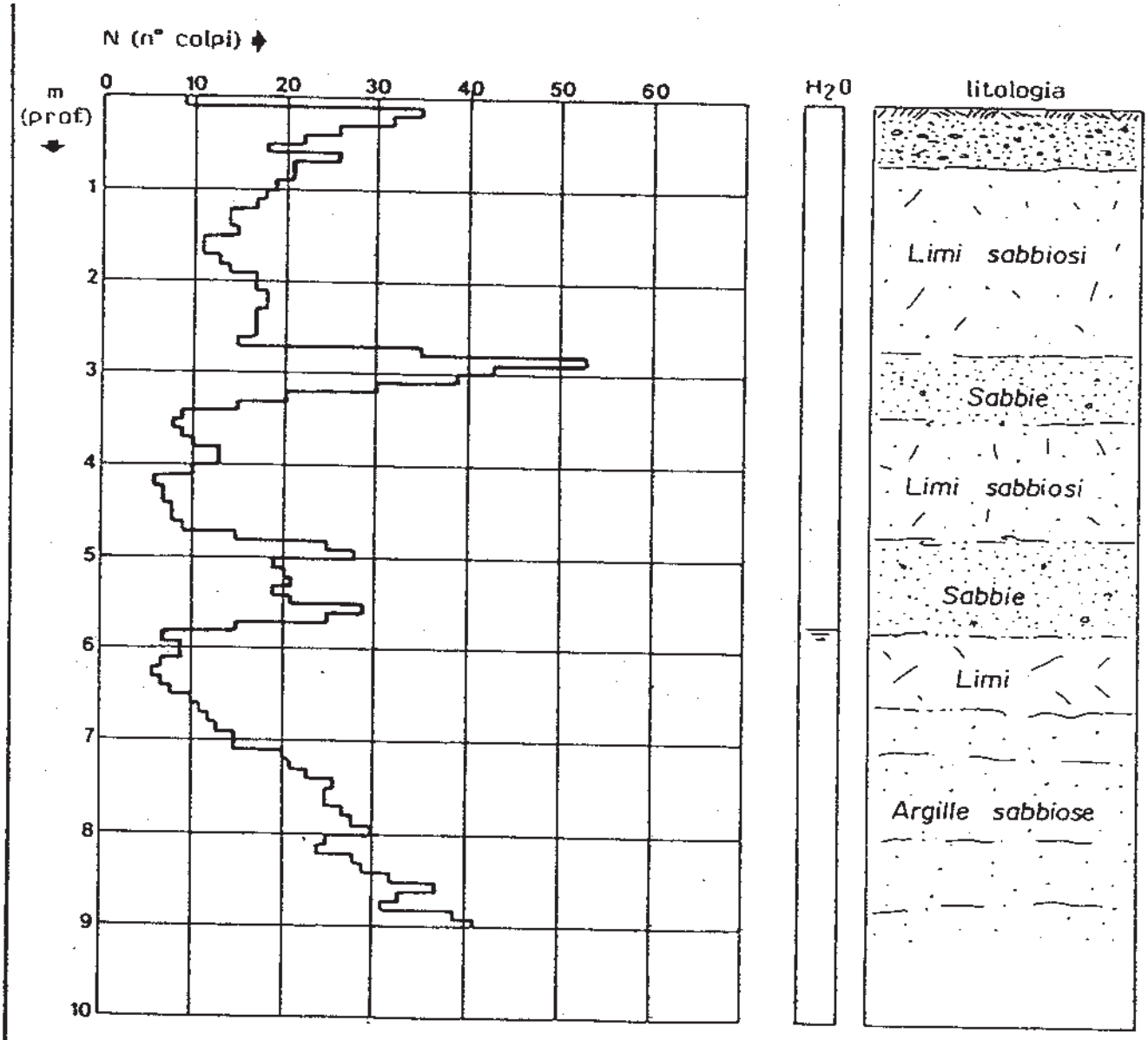
Maglio: peso=30 kg, altezza di caduta=20 cm - Testata d'infissione: 13 kg - Aste di sondaggio: peso=2,3 kg/m, ø=30 mm - Punta conica: apertura del cono=60°, sezione=10 cm², ø max=35,7 mm, altezza della parte cilindrica=1 mm - Avanzamento punta=10cm



CARATTERISTICHE STRUMENTALI

PENETROMETRO DINAMICO MEDIO (ISSMFE 1988)

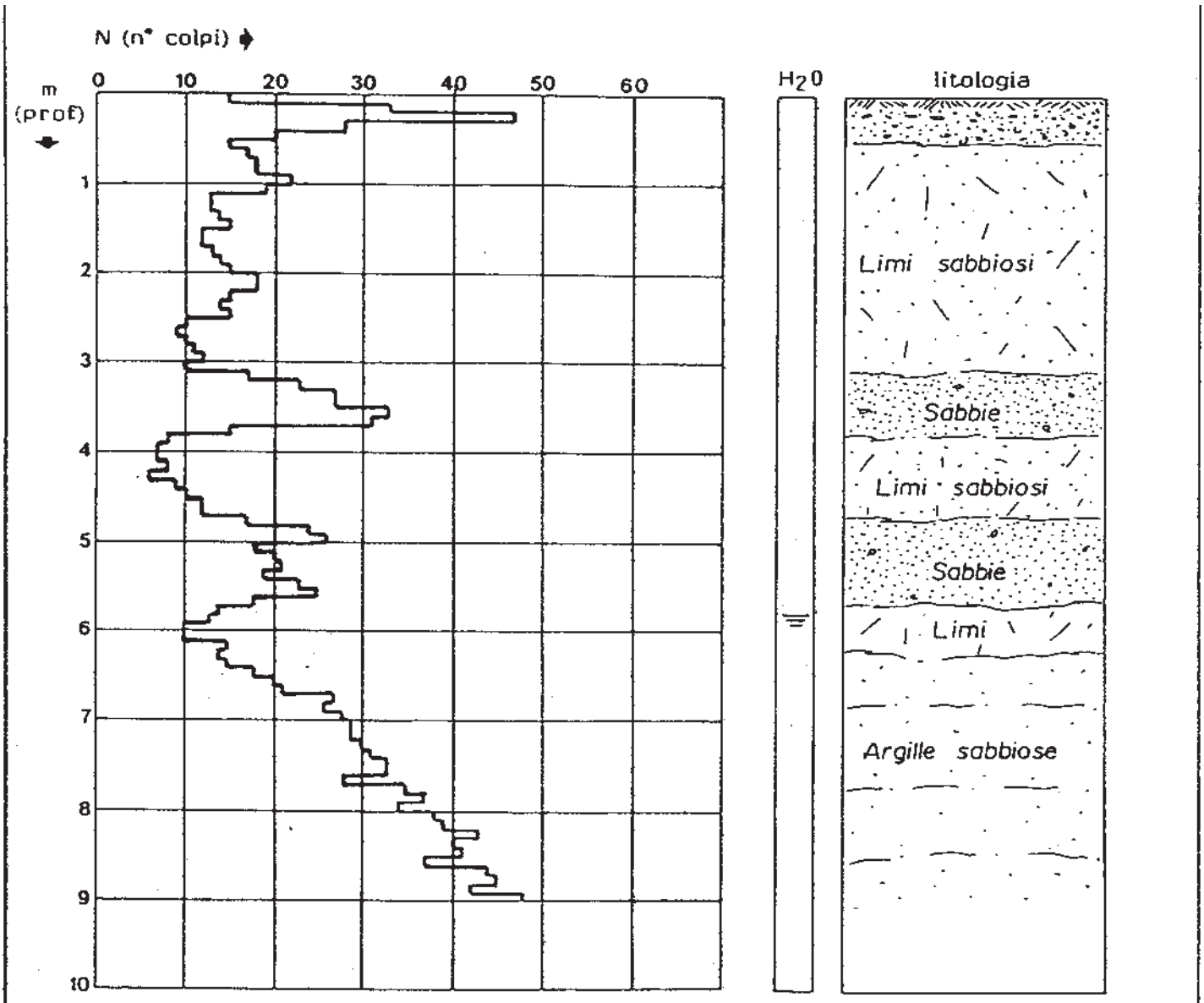
Maglio: peso=10 kg, altezza di caduta=20 cm - Testata d'infissione: 13 kg - Aste di sondaggio: peso=2,3 kg/m, Ø=28 mm - Punta conica: apertura del cono=60°, sezione=10 cm², Ø max=35,7 mm, altezza della parte cilindrica=4 mm - Avanzamento punta=10cm



CARATTERISTICHE STRUMENTALI

PENETROMETRO DINAMICO MEDIO (DSPHE Med)

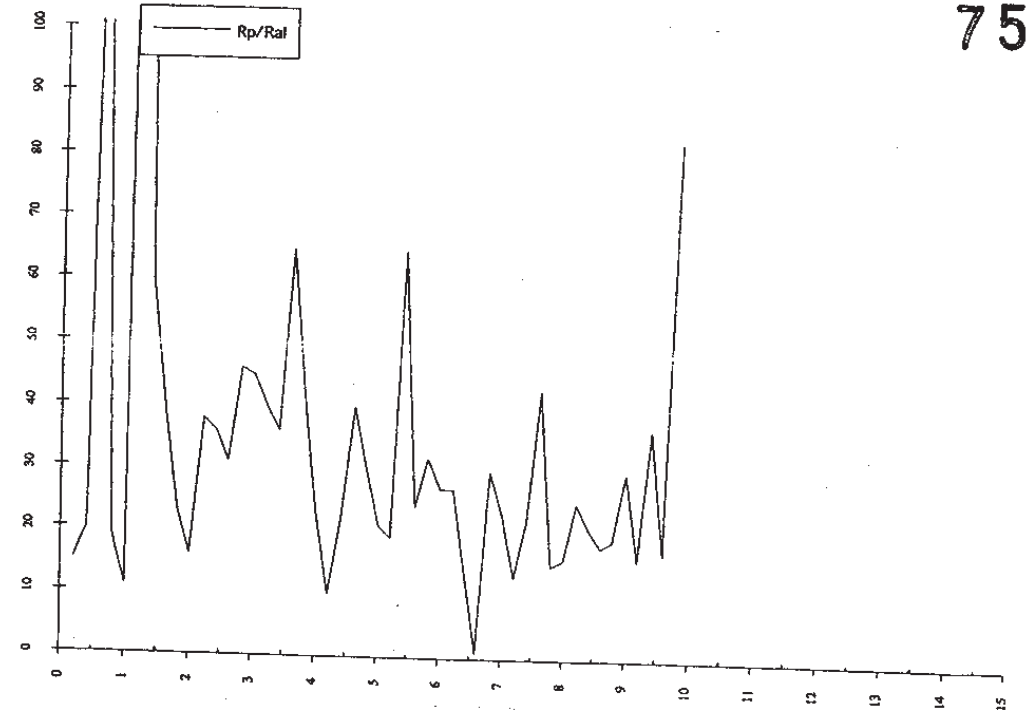
Maglio: peso-30 kg, altezza di caduta-20 cm - Testata d'infissione: 13 kg - Aste di sondaggio: peso-2,9 kg/m, Ø-20 mm - Punta conica: apertura del cono-60°, base-10 cm, Ø max-35,7 mm, altezza della parte cilindrica-4 cm - Avanzamento punta-10cm

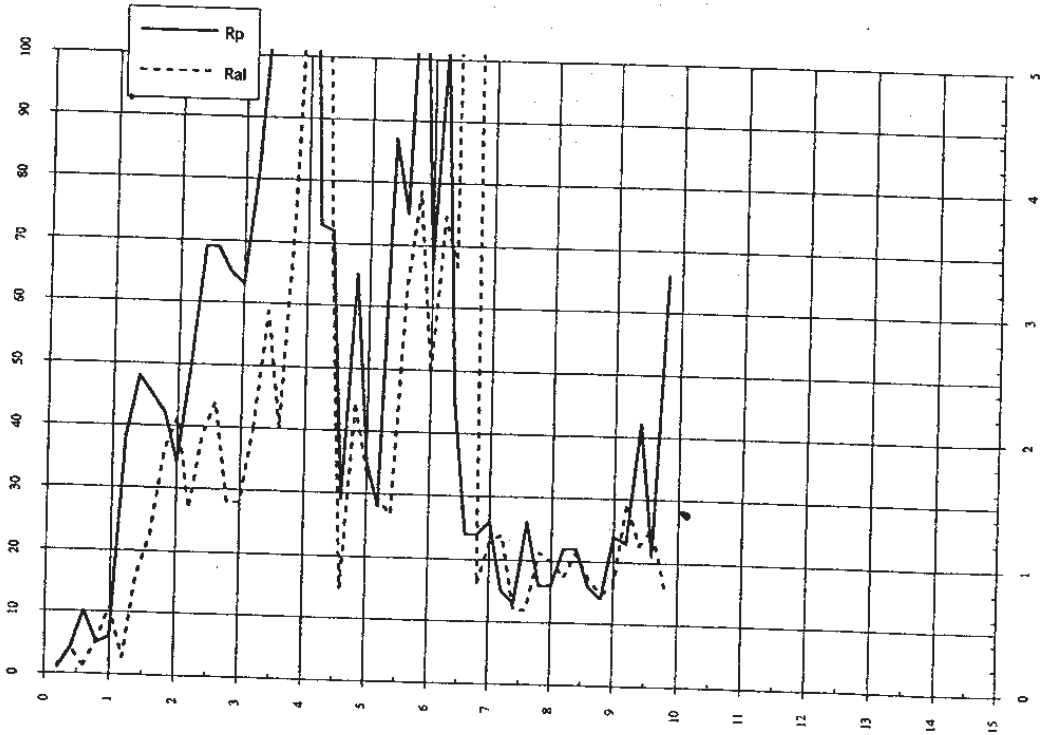


CARATTERISTICHE STRUMENTALI

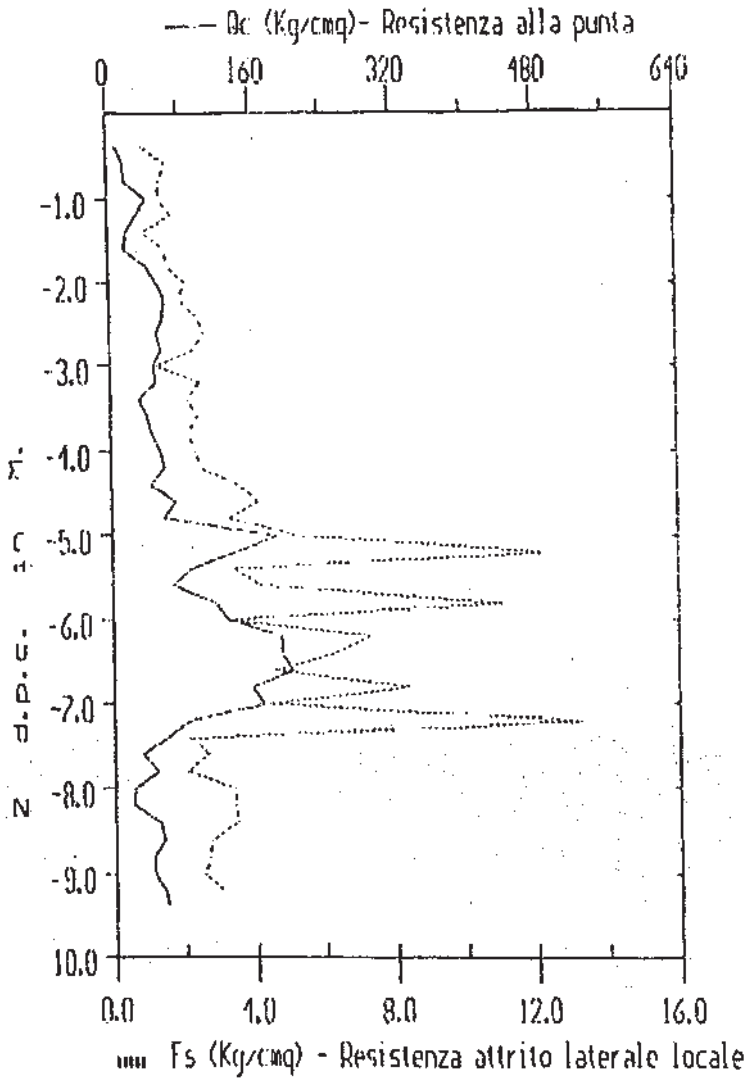
PENETROMETRO DINAMICO MEDIO (ISSMFE 1988)

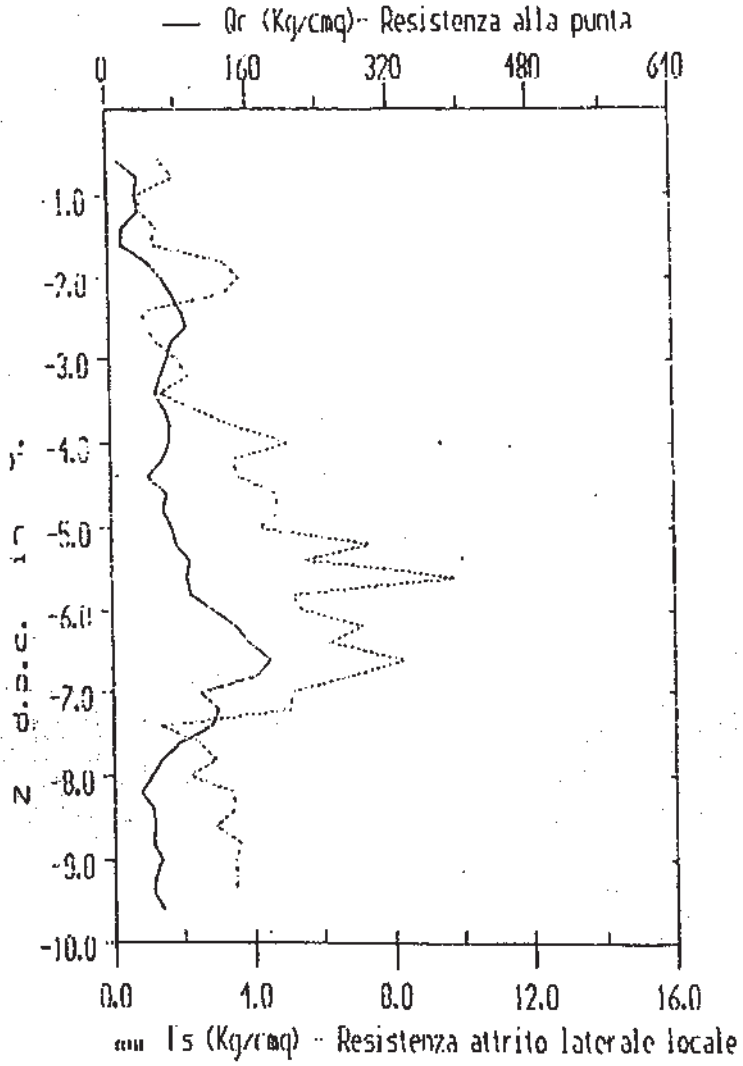
Maglio: peso=10 kg, altezza di caduta=20 cm - Testata d'infissione: 11 kg - Aste di sondaggio: peso=2,1 kg/m, Ø=20 mm - Punta conica: apertura del cono=60°, sezione=10 cmq, Ø max=35,7 mm, altezza della parte cilindrica=9 mm - Avanzamento punta=10cm

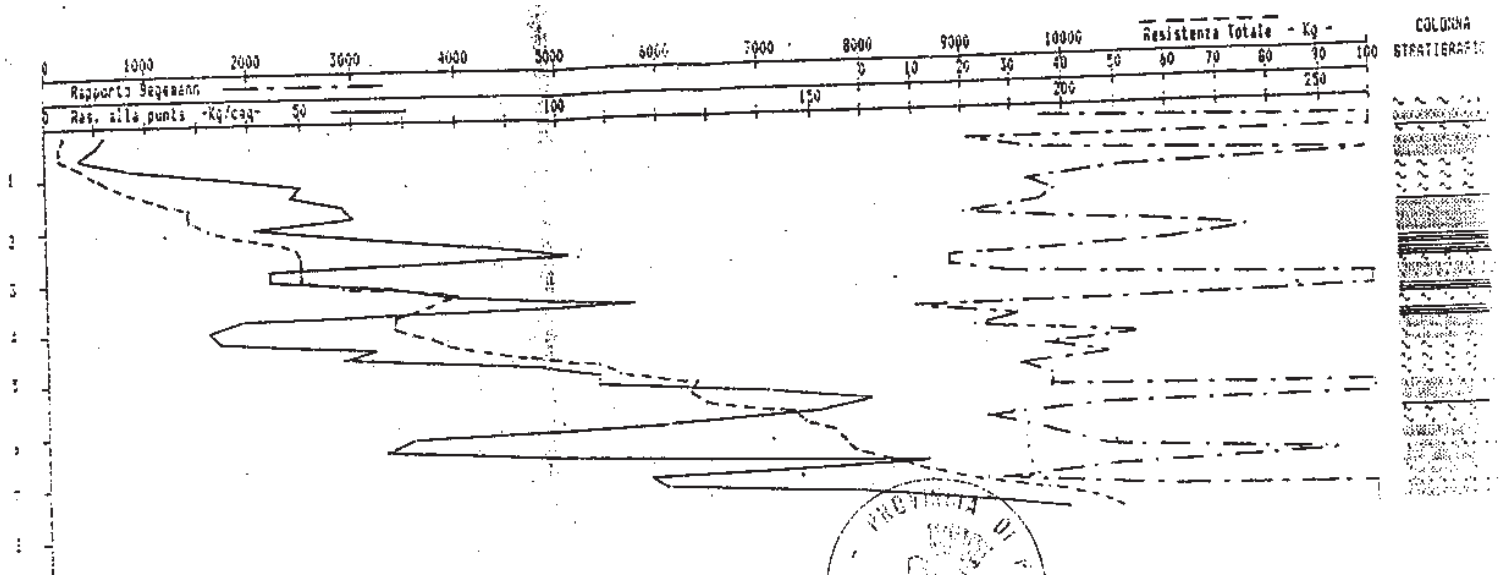

Rp/Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

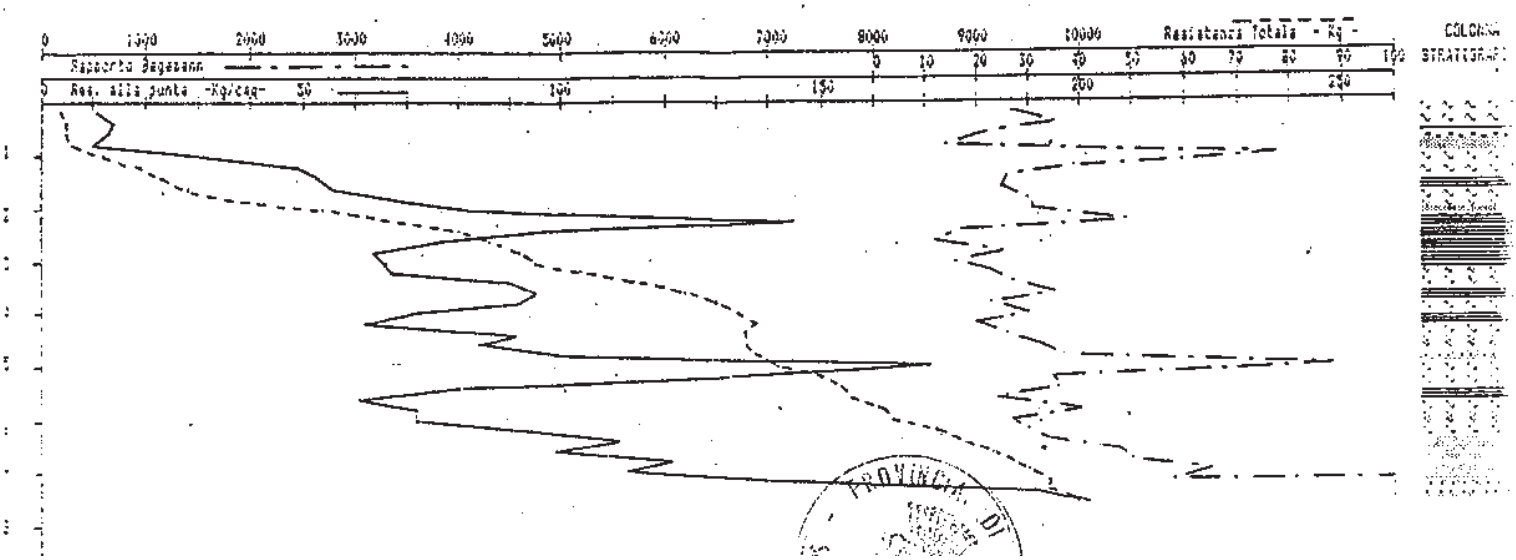

Rp
Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
0
1
2
3
4
5

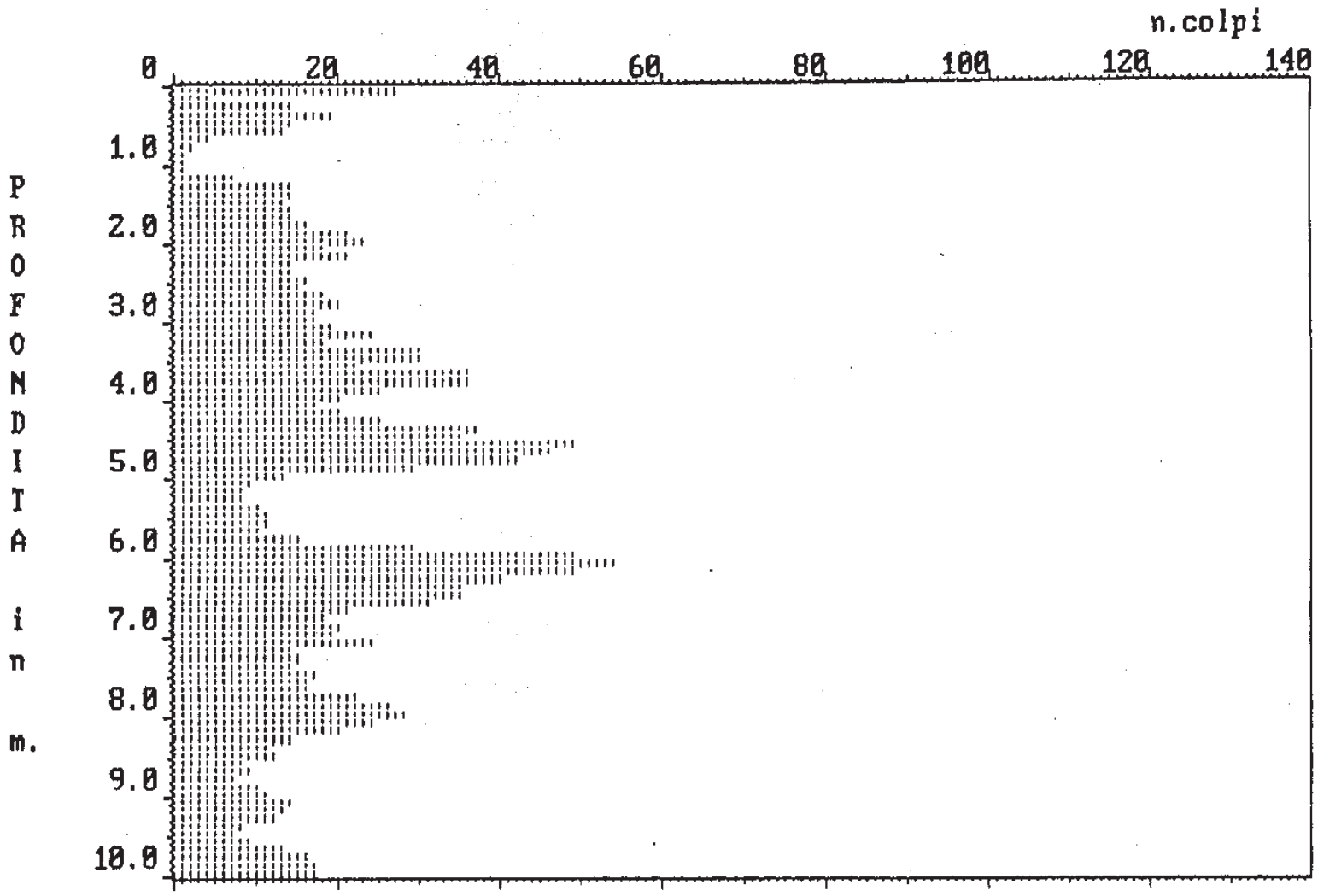
PENETROMETRIA CPT



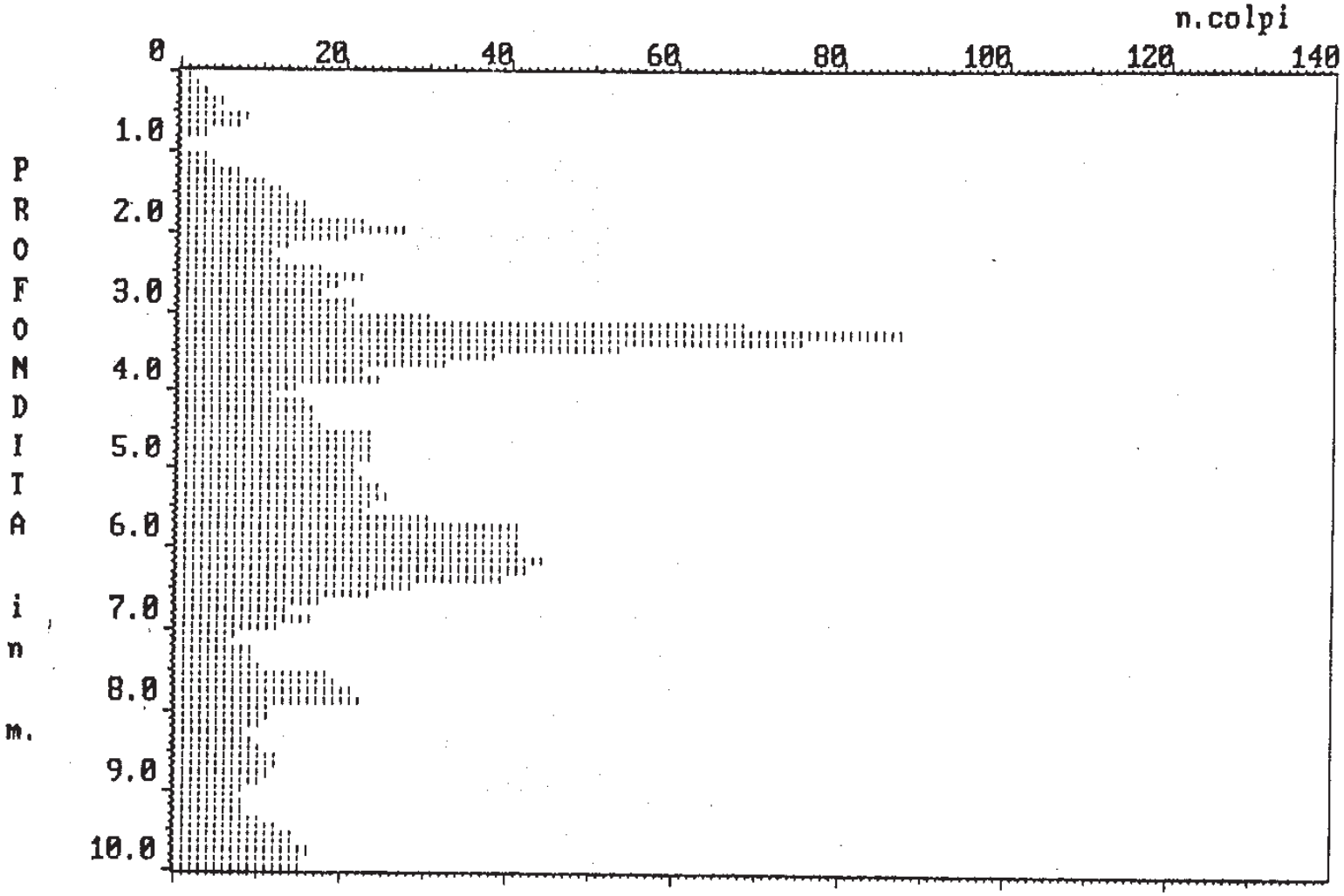

Qr (Kg/cmq)- Resistenza alla punta
0
160
320
480
640
-1.0
-2.0
-3.0
-4.0
-5.0
-6.0
-7.0
-8.0
-9.0
-10.0
0.0
4.0
8.0
12.0
16.0
Fs (Kg/cmq) - Resistenza attrito laterale locale


Resistenza Totale - Kg -
COLONNA STRATIGRAFICA
Rapporto Begemann
Res. alla punta -Kg/cmq-

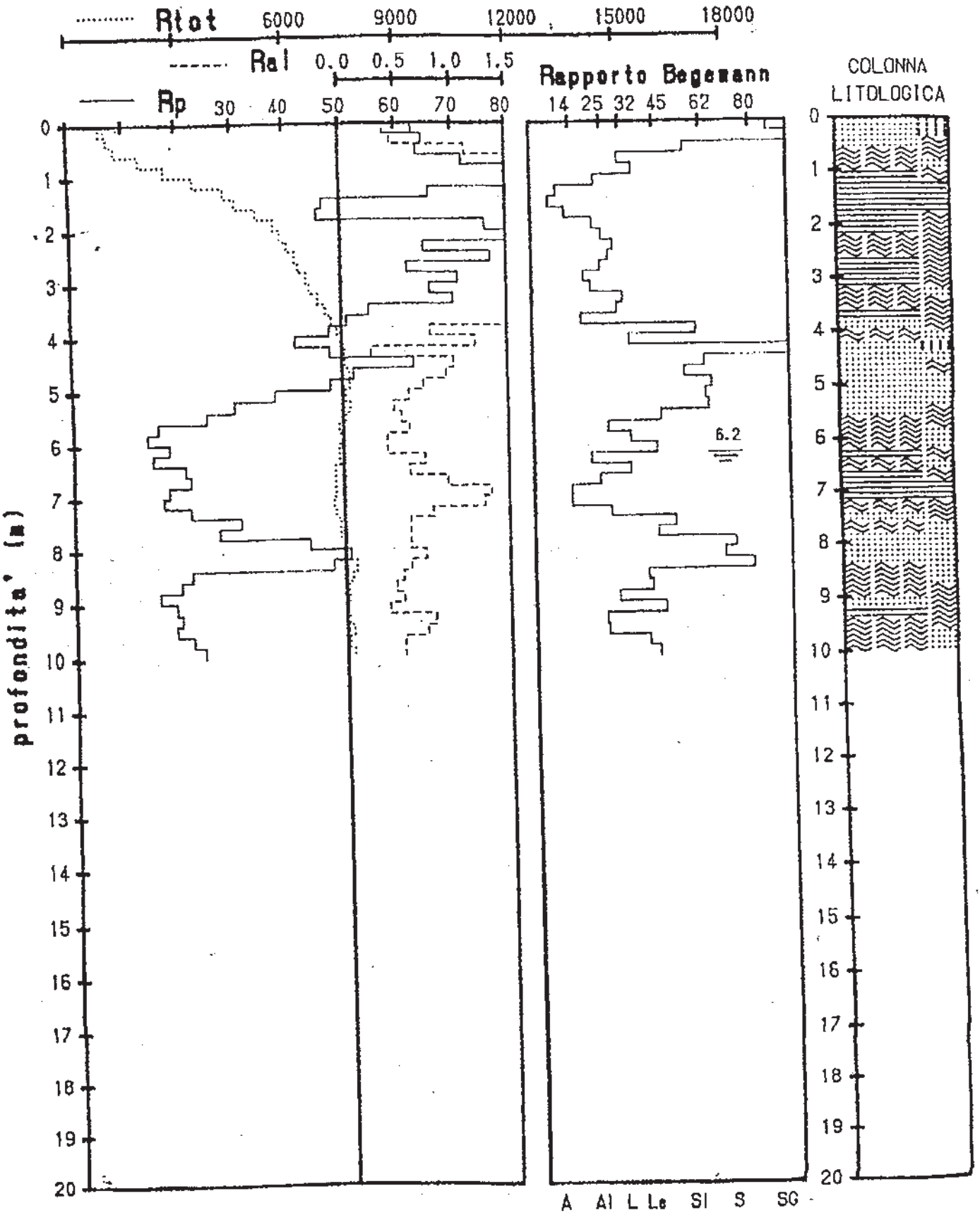

0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
Resistenza Totale - Kg -
COLONNA STRATIGRAFICA
Resistenza Laterale
0
10
20
30
40
50
60
70
80
90
100
Res. alla punta -Kg/cmq-
50
100
150
200
250

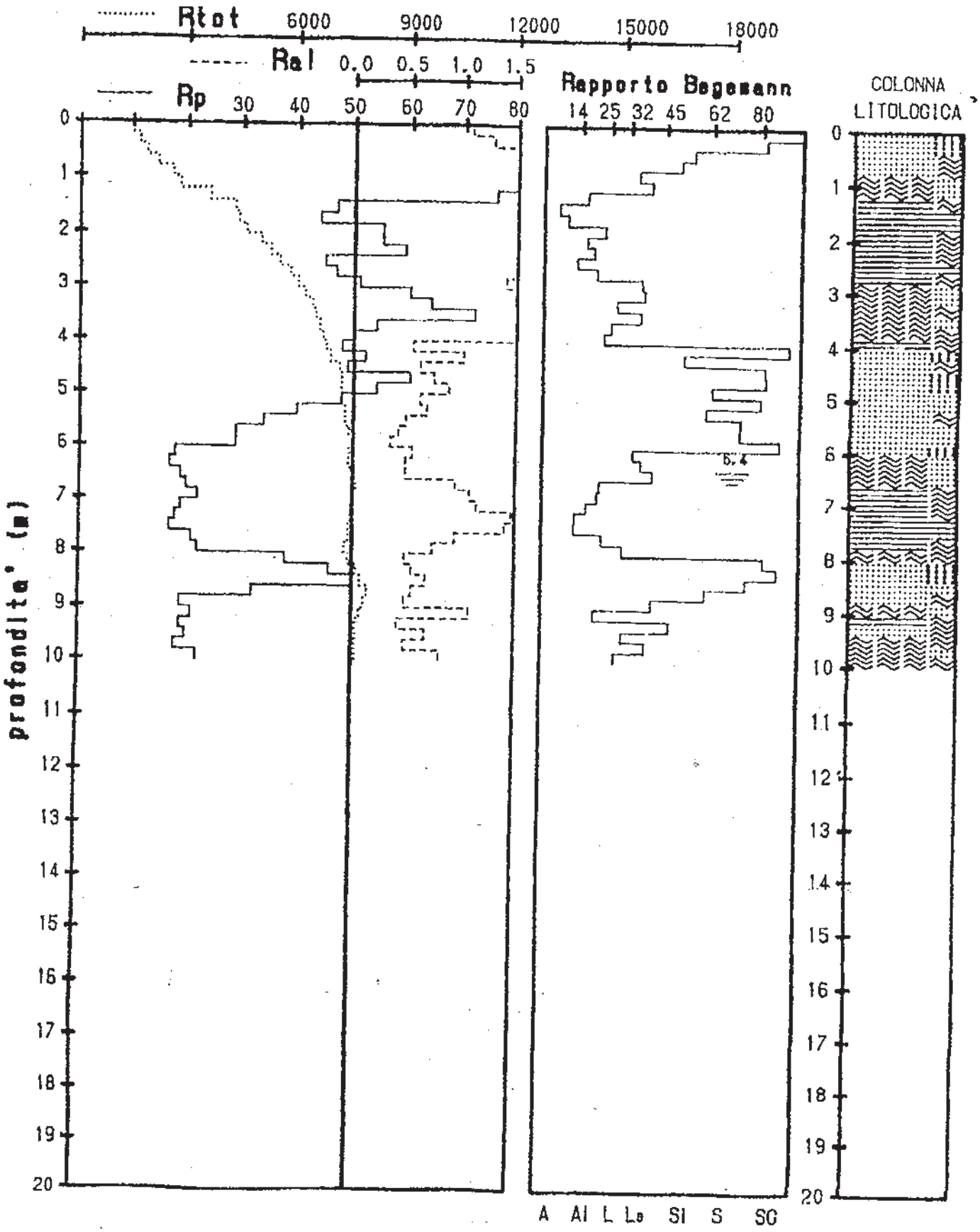


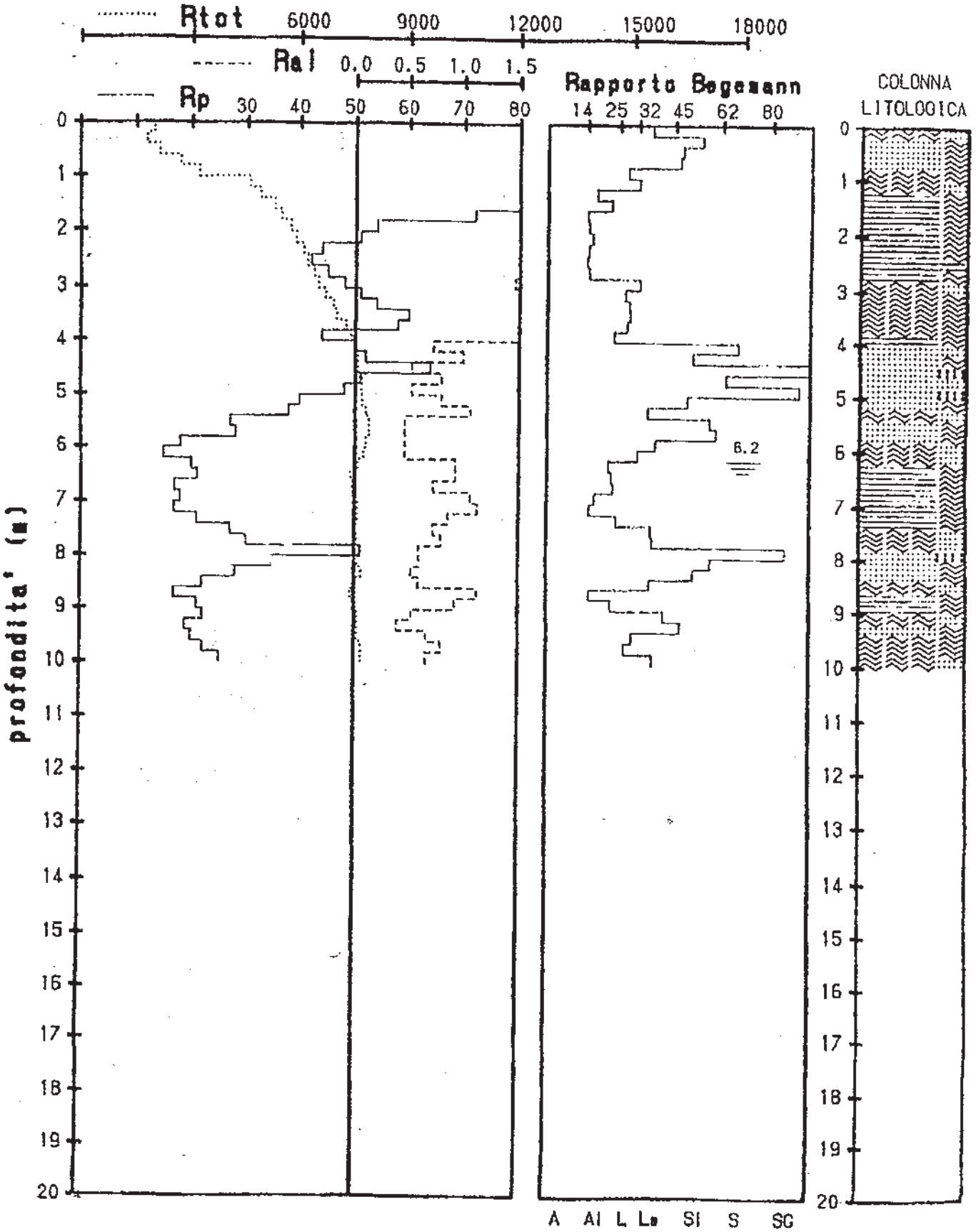
Resistenza : punta (¦ 1 colpo/10 cm.) rivestimento (—)

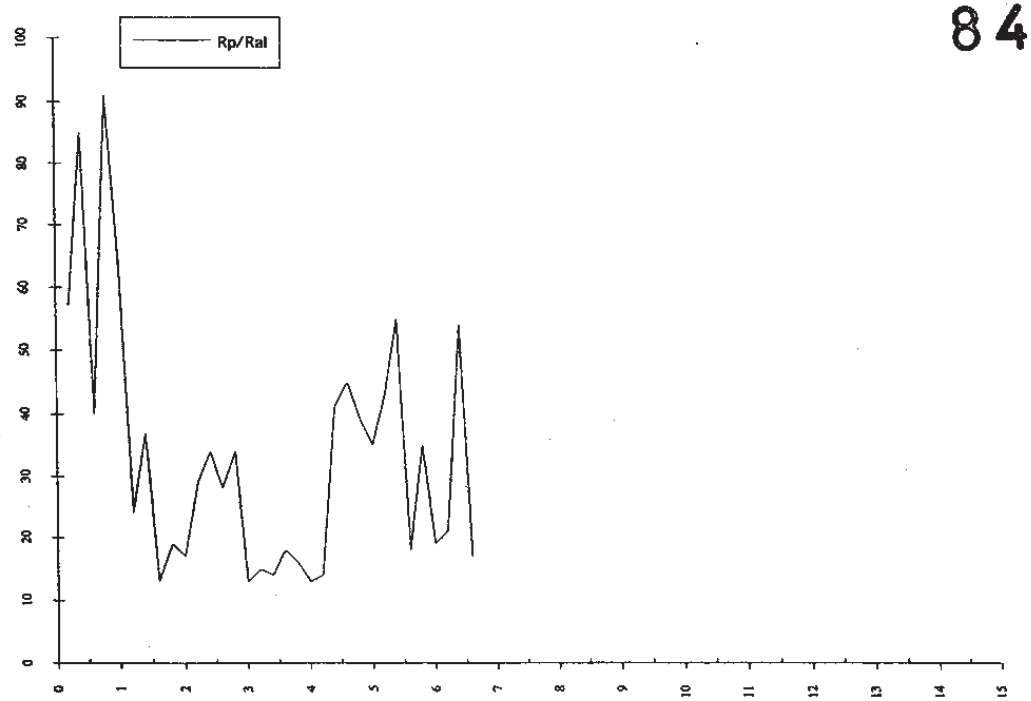


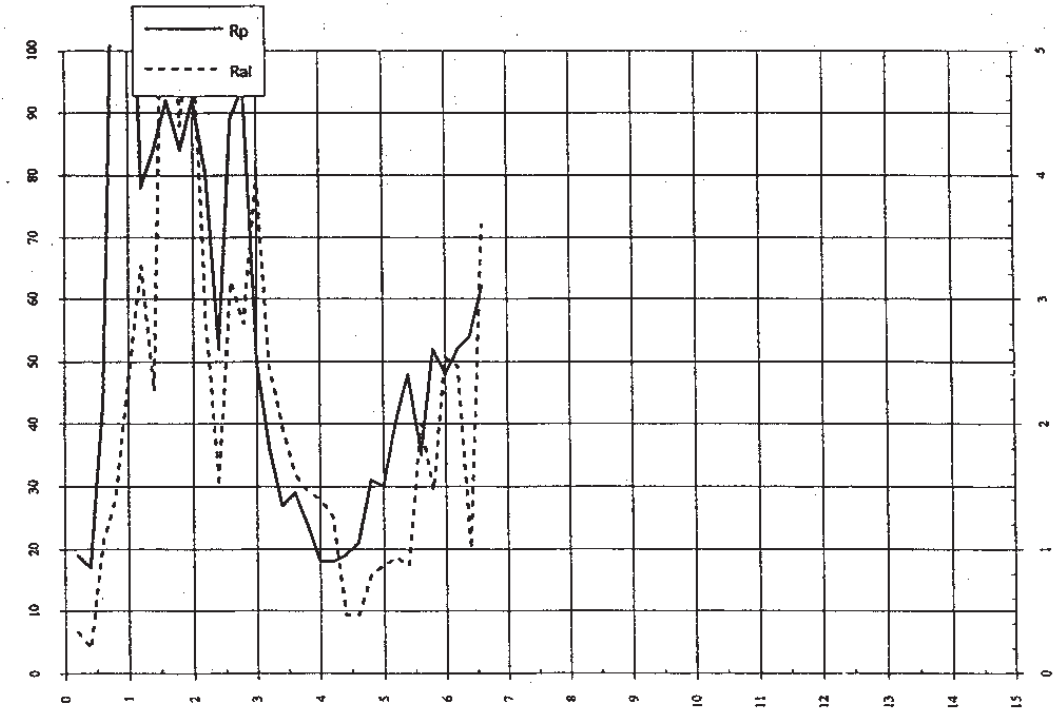
Resistenza : punta (I 1 colpo/10 cm.) rivestimento (—)

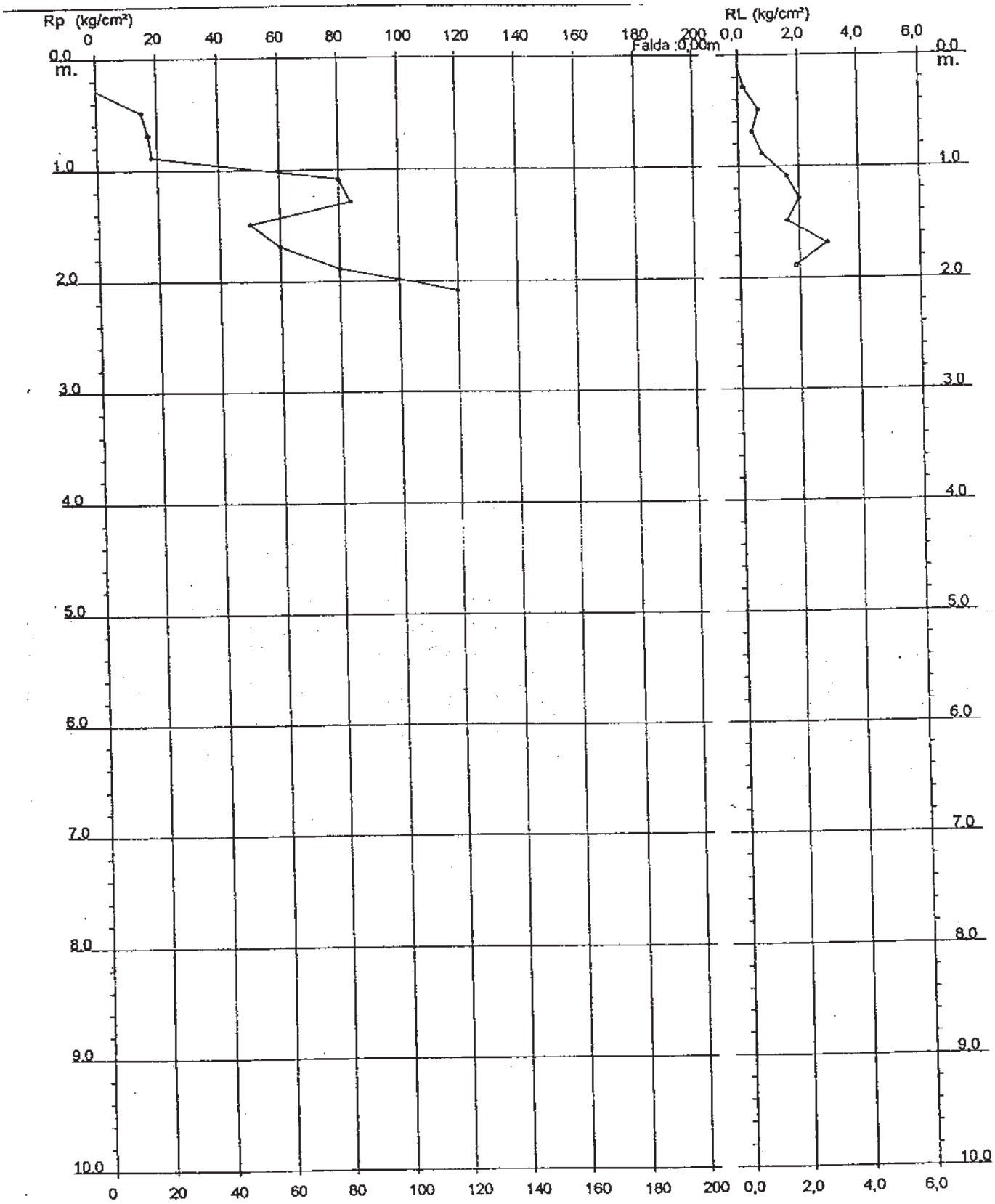

Rtot
6000
9000
12000
15000
18000
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
COLONNA LITOLOGICA
profondita' (m)
6.2
A
Al
L
Le
Sl
S
SG


Rtot
6000
9000
12000
15000
18000
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
COLONNA LITOLOGICA
profondita' (m)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
Al
L
Ls
Sl
S
SG

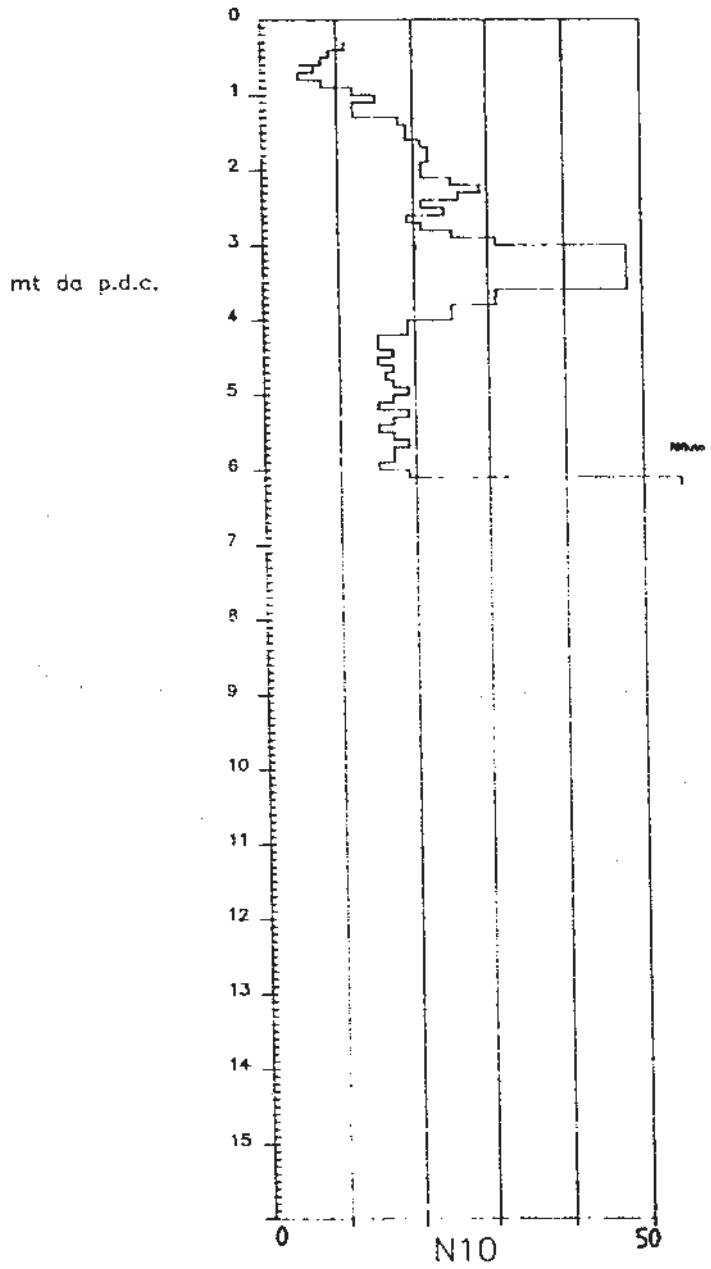

Rtot
6000
9000
12000
15000
18000
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
COLONNA LITOLOGICA
profondita' (m)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
6.2
A
Al
L
La
Sl
S
SC


Rp/Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

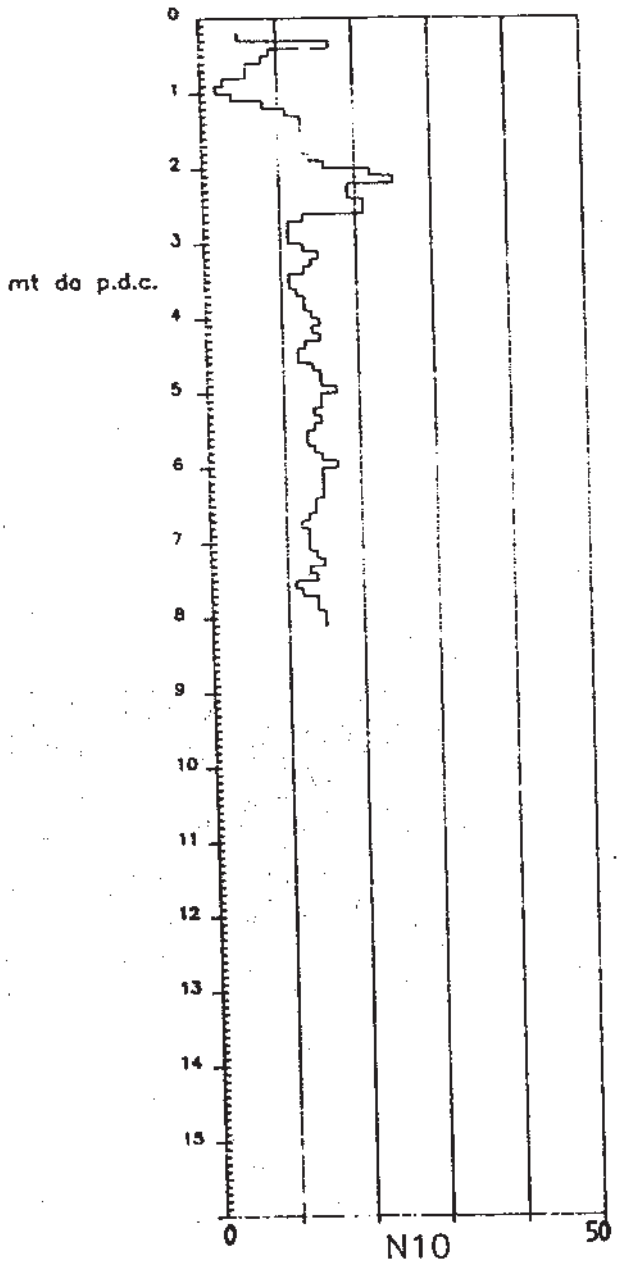

Rp
Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

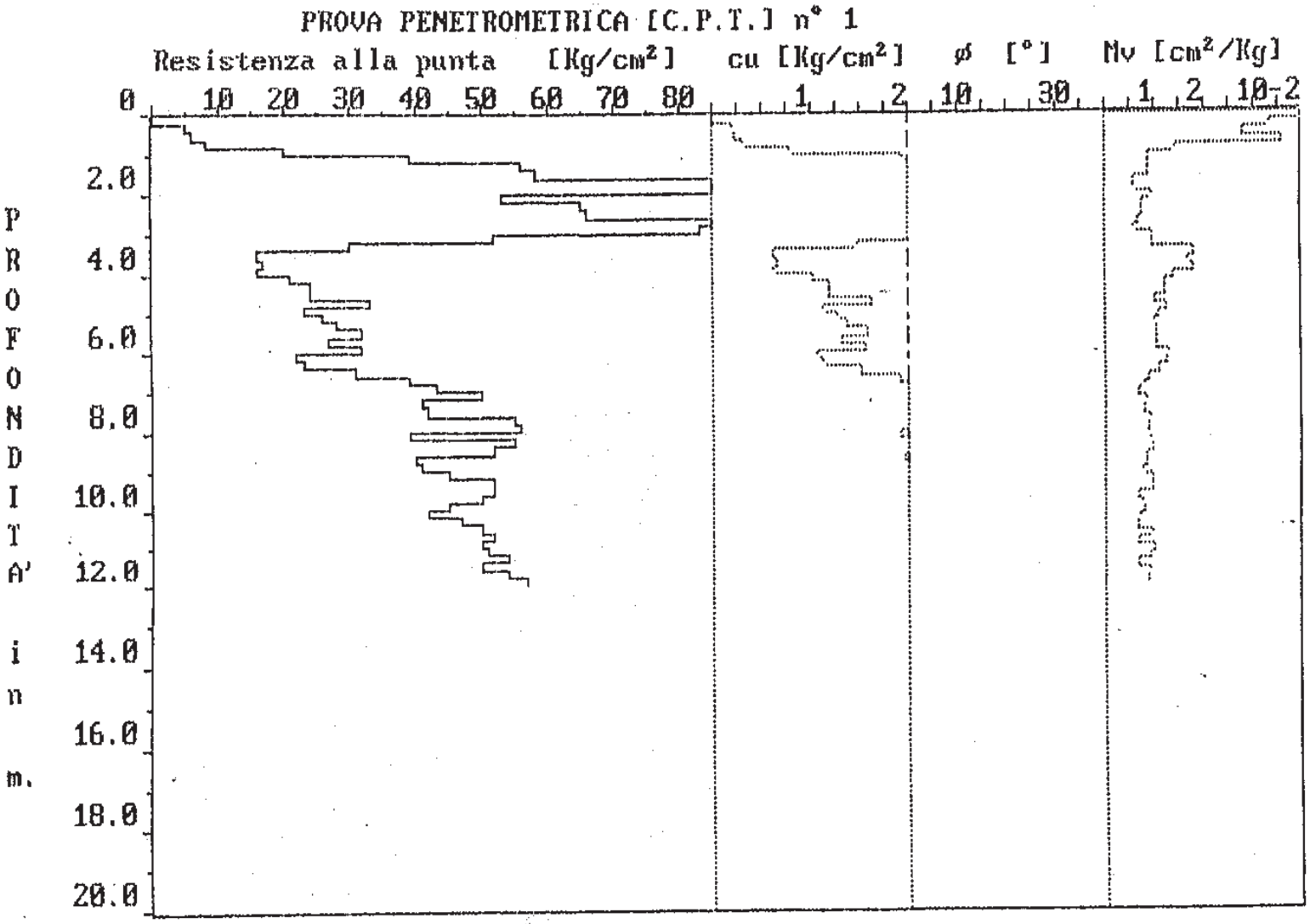

Rp (kg/cm²)
0 20 40 60 80 100 120 140 160 180 200
Falda :0,00m
RL (kg/cm²)
0,0 2,0 4,0 6,0
0,0 m.
1,0
2,0
3,0
4,0
5,0
6,0
7,0
8,0
9,0
10,0

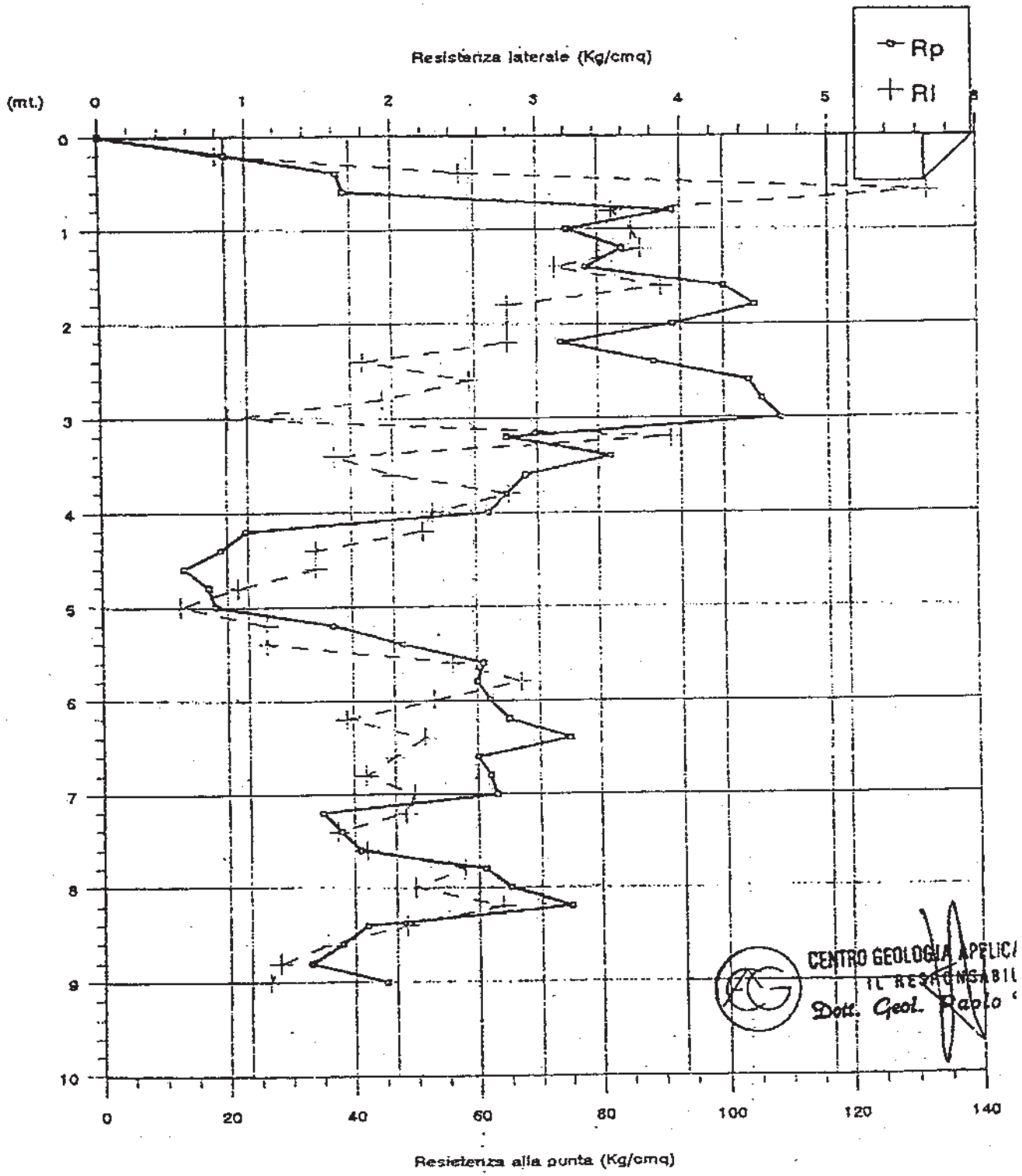
Localita' Perignano
PPD1



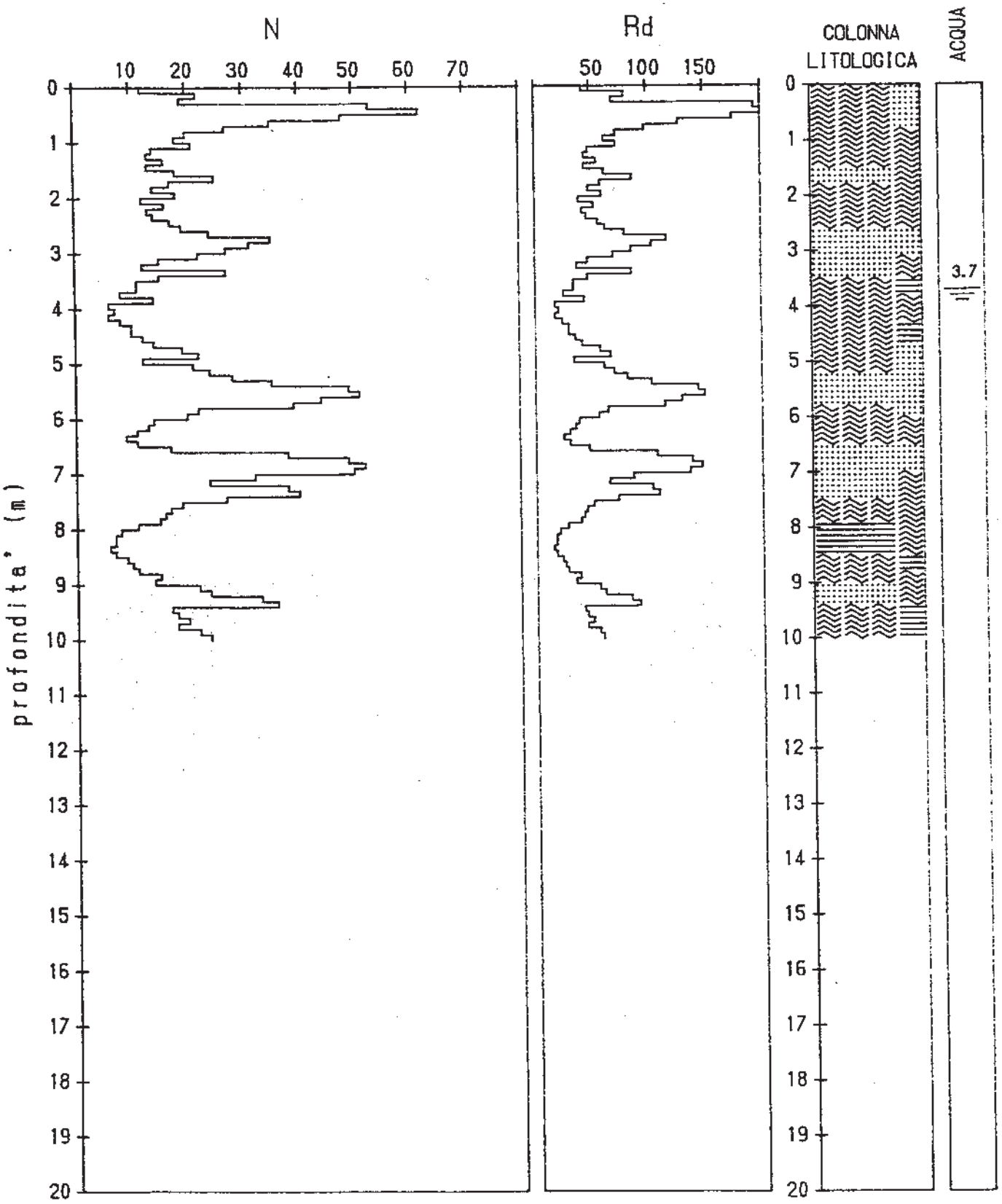
Localita' Perignano
PPD2

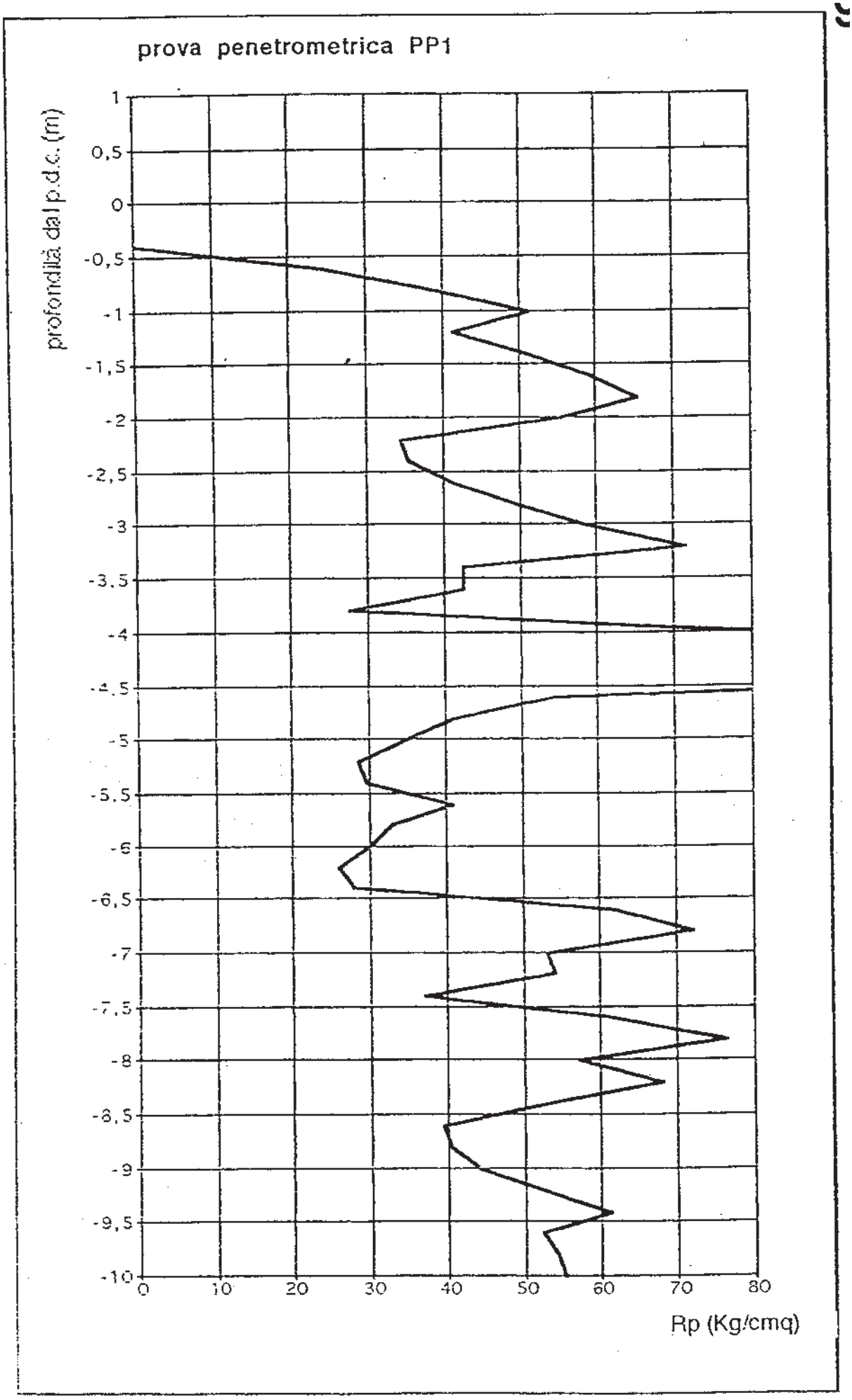



PROVA PENETROMETRICA [C.P.T.] n° 1
Resistenza alla punta [Kg/cm²]
0 10 20 30 40 50 60 70 80
cu [Kg/cm²]
1 2
ø [°]
10 30
Mv [cm²/Kg]
1 2 10-2
PROFONDITA' in m.
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
20.0

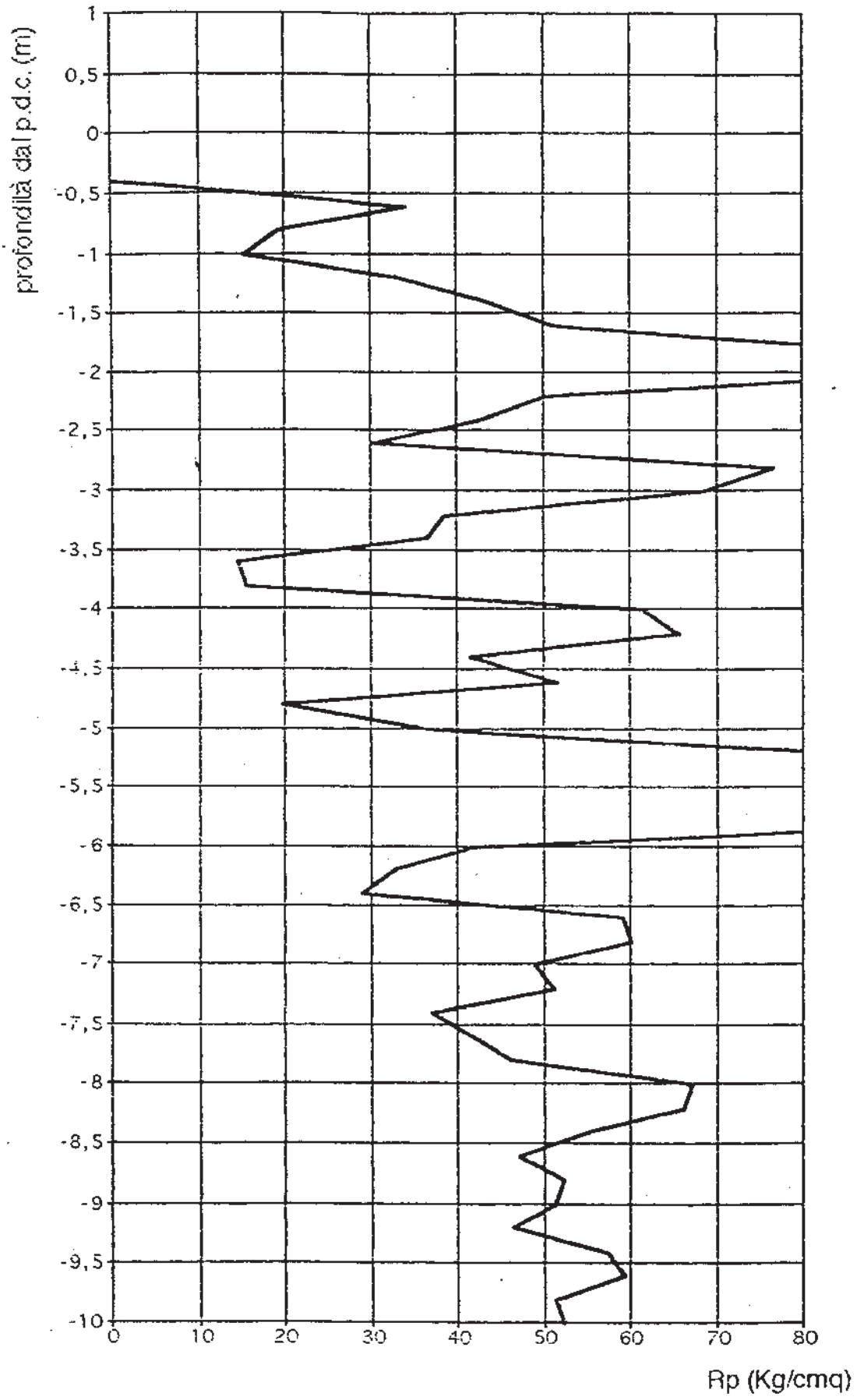


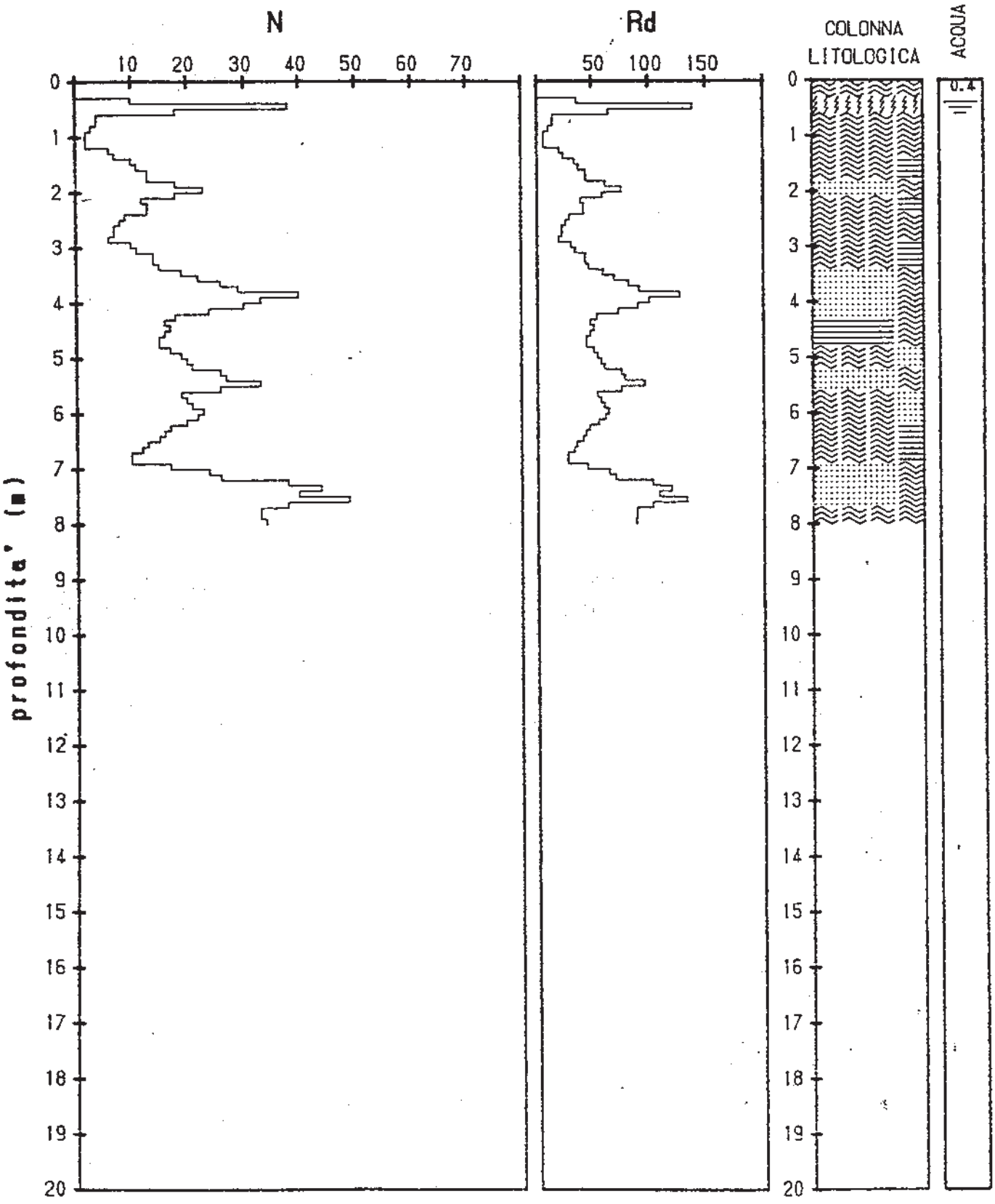
Penetrometro Statico GOUDA - Avanzamento 2 cm./sec.
Punta meccanica BEGEMANN diam.=35.7 mm. - Manicotto superfice 150 cmq.
Data Esecuzione : 28/11/1995 - Archivio :85/S/95

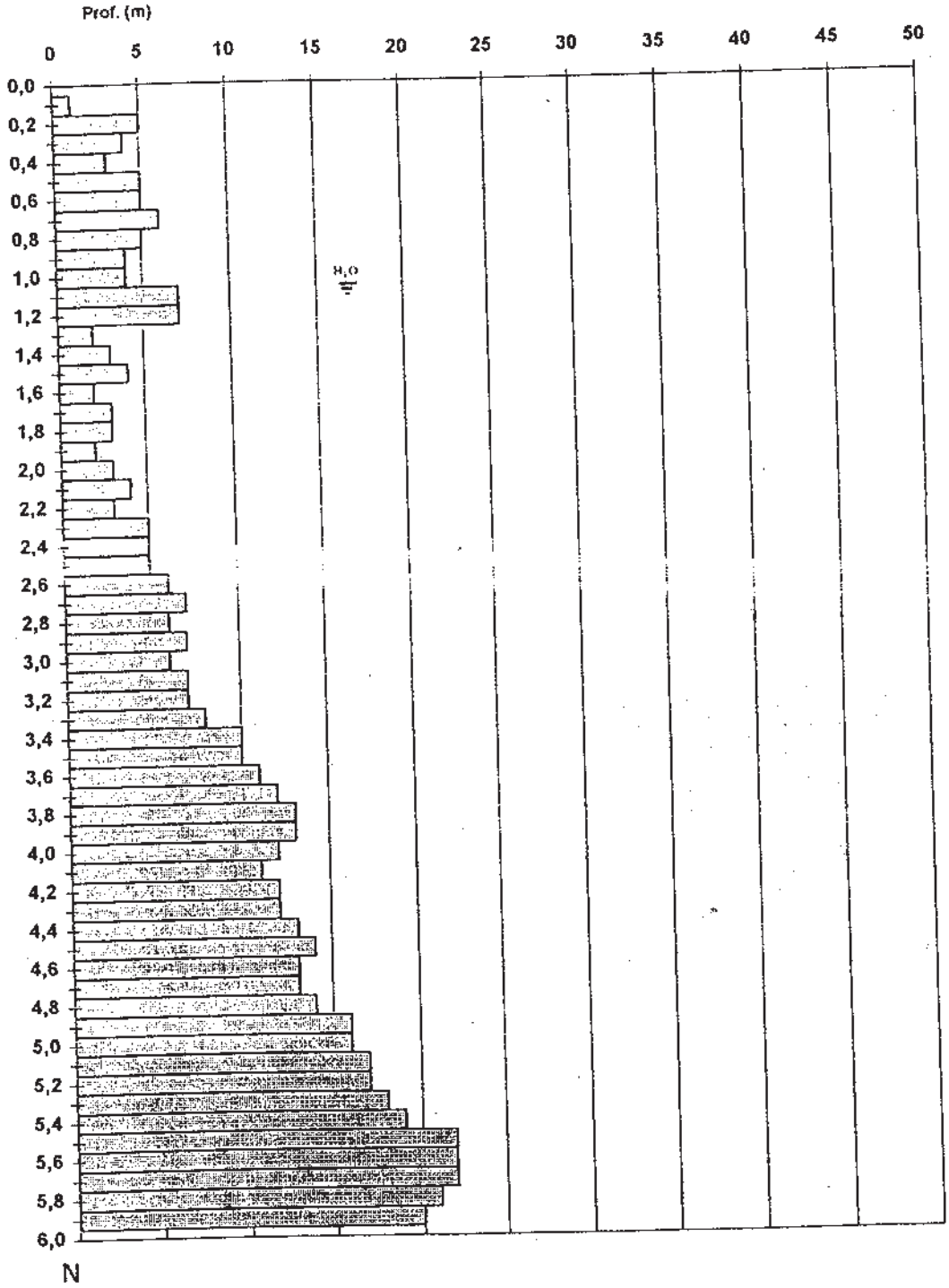

N
10 20 30 40 50 60 70
Rd
50 100 150
COLONNA LITOLOGICA
ACQUA
3.7
profondita' (m)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

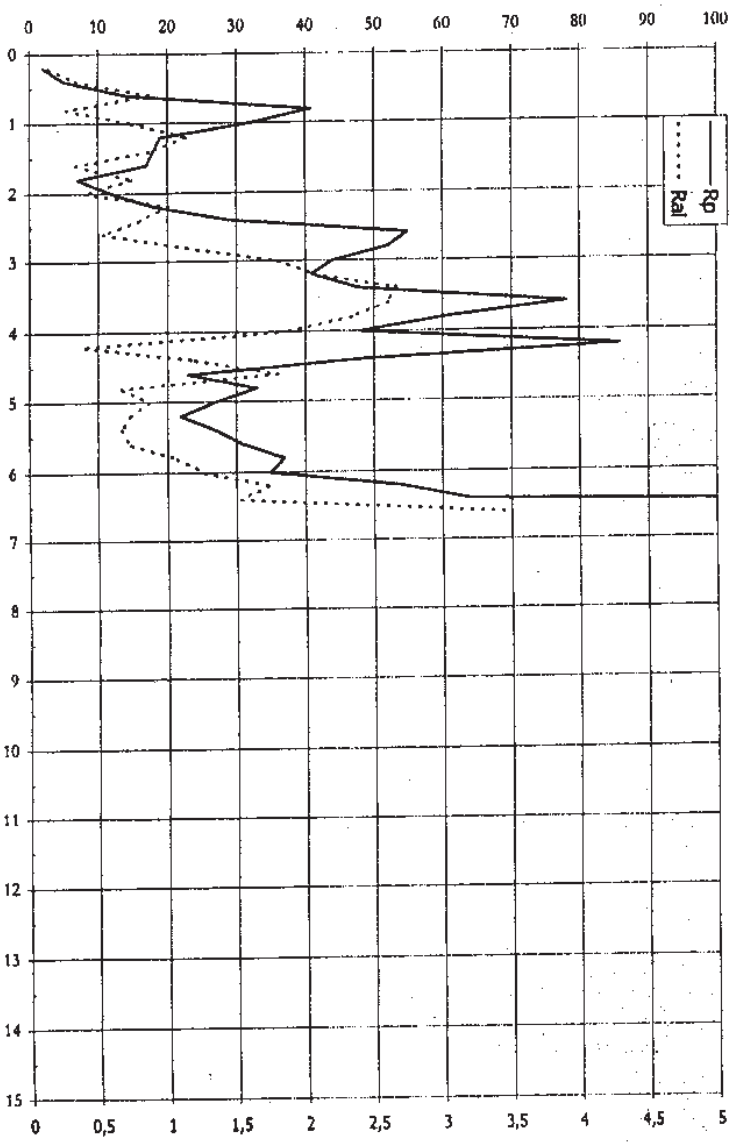

prova penetrometrica PP1
profondità dal p.d.c. (m)
1
0,5
0
-0,5
-1
-1,5
-2
-2,5
-3
-3,5
-4
-4,5
-5
-5,5
-6
-6,5
-7
-7,5
-8
-8,5
-9
-9,5
-10
0
10
20
30
40
50
60
70
80
Rp (Kg/cmq)

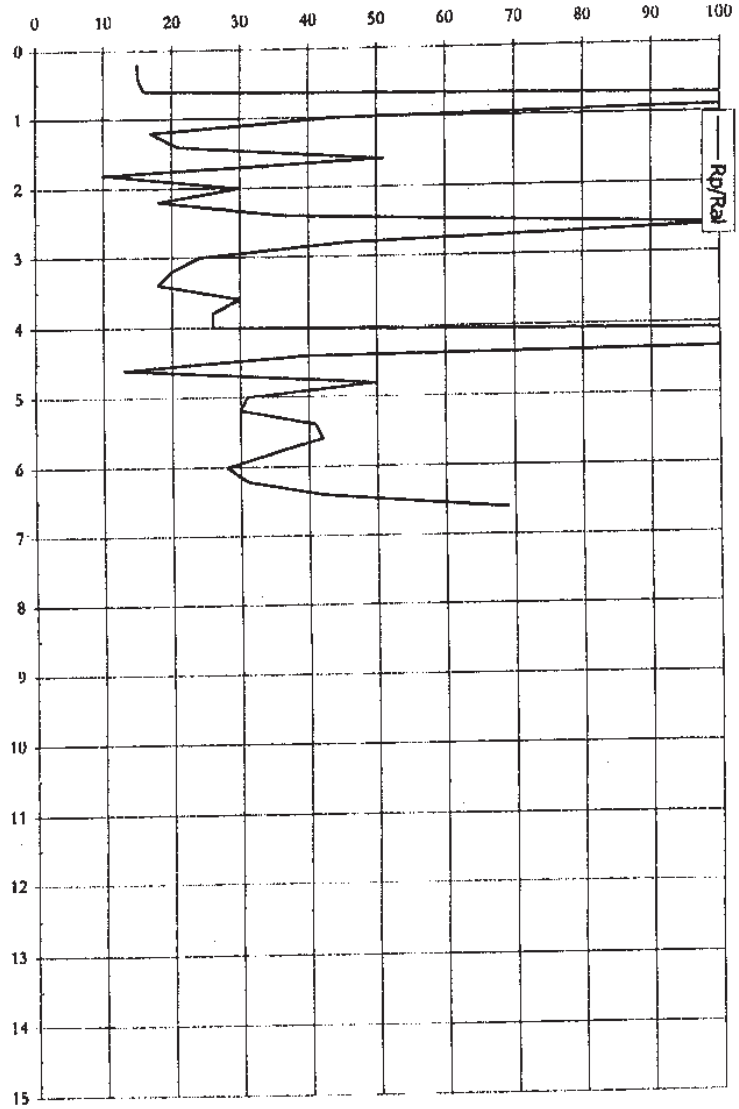
prova penetrometrica PP2

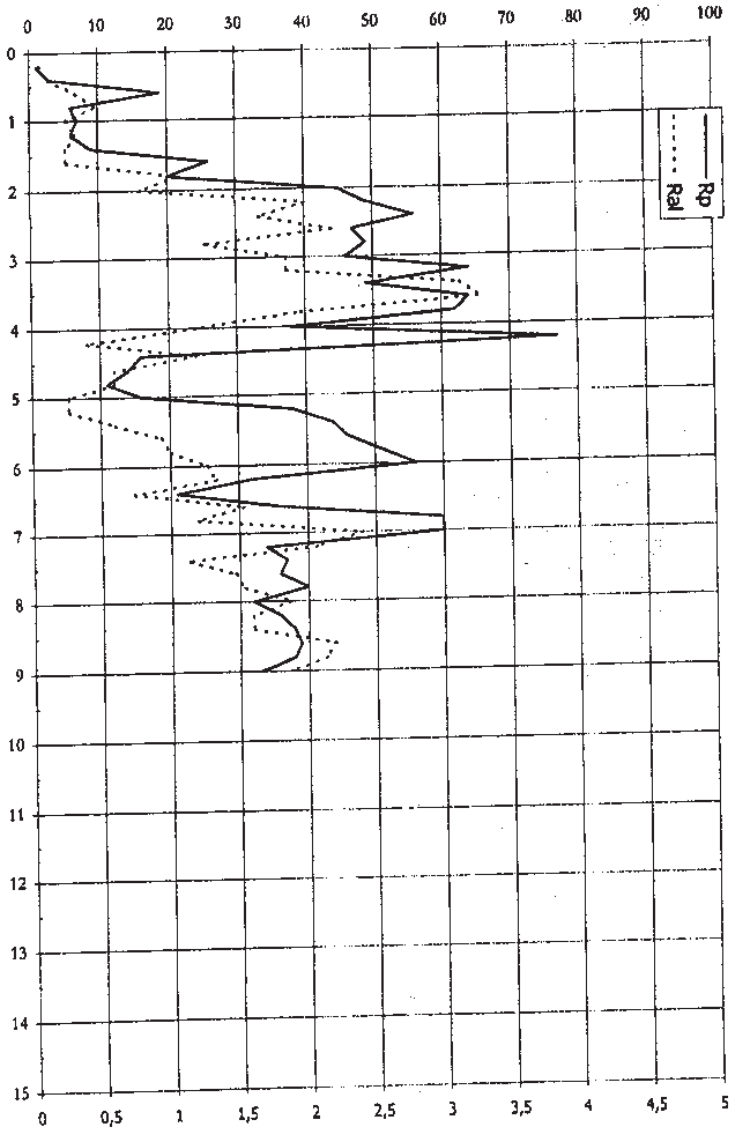


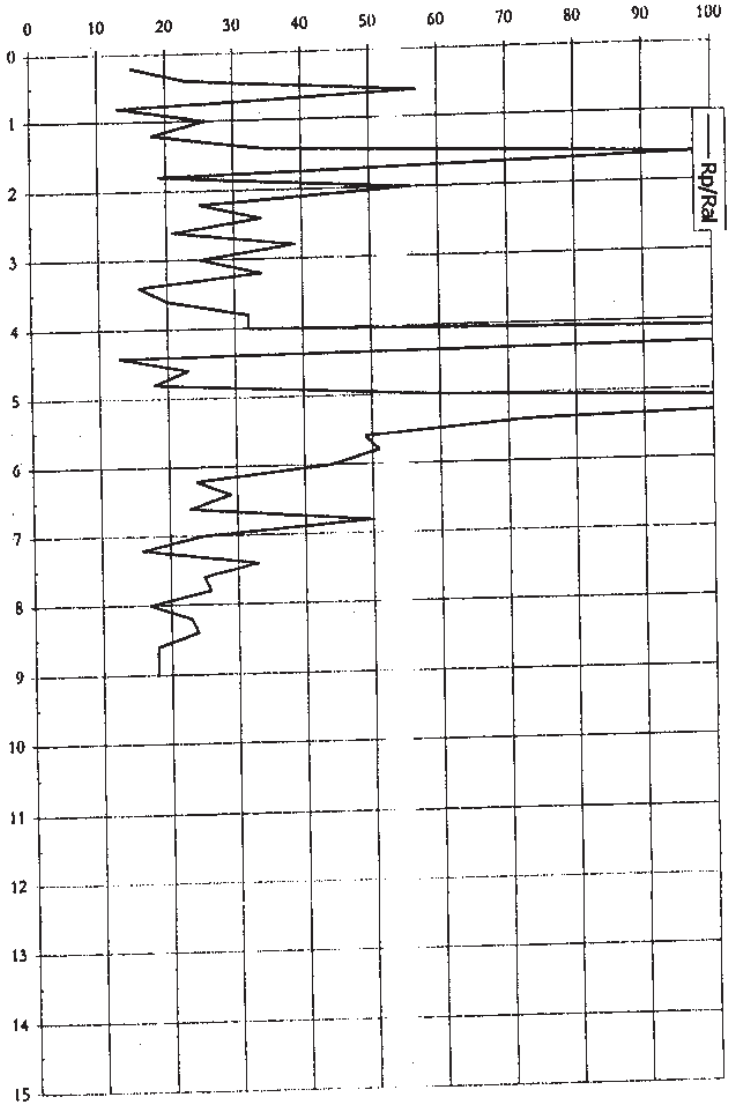

N
10 20 30 40 50 60 70
Rd
50 100 150
COLONNA LITOLOGICA
ACQUA
0.4
profondita' (m)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

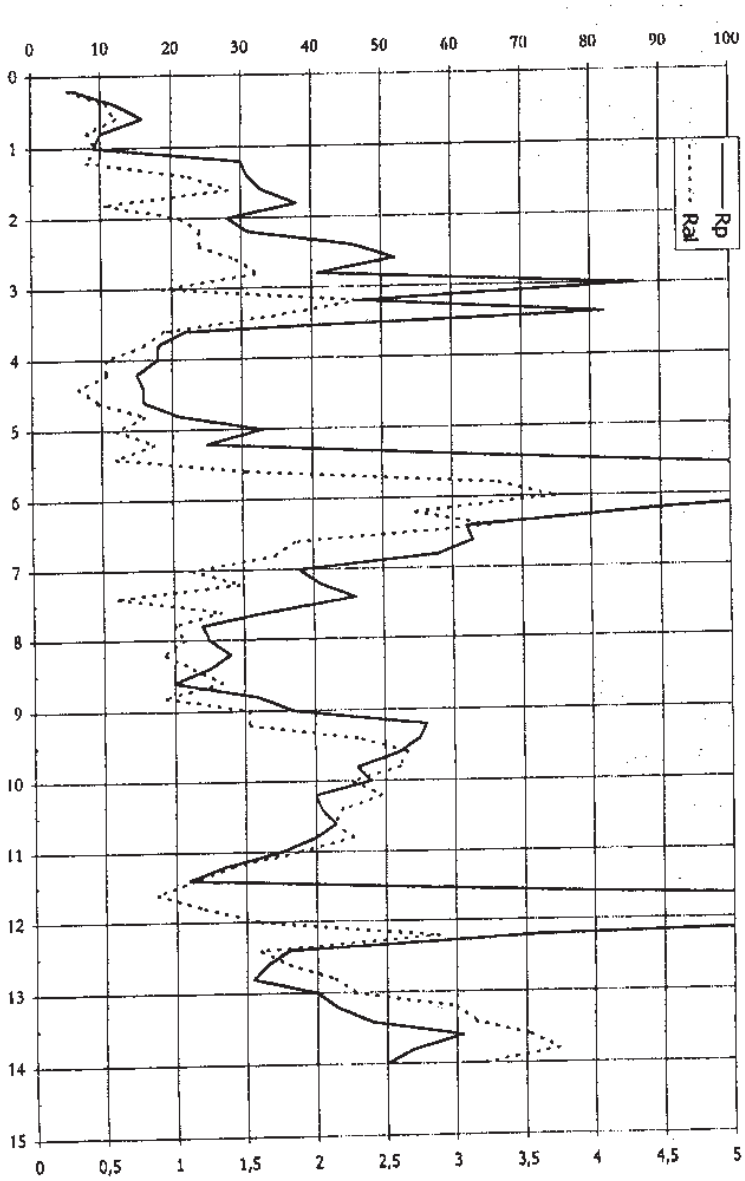

Prof. (m)
0
5
10
15
20
25
30
35
40
45
50
0,0
0,2
0,4
0,6
0,8
1,0
1,2
1,4
1,6
1,8
2,0
2,2
2,4
2,6
2,8
3,0
3,2
3,4
3,6
3,8
4,0
4,2
4,4
4,6
4,8
5,0
5,2
5,4
5,6
5,8
6,0
N

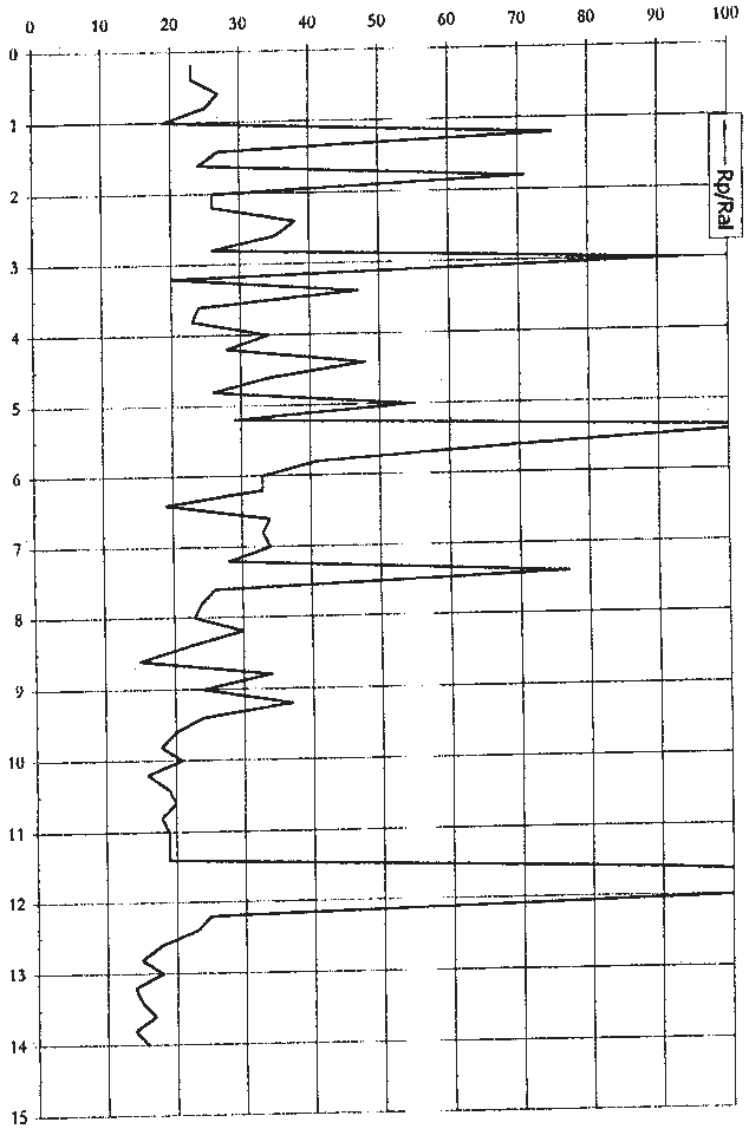

Rp
Ral

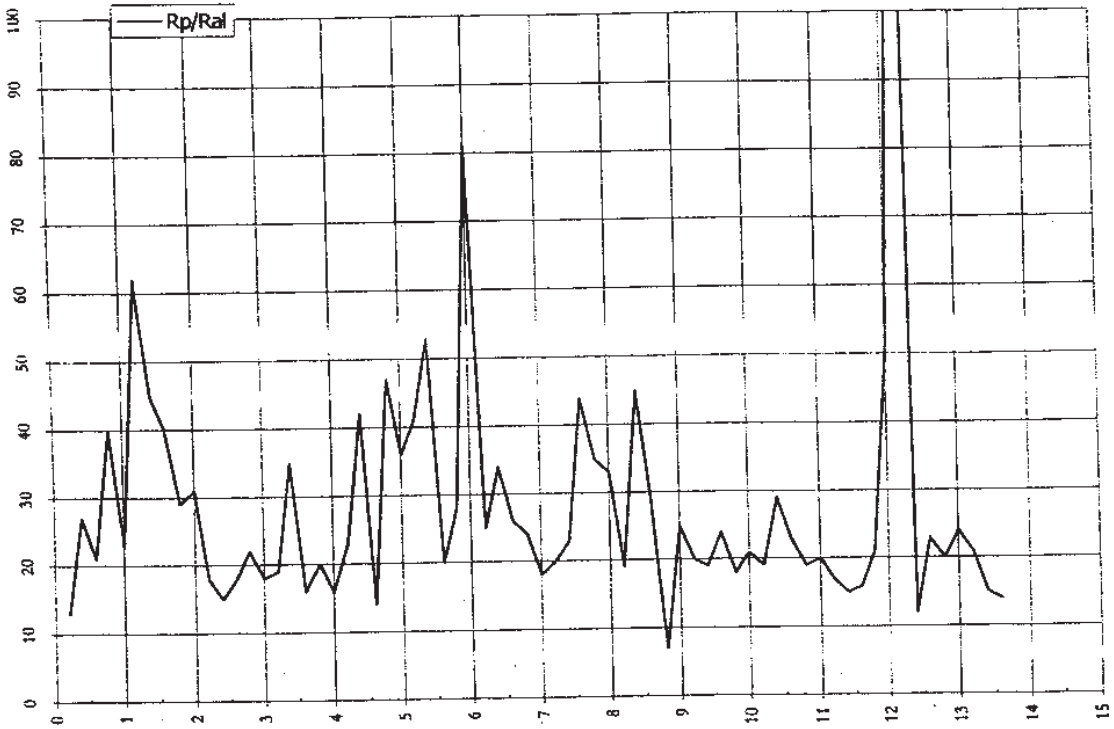

Rp/Ral

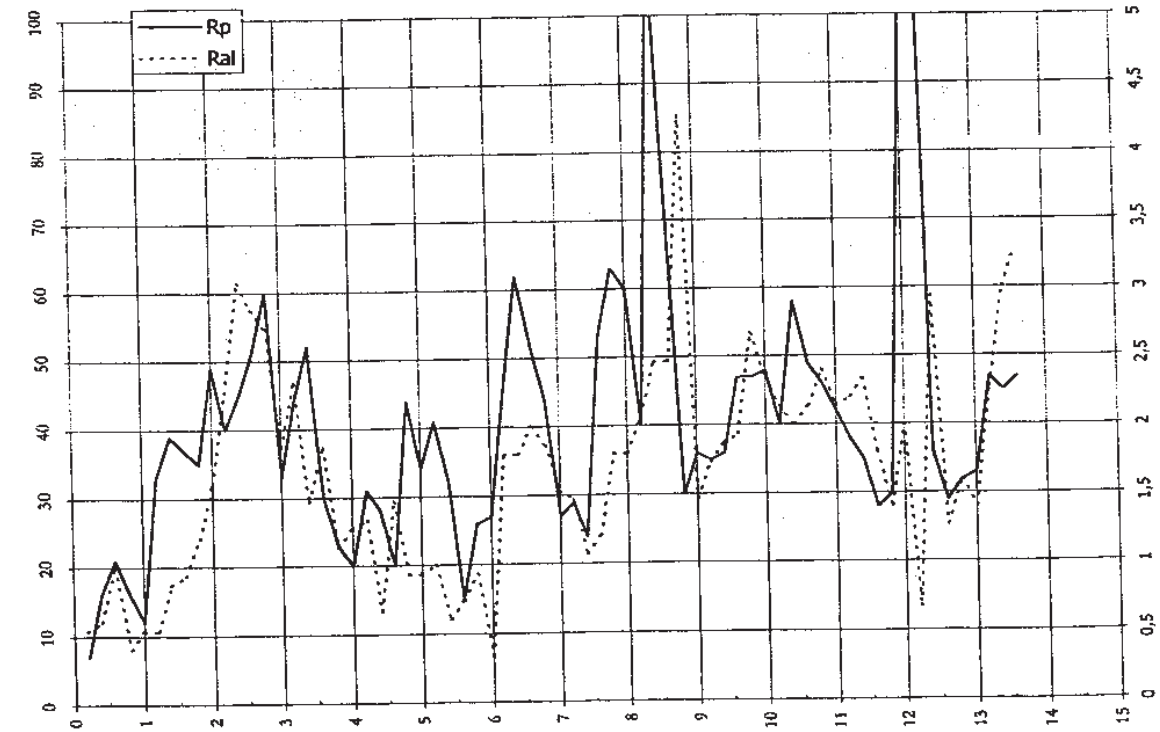

0 10 20 30 40 50 60 70 80 90 100
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
0 0,5 1 1,5 2 2,5 3 3,5 4 4,5 5
Rp
Ral

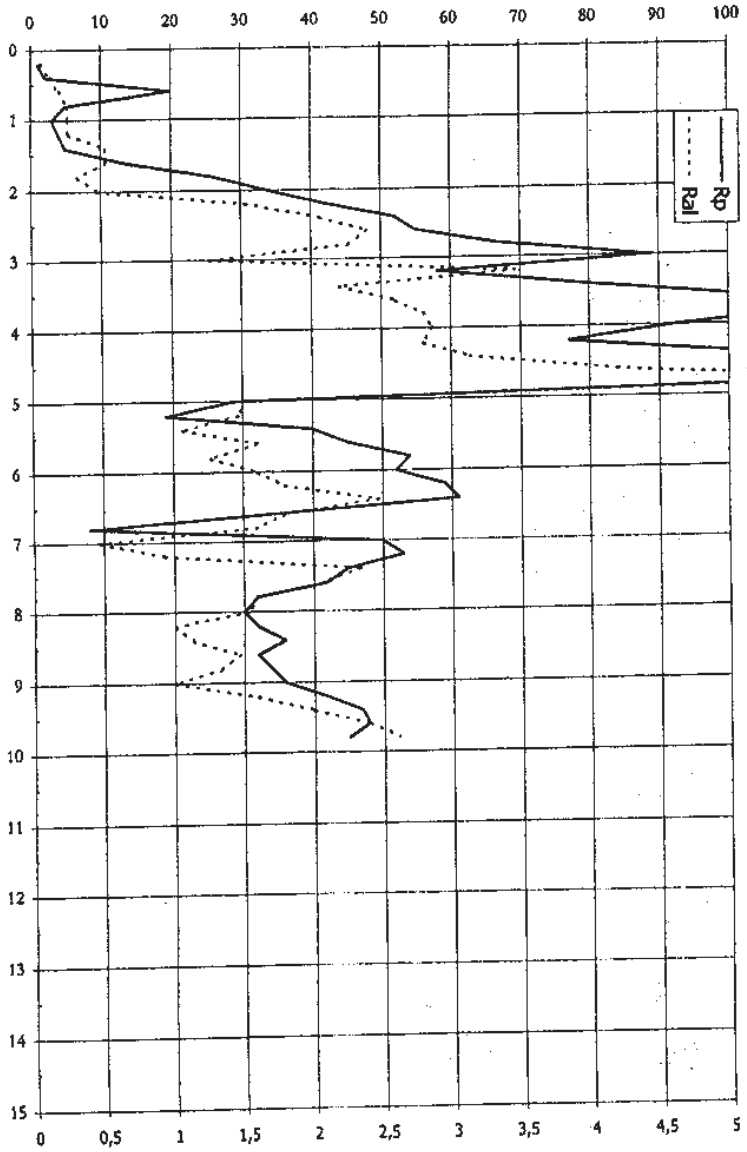

0 10 20 30 40 50 60 70 80 90 100
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Rp/Ral

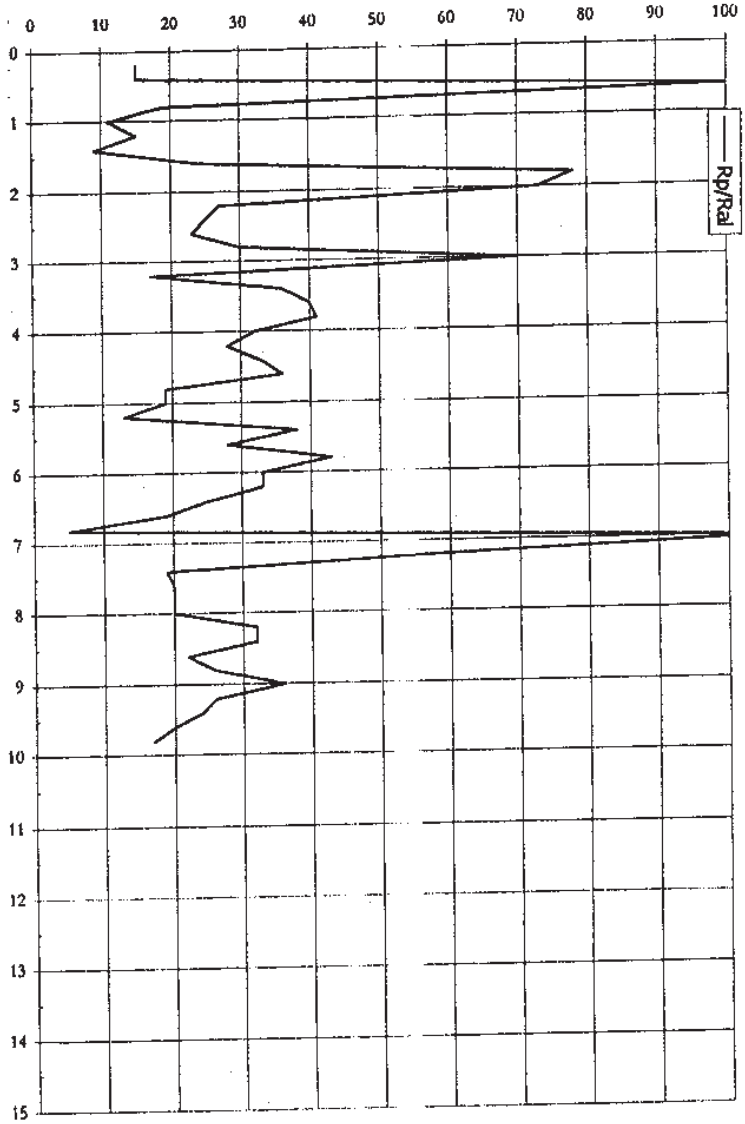

0 10 20 30 40 50 60 70 80 90 100
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
0 0,5 1 1,5 2 2,5 3 3,5 4 4,5 5
Rp
Ral

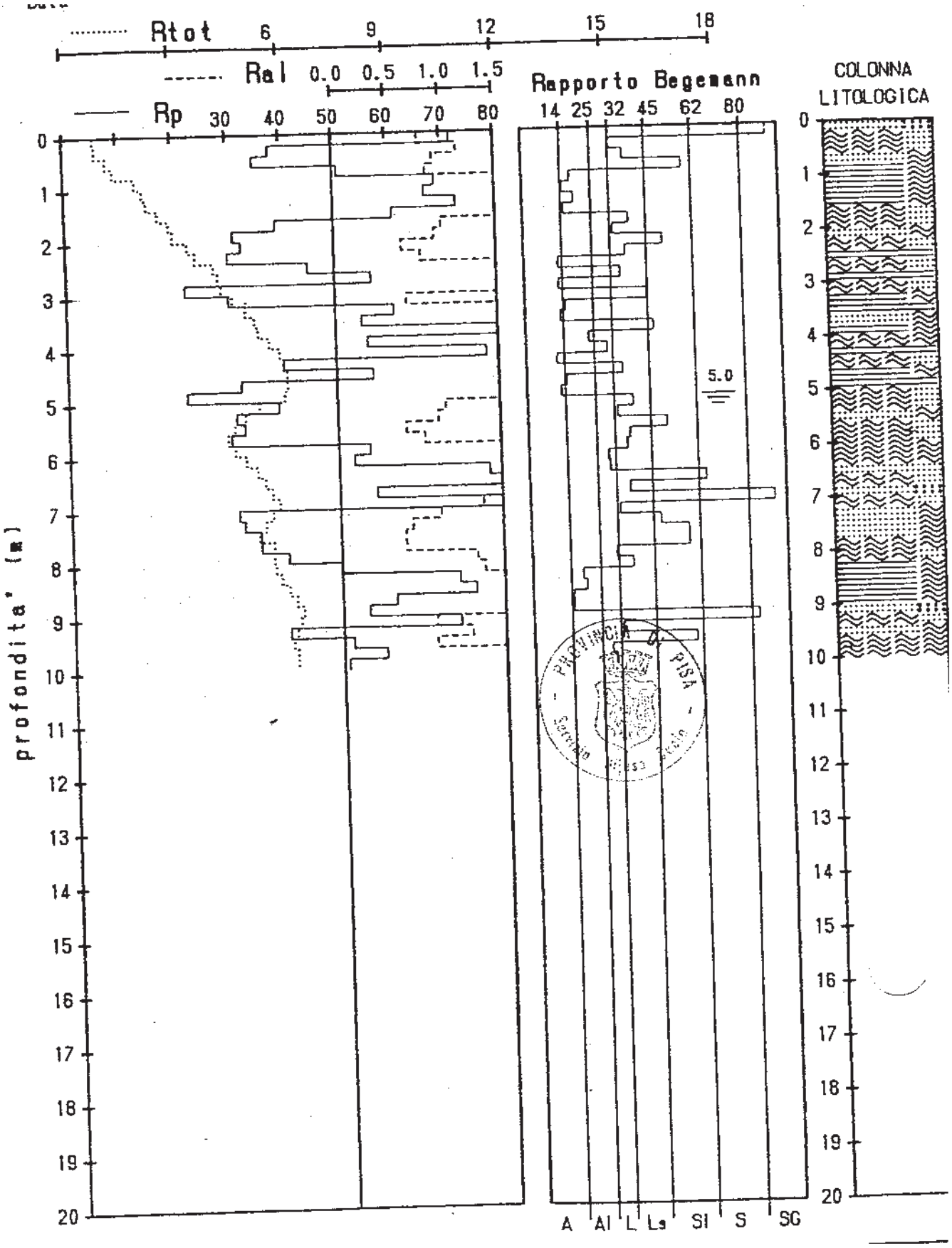

0 10 20 30 40 50 60 70 80 90 100
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Rp/Ral

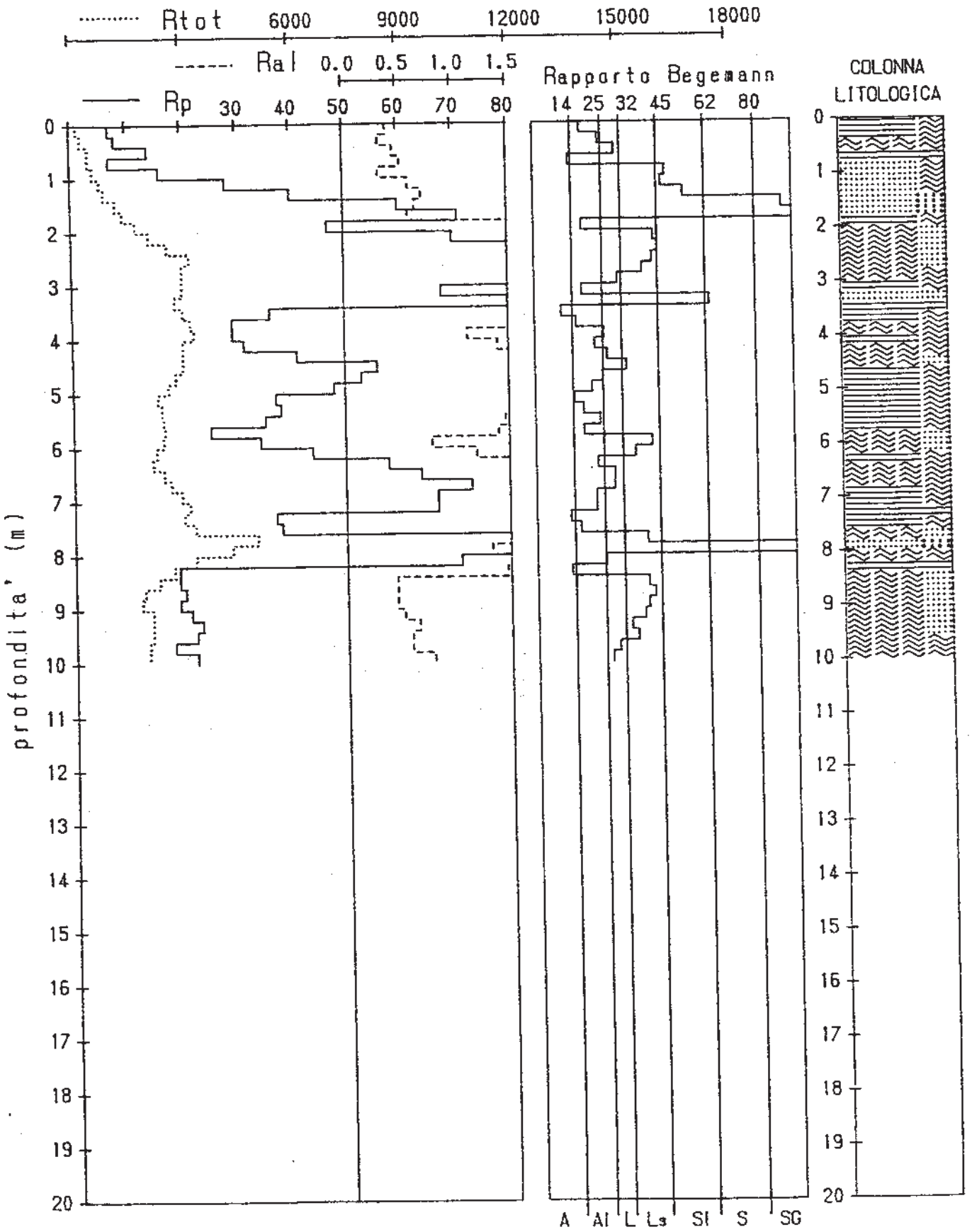

Rp/Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

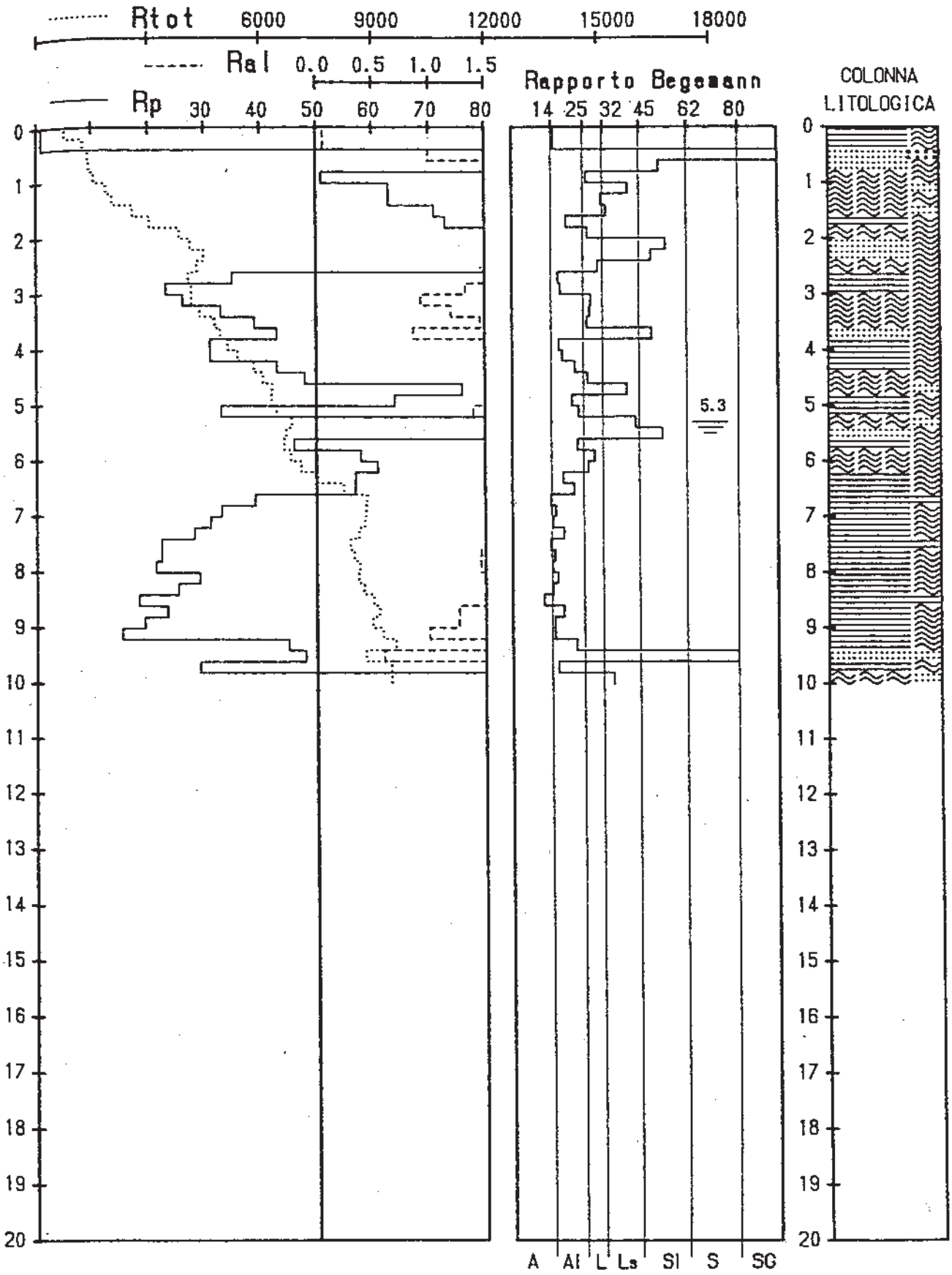

Rp
Ral
0
10
20
30
40
50
60
70
80
90
100
0
0,5
1
1,5
2
2,5
3
3,5
4
4,5
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

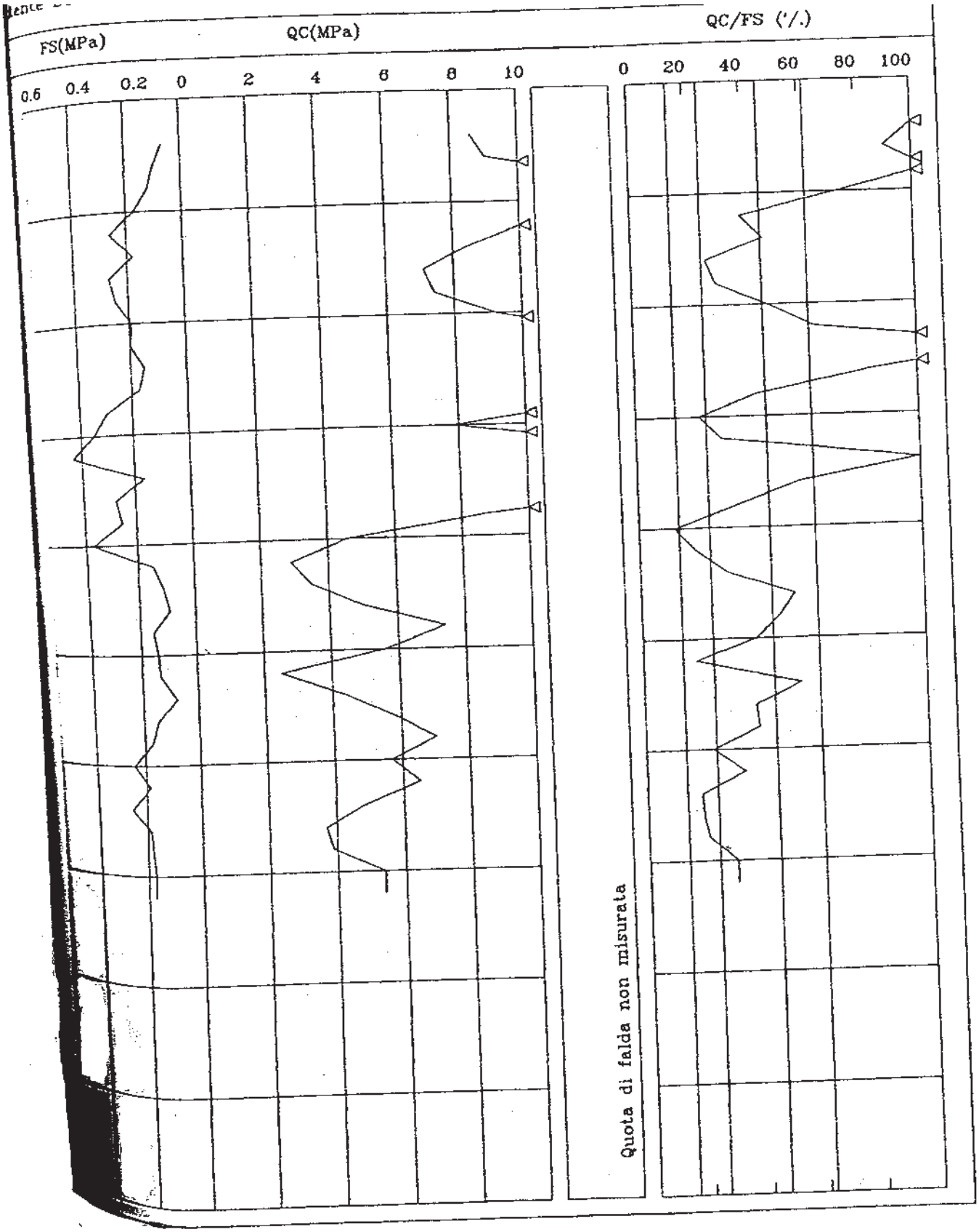

Rp
Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
0
0,5
1
1,5
2
2,5
3
3,5
4
4,5
5

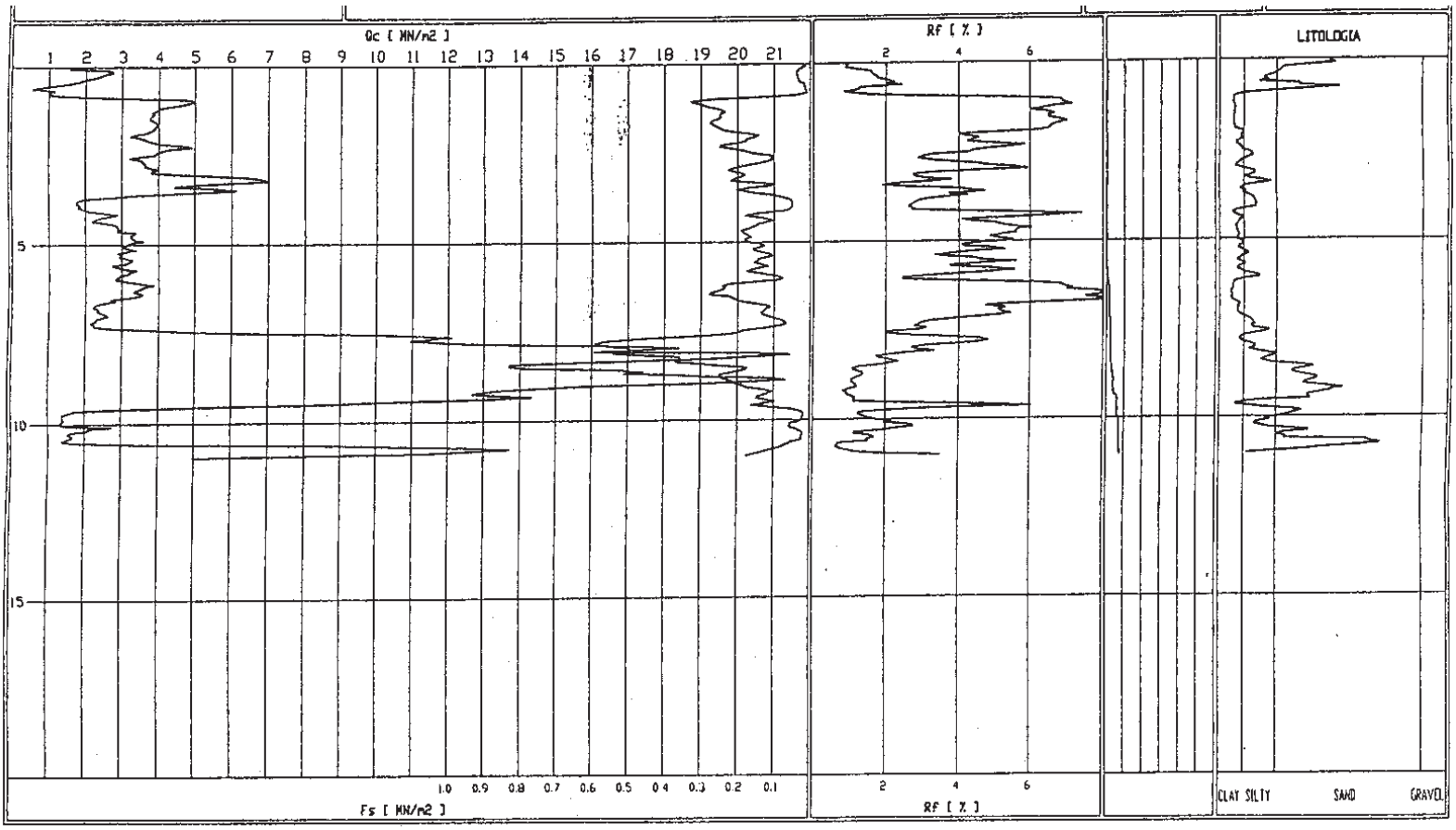

Rp/Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

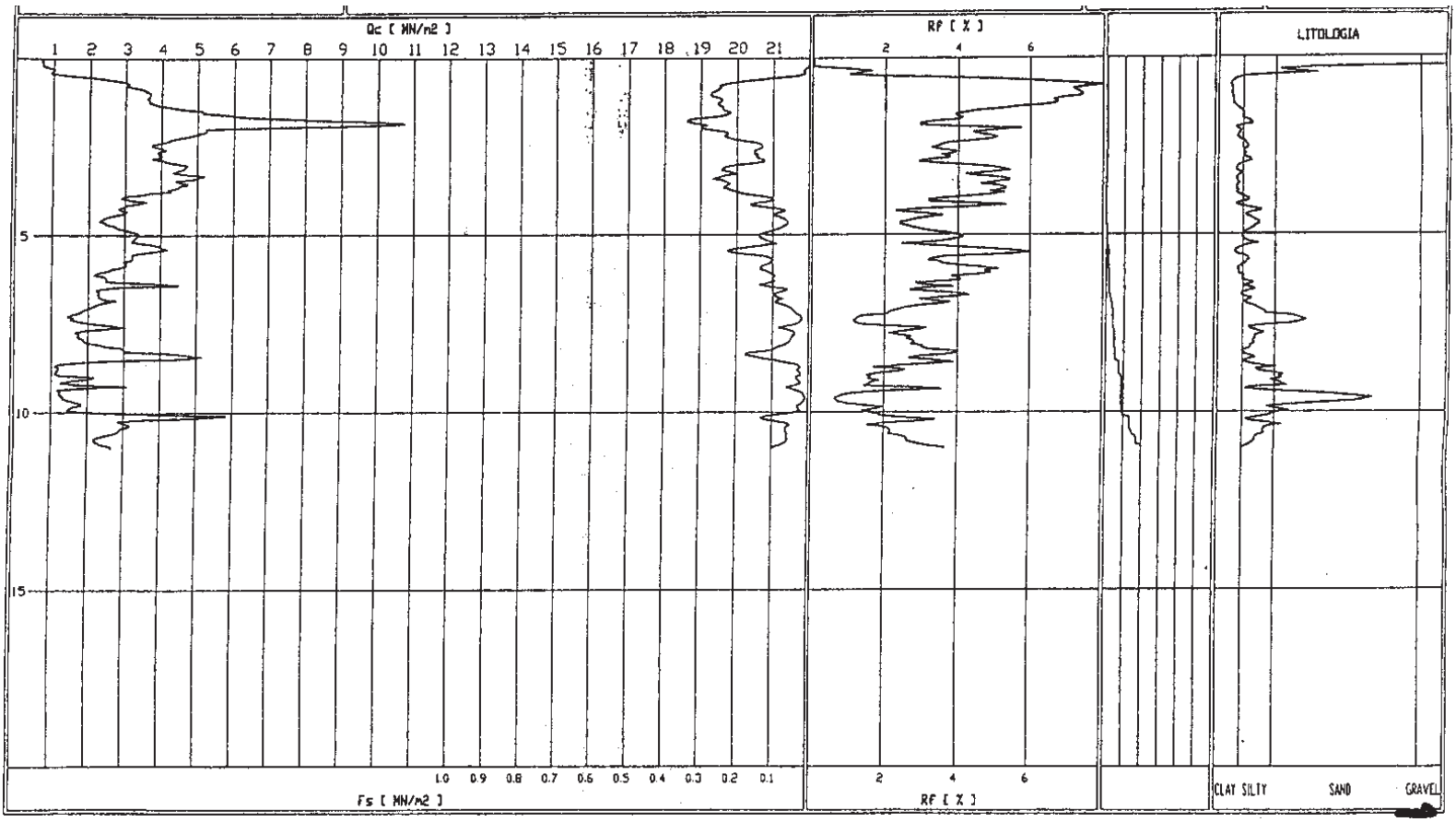

Rtot
6
9
12
15
18
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
COLONNA LITOLOGICA
profondita' (m)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
5.0
A
Al
L
Ls
Sl
S
SG

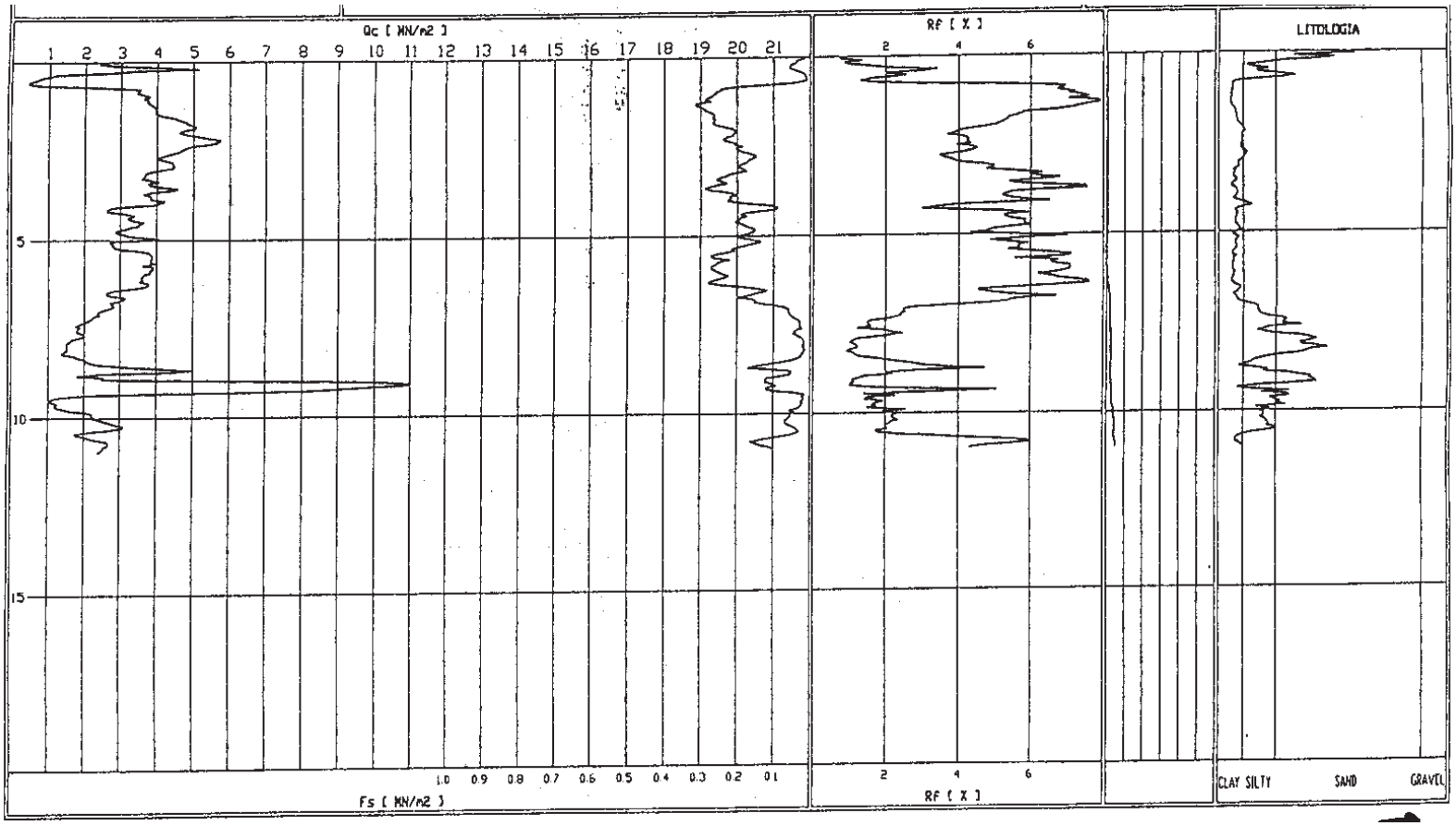

Rtot
6000
9000
12000
15000
18000
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
COLONNA LITOLOGICA
profondita' (m)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
Al
L
Ls
Sl
S
SG

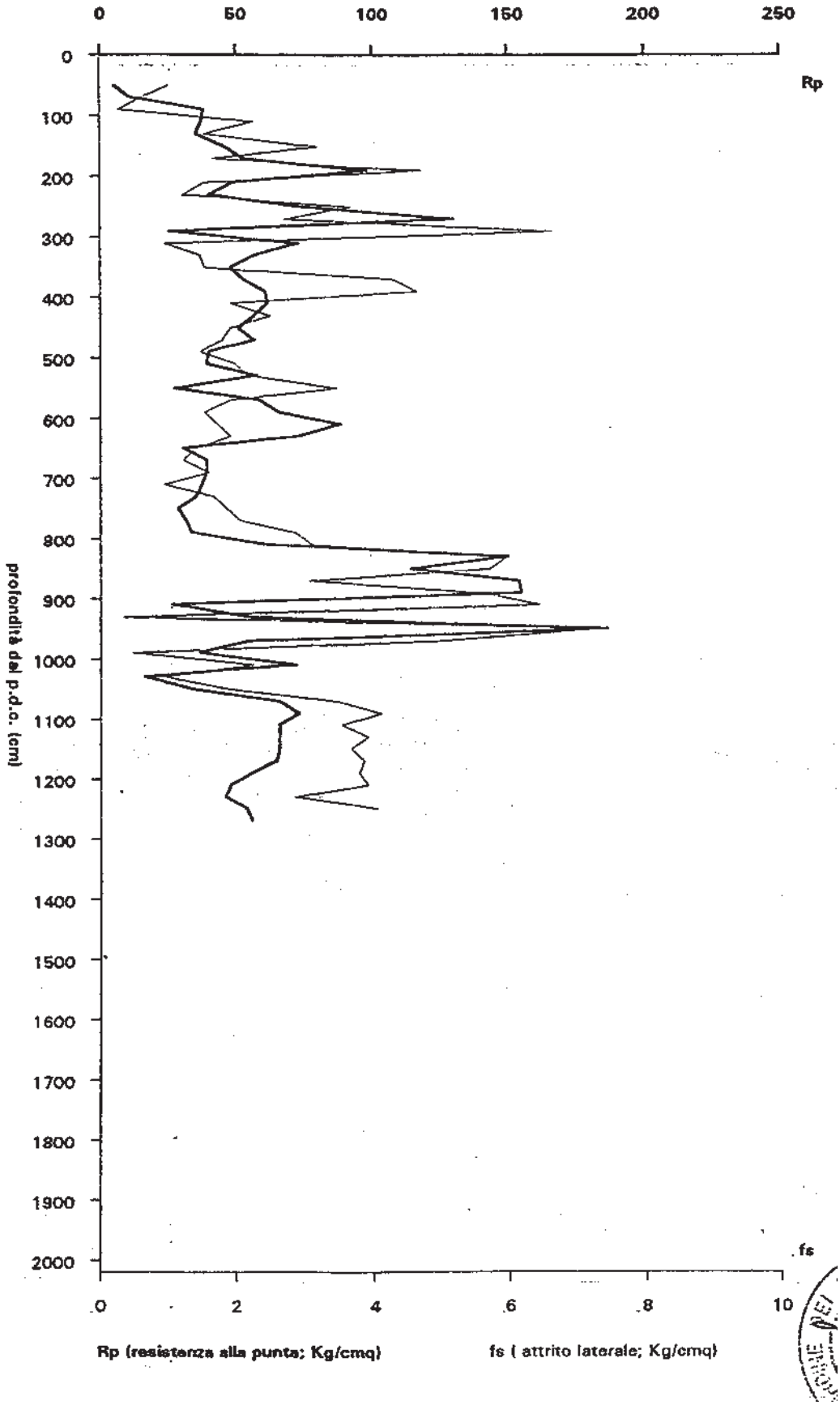

Rtot
6000
9000
12000
15000
18000
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
5.3
COLONNA
LITOLOGICA
A
Al
L
Ls
Sl
S
SG

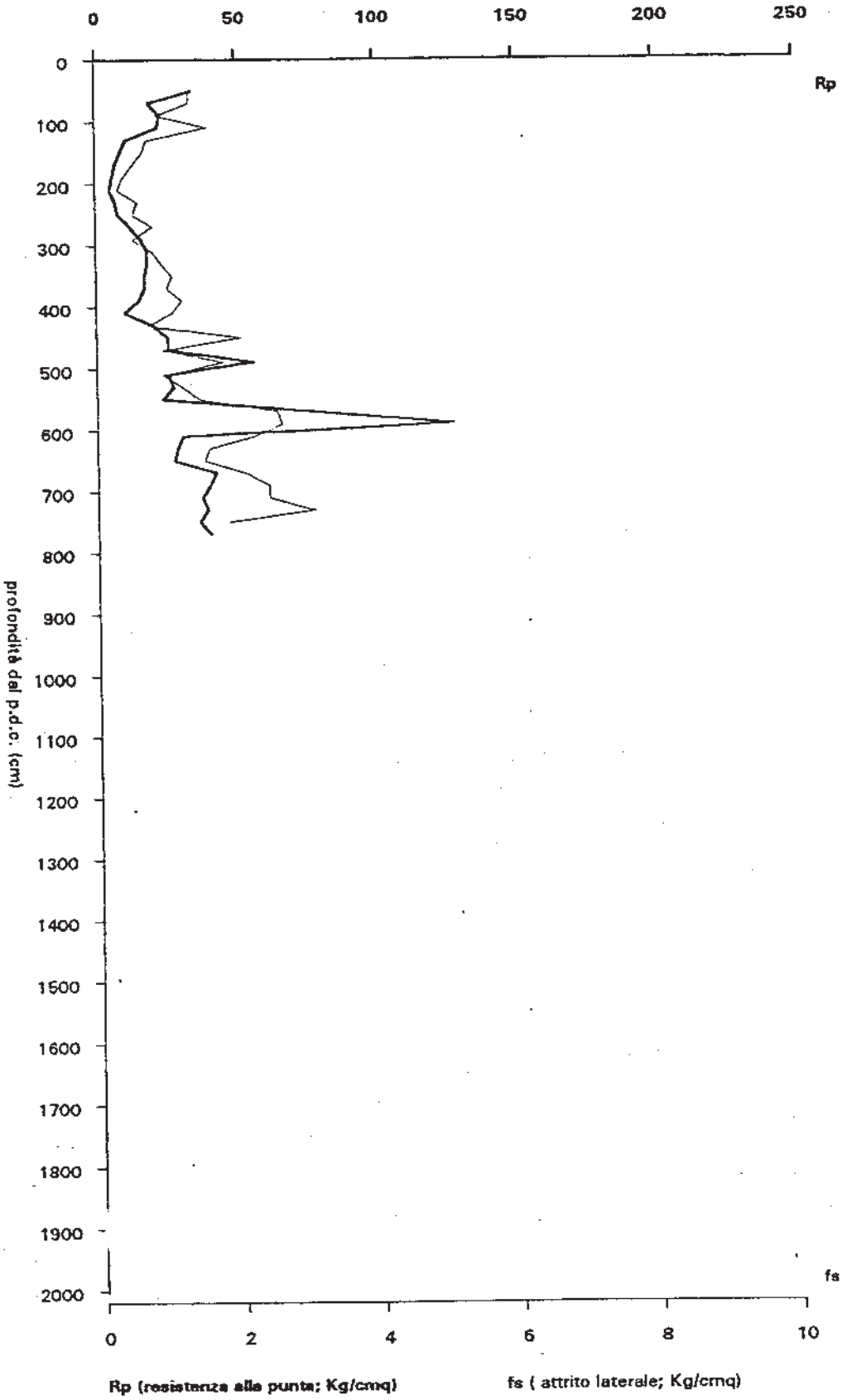

FS(MPa)
0.6
0.4
0.2
0
QC(MPa)
2
4
6
8
10
Quota di falda non misurata
QC/FS (%)
0
20
40
60
80
100

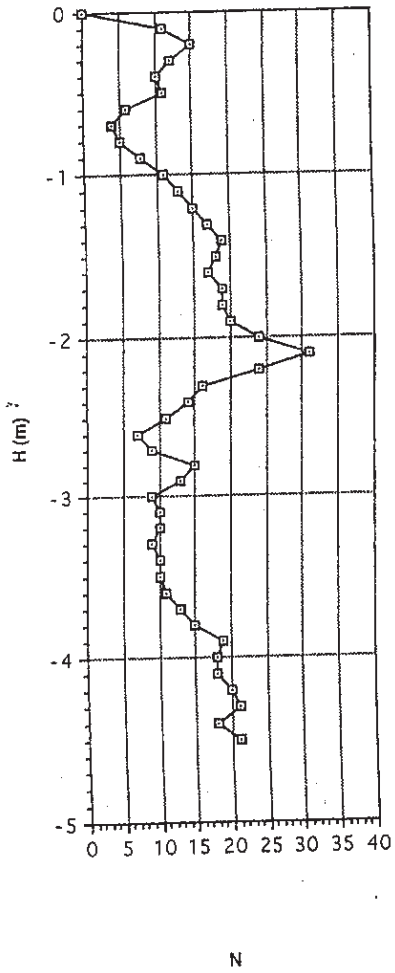

Qc [MN/m2]
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
5
10
15
1.0 0.9 0.8 0.7 0.6 0.5 0.4 0.3 0.2 0.1
Fs [MN/m2]
Rf [%]
2 4 6
2 4 6
Rf [%]
LITOLOGIA
CLAY SILTY
SAND
GRAVEL

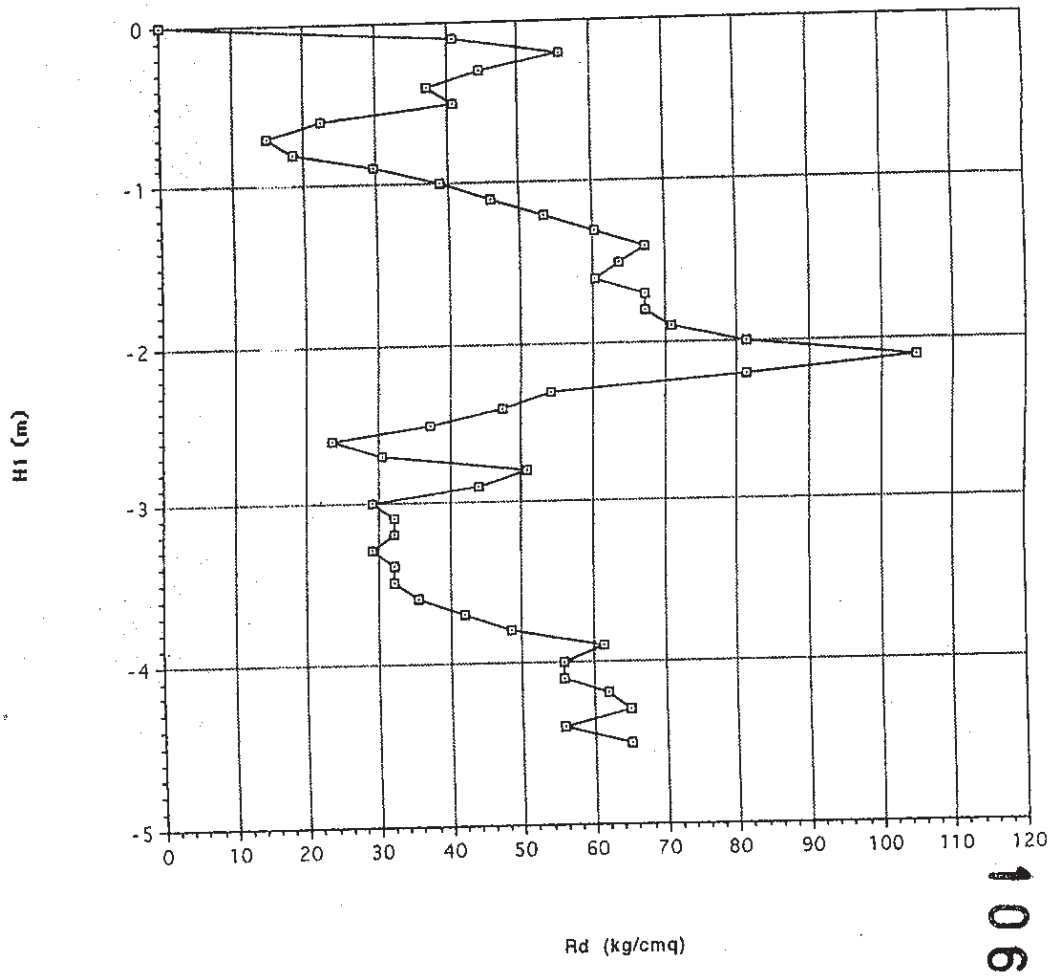

Qc [MN/m2]
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
5
10
15
1.0 0.9 0.8 0.7 0.6 0.5 0.4 0.3 0.2 0.1
Fs [MN/m2]
Rf [%]
2 4 6
2 4 6
Rf [%]
LITOLOGIA
CLAY SILTY
SAND
GRAVEL

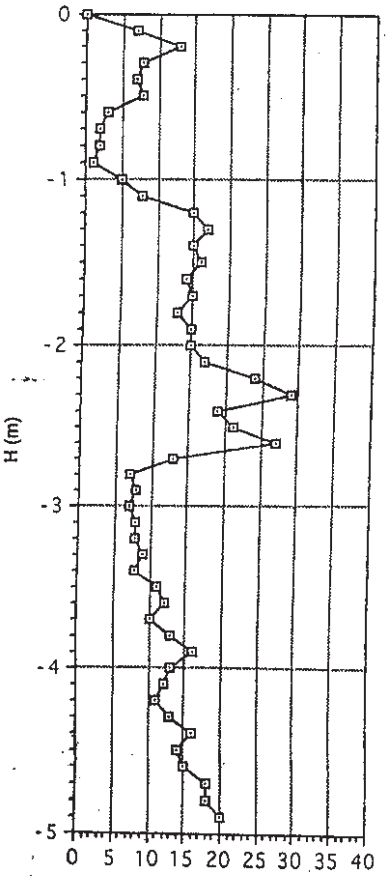

Qc [MN/m2]
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
5
10
15
1.0 0.9 0.8 0.7 0.6 0.5 0.4 0.3 0.2 0.1
Fs [MN/m2]
Rf [%]
2 4 6
2 4 6
Rf [%]
LITOLOGIA
CLAY SILTY
SAND
GRAVEL

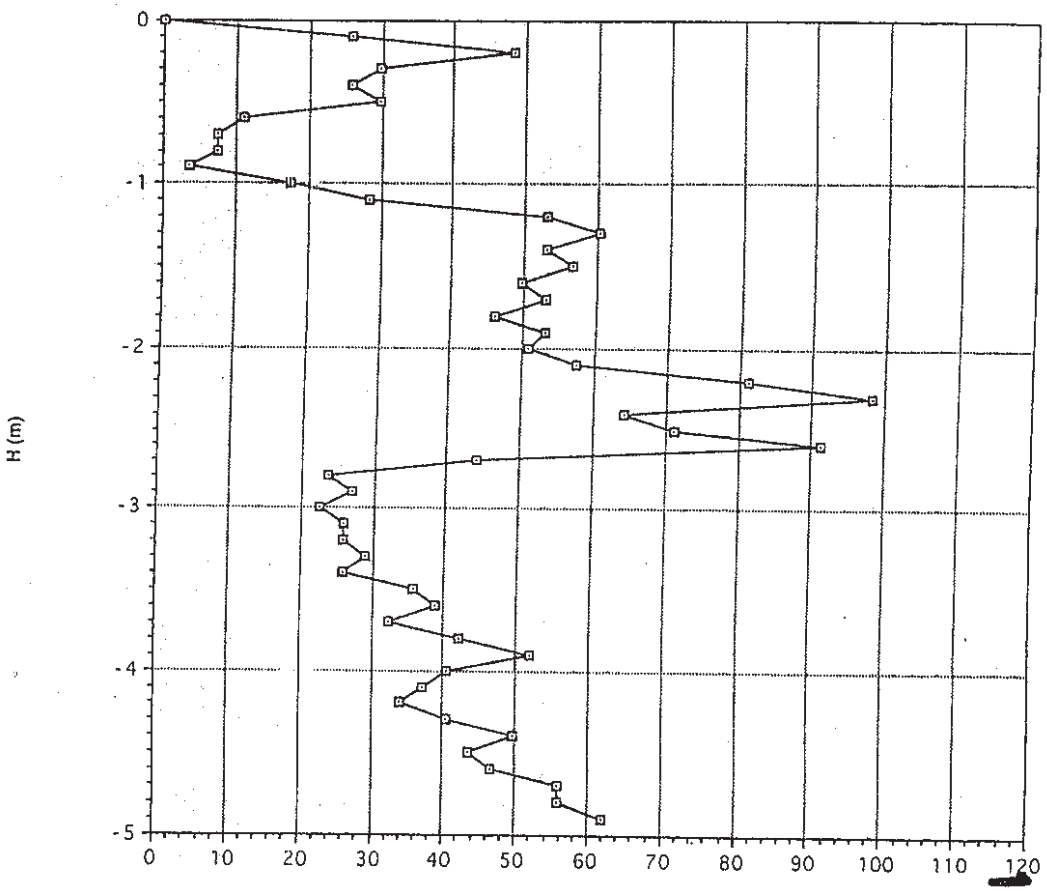

0
50
100
150
200
250
Rp
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
profondità del p.d.c. (cm)
fs
.0
2
4
.6
.8
10
Rp (resistenza alla punta; Kg/cmq)
fs (attrito laterale; Kg/cmq)

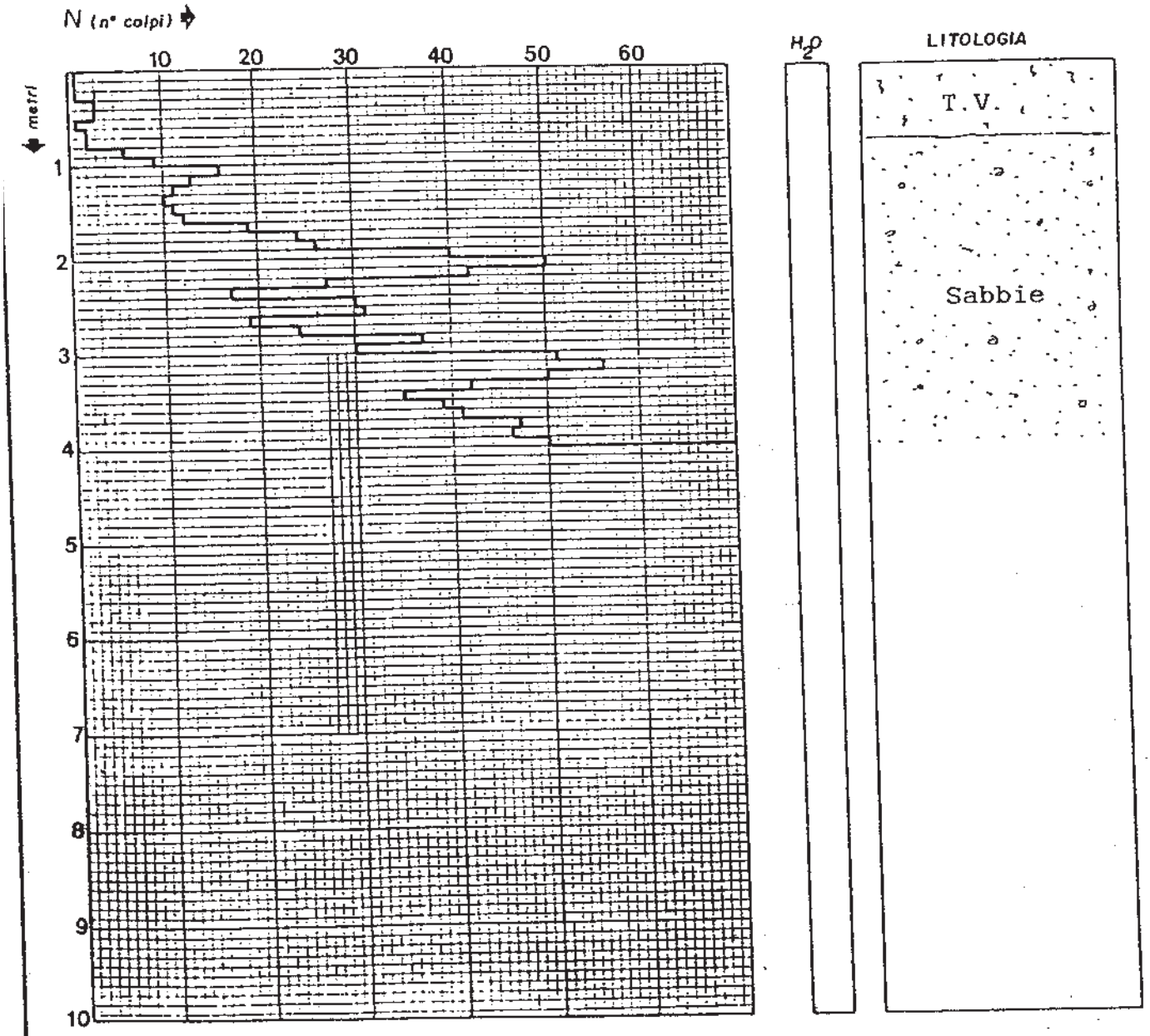

0
50
100
150
200
250
Rp
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
profondità dal p.d.c. (cm)
fs
0
2
4
6
8
10
Rp (resistenza alla punta; Kg/cmq)
fs (attrito laterale; Kg/cmq)


H (m)
0
-1
-2
-3
-4
-5
0 5 10 15 20 25 30 35 40
N


H1 (m)
0
-1
-2
-3
-4
-5
0 10 20 30 40 50 60 70 80 90 100 110 120
Rd (kg/cmq)


H (m)
0
-1
-2
-3
-4
-5
0 5 10 15 20 25 30 35 40


H (m)
0
-1
-2
-3
-4
-5
0 10 20 30 40 50 60 70 80 90 100 110 120

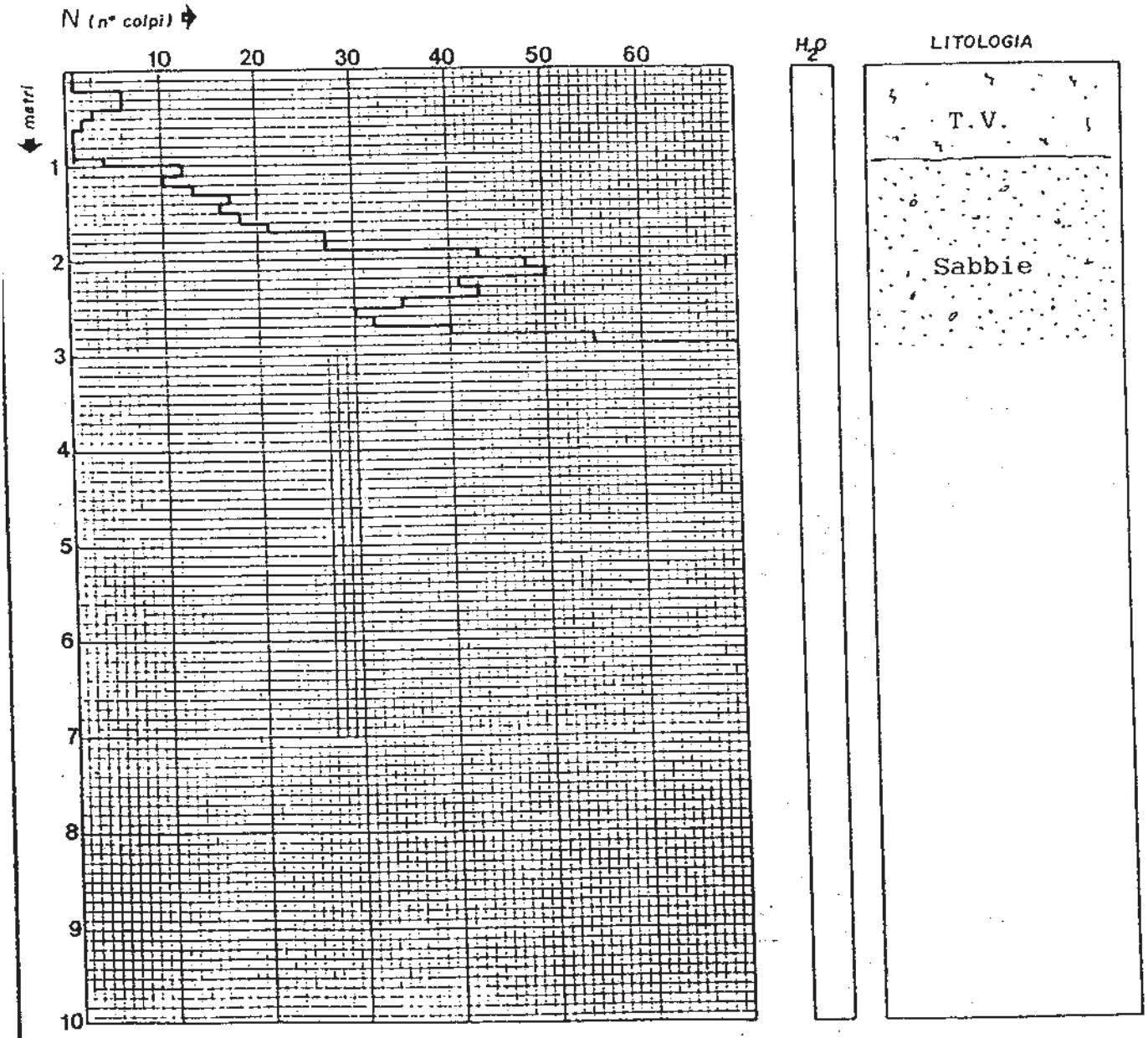


CARATTERISTICHE STRUMENTALI

P.O.M. – ISSMFE 1988

Maglio: peso = 30 Kg , altezza di caduta = 20 cm – Testata d'infissione: 13 Kg

Aste: peso = 2.9 Kg/m , Ø = 20 mm – Punta: apertura del cono = 60°, sezione = 10 cmq , Ø max = 35.7 mm , altezza della parte cilindrica = 9 mm – Avanzamento = 10 cm



CARATTERISTICHE STRUMENTALI

P.O.M. - ISSMFE 1988

Maglio: peso = 30 Kg , altezza di caduta = 20 cm - Testata d'infissione: 13 Kg

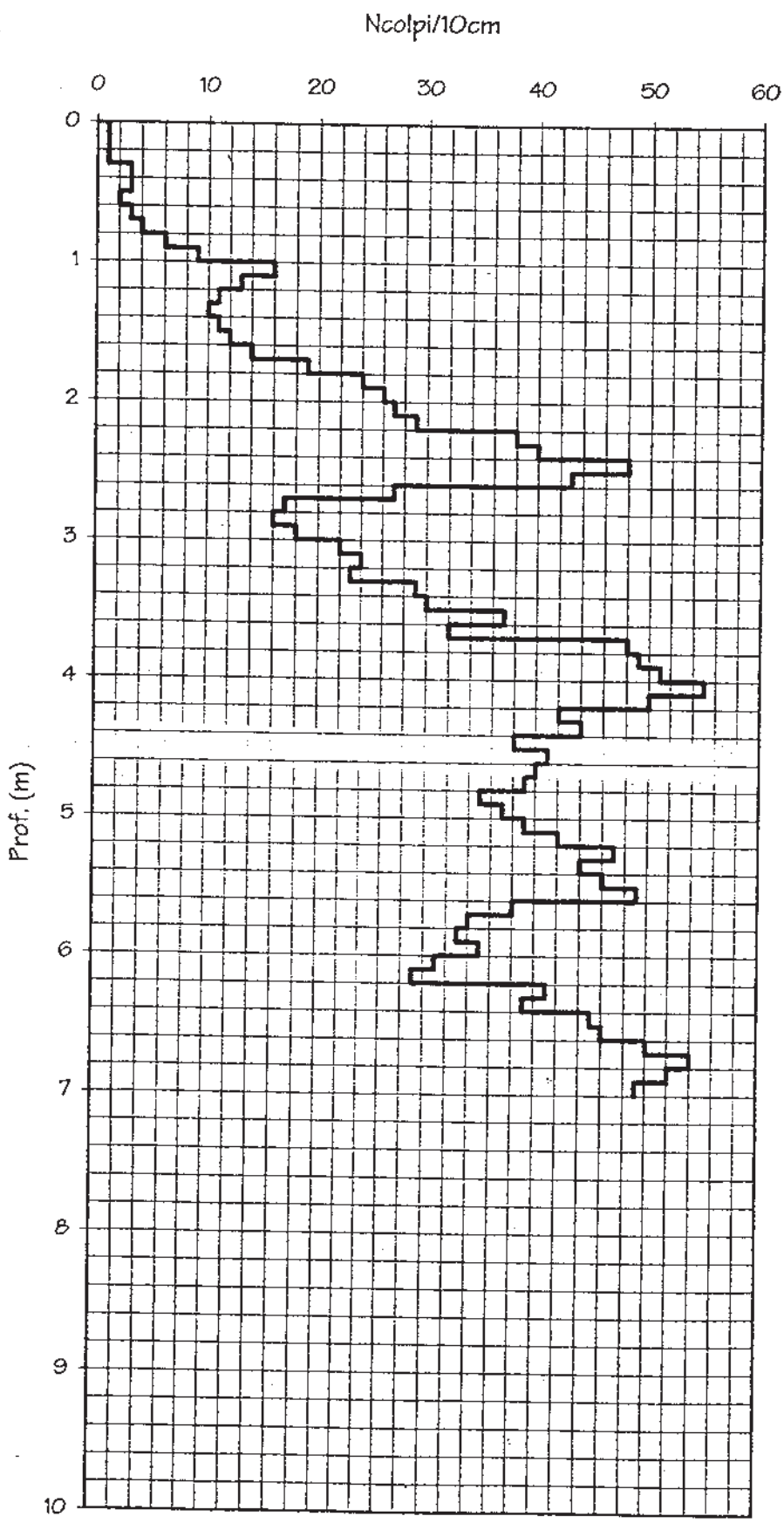
Aste: peso = 2.9 Kg/m , Ø = 20 mm - Punta: apertura del cono = 60°, sezione = 10 cmq , Ø max = 35.7 mm , altezza della parte cilindrica = 9 mm - Avanzamento = 10 cm

Prof. (m da	Ncolpi /10 cm	Resist. dinam. (kg/cmq)
0,10	1	4
0,20	1	4
0,30	1	4
0,40	3	11
0,50	3	11
0,60	2	7
0,70	3	11
0,80	4	14
0,90	6	21
1,00	9	31
1,10	16	55
1,20	13	44
1,30	11	38
1,40	10	34
1,50	11	38
1,60	12	41
1,70	14	48
1,80	19	65
1,90	24	82
2,00	26	85
2,10	27	88
2,20	29	95
2,30	38	124
2,40	40	130
2,50	48	157
2,60	43	140
2,70	27	88
2,80	17	55
2,90	16	52
3,00	18	56
3,10	22	69
3,20	24	75
3,30	23	72
3,40	29	91
3,50	30	94
3,60	37	116
3,70	32	100
3,80	48	150
3,90	49	153
4,00	51	159
4,10	55	172
4,20	50	156
4,30	42	131
4,40	44	138
4,50	38	119
4,60	41	128
4,70	40	125
4,80	39	122
4,90	35	109
5,00	37	111
5,10	39	117
5,20	42	126
5,30	47	141
5,40	44	132
5,50	46	138
5,60	49	147
5,70	38	114
5,80	34	102
5,90	33	99
6,00	35	101
6,10	31	89
6,20	29	84
6,30	41	118
6,40	39	113
6,50	45	130
6,60	46	133
6,70	50	144
6,80	54	156
6,90	52	150
7,00	49	136

Località: Perignano, Lari (PI)
Via: Spinelli
Comm.te:

PROVA PENETROMETRICA DINAMICA

Data: 24/7/98



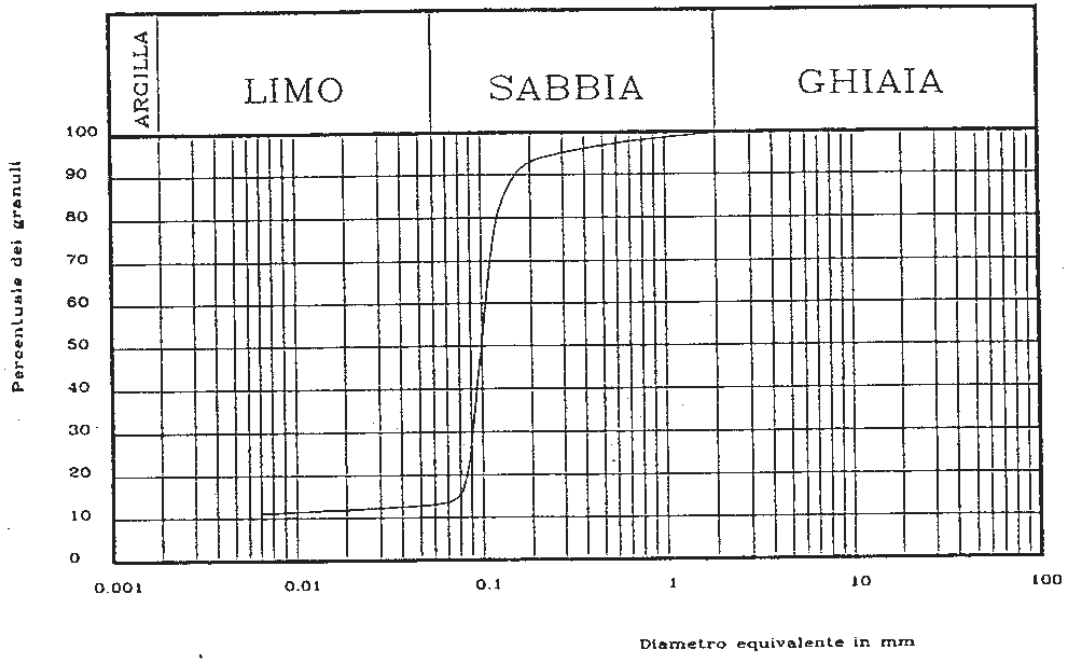
COLONNA STRATIGRAFICA	PROF. in m da P.C.	DESCRIZIONE
	0	TERRENO VEGETALE
	1	
	2	SABBIA FINE DI COLORE GIALLO
	3	
	4	

CURVA GRANULOMETRICA

Scavo 1

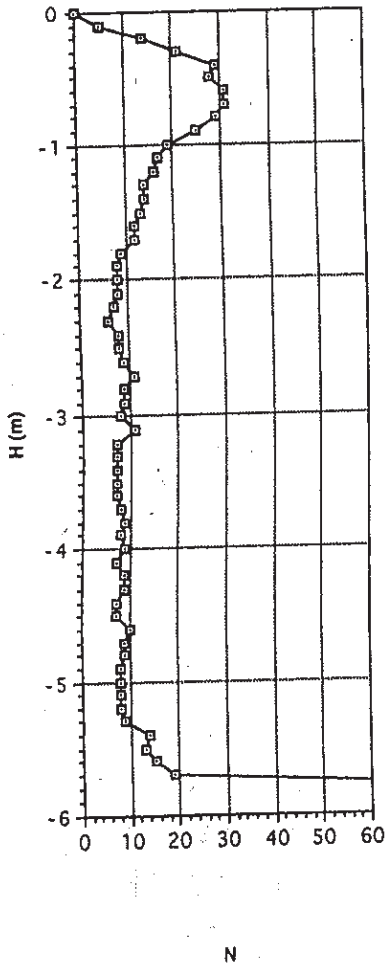
Campione 1

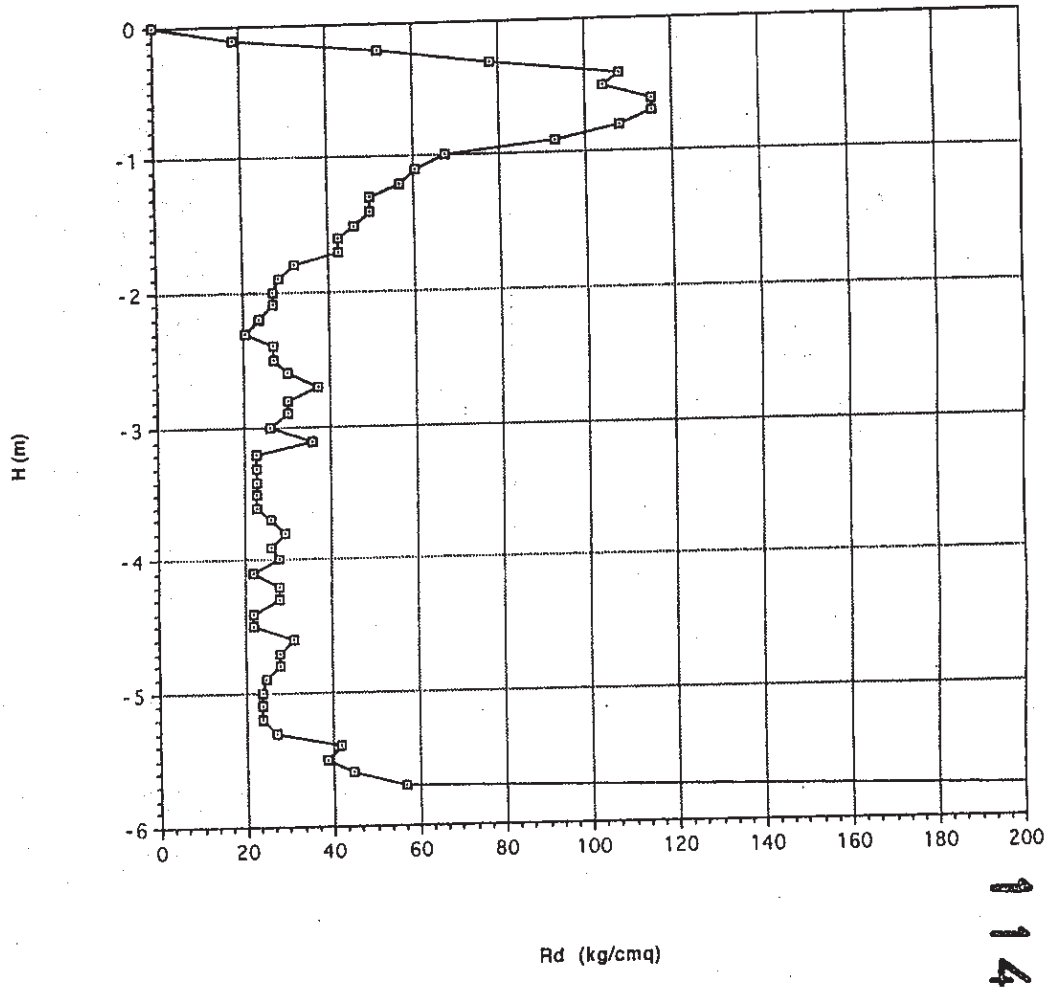
Profondità 2.20 m d.p.c.



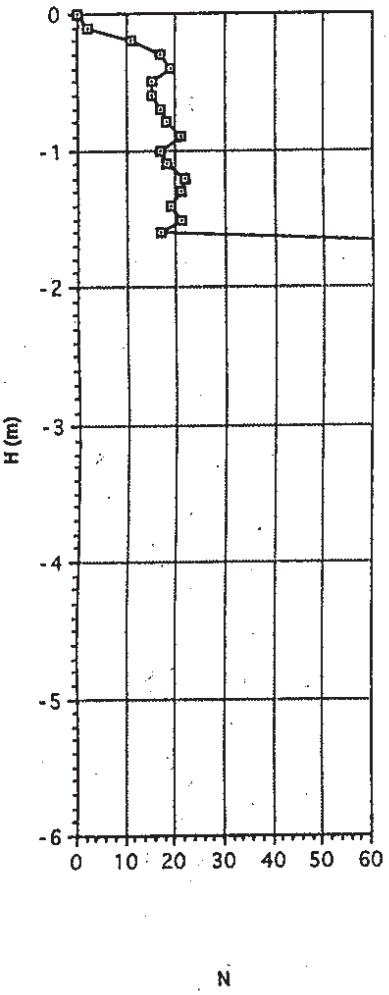
Classifica A.G.I.: ***SABBIA DEBOLMENTE LIMOSA***

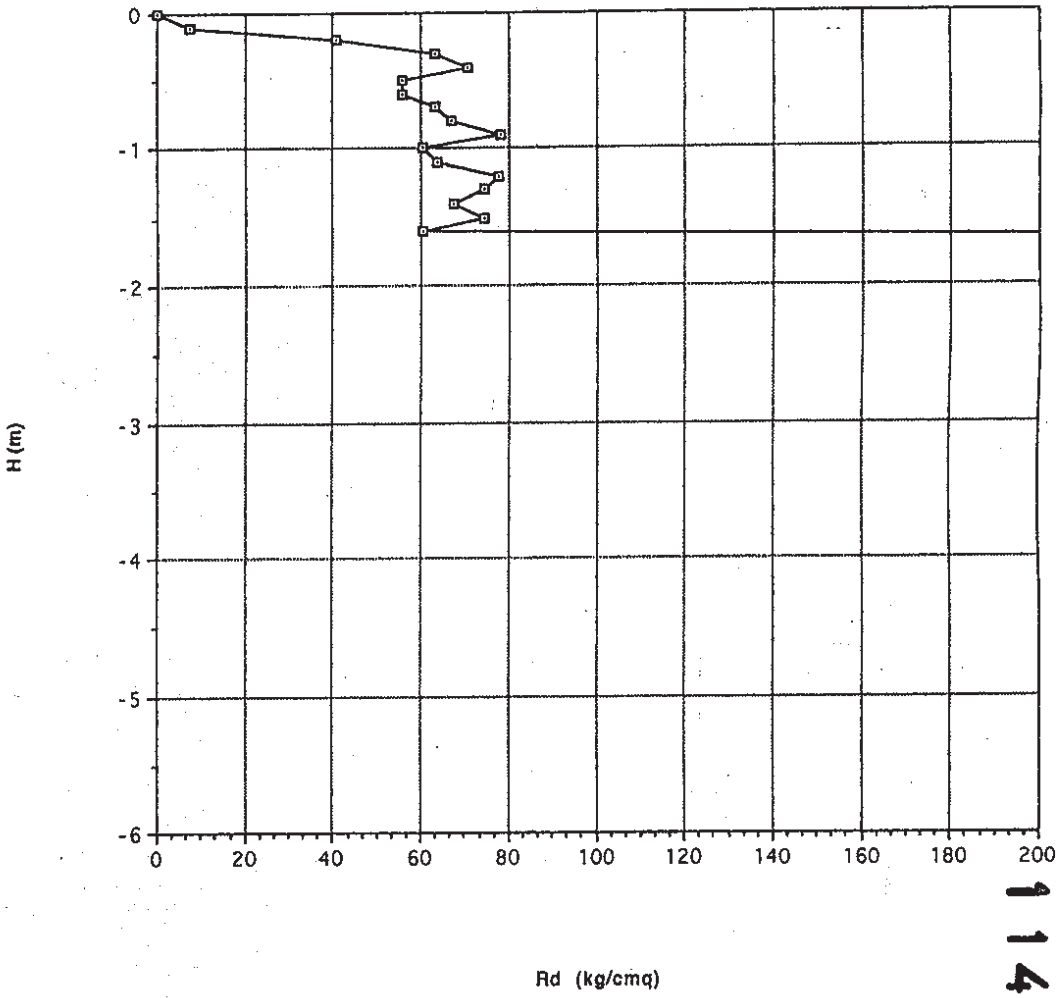
4854

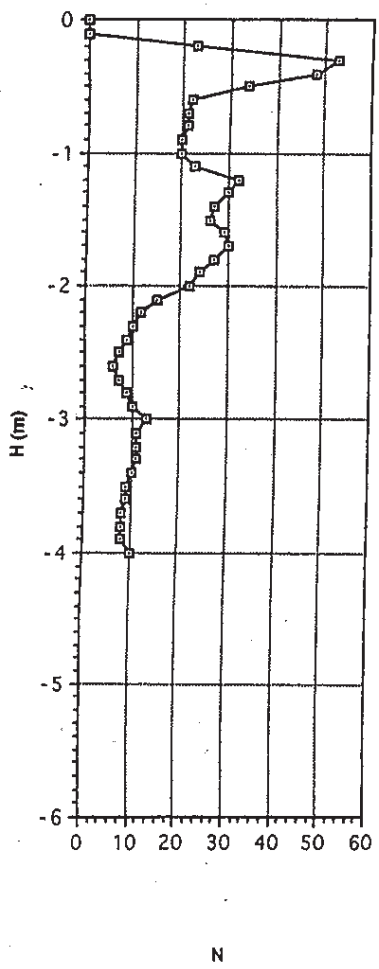

H (m)
0
-1
-2
-3
-4
-5
-6
0 10 20 30 40 50 60
N

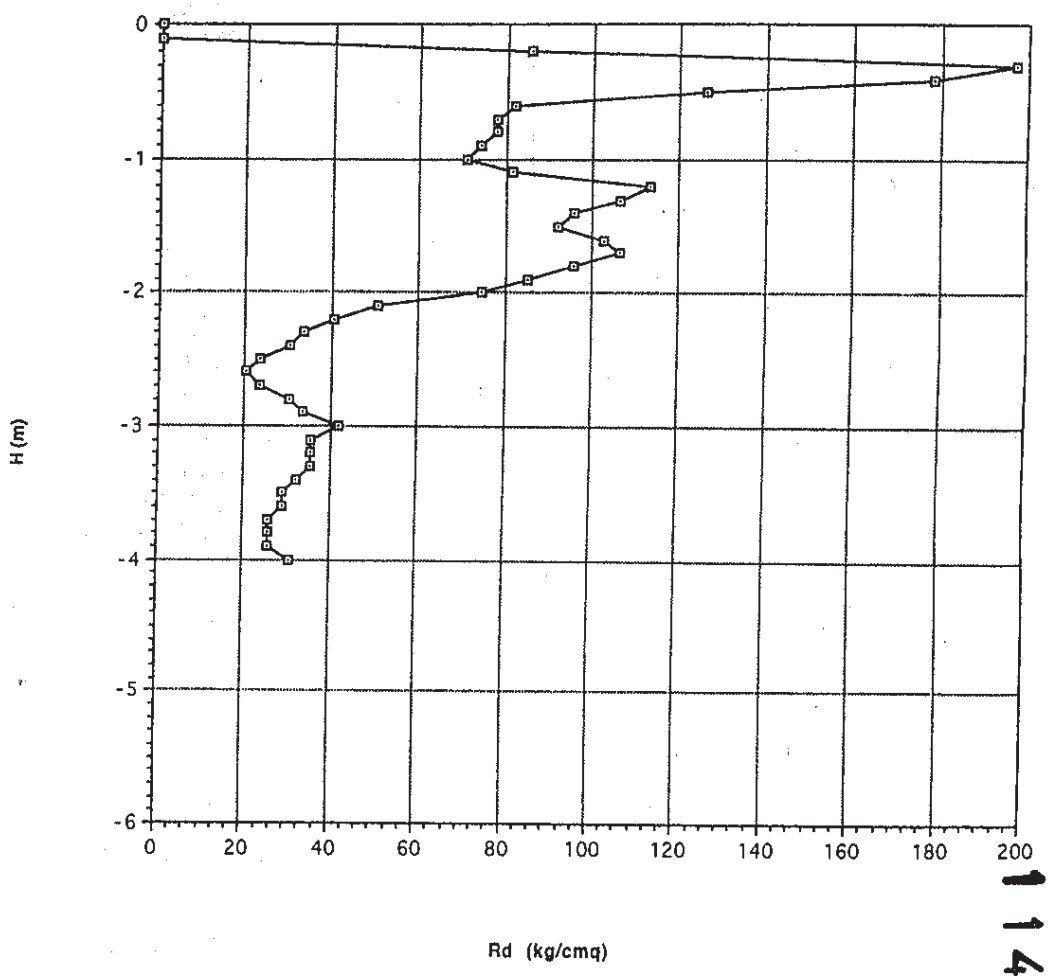

H (m)
0
-1
-2
-3
-4
-5
-6
0 20 40 60 80 100 120 140 160 180 200
Rd (kg/cmq)

114


H (m)
0
-1
-2
-3
-4
-5
-6
0 10 20 30 40 50 60
N


H (m)
0
-1
-2
-3
-4
-5
-6
0 20 40 60 80 100 120 140 160 180 200
Rd (kg/cmq)


H (m)
0
-1
-2
-3
-4
-5
-6
0 10 20 30 40 50 60
N

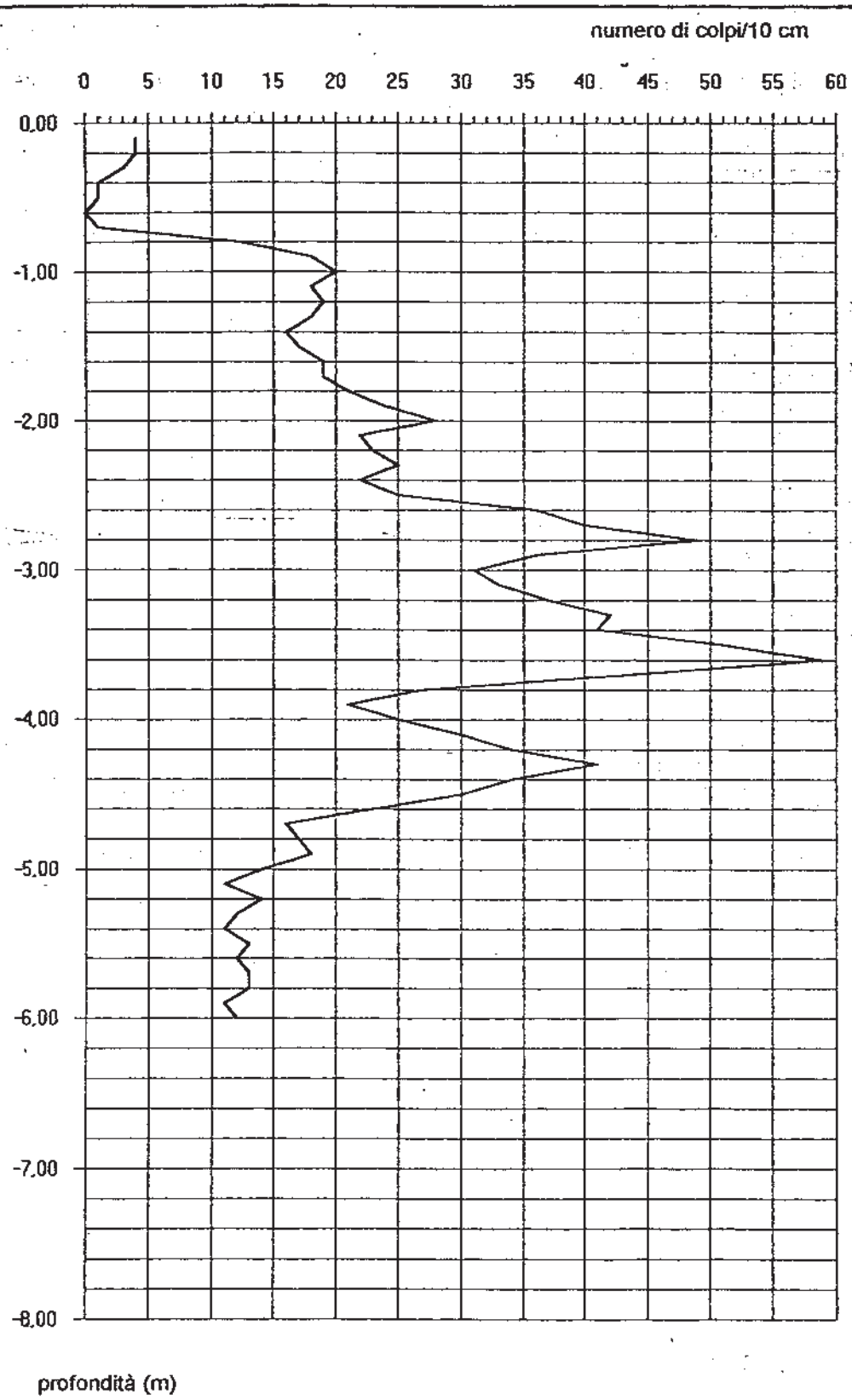

H (m)
0
-1
-2
-3
-4
-5
-6
0 20 40 60 80 100 120 140 160 180 200
Rd (kg/cmq)

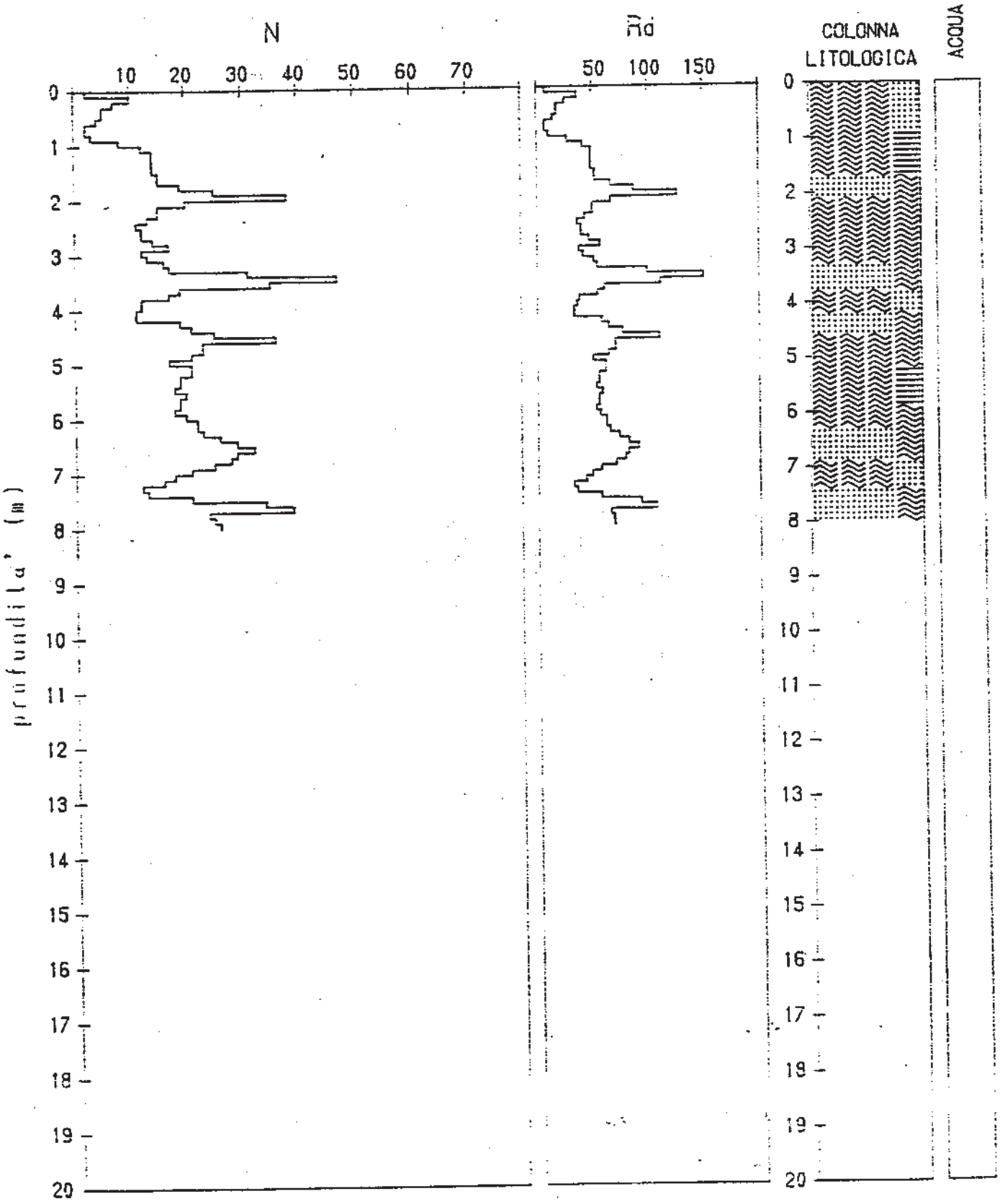
114

Loc: Spinelli - Perignano Lari ...

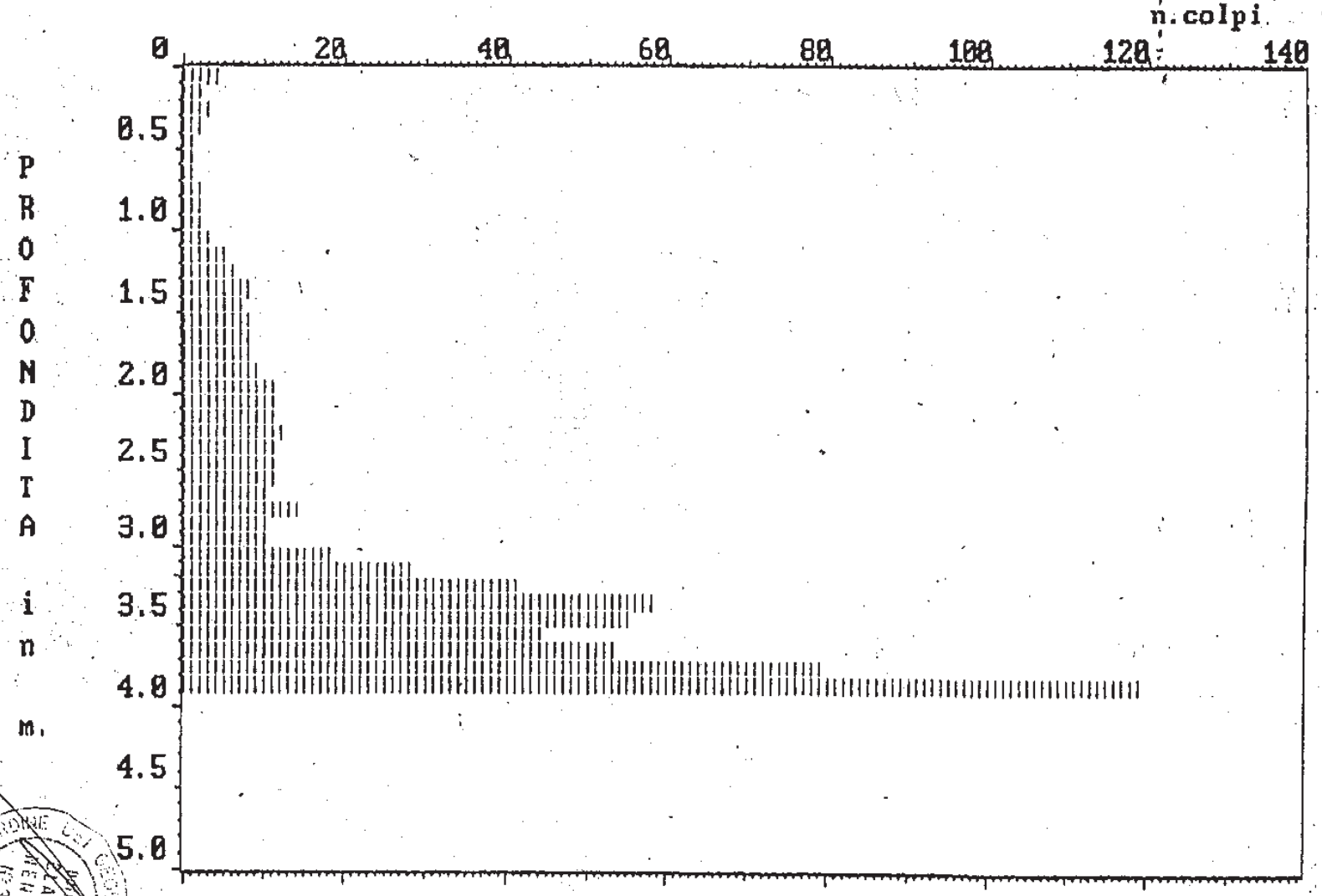
PROVA PENETROMETRICA DINAMICA LEGGERA

m da p.c.	colpi / 10 cm	Rd Kg/cm q
0,10	4	14,29
0,20	4	14,29
0,30	3	10,71
0,40	1	3,57
0,50	1	3,57
0,60	0	0,00
0,70	1	3,57
0,80	12	42,86
0,90	18	64,29
1,00	20	68,18
1,10	18	61,36
1,20	19	64,77
1,30	18	61,36
1,40	16	54,55
1,50	17	57,95
1,60	19	64,77
1,70	19	64,77
1,80	21	71,59
1,90	24	81,82
2,00	28	91,30
2,10	22	71,74
2,20	23	75,00
2,30	25	81,52
2,40	22	71,74
2,50	25	81,52
2,60	36	117,39
2,70	40	130,43
2,80	49	159,78
2,90	36	117,39
3,00	31	96,88
3,10	33	103,13
3,20	37	115,63
3,30	42	131,25
3,40	41	128,13
3,50	51	159,38
3,60	59	184,38
3,70	43	134,38
3,80	27	84,38
3,90	21	65,63
4,00	25	78,13
4,10	30	93,75
4,20	34	106,25
4,30	41	128,13
4,40	34	106,25
4,50	30	93,75
4,60	23	71,88
4,70	16	50,00
4,80	17	53,13
4,90	18	56,25
5,00	14	42,00
5,10	11	33,00
5,20	14	42,00
5,30	12	36,00
5,40	11	33,00
5,50	13	39,00
5,60	12	36,00
5,70	13	39,00
5,80	13	39,00
5,90	11	33,00
6,00	12	34,62

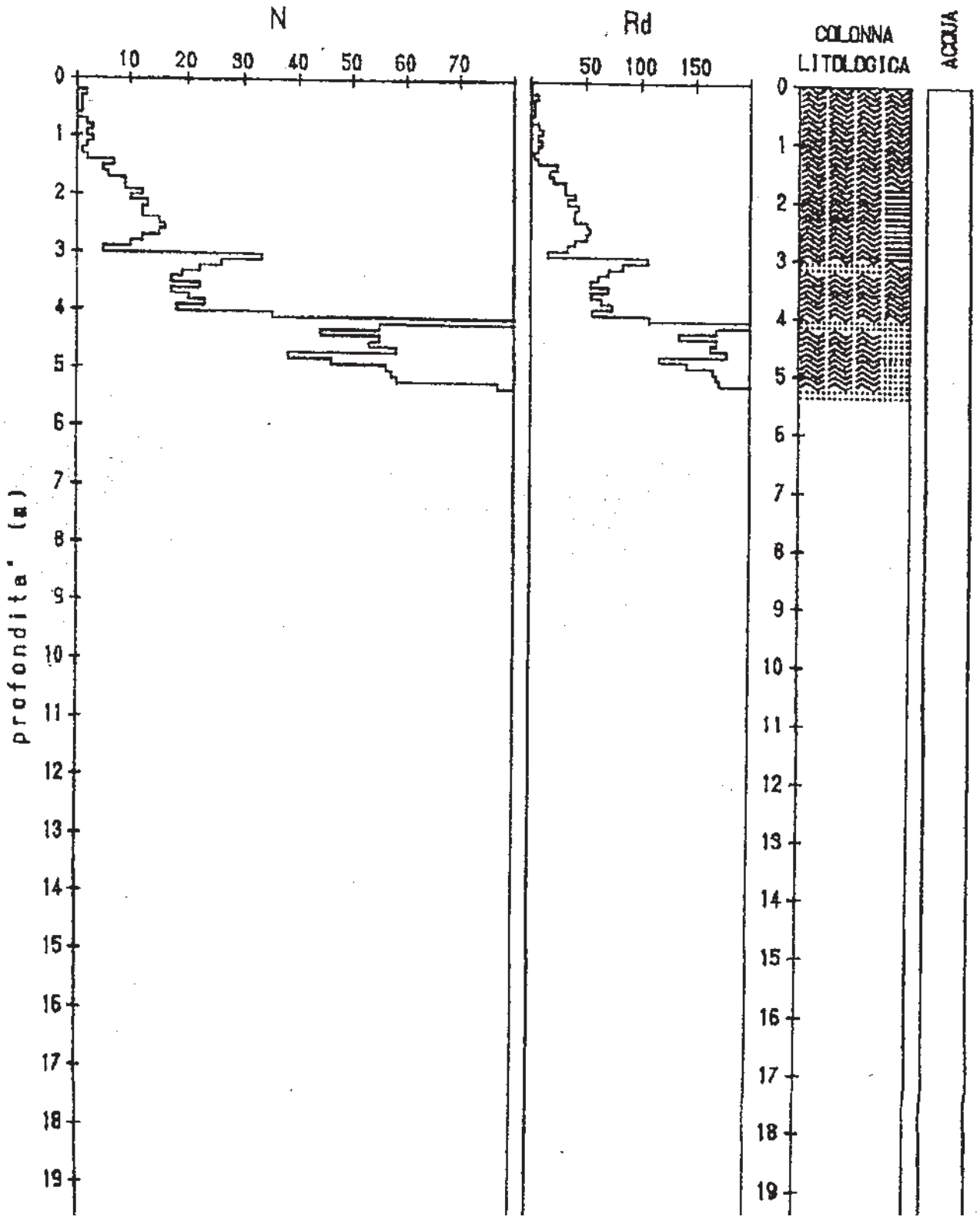


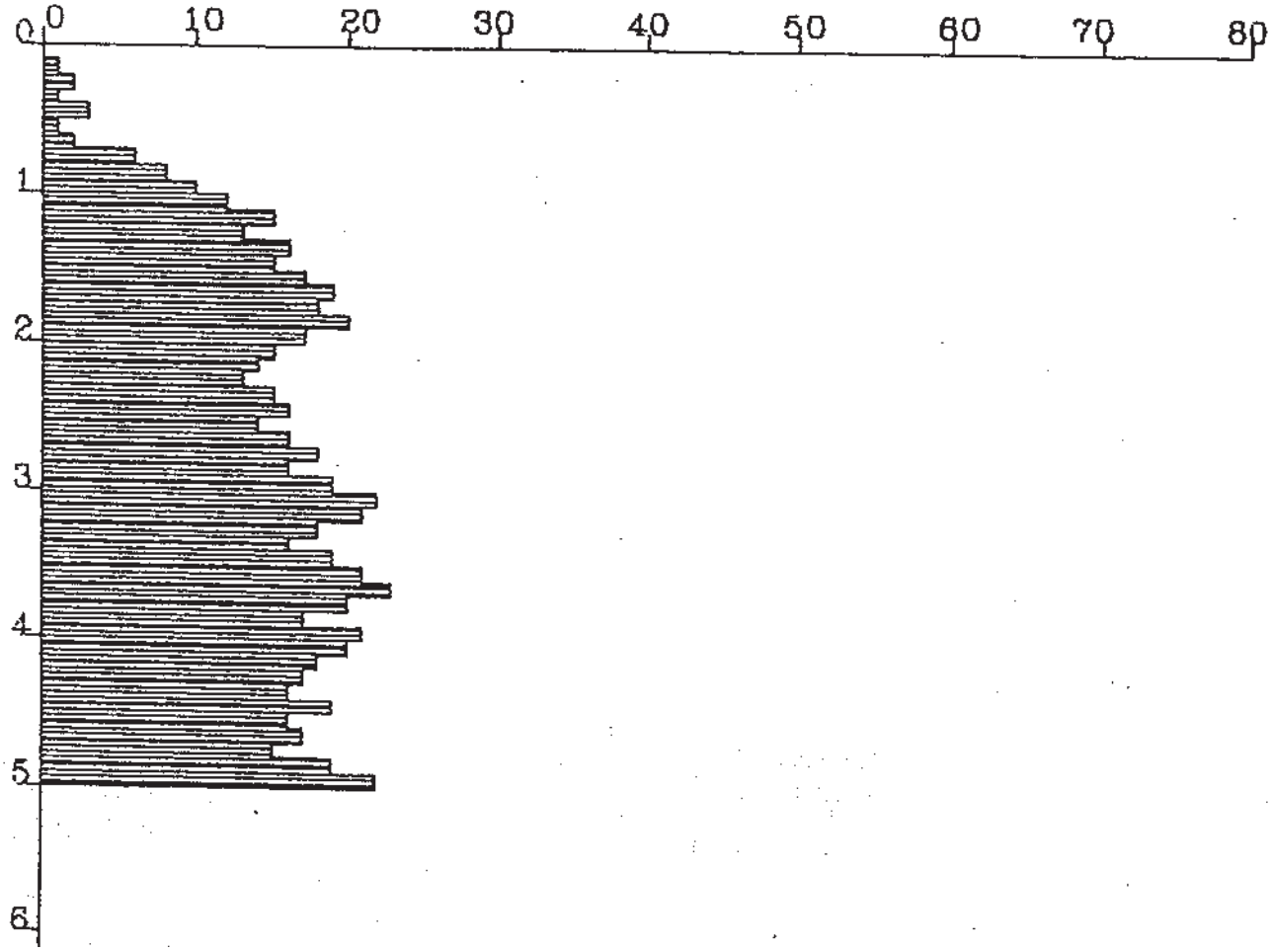

N
10 20 30 40 50 60 70
Rd
50 100 150
COLONNA LITOLOGICA
ACQUA
profondità (m)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

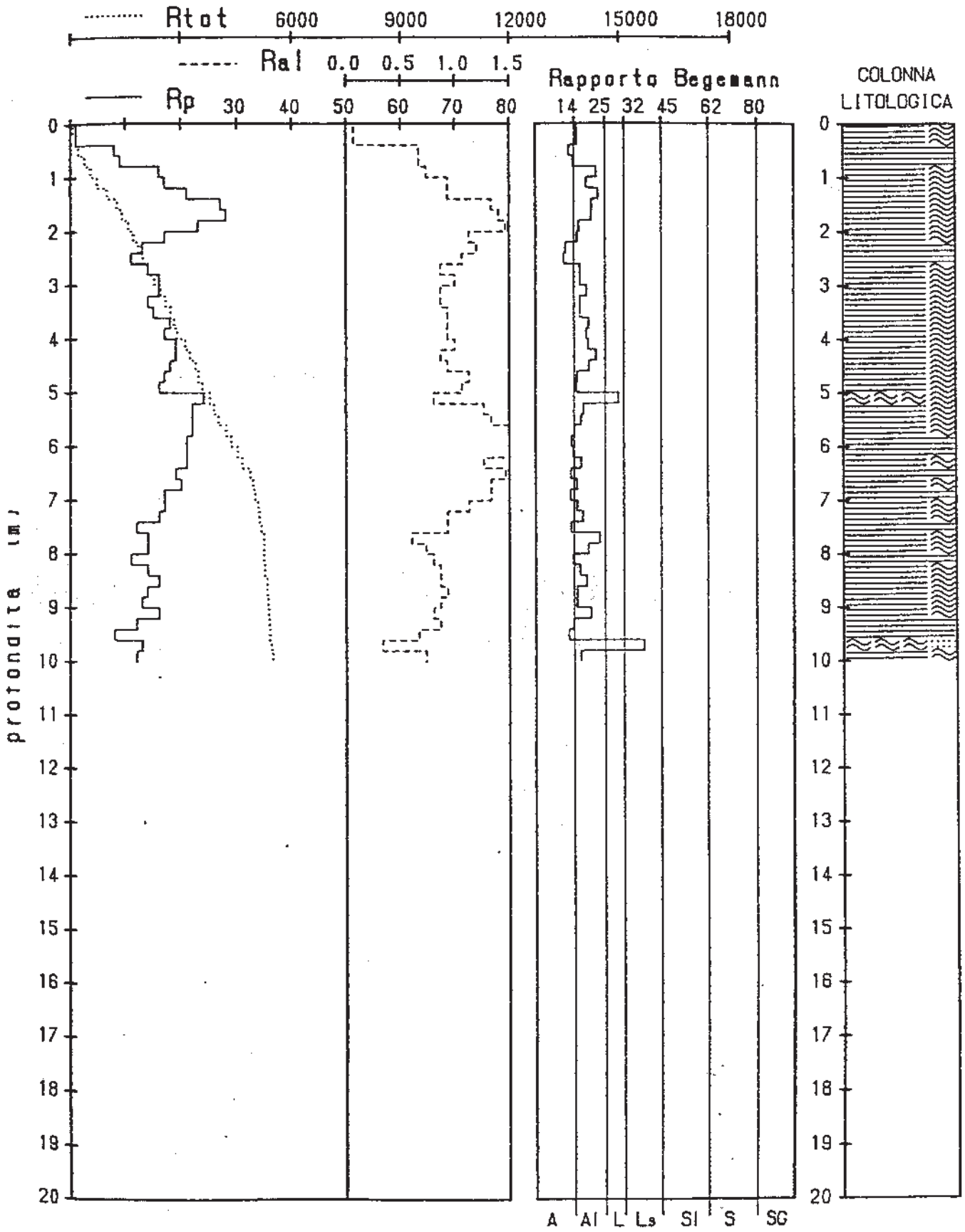
PROVA PENETROMETRICA [S.C.P.T.] N. 1

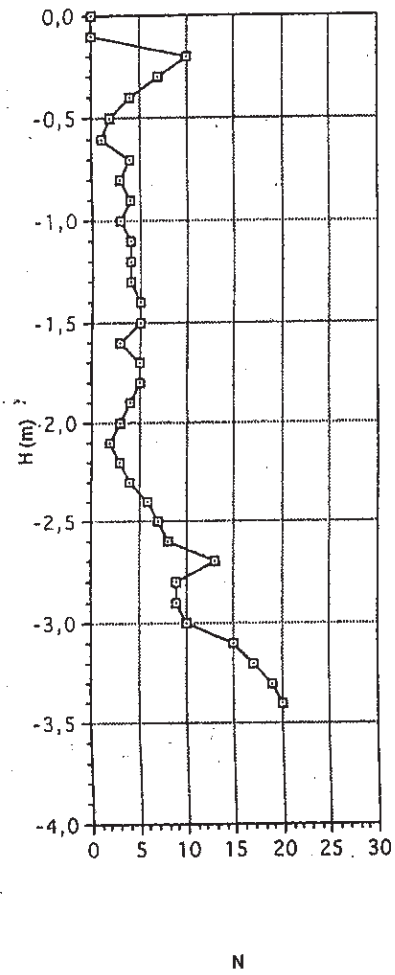


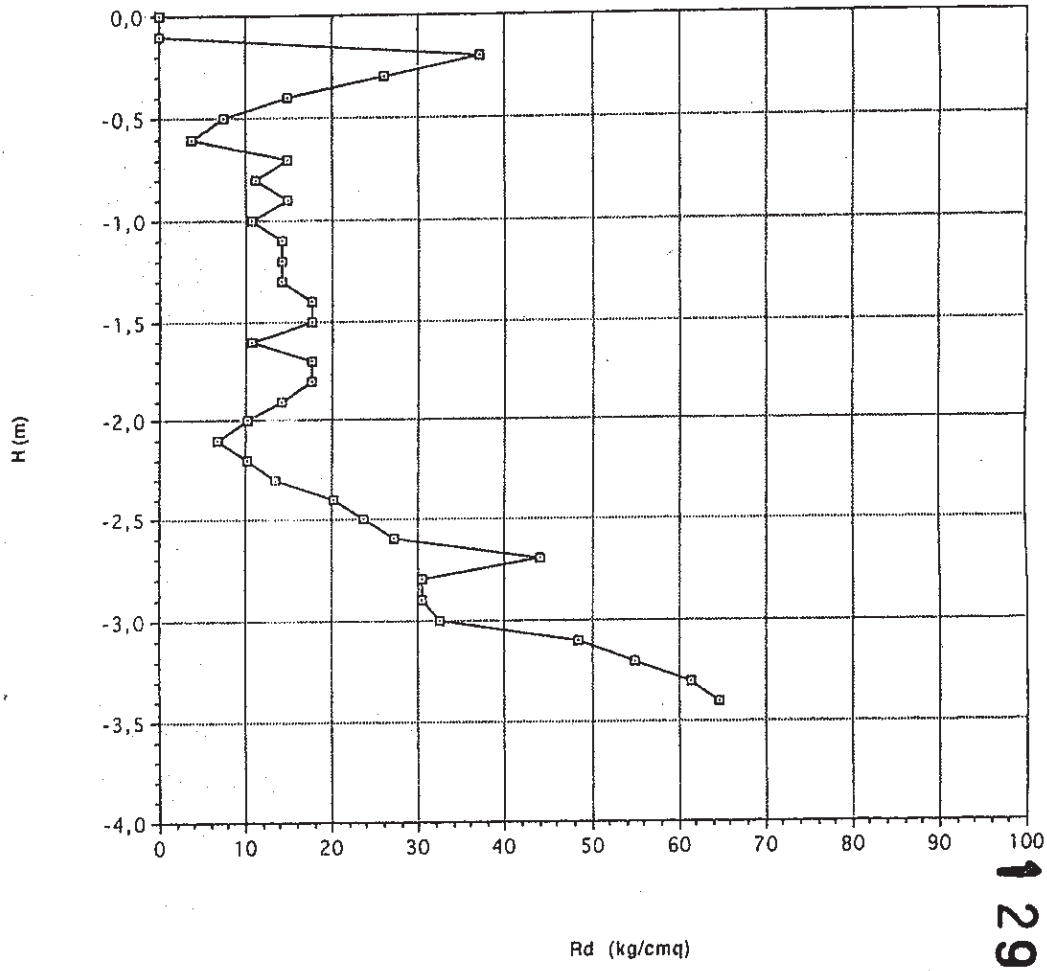
Resistenza : punta (I 1 colpo/10 cm.) rivestimento (—)

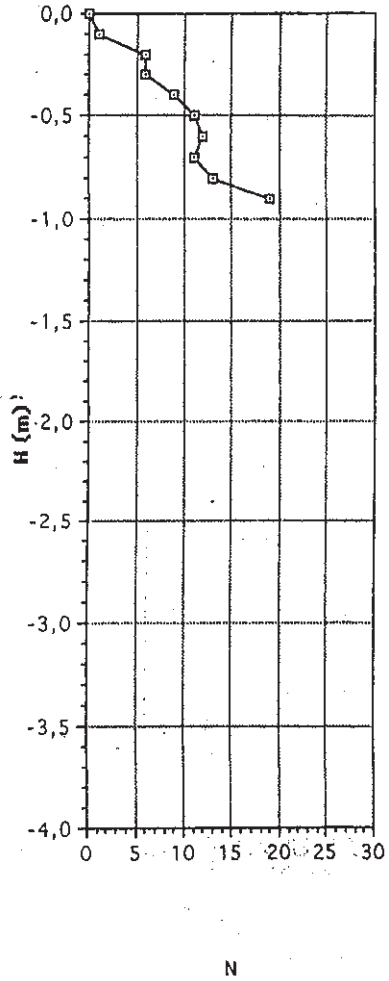

N
10 20 30 40 50 60 70
Rd
50 100 150
COLONNA LITOLOGICA
ACQUA
profondita' (m)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

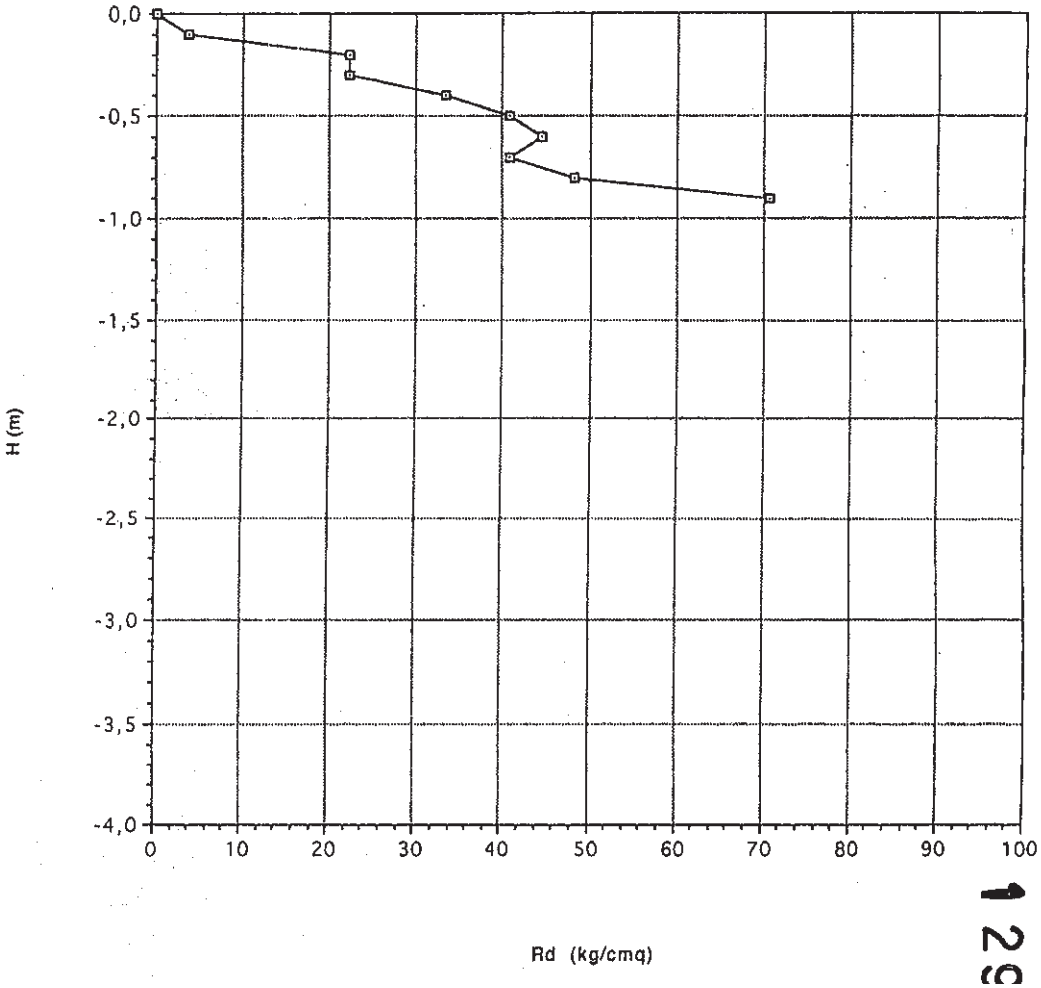

0
10
20
30
40
50
60
70
80
0
1
2
3
4
5
6

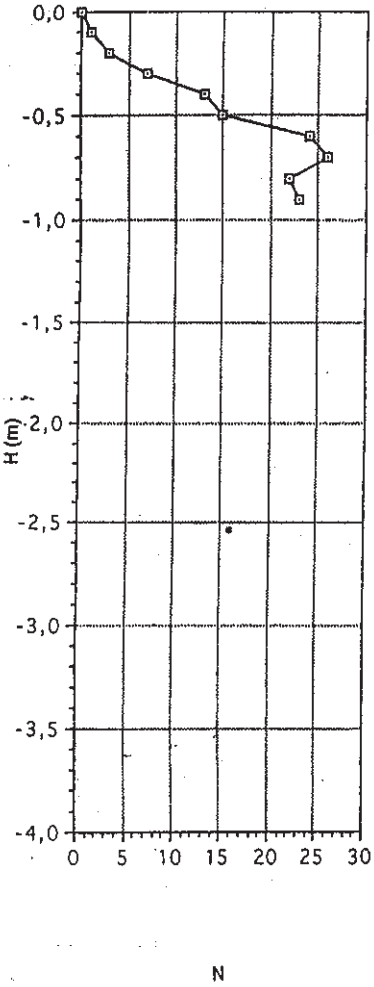

Rtot
6000
9000
12000
15000
18000
Ral
0.0
0.5
1.0
1.5
Rp
30
40
50
60
70
80
Rapporto Begemann
14
25
32
45
62
80
COLONNA LITOLOGICA
profondità (m)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
Al
L
Ls
Sl
S
SG

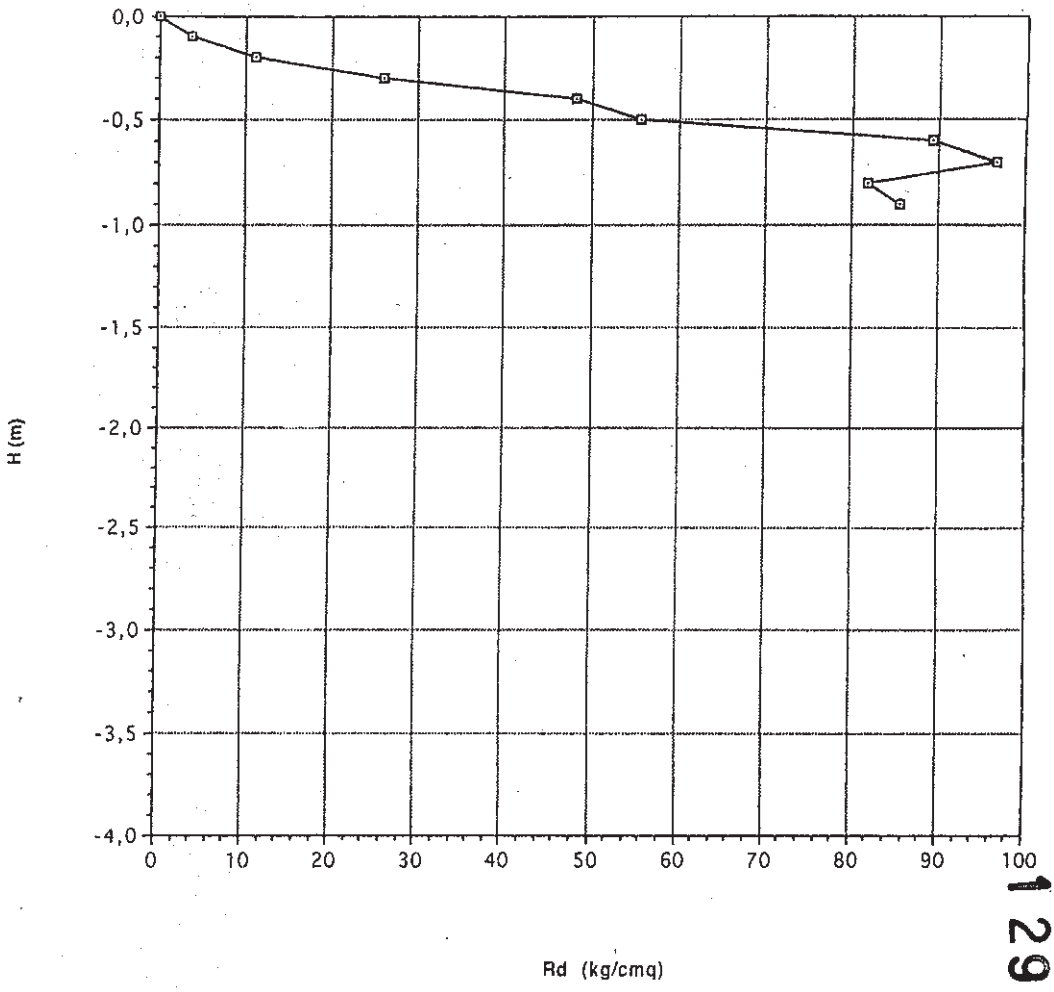

0,0
-0,5
-1,0
-1,5
-2,0
-2,5
-3,0
-3,5
-4,0
H (m)
0
5
10
15
20
25
30
N

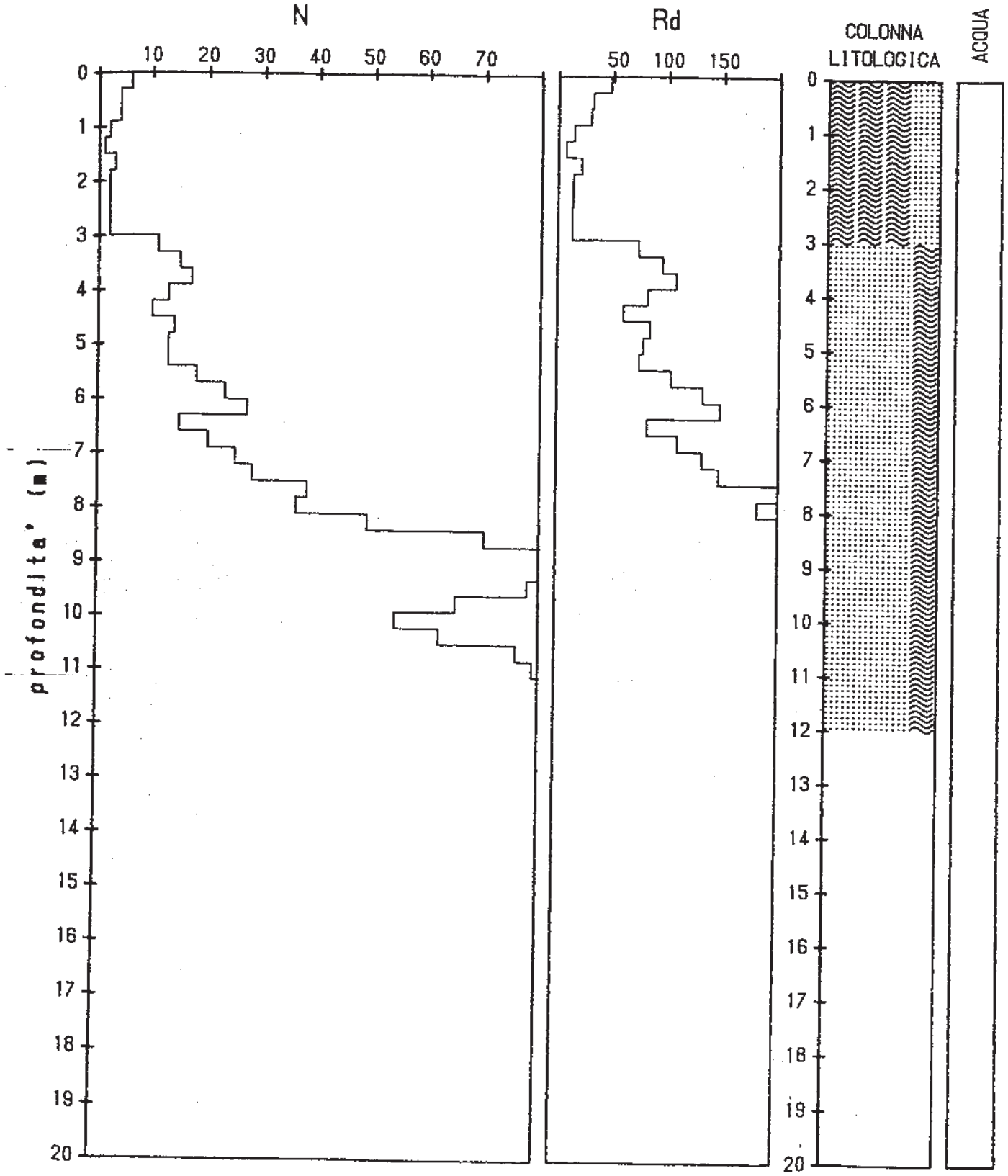

0,0
-0,5
-1,0
-1,5
-2,0
-2,5
-3,0
-3,5
-4,0
H (m)
0
10
20
30
40
50
60
70
80
90
100
Rd (kg/cmq)

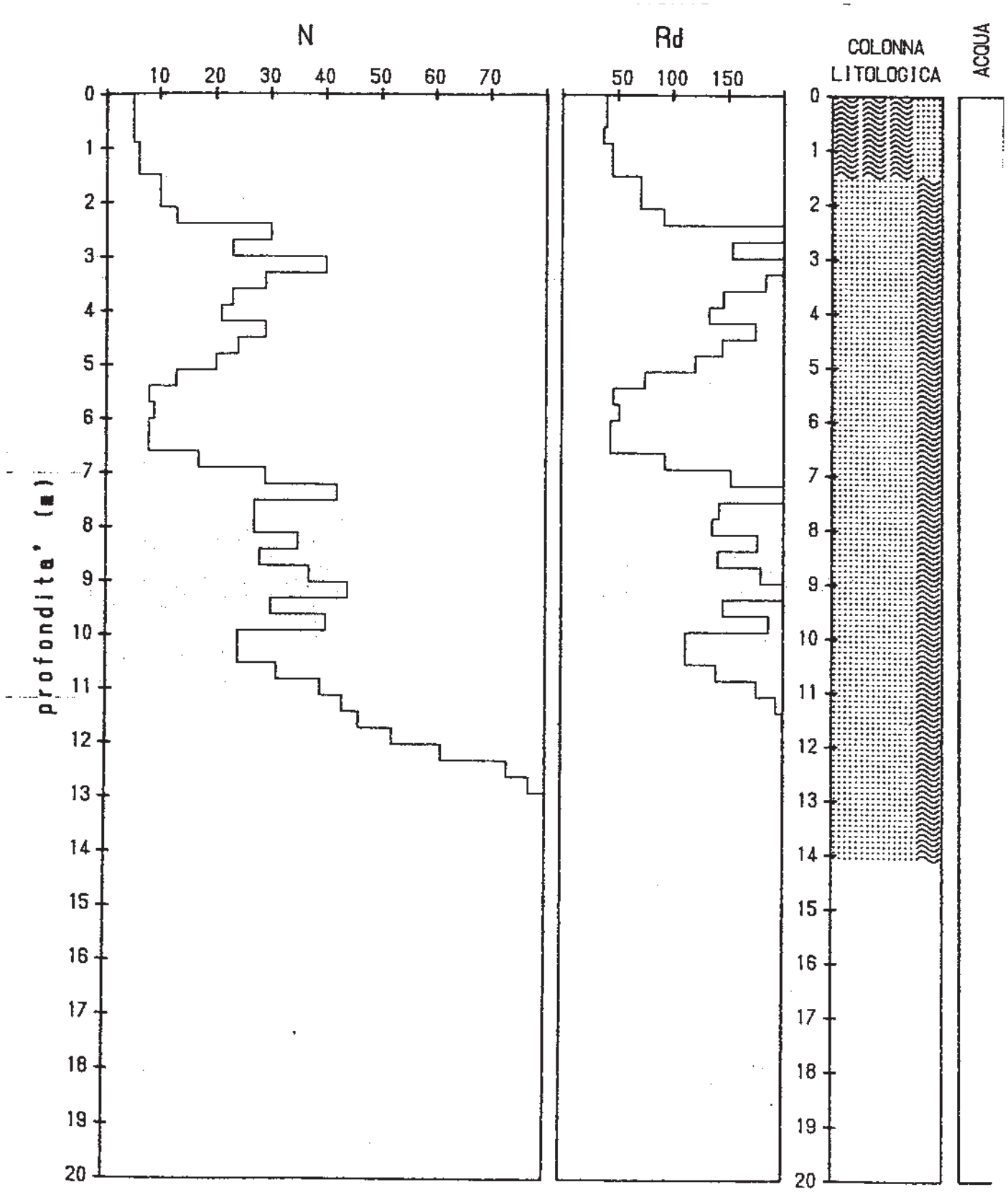

H (m)
0,0
-0,5
-1,0
-1,5
-2,0
-2,5
-3,0
-3,5
-4,0
0
5
10
15
20
25
30
N

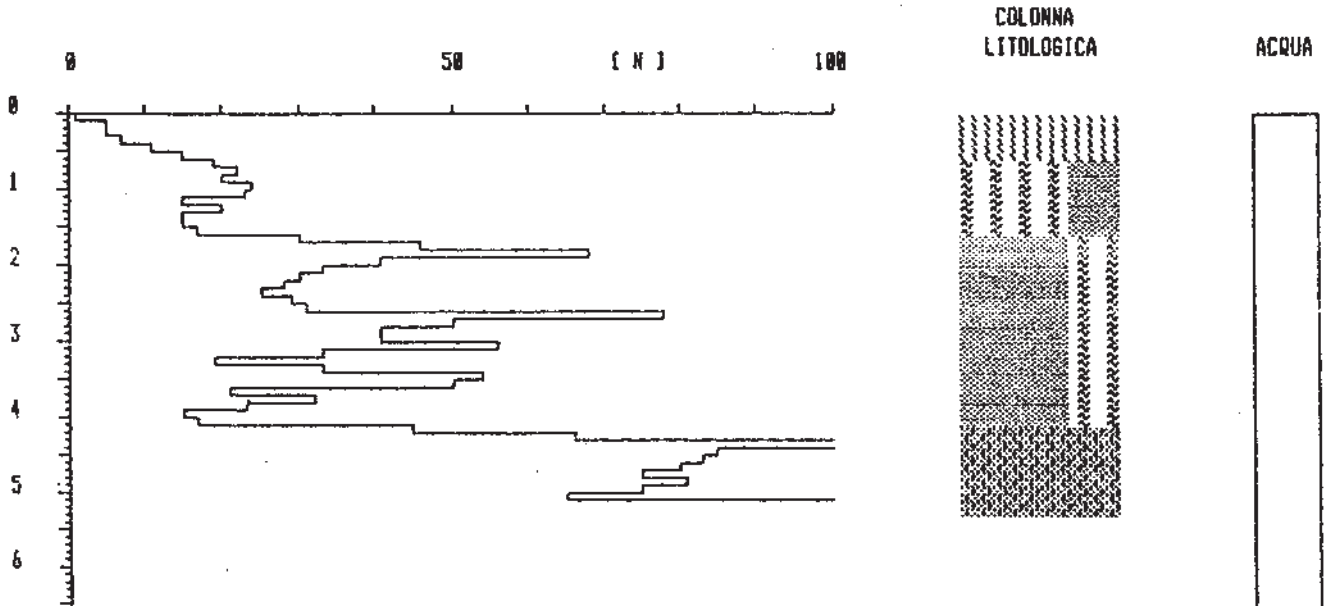

H (m)
0,0
-0,5
-1,0
-1,5
-2,0
-2,5
-3,0
-3,5
-4,0
0
10
20
30
40
50
60
70
80
90
100
Rd (kg/cmq)

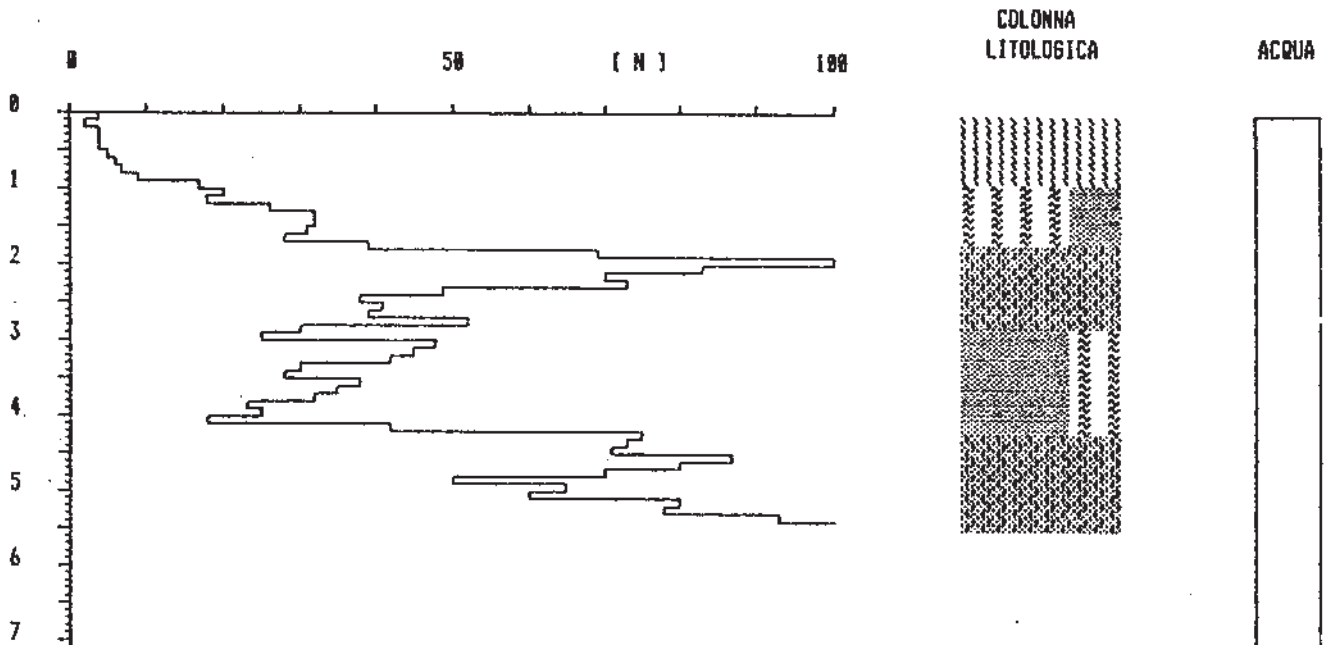

0,0
-0,5
-1,0
-1,5
-2,0
-2,5
-3,0
-3,5
-4,0
H (m)
0
5
10
15
20
25
30
N

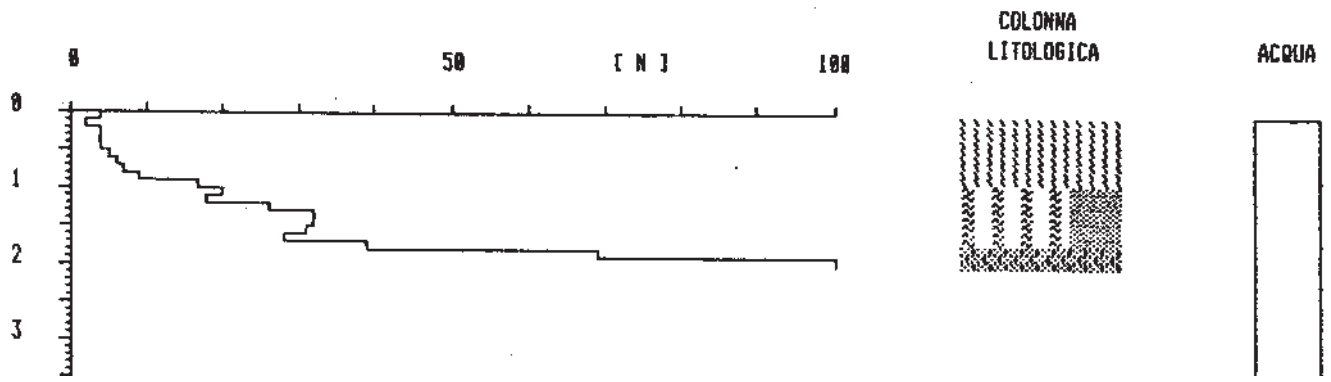

0,0
-0,5
-1,0
-1,5
-2,0
-2,5
-3,0
-3,5
-4,0
H (m)
0
10
20
30
40
50
60
70
80
90
100
Rd (kg/cmq)

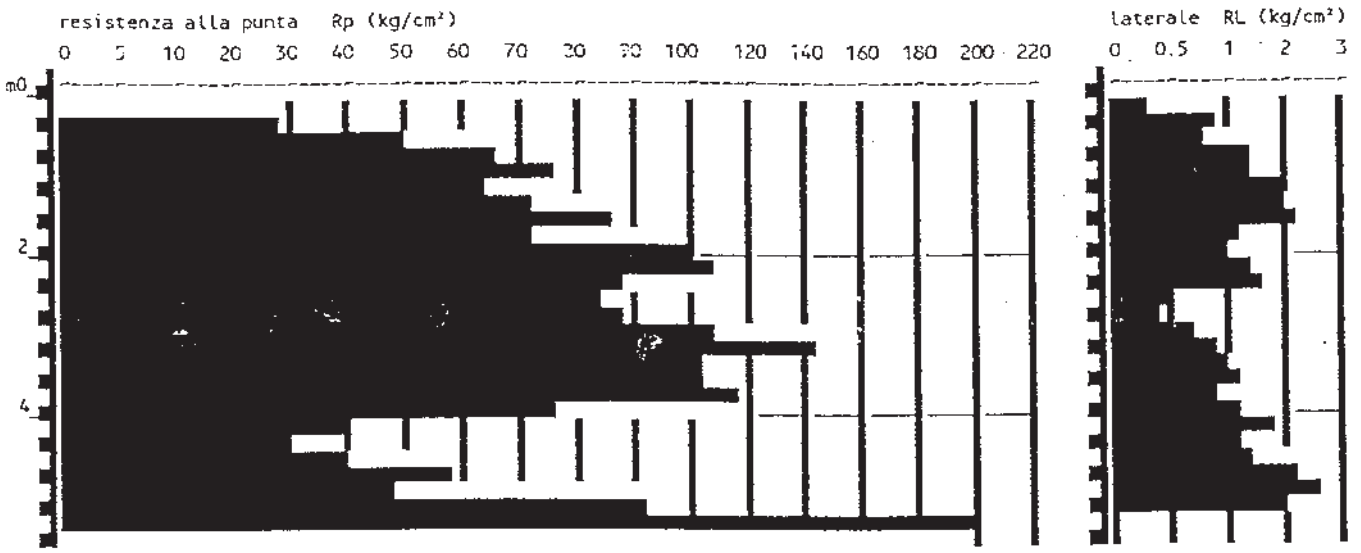

N
10 20 30 40 50 60 70
Rd
50 100 150
COLONNA LITOLOGICA
ACQUA
profondita' (m)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

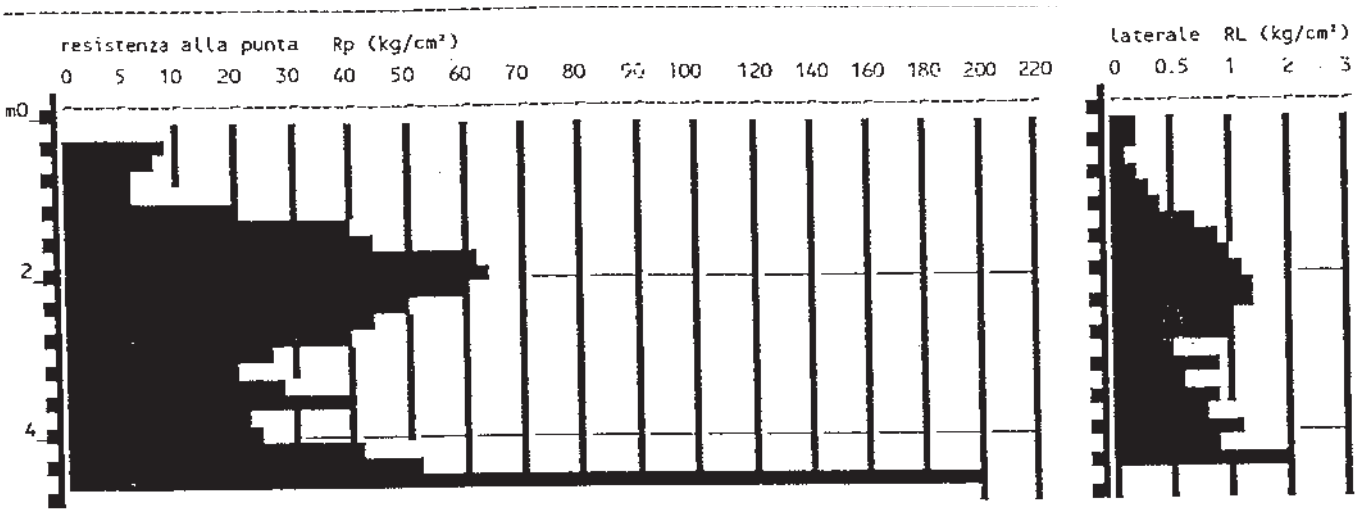

N
10 20 30 40 50 60 70
Rd
50 100 150
COLONNA LITOLOGICA
ACQUA
profondita' (m)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

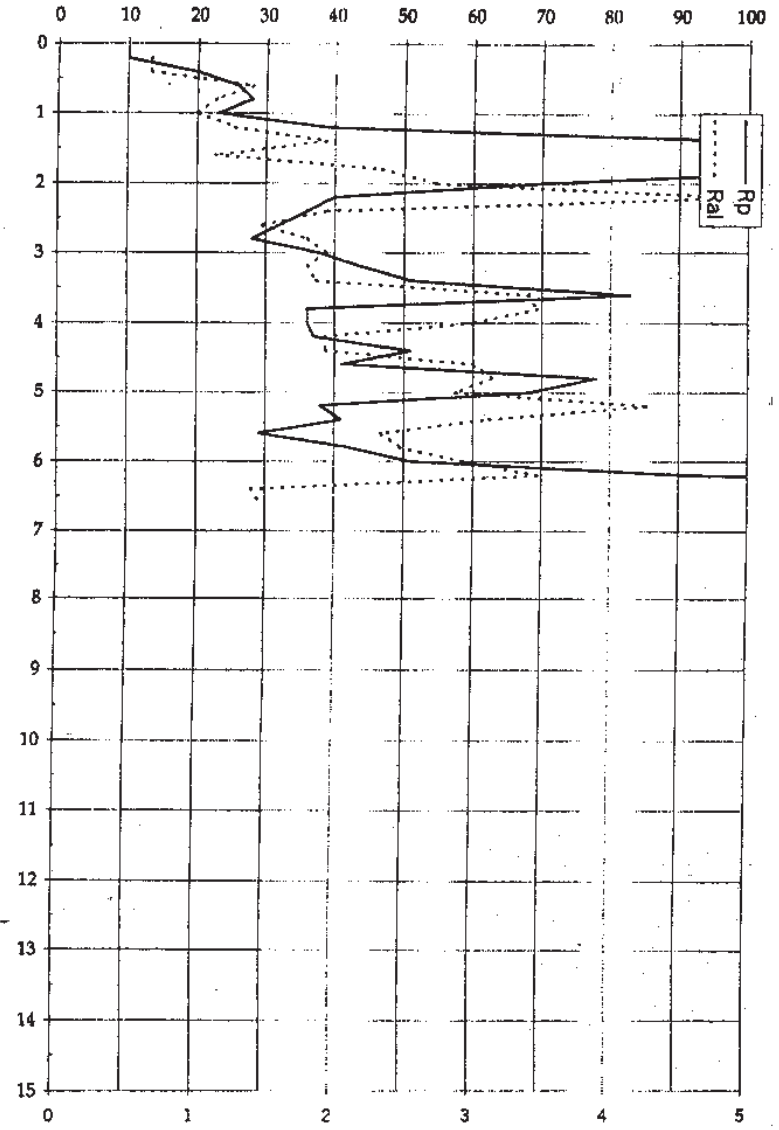

0
50
[N]
100
0
1
2
3
4
5
6
COLONNA
LITOLOGICA
ACQUA

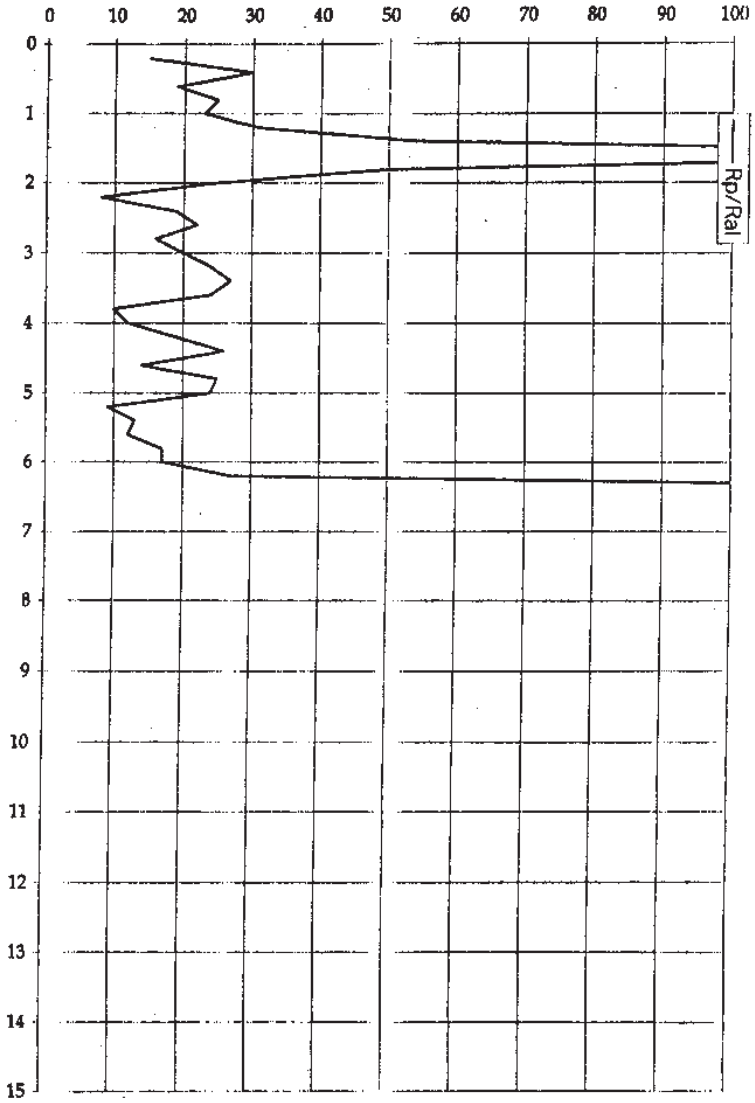

0
50
[N]
100
0
1
2
3
4
5
6
7
COLONNA
LITOLOGICA
ACQUA

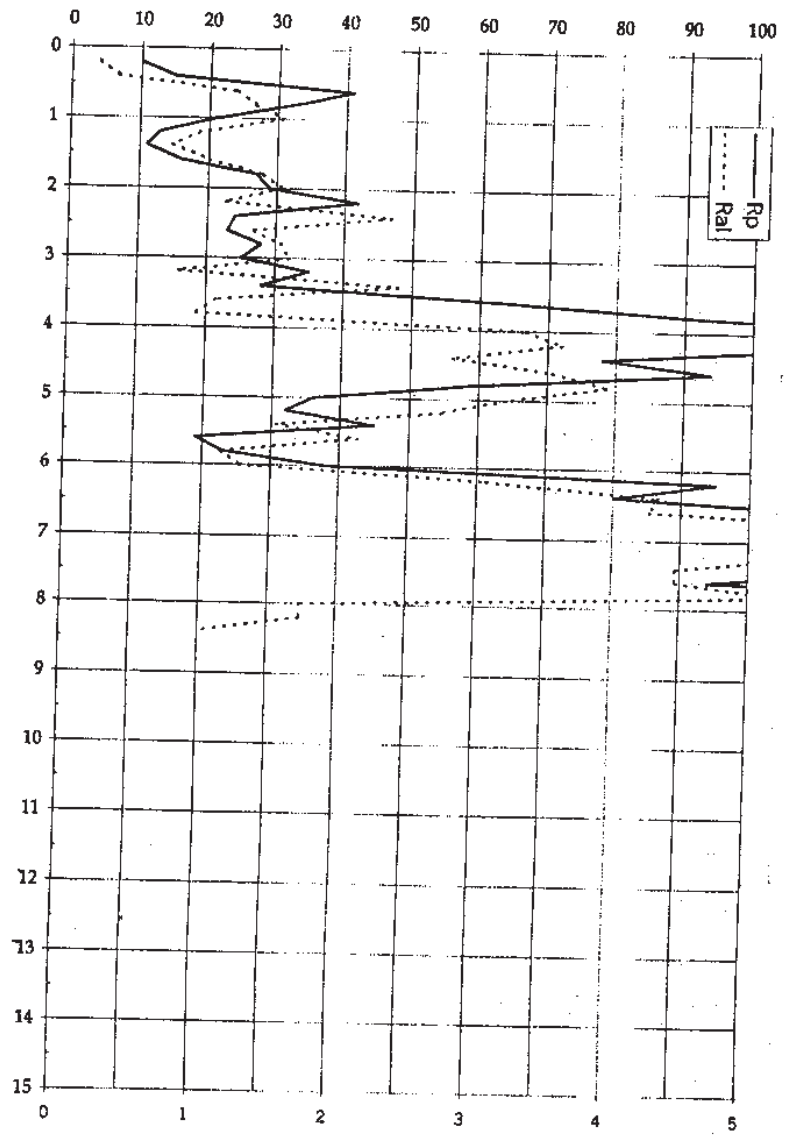

0
50
[N]
100
0
1
2
3
COLONNA
LITOLOGICA
ACQUA

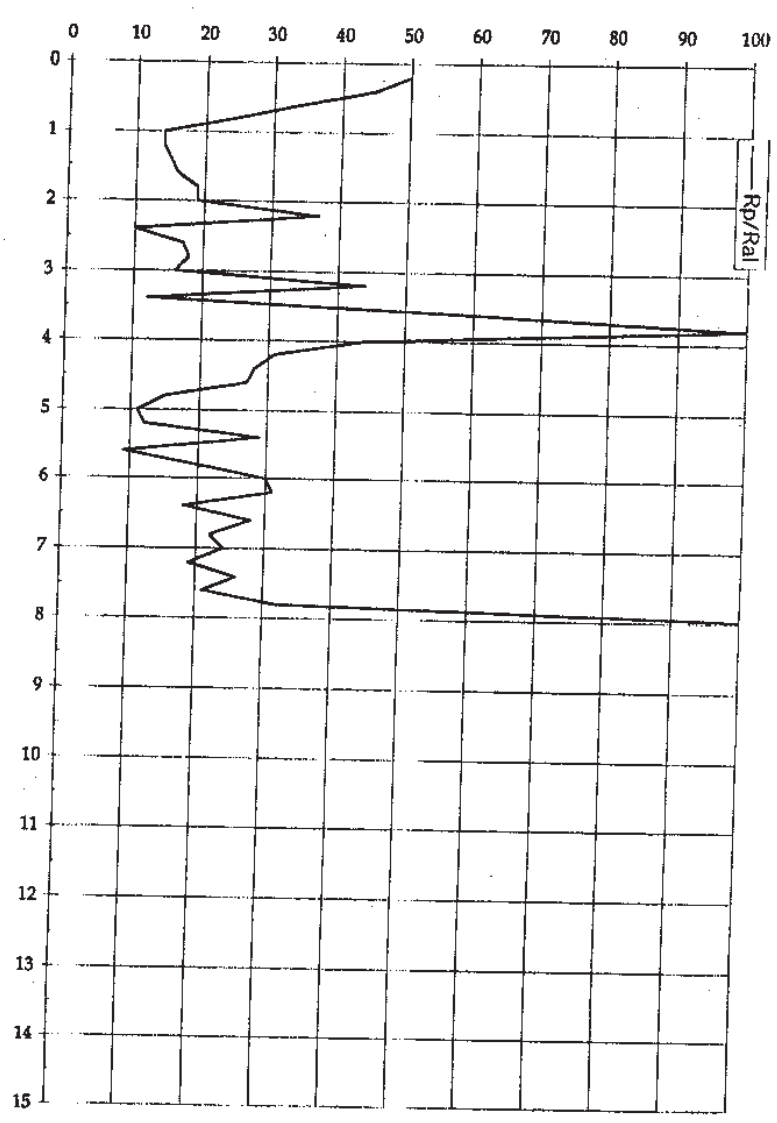

resistenza alla punta Rp (kg/cm²)
0 5 10 20 30 40 50 60 70 80 90 100 120 140 160 180 200 220
laterale RL (kg/cm²)
0 0.5 1 2 3
m0
2
4

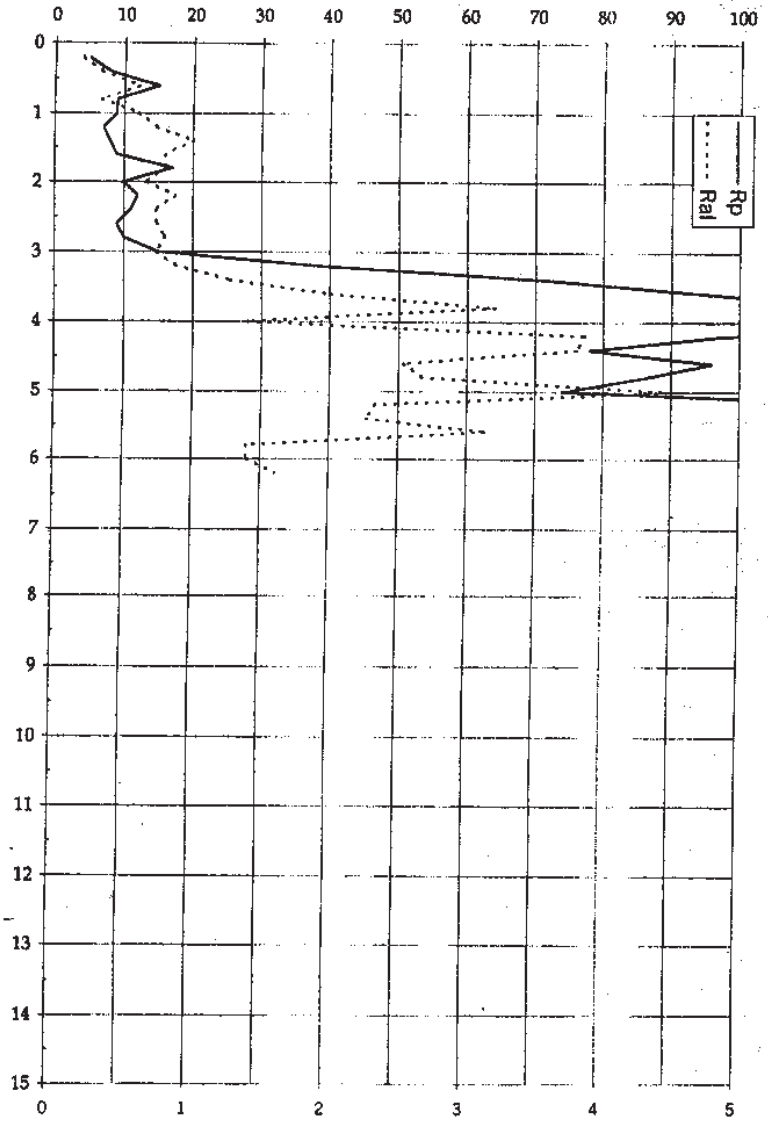

resistenza alla punta Rp (kg/cm²)
0 5 10 20 30 40 50 60 70 80 90 100 120 140 160 180 200 220
laterale RL (kg/cm²)
0 0.5 1 2 3
m0
2
4

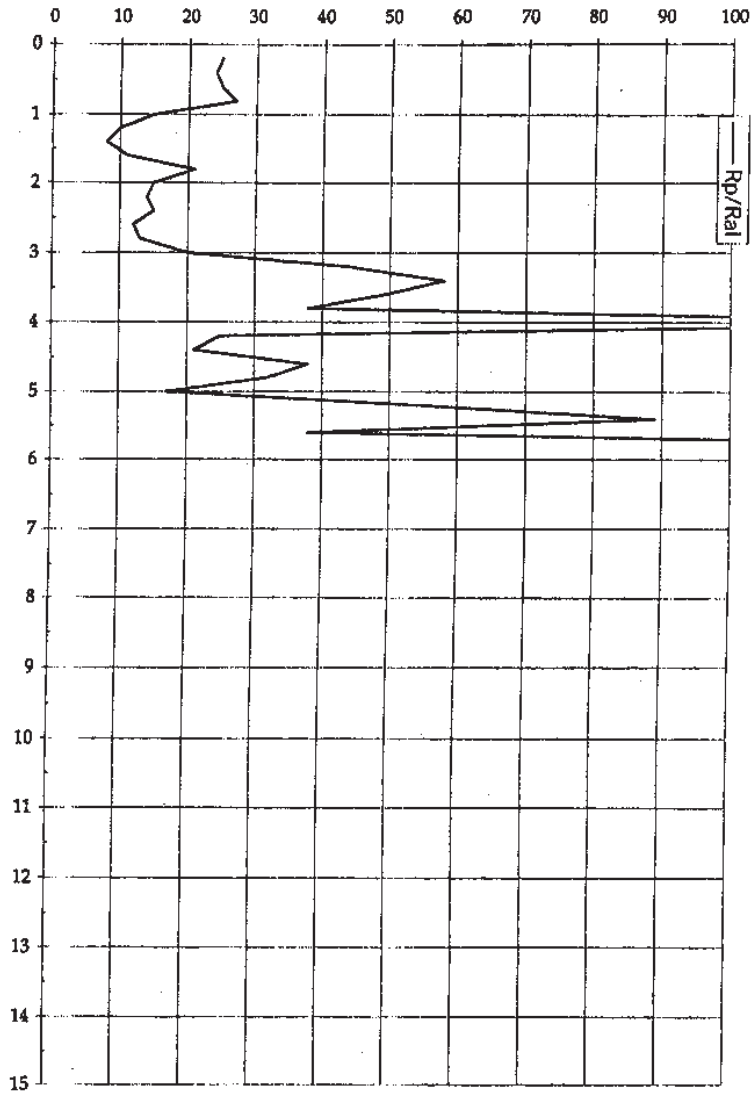

Rp
Ral

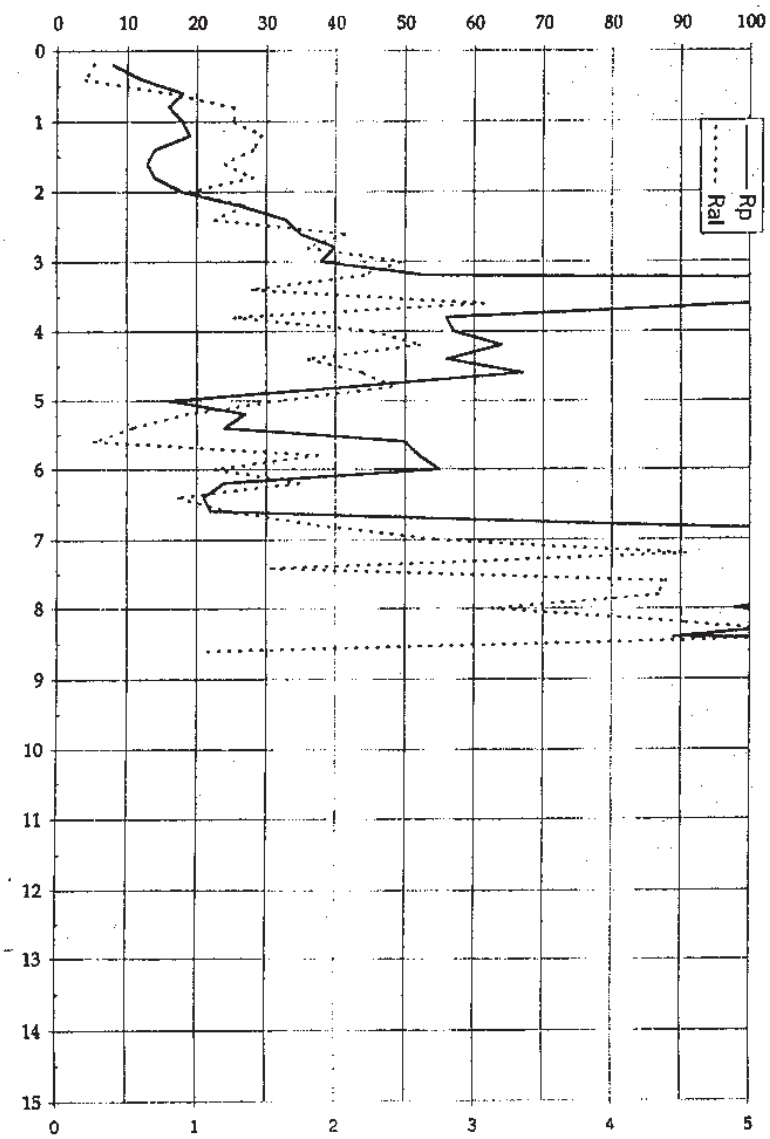

Rp/Ral

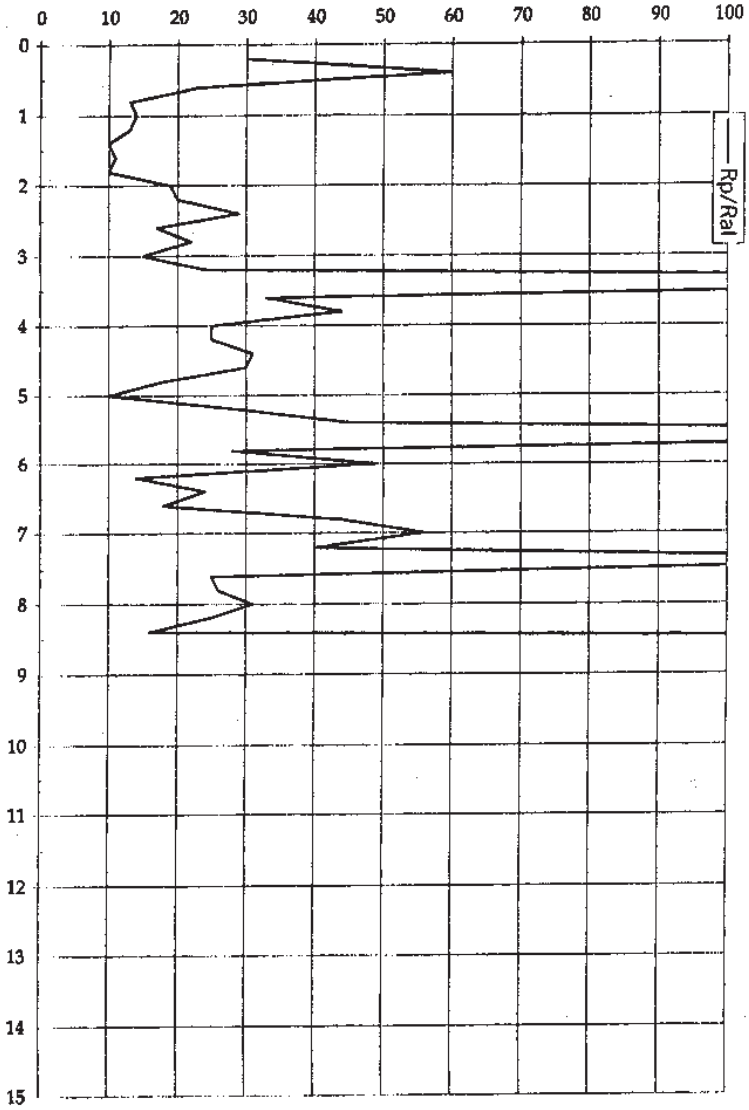

Rp
Ral

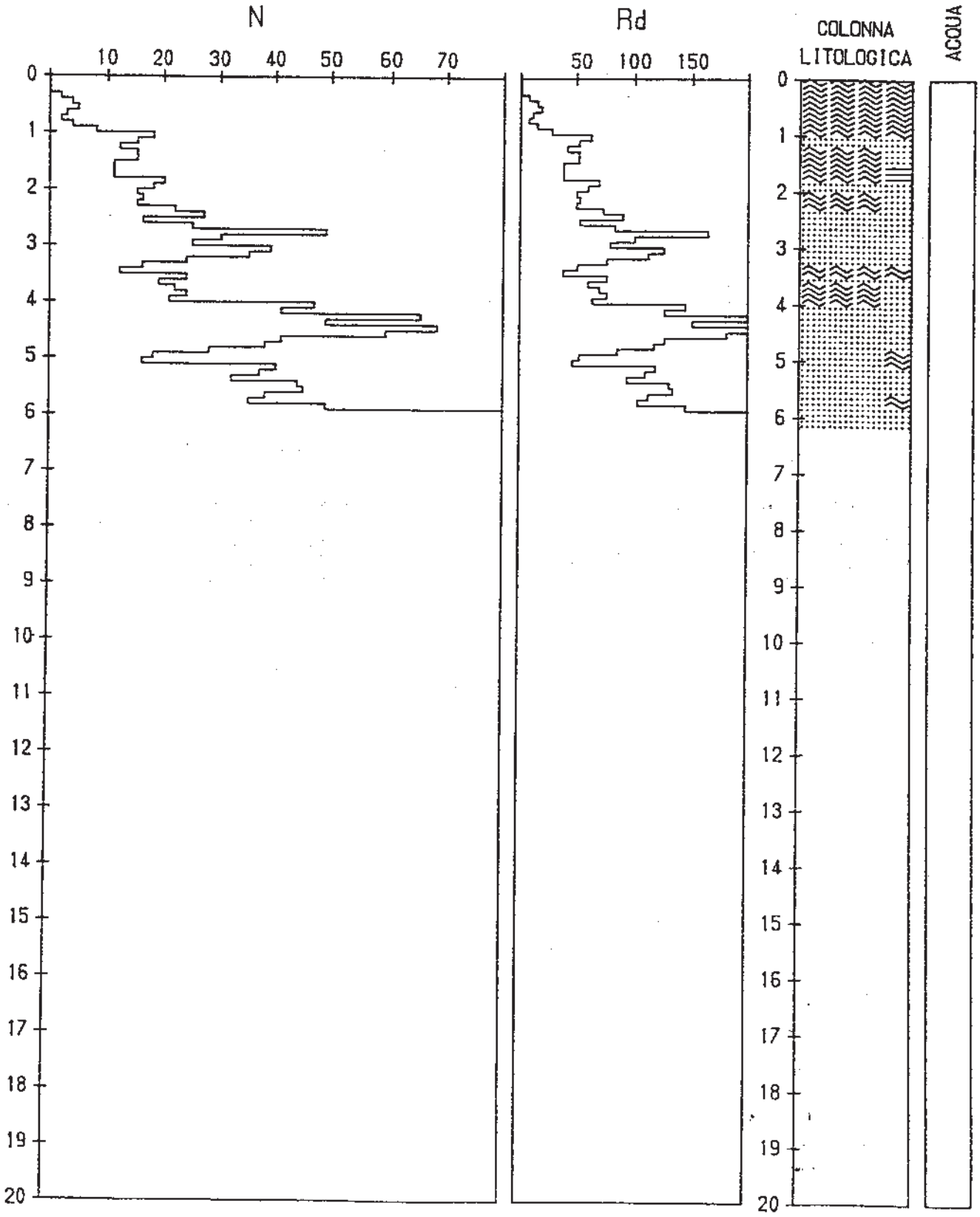

Rp/Ral

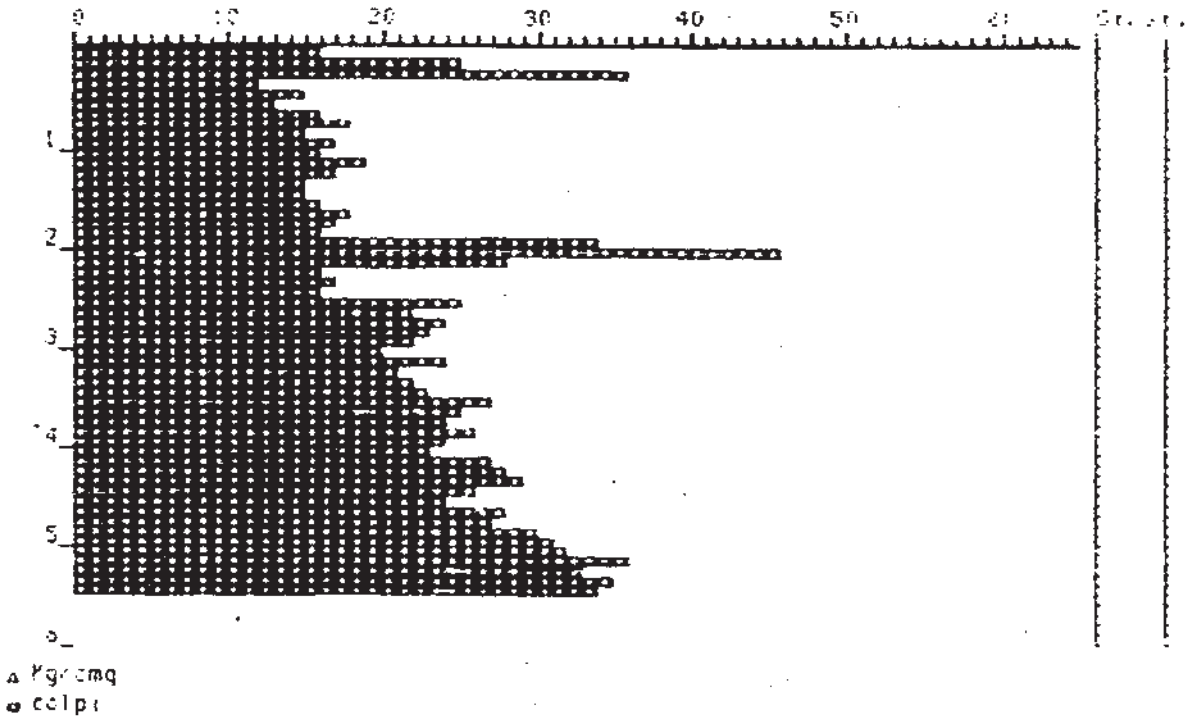

Rp
Ral


Rp/Ral


Rp
Ral


Rp/Ral

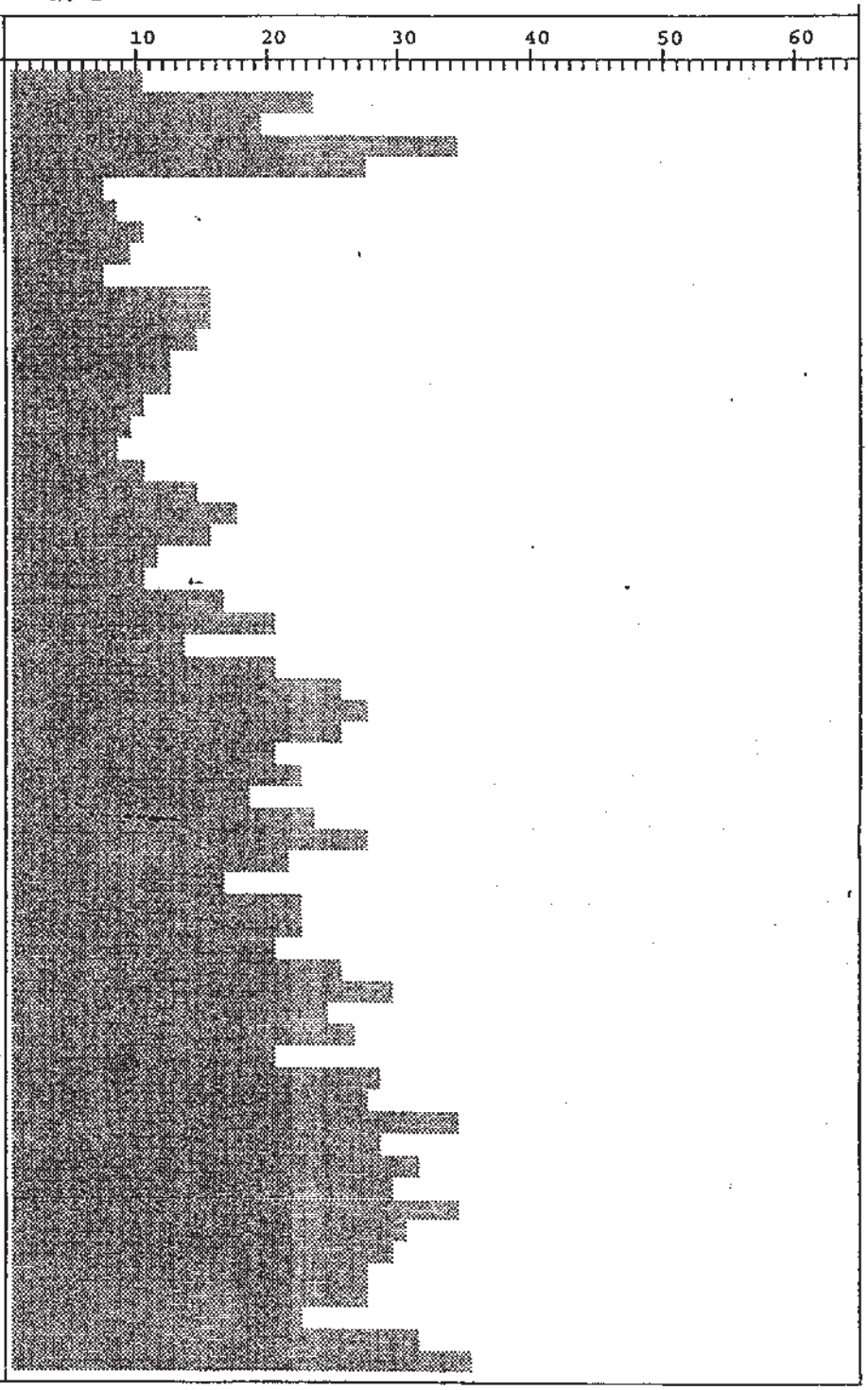

N
10 20 30 40 50 60 70
Rd
50 100 150
COLONNA LITOLOGICA
ACQUA
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

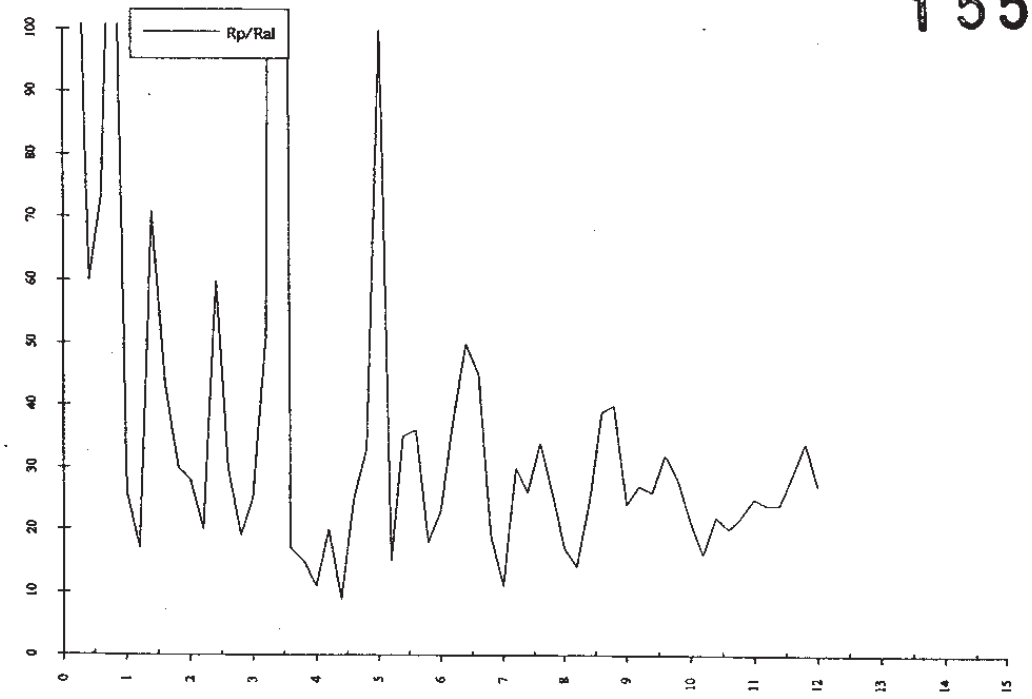

0
10
20
30
40
50
1
2
3
4
5
6
Kg/cmq
colpi

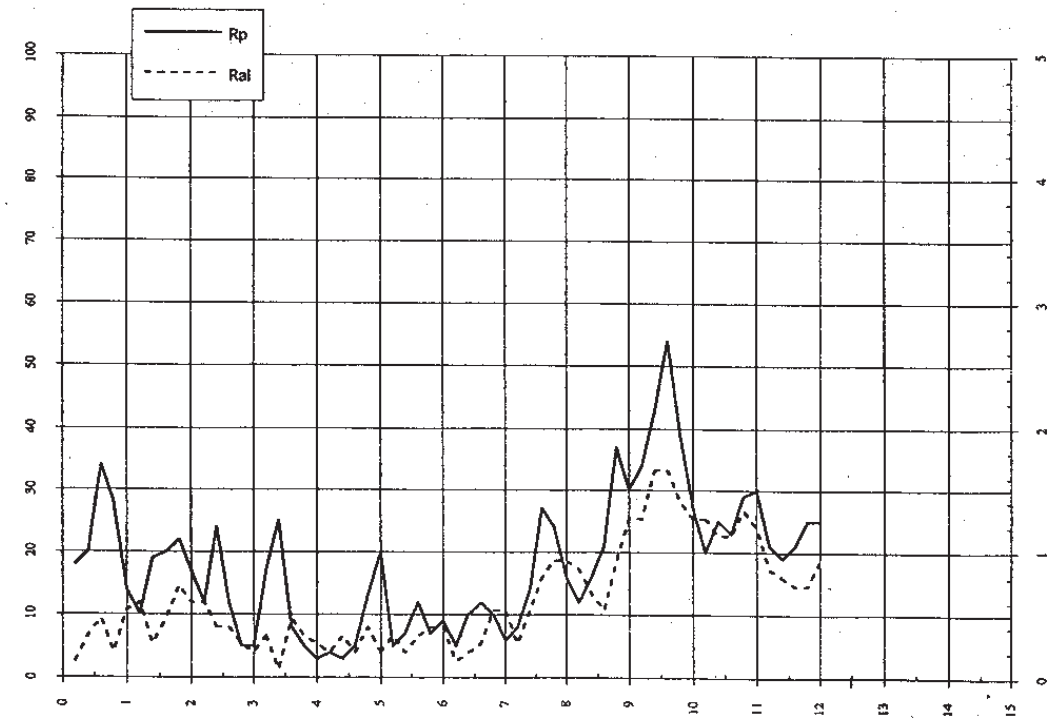
PROVA PENETROMETRICA

N. 1

PROF.	N
0.10	10.0
0.20	23.0
0.30	19.0
0.40	34.0
0.50	27.0
0.60	7.0
0.70	8.0
0.80	10.0
0.90	9.0
1.00	7.0
1.10	15.0
1.20	15.0
1.30	14.0
1.40	12.0
1.50	12.0
1.60	10.0
1.70	9.0
1.80	8.0
1.90	10.0
2.00	14.0
2.10	17.0
2.20	15.0
2.30	11.0
2.40	10.0
2.50	16.0
2.60	20.0
2.70	13.0
2.80	20.0
2.90	25.0
3.00	27.0
3.10	25.0
3.20	20.0
3.30	22.0
3.40	18.0
3.50	23.0
3.60	27.0
3.70	21.0
3.80	16.0
3.90	22.0
4.00	22.0
4.10	20.0
4.20	25.0
4.30	29.0
4.40	24.0
4.50	26.0
4.60	20.0
4.70	28.0
4.80	27.0
4.90	34.0
5.00	28.0
5.10	31.0
5.20	29.0
5.30	34.0
5.40	30.0
5.50	29.0
5.60	27.0
5.70	27.0
5.80	22.0
5.90	31.0
6.00	35.0




Rp/Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15


Rp
Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
0
1
2
3
4
5
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11
12
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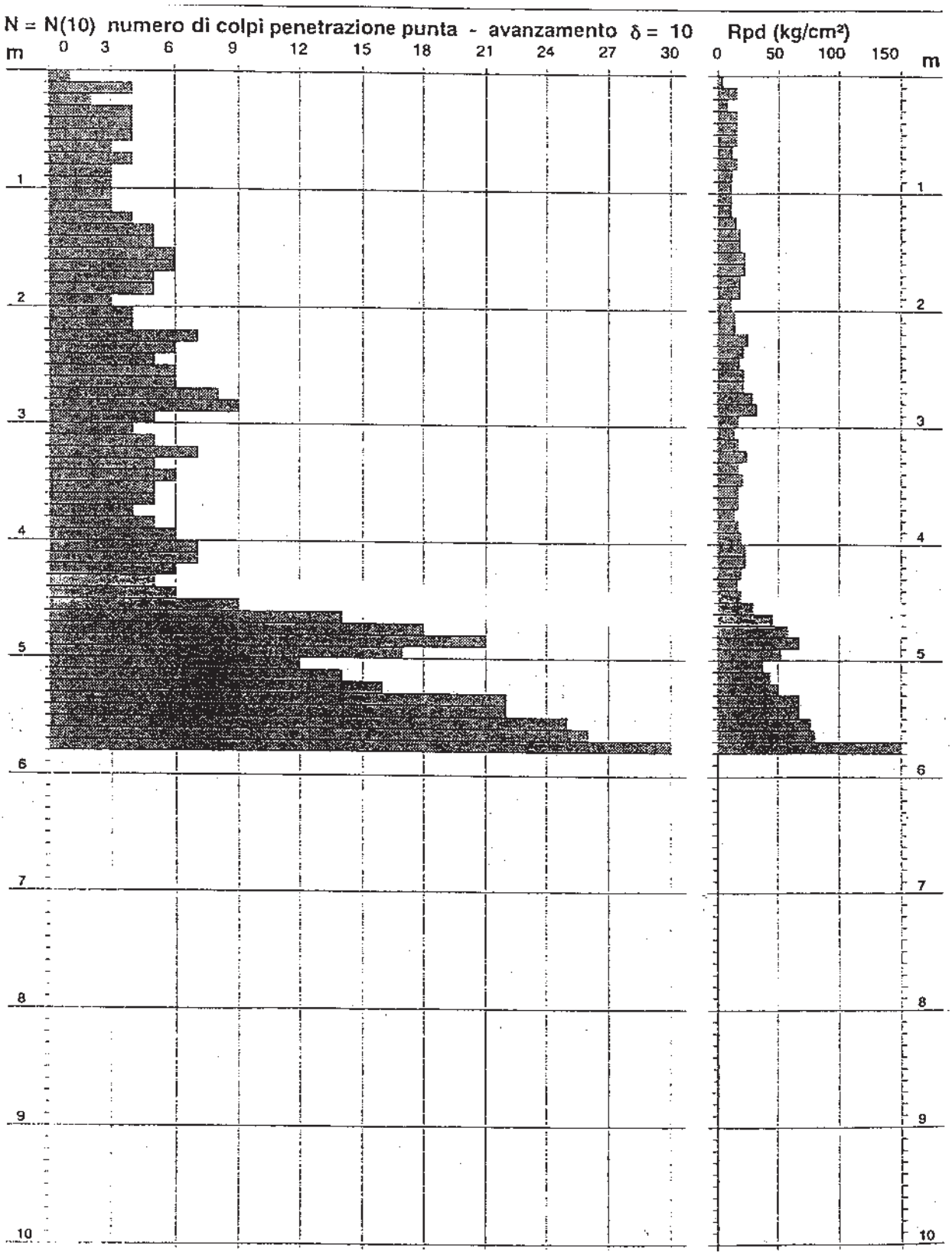
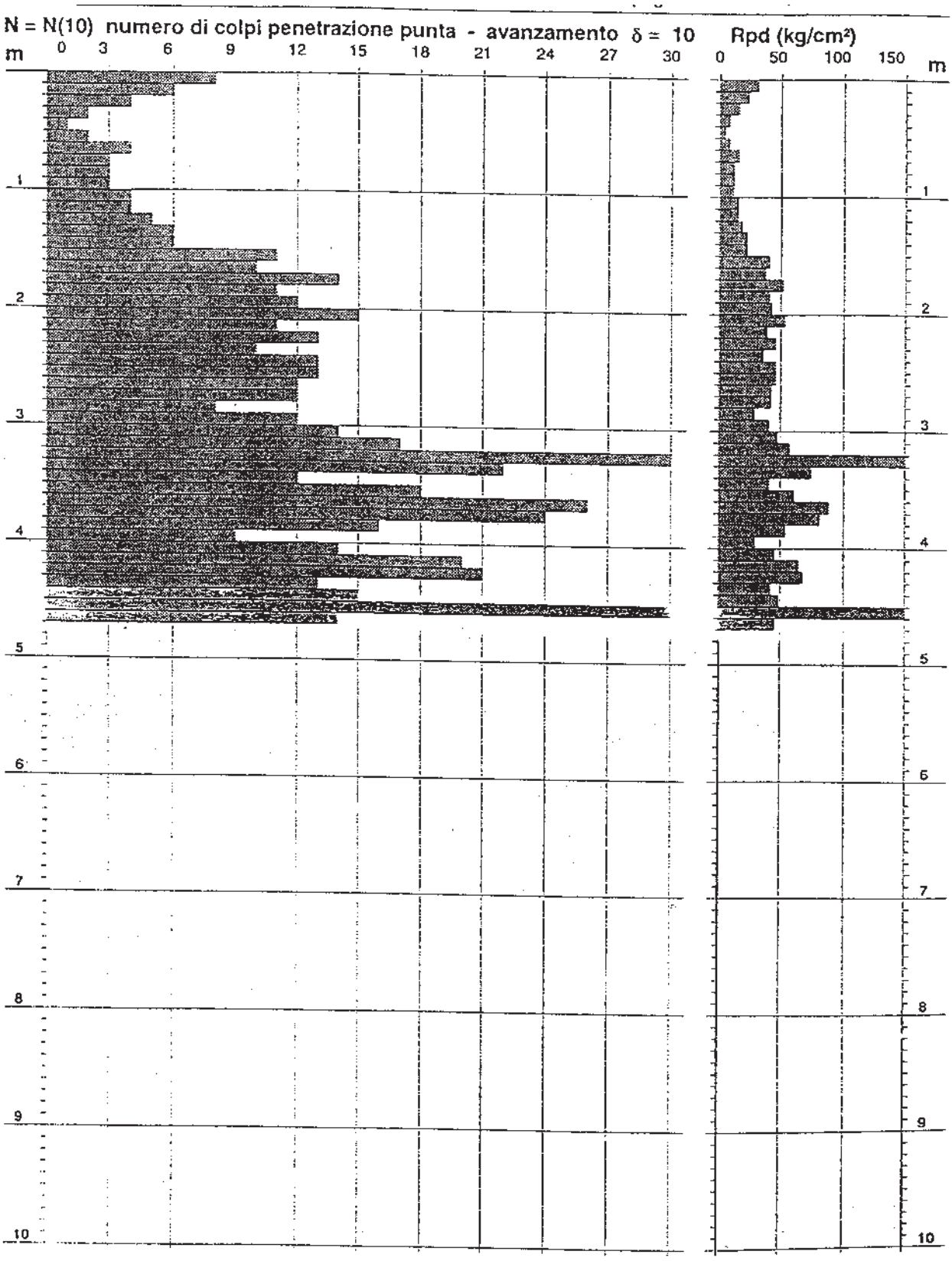
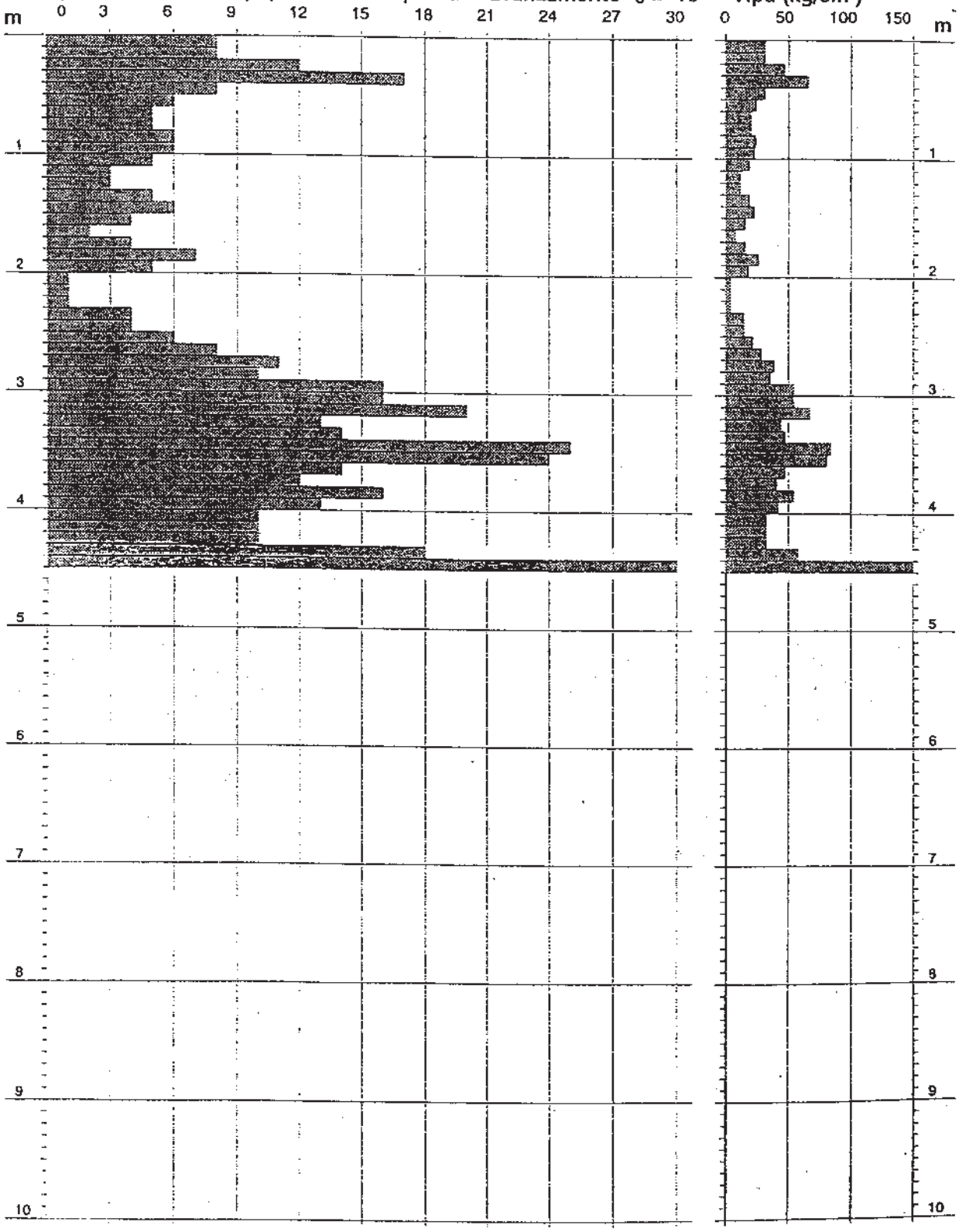
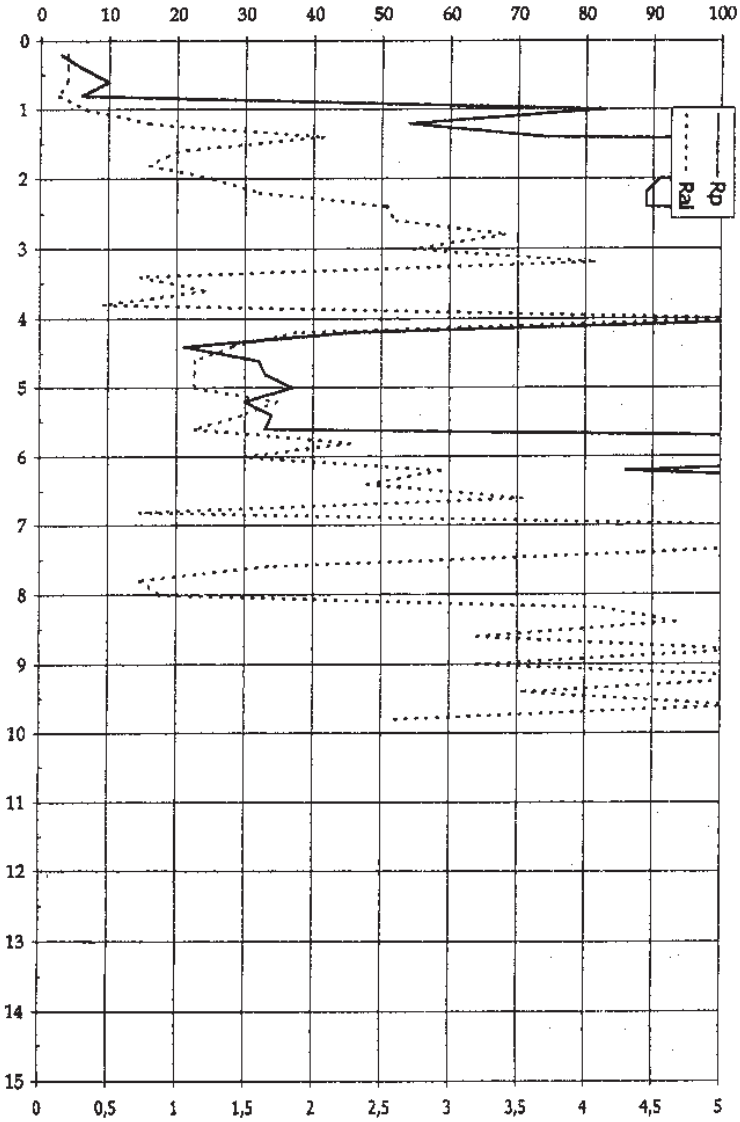
14
15

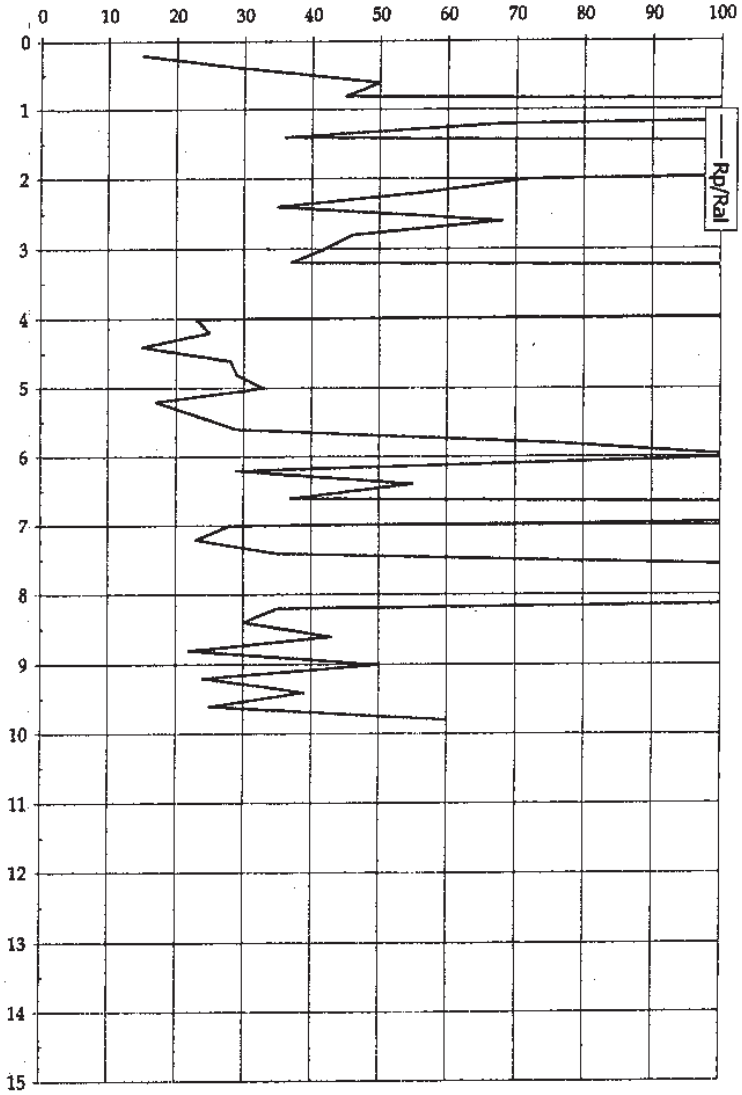

N = N(10) numero di colpi penetrazione punta - avanzamento δ = 10
Rpd (kg/cm²)
m
0 3 6 9 12 15 18 21 24 27 30
0 50 100 150
m
1
2
3
4
5
6
7
8
9
10

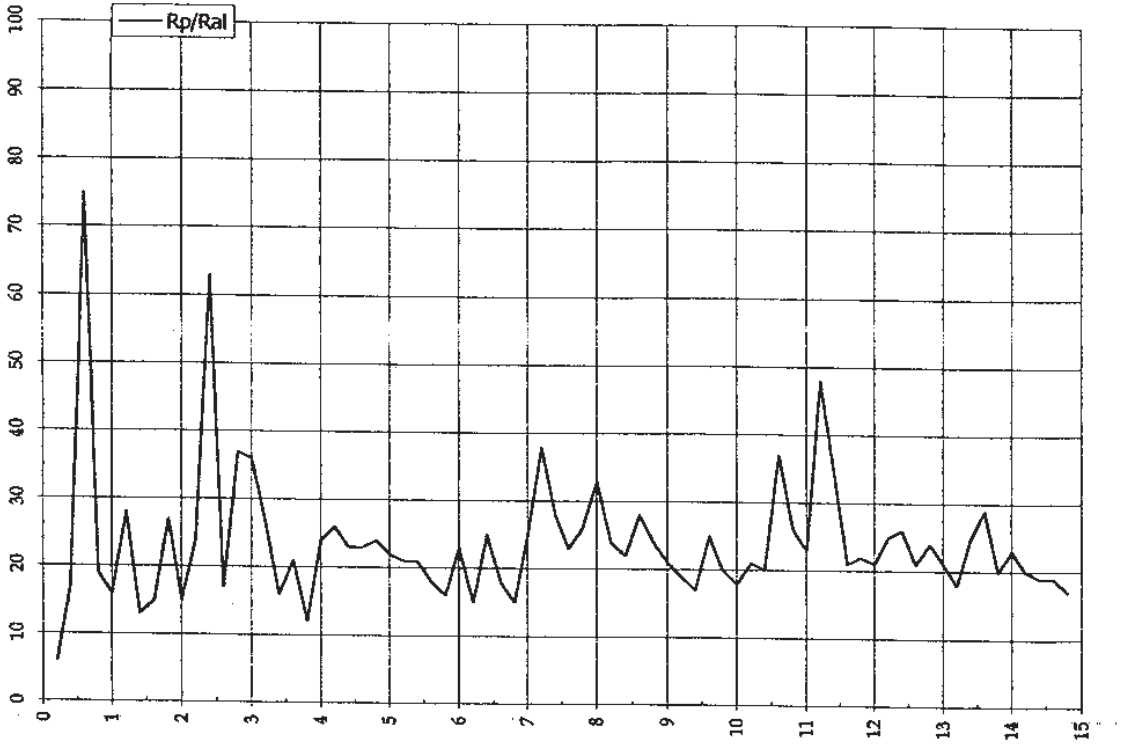

N = N(10) numero di colpi penetrazione punta - avanzamento δ = 10
Rpd (kg/cm²)
m
0 3 6 9 12 15 18 21 24 27 30
0 50 100 150
m
1
2
3
4
5
6
7
8
9
10

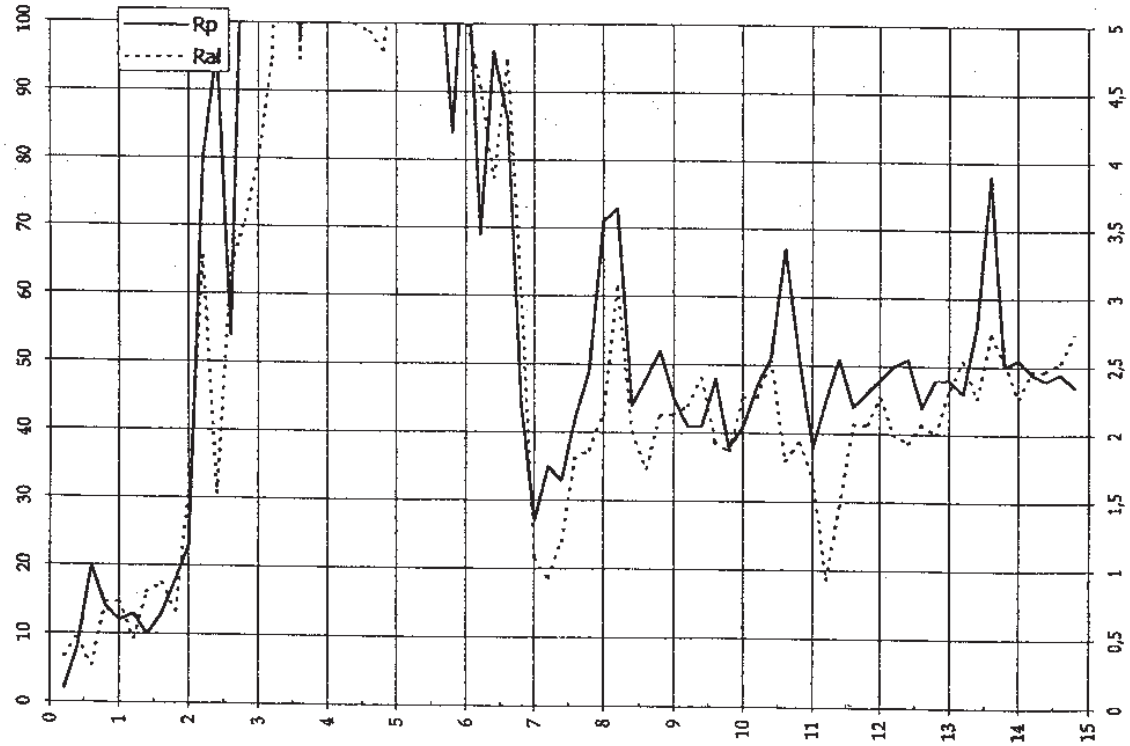
N = N(10) numero di colpi penetrazione punta - avanzamento δ = 10 Rpd (kg/cm²)

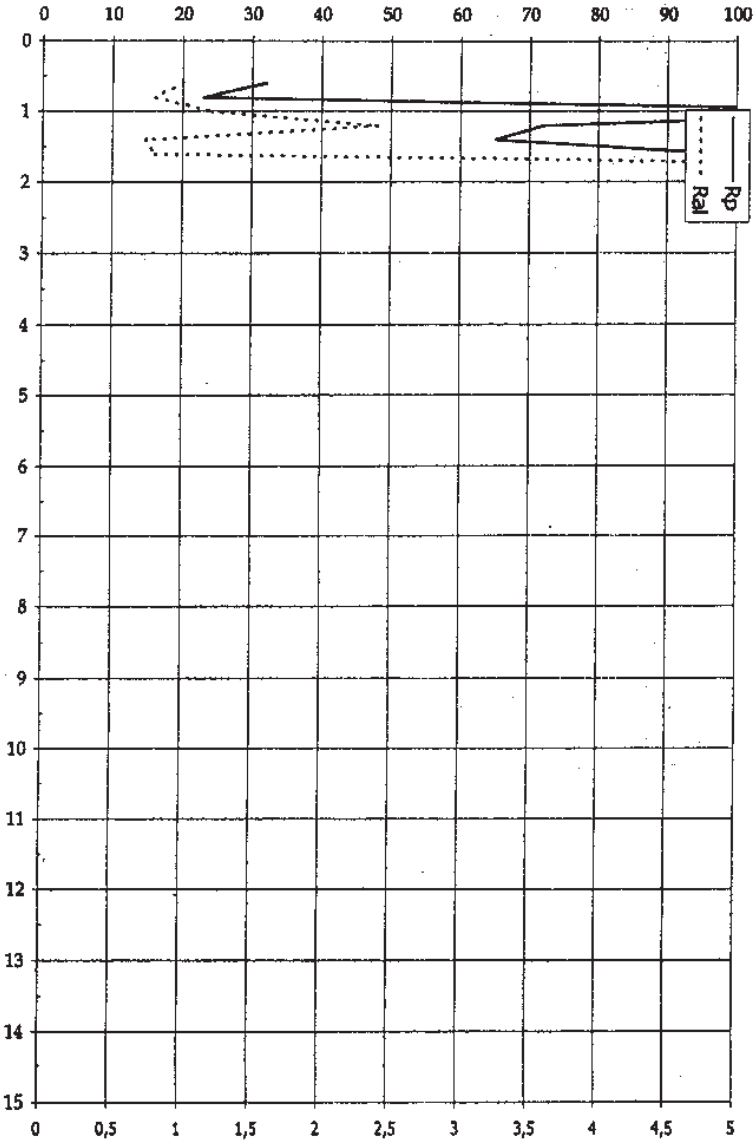


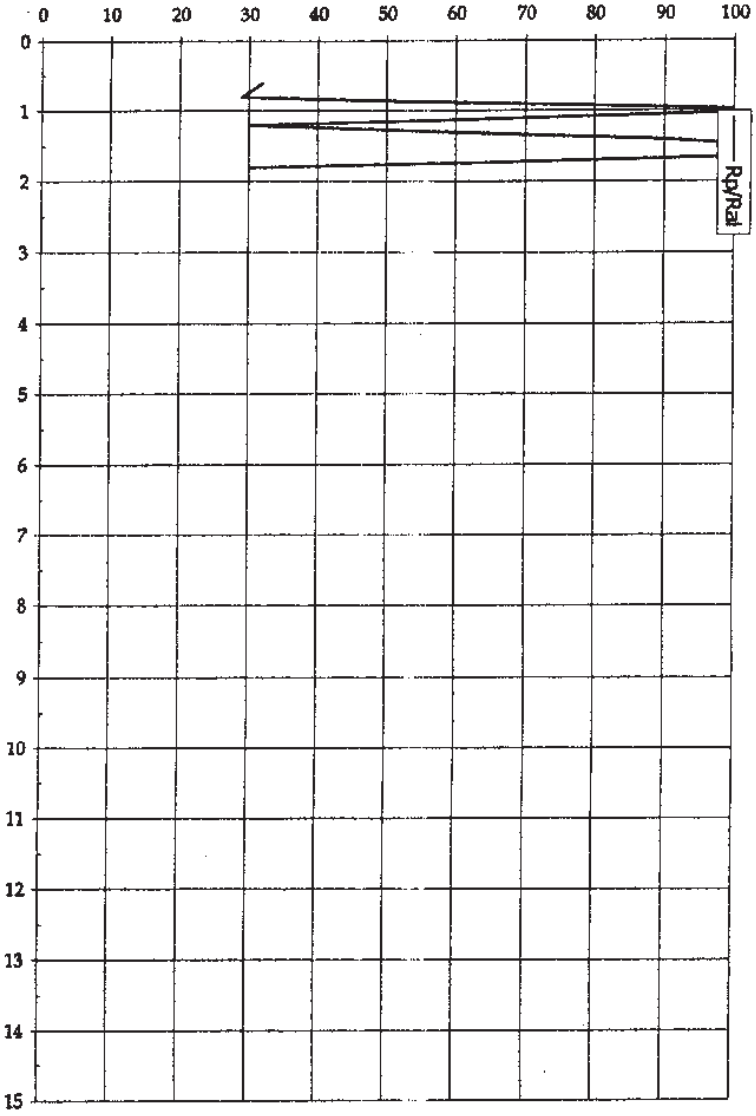

Rp
Ral
0 10 20 30 40 50 60 70 80 90 100
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
0 0,5 1 1,5 2 2,5 3 3,5 4 4,5 5

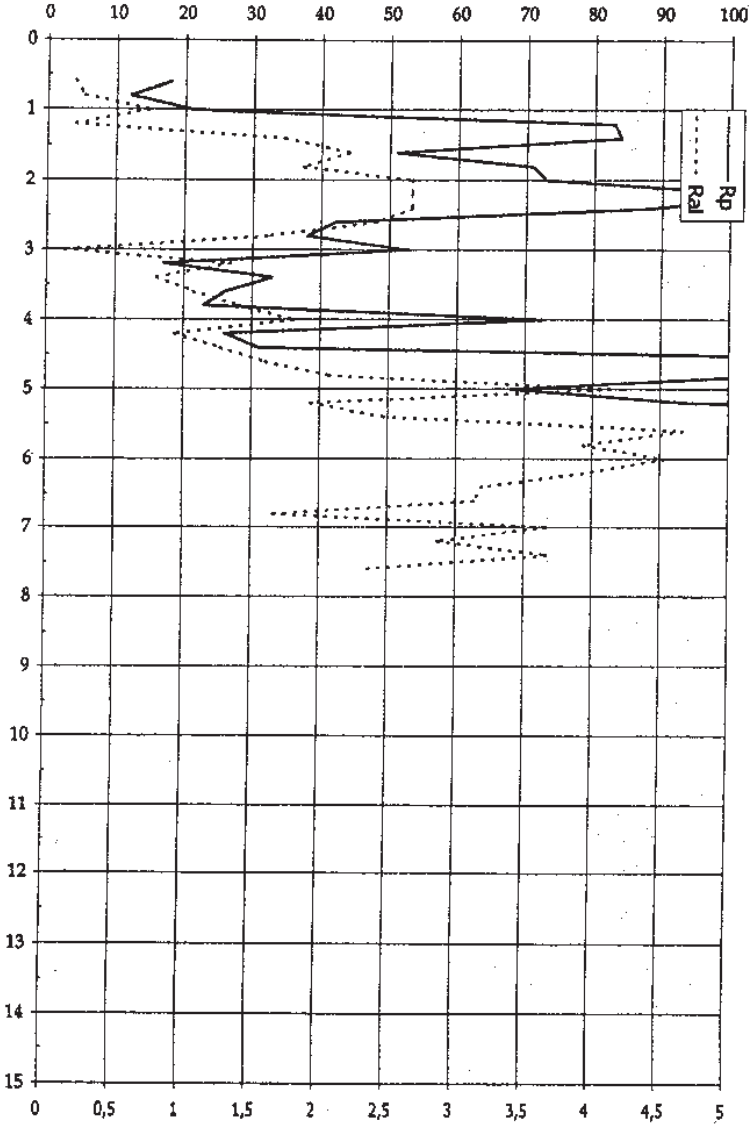

Rp/Ral
0 10 20 30 40 50 60 70 80 90 100
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

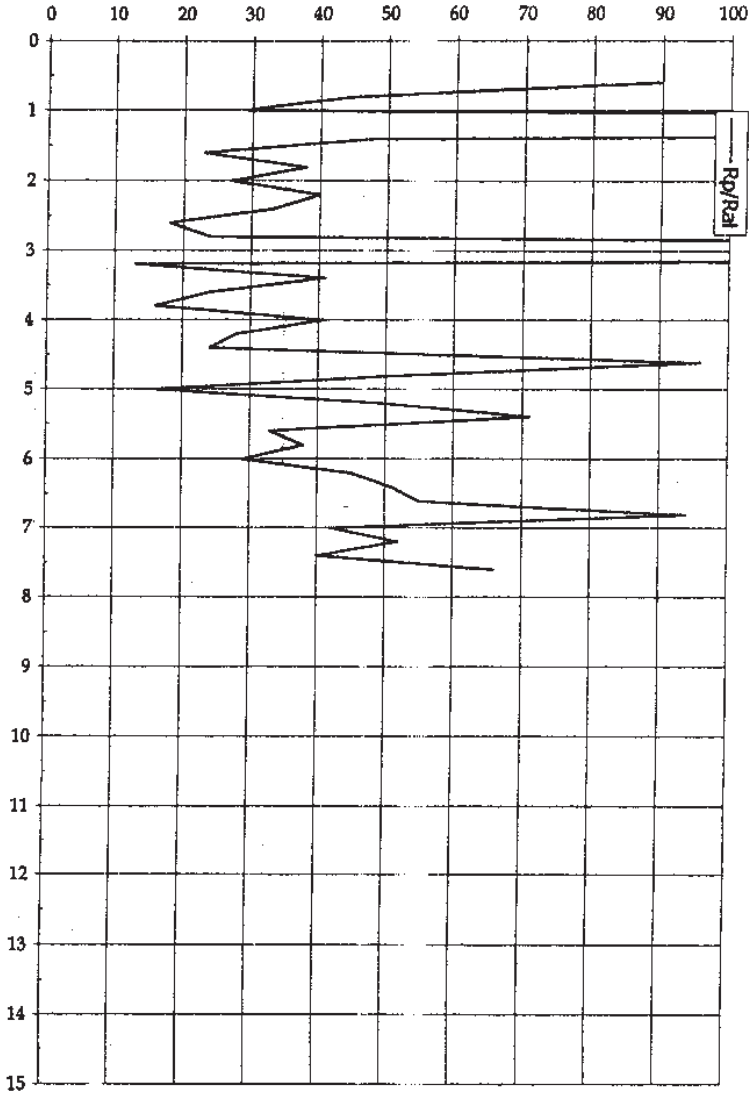

Rp/Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

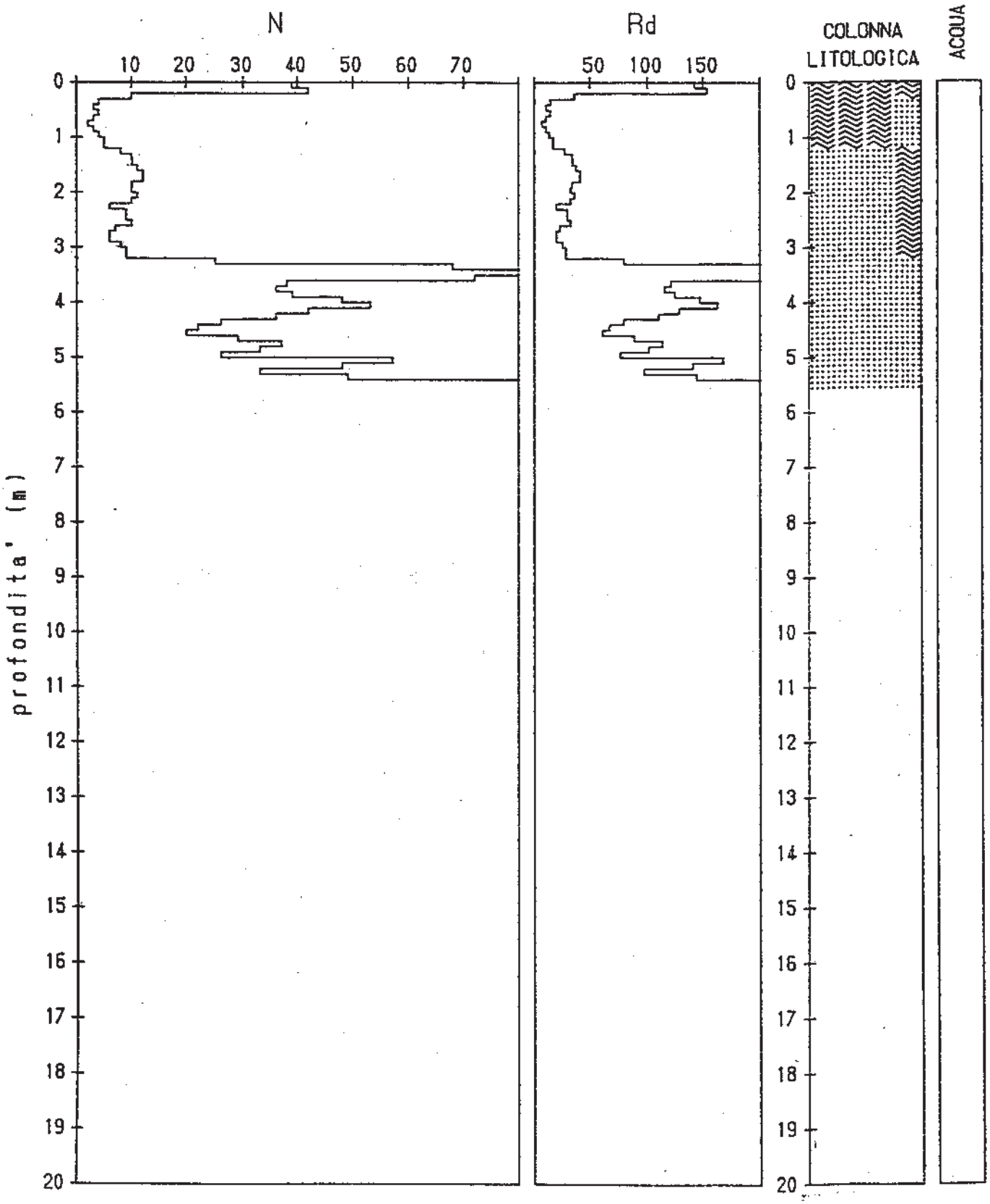

Rp
Ral
0
10
20
30
40
50
60
70
80
90
100
0
0,5
1
1,5
2
2,5
3
3,5
4
4,5
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15


Rp
Ral
0 10 20 30 40 50 60 70 80 90 100
0 0,5 1 1,5 2 2,5 3 3,5 4 4,5 5
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

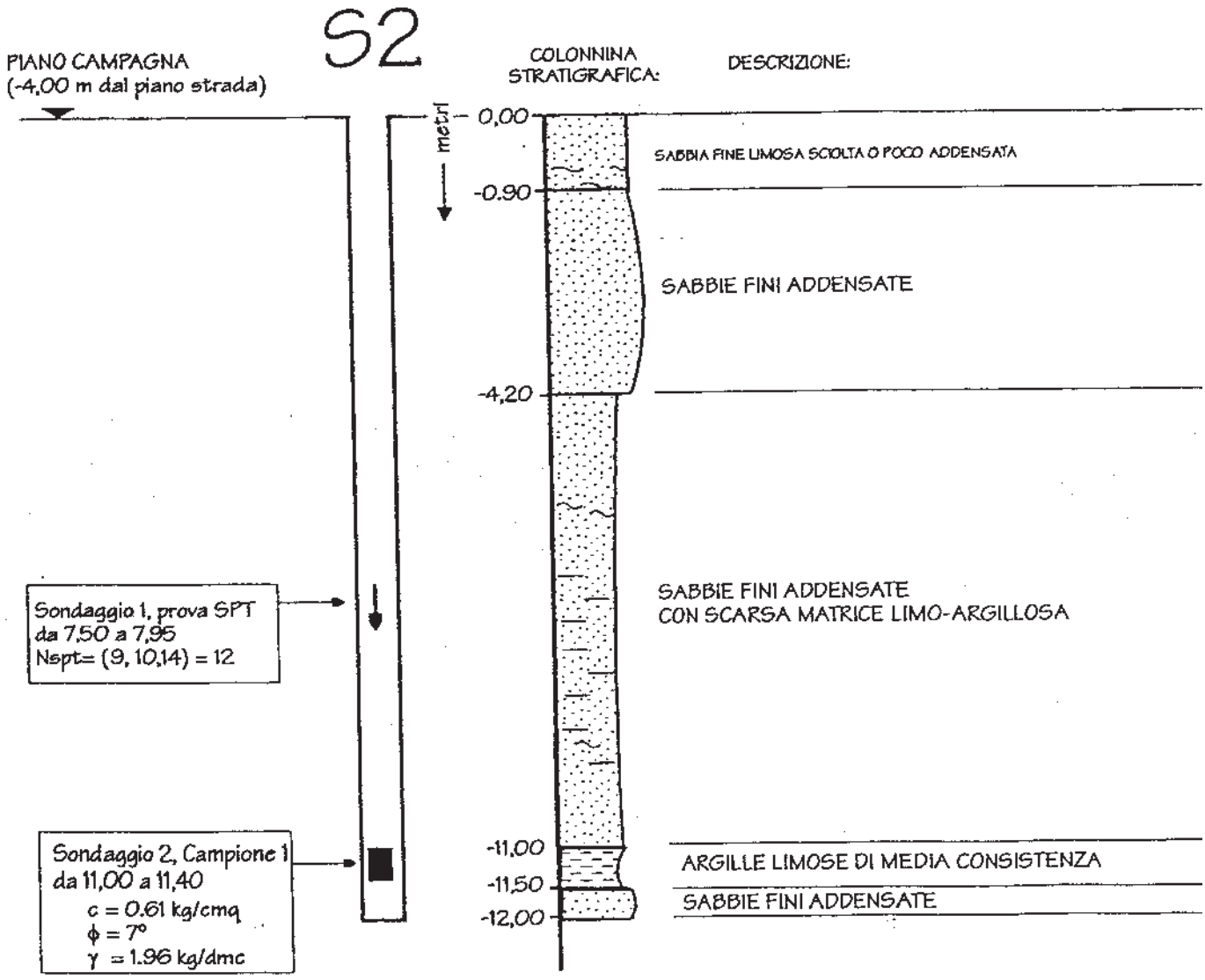

Rp/Ral
0 10 20 30 40 50 60 70 80 90 100
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

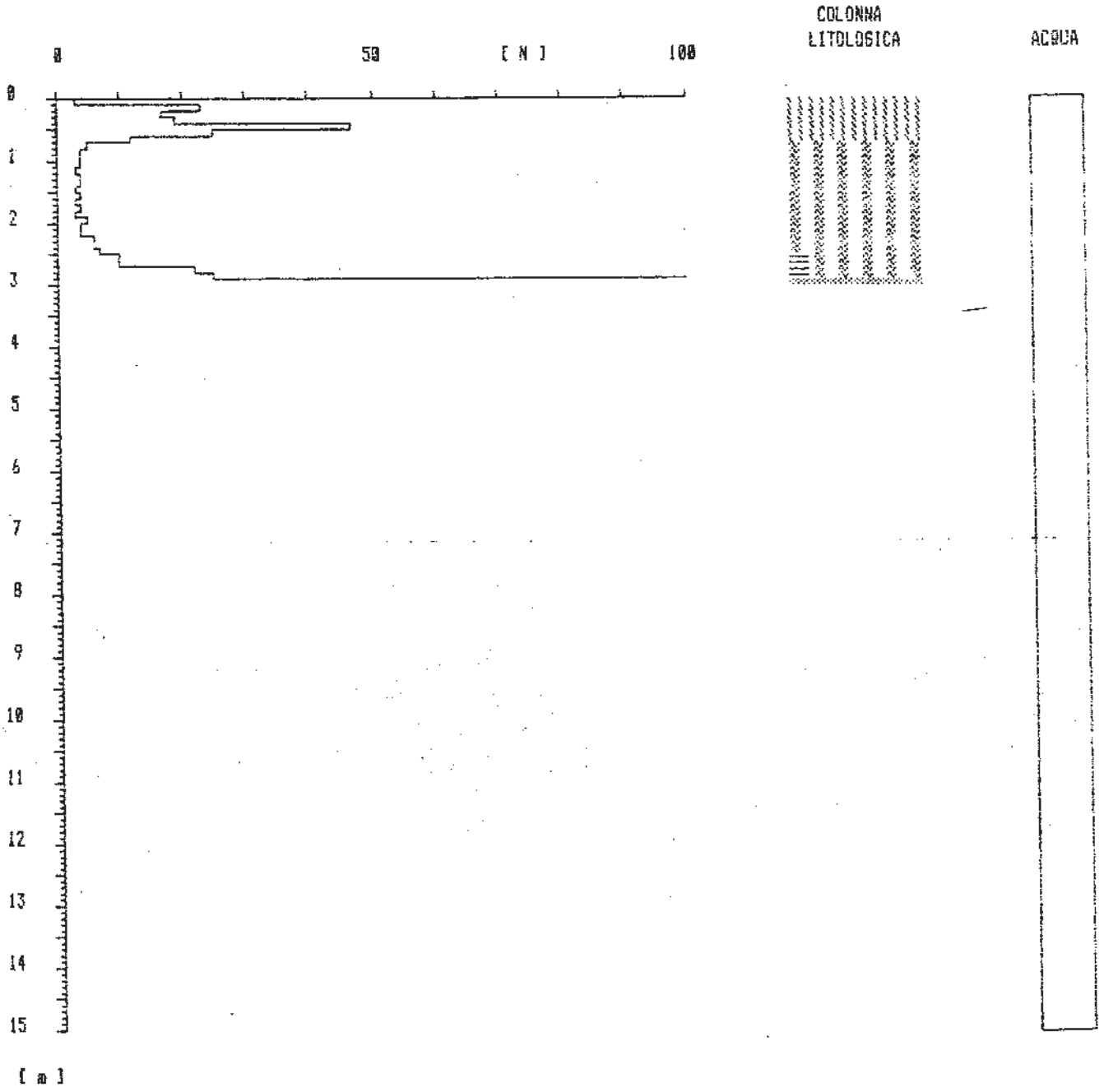

Rp
Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
0
0,5
1
1,5
2
2,5
3
3,5
4
4,5
5

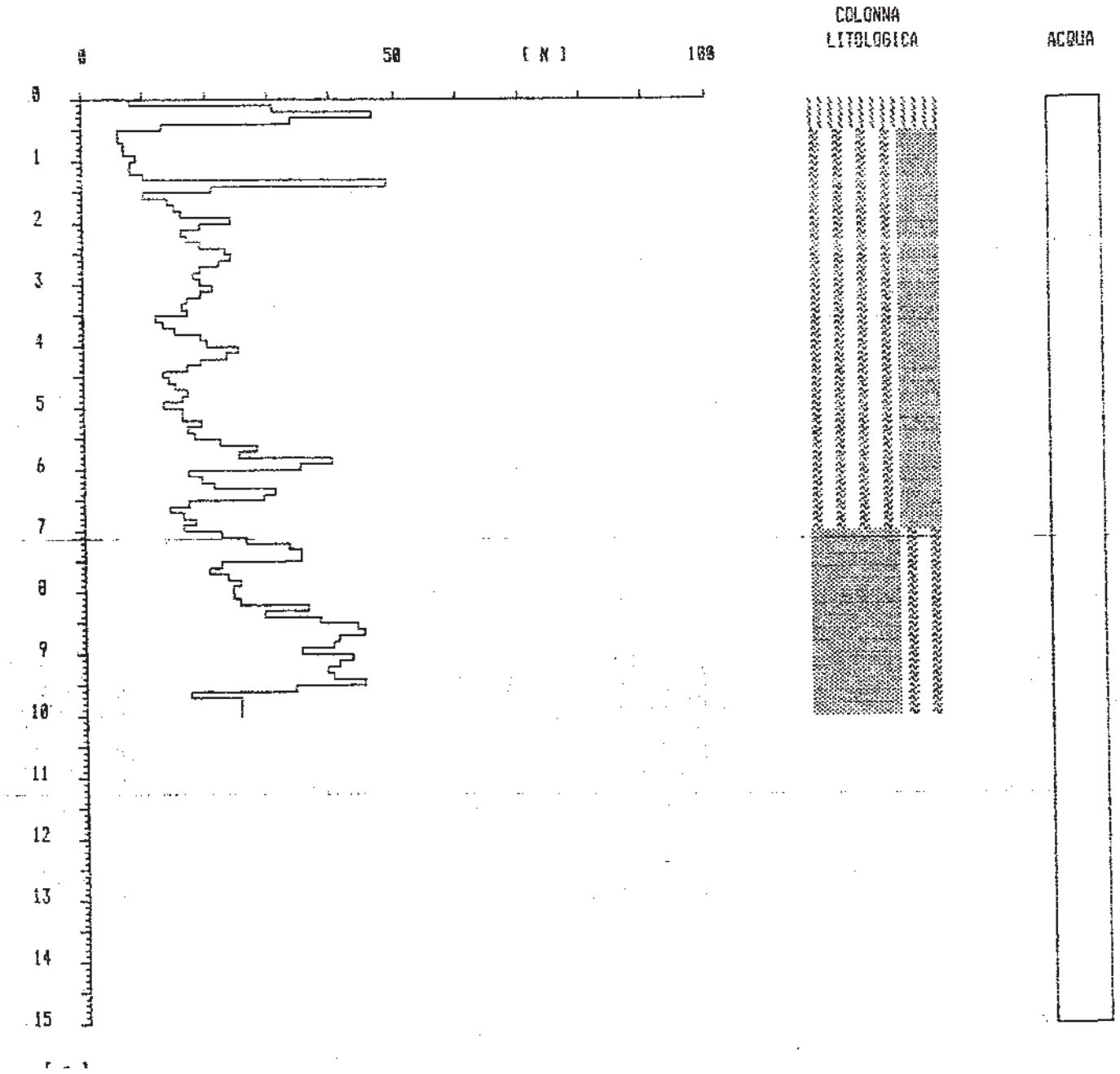

Rp/Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

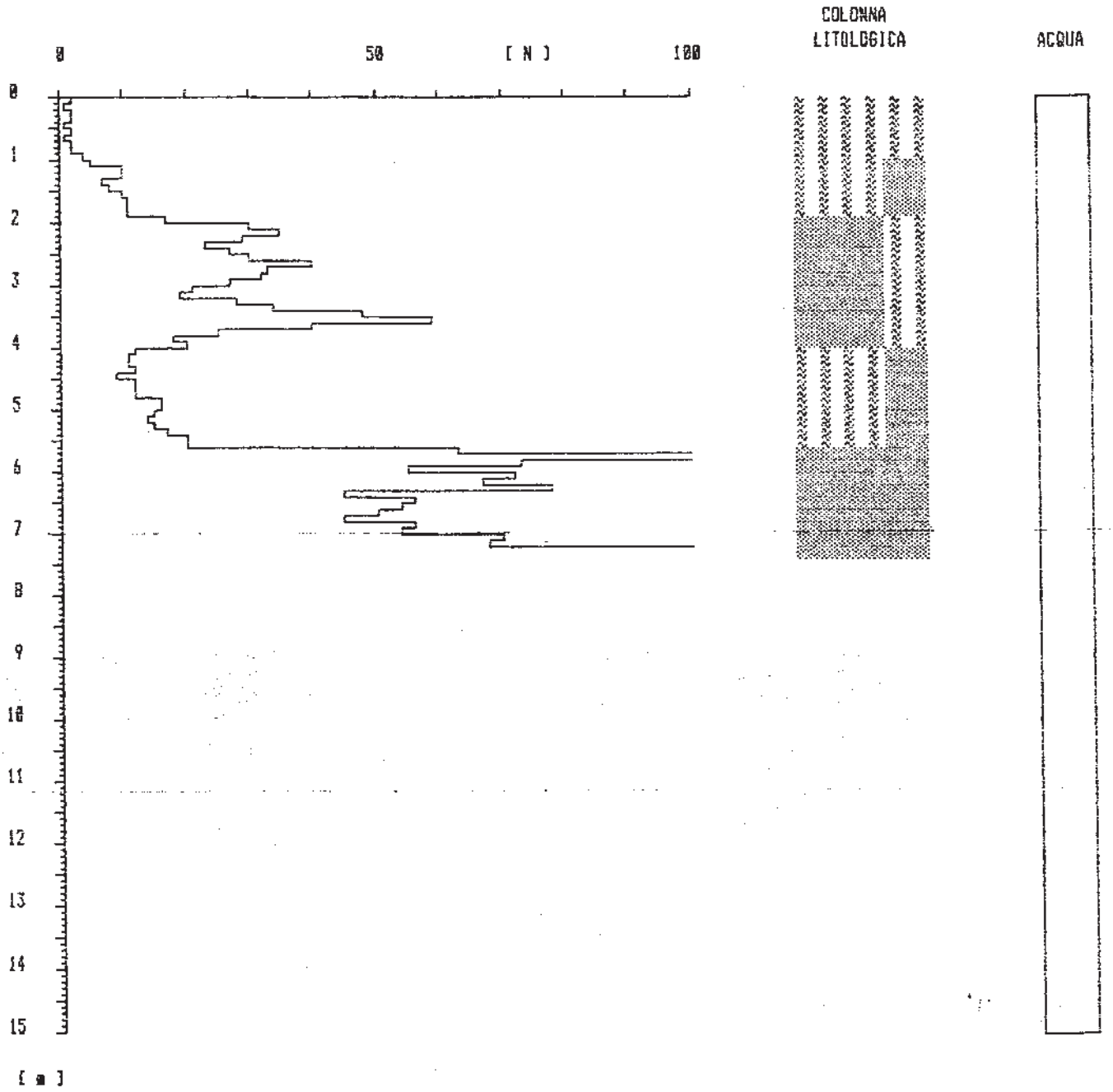

N
10 20 30 40 50 60 70
Rd
50 100 150
COLONNA LITOLOGICA
ACQUA
profondita' (m)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

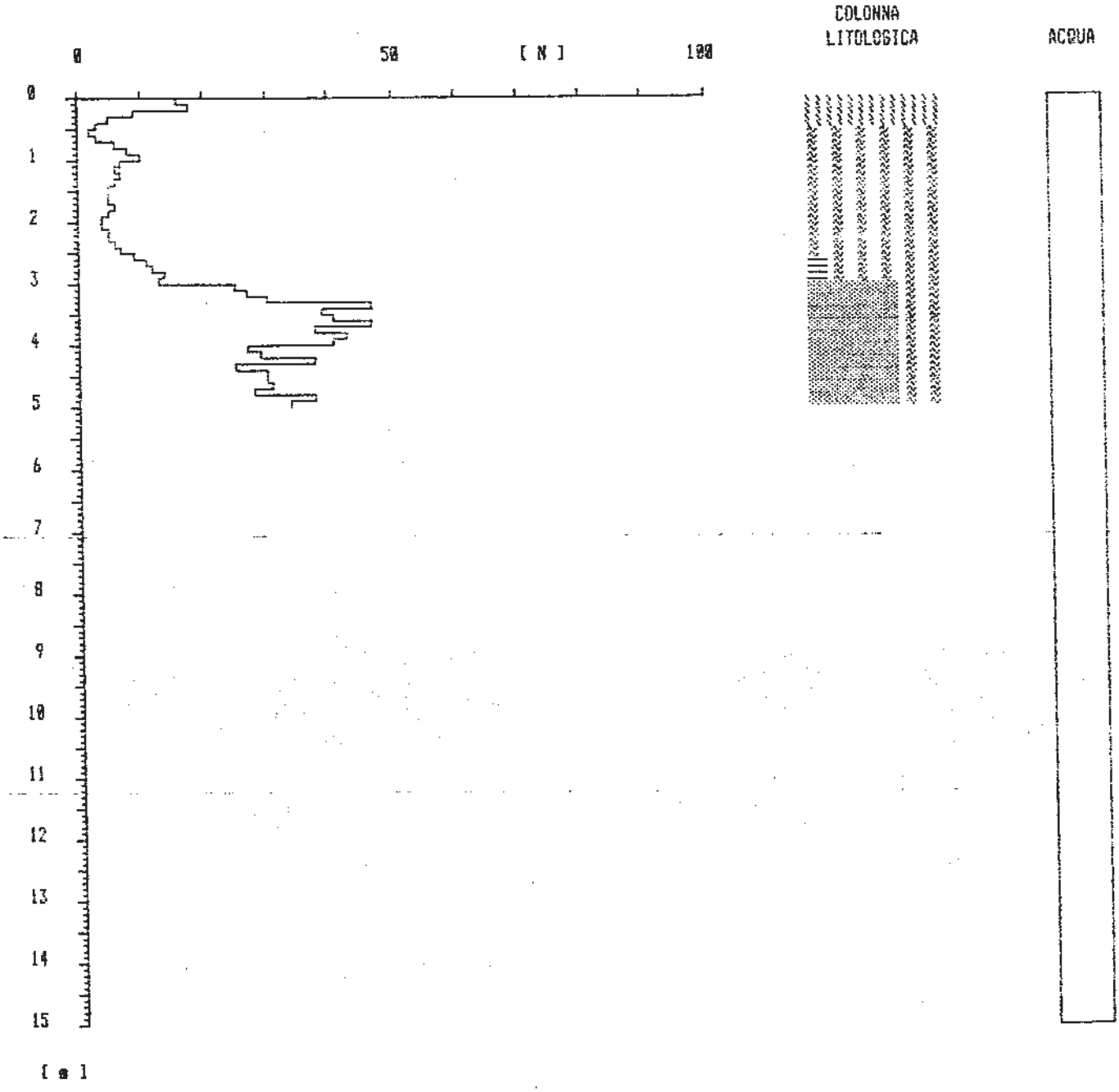
SONDAGGIO A CAROTAGGIO CONTINUO N°2

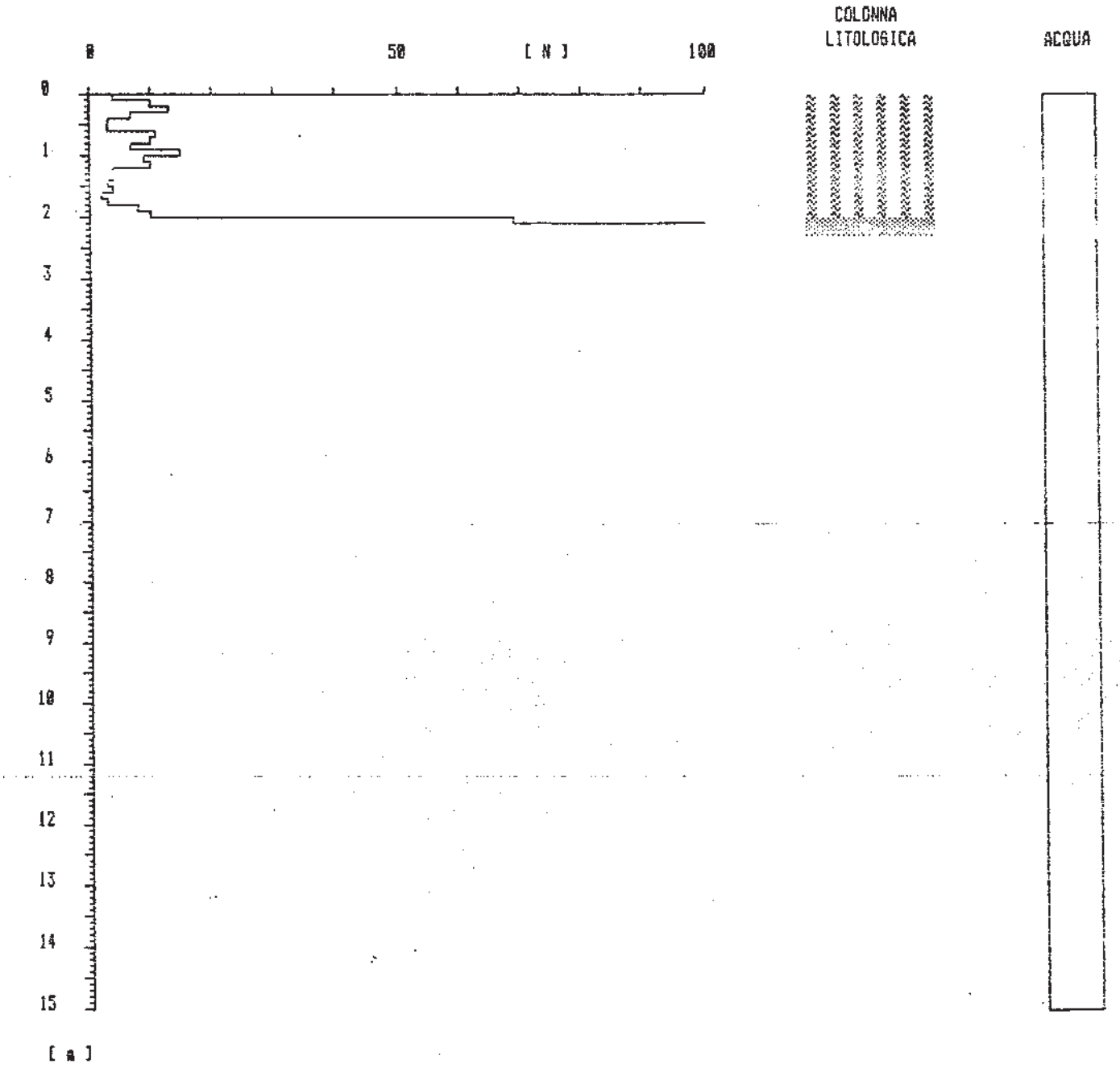


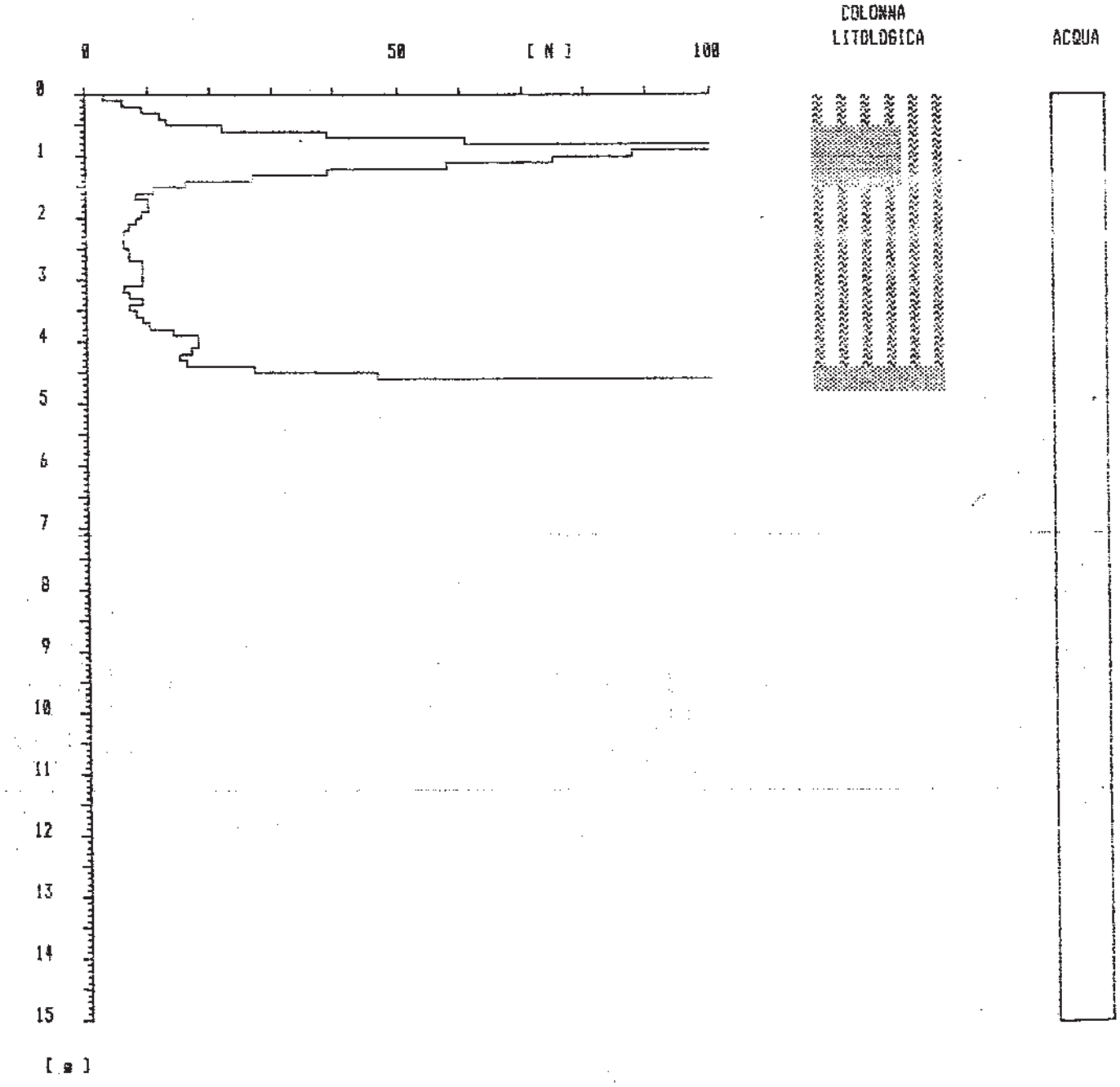

COLONNA
LITOLOGICA
ACQUA
0
50
[N]
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
[m]

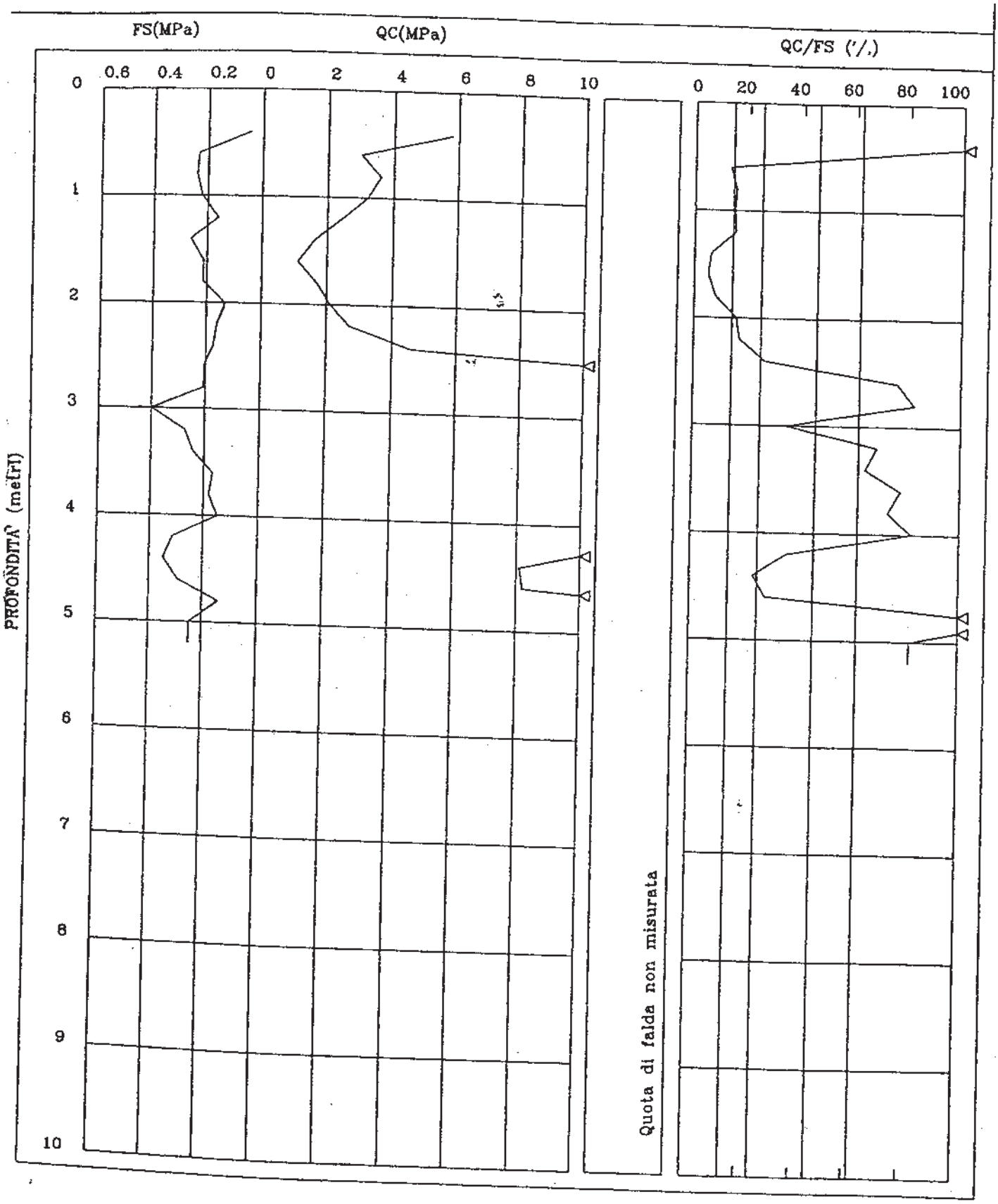

COLONNA
LITOLOGICA
ACQUA
0
50
[N]
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

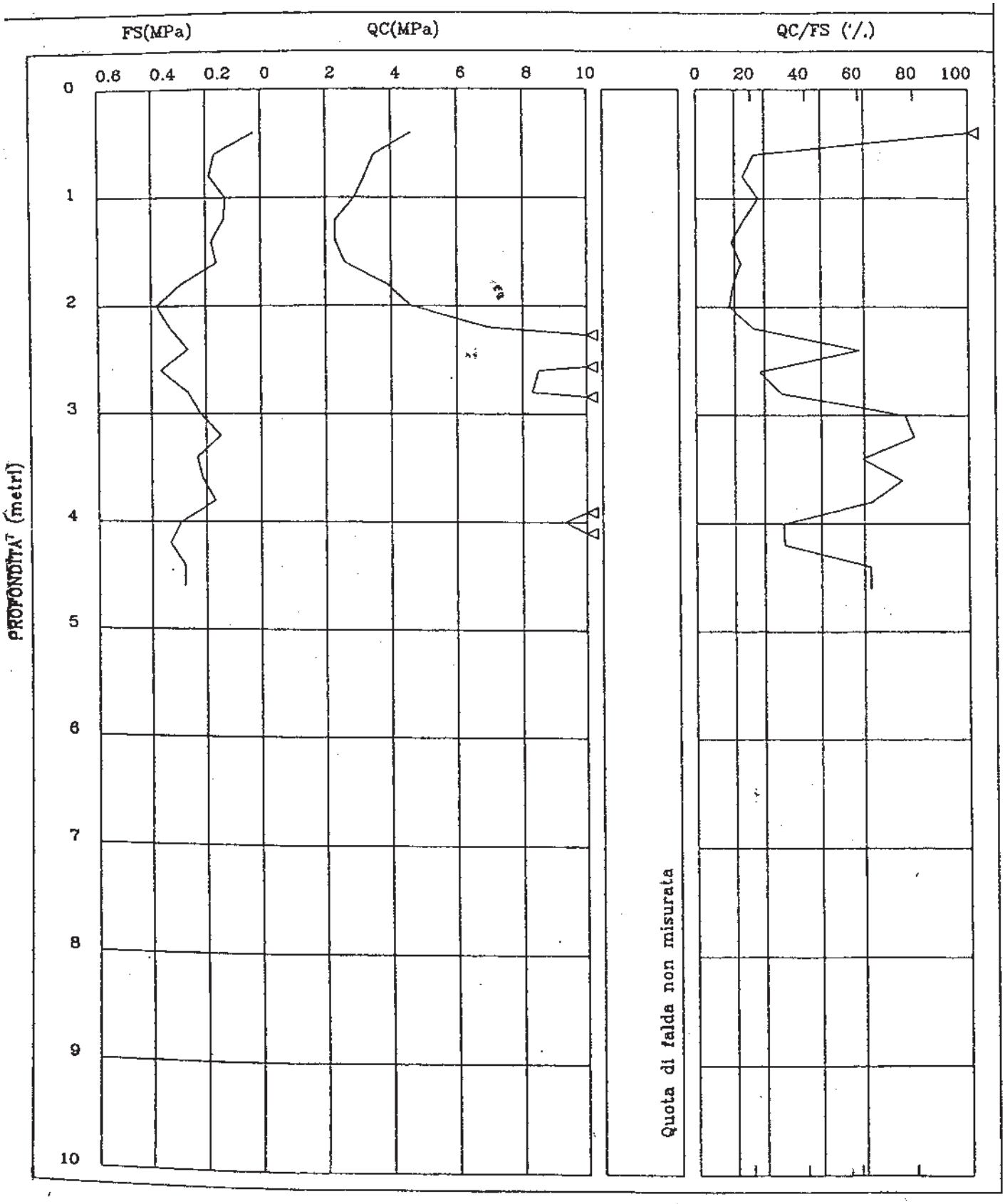

COLONNA
LITOLOGICA
ACQUA
0
50
[N]
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
[m]

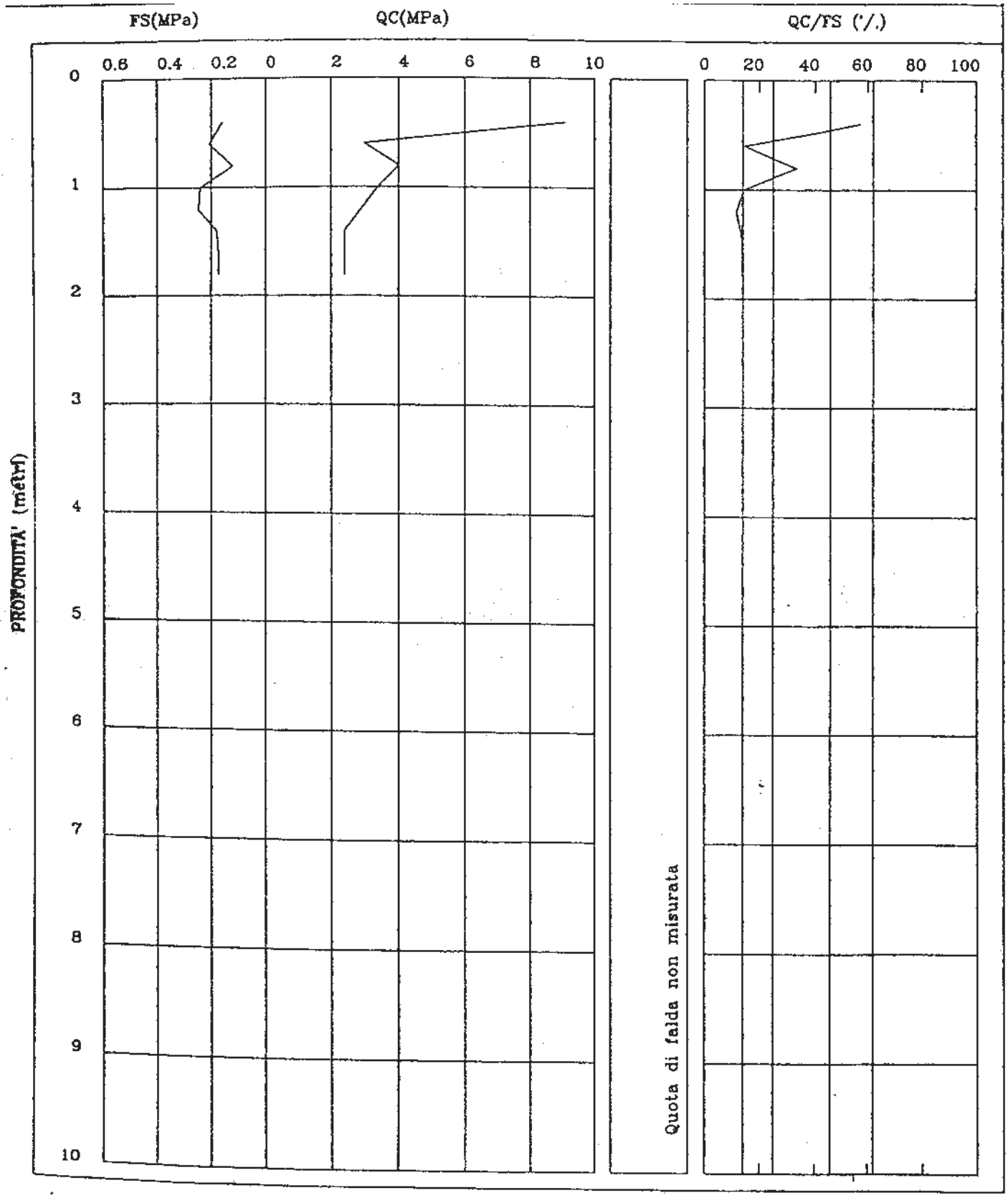

COLONNA
LITOLOGICA
ACQUA
0
50
[N]
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
[m]

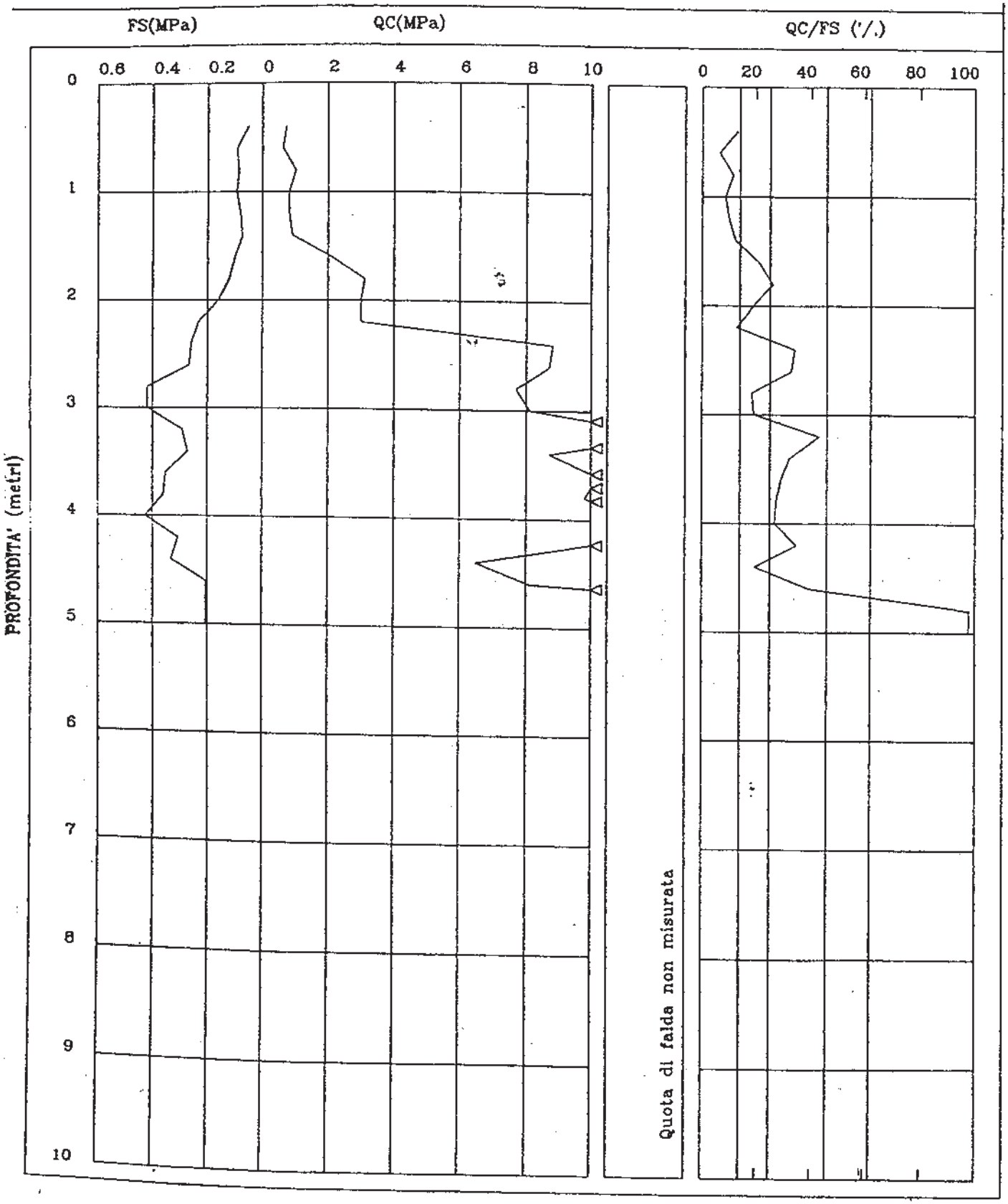

COLONNA
LITOLOGICA
ACQUA
0
50
[N]
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
[m]

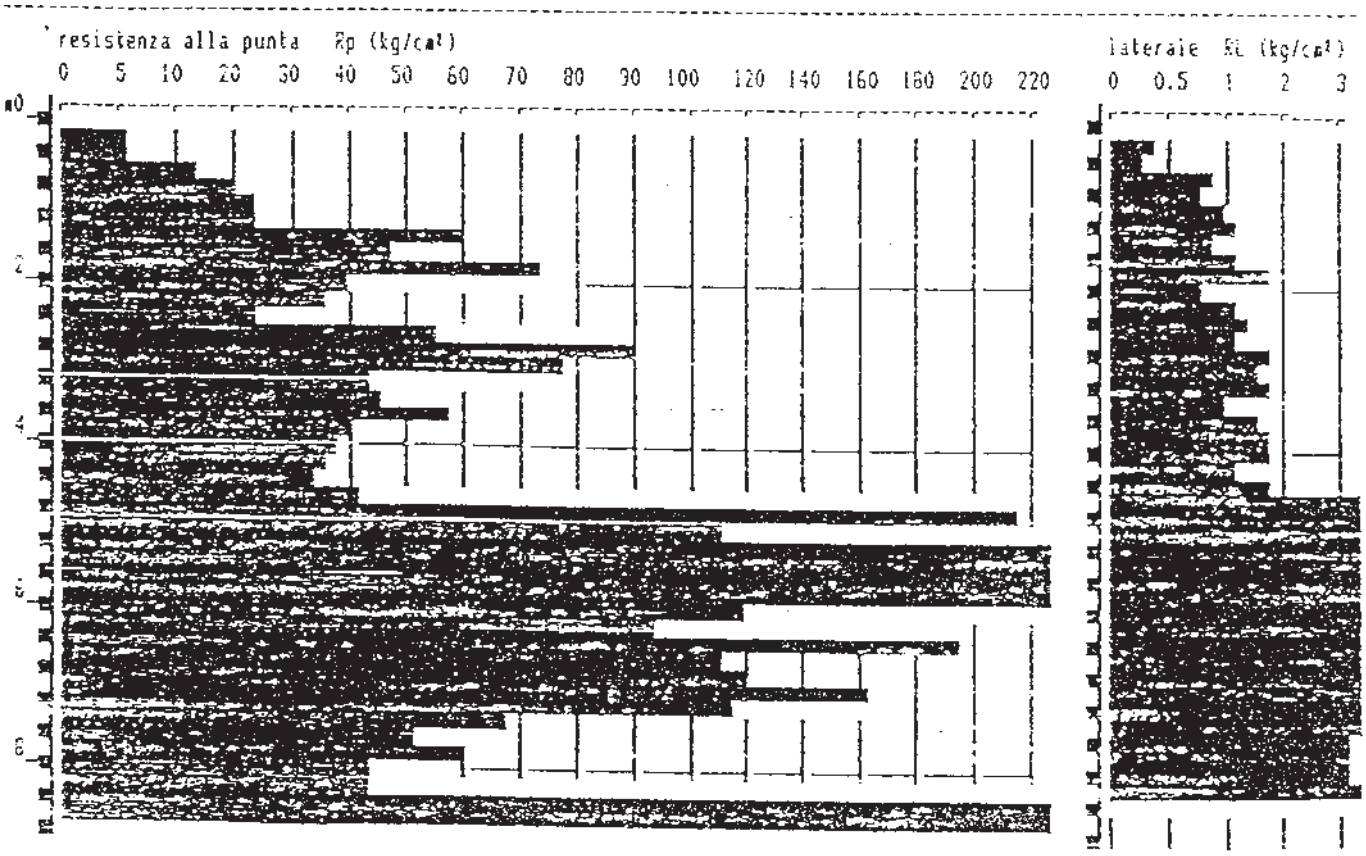

COLONNA
LITOLOGICA
ACQUA
0
50
[N]
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
[m]


FS(MPa)
0.6
0.4
0.2
0
QC(MPa)
2
4
6
8
10
QC/FS (%)
0
20
40
60
80
100
PROFONDITA' (metri)
0
1
2
3
4
5
6
7
8
9
10
Quota di falda non misurata

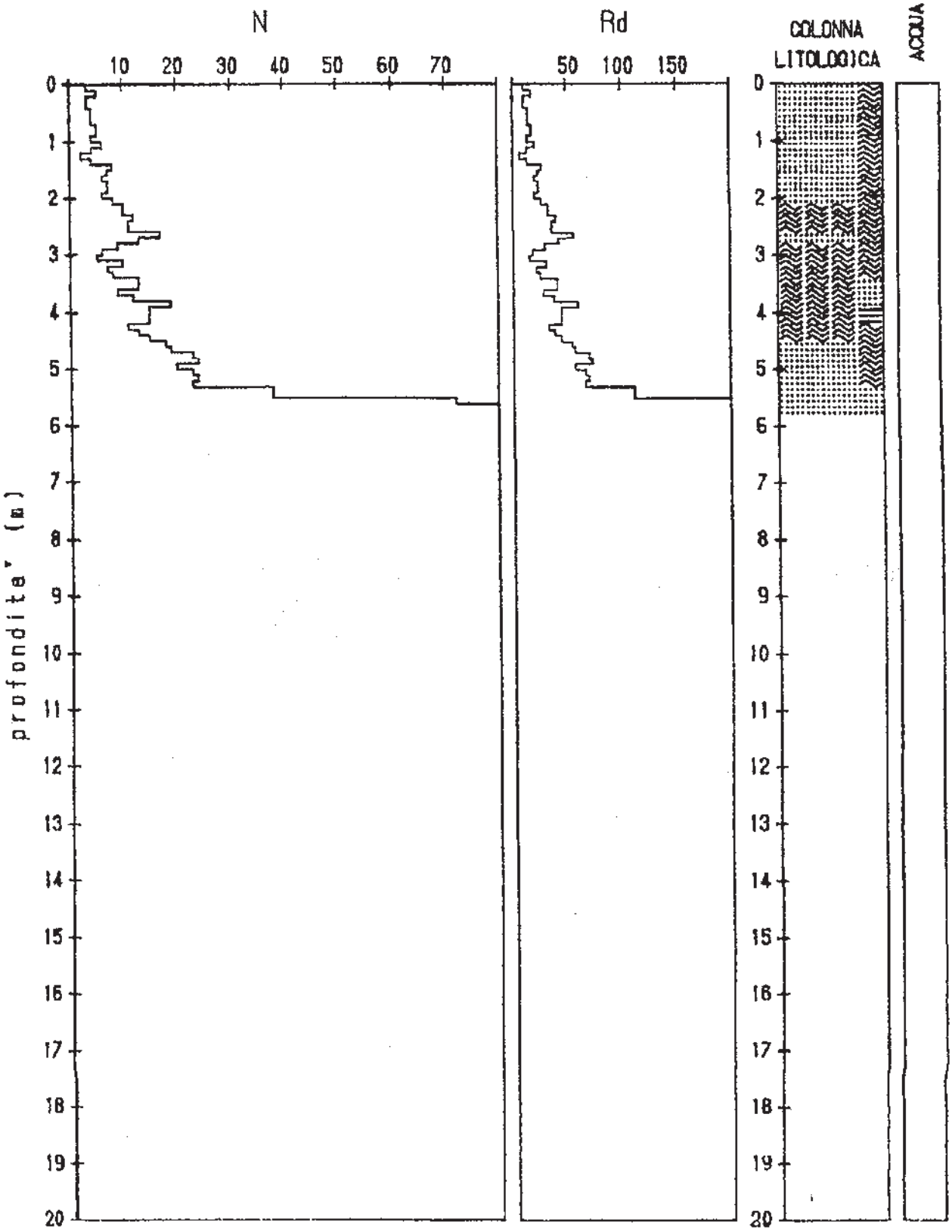

FS(MPa)
QC(MPa)
QC/FS (%)
0.6 0.4 0.2 0
2 4 6 8 10
0 20 40 60 80 100
0 1 2 3 4 5 6 7 8 9 10
PROFONDITA' (metri)
Quota di falda non misurata

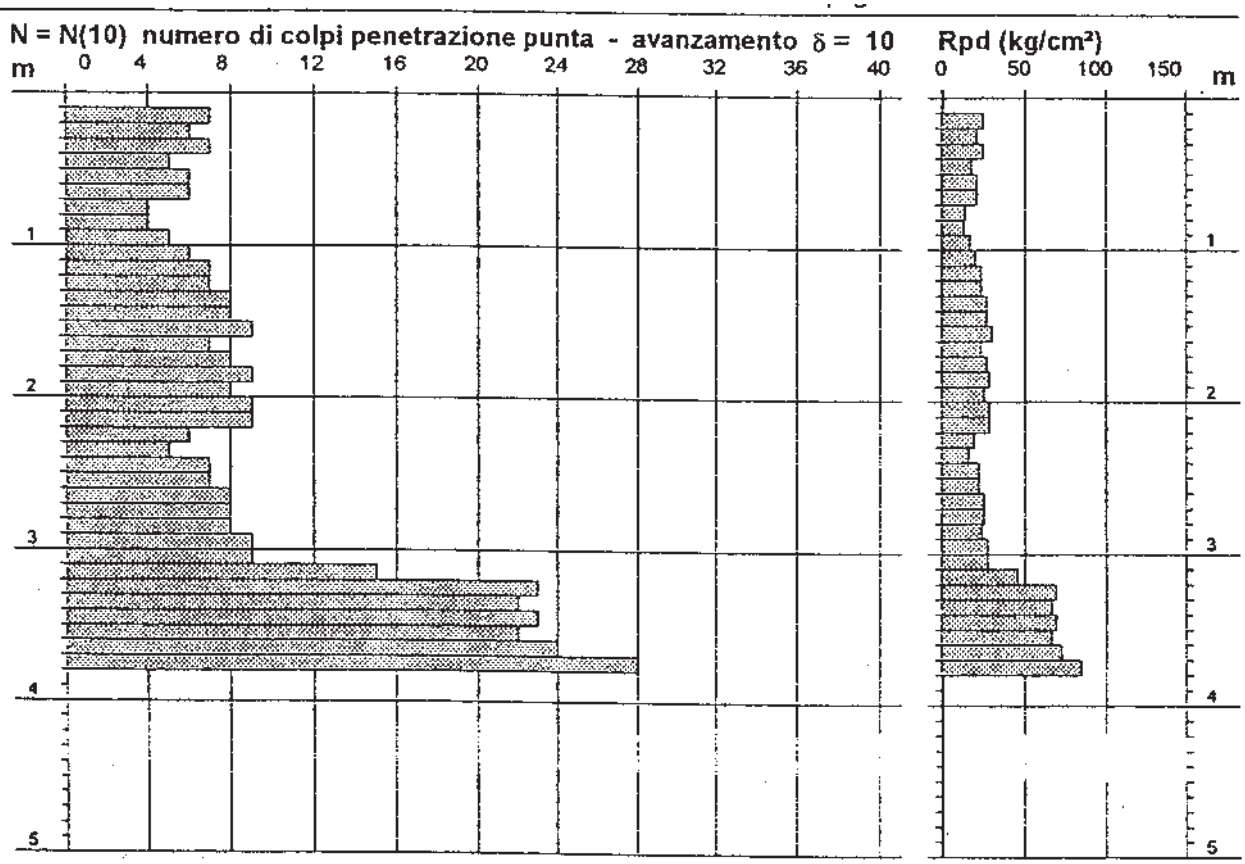

FS(MPa)
QC(MPa)
QC/FS (%)
0.6 0.4 0.2 0
2 4 6 8 10
0 20 40 60 80 100
0 1 2 3 4 5 6 7 8 9 10
PROFONDITA' (metri)
Quota di falda non misurata

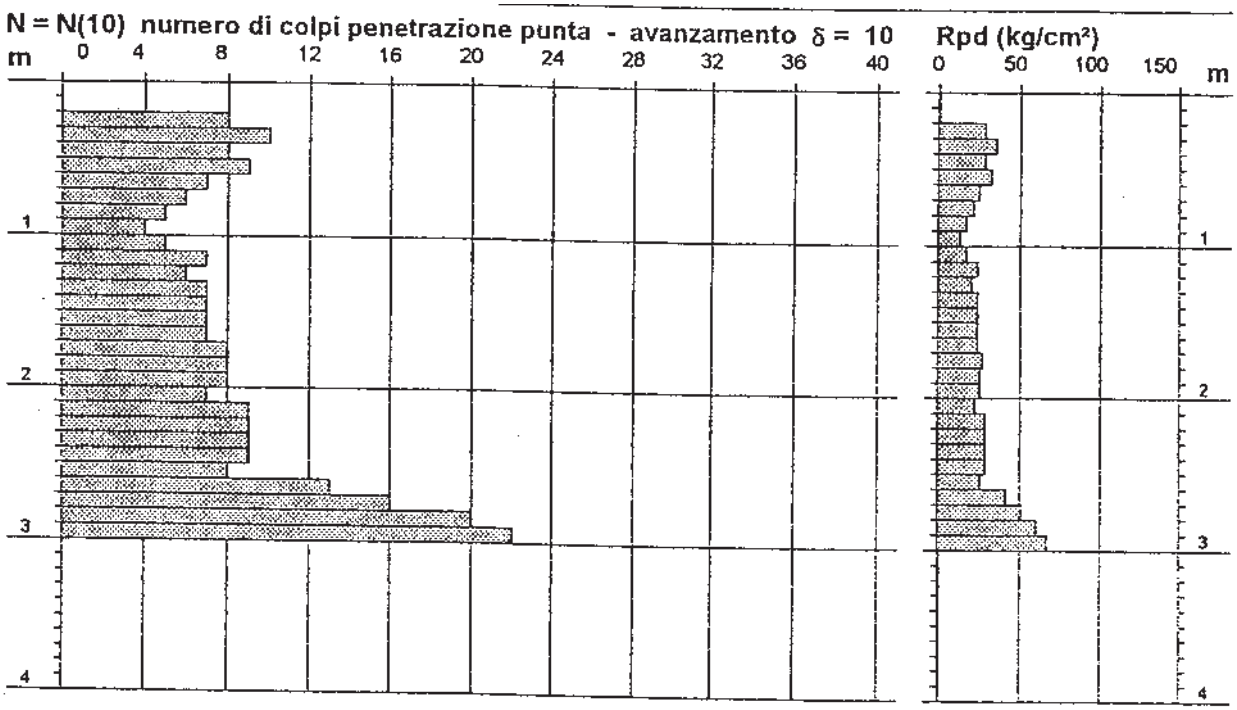

FS(MPa)
QC(MPa)
QC/FS (%)
0.6 0.4 0.2 0
2 4 6 8 10
0 20 40 60 80 100
PROFONDITA' (metri)
0 1 2 3 4 5 6 7 8 9 10
Quota di falda non misurata

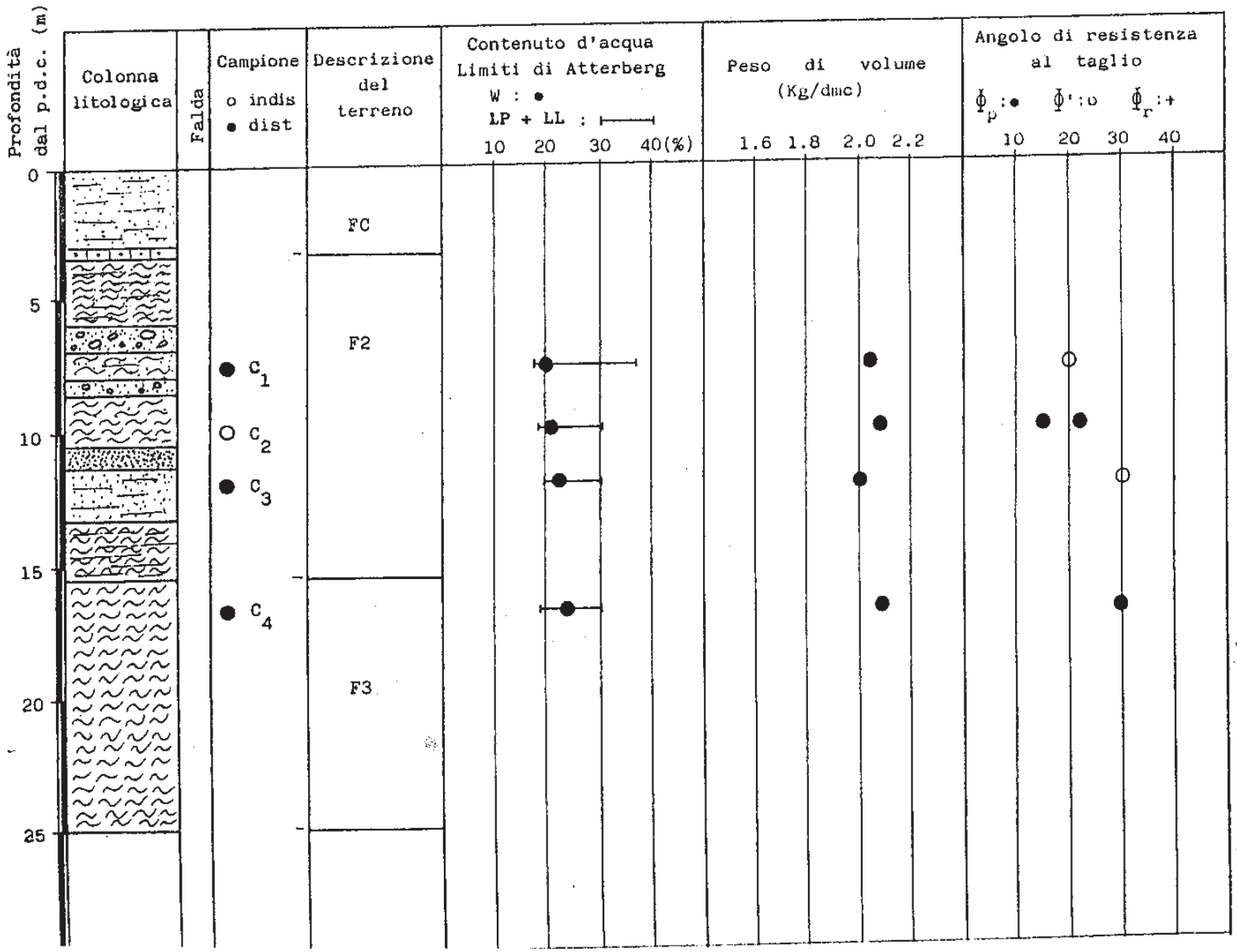

resistenza alla punta Rp (kg/cm²)
0 5 10 20 30 40 50 60 70 80 90 100 120 140 160 180 200 220
laterale RL (kg/cm²)
0 0.5 1 2 3

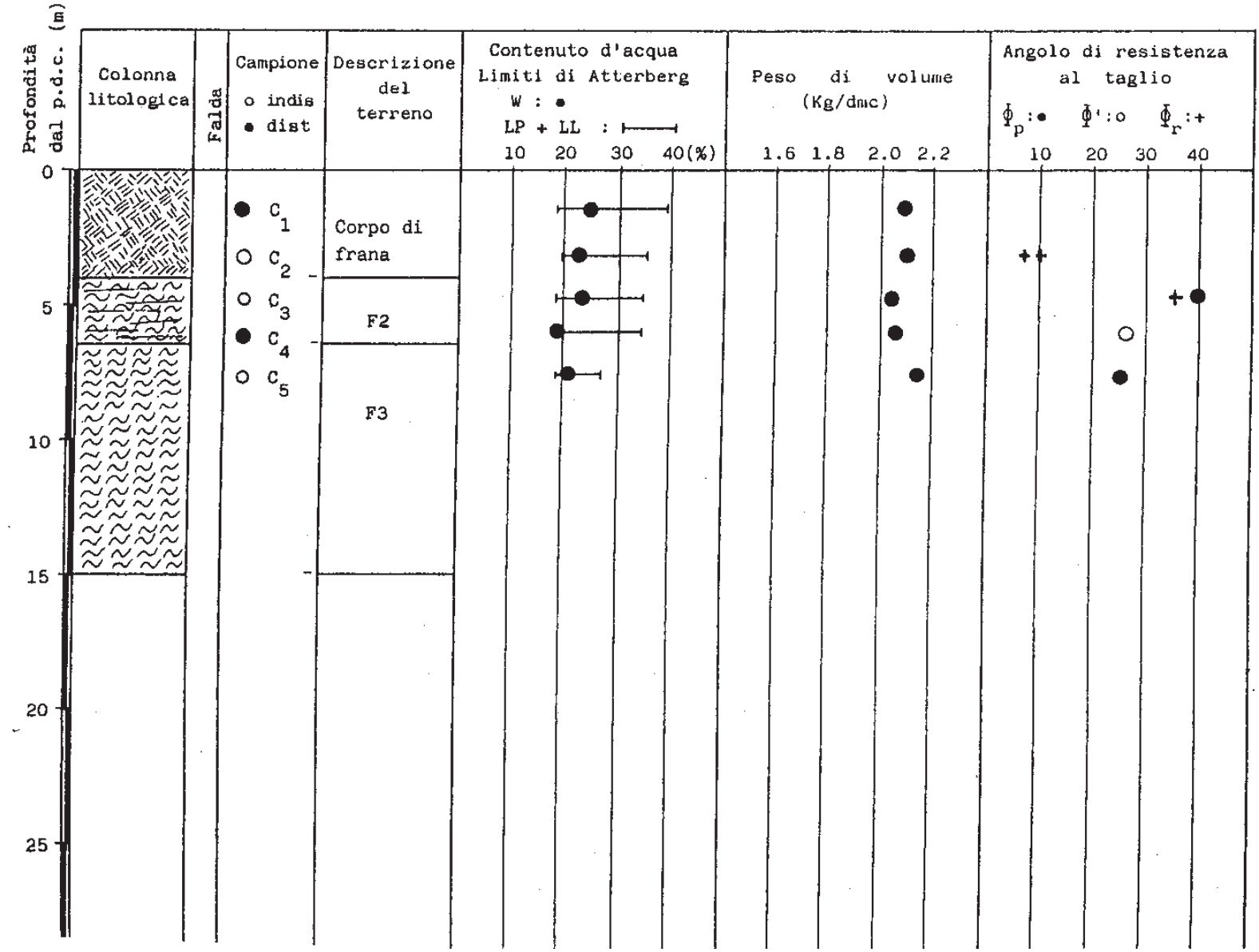
PROFONDITA' (m. dal p.c.)	LEGENDA	Livello falda	ϕ (°)	Cu (Kg/cmq)	γ (tonn/cmc)		LITOLOGIA
			22.0 - 25.0	-	1.6	0.30	Terreno vegetale parzialmente decompresso
			26.0- 28.0	0.10	1.8	0.80	Sabbie fini limose poco addensate
1.00			28.0 - 30.0	0.10	1:9		Sabbie fini mediamente addensate
2.00						2.70	
3.00							Scavo asciutto e stabile; assenza di rifluimento del materiale dalle pareti
4.00							
5.00							
6.00							
7.00							
8.00							
9.00							
10.00							


N
10 20 30 40 50 60 70
Rd
50 100 150
COLONNA LITOLOGICA
ACQUA
profondita' (m)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

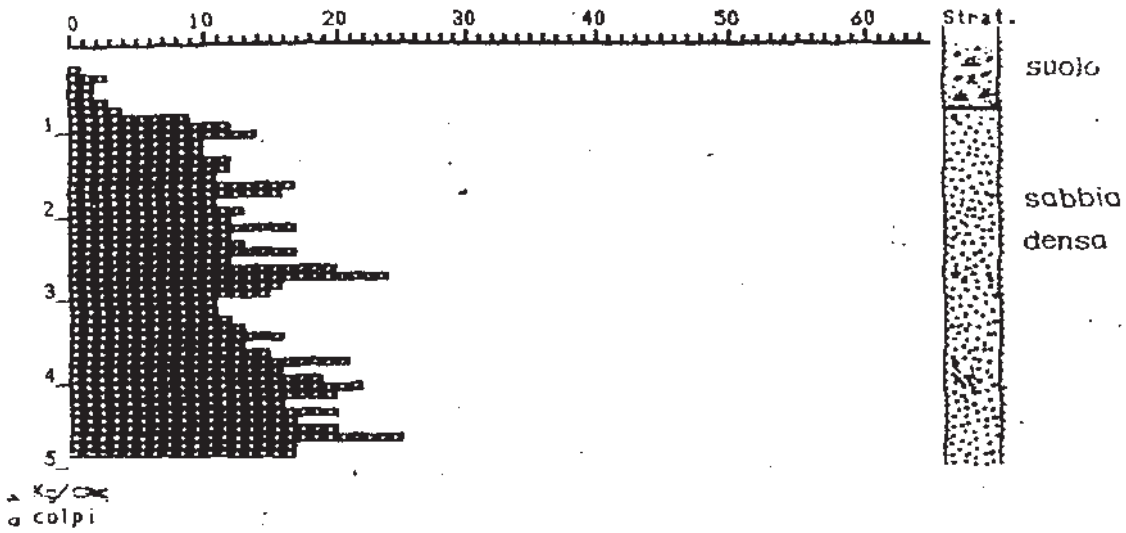

N = N(10) numero di colpi penetrazione punta - avanzamento δ = 10
m
0 4 8 12 16 20 24 28 32 36 40
Rpd (kg/cm²)
0 50 100 150
m
1
2
3
4
5

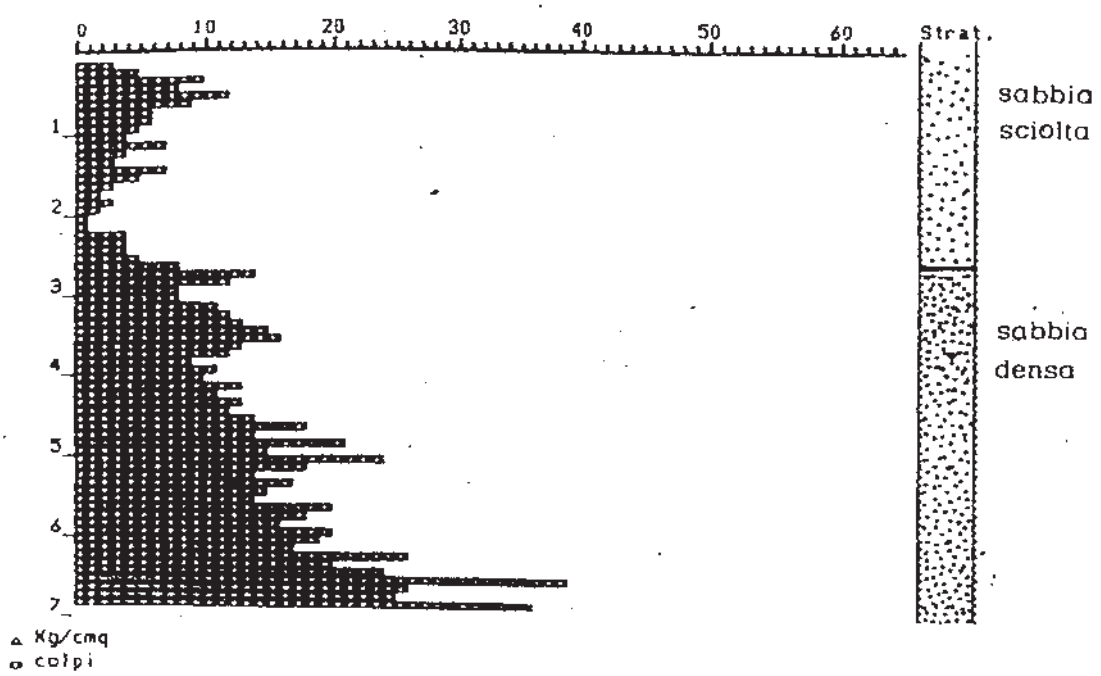

N = N(10) numero di colpi penetrazione punta - avanzamento δ = 10
m
0 4 8 12 16 20 24 28 32 36 40
Rpd (kg/cm²)
0 50 100 150
m
1
2
3
4

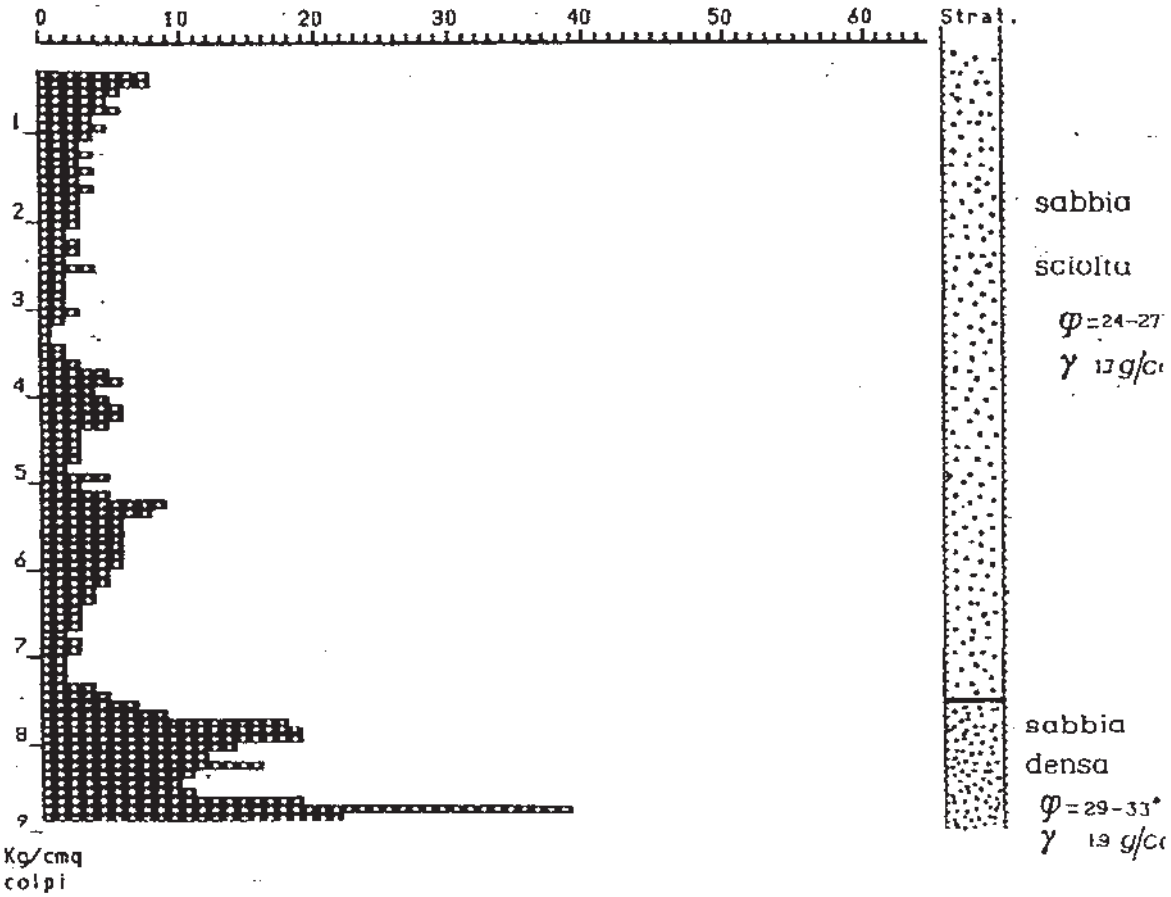

Profondità dal p.d.c. (m)
Colonna litologica
Falda
Campione
o indis
● dist
Descrizione del terreno
Contenuto d'acqua
Limiti di Atterberg
W : ●
LP + LL : ⊢—⊣
10 20 30 40(%)
Peso di volume
(Kg/dmc)
1.6 1.8 2.0 2.2
Angolo di resistenza al taglio
Φp :● Φ' :○ Φr :+
10 20 30 40
0
5
10
15
20
25
FC
F2
F3
C1
C2
C3
C4

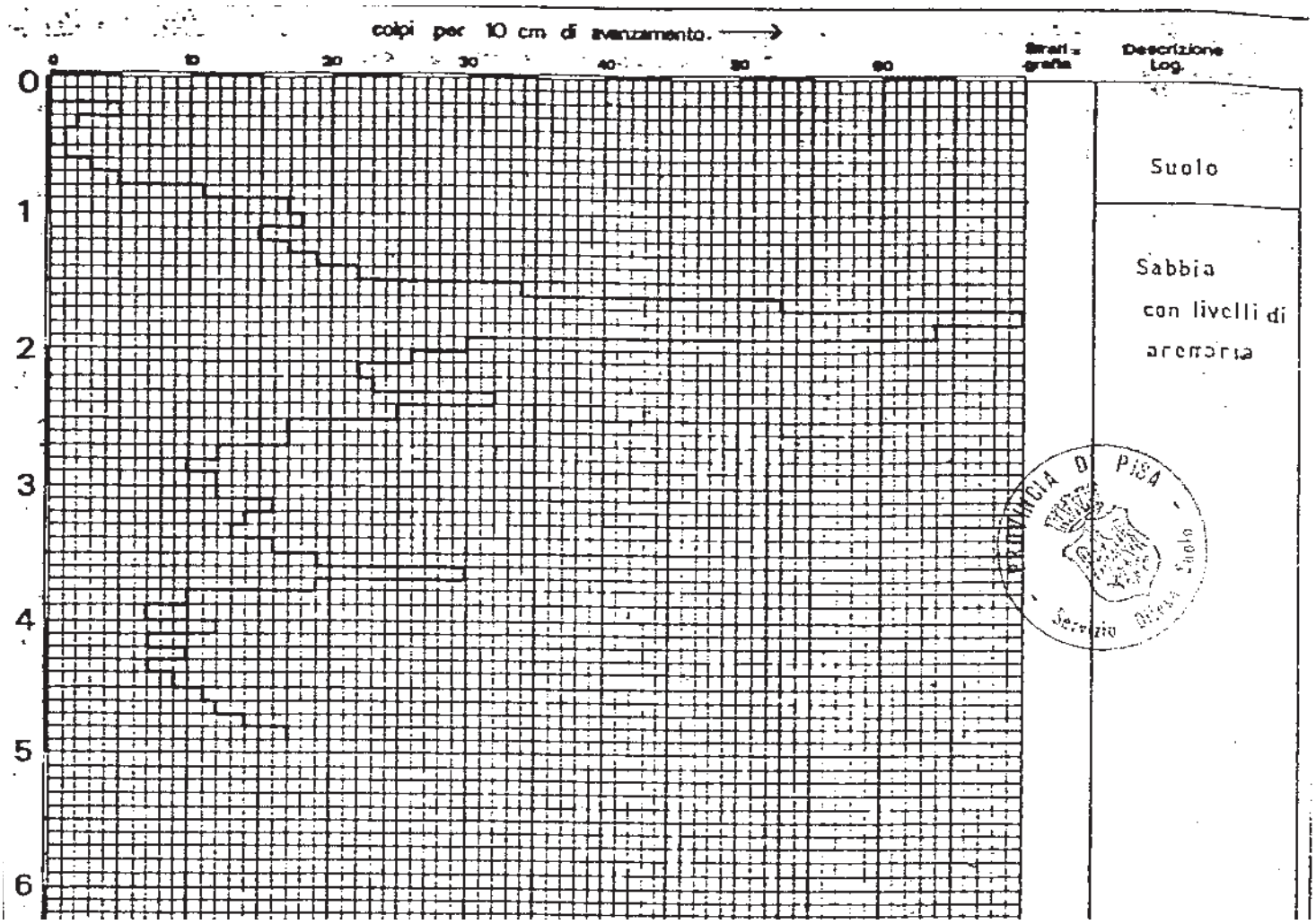

Profondità dal p.d.c. (m)
Colonna litologica
Falda
Campione
o indis
• dist
Descrizione del terreno
Contenuto d'acqua
Limiti di Atterberg
W : •
LP + LL : ⊢—⊣
10 20 30 40(%)
Peso di volume (Kg/dmc)
1.6 1.8 2.0 2.2
Angolo di resistenza al taglio
Φp:• Φ':o Φr:+
10 20 30 40
0
5
10
15
20
25
C1
C2
C3
C4
C5
Corpo di frana
F2
F3

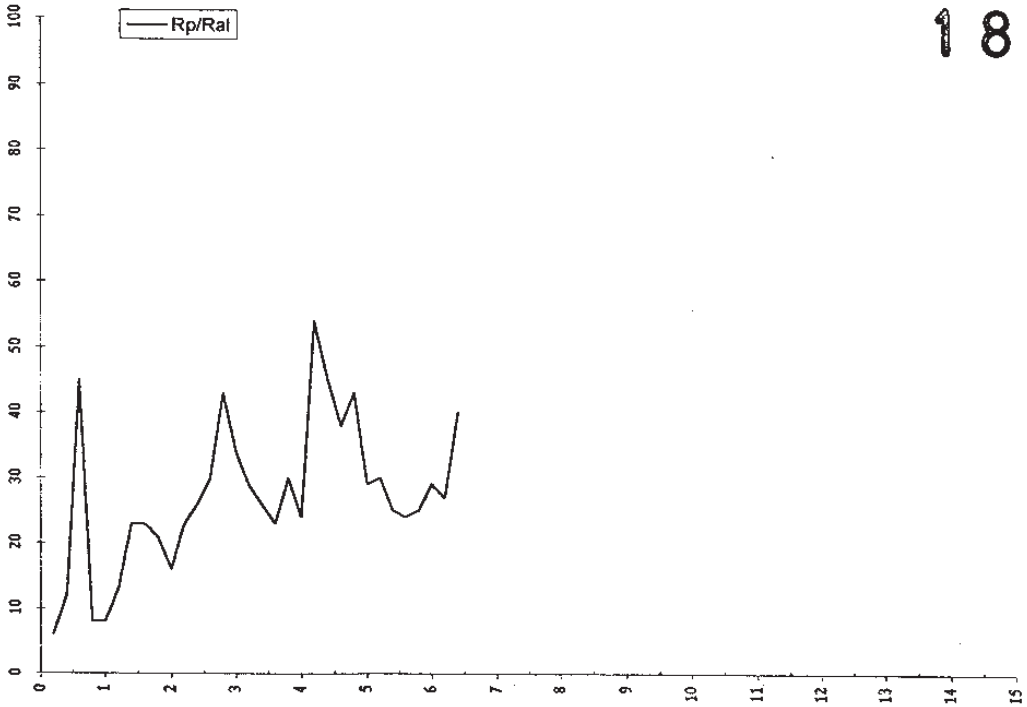
	Profondità dal p.d.c.(m)	γ kg/dmc	w	LL	LP	IP	IC	Granulometria Ag / L / S / G	Valori di resistenza al taglio di picco ϕ_p	di picco c_p kg/cmq	rammollimento ϕ'	rammollimento c' kg/cmq	residui ϕ_r	residui c_r kg/cmq	Prova edometrica e_0	Prova edometrica k (cm/sec)
S_1C_1	7,50-7,70	2,04	20%	37%	18%	19%	0,99	1 / 62 / 34 / 3			20°	0				
S_1C_2 a	9,80-10,10	2,08	21%	30%	19%	11%	0,81		22°	0,76						
S_1C_2 b	10,10-10,40	2,08	21%	30%	19%	11%	0,81		15°	1,12					0,647	$4,9\ 10^{-5}$
S_1C_3	12,00-12,20	2,00	23%	30%	20%	10%	0,70				30°	0				
S_1C_4	16,50-17,10	2,08	24%	30%	19%	11%	0,64		30°	0,44						
S_2C_1	1,50-1,70	2,09	25%	39%	19%	20%	0,70									
S_2C_2 a	3,00-3,30	2,08	24%	35%	20%	15%	0,80	24 / 65 / 10 / 1	7°	0,72			7°	0,07		
S_2C_2 b	3,30-3,60	2,12	22%					24 / 65 / 10 / 1	10°	0,92			7°	0,07		
S_2C_3	4,50-5,10	2,04	24%	31%	21%	10%	0,70		40°	0,10			35°	0,20	0,656	$1,99\ 10^{-5}$
S_2C_4	6,00-6,20	2,06	19%	34%	19%	15%	1,00				26°	0				
S_2C_5	7,50-8,10	2,14	21%	27%	19%	8%	0,75		25°	0,60					0,601	$2,06\ 10^{-6}$
Cp_1	3,00-3,60	2,01	20%	44%	21%	23%	1,04				19°	0				
Cp_4	4,00-4,30	2,13	18%	26%	16%	10%	1,20				25°	0				
Cp_7	8,00-8,60	2,13	21%	32%	19%	13%	0,84				21°	0				

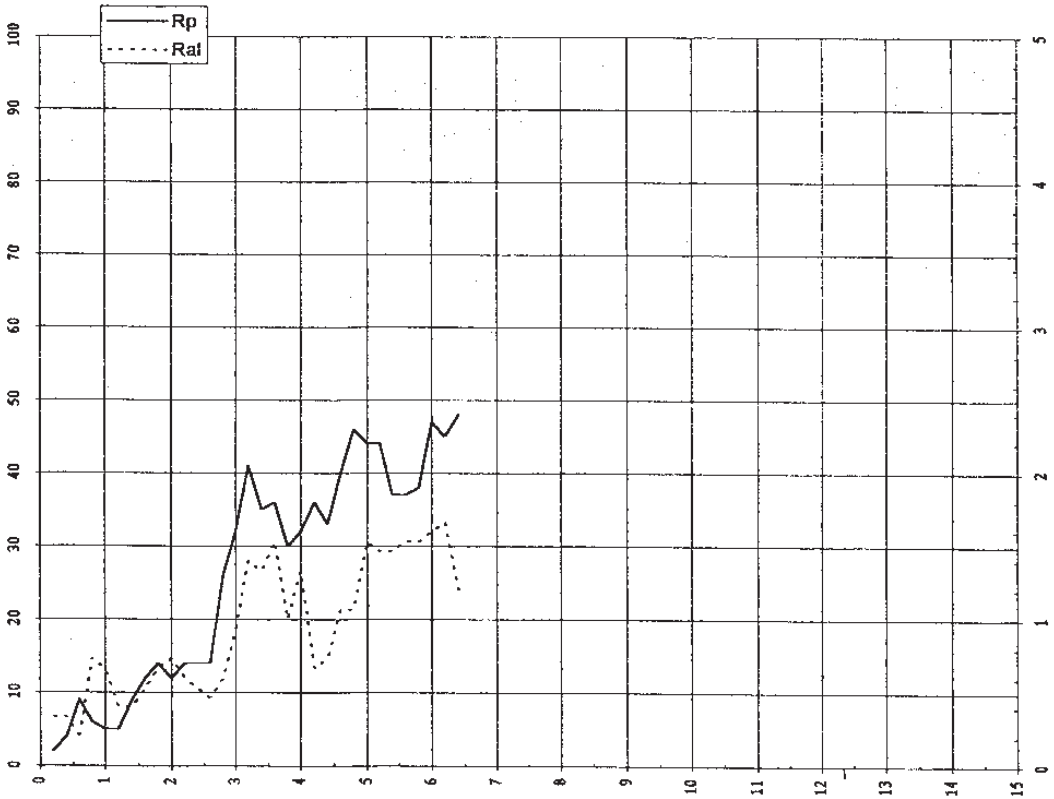

0
10
20
30
40
50
60
Strat.
suolo
sabbia
densa
1
2
3
4
5
colpi

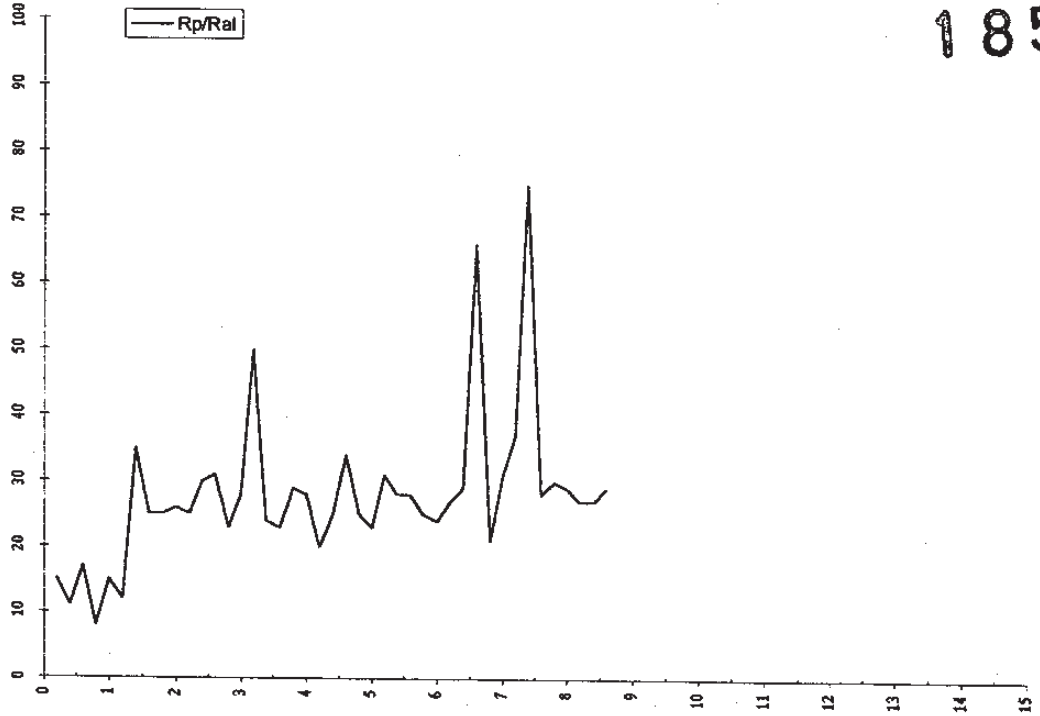

0
10
20
30
40
50
60
Strat.
1
2
3
4
5
6
7
sabbia
sciolta
sabbia
densa
Kg/cmq
colpi

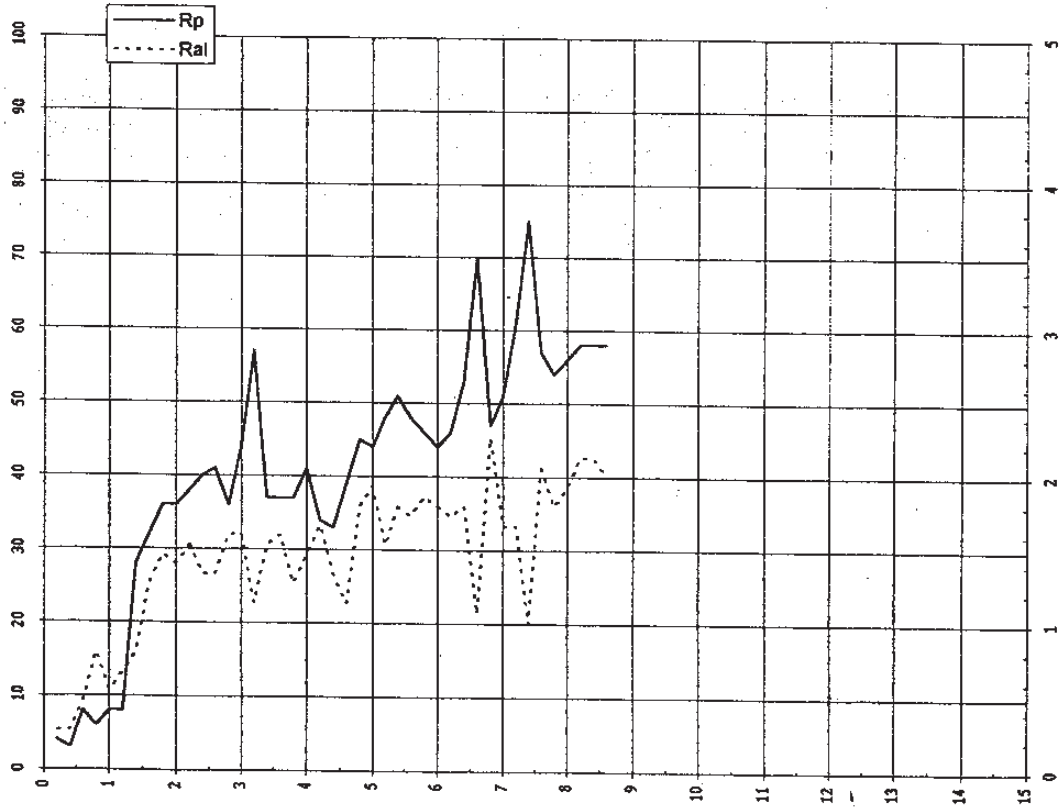

0
10
20
30
40
50
60
Strat.
1
2
3
4
5
6
7
8
9
Kg/cmq
colpi
sabbia
sciolta
φ=24-27
γ 17 g/c
sabbia
densa
φ=29-33°
γ 19 g/c

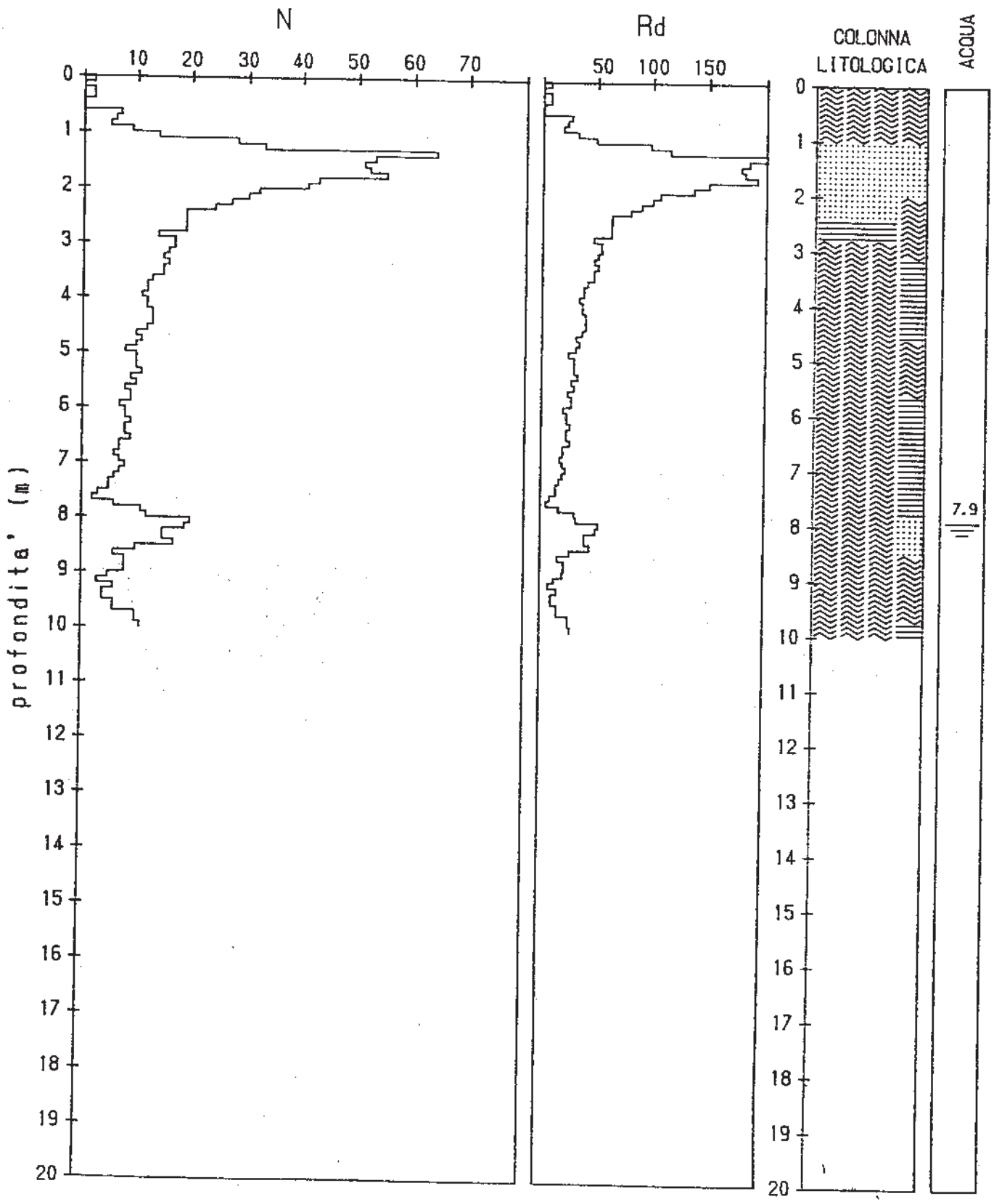

colpi per 10 cm di avanzamento.
0
10
20
30
40
50
60
Strati-grafia
Descrizione Log.
0
1
2
3
4
5
6
Suolo
Sabbia con livelli di arenaria
PROVINCIA DI PISA
Servizio Difesa Suolo

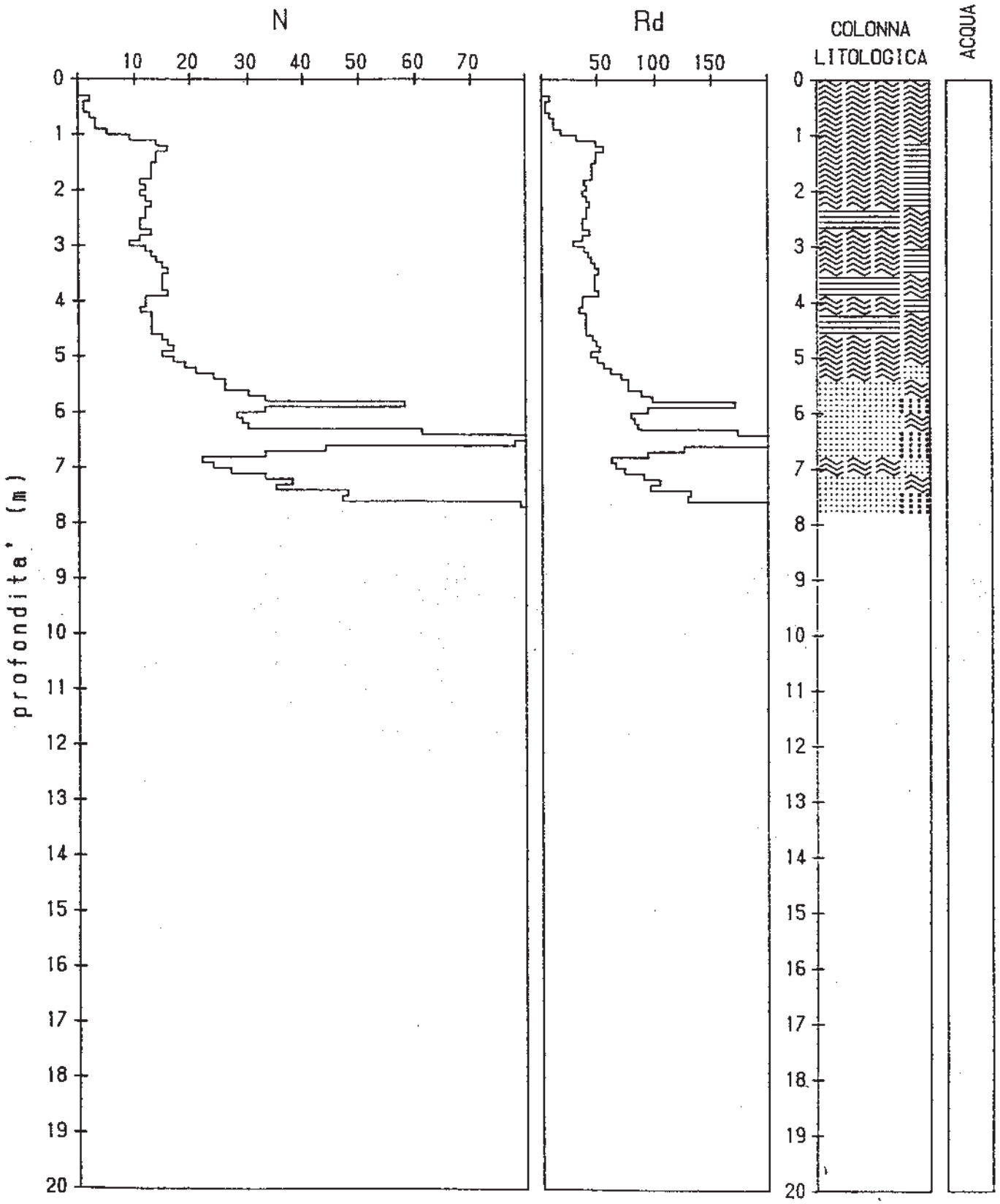

Rp/Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

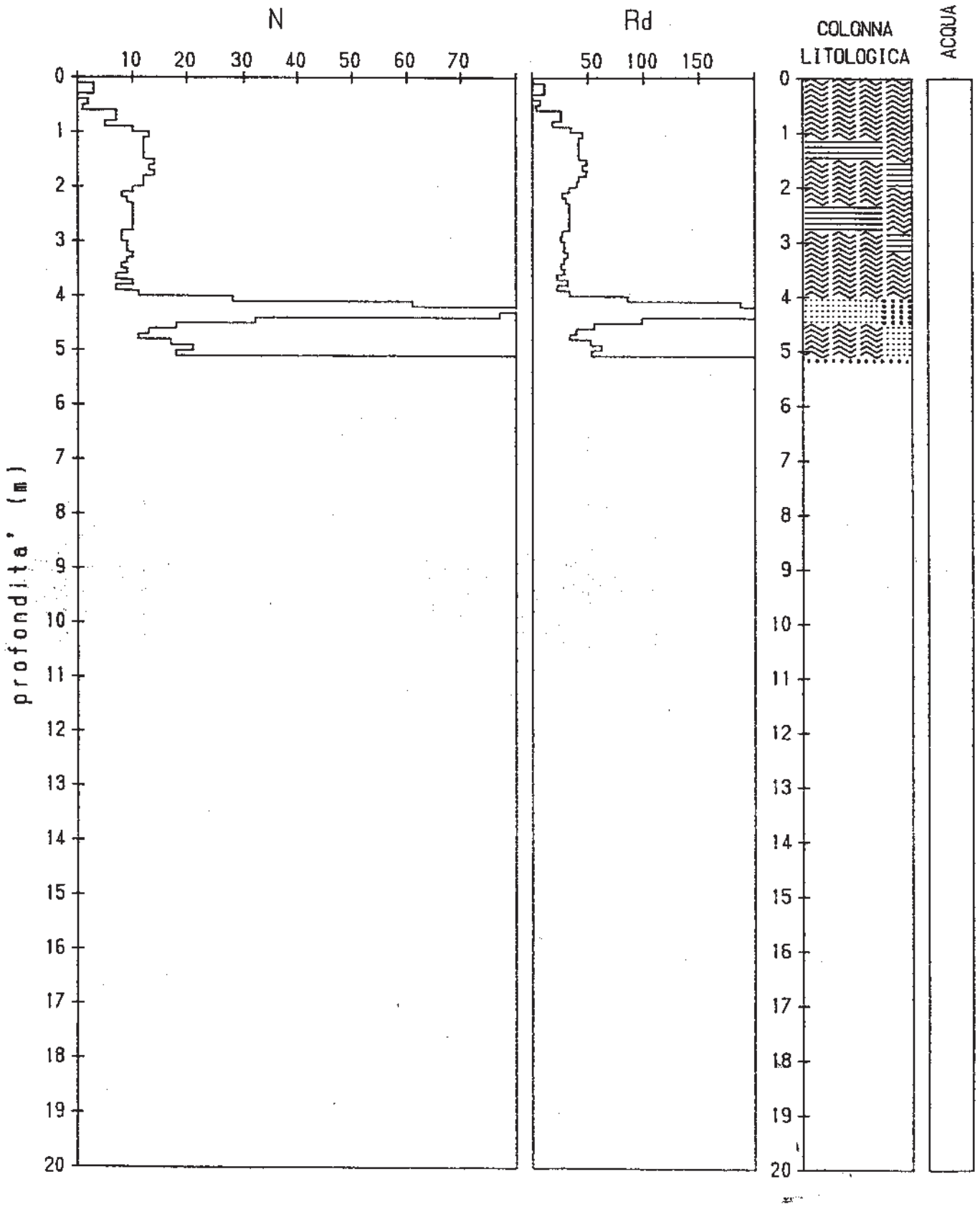

Rp
Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
0
1
2
3
4
5

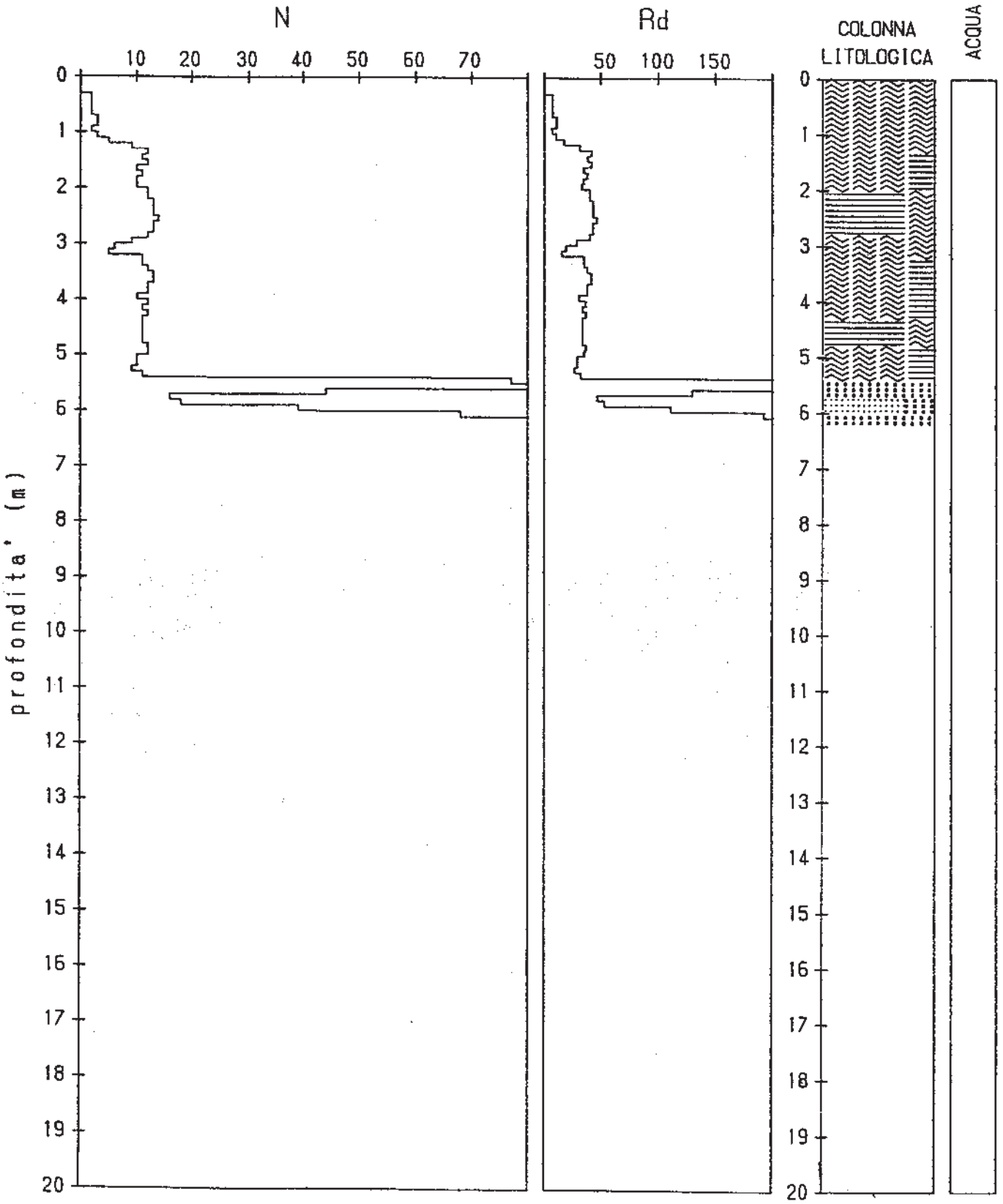

Rp/Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

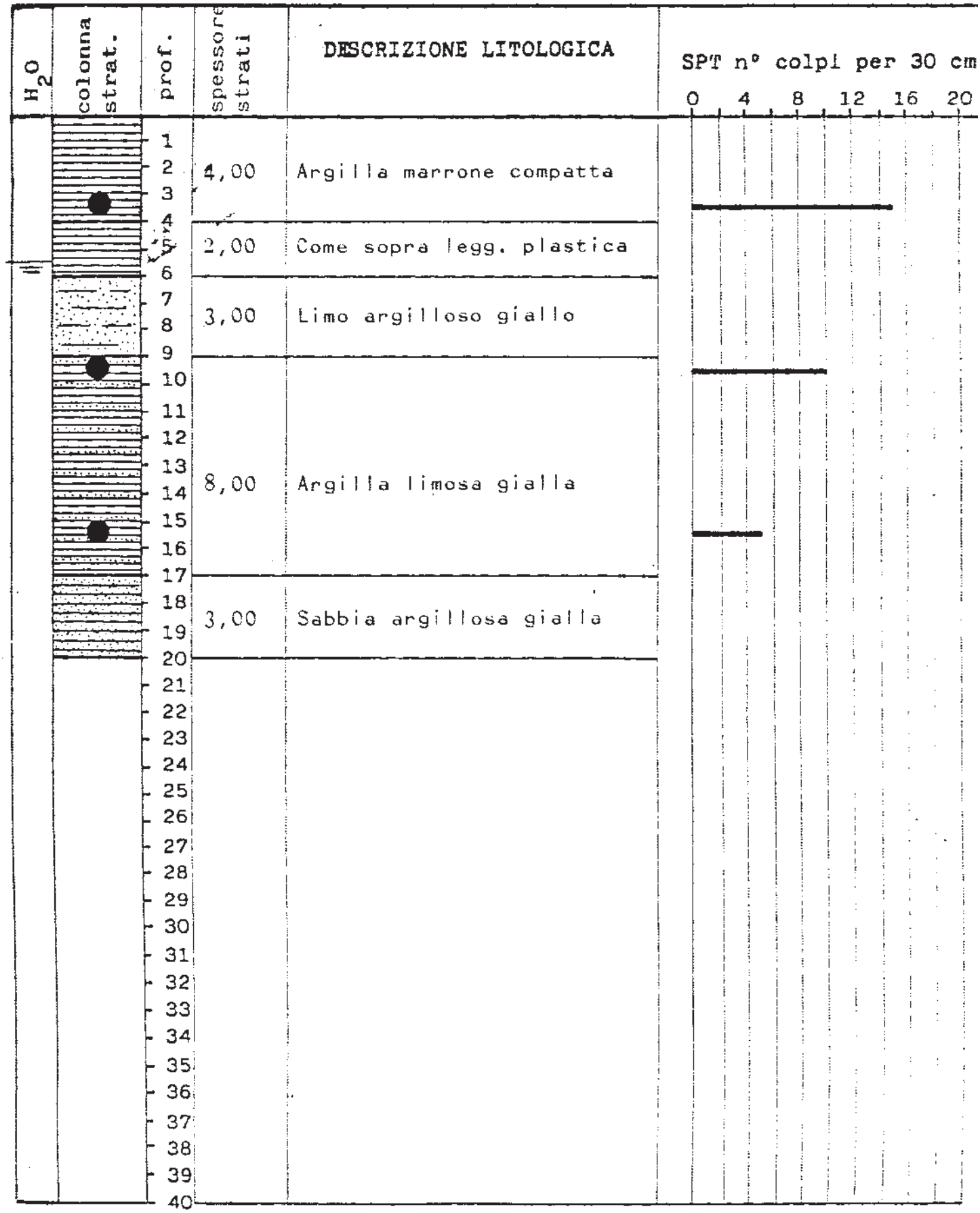

Rp
Ral
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
0
1
2
3
4
5


N
10 20 30 40 50 60 70
Rd
50 100 150
COLONNA LITOLOGICA
ACQUA
7.9
profondita' (m)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20


N
10 20 30 40 50 60 70
Rd
50 100 150
COLONNA LITOLOGICA
ACQUA
profondita' (m)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

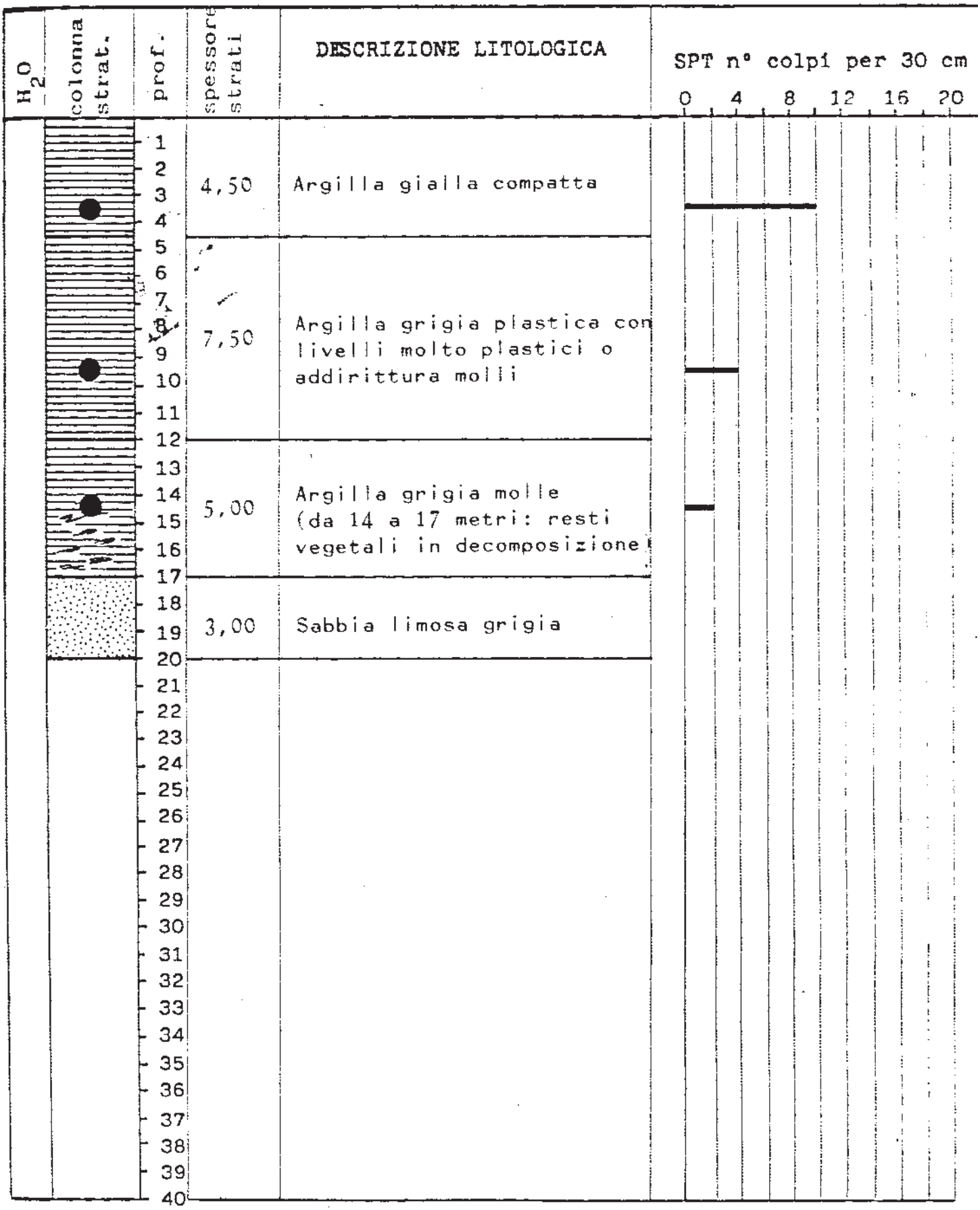

N
10 20 30 40 50 60 70
Rd
50 100 150
COLONNA LITOLOGICA
ACQUA
profondita' (m)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

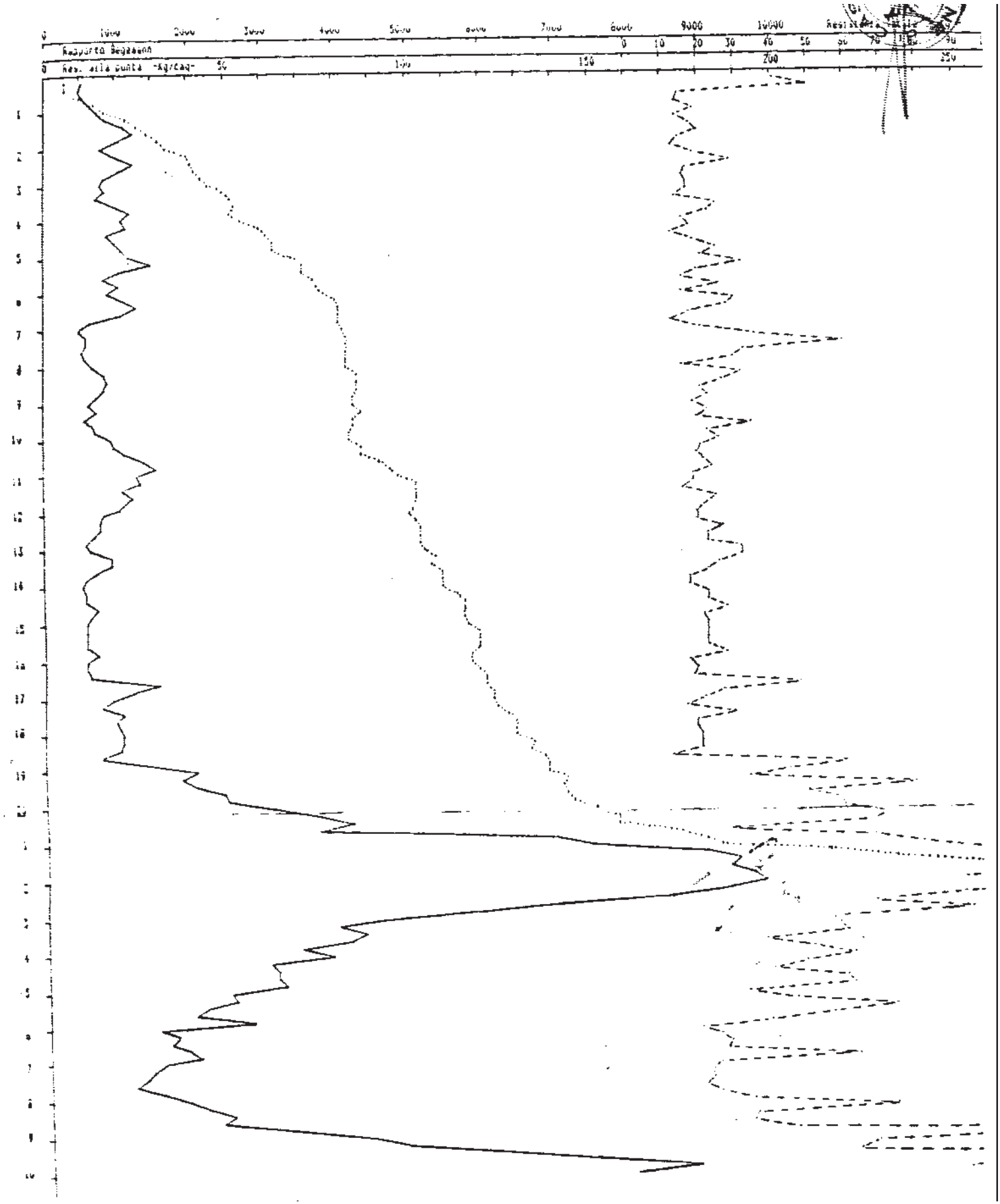

N
10 20 30 40 50 60 70
Rd
50 100 150
COLONNA LITOLOGICA
ACQUA
profondita' (m)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

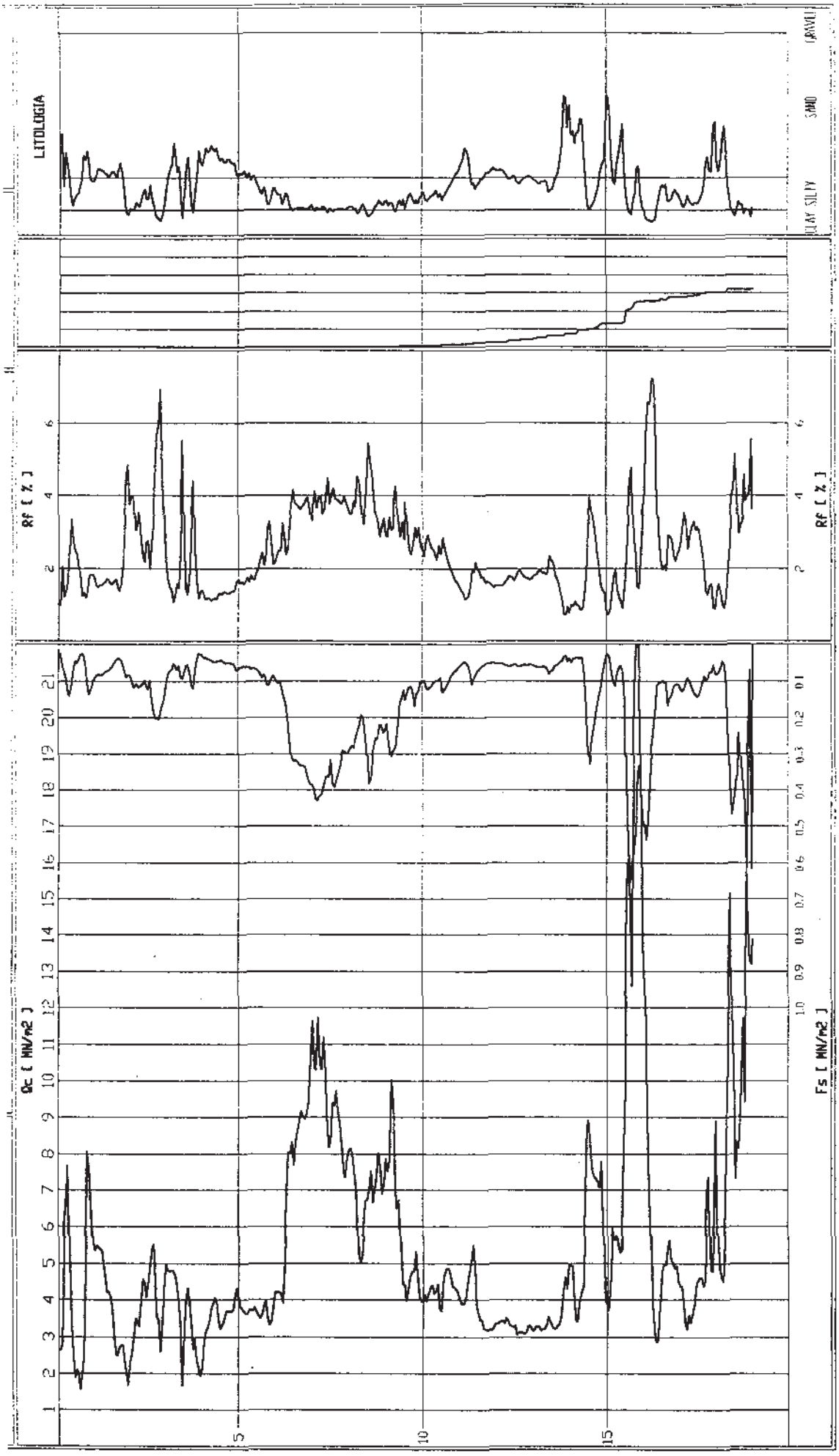

H_2O
colonna strat.
prof.
spessore strati
DESCRIZIONE LITOLOGICA
SPT n° colpi per 30 cm
0 4 8 12 16 20
4,00
Argilla marrone compatta
2,00
Come sopra legg. plastica
3,00
Limo argilloso giallo
8,00
Argilla limosa gialla
3,00
Sabbia argillosa gialla

campioni indisturbati ●

H_2O	colonna strat.	prof.	spessore strati	DESCRIZIONE LITOLOGICA	SPT n° colpi per 30 cm (0 4 8 12 16 20)
		1 2 3	4,00	Argilla gialla compatta	
		4 5	1,00	Come sopra plastica	
		6 7 8 9	4,00	Argilla gialla compatta	
		10 11 12 13	4,00	Limo argilloso giallo	
		14 15 16	3,00	Argilla limosa gialla	
		17 18 19 20	4,00	Sabbia gialla	
		21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40			


H_2O
colonna strat.
prof.
spessore strati
DESCRIZIONE LITOLOGICA
SPT n° colpi per 30 cm
0 4 8 12 16 20
4,50
Argilla gialla compatta
7,50
Argilla grigia plastica con livelli molto plastici o addirittura molli
5,00
Argilla grigia molle (da 14 a 17 metri: resti vegetali in decomposizione)
3,00
Sabbia limosa grigia




LITOLOGIA
CLAY SILTY
SAND
GRAVEL
Rf [%]
Qc [MN/m2]
Fs [MN/m2]
5
10
15

Committente: Provincia di Pisa
Localit : Torrente Zannone CPT:1
Dir. Lavori: Dott. Della Maggese
Data : 13-02-98 10:29:29

Qc (MN/mq) Resistenza alla punta I (%) Inclinazione
Fs (MN/mq) Attrito laterale locale Rf (%) Rapporto di attrito

1 MN/mq = 10.2 Kg/cmq

Cone ID: GD.100.1000.15 Cone serial: 00000 File ID: ZANNONE.1

D	Qc	Fs	I	Rf	Tipo di Terreno
0.05	2.65	0.026	0.07	0.99	Sabbia
0.10	2.82	0.058	0.00	2.05	Limo sabbioso
0.15	6.08	0.074	0.00	1.22	Sabbia
0.20	6.62	0.092	0.07	1.39	Sabbia
0.25	7.68	0.125	0.07	1.62	Sabbia
0.30	5.53	0.140	0.00	2.53	Limo
0.35	3.49	0.117	0.00	3.35	Limo argilloso
0.40	2.60	0.072	0.07	2.77	Limo
0.45	1.90	0.047	0.07	2.48	Limo
0.50	2.10	0.051	0.07	2.41	Limo
0.55	2.02	0.042	0.07	2.08	Limo sabbioso
0.60	1.57	0.029	0.00	1.83	Limo sabbioso
0.65	1.98	0.025	0.07	1.26	Sabbia
0.70	2.52	0.033	0.07	1.33	Sabbia
0.75	5.55	0.066	0.07	1.19	Sabbia
0.80	8.07	0.107	0.07	1.33	Sabbia
0.85	7.62	0.137	0.07	1.79	Limo sabbioso
0.90	6.57	0.122	0.07	1.85	Limo sabbioso
0.95	5.60	0.103	0.07	1.84	Limo sabbioso
1.00	5.37	0.092	0.07	1.71	Sabbia
1.05	5.49	0.084	0.07	1.52	Sabbia
1.10	5.44	0.082	0.07	1.50	Sabbia
1.15	5.39	0.083	0.07	1.54	Sabbia
1.20	5.37	0.083	0.07	1.54	Sabbia
1.25	4.94	0.080	0.00	1.61	Sabbia
1.30	4.55	0.074	0.07	1.62	Sabbia
1.35	4.20	0.072	0.00	1.73	Sabbia
1.40	4.22	0.071	0.07	1.69	Sabbia
1.45	4.07	0.065	0.00	1.59	Sabbia
1.50	3.72	0.059	0.00	1.58	Sabbia
1.55	3.00	0.050	0.00	1.66	Sabbia
1.60	2.53	0.043	0.00	1.71	Sabbia
1.65	2.50	0.038	0.00	1.52	Sabbia
1.70	2.72	0.038	0.00	1.39	Sabbia
1.75	2.77	0.044	0.00	1.60	Sabbia
1.80	2.77	0.058	0.00	2.08	Limo sabbioso
1.85	2.27	0.078	0.07	3.42	Limo argilloso
1.90	2.02	0.090	0.07	4.44	Argilla
1.95	1.69	0.082	0.07	4.84	Argilla
2.00	2.30	0.086	0.00	3.76	Limo argilloso
2.05	2.53	0.101	0.07	4.00	Argilla
2.10	2.98	0.118	0.07	3.95	Limo argilloso
2.15	3.50	0.107	0.07	3.06	Limo argilloso
2.20	3.44	0.110	0.07	3.19	Limo argilloso

CPT:1

D	Qc	Fs	I	Rf	Tipo di Terreno
2.25	3.30	0.117	0.00	3.53	Limo argilloso
2.30	3.95	0.112	0.07	2.84	Limo
2.35	4.57	0.107	0.00	2.34	Limo
2.40	4.45	0.097	0.00	2.18	Limo sabbioso
2.45	4.07	0.111	0.00	2.74	Limo
2.50	4.42	0.122	0.07	2.76	Limo
2.55	4.91	0.098	0.07	2.00	Limo sabbioso
2.60	5.40	0.149	0.07	2.76	Limo
2.65	5.52	0.182	0.07	3.31	Limo argilloso
2.70	4.19	0.201	0.07	4.79	Argilla
2.75	3.53	0.200	0.00	5.67	Argilla
2.80	3.47	0.206	0.00	5.93	Argilla
2.85	2.62	0.182	0.00	6.93	Argilla
2.90	3.42	0.161	0.00	4.71	Argilla
2.95	4.53	0.143	0.00	3.15	Limo argilloso
3.00	4.99	0.111	0.00	2.22	Limo sabbioso
3.05	4.80	0.082	0.00	1.71	Sabbia
3.10	4.77	0.073	0.00	1.52	Sabbia
3.15	4.82	0.068	0.07	1.41	Sabbia
3.20	4.78	0.052	0.00	1.09	Sabbia
3.25	4.64	0.060	0.00	1.29	Sabbia
3.30	4.38	0.069	0.00	1.58	Sabbia
3.35	3.95	0.058	0.00	1.46	Sabbia
3.40	3.33	0.088	0.00	2.64	Limo
3.45	1.67	0.092	0.00	5.51	Argilla
3.50	3.08	0.073	0.00	2.38	Limo
3.55	3.97	0.058	0.00	1.47	Sabbia
3.60	4.32	0.056	0.00	1.29	Sabbia
3.65	3.92	0.076	0.00	1.94	Limo sabbioso
3.70	3.35	0.110	0.00	3.29	Limo argilloso
3.75	2.68	0.118	0.00	4.40	Argilla
3.80	2.98	0.074	0.00	2.49	Limo
3.85	2.40	0.041	0.00	1.69	Sabbia
3.90	2.17	0.026	0.00	1.19	Sabbia
3.95	1.93	0.026	0.00	1.36	Sabbia
4.00	2.14	0.031	0.00	1.43	Sabbia
4.05	2.85	0.036	0.00	1.25	Sabbia
4.10	3.12	0.036	0.00	1.16	Sabbia
4.15	3.25	0.039	0.00	1.20	Sabbia
4.20	3.43	0.041	0.00	1.19	Sabbia
4.25	3.79	0.043	0.00	1.12	Sabbia
4.30	3.92	0.046	0.00	1.18	Sabbia
4.35	4.05	0.048	0.00	1.19	Sabbia
4.40	3.97	0.046	0.00	1.16	Sabbia
4.45	3.48	0.045	0.00	1.29	Sabbia
4.50	3.23	0.043	0.00	1.34	Sabbia
4.55	3.32	0.043	0.00	1.30	Sabbia
4.60	3.47	0.048	0.00	1.38	Sabbia
4.65	3.65	0.051	0.00	1.38	Sabbia
4.70	3.72	0.049	0.00	1.32	Sabbia
4.75	3.70	0.049	0.00	1.32	Sabbia
4.80	3.68	0.051	0.00	1.38	Sabbia
4.85	3.75	0.052	0.00	1.40	Sabbia
4.90	4.04	0.056	0.00	1.39	Sabbia
4.95	4.32	0.070	0.00	1.63	Sabbia
5.00	4.05	0.069	0.00	1.70	Sabbia

CPT:1

D	Qc	Fs	I	Rf	Tipo di Terreno
5.05	3.82	0.062	0.00	1.62	Sabbia
5.10	3.75	0.062	0.00	1.65	Sabbia
5.15	3.67	0.058	0.00	1.58	Sabbia
5.20	3.63	0.060	0.00	1.64	Sabbia
5.25	3.63	0.064	0.00	1.76	Limo sabbioso
5.30	3.75	0.061	0.00	1.63	Sabbia
5.35	3.73	0.068	0.00	1.82	Limo sabbioso
5.40	3.73	0.063	0.00	1.70	Sabbia
5.45	3.80	0.065	0.00	1.70	Sabbia
5.50	3.68	0.069	0.00	1.88	Limo sabbioso
5.55	3.58	0.073	0.00	2.03	Limo sabbioso
5.60	3.50	0.079	0.00	2.27	Limo sabbioso
5.65	3.65	0.089	0.00	2.44	Limo
5.70	3.92	0.082	0.00	2.09	Limo sabbioso
5.75	3.97	0.089	0.00	2.25	Limo sabbioso
5.80	3.50	0.110	0.00	3.14	Limo argilloso
5.85	3.33	0.110	0.00	3.30	Limo argilloso
5.90	3.47	0.094	0.00	2.71	Limo
5.95	3.92	0.084	0.00	2.14	Limo sabbioso
6.00	4.20	0.089	0.00	2.13	Limo sabbioso
6.05	4.22	0.100	0.00	2.36	Limo
6.10	4.20	0.105	0.00	2.50	Limo
6.15	4.15	0.103	0.00	2.49	Limo
6.20	3.93	0.128	0.00	3.25	Limo argilloso
6.25	5.18	0.147	0.00	2.84	Limo
6.30	6.65	0.160	0.00	2.40	Limo
6.35	8.03	0.203	0.00	2.53	Limo
6.40	8.00	0.264	0.00	3.30	Limo argilloso
6.45	8.32	0.313	0.00	3.76	Limo argilloso
6.50	7.70	0.320	0.00	4.16	Argilla
6.55	8.27	0.316	0.00	3.82	Limo argilloso
6.60	8.58	0.323	0.00	3.76	Limo argilloso
6.65	8.88	0.329	0.00	3.71	Limo argilloso
6.70	9.17	0.333	0.00	3.63	Limo argilloso
6.75	9.02	0.333	0.00	3.69	Limo argilloso
6.80	8.95	0.336	0.00	3.76	Limo argilloso
6.85	9.09	0.353	0.00	3.88	Limo argilloso
6.90	9.40	0.373	0.00	3.96	Limo argilloso
6.95	10.58	0.385	0.00	3.64	Limo argilloso
7.00	11.62	0.386	0.00	3.32	Limo argilloso
7.05	10.37	0.398	0.00	3.83	Limo argilloso
7.10	10.30	0.423	0.00	4.11	Argilla
7.15	11.73	0.429	0.00	3.66	Limo argilloso
7.20	10.52	0.415	0.00	3.94	Limo argilloso
7.25	10.32	0.413	0.00	4.00	Argilla
7.30	11.19	0.393	0.00	3.51	Limo argilloso
7.35	10.23	0.370	0.00	3.62	Limo argilloso
7.40	9.03	0.362	0.00	4.01	Argilla
7.45	8.18	0.365	0.00	4.47	Argilla
7.50	8.35	0.316	0.00	3.78	Limo argilloso
7.55	9.38	0.382	0.00	4.07	Argilla
7.60	9.33	0.392	0.00	4.20	Argilla
7.65	9.72	0.380	0.00	3.91	Limo argilloso
7.70	9.19	0.359	0.00	3.90	Limo argilloso
7.75	8.82	0.340	0.00	3.85	Limo argilloso
7.80	8.25	0.311	0.00	3.77	Limo argilloso

CPT:1

D	Qc	Fs	I	Rf	Tipo di Terreno
7.85	7.53	0.290	0.00	3.85	Limo argilloso
7.90	7.37	0.294	0.00	3.99	Limo argilloso
7.95	7.88	0.301	0.00	3.82	Limo argilloso
8.00	8.09	0.296	0.00	3.66	Limo argilloso
8.05	8.15	0.286	0.00	3.51	Limo argilloso
8.10	7.89	0.278	0.00	3.52	Limo argilloso
8.15	7.37	0.284	0.00	3.85	Limo argilloso
8.20	6.95	0.257	0.00	3.70	Limo argilloso
8.25	5.28	0.238	0.00	4.52	Argilla
8.30	5.00	0.220	0.00	4.39	Argilla
8.35	5.25	0.193	0.00	3.68	Limo argilloso
8.40	6.22	0.201	0.00	3.23	Limo argilloso
8.45	6.70	0.236	0.00	3.52	Limo argilloso
8.50	6.74	0.293	0.00	4.35	Argilla
8.55	7.02	0.381	0.00	5.43	Argilla
8.60	7.54	0.371	0.00	4.92	Argilla
8.65	6.67	0.305	0.00	4.58	Argilla
8.70	7.07	0.276	0.00	3.90	Limo argilloso
8.75	7.37	0.258	0.00	3.50	Limo argilloso
8.80	8.03	0.260	0.00	3.24	Limo argilloso
8.85	7.65	0.220	0.00	2.88	Limo
8.90	6.90	0.221	0.00	3.20	Limo argilloso
8.95	7.18	0.243	0.00	3.38	Limo argilloso
9.00	7.87	0.235	0.00	2.99	Limo
9.05	7.52	0.216	0.00	2.88	Limo
9.10	7.83	0.268	0.00	3.42	Limo argilloso
9.15	10.02	0.308	0.00	3.08	Limo argilloso
9.20	9.42	0.295	0.00	3.13	Limo argilloso
9.25	7.15	0.289	0.00	4.04	Argilla
9.30	6.50	0.277	0.00	4.26	Argilla
9.35	6.72	0.220	0.07	3.27	Limo argilloso
9.40	5.47	0.159	0.14	2.90	Limo
9.45	4.42	0.146	0.14	3.29	Limo argilloso
9.50	4.40	0.124	0.07	2.81	Limo
9.55	3.98	0.152	0.14	3.81	Limo argilloso
9.60	4.28	0.130	0.14	3.04	Limo argilloso
9.65	4.63	0.117	0.14	2.52	Limo
9.70	4.77	0.115	0.14	2.41	Limo
9.75	4.80	0.131	0.14	2.74	Limo
9.80	5.34	0.168	0.14	3.14	Limo argilloso
9.85	4.72	0.136	0.14	2.87	Limo
9.90	4.12	0.129	0.14	3.13	Limo argilloso
9.95	3.97	0.105	0.14	2.64	Limo
10.00	3.95	0.100	0.14	2.53	Limo
10.05	4.13	0.097	0.14	2.34	Limo
10.10	3.97	0.110	0.14	2.78	Limo
10.15	4.17	0.122	0.14	2.93	Limo
10.20	4.33	0.118	0.14	2.74	Limo
10.25	4.40	0.114	0.14	2.58	Limo
10.30	4.17	0.105	0.14	2.51	Limo
10.35	4.25	0.100	0.14	2.36	Limo
10.40	4.42	0.099	0.20	2.25	Limo sabbioso
10.45	3.78	0.100	0.20	2.64	Limo
10.50	3.70	0.089	0.20	2.40	Limo
10.55	4.59	0.131	0.27	2.85	Limo
10.60	4.79	0.124	0.27	2.58	Limo

CPT:1

D	Qc	Fs	I	Rf	Tipo di Terreno
10.65	4.87	0.117	0.27	2.40	Limo
10.70	4.85	0.107	0.27	2.20	Limo sabbioso
10.75	4.62	0.095	0.27	2.05	Limo sabbioso
10.80	4.34	0.084	0.34	1.92	Limo sabbioso
10.85	4.33	0.077	0.34	1.77	Limo sabbioso
10.90	4.27	0.071	0.27	1.67	Sabbia
10.95	4.17	0.068	0.34	1.63	Sabbia
11.00	4.00	0.061	0.27	1.54	Sabbia
11.05	3.90	0.055	0.34	1.41	Sabbia
11.10	3.89	0.052	0.34	1.35	Sabbia
11.15	4.05	0.047	0.34	1.16	Sabbia
11.20	4.38	0.052	0.34	1.18	Sabbia
11.25	4.73	0.058	0.34	1.23	Sabbia
11.30	5.05	0.075	0.34	1.49	Sabbia
11.35	5.50	0.109	0.34	1.97	Limo sabbioso
11.40	4.85	0.093	0.47	1.92	Limo sabbioso
11.45	3.87	0.084	0.47	2.17	Limo sabbioso
11.50	3.65	0.073	0.47	2.01	Limo sabbioso
11.55	3.48	0.068	0.47	1.94	Limo sabbioso
11.60	3.44	0.061	0.47	1.77	Limo sabbioso
11.65	3.23	0.058	0.47	1.78	Limo sabbioso
11.70	3.22	0.054	0.47	1.68	Sabbia
11.75	3.19	0.052	0.47	1.62	Sabbia
11.80	3.22	0.053	0.47	1.64	Sabbia
11.85	3.18	0.051	0.54	1.59	Sabbia
11.90	3.23	0.050	0.54	1.53	Sabbia
11.95	3.33	0.050	0.54	1.49	Sabbia
12.00	3.37	0.052	0.54	1.54	Sabbia
12.05	3.37	0.052	0.54	1.55	Sabbia
12.10	3.43	0.053	0.54	1.55	Sabbia
12.15	3.45	0.053	0.54	1.53	Sabbia
12.20	3.37	0.053	0.54	1.56	Sabbia
12.25	3.52	0.057	0.54	1.63	Sabbia
12.30	3.48	0.058	0.54	1.67	Sabbia
12.35	3.33	0.060	0.68	1.80	Limo sabbioso
12.40	3.30	0.060	0.68	1.80	Limo sabbioso
12.45	3.27	0.057	0.68	1.74	Sabbia
12.50	3.32	0.056	0.68	1.68	Sabbia
12.55	3.06	0.054	0.68	1.78	Limo sabbioso
12.60	3.13	0.060	0.68	1.92	Limo sabbioso
12.65	3.13	0.061	0.74	1.96	Limo sabbioso
12.70	3.13	0.058	0.81	1.86	Limo sabbioso
12.75	3.07	0.055	0.81	1.80	Limo sabbioso
12.80	3.13	0.055	0.81	1.75	Limo sabbioso
12.85	3.29	0.058	0.81	1.75	Limo sabbioso
12.90	3.32	0.056	0.81	1.70	Sabbia
12.95	3.20	0.055	0.88	1.71	Sabbia
13.00	3.17	0.056	0.88	1.77	Limo sabbioso
13.05	3.27	0.060	0.95	1.83	Limo sabbioso
13.10	3.30	0.060	0.95	1.83	Limo sabbioso
13.15	3.30	0.063	1.01	1.92	Limo sabbioso
13.20	3.18	0.062	1.01	1.96	Limo sabbioso
13.25	3.22	0.061	1.01	1.88	Limo sabbioso
13.30	3.23	0.061	1.01	1.90	Limo sabbioso
13.35	3.33	0.062	1.01	1.85	Limo sabbioso
13.40	3.54	0.067	1.22	1.90	Limo sabbioso

CPT:1

D	Qc	Fs	I	Rf	Tipo di Terreno
13.45	3.44	0.081	1.22	2.35	Limo
13.50	3.30	0.074	1.22	2.23	Limo sabbioso
13.55	3.23	0.070	1.22	2.16	Limo sabbioso
13.60	3.23	0.059	1.22	1.84	Limo sabbioso
13.65	3.30	0.058	1.22	1.76	Limo sabbioso
13.70	3.35	0.054	1.28	1.61	Sabbia
13.75	3.58	0.048	1.28	1.35	Sabbia
13.80	4.24	0.047	1.28	1.12	Sabbia
13.85	4.60	0.033	1.28	0.73	Sabbia
13.90	4.30	0.032	1.49	0.74	Sabbia
13.95	4.94	0.046	1.49	0.94	Sabbia
14.00	4.95	0.039	1.49	0.78	Sabbia
14.05	4.92	0.050	1.49	1.01	Sabbia
14.10	3.97	0.038	1.49	0.97	Sabbia
14.15	3.43	0.038	1.49	1.10	Sabbia
14.20	3.43	0.034	1.55	0.99	Sabbia
14.25	4.00	0.039	1.89	0.98	Sabbia
14.30	4.20	0.036	1.96	0.87	Sabbia
14.35	4.37	0.038	1.96	0.88	Sabbia
14.40	6.57	0.083	1.96	1.27	Sabbia
14.45	8.70	0.166	1.96	1.90	Limo sabbioso
14.50	8.92	0.273	1.96	3.06	Limo argilloso
14.55	8.28	0.328	2.03	3.96	Limo argilloso
14.60	7.55	0.274	2.03	3.63	Limo argilloso
14.65	7.38	0.237	2.03	3.21	Limo argilloso
14.70	7.32	0.207	2.09	2.83	Limo
14.75	7.25	0.177	2.23	2.44	Limo
14.80	7.08	0.146	2.36	2.07	Limo sabbioso
14.85	7.79	0.122	2.57	1.57	Sabbia
14.90	5.74	0.082	2.64	1.42	Sabbia
14.95	3.98	0.053	2.64	1.34	Sabbia
15.00	3.87	0.032	2.64	0.84	Sabbia
15.05	3.74	0.027	2.64	0.73	Sabbia
15.10	4.63	0.038	2.64	0.81	Sabbia
15.15	5.95	0.077	2.64	1.29	Sabbia
15.20	5.65	0.102	2.64	1.81	Limo sabbioso
15.25	5.75	0.113	2.64	1.97	Limo sabbioso
15.30	5.54	0.081	2.64	1.46	Sabbia
15.35	5.30	0.066	2.64	1.25	Sabbia
15.40	5.37	0.058	2.70	1.08	Sabbia
15.45	7.82	0.071	2.77	0.91	Sabbia
15.50	9.68	0.148	2.84	1.53	Sabbia
15.55	15.23	0.340	4.12	2.23	Limo sabbioso
15.60	16.09	0.538	4.19	3.34	Limo argilloso
15.65	14.97	0.655	4.26	4.38	Argilla
15.70	12.60	0.599	4.39	4.76	Argilla
15.75	19.77	0.569	4.73	2.88	Limo
15.80	21.82	0.519	5.00	2.38	Limo
15.85	23.52	0.355	5.11	1.51	Sabbia
15.90	22.69	0.332	5.09	1.46	Sabbia
15.95	17.23	0.425	5.11	2.47	Limo
16.00	13.70	0.492	5.11	3.59	Limo argilloso
16.05	12.27	0.498	5.13	4.06	Argilla
16.10	9.45	0.537	5.16	5.68	Argilla
16.15	7.17	0.471	5.16	6.57	Argilla
16.20	5.60	0.365	5.16	6.52	Argilla

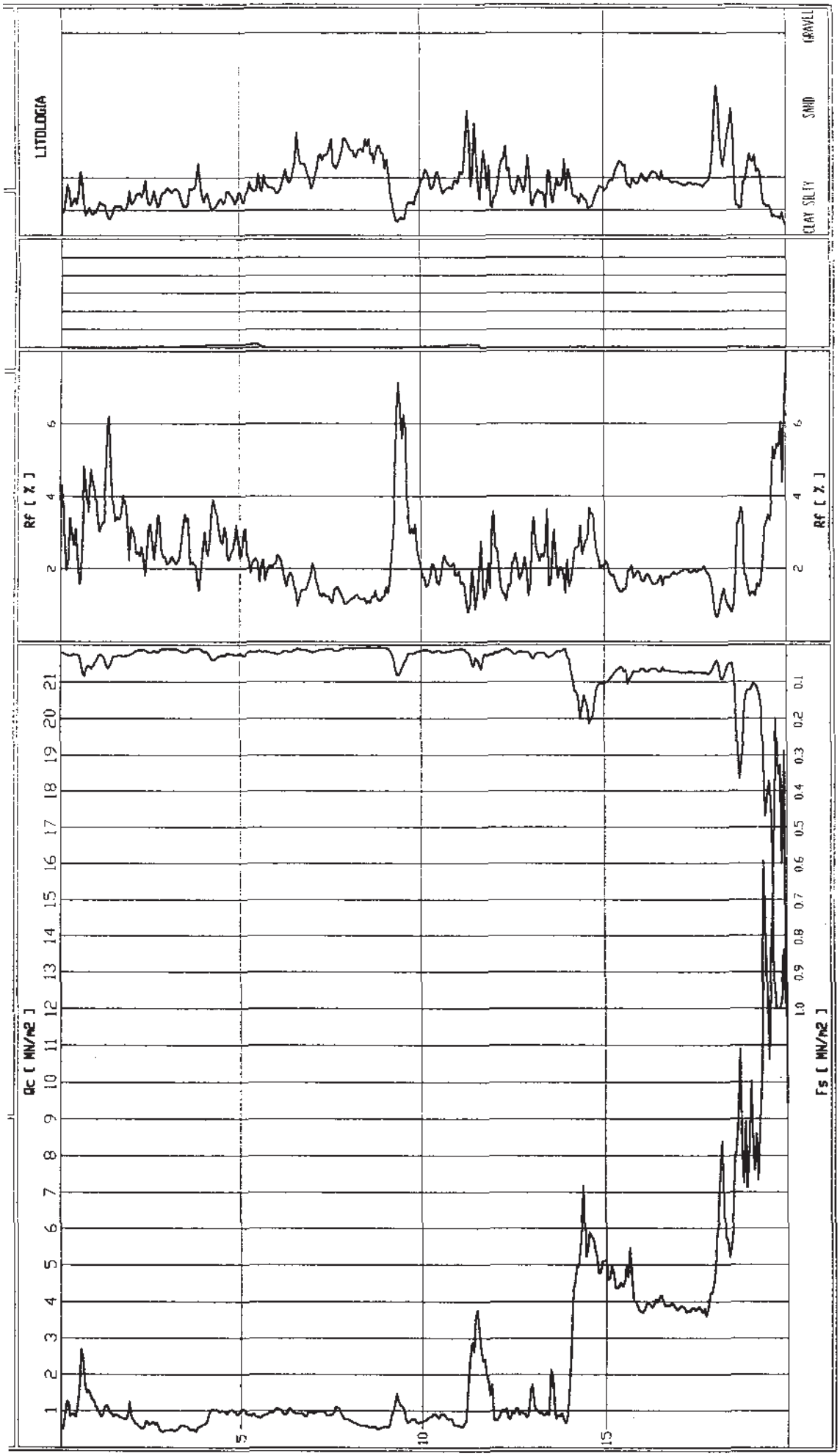
CPT:1

D	Qc	Fs	I	Rf	Tipo di Terreno
16.25	3.87	0.279	5.16	7.22	Argilla
16.30	3.13	0.225	5.18	7.18	Argilla
16.35	2.87	0.173	5.16	6.02	Argilla
16.40	2.89	0.110	5.18	3.80	Limo argilloso
16.45	3.82	0.105	5.18	2.76	Limo
16.50	4.77	0.103	5.42	2.16	Limo sabbioso
16.55	4.99	0.099	5.36	1.98	Limo sabbioso
16.60	4.97	0.104	5.27	2.10	Limo sabbioso
16.65	5.38	0.105	5.24	1.96	Limo sabbioso
16.70	5.64	0.165	5.53	2.92	Limo
16.75	5.07	0.146	5.62	2.89	Limo
16.80	5.02	0.139	5.64	2.77	Limo
16.85	4.87	0.115	5.62	2.36	Limo
16.90	4.93	0.109	5.60	2.21	Limo sabbioso
16.95	4.52	0.108	5.62	2.39	Limo
17.00	4.37	0.109	5.62	2.50	Limo
17.05	4.37	0.122	5.62	2.78	Limo
17.10	3.87	0.127	5.62	3.28	Limo argilloso
17.15	3.35	0.119	5.62	3.55	Limo argilloso
17.20	3.22	0.102	5.62	3.17	Limo argilloso
17.25	3.60	0.091	5.71	2.54	Limo
17.30	3.40	0.101	5.71	2.96	Limo
17.35	3.65	0.115	5.73	3.15	Limo argilloso
17.40	3.90	0.129	5.76	3.31	Limo argilloso
17.45	4.45	0.137	5.80	3.07	Limo argilloso
17.50	4.50	0.142	5.80	3.15	Limo argilloso
17.55	4.60	0.140	5.82	3.05	Limo argilloso
17.60	4.58	0.124	6.04	2.70	Limo
17.65	4.35	0.104	6.07	2.40	Limo
17.70	4.57	0.087	6.07	1.91	Limo sabbioso
17.75	6.85	0.096	6.11	1.40	Sabbia
17.80	7.35	0.094	6.13	1.28	Sabbia
17.85	4.84	0.075	6.13	1.55	Sabbia
17.90	4.77	0.076	6.13	1.58	Sabbia
17.95	6.17	0.057	6.13	0.93	Sabbia
18.00	8.90	0.079	6.13	0.89	Sabbia
18.05	5.95	0.080	6.13	1.35	Sabbia
18.10	4.87	0.077	6.16	1.58	Sabbia
18.15	4.62	0.064	6.16	1.38	Sabbia
18.20	4.50	0.047	6.16	1.05	Sabbia
18.25	5.93	0.055	6.16	0.92	Sabbia
18.30	7.77	0.087	6.18	1.12	Sabbia
18.35	11.50	0.224	6.40	1.95	Limo sabbioso
18.40	15.14	0.394	6.40	2.60	Limo
18.45	11.83	0.466	6.40	3.94	Limo argilloso
18.50	10.09	0.427	6.40	4.23	Argilla
18.55	7.33	0.376	6.40	5.13	Argilla
18.60	8.31	0.358	6.40	4.31	Argilla
18.65	8.17	0.242	6.40	2.97	Limo
18.70	9.82	0.318	6.40	3.23	Limo argilloso
18.75	11.70	0.383	6.40	3.28	Limo argilloso
18.80	9.42	0.430	6.40	4.57	Argilla
18.85	14.50	0.560	6.40	3.86	Limo argilloso
18.90	19.00	0.758	6.40	3.99	Limo argilloso
18.95	21.30	0.867	6.42	4.07	Argilla
19.00	15.84	0.879	6.42	5.55	Argilla

CPT:1

D	Qc	Fs	I	Rf	Tipo di Terreno
19.03	22.30	0.812	6.49	3.64	Limo argilloso

Fine -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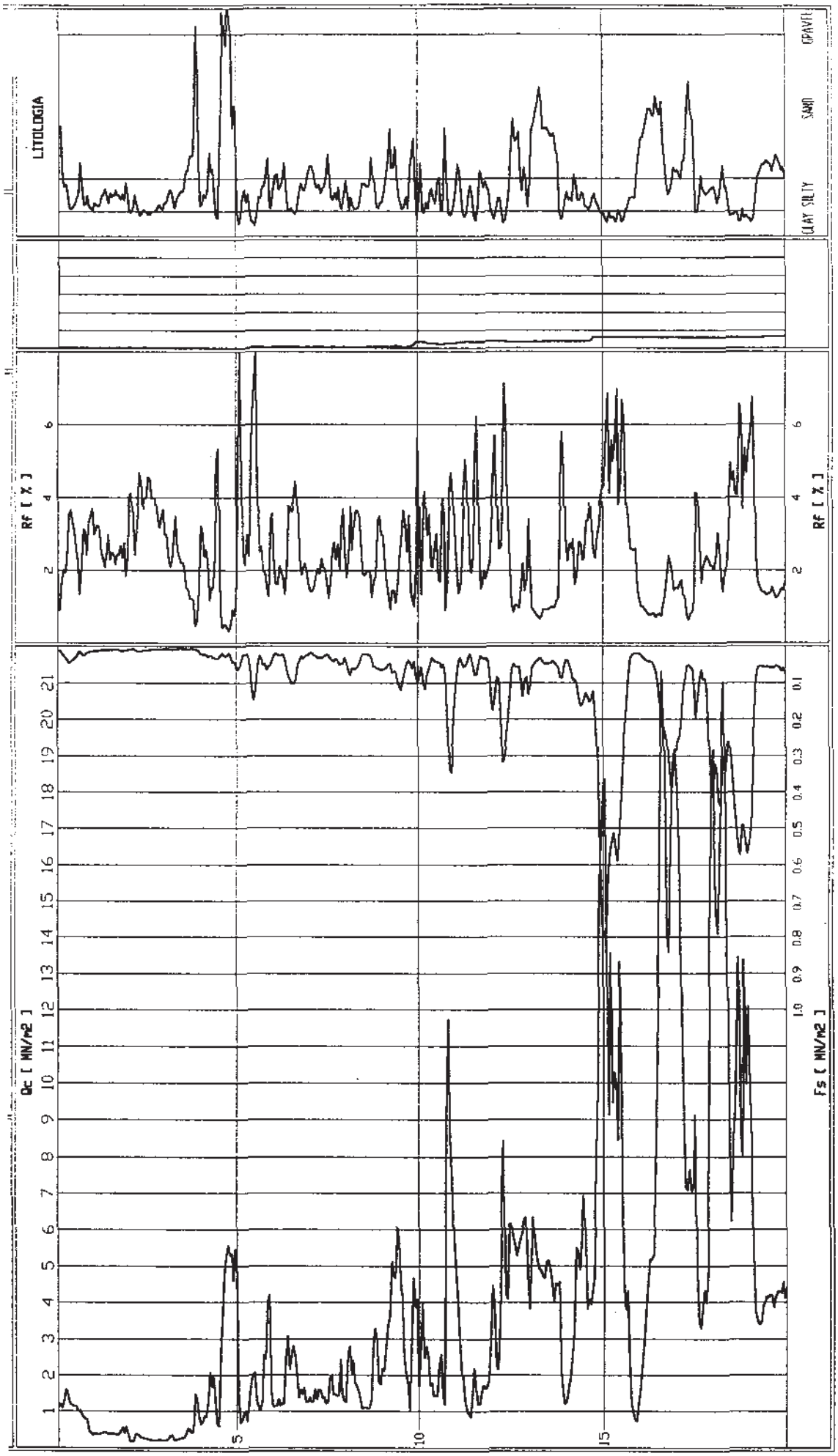
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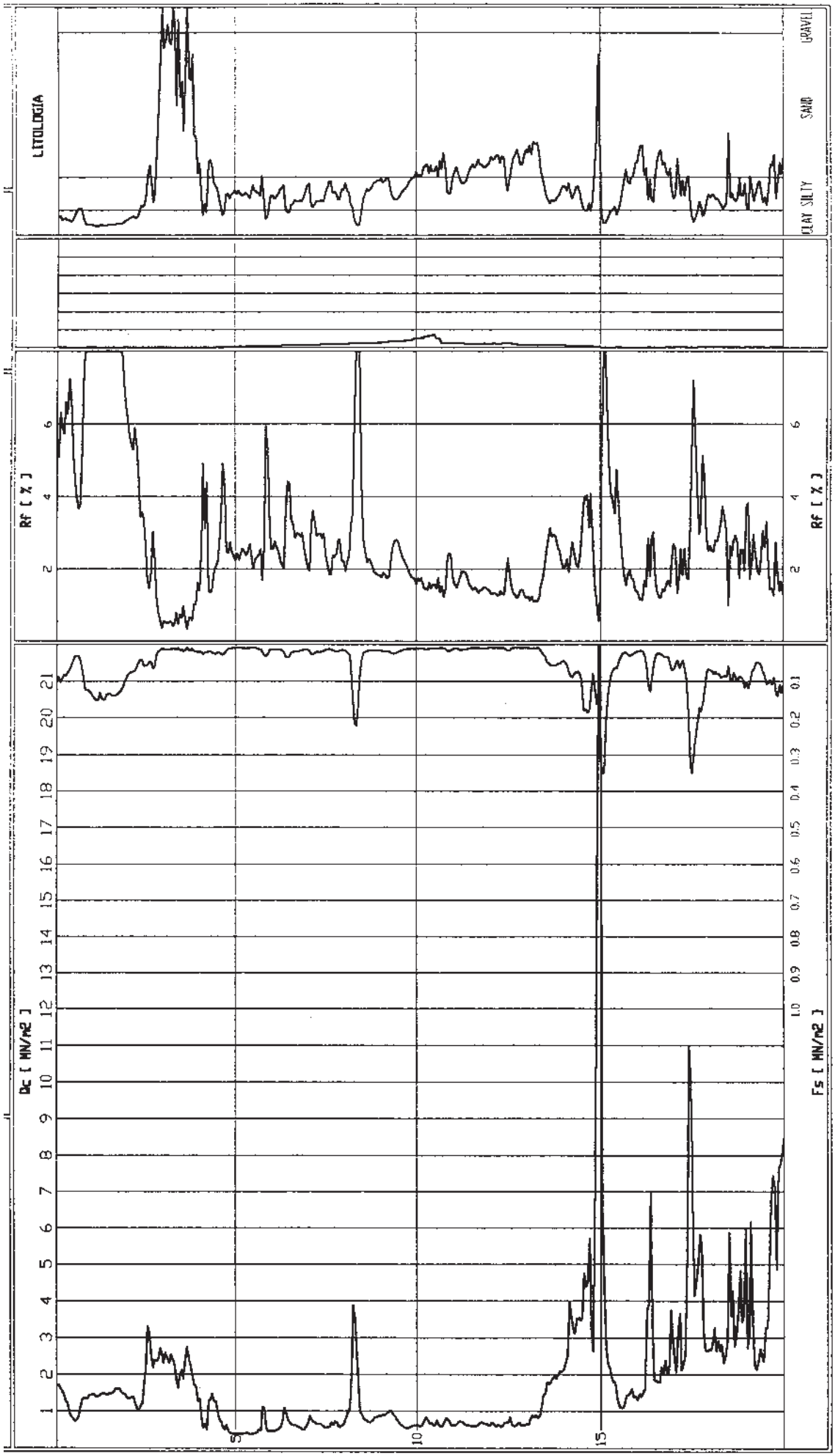
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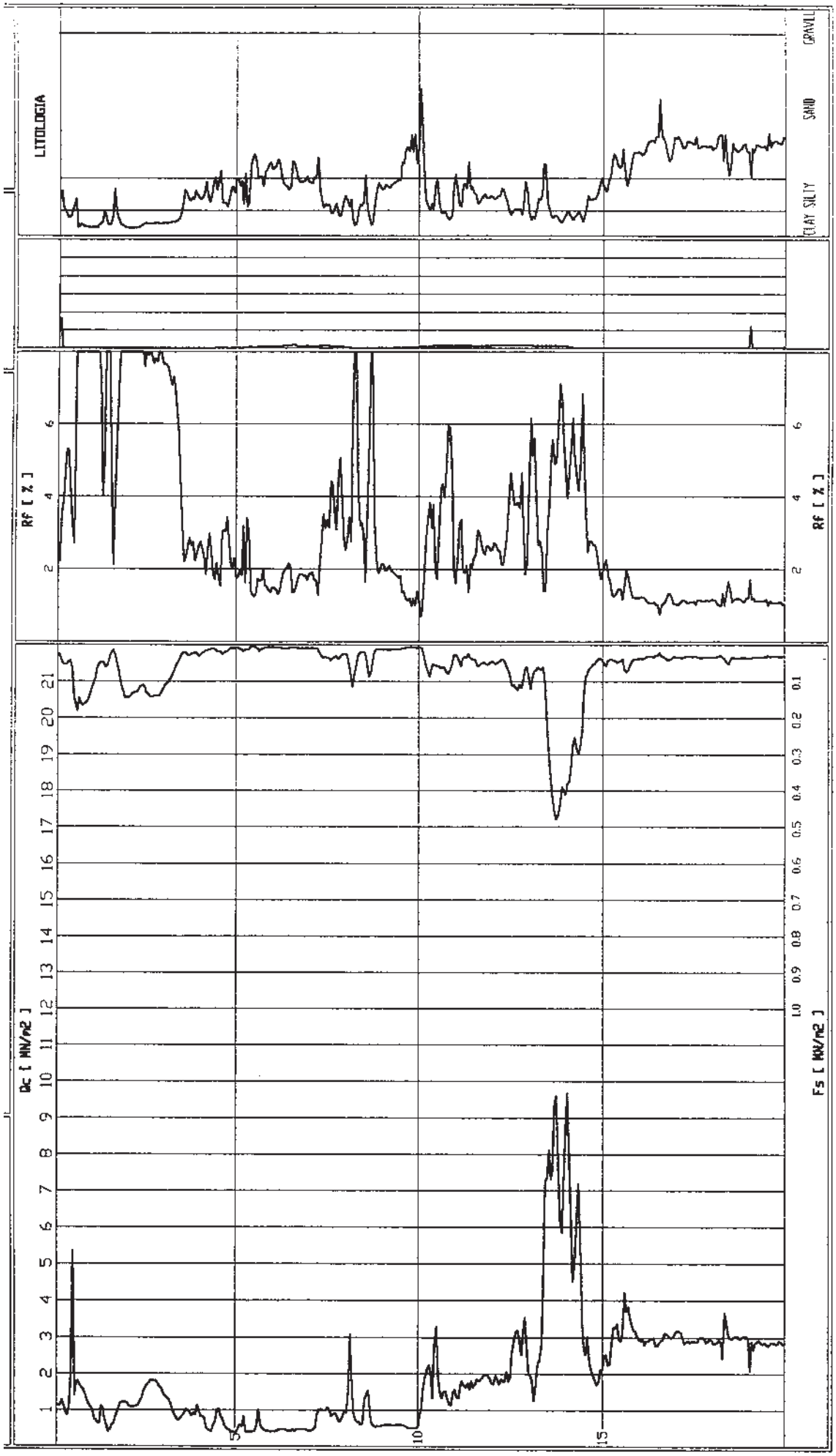
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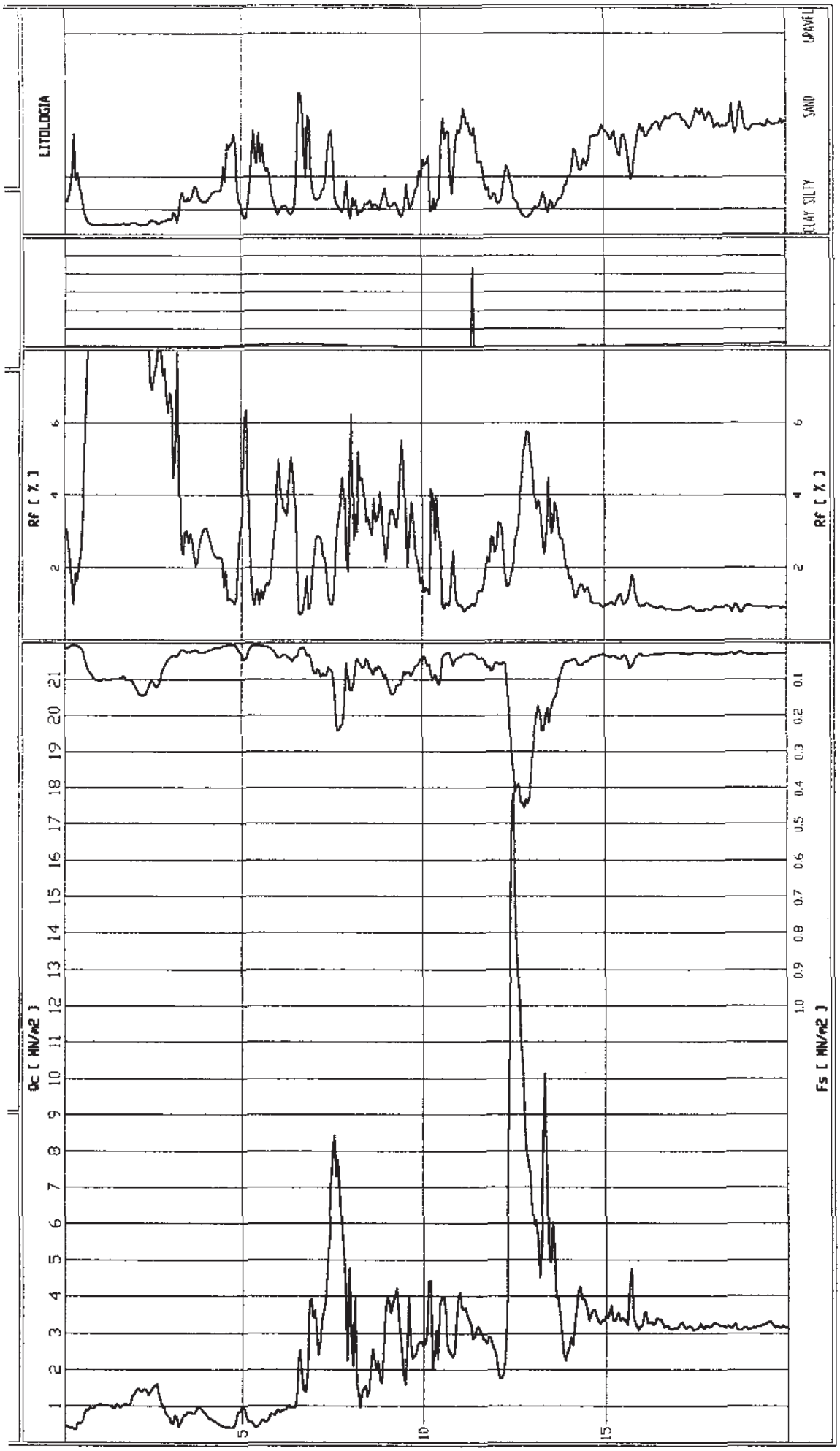
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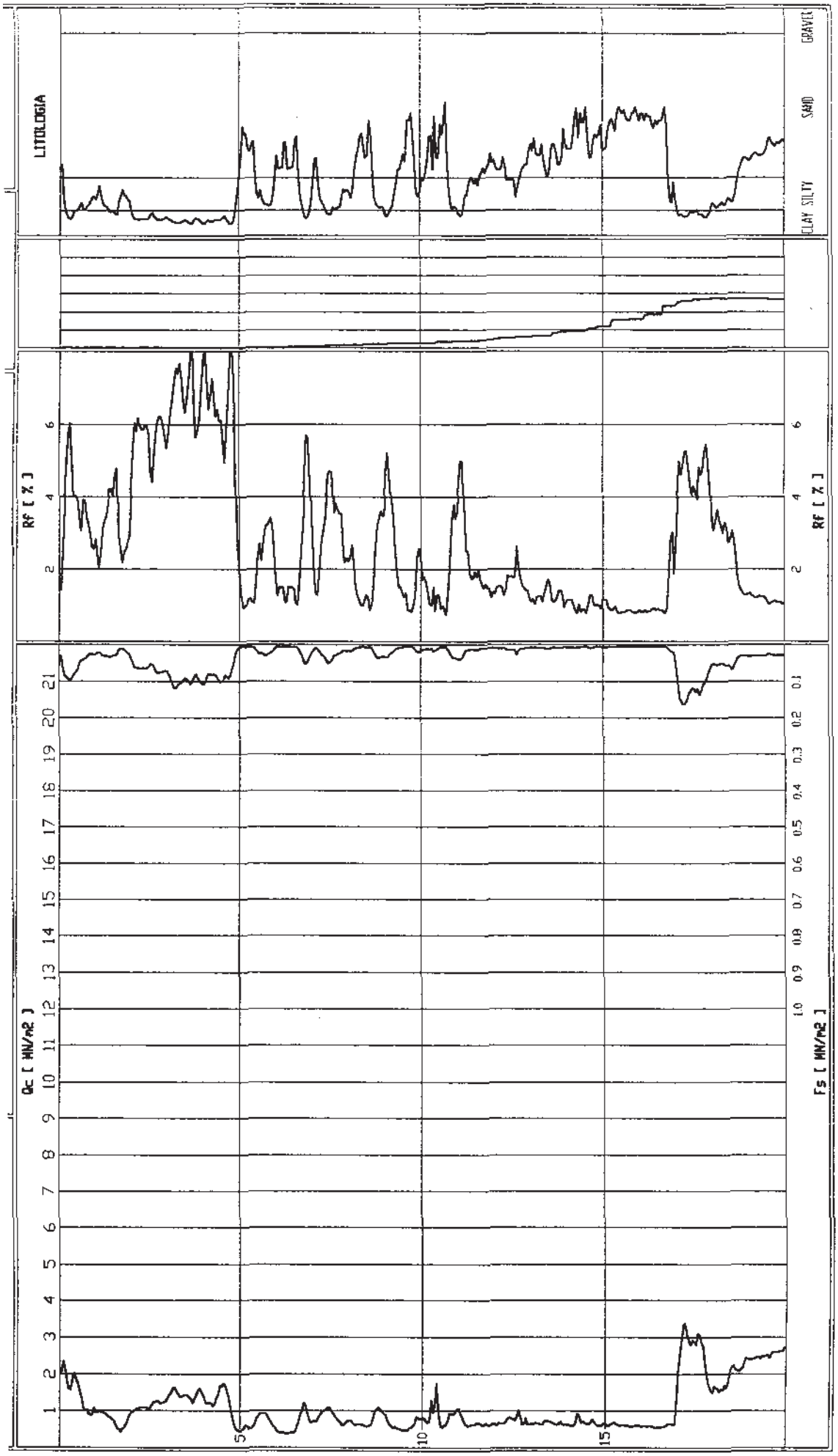
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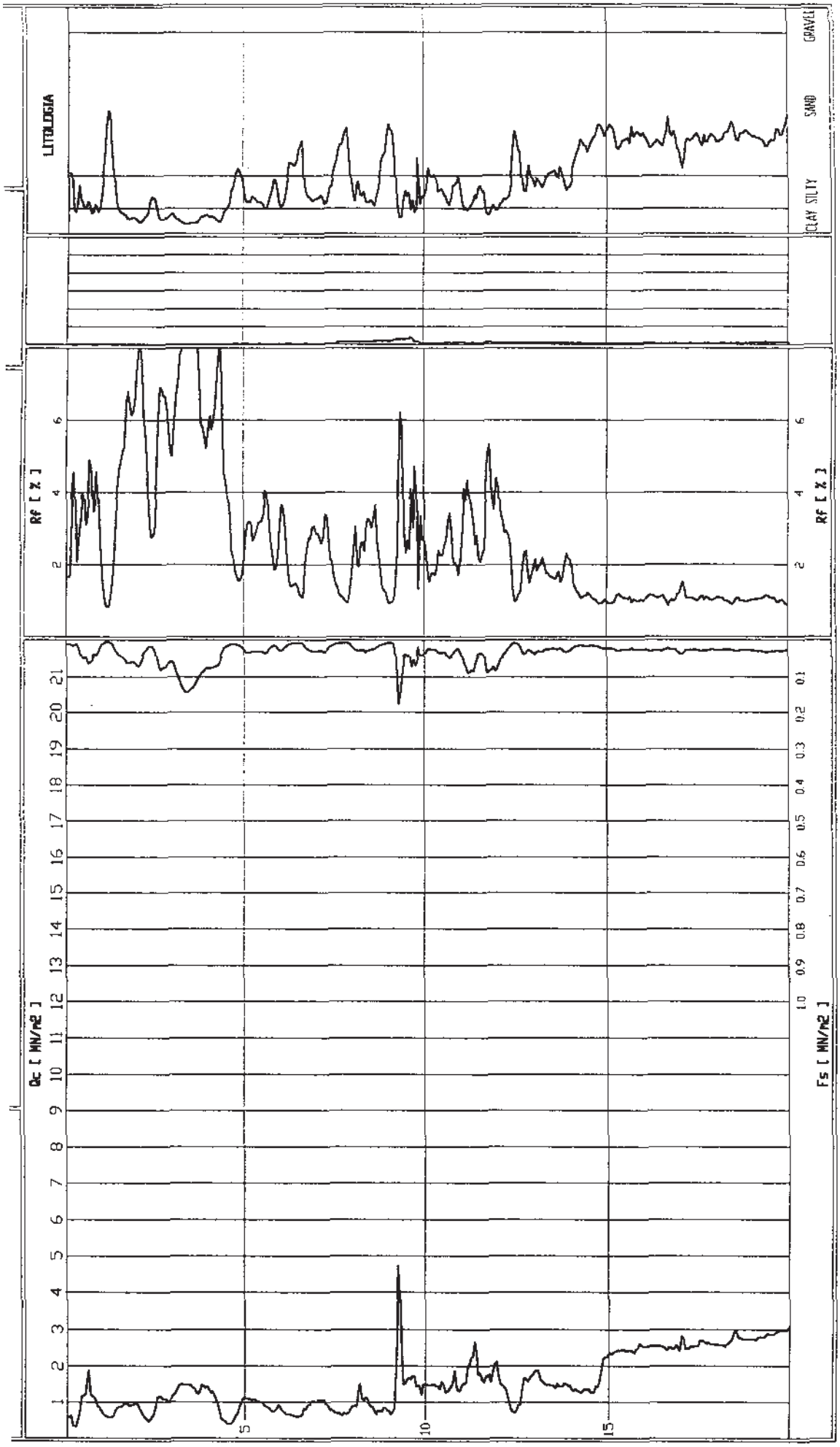
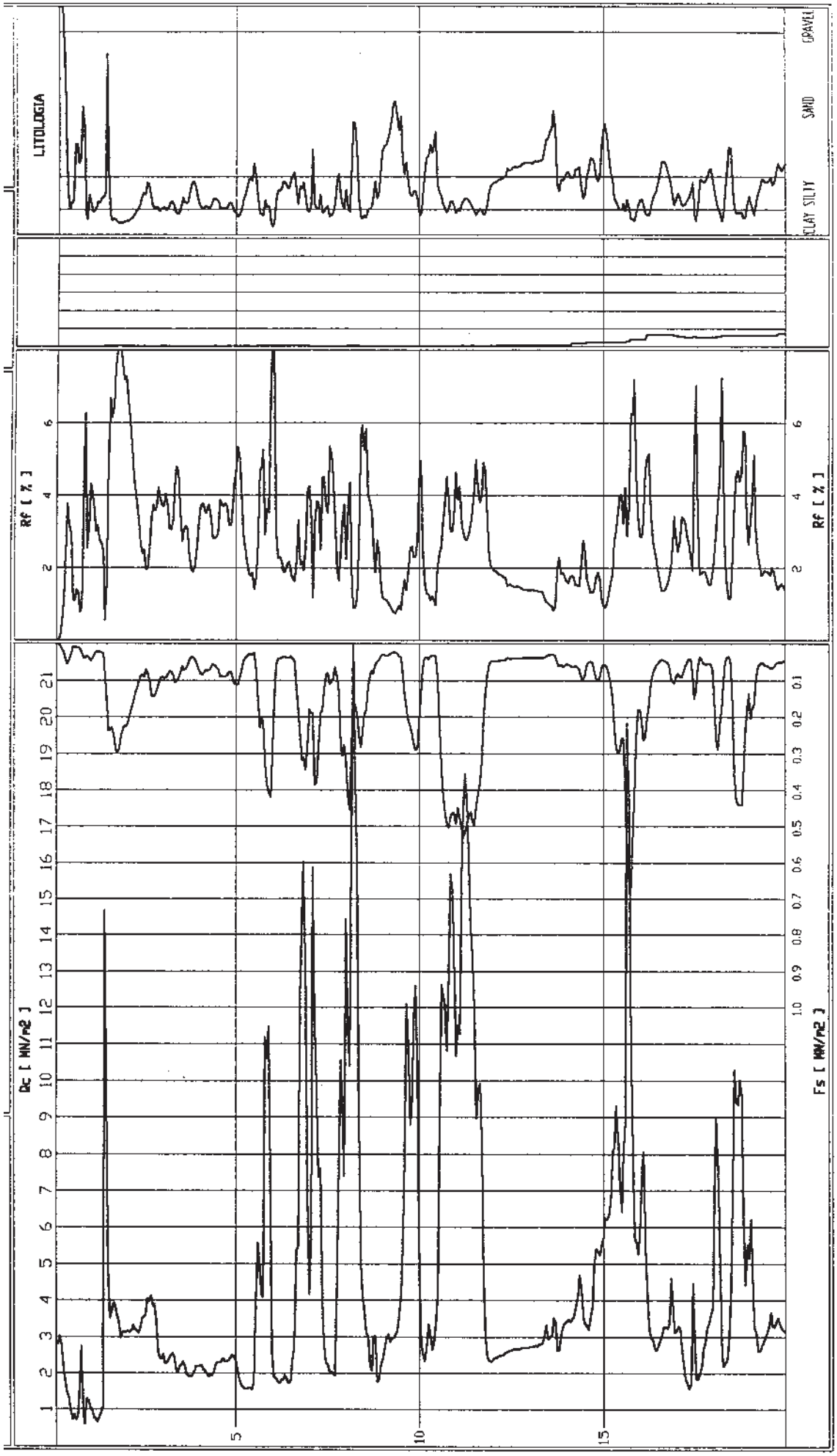
11
12
13
14
15
16
17
18
19
20
21
Fs [MN/m2]
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
5
10
15


LITOLOGIA
CLAY SILTY
SAND
GRAVEL
Rf [%]
Qc [MN/m2]
Fs [MN/m2]
5
10
15


LITOLOGIA
CLAY SILTY
SAND
GRAVEL
Rf [%]
Rf [%]
Qc [MN/m2]
Fs [MN/m2]
5
10
15

RF. INT.: 1998000054	DATA ELABORAZIONE: 31/03/1998	DATA INIZIO PERFORAZIONE: 05/03/1998	DATA FINE PERFORAZIONE: 07/03/1998
COMMITTENTE: Provincia di Pisa		CANTIERE: Torrente Zannone - Lari (PI)	
PERFORAZIONE: S2	QUOTA BOCCAFORO (m s.l.m.):	LUNGHEZZA (m): 20.00	INCLINAZIONE (gradi):	SCALA GRAFICA: 1:120
MACCHINA PERFORATRICE: Punte! tipo PX1200			
PERFORATORE RESPONSABILE: Sig. F.Piga		TECNICO RESPONSABILE: Geol. D.Senesi	

NOTE: Inserito piezometro in pvc, fenestrato secondo lo schema sottostante.
SPT=Standard Penetration Test. PT=Penetrometro Tascabile. VT=Vane Test. ST=Scissometro Tascabile.
Da metri 1.50 a metri 20.00 piezometro a tubo sfenestrato.

Profondità dal p.c. (m)	Potenza (m)	Simbolo grafico	Descrizione litologica
1.50	1.50		Sabbia fine e medio-fine, con limo nocciolo, con rari resti vegetali.
2.50	1.00		Limo con sabbia, nocciolo con striat. avana, da poco a mediamente compatto.
3.00	0.50		Sabbia media con limo, nocciolo con striat. grigie, sciolte.
5.00			Limo sabbioso e con sabbia, deboim. argilloso, grigio-verdastro con striat. nocciola, da poco a mediamente compatto. Presenti passaggi centim. di sabbia fine con limo.
8.50	5.50		
9.90	1.40		Sabbia fine con limo argilloso, verdastra, poco addensata.
10.90	1.00		Sabbia medio-fine con limo e limosa, grigio-verdastra con striat. nocciola, poco addensata.
11.90	1.00		Sabbia fine con limo, grigia, poco addensata.
13.40	1.50		Limo con sabbia e sabbioso, deboim. argilloso, grigio, compatto.
15.00			Limo con argilla deboim. sabbioso, grigio, compatto, con passaggi decim. di argilla con limo. Presenti resti conchiliari, Dmax 3 cm.
15.50	2.10		
20.00	4.50		Argilla con limo deboim. sabbiosa, grigia, compatta, con passaggi centim. di limo con argilla. Presenti resti conchiliari, Dmax 5 cm.

CAMPIONI: Profondità di prelievo (m)	Campionatore	Tipo di prelievo
1.60 – 2.10	Pareti sottili	Pressione
6.00 – 6.50	Pareti sottili	Pressione

PERCENTUALE DI CAROTAGGIO 50 %

SPT (m) / N. colpi	PT (m) / Kg/cmq	VT	ST	Kg/cmq
	1.60	1.60	1.60	
	0.60		0.28	
	2.50	2.50	2.50	
3.00 / 0- 0- 1	0.70		0.32	
	4.20	4.20	4.20	
	0.60		0.32	
	5.20	5.30	5.30	
	0.90		0.52	
6.00 / 0- 1- 1				
	7.30	7.30	7.30	
	0.40		0.20	
	8.30	8.30	8.30	
	0.70		0.20	
10.50 / 1- 2- 3				
	12.50	12.50	12.50	
	1.60		0.72	
	13.50	13.50	13.50	
	2.00		1.04	
	14.50	14.50	14.50	
	1.80		0.88	
	15.50	15.50	15.50	
	1.90		1.00	
	16.50	16.50	16.50	
	1.60		0.80	
	17.50	17.50	17.50	
	1.70		1.70	
	18.50	18.50	18.50	
	1.60		0.96	
	19.50	19.50	19.50	
	2.00		1.04	

DIAMETRO DEL FORO (mm): 101

METODO DI PERFORAZIONE: Rotazione con carotiere semplice a secco

METODO DI STABILIZZAZIONE: Tubi di rivestimento

PIEZOMETRO

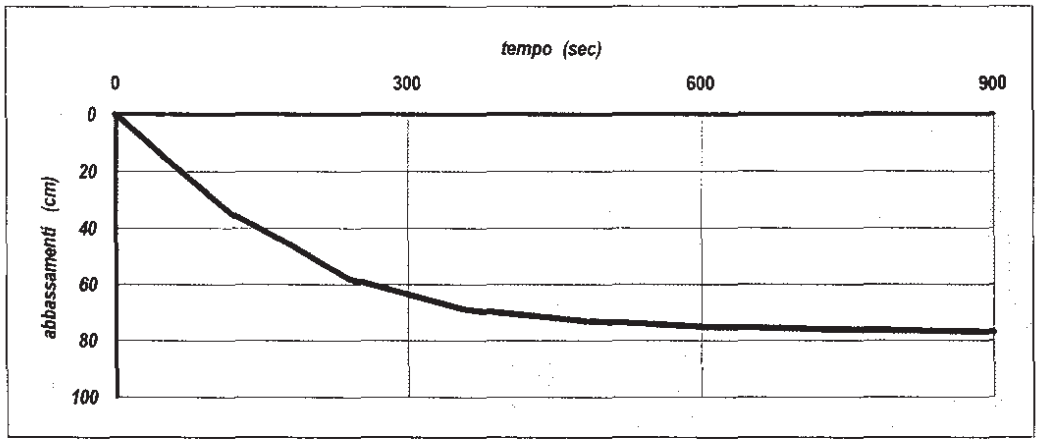
Tempo (sec)	Abbassamenti (cm)
0	0
60	18
120	35
180	46
240	58
360	69
480	73
600	75
720	76
900	77

Prova di permeabilità Lefranc a carico variabile

Sondaggio 2

	(cm)
Quota superiore filtro dal p.c.	160
Quota inferiore filtro dal p.c.	300
Lunghezza tratto di prova	140
Quota falda dal p.c.	80
Diametro foro	10.1
Quota boccaforo sul p.c.	5
Area (cmq)	80
Fattore di forma (-)	354

K (coeff. di permeabilità) = 1.08E-03 cm/sec



Le misure riportate in tabella si riferiscono alla quota del boccaforo

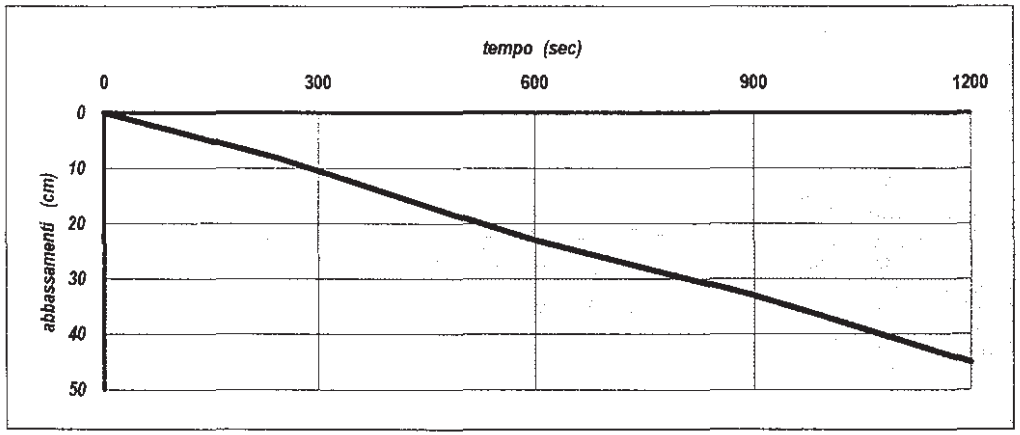
Tempo (sec)	Abbassamenti (cm)
0	0
60	2
120	4
180	6
240	8
360	13
480	18
600	23
720	27
900	33
1200	45

Prova di permeabilità Lefranc a carico variabile

Sondaggio 2

	(cm)
Quota superiore filtro dal p.c.	600
Quota inferiore filtro dal p.c.	750
Lunghezza tratto di prova	150
Quota falda dal p.c.	80
Diametro foro	10.1
Quota boccaforo sul p.c.	15
Area (cmq)	80
Fattore di forma (-)	372

K (coeff. di permeabilità) = 1.15E-04 cm/sec



Le misure riportate in tabella si riferiscono alla quota del boccaforo

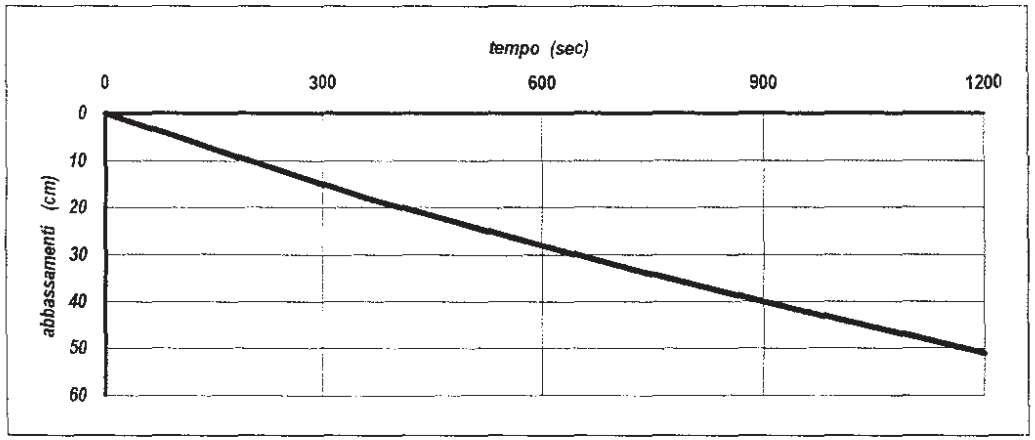
Tempo (sec)	Abbassamenti (cm)
0	0
60	3
120	6
180	9
240	12
360	18
480	23
600	28
720	33
900	40
1200	51

Prova di permeabilità Lefranc a carico variabile

Sondaggio 2

	(cm)
Quota superiore filtro dal p.c.	900
Quota inferiore filtro dal p.c.	1050
Lunghezza tratto di prova	150
Quota falda dal p.c.	80
Diametro foro	10.1
Quota boccaforo sul p.c.	15
Area (cmq)	80
Fattore di forma (-)	372

K (coeff. di permeabilità) = 1.38E-04 cm/sec



Le misure riportate in tabella si riferiscono alla quota del boccaforo

Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 2 Camp. ..: 1 Quota ..: 1.5-2.0 m

Descrizione del campione

CAMPIONE COSTITUITO DA LIMO CON SABBIA DEBOLMENTE ARGILLOSO DI COLORE AVANA.

Stato del campione .....: Indisturbato

Caratteristiche generali del campione

Massa volumica reale .....:	G	2.69	g/cm3
Massa volumica apparente umida ..:	Pv	2.02	g/cm3
Umidità naturale .....:	W	22.4	%
Massa volumica apparente secca ..:	Ps	1.65	g/cm3
Indice dei vuoti .....:	e	0.630	
Porosità .....:	n	38.6	%
Grado di saturazione .....:	Sr	96	%

Limiti di consistenza o di Atterberg

Limite liquido .....:	WL	24.0	%
Limite plastico .....:	WP	18.0	%
Limite di ritiro .....:	WR	--	%
Indice di plasticità .....:	IP	6.0	%
Indice di consistenza .....:	IC	0.26	

Classificazione Casagrande .....: CL-ML

Analisi Granulometrica

Argilla .....:	9.2	%
Limo .....:	59.7	%
Sabbia .....:	30.8	%
Ghiaia .....:	0.3	%

Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 2 Camp. ..: 1 Quota ..: 1.5-2.0 m

P R O V A E D O M E T R I C A

Caratteristiche iniziali del provino:

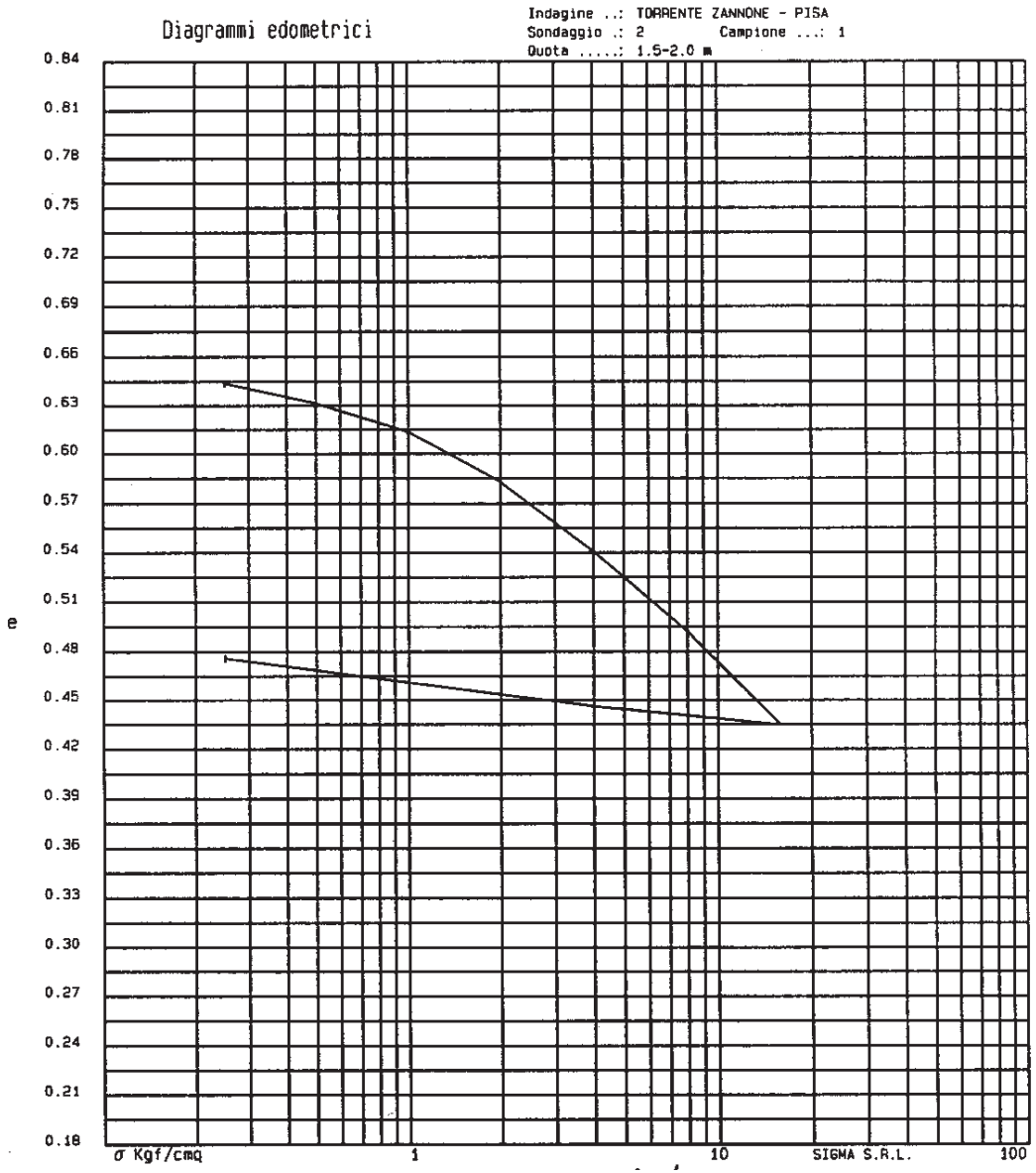
Massa volumica reale .....: G 2.69 g/cm3
Massa volumica apparente umida ..: Pv 2.00 g/cm3
Umidità naturale .....: W 22.9 %
Indice dei vuoti .....: e 0.656
Grado di saturazione .....: Sr 94 %
Dimensioni del provino: Diametro .....: 50.40 mm
Altezza .....: 20.00 mm

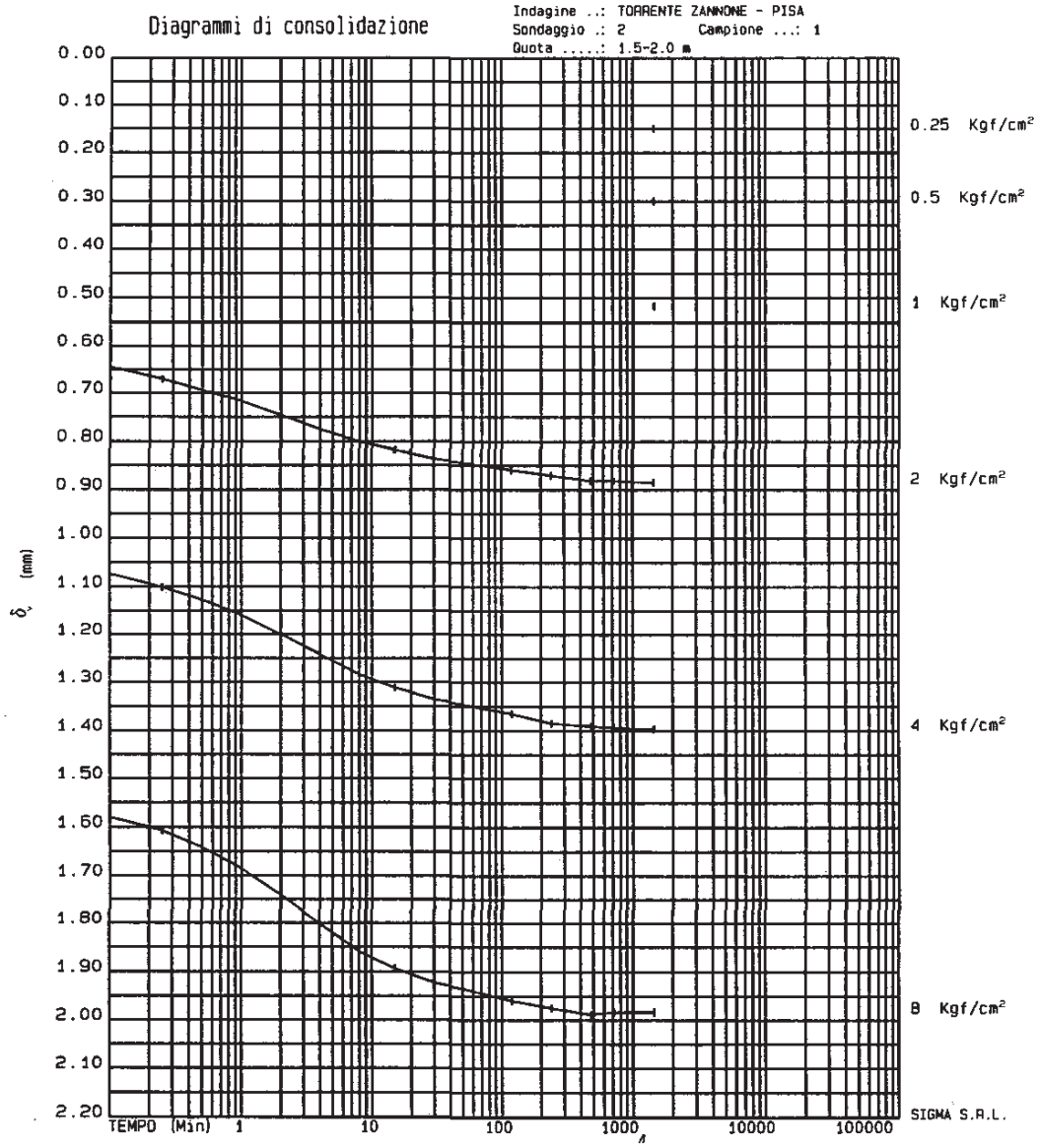
Pressione σv	Cedimento δv	Indice dei Vuoti e	Modulo di Compressione Edometrica E'	Coefficiente di Permeabilità Kv	Coefficiente di Consolidazione cv
Kgf/cm²	mm		Kgf/cm²	cm/sec	cm²/sec
0.25	0.150	0.644	33		
0.50	0.300	0.632	33		
1.00	0.517	0.614	46		
2.00	0.885	0.583	54	3.5E-08	1.9E-03
4.00	1.396	0.541	78	1.7E-08	1.3E-03
8.00	1.983	0.492	136	8.1E-09	1.1E-03
16.00	2.680	0.434	230		
4.00	2.540	0.446			
1.00	2.360	0.461			
0.25	2.180	0.476			

Indice di Compressibilità.....: Cc 0.19

Note

TERRENI COME QUELLI IN QUESTIONE MAL SI PRESTANO ALLA DETERMINAZIONE DI CV E KV PER CUI I RISULTATI SONO DA RITENERSI POCO ATTENDIBILI.





Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 2 Camp. ..: 1 Quota ..: 1.5-2.0 m

P R O V A D I T A G L I O D I R E T T O

Stato del campione .....: Indisturbato
Tipo della prova .....: Consolidata Drenata
Velocità di deformazione .....: v 0.0100 mm/min

Caratteristiche iniziali medie dei provini:
Massa volumica apparente umida ..: Pv 2.03 g/cm3
Umidità naturale .....: W 22.5 %

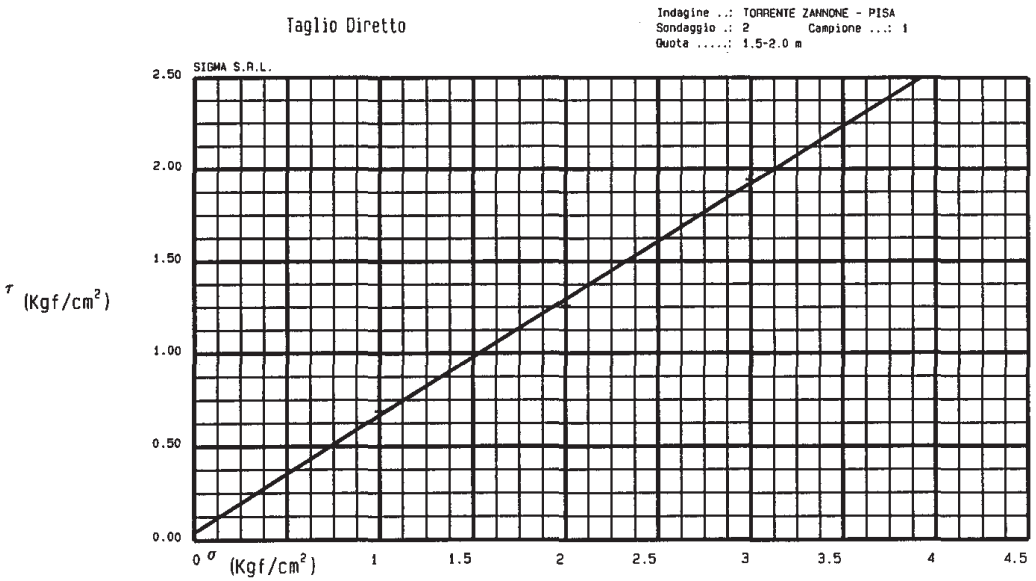
Dimensioni		Provino	1	2	3	4
Lato		mm	60.00	60.00	60.00	
Altezza		mm	19.60	19.60	19.60	

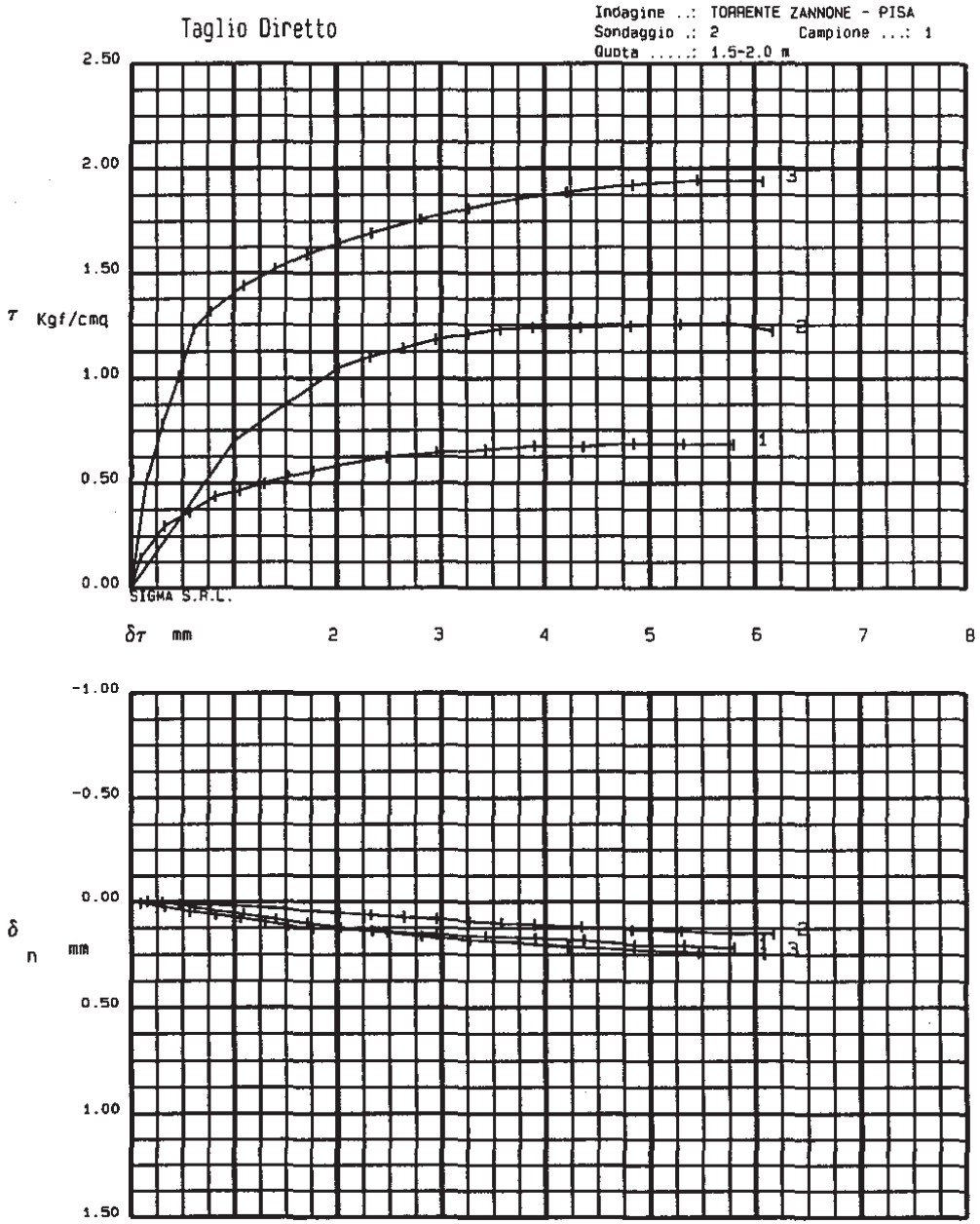
Consolidazione		Provino	1	2	3	4
Pressione verticale	σ	Kgf/cm²	1.00	2.00	3.00	
Tempo di consolidazione	t	h	24	48	72	
Cedimento finale	δf	mm	0.85	1.40	2.04	

Rottura		Provino	1	2	3	4
Sollecitazione tangenziale	τ	Kgf/cm²	0.69	1.26	1.94	
Deformazione trasversale	δt	mm	4.85	5.76	5.46	
Deformazione normale	δn	mm	0.21	0.15	0.24	
Umidità naturale finale	Wf	%	22.2	21.1	20.2	

Angolo di attrito φ' : 32.1°

Coesione c' : 0.04 Kgf/cm²


Taglio Diretto
Indagine ..: TORRENTE ZANNONE - PISA
Sondaggio .: 2 Campione ...: 1
Quota .....: 1.5-2.0 m
SIGMA S.R.L.
τ (Kgf/cm²)
σ (Kgf/cm²)
2.50
2.00
1.50
1.00
0.50
0.00
0
1
1.5
2
2.5
3
3.5
4
4.5


Taglio Diretto
Indagine ..: TORRENTE ZANNONE - PISA
Sondaggio .: 2 Campione ...: 1
Quota .....: 1.5-2.0 m
SIGMA S.R.L.
τ Kgf/cmq
δτ mm
δn mm
2.50
2.00
1.50
1.00
0.50
0.00
-1.00
-0.50
0.00
0.50
1.00
1.50
2
3
4
5
6
7
8
1
2
3

Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 2 Camp. ..: 1 Quota ..: 1.5-2.0 m

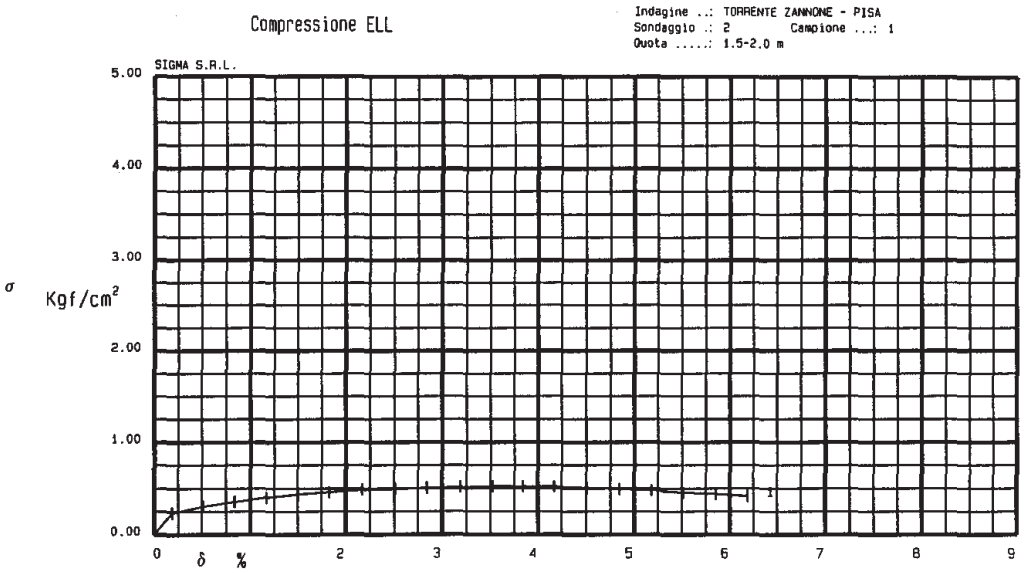
PROVA DI COMPRESSIONE AD ESPANSIONE LATERALE LIBERA

Stato del campione .....: Indisturbato
Velocità di deformazione .....: v 1.5000 mm/min

Condizioni iniziali		Provino	1	2	3	4
Altezza	H	cm	7.62			
Diametro	D	cm	3.81			
Volume	V	cm3	86.87			
Massa volumica apparente umida	Pv	g/cm3	2.01			
Umidità naturale	W	%	21.80			

Rottura		Provino	1	2	3	4
Pressione di cella	σ3	Kgf/cm²	0.00			
Deform. vert. a rottura	δh	%	3.52			
Pressione finale a rottura	σ1-σ3	Kgf/cm²	0.52			

Coesione	Cu = (σ1-σ3)/2 :	0.26	Kgf/cm²

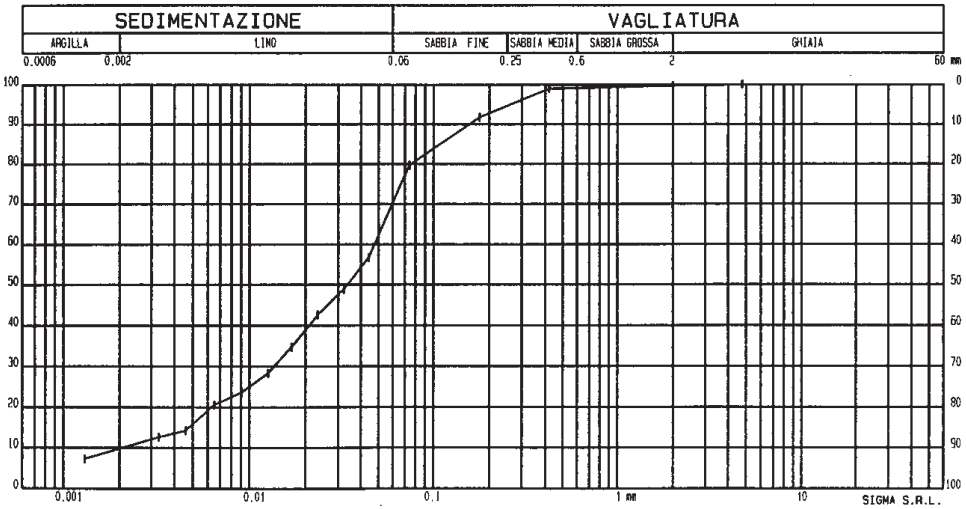


ANALISI GRANULOMETRICA

Indagine ..: TORRENTE ZANNONE - PISA
Sondaggio .: 2 Campione ...: 1
Quota .....: 1.5-2.0 m
Committente: SOIL TEST SRL

Certificato : 2786
Data .....: 9/4/98
Riferimento : 777

D10.....: 0.00
D60.....: 0.05
COEFF.UNIF..: 22.84
ARGILLA.....: 9.2 %
LIMO.....: 59.7 %
SABBIA.....: 30.8 %
GHIAIA.....: 0.3 %



Denominazione AGI ....: Limo con Sabbia debolmente Argilloso

Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 2 Camp. ..: 2 Quota ..: 3.0-3.5 m

Descrizione del campione

CAMPIONE DISOMOGENEO COSTITUITO DA LIMO CON SABBIA DEBOLMENTE ARGILLOSO DI COLORE AVANA CHIARO.

Stato del campione .....: Indisturbato

Caratteristiche generali del campione

Massa volumica reale .....:	G	2.71	g/cm3
Massa volumica apparente umida ..:	Pv	2.08	g/cm3
Umidità naturale .....:	W	19.2	%
Massa volumica apparente secca ..:	Ps	1.74	g/cm3
Indice dei vuoti .....:	e	0.557	
Porosità .....:	n	35.8	%
Grado di saturazione .....:	Sr	93	%

Limiti di consistenza o di Atterberg

Limite liquido .....:	WL	29.0	%
Limite plastico .....:	WP	20.0	%
Limite di ritiro .....:	WR	--	%
Indice di plasticità .....:	IP	9.0	%
Indice di consistenza .....:	IC	1.09	

Classificazione Casagrande .....: CL

Analisi Granulometrica

Argilla .....:	15.0	%
Limo .....:	51.6	%
Sabbia .....:	33.4	%
Ghiaia .....:	0.0	%

Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 2 Camp. ..: 2 Quota ..: 3.0-3.5 m

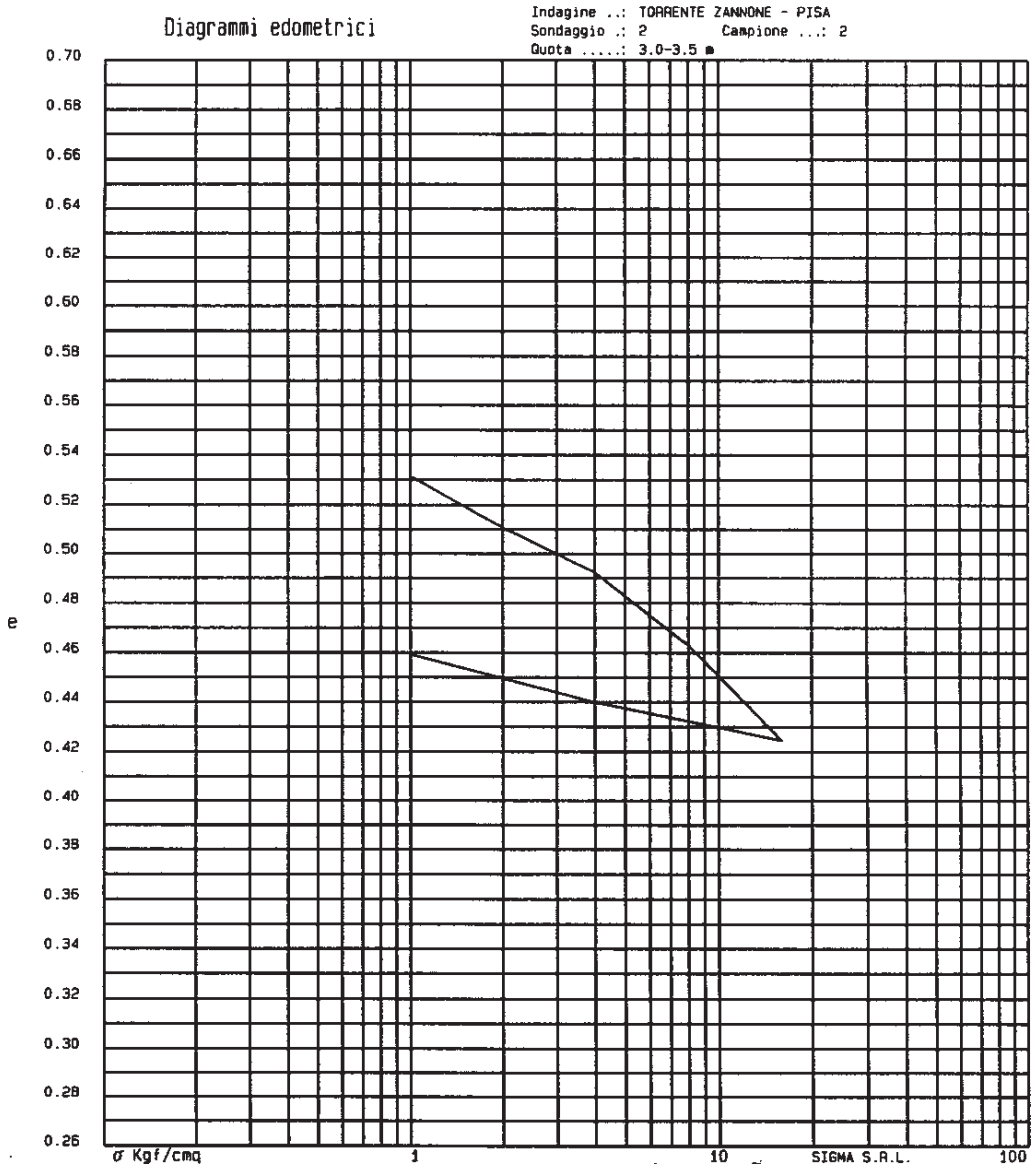
P R O V A E D O M E T R I C A

Caratteristiche iniziali del provino:

Massa volumica reale .....: G 2.71 g/cm3
Massa volumica apparente umida ..: Pv 2.10 g/cm3
Umidità naturale .....: W 19.6 %
Indice dei vuoti .....: e 0.540
Grado di saturazione .....: Sr 98 %
Dimensioni del provino: Diametro .....: 50.40 mm
Altezza .....: 20.00 mm

Pressione σv	Cedimento δv	Indice dei Vuoti e	Modulo di Compressione Edometrica E'	Coefficiente di Permeabilità Kv	Coefficiente di Consolidazione cv
Kgf/cm²	mm		Kgf/cm²	cm/sec	cm²/sec
1.00	0.110	0.531	182		
2.00	0.380	0.511	74		
4.00	0.620	0.492	167		
8.00	1.000	0.463	211		
16.00	1.500	0.424	320		
4.00	1.300	0.440			
1.00	1.050	0.459			

Indice di Compressibilità.....: Cc 0.13



Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 2 Camp. ..: 2 Quota ..: 3.0-3.5 m

P R O V A D I T A G L I O D I R E T T O

Stato del campione .....: Indisturbato
Tipo della prova .....: Consolidata Drenata
Velocità di deformazione .....: v 0.0100 mm/min

Caratteristiche iniziali medie dei provini:
Massa volumica apparente umida ..: Pv 2.08 g/cm3
Umidità naturale .....: W 19.3 %

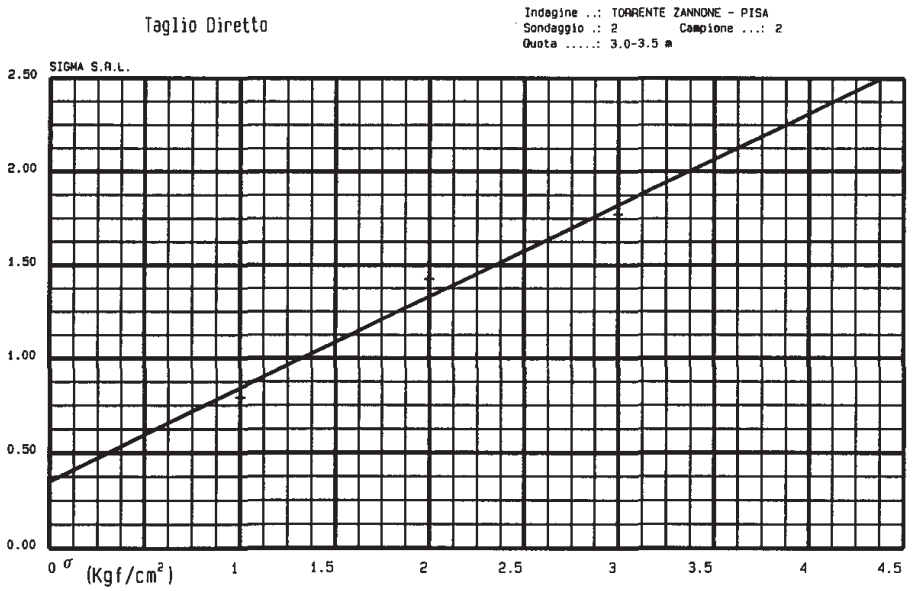
Dimensioni		Provino	1	2	3	4
Lato		mm	60.00	60.00	60.00	
Altezza		mm	15.90	15.90	15.90	

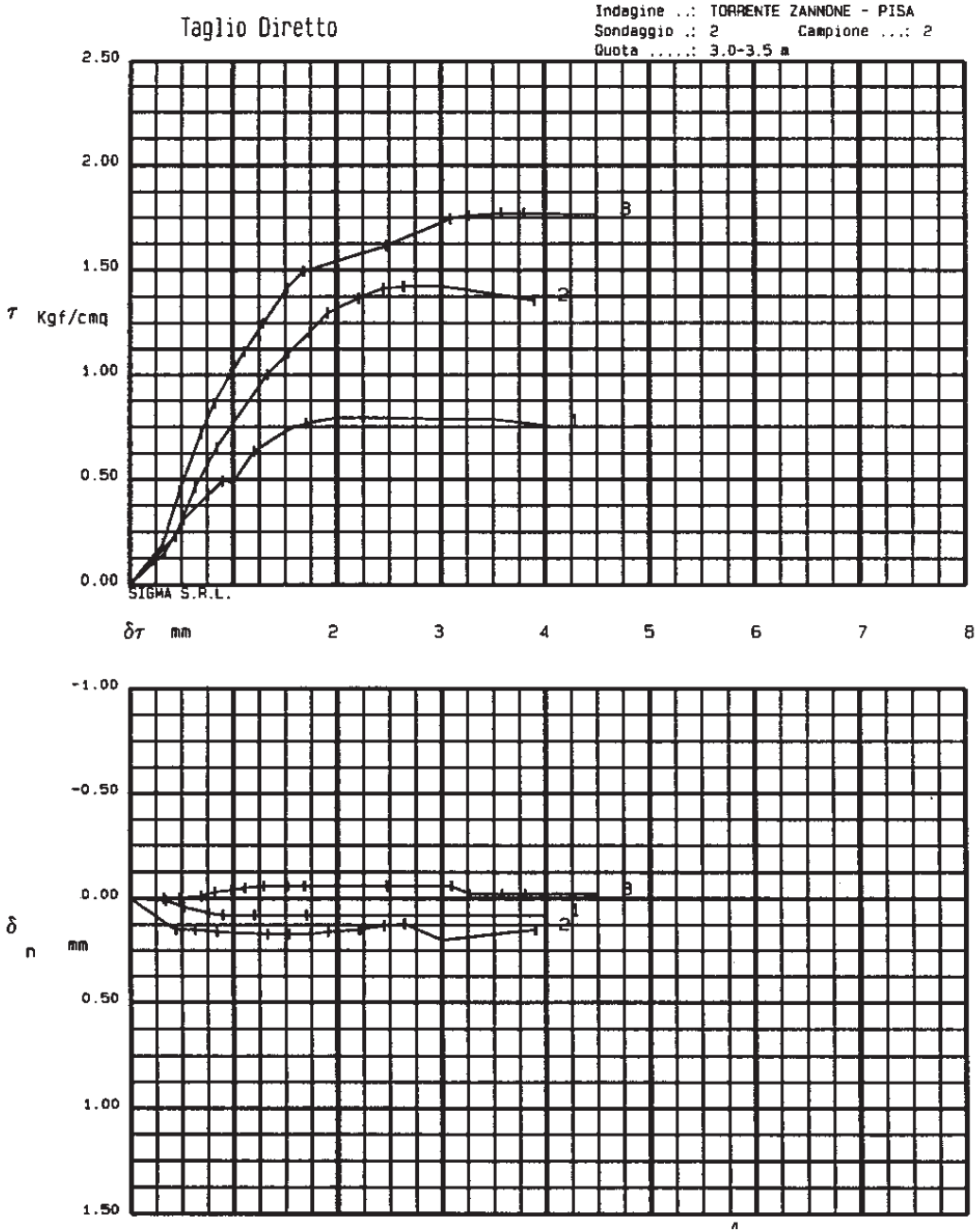
Consolidazione		Provino	1	2	3	4
Pressione verticale	σ	Kgf/cm²	1.00	2.00	3.00	
Tempo di consolidazione	t	h	24	48	72	
Cedimento finale	δf	mm	0.87	0.58	1.90	

Rottura		Provino	1	2	3	4
Sollecitazione tangenziale	τ	Kgf/cm²	0.79	1.43	1.77	
Deformazione trasversale	δt	mm	2.00	3.00	3.58	
Deformazione normale	δn	mm	0.08	0.20	-0.02	
Umidità naturale finale	Wf	%	21.2	19.9	17.4	

Angolo di attrito φ' : 26.1°

Coesione c' : 0.35 Kgf/cm²





Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 2 Camp. ..: 2 Quota ..: 3.0-3.5 m

PROVA DI COMPRESSIONE AD ESPANSIONE LATERALE LIBERA

Stato del campione .....: Indisturbato
Velocità di deformazione .....: v 1.5000 mm/min

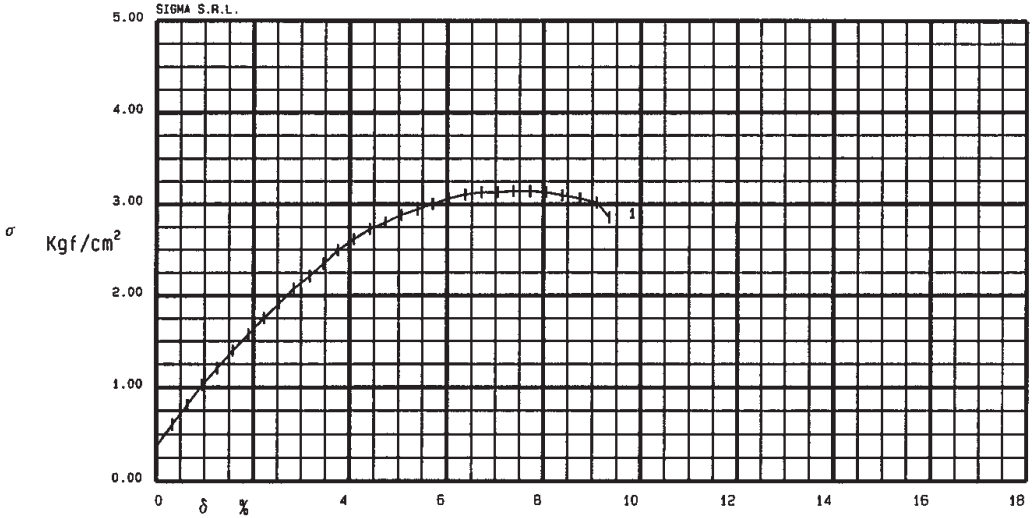
Condizioni iniziali		Provino	1	2	3	4
Altezza	H	cm	7.62			
Diametro	D	cm	3.81			
Volume	V	cm3	86.87			
Massa volumica apparente umida	Pv	g/cm3	2.05			
Umidità naturale	W	%	18.70			

Rottura		Provino	1	2	3	4
Pressione di cella	σ3	Kgf/cm²	0.00			
Deform. vert. a rottura	δh	%	7.36			
Pressione finale a rottura	σ1-σ3	Kgf/cm²	3.14			

Coesione	Cu = (σ1-σ3)/2 :	1.57	Kgf/cm²

Compressione ELL

Indagine ..: TORRENTE ZANNONE - PISA
Sondaggio .: 2 Campione ...: 2
Quota .....: 3.0-3.5 m

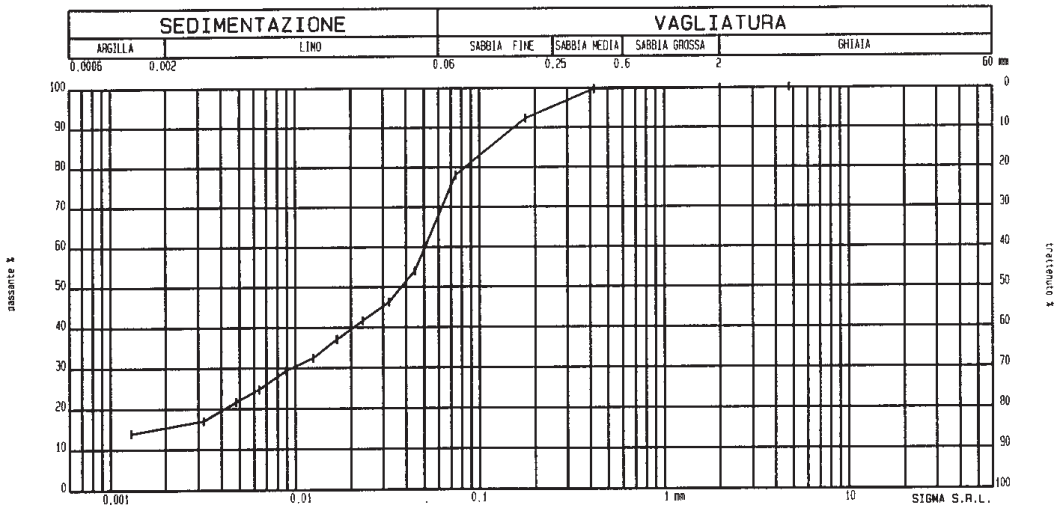


ANALISI GRANULOMETRICA

Indagine ..: TORRENTE ZANNONE - PISA
Sondaggio .: 2 Campione ...: 2
Quota .....: 3.0-3.5 m
Committente: SOIL TEST SRL

Certificato : 2876
Data .....: 9/4/98
Riferimento : 777

ARGILLA....: 15.0 %
LIMO.....: 51.6 %
SABBIA.....: 33.4 %
GHIAIA.....: 0.0 %



RIF. INT.: 1998000055	DATA ELABORAZIONE: 31/03/1998	DATA INIZIO PERFORAZIONE: 09/03/1998	DATA FINE PERFORAZIONE: 10/03/1998
COMMITTENTE: Provincia di Pisa		CANTIERE: Torrente Zannone - Lari (PI)	
PERFORAZIONE: S3	QUOTA BOCCAFORO (m s.l.m.):	LUNGHEZZA (m): 20.00	INCLINAZIONE (gradi):	SCALA GRAFICA: 1:120
MACCHINA PERFORATRICE: Puntel tipo PX1200			
PERFORATORE RESPONSABILE: Sig. F.Piga		TECNICO RESPONSABILE: Geol. D.Senesi	

NOTE: Inserito piezometro in pvc, fenestrato secondo lo schema sottostante.
SPT=Standard Penetration Test. PT=Penetrometro Tascabile. VT=Vane Test. ST=Scissometro Tascabile.
Da metri 1.50 a metri 20.00 piezometro a tubo sfenestrato.

Profondità dal p.c. (m)	Potenza (m)	Simbolo grafico	Descrizione litologica	Campioni: Profondità di prelievo (m)	Campionatore	Tipo di prelievo	Percentuale di carotaggio 50 %	SPT (m) N. colpi / PT (m) Kg/cmq	VT / ST Kg/cmq	Diametro del foro (mm)	Metodo di perforazione	Metodo di stabilizzazione	Piezometro
1.00	1.00		Sabbia fine e medio-fine, con limo nocciola, con rari resti vegetali e vegetali.										
3.20	2.20		Limo con sabbia, nocciola con striat. grigie, da poco a mediamente compatto, con passaggi centim. di sabbia con limo.	2.00 2.50	Pareti sottili	Pressione		○ 1.40 1.00 ○ 3.10 0.60	○ 1.40 0.52 ○ 3.10 0.24				
5.40	2.20		Sabbia media-fine con limo, nocciola e grigia, sciolta, con passaggi centim. di limo con sabbia.					● 4.50 0- 0- 1					
5.80	0.40		Limo con sabbia, marrone e verdastra con striat. grigie, poco compatto.					○ 5.70 0.80	○ 5.70 0.28				
9.70	3.90		Sabbia media-fine e media, con limo e limosa, a tratti torbosa, grigio-verdastra e grigia, da sciolta a poco addensata.	8.50 9.00	Pareti sottili	Pressione		● 7.50 0- 1- 1					
11.00	1.30		Ghiaia eterometrica, poco addensata, con clasti eterogenei, arrotond., Dmax 7 cm, dmed 3 cm, in matrice sabbioso-limosa, verdastra passante marrone, abbondante nella parte alta (clasti 50-80%).					● 10.50 1- 3- 4					
12.10	1.10		Sabbia fine con limo, verdastra passante grigia.										
13.80	1.70		Limo con sabbia, passante sabbioso argilloso debolm. ghiaioso fine, grigio, compatto. Presenti resti conchiliari, Dmax 3 cm.					○ 12.30 2.10 ○ 13.10 2.10	○ 12.30 0.96 ○ 13.10 1.04				
18.80	5.00		Limo argilloso sabbioso, passante con argilla debolm. sabbioso, grigio, compatto. Presenti resti conchiliari, Dmax 3 cm.					○ 14.10 2.80 ○ 15.00 2.40 ○ 16.00 2.50 ○ 17.00 2.40 ○ 18.00 2.50	○ 14.10 1.16 ○ 15.00 1.15 ○ 16.00 1.20 ○ 17.00 1.04 ○ 18.00 1.36				
20.00	1.20		Argilla con limo debolm. sabbioso, grigia, compatta, con resti conchiliari, Dmax 3 cm.					○ 19.00 3.00 ○ 20.00 2.70	○ 19.00 1.48 ○ 20.00 1.40	101	Rotazione con carotiere semplice a secco	Tubi di rivestimento	

Software by GHEOS

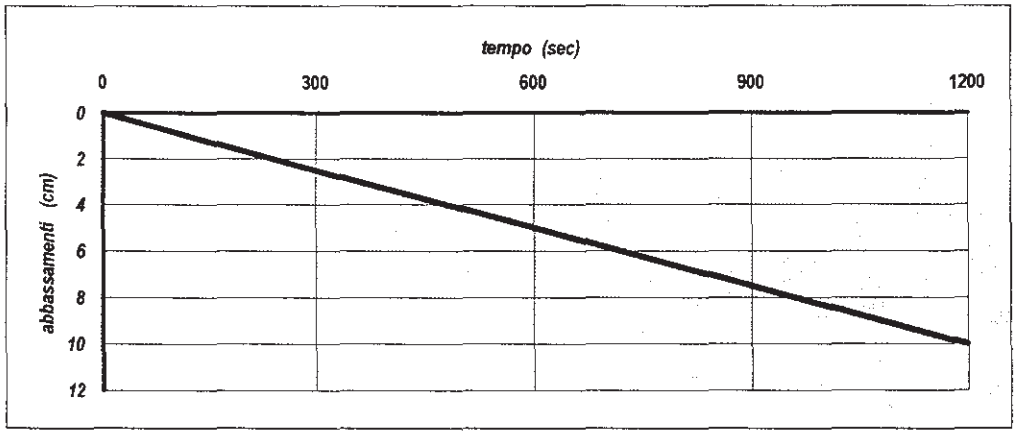
Tempo (sec)	Abbassamenti (cm)
0	0
60	0.5
120	1
180	1.5
240	2
360	3
480	4
600	5
720	6
900	7.5
1200	10

Prova di permeabilità Lefranc a carico variabile

Sondaggio 3

	(cm)
Quota superiore filtro dal p.c.	160
Quota inferiore filtro dal p.c.	200
Lunghezza tratto di prova	40
Quota falda dal p.c.	80
Diametro foro	10.1
Quota boccaforo sul p.c.	5
Area (cmq)	80
Fattore di forma (-)	152

K (coeff. di permeabilità) = 5.49E-05 cm/sec



Le misure riportate in tabella si riferiscono alla quota del boccaforo

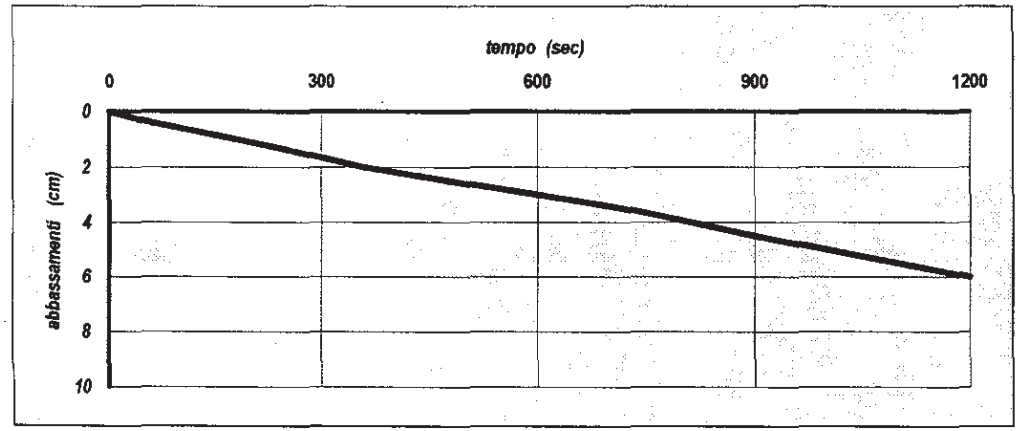
Tempo (sec)	Abbassamenti (cm)
0	0
60	0.4
120	0.7
180	1
240	1.3
360	2
480	2.5
600	3
720	3.5
900	4.5
1200	6

Prova di permeabilità Lefranc a carico variabile

Sondaggio 3

	(cm)
Quota superiore filtro dal p.c.	300
Quota inferiore filtro dal p.c.	400
Lunghezza tratto di prova	100
Quota falda dal p.c.	80
Diametro foro	10.1
Quota boccaforo sul p.c.	15
Area (cmq)	80
Fattore di forma (-)	278

K (coeff. di permeabilità) = 1.57E-05 cm/sec



Le misure riportate in tabella si riferiscono alla quota del boccaforo

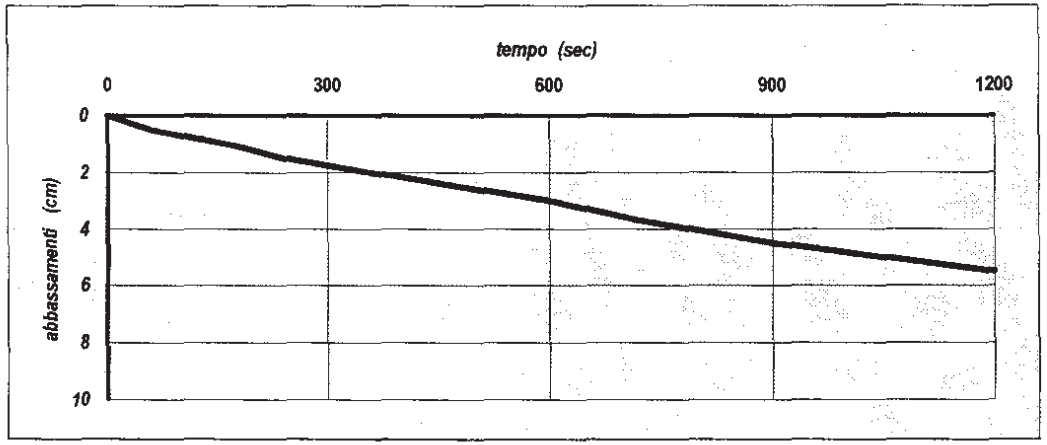
Tempo (sec)	Abbassamenti (cm)
0	0
60	0.5
120	0.8
180	1.1
240	1.5
360	2
480	2.5
600	3
720	3.7
900	4.5
1200	5.5

Prova di permeabilità Lefranc a carico variabile

Sondaggio 3

	(cm)
Quota superiore filtro dal p.c.	600
Quota inferiore filtro dal p.c.	750
Lunghezza tratto di prova	150
Quota falda dal p.c.	80
Diametro foro	10.1
Quota boccaforo sul p.c.	15
Area (cmq)	80
Fattore di forma (-)	372

K (coeff. di permeabilità) = 1.07E-05 cm/sec



Le misure riportate in tabella si riferiscono alla quota del boccaforo

Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 3 Camp. ..: 1 Quota ..: 6.0-6.5 m

Descrizione del campione

CAMPIONE DISOMOGENEO COSTITUITO DA LIMO CON SABBIA DEBOLMENTE ARGILLOSO DI COLORE GRIGIO VERDE.

Stato del campione .....: Indisturbato

Caratteristiche generali del campione

Massa volumica reale .....:	G	2.67	g/cm3
Massa volumica apparente umida ..:	Pv	1.98	g/cm3
Umidità naturale .....:	W	27.3	%
Massa volumica apparente secca ..:	Ps	1.55	g/cm3
Indice dei vuoti .....:	e	0.722	
Porosità .....:	n	41.9	%
Grado di saturazione .....:	Sr	101	%

Limiti di consistenza o di Atterberg

Limite liquido .....:	WL	25.0	%
Limite plastico .....:	WP	19.0	%
Limite di ritiro .....:	WR	--	%
Indice di plasticità .....:	IP	6.0	%
Indice di consistenza .....:	IC	-.40	

Classificazione Casagrande .....: CL-ML

Analisi Granulometrica

Argilla .....:	14.4	%
Limo .....:	55.4	%
Sabbia .....:	30.2	%
Ghiaia .....:	0.0	%

Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 3 Camp. ..: 1 Quota ..: 6.0-6.5 m

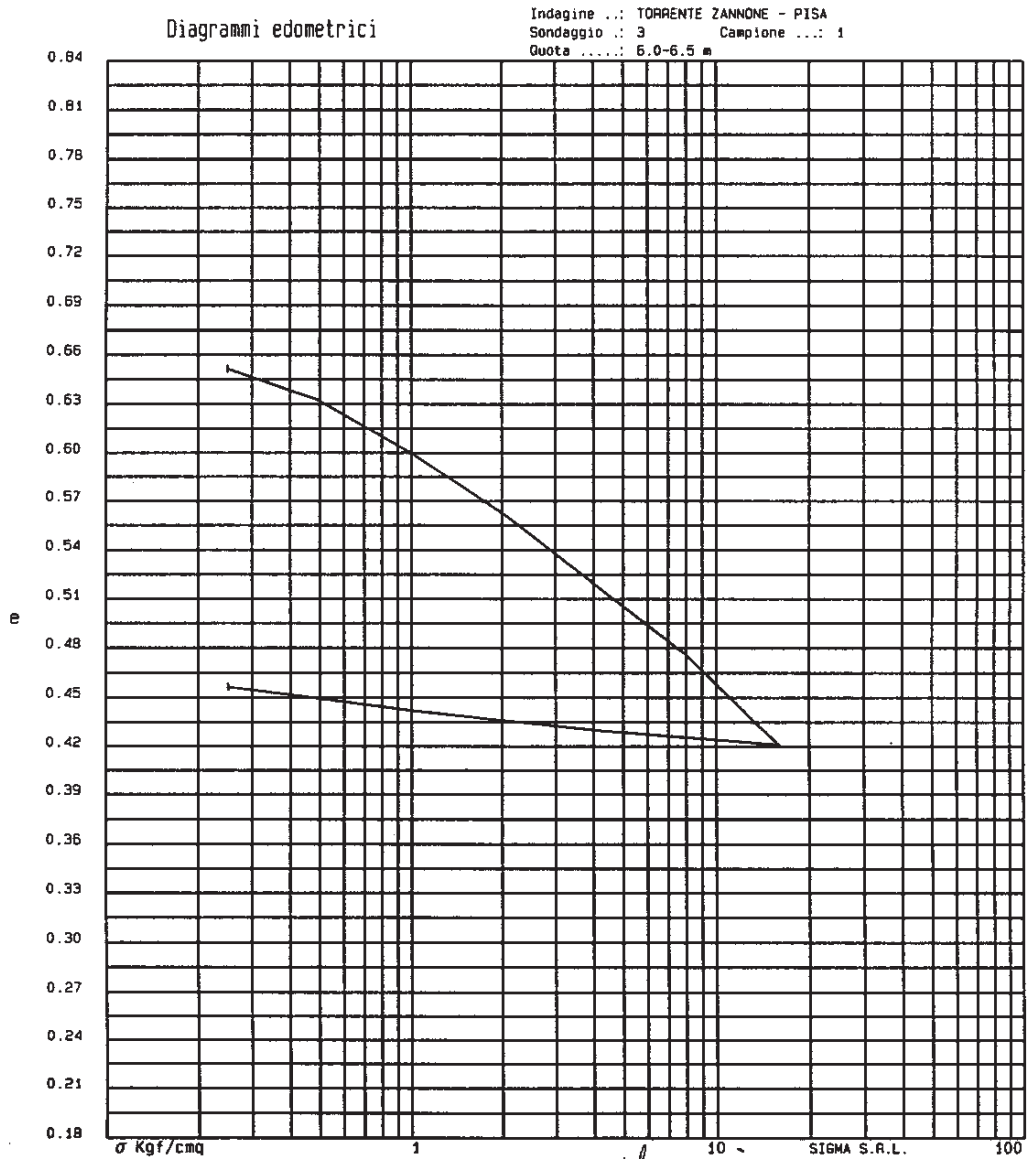
P R O V A E D O M E T R I C A

Caratteristiche iniziali del provino:

Massa volumica reale .....: G 2.67 g/cm3
Massa volumica apparente umida ..: Pv 2.04 g/cm3
Umidità naturale .....: W 28.8 %
Indice dei vuoti .....: e 0.689
Grado di saturazione .....: Sr 112 %
Dimensioni del provino: Diametro .....: 50.40 mm
Altezza .....: 20.00 mm

Pressione σv	Cedimento δv	Indice dei Vuoti e	Modulo di Compressione Edometrica E'	Coefficiente di Permeabilità Kv	Coefficiente di Consolidazione cv
Kgf/cm²	mm		Kgf/cm²	cm/sec	cm²/sec
0.25	0.450	0.651	11		
0.50	0.680	0.632	22		
1.00	1.060	0.600	26		
2.00	1.500	0.563	45		
4.00	2.010	0.520	78		
8.00	2.530	0.476	154		
16.00	3.180	0.421	246		
4.00	3.070	0.430			
1.00	2.930	0.442			
0.25	2.760	0.456			

Indice di Compressibilità.....: Cc 0.18



Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 3 Camp. ..: 1 Quota ..: 6.0-6.5 m

P R O V A D I T A G L I O D I R E T T O

Stato del campione .....: Indisturbato
Tipo della prova .....: Consolidata Drenata
Velocità di deformazione .....: v 0.0100 mm/min

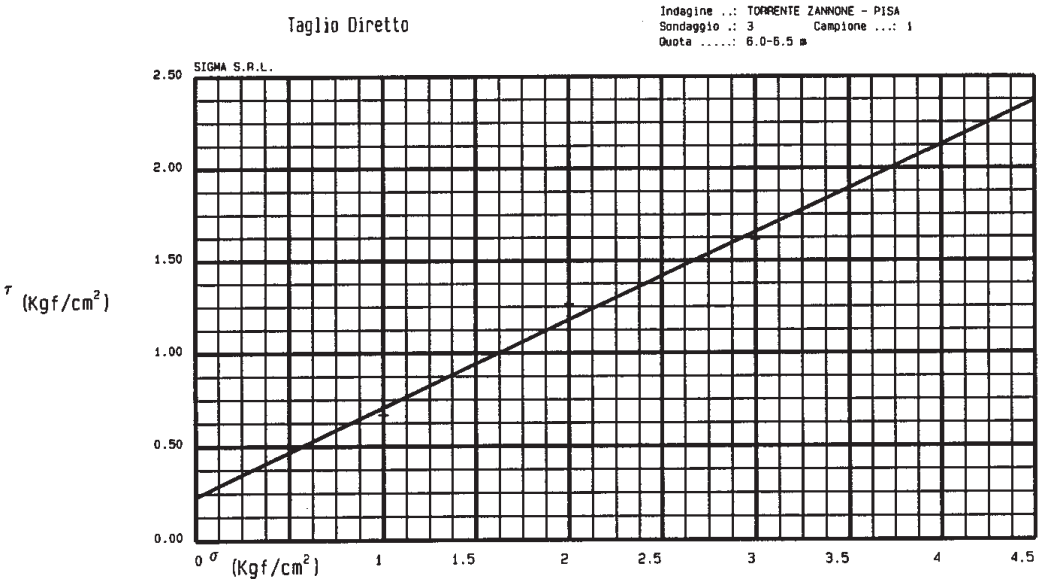
Caratteristiche iniziali medie dei provini:
Massa volumica apparente umida ..: Pv 2.02 g/cm3
Umidità naturale .....: W 26.9 %

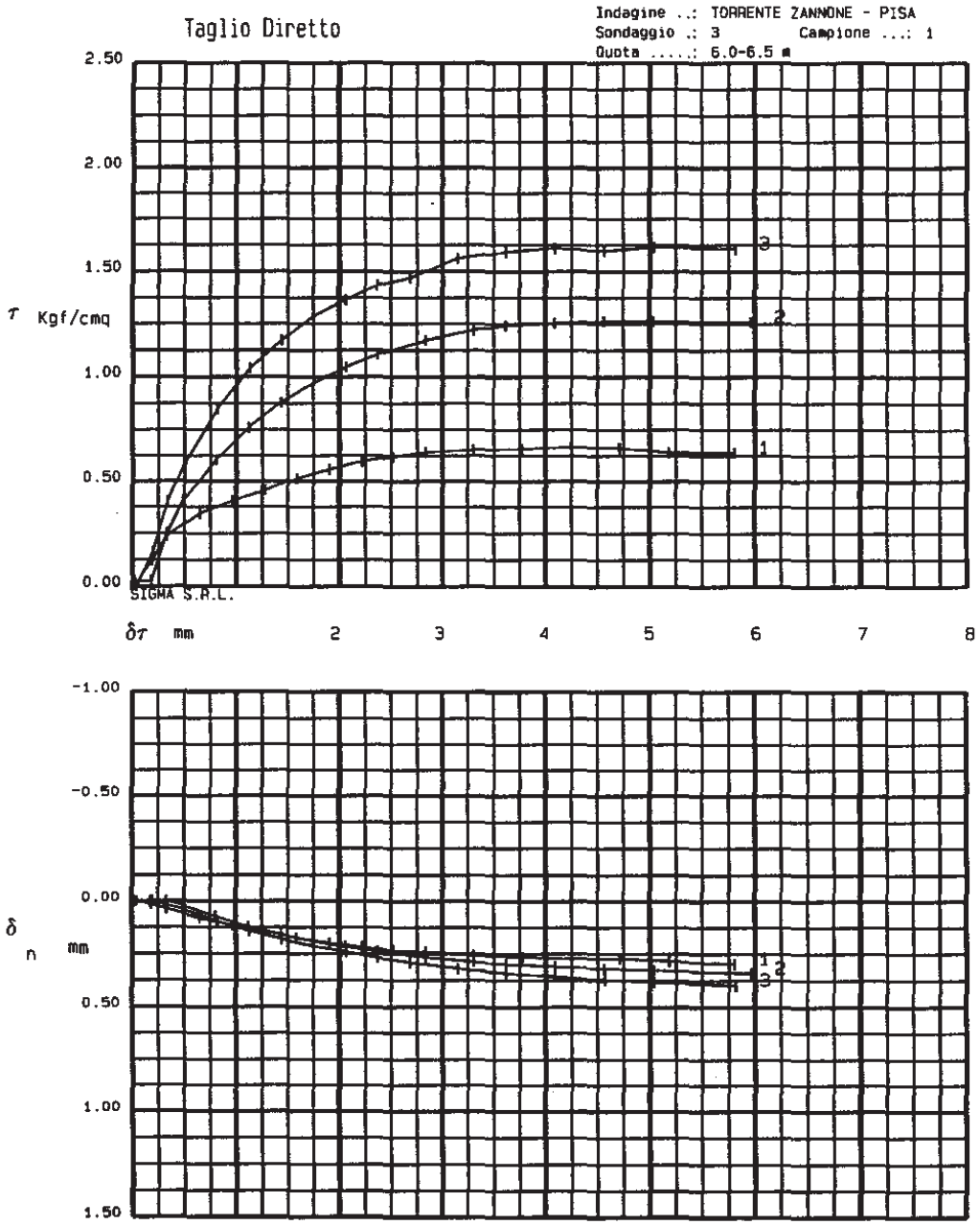
Dimensioni		Provino	1	2	3	4
Lato		mm	60.00	60.00	60.00	
Altezza		mm	19.60	19.60	19.60	

Consolidazione		Provino	1	2	3	4
Pressione verticale	σ	Kgf/cm²	1.00	2.00	3.00	
Tempo di consolidazione	t	h	24	48	72	
Cedimento finale	δf	mm	0.90	2.17	1.94	

Rottura		Provino	1	2	3	4
Sollecitazione tangenziale	τ	Kgf/cm²	0.67	1.26	1.61	
Deformazione trasversale	δt	mm	4.24	4.56	5.04	
Deformazione normale	δn	mm	0.27	0.32	0.38	
Umidità naturale finale	Wf	%	22.7	20.9	21.9	

Angolo di attrito φ' : 25.4°	Coesione c' : 0.23 Kgf/cm²





Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 3 Camp. ..: 1 Quota ..: 6.0-6.5 m

PROVA DI COMPRESSIONE AD ESPANSIONE LATERALE LIBERA

Stato del campione .....: Indisturbato
Velocità di deformazione .....: v 1.5000 mm/min

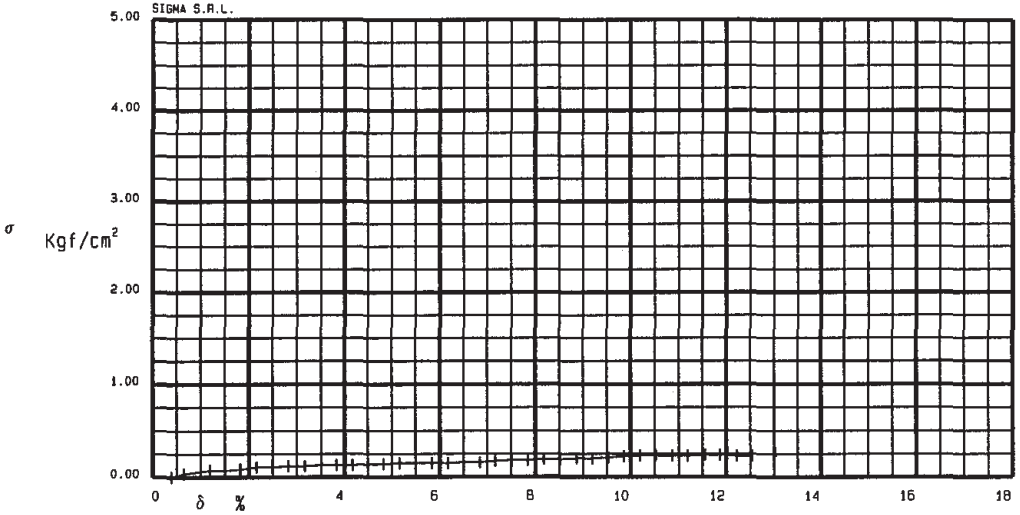
Condizioni iniziali		Provino	1	2	3	4
Altezza	H	cm	7.62			
Diametro	D	cm	3.81			
Volume	V	cm3	86.87			
Massa volumica apparente umida	Pv	g/cm3	1.82			
Umidità naturale	W	%	27.20			

Rottura		Provino	1	2	3	4
Pressione di cella	σ3	Kgf/cm²	0.00			
Deform. vert. a rottura	δh	%	11.55			
Pressione finale a rottura	σ1-σ3	Kgf/cm²	0.24			

Coesione Cu = (σ1-σ3)/2 : 0.12 Kgf/cm²

Compressione ELL

Indagine ..: TORRENTE ZANNONE - PISA
Sondaggio .: 3 Campione ...: 1
Quota .....: 6.0-6.5 m

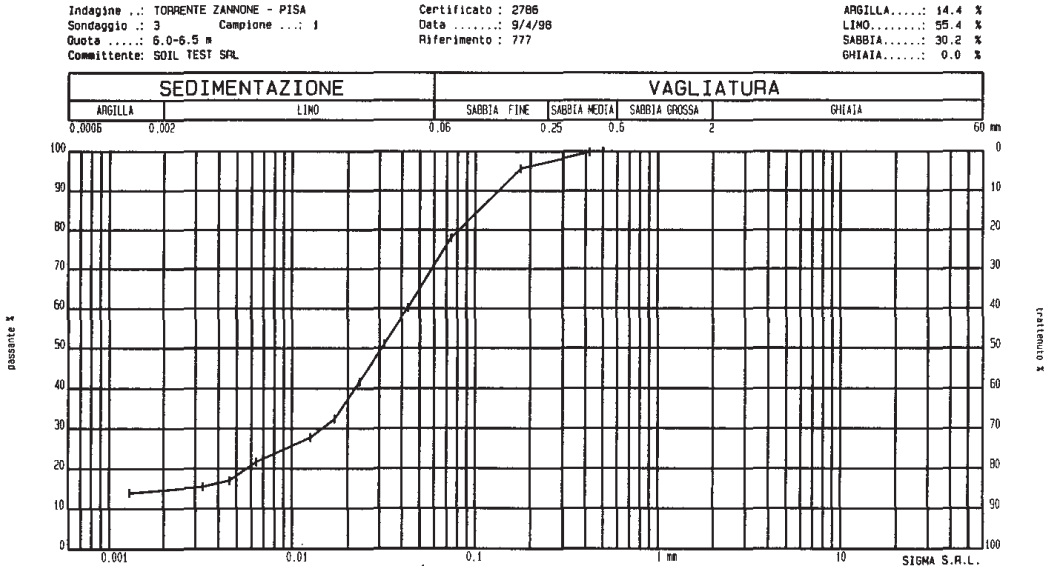


ANALISI GRANULOMETRICA

Indagine ..: TORRENTE ZANNONE - PISA
Sondaggio .: 3 Campione ...: 1
Quota .....: 6.0-6.5 m
Committente: SOIL TEST SRL

Certificato : 2786
Data .....: 9/4/98
Riferimento : 777

ARGILLA.....: 14.4 %
LIMO.....: 55.4 %
SABBIA.....: 30.2 %
GHIAIA.....: 0.0 %



Denominazione AGI ....: Limo con Sabbia debolmente Argilloso

Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 3 Camp. ..: 2 Quota ..: 8.0-8.5 m

Descrizione del campione

CAMPIONE DISOMOGENEO COSTITUITO DA SABBIA CON LIMO DEBOLMENTE ARGILLOSA DI COLORE GRIGIO SCURO.

Stato del campione .....: Indisturbato

Caratteristiche generali del campione

Massa volumica reale .....:	G	2.67	g/cm3
Massa volumica apparente umida ..:	Pv	1.94	g/cm3
Umidità naturale .....:	W	30.7	%
Massa volumica apparente secca ..:	Ps	1.48	g/cm3
Indice dei vuoti .....:	e	0.804	
Porosità .....:	n	44.5	%
Grado di saturazione .....:	Sr	102	%

Limiti di consistenza o di Atterberg

Limite liquido .....:	WL	ND	%
Limite plastico .....:	WP	NP	%
Limite di ritiro .....:	WR	--	%
Indice di plasticità .....:	IP	--	%
Indice di consistenza .....:	IC	--	

Classificazione USCS .....: SM

Analisi Granulometrica

Argilla .....:	9.3	%
Limo .....:	24.6	%
Sabbia .....:	65.9	%
Ghiaia .....:	0.2	%

Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 3 Camp. ..: 2 Quota ..: 8.0-8.5 m

P R O V A E D O M E T R I C A

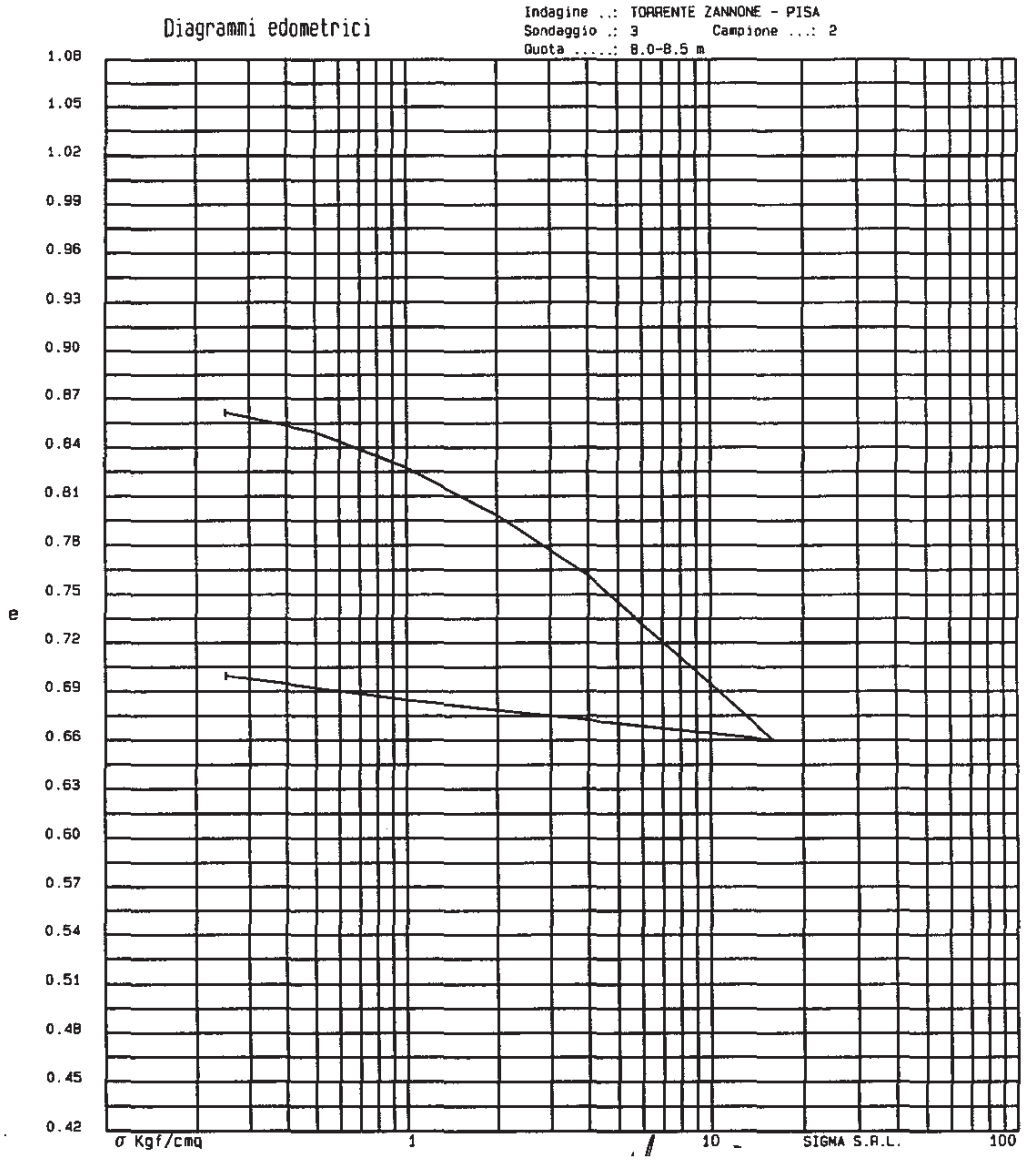
Caratteristiche iniziali del provino:

Massa volumica reale .....:	G	2.67	g/cm3
Massa volumica apparente umida ..:	Pv	1.87	g/cm3
Umidità naturale .....:	W	31.8	%
Indice dei vuoti .....:	e	0.882	
Grado di saturazione .....:	Sr	96	%

Dimensioni del provino: Diametro .....: 50.40 mm
Altezza .....: 20.00 mm

Pressione σv	Cedimento δv	Indice dei Vuoti e	Modulo di Compressione Edometrica E'	Coefficiente di Permeabilità Kv	Coefficiente di Consolidazione cv
Kgf/cm²	mm		Kgf/cm²	cm/sec	cm²/sec
0.25	0.220	0.862	23		
0.50	0.350	0.849	38		
1.00	0.580	0.828	43		
2.00	0.890	0.798	65		
4.00	1.280	0.762	103		
8.00	1.820	0.711	148		
16.00	2.360	0.660	296		
4.00	2.230	0.672			
1.00	2.100	0.685			
0.25	1.940	0.700			

Indice di Compressibilità.....: Cc 0.17



Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 3 Camp. ..: 2 Quota ..: 8.0-8.5 m

PROVA DI TAGLIO DIRETTO

Stato del campione .....: Indisturbato
Tipo della prova .....: Consolidata Drenata
Velocità di deformazione .....: v 0.0300 mm/min

Caratteristiche iniziali medie dei provini:
Massa volumica apparente umida ..: Pv 1.97 g/cm3
Umidità naturale .....: W 32.3 %

Dimensioni		Provino	1	2	3	4
Lato		mm	60.00	60.00	60.00	
Altezza		mm	19.60	19.60	19.60	

Consolidazione		Provino	1	2	3	4
Pressione verticale	σ	Kgf/cm²	1.00	2.00	3.00	
Tempo di consolidazione	t	h	24	48	72	
Cedimento finale	δf	mm	0.84	1.47	2.57	

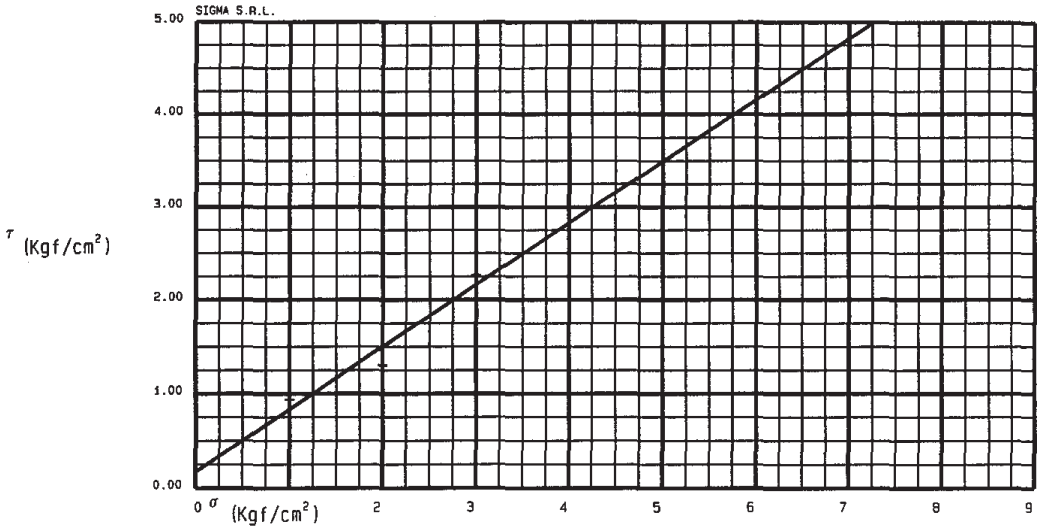
Rottura		Provino	1	2	3	4
Sollecitazione tangenziale	τ	Kgf/cm²	0.93	1.30	2.26	
Deformazione trasversale	δt	mm	5.46	5.85	6.17	
Deformazione normale	δn	mm	0.26	0.07	0.33	
Umidità naturale finale	Wf	%	33.2	31.7	34.7	

Angolo di attrito ϕ' : 33.6°

Coesione c' : 0.17 Kgf/cm²

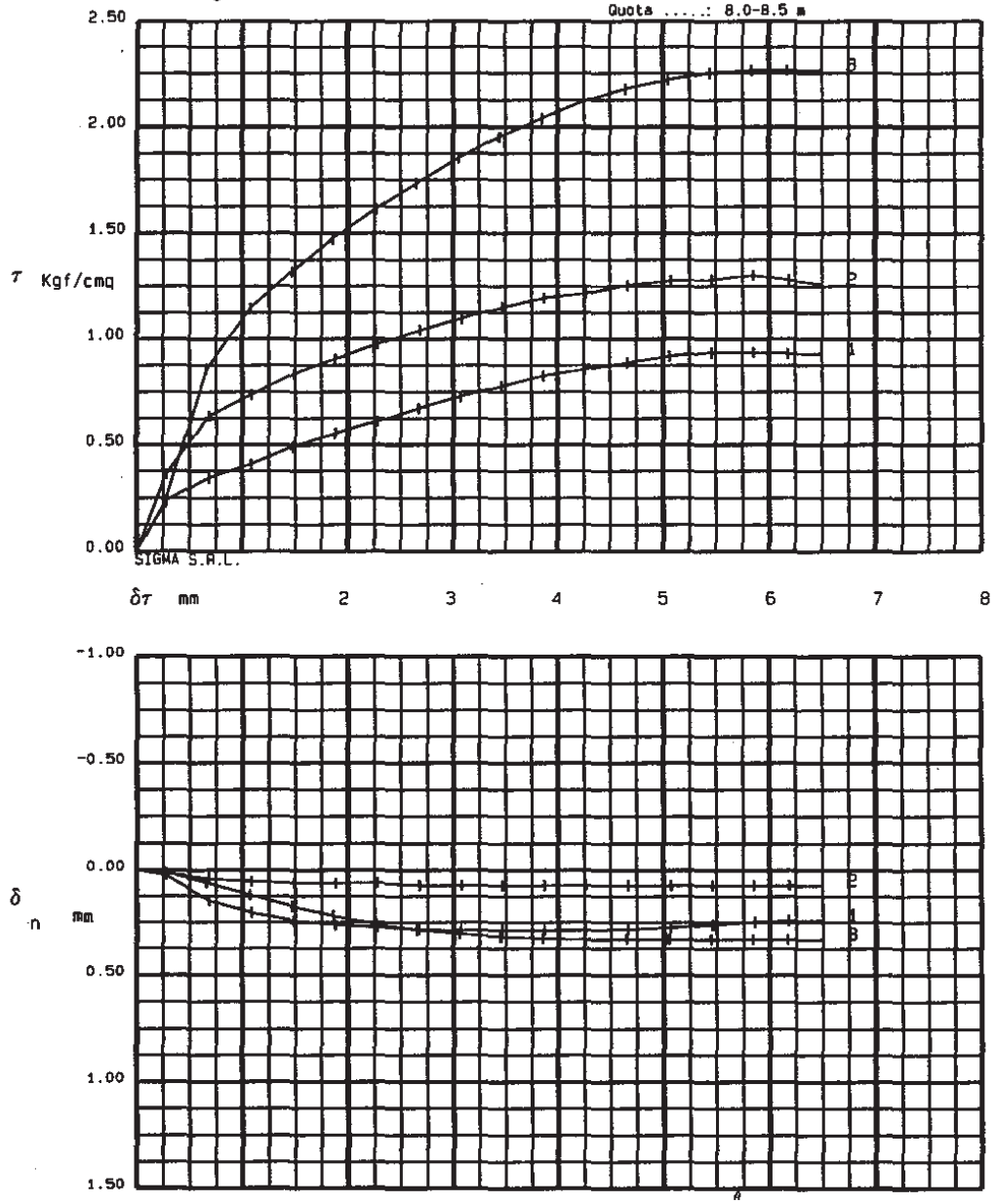
Taglio Diretto

Indagine ..: TORRENTE ZANNONE - PISA
Sondaggio .: 3 Campione ...: 2
Quota .....: 8.0-8.5 m



Taglio Diretto

Indagine ..: TORRENTE ZANNONE - PISA
Sondaggio .: 3 Campione ...: 2
Quota .....: 8.0-8.5 m



Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 3 Camp. ..: 2 Quota ..: 8.0-8.5 m

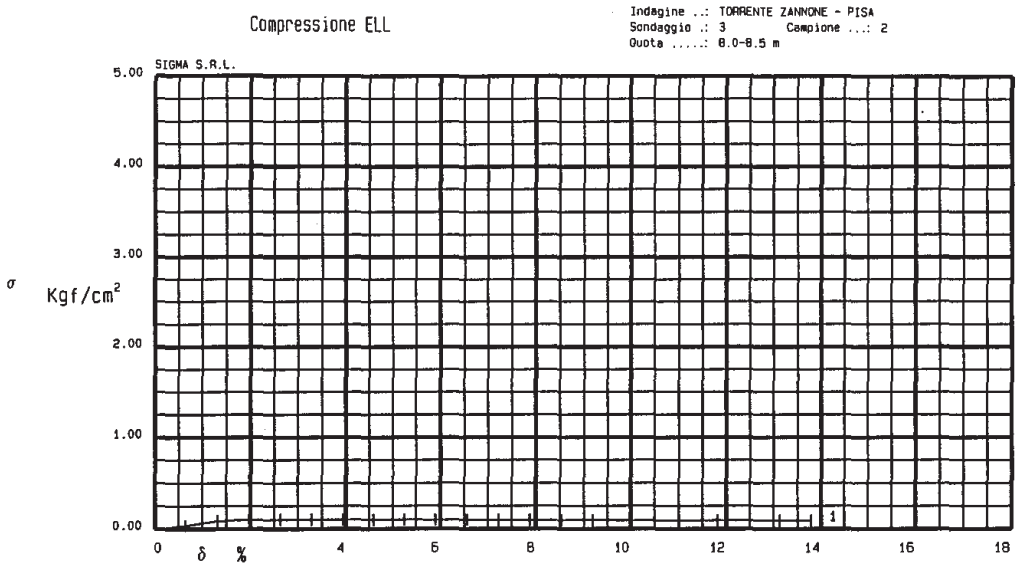
PROVA DI COMPRESSIONE AD ESPANSIONE LATERALE LIBERA

Stato del campione .....: Indisturbato
Velocità di deformazione .....: v 1.5000 mm/min

Condizioni iniziali		Provino	1	2	3	4
Altezza	H	cm	7.62			
Diametro	D	cm	3.81			
Volume	V	cm3	86.87			
Massa volumica apparente umida	Pv	g/cm3	1.93			
Umidità naturale	W	%	25.00			

Rottura		Provino	1	2	3	4
Pressione di cella	σ3	Kgf/cm²	0.00			
Deform. vert. a rottura	δh	%	1.97			
Pressione finale a rottura	σ1-σ3	Kgf/cm²	0.10			

Coesione	Cu = (σ1-σ3)/2 :	0.05	Kgf/cm²

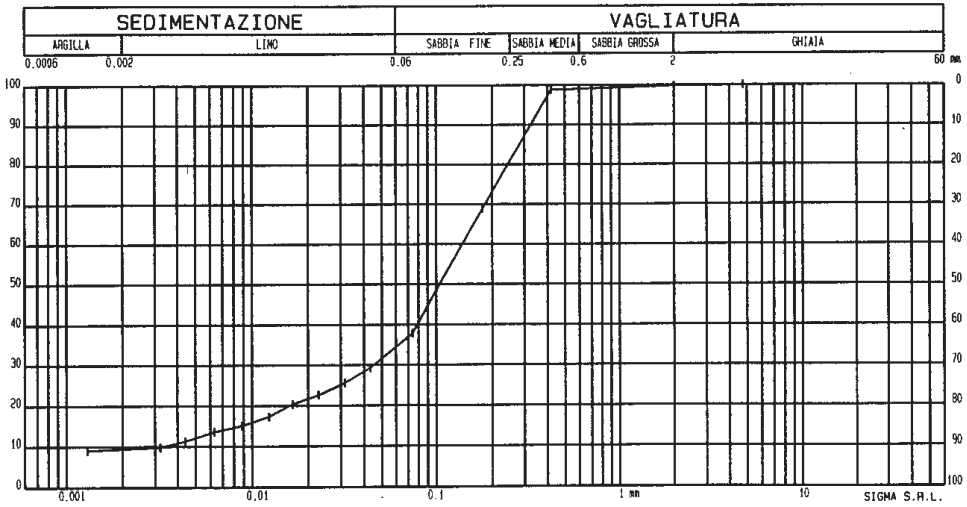


ANALISI GRANULOMETRICA

Indagine ..: TORRENTE ZANNONE - PISA
Sondaggio .: 3 Campione ...: 2
Quota .....: 8.0-8.5 m
Committente: SOIL TEST SRL

Certificato : 2786
Data .....: 9/4/98
Riferimento : 777

D10.....: 0.00
D60.....: 0.14
COEFF.UNIF..: 41.05
ARGILLA....: 9.3 %
LIMO.....: 24.6 %
SABBIA.....: 65.9 %
GHIAIA.....: 0.2 %



Denominazione AGI ....: Sabbia Limosa debolmente Argillosa

MICROPALI

RF. INT.: 1998000056	DATA ELABORAZIONE: 31/03/1998	DATA INIZIO PERFORAZIONE: 11/03/1998	DATA FINE PERFORAZIONE: 11/03/1998
COMMITTENTE: Provincia di Pisa		CANTIERE: Torrente Zannone - Lari (PI)	
PERFORAZIONE: S4	QUOTA BOCCAFORO (m s.l.m.):	LUNGHEZZA (m): 10.00	INCLINAZIONE (gradi):	SCALA GRAFICA: 1:120
MACCHINA PERFORATRICE: Puntel tipo PX1200			
PERFORATORE RESPONSABILE: Sig. F.Pigo		TECNICO RESPONSABILE: Geol. D.Senesi	

NOTE: Inserito piezometro in pvc, fenestrato secondo lo schema sottostante.
SPT=Standard Penetration Test. PT=Penetrometro Tascabile. VT=Vane Test. ST=Scissometro Tascabile.
Da metri 1.50 a metri 10.00 piezometro a tubo sfenestrato.

Profondità dal p.c. (m)	Potenza (m)	Simbolo grafico	STRATIGRAFIA: Descrizione litologica	CAMPIONI: Profondità di prelievo (m)	Campionatore	Tipo di prelievo	PERCENTUALE DI CAROTAGGIO 50 %	● SPT (m) N. colpi / ○ PT (m) Kg/cmq	● VT / ○ ST Kg/cmq	DIAMETRO DEL FORO (mm)	METODO DI PERFORAZIONE	METODO DI STABILIZZAZIONE	PIEZOMETRO
1.30	1.30		Sabbia medio-fine con limo, nocciola, argillosa nella parte bassa.					○ 1.50	○ 1.50				
2.50	1.20		Limo con sabbia debolm. argilloso, a tratti ghiaioso, nocciola, poco compatto, con clasti arenacei e marnosi, molto alterati, Dmax 2 cm (clasti 0-20%).					0.60 ○ 2.20	0.20 ○ 2.10				
3.50	1.00		Limo argilloso debolm. sabbioso, nocciola con striat. avana, molto compatto.	3.00 3.50	Pareti sottili	Pressione		0.60 ○ 2.80 4.30 ● 3.60 6- 9-11	0.28 ○ 2.80 2.00				
4.90	1.40		Limo sabbioso e con sabbia, nocciola con striat. grigie, compatto, con passaggi centim. e decim. di sabbia con limo.					○ 4.70 2.20	○ 4.70 1.08				
6.40	1.50		Sabbia media con limo, marrone ed avana, con striat. grigie, con passaggi centim. di limo con sabbia.					○ 6.60 2.90	○ 6.60 1.40				
6.90	0.50		Limo con sabbia e sabbioso, debolm. argilloso, nocciola, compatto.					○ 7.40 5.00	○ 7.40 2.20				
8.10	1.20		Limo argilloso, debolm. sabbioso e sabbioso, marrone con striat. grigie, molto compatto, a tratti debolm. ghiaioso fine, con clasti, Dmax 1 cm (clasti 0-10%).					○ 8.30 0.80	○ 8.30 0.36				
8.50	0.40		Limo sabbioso e con sabbia, avana con striat. grigie, mediamente compatto.					○ 9.50 2.80	○ 9.50 1.40	101	Rotazione con carotiere semplice a secco	tubi di rivestimento	
9.20	0.70		Sabbia fine e medio-fine con limo, grigia con striat. nocciola.										
9.70	0.50		Limo sabbioso, argilloso nella parte bassa, grigio con striat. nocciola, compatto.										
10.00	0.30		Sabbia medio-fine con limo, marrone e grigia.										

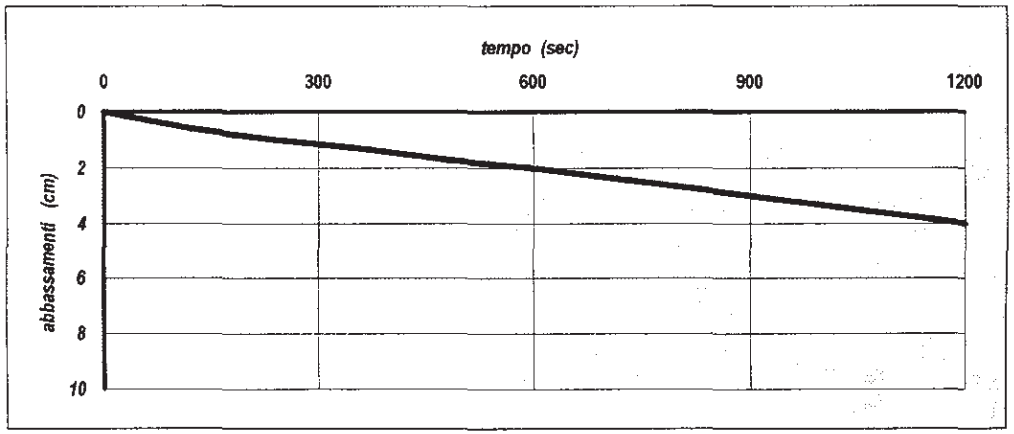
Tempo (sec)	Abbassamenti (cm)
0	0
60	0.3
120	0.6
180	0.8
240	1
360	1.3
480	1.7
600	2
720	2.4
900	3
1200	4

Prova di permeabilità Lefranc a carico variabile

Sondaggio 4

	(cm)
Quota superiore filtro dal p.c.	300
Quota inferiore filtro dal p.c.	450
Lunghezza tratto di prova	150
Quota falda dal p.c.	100
Diametro foro	10.1
Quota boccaforo sul p.c.	15
Area (cmq)	80
Fattore di forma (-)	372

K (coeff. di permeabilità) = 6.35E-06 cm/sec



Le misure riportate in tabella si riferiscono alla quota del boccaforo

Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 4 Camp. ..: 1 Quota ..: 2.0-2.5 m

Descrizione del campione

CAMPIONE DISOMOGENEO COSTITUITO DA LIMO CON SABBIA DEBOLMENTE ARGILLOSO DI COLORE AVANA.

Stato del campione .....: Indisturbato

Caratteristiche generali del campione

Massa volumica reale .....:	G	2.70	g/cm3
Massa volumica apparente umida ..:	Pv	1.99	g/cm3
Umidità naturale .....:	W	24.4	%
Massa volumica apparente secca ..:	Ps	1.59	g/cm3
Indice dei vuoti .....:	e	0.698	
Porosità .....:	n	41.1	%
Grado di saturazione .....:	Sr	94	%

Limiti di consistenza o di Atterberg

Limite liquido .....:	WL	25.0	%
Limite plastico .....:	WP	18.0	%
Limite di ritiro .....:	WR	--	%
Indice di plasticità .....:	IP	7.0	%
Indice di consistenza .....:	IC	0.08	

Classificazione Casagrande .....: CL-ML

Analisi Granulometrica

Argilla .....:	11.5	%
Limo .....:	53.7	%
Sabbia .....:	34.1	%
Ghiaia .....:	0.7	%

Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 4 Camp. ..: 1 Quota ..: 2.0-2.05 m

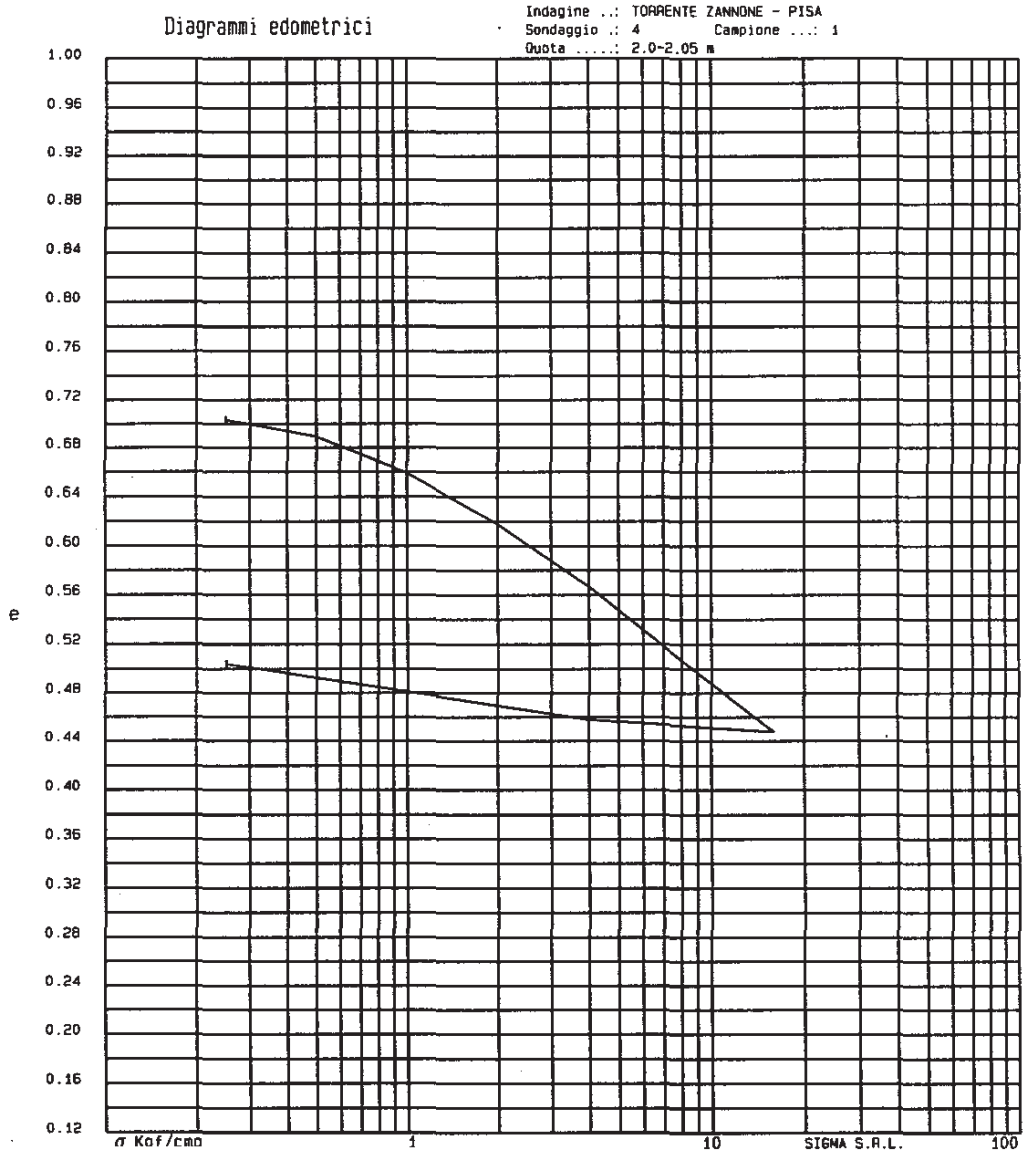
P R O V A E D O M E T R I C A

Caratteristiche iniziali del provino:

Massa volumica reale .....: G 2.70 g/cm3
Massa volumica apparente umida ..: Pv 1.97 g/cm3
Umidità naturale .....: W 25.2 %
Indice dei vuoti .....: e 0.712
Grado di saturazione .....: Sr 96 %
Dimensioni del provino: Diametro .....: 50.40 mm
Altezza .....: 20.00 mm

Pressione σv	Cedimento δv	Indice dei Vuoti e	Modulo di Compressione Edometrica E'	Coefficiente di Permeabilità Kv	Coefficiente di Consolidazione cv
Kgf/cm²	mm		Kgf/cm²	cm/sec	cm²/sec
0.25	0.100	0.704	50		
0.50	0.270	0.689	29		
1.00	0.620	0.659	29		
2.00	1.100	0.618	42		
4.00	1.700	0.567	67		
8.00	2.400	0.507	114		
16.00	3.090	0.448	232		
4.00	2.970	0.458			
1.00	2.700	0.481			
0.25	2.430	0.504			

Indice di Compressibilità.....: Cc 0.20



Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 4 Camp. ..: 1 Quota ..: 2.0-2.5 m

P R O V A D I T A G L I O D I R E T T O

Stato del campione .....: Indisturbato
Tipo della prova .....: Consolidata Drenata
Velocità di deformazione .....: v 0.0100 mm/min

Caratteristiche iniziali medie dei provini:
Massa volumica apparente umida ..: Pv 2.05 g/cm3
Umidità naturale .....: W 23.7 %

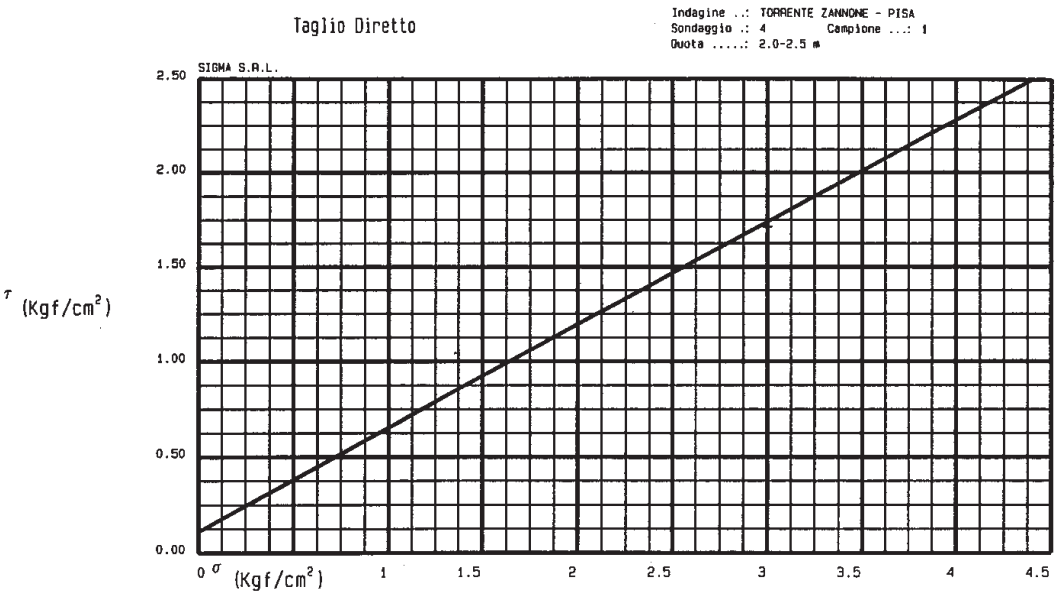
Dimensioni		Provino	1	2	3	4
Lato		mm	60.00	60.00	60.00	60.00
Altezza		mm	19.60	19.60	19.60	20.00

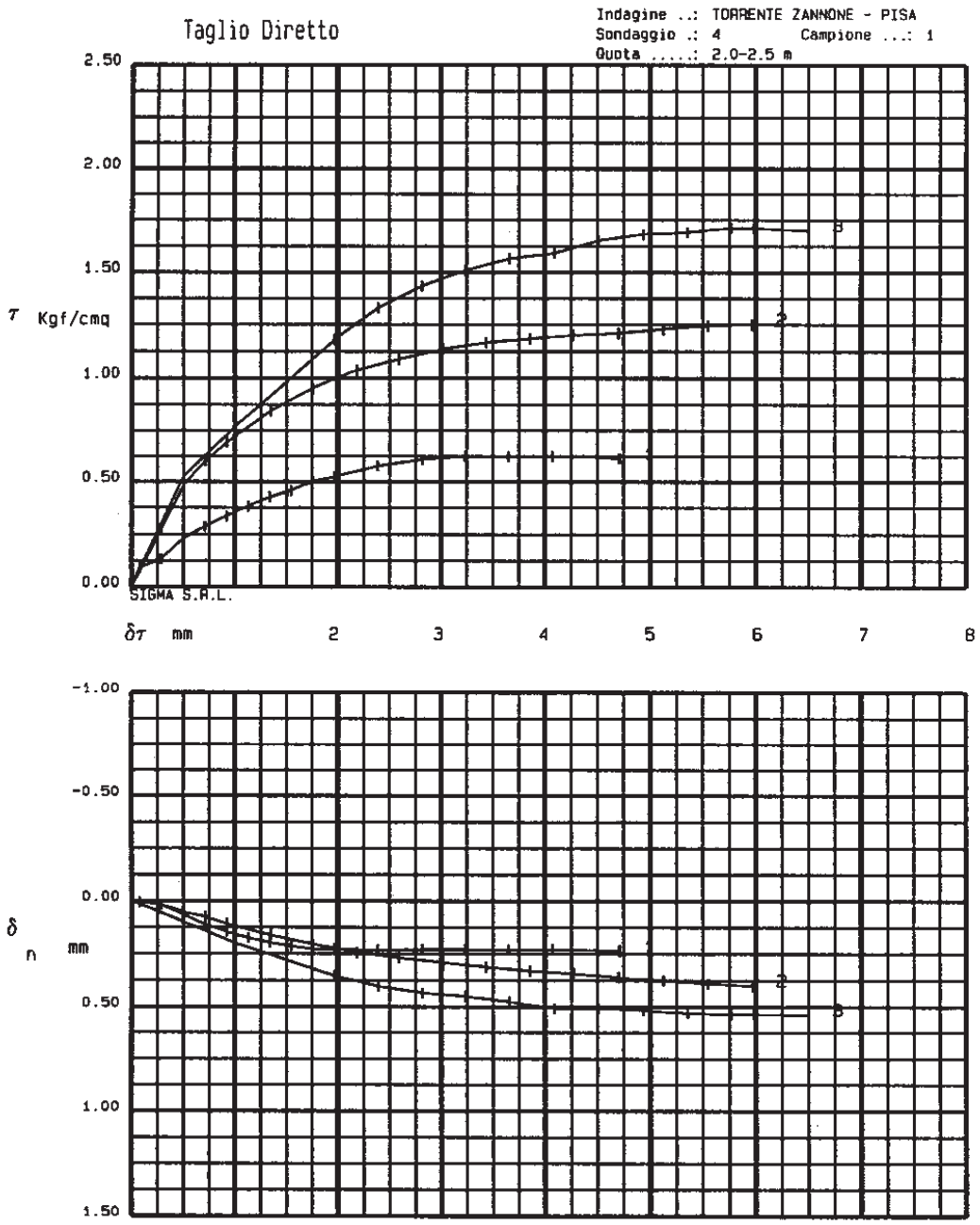
Consolidazione		Provino	1	2	3	4
Pressione verticale	σ	Kgf/cm²	1.00	2.00	3.00	
Tempo di consolidazione	t	h	24	48	72	
Cedimento finale	δf	mm	1.47	1.01	2.50	

Rottura		Provino	1	2	3	4
Sollecitazione tangenziale	τ	Kgf/cm²	0.62	1.25	1.71	
Deformazione trasversale	δt	mm	3.23	5.97	5.77	
Deformazione normale	δn	mm	0.23	0.40	0.53	
Umidità naturale finale	Wf	%	20.4	20.8	20.4	

Angolo di attrito φ' : 28.5°

Coesione c' : 0.11 Kgf/cm²





Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 4 Camp. ..: 1 Quota ..: 2.0-2.5 m

PROVA DI COMPRESSIONE AD ESPANSIONE LATERALE LIBERA

Stato del campione .....: Indisturbato
Velocità di deformazione .....: v 1.5000 mm/min

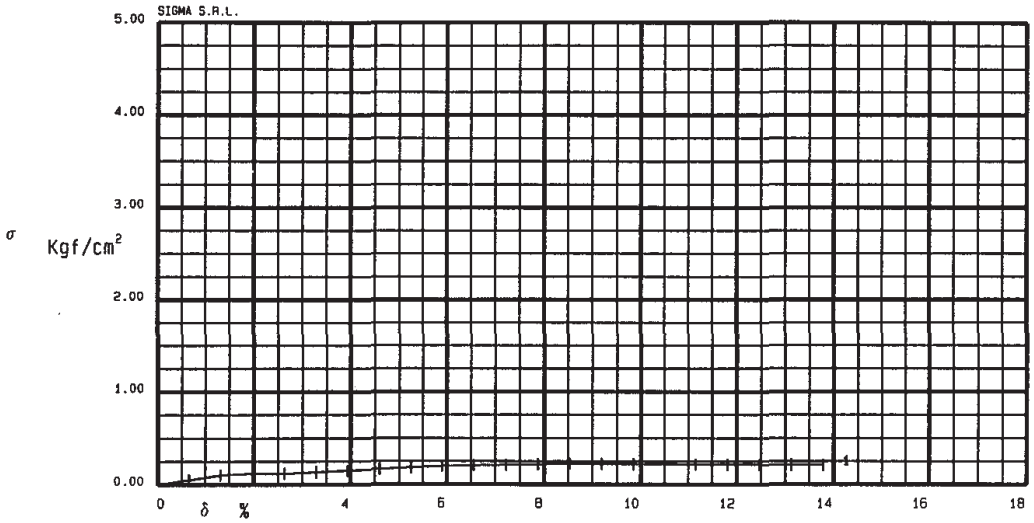
Condizioni iniziali		Provino	1	2	3	4
Altezza	H	cm	7.62			
Diametro	D	cm	3.81			
Volume	V	cm3	86.87			
Massa volumica apparente umida	Pv	g/cm3	1.87			
Umidità naturale	W	%	25.70			

Rottura		Provino	1	2	3	4
Pressione di cella	σ3	Kgf/cm²	0.00			
Deform. vert. a rottura	δh	%	8.53			
Pressione finale a rottura	σ1-σ3	Kgf/cm²	0.22			

Coesione	Cu = (σ1-σ3)/2 :	0.11	Kgf/cm²

Compressione ELL

Indagine ..: TORRENTE ZANNONE - PISA
Sondaggio .: 4 Campione ...: 1
Quota .....: 2.0-2.5 m

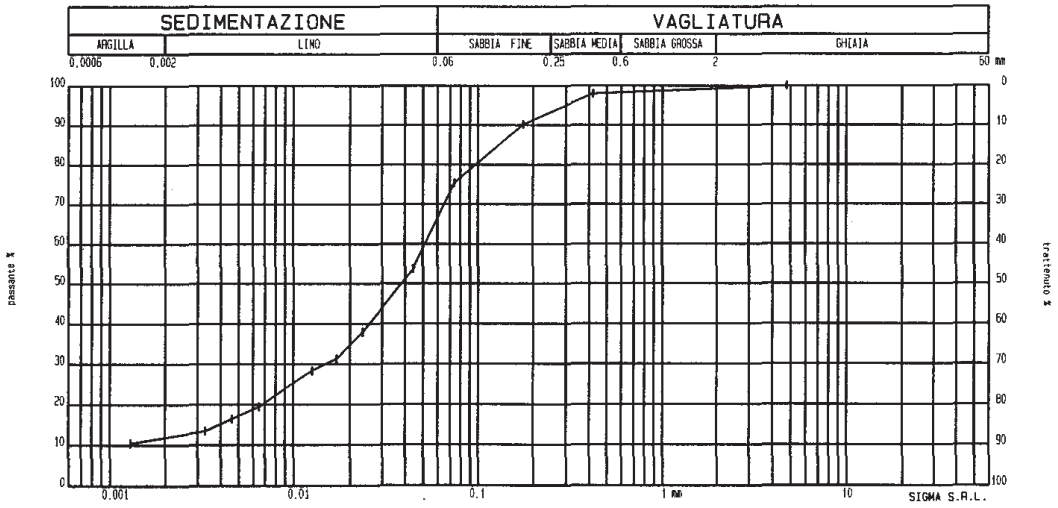


ANALISI GRANULOMETRICA

Indagine ..: TORRENTE ZANNONE - PISA
Sondaggio .: 4 Campione ...: 1
Quota .....: 2.0-2.5 m
Committente: SOIL TEST SRL

Certificato : 2786
Data .....: 9/4/98
Riferimento : 777

ARGILLA.....: 11.5 %
LIMO.....: 53.7 %
SABBIA.....: 34.1 %
GHIAIA.....: 0.7 %



Denominazione AGI ....: Limo con Sabbia debolmente Argilloso

MICROFALT

RF. INT.: 1998000057	DATA ELABORAZIONE: 31/03/1998	DATA INIZIO PERFORAZIONE: 11/03/1998	DATA FINE PERFORAZIONE: 12/03/1998
COMMITTENTE: Provincia di Pisa		CANTIERE: Torrente Zannone - Lari (PI)	
PERFORAZIONE: S5	QUOTA BOCCAFORO (m s.l.m.):	LUNGHEZZA (m): 10.00	INCLINAZIONE (gradi):	SCALA GRAFICA: 1:120
MACCHINA PERFORATRICE: Puntel tipo PX1200			
PERFORATORE RESPONSABILE: Sig. F.Piga		TECNICO RESPONSABILE: Geol. D.Senesi	

NOTE: Inserito piezometro in pvc, fenestrato secondo lo schema sottostante.
SPT=Standard Penetration Test. PT=Penetrometro Tascabile. VT=Vane Test. ST=Scissometro Tascabile.
Da metri 1.50 a metri 10.00 piezometro a tubo sfenestrato.

Profondità dal p.c. (m)	Potenza (m)	Simbolo grafico	Descrizione litologica
1.60	1.60		Sabbia medio-fine con limo e limosa, marrone e nocciola.
4.30	2.70		Limo sabbioso argilloso passante con sabbia debolm. argilloso, a tratti debolm. ghiaioso, nocciola, con striat. grigie dopo 3.0 m, da poco a mediamente compatto, clasti molto alterati, Dmax 2 cm (clasti 0-10%).
5.00	0.70		Limo con argilla, sabbioso dopo 4.6m, nocciola con striat. grigie e nerastre, molto compatto.
5.30	0.30		Limo sabbioso debolm. argilloso, nocciola e grigio, compatto.
6.60	1.30		Sabbia medio-fine con limo e limosa, nocciola con striat. grigie.
7.50	0.90		Limo argilloso, debolm. sabbioso e sabbioso, nocciola con striat. grigie, da compatto a molto compatto.
8.50	1.00		Limo sabbioso e con sabbia, argilloso, nocciola con striat. grigie, compatto. Presente alla base passaggio centim. di sabbia con limo.
9.00	0.50		Limo con argilla, debolm. sabbioso e sabbioso, nocciola con striat. grigie, molto compatto.
9.30	0.30		
9.60	0.30		Limo sabbioso argilloso, nocciola con striat. grigie, compatto.
10.00	0.40		Sabbia medio-fine con limo, nocciola.
			Limo argilloso debolm. sabbioso, avana.

CAMPIONI: Profondità di prelievo (m)	Campionatore	Tipo di prelievo	PERCENTUALE DI CAROTAGGIO 50 %	SPT (m) N colpi	PT (m) Kg/cmq	VT	ST	Kg/cmq	DIAMETRO DEL FORO (mm)	METODO DI PERFORAZIONE	METODO DI STABILIZZAZIONE	PIEZOMETRO
2.00	Pareti sottili	Pressione			1.70		1.70					
2.50				2.50	0.70		0.24					
				2- 3- 4								
					3.80		3.80					
					1.00		0.40					
					4.50		4.50					
					4.50		2.20					
					5.20		5.20					
					1.80		0.92					
					7.00		7.00					
					3.10		1.56					
					7.90		7.90					
					2.80		1.44					
					8.60		8.60					
					4.00		2.00					
					9.20		9.20					
					2.30		1.06					
					9.80		9.70					
					3.60		1.80		101	Rotazione con carotiere semplice a secco	Tubi di rivestimento	

Software by GHEOS

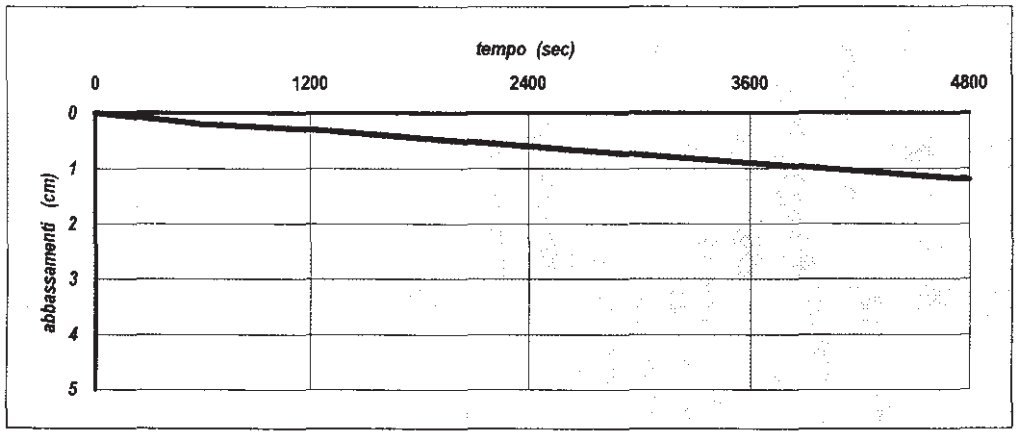
Tempo (sec)	Abbassamenti (cm)
0	0
300	0.1
600	0.2
1200	0.3
4800	1.2

Prova di permeabilità Lefranc a carico variabile

Sondaggio 5

	(cm)
Quota superiore filtro dal p.c.	160
Quota inferiore filtro dal p.c.	450
Lunghezza tratto di prova	290
Quota falda dal p.c.	100
Diametro foro	10.1
Quota boccaforo sul p.c.	5
Area (cmq)	80
Fattore di forma (-)	613

K (coeff. di permeabilità) = 3.13E-07 cm/sec



Le misure riportate in tabella si riferiscono alla quota del boccaforo

Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 5 Camp. ..: 1 Quota ..: 2.0-2.5 m

Descrizione del campione

CAMPIONE COSTITUITO DA LIMO CON SABBIA ARGILLOSO DI COLORE AVANA CHIARO.

Stato del campione .....: Indisturbato

Caratteristiche generali del campione

Massa volumica reale .....:	G	2.70	g/cm3
Massa volumica apparente umida ..:	Pv	1.99	g/cm3
Umidità naturale .....:	W	21.8	%
Massa volumica apparente secca ..:	Ps	1.63	g/cm3
Indice dei vuoti .....:	e	0.656	
Porosità .....:	n	39.6	%
Grado di saturazione .....:	Sr	90	%

Limiti di consistenza o di Atterberg

Limite liquido .....:	WL	ND	%
Limite plastico .....:	WP	19.0	%
Limite di ritiro .....:	WR	--	%
Indice di plasticità .....:	IP	--	%
Indice di consistenza .....:	IC	--	

Classificazione Casagrande .....: ML

Analisi Granulometrica

Argilla .....:	22.9	%
Limo .....:	39.2	%
Sabbia .....:	36.9	%
Ghiaia .....:	1.1	%

Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 5 Camp. ..: 1 Quota ..: 2.0-2.5 m

P R O V A E D O M E T R I C A

Caratteristiche iniziali del provino:

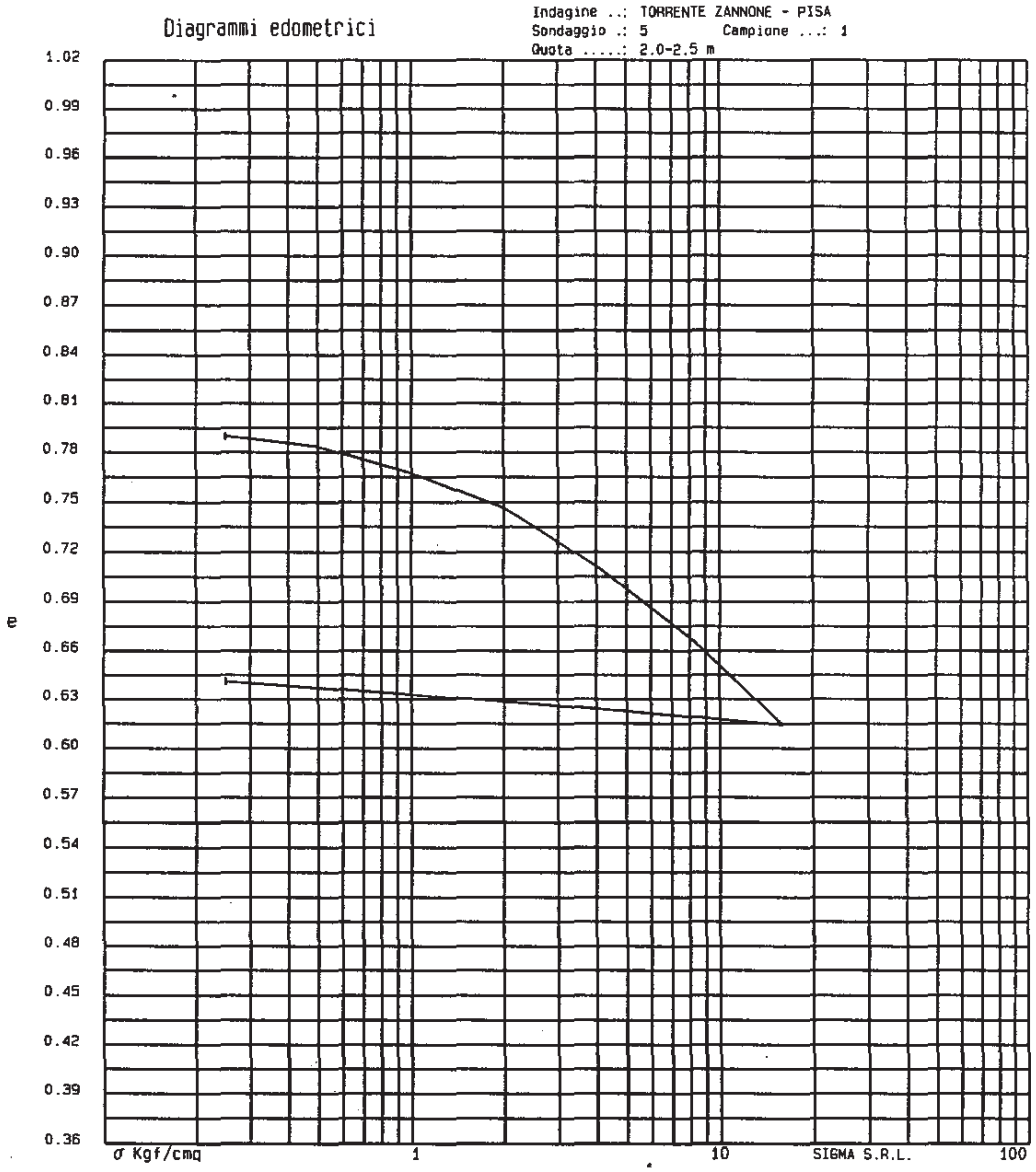
Massa volumica reale .....: G 2.70 g/cm3
Massa volumica apparente umida ..: Pv 1.88 g/cm3
Umidità naturale .....: W 25.0 %
Indice dei vuoti .....: e 0.794
Grado di saturazione .....: Sr 85 %
Dimensioni del provino: Diametro .....: 50.40 mm
Altezza .....: 20.00 mm

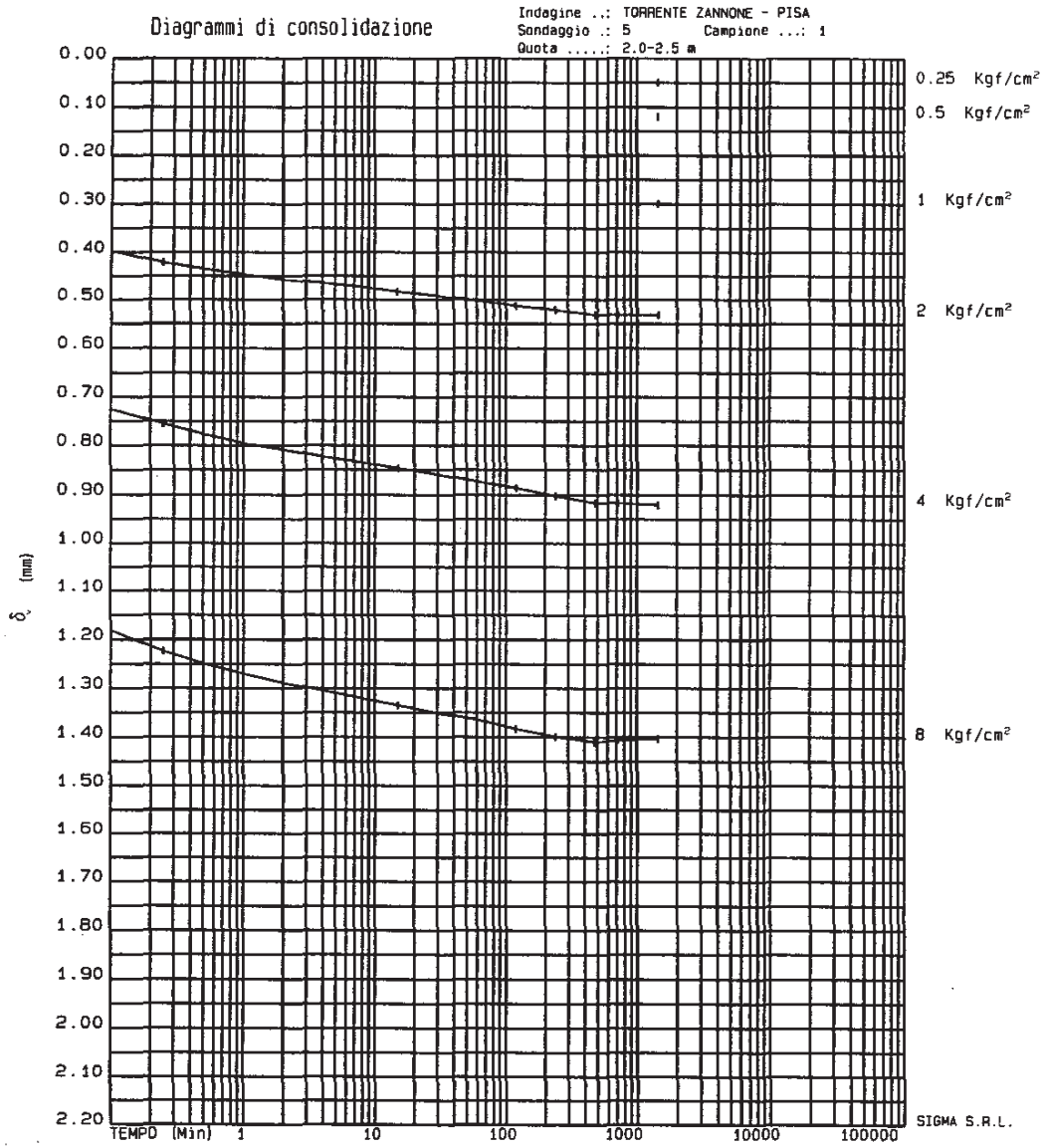
Pressione σv	Cedimento δv	Indice dei Vuoti e	Modulo di Compressione Edometrica E'	Coefficiente di Permeabilità Kv	Coefficiente di Consolidazione cv
Kgf/cm²	mm		Kgf/cm²	cm/sec	cm²/sec
0.25	0.050	0.790	100		
0.50	0.120	0.784	71		
1.00	0.300	0.767	56		
2.00	0.532	0.747	86	3.9E-08	3.4E-03
4.00	0.921	0.712	103	2.4E-08	2.5E-03
8.00	1.404	0.668	166	2.2E-08	3.7E-03
16.00	2.010	0.614	264		
4.00	1.900	0.624			
1.00	1.800	0.633			
0.25	1.710	0.641			

Indice di Compressibilità.....: Cc 0.18

Note

TERRENI COME QUELLI IN QUESTIONE MAL SI PRESTANO ALLA DETERMINAZIONE DI CV E KV PER CUI I RISULTATI SONO DA RITENERSI POCO ATTENDIBILI.





Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 5 Camp. ..: 1 Quota ..: 2.0-2.5 m

P R O V A D I T A G L I O D I R E T T O

Stato del campione .....: Indisturbato
Tipo della prova .....: Consolidata Drenata
Velocità di deformazione .....: v 0.0200 mm/min

Caratteristiche iniziali medie dei provini:
Massa volumica apparente umida ..: Pv 2.05 g/cm3
Umidità naturale .....: W 20.8 %

Dimensioni		Provino	1	2	3	4
Lato		mm	60.00	60.00	60.00	
Altezza		mm	19.60	19.60	19.60	

Consolidazione		Provino	1	2	3	4
Pressione verticale	σ	Kgf/cm²	1.00	2.00	3.00	
Tempo di consolidazione	t	h	24	48	72	
Cedimento finale	δf	mm	0.84	1.24	1.41	

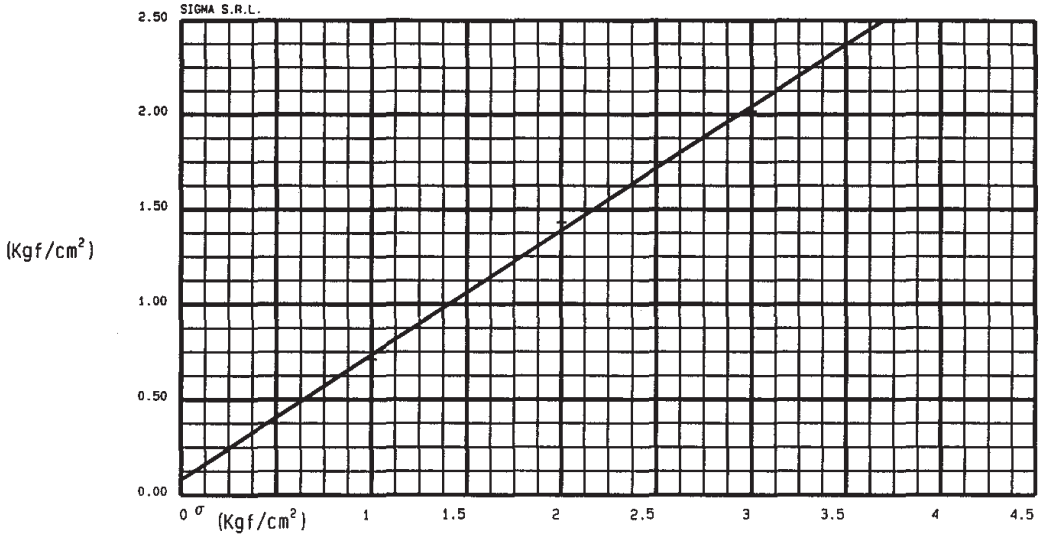
Rottura		Provino	1	2	3	4
Sollecitazione tangenziale	τ	Kgf/cm²	0.71	1.43	2.02	
Deformazione trasversale	δt	mm	5.41	4.10	5.60	
Deformazione normale	δn	mm	0.35	0.19	0.31	
Umidità naturale finale	Wf	%	19.9	18.8	17.7	

Angolo di attrito φ' : 33.2°	Coesione c' : 0.08 Kgf/cm²

Taglio Diretto

Indagine ..: TORRENTE ZANNONE - PISA
Sondaggio .: 5 Campione ...: 1
Quota .....: 2.0-2.5 m

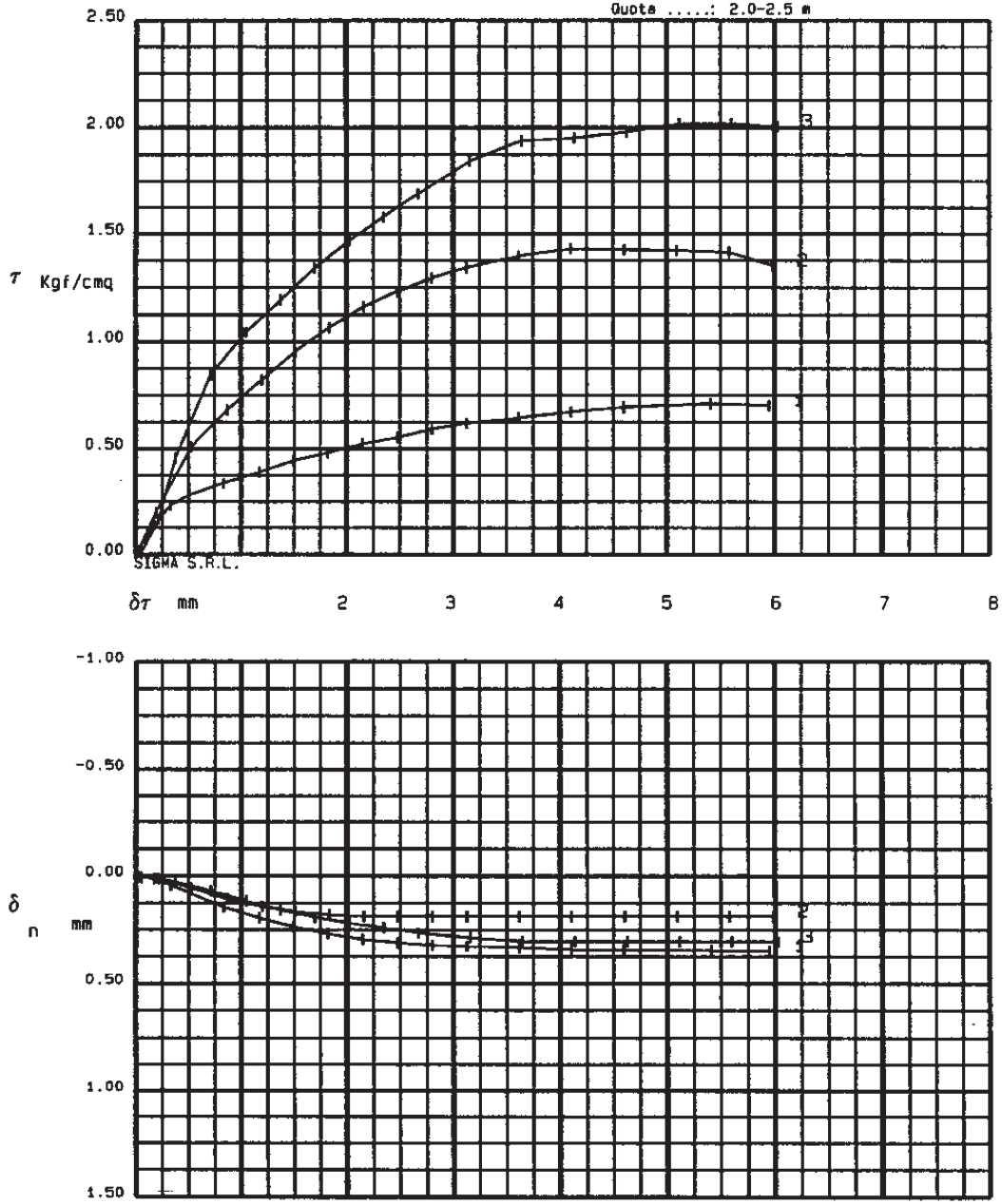
SIGMA S.R.L.



Taglio Diretto

Indagine ..: TORRENTE ZANNONE - PISA
Sondaggio .: 5 Campione ...: 1
Quota .....: 2.0-2.5 m

SIGMA S.R.L.



Indagine ..: TORRENTE ZANNONE - PISA

Sond. ..: 5 Camp. ..: 1 Quota ..: 2.0-2.5 m

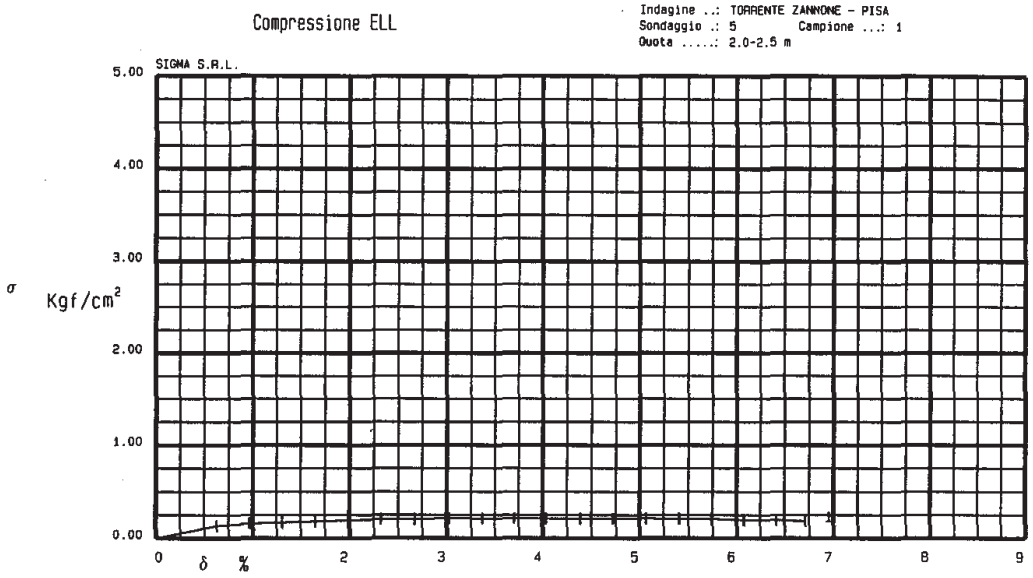
PROVA DI COMPRESSIONE AD ESPANSIONE LATERALE LIBERA

Stato del campione .....: Indisturbato
Velocità di deformazione .....: v 1.5000 mm/min

Condizioni iniziali		Provino	1	2	3	4
Altezza	H	cm	7.62			
Diametro	D	cm	3.81			
Volume	V	cm3	86.87			
Massa volumica apparente umida	Pv	g/cm3	1.93			
Umidità naturale	W	%	23.90			

Rottura		Provino	1	2	3	4
Pressione di cella	σ3	Kgf/cm²	0.00			
Deform. vert. a rottura	δh	%	3.03			
Pressione finale a rottura	σ1-σ3	Kgf/cm²	0.22			

Coesione	Cu = (σ1-σ3)/2 :	0.11	Kgf/cm²

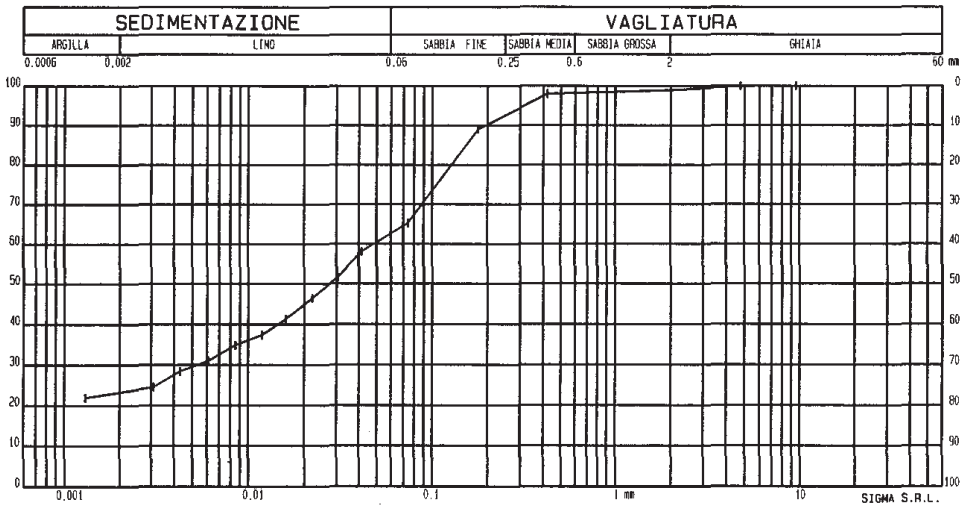


ANALISI GRANULOMETRICA

Indagine ..: TORRENTE ZANNONE - PISA
Sondaggio .: 5 Campione ...: 1
Quota .....: 2.0-2.5 m
Committente: SOIL TEST SRL

Certificato : 2786
Data .....: 9/4/98
Riferimento : 777

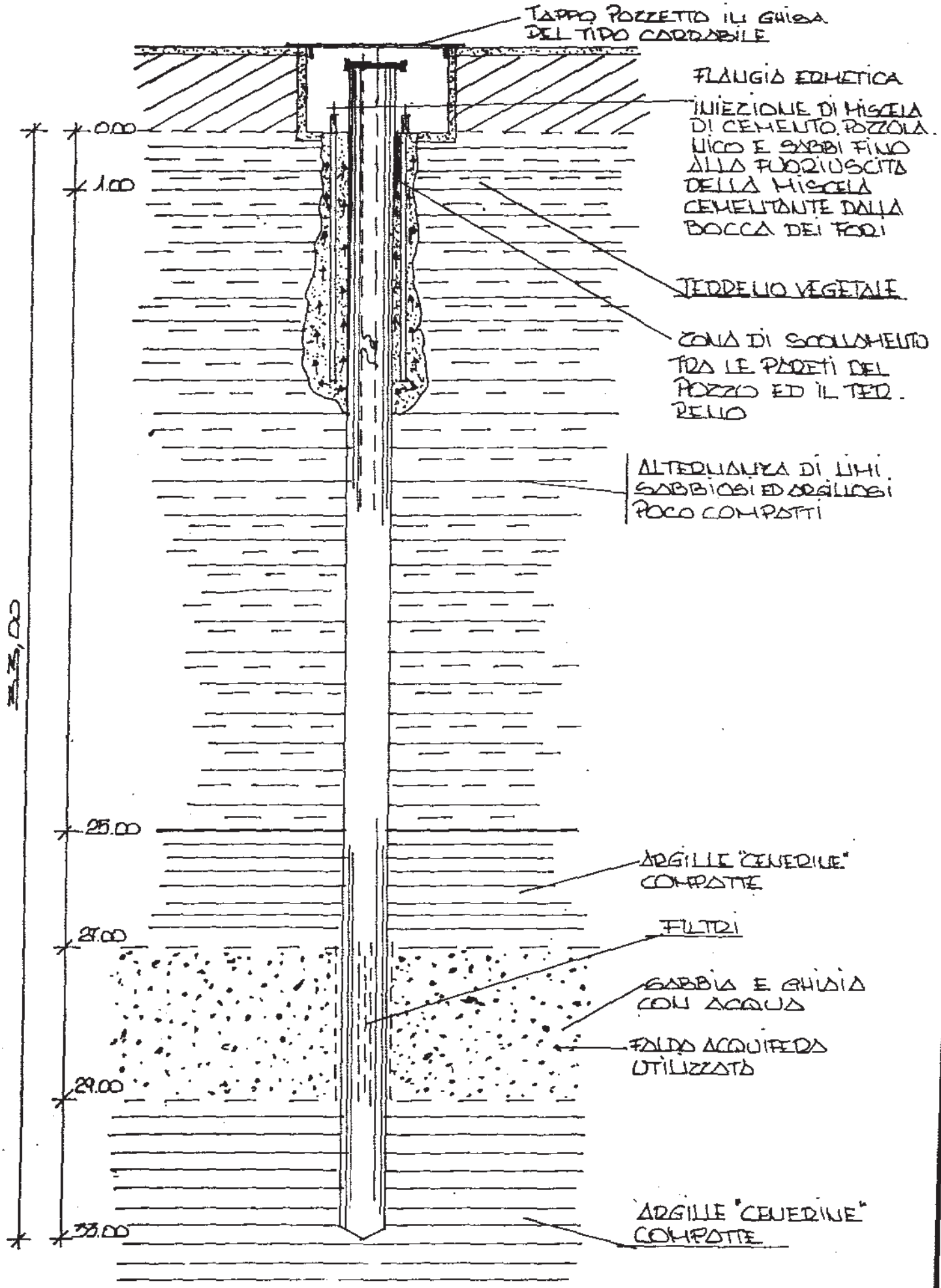
ARGILLA.....: 22.9 %
LIMO.....: 39.2 %
SABBIA.....: 36.9 %
GHIAIA.....: 1.1 %



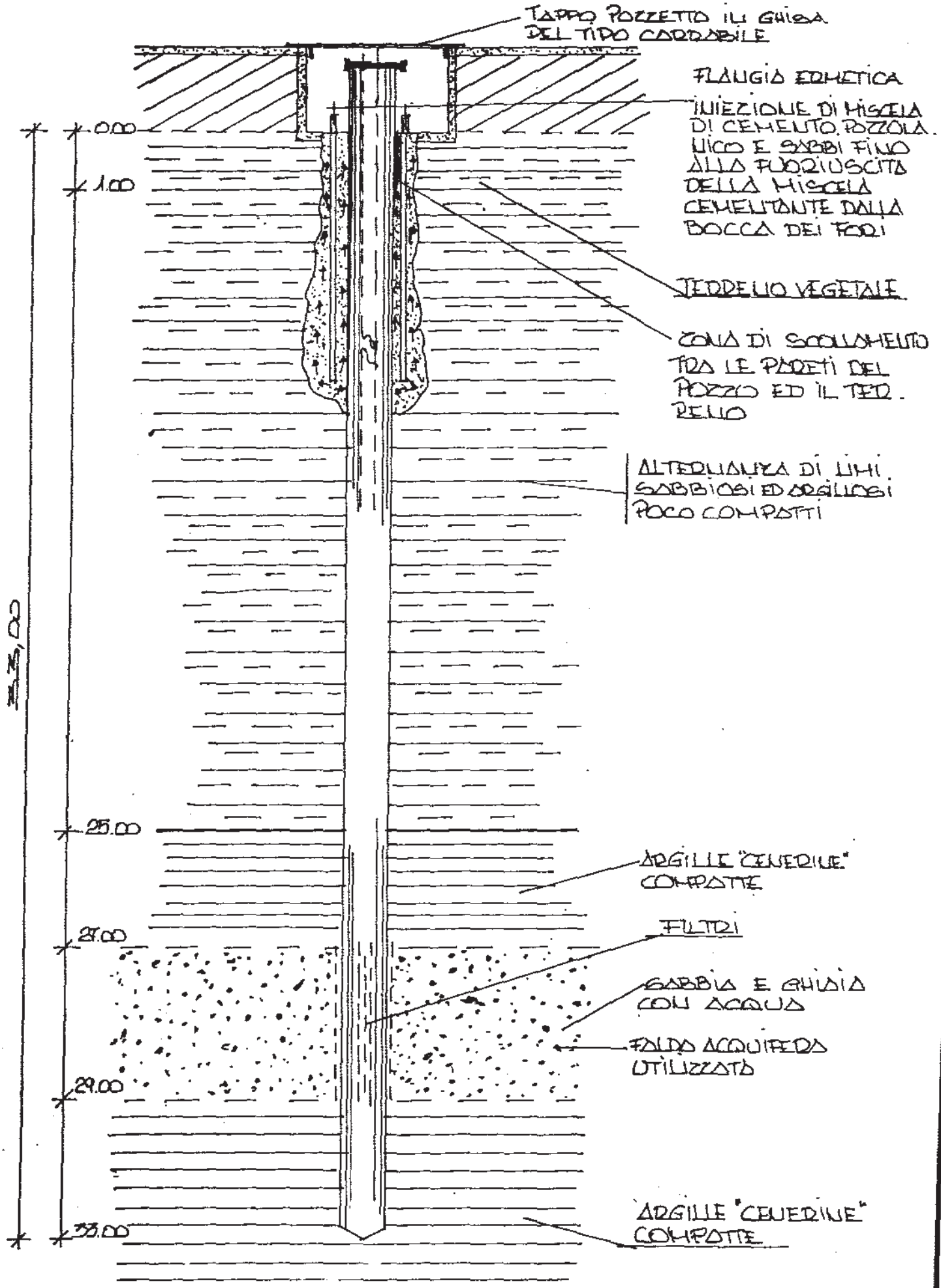
Denominazione AGI ....: Limo con Sabbia Argilloso

A.1

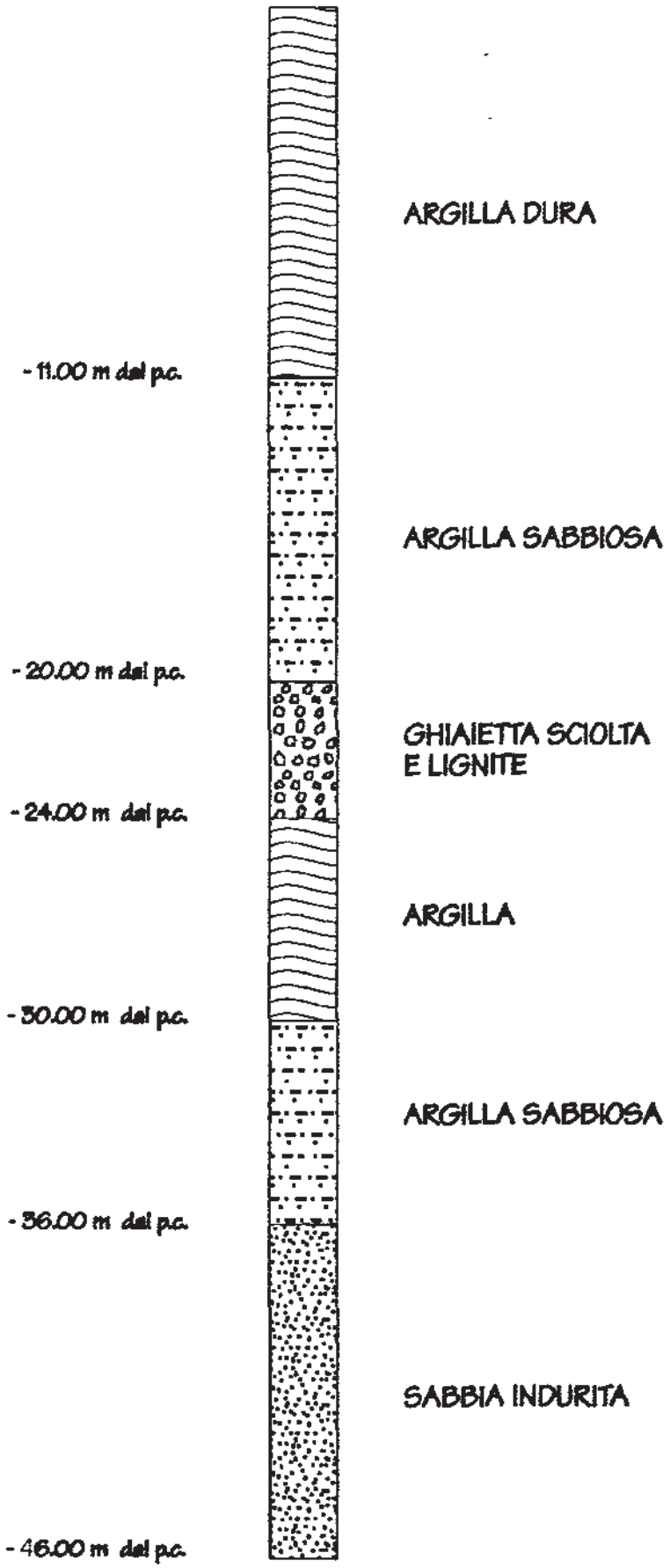
SCHEMA COSTRUZIONE POZZO



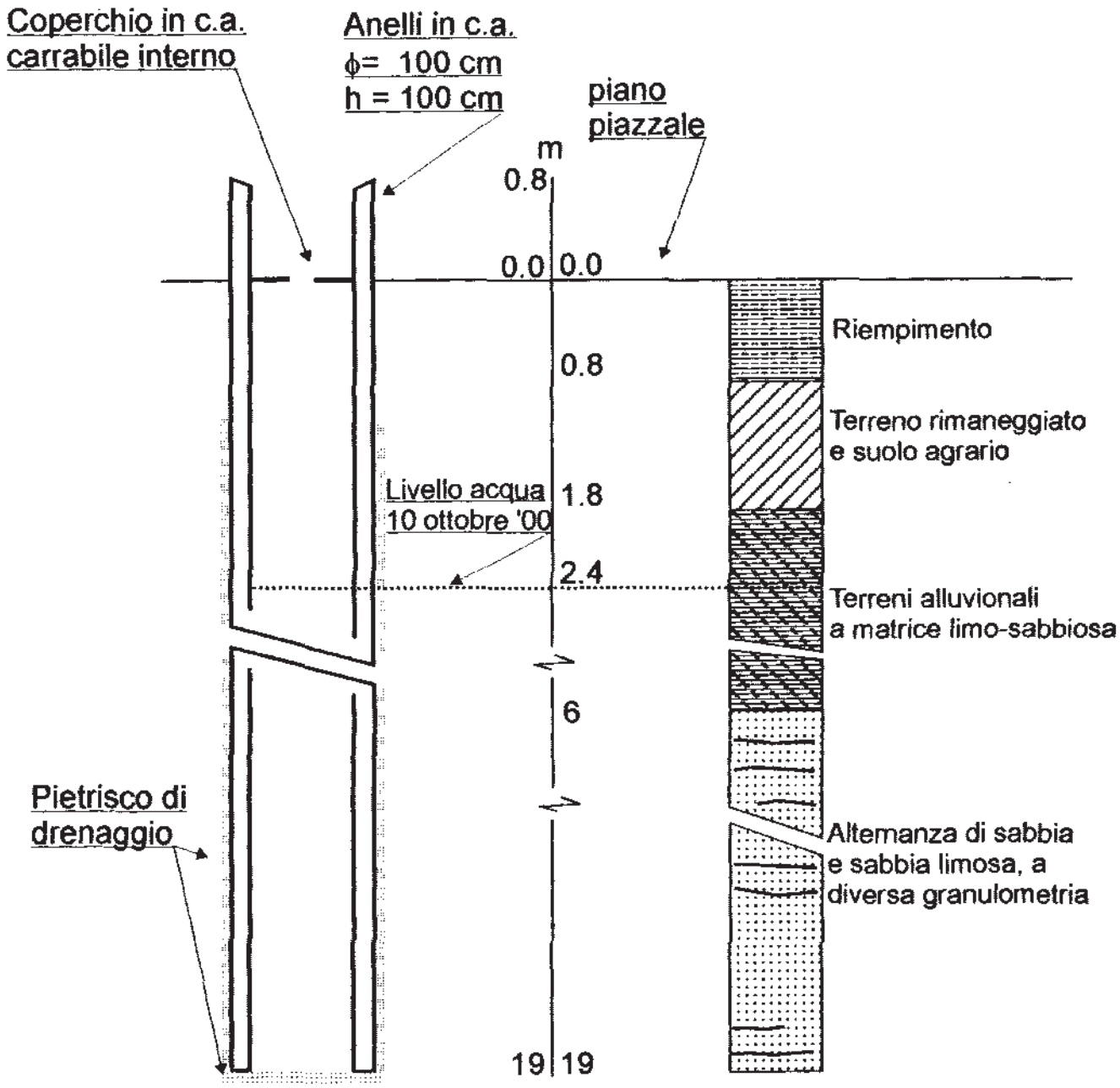
SCHEMA COSTRUZIONE POZZO



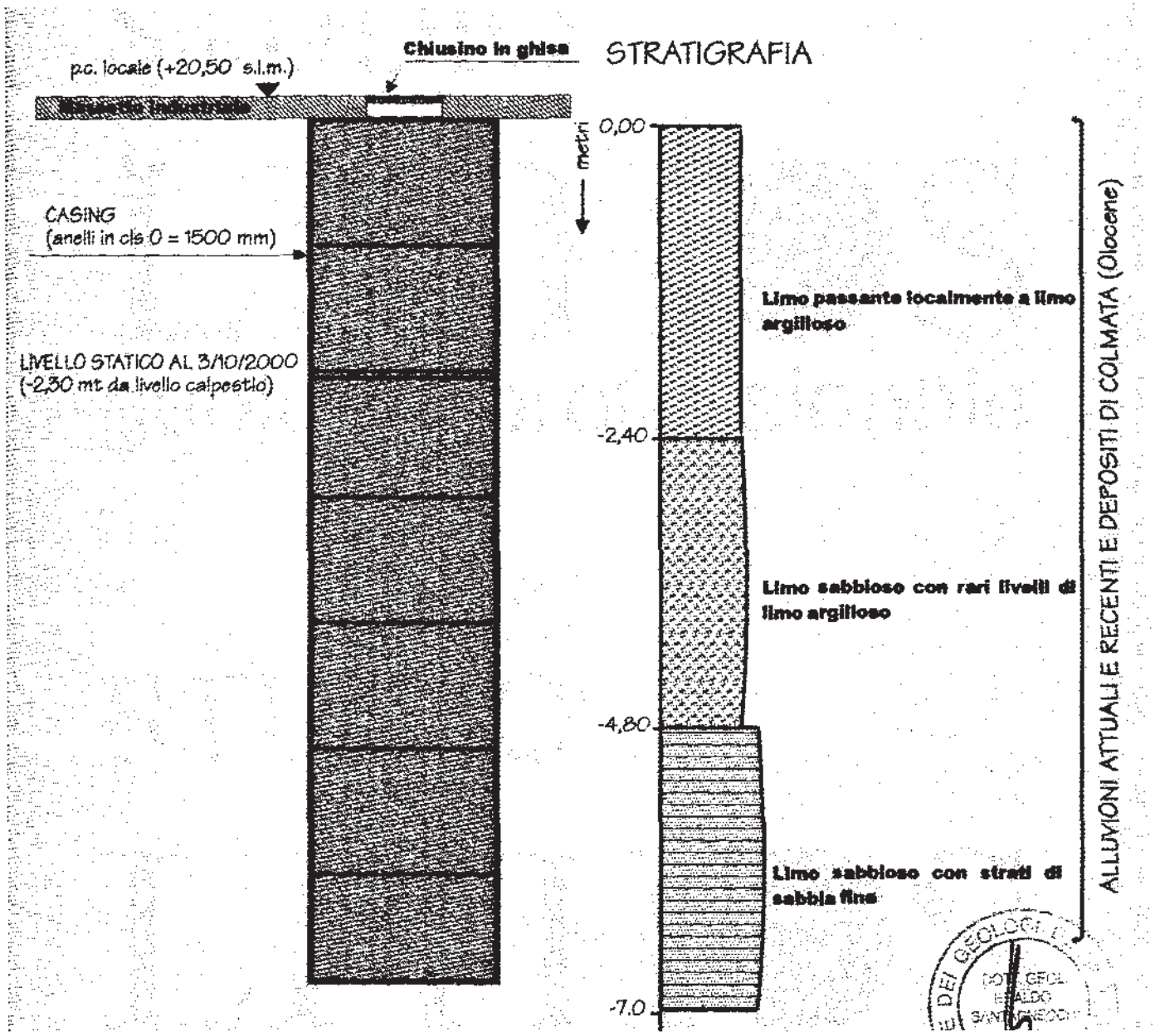
STRATIGRAFIA SCHEMATICA

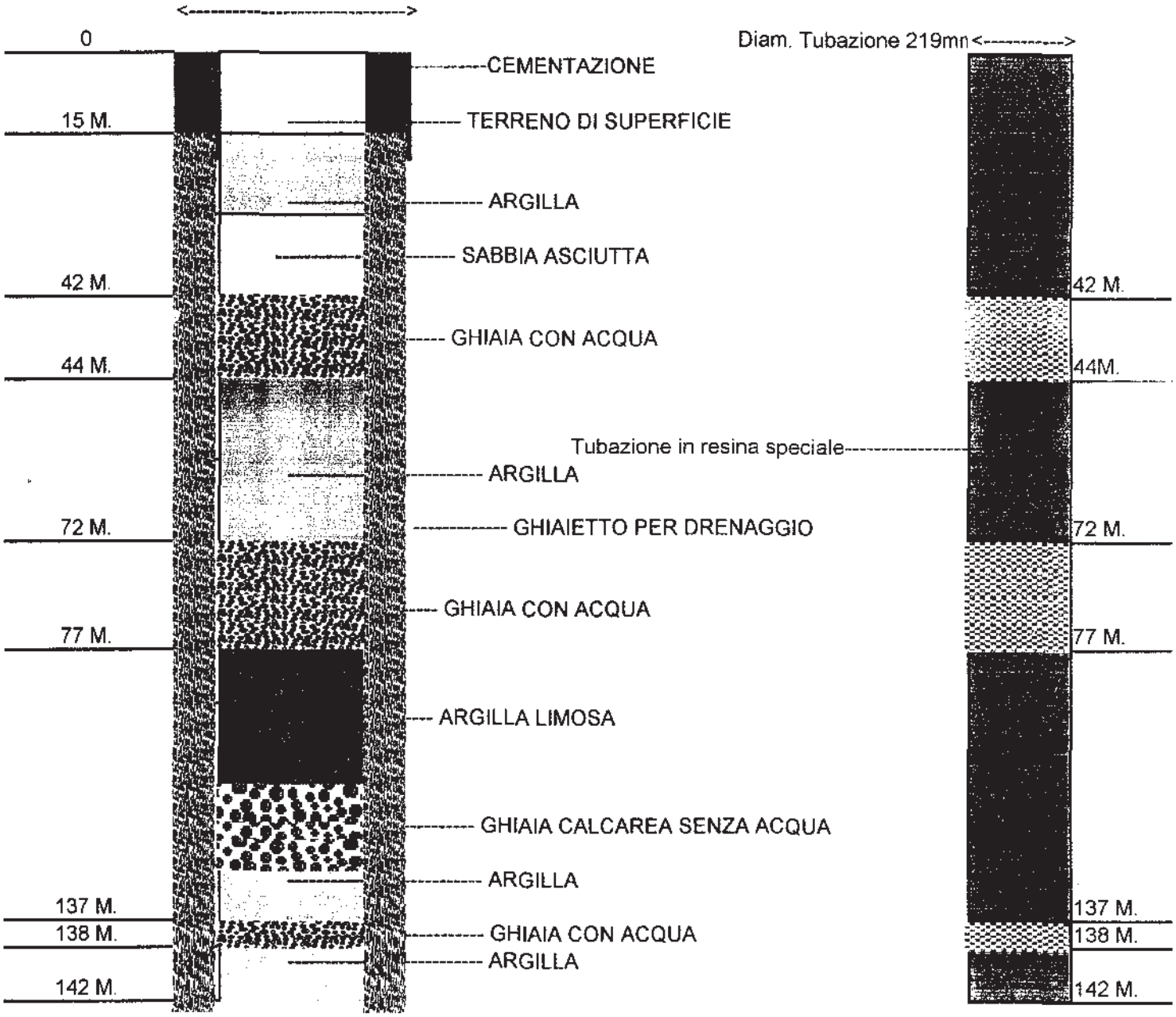


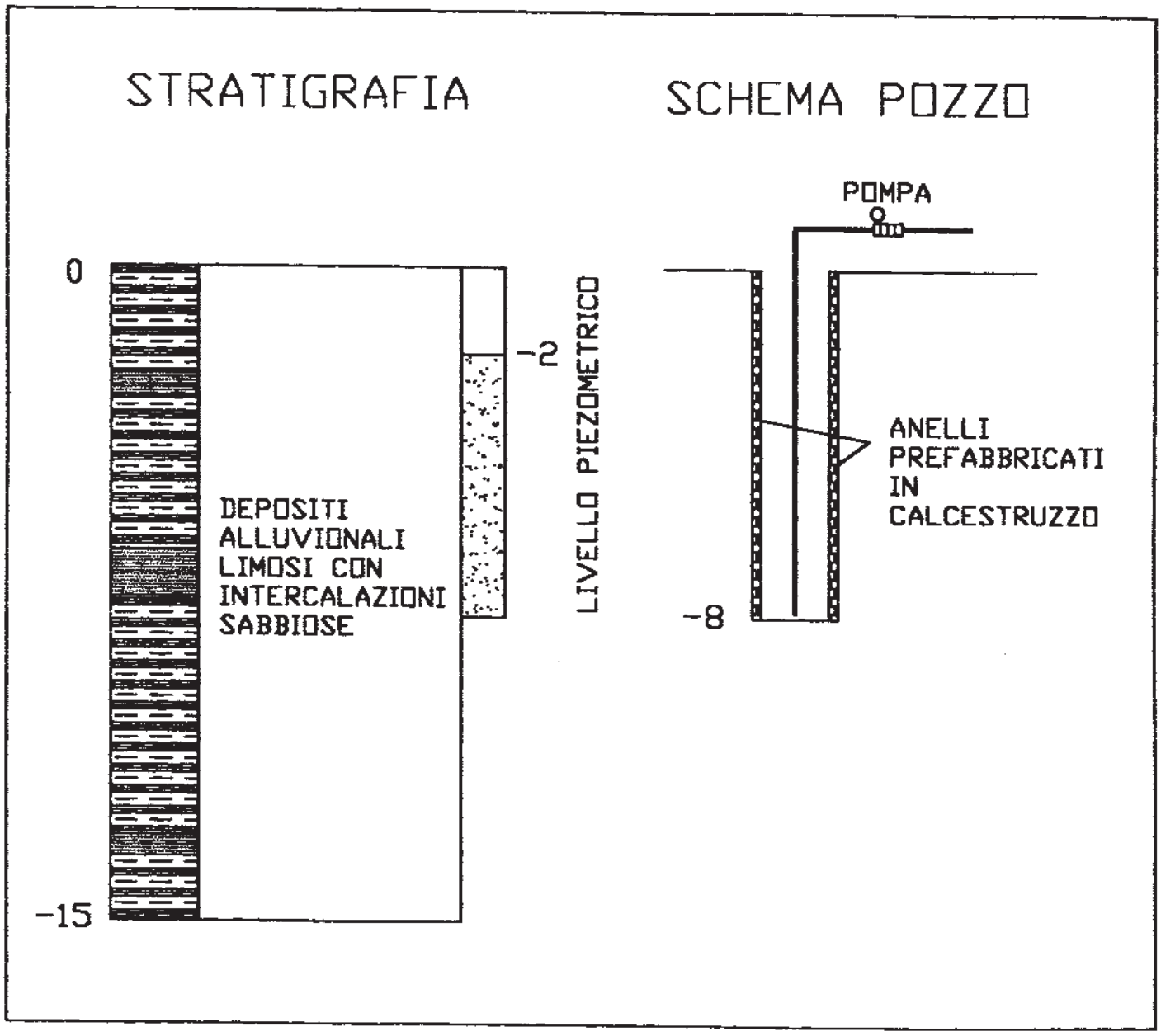
POZZO AD ANELLI STRATIGRAFIA

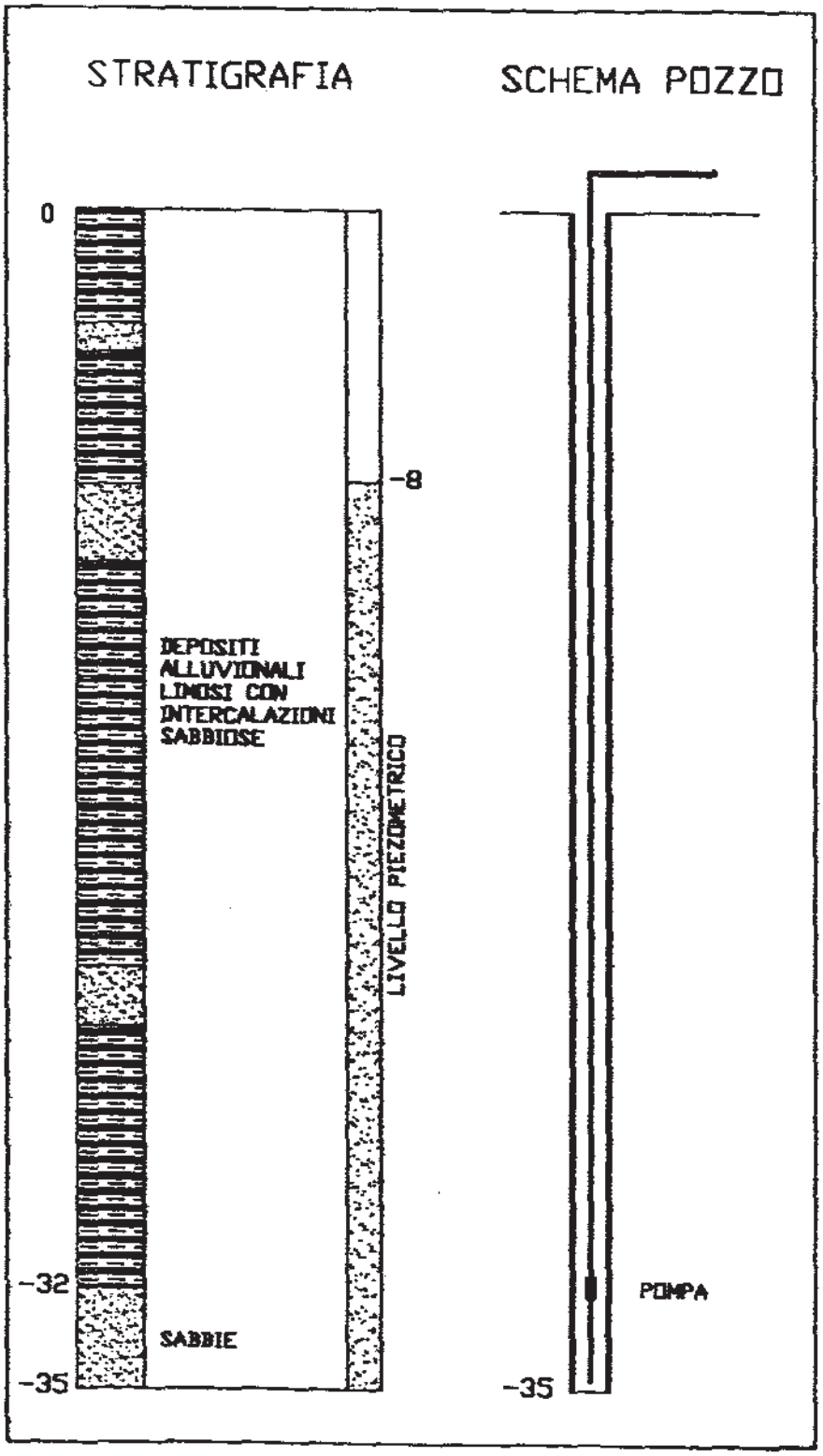


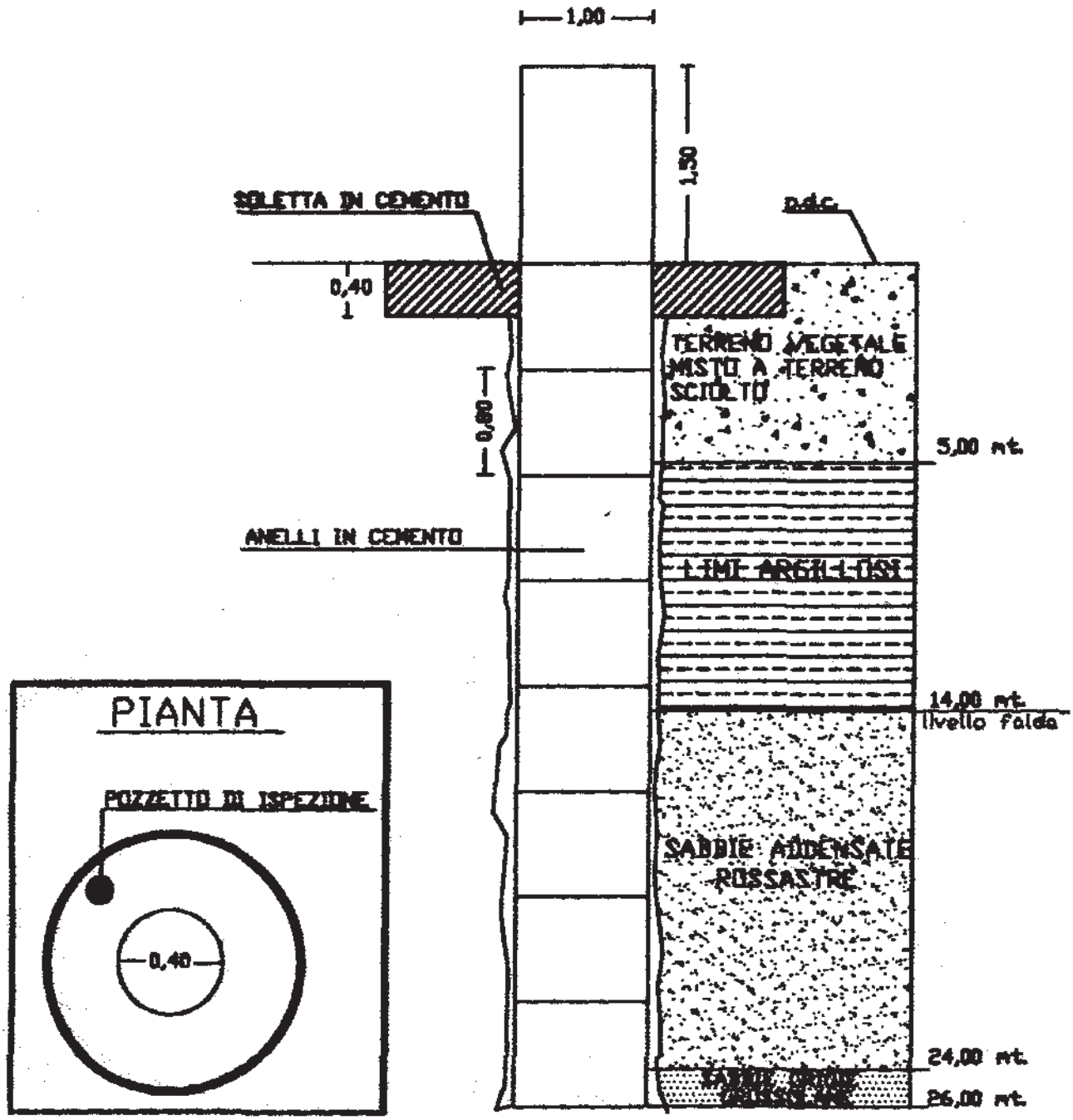
Schema pozzo ad anelli
e Stratigrafia
Scala 1:50

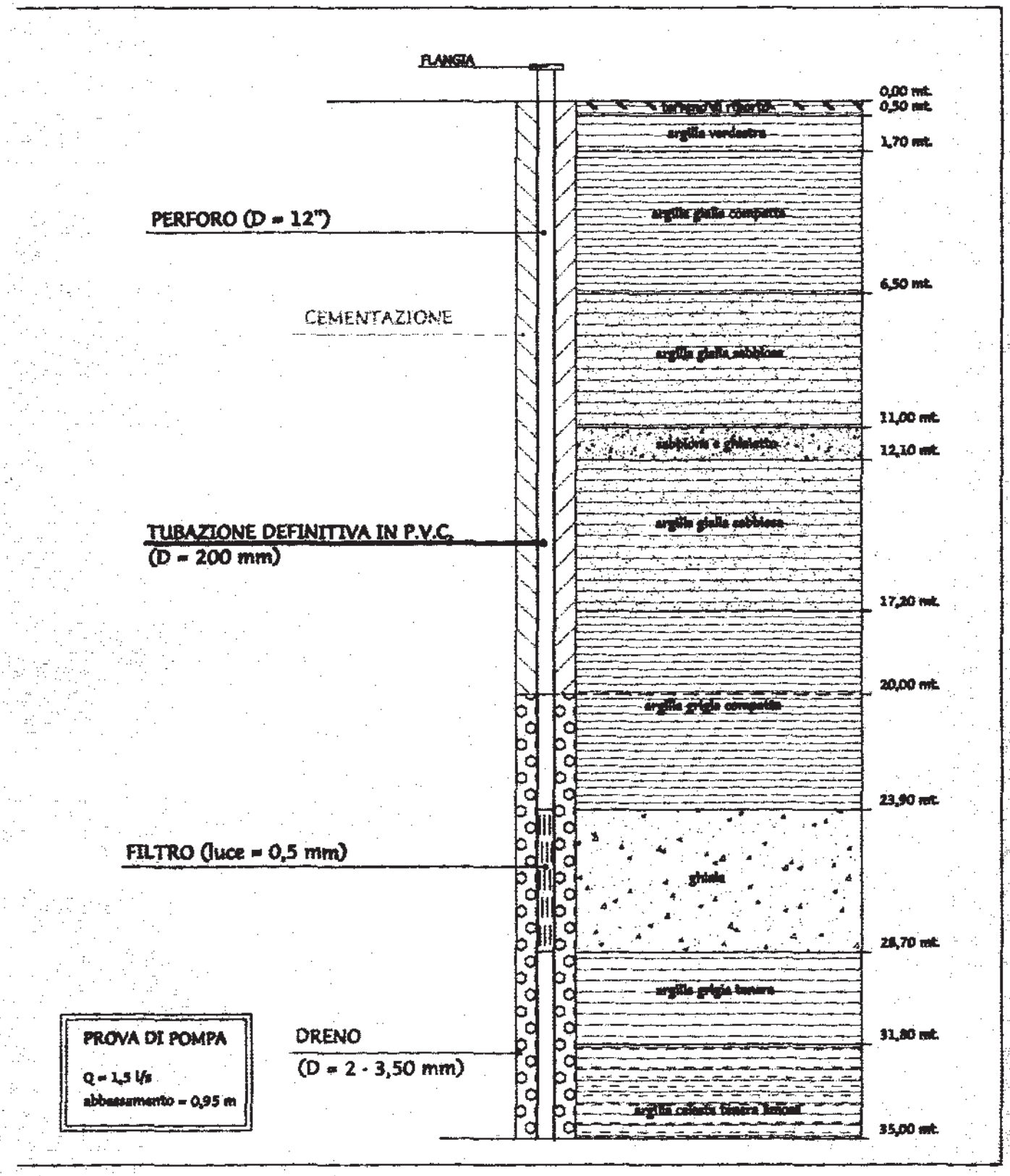

p.c. locale (+20,50 s.l.m.)
Chiusino in ghisa
STRATIGRAFIA
CASING
(anelli in cls Ø = 1500 mm)
LIVELLO STATICO AL 3/10/2000
(-2,30 mt da livello calpestio)
metri
0,00
-2,40
-4,80
-7,0
Limo passante localmente a limo argilloso
Limo sabbioso con rari livelli di limo argilloso
Limo sabbioso con strati di sabbia fine
ALLUVIONI ATTUALI E RECENTI E DEPOSITI DI COLMATA (Olocene)


0
15 M.
42 M.
44 M.
72 M.
77 M.
137 M.
138 M.
142 M.
CEMENTAZIONE
TERRENO DI SUPERFICIE
ARGILLA
SABBIA ASCIUTTA
GHIAIA CON ACQUA
ARGILLA
GHIAIETTO PER DRENAGGIO
GHIAIA CON ACQUA
ARGILLA LIMOSA
GHIAIA CALCAREA SENZA ACQUA
ARGILLA
GHIAIA CON ACQUA
ARGILLA
Diam. Tubazione 219mm
Tubazione in resina speciale
42 M.
44M.
72 M.
77 M.
137 M.
138 M.
142 M.

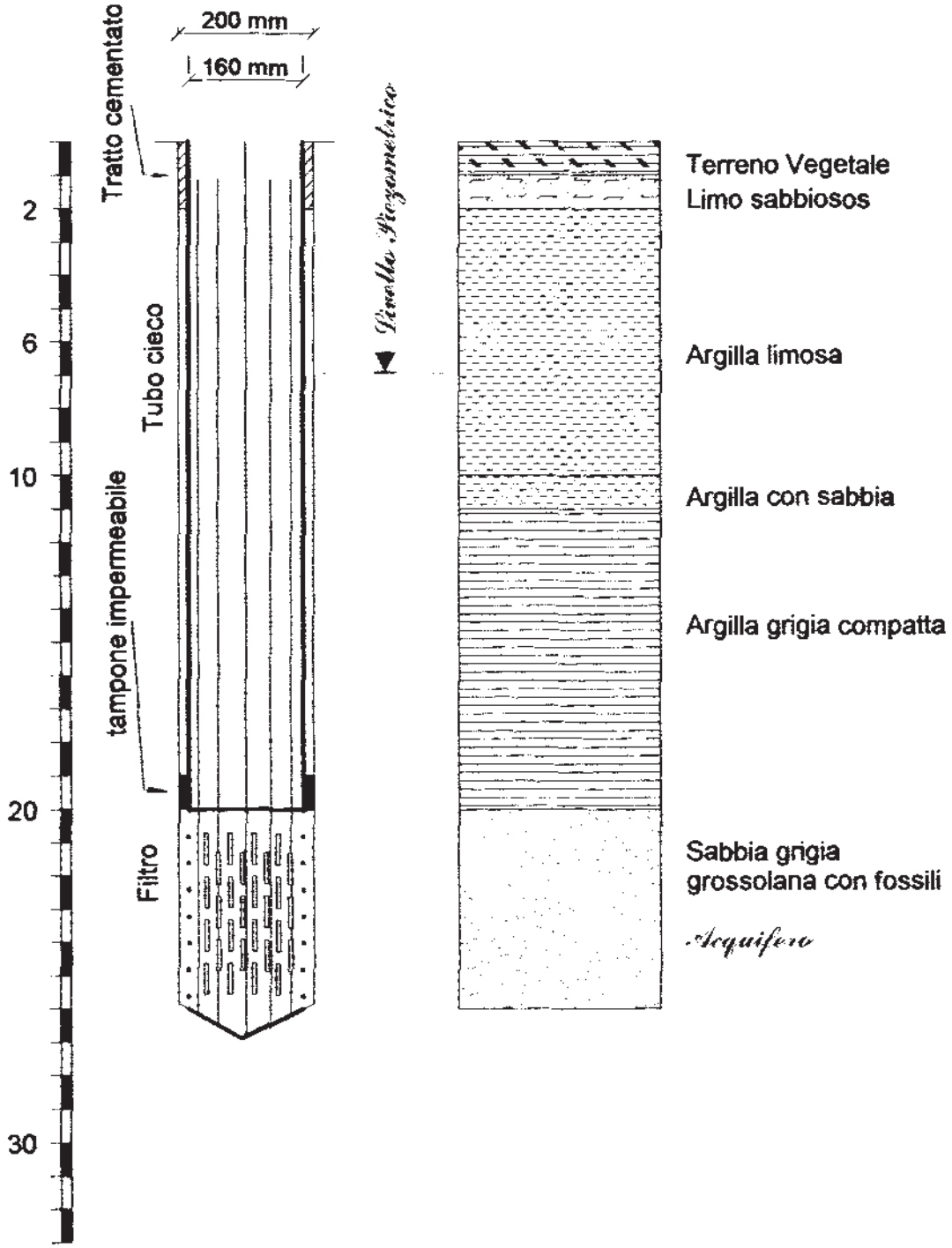

STRATIGRAFIA
SCHEMA POZZO
POMPA
0
-2
LIVELLO PIEZOMETRICO
DEPOSITI
ALLUVIONALI
LIMOSI CON
INTERCALAZIONI
SABBIOSE
ANELLI
PREFABBRICATI
IN
CALCESTRUZZO
-8
-15

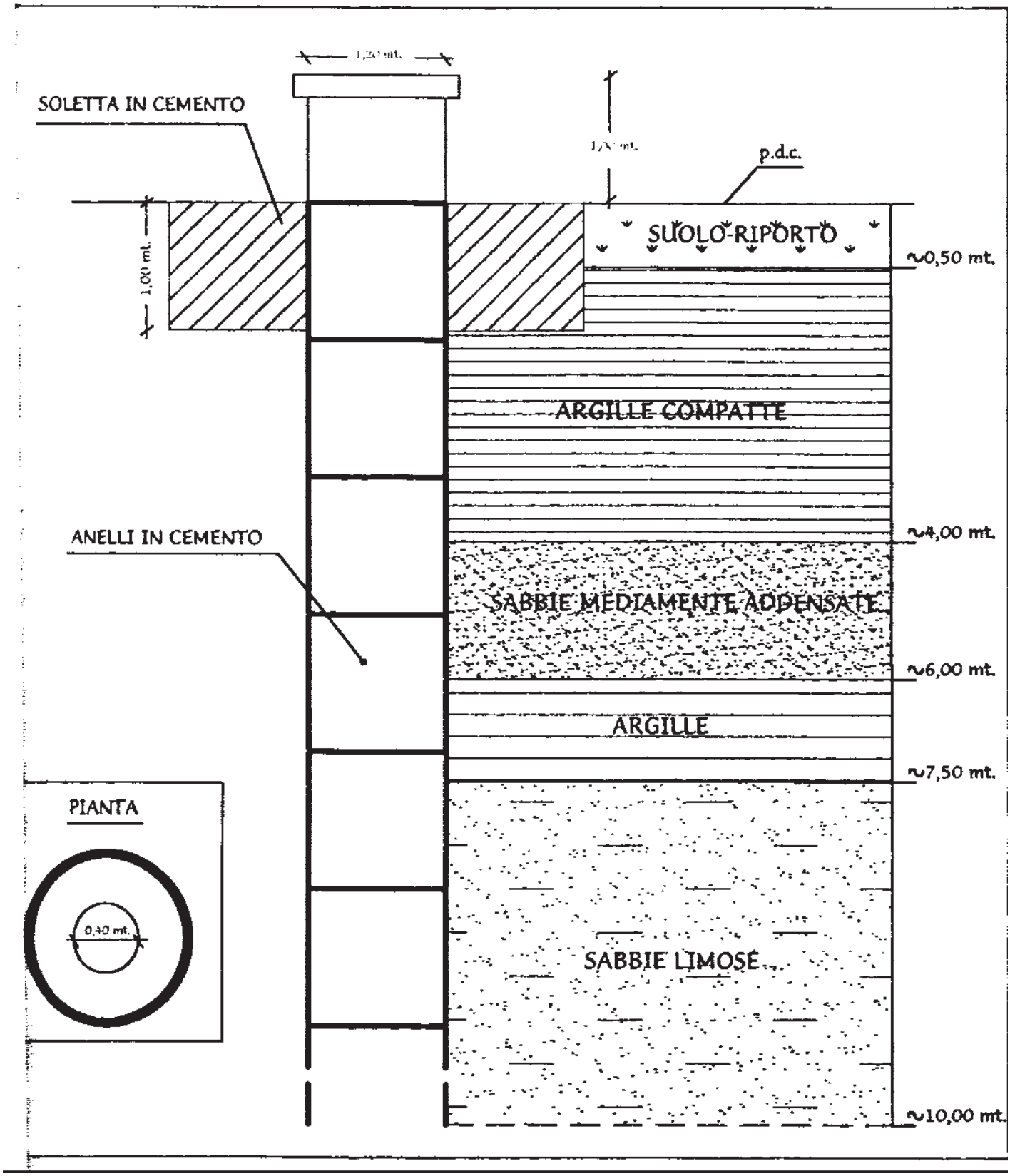

STRATIGRAFIA
SCHEMA POZZO
0
-8
DEPOSITI
ALLUVIONALI
LIMOSI CON
INTERCALAZIONI
SABBIOSE
LIVELLO PIEZOMETRICO
-32
SABBIE
-35
POMPA
-35

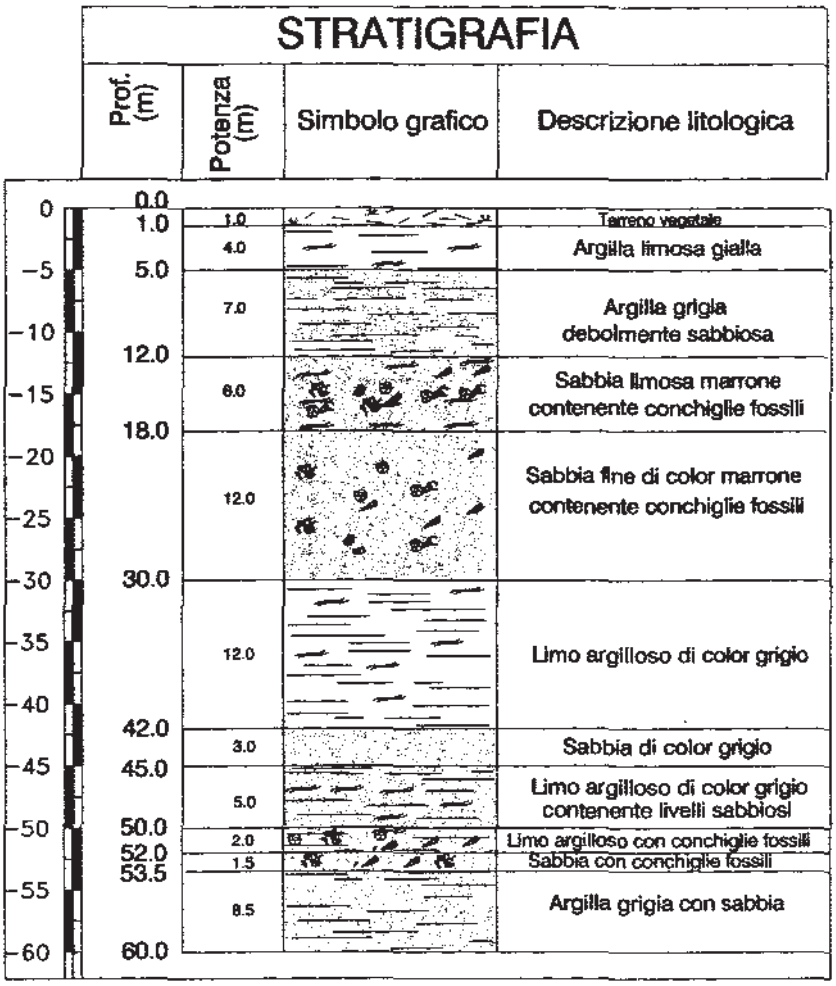

1,00
1,50
SOLETTA IN CEMENTO
p.c.
0,40
TERRENO VEGETALE MISTO A TERRENO SCIOLTO
0,80
5,00 mt.
ANELLI IN CEMENTO
LIMI ARGILLOSI
14,00 mt.
livello falda
PIANTA
POZZETTO DI ISPEZIONE
0,40
SABBIE ADDENSATE ROSSASTRE
24,00 mt.
26,00 mt.

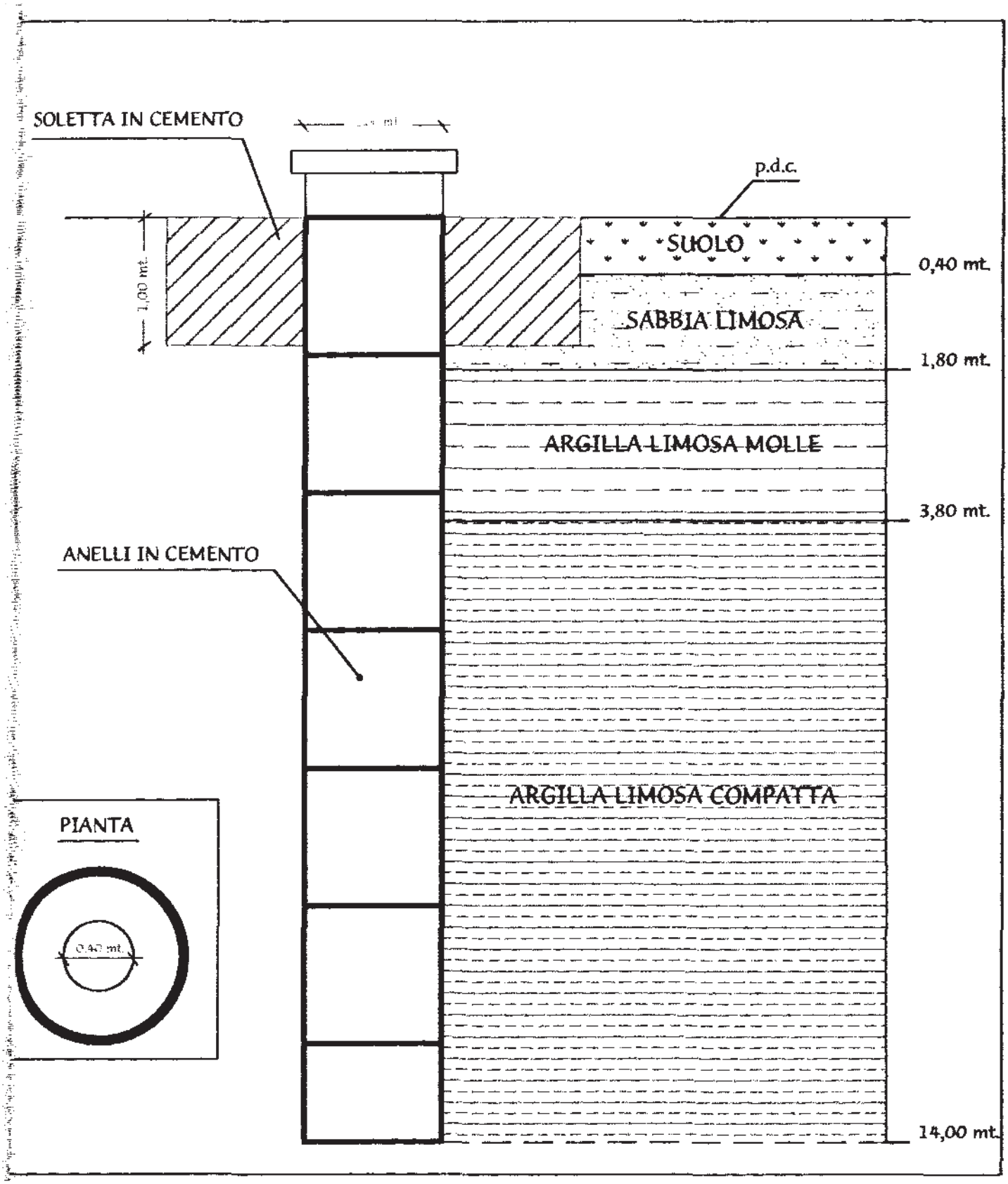


SCHEMA E STRATIGRAFIA DEL POZZO
(senza scala)


200 mm
160 mm
Tratto cementato
Tubo cieco
tampone impermeabile
Filtro
Livello Piezometrico
2
6
10
20
30
Terreno Vegetale
Limo sabbiosos
Argilla limosa
Argilla con sabbia
Argilla grigia compatta
Sabbia grigia
grossolana con fossili
Acquifero


SOLETTA IN CEMENTO
p.d.c.
SUOLO-RIPORTO
~0,50 mt.
1,00 mt.
ARGILLE COMPATTE
~4,00 mt.
ANELLI IN CEMENTO
SABBIE MEDIAMENTE ADDENSATE
~6,00 mt.
ARGILLE
~7,50 mt.
PIANTA
0,40 mt.
SABBIE LIMOSE
~10,00 mt.


STRATIGRAFIA
Prof. (m)
Potenza (m)
Simbolo grafico
Descrizione litologica
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
0.0
1.0
5.0
12.0
18.0
30.0
42.0
45.0
50.0
52.0
53.5
60.0
1.0
4.0
7.0
6.0
12.0
12.0
3.0
5.0
2.0
1.5
8.5
Terreno vegetale
Argilla limosa gialla
Argilla grigia debolmente sabbiosa
Sabbia limosa marrone contenente conchiglie fossili
Sabbia fine di color marrone contenente conchiglie fossili
Limo argilloso di color grigio
Sabbia di color grigio
Limo argilloso di color grigio contenente livelli sabbiosi
Limo argilloso con conchiglie fossili
Sabbia con conchiglie fossili
Argilla grigia con sabbia


SOLETTA IN CEMENTO
p.d.c.
SUOLO
0,40 mt.
1,00 mt.
SABBIA LIMOSA
1,80 mt.
ARGILLA LIMOSA MOLLE
3,80 mt.
ANELLI IN CEMENTO
ARGILLA LIMOSA COMPATTA
PIANTA
0,40 mt.
14,00 mt.

prof.	n	Rd
0.30	13.0	46.71
0.50	20.0	71.86
0.70	13.0	46.71
0.90	13.0	44.57
1.10	36.0	123.43
1.30	39.0	133.71
1.50	92.0	315.43

prof.	n	Rd
0.40	17.0	61.08
0.60	20.0	71.86
0.80	12.0	43.11
1.00	22.0	75.43
1.20	47.0	161.14
1.40	78.0	267.43
1.60	>150	514.29

Quota : p.c.

Livello di falda :

	letture di campagna				valori derivati							
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
0,20		20	30	40	10	0,07	30	20			0,10	58,22	Limo
0,40		50	70	100	20	0,13	38	50			0,25	29,00	Limo sabbioso
0,60		20	80	130	60	0,40	5	110			0,10	58,22	Argilla
0,80		70	130	230	60	0,40	18	160			0,35	23,81	Argilla
1,00		160	270	400	110	0,73	22	240			0,80	17,93	Argilla
1,20		120	310	390	190	1,27	9	270			0,60	19,13	Argilla
1,40		150	230	310	80	0,53	28	160			0,75	18,14	Limo
1,60		160	250	380	90	0,60	27	220			0,80	17,93	Limo
1,80		180	250	500	70	0,47	39	320			0,90	17,60	Limo sabbioso
2,00		210	330	640	120	0,80	26	430			0,84	17,25	Limo
2,20		290	430	890	140	0,93	31	600			1,16	16,35	Limo
2,40		340	550	1090	210	1,40	24	750			1,36	15,59	Argilla
2,60		300	590	1440	290	1,93	16	1140			1,20	16,21	Argilla
2,80		300	740	1810	440	2,93	10	1510			1,20	16,21	Argilla
3,00		460	860	2100	400	2,67	17	1640			1,53	13,33	Argilla
3,20		420	880	2420	460	3,07	14	2000			1,40	14,11	Argilla
3,40		310	720	2630	410	2,73	11	2320			1,24	16,06	Argilla
3,60		330	750	2910	420	2,80	12	2580			1,32	15,75	Argilla
3,80		320	660	3080	340	2,27	14	2760			1,28	15,91	Argilla
4,00		300	660	3400	360	2,40	13	3100			1,20	16,21	Argilla
4,20		310	630	3800	320	2,13	15	3490			1,24	16,06	Argilla
4,40		330	630	4110	300	2,00	17	3780			1,32	15,75	Argilla
4,60		330	710	4720	380	2,53	13	4390			1,32	15,75	Argilla
4,80		370	730	5010	360	2,40	15	4640			1,48	15,06	Argilla
5,00		320	670	5370	350	2,33	14	5050			1,28	15,91	Argilla
5,20		300	650	5410	350	2,33	13	5110			1,20	16,21	Argilla
5,40		300	620	5870	320	2,13	14	5570			1,20	16,21	Argilla
5,60		260	560	6030	300	2,00	13	5770			1,04	16,72	Argilla
5,80		230	490	6290	260	1,73	13	6060			0,92	17,04	Argilla
6,00		280	540	6470	260	1,73	16	6190			1,12	16,48	Argilla
6,20		290	530	6540	240	1,60	18	6250			1,16	16,35	Argilla
6,40		270	510	6570	240	1,60	17	6300			1,08	16,60	Argilla
6,60		280	570	6770	290	1,93	14	6490			1,12	16,48	Argilla
6,80		320	580	6880	260	1,73	18	6560			1,28	15,91	Argilla
7,00		360	630	7190	270	1,80	20	6830			1,44	15,24	Argilla
7,20		440	730	7410	290	1,93	23	6970			1,47	13,72	Argilla
7,40		450	850	7570	400	2,67	17	7120			1,50	13,53	Argilla
7,60		510	910	8000	400	2,67	19	7490			1,70	12,39	Argilla
7,80		520	920	8320	400	2,67	20	7800			1,73	12,20	Argilla
8,00		440	760	8710	320	2,13	21	8270			1,47	13,72	Argilla
8,20		330	740	8780	410	2,73	12	8450			1,32	15,75	Argilla
8,40		300	570	8660	270	1,80	17	8360			1,20	16,21	Argilla
8,60		290	540	8750	250	1,67	17	8460			1,16	16,35	Argilla
8,80		230	410	8860	180	1,20	19	8630			0,92	17,04	Argilla
9,00		200	380	8950	180	1,20	17	8750			1,00	17,36	Argilla
9,20		180	350	9010	170	1,13	16	8830			0,90	17,60	Argilla
9,40		200	360	8990	160	1,07	19	8790			1,00	17,36	Argilla
9,60		220	380	9040	160	1,07	21	8820			0,88	17,15	Argilla
9,80		260	480	9090	220	1,47	18	8830			1,04	16,72	Argilla
10,00		270	490	9210	220	1,47	18	8940			1,08	16,60	Argilla
10,20													
10,40													
10,60													
10,80													
11,00													
11,20													
11,40													
11,60													
11,80													
12,00													
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13,80													
14,00													
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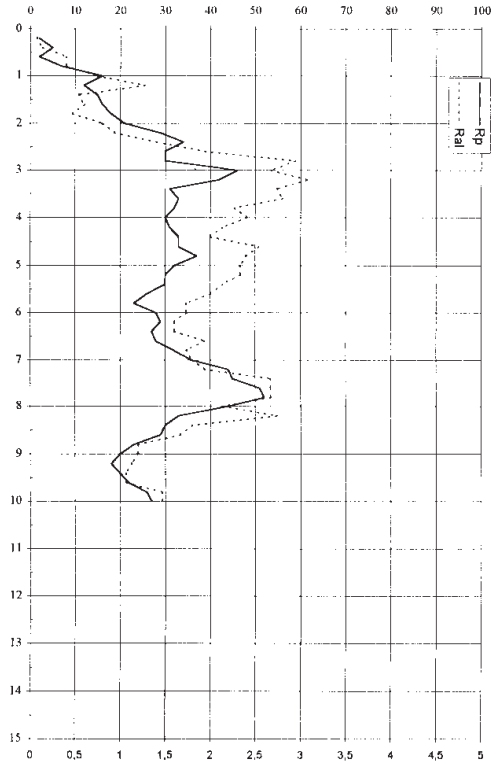
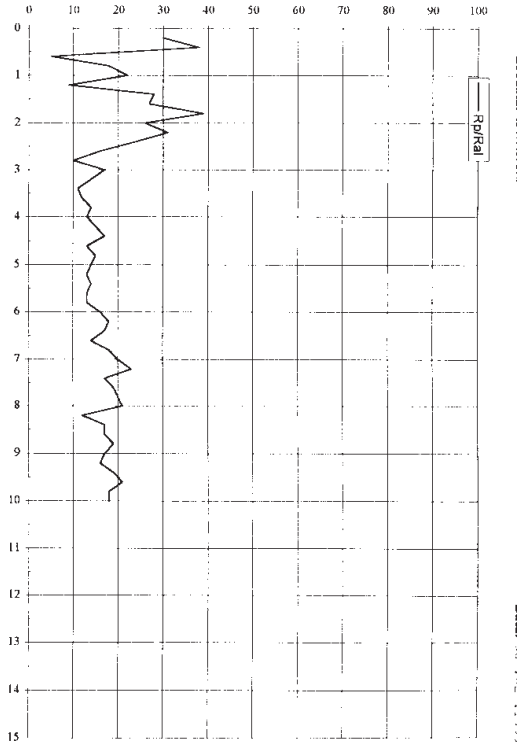
14,40													
14,60													
14,80													
15,00													





7021

	letture di campagna			valori derivati								
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Rai	Rp/Rai	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
0,20		20	40	70	20	0,13	15	50			0,10	58,22	Argilla
0,40		40	120	210	80	0,53	8	170			0,20	33,74	Argilla
0,60		130	220	320	90	0,60	22	190			0,65	18,72	Argilla
0,80		150	300	450	150	1,00	15	300			0,75	18,14	Argilla
1,00		260	450	1230	190	1,27	21	970			1,04	16,72	Argilla
1,20		1080	1310	2040	230	1,53	70	960	39	63		6,17	Sabbia
1,40		1030	1590	2610	560	3,73	28	1580			3,43	6,46	Limo
1,60		1050	1610	3000	560	3,73	28	1950			3,50	6,34	Limo
1,80		850	1220	2290	370	2,47	34	1440			2,83	7,82	Limo sabbioso
2,00		730	1230	2490	500	3,33	22	1760			2,43	9,06	Argilla
2,20		820	1530	2290	710	4,73	17	1470			2,73	8,10	Argilla
2,40		810	1490	2430	680	4,53	18	1620			2,70	8,20	Argilla
2,60		710	1440	2320	730	4,87	15	1610			2,37	9,30	Argilla
2,80		610	1580	2410	970	6,47	9	1800			2,03	10,69	Argilla
3,00		620	1480	2040	860	5,73	11	1420			2,07	10,53	Argilla
3,20		610	1260	1940	650	4,33	14	1330			2,03	10,69	Argilla
3,40		510	1110	1800	600	4,00	13	1290			1,70	12,39	Argilla
3,60		420	1010	1590	590	3,93	11	1170			1,40	14,11	Argilla
3,80		350	960	1410	610	4,07	9	1060			1,40	15,42	Argilla
4,00		310	680	1170	370	2,47	13	860			1,24	16,06	Argilla
4,20		310	760	1170	450	3,00	10	860			1,24	16,06	Argilla
4,40		320	760	1130	440	2,93	11	810			1,28	15,91	Argilla
4,60		300	730	1140	430	2,87	10	840			1,20	16,21	Argilla
4,80		310	650	1130	340	2,27	14	820			1,24	16,06	Argilla
5,00		300	640	1120	340	2,27	13	820			1,20	16,21	Argilla
5,20		300	630	1210	330	2,20	14	910			1,20	16,21	Argilla
5,40		360	730	1570	370	2,47	15	1210			1,44	15,24	Argilla
5,60		310	690	1660	380	2,53	12	1350			1,24	16,06	Argilla
5,80		270	600	2080	330	2,20	12	1810			1,08	16,60	Argilla
6,00		320	580	2360	260	1,73	18	2040			1,28	15,91	Argilla
6,20		340	660	2620	320	2,13	16	2280			1,36	15,59	Argilla
6,40		310	660	2860	350	2,33	13	2550			1,24	16,06	Argilla
6,60		200	510	2940	310	2,07	10	2740			1,00	17,36	Argilla
6,80		220	430	3010	210	1,40	16	2790			0,88	17,15	Argilla
7,00		180	400	2960	220	1,47	12	2780			0,90	17,60	Argilla
7,20		130	280	2900	150	1,00	13	2770			0,65	18,72	Argilla
7,40		120	220	3000	100	0,67	18	2880			0,60	19,13	Argilla
7,60		130	250	3100	120	0,80	16	2970			0,65	18,72	Argilla
7,80		140	270	3150	130	0,87	16	3010			0,70	18,40	Argilla
8,00		150	300	3240	150	1,00	15	3090			0,75	18,14	Argilla
8,20		130	260	3230	130	0,87	15	3100			0,65	18,72	Argilla
8,40		210	350	3460	140	0,93	23	3250			0,84	17,25	Argilla
8,60		270	450	3520	180	1,20	23	3250			1,08	16,60	Argilla
8,80		270	540	3650	270	1,80	15	3380			1,08	16,60	Argilla
9,00		250	520	3770	270	1,80	14	3520			1,00	16,83	Argilla
9,20		280	510	3970	230	1,53	18	3690			1,12	16,48	Argilla
9,40		280	510	5160	230	1,53	18	4880			1,12	16,48	Argilla
9,60		290	580	4380	290	1,93	15	4090			1,16	16,35	Argilla
9,80		280	540	4510	260	1,73	16	4230			1,12	16,48	Argilla
10,00		280	550	4810	270	1,80	16	4530			1,12	16,48	Argilla
10,20													
10,40													
10,60													
10,80													
11,00													
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11,80													
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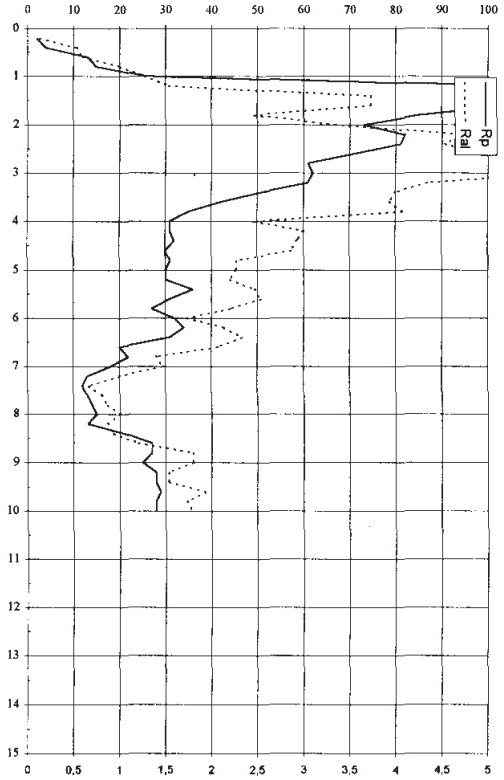
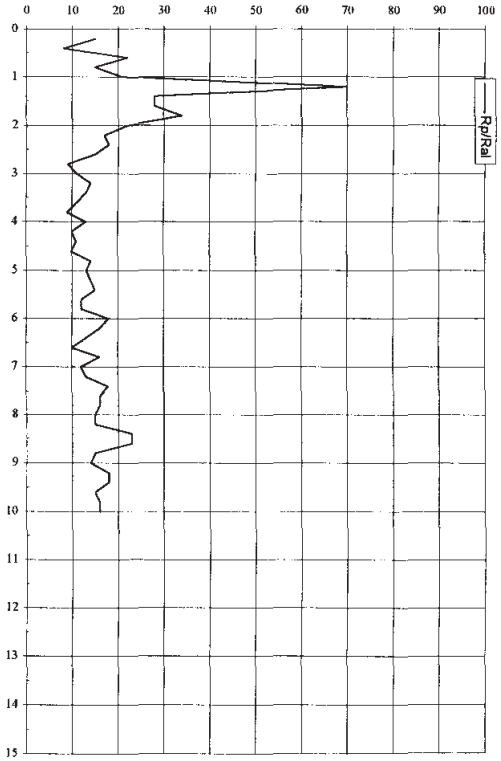
14,80													
15,00													





7022

	letture di campagna				valori derivati								
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fi	Dr	Cu	rnv	Tipo litologico
0,20		20	40	60	20	0,13	15	40			0,10	58,22	Argilla
0,40		70	100	190	30	0,20	35	120			0,35	23,81	Limo sabbioso
0,60		120	260	550	140	0,93	13	430			0,60	19,13	Argilla
0,80		140	300	410	160	1,07	13	270			0,70	18,40	Argilla
1,00		170	330	470	160	1,07	16	300			0,85	17,75	Argilla
1,20		210	370	680	160	1,07	20	470			0,84	17,25	Argilla
1,40		250	510	790	260	1,73	14	540			1,00	16,83	Argilla
1,60		300	540	880	240	1,60	19	580			1,20	16,21	Argilla
1,80		280	520	1000	240	1,60	18	720			1,12	16,48	Argilla
2,00		150	540	960	390	2,60	6	810			0,75	18,14	Argilla
2,20		190	360	680	170	1,13	17	490			0,95	17,47	Argilla
2,40		210	350	730	140	0,93	23	520			0,84	17,25	Argilla
2,60		280	460	1000	180	1,20	23	720			1,12	16,48	Argilla
2,80		310	560	1330	250	1,67	19	1020			1,24	16,06	Argilla
3,00		380	660	1580	280	1,87	20	1200			1,52	14,87	Argilla
3,20		360	700	1880	340	2,27	16	1520			1,44	15,24	Argilla
3,40		330	730	2070	400	2,67	12	1740			1,32	15,75	Argilla
3,60		300	700	2410	400	2,67	11	2110			1,20	16,21	Argilla
3,80		340	750	2650	410	2,73	12	2310			1,36	15,59	Argilla
4,00		330	690	2960	360	2,40	14	2630			1,32	15,75	Argilla
4,20		340	660	3310	320	2,13	16	2970			1,36	15,59	Argilla
4,40		330	660	3700	330	2,20	15	3370			1,32	15,75	Argilla
4,60		340	630	4150	290	1,93	18	3810			1,36	15,59	Argilla
4,80		320	560	4610	240	1,60	20	4290			1,28	15,91	Argilla
5,00		290	580	5000	290	1,93	15	4710			1,16	16,35	Argilla
5,20		270	540	5250	270	1,80	15	4980			1,08	16,60	Argilla
5,40		400	580	5490	180	1,20	33	5090			1,60	14,50	Limo sabbioso
5,60		340	610	5580	270	1,80	19	5240			1,36	15,59	Argilla
5,80		170	410	5860	240	1,60	11	5690			0,85	17,75	Argilla
6,00		290	470	5660	180	1,20	24	5370			1,16	16,35	Argilla
6,20		280	460	5980	180	1,20	23	5700			1,12	16,48	Argilla
6,40		280	480	6160	200	1,33	21	5880			1,12	16,48	Argilla
6,60		290	530	6300	240	1,60	18	6010			1,16	16,35	Argilla
6,80		290	550	6530	260	1,73	17	6240			1,16	16,35	Argilla
7,00		320	580	6730	260	1,73	18	6410			1,28	15,91	Argilla
7,20		410	730	7010	320	2,13	19	6600			1,37	14,30	Argilla
7,40		480	830	7400	350	2,33	21	6920			1,60	12,95	Argilla
7,60		480	890	7730	410	2,73	18	7250			1,60	12,95	Argilla
7,80		500	940	8130	440	2,93	17	7630			1,67	12,57	Argilla
8,00		500	920	8410	420	2,80	18	7910			1,67	12,57	Argilla
8,20		490	1020	8670	530	3,53	14	8180			1,63	12,76	Argilla
8,40		470	930	8790	460	3,07	15	8320			1,57	13,14	Argilla
8,60		420	880	9060	460	3,07	14	8640			1,40	14,11	Argilla
8,80		510	870	9240	360	2,40	21	8730			1,70	12,39	Argilla
9,00		350	870	9280	520	3,47	10	8930			1,40	15,42	Argilla
9,20		370	820	9060	450	3,00	12	8690			1,48	15,06	Argilla
9,40		370	690	9250	320	2,13	17	8880			1,48	15,06	Argilla
9,60		480	730	9000	250	1,67	29	8520			1,60	12,95	Limo
9,80		310	610	9010	300	2,00	16	8700			1,24	16,06	Argilla
10,00		290	600	8890	310	2,07	14	8600			1,16	16,35	Argilla
10,20													
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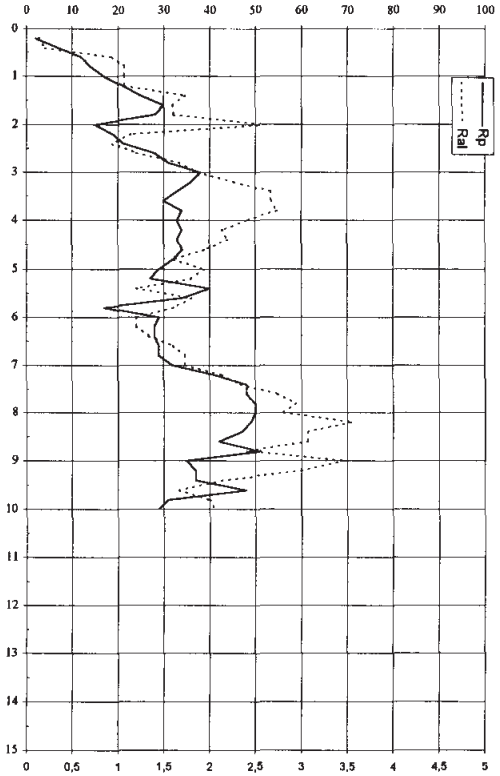

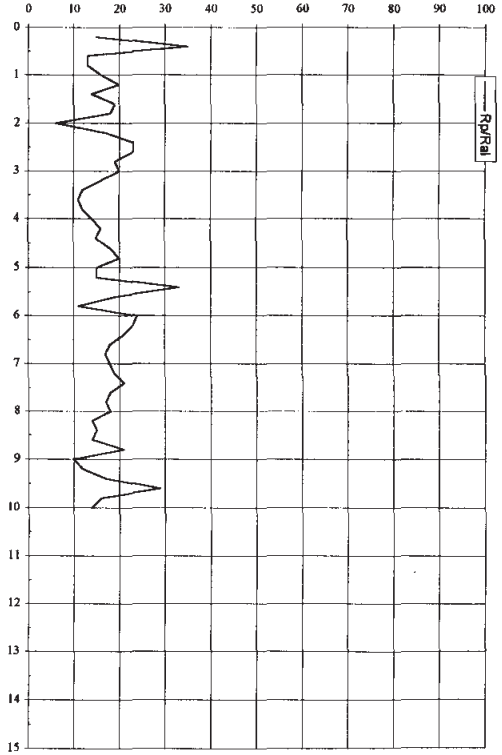

7023

	letture di campagna			valori derivati								
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
0,20		10	20	30	10	0,07	15	20			0,05	107,97	Argilla
0,40		20	60	90	40	0,27	8	70			0,10	58,22	Argilla
0,60		60	110	260	50	0,33	18	200			0,30	25,93	Argilla
0,80		140	220	300	80	0,53	26	160			0,70	18,40	Limo
1,00		120	300	440	180	1,20	10	320			0,60	19,13	Argilla
1,20		140	300	440	160	1,07	13	300			0,70	18,40	Argilla
1,40		150	270	560	120	0,80	19	410			0,75	18,14	Argilla
1,60		200	330	680	130	0,87	23	480			1,00	17,36	Argilla
1,80		210	310	1070	100	0,67	32	860			0,84	17,25	Limo
2,00		410	470	1530	60	0,40	103	1120	31	33		14,30	Sabbia con ghiaia
2,20		520	980	2060	460	3,07	17	1540			1,73	12,20	Argilla
2,40		530	1100	2020	570	3,80	14	1490			1,77	12,02	Argilla
2,60		370	860	1800	490	3,27	11	1430			1,48	15,06	Argilla
2,80		270	740	1640	470	3,13	9	1370			1,08	16,60	Argilla
3,00		260	610	1500	350	2,33	11	1240			1,04	16,72	Argilla
3,20		280	570	1490	290	1,93	14	1210			1,12	16,48	Argilla
3,40		320	590	1880	270	1,80	18	1560			1,28	15,91	Argilla
3,60		320	620	2230	300	2,00	16	1910			1,28	15,91	Argilla
3,80		310	690	2690	380	2,53	12	2380			1,24	16,06	Argilla
4,00		280	600	2980	320	2,13	13	2700			1,12	16,48	Argilla
4,20		310	570	3440	260	1,73	18	3130			1,24	16,06	Argilla
4,40		300	570	3750	270	1,80	17	3450			1,20	16,21	Argilla
4,60		320	580	4200	260	1,73	18	3880			1,28	15,91	Argilla
4,80		340	620	4570	280	1,87	18	4230			1,36	15,59	Argilla
5,00		280	530	4930	250	1,67	17	4650			1,12	16,48	Argilla
5,20		280	510	5100	230	1,53	18	4820			1,12	16,48	Argilla
5,40		220	440	5350	220	1,47	15	5130			0,88	17,15	Argilla
5,60		220	430	5460	210	1,40	16	5240			0,88	17,15	Argilla
5,80		280	510	5640	230	1,53	18	5360			1,12	16,48	Argilla
6,00		250	500	5710	250	1,67	15	5460			1,00	16,83	Argilla
6,20		220	440	5820	220	1,47	15	5600			0,88	17,15	Argilla
6,40		140	330	5840	190	1,27	11	5700			0,70	18,40	Argilla
6,60		210	390	5760	180	1,20	18	5550			0,84	17,25	Argilla
6,80		230	400	5280	170	1,13	20	5050			0,92	17,04	Argilla
7,00		270	450	5970	180	1,20	23	5700			1,08	16,60	Argilla
7,20		310	520	6110	210	1,40	22	5800			1,24	16,06	Argilla
7,40		290	550	6390	260	1,73	17	6100			1,16	16,35	Argilla
7,60		330	590	6640	260	1,73	19	6310			1,32	15,75	Argilla
7,80		420	690	7060	270	1,80	23	6640			1,40	14,11	Argilla
8,00		500	930	7540	430	2,87	17	7040			1,67	12,57	Argilla
8,20		560	1000	8100	440	2,93	19	7540			1,87	11,50	Argilla
8,40		570	630	8600	60	0,40	143	8030	32	42		11,33	Sabbia con ghiaia
8,60		700	1200	8540	500	3,33	21	7840			2,33	9,43	Argilla
8,80		400	1010	8760	610	4,07	10	8360			1,60	14,50	Argilla
9,00		400	830	8460	430	2,87	14	8060			1,60	14,50	Argilla
9,20		460	890	8480	430	2,87	16	8020			1,53	13,33	Argilla
9,40		660	910	8560	250	1,67	40	7900			2,20	9,96	Limo sabbioso
9,60		550	900	8500	350	2,33	24	7950			1,83	11,67	Argilla
9,80		330	660	8480	330	2,20	15	8150			1,32	15,75	Argilla
10,00		310	600	8470	290	1,93	16	8160			1,24	16,06	Argilla
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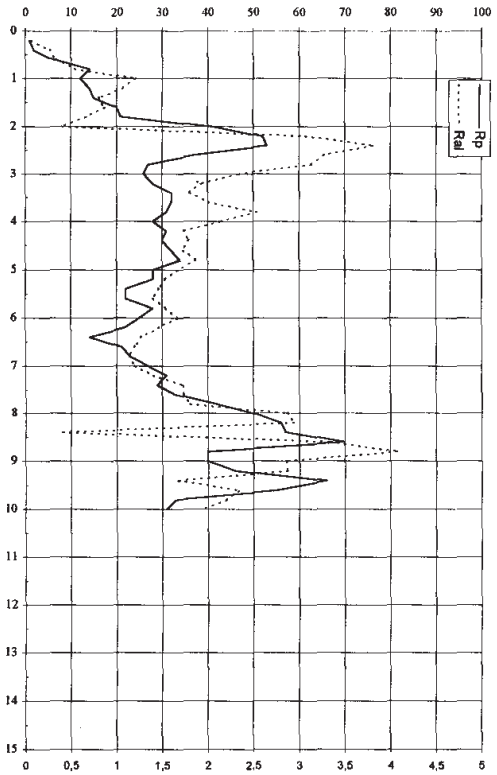
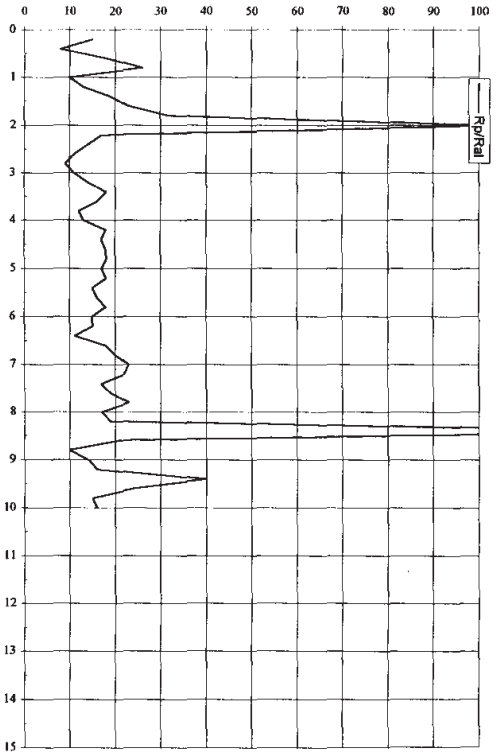
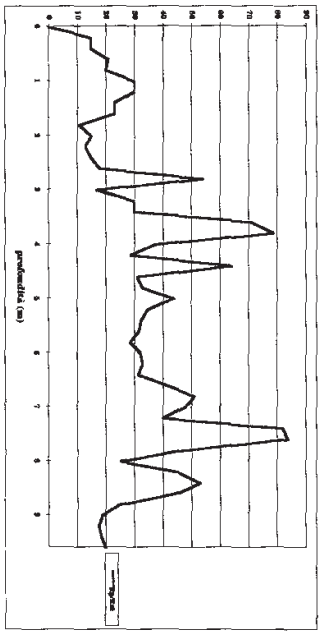


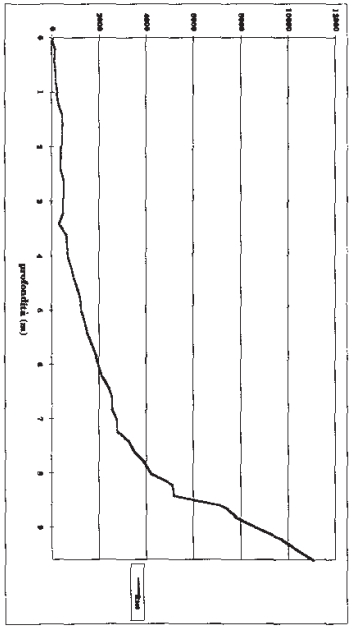


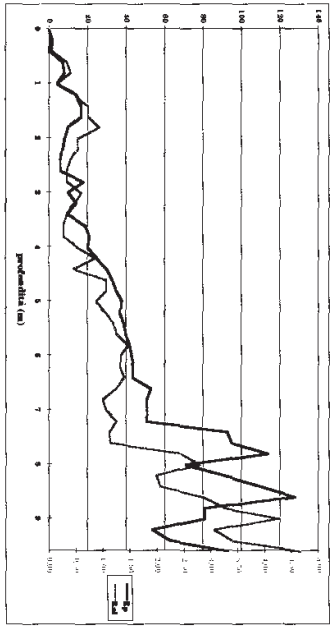
7024

Prof.	Rpt	Rst	Rtot	Rp	Rsl	Rp/Rsl	Fr	F	Dr	Cu	mv	Tipo Litologico
0,2	10	20	160	1	0,07	15	6,67	-	-	0,05	200,0	ARGILLA LIMOSA
0,4	10	20	100	1	0,07	15	6,67	-	-	0,05	200,0	ARGILLA LIMOSA
0,6	70	120	150	7	0,33	21	4,76	-	-	0,35	16,7	ARGILLA LIMOSA
0,8	80	140	160	8	0,40	20	5,00	-	-	0,40	16,7	ARGILLA LIMOSA
1	40	60	230	4	0,13	30	3,33	-	-	0,20	16,7	LIMO
1,2	140	210	300	14	0,47	30	3,33	-	-	0,70	15,4	LIMO
1,4	170	280	460	17	0,73	23	4,31	-	-	0,85	31,3	ARGILLA LIMOSA
1,6	170	280	450	17	0,73	23	4,31	-	-	0,85	35,7	ARGILLA LIMOSA
1,8	100	240	430	10	0,93	11	9,33	-	-	0,50	35,7	ARGILLA
2	80	160	410	8	0,53	15	6,67	-	-	0,40	27,8	ARGILLA LIMOSA
2,2	70	150	400	7	0,53	13	7,62	-	-	0,35	27,8	ARGILLA
2,4	60	120	390	6	0,40	15	6,67	-	-	0,30	37,0	ARGILLA LIMOSA
2,6	60	110	510	6	0,33	18	5,56	-	-	0,30	35,7	ARGILLA LIMOSA
2,8	180	230	510	18	0,33	54	1,85	24	34	-	50,0	SABBIA LIMOSA
3	100	190	480	10	0,60	17	6,00	-	-	0,50	33,3	ARGILLA LIMOSA
3,2	140	210	510	14	0,47	30	3,33	-	-	0,70	25,0	LIMO
3,4	100	150	320	10	0,33	30	3,33	-	-	0,50	29,4	LIMO
3,6	190	230	630	19	0,27	71	1,40	27	30	-	15,2	SABBIA
3,8	210	250	640	21	0,27	79	1,27	27	33	-	10,0	SABBIA
4	200	280	720	20	0,53	38	2,67	24	30	-	11,9	LIMO SABBIOSO
4,2	250	380	830	25	0,87	29	3,47	-	-	1,25	7,7	LIMO
4,4	300	370	950	30	0,47	64	1,56	30	42	-	7,1	SABBIA
4,6	330	490	1090	33	1,07	31	3,23	-	-	1,65	7,1	LIMO
4,8	350	510	1220	35	1,07	33	3,05	27	45	-	10,1	LIMO SABBIOSO
5	380	510	1280	38	0,87	44	2,28	27	47	-	15,6	LIMO SABBIOSO
5,2	370	530	1410	37	1,07	35	2,88	27	45	-	23,8	LIMO SABBIOSO
5,4	390	570	1510	39	1,20	32	3,08	-	-	1,95	20,8	LIMO SABBIOSO
5,6	400	590	1690	40	1,27	32	3,17	-	-	2,00	22,2	LIMO SABBIOSO
5,8	420	640	1860	42	1,47	29	3,49	-	-	2,10	23,8	LIMO
6	430	630	2000	43	1,33	32	3,10	-	-	2,15	16,7	LIMO SABBIOSO
6,2	440	640	2130	44	1,33	33	3,03	28	47	-	25,0	LIMO SABBIOSO
6,4	440	650	2410	44	1,40	31	3,18	-	-	2,20	17,1	LIMO SABBIOSO
6,6	530	720	2550	53	1,27	42	2,39	29	52	-	10,4	SABBIA LIMOSA
6,8	510	660	2550	51	1,00	51	1,96	31	50	-	8,2	SABBIA LIMOSA
7	510	670	2770	51	1,07	48	2,09	31	50	-	6,5	SABBIA LIMOSA
7,2	510	700	2780	51	1,27	40	2,48	29	49	-	4,8	LIMO SABBIOSO
7,4	930	1100	3290	93	1,13	82	1,22	41	69	-	5,5	SABBIA CON GHIAIA
7,6	950	1120	3500	95	1,13	84	1,19	42	70	-	3,5	SABBIA CON GHIAIA
7,8	1140	1510	3960	114	2,47	46	2,16	39	75	-	4,2	SABBIA LIMOSA
8	710	1130	4230	71	2,80	25	3,94	-	-	3,55	3,3	LIMO
8,2	910	1210	5130	91	2,00	46	2,20	36	66	-	4,2	SABBIA LIMOSA
8,4	1100	1410	5200	110	2,07	53	1,88	39	72	-	4,3	SABBIA LIMOSA
8,6	1280	1710	7310	128	2,87	45	2,24	37	77	-	6,3	SABBIA LIMOSA
8,8	810	1300	7830	81	3,27	25	4,03	-	-	4,05	6,9	LIMO
9	810	1450	8720	81	4,27	19	5,27	-	-	4,05	13,3	ARGILLA LIMOSA
9,2	540	1000	9720	54	3,07	18	5,68	-	-	2,70	14,5	ARGILLA LIMOSA
9,4	630	1140	10390	63	3,40	19	5,40	-	-	3,15	11,5	ARGILLA LIMOSA
9,6	930	1630	11100	93	4,67	20	5,02	-	-	4,65	10,4	ARGILLA LIMOSA

dati di campagna — dati derivati







7025

		letture di campagna			valori derivati								
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
0,20		10	15	190	5	0,03	30	180			0,05	107,97	Limo
0,40		13	30	200	17	0,11	11	187			0,07	84,97	Argilla
0,60		140	290	320	150	1,00	14	180			0,70	18,40	Argilla
0,80		180	300	400	120	0,80	23	220			0,90	17,60	Argilla
1,00		150	340	510	190	1,27	12	360			0,75	18,14	Argilla
1,20		140	330	530	190	1,27	11	390			0,70	18,40	Argilla
1,40		130	340	470	210	1,40	9	340			0,65	18,72	Argilla
1,60		100	310	360	210	1,40	7	260			0,50	20,30	Argilla
1,80	X	90	180	300	90	0,60	15	210			0,45	21,16	Argilla
2,00		90	150	310	60	0,40	23	220			0,45	21,16	Argilla
2,20		100	190	360	90	0,60	17	260			0,50	20,30	Argilla
2,40		110	190	450	80	0,53	21	340			0,55	19,64	Argilla
2,60		110	220	480	110	0,73	15	370			0,55	19,64	Argilla
2,80		120	210	510	90	0,60	20	390			0,60	19,13	Argilla
3,00		90	170	530	80	0,53	17	440			0,45	21,16	Argilla
3,20		60	150	570	90	0,60	10	510			0,30	25,93	Argilla
3,40		70	100	580	30	0,20	35	510			0,35	23,81	Limo sabbioso
3,60		80	110	620	30	0,20	40	540			0,40	22,29	Limo sabbioso
3,80		50	100	650	50	0,33	15	600			0,25	29,00	Argilla
4,00		110	140	670	30	0,20	55	560	25	10		19,64	Sabbia limosa
4,20		70	130	710	60	0,40	18	640			0,35	23,81	Argilla
4,40		70	120	700	50	0,33	21	630			0,35	23,81	Argilla
4,60		60	130	710	70	0,47	13	650			0,30	25,93	Argilla
4,80		60	110	740	50	0,33	18	680			0,30	25,93	Argilla
5,00		70	120	780	50	0,33	21	710			0,35	23,81	Argilla
5,20		100	150	810	50	0,33	30	710			0,50	20,30	Limo
5,40		80	150	880	70	0,47	17	800			0,40	22,29	Argilla
5,60		80	150	990	70	0,47	17	910			0,40	22,29	Argilla
5,80		80	170	1080	90	0,60	13	1000			0,40	22,29	Argilla
6,00		90	190	1160	100	0,67	14	1070			0,45	21,16	Argilla
6,20		100	200	1220	100	0,67	15	1120			0,50	20,30	Argilla
6,40		100	210	1290	110	0,73	14	1190			0,50	20,30	Argilla
6,60		110	190	1370	80	0,53	21	1260			0,55	19,64	Argilla
6,80		100	220	1440	120	0,80	13	1340			0,50	20,30	Argilla
7,00		70	160	1480	90	0,60	12	1410			0,35	23,81	Argilla
7,20		50	150	1520	100	0,67	8	1470			0,25	29,00	Argilla
7,40		40	110	1550	70	0,47	9	1510			0,20	33,74	Argilla
7,60		40	90	1580	50	0,33	12	1540			0,20	33,74	Argilla
7,80		60	110	1660	50	0,33	18	1600			0,30	25,93	Argilla
8,00		80	140	1720	60	0,40	20	1640			0,40	22,29	Argilla
8,20		90	180	1760	90	0,60	15	1670			0,45	21,16	Argilla
8,40		60	180	1760	120	0,80	8	1700			0,30	25,93	Argilla
8,60		50	130	1770	80	0,53	9	1720			0,25	29,00	Argilla
8,80		60	110	1800	50	0,33	18	1740			0,30	25,93	Argilla
9,00		40	90	1800	50	0,33	12	1760			0,20	33,74	Argilla
9,20		40	80	1800	40	0,27	15	1760			0,20	33,74	Argilla
9,40	2	40	80	1860	40	0,27	15	1820			0,20	33,74	Argilla
9,60		220	240	1960	20	0,13	165	1740	28	20		17,15	Sabbia con ghiaia
9,80		190	380	2250	190	1,27	15	2060			0,95	17,47	Argilla
10,00		370	420	2390	50	0,33	111	2020	31	30		15,06	Sabbia con ghiaia
10,20		420	610	2500	190	1,27	33	2080			1,40	14,11	Limo sabbioso
10,40		350	470	2430	120	0,80	44	2080			1,40	15,42	Limo sabbioso
10,60		220	390	2420	170	1,13	19	2200			0,88	17,15	Argilla
10,80		200	370	2240	170	1,13	18	2040			1,00	17,36	Argilla
11,00		70	220	2260	150	1,00	7	2190			0,35	23,81	Argilla
11,20		70	170	2010	100	0,67	11	1940			0,35	23,81	Argilla
11,40		60	110	2100	50	0,33	18	2040			0,30	25,93	Argilla
11,60		510	640	2560	130	0,87	59	2050	36	39		12,39	Sabbia limosa
11,80		620	820	3050	200	1,33	47	2430	36	45		10,53	Sabbia limosa
12,00		660	1020	3460	360	2,40	28	2800			2,20	9,96	Limo
12,20		980	1210	3420	230	1,53	64	2440	39	60		6,79	Sabbia
12,40		760	1220	3280	460	3,07	25	2520			2,53	8,72	Argilla
12,60		440	800	3180	360	2,40	18	2740			1,47	13,72	Argilla
12,80		690	970	3210	280	1,87	37	2520			2,30	9,55	Limo sabbioso
13,00		830	1130	3270	300	2,00	42	2440			2,77	8,00	Limo sabbioso
13,20		530	820	3160	290	1,93	27	2630			1,77	12,02	Limo
13,40		470	720	2960	250	1,67	28	2490			1,57	13,14	Limo
13,60		500	710	2850	210	1,40	36	2350			1,67	12,57	Limo sabbioso
13,80		530	600	2780	70	0,47	114	2250	31	40		12,02	Sabbia con ghiaia
14,00		730	870	2840	140	0,93	78	2110	37	50		9,06	Sabbia
14,20		460	700	2930	240	1,60	29	2470			1,53	13,33	Limo
14,40		560	790	3090	230	1,53	37	2530			1,87	11,50	Limo sabbioso
14,60		1110	1260	3380	150	1,00	111	2270	39	64		6,00	Sabbia con ghiaia
14,80		1000	1190	3400	190	1,27	79	2400	39	60		6,66	Sabbia
15,00		1010	1220	3410	210	1,40	72	2400	39	61		6,59	Sabbia

		letture di campagna			valori derivati								
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Rai	Rp/Rai	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
0,20				120									
0,40				250									
0,60		90	150	300	60	0,40	23	210			0,45	21,16	Argilla
0,80		170	240	280	70	0,47	36	110			0,85	17,75	Limo sabbioso
1,00		110	190	380	80	0,53	21	270			0,55	19,64	Argilla
1,20		130	230	280	100	0,67	20	150			0,65	18,72	Argilla
1,40		130	220	280	90	0,60	22	150			0,65	18,72	Argilla
1,60		130	200	270	70	0,47	28	140			0,65	18,72	Limo
1,80		90	160	280	70	0,47	19	190			0,45	21,16	Argilla
2,00		80	130	290	50	0,33	24	210			0,40	22,29	Argilla
2,20		90	140	310	50	0,33	27	220			0,45	21,16	Limo
2,40		90	140	370	50	0,33	27	280			0,45	21,16	Limo
2,60		130	180	430	50	0,33	39	300			0,65	18,72	Limo sabbioso
2,80		110	190	510	80	0,53	21	400			0,55	19,64	Argilla
3,00		110	180	530	70	0,47	24	420			0,55	19,64	Argilla
3,20		70	150	560	80	0,53	13	490			0,35	23,81	Argilla
3,40	X	60	120	600	60	0,40	15	540			0,30	25,93	Argilla
3,60		70	120	630	50	0,33	21	560			0,35	23,81	Argilla
3,80		50	100	660	50	0,33	15	610			0,25	29,00	Argilla
4,00		40	100	690	60	0,40	10	650			0,20	33,74	Argilla
4,20		60	100	730	40	0,27	23	670			0,30	25,93	Argilla
4,40		50	110	740	60	0,40	13	690			0,25	29,00	Argilla
4,60		50	120	760	70	0,47	11	710			0,25	29,00	Argilla
4,80		70	130	790	60	0,40	18	720			0,35	23,81	Argilla
5,00		60	120	810	60	0,40	15	750			0,30	25,93	Argilla
5,20		70	130	840	60	0,40	18	770			0,35	23,81	Argilla
5,40		70	140	920	70	0,47	15	850			0,35	23,81	Argilla
5,60		150	200	900	50	0,33	45	750			0,75	18,14	Limo sabbioso
5,80		60	180	970	120	0,80	8	910			0,30	25,93	Argilla
6,00		100	170	1020	70	0,47	21	920			0,50	20,30	Argilla
6,20		120	220	1100	100	0,67	18	980			0,60	19,13	Argilla
6,40		140	240	1170	100	0,67	21	1030			0,70	18,40	Argilla
6,60		160	270	1350	110	0,73	22	1190			0,80	17,93	Argilla
6,80		140	270	1400	130	0,87	16	1260			0,70	18,40	Argilla
7,00		110	230	1430	120	0,80	14	1320			0,55	19,64	Argilla
7,20		80	150	1500	70	0,47	17	1420			0,40	22,29	Argilla
7,40		110	210	1600	100	0,67	17	1490			0,55	19,64	Argilla
7,60		110	220	1640	110	0,73	15	1530			0,55	19,64	Argilla
7,80		70	160	1660	90	0,60	12	1590			0,35	23,81	Argilla
8,00		40	120	1720	80	0,53	8	1680			0,20	33,74	Argilla
8,20		80	140	1780	60	0,40	20	1700			0,40	22,29	Argilla
8,40		100	190	1840	90	0,60	17	1740			0,50	20,30	Argilla
8,60		120	210	1890	90	0,60	20	1770			0,60	19,13	Argilla
8,80		70	160	1900	90	0,60	12	1830			0,35	23,81	Argilla
9,00		40	110	1910	70	0,47	9	1870			0,20	33,74	Argilla
9,20		30	90	1920	60	0,40	8	1890			0,15	41,81	Argilla
9,40		40	100	1940	60	0,40	10	1900			0,20	33,74	Argilla
9,60		50	110	1930	60	0,40	13	1880			0,25	29,00	Argilla
9,80		50	110	1930	60	0,40	13	1880			0,25	29,00	Argilla
10,00		50	110	1940	60	0,40	13	1890			0,25	29,00	Argilla
10,20													
10,40													
10,60													
10,80													
11,00													
11,20													
11,40													
11,60													
11,80													
12,00													
12,20													
12,40													
12,60													
12,80													
13,00													
13,20													
13,40													
13,60													
13,80													
14,00													
14,20													
14,40													
14,60													
14,80													
15,00													

	letture di campagna				valori derivati								
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
0,20				540									
0,40				450									
0,60		340	480	810	140	0,93	36	470			1,36	15,59	Limo sabbioso
0,80		400	490	620	90	0,60	67	220	36	32		14,50	Sabbia
1,00		180	440	680	260	1,73	10	500			0,90	17,60	Argilla
1,20		140	260	330	120	0,80	18	190			0,70	18,40	Argilla
1,40		100	220	270	120	0,80	13	170			0,50	20,30	Argilla
1,60	X	150	190	310	40	0,27	56	160	25	14		18,14	Sabbia limosa
1,80		140	230	380	90	0,60	23	240			0,70	18,40	Argilla
2,00		130	190	470	60	0,40	33	340			0,65	18,72	Limo sabbioso
2,20		210	260	430	50	0,33	63	220	28	19		17,25	Sabbia
2,40		70	130	370	60	0,40	18	300			0,35	23,81	Argilla
2,60		70	110	470	40	0,27	26	400			0,35	23,81	Limo
2,80		140	180	510	40	0,27	53	370	25	13		18,40	Sabbia limosa
3,00		130	220	550	90	0,60	22	420			0,65	18,72	Argilla
3,20		100	190	570	90	0,60	17	470			0,50	20,30	Argilla
3,40		70	150	610	80	0,53	13	540			0,35	23,81	Argilla
3,60		70	110	640	40	0,27	26	570			0,35	23,81	Limo
3,80		40	90	670	50	0,33	12	630			0,20	33,74	Argilla
4,00		40	90	720	50	0,33	12	680			0,20	33,74	Argilla
4,20		50	90	740	40	0,27	19	690			0,25	29,00	Argilla
4,40		40	90	780	50	0,33	12	740			0,20	33,74	Argilla
4,60		30	70	800	40	0,27	11	770			0,15	41,81	Argilla
4,80		50	90	820	40	0,27	19	770			0,25	29,00	Argilla
5,00		60	110	860	50	0,33	18	800			0,30	25,93	Argilla
5,20		60	130	910	70	0,47	13	850			0,30	25,93	Argilla
5,40		70	140	930	70	0,47	15	860			0,35	23,81	Argilla
5,60		90	170	990	80	0,53	17	900			0,45	21,16	Argilla
5,80		120	230	1070	110	0,73	16	950			0,60	19,13	Argilla
6,00		130	250	1160	120	0,80	16	1030			0,65	18,72	Argilla
6,20		140	240	1250	100	0,67	21	1110			0,70	18,40	Argilla
6,40		130	250	1320	120	0,80	16	1190			0,65	18,72	Argilla
6,60		130	250	1410	120	0,80	16	1280			0,65	18,72	Argilla
6,80		120	230	1420	110	0,73	16	1300			0,60	19,13	Argilla
7,00		90	200	1520	110	0,73	12	1430			0,45	21,16	Argilla
7,20		70	150	1510	80	0,53	13	1440			0,35	23,81	Argilla
7,40		30	110	1560	80	0,53	6	1530			0,15	41,81	Argilla
7,60		50	90	1580	40	0,27	19	1530			0,25	29,00	Argilla
7,80		70	120	1640	50	0,33	21	1570			0,35	23,81	Argilla
8,00		80	150	1690	70	0,47	17	1610			0,40	22,29	Argilla
8,20		100	190	1750	90	0,60	17	1650			0,50	20,30	Argilla
8,40		120	230	1820	110	0,73	16	1700			0,60	19,13	Argilla
8,60		140	230	1900	90	0,60	23	1760			0,70	18,40	Argilla
8,80		100	220	1940	120	0,80	13	1840			0,50	20,30	Argilla
9,00		90	180	1980	90	0,60	15	1890			0,45	21,16	Argilla
9,20		60	150	2010	90	0,60	10	1950			0,30	25,93	Argilla
9,40		60	120	2030	60	0,40	15	1970			0,30	25,93	Argilla
9,60		110	190	2210	80	0,53	21	2100			0,55	19,64	Argilla
9,80		310	370	2350	60	0,40	78	2040	29	26		16,06	Sabbia
10,00		380	500	2510	120	0,80	48	2130	36	31		14,87	Sabbia limosa
10,20		320	480	2540	160	1,07	30	2220			1,28	15,91	Limo
10,40		310	460	2470	150	1,00	31	2160			1,24	16,06	Limo
10,60		200	390	2580	190	1,27	16	2380			1,00	17,36	Argilla
10,80		280	360	2350	80	0,53	53	2070	29	24		16,48	Sabbia limosa
11,00		40	80	2260	40	0,27	15	2220			0,20	33,74	Argilla
11,20		80	90	2100	10	0,07	120	2020	25	8		22,29	Sabbia con ghiaia
11,40		60	120	2170	60	0,40	15	2110			0,30	25,93	Argilla
11,60		50	70	2190	20	0,13	38	2140			0,25	29,00	Limo sabbioso
11,80		40	80	2160	40	0,27	15	2120			0,20	33,74	Argilla
12,00		50	80	2120	30	0,20	25	2070			0,25	29,00	Argilla
12,20		50	90	2120	40	0,27	19	2070			0,25	29,00	Argilla
12,40		40	90	2140	50	0,33	12	2100			0,20	33,74	Argilla
12,60		60	100	2190	40	0,27	23	2130			0,30	25,93	Argilla
12,80		40	100	2190	60	0,40	10	2150			0,20	33,74	Argilla
13,00		50	90	2210	40	0,27	19	2160			0,25	29,00	Argilla
13,20		60	110	2230	50	0,33	18	2170			0,30	25,93	Argilla
13,40		70	120	2170	50	0,33	21	2100			0,35	23,81	Argilla
13,60		60	130	2220	70	0,47	13	2160			0,30	25,93	Argilla
13,80		110	170	2320	60	0,40	28	2210			0,55	19,64	Limo
14,00		80	140	2260	60	0,40	20	2180			0,40	22,29	Argilla
14,20		60	100	2270	40	0,27	23	2210			0,30	25,93	Argilla
14,40		60	120	2290	60	0,40	15	2230			0,30	25,93	Argilla
14,60		80	150	2320	70	0,47	17	2240			0,40	22,29	Argilla
14,80		80	160	2350	80	0,53	15	2270			0,40	22,29	Argilla
15,00		80	160	2360	80	0,53	15	2280			0,40	22,29	Argilla

		letture di campagna			valori derivati								
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fl	Dr	Cu	mv	Tipo litologico
0,20				160									
0,40				210									
0,60		120	200	280	80	0,53	23	160			0,60	19,13	Argilla
0,80		130	240	360	110	0,73	18	230			0,65	18,72	Argilla
1,00		140	280	420	140	0,93	15	280			0,70	18,40	Argilla
1,20		130	320	400	190	1,27	10	270			0,65	18,72	Argilla
1,40		130	260	360	130	0,87	15	230			0,65	18,72	Argilla
1,60		150	260	410	110	0,73	20	260			0,75	18,14	Argilla
1,80		130	240	450	110	0,73	18	320			0,65	18,72	Argilla
2,00		110	210	470	100	0,67	17	360			0,55	19,64	Argilla
2,20		150	210	500	60	0,40	38	350			0,75	18,14	Limo sabbioso
2,40		150	260	560	110	0,73	20	410			0,75	18,14	Argilla
2,60		140	240	600	100	0,67	21	460			0,70	18,40	Argilla
2,80		130	240	630	110	0,73	18	500			0,65	18,72	Argilla
3,00		100	180	640	80	0,53	19	540			0,50	20,30	Argilla
3,20		70	140	630	70	0,47	15	560			0,35	23,81	Argilla
3,40	X	60	120	660	60	0,40	15	600			0,30	25,93	Argilla
3,60		60	110	680	50	0,33	18	620			0,30	25,93	Argilla
3,80		60	110	710	50	0,33	18	650			0,30	25,93	Argilla
4,00		70	120	760	50	0,33	21	690			0,35	23,81	Argilla
4,20		50	110	800	60	0,40	13	750			0,25	29,00	Argilla
4,40		60	110	840	50	0,33	18	780			0,30	25,93	Argilla
4,60		80	130	880	50	0,33	24	800			0,40	22,29	Argilla
4,80		70	130	940	60	0,40	18	870			0,35	23,81	Argilla
5,00		100	160	1020	60	0,40	25	920			0,50	20,30	Argilla
5,20		100	200	1100	100	0,67	15	1000			0,50	20,30	Argilla
5,40		140	240	1220	100	0,67	21	1080			0,70	18,40	Argilla
5,60		140	280	1330	140	0,93	15	1190			0,70	18,40	Argilla
5,80		150	290	1440	140	0,93	16	1290			0,75	18,14	Argilla
6,00		130	270	1520	140	0,93	14	1390			0,65	18,72	Argilla
6,20		130	250	1630	120	0,80	16	1500			0,65	18,72	Argilla
6,40		140	250	1730	110	0,73	19	1590			0,70	18,40	Argilla
6,60		100	210	1710	110	0,73	14	1610			0,50	20,30	Argilla
6,80		40	120	1730	80	0,53	8	1690			0,20	33,74	Argilla
7,00		30	70	1730	40	0,27	11	1700			0,15	41,81	Argilla
7,20		30	70	1730	40	0,27	11	1700			0,15	41,81	Argilla
7,40		50	90	1770	40	0,27	19	1720			0,25	29,00	Argilla
7,60		100	150	1810	50	0,33	30	1710			0,50	20,30	Limo
7,80		130	220	1880	90	0,60	22	1750			0,65	18,72	Argilla
8,00		100	210	1910	110	0,73	14	1810			0,50	20,30	Argilla
8,20		70	160	1890	90	0,60	12	1820			0,35	23,81	Argilla
8,40		50	110	1880	60	0,40	13	1830			0,25	29,00	Argilla
8,60		40	80	1910	40	0,27	15	1870			0,20	33,74	Argilla
8,80		40	80	1940	40	0,27	15	1900			0,20	33,74	Argilla
9,00		60	100	2010	40	0,27	23	1950			0,30	25,93	Argilla
9,20		110	160	2070	50	0,33	33	1960			0,55	19,64	Limo sabbioso
9,40		60	150	2080	90	0,60	10	2020			0,30	25,93	Argilla
9,60		60	150	2240	90	0,60	10	2180			0,30	25,93	Argilla
9,80		260	320	2310	60	0,40	65	2050	29	23		16,72	Sabbia
10,00		260	340	2350	80	0,53	49	2090	29	23		16,72	Sabbia limosa
10,20													
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		letture di campagna			valori derivati								
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
0,20				200									
0,40				240									
0,60		180	280	460	100	0,67	27	280			0,90	17,60	Limo
0,80		310	390	610	80	0,53	58	300	29	26		16,06	Sabbia limosa
1,00		230	430	600	200	1,33	17	370			0,92	17,04	Argilla
1,20		180	390	610	210	1,40	13	430			0,90	17,60	Argilla
1,40		120	220	350	100	0,67	18	230			0,60	19,13	Argilla
1,60		100	170	320	70	0,47	21	220			0,50	20,30	Argilla
1,80		110	170	300	60	0,40	28	190			0,55	19,64	Limo
2,00		120	210	340	90	0,60	20	220			0,60	19,13	Argilla
2,20		130	210	360	80	0,53	24	230			0,65	18,72	Argilla
2,40		100	220	400	120	0,80	13	300			0,50	20,30	Argilla
2,60		130	210	470	80	0,53	24	340			0,65	18,72	Argilla
2,80		140	220	540	80	0,53	26	400			0,70	18,40	Limo
3,00		130	210	530	80	0,53	24	400			0,65	18,72	Argilla
3,20	X	140	220	600	80	0,53	26	460			0,70	18,40	Limo
3,40		110	210	610	100	0,67	17	500			0,55	19,64	Argilla
3,60		60	130	610	70	0,47	13	550			0,30	25,93	Argilla
3,80		70	120	630	50	0,33	21	560			0,35	23,81	Argilla
4,00		50	110	630	60	0,40	13	580			0,25	29,00	Argilla
4,20		50	100	620	50	0,33	15	570			0,25	29,00	Argilla
4,40		40	90	660	50	0,33	12	620			0,20	33,74	Argilla
4,60		70	120	700	50	0,33	21	630			0,35	23,81	Argilla
4,80		60	140	730	80	0,53	11	670			0,30	25,93	Argilla
5,00		70	140	780	70	0,47	15	710			0,35	23,81	Argilla
5,20		70	130	820	60	0,40	18	750			0,35	23,81	Argilla
5,40		80	170	900	90	0,60	13	820			0,40	22,29	Argilla
5,60		130	240	1000	110	0,73	18	870			0,65	18,72	Argilla
5,80		120	270	1090	150	1,00	12	970			0,60	19,13	Argilla
6,00		90	230	1130	140	0,93	10	1040			0,45	21,16	Argilla
6,20		40	160	1160	120	0,80	5	1120			0,20	33,74	Argilla
6,40		40	100	1180	60	0,40	10	1140			0,20	33,74	Argilla
6,60		20	70	1200	50	0,33	6	1180			0,10	58,22	Argilla
6,80		20	50	1210	30	0,20	10	1190			0,10	58,22	Argilla
7,00		30	50	1230	20	0,13	23	1200			0,15	41,81	Argilla
7,20		30	50	1210	20	0,13	23	1180			0,15	41,81	Argilla
7,40		30	60	1200	30	0,20	15	1170			0,15	41,81	Argilla
7,60		40	80	1240	40	0,27	15	1200			0,20	33,74	Argilla
7,80		50	90	1290	40	0,27	19	1240			0,25	29,00	Argilla
8,00		40	90	1290	50	0,33	12	1250			0,20	33,74	Argilla
8,20		50	90	1300	40	0,27	19	1250			0,25	29,00	Argilla
8,40		70	110	1480	40	0,27	26	1410			0,35	23,81	Limo
8,60		100	120	1680	20	0,13	75	1580	25	9		20,30	Sabbia
8,80		360	470	1710	110	0,73	49	1350	36	30		15,24	Sabbia limosa
9,00		300	430	1710	130	0,87	35	1410			1,20	16,21	Limo sabbioso
9,20		300	450	1730	150	1,00	30	1430			1,20	16,21	Limo
9,40		210	320	1670	110	0,73	29	1460			0,84	17,25	Limo
9,60		120	240	1570	120	0,80	15	1450			0,60	19,13	Argilla
9,80		230	320	1680	90	0,60	38	1450			0,92	17,04	Limo sabbioso
10,00		110	210	1690	100	0,67	17	1580			0,55	19,64	Argilla
10,20		160	250	1590	90	0,60	27	1430			0,80	17,93	Limo
10,40		150	250	1610	100	0,67	23	1460			0,75	18,14	Argilla
10,60		80	160	1630	80	0,53	15	1550			0,40	22,29	Argilla
10,80		110	170	1620	60	0,40	28	1510			0,55	19,64	Limo
11,00		140	200	1710	60	0,40	35	1570			0,70	18,40	Limo sabbioso
11,20		150	270	1770	120	0,80	19	1620			0,75	18,14	Argilla
11,40		150	270	1900	120	0,80	19	1750			0,75	18,14	Argilla
11,60		180	330	2080	150	1,00	18	1900			0,90	17,60	Argilla
11,80		250	440	2170	190	1,27	20	1920			1,00	16,83	Argilla
12,00		180	330	2140	150	1,00	18	1960			0,90	17,60	Argilla
12,20		130	250	2320	120	0,80	16	2190			0,65	18,72	Argilla
12,40		230	330	2540	100	0,67	35	2310			0,92	17,04	Limo sabbioso
12,60		340	470	2650	130	0,87	39	2310			1,36	15,59	Limo sabbioso
12,80		210	440	2720	230	1,53	14	2510			0,84	17,25	Argilla
13,00		240	340	2970	100	0,67	36	2730			0,96	16,94	Limo sabbioso
13,20		320	530	3070	210	1,40	23	2750			1,28	15,91	Argilla
13,40		280	540	3180	260	1,73	16	2900			1,12	16,48	Argilla
13,60		220	380	3250	160	1,07	21	3030			0,88	17,15	Argilla
13,80		180	480	3320	300	2,00	9	3140			0,90	17,60	Argilla
14,00		80	110	3340	30	0,20	40	3260			0,40	22,29	Limo sabbioso
14,20		240	400	3470	160	1,07	23	3230			0,96	16,94	Argilla
14,40		270	470	3480	200	1,33	20	3210			1,08	16,60	Argilla
14,60		240	470	3540	230	1,53	16	3300			0,96	16,94	Argilla
14,80		160	270	3600	110	0,73	22	3440			0,80	17,93	Argilla
15,00		190	330	3790	140	0,93	20	3600			0,95	17,47	Argilla

		letture di campagna			valori derivati								
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
15,20		280	410	3900	130	0,87	32	3620			1,12	16,48	Limo
15,40		220	500	3910	280	1,87	12	3690			0,88	17,15	Argilla
15,60		330	550	4220	220	1,47	23	3890			1,32	15,75	Argilla
15,80		550	620	4330	70	0,47	118	3780	32	41		11,67	Sabbia con ghiaia
16,00		420	530	4590	110	0,73	57	4170	36	34		14,11	Sabbia limosa
16,20		390	730	4880	340	2,27	17	4490			1,56	14,69	Argilla
16,40		430	830	5000	400	2,67	16	4570			1,43	13,92	Argilla
16,60		290	520	4960	230	1,53	19	4670			1,16	16,35	Argilla
16,80		220	440	5100	220	1,47	15	4880			0,88	17,15	Argilla
17,00		250	380	5690	130	0,87	29	5440			1,00	16,83	Limo
17,20		1450	1700	6430	250	1,67	87	4980	41	72		4,59	Sabbia con ghiaia
17,40		1160	1310	6250	150	1,00	116	5090	40	65		5,74	Sabbia con ghiaia
17,60		380	600	6030	220	1,47	26	5650			1,52	14,87	Limo
17,80		360	480	5570	120	0,80	45	5210			1,44	15,24	Limo sabbioso
18,00		280	530	5750	250	1,67	17	5470			1,12	16,48	Argilla
18,20		250	500	5660	250	1,67	15	5410			1,00	16,83	Argilla
18,40		590	760	6290	170	1,13	52	5700	36	43		11,00	Sabbia limosa
18,60		370	540	6220	170	1,13	33	5850			1,48	15,06	Limo sabbioso
18,80		220	430	6420	210	1,40	16	6200			0,88	17,15	Argilla
19,00		650	720	6360	70	0,47	139	5710	32	46		10,10	Sabbia con ghiaia
19,20		330	560	6630	230	1,53	22	6300			1,32	15,75	Argilla
19,40		270	500	6890	230	1,53	18	6620			1,08	16,60	Argilla
19,60		1340	1590	15100	250	1,67	80	13760	40	70		4,97	Sabbia
19,80		1850	2010	19000	160	1,07	173	17150	42	78		3,60	Sabbia con ghiaia
20,00													
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Prof.	H2O	letture di campagna Rpt	Rat	Rt	valori derivati Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
0,20				400									
0,40				430									
0,60		280	400	690	-240	-1,60	-17	410			1,12	16,48	Argille plastiche
0,80		320	440	540	120	0,80	40	220			1,28	15,91	Limo sabbioso
1,00		140	330	580	190	1,27	11	440			0,70	18,40	Argilla
1,20		130	310	410	180	1,20	11	280			0,65	18,72	Argilla
1,40		120	280	400	160	1,07	11	280			0,60	19,13	Argilla
1,60	x	120	270	330	150	1,00	12	210			0,60	19,13	Argilla
1,80		90	160	350	70	0,47	19	260			0,45	21,16	Argilla
2,00		120	160	380	40	0,27	45	260			0,60	19,13	Limo sabbioso
2,20		140	180	440	40	0,27	53	300	25	13		18,40	Sabbia limosa
2,40		140	240	430	100	0,67	21	290			0,70	18,40	Argilla
2,60		90	180	500	90	0,60	15	410			0,45	21,16	Argilla
2,80		110	240	490	130	0,87	13	380			0,55	19,64	Argilla
3,00		120	190	520	70	0,47	26	400			0,60	19,13	Limo
3,20		90	180	520	90	0,60	15	430			0,45	21,16	Argilla
3,40		80	160	510	80	0,53	15	430			0,40	22,29	Argilla
3,60		60	120	540	60	0,40	15	480			0,30	25,93	Argilla
3,80		50	110	540	60	0,40	13	490			0,25	29,00	Argilla
4,00		40	80	570	40	0,27	15	530			0,20	33,74	Argilla
4,20		50	110	580	60	0,40	13	530			0,25	29,00	Argilla
4,40		60	120	280	60	0,40	15	220			0,30	25,93	Argilla
4,60		90	170	640	80	0,53	17	550			0,45	21,16	Argilla
4,80		80	160	670	80	0,53	15	590			0,40	22,29	Argilla
5,00		80	150	700	70	0,47	17	620			0,40	22,29	Argilla
5,20		90	170	750	80	0,53	17	660			0,45	21,16	Argilla
5,40		100	190	800	90	0,60	17	700			0,50	20,30	Argilla
5,60		110	230	940	120	0,80	14	830			0,55	19,64	Argilla
5,80		140	260	1040	120	0,80	18	900			0,70	18,40	Argilla
6,00		150	310	1160	160	1,07	14	1010			0,75	18,14	Argilla
6,20		140	320	1210	180	1,20	12	1070			0,70	18,40	Argilla
6,40		140	300	1280	160	1,07	13	1140			0,70	18,40	Argilla
6,60		110	260	1410	150	1,00	11	1300			0,55	19,64	Argilla
6,80		120	250	1460	130	0,87	14	1340			0,60	19,13	Argilla
7,00		90	230	1510	140	0,93	10	1420			0,45	21,16	Argilla
7,20		90	200	1500	110	0,73	12	1410			0,45	21,16	Argilla
7,40		60	170	1500	110	0,73	8	1440			0,30	25,93	Argilla
7,60		40	110	1540	70	0,47	9	1500			0,20	33,74	Argilla
7,80		20	70	1560	50	0,33	6	1540			0,10	58,22	Argilla
8,00		20	40	1580	20	0,13	15	1560			0,10	58,22	Argilla
8,20		40	80	1610	40	0,27	15	1570			0,20	33,74	Argilla
8,40		10	40	1620	30	0,20	5	1610			0,05	107,97	Argilla
8,60		80	120	1630	40	0,27	30	1550			0,40	22,29	Limo
8,80		80	130	1610	50	0,33	24	1530			0,40	22,29	Argilla
9,00		70	130	1610	60	0,40	18	1540			0,35	23,81	Argilla
9,20		60	120	1530	60	0,40	15	1470			0,30	25,93	Argilla
9,40		70	120	1630	50	0,33	21	1560			0,35	23,81	Argilla
9,60		60	120	1690	60	0,40	15	1630			0,30	25,93	Argilla
9,80		80	140	1750	60	0,40	20	1670			0,40	22,29	Argilla
10,00		120	210	1790	90	0,60	20	1670			0,60	19,13	Argilla
10,20		110	210	1800	100	0,67	17	1690			0,55	19,64	Argilla
10,40		80	190	1810	110	0,73	11	1730			0,40	22,29	Argilla
10,60		60	130	1870	70	0,47	13	1810			0,30	25,93	Argilla
10,80		60	130	1870	70	0,47	13	1810			0,30	25,93	Argilla
11,00		70	130	1890	60	0,40	18	1820			0,35	23,81	Argilla
11,20		70	130	1890	60	0,40	18	1820			0,35	23,81	Argilla
11,40		70	120	1890	50	0,33	21	1820			0,35	23,81	Argilla
11,60		60	110	1890	50	0,33	18	1830			0,30	25,93	Argilla
11,80		60	110	1930	50	0,33	18	1870			0,30	25,93	Argilla
12,00		100	160	1940	60	0,40	25	1840			0,50	20,30	Argilla
12,20		100	160	1940	60	0,40	25	1840			0,50	20,30	Argilla
12,40		80	170	1930	90	0,60	13	1850			0,40	22,29	Argilla
12,60		100	160	1950	60	0,40	25	1850			0,50	20,30	Argilla
12,80		100	160	1910	60	0,40	25	1810			0,50	20,30	Argilla
13,00		80	140	1890	60	0,40	20	1810			0,40	22,29	Argilla
13,20		70	110	1900	40	0,27	26	1830			0,35	23,81	Limo
13,40		150	180	1880	30	0,20	75	1730	25	14		18,14	Sabbia
13,60		80	140	2040	60	0,40	20	1960			0,40	22,29	Argilla
13,80		70	100	2010	30	0,20	35	1940			0,35	23,81	Limo sabbioso
14,00		80	130	2010	50	0,33	24	1930			0,40	22,29	Argilla
14,20		50	110	2130	60	0,40	13	2080			0,25	29,00	Argilla
14,40		470	520	2360	50	0,33	141	1890	31	37		13,14	Sabbia con ghiaia
14,60		240	270	2350	30	0,20	120	2110	28	21		16,94	Sabbia con ghiaia
14,80		110	300	2440	190	1,27	9	2330			0,55	19,64	Argilla
15,00		80	130	2490	50	0,33	24	2410			0,40	22,29	Argilla

Prof.	H2O	letture di campagna Rpt	Rat	Rt	valori derivati Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
15,20		80	110	2300	30	0,20	40	2220			0,40	22,29	Limo sabbioso
15,40		50	100	2310	50	0,33	15	2260			0,25	29,00	Argilla
15,60		100	160	2320	60	0,40	25	2220			0,50	20,30	Argilla
15,80		100	200	2210	100	0,67	15	2110			0,50	20,30	Argilla
16,00		100	200	2230	100	0,67	15	2130			0,50	20,30	Argilla
16,20													
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		letture di campagna			valori derivati								
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
0,20				200									
0,40				260									
0,60		150	250	420	100	0,67	23	270			0,75	18,14	Argilla
0,80		170	250	430	80	0,53	32	260			0,85	17,75	Limo
1,00		150	320	510	170	1,13	13	360			0,75	18,14	Argilla
1,20		120	330	470	210	1,40	9	350			0,60	19,13	Argilla
1,40		80	290	370	210	1,40	6	290			0,40	22,29	Argilla
1,60		120	220	300	100	0,67	18	180			0,60	19,13	Argilla
1,80	X	100	220	340	120	0,80	13	240			0,50	20,30	Argilla
2,00		110	200	320	90	0,60	18	210			0,55	19,64	Argilla
2,20		110	160	330	50	0,33	33	220			0,55	19,64	Limo sabbioso
2,40		120	180	370	60	0,40	30	250			0,60	19,13	Limo
2,60		120	200	430	80	0,53	23	310			0,60	19,13	Argilla
2,80		120	230	440	110	0,73	16	320			0,60	19,13	Argilla
3,00		110	200	490	90	0,60	18	380			0,55	19,64	Argilla
3,20		90	200	510	110	0,73	12	420			0,45	21,16	Argilla
3,40		60	100	500	40	0,27	23	440			0,30	25,93	Argilla
3,60		40	110	530	70	0,47	9	490			0,20	33,74	Argilla
3,80		60	110	530	50	0,33	18	470			0,30	25,93	Argilla
4,00		50	110	570	60	0,40	13	520			0,25	29,00	Argilla
4,20		50	90	600	40	0,27	19	550			0,25	29,00	Argilla
4,40		70	120	630	50	0,33	21	560			0,35	23,81	Argilla
4,60		60	140	680	80	0,53	11	620			0,30	25,93	Argilla
4,80		80	150	720	70	0,47	17	640			0,40	22,29	Argilla
5,00		100	170	800	70	0,47	21	700			0,50	20,30	Argilla
5,20		80	170	810	90	0,60	13	730			0,40	22,29	Argilla
5,40		80	180	900	100	0,67	12	820			0,40	22,29	Argilla
5,60		110	200	960	90	0,60	18	850			0,55	19,64	Argilla
5,80		110	240	1040	130	0,87	13	930			0,55	19,64	Argilla
6,00		120	270	1150	150	1,00	12	1030			0,60	19,13	Argilla
6,20		150	310	1240	160	1,07	14	1090			0,75	18,14	Argilla
6,40		140	310	1340	170	1,13	12	1200			0,70	18,40	Argilla
6,60		100	250	1390	150	1,00	10	1290			0,50	20,30	Argilla
6,80		80	210	1460	130	0,87	9	1380			0,40	22,29	Argilla
7,00		80	180	1460	100	0,67	12	1380			0,40	22,29	Argilla
7,20		30	120	1460	90	0,60	5	1430			0,15	41,81	Argilla
7,40		30	80	1500	50	0,33	9	1470			0,15	41,81	Argilla
7,60		50	90	1520	40	0,27	19	1470			0,25	29,00	Argilla
7,80		50	110	1480	60	0,40	13	1430			0,25	29,00	Argilla
8,00		40	80	1480	40	0,27	15	1440			0,20	33,74	Argilla
8,20		40	80	1490	40	0,27	15	1450			0,20	33,74	Argilla
8,40		40	80	1480	40	0,27	15	1440			0,20	33,74	Argilla
8,60		30	60	1510	30	0,20	15	1480			0,15	41,81	Argilla
8,80		40	60	1490	20	0,13	30	1450			0,20	33,74	Limo
9,00		40	60	1490	20	0,13	30	1450			0,20	33,74	Limo
9,20		50	80	1490	30	0,20	25	1440			0,25	29,00	Argilla
9,40		50	100	1530	50	0,33	15	1480			0,25	29,00	Argilla
9,60		60	100	1570	40	0,27	23	1510			0,30	25,93	Argilla
9,80		90	140	1620	50	0,33	27	1530			0,45	21,16	Limo
10,00		90	180	1640	90	0,60	15	1550			0,45	21,16	Argilla
10,20		70	170	1660	100	0,67	11	1590			0,35	23,81	Argilla
10,40		60	130	1640	70	0,47	13	1580			0,30	25,93	Argilla
10,60		40	110	1690	70	0,47	9	1650			0,20	33,74	Argilla
10,80		60	120	1680	60	0,40	15	1620			0,30	25,93	Argilla
11,00		50	120	1730	70	0,47	11	1680			0,25	29,00	Argilla
11,20		50	110	1750	60	0,40	13	1700			0,25	29,00	Argilla
11,40		50	100	1780	50	0,33	15	1730			0,25	29,00	Argilla
11,60		40	100	1820	60	0,40	10	1780			0,20	33,74	Argilla
11,80		50	100	1820	50	0,33	15	1770			0,25	29,00	Argilla
12,00		50	110	1850	60	0,40	13	1800			0,25	29,00	Argilla
12,20		60	110	1840	50	0,33	18	1780			0,30	25,93	Argilla
12,40		30	90	1870	60	0,40	8	1840			0,15	41,81	Argilla
12,60		30	60	1860	30	0,20	15	1830			0,15	41,81	Argilla
12,80		60	80	1870	20	0,13	45	1810			0,30	25,93	Limo sabbioso
13,00		40	90	1860	50	0,33	12	1820			0,20	33,74	Argilla
13,20		40	90	1910	50	0,33	12	1870			0,20	33,74	Argilla
13,40		180	240	2270	60	0,40	45	2090			0,90	17,60	Limo sabbioso
13,60		400	440	2350	40	0,27	150	1950	31	32		14,50	Sabbia con ghiaia
13,80		240	340	2190	100	0,67	36	1950			0,96	16,94	Limo sabbioso
14,00		80	230	2050	150	1,00	8	1970			0,40	22,29	Argilla
14,20		60	100	1930	40	0,27	23	1870			0,30	25,93	Argilla
14,40		40	100	1980	60	0,40	10	1940			0,20	33,74	Argilla
14,60		50	90	2000	40	0,27	19	1950			0,25	29,00	Argilla
14,80		40	70	2010	30	0,20	20	1970			0,20	33,74	Argilla
15,00		40	90	2000	50	0,33	12	1960			0,20	33,74	Argilla

		letture di campagna			valori derivati								
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
15,20		40	70	1990	30	0,20	20	1950			0,20	33,74	Argilla
15,40		60	100	1970	40	0,27	23	1910			0,30	25,93	Argilla
15,60		50	100	2030	50	0,33	15	1980			0,25	29,00	Argilla
15,80		100	180	2310	80	0,53	19	2210			0,50	20,30	Argilla
16,00		370	400	2240	30	0,20	185	1870	31	30		15,06	Sabbia con ghiaia
16,20		90	260	2290	170	1,13	8	2200			0,45	21,16	Argilla
16,40		70	130	2210	60	0,40	18	2140			0,35	23,81	Argilla
16,60		60	120	2260	60	0,40	15	2200			0,30	25,93	Argilla
16,80		60	100	2280	40	0,27	23	2220			0,30	25,93	Argilla
17,00		100	180	2860	80	0,53	19	2760			0,50	20,30	Argilla
17,20		330	440	2620	110	0,73	45	2290			1,32	15,75	Limo sabbioso
17,40		70	310	2830	240	1,60	4	2760			0,35	23,81	Argilla
17,60		320	350	2550	30	0,20	160	2230	29	27		15,91	Sabbia con ghiaia
17,80		70	220	2570	150	1,00	7	2500			0,35	23,81	Argilla
18,00		100	180	2520	80	0,53	19	2420			0,50	20,30	Argilla
18,20		90	160	2470	70	0,47	19	2380			0,45	21,16	Argilla
18,40		80	180	250	100	0,67	12	170			0,40	22,29	Argilla
18,60		90	140	2550	50	0,33	27	2460			0,45	21,16	Limo
18,80		70	150	2640	80	0,53	13	2570			0,35	23,81	Argilla
19,00		110	160	2680	50	0,33	33	2570			0,55	19,64	Limo sabbioso
19,20		310	350	2800	40	0,27	116	2490	29	26		16,06	Sabbia con ghiaia
19,40		70	240	2890	170	1,13	6	2820			0,35	23,81	Argilla
19,60		60	110	2910	50	0,33	18	2850			0,30	25,93	Argilla
19,80		50	90	2910	40	0,27	19	2860			0,25	29,00	Argilla
20,00		50	100	2900	50	0,33	15	2850			0,25	29,00	Argilla
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		letture di campagna			valori derivati									
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
0,20				180									
0,40				250									
0,60		130	240	300	110	0,73	18	170			0,65	18,72	Argilla
0,80		190	250	440	60	0,40	48	250	28	17		17,47	Sabbia limosa
1,00		210	390	580	180	1,20	18	370			0,84	17,25	Argilla
1,20		150	450	610	300	2,00	8	460			0,75	18,14	Argilla
1,40		110	340	400	230	1,53	7	290			0,55	19,64	Argilla
1,60	X	120	220	290	100	0,67	18	170			0,60	19,13	Argilla
1,80		110	180	330	70	0,47	24	220			0,55	19,64	Argilla
2,00		110	180	360	70	0,47	24	250			0,55	19,64	Argilla
2,20		120	180	360	60	0,40	30	240			0,60	19,13	Limo
2,40		80	160	410	80	0,53	15	330			0,40	22,29	Argilla
2,60		110	170	450	60	0,40	28	340			0,55	19,64	Limo
2,80		110	240	500	130	0,87	13	390			0,55	19,64	Argilla
3,00		130	200	510	70	0,47	28	380			0,65	18,72	Limo
3,20		60	120	540	60	0,40	15	480			0,30	25,93	Argilla
3,40		80	140	570	60	0,40	20	490			0,40	22,29	Argilla
3,60		90	170	550	80	0,53	17	460			0,45	21,16	Argilla
3,80		60	170	560	110	0,73	8	500			0,30	25,93	Argilla
4,00		40	120	560	80	0,53	8	520			0,20	33,74	Argilla
4,20		40	90	570	50	0,33	12	530			0,20	33,74	Argilla
4,40		60	110	600	50	0,33	18	540			0,30	25,93	Argilla
4,60		80	140	600	60	0,40	20	520			0,40	22,29	Argilla
4,80		70	160	630	90	0,60	12	560			0,35	23,81	Argilla
5,00		70	140	650	70	0,47	15	580			0,35	23,81	Argilla
5,20		70	160	680	90	0,60	12	610			0,35	23,81	Argilla
5,40		90	190	720	100	0,67	14	630			0,45	21,16	Argilla
5,60		80	180	750	100	0,67	12	670			0,40	22,29	Argilla
5,80		70	160	820	90	0,60	12	750			0,35	23,81	Argilla
6,00		70	160	910	90	0,60	12	840			0,35	23,81	Argilla
6,20		120	220	1000	100	0,67	18	880			0,60	19,13	Argilla
6,40		130	260	1090	130	0,87	15	960			0,65	18,72	Argilla
6,60		100	250	1180	150	1,00	10	1080			0,50	20,30	Argilla
6,80		80	200	1230	120	0,80	10	1150			0,40	22,29	Argilla
7,00		50	130	1250	80	0,53	9	1200			0,25	29,00	Argilla
7,20		40	90	1290	50	0,33	12	1250			0,20	33,74	Argilla
7,40		60	120	1340	60	0,40	15	1280			0,30	25,93	Argilla
7,60		70	140	1380	70	0,47	15	1310			0,35	23,81	Argilla
7,80		90	160	1420	70	0,47	19	1330			0,45	21,16	Argilla
8,00		40	130	1410	90	0,60	7	1370			0,20	33,74	Argilla
8,20		40	80	1410	40	0,27	15	1370			0,20	33,74	Argilla
8,40		50	90	1430	40	0,27	19	1380			0,25	29,00	Argilla
8,60		60	120	1440	60	0,40	15	1380			0,30	25,93	Argilla
8,80		60	130	1480	70	0,47	13	1420			0,30	25,93	Argilla
9,00		40	100	1500	60	0,40	10	1460			0,20	33,74	Argilla
9,20		80	110	1490	30	0,20	40	1410			0,40	22,29	Limo sabbioso
9,40		50	100	1670	50	0,33	15	1620			0,25	29,00	Argilla
9,60		280	290	1680	10	0,07	420	1400	29	24		16,48	Sabbia con ghiaia
9,80		80	180	1660	100	0,67	12	1580			0,40	22,29	Argilla
10,00		50	140	1750	90	0,60	8	1700			0,25	29,00	Argilla
10,20		60	100	1530	40	0,27	23	1470			0,30	25,93	Argilla
10,40		70	90	1540	20	0,13	53	1470	25	7		23,81	Sabbia limosa
10,60		70	90	1530	20	0,13	53	1460	25	7		23,81	Sabbia limosa
10,80		60	90	1550	30	0,20	30	1490			0,30	25,93	Limo
11,00		60	90	1550	30	0,20	30	1490			0,30	25,93	Limo
11,20		70	110	1550	40	0,27	26	1480			0,35	23,81	Limo
11,40		70	110	1610	40	0,27	26	1540			0,35	23,81	Limo
11,60		80	110	1600	30	0,20	40	1520			0,40	22,29	Limo sabbioso
11,80		70	100	1600	30	0,20	35	1530			0,35	23,81	Limo sabbioso
12,00		80	120	1670	40	0,27	30	1590			0,40	22,29	Limo
12,20		230	330	1980	100	0,67	35	1750			0,92	17,04	Limo sabbioso
12,40		440	510	2260	70	0,47	94	1820	31	35		13,72	Sabbia con ghiaia
12,60		600	830	2570	230	1,53	39	1970			2,00	10,84	Limo sabbioso
12,80		640	980	2670	340	2,27	28	2030			2,13	10,24	Limo
13,00		540	650	2620	110	0,73	74	2080	36	41		11,85	Sabbia
13,20		480	840	2760	360	2,40	20	2280			1,60	12,95	Argilla
13,40		650	920	2700	270	1,80	36	2050			2,17	10,10	Limo sabbioso
13,60		430	660	2640	230	1,53	28	2210			1,43	13,92	Limo
13,80		370	700	2400	330	2,20	17	2030			1,48	15,06	Argilla
14,00		240	510	2450	270	1,80	13	2210			0,96	16,94	Argilla
14,20		360	560	2470	200	1,33	27	2110			1,44	15,24	Limo
14,40		540	710	2450	170	1,13	48	1910	36	41		11,85	Sabbia limosa
14,60		400	620	2550	220	1,47	27	2150			1,60	14,50	Limo
14,80		520	780	2400	260	1,73	30	1880			1,73	12,20	Limo
15,00		240	500	2260	260	1,73	14	2020			0,96	16,94	Argilla

		letture di campagna			valori derivati								
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
15,20		80	250	2070	170	1,13	7	1990			0,40	22,29	Argilla
15,40		150	200	2100	50	0,33	45	1950			0,75	18,14	Limo sabbioso
15,60		430	470	2460	40	0,27	161	2030	31	34		13,92	Sabbia con ghiaia
15,80		560	720	2870	160	1,07	53	2310	36	42		11,50	Sabbia limosa
16,00		670	1020	3140	350	2,33	29	2470			2,23	9,82	Limo
16,20		910	1160	3060	250	1,67	55	2150	38	57		7,31	Sabbia limosa
16,40		310	400	2800	90	0,60	52	2490	34	26		16,06	Sabbia limosa
16,60		90	250	2190	160	1,07	8	2100			0,45	21,16	Argilla
16,80		130	190	1980	60	0,40	33	1850			0,65	18,72	Limo sabbioso
17,00		50	100	2010	50	0,33	15	1960			0,25	29,00	Argilla
17,20		290	400	2170	110	0,73	40	1880			1,16	16,35	Limo sabbioso
17,40		290	400	2240	110	0,73	40	1950			1,16	16,35	Limo sabbioso
17,60		110	310	2220	200	1,33	8	2110			0,55	19,64	Argilla
17,80		70	180	2110	110	0,73	10	2040			0,35	23,81	Argilla
18,00		70	110	2240	40	0,27	26	2170			0,35	23,81	Limo
18,20		170	230	2130	60	0,40	43	1960			0,85	17,75	Limo sabbioso
18,40		50	130	2320	80	0,53	9	2270			0,25	29,00	Argilla
18,60		110	130	2540	20	0,13	83	2430	25	10		19,64	Sabbia con ghiaia
18,80		410	540	2630	130	0,87	47	2220	36	33		14,30	Sabbia limosa
19,00		410	520	2650	110	0,73	56	2240	36	33		14,30	Sabbia limosa
19,20		280	480	2510	200	1,33	21	2230			1,12	16,48	Argilla
19,40		60	240	2540	180	1,20	5	2480			0,30	25,93	Argilla
19,60		60	120	2380	60	0,40	15	2320			0,30	25,93	Argilla
19,80		70	120	240	50	0,33	21	170			0,35	23,81	Argilla
20,00		60	120	230	60	0,40	15	170			0,30	25,93	Argilla
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Prof.	H2O	letture di campagna Rpt	Rat	Rt	valori derivati Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
0,20				250									
0,40				260									
0,60		170	300	500	130	0,87	20	330			0,85	17,75	Argilla
0,80		240	290	480	50	0,33	72	240	28	21		16,94	Sabbia
1,00		220	440	680	220	1,47	15	460			0,88	17,15	Argilla
1,20		180	460	640	280	1,87	10	460			0,90	17,60	Argilla
1,40	X	120	290	480	170	1,13	11	360			0,60	19,13	Argilla
1,60		80	270	330	190	1,27	6	250			0,40	22,29	Argilla
1,80		70	160	220	90	0,60	12	150			0,35	23,81	Argilla
2,00		110	150	230	40	0,27	41	120			0,55	19,64	Limo sabbioso
2,20		150	220	320	70	0,47	32	170			0,75	18,14	Limo
2,40		140	250	330	110	0,73	19	190			0,70	18,40	Argilla
2,60		140	230	380	90	0,60	23	240			0,70	18,40	Argilla
2,80		120	220	390	100	0,67	18	270			0,60	19,13	Argilla
3,00		110	240	470	130	0,87	13	360			0,55	19,64	Argilla
3,20		120	200	460	80	0,53	23	340			0,60	19,13	Argilla
3,40		50	140	480	90	0,60	8	430			0,25	29,00	Argilla
3,60		50	110	460	60	0,40	13	410			0,25	29,00	Argilla
3,80		40	90	460	50	0,33	12	420			0,20	33,74	Argilla
4,00		40	90	470	50	0,33	12	430			0,20	33,74	Argilla
4,20		40	90	490	50	0,33	12	450			0,20	33,74	Argilla
4,40		40	100	530	60	0,40	10	490			0,20	33,74	Argilla
4,60		70	130	570	60	0,40	18	500			0,35	23,81	Argilla
4,80		70	160	630	90	0,60	12	560			0,35	23,81	Argilla
5,00		110	190	670	80	0,53	21	560			0,55	19,64	Argilla
5,20		90	210	720	120	0,80	11	630			0,45	21,16	Argilla
5,40		90	200	760	110	0,73	12	670			0,45	21,16	Argilla
5,60		80	180	820	100	0,67	12	740			0,40	22,29	Argilla
5,80		90	190	880	100	0,67	14	790			0,45	21,16	Argilla
6,00		90	220	950	130	0,87	10	860			0,45	21,16	Argilla
6,20		120	220	1010	100	0,67	18	890			0,60	19,13	Argilla
6,40		70	180	1040	110	0,73	10	970			0,35	23,81	Argilla
6,60		40	130	1090	90	0,60	7	1050			0,20	33,74	Argilla
6,80		40	110	1110	70	0,47	9	1070			0,20	33,74	Argilla
7,00		40	80	1130	40	0,27	15	1090			0,20	33,74	Argilla
7,20		40	80	1140	40	0,27	15	1100			0,20	33,74	Argilla
7,40		30	80	1180	50	0,33	9	1150			0,15	41,81	Argilla
7,60		60	110	1210	50	0,33	18	1150			0,30	25,93	Argilla
7,80		90	160	1290	70	0,47	19	1200			0,45	21,16	Argilla
8,00		100	200	1350	100	0,67	15	1250			0,50	20,30	Argilla
8,20		100	200	1380	100	0,67	15	1280			0,50	20,30	Argilla
8,40		100	210	1460	110	0,73	14	1360			0,50	20,30	Argilla
8,60		110	200	1540	90	0,60	18	1430			0,55	19,64	Argilla
8,80		120	220	1450	100	0,67	18	1330			0,60	19,13	Argilla
9,00		120	190	1460	70	0,47	26	1340			0,60	19,13	Limo
9,20		60	140	1640	80	0,53	11	1580			0,30	25,93	Argilla
9,40		80	140	1710	60	0,40	20	1630			0,40	22,29	Argilla
9,60		150	220	1810	70	0,47	32	1660			0,75	18,14	Limo
9,80		300	410	1930	110	0,73	41	1630			1,20	16,21	Limo sabbioso
10,00		330	440	2020	110	0,73	45	1690			1,32	15,75	Limo sabbioso
10,20		340	480	1970	140	0,93	36	1630			1,36	15,59	Limo sabbioso
10,40		220	320	1810	100	0,67	33	1590			0,88	17,15	Limo sabbioso
10,60		60	220	1830	160	1,07	6	1770			0,30	25,93	Argilla
10,80		70	120	1700	50	0,33	21	1630			0,35	23,81	Argilla
11,00		80	120	1730	40	0,27	30	1650			0,40	22,29	Limo
11,20		60	120	1780	60	0,40	15	1720			0,30	25,93	Argilla
11,40		60	120	1830	60	0,40	15	1770			0,30	25,93	Argilla
11,60		60	100	1860	40	0,27	23	1800			0,30	25,93	Argilla
11,80		70	120	1860	50	0,33	21	1790			0,35	23,81	Argilla
12,00		50	100	1950	50	0,33	15	1900			0,25	29,00	Argilla
12,20		180	240	2070	60	0,40	45	1890			0,90	17,60	Limo sabbioso
12,40		160	310	2090	150	1,00	16	1930			0,80	17,93	Argilla
12,60		60	220	2100	160	1,07	6	2040			0,30	25,93	Argilla
12,80		40	120	2130	80	0,53	8	2090			0,20	33,74	Argilla
13,00		40	70	2150	30	0,20	20	2110			0,20	33,74	Argilla
13,20		30	70	2160	40	0,27	11	2130			0,15	41,81	Argilla
13,40		50	100	2160	50	0,33	15	2110			0,25	29,00	Argilla
13,60		40	130	2320	90	0,60	7	2280			0,20	33,74	Argilla
13,80		120	150	2270	30	0,20	60	2150	25	11		19,13	Sabbia limosa
14,00		60	140	2330	80	0,53	11	2270			0,30	25,93	Argilla
14,20		120	230	2330	110	0,73	16	2210			0,60	19,13	Argilla
14,40		70	140	2350	70	0,47	15	2280			0,35	23,81	Argilla
14,60		60	110	260	50	0,33	18	200			0,30	25,93	Argilla
14,80		380	420	2710	40	0,27	143	2330	31	31		14,87	Sabbia con ghiaia
15,00		470	600	2780	130	0,87	54	2310	36	37		13,14	Sabbia limosa

Prof.	H2O	letture di campagna Rpt	Rat	Rt	valori derivati Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
15,20		220	440	2810	220	1,47	15	2590			0,88	17,15	Argilla
15,40		100	200	2530	100	0,67	15	2430			0,50	20,30	Argilla
15,60		60	150	2590	90	0,60	10	2530			0,30	25,93	Argilla
15,80		120	160	2520	40	0,27	45	2400			0,60	19,13	Limo sabbioso
16,00		100	140	2570	40	0,27	38	2470			0,50	20,30	Limo sabbioso
16,20		100	160	2710	60	0,40	25	2610			0,50	20,30	Argilla
16,40		610	680	3000	70	0,47	131	2390	32	44		10,69	Sabbia con ghiaia
16,60		590	710	3340	120	0,80	74	2750	36	43		11,00	Sabbia
16,80		600	810	3700	210	1,40	43	3100			2,00	10,84	Limo sabbioso
17,00		1000	1210	3940	210	1,40	71	2940	39	60		6,66	Sabbia
17,20		800	960	3400	160	1,07	75	2600	38	53		8,30	Sabbia
17,40		120	310	3090	190	1,27	9	2970			0,60	19,13	Argilla
17,60		110	280	3210	170	1,13	10	3100			0,55	19,64	Argilla
17,80		710	820	3500	110	0,73	97	2790	37	49		9,30	Sabbia con ghiaia
18,00		860	1140	3980	280	1,87	46	3120	38	55		7,73	Sabbia limosa
18,20		800	1170	4200	370	2,47	32	3400			2,67	8,30	Limo
18,40		860	1200	4180	340	2,27	38	3320			2,87	7,73	Limo sabbioso
18,60		730	1220	4400	490	3,27	22	3670			2,43	9,06	Argilla
18,80		980	1110	4290	130	0,87	113	3310	39	60		6,79	Sabbia con ghiaia
19,00		910	1040	4010	130	0,87	105	3100	38	57		7,31	Sabbia con ghiaia
19,20		960	1100	4300	140	0,93	103	3340	39	59		6,93	Sabbia con ghiaia
19,40		1100	1420	4030	320	2,13	52	2930	39	63		6,05	Sabbia limosa
19,60		780	960	4050	180	1,20	65	3270	38	52		8,50	Sabbia
19,80		610	930	4100	320	2,13	29	3490			2,03	10,69	Limo
20,00		620	900	4130	280	1,87	33	3510			2,07	10,53	Limo sabbioso
20,20													
20,40													
20,60													
20,80													
21,00													
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7034

		letture di campagna			valori derivati								
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Rai	Rp/Rai	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
0,20				230									
0,40				340									
0,60		210	360	600	150	1,00	21	390			0,84	17,25	Argilla
0,80		300	420	470	120	0,80	38	170			1,20	16,21	Limo sabbioso
1,00		220	390	680	170	1,13	19	460			0,88	17,15	Argilla
1,20		170	400	610	230	1,53	11	440			0,85	17,75	Argilla
1,40		100	390	450	290	1,93	5	350			0,50	20,30	Argilla
1,60		110	230	280	120	0,80	14	170			0,55	19,64	Argilla
1,80		110	190	280	80	0,53	21	170			0,55	19,64	Argilla
2,00	X	90	160	310	70	0,47	19	220			0,45	21,16	Argilla
2,20		100	160	270	60	0,40	25	170			0,50	20,30	Argilla
2,40		80	150	290	70	0,47	17	210			0,40	22,29	Argilla
2,60		110	270	540	160	1,07	10	430			0,55	19,64	Argilla
2,80		110	190	370	80	0,53	21	260			0,55	19,64	Argilla
3,00		90	180	410	90	0,60	15	320			0,45	21,16	Argilla
3,20		90	180	440	90	0,60	15	350			0,45	21,16	Argilla
3,40		70	160	450	90	0,60	12	380			0,35	23,81	Argilla
3,60		60	120	450	60	0,40	15	390			0,30	25,93	Argilla
3,80		60	110	450	50	0,33	18	390			0,30	25,93	Argilla
4,00		50	100	490	50	0,33	15	440			0,25	29,00	Argilla
4,20		60	100	520	40	0,27	23	460			0,30	25,93	Argilla
4,40		70	140	560	70	0,47	15	490			0,35	23,81	Argilla
4,60		90	160	590	70	0,47	19	500			0,45	21,16	Argilla
4,80		80	180	640	100	0,67	12	560			0,40	22,29	Argilla
5,00		90	190	710	100	0,67	14	620			0,45	21,16	Argilla
5,20		100	210	760	110	0,73	14	660			0,50	20,30	Argilla
5,40		100	220	830	120	0,80	13	730			0,50	20,30	Argilla
5,60		110	220	910	110	0,73	15	800			0,55	19,64	Argilla
5,80		110	230	1030	120	0,80	14	920			0,55	19,64	Argilla
6,00		160	300	1120	140	0,93	17	960			0,80	17,93	Argilla
6,20		160	350	1190	190	1,27	13	1030			0,80	17,93	Argilla
6,40		120	250	1250	130	0,87	14	1130			0,60	19,13	Argilla
6,60		80	230	1300	150	1,00	8	1220			0,40	22,29	Argilla
6,80		80	180	1350	100	0,67	12	1270			0,40	22,29	Argilla
7,00		70	170	1390	100	0,67	11	1320			0,35	23,81	Argilla
7,20		80	170	1410	90	0,60	13	1330			0,40	22,29	Argilla
7,40		80	190	1460	110	0,73	11	1380			0,40	22,29	Argilla
7,60		80	170	1520	90	0,60	13	1440			0,40	22,29	Argilla
7,80		70	170	1560	100	0,67	11	1490			0,35	23,81	Argilla
8,00		60	140	1610	80	0,53	11	1550			0,30	25,93	Argilla
8,20		90	170	1740	80	0,53	17	1650			0,45	21,16	Argilla
8,40		180	270	1840	90	0,60	30	1660			0,90	17,60	Limo
8,60		160	310	1870	150	1,00	16	1710			0,80	17,93	Argilla
8,80		130	300	1920	170	1,13	11	1790			0,65	18,72	Argilla
9,00		120	270	1980	150	1,00	12	1860			0,60	19,13	Argilla
9,20		110	220	2060	110	0,73	15	1950			0,55	19,64	Argilla
9,40		120	240	2090	120	0,80	15	1970			0,60	19,13	Argilla
9,60		60	180	2150	120	0,80	8	2090			0,30	25,93	Argilla
9,80		50	110	2180	60	0,40	13	2130			0,25	29,00	Argilla
10,00		40	90	220	50	0,33	12	180			0,20	33,74	Argilla
10,20		60	90	2150	30	0,20	30	2090			0,30	25,93	Limo
10,40		70	130	2190	60	0,40	18	2120			0,35	23,81	Argilla
10,60		90	120	220	30	0,20	45	130			0,45	21,16	Limo sabbioso
10,80		90	150	2230	60	0,40	23	2140			0,45	21,16	Argilla
11,00		90	150	2180	60	0,40	23	2090			0,45	21,16	Argilla
11,20		140	160	2190	20	0,13	105	2050	25	13		18,40	Sabbia con ghiaia
11,40		50	80	2170	30	0,20	25	2120			0,25	29,00	Argilla
11,60		30	70	2230	40	0,27	11	2200			0,15	41,81	Argilla
11,80		100	130	2260	30	0,20	50	2160	25	9		20,30	Sabbia limosa
12,00		80	130	2270	50	0,33	24	2190			0,40	22,29	Argilla
12,20		100	140	2420	40	0,27	38	2320			0,50	20,30	Limo sabbioso
12,40		220	280	2580	60	0,40	55	2360	28	20		17,15	Sabbia limosa
12,60		180	400	2640	220	1,47	12	2460			0,90	17,60	Argilla
12,80		310	360	2730	50	0,33	93	2420	29	26		16,06	Sabbia con ghiaia
13,00		140	280	2770	140	0,93	15	2630			0,70	18,40	Argilla
13,20		70	190	2840	120	0,80	9	2770			0,35	23,81	Argilla
13,40		70	100	2890	30	0,20	35	2820			0,35	23,81	Limo sabbioso
13,60		90	130	2930	40	0,27	34	2840			0,45	21,16	Limo sabbioso
13,80		80	150	2970	70	0,47	17	2890			0,40	22,29	Argilla
14,00		80	120	2990	40	0,27	30	2910			0,40	22,29	Limo
14,20		70	110	3030	40	0,27	26	2960			0,35	23,81	Limo
14,40		70	130	3150	60	0,40	18	3080			0,35	23,81	Argilla
14,60		140	160	3190	20	0,13	105	3050	25	13		18,40	Sabbia con ghiaia
14,80		60	110	3200	50	0,33	18	3140			0,30	25,93	Argilla
15,00		60	100	3210	40	0,27	23	3150			0,30	25,93	Argilla

		letture di campagna			valori derivati								
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fl	Dr	Cu	mv	Tipo litologico
0,20				190									
0,40				260									
0,60		160	250	420	90	0,60	27	260			0,80	17,93	Limo
0,80		180	350	470	170	1,13	16	290			0,90	17,60	Argilla
1,00		160	350	560	190	1,27	13	400			0,80	17,93	Argilla
1,20		130	290	510	160	1,07	12	380			0,65	18,72	Argilla
1,40		110	300	370	190	1,27	9	260			0,55	19,64	Argilla
1,60		90	210	340	120	0,80	11	250			0,45	21,16	Argilla
1,80		100	190	340	90	0,60	17	240			0,50	20,30	Argilla
2,00		90	170	370	80	0,53	17	280			0,45	21,16	Argilla
2,20		100	180	420	80	0,53	19	320			0,50	20,30	Argilla
2,40		120	200	390	80	0,53	23	270			0,60	19,13	Argilla
2,60		80	180	430	100	0,67	12	350			0,40	22,29	Argilla
2,80		70	140	470	70	0,47	15	400			0,35	23,81	Argilla
3,00		90	160	500	70	0,47	19	410			0,45	21,16	Argilla
3,20		60	130	540	70	0,47	13	480			0,30	25,93	Argilla
3,40	X	60	140	550	80	0,53	11	490			0,30	25,93	Argilla
3,60		40	120	580	80	0,53	8	540			0,20	33,74	Argilla
3,80		30	90	630	60	0,40	8	600			0,15	41,81	Argilla
4,00		30	110	650	80	0,53	6	620			0,15	41,81	Argilla
4,20		60	140	670	80	0,53	11	610			0,30	25,93	Argilla
4,40		130	170	660	40	0,27	49	530	25	12		18,72	Sabbia limosa
4,60		70	180	670	110	0,73	10	600			0,35	23,81	Argilla
4,80		60	160	710	100	0,67	9	650			0,30	25,93	Argilla
5,00		70	170	720	100	0,67	11	650			0,35	23,81	Argilla
5,20		70	180	790	110	0,73	10	720			0,35	23,81	Argilla
5,40		150	180	830	30	0,20	75	680	25	14		18,14	Sabbia
5,60		100	150	940	50	0,33	30	840			0,50	20,30	Limo
5,80		110	190	1040	80	0,53	21	930			0,55	19,64	Argilla
6,00		80	170	1050	90	0,60	13	970			0,40	22,29	Argilla
6,20		110	190	1120	80	0,53	21	1010			0,55	19,64	Argilla
6,40		130	230	1180	100	0,67	20	1050			0,65	18,72	Argilla
6,60		100	220	1260	120	0,80	13	1160			0,50	20,30	Argilla
6,80		60	170	1310	110	0,73	8	1250			0,30	25,93	Argilla
7,00		70	160	1360	90	0,60	12	1290			0,35	23,81	Argilla
7,20		40	120	1380	80	0,53	8	1340			0,20	33,74	Argilla
7,40		40	10	1420	-30	-0,20	-20	1380			0,20	33,74	Argille plastiche
7,60		90	160	1510	70	0,47	19	1420			0,45	21,16	Argilla
7,80		110	210	1350	100	0,67	17	1240			0,55	19,64	Argilla
8,00		70	160	1560	90	0,60	12	1490			0,35	23,81	Argilla
8,20		50	90	1600	40	0,27	19	1550			0,25	29,00	Argilla
8,40		50	100	1610	50	0,33	15	1560			0,25	29,00	Argilla
8,60		70	80	1580	10	0,07	105	1510	25	7		23,81	Sabbia con ghiaia
8,80		60	90	1590	30	0,20	30	1530			0,30	25,93	Limo
9,00		40	80	1610	40	0,27	15	1570			0,20	33,74	Argilla
9,20		40	60	1610	20	0,13	30	1570			0,20	33,74	Limo
9,40		50	80	1610	30	0,20	25	1560			0,25	29,00	Argilla
9,60		50	70	1630	20	0,13	38	1580			0,25	29,00	Limo sabbioso
9,80		50	80	1600	30	0,20	25	1550			0,25	29,00	Argilla
10,00		40	80	1610	40	0,27	15	1570			0,20	33,74	Argilla
10,20		100	140	1640	40	0,27	38	1540			0,50	20,30	Limo sabbioso
10,40		80	130	1550	50	0,33	24	1470			0,40	22,29	Argilla
10,60		90	120	1610	30	0,20	45	1520			0,45	21,16	Limo sabbioso
10,80		70	110	1540	40	0,27	26	1470			0,35	23,81	Limo
11,00		40	80	1560	40	0,27	15	1520			0,20	33,74	Argilla
11,20		40	90	1600	50	0,33	12	1560			0,20	33,74	Argilla
11,40		100	130	1650	30	0,20	50	1550	25	9		20,30	Sabbia limosa
11,60		60	140	1660	80	0,53	11	1600			0,30	25,93	Argilla
11,80		60	80	1670	20	0,13	45	1610			0,30	25,93	Limo sabbioso
12,00		50	80	1710	30	0,20	25	1660			0,25	29,00	Argilla
12,20		50	70	1720	20	0,13	38	1670			0,25	29,00	Limo sabbioso
12,40		80	160	1830	80	0,53	15	1750			0,40	22,29	Argilla
12,60		150	190	1880	40	0,27	56	1730	25	14		18,14	Sabbia limosa
12,80		450	540	2020	90	0,60	75	1570	36	35		13,53	Sabbia
13,00		130	210	1940	80	0,53	24	1810			0,65	18,72	Argilla
13,20		140	320	2030	180	1,20	12	1890			0,70	18,40	Argilla
13,40		330	350	1870	20	0,13	248	1540	29	28		15,75	Sabbia con ghiaia
13,60		80	220	2030	140	0,93	9	1950			0,40	22,29	Argilla
13,80		70	110	1910	40	0,27	26	1840			0,35	23,81	Limo
14,00		60	90	1880	30	0,20	30	1820			0,30	25,93	Limo
14,20		80	90	1930	10	0,07	120	1850	25	8		22,29	Sabbia con ghiaia
14,40		320	360	1940	40	0,27	120	1620	29	27		15,91	Sabbia con ghiaia
14,60		280	330	1980	50	0,33	84	1700	29	24		16,48	Sabbia con ghiaia
14,80		140	240	2000	100	0,67	21	1860			0,70	18,40	Argilla
15,00		80	140	1910	60	0,40	20	1830			0,40	22,29	Argilla

		letture di campagna			valori derivati								
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fl	Dr	Cu	mv	Tipo litologico
15,20		60	100	1970	40	0,27	23	1910			0,30	25,93	Argilla
15,40		200	250	2020	50	0,33	60	1820	28	18		17,36	Sabbia limosa
15,60		130	230	2540	100	0,67	20	2410			0,65	18,72	Argilla
15,80		540	600	2660	60	0,40	135	2120	31	41		11,85	Sabbia con ghiaia
16,00		150	380	2340	230	1,53	10	2190			0,75	18,14	Argilla
16,20		70	180	1990	110	0,73	10	1920			0,35	23,81	Argilla
16,40		90	110	2000	20	0,13	68	1910	25	9		21,16	Sabbia
16,60		70	150	2240	80	0,53	13	2170			0,35	23,81	Argilla
16,80		630	700	2730	70	0,47	135	2100	32	45		10,39	Sabbia con ghiaia
17,00		560	780	3020	220	1,47	38	2460			1,87	11,50	Limo sabbioso
17,20		480	730	2820	250	1,67	29	2340			1,60	12,95	Limo
17,40		350	600	3300	250	1,67	21	2950			1,40	15,42	Argilla
17,60		840	1010	2830	170	1,13	74	1990	38	55		7,91	Sabbia
17,80		90	320	2930	230	1,53	6	2840			0,45	21,16	Argilla
18,00		100	210	2570	110	0,73	14	2470			0,50	20,30	Argilla
18,20		200	230	2440	30	0,20	100	2240	28	18		17,36	Sabbia con ghiaia
18,40		450	580	2570	130	0,87	52	2120	36	35		13,53	Sabbia limosa
18,60		180	330	2650	150	1,00	18	2470			0,90	17,60	Argilla
18,80		70	240	2500	170	1,13	6	2430			0,35	23,81	Argilla
19,00		70	90	2590	20	0,13	53	2520	25	7		23,81	Sabbia limosa
19,20		290	310	2450	20	0,13	218	2160	29	25		16,35	Sabbia con ghiaia
19,40		80	190	2640	110	0,73	11	2560			0,40	22,29	Argilla
19,60		70	120	2620	50	0,33	21	2550			0,35	23,81	Argilla
19,80		80	120	2630	40	0,27	30	2550			0,40	22,29	Limo
20,00		80	120	2640	40	0,27	30	2560			0,40	22,29	Limo
20,20													
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20,60													
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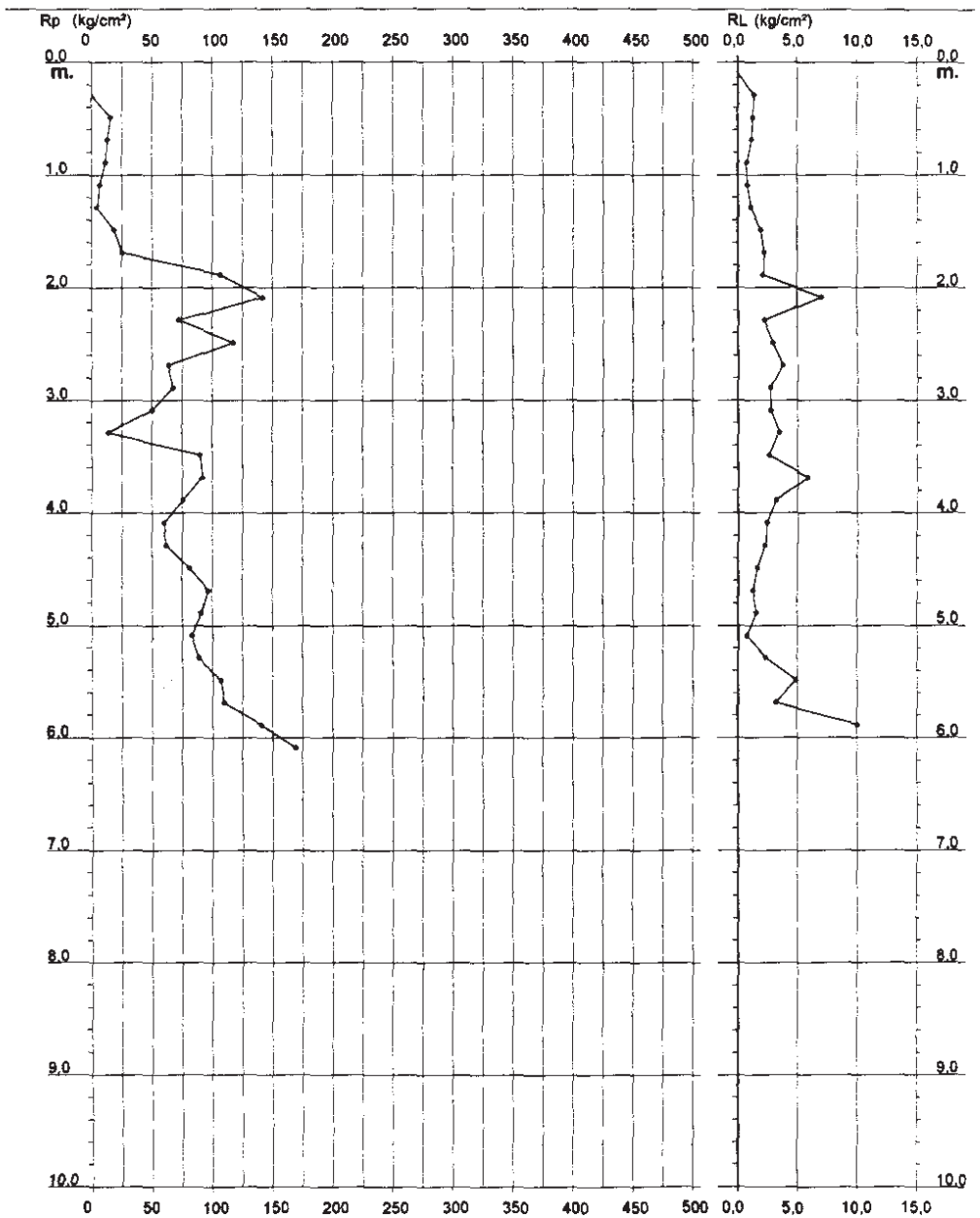
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RL (kg/cm²)
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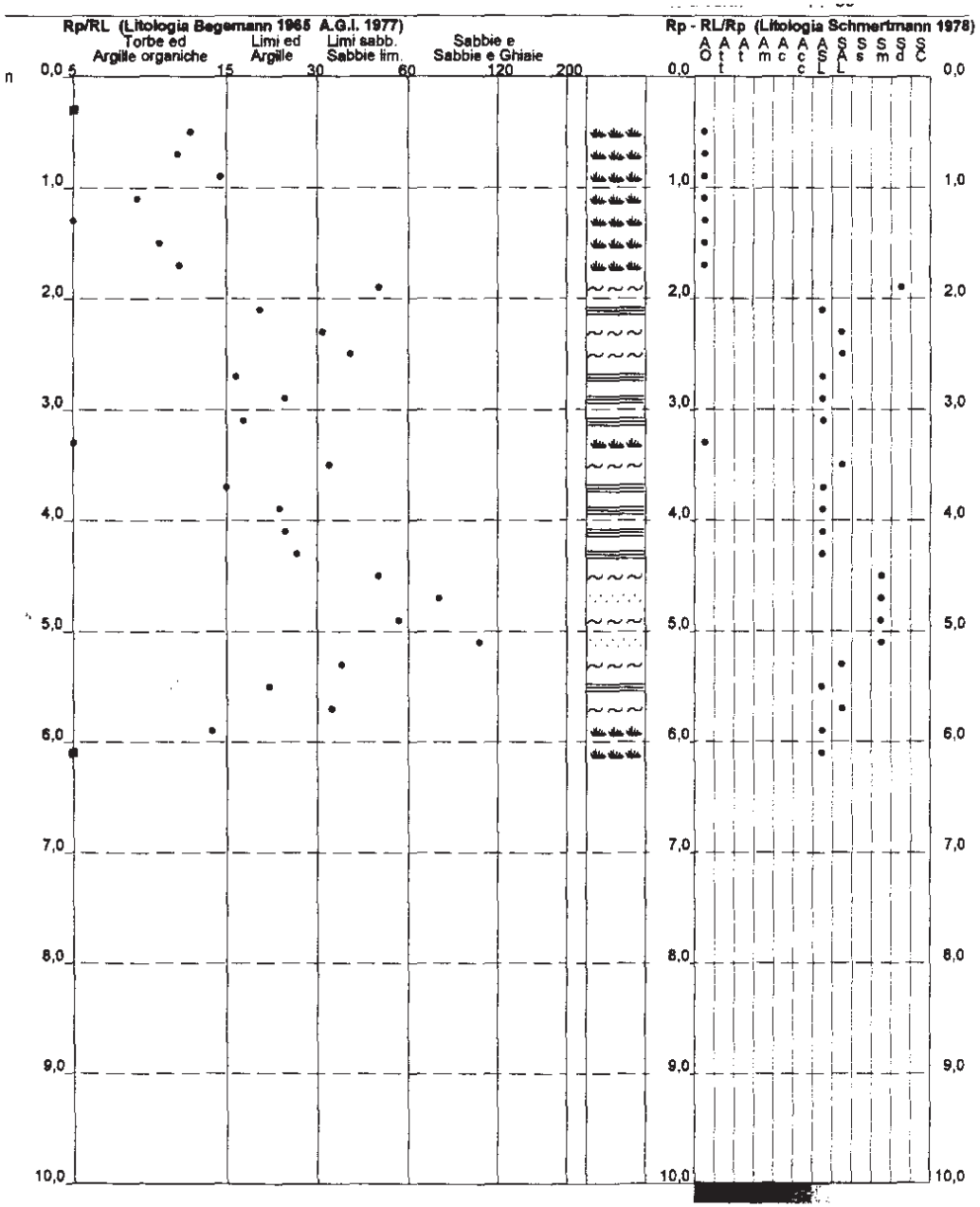
m.
0,0 1,0 2,0 3,0 4,0 5,0 6,0 7,0 8,0 9,0 10,0


Rp/RL (Litologia Begemann 1965 A.G.I. 1977)
Torbe ed Argille organiche
Limi ed Argille
Limi sabb. Sabbie lim.
Sabbie e Sabbie e Ghiaie
0,5 15 30 60 120 200
Rp - RL/Rp (Litologia Schmertmann 1978)
AO AtAmAcAcSLSAsSmSdSC
0,0 1,0 2,0 3,0 4,0 5,0 6,0 7,0 8,0 9,0 10,0

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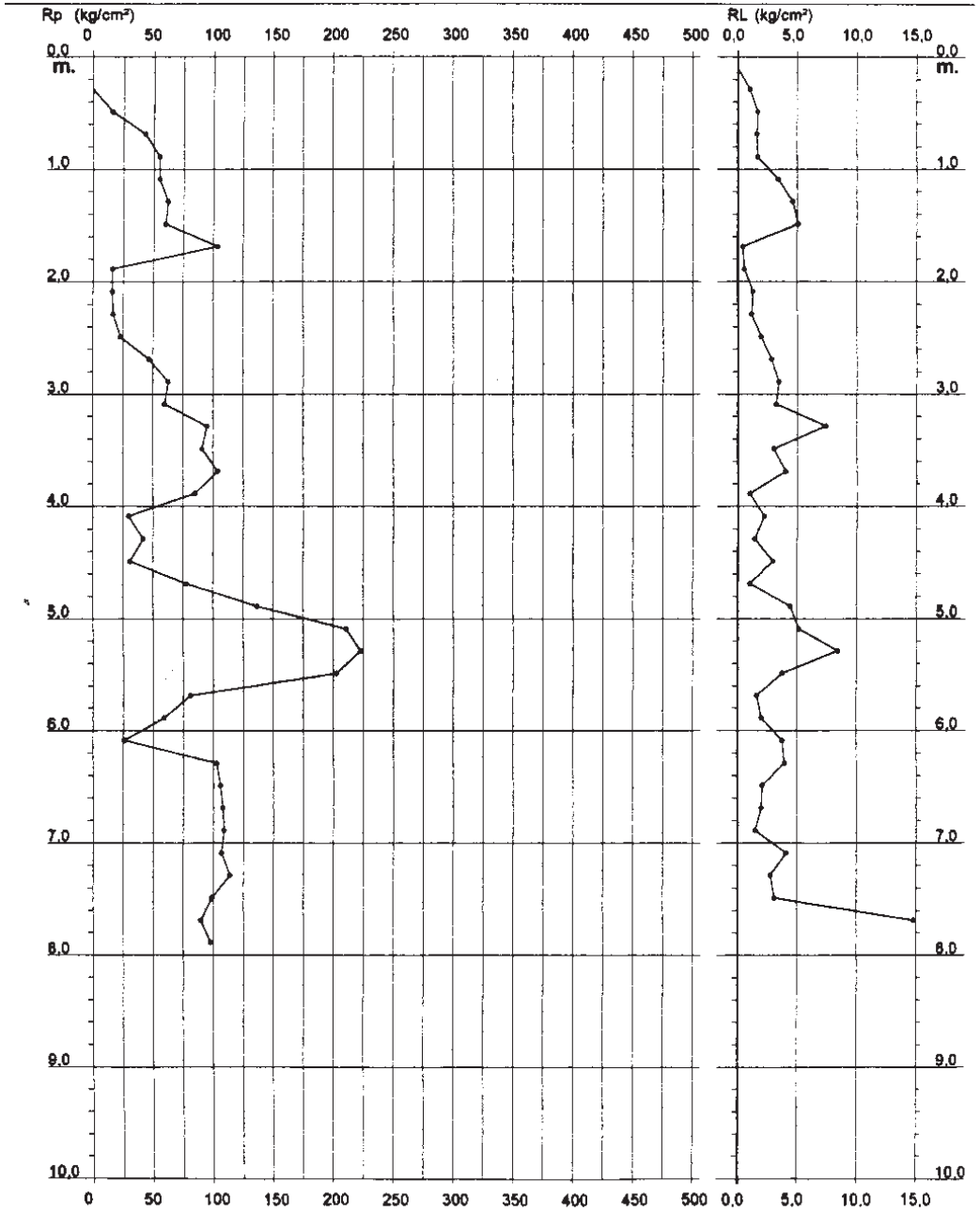
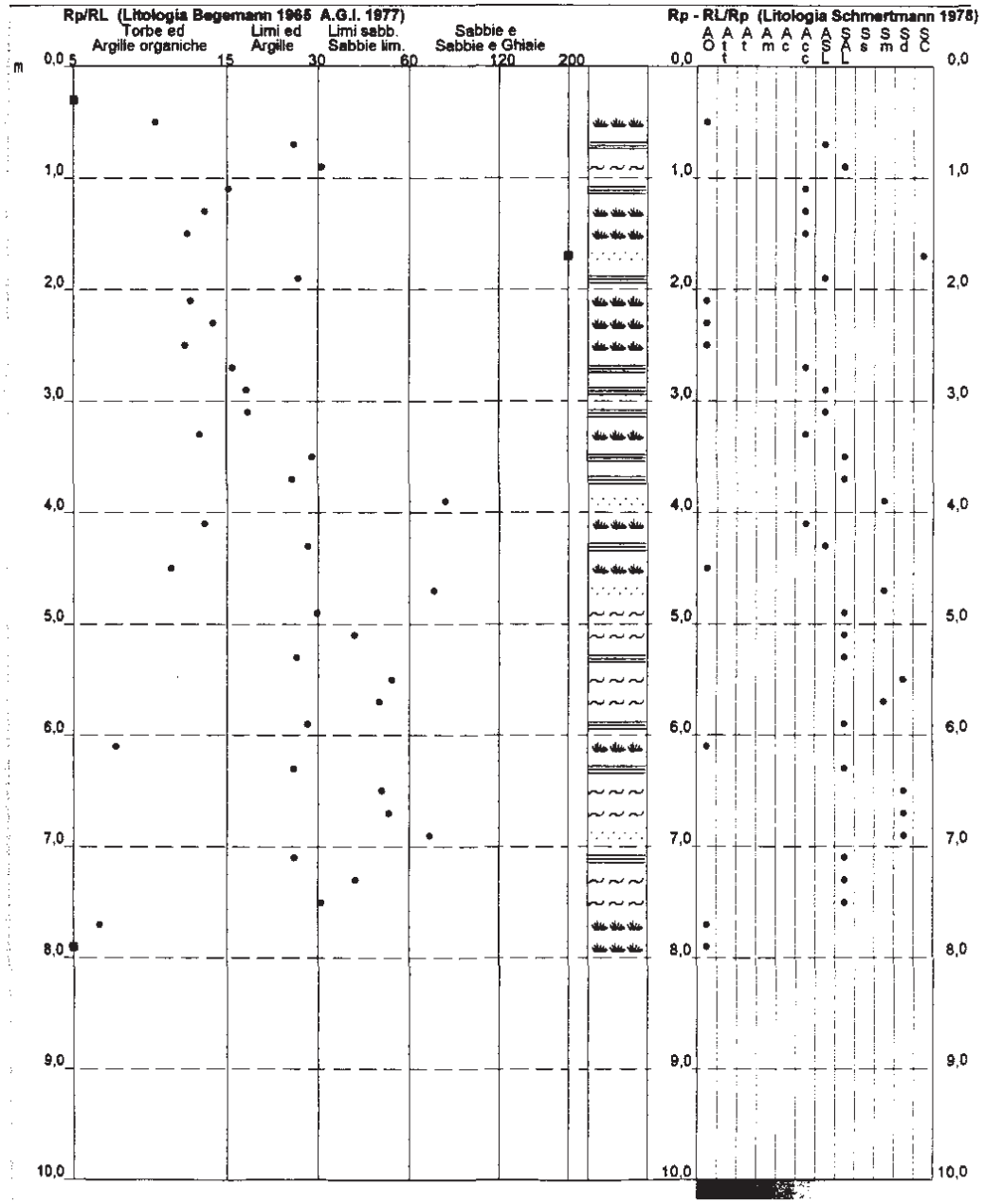
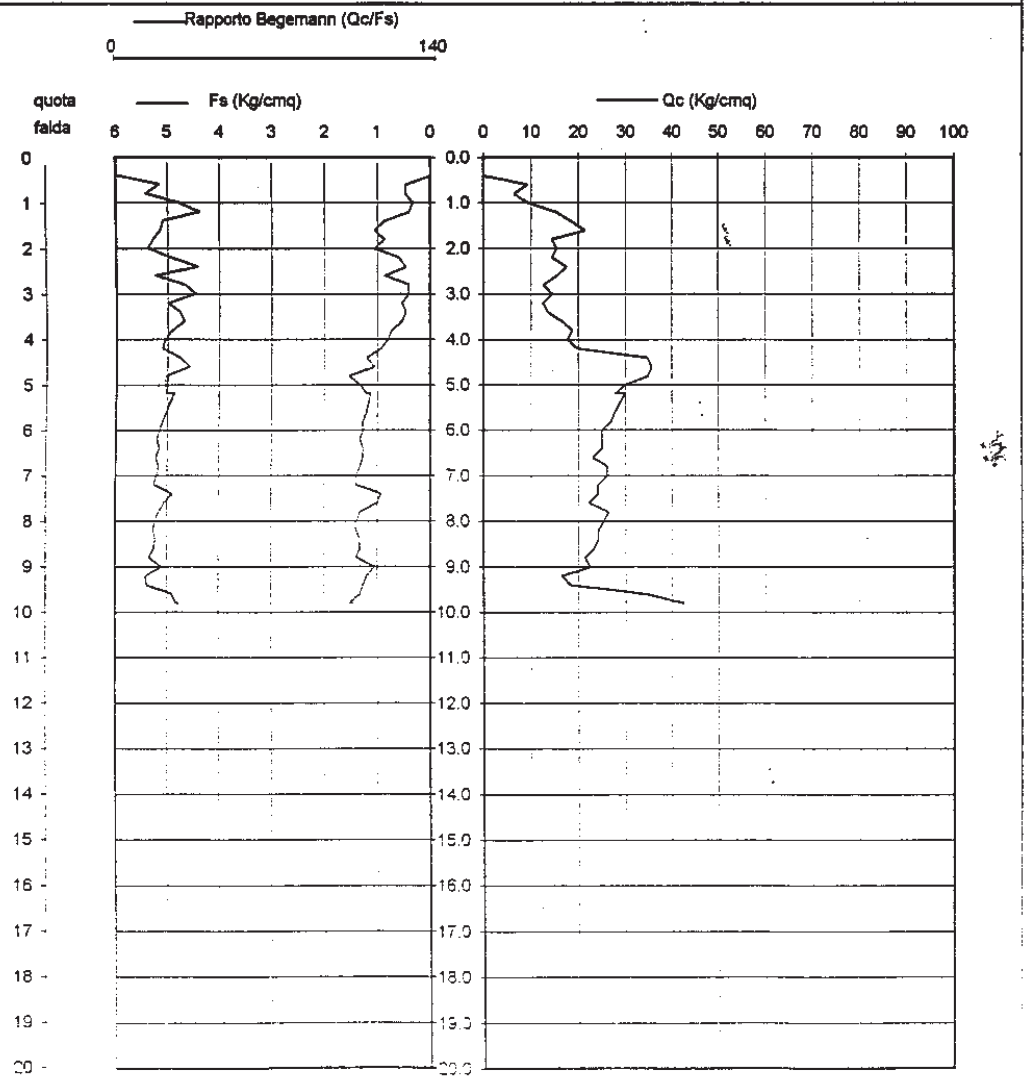

Rp (kg/cm²)
0 50 100 150 200 250 300 350 400 450 500
m.
0,0 1,0 2,0 3,0 4,0 5,0 6,0 7,0 8,0 9,0 10,0
RL (kg/cm²)
0,0 5,0 10,0 15,0


Rp/RL (Litologia Begemann 1965 A.G.I. 1977)
Torbe ed Argille organiche
Limi ed Argille
Limi sabb. Sabbie lim.
Sabbie e Sabbie e Ghiaie
0,5 15 30 60 120 200
Rp - RL/Rp (Litologia Schmertmann 1978)
AO At Am Ac AS SA Ss Sm Sd SC
m
0,0 1,0 2,0 3,0 4,0 5,0 6,0 7,0 8,0 9,0 10,0

7038

Prof. [metri]	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Rt [Kgf]	parametri geotecnici stimati γ [Kg/dmc]	σ'vo [Kg/cmq]	ϕ [gradi]	Dr [%]	Cu [Kg/cmq]	mv [cmq/t]	Colonna stratig.	lito_ logia
0.2					1.80	0.04	-	-	-	-	non ril.	
0.4					1.80	0.07	-	-	-	-	non ril.	
0.6	9.1	0.5	20		1.86	0.11	-	-	0.36	24.7	======	a
0.8	6.3	0.5	13		1.49	0.14	-	-	0.24	50.1	######	acf
1	9.3	0.3	28		1.86	0.18	-	-	0.36	24.5	======	al
1.2	15.3	0.4	38		1.68	0.21	-	-	0.60	17.7	======	[illegible]
1.4	18.3	0.9	21		1.92	0.25	-	-	0.72	19.5	======	a
1.6	21.3	1.1	20		1.93	0.29	-	-	0.84	18.8	======	a
1.8	14.4	0.9	17		1.91	0.32	-	-	0.56	19.9	======	a
2	15.4	1.1	14		1.91	0.36	-	-	0.60	19.6	======	a
2.2	14.4	0.6	24		1.91	0.40	-	-	0.56	19.9	======	a
2.4	17.4	0.5	37		1.69	0.44	-	-	0.68	17.0	======	[illegible]
2.6	15.4	0.9	18		1.91	0.47	-	-	0.60	19.6	======	a
2.8	12.5	0.4	31		1.91	0.51	-	-	0.48	20.9	======	al
3	14.5	0.4	36		1.67	0.54	-	-	0.56	18.0	======	[illegible]
3.2	12.5	0.5	23		1.91	0.58	-	-	0.48	20.9	======	[illegible]
3.4	13.5	0.5	29		1.91	0.62	-	-	0.52	20.3	======	[illegible]
3.6	16.5	0.5	31		1.91	0.66	-	-	0.63	19.4	======	[illegible]
3.8	18.7	0.7	25		1.92	0.70	-	-	0.72	19.6	======	[illegible]
4	17.7	0.8	22		1.92	0.74	-	-	0.68	19.4	======	[illegible]
4.2	19.7	0.9	21		1.92	0.77	-	-	0.76	19.9	======	[illegible]
4.4	34.7	1.2	29		1.95	0.81	-	-	1.35	11.5	======	[illegible]
4.6	35.7	1.1	33		1.78	0.85	29	-	-	9.4	======	[illegible]
4.8	34.8	1.5	23		1.96	0.89	-	-	1.38	11.5	======	[illegible]
5	29.8	1.3	22		1.94	0.93	-	-	1.15	13.4	======	
5.2	27.8	1.2	23		1.94	0.97	-	-	1.07	14.4	======	[illegible]
5.4	29.8	1.1	26		1.94	1.00	-	-	1.15	13.4	======	[illegible]
5.6	27.8	1.2	23		1.94	1.04	-	-	1.07	14.4	======	[illegible]
5.8	26.9	1.3	21		1.94	1.08	-	-	1.03	14.9	======	
6	24.9	1.3	20		1.93	1.12	-	-	0.95	16.1	======	
6.2	24.9	1.3	19		1.93	1.16	-	-	0.95	16.1	======	
6.4	24.9	1.3	20		1.93	1.20	-	-	0.95	16.1	======	
6.6	22.9	1.3	18		1.93	1.24	-	-	0.87	17.5	======	
6.8	26.0	1.3	20		1.94	1.28	-	-	0.99	15.4	======	
7	26.0	1.4	19		1.94	1.31	-	-	0.99	15.4	======	
7.2	24.0	1.4	17		1.93	1.35	-	-	0.91	16.6	======	
7.4	24.0	0.9	26		1.93	1.39	-	-	0.91	16.6	======	
7.6	22.0	1.0	22		1.93	1.43	-	-	0.82	18.1	======	
7.8	26.2	1.3	20		1.94	1.47	-	-	0.99	15.3	======	
8	25.2	1.4	18		1.93	1.51	-	-	0.95	15.9	======	
8.2	24.2	1.4	17		1.93	1.55	-	-	0.90	16.5	======	
8.4	24.2	1.3	18		1.93	1.58	-	-	0.90	16.5	======	
8.6	23.2	1.3	17		1.93	1.62	-	-	0.86	17.2	======	
8.8	21.3	1.4	16		1.93	1.66	-	-	0.79	18.8	======	
9	22.3	[illegible]	21		1.93	1.70	-	-	0.82	17.9	======	
9.2	18.3	[illegible]	[illegible]		[illegible]	1.73	-		[illegible]	[illegible]	======	
9.4	19.3	[illegible]	[illegible]		[illegible]	1.77	-		[illegible]	19.6	======	
9.6	34.3	1.3	26		1.96	1.81	-		[illegible]	[illegible]	======	
9.8	42.3	[illegible]	18		[illegible]	1.85	-		-	[illegible]	======	
10	42.3	1.5	28		[illegible]	1.89	32			[illegible]	======	

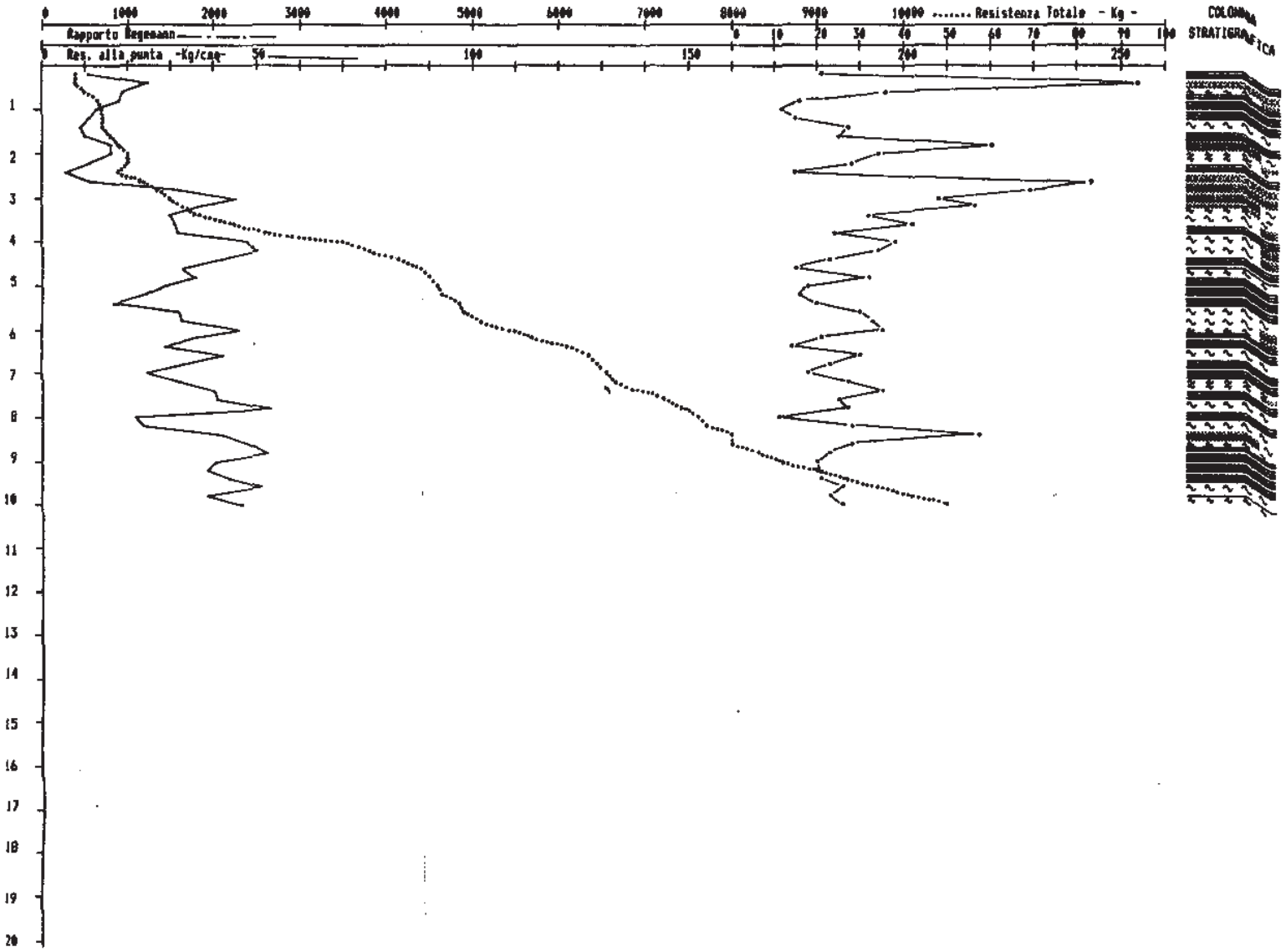
PENETROMETRO STATICO: TG 73 200 KN PAGANI



7240

Quota falda: m dal p.c.

Prof. [metri]	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Rt [Kgf]	γ [Kg/dmc]	σ'vo [Kg/cmq]	ϕ [gradi]	Dr [%]	Cu [Kg/cmq]	mv [cmq/t]	Colonna stratig.	litologia
					parametri geotecnici stimati							
0.2					1.80	0.04	-	-	-	-	non ril.	
0.4					1.80	0.07	-	-	-	-	non ril.	
0.6	11.1	0.3	33		1.90	0.11	-	-	0.44	22.0	======	a1
0.8	10.3	0.5	22		1.90	0.15	-	-	0.40	23.0	======	a
1	7.3	0.3	22		1.76	0.18	-	-	0.28	28.9	======	a
1.2	15.3	0.4	38		1.68	0.22	-	-	0.60	17.7	======	[illegible]
1.4	17.3	0.9	18		1.92	0.26	-	-	0.68	19.4	======	a
1.6	18.3	1.1	17		1.92	0.29	-	-	0.72	19.5	======	a
1.8	15.4	1.3	12		1.58	0.33	-	-	0.60	24.1	######	[illegible]
2	17.4	0.9	20		1.92	0.36	-	-	0.68	19.4	======	a
2.2	14.4	1.0	14		1.91	0.40	-	-	0.56	19.9	======	a
2.4	16.4	1.1	15		1.91	0.44	-	-	0.64	19.4	======	a
2.6	14.4	0.7	20		1.91	0.48	-	-	0.56	19.9	======	a
2.8	17.5	0.2	88		1.69	0.51	31	24	-	1.0	//////	[illegible]
3	14.5	0.5	31		1.91	0.55	-	-	0.56	19.8	======	[illegible]
3.2	13.5	0.4	34		1.67	0.58	-	-	0.52	18.6	======	[illegible]
3.4	9.5	0.5	18		1.88	0.62	-	-	0.36	24.1	======	[illegible]
3.6	14.5	0.3	54		1.67	0.65	28	12	-	1.1	//////	[illegible]
3.8	7.7	0.5	14		1.51	0.68	-	-	0.28	43.5	======	[illegible]
4	7.7	0.3	23		1.78	0.72	-	-	0.28	27.8	======	[illegible]
4.2	6.7	0.5	12		1.50	0.75	-	-	0.24	48.0	======	[illegible]
4.4	9.7	0.5	21		1.88	0.79	-	-	0.35	23.9	======	[illegible]
4.6	9.7	0.5	18		1.88	0.83	-	-	0.35	23.9	======	[illegible]
4.8	13.8	0.6	23		1.91	0.86	-	-	0.52	20.1	======	[illegible]
5	13.8	0.7	19		1.91	0.90	-	-	0.52	20.1	======	[illegible]
5.2	17.8	0.7	27		1.92	0.94	-	-	0.67	19.4	======	[illegible]
5.4	21.8	0.7	30		1.93	0.98	-	-	0.83	18.4	======	[illegible]
5.6	27.8	1.1	25		1.94	1.02	-	-	1.07	14.4	======	[illegible]
5.8	32.9	1.5	22		1.95	1.06	-	-	1.27	12.2	======	[illegible]
6	40.9	1.3	31		1.80	1.09	30	-	-	8.1	//////	[illegible]
6.2	30.9	1.9	16		1.95	1.13	-	-	1.19	12.9	======	[illegible]
6.4	29.9	1.5	19		1.94	1.17	-	-	1.15	13.4	======	[illegible]
6.6	27.9	1.5	19		1.94	1.21	-	-	1.07	14.3	======	[illegible]
6.8	24.0	1.3	18		1.93	1.25	-	-	0.91	16.6	======	
7	17.0	1.5	12		1.80	1.28	-	-	0.63	21.7	======	[illegible]
7.2	24.0	1.3	19		1.93	1.32	-	-	0.91	16.6	======	
7.4	22.0	1.5	15		1.93	1.36	-	-	0.83	18.1	======	
7.6	25.0	1.3	20		1.93	1.40	-	-	0.95	16.0	======	
7.8	22.2	1.3	17		1.93	1.43	-	-	0.83	18.0	======	
8	24.2	1.1	21		1.93	1.47	-	-	0.91	16.5	======	
8.2	25.2	1.3	20		1.93	1.51	-	-	0.95	15.9	======	
8.4	29.2	0.9	34		1.75	1.55	28	-	-	11.4	//////	
8.6	20.2	1.2	17		1.92	1.58	-	-	0.74	19.3	======	
8.8	25.3	1.2	21		1.93	1.62	-	-	0.95	16.3	======	
9	24.3	1.3	19		1.93	1.66	-	-	0.91	16.5	======	
9.2	24.3	0.9	26		1.93	1.70	-	-	0.91	16.5	======	
9.4	22.3	1.3	17		1.93	1.74	-	-	0.83	17.9	======	
9.6	29.3	1.2	25		1.94	1.78	-	-	1.07	15.2	======	
9.8	22.4	[illegible]	17		[illegible]	[illegible]		-	[illegible]	[illegible]		
10	22.4	1.3	17		1.93	1.86	-	-	[illegible]	[illegible]		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Rapporto Begemann
0 10 20 30 40 50 60 70 80 90 100
Res. alla punta -Kg/cmq- 50 100 150 200 250
COLONNA STRATIGRAFICA
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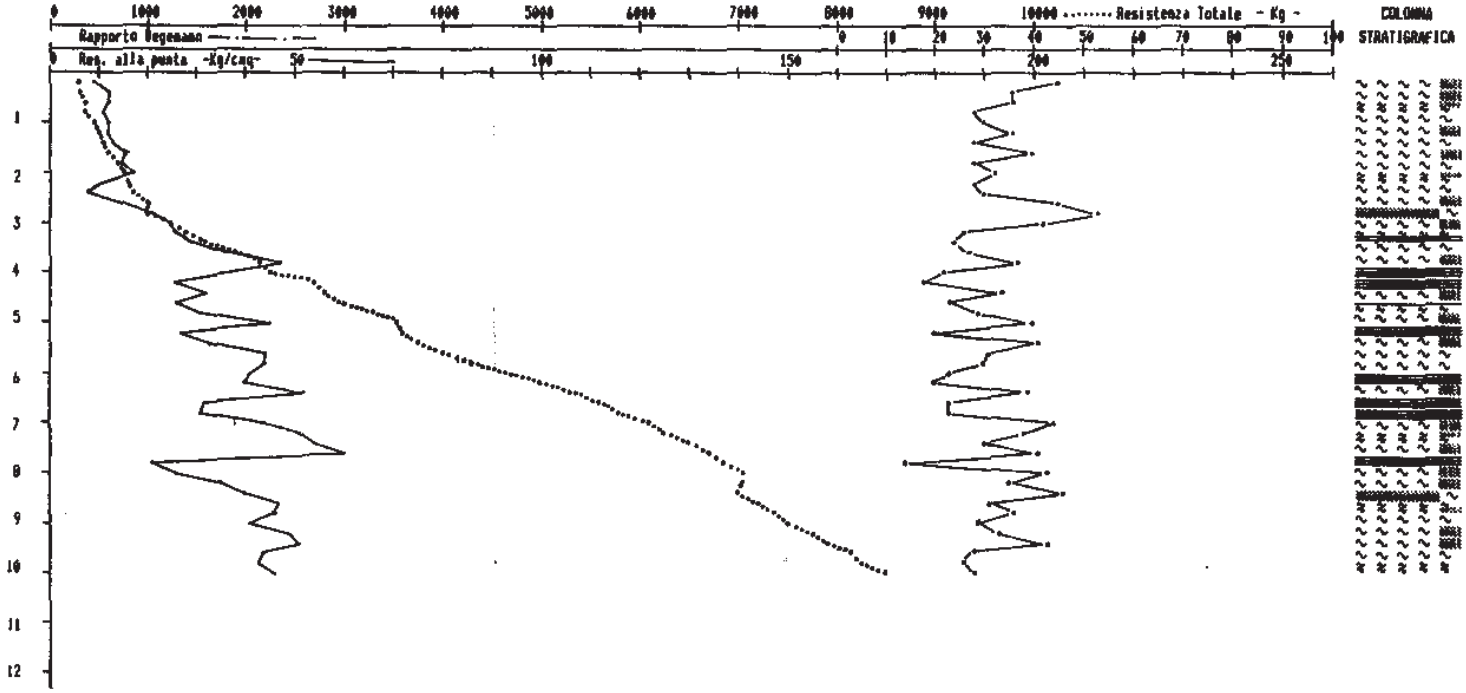
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Rapporto Begemann
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Res. alla punta -Kg/cmq- 50 100 150 200 250
COLONNA STRATIGRAFICA
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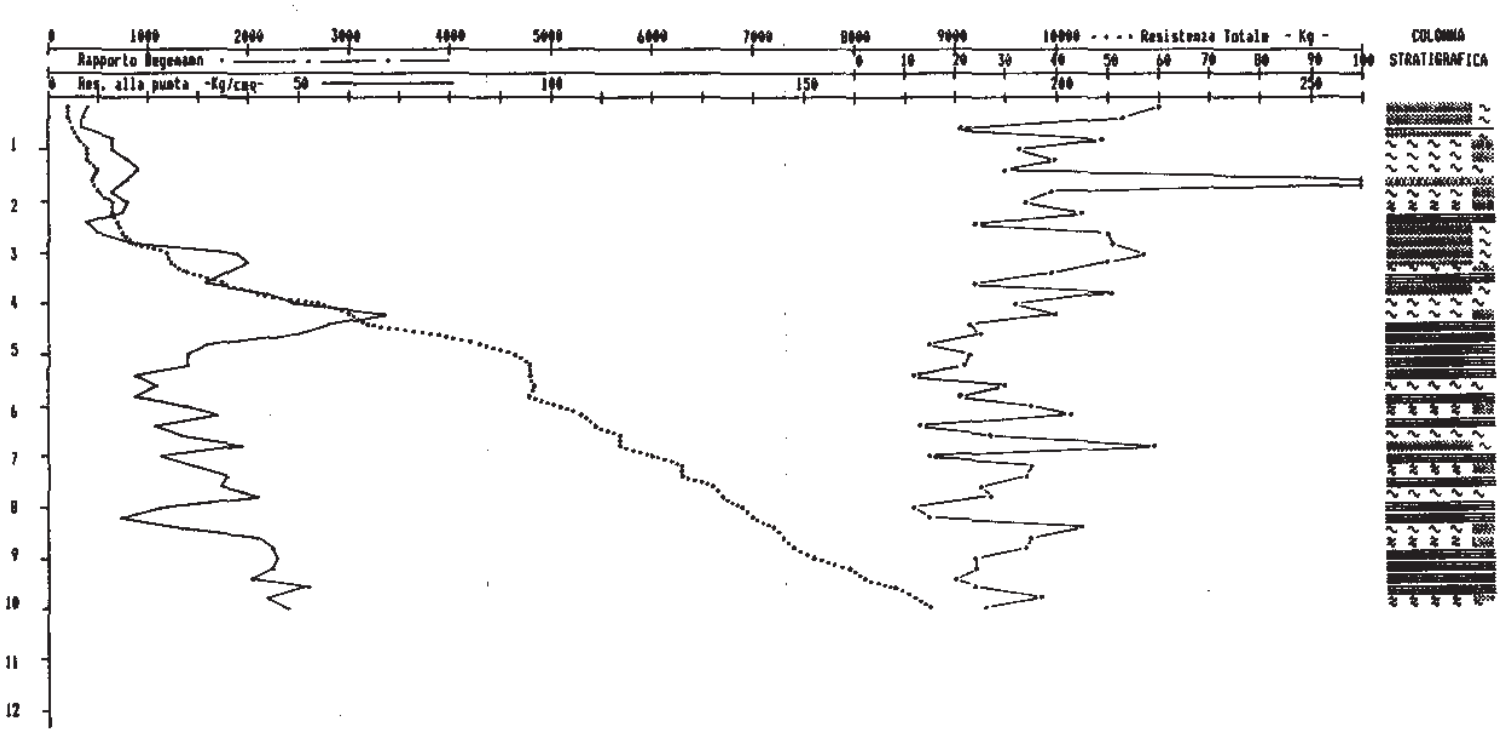
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Rapporto Begemann
0 10 20 30 40 50 60 70 80 90 100
Res. alla punta -Kg/cm²-
0 50 100 150 200 250
COLONNA STRATIGRAFICA
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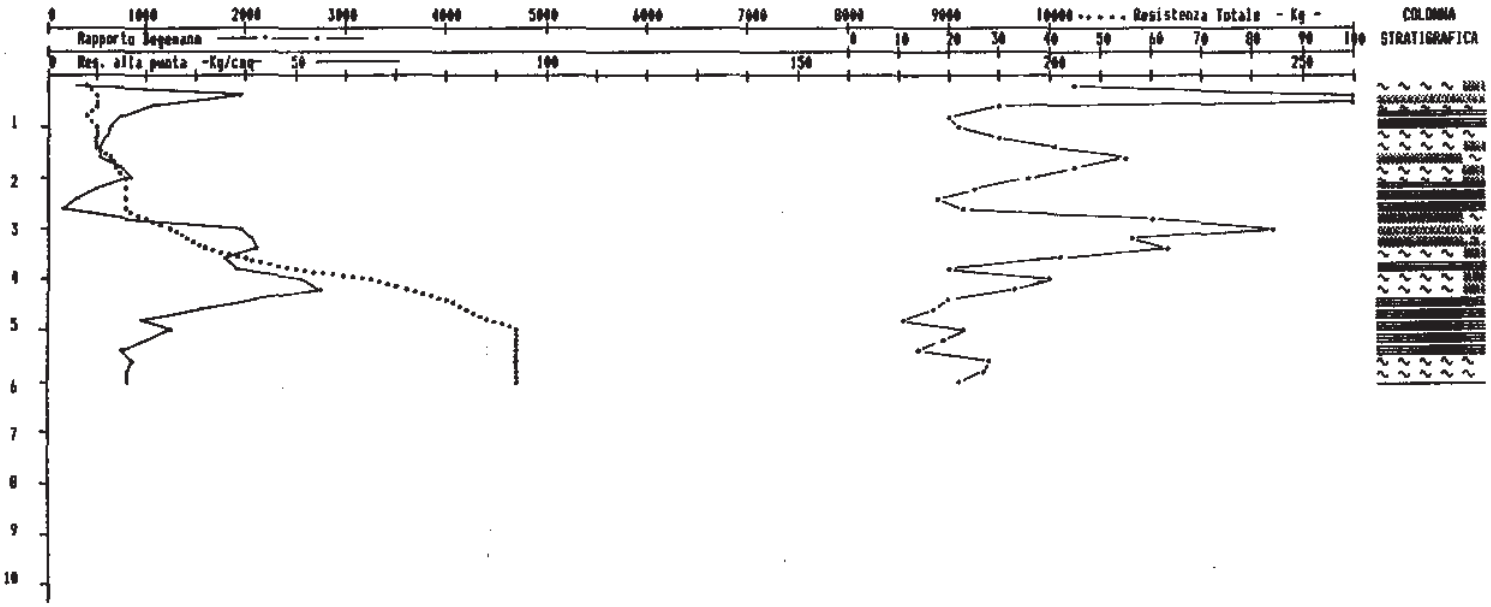
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Rapporto Begemann
0 10 20 30 40 50 60 70 80 90 100
Res. alla punta -Kg/cmq-
0 50 100 150 200 250
COLONNA STRATIGRAFICA
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Prof	Rpt	Rat	Rtot	Rp	Ral	Rp/Ral	Fr	Ø	Dr	Cu	mv
0.2	10	20	40	1	0.07	15	6.67	.	.	0.04	200.0
0.4	10	20	160	1	0.07	15	6.67	.	.	0.04	200.0
0.6	70	120	190	7	0.33	21	4.76	.	.	0.35	28.6
0.8	80	160	240	8	0.53	15	6.67	.	.	0.40	25.0
1.0	120	190	390	12	0.47	26	3.89	.	.	0.60	20.8
1.2	200	280	610	20	0.53	37	2.67	24	40	.	16.7
1.4	180	350	730	16	1.13	16	6.30	.	.	0.90	11.1
1.6	190	380	880	19	1.27	15	6.67	.	.	0.95	10.5
1.8	140	330	960	14	1.27	11	9.05	.	.	0.70	17.9
2.0	100	230	1030	10	0.87	12	8.67	.	.	0.50	25.0
2.2	90	190	1080	9	0.67	13	7.41	.	.	0.45	27.8
2.4	100	190	1130	10	0.60	17	6.00	.	.	0.50	20.0
2.6	100	160	1260	10	0.40	25	4.00	.	.	0.50	25.0
2.8	110	180	1350	11	0.47	24	4.24	.	.	0.55	18.2
3.0	120	220	1540	12	0.67	18	5.56	.	.	0.60	16.7
3.2	120	230	1490	12	0.73	16	6.11	.	.	0.60	16.7
3.4	150	260	1590	15	0.73	20	4.89	.	.	0.75	13.3
3.6	160	290	1790	16	0.87	18	5.42	.	.	0.80	12.5
3.8	170	330	1920	17	1.07	16	6.27	.	.	0.85	11.8
4.0	160	310	2060	16	1.00	16	6.25	.	.	0.80	12.5
4.2	140	270	2160	14	0.67	16	6.19	.	.	0.70	14.3
4.4	150	270	2280	15	0.80	19	5.33	.	.	0.75	13.3
4.6	170	290	2430	17	0.80	21	4.71	.	.	0.85	11.8
4.8	190	360	2600	19	1.13	17	5.96	.	.	0.95	10.5
5.0	200	380	2760	20	1.20	17	6.00	.	.	1.00	10.0
5.2	240	380	2980	24	0.93	26	3.89	.	.	1.20	10.4
5.4	230	450	3160	23	1.47	16	6.38	.	.	1.15	8.7
5.6	230	450	3430	23	1.47	16	6.38	.	.	1.15	8.7
5.8	180	350	3510	18	1.13	16	6.30	.	.	0.90	11.1
6.0	180	350	3640	18	1.13	16	6.30	.	.	0.90	11.1
6.2	170	350	3770	17	1.20	14	7.06	.	.	0.85	11.8
6.4	160	330	3860	16	1.13	14	7.08	.	.	0.80	12.5
6.6	160	320	4040	16	1.07	15	6.67	.	.	0.80	12.5
6.8	180	310	4170	18	0.87	21	4.81	.	.	0.90	11.1
7.0	130	300	4190	13	1.13	11	8.72	.	.	0.65	19.2
7.2	80	170	4220	8	0.60	13	7.50	.	.	0.40	31.3
7.4	120	190	4320	12	0.47	26	3.89	.	.	0.60	20.8
7.6	160	280	4590	16	0.80	20	5.00	.	.	0.80	12.5
7.8	160	290	4520	16	0.87	18	5.42	.	.	0.80	12.5
8.0	120	230	4580	12	0.73	16	6.11	.	.	0.60	16.7
8.2	170	290	4670	17	0.80	21	4.71	.	.	0.85	11.8
8.4	170	300	4700	17	0.87	20	5.10	.	.	0.85	11.8
8.6	160	230	4740	16	0.47	34	2.92	23	10	.	20.8
8.8	120	230	4840	12	0.73	16	6.11	.	.	0.60	16.7
9.0	100	200	4820	10	0.67	15	6.67	.	.	0.50	20.0
9.2	80	170	4820	8	0.60	13	7.50	.	.	0.40	31.3
9.4	120	210	4810	12	0.60	20	5.00	.	.	0.60	16.7
9.6	140	250	4980	14	0.73	19	5.24	.	.	0.70	14.3
9.8	130	260	5000	13	0.87	15	6.67	.	.	0.65	15.4
10.0	110	240	5000	11	0.87	13	7.86	.	.	0.55	22.7

Prof	Rpt	Rat	Rtot	Rp	Ral	Rp/Ral	Fr	Ø	Dr	Cu	mv
10.2	80	170	4960	8	0.60	13	7.50	.	.	0.40	31.3
10.4	40	110	4920	4	0.47	9	11.67	.	.	0.20	62.5
10.6	50	90	4970	5	0.27	19	5.33	.	.	0.25	40.0
10.8	70	130	5000	7	0.40	17	5.71	.	.	0.35	28.6
11.0	100	180	5010	10	0.53	19	5.33	.	.	0.50	20.0
11.2	80	160	5050	8	0.53	15	6.67	.	.	0.40	25.0
11.4	110	190	5100	11	0.53	21	4.85	.	.	0.55	18.2
11.6	140	210	5220	14	0.47	30	3.33	.	.	0.70	17.9
11.8	80	160	5250	8	0.53	15	6.67	.	.	0.40	25.0
12.0	40	110	5220	4	0.47	9	11.67	.	.	0.20	62.5
12.2	30	60	5210	3	0.20	15	6.67	.	.	0.15	66.7
12.4	60	100	5260	6	0.27	22	4.44	.	.	0.30	33.3
12.6	130	200	5350	13	0.47	28	3.59	.	.	0.65	19.2
12.8	100	170	5340	10	0.47	21	4.67	.	.	0.50	20.0
13.0	60	140	5300	6	0.53	11	8.89	.	.	0.30	41.7
13.2	70	130	5280	7	0.40	17	5.71	.	.	0.35	28.6
13.4	60	120	5320	6	0.40	15	6.67	.	.	0.30	33.3
13.6	30	70	5540	3	0.27	11	8.89	.	.	0.15	83.3
13.8	60	100	5490	6	0.27	22	4.44	.	.	0.30	33.3
14.0	40	90	5500	4	0.33	12	8.33	.	.	0.20	62.5
14.2	80	130	5450	8	0.33	24	4.17	.	.	0.40	25.0
14.4	90	140	5420	9	0.33	27	3.70	.	.	0.45	27.8
14.6	80	160	5450	8	0.53	15	6.67	.	.	0.40	25.0
14.8	70	130	5610	7	0.40	17	5.71	.	.	0.35	28.6
15.0	60	140	5380	6	0.53	11	8.89	.	.	0.30	41.7
15.2	50	110	5350	5	0.40	12	8.00	.	.	0.25	50.0
15.4	50	130	5320	5	0.53	9	10.67	.	.	0.25	50.0
15.6	40	130	5550	4	0.60	7	15.00	.	.	0.20	62.5
15.8	70	130	5360	7	0.40	17	5.71	.	.	0.35	28.6
16.0	80	150	5300	8	0.47	17	5.83	.	.	0.40	25.0
16.2	80	140	5270	8	0.40	20	5.00	.	.	0.40	25.0
16.4	80	160	5200	8	0.53	15	6.67	.	.	0.40	25.0
16.6	60	120	5230	6	0.40	15	6.67	.	.	0.30	33.3
16.8	260	330	5490	26	0.47	56	1.79	27	10	.	19.2
17.0	310	360	5370	31	0.33	93	1.08	30	10	.	21.5
17.2	60	90	5310	6	0.20	30	3.33	.	.	0.30	41.7
17.4	30	80	5290	3	0.33	9	11.11	.	.	0.15	83.3
17.6	30	90	5320	3	0.40	7	13.33	.	.	0.15	83.3
17.8	30	90	5490	3	0.40	7	13.33	.	.	0.15	83.3
18.0	30	60	5470	3	0.20	15	6.67	.	.	0.15	66.7
18.2	30	50	5460	3	0.13	22	4.44	.	.	0.15	66.7
18.4	60	80	5540	6	0.13	45	2.22	20	10	.	83.3
18.6	250	510	5550	25	1.73	14	6.93	.	.	1.25	8.0
18.8	290	410	5590	29	0.80	36	2.76	25	10	.	11.5
19.0	340	420	5700	34	0.53	64	1.57	31	10	.	14.7
19.2	80	230	5730	8	1.00	8	12.50	.	.	0.40	31.3
19.4	160	210	5750	16	0.33	48	2.08	24	10	.	31.3
19.6	300	410	5760	30	0.73	41	2.44	26	10	.	11.1
19.8	170	240	5790	17	0.47	36	2.75	23	10	.	19.4
20.0	290	450	5800	29	1.07	27	3.68	.	.	1.45	8.

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Prof	Rpt	Rat	Rtot	Rp	Ral	Rp/Ral	Fr	Ø	Dr	Cu	mv
0.2	10	20	60	1	0.07	15	6.67	.	.	0.04	200.0
0.4	10	20	160	1	0.07	15	6.67	.	.	0.04	200.0
0.6	60	120	290	6	0.40	15	6.67	.	.	0.30	33.3
0.8	110	220	410	11	0.73	15	6.67	.	.	0.55	18.2
1.0	170	290	620	17	0.80	21	4.71	.	.	0.85	11.8
1.2	210	400	810	21	1.27	17	6.03	.	.	1.05	9.5
1.4	200	420	960	20	1.47	14	7.33	.	.	1.00	10.0
1.6	160	370	1060	16	1.40	11	8.75	.	.	0.80	15.6
1.8	150	320	1160	15	1.13	13	7.56	.	.	0.75	16.7
2.0	120	230	1220	12	0.73	16	6.11	.	.	0.60	16.7
2.2	120	210	1300	12	0.60	20	5.00	.	.	0.60	16.7
2.4	110	190	1310	11	0.53	21	4.85	.	.	0.55	18.2
2.6	90	140	1460	9	0.33	27	3.70	.	.	0.45	27.8
2.8	90	160	1550	9	0.47	19	5.19	.	.	0.45	22.2
3.0	130	190	1590	13	0.40	32	3.08	.	.	0.65	25.6
3.2	80	150	1660	8	0.47	17	5.83	.	.	0.40	25.0
3.4	100	160	1750	10	0.40	25	4.00	.	.	0.50	25.0
3.6	90	150	1820	9	0.40	22	4.44	.	.	0.45	22.2
3.8	150	290	1850	15	0.93	16	6.22	.	.	0.75	13.3
4.0	160	280	2060	16	0.80	20	5.00	.	.	0.80	12.5
4.2	140	290	2180	14	1.00	14	7.14	.	.	0.70	14.3
4.4	160	300	2330	16	0.93	17	5.83	.	.	0.80	12.5
4.6	200	340	2590	20	0.93	21	4.67	.	.	1.00	10.0
4.8	250	460	2800	25	1.40	18	5.60	.	.	1.25	8.0
5.0	210	440	3010	21	1.53	14	7.30	.	.	1.05	9.5
5.2	200	360	3130	20	1.07	19	5.33	.	.	1.00	10.0
5.4	170	350	3320	17	1.20	14	7.06	.	.	0.85	11.8
5.6	160	310	3470	16	1.00	16	6.25	.	.	0.80	12.5
5.8	210	330	3670	21	0.80	26	3.81	.	.	1.05	11.9
6.0	210	330	3790	21	0.80	26	3.81	.	.	1.05	11.9
6.2	220	410	3990	22	1.27	17	5.76	.	.	1.10	9.1
6.4	170	390	4130	17	1.47	12	8.63	.	.	0.85	14.7
6.6	160	350	4230	16	1.27	13	7.92	.	.	0.80	15.6
6.8	140	290	4300	14	1.00	14	7.14	.	.	0.70	14.3
7.0	100	190	4330	10	0.60	17	6.00	.	.	0.50	20.0
7.2	130	230	4340	13	0.67	19	5.13	.	.	0.65	15.4
7.4	140	250	4390	14	0.73	19	5.24	.	.	0.70	14.3
7.6	140	240	4420	14	0.67	21	4.76	.	.	0.70	14.3
7.8	130	230	4480	13	0.67	19	5.13	.	.	0.65	15.4
8.0	120	200	4520	12	0.53	22	4.44	.	.	0.60	16.7
8.2	130	270	4550	13	0.93	14	7.18	.	.	0.65	15.4
8.4	100	260	4650	10	1.07	9	10.67	.	.	0.50	25.0
8.6	60	150	4700	6	0.60	10	10.00	.	.	0.30	41.7
8.8	80	150	4750	8	0.47	17	5.83	.	.	0.40	25.0
9.0	80	170	4750	8	0.60	13	7.50	.	.	0.40	31.3
9.2	80	150	4750	8	0.47	17	5.83	.	.	0.40	25.0
9.4	90	170	4900	9	0.53	17	5.93	.	.	0.45	22.2
9.6	120	230	4890	12	0.73	16	6.11	.	.	0.60	16.7
9.8	130	230	4950	13	0.67	19	5.13	.	.	0.65	15.4
10.0	110	260	4990	11	1.00	11	9.09	.	.	0.55	22.7

Prof	Rpt	Rat	Rtot	Rp	Ral	Rp/Ral	Fr	Ø	Dr	Cu	mv
10.2	80	170	4980	8	0.60	13	7.50	.	.	0.40	31.3
10.4	40	80	5100	4	0.27	15	6.67	.	.	0.20	50.0
10.6	80	150	5150	8	0.47	17	5.83	.	.	0.40	25.0
10.8	90	180	5150	9	0.60	15	6.67	.	.	0.45	22.2
11.0	60	170	5100	6	0.73	8	12.22	.	.	0.30	41.7
11.2	60	120	5080	6	0.40	15	6.67	.	.	0.30	33.3
11.4	90	150	5160	9	0.40	22	4.44	.	.	0.45	22.2
11.6	50	110	5100	5	0.40	12	8.00	.	.	0.25	50.0
11.8	20	40	5080	2	0.13	15	6.67	.	.	0.10	100.0
12.0	30	60	5020	3	0.20	15	6.67	.	.	0.15	66.7
12.2	20	50	5020	2	0.20	10	10.00	.	.	0.10	125.0
12.4	30	70	5210	3	0.27	11	8.89	.	.	0.15	83.3
12.6	70	130	5230	7	0.40	17	5.71	.	.	0.35	28.6
12.8	80	160	5270	8	0.53	15	6.67	.	.	0.40	25.0
13.0	80	160	5260	8	0.53	15	6.67	.	.	0.40	25.0
13.2	60	110	5160	6	0.33	18	5.56	.	.	0.30	33.3
13.4	20	60	5220	2	0.27	7	13.33	.	.	0.10	125.0
13.6	30	60	5270	3	0.20	15	6.67	.	.	0.15	66.7
13.8	80	120	5300	8	0.27	30	3.33	.	.	0.40	31.3
14.0	80	150	5230	8	0.47	17	5.83	.	.	0.40	25.0
14.2	50	80	5180	5	0.20	25	4.00	.	.	0.25	50.0
14.4	50	90	5260	5	0.27	19	5.33	.	.	0.25	40.0
14.6	60	130	5220	6	0.47	13	7.78	.	.	0.30	41.7
14.8	60	140	5220	6	0.53	11	8.89	.	.	0.30	41.7
15.0	60	140	5190	6	0.53	11	8.89	.	.	0.30	41.7
15.2	50	100	5120	5	0.33	15	6.67	.	.	0.25	40.0
15.4	30	70	5120	3	0.27	11	8.89	.	.	0.15	83.3
15.6	20	50	5190	2	0.20	10	10.00	.	.	0.10	125.0
15.8	30	60	5150	3	0.20	15	6.67	.	.	0.15	66.7
16.0	20	50	5110	2	0.20	10	10.00	.	.	0.10	125.0
16.2	20	50	5090	2	0.20	10	10.00	.	.	0.10	125.0
16.4	20	60	5200	2	0.27	7	13.33	.	.	0.10	125.0
16.6	20	60	5170	2	0.27	7	13.33	.	.	0.10	125.0
16.8	30	90	5200	3	0.40	7	13.33	.	.	0.15	83.3
17.0	100	150	5070	10	0.33	30	3.33	.	.	0.50	25.0
17.2	60	100	5260	6	0.27	22	4.44	.	.	0.30	33.3
17.4	330	370	5370	33	0.27	124	0.81	30	11	.	20.2
17.6	350	430	5410	35	0.53	66	1.52	31	13	.	14.3
17.8	370	480	5320	37	0.73	50	1.98	28	15	.	13.5
18.0	70	100	5110	7	0.20	35	2.86	20	10	.	47.6
18.2	20	70	5040	2	0.33	6	16.67	.	.	0.10	125.0
18.4	190	220	5180	19	0.20	95	1.05	27	10	.	35.1
18.6	20	40	5210	2	0.13	15	6.67	.	.	0.10	100.0
18.8	30	50	5290	3	0.13	22	4.44	.	.	0.15	66.7
19.0	50	90	5300	5	0.27	19	5.33	.	.	0.25	40.0
19.2	100	140	5210	10	0.27	37	2.67	20	10	.	33.3
19.4	30	80	5510	3	0.33	9	11.11	.	.	0.15	83.3
19.6	280	320	5570	28	0.27	105	0.95	29	10	.	[illegible]
19.8	360	450	5860	36	0.60	60	1.67	28	12	.	
20.0	480	530	5900	48	0.33	144	0.69	34	22	.	

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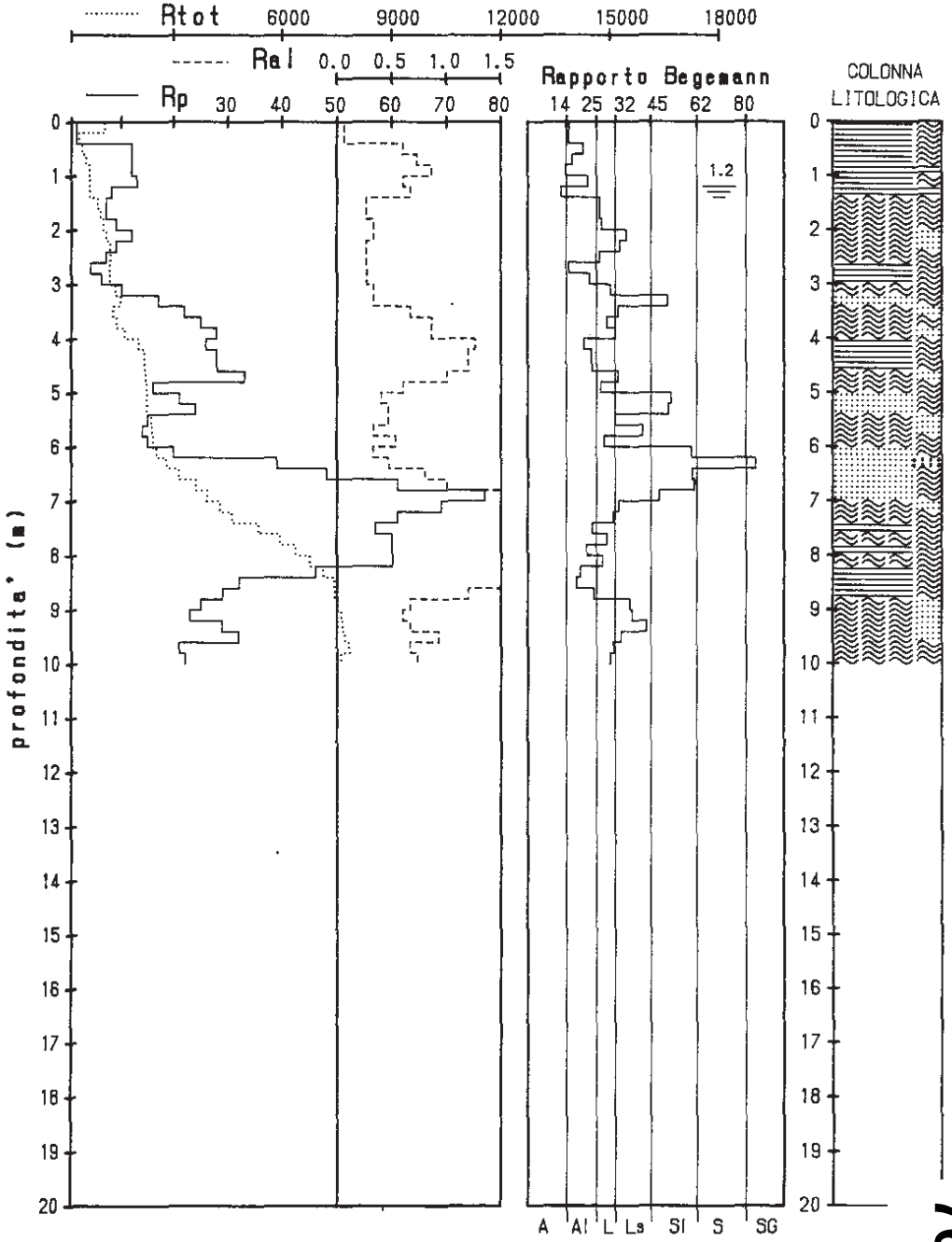
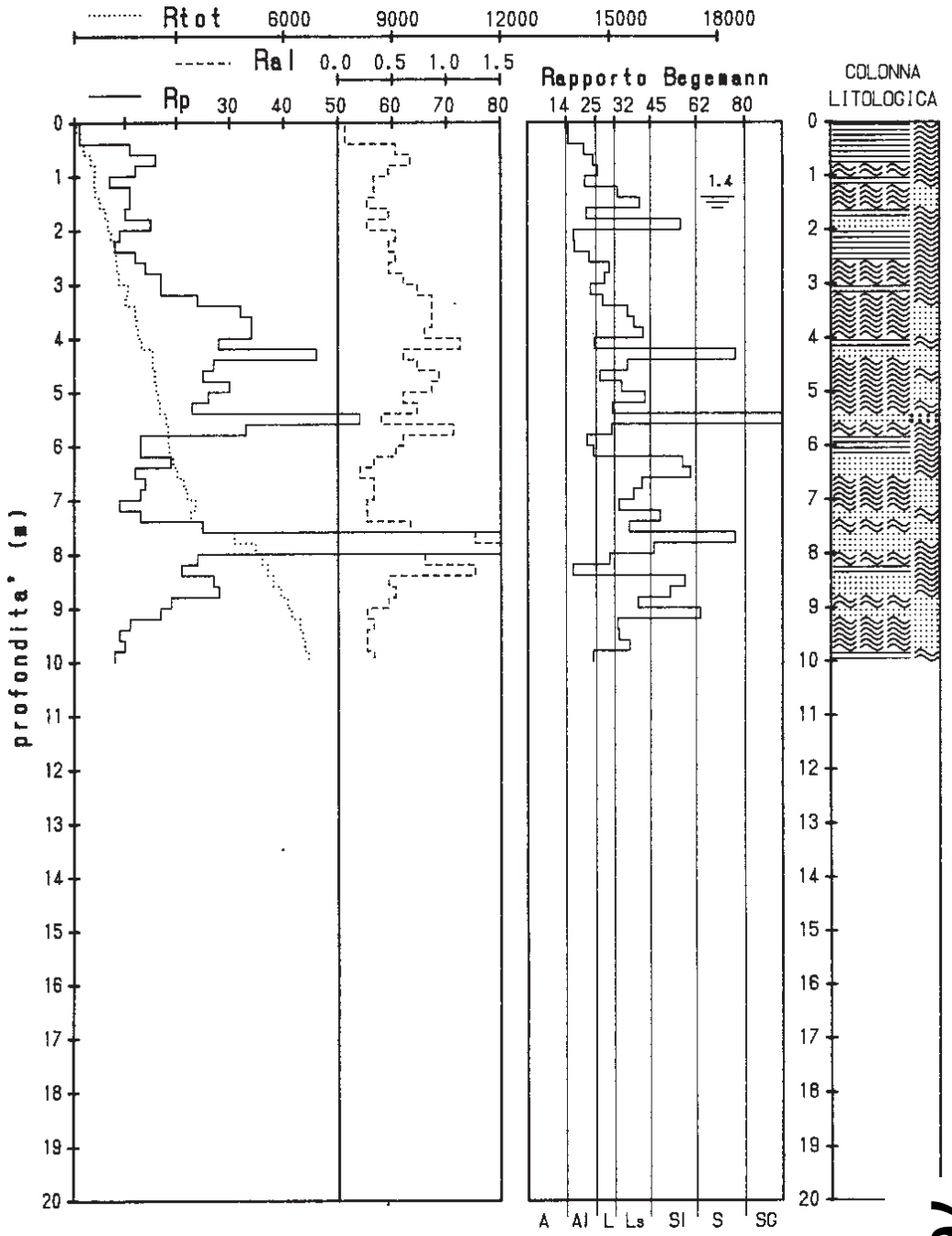
Prof	Rpt	Rat	Rtot	Rp	Ral	Rp/Ral	Fr	ø	Dr	Cu	mv
0.2	10	20	1010	1	0.07	15	6.67	.	.	0.04	200.0
0.4	10	20	230	1	0.07	15	6.67	.	.	0.04	200.0
0.6	120	210	330	12	0.60	20	5.00	.	.	0.60	16.7
0.8	120	230	450	12	0.73	16	6.11	.	.	0.60	16.7
1.0	120	250	560	12	0.87	14	7.22	.	.	0.60	16.7
1.2	130	220	550	13	0.60	22	4.62	.	.	0.65	15.4
1.4	80	180	540	8	0.67	12	8.33	.	.	0.40	31.3
1.6	70	110	790	7	0.27	26	3.81	.	.	0.35	35.7
1.8	70	110	680	7	0.27	26	3.81	.	.	0.35	35.7
2.0	90	140	960	9	0.33	27	3.70	.	.	0.45	27.8
2.2	120	170	1060	12	0.33	36	2.78	22	30	.	27.8
2.4	90	130	1170	9	0.27	34	2.96	20	18	.	37.0
2.6	70	110	1170	7	0.27	26	3.81	.	.	0.35	35.7
2.8	40	80	1160	4	0.27	15	6.67	.	.	0.20	50.0
3.0	60	100	1150	6	0.27	22	4.44	.	.	0.30	33.3
3.2	100	150	1310	10	0.33	30	3.33	.	.	0.50	25.0
3.4	170	220	1460	17	0.33	51	1.96	34	34	.	29.4
3.6	220	320	1550	22	0.37	33	3.03	24	32	.	18.3
3.8	250	380	1360	25	0.37	29	3.47	.	.	1.25	10.0
4.0	280	410	1590	28	0.37	32	3.10	.	.	1.40	11.9
4.2	260	450	2000	26	1.27	21	4.87	.	.	1.30	7.7
4.4	280	460	2160	28	1.20	23	4.29	.	.	1.40	7.1
4.6	280	460	2160	28	1.20	23	4.29	.	.	1.40	7.1
4.8	330	480	2150	33	1.00	33	3.03	26	40	.	18.1
5.0	160	250	2510	16	0.60	27	3.75	.	.	0.80	15.6
5.2	310	370	2220	31	0.40	53	1.90	25	23	.	23.8
5.4	240	310	2230	24	0.47	51	1.94	26	27	.	20.9
5.6	150	220	2350	15	0.47	32	3.11	.	.	0.75	22.2
5.8	140	190	2380	14	0.33	42	2.36	22	18	.	23.8
6.0	150	230	2410	15	0.53	28	3.56	.	.	0.75	16.7
6.2	200	250	2510	20	0.33	60	1.67	25	16	.	25.0
6.4	390	460	2800	39	0.47	84	1.20	32	40	.	17.1
6.6	480	600	3130	48	0.60	80	1.67	30	47	.	10.4
6.8	610	760	3600	61	1.00	61	1.64	32	55	.	8.2
7.0	770	1010	3920	77	1.60	48	2.08	35	62	.	6.5
7.2	690	1000	4280	69	2.07	33	3.00	31	58	.	4.8
7.4	610	900	4610	61	1.93	32	3.17	.	.	3.05	5.5
7.6	570	930	5350	57	2.40	24	4.21	.	.	2.85	3.5
7.8	600	910	5950	60	2.07	29	3.44	.	.	3.00	4.2
8.0	600	1020	6360	60	2.80	21	4.67	.	.	3.00	3.3
8.2	600	930	6740	60	2.20	27	3.67	.	.	3.00	4.2
8.4	460	820	7120	46	2.40	19	5.22	.	.	2.30	4.3
8.6	320	590	7420	32	1.80	18	5.63	.	.	1.60	6.3
8.8	290	470	7430	29	1.20	24	4.14	.	.	1.45	6.9
9.0	250	350	7520	25	0.67	37	2.67	24	16	.	13.3
9.2	230	320	7610	23	0.60	35	2.61	24	14	.	14.5
9.4	290	390	7660	29	0.67	43	2.30	25	22	.	11.5
9.6	320	460	7720	32	0.93	34	2.92	26	25	.	10.4
9.8	210	310	7840	21	0.67	31	3.17	.	.	1.05	11.9
10.0	220	330	7600	22	0.73	30	3.33	.	.	1.10	11.4



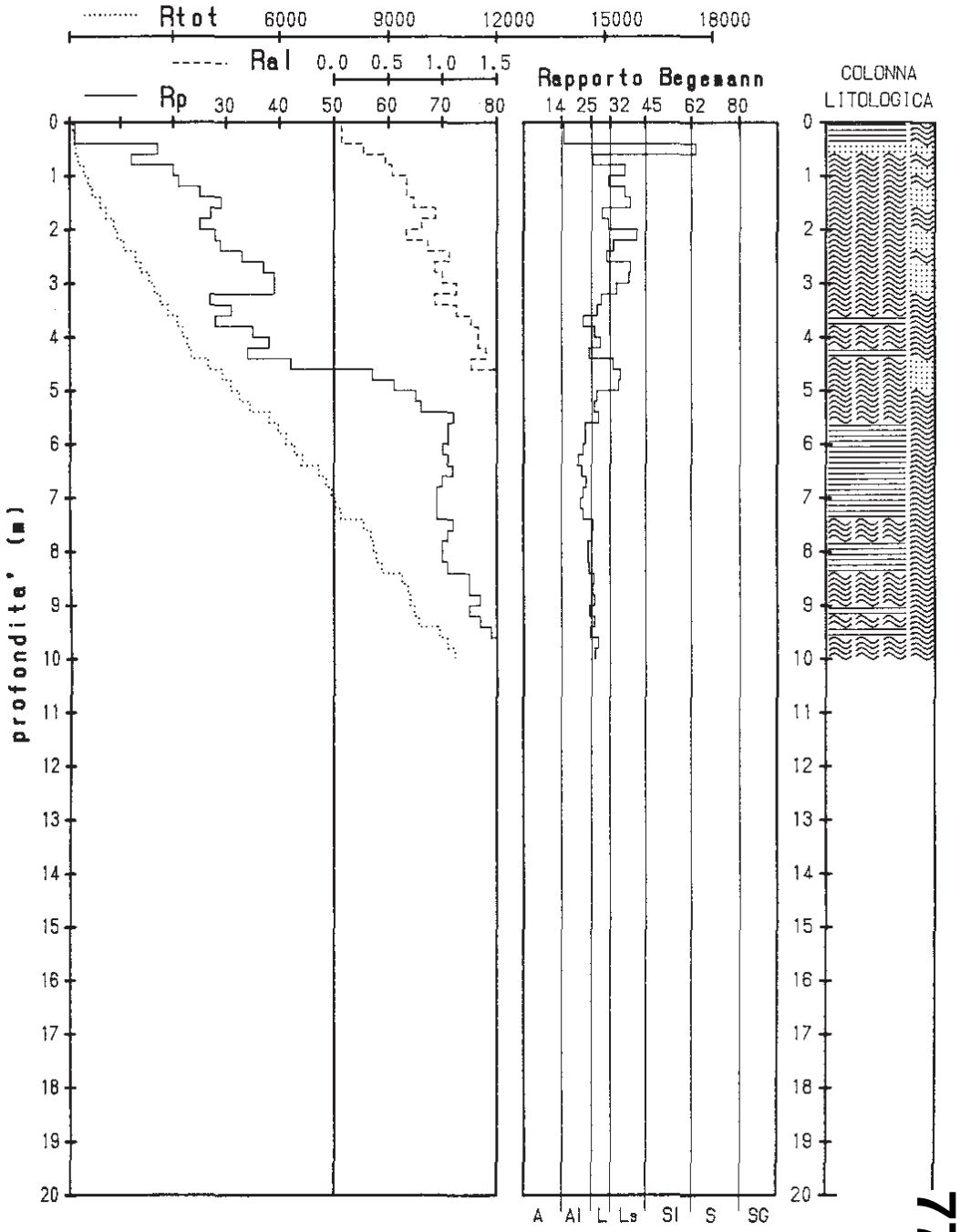
7694

Prof	Rpt	Rat	Rtot	Rp	Ral	Rp/Ral	Fr	ø	Dr	Cu	mv
0.2	10	20	50	1	0.07	15	6.67	.	.	0.04	200.0
0.4	10	20	160	1	0.07	15	6.67	.	.	0.04	200.0
0.6	110	190	270	11	0.53	21	4.85	.	.	0.55	16.2
0.8	160	260	480	16	0.67	24	4.17	.	.	0.80	12.5
1.0	120	190	600	12	0.47	26	3.89	.	.	0.60	20.8
1.2	70	120	590	7	0.33	21	4.76	.	.	0.35	25.6
1.4	110	160	620	11	0.33	33	3.03	22	23	.	30.3
1.6	110	150	760	11	0.27	41	2.42	22	21	.	30.3
1.8	100	170	920	10	0.47	21	4.67	.	.	0.50	20.0
2.0	150	190	990	15	0.27	56	1.78	24	28	.	33.3
2.2	90	170	1060	9	0.53	17	5.93	.	.	0.45	22.2
2.4	80	150	1210	8	0.47	17	5.83	.	.	0.40	25.0
2.6	120	300	1230	12	0.53	22	4.44	.	.	0.60	16.7
2.8	140	210	1260	14	0.47	30	3.33	.	.	0.70	17.9
3.0	170	260	1320	17	0.60	28	3.53	.	.	0.85	14.7
3.2	170	230	1390	17	0.73	23	4.31	.	.	0.85	11.8
3.4	240	370	1520	24	0.57	28	3.61	.	.	1.20	10.4
3.6	320	450	1810	32	0.87	37	2.71	26	44	.	10.4
3.8	340	470	1840	34	0.87	39	2.55	26	45	.	9.8
4.0	340	460	1880	34	0.85	42	2.35	26	44	.	9.8
4.2	280	450	1980	28	1.13	25	4.05	.	.	1.40	8.9
4.4	460	550	2310	46	0.60	77	1.30	34	53	.	10.9
4.6	270	380	2320	27	0.73	37	2.72	25	34	.	12.3
4.8	250	390	2390	25	0.93	27	3.73	.	.	1.25	10.0
5.0	300	430	2420	30	0.87	35	2.89	26	36	.	11.1
5.2	260	350	2470	26	0.60	43	2.31	24	30	.	12.6
5.4	230	340	2520	23	0.73	31	3.19	.	.	1.15	10.9
5.6	540	600	2710	54	0.40	135	0.74	35	54	.	12.3
5.8	330	490	2760	33	1.07	31	3.23	.	.	1.65	7.6
6.0	130	220	2770	13	0.60	22	4.62	.	.	0.65	15.4
6.2	130	210	2790	13	0.53	24	4.10	.	.	0.65	15.4
6.4	190	240	2910	19	0.33	57	1.75	24	15	.	26.3
6.6	120	150	3020	12	0.20	60	1.67	23	10	.	41.7
6.8	140	190	3210	14	0.33	42	2.38	23	10	.	23.8
7.0	130	180	3300	13	0.33	39	2.56	22	10	.	25.6
7.2	90	130	3540	9	0.27	34	2.96	20	10	.	37.0
7.4	130	170	3410	13	0.27	49	2.05	23	10	.	36.5
7.6	250	350	3720	25	0.67	37	2.67	24	21	.	13.3
7.8	970	1160	4620	97	1.27	77	1.31	42	68	.	5.2
8.0	990	1310	5210	99	2.13	46	2.15	37	68	.	5.1
8.2	240	360	5400	24	0.80	30	3.33	.	.	1.20	10.4
8.4	210	400	5560	21	1.27	17	6.03	.	.	1.05	9.5
8.6	270	340	5710	27	0.47	58	1.73	27	21	.	18.5
8.8	280	360	5920	28	0.53	52	1.90	27	22	.	17.9
9.0	190	260	6100	19	0.47	41	2.46	24	10	.	17.5
9.2	170	210	6220	17	0.27	64	1.57	26	10	.	29.4
9.4	110	160	6440	11	0.33	33	3.03	22	10	.	30.3
9.6	90	130	6520	9	0.27	34	2.96	20	10	.	37.0
9.8	100	140	6580	10	0.27	37	2.67	20	10	.	33.3
10.0	80	130	6680	8	0.33	24	4.17	.	.	0.40	25.0



7695

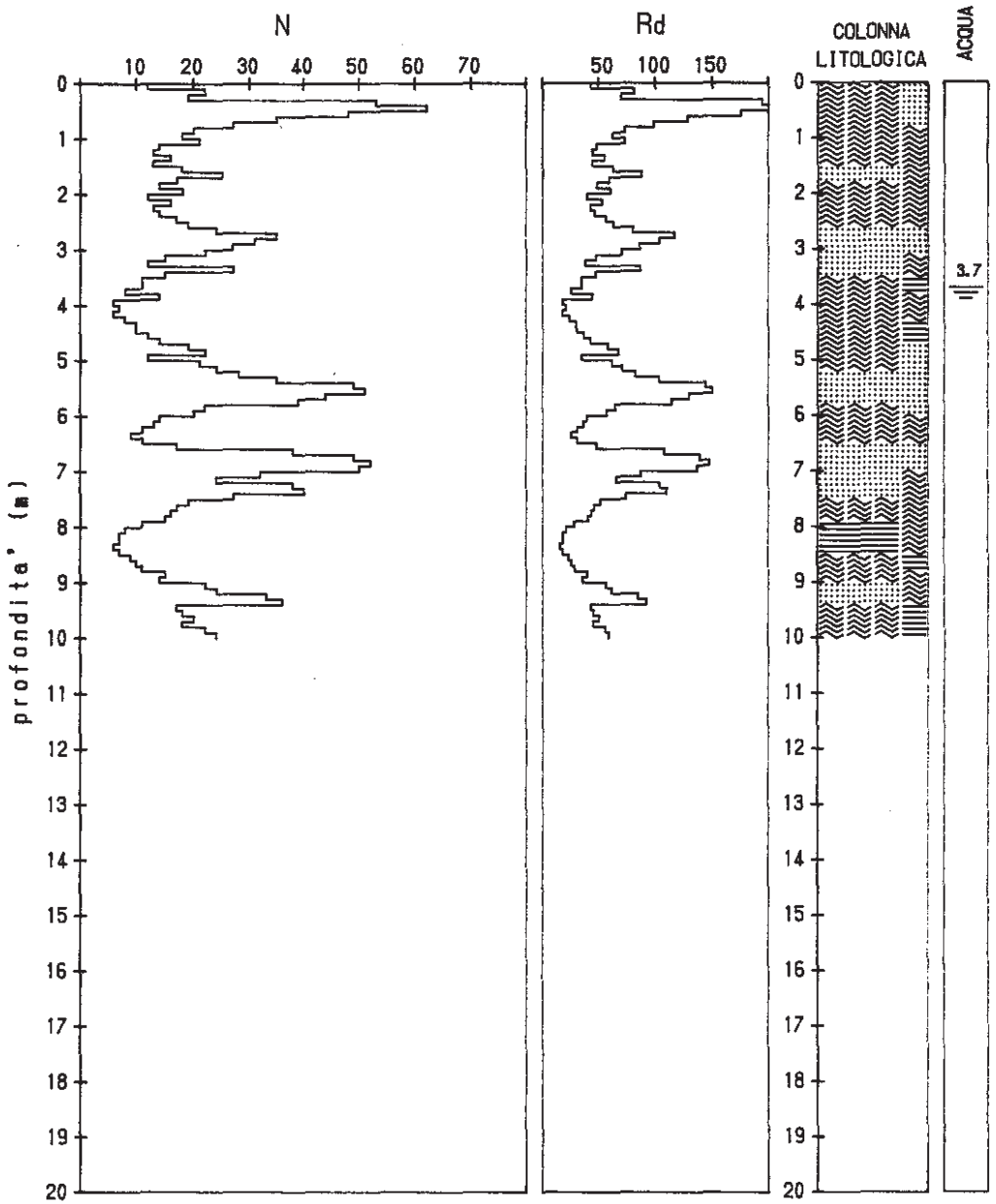
Prof	Rpt	Rat	Rtot	Rp	Ral	Rp/Ral	Fr	Ø	Dr	Cu	mv
0.2	10	20	90	1	0.07	15	6.67	.	.	0.04	200.0
0.4	10	20	150	1	0.07	15	6.67	.	.	0.04	200.0
0.6	170	210	180	17	0.27	64	1.57	26	67	.	29.4
0.8	120	190	240	12	0.47	26	3.89	.	.	0.60	20.8
1.0	200	280	430	20	0.53	37	2.67	24	61	.	16.7
1.2	210	310	550	21	0.67	31	3.17	.	.	1.05	11.9
1.4	250	350	660	25	0.67	37	2.67	24	61	.	13.3
1.6	290	400	890	29	0.73	40	2.53	25	64	.	11.5
1.8	270	410	1060	27	0.93	29	3.46	.	.	1.35	9.3
2.0	250	370	1280	25	0.80	31	3.20	.	.	1.25	10.0
2.2	280	380	1410	28	0.67	42	2.38	25	55	.	11.9
2.4	290	420	1600	29	0.87	33	2.99	25	54	.	11.5
2.6	330	490	1930	33	1.07	31	3.23	.	.	1.65	7.6
2.8	370	510	2080	37	0.93	40	2.52	27	59	.	9.0
3.0	390	540	2320	39	1.00	39	2.56	27	60	.	8.5
3.2	390	560	2470	39	1.13	34	2.91	27	58	.	8.5
3.4	270	410	2640	27	0.93	29	3.46	.	.	1.35	9.3
3.6	310	480	2850	31	1.13	27	3.66	.	.	1.55	8.1
3.8	280	470	3130	28	1.27	22	4.52	.	.	1.40	7.1
4.0	350	550	3270	35	1.33	26	3.81	.	.	1.75	7.1
4.2	380	580	3410	38	1.33	28	3.51	.	.	1.90	6.6
4.4	340	550	3520	34	1.40	24	4.12	.	.	1.70	5.9
4.6	420	610	3990	42	1.27	33	3.02	27	52	.	7.9
4.8	570	810	4390	57	1.60	36	2.81	29	62	.	5.8
5.0	610	870	4620	61	1.73	35	2.84	30	64	.	5.5
5.2	650	1010	4860	65	2.40	27	3.69	.	.	3.25	3.8
5.4	660	1040	5160	66	2.53	26	3.84	.	.	3.30	3.8
5.6	720	1110	5710	72	2.60	28	3.61	.	.	3.60	3.5
5.8	710	1180	5940	71	3.13	23	4.41	.	.	3.55	2.8
6.0	710	1180	6150	71	3.13	23	4.41	.	.	3.55	2.8
6.2	700	1180	6400	70	3.20	22	4.57	.	.	3.50	2.9
6.4	710	1240	6610	71	3.53	20	4.98	.	.	3.55	2.8
6.6	720	1220	7090	72	3.33	22	4.63	.	.	3.60	2.8
6.8	700	1150	7280	70	3.00	23	4.29	.	.	3.50	2.9
7.0	690	1160	7430	69	3.13	22	4.54	.	.	3.45	2.9
7.2	690	1180	7550	69	3.27	21	4.73	.	.	3.45	2.9
7.4	690	1160	7690	69	3.13	22	4.54	.	.	3.45	2.9
7.6	720	1140	8320	72	2.80	26	3.89	.	.	3.60	3.5
7.8	710	1130	8510	71	2.80	25	3.94	.	.	3.55	3.5
8.0	700	1140	8590	70	2.93	24	4.19	.	.	3.50	2.9
8.2	700	1140	8660	70	2.93	24	4.19	.	.	3.50	2.9
8.4	710	1150	8810	71	2.93	24	4.13	.	.	3.55	2.8
8.6	750	1180	9380	75	2.87	26	3.82	.	.	3.75	3.3
8.8	750	1190	9540	75	2.93	26	3.91	.	.	3.75	3.3
9.0	770	1210	9610	77	2.93	26	3.81	.	.	3.85	3.2
9.2	750	1210	9720	75	3.07	24	4.09	.	.	3.75	2.7
9.4	770	1210	9850	77	2.93	26	3.81	.	.	3.85	3.2
9.6	790	1270	10420	79	3.20	25	4.05	.	.	3.95	3.2
9.8	810	1250	10640	81	2.93	28	3.62	.	.	4.05	3.1
10.0	810	1270	10850	81	3.07	26	3.79	.	.	4.05	3.1



7728

Prof	N	Rd	ø	Dr	Cu	mv
0.1	12	44.0	28	99	.	3.0
0.2	22	80.7	33	99	.	1.6
0.3	19	69.7	32	99	.	1.9
0.4	53	194.3	43	99	.	0.7
0.5	62	227.3	45	99	.	0.6
0.6	48	176.0	42	99	.	0.8
0.7	35	128.3	38	99	.	1.0
0.8	27	99.0	35	99	.	1.3
0.9	20	73.3	.	.	1.3	1.8
1.0	18	62.9	.	.	1.2	2.0
1.1	21	73.4	.	.	1.4	1.7
1.2	14	48.9	.	.	0.9	2.6
1.3	13	45.4	.	.	0.9	2.8
1.4	16	55.9	.	.	1.1	2.3
1.5	13	45.4	.	.	0.9	2.8
1.6	18	62.9	31	97	.	2.0
1.7	25	87.4	34	99	.	1.4
1.8	17	59.4	31	93	.	2.1
1.9	14	48.9	.	.	0.9	2.6
2.0	18	60.1	.	.	1.2	2.0
2.1	12	40.1	.	.	0.8	3.0
2.2	16	53.4	.	.	1.1	2.3
2.3	13	43.4	.	.	0.9	2.8
2.4	14	46.8	.	.	0.9	2.6
2.5	17	56.8	.	.	1.1	2.1
2.6	19	63.5	.	.	1.3	1.9
2.7	24	80.1	34	97	.	1.5
2.8	35	116.9	38	99	.	1.0
2.9	31	103.5	37	99	.	1.2
3.0	27	86.3	35	99	.	1.3
3.1	22	70.3	33	92	.	1.6
3.2	15	48.0	30	80	.	2.4
3.3	12	38.4	28	73	.	3.0
3.4	27	86.3	35	97	.	1.3
3.5	15	48.0	30	78	.	2.4
3.6	11	35.2	.	.	0.7	3.3
3.7	11	35.2	.	.	0.7	3.3
3.8	8	25.6	.	.	0.5	4.5
3.9	14	44.8	.	.	0.9	2.6
4.0	6	18.4	.	.	0.4	6.0
4.1	7	21.5	.	.	0.5	5.1
4.2	6	18.4	.	.	0.4	6.0
4.3	8	24.5	.	.	0.5	4.5
4.4	10	30.7	.	.	0.7	3.6
4.5	10	30.7	.	.	0.7	3.6
4.6	12	36.8	.	.	0.8	3.0
4.7	14	42.9	.	.	0.9	2.6
4.8	19	58.3	32	82	.	1.9
4.9	22	67.5	33	86	.	1.6
5.0	12	35.4	28	67	.	3.0

Prof	N	Rd	ø	Dr	Cu	mv
5.1	21	59.5	33	84	.	1.7
5.2	24	65.6	34	88	.	1.5
5.3	28	73.8	35	92	.	1.3
5.4	35	89.1	38	98	.	1.0
5.5	49	120.7	42	99	.	0.7
5.6	51	121.6	43	99	.	0.7
5.7	44	101.7	41	99	.	0.8
5.8	39	87.4	39	99	.	0.9
5.9	22	47.9	33	83	.	1.6
6.0	20	42.3	32	80	.	1.8
6.1	14	28.8	.	.	0.9	2.6
6.2	13	26.0	.	.	0.9	2.8
6.3	11	21.5	.	.	0.7	3.3
6.4	9	17.1	.	.	0.6	4.0
6.5	11	20.4	.	.	0.7	3.3
6.6	17	30.8	31	74	.	2.1
6.7	38	67.1	39	98	.	0.9
6.8	49	84.6	42	99	.	0.7
6.9	52	87.7	43	99	.	0.7
7.0	50	82.5	42	99	.	0.7
7.1	32	51.7	37	92	.	1.1
7.2	24	37.9	34	83	.	1.5
7.3	38	58.8	39	97	.	0.9
7.4	40	60.7	39	98	.	0.9
7.5	27	40.1	35	86	.	1.3
7.6	19	27.7	.	.	1.3	1.9
7.7	17	24.3	.	.	1.1	2.1
7.8	16	22.4	.	.	1.1	2.3
7.9	15	20.7	.	.	1.0	2.4
8.0	11	14.9	.	.	0.7	3.3
8.1	8	10.6	.	.	0.5	4.5
8.2	7	9.1	.	.	0.5	5.1
8.3	7	9.0	.	.	0.5	5.1
8.4	6	7.6	.	.	0.4	6.0
8.5	7	8.7	.	.	0.5	5.1
8.6	9	11.0	.	.	0.6	4.0
8.7	10	12.0	.	.	0.7	3.6
8.8	11	13.0	.	.	0.7	3.3
8.9	15	17.5	.	.	1.0	2.4
9.0	14	16.0	.	.	0.9	2.6
9.1	22	24.8	33	78	.	1.6
9.2	24	26.7	34	80	.	1.5
9.3	33	36.2	37	90	.	1.1
9.4	36	38.9	38	92	.	1.0
9.5	17	18.1	.	.	1.1	2.1
9.6	18	18.9	.	.	1.2	2.0
9.7	20	20.7	.	.	1.3	1.8
9.8	18	18.4	.	.	1.2	2.0
9.9	22	22.2	.	.	1.5	1.6
10.0	24	23.9	.	.	1.6	1.5



7732

PROF.	N
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0.30	4.0
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0.50	6.0
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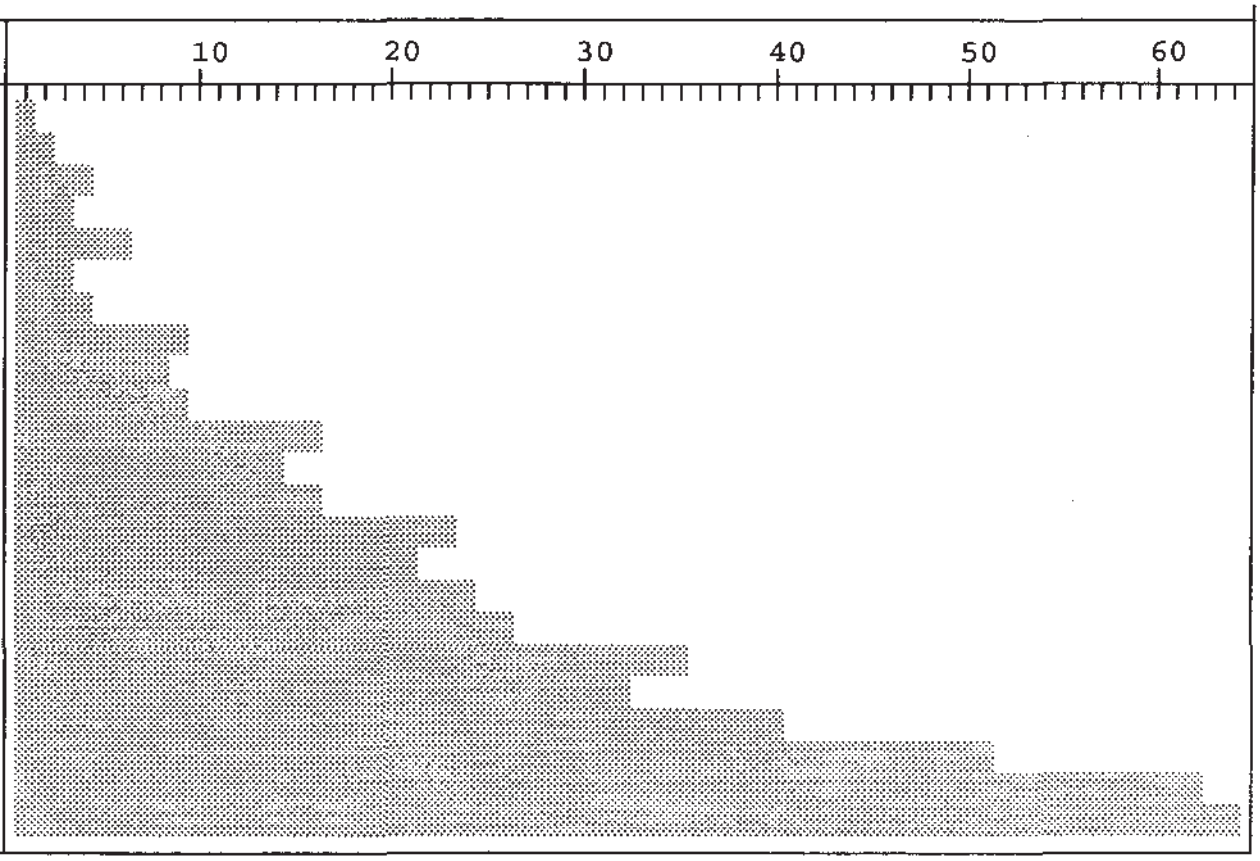
0.70	4.0
0.80	9.0
0.90	8.0
1.00	9.0
1.10	16.0
1.20	14.0
1.30	16.0
1.40	23.0
1.50	21.0
1.60	24.0
1.70	26.0
1.80	35.0
1.90	32.0
2.00	40.0
2.10	51.0
2.20	62.0
2.30	79.0



PROF.	NC	RD.	PROF.	NC	RD.	PROF.	NC	RD	PROF.	NC	RD
0.00	7	71.52									
0.20	7	71.52									
0.40	13	132.82									
0.60	17	173.69									
0.80	21	214.55									
1.00	21	214.55									
1.20	17	160.06									
1.40	12	112.98									
1.60	11	103.57									
1.80	11	103.57									
2.00	15	141.23									
2.20	13	113.49									
2.40	11	96.03									
2.60	11	96.03									
2.80	12	104.76									
3.00	13	113.49									
3.20	7	56.97									
3.40	6	48.83									
3.60	6	48.83									
3.80	5	40.69									
4.00	5	40.69									
4.20	10	76.21									
4.40	10	76.21									
4.60	8	60.97									
4.80	7	53.35									
5.00	7	53.35									
5.20	9	64.50									
5.40	7	50.16									
5.60	9	64.50									
5.80	9	64.50									
6.00	9	64.50									
6.20	18	121.72									
6.40	27	182.59									

LEGGENDA : PROF. = PROFONDITA' DI INFISSIONE CM.
NC = NUMERO COLPI N.RO
RD = RESISTENZA DINAMICA dN/cmq

PROVA PENETROMETRICA DINAMICA

CERTIFICATO N.RO : 758-AA CANTIERE :COSTRUZIONE FABBRICATO PER CIVILE ABITAZIONE

PROF.	NC	RD.	PROF.	NC	RD.	PROF.	NC	RD	PROF.	NC	RD
0.00	6	61.30									
0.20	6	61.30									
0.40	10	102.17									
0.60	10	102.17									
0.80	11	112.39									
1.00	9	91.95									
1.20	10	94.15									
1.40	15	141.23									
1.60	5	47.08									
1.80	6	56.49									
2.00	6	56.49									
2.20	7	61.11									
2.40	8	69.84									
2.60	10	87.30									
2.80	10	87.30									
3.00	7	61.11									
3.20	7	56.97									
3.40	13	105.80									
3.60	20	162.77									
3.80	21	170.90									
4.00	18	146.49									
4.20	15	114.52									
4.40	19	144.81									
4.60	20	152.43									

LEGGENDA : PROF. = PROFONDITA' DI INFISSIONE CM.
NC = NUMERO COLPI N.RO
RD = RESISTENZA DINAMICA dN/cmq

Prof	N	Rd	ø	Dr	Cu	mv
0.1	69	253.0	.	.	4.6	0.5
0.2	9	33.0	.	.	0.6	4.0
0.3	12	44.0	.	.	0.8	3.0
0.4	9	33.0	.	.	0.6	4.0
0.5	4	14.7	.	.	0.3	9.0
0.6	4	14.7	.	.	0.3	9.0
0.7	2	7.3	.	.	0.1	18.0
0.8	2	7.3	.	.	0.1	18.0
0.9	2	7.3	.	.	0.1	18.0
1.0	0	0.0	.	.	.	.
1.1	1	3.5	.	.	0.1	36.0
1.2	4	14.0	.	.	0.3	9.0
1.3	9	31.5	.	.	0.6	4.0
1.4	11	38.4	.	.	0.7	3.3
1.5	13	45.4	.	.	0.9	2.8
1.6	14	48.9	.	.	0.9	2.6
1.7	15	52.4	.	.	1.0	2.4
1.8	16	55.9	.	.	1.1	2.3
1.9	16	55.9	.	.	1.1	2.3
2.0	12	40.1	.	.	0.8	3.0
2.1	14	46.8	.	.	0.9	2.6
2.2	13	43.4	.	.	0.9	2.8
2.3	14	46.8	.	.	0.9	2.6
2.4	13	43.4	.	.	0.9	2.8
2.5	14	46.8	.	.	0.9	2.6
2.6	16	53.4	30	90	.	2.3
2.7	18	60.1	31	93	.	2.0
2.8	20	66.8	32	95	.	1.8
2.9	27	90.2	35	99	.	1.3
3.0	27	86.3	35	99	.	1.3
3.1	31	99.1	37	99	.	1.2
3.2	27	86.3	35	99	.	1.3
3.3	26	83.1	.	.	1.7	1.4
3.4	25	79.9	.	.	1.7	1.4
3.5	24	76.7	.	.	1.6	1.5
3.6	23	73.5	.	.	1.5	1.6
3.7	22	70.3	.	.	1.5	1.6
3.8	18	57.5	.	.	1.2	2.0
3.9	18	57.5	.	.	1.2	2.0
4.0	17	52.1	.	.	1.1	2.1
4.1	15	46.0	.	.	1.0	2.4
4.2	10	30.7	.	.	0.7	3.6
4.3	7	21.5	.	.	0.5	5.1
4.4	7	21.5	.	.	0.5	5.1
4.5	9	27.6	.	.	0.6	4.0
4.6	8	24.5	.	.	0.5	4.5
4.7	10	30.7	.	.	0.7	3.6
4.8	12	36.8	.	.	0.8	3.0
4.9	9	27.6	27	63	.	4.0
5.0	7	20.6	25	55	.	5.1

Prof	N	Rd	ø	Dr	Cu	mv
5.1	7	19.8	25	55	.	5.1
5.2	7	19.1	25	54	.	5.1
5.3	5	13.2	24	44	.	7.2
5.4	5	12.7	24	44	.	7.2
5.5	7	17.2	25	54	.	5.1
5.6	9	21.5	27	61	.	4.0
5.7	9	20.8	27	61	.	4.0
5.8	14	31.4	.	.	0.9	2.6
5.9	12	26.1	.	.	0.8	3.0
6.0	11	23.3	.	.	0.7	3.3
6.1	13	26.7	.	.	0.9	2.8
6.2	15	30.0	30	75	.	2.4
6.3	17	33.2	31	78	.	2.1
6.4	20	38.0	32	83	.	1.8
6.5	23	42.6	34	87	.	1.6
6.6	22	39.8	33	85	.	1.6
6.7	21	37.1	33	84	.	1.7
6.8	19	32.8	32	80	.	1.9
6.9	18	30.4	.	.	1.2	2.0
7.0	17	28.0	.	.	1.1	2.1
7.1	17	27.4	.	.	1.1	2.1
7.2	18	28.4	.	.	1.2	2.0
7.3	19	29.4	.	.	1.3	1.9
7.4	18	27.3	.	.	1.2	2.0
7.5	22	32.7	33	83	.	1.6
7.6	25	36.4	34	87	.	1.4
7.7	28	40.0	35	90	.	1.3
7.8	30	42.1	36	92	.	1.2
7.9	26	35.8	35	87	.	1.4
8.0	22	29.8	.	.	1.5	1.6
8.1	20	26.6	.	.	1.3	1.8
8.2	19	24.8	.	.	1.3	1.9
8.3	19	24.4	.	.	1.3	1.9
8.4	17	21.4	.	.	1.1	2.1
8.5	15	18.6	.	.	1.0	2.4
8.6	15	18.3	.	.	1.0	2.4
8.7	11	13.2	.	.	0.7	3.3
8.8	10	11.8	.	.	0.7	3.6
8.9	12	14.0	.	.	0.8	3.0
9.0	10	11.5	.	.	0.7	3.6
9.1	9	10.2	.	.	0.6	4.0
9.2	10	11.1	.	.	0.7	3.6
9.3	13	14.2	.	.	0.9	2.8
9.4	12	13.0	.	.	0.8	3.0
9.5	14	14.9	.	.	0.9	2.6
9.6	16	16.8	.	.	1.1	2.3
9.7	17	17.6	.	.	1.1	2.1
9.8	21	21.4	.	.	1.4	1.7
9.9	23	23.2	.	.	1.5	1.6
10.0	21	20.9	.	.	1.4	1.7

parametri geotecnici stimati

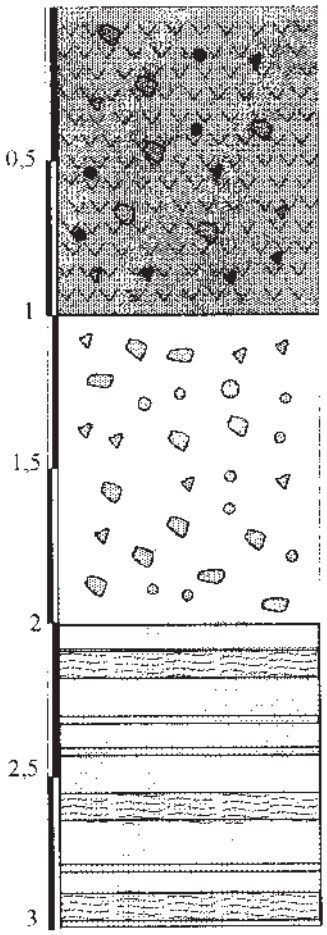
PROFONDITA' (metri)	Qc (Kg/cmq)	Fs (Kg/cmq)	Qc/Fs	Qt (Kgr)	δ (Kg/dmc)	σ_{ov} (Kg/cmq)	φ (gradi)	D_R (%)	c_u (Kg/cmq)	m_v (cmq/t)	Colonna Stratig.
0.2					1,80	,04	-	-	-	-	
0.4					1,80	,07	-	-	-	-	
0.6	49,1	1,3	39	330	1,85	,11	31	-	-	6,8	
0.8	19,3	,8	24	510	1,92	,15	-	-	,77	19,7	
1.0	14,3	1,1	13	430	1,57	,18	-	-	,56	25,9	
1.2	13,3	1,2	11	410	1,56	,21	-	-	,52	27,8	
1.4	14,3	1,1	13	390	1,57	,24	-	-	,56	25,9	
1.6	10,3	,7	14	370	1,53	,27	-	-	,40	36,0	
1.8	15,4	,7	23	310	1,91	,31	-	-	,60	19,6	
2.0	11,4	,7	17	350	1,90	,35	-	-	,44	21,8	
2.2	13,4	,2	67	380	1,67	,38	31	21	-	16,7	
2.4	11,4	,3	34	420	1,90	,42	-	-	,44	21,8	
2.6	12,4	,4	31	420	1,91	,46	-	-	,48	20,9	
2.8	10,5	,3	32	420	1,90	,50	-	-	,40	22,7	
3.0	10,5	,3	32	430	1,90	,51	-	-	,40	22,7	
3.2	10,5	,4	26	460	1,90	,53	-	-	,40	22,7	
3.4	9,5	,5	20	510	1,88	,55	-	-	,36	24,1	
3.6	9,5	,7	14	590	1,53	,56	-	-	,36	38,1	
3.8	10,6	,5	20	650	1,90	,58	-	-	,40	22,6	
4.0	11,6	,5	25	760	1,90	,60	-	-	,44	21,6	
4.2	16,6	,6	28	850	1,91	,61	-	-	,64	19,4	
4.4	16,6	,8	21	950	1,91	,63	-	-	,64	19,4	
4.6	16,6	,6	28	1060	1,91	,65	-	-	,64	19,4	
4.8	17,7	,9	19	1120	1,92	,67	-	-	,68	19,4	
5.0	13,7	,6	23	1180	1,91	,69	-	-	,52	20,2	
5.2	12,7	,7	17	1210	1,91	,71	-	-	,48	20,7	
5.4	11,7	,6	20	1250	1,90	,72	-	-	,44	21,5	
5.6	5,7	,3	21	1290	1,69	,74	-	-	,20	34,8	
5.8	4,9	,3	15	1300	1,48	,75	-	-	,17	60,7	
6.0	3,9	,2	20	1300	1,60	,76	-	-	,13	47,8	
6.2	3,9	,2	20	1330	1,60	,77	-	-	,13	47,8	
6.4	3,9	,2	20	1330	1,60	,78	-	-	,12	47,8	
6.6	3,9	,2	20	1320	1,60	,79	-	-	,12	47,8	
6.8	5	,3	19	1350	1,65	,81	-	-	,17	38,7	
7.0	8	,3	30	1320	1,80	,82	-	-	,29	27,0	
7.2	4	,2	20	1320	1,60	,84	-	-	,13	46,8	
7.4	3	,1	23	1320	1,55	,85	-	-	,09	60,4	
7.6	7	,2	35	1440	1,75	,86	-	-	,25	29,7	
7.8	12,2	,1	92	1420	1,66	,87	28	2	-	16,7	
8.0	7,2	,5	15	1480	1,50	,88	-	-	,25	45,3	
8.2	15,2	,5	29	1780	1,91	,90	-	-	,57	19,6	
8.4	40,2	,5	86	1860	1,80	,92	32	39	-	8,3	
8.6	41,2	,9	48	2250	1,81	,94	30	-	-	8,1	
8.8	51,2	1	51	2260	1,86	,95	34	47	-	6,5	
9.0	44,2	,9	51	2450	1,82	,97	33	41	-	[illegible]	
9.2	45,2	,7	68	2320	1,83	,99	33	42	-	[illegible]	
9.4	39,2	,9	45	2320	1,80	1,00	30	-	-	8,5	
9.6	42,2	,4	106	2300	1,81	1,02	32	39	-	[illegible]	
9.8	41,2	,8	52	2200	1,81	1,03	32	37	-	[illegible]	
10.0	32,2	,9	35	2200	1,76	1,05	29	-	-	10,4	

	A	B	C	D	E	F
1	Profondità (m)	Numero colpi	Rd (kg/cmq)	Profondità (m)	Numero colpi	Rd (kg/cmq)
2	0,10	8	29,75	4,60	9	27,93
3	0,20	15	55,79	4,70	9	27,93
4	0,30	15	55,79	4,80	9	27,93
5	0,40	15	55,79	4,90	9	27,93
6	0,50	10	37,19	5,00	9	26,82
7	0,60	12	44,63	5,10	8	23,84
8	0,70	14	52,07	5,20	9	26,82
9	0,80	13	48,35	5,30	9	26,82
10	0,90	10	37,19	5,40	10	29,80
11	1,00	11	38,98	5,50	9	26,82
12	1,10	13	46,06	5,60	9	26,82
13	1,20	15	53,15	5,70	8	23,84
14	1,30	15	53,15	5,80	7	20,86
15	1,40	14	49,61	5,90		0,00
16	1,50	15	53,15	6,00		0,00
17	1,60	16	56,69	6,10		0,00
18	1,70	16	56,69	6,20		0,00
19	1,80	15	53,15	6,30		0,00
20	1,90	16	56,69	6,40		0,00
21	2,00	15	50,75	6,50		0,00
22	2,10	13	43,98	6,60		0,00
23	2,20	12	40,60	6,70		0,00
24	2,30	12	40,60	6,80		0,00
25	2,40	11	37,22	6,90		0,00
26	2,50	12	40,60	7,00		0,00
27	2,60	12	40,60	7,10		0,00
28	2,70	10	33,83	7,20		0,00
29	2,80	11	37,22	7,30		0,00
30	2,90	12	40,60	7,40		0,00
31	3,00	11	35,61	7,50		0,00
32	3,10	11	35,61	7,60		0,00
33	3,20	11	35,61	7,70		0,00
34	3,30	11	35,61	7,80		0,00
35	3,40	11	35,61	7,90		0,00
36	3,50	11	35,61	8,00		0,00
37	3,60	11	35,61	8,10		0,00
38	3,70	10	32,37	8,20		0,00
39	3,80	11	35,61	8,30		0,00
40	3,90	9	29,14	8,40		0,00
41	4,00	9	27,93	8,50		0,00
42	4,10	10	31,03	8,60		0,00
43	4,20	11	34,14	8,70		0,00
44	4,30	9	27,93	8,80		0,00
45	4,40	9	27,93	8,90		0,00
46	4,50	8	24,83	9,00		0,00

	A	B	C	D	E	F
1	Profondità (m)	Numero colpi	Rd (kg/cmq)	Profondità (m)	Numero colpi	Rd (kg/cmq)
2	0,10	8	29,75	4,60	7	21,72
3	0,20	16	59,50	4,70	6	18,62
4	0,30	13	48,35	4,80	5	15,52
5	0,40	15	55,79	4,90	7	21,72
6	0,50	15	55,79	5,00	6	17,88
7	0,60	14	52,07	5,10	6	17,88
8	0,70	14	52,07	5,20	6	17,88
9	0,80	14	52,07	5,30	6	17,88
10	0,90	15	55,79	5,40	8	23,84
11	1,00	17	60,24	5,50	8	23,84
12	1,10	19	67,32	5,60	7	20,86
13	1,20	20	70,87	5,70	7	20,86
14	1,30	19	67,32	5,80	7	20,86
15	1,40	18	63,78	5,90		0,00
16	1,50	18	63,78	6,00		0,00
17	1,60	17	60,24	6,10		0,00
18	1,70	16	56,69	6,20		0,00
19	1,80	15	53,15	6,30		0,00
20	1,90	15	53,15	6,40		0,00
21	2,00	15	50,75	6,50		0,00
22	2,10	14	47,37	6,60		0,00
23	2,20	13	43,98	6,70		0,00
24	2,30	13	43,98	6,80		0,00
25	2,40	13	43,98	6,90		0,00
26	2,50	12	40,60	7,00		0,00
27	2,60	12	40,60	7,10		0,00
28	2,70	12	40,60	7,20		0,00
29	2,80	12	40,60	7,30		0,00
30	2,90	12	40,60	7,40		0,00
31	3,00	11	35,61	7,50		0,00
32	3,10	11	35,61	7,60		0,00
33	3,20	10	32,37	7,70		0,00
34	3,30	9	29,14	7,80		0,00
35	3,40	9	29,14	7,90		0,00
36	3,50	9	29,14	8,00		0,00
37	3,60	8	25,90	8,10		0,00
38	3,70	8	25,90	8,20		0,00
39	3,80	8	25,90	8,30		0,00
40	3,90	8	25,90	8,40		0,00
41	4,00	7	21,72	8,50		0,00
42	4,10	6	18,62	8,60		0,00
43	4,20	8	24,83	8,70		0,00
44	4,30	7	21,72	8,80		0,00
45	4,40	6	18,62	8,90		0,00
46	4,50	6	18,62	9,00		0,00

	A	B	C	D	E	F
1	Profondità (m)	Numero colpi	Rd (kg/cmq)	Profondità (m)	Numero colpi	Rd (kg/cmq)
2	0,10	2	7,44	4,60		0,00
3	0,20	2	7,44	4,70		0,00
4	0,30	4	14,88	4,80		0,00
5	0,40	6	22,31	4,90		0,00
6	0,50	5	18,60	5,00		0,00
7	0,60	4	14,88	5,10		0,00
8	0,70	3	11,16	5,20		0,00
9	0,80	34	126,45	5,30		0,00
10	0,90	60	223,14	5,40		0,00
11	1,00	100	354,33	5,50		0,00
12	1,10		0,00	5,60		0,00
13	1,20		0,00	5,70		0,00
14	1,30		0,00	5,80		0,00
15	1,40		0,00	5,90		0,00
16	1,50		0,00	6,00		0,00
17	1,60		0,00	6,10		0,00
18	1,70		0,00	6,20		0,00
19	1,80		0,00	6,30		0,00
20	1,90		0,00	6,40		0,00
21	2,00		0,00	6,50		0,00
22	2,10		0,00	6,60		0,00
23	2,20		0,00	6,70		0,00
24	2,30		0,00	6,80		0,00
25	2,40		0,00	6,90		0,00
26	2,50		0,00	7,00		0,00
27	2,60		0,00	7,10		0,00
28	2,70		0,00	7,20		0,00
29	2,80		0,00	7,30		0,00
30	2,90		0,00	7,40		0,00
31	3,00		0,00	7,50		0,00
32	3,10		0,00	7,60		0,00
33	3,20		0,00	7,70		0,00
34	3,30		0,00	7,80		0,00
35	3,40		0,00	7,90		0,00
36	3,50		0,00	8,00		0,00
37	3,60		0,00	8,10		0,00
38	3,70		0,00	8,20		0,00
39	3,80		0,00	8,30		0,00
40	3,90		0,00	8,40		0,00
41	4,00		0,00	8,50		0,00
42	4,10		0,00	8,60		0,00
43	4,20		0,00	8,70		0,00
44	4,30		0,00	8,80		0,00
45	4,40		0,00	8,90		0,00
46	4,50		0,00	9,00		0,00

PROFONDITA' [metri]	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Qt [Kgf]	parametri geotecnici stimati: Gamma [Kg/dmc]	Sigma IVO [Kg/cmq]	Fi [gradi]	D_R [%]	c_u [Kg/cmq]	m_v [cmq/t]	Colonna Stratig.
0.2					1,80	,04	-	-	-	-	
0.4					1,80	,07	-	-	-	-	
0.6	49,1	,2	246	760	2,05	,11	43	93	-	6,8	SG
0.8	52,3	2,6	20	1320	1,99	,15	-	-	2,09	7,6	AL
1.0	58,3	2,9	20	1060	2,01	,19	-	-	2,32	6,9	AL
1.2	44,3	1,9	23	1150	1,98	,23	-	-	1,76	9,0	AL
1.4	44,3	3	15	1590	1,98	,27	-	-	1,76	9,0	A
1.6	48,3	3,9	12	1990	1,99	,31	-	-	1,92	8,3	A
1.8	51,4	4,5	11	2240	1,99	,35	-	-	2,04	7,8	A
2.0	55,4	4,2	13	2400	2,00	,39	-	-	2,20	7,2	A
2.2	47,4	3,8	12	2730	1,98	,43	-	-	1,88	8,4	A
2.4	51,4	3,5	15	2890	1,99	,47	-	-	2,04	7,8	A
2.6	36,4	3,5	11	3250	1,96	,51	-	-	1,44	11,0	A
2.8	38,5	3,4	11	3390	1,96	,55	-	-	1,52	10,4	A
3.0	33,5	3,1	11	3640	1,95	,59	-	-	1,32	11,9	A
3.2	32,5	2,7	12	3780	1,95	,63	-	-	1,27	12,3	A
3.4	32,5	2,3	14	3940	1,95	,67	-	-	1,27	12,3	A
3.6	27,5	2,2	13	4140	1,94	,71	-	-	1,07	14,5	A
3.8	17,6	2,1	9	4330	1,61	,74	-	-	,67	21,0	T
4.0	16,6	1,7	10	4510	1,60	,77	-	-	,63	22,3	T
4.2	25,6	1,3	20	4730	1,93	,81	-	-	,99	15,6	A
4.4	27,6	1,5	19	4880	1,94	,85	-	-	1,07	14,5	A
4.6	23,6	1,3	18	5000	1,93	,89	-	-	,91	16,9	A
4.8	23,7	1,5	16	5140	1,93	,92	-	-	,91	16,9	A
5.0	22,7	1,4	16	5300	1,93	,96	-	-	,87	17,6	A
5.2	23,7	1,5	15	5450	1,93	1,00	-	-	,91	16,9	A
5.4	25,7	1,3	20	5600	1,93	1,04	-	-	,99	15,6	A
5.6	26,7	1,3	20	5780	1,94	1,08	-	-	1,02	15,0	A
5.8	24,9	1,4	18	5970	1,93	1,12	-	-	,95	16,1	A
6.0	26,9	1,1	25	5990	1,94	1,16	-	-	1,03	14,9	AL
6.2	29,9	1,1	26	6090	1,94	1,19	-	-	1,15	13,4	AL
6.4	23,9	1,3	18	6260	1,93	1,23	-	-	,91	16,7	A
6.6	28,9	1,3	22	6340	1,94	1,27	-	-	1,11	13,8	A
6.8	27	1,5	18	6470	1,94	1,31	-	-	1,03	14,8	A
7.0	26	1,4	19	6520	1,94	1,35	-	-	,99	15,4	A
7.2	32	1,4	23	6640	1,95	1,39	-	-	1,22	12,5	AL
7.4	31	1,7	19	6800	1,95	1,43	-	-	1,18	12,9	A
7.6	29	1,8	16	6930	1,94	1,47	-	-	1,10	13,8	A
7.8	27,2	1,8	15	7130	1,94	1,51	-	-	1,03	14,7	A
8.0	29,2	1,6	18	7370	1,94	1,54	-	-	1,11	13,7	A
8.2	26,2	1,9	14	7610	1,94	1,58	-	-	,98	15,3	A
8.4	42,2	1,7	25	7950	1,97	1,62	-	-	1,62	9,5	AL
8.6	46,2	1,9	24	8300	1,98	1,66	-	-	1,78	8,7	AL
8.8	40,3	2,2	18	8590	1,97	1,70	-	-	1,54	9,9	A
9.0	34,3	1,8	19	8850	1,95	1,74	-	-	1,30	11,7	A
9.2	30,3	1,9	16	8090	1,95	1,78	-	-	1,14	13,2	A
9.4	36,3	1,7	22	9270	1,96	1,82	-	-	1,38	11,0	A
9.6	36,3	2,1	18	9300	1,96	1,86	-	-	1,38	11,0	A
9.8	31,4	2,1	15	9510	1,95	1,90	-	-	1,18	12,7	A



Terreno di riporto ad elemento minuti di diaspro e ciottoli calcarei

Sabbie fini con ciottoli calcareo-marnosi di dimensioni decimetrica arrotondati. Presenza di acqua

Limi argillosi ed argille franche di colore grigio-beige

	A	B	C	D	E	F
1	Profondità (m)	Numero colpi	Rd (kg/cmq)	Profondità (m)	Numero colpi	Rd (kg/cmq)
2	0,10	10	37,19	4,60	13	40,34
3	0,20	20	74,38	4,70	13	40,34
4	0,30	19	70,66	4,80	13	40,34
5	0,40	18	66,94	4,90	13	40,34
6	0,50	12	44,63	5,00	13	38,74
7	0,60	15	55,79	5,10	13	38,74
8	0,70	17	63,22	5,20	13	38,74
9	0,80	10	37,19	5,30	13	38,74
10	0,90	5	18,60	5,40	12	35,76
11	1,00	4	14,17	5,50	12	35,76
12	1,10	3	10,63	5,60	11	32,78
13	1,20	4	14,17	5,70	12	35,76
14	1,30	6	21,26	5,80	11	32,78
15	1,40	6	21,26	5,90	12	35,76
16	1,50	8	28,35	6,00	11	31,53
17	1,60	8	28,35	6,10	12	34,39
18	1,70	10	35,43	6,20	12	34,39
19	1,80	13	46,06	6,30	11	31,53
20	1,90	13	46,06	6,40	12	34,39
21	2,00	13	43,98	6,50	12	34,39
22	2,10	16	54,14	6,60	12	34,39
23	2,20	20	67,67	6,70	12	34,39
24	2,30	20	67,67	6,80	13	37,26
25	2,40	19	64,29	6,90	12	34,39
26	2,50	16	54,14	7,00	13	35,89
27	2,60	16	54,14	7,10		0,00
28	2,70	15	50,75	7,20		0,00
29	2,80	14	47,37	7,30		0,00
30	2,90	15	50,75	7,40		0,00
31	3,00	15	48,56	7,50		0,00
32	3,10	15	48,56	7,60		0,00
33	3,20	15	48,56	7,70		0,00
34	3,30	15	48,56	7,80		0,00
35	3,40	16	51,80	7,90		0,00
36	3,50	15	48,56	8,00		0,00
37	3,60	15	48,56	8,10		0,00
38	3,70	13	42,09	8,20		0,00
39	3,80	13	42,09	8,30		0,00
40	3,90	14	45,32	8,40		0,00
41	4,00	12	37,24	8,50		0,00
42	4,10	13	40,34	8,60		0,00
43	4,20	12	37,24	8,70		0,00
44	4,30	13	40,34	8,80		0,00
45	4,40	13	40,34	8,90		0,00
46	4,50	13	40,34	9,00		0,00

	A	B	C	D	E	F
1	Profondità (m)	Numero colpi	Rd (kg/cmq)	Profondità (m)	Numero colpi	Rd (kg/cmq)
2	0,10		0,00	4,60	11	34,14
3	0,20	100	371,90	4,70	11	34,14
4	0,30	100	371,90	4,80	11	34,14
5	0,40	29	107,85	4,90	11	34,14
6	0,50	11	40,91	5,00		0,00
7	0,60	9	33,47	5,10		0,00
8	0,70	7	26,03	5,20		0,00
9	0,80	7	26,03	5,30		0,00
10	0,90	8	29,75	5,40		0,00
11	1,00	8	28,35	5,50		0,00
12	1,10	8	28,35	5,60		0,00
13	1,20	7	24,80	5,70		0,00
14	1,30	7	24,80	5,80		0,00
15	1,40	8	28,35	5,90		0,00
16	1,50	7	24,80	6,00		0,00
17	1,60	7	24,80	6,10		0,00
18	1,70	8	28,35	6,20		0,00
19	1,80	7	24,80	6,30		0,00
20	1,90	7	24,80	6,40		0,00
21	2,00	5	16,92	6,50		0,00
22	2,10	6	20,30	6,60		0,00
23	2,20	7	23,68	6,70		0,00
24	2,30	8	27,07	6,80		0,00
25	2,40	9	30,45	6,90		0,00
26	2,50	9	30,45	7,00		0,00
27	2,60	10	33,83	7,10		0,00
28	2,70	10	33,83	7,20		0,00
29	2,80	10	33,83	7,30		0,00
30	2,90	10	33,83	7,40		0,00
31	3,00	10	32,37	7,50		0,00
32	3,10	10	32,37	7,60		0,00
33	3,20	11	35,61	7,70		0,00
34	3,30	11	35,61	7,80		0,00
35	3,40	10	32,37	7,90		0,00
36	3,50	10	32,37	8,00		0,00
37	3,60	10	32,37	8,10		0,00
38	3,70	11	35,61	8,20		0,00
39	3,80	11	35,61	8,30		0,00
40	3,90	11	35,61	8,40		0,00
41	4,00	10	31,03	8,50		0,00
42	4,10	11	34,14	8,60		0,00
43	4,20	10	31,03	8,70		0,00
44	4,30	10	31,03	8,80		0,00
45	4,40	11	34,14	8,90		0,00
46	4,50	10	31,03	9,00		0,00

	A	B	C	D	E	F
1	Profondità (m)	Numero colpi	Rd (kg/cmq)	Profondità (m)	Numero colpi	Rd (kg/cmq)
2	0,10	6	22,31	4,60	11	34,14
3	0,20	33	122,73	4,70	12	37,24
4	0,30	34	126,45	4,80	11	34,14
5	0,40	25	92,98	4,90	13	40,34
6	0,50	20	74,38	5,00		0,00
7	0,60	18	66,94	5,10		0,00
8	0,70	12	44,63	5,20		0,00
9	0,80	10	37,19	5,30		0,00
10	0,90	11	40,91	5,40		0,00
11	1,00	8	28,35	5,50		0,00
12	1,10	9	31,89	5,60		0,00
13	1,20	10	35,43	5,70		0,00
14	1,30	9	31,89	5,80		0,00
15	1,40	11	38,98	5,90		0,00
16	1,50	9	31,89	6,00		0,00
17	1,60	8	28,35	6,10		0,00
18	1,70	11	38,98	6,20		0,00
19	1,80	17	60,24	6,30		0,00
20	1,90	17	60,24	6,40		0,00
21	2,00	15	50,75	6,50		0,00
22	2,10	15	50,75	6,60		0,00
23	2,20	15	50,75	6,70		0,00
24	2,30	16	54,14	6,80		0,00
25	2,40	14	47,37	6,90		0,00
26	2,50	14	47,37	7,00		0,00
27	2,60	13	43,98	7,10		0,00
28	2,70	14	47,37	7,20		0,00
29	2,80	13	43,98	7,30		0,00
30	2,90	13	43,98	7,40		0,00
31	3,00	13	42,09	7,50		0,00
32	3,10	13	42,09	7,60		0,00
33	3,20	12	38,85	7,70		0,00
34	3,30	12	38,85	7,80		0,00
35	3,40	11	35,61	7,90		0,00
36	3,50	12	38,85	8,00		0,00
37	3,60	11	35,61	8,10		0,00
38	3,70	11	35,61	8,20		0,00
39	3,80	11	35,61	8,30		0,00
40	3,90	11	35,61	8,40		0,00
41	4,00	10	31,03	8,50		0,00
42	4,10	12	37,24	8,60		0,00
43	4,20	11	34,14	8,70		0,00
44	4,30	11	34,14	8,80		0,00
45	4,40	12	37,24	8,90		0,00
46	4,50	11	34,14	9,00		0,00

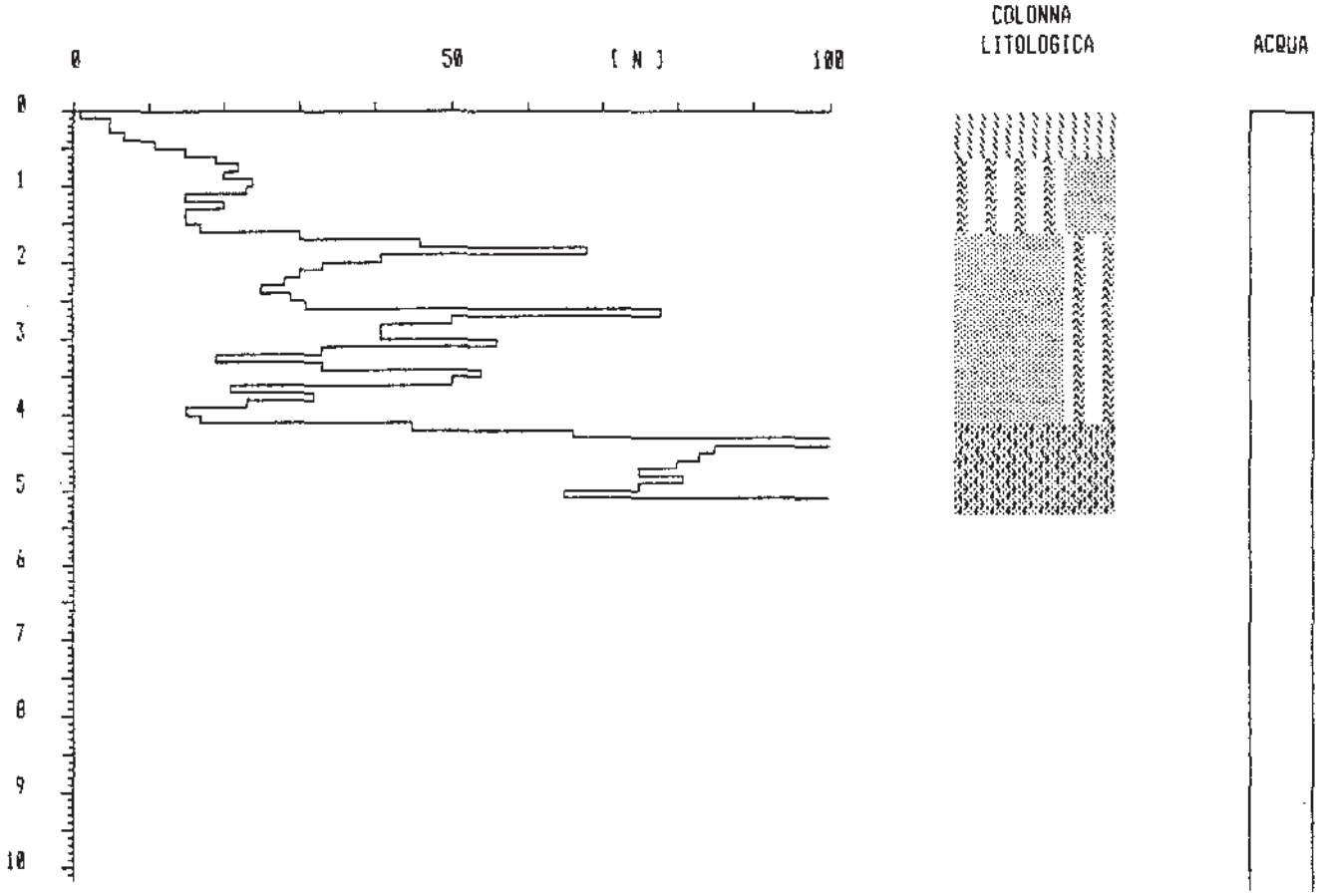
- Da 0.20 a -1.40 m dal p.c. è stata rilevata la presenza di limi plastici di colore beige contenenti al loro interno noduli di carbonato e di travertino.

- Da -1.40 a - 1.60 m dal p.c è stata rilevata la presenza di un trovante di travertino.
-
- Da - 1.60 a -3.00 m dal p.c. sono presenti ciottoli più o meno arrossati con cristalli di gesso selenitico immersi in limi plastici di colore beige.

- Da -3.00 a -6.00 m dal p.c. è stata osservata un limo argilloso con noduli di travertino.

Prof	Rpt	Rat	Rtot	Rp	Ral	Rp/Ral	Fr	ø	Dr	Cu	mv
0.2	80	130	200	8	0.33	24	4.17	.	.	0.40	25.0
0.4	80	130	400	8	0.33	24	4.17	.	.	0.40	25.0
0.6	60	140	400	6	0.53	11	8.89	.	.	0.30	41.7
0.8	110	130	450	11	0.13	82	1.21	24	45	.	60.6
1.0	270	360	650	27	0.60	45	2.22	25	72	.	18.5
1.2	560	700	1200	56	0.93	60	1.67	32	93	.	8.9
1.4	1160	1350	1200	116	1.27	92	1.09	44	99	.	5.7
1.6	470	960	1300	47	3.27	14	6.95	.	.	2.35	4.3
1.8	520	930	1400	52	2.73	19	5.26	.	.	2.60	3.8
2.0	550	1020	1600	55	3.13	18	5.70	.	.	2.75	3.6
2.2	950	1480	2000	95	3.53	27	3.72	.	.	4.75	2.6
2.4	1820	2000	2700	182	1.20	152	0.66	52	99	.	3.7

Prof	Rpt	Rat	Rtot	Rp	Ral	Rp/Ral	Fr	ø	Dr	Cu	mv
0.2	70	130	200	7	0.40	17	5.71	.	.	0.35	28.6
0.4	80	130	300	8	0.33	24	4.17	.	.	0.40	25.0
0.6	140	210	500	14	0.47	30	3.33	.	.	0.70	17.9
0.8	70	150	500	7	0.53	13	7.62	.	.	0.35	35.7
1.0	160	210	600	16	0.33	48	2.08	24	53	.	31.3
1.2	280	370	800	28	0.60	47	2.14	27	69	.	17.9
1.4	400	510	900	40	0.73	55	1.83	29	78	.	12.5
1.6	600	700	1200	60	0.67	90	1.11	36	89	.	11.1
1.8	710	800	1400	71	0.60	118	0.85	38	92	.	9.4
2.0	470	870	1750	47	2.67	18	5.67	.	.	2.35	4.3
2.2	700	940	2100	70	1.60	44	2.29	31	87	.	4.8
2.4	1020	1360	2600	102	2.27	45	2.22	35	98	.	4.9
2.6	1150	1550	3200	115	2.67	43	2.32	36	99	.	2.9
2.8	1190	1640	3000	119	3.00	40	2.52	36	99	.	2.8
3.0	880	1310	3000	88	2.87	31	3.26	.	.	4.40	2.8
3.2	680	1260	3000	68	3.87	18	5.69	.	.	3.40	2.9
3.4	1100	1360	2800	110	1.73	63	1.58	44	93	.	4.5
3.6	360	900	3000	36	3.60	10	10.00	.	.	1.80	6.9
3.8	290	570	3200	29	1.87	16	6.44	.	.	1.45	6.9
4.0	290	460	3300	29	1.13	26	3.91	.	.	1.45	8.6
4.2	310	520	3000	31	1.40	22	4.52	.	.	1.55	6.5
4.4	410	640	3000	41	1.53	27	3.74	.	.	2.05	6.1
4.6	560	810	3000	56	1.67	34	2.98	29	63	.	6.0
4.8	530	850	2800	53	2.13	25	4.03	.	.	2.65	4.7
5.0	480	820	2600	48	2.27	21	4.72	.	.	2.40	4.2
5.2	370	750	2300	37	2.53	15	6.85	.	.	1.85	5.4
5.4	380	700	2400	38	2.13	18	5.61	.	.	1.90	5.3
5.6	350	570	2450	35	1.47	24	4.19	.	.	1.75	5.7
5.8	250	460	2500	25	1.40	18	5.60	.	.	1.25	8.0
6.0	340	460	2450	34	0.80	42	2.35	26	39	.	9.8
6.2	440	620	2250	44	1.20	37	2.73	28	47	.	7.6
6.4	580	960	2150	58	2.53	23	4.37	.	.	2.90	3.4
6.6	640	970	2450	64	2.20	29	3.44	.	.	3.20	3.9
6.8	730	1110	2650	73	2.53	29	3.47	.	.	3.65	3.4
7.0	670	1120	2950	67	3.00	22	4.48	.	.	3.35	3.0
7.2	670	1120	3150	67	3.00	22	4.48	.	.	3.35	3.0
7.4	370	810	3000	37	2.93	13	7.93	.	.	1.85	6.8
7.6	380	730	3300	38	2.33	16	6.14	.	.	1.90	5.3
7.8	810	1110	5000	81	2.00	40	2.47	32	63	.	4.1
8.0	1670	1870	4300	167	1.33	125	0.80	50	88	.	4.0
8.2	710	1130	3300	71	2.80	25	3.94	.	.	3.55	3.5
8.4	190	410	2700	19	1.47	13	7.72	.	.	0.95	13.2
8.6	190	260	2300	19	0.47	41	2.46	24	10	.	17.5
8.8	200	270	1900	20	0.47	43	2.33	24	12	.	16.7
9.0	190	260	1800	19	0.47	41	2.46	24	10	.	17.5
9.2	210	290	2100	21	0.53	39	2.54	24	12	.	15.9
9.4	230	330	2100	23	0.67	34	2.90	24	15	.	14.5
9.6	220	310	2100	22	0.60	37	2.73	24	13	.	15.2
9.8	180	270	2000	18	0.60	30	3.33	.	.	0.90	13.9
10.0	220	340	2000	22	0.80	27	3.64	.	.	1.10	11.4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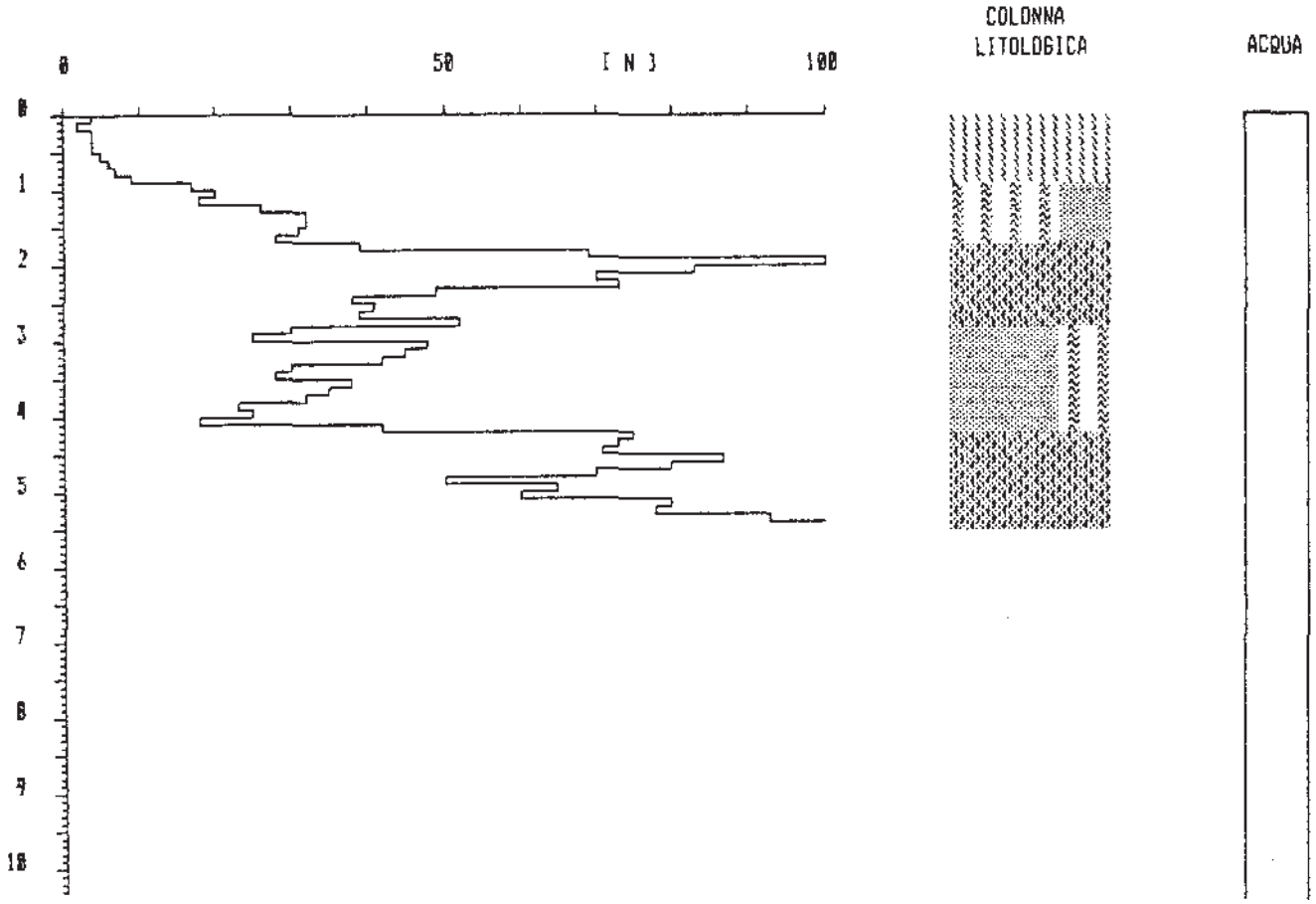
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PROFONDITA' [metri]	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Qt [Kgf]	parametri geotecnici stimati: Gamma [Kg/dmc]	Sigma IVO [Kg/cmq]	Fi [gradi]	D_R [%]	c_u [Kg/cmq]	m_v [cmq/t]	Colonna Stratig.
0.2					1,80	,04	-	-	-	-	
0.4					1,80	,07	-	-	-	-	
0.6	15,1	1,2	13	440	1,58	,10	-	-	,60	24,5	T
0.8	25,3	,7	35	430	1,73	,14	28	-	-	13,2	SL
1.0	25,3	1	25	470	1,93	,18	-	-	1,00	15,8	AL
1.2	31,3	,7	43	700	1,76	,21	29	-	-	10,6	SL
1.4	33,3	2,1	16	1180	1,95	,25	-	-	1,32	12,0	A
1.6	44,3	2,7	17	1240	1,98	,29	-	-	1,76	9,0	A
1.8	44,4	3,1	14	1510	1,98	,33	-	-	1,76	9,0	A
2.0	44,4	3,9	11	1390	1,98	,37	-	-	1,76	9,0	A
2.2	41,4	3,5	12	1160	1,97	,41	-	-	1,64	9,7	A
2.4	32,4	2,6	12	970	1,95	,45	-	-	1,28	12,3	A
2.6	25,4	1,9	14	860	1,93	,49	-	-	1,00	15,7	A
2.8	24,5	1,3	18	780	1,93	,53	-	-	,96	16,3	A
3.0	21,5	1,1	20	800	1,93	,56	-	-	,84	18,6	A
3.2	22,5	,9	24	790	1,93	,60	-	-	,88	17,8	AL
3.4	19,5	1,1	18	880	1,92	,64	-	-	,75	19,8	A
3.6	23,5	,7	32	760	1,72	,68	-	-	,91	14,2	L
3.8	12,6	,7	17	760	1,91	,71	-	-	,48	20,8	A
4.0	11,6	,7	16	660	1,90	,75	-	-	,43	21,6	A
4.2	5,6	,6	9	790	1,49	,78	-	-	,19	54,6	T
4.4	26,6	,6	44	1010	1,73	,82	28	-	-	12,5	SL
4.6	43,6	,7	59	1240	1,82	,85	33	44	-	7,6	SMA
4.8	70,7	1,9	37	1680	1,95	,89	32	-	-	4,7	SL
5.0	66,7	2	33	2210	1,93	,93	31	-	-	5,0	SL
5.2	84,7	3,2	26	3110	2,02	,97	32	-	-	3,9	SL
5.4	141,7	3,3	43	3880	2,10	1,01	36	-	-	2,4	SL
5.6	141,7	3,1	45	3860	2,10	1,05	36	-	-	2,4	SL
5.8	147,9	4,3	35	4080	2,10	1,10	36	-	-	2,3	SL
6.0	169,9	3,5	49	4570	2,10	1,14	39	84	-	2,0	SG
6.2	193,9	2	97	5080	2,10	1,18	39	88	-	1,7	SG
6.4	227,9	1,6	142	6570	2,30	1,23	40	92	-	1,5	SG
6.6	161,9	4,1	40	6110	2,10	1,27	36	-	-	2,1	SL
6.8	263	2,6	101	5880	2,10	1,31	40	96	-	1,3	SG
7.0	190	3	63	6100	2,10	1,35	39	84	-	1,8	SG
7.2	122	3,1	40	4050	2,10	1,39	35	-	-	2,7	SL
7.4	63	3,3	19	4570	2,02	1,43	-	-	2,46	6,3	AL
7.6	236	1,7	142	5080	2,30	1,48	39	89	-	1,4	SG
7.8	280,2	,8	350	4460	2,30	1,53	40	95	-	1,2	SG
8.0	63,2	3,3	19	3500	2,02	1,57	-	-	2,47	6,3	AL
8.2	70,2	3	23	3370	2,03	1,61	-	-	2,74	5,7	AL
8.4	129,2	2,1	63	4160	2,10	1,65	36	66	-	2,6	SG
8.6	176,2	2,5	71	6990	2,10	1,69	37	76	-	1,9	SG

PROFONDITA' [metri]	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Qt [Kgf]	parametri geotecnici stimati: Gamma [Kg/dmc]	Sigma IVO [Kg/cmq]	Fi [gradi]	D_R [%]	c_u [Kg/cmq]	m_v [cmq/t]	Colonna Stratig.
0.2					1,80	,04	-	-	-	-	
0.4					1,80	,07	-	-	-	-	
0.6	5,1	,2	26	230	1,66	,11	-	-	,20	38,1	A
0.8	4,3	,8	5	200	1,47	,13	-	-	,17	67,6	T
1.0	10,3	,1	77	180	1,65	,17	34	30	-	16,7	SS
1.2	9,3	,4	23	320	1,87	,20	-	-	,36	24,4	A
1.4	25,3	,6	42	500	1,73	,24	28	-	-	13,2	SL
1.6	24,3	1,8	14	870	1,93	,28	-	-	,96	16,5	A
1.8	36,4	2,3	16	1150	1,96	,32	-	-	1,44	11,0	A
2.0	38,4	2,3	17	1140	1,96	,36	-	-	1,52	10,4	A
2.2	32,4	2,2	15	1430	1,95	,40	-	-	1,28	12,3	A
2.4	30,4	1,5	21	1580	1,95	,43	-	-	1,20	13,2	A
2.6	26,4	1,2	22	1640	1,94	,47	-	-	1,04	15,2	A
2.8	26,5	1,1	25	1720	1,94	,51	-	-	1,04	15,1	AL
3.0	29,5	,9	32	1900	1,75	,55	28	-	-	11,3	SL
3.2	36,5	1,4	26	2130	1,96	,59	-	-	1,44	11,0	AL
3.4	37,5	1,5	24	2260	1,96	,63	-	-	1,47	10,7	AL
3.6	51,5	1,5	34	2580	1,86	,66	31	-	-	6,5	SL
3.8	51,6	1,7	31	2810	1,86	,70	31	-	-	6,5	SL
4.0	57,6	2,1	27	2900	2,01	,74	-	-	2,27	6,9	AL
4.2	51,6	2,2	23	2820	1,99	,78	-	-	2,03	7,8	AL
4.4	32,6	2,2	15	2760	1,95	,82	-	-	1,27	12,3	A
4.6	39,6	1,3	30	2560	1,80	,85	30	-	-	8,4	SL
4.8	34,7	2,1	17	4410	1,95	,89	-	-	1,35	11,5	A
5.0	202,7	3,3	61	6630	2,10	,94	41	95	-	1,6	SG
5.2	198,7	2,9	69	7470	2,10	,98	40	93	-	1,7	SG
5.4	124,7	1,7	72	6790	2,10	1,02	38	76	-	2,7	SG
5.6	111,7	1,8	62	5020	2,10	1,06	37	71	-	3,0	SG
5.8	99,9	2,5	40	4150	2,10	1,10	33	-	-	3,3	SL
6.0	151,9	2,5	60	3850	2,10	1,15	38	80	-	2,2	SG
6.2	50,9	3,4	15	3840	1,99	1,19	-	-	1,99	7,9	A
6.4	6,9	5,7	1	3800	1,50	1,22	-	-	,23	46,7	T
6.6	52,9	1,7	31	4840	1,86	1,25	31	-	-	6,3	SL
6.8	192	3,6	53	6760	2,10	1,29	39	85	-	1,7	SG
7.0	217	1,6	136	8420	2,30	1,34	39	89	-	1,5	SG
7.2	242	1,9	130	9410	2,10	1,38	40	92	-	1,4	SG

PROFONDITA' [metri]	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Qt [Kgf]	parametri geotecnici stimati: Gamma [Kg/dmc]	Sigma IVO [Kg/cmq]	Fi [gradi]	D_R [%]	c_u [Kg/cmq]	m_v [cmq/t]	Colonna Stratig.
0.2					1,80	,04	-	-	-	-	
0.4					1,80	,07	-	-	-	-	
0.6	64,1	1,9	33	1070	1,92	,11	31	-	-	5,2	SL
0.8	58,3	1,9	30	1330	1,89	,15	31	-	-	5,7	SL
1.0	69,3	2,9	24	1440	2,03	,19	-	-	2,76	5,8	AL
1.2	49,3	3,8	13	1580	1,99	,23	-	-	1,96	8,1	A
1.4	27,3	1	27	1660	1,94	,27	-	-	1,08	14,7	AL
1.6	17,3	1	17	1810	1,92	,31	-	-	,68	19,4	A
1.8	16,4	1,7	9	2030	1,59	,34	-	-	,64	22,6	T
2.0	16,4	1,7	10	2210	1,59	,37	-	-	,64	22,6	T
2.2	13,4	1,6	8	2320	1,56	,40	-	-	,52	27,6	T
2.4	12,4	1,2	10	2400	1,55	,43	-	-	,48	29,9	T
2.6	12,4	1,1	11	2400	1,55	,46	-	-	,48	29,9	T
2.8	9,5	,8	12	2280	1,53	,49	-	-	,36	38,1	T
3.0	8,5	,7	12	2190	1,52	,52	-	-	,32	40,6	T
3.2	9,5	,7	14	1930	1,53	,55	-	-	,36	38,1	T
3.4	11,5	,5	25	1830	1,90	,59	-	-	,44	21,7	A
3.6	12,5	,6	21	2020	1,91	,63	-	-	,47	20,9	A
3.8	9,6	,7	13	2190	1,53	,66	-	-	,36	37,9	T
4.0	10,6	,7	16	2350	1,90	,70	-	-	,40	22,6	A
4.2	13,6	,5	26	2480	1,91	,74	-	-	,51	20,2	A
4.4	12,6	,7	17	2540	1,91	,78	-	-	,47	20,8	A
4.6	10,6	,7	16	2620	1,90	,81	-	-	,39	22,6	A
4.8	11,7	,7	16	2630	1,90	,85	-	-	,43	21,5	A
5.0	9,7	,7	15	2710	1,53	,88	-	-	,35	37,6	T
5.2	9,7	,6	16	2870	1,89	,92	-	-	,35	23,8	A
5.4	9,7	,5	18	2960	1,89	,96	-	-	,35	23,8	A
5.6	10,7	,7	16	2970	1,90	1,00	-	-	,39	22,5	A
5.8	11,9	,6	20	2890	1,90	1,03	-	-	,43	21,3	A
6.0	11,9	,7	18	2800	1,90	1,07	-	-	,43	21,3	A
6.2	9,9	,6	17	2700	1,90	1,11	-	-	,35	23,5	A
6.4	12,9	,5	24	2660	1,91	1,15	-	-	,47	20,6	A
6.6	11,9	,7	18	2750	1,90	1,19	-	-	,43	21,3	A
6.8	11	,7	17	2700	1,90	1,22	-	-	,39	22,2	A
7.0	7	,6	12	2700	1,50	1,25	-	-	,23	46,2	T
7.2	7	,4	18	2650	1,75	1,29	-	-	,23	29,7	A
7.4	7	,5	15	2670	1,50	1,32	-	-	,23	46,2	T
7.6	6	,4	15	2770	1,49	1,35	-	-	,19	51,8	T
7.8	7,2	,3	27	2750	1,76	1,38	-	-	,23	29,1	A
8.0	6,2	,4	16	2810	1,49	1,41	-	-	,19	50,5	T
8.2	8,2	,3	25	2750	1,81	1,45	-	-	,27	26,5	A
8.4	8,2	,5	18	2720	1,81	1,49	-	-	,27	26,5	A
8.6	11,2	,5	24	2780	1,90	1,52	-	-	,39	22,0	A
8.8	10,3	,6	17	2800	1,90	1,56	-	-	,35	23,0	A
9.0	8,3	,6	14	2880	1,51	1,59	-	-	,27	41,2	T
9.2	10,3	,5	19	2810	1,90	1,63	-	-	,35	23,0	A
9.4	7,3	,5	16	2770	1,50	1,66	-	-	,23	44,9	T
9.6	8,3	,3	31	2850	1,82	1,70	-	-	,26	26,3	AL
9.8	15,4	,5	29	2900	1,91	1,73	-	-	,55	19,6	AL
10.0	18,4	,6	31	3010	1,92	1,77	-	-	,67	19,5	AL

PROFONDITA' [metri]	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Qt [Kgf]	parametri geotecnici stimati: Gamma [Kg/dmc]	Sigma IVO [Kg/cmq]	Fi [gradi]	D_R [%]	c_u [Kg/cmq]	m_v [cmq/t]	Colonna Stratig.
0.2					1,80	,04	-	-	-	-	
0.4					1,80	,07	-	-	-	-	
0.6	26,1	1,7	15	540	1,94	,11	-	-	1,04	15,3	A
0.8	12,3	1	12	360	1,55	,14	-	-	,49	30,1	T
1.0	10,3	,5	22	360	1,90	,18	-	-	,40	23,0	A
1.2	5,3	,8	7	400	1,48	,21	-	-	,20	57,0	T
1.4	10,3	,5	19	400	1,90	,25	-	-	,40	23,0	A
1.6	10,3	,8	13	550	1,53	,28	-	-	,40	36,0	T
1.8	15,4	1	15	660	1,91	,32	-	-	,60	19,6	A
2.0	13,4	1,2	11	750	1,56	,35	-	-	,52	27,6	T
2.2	12,4	,7	17	770	1,91	,39	-	-	,48	20,9	A
2.4	8,4	,7	13	790	1,51	,42	-	-	,32	40,9	T
2.6	7,4	,5	16	790	1,50	,45	-	-	,28	44,5	T
2.8	10,5	,3	39	730	1,65	,48	-	-	,40	21,5	L
3.0	10,5	,4	26	750	1,90	,52	-	-	,40	22,7	A
3.2	10,5	,4	26	790	1,90	,56	-	-	,40	22,7	A
3.4	10,5	,7	16	860	1,90	,59	-	-	,40	22,7	A
3.6	10,5	,5	23	940	1,90	,63	-	-	,39	22,7	A
3.8	11,6	,5	22	1010	1,90	,67	-	-	,44	21,6	A
4.0	10,6	,6	18	1040	1,90	,71	-	-	,40	22,6	A
4.2	12,6	,6	21	1080	1,91	,75	-	-	,47	20,8	A
4.4	12,6	,7	19	1120	1,91	,78	-	-	,47	20,8	A
4.6	11,6	,7	16	1290	1,90	,82	-	-	,43	21,6	A
4.8	12,7	,6	21	1320	1,91	,86	-	-	,47	20,7	A
5.0	10,7	,7	15	1390	1,54	,89	-	-	,39	34,6	T
5.2	11,7	,6	20	1450	1,90	,93	-	-	,43	21,5	A
5.4	12,7	,7	19	1540	1,91	,97	-	-	,47	20,7	A
5.6	13,7	,8	17	1570	1,91	1,00	-	-	,51	20,2	A
5.8	11,9	,9	14	1560	1,55	1,04	-	-	,43	31,1	T
6.0	11,9	,8	15	1620	1,90	1,07	-	-	,43	21,3	A
6.2	9,9	,7	15	1630	1,53	1,10	-	-	,35	37,2	T
6.4	8,9	,7	13	1660	1,52	1,13	-	-	,31	39,5	T
6.6	7,9	,5	15	1700	1,51	1,17	-	-	,27	42,6	T
6.8	7	,5	15	1680	1,50	1,20	-	-	,23	46,2	T
7.0	8	,4	20	1720	1,80	1,23	-	-	,27	27,0	A
7.2	10	,3	30	1770	1,90	1,27	-	-	,35	23,4	AL
7.4	12	,5	26	1850	1,90	1,31	-	-	,43	21,2	A
7.6	12	,7	16	1970	1,90	1,35	-	-	,43	21,2	A
7.8	13,2	,5	28	2030	1,91	1,38	-	-	,47	20,4	AL
8.0	15,2	,6	25	2110	1,91	1,42	-	-	,55	19,6	AL
8.2	19,2	,7	26	2260	1,92	1,46	-	-	,71	19,7	AL
8.4	27,2	,9	29	2450	1,94	1,50	-	-	1,03	14,7	AL
8.6	26,2	1,7	15	2650	1,94	1,54	-	-	,99	15,3	A
8.8	31,3	1,2	26	2840	1,95	1,58	-	-	1,19	12,8	AL
9.0	26,3	1,8	15	2980	1,94	1,62	-	-	,99	15,2	A
9.2	24,3	1,5	16	3140	1,93	1,65	-	-	,91	16,5	A
9.4	25,3	1,3	19	3410	1,93	1,69	-	-	,94	15,8	A
9.6	30,3	1,1	27	3700	1,95	1,73	-	-	1,14	13,2	AL
9.8	39,4	1,2	33	3790	1,80	1,77	30	-	-	8,5	SL
10.0	29,4	,9	32	3990	1,75	1,80	28	-	-	11,3	SL

	A	B	C	D	E	F
1	Profondità (m)	Numero colpi	Rd (kg/cmq)	Profondità (m)	Numero colpi	Rd (kg/cmq)
2	0,10	0,3	1,12	4,60		0,00
3	0,20	0,3	1,12	4,70		0,00
4	0,30	0,3	1,12	4,80		0,00
5	0,40	2	7,44	4,90		0,00
6	0,50	6	22,31	5,00		0,00
7	0,60	7	26,03	5,10		0,00
8	0,70	11	40,91	5,20		0,00
9	0,80	34	126,45	5,30		0,00
10	0,90	65	241,74	5,40		0,00
11	1,00	100	354,33	5,50		0,00
12	1,10		0,00	5,60		0,00
13	1,20		0,00	5,70		0,00
14	1,30		0,00	5,80		0,00
15	1,40		0,00	5,90		0,00
16	1,50		0,00	6,00		0,00
17	1,60		0,00	6,10		0,00
18	1,70		0,00	6,20		0,00
19	1,80		0,00	6,30		0,00
20	1,90		0,00	6,40		0,00
21	2,00		0,00	6,50		0,00
22	2,10		0,00	6,60		0,00
23	2,20		0,00	6,70		0,00
24	2,30		0,00	6,80		0,00
25	2,40		0,00	6,90		0,00
26	2,50		0,00	7,00		0,00
27	2,60		0,00	7,10		0,00
28	2,70		0,00	7,20		0,00
29	2,80		0,00	7,30		0,00
30	2,90		0,00	7,40		0,00
31	3,00		0,00	7,50		0,00
32	3,10		0,00	7,60		0,00
33	3,20		0,00	7,70		0,00
34	3,30		0,00	7,80		0,00
35	3,40		0,00	7,90		0,00
36	3,50		0,00	8,00		0,00
37	3,60		0,00	8,10		0,00
38	3,70		0,00	8,20		0,00
39	3,80		0,00	8,30		0,00
40	3,90		0,00	8,40		0,00
41	4,00		0,00	8,50		0,00
42	4,10		0,00	8,60		0,00
43	4,20		0,00	8,70		0,00
44	4,30		0,00	8,80		0,00
45	4,40		0,00	8,90		0,00
46	4,50		0,00	9,00		0,00

	A	B	C	D	E	F
1	Profondità (m)	Numero colpi	Rd (kg/cmq)	Profondità (m)	Numero colpi	Rd (kg/cmq)
2	0,10	1	3,72	4,60	8	24,83
3	0,20	5	18,60	4,70	9	27,93
4	0,30	11	40,91	4,80	9	27,93
5	0,40	7	26,03	4,90	8	24,83
6	0,50	6	22,31	5,00	6	17,88
7	0,60	9	33,47	5,10	7	20,86
8	0,70	4	14,88	5,20	5	14,90
9	0,80	4	14,88	5,30	6	17,88
10	0,90	9	33,47	5,40	8	23,84
11	1,00	14	49,61	5,50	13	38,74
12	1,10	20	70,87	5,60	16	47,68
13	1,20	20	70,87	5,70	19	56,62
14	1,30	21	74,41	5,80	22	65,56
15	1,40	23	81,50	5,90	25	74,50
16	1,50	21	74,41	6,00	30	85,99
17	1,60	16	56,69	6,10	37	106,05
18	1,70	15	53,15	6,20	43	123,25
19	1,80	13	46,06	6,30	48	137,58
20	1,90	12	42,52	6,40	100	286,62
21	2,00	12	40,60	6,50		0,00
22	2,10	10	33,83	6,60		0,00
23	2,20	10	33,83	6,70		0,00
24	2,30	9	30,45	6,80		0,00
25	2,40	10	33,83	6,90		0,00
26	2,50	9	30,45	7,00		0,00
27	2,60	8	27,07	7,10		0,00
28	2,70	8	27,07	7,20		0,00
29	2,80	7	23,68	7,30		0,00
30	2,90	8	27,07	7,40		0,00
31	3,00	7	22,66	7,50		0,00
32	3,10	7	22,66	7,60		0,00
33	3,20	7	22,66	7,70		0,00
34	3,30	7	22,66	7,80		0,00
35	3,40	6	19,42	7,90		0,00
36	3,50	7	22,66	8,00		0,00
37	3,60	7	22,66	8,10		0,00
38	3,70	7	22,66	8,20		0,00
39	3,80	7	22,66	8,30		0,00
40	3,90	7	22,66	8,40		0,00
41	4,00	7	21,72	8,50		0,00
42	4,10	6	18,62	8,60		0,00
43	4,20	9	27,93	8,70		0,00
44	4,30	11	34,14	8,80		0,00
45	4,40	10	31,03	8,90		0,00
46	4,50	8	24,83	9,00		0,00

Prof	N	Rd	ø	Dr	Cu	mv
0.1	0	0.0	.	.	.	.
0.2	1	3.7	.	.	0.1	36.0
0.3	2	7.3	.	.	0.1	18.0
0.4	3	11.0	.	.	0.2	12.0
0.5	3	11.0	.	.	0.2	12.0
0.6	3	11.0	.	.	0.2	12.0
0.7	4	14.7	.	.	0.3	9.0
0.8	4	14.7	.	.	0.3	9.0
0.9	4	14.7	.	.	0.3	9.0
1.0	8	28.0	.	.	0.5	4.5
1.1	11	38.4	.	.	0.7	3.3
1.2	12	41.9	.	.	0.8	3.0
1.3	10	35.0	.	.	0.7	3.6
1.4	7	24.5	.	.	0.5	5.1
1.5	8	28.0	.	.	0.5	4.5
1.6	10	35.0	.	.	0.7	3.6
1.7	10	35.0	.	.	0.7	3.6
1.8	10	35.0	.	.	0.7	3.6
1.9	9	31.5	.	.	0.6	4.0
2.0	7	23.4	.	.	0.5	5.1
2.1	9	30.1	.	.	0.6	4.0
2.2	11	36.7	.	.	0.7	3.3
2.3	9	30.1	.	.	0.6	4.0
2.4	8	26.7	.	.	0.5	4.5
2.5	8	26.7	.	.	0.5	4.5
2.6	9	30.1	.	.	0.6	4.0
2.7	10	33.4	.	.	0.7	3.6
2.8	9	30.1	.	.	0.6	4.0
2.9	9	30.1	.	.	0.6	4.0
3.0	8	25.6	.	.	0.5	4.5
3.1	7	22.4	.	.	0.5	5.1
3.2	7	22.4	.	.	0.5	5.1
3.3	6	19.2	.	.	0.4	6.0
3.4	5	16.0	.	.	0.3	7.2
3.5	4	12.8	.	.	0.3	9.0
3.6	4	12.8	.	.	0.3	9.0
3.7	6	19.2	.	.	0.4	6.0
3.8	4	12.8	.	.	0.3	9.0
3.9	3	9.6	.	.	0.2	12.0
4.0	6	18.4	.	.	0.4	6.0
4.1	6	18.4	.	.	0.4	6.0
4.2	5	15.3	.	.	0.3	7.2
4.3	5	15.3	.	.	0.3	7.2
4.4	6	18.4	.	.	0.4	6.0
4.5	5	15.3	.	.	0.3	7.2
4.6	5	15.3	.	.	0.3	7.2
4.7	6	18.4	.	.	0.4	6.0
4.8	8	24.5	.	.	0.5	4.5
4.9	6	18.4	.	.	0.4	6.0
5.0	7	20.6	.	.	0.5	5.1
5.1	6	17.0	.	.	0.4	6.0
5.2	4	10.9	.	.	0.3	9.0
5.3	4	10.5	.	.	0.3	9.0
5.4	3	7.6	.	.	0.2	12.0
5.5	5	12.3	.	.	0.3	7.2
5.6	4	9.5	.	.	0.3	9.0
5.7	4	9.2	.	.	0.3	9.0
5.8	5	11.2	.	.	0.3	7.2
5.9	5	10.9	.	.	0.3	7.2
6.0	6	12.7	.	.	0.4	6.0
6.1	5	10.3	.	.	0.3	7.2
6.2	5	10.0	.	.	0.3	7.2
6.3	5	9.8	.	.	0.3	7.2
6.4	6	11.4	.	.	0.4	6.0
6.5	7	13.0	.	.	0.5	5.1
6.6	4	7.2	.	.	0.3	9.0
6.7	5	8.8	.	.	0.3	7.2
6.8	4	6.9	.	.	0.3	9.0
6.9	5	8.4	.	.	0.3	7.2
7.0	5	8.2	.	.	0.3	7.2
7.1	5	8.1	.	.	0.3	7.2
7.2	3	4.7	.	.	0.2	12.0
7.3	3	4.6	.	.	0.2	12.0
7.4	3	4.5	.	.	0.2	12.0
7.5	3	4.5	.	.	0.2	12.0
7.6	3	4.4	.	.	0.2	12.0
7.7	5	7.1	.	.	0.3	7.2
7.8	4	5.6	.	.	0.3	9.0
7.9	4	5.5	.	.	0.3	9.0
8.0	5	6.8	.	.	0.3	7.2
8.1	7	9.3	.	.	0.5	5.1
8.2	7	9.1	.	.	0.5	5.1
8.3	6	7.7	.	.	0.4	6.0
8.4	5	6.3	.	.	0.3	7.2
8.5	5	6.2	.	.	0.3	7.2
8.6	5	6.1	.	.	0.3	7.2
8.7	5	6.0	.	.	0.3	7.2
8.8	6	7.1	.	.	0.4	6.0
8.9	5	5.8	.	.	0.3	7.2
9.0	6	6.9	.	.	0.4	6.0
9.1	8	9.0	.	.	0.5	4.5
9.2	9	10.0	.	.	0.6	4.0
9.3	8	8.8	.	.	0.5	4.5
9.4	8	8.6	.	.	0.5	4.5
9.5	7	7.5	.	.	0.5	5.1
9.6	6	6.3	.	.	0.4	6.0
9.7	6	6.2	.	.	0.4	6.0
9.8	5	5.1	.	.	0.3	7.2
9.9	6	6.0	.	.	0.4	6.0
10.0	7	7.0	.	.	0.5	5.1

Prof	N	Rd	ø	Dr	Cu	mv
0.1	0	0.0	.	.	.	.
0.2	0	0.0	.	.	.	.
0.3	2	7.3	.	.	0.1	18.0
0.4	2	7.3	.	.	0.1	18.0
0.5	1	3.7	.	.	0.1	36.0
0.6	0	0.0	.	.	.	.
0.7	2	7.3	.	.	0.1	18.0
0.8	1	3.7	.	.	0.1	36.0
0.9	3	11.0	.	.	0.2	12.0
1.0	6	21.0	.	.	0.4	6.0
1.1	5	17.5	.	.	0.3	7.2
1.2	6	21.0	.	.	0.4	6.0
1.3	6	21.0	.	.	0.4	6.0
1.4	10	35.0	.	.	0.7	3.6
1.5	11	38.4	.	.	0.7	3.3
1.6	12	41.9	.	.	0.8	3.0
1.7	11	38.4	.	.	0.7	3.3
1.8	12	41.9	.	.	0.8	3.0
1.9	12	41.9	.	.	0.8	3.0
2.0	13	43.4	.	.	0.9	2.8
2.1	10	33.4	.	.	0.7	3.6
2.2	13	43.4	.	.	0.9	2.8
2.3	12	40.1	.	.	0.8	3.0
2.4	9	30.1	.	.	0.6	4.0
2.5	9	30.1	.	.	0.6	4.0
2.6	8	26.7	.	.	0.5	4.5
2.7	8	26.7	.	.	0.5	4.5
2.8	8	26.7	.	.	0.5	4.5
2.9	11	36.7	.	.	0.7	3.3
3.0	10	32.0	.	.	0.7	3.6
3.1	10	32.0	.	.	0.7	3.6
3.2	8	25.6	.	.	0.5	4.5
3.3	7	22.4	.	.	0.5	5.1
3.4	7	22.4	.	.	0.5	5.1
3.5	4	12.8	.	.	0.3	9.0
3.6	2	6.4	.	.	0.1	18.0
3.7	4	12.8	.	.	0.3	9.0
3.8	5	16.0	.	.	0.3	7.2
3.9	5	16.0	.	.	0.3	7.2
4.0	5	15.3	.	.	0.3	7.2
4.1	8	24.5	.	.	0.5	4.5
4.2	7	21.5	.	.	0.5	5.1
4.3	7	21.5	.	.	0.5	5.1
4.4	7	21.5	.	.	0.5	5.1
4.5	8	24.5	.	.	0.5	4.5
4.6	7	21.5	.	.	0.5	5.1
4.7	6	18.4	.	.	0.4	6.0
4.8	7	21.5	.	.	0.5	5.1
4.9	6	18.4	.	.	0.4	6.0
5.0	6	17.7	.	.	0.4	6.0
5.1	5	14.2	.	.	0.3	7.2
5.2	4	10.9	.	.	0.3	9.0
5.3	5	13.2	.	.	0.3	7.2
5.4	5	12.7	.	.	0.3	7.2
5.5	5	12.3	.	.	0.3	7.2
5.6	6	14.3	.	.	0.4	6.0
5.7	6	13.9	.	.	0.4	6.0
5.8	7	15.7	.	.	0.5	5.1
5.9	6	13.1	.	.	0.4	6.0
6.0	7	14.8	.	.	0.5	5.1
6.1	6	12.3	.	.	0.4	6.0
6.2	7	14.0	.	.	0.5	5.1
6.3	7	13.7	.	.	0.5	5.1
6.4	5	9.5	.	.	0.3	7.2
6.5	4	7.4	.	.	0.3	9.0
6.6	3	5.4	.	.	0.2	12.0
6.7	3	5.3	.	.	0.2	12.0
6.8	4	6.9	.	.	0.3	9.0
6.9	5	8.4	.	.	0.3	7.2
7.0	5	8.2	.	.	0.3	7.2
7.1	6	9.7	.	.	0.4	6.0
7.2	4	6.3	.	.	0.3	9.0
7.3	3	4.6	.	.	0.2	12.0
7.4	4	6.1	.	.	0.3	9.0
7.5	4	5.9	.	.	0.3	9.0
7.6	3	4.4	.	.	0.2	12.0
7.7	5	7.1	.	.	0.3	7.2
7.8	6	8.4	.	.	0.4	6.0
7.9	6	8.3	.	.	0.4	6.0
8.0	7	9.5	.	.	0.5	5.1
8.1	6	8.0	.	.	0.4	6.0
8.2	5	6.5	.	.	0.3	7.2
8.3	5	6.4	.	.	0.3	7.2
8.4	4	5.0	.	.	0.3	9.0
8.5	5	6.2	.	.	0.3	7.2
8.6	6	7.3	.	.	0.4	6.0
8.7	6	7.2	.	.	0.4	6.0
8.8	6	7.1	.	.	0.4	6.0
8.9	7	8.1	.	.	0.5	5.1
9.0	6	6.9	.	.	0.4	6.0
9.1	5	5.6	.	.	0.3	7.2
9.2	6	6.7	.	.	0.4	6.0
9.3	7	7.7	.	.	0.5	5.1
9.4	8	8.6	.	.	0.5	4.5
9.5	8	8.5	.	.	0.5	4.5
9.6	9	9.4	.	.	0.6	4.0
9.7	8	8.3	.	.	0.5	4.5
9.8	9	9.2	.	.	0.6	4.0
9.9	8	8.1	.	.	0.5	4.5
10.0	9	8.9	.	.	0.6	4.0

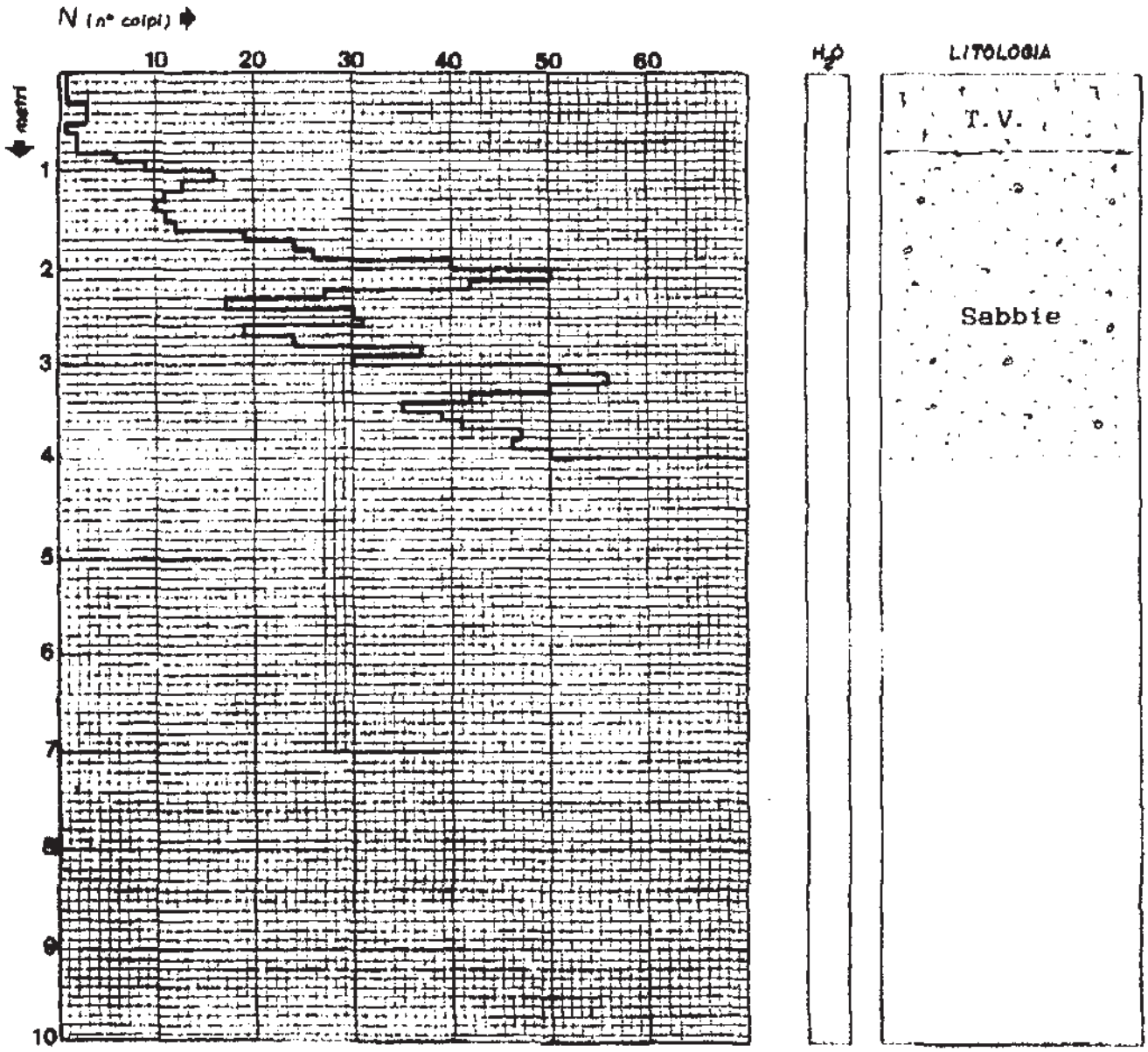
TIPO DI CORONA	ATTREZZO DI PERFORAZIONE	PROFONDITA' DAL P.C (m)	COLONNA STRATIGRAFICA	LIVELLO FALDA	DESCRIZIONE STRATIGRAFICA	CAROTAGGIO % (20 40 60 80)	POKET PENETROMETER (Kg/cmq)	CAMPIONI: NUMERO	CAMPIONI: TIPO	CAMPIONI: PROFONDITA'	STRUMENTAZIONE INSTALLATA
WIDIA	CAROTIERE SEMPLICE	1			*Massicciata preesistente di diaspri e calcari compattata*						
		2									
		3			*Travertino spugnoso cariato marrone scuro con cavità di dissoluzione rossastre*						
		4									
		5									
		6									
		7			*Argilla compatta grigia con frustoli vegetali ed elementi litoidi millimetrici carbonatici. Sono presenti noduli di gesso. Le argille presentano un'alternanza di livelli molto plastici e livelli a maggiore campattezza*						
		8									
		9			*Livello argilloso-sabbioso moltoplastico molle*						
		10									
		11									
		12									
		13									
		14									
		15									
		16									
		17									
		18									
		19									
		20									

Quota falda: m dal p.c.

Prof. [metri]	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Rt [Kgf]	parametri geotecnici stimati γ [Kg/dmc]	σ'vo [Kg/cmq]	ϕ [gradi]	Dr [%]	Cu [Kg/cmq]	mv [cmq/t]	Colonna stratig.	lito_ logia
0.2					1.80	0.04	-	-	-	-	non ril.	
0.4					1.80	0.07	-	-	-	-	non ril.	
0.6	6.1	0.1	46		1.63	0.10	-	-	0.24	32.1		l
0.8	16.3	0.5	35		1.68	0.14	-	-	0.64	17.3		l
1	13.3	0.4	33		1.91	0.18	-	-	0.52	20.4		al
1.2	18.3	0.4	46		1.69	0.21	-	-	0.72	16.8		l
1.4	14.3	0.7	21		1.91	0.25	-	-	0.56	19.9		a
1.6	11.3	0.5	24		1.90	0.29	-	-	0.44	21.9		a
1.8	14.4	0.3	43		1.67	0.32	-	-	0.56	18.1		l
2	19.4	0.4	48		1.70	0.35	34	35	-	0.9		ss
2.2	18.4	1.3	15		1.92	0.39	-	-	0.72	19.5		a
2.4	22.4	1.0	22		1.93	0.43	-	-	0.88	17.9		a
2.6	20.4	1.7	12		1.92	0.47	-	-	0.80	18.2		a
2.8	20.5	1.2	17		1.92	0.51	-	-	0.80	19.5		a
3	22.5	1.4	16		1.93	0.55	-	-	0.88	17.8		a
3.2	26.5	1.2	22		1.94	0.58	-	-	1.04	15.1		a
3.4	26.5	1.3	20		1.94	0.62	-	-	1.04	15.1		a
3.6	29.5	1.5	19		1.94	0.66	-	-	1.15	13.6		a
3.8	31.7	1.5	22		1.95	0.70	-	-	1.24	12.6		a
4	30.7	1.5	20		1.95	0.74	-	-	1.20	13.1		a
4.2	29.7	1.3	22		1.94	0.78	-	-	1.15	13.5		a
4.4	34.7	1.2	29		1.95	0.82	-	-	1.35	11.5		al
4.6	40.7	1.4	29		1.80	0.85	30	-	-	8.2		al
4.8	37.8	1.9	20		1.96	0.89	-	-	1.48	10.6		a
5	49.8	2.3	21		1.99	0.93	-	-	1.95	8.0		al
5.2	51.8	2.6	20		1.99	0.97	-	-	2.03	7.7		a
5.4	52.8	2.5	21		2.00	1.01	-	-	2.07	7.6		al
5.6	49.8	2.8	18		1.99	1.05	-	-	1.95	8.0		a
5.8	55.9	2.9	20		2.00	1.09	-	-	2.19	7.2		a
6	54.9	3.5	16		2.00	1.13	-	-	2.15	7.3		a
6.2	70.9	3.3	22		2.04	1.17	-	-	2.79	5.6		al
6.4	55.9	2.9	20		2.00	1.21	-	-	2.19	7.2		a
6.6	67.9	3.0	23		2.03	1.25	-	-	2.67	5.9		al
6.8	48.0	3.6	13		1.98	1.29	-	-	1.87	8.3		a
7	58.0	3.2	18		2.01	1.33	-	-	2.27	6.9		a
7.2	68.0	3.1	22		2.03	1.37	-	-	2.67	5.9		al
7.4	73.0	5.0	15		2.04	1.42	-	-	2.86	5.5		a
7.6	67.0	4.1	16		2.03	1.46	-	-	2.62	6.0		a
7.8	71.2	5.4	13		2.04	1.50	-	-	2.79	5.6		a
8	73.2	5.4	14		2.04	1.54	-	-	2.87	5.5		a
8.2	81.2	4.4	18		2.06	1.58	-	-	3.18	4.9		al
8.4												
8.6												
8.8												
9												
9.2												
9.4												
9.6												
9.8												
10												

DITA' [m]	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Qt [Kgf]	parametri geotecnici stimati: Gamma [Kg/dmc]	Sigma IVO [Kg/cmq]	Fi [gradi]	D_R [%]	c_u [Kg/cmq]	m_v [cmq/t]	Colonna Stratig.
					1,80	,04	-	-	-	-	
					1,80	,07	-	-	-	-	
	24,1	,6	40	340	1,72	,11	-	-	,96	13,8	L
	38,3	,5	82	550	1,79	,14	42	79	-	8,7	SG
	51,3	,7	70	760	1,86	,18	42	84	-	6,5	SG
	41,3	1,1	36	990	1,81	,22	30	-	-	8,1	SL
	51,3	1,3	38	1130	1,86	,25	31	-	-	6,5	SL
	59,3	2,1	29	1320	1,90	,29	31	-	-	5,6	SL
	65,4	1,7	38	1460	1,93	,33	31	-	-	5,1	SL
	55,4	1,7	32	1410	1,88	,37	31	-	-	6,0	SL
	34,4	1,8	19	1480	1,95	,41	-	-	1,36	11,6	A
	35,4	2,1	17	1590	1,96	,44	-	-	1,40	11,3	A
	41,4	1,9	21	1700	1,97	,48	-	-	1,64	9,7	AL
	49,5	1	50	1900	1,85	,50	37	60	-	6,7	SMA
	58,5	1,4	42	2070	1,89	,52	31	-	-	5,7	SL
	71,5	1,5	47	2150	1,96	,54	32	-	-	4,7	SL
	42,5	1,3	32	2600	1,81	,55	30	-	-	7,8	SL
	42,5	1,1	38	2160	1,81	,57	30	-	-	7,8	SL
	27,6	1,9	14	2030	1,94	,59	-	-	1,08	14,5	A
	82,6	,7	113	2300	2,01	,61	39	73	-	4,0	SG
	80,6	2,1	39	3440	2,00	,63	32	-	-	4,1	SL
	160,6	2,2	73	3300	2,10	,65	41	95	-	2,1	SG
	54,6	1,9	28	3540	1,87	,67	31	-	-	6,1	SL
	40,7	1,3	32	3310	1,80	,69	30	-	-	8,2	SL
	34,7	1,5	24	3350	1,95	,70	-	-	1,36	11,5	AL
	28,7	1,1	25	3460	1,94	,72	-	-	1,12	13,9	AL
	29,7	,9	34	3630	1,75	,74	28	-	-	11,2	SL
	40,7	1,5	27	3810	1,97	,76	-	-	1,60	9,8	AL
	32,9	,8	41	3780	1,76	,77	29	-	-	10,1	SL
	29,9	1,4	21	3860	1,94	,79	-	-	1,16	13,4	A
	25,9	,9	30	3920	1,73	,81	28	-	-	12,9	SL
	27,9	,9	30	4310	1,74	,82	28	-	-	11,9	SL
	61,9	1	62	4770	1,91	,84	36	56	-	5,4	SMA
	72	,9	83	4760	1,96	,86	36	61	-	4,6	SMA
	53	1,8	29	4870	1,87	,88	31	-	-	6,3	SL
	54	1,8	30	5020	1,87	,89	31	-	-	6,2	SL
	37	1,3	28	5240	1,96	,91	-	-	1,44	10,8	AL
	61	1,7	37	5630	1,91	,93	31	-	-	5,5	SL
	76,2	1,7	44	5490	1,98	,95	32	-	-	4,4	SL
	57,2	2	29	5760	1,89	,97	31	-	-	5,8	SL
	68,2	2	34	5940	1,94	,99	32	-	-	4,9	SL
	53,2	2,2	24	6040	2,00	1,01	-	-	2,09	7,5	AL
	39,2	2,2	18	6290	1,96	1,03	-	-	1,53	10,2	A
	40,3	2	20	6610	1,97	1,05	-	-	1,57	9,9	A
	44,3	1,9	24	6970	1,98	1,06	-	-	1,73	9,0	AL
	52,3	2,3	22	7140	1,99	1,08	-	-	2,05	7,6	AL
	61,3	1,4	44	7270	1,91	1,10	31	-	-	5,4	SL
	52,3	2	26	7430	1,99	1,12	-	-	2,05	7,6	AL
	54,4	2,8	19	7670	2,00	1,14	-	-	2,13	7,4	A
	55,4	2,5	22	7990	2,00	1,16	-	-	2,17	7,2	AL

					parametri geotecnici stimati						
PROFONDITA' [metri]	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Qt [Kgf]	Gamma [Kg/dmc]	Sigma IVO [Kg/cmq]	Fi [gradi]	D_R [%]	c_u [Kg/cmq]	m_v [cmq/t]	Colonna Stratig.
0.2					1,80	,04	-	-	-	-	
0.4					1,80	,07	-	-	-	-	
0.6	34,1	,7	51	490	1,77	,11	42	82	-	9,8	SG
0.8	19,3	1	19	510	1,92	,15	-	-	,77	19,7	A
1.0	15,3	1,2	13	550	1,58	,18	-	-	,60	24,2	T
1.2	33,3	,9	36	670	1,77	,21	29	-	-	10,0	SL
1.4	43,3	,6	72	860	1,82	,25	40	71	-	7,7	SG
1.6	51,3	1,2	43	1260	1,86	,29	31	-	-	6,5	SL
1.8	85,4	1,7	49	1850	2,03	,33	41	88	-	3,9	SG
2.0	97,4	,5	183	1980	2,29	,37	41	90	-	3,4	SG
2.2	50,4	1,3	38	2020	1,85	,41	31	-	-	6,6	SL
2.4	42,4	1,6	27	1720	1,97	,45	-	-	1,68	9,4	AL
2.6	30,4	1	30	2170	1,75	,48	29	-	-	11,0	SL
2.8	76,5	,5	143	2270	2,18	,51	39	75	-	4,4	SG
3.0	68,5	2,1	33	2380	1,94	,53	32	-	-	4,9	SL
3.2	38,5	1,1	34	2330	1,79	,54	30	-	-	8,7	SL
3.4	36,5	1,1	34	2140	1,78	,56	29	-	-	9,1	SL
3.6	14,5	1	15	2300	1,91	,58	-	-	,56	19,8	A
3.8	15,6	,7	23	2450	1,91	,59	-	-	,60	19,5	A
4.0	61,6	1,2	51	3010	1,91	,61	37	63	-	5,4	SMA
4.2	65,6	,3	197	2880	2,13	,64	37	64	-	5,1	SMA
4.4	41,6	2,9	15	3120	1,97	,65	-	-	1,64	9,6	A
4.6	51,6	,5	97	2960	1,86	,67	36	55	-	6,5	SMA
4.8	19,7	1,5	13	3120	1,92	,69	-	-	,76	19,9	A
5.0	36,7	1,3	28	3400	1,96	,71	-	-	1,44	10,9	AL
5.2	82,7	2,3	36	4260	2,01	,73	32	-	-	4,0	SL
5.4	139,7	1,7	84	6020	2,10	,75	40	87	-	2,4	SG
5.6	300,7	2,3	133	6300	2,30	,78	43	100	-	1,1	SG
5.8	104,9	1,3	83	5410	2,10	,80	38	75	-	3,2	SG
6.0	41,9	1,3	33	4570	1,81	,82	30	-	-	8,0	SL
6.2	32,9	,9	38	4850	1,76	,83	29	-	-	10,1	SL
6.4	28,9	1	29	5300	1,94	,85	-	-	1,12	13,8	AL
6.6	58,9	1,5	38	5750	1,89	,87	31	-	-	5,7	SL
6.8	60	2,1	28	5730	1,90	,89	31	-	-	5,6	SL
7.0	49	1,9	26	5720	1,99	,91	-	-	1,92	8,2	AL
7.2	51	2,4	21	6040	1,99	,93	-	-	2,00	7,8	AL
7.4	37	2	19	6250	1,96	,94	-	-	1,44	10,8	A
7.6	42	2	21	6640	1,97	,96	-	-	1,64	9,5	A
7.8	46,2	1,7	27	6820	1,98	,98	-	-	1,81	8,7	AL
8.0	67,2	2,6	26	6980	2,03	1,00	-	-	2,65	6,0	AL
8.2	66,2	3,5	19	7430	2,02	1,02	-	-	2,61	6,0	AL
8.4	55,2	2,7	20	7610	2,00	1,04	-	-	2,17	7,2	AL
8.6	47,2	3,1	15	8170	1,98	1,06	-	-	1,85	8,5	A
8.8	52,3	2,1	25	8490	1,99	1,08	-	-	2,05	7,6	AL
9.0	51,3	1,9	27	8630	1,99	1,10	-	-	2,01	7,8	AL
9.2	46,3	2,3	20	8590	1,98	1,12	-	-	1,81	8,6	A
9.4	57,3	2,5	23	8760	2,01	1,14	-	-	2,25	7,0	AL
9.6	59,3	2,3	25	8960	2,01	1,16	-	-	2,33	6,7	AL
9.8	51,4	3	17	9030	1,99	1,18	-	-	2,01	7,8	A
10.0	52,4	2,3	23	9410	1,99	1,20	-	-	2,05	7,6	AL



CARATTERISTICHE STRUMENTALI

P.D.M. - ISSMFE 1988

Maglio: peso = 30 Kg , altezza di caduta = 20 cm – Testata d'infissione: 13 Kg

Aste: peso = 2.9 Kg/m , Ø = 20 mm – Punta: apertura del cono = 60°, sezione = 10 cmq , Ø max = 35.7 mm, altezza della parte cilindrica = 9 mm – Avanzamento = 10cm

	A	B	C	D	E	F
1	Profondità (m)	Numero colpi	Rd (kg/cmq)	Profondità (m)	Numero colpi	Rd (kg/cmq)
2	0,10	11	40,91	4,60		0,00
3	0,20	15	55,79	4,70		0,00
4	0,30	12	44,63	4,80		0,00
5	0,40	10	37,19	4,90		0,00
6	0,50	11	40,91	5,00		0,00
7	0,60	6	22,31	5,10		0,00
8	0,70	4	14,88	5,20		0,00
9	0,80	5	18,60	5,30		0,00
10	0,90	8	29,75	5,40		0,00
11	1,00	11	38,98	5,50		0,00
12	1,10	13	46,06	5,60		0,00
13	1,20	15	53,15	5,70		0,00
14	1,30	17	60,24	5,80		0,00
15	1,40	19	67,32	5,90		0,00
16	1,50	18	63,78	6,00		0,00
17	1,60	17	60,24	6,10		0,00
18	1,70	19	67,32	6,20		0,00
19	1,80	19	67,32	6,30		0,00
20	1,90	20	70,87	6,40		0,00
21	2,00	24	81,20	6,50		0,00
22	2,10	31	104,89	6,60		0,00
23	2,20	24	81,20	6,70		0,00
24	2,30	16	54,14	6,80		0,00
25	2,40	14	47,37	6,90		0,00
26	2,50	11	37,22	7,00		0,00
27	2,60	7	23,68	7,10		0,00
28	2,70	9	30,45	7,20		0,00
29	2,80	15	50,75	7,30		0,00
30	2,90	13	43,98	7,40		0,00
31	3,00	9	29,14	7,50		0,00
32	3,10	10	32,37	7,60		0,00
33	3,20	10	32,37	7,70		0,00
34	3,30	9	29,14	7,80		0,00
35	3,40	10	32,37	7,90		0,00
36	3,50	10	32,37	8,00		0,00
37	3,60	11	35,61	8,10		0,00
38	3,70	13	42,09	8,20		0,00
39	3,80	15	48,56	8,30		0,00
40	3,90	19	61,51	8,40		0,00
41	4,00	18	55,86	8,50		0,00
42	4,10	18	55,86	8,60		0,00
43	4,20	20	62,07	8,70		0,00
44	4,30	21	65,17	8,80		0,00
45	4,40	18	55,86	8,90		0,00
46	4,50	21	65,17	9,00		0,00

	A	B	C	D	E	F
1	Profondità (m)	Numero colpi	Rd (kg/cmq)	Profondità (m)	Numero colpi	Rd (kg/cmq)
2	0,10	7	26,03	4,60	15	46,55
3	0,20	13	48,35	4,70	18	55,86
4	0,30	8	29,75	4,80	18	55,86
5	0,40	7	26,03	4,90	20	62,07
6	0,50	8	29,75	5,00		0,00
7	0,60	3	11,16	5,10		0,00
8	0,70	2	7,44	5,20		0,00
9	0,80	2	7,44	5,30		0,00
10	0,90	1	3,72	5,40		0,00
11	1,00	5	17,72	5,50		0,00
12	1,10	8	28,35	5,60		0,00
13	1,20	15	53,15	5,70		0,00
14	1,30	17	60,24	5,80		0,00
15	1,40	15	53,15	5,90		0,00
16	1,50	16	56,69	6,00		0,00
17	1,60	14	49,61	6,10		0,00
18	1,70	15	53,15	6,20		0,00
19	1,80	13	46,06	6,30		0,00
20	1,90	15	53,15	6,40		0,00
21	2,00	15	50,75	6,50		0,00
22	2,10	17	57,52	6,60		0,00
23	2,20	24	81,20	6,70		0,00
24	2,30	29	98,12	6,80		0,00
25	2,40	19	64,29	6,90		0,00
26	2,50	21	71,05	7,00		0,00
27	2,60	27	91,35	7,10		0,00
28	2,70	13	43,98	7,20		0,00
29	2,80	7	23,68	7,30		0,00
30	2,90	8	27,07	7,40		0,00
31	3,00	7	22,66	7,50		0,00
32	3,10	8	25,90	7,60		0,00
33	3,20	8	25,90	7,70		0,00
34	3,30	9	29,14	7,80		0,00
35	3,40	8	25,90	7,90		0,00
36	3,50	11	35,61	8,00		0,00
37	3,60	12	38,85	8,10		0,00
38	3,70	10	32,37	8,20		0,00
39	3,80	13	42,09	8,30		0,00
40	3,90	16	51,80	8,40		0,00
41	4,00	13	40,34	8,50		0,00
42	4,10	12	37,24	8,60		0,00
43	4,20	11	34,14	8,70		0,00
44	4,30	13	40,34	8,80		0,00
45	4,40	16	49,66	8,90		0,00
46	4,50	14	43,45	9,00		0,00

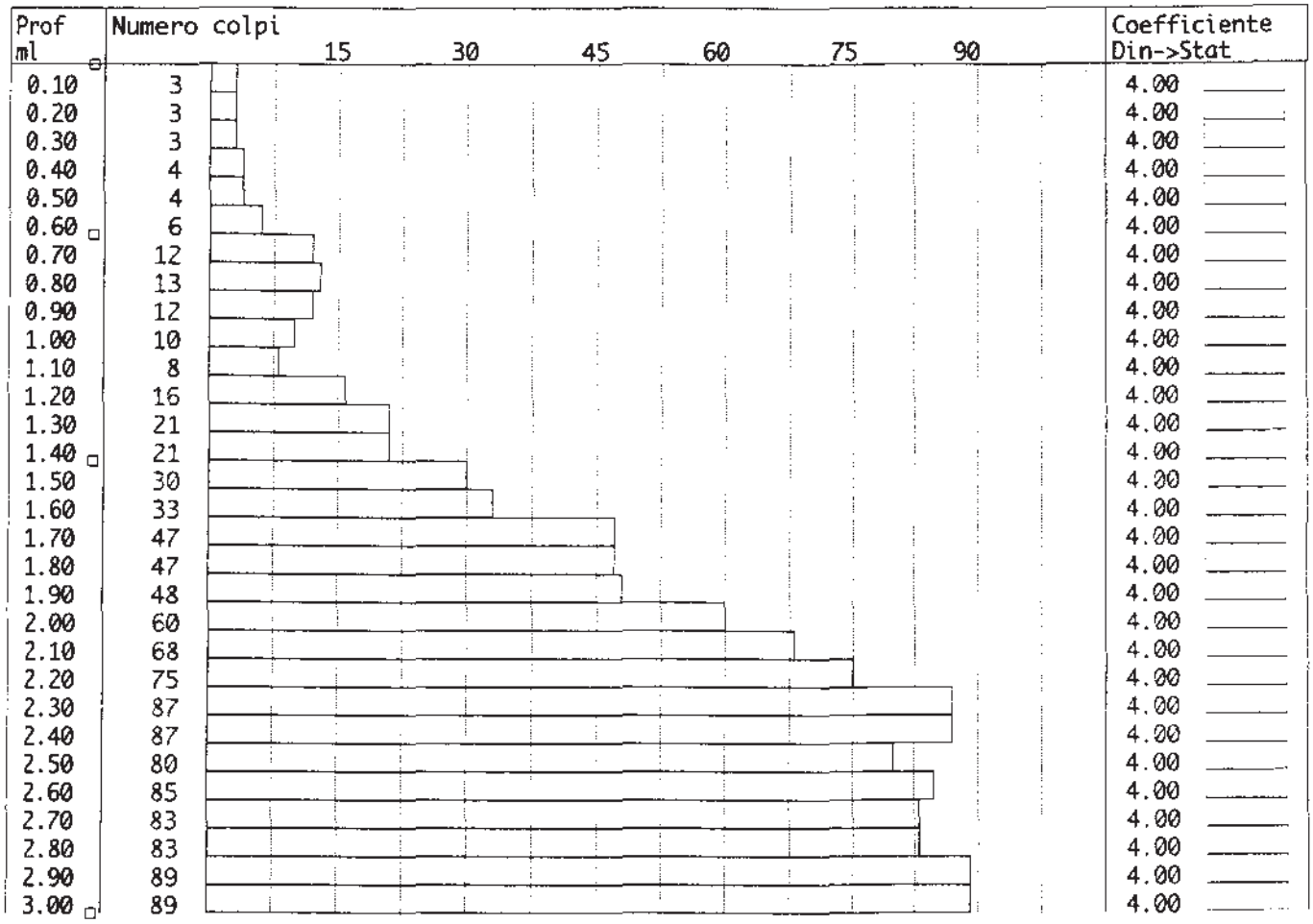
Prof.(m)	N(colpi p)	Rpd(kg/cm²)	asta	Prof.(m)	N(colpi p)	Rpd(kg/cm²)	asta
0,00 - 0,10	---	---	1	3,30 - 3,40	15	45,2	4
0,10 - 0,20	---	---	1	3,40 - 3,50	20	60,3	4
0,20 - 0,30	11	38,9	1	3,50 - 3,60	16	48,2	4
0,30 - 0,40	13	45,9	1	3,60 - 3,70	23	69,3	4
0,40 - 0,50	12	42,4	1	3,70 - 3,80	18	54,3	4
0,50 - 0,60	6	21,2	1	3,80 - 3,90	16	46,0	5
0,60 - 0,70	4	14,1	1	3,90 - 4,00	15	43,1	5
0,70 - 0,80	2	7,1	1	4,00 - 4,10	16	46,0	5
0,80 - 0,90	2	6,7	2	4,10 - 4,20	15	43,1	5
0,90 - 1,00	2	6,7	2	4,20 - 4,30	11	31,6	5
1,00 - 1,10	2	6,7	2	4,30 - 4,40	11	31,6	5
1,10 - 1,20	3	10,0	2	4,40 - 4,50	11	31,6	5
1,20 - 1,30	4	13,4	2	4,50 - 4,60	13	37,4	5
1,30 - 1,40	5	16,7	2	4,60 - 4,70	13	37,4	5
1,40 - 1,50	6	20,1	2	4,70 - 4,80	13	37,4	5
1,50 - 1,60	6	20,1	2	4,80 - 4,90	12	32,9	6
1,60 - 1,70	6	20,1	2	4,90 - 5,00	13	35,7	6
1,70 - 1,80	6	20,1	2	5,00 - 5,10	12	32,9	6
1,80 - 1,90	6	19,0	3	5,10 - 5,20	15	41,2	6
1,90 - 2,00	6	19,0	3	5,20 - 5,30	13	35,7	6
2,00 - 2,10	6	19,0	3	5,30 - 5,40	13	35,7	6
2,10 - 2,20	6	19,0	3	5,40 - 5,50	11	30,2	6
2,20 - 2,30	6	19,0	3	5,50 - 5,60	12	32,9	6
2,30 - 2,40	6	19,0	3	5,60 - 5,70	14	38,4	6
2,40 - 2,50	5	15,8	3	5,70 - 5,80	17	46,7	6
2,50 - 2,60	5	15,8	3	5,80 - 5,90	17	44,7	7
2,60 - 2,70	4	12,7	3	5,90 - 6,00	20	52,5	7
2,70 - 2,80	4	12,7	3	6,00 - 6,10	22	57,8	7
2,80 - 2,90	4	12,1	4	6,10 - 6,20	28	73,6	7
2,90 - 3,00	5	15,1	4	6,20 - 6,30	35	92,0	7
3,00 - 3,10	5	15,1	4	6,30 - 6,40	38	99,8	7
3,10 - 3,20	5	15,1	4	6,40 - 6,50	42	110,3	7
3,20 - 3,30	12	36,2	4				

- PENETROMETRO DINAMICO tipo : **DL-30 (60°)**
- M (massa battente)= **30,00** kg - H (altezza caduta)= **0,20** m - A (area punta)= **10,00** cm² - D(diam. punta)= **35,70 mm**
- Numero Colpi Punta N = N(**10**) [δ = 10 cm] - Uso rivestimento / fanghi iniezione : **NO**

Prof.(m)	N(colpi p)	Rpd(kg/cm²)	asta
0,00 - 0,10	—	—	1
0,10 - 0,20	—	—	1
0,20 - 0,30	12	42,4	1
0,30 - 0,40	18	63,6	1
0,40 - 0,50	19	67,2	1
0,50 - 0,60	18	63,6	1
0,60 - 0,70	14	49,5	1
0,70 - 0,80	17	60,1	1
0,80 - 0,90	20	66,8	2
0,90 - 1,00	21	70,2	2
1,00 - 1,10	17	56,8	2
1,10 - 1,20	13	43,4	2
1,20 - 1,30	12	40,1	2
1,30 - 1,40	12	40,1	2
1,40 - 1,50	10	33,4	2
1,50 - 1,60	8	26,7	2
1,60 - 1,70	7	23,4	2
1,70 - 1,80	5	16,7	2
1,80 - 1,90	3	9,5	3
1,90 - 2,00	3	9,5	3
2,00 - 2,10	4	12,7	3
2,10 - 2,20	5	15,8	3
2,20 - 2,30	6	19,0	3
2,30 - 2,40	7	22,2	3
2,40 - 2,50	7	22,2	3
2,50 - 2,60	8	25,4	3
2,60 - 2,70	9	28,5	3
2,70 - 2,80	9	28,5	3
2,80 - 2,90	7	21,1	4
2,90 - 3,00	8	24,1	4
3,00 - 3,10	7	21,1	4
3,10 - 3,20	6	18,1	4
3,20 - 3,30	6	18,1	4
3,30 - 3,40	13	39,2	4
3,40 - 3,50	17	51,2	4
3,50 - 3,60	17	51,2	4
3,60 - 3,70	24	72,3	4
3,70 - 3,80	21	63,3	4
3,80 - 3,90	27	77,6	5
3,90 - 4,00	26	74,7	5
4,00 - 4,10	18	51,7	5
4,10 - 4,20	13	37,4	5
4,20 - 4,30	17	48,8	5
4,30 - 4,40	21	60,3	5
4,40 - 4,50	18	51,7	5
4,50 - 4,60	22	63,2	5
4,60 - 4,70	20	57,5	5
4,70 - 4,80	26	74,7	5
4,80 - 4,90	20	54,9	6
4,90 - 5,00	20	54,9	6
5,00 - 5,10	18	49,4	6
5,10 - 5,20	23	63,1	6
5,20 - 5,30	24	65,9	6
5,30 - 5,40	24	65,9	6
5,40 - 5,50	27	74,1	6
5,50 - 5,60	30	82,3	6
5,60 - 5,70	31	85,1	6
5,70 - 5,80	32	87,8	6
5,80 - 5,90	35	92,0	7
5,90 - 6,00	32	84,1	7
6,00 - 6,10	35	92,0	7
6,10 - 6,20	36	94,6	7
6,20 - 6,30	37	97,2	7
6,30 - 6,40	37	97,2	7
6,40 - 6,50	39	102,5	7
6,50 - 6,60	40	105,1	7

- PENETROMETRO DINAMICO tipo : **DL-30 (60°)**
- M (massa battente)= **30,00** kg - H (altezza caduta)= **0,20** m - A (area punta)= **10,00** cm² - D(diam. punta)= **35,70 mm**
- Numero Colpi Punta N = N(**10**) [δ = 10 cm] - Uso rivestimento / fanghi iniezione : **NO**

0,00	-	1,00	mt. dal p.d.c.:	*SUOLO – TERRENO VEGETALE*
1,00	-	5,00	mt. dal p.d.c.:	*LIMO SABBIOSO E SABBIA*


Prof
ml
Numero colpi
15
30
45
60
75
90
Coefficiente
Din->Stat
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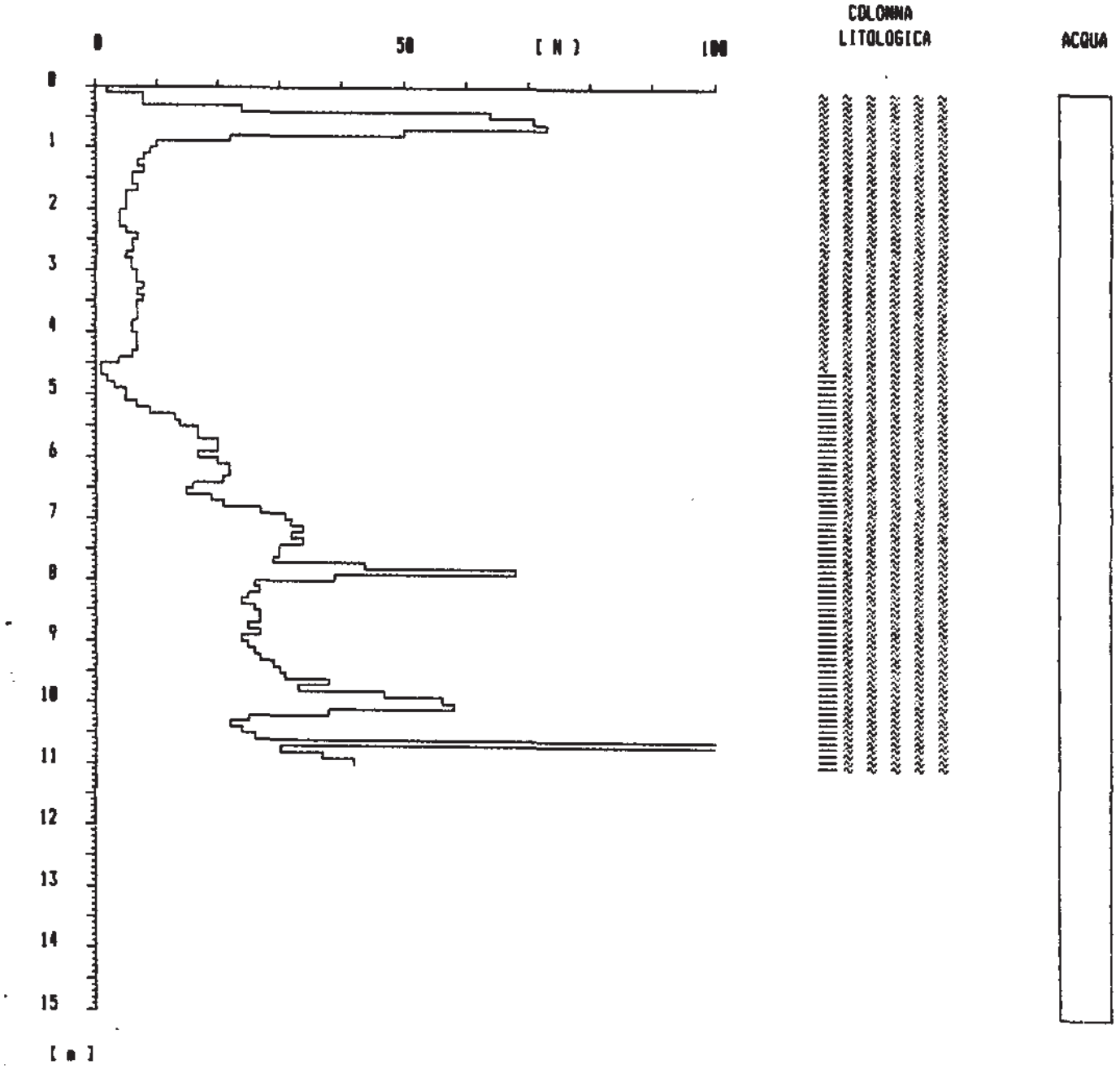
0.30 3 4.00
0.40 4 4.00
0.50 4 4.00
0.60 6 4.00
0.70 12 4.00
0.80 13 4.00
0.90 12 4.00
1.00 10 4.00
1.10 8 4.00
1.20 16 4.00
1.30 21 4.00
1.40 21 4.00
1.50 30 4.00
1.60 33 4.00
1.70 47 4.00
1.80 47 4.00
1.90 48 4.00
2.00 60 4.00
2.10 68 4.00
2.20 75 4.00
2.30 87 4.00
2.40 87 4.00
2.50 80 4.00
2.60 85 4.00
2.70 83 4.00
2.80 83 4.00
2.90 89 4.00
3.00 89 4.00

	letture di campagna				valori derivati								
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
0,20													
0,40													
0,60		110	180	300	70	0,47	24	190			0,55	19,64	Argilla
0,80		120	150	430	30	0,20	60	310	25	11		19,13	Sabbia limosa
1,00		170	290	650	120	0,80	21	480			0,85	17,75	Argilla
1,20		190	450	860	260	1,73	11	670			0,95	17,47	Argilla
1,40		250	470	1470	220	1,47	17	1220			1,00	16,83	Argilla
1,60		700	970	1930	270	1,80	39	1230			2,33	9,43	Limo sabbioso
1,80		600	1280	2630	680	4,53	13	2030			2,00	10,84	Argilla
2,00		420	1180	2610	760	5,07	8	2190			1,40	14,11	Argilla
2,20		330	860	2700	530	3,53	9	2370			1,32	15,75	Argilla
2,40		270	630	2900	360	2,40	11	2630			1,08	16,60	Argilla
2,60		210	330	2670	120	0,80	26	2460			0,84	17,25	Limo
2,80		190	440	3080	250	1,67	11	2890			0,95	17,47	Argilla
3,00		110	330	3250	220	1,47	8	3140			0,55	19,64	Argilla
3,20		130	340	3410	210	1,40	9	3280			0,65	18,72	Argilla
3,40		130	280	3540	150	1,00	13	3410			0,65	18,72	Argilla
3,60		120	310	3760	190	1,27	9	3640			0,60	19,13	Argilla
3,80		140	360	3850	220	1,47	10	3710			0,70	18,40	Argilla
4,00		130	340	3920	210	1,40	9	3790			0,65	18,72	Argilla
4,20		140	310	4030	170	1,13	12	3890			0,70	18,40	Argilla
4,40		130	320	4070	190	1,27	10	3940			0,65	18,72	Argilla
4,60		60	180	4010	120	0,80	8	3950			0,30	25,93	Argilla
4,80		50	130	4090	80	0,53	9	4040			0,25	29,00	Argilla
5,00		140	240	4150	100	0,67	21	4010			0,70	18,40	Argilla
5,20		170	280	4200	110	0,73	23	4030			0,85	17,75	Argilla
5,40		190	260	4250	70	0,47	41	4060			0,95	17,47	Limo sabbioso
5,60		240	360	4370	120	0,80	30	4130			0,96	16,94	Limo
5,80		370	540	4490	170	1,13	33	4120			1,48	15,06	Limo sabbioso
6,00		490	680	4500	190	1,27	39	4010			1,63	12,76	Limo sabbioso
6,20		580	960	4530	380	2,53	23	3950			1,93	11,16	Argilla
6,40		470	680	4750	210	1,40	34	4280			1,57	13,14	Limo sabbioso
6,60		980	1110	5020	130	0,87	113	4040	39	60		6,79	Sabbia con ghiaia
6,80		1150	1710	5890	560	3,73	31	4740			3,83	5,79	Limo
7,00		1230	1490	5630	260	1,73	71	4400	40	67		5,41	Sabbia
7,20		360	1210	5950	850	5,67	6	5590			1,44	15,24	Argilla
7,40		580	1030	6020	450	3,00	19	5440			1,93	11,16	Argilla
7,60		450	780	6280	330	2,20	20	5830			1,50	13,53	Argilla
7,80		450	940	6510	490	3,27	14	6060			1,50	13,53	Argilla
8,00		450	900	6830	450	3,00	15	6380			1,50	13,53	Argilla
8,20		380	680	7170	300	2,00	19	6790			1,52	14,87	Argilla
8,40		400	780	7730	380	2,53	16	7330			1,60	14,50	Argilla
8,60		470	850	7820	380	2,53	19	7350			1,57	13,14	Argilla
8,80		350	660	8000	310	2,07	17	7650			1,40	15,42	Argilla
9,00		380	810	8240	430	2,87	13	7860			1,52	14,87	Argilla
9,20		400	760	8420	360	2,40	17	8020			1,60	14,50	Argilla
9,40		440	820	8670	380	2,53	17	8230			1,47	13,72	Argilla
9,60		450	890	9690	440	2,93	15	9240			1,50	13,53	Argilla
9,80		470	870	9020	400	2,67	18	8550			1,57	13,14	Argilla
10,00		460	860	9500	400	2,67	17	9040			1,53	13,33	Argilla
10,20													
10,40													
10,60													
10,80													
11,00													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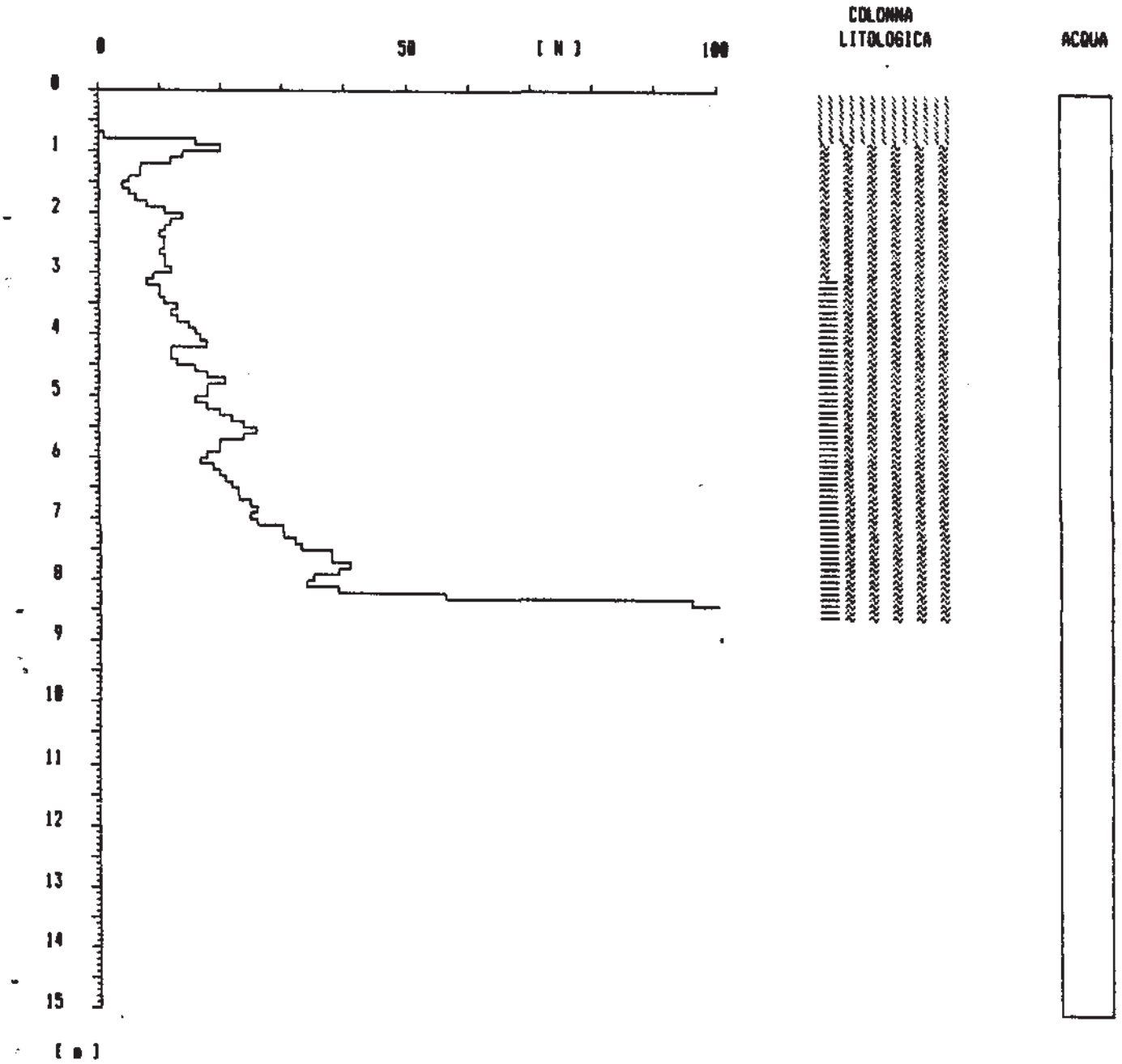
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Prof. m	RP/10 kg/cm²	RL/10 kg/cm²	Qc kg/cm²	fs kg/cm²	Qc/fs
0,20	---	---	--	---	---
0,40	---	---	--	0,13	---
0,60	3,0	4,0	6,0	0,20	30,0
0,80	2,5	4,0	5,0	0,07	75,0
1,00	8,0	8,5	16,0	0,93	17,0
1,20	7,0	14,0	14,0	0,87	16,0
1,40	19,0	25,5	38,0	1,27	30,0
1,60	23,0	32,5	46,0	1,40	33,0

Prof. m	RP/10 kg/cm²	RL/10 kg/cm²	Qc kg/cm²	fs kg/cm²	Qc/fs
1,80	22,5	33,0	45,0	2,00	22,0
2,00	21,0	36,0	42,0	3,20	13,0
2,20	30,0	54,0	60,0	2,40	25,0
2,40	50,0	68,0	100,0	3,47	29,0
2,60	32,0	58,0	64,0	2,13	30,0
2,80	34,0	50,0	68,0	1,07	64,0
3,00	34,0	42,0	68,0	---	---

ENETROMETRO STATICO tipo GOUDA da 5 t - (con anello allargatore) -
OSTANTE DI TRASFORMAZIONE Ct = 20 - Velocità Avanzamento punta 2 cm/s
nta meccanica tipo Begemann ø = 35.7 mm (area punta 10 cm² - apertura 60°)
anicotto laterale (superficie 150 cm²)

Prof. m	RP/10 kg/cm²	RL/10 kg/cm²	Qc kg/cm²	fs kg/cm²	Qc/fs
0,20	----	----	–	-----	----
0,40	----	----	–	0,07	----
0,60	8,5	9,0	17,0	0,60	28,0
0,80	3,0	7,5	6,0	0,13	45,0
1,00	1,0	2,0	2,0	0,53	4,0
1,20	4,0	8,0	8,0	1,07	7,0
1,40	16,5	24,5	33,0	1,47	22,0
1,60	19,0	30,0	38,0	1,47	26,0
1,80	21,5	32,5	43,0	2,00	22,0
2,00	31,0	46,0	62,0	2,40	26,0
2,20	32,0	50,0	64,0	1,33	48,0
2,40	30,0	40,0	60,0	1,87	32,0
2,60	12,0	26,0	24,0	1,13	21,0

Prof. m	RP/10 kg/cm²	RL/10 kg/cm²	Qc kg/cm²	fs kg/cm²	Qc/fs
2,80	16,5	25,0	33,0	1,73	19,0
3,00	19,5	32,5	39,0	1,07	37,0
3,20	34,0	42,0	68,0	0,93	73,0
3,40	33,0	40,0	66,0	1,87	35,0
3,60	36,0	50,0	72,0	2,60	28,0
3,80	30,5	50,0	61,0	2,20	28,0
4,00	21,5	38,0	43,0	1,87	23,0
4,20	36,0	50,0	72,0	2,67	27,0
4,40	40,0	60,0	80,0	2,67	30,0
4,60	42,0	62,0	84,0	3,47	24,0
4,80	36,0	62,0	72,0	3,47	21,0
5,00	34,0	60,0	68,0	-----	----

PENETROMETRO STATICO tipo GOUDA da 5 t - (con anello allargatore) -
COSTANTE DI TRASFORMAZIONE Ct = 20 - Velocità Avanzamento punta 2 cm/s
punta meccanica tipo Begemann ø = 35.7 mm (area punta 10 cm² - apertura 60°)
manicotto laterale (superficie 150 cm²)

Prof.	N	R$_d$	Φ	D$_r$	C$_u$	m$_v$	Tipo Litologico
0,00	-	-	-	-	-	-	RIPORTO

9,20	24	57	-	7,20	LIMO SABBIOSO SCIOLTO	1,80	[illegible]	[illegible]
[illegible]	24	52	-	7,20	LIMO SABBIOSO SCIOLTO	[illegible]	[illegible]	[illegible]
8,80	20	47		8,00	LIMO SABBIOSO SCIOLTO	2,00	4	[illegible]
9,40	23	48	-	9,00	LIMO SABBIOSO SCIOLTO	2,10	4	[illegible]
5,40	23	47	-	5,00	LIMO SABBIOSO SCIOLTO	2,20	4	[illegible]
7,50	22	58	-	12,00	LIMO SABBIOSO SCIOLTO	2,30	[illegible]	[illegible]
2,40	23	46	-	9,00	LIMO SABBIOSO SCIOLTO	2,40	[illegible]	[illegible]
4,20	24	52	-	7,20	LIMO SABBIOSO SCIOLTO	2,50	5	2
4,20	24	52	-	7,20	LIMO SABBIOSO SCIOLTO	2,60	5	2
3,00	24	57	-	6,00	LIMO SABBIOSO SCIOLTO	2,70	6	2
9,40	23	46	-	9,00	LIMO SABBIOSO SCIOLTO	2,80	4	[illegible]
2,40	23	44	-	9,00	LIMO SABBIOSO SCIOLTO	2,90	4	[illegible]
6,20	23	43	-	9,00	LIMO SABBIOSO SCIOLTO	3,00	[illegible]	[illegible]
9,20	23	43	-	9,00	LIMO SABBIOSO SCIOLTO	3,10	[illegible]	[illegible]
6,20	23	43	-	9,00	LIMO SABBIOSO SCIOLTO	3,20	4	[illegible]
3,60	22	34	-	12,00	LIMO SABBIOSO SCIOLTO	3,30	3	[illegible]
5,20	23	42	-	9,00	LIMO SABBIOSO SCIOLTO	3,40	4	[illegible]
2,70	24	58	-	7,20	LIMO SABBIOSO SCIOLTO	3,50	5	2
1,80	-	-	0,50	5,10	ARGILLA	3,60	7	3
5,40	-	-	0,50	4,50	ARGILLA	3,70	8	3
0,90	-	-	0,60	4,00	ARGILLA	3,80	9	4
1,50	-	-	0,80	3,00	ARGILLA	3,90	12	5
1,50	-	-	0,80	3,00	ARGILLA	4,00	12	5
0,00	-	-	0,90	2,60	ARGILLA	4,10	14	6
8,80	-	-	1,10	2,50	ARGILLA	4,20	16	5
9,60	-	-	1,10	2,30	ARGILLA	4,30	15	6
7,30	-	-	1,20	2,00	ARGILLA	4,40	16	7
1,40	-	-	0,80	1,90	ARGILLA	4,50	19	8
2,90	-	-	1,10	2,10	ARGILLA	4,60	17	7
[illegible]	-	-	1,70	1,50	ARGILLA	4,70	25	[illegible]
5,30	-	-	1,90	1,60	ARGILLA	4,80	22	9
3,00	-	-	[illegible]	[illegible]	ARGILLA	4,90	23	9
						5,00		

Prof.	N	R_d	Φ	D_r	C_u	m_v	Tipo Litologico
0,00	-	-	-	-	-	-	RIPORTO
0,10	-	-	-	-	-	-	RIPORTO
0,20	-	-	-	-	-	-	RIPORTO
0,30	2	11,10	-	-	-	-	RIPORTO
0,40	45	250,00	-	-	-	-	RIPORTO
0,50	26	144,40	-	-	-	-	RIPORTO
0,60	12	66,70	-	-	-	-	RIPORTO
0,70	8	44,40	-	-	-	-	RIPORTO
0,80	9	50,00	-	-	-	-	RIPORTO
0,90	6	33,30	-	-	-	-	RIPORTO
1,00	4	20,70	23	60	-	9,00	LIMO SABBIOSO SCIOLTO
1,10	4	20,70	23	58	-	9,00	LIMO SABBIOSO SCIOLTO
1,20	4	20,70	23	57	-	9,00	LIMO SABBIOSO SCIOLTO
1,30	4	20,70	23	55	-	9,00	LIMO SABBIOSO SCIOLTO
1,40	4	20,70	23	54	-	9,00	LIMO SABBIOSO SCIOLTO
1,50	5	25,90	24	60	-	7,20	LIMO SABBIOSO SCIOLTO
1,60	4	20,70	23	52	-	9,00	LIMO SABBIOSO SCIOLTO
1,70	4	20,70	23	51	-	9,00	LIMO SABBIOSO SCIOLTO
1,80	4	20,70	23	50	-	9,00	LIMO SABBIOSO SCIOLTO
1,90	3	15,50	22	41	-	12,00	LIMO SABBIOSO SCIOLTO
2,00	3	14,50	22	40	-	12,00	LIMO SABBIOSO SCIOLTO
2,10	3	14,50	22	40	-	12,00	LIMO SABBIOSO SCIOLTO
2,20	4	19,40	23	48	-	9,00	LIMO SABBIOSO SCIOLTO
2,30	3	14,50	22	39	-	12,00	LIMO SABBIOSO SCIOLTO
2,40	5	24,20	24	53	-	7,20	LIMO SABBIOSO SCIOLTO
2,50	6	29,00	24	58	-	6,00	LIMO SABBIOSO SCIOLTO
2,60	7	33,90	25	62	-	5,10	LIMO SABBIOSO SCIOLTO
2,70	4	19,40	23	45	-	9,00	LIMO SABBIOSO SCIOLTO
2,80	4	19,40	23	45	-	9,00	LIMO SABBIOSO SCIOLTO
2,90	3	14,50	22	36	-	12,00	LIMO SABBIOSO SCIOLTO
3,00	4	18,20	23	44	-	9,00	LIMO SABBIOSO SCIOLTO
3,10	4	18,20	23	43	-	9,00	LIMO SABBIOSO SCIOLTO
3,20	5	22,70	24	50	-	7,20	LIMO SABBIOSO SCIOLTO
3,30	6	27,30	-	-	0,40	6,00	ARGILLA
3,40	8	36,40	-	-	0,50	4,50	ARGILLA
3,50	10	45,50	-	-	0,70	3,60	ARGILLA
3,60	11	50,00	-	-	0,70	3,30	ARGILLA
3,70	14	63,60	-	-	0,90	2,60	ARGILLA
3,80	14	63,60	-	-	0,90	2,60	ARGILLA
3,90	19	86,40	-	-	1,30	1,90	ARGILLA
4,00	22	94,30	-	-	1,50	1,60	ARGILLA
4,10	23	98,60	-	-	1,50	1,60	ARGILLA
4,20	28	120,00	-	-	1,90	1,30	ARGILLA
4,30	30	128,60	-	-	2,00	1,20	ARGILLA
4,40	35	150,00	-	-	2,30	1,00	ARGILLA
4,50	39	167,10	-	-	2,60	0,90	ARGILLA
4,60							
4,70							
4,80							
4,90							
5,00							

		letture di campagna			valori derivati								
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
0,20		20	70	100	50	0,33	6	80			0,10	58,22	Argilla
0,40		80	150	140	70	0,47	17	60			0,40	22,29	Argilla
0,60		200	240	280	40	0,27	75	80	28	18		17,36	Sabbia
0,80		140	250	310	110	0,73	19	170			0,70	18,40	Argilla
1,00		120	230	250	110	0,73	16	130			0,60	19,13	Argilla
1,20		130	200	240	70	0,47	28	110			0,65	18,72	Limo
1,40		100	220	310	120	0,80	13	210			0,50	20,30	Argilla
1,60		130	260	360	130	0,87	15	230			0,65	18,72	Argilla
1,80		180	280	380	100	0,67	27	200			0,90	17,60	Limo
2,00		230	460	890	230	1,53	15	660			0,92	17,04	Argilla
2,20		800	1290	1780	490	3,27	24	980			2,67	8,30	Argilla
2,40		960	1190	1800	230	1,53	63	840	39	59		6,93	Sabbia
2,60		540	1020	2820	480	3,20	17	2280			1,80	11,85	Argilla
2,80		1300	1830	2540	530	3,53	37	1240			4,33	5,12	Limo sabbioso
3,00		1440	2040	3810	600	4,00	36	2370			4,80	4,62	Limo sabbioso
3,20		1300	2010	3890	710	4,73	27	2590			4,33	5,12	Limo
3,40		1170	2290	3420	1120	7,47	16	2250			3,90	5,69	Argilla
3,60		980	1690	3400	710	4,73	21	2420			3,27	6,79	Argilla
3,80		1380	3120	3420	1740	11,60	12	2040			4,60	4,83	Argilla
4,00		1300	2120	3880	820	5,47	24	2580			4,33	5,12	Argilla
4,20		1370	2150	3720	780	5,20	26	2350			4,57	4,86	Limo
4,40		1160	1910	3550	750	5,00	23	2390			3,87	5,74	Argilla
4,60		1140	1880	3380	740	4,93	23	2240			3,80	5,84	Argilla
4,80	X	1140	1860	3380	720	4,80	24	2240			3,80	5,84	Argilla
5,00		1240	2070	3450	830	5,53	22	2210			4,13	5,37	Argilla
5,20		1330	2290	3380	960	6,40	21	2050			4,43	5,01	Argilla
5,40		1130	1930	3330	800	5,33	21	2200			3,77	5,89	Argilla
5,60		1120	2040	3060	920	6,13	18	1940			3,73	5,95	Argilla
5,80		840	1630	3030	790	5,27	16	2190			2,80	7,91	Argilla
6,00		1160	1920	2650	760	5,07	23	1490			3,87	5,74	Argilla
6,20		690	1370	2820	680	4,53	15	2130			2,30	9,55	Argilla
6,40		960	1540	2180	580	3,87	25	1220			3,20	6,93	Argilla
6,60		860	1570	2020	710	4,73	18	1160			2,87	7,73	Argilla
6,80		440	890	1590	450	3,00	15	1150			1,47	13,72	Argilla
7,00		270	430	1580	160	1,07	25	1310			1,08	16,60	Argilla
7,20		350	490	1400	140	0,93	38	1050			1,40	15,42	Limo sabbioso
7,40		330	510	1410	180	1,20	28	1080			1,32	15,75	Limo
7,60		420	690	1760	270	1,80	23	1340			1,40	14,11	Argilla
7,80		490	770	1950	280	1,87	26	1460			1,63	12,76	Limo
8,00		710	1030	2190	320	2,13	33	1480			2,37	9,30	Limo sabbioso
8,20		730	1190	2260	460	3,07	24	1530			2,43	9,06	Argilla
8,40		440	740	2270	300	2,00	22	1830			1,47	13,72	Argilla
8,60		480	740	2500	260	1,73	28	2020			1,60	12,95	Limo
8,80		520	840	2620	320	2,13	24	2100			1,73	12,20	Argilla
9,00		450	770	2670	320	2,13	21	2220			1,50	13,53	Argilla
9,20		410	740	2750	330	2,20	19	2340			1,37	14,30	Argilla
9,40		410	770	2800	360	2,40	17	2390			1,37	14,30	Argilla
9,60		480	770	2960	290	1,93	25	2480			1,60	12,95	Argilla
9,80		380	660	3020	280	1,87	20	2640			1,52	14,87	Argilla
10,00		410	750	3090	340	2,27	18	2680			1,37	14,30	Argilla
10,20		470	810	3070	340	2,27	21	2600			1,57	13,14	Argilla
10,40		510	890	3190	380	2,53	20	2680			1,70	12,39	Argilla
10,60		670	940	3400	270	1,80	37	2730			2,23	9,82	Limo sabbioso
10,80		510	800	3320	290	1,93	26	2810			1,70	12,39	Limo
11,00		380	630	3380	250	1,67	23	3000			1,52	14,87	Argilla
11,20		450	590	3400	140	0,93	48	2950	36	35		13,53	Sabbia limosa
11,40		510	730	3560	220	1,47	35	3050			1,70	12,39	Limo sabbioso
11,60		440	750	3900	310	2,07	21	3460			1,47	13,72	Argilla
11,80		460	770	4120	310	2,07	22	3660			1,53	13,33	Argilla
12,00		480	820	4230	340	2,27	21	3750			1,60	12,95	Argilla
12,20		500	800	4330	300	2,00	25	3830			1,67	12,57	Argilla
12,40		510	800	4520	290	1,93	26	4010			1,70	12,39	Limo
12,60		440	750	4710	310	2,07	21	4270			1,47	13,72	Argilla
12,80		480	780	4810	300	2,00	24	4330			1,60	12,95	Argilla
13,00		480	830	4920	350	2,33	21	4440			1,60	12,95	Argilla
13,20		460	840	5070	380	2,53	18	4610			1,53	13,33	Argilla
13,40		560	900	5270	340	2,27	25	4710			1,87	11,50	Argilla
13,60		780	1190	5490	410	2,73	29	4710			2,60	8,50	Limo
13,80		500	880	5560	380	2,53	20	5060			1,67	12,57	Argilla
14,00		510	850	5530	340	2,27	23	5020			1,70	12,39	Argilla
14,20		490	860	5640	370	2,47	20	5150			1,63	12,76	Argilla
14,40		480	850	5750	370	2,47	19	5270			1,60	12,95	Argilla
14,60		490	870	5820	380	2,53	19	5330			1,63	12,76	Argilla
14,80		470	880	5990	410	2,73	17	5520			1,57	13,14	Argilla
15,00													

OFONDITA' metri]	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Qt [Kgf]	parametri geotecnici stimati: Gamma [Kg/dmc]	Sigma IVO [Kg/cmq]	Fi [gradi]	D_R [%]	c_u [Kg/cmq]	m_v [cmq/t]	Colonna Stratig.
0.2					1,80	,04	-	-	-	-	
0.4					1,80	,07	-	-	-	-	
0.6	10,1	,3	38	180	1,65	,11	-	-	,40	22,1	L
0.8	8,3	,2	42	410	1,64	,14	-	-	,33	25,3	L
1.0	45,3	,5	97	620	1,83	,17	41	80	-	7,4	SG
1.2	18,3	1,5	32	790	1,84	,21	30	-	-	6,9	SL
1.4	44,3	1,7	26	860	1,98	,25	-	-	1,76	9,0	AL
1.6	37,3	1,2	31	1050	1,79	,29	30	-	-	8,9	SL
1.8	50,4	1,5	33	1140	1,85	,32	31	-	-	6,6	SL
2.0	49,4	1,3	39	1410	1,85	,36	31	-	-	6,7	SL
2.2	44,4	,9	48	1520	1,82	,40	30	-	-	7,5	SL
2.4	48,4	,7	66	1730	1,84	,43	38	62	-	6,9	SMA
2.6	63,4	1,9	34	2140	1,92	,47	31	-	-	5,3	SL
2.8	78,5	1,9	42	2440	1,99	,51	32	-	-	4,2	SL
3.0	53,5	1,9	29	2460	1,87	,55	31	-	-	6,2	SL
3.2	42,5	1,4	30	2420	1,81	,59	30	-	-	7,8	SL
3.4	26,5	1,7	16	2240	1,94	,62	-	-	1,04	15,1	A
3.6	24,5	,6	41	2130	1,72	,66	-	-	,95	13,6	L
3.8	42,6	,9	46	2280	1,81	,69	30	-	-	7,8	SL
4.0	46,6	1,5	32	2500	1,83	,73	30	-	-	7,2	SL
4.2	53,6	1,9	29	2720	1,87	,77	31	-	-	6,2	SL
4.4	47,6	2,3	20	3080	1,98	,81	-	-	1,87	8,4	A
4.6	47,6	2,2	22	3390	1,98	,85	-	-	1,87	8,4	AL
4.8	39,7	2,8	14	3790	1,97	,89	-	-	1,55	10,1	A
5.0	36,7	1,7	21	3960	1,96	,93	-	-	1,43	10,9	A
5.2	39,7	1,6	25	4210	1,97	,97	-	-	1,55	10,1	AL
5.4	45,7	1,9	24	4510	1,98	1,01	-	-	1,79	8,8	AL
5.6	54,7	1,8	30	4720	1,87	1,04	31	-	-	6,1	SL
5.8	79,9	2	40	5150	2,00	1,08	32	-	-	4,2	SL
6.0	62,9	1,7	36	5390	1,91	1,12	31	-	-	5,3	SL
6.2	54,9	1,8	31	5530	1,87	1,16	31	-	-	6,1	SL
6.4	47,9	1,9	25	5590	1,98	1,20	-	-	1,87	8,4	AL
6.6	43,9	1,8	24	5920	1,98	1,24	-	-	1,71	9,1	AL
6.8	42	1,3	32	5990	1,81	1,27	30	-	-	7,9	SL
7.0	26	1,5	18	6080	1,94	1,31	-	-	,99	15,4	A
7.2	51	1,5	33	6340	1,86	1,33	31	-	-	6,5	SL
7.4	47	1,7	27	6560	1,98	1,35	-	-	1,83	8,5	AL
7.6	49	2,2	22	6500	1,99	1,37	-	-	1,91	8,2	AL
7.8	32,2	2,3	14	6730	1,95	1,39	-	-	1,23	12,4	A
8.0	26,2	1,9	14	6870	1,94	1,41	-	-	,99	15,3	A
8.2	30,2	1,3	24	7210	1,94	1,43	-	-	1,15	13,2	AL
8.4	77,2	1,2	64	7310	1,99	1,45	33	51	-	4,3	SMA
8.6	107,2	2,4	45	7460	2,10	1,47	34	-	-	3,1	SL
8.8	72,3	2,4	30	7330	1,96	1,49	32	-	-	4,6	SL
9.0	29,3	1,1	27	7090	1,94	1,51	-	-	1,11	13,7	AL
9.2	26,3	,7	36	6870	1,73	1,52	28	-	-	12,7	SL
9.4	30,3	,9	35	6890	1,75	1,54	29	-	-	11,0	SL
9.6	28,3	1,4	20	7000	1,94	1,55	-	-	1,07	14,1	A
9.8	26,4	1,2	22	7210	1,94	1,57	-	-	,99	15,2	A
10.0	27,4	1,2	23	7370	1,94	1,59	-	-	1,03	14,6	A

PROFONDITA' [metri]	Qc [Kg/cmq]	Fs [Kg/cmq]	Qc/Fs	Qt [Kgf]	parametri geotecnici stimati: Gamma [Kg/dmc]	Sigma IVO [Kg/cmq]	Fi [gradi]	D_R [%]	c_u [Kg/cmq]	m_v [cmq/t]	Colonna Stratig.
0.2					1,80	,04	-	-	-	-	
0.4					1,80	,07	-	-	-	-	
0.6	7,1	,3	27	190	1,76	,11	-	-	,28	29,4	A
0.8	24,3	,3	91	430	1,72	,14	40	64	-	13,7	SMA
1.0	44,3	,8	55	810	1,82	,18	41	79	-	7,5	SG
1.2	47,3	1,5	31	1140	1,84	,21	30	-	-	7,0	SL
1.4	43,3	2,9	15	1400	1,97	,25	-	-	1,72	9,2	A
1.6	47,3	3,2	15	1560	1,98	,29	-	-	1,88	8,5	A
1.8	53,4	1,9	29	1460	1,87	,33	31	-	-	6,2	SL
2.0	51,4	1,7	30	1630	1,86	,37	31	-	-	6,5	SL
2.2	55,4	1,9	30	1960	1,88	,41	31	-	-	6,0	SL
2.4	53,4	1,8	30	2160	1,87	,44	31	-	-	6,2	SL
2.6	45,4	1,8	25	2070	1,98	,48	-	-	1,80	8,8	AL
2.8	40,5	2,1	19	2100	1,97	,52	-	-	1,60	9,9	A
3.0	46,5	,9	54	2170	1,83	,56	36	55	-	7,2	SMA
3.2	42,5	,7	64	2270	1,81	,60	35	51	-	7,8	SMA
3.4	49,5	1,1	46	2460	1,85	,63	31	-	-	6,7	SL
3.6	44,5	1,9	23	2410	1,98	,67	-	-	1,75	9,0	AL
3.8	43,6	1,7	25	2450	1,97	,71	-	-	1,72	9,2	AL
4.0	47,6	2,2	22	2710	1,98	,75	-	-	1,87	8,4	AL
4.2	49,6	1,8	28	2940	1,99	,79	-	-	1,95	8,1	AL
4.4	44,6	3	15	3280	1,98	,83	-	-	1,75	9,0	A
4.6	47,6	2,3	20	3430	1,98	,87	-	-	1,87	8,4	A
4.8	50,7	2,1	24	3700	1,99	,91	-	-	1,99	7,9	AL
5.0	37,7	1,6	24	3800	1,96	,95	-	-	1,47	10,6	AL
5.2	34,7	1,3	26	3960	1,95	,99	-	-	1,35	11,5	AL
5.4	42,7	1,8	24	4230	1,97	1,03	-	-	1,67	9,4	AL
5.6	53,7	1,7	31	4500	1,87	1,06	31	-	-	6,2	SL
5.8	65,9	2,2	30	4870	1,93	1,10	31	-	-	5,1	SL
6.0	75,9	3,4	22	5360	2,05	1,14	-	-	2,99	5,3	AL
6.2	75,9	3,5	21	5620	2,05	1,19	-	-	2,99	5,3	AL
6.4	70,9	3,9	18	5870	2,04	1,23	-	-	2,79	5,6	AL
6.6	54,9	4	14	5940	2,00	1,27	-	-	2,15	7,3	A
6.8	48	2,6	18	6000	1,98	1,31	-	-	1,87	8,3	A
7.0	37	1,8	21	6170	1,96	1,34	-	-	1,43	10,8	A
7.2	43	1,4	31	6640	1,82	1,36	30	-	-	7,8	SL
7.4	50	1,9	27	7140	1,99	1,38	-	-	1,94	8	AL
7.6	62	2,1	30	7460	1,91	1,40	31	-	-	5,4	SL
7.8	64,2	2,7	23	7860	2,02	1,42	-	-	2,51	6,2	AL
8.0	56,2	3,2	18	8140	2,00	1,44	-	-	2,19	7,1	A
8.2	42,2	2,5	17	8260	1,97	1,46	-	-	1,63	9,5	A
8.4	32,2	2,2	15	8350	1,95	1,48	-	-	1,23	12,4	A
8.6	33,2	1,4	24	8280	1,95	1,50	-	-	1,27	12,0	AL
8.8	55,3	1,4	40	8910	1,88	1,51	31	-	-	6,0	SL
9.0	101,3	2,1	49	9520	2,10	1,54	35	59	-	3,3	SMA
9.2	140,3	2,5	57	9560	2,10	1,56	37	70	-	2,4	SG
9.4	44,3	4,3	10	9060	1,98	1,58	-	-	1,71	9,0	A
9.6	28,3	1,2	24	8740	1,94	1,60	-	-	1,07	14,1	AL
9.8	30,4	1,1	27	8910	1,95	1,62	-	-	1,15	13,2	AL
10.0	30,4	1,1	27	9080	1,95	1,63	-	-	1,15	13,2	AL

		letture di campagna			valori derivati								
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Rai	Rp/Rai	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
0,20				70									
0,40				100									
0,60		90	140	140	50	0,33	27	50			0,45	21,16	Limo
0,80		50	180	190	110	0,73	7	140			0,25	29,00	Argilla
1,00		60	130	290	70	0,47	13	230			0,30	25,93	Argilla
1,20		230	410	940	180	1,20	19	710			0,92	17,04	Argilla
1,40		860	820	1160	160	1,07	62	500	37	47		9,96	Sabbia limosa
1,60		440	830	1350	390	2,60	17	910			1,47	13,72	Argilla
1,80		410	900	1840	490	3,27	13	1430			1,37	14,30	Argilla
2,00		1290	1550	2280	260	1,73	74	990	40	69		5,16	Sabbia
2,20		1480	1940	2730	460	3,07	48	1250	41	73		4,50	Sabbia limosa
2,40		1500	2190	3540	690	4,60	33	2040			5,00	4,44	Limo sabbioso
2,60		1260	2210	2850	950	6,33	20	1590			4,20	5,29	Argilla
2,80		1420	2010	3480	590	3,93	36	2060			4,73	4,69	Limo sabbioso
3,00		1840	2410	3910	570	3,80	48	2070	42	78		3,62	Sabbia limosa
3,20		1380	2170	3380	790	5,27	26	2000			4,60	4,83	Limo
3,40		1320	1840	2990	520	3,47	38	1670			4,40	5,05	Limo sabbioso
3,60		1210	2000	2890	790	5,27	23	1680			4,03	5,50	Argilla
3,80		1090	1780	2330	690	4,60	24	1240			3,63	6,11	Argilla
4,00		910	1420	1950	510	3,40	27	1040			3,03	7,31	Limo
4,20		880	1360	7280	480	3,20	28	6400			2,93	7,56	Limo
4,40		3900	4300	9200	400	2,67	146	5300	44	89		1,70	Sabbia con ghiaia
4,60													
4,80													
5,00													
5,20													
5,40													
5,60													
5,80													
6,00													

		letture di campagna			valori derivati								
Prof.	H2O	Rpt	Rat	Rt	Rat-Rpt	Ral	Rp/Ral	Rt-Rpt	fi	Dr	Cu	mv	Tipo litologico
0,20				30									
0,40				50									
0,60		50	60	100	10	0,07	75	50	25	5		29,00	Sabbia
0,80		50	90	110	40	0,27	19	60			0,25	29,00	Argilla
1,00		40	70	150	30	0,20	20	110			0,20	33,74	Argilla
1,20		60	110	290	50	0,33	18	230			0,30	25,93	Argilla
1,40		190	240	440	50	0,33	57	250	28	17		17,47	Sabbia limosa
1,60		330	580	970	250	1,67	20	640			1,32	15,75	Argilla
1,80		630	780	1070	150	1,00	63	440	36	45		10,39	Sabbia
2,00		420	660	1010	240	1,60	26	590			1,40	14,11	Limo
2,20		490	600	1070	110	0,73	67	580	36	38		12,76	Sabbia
2,40		730	890	1150	160	1,07	68	420	37	50		9,06	Sabbia
2,60		530	840	1420	310	2,07	26	890			1,77	12,02	Limo
2,80		480	710	1100	230	1,53	31	620			1,60	12,95	Limo
3,00		340	750	1220	410	2,73	12	880			1,36	15,59	Argilla
3,20		190	510	1200	320	2,13	9	1010			0,95	17,47	Argilla
3,40		530	860	1390	330	2,20	24	860			1,77	12,02	Argilla
3,60		1130	1590	8000	460	3,07	37	6870			3,77	5,89	Limo sabbioso
3,80		2010	2200	4010	190	1,27	159	2000	43	80		3,31	Sabbia con ghiaia
4,00		1460	2270	4710	810	5,40	27	3250			4,87	4,56	Limo
4,20		2120	2300	4750	180	1,20	177	2630	43	81		3,14	Sabbia con ghiaia
4,40		1970	2180	4840	210	1,40	141	2870	43	80		3,38	Sabbia con ghiaia
4,60		2030	2200	4930	170	1,13	179	2900	43	81		3,28	Sabbia con ghiaia
4,80		1900	2100	3900	200	1,33	143	2000	42	79		3,50	Sabbia con ghiaia
5,00		610	1090	2990	480	3,20	19	2380			2,03	10,69	Argilla
5,20		520	1020	6800	500	3,33	16	6280			1,73	12,20	Argilla
5,40		2990	3100	5440	110	0,73	408	2450	44	87		2,22	Sabbia con ghiaia
5,60		2070	2200	6870	130	0,87	239	4800	43	81		3,22	Sabbia con ghiaia
5,80		2370	2500	6380	130	0,87	273	4010	44	84		2,81	Sabbia con ghiaia
6,00		2150	3300	6930	1150	7,67	28	4780			7,17	3,10	Limo
6,20		2370	2500	5560	130	0,87	273	3190	44	84		2,81	Sabbia con ghiaia
6,40		890	1010	3500	120	0,80	111	2610	38	57		7,47	Sabbia con ghiaia
6,60		390	1010	2500	620	4,13	9	2110			1,56	14,69	Argilla
6,80		480	650	1820	170	1,13	42	1340			1,60	12,95	Limo sabbioso
7,00		410	740	2130	330	2,20	19	1720			1,37	14,30	Argilla
7,20		650	900	2360	250	1,67	39	1710			2,17	10,10	Limo sabbioso
7,40		530	950	2760	420	2,80	19	2230			1,77	12,02	Argilla
7,60		600	970	3130	370	2,47	24	2530			2,00	10,84	Argilla
7,80		870	1310	3210	440	2,93	30	2340			2,90	7,64	Limo
8,00		710	1160	3610	450	3,00	24	2900			2,37	9,30	Argilla
8,20		800	1370	3560	570	3,80	21	2760			2,67	8,30	Argilla
8,40		720	1070	3730	350	2,33	31	3010			2,40	9,18	Limo
8,60		660	1300	4440	640	4,27	15	3780			2,20	9,96	Argilla
8,80		1360	1820	4570	460	3,07	44	3210			4,53	4,90	Limo sabbioso
9,00		1270	2000	5870	730	4,87	26	4600			4,23	5,24	Limo
9,20		1730	2300	6470	570	3,80	46	4740	42	77		3,85	Sabbia limosa
9,40		1910	2300	6760	390	2,60	73	4850	42	79		3,49	Sabbia
9,60		1820	2400	6550	580	3,87	47	4730	42	78		3,66	Sabbia limosa
9,80		1100	1430	7000	330	2,20	50	5900	39	63		6,05	Sabbia limosa
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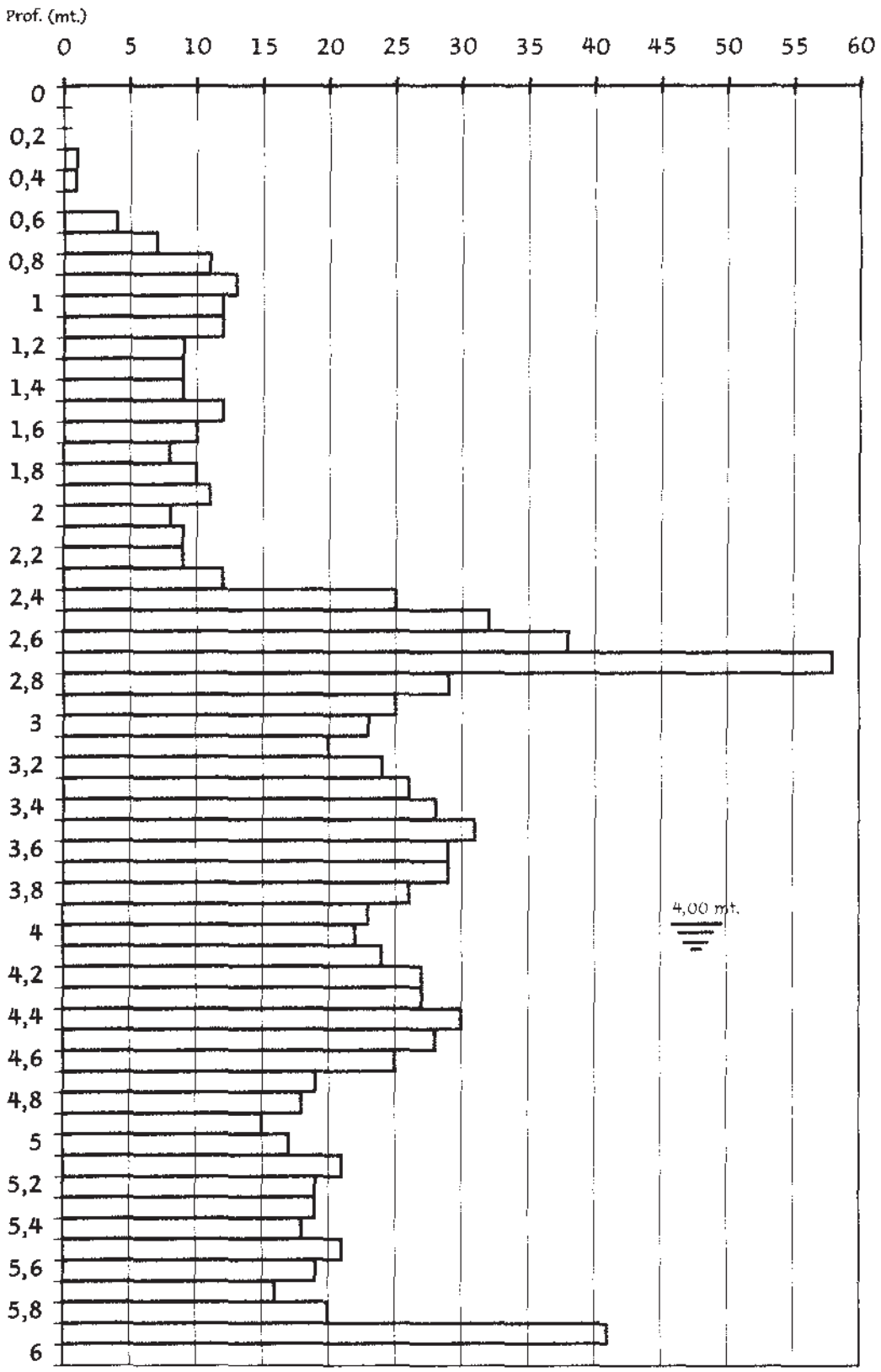
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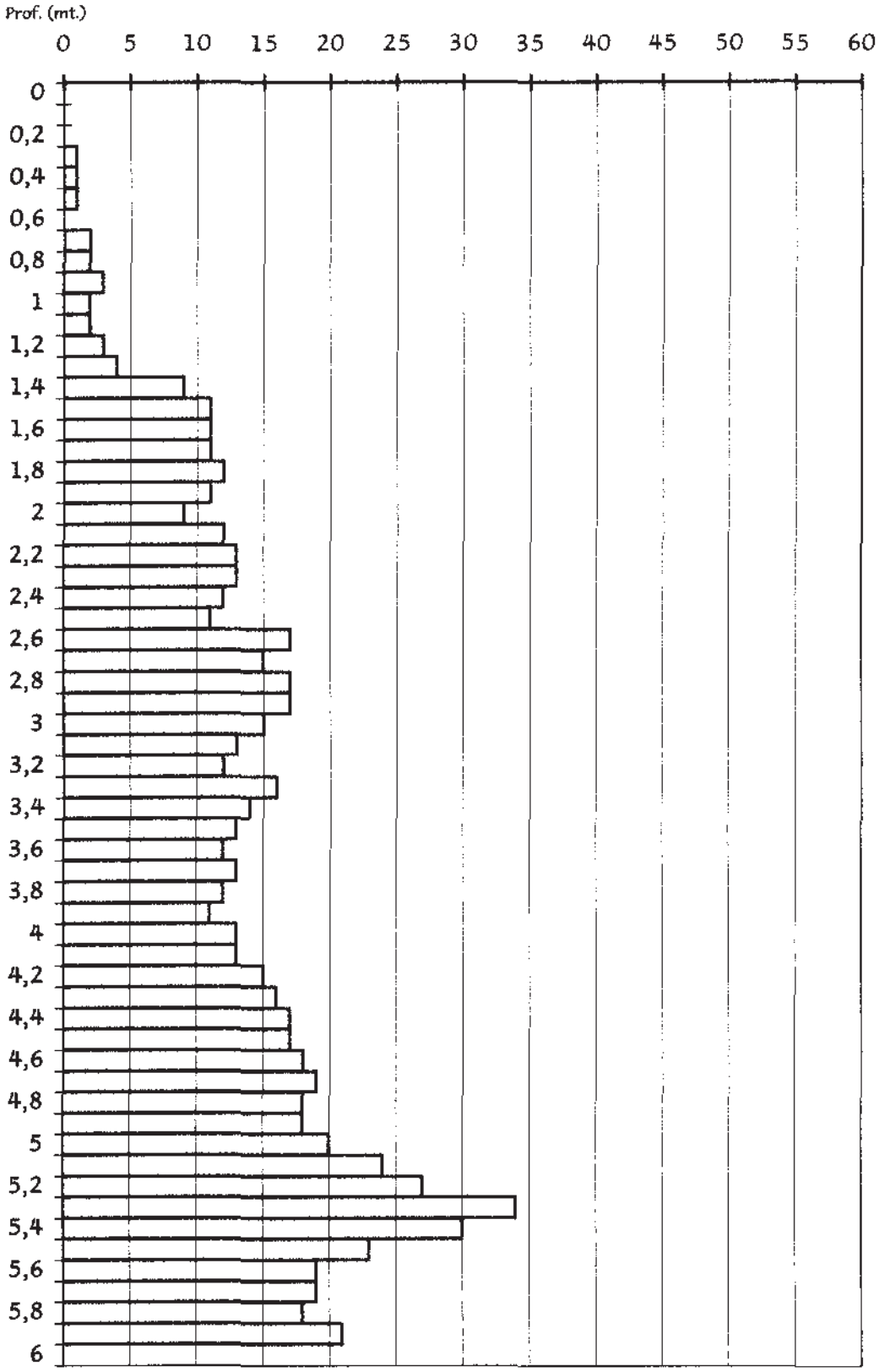
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Profondità (m)	Resistenza punta(kg)	Res.punta+laterale (kg)	qc (kg/cmq)	fs (kg/cmq)	Rapporto qc/fs
0,6	340	540	34	1,33	26
0,8	560	860	56	2	28
1	480	970	48	3,27	15
1,2	510	1050	51	3,6	14
1,4	270	760	27	3,27	8
1,6	360	680	36	2,13	17
1,8	320	660	32	2,27	14
2	240	690	24	3	8
2,2	190	460	19	1,8	11
2,4	160	390	16	1,53	10
2,6	160	350	16	1,27	13
2,8	170	330	17	1,07	16
3	160	310	16	1	16
3,2	170	310	17	0,93	18
3,4	160	300	16	0,93	17
3,6	130	260	13	0,87	15
3,8	130	250	13	0,8	16
4	130	260	13	0,87	15
4,2	180	360	18	1,2	15
4,4	190	350	19	1,07	18
4,6	190	380	19	1,27	15
4,8	200	370	20	1,13	18
5	190	360	19	1,13	17
5,2	80	200	8	0,8	10
5,4	70	150	7	0,53	13
5,6	220	340	22	0,8	28
5,8	330	570	33	1,6	21
6	430	640	43	1,4	31
6,2	550	810	55	1,73	32
6,4	570	1020	57	3	19
6,6	560	1040	56	3,2	18
6,8	730	1240	73	3,4	21
7	580	1190	58	4,07	14
7,2	450	910	45	3,07	15
7,4	400	630	40	1,53	26
7,6	450	750	45	2	22
7,8	430	720	43	1,93	22
8	410	770	41	2,4	17
8,2	330	640	33	2,07	16
8,4	390	690	39	2	20
8,6	390	770	39	2,53	15
8,8	390	780	39	2,6	15
9	360	700	36	2,27	16
9,2	330	640	33	2,07	16
9,4	340	610	34	1,8	19
9,6	320	590	32	1,8	18
9,8	360	640	36	1,87	19
10	400	750	40	2,33	17
10,2	390	740	39	2,33	17
10,4	360	720	36	2,4	15
10,6	380	660	38	1,87	20
10,8	390	670	39	1,87	21
11	410	700	41	1,93	21
11,2	400	740	40	2,27	18
11,4	380	730	38	2,33	16
11,6	380	690	38	2,07	18
11,8	380	670	38	1,93	20
12	380	670	38	1,93	20
12,2	330	590	33	1,73	19
12,4	180	380	18	1,33	14
12,6	140	300	14	1,07	13
12,8	120	220	12	0,67	18
13	170	260	17	0,6	28
13,2	170	260	17	0,6	28
13,4	180	270	18	0,6	30
13,6	220	320	22	0,67	33
13,8	320	480	32	1,07	30
14	770	960	77	1,27	61
14,2	1020	1180	102	1,07	95
14,4	1010	1830	101	5,47	18

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Profondità (m)	Resistenza punta(kg)	Res.punta+laterale (kg)	qc (kg/cmq)	fs (kg/cmq)	Rapporto qc/fs
0,8	330	380	33	0,33	100
1	270	540	27	1,8	15
1,2	350	810	35	3,07	11
1,4	580	870	58	1,93	30
1,6	550	1350	55	5,33	10
1,8	340	1250	34	6,07	6
2	200	790	20	3,93	5
2,2	160	490	16	2,2	7
2,4	170	400	17	1,53	11
2,6	190	340	19	1	19
2,8	170	330	17	1,07	16
3	160	330	16	1,13	14
3,2	150	310	15	1,07	14
3,4	170	350	17	1,2	14
3,6	190	390	19	1,33	14
3,8	200	410	20	1,4	14
4	240	440	24	1,33	18
4,2	230	410	23	1,2	19
4,4	210	400	21	1,27	17
4,6	200	380	20	1,2	17
4,8	190	340	19	1	19
5	190	340	19	1	19
5,2	250	410	25	1,07	23
5,4	220	400	22	1,2	18
5,6	160	330	16	1,13	14
5,8	150	270	15	0,8	19
6	210	310	21	0,67	31
6,2	190	360	19	1,13	17
6,4	220	390	22	1,13	19
6,6	210	390	21	1,2	18
6,8	140	310	14	1,13	12
7	100	200	10	0,67	15
7,2	90	160	9	0,47	19
7,4	100	170	10	0,47	21
7,6	110	200	11	0,6	18
7,8	140	230	14	0,6	23
8	150	280	15	0,87	17
8,2	160	280	16	0,8	20
8,4	150	290	15	0,93	16
8,6	150	270	15	0,8	19
8,8	150	280	15	0,87	17
9	130	270	13	0,93	14
9,2	110	220	11	0,73	15
9,4	100	190	10	0,6	17
9,6	110	190	11	0,53	21
9,8	140	230	14	0,6	23
10	180	280	18	0,67	27
10,2	180	290	18	0,73	25
10,4	180	300	18	0,8	22
10,6	200	350	20	1	20
10,8	250	450	25	1,33	19
11	290	530	29	1,6	18
11,2	260	510	26	1,67	16
11,4	230	460	23	1,53	15
11,6	190	420	19	1,53	12
11,8	180	380	18	1,33	14
12	170	340	17	1,13	15
12,2	150	310	15	1,07	14
12,4	140	310	14	1,13	12
12,6	160	330	16	1,13	14
12,8	140	290	14	1	14
13	130	270	13	0,93	14
13,2	160	290	16	0,87	18
13,4	160	320	16	1,07	15
13,6	160	330	16	1,13	14
13,8	130	280	13	1	13
14	130	260	13	0,87	15
14,2	120	260	12	0,93	13
14,4	130	270	13	0,93	14
14,6	170	330	17	1,07	16
14,8	130	280	13	1	13
15	140	270	14	0,87	16
15,2	130	260	13	0,87	15
15,4	120	250	12	0,87	14
15,6	170	300	17	0,87	20
15,8	130	270	13	0,93	14

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Profondità (m)	Resistenza punta(kg)	Res.punta+laterale (kg)	qc (kg/cmq)	fs (kg/cmq)	Rapporto qc/fs
0,6	180	300	18	0,8	22
0,8	390	710	39	2,13	18
1	710	950	71	1,6	44
1,2	600	1210	60	4,07	15
1,4	590	1150	59	3,73	16
1,6	550	1290	55	4,93	11
1,8	450	1160	45	4,73	10
2	310	950	31	4,27	7
2,2	240	710	24	3,13	8
2,4	220	590	22	2,47	9
2,6	210	520	21	2,07	10
2,8	210	470	21	1,73	12
3	190	380	19	1,27	15
3,2	190	340	19	1	19
3,4	190	360	19	1,13	17
3,6	190	360	19	1,13	17
3,8	190	360	19	1,13	17
4	210	370	21	1,07	20
4,2	190	360	19	1,13	17
4,4	160	350	16	1,27	13
4,6	180	350	18	1,13	16
4,8	160	320	16	1,07	15
5	140	310	14	1,13	12
5,2	230	370	23	0,93	25
5,4	250	420	25	1,13	22
5,6	280	490	28	1,4	20
5,8	360	560	36	1,33	27
6	350	670	35	2,13	16
6,2	360	780	36	2,8	13
6,4	420	810	42	2,6	16
6,6	360	800	36	2,93	12
6,8	380	770	38	2,6	15
7	350	690	35	2,27	15
7,2	330	630	33	2	16
7,4	370	710	37	2,27	16
7,6	410	780	41	2,47	17
7,8	430	800	43	2,47	17
8	410	790	41	2,53	16
8,2	450	790	45	2,27	20
8,4	450	840	45	2,6	17