

Comune di
CASTELLO D'ARGILE



PSC

ELABORATO IN FORMA ASSOCIATA

PIANO STRUTTURALE COMUNALE

AGGIORNAMENTO OTTOBRE 2013

PERICOLOSITA E MICROZONAZIONE SISMICA
(DAL 112/2007)

Archivio prove geognostiche
e geofisiche di riferimento

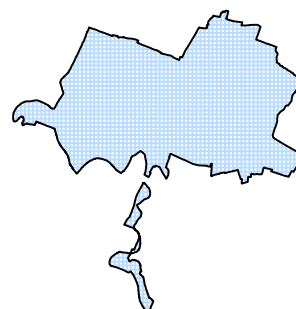
Sindaco
Michele Giovannini

Segretario comunale
D.ssa Marilia Moschetta

Responsabile Ufficio Pianificazione Territoriale
Arch. Piero Vignali

Elaborazione
Studio Sangiorgi: Dott. Geol. Samuel Sangiorgi
Dott. Geol. Venusia Ferrari

PRIMA APPROVAZIONE
adozione delib. C.C n.43 del 28.07.2008
approvazione delib. C.C n.04 del 06.02.2009



VARIANTI

Variante in materia di riduzione del rischio sismico – Co-pianificazione ai sensi dell'art. 21 della L.R. 20/2000 con variante al PTCP.

Approvazione Accordo di Pianificazione:

delibera Cons. Prov. n. 1 del 07/01/2013

Adozione:

delibera Cons. Prov. n. 4 del 14/01/2013

Approvazione:

delibera Cons. Prov. n. 57 del 28/10/2013

1_car/psc

Legenda

Prove eseguite dallo studio

● Penetrometria CPTU-CPTU

⊕ Cono sismico

* Indagine con tomografo digitale

Masw

Prove di repertorio

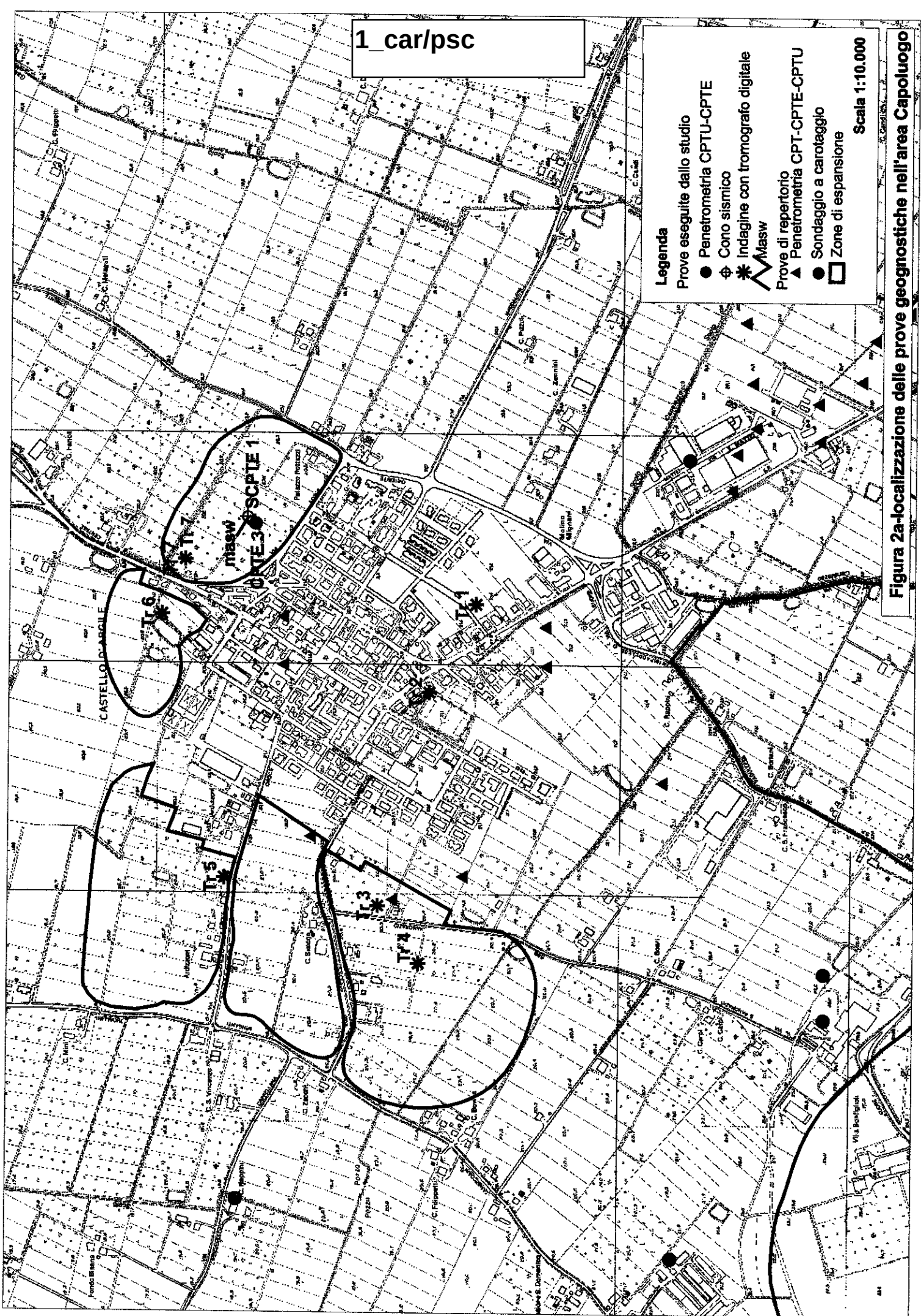
▲ Penetrometria CPT-CPTU-CPTU

● Sondaggio a carotaggio

□ Zone di espansione

Scala 1:10.000

Figura 2a-localizzazione delle prove geognostiche nell'area Capoluogo



Comune
Via
Localita'
Committente
Data

castello d'argile
scuola
scuola di castello d'argile
studio viei
06-lug-07

Sigla della Punta
Azzerramento
Ultimo taratura guadagno
Ultimo taratura per deriva termica

Tecnopenta 161006
Inizio prova
24-mag-2007
24-mag-2007

Falda

2.1 m

CPTU

1

Attrito Laterale corretto FT (MPa)
Attrito Laterale Fs (MPa)

Resistenza alla Punta corretta QT (MPa)
Resistenza alla Punta Qc (MPa)

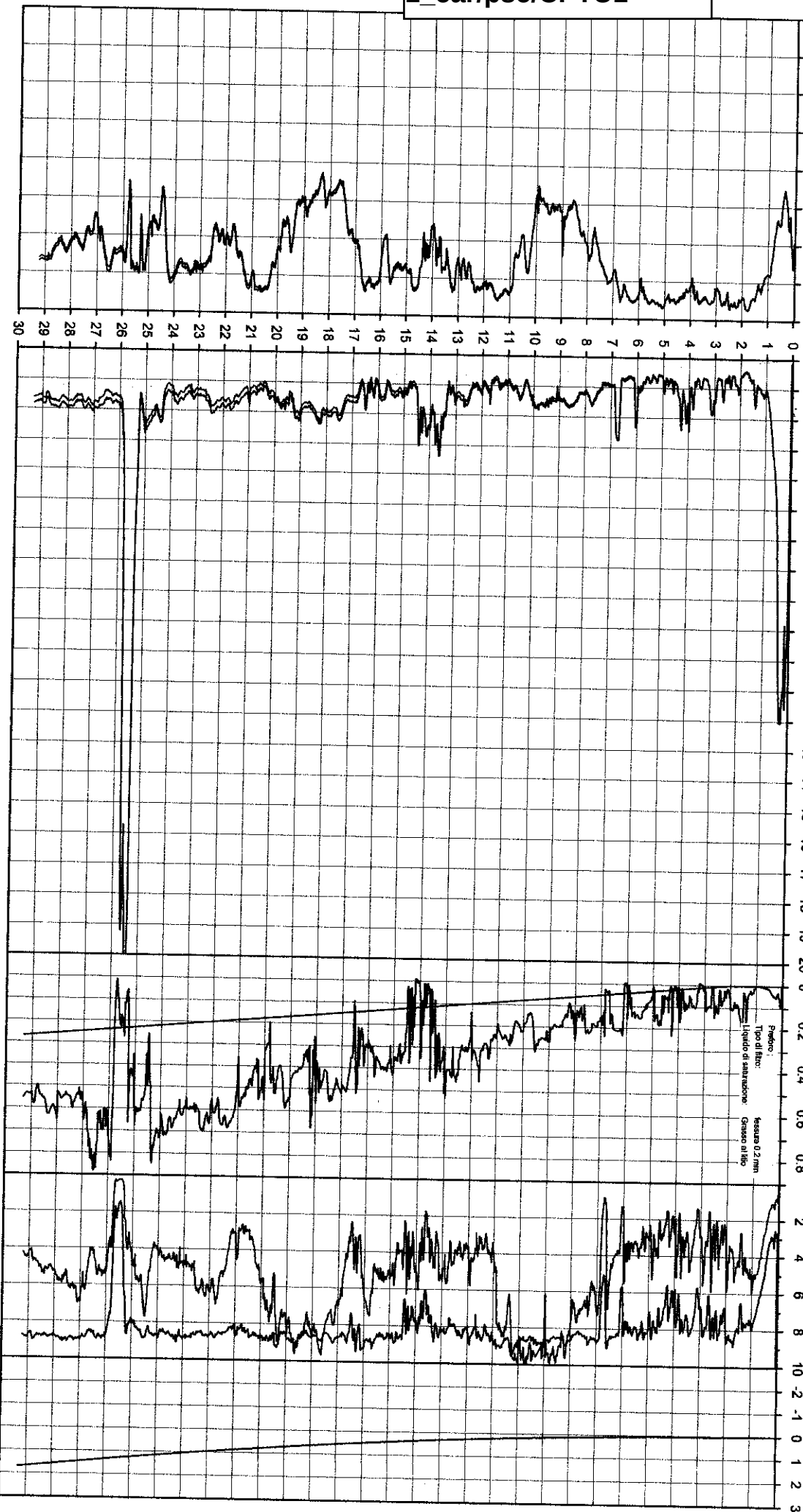
Pressione Interstiziale
Penetrometrica (MPa)

Indice di Comportamento Ic
1.0 1.5 2.0 2.5 3.0 3.5

FT/QT (%)

Deviazione (m)

1_car/psc/CPTU1



Comune
Via
Località
Committente
Data

Castello d'Argile
Oriente
Castello d'Argile
Viel & Sangiorgi
14-apr-08

Falda

1,8 m

Sigla della Punta
Azzerramento
Ultimo taratura guadagno
Ultimo taratura per deriva termica

Tecnopenta 100707
Inizio prova
7-gen-2008
7-gen-2008



Società di
Geologia
Territoriale

S.G.T. sas
di Van Zutphen Albert & C.
Via Matteotti 50
48012 Bagnacavallo (RA)
www.geo55.com

CPTU

3

Attrito Laterale corretto FT (MPa)
Attrito Laterale Fs (MPa)

Resistenza alla Punta corretta QT (MPa)
Resistenza alla Punta Qc (MPa)

Pressione Interstiziale
Penetrometrica (MPa)

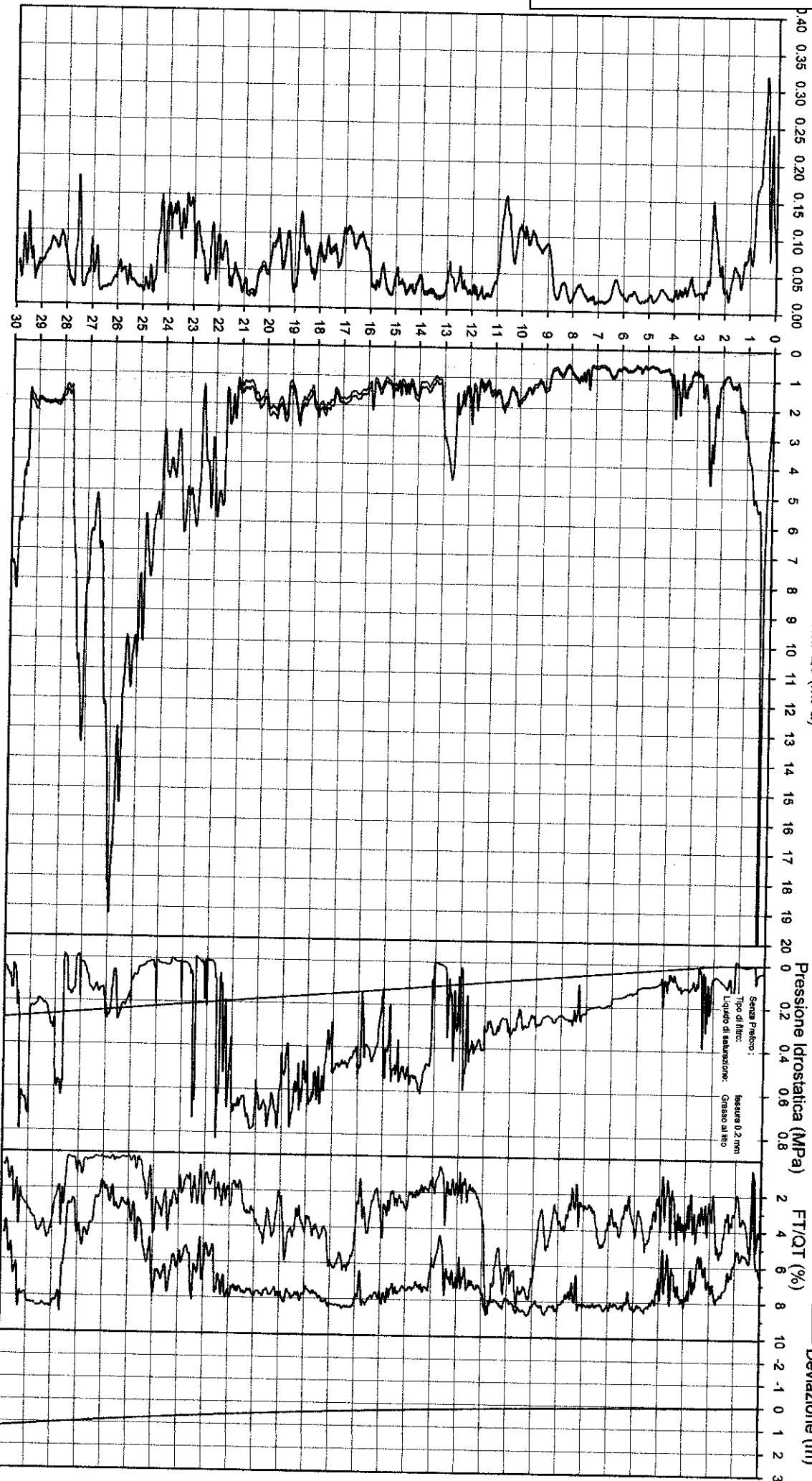
Indice di Comportamento Ic
1,0 1,5 2,0 2,5 3,0 3,5

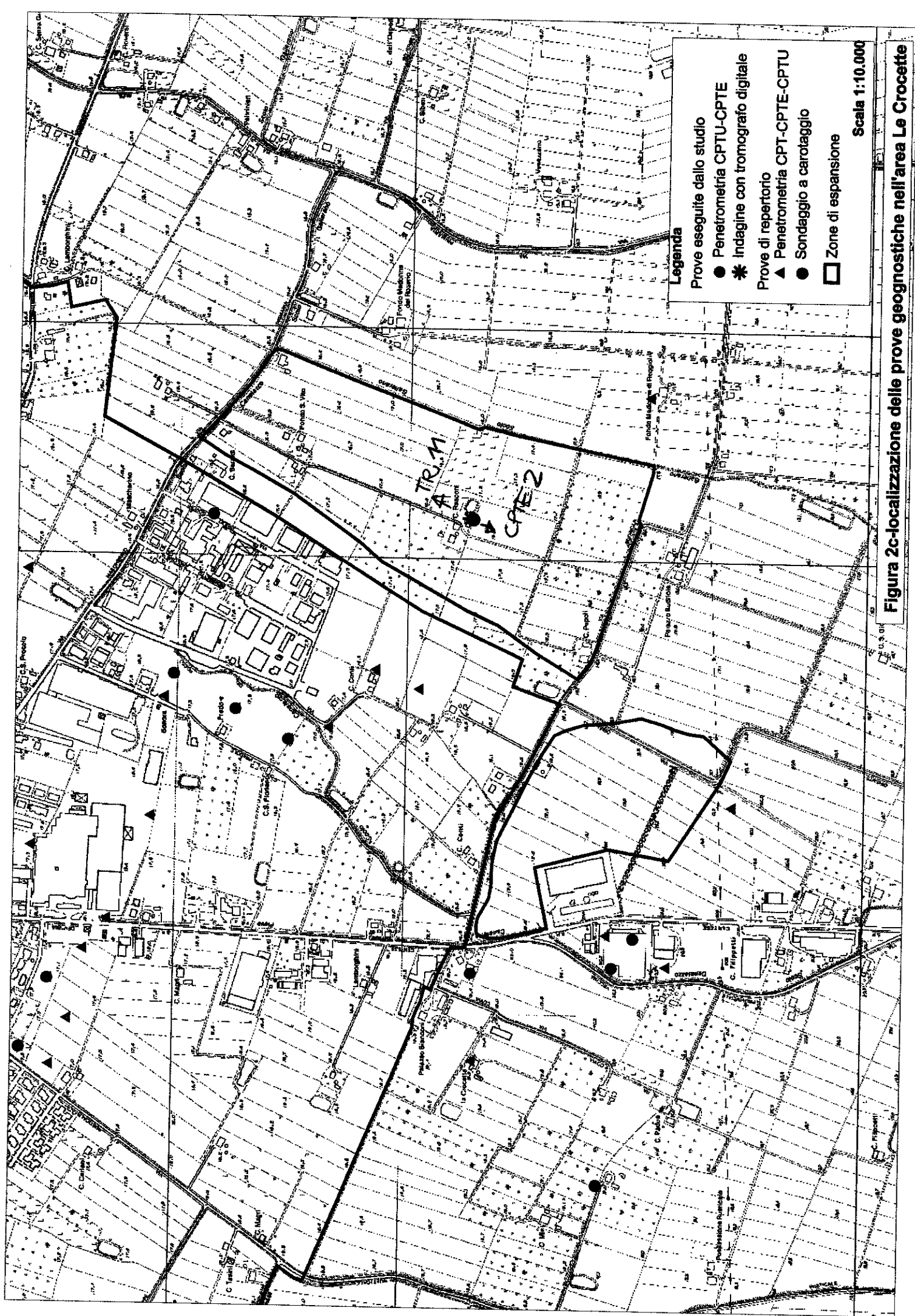
Pressione Idrostatica (MPa)

FT/QT (%)

Deviazione (m)

1_car/psc/CPTU3





Comune
Via
Località
Committente
Data

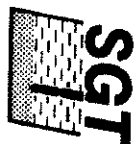
Castello d'Argile
Budrio 4
Castello d'Argile
Viel & Sangiorgi
11-apr-08

Falda

2,3 m

Sigla della Punta
Azzerramento
Ultimo taratura guadagno
Ultimo taratura per deriva termica

Tecnopenta 100707
Inizio prova
7-gen-2008
7-gen-2008



Società di
Geologia
Territoriale

S.G.T. sas
di Van Zulphen Albert & C.
Via Matteotti 50
48012 Bagnacavallo (RA)
www.geo55.com

CPTU

2

Attirito Laterale corretto FT (MPa)
Attirito Laterale Fs (MPa)

Resistenza alla Punta corretta QT (MPa)
Resistenza alla Punta Qc (MPa)

Pressione Interstiziale
Penetrometrica (MPa)

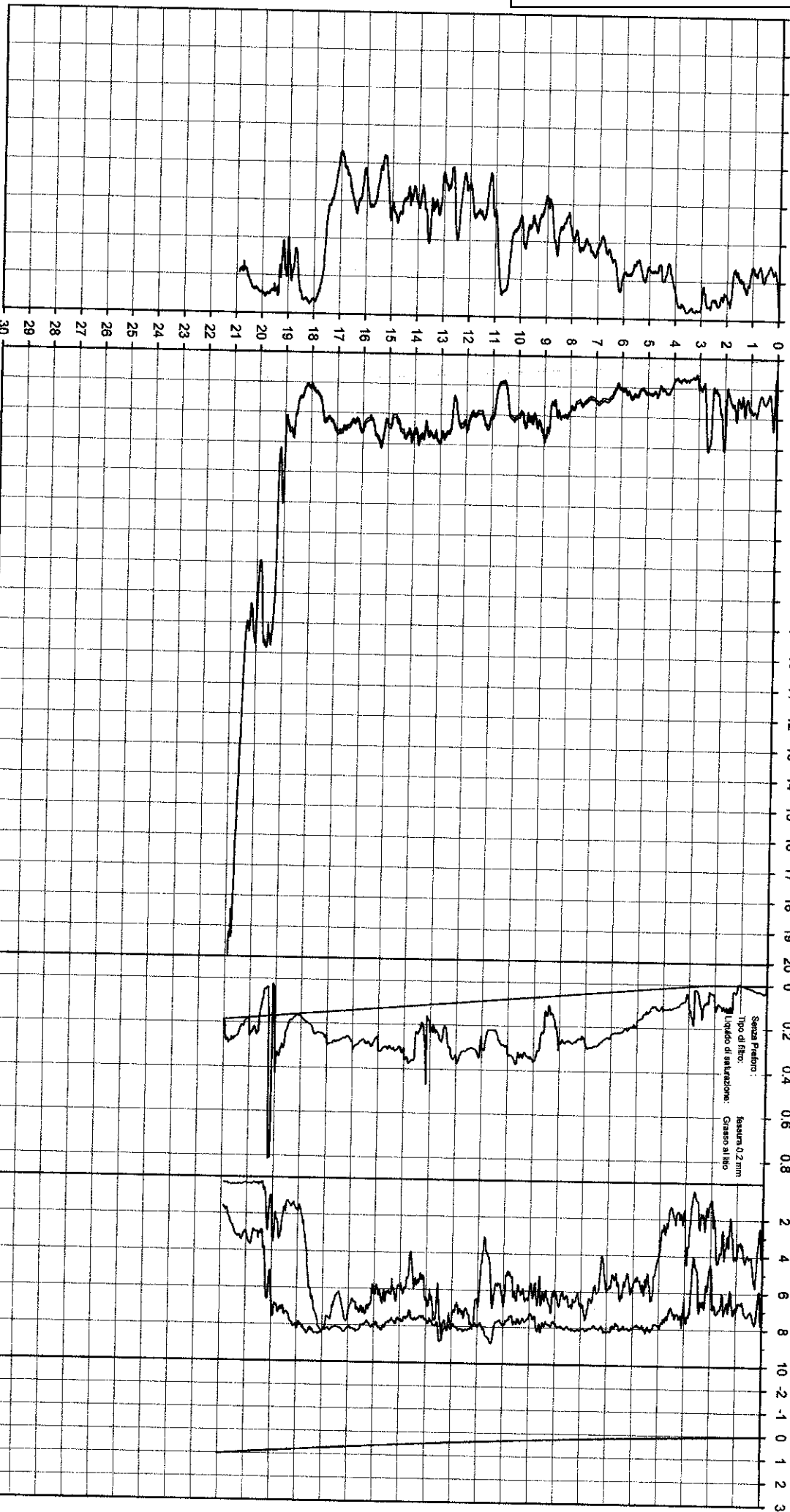
Indice di Comportamento Ic
1.0 1.5 2.0 2.5 3.0 3.5

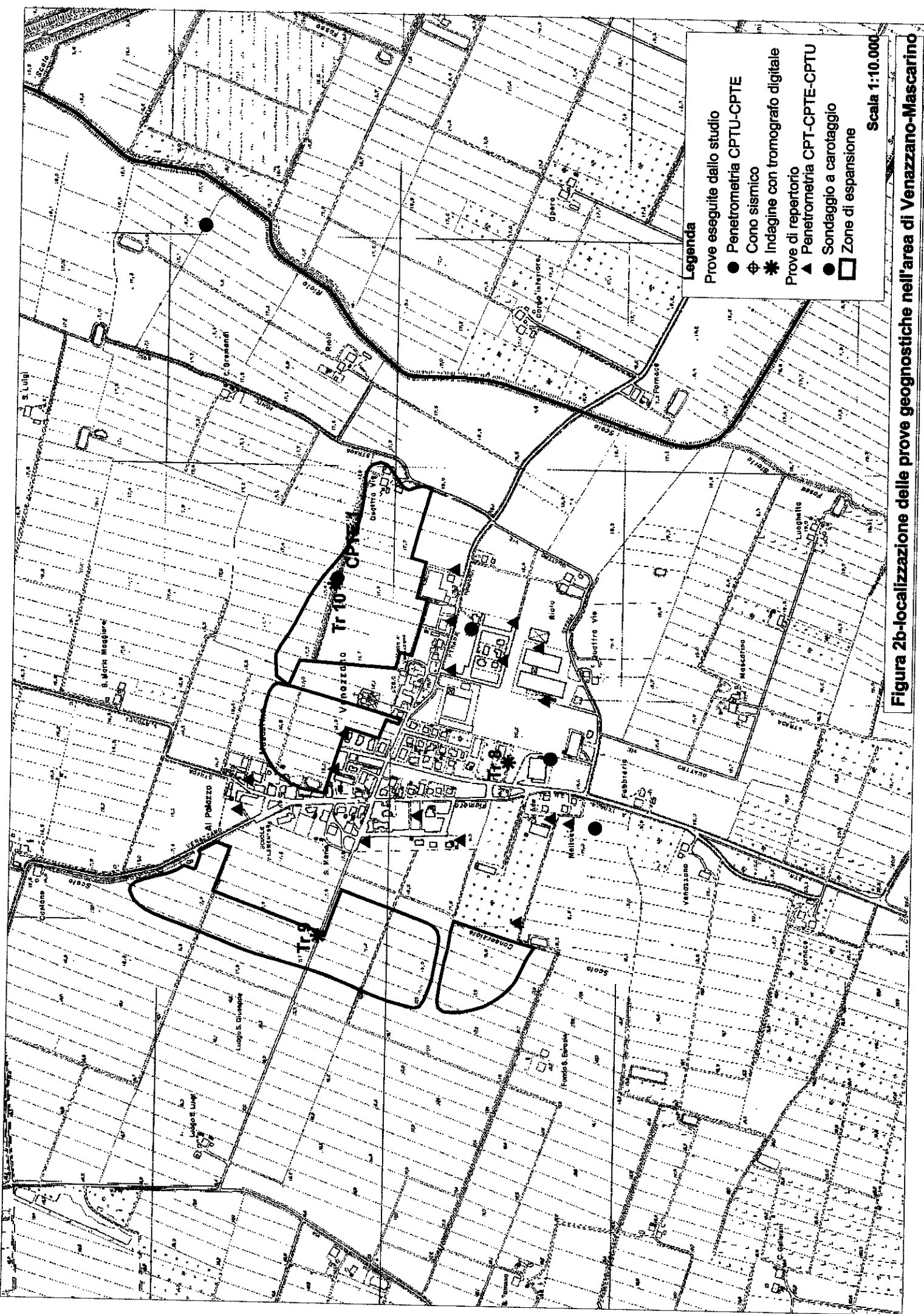
Pressione Idrostatica (MPa)

FT/QT (%)

Deviazione (m)

1_car/psc/CPTU2





Comune
Via
Località
Committente
Data

Castello d'Argile
Ponte Assa
Mascerino - Venezzano
Viel & Sangiorgi
11-apr-08

Falda

1,5 m

Sigla della Punta
Azzeramento
Ultimo taratura guadagno
Ultimo taratura per deriva termica

Tecnopenta 100707
Inizio prova
7-gen-2008
7-gen-2008



Società di
Geologia
Territoriale

S.G.T. sas
di Van Zulphen Albert & C.
Via Matteotti 50
48012 Bagnacavallo (RA)
www.geo55.com

CPTU

Attrito Laterale corretto FT (MPa)
Attrito Laterale Fs (MPa)

Profondità (m)

Resistenza alla Punta corretta QT (MPa)
Resistenza alla Punta Qc (MPa)

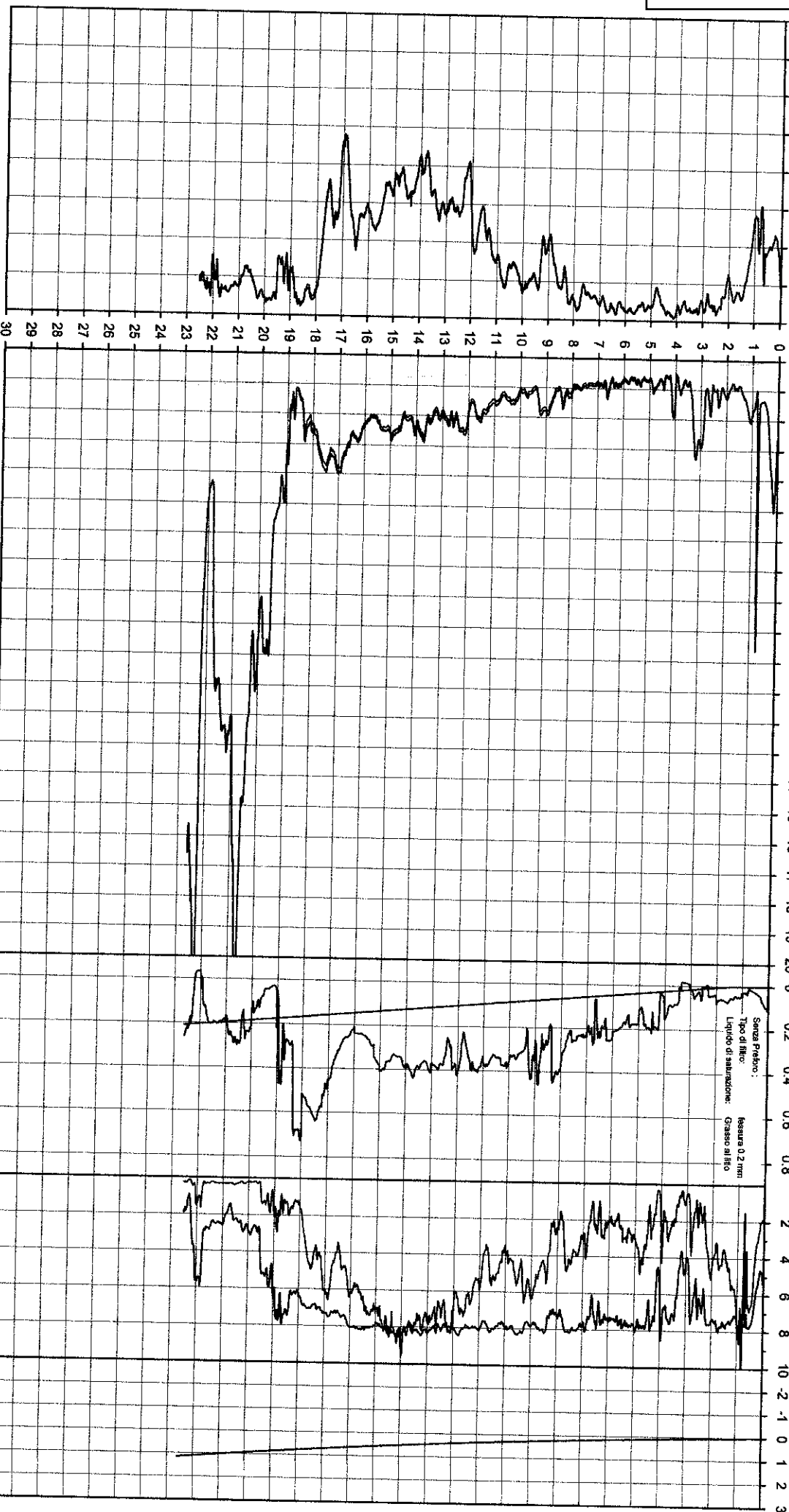
Pressione Interstiziale
Penetrometrica (MPa)

Indice di Comportamento Ic
1.0 1.5 2.0 2.5 3.0 3.5

Pressione Idrostatica (MPa)

FT/QT (%)

Deviazione (m)



1_car/psc/SCPT1

COMMITTENTE	St. Viel & Ass.
CONO SISMICO	CPT N°1
Località	CASTELLO D'ARGILE
Data acquisizione	14/04/08

Codice lavoro 509-27



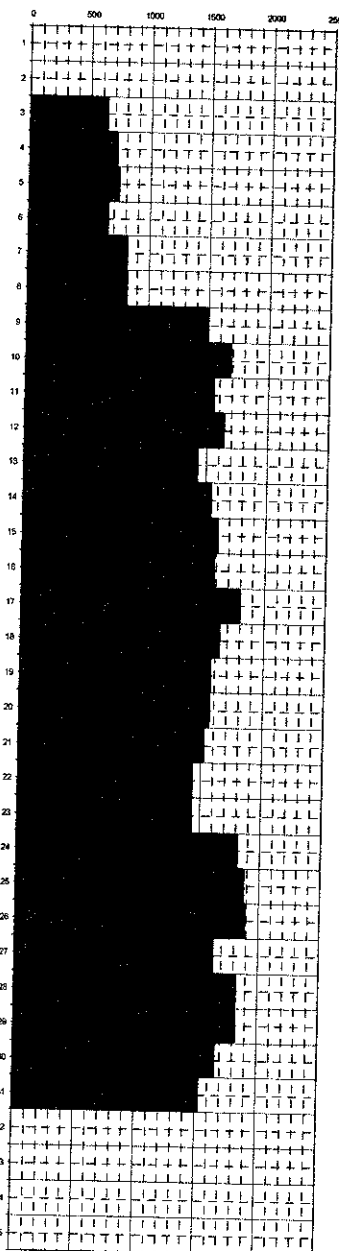
PROGEO S.r.l.
Via Tevere 106 - 47101 Forlì
tel. 0545 / 723590
fax 0545 / 721408
e-mail: proggeo@tin.it

Profondità	Vp	Vs	v	γ	E _{din}	G _{din}	K _{din}
m/sec	m/sec			T/m³	Kg/cm³	Kg/cm²	Kg/cm²

0							
1							
2							
3	637	161	0.47	1.74	1339	457	6587
4	721	165	0.47	1.78	1463	497	8782
5	742	149	0.48	1.79	1204	407	9503
6	653	154	0.47	1.75	1236	420	7028
7	815	136	0.49	1.82	1026	345	11894
8	819	130	0.49	1.82	935	314	12039
9	1487	180	0.49	2.05	2024	678	45800
10	1682	184	0.49	2.09	2152	720	59329
11	1551	238	0.49	2.06	3552	1194	48894
12	1640	229	0.49	2.08	3323	1115	55579
13	1426	240	0.49	2.03	3533	1189	40414
14	1549	234	0.49	2.06	3409	1145	48869
15	1608	201	0.49	2.07	2548	854	53517
16	1583	199	0.49	2.07	2489	834	51739
17	1802	215	0.49	2.12	2979	998	68810
18	1637	286	0.48	2.08	5157	1737	54543
19	1567	281	0.48	2.06	4944	1666	49419
20	1564	284	0.49	2.06	4367	1470	49468
21	1522	260	0.48	2.05	4210	1418	46587
22	1429	252	0.48	2.03	3902	1315	40467
23	1430	281	0.48	2.03	4831	1632	40121
24	1817	258	0.49	2.12	4295	1441	69488
25	1873	303	0.49	2.13	5939	1998	73660
26	1892	272	0.49	2.14	4798	1611	75874
27	1632	239	0.49	2.08	3605	1211	54819
28	1821	236	0.49	2.12	3581	1201	70149
29	1821	221	0.49	2.12	3164	1080	70400
30	1658	265	0.49	2.09	4429	1489	56474
31	1529	209	0.49	2.05	2720	913	47714
32							
33							
34							
35							

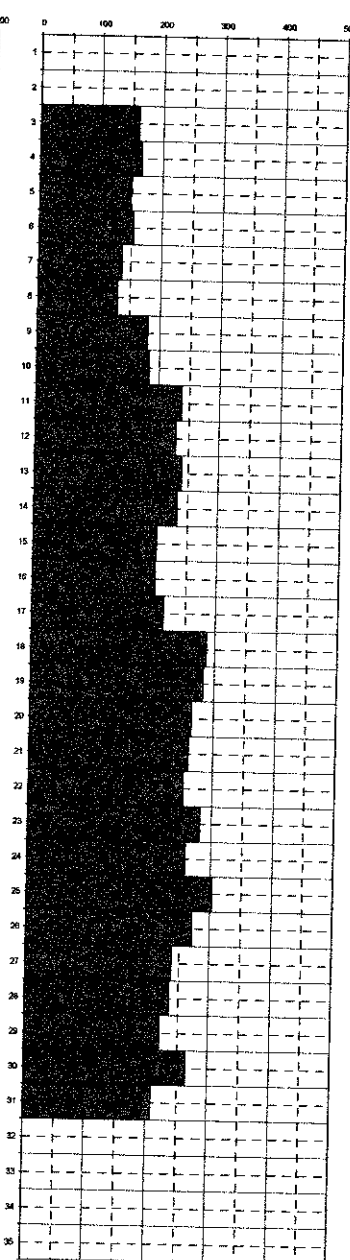
VELOCITA' ONDE DI COMPRESSIONE

m/sec



VELOCITA' ONDE DI TAGLIO

m/sec



Legenda parametri dinamici

Tp	Tempi onde di compressione	millisecondi	γ	Peso di volume	T/m³
Ts	Tempi onde di taglio	millisecondi	E _{din}	Modulo di Elasticità dinamico	Kg/cm²
Vp	Velocità onde di compressione	m/sec	G _{din}	Modulo di Taglio dinamico	Kg/cm²
Vs	Velocità onde di taglio	m/sec	K _{din}	Modulo di Compressibilità dinamico	Kg/cm²
v	Coefficiente di Poisson				

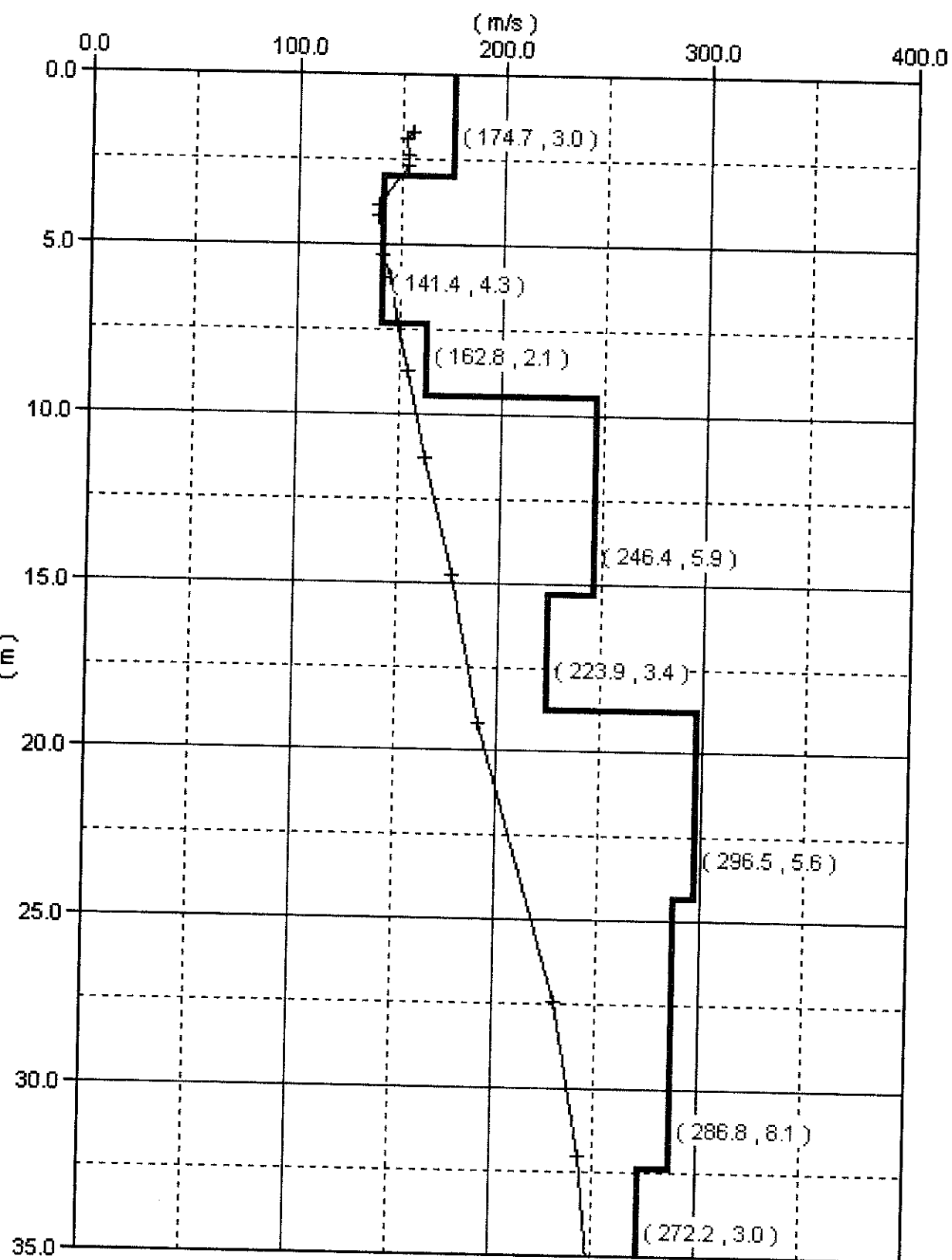
CLASSIFICAZIONE SISMICA DEI SUOLI (NORME TECNICHE PER LE COSTRUZIONI P.C.M. n° 3341 del 14/08/2005)

$$V_{s30} = \frac{30}{\sum_{i=1, N} \frac{h_i}{V_i}}$$

$$\frac{V_{s30}}{G_0} = \frac{211}{898} \quad \text{m/sec} \quad \text{Kg/cm}^2$$

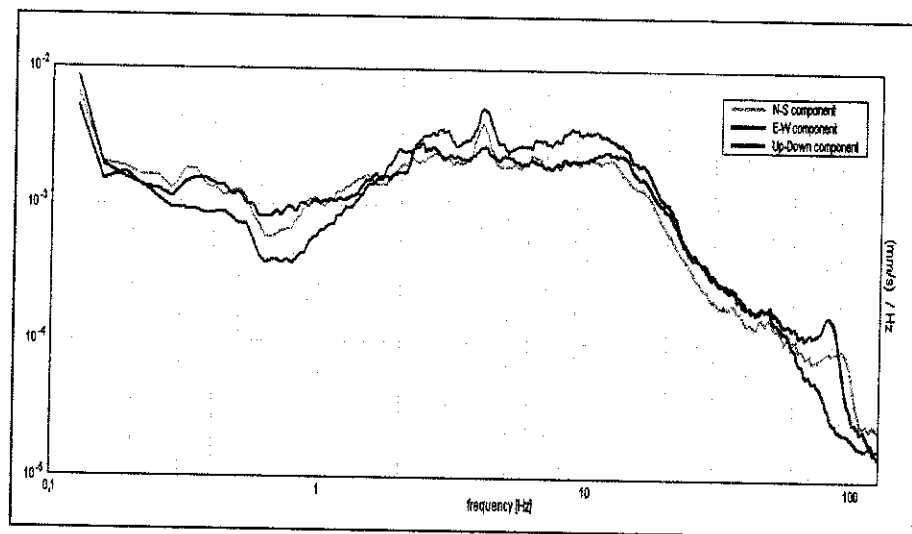
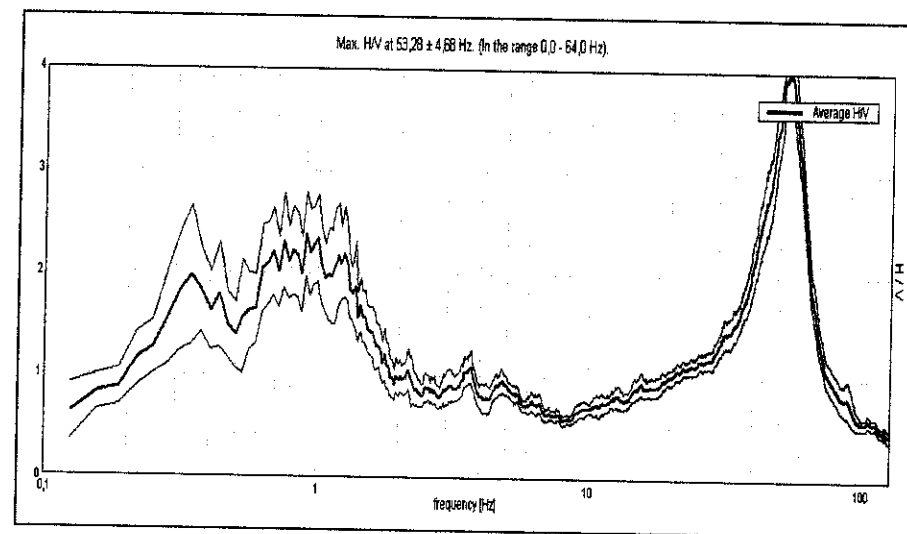
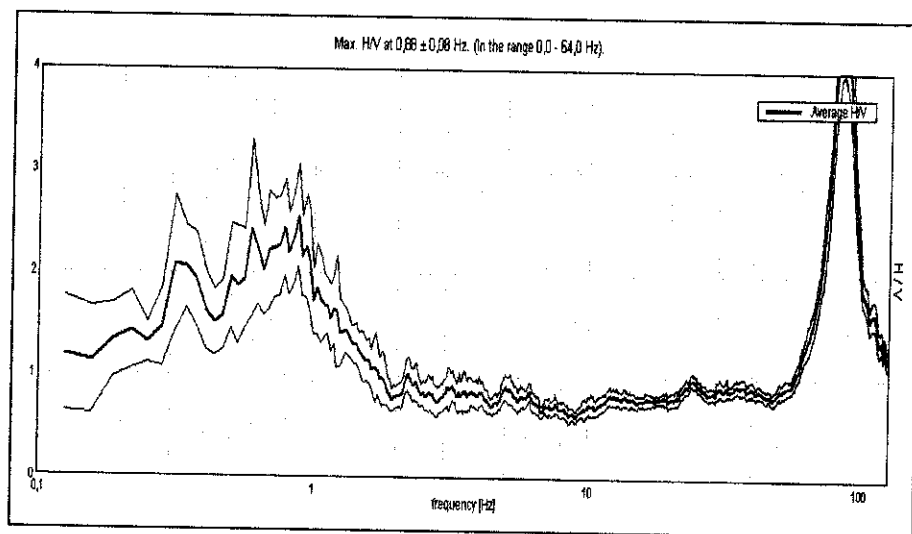
CATEGORIA SUOLO

C

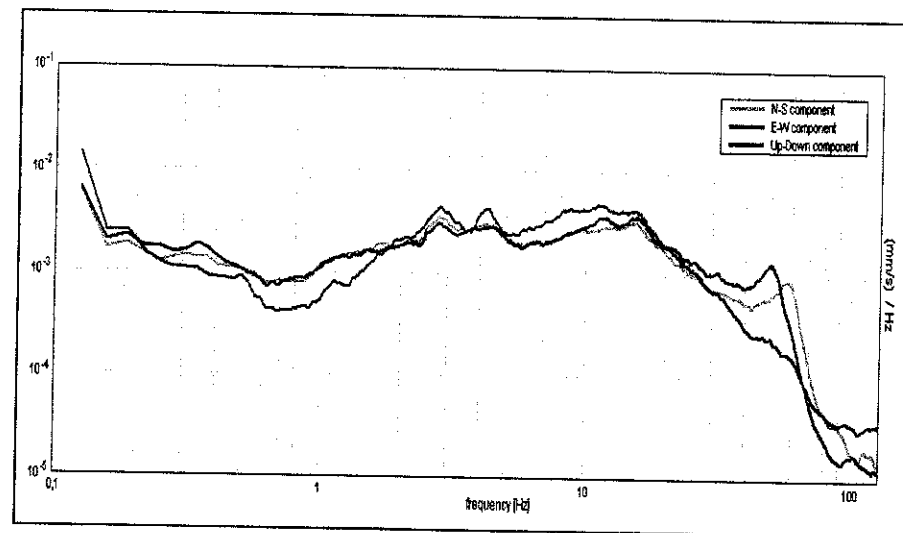


1_car/psc/MASW1

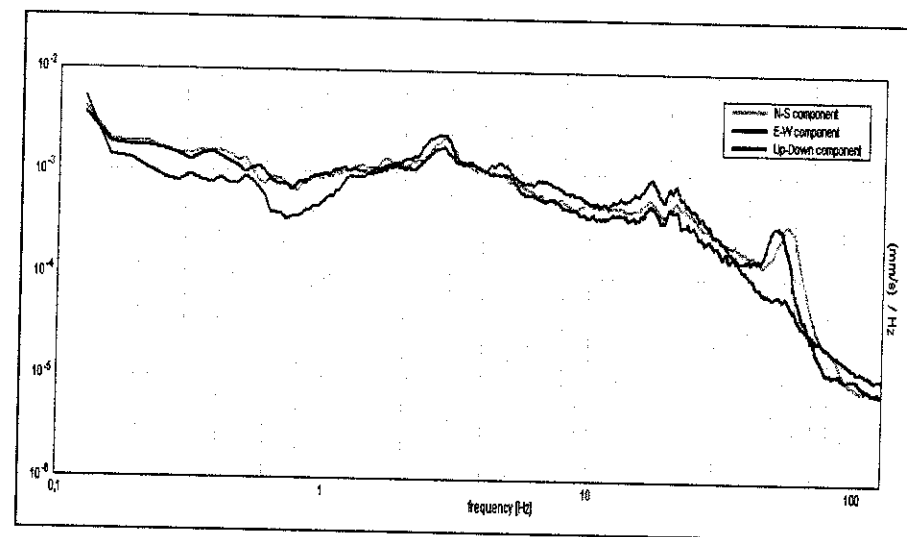
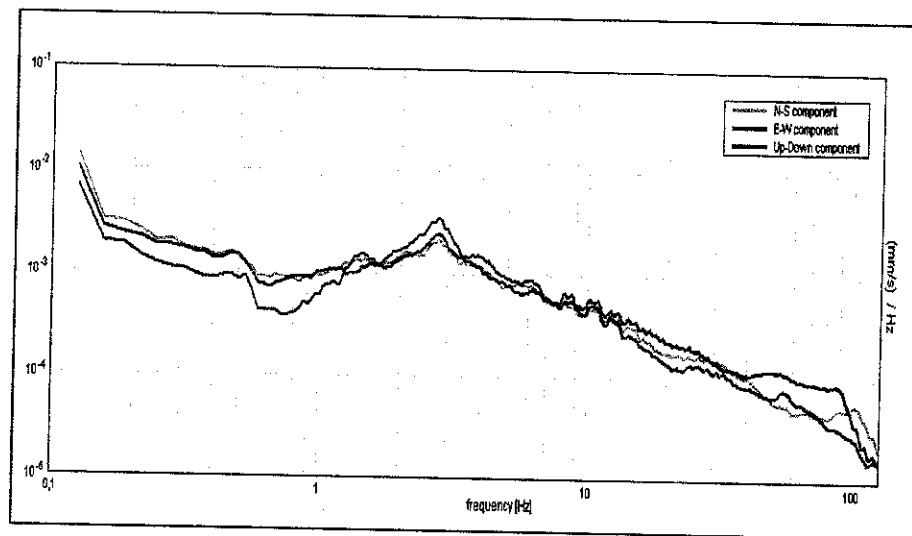
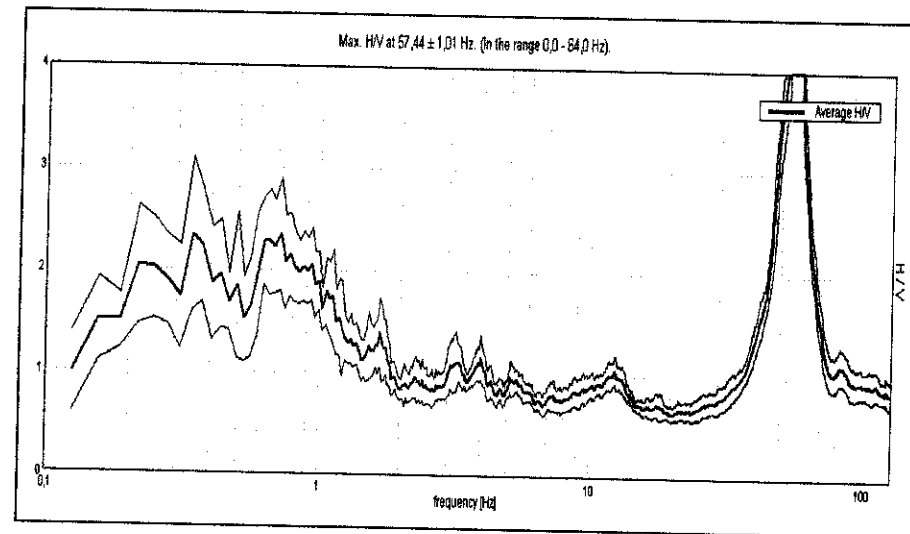
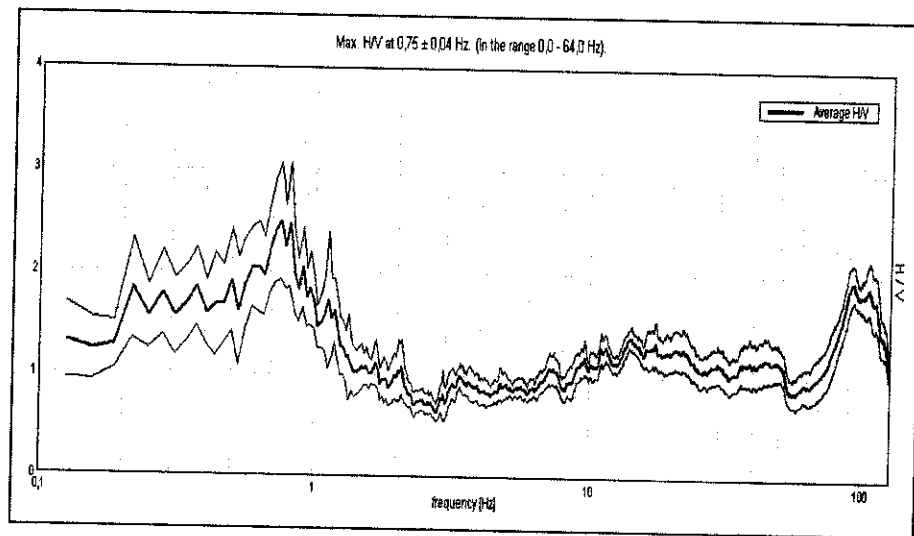
COMUNE DI CASTELLO D'ARGILE



1_car/psc/TR1

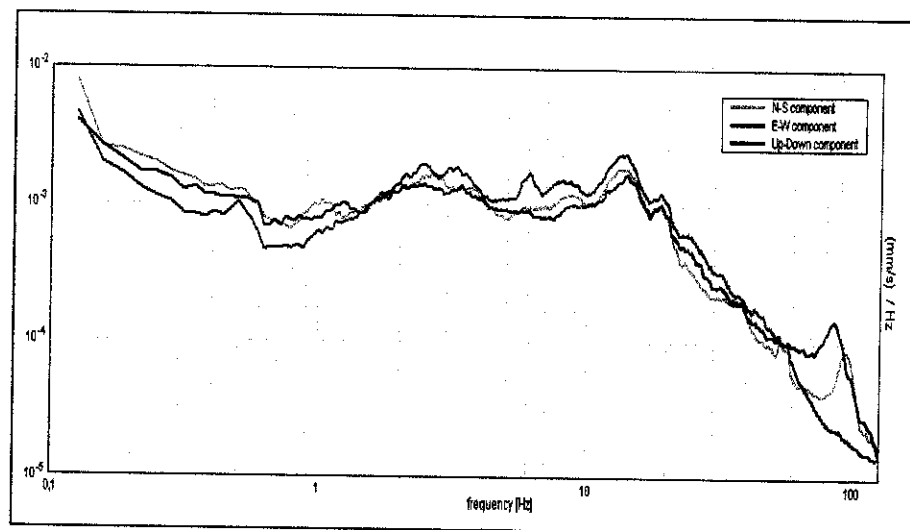
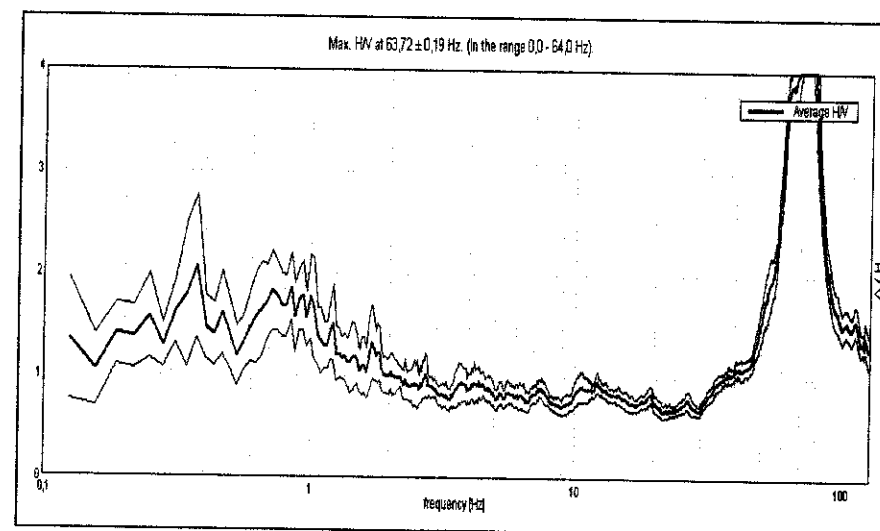
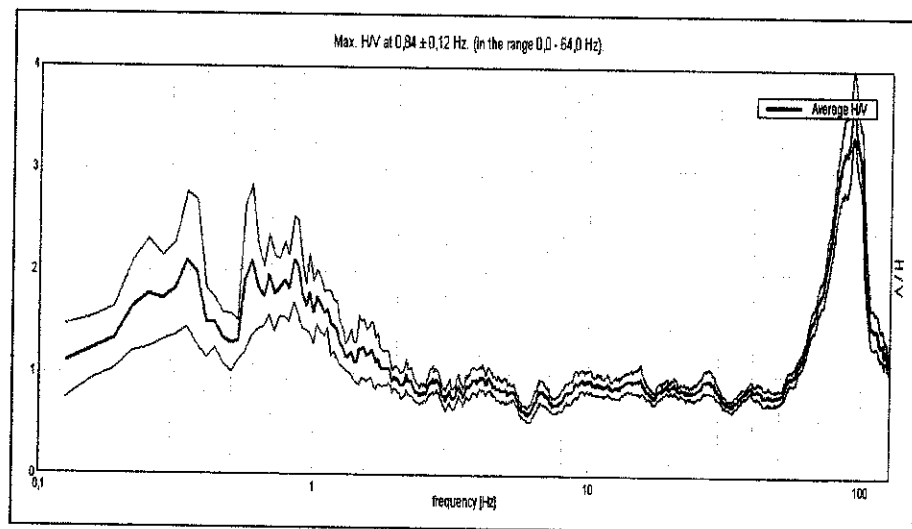


1_car/psc/TR2

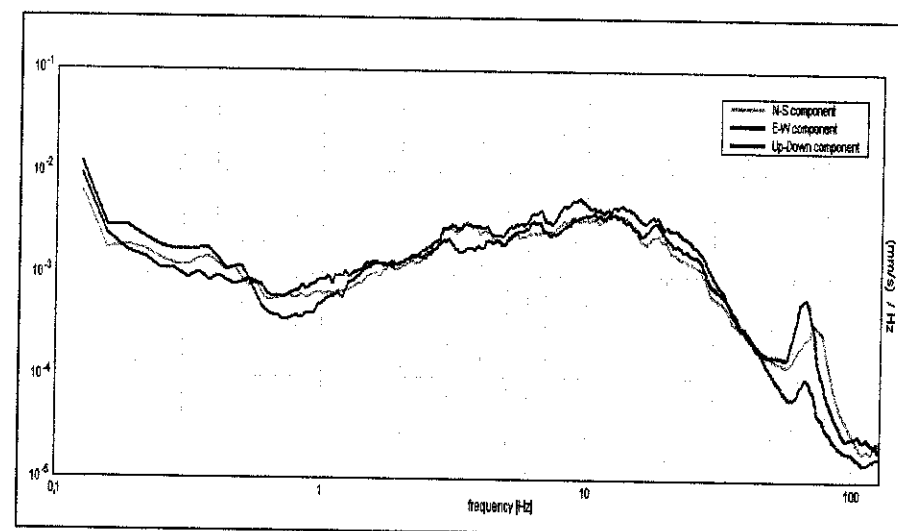


1_car/psc/TR3

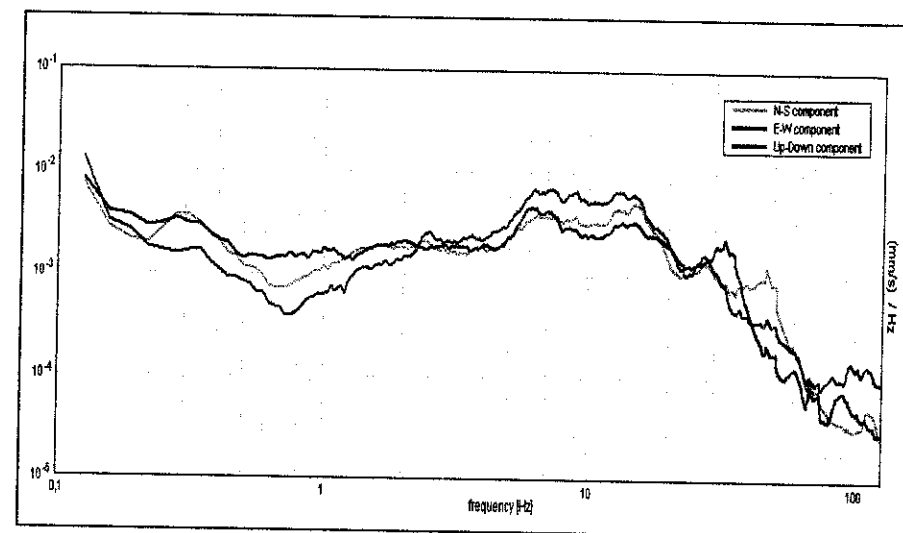
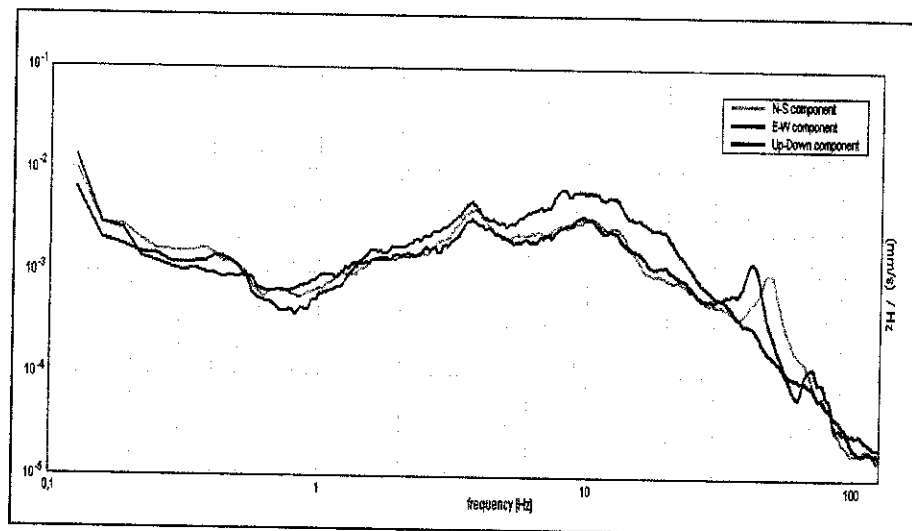
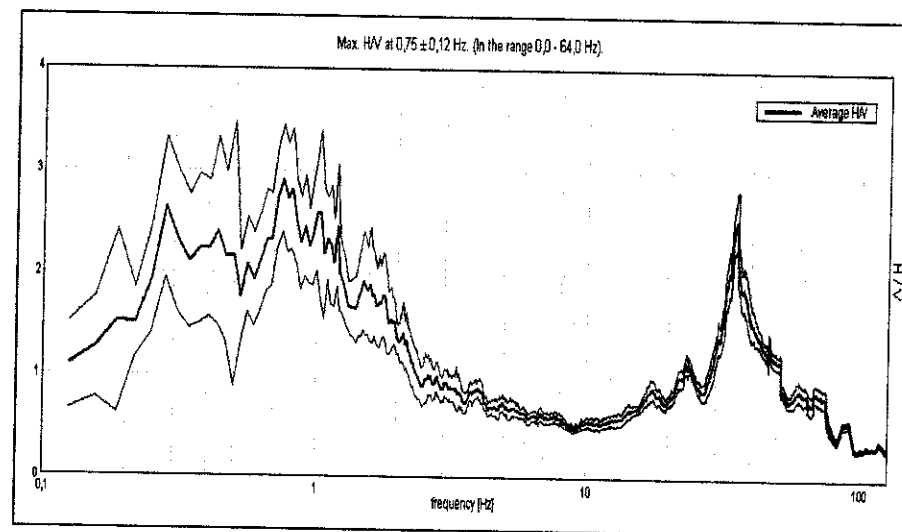
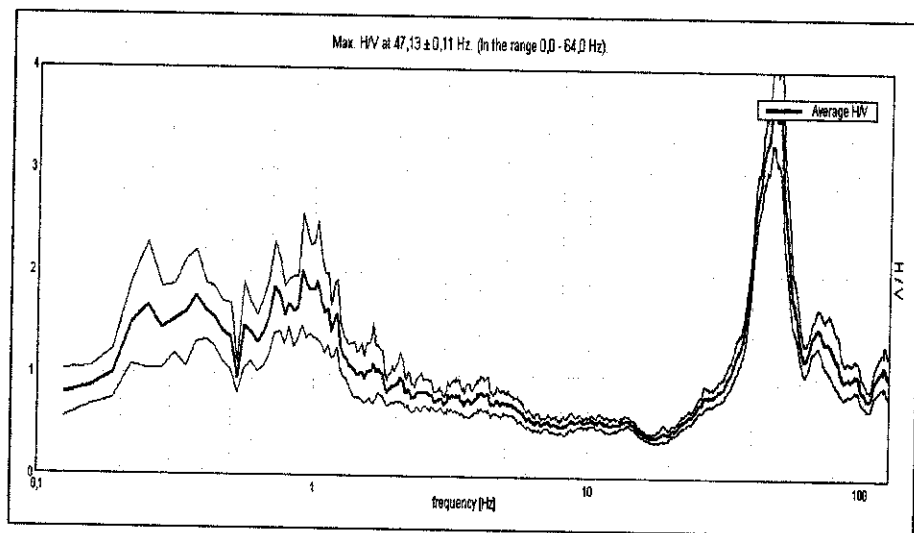
1_car/psc/TR4



1_car/psc/TR5

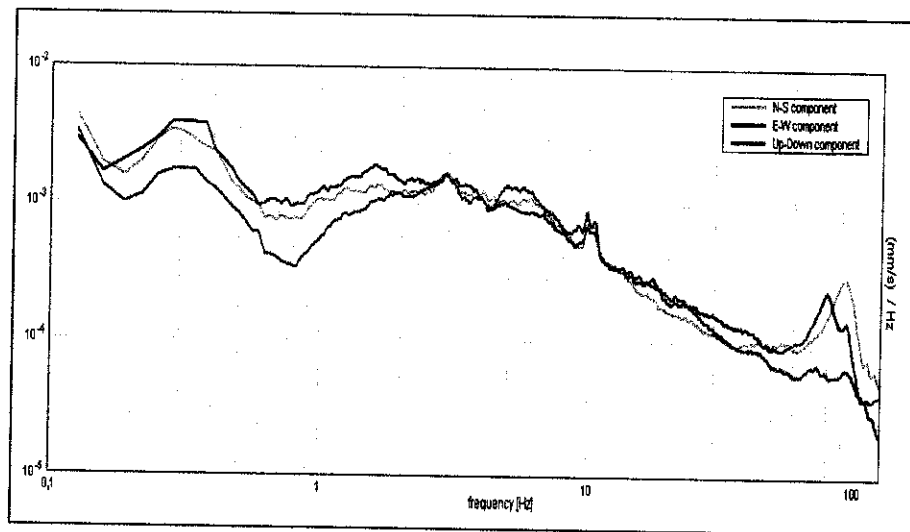
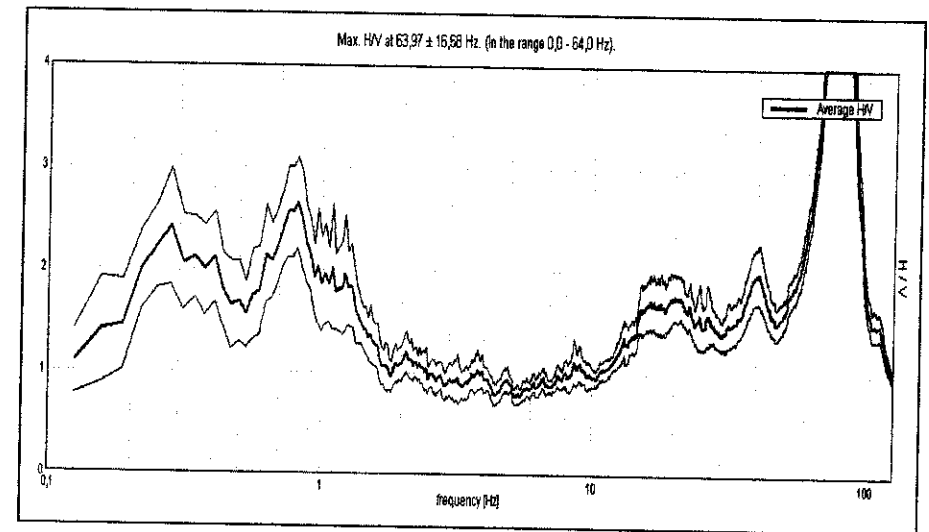
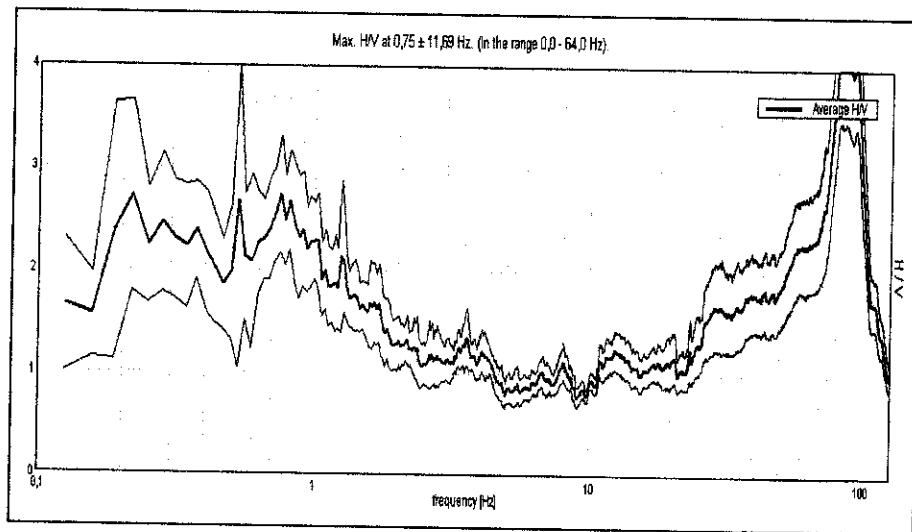


1_car/psc/TR6

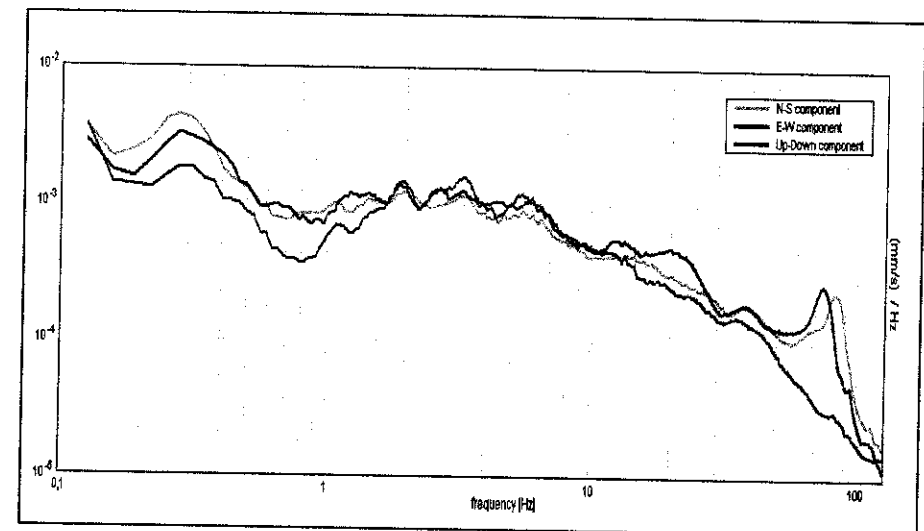


1_car/psc/TR7

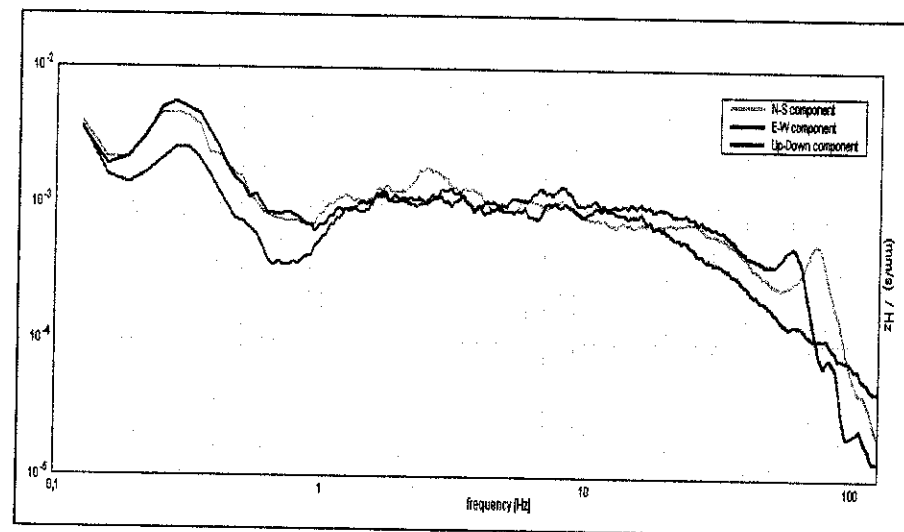
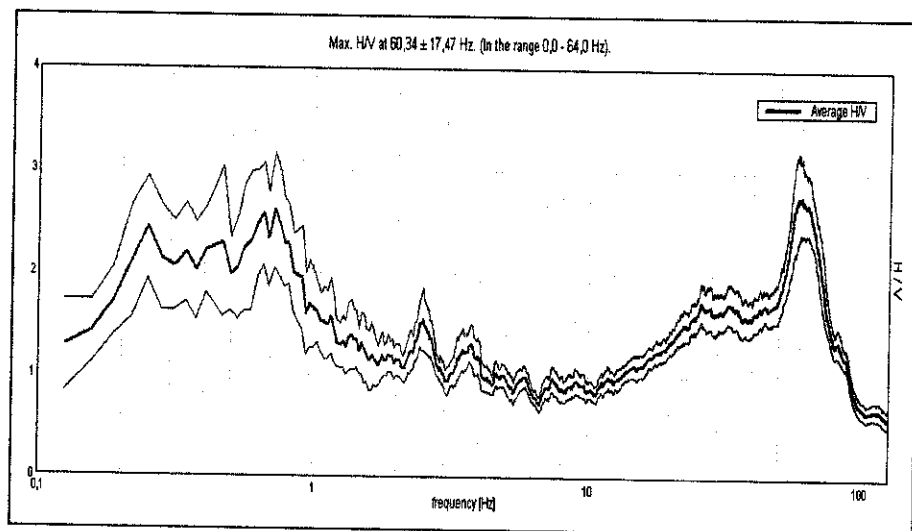
1_car/psc/TR8



1_car/psc/TR9

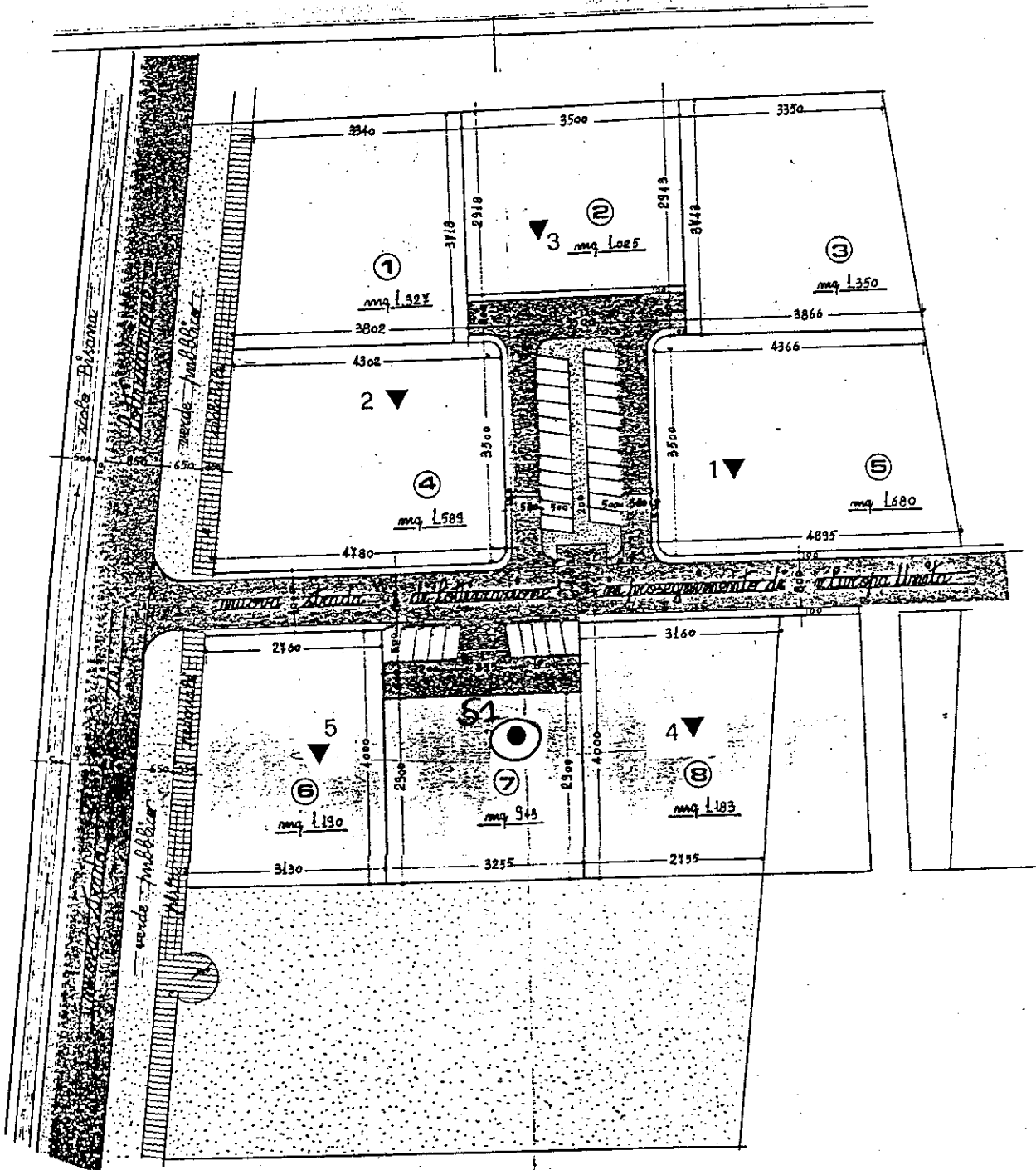


1_car/psc/TR10



1_car/psc/TR11

TAV. 2 - UBICAZIONE INDAGINE GEOGNOSTICA



▼ Penetrometrie statiche

● Trivellazione a secco

Scala 1: 1.000

GEO-PROBE

40133 BOLOGNA

Via R. Grimaldi, 7 - Tel. 051/61.45.360

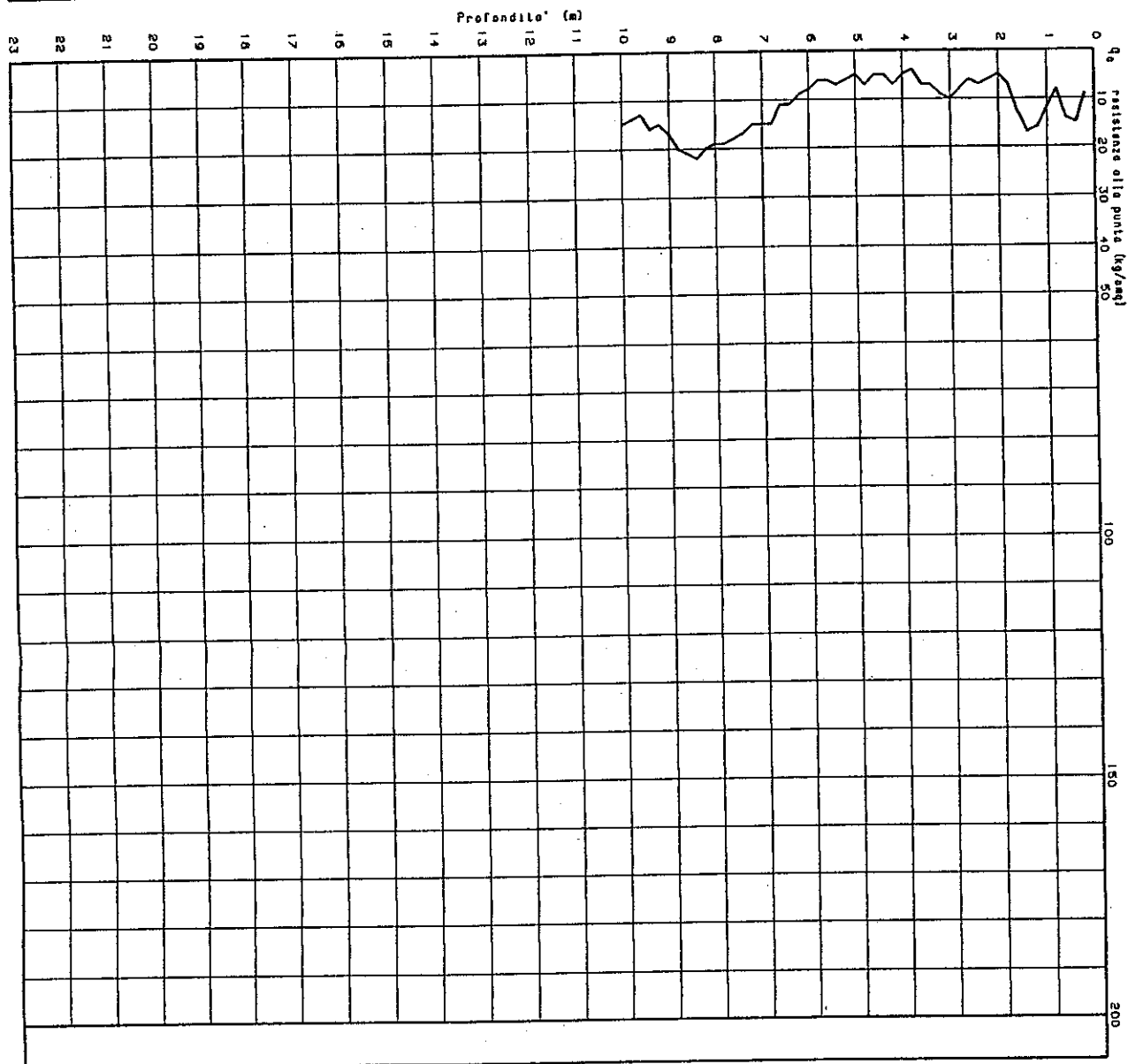
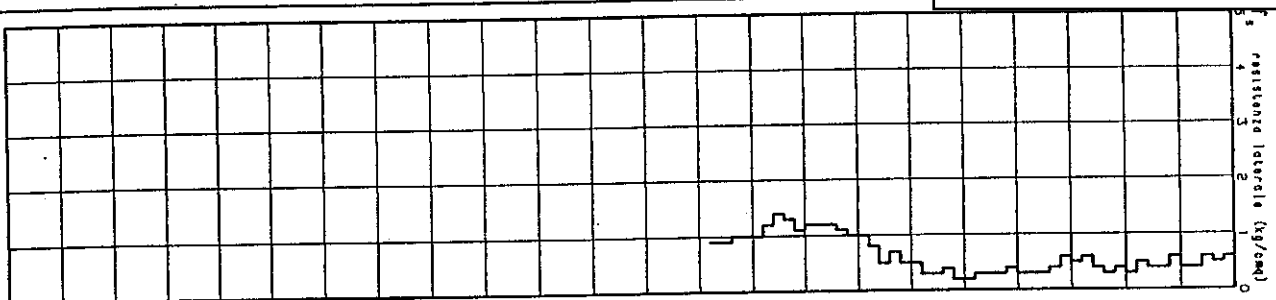
Committente: Geom. Gavina

Località: Castello d'Argile (BO) Via Europa Unite

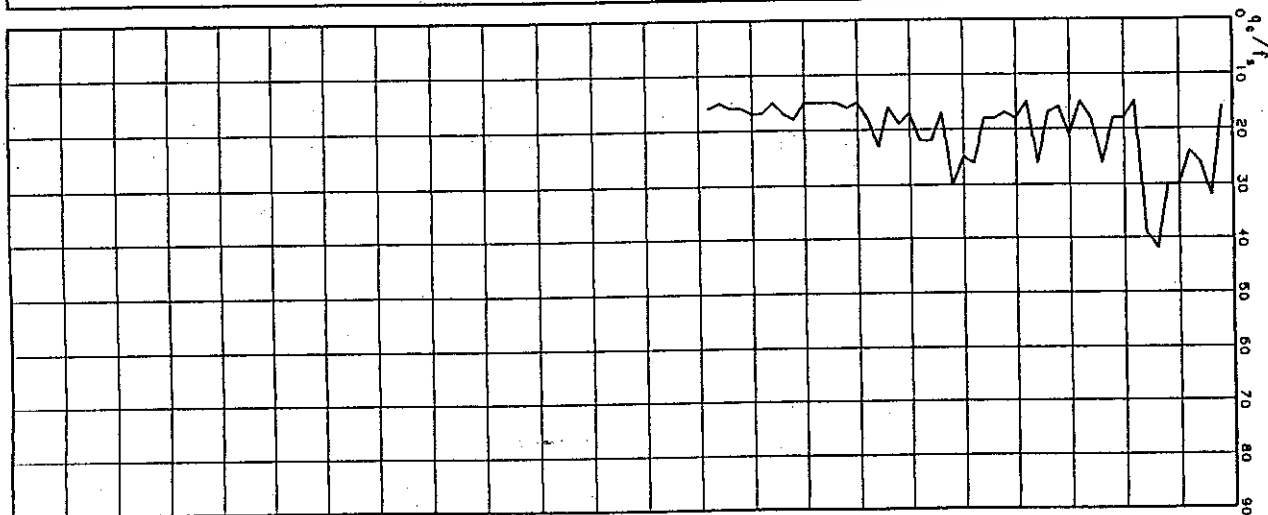
CPT (CONE PENETRATION TEST) N.1

N. Certificato: 02165001

Data: 17/05/2002



Livello acque da p.c.: foro chiuso a -1.00 m



GEO-PROBE

40133 BOLOGNA

Via R. Griseo, 7 - Tel. 051/51.45.360

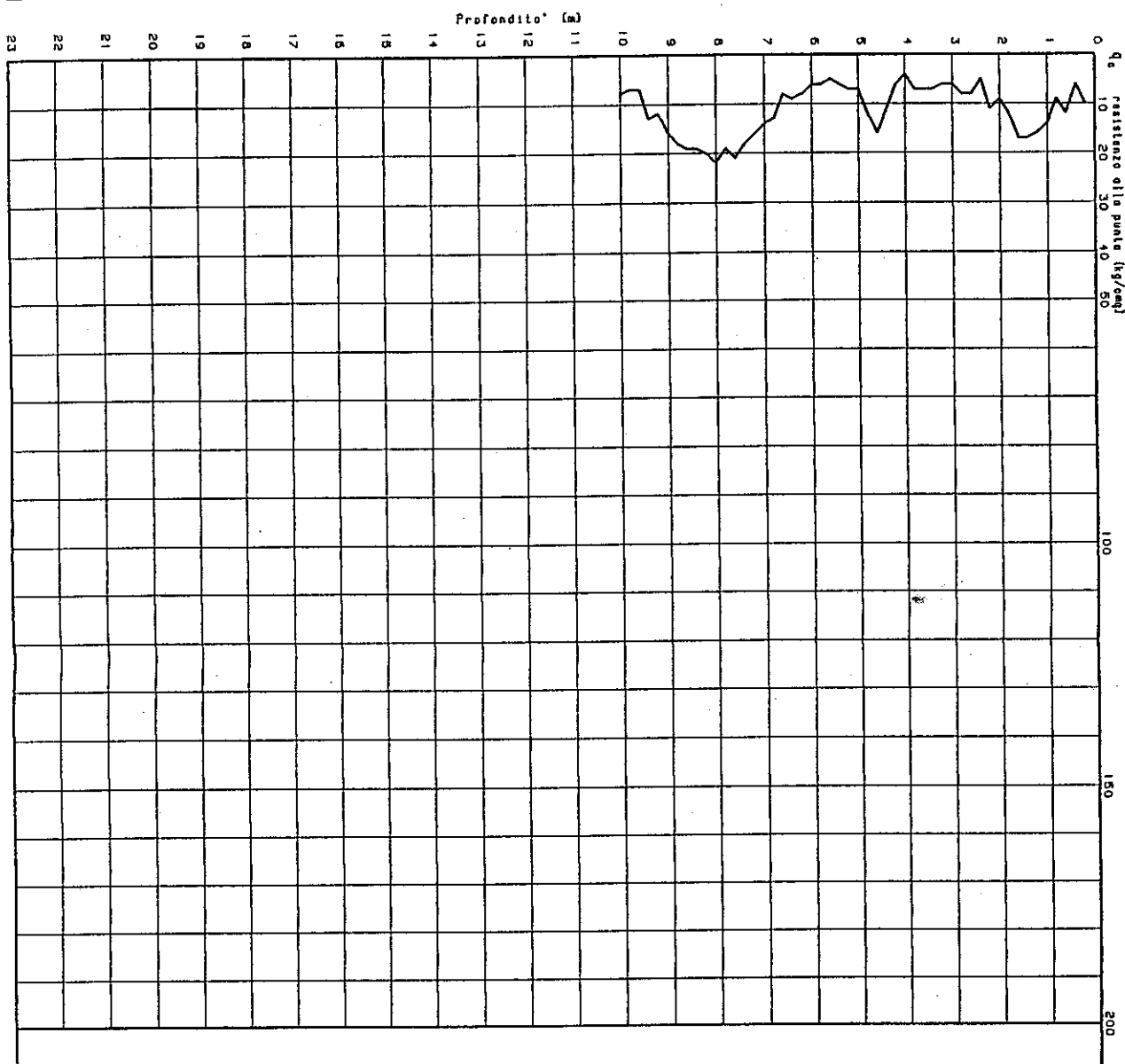
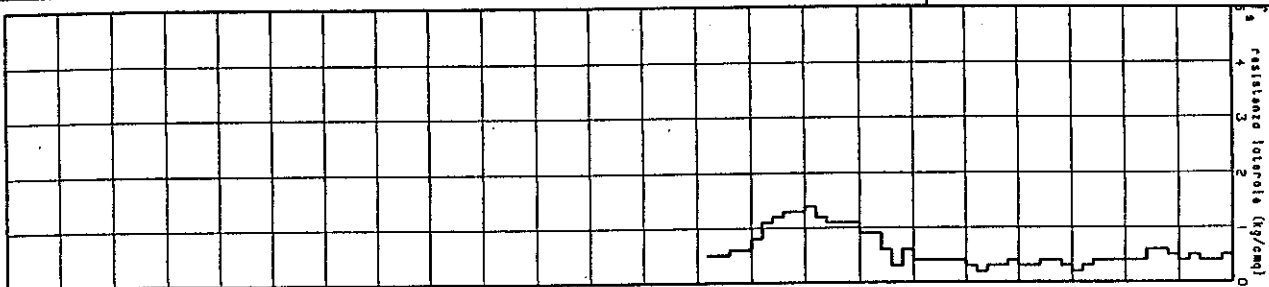
Committente: Geom. Gavino

Località: Castello d'Argile (BO) Via Europa Unita

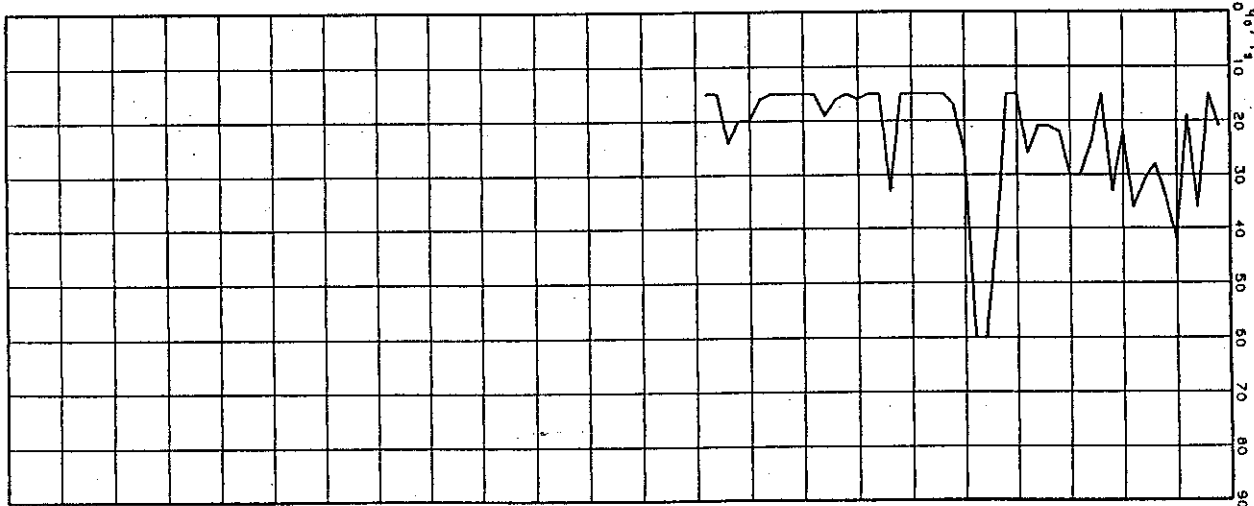
CPT (CONE PENETRATION TEST) N.2

N. Certificato: 02166002

Data: 17/05/2002



Livello acque da p.o.: foro chiuso a -1.00 m



GEO-PROBE

40133 BOLOGNA

Via R. Grasseo, 7 - Tel. 051/61.45.360

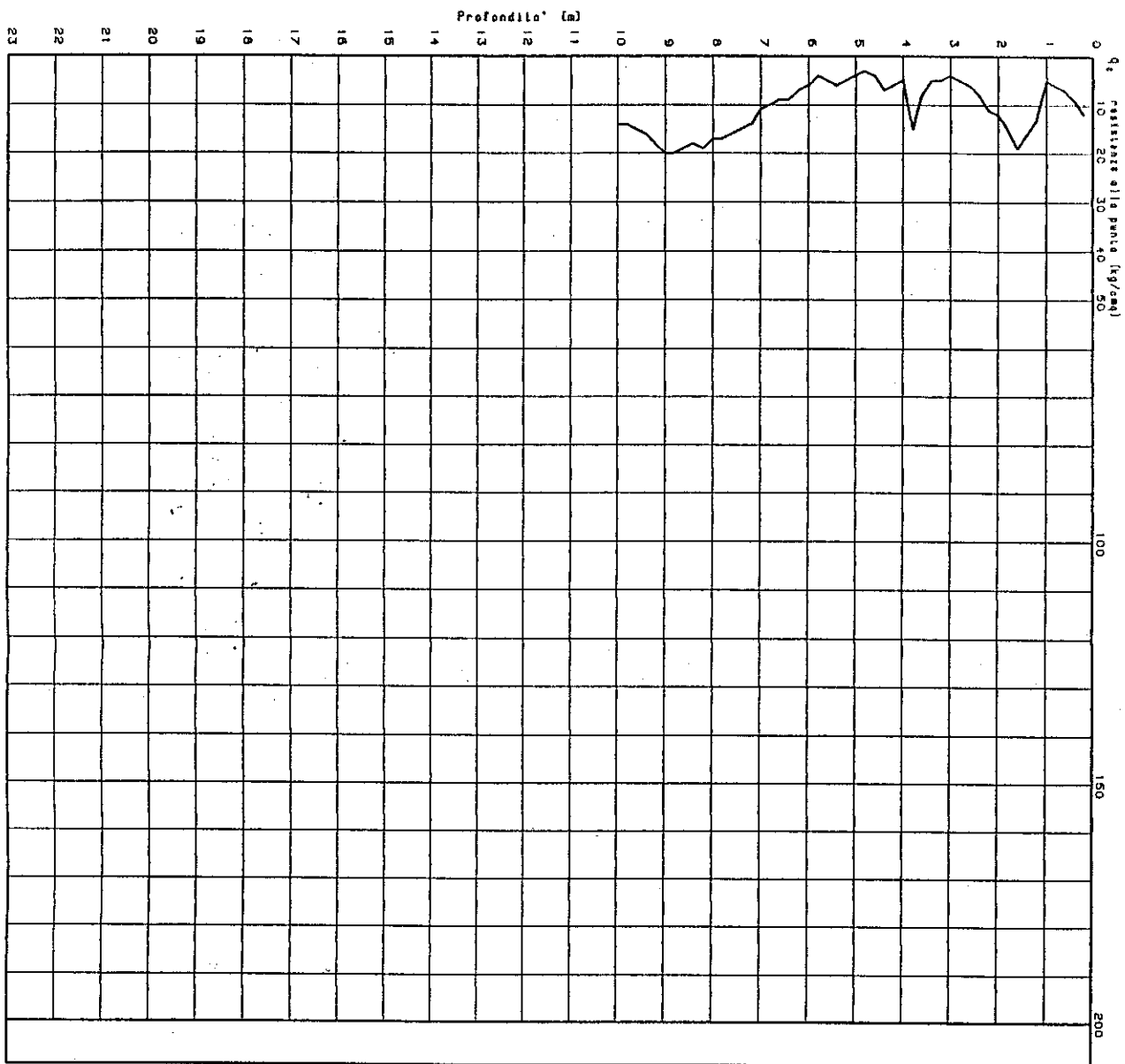
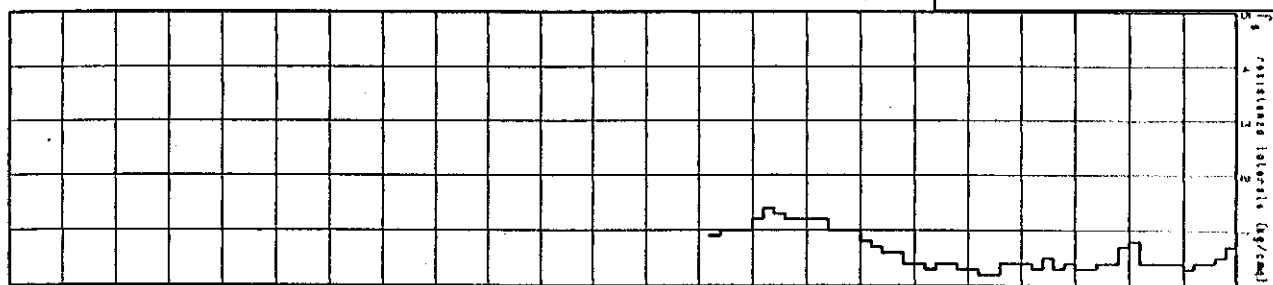
Committente: Geom. Gavino

Località: Castello d'Argile (BO) via Europa Unita

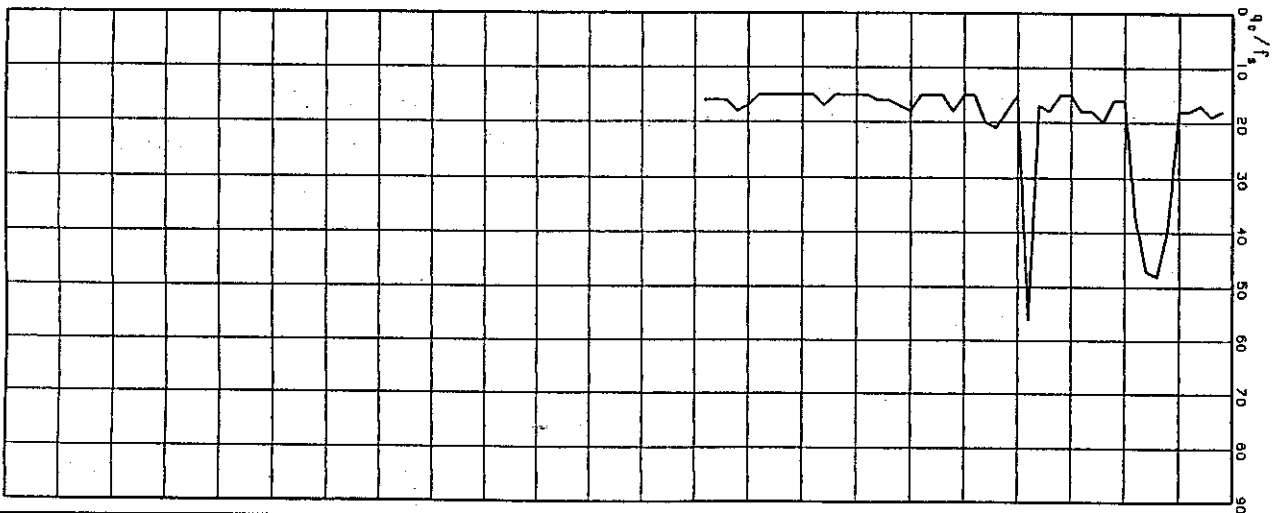
CPT (CONE PENETRATION TEST) N.3

N. Certificato: 02166003

Data: 17/05/2002



Livello acqua da p.c.: foro chiuso a -0.40 m



GEO-PROBE

40135 BOLOGNA

Via S. Giovanni, 7 - Tel. 051/51.45.360

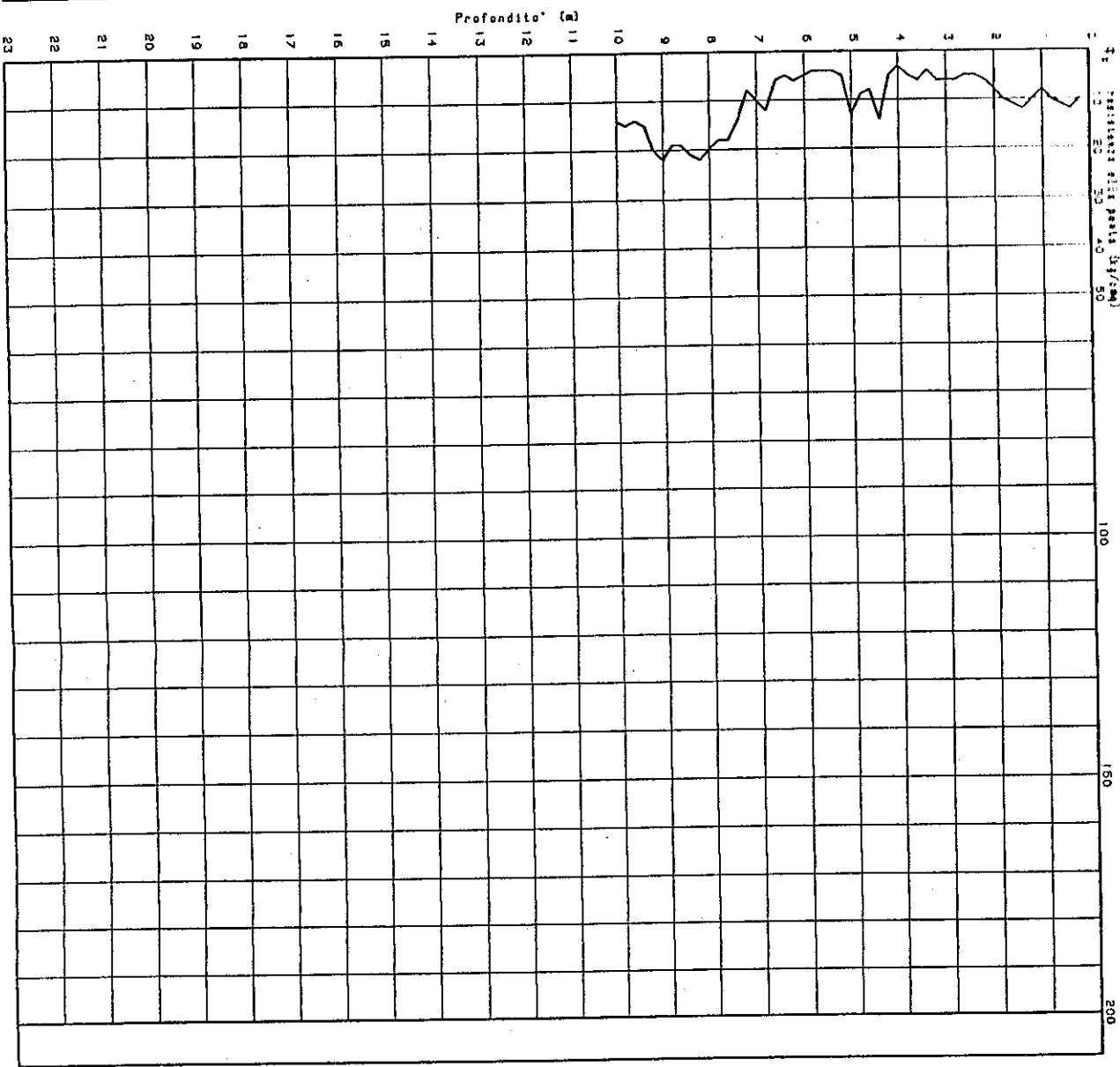
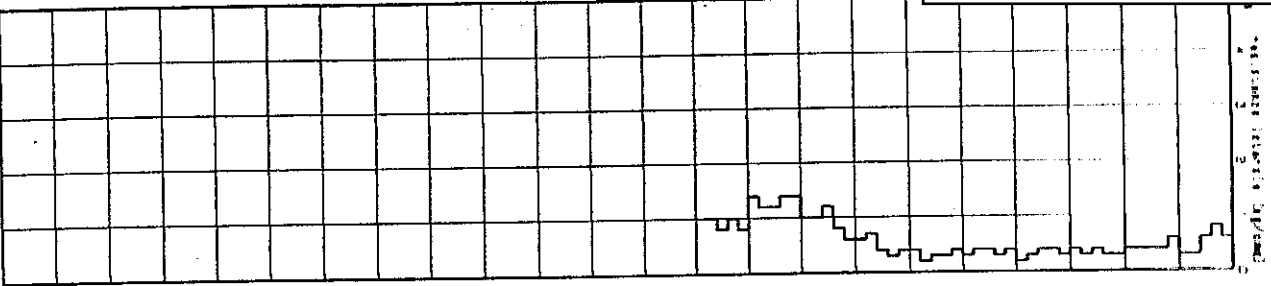
Completato: 02/01/2002

Località: Castello d'Angile (BO) Via Europa Unita

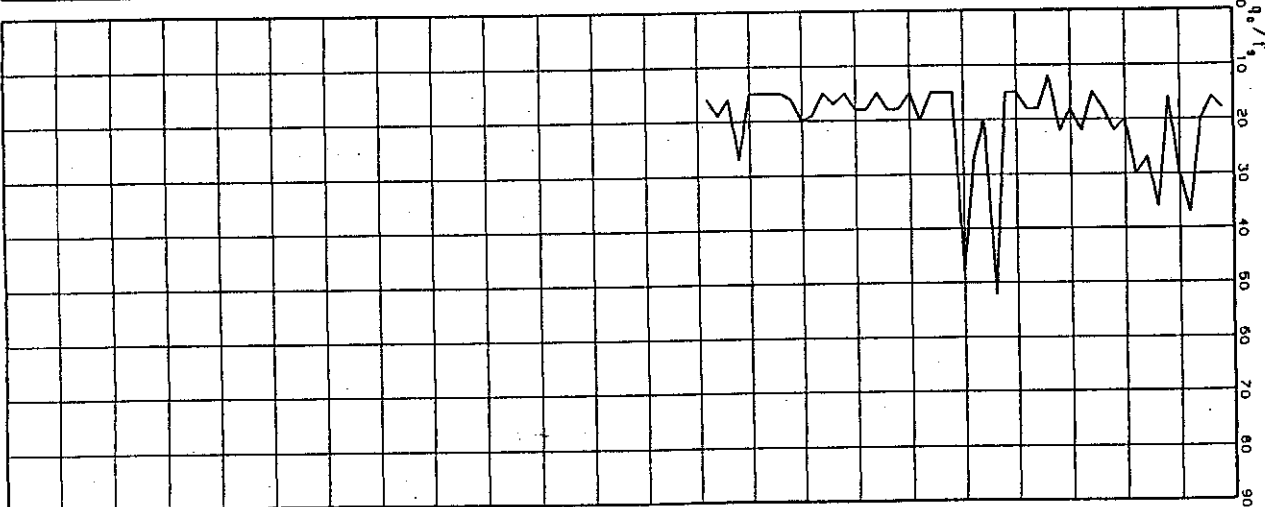
CPT (CONE PENETRATION TEST) N.4

N. Certificato: 02166004

Data: 17/05/2002



Livello acqua da p.e.: foro chiuso a -0.70 m



GEO-PROBE

40133 BOLOGNA

Via R. Grasseo, 7 - Tel. 051/61.45.350

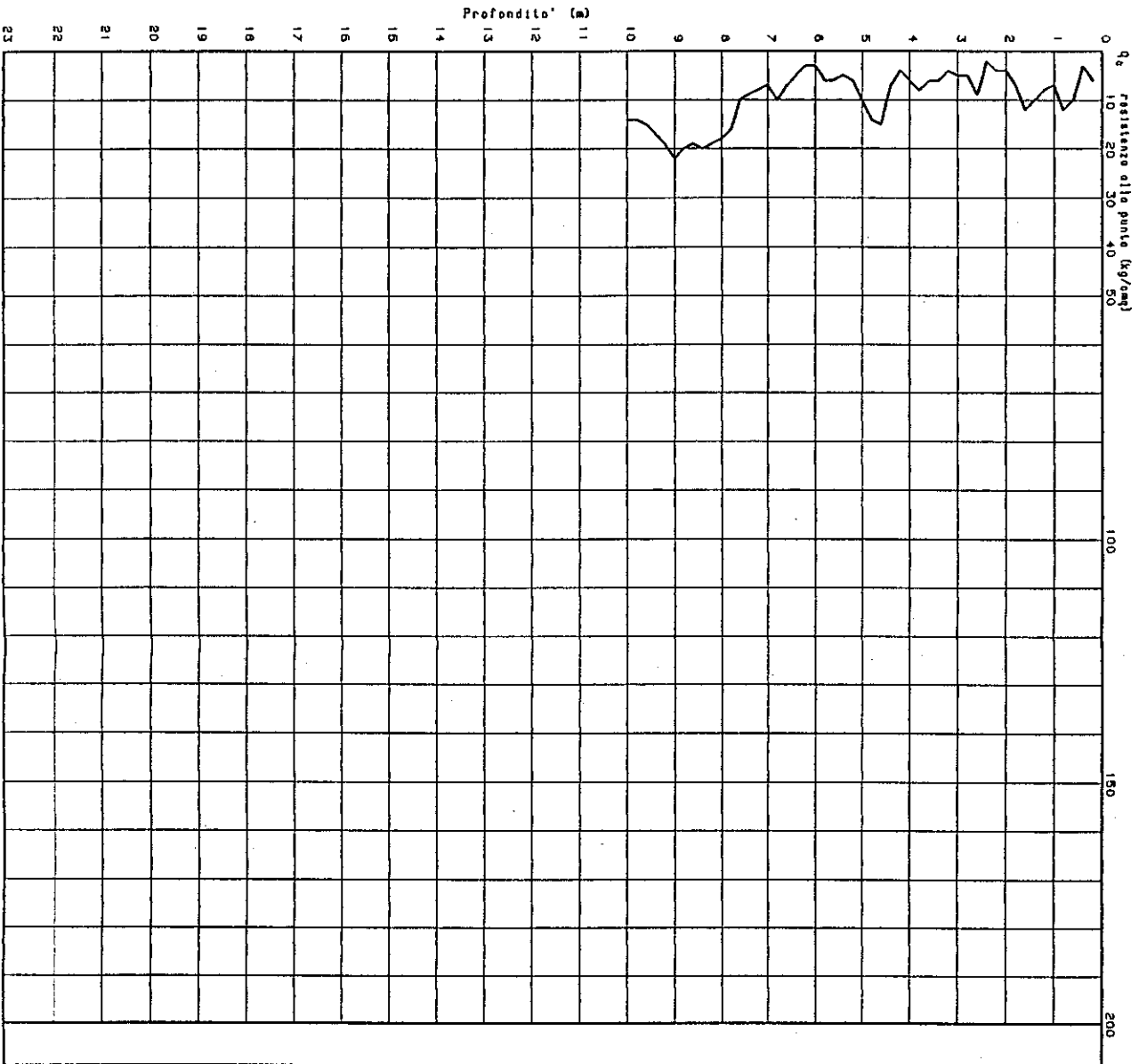
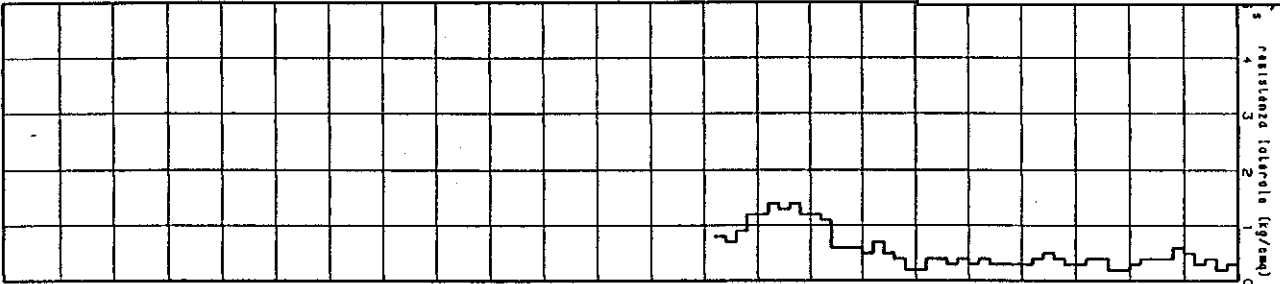
Committente: Geom. Gavino

Località: Castello d'Argile (BO) via Europa Unità

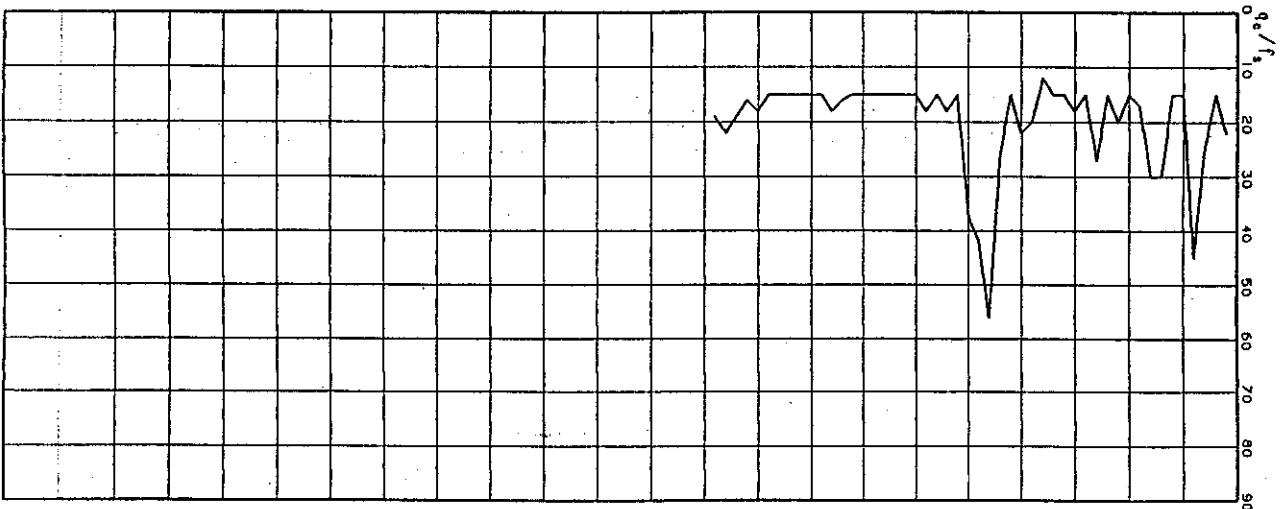
CPT (CONE PENETRATION TEST) N.5

N. Certificato: 02166005

Data: 17/05/2002



Livello acqua da p.o.: foro chiuso a -1.00 m



Profondità (m)	Colonna stratigr.	Descrizione stratigrafica	Folde	Campioni		Pocket penetrometer (kg/cm²)	Torvane (kg/cm²)	S.P.T.		Piezometro (m)	Schema
				Profondità (m)	n. Tipo			Profondità (m)	N.		
0.40		Terreno pedogenizzato.									
		Atterramento di sabbie limose e/o argillose di colore grigio marrone; - terreno a consistenza da siccità a medio siccità ed umidità elevata.									
1.60		Sabbia limosa e/o viscosa di colore grigiastro; - terreno a consistenza molto siccità, in totale saturazione idrica.									
4.50		Sabbia variabilmente limosa di colore grigio; - terreno ad addensamento siccità, siccità.									
5.00											
2_car/rep/CS1			Profondità acqua da p.e.: -1.20 m								

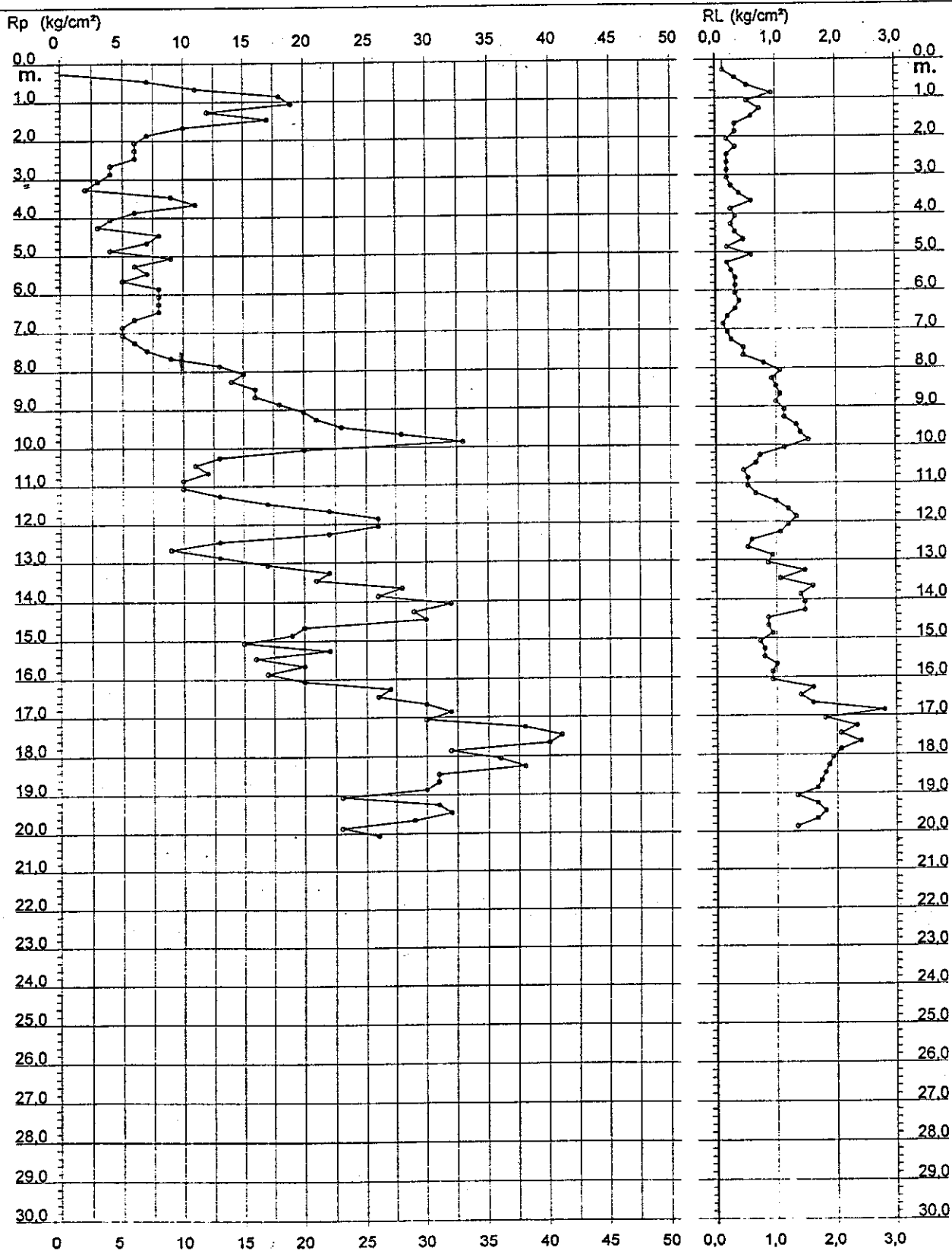
PROVA PENETROMETRICA STATICA DIAGRAMMA DI RESISTENZA

CPT 1

2.010496-001

- committente : POPPI ELETTROSTAMPERIE - Castello d'Argile
 - lavoro : Indagini Dr. Taddia
 - località : Pieve di Cento
 - note : Falda non rilevata - foro chiuso a mt 1.00

- data : 10/04/2000
 - quota inizio : p.c.
 - prof. falda : Falda non rilevata
 - scala vert.: 1 : 150



PROVA PENETROMETRICA STATICA

CPT 1

LETTURE DI CAMPAGNA / VALORI DI RESISTENZA

2.010496-001

- committente : POPPI ELETTROSTAMPERIE - Castello d'Argile
 - lavoro : Indagini Dr. Taddia
 - località : Pieve di Cento
 - note : Falda non rilevata - foro chiuso a mt 1.00

- data : 10/04/2000
 - quota inizio : p.c.
 - prof. falda : Falda non rilevata
 - pagina : 1

prf	LP	LL	Rp	RL	Rp/RI	prf	LP	LL	Rp	RL	Rp/RI
m	Kg/cm ²	Kg/cm ²	Kg/cm ²	Kg/cm ²	-	m	Kg/cm ²	Kg/cm ²	Kg/cm ²	Kg/cm ²	-
0,20	---	---	---	0,13	---	10,20	13,0	30,0	13,0	0,73	18,0
0,40	7,0	9,0	7,0	0,33	21,0	10,40	11,0	22,0	11,0	0,67	16,0
0,60	11,0	16,0	11,0	0,53	21,0	10,60	12,0	22,0	12,0	0,47	26,0
0,80	18,0	26,0	18,0	0,93	19,0	10,80	10,0	17,0	10,0	0,53	19,0
1,00	19,0	33,0	19,0	0,53	36,0	11,00	10,0	18,0	10,0	0,53	19,0
1,20	12,0	20,0	12,0	0,73	16,0	11,20	13,0	21,0	13,0	0,67	19,0
1,40	17,0	28,0	17,0	0,60	28,0	11,40	17,0	27,0	17,0	1,00	17,0
1,60	10,0	19,0	10,0	0,33	30,0	11,60	22,0	37,0	22,0	1,20	18,0
1,80	7,0	12,0	7,0	0,33	21,0	11,80	26,0	44,0	26,0	1,33	19,0
2,00	6,0	11,0	6,0	0,20	30,0	12,00	26,0	46,0	26,0	1,20	22,0
2,20	6,0	9,0	6,0	0,33	18,0	12,20	22,0	40,0	22,0	1,07	21,0
2,40	6,0	11,0	6,0	0,20	30,0	12,40	13,0	29,0	13,0	0,60	22,0
2,60	4,0	7,0	4,0	0,20	20,0	12,60	9,0	18,0	9,0	0,53	17,0
2,80	4,0	7,0	4,0	0,20	20,0	12,80	13,0	21,0	13,0	0,93	14,0
3,00	3,0	6,0	3,0	0,20	15,0	13,00	17,0	31,0	17,0	0,87	20,0
3,20	2,0	5,0	2,0	0,27	7,0	13,20	22,0	35,0	22,0	1,47	15,0
3,40	9,0	13,0	9,0	0,40	22,0	13,40	21,0	43,0	21,0	1,07	20,0
3,60	11,0	17,0	11,0	0,60	18,0	13,60	28,0	44,0	28,0	1,60	17,0
3,80	6,0	15,0	6,0	0,27	22,0	13,80	26,0	50,0	26,0	1,40	19,0
4,00	4,0	8,0	4,0	0,33	12,0	14,00	32,0	53,0	32,0	1,47	22,0
4,20	3,0	8,0	3,0	0,27	11,0	14,20	29,0	51,0	29,0	1,47	20,0
4,40	8,0	12,0	8,0	0,33	24,0	14,40	30,0	52,0	30,0	0,87	35,0
4,60	7,0	12,0	7,0	0,47	15,0	14,60	20,0	33,0	20,0	0,87	23,0
4,80	4,0	11,0	4,0	0,20	20,0	14,80	19,0	32,0	19,0	0,93	20,0
5,00	9,0	12,0	9,0	0,60	15,0	15,00	15,0	29,0	15,0	0,73	20,0
5,20	6,0	15,0	6,0	0,20	30,0	15,20	22,0	33,0	22,0	0,80	27,0
5,40	7,0	10,0	7,0	0,27	26,0	15,40	16,0	28,0	16,0	0,80	20,0
5,60	5,0	9,0	5,0	0,33	15,0	15,60	20,0	32,0	20,0	1,00	20,0
5,80	8,0	13,0	8,0	0,33	24,0	15,80	17,0	32,0	17,0	0,93	18,0
6,00	8,0	13,0	8,0	0,33	24,0	16,00	20,0	34,0	20,0	0,93	21,0
6,20	8,0	13,0	8,0	0,40	20,0	16,20	27,0	41,0	27,0	1,60	17,0
6,40	8,0	14,0	8,0	0,33	24,0	16,40	26,0	50,0	26,0	1,40	19,0
6,60	6,0	11,0	6,0	0,20	30,0	16,60	30,0	51,0	30,0	1,60	19,0
6,80	5,0	8,0	5,0	0,13	37,0	16,80	32,0	56,0	32,0	2,80	11,0
7,00	5,0	7,0	5,0	0,20	25,0	17,00	30,0	72,0	30,0	1,80	17,0
7,20	6,0	9,0	6,0	0,27	22,0	17,20	38,0	65,0	38,0	2,33	16,0
7,40	7,0	11,0	7,0	0,47	15,0	17,40	41,0	76,0	41,0	2,07	20,0
7,60	9,0	16,0	9,0	0,47	19,0	17,60	40,0	71,0	40,0	2,40	17,0
7,80	13,0	20,0	13,0	0,80	16,0	17,80	32,0	68,0	32,0	2,07	15,0
8,00	15,0	27,0	15,0	1,07	14,0	18,00	36,0	67,0	36,0	1,93	19,0
8,20	14,0	30,0	14,0	0,93	15,0	18,20	38,0	67,0	38,0	1,87	20,0
8,40	16,0	30,0	16,0	1,00	16,0	18,40	31,0	59,0	31,0	1,80	17,0
8,60	16,0	31,0	16,0	1,07	15,0	18,60	31,0	58,0	31,0	1,73	18,0
8,80	18,0	34,0	18,0	1,00	18,0	18,80	30,0	56,0	30,0	1,67	18,0
9,00	20,0	35,0	20,0	1,13	18,0	19,00	23,0	48,0	23,0	1,33	17,0
9,20	21,0	38,0	21,0	1,13	19,0	19,20	31,0	51,0	31,0	1,67	19,0
9,40	23,0	40,0	23,0	1,33	17,0	19,40	32,0	57,0	32,0	1,80	18,0
9,60	28,0	48,0	28,0	1,40	20,0	19,60	29,0	56,0	29,0	1,67	17,0
9,80	33,0	54,0	33,0	1,53	22,0	19,80	23,0	48,0	23,0	1,33	17,0
10,00	20,0	43,0	20,0	1,13	18,0	20,00	26,0	46,0	26,0	---	---

- PENETROMETRO STATICO tipo GOUDA da 20 t - (con anello allargatore) -
- COSTANTE DI TRASFORMAZIONE $C_t = 10$ - Velocità Avanzamento punta 2 cm/s
- punta meccanica tipo Begemann $\phi = 35.7$ mm (area punta 10 cm² - apertura 60°)
- manicotto laterale (superficie 150 cm²)

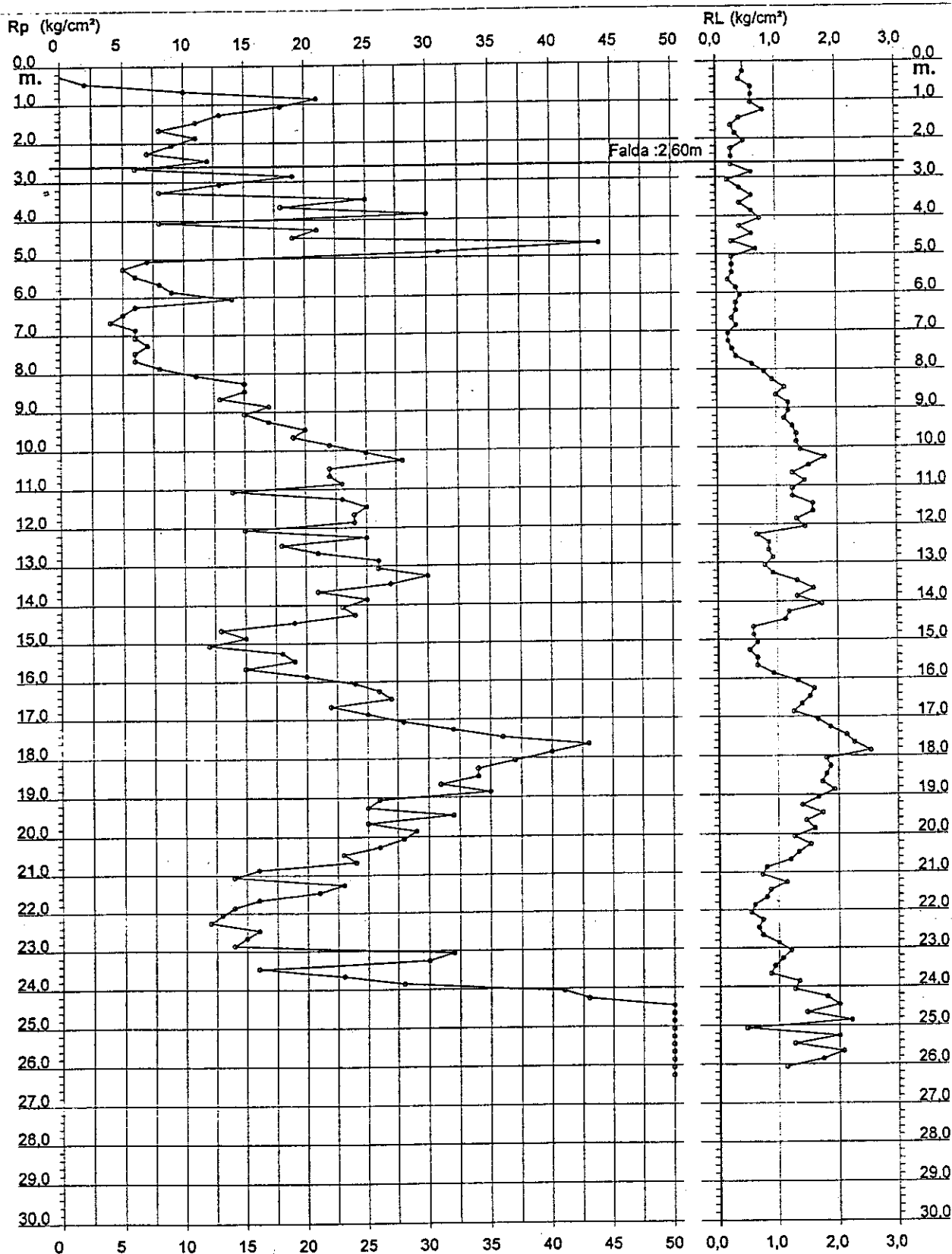
PROVA PENETROMETRICA STATICA **DIAGRAMMA DI RESISTENZA**

CPT 2

P2.010496-001

- committente : POPPI ELETTROSTAMPERIE - Castello d'Argile
 - lavoro : Indagini Dr. Taddia
 - località : Pieve di Cento

- data : 10/04/2000
 - quota inizio : p.c.
 - prof. falda : 2,60 m da quota inizio
 - scala vert.: 1 : 150



PROVA PENETROMETRICA STATICA LETTURE DI CAMPAGNA / VALORI DI RESISTENZA

CPT 2

2.016496-001

- committente : POPPI ELETTROSTAMPERIE - Castello d'Argile
 - lavoro : Indagini Dr. Taddia
 - località : Pieve di Cento
 - note :

- data : 10/04/2000
 - quota inizio : p.c.
 - prof. falda : 2,60 m da quota inizio
 - pagina : 1

prf	LP	LL	Rp	RL	Rp/RI	prf	LP	LL	Rp	RL	Rp/RI
m	Kg/cm²	Kg/cm²	Kg/cm²	Kg/cm²	-	m	Kg/cm²	Kg/cm²	Kg/cm²	Kg/cm²	-
0,20	---	---	---	0,47	---	10,20	28,0	49,0	28,0	1,80	16,0
0,40	2,0	9,0	2,0	0,40	5,0	10,40	22,0	49,0	22,0	1,53	14,0
0,60	10,0	16,0	10,0	0,60	17,0	10,60	22,0	45,0	22,0	1,27	17,0
0,80	21,0	30,0	21,0	0,60	35,0	10,80	23,0	42,0	23,0	1,47	16,0
1,00	18,0	27,0	18,0	0,60	30,0	11,00	14,0	36,0	14,0	1,27	11,0
1,20	13,0	22,0	13,0	0,80	16,0	11,20	23,0	42,0	23,0	1,27	18,0
1,40	11,0	23,0	11,0	0,40	27,0	11,40	25,0	44,0	25,0	1,60	16,0
1,60	8,0	14,0	8,0	0,27	30,0	11,60	24,0	48,0	24,0	1,60	15,0
1,80	11,0	15,0	11,0	0,33	33,0	11,80	24,0	48,0	24,0	1,33	18,0
2,00	9,0	14,0	9,0	0,47	19,0	12,00	15,0	35,0	15,0	1,47	10,0
2,20	7,0	14,0	7,0	0,27	26,0	12,20	25,0	47,0	25,0	0,67	37,0
2,40	12,0	16,0	12,0	0,27	45,0	12,40	18,0	28,0	18,0	0,87	21,0
2,60	6,0	10,0	6,0	0,27	22,0	12,60	21,0	34,0	21,0	0,87	24,0
2,80	19,0	23,0	19,0	0,60	32,0	12,80	26,0	39,0	26,0	0,93	28,0
3,00	13,0	22,0	13,0	0,20	65,0	13,00	26,0	40,0	26,0	0,80	32,0
3,20	8,0	11,0	8,0	0,40	20,0	13,20	30,0	42,0	30,0	0,93	32,0
3,40	25,0	31,0	25,0	0,60	42,0	13,40	27,0	41,0	27,0	1,33	20,0
3,60	18,0	27,0	18,0	0,40	45,0	13,60	21,0	41,0	21,0	1,60	13,0
3,80	30,0	36,0	30,0	0,60	50,0	13,80	25,0	49,0	25,0	1,33	19,0
4,00	8,0	17,0	8,0	0,73	11,0	14,00	23,0	43,0	23,0	1,73	13,0
4,20	21,0	32,0	21,0	0,40	52,0	14,20	24,0	50,0	24,0	1,20	20,0
4,40	19,0	25,0	19,0	0,60	32,0	14,40	19,0	37,0	19,0	1,13	17,0
4,60	44,0	53,0	44,0	0,27	165,0	14,60	13,0	30,0	13,0	0,60	22,0
4,80	31,0	35,0	31,0	0,67	46,0	14,80	15,0	24,0	15,0	0,60	25,0
5,00	7,0	17,0	7,0	0,27	26,0	15,00	12,0	21,0	12,0	0,67	18,0
5,20	5,0	9,0	5,0	0,27	19,0	15,20	18,0	28,0	18,0	0,53	34,0
5,40	6,0	10,0	6,0	0,27	22,0	15,40	19,0	27,0	19,0	0,67	28,0
5,60	8,0	12,0	8,0	0,20	40,0	15,60	15,0	25,0	15,0	0,67	22,0
5,80	9,0	12,0	9,0	0,33	27,0	15,80	20,0	30,0	20,0	0,93	21,0
6,00	14,0	19,0	14,0	0,40	35,0	16,00	24,0	38,0	24,0	1,33	18,0
6,20	6,0	12,0	6,0	0,33	18,0	16,20	26,0	46,0	26,0	1,60	16,0
6,40	5,0	10,0	5,0	0,33	15,0	16,40	27,0	51,0	27,0	1,53	18,0
6,60	4,0	9,0	4,0	0,27	15,0	16,60	22,0	45,0	22,0	1,40	16,0
6,80	6,0	10,0	6,0	0,33	18,0	16,80	25,0	46,0	25,0	1,27	20,0
7,00	6,0	11,0	6,0	0,20	30,0	17,00	28,0	47,0	28,0	1,67	17,0
7,20	7,0	10,0	7,0	0,20	35,0	17,20	32,0	57,0	32,0	1,87	17,0
7,40	6,0	9,0	6,0	0,27	22,0	17,40	36,0	64,0	36,0	2,13	17,0
7,60	6,0	10,0	6,0	0,33	18,0	17,60	43,0	75,0	43,0	2,27	19,0
7,80	8,0	13,0	8,0	0,60	13,0	17,80	40,0	74,0	40,0	2,53	16,0
8,00	11,0	20,0	11,0	0,80	14,0	18,00	37,0	75,0	37,0	1,80	21,0
8,20	15,0	27,0	15,0	0,93	16,0	18,20	34,0	61,0	34,0	1,87	18,0
8,40	15,0	29,0	15,0	1,13	13,0	18,40	34,0	62,0	34,0	1,80	19,0
8,60	13,0	30,0	13,0	1,00	13,0	18,60	31,0	58,0	31,0	1,73	18,0
8,80	17,0	32,0	17,0	1,20	14,0	18,80	35,0	61,0	35,0	1,93	18,0
9,00	15,0	33,0	15,0	1,20	12,0	19,00	26,0	55,0	26,0	1,67	16,0
9,20	17,0	35,0	17,0	1,13	15,0	19,20	25,0	50,0	25,0	1,40	18,0
9,40	20,0	37,0	20,0	1,27	16,0	19,40	32,0	53,0	32,0	1,73	18,0
9,60	19,0	38,0	19,0	1,33	14,0	19,60	25,0	51,0	25,0	1,47	17,0
9,80	22,0	42,0	22,0	1,33	16,0	19,80	29,0	51,0	29,0	1,60	18,0
10,00	25,0	45,0	25,0	1,40	18,0	20,00	28,0	52,0	28,0	1,27	22,0

- PENETROMETRO STATICO tipo GOUDA da 20 t - (con anello allargatore) -
 - COSTANTE DI TRASFORMAZIONE Ct = 10 - Velocità Avanzamento punta 2 cm/s
 - punta meccanica tipo Begemann $\phi = 35.7$ mm (area punta 10 cm² - apertura 60°)
 - manicotto laterale (superficie 150 cm²)

PROVA PENETROMETRICA STATICA

CPT 2

LETTURE DI CAMPAGNA / VALORI DI RESISTENZA

2.010496-001

- committente : POPPI ELETTROSTAMPERIE - Castello d'Argile
 - lavoro : Indagini Dr. Taddia
 - località : Pieve di Cento
 - note :

- data : 10/04/2000
 - quota inizio : p.c.
 - prof. falda : 2,60 m da quota inizio
 - pagina : 2

prf	LP	LL	Rp	RL	Rp/RI	prf	LP	LL	Rp	RL	Rp/RI
m	Kg/cm ²	Kg/cm ²	Kg/cm ²	Kg/cm ²	-	m	Kg/cm ²	Kg/cm ²	Kg/cm ²	Kg/cm ²	-
20,20	26,0	45,0	26,0	1,53	17,0	23,40	16,0	32,0	16,0	0,93	17,0
20,40	23,0	46,0	23,0	1,33	17,0	23,60	23,0	37,0	23,0	0,87	27,0
20,60	24,0	44,0	24,0	1,20	20,0	23,80	28,0	41,0	28,0	1,33	21,0
20,80	16,0	34,0	16,0	0,80	20,0	24,00	41,0	61,0	41,0	1,27	32,0
21,00	14,0	26,0	14,0	0,73	19,0	24,20	43,0	62,0	43,0	1,80	24,0
21,20	23,0	34,0	23,0	1,13	20,0	24,40	97,0	124,0	97,0	2,00	48,0
21,40	21,0	38,0	21,0	0,87	24,0	24,60	85,0	115,0	85,0	1,47	58,0
21,60	16,0	29,0	16,0	0,80	20,0	24,80	79,0	101,0	79,0	2,20	36,0
21,80	14,0	26,0	14,0	0,60	23,0	25,00	103,0	136,0	103,0	0,47	221,0
22,00	13,0	22,0	13,0	0,53	24,0	25,20	135,0	142,0	135,0	2,00	68,0
22,20	12,0	20,0	12,0	0,73	16,0	25,40	115,0	145,0	115,0	1,27	91,0
22,40	16,0	27,0	16,0	0,67	24,0	25,60	108,0	127,0	108,0	2,07	52,0
22,60	15,0	25,0	15,0	0,73	20,0	25,80	80,0	111,0	80,0	1,73	46,0
22,80	14,0	25,0	14,0	1,00	14,0	26,00	110,0	136,0	110,0	1,13	97,0
23,00	32,0	47,0	32,0	1,20	27,0	26,20	150,0	167,0	150,0	---	---
23,20	30,0	48,0	30,0	1,07	28,0						

- PENETROMETRO STATICO tipo GOUDA da 20 t - (con anello allargatore) -
- COSTANTE DI TRASFORMAZIONE Ct = 10 - Velocità Avanzamento punta 2 cm/s
- punta meccanica tipo Begemann $\phi = 35.7$ mm (area punta 10 cm² - apertura 60°)
- manicotto laterale (superficie 150 cm²)

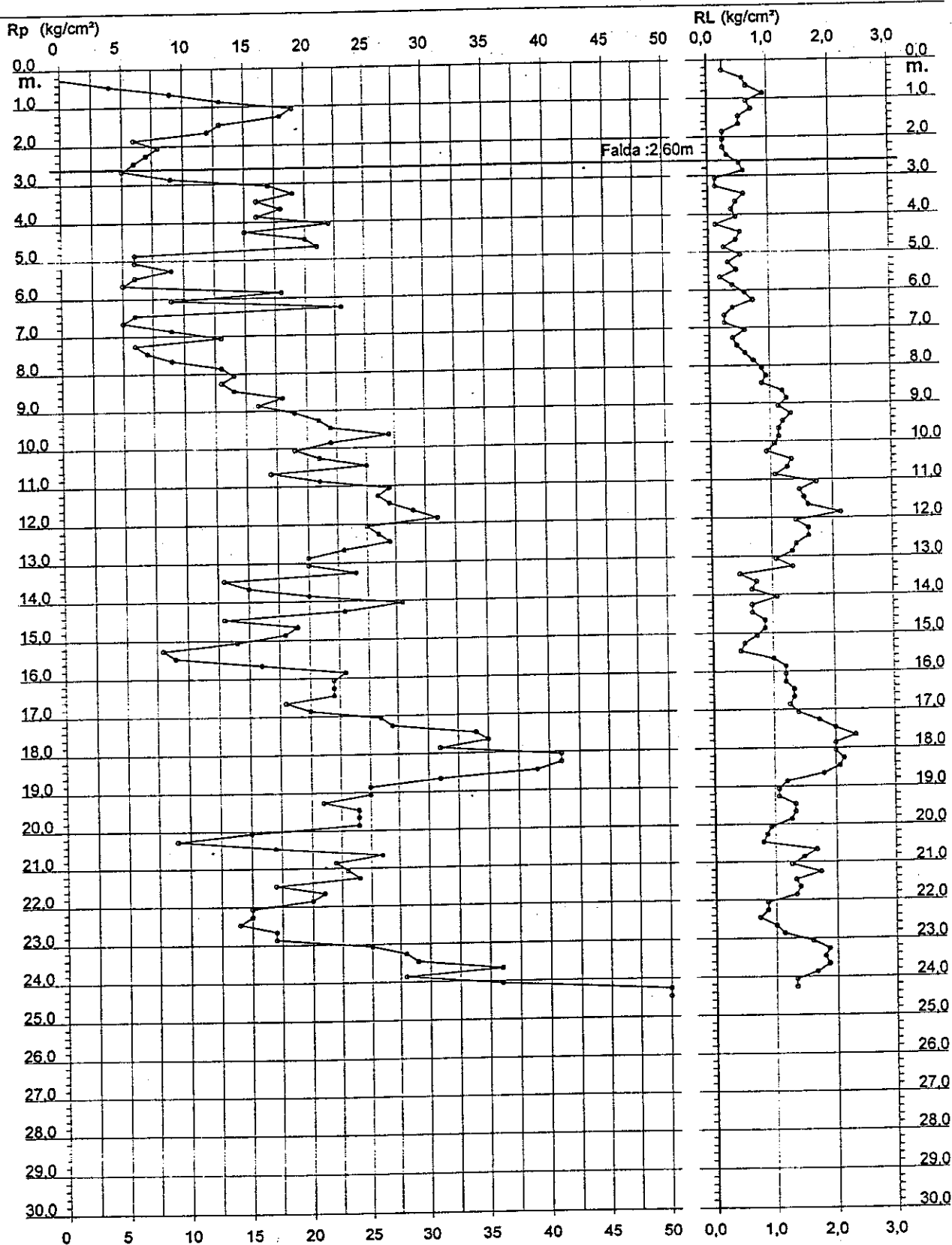
PROVA PENETROMETRICA STATICA DIAGRAMMA DI RESISTENZA

CPT 3

2010496-001

- committente : POPPI ELETTROSTAMPERIE - Castello d'Argile
 - lavoro : Indagini Dr. Taddia
 - località : Pieve di Cento

- data : 10/04/2000
 - quota inizio : p.c.
 - prof. falda : 2,60 m da quota inizio
 - scala vert.: 1 : 150



PROVA PENETROMETRICA STATICA **LETTURE DI CAMPAGNA / VALORI DI RESISTENZA**

CPT 3

2.010496-001

- committente : POPPI ELETTROSTAMPERIE - Castello d'Argile
 - lavoro : Indagini Dr. Taddia
 - località : Pieve di Cento
 - note :

- data : 10/04/2000
 - quota inizio : p.c.
 - prof. falda : 2,60 m da quota inizio
 - pagina : 1

prf	LP	LL	Rp	RL	Rp/RI	prf	LP	LL	Rp	RL	Rp/RI
m	Kg/cm ²	Kg/cm ²	Kg/cm ²	Kg/cm ²	-	m	Kg/cm ²	Kg/cm ²	Kg/cm ²	Kg/cm ²	-
0,20	---	---	---	0,27	---	10,20	21,0	37,0	21,0	0,93	22,0
0,40	4,0	8,0	4,0	0,60	7,0	10,40	25,0	39,0	25,0	1,33	19,0
0,60	9,0	18,0	9,0	0,67	13,0	10,60	17,0	37,0	17,0	1,27	13,0
0,80	13,0	23,0	13,0	0,93	14,0	10,80	21,0	40,0	21,0	1,07	20,0
1,00	19,0	33,0	19,0	0,67	28,0	11,00	27,0	43,0	27,0	1,73	16,0
1,20	18,0	28,0	18,0	0,73	25,0	11,20	26,0	52,0	26,0	1,47	18,0
1,40	13,0	24,0	13,0	0,53	24,0	11,40	27,0	49,0	27,0	1,53	18,0
1,60	12,0	20,0	12,0	0,53	22,0	11,60	29,0	52,0	29,0	1,60	18,0
1,80	6,0	14,0	6,0	0,27	22,0	11,80	31,0	55,0	31,0	2,13	15,0
2,00	8,0	12,0	8,0	0,27	30,0	12,00	25,0	57,0	25,0	1,40	18,0
2,20	7,0	11,0	7,0	0,27	26,0	12,20	26,0	47,0	26,0	1,60	16,0
2,40	6,0	10,0	6,0	0,33	18,0	12,40	27,0	51,0	27,0	1,60	17,0
2,60	5,0	10,0	5,0	0,53	9,0	12,60	23,0	47,0	23,0	1,40	16,0
2,80	9,0	17,0	9,0	0,60	15,0	12,80	20,0	41,0	20,0	1,33	15,0
3,00	17,0	26,0	17,0	0,13	127,0	13,00	20,0	40,0	20,0	1,07	19,0
3,20	19,0	21,0	19,0	0,13	142,0	13,20	24,0	40,0	24,0	1,33	18,0
3,40	16,0	18,0	16,0	0,60	27,0	13,40	13,0	33,0	13,0	0,47	28,0
3,60	18,0	27,0	18,0	0,47	39,0	13,60	15,0	22,0	15,0	0,73	20,0
3,80	16,0	23,0	16,0	0,40	40,0	13,80	20,0	31,0	20,0	0,67	30,0
4,00	22,0	28,0	22,0	0,47	47,0	14,00	28,0	38,0	28,0	1,07	26,0
4,20	15,0	22,0	15,0	0,13	112,0	14,20	23,0	39,0	23,0	0,67	34,0
4,40	20,0	22,0	20,0	0,53	37,0	14,40	13,0	23,0	13,0	0,67	19,0
4,60	21,0	29,0	21,0	0,47	45,0	14,60	19,0	29,0	19,0	0,87	22,0
4,80	6,0	13,0	6,0	0,27	22,0	14,80	18,0	31,0	18,0	0,87	21,0
5,00	6,0	10,0	6,0	0,53	11,0	15,00	14,0	27,0	14,0	0,73	19,0
5,20	9,0	17,0	9,0	0,33	27,0	15,20	8,0	19,0	8,0	0,53	15,0
5,40	6,0	11,0	6,0	0,47	13,0	15,40	9,0	17,0	9,0	0,47	19,0
5,60	5,0	12,0	5,0	0,20	25,0	15,60	16,0	23,0	16,0	1,00	16,0
5,80	18,0	21,0	18,0	0,40	45,0	15,80	23,0	38,0	23,0	1,20	19,0
6,00	9,0	15,0	9,0	0,60	15,0	16,00	22,0	40,0	22,0	1,20	18,0
6,20	23,0	32,0	23,0	0,73	31,0	16,20	22,0	40,0	22,0	1,20	18,0
6,40	6,0	17,0	6,0	0,40	15,0	16,40	22,0	40,0	22,0	1,33	16,0
6,60	5,0	11,0	5,0	0,27	19,0	16,60	18,0	38,0	18,0	1,33	13,0
6,80	9,0	13,0	9,0	0,27	34,0	16,80	20,0	40,0	20,0	1,27	16,0
7,00	13,0	17,0	13,0	0,60	22,0	17,00	26,0	45,0	26,0	1,40	19,0
7,20	6,0	15,0	6,0	0,40	15,0	17,20	27,0	48,0	27,0	1,73	16,0
7,40	7,0	13,0	7,0	0,47	15,0	17,40	34,0	60,0	34,0	2,00	17,0
7,60	9,0	16,0	9,0	0,60	15,0	17,60	35,0	65,0	35,0	2,33	15,0
7,80	13,0	22,0	13,0	0,73	18,0	17,80	31,0	66,0	31,0	2,00	16,0
8,00	14,0	25,0	14,0	0,87	16,0	18,00	41,0	71,0	41,0	2,00	20,0
8,20	13,0	26,0	13,0	0,93	14,0	18,20	41,0	71,0	41,0	2,13	19,0
8,40	14,0	28,0	14,0	0,87	16,0	18,40	39,0	71,0	39,0	2,07	19,0
8,60	18,0	31,0	18,0	1,20	15,0	18,60	31,0	62,0	31,0	1,80	17,0
8,80	16,0	34,0	16,0	1,27	13,0	18,80	25,0	52,0	25,0	1,20	21,0
9,00	19,0	38,0	19,0	1,13	17,0	19,00	25,0	43,0	25,0	1,07	23,0
9,20	21,0	38,0	21,0	1,33	16,0	19,20	21,0	37,0	21,0	1,07	20,0
9,40	22,0	42,0	22,0	1,20	18,0	19,40	24,0	40,0	24,0	1,33	18,0
9,60	27,0	45,0	27,0	1,13	24,0	19,60	24,0	44,0	24,0	1,33	18,0
9,80	22,0	39,0	22,0	1,13	19,0	19,80	24,0	44,0	24,0	1,27	19,0
10,00	19,0	36,0	19,0	1,07	18,0	20,00	15,0	34,0	15,0	0,93	16,0

- PENETROMETRO STATICO tipo GOUDA da 20 t - (con anello allargatore) -
 - COSTANTE DI TRASFORMAZIONE Ct = 10 - Velocità Avanzamento punta 2 cm/s
 - punta meccanica tipo Begemann ϕ = 35,7 mm (area punta 10 cm² - apertura 60°)
 - manicotto laterale (superficie 150 cm²)

PROVA PENETROMETRICA STATICA **LETTURE DI CAMPAGNA / VALORI DI RESISTENZA**

CPT 3

2.010496-001

- committente : POPPI ELETTROSTAMPERIE - Castello d'Argile
 - lavoro : Indagini Dr. Taddia
 - località : Pieve di Cento
 - note :

- data : 10/04/2000
 - quota inizio : p.c.
 - prof. falda : 2,60 m da quota inizio
 - pagina : 2

prf	LP	LL	Rp	RL	Rp/RI	prf	LP	LL	Rp	RL	Rp/RI
m	Kg/cm²	Kg/cm²	Kg/cm²	Kg/cm²	-	m	Kg/cm²	Kg/cm²	Kg/cm²	Kg/cm²	-
20,20	9,0	23,0	9,0	0,87	10,0	22,40	14,0	27,0	14,0	0,73	19,0
20,40	17,0	30,0	17,0	0,80	21,0	22,60	17,0	28,0	17,0	1,00	17,0
20,60	26,0	38,0	26,0	1,67	16,0	22,80	17,0	32,0	17,0	1,13	15,0
20,80	22,0	47,0	22,0	1,47	15,0	23,00	25,0	42,0	25,0	1,60	16,0
21,00	23,0	45,0	23,0	1,27	18,0	23,20	28,0	52,0	28,0	1,87	15,0
21,20	24,0	43,0	24,0	1,73	14,0	23,40	29,0	57,0	29,0	1,80	16,0
21,40	17,0	43,0	17,0	1,33	13,0	23,60	36,0	63,0	36,0	1,87	19,0
21,60	21,0	41,0	21,0	1,40	15,0	23,80	28,0	56,0	28,0	1,67	17,0
21,80	20,0	41,0	20,0	1,33	15,0	24,00	36,0	61,0	36,0	1,33	27,0
22,00	15,0	35,0	15,0	0,87	17,0	24,20	51,0	71,0	51,0	1,33	38,0
22,20	15,0	28,0	15,0	0,87	17,0	24,40	53,0	73,0	53,0	—	—

- PENETROMETRO STATICO tipo GOUDA da 20 t - (con anello allargatore) -
 - COSTANTE DI TRASFORMAZIONE Ct = 10 - Velocità Avanzamento punta 2 cm/s
 - punta meccanica tipo Begemann $\phi = 35.7$ mm (area punta 10 cm² - apertura 60°)
 - manicotto laterale (superficie 150 cm²)

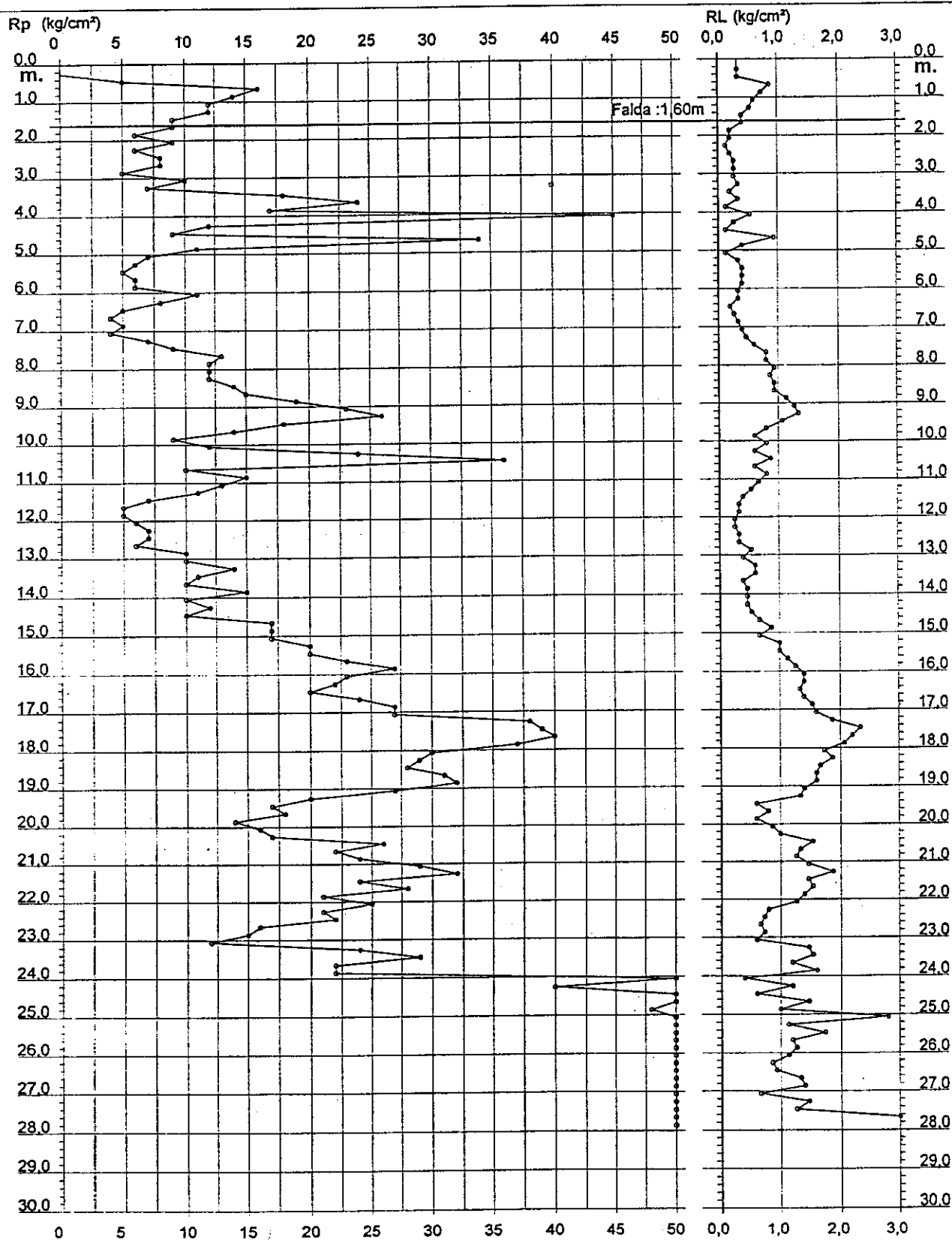
PROVA PENETROMETRICA STATICA **DIAGRAMMA DI RESISTENZA**

CPT 4

2.010496-001

- committente : POPPI ELETTROSTAMPERIE - Castello d'Argile
 - lavoro : Indagini Dr. Taddia
 - località : Pieve di Cento

- data : 10/04/2000
 - quota inizio : p.c.
 - prof. falda : 1,60 m da quota inizio
 - scala vert.: 1 : 150



PROVA PENETROMETRICA STATICA **LETTURE DI CAMPAGNA / VALORI DI RESISTENZA**

CPT 4

2.010496-001

- committente : POPPI ELETTROSTAMPERIE - Castello d'Argile
 - lavoro : Indagini Dr. Taddia
 - località : Pieve di Cento
 - note :

- data : 10/04/2000
 - quota inizio : p.c.
 - prof. falda : 1,60 m da quota inizio
 - pagina : 1

prf	LP	LL	Rp	RL	Rp/RI	prf	LP	LL	Rp	RL	Rp/RI
m	Kg/cm ²	Kg/cm ²	Kg/cm ²	Kg/cm ²	-	m	Kg/cm ²	Kg/cm ²	Kg/cm ²	Kg/cm ²	-
0,20	---	---	---	0,33	---	10,20	24,0	36,0	24,0	0,60	40,0
0,40	5,0	10,0	5,0	0,33	15,0	10,40	36,0	45,0	36,0	0,87	42,0
0,60	16,0	21,0	16,0	0,87	18,0	10,60	10,0	23,0	10,0	0,60	17,0
0,80	14,0	27,0	14,0	0,73	19,0	10,80	15,0	24,0	15,0	0,80	19,0
1,00	12,0	23,0	12,0	0,60	20,0	11,00	13,0	25,0	13,0	0,67	19,0
1,20	12,0	21,0	12,0	0,53	22,0	11,20	11,0	21,0	11,0	0,53	21,0
1,40	9,0	17,0	9,0	0,40	22,0	11,40	7,0	15,0	7,0	0,40	17,0
1,60	9,0	15,0	9,0	0,40	22,0	11,60	5,0	11,0	5,0	0,33	15,0
1,80	6,0	12,0	6,0	0,20	30,0	11,80	5,0	10,0	5,0	0,33	15,0
2,00	9,0	12,0	9,0	0,20	45,0	12,00	6,0	11,0	6,0	0,27	22,0
2,20	6,0	9,0	6,0	0,13	45,0	12,20	7,0	11,0	7,0	0,27	26,0
2,40	8,0	10,0	8,0	0,20	40,0	12,40	7,0	11,0	7,0	0,33	21,0
2,60	8,0	11,0	8,0	0,27	30,0	12,60	6,0	11,0	6,0	0,33	18,0
2,80	5,0	9,0	5,0	0,27	19,0	12,80	10,0	15,0	10,0	0,53	19,0
3,00	10,0	14,0	10,0	0,27	37,0	13,00	10,0	18,0	10,0	0,40	25,0
3,20	7,0	11,0	7,0	0,33	21,0	13,20	14,0	20,0	14,0	0,60	23,0
3,40	18,0	23,0	18,0	0,20	90,0	13,40	11,0	20,0	11,0	0,60	18,0
3,60	24,0	27,0	24,0	0,33	72,0	13,60	10,0	19,0	10,0	0,40	25,0
3,80	17,0	22,0	17,0	0,13	127,0	13,80	15,0	21,0	15,0	0,47	32,0
4,00	45,0	47,0	45,0	0,53	84,0	14,00	10,0	17,0	10,0	0,47	21,0
4,20	12,0	20,0	12,0	0,27	45,0	14,20	12,0	19,0	12,0	0,47	26,0
4,40	9,0	13,0	9,0	0,13	67,0	14,40	10,0	17,0	10,0	0,53	19,0
4,60	34,0	36,0	34,0	0,93	36,0	14,60	17,0	25,0	17,0	0,67	25,0
4,80	11,0	25,0	11,0	0,40	27,0	14,80	17,0	27,0	17,0	0,87	20,0
5,00	7,0	13,0	7,0	0,13	52,0	15,00	17,0	30,0	17,0	0,67	25,0
5,20	6,0	8,0	6,0	0,33	18,0	15,20	20,0	30,0	20,0	1,00	20,0
5,40	5,0	10,0	5,0	0,40	12,0	15,40	20,0	35,0	20,0	1,00	20,0
5,60	6,0	12,0	6,0	0,40	15,0	15,60	23,0	38,0	23,0	1,13	20,0
5,80	6,0	12,0	6,0	0,40	15,0	15,80	27,0	44,0	27,0	1,27	21,0
6,00	11,0	17,0	11,0	0,33	33,0	16,00	23,0	42,0	23,0	1,40	16,0
6,20	8,0	13,0	8,0	0,33	24,0	16,20	22,0	43,0	22,0	1,40	16,0
6,40	5,0	10,0	5,0	0,20	25,0	16,40	20,0	41,0	20,0	1,33	15,0
6,60	4,0	7,0	4,0	0,27	15,0	16,60	24,0	44,0	24,0	1,40	17,0
6,80	5,0	9,0	5,0	0,33	15,0	16,80	27,0	48,0	27,0	1,53	18,0
7,00	4,0	9,0	4,0	0,40	10,0	17,00	27,0	50,0	27,0	1,60	17,0
7,20	7,0	13,0	7,0	0,47	15,0	17,20	38,0	62,0	38,0	1,87	20,0
7,40	9,0	16,0	9,0	0,60	15,0	17,40	39,0	67,0	39,0	2,33	17,0
7,60	13,0	22,0	13,0	0,80	16,0	17,60	40,0	75,0	40,0	2,20	18,0
7,80	12,0	24,0	12,0	0,80	15,0	17,80	37,0	70,0	37,0	2,07	18,0
8,00	12,0	24,0	12,0	0,93	13,0	18,00	30,0	61,0	30,0	1,73	17,0
8,20	12,0	26,0	12,0	0,87	14,0	18,20	29,0	55,0	29,0	1,87	16,0
8,40	14,0	27,0	14,0	0,93	15,0	18,40	28,0	56,0	28,0	1,67	17,0
8,60	15,0	29,0	15,0	0,93	16,0	18,60	31,0	56,0	31,0	1,60	19,0
8,80	19,0	33,0	19,0	1,13	17,0	18,80	32,0	56,0	32,0	1,60	20,0
9,00	23,0	40,0	23,0	1,27	18,0	19,00	27,0	51,0	27,0	1,40	19,0
9,20	26,0	45,0	26,0	1,33	19,0	19,20	20,0	41,0	20,0	1,33	15,0
9,40	18,0	38,0	18,0	1,07	17,0	19,40	17,0	37,0	17,0	0,60	28,0
9,60	14,0	30,0	14,0	0,80	17,0	19,60	18,0	27,0	18,0	0,80	22,0
9,80	9,0	21,0	9,0	0,60	15,0	19,80	14,0	26,0	14,0	0,60	23,0
10,00	12,0	21,0	12,0	0,80	15,0	20,00	16,0	25,0	16,0	0,87	18,0

- PENETROMETRO STATICO tipo GOUDA da 20 t - (con anello allargatore) -
 - COSTANTE DI TRASFORMAZIONE Ct = 10 - Velocità Avanzamento punta 2 cm/s
 - punta meccanica tipo Begemann $\phi = 35.7$ mm (area punta 10 cm² - apertura 60°)
 - manicotto laterale (superficie 150 cm²)

PROVA PENETROMETRICA STATICA **LETTURE DI CAMPAGNA / VALORI DI RESISTENZA**

CPT 4

2.010496-001

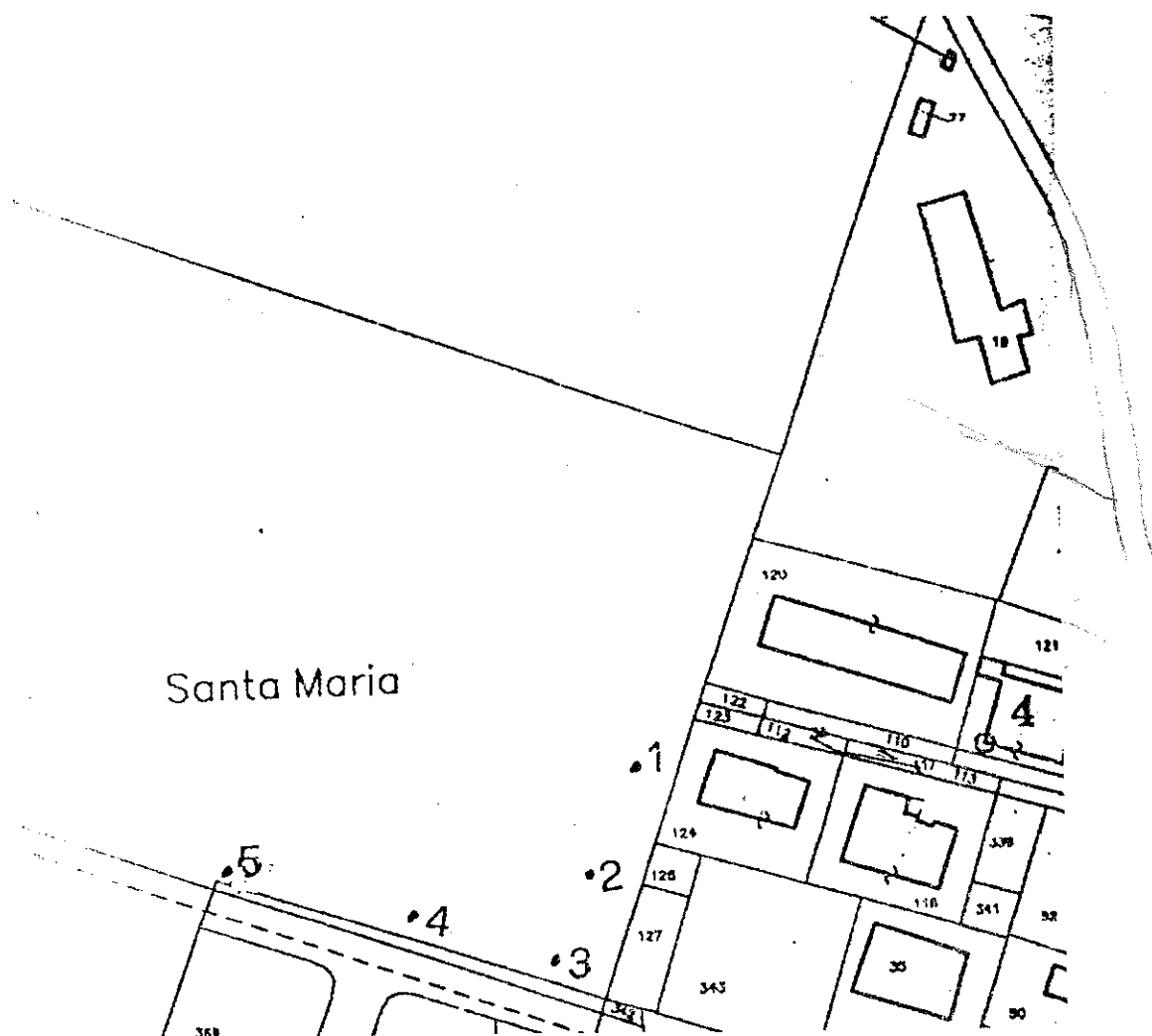
- committente : POPPI ELETTROSTAMPERIE - Castello d'Argile
 - lavoro : Indagini Dr. Taddia
 - località : Pieve di Cento
 - note :

- data : 10/04/2000
 - quota inizio : p.c.
 - prof. falda : 1,60 m da quota inizio
 - pagina : 2

prf m	LP Kg/cm ²	LL Kg/cm ²	Rp Kg/cm ²	RL Kg/cm ²	Rp/RI -	prf m	LP Kg/cm ²	LL Kg/cm ²	Rp Kg/cm ²	RL Kg/cm ²	Rp/RI -
20,20	17,0	30,0	17,0	1,00	17,0	24,20	40,0	46,0	40,0	1,20	33,0
20,40	26,0	41,0	26,0	1,53	17,0	24,40	68,0	86,0	68,0	0,60	113,0
20,60	22,0	45,0	22,0	1,33	16,0	24,60	100,0	109,0	100,0	1,47	68,0
20,80	24,0	44,0	24,0	1,27	19,0	24,80	48,0	70,0	48,0	1,00	48,0
21,00	29,0	48,0	29,0	1,47	20,0	25,00	122,0	137,0	122,0	2,80	44,0
21,20	32,0	54,0	32,0	1,87	17,0	25,20	83,0	125,0	83,0	1,13	73,0
21,40	24,0	52,0	24,0	1,47	16,0	25,40	68,0	85,0	68,0	1,73	39,0
21,60	28,0	50,0	28,0	1,53	18,0	25,60	105,0	131,0	105,0	1,20	87,0
21,80	21,0	44,0	21,0	1,40	15,0	25,80	89,0	107,0	89,0	1,27	70,0
22,00	25,0	46,0	25,0	1,27	20,0	26,00	61,0	80,0	61,0	1,13	54,0
22,20	21,0	40,0	21,0	0,80	26,0	26,20	104,0	121,0	104,0	0,87	120,0
22,40	22,0	34,0	22,0	0,73	30,0	26,40	75,0	88,0	75,0	0,93	80,0
22,60	16,0	27,0	16,0	0,67	24,0	26,60	80,0	94,0	80,0	1,33	60,0
22,80	15,0	25,0	15,0	0,73	20,0	26,80	77,0	97,0	77,0	1,40	55,0
23,00	12,0	23,0	12,0	0,60	20,0	27,00	92,0	113,0	92,0	0,67	138,0
23,20	24,0	33,0	24,0	1,47	16,0	27,20	140,0	150,0	140,0	1,47	95,0
23,40	29,0	51,0	29,0	1,53	19,0	27,40	89,0	111,0	89,0	1,27	70,0
23,60	22,0	45,0	22,0	1,20	18,0	27,60	129,0	148,0	129,0	4,00	32,0
23,80	22,0	40,0	22,0	1,60	14,0	27,80	190,0	250,0	190,0	---	---
24,00	51,0	75,0	51,0	0,40	127,0						

- PENETROMETRO STATICO tipo GOUDA da 20 t - (con anello allargatore) -
 - COSTANTE DI TRASFORMAZIONE Ct = 10 - Velocità Avanzamento punta 2 cm/s
 - punta meccanica tipo Begemann $\phi = 35.7$ mm (area punta 10 cm² - apertura 60°)
 - manicotto laterale (superficie 150 cm²)

UBICAZIONE PROVE PENETROMETRICHE



GEO-PROBE s.n.c. Indagini Geognostiche

GEO-PROBE

40133 BOLOGNA

Via R. Grieco, 7 - Tel. 051/61.45.360

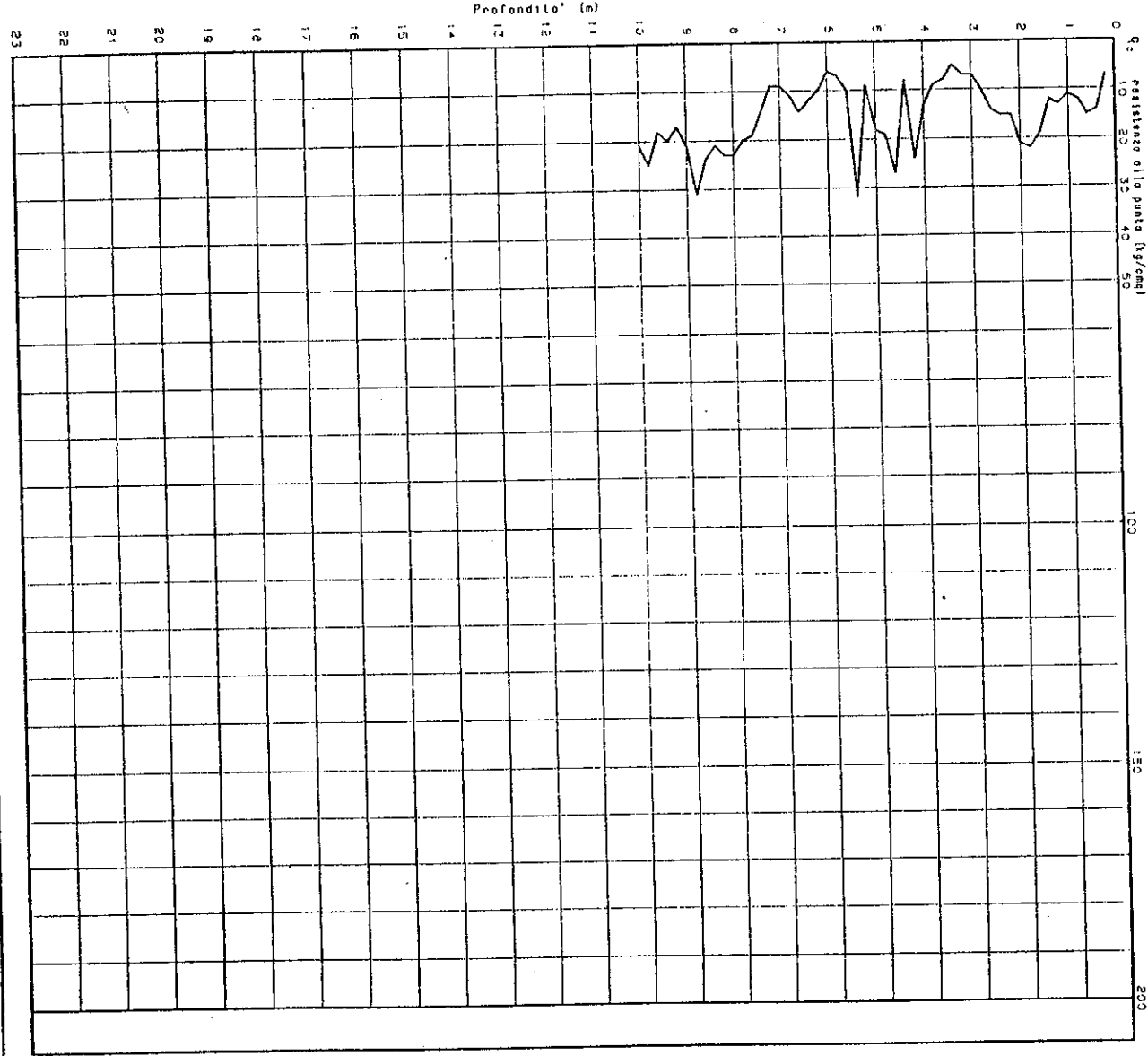
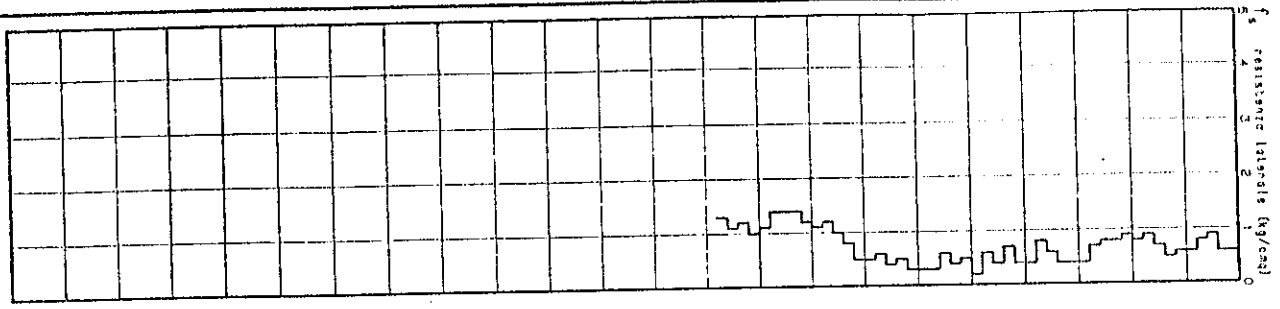
CPT (CONE PENETRATION TEST) N.1

Committente: Edilizia Geom. Zaniboni Otello & c. s.r.l.s.

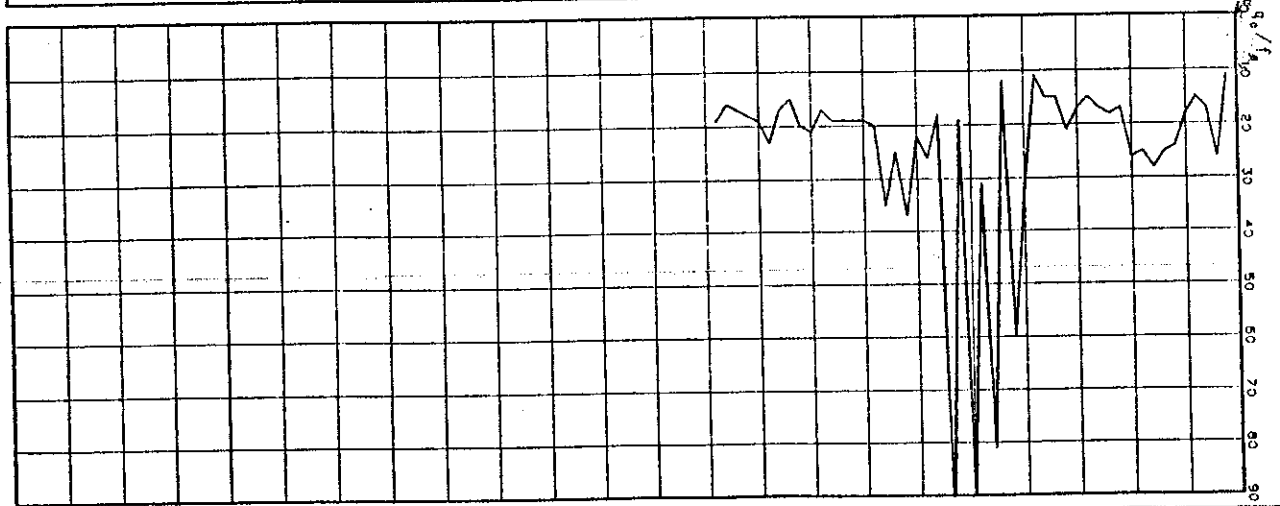
Localita': Castello d'Argile (BO) Moscorino

N. Certificato: 98043001

Data: 27/02/1998



Quota di fondo: -1.80 m



GEO-PROBE

40133 BOLOGNA

Via R. Gracchi, 7 - Tel. 051/51.45.360

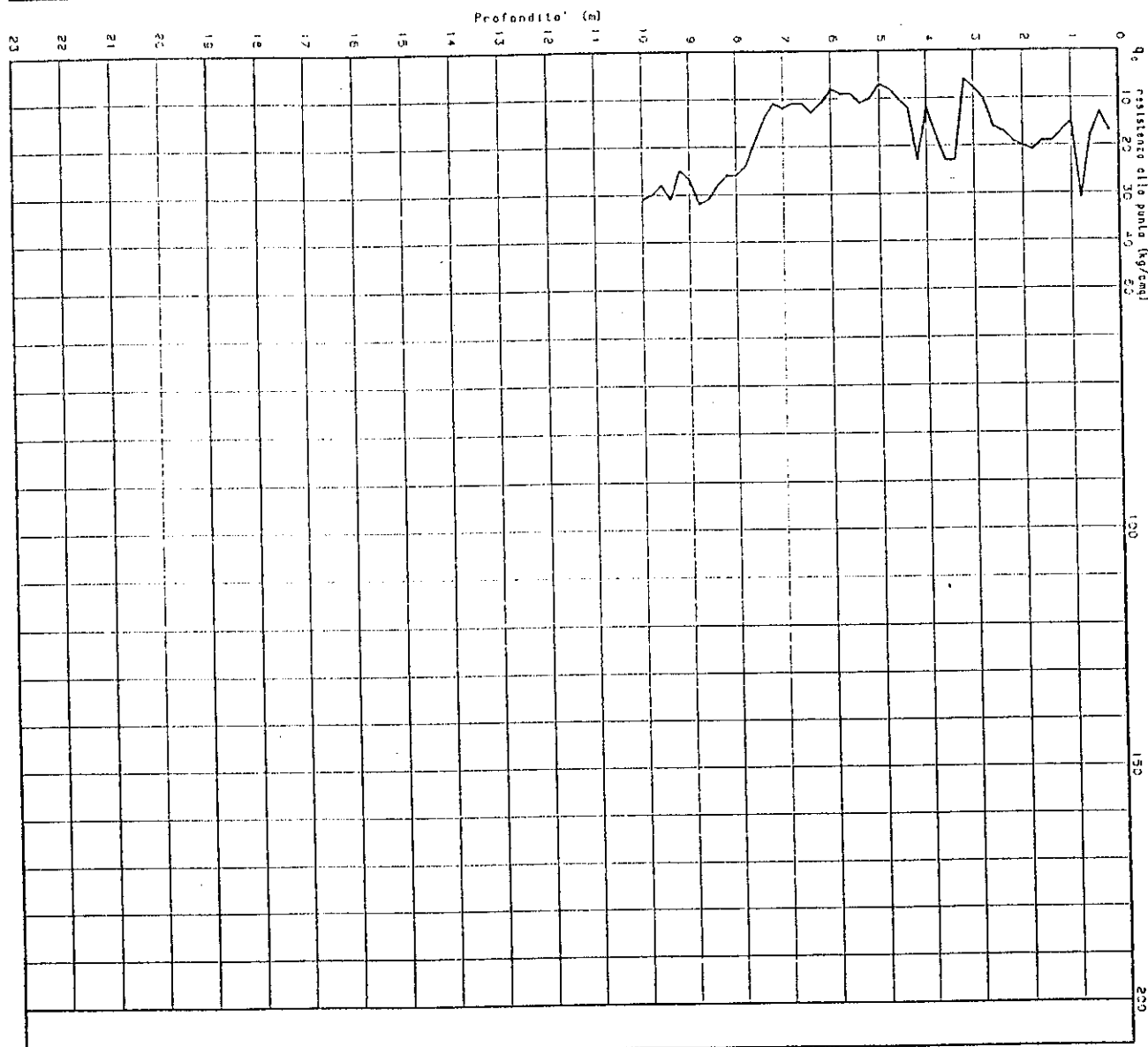
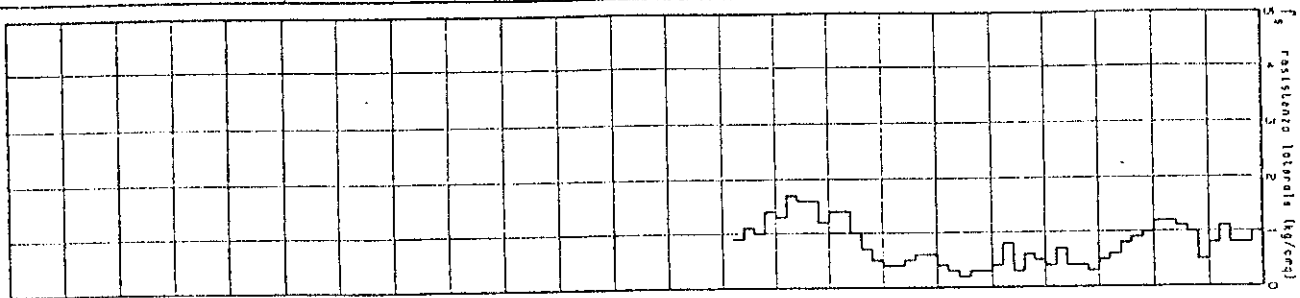
CPT (CONE PENETRATION TEST) N.2

Committente: Edilizio Geom. Zamboni Otello & c. s.r.l.

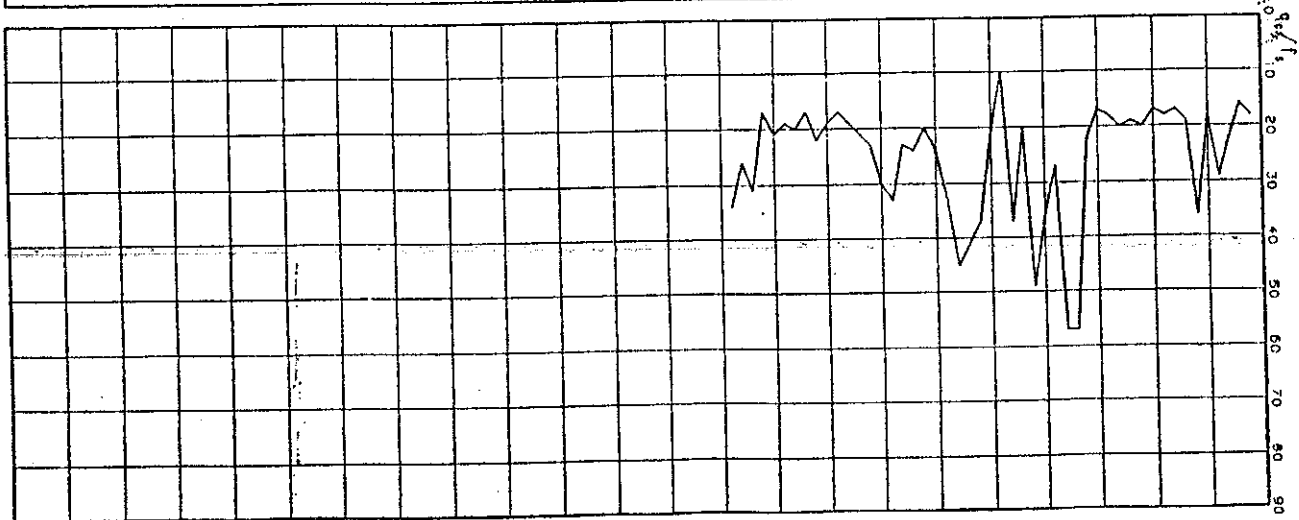
Località: Castello d'Argile (BO) Moscorino

N. Certificato: 98043002

Data: 27/02/1998



Quota di fondo: -1.52 m



GEO-PROBE

40133 BOLOGNA

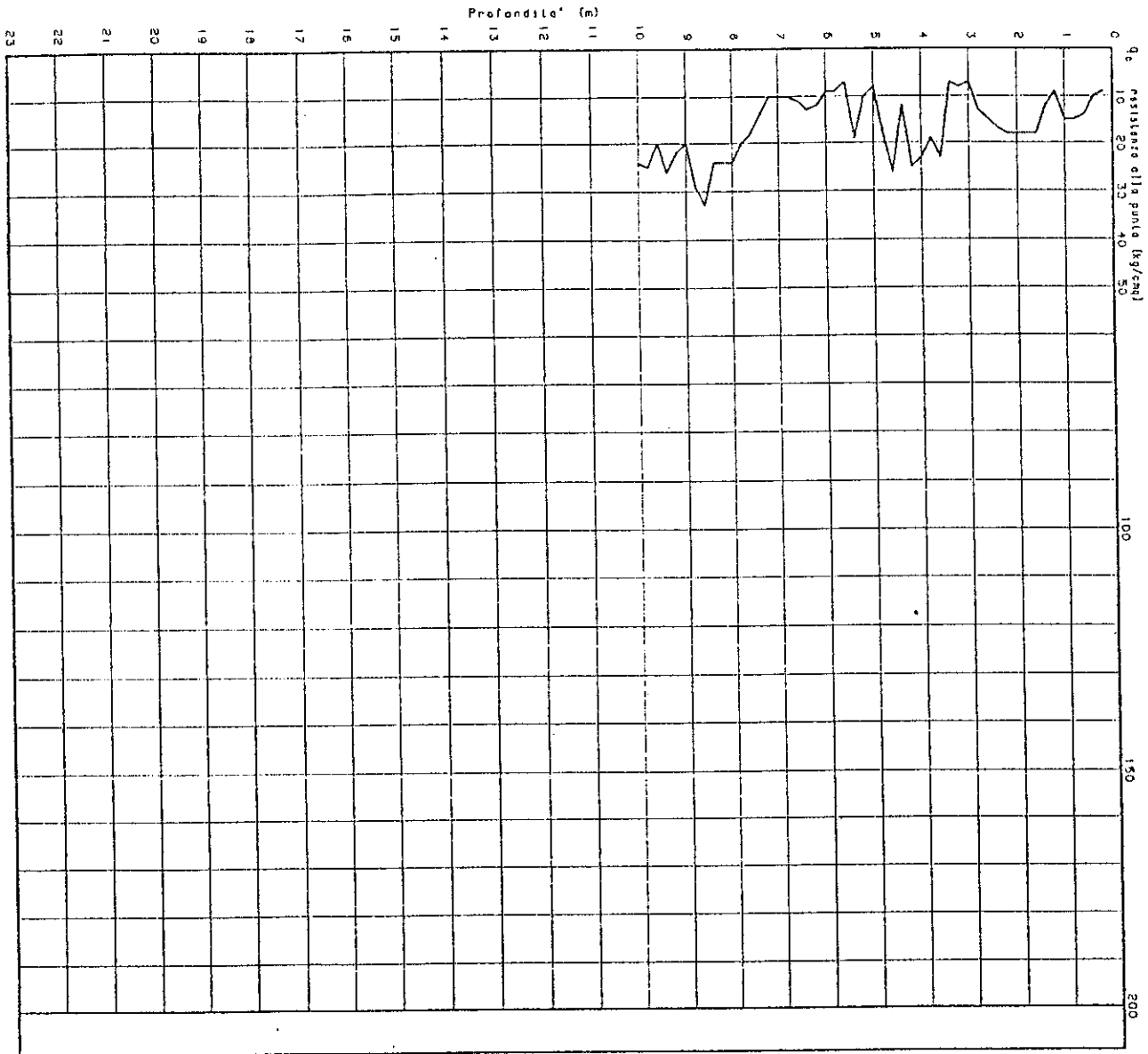
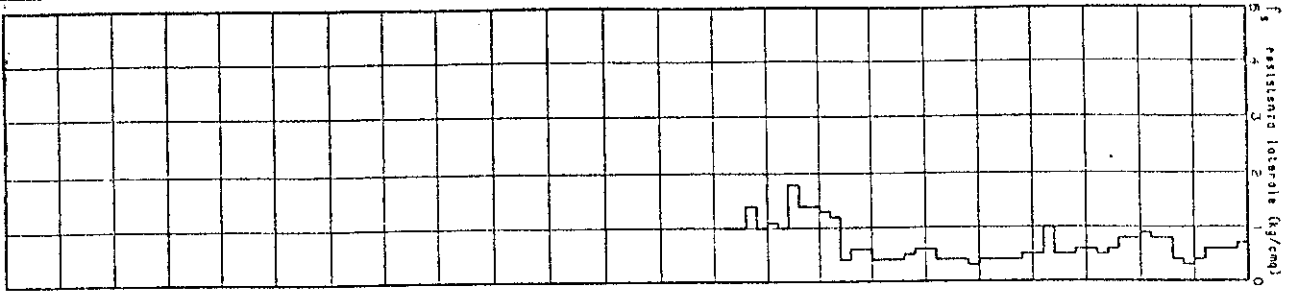
CPT (CONE PENETRATION TEST) N.3

N. Certificato: 98043003

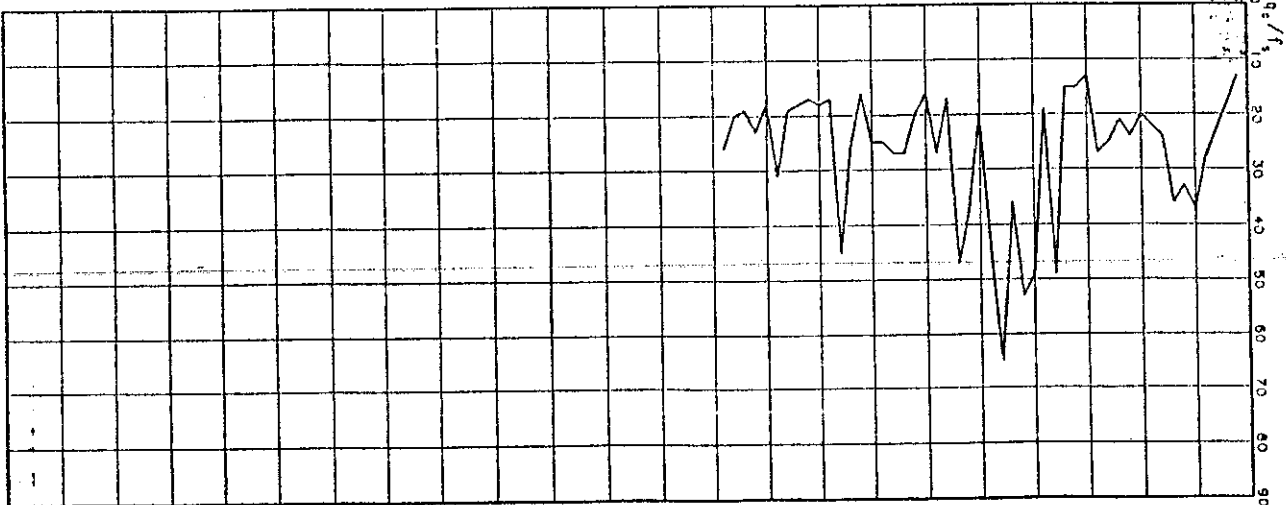
Via P. Grileco, 7 - Tel. 051/61.45.350

Committente: Edilizio Geom. Zamboni Otello & c. s.r.l.
Località: Castello d'Argile (BO) Mascorino

Data: 27/02/1998



Quota di fondo: -1.32 m



GEO-PROBE

40133 BOLOGNA

Via R. Gracchi, 7 - Tel. 051/61.45.360

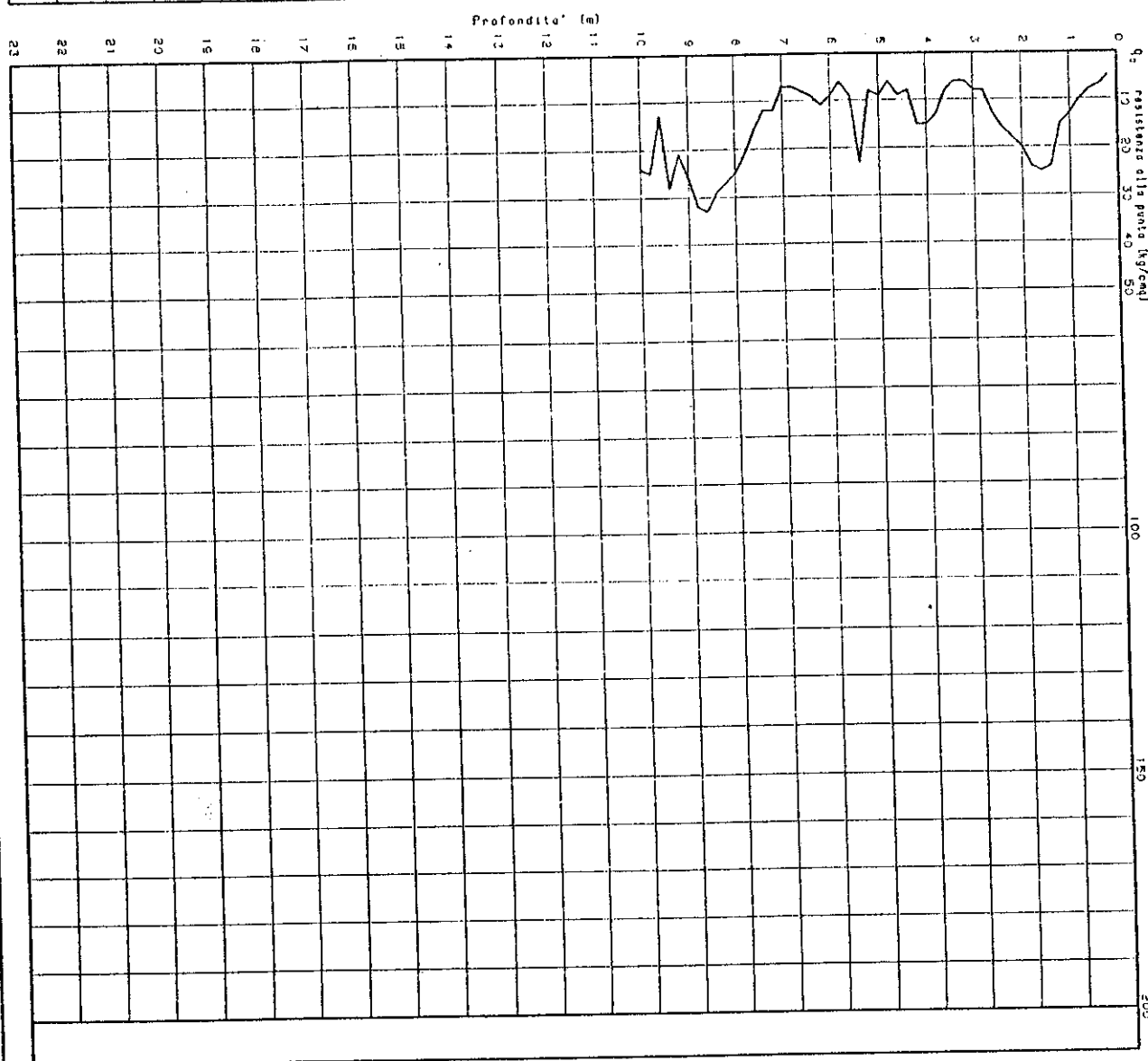
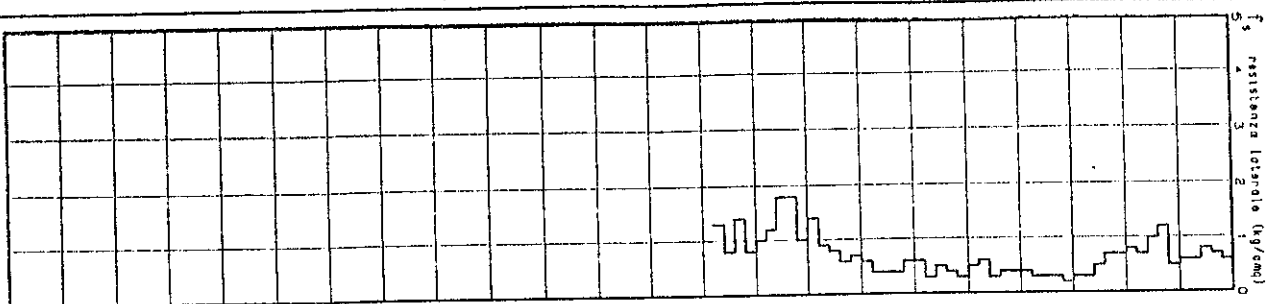
CPT (CONE PENETRATION TEST) N.4

Committente: Edilizio Geom. Zoniboni Otello & c. s.r.l.

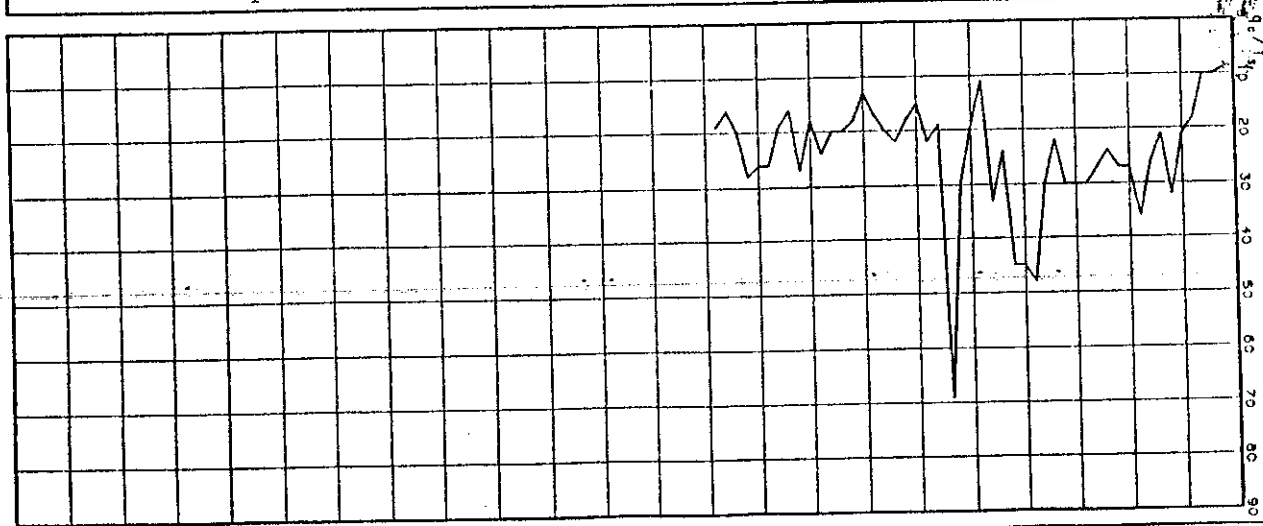
Località: Castello d'Argile (BO) Moscardino

N. Certificato: 98043004

Data: 27/02/1998



Quota di fondo: -1.46 m



GEO-PROBE

40133 BOLOGNA

Via R. Gracchi, 7 - Tel. 051/61.45.360

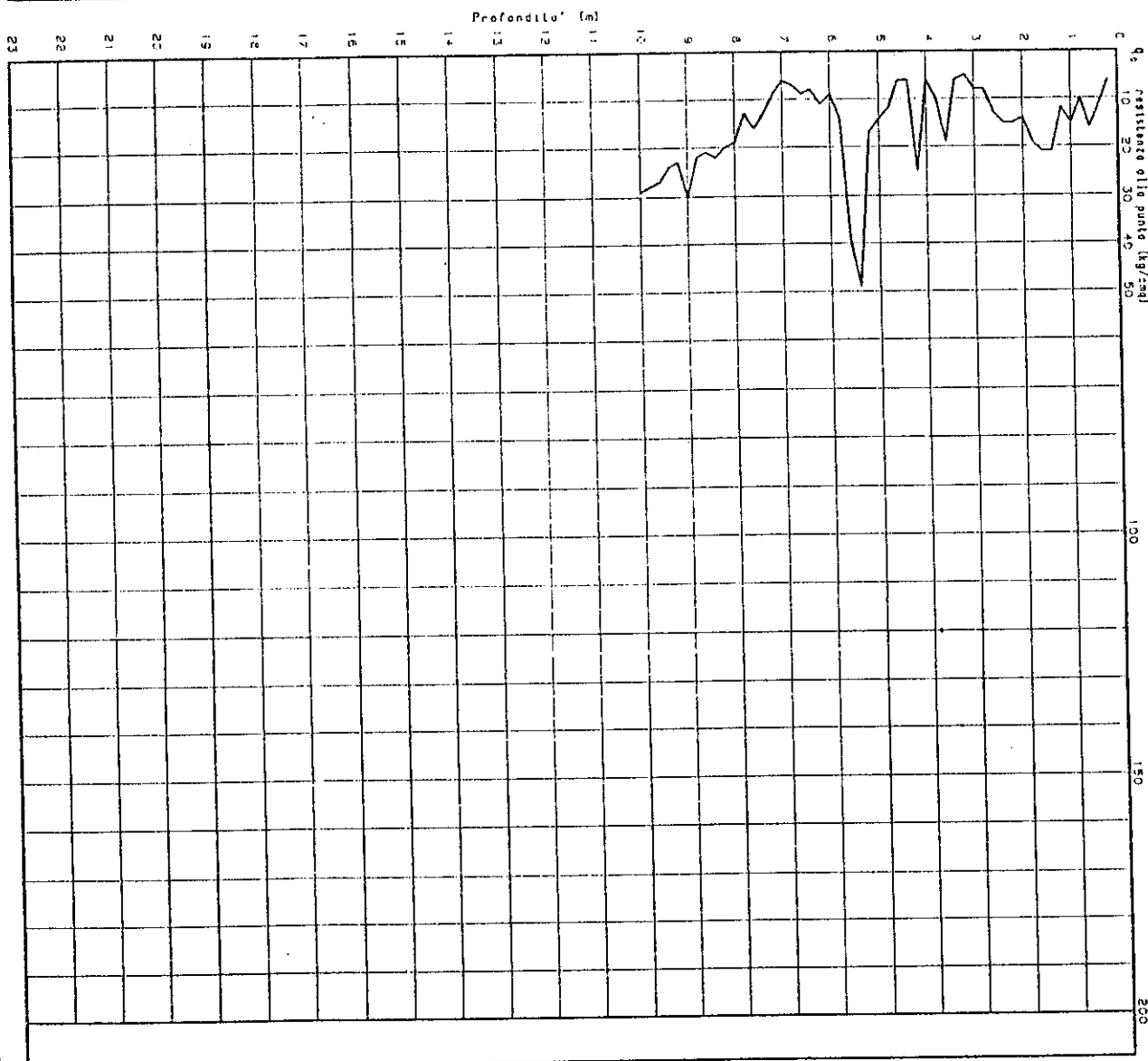
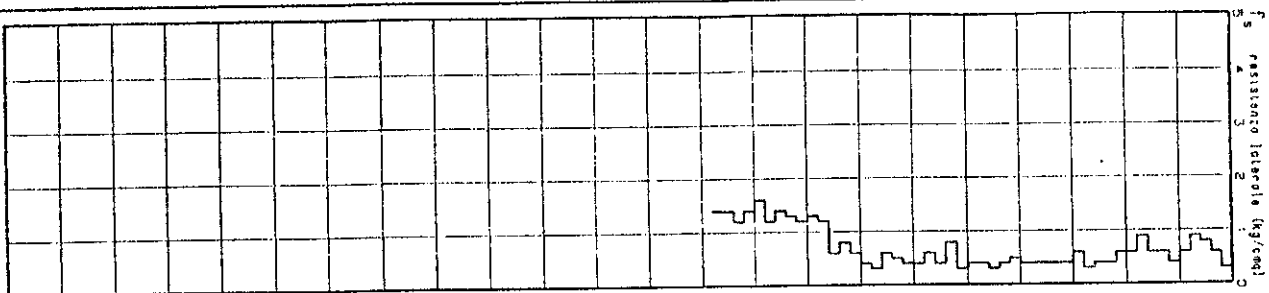
Committente: Edilizia Geom. Zaniboni Otello & c.

Località: Castello d'Angile (BO) Moscarino

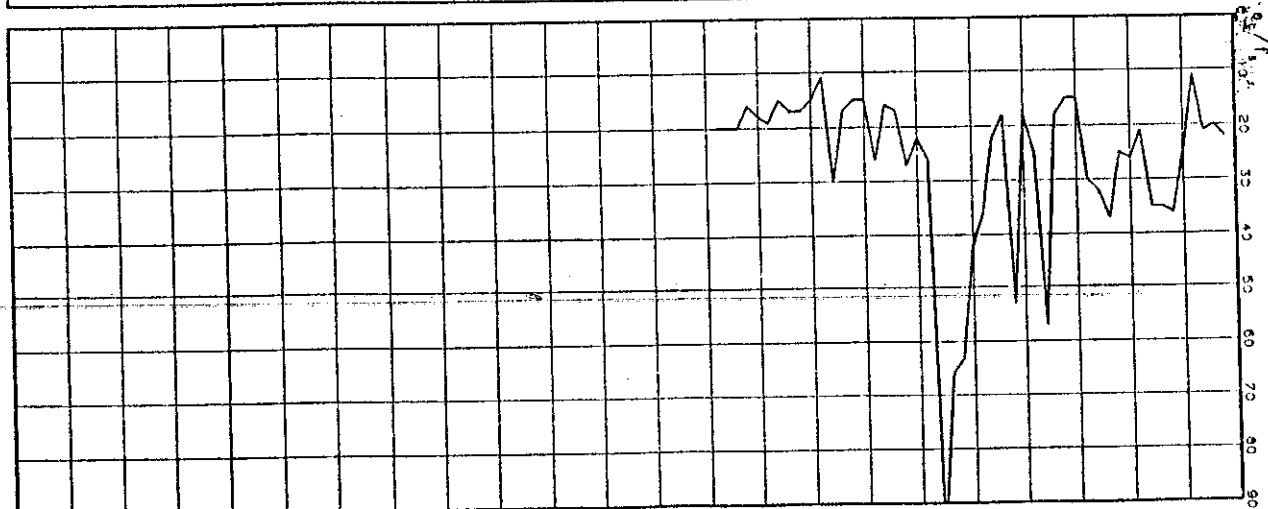
CPT (CONE PENETRATION TEST) N.5

N. Certificato: 98043005

Data: 27/02/1998



Quota di fondo: -1.66 m



SCHIZZO PLANIMETRICO CON UBICAZIONE DELLE PROVE

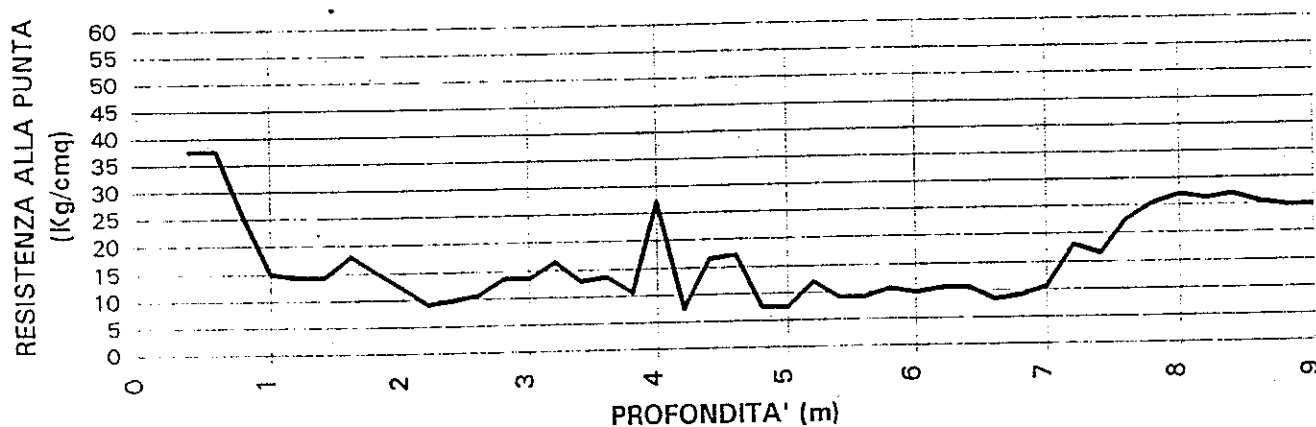
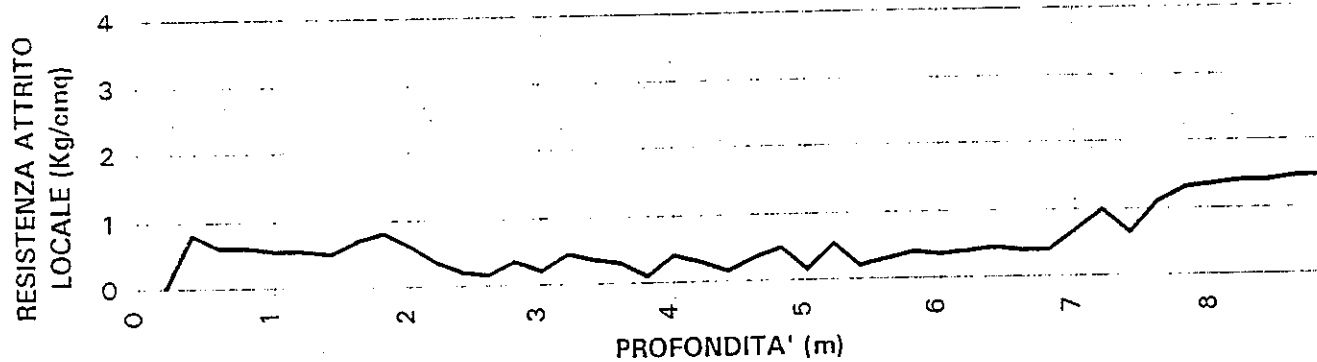
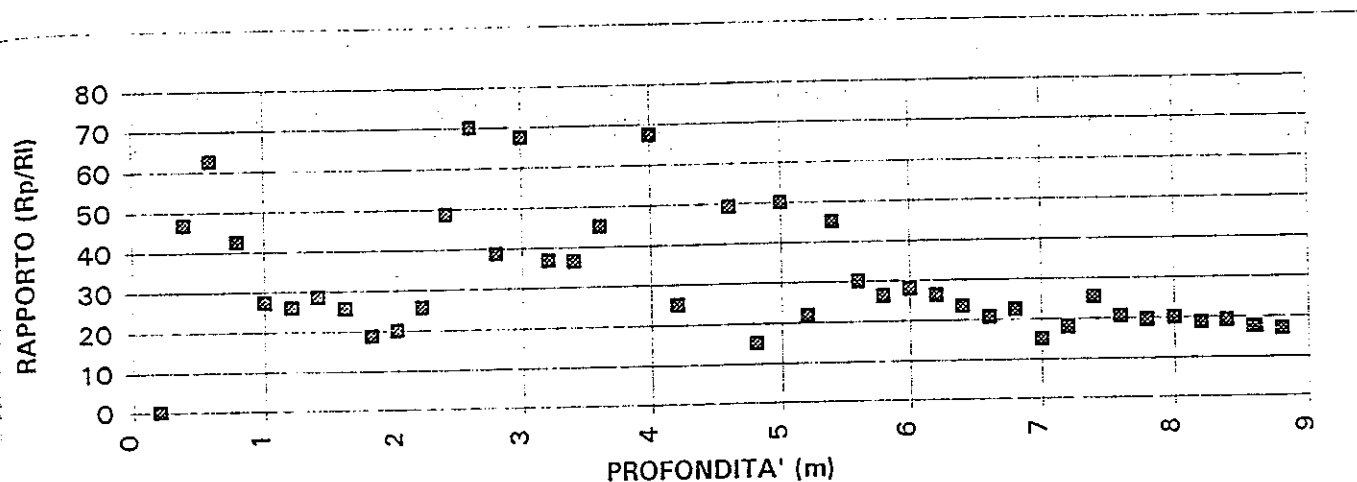
● P1 prova penetrometrica

◆ S1 sondaggio geognostico



PENETROMETRIA N. 1
CASTELLO D'ARGILE

07.09.2000



PENETROMETRIA N. 1

COMMITTENTE: IMMOBILIARE RIGONE

LOCALITA': CASTELLO D'ARGILE

PROGETTO: LOTTIZZAZIONE RIGONE 2

DATA: 07.09.2000

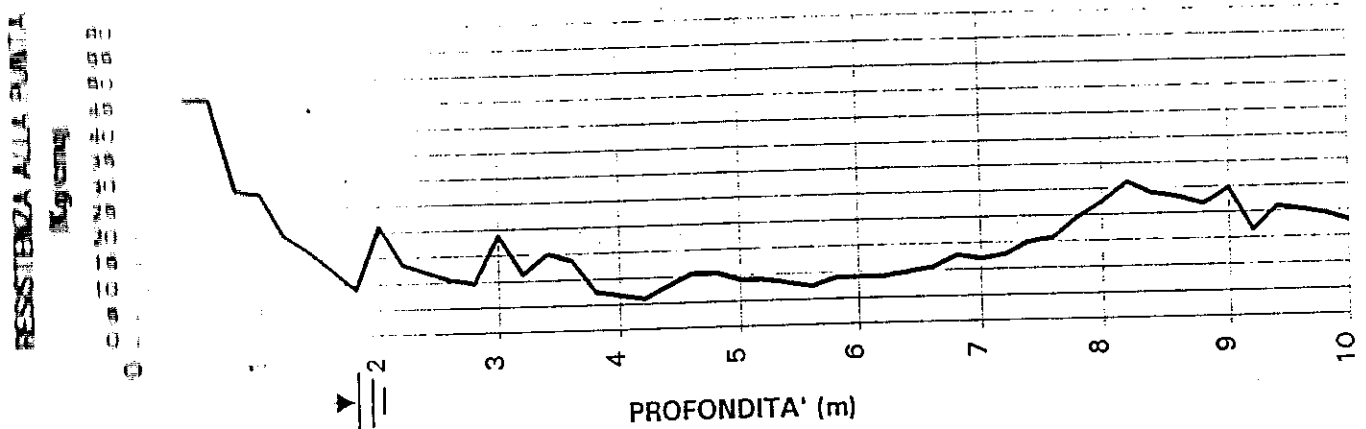
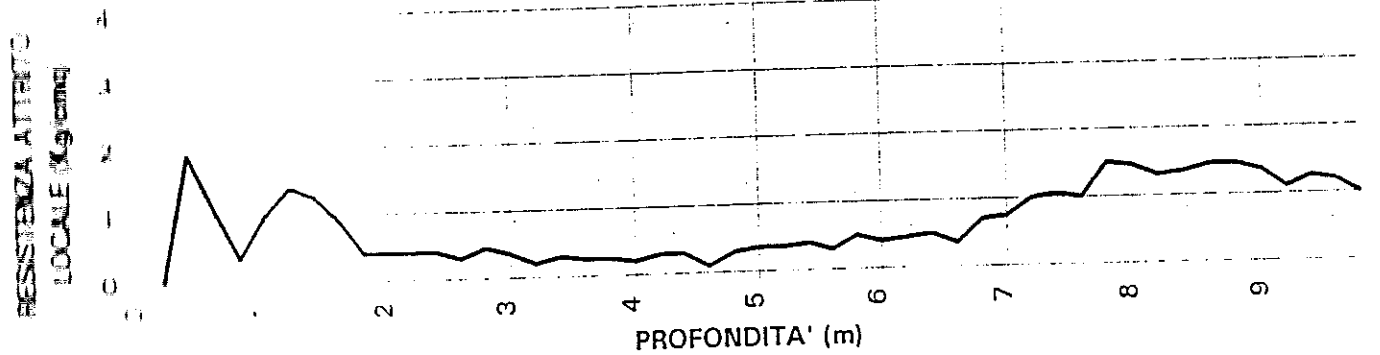
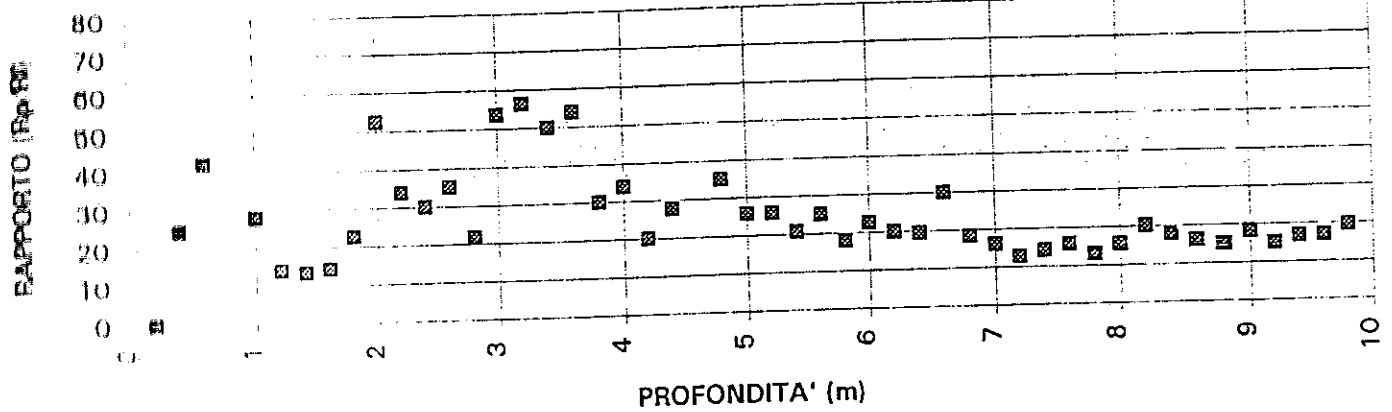
Livello di riferimento: p.c.

Quota foro: p.c. Livello statico: m. -

Prof. m	Rp Kg/cmq	RI Kg/cmq	R tot Kg	Rp/RI	RI/Rp
0					
0,2			-	-	
0,4	37,5	0,80	-	46,9	2,13%
0,6	37,5	0,60	-	62,5	1,60%
0,8	25,5	0,60	-	42,5	2,35%
1	15,0	0,55	255	27,3	3,67%
1,2	14,3	0,55	-	25,9	3,86%
1,4	14,3	0,50	-	28,5	3,51%
1,6	18,0	0,70	-	25,7	3,89%
1,8	15,0	0,80	-	18,8	5,33%
2	12,0	0,60	570	20,0	5,00%
2,2	9,0	0,35	-	25,7	3,89%
2,4	9,8	0,20	-	48,8	2,05%
2,6	10,5	0,15	-	70,0	1,43%
2,8	13,5	0,35	-	38,6	2,59%
3	13,5	0,20	510	67,5	1,48%
3,2	16,5	0,45	-	36,7	2,73%
3,4	12,8	0,35	-	36,4	2,75%
3,6	13,5	0,30	-	45,0	2,22%
3,8	10,5	0,10	-	105,0	0,95%
4	27,0	0,40	630	67,5	1,48%
4,2	7,5	0,30	-	25,0	4,00%
4,4	16,5	0,15	-	110,0	0,91%
4,6	17,3	0,35	-	49,3	2,03%
4,8	7,5	0,50	-	15,0	6,67%
5	7,5	0,15	675	50,0	2,00%
5,2	12,0	0,55	-	21,8	4,58%
5,4	9,0	0,20	-	45,0	2,22%
5,6	9,0	0,30	-	30,0	3,33%
5,8	10,5	0,40	-	26,3	3,81%
6	9,8	0,35	780	27,9	3,59%
6,2	10,5	0,40	-	26,3	3,81%
6,4	10,5	0,45	-	23,3	4,29%
6,6	8,3	0,40	-	20,6	4,85%
6,8	9,0	0,40	-	22,5	4,44%
7	10,5	0,70	900	15,0	6,67%
7,2	18,0	1,00	-	18,0	5,56%
7,4	16,5	0,65	-	25,4	3,94%
7,6	22,5	1,10	-	20,5	4,89%
7,8	25,5	1,30	-	19,6	5,10%
8	27,0	1,35	1425	20,0	5,00%
8,2	26,3	1,40	-	18,8	5,33%
8,4	27,0	1,40	-	19,3	5,19%
8,6	25,5	1,45	-	17,6	5,69%
8,8	24,8	1,45	-	17,1	5,86%
9	24,8	-	-	-	-

PENETROMETRIA N. 2
CASTELLO D'ARGILE

07.09.2000



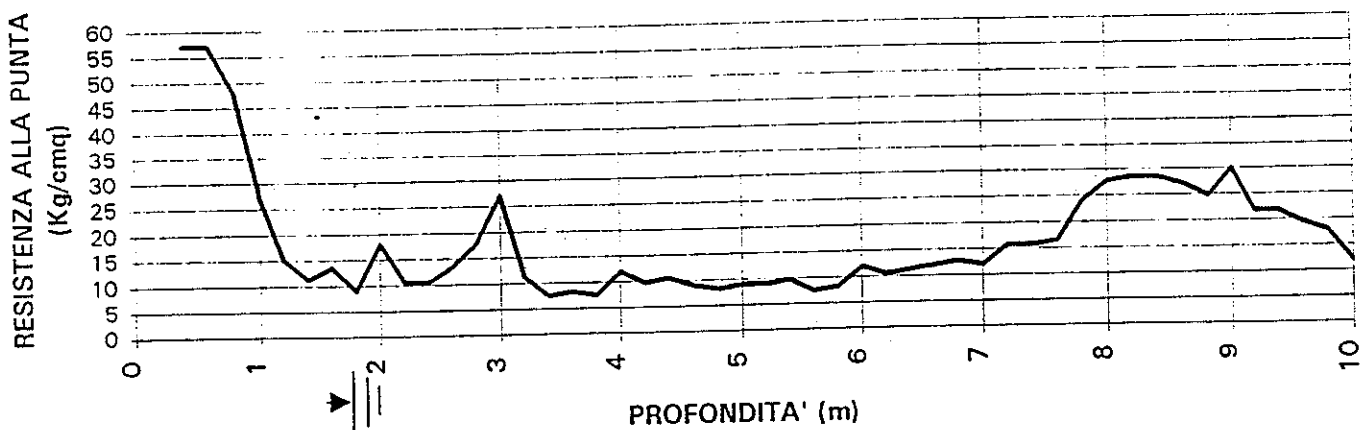
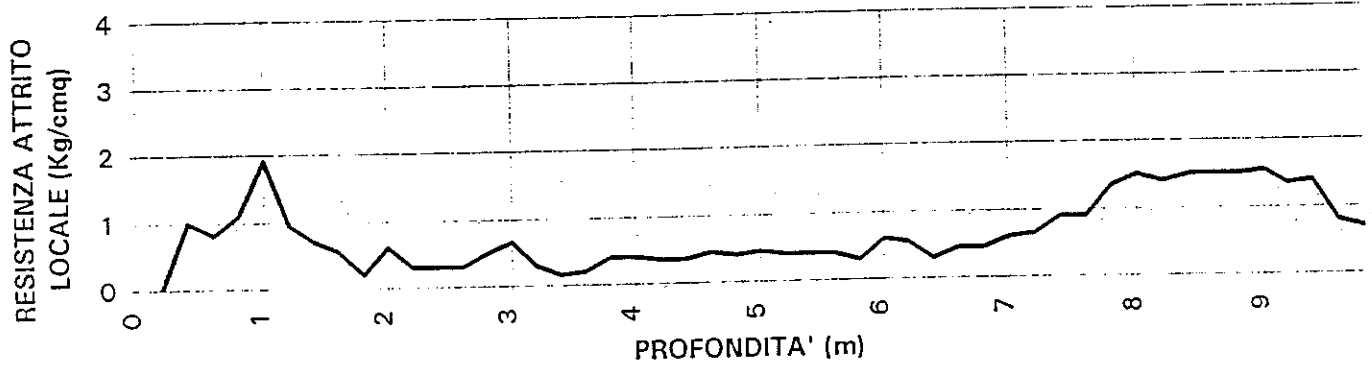
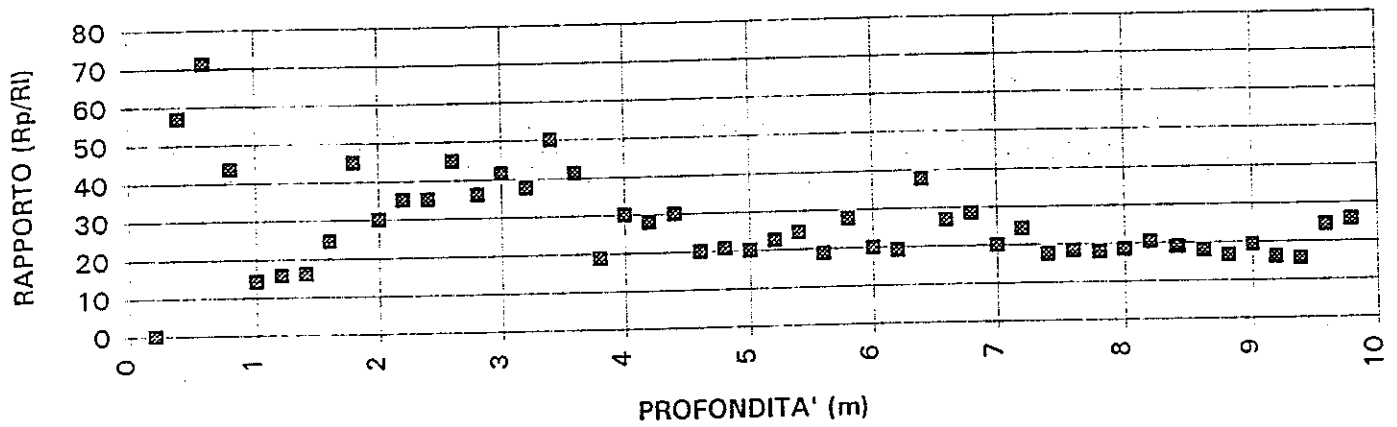
PENETROMETRIA N. 2
COMMITTENTE: IMMOBILIARE RIGONE
LOCALITA': CASTELLO D'ARGILE
PROGETTO: LOTTIZZAZIONE RIGONE 2
DATA: 07.09.2000

Livello di riferimento: p.c.
Quota foro: p.c. **Livello statico: m. -** 1,80

Prof. m	Rp Kg/cmq	RI Kg/cmq	R tot Kg	Rp/RI	RI/Rp
0					
0,2			-	-	
0,4	46,5	1,90	-	24,5	4,09%
0,6	46,5	1,10	-	42,3	2,37%
0,8	28,5	0,35	-	81,4	1,23%
1	27,8	1,00	390	27,8	3,60%
1,2	19,5	1,40	-	13,9	7,18%
1,4	16,5	1,25	-	13,2	7,58%
1,6	12,8	0,90	-	14,2	7,06%
1,8	9,0	0,40	-	22,5	4,44%
2	21,0	0,40	600	52,5	1,90%
2,2	13,5	0,40	-	33,8	2,96%
2,4	12,0	0,40	-	30,0	3,33%
2,6	10,5	0,30	-	35,0	2,86%
2,8	9,8	0,45	-	21,7	4,62%
3	18,8	0,35	525	53,6	1,87%
3,2	11,3	0,20	-	56,3	1,78%
3,4	15,0	0,30	-	50,0	2,00%
3,6	13,5	0,25	-	54,0	1,85%
3,8	7,5	0,25	-	30,0	3,33%
4	6,8	0,20	315	33,8	2,96%
4,2	6,0	0,30	-	20,0	5,00%
4,4	8,3	0,30	-	27,5	3,64%
4,6	10,5	0,10	-	105,0	0,95%
4,8	10,5	0,30	-	35,0	2,86%
5	9,0	0,35	300	25,7	3,89%
5,2	9,0	0,35	-	25,7	3,89%
5,4	8,3	0,40	-	20,6	4,85%
5,6	7,5	0,30	-	25,0	4,00%
5,8	9,0	0,50	-	18,0	5,56%
6	9,0	0,40	308	22,5	4,44%
6,2	9,0	0,45	-	20,0	5,00%
6,4	9,8	0,50	-	19,5	5,13%
6,6	10,5	0,35	-	30,0	3,33%
6,8	12,8	0,70	-	18,2	5,49%
7	12,0	0,75	495	16,0	6,25%
7,2	12,8	1,00	-	12,8	7,84%
7,4	15,0	1,05	-	14,3	7,00%
7,6	15,8	1,00	-	15,8	6,35%
7,8	19,5	1,50	-	13,0	7,69%
8	22,5	1,45	1125	15,5	6,44%
8,2	26,3	1,30	-	20,2	4,95%
8,4	24,0	1,35	-	17,8	5,63%
8,6	23,3	1,45	-	16,0	6,24%
8,8	21,8	1,45	-	15,0	6,67%
9	24,8	1,35	1800	18,3	5,45%
9,2	16,5	1,10	-	15,0	6,67%
9,4	21,0	1,25	-	16,8	5,95%
9,6	20,3	1,20	-	16,9	5,93%
9,8	19,5	1,00	-	19,5	5,13%
10	18,0	-	2100	-	-

PENETROMETRIA N. 3
CASTELLO D'ARGILE

07.09.2000



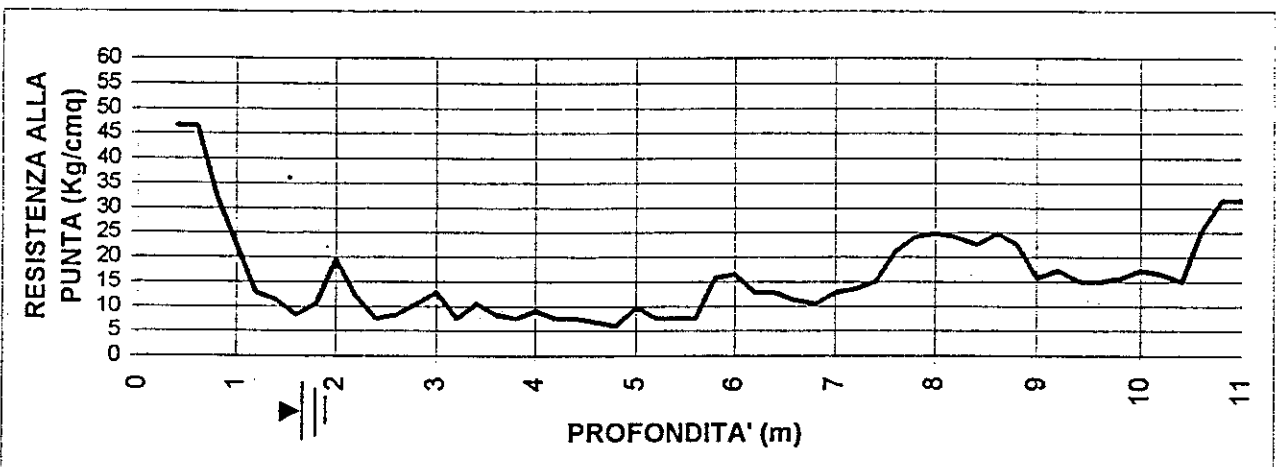
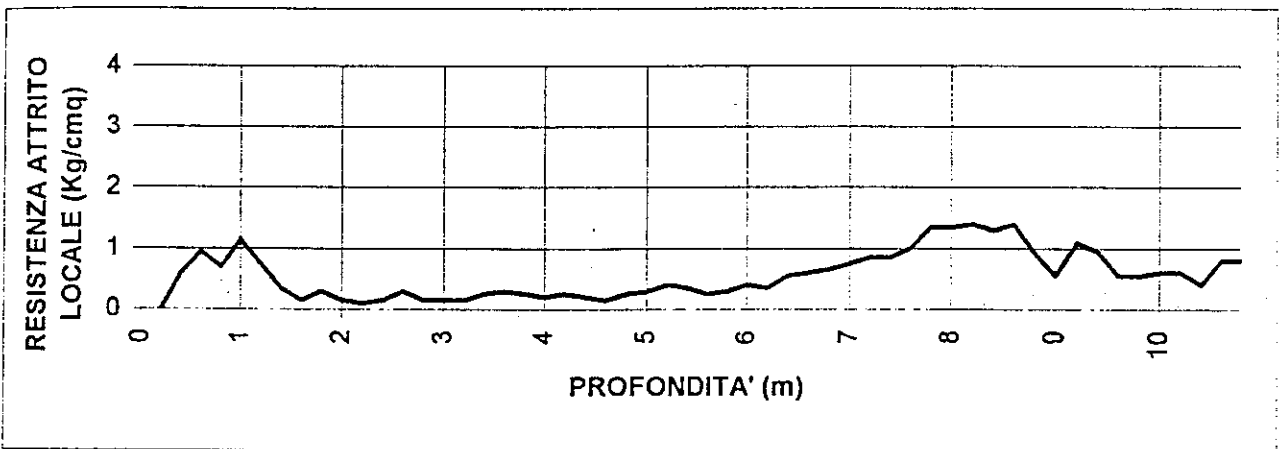
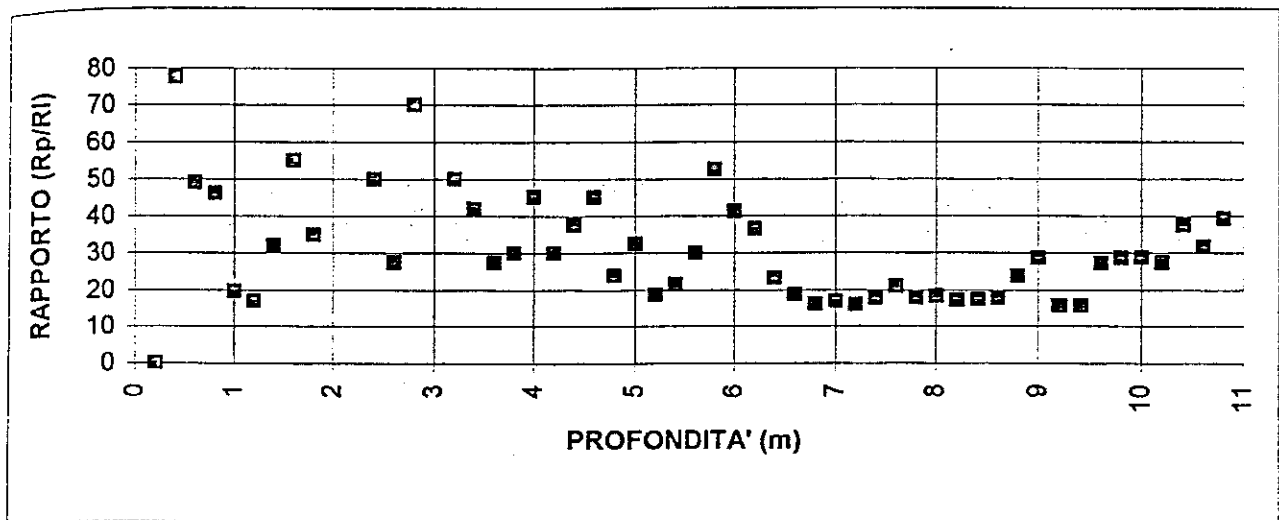
PENETROMETRIA N. 3
COMMITTENTE: IMMOBILIARE RIGONE
LOCALITA': CASTELLO D'ARGILE
PROGETTO: LOTTIZZAZIONE RIGONE 2
DATA: 07.09.2000

Livello di riferimento: p.c.
Quota foro: p.c. **Livello statico: m. -** 1,70

Prof. m	Rp Kg/cmq	Ri Kg/cmq	R tot Kg	Rp/Ri	Ri/Rp
0					
0,2					
0,4	57,0	1,00	-	57,0	1,75%
0,6	57,0	0,80	-	71,3	1,40%
0,8	48,0	1,10	-	43,6	2,29%
1	27,0	1,90	540	14,2	7,04%
1,2	15,0	0,95	-	15,8	6,33%
1,4	11,3	0,70	-	16,1	6,22%
1,6	13,5	0,55	-	24,5	4,07%
1,8	9,0	0,20	-	45,0	2,22%
2	18,0	0,60	495	30,0	3,33%
2,2	10,5	0,30	-	35,0	2,86%
2,4	10,5	0,30	-	35,0	2,86%
2,6	13,5	0,30	-	45,0	2,22%
2,8	18,0	0,50	-	36,0	2,78%
3	27,0	0,65	600	41,5	2,41%
3,2	11,3	0,30	-	37,5	2,67%
3,4	7,5	0,15	-	50,0	2,00%
3,6	8,3	0,20	-	41,3	2,42%
3,8	7,5	0,40	-	18,8	5,33%
4	12,0	0,40	450	30,0	3,33%
4,2	9,8	0,35	-	27,9	3,59%
4,4	10,5	0,35	-	30,0	3,33%
4,6	9,0	0,45	-	20,0	5,00%
4,8	8,3	0,40	-	20,6	4,85%
5	9,0	0,45	525	20,0	5,00%
5,2	9,0	0,40	-	22,5	4,44%
5,4	9,8	0,40	-	24,4	4,10%
5,6	7,5	0,40	-	18,8	5,33%
5,8	8,3	0,30	-	27,5	3,64%
6	12,0	0,60	480	20,0	5,00%
6,2	10,5	0,55	-	19,1	5,24%
6,4	11,3	0,30	-	37,5	2,67%
6,6	12,0	0,45	-	26,7	3,75%
6,8	12,8	0,45	-	28,3	3,53%
7	12,0	0,60	600	20,0	5,00%
7,2	15,8	0,65	-	24,2	4,13%
7,4	15,8	0,90	-	17,5	5,71%
7,6	16,5	0,90	-	18,3	5,45%
7,8	24,0	1,35	-	17,8	5,63%
8	27,8	1,50	1200	18,5	5,41%
8,2	28,5	1,40	-	20,4	4,91%
8,4	28,5	1,50	-	19,0	5,26%
8,6	27,0	1,50	-	18,0	5,56%
8,8	24,8	1,50	-	16,5	6,06%
9	30,0	1,55	1800	19,4	5,17%
9,2	21,8	1,35	-	16,1	6,21%
9,4	21,8	1,40	-	15,5	6,44%
9,6	19,5	0,80	-	24,4	4,10%
9,8	18,0	0,70	-	25,7	3,89%
10	12,0	-	2100	-	-

08.09.2000

PENETROMETRIA N. 4
CASTELLO D'ARGILE



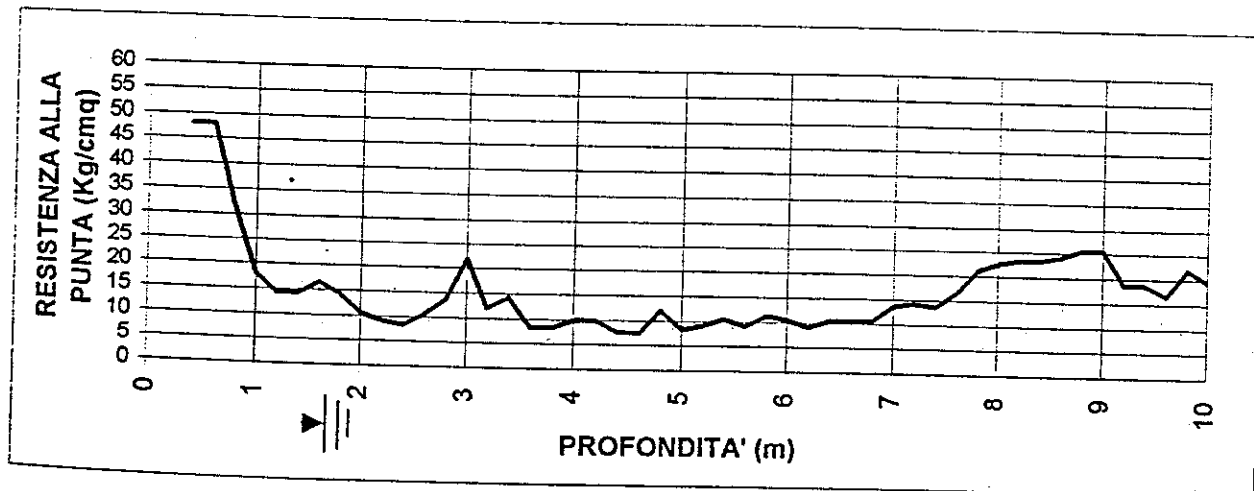
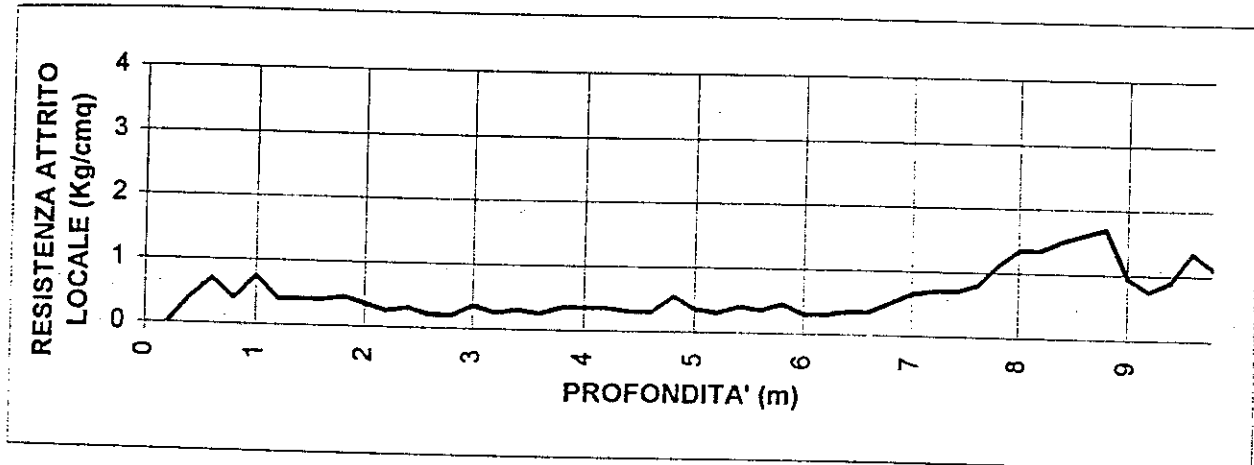
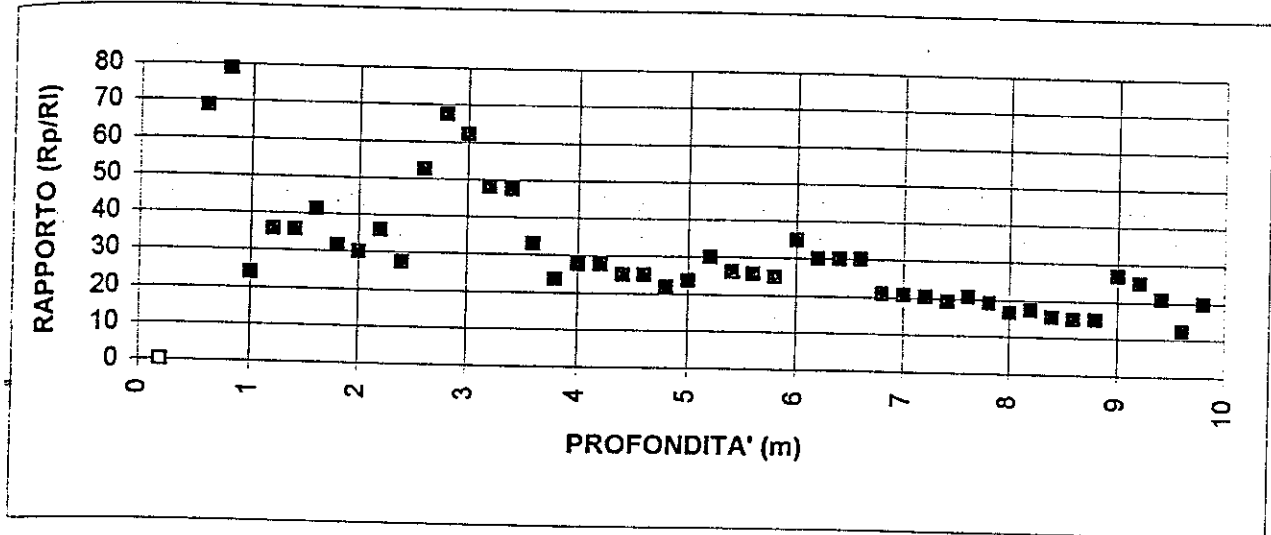
PENETROMETRIA N. 4
COMMITTENTE: IMMOBILIARE RIGONE
LOCALITA': CASTELLO D'ARGILE
PROGETTO: LOTTIZZAZIONE RIGONE 2
DATA: 08.09.2000

Livello di riferimento: p.c.
Quota foro: p.c. **Livello statico: m. -** 1,60

Prof. m	Rp Kg/cm ²	RI Kg/cm ²	R tot Kg	Rp/RI	RI/Rp
0					
0,2					
0,4	46,5	0,60	-	77,5	1,29%
0,6	46,5	0,95	-	48,9	2,04%
0,8	32,3	0,70	-	46,1	2,17%
1	22,5	1,15	375	19,6	5,11%
1,2	12,8	0,75	-	17,0	5,88%
1,4	11,3	0,35	-	32,1	3,11%
1,6	8,3	0,15	-	55,0	1,82%
1,8	10,5	0,30	-	35,0	2,86%
2	19,5	0,15	525	130,0	0,77%
2,2	12,0	0,10	-	120,0	0,83%
2,4	7,5	0,15	-	50,0	2,00%
2,6	8,3	0,30	-	27,5	3,64%
2,8	10,5	0,15	-	70,0	1,43%
3	12,8	0,15	300	85,0	1,18%
3,2	7,5	0,15	-	50,0	2,00%
3,4	10,5	0,25	-	42,0	2,38%
3,6	8,3	0,30	-	27,5	3,64%
3,8	7,5	0,25	-	30,0	3,33%
4	9,0	0,20	420	45,0	2,22%
4,2	7,5	0,25	-	30,0	3,33%
4,4	7,5	0,20	-	37,5	2,67%
4,6	6,8	0,15	-	45,0	2,22%
4,8	6,0	0,25	-	24,0	4,17%
5	9,8	0,30	405	32,5	3,08%
5,2	7,5	0,40	-	18,8	5,33%
5,4	7,5	0,35	-	21,4	4,67%
5,6	7,5	0,25	-	30,0	3,33%
5,8	15,8	0,30	-	52,5	1,90%
6	16,5	0,40	525	41,3	2,42%
6,2	12,8	0,35	-	36,4	2,75%
6,4	12,8	0,55	-	23,2	4,31%
6,6	11,3	0,60	-	18,8	5,33%
6,8	10,5	0,65	-	16,2	6,19%
7	12,8	0,75	750	17,0	5,88%
7,2	13,5	0,85	-	15,9	6,30%
7,4	15,0	0,85	-	17,6	5,67%
7,6	21,0	1,00	-	21,0	4,76%
7,8	24,0	1,35	-	17,8	5,63%
8	24,8	1,35	1200	18,3	5,45%
8,2	24,0	1,40	-	17,1	5,83%
8,4	22,5	1,30	-	17,3	5,78%
8,6	24,8	1,40	-	17,7	5,66%
8,8	22,5	0,95	-	23,7	4,22%
9	15,8	0,55	1575	28,6	3,49%
9,2	17,3	1,10	-	15,7	6,38%
9,4	15,0	0,95	-	15,8	6,33%
9,6	15,0	0,55	-	27,3	3,67%
9,8	15,8	0,55	-	28,6	3,49%
10	17,3	0,60	2025	28,8	3,48%
10,2	16,5	0,60	-	27,5	3,64%
10,4	15,0	0,40	-	37,5	2,67%
10,6	25,5	0,80	-	31,9	3,14%
10,8	31,5	0,80	2250	39,4	2,54%
11	31,5	-	-	-	-

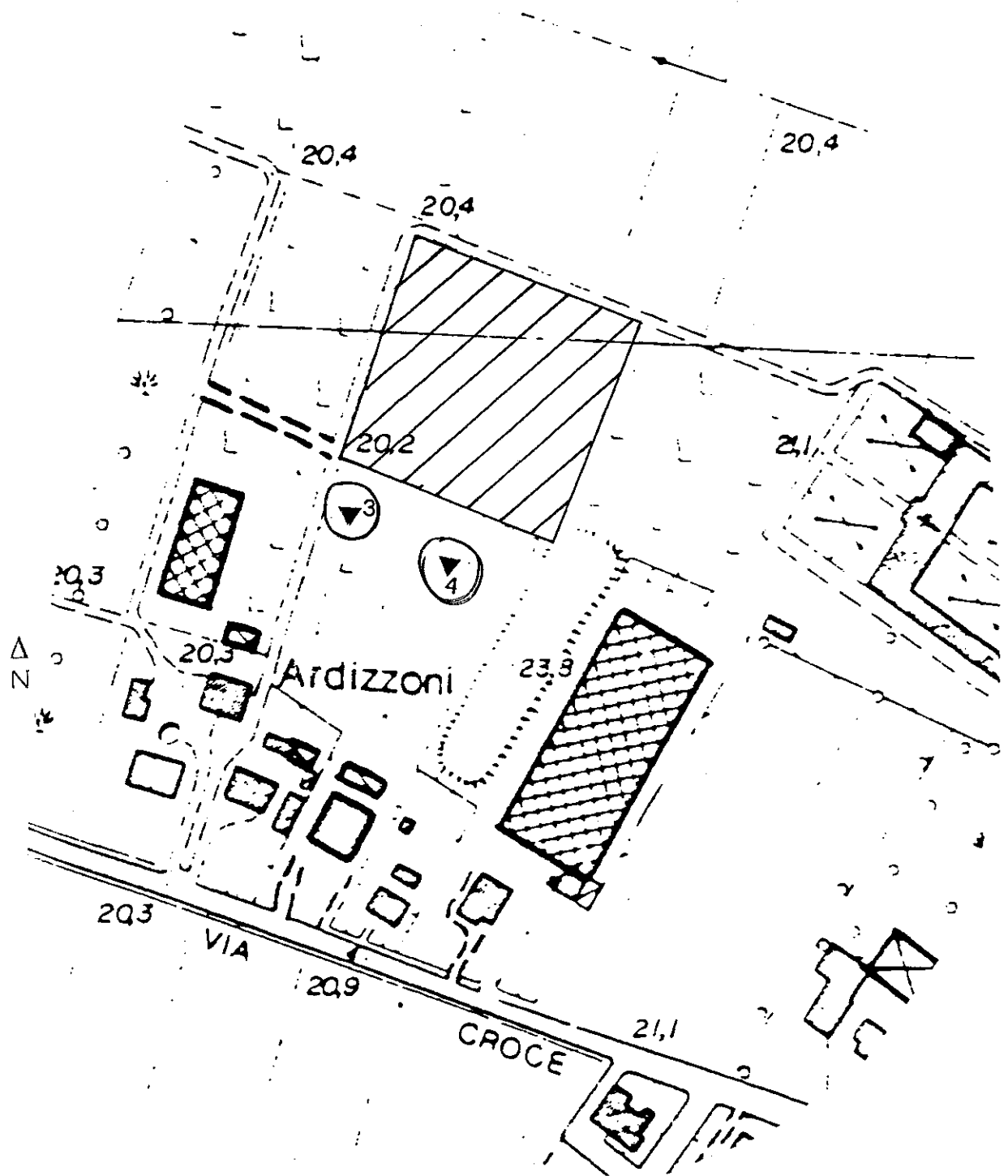
08.09.2000

PENETROMETRIA N. 5
CASTELLO D'ARGILE



Dott. ENRICO TADDIA GEOLOGO 44047 Sant'Agostino (FE) Via Statale, 140 - tel/fax 0532 . 846537			SONDAGGIO MECCANICO N. 1 Committente IMMOBILIARE RIGONE Località CASTELLO D'ARGILE Quota foro p.c. Livello falda 1,70 m Data 07/09/00				
METRI	SIMBOLI	DESCRIZIONE STRATIGRAFICA	Pocket kg/cmq				FALDA
0,70		Limi sabbiosi nocciola con frustoli vegetali.					
1		Sabbie fini limose nocciola.					
1,10			1,7				
			2,3				
			2,3				
		Argille limose grigio-nocciola con maculazioni ocra.	2,8				
			1,3				
1,80		Limi argillo-sabbiosi nocciola.					
2							
2,10							
2,30		Argille limose grigio nocciola.	1,4				
			2,0				
		Sabbie fini limose grigio-nocciola.					
3							
3,50							
		Sabbie medie e grossolane grigie con sottili intercalazioni di argille.					
4							
		Alternanza di sabbie fini limose e argille limose grigie con locali presenze di materiale torboso.					
5							

TAV. 2 - UBICAZIONE INDAGINE GEOGNOSTICA



▨ Area oggetto di intervento

▼ Penetrometrie statiche

Scala 1: 2.000

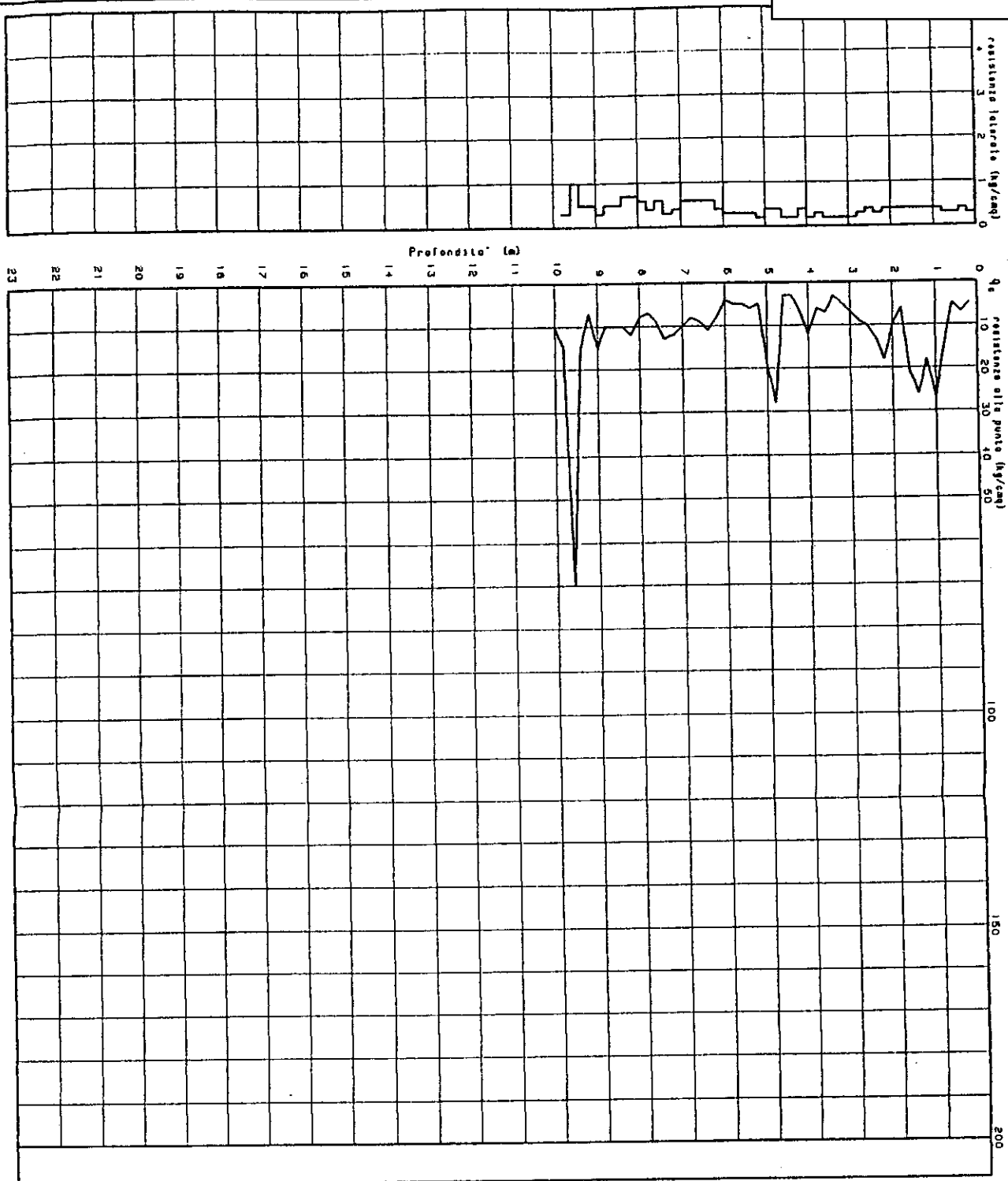
40133 BOLOGNA

Via R. Grieco, 7 - Tel. 051/61.45.360

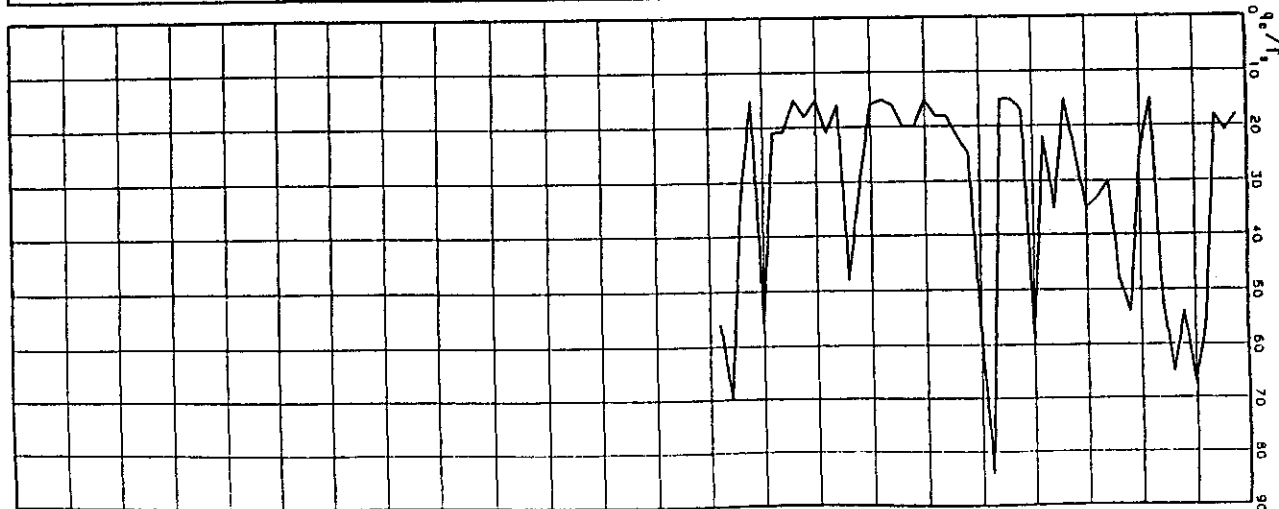
Committente: Ing. Montognoni

Località: Castello d'Argile (BO) via Croce

Data: 27/05/2002



Livello acqua da p.c.: -1.05 m



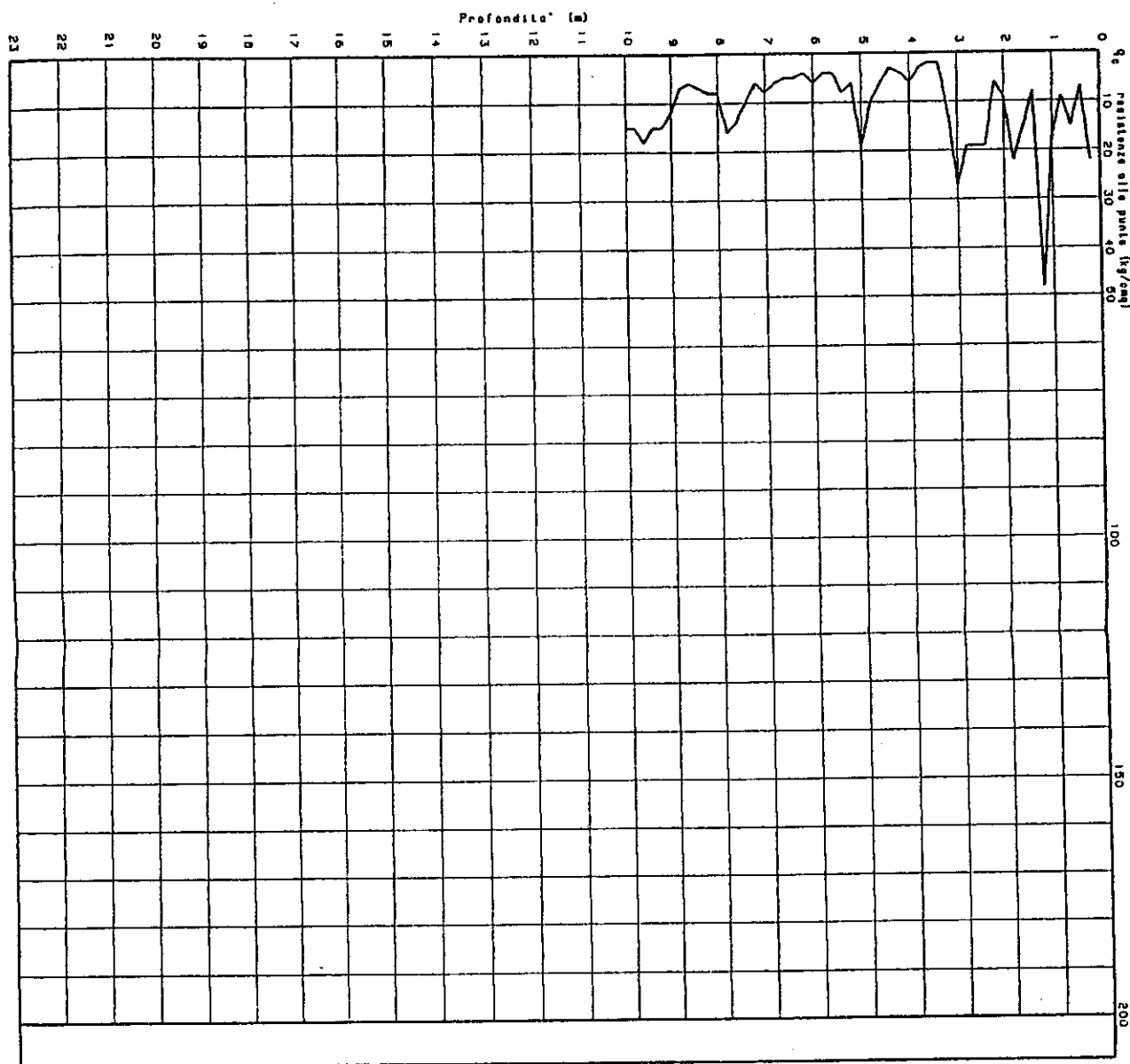
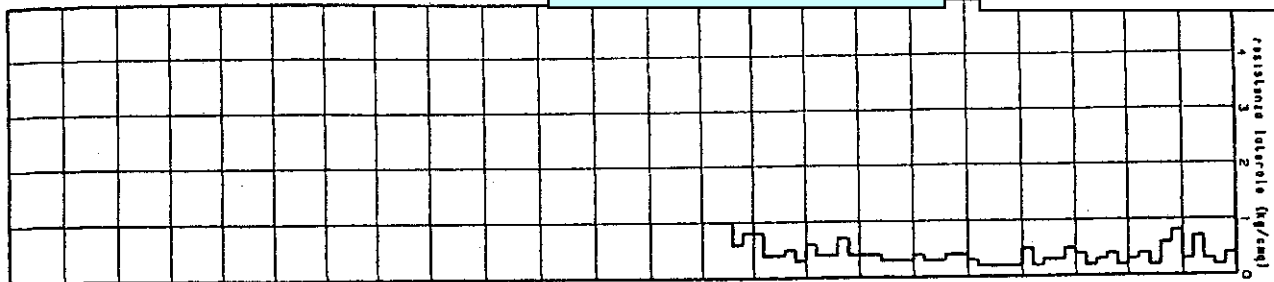
40133 BOLOGNA

Via R. Grieco, 7 - Tel. 051/61.45.360

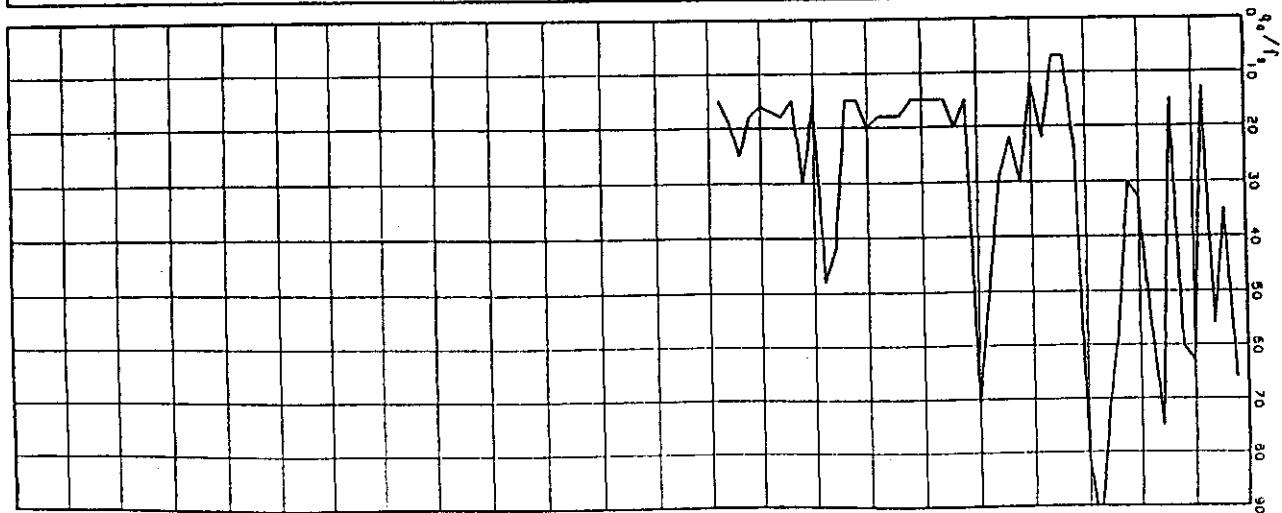
Committente: Ing. Montagnini

Località: Castello d'Argile (BO) via Croce

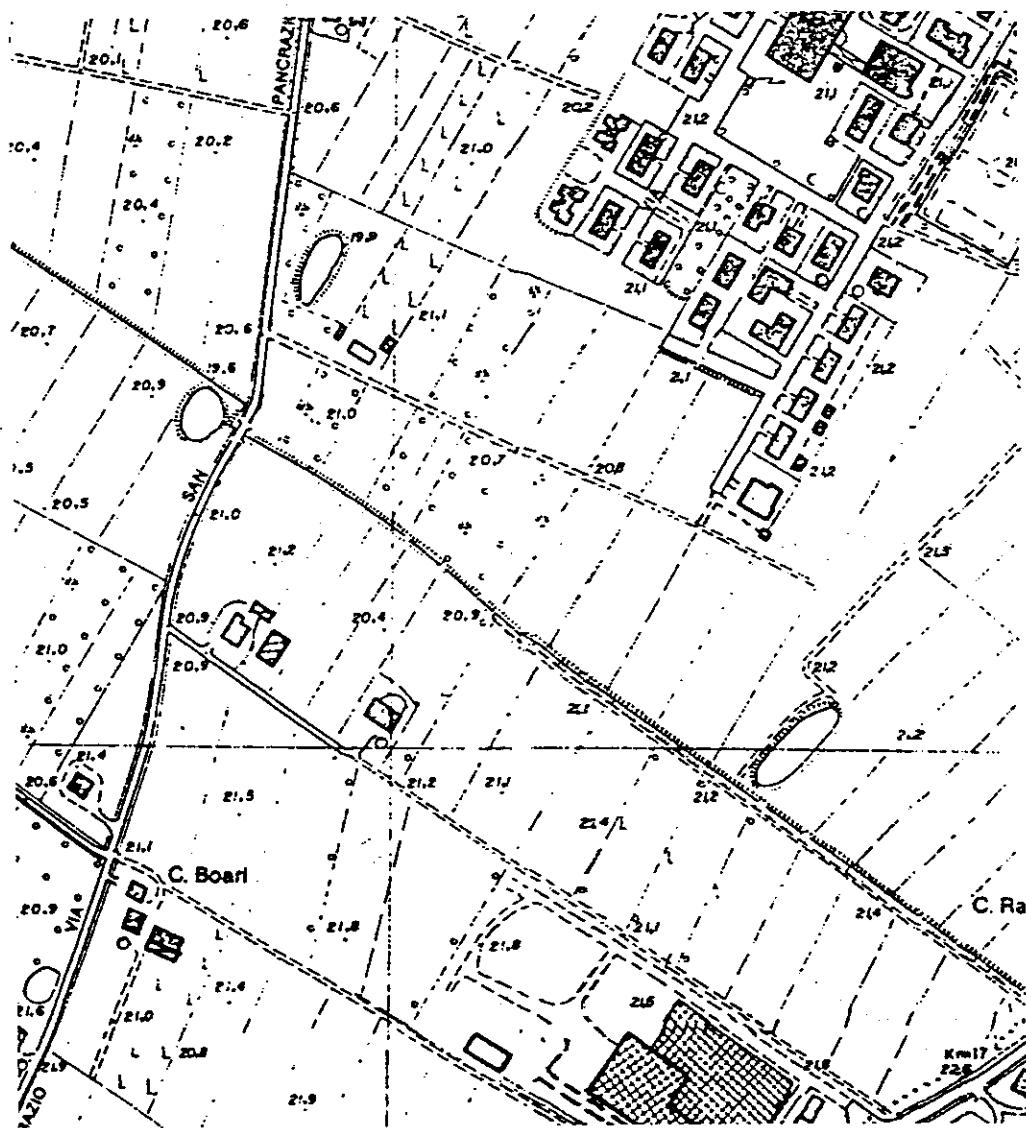
Data: 27/05/2002



Livello acqua p.c.: -1.00 m



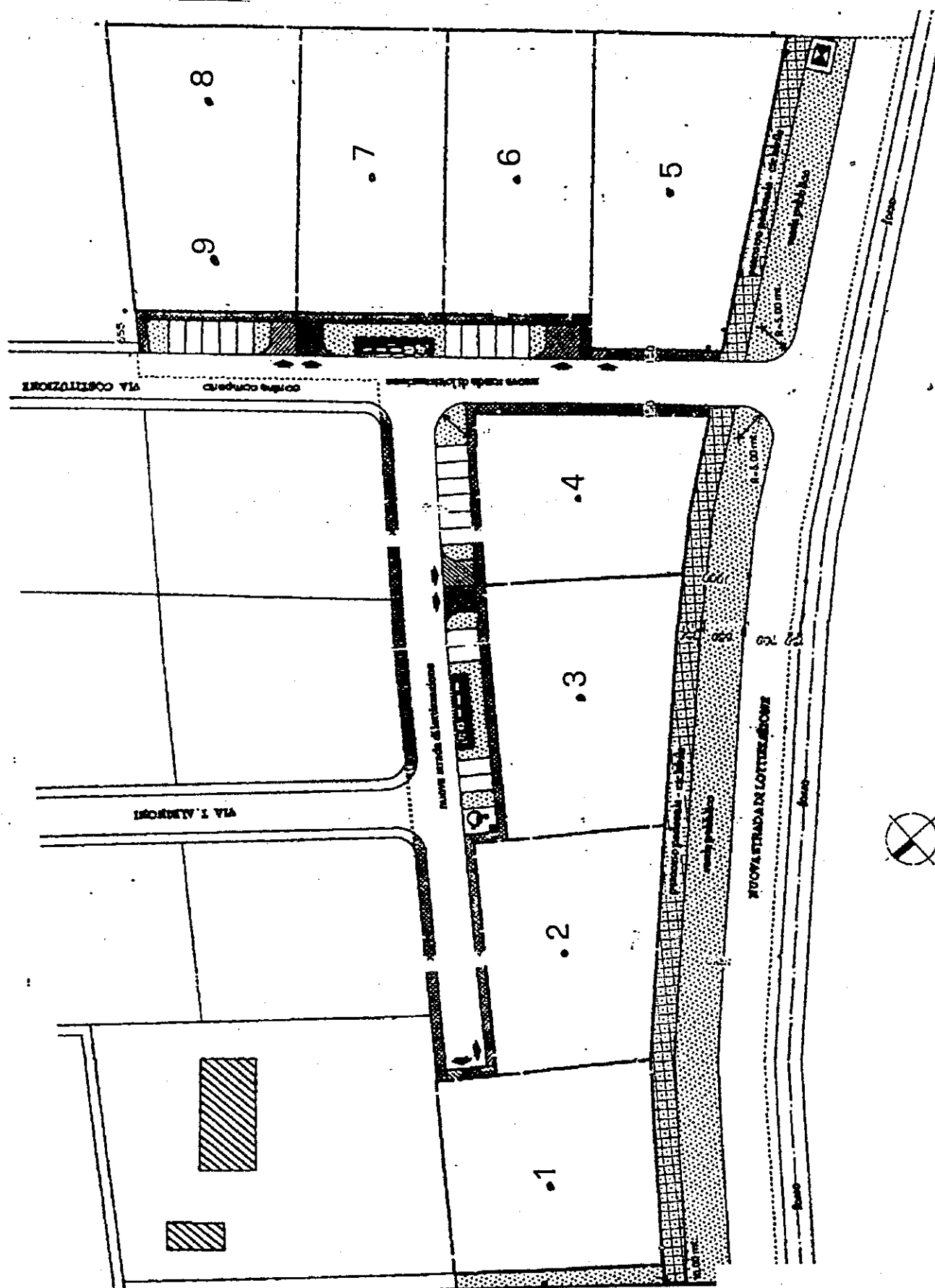
Ubicazione Topografica
Scala 1:5.000





Mappa Catastale
Scala 1:2.000

Ubicazione Prove Penetrometriche



GEO-PROBE

40133 BOLOGNA

Via R. Grasseo, 7 - Tel. 051/61.45.360

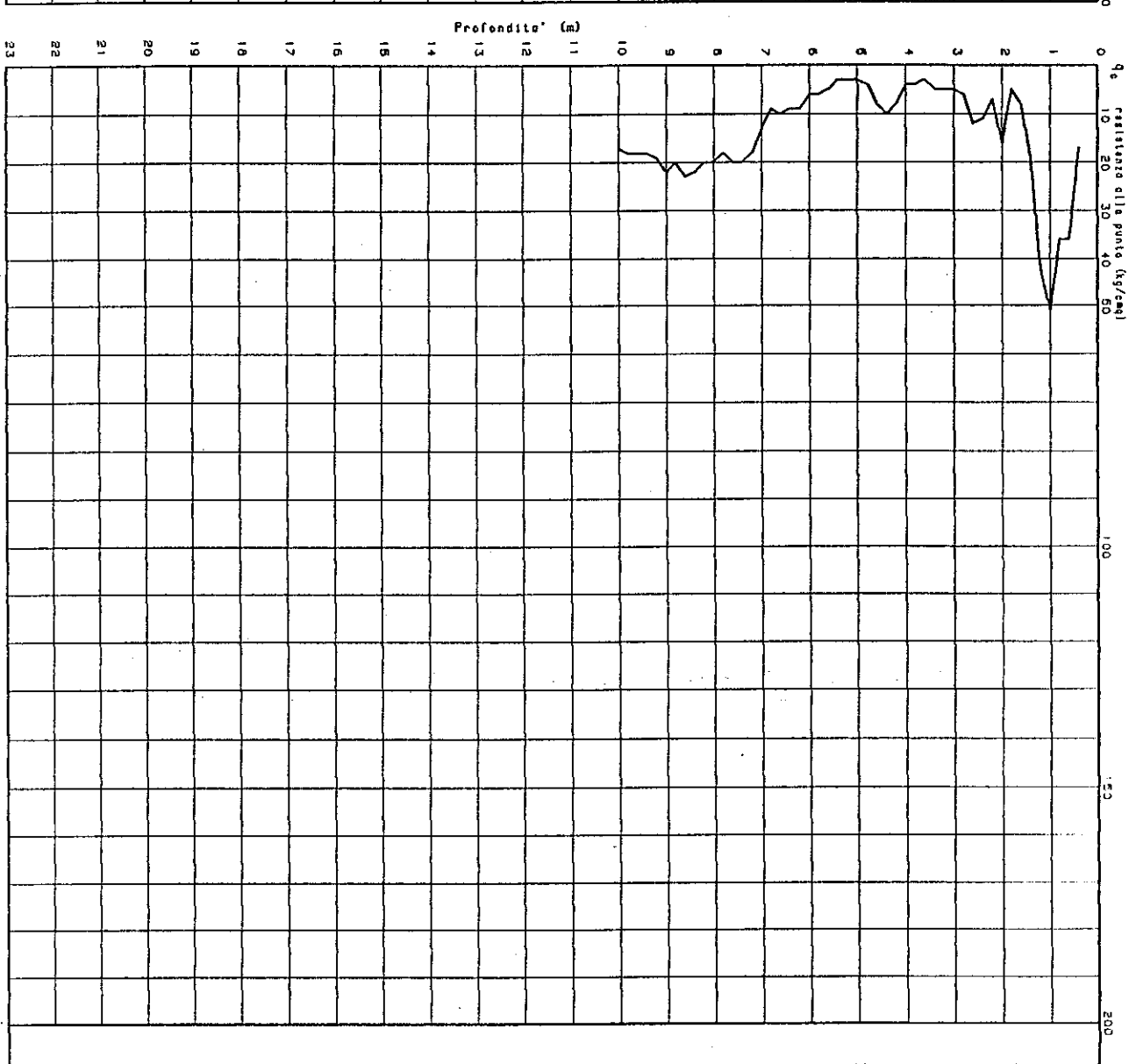
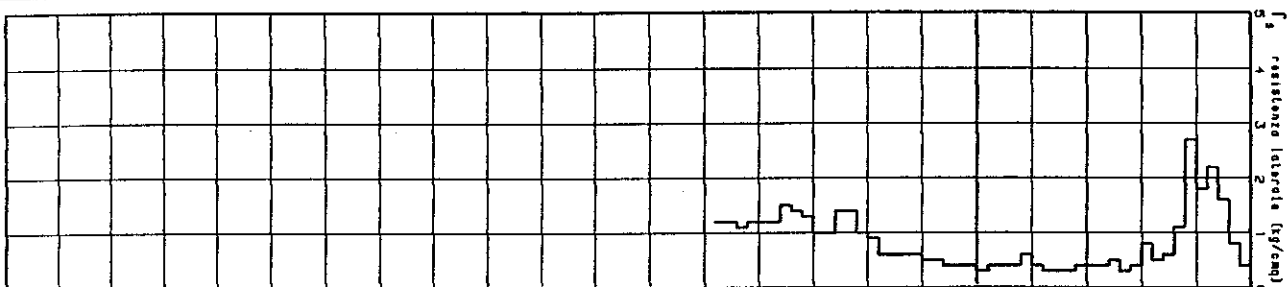
Committente: P.E. Toddi Roberto

Località: Castello d'Argile (BO) Comparto C 11

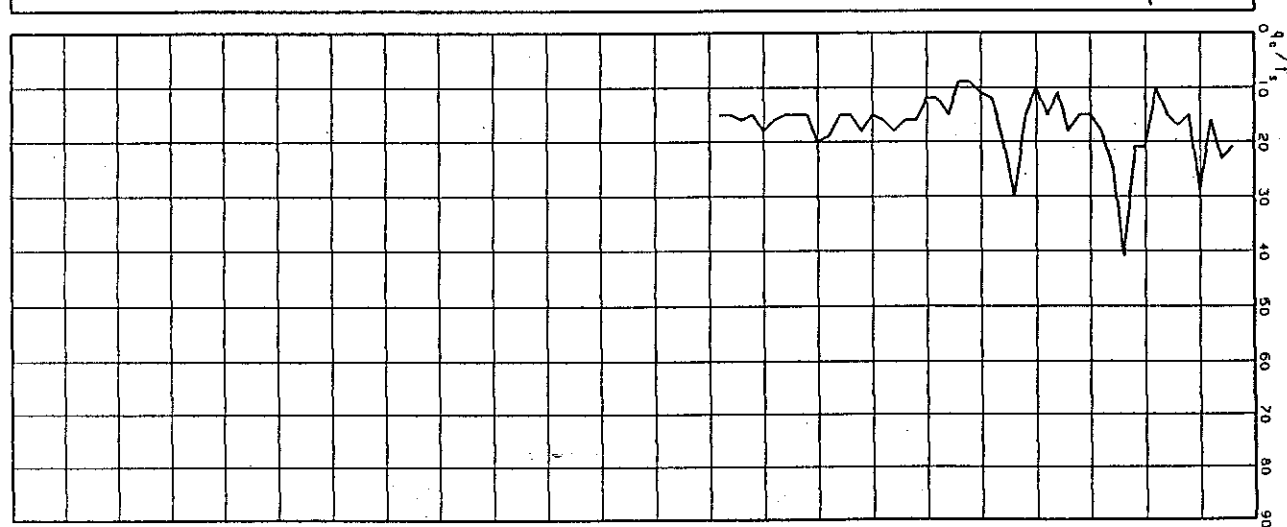
CPT (CONE PENETRATION TEST) N.1

N. Certificato: 00252001

Data: 05/09/2000



Livello acqua da p.c.: -1.90 m



GEO-PROBE

40133 BOLOGNA

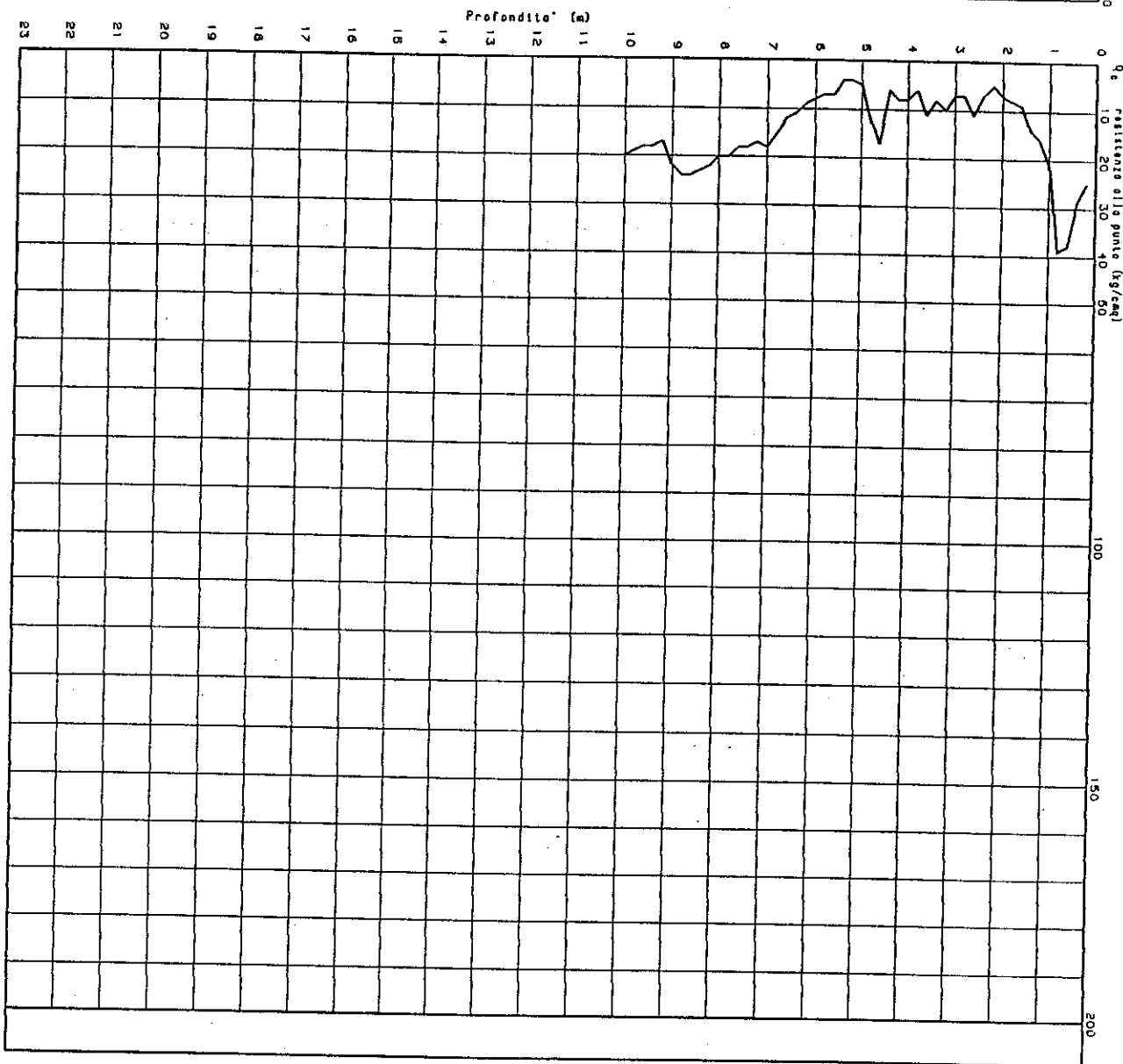
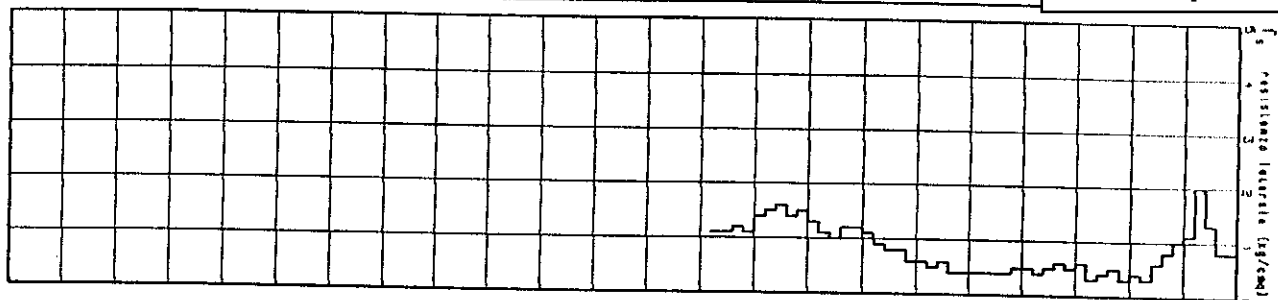
CPT (CONE PENETRATION TEST) N.2

N. Certificato: 00252002

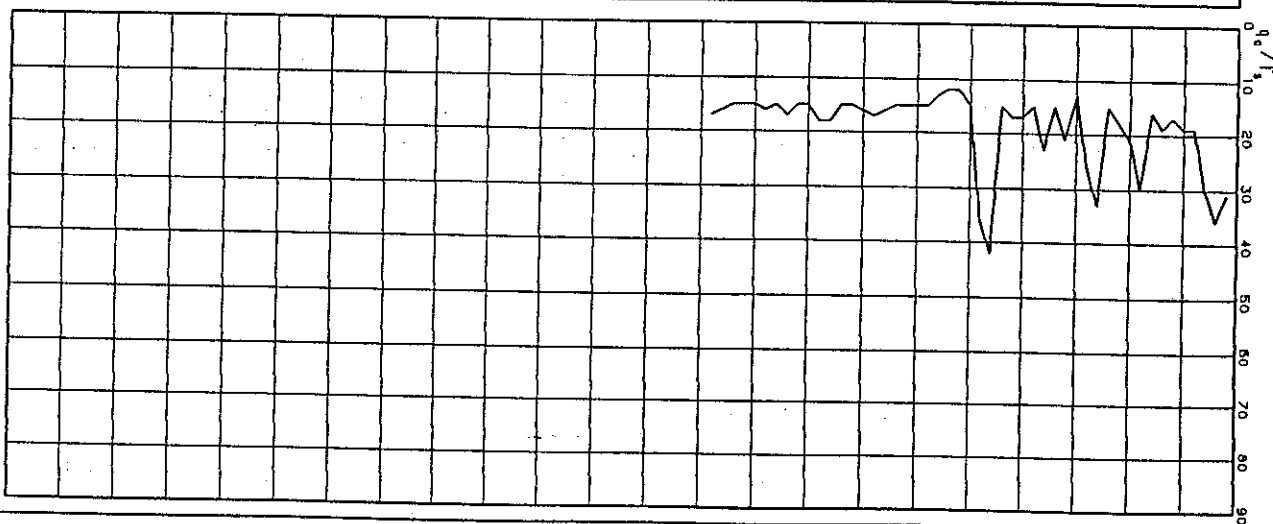
Via R. Griseo, 7 - Tel. 051/51.45.350

Committente: P.E. Taddio Roberto
Località: Costello d'Argile (BO) Comparto C11

Data: 05/09/2000



Livello acqua da p.c.: foro chiuso a -1.95 m



GEO-PROBE

40133 BOLOGNA

Via R. Griseo, 7 - Tel. 051/61.45.360

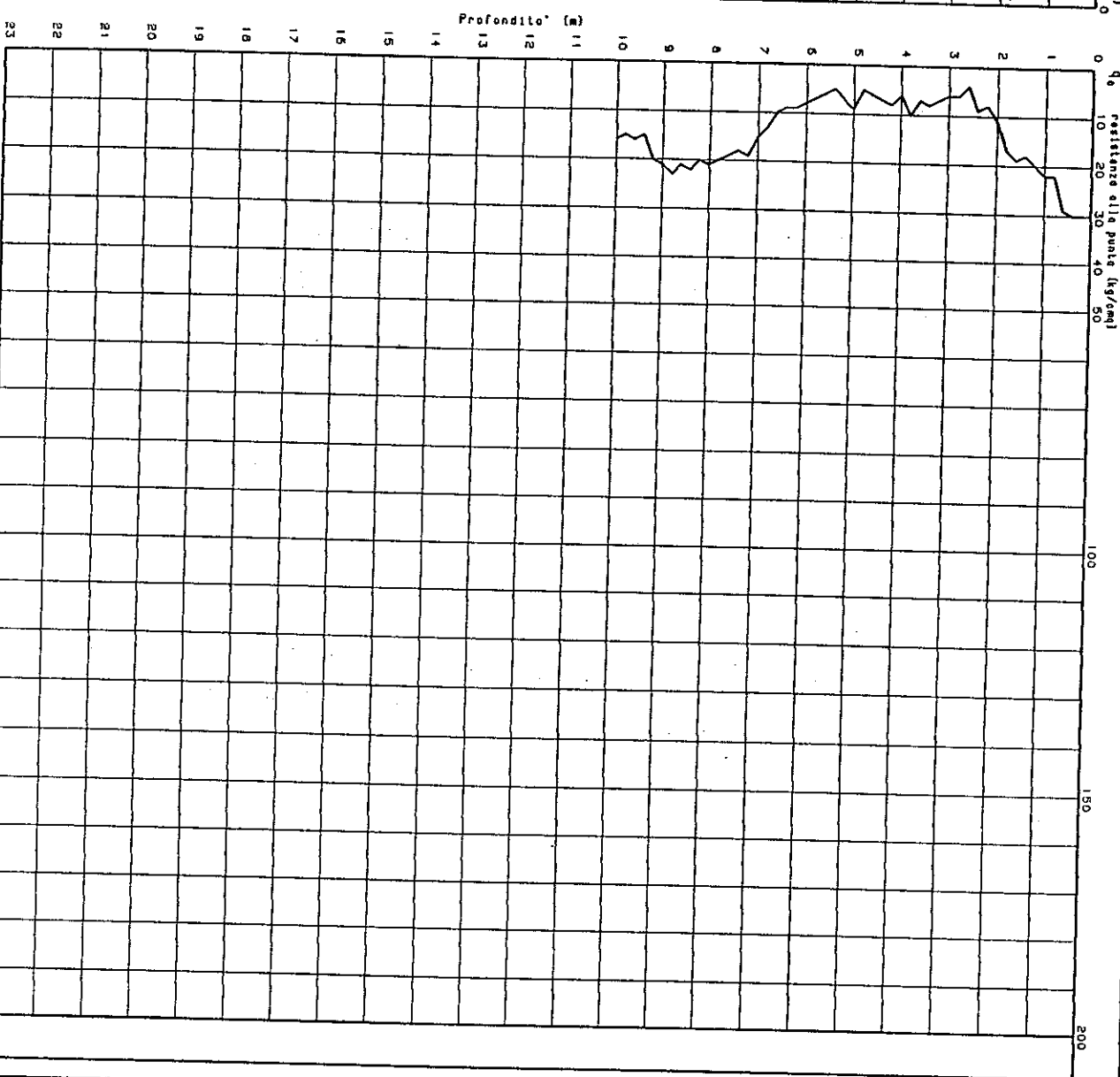
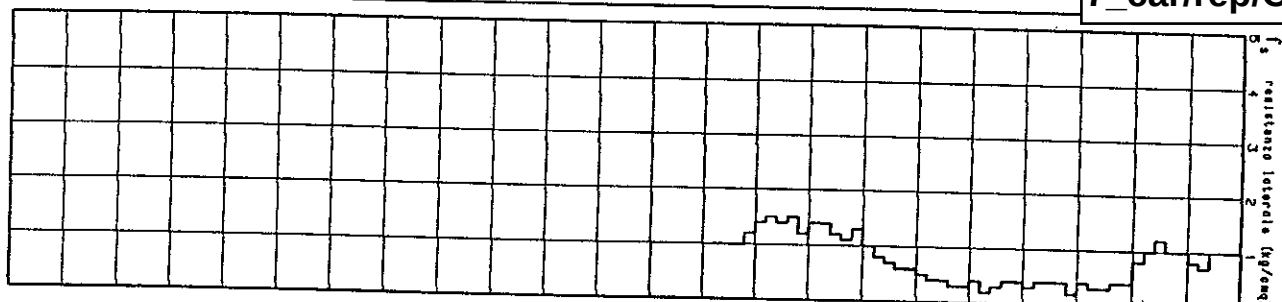
CPT (CONE PENETRATION TEST) N.4

Committente: P.E. Taddia Roberto

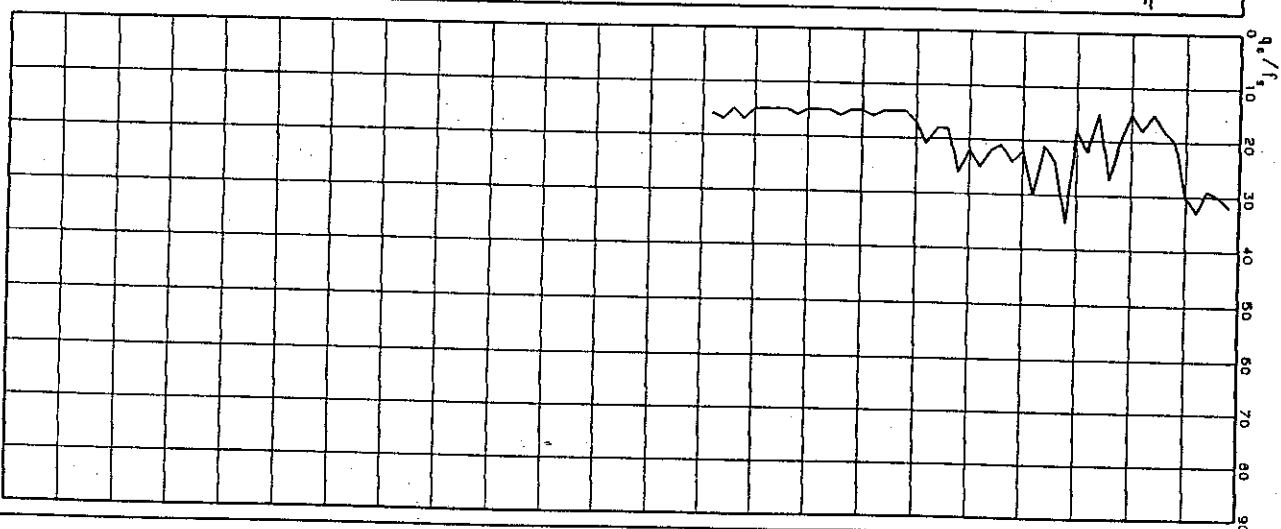
Località: Castello d'Argile (BO) Comparto C II

N. Certificato: 00252004

Data: 05/09/2000



Livello acqua da p.c.: -1.68 m



GEO-PROBE

40133 BOLOGNA

Via R. Griseo, 7 - Tel. 051/51.45.360

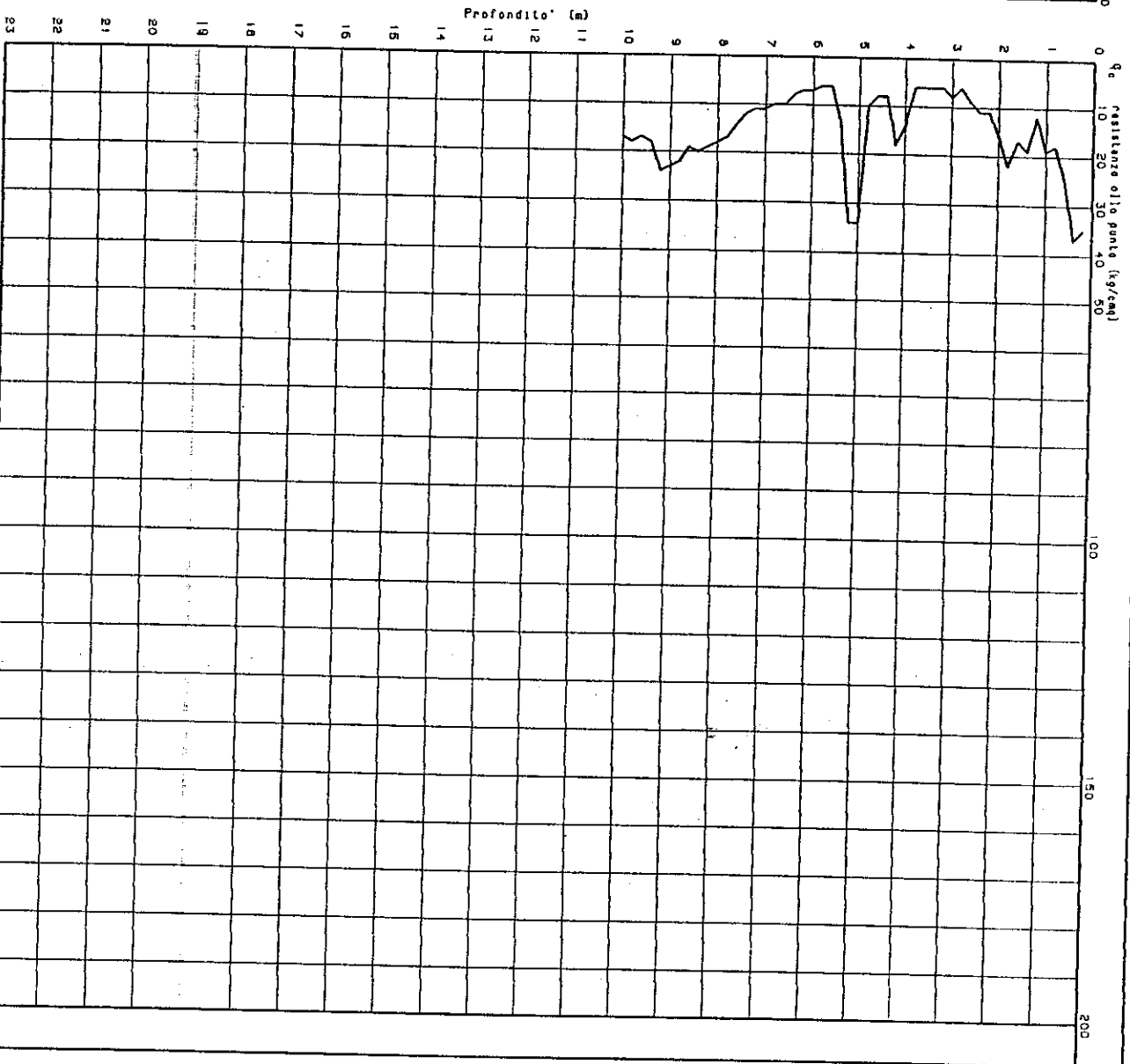
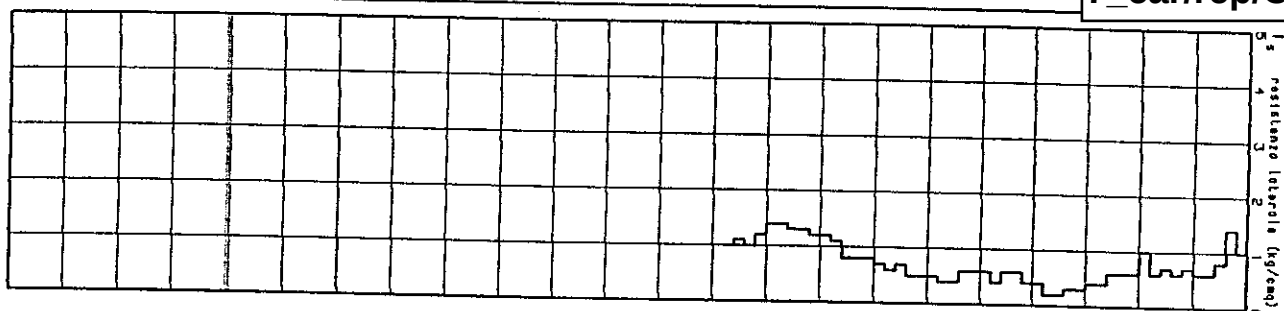
CPT (CONE PENETRATION TEST) N.5

Committente: P.E. Taddio Roberto

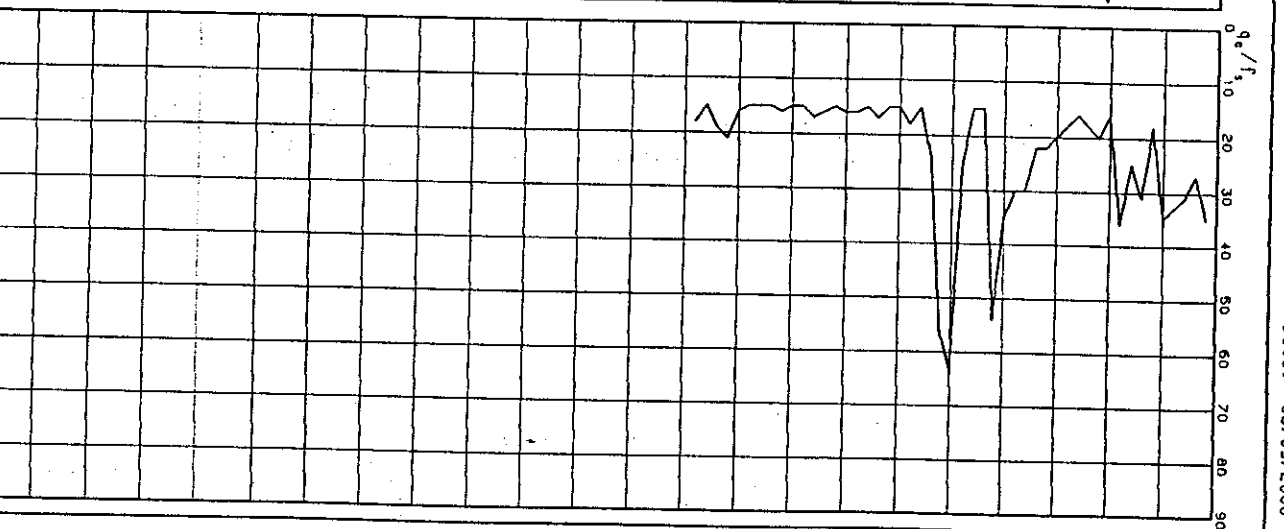
Localita': Castello d'Angile (BO) Comparto C 11

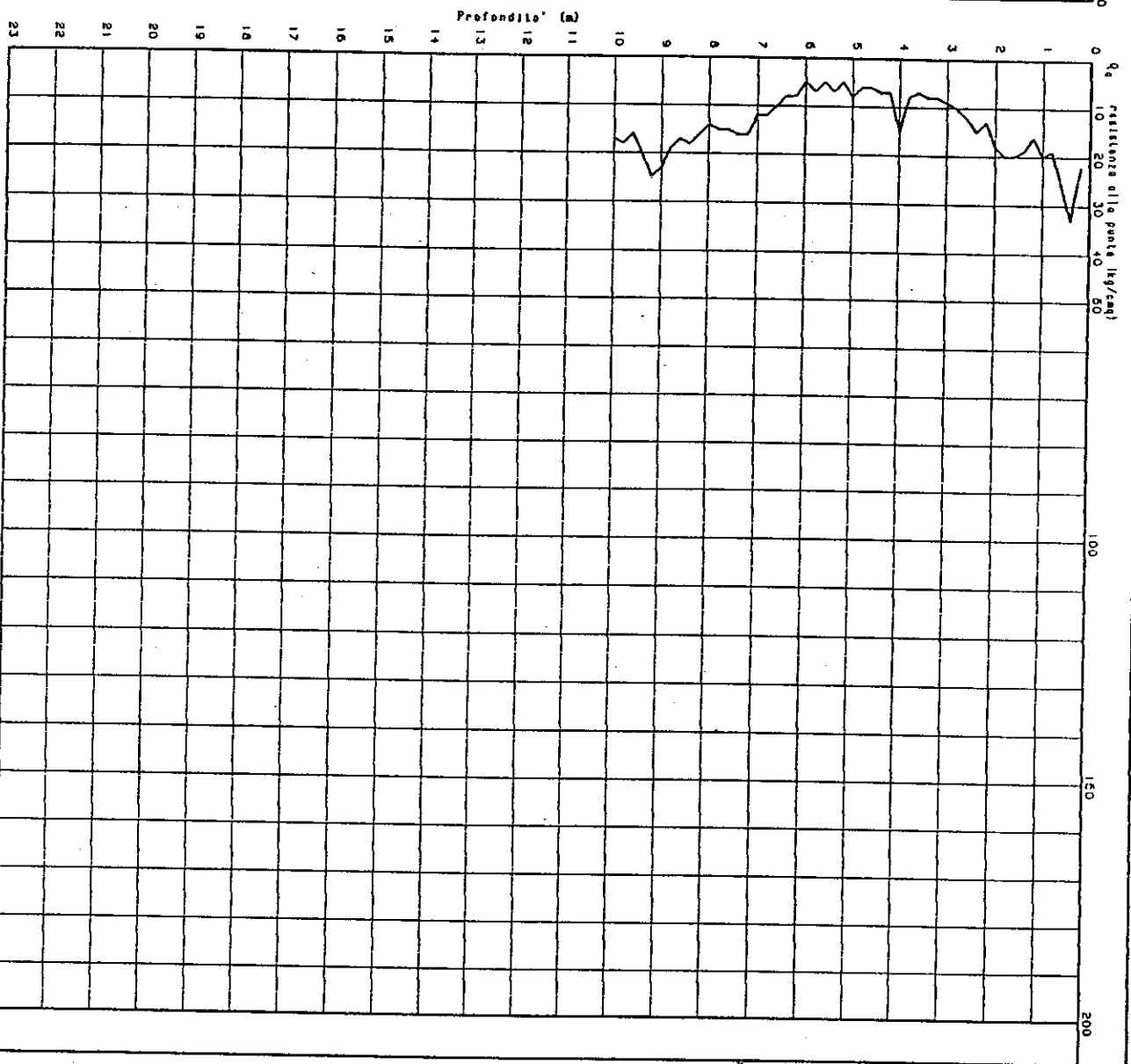
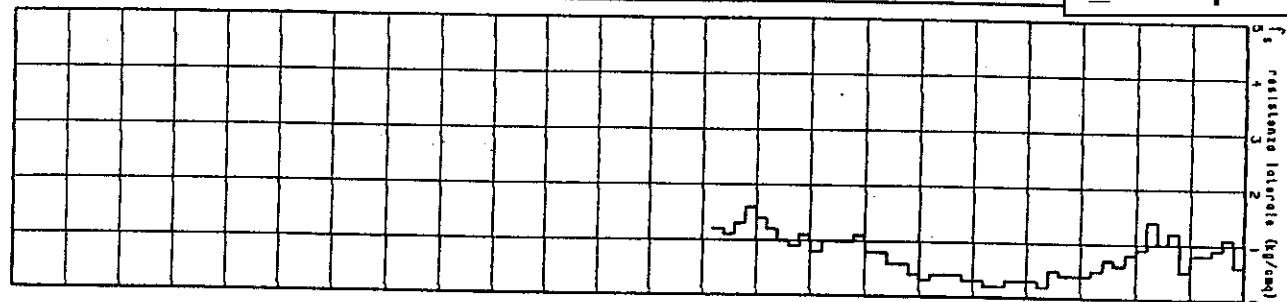
N. Certificato: 00262005

Data: 05/09/2000

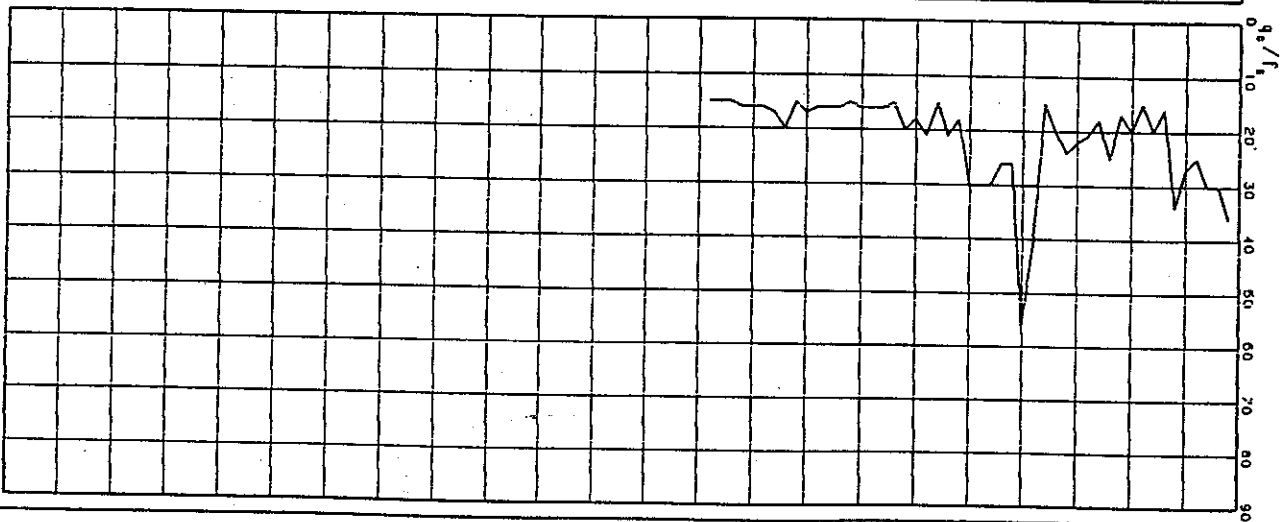


Livello acqua da p.c.: -2.10 m





Livello acque de p.c.: -2.39 m



GEO-PROBE

40133 BOLIGNA

Via R. Griseo, 7 - Tel. 051/61.45.360

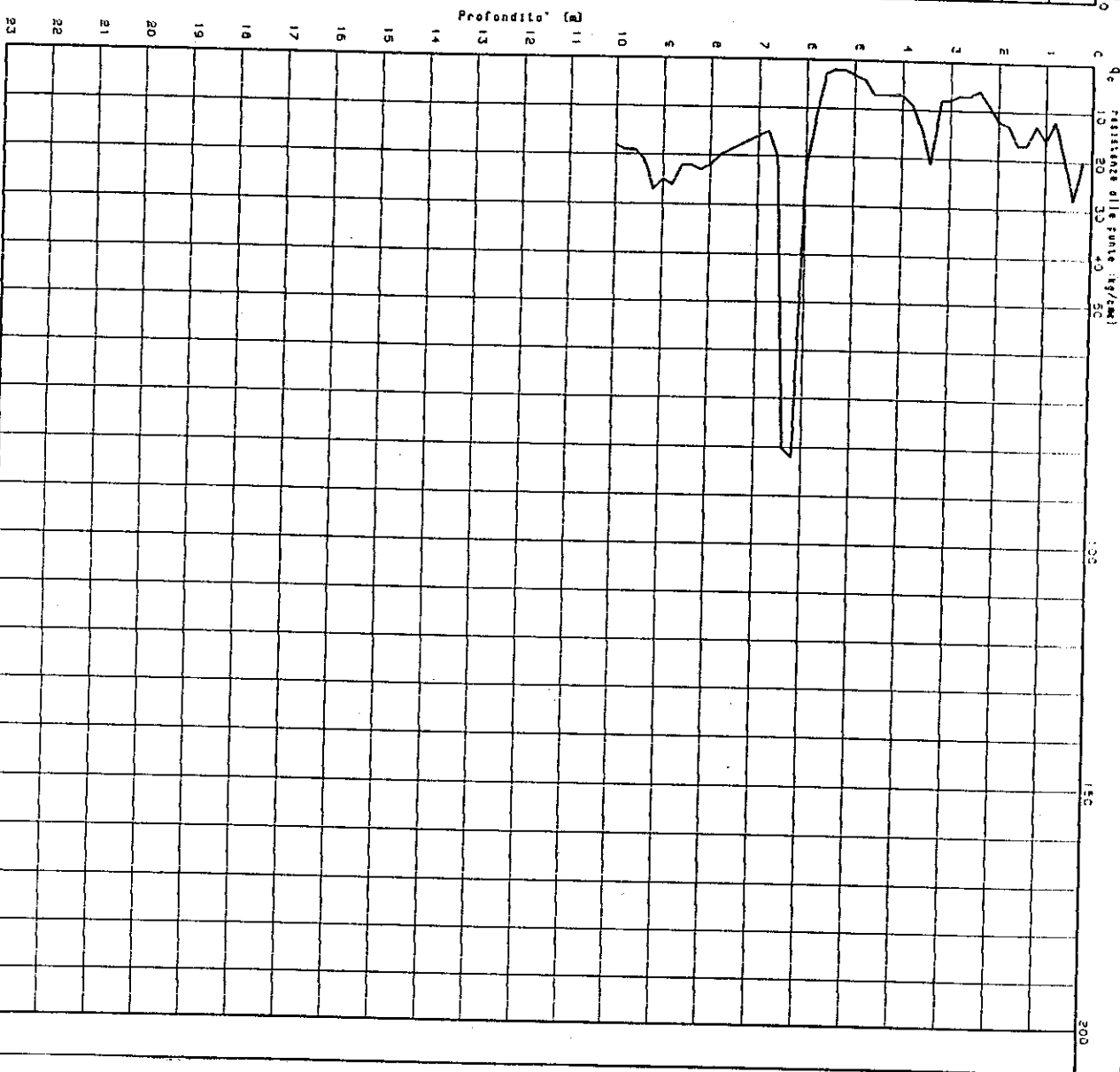
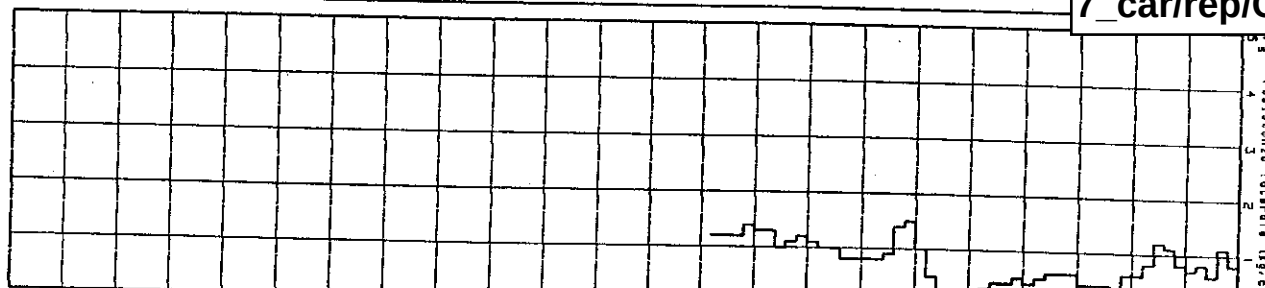
Committente: P.E. Toddi Roberto

Località: Castello d'Agilia (BG) Campione C. 1

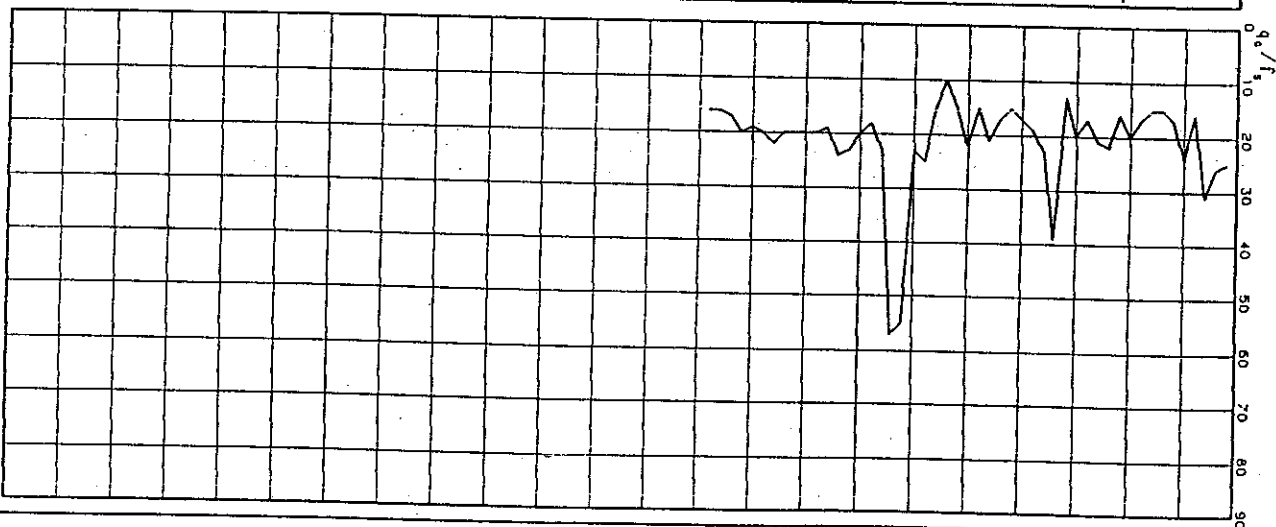
CPT (CONE PENETRATION TEST) N.7

N. Certificato: 00253007

Data: 05/05/2000



Livello acqua da p.c.: -2.20 m



GEO-PROBE

40133 BOLOGNA

CPT (CONE PENETRATION TEST) N.6

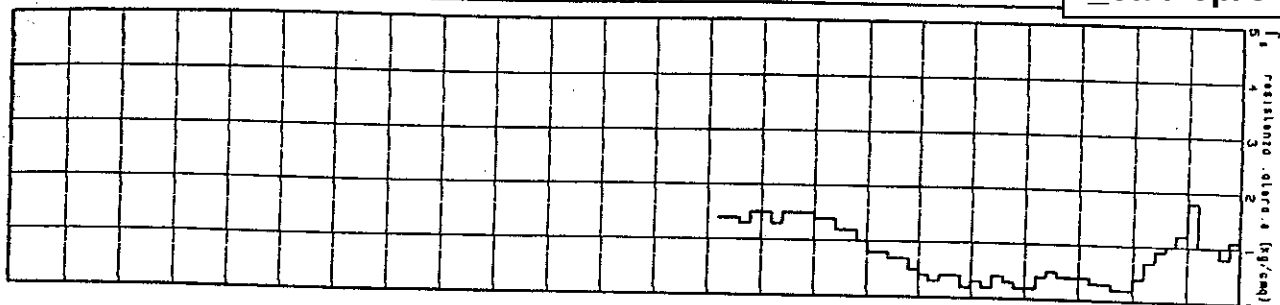
Committente: P.E. Taddio Roberto

Località: Costello d'Argile (BO) Comparto C.1

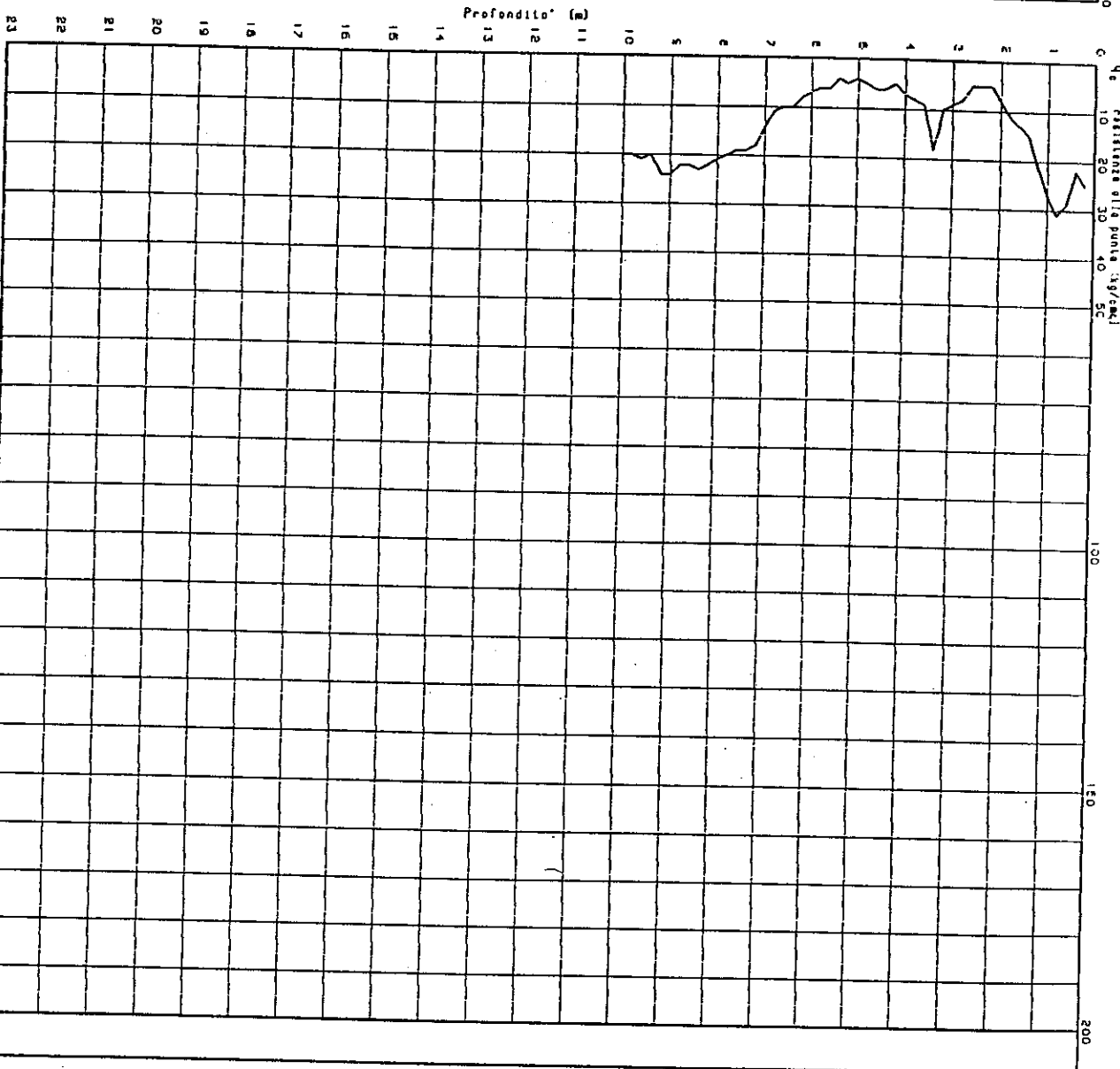
N. Cart. fileato: 00252003

Data: 05/05/2000

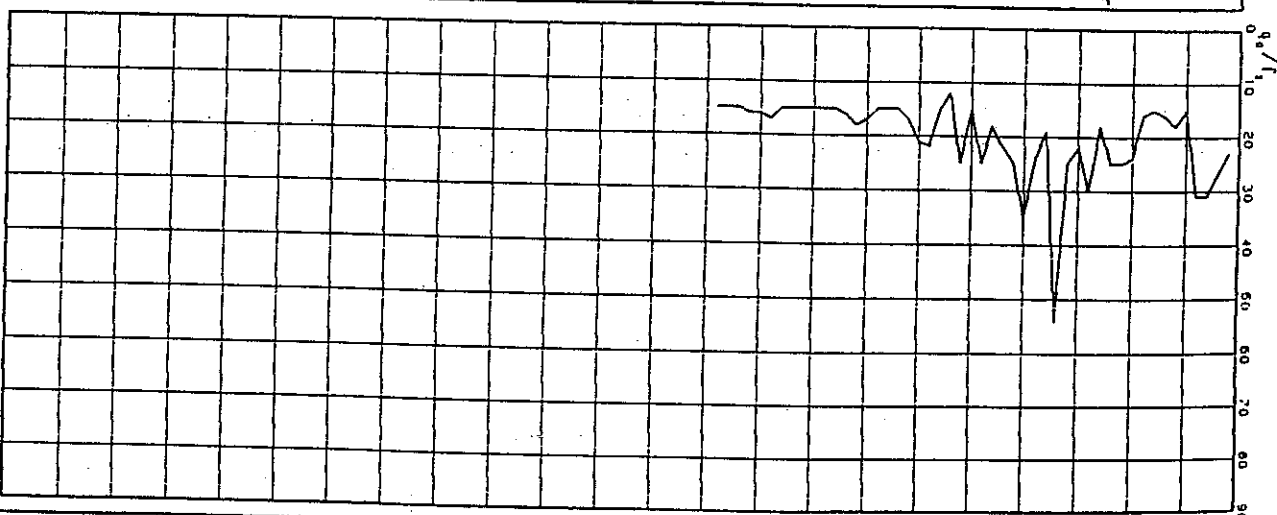
Via R. Griseo, 7 - Tel. 051/61.45.360



Profondità (m)



Livello acqua da p.c.: -2.50 m



GEO-PROBE

40133 BOLOGNA

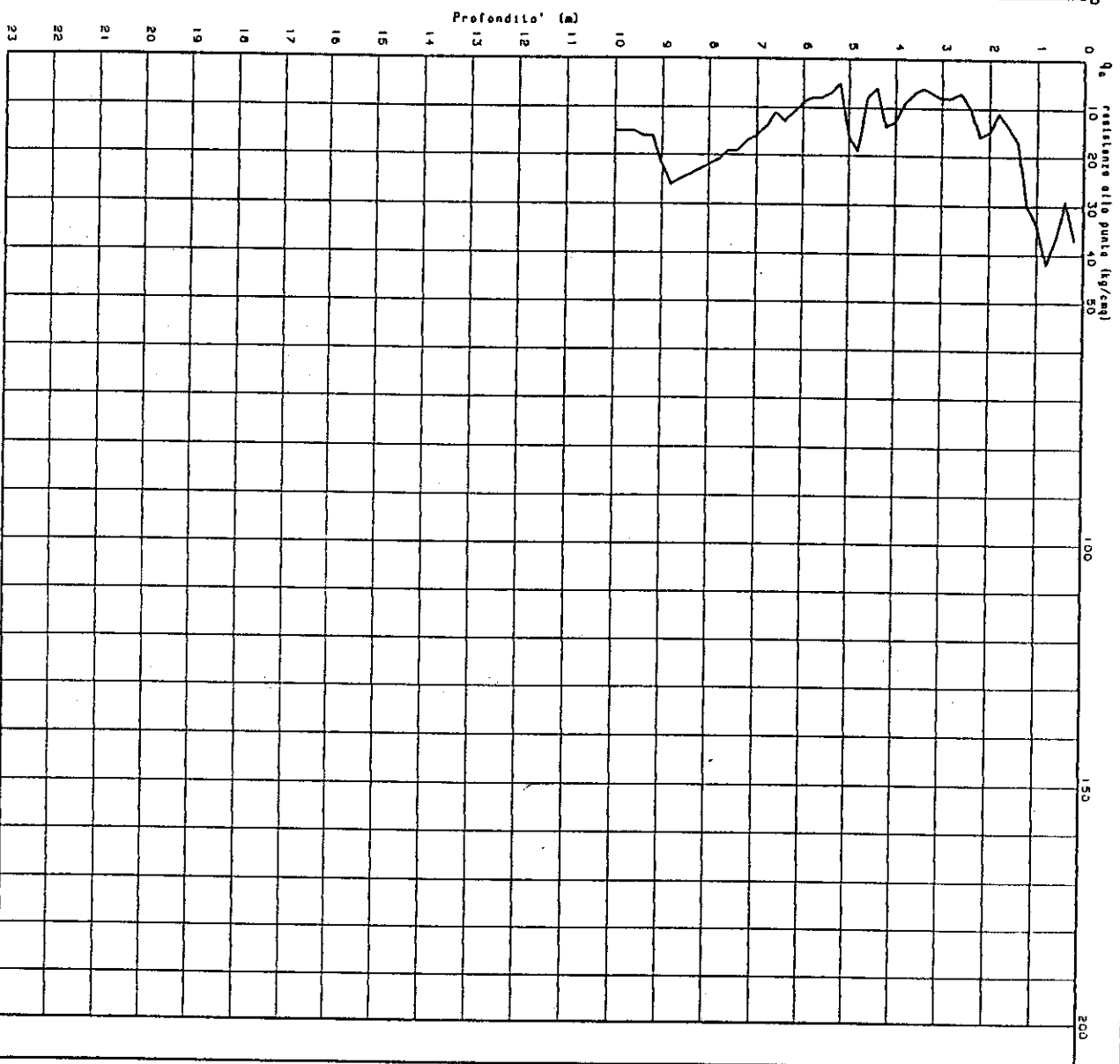
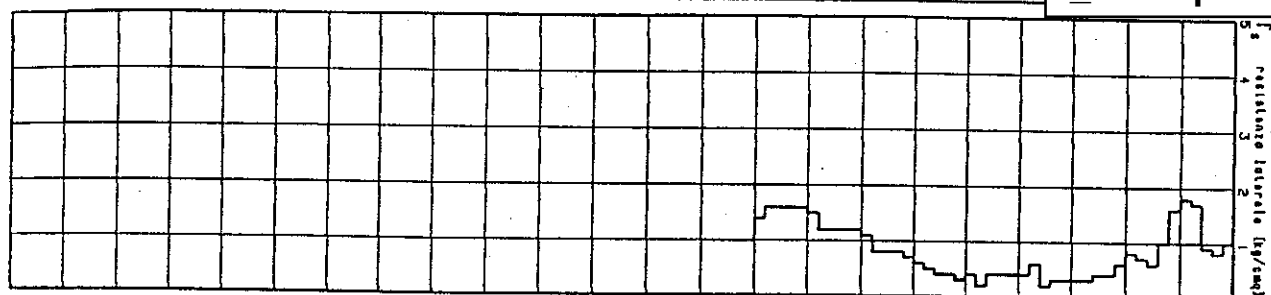
CPT (CONE PENETRATION TEST) N.9

N. Certificato: 00252009

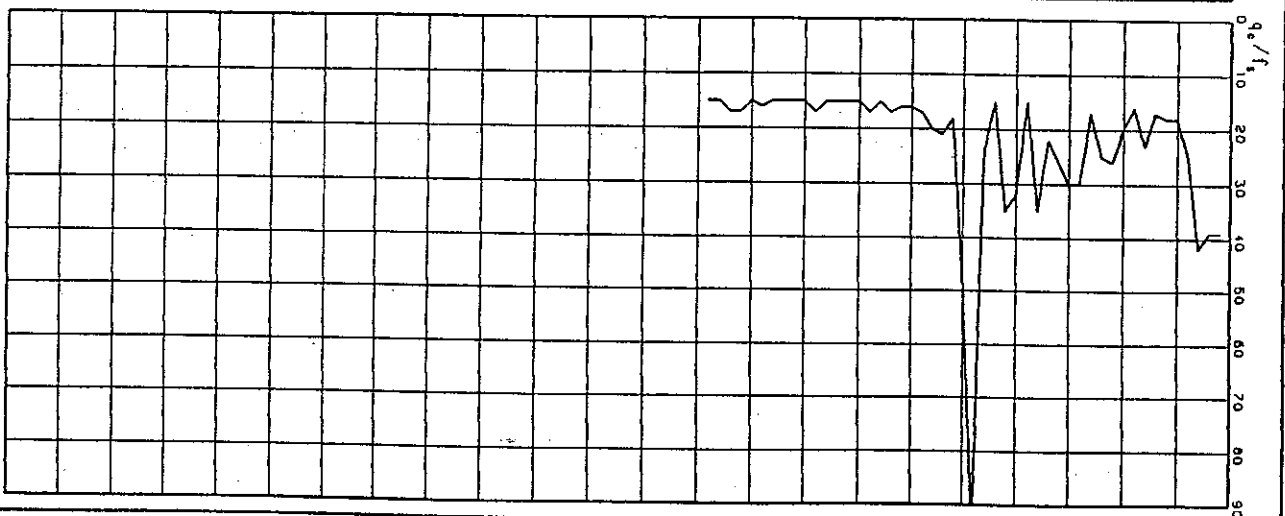
Via R. Griseo, 7 - Tel. 051/61.45.360

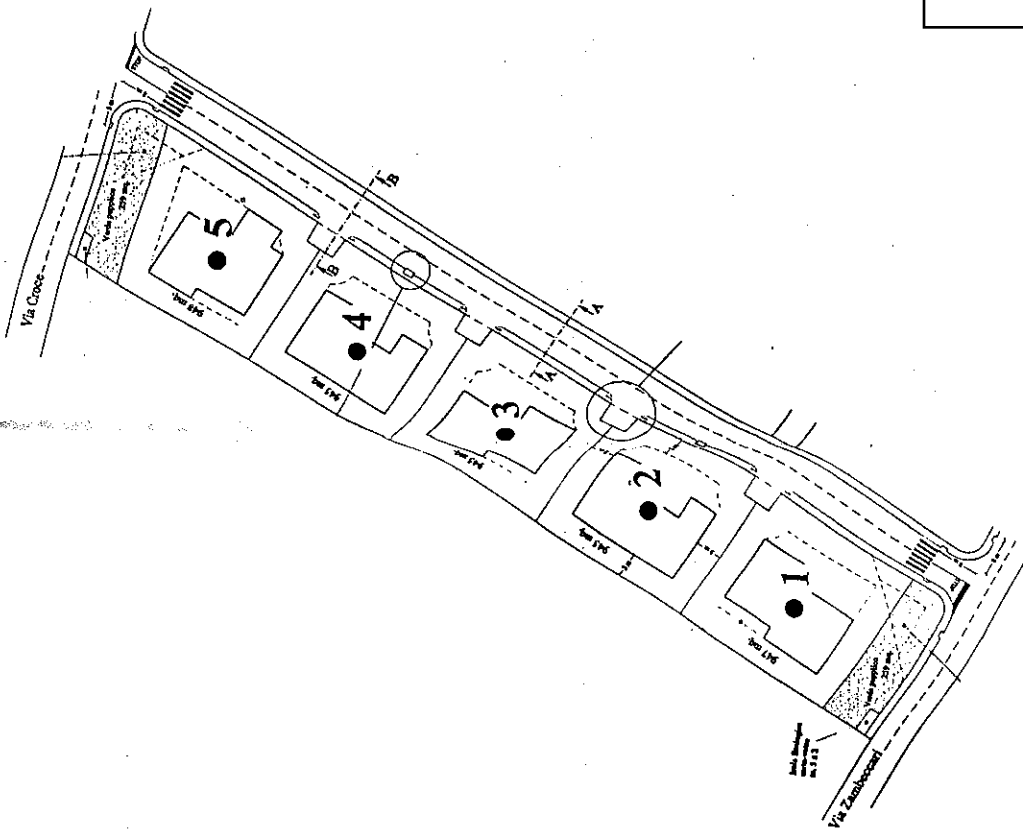
Committente: P.E. Taddia Roberto
Località: Castello d'Argile (BO) Comporto C II

Data: 05/09/2000



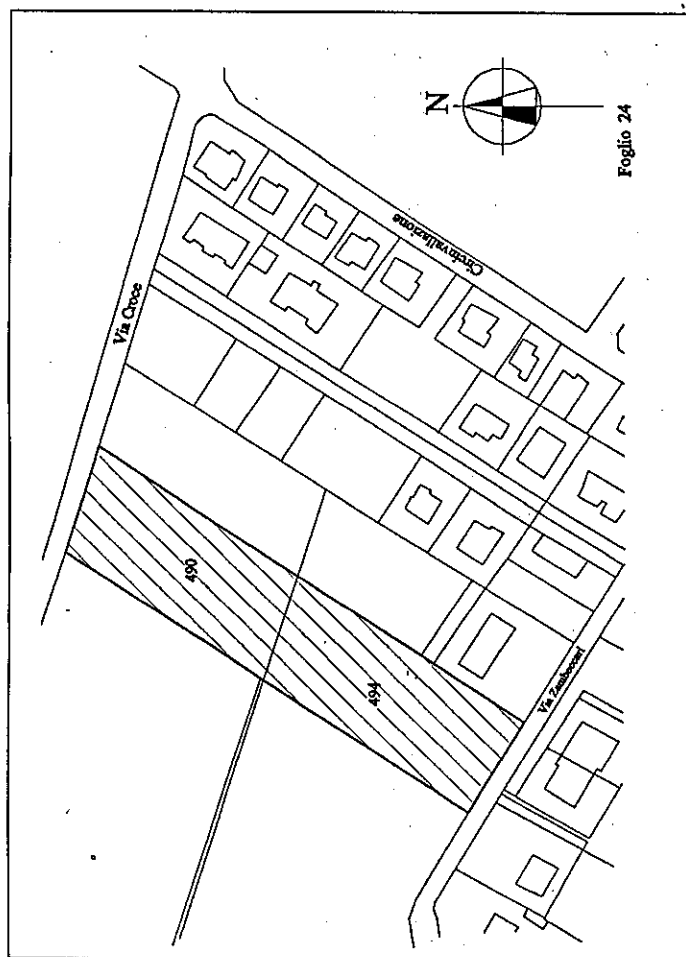
Livello acque da p.c.: -1.58 m





CARTA UBICAZIONE PROVE scala 1 : 1.000

- 1 prova penetrometrica statica - CPT e numerazione Lotto



Planimetria catastale
Comune di Castello D'Argile
Foglio 24 - Mapp. 490 e 494

sc. 1 : 2.000

Foglio 24

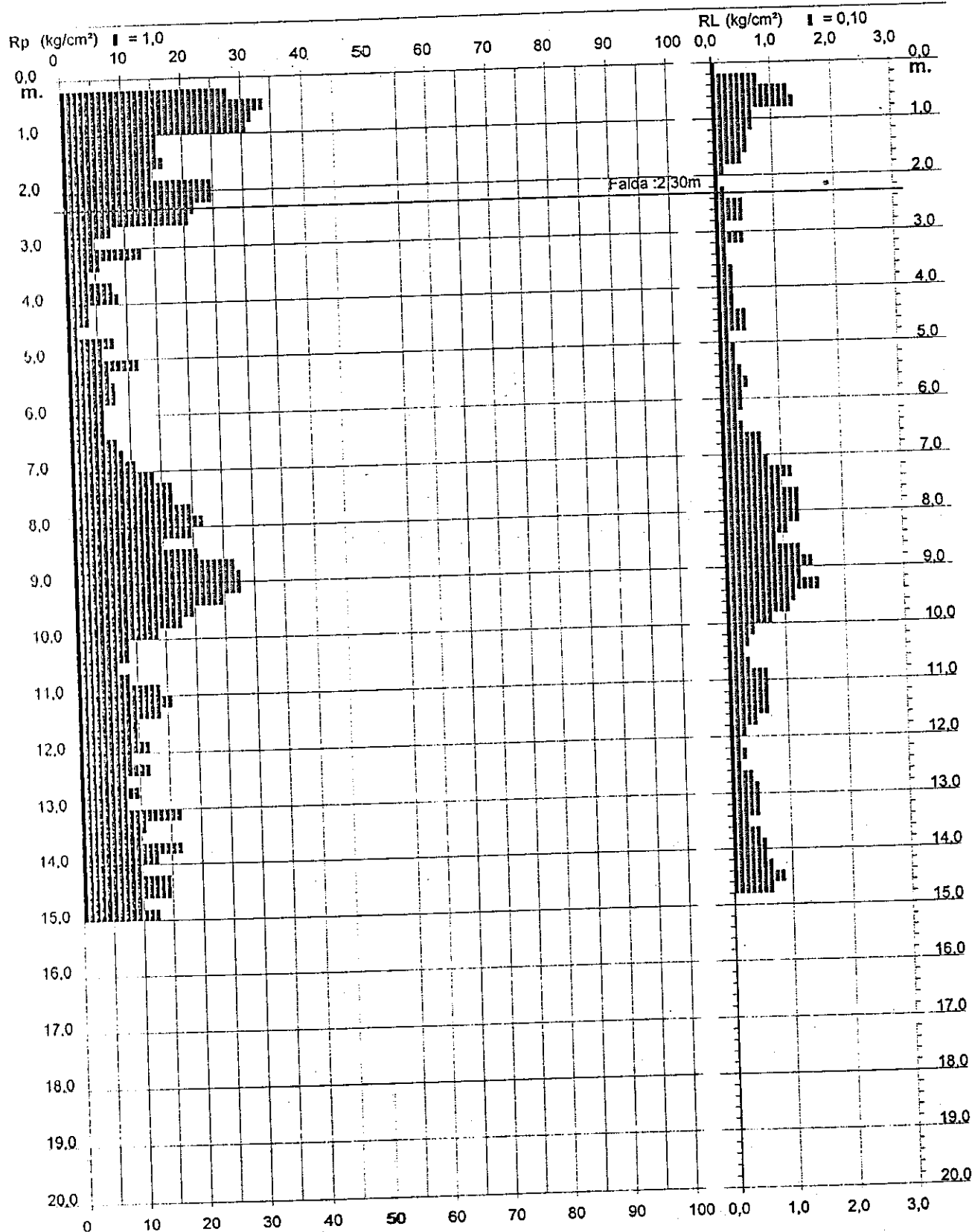
PROVA PENETROMETRICA STATICA
DIAGRAMMA DI RESISTENZA

CPT 1

2.010496-003

- committente : Sigg. RESCA Guerrino - RESCA Franco
- lavoro : Piano Particolareggiato
- località : Castel d'Argile (Bologna) - V. Zambeccari / V. Croce

- data : 30/09/2000
- quota inizio : Piano Campagna
- prof. falda : 2,30 m da quota inizio
- scala vert.: 1 : 100



PROVA PENETROMETRICA STATICA
LETTURE DI CAMPAGNA / VALORI DI RESISTENZA

CPT 1

2.010496-003

- committente : Sigg. RESCA Guerrino - RESCA Franco
- lavoro : Piano Particolareggiato
- località : Castel d'Argile (Bologna) - V. Zambecari / V. Croce
- note :

- data : 30/09/2000
- quota inizio : Piano Campagna
- prof. falda : 2,30 m da quota inizio
- pagina : 1

prf	LP	LL	Rp	RL	Rp/RI	prf	LP	LL	Rp	RL	Rp/RI
m	Kg/cm ²	Kg/cm ²	Kg/cm ²	Kg/cm ²	-	m	Kg/cm ²	Kg/cm ²	Kg/cm ²	Kg/cm ²	-
0,20	---	---	---	0,13	---	7,80	10,0	17,5	20,0	1,33	15,0
0,40	14,0	15,0	28,0	0,80	35,0	8,00	11,0	21,0	22,0	1,33	16,0
0,60	17,0	23,0	34,0	1,33	25,0	8,20	10,0	20,0	20,0	1,27	16,0
0,80	16,0	26,0	32,0	1,40	23,0	8,40	7,5	17,0	15,0	1,07	14,0
1,00	15,5	26,0	31,0	0,67	46,0	8,60	10,5	18,5	21,0	0,87	24,0
1,20	8,0	13,0	16,0	0,73	22,0	8,80	13,5	20,0	27,0	1,33	20,0
1,40	8,0	13,5	16,0	0,60	27,0	9,00	14,0	24,0	28,0	1,47	19,0
1,60	8,5	13,0	17,0	0,60	28,0	9,20	14,0	25,0	28,0	1,27	22,0
1,80	7,5	12,0	15,0	0,53	28,0	9,40	12,5	22,0	25,0	1,60	16,0
2,00	12,5	16,5	25,0	0,20	125,0	9,60	10,0	22,0	20,0	1,20	17,0
2,20	12,5	14,0	25,0	0,13	187,0	9,80	9,0	18,0	18,0	1,07	17,0
2,40	11,0	12,0	22,0	0,20	110,0	10,00	7,0	15,0	14,0	0,80	17,0
2,60	10,5	12,0	21,0	0,47	45,0	10,20	4,5	10,5	9,0	0,53	17,0
2,80	4,0	7,5	8,0	0,47	17,0	10,40	4,5	8,5	9,0	0,40	22,0
3,00	2,5	6,0	5,0	0,20	25,0	10,60	3,5	6,5	7,0	0,33	21,0
3,20	6,5	8,0	13,0	0,47	28,0	10,80	4,5	7,0	9,0	0,40	22,0
3,40	3,0	6,5	6,0	0,20	30,0	11,00	7,0	10,0	14,0	0,73	19,0
3,60	2,0	3,5	4,0	0,20	20,0	11,20	8,0	13,5	16,0	0,73	22,0
3,80	4,0	5,5	8,0	0,27	30,0	11,40	7,0	12,5	14,0	0,67	21,0
4,00	4,5	6,5	9,0	0,27	34,0	11,60	5,0	10,0	10,0	0,67	15,0
4,20	2,0	4,0	4,0	0,33	12,0	11,80	5,0	10,0	10,0	0,47	21,0
4,40	2,0	4,5	4,0	0,27	15,0	12,00	6,0	9,5	12,0	0,33	36,0
4,60	1,0	3,0	2,0	0,47	4,0	12,20	4,5	7,0	9,0	0,20	45,0
4,80	4,0	7,5	8,0	0,53	15,0	12,40	6,0	7,5	12,0	0,33	36,0
5,00	3,0	7,0	6,0	0,20	30,0	12,60	4,0	6,5	8,0	0,20	40,0
5,20	6,0	7,5	12,0	0,33	36,0	12,80	5,0	6,5	10,0	0,40	25,0
5,40	3,5	6,0	7,0	0,33	21,0	13,00	4,0	7,0	8,0	0,47	17,0
5,60	4,0	6,5	8,0	0,40	20,0	13,20	8,5	12,0	17,0	0,47	36,0
5,80	4,0	7,0	8,0	0,47	17,0	13,40	5,5	9,0	11,0	0,47	24,0
6,00	3,0	6,5	6,0	0,40	15,0	13,60	5,0	8,5	10,0	0,27	37,0
6,20	3,0	6,0	6,0	0,40	15,0	13,80	8,5	10,5	17,0	0,47	36,0
6,40	3,0	6,0	6,0	0,33	18,0	14,00	6,5	10,0	13,0	0,60	22,0
6,60	4,0	6,5	8,0	0,40	20,0	14,20	5,0	9,5	10,0	0,60	17,0
6,80	4,5	7,5	9,0	0,67	13,0	14,40	7,5	12,0	15,0	0,73	20,0
7,00	5,5	10,5	11,0	0,67	16,0	14,60	7,5	13,0	15,0	0,93	16,0
7,20	7,0	12,0	14,0	0,80	17,0	14,80	5,0	12,0	10,0	0,73	14,0
7,40	8,5	14,5	17,0	1,20	14,0	15,00	6,5	12,0	13,0	---	---
7,60	8,5	17,5	17,0	1,00	17,0						

- PENETROMETRO STATICO tipo GOUDA da 12 t - (con anello allargatore) -
- COSTANTE DI TRASFORMAZIONE Ct = 20 - Velocità Avanzamento punta 2 cm/s
- punta meccanica tipo Begemann $\phi = 35.7$ mm (area punta 10 cm² - apertura 60°)
- manicotto laterale (superficie 150 cm²)

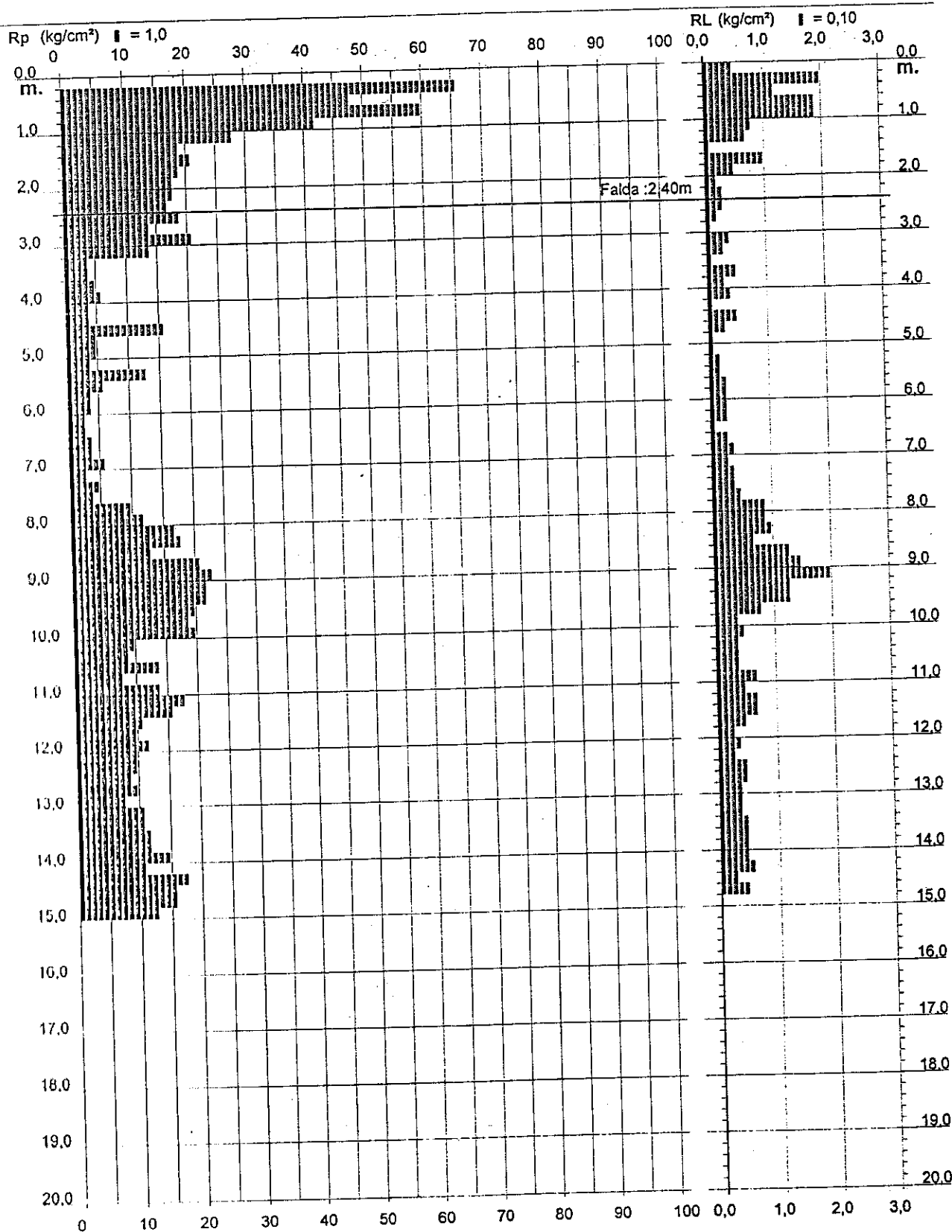
PROVA PENETROMETRICA STATICA **DIAGRAMMA DI RESISTENZA**

CPT 2

2.010496-003

- committente : Sigg. RESCA Guerrino - RESCA Franco
 - lavoro : Piano Particolareggiato
 - località : Castel d'Argile (Bologna) - V. Zambeccari / V. Croce

- data : 30/09/2000
 - quota inizio : Piano Campagna
 - prof. falda : 2,40 m da quota inizio
 - scala vert.: 1 : 100



PROVA PENETROMETRICA STATICA
LETTURE DI CAMPAGNA / VALORI DI RESISTENZA

CPT 2

2.010496-003

- committente : Sigg. RESCA Guerrino - RESCA Franco
- lavoro : Piano Particolareggiato
- località : Castel d'Argile (Bologna) - V. Zambecari / V. Croce
- note :

- data : 30/09/2000
- quota inizio : Piano Campagna
- prof. falda : 2,40 m da quota inizio
- pagina : 1

prf	LP	LL	Rp	RL	Rp/RI	prf	LP	LL	Rp	RL	Rp/RI
m	Kg/cm ²	Kg/cm ²	Kg/cm ²	Kg/cm ²	-	m	Kg/cm ²	Kg/cm ²	Kg/cm ²	Kg/cm ²	-
0,20	---	---	---	0,53	---	7,80	5,0	8,0	10,0	0,53	19,0
0,40	33,0	37,0	66,0	2,00	33,0	8,00	6,0	10,0	12,0	0,87	14,0
0,60	24,0	39,0	48,0	1,20	40,0	8,20	8,5	15,0	17,0	0,93	18,0
0,80	30,0	39,0	60,0	1,87	32,0	8,40	9,0	16,0	18,0	1,00	18,0
1,00	21,0	35,0	42,0	1,87	22,0	8,60	6,5	14,0	13,0	0,67	19,0
1,20	14,0	28,0	28,0	0,80	35,0	8,80	10,5	15,5	21,0	1,27	17,0
1,40	9,5	15,5	19,0	0,67	28,0	9,00	11,5	21,0	23,0	1,47	16,0
1,60	10,5	15,5	21,0	0,13	157,0	9,20	11,0	22,0	22,0	2,00	11,0
1,80	9,5	10,5	19,0	1,00	19,0	9,40	11,0	26,0	22,0	1,33	16,0
2,00	9,0	16,5	18,0	0,47	39,0	9,60	10,0	20,0	20,0	1,27	16,0
2,20	9,0	12,5	18,0	0,20	90,0	9,80	9,5	19,0	19,0	0,80	24,0
2,40	8,5	10,0	17,0	0,33	51,0	10,00	10,0	16,0	20,0	0,40	50,0
2,60	9,5	12,0	19,0	0,27	71,0	10,20	5,0	8,0	10,0	0,53	19,0
2,80	7,0	9,0	14,0	0,20	70,0	10,40	4,5	8,5	9,0	0,40	22,0
3,00	10,5	12,0	21,0	0,07	315,0	10,60	7,0	10,0	14,0	0,40	35,0
3,20	7,0	7,5	14,0	0,40	35,0	10,80	4,0	7,0	8,0	0,40	20,0
3,40	2,0	5,0	4,0	0,27	15,0	11,00	7,0	10,0	14,0	0,67	21,0
3,60	2,0	4,0	4,0	0,07	60,0	11,20	9,0	14,0	18,0	0,47	39,0
3,80	2,5	3,0	5,0	0,53	9,0	11,40	8,0	11,5	16,0	0,67	24,0
4,00	3,0	7,0	6,0	0,33	18,0	11,60	5,5	10,5	11,0	0,67	16,0
4,20	2,0	4,5	4,0	0,40	10,0	11,80	5,0	10,0	10,0	0,47	21,0
4,40	2,0	5,0	4,0	0,13	30,0	12,00	6,0	9,5	12,0	0,33	36,0
4,60	8,0	9,0	16,0	0,47	34,0	12,20	5,0	7,5	10,0	0,40	25,0
4,80	2,5	6,0	5,0	0,27	19,0	12,40	5,0	8,0	10,0	0,27	37,0
5,00	2,5	4,5	5,0	0,13	37,0	12,60	4,5	6,5	9,0	0,47	19,0
5,20	2,0	3,0	4,0	0,07	60,0	12,80	5,0	8,5	10,0	0,47	21,0
5,40	6,5	7,0	13,0	0,20	65,0	13,00	4,0	7,5	8,0	0,40	20,0
5,60	3,0	4,5	6,0	0,20	30,0	13,20	5,5	8,5	11,0	0,40	27,0
5,80	2,0	3,5	4,0	0,27	15,0	13,40	5,5	8,5	11,0	0,40	27,0
6,00	2,0	4,0	4,0	0,27	15,0	13,60	6,0	9,0	12,0	0,47	26,0
6,20	1,5	3,5	3,0	0,27	11,0	13,80	6,0	9,5	12,0	0,47	26,0
6,40	1,5	3,5	3,0	0,27	11,0	14,00	7,5	11,0	15,0	0,53	28,0
6,60	2,0	4,0	4,0	0,13	30,0	14,20	5,5	9,5	11,0	0,53	21,0
6,80	2,0	3,0	4,0	0,27	15,0	14,40	9,0	13,0	18,0	0,60	30,0
7,00	3,0	5,0	6,0	0,40	15,0	14,60	8,0	12,5	16,0	0,27	60,0
7,20	1,5	4,5	3,0	0,27	11,0	14,80	8,0	10,0	16,0	0,53	30,0
7,40	2,5	4,5	5,0	0,40	12,0	15,00	6,5	10,5	13,0	---	---
7,60	2,0	5,0	4,0	0,40	10,0						

- PENETROMETRO STATICO tipo GOUDA da 12 t - (con anello allargatore) -
- COSTANTE DI TRASFORMAZIONE Ct = 20 - Velocità Avanzamento punta 2 cm/s
- punta meccanica tipo Begemann $\phi = 35.7$ mm (area punta 10 cm² - apertura 60°)
- manicotto laterale (superficie 150 cm²)

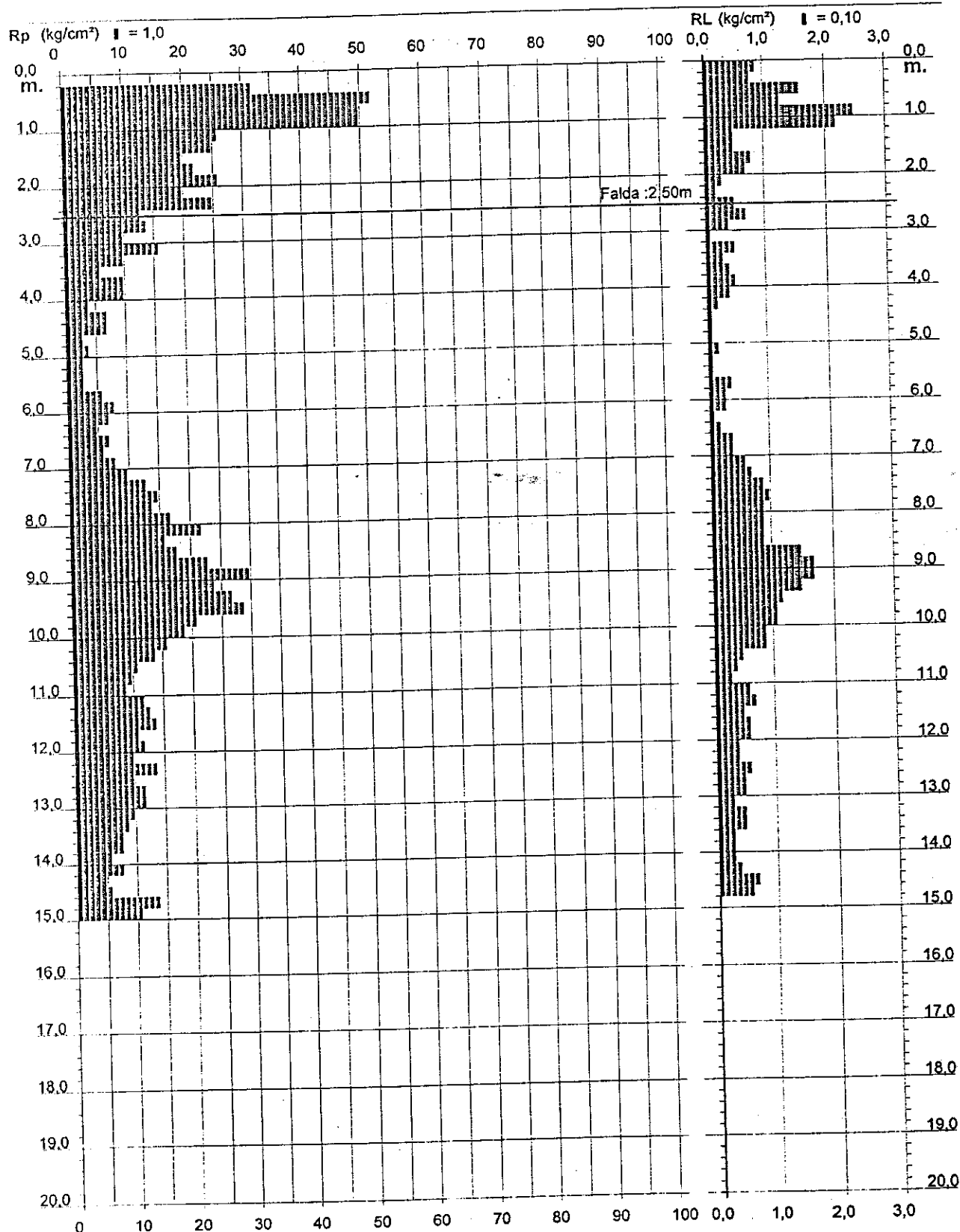
PROVA PENETROMETRICA STATICA **DIAGRAMMA DI RESISTENZA**

CPT 3

2.010496-003

- committente : Sigg. RESCA Guerrino - RESCA Franco
 - lavoro : Piano Particolareggiato
 - località : Castel d'Argile (Bologna) - V. Zambecari / V. Croce

- data : 30/09/2000
 - quota inizio : Piano Campagna
 - prof. falda : 2,50 m da quota inizio
 - scala vert.: 1 : 100



PROVA PENETROMETRICA STATICA
LETTURE DI CAMPAGNA / VALORI DI RESISTENZA

CPT 3

2.010496-003

- committente : Sigg. RESCA Guerrino - RESCA Franco
- lavoro : Piano Particolareggiato
- località : Castel d'Argile (Bologna) - V. Zambeccari / V. Croce
- note :

- data : 30/09/2000
- quota inizio : Piano Campagna
- prof. falda : 2,50 m da quota inizio
- pagina : 1

prf	LP	LL	Rp	RL	Rp/RI	prf	LP	LL	Rp	RL	Rp/RI
m	Kg/cm ²	Kg/cm ²	Kg/cm ²	Kg/cm ²	-	m	Kg/cm ²	Kg/cm ²	Kg/cm ²	Kg/cm ²	-
0,20	----	----	---	0,93	----	7,80	7,0	14,0	14,0	1,00	14,0
0,40	16,0	23,0	32,0	0,80	40,0	8,00	8,5	16,0	17,0	0,93	18,0
0,60	20,0	32,0	52,0	1,60	32,0	8,20	11,0	18,0	22,0	0,93	24,0
0,80	25,0	37,0	50,0	1,33	37,0	8,40	8,0	15,0	16,0	0,87	18,0
1,00	25,0	35,0	50,0	2,53	20,0	8,60	9,0	15,5	18,0	0,87	21,0
1,20	13,0	32,0	26,0	2,20	12,0	8,80	11,5	18,0	23,0	1,47	16,0
1,40	12,5	29,0	25,0	0,47	54,0	9,00	15,0	26,0	30,0	1,73	17,0
1,60	10,0	13,5	20,0	0,53	37,0	9,20	12,0	25,0	24,0	1,67	14,0
1,80	11,0	15,0	22,0	0,80	27,0	9,40	13,5	26,0	27,0	1,53	18,0
2,00	13,0	19,0	26,0	0,67	39,0	9,60	14,5	26,0	29,0	1,20	24,0
2,20	10,0	15,0	20,0	0,33	60,0	9,80	10,5	19,5	21,0	1,13	19,0
2,40	12,5	15,0	25,0	0,20	125,0	10,00	9,5	18,0	19,0	1,07	18,0
2,60	6,5	8,0	13,0	0,53	24,0	10,20	8,0	16,0	16,0	0,93	17,0
2,80	7,0	11,0	14,0	0,67	21,0	10,40	7,0	14,0	14,0	0,87	16,0
3,00	5,0	10,0	10,0	0,40	25,0	10,60	5,5	12,0	11,0	0,47	24,0
3,20	8,0	11,0	16,0	0,07	240,0	10,80	5,0	8,5	10,0	0,40	25,0
3,40	5,0	5,5	10,0	0,53	19,0	11,00	4,5	7,5	9,0	0,33	27,0
3,60	3,0	7,0	6,0	0,27	22,0	11,20	6,0	8,5	12,0	0,60	20,0
3,80	5,0	7,0	10,0	0,40	25,0	11,40	6,5	11,0	13,0	0,67	19,0
4,00	5,0	8,0	10,0	0,53	19,0	11,60	7,0	12,0	14,0	0,53	26,0
4,20	2,0	6,0	4,0	0,40	10,0	11,80	5,5	9,5	11,0	0,60	18,0
4,40	3,5	6,5	7,0	0,20	35,0	12,00	6,0	10,5	12,0	0,60	20,0
4,60	3,5	5,0	7,0	0,13	52,0	12,20	5,0	9,5	10,0	0,40	25,0
4,80	1,5	2,5	3,0	0,13	22,0	12,40	7,0	10,0	14,0	0,40	35,0
5,00	2,0	3,0	4,0	0,13	30,0	12,60	5,0	8,0	10,0	0,60	17,0
5,20	1,5	2,5	3,0	0,20	15,0	12,80	6,0	10,5	12,0	0,53	22,0
5,40	1,5	3,0	3,0	0,13	22,0	13,00	6,0	10,0	12,0	0,53	22,0
5,60	1,5	2,5	3,0	0,13	22,0	13,20	5,0	9,0	10,0	0,27	37,0
5,80	3,0	4,0	6,0	0,40	15,0	13,40	4,5	6,5	9,0	0,53	17,0
6,00	4,0	7,0	8,0	0,33	24,0	13,60	4,0	8,0	8,0	0,47	17,0
6,20	3,5	6,0	7,0	0,33	21,0	13,80	4,0	7,5	8,0	0,33	24,0
6,40	2,5	5,0	5,0	0,13	37,0	14,00	3,0	5,5	6,0	0,33	18,0
6,60	3,5	4,5	7,0	0,20	35,0	14,20	4,0	6,5	8,0	0,27	30,0
6,80	3,0	4,5	6,0	0,40	15,0	14,40	2,5	4,5	5,0	0,40	12,0
7,00	4,0	7,0	8,0	0,40	20,0	14,60	3,0	6,0	6,0	0,67	9,0
7,20	5,0	8,0	10,0	0,60	17,0	14,80	7,0	12,0	14,0	0,60	23,0
7,40	6,5	11,0	13,0	0,73	18,0	15,00	5,5	10,0	11,0	---	---
7,60	7,5	13,0	15,0	0,93	16,0						

- PENETROMETRO STATICO tipo GOUDA da 12 t - (con anello allargatore) -
- COSTANTE DI TRASFORMAZIONE $C_t = 20$ - Velocità Avanzamento punta 2 cm/s
- punta meccanica tipo Begemann $\phi = 35.7$ mm (area punta 10 cm² - apertura 60°)
- manicotto laterale (superficie 150 cm²)

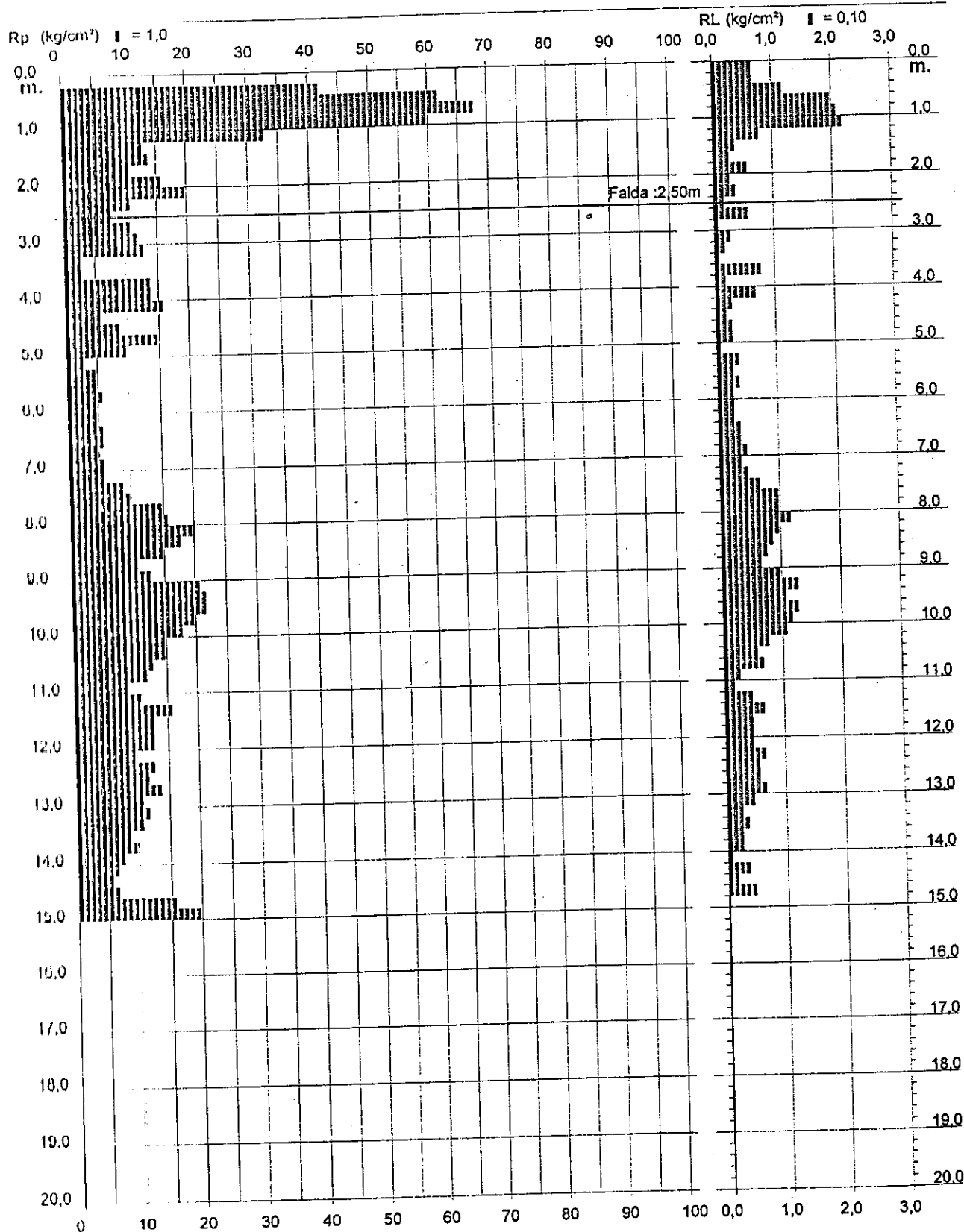
PROVA PENETROMETRICA STATICA DIAGRAMMA DI RESISTENZA

CPT 4

2.010496-003

- committente : Sigg. RESCA Guerrino - RESCA Franco
- lavoro : Piano Particolareggiato
- località : Castel d'Argile (Bologna) - V. Zambecari / V. Croce

- data : 30/09/2000
- quota inizio : Piano Campagna
- prof. falda : 2,50 m da quota inizio
- scala vert.: 1 : 100



PROVA PENETROMETRICA STATICA **LETTURE DI CAMPAGNA / VALORI DI RESISTENZA**

CPT 4

2.010496-003

- committente : Sigg. RESCA Guerrino - RESCA Franco
 - lavoro : Piano Particolareggiato
 - località : Castel d'Argile (Bologna) - V. Zambeccari / V. Croce
 - note :

- data : 30/09/2000
 - quota inizio : Piano Campagna
 - prof. falda : 2,50 m da quota inizio
 - pagina : 1

prf	LP	LL	Rp	RL	Rp/RI	prf	LP	LL	Rp	RL	Rp/RI
m	Kg/cm ²	Kg/cm ²	Kg/cm ²	Kg/cm ²	-	m	Kg/cm ²	Kg/cm ²	Kg/cm ²	Kg/cm ²	-
0,20	---	---	---	0,67	---	7,80	7,5	12,5	15,0	1,00	15,0
0,40	21,0	26,0	42,0	0,67	63,0	8,00	8,0	15,5	16,0	1,00	16,0
0,60	31,0	36,0	62,0	1,20	52,0	8,20	10,0	17,5	20,0	1,20	17,0
0,80	34,0	43,0	68,0	2,00	34,0	8,40	9,0	18,0	18,0	1,00	18,0
1,00	30,0	45,0	60,0	2,07	29,0	8,60	7,5	15,0	15,0	0,87	17,0
1,20	16,5	32,0	33,0	2,20	15,0	8,80	5,5	12,0	11,0	0,80	14,0
1,40	6,5	23,0	13,0	0,80	16,0	9,00	6,5	12,5	13,0	0,67	19,0
1,60	7,0	13,0	14,0	0,40	35,0	9,20	10,5	15,5	21,0	1,00	21,0
1,80	5,5	8,5	11,0	0,33	33,0	9,40	11,0	18,5	22,0	1,33	16,0
2,00	8,0	10,5	16,0	0,60	27,0	9,60	11,0	21,0	22,0	1,13	19,0
2,20	10,0	14,5	20,0	0,27	75,0	9,80	10,0	18,5	20,0	1,33	15,0
2,40	5,5	7,5	11,0	0,40	27,0	10,00	9,0	19,0	18,0	1,20	15,0
2,60	4,0	7,0	8,0	0,20	40,0	10,20	7,5	16,5	15,0	1,07	14,0
2,80	5,5	7,0	11,0	0,60	18,0	10,40	7,5	15,5	15,0	0,80	19,0
3,00	6,0	10,5	12,0	0,13	90,0	10,60	6,5	12,5	13,0	0,60	22,0
3,20	6,5	7,5	13,0	0,27	49,0	10,80	6,0	10,5	12,0	0,67	18,0
3,40	1,5	3,5	3,0	0,20	15,0	11,00	4,5	9,5	9,0	0,33	27,0
3,60	1,5	3,0	3,0	0,07	45,0	11,20	5,5	8,0	11,0	0,20	55,0
3,80	7,0	7,5	14,0	0,80	17,0	11,40	8,0	9,5	16,0	0,47	34,0
4,00	7,0	13,0	14,0	0,20	70,0	11,60	6,5	10,0	13,0	0,73	18,0
4,20	8,0	9,5	16,0	0,73	22,0	11,80	6,5	12,0	13,0	0,53	24,0
4,40	3,0	8,5	6,0	0,33	18,0	12,00	6,5	10,5	13,0	0,53	24,0
4,60	4,5	7,0	9,0	0,20	45,0	12,20	5,0	9,0	10,0	0,53	19,0
4,80	7,5	9,0	15,0	0,27	56,0	12,40	6,5	10,5	13,0	0,67	19,0
5,00	5,0	7,0	10,0	0,27	37,0	12,60	6,0	11,0	12,0	0,60	20,0
5,20	1,5	3,5	3,0	0,13	22,0	12,80	7,0	11,5	14,0	0,60	23,0
5,40	2,5	3,5	5,0	0,40	12,0	13,00	5,5	10,0	11,0	0,67	16,0
5,60	2,5	5,5	5,0	0,27	19,0	13,20	6,0	11,0	12,0	0,53	22,0
5,80	3,0	5,0	6,0	0,40	15,0	13,40	5,5	9,5	11,0	0,27	41,0
6,00	2,5	5,5	5,0	0,33	15,0	13,60	4,5	6,5	9,0	0,40	22,0
6,20	2,5	5,0	5,0	0,27	19,0	13,80	5,0	8,0	10,0	0,33	30,0
6,40	3,0	5,0	6,0	0,33	18,0	14,00	4,0	6,5	8,0	0,27	30,0
6,60	3,0	5,5	6,0	0,40	15,0	14,20	3,5	5,5	7,0	0,13	52,0
6,80	2,5	5,5	5,0	0,40	12,0	14,40	3,0	4,0	6,0	0,40	15,0
7,00	3,0	6,0	6,0	0,47	13,0	14,60	3,5	6,5	7,0	0,20	35,0
7,20	3,0	6,5	6,0	0,40	15,0	14,80	8,0	9,5	16,0	0,47	34,0
7,40	4,5	7,5	9,0	0,53	17,0	15,00	10,0	13,5	20,0	---	---
7,60	5,0	9,0	10,0	0,67	15,0						

- PENETROMETRO STATICO tipo GOUDA da 12 t - (con anello allargatore) -
 - COSTANTE DI TRASFORMAZIONE $C_t = 20$ - Velocità Avanzamento punta 2 cm/s
 - punta meccanica tipo Begemann $\phi = 35.7$ mm (area punta 10 cm² - apertura 60°)
 - manicotto laterale (superficie 150 cm²)

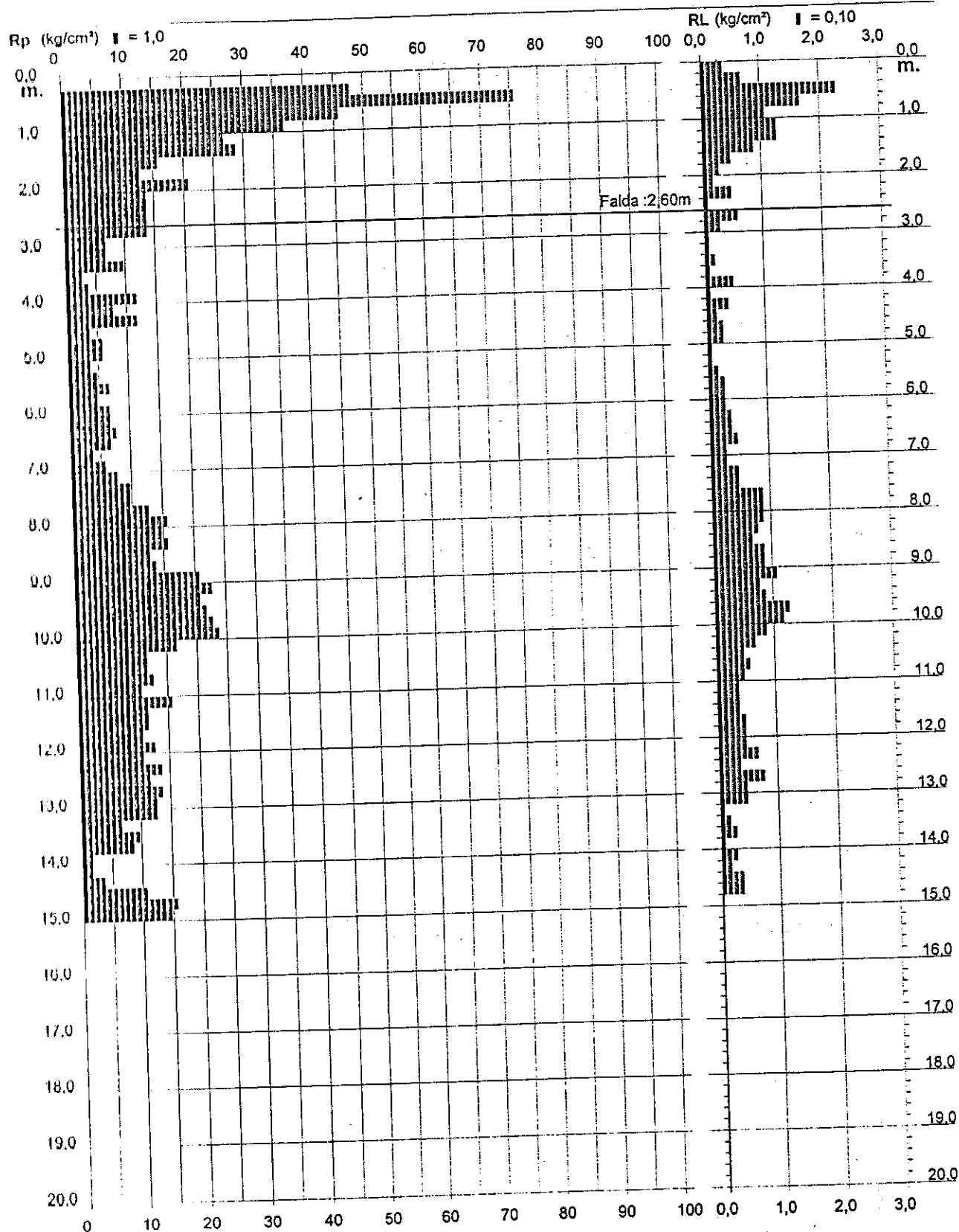
PROVA PENETROMETRICA STATICA
DIAGRAMMA DI RESISTENZA

CPT 5

2.010496-003

- committente : Sigg. RESCA Guerrino - RESCA Franco
 - lavoro : Piano Particolareggiato
 - località : Castel d'Argile (Bologna) - V. Zambeccari / V. Croce

- data : 30/09/2000
 - quota inizio : Piano Campagna
 - prof. falda : 2,60 m da quota inizio
 - scala vert.: 1 : 100



PROVA PENETROMETRICA STATICA
LETTURE DI CAMPAGNA / VALORI DI RESISTENZA

CPT 5

2.010496-003

- committente : Sigg. RESCA Guerrino - RESCA Franco
- lavoro : Piano Particolareggiato
- località : Castel d'Argile (Bologna) - V. Zambeccari / V. Croce
- note :

- data : 30/09/2000
- quota inizio : Piano Campagna
- prof. falda : 2,60 m da quota inizio
- pagina : 1

prf	LP	LL	Rp	RL	Rp/RI	prf	LP	LL	Rp	RL	Rp/RI
m	Kg/cm ²	Kg/cm ²	Kg/cm ²	Kg/cm ²	-	m	Kg/cm ²	Kg/cm ²	Kg/cm ²	Kg/cm ²	-
0,20	----	----	---	0,40	----	7,80	6,5	10,0	13,0	0,93	14,0
0,40	24,0	27,0	48,0	0,67	72,0	8,00	8,0	15,0	16,0	0,93	17,0
0,60	38,0	43,0	76,0	2,27	34,0	8,20	7,5	14,5	15,0	0,87	17,0
0,80	23,0	40,0	46,0	1,67	28,0	8,40	8,0	14,5	16,0	0,80	20,0
1,00	18,5	31,0	37,0	1,13	33,0	8,60	6,5	12,5	13,0	0,67	19,0
1,20	13,5	22,0	27,0	1,27	21,0	8,80	7,0	12,0	14,0	0,87	16,0
1,40	14,5	24,0	29,0	1,33	22,0	9,00	10,5	17,0	21,0	0,93	22,0
1,60	8,0	18,0	16,0	0,87	18,0	9,20	11,5	18,5	23,0	1,13	20,0
1,80	6,5	13,0	13,0	0,53	24,0	9,40	10,5	19,0	21,0	0,80	26,0
2,00	10,5	14,5	21,0	0,27	79,0	9,60	11,0	17,0	22,0	0,87	25,0
2,20	7,0	9,0	14,0	0,20	70,0	9,80	11,5	18,0	23,0	1,33	17,0
2,40	7,0	8,5	14,0	0,47	30,0	10,00	12,0	22,0	24,0	1,20	20,0
2,60	7,0	10,5	14,0	0,07	210,0	10,20	8,5	17,5	17,0	0,87	20,0
2,80	7,0	7,5	14,0	0,60	23,0	10,40	6,0	12,5	12,0	0,73	16,0
3,00	3,5	8,0	7,0	0,27	26,0	10,60	6,0	11,5	12,0	0,53	22,0
3,20	3,5	5,5	7,0	0,07	105,0	10,80	6,5	10,5	13,0	0,60	22,0
3,40	5,0	5,5	10,0	0,13	75,0	11,00	5,5	10,0	11,0	0,53	21,0
3,60	1,5	2,5	3,0	0,20	15,0	11,20	8,0	12,0	16,0	0,40	40,0
3,80	2,0	3,5	4,0	0,13	30,0	11,40	6,0	9,0	12,0	0,40	30,0
4,00	6,0	7,0	12,0	0,53	22,0	11,60	6,0	9,0	12,0	0,40	30,0
4,20	4,0	8,0	8,0	0,07	120,0	11,80	5,5	8,5	11,0	0,53	21,0
4,40	6,0	6,5	12,0	0,40	30,0	12,00	6,5	10,5	13,0	0,47	28,0
4,60	2,0	5,0	4,0	0,20	20,0	12,20	5,5	9,0	11,0	0,47	24,0
4,80	3,0	4,5	6,0	0,27	22,0	12,40	7,0	10,5	14,0	0,73	19,0
5,00	3,0	5,0	6,0	0,27	22,0	12,60	6,0	11,5	12,0	0,40	30,0
5,20	2,0	4,0	4,0	0,13	30,0	12,80	7,0	10,0	14,0	0,80	17,0
5,40	2,5	3,5	5,0	0,13	37,0	13,00	6,5	12,5	13,0	0,53	24,0
5,60	3,5	4,5	7,0	0,20	35,0	13,20	6,5	10,5	13,0	0,47	28,0
5,80	2,5	4,0	5,0	0,33	15,0	13,40	3,5	7,0	7,0	0,13	52,0
6,00	3,5	6,0	7,0	0,33	21,0	13,60	5,0	6,0	10,0	0,20	50,0
6,20	3,5	6,0	7,0	0,33	21,0	13,80	4,5	6,0	9,0	0,27	34,0
6,40	4,0	6,5	8,0	0,40	20,0	14,00	1,0	3,0	2,0	0,13	15,0
6,60	3,5	6,5	7,0	0,40	17,0	14,20	1,0	2,0	2,0	0,27	7,0
6,80	2,0	5,0	4,0	0,47	9,0	14,40	2,0	4,0	4,0	0,20	20,0
7,00	3,0	6,5	6,0	0,33	18,0	14,60	5,5	7,0	11,0	0,40	27,0
7,20	4,0	6,5	8,0	0,27	30,0	14,80	8,0	11,0	16,0	0,40	40,0
7,40	5,0	7,0	10,0	0,47	21,0	15,00	7,5	10,5	15,0	----	----
7,60	5,0	8,5	10,0	0,47	21,0						

- PENETROMETRO STATICO tipo GOUDA da 12 t - (con anello allargatore) -
- COSTANTE DI TRASFORMAZIONE Ct = 20 - Velocità Avanzamento punta 2 cm/s
- punta meccanica tipo Begemann $\phi = 35.7$ mm (area punta 10 cm² - apertura 60°)
- manicotto laterale (superficie 150 cm²)

9_car/rep

Lo Studio scrivente è stato incaricato dall'Amministrazione Comunale di Castel Maggiore di eseguire lo studio geologico propedeutico alla progettazione di interventi di consolidamento del Municipio (figura 1.1), risultato danneggiato dagli eventi sismici del maggio 2012. Lo studio geologico e sismico, impostato ai sensi delle Norme Tecniche per le Costruzioni (NTC 2008), si basa sugli esiti di prove penetrometriche e geofisiche eseguite per questo lavoro. Lo studio è dunque impostato in riferimento alle caratteristiche prestazionali richieste per un manufatto di rilevanza strategica e pubblica quale risulta la sede municipale: tipo di costruzione 2; vita nominale ≥ 50 anni; classe d'uso IV.

La presente relazione dunque fornisce:

- lo schema geologico ed idrogeologico dell'area interessata dal progetto;
- pericolosità sismica (amplificazione locale; propensione alla liquefazione; cedimenti post-sisma; definizione dei parametri di "azione sismica")
- la caratterizzazione delle unità litotecniche individuate dalle terebrazioni e che costituiscono il "volume significativo" di sottosuolo;
- eventuali prescrizioni

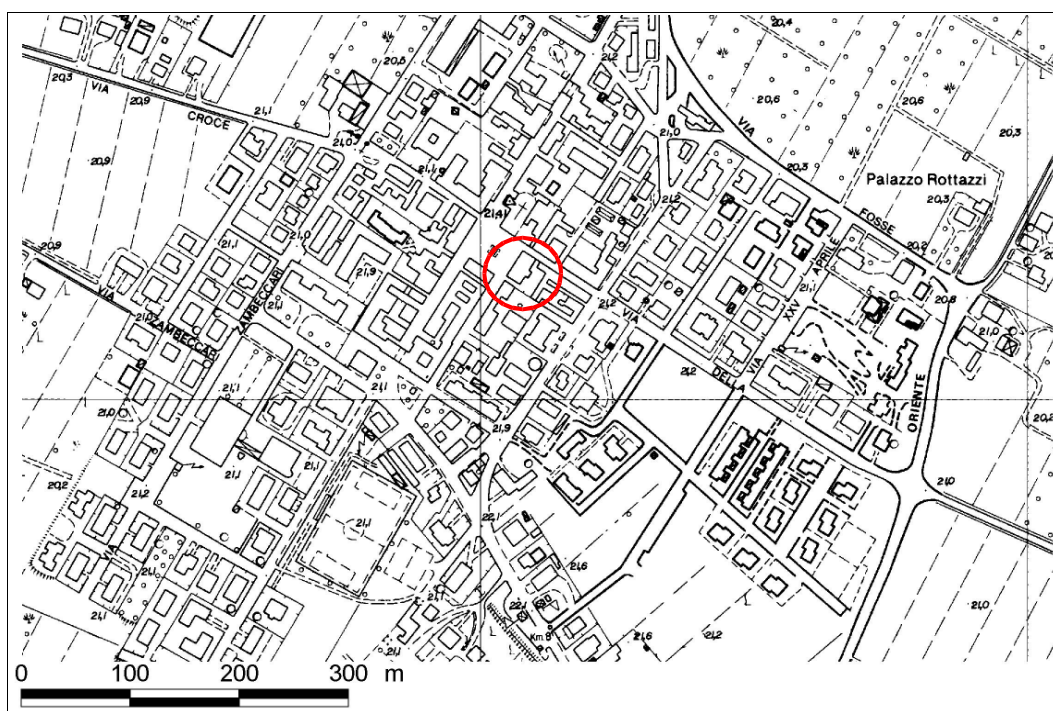


Figura 1.1 – Localizzazione dell'area di studio (stralcio Carta Topografica RER, scala 5.000) cerchiata in rosso

In questo modo, gli esiti delle misure tromografiche, opportunamente calibrati con la stratigrafia direttamente desunta dalle penetrometrie e dai dati di sottosuolo pregressi forniscono un ulteriore e utile supporto alla ricostruzione di sottosuolo ed alla stima della velocità media delle onde di taglio nel volume di sottosuolo investigato; la stima delle frequenze amplificanti del terreno consente anche una preliminare valutazione delle eventuali “doppie risonanze” con le tipologie di manufatti di progetto.

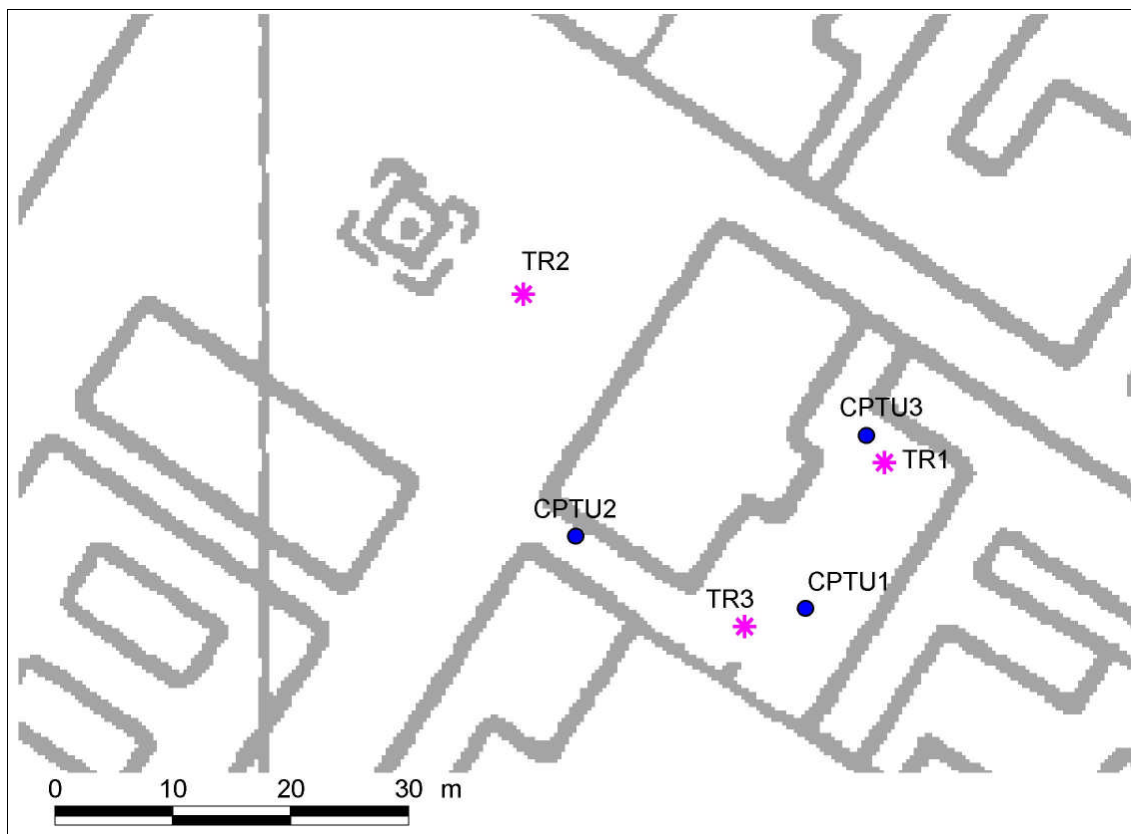


Figura 3.1 – Localizzazione delle prove geognostiche e geofisiche eseguite per questo lavoro (base cartografica: CTR scala 1:5.000)

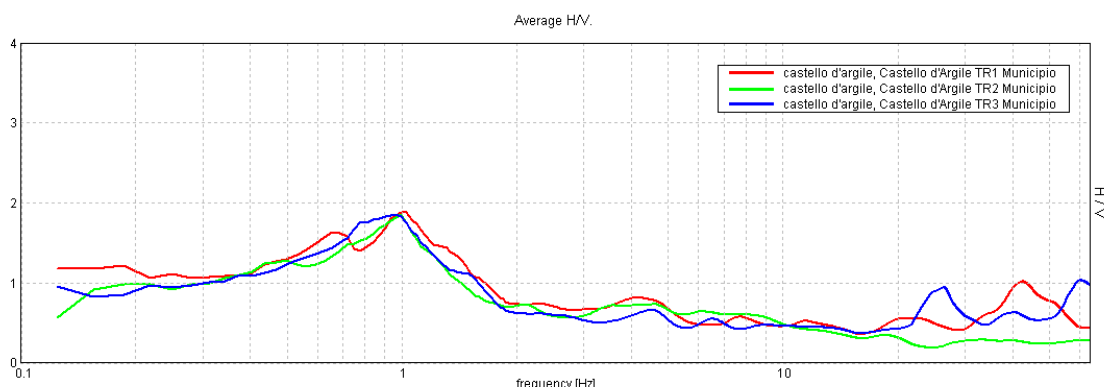


Figura 4.8 – Confronto del rapporto H/V ricavati dalle acquisizioni tromografica TR1, TR2 e TR3

Per quanto detto, le tre tracce H/V ricavate dalle altrettante acquisizioni sono ben correlabili tra loro a dimostrazione della omogenea risposta sismica locale. In particolare, le tracce non rilevano possibilità di amplificazione per un ampio range di frequenze, come peraltro presumibile dal contesto geologico-strutturale profondo (effetti di smorzamento del segnale indotto dal potente spessore della coltre alluvionale). Le misure rilevano possibilità di amplificazione dell'impulso sismico solamente per frequenze molto basse, cioè a frequenze minori di 1 Hz (probabile tetto del “bedrock” sismico locale), tali da indurre effetti di “doppia risonanza” solamente con strutture e manufatti di notevole elevazione (>10÷12 piani).

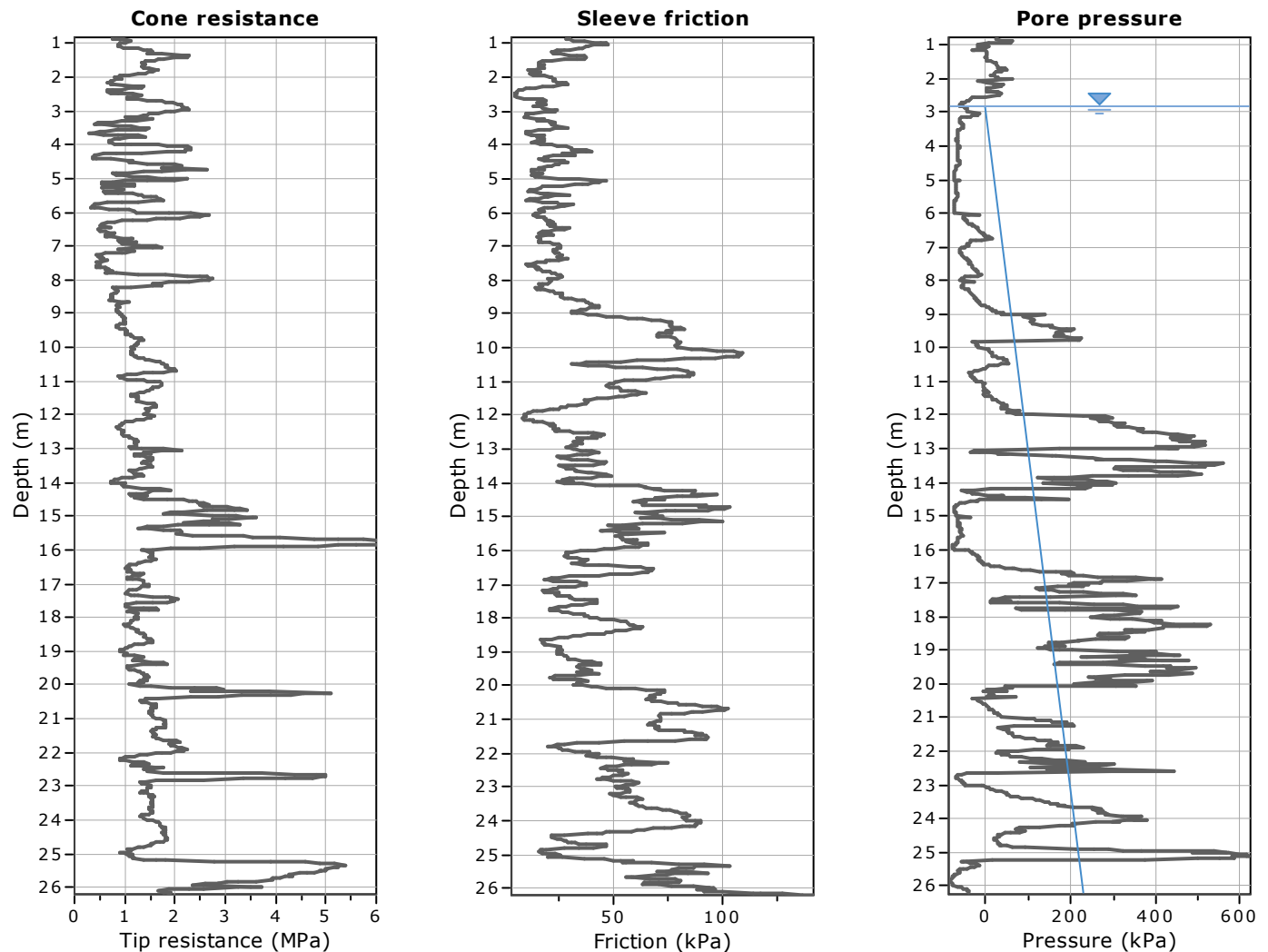
4.3.3 Parametri sismici di dettaglio (NTC 2008)

Le NTC 2008 adottano un approccio prestazionale alle verifiche di progettazione per le nuove strutture e per quelle esistenti. Per quanto attiene l'azione sismica, l'obiettivo è il controllo del livello di danneggiamento del manufatto a fronte di un sisma che possa verificarsi nell'area di progetto. In questo senso, la pericolosità sismica sito specifica per poter essere adeguata alle NTC vigenti, deve fornire:

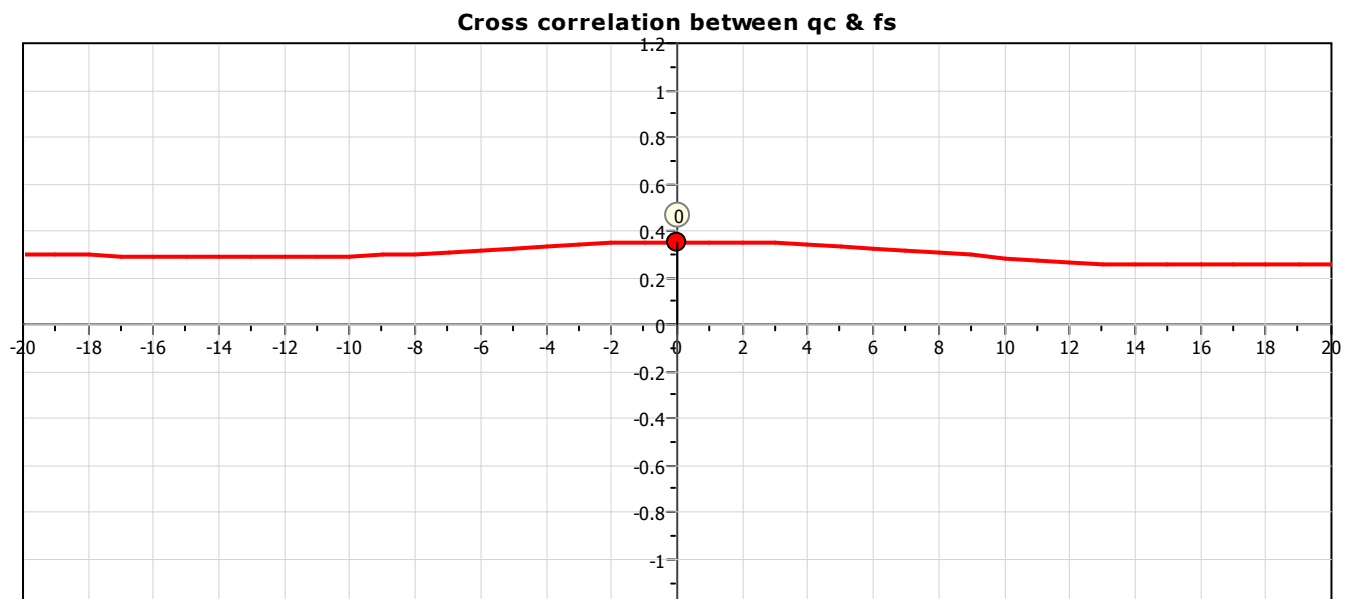
- la risposta sismica locale in funzione del contesto stratigrafico del sottosuolo e morfologico;
- i valori di accelerazione orizzontale massima a_g e i parametri che definiscono gli spettri di risposta per differenti probabilità di superamento (P_{vr}) nel periodo di riferimento (V_r), valutati in funzione degli stati limite ultimi (SLV; SLC) e di esercizio (SLO; SLD) dei manufatti e sulla base delle relative caratteristiche prestazionali di progetto. Per quanto detto, l'azione sismica viene calcolata sulla base delle seguenti caratteristiche prestazionali dell'edificio in questione:

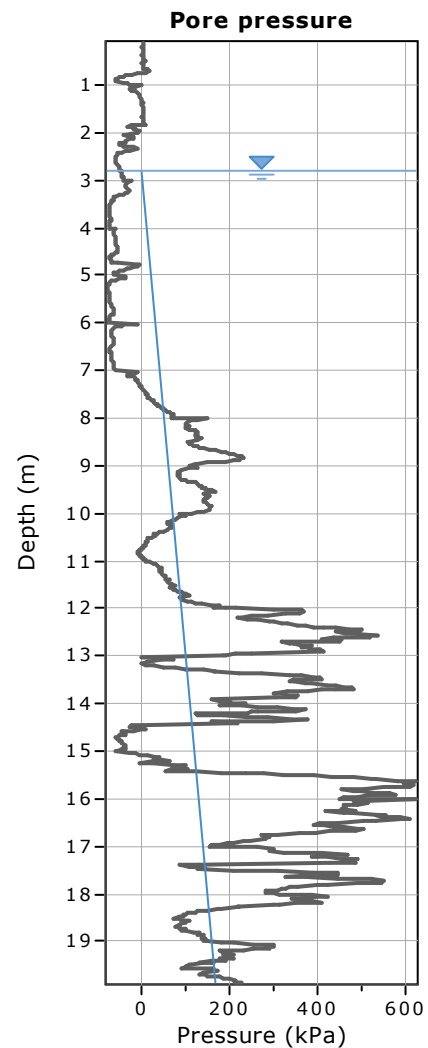
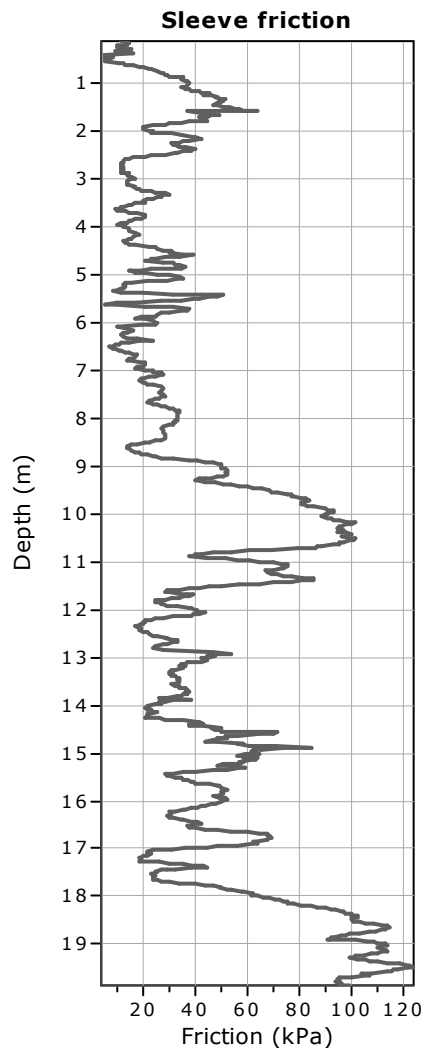
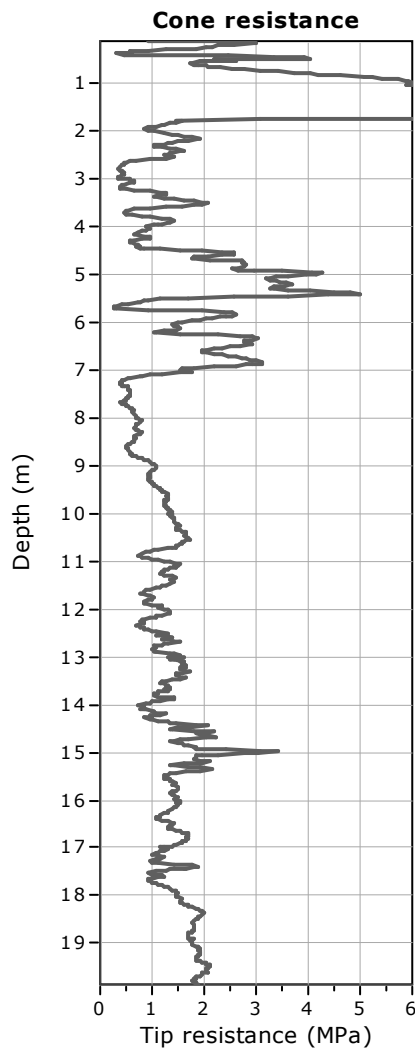
Project:

Location: Geotechnical Engineers

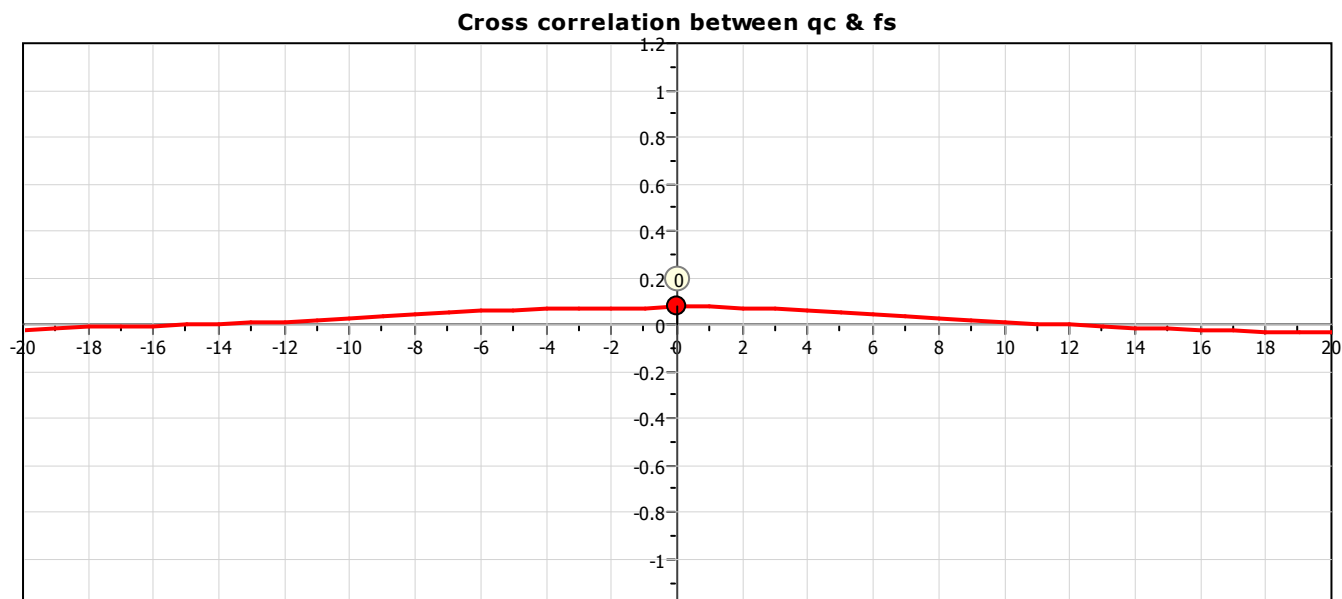


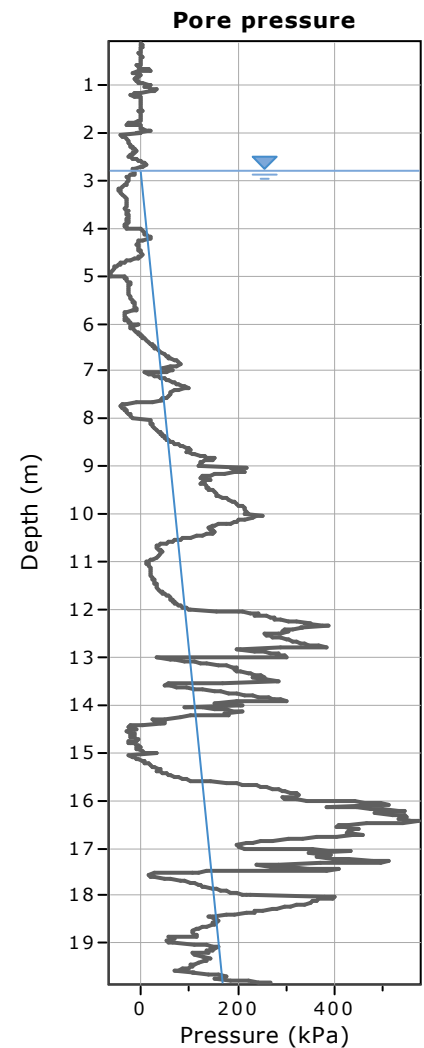
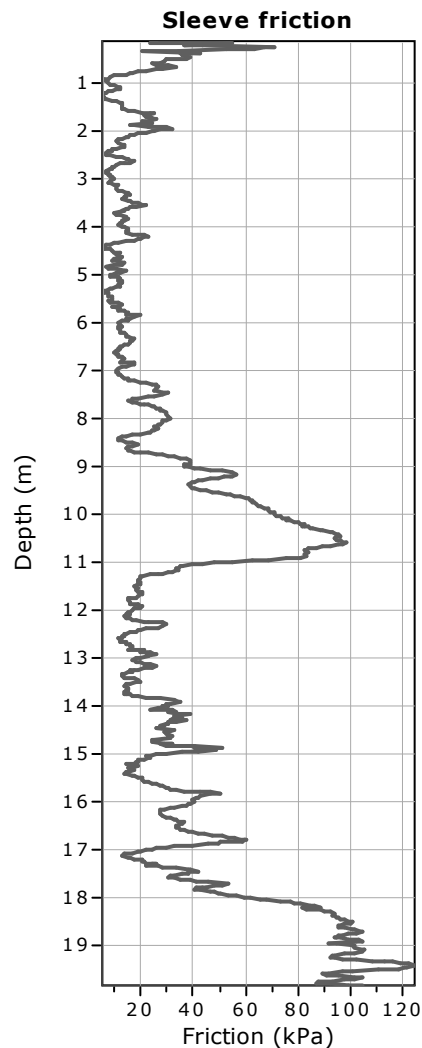
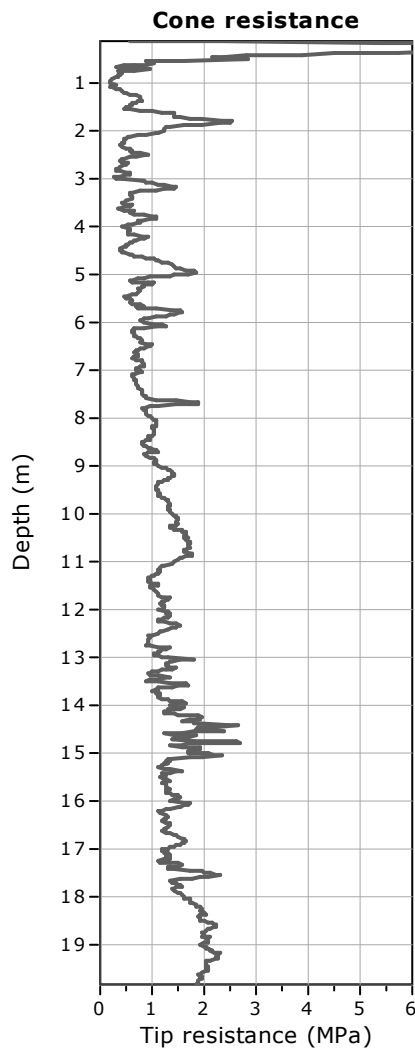
The plot below presents the cross correlation coefficient between the raw q_c and f_s values (as measured on the field). X axes presents the lag distance (one lag is the distance between two successive CPT measurements).



Project:**Location: Geotechnical Engineers**

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