Firmato digitalmente da

ALESSANDRA QUARANTA

CN = QUARANTA ALESSANDRA
C = IT

Firmato digitalmente da

GIUSEPPE SPILOTRO

O = ORDINE DEGLI INGEGNERI DI BARI
C = IT

Impianto "PESCOPAGANO"

Impianto di accumulo idroelettrico mediante pompaggio ad alta flessibilità

Comune di Pescopagano (PZ)

COMMITTENTE	COORDINAMENTO / MANDANTE	GEOLOGIA / MANDATARIA
EDISON EDF GROUP	STRATEGIES FOR WATER FROSIO next	GEO TECNOLOGIE S.R.L.

TITOLO ELABORATO

PROVE DILATOMETRICHE (Allegato 7)

SCALA	
COMMESSA	**1295**
CODIFICA DOCUMENTO	**1295-A-GE-D-10-0**

REV.	DESCRIZIONE	DATA	REDATTO	VERIFICATO	APPROVATO
4					
3					
2					
1					
0	**PROGETTO PRELIMINARE**	**07/05/2021**	**07/05/2021**		

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

TRIVELSONDA s.r.l.
Perforazioni ed esplorazioni del sottosuolo
Via degli Stagnini,8 - 73018 SQUINZANO (LE)
tel. +39 0832 785237 fax +39 0832 868047
www.trivelsonda.com

Committente:

STUDIO FROSIO S.r.l.

Report prove dilatometriche in roccia

Riferimento:

Indagini geognostiche derivazione
Pescopagano (PZ)

TRIVELSONDA S.R.L.

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo

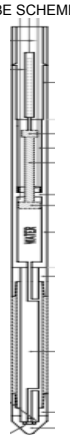
borehole	S1	probe depth m	33,5	code	1
Client:	STUDIO FROSIO S.R.L.	job	2020	v. accept.	2020
Project	DERIVAZIONE PESCOPAGANO	report	2020		DRT
coordinates		EAST			
site	PESCOPAGANO	NORTH	date	20.11.20	pag 1/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole	S1
test 1	depth 33,5
slope (degree) 90	core barrell HQ 96 MM - DIAM.
Device: GEOANALISI VM02	
Orientation capteur C1=	Standard method: ISRM 1987
Probe diam 90 MM	Borehole diam 96 MM
Meteo	Temperature
lithotype	CALCARE MICRITICO BIANCO CON FRATTURE BEANTI
water table	POCKET PENETRO METER

Temps min	PBAR	MM
0	36,00	98,71
1	36,00	98,72
2	36,00	98,72
3	36,00	98,73
4	36,00	98,74
5	36,00	98,75

PROBE SCHEME



rod adaptor

electronic device

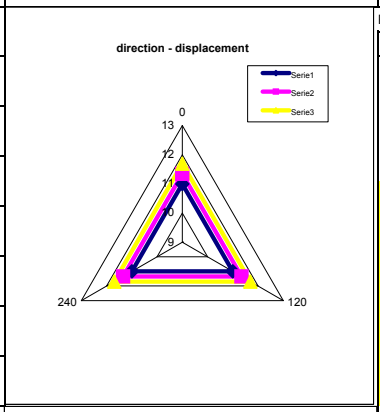
double action piston

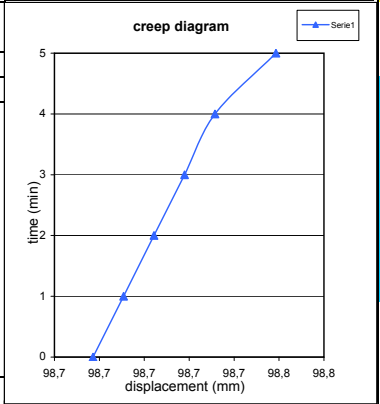
expandable cylinder

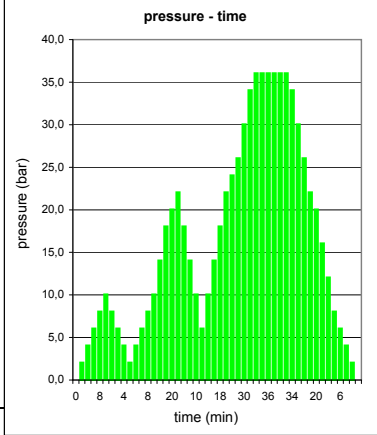
PROBE CALIBRATION

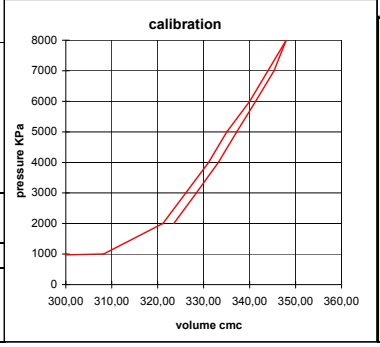
probe		
membrane	CAUCCIU' ARMATO	
measure cell height (cm)		47,50
V0 cell volume at rest (cmc)		3494
lenght cable (mt)		100
Volume initial Vi (cmc)		312
diam calibration tube (cm)		10,1
tube calibration volume cmc		3806
Calibration in air		
coeff *m*	0,11	Kpa/cmc
Confined calibration		
first load	4,4	cmc/Mpa
unload	3,5	cmc/Mpa

LITHOTYPE









PRESSURE STEP	P bar	Pcorr Kpa	Vol cmc	e c %	1/V 1000/cmc	diameter (mm)	Dil. Diam (mm)	Modulo MPa
0	0,0	0	0,0	-1,277	0,000	96,780	0,000	0,0
1	**2,0**	**525**	**50,2**	**-0,571**	**19,920**	**97,473**	**0,693**	**92,0**
2	**4,0**	**719**	**63,4**	**-0,386**	**15,773**	**97,655**	**0,874**	**130,5**
3	6,0	914	71,6	-0,271	13,966	97,767	0,987	211,4
4	8,0	1108	82,8	-0,114	12,077	97,920	1,140	154,9
5	**10,0**	**1303**	**91,0**	**0,000**	**10,989**	**98,033**	**1,252**	**212,5**
6	8,0	1107	89,8	-0,017	11,136	98,016	1,236	1459,8
7	6,0	912	86,6	-0,061	11,547	97,973	1,192	546,5
8	4,0	717	82,4	-0,120	12,136	97,915	1,135	415,7
9	2,0	522	74,2	-0,235	13,477	97,803	1,022	212,0
10	4,0	717	81,4	-0,134	12,285	97,901	1,121	241,6
11	6,0	912	87,6	-0,047	11,416	97,986	1,206	281,3
12	8,0	1107	92,8	0,025	10,776	98,057	1,277	336,1
13	10,0	1302	96,0	0,070	10,417	98,101	1,321	547,4
14	14,0	1693	100,4	0,131	9,960	98,161	1,381	797,5
15	18,0	2083	107,8	0,234	9,276	98,262	1,482	474,6
16	20,0	2279	111,0	0,279	9,009	98,306	1,525	549,7
17	22,0	2474	114,2	0,323	8,757	98,349	1,569	550,2
18	18,0	2083	113,8	0,318	8,787	98,344	1,564	8821,8
19	14,0	1692	112,4	0,298	8,897	98,325	1,545	2519,1
20	10,0	1301	110,0	0,265	9,091	98,292	1,512	1468,3
21	6,0	910	101,6	0,148	9,843	98,178	1,397	418,1
22	10,0	1301	106,0	0,209	9,434	98,238	1,457	798,8
23	14,0	1692	110,4	0,270	9,058	98,298	1,517	799,8
24	18,0	2083	112,8	0,304	8,865	98,330	1,550	1468,5
25	22,0	2474	116,2	0,351	8,606	98,377	1,596	1037,1
26	24,0	2668	128,4	0,520	7,788	98,543	1,762	143,9
27	26,0	2863	134,6	0,606	7,429	98,627	1,847	284,9
28	30,0	3254	136,0	0,626	7,353	98,646	1,866	2534,7
29	34,0	3645	140,1	0,683	7,138	98,702	1,921	865,5
30	**36,0**	**3841**	**140,6**	**0,689**	**7,112**	**98,709**	**1,928**	**3553,9**
31	36,0	3840	141,1	0,696	7,087	98,715	1,935	-1,0
32	36,0	3840	141,6	0,703	7,062	98,722	1,942	-1,0
33	36,0	3840	142,1	0,710	7,037	98,729	1,949	-1,0
34	36,0	3840	142,6	0,717	7,013	98,736	1,955	-1,0
35	36,0	3840	143,6	0,731	6,964	98,749	1,969	-1,0
36	34,0	3645	143,8	0,734	6,954	98,752	1,972	-8896,5
37	30,0	3253	142,0	0,709	7,042	98,728	1,947	1975,3
38	26,0	2862	142,6	0,717	7,013	98,736	1,955	-5929,1
39	22,0	2471	142,2	0,712	7,032	98,730	1,950	8891,2
40	20,0	2275	140,0	0,681	7,143	98,700	1,920	807,1
41	16,0	1884	139,6	0,676	7,163	98,695	1,915	8884,9
42	12,0	1493	136,2	0,628	7,342	98,649	1,868	1043,8
43	8,0	1102	131,8	0,567	7,587	98,589	1,809	805,5
44	6,0	908	125,6	0,481	7,962	98,505	1,724	284,7
45	4,0	713	119,4	0,395	8,375	98,420	1,640	284,2
46	2,0	518	110,2	0,267	9,074	98,295	1,515	190,8

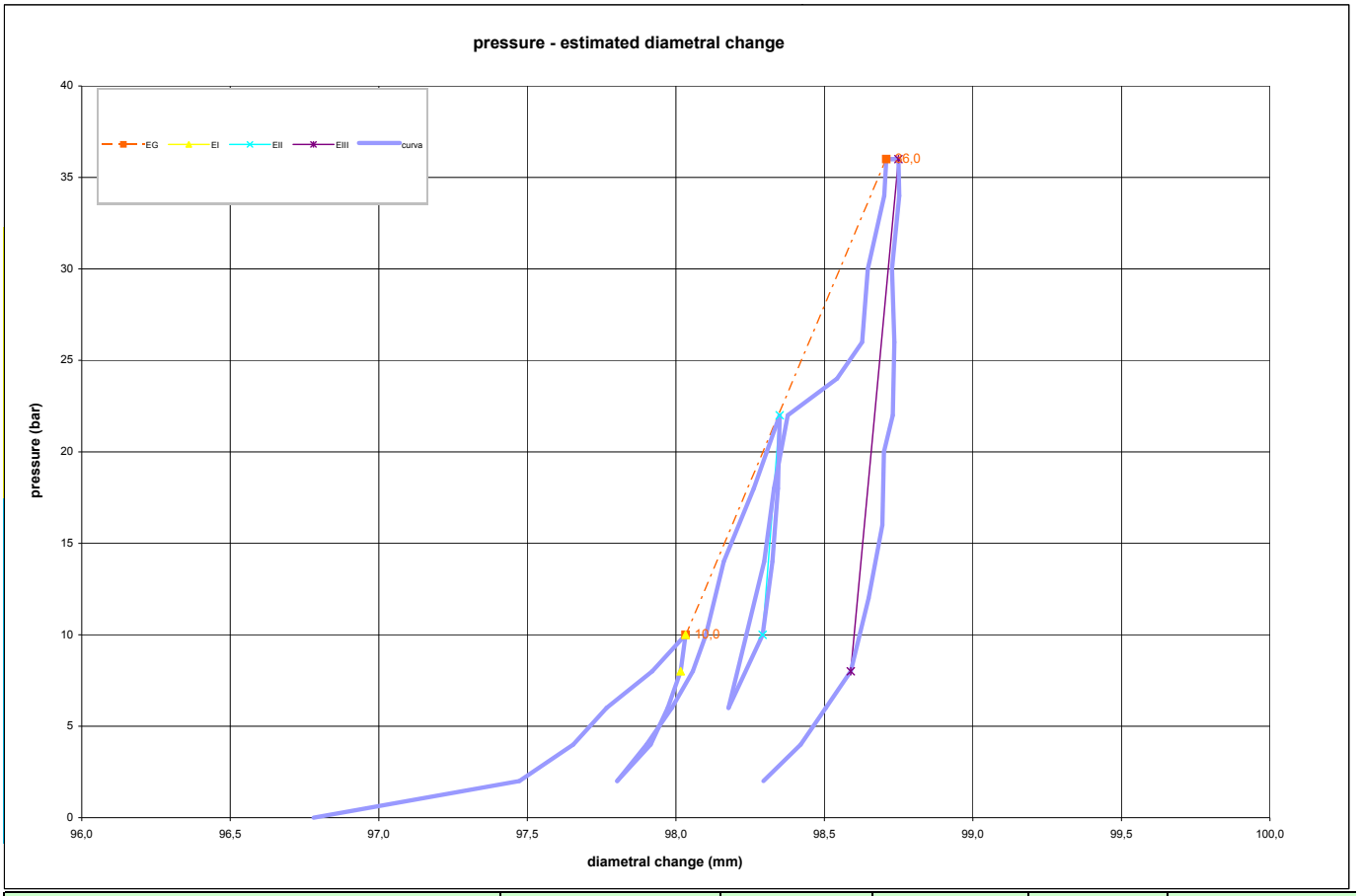
i valori diametrali sono calcolati come valore medio della sonda cillindrica in espansione

FIELD LIMITS

	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop
min	10,0	1302,8	91,0	0,0	11,0	98,0	1,3	primo
max	36,0	3840,5	140,6	0,7	7,1	98,7	1,9	carico
max	10,0	1302,8	91,0	0,0	11,0	98,0	1,3	I
min	8,0	1107,3	89,8	0,0	11,1	98,0	1,2	
max	22,0	2474,0	114,2	0,3	8,8	98,3	1,6	II
min	10,0	1300,6	110,0	0,3	9,1	98,3	1,5	
max	36,0	3840,2	143,6	0,7	7,0	98,7	2,0	III
min	8,0	1102,5	131,8	0,6	7,6	98,6	1,8	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	DILATOMETRIC ROCK TEST DRT				mod DVT REV3. 20 settembre 2020
	borehole	S1	probe depth m	33,5	code 1
	Client:	STUDIO FROSIO S.R.L.	job 2020	v. accept.	2020
	Project	PFTE BARI NORD		report 2020	DRT
		coordinates	EAST		
	site	PESCOPAGANO	NORTH	date 20.11.20	pag 2/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

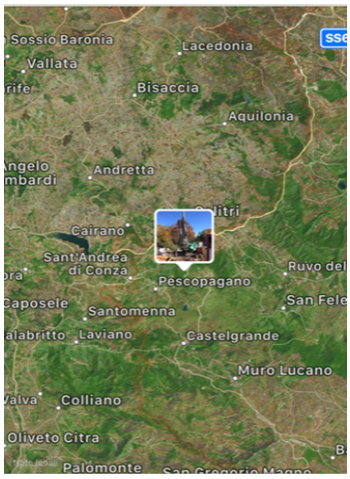


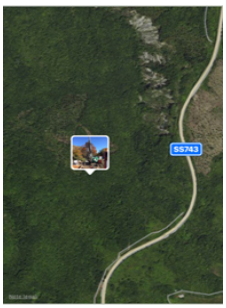
DATA PROCESSING						SENSOR 1	SENSOR 2	SENSOR 3	SENSOR AVE
			ELASTICITY MODULUS Ei						
Legend:	DATA		loop	Pmax	Pmin	E sensor 1 (Mpa)	E sensor2 (Mpa)	E sensor 3 (Mpa)	E1-E2-E3 average(Mpa)
H = test depth	symbol	datum	1	10,0	8,0				**1460**
W = water table depth	γnsoil	2,5	2	22,0	10,0				**2511**
ν = Poisson ratio	W (ml)	33,5	3	36,0	8,0				**2093**
vo = cell initial volume	ν	0,25	4						
do =cell initial diameter	vo (cmc)	3494	5						
Φ = borehole wall diameter	do (mm)	96,78	DEFORMATION MODULUS Ti						
Po = start pressure	σv (kPa)	838	loop	Pmax	Pmin	T1 (Mpa)	T2 (Mpa)	T3 (Mpa)	Tm (Mpa)
Pmax = max loop pressure (MPa)	height mt	25	1	10,0	10,0				#DIV/0!
Pmin = min loop pressure (MPa)			2	22,0	10,0				453
d max displacement at P max			3	36,0	22,0				419
d min displacement at P min			4						
σv vertical total stress estimated			5						
ε c = dR / Ro			GLOBAL DEFORMATION MODULUS EG						
ELASTICITY MODULUS Ei	ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)	EG2 (Mpa)	EG3 (Mpa)	EGm (Mpa)
Ei = (1+ ν) Φ Pax - Pmin	Ey= (EII+EIII)/2			36,0	10,0				460
dmax - dmin	Ey= EIII		DIAMETER			F	F	F	F
			beginning diameter (mm)						98,033
DEFORMATION MODULUS Ti			final diameter (mm)						98,349
Ti = (1+ ν) Φ Pi - Pi-1			range mm						0,317
Xi - Xi-1			DM loop minimun displacement			DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS			
	Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)	525	**EG** (MPa)	**460**
GLOBAL DEFORMATION MODULUS EG	bar	0	120	240	0	Pf creep pressure (KPa)	3841	**E** (MPa)	**2.093**
EG = (1+ ν) Φ Pmax - Po	10,0	10,997	10,997	10,997	1,252	PL limit pres. (KPa) Cassan >	6119	E/P'L	83,16
dmax - do	22,0	11,342	11,342	11,342	1,569	PL' net limit pres (KPa) >	5532	EG/Ey	0,22
note:						Ko lateral coeff at rest (KPa)	**0,70**	**cu** coesion (KPa) johnson	
						Pho lateral pressure (KPa)	586	ϕ friction angle (°) >	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	DILATOMETRIC ROCK TEST DRT					mod DVT REV3. 20 settembre 2020	
	borehole	S1	probe depth m	33,5		code	1
	Client:	STUDIO FROSIO S.R.L.			job 2020	v. accept.	2020
	Project	DERIVAZIONE PESCOPAGANO			report	2020	DRT
		coordinates		EAST			
	site	PESCOPAGANO		NORTH	date 20.11.20	pag	3/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

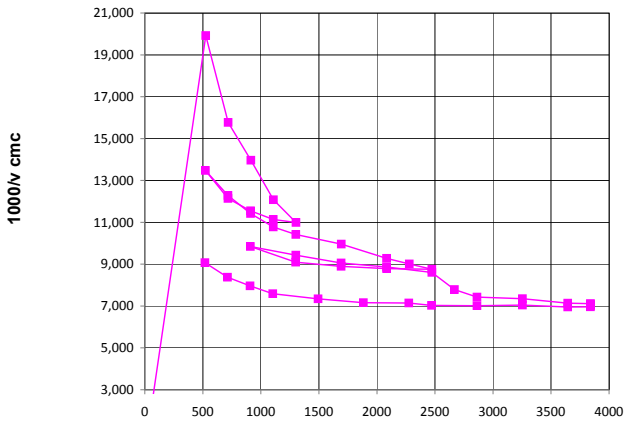
PLACE



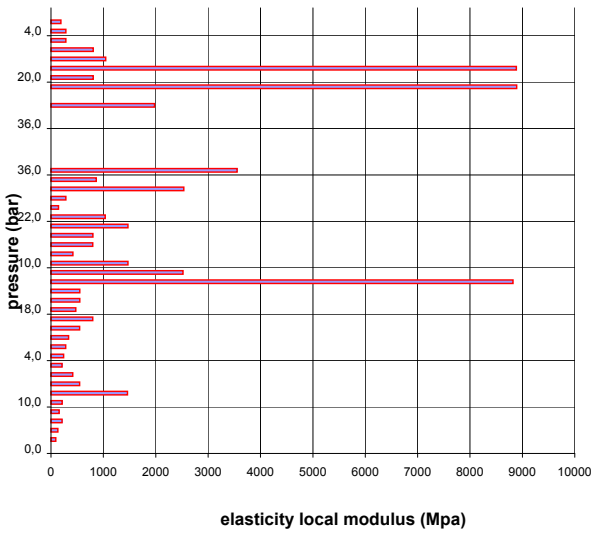


SECTION

pressure - 1/V



elasticity local modulus - pressure



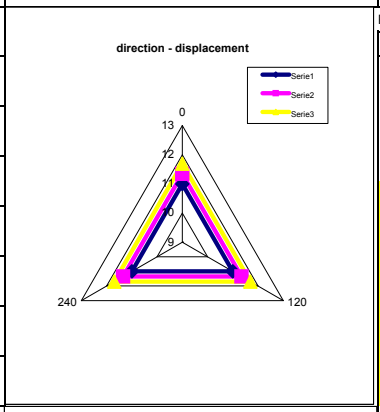
TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	borehole	S1	probe depth m	46,0	mod DVT REV3. 20 settembre 2020 code 2
	Client:	STUDIO FROSIO S.R.L.	job	2020	v. accept. 2020
	Project	DERIVAZIONE PESCOPAGANO	report	2020	DRT
	coordinates		EAST		
	site	PESCOPAGANO	NORTH	date 20.11.20	pag 1/3

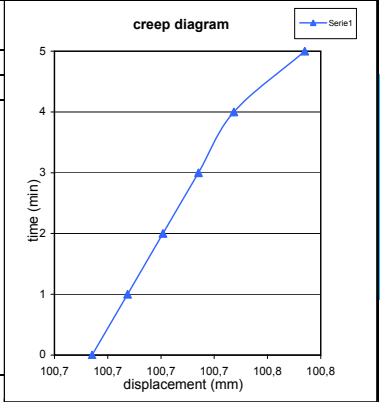
DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole	S1
test 2	depth 46,0
slope (degree) 90	core barrell HQ 96 MM - DIAM.
Device: GEOANALISI VM02	
Orientation capteur C1=	Standard method: ISRM 1987
Probe diam 90 MM	Borehole diam 96 MM
Meteo	Temperature
lithotype	CALCARE MICRITICO BIANCO FRATTURATO
water table	POCKET PENETRO METER

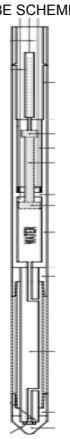
Temps min	PBAR	MM
0	36,00	100,72
1	36,00	100,72
2	36,00	100,73
3	36,00	100,74
4	36,00	100,74
5	36,00	100,76

LITHOTYPE





PROBE SCHEME

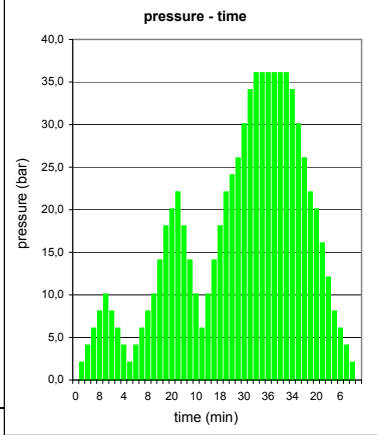


rod adaptor

electronic device

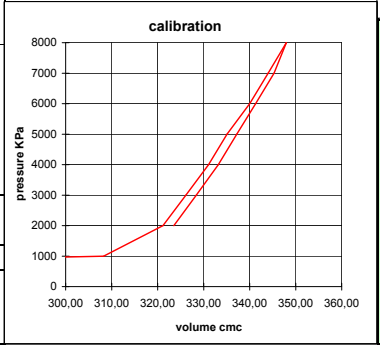
double action piston

expandable cylinder



PROBE CALIBRATION

probe		
membrane	CAUCCIU' ARMATO	
measure cell height (cm)		47,50
V0 cell volume at rest (cmc)		3494
lenght cable (mt)		100
Volume initial Vi (cmc)		312
diam calibration tube (cm)		10,1
tube calibration volume cmc		3806
Calibration in air		
coeff *m*	0,11	Kpa/cmc
Confined calibration		
first load	4,4	cmc/Mpa
unload	3,5	cmc/Mpa



PRESSURE STEP	P bar	Pcorr Kpa	Vol cmc	e c %	1/V 1000/cmc	diameter (mm)	Dil. Diam (mm)	Modulo MPa
0	0,0	0	0,0	-3,504	0,000	96,780	0,000	0,0
1	**2,0**	**629**	**235,0**	**-0,311**	**4,255**	**99,982**	**3,202**	**24,2**
2	4,0	824	242,0	-0,217	4,132	100,076	3,296	259,8
3	6,0	1019	249,0	-0,124	4,016	100,170	3,390	260,3
4	8,0	1214	253,0	-0,071	3,953	100,223	3,443	457,0
5	**10,0**	**1409**	**258,3**	**0,000**	**3,871**	**100,294**	**3,514**	**345,1**
6	8,0	1213	257,0	-0,017	3,891	100,277	3,497	1411,0
7	6,0	1018	255,0	-0,044	3,922	100,250	3,470	916,4
8	4,0	823	251,0	-0,097	3,984	100,197	3,416	457,3
9	2,0	627	246,0	-0,164	4,065	100,130	3,349	365,2
10	4,0	823	250,0	-0,111	4,000	100,183	3,403	456,7
11	6,0	1018	254,0	-0,057	3,937	100,237	3,456	457,2
12	8,0	1213	258,0	-0,004	3,876	100,290	3,510	457,6
13	10,0	1409	260,0	0,023	3,846	100,317	3,537	917,1
14	14,0	1800	267,0	0,116	3,745	100,410	3,630	524,2
15	18,0	2190	273,0	0,196	3,663	100,491	3,710	612,8
16	20,0	2386	275,0	0,222	3,636	100,517	3,737	920,8
17	22,0	2581	278,0	0,262	3,597	100,557	3,777	613,9
18	18,0	2190	277,0	0,249	3,610	100,544	3,764	3689,7
19	14,0	1799	275,0	0,222	3,636	100,517	3,737	1843,6
20	10,0	1407	273,0	0,196	3,663	100,491	3,710	1842,6
21	6,0	1017	267,0	0,116	3,745	100,410	3,630	612,8
22	10,0	1408	271,0	0,169	3,690	100,464	3,684	919,5
23	14,0	1799	274,0	0,209	3,650	100,504	3,724	1227,6
24	18,0	2190	277,0	0,249	3,610	100,544	3,764	1228,5
25	22,0	2581	279,0	0,275	3,584	100,571	3,790	1844,6
26	24,0	2777	281,0	0,302	3,559	100,597	3,817	922,2
27	26,0	2972	283,0	0,329	3,534	100,624	3,844	922,7
28	30,0	3363	286,0	0,368	3,497	100,664	3,883	1231,5
29	34,0	3754	289,0	0,408	3,460	100,704	3,923	1232,4
30	**36,0**	**3950**	**290,0**	**0,422**	**3,448**	**100,717**	**3,937**	**1850,2**
31	36,0	3950	290,5	0,428	3,442	100,724	3,943	-1,1
32	36,0	3950	291,0	0,435	3,436	100,730	3,950	-1,1
33	36,0	3950	291,5	0,441	3,431	100,737	3,957	-1,1
34	36,0	3950	292,0	0,448	3,425	100,744	3,963	-1,1
35	36,0	3950	293,0	0,461	3,413	100,757	3,977	-1,1
36	34,0	3754	292,2	0,451	3,422	100,746	3,966	2314,9
37	30,0	3363	291,0	0,435	3,436	100,730	3,950	3086,1
38	26,0	2971	292,0	0,448	3,425	100,744	3,963	-3705,6
39	22,0	2580	290,0	0,422	3,448	100,717	3,937	1850,9
40	20,0	2384	290,0	0,422	3,448	100,717	3,937	#DIV/0!
41	16,0	1993	288,0	0,395	3,472	100,690	3,910	1849,9
42	12,0	1602	286,0	0,368	3,497	100,664	3,883	1849,0
43	8,0	1211	281,0	0,302	3,559	100,597	3,817	738,3
44	6,0	1015	277,0	0,249	3,610	100,544	3,764	460,5
45	4,0	820	272,0	0,182	3,676	100,477	3,697	367,7
46	2,0	625	266,0	0,103	3,759	100,397	3,617	305,8

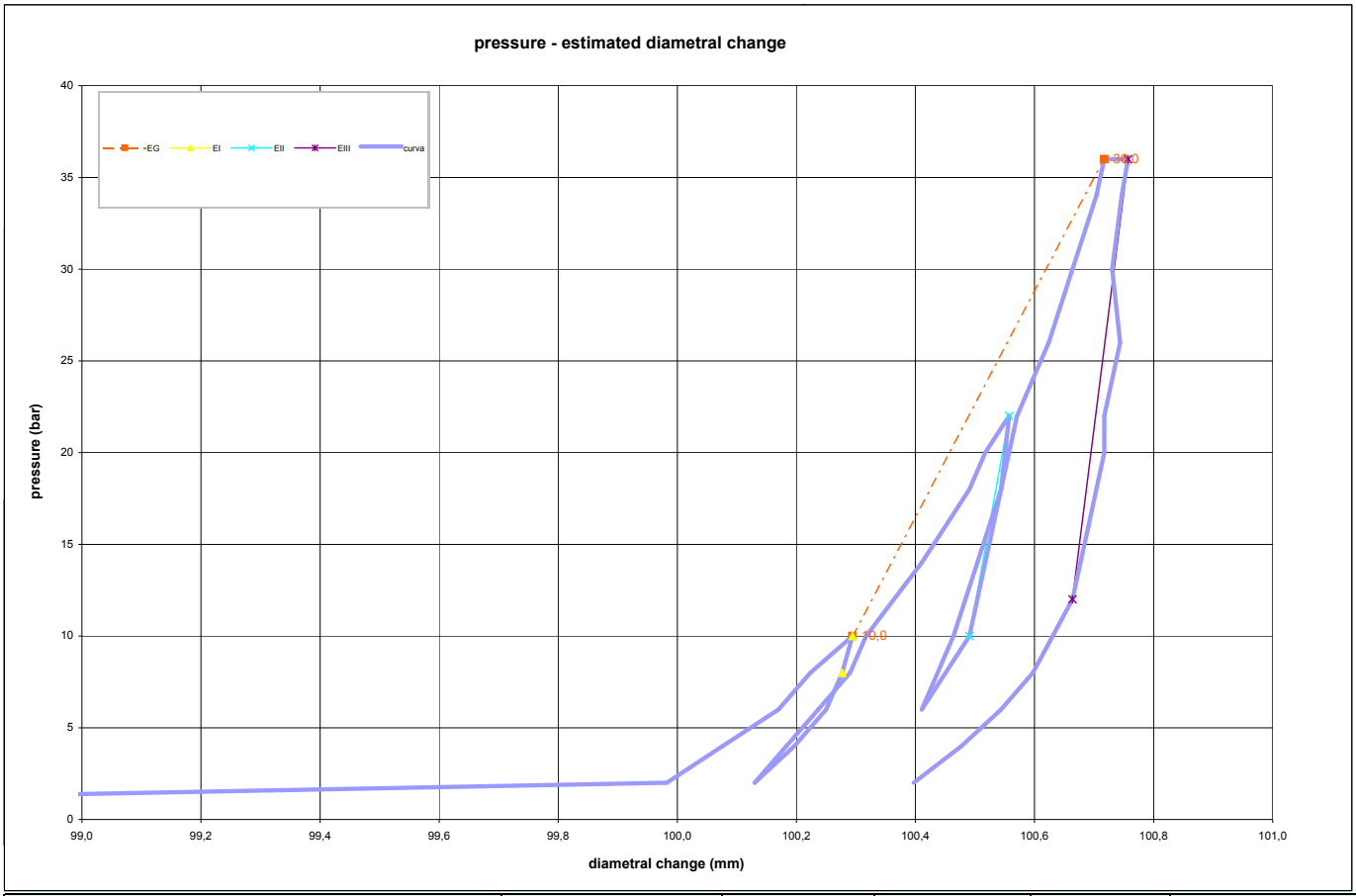
i valori diametrali sono calcolati come valore medio della sonda cillindrica in espansione

FIELD LIMITS

	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop
min	10,0	1409,0	258,3	0,0	3,9	100,3	3,5	primo
max	36,0	3950,0	290,0	0,4	3,4	100,7	3,9	carico
max	10,0	1409,0	258,3	0,0	3,9	100,3	3,5	I
min	8,0	1213,5	257,0	0,0	3,9	100,3	3,5	
max	22,0	2581,2	278,0	0,3	3,6	100,6	3,8	II
min	10,0	1407,4	273,0	0,2	3,7	100,5	3,7	
max	36,0	3949,7	293,0	0,5	3,4	100,8	4,0	III
min	12,0	1601,6	286,0	0,4	3,5	100,7	3,9	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	**DILATOMETRIC ROCK TEST DRT**				mod DVT REV3. 20 settembre 2020
	borehole	**S1**	**probe depth m**	**46,0**	**code** 2
	Client:	**STUDIO FROSIO S.R.L.**	job 2020	v. accept.	**2020**
	Project	**PFTE BARI NORD**		report **2020**	**DRT**
		coordinates	EAST		
	site	**PESCOPAGANO**	NORTH	date 20.11.20	pag 2/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

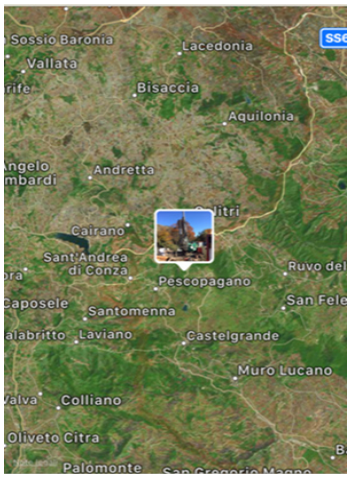


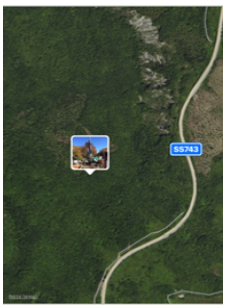
DATA PROCESSING						SENSOR 1	SENSOR 2	SENSOR 3	SENSOR AVE
			ELASTICITY MODULUS Ei						
Legend:	**DATA**		loop	Pmax	Pmin	E sensor 1 (Mpa)	E sensor2 (Mpa)	E sensor 3 (Mpa)	E1-E2-E3 average(Mpa)
H = test depth	symbol	datum	1	10,0	8,0				**1411**
W = water table depth	γnsoil	2,5	2	22,0	10,0				**2207**
ν = Poisson ratio	W (ml)	46,0	3	36,0	12,0				**3159**
vo = cell initial volume	ν	0,25	4						
do =cell initial diameter	vo (cmc)	3494	5						
Φ = borehole wall diameter	do (mm)	96,78	DEFORMATION MODULUS Ti						
Po = start pressure	σv (kPa)	1150	loop	Pmax	Pmin	T1 (Mpa)	T2 (Mpa)	T3 (Mpa)	Tm (Mpa)
Pmax = max loop pressure (MPa)	height mt	25	1	10,0	10,0				#DIV/0!
Pmin = min loop pressure (MPa)			2	22,0	10,0				559
d max displacement at P max			3	36,0	22,0				859
d min displacement at P min			4						
σv vertical total stress estimated			5						
ε c = dR / Ro			GLOBAL DEFORMATION MODULUS EG						
ELASTICITY MODULUS Ei	ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)	EG2 (Mpa)	EG3 (Mpa)	EGm (Mpa)
Ei = (1+ ν) Φ Pax - Pmin	Ey= (EII+EIII)/2			36,0	10,0				753
dmax - dmin	Ey= EIII		DIAMETER			F	F	F	F
			beginning diameter (mm)						100,294
DEFORMATION MODULUS Ti			final diameter (mm)						100,557
Ti = (1+ ν) Φ Pi - Pi-1			range mm						0,263
Xi - Xi-1			DM loop minimun displacement			DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS			
	Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)	629	**EG** (MPa)	**753**
GLOBAL DEFORMATION MODULUS EG	bar	0	120	240	0	Pf creep pressure (KPa)	3950	**E** (MPa)	**3.159**
EG = (1+ ν) Φ Pmax - Po	10,0	10,997	10,997	10,997	3,514	PL limit pres. (KPa) Cassan >	6232	E/P'L	135,95
dmax - do	22,0	11,342	11,342	11,342	3,777	PL' net limit pres (KPa) >	5542	EG/Ey	0,24
note:						Ko lateral coeff at rest (KPa)	**0,60**	**cu** coesion (KPa) johnson	
						Pho lateral pressure (KPa)	690	**ϕ** friction angle (°) >	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	DILATOMETRIC ROCK TEST DRT					mod DVT REV3. 20 settembre 2020	
	borehole	S1	probe depth m	46,0		code	2
	Client:	STUDIO FROSIO S.R.L.			job 2020	v. accept.	2020
	Project	DERIVAZIONE PESCOPAGANO			report	2020	DRT
		coordinates		EAST			
	site	PESCOPAGANO		NORTH	date 20.11.20	pag	3/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

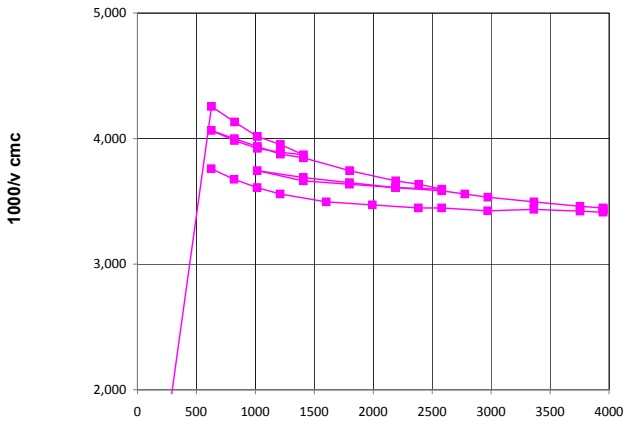
PLACE



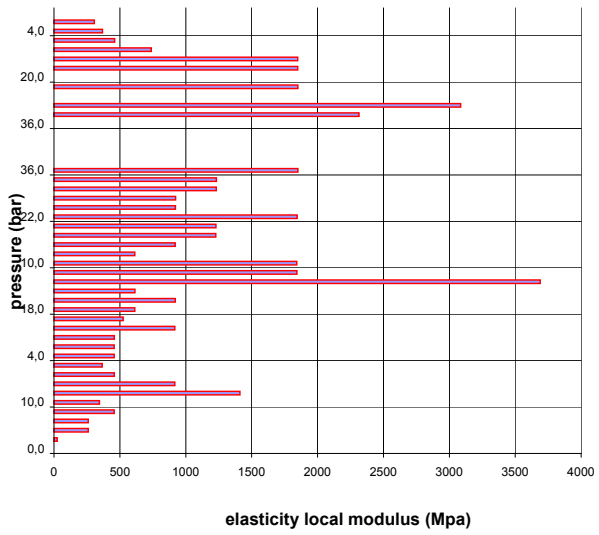


SECTION

pressure - 1/V



elasticity local modulus - pressure



TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo

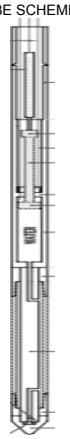
borehole	S1	probe depth m	55,5	code	3
Client:	STUDIO FROSIO S.R.L.	job	2020	v. accept.	2020
Project	DERIVAZIONE PESCOPAGANO	report	2020		DRT
coordinates		EAST			
site	PESCOPAGANO	NORTH	date	20.11.20	pag 1/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole	S1
test 3	depth 55,5
slope (degree) 90	core barrell HQ 96 MM - DIAM.
Device: GEOANALISI VM02	
Orientation capteur C1=	Standard method: ISRM 1987
Probe diam 90 MM	Borehole diam 96 MM
Meteo	Temperature
lithotype	CALCARE MICRITICO BIANCO AVANA FRATTURATO
water table	POCKET PENETRO METER

Temps min	PBAR	MM
0	38,00	99,73
1	38,00	99,74
2	38,00	99,74
3	38,00	99,75
4	38,00	99,76
5	38,00	99,76

PROBE SCHEME



rod adaptor

electronic device

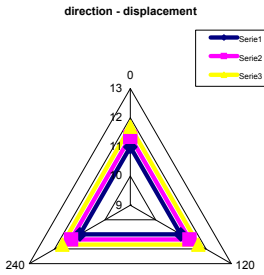
double action piston

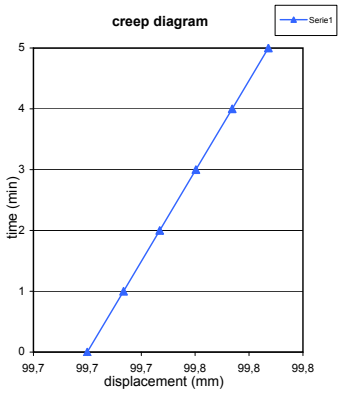
expandable cylinder

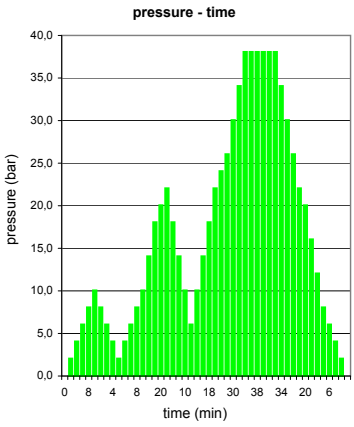
PROBE CALIBRATION

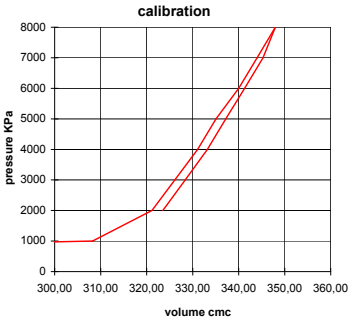
probe		
membrane	CAUCCIU' ARMATO	
measure cell height (cm)		47,50
V0 cell volume at rest (cmc)		3494
lenght cable (mt)		100
Volume initial Vi (cmc)		312
diam calibration tube (cm)		10,1
tube calibration volume cmc		3806
Calibration in air		
coeff *m*	0,11	Kpa/cmc
Confined calibration		
first load	4,4	cmc/Mpa
unload	3,5	cmc/Mpa

LITHOTYPE









PRESSURE STEP	P bar	Pcorr Kpa	Vol cmc	e c %	1/V 1000/cmc	diameter (mm)	Dil. Diam (mm)	Modulo MPa
0	0,0	0	0,0	-2,308	0,000	96,780	0,000	0,0
1	**2,0**	**737**	**122,8**	**-0,606**	**8,143**	**98,467**	**1,686**	**53,3**
2	4,0	931	136,6	-0,416	7,321	98,654	1,874	127,4
3	6,0	1125	148,4	-0,254	6,739	98,814	2,034	149,7
4	8,0	1320	158,2	-0,120	6,321	98,947	2,167	181,0
5	**10,0**	**1514**	**167,0**	**0,000**	**5,988**	**99,066**	**2,286**	**202,2**
6	8,0	1319	166,2	-0,011	6,017	99,056	2,275	2237,6
7	6,0	1124	162,4	-0,063	6,158	99,004	2,224	470,0
8	4,0	928	156,6	-0,142	6,386	98,926	2,145	307,1
9	2,0	734	148,8	-0,249	6,720	98,820	2,040	227,7
10	4,0	929	155,6	-0,156	6,427	98,912	2,132	261,3
11	6,0	1124	162,4	-0,063	6,158	99,004	2,224	261,8
12	8,0	1319	166,2	-0,011	6,017	99,056	2,275	470,0
13	10,0	1514	171,0	0,055	5,848	99,121	2,340	372,3
14	14,0	1904	181,6	0,199	5,507	99,264	2,483	337,8
15	18,0	2295	190,2	0,316	5,258	99,380	2,600	417,6
16	20,0	2490	194,0	0,368	5,155	99,431	2,651	473,5
17	22,0	2685	197,8	0,420	5,056	99,482	2,702	474,0
18	18,0	2294	197,2	0,412	5,071	99,474	2,694	6019,1
19	14,0	1903	195,6	0,390	5,112	99,453	2,672	2255,8
20	10,0	1512	192,0	0,341	5,208	99,404	2,624	1001,3
21	6,0	1121	185,4	0,251	5,394	99,315	2,535	544,9
22	10,0	1512	188,0	0,286	5,319	99,350	2,570	1384,1
23	14,0	1903	194,6	0,376	5,139	99,439	2,659	545,3
24	18,0	2294	197,2	0,412	5,071	99,474	2,694	1387,6
25	22,0	2685	200,8	0,461	4,980	99,523	2,742	1002,7
26	24,0	2880	202,6	0,485	4,936	99,547	2,767	1003,4
27	26,0	3076	205,4	0,523	4,869	99,585	2,804	645,1
28	30,0	3467	209,0	0,572	4,785	99,633	2,853	1004,9
29	34,0	3858	214,6	0,648	4,660	99,708	2,928	646,5
30	**38,0**	**4249**	**216,2**	**0,670**	**4,625**	**99,730**	**2,950**	**2267,4**
31	38,0	4249	216,7	0,677	4,615	99,737	2,956	-1,1
32	38,0	4249	217,2	0,683	4,604	99,743	2,963	-1,1
33	38,0	4249	217,7	0,690	4,593	99,750	2,970	-1,1
34	38,0	4249	218,2	0,697	4,583	99,757	2,977	-1,1
35	38,0	4249	218,7	0,704	4,572	99,764	2,983	-1,1
36	34,0	3857	218,6	0,702	4,575	99,762	2,982	36326,8
37	30,0	3466	219,0	0,708	4,566	99,768	2,987	-9083,4
38	26,0	3074	219,4	0,713	4,558	99,773	2,993	-9084,4
39	22,0	2683	217,8	0,691	4,591	99,751	2,971	2269,4
40	20,0	2487	217,0	0,681	4,608	99,741	2,960	2268,7
41	16,0	2096	215,4	0,659	4,643	99,719	2,939	2267,9
42	12,0	1705	211,8	0,610	4,721	99,671	2,890	1006,7
43	8,0	1314	207,2	0,548	4,826	99,609	2,829	786,7
44	6,0	1119	201,4	0,469	4,965	99,531	2,751	310,9
45	4,0	924	196,6	0,403	5,086	99,466	2,686	375,4
46	2,0	729	187,8	0,284	5,325	99,348	2,567	203,9

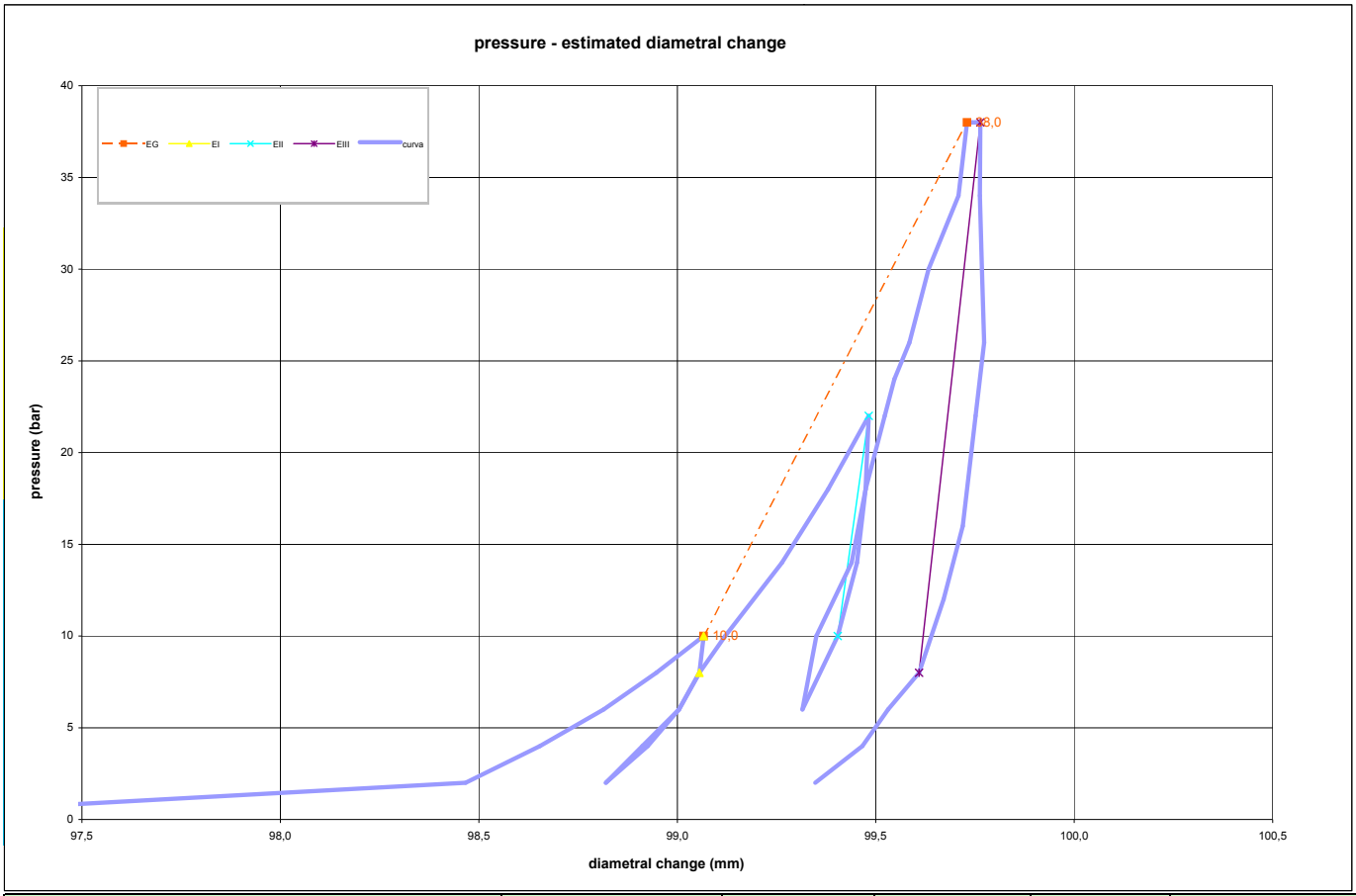
i valori diametrali sono calcolati come valore medio della sonda cillindrica in espansione

FIELD LIMITS

	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop
min	10,0	1514,4	167,0	0,0	6,0	99,1	2,3	primo
max	38,0	4248,8	216,2	0,7	4,6	99,7	2,9	carico
max	10,0	1514,4	167,0	0,0	6,0	99,1	2,3	I
min	8,0	1318,8	166,2	0,0	6,0	99,1	2,3	
max	22,0	2685,2	197,8	0,4	5,1	99,5	2,7	II
min	10,0	1511,5	192,0	0,3	5,2	99,4	2,6	
max	38,0	4248,5	218,7	0,7	4,6	99,8	3,0	III
min	8,0	1314,1	207,2	0,5	4,8	99,6	2,8	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	**DILATOMETRIC ROCK TEST DRT**				mod DVT REV3. 20 settembre 2020
	borehole	**S1**	**probe depth m**	**55,5**	**code** 3
	Client:	**STUDIO FROSIO S.R.L.**	job 2020	v. accept. **2020**	
	Project	**PFTE BARI NORD**		report **2020**	**DRT**
		coordinates	EAST		
	site	**PESCOPAGANO**	NORTH	date 20.11.20	pag 2/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

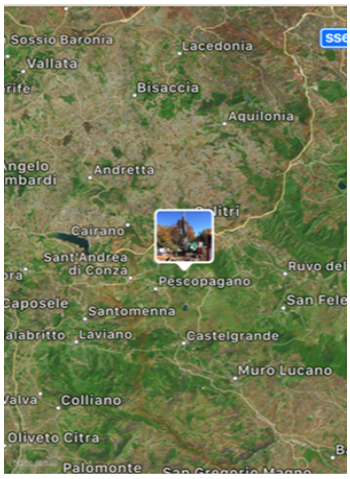


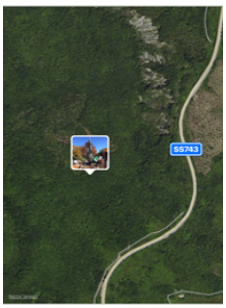
DATA PROCESSING						SENSOR 1	SENSOR 2	SENSOR 3	SENSOR AVE
			ELASTICITY MODULUS Ei						
Legend:	**DATA**		loop	Pmax	Pmin	E sensor 1 (Mpa)	E sensor2 (Mpa)	E sensor 3 (Mpa)	E1-E2-E3 average(Mpa)
H = test depth	symbol	datum	1	10,0	8,0				**2238**
W = water table depth	γnsoil	2,5	2	22,0	10,0				**1859**
ν = Poisson ratio	W (ml)	55,5	3	38,0	8,0				**2350**
vo = cell initial volume	ν	0,25	4						
do =cell initial diameter	vo (cmc)	3494	5						
Φ = borehole wall diameter	do (mm)	96,78	DEFORMATION MODULUS Ti						
Po = start pressure	σv (kPa)	1388	loop	Pmax	Pmin	T1 (Mpa)	T2 (Mpa)	T3 (Mpa)	Tm (Mpa)
Pmax = max loop pressure (MPa)	height mt	25	1	10,0	10,0				#DIV/0!
Pmin = min loop pressure (MPa)			2	22,0	10,0				349
d max displacement at P max			3	38,0	22,0				688
d min displacement at P min			4						
σv vertical total stress estimated			5						
ε c = dR / Ro			GLOBAL DEFORMATION MODULUS EG						
ELASTICITY MODULUS Ei	ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)	EG2 (Mpa)	EG3 (Mpa)	EGm (Mpa)
Ei = (1+ ν) Φ Pax - Pmin	Ey= (EII+EIII)/2			38,0	10,0				510
dmax - dmin	Ey= EIII		DIAMETER			F	F	F	F
			beginning diameter (mm)						99,066
DEFORMATION MODULUS Ti			final diameter (mm)						99,482
Ti = (1+ ν) Φ Pi - Pi-1			range mm						0,416
Xi - Xi-1			DM loop minimun displacement			DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS			
	Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)	737	**EG** (MPa)	**510**
GLOBAL DEFORMATION MODULUS EG	bar	0	120	240	0	Pf creep pressure (KPa)	4249	**E** (MPa)	**2.350**
EG = (1+ ν) Φ Pmax - Po	10,0	10,997	10,997	10,997	2,286	PL limit pres. (KPa) Cassan >	6640	E/P'L	87,87
dmax - do	22,0	11,342	11,342	11,342	2,702	PL' net limit pres (KPa) >	5808	EG/Ey	0,22
note:						Ko lateral coeff at rest (KPa)	**0,60**	**cu** coesion (KPa) johnson	
						Pho lateral pressure (KPa)	833	ϕ friction angle (°) >	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	DILATOMETRIC ROCK TEST DRT				mod DVT REV3. 20 settembre 2020	
	borehole	S1	probe depth m	55,5	code	3
	Client:	STUDIO FROSIO S.R.L.	job	2020	v. accept.	2020
	Project	DERIVAZIONE PESCOPAGANO	report	2020		DRT
		coordinates	EAST			
	site	PESCOPAGANO	NORTH	date	20.11.20	pag 3/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

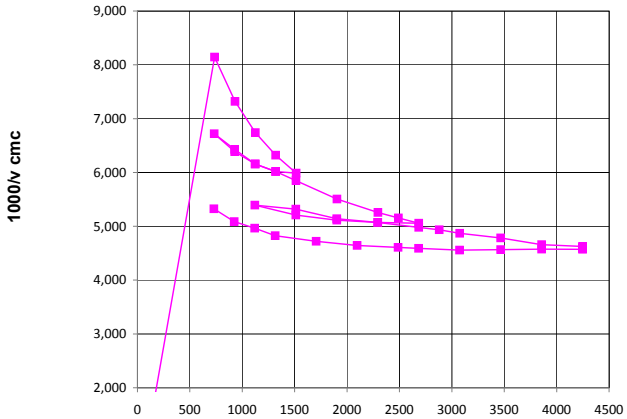
PLACE



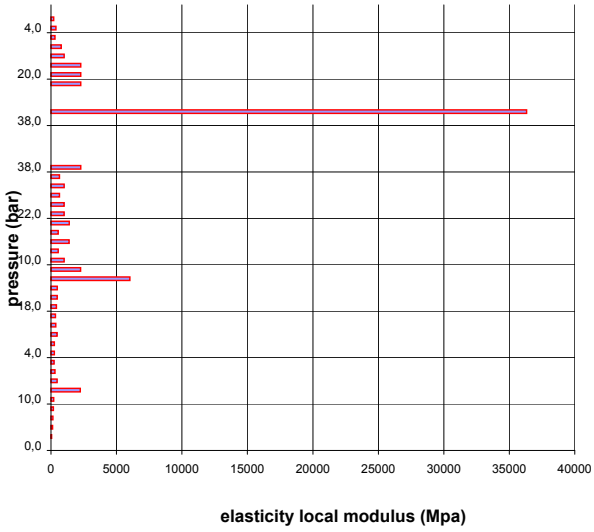


SECTION

pressure - 1/V



elasticity local modulus - pressure



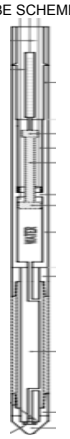
TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	borehole	S1	probe depth m	64,5	mod DVT REV3. 20 settembre 2020 code 4
	Client:	STUDIO FROSIO S.R.L.	job	2020	v. accept. 2020
	Project	DERIVAZIONE PESCOPAGANO	report	2020	DRT
	coordinates		EAST		
	site	PESCOPAGANO	NORTH	date 19.11.20	pag 1/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole	S1
test 4	depth 64,5
slope (degree) 90	core barrell HQ 96 MM - DIAM.
Device: GEOANALISI VM02	
Orientation capteur C1=	Standard method: ISRM 1987
Probe diam 90 MM	Borehole diam 96 MM
Meteo	Temperatu re
lithotype CALCARE MICRITICO FRATTURE BEANTI	
water table	POCKET PENETRO METER

Temps min	PBAR	MM
0	18,00	99,43
1	18,00	99,46
2	18,00	99,53
3	18,00	99,59
4	18,00	99,68
5	18,00	99,78

PROBE SCHEME



rod adaptor

electronic device

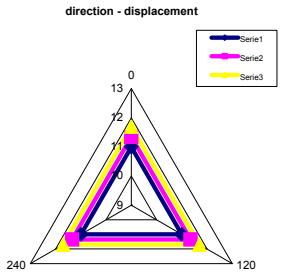
double action piston

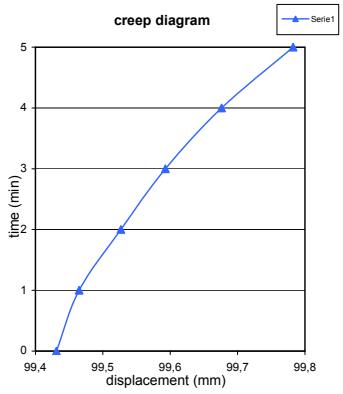
expandable cylinder

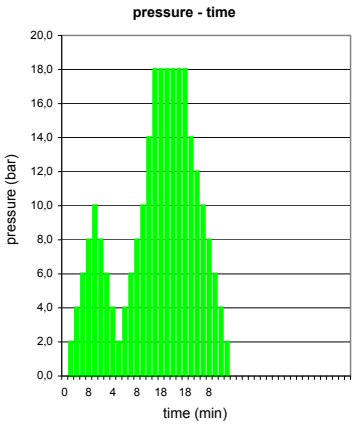
PROBE CALIBRATION

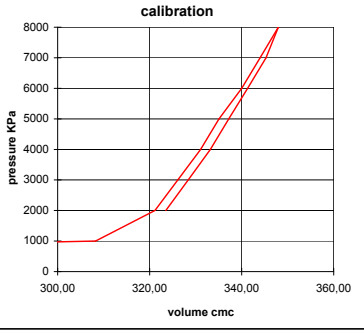
probe		
membrane	CAUCCIU' ARMATO	
measure cell height (cm)		47,50
V0 cell volume at rest (cmc)		3494
lenght cable (mt)		100
Volume initial Vi (cmc)		312
diam calibration tube (cm)		10,1
tube calibration volume cmc		3806
Calibration in air		
coeff *m*	0,11	Kpa/cmc
Confined calibration		
first load	4,4	cmc/Mpa
unload	3,5	cmc/Mpa

LITHOTYPE









PRESSURE STEP	P bar	Pcorr Kpa	Vol cmc	e c %	1/V 1000/cmc	diameter (mm)	Dil. Diam (mm)	Modulo MPa
0	0,0	0	0,0	-2,321	0,000	96,780	0,000	0,0
1	**2,0**	**827**	**123,0**	**-0,616**	**8,130**	**98,469**	**1,689**	**59,7**
2	4,0	1021	137,0	-0,424	7,299	98,660	1,879	125,6
3	6,0	1215	149,0	-0,260	6,711	98,823	2,042	147,3
4	8,0	1410	159,0	-0,123	6,289	98,958	2,178	177,4
5	**10,0**	**1604**	**168,0**	**0,000**	**5,952**	**99,080**	**2,300**	**197,8**
6	8,0	1409	167,0	-0,014	5,988	99,066	2,286	1790,5
7	6,0	1214	163,0	-0,068	6,135	99,012	2,232	446,5
8	4,0	1018	157,0	-0,150	6,369	98,931	2,151	296,9
9	2,0	824	149,0	-0,260	6,711	98,823	2,042	222,0
10	4,0	1019	156,0	-0,164	6,410	98,918	2,137	253,8
11	6,0	1214	163,0	-0,068	6,135	99,012	2,232	254,3
12	8,0	1409	167,0	-0,014	5,988	99,066	2,286	446,5
13	10,0	1604	172,0	0,055	5,814	99,134	2,354	357,5
14	14,0	1994	183,0	0,205	5,464	99,283	2,502	325,6
15	**18,0**	**2384**	**194,0**	**0,354**	**5,155**	**99,431**	**2,651**	**326,6**
16	18,0	2384	196,5	0,388	5,089	99,465	2,684	-1,1
17	18,0	2384	201,1	0,451	4,973	99,527	2,746	-1,1
18	18,0	2383	206,0	0,518	4,854	99,593	2,812	-1,1
19	18,0	2382	212,2	0,602	4,713	99,676	2,896	-1,1
20	18,0	2381	220,1	0,709	4,543	99,782	3,002	-1,1
21	14,0	1989	223,9	0,760	4,466	99,833	3,053	-958,0
22	12,0	1794	224,2	0,764	4,460	99,837	3,057	-6065,2
23	10,0	1598	221,6	0,729	4,513	99,803	3,022	698,4
24	8,0	1403	219,0	0,694	4,566	99,768	2,987	697,9
25	6,0	1207	216,0	0,653	4,630	99,727	2,947	604,3
26	4,0	1012	215,4	0,645	4,643	99,719	2,939	3024,2
27	2,0	816	213,2	0,615	4,690	99,690	2,909	823,7

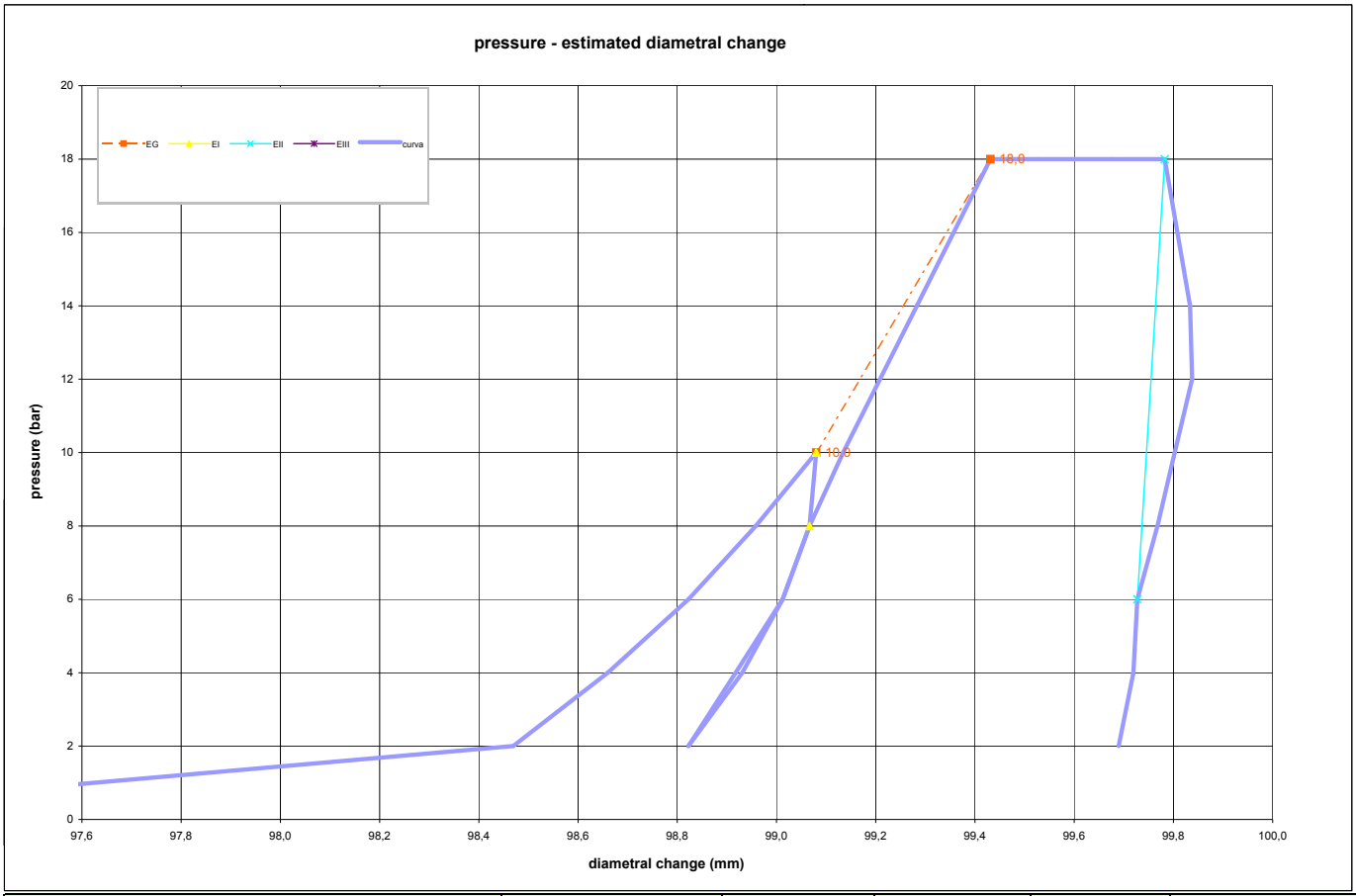
i valori diametrali sono calcolati come valore medio della sonda cillindrica in espansione

FIELD LIMITS

	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop
min	10,0	1604,4	168,0	0,0	6,0	99,1	2,3	primo
max	18,0	2384,4	194,0	0,4	5,2	99,4	2,7	carico
max	10,0	1604,4	168,0	0,0	6,0	99,1	2,3	I
min	8,0	1408,8	167,0	0,0	6,0	99,1	2,3	
max	18,0	2381,4	220,1	0,7	4,5	99,8	3,0	II
min	6,0	1207,4	216,0	0,7	4,6	99,7	2,9	
max								
min								

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	**DILATOMETRIC ROCK TEST DRT**				mod DVT REV3. 20 settembre 2020
	borehole	**S1**	**probe depth m**	**64,5**	**code** **4**
	Client:	**STUDIO FROSIO S.R.L.**	job 2020	v. accept.	**2020**
	Project	**PFTE BARI NORD**		report **2020**	**DRT**
		coordinates	EAST		
	site	**PESCOPAGANO**	NORTH	date 19.11.20	pag 2/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

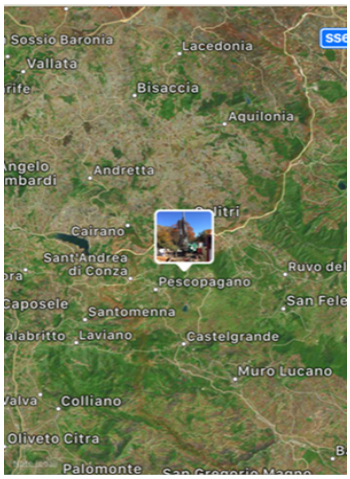


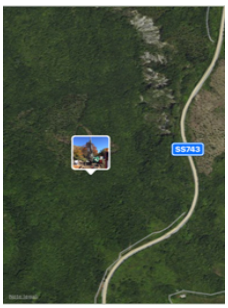
DATA PROCESSING						SENSOR 1	SENSOR 2	SENSOR 3	SENSOR AVE
			ELASTICITY MODULUS Ei						
Legend:	**DATA**		loop	Pmax	Pmin	E sensor 1 (Mpa)	E sensor2 (Mpa)	E sensor 3 (Mpa)	E1-E2-E3 average(Mpa)
H = test depth	symbol	datum	1	10,0	8,0				**1791**
W = water table depth	γnsoil	2,5	2	18,0	6,0				**2639**
ν = Poisson ratio	W (ml)	64,5	3						
vo = cell initial volume	ν	0,25	4						
do =cell initial diameter	vo (cmc)	3494	5						
Φ = borehole wall diameter	do (mm)	96,78	DEFORMATION MODULUS Ti						
Po = start pressure	σv (kPa)	1613	loop	Pmax	Pmin	T1 (Mpa)	T2 (Mpa)	T3 (Mpa)	Tm (Mpa)
Pmax = max loop pressure (MPa)	height mt		1	10,0	10,0				#DIV/0!
Pmin = min loop pressure (MPa)			2	18,0	10,0				137
d max displacement at P max			3	0,0	18,0				98
d min displacement at P min			4						
σv vertical total stress estimated			5						
ε c = dR / Ro			GLOBAL DEFORMATION MODULUS EG						
ELASTICITY MODULUS Ei	ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)	EG2 (Mpa)	EG3 (Mpa)	EGm (Mpa)
Ei = (1+ ν) Φ Pax - Pmin	Ey= (EII+EIII)/2			18,0	10,0				275
dmax - dmin	Ey= EIII		DIAMETER			F	F	F	F
			beginning diameter (mm)						99,080
DEFORMATION MODULUS Ti			final diameter (mm)						99,782
Ti = (1+ ν) Φ Pi - Pi-1			range mm						0,702
Xi - Xi-1			DM loop minimun displacement			DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS			
	Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)	827	**EG** (MPa)	**275**
GLOBAL DEFORMATION MODULUS EG	bar	0	120	240	0	Pf creep pressure (KPa)	2384	**E** (MPa)	**2.639**
EG = (1+ ν) Φ Pmax - Po	10,0	10,997	10,997	10,997	2,300	PL limit pres. (KPa) Cassan >	3376	E/P'L	114,21
dmax - do	18,0	11,342	11,342	11,342	3,002	PL' net limit pres (KPa) >	2409	EG/Ey	0,10
note: ROTTURA LOCALE						Ko lateral coeff at rest (KPa)	**0,60**	**cu** coesion (KPa) johnson	
						Pho lateral pressure (KPa)	968	**ϕ** friction angle (°) >	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	DILATOMETRIC ROCK TEST DRT					mod DVT REV3. 20 settembre 2020	
	borehole	S1	probe depth m	64,5		code	4
	Client:	STUDIO FROSIO S.R.L.			job 2020	v. accept.	2020
	Project	DERIVAZIONE PESCOPAGANO			report	2020	DRT
		coordinates		EAST			
	site	PESCOPAGANO		NORTH	date 19.11.20	pag	3/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

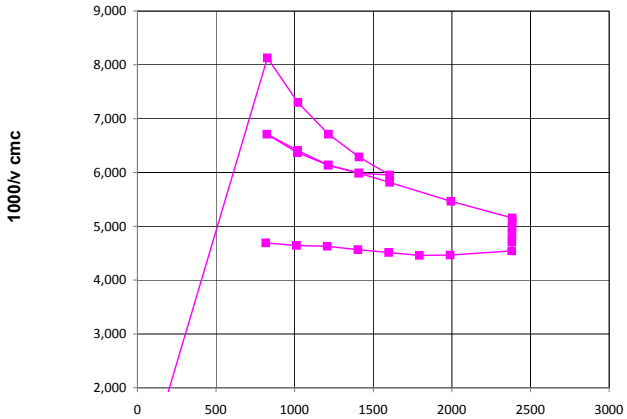
PLACE



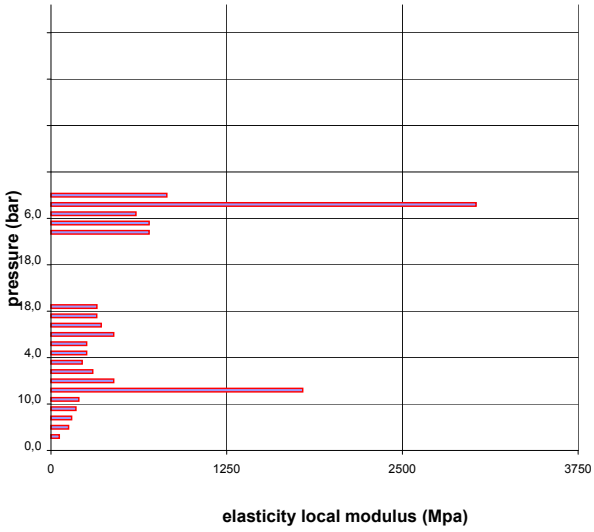


SECTION

pressure - 1/V



elasticity local modulus - pressure



TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	borehole	S1	probe depth m	69,0	mod DVT REV3. 20 settembre 2020 code 5
	Client:	STUDIO FROSIO S.R.L.	job	2020	v. accept. 2020
	Project	DERIVAZIONE PESCOPAGANO	report	2020	DRT
	coordinates		EAST		
	site	PESCOPAGANO	NORTH	date 19.11.20	pag 1/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole	S1
test 5	depth 69,0
slope (degree) 90	core barrell HQ 96 MM - DIAM.
Device: GEOANALISI VM02	
Orientation capteur C1=	Standard method: ISRM 1987
Probe diam 90 MM	Borehole diam 96 MM
Meteo	Temperature
lithotype	CALCARE MICRITICO BIANCO FRATTURATO
water table	POCKET PENETRO METER

Temps min	PBAR	MM
0	34,00	98,88
1	34,00	98,89
2	34,00	98,93
3	34,00	98,93
4	34,00	98,94
5	34,00	98,96

PROBE SCHEME

rod adaptor

electronic device

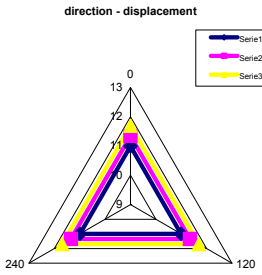
double action piston

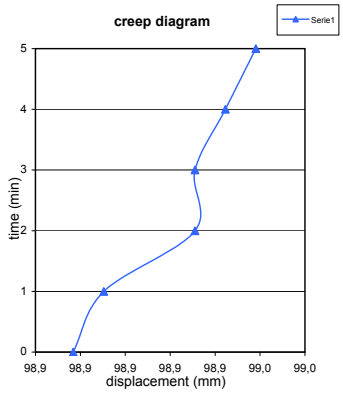
expandable cylinder

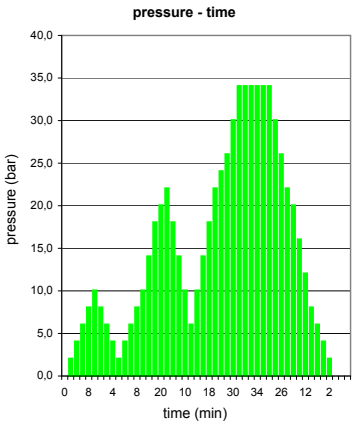
PROBE CALIBRATION

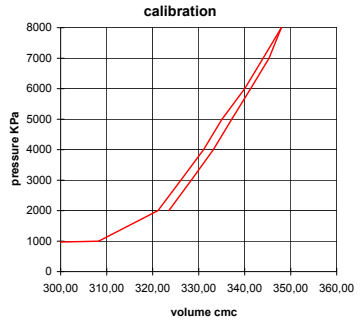
probe		
membrane	CAUCCIU' ARMATO	
measure cell height (cm)		47,50
V0 cell volume at rest (cmc)		3494
lenght cable (mt)		100
Volume initial Vi (cmc)		312
diam calibration tube (cm)		10,1
tube calibration volume cmc		3806
Calibration in air		
coeff *m*	0,11	Kpa/cmc
Confined calibration		
first load	4,4	cmc/Mpa
unload	3,5	cmc/Mpa

LITHOTYPE









PRESSURE STEP	P bar	Pcorr Kpa	Vol cmc	e c %	1/V 1000/cmc	diameter (mm)	Dil. Diam (mm)	Modulo MPa
0	0,0	0	0,0	-0,934	0,000	96,780	0,000	0,0
1	**2,0**	**882**	**31,0**	**-0,496**	**32,258**	**97,209**	**0,428**	**249,7**
2	**4,0**	**1077**	**40,0**	**-0,369**	**25,000**	**97,333**	**0,552**	**190,9**
3	6,0	1271	51,0	-0,214	19,608	97,484	0,704	156,4
4	8,0	1466	59,0	-0,101	16,949	97,594	0,814	216,0
5	**10,0**	**1661**	**66,2**	**0,000**	**15,106**	**97,693**	**0,913**	**240,7**
6	8,0	1465	65,0	-0,017	15,385	97,677	0,896	1450,4
7	6,0	1270	63,0	-0,045	15,873	97,649	0,869	869,4
8	4,0	1075	60,0	-0,087	16,667	97,608	0,828	578,9
9	2,0	879	56,0	-0,143	17,857	97,553	0,773	433,5
10	4,0	1075	56,0	-0,143	17,857	97,553	0,773	#DIV/0!
11	6,0	1270	59,0	-0,101	16,949	97,594	0,814	578,2
12	8,0	1466	64,0	-0,031	15,625	97,663	0,882	346,9
13	10,0	1661	68,0	0,025	14,706	97,718	0,937	434,5
14	14,0	2051	80,0	0,194	12,500	97,882	1,102	289,9
15	18,0	2441	94,0	0,390	10,638	98,074	1,293	249,3
16	20,0	2636	100,0	0,474	10,000	98,156	1,375	291,8
17	22,0	2830	112,0	0,641	8,929	98,319	1,539	145,8
18	18,0	2439	113,0	0,655	8,850	98,333	1,553	-3530,4
19	14,0	2048	110,0	0,613	9,091	98,292	1,512	1175,1
20	10,0	1657	106,0	0,557	9,434	98,238	1,457	880,2
21	6,0	1266	98,0	0,446	10,204	98,128	1,348	438,8
22	10,0	1657	103,0	0,516	9,709	98,197	1,416	702,5
23	14,0	2048	108,0	0,585	9,259	98,265	1,485	703,5
24	18,0	2439	112,0	0,641	8,929	98,319	1,539	880,7
25	22,0	2830	118,0	0,725	8,475	98,401	1,621	587,6
26	24,0	3025	123,0	0,795	8,130	98,469	1,689	352,7
27	26,0	3220	129,0	0,878	7,752	98,551	1,771	294,2
28	30,0	3610	142,0	1,059	7,042	98,728	1,947	272,2
29	**34,0**	**4000**	**153,0**	**1,212**	**6,536**	**98,877**	**2,096**	**322,9**
30	34,0	4000	154,0	1,226	6,494	98,890	2,110	-1,0
31	34,0	4000	157,0	1,267	6,369	98,931	2,151	-1,0
32	34,0	4000	157,0	1,267	6,369	98,931	2,151	#DIV/0!
33	34,0	3999	158,0	1,281	6,329	98,945	2,164	-1,0
34	34,0	3999	159,0	1,295	6,289	98,958	2,178	-1,0
35	30,0	3608	158,0	1,281	6,329	98,945	2,164	3573,3
36	26,0	3216	158,0	1,281	6,329	98,945	2,164	#DIV/0!
37	22,0	2825	157,0	1,267	6,369	98,931	2,151	3572,3
38	20,0	2630	155,0	1,240	6,452	98,904	2,124	891,9
39	16,0	2238	152,0	1,198	6,579	98,863	2,083	1188,8
40	12,0	1848	147,0	1,129	6,803	98,795	2,015	712,1
41	8,0	1457	140,0	1,031	7,143	98,700	1,920	507,5
42	6,0	1262	134,0	0,948	7,463	98,619	1,839	295,1
43	4,0	1067	128,0	0,864	7,813	98,537	1,757	294,6
44	2,0	872	121,0	0,767	8,264	98,442	1,662	251,9

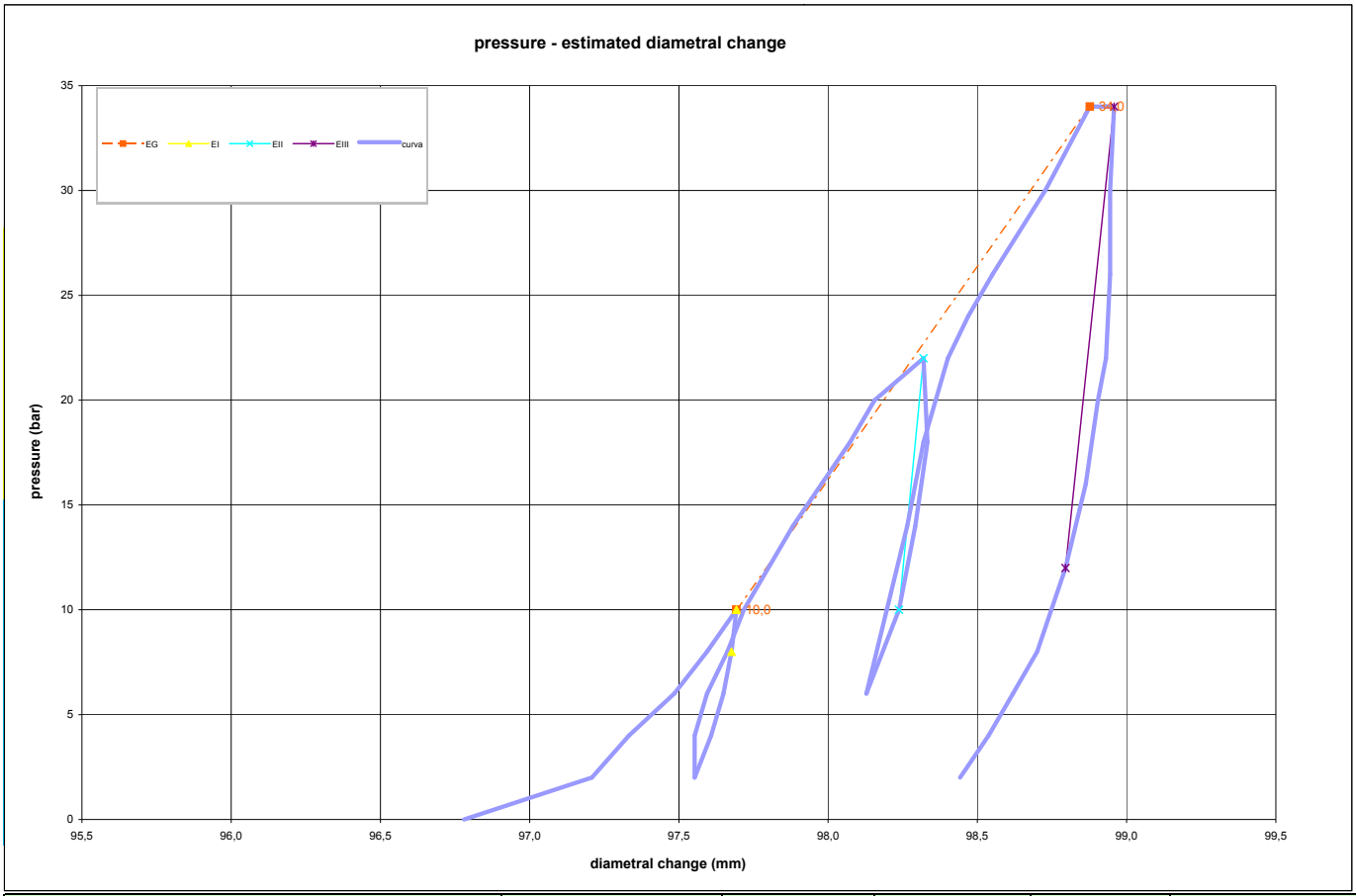
i valori diametrali sono calcolati come valore medio della sonda cillindrica in espansione

FIELD LIMITS

	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop
min	10,0	1661,1	66,2	0,0	15,1	97,7	0,9	primo
max	34,0	4000,0	153,0	1,2	6,5	98,9	2,1	carico
max	10,0	1661,1	66,2	0,0	15,1	97,7	0,9	I
min	8,0	1465,5	65,0	0,0	15,4	97,7	0,9	
max	22,0	2830,3	112,0	0,6	8,9	98,3	1,5	II
min	10,0	1656,5	106,0	0,6	9,4	98,2	1,5	
max	34,0	3999,3	159,0	1,3	6,3	99,0	2,2	III
min	12,0	1847,6	147,0	1,1	6,8	98,8	2,0	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	**DILATOMETRIC ROCK TEST DRT**				mod DVT REV3. 20 settembre 2020
	borehole	**S1**	**probe depth m**	**69,0**	**code** **5**
	Client:	**STUDIO FROSIO S.R.L.**	job 2020	v. accept.	**2020**
	Project	**PFTE BARI NORD**		report **2020**	**DRT**
		coordinates	EAST		
	site	**PESCOPAGANO**	NORTH	date 19.11.20	pag 2/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

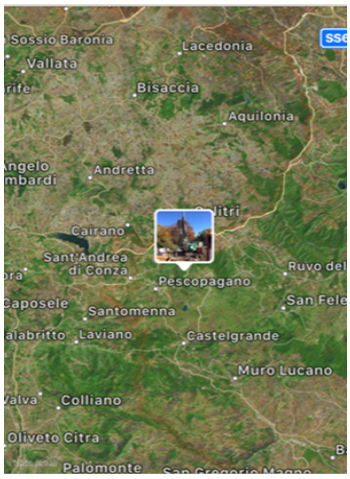


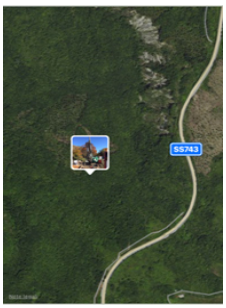
DATA PROCESSING						SENSOR 1	SENSOR 2	SENSOR 3	SENSOR AVE
			ELASTICITY MODULUS Ei						
Legend:	**DATA**		loop	Pmax	Pmin	E sensor 1 (Mpa)	E sensor2 (Mpa)	E sensor 3 (Mpa)	E1-E2-E3 average(Mpa)
H = test depth	symbol	datum	1	10,0	8,0				**1451**
W = water table depth	γnsoil	2,5	2	22,0	10,0				**1751**
ν = Poisson ratio	W (ml)	69,0	3	34,0	12,0				**1615**
vo = cell initial volume	ν	0,25	4						
do =cell initial diameter	vo (cmc)	3494	5						
Φ = borehole wall diameter	do (mm)	96,78	DEFORMATION MODULUS Ti						
Po = start pressure	σv (kPa)	1725	loop	Pmax	Pmin	T1 (Mpa)	T2 (Mpa)	T3 (Mpa)	Tm (Mpa)
Pmax = max loop pressure (MPa)	height mt	25	1	10,0	10,0				#DIV/0!
Pmin = min loop pressure (MPa)			2	22,0	10,0				228
d max displacement at P max			3	34,0	22,0				224
d min displacement at P min			4						
σv vertical total stress estimated			5						
ε c = dR / Ro			GLOBAL DEFORMATION MODULUS EG						
ELASTICITY MODULUS Ei	ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)	EG2 (Mpa)	EG3 (Mpa)	EGm (Mpa)
Ei = (1+ ν) Φ Pax - Pmin	Ey= (EII+EIII)/2			34,0	10,0				241
dmax - dmin	Ey= EIII		DIAMETER			F	F	F	F
			beginning diameter (mm)						97,693
DEFORMATION MODULUS Ti			final diameter (mm)						98,319
Ti = (1+ ν) Φ Pi - Pi-1			range mm						0,626
Xi - Xi-1			DM loop minimun displacement			DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS			
	Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)	980	**EG** (MPa)	**241**
GLOBAL DEFORMATION MODULUS EG	bar	0	120	240	0	Pf creep pressure (KPa)	4000	**E** (MPa)	**1.615**
EG = (1+ ν) Φ Pmax - Po	10,0	10,997	10,997	10,997	0,913	PL limit pres. (KPa) Cassan >	6076	E/P'L	47,86
dmax - do	22,0	11,342	11,342	11,342	1,539	PL' net limit pres (KPa) >	5041	EG/Ey	0,15
note:						Ko lateral coeff at rest (KPa)	**0,60**	**cu** coesion (KPa) johnson	
						Pho lateral pressure (KPa)	1035	ϕ friction angle (°) >	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	DILATOMETRIC ROCK TEST DRT					mod DVT REV3. 20 settembre 2020	
	borehole	S1	probe depth m	69,0		code	5
	Client:	STUDIO FROSIO S.R.L.			job 2020	v. accept.	2020
	Project	DERIVAZIONE PESCOPAGANO			report	2020	DRT
		coordinates		EAST			
	site	PESCOPAGANO		NORTH	date 19.11.20	pag	3/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

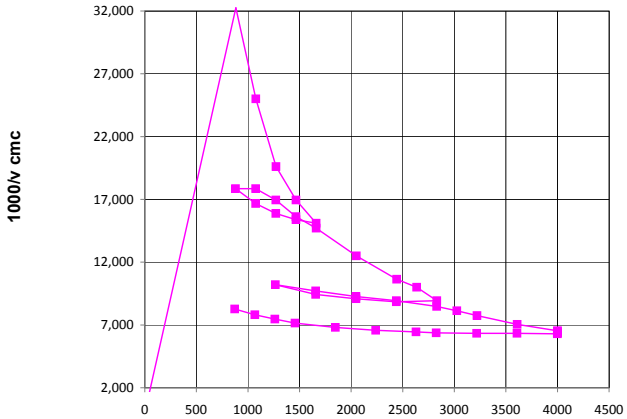
PLACE



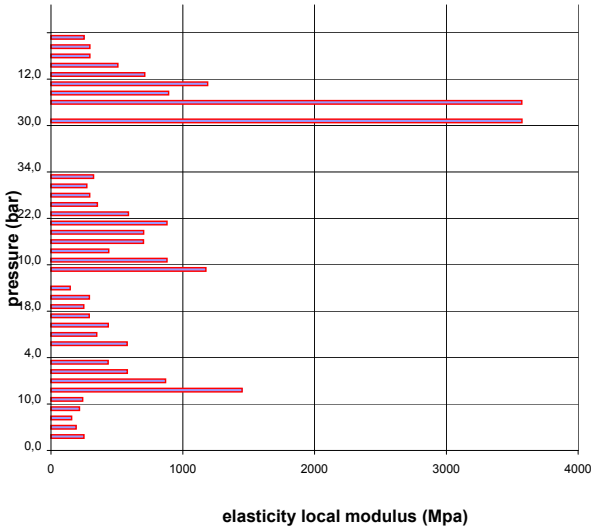


SECTION

pressure - 1/V



elasticity local modulus - pressure



TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo

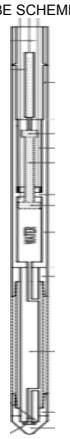
borehole	S1	probe depth m	73,5	code	6
Client:	STUDIO FROSIO S.R.L.	job	2020	v. accept.	2020
Project	DERIVAZIONE PESCOPAGANO	report	2020		DRT
coordinates		EAST			
site	PESCOPAGANO	NORTH	date	19.11.20	pag 1/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole	S1
test 6	depth 73,5
slope (degree) 90	core barrell HQ 96 MM - DIAM.
Device: GEOANALISI VM02	
Orientation capteur C1=	Standard method: ISRM 1987
Probe diam 90 MM	Borehole diam 96 MM
Meteo	Temperature
lithotype	CALCARE MICRITICO BIANCO FRATTURATO
water table	POCKET PENETRO METER

Temps min	PBAR	MM
0	38,00	102,19
1	38,00	102,20
2	38,00	102,21
3	38,00	102,22
4	38,00	102,22
5	38,00	102,23

PROBE SCHEME



rod adaptor

electronic device

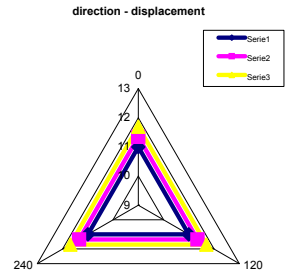
double action piston

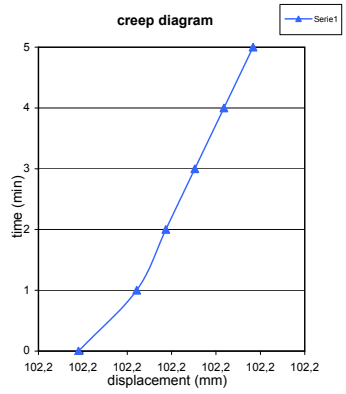
expandable cylinder

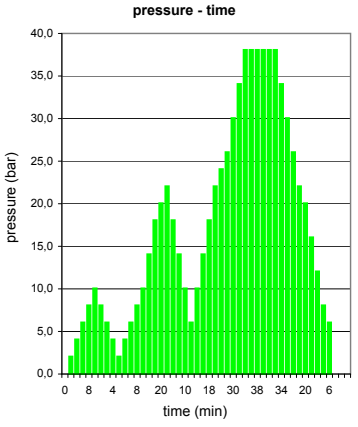
PROBE CALIBRATION

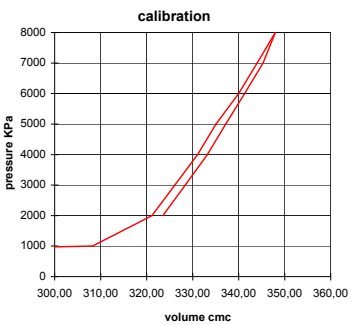
probe		
membrane	CAUCCIU' ARMATO	
measure cell height (cm)		47,50
V0 cell volume at rest (cmc)		3494
lenght cable (mt)		100
Volume initial Vi (cmc)		312
diam calibration tube (cm)		10,1
tube calibration volume cmc		3806
Calibration in air		
coeff *m*	0,11	Kpa/cmc
Confined calibration		
first load	4,4	cmc/Mpa
unload	3,5	cmc/Mpa

LITHOTYPE









PRESSURE STEP	P bar	Pcorr Kpa	Vol cmc	e c %	1/V 1000/cmc	diameter (mm)	Dil. Diam (mm)	Modulo MPa
0	0,0	0	0,0	-4,527	0,000	96,780	0,000	0,0
1	**2,0**	**899**	**273,6**	**-0,859**	**3,655**	**100,499**	**3,718**	**29,8**
2	**4,0**	**1092**	**296,2**	**-0,563**	**3,376**	**100,800**	**4,019**	**80,7**
3	6,0	1286	311,8	-0,358	3,207	101,007	4,226	118,0
4	8,0	1480	325,4	-0,180	3,073	101,187	4,407	136,0
5	**10,0**	**1675**	**339,2**	**0,000**	**2,948**	**101,370**	**4,589**	**134,5**
6	8,0	1479	337,4	-0,023	2,964	101,346	4,566	1040,4
7	6,0	1284	333,8	-0,070	2,996	101,298	4,518	519,3
8	4,0	1089	329,2	-0,131	3,038	101,237	4,457	405,7
9	2,0	894	322,6	-0,217	3,100	101,150	4,370	282,0
10	4,0	1089	327,2	-0,157	3,056	101,211	4,431	405,0
11	6,0	1284	331,8	-0,097	3,014	101,272	4,492	405,5
12	8,0	1479	337,4	-0,023	2,964	101,346	4,566	333,3
13	10,0	1674	341,0	0,023	2,933	101,394	4,613	519,8
14	14,0	2064	355,2	0,209	2,815	101,581	4,801	263,6
15	18,0	2454	366,4	0,354	2,729	101,729	4,948	335,6
16	20,0	2649	372,0	0,427	2,688	101,803	5,022	336,4
17	22,0	2844	376,6	0,487	2,655	101,863	5,083	410,3
18	18,0	2453	376,4	0,484	2,657	101,861	5,080	18933,0
19	14,0	2062	375,2	0,469	2,665	101,845	5,064	3154,0
20	10,0	1671	372,0	0,427	2,688	101,803	5,022	1181,4
21	6,0	1280	365,8	0,346	2,734	101,721	4,941	608,5
22	10,0	1671	371,0	0,414	2,695	101,789	5,009	725,6
23	14,0	2062	373,2	0,443	2,680	101,818	5,038	1718,2
24	18,0	2453	375,4	0,471	2,664	101,847	5,067	1719,2
25	22,0	2844	378,6	0,513	2,641	101,889	5,109	1182,4
26	24,0	3040	380,2	0,533	2,630	101,911	5,130	1183,2
27	26,0	3235	384,8	0,593	2,599	101,971	5,191	411,1
28	30,0	3626	390,0	0,661	2,564	102,039	5,259	729,2
29	34,0	4016	396,2	0,741	2,524	102,121	5,340	612,3
30	**38,0**	**4407**	**401,4**	**0,808**	**2,491**	**102,189**	**5,409**	**731,3**
31	38,0	4407	402,4	0,821	2,485	102,202	5,422	-1,1
32	38,0	4407	402,9	0,828	2,482	102,209	5,428	-1,1
33	38,0	4407	403,4	0,834	2,479	102,215	5,435	-1,1
34	38,0	4407	403,9	0,840	2,476	102,222	5,441	-1,1
35	38,0	4407	404,4	0,847	2,473	102,228	5,448	-1,1
36	34,0	4015	405,2	0,857	2,468	102,239	5,458	-4769,2
37	30,0	3624	405,0	0,855	2,469	102,236	5,456	19072,9
38	26,0	3233	403,8	0,839	2,476	102,220	5,440	3177,3
39	22,0	2841	405,6	0,862	2,465	102,244	5,464	-2120,2
40	20,0	2646	403,0	0,829	2,481	102,210	5,430	732,3
41	16,0	2255	400,8	0,800	2,495	102,181	5,401	1731,5
42	12,0	1863	398,6	0,772	2,509	102,152	5,372	1730,5
43	8,0	1473	392,4	0,692	2,548	102,071	5,291	612,7
44	6,0	1278	387,8	0,632	2,579	102,010	5,230	411,9

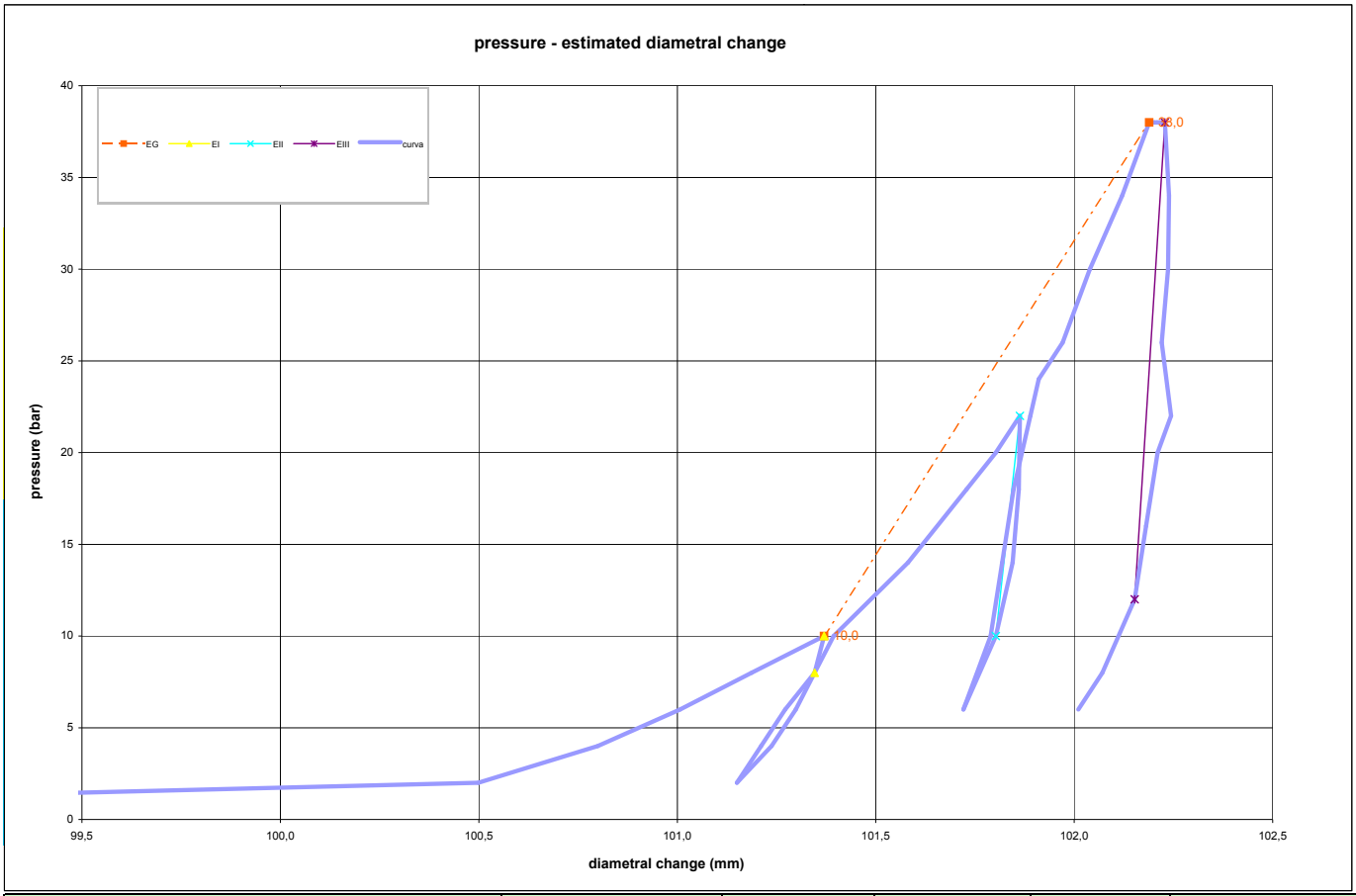
i valori diametrali sono calcolati come valore medio della sonda cillindrica in espansione

FIELD LIMITS

	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop
min	10,0	1674,5	339,2	0,0	2,9	101,4	4,6	primo
max	38,0	4407,1	401,4	0,8	2,5	102,2	5,4	carico
max	10,0	1674,5	339,2	0,0	2,9	101,4	4,6	I
min	8,0	1479,0	337,4	0,0	3,0	101,3	4,6	
max	22,0	2844,4	376,6	0,5	2,7	101,9	5,1	II
min	10,0	1670,8	372,0	0,4	2,7	101,8	5,0	
max	38,0	4406,8	404,4	0,8	2,5	102,2	5,4	III
min	12,0	1863,4	398,6	0,8	2,5	102,2	5,4	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	**DILATOMETRIC ROCK TEST DRT**				mod DVT REV3. 20 settembre 2020
	borehole	**S1**	**probe depth m**	**73,5**	**code** 6
Client:	**STUDIO FROSIO S.R.L.**		job 2020	v. accept.	**2020**
Project	**PFTE BARI NORD**			report **2020**	**DRT**
		coordinates	EAST		
site	**PESCOPAGANO**		NORTH	date 19.11.20	pag 2/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

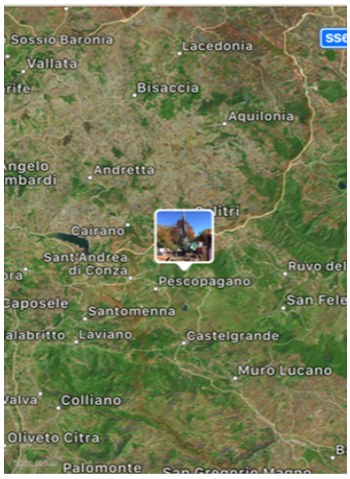


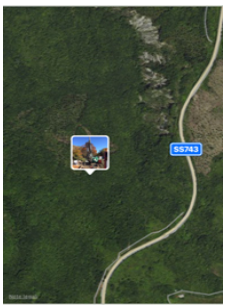
DATA PROCESSING						SENSOR 1	SENSOR 2	SENSOR 3	SENSOR AVE
			ELASTICITY MODULUS Ei						
Legend:	**DATA**		loop	Pmax	Pmin	E sensor 1 (Mpa)	E sensor2 (Mpa)	E sensor 3 (Mpa)	E1-E2-E3 average(Mpa)
H = test depth	symbol	datum	1	10,0	8,0				**1041**
W = water table depth	γnsoil	2,5	2	22,0	10,0				**2456**
ν = Poisson ratio	W (ml)	73,5	3	38,0	12,0				**4236**
vo = cell initial volume	ν	0,25	4						
do =cell initial diameter	vo (cmc)	3494	5						
Φ = borehole wall diameter	do (mm)	96,78	DEFORMATION MODULUS Ti						
Po = start pressure	σv (kPa)	1838	loop	Pmax	Pmin	T1 (Mpa)	T2 (Mpa)	T3 (Mpa)	Tm (Mpa)
Pmax = max loop pressure (MPa)	height mt	25	1	10,0	10,0				#DIV/0!
Pmin = min loop pressure (MPa)			2	22,0	10,0				300
d max displacement at P max			3	38,0	22,0				542
d min displacement at P min			4						
σv vertical total stress estimated			5						
ε c = dR / Ro			GLOBAL DEFORMATION MODULUS EG						
ELASTICITY MODULUS Ei	ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)	EG2 (Mpa)	EG3 (Mpa)	EGm (Mpa)
Ei = (1+ ν) Φ Pax - Pmin	Ey= (EII+EIII)/2			38,0	10,0				423
dmax - dmin	Ey= EIII		DIAMETER			F	F	F	F
			beginning diameter (mm)						101,370
DEFORMATION MODULUS Ti			final diameter (mm)						101,863
Ti = (1+ ν) Φ Pi - Pi-1			range mm						0,493
Xi - Xi-1			DM loop minimun displacement			DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS			
	Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)	996	**EG** (MPa)	**423**
GLOBAL DEFORMATION MODULUS EG	bar	0	120	240	0	Pf creep pressure (KPa)	4407	**E** (MPa)	**4.236**
EG = (1+ ν) Φ Pmax - Po	10,0	10,997	10,997	10,997	4,589	PL limit pres. (KPa) Cassan >	6720	E/P'L	75,24
dmax - do	22,0	11,342	11,342	11,342	5,083	PL' net limit pres (KPa) >	5618	EG/Ey	0,10
note:						Ko lateral coeff at rest (KPa)	**0,60**	**cu** coesion (KPa) johnson	
						Pho lateral pressure (KPa)	1103	ϕ friction angle (°) >	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	DILATOMETRIC ROCK TEST DRT					mod DVT REV3. 20 settembre 2020	
	borehole	S1	probe depth m	73,5		code	6
	Client:	STUDIO FROSIO S.R.L.			job 2020	v. accept.	2020
	Project	DERIVAZIONE PESCOPAGANO			report	2020	DRT
		coordinates		EAST			
	site	PESCOPAGANO		NORTH	date	19.11.20	pag 3/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

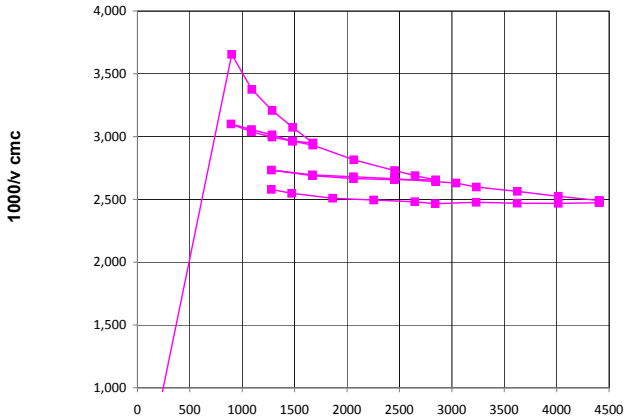
PLACE



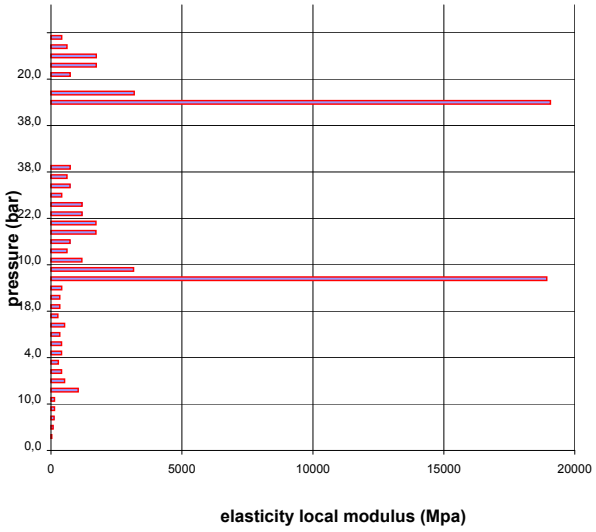


SECTION

pressure - 1/V



elasticity local modulus - pressure



TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo

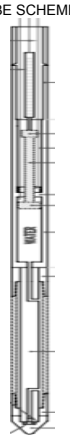
borehole	S2	probe depth m	28,5	code	1
Client:	STUDIO FROSIO S.R.L.	job	2020	v. accept.	2020
Project	DERIVAZIONE PESCOPAGANO	report	2020		DRT
coordinates		EAST			
site	PESCOPAGANO	NORTH	date	01.12.20	pag 1/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole	S2
test 1	depth 28,5
slope (degree) 90	core barrell HQ 96 MM - DIAM.
Device: GEOANALISI VM02	
Orientation capteur C1=	Standard method: ISRM 1987
Probe diam 90 MM	Borehole diam 96 MM
Meteo	Temperature
lithotype MARNA ARGILLOSA	
water table	POCKET PENETRO METER

Temps min	PBAR	MM
0	26,00	104,51
1	26,00	104,51
2	26,00	104,52
3	26,00	104,52
4	26,00	104,53
5	26,00	104,54

PROBE SCHEME



rod adaptor

electronic device

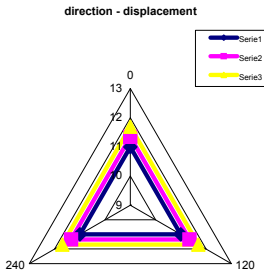
double action piston

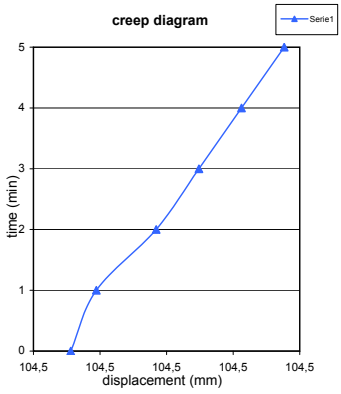
expandable cylinder

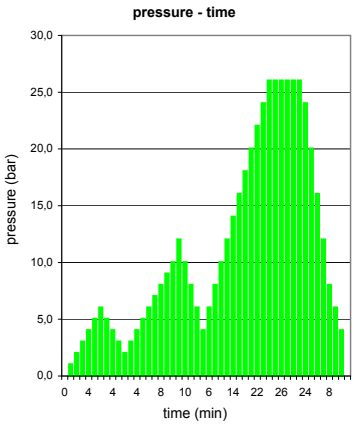
PROBE CALIBRATION

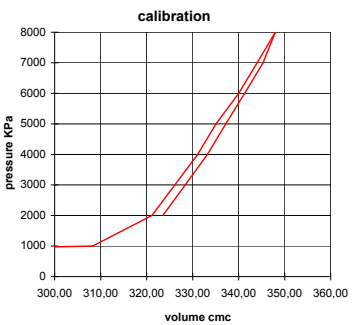
probe		
membrane	CAUCCIU' ARMATO	
measure cell height (cm)		47,50
V0 cell volume at rest (cmc)		3494
lenght cable (mt)		100
Volume initial Vi (cmc)		312
diam calibration tube (cm)		10,1
tube calibration volume cmc		3806
Calibration in air		
coeff *m*	0,11	Kpa/cmc
Confined calibration		
first load	4,4	cmc/Mpa
unload	3,5	cmc/Mpa

LITHOTYPE









PRESSURE STEP	P bar	Pcorr Kpa	Vol cmc	e c %	1/V 1000/cmc	diameter (mm)	Dil. Diam (mm)	Modulo MPa
0	0,0	0	0,0	-6,234	0,000	96,780	0,000	0,0
1	1,0	334	428,0	-0,656	2,336	102,537	5,757	7,2
2	2,0	429	451,0	-0,366	2,217	102,838	6,057	40,7
3	**3,0**	**525**	**470,0**	**-0,126**	**2,128**	**103,085**	**6,305**	**49,8**
4	4,0	622	474,0	-0,076	2,110	103,137	6,357	241,4
5	**5,0**	**719**	**480,0**	**0,000**	**2,083**	**103,215**	**6,435**	**160,8**
6	6,0	816	486,0	0,075	2,058	103,293	6,512	161,0
7	5,0	719	486,0	0,075	2,058	103,293	6,512	#DIV/0!
8	4,0	621	482,0	0,025	2,075	103,241	6,461	242,2
9	3,0	524	475,0	-0,063	2,105	103,150	6,370	137,7
10	2,0	427	465,0	-0,189	2,151	103,020	6,240	95,8
11	3,0	524	474,0	-0,076	2,110	103,137	6,357	106,6
12	4,0	621	482,0	0,025	2,075	103,241	6,461	120,3
13	5,0	718	490,0	0,126	2,041	103,345	6,564	120,6
14	6,0	815	495,0	0,189	2,020	103,410	6,629	193,9
15	7,0	913	500,0	0,251	2,000	103,474	6,694	194,2
16	8,0	1010	507,0	0,339	1,972	103,565	6,785	138,6
17	9,0	1107	513,0	0,414	1,949	103,643	6,862	162,1
18	10,0	1204	520,0	0,502	1,923	103,733	6,953	139,0
19	12,0	1398	531,0	0,640	1,883	103,875	7,095	177,6
20	10,0	1203	526,0	0,577	1,901	103,811	7,030	392,5
21	8,0	1008	521,0	0,515	1,919	103,746	6,966	392,0
22	6,0	813	512,0	0,402	1,953	103,630	6,849	216,9
23	4,0	619	502,0	0,276	1,992	103,500	6,720	194,6
24	6,0	814	510,0	0,377	1,961	103,604	6,823	243,5
25	8,0	1008	520,0	0,502	1,923	103,733	6,953	195,0
26	10,0	1203	528,0	0,602	1,894	103,836	7,056	244,6
27	12,0	1398	535,0	0,690	1,869	103,927	7,146	280,2
28	14,0	1593	542,0	0,777	1,845	104,017	7,237	280,7
29	16,0	1788	549,0	0,864	1,821	104,107	7,327	281,2
30	18,0	1983	557,0	0,964	1,795	104,210	7,430	246,4
31	20,0	2178	562,0	1,027	1,779	104,274	7,494	395,5
32	22,0	2373	568,0	1,101	1,761	104,352	7,571	329,9
33	24,0	2568	574,0	1,176	1,742	104,429	7,648	330,3
34	**26,0**	**2763**	**580,0**	**1,250**	**1,724**	**104,506**	**7,725**	**330,8**
35	26,0	2763	580,3	1,254	1,723	104,509	7,729	-1,2
36	26,0	2763	581,0	1,263	1,721	104,518	7,738	-1,2
37	26,0	2763	581,5	1,269	1,720	104,525	7,744	-1,2
38	26,0	2763	582,0	1,275	1,718	104,531	7,751	-1,2
39	26,0	2763	582,5	1,282	1,717	104,538	7,757	-1,2
40	24,0	2567	582,3	1,279	1,717	104,535	7,755	9971,9
41	20,0	2176	580,0	1,250	1,724	104,506	7,725	1732,7
42	16,0	1785	575,0	1,188	1,739	104,441	7,661	795,7
43	12,0	1394	569,0	1,114	1,757	104,364	7,584	662,0
44	8,0	1003	561,7	1,023	1,780	104,271	7,490	543,0
45	6,0	809	551,7	0,898	1,813	104,142	7,362	197,0
46	4,0	614	543,2	0,792	1,841	104,033	7,252	231,5

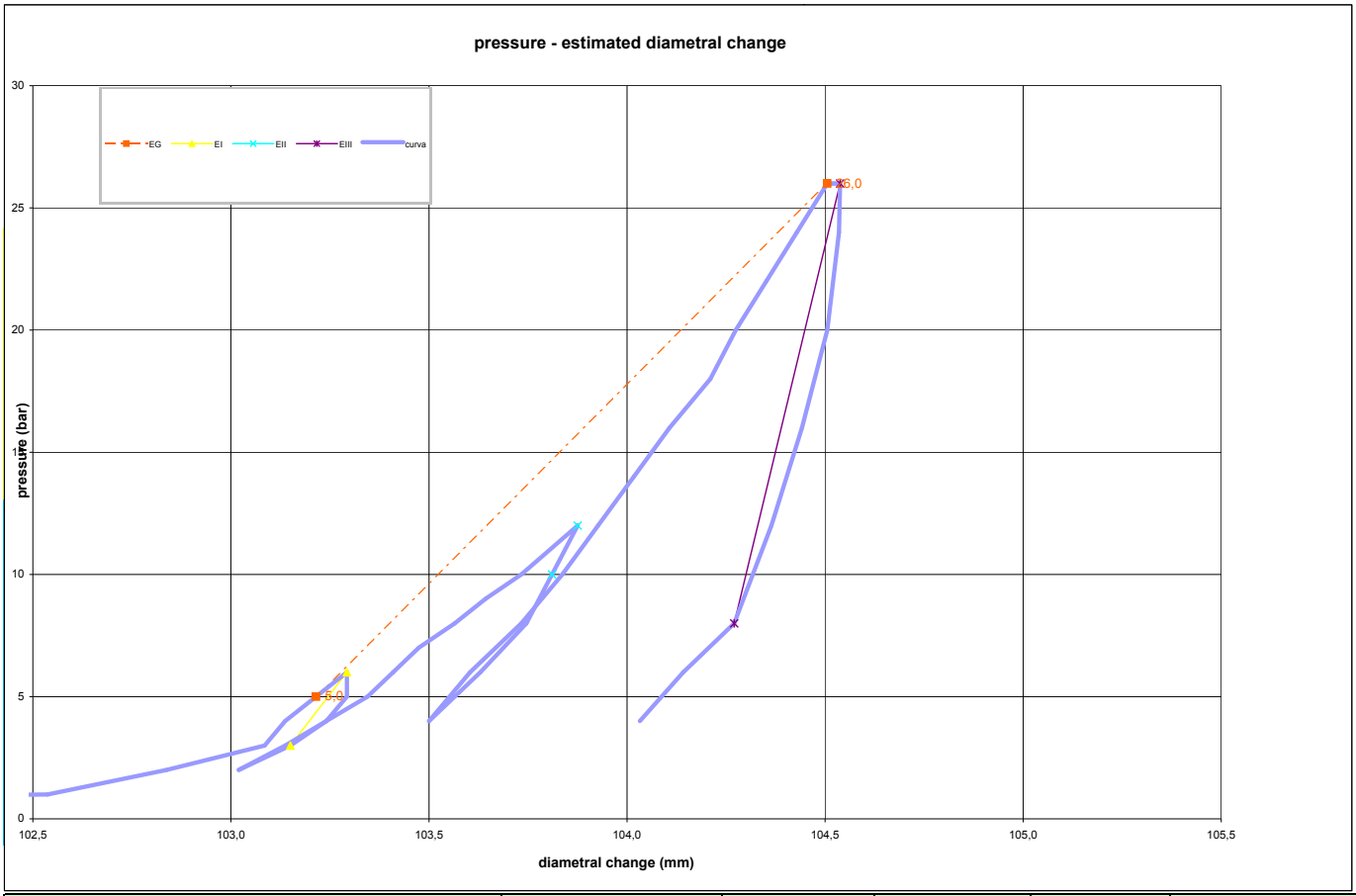
i valori diametrali sono calcolati come valore medio della sonda cillindrica in espansione

FIELD LIMITS

	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop
min	5,0	719,2	480,0	0,0	2,1	103,2	6,4	primo
max	26,0	2763,0	580,0	1,3	1,7	104,5	7,7	carico
max	6,0	816,4	486,0	0,1	2,1	103,3	6,5	I
min	3,0	524,1	475,0	-0,1	2,1	103,1	6,4	
max	12,0	1398,5	531,0	0,6	1,9	103,9	7,1	II
min	10,0	1203,3	526,0	0,6	1,9	103,8	7,0	
max	26,0	2762,7	582,5	1,3	1,7	104,5	7,8	III
min	8,0	1003,5	561,7	1,0	1,8	104,3	7,5	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	**DILATOMETRIC ROCK TEST DRT**				mod DVT REV3. 20 settembre 2020
	borehole	**S2**	**probe depth m**	**28,5**	**code** 1
	Client:	**STUDIO FROSIO S.R.L.**	job 2020	v. accept. **2020**	
	Project	**PFTE BARI NORD**		report **2020**	**DRT**
		coordinates	EAST		
	site	**PESCOPAGANO**	NORTH	date 01.12.20	pag 2/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

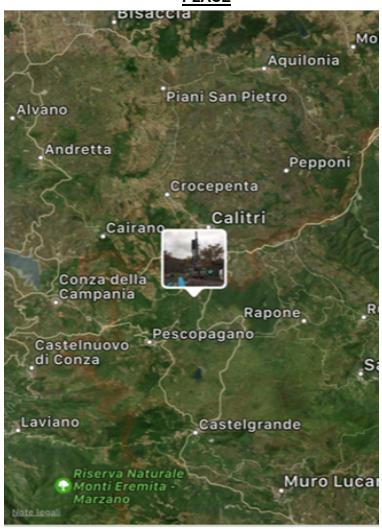


DATA PROCESSING						SENSOR 1	SENSOR 2	SENSOR 3	SENSOR AVE
			ELASTICITY MODULUS Ei						
Legend:	**DATA**		loop	Pmax	Pmin	E sensor 1 (Mpa)	E sensor2 (Mpa)	E sensor 3 (Mpa)	E1-E2-E3 average(Mpa)
H = test depth	symbol	datum	1	6,0	3,0				**264**
W = water table depth	γnsoil	2,3	2	12,0	10,0				**390**
ν = Poisson ratio	W (ml)	28,5	3	26,0	8,0				**850**
vo = cell initial volume	ν	0,25	4						
do =cell initial diameter	vo (cmc)	3494	5						
Φ = borehole wall diameter	do (mm)	96,78	DEFORMATION MODULUS Ti						
Po = start pressure	σv (kPa)	656	loop	Pmax	Pmin	T1 (Mpa)	T2 (Mpa)	T3 (Mpa)	Tm (Mpa)
Pmax = max loop pressure (MPa)	height mt		1	6,0	5,0				161
Pmin = min loop pressure (MPa)			2	12,0	6,0				129
d max displacement at P max			3	26,0	12,0				266
d min displacement at P min			4						
σv vertical total stress estimated			5						
ε c = dR / Ro			GLOBAL DEFORMATION MODULUS EG						
ELASTICITY MODULUS Ei	ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)	EG2 (Mpa)	EG3 (Mpa)	EGm (Mpa)
Ei = (1+ ν) Φ Pax - Pmin	Ey= (EII+EIII)/2			26,0	5,0				204
dmax - dmin	Ey= EIII		DIAMETER			F	F	F	F
			beginning diameter (mm)						103,215
DEFORMATION MODULUS Ti			final diameter (mm)						103,875
Ti = (1+ ν) Φ Pi - Pi-1			range mm						0,660
Xi - Xi-1			DM loop minimun displacement			DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS			
	Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)	525	**EG** (MPa)	**204**
GLOBAL DEFORMATION MODULUS EG	bar	0	120	240	0	Pf creep pressure (KPa)	2763	**E** (MPa)	**850**
EG = (1+ ν) Φ Pmax - Po	6,0	10,997	10,997	10,997	6,512	PL limit pres. (KPa) Cassan >	4330	E/P'L	53,68
dmax - do	12,0	11,342	11,342	11,342	7,095	PL' net limit pres (KPa) >	3806	EG/Ey	0,24
note:						Ko lateral coeff at rest (KPa)	**0,80**	**cu** coesion (KPa) johnson	
						Pho lateral pressure (KPa)	524	ϕ friction angle (°) >	

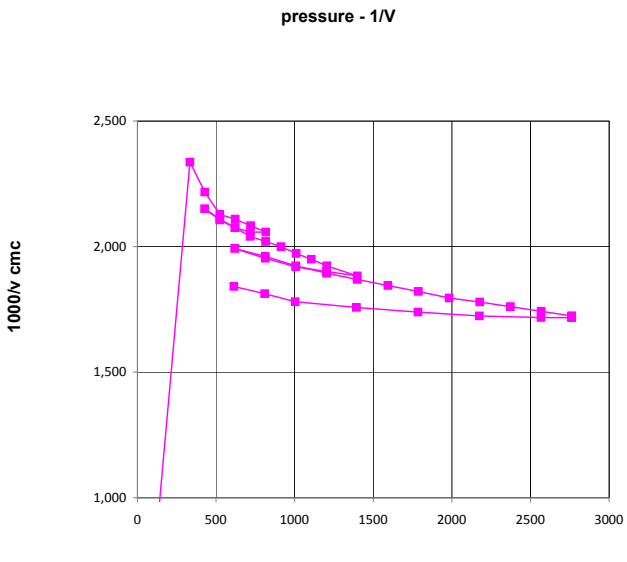
TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	DILATOMETRIC ROCK TEST DRT					mod DVT REV3. 20 settembre 2020	
	borehole	S2	probe depth m	28,5		code	1
	Client:	STUDIO FROSIO S.R.L.			job 2020	v. accept.	2020
	Project	DERIVAZIONE PESCOPAGANO			report	2020	DRT
		coordinates		EAST			
	site	PESCOPAGANO		NORTH	date 01.12.20	pag	3/3

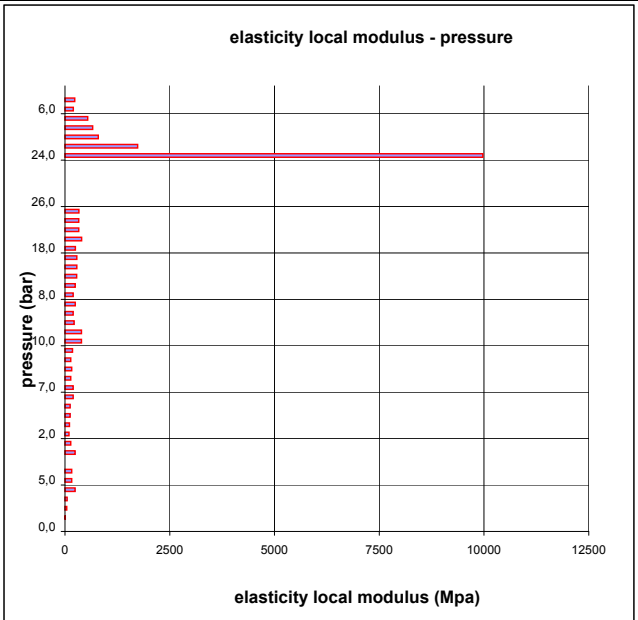
DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

PLACE



SECTION





TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo

borehole	S2	probe depth m	33,5	code	2
Client:	STUDIO FROSIO S.R.L.	job	2020	v. accept.	2020
Project	DERIVAZIONE PESCOPAGANO	report	2020		DRT
coordinates		EAST			
site	PESCOPAGANO	NORTH	date	01.12.20	pag 1/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole	S2
test 2	depth 33,5
slope (degree) 90	core barrell HQ 96 MM - DIAM.
Device: GEOANALISI VM02	
Orientation capteur C1=	Standard method: ISRM 1987
Probe diam 90 MM	Borehole diam 96 MM
Meteo	Temperatu re
lithotype ARGILLITE MARNOSA GRIGIA	
water table	POCKET PENETRO METER

Temps min	PBAR	MM
0	18,00	104,16
1	18,00	104,18
2	18,00	104,19
3	18,00	104,20
4	18,00	104,21
5	18,00	104,22

PROBE SCHEME

rod adaptor

electronic device

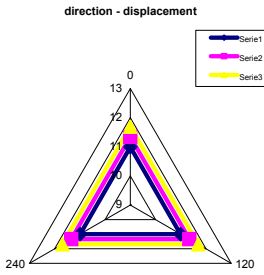
double action piston

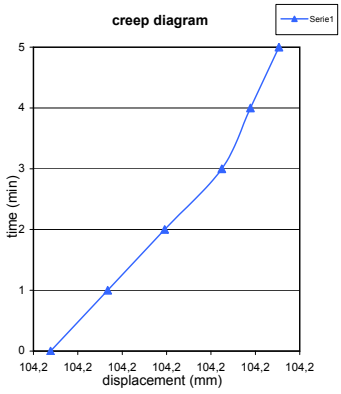
expandable cylinder

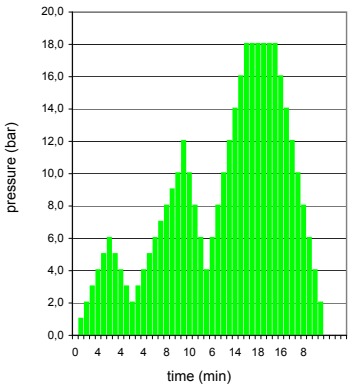
PROBE CALIBRATION

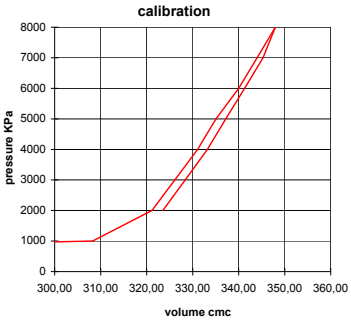
probe		
membrane	CAUCCIU' ARMATO	
measure cell height (cm)		47,50
V0 cell volume at rest (cmc)		3494
lenght cable (mt)		100
Volume initial Vi (cmc)		312
diam calibration tube (cm)		10,1
tube calibration volume cmc		3806
Calibration in air		
coeff *m*	0,11	Kpa/cmc
Confined calibration		
first load	4,4	cmc/Mpa
unload	3,5	cmc/Mpa

LITHOTYPE









PRESSURE STEP	P bar	Pcorr Kpa	Vol cmc	e c %	1/V 1000/cmc	diameter (mm)	Dil. Diam (mm)	Modulo MPa
0	0,0	0	0,0	-6,133	0,000	96,780	0,000	0,0
1	1,0	386	407,8	-0,805	2,452	102,273	5,493	8,8
2	**2,0**	**480**	**440,6**	**-0,389**	**2,270**	**102,702**	**5,922**	**28,1**
3	3,0	577	450,6	-0,263	2,219	102,832	6,052	95,2
4	4,0	673	461,2	-0,129	2,168	102,970	6,190	90,0
5	**5,0**	**770**	**471,4**	**0,000**	**2,121**	**103,103**	**6,323**	**93,8**
6	6,0	867	481,3	0,125	2,078	103,232	6,451	97,0
7	5,0	769	479,2	0,098	2,087	103,205	6,424	461,8
8	4,0	672	472,7	0,016	2,116	103,120	6,340	148,2
9	3,0	576	461,6	-0,124	2,166	102,976	6,195	86,1
10	2,0	479	449,1	-0,282	2,227	102,813	6,032	76,1
11	3,0	576	458,7	-0,160	2,180	102,938	6,158	99,5
12	4,0	673	467,8	-0,045	2,138	103,056	6,276	105,2
13	5,0	770	475,4	0,050	2,103	103,155	6,375	126,5
14	6,0	867	483,8	0,156	2,067	103,264	6,484	114,6
15	7,0	963	491,6	0,254	2,034	103,365	6,585	123,7
16	8,0	1060	499,4	0,352	2,002	103,467	6,686	124,0
17	9,0	1157	507,2	0,450	1,972	103,568	6,787	124,2
18	10,0	1254	514,0	0,536	1,946	103,656	6,875	142,9
19	12,0	1449	526,6	0,694	1,899	103,818	7,038	154,7
20	10,0	1254	521,0	0,624	1,919	103,746	6,966	349,8
21	8,0	1059	514,4	0,541	1,944	103,661	6,880	296,2
22	6,0	864	505,8	0,433	1,977	103,549	6,769	226,6
23	4,0	670	492,2	0,262	2,032	103,373	6,593	142,5
24	6,0	865	500,8	0,370	1,997	103,485	6,704	225,8
25	8,0	1059	512,4	0,516	1,952	103,635	6,855	167,6
26	10,0	1254	521,0	0,624	1,919	103,746	6,966	227,0
27	12,0	1448	529,6	0,731	1,888	103,857	7,077	227,5
28	14,0	1643	538,2	0,839	1,858	103,968	7,188	228,0
29	16,0	1838	546,8	0,946	1,829	104,079	7,299	228,4
30	**18,0**	**2033**	**553,4**	**1,029**	**1,807**	**104,164**	**7,383**	**298,6**
31	18,0	2033	554,4	1,041	1,804	104,177	7,396	-1,2
32	18,0	2032	555,4	1,054	1,801	104,190	7,409	-1,2
33	18,0	2032	556,4	1,066	1,797	104,202	7,422	-1,2
34	18,0	2032	556,9	1,072	1,796	104,209	7,429	-1,2
35	18,0	2032	557,4	1,079	1,794	104,215	7,435	-1,2
36	16,0	1837	551,8	1,009	1,812	104,143	7,363	352,5
37	14,0	1642	549,2	0,976	1,821	104,110	7,329	759,8
38	12,0	1447	545,6	0,931	1,833	104,063	7,283	548,0
39	10,0	1251	540,0	0,861	1,852	103,991	7,211	351,5
40	8,0	1057	532,4	0,766	1,878	103,893	7,113	258,3
41	6,0	862	521,8	0,634	1,916	103,756	6,976	184,4
42	4,0	668	506,2	0,438	1,976	103,555	6,774	124,5
43	2,0	475	482,6	0,141	2,072	103,249	6,468	81,5

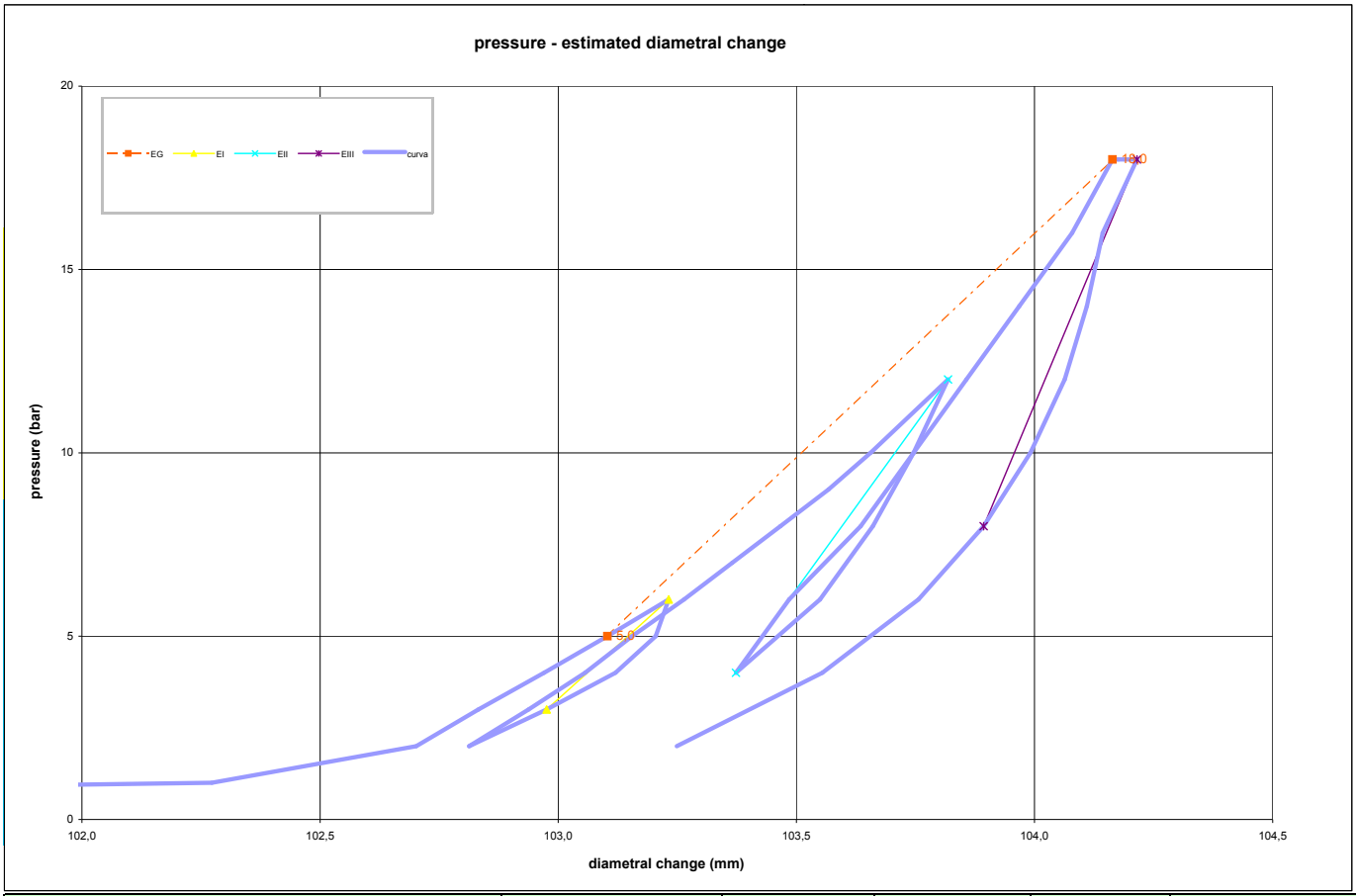
i valori diametrali sono calcolati come valore medio della sonda cillindrica in espansione

FIELD LIMITS

	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop
min	5,0	770,1	471,4	0,0	2,1	103,1	6,3	primo
max	18,0	2032,7	553,4	1,0	1,8	104,2	7,4	carico
max	6,0	866,8	481,3	0,1	2,1	103,2	6,5	I
min	3,0	575,5	461,6	-0,1	2,2	103,0	6,2	
max	12,0	1448,7	526,6	0,7	1,9	103,8	7,0	II
min	4,0	669,9	492,2	0,3	2,0	103,4	6,6	
max	18,0	2032,2	557,4	1,1	1,8	104,2	7,4	III
min	8,0	1056,6	532,4	0,8	1,9	103,9	7,1	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	**DILATOMETRIC ROCK TEST DRT**				mod DVT REV3. 20 settembre 2020
	borehole	**S2**	**probe depth m**	**33,5**	**code** **2**
	Client:	**STUDIO FROSIO S.R.L.**	job 2020	v. accept.	**2020**
	Project	**PFTE BARI NORD**		report **2020**	**DRT**
		coordinates	EAST		
	site	**PESCOPAGANO**	NORTH	date 01.12.20	pag 2/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

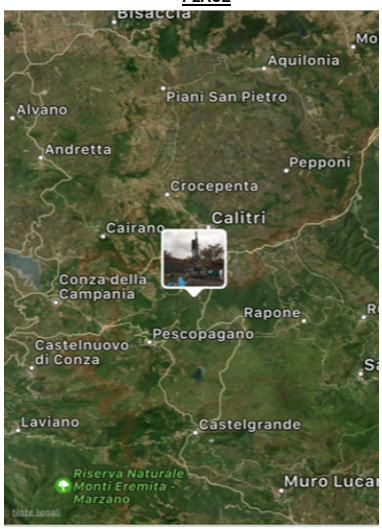


DATA PROCESSING						SENSOR 1	SENSOR 2	SENSOR 3	SENSOR AVE
			ELASTICITY MODULUS Ei						
Legend:	**DATA**		loop	Pmax	Pmin	E sensor 1 (Mpa)	E sensor2 (Mpa)	E sensor 3 (Mpa)	E1-E2-E3 average(Mpa)
H = test depth	symbol	datum	1	6,0	3,0				**147**
W = water table depth	γnsoil	2,3	2	12,0	4,0				**225**
ν = Poisson ratio	W (ml)	33,5	3	18,0	8,0				**390**
vo = cell initial volume	ν	0,25	4						
do =cell initial diameter	vo (cmc)	3494	5						
Φ = borehole wall diameter	do (mm)	96,78	DEFORMATION MODULUS Ti						
Po = start pressure	σv (kPa)	771	loop	Pmax	Pmin	T1 (Mpa)	T2 (Mpa)	T3 (Mpa)	Tm (Mpa)
Pmax = max loop pressure (MPa)	height mt		1	6,0	5,0				97
Pmin = min loop pressure (MPa)			2	12,0	6,0				128
d max displacement at P max			3	18,0	12,0				189
d min displacement at P min			4						
σv vertical total stress estimated			5						
ε c = dR / Ro			GLOBAL DEFORMATION MODULUS EG						
ELASTICITY MODULUS Ei	ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)	EG2 (Mpa)	EG3 (Mpa)	EGm (Mpa)
Ei = (1+ ν) Φ Pax - Pmin	Ey= (EII+EIII)/2			18,0	5,0				153
dmax - dmin	Ey= EIII		DIAMETER			F	F	F	F
			beginning diameter (mm)						103,103
DEFORMATION MODULUS Ti			final diameter (mm)						103,818
Ti = (1+ ν) Φ Pi - Pi-1			range mm						0,715
Xi - Xi-1			DM loop minimun displacement			DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS			
	Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)	577	**EG** (MPa)	**153**
GLOBAL DEFORMATION MODULUS EG	bar	0	120	240	0	Pf creep pressure (KPa)	2033	**E** (MPa)	**390**
EG = (1+ ν) Φ Pmax - Po	6,0	10,997	10,997	10,997	6,451	PL limit pres. (KPa) Cassan >	3024	E/P'L	63,72
dmax - do	12,0	11,342	11,342	11,342	7,038	PL' net limit pres (KPa) >	2408	EG/Ey	0,39
note:						Ko lateral coeff at rest (KPa)	**0,80**	**cu** coesion (KPa) johnson	
						Pho lateral pressure (KPa)	616	ϕ friction angle (°) >	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	DILATOMETRIC ROCK TEST DRT					mod DVT REV3. 20 settembre 2020	
	borehole	S2	probe depth m	33,5		code	2
	Client:	STUDIO FROSIO S.R.L.			job 2020	v. accept.	2020
	Project	DERIVAZIONE PESCOPAGANO			report	2020	DRT
		coordinates		EAST			
	site	PESCOPAGANO		NORTH	date 01.12.20	pag	3/3

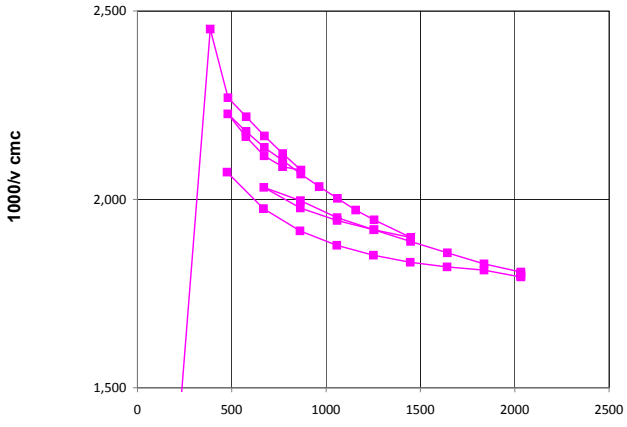
DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

PLACE

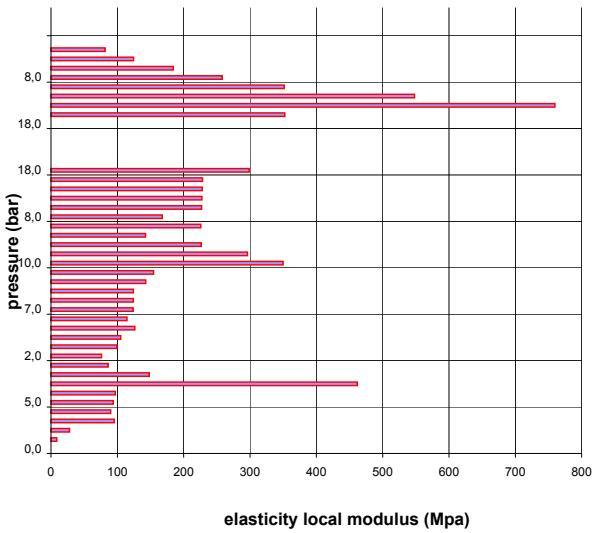


SECTION

pressure - 1/V



elasticity local modulus - pressure



TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo

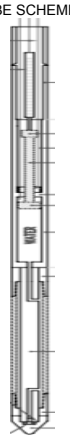
borehole	S2	probe depth m	39,5			code	3
Client:	STUDIO FROSIO S.R.L.			job	2020	v. accept.	2020
Project	DERIVAZIONE PESCOPAGANO			report	2020		DRT
		coordinates		EAST			
site	PESCOPAGANO			NORTH	date	30.11.20	pag 1/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole	S2
test 3	depth 39,5
slope (degree) 90	core barrell HQ 96 MM - DIAM.
Device: GEOANALISI VM02	
Orientation capteur C1=	Standard method: ISRM 1987
Probe diam 90 MM	Borehole diam 96 MM
Meteo	Temperatu re
lithotype MARNA-ARGILLOSA	
water table	POCKET PENETRO METER

Temps min	PBAR	MM
0	26,00	102,73
1	26,00	102,74
2	26,00	102,75
3	26,00	102,75
4	26,00	102,76
5	26,00	102,77

PROBE SCHEME



rod adaptor

electronic device

double action piston

expandable cylinder

PROBE CALIBRATION

probe	
membrane	CAUCCIU' ARMATO
measure cell height (cm)	47,50
V0 cell volume at rest (cmc)	3494
lenght cable (mt)	100
Volume initial Vi (cmc)	312
diam calibration tube (cm)	10,1
tube calibration volume cmc	3806

Calibration in air

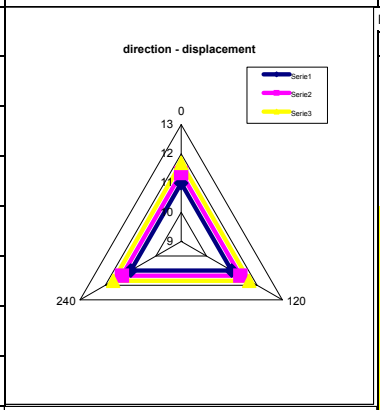
coeff *m* 0,11 Kpa/cmc

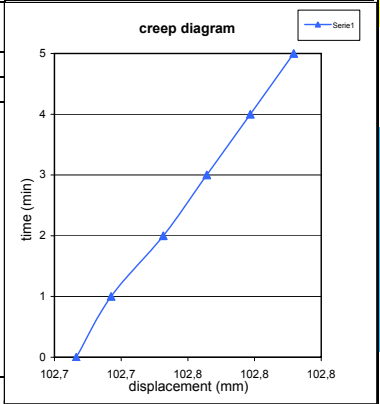
Confined calibration

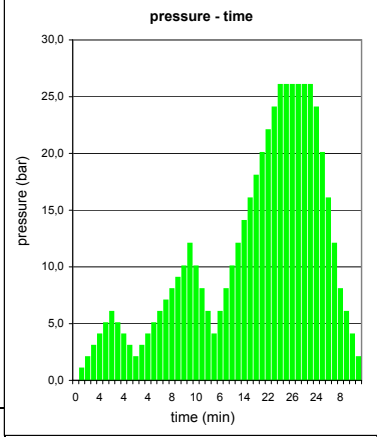
first load 4,4 cmc/Mpa

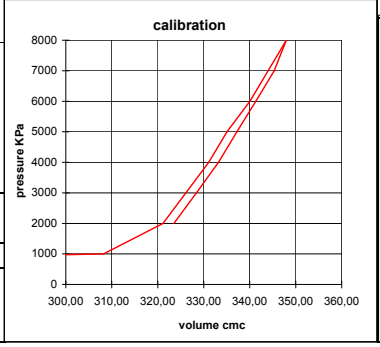
unload 3,5 cmc/Mpa

LITHOTYPE









PRESSURE STEP	P bar	Pcorr Kpa	Vol cmc	e c %	1/V 1000/cmc	diameter (mm)	Dil. Diam (mm)	Modulo MPa
0	0,0	0	0,0	-4,736	0,000	96,780	0,000	0,0
1	1,0	460	289,0	-0,874	3,460	100,704	3,923	14,5
2	2,0	555	314,0	-0,547	3,185	101,036	4,256	36,1
3	3,0	651	331,0	-0,325	3,021	101,261	4,481	53,8
4	**4,0**	**747**	**345,0**	**-0,143**	**2,899**	**101,446**	**4,666**	**65,9**
5	**5,0**	**843**	**356,0**	**0,000**	**2,809**	**101,592**	**4,811**	**84,4**
6	6,0	940	367,0	0,143	2,725	101,737	4,956	84,6
7	5,0	843	362,0	0,078	2,762	101,671	4,891	187,7
8	4,0	745	358,0	0,026	2,793	101,618	4,838	234,6
9	3,0	648	352,0	-0,052	2,841	101,539	4,759	155,8
10	2,0	552	340,0	-0,208	2,941	101,380	4,600	77,2
11	3,0	649	348,0	-0,104	2,874	101,486	4,706	116,3
12	4,0	746	356,0	0,000	2,809	101,592	4,811	116,5
13	5,0	843	363,0	0,091	2,755	101,684	4,904	133,6
14	6,0	940	370,0	0,182	2,703	101,776	4,996	133,8
15	7,0	1037	376,0	0,259	2,660	101,855	5,075	156,6
16	8,0	1134	382,0	0,337	2,618	101,934	5,154	156,8
17	9,0	1231	387,0	0,402	2,584	102,000	5,220	188,7
18	10,0	1329	392,0	0,466	2,551	102,066	5,285	188,9
19	12,0	1523	402,0	0,596	2,488	102,197	5,417	189,3
20	10,0	1328	399,0	0,557	2,506	102,158	5,377	634,1
21	8,0	1133	393,0	0,479	2,545	102,079	5,298	316,1
22	6,0	938	384,0	0,363	2,604	101,961	5,180	210,0
23	4,0	744	374,0	0,234	2,674	101,829	5,049	188,4
24	6,0	938	382,0	0,337	2,618	101,934	5,154	235,7
25	8,0	1133	390,0	0,441	2,564	102,039	5,259	236,2
26	10,0	1328	398,0	0,544	2,513	102,144	5,364	236,7
27	12,0	1523	404,0	0,622	2,475	102,223	5,443	316,5
28	14,0	1718	410,0	0,699	2,439	102,302	5,521	317,0
29	16,0	1913	417,0	0,789	2,398	102,393	5,613	272,0
30	18,0	2108	424,0	0,879	2,358	102,485	5,705	272,5
31	20,0	2303	429,0	0,944	2,331	102,550	5,770	382,5
32	22,0	2498	434,0	1,008	2,304	102,616	5,835	383,0
33	24,0	2693	439,0	1,072	2,278	102,681	5,901	383,5
34	**26,0**	**2889**	**443,0**	**1,124**	**2,257**	**102,733**	**5,953**	**480,2**
35	26,0	2889	443,4	1,129	2,255	102,738	5,958	-1,1
36	26,0	2889	444,0	1,137	2,252	102,746	5,966	-1,1
37	26,0	2889	444,5	1,143	2,250	102,753	5,972	-1,1
38	26,0	2889	445,0	1,149	2,247	102,759	5,979	-1,1
39	26,0	2888	445,5	1,156	2,245	102,766	5,986	-1,1
40	24,0	2693	442,0	1,111	2,262	102,720	5,940	549,4
41	20,0	2302	440,0	1,085	2,273	102,694	5,914	1924,3
42	16,0	1911	435,0	1,021	2,299	102,629	5,848	768,4
43	12,0	1520	427,0	0,918	2,342	102,524	5,744	479,0
44	8,0	1130	414,0	0,751	2,415	102,354	5,574	293,6
45	6,0	936	404,0	0,622	2,475	102,223	5,443	189,9
46	4,0	741	392,0	0,466	2,551	102,066	5,285	157,6
47	2,0	548	368,0	0,156	2,717	101,750	4,970	77,9

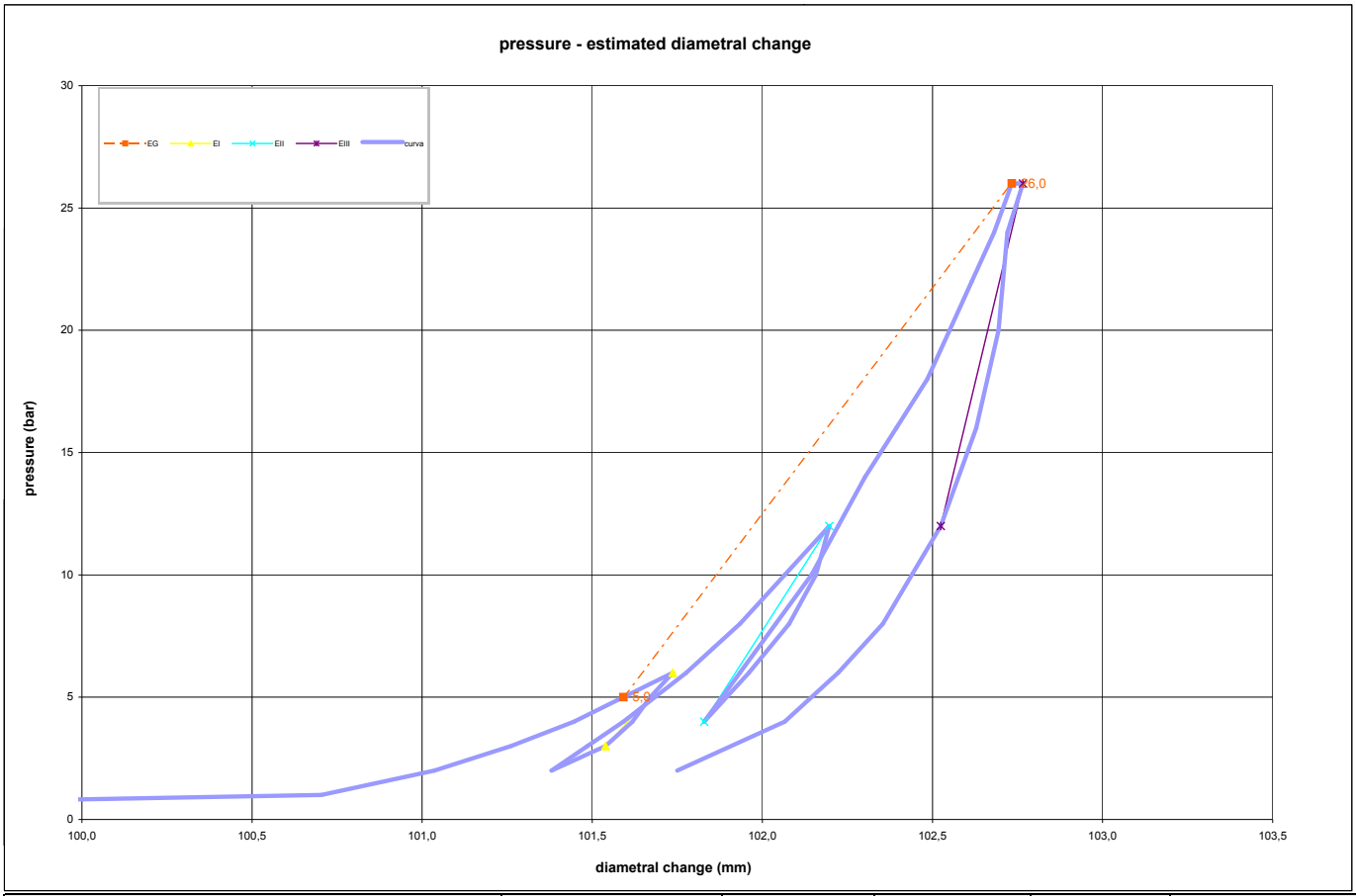
i valori diametrali sono calcolati come valore medio della sonda cillindrica in espansione

FIELD LIMITS

	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop
min	5,0	843,5	356,0	0,0	2,8	101,6	4,8	primo
max	26,0	2888,8	443,0	1,1	2,3	102,7	6,0	carico
max	6,0	940,1	367,0	0,1	2,7	101,7	5,0	I
min	3,0	648,2	352,0	-0,1	2,8	101,5	4,8	
max	12,0	1523,3	402,0	0,6	2,5	102,2	5,4	II
min	4,0	743,5	374,0	0,2	2,7	101,8	5,0	
max	26,0	2888,5	445,5	1,2	2,2	102,8	6,0	III
min	12,0	1520,4	427,0	0,9	2,3	102,5	5,7	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	DILATOMETRIC ROCK TEST DRT				mod DVT REV3. 20 settembre 2020
	borehole	S2	probe depth m	39,5	code 3
	Client:	STUDIO FROSIO S.R.L.	job 2020	v. accept.	2020
	Project	PFTE BARI NORD		report 2020	DRT
		coordinates	EAST		
	site	PESCOPAGANO	NORTH	date 30.11.20	pag 2/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

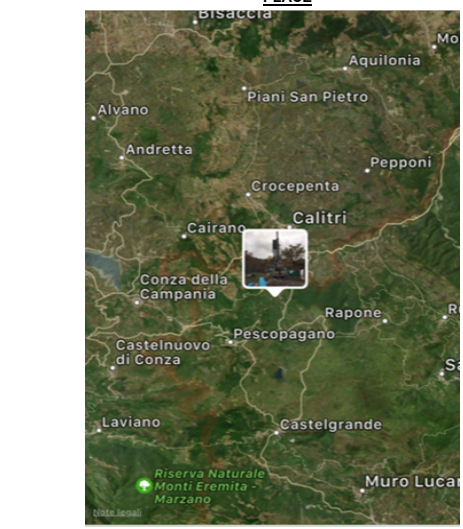


DATA PROCESSING						SENSOR 1	SENSOR 2	SENSOR 3	SENSOR AVE
			ELASTICITY MODULUS Ei						
Legend:	DATA		loop	Pmax	Pmin	E sensor 1 (Mpa)	E sensor2 (Mpa)	E sensor 3 (Mpa)	E1-E2-E3 average(Mpa)
H = test depth	symbol	datum	1	6,0	3,0				187
W = water table depth	γnsoil	2,3	2	12,0	4,0				269
ν = Poisson ratio	W (ml)	39,5	3	26,0	12,0				719
vo = cell initial volume	ν	0,25	4						
do =cell initial diameter	vo (cmc)	3494	5						
Φ = borehole wall diameter	do (mm)	96,78	DEFORMATION MODULUS Ti						
Po = start pressure	σv (kPa)	909	loop	Pmax	Pmin	T1 (Mpa)	T2 (Mpa)	T3 (Mpa)	Tm (Mpa)
Pmax = max loop pressure (MPa)	height mt		1	6,0	5,0				85
Pmin = min loop pressure (MPa)			2	12,0	6,0				161
d max displacement at P max			3	26,0	12,0				305
d min displacement at P min			4						
σv vertical total stress estimated			5						
ε c = dR / Ro			GLOBAL DEFORMATION MODULUS EG						
ELASTICITY MODULUS Ei	ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)	EG2 (Mpa)	EG3 (Mpa)	EGm (Mpa)
Ei = (1+ ν) Φ Pax - Pmin	Ey= (EII+EIII)/2			26,0	5,0				228
dmax - dmin	Ey= EIII		DIAMETER			F	F	F	F
			beginning diameter (mm)						101,592
DEFORMATION MODULUS Ti		L19	final diameter (mm)						102,197
Ti = (1+ ν) Φ Pi - Pi-1			range mm						0,605
Xi - Xi-1			DM loop minimun displacement			DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS			
	Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)	747	**EG** (MPa)	**228**
GLOBAL DEFORMATION MODULUS EG	bar	0	120	240	0	Pf creep pressure (KPa)	2889	**E** (MPa)	**719**
EG = (1+ ν) Φ Pmax - Po	6,0	10,997	10,997	10,997	4,956	PL limit pres. (KPa) Cassan >	4339	E/P'L	64,62
dmax - do	12,0	11,342	11,342	11,342	5,417	PL' net limit pres (KPa) >	3521	EG/Ey	0,32
note:						Ko lateral coeff at rest (KPa)	**0,90**	**cu** coesion (KPa) johnson	
						Pho lateral pressure (KPa)	818	ϕ friction angle (°) >	

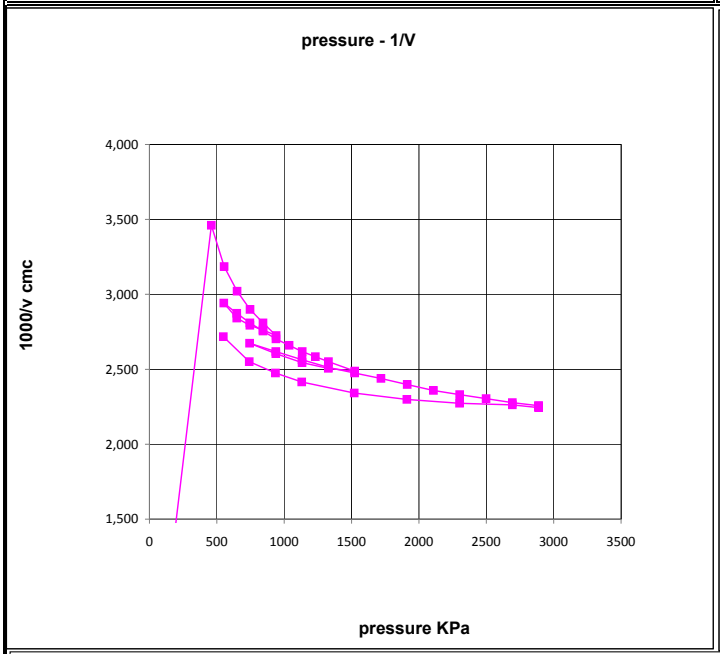
TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	DILATOMETRIC ROCK TEST DRT					mod DVT REV3. 20 settembre 2020	
	borehole	S2	probe depth m	39,5		code	3
	Client:	STUDIO FROSIO S.R.L.			job 2020	v. accept.	2020
	Project	DERIVAZIONE PESCOPAGANO			report	2020	DRT
		coordinates		EAST			
	site	PESCOPAGANO		NORTH	date 30.11.20	pag	3/3

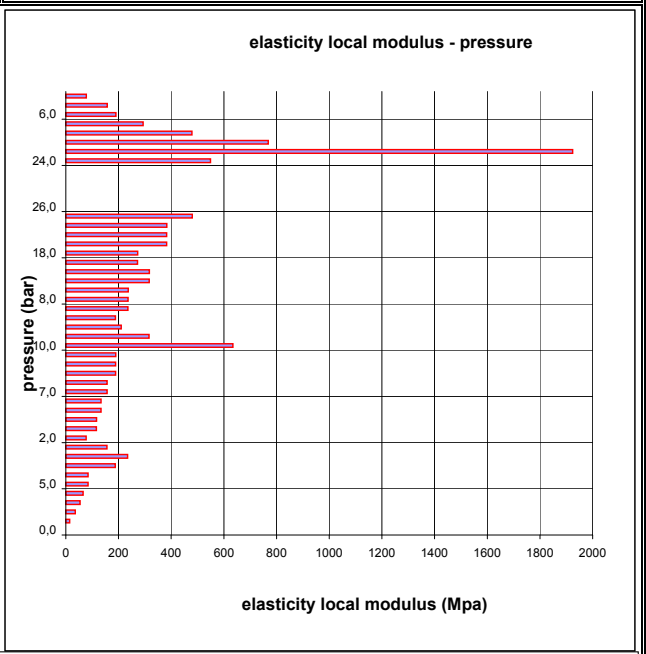
DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

PLACE



SECTION





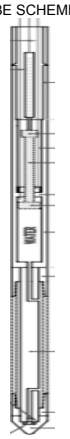
borehole	S2	probe depth m	44,5	code	4
Client:	STUDIO FROSIO S.R.L.	job	2020	v. accept.	2020
Project	DERIVAZIONE PESCOPAGANO	report	2020		DRT
coordinates		EAST			
site	PESCOPAGANO	NORTH	date	30.11.20	pag 1/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole	S2
test 4	depth 44,5
slope (degree) 90	core barrell HQ 96 MM - DIAM.
Device: GEOANALISI VM02	
Orientation capteur C1=	Standard method: ISRM 1987
Probe diam 90 MM	Borehole diam 96 MM
Meteo	Temperatu re
lithotype ARGILLITE MARNOSA	
water table	POCKET PENETRO METER

Temps min	PBAR	MM
0	22,00	103,95
1	22,00	103,98
2	22,00	103,98
3	22,00	103,99
4	22,00	104,00
5	22,00	104,00

PROBE SCHEME



rod adaptor

electronic device

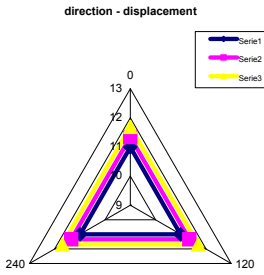
double action piston

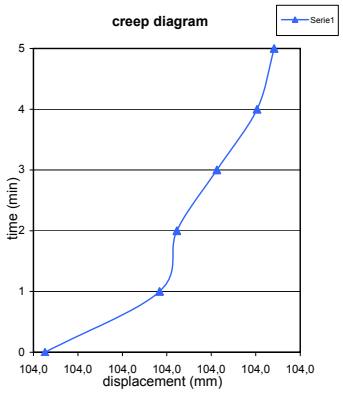
expandable cylinder

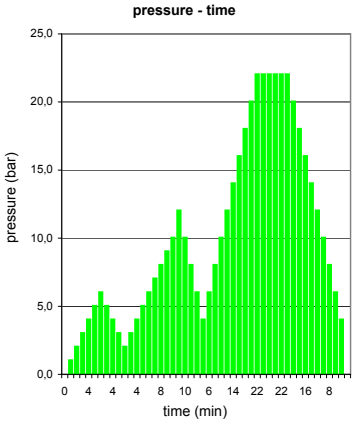
PROBE CALIBRATION

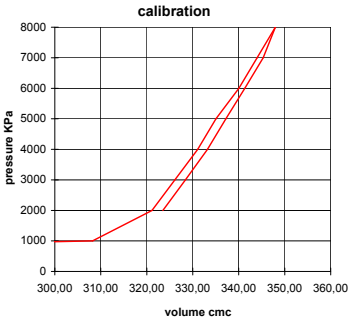
probe		
membrane	CAUCCIU' ARMATO	
measure cell height (cm)		47,50
V0 cell volume at rest (cmc)		3494
lenght cable (mt)		100
Volume initial Vi (cmc)		312
diam calibration tube (cm)		10,1
tube calibration volume cmc		3806
Calibration in air		
coeff *m*	0,11	Kpa/cmc
Confined calibration		
first load	4,4	cmc/Mpa
unload	3,5	cmc/Mpa

LITHOTYPE









PRESSURE STEP	P bar	Pcorr Kpa	Vol cmc	e c %	1/V 1000/cmc	diameter (mm)	Dil. Diam (mm)	Modulo MPa
0	0,0	0	0,0	-5,166	0,000	96,780	0,000	0,0
1	1,0	506	318,0	-0,944	3,145	101,089	4,309	14,5
2	2,0	601	344,0	-0,607	2,907	101,433	4,653	34,9
3	**3,0**	**697**	**364,0**	**-0,348**	**2,747**	**101,697**	**4,917**	**46,0**
4	4,0	793	379,0	-0,155	2,639	101,895	5,114	61,9
5	5,0	889	391,0	0,000	2,558	102,052	5,272	78,0
6	6,0	986	404,0	0,167	2,475	102,223	5,443	72,1
7	5,0	888	400,0	0,116	2,500	102,171	5,390	237,2
8	4,0	791	394,0	0,039	2,538	102,092	5,312	157,5
9	3,0	695	384,0	-0,090	2,604	101,961	5,180	93,9
10	2,0	598	376,0	-0,193	2,660	101,855	5,075	117,4
11	3,0	695	383,0	-0,103	2,611	101,947	5,167	134,3
12	4,0	791	392,0	0,013	2,551	102,066	5,285	104,4
13	5,0	888	400,0	0,116	2,500	102,171	5,390	117,8
14	6,0	985	408,0	0,219	2,451	102,276	5,495	118,1
15	7,0	1082	417,0	0,334	2,398	102,393	5,613	105,1
16	8,0	1179	426,0	0,449	2,347	102,511	5,731	105,3
17	9,0	1276	434,0	0,552	2,304	102,616	5,835	118,9
18	10,0	1373	444,0	0,680	2,252	102,746	5,966	95,1
19	12,0	1567	461,0	0,897	2,169	102,968	6,188	112,5
20	10,0	1371	455,0	0,820	2,198	102,890	6,109	321,2
21	8,0	1177	448,0	0,731	2,232	102,798	6,018	274,7
22	6,0	982	438,0	0,603	2,283	102,668	5,888	191,5
23	4,0	788	425,0	0,437	2,353	102,498	5,718	146,6
24	6,0	982	434,0	0,552	2,304	102,616	5,835	212,2
25	8,0	1177	444,0	0,680	2,252	102,746	5,966	191,3
26	10,0	1372	454,0	0,808	2,203	102,877	6,096	191,8
27	12,0	1566	465,0	0,948	2,151	103,020	6,240	174,7
28	14,0	1760	478,0	1,114	2,092	103,189	6,409	148,1
29	16,0	1954	492,0	1,292	2,033	103,371	6,590	137,9
30	18,0	2148	509,0	1,507	1,965	103,591	6,811	113,8
31	20,0	2342	525,0	1,710	1,905	103,798	7,017	121,5
32	**22,0**	**2536**	**537,0**	**1,862**	**1,862**	**103,953**	**7,172**	**163,0**
33	22,0	2536	539,0	1,887	1,855	103,978	7,198	-1,2
34	22,0	2536	539,3	1,891	1,854	103,982	7,202	-1,2
35	22,0	2536	540,0	1,900	1,852	103,991	7,211	-1,2
36	22,0	2536	540,7	1,909	1,849	104,000	7,220	-1,2
37	22,0	2536	541,0	1,912	1,848	104,004	7,224	-1,2
38	20,0	2340	540,0	1,900	1,852	103,991	7,211	1972,9
39	18,0	2145	537,0	1,862	1,862	103,953	7,172	656,6
40	16,0	1950	533,0	1,811	1,876	103,901	7,121	491,7
41	14,0	1755	527,0	1,735	1,898	103,824	7,043	327,0
42	12,0	1560	522,0	1,672	1,916	103,759	6,979	392,1
43	10,0	1365	515,0	1,583	1,942	103,668	6,888	279,3
44	8,0	1170	505,0	1,457	1,980	103,539	6,759	194,8
45	6,0	976	493,0	1,304	2,028	103,384	6,603	161,7
46	4,0	782	475,0	1,075	2,105	103,150	6,370	107,0

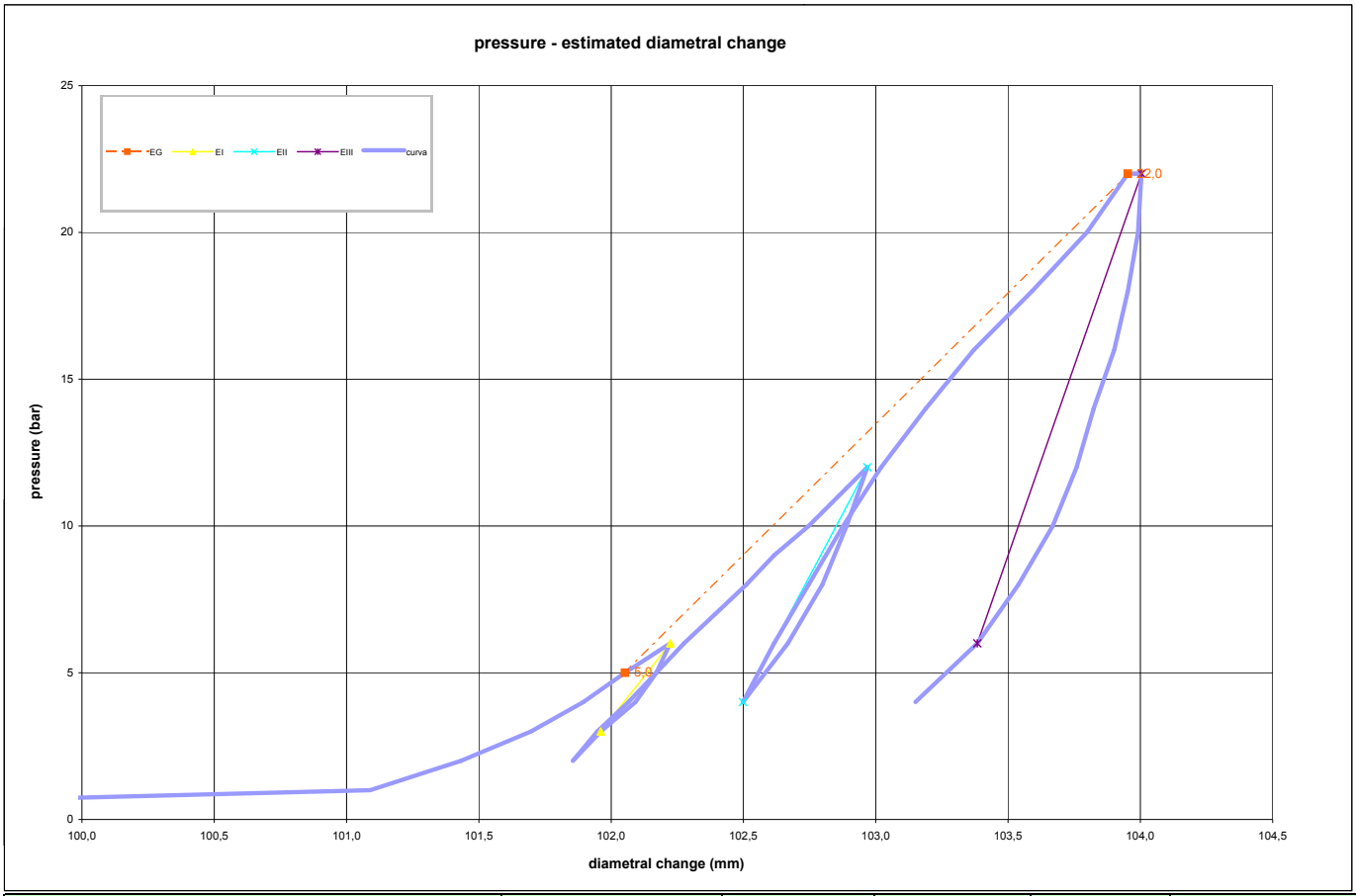
i valori diametrali sono calcolati come valore medio della sonda cillindrica in espansione

FIELD LIMITS

	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop
min	5,0	889,5	391,0	0,0	2,6	102,1	5,3	primo
max	22,0	2536,5	537,0	1,9	1,9	104,0	7,2	carico
max	6,0	985,8	404,0	0,2	2,5	102,2	5,4	I
min	3,0	694,5	384,0	-0,1	2,6	102,0	5,2	
max	12,0	1566,5	461,0	0,9	2,2	103,0	6,2	II
min	4,0	787,7	425,0	0,4	2,4	102,5	5,7	
max	22,0	2536,0	541,0	1,9	1,8	104,0	7,2	III
min	6,0	975,6	493,0	1,3	2,0	103,4	6,6	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	**DILATOMETRIC ROCK TEST DRT**				mod DVT REV3. 20 settembre 2020
	borehole	**S2**	**probe depth m**	**44,5**	**code** **4**
	Client:	**STUDIO FROSIO S.R.L.**	job 2020	v. accept.	**2020**
	Project	**PFTE BARI NORD**		report **2020**	**DRT**
		coordinates	EAST		
	site	**PESCOPAGANO**	NORTH	date 30.11.20	pag 2/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

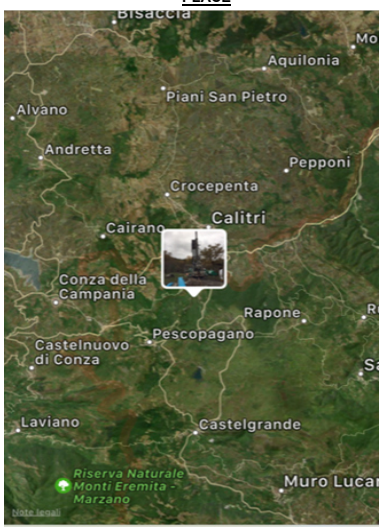


DATA PROCESSING						SENSOR 1	SENSOR 2	SENSOR 3	SENSOR AVE
			ELASTICITY MODULUS Ei						
Legend:	**DATA**		loop	Pmax	Pmin	E sensor 1 (Mpa)	E sensor2 (Mpa)	E sensor 3 (Mpa)	E1-E2-E3 average(Mpa)
H = test depth	symbol	datum	1	6,0	3,0				**142**
W = water table depth	γnsoil	2,3	2	12,0	4,0				**212**
ν = Poisson ratio	W (ml)	44,5	3	22,0	6,0				**321**
vo = cell initial volume	ν	0,25	4						
do =cell initial diameter	vo (cmc)	3494	5						
Φ = borehole wall diameter	do (mm)	96,78	DEFORMATION MODULUS Ti						
Po = start pressure	σv (kPa)	1024	loop	Pmax	Pmin	T1 (Mpa)	T2 (Mpa)	T3 (Mpa)	Tm (Mpa)
Pmax = max loop pressure (MPa)	height mt		1	6,0	5,0				72
Pmin = min loop pressure (MPa)			2	12,0	6,0				99
d max displacement at P max			3	22,0	12,0				119
d min displacement at P min			4						
σv vertical total stress estimated			5						
ε c = dR / Ro			GLOBAL DEFORMATION MODULUS EG						
ELASTICITY MODULUS Ei	ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)	EG2 (Mpa)	EG3 (Mpa)	EGm (Mpa)
Ei = (1+ ν) Φ Pax - Pmin	Ey= (EII+EIII)/2			22,0	5,0				111
dmax - dmin	Ey= EIII		DIAMETER			F	F	F	F
			beginning diameter (mm)						102,052
DEFORMATION MODULUS Ti			final diameter (mm)						102,968
Ti = (1+ ν) Φ Pi - Pi-1			range mm						0,915
Xi - Xi-1			DM loop minimun displacement			DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS			
	Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)	697	**EG** (MPa)	**111**
GLOBAL DEFORMATION MODULUS EG	bar	0	120	240	0	Pf creep pressure (KPa)	2536	**E** (MPa)	**321**
EG = (1+ ν) Φ Pmax - Po	6,0	10,997	10,997	10,997	5,443	PL limit pres. (KPa) Cassan >	3739	E/P'L	37,87
dmax - do	12,0	11,342	11,342	11,342	6,188	PL' net limit pres (KPa) >	2920	EG/Ey	0,34
note:						Ko lateral coeff at rest (KPa)	**0,80**	**cu** coesion (KPa) johnson	
						Pho lateral pressure (KPa)	819	ϕ friction angle (°) >	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	DILATOMETRIC ROCK TEST DRT					mod DVT REV3. 20 settembre 2020	
	borehole	S2	probe depth m	44,5		code	4
	Client:	STUDIO FROSIO S.R.L.			job 2020	v. accept.	2020
	Project	DERIVAZIONE PESCOPAGANO			report	2020	DRT
		coordinates		EAST			
	site	PESCOPAGANO		NORTH	date 30.11.20	pag	3/3

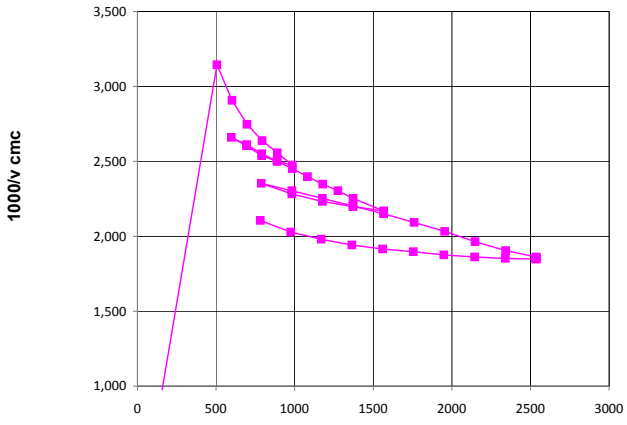
DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

PLACE

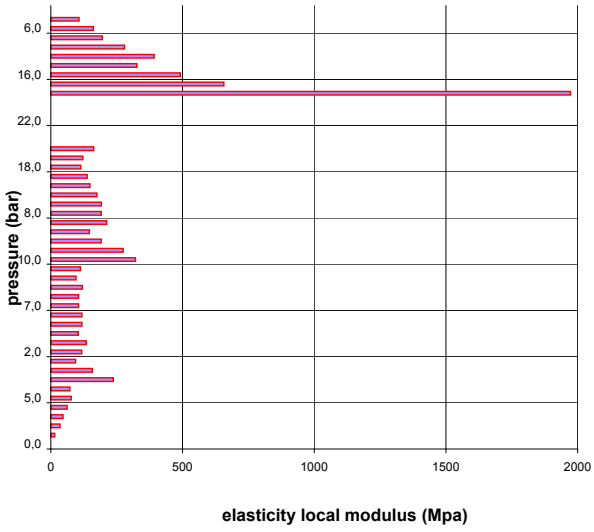


SECTION

pressure - 1/V



elasticity local modulus - pressure



TRIVELSONDA s.r.l.
Perforazioni ed esplorazioni del sottosuolo

mod DVT REV3. 20 settembre 2020

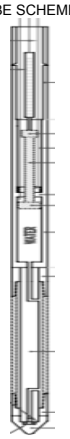
borehole	S2	probe depth m	49,5	code	5
Client:	STUDIO FROSIO S.R.L.	job	2020	v. accept.	2020
Project	DERIVAZIONE PESCOPAGANO	report	2020		DRT
coordinates		EAST			
site	PESCOPAGANO	NORTH	date	30.11.20	pag 1/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole	S2
test 5	depth 49,5
slope (degree) 90	core barrell HQ 96 MM - DIAM.
Device: GEOANALISI VM02	
Orientation capteur C1=	Standard method: ISRM 1987
Probe diam 90 MM	Borehole diam 96 MM
Meteo	Temperatu re
lithotype ARGILLITE MARNOSA	
water table 48,0	POCKET PENETRO METER

Temps min	PBAR	MM
0	34,00	101,77
1	34,00	101,78
2	34,00	101,80
3	34,00	101,80
4	34,00	101,81
5	34,00	101,81

PROBE SCHEME



rod adaptor

electronic device

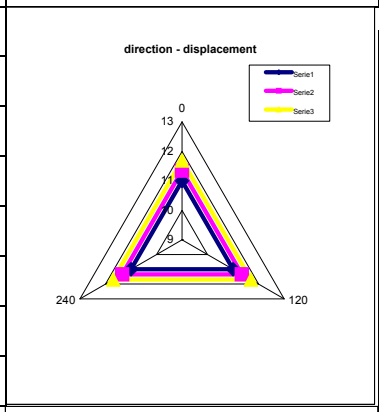
double action piston

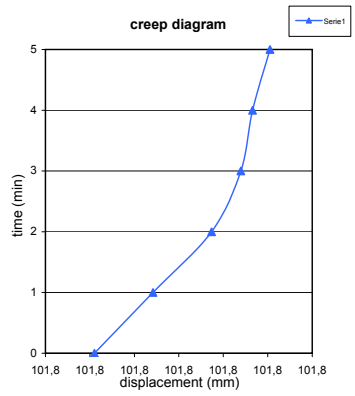
expandable cylinder

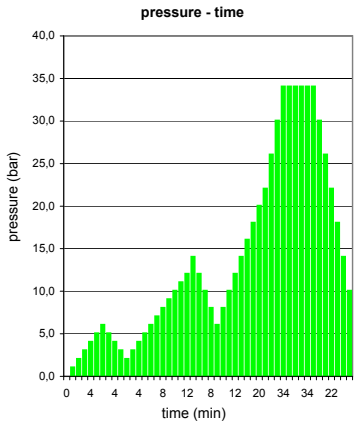
PROBE CALIBRATION

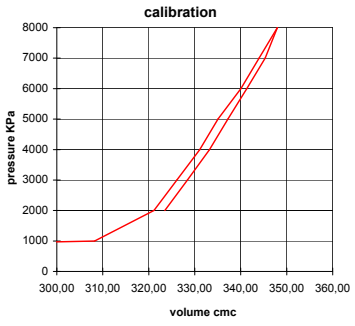
probe		
membrane	CAUCCIU' ARMATO	
measure cell height (cm)		47,50
V0 cell volume at rest (cmc)		3494
lenght cable (mt)		100
Volume initial Vi (cmc)		312
diam calibration tube (cm)		10,1
tube calibration volume cmc		3806
Calibration in air		
coeff *m*	0,11	Kpa/cmc
Confined calibration		
first load	4,4	cmc/Mpa
unload	3,5	cmc/Mpa

LITHOTYPE









PRESSURE STEP	P bar	Pcorr Kpa	Vol cmc	e c %	1/V 1000/cmc	diameter (mm)	Dil. Diam (mm)	Modulo MPa
0	0,0	0	0,0	-3,435	0,000	96,780	0,000	0,0
1	1,0	572	182,4	-0,947	5,482	99,275	2,494	28,1
2	2,0	667	206,8	-0,618	4,836	99,604	2,823	35,9
3	**3,0**	**763**	**225,2**	**-0,372**	**4,440**	**99,851**	**3,071**	**48,3**
4	4,0	859	242,6	-0,139	4,122	100,084	3,304	51,4
5	**5,0**	**956**	**253,0**	**0,000**	**3,953**	**100,223**	**3,443**	**87,0**
6	6,0	1052	263,4	0,139	3,797	100,362	3,582	87,2
7	5,0	955	259,0	0,080	3,861	100,304	3,523	207,8
8	4,0	857	254,6	0,021	3,928	100,245	3,464	207,6
9	3,0	760	249,2	-0,051	4,013	100,173	3,392	168,7
10	2,0	663	238,8	-0,190	4,188	100,033	3,253	86,9
11	3,0	760	246,2	-0,091	4,062	100,132	3,352	122,5
12	4,0	858	252,6	-0,005	3,959	100,218	3,438	142,1
13	5,0	955	260,0	0,093	3,846	100,317	3,537	123,0
14	6,0	1052	266,4	0,179	3,754	100,402	3,622	142,6
15	7,0	1149	273,8	0,277	3,652	100,501	3,721	123,4
16	8,0	1246	281,2	0,376	3,556	100,600	3,820	123,7
17	9,0	1343	285,6	0,434	3,501	100,658	3,878	209,0
18	10,0	1441	292,0	0,519	3,425	100,744	3,963	143,6
19	11,0	1538	297,4	0,591	3,362	100,816	4,035	170,6
20	12,0	1635	301,8	0,649	3,313	100,874	4,094	209,9
21	14,0	1830	310,6	0,766	3,220	100,991	4,211	210,3
22	12,0	1635	306,8	0,715	3,259	100,940	4,160	488,8
23	10,0	1439	304,0	0,678	3,289	100,903	4,123	663,2
24	8,0	1244	298,2	0,601	3,353	100,826	4,046	319,2
25	6,0	1049	290,4	0,498	3,444	100,722	3,942	236,7
26	8,0	1244	296,2	0,575	3,376	100,800	4,019	318,6
27	10,0	1439	302,0	0,652	3,311	100,877	4,096	319,1
28	12,0	1635	306,8	0,715	3,259	100,940	4,160	386,3
29	14,0	1830	312,6	0,792	3,199	101,017	4,237	319,9
30	16,0	2025	319,4	0,882	3,131	101,108	4,327	273,2
31	18,0	2220	325,2	0,959	3,075	101,184	4,404	321,0
32	20,0	2415	333,0	1,062	3,003	101,288	4,507	238,8
33	22,0	2610	339,8	1,152	2,943	101,378	4,597	274,7
34	26,0	3001	350,4	1,291	2,854	101,518	4,737	353,5
35	30,0	3391	362,0	1,444	2,762	101,671	4,891	323,9
36	**34,0**	**3782**	**369,6**	**1,544**	**2,706**	**101,771**	**4,991**	**496,1**
37	34,0	3782	370,6	1,557	2,698	101,784	5,004	-1,1
38	34,0	3781	371,6	1,570	2,691	101,797	5,017	-1,1
39	34,0	3781	372,1	1,577	2,687	101,804	5,024	-1,1
40	34,0	3781	372,3	1,580	2,686	101,807	5,026	-1,1
41	34,0	3781	372,6	1,584	2,684	101,811	5,030	-1,1
42	30,0	3390	367,0	1,510	2,725	101,737	4,956	674,4
43	26,0	2999	365,4	1,489	2,737	101,716	4,935	2361,0
44	22,0	2608	360,8	1,428	2,772	101,655	4,875	819,8
45	18,0	2217	354,2	1,342	2,823	101,568	4,788	570,2
46	14,0	1826	346,6	1,241	2,885	101,468	4,687	494,1
47	10,0	1436	335,0	1,088	2,985	101,314	4,534	322,6

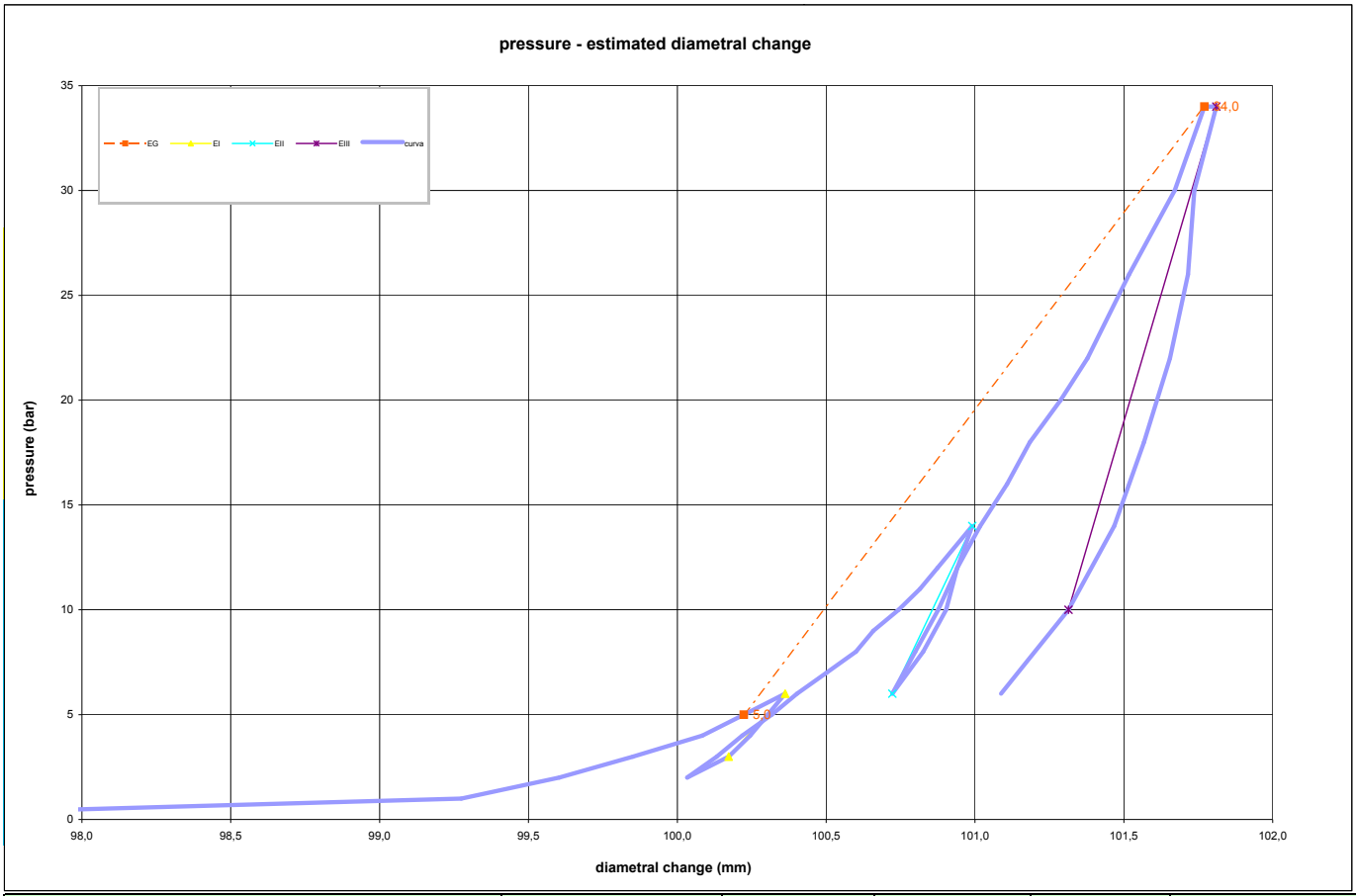
i valori diametrali sono calcolati come valore medio della sonda cillindrica in espansione

FIELD LIMITS

	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop
min	5,0	955,5	253,0	0,0	4,0	100,2	3,4	primo
max	34,0	3781,7	369,6	1,5	2,7	101,8	5,0	carico
max	6,0	1052,3	263,4	0,1	3,8	100,4	3,6	I
min	3,0	760,1	249,2	-0,1	4,0	100,2	3,4	
max	14,0	1830,2	310,6	0,8	3,2	101,0	4,2	II
min	6,0	1049,2	290,4	0,5	3,4	100,7	3,9	
max	34,0	3781,4	372,6	1,6	2,7	101,8	5,0	III
min	10,0	1435,7	335,0	1,1	3,0	101,3	4,5	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	**DILATOMETRIC ROCK TEST DRT**			mod DVT REV3. 20 settembre 2020
	borehole	**S2**	**probe depth m**	**49,5**	**code**	**5**
Client:	**STUDIO FROSIO S.R.L.**		job 2020	v. accept.	**2020**
Project	**PFTE BARI NORD**			report	**2020**	**DRT**
	coordinates		EAST			
site	**PESCOPAGANO**		NORTH	date	30.11.20	pag	2/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

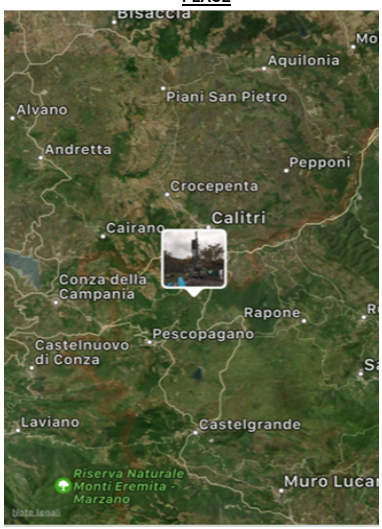


DATA PROCESSING						SENSOR 1	SENSOR 2	SENSOR 3	SENSOR AVE
			ELASTICITY MODULUS Ei						
Legend:	**DATA**		loop	Pmax	Pmin	E sensor 1 (Mpa)	E sensor2 (Mpa)	E sensor 3 (Mpa)	E1-E2-E3 average(Mpa)
H = test depth	symbol	datum	1	6,0	3,0				**193**
W = water table depth	γnsoil	2,3	2	14,0	6,0				**364**
ν = Poisson ratio	W (ml)	49,5	3	34,0	10,0				**592**
vo = cell initial volume	ν	0,25	4						
do =cell initial diameter	vo (cmc)	3494	5						
Φ = borehole wall diameter	do (mm)	96,78	DEFORMATION MODULUS Ti						
Po = start pressure	σv (kPa)	1139	loop	Pmax	Pmin	T1 (Mpa)	T2 (Mpa)	T3 (Mpa)	Tm (Mpa)
Pmax = max loop pressure (MPa)	height mt		1	6,0	5,0				87
Pmin = min loop pressure (MPa)			2	14,0	6,0				155
d max displacement at P max			3	34,0	14,0				298
d min displacement at P min			4						
σv vertical total stress estimated			5						
ε c = dR / Ro			GLOBAL DEFORMATION MODULUS EG						
ELASTICITY MODULUS Ei	ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)	EG2 (Mpa)	EG3 (Mpa)	EGm (Mpa)
Ei = (1+ ν) Φ Pax - Pmin	Ey= (EII+EIII)/2			34,0	5,0				229
dmax - dmin	Ey= EIII		DIAMETER			F	F	F	F
			beginning diameter (mm)						100,223
DEFORMATION MODULUS Ti			final diameter (mm)						100,991
Ti = (1+ ν) Φ Pi - Pi-1			range mm						0,767
Xi - Xi-1			DM loop minimun displacement			DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS			
	Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)	763	**EG** (MPa)	**229**
GLOBAL DEFORMATION MODULUS EG	bar	0	120	240	0	Pf creep pressure (KPa)	3782	**E** (MPa)	**592**
EG = (1+ ν) Φ Pmax - Po	6,0	10,997	10,997	10,997	3,582	PL limit pres. (KPa) Cassan >	5791	E/P'L	46,88
dmax - do	14,0	11,342	11,342	11,342	4,211	PL' net limit pres (KPa) >	4881	EG/Ey	0,39
note:						Ko lateral coeff at rest (KPa)	**0,80**	**cu** coesion (KPa) johnson	
						Pho lateral pressure (KPa)	911	ϕ friction angle (°) >	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	DILATOMETRIC ROCK TEST DRT					mod DVT REV3. 20 settembre 2020	
	borehole	S2	probe depth m	49,5		code	5
	Client:	STUDIO FROSIO S.R.L.			job 2020	v. accept.	2020
	Project	DERIVAZIONE PESCOPAGANO			report	2020	DRT
		coordinates		EAST			
	site	PESCOPAGANO		NORTH	date 30.11.20	pag	3/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

PLACE



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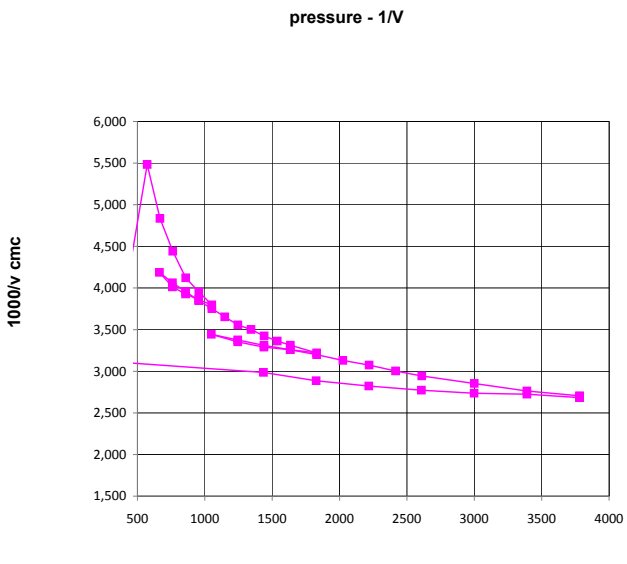
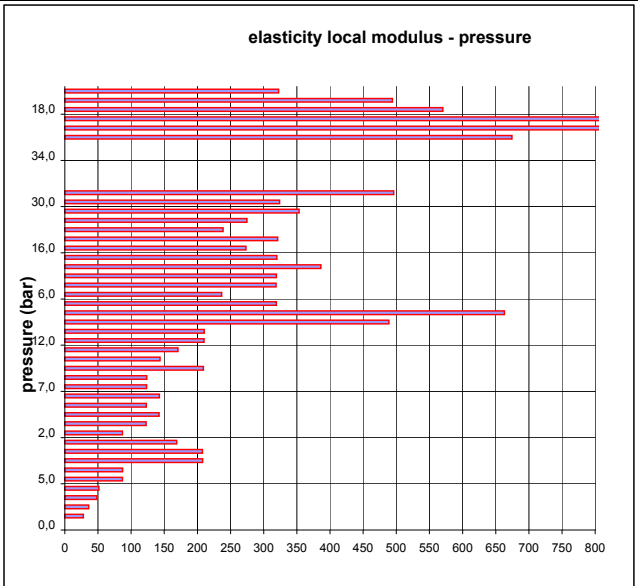




TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo

borehole	S2	probe depth m	55,0	code	6
Client:	STUDIO FROSIO S.R.L.	job	2020	v. accept.	2020
Project	DERIVAZIONE PESCOPAGANO	report	2020		DRT
coordinates		EAST			
site	PESCOPAGANO	NORTH	date	30.11.20	pag 1/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole	S2
test 6	depth 55,0
slope (degree) 90	core barrell HQ 96 MM - DIAM.
Device: GEOANALISI VM02	
Orientation capteur C1=	Standard method: ISRM 1987
Probe diam 90 MM	Borehole diam 96 MM
Meteo	Temperatu re
lithotype ARGILLITE MARNOSA	
water table 48,0	POCKET PENETRO METER

Temps min	PBAR	MM
0	22,00	104,42
1	22,00	104,44
2	22,00	104,45
3	22,00	104,46
4	22,00	104,48
5	22,00	104,50

PROBE SCHEME

rod adaptor

electronic device

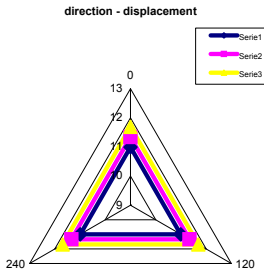
double action piston

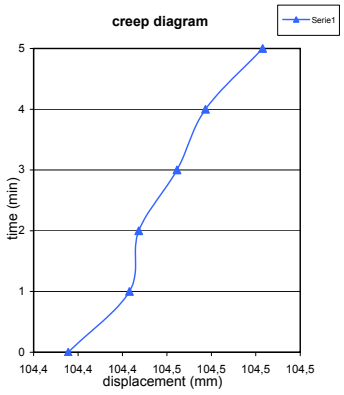
expandable cylinder

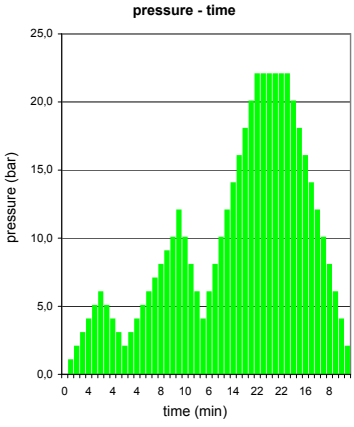
PROBE CALIBRATION

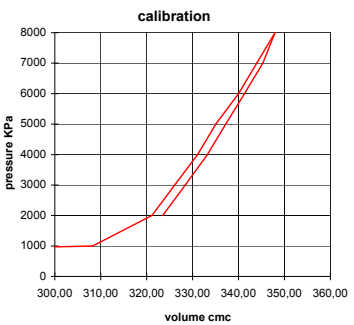
probe		
membrane	CAUCCIU' ARMATO	
measure cell height (cm)		47,50
V0 cell volume at rest (cmc)		3494
lenght cable (mt)		100
Volume initial Vi (cmc)		312
diam calibration tube (cm)		10,1
tube calibration volume cmc		3806
Calibration in air		
coeff *m*	0,11	Kpa/cmc
Confined calibration		
first load	4,4	cmc/Mpa
unload	3,5	cmc/Mpa

LITHOTYPE









PRESSURE STEP	P bar	Pcorr Kpa	Vol cmc	e c %	1/V 1000/cmc	diameter (mm)	Dil. Diam (mm)	Modulo MPa
0	0,0	0	0,0	-5,496	0,000	96,780	0,000	0,0
1	1,0	619	254,3	-2,117	3,932	100,241	3,460	22,0
2	2,0	712	295,2	-1,585	3,388	100,786	4,006	21,5
3	3,0	808	312,5	-1,360	3,200	101,016	4,236	52,6
4	4,0	901	352,5	-0,843	2,837	101,546	4,765	22,3
5	5,0	994	392,5	-0,329	2,548	102,072	5,292	22,5
6	**6,0**	**1089**	**418,2**	**0,000**	**2,391**	**102,409**	**5,629**	**36,0**
7	5,0	992	415,2	-0,038	2,408	102,370	5,590	317,8
8	4,0	894	411,6	-0,084	2,430	102,323	5,542	264,4
9	3,0	798	400,9	-0,221	2,494	102,182	5,402	88,0
10	2,0	701	387,2	-0,397	2,583	102,003	5,222	68,3
11	3,0	798	397,6	-0,264	2,515	102,139	5,359	90,3
12	4,0	894	412,2	-0,077	2,426	102,331	5,550	64,2
13	5,0	991	420,7	0,032	2,377	102,442	5,662	111,4
14	6,0	1088	429,7	0,147	2,327	102,560	5,779	105,4
15	7,0	1185	438,7	0,262	2,279	102,677	5,897	105,6
16	8,0	1281	447,7	0,376	2,234	102,795	6,014	105,9
17	9,0	1378	457,6	0,502	2,185	102,924	6,143	96,4
18	10,0	1475	467,6	0,629	2,139	103,054	6,273	95,7
19	12,0	1668	488,8	0,898	2,046	103,329	6,549	90,5
20	10,0	1473	484,2	0,840	2,065	103,269	6,489	421,9
21	8,0	1278	476,6	0,743	2,098	103,171	6,390	254,2
22	6,0	1084	462,1	0,560	2,164	102,982	6,202	132,8
23	4,0	890	447,3	0,371	2,236	102,789	6,009	129,4
24	6,0	1085	457,9	0,506	2,184	102,928	6,147	181,0
25	8,0	1279	472,3	0,689	2,117	103,115	6,334	133,5
26	10,0	1473	483,1	0,826	2,070	103,255	6,475	178,2
27	12,0	1667	495,0	0,977	2,020	103,410	6,630	162,4
28	14,0	1862	509,1	1,155	1,964	103,592	6,812	137,8
29	16,0	2056	524,3	1,347	1,907	103,788	7,008	128,4
30	18,0	2249	542,6	1,578	1,843	104,025	7,245	106,0
31	20,0	2443	560,0	1,796	1,786	104,248	7,468	113,1
32	**22,0**	**2637**	**573,0**	**1,959**	**1,745**	**104,416**	**7,635**	**151,4**
33	22,0	2637	575,1	1,986	1,739	104,443	7,663	-1,2
34	22,0	2637	575,5	1,990	1,738	104,447	7,667	-1,2
35	22,0	2637	576,8	2,007	1,734	104,465	7,684	-1,2
36	22,0	2637	577,8	2,020	1,731	104,477	7,697	-1,2
37	22,0	2636	579,8	2,045	1,725	104,503	7,723	-1,2
38	20,0	2441	576,1	1,998	1,736	104,456	7,675	538,0
39	18,0	2246	572,8	1,957	1,746	104,413	7,632	595,9
40	16,0	2050	568,4	1,901	1,759	104,356	7,576	449,8
41	14,0	1856	559,0	1,784	1,789	104,236	7,456	210,9
42	12,0	1661	549,4	1,663	1,820	104,112	7,332	205,1
43	10,0	1466	541,4	1,563	1,847	104,009	7,229	245,9
44	8,0	1271	537,8	1,518	1,859	103,963	7,183	552,2
45	6,0	1077	524,8	1,354	1,905	103,796	7,015	150,3
46	4,0	883	505,4	1,108	1,979	103,544	6,764	99,7
47	2,0	691	478,4	0,767	2,090	103,195	6,414	71,2

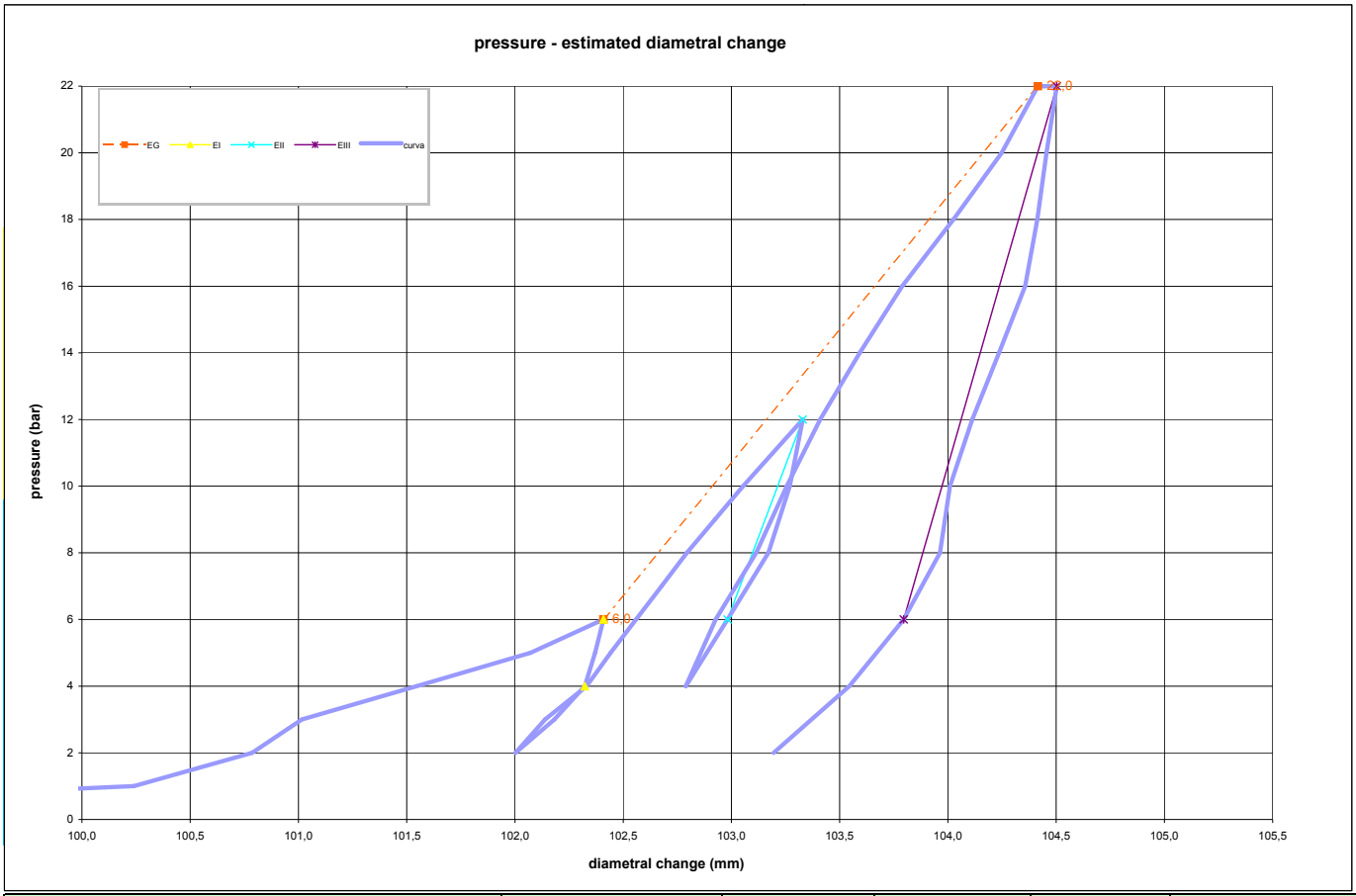
i valori diametrali sono calcolati come valore medio della sonda cillindrica in espansione

FIELD LIMITS

	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop
min	6,0	1089,1	418,2	0,0	2,4	102,4	5,6	primo
max	22,0	2637,1	573,0	2,0	1,7	104,4	7,6	carico
max	6,0	1089,1	418,2	0,0	2,4	102,4	5,6	I
min	4,0	894,2	411,6	-0,1	2,4	102,3	5,5	
max	12,0	1668,2	488,8	0,9	2,0	103,3	6,5	II
min	6,0	1084,1	462,1	0,6	2,2	103,0	6,2	
max	22,0	2636,3	579,8	2,0	1,7	104,5	7,7	
min	6,0	1076,9	524,8	1,4	1,9	103,8	7,0	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	DILATOMETRIC ROCK TEST DRT				mod DVT REV3. 20 settembre 2020
	borehole	S2	probe depth m	55,0	code 6
	Client:	STUDIO FROSIO S.R.L.	job 2020	v. accept.	2020
	Project	PFTE BARI NORD		report 2020	DRT
		coordinates	EAST		
	site	PESCOPAGANO	NORTH	date 30.11.20	pag 2/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

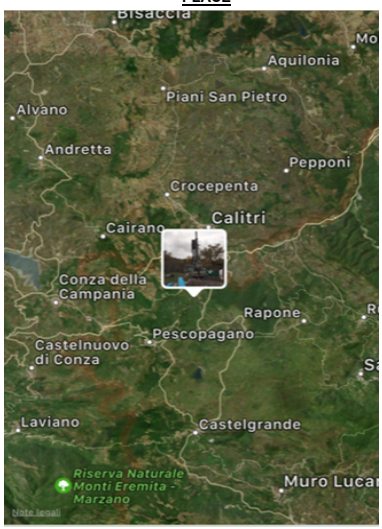


DATA PROCESSING						SENSOR 1	SENSOR 2	SENSOR 3	SENSOR AVE
			ELASTICITY MODULUS Ei						
Legend:	DATA		loop	Pmax	Pmin	E sensor 1 (Mpa)	E sensor2 (Mpa)	E sensor 3 (Mpa)	E1-E2-E3 average(Mpa)
H = test depth	symbol	datum	1	6,0	4,0				289
W = water table depth	γnsoil	2,3	2	12,0	6,0				215
ν = Poisson ratio	W (ml)	55,0	3	22,0	6,0				282
vo = cell initial volume	ν	0,25	4						
do =cell initial diameter	vo (cmc)	3494	5						
Φ = borehole wall diameter	do (mm)	96,78	DEFORMATION MODULUS Ti						
Po = start pressure	σv (kPa)	1265	loop	Pmax	Pmin	T1 (Mpa)	T2 (Mpa)	T3 (Mpa)	Tm (Mpa)
Pmax = max loop pressure (MPa)	height mt		1	6,0	6,0				#DIV/0!
Pmin = min loop pressure (MPa)			2	12,0	6,0				81
d max displacement at P max			3	22,0	12,0				106
d min displacement at P min			4						
σv vertical total stress estimated			5						
ε c = dR / Ro			GLOBAL DEFORMATION MODULUS EG						
ELASTICITY MODULUS Ei	ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)	EG2 (Mpa)	EG3 (Mpa)	EGm (Mpa)
Ei = (1+ ν) Φ Pax - Pmin	Ey= (EII+EIII)/2			22,0	6,0				99
dmax - dmin	Ey= EIII		DIAMETER			F	F	F	F
			beginning diameter (mm)						102,409
DEFORMATION MODULUS Ti			final diameter (mm)						103,329
Ti = (1+ ν) Φ Pi - Pi-1			range mm						0,920
Xi - Xi-1			DM loop minimun displacement			DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS			
	Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)	1089	**EG** (MPa)	**99**
GLOBAL DEFORMATION MODULUS EG	bar	0	120	240	0	Pf creep pressure (KPa)	2637	**E** (MPa)	**282**
EG = (1+ ν) Φ Pmax - Po	6,0	10,997	10,997	10,997	5,629	PL limit pres. (KPa) Cassan >	3686	E/P'L	38,77
dmax - do	12,0	11,342	11,342	11,342	6,549	PL' net limit pres (KPa) >	2548	EG/Ey	0,35
note:						Ko lateral coeff at rest (KPa)	**0,90**	**cu** coesion (KPa) johnson	
						Pho lateral pressure (KPa)	1139	ϕ friction angle (°) >	

TRIVELSONDA s.r.l. Perforazioni ed esplorazioni del sottosuolo	DILATOMETRIC ROCK TEST DRT					mod DVT REV3. 20 settembre 2020	
	borehole	S2	probe depth m	55,0		code	6
	Client:	STUDIO FROSIO S.R.L.			job 2020	v. accept.	2020
	Project	DERIVAZIONE PESCOPAGANO			report	2020	DRT
		coordinates		EAST			
	site	PESCOPAGANO		NORTH	date 30.11.20	pag	3/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

PLACE



SECTION