

# APPALTO INTEGRATO PER LA PROGETTAZIONE E LA REALIZZAZIONE

R.T.I.



R.T.P.



Legale rappresentante:  
dott. ing. Francesco Viero



Legale rappresentante:  
dott. ing. Gianfranco Marchi



Legale rappresentante  
dott. ing. Roberto Tassinari

Responsabile generale  
della progettazione:  
dott. ing. Guido Zanollo



Responsabile delle  
integrazioni specialistiche:  
dott. ing. Fabrizio Parboni Arquati



Responsabile della  
progettazione strutturale:  
dott. ing. Francesco Viero



Co-responsabile della  
progettazione strutturale:  
dott. ing. Roberto Tassinari



Responsabile della  
progettazione geotecnica:  
dott. ing. Gianfranco Marchi



Relazione studi ed attività  
inerenti la geologia:  
dott. geol. Gianluca Benedetti



## PROGETTO ESECUTIVO

3					
2	06/07/2016	CMC	CMC - M.B.	L.Z.	Revisione
1	20/04/2016	CMC	CMC - M.B.	L.Z.	Emissione Prog. Esec.
REV.	DATA (DATE)	REDATTO (DRWN)	CONTROL. (CHK'D)	APPROVATO (APPR'D)	DESCRIZIONE (DESCRIPTION)

FUNZIONE O SERVIZIO (DEPARTMENT)


**INGEGNERIA ACQUA**

**PROGETTAZIONE IMPIANTI ACQUA**

DENOMINAZIONE IMPIANTO O LAVORO (PLANT OR PROJECT DESCRIPTION)

**PSBO - VASCHE DI LAMINAZIONE AUSA**

IDENTIFICATIVO IMPIANTO (PLANT IDENTIFIER)		WBS <b>R.2150.11.03.00065</b>	CODICE CUP (CUP CODE) <b>H97H14000700005</b>	
		CODICE DOCUMENTO (CODE) <b>C00RN02</b>	N° COMMESSA (JOB N.) <b>11300273776</b>	
		ID DOCUMENTO (DOCUMENT ID)	NOME FILE (FILE NAME)	
<div><p><b>HERA S.p.A.</b> Holding Energia Risorse Ambiente Viale Carlo Berti Pichat 2/4 40127 Bologna tel. 051.287.111 fax 051.287.525 <a href="http://www.gruppohera.it">www.gruppohera.it</a></p></div>		DENOMINAZIONE DOCUMENTO (DOCUMENT DESCRIPTION) <b>RAPPORTO DELLE INDAGINI GEOGNOSTICHE E DELLE PROVE DI LABORATORIO</b>		
		SCALA (SCALE) --	N° FOGLIO (SHEET N°) 1	DI (LAST) 100

	<b>RAPPORTO DELLE INDAGINI GEOGNOSTICHE E DELLE PROVE DI LABORATORIO</b>				
	N° COMMESSA ( <i>JOB N°</i> )	ID DOC. ( <i>DOC. ID</i> )	REV.	N° FG. ( <i>SH. N.</i> )	DI ( <i>LAST</i> )
	<b>11300273776</b>		<b>2</b>		
<b>PSBO - VASCHE DI LAMINAZIONE AUSA</b>					

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- 4-2 ELABORAZIONI LITOLOGICHE PROVE PENETROMETRICHE CPT E CPTU
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- 4-4 ELABORAZIONI DI PERMEABILITA' – “IC-STB ROBERTSON” PROVE CPTU
- 4-5 TABELLE GRAFICHE RIASSUNTIVE DEI VALORI DI PERMEABILITA'
- 4-6 DIAGRAMMI DI PLASTICITA' DI CASAGRANDE
- 4.7 TABELLE RIASSUNTIVE CARATTERISTICHE LITOLOGICHE DESUNTE DA PROVE DI LABORATORIO SU CAMPIONI DI TERRENO PRELEVATI IN SITO
- 4-8 CURVE GRANULOMETRICHE - “POSSIBILITA' DI LIQUEFAZIONE”

**ELABORATO N. 4 - 1**

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**ELABORAZIONI PROFILI STRATIGRAFICI DEI SONDAGGI  
GEOGNOSTICI BH**

COMMITTENTE: HERA S.p.a.  
CANTIERE: Piazzale Kennedy  
LOCALITA': Rimini (RN)  
DATA: Maggio 2015

## ELABORATO 4-1



**Studio di Geologia**  
via Ceccarini, 171 - Palazzo La Viola  
Riccione - 47836 - (RN)  
Tel/Fax 0541/600464

GEOPROGET

PROF. DAL P.C.	SONDAGGIO BH1			SONDAGGIO BH2			SONDAGGIO BH3			SONDAGGIO BH4			SONDAGGIO BH5		
	SPESSORE STRATO	STRATIG.	LITOTIPO	SPESSORE STRATO	STRATIG.	LITOTIPO	SPESSORE STRATO	STRATIG.	LITOTIPO	SPESSORE STRATO	STRATIG.	LITOTIPO	SPESSORE STRATO	STRATIG.	LITOTIPO
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4.0				6.80			SL			7.45					
6.0	7.20	LA	5.70		LA	16.50	LA	16.75	LA	6.95	LA	0.60	ALA	9.70	LA
8.0															
10.0	8.30	LA	10.60		LA	0.70	GA	3.00	LA	3.60	LA	3.60	LA	3.60	LA
12.0															
14.0	0.70	GA	2.00		LA	0.70	GA	3.00	LA	3.60	LA	3.60	LA	3.60	LA
16.0															
18.0	8.30	LA	10.60		LA	0.70	GA	3.00	LA	3.60	LA	3.60	LA	3.60	LA
20.0															
22.0	0.70	GA	2.00		LA	0.70	GA	3.00	LA	3.60	LA	3.60	LA	3.60	LA
24.0															
26.0	8.30	LA	10.60		LA	0.70	GA	3.00	LA	3.60	LA	3.60	LA	3.60	LA
28.0															
30.0	0.70	GA	2.00		LA	0.70	GA	3.00	LA	3.60	LA	3.60	LA	3.60	LA
32.0															
34.0	8.30	LA	10.60		LA	0.70	GA	3.00	LA	3.60	LA	3.60	LA	3.60	LA
36.0															



ELABORATO 4-1  
PROFILI STRATIGRAFICI SCHEMATICI

[illegible]

COMMITTENTE: HERA S.p.a.  
 CANTIERE: Piazzale Kennedy  
 LOCALITA': Rimini ( RN)  
 DATA: Maggio 2015

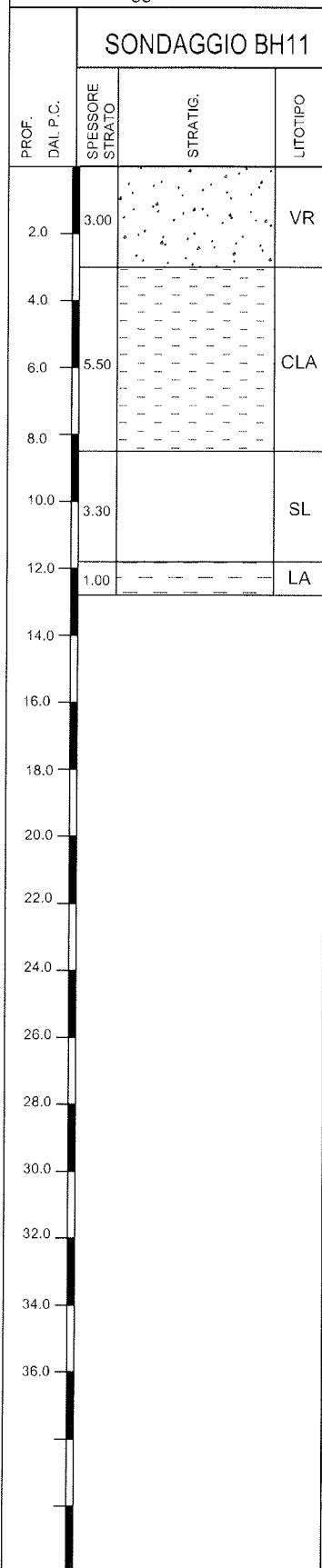
# ELABORATO 4-1

PROFILI STRATIGRAFICI SCHEMATICI



Studio di Geologia  
 via Ceccarini, 171 - Palazzo La Viola  
 Riccione - 47838 - (RN)  
 Tel/Fax 0541/606464

**GEOPROGET**



PROF. DAL P.C.	STATICA CPTU1			STATICA CPTU2			STATICA CPTU3			STATICA CPTU4			STATICA CPTU5		
	SPESORE STRATO	STRATIG.	LITOTIPO	SPESORE STRATO	STRATIG.	LITOTIPO	SPESORE STRATO	STRATIG.	LITOTIPO	SPESORE STRATO	STRATIG.	LITOTIPO	SPESORE STRATO	STRATIG.	LITOTIPO
2.0	6.00		VR	6.30		VR	5.20		VR	4.80		VR	3.00		VR
4.0													6.80	SL	6.40
6.0	0.75		SL												
8.0	0.70		CLA												
10.0	4.50		SL												
12.0				8.10	LA	7.10	LA	7.70	LA	7.20	LA	6.30		LA	
14.0	0.90		ALA												
16.0	0.70	ALA	2.70			LA	0.70	ALA	0.90	ALA	2.10		ALA		
18.0														5.90	LA
20.0															
22.0															
24.0															
26.0															
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32.0															
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COMMITTENTE: HERA S.p.a.  
CANTIERE: Piazzale Kennedy  
LOCALITA': Rimini (RN)  
DATA: Maggio 2015

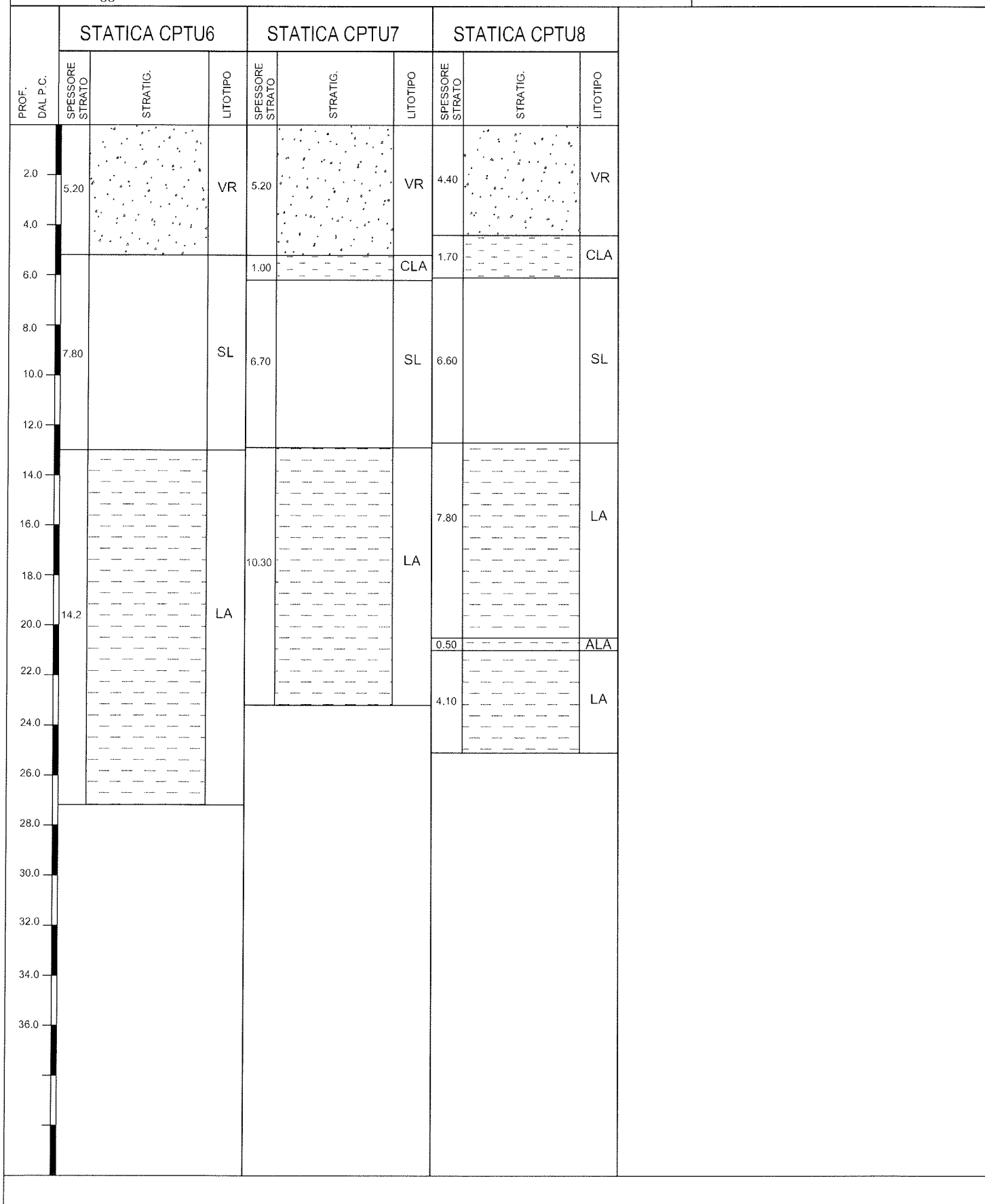
# ELABORATO 4-1

## PROFILI STRATIGRAFICI SCHEMATICI



Studio di Geologia  
via Ceccarini, 171 - Palazzo La Viola  
Riccione - 47838 - (RN)  
Tel/Fax 0541/606464

**GEOPROGET**



**ELABORATO N. 4 - 2**

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**ELABORAZIONI LITOLOGICHE PROVE PENETROMETRICHE  
CPT E CPTU**

**PROVA PENETROMETRICA STATICA MECCANICA**  
**DIAGRAMMI LITOLOGIA****CPT****1**

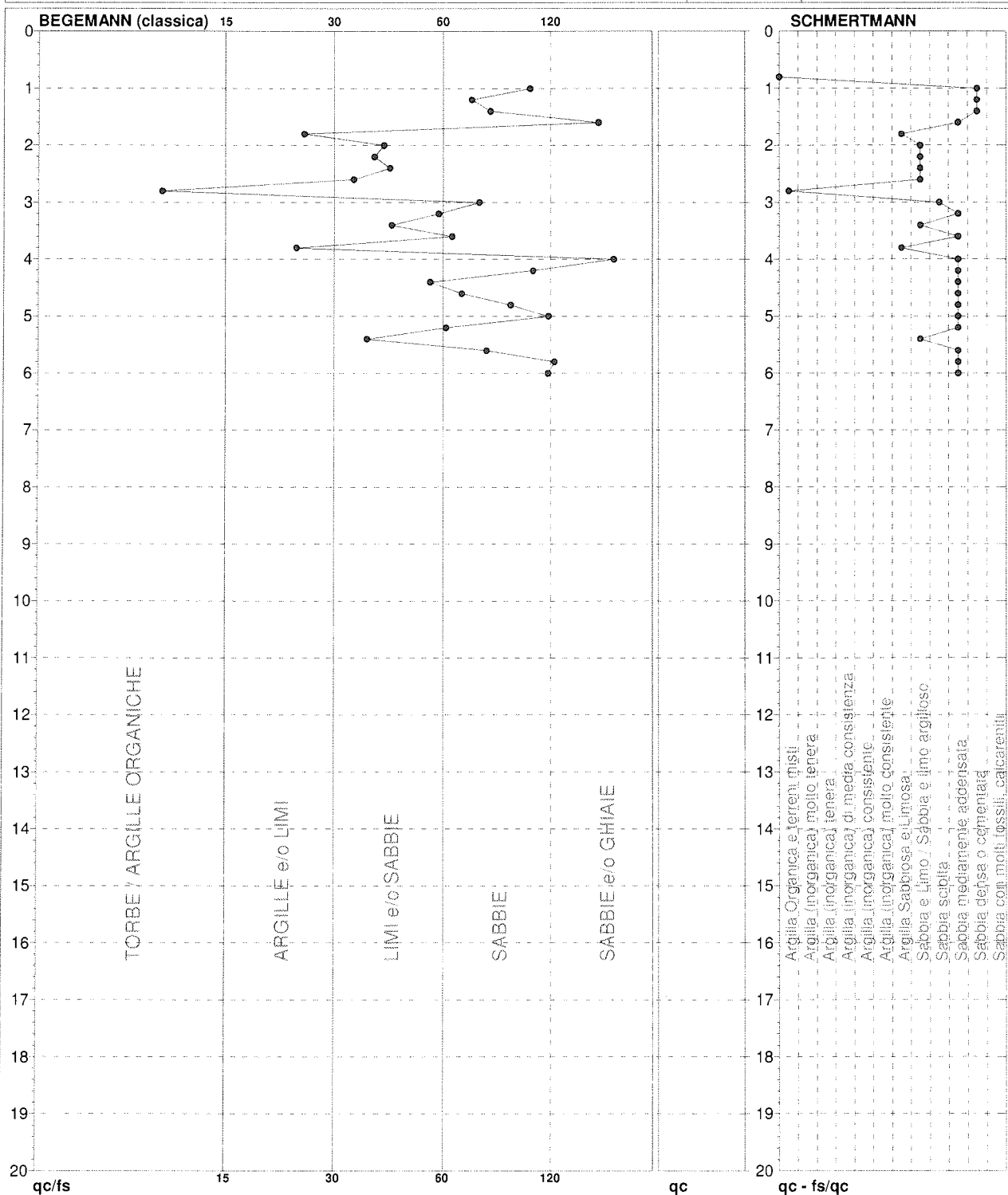
riferimento

**011-2014**

certificato n°

Committente: **HERA S.p.A**  
Cantiere: **Piazzale Kennedy**  
Località: **Rimini (RN)**U.M.: **daN/cm²**Scala: **1:100**Pagina: **1**

Elaborato:

Data esec.: **24/03/2014**Data certificato: **04/05/2015**Falda: **-2,80 m**

Torbe / Argille org. : 75 punti, 75,76%  
 Argille e/o Limi : 2 punti, 2,02%  
 Limi e/o Sabbie : 10 punti, 10,10%  
 Sabbie : 11 punti, 11,11%  
 Sabbie e/o Ghiaie : 2 punti, 2,02%

Lo sperimentatore:

Il direttore laboratorio:

FON000

# PROVA PENETROMETRICA STATICA DIAGRAMMI LITOLOGIA

CPTU1

riferimento

HERA

certificato n°

Committente: HERA S.p.A.

Cantiere: Piazzale Kennedy

Località: Rimini

U.M.: daN/cm²

Scala:

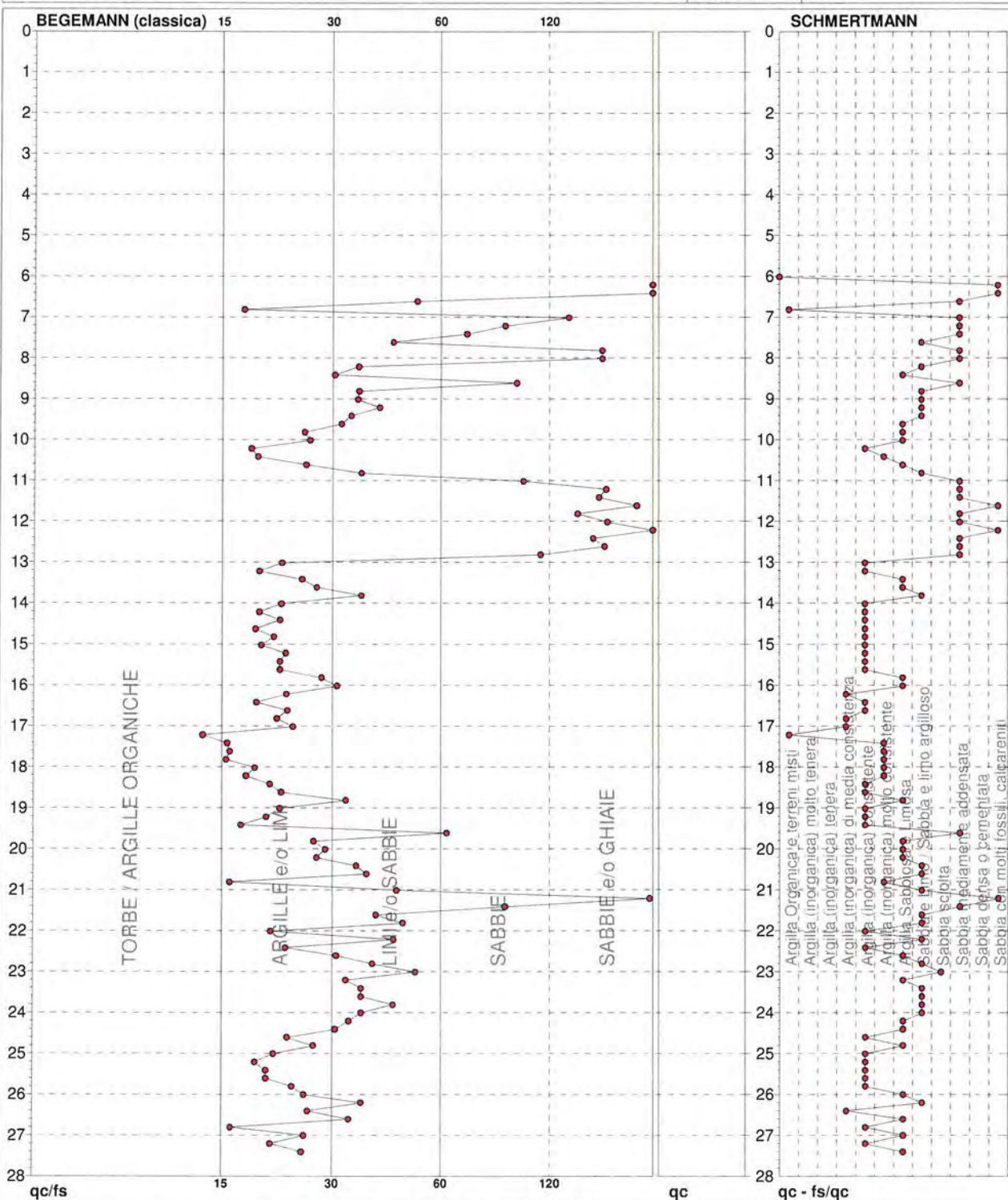
Pagina: 1

Elaborato:

Data esec.: 24/03/2014

Data certificato:

Falda:



Torbe / Argille org. : 34 punti, 24,46%  
Argille e/o Limi : 56 punti, 40,29%  
Limi e/o Sabbie : 30 punti, 21,58%  
Sabbie: 6 punti, 4,32%  
Sabbie e/o Ghiaie : 14 punti, 10,07%

SOGEO s.r.l.

San Potito 43 - 48022 LUGO (RA) - Tel. +39(0)54522042 - Fax. +39(0)54534443  
Conc. Min. Infrastrutture e Trasporti - Settore C - Decr. n. 005754 del 01/07/2010

# PROVA PENETROMETRICA STATICA MECCANICA DIAGRAMMI LITOLOGIA

**CPT**

**2**

referimento

**011-2014**

certificato n°

Committente: **HERA S.p.A**

Cantiere: **Piazzale Kennedy**

Località: **Rimini (RN)**

U.M.: **daN/cm²**

Scala: **1:100**

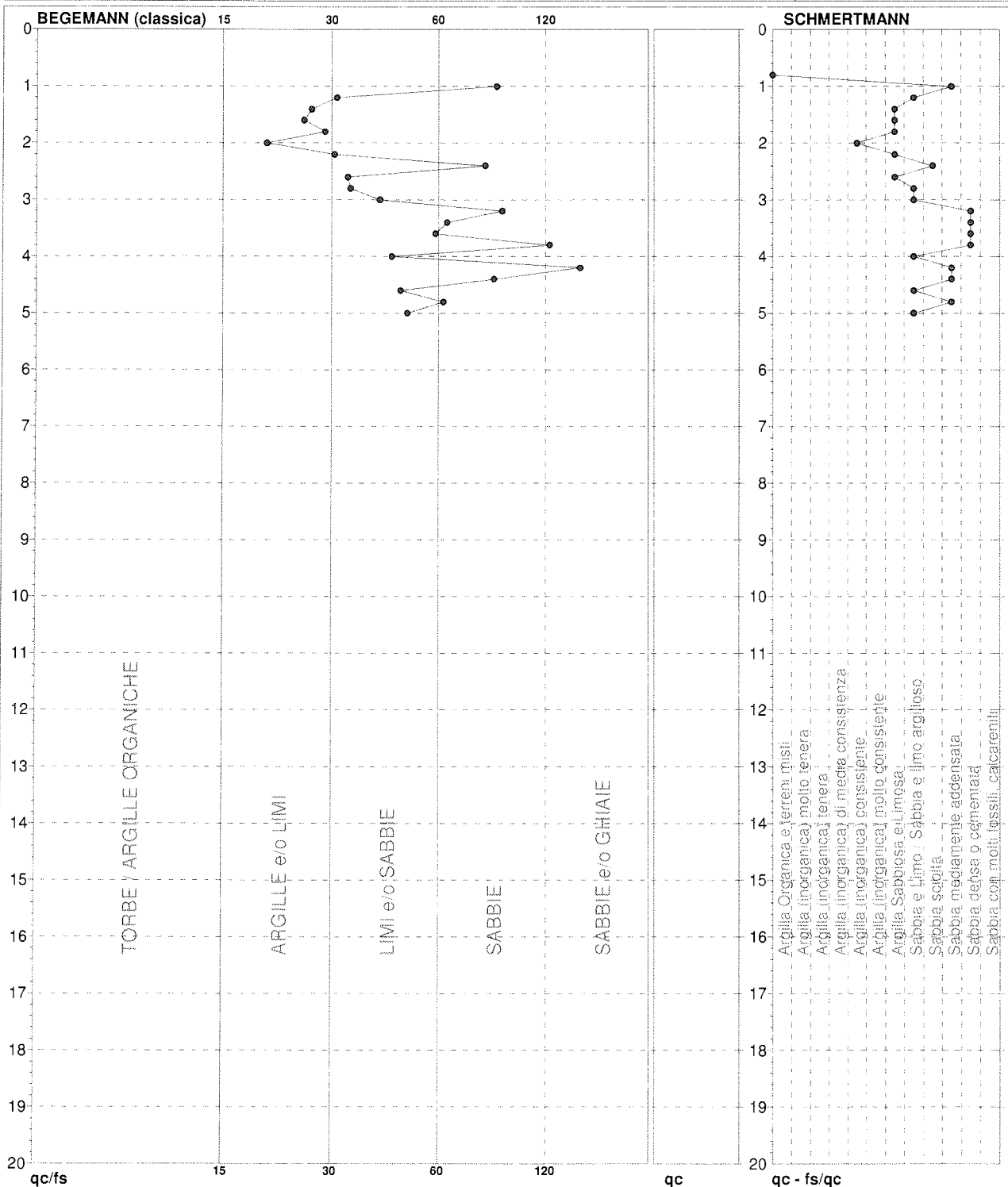
Pagina: **1**

Elaborato:

Data esec.: **24/03/2014**

Data certificato: **04/05/2015**

Falda: **-3,00 m**



Torbe / Argille org. : 79 punti, 79,80%  
Argille e/o Limi : 5 punti, 5,05%  
Limi e/o Sabbie : 10 punti, 10,10%  
Sabbie: 5 punti, 5,05%  
Sabbie e/o Ghiaie : 1 punti, 1,01%

Lo sperimentatore:

Il direttore laboratorio:

FON000



# PROVA PENETROMETRICA STATICA

## DIAGRAMMI LITOLOGIA

**CPTU2**

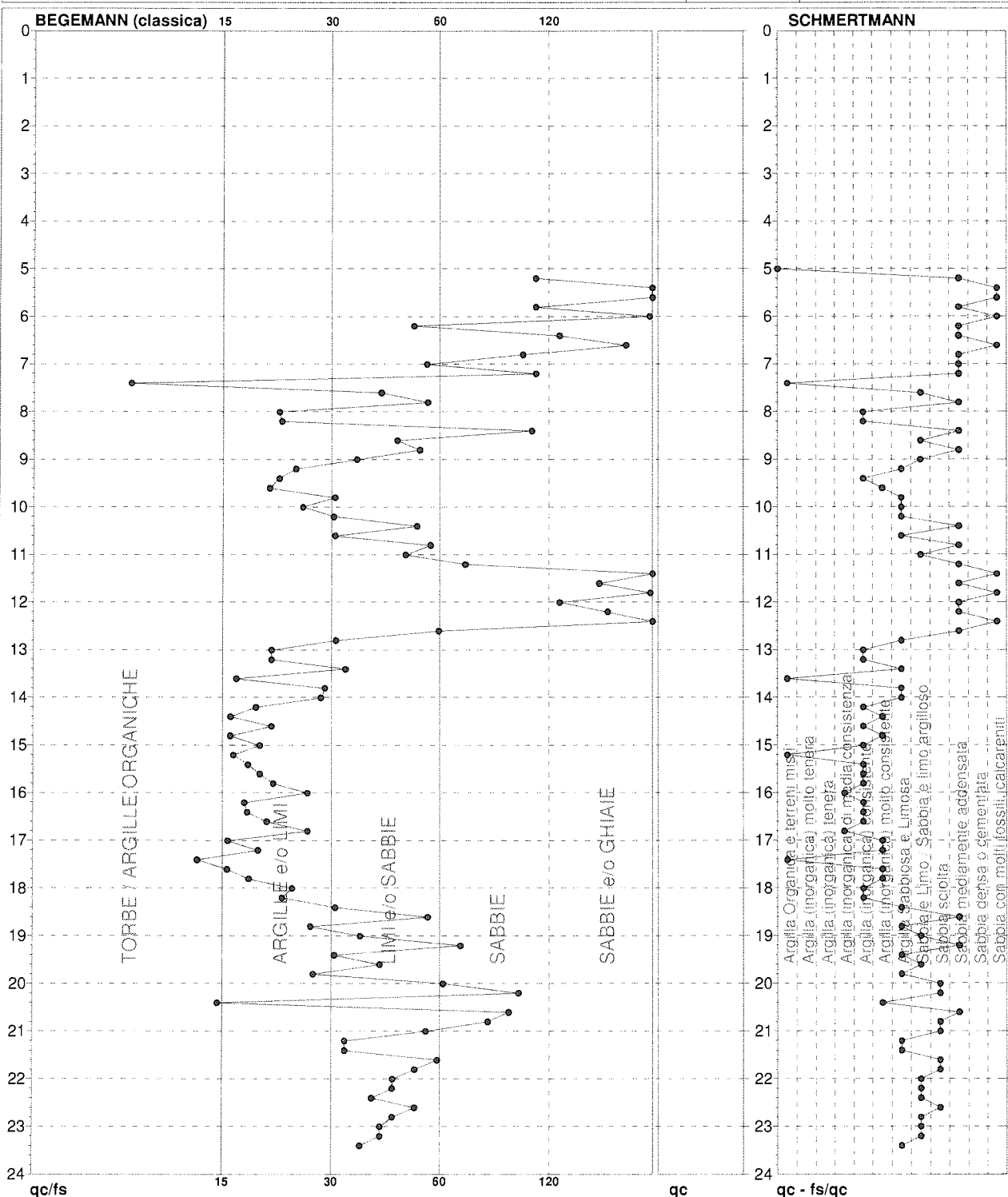
referimento  
certificato n°

**HERA**

Committente: **HERA S.p.A**  
Cantiere: **Piazzale Kennedy**  
Località: **Rimini**

U.M.: **daN/cm²**  
Scala:  
Pagina: **1**  
Elaborato:

Data eseg.: **24/03/2014**  
Data certificato:  
Falda:



Torbe / Argille org. : 31 punti, 26,05%  
Argille e/o Limi : 35 punti, 29,41%  
Limi e/o Sabbie : 33 punti, 27,73%  
Sabbie: 12 punti, 10,08%  
Sabbie e/o Ghiaie : 9 punti, 7,56%

FON000

**PROVA PENETROMETRICA STATICA MECCANICA**  
**DIAGRAMMI LITOLOGIA****CPT****3**

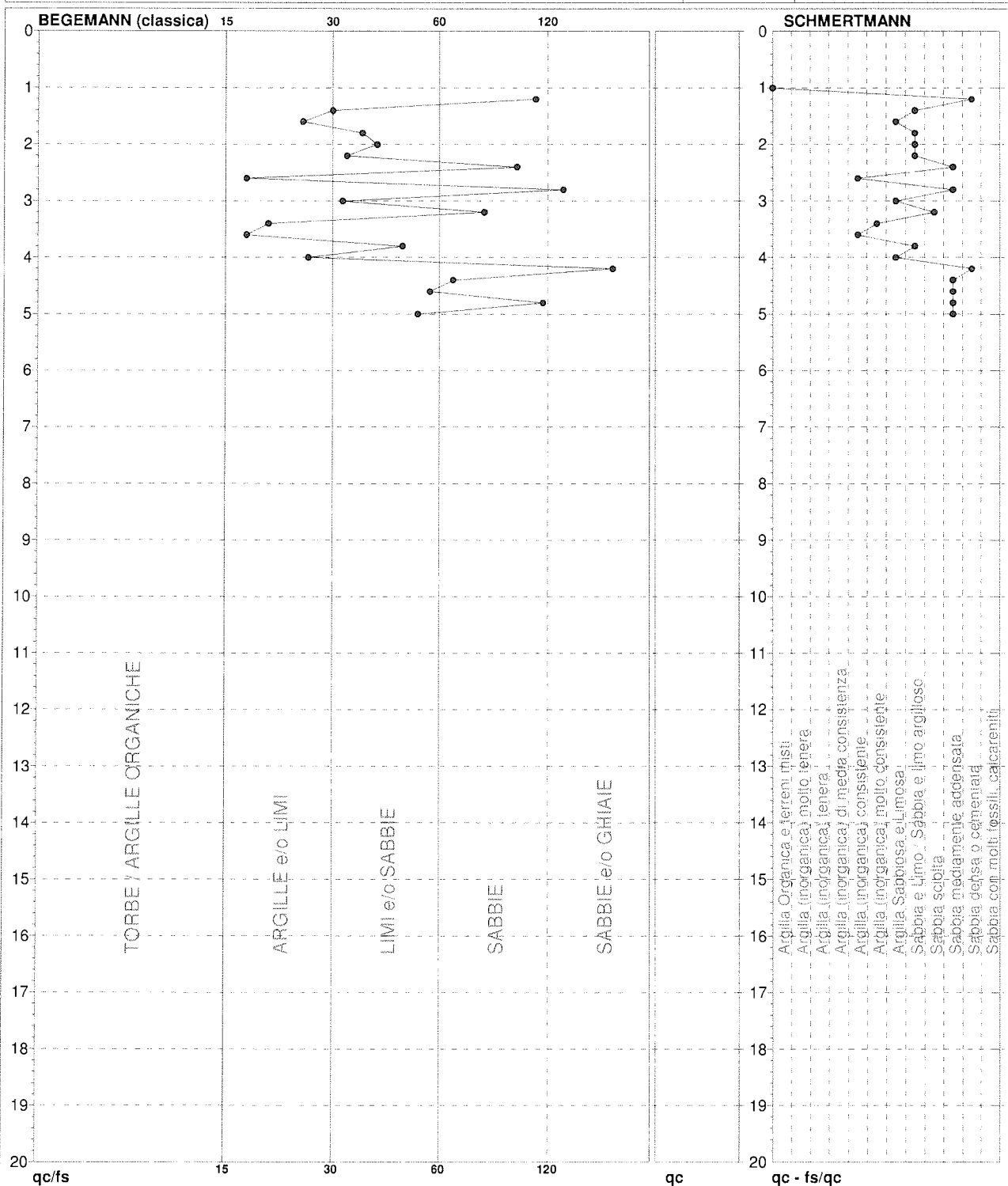
riferimento

**011-2014**

certificato n°

Committente: **HERA S.p.A**  
Cantiere: **Piazzale Kennedy**  
Località: **Rimini (RN)**U.M.: **daN/cm²**Scala: **1:100**Pagina: **1**

Elaborato:

Data eseg.: **24/03/2014**Data certificato: **04/05/2015**Falda: **-2,80 m**

Torbe / Argille org. : 80 punti, 80,81%  
 Argille e/o Limi : 6 punti, 6,06%  
 Limi e/o Sabbie : 7 punti, 7,07%  
 Sabbie : 6 punti, 6,06%  
 Sabbie e/o Ghiaie : 1 punti, 1,01%

Lo sperimentatore:

Il direttore laboratorio:

FON000

# PROVA PENETROMETRICA STATICA DIAGRAMMI LITOLOGIA

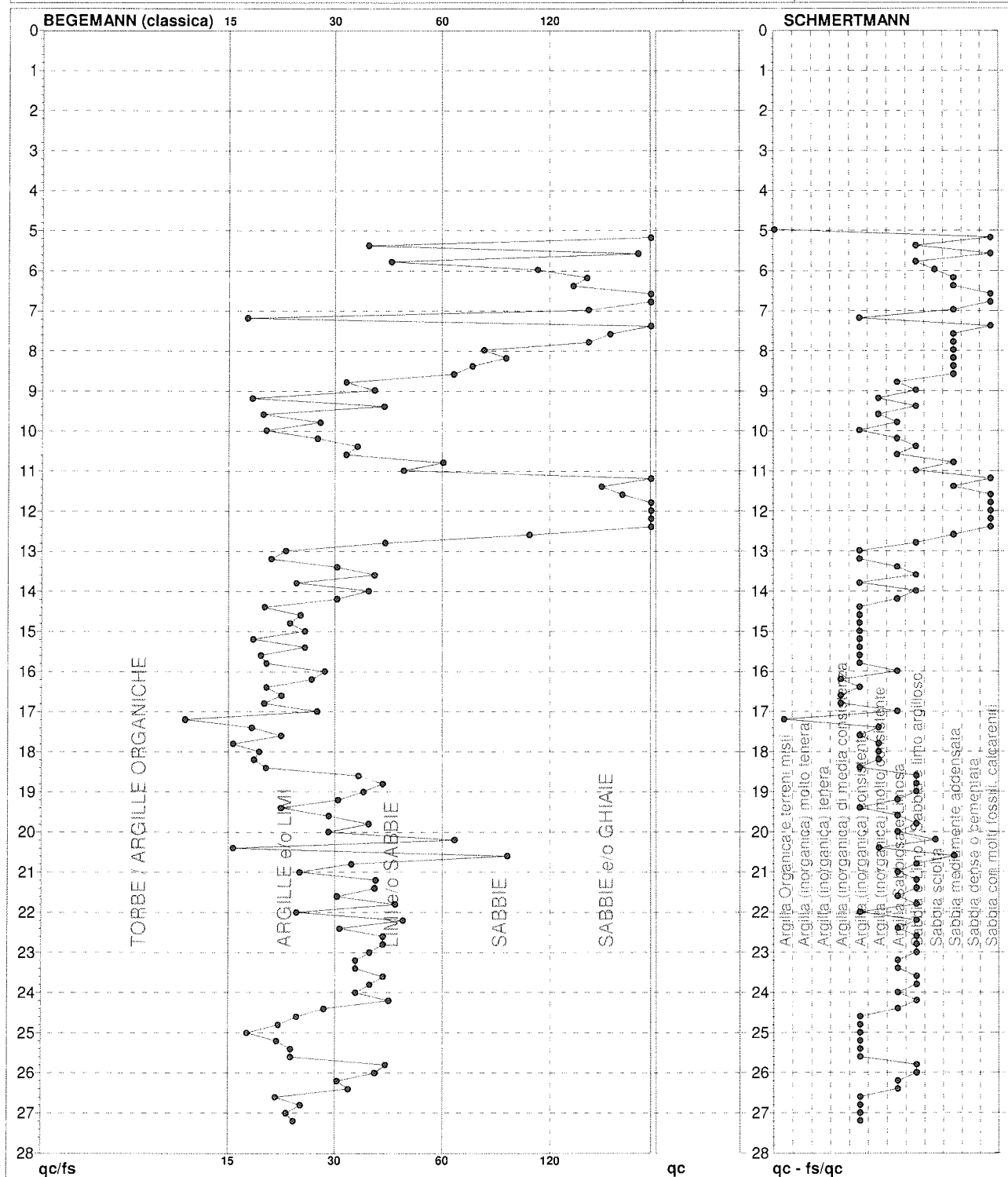
**CPTU3  
HERA**

referimento  
certificato n°

Committente: **HERA S.p.A**  
Cantiere: **Piazzale Kennedy**  
Località: **Rimini**

U.M.: **daN/cm²**  
Scala:  
Pagina: **1**  
Elaborato:

Data eseg.: **21/03/2014**  
Data certificato:  
Falda:



Torbe / Argille org. : 30 punti, 21,58%  
Argille e/o Limi : 51 punti, 36,69%  
Limi e/o Sabbie : 34 punti, 24,46%  
Sabbie: 8 punti, 5,76%  
Sabbie e/o Ghiaie : 17 punti, 12,23%

# PROVA PENETROMETRICA STATICA

## DIAGRAMMI LITOLOGIA

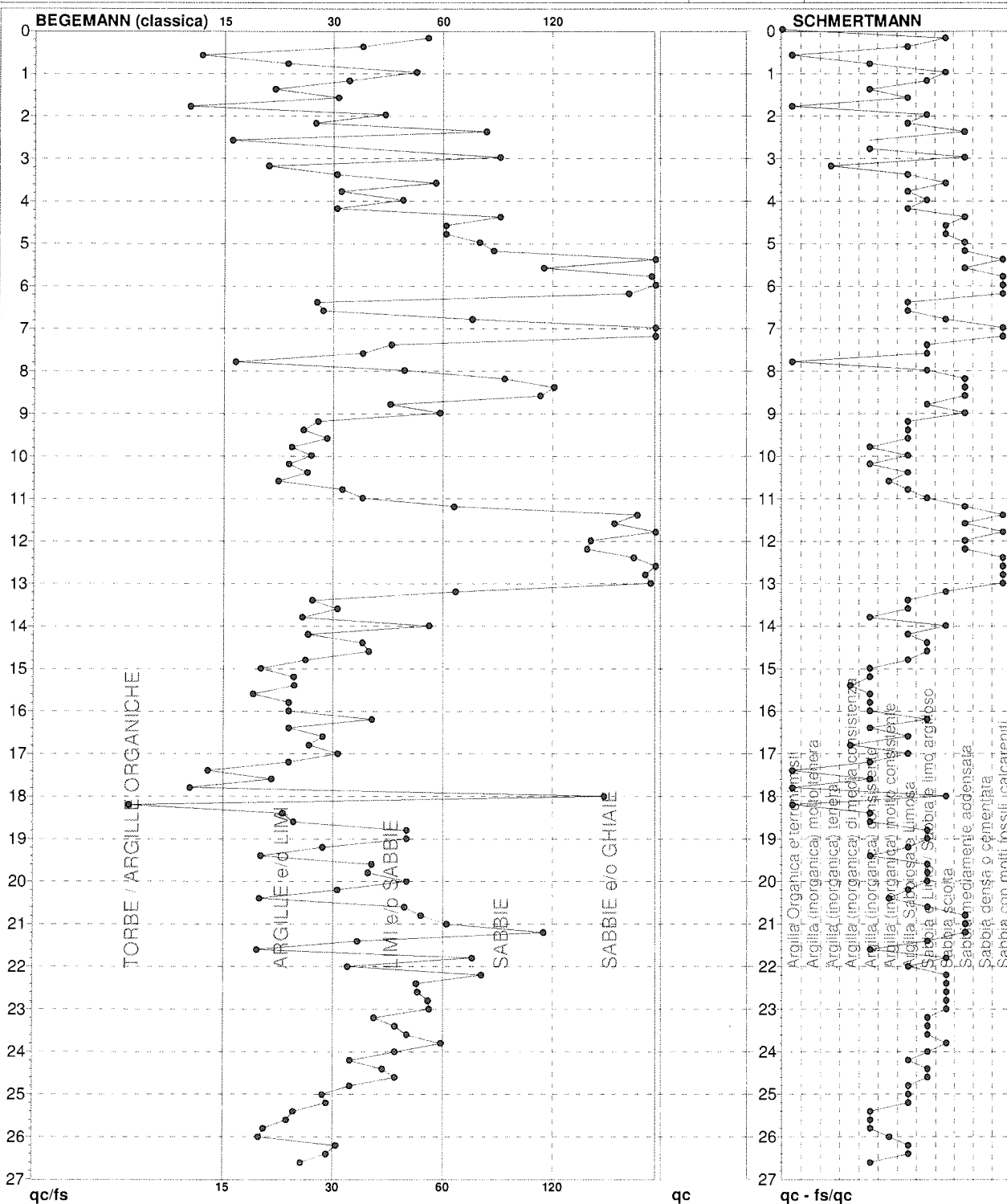
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**HERA**

referimento  
certificato n°

Committente: **HERA S.p.A.**  
Cantiere: **Piazzale Kennedy**  
Località: **Rimini**

U.M.: **daN/cm²**  
Scala:  
Pagina: **1**  
Elaborato:

Data eseg.: **20/03/2014**  
Data certificato:  
Falda:



Torbe / Argille org. : 8 punti, 5,97%  
Argille e/o Limi : 48 punti, 35,82%  
Limi e/o Sabbie : 49 punti, 36,57%  
Sabbie: 14 punti, 10,45%  
Sabbie e/o Ghiaie : 16 punti, 11,94%

FON000

# **PROVA PENETROMETRICA STATICA MECCANICA** **DIAGRAMMI LITOLOGIA**

**CPT**

**5**

referimento

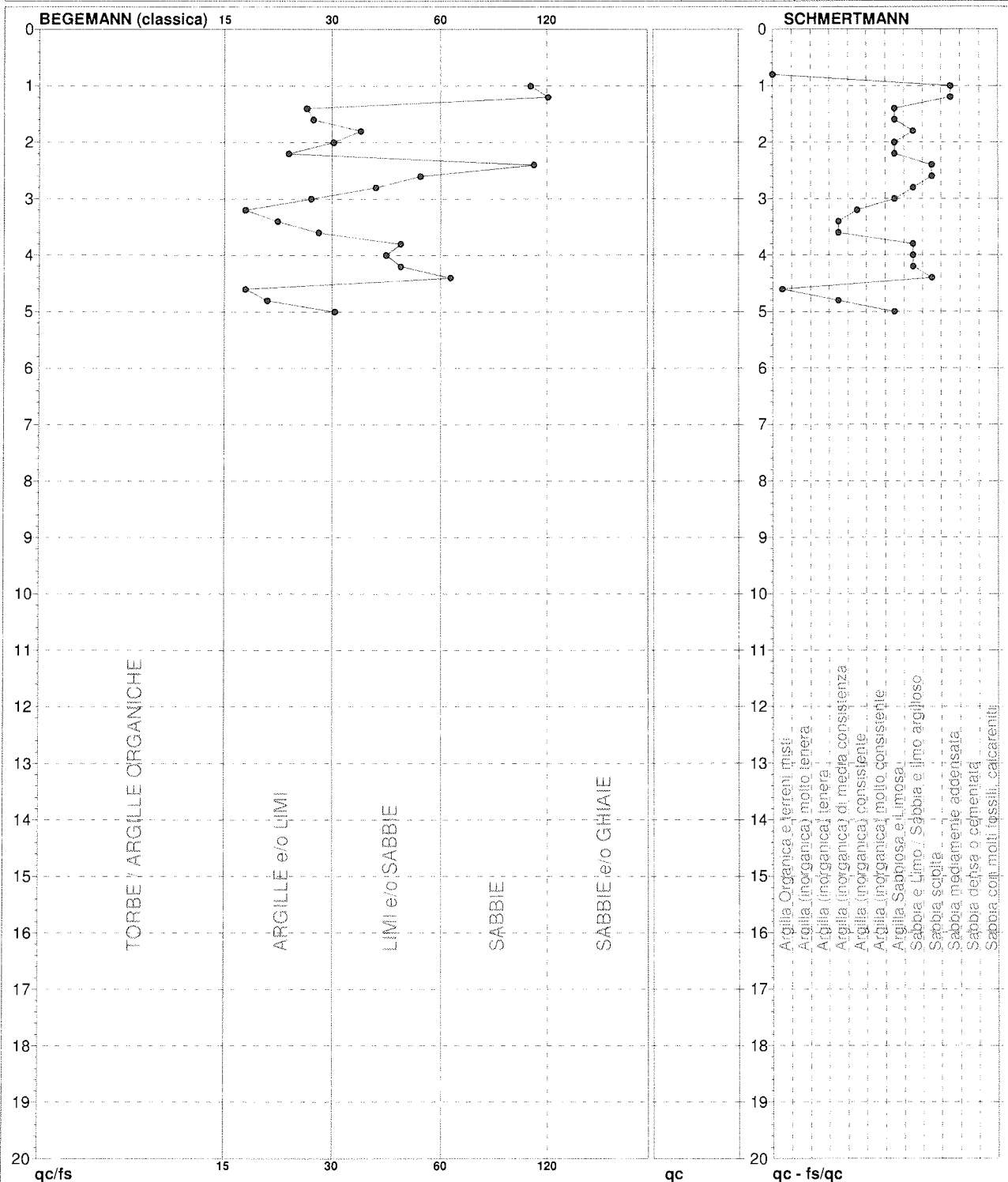
**011-2014**

certificato n°

Committente: **HERA S.p.A**  
 Cantiere: **Piazzale Kennedy**  
 Località: **Rimini (RN)**

U.M.: **daN/cm²**  
 Scala: **1:100**  
 Pagina: **1**  
 Elaborato:

Data exec.: **24/03/2014**  
 Data certificato: **04/05/2015**  
 Falda: **-3,00 m**



Torbe / Argille org. : 79 punti, 79,80%  
 Argille e/o Limi : 11 punti, 11,11%  
 Limi e/o Sabbie : 7 punti, 7,07%  
 Sabbie: 3 punti, 3,03%

**Lo sperimentatore:**

**Il direttore laboratorio:**

FON000

# PROVA PENETROMETRICA STATICA

## DIAGRAMMI LITOLOGIA

**CPTU5**

riferimento  
**HERA**

certificato n°

Committente: **HERA S.p.A.**  
Cantiere: **Piazzale Kennedy**  
Località: **Rimini**

U.M.: **daN/cm²**

Scala:

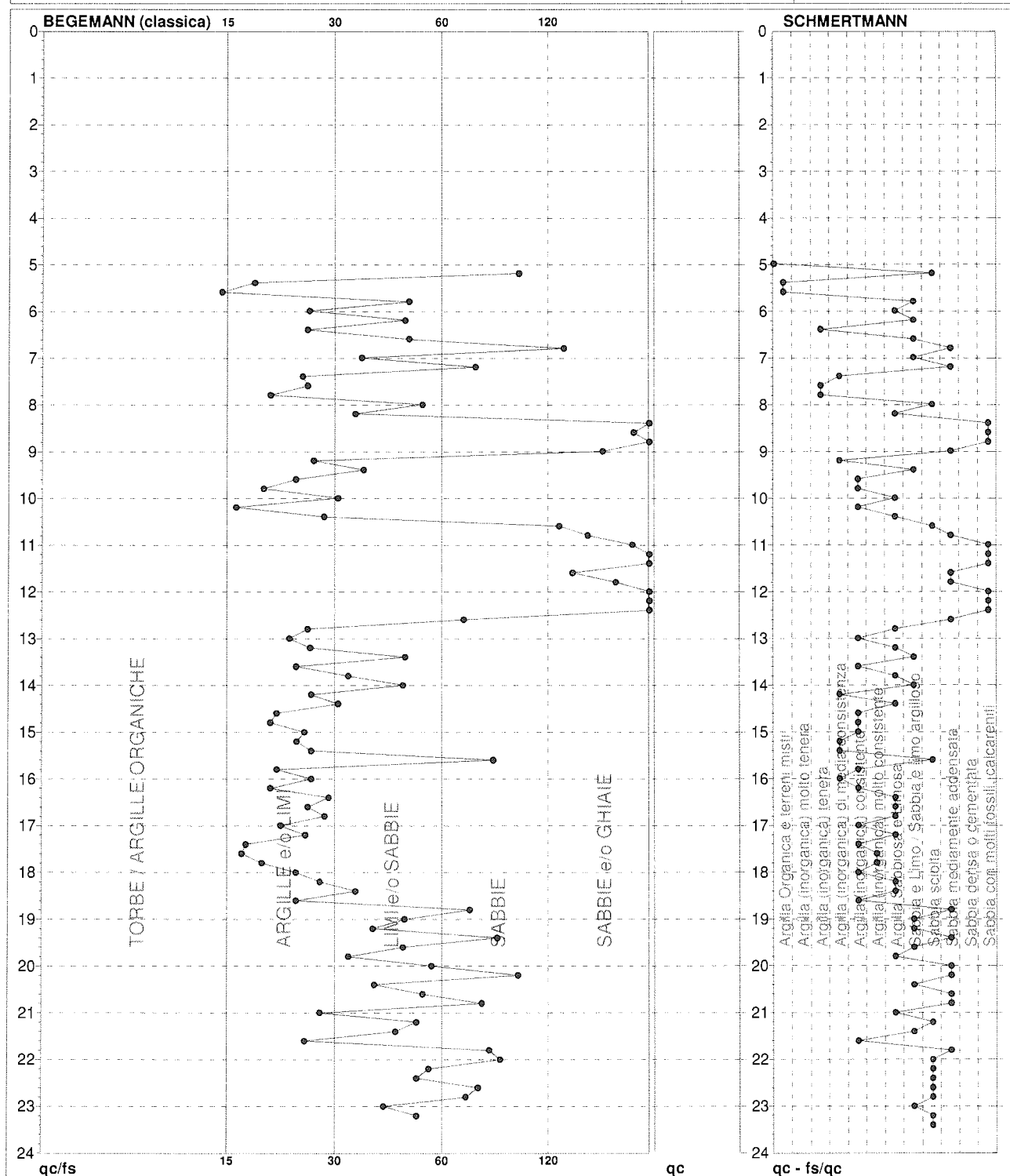
Pagina: **1**

Elaborato:

Data eseg.: **20/03/2014**

Data certificato:

Falda:



Torbe / Argille org. : 30 punti, 25,21%  
Argille e/o Limi : 39 punti, 32,77%  
Limi e/o Sabbie : 24 punti, 20,17%  
Sabbie: 14 punti, 11,76%  
Sabbie e/o Ghiaie : 13 punti, 10,92%

**PROVA PENETROMETRICA STATICA MECCANICA**  
**DIAGRAMMI LITOLOGIA****CPT****6**

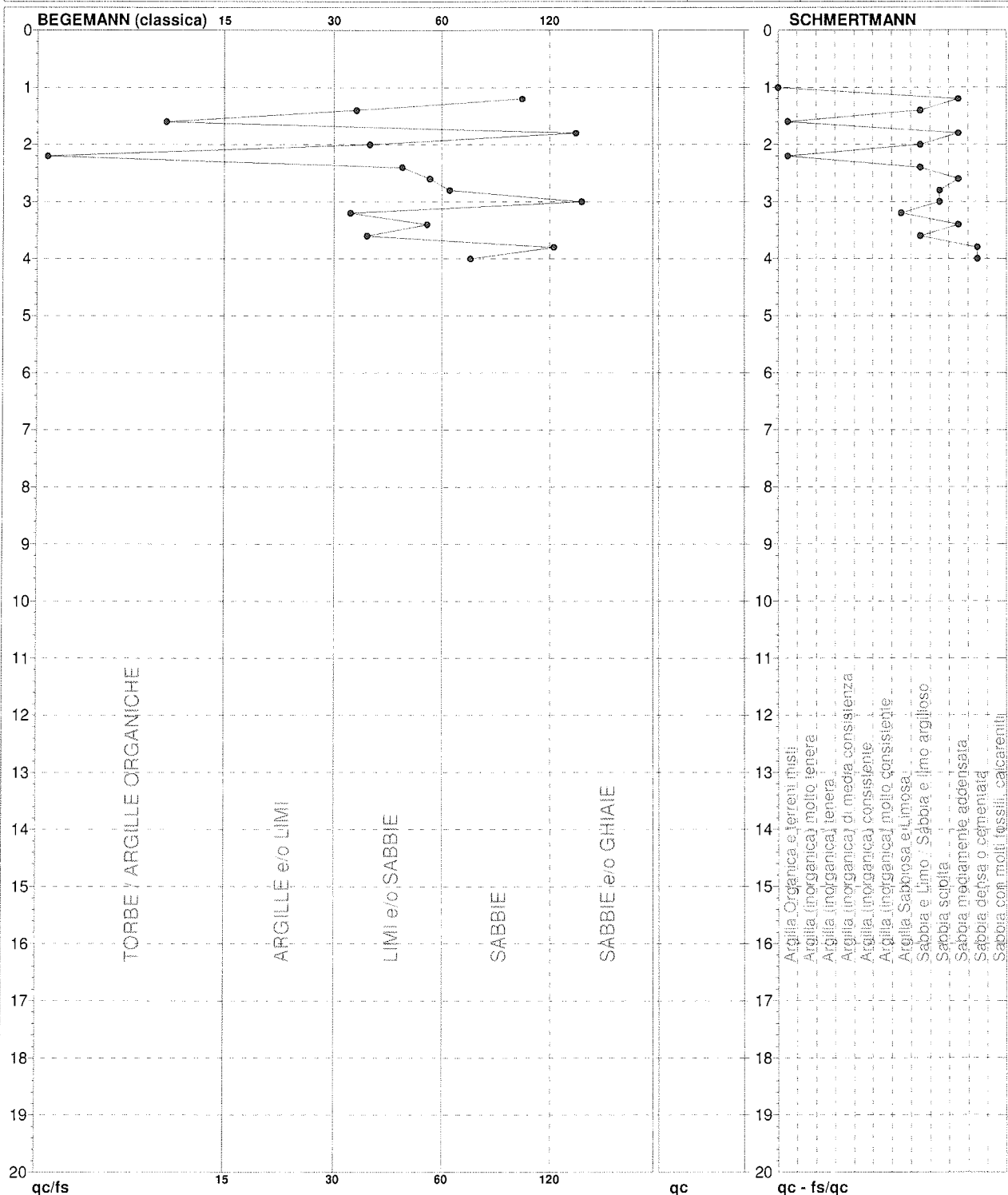
riferimento

**011-2014**

certificato n°

Committente: **HERA S.p.A**  
Cantiere: **Piazzale Kennedy**  
Località: **Rimini (RN)**U.M.: **daN/cm²**Scala: **1:100**Pagina: **1**

Elaborato:

Data esec.: **24/03/2014**Data certificato: **04/05/2015**Falda: **-3,00 m**

Torbe / Argille org. : 87 punti, 87,88%

Limi e/o Sabbie : 8 punti, 8,08%

Sabbie: 3 punti, 3,03%

Sabbie e/o Ghiaie : 2 punti, 2,02%

Lo sperimentatore:

Il direttore laboratorio:

FON000

# PROVA PENETROMETRICA STATICA

## DIAGRAMMI LITOLOGIA

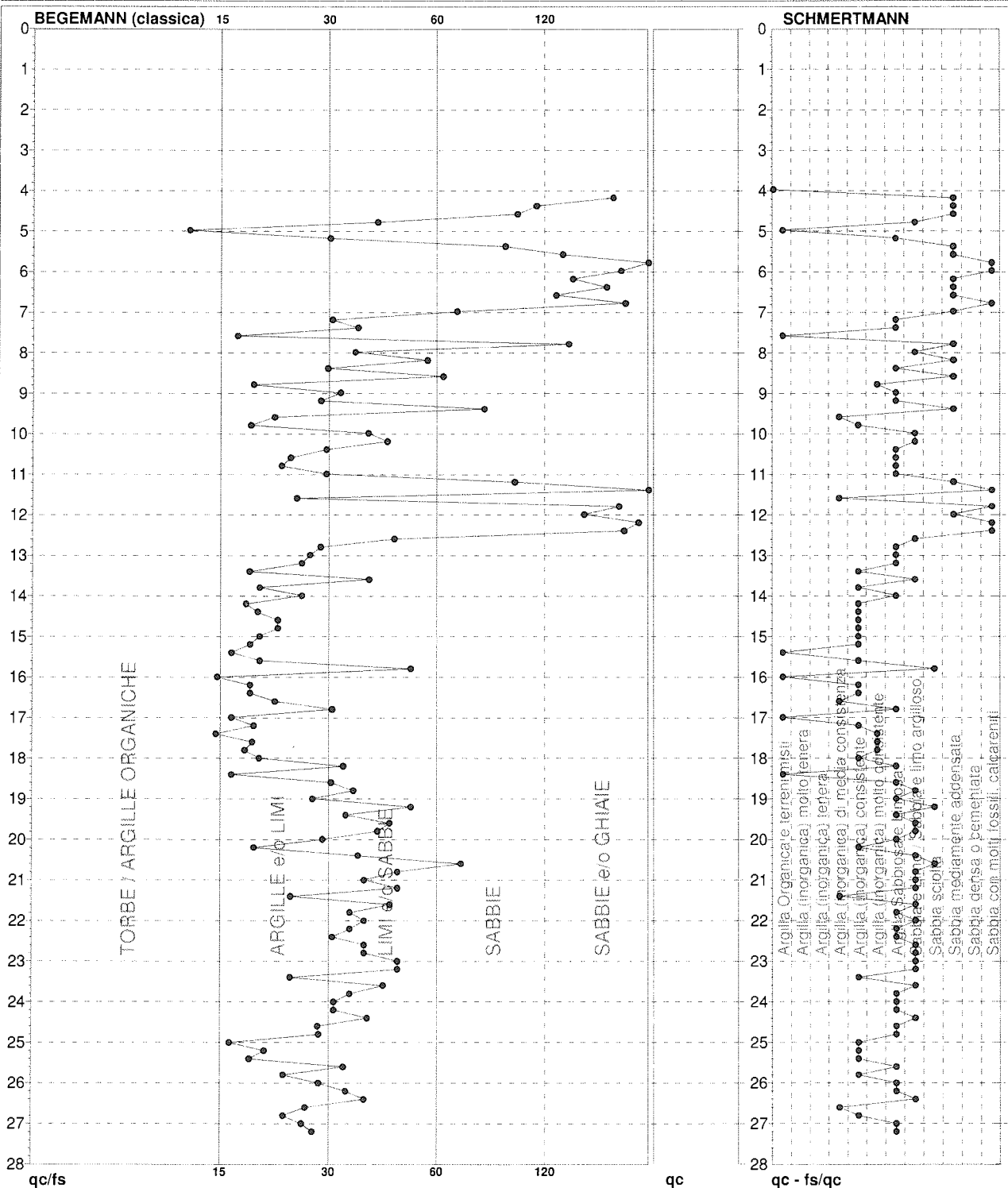
**CPTU6**  
**HERA**

referimento  
certificato n°

Committente: **HERA S.p.A.**  
Cantiere: **Piazzale Kennedy**  
Località: **Rimini**

U.M.: **daN/cm²**  
Scala:  
Pagina: **1**  
Elaborato:

Data eseg.: **24/03/2014**  
Data certificato:  
Falda:



Torbe / Argille org. : 26 punti, 18,71%  
Argille e/o Limi : 56 punti, 40,29%  
Limi e/o Sabbie : 37 punti, 26,62%  
Sabbie: 9 punti, 6,47%  
Sabbie e/o Ghiaie : 12 punti, 8,63%



SOGEO s.r.l.

San Potito 43 - 48022 LUGO (RA) - Tel. +39(0)54522042 - Fax. +39(0)54534443  
Conc. Min. Infrastrutture e Trasporti - Settore C - Decr. n. 005754 del 01/07/2010

# PROVA PENETROMETRICA STATICA MECCANICA

## DIAGRAMMI LITOLOGIA

**CPT**

**7**

referimento

**011-2014**

certificato n°

Committente: **HERA S.p.A**  
Cantiere: **Piazzale Kennedy**  
Località: **Rimini (RN)**

U.M.: **daN/cm²**

Scala: **1:100**

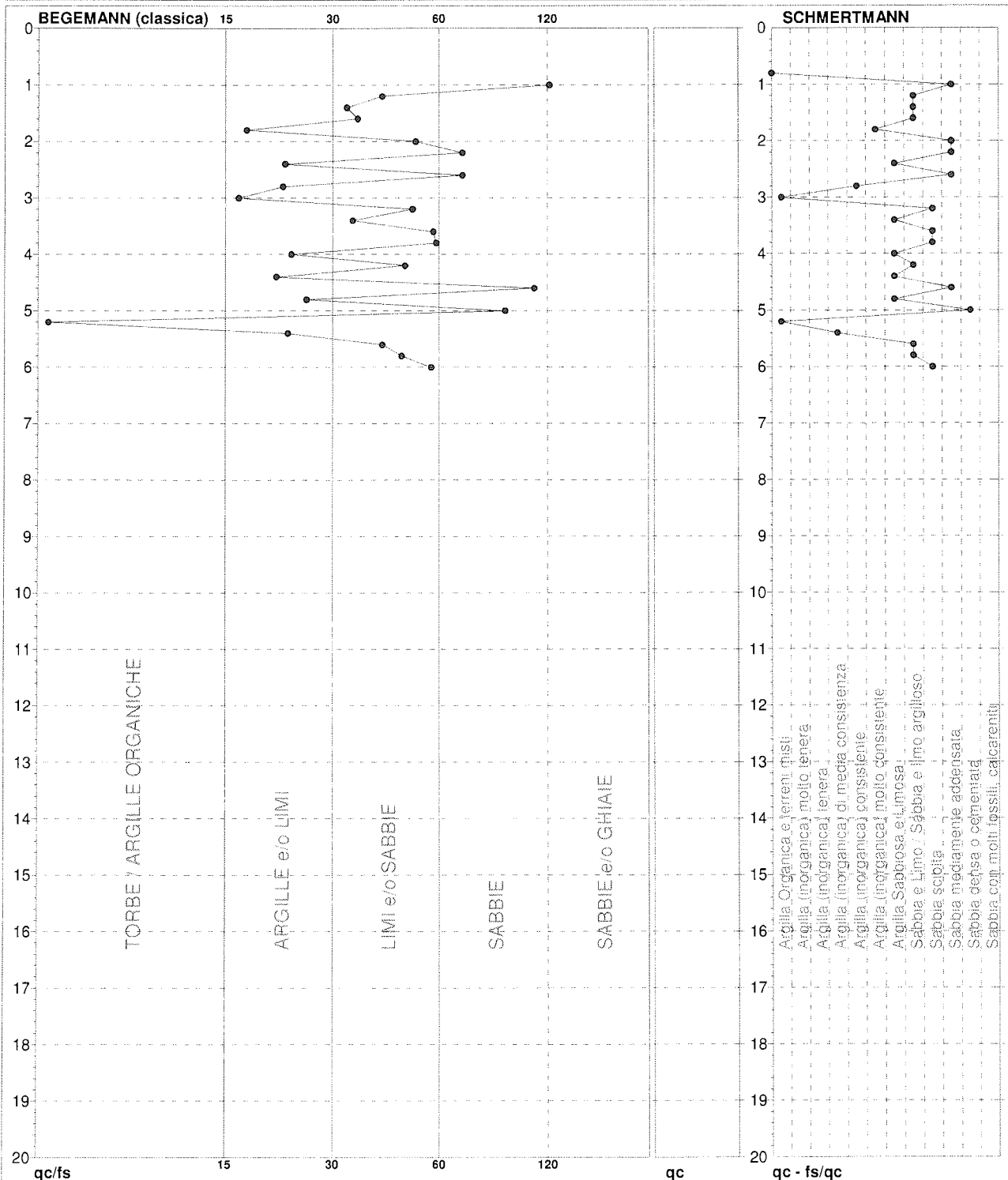
Pagina: **1**

Elaborato:

Data exec.: **24/03/2014**

Data certificato: **04/05/2015**

Falda: **-2,80 m**



Torbe / Argille org. : 75 punti, 75,76%  
Argille e/o Limi : 8 punti, 8,08%  
Limi e/o Sabbie : 12 punti, 12,12%  
Sabbie: 5 punti, 5,05%

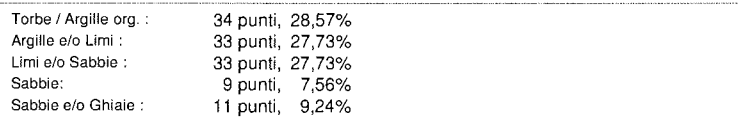
Lo sperimentatore:

Il direttore laboratorio:

FON000

**CPTU7**  
**HERA**  
 riferimento  
**certificato n°**

U.M.: <b>daN/cm<sup>2</sup></b>	Data esec.: 21/03/2014
Scala:	Data certificato:
Pagina: 1	
Elaborato:	Falda:



**PROVA PENETROMETRICA STATICA MECCANICA**  
**DIAGRAMMI LITOLOGIA****CPT****8**

riferimento

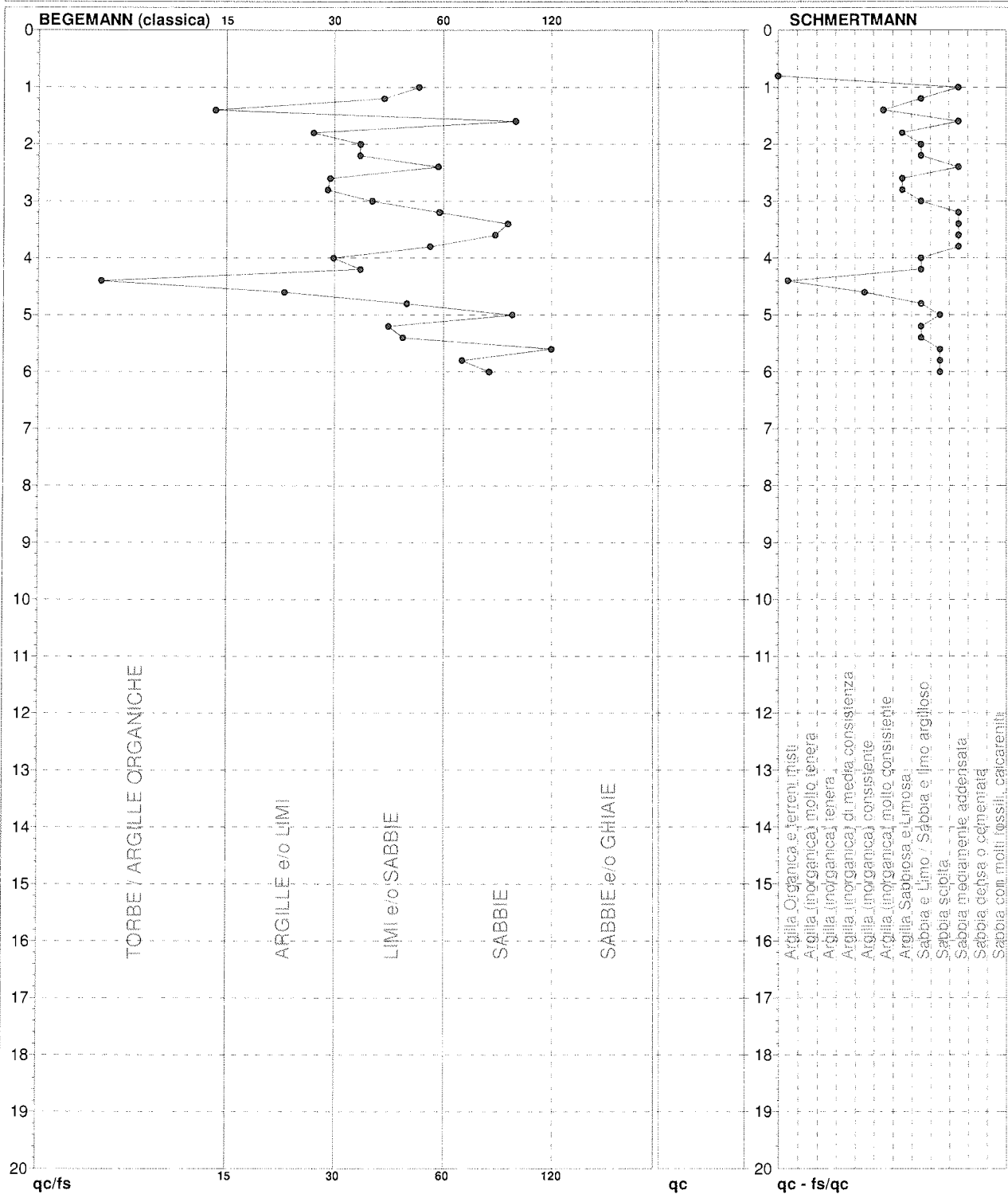
**011-2014**

certificato n°

Committente: **HERA S.p.A**  
Cantiere: **Piazzale Kennedy**  
Località: **Rimini (RN)**U.M.: **daN/cm²**Data eseg.: **24/03/2014**Scala: **1:100**Data certificato: **04/05/2015**Pagina: **1**

Elaborato:

Falda:



Torbe / Argille org. : 76 punti, 76,77%  
 Argille e/o Limi : 5 punti, 5,05%  
 Limi e/o Sabbie : 12 punti, 12,12%  
 Sabbie: 7 punti, 7,07%

Lo sperimentatore:

Il direttore laboratorio:

FON000

# PROVA PENETROMETRICA STATICA | DIAGRAMMI LITOLOGIA

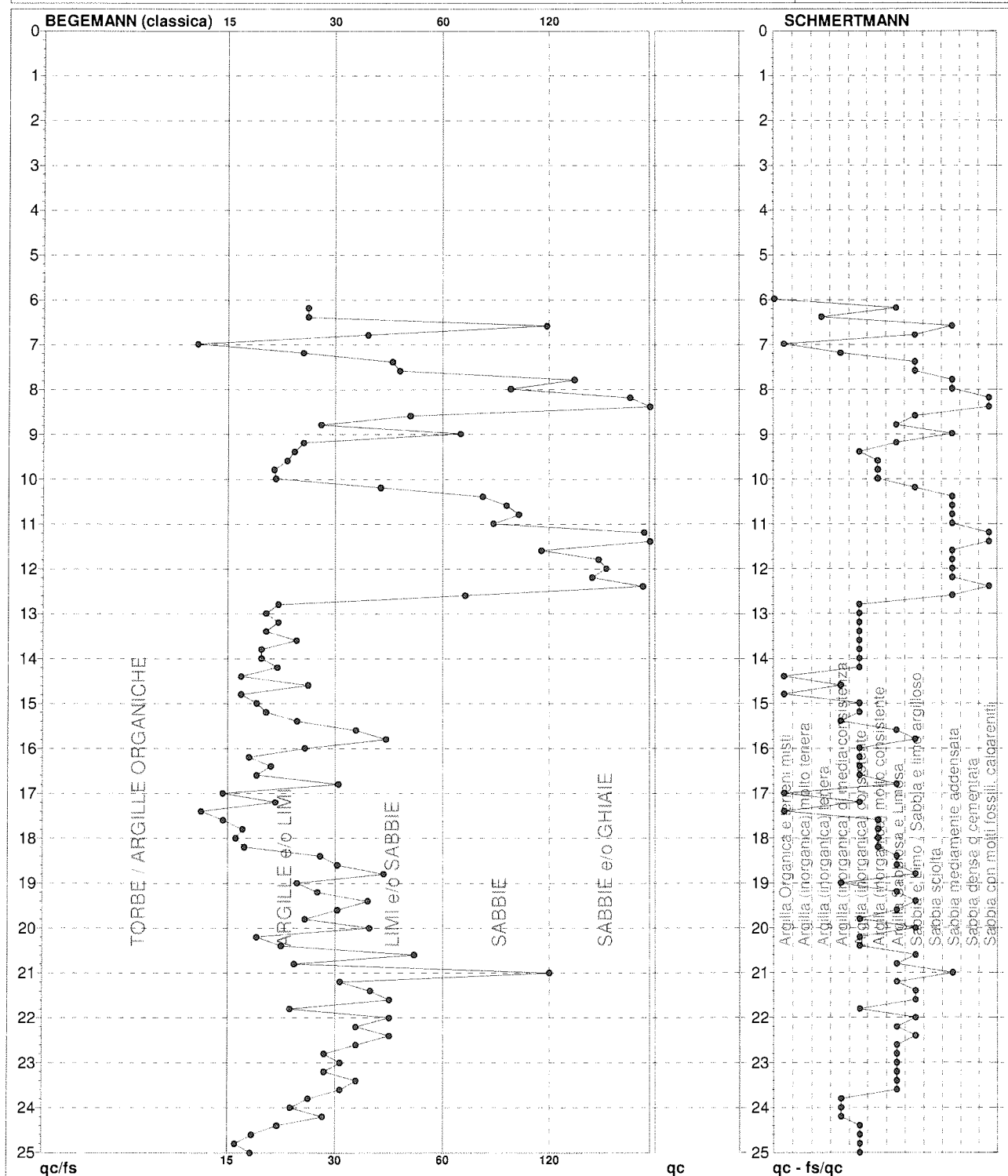
**CPTU8**  
**HERA**

referimento  
certificato n°

Committente: **HERA S.p.A.**  
Cantiere: **Piazzale Kennedy**  
Località: **Rimini**

U.M.: **daN/cm²**  
Scala:  
Pagina: **1**  
Elaborato:

Data eseg.: **25/03/2014**  
Data certificato:  
Falda:



Torbe / Argille org. : 34 punti, 27,42%  
Argille e/o Limi : 51 punti, 41,13%  
Limi e/o Sabbie : 21 punti, 16,94%  
Sabbie: 10 punti, 8,06%  
Sabbie e/o Ghiaie : 9 punti, 7,26%

FON000

## **ELABORATO N. 4 - 3**

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### **ELABORAZIONI DI PERMEABILITA' PROVE LEFRANC**

Cantiere: RIMINI P.ZZ.LE KENNEDY

BH6 quota -3.0/-3.5 p.c.

**(K) Permeabilità a carico variabile in foro di sondaggio (AGI) -**

Area di base del foro di sondaggi in m<sup>2</sup>

A	0.00801	m <sup>2</sup>
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prova in risalita

h1 altezza falda al tempo t1

h1	m
----	---

t1	sec
----	-----

h2 altezza falda al tempo t2

h2	m
----	---

t2	sec
----	-----

Tratto di prova

L	0.5	m
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coefficiente

C=L se L>>D	0.5	m
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con D= diametro foro = 0.101 m



**GEOPROGET**  
Studio di Geologia

$$K = \frac{A}{C (t_2 - t_1)} \ln \left( \frac{h_1}{h_2} \right)$$

lettura 60-120 sec	H	t
	0.08	60
	0.14	120

K	=	1.40E-04	m/s
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lettura 180-240sec	H	t
	0.17	180
	0.21	240

K	=	5.64E-05	m/s
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K valore medio	=	9.80E-05	m/s
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Permeabilità media strato compreso tra -  
3.00 e -3.50 da p.c. sabbie e macerie -  
LITOTIPO VR

Cantiere: RIMINI P.ZZ.LE KENNEDY

BH6 quota -6.0/-6.5 p.c.

**(K) Permeabilità a carico variabile in foro di sondaggio (AGI) -**

Area di base del foro di sondaggi in m<sup>2</sup>

A	0.00801	m <sup>2</sup>
---	---------	----------------

prova in risalita

h1 altezza falda al tempo t1

h1	m
----	---

t1	sec
----	-----

h2 altezza falda al tempo t2

h2	m
----	---

t2	sec
----	-----

Tratto di prova

L	0.5	m
---	-----	---

coefficiente

C=L se L>>D	0.5	m
-------------	-----	---

con D= diametro foro = 0.101 m



$$K = \frac{A}{C (t_2 - t_1)} \ln \left( \frac{h_1}{h_2} \right)$$

lettura 60-120 sec	H	t
	0.06	60
	0.09	120

K	=	1.08E-04	m/s
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lettura 180-240sec	H	t
	0.12	180
	0.15	240

K	=	5.05E-05	m/s
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K valore medio	=	7.94E-05	m/s
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Permeabilità media strato compreso tra -  
6.00 e -6.50 da p.c.sabbie limose -  
LITOTIPO CLA



Cantiere: RIMINI P.ZZ.LE KENNEDY

BH6 quota -9.0/-9.5 p.c.

**(K) Permeabilità a carico variabile in foro di sondaggio (AGI) -**

Area di base del foro di sondaggi in m<sup>2</sup>

A	0.00801	m <sup>2</sup>
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prova in risalita

h1 altezza falda al tempo t1

h1	m
----	---

t1	sec
----	-----

h2 altezza falda al tempo t2

h2	m
----	---

t2	sec
----	-----

Tratto di prova

L	0.5	m
---	-----	---

coefficiente

C=L se L>>D	0.5	m
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con D= diametro foro = 0.101 m



**GEOPROGET**  
Studio di Geologia

$$K = \frac{A}{C (t_2 - t_1)} \ln \left( \frac{h_1}{h_2} \right)$$

lettura 60-120 sec	H	t
	0.04	60
	0.06	120

K	=	7.20E-05	m/s
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lettura 180-240sec	H	t
	0.07	180
	0.08	240

K	=	5.54E-05	m/s
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K valore medio	=	6.37E-05	m/s
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Permeabilità media strato compreso tra -  
9.00 e -9.50 da p.c.sabbie limose - LITOTIPI  
CLA / SL



Cantiere: RIMINI P.ZZ.LE KENNEDY

BH6 quota -12.0/-12.5 p.c.

**(K) Permeabilità a carico variabile in foro di sondaggio (AGI) -**

Area di base del foro di sondaggi in m2

A	0.00801	m <sup>2</sup>
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prova in risalita

h1 altezza falda al tempo t1

h1	m
----	---

t1	sec
----	-----

h2 altezza falda al tempo t2

h2	m
----	---

t2	sec
----	-----

Tratto di prova

L	0.5	m
---	-----	---

coefficiente

C=L se L>>D	0.5	m
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con D= diametro foro = 0.101 m



$$K = \frac{A}{C (t_2 - t_1)} \ln \left( \frac{h_1}{h_2} \right)$$

lettura 60-120 sec	H	t
	0.15	60
	0.22	120

K	=	1.02E-04	m/s
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lettura 180-240sec	H	t
	0.30	180
	0.37	240

K	=	5.60E-05	m/s
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K valore medio	=	7.91E-05	m/s
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Permeabilità media strato compreso tra -  
12.00 e -12.50 da p.c.sabbie limose -  
LITOTIPO SL

Cantiere: RIMINI P.ZZ.LE KENNEDY

BH10 quota -6.0/-7.0 p.c.

**(K) Permeabilità a carico variabile in foro di sondaggio (AGI) -**

Area di base del foro di sondaggi in m<sup>2</sup>

A	0.00801	m <sup>2</sup>
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prova in risalita

h1 altezza falda al tempo t1

h1	m
----	---

t1	sec
----	-----

h2 altezza falda al tempo t2

h2	m
----	---

t2	sec
----	-----

Tratto di prova

L	1	m
---	---	---

coefficiente

C=L se L>>D	1	m
-------------	---	---

con D= diametro foro = 0.101 m



**GEOPROGET**  
Studio di Geologia

$$K = \frac{A}{C (t_2 - t_1)} \ln \left( \frac{h_1}{h_2} \right)$$

lettura 180-240 sec	H	t
	0.004	180
	0.010	240

K	=	1.22E-04	m/s
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lettura 420-480sec	H	t
	0.020	420
	0.022	480

K	=	1.27E-05	m/s
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K valore medio	=	6.75E-05	m/s
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Permeabilità media strato compreso tra - 6.00 e -7.0 da p.c. limi argillo-sabbiosi organici - Litotipo CLA

Cantiere: RIMINI P.ZZ.LE KENNEDY

BH10 quota -9.0/-9.5 p.c.

**(K) Permeabilità a carico variabile in foro di sondaggio (AGI) -**

Area di base del foro di sondaggi in m<sup>2</sup>

A	0.00801	m <sup>2</sup>
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prova in risalita

h1 altezza falda al tempo t1

h1	m
----	---

t1	sec
----	-----

h2 altezza falda al tempo t2

h2	m
----	---

t2	sec
----	-----

Tratto di prova

L	0.5	m
---	-----	---

coefficiente

C=L se L>>D	0.5	m
-------------	-----	---

con D= diametro foro = 0.101 m



GEOPROGET  
Studio di Geologia

$$K = \frac{A}{C (t_2 - t_1)} \ln \left( \frac{h_1}{h_2} \right)$$

lettura 180-240 sec	H	t
	0.65	180
	0.85	240

K	=	7.16E-05	m/s
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lettura 420-480sec	H	t
	1.05	300
	1.15	360

K	=	2.43E-05	m/s
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K valore medio	=	4.79E-05	m/s
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Permeabilità media strato compreso tra -  
9.00 e -9.50 da p.c.sabbie limose -  
LITOTIPO SL

Cantiere: RIMINI P.ZZ.LE KENNEDY

BH10 quota -12.0/-12.5 p.c.

**(K) Permeabilità a carico variabile in foro di sondaggio (AGI) -**

Area di base del foro di sondaggi in m<sup>2</sup>

A	0.00801	m <sup>2</sup>
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prova in risalita

h1 altezza falda al tempo t1

h1	m
----	---

t1	sec
----	-----

h2 altezza falda al tempo t2

h2	m
----	---

t2	sec
----	-----

Tratto di prova

L	0.5	m
---	-----	---

coefficiente

C=L se L>>D	0.5	m
-------------	-----	---

con D= diametro foro = 0.101 m



**GEOPROGET**  
Studio di Geologia

$$K = \frac{A}{C (t_2 - t_1)} \ln \left( \frac{h_1}{h_2} \right)$$

lettura 180-240 sec	H	t
	0.48	180
	0.60	240

K	=	5.96E-05	m/s
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lettura 420-480sec	H	t
	0.88	420
	0.96	480

K	=	2.32E-05	m/s
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K valore medio	=	4.14E-05	m/s
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Permeabilità media strato compreso tra -  
12.00 e -12.50 da p.c.sabbie limose -  
LITOTIPO SL



Cantiere: RIMINI P.ZZ.LE KENNEDY

BH11 quota -3.0/-3.5 p.c.

**(K) Permeabilità a carico variabile in foro di sondaggio (AGI) -**

Area di base del foro di sondaggi in m<sup>2</sup>

A	0.00801	m <sup>2</sup>
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prova in risalita

h1 altezza falda al tempo t1

h1	m
----	---

t1	sec
----	-----

h2 altezza falda al tempo t2

h2	m
----	---

t2	sec
----	-----

Tratto di prova

L	0.5	m
---	-----	---

coefficiente

C=L se L>>D	0.5	m
-------------	-----	---

con D= diametro foro = 0.101 m



**GEOPROGET**  
Studio di Geologia

$$K = \frac{A}{C (t_2 - t_1)} \ln \left( \frac{h_1}{h_2} \right)$$

lettura 300-600 sec	H	t
	0.001	300
	0.002	600

K	=	3.70E-05	m/s
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lettura 1200-3600	H	t
	0.005	1200
	0.010	3600

K	=	4.63E-06	m/s
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K valore medio	=	2.08E-05	m/s
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Permeabilità media strato compreso tra - 3.00 e -3.50 da p.c. limi argillo-sabbiosi organici - LITOTIPO CLA

Cantiere: RIMINI P.ZZ.LE KENNEDY

BH11 quota -6.0/-6.5 p.c.

**(K) Permeabilità a carico variabile in foro di sondaggio (AGI) -**

Area di base del foro di sondaggi in m<sup>2</sup>

A	0.00801	m <sup>2</sup>
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prova in risalita

h1 altezza falda al tempo t1

h1	m
----	---

t1	sec
----	-----

h2 altezza falda al tempo t2

h2	m
----	---

t2	sec
----	-----

Tratto di prova

L	0.5	m
---	-----	---

coefficiente

C=L se L>>D	0.5	m
-------------	-----	---

con D= diametro foro = 0.101 m



**GEOPROGET**  
Studio di Geologia

$$K = \frac{A}{C (t_2 - t_1)} \ln \left( \frac{h_1}{h_2} \right)$$

lettura 300-600sec	H	t
	0.007	300
	0.008	600

K	=	7.13E-06	m/s
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lettura 900-1800	H	t
	0.008	900
	0.010	1800

K	=	3.97E-06	m/s
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K valore medio	=	5.55E-06	m/s
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Permeabilità media strato compreso tra -6.00 e -6.50 da p.c. limi argillo-sabbiosi organici LITOTIPO CLA

Cantiere: RIMINI P.ZZ.LE KENNEDY

BH11 quota -9.0/-9.5 p.c.

**(K) Permeabilità a carico variabile in foro di sondaggio (AGI) -**

Area di base del foro di sondaggi in m<sup>2</sup>

A	0.00801	m <sup>2</sup>
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prova in risalita

h1 altezza falda al tempo t1

h1	m
----	---

t1	sec
----	-----

h2 altezza falda al tempo t2

h2	m
----	---

t2	sec
----	-----

Tratto di prova

L	0.5	m
---	-----	---

coefficiente

C=L se L>>D	0.5	m
-------------	-----	---

con D= diametro foro = 0.101 m



**GEOPROGET**  
Studio di Geologia

$$K = \frac{A}{C (t_2 - t_1)} \ln \left( \frac{h_1}{h_2} \right)$$

lettura 180-240sec	H	t
	0.440	180
	0.540	240

K	=	5.47E-05	m/s
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lettura 300-600	H	t
	0.640	300
	0.740	360

K	=	3.88E-05	m/s
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K valore medio	=	4.67E-05	m/s
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Permeabilità media strato compreso tra -  
9.00 e -9.50 da p.c. sabbie limose -  
LITOTIPO SL

Cantiere: RIMINI P.ZZ.LE KENNEDY

BH11 quota -11.0/-11.8 p.c.

**(K) Permeabilità a carico variabile in foro di sondaggio (AGI) -**

Area di base del foro di sondaggi in m<sup>2</sup>

A	0.00801	m <sup>2</sup>
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prova in risalita

h1 altezza falda al tempo t1

h1	m
----	---

t1	sec
----	-----

h2 altezza falda al tempo t2

h2	m
----	---

t2	sec
----	-----

Tratto di prova

L	0.8	m
---	-----	---

coefficiente

C=L se L>>D	0.8	m
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con D= diametro foro = 0.101 m



GEOPROGET  
Studio di Geologia

$$K = \frac{A}{C (t_2 - t_1)} \ln \left( \frac{h_1}{h_2} \right)$$

lettura 180-240 sec	H	t
	0.300	180
	0.350	240

K	=	2.57E-05	m/s
---	---	----------	-----

lettura 300-360	H	t
	0.450	300
	0.500	360

K	=	1.76E-05	m/s
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K valore medio	=	2.16E-05	m/s
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Permeabilità media strato compreso tra -  
11.00 e -11.80 da p.c. sabbie limose -  
LITOTIPO SL



Cantiere: RIMINI P.ZZ.LE KENNEDY

BH12 quota -3.0/-3.5 p.c.

**(K) Permeabilità a carico variabile in foro di sondaggio (AGI) -**

Area di base del foro di sondaggi in m2

A	0.00801	m <sup>2</sup>
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prova in risalita

h1 altezza falda al tempo t1

h1	m
----	---

t1	sec
----	-----

h2 altezza falda al tempo t2

h2	m
----	---

t2	sec
----	-----

Tratto di prova

L	0.5	m
---	-----	---

coefficiente

C=L se L>>D	0.5	m
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con D= diametro foro = 0.101 m



**GEOPROGET**  
Studio di Geologia

$$K = \frac{A}{C(t_2 - t_1)} \ln\left(\frac{h_1}{h_2}\right)$$

lettura 180-240 sec	H	t
	0.500	180
	0.630	240

K	=	6.17E-05	m/s
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lettura 300-360	H	t
	0.640	300
	0.860	360

K	=	7.89E-05	m/s
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K valore medio	=	7.03E-05	m/s
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Permeabilità media strato compreso tra -  
3.00 e -3.50 da p.c.sabbie limose e macerie -  
LITOTIPO VR

Cantiere: RIMINI P.ZZ.LE KENNEDY

BH12 quota -6.0/-6.5 p.c.

**(K) Permeabilità a carico variabile in foro di sondaggio (AGI) -**

Area di base del foro di sondaggi in m<sup>2</sup>

A	0.00801	m <sup>2</sup>
---	---------	----------------

prova in risalita

h1 altezza falda al tempo t1

h1	m
----	---

t1	sec
----	-----

h2 altezza falda al tempo t2

h2	m
----	---

t2	sec
----	-----

Tratto di prova

L	0.5	m
---	-----	---

coefficiente

C=L se L>>D	0.5	m
-------------	-----	---

con D= diametro foro = 0.101 m



**GEOPROGET**  
Studio di Geologia

$$K = \frac{A}{C (t_2 - t_1)} \ln \left( \frac{h_1}{h_2} \right)$$

lettura 180-240 sec	H	t
	0.620	180
	0.770	240

K	=	5.78E-05	m/s
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lettura 300-360	H	t
	0.920	300
	1.060	360

K	=	3.78E-05	m/s
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K valore medio	=	4.78E-05	m/s
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Permeabilità media strato compreso tra -  
6.00 e -6.50 da p.c.sabbie limose

Cantiere: RIMINI P.ZZ.LE KENNEDY

BH12 quota -9.0/-9.5 p.c.

**(K) Permeabilità a carico variabile in foro di sondaggio (AGI) -**

Area di base del foro di sondaggi in m<sup>2</sup>

A	0.00801	m <sup>2</sup>
---	---------	----------------

prova in risalita

h1 altezza falda al tempo t1

h1	m
----	---

t1	sec
----	-----

h2 altezza falda al tempo t2

h2	m
----	---

t2	sec
----	-----

Tratto di prova

L	0.5	m
---	-----	---

coefficiente

C=L se L>>D	0.5	m
-------------	-----	---

con D= diametro foro = 0.101 m



$$K = \frac{A}{C (t_2 - t_1)} \ln \left( \frac{h_1}{h_2} \right)$$

lettura 180-240 sec	H	t
	0.410	180
	0.540	240

K	=	7.35E-05	m/s
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lettura 300-360	H	t
	0.680	300
	0.810	360

K	=	4.67E-05	m/s
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K valore medio	=	6.01E-05	m/s
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Permeabilità media strato compreso tra -  
9.00 e -9.50 da p.c.sabbie limose -  
LITOTIPO SL

Cantiere: RIMINI P.ZZ.LE KENNEDY

BH12 quota -12.0/-12.5 p.c.

**(K) Permeabilità a carico variabile in foro di sondaggio (AGI) -**

Area di base del foro di sondaggi in m<sup>2</sup>

A	0.00801	m <sup>2</sup>
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prova in risalita

h1 altezza falda al tempo t1

h1	m
----	---

t1	sec
----	-----

h2 altezza falda al tempo t2

h2	m
----	---

t2	sec
----	-----

Tratto di prova

L	0.5	m
---	-----	---

coefficiente

C=L se L>>D	0.5	m
-------------	-----	---

con D= diametro foro = 0.101 m



**GEOPROGET**  
Studio di Geologia

$$K = \frac{A}{C (t_2 - t_1)} \ln \left( \frac{h_1}{h_2} \right)$$

lettura 180-240 sec	H	t
	0.380	180
	0.440	240

K	=	3.91E-05	m/s
---	---	----------	-----

lettura 300-360	H	t
	0.480	300
	0.510	360

K	=	1.62E-05	m/s
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K valore medio	=	2.77E-05	m/s
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Permeabilità media strato compreso tra -  
12.00 e -12.50 da p.c.sabbie limose -  
LITOTIPO SL



Cantiere: RIMINI P.ZZ.LE KENNEDY

BH13 quota -3.0/-3.5 p.c.

**(K) Permeabilità a carico variabile in foro di sondaggio (AGI) -**

Area di base del foro di sondaggi in m<sup>2</sup>

A	0.00801	m <sup>2</sup>
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prova in risalita

h1 altezza falda al tempo t1

h1	m
----	---

t1	sec
----	-----

h2 altezza falda al tempo t2

h2	m
----	---

t2	sec
----	-----



**GEOPROGET**  
Studio di Geologia

Tratto di prova

L	0.5	m
---	-----	---

coefficiente

C=L se L>>D	0.5	m
-------------	-----	---

con D= diametro foro = 0.101 m

$$K = \frac{A}{C(t_2 - t_1)} \ln\left(\frac{h_1}{h_2}\right)$$

lettura 180-240 sec	H	t
	0.600	180
	0.680	240

K	=	3.34E-05	m/s
---	---	----------	-----

lettura 300-600	H	t
	0.800	300
	0.880	360

K	=	2.54E-05	m/s
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K valore medio	=	2.94E-05	m/s
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Permeabilità media strato compreso tra -  
3.00 e -3.50 da p.c.sabbie limose

Cantiere: RIMINI P.ZZ.LE KENNEDY

BH13 quota -6.0/-6.5 p.c.

**(K) Permeabilità a carico variabile in foro di sondaggio (AGI) -**

Area di base del foro di sondaggi in m<sup>2</sup>

A	0.00801	m <sup>2</sup>
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prova in risalita

h1 altezza falda al tempo t1

h1	m
----	---

t1	sec
----	-----

h2 altezza falda al tempo t2

h2	m
----	---

t2	sec
----	-----

Tratto di prova

L	0.5	m
---	-----	---

coefficiente

C=L se L>>D	0.5	m
-------------	-----	---

con D= diametro foro = 0.101 m



**GEOPROGET**  
Studio di Geologia

$$K = \frac{A}{C (t_2 - t_1)} \ln \left( \frac{h_1}{h_2} \right)$$

lettura 180-240 sec	H	t
	0.030	180
	0.037	240

K	=	5.60E-05	m/s
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lettura 300-600	H	t
	0.045	300
	0.052	360

K	=	3.86E-05	m/s
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K valore medio	=	4.73E-05	m/s
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Permeabilità media strato compreso tra -  
6.00 e -6.50 da p.c.sabbie limose e limi  
sabbioso argillosi - LITOTIPI CLA/SL

Cantiere: RIMINI P.ZZ.LE KENNEDY

BH13 quota -9.0/-9.5 p.c.

**(K) Permeabilità a carico variabile in foro di sondaggio (AGI) -**

Area di base del foro di sondaggi in m<sup>2</sup>

A	0.00801	m <sup>2</sup>
---	---------	----------------

prova in risalita

h1 altezza falda al tempo t1

h1	m
----	---

t1	sec
----	-----

h2 altezza falda al tempo t2

h2	m
----	---

t2	sec
----	-----



**GEOPROGET**  
Studio di Geologia

Tratto di prova

L	0.5	m
---	-----	---

coefficiente

C=L se L>>D	0.5	m
-------------	-----	---

con D= diametro foro = 0.101 m

$$K = \frac{A}{C (t_2 - t_1)} \ln \left( \frac{h_1}{h_2} \right)$$

lettura 180-240 sec	H	t
	0.600	180
	0.730	240

K	=	5.23E-05	m/s
---	---	----------	-----

lettura 300-600	H	t
	0.850	300
	1.000	360

K	=	4.34E-05	m/s
---	---	----------	-----

K valore medio	=	4.79E-05	m/s
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Permeabilità media strato compreso tra -  
9.00 e -9.50 da p.c.sabbie limose -  
LITOTIPO SL



Cantiere: RIMINI P.ZZ.LE KENNEDY

BH13 quota -12.0/-12.5 p.c.

**(K) Permeabilità a carico variabile in foro di sondaggio (AGI) -**

Area di base del foro di sondaggi in m<sup>2</sup>

A	0.00801	m <sup>2</sup>
---	---------	----------------

prova in risalita

h1 altezza falda al tempo t1

h1	m
----	---

t1	sec
----	-----

h2 altezza falda al tempo t2

h2	m
----	---

t2	sec
----	-----

Tratto di prova

L	0.5	m
---	-----	---

coefficiente

C=L se L>>D	0.5	m
-------------	-----	---

con D= diametro foro = 0.101 m



**GEOPROGET**  
Studio di Geologia

$$K = \frac{A}{C(t_2 - t_1)} \ln\left(\frac{h_1}{h_2}\right)$$

lettura 180-240 sec	H	t
	1.060	180
	1.300	240

K	=	5.45E-05	m/s
---	---	----------	-----

lettura 300-600	H	t
	1.520	300
	1.660	360

K	=	2.35E-05	m/s
---	---	----------	-----

K valore medio	=	3.90E-05	m/s
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Permeabilità media strato compreso tra -  
12.00 e -12.50 da p.c.sabbie limose -  
LITOTIPO SL

**ELABORATO N. 4 - 4**

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**ELABORAZIONI DI PERMEABILITA' - "IC- STB" ROBERTSON  
PROVE CPTU**



# Penetrometria statica CPTU 1

Unità di misura: Kg, cm

ELABORATO n. 4-4



GEOPROGET - Studio di Geologia

via Ceccarini, 171 - 47838 Riccione (RN)

tel. 0541/606464 - email vannoni.fabio1960@libero.it

LAVORO: HERA - VASCA KENNEDY

LOCALITA': P.zze Kennedy - Rimini

DATA: elaborazione 01/05/2015

note:

falda: -2.5

## Litotipi

A Argille=1.9 t/mc  
AL alternanze =1.8 t/mc  
H Sabbie/limi poco addensati=1.8 t/mc  
S sabbie med. addens.=1.9 t/mc  
D sabbie dense=2.0 t/mc  
G ghiaie=2.1 t/mc  
SD Substrato decomp.=2.0 t/mc  
SU Substrato=2.1 t/mc

z	qcNqt bar - Kg/cm <sup>2</sup>	FsN bar - Kg/cm <sup>2</sup>	σ <sub>vc</sub> (kPa)	σ' <sub>vc</sub> (kPa)	Qi	Qtn	F	lc	lcN2	n	permeability K m/sec Robertson '05	Coesivo / Incoerente	Litotipo	Falda
0.1	0.00	0.00	1.80	1.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.2	0.00	0.00	3.60	3.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.3	0.00	0.00	5.40	5.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.4	0.00	0.00	7.20	7.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.5	0.00	0.00	9.00	9.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.6	0.00	0.00	10.80	10.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.7	0.00	0.00	12.60	12.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.8	0.00	0.00	14.40	14.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.9	0.00	0.00	16.20	16.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.0	0.00	0.00	18.00	18.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.1	0.00	0.00	19.80	19.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.2	0.00	0.00	21.60	21.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.3	0.00	0.00	23.40	23.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.4	0.00	0.00	25.20	25.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.5	0.00	0.00	27.00	27.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.6	0.00	0.00	28.80	28.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.7	0.00	0.00	30.60	30.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.8	0.00	0.00	32.40	32.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.9	0.00	0.00	34.20	34.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.0	0.00	0.00	36.00	36.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.1	0.00	0.00	37.80	37.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.2	0.00	0.00	39.60	39.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.3	0.00	0.00	41.40	41.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.4	0.00	0.00	43.20	43.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.5	0.00	0.00	45.00	45.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.6	0.00	0.00	47.00	46.02	-1.02	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.7	0.00	0.00	49.00	47.04	-1.04	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.8	0.00	0.00	51.00	48.06	-1.06	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.9	0.00	0.00	53.00	49.08	-1.08	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.0	0.00	0.00	55.00	50.10	-1.10	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.1	0.00	0.00	57.00	51.11	-1.12	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.2	0.00	0.00	59.00	52.13	-1.13	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.3	0.00	0.00	61.00	53.15	-1.15	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.4	0.00	0.00	63.00	54.17	-1.16	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.5	0.00	0.00	65.00	55.19	-1.18	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.6	0.00	0.00	67.00	56.21	-1.19	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.7	0.00	0.00	69.00	57.23	-1.21	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.8	0.00	0.00	71.00	58.25	-1.22	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.9	0.00	0.00	73.00	59.27	-1.23	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.0	0.00	0.00	75.00	60.29	-1.24	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.1	0.00	0.00	77.00	61.30	-1.26	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.2	0.00	0.00	79.00	62.32	-1.27	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.3	0.00	0.00	81.00	63.34	-1.28	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.4	0.00	0.00	83.00	64.36	-1.29	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.5	0.00	0.00	85.00	65.38	-1.30	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.6	0.00	0.00	87.00	66.40	-1.31	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.7	0.00	0.00	89.00	67.42	-1.32	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.8	0.00	0.00	91.00	68.44	-1.33	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.9	0.00	0.00	93.00	69.46	-1.34	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
5.0	0.00	0.00	95.00	70.48	-1.35	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
5.1	0.00	0.00	97.00	71.49	-1.36	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
5.2	0.00	0.00	99.00	72.51	-1.37	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
5.3	0.00	0.00	101.00	73.53	-1.37	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
5.4	0.00	0.00	103.00	74.55	-1.38	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
5.5	0.00	0.00	105.00	75.57	-1.39	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
5.6	0.00	0.00	107.00	76.59	-1.40	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
5.7	0.00	0.00	109.00	77.61	-1.40	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
5.8	0.00	0.00	111.00	78.63	-1.41	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
5.9	0.00	0.00	113.00	79.65	-1.42	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
6.0	0.00	0.00	115.00	80.66	-1.43	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
6.1	46.45	0.16	117.00	81.68	54.30	50.11	0.36	1.90	1.93	0.63	1.18334E-05	o	S	W
6.2	40.32	0.17	119.00	82.70	46.33	43.27	0.44	2.00	2.03	0.66	6.12371E-06	o	S	W
6.3	43.18	0.14	121.00	83.72	49.10	45.82	0.34	1.93	1.96	0.64	9.91754E-06	o	S	W
6.4	35.43	0.11	123.00	84.74	39.52	37.25	0.33	2.02	2.04	0.67	5.63485E-06	o	S	W
6.5	31.79	0.15	125.00	85.76	34.87	33.24	0.51	2.14	2.16	0.71	2.48502E-06	o	S	W
6.6	28.47	0.06	127.00	86.78	30.69	29.24	0.23	2.07	2.09	0.69	4.04626E-06	o	S	W
6.7	20.27	0.23	129.00	87.80	21.16	20.71	1.19	2.51	2.51	0.85	2.05073E-07	o	S	W
6.8	20.31	0.36	131.00	88.82	20.94	20.65	1.87	2.62	2.62	0.89	9.6075E-08	o	S	W
6.9	24.20	0.43	133.00	89.84	24.92	24.53	1.90	2.56	2.56	0.87	1.43917E-07	o	S	W

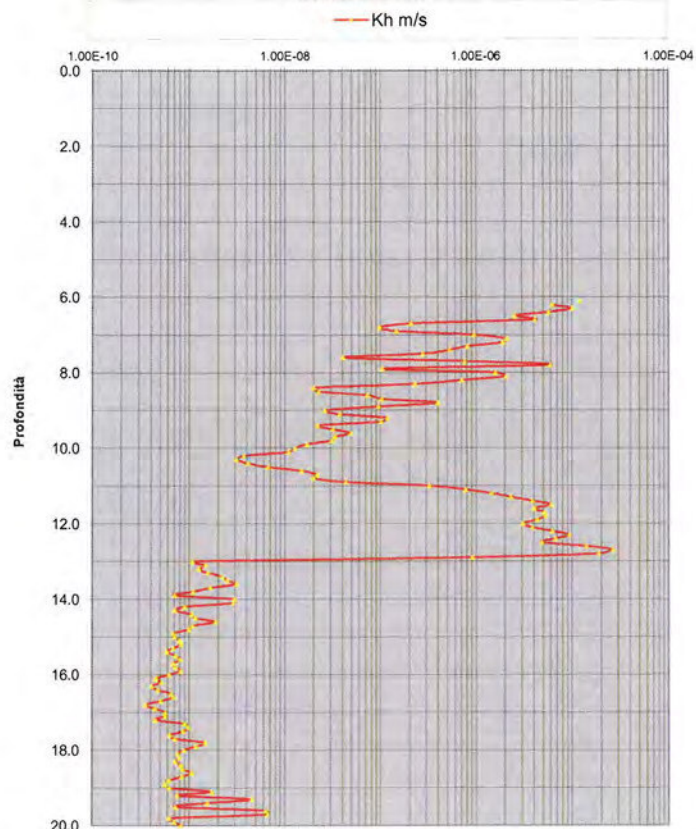


7.0	34.92	0.37	135.00	90.85	36.18	35.29	1.09	2.29	2.30	0.77	9.31526E-07	o	S	W
7.1	45.87	0.53	137.00	91.87	47.44	46.19	1.02	2.17	2.18	0.73	2.05846E-08	o	S	W
7.2	42.19	0.45	139.00	92.89	43.01	42.02	0.94	2.19	2.20	0.73	1.8736E-06	o	S	W
7.3	37.36	0.46	141.00	93.91	37.48	36.86	1.27	2.31	2.32	0.78	7.89438E-07	o	S	W
7.4	34.78	0.48	143.00	94.93	34.39	33.96	1.45	2.38	2.38	0.80	5.20688E-07	o	S	W
7.5	24.76	0.29	145.00	95.95	23.78	23.58	1.23	2.47	2.47	0.84	2.71888E-07	o	S	W
7.6	16.57	0.30	147.00	96.97	15.23	15.19	1.99	2.75	2.75	0.94	4.01391E-08	o	S	W
7.7	34.78	0.38	149.00	97.99	33.26	33.03	1.13	2.33	2.33	0.79	7.43416E-07	o	S	W
7.8	52.37	0.36	151.00	99.01	50.31	49.94	0.80	2.03	2.04	0.67	9.82659E-06	o	S	W
7.9	26.39	0.56	153.00	100.03	24.33	24.30	2.26	2.61	2.61	0.89	1.02293E-07	o	S	W
8.0	43.42	0.49	155.00	101.05	40.58	40.55	0.99	2.22	2.22	0.75	1.56196E-06	o	S	W
8.1	41.52	0.36	157.00	102.06	38.33	38.41	0.77	2.19	2.19	0.73	2.01588E-06	o	S	W
8.2	36.73	0.42	159.00	103.08	33.38	33.50	1.20	2.34	2.34	0.79	6.94088E-07	o	S	W
8.3	25.95	0.32	161.00	104.10	22.88	22.97	1.33	2.50	2.50	0.85	2.24171E-07	o	S	W
8.4	19.95	0.64	163.00	105.12	17.05	17.05	3.47	2.85	2.85	0.99	1.97038E-08	o	S	W
8.5	24.12	0.93	165.00	106.14	20.72	20.73	4.13	2.83	2.83	0.98	2.23061E-08	o	S	W
8.6	23.71	0.47	167.00	107.16	20.13	20.22	2.14	2.66	2.66	0.92	7.21202E-08	o	S	W
8.7	31.79	0.80	169.00	108.18	27.23	27.41	2.66	2.62	2.61	0.90	1.61018E-07	o	S	W
8.8	32.98	0.41	171.00	109.20	28.03	28.40	1.31	2.43	2.42	0.83	3.92313E-07	o	S	W
8.9	26.05	0.50	173.00	110.22	21.59	21.76	2.05	2.63	2.63	0.90	9.35199E-08	o	S	W
9.0	24.35	0.82	175.00	111.24	19.88	19.92	3.64	2.81	2.81	0.98	2.58579E-08	o	S	W
9.1	27.09	0.87	177.00	112.25	22.08	22.17	3.45	2.76	2.76	0.96	3.68496E-08	o	S	W
9.2	34.26	0.84	179.00	113.27	28.06	28.39	2.58	2.60	2.59	0.89	1.16548E-07	o	S	W
9.3	30.21	0.66	181.00	114.29	24.32	24.60	2.33	2.62	2.62	0.90	9.97287E-08	o	S	W
9.4	22.05	0.67	183.00	115.31	17.16	17.18	3.33	2.83	2.83	0.99	2.15968E-08	o	S	W
9.5	26.93	0.89	185.00	116.33	21.10	21.19	3.55	2.78	2.78	0.97	3.13231E-08	o	S	W
9.6	26.79	0.69	187.00	117.35	20.78	20.95	2.77	2.72	2.72	0.94	4.8456E-08	o	S	W
9.7	29.12	1.02	189.00	118.37	22.52	22.64	3.74	2.77	2.77	0.97	3.29397E-08	o	S	W
9.8	26.85	0.86	191.00	119.39	20.44	20.54	3.45	2.78	2.78	0.97	3.06561E-08	o	S	W
9.9	24.44	0.93	193.00	120.41	18.29	18.29	4.13	2.87	2.87	1.00	1.66783E-08	o	S	W
10.0	23.94	1.02	195.00	121.43	17.72	17.72	4.61	2.91	2.91	1.00	1.24932E-08	o	S	W
10.1	23.24	1.01	197.00	122.44	16.99	16.99	4.74	2.93	2.93	1.00	1.0794E-08	o	S	W
10.2	18.14	0.95	199.00	123.46	12.79	12.79	5.87	3.09	3.09	1.00	3.65464E-09	o	S	W
10.3	17.49	0.94	201.00	124.48	12.16	12.16	6.06	3.11	3.11	1.00	3.05556E-09	o	S	W
10.4	19.05	0.99	203.00	125.50	13.26	13.26	5.83	3.07	3.07	1.00	4.02437E-09	o	S	W
10.5	20.74	0.94	205.00	126.52	14.44	14.44	5.04	3.01	3.01	1.00	6.53157E-09	o	S	W
10.6	25.29	0.99	207.00	127.54	17.81	17.81	4.28	2.89	2.89	1.00	1.4648E-08	o	S	W
10.7	26.93	0.94	209.00	128.56	18.90	18.93	3.78	2.84	2.84	0.99	2.17793E-08	o	S	W
10.8	27.56	1.03	211.00	129.58	19.21	19.22	4.04	2.85	2.85	1.00	1.95913E-08	o	S	W
10.9	33.78	1.10	213.00	130.60	23.72	23.98	3.47	2.74	2.74	0.96	4.29533E-08	o	S	W
11.0	44.14	0.89	215.00	131.62	31.23	32.49	1.80	2.47	2.45	0.85	3.16378E-07	o	S	W
11.1	49.25	0.72	217.00	132.63	34.76	36.66	1.30	2.35	2.33	0.80	7.58621E-07	o	S	W
11.2	49.79	0.51	219.00	133.65	34.87	37.18	0.92	2.26	2.24	0.77	1.41394E-06	o	S	W
11.3	54.41	0.49	221.00	134.67	37.95	40.82	0.79	2.20	2.17	0.74	2.25779E-06	o	S	W
11.4	60.75	0.48	223.00	135.69	42.23	45.89	0.69	2.13	2.10	0.72	3.80267E-06	o	S	W
11.5	59.21	0.32	225.00	136.71	40.80	44.75	0.48	2.07	2.03	0.69	5.98309E-06	o	S	W
11.6	61.66	0.47	227.00	137.73	42.22	46.10	0.68	2.12	2.09	0.71	3.96413E-06	o	S	W
11.7	63.04	0.43	229.00	138.75	42.88	47.10	0.60	2.09	2.05	0.70	5.0691E-06	o	S	W
11.8	65.71	0.47	231.00	139.77	44.42	48.92	0.63	2.09	2.05	0.70	5.21989E-06	o	S	W
11.9	57.47	0.36	233.00	140.79	38.35	42.16	0.55	2.12	2.08	0.71	4.27209E-06	o	S	W
12.0	62.85	0.56	235.00	141.81	41.78	45.74	0.79	2.16	2.13	0.73	3.04373E-06	o	S	W
12.1	61.47	0.46	237.00	142.82	40.52	44.62	0.66	2.13	2.10	0.72	3.80704E-06	o	S	W
12.2	69.26	0.47	239.00	143.84	45.53	50.69	0.60	2.07	2.03	0.69	6.13161E-06	o	S	W
12.3	67.77	0.33	241.00	144.86	44.18	49.69	0.43	2.01	1.97	0.67	9.30083E-06	o	S	W
12.4	61.50	0.31	243.00	145.88	39.65	44.38	0.44	2.06	2.02	0.69	6.57767E-06	o	S	W
12.5	58.23	0.32	245.00	146.90	37.18	41.43	0.49	2.11	2.06	0.71	4.77952E-06	o	S	W
12.6	83.86	0.47	247.00	147.92	53.89	61.48	0.49	1.96	1.91	0.65	1.37284E-05	o	S	W
12.7	95.09	0.44	249.00	148.94	60.90	70.56	0.41	1.88	1.82	0.62	2.59532E-05	o	S	W
12.8	98.71	0.61	251.00	149.96	62.84	72.46	0.54	1.92	1.87	0.64	1.85249E-05	o	S	W
12.9	52.07	0.64	253.00	150.98	32.12	34.76	1.09	2.33	2.30	0.80	8.94517E-07	-	L	W
13.0	16.66	1.04	255.00	152.00	9.07	9.07	7.33	3.27	3.27	1.00	1.06161E-09	-	L	W
13.1	15.20	0.67	257.00	153.01	8.05	8.05	5.33	3.22	3.22	1.00	1.46288E-09	-	L	W
13.2	14.77	0.67	259.00	154.03	7.72	7.72	5.52	3.24	3.24	1.00	1.2369E-09	-	L	W
13.3	15.93	0.73	261.00	155.05	8.39	8.39	5.48	3.21	3.21	1.00	1.53612E-09	-	L	W
13.4	16.88	0.70	263.00	156.07	8.91	8.91	4.92	3.16	3.16	1.00	2.16368E-09	-	L	W
13.5	17.99	0.77	265.00	157.09	9.54	9.54	5.04	3.15	3.15	1.00	2.44234E-09	-	L	W
13.6	18.64	0.75	267.00	158.11	9.87	9.87	4.67	3.11	3.11	1.00	3.04366E-09	-	L	W
13.7	16.25	0.71	269.00	159.13	8.32	8.32	5.24	3.20	3.20	1.00	1.83397E-09	-	L	W
13.8	14.69	0.66	271.00	160.15	7.30	7.30	5.52	3.26	3.26	1.00	1.08055E-09	-	L	W
13.9	11.57	0.57	273.00	161.17	5.34	5.34	5.80	3.38	3.38	1.00	6.97132E-10	-	L	W
14.0	15.56	0.44	275.00	162.19	7.71	7.71	3.40	3.12	3.12	1.00	2.91731E-09	-	L	W
14.1	17.75	0.64	277.00	163.20	8.96	8.96	4.28	3.13	3.13	1.00	2.82611E-09	-	L	W
14.2	15.73	0.92	279.00	164.22	7.69	7.69	7.07	3.31	3.31	1.00	8.79806E-10	-	L	W
14.3	12.90	0.68	281.00	165.24	5.95	5.95	6.71	3.38	3.38	1.00	6.96798E-10	-	L	W
14.4	16.04	0.81	283.00	166.26	7.75	7.75	6.09	3.27	3.27	1.00	1.04384E-09	-	L	W
14.5	14.10	0.52	285.00	167.28	6.56	6.56	4.63	3.26	3.26	1.00	1.13953E-09	-	L	W
14.6	15.51	0.52	287.00	168.30	7.33	7.33	4.12	3.19	3.19	1.00	1.84307E-09	-	L	W
14.7	15.55	0.71	289.00	169.32	7.29	7.29	5.56	3.26	3.26	1.00	1.06582E-09	-	L	W
14.8	15.29	0.70	291.00	170.34	7.09	7.09	5.63	3.28	3.28	1.00	9.74881E-10	-	L	W
14.9	13.69	0.79	293.00	171.36	6.12	6.12	7.31	3.40	3.40	1.00	6.68587E-10	-	L	W
15.0	13.38	0.69	295.00	172.38	5.90	5.90	6.62	3.38	3.38	1.00	6.98044E-10	-	L	W
15.1	13.62	0.63	297.00	173.39	5.99	5.99	5.90	3.35	3.35	1.00	7.79416E-10	-	L	W
15.2	14.25	0.68	299.00	174.41	6.29	6.29	6.00	3.34	3.34	1.00	8.12499E-10	-	L	W
15.3	13.91	0.79	301.00	175.43	6.06	6.06	7.21	3.40	3.40	1.00	6.89194E-10	-	L	W
15.4	12.94	0.75	303.00	176.45	5.47	5.47	7.59	3.45	3.45	1.00	5.75865E-10	-	L	W
15.5	13.22	0.61	305.00	177.47	5.58	5.58	6.02	3.38	3.38	1.00	7.106E-10	-	L	W
15.6	13.68	0.58	307.00	178.49	5.79	5.79	5.48	3.34	3.34					



15.8	13.38	0.61	311.00	180.53	5.54	5.54	5.93	3.38	3.38	1.00	7.12418E-10	-	L	W
15.9	13.61	0.55	313.00	181.55	5.62	5.62	5.21	3.34	3.34	1.00	8.04185E-10	-	L	W
16.0	11.48	0.49	315.00	182.57	4.43	4.43	5.29	3.43	3.43	1.00	6.09057E-10	-	L	W
16.1	9.24	0.33	317.00	183.58	3.21	3.21	4.92	3.53	3.53	1.00	4.4497E-10	-	L	W
16.2	9.27	0.27	319.00	184.60	3.19	3.19	4.03	3.48	3.48	1.00	5.10888E-10	-	L	W
16.3	9.44	0.40	321.00	185.62	3.26	3.26	5.78	3.56	3.56	1.00	4.00652E-10	-	L	W
16.4	9.95	0.40	323.00	186.64	3.50	3.50	5.31	3.51	3.51	1.00	4.63717E-10	-	L	W
16.5	10.96	0.36	325.00	187.66	3.99	3.99	4.22	3.41	3.41	1.00	6.40783E-10	-	L	W
16.6	12.27	0.45	327.00	188.68	4.64	4.64	4.97	3.40	3.40	1.00	6.73194E-10	-	L	W
16.7	11.76	0.63	329.00	189.70	4.34	4.34	6.62	3.49	3.49	1.00	4.97966E-10	-	L	W
16.8	10.37	0.63	331.00	190.72	3.59	3.59	8.00	3.61	3.61	1.00	3.46934E-10	-	L	W
16.9	10.39	0.48	333.00	191.74	3.58	3.58	6.03	3.54	3.54	1.00	4.31229E-10	-	L	W
17.0	11.26	0.44	335.00	192.76	3.99	3.99	5.01	3.45	3.45	1.00	5.6207E-10	-	L	W
17.1	11.84	0.53	337.00	193.77	4.25	4.25	5.60	3.46	3.46	1.00	5.54964E-10	-	L	W
17.2	10.97	0.54	339.00	194.79	3.78	3.78	6.38	3.53	3.53	1.00	4.39032E-10	-	L	W
17.3	13.73	0.42	341.00	195.81	5.13	5.13	4.06	3.31	3.31	1.00	8.79381E-10	-	L	W
17.4	16.44	0.66	343.00	196.83	6.44	6.44	5.04	3.28	3.28	1.00	9.6094E-10	-	L	W
17.5	18.18	1.01	345.00	197.85	7.26	7.26	6.82	3.32	3.32	1.00	8.53108E-10	-	L	W
17.6	16.61	1.13	347.00	198.87	6.44	6.44	8.55	3.42	3.42	1.00	6.18653E-10	-	L	W
17.7	16.30	0.91	349.00	199.89	6.24	6.24	7.07	3.38	3.38	1.00	7.03149E-10	-	L	W
17.8	19.81	0.86	351.00	200.91	7.92	7.92	5.24	3.22	3.22	1.00	1.44935E-09	-	L	W
17.9	21.44	1.19	353.00	201.93	8.66	8.66	6.61	3.25	3.25	1.00	1.16291E-09	-	L	W
18.0	20.92	1.39	355.00	202.95	8.36	8.36	8.00	3.32	3.32	1.00	8.63257E-10	-	L	W
18.1	19.21	1.29	357.00	203.96	7.48	7.48	8.25	3.36	3.36	1.00	7.47907E-10	-	L	W
18.2	18.80	1.16	359.00	204.98	7.24	7.24	7.62	3.35	3.35	1.00	7.73554E-10	-	L	W
18.3	17.60	1.07	361.00	206.00	6.62	6.62	7.64	3.38	3.38	1.00	7.01296E-10	-	L	W
18.4	19.09	1.13	363.00	207.02	7.28	7.28	7.29	3.34	3.34	1.00	8.08575E-10	-	L	W
18.5	18.48	0.98	365.00	208.04	6.95	6.95	6.62	3.33	3.33	1.00	8.35233E-10	-	L	W
18.6	19.51	0.91	367.00	209.06	7.39	7.39	5.74	3.27	3.27	1.00	1.03737E-09	-	L	W
18.7	18.49	0.98	369.00	210.08	6.87	6.87	6.63	3.33	3.33	1.00	8.22479E-10	-	L	W
18.8	16.27	0.96	371.00	211.10	5.79	5.79	7.65	3.43	3.43	1.00	6.06849E-10	-	L	W
18.9	14.51	0.75	373.00	212.12	4.94	4.94	6.91	3.46	3.46	1.00	5.55755E-10	-	L	W
19.0	13.27	0.48	375.00	213.14	4.34	4.34	5.07	3.42	3.42	1.00	6.14469E-10	-	L	W
19.1	16.61	0.40	377.00	214.15	5.84	5.84	3.09	3.20	3.20	1.00	1.69094E-09	-	L	W
19.2	15.71	0.65	379.00	215.17	5.39	5.39	5.47	3.37	3.37	1.00	7.38362E-10	-	L	W
19.3	22.99	0.61	381.00	216.19	8.66	8.66	3.17	3.06	3.06	1.00	4.39216E-09	-	L	W
19.4	20.97	0.85	383.00	217.21	7.70	7.70	4.94	3.22	3.22	1.00	1.50577E-09	-	L	W
19.5	15.67	0.66	385.00	218.23	5.27	5.27	5.59	3.38	3.38	1.00	7.07859E-10	-	L	W
19.6	26.63	0.75	387.00	219.25	10.14	10.14	3.29	3.01	3.01	1.00	6.12348E-09	-	L	W
19.7	29.35	0.94	389.00	220.27	11.29	11.29	3.68	3.01	3.01	1.00	6.52758E-09	-	L	W
19.8	14.91	0.66	391.00	221.29	4.83	4.83	5.96	3.43	3.43	1.00	6.10293E-10	-	L	W
19.9	13.66	0.41	393.00	222.31	4.25	4.25	4.25	3.39	3.39	1.00	6.86532E-10	-	L	W
20.0	14.75	0.43	395.00	223.33	4.70	4.70	3.99	3.34	3.34	1.00	8.07169E-10	-	L	W

Coefficiente di permeabilità orizzontale  
Robertson 2009





# Penetrometria statica CPTU 2

Unità di misura: Kg, cm

ELABORATO n. 4-4



GEOPROGET - Studio di Geologia

via Ceccarini, 171 - 47838 Riccione (RN)

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## Litotipi

A Argille=1.9 t/mc  
AL alternanze =1.8 t/mc  
H Sabbie/limi poco addensati=1.8 t/mc  
S sabbie med. addens.=1.9 t/mc  
D sabbie dense=2.0 t/mc  
G ghiaie=2.1 t/mc  
SD Substrato decomp.=2.0 t/mc  
SU Substrato=2.1 t/mc

LAVORO: HERA - VASCA KENNEDY

LOCALITA': P.zze Kennedy - Rimini

DATA: elaborazione 01/05/2015

note:

falda: -2.5

Z	qcN/qt bar - Kg/cm <sup>2</sup>	FsN bar - Kg/cm <sup>2</sup>	σvc (kPa)	σ'vc (kPa)	Qi	Qtn	F	lc	lcN2	n	permeability K m/sec Robertson '09	Coesivo / Incoerente	Litotipo	Falda
0.1	0.00	0.00	1.80	1.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.2	0.00	0.00	3.60	3.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.3	0.00	0.00	5.40	5.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.4	0.00	0.00	7.20	7.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.5	0.00	0.00	9.00	9.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.6	0.00	0.00	10.80	10.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.7	0.00	0.00	12.60	12.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.8	0.00	0.00	14.40	14.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.9	0.00	0.00	16.20	16.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.0	0.00	0.00	18.00	18.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.1	0.00	0.00	19.80	19.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.2	0.00	0.00	21.60	21.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.3	0.00	0.00	23.40	23.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.4	0.00	0.00	25.20	25.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.5	0.00	0.00	27.00	27.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.6	0.00	0.00	28.80	28.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.7	0.00	0.00	30.60	30.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.8	0.00	0.00	32.40	32.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.9	0.00	0.00	34.20	34.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.0	0.00	0.00	36.00	36.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.1	0.00	0.00	37.80	37.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.2	0.00	0.00	39.60	39.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.3	0.00	0.00	41.40	41.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.4	0.00	0.00	43.20	43.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.5	0.00	0.00	45.00	45.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.6	0.00	0.00	47.00	46.02	-1.02	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.7	0.00	0.00	49.00	47.04	-1.04	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.8	0.00	0.00	51.00	48.06	-1.06	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.9	0.00	0.00	53.00	49.08	-1.08	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.0	0.00	0.00	55.00	50.10	-1.10	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.1	0.00	0.00	57.00	51.11	-1.12	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.2	0.00	0.00	59.00	52.13	-1.13	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.3	0.00	0.00	61.00	53.15	-1.15	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.4	0.00	0.00	63.00	54.17	-1.16	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.5	0.00	0.00	65.00	55.19	-1.18	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.6	0.00	0.00	67.00	56.21	-1.19	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.7	0.00	0.00	69.00	57.23	-1.21	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.8	0.00	0.00	71.00	58.25	-1.22	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.9	0.00	0.00	73.00	59.27	-1.23	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.0	0.00	0.00	75.00	60.29	-1.24	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.1	0.00	0.00	77.00	61.30	-1.26	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.2	0.00	0.00	79.00	62.32	-1.27	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.3	0.00	0.00	81.00	63.34	-1.28	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.4	0.00	0.00	83.00	64.36	-1.29	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.5	0.00	0.00	85.00	65.38	-1.30	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.6	0.00	0.00	87.00	66.40	-1.31	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.7	0.00	0.00	89.00	67.42	-1.32	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.8	0.00	0.00	91.00	68.44	-1.33	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.9	0.00	0.00	93.00	69.46	-1.34	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
5.0	0.00	0.00	95.00	70.48	-1.35	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
5.1	29.98	0.17	97.00	71.49	39.73	35.85	0.57	2.11	2.15	0.70	2.58817E-06	o	V	W
5.2	31.59	0.21	99.00	72.51	41.32	37.54	0.69	2.14	2.17	0.71	2.2348E-06	o	V	W
5.3	42.44	0.25	101.00	73.53	55.19	49.32	0.51	1.96	2.00	0.65	7.2777E-06	o	V	W
5.4	59.64	0.31	103.00	74.55	77.02	67.98	0.45	1.81	1.85	0.59	2.05419E-05	o	V	W
5.5	50.69	0.28	105.00	75.57	64.35	57.61	0.47	1.89	1.93	0.62	1.21919E-05	o	V	W
5.6	44.33	0.20	107.00	76.59	55.32	49.90	0.40	1.91	1.95	0.63	1.03679E-05	o	V	W
5.7	50.05	0.30	109.00	77.61	61.80	56.05	0.51	1.92	1.96	0.63	1.00988E-05	o	V	W
5.8	48.47	0.26	111.00	78.63	59.00	53.75	0.46	1.92	1.95	0.63	1.02747E-05	o	V	W
5.9	43.11	0.27	113.00	79.65	51.63	47.60	0.54	2.00	2.03	0.66	6.09885E-06	o	V	W
6.0	52.27	0.44	115.00	80.66	62.07	57.47	0.73	2.00	2.03	0.66	6.19451E-06	o	V	W
6.1	43.48	0.36	117.00	81.68	50.74	47.44	0.72	2.07	2.09	0.69	3.87355E-06	o	V	W
6.2	28.83	0.23	119.00	82.70	32.72	31.17	0.84	2.27	2.28	0.76	1.02264E-06	o	V	W
6.3	63.46	0.42	121.00	83.72	72.84	67.72	0.57	1.88	1.91	0.62	1.42016E-05	o	V	W
6.4	60.08	0.49	123.00	84.74	68.03	63.86	0.71	1.96	1.98	0.65	8.5257E-06	o	S	W
6.5	36.09	0.89	125.00	85.76	39.79	38.74	2.55	2.48	2.49	0.84	2.46139E-07	o	S	W
6.6	49.50	0.41	127.00	86.78	54.44	51.78	0.71	2.04	2.06	0.68	4.95336E-06	o	S	W
6.7	44.87	0.21	129.00	87.80	48.62	46.24	0.40	1.96	1.98	0.65	8.35448E-06	o	S	W
6.8	42.40	0.26	131.00	88.82	45.31	43.44	0.54	2.05	2.06	0.68	4.77716E-06	o	S	W
6.9	34.67	0.36	133.00	89.84	36.34	35.35	1.09	2.29	2.30	0.77	9.35298E-07	o	S	W

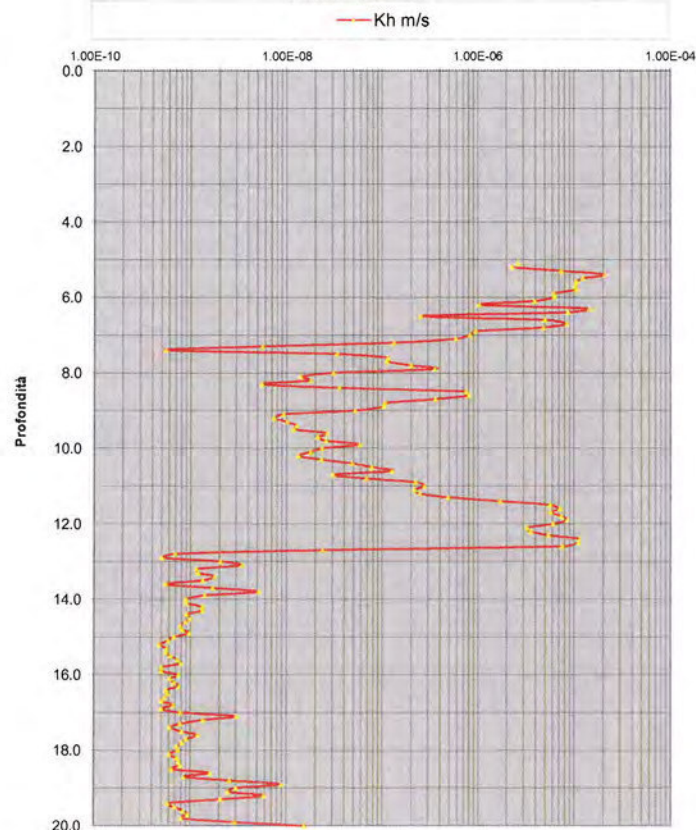


7.0	38.36	0.50	135.00	90.85	39.89	38.93	1.36	2.31	2.32	0.78	8.15191E-07	o	S	W
7.1	31.84	0.38	137.00	91.87	32.47	31.83	1.24	2.36	2.37	0.80	5.77308E-07	o	S	W
7.2	26.55	0.55	139.00	92.89	26.51	26.24	2.20	2.57	2.58	0.88	1.30173E-07	o	S	W
7.3	14.82	0.71	141.00	93.91	13.97	13.97	5.26	3.03	3.03	1.00	8.88751E-09	o	S	W
7.4	6.05	0.35	143.00	94.93	4.74	4.74	6.70	3.46	3.46	1.00	5.44159E-10	o	S	W
7.5	14.50	0.24	145.00	95.95	13.30	13.27	1.82	2.77	2.77	0.95	3.30736E-08	o	S	W
7.6	24.57	0.46	147.00	96.97	23.32	23.20	2.00	2.60	2.60	0.89	1.13891E-07	o	S	W
7.7	26.61	0.57	149.00	97.99	25.10	25.00	2.25	2.60	2.60	0.89	1.10852E-07	o	S	W
7.8	34.36	0.76	151.00	99.01	32.48	32.38	2.30	2.52	2.52	0.86	1.97201E-07	o	S	W
7.9	33.03	0.50	153.00	100.03	30.83	30.76	1.58	2.44	2.44	0.83	3.47802E-07	o	S	W
8.0	20.18	0.55	155.00	101.05	18.03	18.03	2.95	2.79	2.79	0.96	3.05331E-08	o	S	W
8.1	22.91	1.10	157.00	102.06	20.46	20.46	5.17	2.90	2.90	1.00	1.38245E-08	o	S	W
8.2	23.82	1.06	159.00	103.08	21.11	21.11	4.74	2.86	2.86	0.99	1.76845E-08	o	S	W
8.3	17.57	0.92	161.00	104.10	15.00	15.00	5.77	3.03	3.03	1.00	5.47062E-09	o	S	W
8.4	26.32	0.92	163.00	105.12	22.99	23.03	3.71	2.77	2.77	0.96	3.51052E-08	o	S	W
8.5	43.93	0.72	165.00	106.14	39.01	39.39	1.45	2.33	2.33	0.79	7.45105E-07	o	S	W
8.6	39.46	0.45	167.00	107.16	34.53	34.94	1.18	2.32	2.32	0.79	7.93844E-07	o	S	W
8.7	31.18	0.38	169.00	108.18	26.68	26.98	1.29	2.44	2.43	0.83	3.54873E-07	o	S	W
8.8	28.63	0.60	171.00	109.20	24.13	24.31	2.24	2.61	2.61	0.90	1.04545E-07	o	S	W
8.9	31.76	0.78	173.00	110.22	26.67	26.90	2.59	2.62	2.61	0.90	1.01855E-07	o	S	W
9.0	25.89	0.67	175.00	111.24	21.24	21.36	2.76	2.71	2.71	0.94	8.14151E-08	o	S	W
9.1	19.77	0.84	177.00	112.25	15.68	15.68	4.68	2.96	2.96	1.00	9.14338E-09	o	S	W
9.2	19.12	0.86	179.00	113.27	14.97	14.97	4.97	2.99	2.99	1.00	7.29457E-09	o	S	W
9.3	19.55	0.76	181.00	114.29	15.18	15.18	4.30	2.94	2.94	1.00	9.98598E-09	o	S	W
9.4	21.47	0.84	183.00	115.31	16.66	16.66	4.25	2.91	2.91	1.00	1.2682E-08	o	S	W
9.5	20.98	0.81	185.00	116.33	16.09	16.09	4.25	2.92	2.92	1.00	1.10754E-08	o	S	W
9.6	26.69	0.94	187.00	117.35	20.70	20.77	3.80	2.81	2.81	0.98	2.61742E-08	o	S	W
9.7	26.87	1.06	189.00	118.37	20.65	20.68	4.26	2.84	2.84	0.99	2.08461E-08	o	S	W
9.8	30.44	1.27	191.00	119.39	23.39	23.46	4.44	2.81	2.81	0.98	2.54647E-08	o	S	W
9.9	33.91	1.08	193.00	120.41	26.00	26.29	3.37	2.70	2.69	0.94	5.78318E-08	o	S	W
10.0	28.13	1.09	195.00	121.43	21.10	21.15	4.15	2.83	2.83	0.99	2.31203E-08	o	S	W
10.1	26.30	1.05	197.00	122.44	19.44	19.44	4.33	2.86	2.86	1.00	1.75348E-08	o	S	W
10.2	25.18	1.09	199.00	123.46	18.38	18.38	4.72	2.91	2.91	1.00	1.39228E-08	o	S	W
10.3	28.68	1.11	201.00	124.48	20.97	21.02	4.15	2.83	2.83	0.99	2.37779E-08	o	S	W
10.4	32.60	1.01	203.00	125.50	23.84	24.10	3.31	2.72	2.72	0.95	4.76902E-08	o	S	W
10.5	34.49	0.91	205.00	126.52	25.09	25.52	2.82	2.66	2.65	0.92	7.64453E-08	o	S	W
10.6	31.75	0.57	207.00	127.54	22.77	23.32	1.91	2.59	2.58	0.90	1.25221E-07	o	S	W
10.7	28.91	0.93	209.00	128.56	20.42	20.54	3.48	2.79	2.79	0.98	3.00973E-08	o	S	W
10.8	36.09	1.05	211.00	129.58	25.67	26.10	3.08	2.68	2.67	0.93	6.77487E-08	o	S	W
10.9	42.22	0.97	213.00	130.60	30.05	31.08	2.06	2.51	2.50	0.87	2.30015E-07	o	S	W
11.0	41.76	0.84	215.00	131.62	29.46	30.59	1.79	2.48	2.47	0.86	2.74634E-07	o	S	W
11.1	39.95	0.72	217.00	132.63	27.88	28.87	1.90	2.52	2.51	0.87	2.13714E-07	o	S	W
11.2	41.83	0.88	219.00	133.65	29.03	30.15	1.88	2.50	2.49	0.86	2.42764E-07	o	S	W
11.3	50.51	0.96	221.00	134.67	35.11	36.87	1.69	2.41	2.39	0.83	4.78869E-07	o	S	W
11.4	61.42	0.79	223.00	135.69	42.72	45.82	1.13	2.24	2.21	0.76	1.68555E-07	o	S	W
11.5	68.35	0.52	225.00	136.71	47.35	51.88	0.66	2.08	2.04	0.70	5.57317E-06	o	S	W
11.6	64.20	0.37	227.00	137.73	44.03	48.53	0.50	2.05	2.01	0.68	7.02239E-06	o	S	W
11.7	59.76	0.34	229.00	138.75	40.56	44.63	0.50	2.08	2.04	0.70	5.64907E-06	o	S	W
11.8	65.75	0.38	231.00	139.77	44.45	49.23	0.50	2.04	2.00	0.68	7.30255E-06	o	S	W
11.9	66.61	0.35	233.00	140.79	44.71	49.75	0.47	2.02	1.98	0.67	8.39196E-06	o	S	W
12.0	58.67	0.30	235.00	141.81	38.89	43.11	0.45	2.07	2.03	0.69	6.00621E-06	o	S	W
12.1	55.60	0.38	237.00	142.82	36.49	40.06	0.61	2.16	2.12	0.73	3.23292E-06	o	S	W
12.2	59.03	0.42	239.00	143.84	38.55	42.47	0.63	2.14	2.11	0.72	8.53437E-06	o	S	W
12.3	69.44	0.51	241.00	144.86	45.31	50.42	0.65	2.09	2.05	0.70	8.36097E-06	o	S	W
12.4	83.43	0.54	243.00	145.88	54.38	61.53	0.56	1.99	1.94	0.66	1.12979E-05	o	S	W
12.5	76.01	0.41	245.00	146.90	49.04	55.56	0.48	1.99	1.95	0.66	1.08951E-05	o	S	W
12.6	65.97	0.34	247.00	147.92	42.04	47.36	0.46	2.05	2.00	0.68	7.48362E-06	o	S	W
12.7	24.95	0.59	249.00	148.94	14.74	14.75	2.60	2.82	2.82	1.00	2.33945E-08	o	S	W
12.8	12.74	0.82	251.00	149.96	6.65	6.65	8.01	3.39	3.39	1.00	6.77145E-10	-	L	W
12.9	9.63	0.57	253.00	150.98	4.57	4.57	7.22	3.49	3.49	1.00	4.92082E-10	-	L	W
13.0	12.77	0.34	255.00	152.00	6.56	6.56	3.31	3.17	3.17	1.00	2.02375E-09	-	L	W
13.1	15.95	0.48	257.00	153.01	8.53	8.53	3.60	3.10	3.10	1.00	3.40343E-09	-	L	W
13.2	15.29	0.78	259.00	154.03	8.05	8.05	6.11	3.26	3.26	1.00	1.13298E-09	-	L	W
13.3	15.18	0.74	261.00	155.05	7.91	7.91	5.85	3.25	3.25	1.00	1.18044E-09	-	L	W
13.4	16.64	0.76	263.00	156.07	8.76	8.76	5.39	3.19	3.19	1.00	1.75694E-09	-	L	W
13.5	15.65	0.74	265.00	157.09	8.08	8.08	5.66	3.23	3.23	1.00	1.31065E-09	-	L	W
13.6	10.66	0.63	267.00	158.11	4.92	4.92	7.07	3.46	3.46	1.00	5.41612E-10	-	L	W
13.7	14.05	0.46	269.00	159.13	6.96	6.96	4.04	3.20	3.20	1.00	1.6763E-09	-	L	W
13.8	17.89	0.49	271.00	160.15	9.26	9.26	3.22	3.04	3.04	1.00	5.06415E-09	-	L	W
13.9	16.41	0.78	273.00	161.17	8.28	8.28	5.71	3.23	3.23	1.00	1.37973E-09	-	L	W
14.0	14.18	0.71	275.00	162.19	6.87	6.87	6.19	3.31	3.31	1.00	8.72382E-10	-	L	W
14.1	13.30	0.57	277.00	163.20	6.29	6.29	5.43	3.31	3.31	1.00	8.61332E-10	-	L	W
14.2	14.20	0.52	279.00	164.22	6.78	6.78	4.50	3.24	3.24	1.00	1.29874E-09	-	L	W
14.3	15.12	0.61	281.00	165.24	7.27	7.27	4.96	3.24	3.24	1.00	1.30083E-09	-	L	W
14.4	15.24	0.81	283.00	166.26	7.28	7.28	6.49	3.31	3.31	1.00	8.92164E-10	-	L	W
14.5	15.69	0.78	285.00	167.28	7.49	7.49	6.08	3.28	3.28	1.00	9.71182E-10	-	L	W
14.6	15.59	0.87	287.00	168.30	7.38	7.38	6.79	3.31	3.31	1.00	8.71064E-10	-	L	W
14.7	14.85	0.87	289.00	169.32	6.89	6.89	7.24	3.35	3.35	1.00	7.66482E-10	-	L	W
14.8	14.76	0.80	291.00	170.34	6.78	6.78	6.71	3.34	3.34	1.00	8.03875E-10	-	L	W
14.9	15.81	0.78	293.00	171.36	7.33	7.33	6.07	3.29	3.29	1.00	9.51406E-10	-	L	W
15.0	14.59	0.95	295.00	172.38	6.58	6.58	8.16	3.40	3.40	1.00	6.58791E-10	-	L	W
15.1	13.69	0.92	297.00	173.39	6.02	6.02	8.55	3.45	3.45	1.00	5.75865E-10	-	L	W
15.2	12.05	0.81	299.00	174.41	5.06	5.06	8.86	3.51	3.51	1.00	4.63115E-10	-	L	W
15.3	11.80	0.66	301.00	175.43	4.88	4.88	6.73	3.45	3.45	1.00	5.58998E-10	-	L	W
15.4	12.04	0.65	303.00	176.45	4.97	4.97	7.16	3.46	3.46	1.00	5.42705E-10	-	L	W
15.5	12.54	0.63	305.00	177.47	5.21	5.21	6.63	3.43	3.43	1.00	6.08573E-10	-	L	W
15.6	13.42	0.63	307.00	178.49	5.65	5.65	6.03	3.37	3.37	1.				



15.8	12.35	0.75	311.00	180.53	4.98	4.98	8.11	3.50	3.50	1.00	4.90776E-10	-	L	W
15.9	11.32	0.63	313.00	181.55	4.39	4.39	6.87	3.50	3.50	1.00	4.89036E-10	-	L	W
16.0	12.89	0.50	315.00	182.57	5.20	5.20	5.16	3.36	3.36	1.00	7.41431E-10	-	L	W
16.1	12.85	0.64	317.00	183.58	5.13	5.13	6.54	3.43	3.43	1.00	6.05217E-10	-	L	W
16.2	12.94	0.57	319.00	184.60	5.14	5.14	5.81	3.40	3.40	1.00	6.67012E-10	-	L	W
16.3	13.52	0.56	321.00	185.62	5.41	5.41	5.41	3.36	3.36	1.00	7.48092E-10	-	L	W
16.4	13.05	0.73	323.00	186.64	5.12	5.12	7.38	3.46	3.46	1.00	5.46719E-10	-	L	W
16.5	13.65	0.79	325.00	187.66	5.40	5.40	7.54	3.45	3.45	1.00	5.69065E-10	-	L	W
16.6	12.76	0.69	327.00	188.68	4.90	4.90	7.22	3.47	3.47	1.00	5.30251E-10	-	L	W
16.7	12.42	0.68	329.00	189.70	4.68	4.68	7.42	3.49	3.49	1.00	4.9343E-10	-	L	W
16.8	13.00	0.55	331.00	190.72	4.95	4.95	5.65	3.41	3.41	1.00	6.52876E-10	-	L	W
16.9	10.87	0.48	333.00	191.74	3.82	3.82	5.67	3.50	3.50	1.00	4.87199E-10	-	L	W
17.0	14.64	0.63	335.00	192.76	5.71	5.71	5.59	3.35	3.35	1.00	7.7297E-10	-	L	W
17.1	19.28	0.57	337.00	193.77	8.01	8.01	3.55	3.12	3.12	1.00	2.97991E-09	-	L	W
17.2	19.51	0.91	339.00	194.79	8.08	8.08	5.63	3.23	3.23	1.00	1.33222E-09	-	L	W
17.3	17.89	1.12	341.00	195.81	7.21	7.21	7.70	3.36	3.36	1.00	7.63667E-10	-	L	W
17.4	15.98	1.07	343.00	196.83	6.21	6.21	8.51	3.43	3.43	1.00	5.98127E-10	-	L	W
17.5	17.23	0.94	345.00	197.85	6.79	6.79	6.83	3.34	3.34	1.00	7.92987E-10	-	L	W
17.6	19.90	0.99	347.00	198.87	8.06	8.06	6.02	3.25	3.25	1.00	1.17052E-09	-	L	W
17.7	20.24	1.27	349.00	199.89	8.18	8.18	7.56	3.31	3.31	1.00	8.87003E-10	-	L	W
17.8	19.26	1.24	351.00	200.91	7.65	7.65	7.83	3.34	3.34	1.00	8.01146E-10	-	L	W
17.9	17.64	1.11	353.00	201.93	6.81	6.81	7.83	3.38	3.38	1.00	7.0873E-10	-	L	W
18.0	17.47	1.02	355.00	202.95	6.69	6.69	7.31	3.37	3.37	1.00	7.36163E-10	-	L	W
18.1	15.89	1.00	357.00	203.96	5.88	5.88	8.08	3.44	3.44	1.00	5.88925E-10	-	L	W
18.2	16.13	0.83	359.00	204.98	5.96	5.96	6.63	3.38	3.38	1.00	7.05594E-10	-	L	W
18.3	16.49	0.82	361.00	206.00	6.09	6.09	6.37	3.36	3.36	1.00	7.46767E-10	-	L	W
18.4	16.81	0.83	363.00	207.02	6.21	6.21	6.30	3.35	3.35	1.00	7.68496E-10	-	L	W
18.5	14.80	0.72	365.00	208.04	5.22	5.22	6.45	3.42	3.42	1.00	6.23723E-10	-	L	W
18.6	17.94	0.56	367.00	209.06	6.65	6.65	3.92	3.21	3.21	1.00	1.57875E-09	-	L	W
18.7	16.41	0.68	369.00	210.08	5.90	5.90	5.35	3.33	3.33	1.00	8.30466E-10	-	L	W
18.8	18.74	0.48	371.00	211.10	6.94	6.94	3.17	3.14	3.14	1.00	2.52172E-09	-	L	W
18.9	26.55	0.65	373.00	212.12	10.51	10.51	2.82	2.96	2.96	1.00	8.7318E-09	-	L	W
19.0	23.44	0.83	375.00	213.14	9.02	9.02	4.23	3.12	3.12	1.00	2.94012E-09	-	L	W
19.1	24.45	1.03	377.00	214.15	9.43	9.43	4.98	3.15	3.15	1.00	2.42472E-09	-	L	W
19.2	27.11	0.84	379.00	215.17	10.59	10.59	3.61	3.02	3.02	1.00	5.78616E-09	-	L	W
19.3	21.03	0.73	381.00	216.19	7.77	7.77	4.25	3.17	3.17	1.00	2.01926E-09	-	L	W
19.4	13.67	0.57	383.00	217.21	4.41	4.41	5.72	3.45	3.45	1.00	5.68368E-10	-	L	W
19.5	12.47	0.32	385.00	218.23	3.83	3.83	3.70	3.40	3.40	1.00	6.7328E-10	-	L	W
19.6	13.40	0.31	387.00	219.25	4.22	4.22	3.25	3.33	3.33	1.00	8.26625E-10	-	L	W
19.7	14.23	0.33	389.00	220.27	4.57	4.57	3.20	3.30	3.30	1.00	9.17163E-10	-	L	W
19.8	13.87	0.37	391.00	221.29	4.38	4.38	3.71	3.35	3.35	1.00	7.84138E-10	-	L	W
19.9	18.12	0.35	393.00	222.31	6.22	6.22	2.47	3.12	3.12	1.00	2.84818E-09	-	L	W
20.0	27.58	0.47	395.00	223.33	10.33	10.33	1.98	2.89	2.89	1.00	1.49989E-08	o	AL	W

Coefficiente di permeabilità orizzontale  
Robertson 2009





# Penetrometria statica CPTU 3

Unità di misura: Kg, cm

ELABORATO n. 4-4



GEOPROGET - Studio di Geologia

via Ceccarini, 171 - 47838 Riccione (RN)

tel. 0541/606464 - email vannoni.fabio1960@libero.it

LAVORO: HERA - VASCA KENNEDY

LOCALITA': P.zzle Kennedy - Rimini

DATA: elaborazione 01/05/2015

note:

falda: -2.5

## Litotipi

A Argille=1.9 t/mc  
AL alternanze =1.8 t/mc  
H Sabbie/limi poco addensati=1.8 t/mc  
S sabbie med. addens.=1.9 t/mc  
D sabbie dense=2.0 t/mc  
G ghiaie=2.1 t/mc  
SD Substrato decomp.=2.0 t/mc  
SU Substrato=2.1 t/mc

Z	qc/Nqt bar - Kg/cm <sup>2</sup>	FsN bar - Kg/cm <sup>2</sup>	σ <sub>vc</sub> (kPa)	σ' <sub>vc</sub> (kPa)	Qi	Qtn	F	Io	IoN2	n	permeability K m/sec Robertson '09	Coesivo / Incoerente	Litotipo	Falda
0.1	0.00	0.00	1.80	1.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.2	0.00	0.00	3.60	3.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.3	0.00	0.00	5.40	5.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.4	0.00	0.00	7.20	7.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.5	0.00	0.00	9.00	9.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.6	0.00	0.00	10.80	10.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.7	0.00	0.00	12.60	12.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.8	0.00	0.00	14.40	14.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.9	0.00	0.00	16.20	16.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.0	0.00	0.00	18.00	18.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.1	0.00	0.00	19.80	19.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.2	0.00	0.00	21.60	21.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.3	0.00	0.00	23.40	23.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.4	0.00	0.00	25.20	25.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.5	0.00	0.00	27.00	27.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.6	0.00	0.00	28.80	28.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.7	0.00	0.00	30.60	30.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.8	0.00	0.00	32.40	32.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.9	0.00	0.00	34.20	34.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.0	0.00	0.00	36.00	36.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.1	0.00	0.00	37.80	37.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.2	0.00	0.00	39.60	39.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.3	0.00	0.00	41.40	41.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.4	0.00	0.00	43.20	43.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.5	0.00	0.00	45.00	45.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.6	0.00	0.00	47.00	46.02	-1.02	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.7	0.00	0.00	49.00	47.04	-1.04	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.8	0.00	0.00	51.00	48.06	-1.06	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.9	0.00	0.00	53.00	49.08	-1.08	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.0	0.00	0.00	55.00	50.10	-1.10	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.1	0.00	0.00	57.00	51.11	-1.12	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.2	0.00	0.00	59.00	52.13	-1.13	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.3	0.00	0.00	61.00	53.15	-1.15	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.4	0.00	0.00	63.00	54.17	-1.16	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.5	0.00	0.00	65.00	55.19	-1.18	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.6	0.00	0.00	67.00	56.21	-1.19	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.7	0.00	0.00	69.00	57.23	-1.21	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.8	0.00	0.00	71.00	58.25	-1.22	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.9	0.00	0.00	73.00	59.27	-1.23	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.0	0.00	0.00	75.00	60.29	-1.24	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.1	0.00	0.00	77.00	61.30	-1.26	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.2	0.00	0.00	79.00	62.32	-1.27	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.3	0.00	0.00	81.00	63.34	-1.28	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.4	0.00	0.00	83.00	64.36	-1.29	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.5	0.00	0.00	85.00	65.38	-1.30	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.6	0.00	0.00	87.00	66.40	-1.31	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.7	0.00	0.00	89.00	67.42	-1.32	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.8	0.00	0.00	91.00	68.44	-1.33	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.9	0.00	0.00	93.00	69.46	-1.34	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
5.0	0.00	0.00	95.00	70.48	-1.35	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
5.1	47.43	0.23	97.00	71.49	63.66	55.71	0.43	1.87	1.92	0.62	1.28534E-06	o	V	W
5.2	48.04	0.28	99.00	72.51	63.56	56.14	0.50	1.90	1.95	0.63	1.05576E-05	o	V	W
5.3	46.82	0.27	101.00	73.53	61.03	54.27	0.50	1.92	1.96	0.63	9.57003E-05	o	S	W
5.4	23.23	0.24	103.00	74.55	29.16	27.40	1.08	2.36	2.39	0.80	4.92961E-07	o	S	W
5.5	16.74	0.30	105.00	75.57	20.32	19.70	1.91	2.63	2.64	0.89	9.23163E-08	o	S	W
5.6	17.86	0.40	107.00	76.59	21.45	20.91	2.39	2.67	2.68	0.91	5.42511E-08	o	S	W
5.7	26.51	0.41	109.00	77.61	32.07	30.56	1.60	2.43	2.44	0.82	3.35144E-07	o	S	W
5.8	22.20	0.16	111.00	78.63	26.26	24.86	0.77	2.33	2.35	0.78	6.1335E-07	o	S	W
5.9	24.16	0.14	113.00	79.65	28.31	26.69	0.60	2.25	2.27	0.76	1.08941E-06	o	S	W
6.0	19.76	0.42	115.00	80.66	22.58	22.05	2.25	2.64	2.64	0.90	8.19071E-08	o	S	W
6.1	11.16	0.39	117.00	81.68	11.96	11.96	3.55	2.98	2.98	1.00	3.04237E-09	o	S	W
6.2	14.10	0.27	119.00	82.70	15.27	15.09	2.08	2.76	2.76	0.94	3.75047E-08	o	S	W
6.3	32.81	0.21	121.00	83.72	36.96	35.08	0.67	2.17	2.19	0.73	1.96679E-06	o	S	W
6.4	36.65	0.20	123.00	84.74	40.93	38.79	0.57	2.10	2.12	0.70	3.26716E-06	o	S	W
6.5	61.48	0.20	125.00	85.76	68.79	64.19	0.33	1.79	1.82	0.59	2.65792E-05	o	S	W
6.6	53.40	0.26	127.00	86.78	58.84	55.51	0.42	1.90	1.92	0.62	1.30503E-05	o	S	W
6.7	33.15	0.30	129.00	87.80	35.54	34.34	0.95	2.26	2.27	0.76	1.09393E-06	o	S	W
6.8	35.44	0.22	131.00	88.82	37.63	36.27	0.64	2.15	2.17	0.72	2.29125E-06	o	S	W
6.9	52.85	0.16	133.00	89.84	56.18	53.60	0.30	1.86	1.88	0.61	1.76703E-05	o	S	W

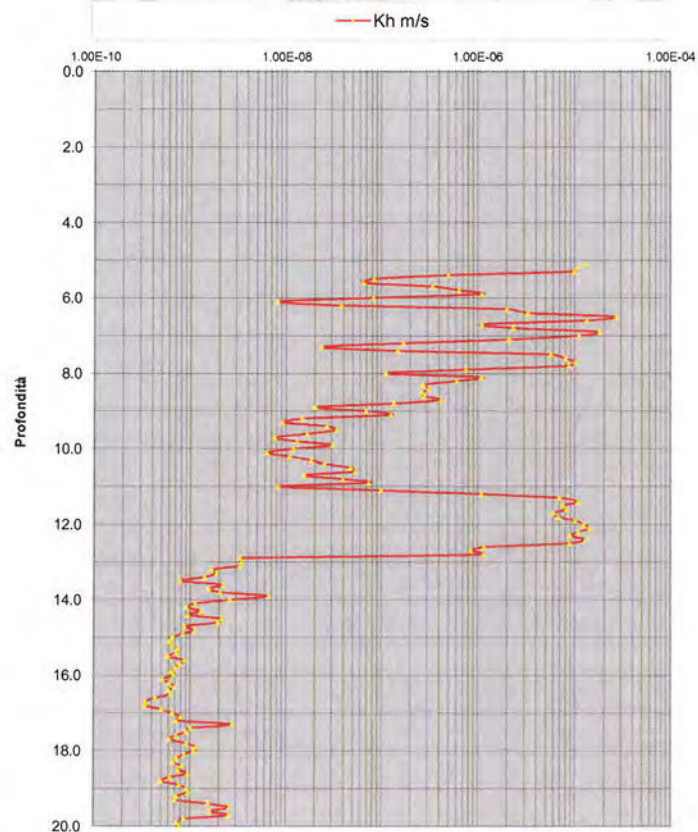


7.0	48.84	0.21	135.00	90.85	51.19	49.20	0.37	1.93	1.95	0.64	1.09205E-05	o	S	W
7.1	34.54	0.21	137.00	91.87	35.35	34.42	0.62	2.17	2.18	0.73	2.07029E-06	o	S	W
7.2	18.00	0.16	139.00	92.89	17.49	17.28	0.99	2.54	2.54	0.86	1.88620E-07	o	S	W
7.3	17.40	0.49	141.00	93.91	16.65	16.62	3.08	2.82	2.82	0.97	2.33121E-06	o	S	W
7.4	31.91	0.78	143.00	94.93	31.44	31.18	2.56	2.56	2.56	0.87	1.48795E-07	o	S	W
7.5	60.90	0.58	145.00	95.95	60.69	59.63	0.83	2.03	2.04	0.68	6.57898E-08	o	S	W
7.6	49.38	0.25	147.00	96.97	48.39	47.67	0.45	1.99	1.99	0.66	7.83180E-08	o	S	W
7.7	54.91	0.29	149.00	97.99	53.39	52.76	0.46	1.95	1.96	0.64	1.00751E-08	o	S	W
7.8	56.15	0.34	151.00	99.01	54.05	53.62	0.53	1.98	1.98	0.65	8.65270E-08	o	S	W
7.9	31.96	0.29	153.00	100.03	29.79	29.71	0.95	2.33	2.33	0.79	7.44850E-07	o	S	W
8.0	22.66	0.36	155.00	101.05	20.44	20.44	1.70	2.60	2.60	0.89	1.10655E-07	o	S	W
8.1	36.48	0.32	157.00	102.06	33.49	33.55	0.92	2.28	2.28	0.77	1.07118E-06	o	S	W
8.2	35.29	0.41	159.00	103.08	32.00	32.11	1.23	2.36	2.36	0.80	6.00777E-07	o	S	W
8.3	32.83	0.54	161.00	104.10	29.36	29.49	1.72	2.48	2.47	0.84	2.70685E-07	o	S	W
8.4	31.66	0.45	163.00	105.12	27.96	28.13	1.49	2.46	2.45	0.84	3.08379E-07	o	S	W
8.5	26.11	0.29	165.00	106.14	22.55	22.71	1.18	2.48	2.48	0.85	2.64085E-07	o	S	W
8.6	30.67	0.43	167.00	107.16	26.49	26.72	1.48	2.47	2.47	0.84	2.7596E-07	o	S	W
8.7	32.68	0.39	169.00	108.18	28.04	28.37	1.27	2.42	2.41	0.82	4.13635E-07	o	S	W
8.8	28.46	0.52	171.00	109.20	23.98	24.18	1.95	2.58	2.58	0.88	1.32975E-07	o	S	W
8.9	19.64	0.56	173.00	110.22	15.90	15.91	3.13	2.84	2.84	0.99	2.01421E-08	o	S	W
9.0	29.37	0.78	175.00	111.24	24.30	24.48	2.83	2.67	2.67	0.92	6.36521E-08	o	S	W
9.1	27.77	0.49	177.00	112.25	22.67	22.93	1.87	2.59	2.58	0.89	1.24563E-07	o	S	W
9.2	20.18	0.69	179.00	113.27	15.88	15.88	3.72	2.89	2.89	1.00	1.45839E-08	o	S	W
9.3	20.99	0.95	181.00	114.29	16.42	16.42	4.96	2.96	2.96	1.00	9.09659E-09	o	S	W
9.4	27.39	1.02	183.00	115.31	21.69	21.76	4.00	2.81	2.81	0.98	2.64903E-08	o	S	W
9.5	30.02	1.11	185.00	116.33	23.70	23.82	3.94	2.77	2.77	0.96	3.34788E-08	o	S	W
9.6	21.70	0.73	187.00	117.35	16.53	16.53	3.66	2.87	2.87	1.00	1.65723E-08	o	S	W
9.7	20.48	0.94	189.00	118.37	15.36	15.36	5.05	2.99	2.99	1.00	7.52351E-09	o	S	W
9.8	23.51	0.98	191.00	119.39	17.70	17.70	4.54	2.91	2.91	1.00	1.28615E-08	o	S	W
9.9	27.42	0.90	193.00	120.41	20.71	20.82	3.53	2.79	2.79	0.97	3.03225E-08	o	S	W
10.0	21.25	0.78	195.00	121.43	15.55	15.55	4.05	2.92	2.92	1.00	1.1834E-08	o	S	W
10.1	20.43	0.98	197.00	122.44	14.74	14.74	5.30	3.01	3.01	1.00	6.19839E-09	o	S	W
10.2	22.83	0.96	199.00	123.46	16.51	16.51	4.59	2.93	2.93	1.00	1.07092E-08	o	S	W
10.3	25.46	0.94	201.00	124.48	18.43	18.43	4.00	2.86	2.86	1.00	1.81133E-08	o	S	W
10.4	27.45	0.94	203.00	125.50	19.81	19.88	3.70	2.81	2.81	0.98	2.49454E-08	o	S	W
10.5	29.42	0.79	205.00	126.52	21.17	21.41	2.88	2.72	2.72	0.95	4.68774E-08	o	S	W
10.6	26.51	0.56	207.00	127.54	18.75	18.99	2.30	2.71	2.71	0.94	5.26062E-08	o	S	W
10.7	25.90	1.01	209.00	128.56	18.12	18.12	4.26	2.88	2.88	1.00	1.53932E-08	o	S	W
10.8	29.48	0.85	211.00	129.58	20.66	20.86	3.09	2.75	2.75	0.96	3.89216E-08	o	S	W
10.9	33.85	0.86	213.00	130.60	23.77	24.21	2.70	2.67	2.66	0.93	7.3123E-08	o	S	W
11.0	18.66	0.60	215.00	131.62	12.26	12.26	3.64	2.97	2.97	1.00	8.18006E-09	o	S	W
11.1	34.51	0.76	217.00	132.63	23.86	24.43	2.34	2.63	2.62	0.91	9.74792E-08	o	S	W
11.2	52.53	0.69	219.00	133.65	36.88	39.15	1.17	2.30	2.28	0.78	1.06962E-06	o	S	W
11.3	61.61	0.34	221.00	134.67	43.19	47.26	0.49	2.05	2.01	0.68	6.83266E-06	o	S	W
11.4	63.45	0.27	223.00	135.69	44.19	48.81	0.37	1.99	1.95	0.66	1.06816E-05	o	S	W
11.5	63.46	0.34	225.00	136.71	43.84	48.27	0.48	2.04	2.00	0.68	7.48216E-06	o	S	W
11.6	65.19	0.35	227.00	137.73	44.74	49.43	0.47	2.03	1.99	0.68	8.14096E-06	o	S	W
11.7	69.37	0.51	229.00	138.75	47.35	52.15	0.64	2.07	2.03	0.69	5.97072E-06	o	S	W
11.8	63.90	0.37	231.00	139.77	43.15	47.72	0.51	2.05	2.02	0.69	6.68769E-06	o	S	W
11.9	66.22	0.31	233.00	140.79	44.44	49.60	0.41	2.00	1.96	0.67	9.88819E-06	o	S	W
12.0	70.75	0.33	235.00	141.81	47.24	53.03	0.40	1.98	1.93	0.66	1.20325E-05	o	S	W
12.1	70.77	0.29	237.00	142.82	46.90	52.92	0.36	1.96	1.91	0.65	1.3956E-05	o	S	W
12.2	67.19	0.29	239.00	143.84	44.11	49.63	0.39	2.00	1.95	0.66	1.06639E-05	o	S	W
12.3	71.47	0.40	241.00	144.86	46.69	52.46	0.50	2.02	1.98	0.67	8.835E-06	o	S	W
12.4	73.84	0.34	243.00	145.88	47.94	54.36	0.41	1.97	1.92	0.66	1.2671E-05	o	S	W
12.5	61.71	0.25	245.00	146.90	39.50	44.55	0.36	2.03	1.98	0.68	8.70408E-06	o	S	W
12.6	38.84	0.20	247.00	147.92	24.06	26.09	0.55	2.30	2.27	0.79	1.1466E-06	o	S	W
12.7	47.20	0.51	249.00	148.94	29.38	31.69	0.98	2.34	2.31	0.80	8.42287E-07	o	S	W
12.8	44.36	0.36	251.00	149.96	27.32	29.67	0.72	2.30	2.27	0.79	1.12038E-06	o	S	W
12.9	18.73	0.79	253.00	150.98	10.48	10.48	4.89	3.11	3.11	1.00	3.2413E-09	-	L	W
13.0	18.49	0.74	255.00	152.00	10.25	10.25	4.61	3.10	3.10	1.00	3.42719E-09	-	L	W
13.1	18.61	0.76	257.00	153.01	10.24	10.24	4.71	3.10	3.10	1.00	3.28004E-09	-	L	W
13.2	17.43	0.90	259.00	154.03	9.40	9.40	6.08	3.20	3.20	1.00	1.66094E-09	-	L	W
13.3	17.18	0.81	261.00	155.05	9.17	9.17	5.56	3.19	3.19	1.00	1.85075E-09	-	L	W
13.4	15.85	0.75	263.00	156.07	8.27	8.27	5.67	3.23	3.23	1.00	1.39132E-09	-	L	W
13.5	12.66	0.63	265.00	157.09	6.21	6.21	6.28	3.35	3.35	1.00	7.71704E-10	-	L	W
13.6	14.68	0.46	267.00	158.11	7.41	7.41	3.79	3.16	3.16	1.00	2.18986E-09	-	L	W
13.7	14.69	0.55	269.00	159.13	7.36	7.36	4.60	3.21	3.21	1.00	1.50399E-09	-	L	W
13.8	14.78	0.47	271.00	160.15	7.35	7.35	3.91	3.17	3.17	1.00	2.03542E-09	-	L	W
13.9	18.43	0.46	273.00	161.17	9.51	9.51	2.90	3.01	3.01	1.00	6.48888E-09	-	L	W
14.0	17.58	0.67	275.00	162.19	8.93	8.93	4.51	3.14	3.14	1.00	2.54962E-09	-	L	W
14.1	15.37	0.71	277.00	163.20	7.53	7.53	5.66	3.26	3.26	1.00	1.11401E-09	-	L	W
14.2	13.82	0.62	279.00	164.22	6.55	6.55	5.58	3.30	3.30	1.00	9.01545E-10	-	L	W
14.3	14.02	0.49	281.00	165.24	6.61	6.61	4.40	3.24	3.24	1.00	1.27374E-09	-	L	W
14.4	13.82	0.58	283.00	166.26	6.45	6.45	5.24	3.29	3.29	1.00	9.32594E-10	-	L	W
14.5	15.44	0.48	285.00	167.28	7.34	7.34	3.82	3.17	3.17	1.00	2.10701E-09	-	L	W
14.6	16.61	0.62	287.00	168.30	7.97	7.97	4.54	3.18	3.18	1.00	1.91001E-09	-	L	W
14.7	14.91	0.77	289.00	169.32	6.92	6.92	6.42	3.32	3.32	1.00	8.52377E-10	-	L	W
14.8	15.15	0.64	291.00	170.34	7.01	7.01	5.21	3.26	3.26	1.00	1.08913E-09	-	L	W
14.9	14.71	0.75	293.00	171.36	6.70	6.70	6.34	3.33	3.33	1.00	8.31102E-10	-	L	W
15.0	13.52	0.78	295.00	172.38	5.98	5.98	7.33	3.41	3.41	1.00	6.50479E-10	-	L	W
15.1	12.43	0.65	297.00	173.39	5.31	5.31	6.84	3.43	3.43	1.00	6.85963E-10	-	L	W
15.2	12.13	0.54	299.00	174.41	5.10	5.10	5.94	3.41	3.41	1.00	6.50577E-10	-	L	W
15.3	12.82	0.56	301.00	175.43	5.44	5.44	5.65	3.37	3.37	1.00	7.27213E-10	-	L	W
15.4	13.19	0.62	303.00	176.45	5.61	5.61	6.10	3.38	3.38	1.00	7.06369E-10	-	L	W
15.5	12.31	0.63	305.00	177.47	5.08	5.08	6.79	3.44	3.44	1.00	5.8034E-10	-	L	W
15.6	14.04	0.57	307.00	178.49	5.99	5.99	5.22	3.32	3.32					



15.8	13.99	0.73	311.00	180.53	5.87	5.87	6.70	3.39	3.39	1.00	6.87933E-10	-	L	W
15.9	13.66	0.75	313.00	181.55	5.65	5.65	7.09	3.42	3.42	1.00	6.29443E-10	-	L	W
16.0	13.60	0.68	315.00	182.57	5.57	5.57	6.52	3.40	3.40	1.00	6.64826E-10	-	L	W
16.1	12.20	0.66	317.00	183.58	4.79	4.79	7.32	3.48	3.48	1.00	5.11068E-10	-	L	W
16.2	12.14	0.53	319.00	184.60	4.72	4.72	5.86	3.43	3.43	1.00	6.01882E-10	-	L	W
16.3	12.44	0.48	321.00	185.62	4.84	4.84	5.15	3.39	3.39	1.00	6.85387E-10	-	L	W
16.4	12.34	0.55	323.00	186.64	4.75	4.75	6.07	3.44	3.44	1.00	5.89925E-10	-	L	W
16.5	12.46	0.53	325.00	187.66	4.77	4.77	5.75	3.42	3.42	1.00	6.1942E-10	-	L	W
16.6	11.27	0.66	327.00	188.68	4.12	4.12	7.44	3.54	3.54	1.00	4.27854E-10	-	L	W
16.7	10.10	0.61	329.00	189.70	3.48	3.48	7.96	3.62	3.62	1.00	3.36584E-10	-	L	W
16.8	9.47	0.48	331.00	190.72	3.13	3.13	6.95	3.62	3.62	1.00	3.32349E-10	-	L	W
16.9	10.36	0.40	333.00	191.74	3.56	3.56	5.05	3.50	3.50	1.00	4.91252E-10	-	L	W
17.0	12.27	0.45	335.00	192.76	4.50	4.50	5.00	3.41	3.41	1.00	6.4713E-10	-	L	W
17.1	14.00	0.54	337.00	193.77	5.34	5.34	5.04	3.35	3.35	1.00	7.80053E-10	-	L	W
17.2	13.71	0.56	339.00	194.79	5.16	5.16	5.42	3.38	3.38	1.00	7.07882E-10	-	L	W
17.3	18.91	0.55	341.00	195.81	7.72	7.72	3.55	3.13	3.13	1.00	2.72445E-09	-	L	W
17.4	19.80	1.07	343.00	196.83	8.11	8.11	6.53	3.27	3.27	1.00	9.9759E-10	-	L	W
17.5	19.77	1.20	345.00	197.85	8.05	8.05	7.34	3.31	3.31	1.00	8.94763E-10	-	L	W
17.6	17.77	1.17	347.00	198.87	7.01	7.01	8.14	3.38	3.38	1.00	7.06738E-10	-	L	W
17.7	16.08	1.05	349.00	199.89	6.14	6.14	8.31	3.43	3.43	1.00	6.0253E-10	-	L	W
17.8	17.88	0.88	351.00	200.91	6.97	6.97	6.08	3.30	3.30	1.00	8.99804E-10	-	L	W
17.9	19.95	0.98	353.00	201.93	7.93	7.93	5.97	3.25	3.25	1.00	1.14523E-09	-	L	W
18.0	21.13	1.18	355.00	202.95	8.45	8.45	6.70	3.26	3.26	1.00	1.06947E-09	-	L	W
18.1	20.44	1.31	357.00	203.96	8.07	8.07	7.73	3.32	3.32	1.00	8.57691E-10	-	L	W
18.2	18.68	1.25	359.00	204.98	7.18	7.18	8.29	3.38	3.38	1.00	7.12888E-10	-	L	W
18.3	16.59	0.98	361.00	206.00	6.14	6.14	7.51	3.40	3.40	1.00	6.56431E-10	-	L	W
18.4	18.40	1.02	363.00	207.02	6.96	6.96	6.89	3.34	3.34	1.00	8.07128E-10	-	L	W
18.5	17.96	1.04	365.00	208.04	6.70	6.70	7.27	3.36	3.36	1.00	7.41904E-10	-	L	W
18.6	19.09	0.94	367.00	209.06	7.19	7.19	6.06	3.29	3.29	1.00	9.32919E-10	-	L	W
18.7	16.34	0.98	369.00	210.08	5.86	5.86	7.71	3.43	3.43	1.00	6.10633E-10	-	L	W
18.8	13.44	0.69	371.00	211.10	4.48	4.48	7.09	3.50	3.50	1.00	4.88016E-10	-	L	W
18.9	13.86	0.43	373.00	212.12	4.64	4.64	4.24	3.36	3.36	1.00	7.59505E-10	-	L	W
19.0	13.76	0.33	375.00	213.14	4.57	4.57	3.27	3.30	3.30	1.00	9.02365E-10	-	L	W
19.1	14.74	0.39	377.00	214.15	4.99	4.99	3.56	3.29	3.29	1.00	9.40545E-10	-	L	W
19.2	13.60	0.43	379.00	215.17	4.43	4.43	4.34	3.38	3.38	1.00	7.0784E-10	-	L	W
19.3	12.76	0.35	381.00	216.19	4.02	4.02	3.91	3.39	3.39	1.00	6.83484E-10	-	L	W
19.4	15.91	0.35	383.00	217.21	5.42	5.42	2.92	3.21	3.21	1.00	1.52562E-09	-	L	W
19.5	20.58	0.59	385.00	218.23	7.48	7.48	3.53	3.14	3.14	1.00	2.53294E-09	-	L	W
19.6	20.68	0.78	387.00	219.25	7.48	7.48	4.60	3.21	3.21	1.00	1.5911E-09	-	L	W
19.7	23.19	0.83	389.00	220.27	8.55	8.55	4.30	3.14	3.14	1.00	2.50098E-09	-	L	W
19.8	17.88	0.77	391.00	221.29	6.15	6.15	5.49	3.32	3.32	1.00	8.52302E-10	-	L	W
19.9	14.88	0.53	393.00	222.31	4.79	4.79	4.81	3.38	3.38	1.00	7.1596E-10	-	L	W
20.0	14.66	0.45	395.00	223.33	4.66	4.66	4.19	3.35	3.35	1.00	7.69749E-10	-	L	W

Coefficiente di permeabilità orizzontale  
Robertson 2009





# **Penetrometria statica CPTU 4**

Unità di misura: Kg, cm

**ELABORATO n. 4-4**



**GEOPROGET - Studio di Geologia**

**via Ceccarini, 171 - 47838 Riccione (RN)**

**tel. 0541/606464 - email vannoni.fabio1960@libero.it**

**LAVORO: HERA - VASCA KENNEDY**

**LOCALITA': P.zze Kennedy - Rimini**

**DATA: elaborazione 01/05/2015**

**note:**

**falda: -2.5**

## **Litotipi**

A Argille=1.9 t/mc  
AL alternanze =1.8 t/mc  
H Sabbie/limi poco addensati=1.8 t/mc  
S sabbie med. addens.=1.9 t/mc  
D sabbie dense=2.0 t/mc  
G ghiaie=2.1 t/mc  
SD Substrato decomp.=2.0 t/mc  
SU Substrato=2.1 t/mc

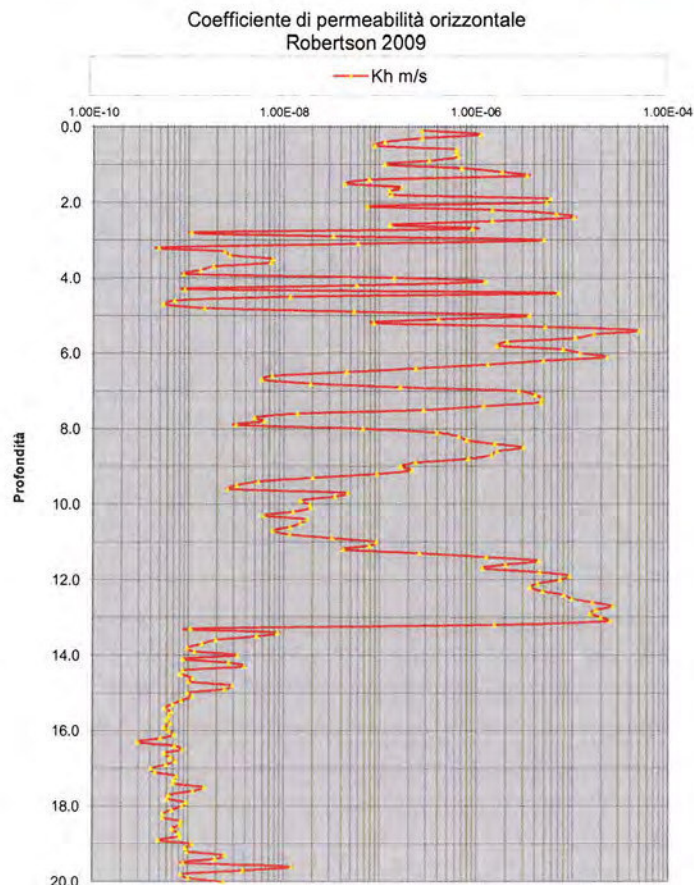
Z	qc/Nqt bar Kg/cm <sup>2</sup>	FsN bar Kg/cm <sup>2</sup>	σ <sub>vc</sub> (kPa)	σ' <sub>vc</sub> (kPa)	Qi	Qtn	F	lc	lcN2	n	permeability K m/sec Robertson '09	Coesivo / Incoerente	Litotipo	Falda
0.1	6.78	0.60	1.80	1.80	368.23	159.80	8.01	2.31	2.47	0.79	2.72801E-07	o	V	/
0.2	11.06	0.45	3.60	3.60	300.12	116.72	3.68	2.04	2.27	0.72	1.11729E-06	o	V	/
0.3	9.57	0.59	5.40	5.40	172.70	94.48	5.60	2.32	2.47	0.79	2.74755E-07	o	V	/
0.4	7.57	0.52	7.20	7.20	102.10	67.48	6.22	2.49	2.60	0.84	1.13344E-07	o	V	/
0.5	5.64	0.28	9.00	9.00	60.41	42.78	4.62	2.53	2.63	0.86	8.08422E-08	o	V	/
0.6	9.27	0.21	10.80	10.80	83.16	47.71	2.02	2.18	2.35	0.75	6.2887E-07	o	V	/
0.7	12.75	0.32	12.60	12.60	98.19	58.66	2.55	2.20	2.35	0.75	6.26815E-07	o	V	/
0.8	17.41	0.53	14.40	14.40	117.47	72.24	3.05	2.21	2.35	0.75	5.61979E-07	o	V	/
0.9	18.41	0.79	16.20	16.20	110.37	75.19	4.35	2.34	2.45	0.79	3.23782E-07	o	V	/
1.0	14.05	0.76	18.00	18.00	75.48	58.13	5.50	2.53	2.60	0.85	1.12966E-07	o	V	/
1.1	20.69	0.57	19.80	19.80	101.42	67.42	2.77	2.22	2.34	0.75	7.07627E-07	o	V	/
1.2	25.27	0.47	21.60	21.60	113.65	71.37	1.87	2.06	2.20	0.70	1.83187E-06	o	V	/
1.3	30.16	0.45	23.40	23.40	125.29	76.95	1.52	1.96	2.11	0.67	3.33071E-06	o	V	/
1.4	15.96	0.91	25.20	25.20	61.07	51.14	5.78	2.60	2.65	0.87	7.80724E-06	o	V	/
1.5	11.97	0.82	27.00	27.00	42.44	37.46	6.34	2.74	2.74	0.91	4.3231E-06	o	V	/
1.6	15.50	0.51	28.80	28.80	51.74	41.89	3.34	2.47	2.54	0.83	1.59139E-07	o	V	/
1.7	14.12	0.46	30.60	30.60	44.23	36.90	3.35	2.52	2.58	0.85	1.26712E-07	o	V	/
1.8	11.78	0.32	32.40	32.40	34.63	29.10	2.49	2.52	2.58	0.85	1.32209E-07	o	V	/
1.9	32.70	0.28	34.20	34.20	92.71	62.87	0.87	1.90	2.04	0.64	5.50951E-06	o	V	/
2.0	41.65	0.59	36.00	36.00	112.39	78.09	1.22	1.93	2.05	0.65	5.30877E-06	o	V	/
2.1	21.12	1.16	37.80	37.80	53.75	47.83	5.57	2.63	2.66	0.88	7.35267E-06	o	V	/
2.2	31.15	0.52	39.60	39.60	76.08	58.50	1.68	2.15	2.23	0.72	1.46652E-05	o	V	/
2.3	34.50	0.25	41.40	41.40	80.67	58.36	0.72	1.90	2.02	0.64	6.66161E-06	o	V	/
2.4	48.10	0.48	43.20	43.20	108.12	77.91	0.85	1.84	1.95	0.62	1.02849E-05	o	V	/
2.5	42.35	1.05	45.00	45.00	91.23	72.85	2.13	2.16	2.23	0.72	1.46146E-05	o	V	/
2.6	17.47	0.49	47.00	46.02	36.18	32.30	2.88	2.54	2.58	0.86	1.2719E-07	o	V	W
2.7	35.89	0.78	49.00	47.04	73.74	60.83	2.21	2.24	2.30	0.75	9.15613E-07	o	V	W
2.8	6.59	0.70	51.00	48.06	12.37	12.37	10.43	3.27	3.27	1.00	1.05954E-09	o	V	W
2.9	14.37	0.65	53.00	49.08	27.62	26.29	4.72	2.78	2.78	0.93	3.26694E-06	o	V	W
3.0	26.77	0.12	55.00	50.10	51.28	40.31	0.44	1.96	2.06	0.66	5.00597E-06	o	V	W
3.1	12.94	0.33	57.00	51.11	23.69	22.12	2.69	2.67	2.69	0.90	5.93268E-06	o	V	W
3.2	4.24	0.50	59.00	52.13	6.83	6.83	12.23	3.50	3.50	1.00	4.79992E-10	o	V	W
3.3	4.42	0.13	61.00	53.15	7.00	7.00	3.33	3.15	3.15	1.00	2.36274E-09	o	V	W
3.4	4.91	0.15	63.00	54.17	7.72	7.72	3.60	3.13	3.13	1.00	2.65814E-09	o	V	W
3.5	6.65	0.19	65.00	55.19	10.62	10.62	3.11	2.98	2.98	1.00	7.55399E-09	o	V	W
3.6	6.58	0.18	67.00	56.21	10.27	10.27	3.05	2.99	2.99	1.00	7.20705E-09	o	V	W
3.7	5.12	0.21	69.00	57.23	7.56	7.56	4.34	3.19	3.19	1.00	1.81313E-09	o	V	W
3.8	4.64	0.17	71.00	58.25	6.58	6.58	4.28	3.23	3.23	1.00	1.32165E-09	o	V	W
3.9	3.83	0.13	73.00	59.27	5.10	5.10	4.09	3.32	3.32	1.00	8.87653E-10	o	V	W
4.0	10.82	0.09	75.00	60.29	16.35	15.18	0.88	2.54	2.57	0.86	1.40575E-07	o	V	W
4.1	19.82	0.10	77.00	61.30	30.43	26.71	0.55	2.21	2.26	0.74	1.23273E-06	o	V	W
4.2	10.90	0.16	79.00	62.32	15.87	15.18	1.60	2.68	2.70	0.91	5.72603E-06	o	V	W
4.3	5.13	0.27	81.00	63.34	6.65	6.65	5.72	3.30	3.30	1.00	8.38733E-10	o	V	W
4.4	42.87	0.31	83.00	64.36	63.99	54.52	0.62	1.95	2.01	0.65	7.03856E-06	o	V	W
4.5	13.68	0.68	85.00	65.38	19.21	19.18	5.27	2.92	2.92	1.00	1.15157E-06	o	V	W
4.6	5.69	0.44	87.00	66.40	7.08	7.08	8.29	3.38	3.38	1.00	7.02849E-10	o	V	W
4.7	3.91	0.18	89.00	67.42	4.36	4.36	6.10	3.47	3.47	1.00	5.34833E-10	o	V	W
4.8	4.14	0.07	91.00	68.44	4.61	4.61	2.28	3.22	3.22	1.00	1.45519E-09	o	V	W
4.9	8.46	0.07	93.00	69.46	10.60	10.27	0.87	2.70	2.70	0.91	5.35866E-08	o	S	W
5.0	25.45	0.07	95.00	70.48	34.05	30.40	0.30	2.06	2.11	0.69	3.50493E-06	o	S	W
5.1	19.44	0.18	97.00	71.49	25.29	23.63	0.96	2.39	2.42	0.81	4.05145E-07	o	S	W
5.2	18.27	0.39	99.00	72.51	23.32	22.49	2.25	2.63	2.64	0.89	8.55604E-06	o	S	W
5.3	41.98	0.31	101.00	73.53	54.58	49.08	0.64	2.01	2.05	0.67	5.11932E-06	o	S	W
5.4	66.67	0.22	103.00	74.55	86.25	75.03	0.28	1.67	1.73	0.55	4.94922E-05	o	S	W
5.5	61.82	0.39	105.00	75.57	78.77	70.17	0.55	1.84	1.89	0.61	1.65874E-05	o	S	W
5.6	54.88	0.38	107.00	76.59	68.82	62.07	0.60	1.91	1.95	0.63	1.05253E-05	o	S	W
5.7	37.57	0.33	109.00	77.61	46.04	42.73	0.91	2.16	2.18	0.72	2.06384E-06	o	S	W
5.8	36.50	0.35	111.00	78.63	44.08	41.20	0.99	2.19	2.22	0.73	1.62429E-06	o	S	W
5.9	50.17	0.34	113.00	79.65	60.32	55.42	0.60	1.96	1.99	0.65	7.85145E-06	o	S	W
6.0	47.75	0.22	115.00	80.66	56.58	51.97	0.40	1.90	1.94	0.63	1.16091E-05	o	S	W
6.1	56.22	0.21	117.00	81.68	66.02	60.45	0.32	1.80	1.84	0.59	2.28379E-05	o	S	W
6.2	37.87	0.17	119.00	82.70	43.44	40.67	0.46	2.03	2.06	0.68	4.87613E-06	o	S	W
6.3	27.85	0.17	121.00	83.72	31.15	29.69	0.65	2.23	2.25	0.75	1.39647E-06	o	S	W
6.4	17.93	0.15	123.00	84.74	19.28	18.74	0.91	2.48	2.49	0.84	2.34917E-07	o	S	W
6.5	15.14	0.27	125.00	85.76	15.84	15.66	1.97	2.73	2.73	0.93	4.52151E-09	o	S	W
6.6	13.06	0.50	127.00	86.78	13.29	13.29	4.24	2.99	2.99	1.00	7.45745E-09	o	S	W
6.7	13.89	0.65	129.00	87.80	14.04	14.04	5.19	3.02	3.02	1.00	5.7724E-09	o	S	W
6.8	16.60	0.54	131.00	88.82	16.84	16.80	3.50	2.85	2.85	0.98	1.88158E-08	o	S	W
6.9	27.13	0.54	133.00	89.84	28.11	27.66	2.10	2.54	2.55	0.86	1.61368E-07	o	S	W



7.0	42.46	0.37	135.00	90.85	44.32	42.95	0.77	2.13	2.14	0.71	2.70923E-06	o	S	W
7.1	37.85	0.17	137.00	91.87	38.89	37.73	0.46	2.08	2.09	0.69	4.02498E-06	o	S	W
7.2	40.74	0.18	139.00	92.89	41.48	40.35	0.47	2.05	2.07	0.68	4.71663E-06	o	S	W
7.3	33.49	0.09	141.00	93.91	33.44	32.65	0.29	2.06	2.07	0.68	4.67811E-06	o	S	W
7.4	25.34	0.11	143.00	94.93	24.65	24.27	0.46	2.26	2.26	0.76	1.17698E-06	o	S	W
7.5	18.94	0.12	145.00	95.95	17.83	17.67	0.71	2.46	2.47	0.84	2.82787E-07	o	S	W
7.6	15.02	0.43	147.00	96.97	13.66	13.66	3.17	2.90	2.90	1.00	1.36840E-08	o	S	W
7.7	14.49	0.67	149.00	97.99	12.97	12.97	5.15	3.05	3.05	1.00	4.87162E-09	o	S	W
7.8	14.88	0.62	151.00	99.01	13.21	13.21	4.65	3.01	3.01	1.00	8.19044E-09	o	S	W
7.9	9.43	0.29	153.00	100.03	7.71	7.71	3.27	3.11	3.11	1.00	3.10649E-09	o	S	W
8.0	20.10	0.35	155.00	101.05	17.96	17.95	1.90	2.67	2.67	0.92	6.62924E-08	o	S	W
8.1	34.88	0.52	157.00	102.06	31.95	31.99	1.57	2.42	2.42	0.82	3.87486E-07	o	S	W
8.2	36.93	0.44	159.00	103.08	33.57	33.68	1.25	2.35	2.35	0.80	6.56135E-07	o	S	W
8.3	43.94	0.71	161.00	104.10	39.82	40.05	1.43	2.32	2.32	0.79	7.93583E-07	o	S	W
8.4	49.43	0.65	163.00	105.12	44.53	44.95	1.16	2.23	2.23	0.75	1.52853E-06	o	S	W
8.5	48.57	0.41	165.00	106.14	43.29	43.87	0.74	2.13	2.13	0.71	3.05695E-06	o	S	W
8.6	41.04	0.38	167.00	107.16	35.98	36.49	0.82	2.22	2.22	0.75	1.61304E-06	o	S	W
8.7	40.12	0.38	169.00	108.18	34.78	35.34	0.84	2.24	2.24	0.76	1.42185E-06	o	S	W
8.8	35.74	0.33	171.00	109.20	30.51	31.00	0.96	2.32	2.32	0.79	4.19574E-07	o	S	W
8.9	33.21	0.56	173.00	110.22	27.96	28.30	1.76	2.50	2.49	0.85	2.33656E-07	o	S	W
9.0	35.42	0.78	175.00	111.24	29.63	29.98	2.30	2.55	2.55	0.87	1.64064E-07	o	S	W
9.1	38.77	0.83	177.00	112.25	32.27	32.73	2.24	2.51	2.51	0.86	2.12823E-07	o	S	W
9.2	29.70	0.67	179.00	113.27	24.12	24.37	2.39	2.63	2.63	0.91	9.30883E-08	o	S	W
9.3	22.92	0.78	181.00	114.29	18.07	18.09	3.71	2.85	2.85	0.99	1.99164E-07	o	S	W
9.4	18.68	0.93	183.00	115.31	14.29	14.29	5.52	3.03	3.03	1.00	5.32619E-09	o	S	W
9.5	16.83	0.93	185.00	116.33	12.59	12.59	6.20	3.11	3.11	1.00	3.1608E-09	o	S	W
9.6	14.96	0.77	187.00	117.35	10.90	10.90	5.85	3.14	3.14	1.00	3.53306E-09	o	S	W
9.7	26.49	0.68	189.00	118.37	20.34	20.51	2.75	2.73	2.73	0.95	4.65159E-08	o	S	W
9.8	23.27	0.57	191.00	119.39	17.50	17.61	2.68	2.77	2.77	0.96	3.39154E-08	o	S	W
9.9	22.61	0.82	193.00	120.41	16.80	16.80	3.96	2.89	2.89	1.00	1.46636E-08	o	S	W
10.0	24.83	0.90	195.00	121.43	18.43	18.44	3.93	2.86	2.86	1.00	1.8703E-08	o	S	W
10.1	25.55	0.95	197.00	122.44	18.84	18.85	4.01	2.85	2.85	1.00	1.9005E-08	o	S	W
10.2	23.09	0.91	199.00	123.46	16.71	16.71	4.32	2.91	2.91	1.00	1.34101E-08	o	S	W
10.3	21.08	1.05	201.00	124.48	14.98	14.98	5.50	3.02	3.02	1.00	5.9984E-09	o	S	W
10.4	26.64	1.06	203.00	125.50	19.18	19.18	4.31	2.87	2.87	1.00	1.72091E-08	o	S	W
10.5	24.79	0.96	205.00	126.52	17.58	17.58	4.20	2.89	2.89	1.00	1.47236E-08	o	S	W
10.6	25.31	1.13	207.00	127.54	17.83	17.83	4.84	2.92	2.92	1.00	1.15415E-08	o	S	W
10.7	22.73	1.07	209.00	128.56	15.70	15.70	5.18	2.99	2.99	1.00	7.5298E-09	o	S	W
10.8	25.23	1.10	211.00	129.58	17.45	17.45	4.75	2.93	2.93	1.00	1.13996E-08	o	S	W
10.9	31.47	1.09	213.00	130.60	21.99	22.13	3.72	2.78	2.78	0.97	3.15335E-08	o	S	W
11.0	37.57	0.97	215.00	131.62	26.34	26.93	2.73	2.63	2.63	0.92	9.21719E-08	o	S	W
11.1	32.59	0.74	217.00	132.63	22.44	22.89	2.43	2.66	2.65	0.93	7.75495E-08	o	S	W
11.2	30.71	0.86	219.00	133.65	20.88	21.11	3.02	2.74	2.74	0.96	4.15461E-08	o	S	W
11.3	44.03	0.96	221.00	134.67	30.40	31.61	1.95	2.50	2.48	0.86	2.54389E-07	o	S	W
11.4	56.76	0.76	223.00	135.69	39.35	42.01	1.19	2.28	2.26	0.78	1.24879E-06	o	S	W
11.5	56.09	0.34	225.00	136.71	38.56	42.08	0.54	2.11	2.08	0.71	4.3799E-06	o	S	W
11.6	42.08	0.24	227.00	137.73	28.29	30.53	0.50	2.22	2.19	0.75	1.98078E-06	o	S	W
11.7	52.02	0.62	229.00	138.75	35.09	37.58	1.06	2.29	2.27	0.78	1.14445E-06	o	S	W
11.8	63.57	0.47	231.00	139.77	42.92	47.13	0.65	2.11	2.07	0.71	4.45266E-06	o	S	W
11.9	65.56	0.31	233.00	140.79	43.98	49.03	0.42	2.01	1.97	0.67	9.18824E-06	o	S	W
12.0	59.52	0.27	235.00	141.81	39.48	43.91	0.40	2.05	2.00	0.68	7.25158E-06	o	S	W
12.1	55.15	0.31	237.00	142.82	36.18	39.93	0.49	2.12	2.08	0.71	4.2575E-06	o	S	W
12.2	58.74	0.42	239.00	143.84	38.36	42.26	0.63	2.14	2.11	0.72	3.54295E-06	o	S	W
12.3	65.19	0.46	241.00	144.86	42.44	47.11	0.62	2.10	2.06	0.71	4.76108E-06	o	S	W
12.4	70.25	0.41	243.00	145.88	45.53	51.15	0.51	2.04	1.99	0.68	7.9695E-06	o	S	W
12.5	75.14	0.43	245.00	146.90	48.46	54.77	0.51	2.01	1.96	0.67	9.63581E-06	o	S	W
12.6	86.11	0.46	247.00	147.92	55.38	63.37	0.47	1.94	1.89	0.64	1.58868E-05	o	S	W
12.7	89.70	0.37	249.00	148.94	57.35	66.45	0.36	1.88	1.82	0.62	2.39512E-05	o	S	W
12.8	80.53	0.35	251.00	149.96	50.95	58.66	0.38	1.94	1.88	0.64	1.71228E-05	o	S	W
12.9	79.18	0.36	253.00	150.98	49.72	57.22	0.40	1.95	1.90	0.65	1.51033E-05	o	S	W
13.0	91.75	0.47	255.00	152.00	57.48	66.65	0.45	1.92	1.86	0.63	1.94294E-05	o	S	W
13.1	90.80	0.39	257.00	153.01	56.48	65.98	0.37	1.89	1.83	0.62	2.4428E-05	o	S	W
13.2	43.78	0.26	259.00	154.03	26.18	28.77	0.55	2.26	2.23	0.77	1.51887E-06	o	S	W
13.3	14.64	0.71	261.00	155.05	7.57	7.57	5.92	3.27	3.27	1.00	1.03868E-09	-	L	W
13.4	18.59	0.42	263.00	156.07	9.99	9.99	2.65	2.97	2.97	1.00	3.5335E-09	-	L	W
13.5	18.10	0.52	265.00	157.09	9.60	9.60	3.38	3.04	3.04	1.00	5.1083E-09	-	L	W
13.6	16.81	0.72	267.00	158.11	8.73	8.73	5.12	3.18	3.18	1.00	1.91355E-09	-	L	W
13.7	16.05	0.75	269.00	159.13	8.19	8.19	5.63	3.23	3.23	1.00	1.37694E-09	-	L	W
13.8	13.98	0.62	271.00	160.15	6.86	6.86	5.52	3.28	3.28	1.00	9.57933E-10	-	L	W
13.9	13.32	0.48	273.00	161.17	6.41	6.41	4.48	3.25	3.25	1.00	1.14006E-09	-	L	W
14.0	16.09	0.45	275.00	162.19	8.03	8.03	3.39	3.11	3.11	1.00	1.24633E-09	-	L	W
14.1	12.86	0.53	277.00	163.20	6.03	6.03	5.23	3.32	3.32	1.00	8.66291E-10	-	L	W
14.2	14.00	0.32	279.00	164.22	6.66	6.66	2.89	3.14	3.14	1.00	2.62901E-09	-	L	W
14.3	16.98	0.46	281.00	165.24	8.37	8.37	3.27	3.08	3.08	1.00	3.32637E-09	-	L	W
14.4	14.18	0.69	283.00	166.26	6.66	6.66	6.05	3.32	3.32	1.00	8.58781E-10	-	L	W
14.5	12.92	0.55	285.00	167.28	5.86	5.86	5.42	3.33	3.33	1.00	8.16452E-10	-	L	W
14.6	13.36	0.45	287.00	168.30	6.08	6.08	4.23	3.26	3.26	1.00	1.10217E-09	-	L	W
14.7	12.53	0.38	289.00	169.32	5.55	5.55	3.94	3.28	3.28	1.00	9.84081E-10	-	L	W
14.8	14.30	0.30	291.00	170.34	6.52	6.52	2.64	3.12	3.12	1.00	2.5789E-09	-	L	W
14.9	16.03	0.48	293.00	171.36	7.46	7.46	3.65	3.15	3.15	1.00	2.37797E-09	-	L	W
15.0	14.60	0.61	295.00	172.38	6.59	6.59	5.20	3.28	3.28	1.00	9.60748E-10	-	L	W
15.1	14.78	0.57	297.00	173.39	6.64	6.64	4.84	3.26	3.26	1.00	1.08546E-09	-	L	W
15.2	14.77	0.73	299.00	174.41	6.58	6.58	6.22	3.33	3.33	1.00	8.28954E-10	-	L	W
15.3	13.80	0.76	301.00	175.43	5.99	5.99	7.01	3.39	3.39	1.00	6.77985E-10	-	L	W
15.4	12.22	0.65	303.00	176.45	5.07	5.07	7.08	3.45	3.45	1.00	5.59513E-10	-	L	W
15.5	11.68	0.50	305.00	177.47	4.73	4.73	5.21	3.40	3.40	1.00	6.6304E-10	-	L	W
15.6	11.43	0.50	307.00	178.49	4.55	4.55	5.34	3.42	3.42					



15.8	11.86	0.53	311.00	180.53	4.72	4.72	5.40	3.41	3.41	1.00	6.41796E-10	-	L	W
15.9	11.96	0.64	313.00	181.55	4.73	4.73	6.52	3.46	3.46	1.00	5.54388E-10	-	L	W
16.0	12.25	0.54	315.00	182.57	4.85	4.85	5.95	3.43	3.43	1.00	6.13051E-10	-	L	W
16.1	13.17	0.57	317.00	183.58	5.30	5.30	5.70	3.38	3.38	1.00	7.0104E-10	-	L	W
16.2	11.40	0.59	319.00	184.60	4.32	4.32	6.42	3.48	3.48	1.00	5.08104E-10	-	L	W
16.3	8.71	0.45	321.00	185.62	2.87	2.87	7.36	3.66	3.66	1.00	2.88407E-10	-	L	W
16.4	10.40	0.26	323.00	186.64	3.73	3.73	3.30	3.38	3.38	1.00	7.08603E-10	-	L	W
16.5	14.10	0.52	325.00	187.66	5.63	5.63	4.79	3.32	3.32	1.00	3.60245E-10	-	L	W
16.6	12.69	0.64	327.00	188.68	4.86	4.86	6.76	3.46	3.46	1.00	5.54306E-10	-	L	W
16.7	12.56	0.50	329.00	189.70	4.75	4.75	5.43	3.41	3.41	1.00	6.45129E-10	-	L	W
16.8	12.64	0.44	331.00	190.72	4.76	4.76	4.66	3.37	3.37	1.00	7.27138E-10	-	L	W
16.9	12.42	0.54	333.00	191.74	4.61	4.61	5.96	3.44	3.44	1.00	5.79308E-10	-	L	W
17.0	10.58	0.54	335.00	192.76	3.64	3.64	6.75	3.56	3.56	1.00	4.02738E-10	-	L	W
17.1	10.00	0.39	337.00	193.77	3.32	3.32	5.21	3.53	3.53	1.00	4.42877E-10	-	L	W
17.2	11.61	0.33	339.00	194.79	4.10	4.10	3.59	3.36	3.36	1.00	7.44317E-10	-	L	W
17.3	12.92	0.46	341.00	195.81	4.73	4.73	4.81	3.38	3.38	1.00	7.0436E-10	-	L	W
17.4	13.79	0.58	343.00	196.83	5.13	5.13	5.59	3.39	3.39	1.00	6.85853E-10	-	L	W
17.5	17.54	0.62	345.00	197.85	6.95	6.95	4.36	3.22	3.22	1.00	1.46073E-09	-	L	W
17.6	19.37	0.95	347.00	198.87	7.80	7.80	5.94	3.26	3.26	1.00	1.10723E-09	-	L	W
17.7	17.18	1.23	349.00	199.89	6.68	6.68	8.99	3.42	3.42	1.00	6.15592E-10	-	L	W
17.8	16.20	1.08	351.00	200.91	6.16	6.16	8.50	3.44	3.44	1.00	5.92594E-10	-	L	W
17.9	18.56	0.92	353.00	201.93	7.26	7.26	6.11	3.29	3.29	1.00	9.35179E-10	-	L	W
18.0	19.29	1.14	355.00	202.95	7.57	7.57	7.20	3.32	3.32	1.00	8.51361E-10	-	L	W
18.1	18.44	1.32	357.00	203.96	7.11	7.11	8.85	3.40	3.40	1.00	6.66389E-10	-	L	W
18.2	15.77	1.08	359.00	204.98	5.79	5.79	8.86	3.47	3.47	1.00	5.35157E-10	-	L	W
18.3	15.63	1.04	361.00	206.00	5.68	5.68	8.66	3.47	3.47	1.00	5.35031E-10	-	L	W
18.4	17.66	0.88	363.00	207.02	6.61	6.61	6.22	3.33	3.33	1.00	8.32055E-10	-	L	W
18.5	17.91	0.93	365.00	208.04	6.68	6.68	6.51	3.34	3.34	1.00	8.11391E-10	-	L	W
18.6	17.08	1.01	367.00	209.06	6.25	6.25	7.48	3.40	3.40	1.00	6.71294E-10	-	L	W
18.7	17.42	0.87	369.00	210.08	6.37	6.37	6.35	3.35	3.35	1.00	7.86177E-10	-	L	W
18.8	17.13	0.80	371.00	211.10	6.20	6.20	5.92	3.34	3.34	1.00	8.07633E-10	-	L	W
18.9	13.37	0.69	373.00	212.12	4.42	4.42	7.08	3.50	3.50	1.00	4.81009E-10	-	L	W
19.0	14.68	0.35	375.00	213.14	4.99	4.99	3.15	3.26	3.26	1.00	1.08983E-09	-	L	W
19.1	14.73	0.40	377.00	214.15	4.98	4.98	3.63	3.29	3.29	1.00	9.24386E-10	-	L	W
19.2	14.23	0.33	379.00	215.17	4.72	4.72	3.20	3.29	3.29	1.00	9.52696E-10	-	L	W
19.3	16.61	0.31	381.00	216.19	5.77	5.77	2.43	3.15	3.15	1.00	2.39339E-09	-	L	W
19.4	17.51	0.43	383.00	217.21	6.14	6.14	3.11	3.18	3.18	1.00	1.89412E-09	-	L	W
19.5	14.55	0.39	385.00	218.23	4.77	4.77	3.68	3.31	3.31	1.00	8.71654E-10	-	L	W
19.6	26.04	0.47	387.00	219.25	9.87	9.87	2.13	2.92	2.92	1.00	1.18818E-08	-	L	W
19.7	27.16	1.04	389.00	220.27	10.32	10.32	4.45	3.09	3.09	1.00	3.71816E-09	-	L	W
19.8	18.22	0.84	391.00	221.29	6.30	6.30	5.88	3.33	3.33	1.00	8.27546E-10	-	L	W
19.9	17.00	0.54	393.00	222.31	5.73	5.73	4.10	3.27	3.27	1.00	9.89182E-10	-	L	W
20.0	18.82	0.45	395.00	223.33	6.49	6.49	3.01	3.15	3.15	1.00	2.30746E-09	-	L	W





# Penetrometria statica CPTU 5

Unità di misura: Kg, cm

ELABORATO n. 4 - 4



GEOPROGET - Studio di Geologia

via Ceccarini, 171 - 47838 Riccione (RN)

tel. 0541/606464 - email vannoni.fabio1960@libero.it

LAVORO: HERA - VASCA KENNEDY

LOCALITÀ: P.zze Kennedy - Rimini

DATA: elaborazione 01/05/2015

note:

falda: -2.5

## Litotipi

A Argille=1.9 t/mc  
AL alternanze =1.8 t/mc  
H Sabbie/limi poco addensati=1.8 t/mc  
S sabbie med. addens.=1.9 t/mc  
D sabbie dense=2.0 t/mc  
G ghiaie=2.1 t/mc  
SD Substrato decomp.=2.0 t/mc  
SU Substrato=2.1 t/mc

Z	qcN/qt bar - Kg/cm <sup>2</sup>	FaN bar - Kg/cm <sup>2</sup>	σ <sub>vc</sub> (kPa)	σ' <sub>vc</sub> (kPa)	Qi	Qtn	F	lc	lcN2	n	permeability K m/sec Robertson 05	Coesivo / Incoerente	Litotipo	Falda
0.1	0.00	0.00	1.80	1.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.2	0.00	0.00	3.60	3.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.3	0.00	0.00	5.40	5.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.4	0.00	0.00	7.20	7.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.5	0.00	0.00	9.00	9.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.6	0.00	0.00	10.80	10.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.7	0.00	0.00	12.60	12.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.8	0.00	0.00	14.40	14.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.9	0.00	0.00	16.20	16.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.0	0.00	0.00	18.00	18.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.1	0.00	0.00	19.80	19.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.2	0.00	0.00	21.60	21.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.3	0.00	0.00	23.40	23.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.4	0.00	0.00	25.20	25.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.5	0.00	0.00	27.00	27.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.6	0.00	0.00	28.80	28.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.7	0.00	0.00	30.60	30.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.8	0.00	0.00	32.40	32.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.9	0.00	0.00	34.20	34.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.0	0.00	0.00	36.00	36.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.1	0.00	0.00	37.80	37.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.2	0.00	0.00	39.60	39.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.3	0.00	0.00	41.40	41.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.4	0.00	0.00	43.20	43.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.5	0.00	0.00	45.00	45.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.6	0.00	0.00	47.00	46.02	-1.02	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.7	0.00	0.00	49.00	47.04	-1.04	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.8	0.00	0.00	51.00	48.06	-1.06	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.9	0.00	0.00	53.00	49.08	-1.08	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.0	0.00	0.00	55.00	50.10	-1.10	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.1	0.00	0.00	57.00	51.11	-1.12	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
3.2	0.00	0.00	59.00	52.13	-1.13	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
3.3	0.00	0.00	61.00	53.15	-1.15	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
3.4	0.00	0.00	63.00	54.17	-1.16	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
3.5	0.00	0.00	65.00	55.19	-1.18	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
3.6	0.00	0.00	67.00	56.21	-1.19	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
3.7	0.00	0.00	69.00	57.23	-1.21	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
3.8	0.00	0.00	71.00	58.25	-1.22	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
3.9	0.00	0.00	73.00	59.27	-1.23	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
4.0	0.00	0.00	75.00	60.29	-1.24	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
4.1	0.00	0.00	77.00	61.30	-1.26	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
4.2	0.00	0.00	79.00	62.32	-1.27	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
4.3	0.00	0.00	81.00	63.34	-1.28	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
4.4	0.00	0.00	83.00	64.36	-1.29	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
4.5	0.00	0.00	85.00	65.38	-1.30	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
4.6	0.00	0.00	87.00	66.40	-1.31	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
4.7	0.00	0.00	89.00	67.42	-1.32	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
4.8	0.00	0.00	91.00	68.44	-1.33	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
4.9	0.00	0.00	93.00	69.46	-1.34	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
5.0	0.00	0.00	95.00	70.48	-1.35	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
5.1	16.06	0.12	97.00	71.49	20.65	19.38	0.77	2.42	2.45	0.82	3.27747E-07	o	C	W
5.2	23.95	0.16	99.00	72.51	31.00	28.55	0.70	2.25	2.28	0.75	1.05638E-08	o	C	W
5.3	10.02	0.31	101.00	73.53	11.97	11.97	3.07	2.94	2.94	1.00	1.04297E-08	o	C	W
5.4	6.30	0.29	103.00	74.55	6.90	6.90	4.87	3.25	3.25	1.00	1.1815E-09	o	C	W
5.5	9.19	0.20	105.00	75.57	10.53	10.51	2.25	2.91	2.91	1.00	1.28564E-08	o	C	W
5.6	14.23	0.23	107.00	76.59	16.81	16.39	1.73	2.68	2.69	0.91	6.11285E-08	o	C	W
5.7	18.22	0.32	109.00	77.61	21.61	20.96	1.89	2.61	2.62	0.89	9.76439E-08	o	C	W
5.8	14.70	0.33	111.00	78.63	16.91	16.65	2.44	2.76	2.76	0.94	3.63418E-08	o	C	W
5.9	6.37	0.39	113.00	79.65	6.42	6.42	6.72	3.36	3.36	1.00	7.55663E-10	o	C	W
6.0	12.24	0.15	115.00	80.66	13.44	13.21	1.39	2.71	2.71	0.92	5.31725E-08	o	C	W
6.1	20.14	0.54	117.00	81.68	22.73	22.34	2.85	2.70	2.70	0.92	5.43936E-08	o	C	W
6.2	16.08	0.86	119.00	82.70	17.62	17.62	5.76	2.98	2.98	1.00	7.91978E-09	o	C	W
6.3	19.11	0.55	121.00	83.72	20.92	20.67	3.10	2.75	2.75	0.94	3.98397E-08	o	C	W
6.4	6.79	0.44	123.00	84.74	6.40	6.40	7.11	3.37	3.37	1.00	7.19E-10	o	C	W
6.5	5.43	0.28	125.00	85.76	4.74	4.74	6.11	3.44	3.44	1.00	5.85648E-10	o	C	W
6.6	6.08	0.19	127.00	86.78	5.40	5.40	3.94	3.29	3.29	1.00	9.53258E-10	o	C	W
6.7	5.29	0.21	129.00	87.80	4.43	4.43	4.79	3.40	3.40	1.00	6.56439E-10	o	C	W
6.8	19.38	0.18	131.00	88.82	19.91	19.51	0.99	2.49	2.50	0.85	2.29955E-07	o	S	W
6.9	37.16	0.20	133.00	89.84	39.06	37.69	0.55	2.11	2.12	0.70	3.13679E-06	o	S	W

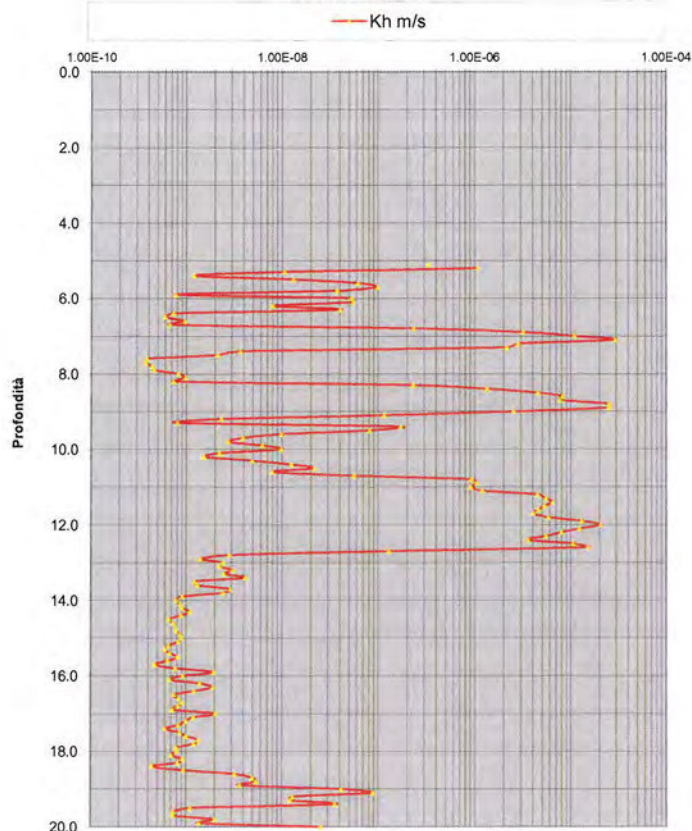


7.0	54.67	0.30	135.00	90.85	57.49	55.25	0.48	1.93	1.95	0.64	1.07153E-05	o	S	W
7.1	82.80	0.49	137.00	91.87	86.83	83.36	0.51	1.79	1.81	0.58	2.88763E-05	o	S	W
7.2	78.43	1.56	139.00	92.89	81.24	79.23	1.72	2.13	2.14	0.71	2.77482E-06	o	S	W
7.3	59.31	0.95	141.00	93.91	60.39	59.15	1.40	2.17	2.18	0.73	2.12108E-06	o	S	W
7.4	14.71	0.85	143.00	94.93	13.68	13.68	6.40	3.09	3.09	1.00	3.80384E-09	o	S	W
7.5	11.52	0.67	145.00	95.95	10.25	10.25	5.99	3.17	3.17	1.00	2.09351E-05	o	S	W
7.6	5.50	0.38	147.00	96.97	4.05	4.05	8.47	3.58	3.58	1.00	3.7721E-10	o	C	W
7.7	4.81	0.24	149.00	97.99	3.29	3.29	6.57	3.59	3.59	1.00	3.86775E-10	o	C	W
7.8	4.68	0.16	151.00	99.01	3.11	3.11	4.97	3.54	3.54	1.00	4.28504E-10	o	C	W
7.9	4.76	0.15	153.00	100.03	3.13	3.13	4.65	3.52	3.52	1.00	4.51611E-10	o	C	W
8.0	6.02	0.15	155.00	101.05	4.30	4.30	3.45	3.34	3.34	1.00	8.10789E-10	o	C	W
8.1	7.09	0.23	157.00	102.06	5.27	5.27	3.78	3.28	3.28	1.00	9.57716E-10	o	C	W
8.2	6.40	0.24	159.00	103.08	4.54	4.54	4.43	3.38	3.38	1.00	7.16433E-10	o	C	W
8.3	23.13	0.23	161.00	104.10	20.22	20.30	1.08	2.50	2.50	0.85	1.20875E-07	o	S	W
8.4	36.87	0.28	163.00	105.12	32.82	33.11	0.79	2.25	2.25	0.76	1.31388E-06	o	S	W
8.5	47.64	0.30	165.00	106.14	42.43	43.04	0.56	2.08	2.07	0.69	4.43089E-06	o	S	W
8.6	50.88	0.23	167.00	107.16	44.98	45.84	0.40	2.00	1.99	0.66	8.11555E-06	o	S	W
8.7	53.98	0.29	169.00	108.18	47.34	48.39	0.48	2.01	2.00	0.66	7.5448E-06	o	S	W
8.8	67.01	0.23	171.00	109.20	58.57	60.35	0.30	1.84	1.83	0.60	2.49555E-05	o	S	W
8.9	67.23	0.23	173.00	110.22	58.21	60.19	0.30	1.84	1.83	0.60	2.4746E-05	o	S	W
9.0	42.23	0.29	175.00	111.24	35.63	36.56	0.61	2.17	2.16	0.73	2.5014E-06	o	S	W
9.1	24.23	0.36	177.00	112.25	19.58	19.79	1.60	2.60	2.60	0.90	1.12854E-07	o	S	W
9.2	9.49	0.27	179.00	113.27	6.63	6.63	3.12	3.15	3.15	1.00	2.30264E-09	o	S	W
9.3	7.03	0.20	181.00	114.29	4.44	4.44	3.75	3.34	3.34	1.00	7.92306E-10	o	S	W
9.4	24.34	0.27	183.00	115.31	19.10	19.41	1.21	2.55	2.54	0.88	1.68195E-07	o	S	W
9.5	25.58	0.48	185.00	116.33	19.96	20.19	2.01	2.65	2.65	0.92	8.03836E-09	o	S	W
9.6	20.15	0.80	187.00	117.35	15.23	15.23	4.39	2.95	2.95	1.00	9.64935E-09	o	S	W
9.7	16.55	0.79	189.00	118.37	12.10	12.10	5.35	3.08	3.08	1.00	3.84046E-09	o	S	W
9.8	15.77	0.83	191.00	119.39	11.35	11.35	5.96	3.13	3.13	1.00	2.68021E-09	o	S	W
9.9	18.34	0.78	193.00	120.41	13.32	13.32	4.73	3.01	3.01	1.00	6.11958E-09	o	S	W
10.0	20.35	0.78	195.00	121.43	14.82	14.82	4.25	2.95	2.95	1.00	9.63034E-09	o	S	W
10.1	15.20	0.80	197.00	122.44	10.56	10.56	6.05	3.16	3.16	1.00	2.20018E-09	o	S	W
10.2	12.61	0.59	199.00	123.46	8.40	8.40	5.53	3.21	3.21	1.00	1.51207E-09	o	S	W
10.3	16.40	0.63	201.00	124.48	11.29	11.29	4.35	3.05	3.05	1.00	4.81364E-09	o	S	W
10.4	21.66	0.77	203.00	125.50	15.30	15.30	3.89	2.92	2.92	1.00	1.22606E-08	o	S	W
10.5	25.30	0.83	205.00	126.52	17.97	18.00	3.56	2.84	2.84	0.99	2.13372E-08	o	S	W
10.6	21.12	0.89	207.00	127.54	14.61	14.61	4.66	2.98	2.98	1.00	7.79107E-09	o	S	W
10.7	30.53	0.78	209.00	128.56	21.64	21.94	2.72	2.70	2.70	0.94	5.50187E-08	o	S	W
10.8	37.80	0.27	211.00	129.58	26.96	28.39	0.76	2.32	2.30	0.79	9.18237E-07	o	S	W
10.9	38.48	0.26	213.00	130.60	27.25	28.78	0.72	2.30	2.28	0.78	1.03261E-06	o	S	W
11.0	37.31	0.26	215.00	131.62	26.15	27.61	0.74	2.32	2.30	0.79	9.00918E-07	o	S	W
11.1	37.66	0.22	217.00	132.63	26.19	27.80	0.62	2.29	2.26	0.78	1.1742E-06	o	S	W
11.2	48.09	0.21	219.00	133.65	33.62	36.47	0.39	2.11	2.07	0.71	4.4198E-06	o	S	W
11.3	52.62	0.25	221.00	134.67	36.65	39.95	0.41	2.08	2.05	0.70	5.33314E-06	o	S	W
11.4	53.87	0.23	223.00	135.69	37.27	40.83	0.38	2.06	2.02	0.69	6.34632E-06	o	S	W
11.5	55.12	0.28	225.00	136.71	37.87	41.44	0.46	2.09	2.05	0.70	5.2197E-06	o	S	W
11.6	50.24	0.23	227.00	137.73	34.10	37.31	0.41	2.11	2.07	0.71	4.50275E-06	o	S	W
11.7	52.62	0.29	229.00	138.75	35.52	38.86	0.49	2.12	2.09	0.71	3.99848E-06	o	S	W
11.8	60.95	0.35	231.00	139.77	41.09	45.32	0.51	2.08	2.04	0.70	5.71848E-06	o	S	W
11.9	72.99	0.35	233.00	140.79	49.15	55.11	0.42	1.97	1.92	0.65	1.27611E-05	o	S	W
12.0	80.88	0.34	235.00	141.81	54.23	61.47	0.37	1.91	1.86	0.63	2.03299E-05	o	S	W
12.1	69.25	0.30	237.00	142.82	45.86	51.60	0.38	1.98	1.93	0.66	1.20276E-05	o	S	W
12.2	67.01	0.36	239.00	143.84	43.99	49.21	0.48	2.04	1.99	0.68	7.86294E-06	o	S	W
12.3	60.72	0.34	241.00	144.86	39.41	43.86	0.50	2.09	2.05	0.70	5.88267E-06	o	S	W
12.4	56.52	0.37	243.00	145.88	36.30	40.13	0.57	2.15	2.11	0.72	3.51078E-06	o	S	W
12.5	69.69	0.33	245.00	146.90	44.82	50.74	0.41	2.00	1.95	0.67	1.03987E-05	o	S	W
12.6	67.42	0.22	247.00	147.92	43.00	49.13	0.28	1.96	1.90	0.65	1.48077E-05	o	S	W
12.7	34.44	0.55	249.00	148.94	20.99	21.76	1.72	2.59	2.58	0.91	1.26912E-07	o	S	W
12.8	19.45	0.96	251.00	149.96	11.04	11.04	5.64	3.13	3.13	1.00	2.79187E-09	-	L	W
12.9	15.61	0.77	253.00	150.98	8.46	8.46	5.87	3.23	3.23	1.00	1.37655E-09	-	L	W
13.0	16.42	0.64	255.00	152.00	8.91	8.91	4.63	3.15	3.15	1.00	2.4137E-09	-	L	W
13.1	16.47	0.67	257.00	153.01	8.87	8.87	4.84	3.16	3.16	1.00	2.20084E-09	-	L	W
13.2	18.10	0.73	259.00	154.03	9.83	9.83	4.68	3.12	3.12	1.00	3.0097E-09	-	L	W
13.3	17.11	0.69	261.00	155.05	9.13	9.13	4.77	3.15	3.15	1.00	2.43336E-09	-	L	W
13.4	18.68	0.66	263.00	156.07	10.04	10.04	4.08	3.07	3.07	1.00	4.07355E-09	-	L	W
13.5	15.53	0.76	265.00	157.09	8.00	8.00	5.89	3.25	3.25	1.00	1.19696E-09	-	L	W
13.6	14.01	0.54	267.00	158.11	6.99	6.99	4.72	3.24	3.24	1.00	1.28955E-09	-	L	W
13.7	15.54	0.46	269.00	159.13	7.88	7.88	3.56	3.12	3.12	1.00	2.84353E-09	-	L	W
13.8	16.20	0.56	271.00	160.15	8.22	8.22	4.18	3.15	3.15	1.00	3.39308E-09	-	L	W
13.9	13.77	0.65	273.00	161.17	6.68	6.68	5.83	3.31	3.31	1.00	8.88159E-10	-	L	W
14.0	12.16	0.52	275.00	162.19	5.65	5.65	5.55	3.35	3.35	1.00	7.68396E-10	-	L	W
14.1	11.20	0.39	277.00	163.20	5.03	5.03	4.10	3.32	3.32	1.00	8.54054E-10	-	L	W
14.2	11.28	0.37	279.00	164.22	5.03	5.03	3.90	3.31	3.31	1.00	8.86951E-10	-	L	W
14.3	12.28	0.36	281.00	165.24	5.58	5.58	3.79	3.26	3.26	1.00	1.07468E-09	-	L	W
14.4	12.57	0.48	283.00	166.26	5.71	5.71	4.86	3.32	3.32	1.00	8.63199E-10	-	L	W
14.5	11.22	0.52	285.00	167.28	4.87	4.87	5.61	3.41	3.41	1.00	6.46349E-10	-	L	W
14.6	11.21	0.45	287.00	168.30	4.82	4.82	4.84	3.38	3.38	1.00	7.17577E-10	-	L	W
14.7	12.22	0.49	289.00	169.32	5.37	5.37	5.21	3.36	3.36	1.00	7.62848E-10	-	L	W
14.8	12.57	0.52	291.00	170.34	5.53	5.53	5.36	3.35	3.35	1.00	7.70596E-10	-	L	W
14.9	13.07	0.51	293.00	171.36	5.76	5.76	4.99	3.32	3.32	1.00	8.54951E-10	-	L	W
15.0	13.65	0.55	295.00	172.38	6.05	6.05	5.14	3.31	3.31	1.00	8.81956E-10	-	L	W
15.1	13.48	0.58	297.00	173.39	5.91	5.91	5.49	3.34	3.34	1.00	8.14125E-10	-	L	W
15.2	12.44	0.60	299.00	174.41	5.28	5.28	6.32	3.41	3.41	1.00	6.4184E-10	-	L	W
15.3	11.18	0.52	301.00	175.43	4.53	4.53	5.73	3.44	3.44	1.00	5.85402E-10	-	L	W
15.4	11.42	0.47	303.00	176.45	4.63	4.63	5.02	3.40	3.40	1.00	6.65435E-10	-	L	W
15.5	13.00	0.50	305.00	177.47	5.46	5.46	5.00	3.34	3.34	1.00	8.03486E-10	-	L	W
15.6	11.61	0.51	307.00	178.49	4.65	4.65	5.39	3.41	3.41	1.00	6.3317E-10	-	L	



15.8	9.62	0.18	311.00	180.53	3.50	3.50	2.68	3.36	3.36	1.00	7.56496E-10	-	L	W
15.9	12.61	0.21	313.00	181.55	5.08	5.08	2.25	3.18	3.18	1.00	1.92329E-09	-	L	W
16.0	13.38	0.44	315.00	182.57	5.46	5.46	4.27	3.30	3.30	1.00	9.08704E-10	-	L	W
16.1	12.33	0.50	317.00	183.58	4.86	4.86	5.43	3.40	3.40	1.00	6.61079E-10	-	L	W
16.2	14.37	0.40	319.00	184.60	5.90	5.90	3.57	3.23	3.23	1.00	1.36274E-09	-	L	W
16.3	17.01	0.56	321.00	185.62	7.25	7.25	4.02	3.18	3.18	1.00	1.87376E-09	-	L	W
16.4	17.59	0.78	323.00	186.64	7.50	7.50	5.42	3.25	3.25	1.00	1.19421E-09	-	L	W
16.5	15.60	0.87	325.00	187.66	6.42	6.42	6.99	3.37	3.37	1.00	7.30971E-10	-	L	W
16.6	15.45	0.72	327.00	188.68	6.29	6.29	5.92	3.33	3.33	1.00	8.21772E-10	-	L	W
16.7	15.45	0.65	329.00	189.70	6.25	6.25	5.33	3.31	3.31	1.00	8.87457E-10	-	L	W
16.8	14.96	0.65	331.00	190.72	5.95	5.95	5.58	3.34	3.34	1.00	8.10735E-10	-	L	W
16.9	12.83	0.47	333.00	191.74	4.82	4.82	4.96	3.38	3.38	1.00	7.03436E-10	-	L	W
17.0	15.93	0.40	335.00	192.76	6.36	6.36	3.18	3.17	3.17	1.00	2.00525E-09	-	L	W
17.1	17.31	0.70	337.00	193.77	7.01	7.01	5.00	3.25	3.25	1.00	1.17234E-09	-	L	W
17.2	17.90	0.84	339.00	194.79	7.26	7.26	5.80	3.28	3.28	1.00	9.77381E-10	-	L	W
17.3	16.85	0.87	341.00	195.81	6.69	6.69	6.45	3.33	3.33	1.00	8.19038E-10	-	L	W
17.4	14.63	0.85	343.00	196.83	5.54	5.54	7.55	3.44	3.44	1.00	5.84583E-10	-	L	W
17.5	15.93	0.70	345.00	197.85	6.14	6.14	5.56	3.32	3.32	1.00	8.42248E-10	-	L	W
17.6	17.79	0.79	347.00	198.87	7.02	7.02	5.52	3.28	3.28	1.00	9.81048E-10	-	L	W
17.7	20.17	0.95	349.00	199.89	8.14	8.14	5.69	3.23	3.23	1.00	1.32974E-09	-	L	W
17.8	20.62	1.06	351.00	200.91	8.31	8.31	6.20	3.25	3.25	1.00	1.19272E-09	-	L	W
17.9	18.70	1.17	353.00	201.93	7.33	7.33	7.71	3.35	3.35	1.00	7.75681E-10	-	L	W
18.0	18.01	1.03	355.00	202.95	6.95	6.95	7.12	3.35	3.35	1.00	7.84296E-10	-	L	W
18.1	16.67	0.96	357.00	203.96	6.26	6.26	7.31	3.39	3.39	1.00	6.85928E-10	-	L	W
18.2	17.45	0.78	359.00	204.98	6.59	6.59	5.62	3.30	3.30	1.00	9.01419E-10	-	L	W
18.3	17.44	0.89	361.00	206.00	6.55	6.55	6.42	3.34	3.34	1.00	8.02608E-10	-	L	W
18.4	13.28	0.82	363.00	207.02	4.53	4.53	8.49	3.54	3.54	1.00	4.25982E-10	-	L	W
18.5	14.93	0.45	365.00	208.04	5.28	5.28	4.00	3.30	3.30	1.00	9.19391E-10	-	L	W
18.6	16.87	0.30	367.00	209.06	6.15	6.15	2.27	3.11	3.11	1.00	3.15393E-09	-	L	W
18.7	20.47	0.43	369.00	210.08	7.79	7.79	2.56	3.05	3.05	1.00	4.80094E-09	-	L	W
18.8	23.17	0.59	371.00	211.10	9.00	9.00	3.01	3.04	3.04	1.00	5.30624E-09	-	L	W
18.9	22.96	0.71	373.00	212.12	8.85	8.85	3.68	3.09	3.09	1.00	3.58282E-09	-	L	W
19.0	33.14	0.48	375.00	213.14	13.48	13.48	1.64	2.74	2.74	1.00	4.04967E-08	o	AL	W
19.1	38.34	0.48	377.00	214.15	15.78	16.26	1.38	2.65	2.64	0.96	8.65485E-08	o	AL	W
19.2	31.21	0.80	379.00	215.17	12.45	12.45	2.90	2.91	2.91	1.00	1.27249E-08	o	AL	W
19.3	32.20	0.89	381.00	216.19	12.83	12.83	3.13	2.92	2.92	1.00	1.19521E-08	o	AL	W
19.4	39.87	0.86	383.00	217.21	16.22	16.22	2.38	2.77	2.77	1.00	3.47707E-08	o	AL	W
19.5	18.57	0.71	385.00	218.23	6.57	6.57	4.78	3.26	3.26	1.00	1.0837E-09	o	AL	W
19.6	14.42	0.49	387.00	219.25	4.68	4.68	4.62	3.38	3.38	1.00	7.17658E-10	-	AL	W
19.7	12.89	0.32	389.00	220.27	3.97	3.97	3.58	3.38	3.38	1.00	7.17377E-10	-	AL	W
19.8	15.87	0.28	391.00	221.29	5.26	5.26	2.36	3.18	3.18	1.00	1.95986E-09	-	AL	W
19.9	14.83	0.28	393.00	222.31	4.77	4.77	2.57	3.23	3.23	1.00	1.33318E-09	-	AL	W
20.0	26.79	0.31	395.00	223.33	9.99	9.99	1.33	2.81	2.81	1.00	2.51245E-08	o	AL	W

Coefficiente di permeabilità orizzontale  
Robertson 2009





# Penetrometria statica CPTU 6

Unità di misura: Kg, cm

ELABORATO n. 4-4



GEOPROGET - Studio di Geologia

via Ceccarini, 171 - 47838 Riccione (RN)

tel. 0541/606464 - email vannoni.fabio1960@libero.it

LAVORO: HERA - VASCA KENNEDY

LOCALITÀ: P.zze Kennedy - Rimini

DATA: elaborazione 01/05/2015

note:

falda: -2.5

## Litotipi

A Argille=1.9 t/mc  
AL alternanze =1.8 t/mc  
H Sabbie/limi poco addensati=1.8 t/mc  
S sabbie med. addens.=1.9 t/mc  
D sabbie dense=2.0 t/mc  
G ghiaie=2.1 t/mc  
SD Substrato decomp.=2.0 t/mc  
SU Substrato=2.1 t/mc

Z	qcN/qt bar - Kg/cm <sup>2</sup>	FsN bar - Kg/cm <sup>2</sup>	σ <sub>vc</sub> (kPa)	σ' <sub>vc</sub> (kPa)	Qi	Qtn	F	lc	lcN2	n	permeability K m/sec Robertson '05	Coesivo / Incoerente	Litotipo	Falda
0.1	0.00	0.00	1.80	1.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.2	0.00	0.00	3.60	3.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.3	0.00	0.00	5.40	5.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.4	0.00	0.00	7.20	7.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.5	0.00	0.00	9.00	9.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.6	0.00	0.00	10.80	10.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.7	0.00	0.00	12.60	12.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.8	0.00	0.00	14.40	14.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.9	0.00	0.00	16.20	16.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.0	0.00	0.00	18.00	18.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.1	0.00	0.00	19.80	19.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.2	0.00	0.00	21.60	21.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.3	0.00	0.00	23.40	23.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.4	0.00	0.00	25.20	25.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.5	0.00	0.00	27.00	27.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.6	0.00	0.00	28.80	28.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.7	0.00	0.00	30.60	30.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.8	0.00	0.00	32.40	32.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.9	0.00	0.00	34.20	34.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.0	0.00	0.00	36.00	36.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.1	0.00	0.00	37.80	37.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.2	0.00	0.00	39.60	39.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.3	0.00	0.00	41.40	41.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.4	0.00	0.00	43.20	43.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.5	0.00	0.00	45.00	45.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.6	0.00	0.00	47.00	46.02	-1.02	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.7	0.00	0.00	49.00	47.04	-1.04	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.8	0.00	0.00	51.00	48.06	-1.06	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.9	0.00	0.00	53.00	49.08	-1.08	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.0	0.00	0.00	55.00	50.10	-1.10	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.1	0.00	0.00	57.00	51.11	-1.12	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.2	0.00	0.00	59.00	52.13	-1.13	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.3	0.00	0.00	61.00	53.15	-1.15	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.4	0.00	0.00	63.00	54.17	-1.16	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.5	0.00	0.00	65.00	55.19	-1.18	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.6	0.00	0.00	67.00	56.21	-1.19	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.7	0.00	0.00	69.00	57.23	-1.21	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.8	0.00	0.00	71.00	58.25	-1.22	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.9	0.00	0.00	73.00	59.27	-1.23	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.0	0.00	0.00	75.00	60.29	-1.24	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.1	84.01	0.72	77.00	61.30	133.04	107.04	0.73	1.73	1.80	0.57	2.95485E-05	o	V	W
4.2	84.14	0.62	79.00	62.32	131.04	105.57	0.63	1.69	1.77	0.56	3.71959E-05	o	V	W
4.3	63.64	0.61	81.00	63.34	97.19	81.16	0.82	1.87	1.93	0.62	1.21706E-05	o	V	W
4.4	46.78	0.54	83.00	64.36	69.94	60.36	1.00	2.03	2.08	0.68	4.16646E-06	o	V	W
4.5	29.57	0.36	85.00	65.38	43.03	38.68	1.24	2.26	2.30	0.76	3.35633E-07	o	V	W
4.6	35.48	0.50	87.00	66.40	51.06	45.93	1.45	2.24	2.27	0.75	1.06739E-06	o	V	W
4.7	35.76	0.31	89.00	67.42	50.66	44.93	0.88	2.11	2.16	0.71	2.47364E-06	o	V	W
4.8	16.85	0.36	91.00	68.44	22.80	21.86	2.27	2.64	2.65	0.89	7.89193E-05	o	V	W
4.9	15.17	0.45	93.00	69.46	20.06	19.60	3.17	2.77	2.77	0.94	3.44719E-05	o	V	W
5.0	6.34	0.44	95.00	70.48	7.46	7.46	7.29	3.33	3.33	1.00	8.30409E-10	o	V	W
5.1	10.07	0.27	97.00	71.49	12.44	12.39	2.70	2.89	2.89	0.99	1.44321E-05	o	V	W
5.2	11.91	0.34	99.00	72.51	14.73	14.58	2.82	2.84	2.84	0.97	2.02847E-05	o	V	W
5.3	12.33	0.44	101.00	73.53	15.07	15.06	3.93	2.92	2.92	1.00	1.16455E-05	o	S	W
5.4	32.35	0.31	103.00	74.55	41.15	38.04	1.00	2.22	2.25	0.74	1.29606E-05	o	S	W
5.5	56.60	0.24	105.00	75.57	72.01	63.82	0.36	1.79	1.84	0.59	2.2937E-05	o	S	W
5.6	76.18	0.35	107.00	76.59	96.08	84.78	0.40	1.70	1.75	0.55	4.38687E-05	o	S	W
5.7	61.82	0.55	109.00	77.61	76.66	69.60	0.77	1.93	1.97	0.64	9.3974E-06	o	S	W
5.8	74.25	0.69	111.00	78.63	91.13	82.75	0.81	1.88	1.92	0.62	1.32052E-05	o	S	W
5.9	81.58	0.49	113.00	79.65	98.96	89.22	0.52	1.75	1.79	0.57	3.35126E-05	o	S	W
6.0	63.41	0.48	115.00	80.66	75.61	69.40	0.65	1.90	1.93	0.62	1.21905E-05	o	S	W
6.1	51.00	0.38	117.00	81.68	59.75	55.49	0.65	1.98	2.01	0.66	6.87172E-06	o	S	W
6.2	45.09	0.31	119.00	82.70	51.99	48.63	0.61	2.02	2.05	0.67	5.38937E-06	o	S	W
6.3	41.80	0.33	121.00	83.72	47.49	44.78	0.69	2.08	2.10	0.69	3.59371E-06	o	S	W
6.4	41.27	0.33	123.00	84.74	46.28	43.84	0.70	2.10	2.12	0.70	3.31178E-06	o	S	W
6.5	47.17	0.22	125.00	85.76	52.44	49.37	0.40	1.93	1.96	0.64	1.00071E-05	o	S	W
6.6	48.68	0.28	127.00	86.78	53.52	50.71	0.51	1.97	1.99	0.65	7.79615E-06	o	S	W
6.7	35.21	0.29	129.00	87.80	37.83	36.46	0.85	2.21	2.23	0.74	1.50433E-06	o	S	W
6.8	42.42	0.36	131.00	88.82	45.33	43.61	0.75	2.12	2.13	0.71	2.94453E-06	o	S	W
6.9	38.15	0.19	133.00	89.84	40.14	38.69	0.52	2.09	2.10	0.69	3.67963E-06	o	S	W

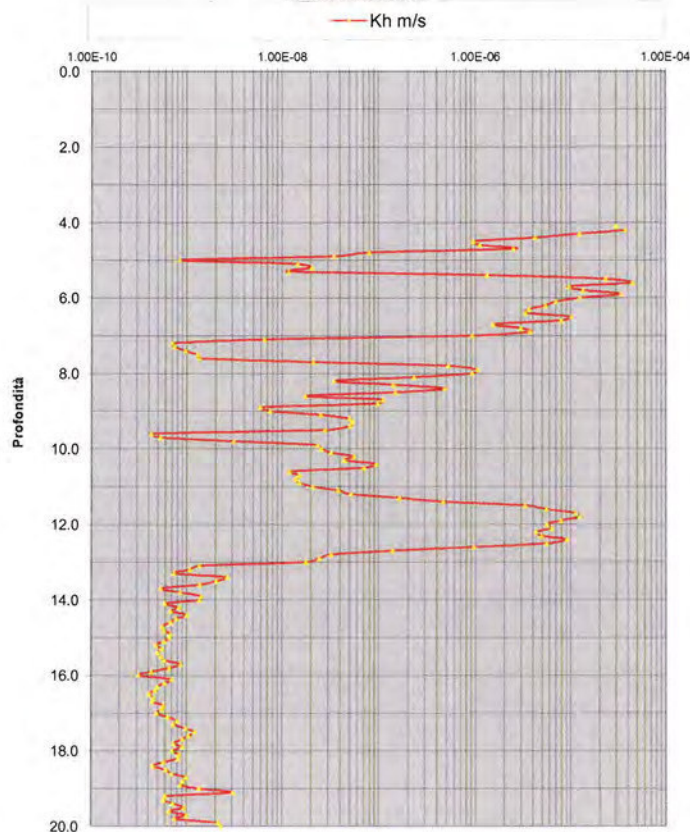


7.0	27.32	0.19	135.00	90.85	27.98	27.29	0.72	2.29	2.30	0.77	9.09189E-07	o	S	W
7.1	10.90	0.34	137.00	91.87	10.14	10.14	3.20	3.01	3.01	1.00	6.44143E-09	o	S	W
7.2	6.63	0.35	139.00	92.89	5.50	5.50	6.06	3.39	3.39	1.00	5.94443E-10	o	S	W
7.3	6.24	0.27	141.00	93.91	5.01	5.01	4.97	3.37	3.37	1.00	7.32982E-10	o	S	W
7.4	6.83	0.25	143.00	94.93	5.54	5.54	4.10	3.29	3.29	1.00	9.52672E-10	o	S	W
7.5	6.96	0.21	145.00	95.95	5.59	5.59	3.44	3.24	3.24	1.00	1.28916E-09	o	S	W
7.6	7.18	0.20	147.00	96.97	5.74	5.74	3.48	3.23	3.23	1.00	1.32893E-09	o	S	W
7.7	14.22	0.28	149.00	97.99	12.70	12.69	2.23	2.84	2.84	0.98	2.10301E-06	o	S	W
7.8	38.59	0.60	151.00	99.01	36.67	36.51	1.61	2.38	2.38	0.81	5.18416E-07	o	S	W
7.9	35.39	0.31	153.00	100.03	33.14	33.04	0.92	2.28	2.28	0.77	1.03113E-06	o	S	W
8.0	36.85	0.37	155.00	101.05	34.21	34.18	1.05	2.30	2.30	0.78	9.06112E-07	o	S	W
8.1	27.11	0.37	157.00	102.06	24.50	24.52	1.45	2.50	2.50	0.85	2.29365E-07	o	S	W
8.2	23.74	0.75	159.00	103.08	21.03	21.05	3.37	2.77	2.77	0.96	3.43725E-08	o	S	W
8.3	34.22	0.84	161.00	104.10	30.67	30.77	2.58	2.57	2.57	0.88	1.41067E-07	o	S	W
8.4	36.94	0.52	163.00	105.12	32.89	33.12	1.47	2.40	2.39	0.81	4.7621E-07	o	S	W
8.5	25.50	0.39	165.00	106.14	21.99	22.11	1.62	2.56	2.56	0.88	1.47027E-07	o	S	W
8.6	23.94	1.02	167.00	107.16	20.33	20.34	4.59	2.87	2.87	0.99	1.73456E-08	o	S	W
8.7	31.86	0.77	169.00	108.18	27.30	27.49	2.55	2.60	2.60	0.89	1.10141E-07	o	S	W
8.8	25.29	0.46	171.00	109.20	21.13	21.29	1.94	2.62	2.62	0.90	9.74283E-08	o	S	W
8.9	16.58	0.71	173.00	110.22	13.17	13.17	4.76	3.02	3.02	1.00	5.86578E-09	o	S	W
9.0	19.71	0.94	175.00	111.24	15.79	15.79	5.24	2.99	2.99	1.00	7.43571E-09	o	S	W
9.1	27.44	1.10	177.00	112.25	22.38	22.43	4.27	2.81	2.81	0.98	2.50059E-08	o	S	W
9.2	28.69	0.85	179.00	113.27	23.24	23.39	3.15	2.72	2.72	0.94	4.95414E-08	o	S	W
9.3	29.55	0.87	181.00	114.29	23.75	23.93	3.13	2.71	2.71	0.94	5.27289E-08	o	S	W
9.4	30.86	0.97	183.00	115.31	24.64	24.83	3.35	2.71	2.71	0.94	5.04054E-08	o	S	W
9.5	23.82	0.71	185.00	116.33	18.48	18.54	3.21	2.80	2.80	0.97	2.76432E-08	o	S	W
9.6	7.21	0.50	187.00	117.35	4.43	4.43	8.39	3.55	3.55	1.00	4.19431E-10	o	S	W
9.7	6.81	0.31	189.00	118.37	4.04	4.04	5.60	3.47	3.47	1.00	5.24415E-10	o	S	W
9.8	10.51	0.27	191.00	119.39	7.03	7.03	2.85	3.11	3.11	1.00	3.09973E-09	o	S	W
9.9	20.91	0.53	193.00	120.41	15.42	15.46	2.78	2.82	2.82	0.99	2.31743E-08	o	S	W
10.0	25.77	0.84	195.00	121.43	19.19	19.26	3.52	2.81	2.81	0.98	2.54262E-08	o	S	W
10.1	28.50	0.94	197.00	122.44	21.20	21.33	3.54	2.78	2.78	0.97	3.18616E-08	o	S	W
10.2	31.55	0.89	199.00	123.46	23.43	23.71	3.01	2.70	2.70	0.94	5.49545E-08	o	S	W
10.3	27.71	0.72	201.00	124.48	20.20	20.40	2.81	2.73	2.73	0.95	4.40828E-08	o	S	W
10.4	34.32	0.82	203.00	125.50	25.18	25.66	2.55	2.63	2.63	0.91	9.36271E-08	o	S	W
10.5	26.26	0.49	205.00	126.52	18.72	19.02	2.00	2.67	2.67	0.93	6.96863E-08	o	S	W
10.6	23.68	0.95	207.00	127.54	16.58	16.58	4.39	2.92	2.92	1.00	1.17642E-08	o	S	W
10.7	26.22	1.06	209.00	128.56	18.37	18.37	4.39	2.89	2.89	1.00	1.49413E-08	o	S	W
10.8	25.57	1.03	211.00	129.58	17.71	17.71	4.39	2.90	2.90	1.00	1.37599E-08	o	S	W
10.9	27.23	1.13	213.00	130.60	18.80	18.80	4.51	2.89	2.89	1.00	1.50102E-08	o	S	W
11.0	29.23	1.12	215.00	131.62	20.13	20.14	4.15	2.84	2.84	1.00	2.07146E-08	o	S	W
11.1	33.17	1.10	217.00	132.63	22.87	23.09	3.55	2.76	2.76	0.97	3.77161E-08	o	S	W
11.2	34.85	1.05	219.00	133.65	23.92	24.26	3.22	2.71	2.71	0.95	5.08283E-08	o	S	W
11.3	41.78	1.07	221.00	134.67	28.76	29.70	2.30	2.56	2.55	0.89	1.61474E-07	o	S	W
11.4	45.35	0.75	223.00	135.69	31.11	32.69	1.48	2.42	2.40	0.83	4.55933E-07	o	S	W
11.5	55.09	0.39	225.00	136.71	37.84	41.09	0.63	2.15	2.12	0.72	3.23791E-06	o	S	W
11.6	63.82	0.43	227.00	137.73	43.76	48.03	0.59	2.08	2.04	0.70	5.46175E-06	o	S	W
11.7	65.67	0.28	229.00	138.75	44.74	49.80	0.38	1.99	1.94	0.66	1.10817E-05	o	S	W
11.8	69.07	0.31	231.00	139.77	46.78	52.28	0.39	1.97	1.93	0.65	1.21472E-05	o	S	W
11.9	64.61	0.34	233.00	140.79	43.32	48.14	0.46	2.04	1.99	0.68	7.76475E-06	o	S	W
12.0	65.19	0.43	235.00	141.81	43.40	48.03	0.58	2.08	2.04	0.70	5.5393E-06	o	S	W
12.1	63.95	0.37	237.00	142.82	42.22	46.92	0.52	2.07	2.03	0.69	6.2162E-06	o	S	W
12.2	63.21	0.46	239.00	143.84	41.40	45.77	0.64	2.12	2.08	0.71	4.26181E-06	o	S	W
12.3	68.43	0.52	241.00	144.86	44.63	49.56	0.67	2.10	2.06	0.71	4.85526E-06	o	S	W
12.4	69.40	0.36	243.00	145.88	44.95	50.62	0.46	2.02	1.97	0.67	8.90815E-06	o	S	W
12.5	61.75	0.35	245.00	146.90	39.53	44.17	0.50	2.09	2.04	0.70	5.49533E-06	o	S	W
12.6	40.24	0.30	247.00	147.92	24.99	26.98	0.68	2.32	2.30	0.80	9.41961E-07	o	S	W
12.7	35.77	0.59	249.00	148.94	21.87	22.70	1.76	2.59	2.57	0.90	1.36031E-07	o	S	W
12.8	30.04	0.79	251.00	149.96	17.96	18.08	2.88	2.78	2.78	0.98	3.16299E-08	o	S	W
12.9	31.50	1.02	253.00	150.98	18.77	18.78	3.53	2.82	2.82	1.00	2.40715E-08	o	S	W
13.0	31.11	1.16	255.00	152.00	18.38	18.38	4.05	2.86	2.86	1.00	1.75478E-08	o	S	W
13.1	17.78	1.08	257.00	153.01	9.71	9.71	7.07	3.23	3.23	1.00	1.33791E-09	-	L	W
13.2	16.01	0.91	259.00	154.03	8.50	8.50	6.78	3.27	3.27	1.00	1.06091E-09	-	L	W
13.3	13.08	0.76	261.00	155.05	6.59	6.59	7.28	3.37	3.37	1.00	7.27148E-10	-	L	W
13.4	16.61	0.60	263.00	156.07	8.75	8.75	4.32	3.14	3.14	1.00	2.62463E-09	-	L	W
13.5	17.59	0.81	265.00	157.09	9.29	9.29	5.39	3.17	3.17	1.00	2.02046E-09	-	L	W
13.6	17.26	0.94	267.00	158.11	9.01	9.01	6.43	3.23	3.23	1.00	1.34499E-09	-	L	W
13.7	11.57	0.82	269.00	159.13	5.43	5.43	8.34	3.47	3.47	1.00	5.26699E-10	-	L	W
13.8	11.82	0.49	271.00	160.15	5.54	5.54	4.78	3.32	3.32	1.00	8.47057E-10	-	L	W
13.9	13.44	0.43	273.00	161.17	6.48	6.48	4.05	3.23	3.23	1.00	1.39565E-09	-	L	W
14.0	14.91	0.60	275.00	162.19	7.32	7.32	4.92	3.23	3.23	1.00	1.33993E-09	-	L	W
14.1	12.30	0.75	277.00	163.20	5.69	5.69	7.88	3.44	3.44	1.00	5.80284E-10	-	L	W
14.2	13.03	0.58	279.00	164.22	6.08	6.08	5.65	3.33	3.33	1.00	8.20873E-10	-	L	W
14.3	12.12	0.59	281.00	165.24	5.49	5.49	6.32	3.40	3.40	1.00	6.69911E-10	-	L	W
14.4	14.12	0.57	283.00	166.26	6.62	6.62	5.06	3.27	3.27	1.00	9.87621E-10	-	L	W
14.5	13.97	0.75	285.00	167.28	6.48	6.48	6.69	3.35	3.35	1.00	7.67138E-10	-	L	W
14.6	13.34	0.76	287.00	168.30	6.06	6.06	7.23	3.40	3.40	1.00	6.68219E-10	-	L	W
14.7	11.60	0.70	289.00	169.32	5.01	5.01	7.17	3.46	3.46	1.00	5.46451E-10	-	L	W
14.8	12.03	0.66	291.00	170.34	5.21	5.21	7.23	3.45	3.45	1.00	5.66897E-10	-	L	W
14.9	12.28	0.57	293.00	171.36	5.31	5.31	6.10	3.40	3.40	1.00	6.65375E-10	-	L	W
15.0	12.22	0.56	295.00	172.38	5.24	5.24	6.06	3.40	3.40	1.00	6.8027E-10	-	L	W
15.1	12.32	0.68	297.00	173.39	5.25	5.25	7.26	3.45	3.45	1.00	5.69939E-10	-	L	W
15.2	11.30	0.72	299.00	174.41	4.63	4.63	7.79	3.51	3.51	1.00	4.68842E-10	-	L	W
15.3	11.59	0.65	301.00	175.43	4.76	4.76	6.80	3.47	3.47	1.00	5.39472E-10	-	L	W
15.4	11.17	0.64	303.00	176.45	4.49	4.49	7.09	3.50	3.50	1.00	4.88688E-10	-	L	W
15.5	11.52	0.63	305.00	177.47	4.64	4.64	6.72	3.47	3.47	1.00	5.30489E-10	-	L	W
15.6	12.33	0.64	307.00	178.49	5.05	5.05	6.83	3.45	3.45	1.00	5.740			



15.8	13.57	0.71	311.00	180.53	5.64	5.64	6.80	3.41	3.41	1.00	6.50893E-10	-	L	W
15.9	10.38	0.56	313.00	181.55	3.88	3.88	6.95	3.54	3.54	1.00	4.22999E-10	-	L	W
16.0	8.38	0.37	315.00	182.57	2.77	2.77	6.38	3.64	3.64	1.00	3.09377E-10	-	L	W
16.1	10.06	0.25	317.00	183.58	3.64	3.64	3.29	3.39	3.39	1.00	6.89396E-10	-	L	W
16.2	11.09	0.46	319.00	184.60	4.16	4.16	5.17	3.44	3.44	1.00	5.76209E-10	-	L	W
16.3	11.21	0.57	321.00	185.62	4.19	4.19	6.40	3.50	3.50	1.00	4.91832E-10	-	L	W
16.4	11.23	0.61	323.00	186.64	4.17	4.17	6.86	3.51	3.51	1.00	4.62373E-10	-	L	W
16.5	9.82	0.46	325.00	187.66	3.40	3.40	6.21	3.56	3.56	1.00	3.97884E-10	-	L	W
16.6	11.11	0.60	327.00	188.68	4.03	4.03	6.88	3.53	3.53	1.00	4.45356E-10	-	L	W
16.7	10.39	0.49	329.00	189.70	3.64	3.64	6.24	3.54	3.54	1.00	4.27912E-10	-	L	W
16.8	11.43	0.48	331.00	190.72	4.14	4.14	5.27	3.45	3.45	1.00	5.64516E-10	-	L	W
16.9	12.06	0.54	333.00	191.74	4.43	4.43	6.12	3.46	3.46	1.00	5.42196E-10	-	L	W
17.0	10.94	0.50	335.00	192.76	3.83	3.83	5.85	3.50	3.50	1.00	4.7671E-10	-	L	W
17.1	11.58	0.42	337.00	193.77	4.12	4.12	4.58	3.42	3.42	1.00	6.24574E-10	-	L	W
17.2	14.35	0.57	339.00	194.79	5.48	5.48	5.18	3.35	3.35	1.00	7.84434E-10	-	L	W
17.3	15.46	0.79	341.00	195.81	5.99	5.99	6.58	3.38	3.38	1.00	7.14119E-10	-	L	W
17.4	17.97	0.85	343.00	196.83	7.20	7.20	5.86	3.28	3.28	1.00	9.59945E-10	-	L	W
17.5	19.54	0.94	345.00	197.85	7.94	7.94	5.85	3.25	3.25	1.00	1.18935E-09	-	L	W
17.6	20.86	1.21	347.00	198.87	8.53	8.53	6.92	3.27	3.27	1.00	1.02849E-09	-	L	W
17.7	20.76	1.35	349.00	199.89	8.43	8.43	7.80	3.31	3.31	1.00	8.91159E-10	-	L	W
17.8	18.62	1.28	351.00	200.91	7.34	7.34	8.47	3.38	3.38	1.00	7.16116E-10	-	L	W
17.9	19.56	1.14	353.00	201.93	7.74	7.74	7.08	3.31	3.31	1.00	8.85459E-10	-	L	W
18.0	18.24	1.23	355.00	202.95	7.06	7.06	8.36	3.39	3.39	1.00	6.95649E-10	-	L	W
18.1	18.12	0.99	357.00	203.96	6.96	6.96	6.78	3.33	3.33	1.00	8.19021E-10	-	L	W
18.2	17.86	0.96	359.00	204.98	6.79	6.79	6.74	3.34	3.34	1.00	8.01506E-10	-	L	W
18.3	15.33	0.92	361.00	206.00	5.54	5.54	7.85	3.45	3.45	1.00	5.66132E-10	-	L	W
18.4	12.39	0.64	363.00	207.02	4.11	4.11	7.24	3.53	3.53	1.00	4.36365E-10	-	L	W
18.5	12.77	0.47	365.00	208.04	4.26	4.26	5.14	3.43	3.43	1.00	5.94715E-10	-	L	W
18.6	14.83	0.64	367.00	209.06	5.20	5.20	5.74	3.39	3.39	1.00	6.81936E-10	-	L	W
18.7	16.00	0.51	369.00	210.08	5.71	5.71	4.16	3.28	3.28	1.00	9.75455E-10	-	L	W
18.8	15.36	0.50	371.00	211.10	5.37	5.37	4.26	3.31	3.31	1.00	8.94808E-10	-	L	W
18.9	15.31	0.53	373.00	212.12	5.31	5.31	4.53	3.32	3.32	1.00	8.42216E-10	-	L	W
19.0	16.64	0.47	375.00	213.14	5.89	5.89	3.62	3.23	3.23	1.00	1.32983E-09	-	L	W
19.1	21.13	0.60	377.00	214.15	7.91	7.91	3.47	3.12	3.12	1.00	3.00508E-09	-	L	W
19.2	14.46	0.67	379.00	215.17	4.82	4.82	6.27	3.44	3.44	1.00	5.85253E-10	-	L	W
19.3	11.95	0.40	381.00	216.19	3.66	3.66	4.35	3.45	3.45	1.00	5.65959E-10	-	L	W
19.4	12.43	0.30	383.00	217.21	3.84	3.84	3.48	3.38	3.38	1.00	7.0599E-10	-	L	W
19.5	14.72	0.38	385.00	218.23	4.85	4.85	3.46	3.29	3.29	1.00	9.28385E-10	-	L	W
19.6	13.82	0.48	387.00	219.25	4.41	4.41	4.83	3.41	3.41	1.00	6.48839E-10	-	L	W
19.7	15.18	0.38	389.00	220.27	4.99	4.99	3.35	3.28	3.28	1.00	9.81776E-10	-	L	W
19.8	13.41	0.36	391.00	221.29	4.17	4.17	3.76	3.37	3.37	1.00	7.34486E-10	-	L	W
19.9	16.99	0.34	393.00	222.31	5.72	5.72	2.59	3.17	3.17	1.00	2.11764E-09	-	L	W
20.0	18.25	0.41	395.00	223.33	6.24	6.24	2.86	3.16	3.16	1.00	2.26249E-09	-	L	W

Coefficiente di permeabilità orizzontale  
Robertson 2009





# Penetrometria statica CPTU 7

Unità di misura: Kg, cm

ELABORATO n. 4 - 4



GEOPROGET - Studio di Geologia

via Ceccarini, 171 - 47838 Riccione (RN)

tel. 0541/606464 - email vannoni.fabio1960@libero.it

LAVORO: HERA - VASCA KENNEDY

LOCALITÀ: P.zze Kennedy - Rimini

DATA: elaborazione 01/05/2015

note:

falda: -2.5

## Litotipi

A Argille=1.9 t/mc  
AL alternanze =1.8 t/mc  
H Sabbie/limi poco addensati=1.8 t/mc  
S sabbie med. addens.=1.9 t/mc  
D sabbie dense=2.0 t/mc  
G ghiaie=2.1 t/mc  
SD Substrato decomp.=2.0 t/mc  
SU Substrato=2.1 t/mc

Z	qcN/qt bar - Kg/cm <sup>2</sup>	FsN bar - Kg/cm <sup>2</sup>	σvc (kPa)	σ'vc (kPa)	Qi	Qtn	F	lc	lcN2	n	permeability K m/sec Robertson '93	Coesivo / Incoerente	Litotipo	Falda
0.1	0.00	0.00	1.80	1.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.2	0.00	0.00	3.60	3.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.3	0.00	0.00	5.40	5.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.4	0.00	0.00	7.20	7.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.5	0.00	0.00	9.00	9.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.6	0.00	0.00	10.80	10.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.7	0.00	0.00	12.60	12.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.8	0.00	0.00	14.40	14.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.9	0.00	0.00	16.20	16.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.0	0.00	0.00	18.00	18.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.1	0.00	0.00	19.80	19.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.2	0.00	0.00	21.60	21.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.3	0.00	0.00	23.40	23.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.4	0.00	0.00	25.20	25.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.5	0.00	0.00	27.00	27.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.6	0.00	0.00	28.80	28.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.7	0.00	0.00	30.60	30.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.8	0.00	0.00	32.40	32.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.9	0.00	0.00	34.20	34.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.0	0.00	0.00	36.00	36.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.1	0.00	0.00	37.80	37.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.2	0.00	0.00	39.60	39.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.3	0.00	0.00	41.40	41.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.4	0.00	0.00	43.20	43.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.5	0.00	0.00	45.00	45.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.6	0.00	0.00	47.00	46.02	-1.02	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.7	0.00	0.00	49.00	47.04	-1.04	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.8	0.00	0.00	51.00	48.06	-1.06	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.9	0.00	0.00	53.00	49.08	-1.08	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.0	0.00	0.00	55.00	50.10	-1.10	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.1	0.00	0.00	57.00	51.11	-1.12	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.2	0.00	0.00	59.00	52.13	-1.13	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.3	0.00	0.00	61.00	53.15	-1.15	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.4	0.00	0.00	63.00	54.17	-1.16	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.5	0.00	0.00	65.00	55.19	-1.18	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.6	0.00	0.00	67.00	56.21	-1.19	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.7	0.00	0.00	69.00	57.23	-1.21	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.8	0.00	0.00	71.00	58.25	-1.22	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.9	0.00	0.00	73.00	59.27	-1.23	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.0	0.00	0.00	75.00	60.29	-1.24	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.1	0.00	0.00	77.00	61.30	-1.26	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.2	0.00	0.00	79.00	62.32	-1.27	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.3	0.00	0.00	81.00	63.34	-1.28	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.4	0.00	0.00	83.00	64.36	-1.29	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.5	0.00	0.00	85.00	65.38	-1.30	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.6	0.00	0.00	87.00	66.40	-1.31	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.7	0.00	0.00	89.00	67.42	-1.32	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.8	0.00	0.00	91.00	68.44	-1.33	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.9	0.00	0.00	93.00	69.46	-1.34	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
5.0	0.00	0.00	95.00	70.48	-1.35	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
5.1	0.00	0.00	97.00	71.49	-1.36	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
5.2	0.00	0.00	99.00	72.51	-1.37	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
5.3	0.00	0.00	101.00	73.53	-1.37	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
5.4	0.00	0.00	103.00	74.55	-1.38	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
5.5	0.00	0.00	105.00	75.57	-1.39	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
5.6	0.00	0.00	107.00	76.59	-1.40	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
5.7	0.00	0.00	109.00	77.61	-1.40	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
5.8	0.00	0.00	111.00	78.63	-1.41	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
5.9	0.00	0.00	113.00	79.65	-1.42	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
6.0	0.00	0.00	115.00	80.66	-1.43	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
6.1	10.70	0.14	117.00	81.68	11.41	11.29	1.47	2.78	2.78	0.95	3.09138E-08	o	C	W
6.2	8.42	0.36	119.00	82.70	8.54	8.54	4.46	3.15	3.15	1.00	2.33073E-09	o	C	W
6.3	18.37	0.43	121.00	83.72	20.05	19.75	2.48	2.70	2.70	0.92	5.44355E-08	o	S	W
6.4	20.89	0.37	123.00	84.74	22.71	22.23	1.87	2.59	2.59	0.88	1.16223E-07	o	S	W
6.5	23.58	0.30	125.00	85.76	25.49	24.79	1.33	2.46	2.47	0.83	2.70634E-07	o	S	W
6.6	35.10	0.55	127.00	86.78	38.17	37.00	1.62	2.37	2.38	0.80	5.25535E-07	o	S	W
6.7	43.50	0.40	129.00	87.80	47.09	45.16	0.81	2.12	2.14	0.71	2.87755E-06	o	S	W
6.8	46.81	0.31	131.00	88.82	50.17	48.05	0.58	2.03	2.04	0.67	5.835E-06	o	S	W
6.9	43.82	0.33	133.00	89.84	46.32	44.64	0.65	2.08	2.09	0.69	3.87553E-06	o	S	W

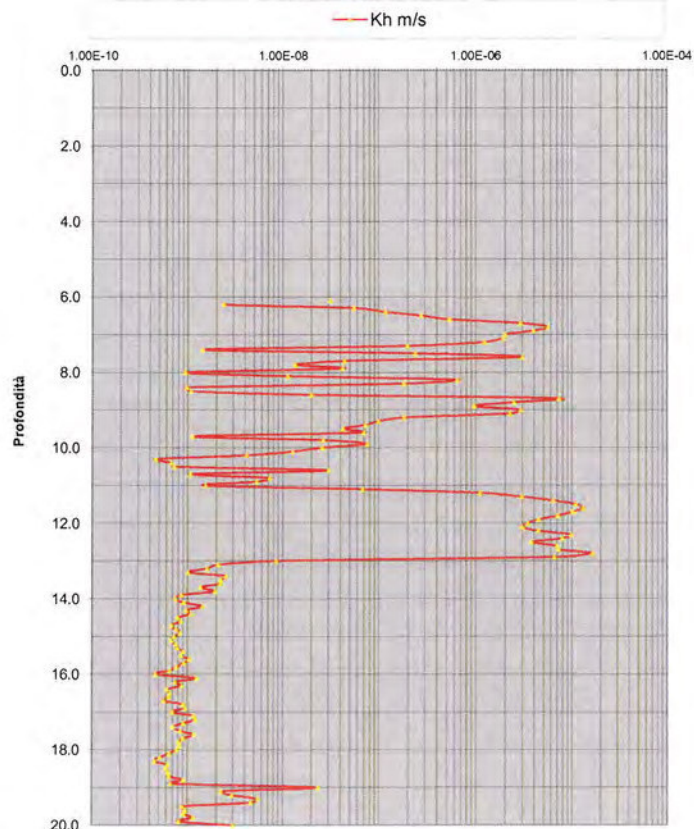


7.0	39.43	0.32	135.00	90.85	41.05	39.85	0.83	2.18	2.19	0.73	1.86346E-06	o	S	W
7.1	37.45	0.28	137.00	91.87	38.46	37.46	0.77	2.19	2.20	0.73	1.87554E-06	o	S	W
7.2	32.29	0.24	139.00	92.89	32.57	31.89	0.79	2.25	2.26	0.76	1.19987E-06	o	S	W
7.3	21.72	0.25	141.00	93.91	21.16	20.93	1.25	2.52	2.52	0.86	1.85988E-07	o	S	W
7.4	8.72	0.40	143.00	94.93	7.49	7.49	4.94	3.22	3.22	1.00	1.40927E-09	o	S	W
7.5	24.11	0.29	145.00	95.95	23.11	22.92	1.29	2.49	2.49	0.85	2.3461E-07	o	S	W
7.6	36.58	0.17	147.00	96.97	35.45	35.00	0.49	2.13	2.13	0.71	2.8732E-06	o	S	W
7.7	18.76	0.39	149.00	97.99	17.24	17.21	2.28	2.73	2.73	0.94	4.34146E-08	o	S	W
7.8	15.33	0.44	151.00	99.01	13.65	13.65	3.21	2.90	2.90	1.00	1.33356E-08	o	S	W
7.9	16.75	0.29	153.00	100.03	14.88	14.87	1.88	2.74	2.74	0.94	4.16257E-08	o	S	W
8.0	7.66	0.32	155.00	101.05	5.89	5.89	4.67	3.29	3.29	1.00	9.24405E-10	o	S	W
8.1	11.83	0.25	157.00	102.06	9.82	9.82	2.20	2.93	2.93	1.00	1.11492E-08	o	S	W
8.2	31.16	0.29	159.00	103.08	28.08	28.18	0.97	2.35	2.35	0.80	6.32895E-07	o	S	W
8.3	22.44	0.25	161.00	104.10	19.58	19.65	1.18	2.53	2.53	0.87	1.79876E-07	o	S	W
8.4	8.89	0.43	163.00	105.12	6.74	6.74	5.37	3.28	3.28	1.00	9.59547E-10	o	S	W
8.5	8.29	0.32	165.00	106.14	6.10	6.10	4.34	3.26	3.26	1.00	1.06757E-09	o	S	W
8.6	13.96	0.23	167.00	107.16	11.20	11.21	1.91	2.85	2.85	0.99	1.96743E-08	o	S	W
8.7	53.78	0.30	169.00	108.18	47.16	48.19	0.49	2.01	2.01	0.67	7.1901E-06	o	S	W
8.8	42.07	0.30	171.00	109.20	36.19	36.94	0.64	2.17	2.16	0.73	2.42373E-06	o	S	W
8.9	48.47	0.77	173.00	110.22	41.53	42.31	1.40	2.30	2.29	0.78	9.48732E-07	o	S	W
9.0	57.98	0.64	175.00	111.24	49.51	50.83	0.97	2.15	2.14	0.72	2.86457E-06	o	S	W
9.1	40.22	0.27	177.00	112.25	33.54	34.46	0.60	2.18	2.17	0.73	2.20105E-06	o	S	W
9.2	31.91	0.56	179.00	113.27	26.03	26.40	1.85	2.54	2.53	0.87	1.80961E-07	o	S	W
9.3	32.19	0.78	181.00	114.29	26.02	26.32	2.57	2.62	2.62	0.90	9.80789E-08	o	S	W
9.4	29.70	0.75	183.00	115.31	23.66	23.90	2.69	2.67	2.66	0.92	7.15158E-08	o	S	W
9.5	28.26	0.86	185.00	116.33	22.22	22.37	3.24	2.74	2.74	0.95	4.20944E-08	o	S	W
9.6	28.65	0.68	187.00	117.35	22.33	22.58	2.55	2.67	2.67	0.92	6.88327E-08	o	S	W
9.7	12.31	0.70	189.00	118.37	8.60	8.60	6.74	3.26	3.26	1.00	1.10185E-09	o	S	W
9.8	20.87	0.50	191.00	119.39	15.53	15.59	2.63	2.81	2.81	0.98	2.61093E-08	o	S	W
9.9	28.70	0.63	193.00	120.41	21.76	22.06	2.36	2.66	2.66	0.92	7.50703E-08	o	S	W
10.0	25.44	0.81	195.00	121.43	18.93	18.99	3.46	2.81	2.81	0.98	2.53992E-08	o	S	W
10.1	20.57	0.69	197.00	122.44	14.86	14.86	3.70	2.91	2.91	1.00	1.25807E-08	o	S	W
10.2	19.04	1.01	199.00	123.46	13.50	13.50	5.91	3.07	3.07	1.00	4.09359E-09	o	S	W
10.3	9.30	0.85	201.00	124.48	5.71	5.71	10.50	3.52	3.52	1.00	4.55245E-10	o	S	W
10.4	8.64	0.43	203.00	125.50	5.13	5.13	5.85	3.40	3.40	1.00	6.61966E-10	o	S	W
10.5	8.15	0.32	205.00	126.52	4.70	4.70	4.66	3.38	3.38	1.00	7.15861E-10	o	S	W
10.6	19.02	0.32	207.00	127.54	13.00	13.07	1.87	2.79	2.79	0.98	2.97338E-08	o	S	W
10.7	9.31	0.30	209.00	128.56	5.47	5.47	3.73	3.27	3.27	1.00	1.04818E-09	o	S	W
10.8	14.40	0.32	211.00	129.58	9.26	9.26	2.62	2.99	2.99	1.00	7.20046E-09	o	S	W
10.9	18.04	0.71	213.00	130.60	11.91	11.91	4.47	3.04	3.04	1.00	5.21135E-09	o	S	W
11.0	14.72	0.79	215.00	131.62	9.33	9.33	6.31	3.21	3.21	1.00	1.51637E-09	o	S	W
11.1	31.69	0.75	217.00	132.63	21.78	22.17	2.53	2.68	2.67	0.93	6.69651E-08	o	S	W
11.2	47.01	0.51	219.00	133.65	32.83	34.86	0.98	2.30	2.28	0.78	1.0829E-06	o	S	W
11.3	54.98	0.43	221.00	134.67	38.37	41.44	0.69	2.16	2.13	0.73	2.93236E-06	o	S	W
11.4	63.21	0.39	223.00	135.69	44.01	48.20	0.54	2.06	2.03	0.69	6.23336E-06	o	S	W
11.5	69.46	0.35	225.00	136.71	48.15	53.32	0.44	1.99	1.95	0.66	1.07931E-05	o	S	W
11.6	68.38	0.29	227.00	137.73	47.01	52.34	0.37	1.96	1.92	0.65	1.29532E-05	o	S	W
11.7	63.91	0.28	229.00	138.75	43.49	48.33	0.38	2.00	1.96	0.66	9.9895E-06	o	S	W
11.8	60.88	0.31	231.00	139.77	41.03	45.42	0.44	2.05	2.01	0.68	6.99164E-06	o	S	W
11.9	59.00	0.38	233.00	140.79	39.42	43.35	0.57	2.11	2.08	0.71	4.3562E-06	o	S	W
12.0	61.67	0.50	235.00	141.81	40.96	44.93	0.72	2.15	2.11	0.72	3.38147E-06	o	S	W
12.1	52.17	0.33	237.00	142.82	34.14	37.42	0.57	2.17	2.13	0.73	2.96065E-06	o	S	W
12.2	60.06	0.39	239.00	143.84	39.26	43.42	0.57	2.12	2.08	0.71	4.33547E-06	o	S	W
12.3	75.21	0.44	241.00	144.86	49.22	55.39	0.52	2.01	1.96	0.67	9.65919E-06	o	S	W
12.4	64.81	0.32	243.00	145.88	41.88	47.03	0.44	2.04	1.99	0.68	7.80305E-06	o	S	W
12.5	57.26	0.36	245.00	146.90	36.53	40.49	0.56	2.14	2.10	0.72	3.68401E-06	o	S	W
12.6	57.98	0.24	247.00	147.92	36.74	41.32	0.36	2.06	2.01	0.69	6.84709E-06	o	S	W
12.7	62.38	0.29	249.00	148.94	39.38	44.40	0.42	2.05	2.01	0.69	7.10758E-06	o	S	W
12.8	76.33	0.31	251.00	149.96	48.21	55.44	0.35	1.94	1.89	0.64	1.62195E-05	o	S	W
12.9	55.51	0.21	253.00	150.98	34.36	38.80	0.33	2.07	2.02	0.69	6.38793E-06	o	S	W
13.0	23.30	0.83	255.00	152.00	13.35	13.35	4.00	2.97	2.97	1.00	8.41857E-09	-	L	W
13.1	17.32	0.80	257.00	153.01	9.42	9.42	5.44	3.17	3.17	1.00	2.05174E-09	-	L	W
13.2	15.33	0.66	259.00	154.03	8.07	8.07	5.14	3.21	3.21	1.00	1.57443E-09	-	L	W
13.3	14.23	0.67	261.00	155.05	7.31	7.31	5.74	3.27	3.27	1.00	9.92862E-10	-	L	W
13.4	16.99	0.66	263.00	156.07	8.99	8.99	4.60	3.14	3.14	1.00	2.50372E-09	-	L	W
13.5	17.56	0.77	265.00	157.09	9.27	9.27	5.15	3.16	3.16	1.00	2.18998E-09	-	L	W
13.6	17.76	0.79	267.00	158.11	9.32	9.32	5.20	3.16	3.16	1.00	2.18082E-09	-	L	W
13.7	16.11	0.77	269.00	159.13	8.23	8.23	5.75	3.23	3.23	1.00	1.34179E-09	-	L	W
13.8	16.38	0.66	271.00	160.15	8.33	8.33	4.81	3.18	3.18	1.00	1.91343E-09	-	L	W
13.9	13.86	0.69	273.00	161.17	6.74	6.74	6.21	3.32	3.32	1.00	8.51348E-10	-	L	W
14.0	12.12	0.55	275.00	162.19	5.63	5.63	5.84	3.37	3.37	1.00	7.34744E-10	-	L	W
14.1	11.75	0.42	277.00	163.20	5.36	5.36	4.22	3.30	3.30	1.00	8.96966E-10	-	L	W
14.2	15.32	0.61	279.00	164.22	7.44	7.44	4.88	3.22	3.22	1.00	1.41755E-09	-	L	W
14.3	14.42	0.65	281.00	165.24	6.85	6.85	5.58	3.29	3.29	1.00	9.47293E-10	-	L	W
14.4	14.08	0.55	283.00	166.26	6.60	6.60	4.85	3.26	3.26	1.00	1.06482E-09	-	L	W
14.5	12.81	0.57	285.00	167.28	5.80	5.80	5.70	3.35	3.35	1.00	7.74904E-10	-	L	W
14.6	12.75	0.50	287.00	168.30	5.72	5.72	5.00	3.32	3.32	1.00	8.47033E-10	-	L	W
14.7	11.37	0.51	289.00	169.32	4.87	4.87	5.43	3.40	3.40	1.00	6.63467E-10	-	L	W
14.8	11.57	0.46	291.00	170.34	4.95	4.95	4.79	3.36	3.36	1.00	7.4406E-10	-	L	W
14.9	11.96	0.44	293.00	171.36	5.13	5.13	4.38	3.33	3.33	1.00	8.30712E-10	-	L	W
15.0	11.61	0.48	295.00	172.38	4.89	4.89	4.95	3.38	3.38	1.00	7.15532E-10	-	L	W
15.1	11.33	0.48	297.00	173.39	4.69	4.69	5.15	3.40	3.40	1.00	6.61802E-10	-	L	W
15.2	12.07	0.45	299.00	174.41	5.07	5.07	4.97	3.36	3.36	1.00	7.43759E-10	-	L	W
15.3	12.41	0.47	301.00	175.43	5.22	5.22	4.95	3.35	3.35	1.00	7.70607E-10	-	L	W
15.4	13.52	0.51	303.00	176.45	5.79	5.79	4.82	3.31	3.31	1.00	8.83917E-10	-	L	W
15.5	13.57	0.54	305.00	177.47	5.78	5.78	5.16	3.33	3.33	1.00	8.35496E-10	-	L	W
15.6	14.43	0.52	307.00	178.49	6.20	6.20	4.53	3.27	3.27	1.00	1.02954E-09	-</		



15.8	12.62	0.47	311.00	180.53	5.13	5.13	4.96	3.36	3.36	1.00	7.53883E-10	-	L	W
15.9	10.74	0.37	313.00	181.55	4.07	4.07	4.35	3.41	3.41	1.00	6.41155E-10	-	L	W
16.0	9.00	0.30	315.00	182.57	3.10	3.10	4.55	3.52	3.52	1.00	4.53411E-10	-	L	W
16.1	12.18	0.25	317.00	183.58	4.77	4.77	2.71	3.24	3.24	1.00	1.23058E-09	-	L	W
16.2	12.31	0.43	319.00	184.60	4.81	4.81	4.74	3.37	3.37	1.00	7.25893E-10	-	L	W
16.3	13.40	0.45	321.00	185.62	5.34	5.34	4.42	3.32	3.32	1.00	8.63392E-10	-	L	W
16.4	12.58	0.57	323.00	186.64	4.87	4.87	6.13	3.43	3.43	1.00	6.02571E-10	-	L	W
16.5	12.82	0.55	325.00	187.66	4.96	4.96	5.73	3.41	3.41	1.00	6.48401E-10	-	L	W
16.6	12.41	0.51	327.00	188.68	4.71	4.71	5.53	3.42	3.42	1.00	6.29927E-10	-	L	W
16.7	11.59	0.52	329.00	189.70	4.25	4.25	5.60	3.46	3.46	1.00	5.5583E-10	-	L	W
16.8	13.73	0.44	331.00	190.72	5.32	5.32	4.22	3.31	3.31	1.00	8.91036E-10	-	L	W
16.9	14.93	0.54	333.00	191.74	5.89	5.89	4.63	3.29	3.29	1.00	9.30006E-10	-	L	W
17.0	13.33	0.55	335.00	192.76	5.04	5.04	5.50	3.39	3.39	1.00	6.81348E-10	-	L	W
17.1	15.09	0.46	337.00	193.77	5.89	5.89	3.95	3.25	3.25	1.00	1.14554E-09	-	L	W
17.2	16.70	0.62	339.00	194.79	6.66	6.66	4.61	3.25	3.25	1.00	1.19174E-09	-	L	W
17.3	16.85	0.78	341.00	195.81	6.69	6.69	5.80	3.31	3.31	1.00	8.93819E-10	-	L	W
17.4	15.43	0.81	343.00	196.83	5.94	5.94	6.72	3.39	3.39	1.00	6.94704E-10	-	L	W
17.5	16.04	0.73	345.00	197.85	6.20	6.20	5.76	3.33	3.33	1.00	8.27575E-10	-	L	W
17.6	18.35	0.80	347.00	198.87	7.30	7.30	5.34	3.25	3.25	1.00	1.14677E-09	-	L	W
17.7	18.77	1.03	349.00	199.89	7.46	7.46	6.72	3.31	3.31	1.00	8.88887E-10	-	L	W
17.8	17.76	0.99	351.00	200.91	6.92	6.92	6.95	3.34	3.34	1.00	7.96982E-10	-	L	W
17.9	17.47	0.91	353.00	201.93	6.73	6.73	6.51	3.33	3.33	1.00	8.17156E-10	-	L	W
18.0	17.16	0.93	355.00	202.95	6.54	6.54	6.80	3.36	3.36	1.00	7.63329E-10	-	L	W
18.1	16.20	0.97	357.00	203.96	6.03	6.03	7.64	3.41	3.41	1.00	6.3447E-10	-	L	W
18.2	14.46	0.89	359.00	204.98	5.16	5.16	8.15	3.48	3.48	1.00	5.07918E-10	-	L	W
18.3	12.82	0.71	361.00	206.00	4.35	4.35	7.70	3.53	3.53	1.00	4.41242E-10	-	L	W
18.4	13.80	0.60	363.00	207.02	4.78	4.78	5.90	3.43	3.43	1.00	6.07476E-10	-	L	W
18.5	13.58	0.59	365.00	208.04	4.64	4.64	5.96	3.44	3.44	1.00	5.83495E-10	-	L	W
18.6	13.08	0.48	367.00	209.06	4.38	4.38	5.06	3.42	3.42	1.00	6.20212E-10	-	L	W
18.7	12.20	0.36	369.00	210.08	3.94	3.94	4.20	3.42	3.42	1.00	6.32441E-10	-	L	W
18.8	13.59	0.33	371.00	211.10	4.55	4.55	3.32	3.31	3.31	1.00	8.89207E-10	-	L	W
18.9	13.11	0.43	373.00	212.12	4.30	4.30	4.57	3.40	3.40	1.00	6.58013E-10	-	L	W
19.0	29.37	0.48	375.00	213.14	11.75	11.75	1.86	2.82	2.82	1.00	2.31577E-08	-	L	W
19.1	21.07	0.72	377.00	214.15	7.88	7.88	4.13	3.16	3.16	1.00	2.20152E-09	-	L	W
19.2	21.43	0.64	379.00	215.17	8.00	8.00	3.62	3.12	3.12	1.00	2.87137E-09	-	L	W
19.3	26.80	0.84	381.00	216.19	10.39	10.39	3.66	3.03	3.03	1.00	5.39334E-09	-	L	W
19.4	26.37	0.88	383.00	217.21	10.13	10.13	3.90	3.06	3.06	1.00	4.5273E-09	-	L	W
19.5	16.51	0.62	385.00	218.23	5.65	5.65	4.84	3.32	3.32	1.00	8.56944E-10	-	L	W
19.6	15.78	0.47	387.00	219.25	5.29	5.29	3.94	3.29	3.29	1.00	9.31698E-10	-	L	W
19.7	14.16	0.34	389.00	220.27	4.54	4.54	3.26	3.30	3.30	1.00	8.96876E-10	-	L	W
19.8	14.23	0.27	391.00	221.29	4.54	4.54	2.64	3.26	3.26	1.00	1.12023E-09	-	L	W
19.9	14.31	0.40	393.00	222.31	4.54	4.54	3.84	3.34	3.34	1.00	7.96829E-10	-	L	W
20.0	18.73	0.38	395.00	223.33	6.45	6.45	2.57	3.12	3.12	1.00	2.93696E-09	-	L	W

Coefficiente di permeabilità orizzontale  
Robertson 2009





# Penetrometria statica CPTU 8

Unità di misura: Kg, cm

ELABORATO n. 4 - 4



GEOPROGET - Studio di Geologia

via Ceccarini, 171 - 47838 Riccione (RN)

tel. 0541/606464 - email vannoni.fabio1960@libero.it

LAVORO: HERA - VASCA KENNEDY

LOCALITA': P.zzle Kennedy - Rimini

DATA: elaborazione 01/05/2015

note:

falda: -2.5

## Litotipi

A Argille=1.9 t/mc  
AL alternanze =1.8 t/mc  
H Sabbie/limi poco addensati=1.8 t/mc  
S sabbie med. addens.=1.9 t/mc  
D sabbie dense=2.0 t/mc  
G ghiaie=2.1 t/mc  
SD Substrato decomp.=2.0 t/mc  
SU Substrato=2.1 t/mc

z	qcN/qt bar - Kg/cmq	FsN bar - Kg/cmq	σvc (kPa)	σ'vc (kPa)	Qi	Qtn	F	lc	lcN2	n	permeability K m/sec Robertson '05	Coesivo / Incoerente	Litotipo	Falda
0.1	0.00	0.00	1.80	1.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.2	0.00	0.00	3.60	3.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.3	0.00	0.00	5.40	5.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.4	0.00	0.00	7.20	7.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.5	0.00	0.00	9.00	9.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.6	0.00	0.00	10.80	10.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.7	0.00	0.00	12.60	12.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.8	0.00	0.00	14.40	14.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
0.9	0.00	0.00	16.20	16.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.0	0.00	0.00	18.00	18.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.1	0.00	0.00	19.80	19.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.2	0.00	0.00	21.60	21.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.3	0.00	0.00	23.40	23.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.4	0.00	0.00	25.20	25.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.5	0.00	0.00	27.00	27.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.6	0.00	0.00	28.80	28.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.7	0.00	0.00	30.60	30.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.8	0.00	0.00	32.40	32.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
1.9	0.00	0.00	34.20	34.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.0	0.00	0.00	36.00	36.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.1	0.00	0.00	37.80	37.80	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.2	0.00	0.00	39.60	39.60	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.3	0.00	0.00	41.40	41.40	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.4	0.00	0.00	43.20	43.20	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.5	0.00	0.00	45.00	45.00	-1.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	/
2.6	0.00	0.00	47.00	46.02	-1.02	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.7	0.00	0.00	49.00	47.04	-1.04	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.8	0.00	0.00	51.00	48.06	-1.06	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
2.9	0.00	0.00	53.00	49.08	-1.08	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.0	0.00	0.00	55.00	50.10	-1.10	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.1	0.00	0.00	57.00	51.11	-1.12	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.2	0.00	0.00	59.00	52.13	-1.13	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.3	0.00	0.00	61.00	53.15	-1.15	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.4	0.00	0.00	63.00	54.17	-1.16	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.5	0.00	0.00	65.00	55.19	-1.18	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.6	0.00	0.00	67.00	56.21	-1.19	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.7	0.00	0.00	69.00	57.23	-1.21	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.8	0.00	0.00	71.00	58.25	-1.22	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
3.9	0.00	0.00	73.00	59.27	-1.23	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.0	0.00	0.00	75.00	60.29	-1.24	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.1	0.00	0.00	77.00	61.30	-1.26	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.2	0.00	0.00	79.00	62.32	-1.27	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.3	0.00	0.00	81.00	63.34	-1.28	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.4	0.00	0.00	83.00	64.36	-1.29	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	V	W
4.5	0.00	0.00	85.00	65.38	-1.30	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
4.6	0.00	0.00	87.00	66.40	-1.31	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
4.7	0.00	0.00	89.00	67.42	-1.32	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
4.8	0.00	0.00	91.00	68.44	-1.33	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
4.9	0.00	0.00	93.00	69.46	-1.34	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
5.0	0.00	0.00	95.00	70.48	-1.35	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
5.1	0.00	0.00	97.00	71.49	-1.36	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
5.2	0.00	0.00	99.00	72.51	-1.37	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
5.3	0.00	0.00	101.00	73.53	-1.37	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
5.4	0.00	0.00	103.00	74.55	-1.38	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
5.5	0.00	0.00	105.00	75.57	-1.39	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
5.6	0.00	0.00	107.00	76.59	-1.40	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
5.7	0.00	0.00	109.00	77.61	-1.40	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
5.8	0.00	0.00	111.00	78.63	-1.41	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
5.9	0.00	0.00	113.00	79.65	-1.42	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
6.0	0.00	0.00	115.00	80.66	-1.43	#NUM!	0.00	#NUM!	#NUM!	#NUM!	#NUM!	o	C	W
6.1	4.56	0.52	117.00	81.68	4.04	4.04	13.66	3.71	3.71	1.00	2.51416E-10	o	C	W
6.2	6.44	0.24	119.00	82.70	6.19	6.19	4.11	3.25	3.25	1.00	1.21174E-09	o	S	W
6.3	39.76	0.19	121.00	83.72	45.09	42.39	0.50	2.04	2.06	0.68	4.86839E-06	o	S	W
6.4	15.17	0.38	123.00	84.74	16.09	15.98	2.75	2.81	2.81	0.96	2.63509E-08	o	S	W
6.5	8.31	0.43	125.00	85.76	8.04	8.04	5.49	3.23	3.23	1.00	1.38185E-09	o	S	W
6.6	31.83	0.23	127.00	86.78	34.48	33.14	0.75	2.22	2.24	0.74	1.42555E-06	o	S	W
6.7	30.54	0.21	129.00	87.80	32.62	31.48	0.73	2.24	2.25	0.75	1.28468E-06	o	S	W
6.8	23.12	0.27	131.00	88.82	24.04	23.53	1.25	2.47	2.48	0.84	2.84863E-07	o	S	W
6.9	22.05	0.34	133.00	89.84	22.57	22.22	1.63	2.56	2.56	0.87	1.46119E-07	o	S	W

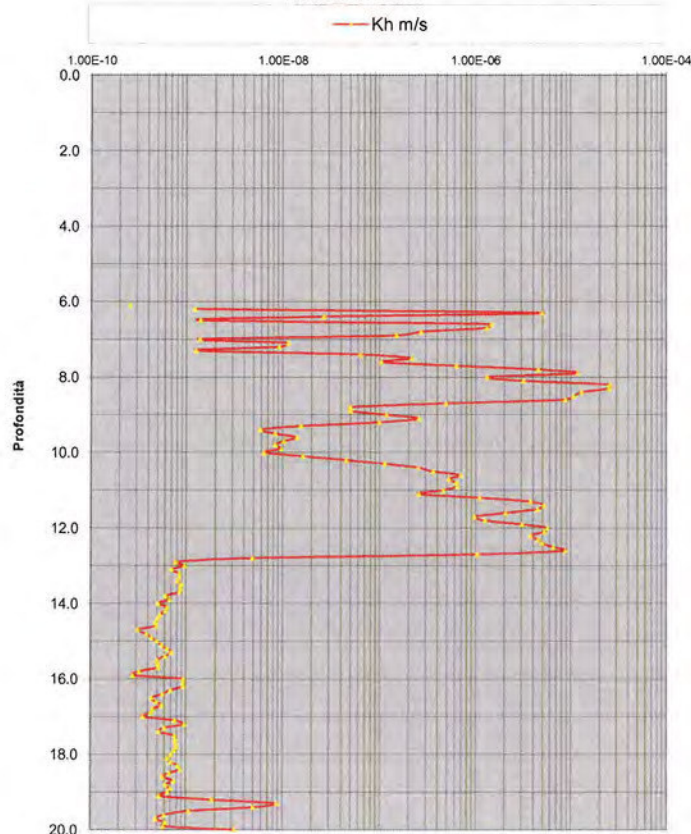


7.0	9.16	0.51	135.00	90.85	8.40	8.40	5.84	3.23	3.23	1.00	1.38427E-09	o	S	W
7.1	14.74	0.50	137.00	91.87	14.23	14.23	3.71	2.93	2.93	1.00	1.13026E-08	o	S	W
7.2	12.87	0.39	139.00	92.89	12.09	12.09	3.37	2.96	2.96	1.00	9.0419E-09	o	S	W
7.3	9.15	0.50	141.00	93.91	8.05	8.05	5.82	3.24	3.24	1.00	1.24292E-08	o	S	W
7.4	20.61	0.43	143.00	94.93	19.77	19.77	2.24	2.68	2.68	0.92	6.22936E-08	o	S	W
7.5	22.97	0.27	145.00	95.95	21.95	21.78	1.26	2.51	2.51	0.85	2.1196E-07	o	S	W
7.6	22.32	0.39	147.00	96.97	21.04	20.94	1.85	2.61	2.61	0.89	1.01905E-07	o	S	W
7.7	41.27	0.76	149.00	97.99	39.76	39.49	1.62	2.35	2.36	0.80	6.14588E-07	o	S	W
7.8	57.45	0.55	151.00	99.01	55.34	54.94	0.84	2.07	2.07	0.69	4.43405E-06	o	S	W
7.9	63.22	0.38	153.00	100.03	60.41	60.13	0.53	1.93	1.94	0.64	1.16639E-05	o	S	W
8.0	38.15	0.33	155.00	101.05	35.47	35.44	0.90	2.25	2.25	0.76	1.2944E-06	o	S	W
8.1	56.89	0.64	157.00	102.06	53.08	53.20	0.98	2.12	2.12	0.71	3.12867E-06	o	S	W
8.2	83.46	0.48	159.00	103.08	77.81	78.35	0.50	1.83	1.83	0.60	2.52061E-05	o	S	W
8.3	79.09	0.42	161.00	104.10	72.91	73.71	0.46	1.83	1.83	0.60	2.46101E-05	o	S	W
8.4	73.23	0.51	163.00	105.12	66.72	67.62	0.61	1.93	1.92	0.63	1.28381E-05	o	S	W
8.5	66.68	0.44	165.00	106.14	60.01	61.01	0.58	1.96	1.95	0.65	1.04896E-05	o	S	W
8.6	55.54	0.29	167.00	107.16	49.24	50.19	0.46	1.99	1.98	0.66	8.61843E-06	o	S	W
8.7	29.63	0.27	169.00	108.18	25.28	25.59	0.98	2.40	2.39	0.81	4.8158E-07	o	S	W
8.8	25.59	0.68	171.00	109.20	21.40	21.50	2.85	2.72	2.72	0.94	4.91007E-08	o	S	W
8.9	29.85	0.97	173.00	110.22	24.97	25.10	3.43	2.72	2.72	0.94	4.95938E-08	o	S	W
9.0	37.69	1.07	175.00	111.24	31.63	31.94	2.99	2.60	2.60	0.89	1.15016E-07	o	S	W
9.1	39.44	0.79	177.00	112.25	32.86	33.36	2.10	2.49	2.48	0.85	2.52356E-07	o	S	W
9.2	29.71	0.65	179.00	113.27	24.13	24.38	2.34	2.62	2.62	0.90	9.73404E-08	o	S	W
9.3	22.29	0.84	181.00	114.29	17.53	17.53	4.11	2.88	2.88	1.00	1.53077E-08	o	S	W
9.4	20.30	1.09	183.00	115.31	15.66	15.66	5.89	3.02	3.02	1.00	5.7866E-09	o	S	W
9.5	21.71	1.06	185.00	116.33	16.69	16.69	5.31	2.97	2.97	1.00	8.23956E-09	o	S	W
9.6	22.30	0.85	187.00	117.35	17.03	17.03	4.17	2.90	2.90	1.00	1.38871E-08	o	S	W
9.7	22.87	1.05	189.00	118.37	17.34	17.34	4.98	2.94	2.94	1.00	1.02153E-08	o	S	W
9.8	22.42	1.10	191.00	119.39	16.81	16.81	5.34	2.97	2.97	1.00	8.27134E-09	o	S	W
9.9	23.56	1.13	193.00	120.41	17.57	17.57	5.22	2.95	2.95	1.00	9.59205E-09	o	S	W
10.0	21.14	1.07	195.00	121.43	15.45	15.45	5.56	3.01	3.01	1.00	6.29528E-09	o	S	W
10.1	27.04	1.18	197.00	122.44	20.03	20.03	4.71	2.88	2.88	1.00	1.5944E-08	o	S	W
10.2	32.86	1.09	199.00	123.46	24.47	24.71	3.52	2.73	2.73	0.95	4.49401E-08	o	S	W
10.3	39.05	1.03	201.00	124.48	29.13	29.72	2.79	2.61	2.60	0.90	1.11165E-07	o	S	W
10.4	41.69	0.93	203.00	125.50	30.94	31.88	2.00	2.50	2.49	0.86	2.48092E-07	o	S	W
10.5	45.21	0.93	205.00	126.52	33.40	34.60	1.84	2.45	2.44	0.84	3.53866E-07	o	S	W
10.6	41.36	0.51	207.00	127.54	30.16	31.54	1.10	2.36	2.34	0.80	6.86262E-07	o	S	W
10.7	41.61	0.61	209.00	128.56	30.10	31.41	1.30	2.40	2.38	0.82	5.126E-07	o	S	W
10.8	42.90	0.59	211.00	129.58	30.82	32.28	1.22	2.37	2.36	0.81	6.15476E-07	o	S	W
10.9	44.43	0.62	213.00	130.60	31.71	33.27	1.25	2.37	2.35	0.81	6.33921E-07	o	S	W
11.0	41.91	0.64	215.00	131.62	29.57	30.92	1.37	2.42	2.40	0.83	4.51667E-07	o	S	W
11.1	38.01	0.58	217.00	132.63	26.45	27.45	1.63	2.50	2.48	0.86	2.50196E-07	o	S	W
11.2	51.83	0.67	219.00	133.65	36.37	38.62	1.14	2.30	2.28	0.78	1.07961E-06	o	S	W
11.3	57.81	0.43	221.00	134.67	40.43	43.83	0.65	2.13	2.10	0.72	3.69719E-06	o	S	W
11.4	62.87	0.43	223.00	135.69	43.76	47.78	0.61	2.09	2.05	0.70	5.13167E-06	o	S	W
11.5	57.28	0.36	225.00	136.71	39.42	43.02	0.56	2.11	2.08	0.71	4.38408E-06	o	S	W
11.6	44.87	0.29	227.00	137.73	30.28	32.69	0.57	2.22	2.19	0.75	2.02958E-06	o	S	W
11.7	44.10	0.44	229.00	138.75	29.50	31.49	0.89	2.32	2.29	0.79	9.54197E-07	o	S	W
11.8	46.89	0.44	231.00	139.77	31.23	33.53	0.85	2.28	2.26	0.78	1.72639E-06	o	S	W
11.9	56.27	0.42	233.00	140.79	37.51	40.98	0.66	2.16	2.13	0.73	2.99975E-06	o	S	W
12.0	62.54	0.38	235.00	141.81	41.56	46.00	0.54	2.08	2.04	0.70	5.54055E-06	o	S	W
12.1	60.69	0.36	237.00	142.82	39.98	44.28	0.53	2.09	2.05	0.70	5.17441E-06	o	S	W
12.2	55.92	0.35	239.00	143.84	36.44	40.18	0.55	2.14	2.10	0.72	3.69217E-06	o	S	W
12.3	57.57	0.33	241.00	144.86	37.28	41.33	0.51	2.11	2.07	0.71	4.43825E-06	o	S	W
12.4	59.64	0.34	243.00	145.88	38.40	42.73	0.51	2.10	2.06	0.71	4.88857E-06	o	S	W
12.5	68.49	0.43	245.00	146.90	44.03	49.35	0.55	2.06	2.02	0.69	6.42626E-06	o	S	W
12.6	66.97	0.32	247.00	147.92	42.70	48.25	0.43	2.03	1.98	0.68	8.65112E-06	o	S	W
12.7	44.92	0.40	249.00	148.94	27.88	30.19	0.80	2.31	2.28	0.79	1.01979E-06	o	S	W
12.8	20.06	0.78	251.00	149.96	11.44	11.44	4.42	3.05	3.05	1.00	4.83013E-09	-	L	W
12.9	13.18	0.77	253.00	150.98	6.88	6.88	7.24	3.35	3.35	1.00	7.65142E-10	-	L	W
13.0	13.56	0.64	255.00	152.00	7.06	7.06	5.77	3.29	3.29	1.00	9.52986E-10	-	L	W
13.1	12.24	0.69	257.00	153.01	6.16	6.16	7.12	3.39	3.39	1.00	6.88777E-10	-	L	W
13.2	13.48	0.71	259.00	154.03	6.89	6.89	6.55	3.33	3.33	1.00	8.34577E-10	-	L	W
13.3	13.61	0.72	261.00	155.05	6.92	6.92	6.55	3.33	3.33	1.00	8.37451E-10	-	L	W
13.4	13.59	0.75	263.00	156.07	6.85	6.85	6.82	3.34	3.34	1.00	8.00963E-10	-	L	W
13.5	13.63	0.67	265.00	157.09	6.82	6.82	6.12	3.31	3.31	1.00	8.72143E-10	-	L	W
13.6	13.59	0.67	267.00	158.11	6.73	6.73	6.11	3.32	3.32	1.00	8.63402E-10	-	L	W
13.7	13.66	0.69	269.00	159.13	6.72	6.72	6.23	3.32	3.32	1.00	8.47098E-10	-	L	W
13.8	11.45	0.67	271.00	160.15	5.31	5.31	6.87	3.43	3.43	1.00	6.03721E-10	-	L	W
13.9	11.16	0.54	273.00	161.17	5.09	5.09	5.75	3.40	3.40	1.00	6.66274E-10	-	L	W
14.0	10.13	0.56	275.00	162.19	4.43	4.43	6.75	3.49	3.49	1.00	3.01262E-10	-	L	W
14.1	10.69	0.49	277.00	163.20	4.72	4.72	5.55	3.42	3.42	1.00	6.28973E-10	-	L	W
14.2	10.88	0.54	279.00	164.22	4.80	4.80	6.00	3.43	3.43	1.00	6.01774E-10	-	L	W
14.3	10.44	0.55	281.00	165.24	4.49	4.49	6.51	3.47	3.47	1.00	5.24653E-10	-	L	W
14.4	10.28	0.55	283.00	166.26	4.36	4.36	6.62	3.49	3.49	1.00	4.99963E-10	-	L	W
14.5	10.41	0.60	285.00	167.28	4.40	4.40	7.12	3.51	3.51	1.00	4.76518E-10	-	L	W
14.6	10.47	0.60	287.00	168.30	4.39	4.39	7.03	3.50	3.50	1.00	4.80712E-10	-	L	W
14.7	8.77	0.56	289.00	169.32	3.37	3.37	8.55	3.65	3.65	1.00	3.06035E-10	-	L	W
14.8	8.97	0.46	291.00	170.34	3.45	3.45	6.75	3.58	3.58	1.00	3.80021E-10	-	L	W
14.9	9.78	0.53	293.00	171.36	3.88	3.88	6.87	3.54	3.54	1.00	4.26979E-10	-	L	W
15.0	10.73	0.60	295.00	172.38	4.39	4.39	6.90	3.50	3.50	1.00	4.87876E-10	-	L	W
15.1	11.41	0.62	297.00	173.39	4.74	4.74	6.61	3.46	3.46	1.00	5.49214E-10	-	L	W
15.2	11.65	0.56	299.00	174.41	4.83	4.83	5.81	3.42	3.42	1.00	6.23189E-10	-	L	W
15.3	13.54	0.69	301.00	175.43	5.85	5.85	6.56	3.38	3.38	1.00	6.97271E-10	-	L	W
15.4	12.68	0.67	303.00	176.45	5.32	5.32	6.94	3.43	3.43	1.00	6.06431E-10	-	L	W
15.5	11.13	0.63	305.00	177.47	4.43	4.43	6.99	3.50	3.50	1.00	4.87489E-10	-	L	W
15.6	10.73	0.53	307.00	178.49	4.17	4.17	6.18	3.49	3.49	1.00	5.			



15.8	8.90	0.47	311.00	180.53	3.11	3.11	7.25	3.63	3.63	1.00	3.19304E-10	-	L	W
15.9	7.51	0.28	313.00	181.55	2.33	2.33	5.79	3.68	3.68	1.00	2.72456E-10	-	L	W
16.0	10.65	0.21	315.00	182.57	3.99	3.99	2.52	3.30	3.30	1.00	9.22615E-10	-	L	W
16.1	13.03	0.39	317.00	183.58	5.23	5.23	3.92	3.30	3.30	1.00	9.22988E-10	-	L	W
16.2	14.39	0.53	319.00	184.60	5.91	5.91	4.74	3.30	3.30	1.00	9.16737E-10	-	L	W
16.3	13.26	0.59	321.00	185.62	5.27	5.27	5.86	3.39	3.39	1.00	6.81007E-10	-	L	W
16.4	12.95	0.69	323.00	186.64	5.07	5.07	7.05	3.45	3.45	1.00	5.61901E-10	-	L	W
16.5	11.99	0.81	325.00	187.66	4.53	4.53	8.36	3.54	3.54	1.00	4.31318E-10	-	L	W
16.6	11.58	0.63	327.00	188.68	4.28	4.28	6.79	3.50	3.50	1.00	4.80818E-10	-	L	W
16.7	11.96	0.58	329.00	189.70	4.44	4.44	6.03	3.46	3.46	1.00	5.50752E-10	-	L	W
16.8	11.38	0.64	331.00	190.72	4.11	4.11	7.12	3.53	3.53	1.00	4.4237E-10	-	L	W
16.9	10.97	0.59	333.00	191.74	3.87	3.87	6.92	3.54	3.54	1.00	4.23033E-10	-	L	W
17.0	9.65	0.47	335.00	192.76	3.17	3.17	6.70	3.61	3.61	1.00	3.4695E-10	-	L	W
17.1	11.91	0.36	337.00	193.77	4.28	4.28	3.81	3.36	3.36	1.00	7.49799E-10	-	L	W
17.2	15.28	0.55	339.00	194.79	5.95	5.95	4.59	3.29	3.29	1.00	9.46848E-10	-	L	W
17.3	15.26	0.97	341.00	195.81	5.90	5.90	8.16	3.44	3.44	1.00	5.85639E-10	-	L	W
17.4	14.04	0.88	343.00	196.83	5.25	5.25	8.26	3.48	3.48	1.00	5.11199E-10	-	L	W
17.5	15.95	0.80	345.00	197.85	6.16	6.16	6.39	3.36	3.36	1.00	7.53034E-10	-	L	W
17.6	17.05	0.94	347.00	198.87	6.66	6.66	6.91	3.35	3.35	1.00	7.68286E-10	-	L	W
17.7	17.87	1.07	349.00	199.89	7.02	7.02	7.41	3.35	3.35	1.00	7.66323E-10	-	L	W
17.8	17.98	1.04	351.00	200.91	7.02	7.02	7.20	3.35	3.35	1.00	7.86169E-10	-	L	W
17.9	17.77	1.07	353.00	201.93	6.88	6.88	7.48	3.36	3.36	1.00	7.43651E-10	-	L	W
18.0	16.85	0.99	355.00	202.95	6.39	6.39	7.43	3.39	3.39	1.00	6.91335E-10	-	L	W
18.1	16.40	1.01	357.00	203.96	6.13	6.13	7.86	3.42	3.42	1.00	6.30646E-10	-	L	W
18.2	16.78	0.97	359.00	204.98	6.27	6.27	7.34	3.39	3.39	1.00	6.84779E-10	-	L	W
18.3	18.15	0.98	361.00	206.00	6.88	6.88	6.76	3.34	3.34	1.00	8.11933E-10	-	L	W
18.4	18.64	0.98	363.00	207.02	7.07	7.07	6.54	3.32	3.32	1.00	8.5851E-10	-	L	W
18.5	16.81	0.99	365.00	208.04	6.17	6.17	7.50	3.40	3.40	1.00	6.60136E-10	-	L	W
18.6	14.44	0.75	367.00	209.06	5.02	5.02	6.90	3.45	3.45	1.00	5.64964E-10	-	L	W
18.7	14.82	0.58	369.00	210.08	5.16	5.16	5.16	3.37	3.37	1.00	7.35038E-10	-	L	W
18.8	13.50	0.54	371.00	211.10	4.51	4.51	5.47	3.43	3.43	1.00	6.04751E-10	-	L	W
18.9	13.06	0.41	373.00	212.12	4.28	4.28	4.35	3.39	3.39	1.00	6.78518E-10	-	L	W
19.0	12.73	0.40	375.00	213.14	4.09	4.09	4.42	3.41	3.41	1.00	6.36917E-10	-	L	W
19.1	11.57	0.41	377.00	214.15	3.53	3.53	4.68	3.48	3.48	1.00	5.15906E-10	-	L	W
19.2	17.77	0.47	379.00	215.17	6.33	6.33	3.33	3.19	3.19	1.00	1.83313E-09	-	L	W
19.3	27.43	0.69	381.00	216.19	10.67	10.67	2.92	2.97	2.97	1.00	8.55318E-09	-	L	W
19.4	26.66	0.87	383.00	217.21	10.26	10.26	3.80	3.05	3.05	1.00	4.881E-09	-	L	W
19.5	19.80	0.87	385.00	218.23	7.13	7.13	5.43	3.27	3.27	1.00	1.05062E-09	-	L	W
19.6	15.46	0.79	387.00	219.25	5.14	5.14	6.82	3.44	3.44	1.00	5.86498E-10	-	L	W
19.7	12.97	0.57	389.00	220.27	4.00	4.00	6.23	3.50	3.50	1.00	4.77491E-10	-	L	W
19.8	13.64	0.49	391.00	221.29	4.27	4.27	5.07	3.43	3.43	1.00	6.03574E-10	-	L	W
19.9	13.04	0.45	393.00	222.31	3.98	3.98	4.90	3.45	3.45	1.00	5.7096E-10	-	L	W
20.0	19.02	0.38	395.00	223.33	6.58	6.58	2.54	3.11	3.11	1.00	3.13964E-09	-	L	W

Coefficiente di permeabilità orizzontale  
Robertson 2009



## **ELABORATO N. 4 - 5**

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### **TABELLE GRAFICHE RIASSUNTIVE DEI VALORI DI PERMEABILITA'**



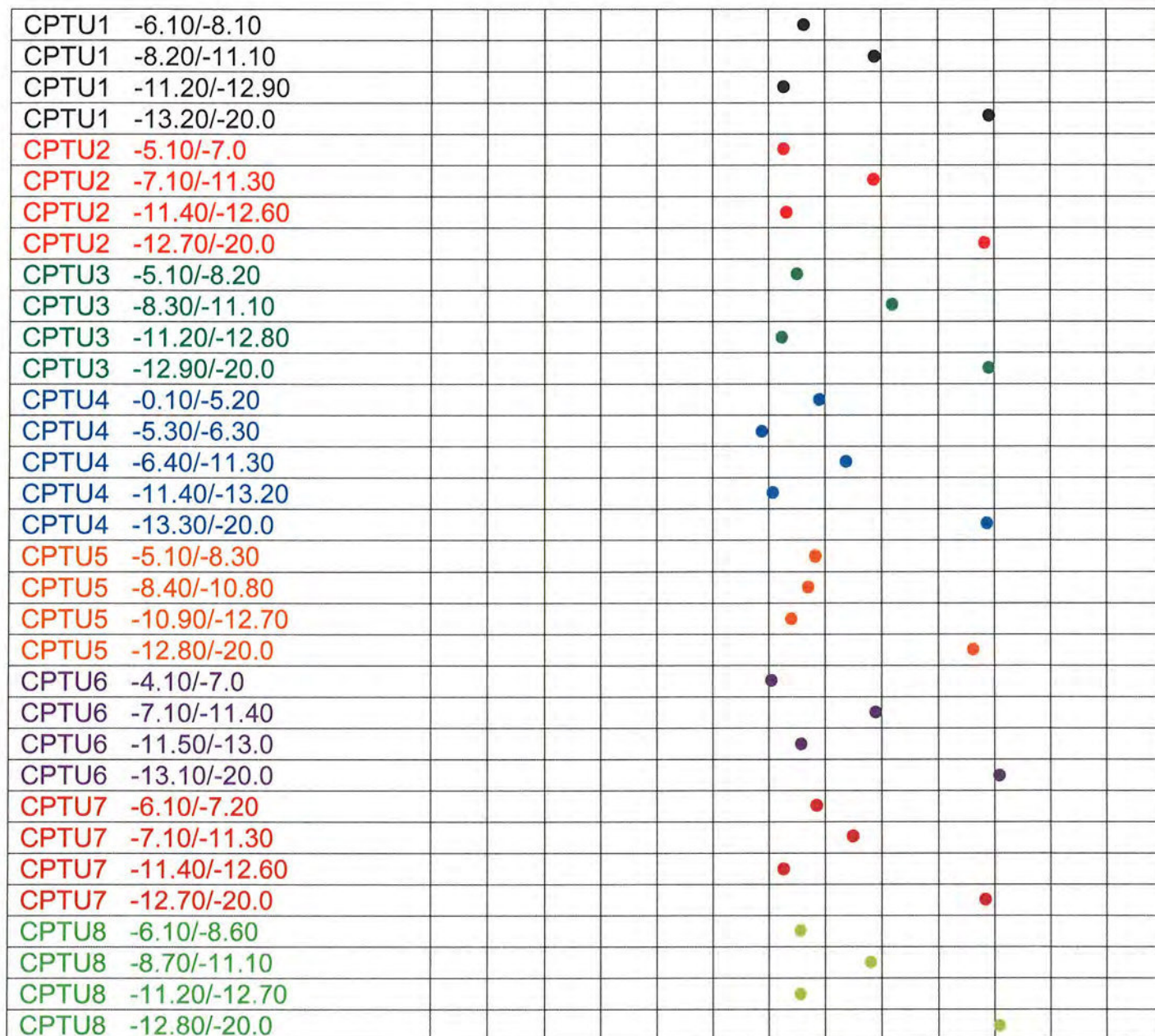
## Elaborato 4-5



**G E O P R O G E T**  
Studio di Geologia

Committente : **HERA S.p.a.**  
Localita' : **Rimini – P.le Kennedy**  
Data : **04 / 2014**  
Rif. : **2103**

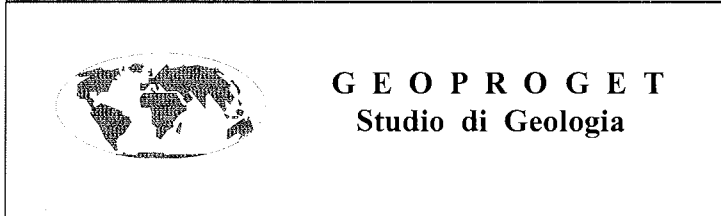
TABELLA RIASSUNTIVA PERMEABILITA' MEDIA  
IC /SBT ROBERTSON





K (mt/sec)		10 <sup>-1</sup>	1	10 <sup>-1</sup>	10 <sup>-2</sup>	10 <sup>-3</sup>	10 <sup>-4</sup>	10 <sup>-5</sup>	10 <sup>-6</sup>	10 <sup>-7</sup>	10 <sup>-8</sup>	10 <sup>-9</sup>	10 <sup>-10</sup>	10 <sup>-11</sup>
GRANULOMETRIA	omogenea	Ghiaia			Sabbia		Sabbia molto fine			limi		Argilla		
	varia	Ghiaia media-gr.		Ghiaia e sabbia		Sabbia e argille - limi								
GRADI DI PERMEABILITA'		ELEVATA						BASSA				NULLA		
TIPI DI FORMAZIONI		PERMEABILI						SEMI-PERMEABILI				IMPERM.		



<b>Elaborato 4-5</b>
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 <p><b>GEOPROGET</b> Studio di Geologia</p>	<p>Committente : <b>HERA S.p.a.</b>          Localita' : <b>Rimini – P.le Kennedy</b>          Data : <b>04 / 2014</b>          Rif. : <b>2103</b></p>
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 <p><b>GEOPROGET</b> Studio di Geologia</p>	<p>Committente : <b>HERA S.p.a.</b>          Localita' : <b>Rimini – P.le Kennedy</b>          Data : <b>04 / 2014</b>          Rif. : <b>2103</b></p>
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**TABELLA RIASSUNTIVA PERMEABILITA'**  
**PROVE LEFRANC - PROVE DI LABORATORIO**

LEFRANC BH6 -3.0/-3.50								●							
LEFRANC BH6 -6.0/-6.50								●							
LEFRANC BH6 -9.0/-9.50								●							
LEFRANC BH6 -12.0/-12.50								●							
LEFRANC BH10 -6.0/-7.0								●							
LEFRANC BH10 -9.0/-9.50								●							
LEFRANC BH10 -12.0/-12.50								●							
LEFRANC BH11 -3.0/-3.50								●							
LEFRANC BH11 -6.0/-6.50									●						
LEFRANC BH11 -9.0/-9.50								●							
LEFRANC BH11 -11.0/-11.70								●							
LEFRANC BH12 -3.0/-3.50								●							
LEFRANC BH12 -6.0/-6.50								●							
LEFRANC BH12 -9.0/-9.50								●							
LEFRANC BH12 -12.0/-12.50								●							
LEFRANC BH13 -3.0/-3.50								●							
LEFRANC BH13 -6.0/-6.50								●							
LEFRANC BH13 -9.0/-9.50								●							
LEFRANC BH13 -12.0/-12.50								●							

[illegible]

K (mt/sec)		10 <sup>-1</sup>	1	10 <sup>-1</sup>	10 <sup>-2</sup>	10 <sup>-3</sup>	10 <sup>-4</sup>	10 <sup>-5</sup>	10 <sup>-6</sup>	10 <sup>-7</sup>	10 <sup>-8</sup>	10 <sup>-9</sup>	10 <sup>-10</sup>	10 <sup>-11</sup>
GRANULOMETRIA	omogenea	Ghiaia			Sabbia		Sabbia molto fine			limi		Argilla		
	varia	Ghiaia media-gr.		Ghiaia e sabbia		Sabbia e argille - limi								
GRADI DI PERMEABILITA'		E L E V A T A						B A S S A				N U L L A		
TIPI DI FORMAZIONI		PERMEABILI						SEMI-PERMEABILI				IMPERM.		

**ELABORATO N. 4 - 6**

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**DIAGRAMMI DI PLASTICITA' DI CASAGRANDE**





**GEOPROGET**  
Studio di Geologia

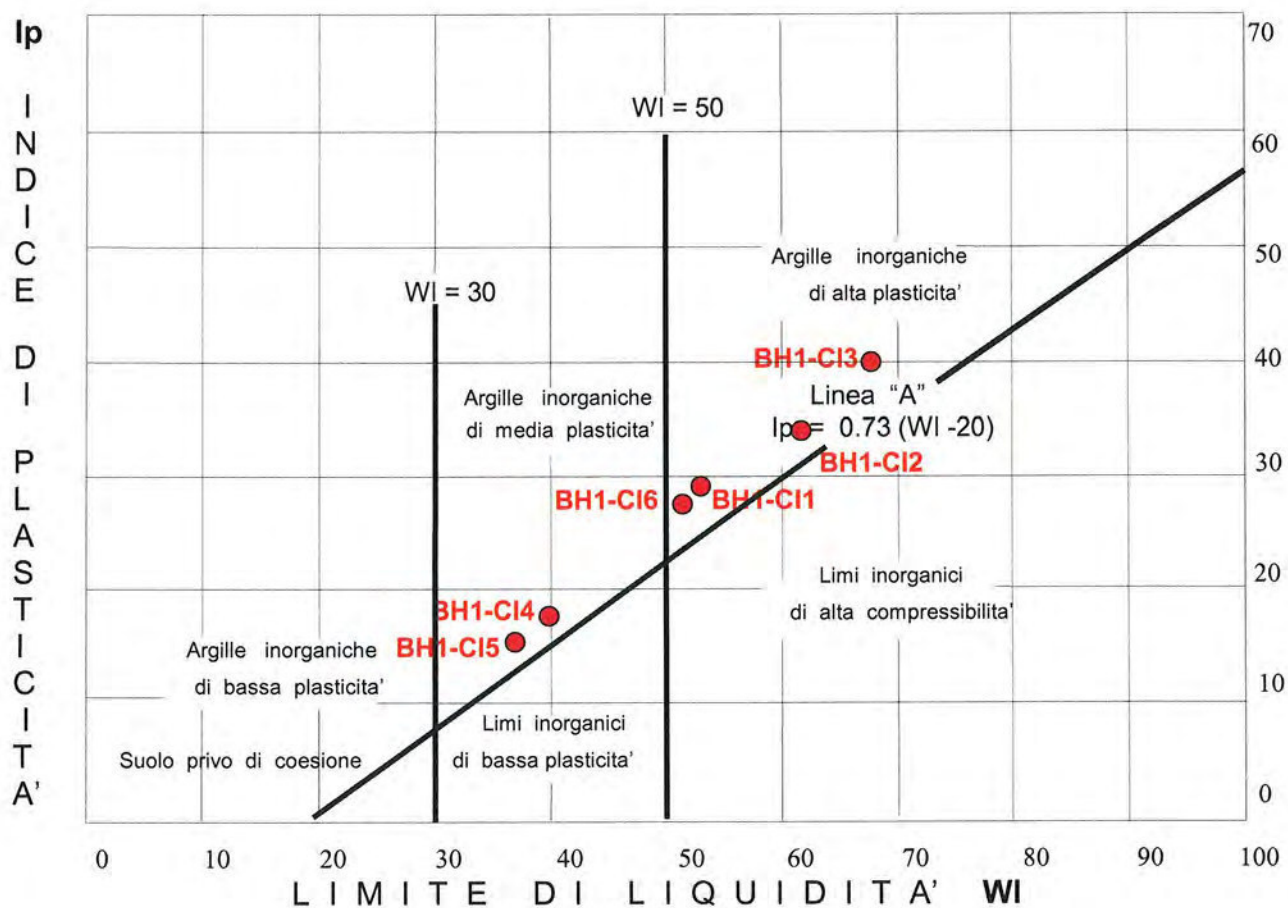
Committente : **HERA S.P.A.**

Localita' : **Rimini – Piazzale Kennedy**

Data : **05 / 2015**

**BH1 CI1-CI2-CI3-CI4-CI5-CI6**

**DIAGRAMMA DI CASAGRANDE**



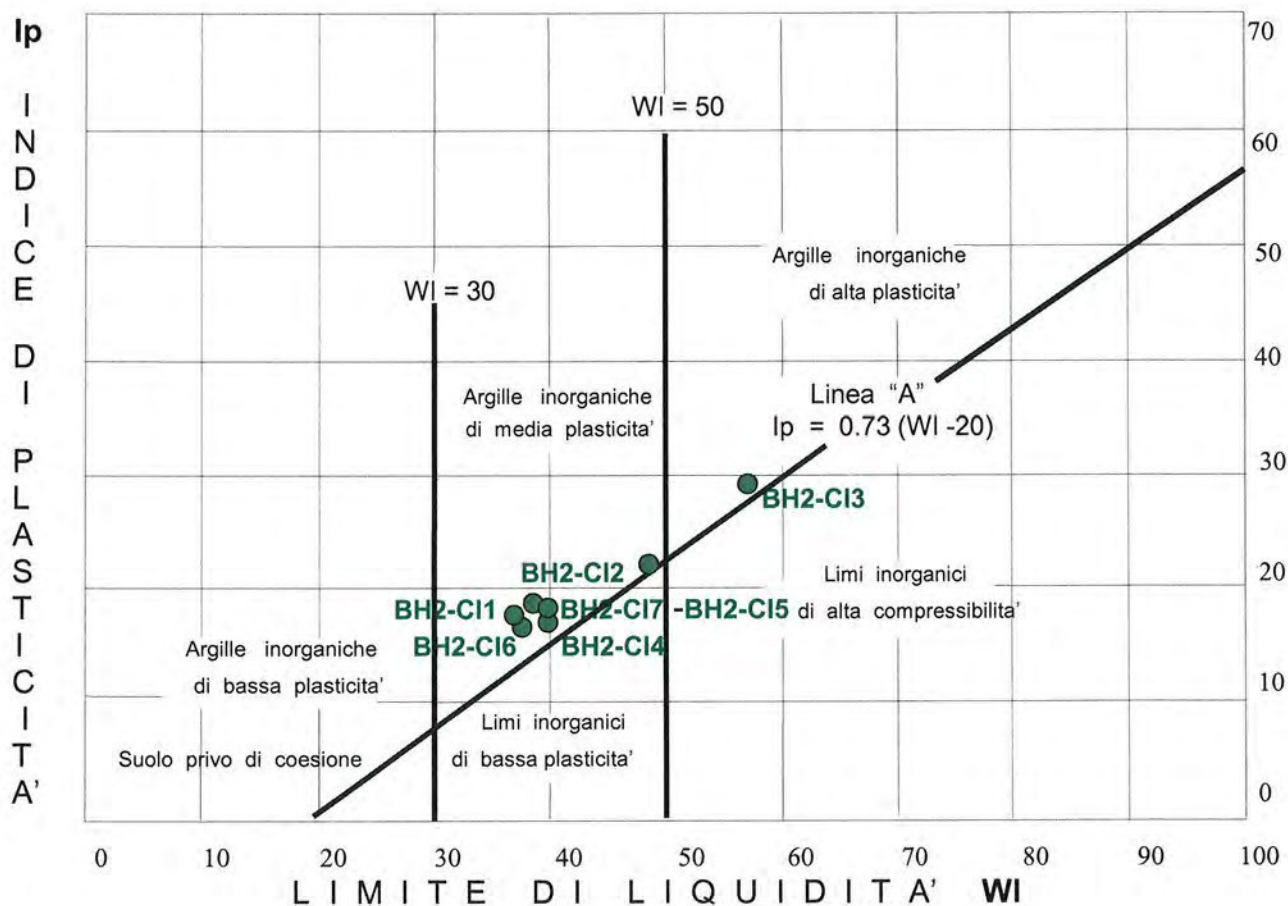


**GEOPROGET**  
Studio di Geologia

Committente : **HERA S.P.A.**  
Localita' : **Rimini – Piazzale Kennedy**  
Data : **05 / 2015**

**BH2 CI1-CI2-CI3-CI4-CI5-CI6-CI7**

**DIAGRAMMA DI CASAGRANDE**



## Elaborato n. 4-6

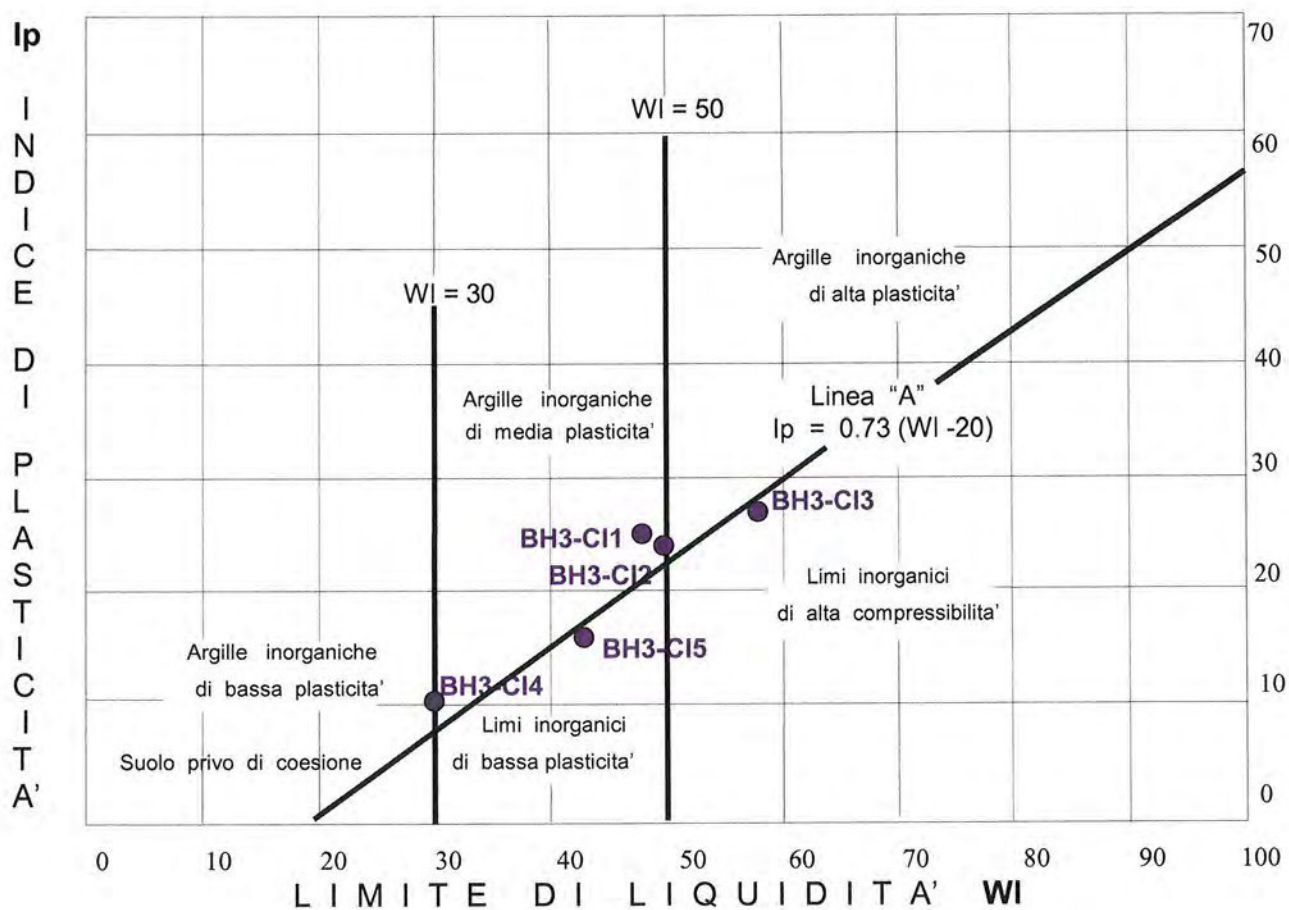


**GEOPROGET**  
Studio di Geologia

Committente : **HERA S.P.A.**  
Localita' : **Rimini – Piazzale Kennedy**  
Data : **05 / 2015**

**BH3 CI1-CI2-CI3-CI4-CI5**

### DIAGRAMMA DI CASAGRANDE





## Elaborato n. 4-6

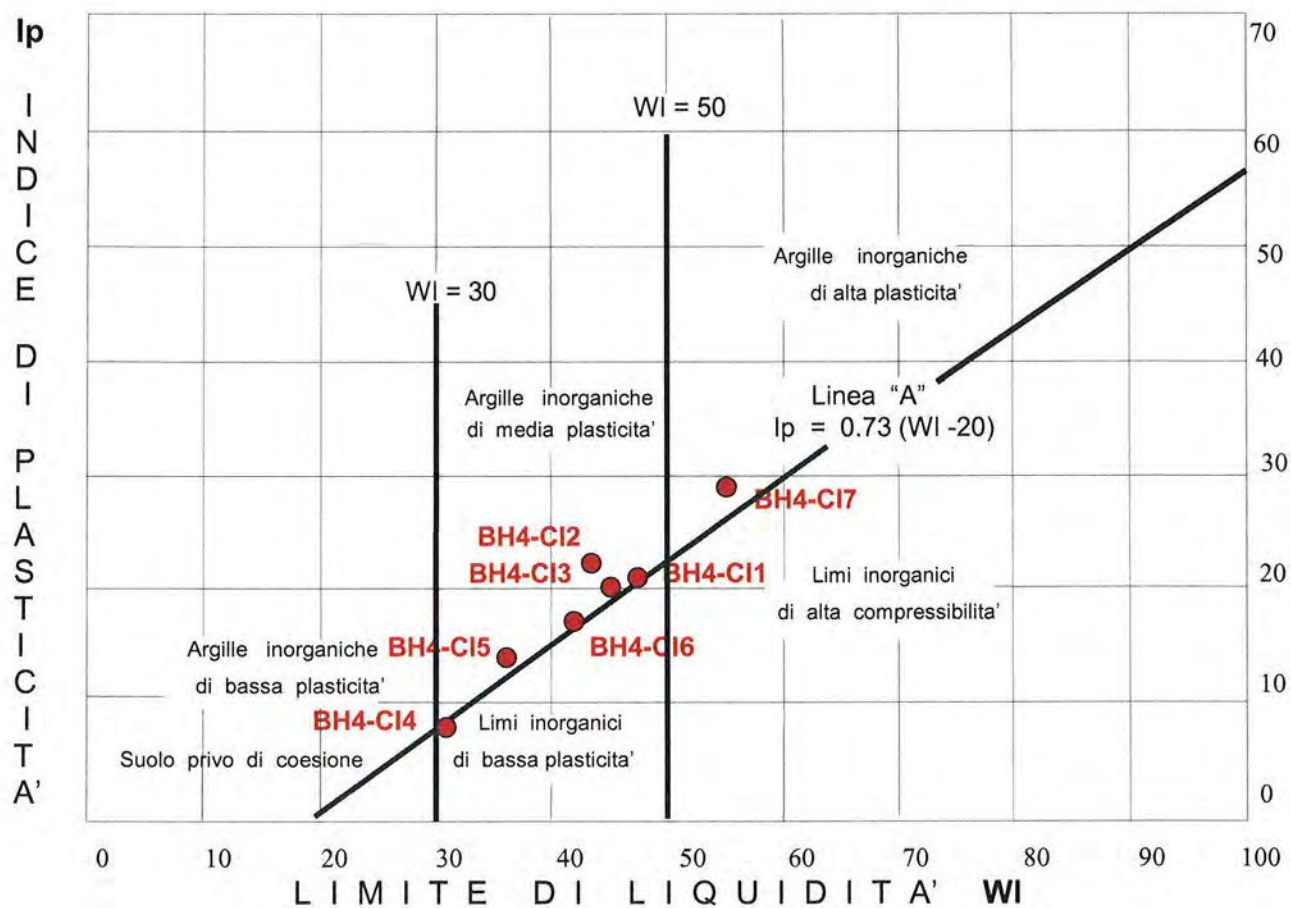


**GEOPROGET**  
Studio di Geologia

Committente : **HERA S.P.A.**  
Localita' : **Rimini – Piazzale Kennedy**  
Data : **05 / 2015**

**BH4 CI1-CI2-CI3-CI4-CI5-CI6-CI7**

### DIAGRAMMA DI CASAGRANDE



## Elaborato n. 4-6



**GEOPROGET**  
Studio di Geologia

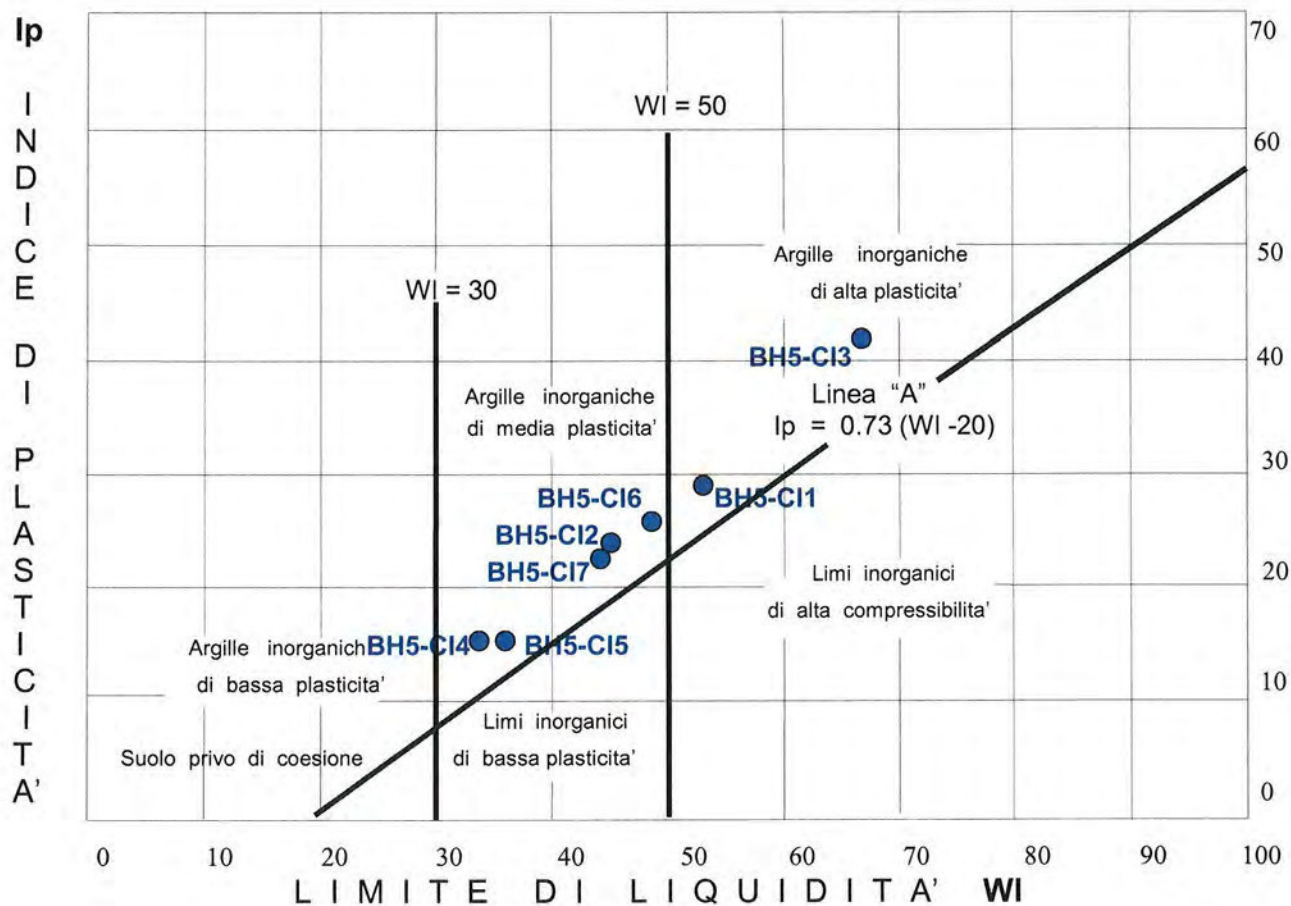
Committente : **HERA S.P.A.**

Localita' : **Rimini – Piazzale Kennedy**

Data : **05 / 2015**

**BH5 - CI1-CI2-CI3-CI4-CI5-CI6-CI7**

### DIAGRAMMA DI CASAGRANDE



## Elaborato n. 4-6



**GEOPROGET**  
Studio di Geologia

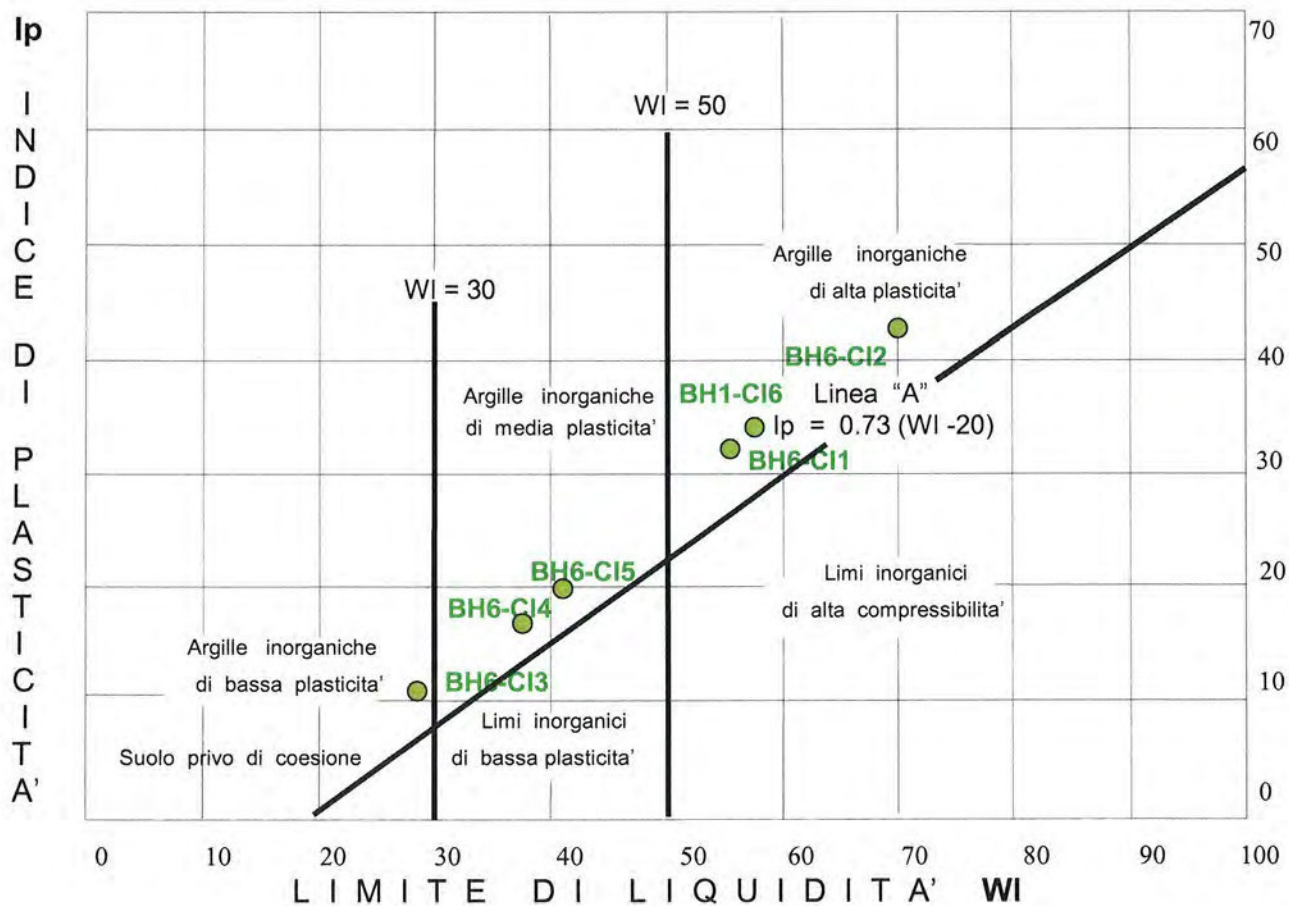
Committente : **HERA S.P.A.**

Localita' : **Rimini – Piazzale Kennedy**

Data : **05 / 2015**

**BH6 CI1-CI2-CI3-CI4-CI5-CI6**

### DIAGRAMMA DI CASAGRANDE





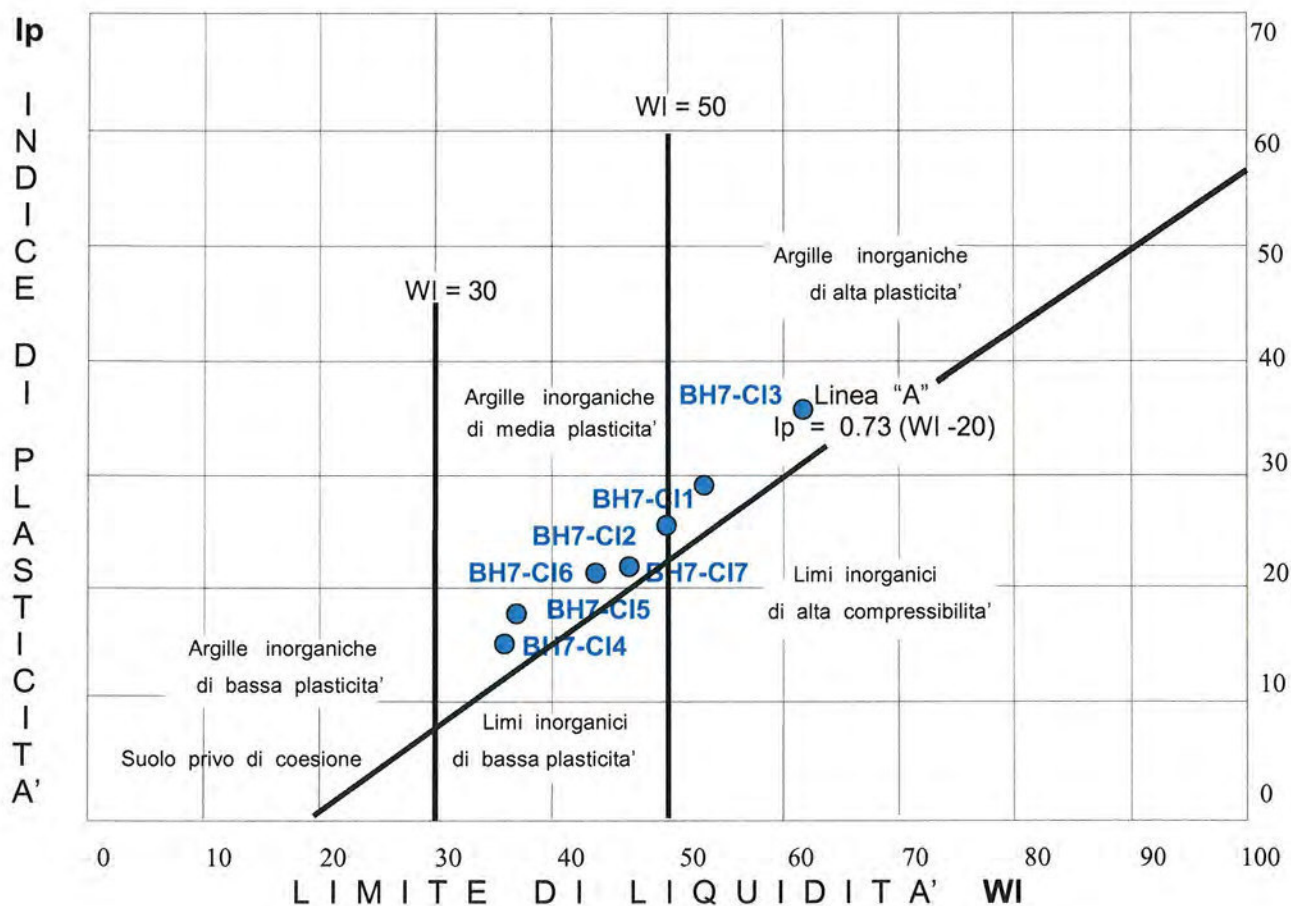


**GEOPROGET**  
Studio di Geologia

Committente : **HERA S.P.A.**  
Localita' : **Rimini – Piazzale Kennedy**  
Data : **05 / 2015**

**BH7 CI1-CI2-CI3-CI4-CI5-CI6-CI7**

**DIAGRAMMA DI CASAGRANDE**



## Elaborato n. 4-6



**GEOPROGET**  
Studio di Geologia

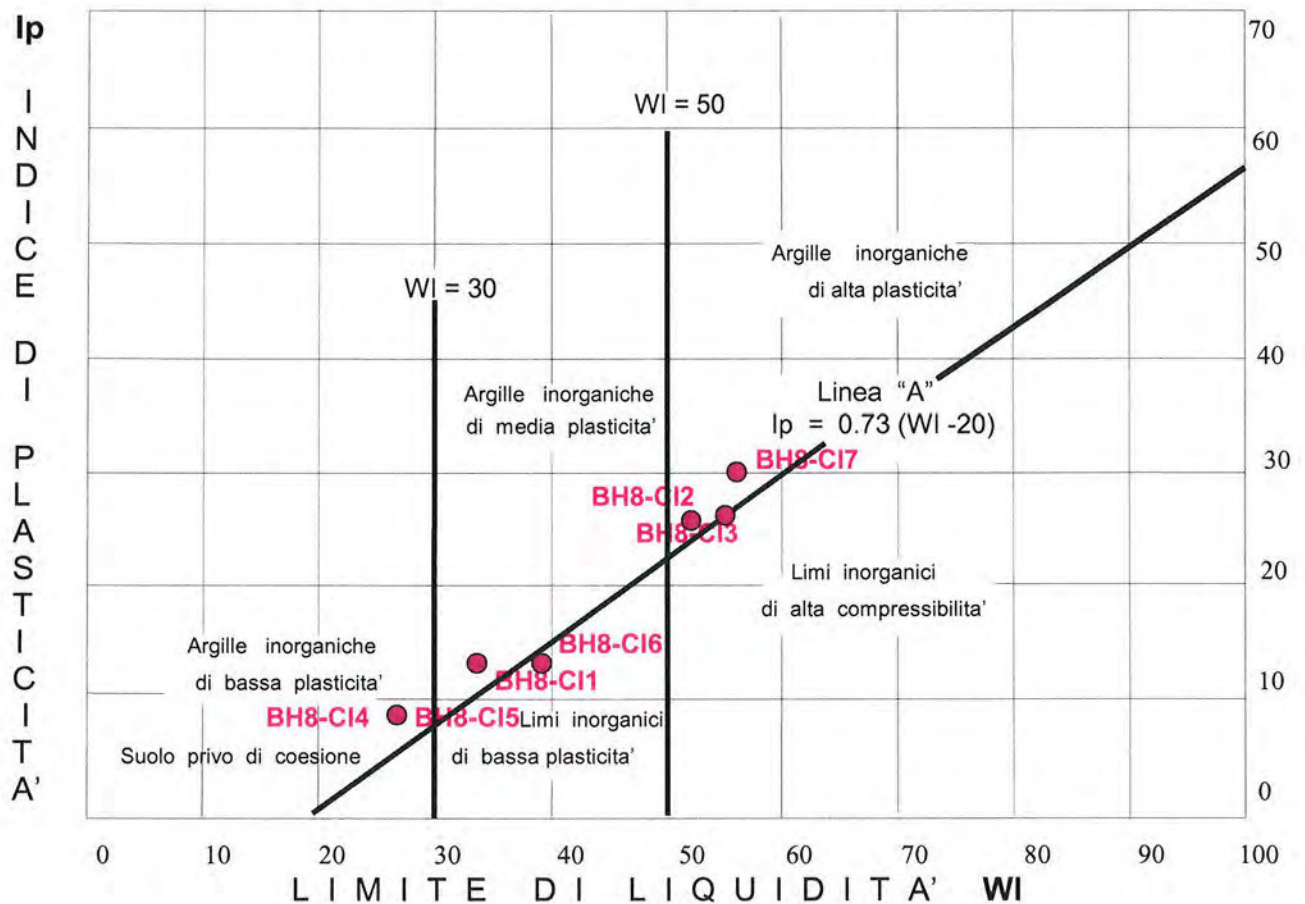
Committente : **HERA S.P.A.**

Localita' : **Rimini – Piazzale Kennedy**

Data : **05 / 2015**

**BH8 CI1-CI2-CI3-CI4-CI5-CI6-CI7**

### DIAGRAMMA DI CASAGRANDE



## Elaborato n. 4-6



**GEOPROGET**  
Studio di Geologia

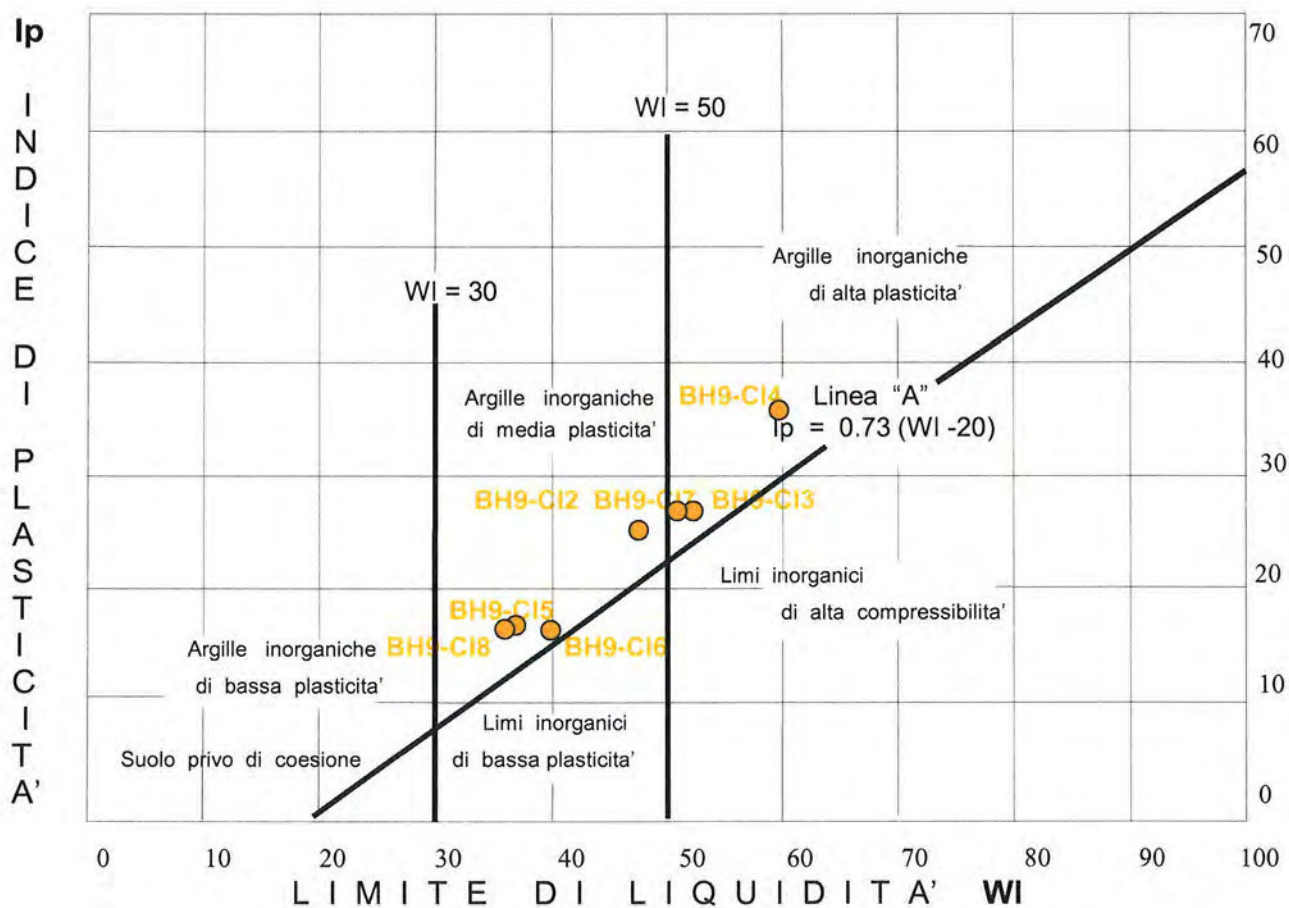
Committente : **HERA S.P.A.**

Localita' : **Rimini – Piazzale Kennedy**

Data : **05 / 2015**

**BH9 CI2-CI3-CI4-CI5-CI6-CI7-CI8**

### DIAGRAMMA DI CASAGRANDE





## **ELABORATO N. 4 - 7**

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**TABELLE RIASSUNTIVE CARATTERISTICHE LITOLOGICHE  
DESUNTE DA PROVE DI LABORATORIO SU CAMPIONI DI  
TERRENO PRELEVATI IN SITO**



**GEOPROGET**  
Studio di Geologia

Committente : **HERA S.P.A.**  
Località : **Rimini – Piazzale Kennedy**  
Data : **05 / 2015**  
Rif. : **2141**

**ELABORATO 4-7**  
**TABELLA RIASSUNTIVA CARATTERISTICHE LITOLOGICHE DA PROVE DI LABORATORIO**  
**DEI CAMPIONI DI TERRENO PRELEVATI IN SITO**

**SONDAGGIO BH1**

Prova in sito - Campione	Profondità Da mt a mt	Classificazione A.G.I. Class. AASHO, UNI 10006 Classificazione "Corps of Engineers"	De (kN/mc) Peso di volume totale	Frazione passante al setaccio ASTM 40 (%)	Frazione passante al setaccio ASTM 200 (%)	Wl - Wp (%) Limite di liquidità e di plasticità	Ip (%) Indice di plasticità
BH1-CD1	2.0– 2.2	Sabbia limosa (A2)	/	98	18.91	/	/
BH1-CD2	6.5– 6.7	Sabbia limosa deb. argillosa (A2)	/	97.47	/	/	/
BH1-CD3	9.8– 10.0	Sabbia limosa deb. argillosa (A2)	/	99.91	30.79	/	/
BH1-CD4	11.4– 11.6	Sabbia limosa deb. argillosa (A2)	/	98.56	33.58	/	/
BH1-SPT1	3.3– 3.75	Sabbia deb. limosa (A3)	/	89.68	8.61	/	/
BH1-SPT2	5.0– 5.45	Sabbia limosa (A2)	/	99.23	13.80	/	/
BH1-SPT3	7.0– 7.45	Sabbia con limo deb. argillosa (A2)	/	99.36	32.26	/	/
BH1-SPT4	11.6-12.05	Sabbia limosa deb. argillosa (A2)	/	97.37	27.95	/	/
BH1 - CI1	13.5–14.1	Limo con argilla Terre argillose (A-7-6) CH (Argille inorganiche ad alta plasticità)	18.8	99.98	99.90	53 - 23	30
BH1 – CI2	15.3–15.9	Argilla con limo Terre argillose (A-7-6) CH (Argille inorganiche ad alta plasticità)	18.32	99.96	99.86	61 - 27	34
BH1 – CI3	17.3–17.7	Argilla con limo Terre argillose (A-7) CH (Argille inorganiche ad alta plasticità)	19.9	99.98	99.81	68 - 28	40
BH1 – CI4	19.25-19.85	Limo con argilla Terre argillose (A-6) CL (Argille inorganiche con plasticità da bassa a media)	19.8	99.97	99.41	40 - 22	18
BH1 – CI5	21.2 -21.8	Limo con argilla Terre argillose (A-6) CL (Argille inorganiche con plasticità da bassa a media)	18.89	99.97	99.73	37 - 21	16
BH1 – CI6	23.2 -23.8	Limo con argilla Terre argillose (A-7-6) CH (Argille inorganiche ad alta plasticità)	19.04	99.97	99.80	51 - 23	28



**GEOPROGET**  
Studio di Geologia

Committente : **HERA S.P.A.**  
Localita' : **Rimini – Piazzale Kennedy**  
Data : **05 / 2015**  
Rif. : **2141**

**ELABORATO 4-7**  
**TABELLA RIASSUNTIVA CARATTERISTICHE LITOLOGICHE DA PROVE DI LABORATORIO**  
**DEI CAMPIONI DI TERRENO PRELEVATI IN SITO**

**SONDAGGIO BH2**

Prova in sito - Campione	Profondità Da mt a mt	Classificazione A.G.I. Class. AASHO, UNI 10006 Classificazione "Corps of Engineers"	De (kN/mc) Peso di volume totale	Frazione passante al setaccio ASTM 40 (%)	Frazione passante al setaccio ASTM 200 (%)	Wl - Wp (%) Limite di liquidità e di plasticità	Ip (%) Indice di plasticità
BH2-CD1	3.5– 3.8	Sabbia limosa (A2)	/	98.7	31.64	/	/
BH2-CD2	5.8– 6.0	Sabbia ghiaiosa e limosa (A1-b)	/	46.00	19.83	/	/
BH2-CD3	8.75– 9.0	Sabbia limosa deb. argillosa (A2)	/	99.47	33.21	/	/
BH2-CD4	11.75– 12.0	Sabbia limosa deb. argillosa (A2)	/	99.82	34.65	/	/
BH2 - CI1	13.5–14.1	Limo deb sabbioso e argilloso Terre argillose (A-6) CL (Argille inorganiche con plasticità da bassa a media)	19.18	99.86	98.20	36 - 18	18
BH2 - CI2	15.5–16.1	Limo con argilla Terre argillose (A-7-6) CL (Argille inorganiche con plasticità da bassa a media)	18.65	99.97	99.75	49 - 27	22
BH2 - CI3	17.3–17.7	Argilla con limo Terre argillose (A-7-6) CH (Argille inorganiche ad alta plasticità)	18.68	99.97	99.95	57 - 28	29
BH2 - CI4	19.5 -20.1	Limo con argilla Terre argillose (A-6) CL (Argille inorganiche con plasticità da bassa a media)	19.52	99.96	99.84	40 - 23	17
BH2 - CI5	21.5 -22.1	Limo argilloso deb. sabbioso Terre argillose (A-6) CL (Argille inorganiche con plasticità da bassa a media)	18.09	99.95	99.55	39 - 20	19
BH2 - CI6	23.5 -24.1	Limo argilloso Terre argillose (A-6) CL (Argille inorganiche con plasticità da bassa a media)	18.84	99.95	99.79	38 - 21	17
BH2 - CI7	25.7 -26.2	Limo argilloso deb. sabbioso Terre argillose (A-6) CL (Argille inorganiche con plasticità da bassa a media)	19.44	99.89	99.19	40 - 22	18
BH2-SPT1	4.65– 5.05	Sabbia (A2)	/	94.92	10.76	/	/
BH2-SPT2	6.0– 6.45	Sabbia limosa deb. Ghiaiosa (A2)	/	66.23	22.86	/	/
BH2-SPT3	10.0–10.45	Sabbia limosa deb. Argillosa (A2)	/	99.30	34.95	/	/
BH2-SPT4	12.0-12.45	Sabbia limosa deb. Argillosa (A2)	/	99.43	23.42	/	/
BH2-SPT5	31.2-31.65	Ghiaia con sabbia deb. limosa (A1-b)	/	34.14	8.92	/	/





**GEOPROGET**  
Studio di Geologia

Committente : **HERA S.P.A.**  
Località : **Rimini – Piazzale Kennedy**  
Data : **05 / 2015**  
Rif. : **2141**

**ELABORATO 4-7**  
**TABELLA RIASSUNTIVA CARATTERISTICHE LITOLOGICHE DA PROVE DI LABORATORIO**  
**DEI CAMPIONI DI TERRENO PRELEVATI IN SITO**

**SONDAGGIO BH3**

Prova in sito - Campione	Profondità Da mt a mt	Classificazione A.G.I. Class. AASHO, UNI 10006 Classificazione "Corps of Engineers"	De (kN/mc) Peso di volume totale	Frazione passante al setaccio ASTM 40 (%)	Frazione passante al setaccio ASTM 200 (%)	Wl - Wp (%) Limite di liquidità e di plasticità	Ip (%) Indice di plasticità
BH3-CD1	5.7– 6.0	Sabbia limosa (A2)	/	87.25	22.81	/	/
BH3-CD2	8.7– 9.0	Sabbia con limo deb. agillosa (A2)	/	99.70	33.72	/	/
BH3-CD3	11.7– 12.0	Sabbia con limo (A2)	/	98.02	34.43	/	/
BH3 - CI1	13.8–14.4	Limo deb sabbioso e argilloso Terre argillose (A-7-6) CL (Argille inorganiche con plasticità da bassa a media)	18.74	99.99	99.86	48 - 25	23
BH3 - CI2	15.8–16.4	Limo con argilla deb. sabbioso Terre argillose (A-7-6) CL (Argille inorganiche con plasticità da bassa a media)	18.97	99.96	99.69	50 - 26	24
BH3 - CI3	17.8–18.4	Limo con argilla Terre argillose (A-7-6) MH-OH (Limi inorganici -argille organiche)	19.12	99.97	99.86	58 - 31	27
BH3 - CI4	19.8 -20.4	Limo sabbioso deb. argilloso Terre limose (A-4) CL (Argille inorganiche con plasticità da bassa a media)	19.97	99.94	93.02	30 - 20	10
BH3 - CI5	24.9 -25.5	Limo con argilla deb. sabbioso Terre argillose (A-7-6) MH-OH (Limi inorganici -argille organiche)	18.98	99.89	99.67	43 - 27	16
BH3-SPT1	3.0 – 3.45	Sabbia deb. limosa (A2)	/	98.54	17.79	/	/
BH3-SPT2	5.2– 5.65	Sabbia con limo deb. Ghiaiosa e argillosa (A2)	/	80.85	35.09	/	/
BH3-SPT3	7.0–7.45	Sabbia deb. limosa (A2)	/	96.07	17.71	/	/
BH3-SPT4	12.0-12.45	Sabbia limosa deb. argillosa (A2)	/	95.49	27.78	/	/



**GEOPROGET**  
Studio di Geologia

Committente : **HERA S.P.A.**  
Localita' : **Rimini – Piazzale Kennedy**  
Data : **05 / 2015**  
Rif. : **2141**

**ELABORATO 4-7**  
**TABELLA RIASSUNTIVA CARATTERISTICHE LITOLOGICHE DA PROVE DI LABORATORIO**  
**DEI CAMPIONI DI TERRENO PRELEVATI IN SITO**

**SONDAGGIO BH4**

Prova in sito - Campione	Profondità Da mt a mt	Classificazione A.G.I. Class. AASHO, UNI 10006 Classificazione "Corps of Engineers"	De (kN/mc) Peso di volume totale	Frazione passante al setaccio ASTM 40 (%)	Frazione passante al setaccio ASTM 200 (%)	Wl - Wp (%) Limite di liquidità e di plasticità	Ip (%) Indice di plasticità
BH4-CD1	7.25– 7.5	<b>Sabbia limosa (A2)</b>	/	89.71	27.78	/	/
BH4-CD2	9.25– 9.50	<b>Sabbia limosa deb. argillosa (A1-b)</b>	/	99.75	34.82	/	/
BH4 - CI1	14.0–14.6	<b>Limo argilloso</b> Terre argillose ( <b>A-7-6</b> ) <b>CL</b> (Argille inorganiche con plasticità da bassa a media)	19.05	99.99	99.86	46 - 25	21
BH4 – CI2	16.0–16.6	<b>Limo con argilla</b> Terre argillose ( <b>A-7-6</b> ) <b>CL</b> (Argille inorganiche con plasticità da bassa a media)	18.74	99.98	99.87	44 - 22	22
BH4 – CI3	18.1–18.7	<b>Limo con argilla</b> Terre argillose ( <b>A-7-6</b> ) <b>CL</b> (Argille inorganiche con plasticità da bassa a media)	19.11	99.99	98.86	45 - 25	20
BH4 – CI4	20.1 -20.7	<b>Limo deb. sabbioso</b> Terre argillose ( <b>A-4</b> ) <b>CL</b> (Argille inorganiche con plasticità da bassa a media)	18.79	99.95	97.86	31 - 23	8
BH4 – CI5	22.1 -22.7	<b>Limo deb. argilloso e sabbioso</b> Terre argillose ( <b>A-6</b> ) <b>CL</b> (Argille inorganiche con plasticità da bassa a media)	18.42	99.86	99.10	36 - 22	14
BH4 – CI6	24.1 -24.7	<b>Limo con argilla deb. sabbioso</b> Terre argillose ( <b>A-7-6</b> ) <b>CL</b> (Argille inorganiche con plasticità da bassa a media)	17.99	99.95	99.79	42 - 25	17
BH4 – CI7	26.1 -26.7	<b>Limo con argilla deb. sabbioso</b> Terre argillose ( <b>A-7-6</b> ) <b>CH</b> (Argille inorganiche ad alta plasticità)	19.46	99.70	95.08	55 - 26	29
BH4-SPT1	5.0– 5.45	<b>Sabbia deb. limosa (A2)</b>	/	86.07	17.15	/	/
BH4-SPT2	7.5– 7.95	<b>Sabbia limosa deb. argillosa (A2)</b>	/	66.23	22.86	/	/
BH4-SPT3	9.5–9.95	<b>Sabbia limosa deb. argillosa (A2)</b>	/	99.52	30.14	/	/
BH4-SPT4	12.0-12.45	<b>Sabbia limosa deb. argillosa (A2)</b>	/	99.87	25.92	/	/
BH4-SPT5	31.0-31.45	<b>Ghiaia con sabbia deb. limosa (A1-b)</b>	/	38.86	20.42	/	/



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**ELABORATO 4-7**  
**TABELLA RIASSUNTIVA CARATTERISTICHE LITOLOGICHE DA PROVE DI LABORATORIO**  
**DEI CAMPIONI DI TERRENO PRELEVATI IN SITO**

**SONDAGGI BH5 – BH6**

Prova in sito - Campione	Profondità Da mt a mt	Classificazione A.G.I. Class. AASHO, UNI 10006 Classificazione "Corps of Engineers"	De (kN/mc) Peso di volume totale	Frazione passante al setaccio ASTM 40 (%)	Frazione passante al setaccio ASTM 200 (%)	Wl - Wp (%) Limite di liquidità e di plasticità	Ip (%) Indice di plasticità
BH5-SPT1	3.1– 3.55	<b>Sabbia con limo e argilla, ghiaiosa</b> Terre limose ( <b>A4 / A5</b> )	/	79.19	58.21	/	/
BH5-SPT2	12.0- 12.45	<b>Sabbia con limo deb. argillosa</b> ( <b>A2</b> )	/	96.95	28.97	/	/
BH5 – CI1	13.5 -14.1	<b>Limo con argilla</b> Terre argillose ( <b>A-7-6</b> ) <b>CH</b> (Argille inorganiche ad alta plasticità)	19.24	100.0	99.96	53 - 24	29
BH5 – CI2	15.5 -16.1	<b>Limo con argilla</b> Terre argillose ( <b>A-7-6</b> ) <b>CL</b> (Argille inorganiche con plasticità da bassa a media)	19.1	99.95	99.28	44 - 22	22
BH5 – CI3	17.6 -18.2	<b>Argilla con limo</b> Terre argillose ( <b>A-7-6</b> ) <b>CH</b> (Argille inorganiche ad alta plasticità)	18.9	100.0	99.95	67 - 25	42
BH5 – CI4	19.7 -20.3	<b>Limo argilloso e sabbioso</b> Terre argillose ( <b>A-6</b> ) <b>CL</b> (Argille inorganiche con plasticità Da bassa a media)	18.9	99.99	88.84	34 - 19	15
BH5 – CI5	21.8 -22.4	<b>Limo argilloso deb. sabbioso</b> Terre argillose ( <b>A-6</b> ) <b>CL</b> (Argille inorganiche con plasticità da bassa a media)	18.68	99.85	98.12	36 - 21	15
BH5 – CI6	23.8 -24.4	<b>Limo con argilla</b> Terre argillose ( <b>A-7-6</b> ) <b>CL</b> (Argille inorganiche con plasticità Da bassa a media)	18.04	99.98	99.94	49 - 23	26
BH5 – CI7	26.0 -26.6	<b>Limo con argilla sabbioso</b> Terre argillose ( <b>A-7-6</b> ) <b>CL</b> (Argille inorganiche con plasticità da bassa a media)	18.95	99.64	89.40	45 - 21	24
BH6 – CI1	13.8 -14.4	<b>Limo con argilla</b> Terre argillose ( <b>A-7-6</b> ) <b>CH</b> (Argille inorganiche ad alta plasticità)	18.63	99.9	99.67	55 - 23	32
BH6 – CI2	17.2 -17.8	<b>Argilla con limo</b> Terre argillose ( <b>A-7-6</b> ) <b>CH</b> (Argille inorganiche ad alta plasticità)	18.99	99.12	98.31	70 - 25	45
BH6 – CI3	19.0 -19.6	<b>Limo argilloso con sabbia</b> Terre argillose ( <b>A-6</b> ) <b>CL</b> (Argille inorganiche con plasticità da bassa a media)	18.81	99.72	80.24	29 - 18	11
BH6 – CI4	21.2 -21.8	<b>Limo con argilla deb. sabbioso</b> Terre argillose ( <b>A-6</b> ) <b>CL</b> (Argille inorganiche con plasticità da bassa a media)	18.95	99.91	97.85	38 - 21	17
BH6 – CI5	23.3 -23.9	<b>Limo con argilla</b> Terre argillose ( <b>A-7-6</b> ) <b>CL</b> (Argille inorganiche con plasticità da bassa a media)	19.01	99.91	97.85	41 - 21	20
BH6 – CI6	25.4 -26.0	<b>Argilla con limo</b> Terre argillose ( <b>A-7-6</b> ) <b>CH</b> (Argille inorganiche ad alta plasticità)	19.78	99.99	99.83	58 - 24	34





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**ELABORATO 4-7**  
**TABELLA RIASSUNTIVA CARATTERISTICHE LITOLOGICHE DA PROVE DI LABORATORIO**  
**DEI CAMPIONI DI TERRENO PRELEVATI IN SITO**

**SONDAGGIO BH7**

Prova in sito - Campione	Profondità Da mt a mt	Classificazione A.G.I. Class. AASHO, UNI 10006 Classificazione "Corps of Engineers"	De (kN/mc) Peso volume totale	Frazione passante al setaccio ASTM 40 (%)	Frazione passante al setaccio ASTM 200 (%)	Wl - Wp (%) Limite di liquidità e di plasticità	Ip (%) Indice di plasticità
BH7-CD1	5.5– 5.7	Sabbia deb. limosa (A3)	/	95.74	9.64	/	/
BH7-CD2	9.2– 9.5	Sabbia limosa deb. argillosa (A2)	/	99.96	34.72	/	/
BH7-CD3	11.25-11.5	Sabbia limosa deb. argillosa (A2)	/	99.97	34.45	/	/
BH7-SPT1	3.0– 3.45	Sabbia limosa (A2)	/	99.29	20.59	/	/
BH7-SPT3	9.7– 10.15	Sabbia argillosa e limosa (A2)	/	99.31	34.41	/	/
BH7-SPT4	11.6-12.05	Sabbia deb. limosa e argillosa (A2)	/	99.93	27.31	/	/
BH7 – CI1	13.5 -14.1	Limo con argilla Terre argillose (A-7-6) CH (Argille inorganiche ad alta plasticità)	18.83	99.99	99.85	53 - 24	29
BH7 – CI2	15.5 -16.1	Limo con argilla Terre argillose (A-7-6) CL-CH (Argille inorganiche a media- alta plasticità)	18.9	100.0	99.96	50 - 24	26
BH7 – CI3	17.6 -18.1	Limo con argilla Terre argillose (A-7-6) CH (Argille inorganiche ad alta plasticità)	19.07	99.95	99.55	62 - 26	36
BH7 – CI4	19.6 -20.1	Limo argilloso deb. sabbioso Terre argillose (A-6) CL (Argille inorganiche con plasticità Da bassa a media)	18.95	99.97	98.71	36 - 21	15
BH7 – CI5	21.6 -22.1	Limo argilloso deb. sabbioso Terre argillose (A-6) CL (Argille inorganiche con plasticità Da bassa a media)	18.94	99.81	98.34	37 - 19	18
BH7 – CI6	23.6 -24.2	Limo con argilla Terre argillose (A-7-6) CL (Argille inorganiche con plasticità Da bassa a media)	18.35	99.96	99.87	44 - 23	21
BH7 – CI7	25.6 -26.2	Limo sabbioso con argilla Terre argillose (A-7-6) CL (Argille inorganiche con plasticità da bassa a media)	18.74	99.66	91.59	47 - 25	22



**GEOPROGET**  
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**ELABORATO 4-7**  
**TABELLA RIASSUNTIVA CARATTERISTICHE LITOLOGICHE DA PROVE DI LABORATORIO**  
**DEI CAMPIONI DI TERRENO PRELEVATI IN SITO**

**SONDAGGIO BH8**

Prova in sito - Campione	Profondità Da mt a mt	Classificazione A.G.I. Class. AASHO, UNI 10006 Classificazione "Corps of Engineers"	De (kN/mc) Peso di volume totale	Frazione passante al setaccio ASTM 40 (%)	Frazione passante al setaccio ASTM 200 (%)	WI - Wp (%) Limite di liquidità e di plasticità	Ip (%) Indice di plasticità
BH8-CD1	4.5 – 4.8	<b>Sabbia deb. limosa (A2)</b>	/	99.05	13.24	/	/
BH8 - CI1	13.7–14.2	<b>Limo argilloso</b> Terre argillose ( <b>A-6</b> ) CL (Argille inorganiche con plasticità da bassa a media)	19.37	99.98	99.73	34 - 21	13
BH8 – CI2	15.6–16.2	<b>Limo con argilla deb. sabbioso</b> Terre argillose ( <b>A-7-6</b> ) CH (Argille inorganiche ad alta plasticità)	18.87	99.98	99.87	52 - 26	26
BH8 – CI3	17.8–18.3	<b>Limo con argilla</b> Terre argillose ( <b>A-7-6</b> ) CH (Argille inorganiche ad alta plasticità)	18.60	99.94	99.78	55 - 30	25
BH8 – CI4	19.8 -20.4	<b>Limo deb. sabbioso</b> Terre argillose ( <b>A-4</b> ) CL (Argille inorganiche con plasticità da bassa a media)	18.64	99.98	97.19	27 - 18	9
BH8 – CI5	21.8 -22.3	<b>Limo deb. sabbioso</b> Terre argillose ( <b>A-4</b> ) CL (Argille inorganiche con plasticità da bassa a media)	18.19	99.93	99.61	27 - 18	9
BH8 – CI6	23.7 -24.3	<b>Limo con argilla</b> Terre argillose ( <b>A-6</b> ) OL-ML (Limi inorganici di bassa plasticità)	18.76	99.96	99.45	39 - 26	17
BH8 – CI7	27.20-27.8	<b>Argilla con limo deb. sabbiosa</b> Terre argillose ( <b>A-7-6</b> ) CH (Argille inorganiche ad alta plasticità)	19.03	99.88	98.99	56 - 26	30
BH8-SPT1	3.0– 3.40	<b>Sabbia deb. limosa (A2)</b>	/	98.38	13.34	/	/
BH8-SPT2	5.1- 5.55	<b>Sabbia limosa deb. argillosa (A2)</b>	/	98.51	23.50	/	/
BH8-SPT3	7.2–7.65	<b>Sabbia limosa deb. argillosa (A2)</b>	/	89.22	28.50	/	/
BH8-SPT4	10.5-10.95	<b>Sabbia limosa (A2)</b>	/	99.57	18.20	/	/
BH8-SPT5	12.0-12.45	<b>Sabbia limosa (A2)</b>	/	99.84	24.49	/	/



**GEOPROGET**  
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**ELABORATO 4-7**  
**TABELLA RIASSUNTIVA CARATTERISTICHE LITOLOGICHE DA PROVE DI LABORATORIO**  
**DEI CAMPIONI DI TERRENO PRELEVATI IN SITO**

**SONDAGGIO BH9**

Prova in sito - Campione	Profondità Da mt a mt	Classificazione A.G.I. Class. AASHO, UNI 10006 Classificazione "Corps of Engineers"	De (kN/mc) Peso di volume totale	Frazione passante al setaccio ASTM 40 (%)	Frazione passante al setaccio ASTM 200 (%)	Wl - Wp (%) Limite di liquidità e di plasticità	Ip (%) Indice di plasticità
BH9-CD1	5.5– 5.7	Sabbia deb. limosa e argillosa (A2)	/	94.60	24.30	/	/
BH9-CD2	8.8– 9.0	Sabbia limosa deb. argillosa (A2)	/	99.78	31.57	/	/
BH9-CD3	10.4–10.6	Sabbia limosa deb. argillosa (A2)	/	99.97	30.53	/	/
BH9-CD4	12.45–12.6	Sabbia deb. limosa e argillosa (A2)	/	99.30	24.16	/	/
BH9-SPT2	5.0– 5.45	Limo con argilla deb. sabbioso	/	99.23	92.86	/	/
BH9-SPT3	9.0– 9.45	Sabbia limosa deb. argillosa (A2)	/	99.63	31.24	/	/
BH9-SPT4	12.0–12.45	Sabbia deb. Limosa e argillosa (A2)	/	99.61	22.53	/	/
BH9-CI1	7.0 - 7.5	Sabbia deb. limosa (A2)	/	96.79	11.30	/	/
BH9-CI2	13.5 -14.0	Limo con argilla Terre argillose (A-7-6) CL (Argille inorganiche con plasticità da bassa a media)	18.83	99.99	99.96	48 - 23	25
BH9-CI3	15.5 -16.0	Limo con argilla Terre argillose (A-7-6) CH (Argille inorganiche ad alta Plasticità)	18.5	99.50	99.04	52 - 25	27
BH9-CI4	17.6 -18.1	Argilla con limo Terre argillose (A-7-6) CH (Argille inorganiche ad alta Plasticità)	18.5	99.90	99.61	60 - 24	36
BH9-CI5	19.7 -20.3	Limo argilloso e sabbioso Terre argillose (A-6) CL (Argille inorganiche con plasticità da bassa a media)	19.24	99.91	97.97	37 - 20	17
BH9-CI6	21.7 -22.2	Limo con argilla Terre argillose (A-6) CL (Argille inorganiche con plasticità da bassa a media)	18.13	99.91	99.58	40 - 23	17
BH9-CI7	23.7 -24.3	Limo con argilla Terre argillose (A-7-6) CH (Argille inorganiche ad alta plasticità)	18.46	99.28	97.47	51 - 24	27
BH9-CI8	25.5 -26.1	Limo con argilla e sabbia Terre argillose (A-6) CL (Argille inorganiche con plasticità da bassa a media)	19.81	99.82	80.77	36 - 19	17



**ELABORATO N. 4 - 8**

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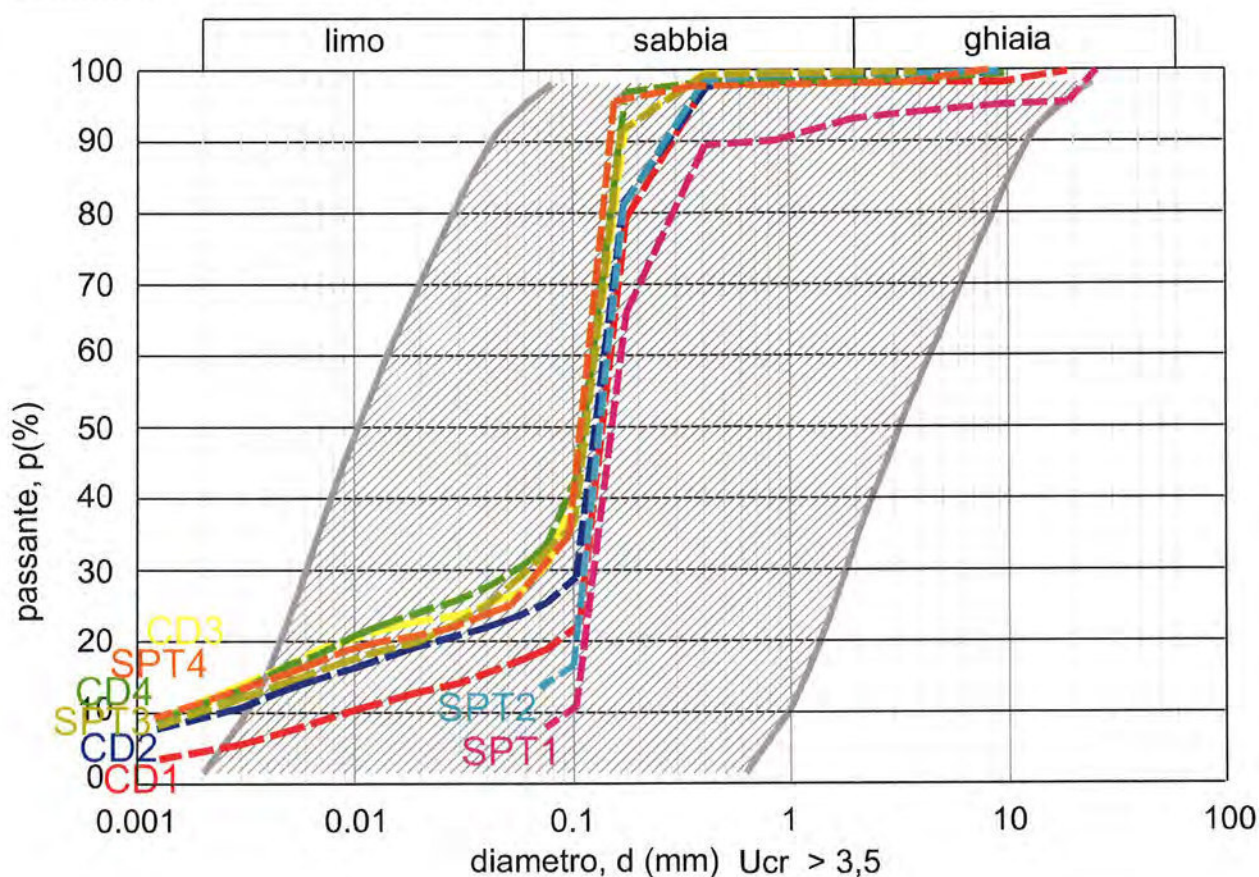
**CURVE GRANULOMETRICHE  
“POSSIBILITA’ DI LIQUEFAZIONE”**

**FUSI GRANULOMETRICI DEI TERRENI SUSCETTIBILI A LIQUEFAZIONE  
SOVRAPPOSIZIONE CON CURVE GRANULOMETRICHE**

**SONDAGGIO BH1**



Possibilità di liquefazione



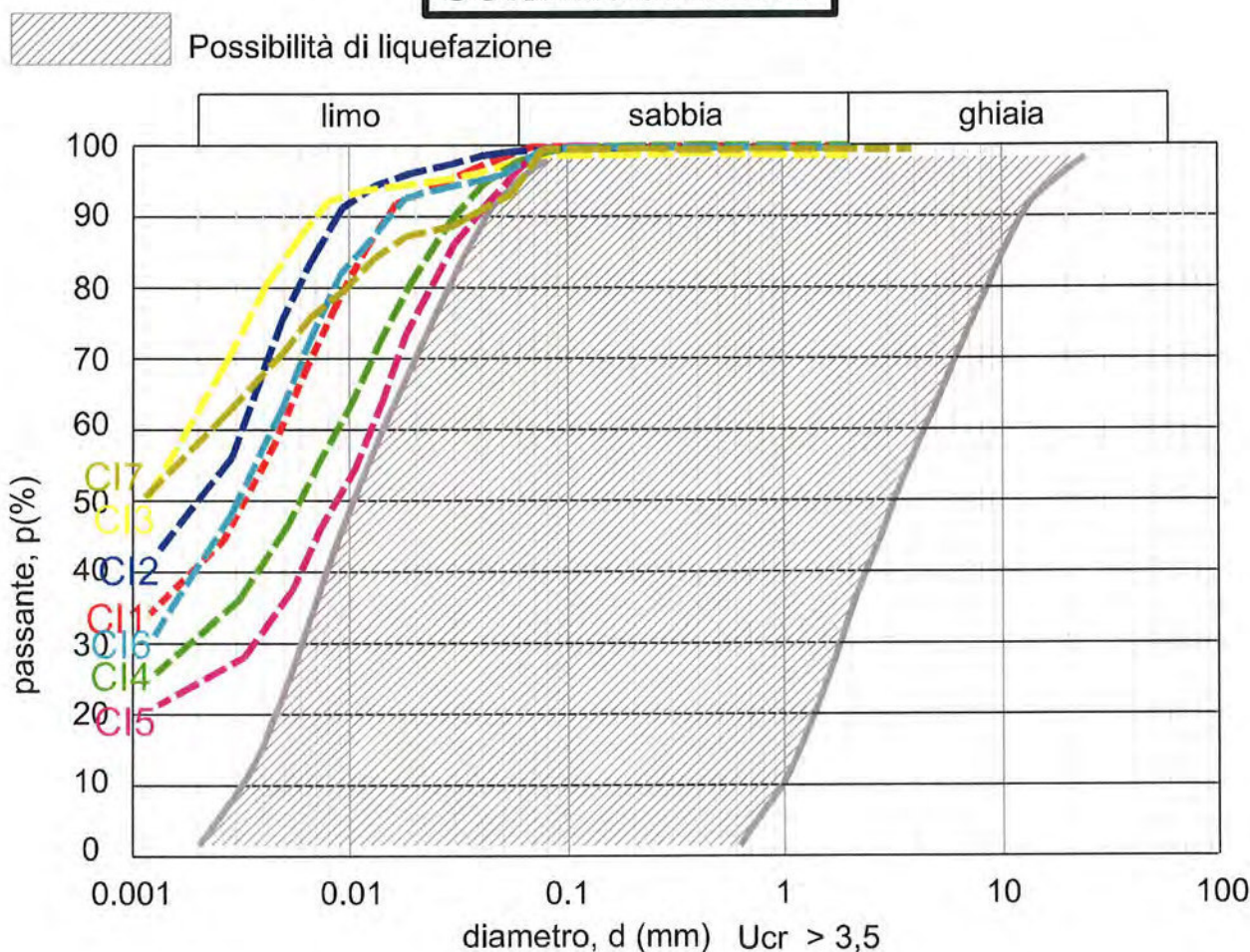
**LITOTIPI "VR" - "SL" - "CLA"**

SONDAGGIO : BH 1	CAMPIONE: CD 1	PROFONDITA': 2.00 ÷ 2.20 m
SONDAGGIO : BH 1	CAMPIONE: CD 2	PROFONDITA': 6.50 ÷ 6.70 m
SONDAGGIO : BH 1	CAMPIONE: CD 3	PROFONDITA': 9.80 ÷ 10.00 m
SONDAGGIO : BH 1	CAMPIONE: CD 4	PROFONDITA': 11.40 ÷ 11.60 m
SONDAGGIO : BH 1	CAMPIONE: SPT 1	PROFONDITA': 3.30 ÷ 3.75 m
SONDAGGIO : BH 1	CAMPIONE: SPT 2	PROFONDITA': 5.00 ÷ 5.45 m
SONDAGGIO : BH 1	CAMPIONE: SPT 3	PROFONDITA': 7.00 ÷ 7.45 m
SONDAGGIO : BH 1	CAMPIONE: SPT 4	PROFONDITA': 11.60 ÷ 12.05 m



**FUSI GRANULOMETRICI DEI TERRENI SUSCETTIBILI A LIQUEFAZIONE  
SOVRAPPOSIZIONE CON CURVE GRANULOMETRICHE**

**SONDAGGIO BH1**



**LITOTIPI "LA" - "ALA"**

SONDAGGIO : BH 1	CAMPIONE: CI 1	PROFONDITA': 13.50 ÷ 14.10 m
SONDAGGIO : BH 1	CAMPIONE: CI 2	PROFONDITA': 15.30 ÷ 15.90 m
SONDAGGIO : BH 1	CAMPIONE: CI 3	PROFONDITA': 17.30 ÷ 17.70 m
SONDAGGIO : BH 1	CAMPIONE: CI 4	PROFONDITA': 19.25 ÷ 19.85 m
SONDAGGIO : BH 1	CAMPIONE: CI 5	PROFONDITA': 21.20 ÷ 21.80 m
SONDAGGIO : BH 1	CAMPIONE: CI 6	PROFONDITA': 23.20 ÷ 23.80 m
SONDAGGIO : BH 1	CAMPIONE: CI 7	PROFONDITA': 25.20 ÷ 25.70 m





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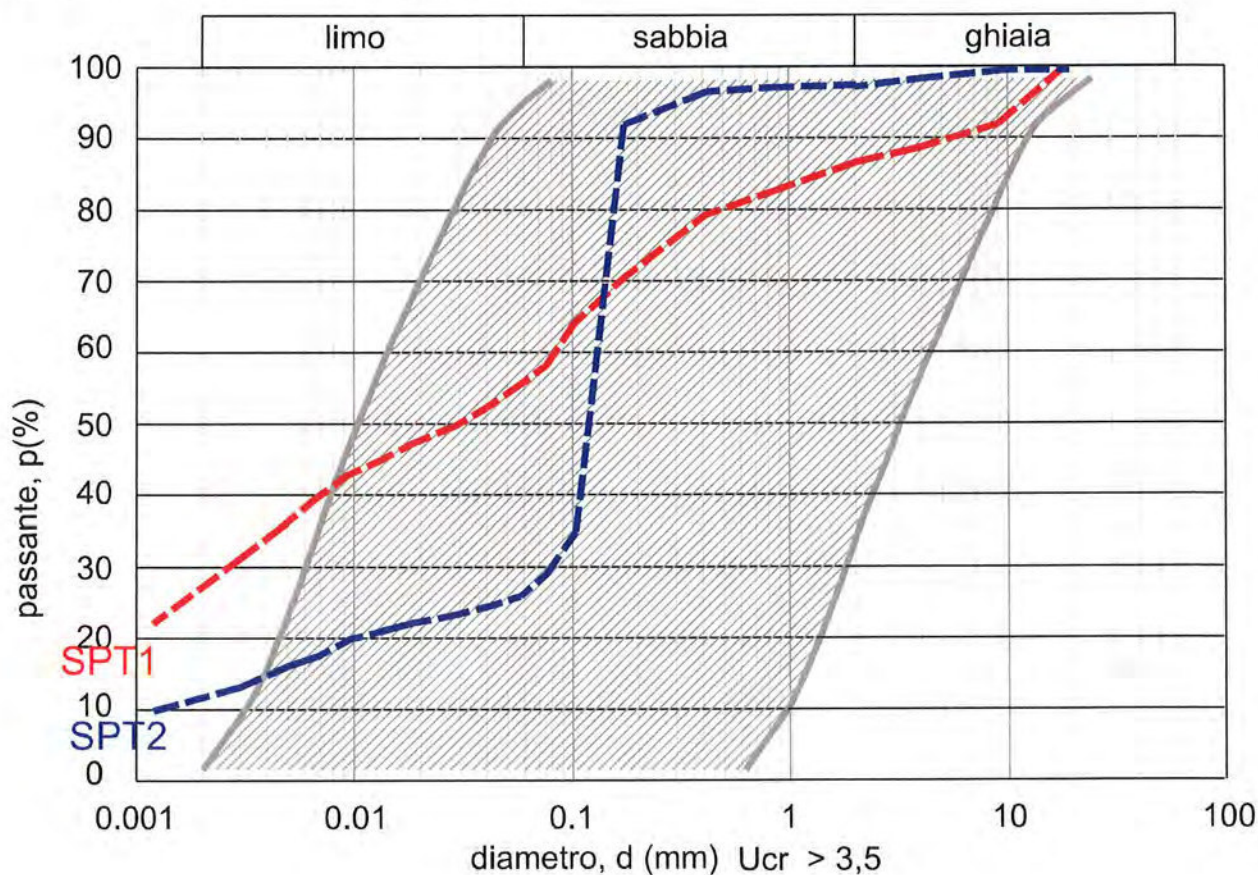
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FUSI GRANULOMETRICI DEI TERRENI SUSCETTIBILI A LIQUEFAZIONE  
SOVRAPPOSIZIONE CON CURVE GRANULOMETRICHE

### SONDAGGIO BH5



Possibilità di liquefazione



### LITOTIPI "VR" - "SL" - "CLA"

SONDAGGIO : BH 5

CAMPIONE: SPT 1

PROFONDITA': 3.10 + 3.55 m

SONDAGGIO : BH 5

CAMPIONE: SPT 2

PROFONDITA': 12.00 + 12.45 m



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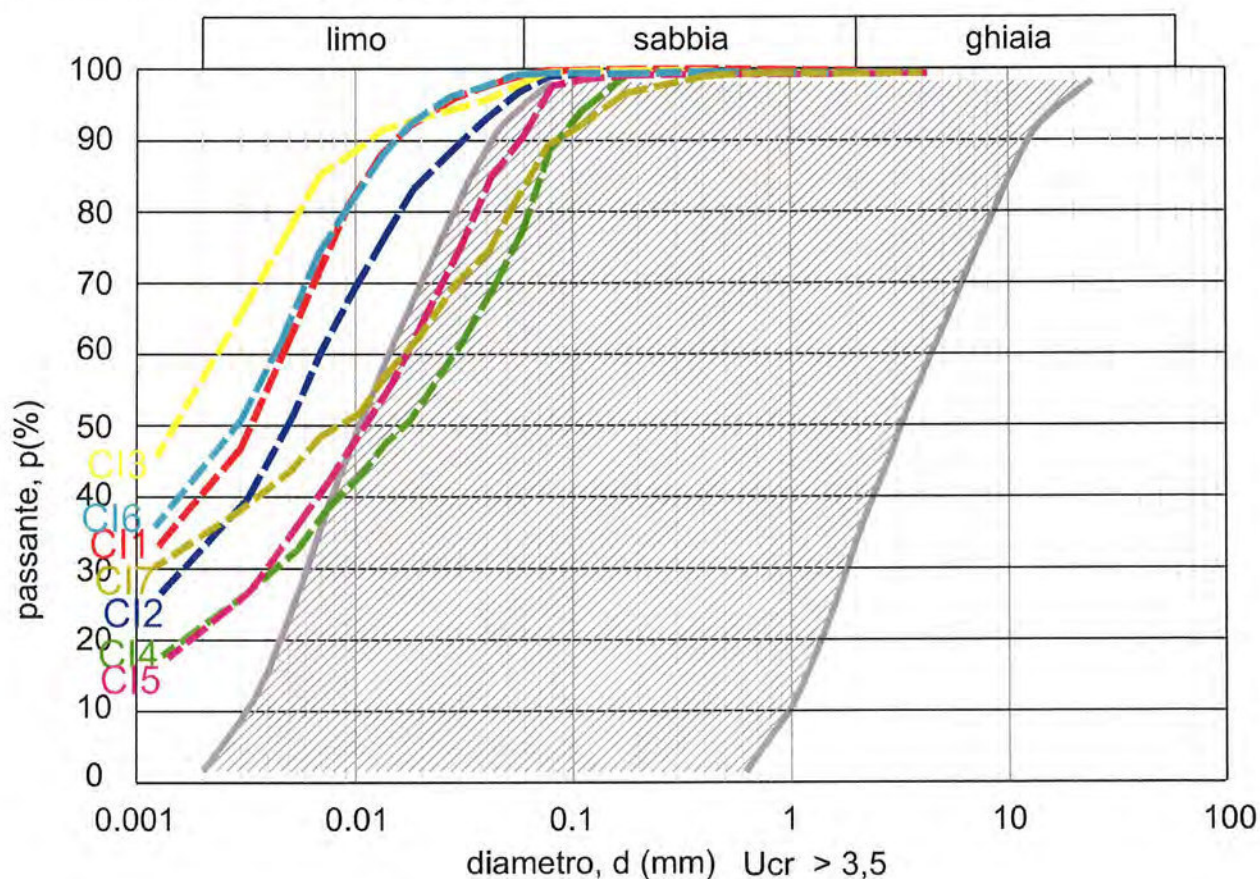
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**FUSI GRANULOMETRICI DEI TERRENI SUSCETTIBILI A LIQUEFAZIONE  
SOVRAPPOSIZIONE CON CURVE GRANULOMETRICHE**

**SONDAGGIO BH5**



Possibilità di liquefazione



**LITOTIPI "LA" - "ALA"**

SONDAGGIO : BH 5	CAMPIONE: CI 1	PROFONDITA': 13.50 ÷ 14.10 m
SONDAGGIO : BH 5	CAMPIONE: CI 2	PROFONDITA': 15.50 ÷ 16.10 m
SONDAGGIO : BH 5	CAMPIONE: CI 3	PROFONDITA': 17.60 ÷ 18.20 m
SONDAGGIO : BH 5	CAMPIONE: CI 4	PROFONDITA': 19.70 ÷ 20.30 m
SONDAGGIO : BH 5	CAMPIONE: CI 5	PROFONDITA': 21.80 ÷ 22.40 m
SONDAGGIO : BH 5	CAMPIONE: CI 6	PROFONDITA': 23.80 ÷ 24.40 m
SONDAGGIO : BH 5	CAMPIONE: CI 7	PROFONDITA': 26.00 ÷ 26.60 m





GEOPROGET

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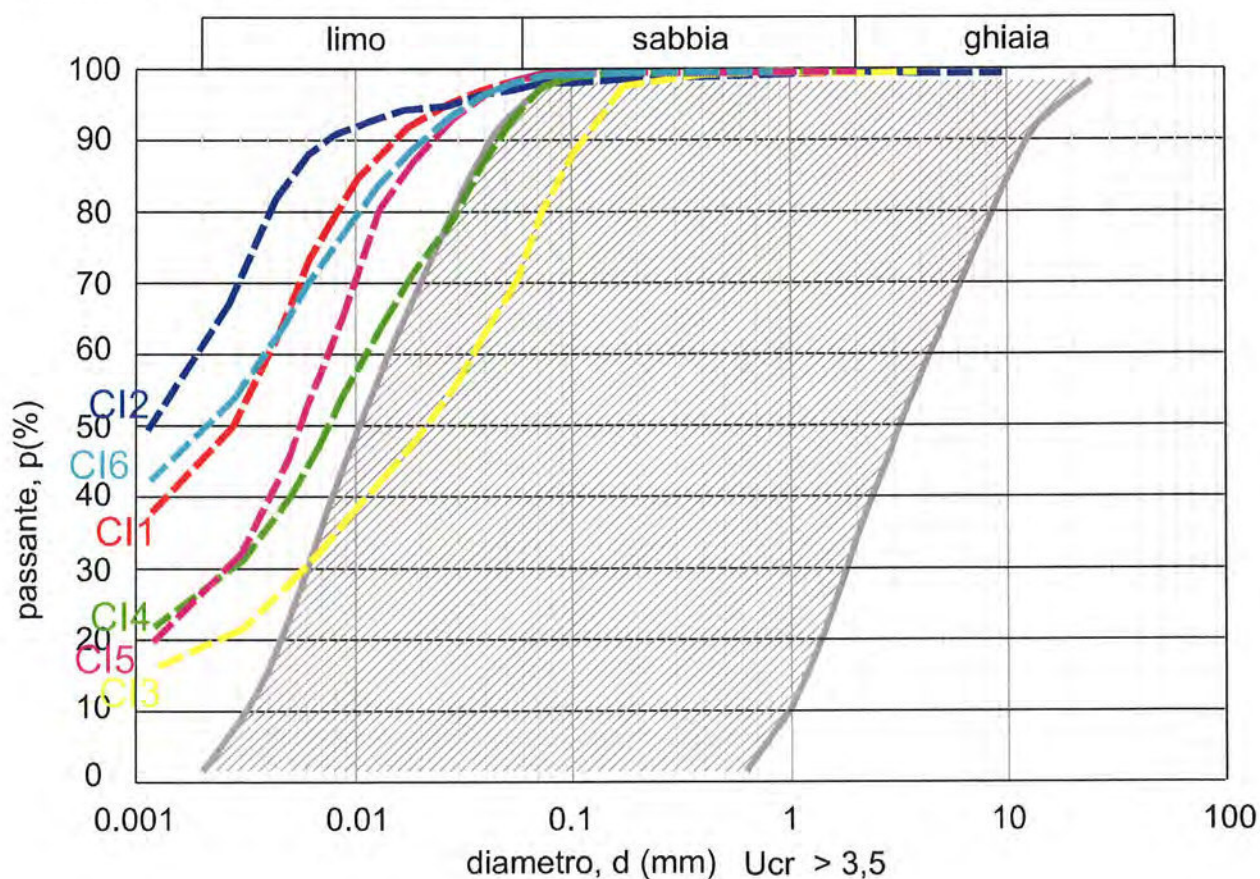
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FUSI GRANULOMETRICI DEI TERRENI SUSCETTIBILI A LIQUEFAZIONE  
SOVRAPPOSIZIONE CON CURVE GRANULOMETRICHE

**SONDAGGIO BH6**



Possibilità di liquefazione



LITOTIPI "LA" - "ALA"

SONDAGGIO : BH 6	CAMPIONE: CI 1	PROFONDITA': 13.80 ÷ 14.40 m
SONDAGGIO : BH 6	CAMPIONE: CI 2	PROFONDITA': 17.20 ÷ 17.80 m
SONDAGGIO : BH 6	CAMPIONE: CI 3	PROFONDITA': 19.00 ÷ 19.60 m
SONDAGGIO : BH 6	CAMPIONE: CI 4	PROFONDITA': 21.20 ÷ 21.80 m
SONDAGGIO : BH 6	CAMPIONE: CI 5	PROFONDITA': 23.30 ÷ 23.90 m
SONDAGGIO : BH 6	CAMPIONE: CI 6	PROFONDITA': 25.40 ÷ 26.00 m





GEOPROGET

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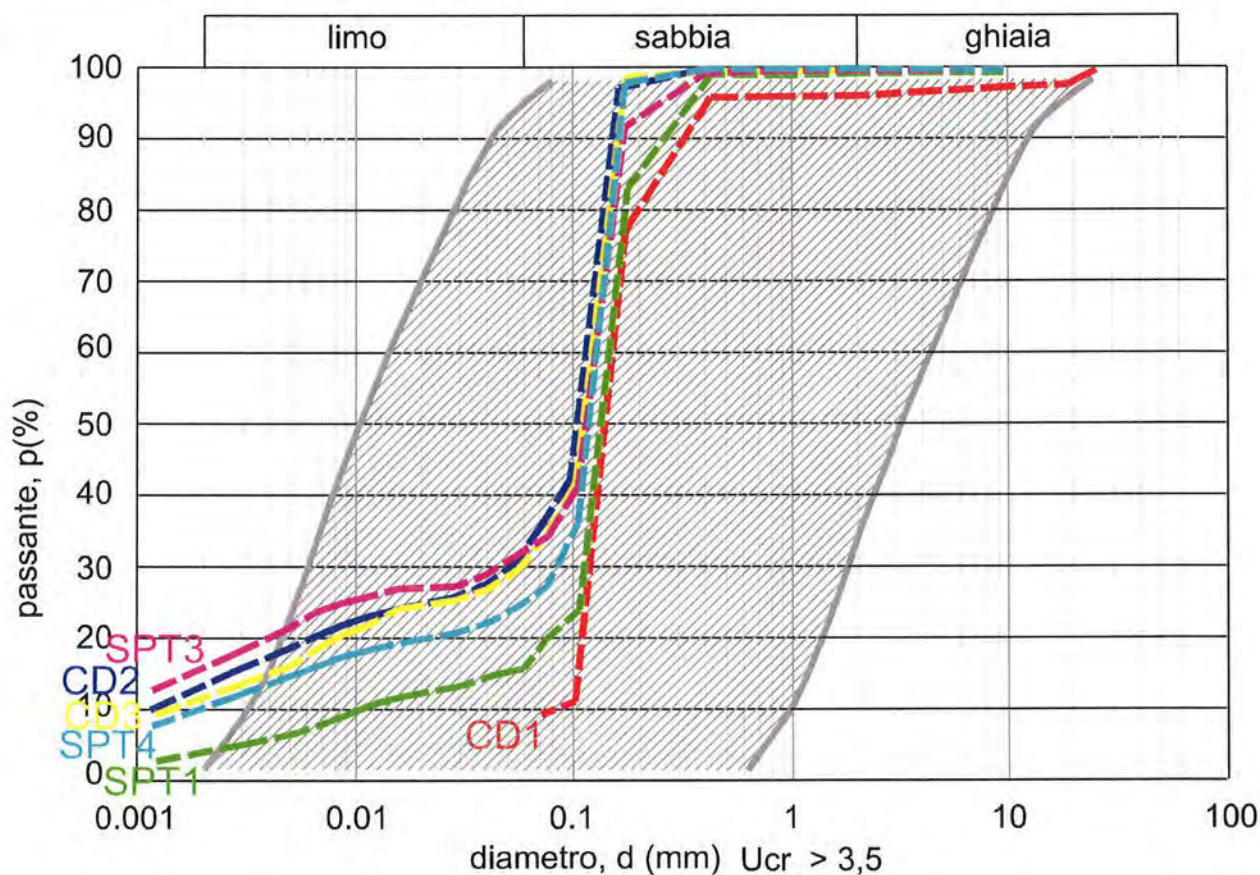
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FUSI GRANULOMETRICI DEI TERRENI SUSCETTIBILI A LIQUEFAZIONE  
SOVRAPPOSIZIONE CON CURVE GRANULOMETRICHE

**SONDAGGIO BH7**



Possibilità di liquefazione



LITOTIPI "VR" - "SL" - "CLA"

SONDAGGIO : BH 7	CAMPIONE: CD 1	PROFONDITA': 5.50 + 5.70 m
SONDAGGIO : BH 7	CAMPIONE: CD 2	PROFONDITA': 9.20 + 9.50 m
SONDAGGIO : BH 7	CAMPIONE: CD 3	PROFONDITA': 11.25 + 11.50 m
SONDAGGIO : BH 7	CAMPIONE: SPT 1	PROFONDITA': 3.00 + 3.45 m
SONDAGGIO : BH 7	CAMPIONE: SPT 3	PROFONDITA': 9.70 + 10.15 m
SONDAGGIO : BH 7	CAMPIONE: SPT 4	PROFONDITA': 11.60 + 12.05 m



GEOPROGET

Studio di Geologia

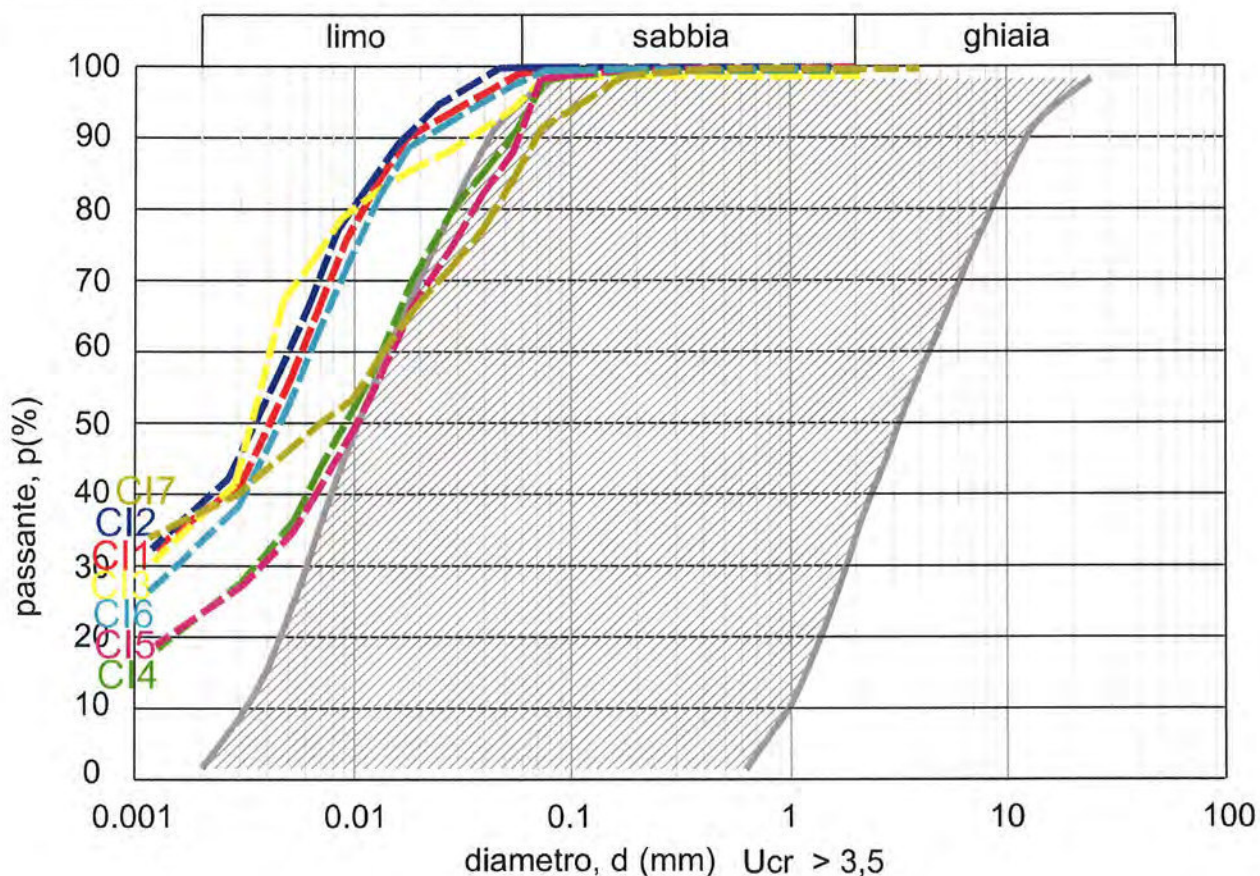
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FUSI GRANULOMETRICI DEI TERRENI SUSCETTIBILI A LIQUEFAZIONE  
SOVRAPPOSIZIONE CON CURVE GRANULOMETRICHE

**SONDAGGIO BH7**



Possibilità di liquefazione



**LITOTIPI "LA" - "ALA"**

SONDAGGIO : BH 7	CAMPIONE: CI 1	PROFONDITA': 13.50 ÷ 14.10 m
SONDAGGIO : BH 7	CAMPIONE: CI 2	PROFONDITA': 15.50 ÷ 16.10 m
SONDAGGIO : BH 7	CAMPIONE: CI 3	PROFONDITA': 17.60 ÷ 18.10 m
SONDAGGIO : BH 7	CAMPIONE: CI 4	PROFONDITA': 19.60 ÷ 20.10 m
SONDAGGIO : BH 7	CAMPIONE: CI 5	PROFONDITA': 21.60 ÷ 22.10 m
SONDAGGIO : BH 7	CAMPIONE: CI 6	PROFONDITA': 23.60 ÷ 24.20 m
SONDAGGIO : BH 7	CAMPIONE: CI 7	PROFONDITA': 25.60 ÷ 26.20 m





GEOPROGET

Studio di Geologia

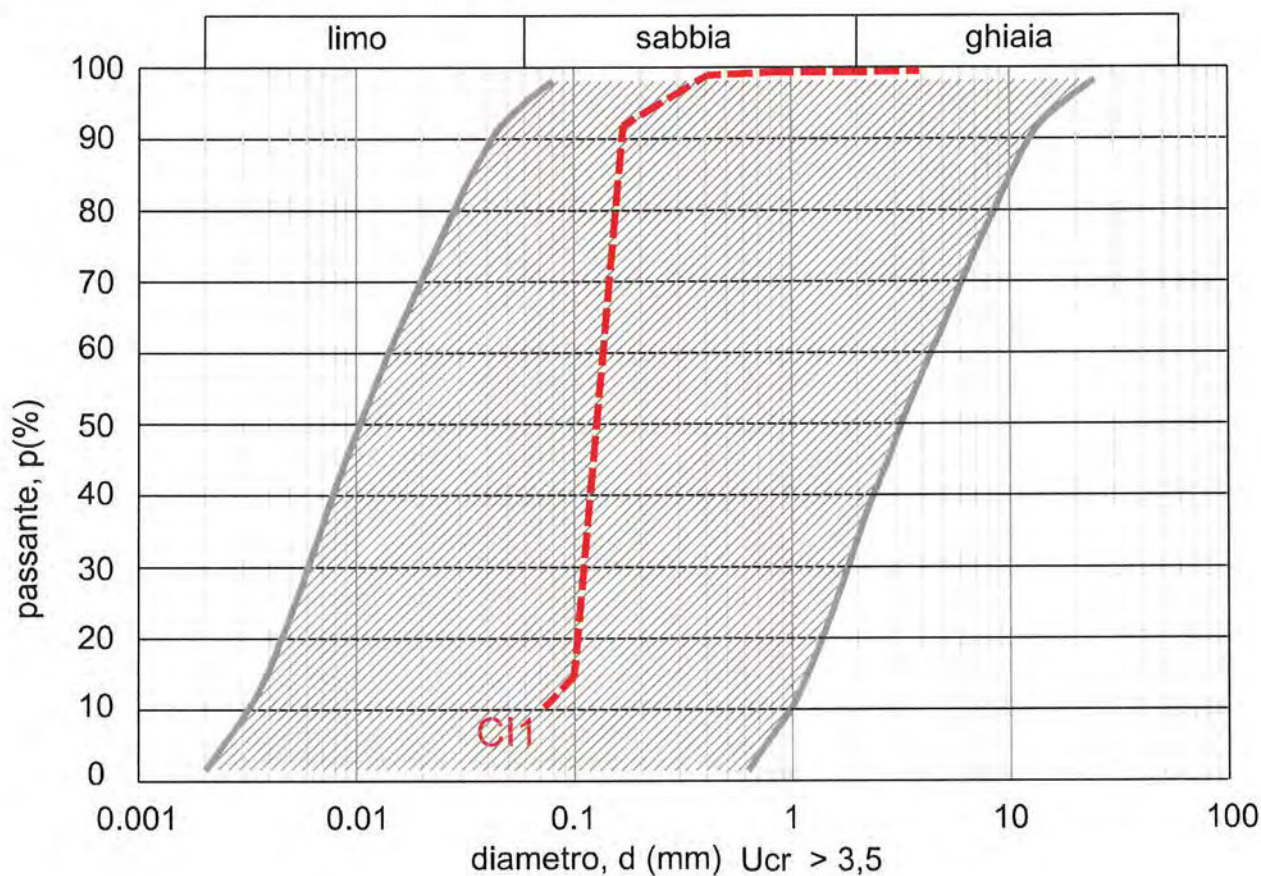
via Ceccarini, 171 - Riccione 47838  
tel. 0541/606464

FUSI GRANULOMETRICI DEI TERRENI SUSCETTIBILI A LIQUEFAZIONE  
SOVRAPPOSIZIONE CON CURVE GRANULOMETRICHE

### SONDAGGIO BH9



Possibilità di liquefazione



LITOTIPI "VR" - "SL" - "CLA"

SONDAGGIO : BH9

CAMPIONE: CI1

PROFONDITA': 7.00 + 7.50 m