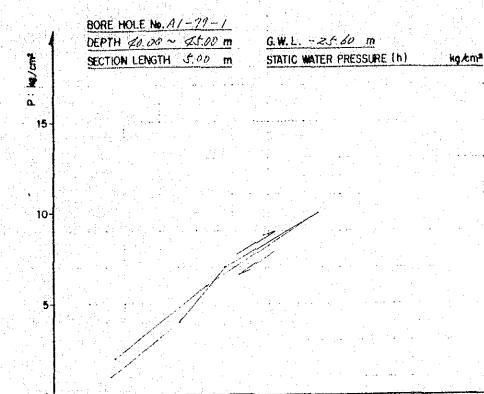
No 4

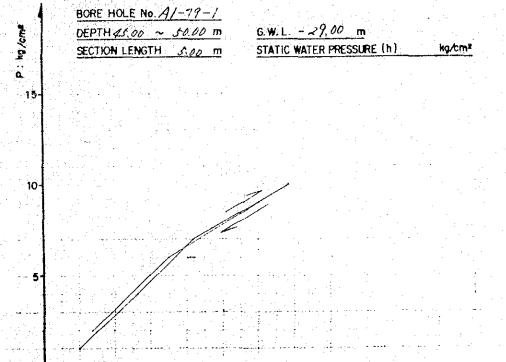


20

30

| Water Pressur | Water Leakage |
|---------------|----------------|
| P (kg/cm²) | Q1 (\$/min/m) |
| , | 6.6 |
| 4 | 141 |
| | 19.1 |
| | 295 |
| 6 | 17.1 |
| ર | 20 |
| | |
| | |
| | |
| | 1 |

Q1: 4/min/m



| Water Pressure | Water Leakage |
|----------------|---------------|
| P (kg/cm²) | Qi(I/min/m) |
| | 20 |
| 4 | <i>5</i> ,3 |
| | 8.4 |
| | 137 |
| 6 | 20 |
| | 28 |
| | |
| | |
| 1 | |
| • | |

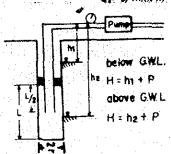
Qs: 4/min/m

LUGEON UNIT (Lu)

 $Lu = \frac{Q_1}{L^2H} \times 10^6$

PERMEABILITY COEFFICIENT (K)

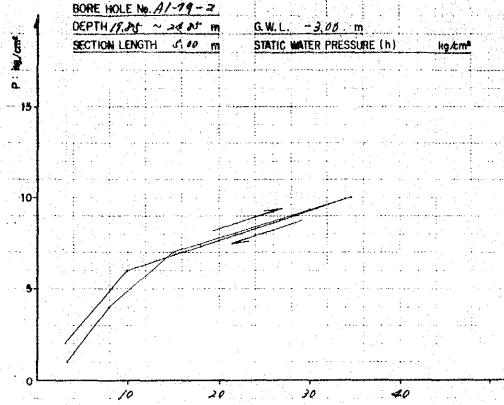
Q = Q × 1000

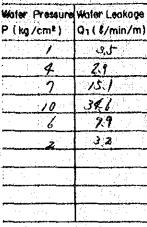


158

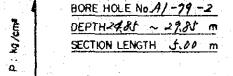
WATER PRESSURE TEST DIAGRAM







Q₁: 1/min/m



15

6.W.L. -3.00 m

| Maier 1633016 | Q1(1/min/m | | | |
|-----------------|------------|--|--|--|
| P (kg/cm²) | | | | |
| | 3/ | | | |
| 4 | 28 | | | |
| 7 | 200 | | | |
| 10 | 520.9 | | | |
| 6 | 224 | | | |
| 2 | 7.8 | | | |
| | | | | |
| | | | | |
| | | | | |

Whiter Pressure Water Leokage

LUGEON UNIT (Lu)

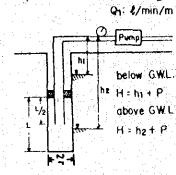
PERMEABILITY COEFFICIENT (K)

40

$$K = \frac{2.302/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$

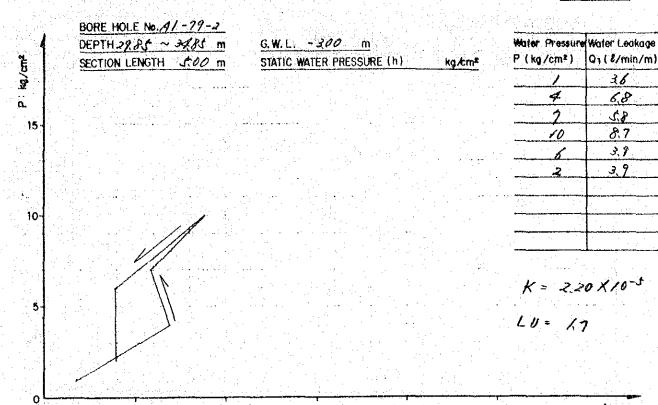
$$Q_2 = Q \times 1000$$

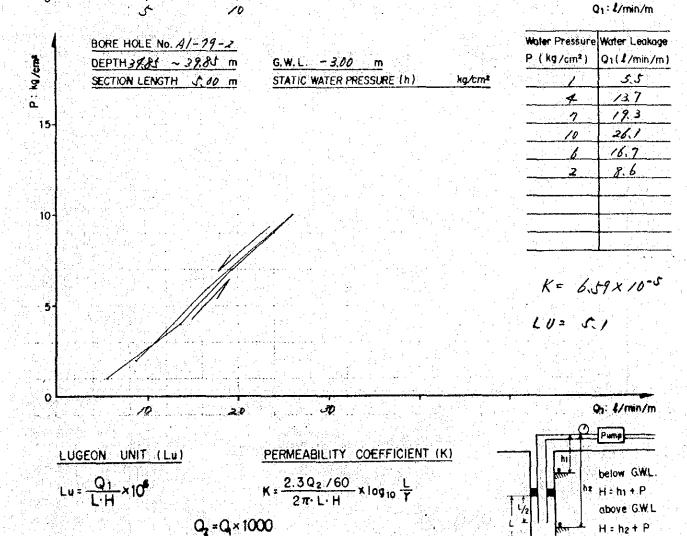
20



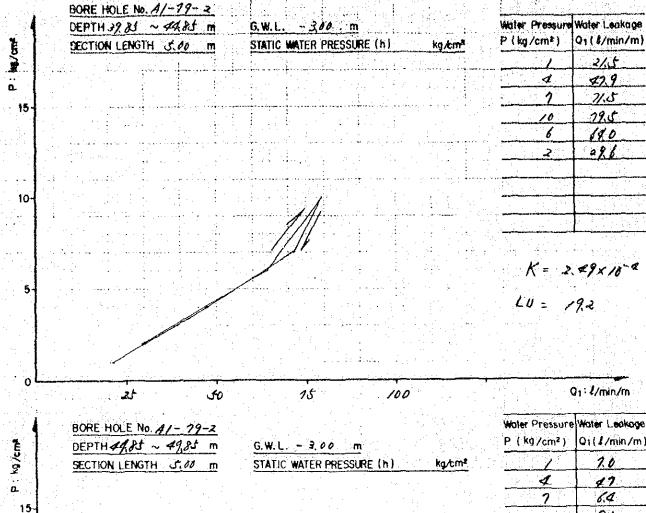


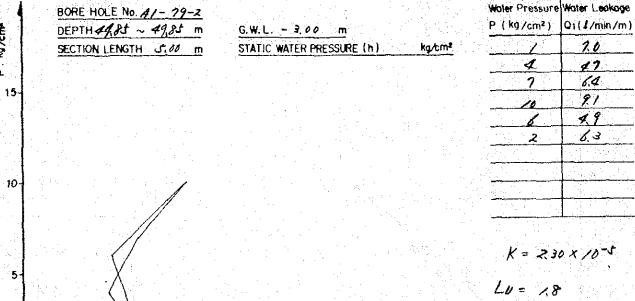
No z





No 3





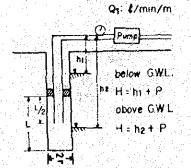
LUGEON UNIT (Lu)

کی

Lu = Q1 ×10

PERMEABILITY COEFFICIENT (K)

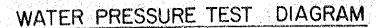
$$K = \frac{2.3 Q_2 / 60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$



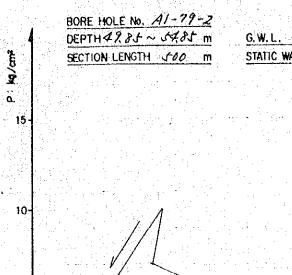
P kg/cm²

15

10

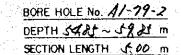


No ≠



| G.W.L | ر ر | 00 | <u>m</u> | | 문화된 | *** |
|--------|-------|-------|----------|-----|---------|-----|
| STATIC | WATER | PRES: | SURE (| (h) | kg.c | m² |

| Water Pressun | Water Leakage |
|---------------|----------------|
| P (kg/cm²) | Q1 (\$/min/m) |
| | 3.4 |
| 4 | 13.9 |
| 7 | 67 |
| 10 | 23 |
| 6 | 9.5 |
| 2 | 32 |
| | |
| | |
| 1 | |
| | |
| | |



10

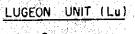
G.W.L! - 300 m

15

STATIC WATER PRESSURE (h) kg/cm²

| Water Pressure | Water Leakage |
|----------------|----------------|
| P (kg/cm²) | $Q_1(1/min/m)$ |
| | J. J. |
| 4 | 137 |
| 7 | 193 |
| 10 | 26.1 |
| 6 | 16.7 |
| 2 | 86 |
| | |
| | |

Q1: 1/min/m

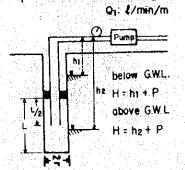


Lu= Q1 ×10

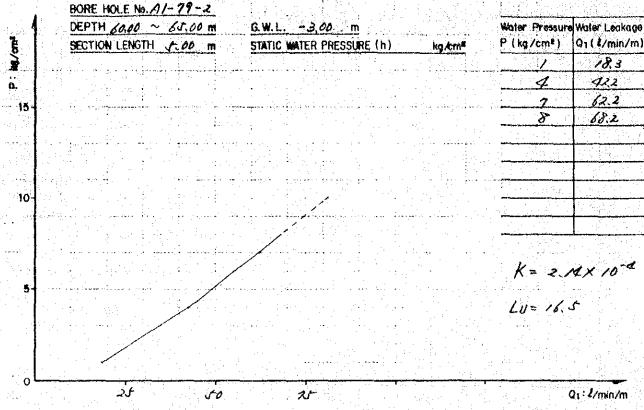
PERMEABILITY COEFFICIENT (K)

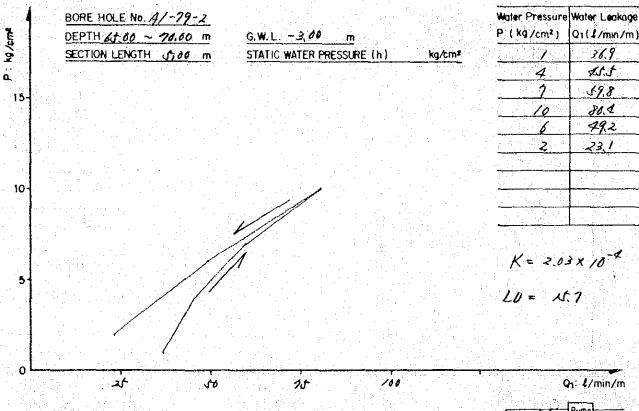
$$K = \frac{2.3 Q_2 / 60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$

30



No 5



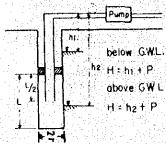


LUGEON UNIT (Lu)

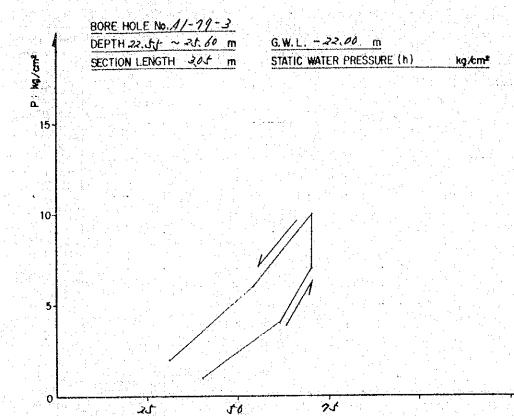
Lu = Q1 ×10

PERMEABILITY COEFFICIENT (K)

 $K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{Y}$



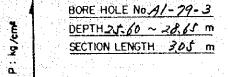
No.



| Water Pressur | Water Leakage |
|---------------|----------------|
| P (kg/cm²) | Q1 (\$/min/m) |
| | 40.1 |
| 4 | 620 |
| 7 | 20.8 |
| 10 | 70.7 |
| 6 | 548 |
| 2 | 3/.3 |
| | |
| | |
| | |
| | |

K= 221×10-4 LU= 189

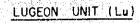
Q1: 1/min/m



| G.W.L 22.00 m | | |
|---------------------------|----|------|
| STATIC WATER PRESSURE (h) | ٠, | kg/b |

| Woter Pressure | Water Leakage |
|----------------|---------------|
| P (kg/cm²) | Q1(4/min/m) |
| 7 | 325 |
| 1 | 45.8 |
| 7 | 44.5 |
| 10 | 59.4 |
| 6 | JU. 9 |
| 2 | 36.0 |
| | |
| | |
| | |
| | |

Q1: 4/min/m



ځدن

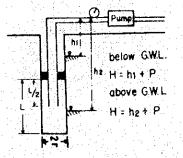
10

PERMEABILITY COEFFICIENT (K)

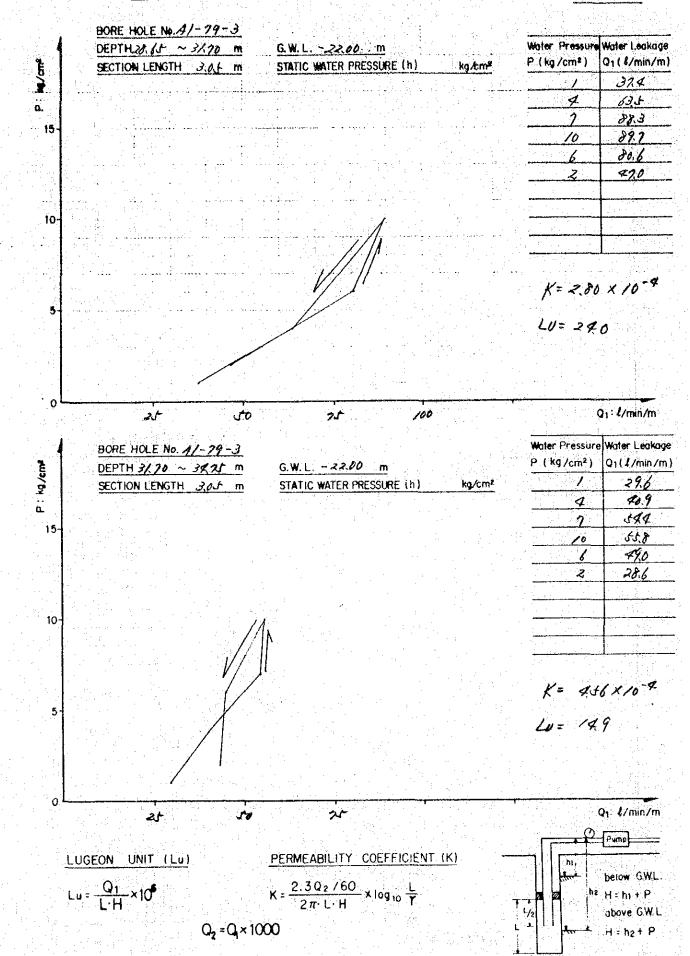
$$K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$

25

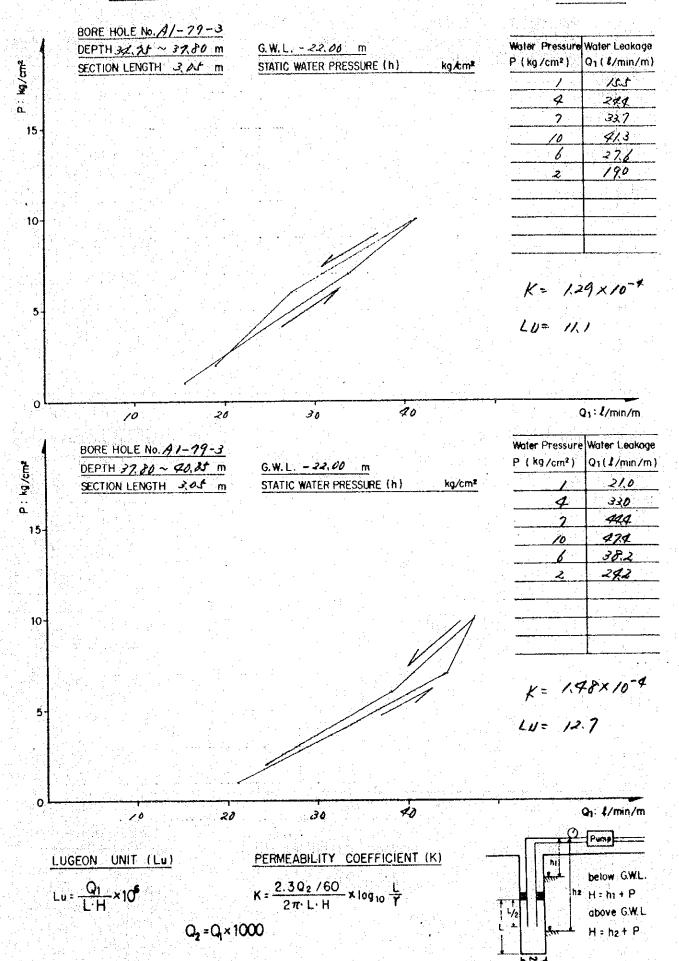
0



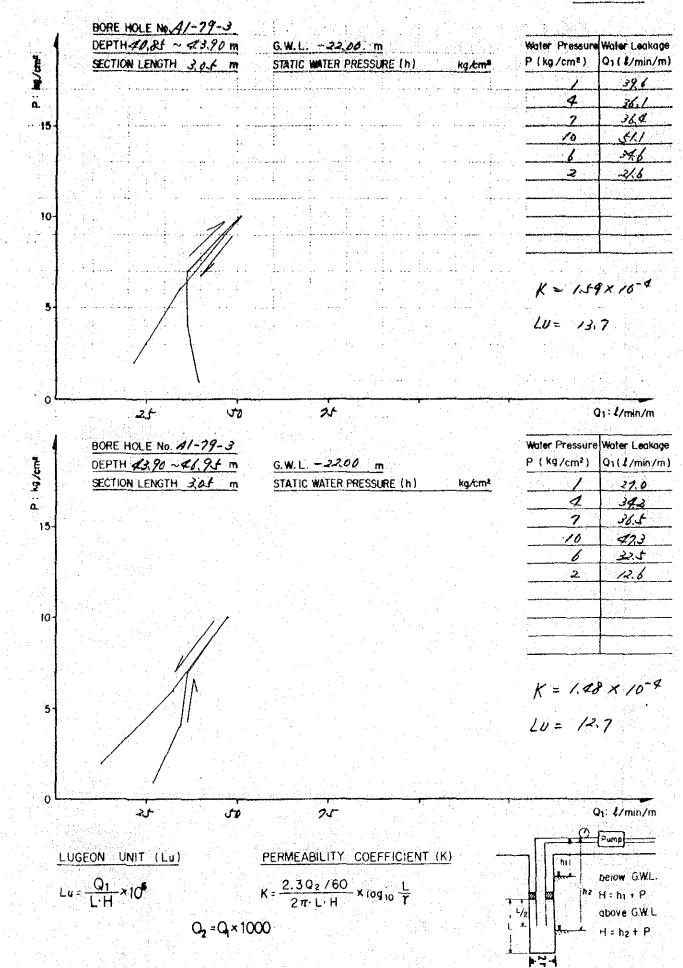
No 2



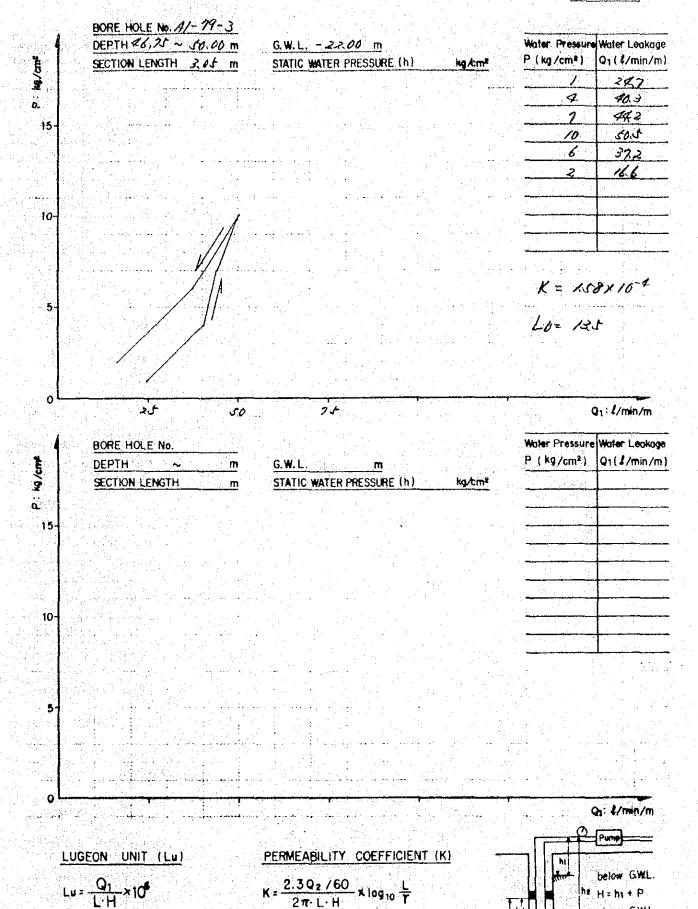
No 3



No K



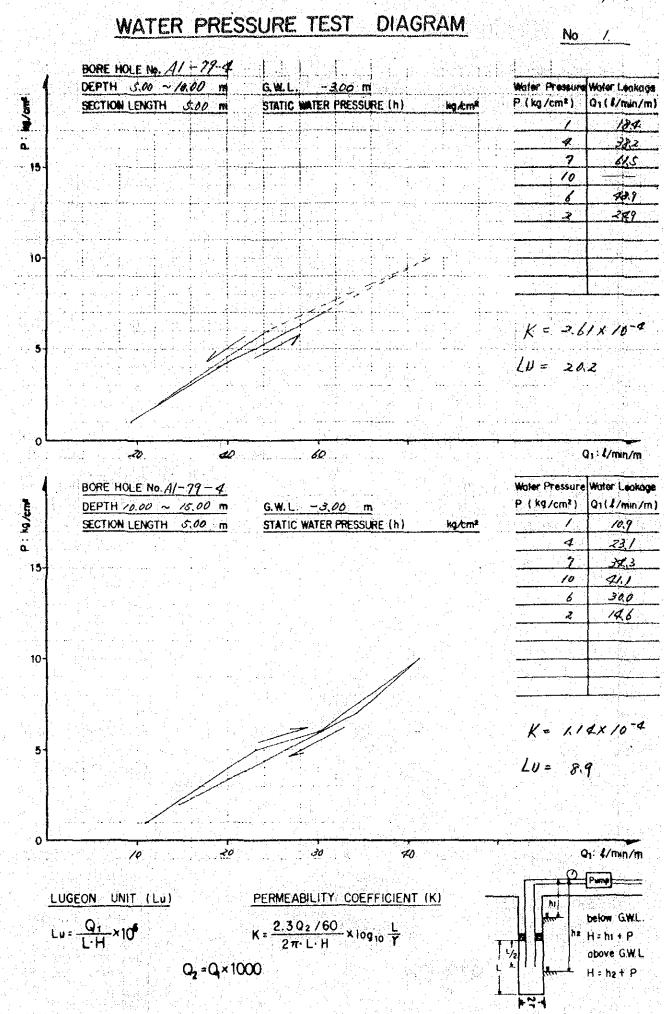
No ۍ.



 $Q_2 = Q \times 1000$

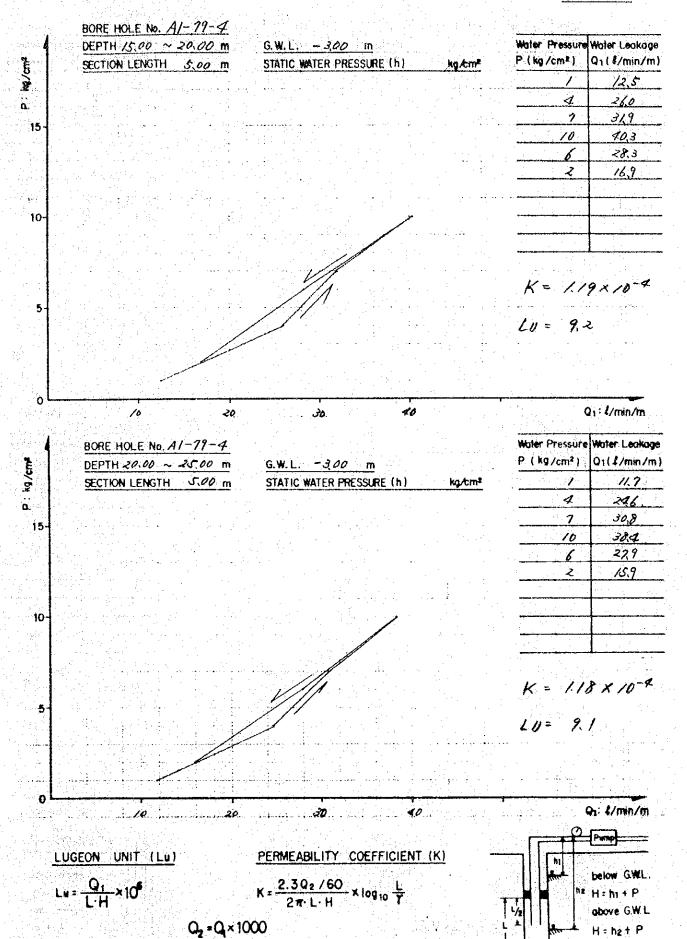
he H=hi+P above GWL

H = h2 + P

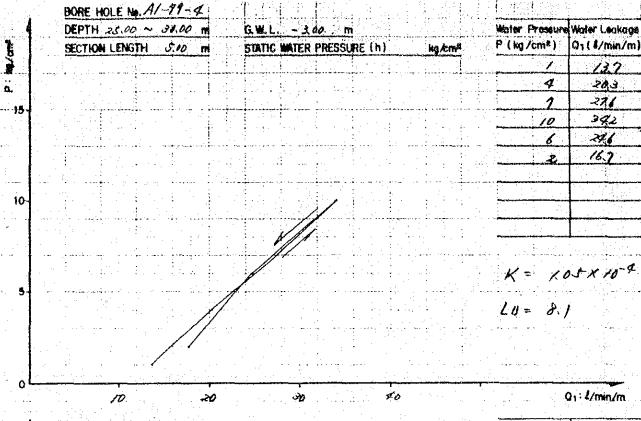


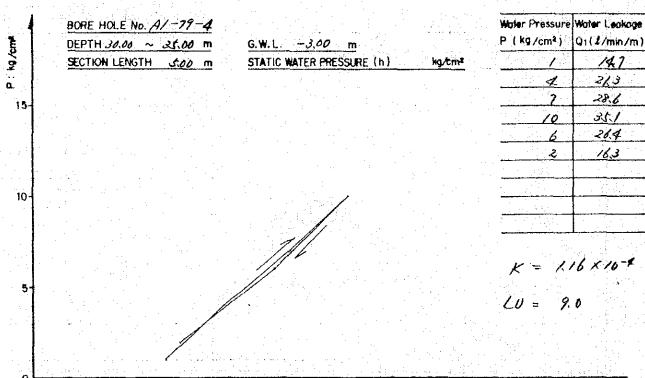
17'

No 2



No 3



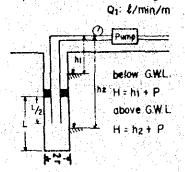


LUGEON UNIT (Lu)

PERMEABILITY COEFFICIENT (K)

 $K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$

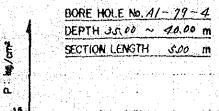
Q2 = Q × 1000



10

WATER PRESSURE TEST DIAGRAM

No ∢



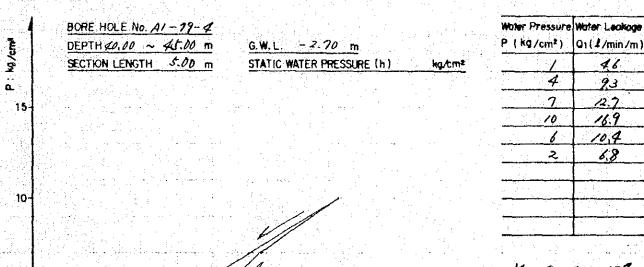
5



| | Control of the Control | and the second second | 1 . | 5 6 |
|--|------------------------|-----------------------|---------|----------------|
| STATIC WAT | | A | 2.0 | |
| CIBILIC: MARKET | FR PRES | SINE IN | . 20 | 6m² |
| ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | OUT | | |
| | | | | And in case of |
| | | | | |

| Woter Pressure | Water Leakage |
|----------------|---------------|
| P (kg/cm²) | |
| / | 14 |
| 4 | 3,5 |
| 7 | 10,2 |
| | 145 |
| 6 | 12,3 |
| 2 | 8.4 |
| | |
| | |
| | Y E |
| | |

Q: 4/min/m



K= 929×10-4

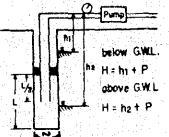
9: 4/min/m

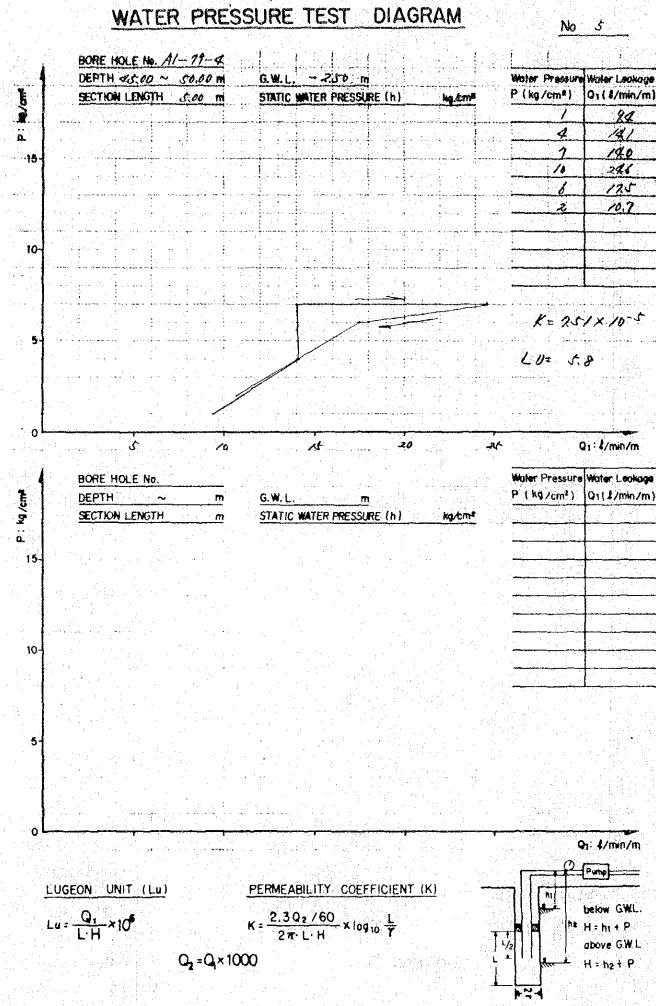
LUGEON UNIT (Lu)

Lu = Q1 ×10°

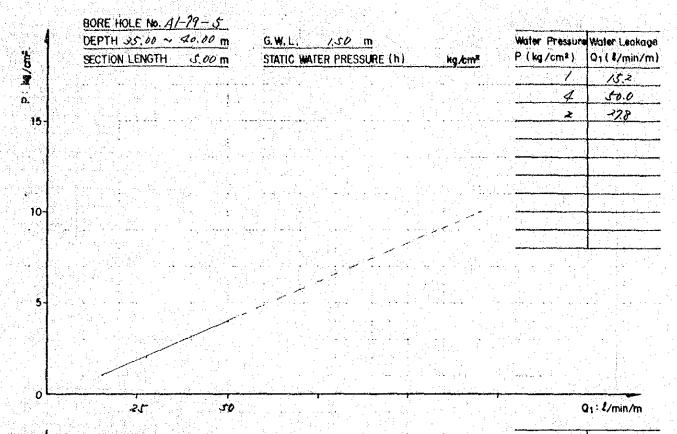
PERMEABILITY COEFFICIENT (K)

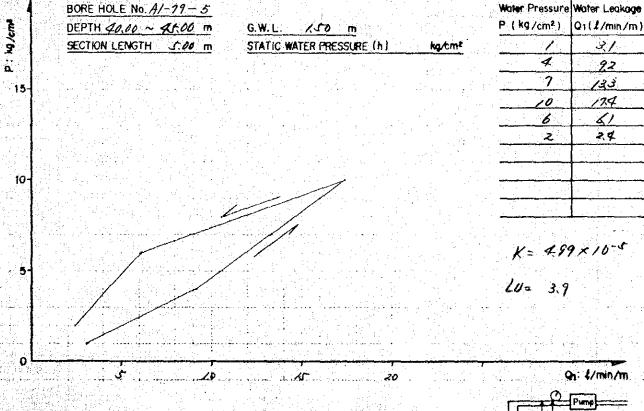
$$K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{Y}$$





No /



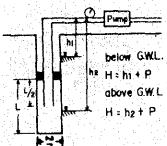


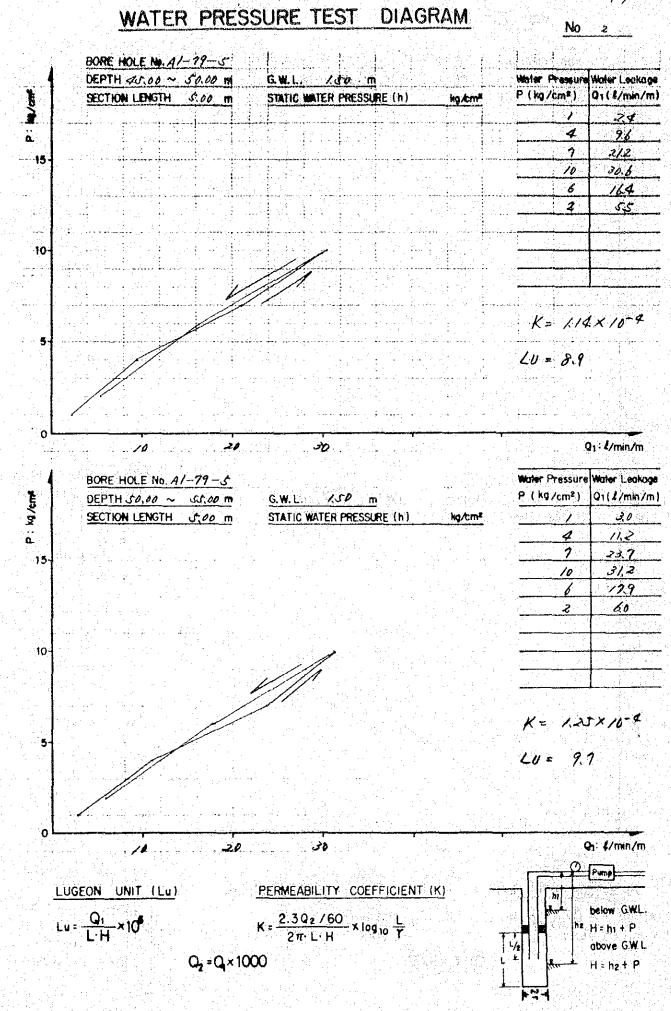
LUGEON UNIT (Lu)

Lu = 01 ×10°

PERMEABILITY COEFFICIENT (K)

$$K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$

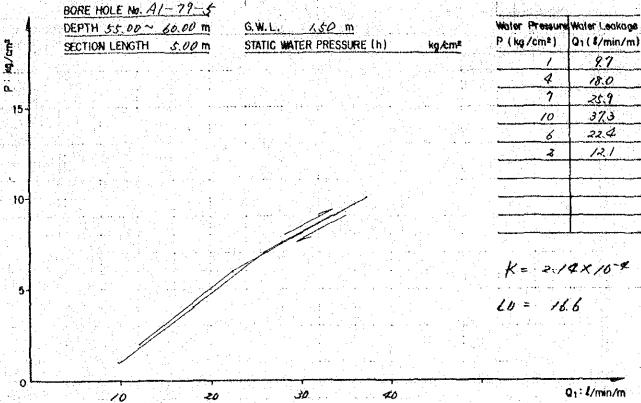


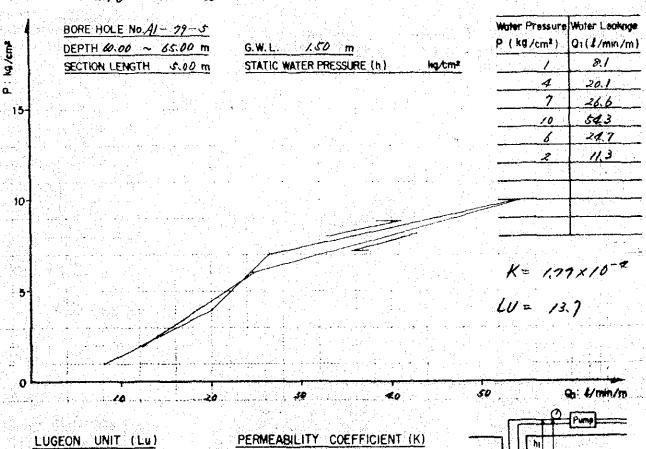


Lu= Q1 ×106

WATER PRESSURE TEST DIAGRAM

No 3





K = 2.302/60 × log 10 T

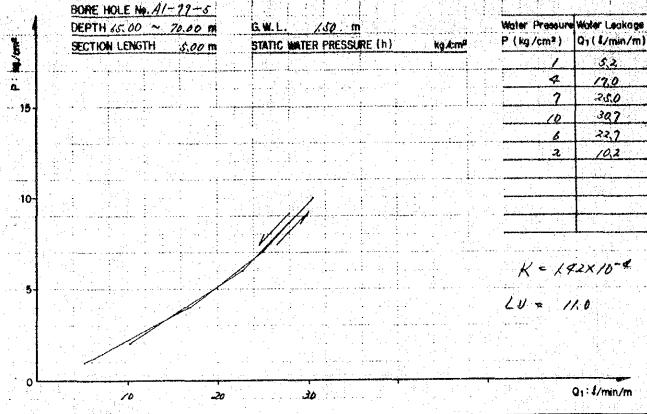
Q = Q × 1000

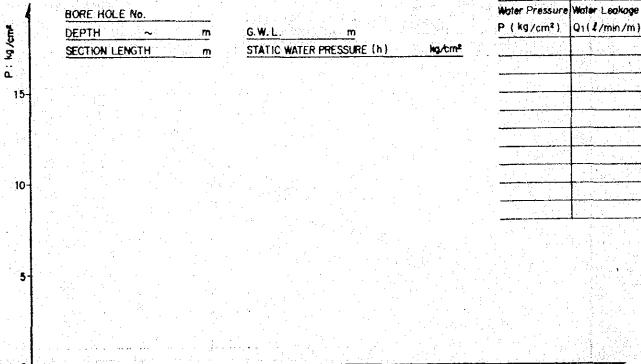
below GWL.

H=h+P

H = h2 + P

No 4





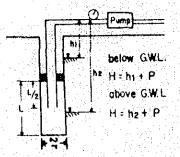
LUGEON UNIT (Lu)

Lu= Q1 ×10

PERMEABILITY COEFFICIENT (K)

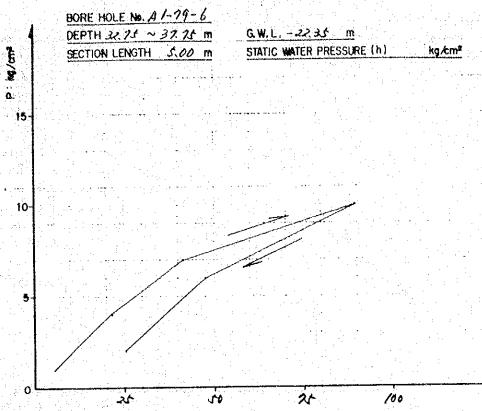
 $K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$

 $Q_2 = Q_1 \times 1000$



Q1: 4/min/m

No /



| and the second of the second o | |
|--|----------------|
| Woter Pressure | Water Leakage |
| P (kg/cm²) | Q1 (\$/min/m) |
| 7 | 5.7 |
| 4 | 220 |
| 7 | 4/6 |
| 10 | 89.5 |
| 6 | 47.9 |
| Z | 25:1 |
| | |
| | |
| | |
| | 1 |

K = 190 × 10-4

Q1: 4/min/m

LU = 146

| - 21 | | | | | | | |
|-----------------------|---|--|---------------------------|--------|------------------------------|------------------------------|--|
| 4 | | BORE HOLE No. A/ - 79 - 6 DEPTH 3225 ~ 42,25 m | G.W.L 22.35 m | | Water Pressure P (kg/cm²) | Water Leakage Q1(1/min/m) | |
| kg/cm² | | SECTION LENGTH 5.00 m | STATIC WATER PRESSURE (h) | kg/cm² | 1. | 2.2 | |
| • | | | | | 4 | 1.6 | |
| 0 | 1 | | | | 7 | 11.5 | |
| 15- | | | | | 10 | 20,3 | |
| | 1 | | | | 6 | 10,3 | |
| r si Fisher | | sy there is a second of | | | | 46 | |
| | | | | | | | |
| John S | | | | A | | | |
| 10- | 1 | | | | | | |
| | | 机铁铁管 电影人类语言 | | | | <u> </u> | |
| | | | | | | | |
| er a go en | | | | | K= 40 | 1×10-5 | |

K= 431x 10°

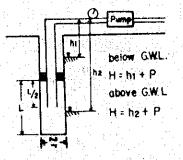
9: 4/min/m

LUGEON UNIT (Lu)

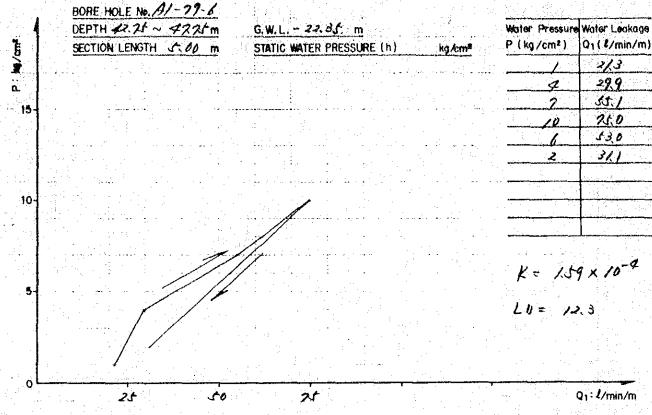
Lu= Q1 ×10

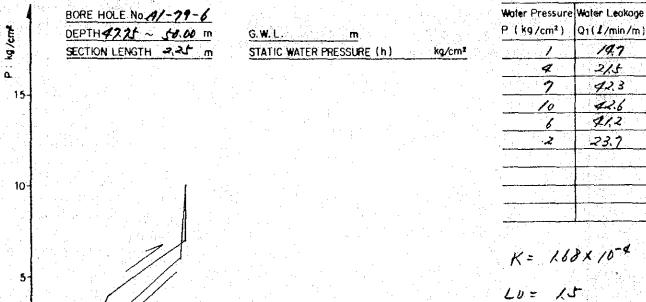
PERMEABILITY COEFFICIENT (K)

Q2 =Q×1000



No æ





LUGEON UNIT (Lu)

2

 $Lu = \frac{Q_1}{L \cdot H} \times 10^6$

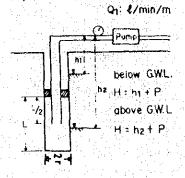
PERMEABILITY COEFFICIENT (K)

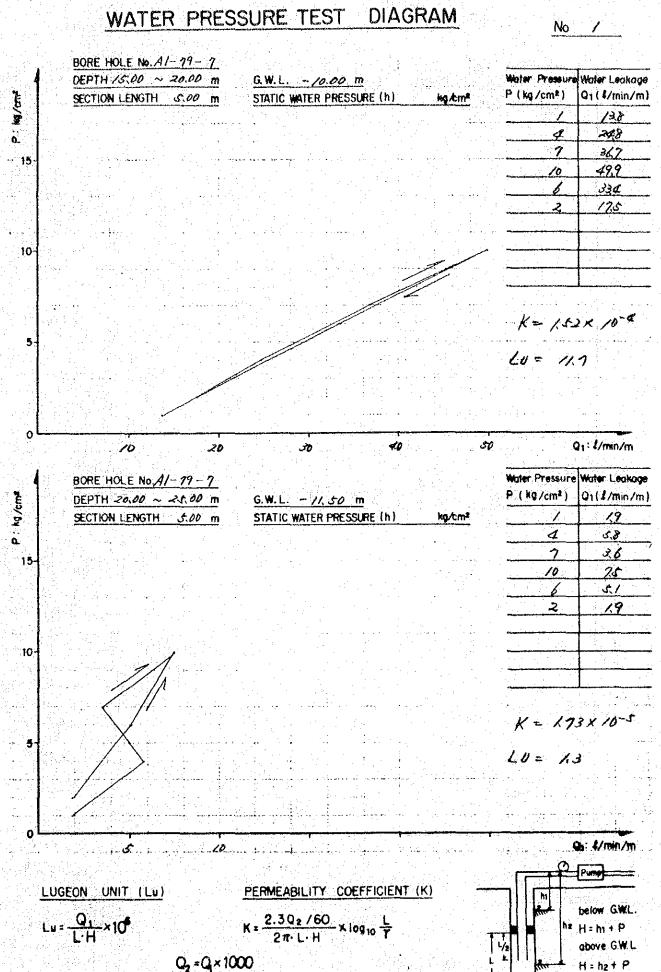
$$K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{Y}$$

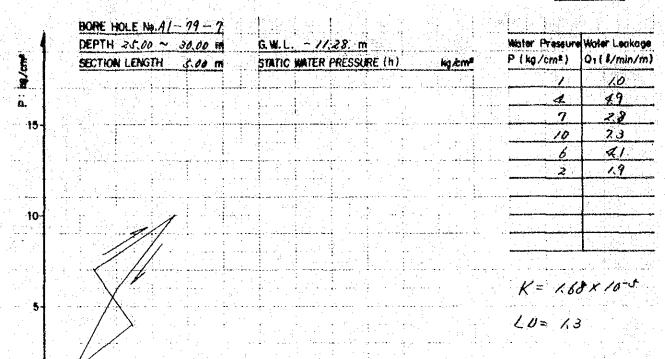
15

 $Q_2 = Q_1 \times 10000$

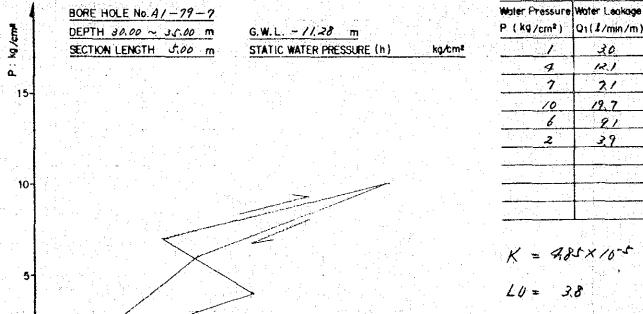
50











| P (kg/cm²) | Q1(1/min/m) | | |
|------------|-------------|--|--|
| 1 | 30 | | |
| 4 | 12.1 | | |
| 7 | 21 | | |
| /0 | 19.7 | | |
| 6 | 21 | | |
| Z | 39 | | |
| | | | |
| | | | |

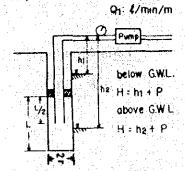
LUGEON UNIT (Lu)

Lu = Q1 ×10

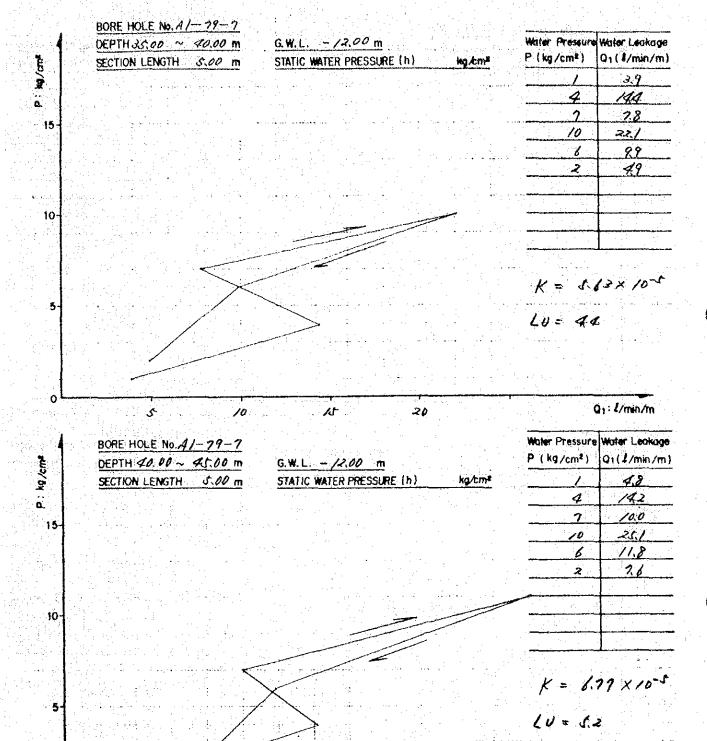
PERMEABILITY COEFFICIENT (K)

20

$$K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$



No 3



LUGEON UNIT (Lu)

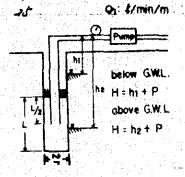
Lu = Q1 ×10

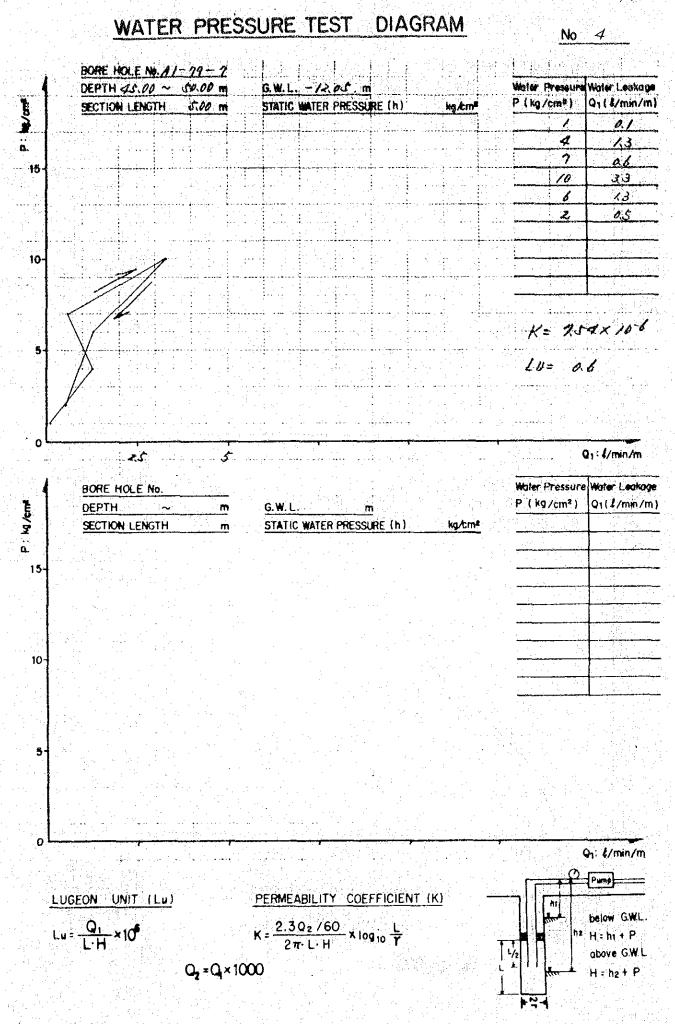
PERMEABILITY COEFFICIENT (K)

$$K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$

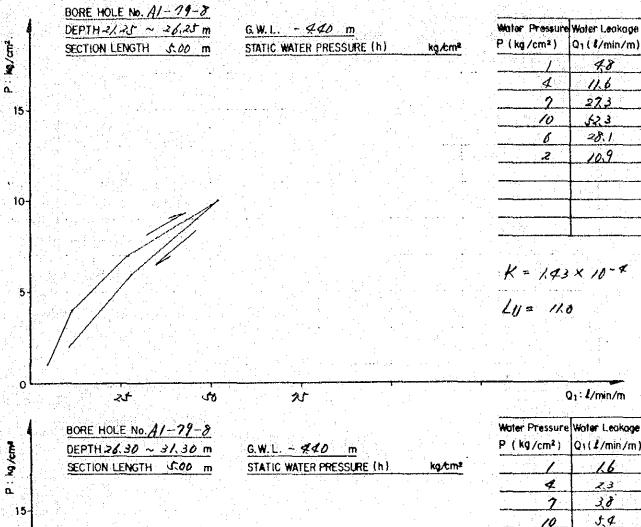
. 1

Q = Q × 1000





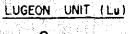
No /



| Woter Pt | essure | Water Leakage | | |
|---|--------|-----------------|--|--|
| P (kg/ | cm²) | Q1(4/min/m) | | |
| | / | 1.6 | | |
| | 4 | 23 | | |
| | 7 | 38 | | |
| | 10 | 5.4 | | |
| | 6 | ک پد | | |
| - <u></u> | 2 | 47 | | |
| | 1 1 | | | |
| | | | | |
| | | | | |
| | 14 | | | |
| *************************************** | | | | |

K = 134×10-5

LU = 10



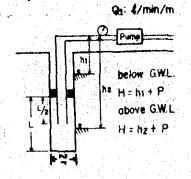
Lu= 01 ×10

10-

5

PERMEABILITY COEFFICIENT (K)

$$K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{\Upsilon}$$



WATER PRESSURE TEST DIAGRAM BORE HOLE NO. A1-19 - 8 G.W.L. - 440 m DEPTH 3/30 ~ 36.30 M Water Pressure Water Leakage P (kg/cm²) Q1 (1/min/m) 28 195 28.9 39.0 ~92 10 K= 9.64 X10-5 LU = 74 30 Q1 1/min/m Water Pressure Water Leakage BORE HOLE No. A1-19-8 P (kg/cm²) $Q_1(1/min/m)$ DEPTH 36.35 ~ 4/35 m G.W.L. - 4.40 m SECTION LENGTH J. 06 m STATIC WATER PRESSURE (h) 4 88 193 7 120 217 24 10 K = 1.04 × 10-4

LUGEON UNIT (Lu) $Lu = \frac{Q_1}{L \cdot H} \times 10^6$

10

PERMEABILITY COEFFICIENT (K)

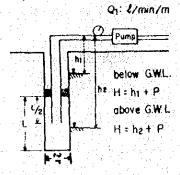
40:

 $K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$

30

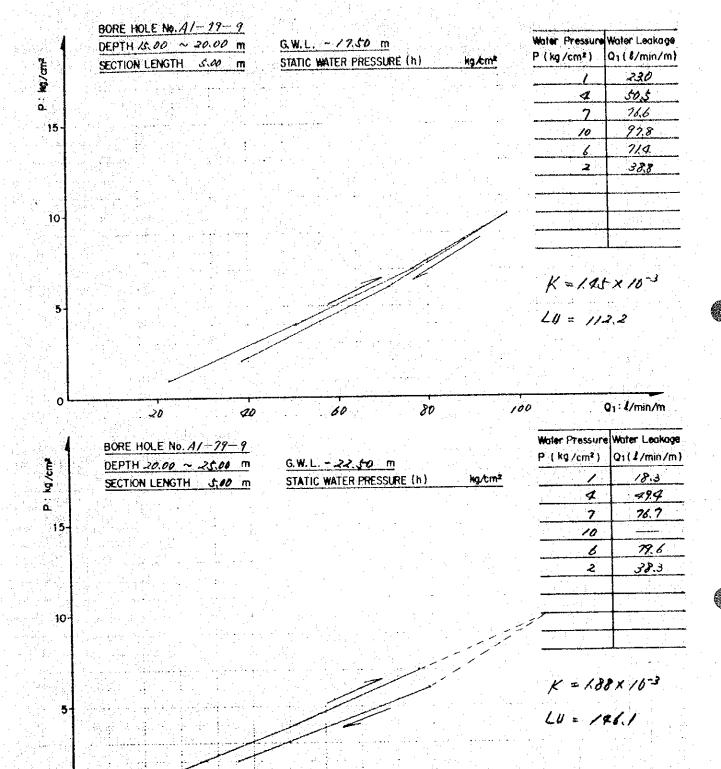
 $Q_2 = Q_1 \times 1000$

20



LU= 80

No /

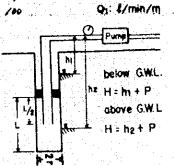


LUGEON UNIT (Lu)

PERMEABILITY COEFFICIENT (K)

$$K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$

$$Q_2 = Q_1 \times 10000$$



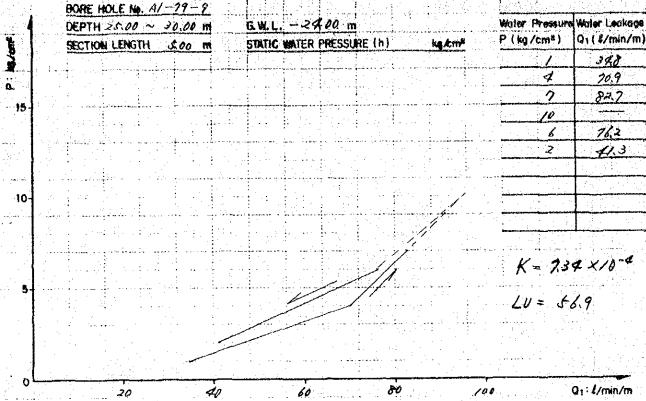
below GWL

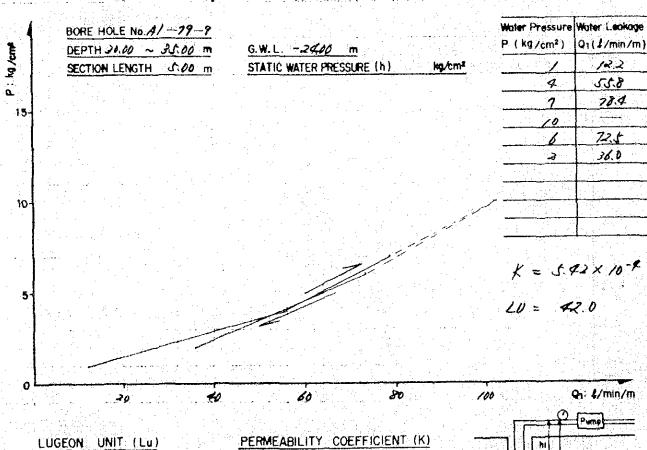
H=h+P above GWL

H = h2 + P

WATER PRESSURE TEST DIAGRAM

No z



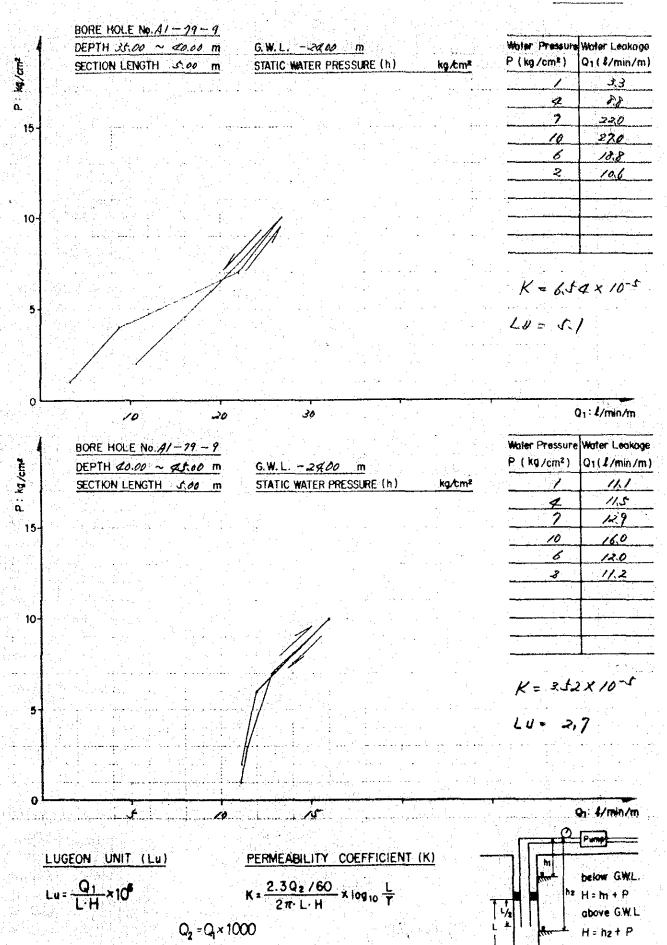


K = 2.302/60 x lag 10 7

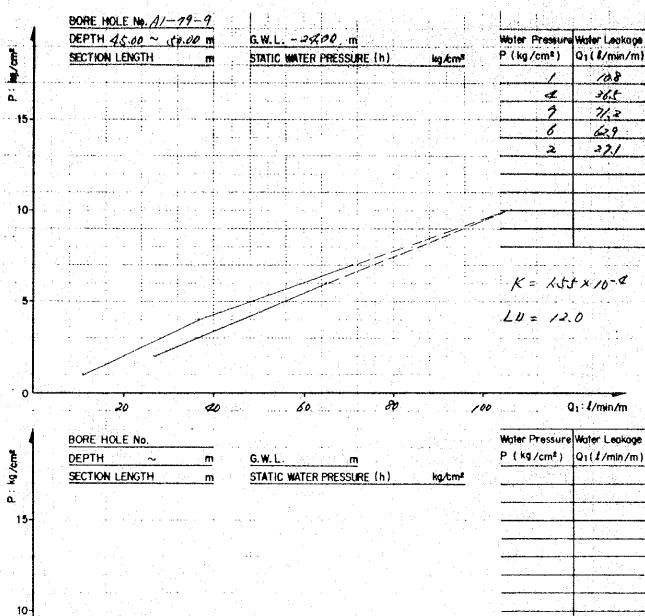
 $Q_2 = Q_1 \times 10000$

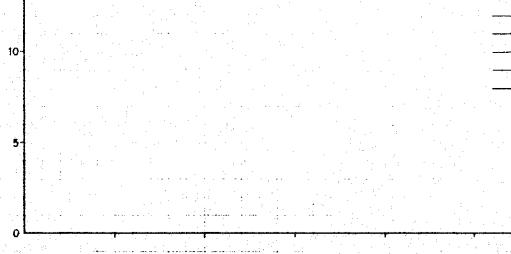
Lu = Q1 ×108

No 3



No ≠





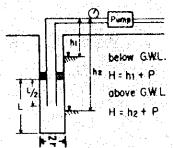
LUGEON UNIT (Lu)

 $Lu = \frac{Q_1}{L \cdot H} \times 10^8$

PERMEABILITY COEFFICIENT (K)

$$K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$

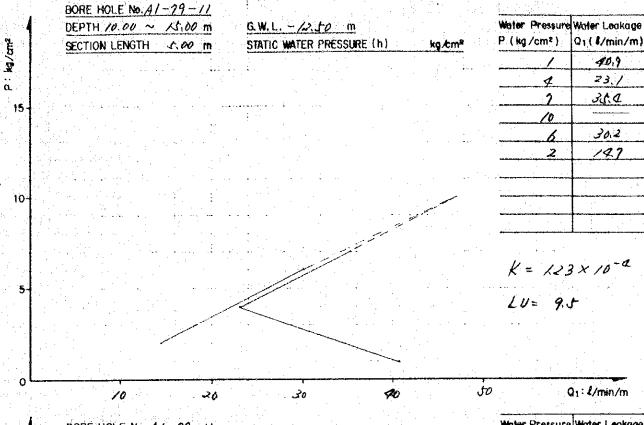
$$Q_2 = Q_1 \times 1000$$

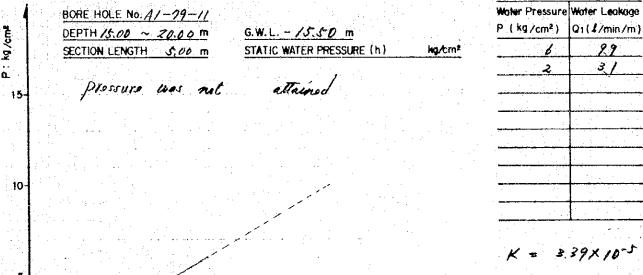


Q1: 4/min/m



No /





LU = 2.6

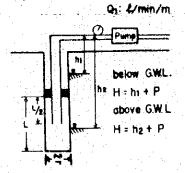
LUGEON UNIT (Lu)

Lu= Q1 ×10

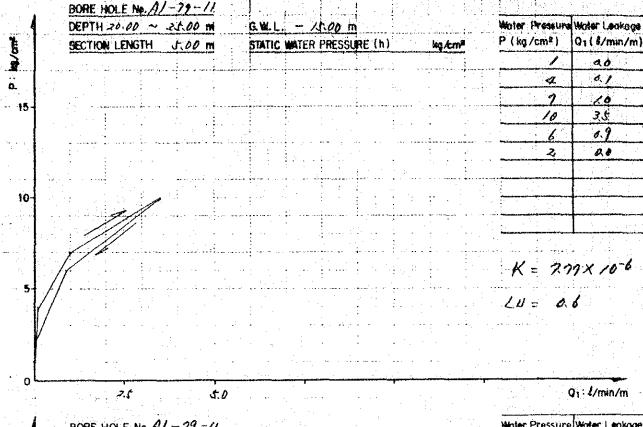
PERMEABILITY COEFFICIENT (K)

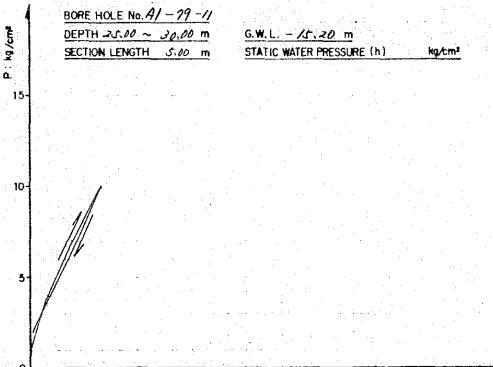
K = 2.3 Q2 /60 x log 10 T

Q = Q × 1000



No 2





| Woter Pressure | Water Leakage | | |
|----------------|---------------|--|--|
| P (kg/cm²) | Q1(1/min/m) | | |
| | 0.0 | | |
| 4 | 05 | | |
| 7 | /2 | | |
| 10 | 3.0 | | |
| 6 | 1.1 | | |
| 2 | 6.1 | | |
| | | | |
| 1.5 | | | |
| | | | |
| | | | |
| | | | |

K = 444×10-6

LH = 0.3

Q1: 4/min/m

LUGEON UNIT (Lu)

. Z.C

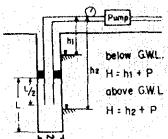
$$Lu = \frac{Q_1}{L \cdot H} \times 10^6$$

PERMEABILITY COEFFICIENT (K)

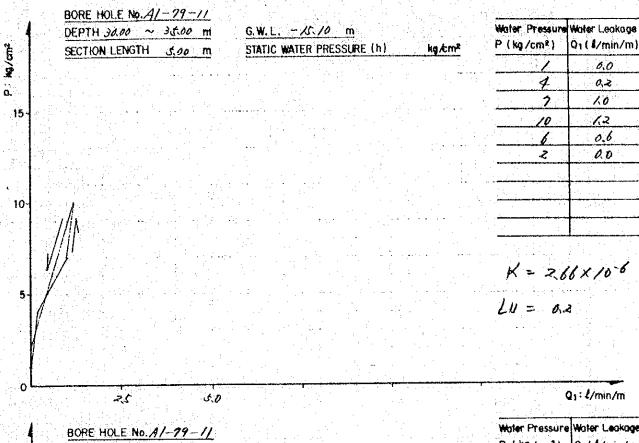
$$K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{Y}$$

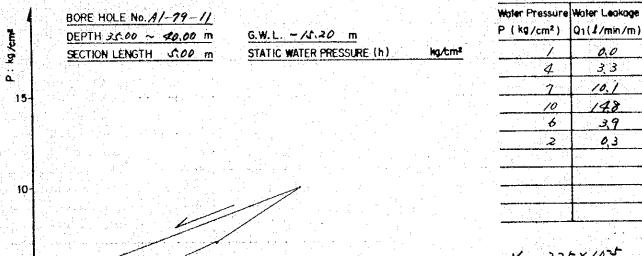
$$Q_2 = Q_1 \times 10000$$

5.0



No 3





K = 3.25 × 10-5

Q: 4/min/m

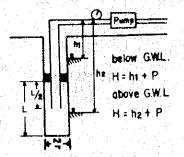
LUGEON UNIT (Lu)

Lu = Q1 ×10

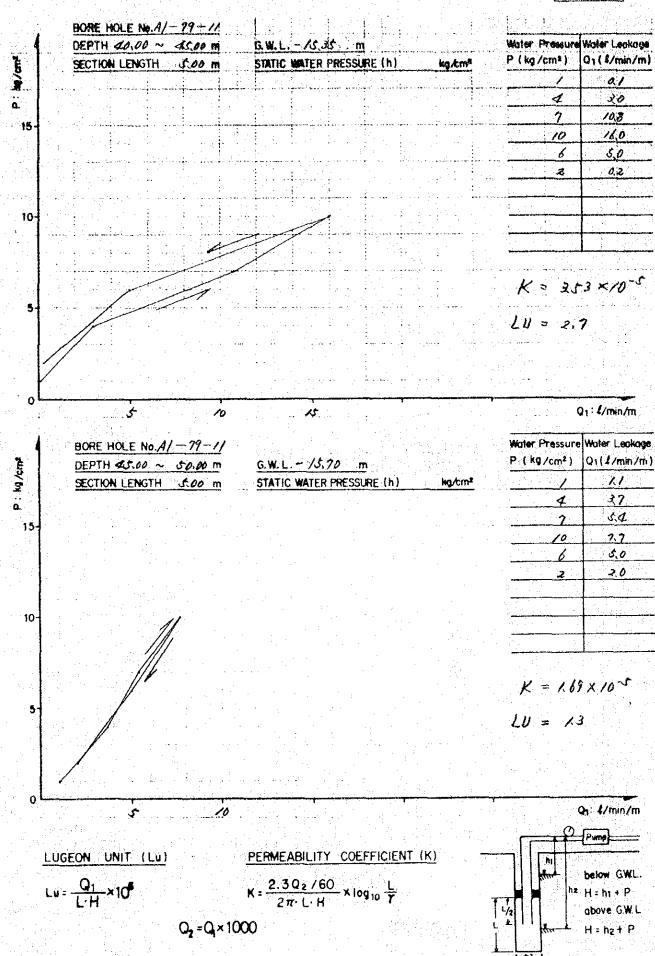
PERMEABILITY COEFFICIENT (K)

K = 2.3Q2/60 x log 10 T

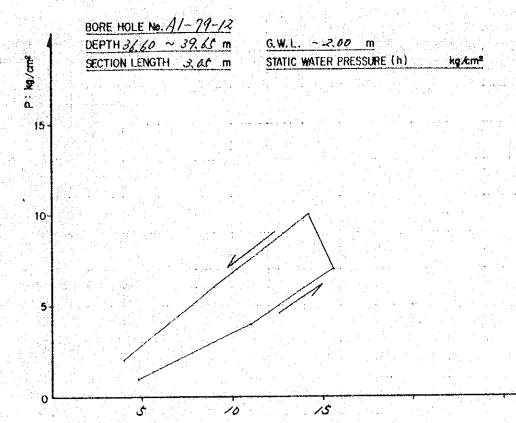
Q2 = Q × 1000



No &



No /

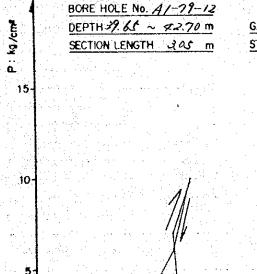


| Water Pressure | Water Leakage |
|----------------|----------------|
| P (kg/cm²) | Q1 (\$/min/m) |
| | 13 |
| 4 | 11.0 |
| 7 | ∕ 5:3 |
| 10 | 183 |
| В | 20 |
| 2 | 40 |
| | |
| | |
| | |
| | |

K = 5.39 × 10-4

111 = 41

Q1: 1/min/m



| U. 77. L | - 2.00 | 118 | | | |
|----------|-----------|-----------|----|-----|--------|
| | | | | 1.0 | |
| CTATIC | WATED DOE | SSURE (h) | 10 | | ka/cm² |
| JIMIL | MATEULINE | JOUNE THE | | | |

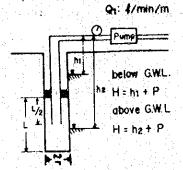
| Moter Pressure | Mater reavage | |
|----------------|---------------|--|
| P (kg/cm²) | Q1(1/min/m) | |
| | 44 | |
| 4 | 28 | |
| 2 | 7.6 | |
| 10 | 8.6 | |
| 6 | 7.6 | |
| - ≥ | 5.5 | |
| | i | |
| | | |
| | | |
| | | |

LUGEON UNIT (Lu)

Lu = Q1 ×10

PERMEABILITY COEFFICIENT (K)

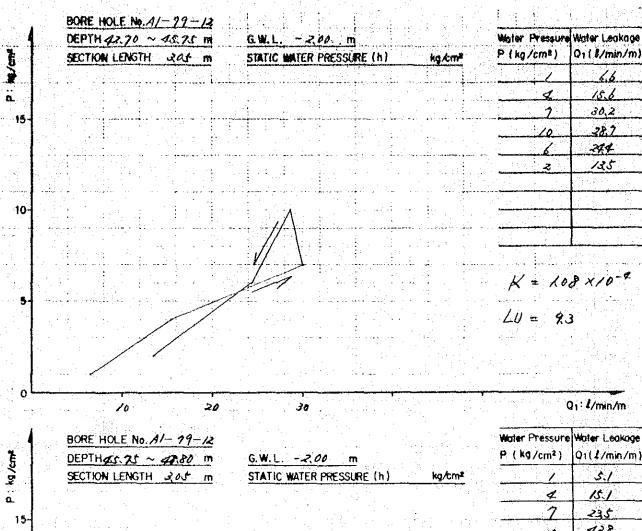
$$K = \frac{2.3 Q_2 / 60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$

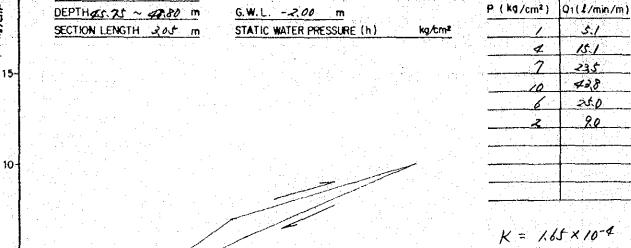


194

WATER PRESSURE TEST DIAGRAM

No ≈





5 LU = 142

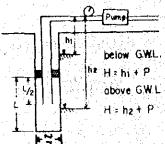
On: 1/min/m

LUGEON UNIT (Lu)

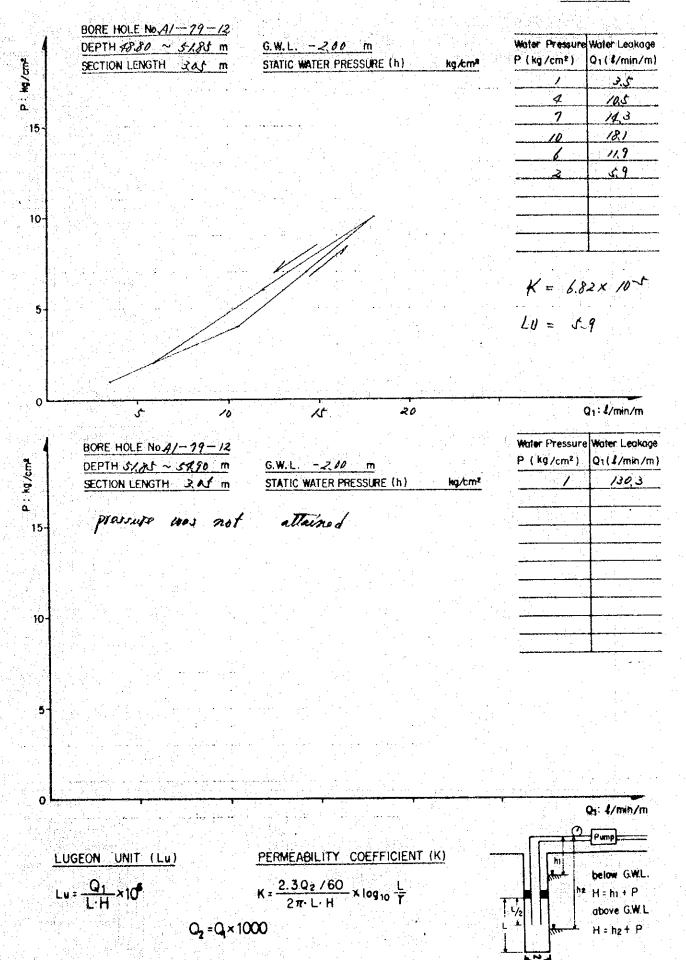
Lu= Q1 ×10

PERMEABILITY COEFFICIENT (K)

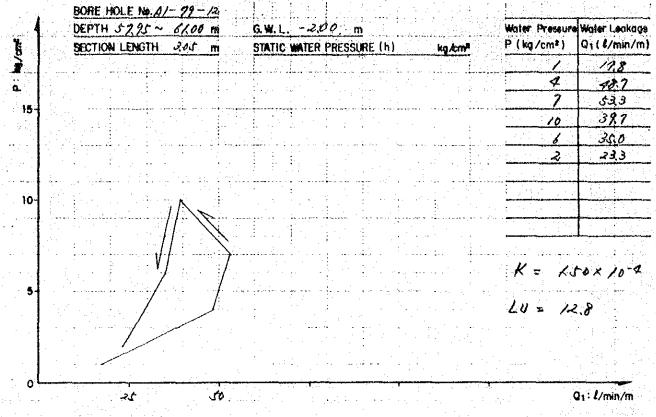
 $K = \frac{2.3 Q_2 / 60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$

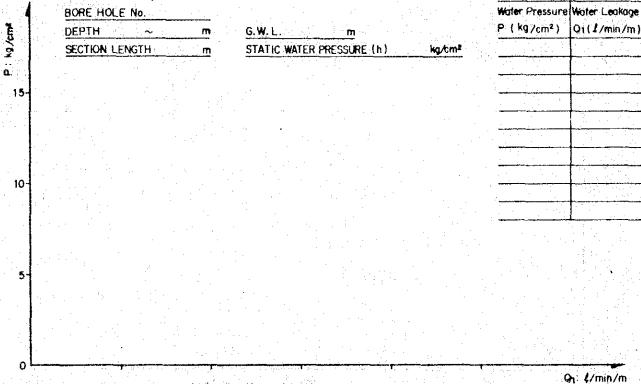


No 3



No \$



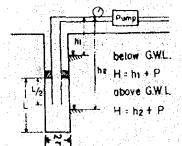


LUGEON UNIT (Lu)

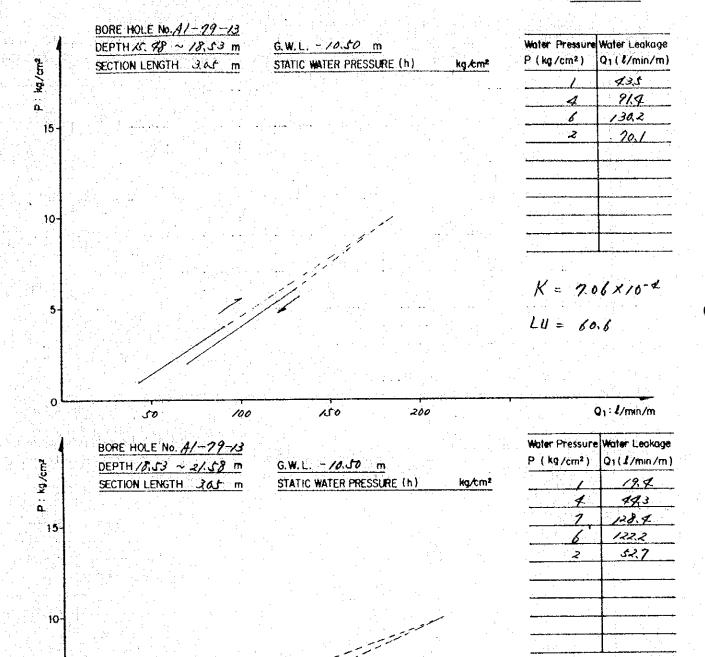
 $Lu = \frac{Q_1}{L \cdot H} \times 10^6$

PERMEABILITY COEFFICIENT (K)

$$K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{Y}$$



No /



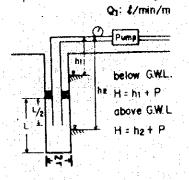
K = 6.10×10-4

 $Lu = \frac{Q_1}{L \cdot H} \times 10^6$

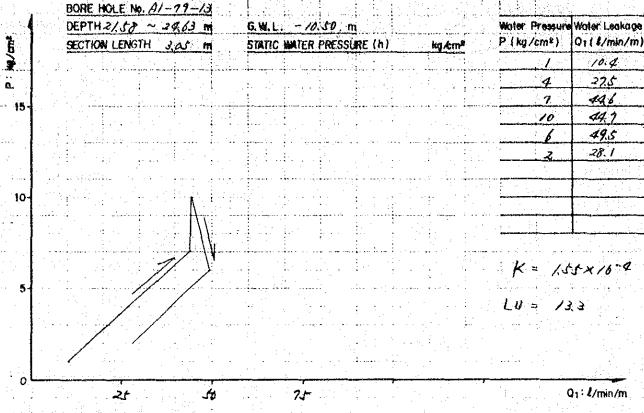
PERMEABILITY COEFFICIENT (K)

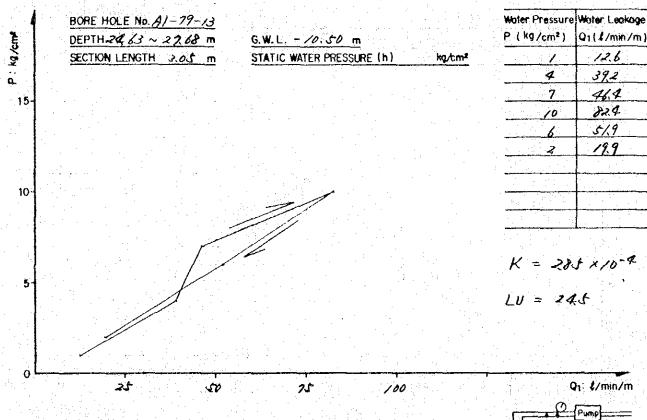
200

$$K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$



No ≥



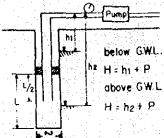


LUGEON UNIT (Lu)

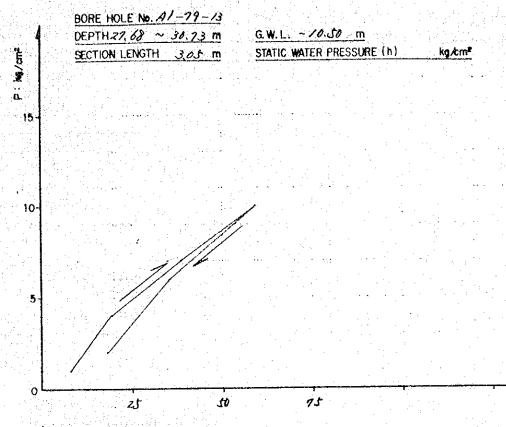
Lu = Q1 ×10

PERMEABILITY COEFFICIENT (K)

 $K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{\Upsilon}$



No 3

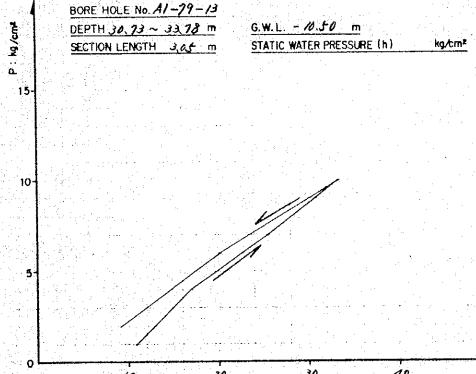


| Notice official State | | | |
|-----------------------|---------------|--|--|
| Water Pressure | Water Leakage | | |
| P(kg/cm²) | Q1 (8/min/m) | | |
| 7 | 8.0 | | |
| 4 | 184 | | |
| 7 | 387 | | |
| 10 | 594 | | |
| 6 | 3t.7 | | |
| \$ | 18.1 | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

K= 2.06 ×10-4

LU = 12.6

Q₁: 4/min/m



| Water Pressure | Water Leakage |
|----------------|---------------|
| P (kg/cm²) | Q1(2/min/m) |
| / | 10.8 |
| 4_ | 12.0 |
| 1 | 25.4 |
| /0 | 33.4 |
| 6 | 20,2 |
| 2 | 91 |
| | |
| | |
| | |
| | |

K = 1.16 × 10-4

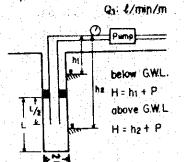
LN = 99

LUGEON UNIT (Lu)

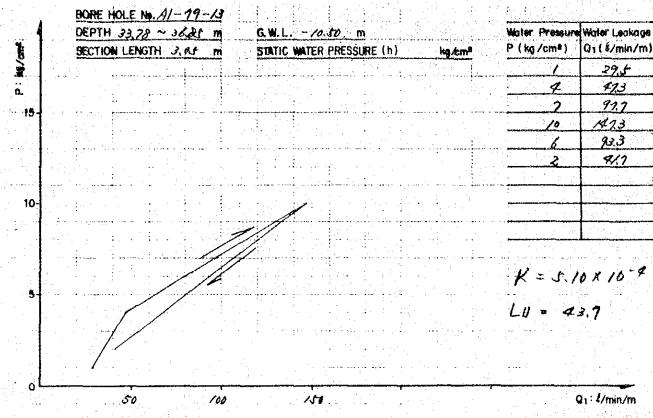
Lu= Q1 ×10

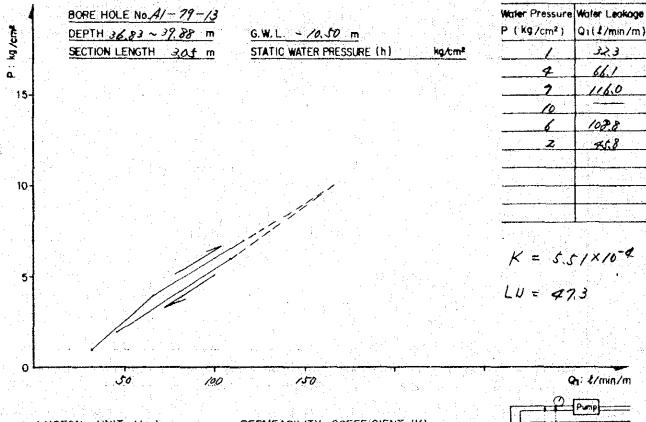
PERMEABILITY COEFFICIENT (K)

 $K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$



No ⊄



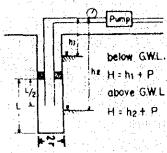


LUGEON UNIT (Lu)

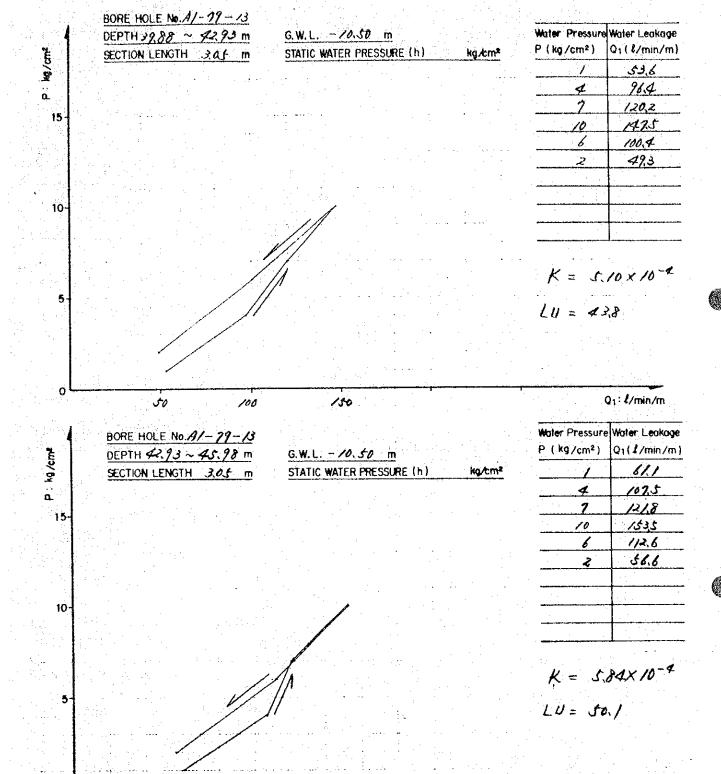
Lu = Q1 × 10

PERMEABILITY COEFFICIENT (K)

 $K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$



No 5

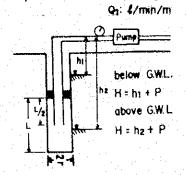


LUGEON UNIT (Lu)

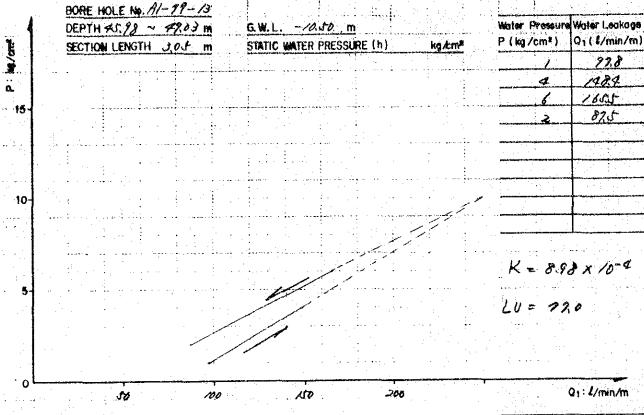
 $Lu = \frac{Q_1}{L \cdot H} \times 10^6$

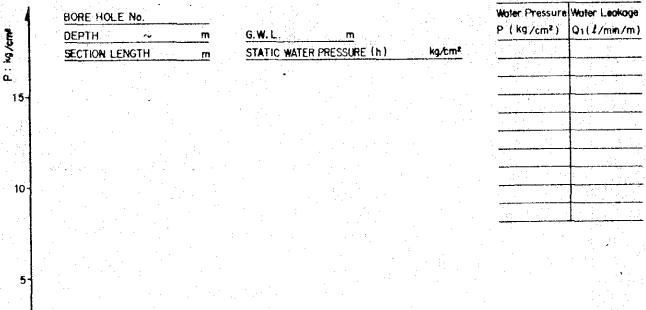
PERMEABILITY COEFFICIENT (K)

 $K = \frac{2.3 Q_2 / 60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$



No 6



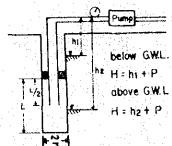


LUGEON UNIT (Lu) PERMEABILITY COEFFICIENT (K)

Lu = Q1 ×10

PERMEABILITY COEFFICIENT (K) $K = \frac{2.3 Q_2 / 60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$

 $Q_2 = Q_1 \times 1000$



Q₁: 4/min/m

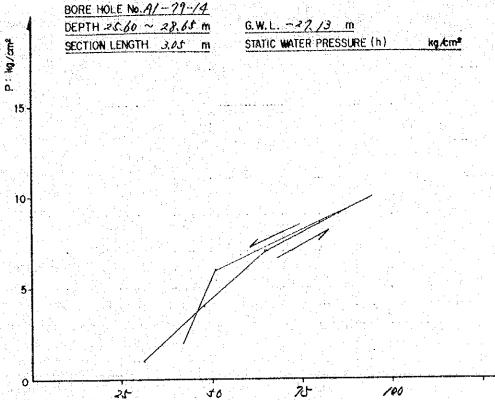
P : kg/cm²

15

10

WATER PRESSURE TEST DIAGRAM

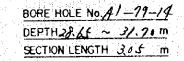
No



| Water Pressure | Water Leakage |
|----------------|---------------|
| P (kg/cm²) | Q1 (&/min/m) |
| | 3/.2 |
| 4 | 429 |
| 2 | ato |
| /0 | 996 |
| в | 32.2 |
| 2 | 42/ |
| | |
| | |
| | |
| | |

$$K = 2.83 \times 10^{-4}$$
 $LU = 243$

Q1: 2/min/m

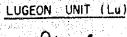


G.W.L. - 29.80 m

STATIC WATER PRESSURE (h)

kg/cm²

| Water Pressure | Water Leakage |
|----------------|---------------|
| P (kg/cm²) | Q1(4/min/m) |
| | 31.7 |
| 4 | 424 |
| 7 | 54.7 |
| 10 | 72.1 |
| 6 | 501 |
| 2 | 39.4 |
| in that, and | |
| | |
| | |



-25

PERMEABILITY COEFFICIENT (K)

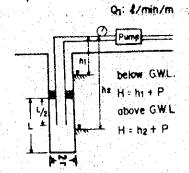
100

$$K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$

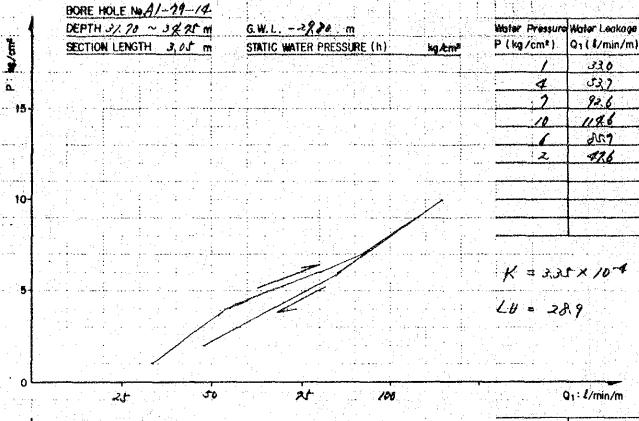
25

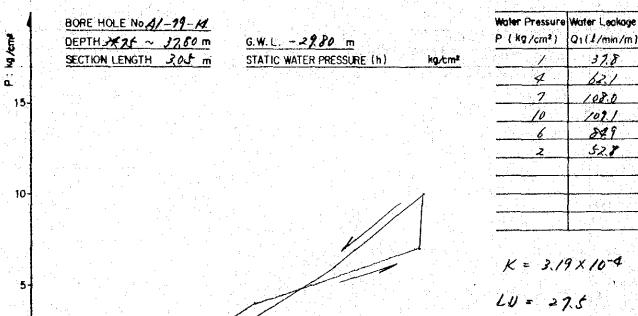
$$Q_2 = Q_1 \times 10000$$

40.





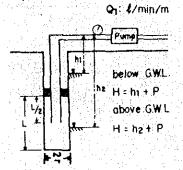


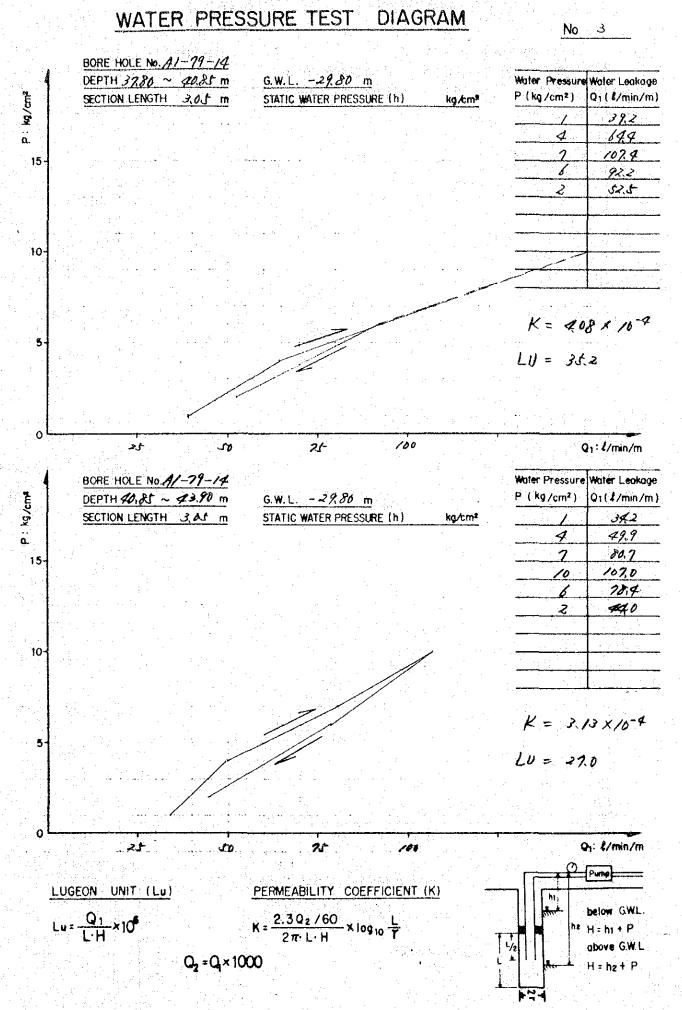


LUGEON UNIT (Lu) $Lu = \frac{Q_1}{L \cdot H} \times 10^6$

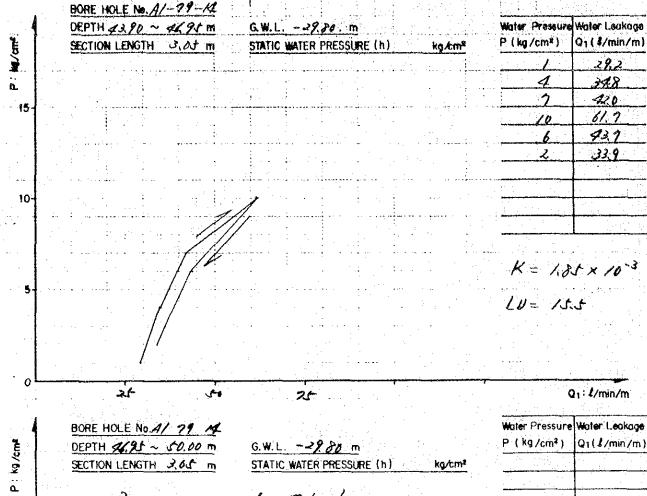
PERMEABILITY COEFFICIENT (K)

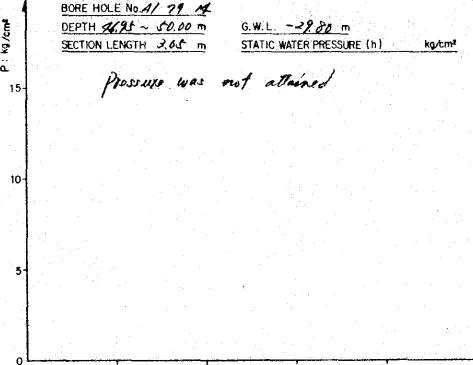
$$K = \frac{2.3 Q_2 / 60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{Y}$$





No 4





Q₁: 1/min/m

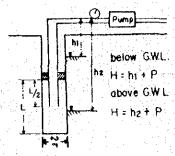
LUGEON UNIT (Lu)

 $Lu = \frac{Q_1}{L \cdot H} \times 10^6$

PERMEABILITY COEFFICIENT (K)

$$K = \frac{2.3 Q_2 / 60}{2 \pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$

 $Q_2 = Q_1 \times 10000$



記念を含める

P : kg/cm²

15

10:

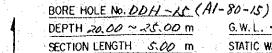
5

15

10

WATER PRESSURE TEST DIAGRAM

No



G.W.L. - 1485 m

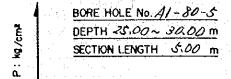
STATIC WATER PRESSURE (h)



| Water Pressure | Water Leakage |
|----------------|---------------|
| P(kg/cm²) | Q (l/min/m) |
| . / | 0.4 |
| 4 | 14 |
| . 7 | 21 |
| 10 | 44 |
| 6 | 24 |
| 2 | 0.5 |
| | |
| | |
| | |
| | |

 $Q': \ell/\min/m$

10



G.W.L. - M. S.S. m.
STATIC WATER PRESSURE (h)

kg/cm²

| Water Pressure | Water Leakage |
|----------------|---------------|
| P (kg/cm²) | Q* (4/min/m) |
| 7 | 0.5 |
| 4 | 16 |
| 7 | ⋜⋜ |
| 10 | 1.1 |
| 6 | 2.3 |
| 2 | 0.6 |
| | |
| | |
| | |
| | 1 |

LUGEON UNIT (Lu)

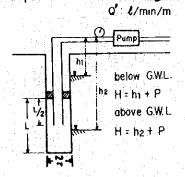
Lu = Q' ×106

PERMEABILITY COEFFICIENT (K)

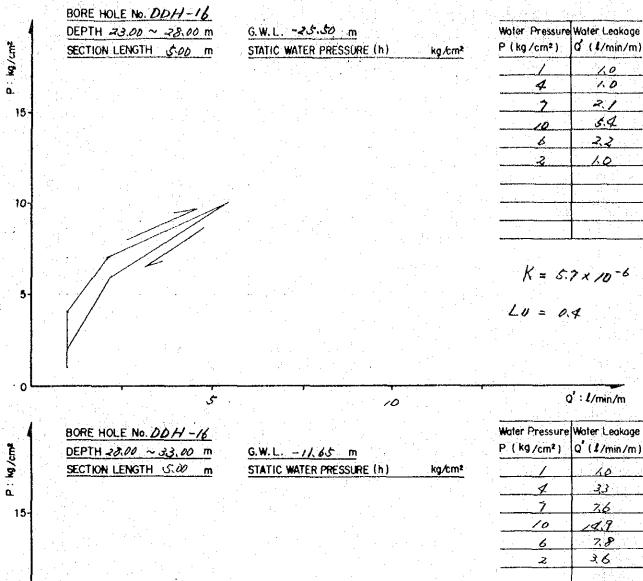
$$K = \frac{2.30 /60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$

Q =Q ×1000

\$



No 16-1



 $K = 34 \times 10^{-5}$

LU = 27

LUGEON UNIT (Lu)

3

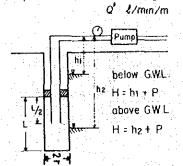
 $Lu = \frac{Q'}{L \cdot H} \times 10^6$

PERMEABILITY COEFFICIENT (K)

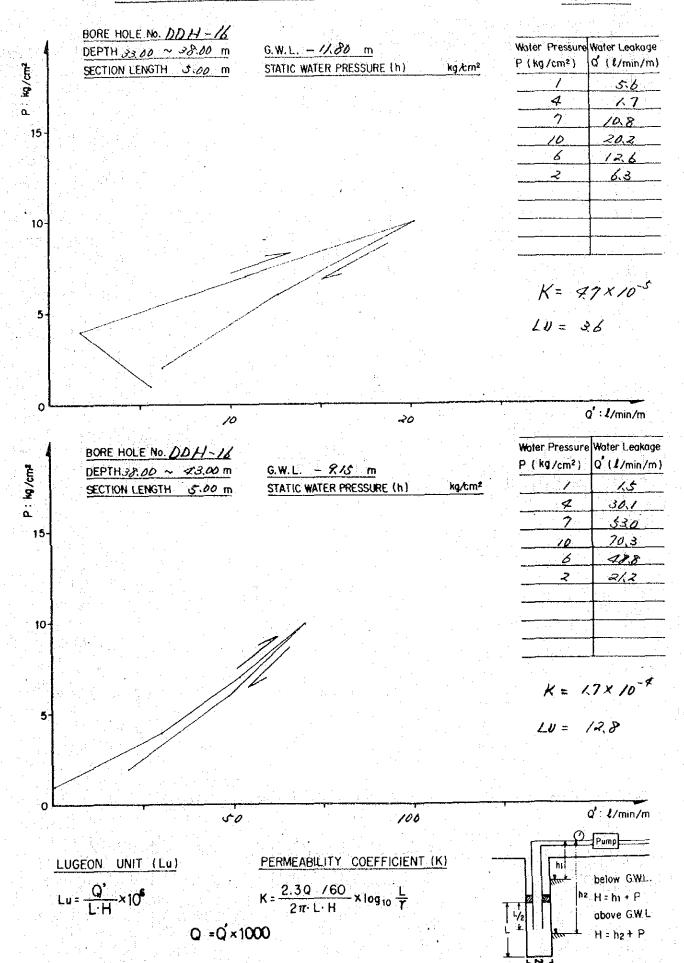
 $K = \frac{2.3Q / 60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{\Upsilon}$

15

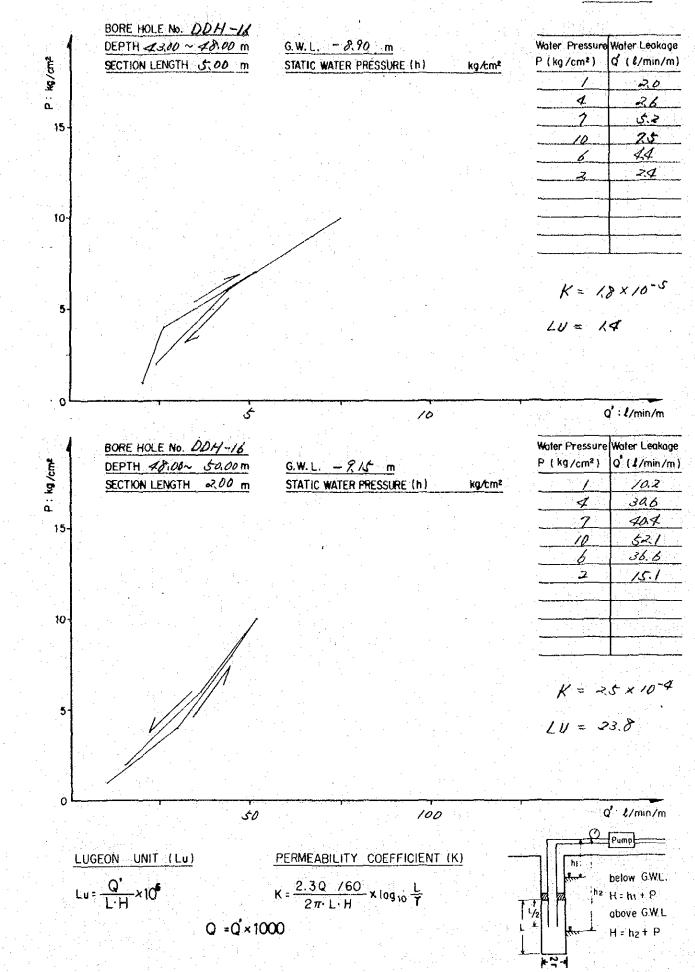
Q =Q'×1000



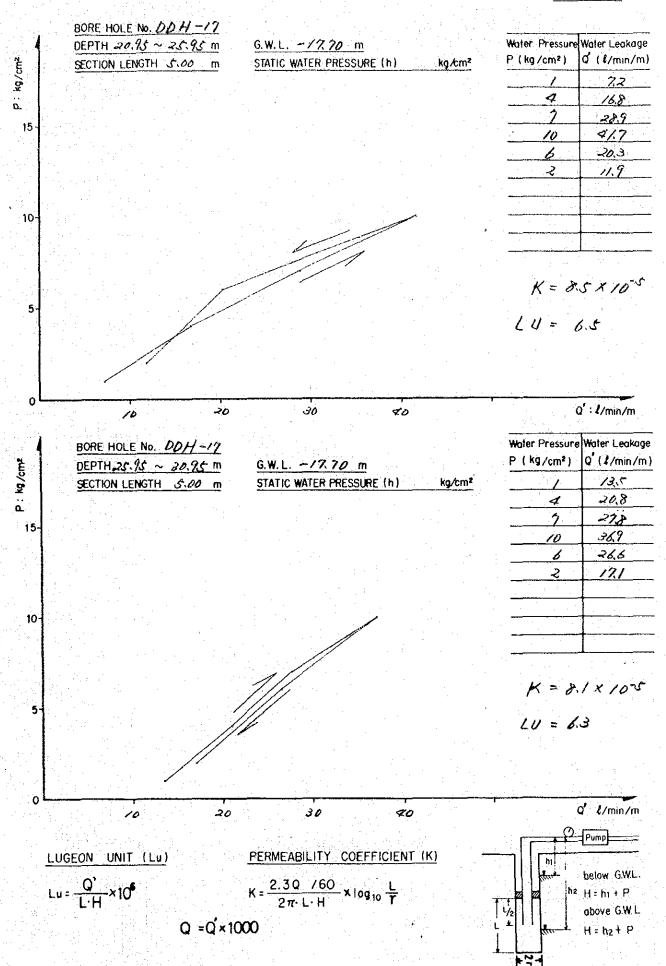
No 16-2



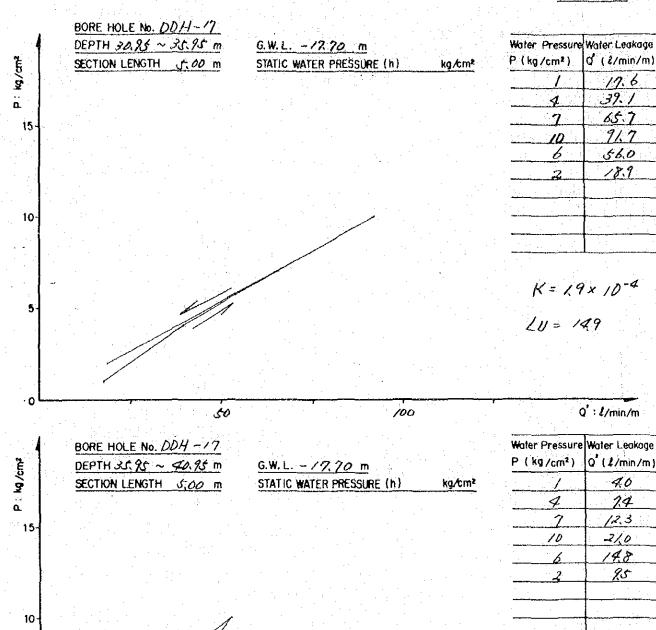
No 16-3



No 17-1



No 17-2



K = 26 x 10-5 111= 28

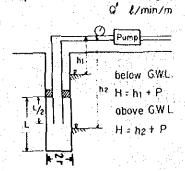
LUGEON UNIT (Lu) Lu = Q' ×106

PERMEABILITY COEFFICIENT (K)

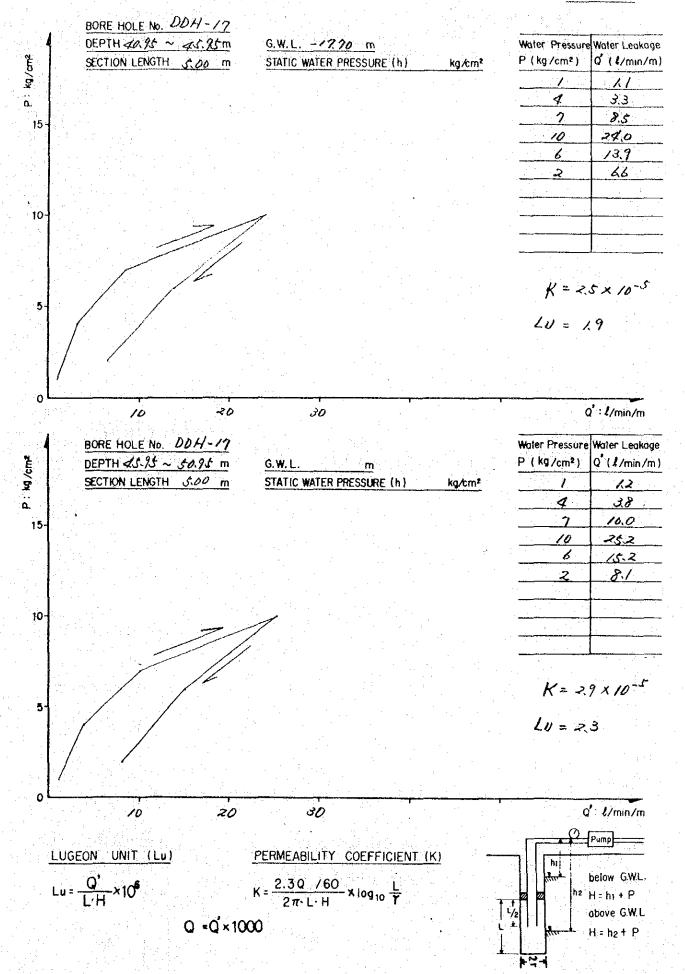
 $K = \frac{2.30 / 60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$

30

 $Q = Q \times 1000$



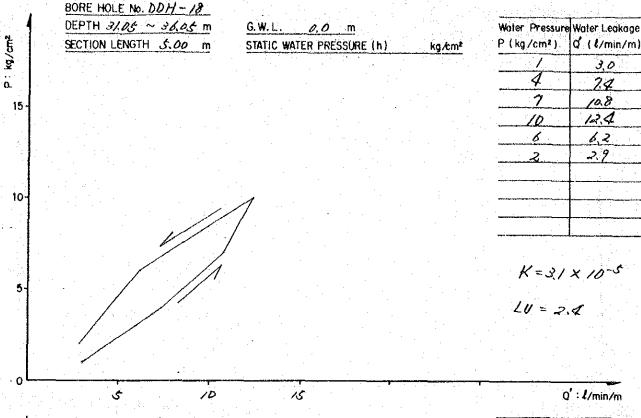
No 17-3

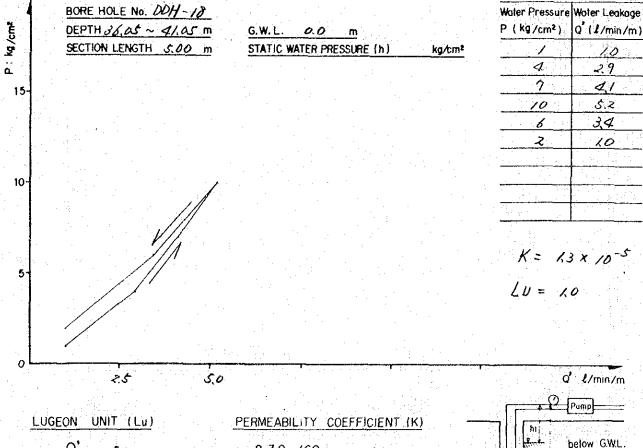


2/4 No 18-1

h2 H=h1+P dbove GWL

H = h2 + P





 $K = \frac{2.3Q / 60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$

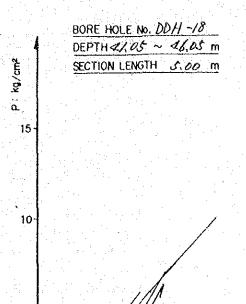
Q =Q'×1000

Lu = Q' ×108

ø

WATER PRESSURE TEST DIAGRAM

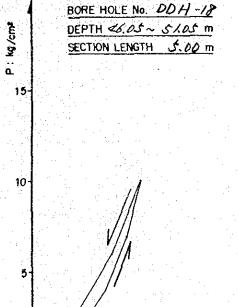
No 18-2



| G.W.L. 0.0 m | | |
|--|-----|---------|
| | | |
| والمتحدد والمتحدد والمتحدد والمتحدد والمتحدد | 4.5 | |
| STATIC WATER PRESSURE (h) | | ko /cm² |
| | | |

| <u> 184 - 194 - 194</u> | <u> </u> |
|-------------------------|-----------------|
| Water Pressur | e Water Leakage |
| P (kg/cm²) | ර් (ℓ/min/m) |
| / | 1.0 |
| 4 | 2.6 |
| | સુદ |
| 10 | 49 |
| 6 | 3/ |
| 2 | 1.4 |
| | |
| | |
| | |
| | |

O' : {/min/m



ی جہ

50

| G.W.L. 0,0 m | |
|---------------------------|--------|
| STATIC WATER PRESSURE (h) | kg/cm² |

| Water Pressure | Water Leakage |
|----------------|---------------|
| P (kg/cm²) | Q (1/min/m) |
| 1 | 70 |
| 4 | 20 |
| 7 | 2.6 |
| 10 | 30 |
| 6 | 2.2 |
| 2 | 10 |
| | |
| 1 | |
| | |
| | |
| | |

LUGEON UNIT (Lu)

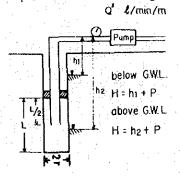
Lu = Q' ×106

PERMEABILITY COEFFICIENT (K)

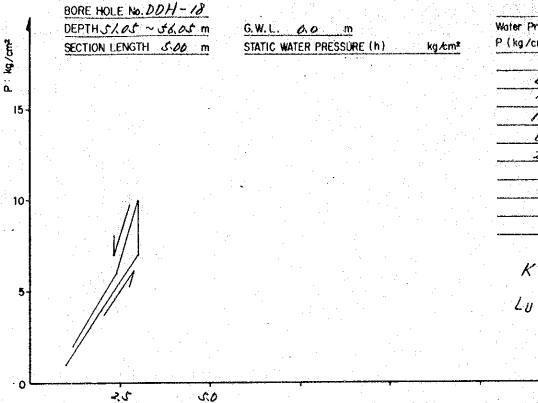
$$K = \frac{2.3Q / 60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$

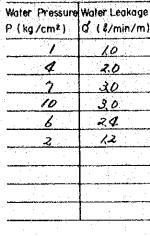
Q =Q'×1000

5.0



No 18-3





K = 7.8 × 10-6

 $Q': 1/\min/m$

BORE HOLE No. DDH-18
DEPTH & AS ~ & LOS m
SECTION LENGTH S.00 m

15
10
10-

K=85 x 10-6

LUGEON UNIT (Lu)

25

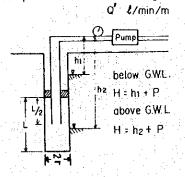
Lu = Q' ×10°

PERMEABILITY COEFFICIENT (K)

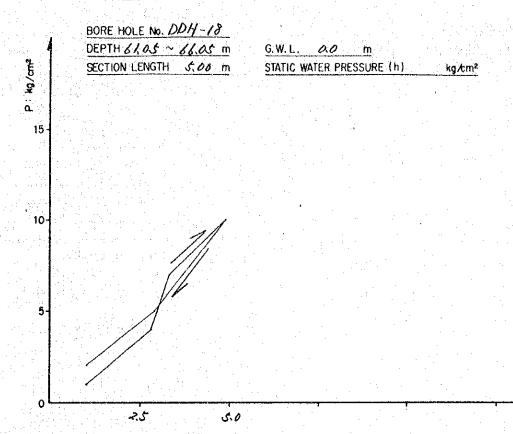
$$K = \frac{2.30 \cdot /60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$

 $Q = Q \times 1000$

5.0

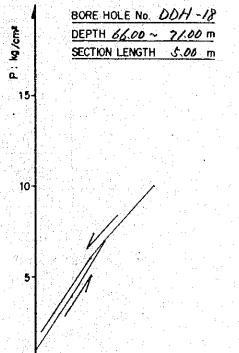


No 18-4



| Water Pressure | |
|----------------|--------------|
| P (kg/cm²) | Q (l/min/m) |
| 1 | 10 |
| A | 2.8 |
| 7 | ત્રુ |
| 10 | 4.9 |
| 6 | 29 |
| 2 | 10 |
| | |
| | |
| | |
| 1 | |
| | |

Q': *l*/min/m



| Woler Pressure | Water Leakage |
|----------------|----------------|
| P (kg/cm²) | Q* (1/min/m) |
| | 0 |
| Ø | 10 |
| 7 | 19 |
| 10 | 3,3 |
| 6 | /5 |
| 2 | 02 |
| | |
| - | |
| | |
| | |

LUGEON UNIT (Lu)

25

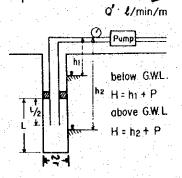
Lu = Q¹ ×10^{\$}

PERMEABILITY COEFFICIENT (K)

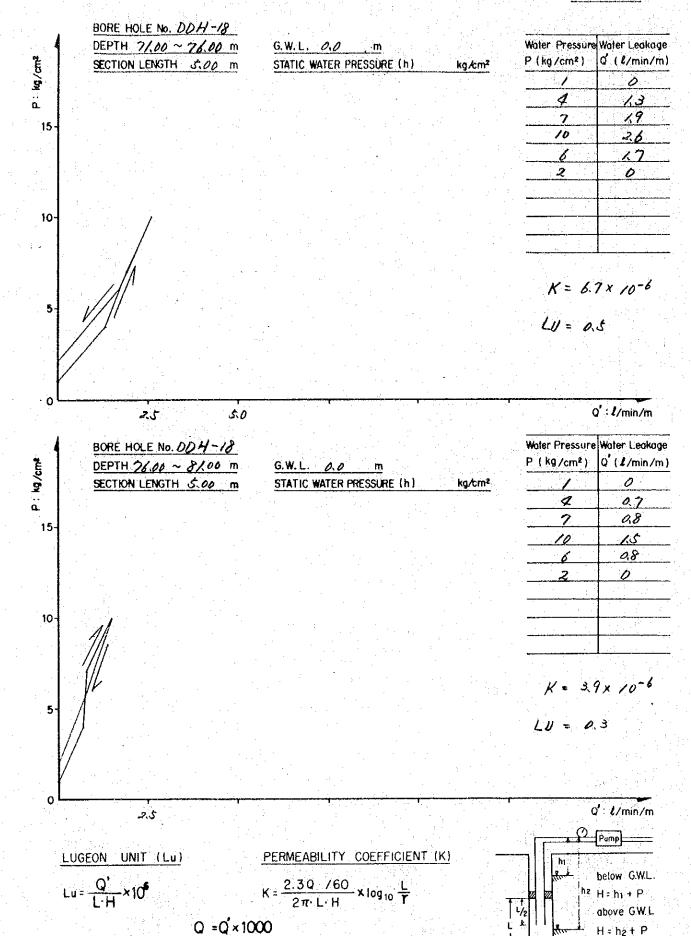
 $K = \frac{2.30 / 60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{\Upsilon}$

Q *Q'×1000

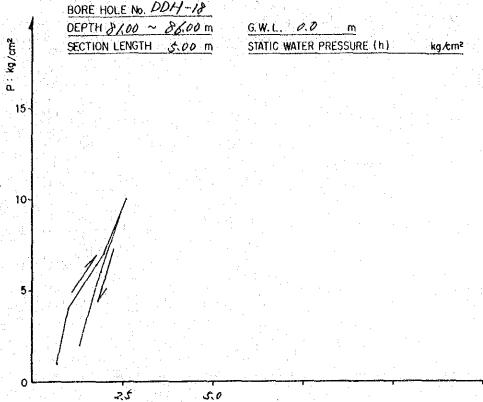
5.0



No 18-5



No 18-6

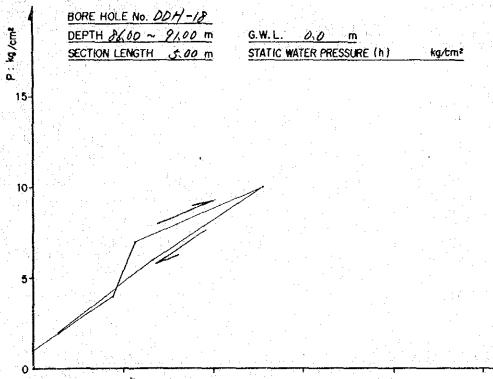


| | and the second |
|---------------|-----------------|
| Water Pressur | e Water Leakage |
| P (kg/cm²) | ් (ℓ/min/m) |
| 7 | 0.7 |
| 4 | 10 |
| 7 | 20 |
| 10 | 2.6 |
| 6 | 19 |
| | 7.3 |
| | |
| · | |
| | |
| | |

K=67 × 10-6

Lu = 0.5

es so



| Water Pressure | Water Leakage | | |
|----------------|---------------|--|--|
| P (kg/cm²) | Q (4/min/m) | | |
| | 0 | | |
| 4 | 22 | | |
| 7 | 28 | | |
| | 6.4 | | |
| 6_ | રૂ૩ | | |
| 2 | 0.7 | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

K=16×10-5

LU = 13

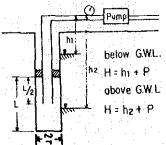
at do d'4/min/m

Lu= Q' ×10

PERMEABILITY COEFFICIENT (K)

 $K = \frac{2.3Q / 60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$

Q =Q'×1000



10

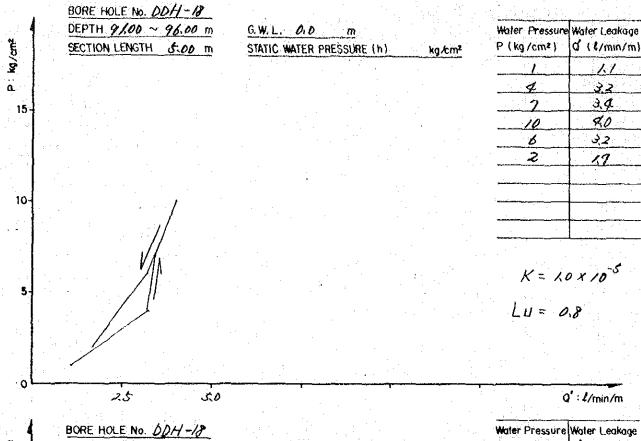
28 12

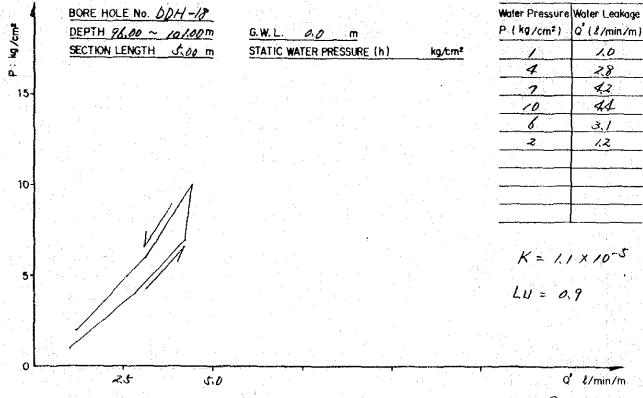
44 3.1

12

WATER PRESSURE TEST DIAGRAM

No 18-7



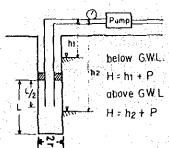


LUGEON UNIT (Lu) $Lu = \frac{Q'}{L \cdot H} \times 10^6$

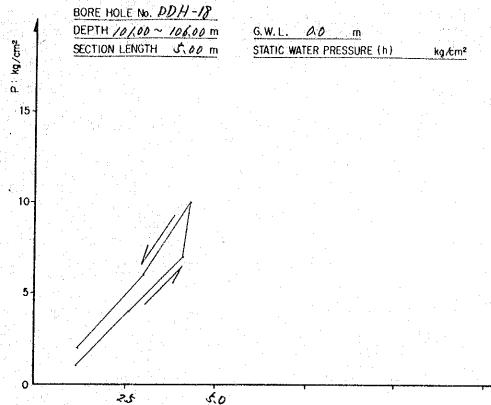
PERMEABILITY COEFFICIENT (K)

$$K = \frac{2.3 \, Q}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$

Q = Q × 1000



No 18-8

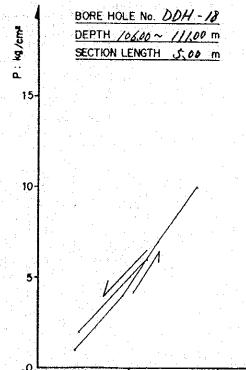


| Water Pressure | Water Leakage |
|----------------|---------------|
| P (kg/cm²) | Q (8/min/m |
| / | 4/ |
| 4 | 2.6 |
| 7 | 41 |
| 10 | 43 |
| 6 | 3.0 |
| 2 | /2 |
| | |
| | |
| | |
| | |

K=1.1 x 10-5

LU = 0.8

0' : {/min/m



| G. W | I.L. 0.0 | m | | |
|------|-----------|-----------|-----|---------|
| STA | TIC WATED | POECCIPOE | 163 | ka dami |

| Water Pressure | Water Leakage |
|----------------|---------------|
| P (kg/cm²) | Q' (1/min/m |
| | 1.0 |
| 4 | 23 |
| | <i>૩ ૩</i> |
| 10 | 44 |
| 6 | 30 |
| 2 | 7.1 |
| | |
| | 1000 |
| | |
| | |

Lu = 0.9

LUGEON UNIT (Lu)

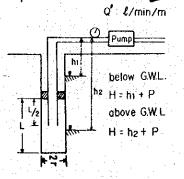
ۍ ج

 $Lu = \frac{Q'}{L \cdot H} \times 10^{6}$

PERMEABILITY COEFFICIENT (K)

$$K = \frac{2.3Q / 60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{Y}$$

Q =Q ×1000



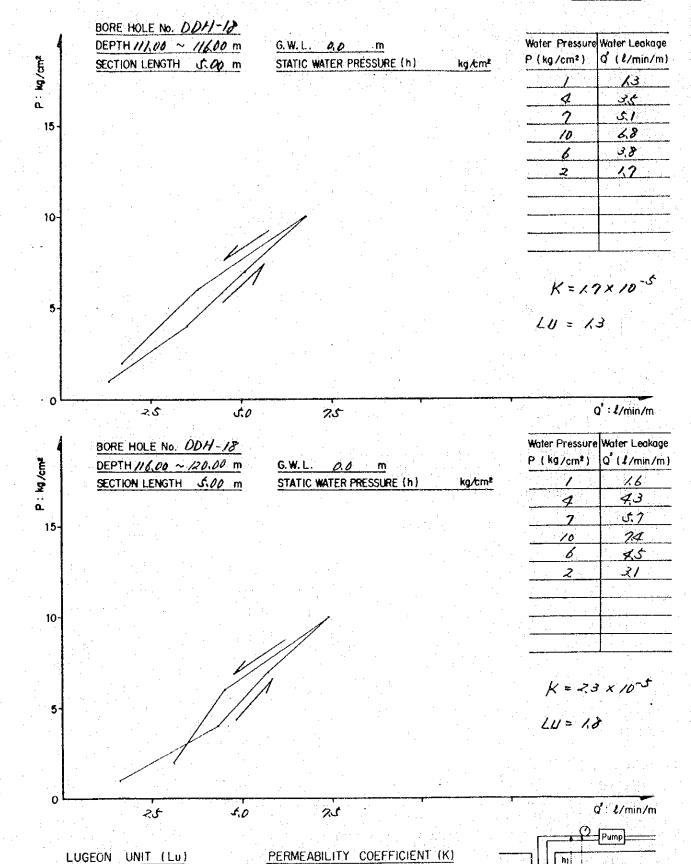
below G.W.L.

H = h2 + P

h2 H=h1+P above G.W.L

WATER PRESSURE TEST DIAGRAM

No 18-9



 $K = \frac{2.3Q / 60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$

Q =Q'×1000

 $Lu = \frac{Q^3}{L \cdot H} \times 10^6$

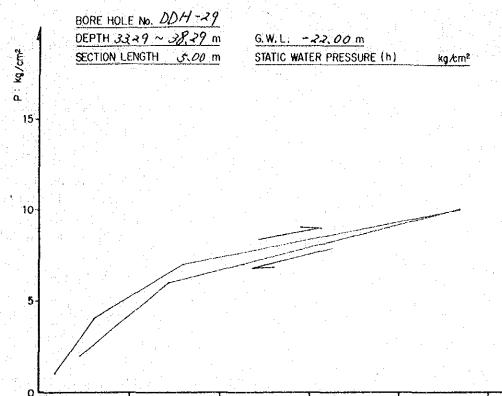
P: kg/cm²

10-

0

WATER PRESSURE TEST DIAGRAM

No



10

| | e Water Leakage |
|------------|---------------------|
| P (kg/cm²) | ዕ (ℓ/min/m) |
| | 0.9 |
| 4 | 30 |
| | 81 |
| 10 | 23,4 |
| 6 | 73 |
| | -23 |
| 14.10.3 | |
| | |
| | |
| | |

Q': 1/min/m

BORE HOLE No. DOH -29
DEPTH 40.00 ~ 45.00 m
SECTION LENGTH 5.00 m

G.W.L. -22.00 m

ځار

STATIC WATER PRESSURE (h)

| kg. | Æπ | η². |
|-----|----|-----|

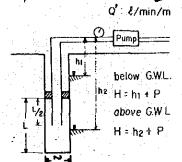
20

| Woler Pressure | Water Leakage |
|----------------|---------------|
| P (kg/cm²) | Q (2/min/m |
| 1 | ₹./ |
| 1 | ઝડ |
| | 95 |
| | 130 |
| 6 | 73 |
| ~ | 28 |
| 1 | |
| | |
| | |
| | |

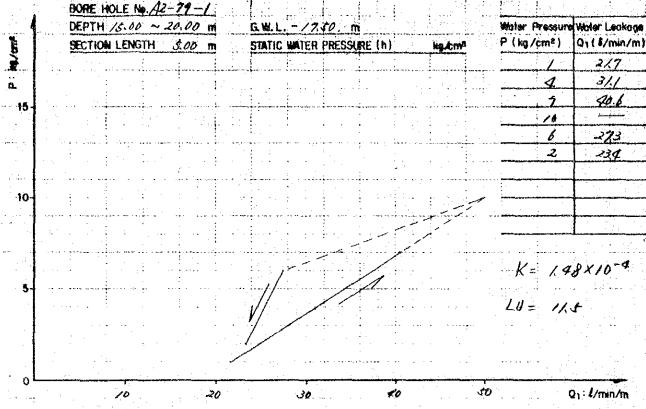
LUGEON UNIT (Lu)

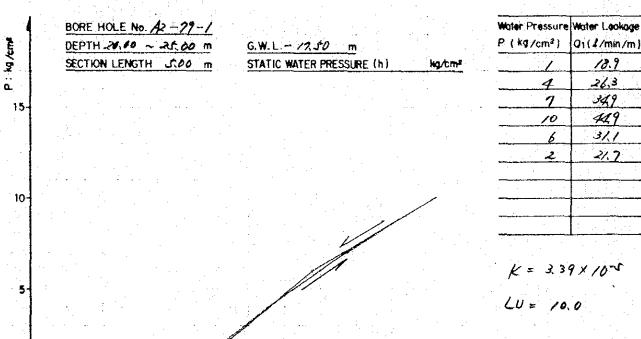
PERMEABILITY COEFFICIENT (K)

$$K = \frac{2.30 / 60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$



No /





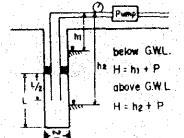
LUGEON UNIT (Lu)

Lu= Q1 ×108

PERMEABILITY COEFFICIENT (K)

$$K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{r}$$

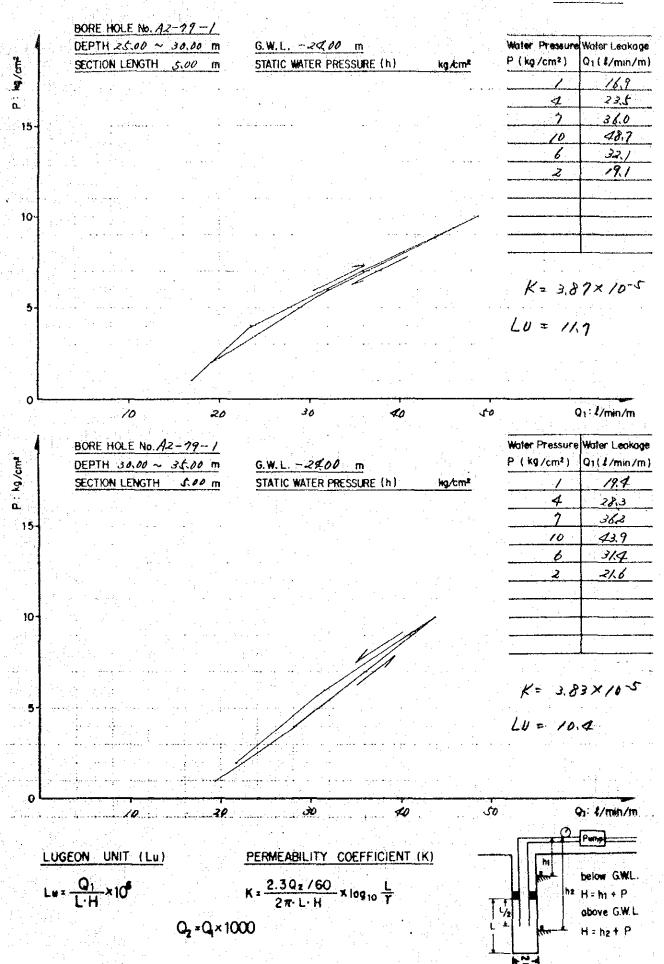
 $Q_2 = Q_1 \times 1000$



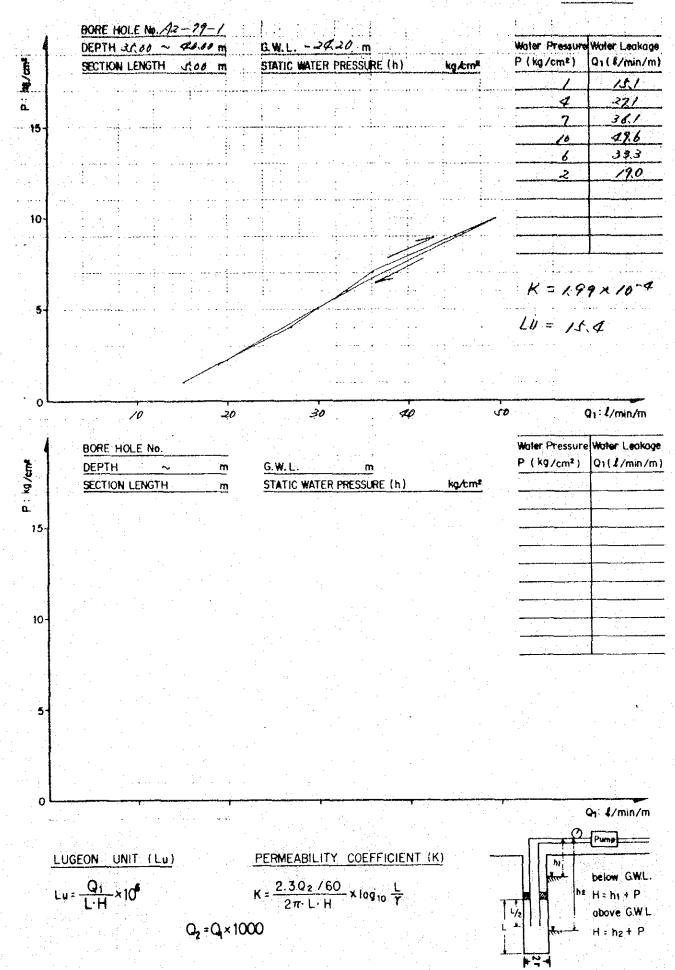
50

Q1: 4/min/m

s on



No 3



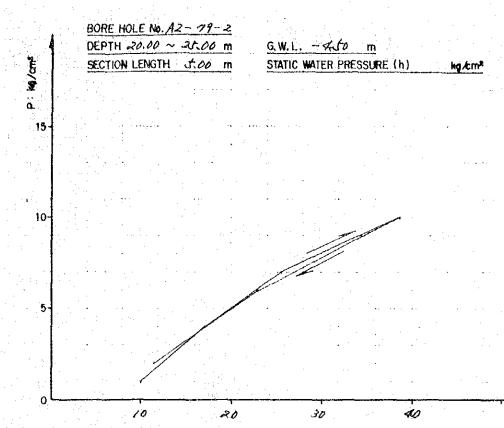
P: kg/cm²

15

10-

WATER PRESSURE TEST DIAGRAM

No /



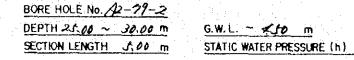
| *************************************** | |
|---|---------------|
| Water Pressure | Water Leokage |
| P (kg/cm²) | Q1 (4/min/m) |
| | 10.1 |
| 4 | 12.1 |
| 2 | 25.6 |
| | 38.7 |
| 6 | 9,55 |
| | 11.6 |
| | |
| | |
| 1.1 | |
| : . | |

K = 1.19 ×10-8

Q1:4/min/m

11 = 92

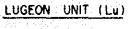
kg/cm²



| Water Pressure | Water Leakage |
|----------------|---------------|
| P (kg/cm²) | Q1(4/min/m) |
| 7 | 21 |
| 4 | 11.8 |
| | 2/2 |
| 10 | 3/3 |
| 6 | 18.6 |
| 2 | 21 |
| | |
| | T |

K = 919×10-5

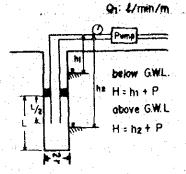
LU = 21



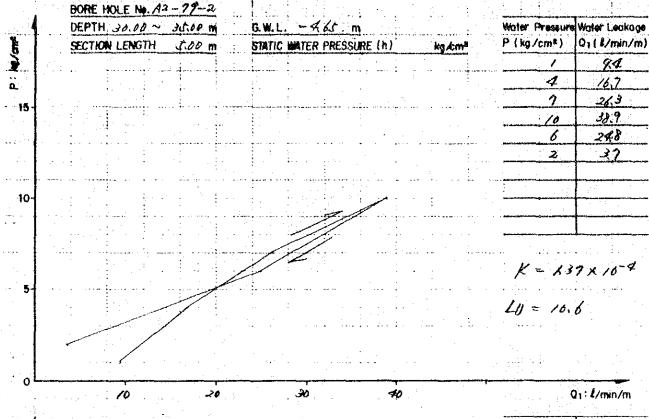
Lu: Q1 ×10

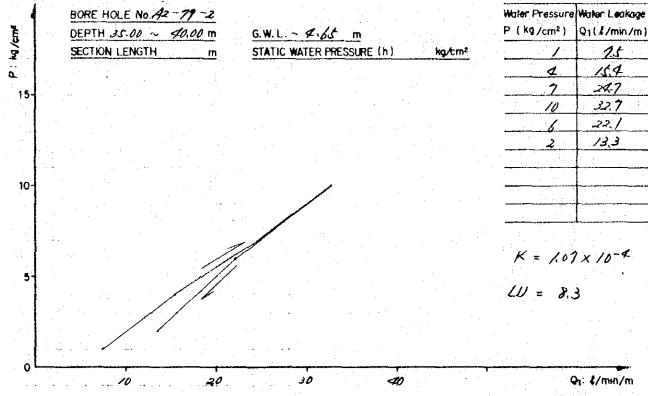
PERMEABILITY COEFFICIENT (K)

 $K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$



No ≥





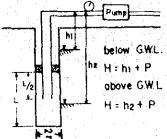
LUGEON UNIT (Lu)

Lu = Q1 ×10

PERMEABILITY COEFFICIENT (K)

$$K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{Y}$$

Q₂ =Q × 1000



P kg/cms

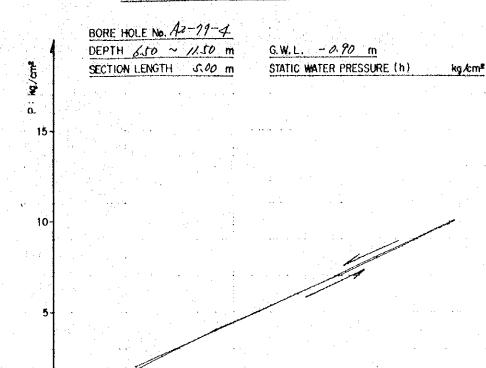
15

10-

5

WATER PRESSURE TEST DIAGRAM

No /

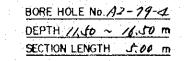


| Water Pressure | Water Leakage |
|----------------|----------------|
| P(kg/cm²) | Q1 (\$/min/m) |
| / | 5.7 |
| 4 | 18.0 |
| | 3/7 |
| | 196 |
| 6 | 27.2 |
| 2 | 9.1 |
| | |
| | : . |
| | |
| | T |

K= 125×10-4

Q1: 4/min/m

ďδ



G.W.L. - 0.90 m

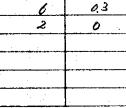
30

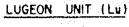
STATIC WATER PRESSURE (h) kg/cm²

40

| P (kg/cm²) | Q1(1/min/m) | |
|------------|-------------|--|
| | 0 | |
| 4 | 0.3 | |
| | 0.5 | |
| 10 | 1.2 | |
| 6 | 0.3 | |
| | | |

Water Pressure Water Leakage



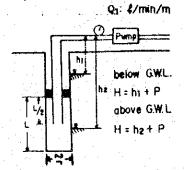


$$Lu = \frac{Q_1}{L \cdot H} \times 10^6$$

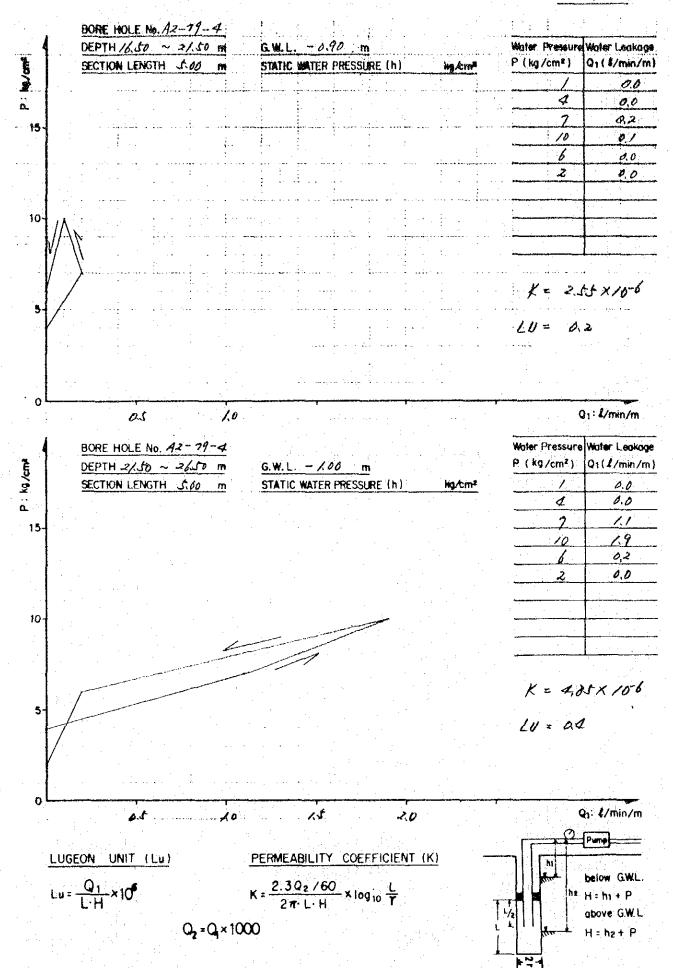
PERMEABILITY COEFFICIENT (K)

$$K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$

$$Q_2 = Q_1 \times 1000$$



No 2



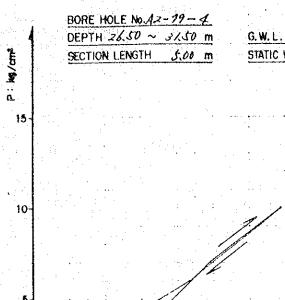
P : kg /cm²

15

10

WATER PRESSURE TEST DIAGRAM

No 3



| G, W. L | /00 m | | |
|------------|-----------|-------|--------|
| STATIC WAT | er pressu | RE(h) | kg/cm² |
| | | | |
| | | | |

| Water Pressure | Water Leakage |
|----------------|----------------|
| P (kg/cm²) | Q1 (\$/min/m) |
| : | 5,2 |
| 4 | 134 |
| | 19.7 |
| 10 | 227 |
| 6 | 17.3 |
| 2 | 0,4 |
| | |
| | |
| | |
| | |

BORE HOLE No. 42 - 79 - 4 DEPTH 3/50 ~ 36.50 m

10

SECTION LENGTH

20

5.00 m

G.W.L. - 0.80 m

30

STATIC WATER PRESSURE (h)

kg/cm²

| Woter Pressure | Water Leakage |
|----------------|---------------|
| P (kg/cm²) | Q1(2/min/m) |
| 7 | ځې |
| 4 | 14.4 |
| 7 | 20.8 |
| 10 | 26.2 |
| 8 | 144 |
| Z | 5.0 |
| | |
| | |
| | |
| | |

Qi: l/min/m

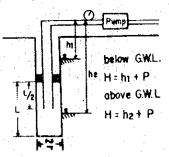
Qs: 4/min/m

LUGEON UNIT (Lu)

Lu = Q1 ×10

PERMEABILITY COEFFICIENT (K)

Q2 = Q × 1000



above G.W.L.

H = h2 + P

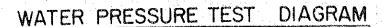
WATER PRESSURE TEST DIAGRAM No 4 BORE HOLE NA. AZ-179-9 DEPTH 35.00 ~ 40,00 m Wester Lackson P (kg/cm²) Q1 (4/min/m) 20 2 182 10 ...10 K= 728 x 10-4 25 Woter Pressure Woter Lapkage BORE HOLE No. P : kg Apme P (kg/cm²) O1(2/min/m) DEPTH STATIC WATER PRESSURE (h) Ch: E/min/m LUGEON UNIT (LW) PERMEABILITY COEFFICIENT (K) below GWL.

K = 2.302 /60 x log to T

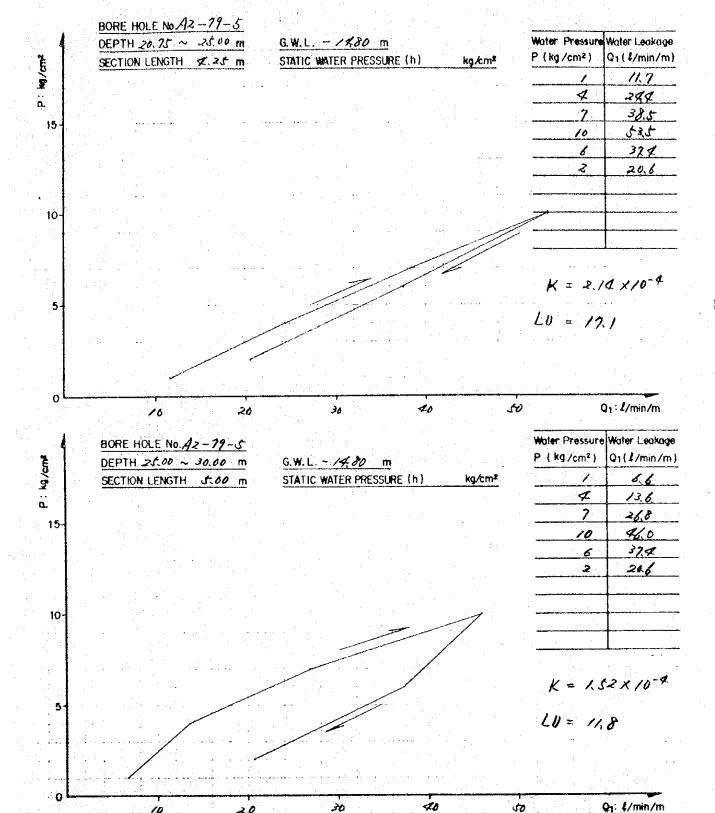
Q =Q × 1000

24/

Lu = Q1 × 10



No /



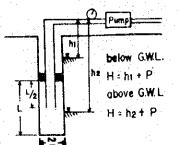
LUGEON UNIT (Lu)

 $Lu = \frac{Q_1}{L \cdot H} \times 10^6$

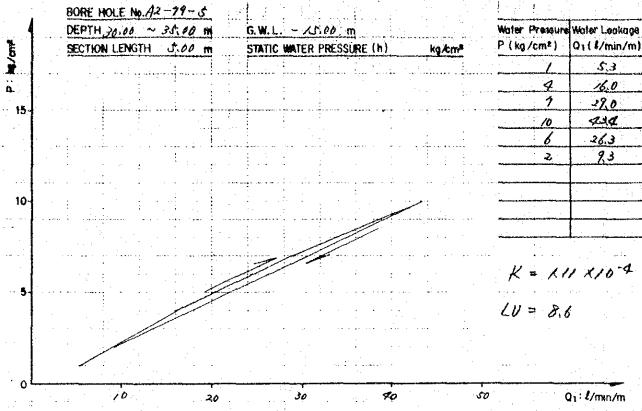
PERMEABILITY COEFFICIENT (K)

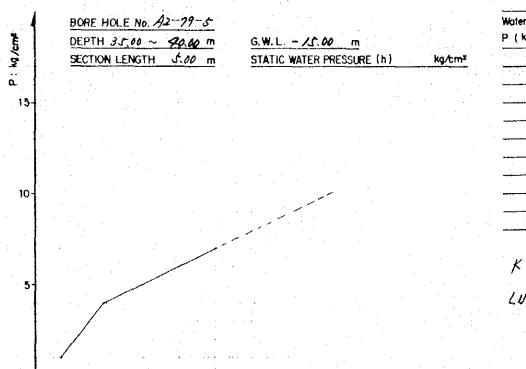
$$K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{Y}$$

Q₂ = Q₁ × 1000



No ≥





K = 5.50 × 10-4

LU = 42.6

Q1: 1/min/m

LUGEON UNIT (Lu)

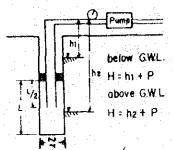
25

Lu = Q1 ×105

PERMEABILITY COEFFICIENT (K)

$$K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{Y}$$

Q2 = Qx 1000



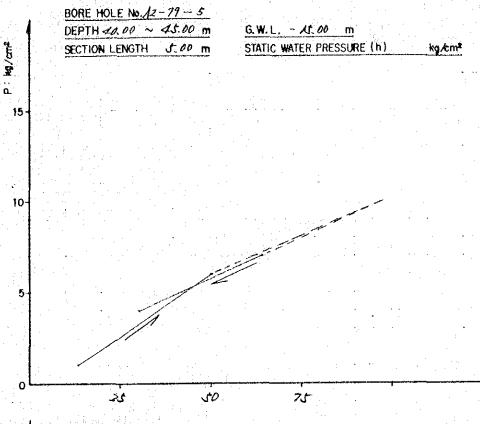
P. Mg/cme

15

10

WATER PRESSURE TEST DIAGRAM

No 3



| Q1 (l/min/m) /3,3 30,4 |
|-------------------------------|
| <u> </u> |
| 30,4 |
| |
| 697 |
| |
| 50.6 |
| 2/4 |
| |
| |
| |
| |
| |

K=362×10-3 LU = 280.3

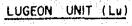
 $Q_1: 4/min/m$

BORE HOLE No. AZ-79-5 DEPTH 45.00 ~ 50.00 m G.W.L. - 15.00 m SECTION LENGTH 600 m STATIC WATER PRESSURE (h) kg/cm²

| Water Pressure | Water Leakage |
|----------------|---------------|
| P (kg/cm²) | Q1(1/min/m) |
| | 85 |
| 4 | 329 |
| 7 | 647 |
| 10 | |
| 6 | 534 |
| 2 | 23.6 |
| | |
| | |
| | |
| | |

K= 400×10-4

LU = 3/10



 $Lu = \frac{Q_1}{L \cdot H} \times 10^8$

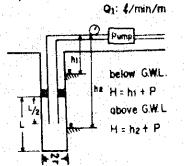
PERMEABILITY COEFFICIENT (K)

$$K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$

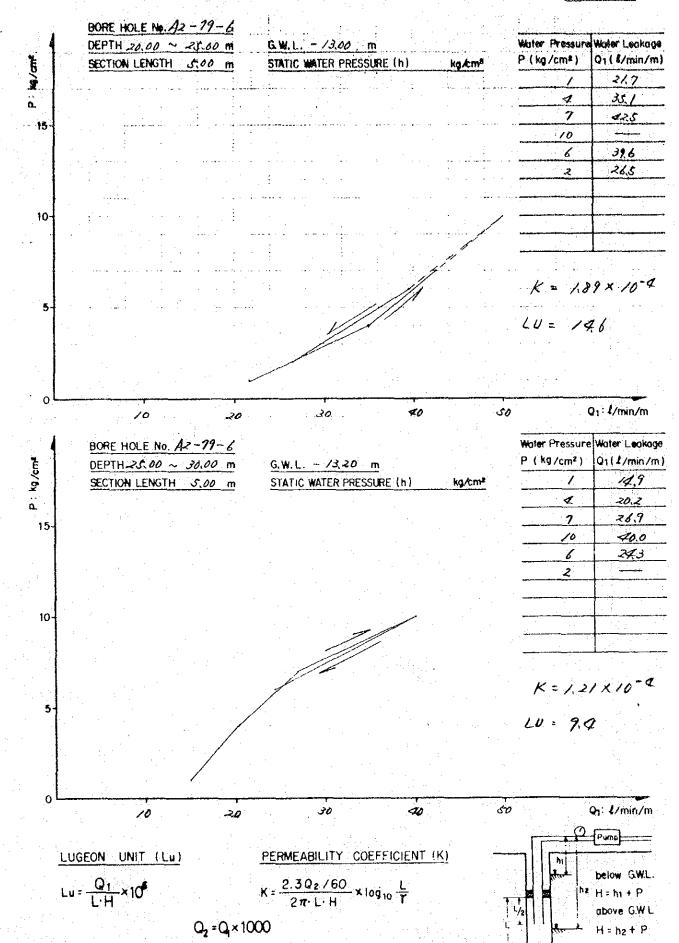
75

 $Q_2 = Q \times 1000$

50 ·

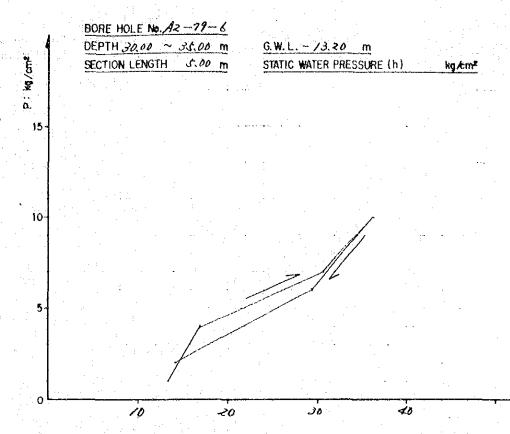


No /



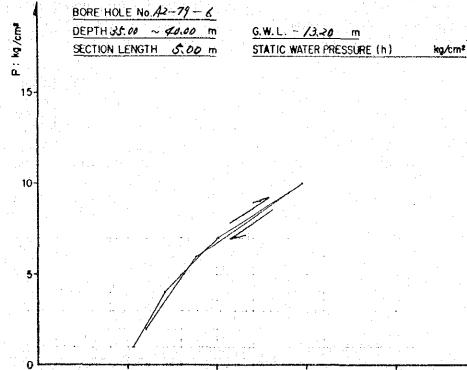
246

S oN



| Woter Pressure | Water Leakage |
|----------------|---------------|
| P(kg/cm²) | Q1 (l/min/m) |
| / | 13,3 |
| 4 | 16.9 |
| | 30.7 |
| | 36.3 |
| 6 | 293 |
| 2 | 142 |
| | |
| | |
| | |
| | |

Q1: 1/min/m



| Water Pressure | Water Leakage |
|----------------|---------------|
| P (kg/cm²) | Q1(4/min/m) |
| , | 10.6 |
| 4 | 142 |
| 7 | 20.1 |
| 10 | 296 |
| 6 | 118 |
| | 120 |
| · | |
| | 1 4 |
| | - |
| | |

Qu: 4/min/m

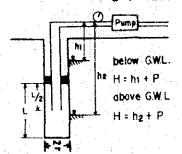
LUGEON UNIT (Lu)

 $Lu = \frac{Q_1}{L \cdot H} \times 10^6$

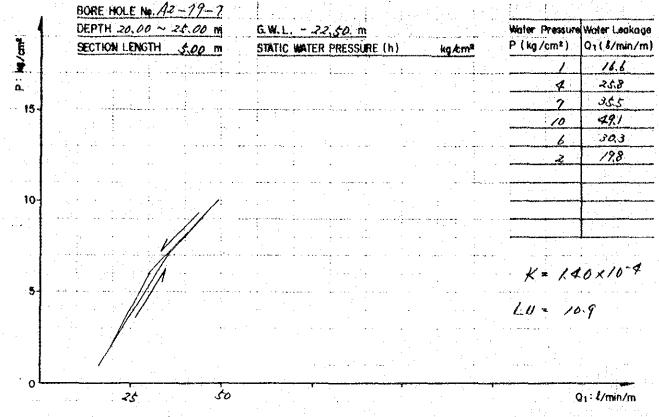
PERMEABILITY COEFFICIENT (K)

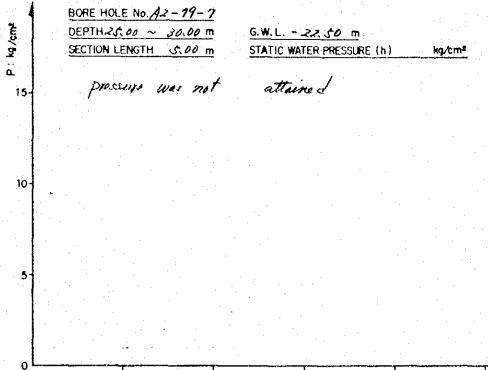
$$K = \frac{2.3Q_2/60}{2\pi \cdot L + 1} \times \log_{10} \frac{L}{T}$$

 $Q_2 = Q_1 \times 1000$



No /





LUGEON UNIT (Lu)

... 25

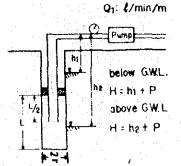
Lu = Q1 ×10

PERMEABILITY COEFFICIENT (K)

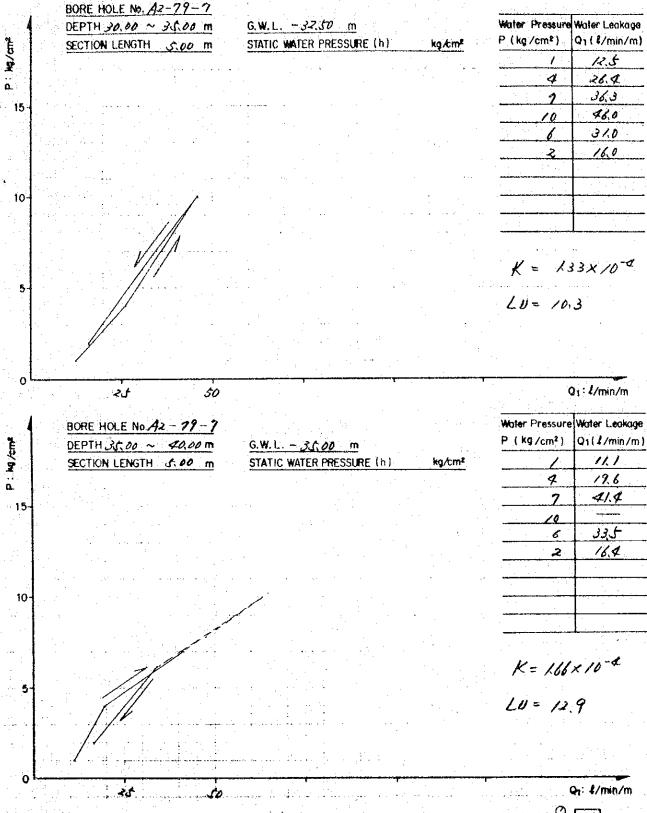
$$K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$$

25

 $Q_2 = Q_1 \times 1000$



No 2



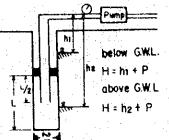
LUGEON UNIT (Lu)

 $Lu = \frac{Q_1}{L \cdot H} \times 10^6$

PERMEABILITY COEFFICIENT (K)

 $K = \frac{2.3Q_2/60}{2\pi \cdot L \cdot H} \times \log_{10} \frac{L}{T}$

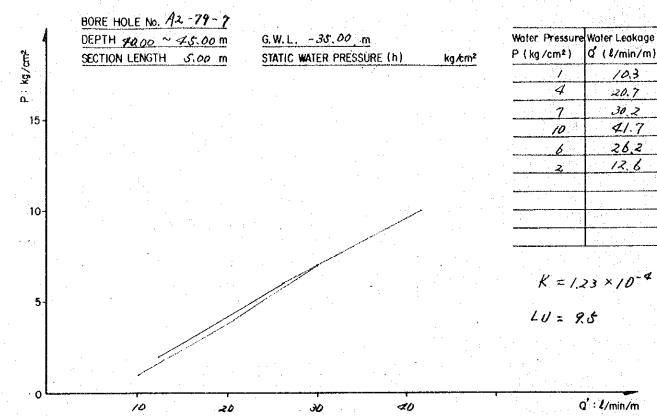
Q2 = Q × 1000

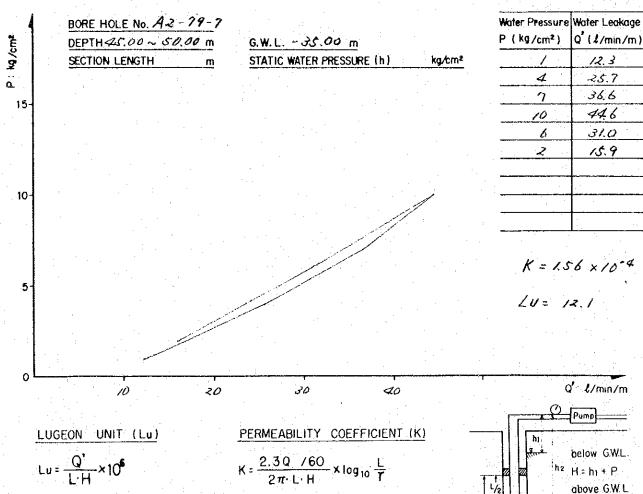


 $H = h_2 + P$

WATER PRESSURE TEST DIAGRAM

No 3





Q = 0 × 1000

