

4

244,246,251,262,263) . 74) 가 가 87,225,241

가 241 244,251)

가 ,

125,126,255)

155 160) Hong

158 160) , 74,75,82)

6

가 1 3,19 24,30,51)

4.1.

()

3

4.1.1

()

가

4.1.2

2

가
가

가

가

가 가

가

가

가

4.2

4.2.1.

가 (1860)
Noo-T sutsuishi

1903 Nigatta
1960

^{126,255} 1960

1964

Shikoku Kanagawa

4.1

2

H

Hokuriku

4.2

2

600mm, 350mm

H

4

가

100m가

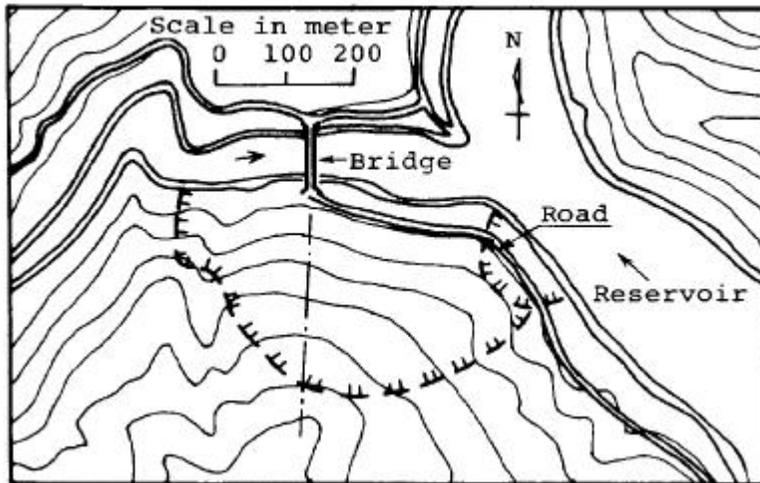
30m

가

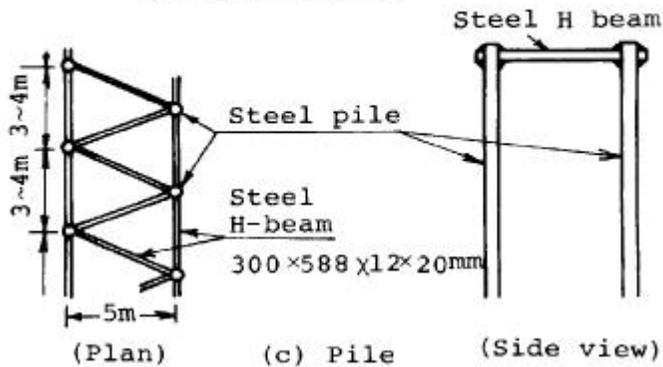
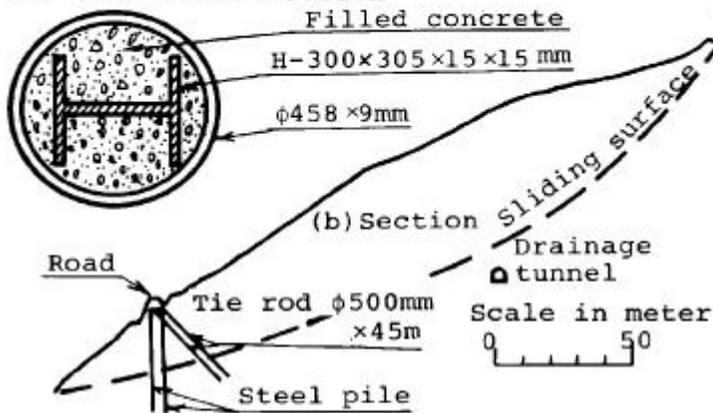
가

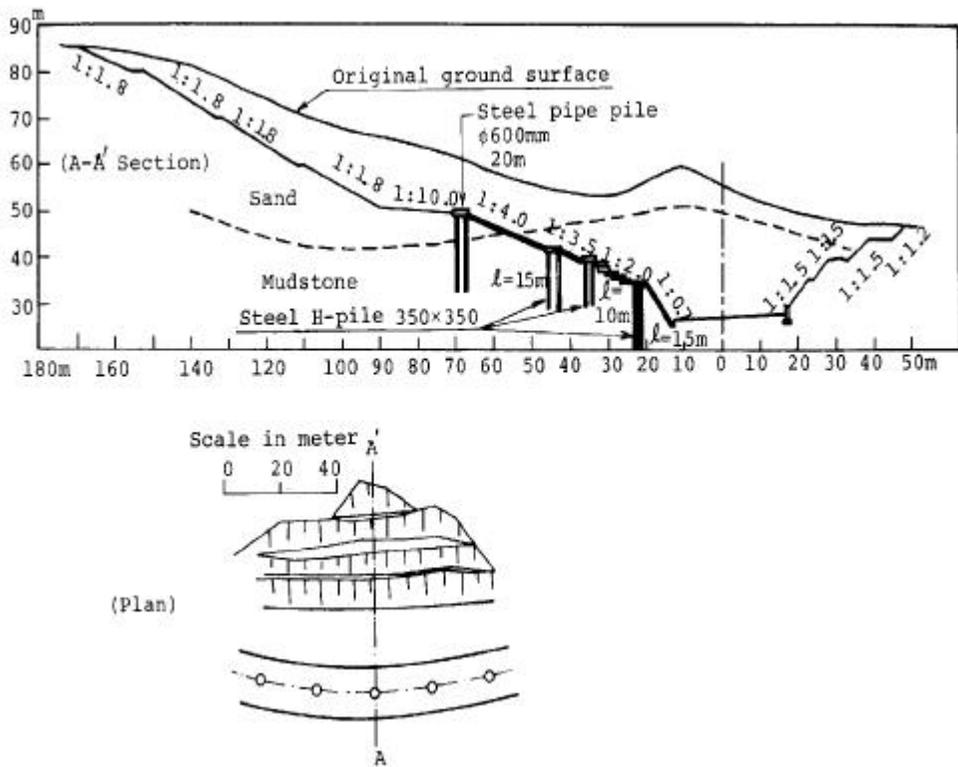
가

가



(d) Pile cross section





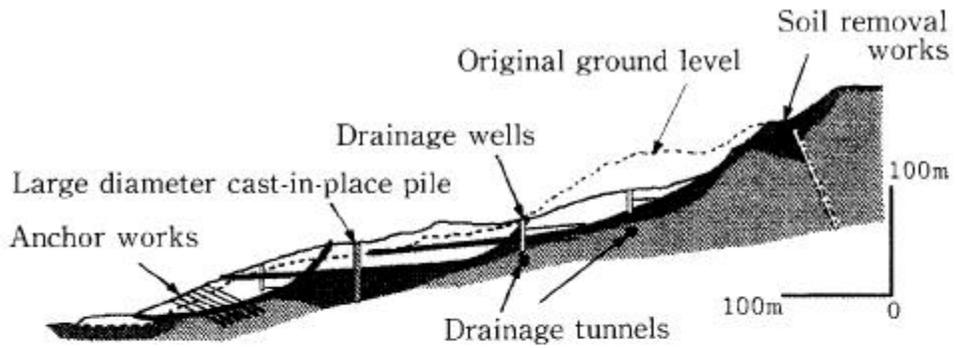
4.2 Hokuriku

126)

(1) Jizukigama

Nagano Jizukigama 1981
 1985 7 26 5 가
 , 가 700m, 500m,
 60m, 25ha 225)

1986 1987
 4.3 .



- Sliding mass
- Colluvium
- Highly weathered bedrocks (tuffaceous rocks)
- Weakly weathered bedrocks (tuffaceous rocks)
- - - Faults
- Slide plane

(2) Otoshi

1993 8 9 919mm 130m, 250m,
 30 40m, 1ha 가 Otoshi
 4.4 ²²⁵⁾
 2 가
 가

(3) Nagano

Nagano 75km 15.5km 46 가
²⁴⁶⁾ 46 15
 , 4.5
 4.7 4.1

4.5

新池

4.6 柳田池

15 20m

2

4.7

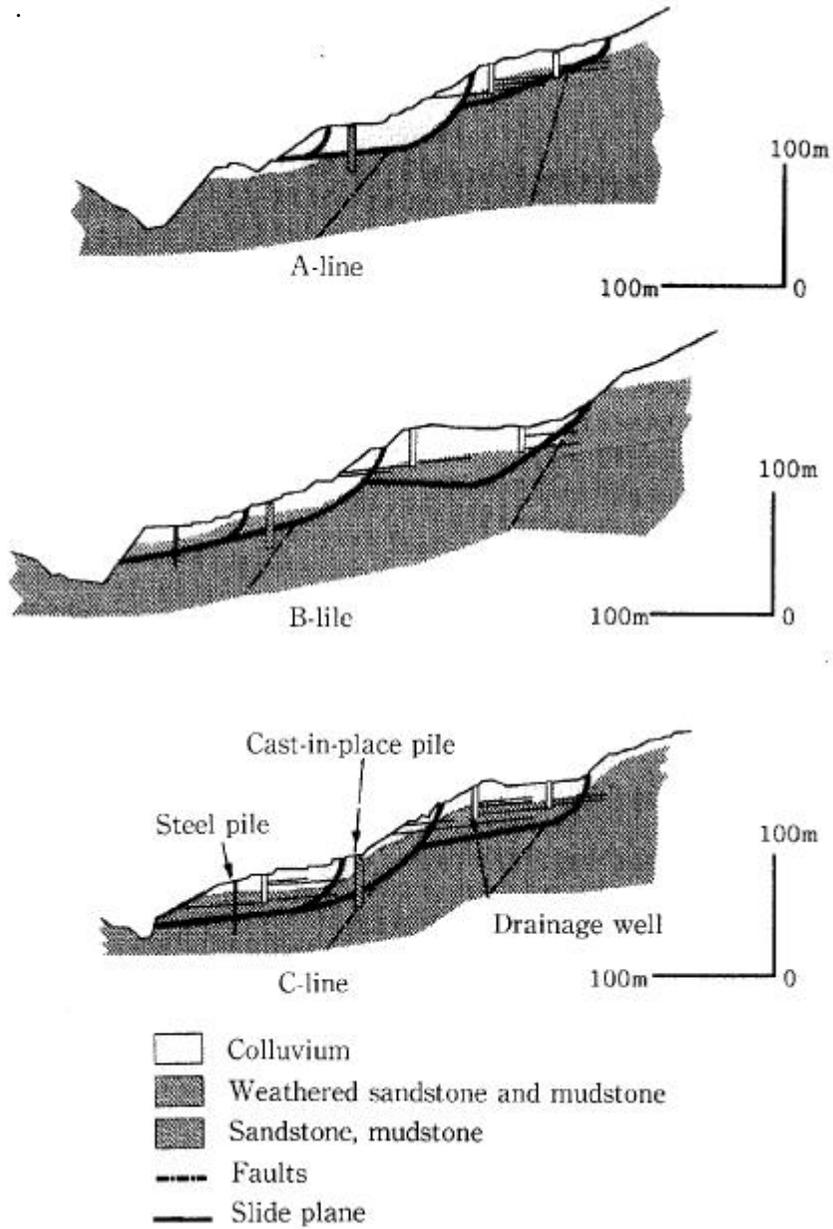
가

service

15m,

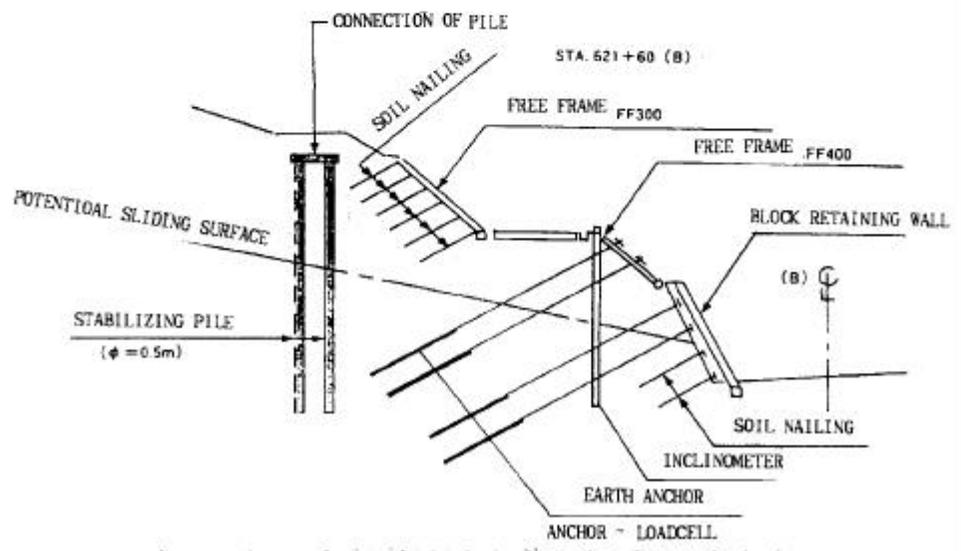
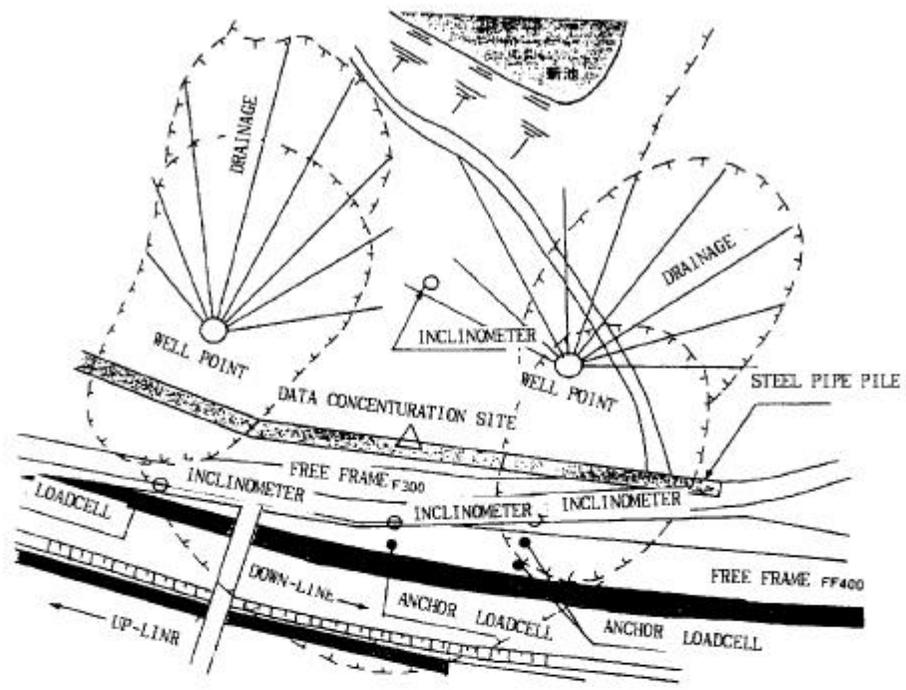
200m

2



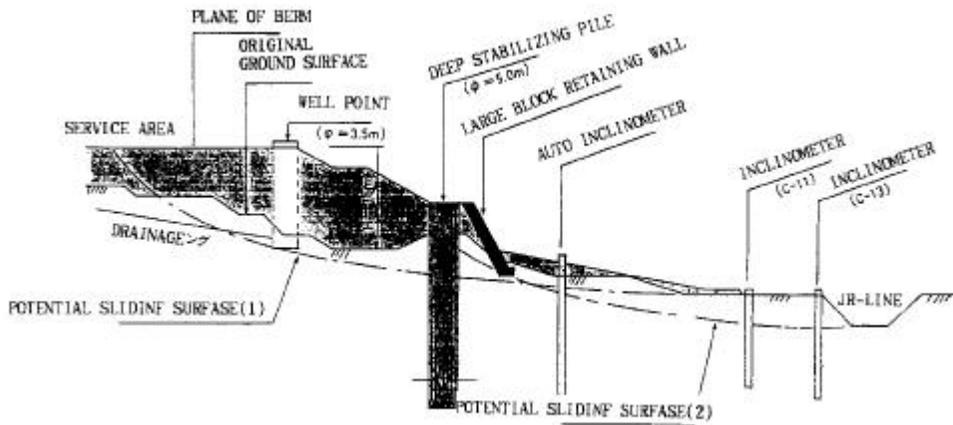
4.4 Otoshi

225)



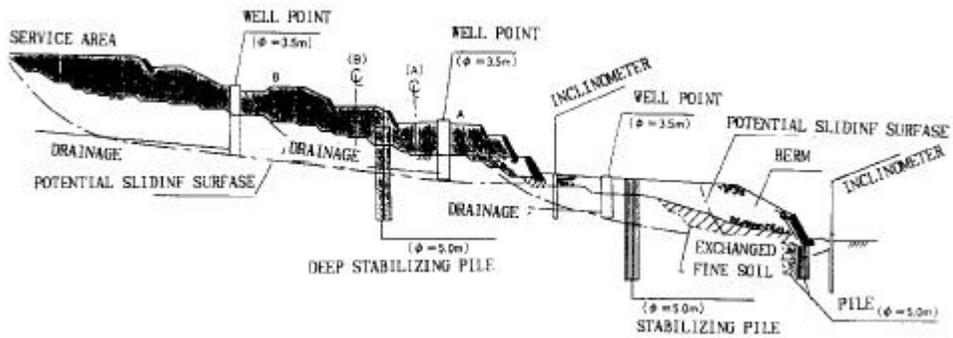
4.5 新池

246)



4.6 柳田池

246)



4.7 脱間

246)

4.1

246)

新池	100t/m		500 t31 3500 Boring 66 Ground Anchor 135 Rock Bolt 42	n=129 2,274m n=2 18.5m n=17 7554m n=240 4,936m n=364 1,820m	:5 :3 :2 :3 42 :35 Anchor :3 6
油田池	116t/m		Boring 5000 3500 66	n=8 250.5m n=3 38.5m n=23 760m	:1 :2 :2 :2 44
脱間() ()	128t/m 142t/m		Boring 5000 5000 3500 66	n=7 205m n=6 180m n=3 55m n=24 755m	:2 :1 :4 88

(4)

Nigatta

가

. 100

4.8

1971

1973

4

(126,255)

130mm,

40m,

가 20°

1971

1973

Moment

, S

S

8- 10

4.8

5

(S1, S2, S3, S4, S5)

Strain Guage

4

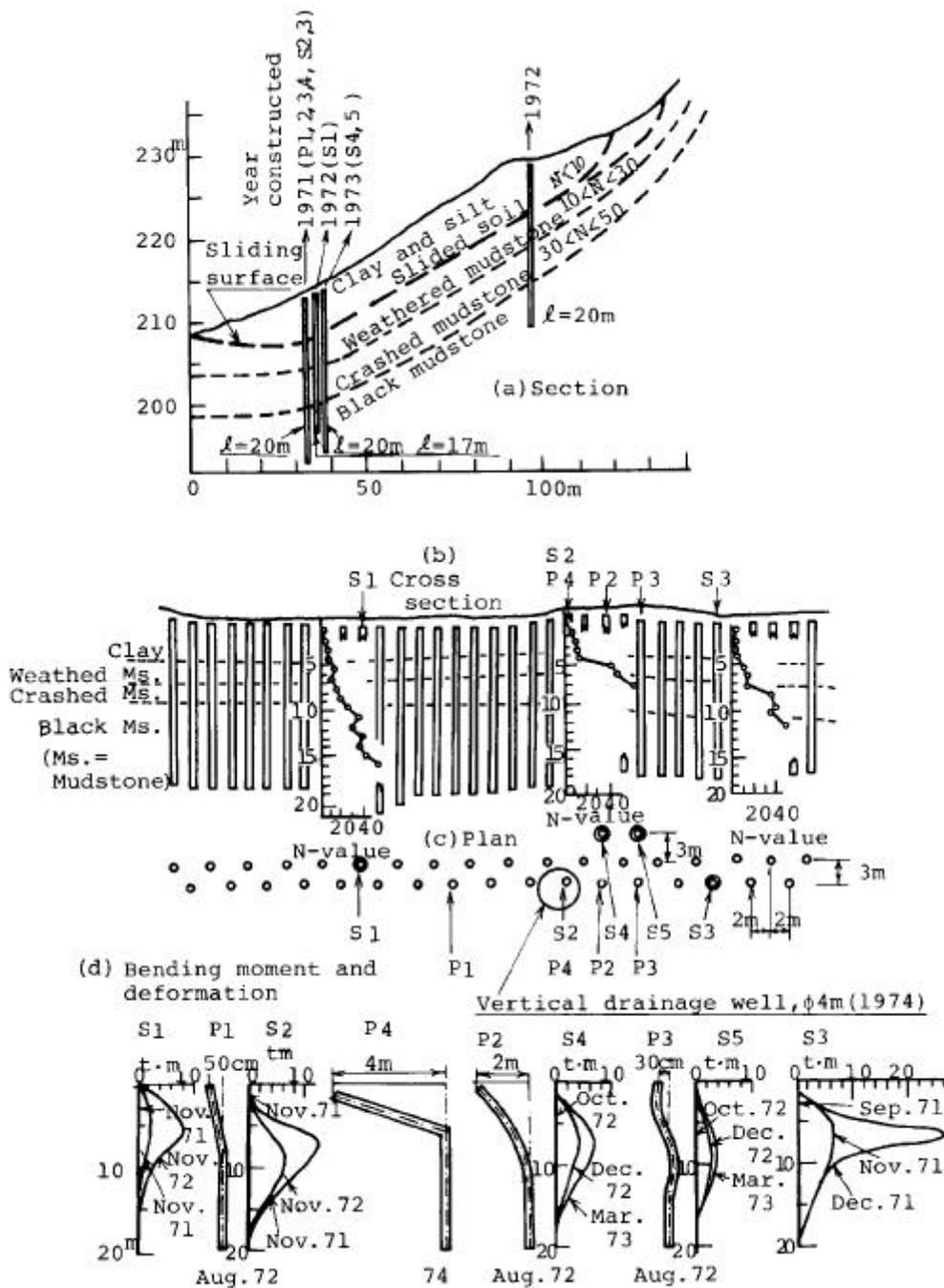
(P1 P4)

P1, P2, P3

1, P4

2

(126)



4.8 Higashi-tono

D_2/D_1 (6.2) 0.92

(6)

가

上教

, 東野名 , 仁上

4.2.2

(1) Ohio

Ohio 1982 15

Pier ⁸⁷⁾

4.9 4.10

457mm 762mm, 1.5 2.1m

6.1m 4.10(a)

Pier 762mm, 1.5m ,

4.10(b) 2.1m 457mm

Pile 2.1m, 61m

Pier 0.5 0.75

Soil

Pier

Pier

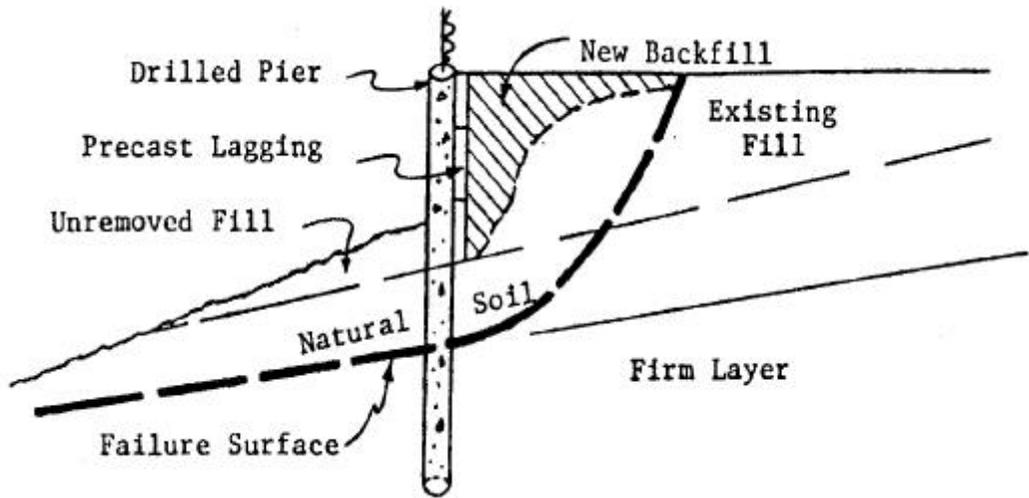
(,)

(4.10(c)).

Pier

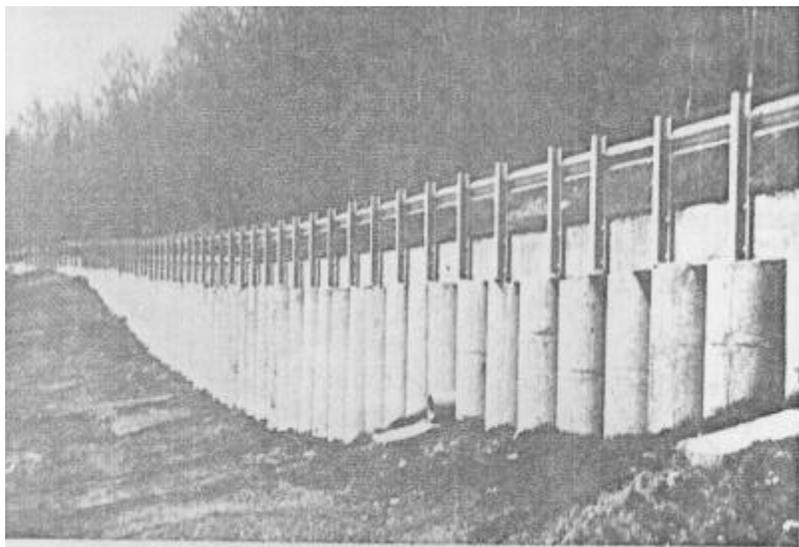
가 가

가



4.9 Pier

87)



4.10(a)

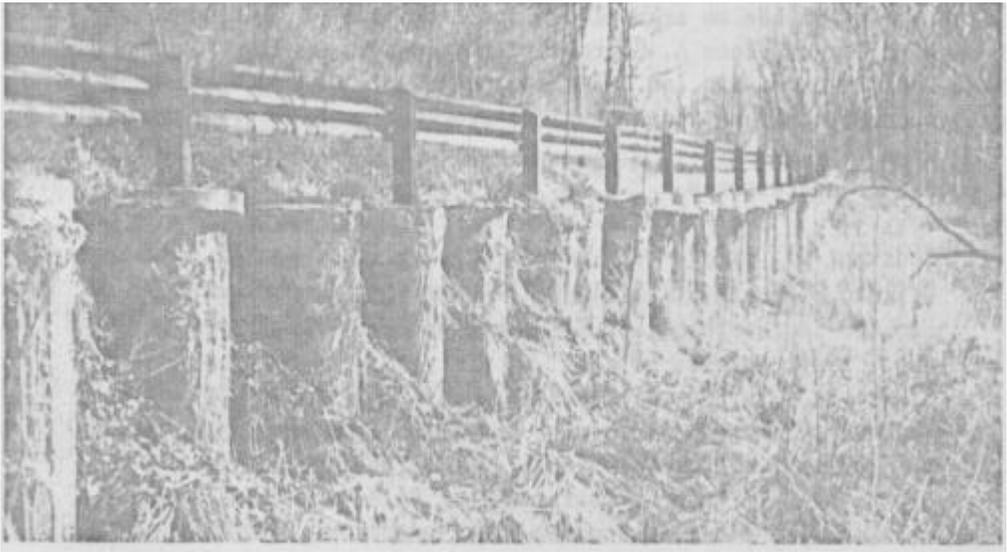
Pier

87)



4.10(b)

Pier 87)



4.10(c)

87)

(2) Oregon Eugene

Oregon Eugene

4.11 ¹⁰⁵⁾

가

35

5m

1/4

1.0

가

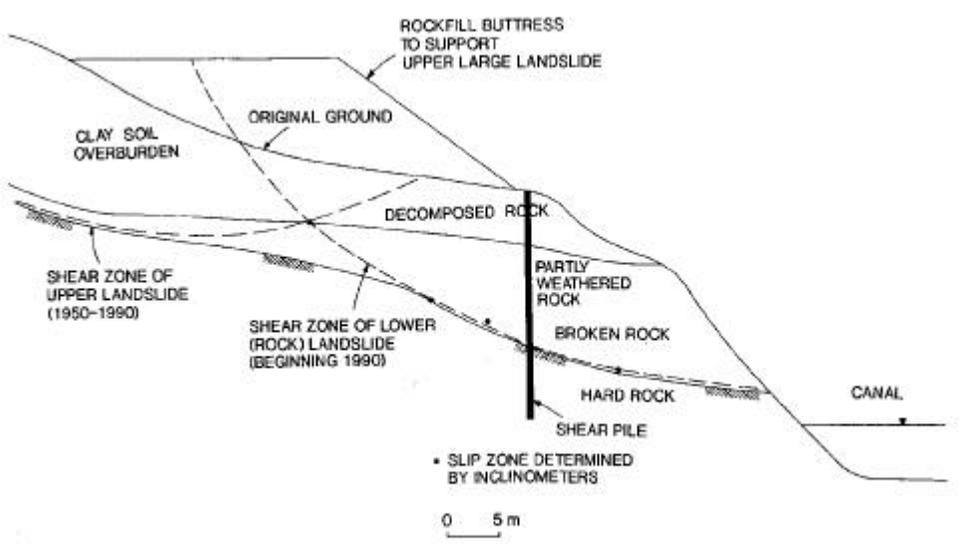
1.25

1991

600mm

(400mm x 400mm)

1.5m



4.11

105)

4.2.3

(1)

1980 6

1984 2

가

가

3

88)

4.12

4.13

40m,

30m

4 5m

London clay가

0.5m

가

600mm

10m

3 8

24

가

305mm

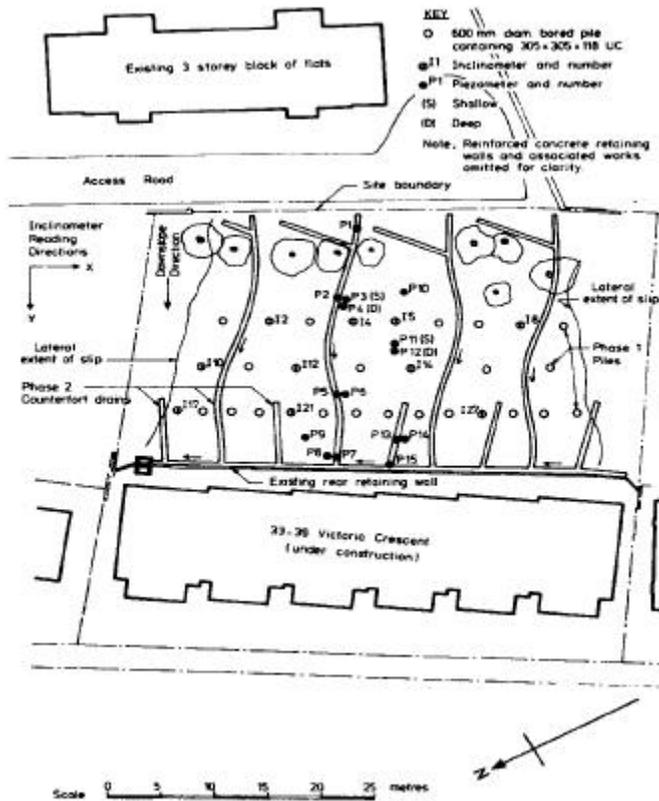
2.8m

가

2

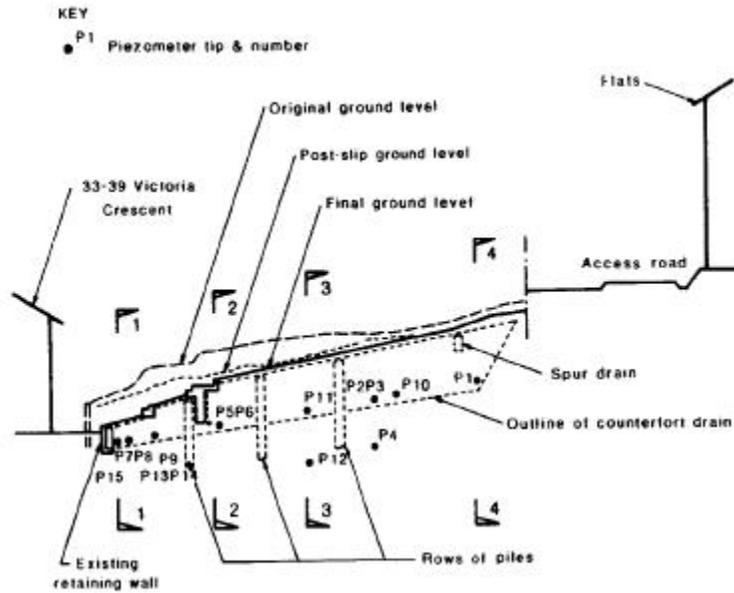
4.12

4.13



4.12

88)



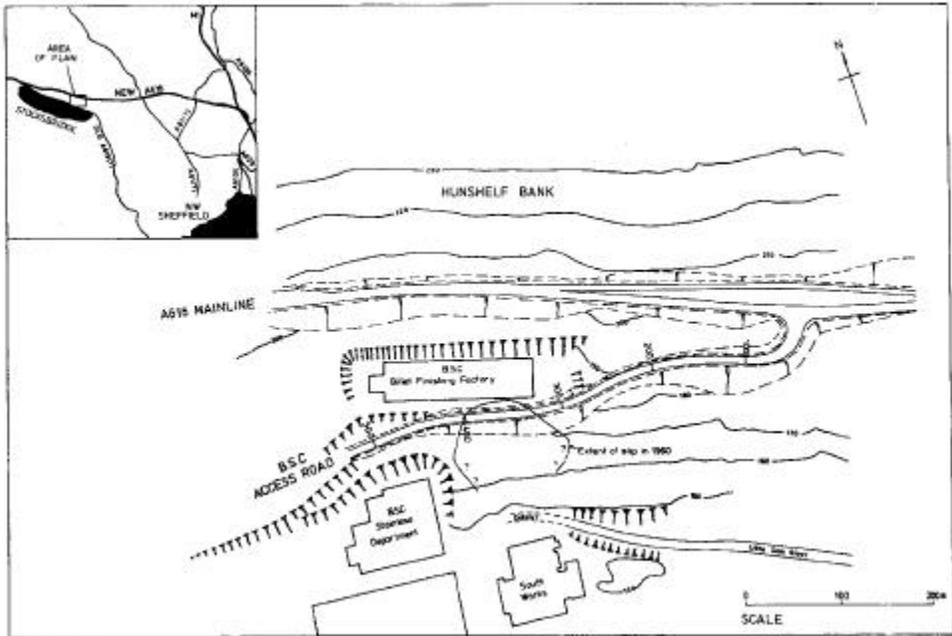
4.13

88)

(2) BSC

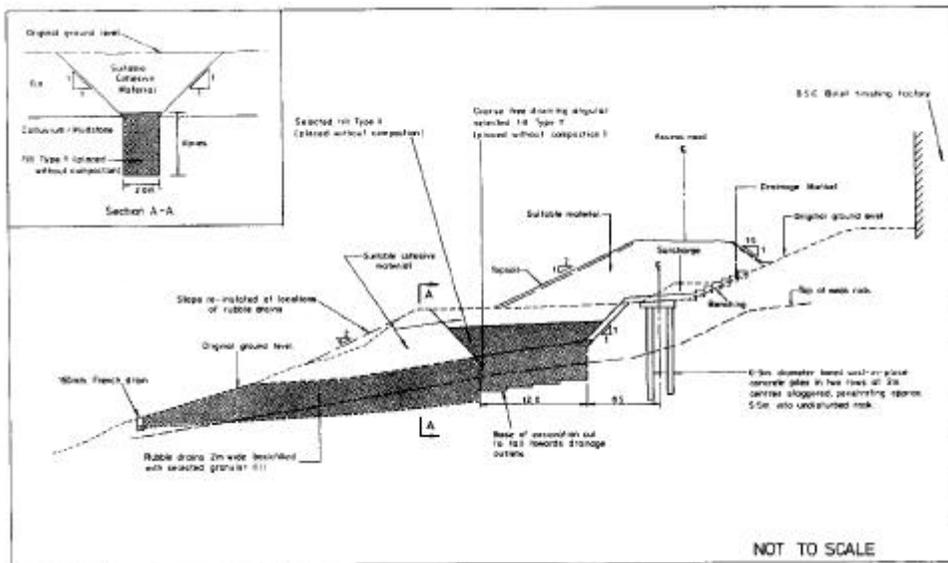
BSC

, 1960 3 .¹⁴⁶⁾ , 1960
130m, 80m 가
1961 5 9 1962 6m 가
1968 가 .(4.14)
. 4.15(a)
0.9m 10m 2m
5.5m 132 2
. 2
75% 25%
1.5m 4.15(b) .



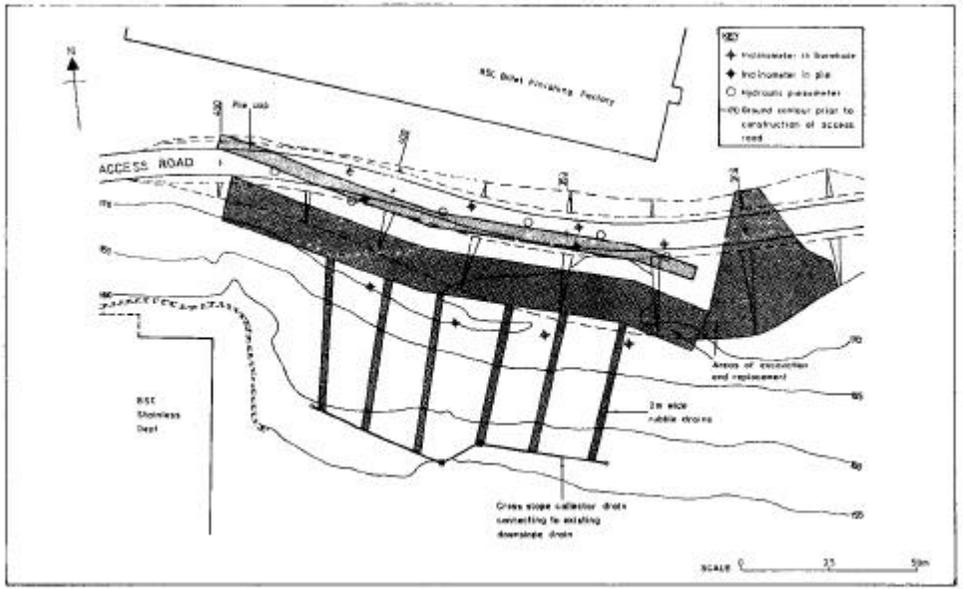
4.14

146)



4.15(a)

146)



4.15(b)

146)

4.3

1980

2 3가 가 3 6 , ,
6 3

4.3.1

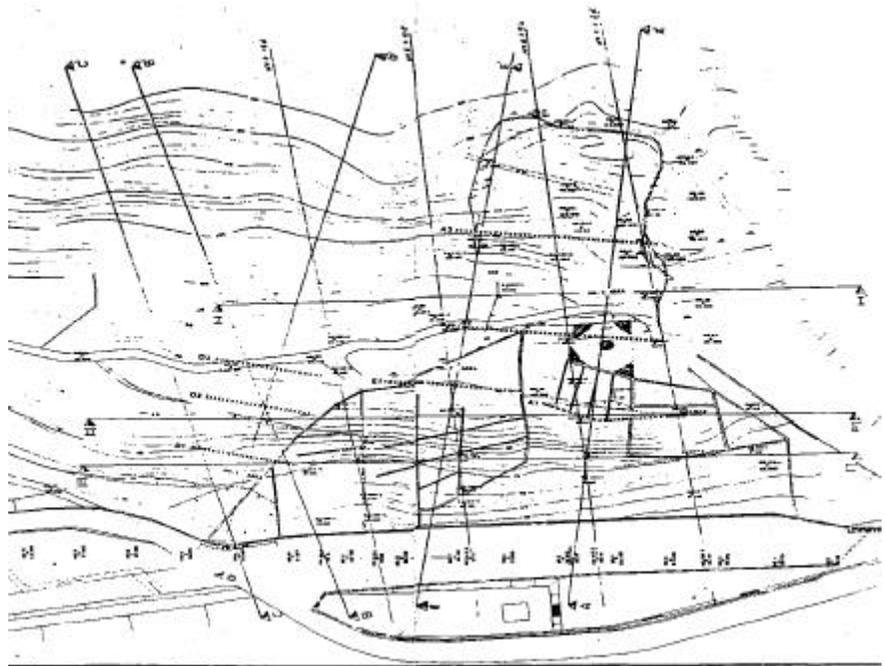
1984 6 - (1982.4.27 1985.12.27)
1 가 1987 2 가

7 4.16(a) 1987
 8 가 4.16(b) (d)

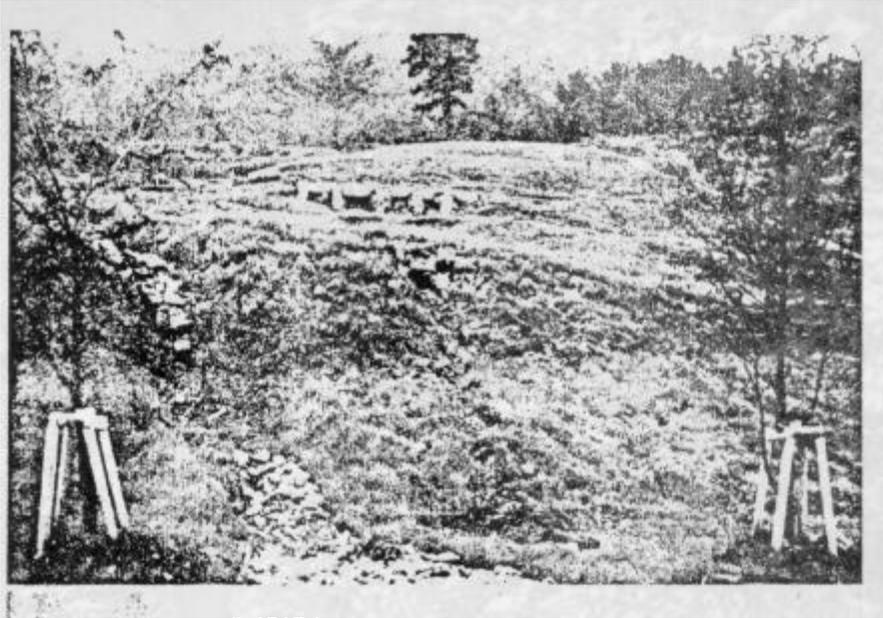
가 5 26.4m ,
 가

b) (d) 4.16(
 가 4.17 .

3 .(4.17) 1



4.16(a) 19)



4.10(D)

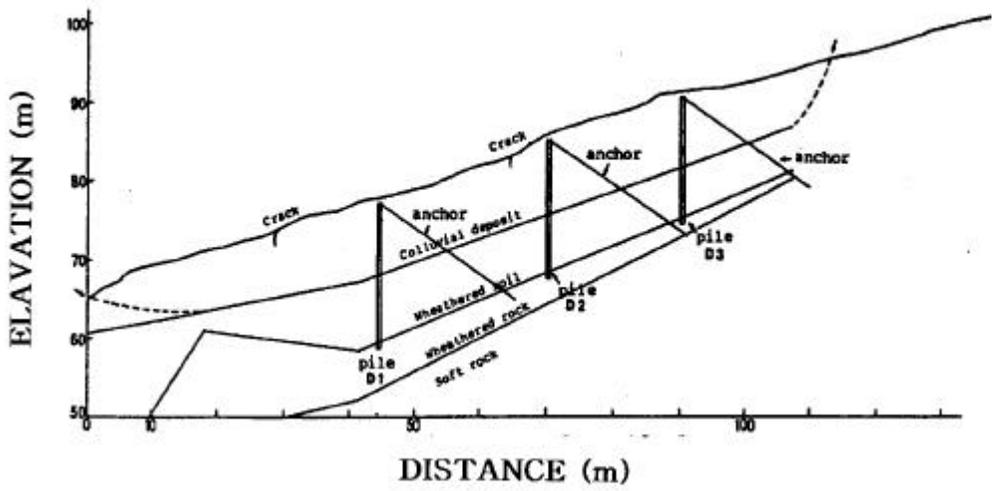


4.16(c)

19)



4.16(d) H-pile 19)

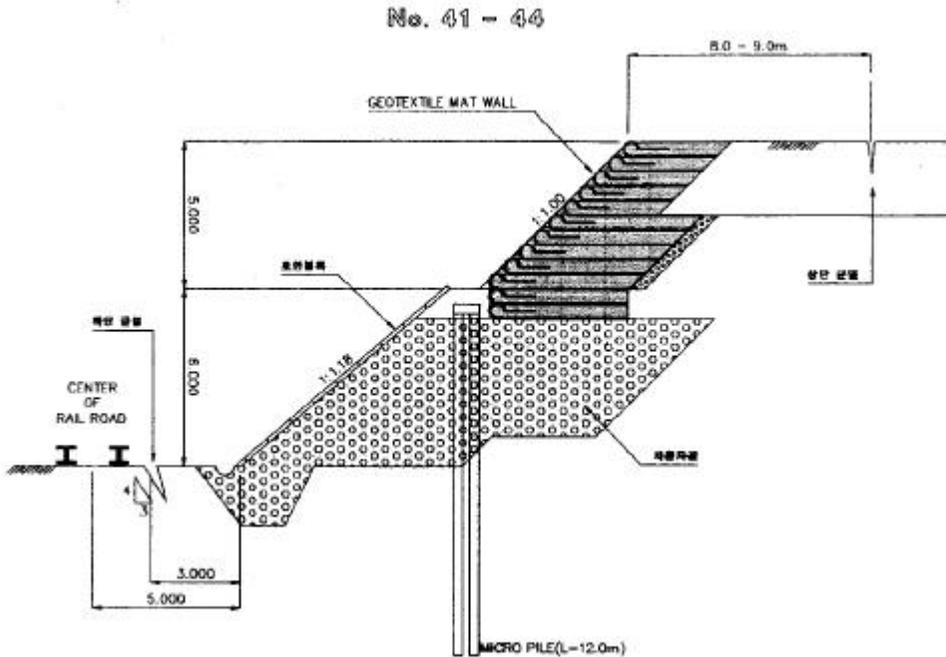


4.17 19)

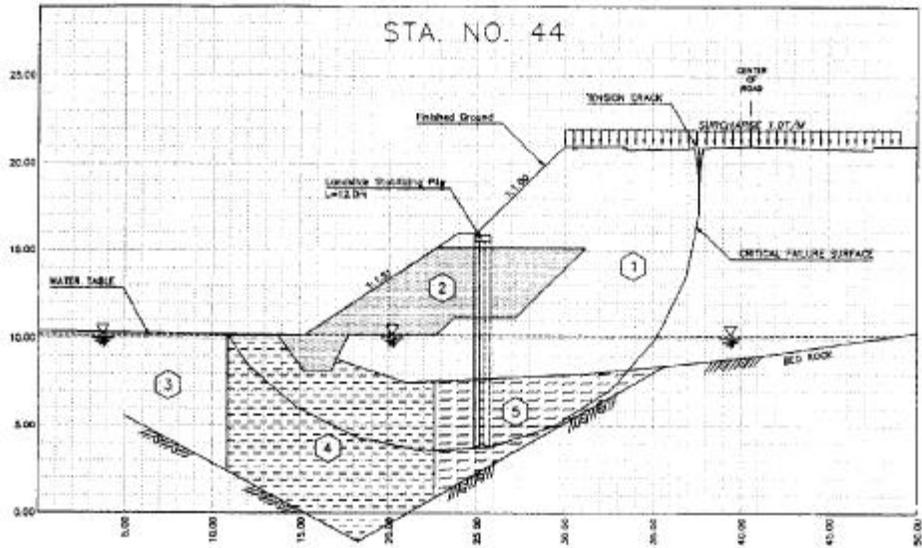
4.3.2

4.18 Geotextile ,
 (Micro-pile)³⁾
 (Micro-pile)
 Geotextile 1 2 60m
 가 .(4.19) ,
 4.19 . 가 15.4m
 12.0m . 가

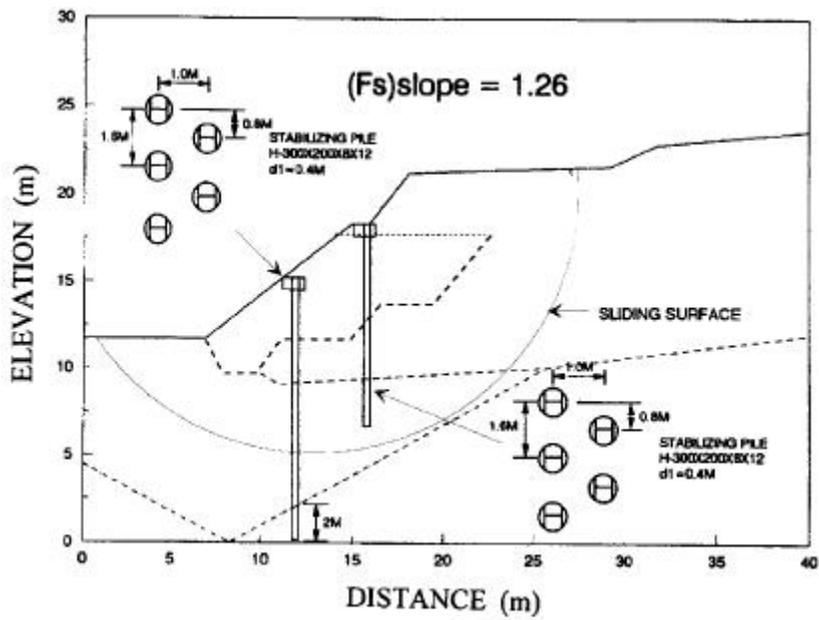
(Micro-pile) 2m
 Cement grouting
 .(4.20)



4.18 (No.41 44)³⁾



4.19



4.20

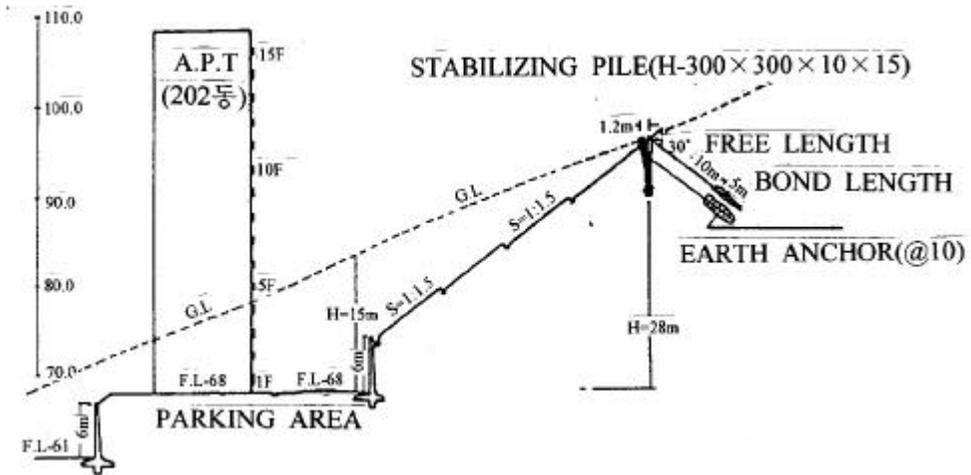
(No.41 44)

4.3.3

6

30)

				4.21	
	1991	8	22	23	505.5mm
	37.7mm				439mm
	1.2m				H
	(H-300 × 300 × 10 × 15)	0.8m	1.0m		20m
	가				가



4.21 201

202

30.41)

