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ไพบูลย์ วิภูษณะ "การเปรียบเทียบข้อมูลการยุบตัวของดินเหนียวอ่อนดอนเมือง ที่ได้จากการทดสอบไตรแอกเซียล และ คอนโซลิเดชั่น" วิทยานิพนธ์ ปริญญามหาบัณฑิต ภาควิชาวิศวกรรมโยธา บัณฑิตวิทยาลัย จุฬาลงกรณมหาวิทยาลัย 2527

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

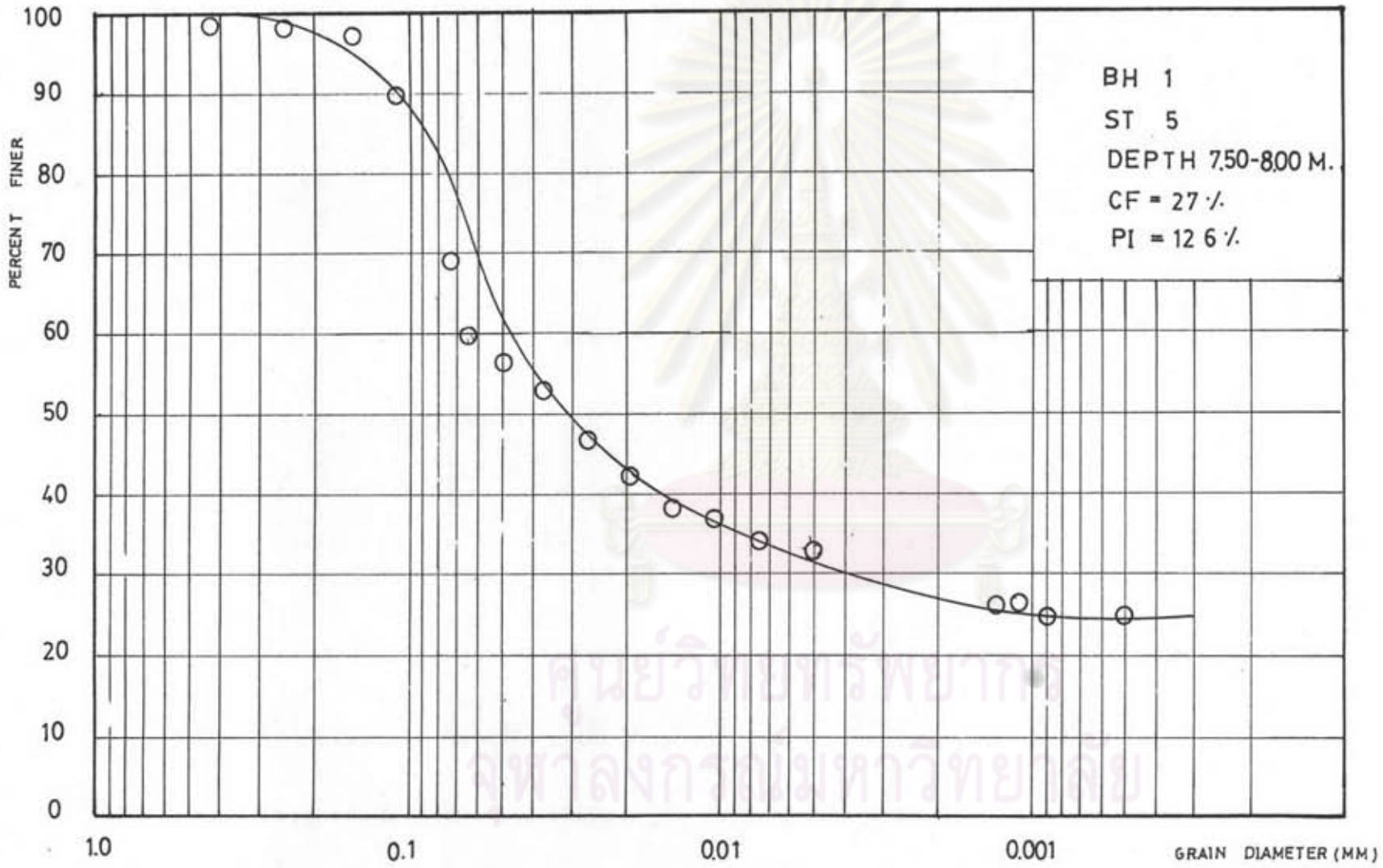
ภาคผนวก

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

ภาคผนวก ก.

- ผลการทดสอบ HYDROMETER ANALYSIS
- ผลการทดสอบ CONSOLIDATION

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



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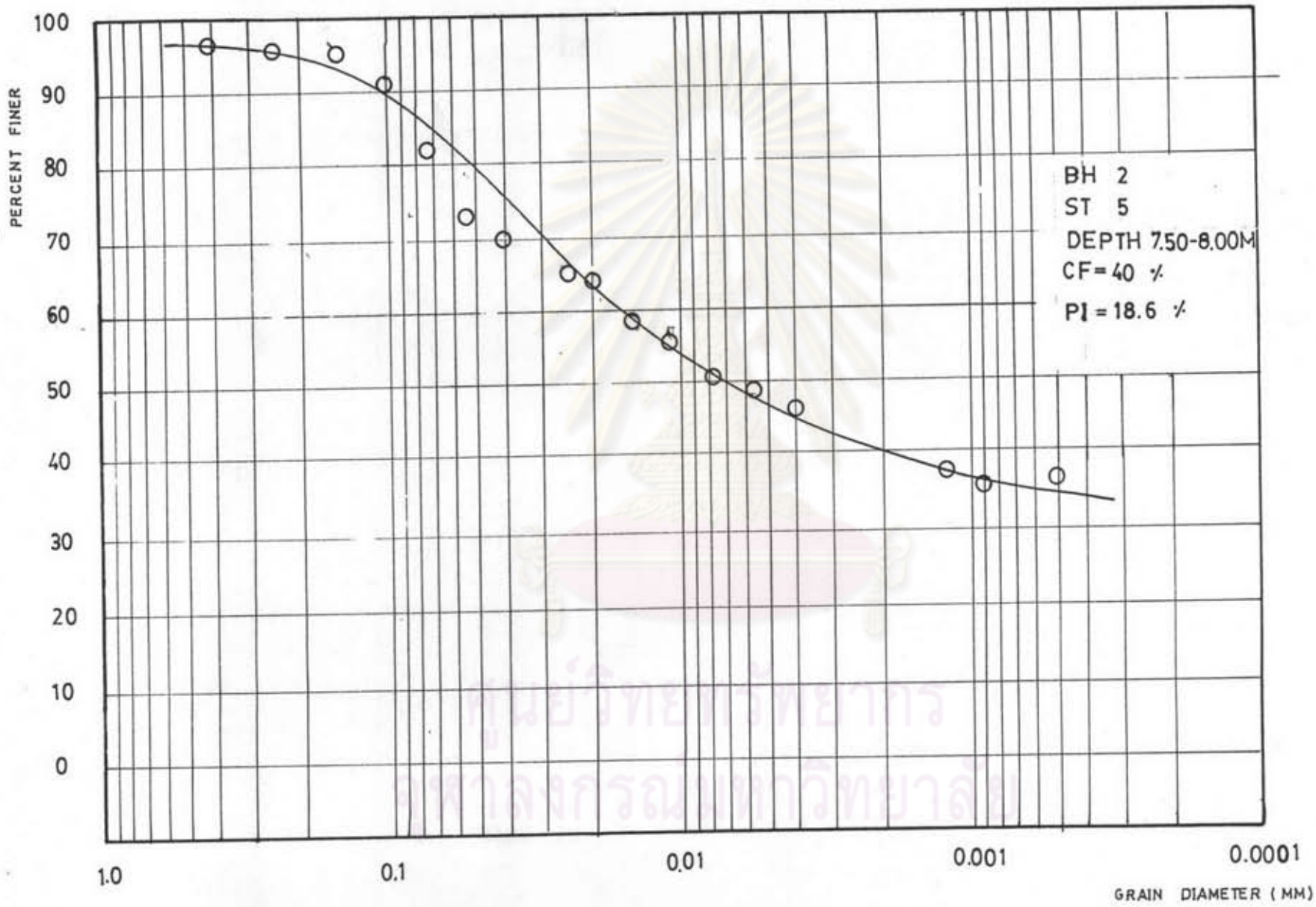

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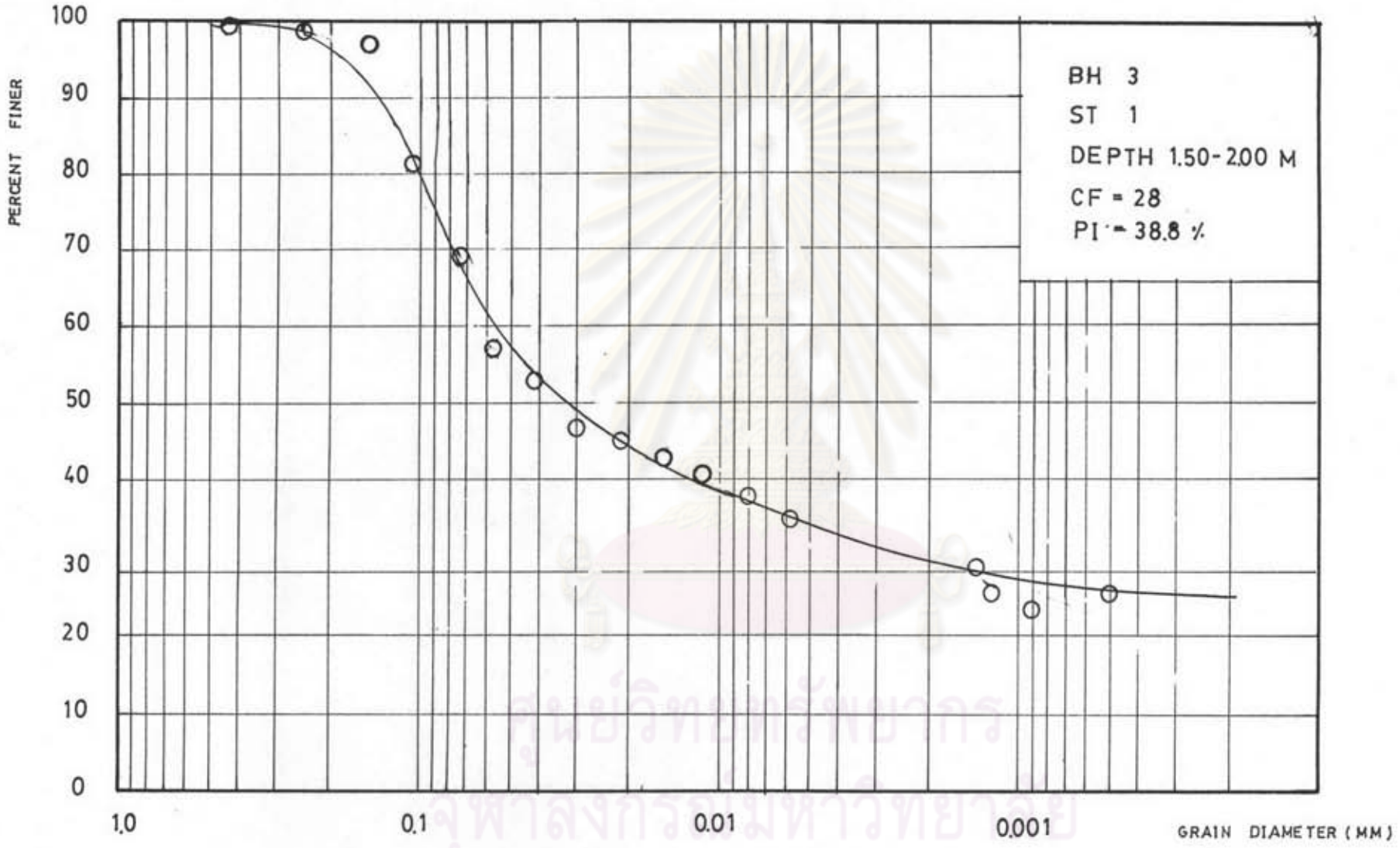

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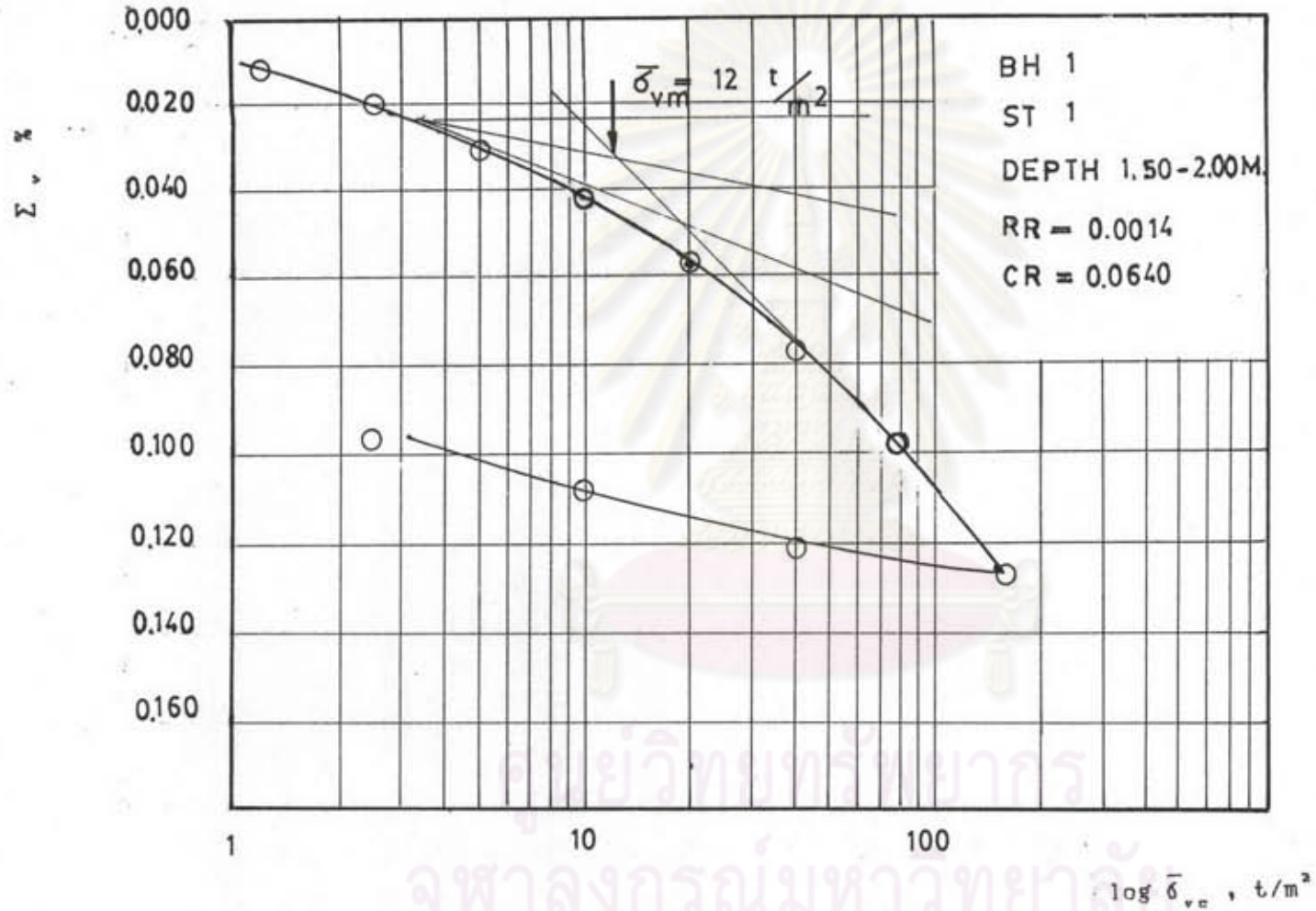
จุฬาลงกรณ์มหาวิทยาลัย



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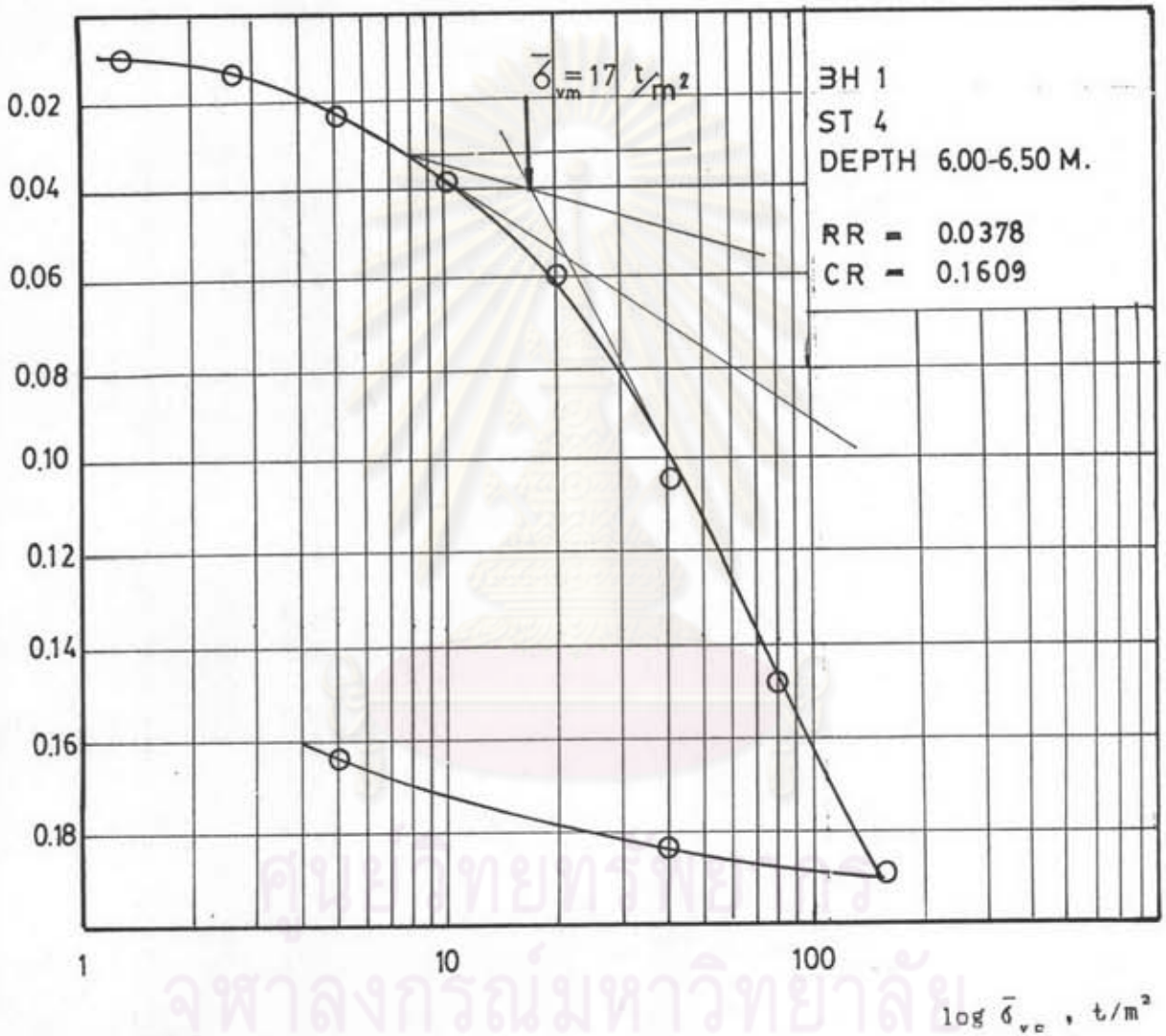

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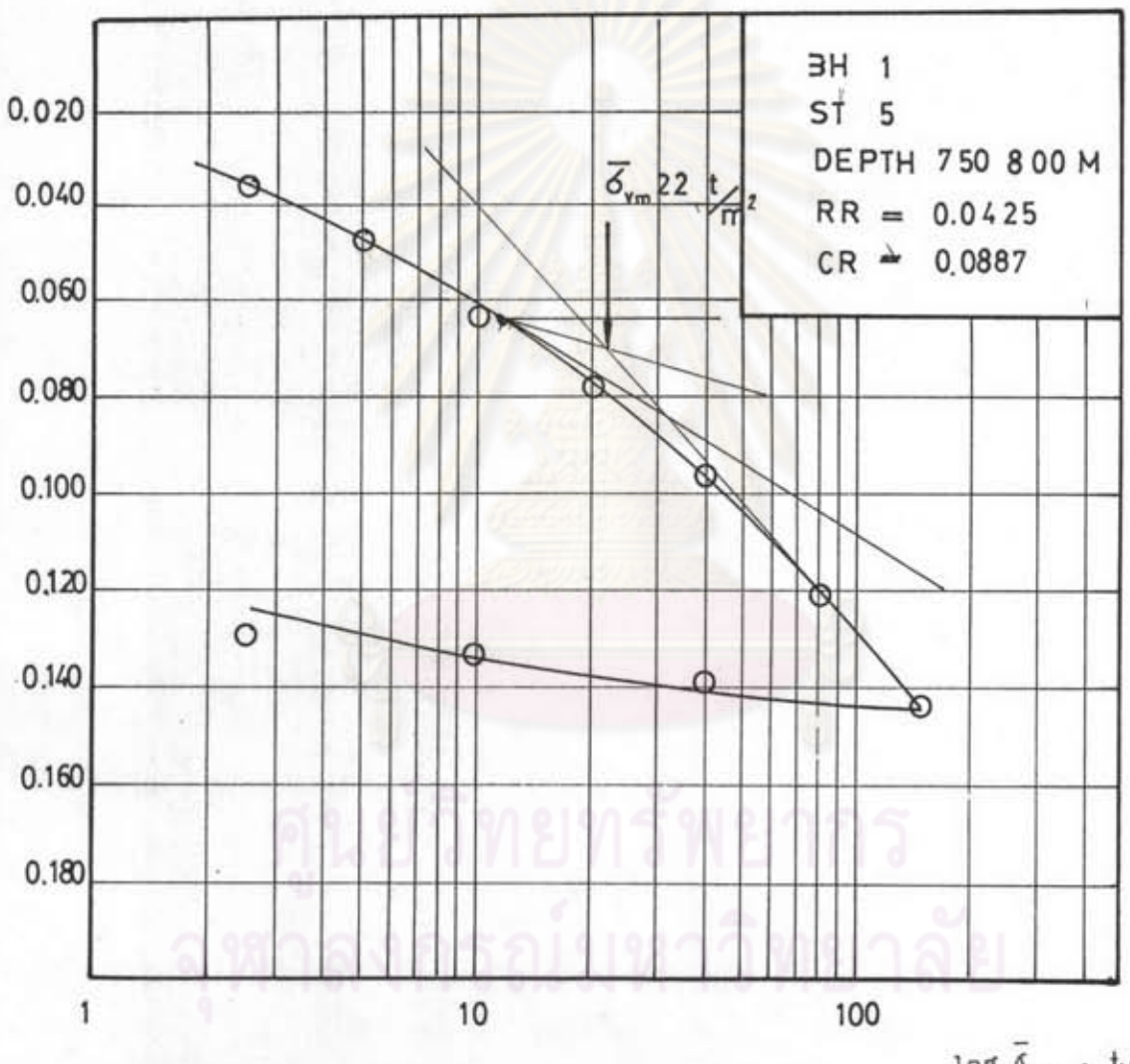
จุฬาลงกรณ์มหาวิทยาลัย



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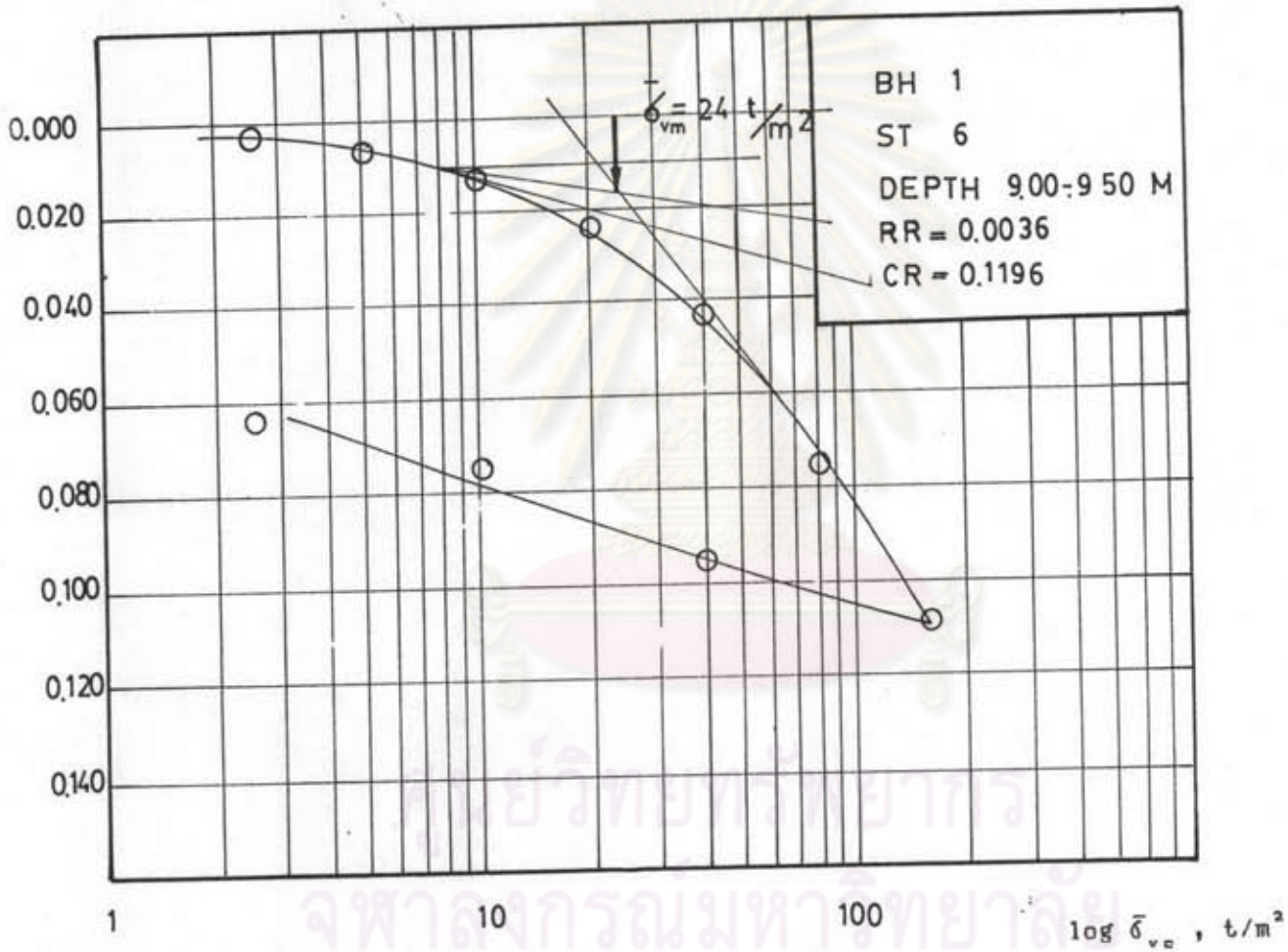
จุฬาลงกรณ์มหาวิทยาลัย



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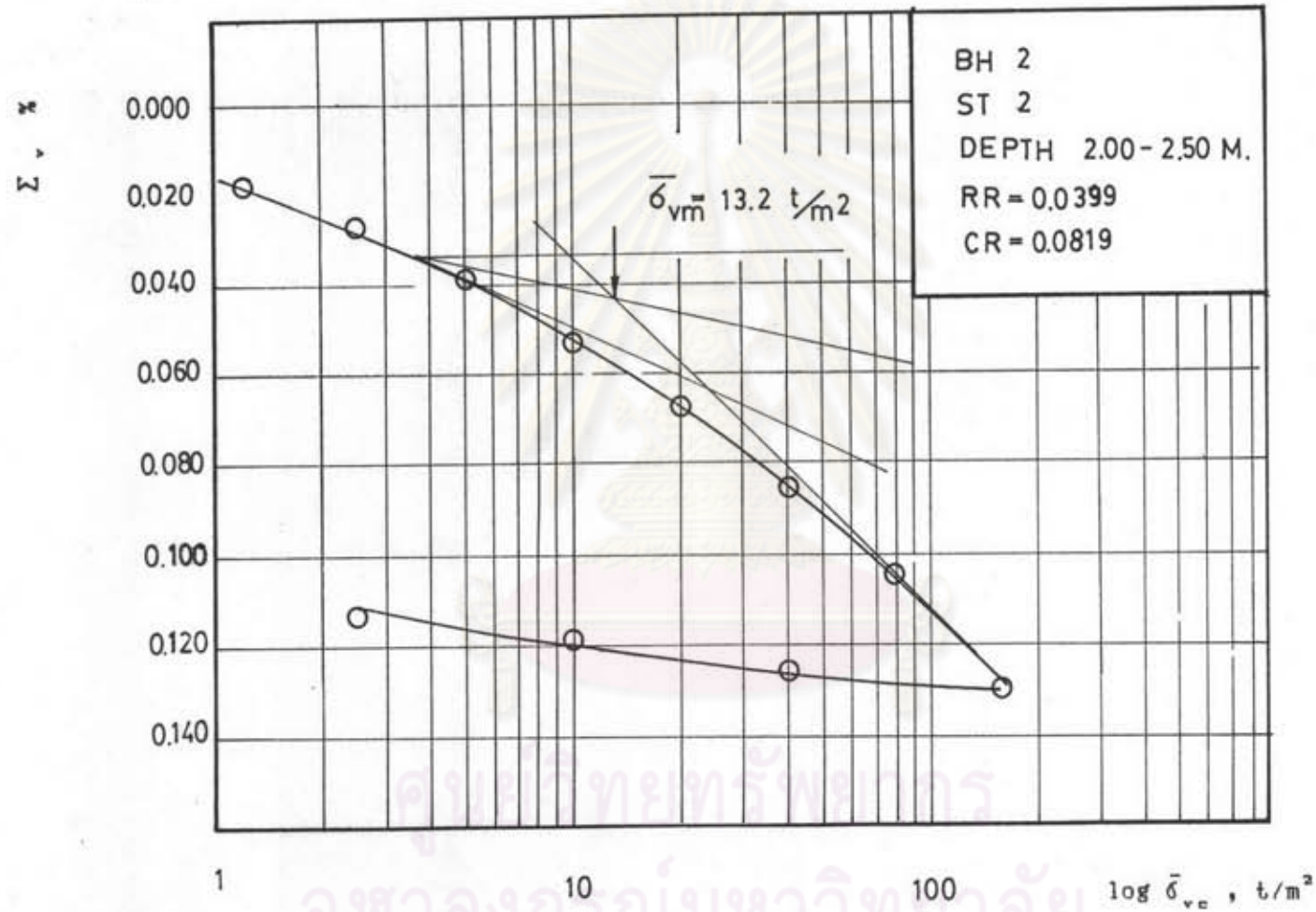
จุฬาลงกรณ์มหาวิทยาลัย



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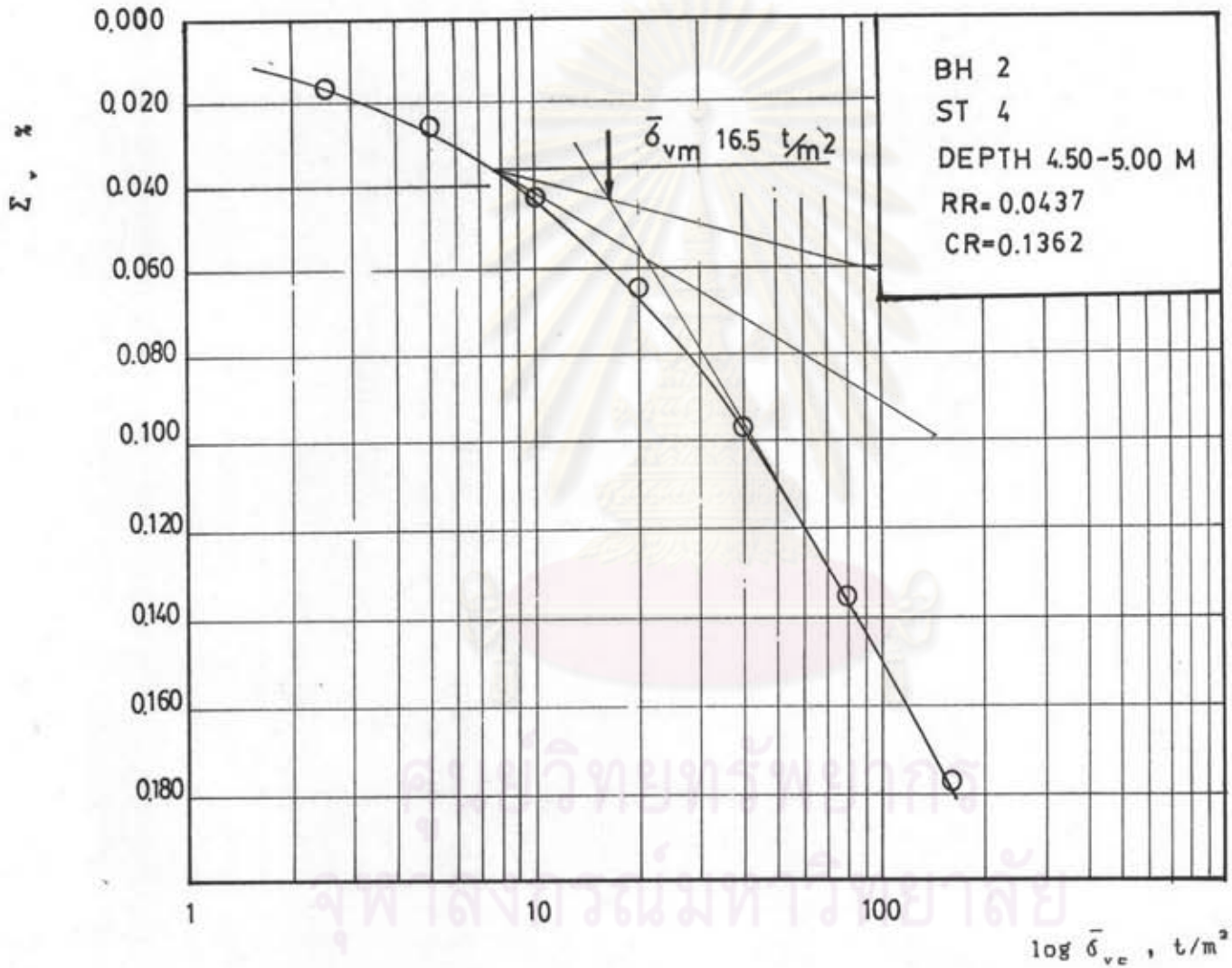
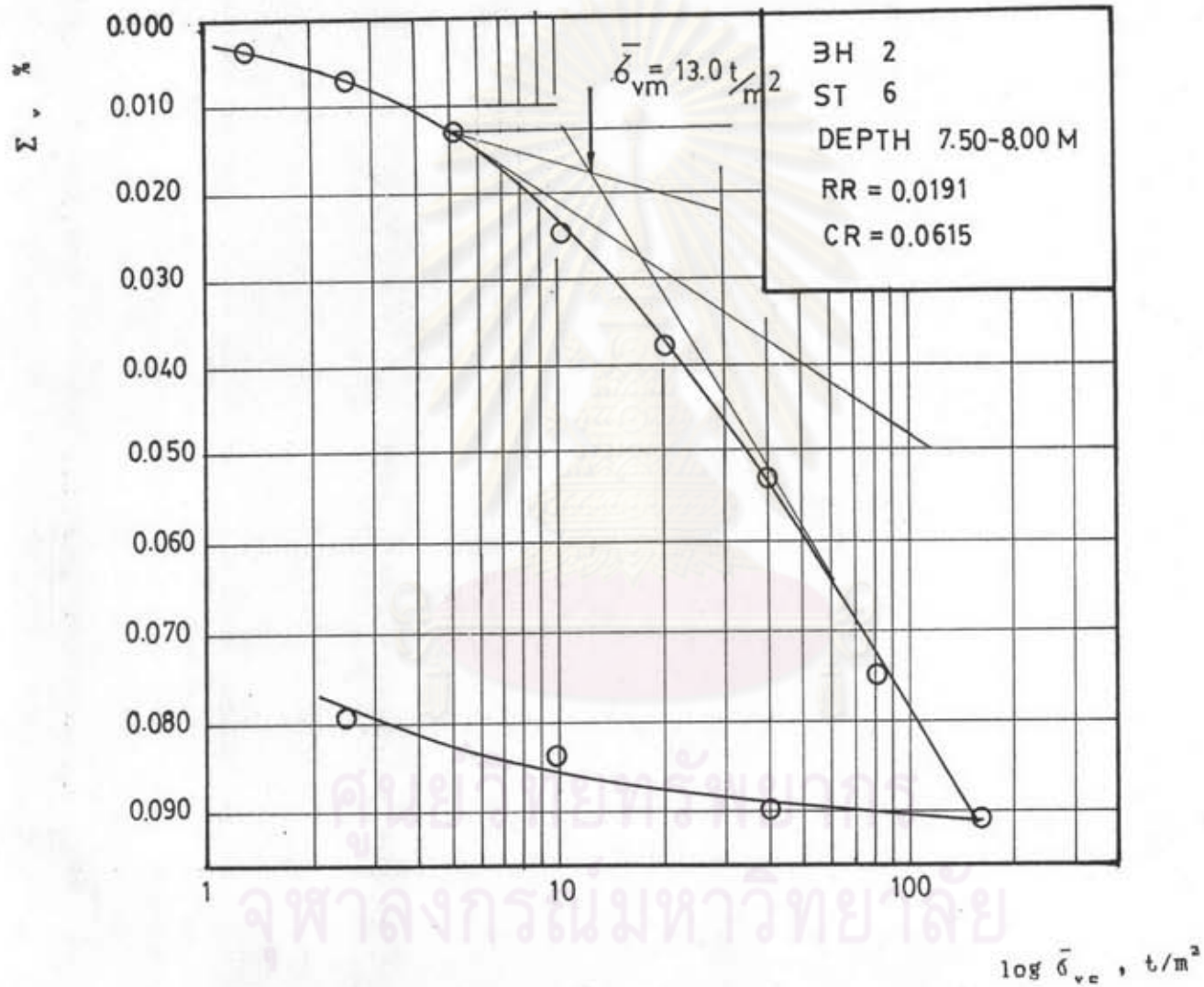
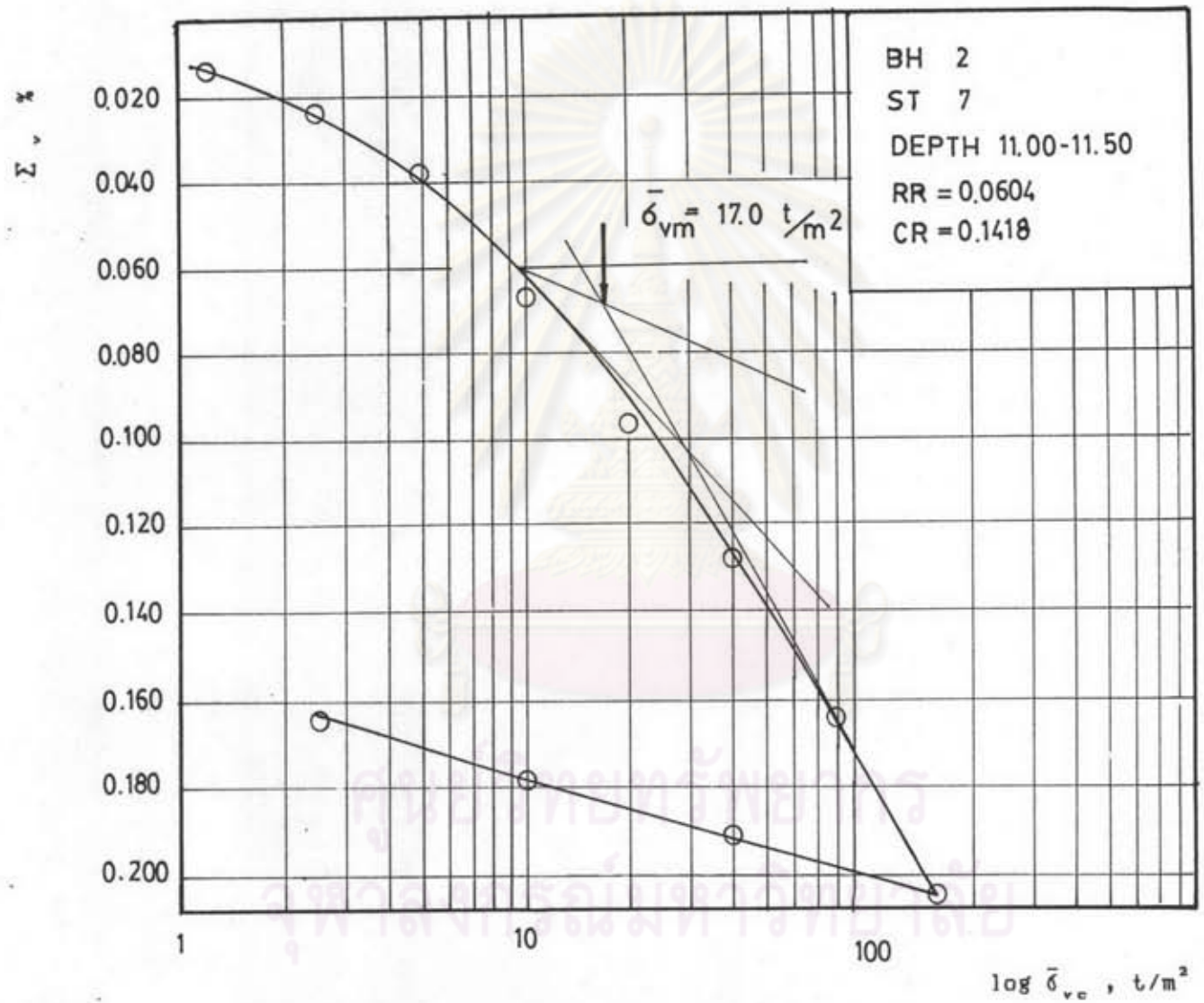
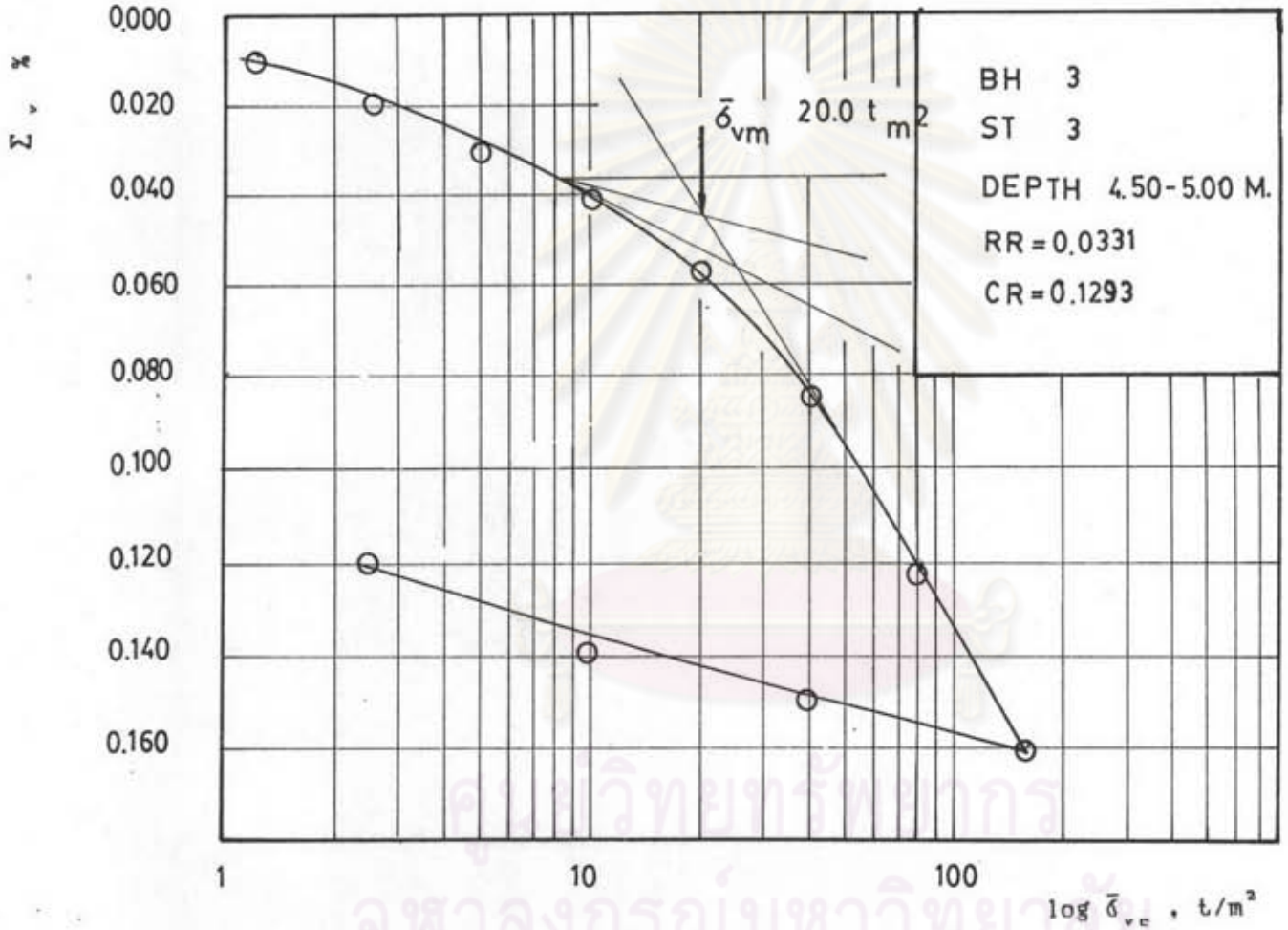
จุฬาลงกรณ์มหาวิทยาลัย

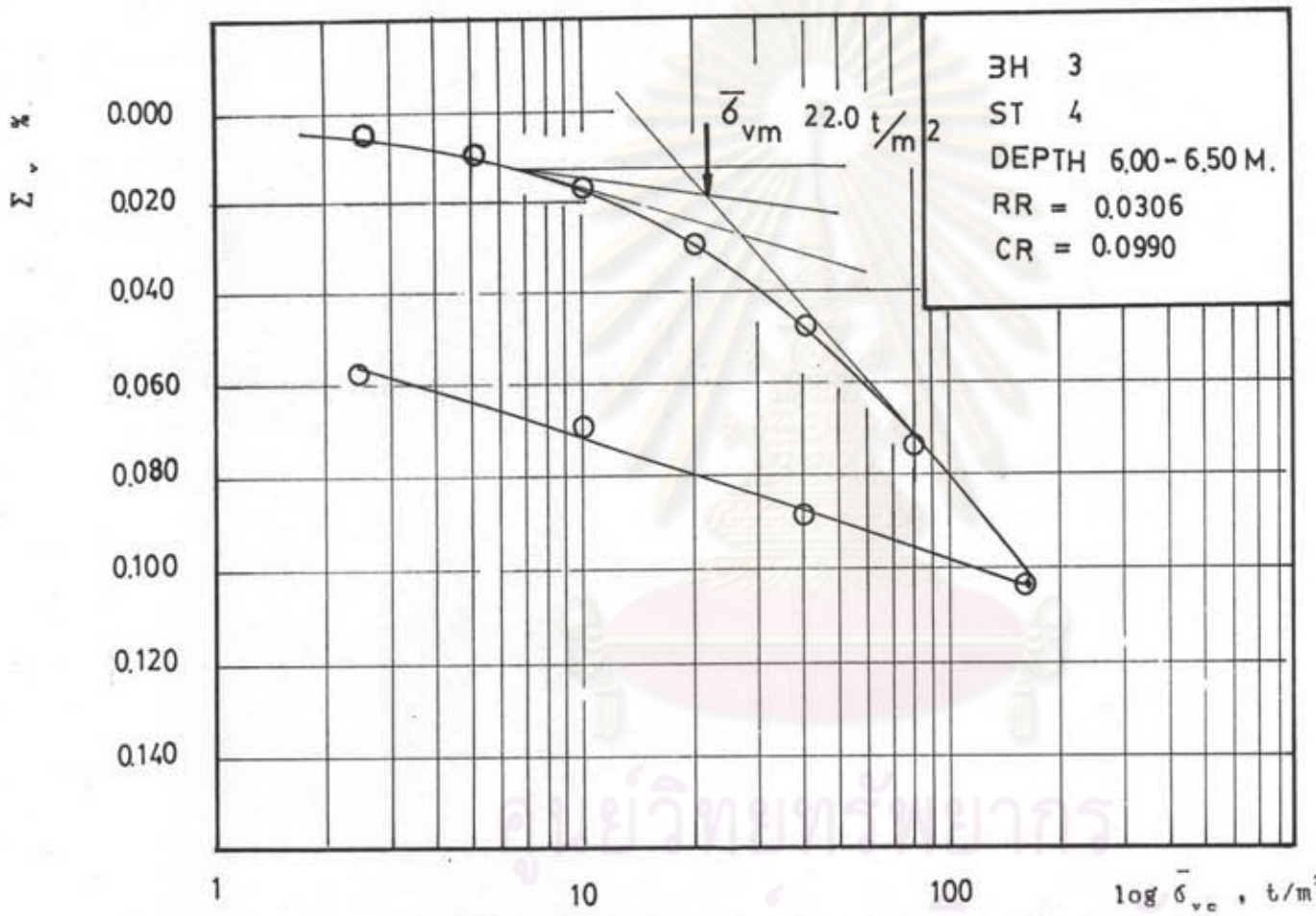

0.000
0.020
0.040
0.060
0.080
0.100
0.120
0.140
0.160
0.180
ε , %
$\bar{\sigma}_{vm}$ 16.5 t/m2
BH 2
ST 4
DEPTH 4.50-5.00 M
RR= 0.0437
CR=0.1362
1
10
100
log $\bar{\sigma}_{vc}$, t/m²


0.000
0.010
0.020
0.030
0.040
0.050
0.060
0.070
0.080
0.090
Σ , %
$\bar{\sigma}_{vm}$ = 13.0 t/m²
BH 2
ST 6
DEPTH 7.50-8.00 M
RR = 0.0191
CR = 0.0615
1
10
100
log $\bar{\sigma}_{vc}$, t/m²

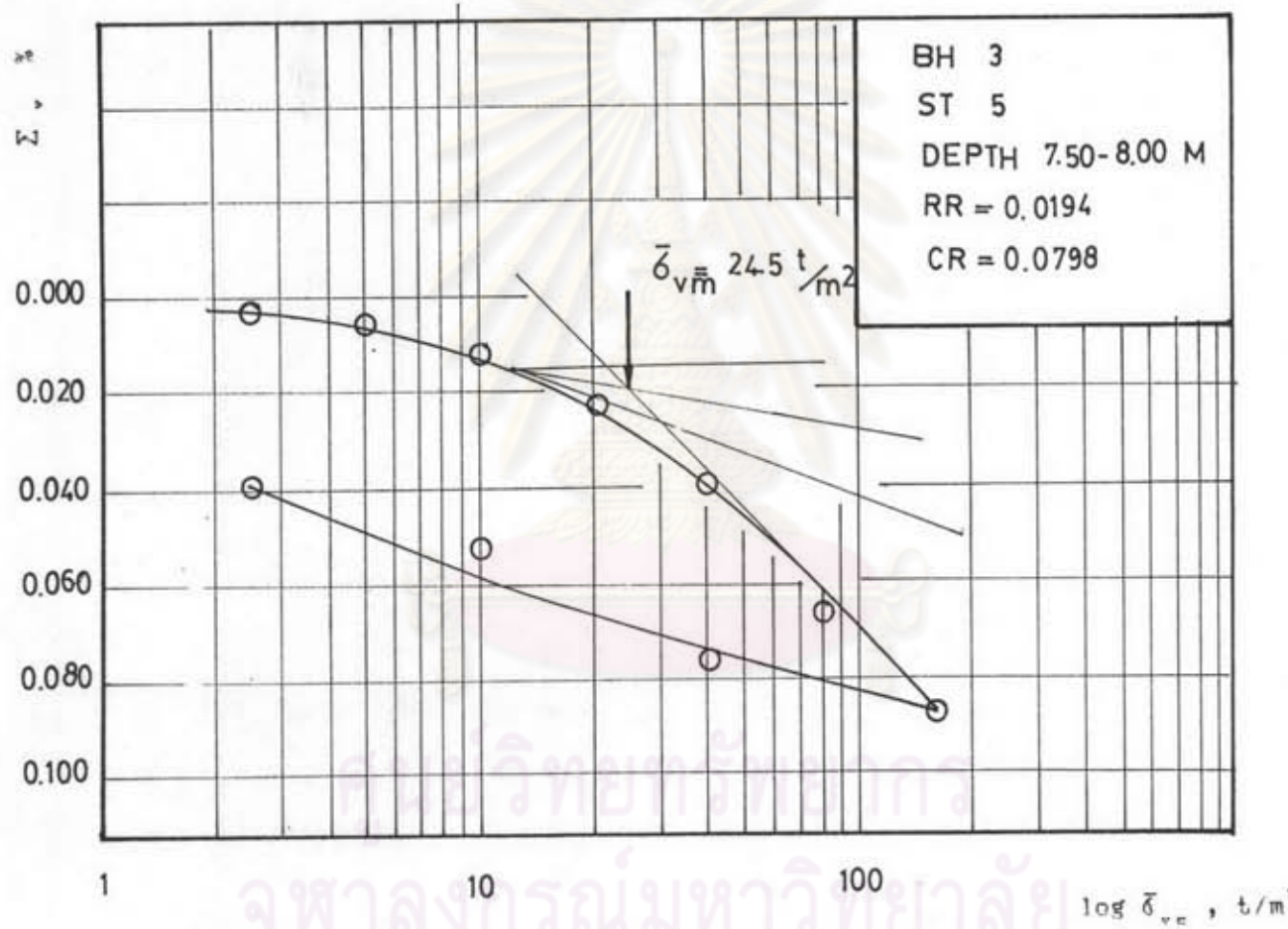

BH 2
ST 7
DEPTH 11.00-11.50
RR = 0.0604
CR = 0.1418
$\bar{\sigma}_{vm}$ = 17.0 t/m²
ε_v , %
0.020
0.040
0.060
0.080
0.100
0.120
0.140
0.160
0.180
0.200
1
10
100
log $\bar{\sigma}_{vc}$, t/m²



ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

ภาคผนวก ข.

ระดับน้ำแม่น้ำป่าสัก ปี 2528-2532

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

TABULATION OF DAILY OF PASAK RIVER
AT BAN SALA LOY THARUA
AYUTTAYA
DURING 1985-1986 Min LEVEL

DATE	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
1								3.25	1.95		0.46	0.78
2								3.02	1.98		0.50	0.71
3							3.80	2.90	1.98		0.51	0.66
4							3.60	2.61	2.24		0.24	0.68
5							3.22	2.44	2.08		0.27	0.34
6							2.88	2.00	2.00		-0.08	-0.26
7							2.40	2.00	1.80		-0.02	0.17
8							1.96	1.90	1.76		0.06	0.10
9							1.60	1.95	1.72		0.20	0.20
10							1.40	1.88	1.68		0.54	0.23
11							1.25	1.78	1.64		0.30	0.28
12							1.20	1.68	1.70		0.55	0.24
13							1.30	1.60	1.75		0.56	-0.34
14							1.50	1.52	1.70		0.53	0.60
15							1.62	1.46	1.80		0.54	0.56
16							1.68	1.40	1.80		0.55	0.67
17							1.85	1.37	1.70		0.57	0.72
18							2.60	1.28	1.58		0.06	0.79
19							2.82	1.30	1.50		0.00	0.40
20							3.00	1.50	1.35		-0.12	0.30
21							3.10	1.70	1.20		-0.25	0.08
22							3.50	1.82	1.00		-0.22	-0.14
23							4.25	1.85	0.96		0.00	-0.18
24								1.80	0.85		0.08	-0.22
25								1.50	0.80		0.30	-0.07
26								1.42	0.50		0.69	0.20
27								1.45	0.40		0.60	0.36
28							3.80	1.50	0.38		0.61	0.54
29							3.70	1.58	0.30			0.65
30							3.52	1.80	0.20			0.55
31							3.30	-2.50	-0.20			0.54
						max	4.25	3.25	2.24		0.69	0.79
						min	1.20	-2.50	-0.20		-0.25	-0.34

มีการเปลี่ยนแปลงไม้ระดับน้ำวันที่ 26 มกราคม 2529

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

TABULATION OF DAILY OF PASAK RIVER
AT BAN SALA LOY THARUA
AYUTTAYA
DURING 1986-1987 Min LEVEL

DATE	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
1	0.58	0.60	0.95	0.60	0.45	1.40	0.30	0.36	-0.0	0.84	0.27	-0.4
2	0.26	0.39	0.82	0.59	0.02	1.47	0.70	0.36	0.18	0.83	0.30	0.15
3	0.36	0.18	0.80	0.40	0.16	1.50	0.70	0.32	-0.0	0.88	0.10	0.30
4	0.14	0.37	0.75	0.30	-0.1	1.45	0.88	0.65	0.26	0.65	0.16	0.40
5	-0.0	-0.0	0.70	0.26	0.20	1.13	1.34	0.40	0.38	0.67	-0.1	0.42
6	-0.2	-0.1	0.62	0.33	0.10	1.07	1.32	0.36	0.55	0.67	0.39	0.43
7	-0.1	0.28	0.65	0.53	0.25	1.37	1.07	0.26	0.55	0.60	0.38	0.40
8	0.16	0.54	0.55	0.59	0.70	1.68	0.62	0.19	0.55	0.51	0.08	0.50
9	0.25	0.90	0.75	0.37	1.10	2.08	0.73	0.10	0.85	0.30	0.12	0.40
10	0.28	1.47	0.70	0.30	1.39	2.52	0.68	0.38	0.85	0.38	-0.0	0.12
11	0.37	1.56	0.60	0.25	2.44	3.75		-0.1	1.18	0.36	-0.1	-0.1
12	0.41	1.50	0.68	0.00	2.53	4.18		0.02	1.54	0.35	-0.2	-0.0
13	0.49	1.94	0.68	0.30	2.51	4.06		0.00	1.80	0.20	-0.3	-0.1
14	0.43	2.12	0.66	0.08	2.50	3.71		0.35	1.79	0.02	-0.2	-0.0
15	0.48	1.93	0.85	-0.2	2.54	3.40		0.28	1.70	0.09	-0.0	-0.1
16	0.48	1.70	0.80	0.00	2.68	2.70	0.20	0.20	2.17	-0.0	0.06	-0.0
17	0.62	1.71	0.79	0.14	2.51	2.01	0.40	0.13	2.17	0.03	0.18	0.08
18	0.57	1.64	0.84	-0.1	1.42	1.97	0.44	0.02	1.97	0.13	0.25	0.26
19	0.33	1.64	0.86	-0.1	1.20	1.58	0.27	0.25	1.73	0.15	0.28	0.25
20	0.01	1.55	0.97	0.00	1.24	1.46	0.50	0.24	1.47	0.14	0.20	0.35
21	-0.1	1.41	1.19	0.34	0.83	1.16	0.30	0.29	1.31	0.07	0.42	0.45
22	-0.2	1.27	1.20	0.58	0.88	1.10	0.18	0.20	1.16	0.05	0.56	0.59
23	0.02	1.17	1.19	1.10	0.82	1.05	0.26	0.28	1.17	-0.0	0.41	0.77
24	0.28	1.22	1.00	1.34	0.72	0.80	0.08	0.20	0.53	0.00	0.16	0.60
25	0.32	1.23	1.01	0.98	0.50	0.79	0.32	0.16	0.52	0.15	0.10	0.30
26	0.39	1.28	1.05	0.90	0.49	0.70	0.08	0.20	0.90	0.24	0.08	0.22
27	0.48	1.22	1.17	0.85	0.50	0.68	0.20	0.29	1.10	0.13	0.07	0.22
28	0.55	1.23	1.11	0.80	0.56	0.60	0.16	0.06	1.12	-0.1	-0.1	-0.0
29	0.59	1.22	0.94	0.80	0.60	0.50	0.17	0.43	0.98	0.01		0.15
30	0.53	1.18	0.83	0.70	1.14	0.17	0.00	0.23	0.90	0.00		0.15
31		1.07		0.63	0.72		0.37		0.86	0.10		0.27
max	0.62	2.12	1.2	1.34	2.68	4.18	1.34	0.65	2.17	0.88	0.56	0.77
min	-0.2	-0.1	0.5	-0.2	-0.1	0.2	0.0	-0.1	-0.0	-0.1	-0.3	-0.4

TABULATION OF DAILY OF PASAK RIVER
AT BAN SALA LOY THARUA
AYUTTAYA
DURING 1987-1988 Min LEVEL

DATE	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
1	0.64	0.42	0.50	0.05	-0.0	0.31		0.72	0.70	0.73	-0.0	-0.0
2	0.80	0.40	0.47	-0.0	-0.1	0.25		0.53	1.00	0.67	0.04	0.00
3	0.80	0.44	0.48	0.05	0.08	-0.11		0.44	1.20	0.58	0.10	0.00
4	0.74	0.36	0.47	0.04	0.17	-0.24		0.67	1.44	0.57	-0.1	0.13
5	0.69	0.35	0.34	0.04	-0.1	-0.37		0.90	1.74	0.66	0.17	0.30
6	0.77	0.46	0.34	0.04	-0.1	-0.22	6.15	0.91	1.74	0.73	0.06	0.52
7	0.41	0.32	0.13	-0.1	-0.1	0.55	5.87	0.90	1.80	0.72	0.14	0.44
8	0.28	0.30	0.28	-0.1	-0.1	2.25	5.25	1.28	1.72	0.62	0.16	0.48
9	-0.0	0.23	0.34	-0.2	0.03	2.54	5.27	1.07	1.60	0.37	0.18	0.64
10	-0.0	0.11	0.29	-0.1	0.22	3.44	5.18	1.18	1.53	0.34	0.29	0.68
11	-0.2	0.12	0.32	-0.1	0.26	3.94	5.08	1.12	1.75	0.49	0.37	0.82
12	-0.2	0.16	0.25	0.00	0.36	4.04	4.55	1.14	1.89	0.40	0.44	0.73
13	0.00	0.22	0.36	0.03	0.27	4.53	4.66	0.92	1.89	0.27	0.41	0.49
14	0.25	0.21	0.70	0.20	0.29	4.80	4.45	1.23	1.84	0.35	0.08	0.18
15	0.33	0.22	0.77	0.14	0.34	4.76	4.19	0.74	1.80	0.30	-0.0	-0.0
16	0.52	0.24	0.70	0.25	0.30	4.67	3.97	0.72	1.80	0.35	0.04	-0.1
17	0.72	0.38	0.64	0.38	0.21	4.64	3.89	0.55	1.86	0.21	0.05	-0.1
18	0.88	0.56	0.40	0.27	0.27	5.20	3.61	0.60	1.72	0.24	0.00	0.04
19	0.80	0.44	0.13	0.00	0.06	6.40	3.33	0.72	1.32	0.23	0.12	0.13
20	0.82	0.48	0.28	-0.0	-0.2	6.93	3.20	0.87	1.40	0.04	0.37	0.35
21	0.64	0.30	0.37	-0.2	-0.3	7.05	2.96	1.08	1.42	0.18	0.23	0.39
22	0.64	0.26	0.35	-0.3	-0.3	7.20	2.81	1.23	1.45	0.26	0.36	0.53
23	0.33	-0.1	0.32	-0.2	0.06	7.60	2.35	1.32	1.57	0.21	0.42	0.53
24	0.08	0.10	0.20	-0.1	0.20	7.92	2.22	1.42	1.53	0.19	0.38	0.73
25	-0.0	0.12	0.17	-0.1	0.10	8.10	1.95	1.39	1.39	0.14	0.58	0.73
26	0.18	0.10	0.07	-0.1	0.16	8.19	2.06	1.27	1.20	0.33	0.59	0.61
27	0.14	0.06	0.18	0.00	0.23	8.2	2.33	1.16	1.22	0.24	0.25	0.44
28	0.30	0.03	0.30	0.01	0.31	8.00	1.55	1.05	1.12	0.23	0.00	0.04
29	0.18	0.10	0.20	0.14	0.34	7.95	1.35	0.93	0.94	0.27	-0.0	-0.0
30	0.66	0.24	0.15	0.20	0.46	8.01	1.13	0.70	0.79	-0.0		-0.3
31		0.21		0.20	0.40		0.80		0.70	-0.1		-0.3
max	0.88	0.56	0.77	0.38	0.46	8.2	6.15	1.42	1.89	0.73	0.59	0.82
min	-0.2	-0.1	0.07	-0.3	-0.3	-0.37	0.80	0.44	0.70	-0.1		-0.3

TABULATION OF DAILY OF PASAK RIVER
AT BAN SALA LOY THARUA
AYUTTAYA
DURING 1988-1989 Min LEVEL

DATE	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
1	0.00	0.28	0.90	0.34	0.34	0.72	0.91	4.98	1.38	0.73	0.67	
2	0.12	0.37	0.74	0.42	0.42	0.74	0.24		1.52	0.67	0.13	
3	0.11	0.14	0.91	0.46	0.46	0.51	1.40	4.42	1.58	0.58	0.21	
4	0.25	0.13	0.77	0.41	0.41	0.83	1.34	4.14	1.72	0.57	0.12	
5	0.35	0.41	0.59	0.37	0.37	0.82	1.20	4.13	1.67	0.66	0.23	
6	0.47	0.55	0.57	0.34	0.34	0.70	1.24	3.74	1.76	0.73	0.12	
7	0.52	0.54	0.54	0.13	0.13	0.68	1.01	3.63	1.90	0.72	0.18	
8	0.64	0.49	1.06	0.52	0.52	0.89	0.92	3.37	2.02	0.48	0.24	
9	0.55	0.48	1.16	0.44	0.44	0.80	0.86	3.30	2.22	0.37	0.31	
10	0.59	0.34	1.47	0.54	0.54	1.18	0.60	3.22	2.30	0.34	0.30	
11	0.54	0.30	1.18	0.58	0.58	1.19	0.54	3.04	2.14	0.49	0.42	
12	0.40	0.35	1.30	0.32	0.32	1.80	0.75	2.87	2.12	0.40	0.46	
13	0.48	0.46	1.04	0.18	0.18	1.95	0.72	2.55	1.92	0.27	0.53	
14	0.22	0.69	1.32	0.28	0.28	2.04	0.54	2.28	1.98	0.35	0.67	
15	0.31	1.06	1.65	0.39	0.39	1.46	0.70	1.90	1.95	0.30	0.39	
16	0.10	0.73	2.42	0.37	0.37	1.51	0.77		1.68	0.35	0.24	
17	0.52	0.96	1.50	0.30	0.30	1.48	0.47	1.60		0.21	0.00	
18	0.48	1.17	1.40	0.27	0.27	1.44	0.37	1.53	1.50	0.24	0.85	
19	0.53	1.32	1.07	0.39	0.39	1.32	0.65	1.50	0.68	0.23	-0.20	
20	0.52	1.32	1.15	0.42	0.42	1.18	2.04	1.45	1.29	0.04	-0.13	
21	0.52	1.12	0.85	0.50	0.50	1.14	3.76	1.26	1.29	0.18	-0.06	
22	0.45	1.02	0.78	0.70	0.70	1.10	3.76	1.28	1.27	0.26	0.02	
23	0.48	1.01	0.55	0.78	0.78	1.31	3.52	1.24	1.46	0.21	0.17	
24	0.10	1.15	0.41	0.82	0.82	0.74	2.55	1.36	1.43	0.15	0.24	
25	0.28	1.14	0.28	0.83	0.83	1.31	2.85	1.32	1.51	0.14	0.37	
26	0.23	0.87	0.23	0.75	0.75	1.51	3.00	1.22	1.31	0.33	0.35	
27	0.07	1.40	0.14	0.78	0.78	1.40	2.64	1.17	1.30	0.24	0.53	
28	0.06	1.30	0.18	0.85	0.85	1.24	2.54	1.11	1.24	0.23	0.59	
29	0.07	1.35	0.12	0.82	0.82	1.07	2.43	1.17	1.18	0.27		
30	0.07	1.17	0.28	0.76	0.76	1.00	2.23	1.10	1.00	-0.04		
31		0.98		0.72	0.72	1.04			0.70			
max	0.64	1.40	2.42	0.85	0.85	2.04	3.76	4.98	2.30	0.73	0.85	
min	0.00	0.13	0.12	0.13	0.13	0.51	0.24	1.10	0.68	-0.04	-0.20	

TABULATION OF DAILY OF PASAK RIVER
AT BAN SALA LOY THARUA
AYUTTAYA
DURING 1985-1986 MAX LEVEL

DATE	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
1								3.32	2.00		0.68	0.83
2								3.20	2.02		0.71	0.77
3								3.02	2.10		0.66	0.78
4								2.82	2.26		0.97	0.87
5								2.60	2.26		0.80	0.89
6								2.20	2.02		0.86	0.98
7								2.02	2.02		0.86	0.98
8								2.02	1.80		0.87	0.94
9								1.96	1.75		1.00	0.88
10								1.92	1.72		0.90	0.74
11								1.82	1.66		0.80	0.88
12								1.75	1.90		0.86	0.55
13								1.65	1.95		0.78	0.70
14								1.53	1.80		0.75	0.68
15								1.50	1.90		0.65	0.60
16								1.44	1.88		0.70	0.59
17								0.82	1.80		0.80	0.60
18								1.33	1.65		0.61	0.57
19								1.40	1.55		0.57	0.56
20								1.60	1.45		0.60	0.58
21								1.80	1.35		0.65	0.59
22								1.85	1.02		0.78	0.68
23								1.88	1.00		0.76	0.60
24								1.88	0.95		0.84	0.58
25								1.60	0.85		0.90	0.57
26								1.45	0.62		0.89	0.56
27								1.48	0.44		0.89	0.55
28								1.52	0.42		0.89	0.58
29								1.70	0.40		0.81	0.56
30								1.90	0.30			0.58
31									0.00			0.57
							max	3.32	2.26		1.00	0.98
							min	0.82	0.00		0.57	0.55

มีการเปลี่ยนแปลงไม้ระดับน้ำวันที่ 26 มกราคม 2529

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

TABULATION OF DAILY OF PASAK RIVER
AT BAN SALA LOY THARUA
AYUTTAYA
DURING 1986-1987 MAX LEVEL

DATE	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
1	0.85	0.93	1.26	1.00	0.89	1.46	1.08	0.79	0.87	1.37	0.90	0.67
2	0.84	0.87	1.19	0.84	0.72	1.60	0.99	1.10	0.90	1.48	0.82	0.78
3	0.88	0.86	1.08	0.70	0.70	1.74	1.03	1.10	1.04	1.40	0.77	0.70
4	0.84	0.70	0.98	0.76	1.00	1.50	1.67	1.40	1.14	1.27	0.74	0.75
5	0.75	0.70	0.87	0.80	0.76	1.25	2.09	1.12	1.27	1.20	0.70	0.72
6	0.70	0.74	0.78	0.88	0.89	1.40	1.86	1.13	1.28	1.15	0.84	0.60
7	0.50	0.80	0.76	0.98	0.85	1.78	1.53	1.04	1.15	1.13	0.84	0.66
8	0.78	0.89	0.78	0.90	0.82	2.06	1.22	0.86	0.93	1.04	0.86	0.79
9	0.78	1.20	0.95	0.78	0.85	2.75	1.27	0.72	1.23	1.04	0.82	0.70
10	0.70	1.50	0.98	0.73	1.54	3.82	1.16	0.74	1.16	1.05	0.87	0.65
11	0.78	1.74	0.94	0.65	1.45	4.48	0.88	0.77	1.48	0.97	0.80	0.70
12	0.78	2.12	1.04	0.40	2.44	4.27	0.99	0.48	1.70	0.98	0.67	0.65
13	0.70	1.94	1.07	0.60	2.83	4.13	0.99	0.54	1.90	0.98	0.70	0.57
14	0.70	2.35	1.02	0.60	2.58	3.74	0.88	0.79	1.88	0.94	0.66	0.53
15	0.67	2.13	1.17	0.30	2.59	4.40	0.86	0.95	2.15	0.96	0.65	0.50
16	0.67	1.78	1.14	0.50	2.54	2.80	0.66	0.85	2.28	0.88	0.67	0.45
17	0.81	1.76	1.15	0.60	2.70	2.10	0.88	0.87	2.23	0.85	0.70	0.50
18	0.87	1.74	1.17	0.59	2.86	1.97	0.72	0.94	2.06	0.80	0.68	0.52
19	0.70	1.68	1.11	0.69	2.10	1.69	0.92	1.01	1.90	0.64	0.66	0.53
20	0.64	1.66	1.00	0.74	1.68	2.34	0.95	1.01	1.73	0.78	0.74	0.47
21	0.65	1.50	1.45	0.70	1.41	1.07	0.89	1.01	1.53	0.66	0.84	0.44
22	0.55	1.36	1.40	1.17	1.34	1.10	0.90	1.06	1.48	0.85	0.90	0.65
23	0.52	1.37	1.40	1.60	1.26	1.05	0.88	1.02	1.50	0.78	0.86	0.67
24	0.59	1.33	1.30	1.66	1.06	0.80	0.94	0.82	1.34	0.88	0.90	0.65
25	0.65	1.35	1.26	1.40	1.00	0.74	1.38	0.65	1.30	1.03	0.96	0.68
26	0.71	1.40	1.28	1.24	1.27	0.70	0.68	0.61	1.28	0.93	0.88	0.70
27	0.77	1.40	1.28	1.20	0.75	0.68	0.71	0.60	1.31	0.88	0.79	0.66
28	0.80	1.39	1.30	1.00	1.02	0.60	0.74	0.70	1.28	0.97	0.69	0.54
29	0.83	1.38	1.20	1.08	0.97	0.75	0.72	0.52	1.40	0.88		0.52
30	0.71	1.23	1.19	0.85	0.95	0.53	0.55	0.79	1.40	0.77		0.52
31		1.25		1.05	1.24		0.69		1.40	0.83		0.58
max	0.88	2.35	1.45	1.66	2.86	4.48	2.09	1.40	2.28	1.48	0.96	0.79
min	0.50	0.70	0.76	0.30	0.70	0.53	0.55	0.48	0.87	0.64	0.65	0.44

TABULATION OF DAILY OF PASAK RIVER
AT BAN SALA LOY THARUA
AYUTTAYA
DURING 1987-1988 MAX LEVEL

DATE	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
1	0.60	0.79	0.70	0.48	0.48	0.47		1.10	0.84	1.20	0.80	0.75
2	0.58	0.80	0.74	0.25	0.48	0.62		0.97	1.02	1.15	0.80	0.69
3	0.52	0.67	0.72	0.40	0.45	0.68		0.86	1.47	1.15	0.73	0.75
4	0.60	0.54	0.74	0.50	0.44	0.62		0.70	1.80	1.20	0.70	0.84
5	0.58	0.47	0.61	0.58	0.74	0.69		0.79	1.95	1.19	0.78	0.89
6	0.53	0.50	0.67	0.49	0.78	0.54	6.40	0.75	1.95	1.26	0.68	0.86
7	0.57	0.16	0.55	0.50	0.84	0.52	6.00	0.77	1.95	1.12	0.54	0.92
8	0.45	0.18	0.50	0.65	0.80	1.65	5.55	0.87	1.92	1.16	0.68	0.90
9	0.54	-0.0	0.74	0.47	0.83	2.40	5.29	0.90	1.80	1.03	0.69	0.92
10	0.40	-0.0	0.60	0.50	0.78	2.93	5.25	0.75	1.85	1.05	0.74	1.02
11	0.27	0.20	0.60	0.57	0.72	3.80	5.15	0.75	1.90	1.04	0.79	1.02
12	0.21	0.40	0.55	0.59	0.68	3.99	5.04	0.88	2.03	0.98	0.90	0.95
13	0.23	0.55	0.62	0.60	0.66	4.28	4.57	0.82	2.08	0.88	0.99	1.04
14	0.32	0.69	0.74	0.54	0.53	4.65	4.67	0.80	1.96	0.97	0.84	1.02
15	0.34	0.80	0.90	0.47	0.54	4.80	4.32	0.76	1.93	1.03	0.98	0.90
16	0.38	0.80	0.91	0.22	0.64	4.75	4.13	0.77	1.88	0.95	0.95	0.77
17	0.55	0.67	0.82	0.35	0.80	4.75	3.96	0.71	1.93	0.96	0.89	0.70
18	0.51	0.29	0.71	0.38	0.90	4.65	3.95	0.60	1.88	1.00	0.86	0.70
19	0.68	0.30	0.54	0.42	0.67	5.90	3.60	0.72	1.48	0.97	0.82	0.72
20	0.76	0.29	0.63	0.57	0.68	6.60	3.28	0.62	1.60	0.98	0.77	0.78
21	0.80	0.36	0.80	0.54	0.62	6.90	3.05	0.65	1.75	0.92	0.65	0.92
22	0.68	0.22	0.81	0.50	0.56	7.10	2.88	0.80	1.79	0.87	0.80	0.84
23	0.55	0.15	0.80	0.54	0.65	7.42	2.75	0.82	1.81	0.75	0.77	0.93
24	0.47	0.17	0.57	0.56	0.63	8.27	2.18	0.96	1.73	0.79	0.77	0.99
25	0.28	0.20	0.53	0.48	0.68	8.00	2.14	1.03	1.64	0.78	1.03	0.90
26	0.24	0.28	0.53	0.50	0.48	8.15	1.84	1.00	1.49	0.70	1.00	0.84
27	0.22	0.56	0.48	0.56	0.49	8.20	2.05	0.99	1.45	0.78	0.95	0.84
28	0.28	0.53	0.46	0.47	0.53	8.15	1.59	0.98	1.38	0.94	0.89	0.81
29	0.40	0.68	0.47	0.35	0.42	8.01	1.60	0.90	1.23	0.98	0.81	0.70
30	0.34	0.70	0.35	0.35	0.48		1.40	0.78	1.18	0.90		0.58
31		0.71		0.30	0.58		1.10		1.12	0.84		0.58
MAX	0.80	0.80	0.91	0.65	0.90	8.27	6.40	1.10	2.08	1.26	1.03	1.04
MIN	0.21	-0.0	0.35	0.22	0.42	0.47	1.10	0.60	0.84	0.70	0.54	0.58

TABULATION OF DAILY OF PASAK RIVER
AT BAN SALA LOY THARUA
AYUTTAYA
DURING 1988-1989 Max LEVEL

DATE	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
1	0.54	0.81	1.37	0.95	1.17	1.22		5.20	1.59	1.20	1.00	
2	0.52	0.80	1.05	0.96	1.06	1.39		4.93	1.86	1.15	0.98	
3	0.71	0.57	1.13	0.95	0.95	1.58		4.55	1.80	1.15	1.01	
4	0.71	0.63	1.18	0.87	1.15	1.62		4.35	1.90	1.20	1.02	
5	0.74	0.64	1.08	0.75	1.24	1.53		4.06	1.98	1.19	1.01	
6	0.73	0.80	1.00	0.66	1.20	1.67		3.78	1.96	1.26	0.90	
7	0.70	0.87	0.90	0.72	1.10	1.48		3.70	2.09	1.12	0.94	
8	0.70	0.85	1.22	1.08	1.20	1.40		3.62	2.23	1.10	0.89	
9	0.78	0.76	1.60	0.99	1.35	1.23		3.33	2.39	1.03	0.81	
10	0.92	0.73	1.87	0.97	1.27	1.08		3.27	2.37	1.05	0.78	
11	1.04	0.83	1.48	1.00	1.92	0.91		3.18	2.33	1.04	0.89	
12	0.96	0.82	1.47	1.03	2.18	0.94		3.03	2.30	0.98	0.85	
13	0.82	0.93	1.48	1.05	2.17	0.87		3.15	2.18	0.88	0.92	
14	0.66	0.95	1.63	1.08	2.10	0.86		2.48	2.12	0.97	1.02	
15	0.75	1.23	1.70	0.98	2.12	0.97		2.16	2.37	1.03	0.97	
16	0.81	1.24	1.60	0.95	1.82	0.43		1.93	1.88	0.95	0.96	
17	0.83	1.15	1.87	0.84	1.60	1.05		1.80		0.96	0.77	
18	0.85	1.27	1.62	0.80	1.73	0.96		1.76	1.75	1.00	0.69	
19	0.79	1.46	1.38	0.85	1.67	1.25		1.93	1.57	0.97	0.69	
20	0.76	1.44	1.32	0.97	1.37	3.18		1.89	1.55	0.98	0.68	
21	0.76	1.49	1.20	1.14	1.35	3.83		1.33	1.49	0.92	0.63	
22	0.78	1.30	1.19	1.20	1.37	3.95		1.47	1.69	0.87	0.60	
23	0.77	1.23	1.03	1.32	1.54	3.87		1.52	1.67	0.75	0.72	
24	0.76	1.20	0.88	1.32	1.57	3.57		1.66	1.65	0,79	0.75	
25	0.79	1.30	0.78	1.14	1.57	3.17		1.59	1.57	0.78	0.79	
26	0.80	1.38	0.54	1.34	1.61	3.17		1.57	1.58	0.70	0.76	
27	0.74	1.52	0.69	1.35	1.86	2.99		1.53	1.57	0.78	0.88	
28	0.67	1.54	0.76	1.32	1.60	2.66		1.56	1.42	1.94	0.87	
29	0.64	1.66	0.75	1.25	1.46	2.45		1.44	1.32	0.98		
30	0.60	1.35	0.90	1.36	1.18	2.44		1.44	1.29	0.90		
31		1.37		1.32	1.40				1.19	0.84		
max	1.04	1.66	1.87	1.36	2.18	3.95		5.20	2.39	1.94	1.02	
min	0.52	0.57	0.54	0.66	0.95	0.43		1.33	1.29	0.70	0.60	

ภาคผนวก ค.

โปรแกรมคอมพิวเตอร์ ในการวิเคราะห์เสถียรภาพวิธี WEDGE METHOD

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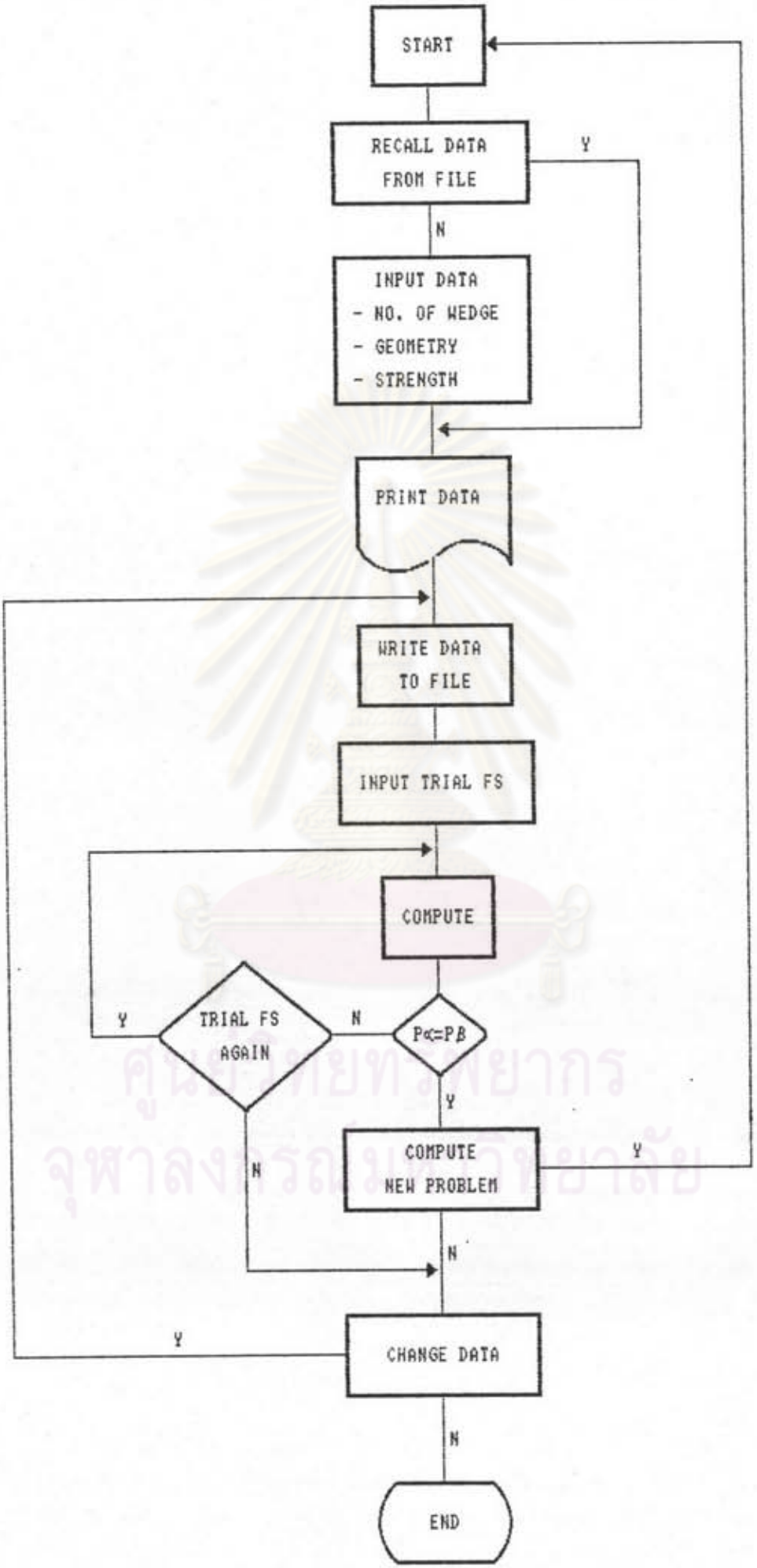

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```
10 CLS
13 LOCATE 12,10,0
15 PRINT " WANT TO RECALL DATA FROM FILE  (Y/N) ";:INPUT "",A$
17 IF A$="N" OR A$="n" THEN GOTO 20 ELSE GOTO 30000
20 REM THIS PROGRAM FOR COMPUTE STABILITY OF WEDGE METHOD
22 Z$="STABILITY ANALYSIS OF PASAK RIVER BANK"
23 Y$="BAN SALA LOY THARUA AYUTTAYA THAILAND"
25 CLS
30 PRINT " PROJECT      :  ";Z$
40 PRINT " LOCATION     :  ";Y$
45 INPUT " FILE'S NAME  :  ",F$
46 DD$="TOTAL STRESS ANALYSIS BEFORE FAILURE AFTER EXCAVATION WITH CRACK"
47 PRINT " DRESCRIPTION :  ";DD$:INPUT " ",Q$
48 CLS
49 LOCATE 12,15,0
50 PRINT " NUMBER OF WEDGE      =    ";:INPUT"",N
60 IF N=0 THEN GOTO 48
70 REM THIS FOR WEDGE 1
80 CLS
90 PRINT " WEDGE 1"
100 INPUT " LEFT CRACK ABOVE COORDINATE  (X,Y)        =   ",LAX(1),LAY(1)
110 INPUT " LEFT CRACK BELOW COORDINATE  (X,Y)        =   ",LBX(1),LBY(1)
120 INPUT " RIGHT X COORDINATE                        =   ",X(1)
130 INPUT " ANGLE OF BASE  (degree)                   =   ",ANGB(1)
140 INPUT " ANGLE OF FACE  (degree)                   =   ",ANGF(1)
150 INPUT " LEFT Y COORDINATE OF GROUND WATER TABLE   =   ",LWY(1)
160 INPUT " RIGHT Y COORDINATE OF GROUND WATER TABLE  =   ",RWY(1)
170 INPUT " AVERAGE UNIT WEIGHT OF WEDGE              =   ",UN(1)
180 INPUT " COHESION                                  =   ",C(1)
190 INPUT " ANGLE OF INTERNAL FRICTION                =   ",PHI(1)
200 LOCATE 24,5,0
210 PRINT " WANT TO CORRECTED  DATA  (Y/N)  ";:INPUT "",A$
220 IF A$="Y" THEN GOTO 80
230 PRINT
240 FOR I=2 TO N
```

```
250 CLS
260 PRINT " WEDGE ";I
270 INPUT " RIGHT X COORDINATE                              =   ",X(I)
280 INPUT " ANGLE OF BASE  (degree)                         =   ",ANGB(I)
290 INPUT " ANGLE OF FACE  (degree)                         =   ",ANGF(I)
300 INPUT " RIGHT Y COORDINATE OF GROUND WATER TABLE        =   ",RWY(I)
320 INPUT " AVERAGE UNIT WEIGHT OF WEDGE                    =   ",UN(I)
330 INPUT " COHESION                                        =   ",C(I)
340 INPUT " ANGLE OF INTERNAL FRICTION                      =   ",PHI(I)
350 LOCATE 24,5,0
360 PRINT " WANT TO CORRECTED  DATA  (Y/N)  ";:INPUT "",A$
370 IF A$="Y" THEN GOTO 250
380 NEXT I
382 FOR I=1 TO N
384 ANGB(I)=ANGB(I)*3.1416/180
386   ANGF(I)=ANGF(I)*3.1416/180
388 PHI(I)=PHI(I)*3.1416/180
389 NEXT I
390 CLS
400 LOCATE 12,10,0
410 PRINT"PRESS RETURN TO PRINT GEOMETRY   ";:INPUT "",A$
420 IF A$="N" THEN GOTO 430 ELSE GOSUB 8010
430 SX=0
434 OPEN F$ FOR OUTPUT AS 1
435 WRITE #1 ,N
436 WRITE #1 ,Z$,Y$,DD$,F$
438 WRITE #1 ,LAX(1),LAY(1),LBX(1),LBY(1),LWY(1)
440 FOR I=1 TO N
442 WRITE #1, X(I),ANGB(I),ANGF(I),RWY(I),UN(I),C(I),PHI(I)
444 NEXT I
446 CLOSE
450 REM THIS FOR COMPUTE WEIGHT
460  FOR I=1 TO N
500    HX(I)=X(I)-LAX(I)
510     RAX(I)=LAX(I)+HX(I)
```

```
520      RAY(I)=HX(I)*TAN(ANGF(I))+LAY(I)
530       RBX(I)=RAX(I)
540        RBY(I)= HX(I)*TAN(ANGB(I))+LBY(I)
550          LY(I)= LBY(I)-LAY(I)
560        RY(I)= RBY(I)-RAY(I)
570       L(I)=HX(I)/COS(ANGB(I))
580     W(I)= .5*(LY(I)+RY(I))*HX(I)*UN(I)
590    IF I=N THEN GOTO 640
600   LAX(I+1)=RAX(I)
610    LAY(I+1)=RAY(I)
620     LBX(I+1)=RBX(I)
630      LBY(I+1)=RBY(I)
640  NEXT I
650 REM
660 REM THIS FOR COMPUTE PORE PRESSURE RATIO
670 REM
680 FOR I=1 TO N
690 WLY(I)=LBY(I)-LWY(I)
700 IF WLY(I)<0 THEN WLY(I)=0
710 WRY(I)=RBY(I)-RWY(I)
720 IF WRY(I)<0 THEN WRY(I)=0
730 IF ANGB(I)=0 THEN WX(I)=HX(I) ELSE WX(I)=HX(I)-(LWY(I)-LBY(I))/TAN(ANGB
740 IF TAN(ANGB(I))<0 THEN WX(I)=(RWY(I)-LBY(I))/TAN(ANGB(I))
750 IF WX(I)>HX(I) THEN WX(I)=HX(I)
760 IF WX(I)<0 THEN WX(I)=HX(I)
770 WW(I)=.5*WX(I)*(WLY(I)+WRY(I))
780 RU(I)=WW(I)/W(I)
790 LWY(I+1)=RWY(I)
795 IF RAY(I)>RWY(I)THEN GOSUB 42000
800 NEXT I
810 CLS
820 LOCATE 12,10,0
830 PRINT" PRESS RETURN TO PRINT WEIGHT ";:INPUT "",A$
840 CLS
850 FOR I=1 TO N
```

```
860 PRINT" WEDGE NO. ";I:PRINT
870 PRINT USING "WEIGHT OF WEDGE                = ####.##    ";W(I)
880 PRINT USING "WIEGHT OF WATER WEDGE          = ####.##    ";WW(I)
890 PRINT USING "PORE WATER PRESSURE RATIO      = ####.##    ";RU(I)
900 PRINT:PRINT
910 IF I/3=INT(I/3) THEN GOSUB 17000
920 NEXT I
930 LOCATE 24,10,0
940 PRINT "PRESS RETURN TO CONTINUE ";:INPUT "",A$
950 CLS
960 REM COMPUTE ACTIVE AND PASSIVE FORCE
970 LOCATE 12,10,0
980 PRINT" FACTOR OF SAFETY      =     ";:INPUT "",FS
990 CLS
1000 SX=SX+1
1010 PRINT "TRIAL NO. ";SX:PRINT
1020 FOR I=1 TO N
1030 CM(I)=C(I)/FS
1040 PHIM(I)=ATN(TAN(PHI(I))/FS)
1050  IF ANGB(I)<1.571 THEN ANG(I)=ANGB(I)-PHIM(I)
1060 IF ANGB(I)>=1.571 THEN ANG(I)=2*3.1416-ANGB(I)+PHIM(I)
1070 IF ANGB(I)>1.571 THEN GOSUB 2000 ELSE GOSUB 3000
1080 IF PA(I)=0 THEN GOTO 1100
1090 PRINT "  PA(";I; USING ")              = ####.##    ";PA(I)
1100 IF PP(I)=0 THEN GOTO 1120
1110 PRINT "  PP(";I; USING ")              = ####.##    ";PP(I)
1120 PRINT
1130 SUMPA(I)=SUMPA(I-1)+PA(I)
1140 SUMPP(I)=SUMPP(I-1)+PP(I)
1150 NEXT I
1151 PRINT
1152 FOR I=1 TO N
1154 IF PW(I)=0 THEN GOTO 1158
1157 PRINT "  WATER FORCE  Pw(";I;:PRINT USING ") = ####.##    ";PW(I)
1158 NEXT I
```

```
1159 PRINT
1160 PRINT USING "  FACTOR OF SAFETY      = ####.##    ";FS
1170 PRINT USING "  SUM ACTIVE FORCE      = ####.##    ";SUMPA(N)
1180 PRINT USING "  SUM PASSIVE FORCE     = ####.##    ";SUMPP(N)
1190 PRINT:PRINT
1200 LOCATE 24,5,0
1210 PRINT "PRESS RETURN TO CONTINUE";:INPUT "",A$
1220 CLS
1230 LOCATE 12,10,0
1240 PRINT " WANT TO PRINT ON PRINTER   (Y/N)    ";:INPUT"",A$
1250 IF A$="N" THEN GOTO 1260 ELSE GOSUB 11040
1260 IF SUMPA(N)<>SUMPP(N) THEN GOSUB 4010
1270 CLS
1280 LOCATE 12,10,0
1290 PRINT " WANT TO END OF RUN  (Y/N) ";:INPUT "",A$
1300 IF A$="Y" THEN GOSUB 40000
1302 CLS
1303 LOCATE 12,10,0
1305 PRINT " WANT TO CHANGE PROJECT DATA  ( Y/N )  ";:INPUT " ",A$
1307 IF A$="N" THEN GOTO 1310 ELSE GOSUB 18000
1310 CLS
1320 LOCATE 12,10,0
1330 PRINT"WANT TO CHANGE GEOMETRY (Y/N) ";:INPUT "",A$
1340 IF A$="Y"  THEN GOSUB 5010 ELSE GOTO 1350
1350 CLS
1360 LOCATE 12,10,0
1370 INPUT " WANT TO CHANGE SOIL DATA (Y/N) ",A$
1380 IF A$="Y" THEN GOSUB 7005 ELSE GOSUB 11000
1390 CLS
1400 LOCATE 12,10,0
1410 PRINT " WANT TO COMPUTE ANOTHER PROBLEM (Y/N) ";:INPUT "",A$
1420 IF A$="N" THEN END ELSE GOTO 10
1430 END
2000 AANGB(I)=2*3.1416-ANGB(I)
2010      PP(I)=(W(I)-RU(I)*W(I)*COS(AANGB(I))+CM(I)*L(I)*SIN(AANGB(I))+PW(I.
```

```
(ANGF(I)))*TAN(ANG(I))+RU(I)*W(I)*SIN(AANGB(I))+CM(I)*L(I)*COS(AANGB(I))+PW(
*SIN(ANGF(I))
2020 RETURN
3000  PA(I)=(W(I)-RU(I)*W(I)*COS(ANGB(I))-CM(I)*L(I)*SIN(ANGB(I))+PW(I)*COS(
(I)))*TAN(ANG(I))+RU(I)*W(I)*SIN(ANGB(I))-CM(I)*L(I)*COS(ANGB(I))-PW(I)*SIN
(ANGF(I))
3010 RETURN
4000 REM THIS FOR CHANGE FACTOR OF SAFETY
4010 CLS
4020 LOCATE 12,10,0
4030 PRINT " SUM Pa NOT EQUAL TO SUM Pp ":PRINT
4040 LOCATE 14,10,0
4050 PRINT " WANT TO CHANGE FACTOR OF SAFETY  (Y/N)  ";:INPUT "",A$
4060 IF A$="N" THEN GOTO 4070 ELSE GOTO 950
4070 RETURN
5000 REM CHANGE GEOMETRY
5010 CLS
5020 INPUT " WANT TO CHANGE GEOMETRY OF WEDGE NO. ",W
5030 PRINT
5040 PRINT "WEDGE NO. ";W:PRINT
5050 IF W=1 THEN GOSUB 6010 ELSE 5060
5055 RETURN
5060 PRINT " RIGHT X COORDINATE                                =   ";X(W):PRINT
5070 PRINT " ANGLE OF BASE  (degree)                           =   ";ANGB(W)*180/3.
5080 PRINT " ANGLE OF FACE  (degree)                           =   ";ANGF(W)*180/3.
5090 PRINT " RIGHT Y COORDINATE OF GROUND WATER TABLE  =   ";RWY(W):PRINT
5100 PRINT
5110 PRINT "CHANGE GEOMETRY OF WEDGE NO. ";W
5120 INPUT " RIGHT X COORDINATE                                =   ",X(W)
5130 INPUT " ANGLE OF BASE  (degree)                           =   ",ANGB(W)
5140 INPUT " ANGLE OF FACE  (degree)                           =   ",ANGF(W)
5150 INPUT " RIGHT Y COORDINATE OF GROUND WATER TABLE  =   ",RWY(W)
5155 ANGF(W)=ANGF(W)*3.1416/180
5157 ANGB(W)=ANGB(W)*3.1416/180
5160 LOCATE 24,5,0
```

```
5170 PRINT " WANT TO CHANGE GEOMETRY AGAIN (Y/N) ";:INPUT "",A$
5180 IF A$="Y" THEN GOTO 5010
5183 CLS
5185 LOCATE 12,10,0
5187 PRINT " WANT TO CHANGE FILE'S NAME  (Y/N)  ";:INPUT " ",A$
5189 IF A$="N" THEN GOTO 6000
5193 LOCATE 14,10,0
5195 PRINT " INPUT NEW FILE'S NAME ==========> ";:INPUT " ",F$
6000 RETURN
6010 PRINT " LEFT CRACK ABOVE COORDINATE  (X,Y)          =   ";LAX(1);LAY(1)
6020 PRINT " LEFT CRACK BELOW COORDINATE  (X,Y)          =   ";LBX(1);LBY(1)
6030 PRINT " RIGHT X COORDINATE                          =   ";X(1)
6040 PRINT " ANGLE OF BASE  (degree)                     =   ";ANGB(1)*180/3.
6050 PRINT " ANGLE OF FACE  (degree)                     =   ";ANGF(1)*180/3.
6060 PRINT " LEFT Y COORDINATE OF GROUND WATER TABLE     =   ";LWY(1)
6070 PRINT " RIGHT Y COORDINATE OF GROUND WATER TABLE    =    ";RWY(1)
6080 PRINT:PRINT
6085 PRINT "CHANGE GEOMETRY OF WEDGE NO. ";W
6090 INPUT " LEFT CRACK ABOVE COORDINATE  (X,Y)          =   ",LAX(1),LAY(1)
6100 INPUT " LEFT CRACK BELOW COORDINATE  (X,Y)          =   ",LBX(1),LBY(1)
6110 INPUT " RIGHT X COORDINATE                          =   ",X(1)
6120 INPUT " ANGLE OF BASE  (degree)                     =   ",ANGB(1)
6130 INPUT " ANGLE OF FACE  (degree)                     =   ",ANGF(1)
6140 INPUT " LEFT Y COORDINATE OF GROUND WATER TABLE     =   ",LWY(1)
6150 INPUT " RIGHT Y COORDINATE OF GROUND WATER TABLE    =   ",RWY(1)
6155 ANGF(1)=ANGF(1)*3.1416/180
6157 ANGB(1)=ANGB(1)*3.1416/180
6160 GOTO 5170
6170 RETURN
7000 REM CHANGE SOIL DATA
7005 CLS
7010 INPUT " WANT TO CHANGE SOIL DATA OF WEDGE NO.     ",W
7020 PRINT
7030 PRINT " WEDGE NO. ";W:PRINT
7040 PRINT " AVERAGE UNIT WEIGHT OF WEDGE            =     ";UN(W)
```

```
7050 PRINT " COHESION                                    =      ";C(W)
7060 PRINT " ANGLE OF INTER FRICTION                     =      ";PHI(W)
7070 PRINT
7080 PRINT " CHANGE SOIL DATA OF WEDGE NO. ";W
7090 PRINT
7100 INPUT " AVERAGE UNIT WEIGHT OF WEDGE                =      ",UN(W)
7110 INPUT " COHESION                                    =      ",C(W)
7120 INPUT " ANGLE OF INTERNAL FRICTION (degree)         =      ",PHI(W)
7125 PHI(W)=PHI(W)*3.1416/180
7130 INPUT " WANT TO CHANGE SOIL DATA AGAIN (Y/N) ",A$
7140 IF A$="Y" THEN GOTO 7010
7150 CLS
7155 LOCATE 12,10,0
7157 PRINT " WANT TO CHANGE FILE'S NAME  (Y/N)  ";:INPUT " ",A$
7159 IF A$="N" THEN GOTO 7170
7162 LOCATE 14,10,0
7165 PRINT " INPUT NEW FILE'S NAME ==========> ";:INPUT " ",F$
7170 GOTO 390
7180 RETURN
8000 REM PRINT GEOMETRY , WEIGHT ,PORE PRESSURE RATIO, SOIL DATA
8010 FOR I=1 TO N
8020 CLS
8030 LOCATE 2,10,0
8040 PRINT " NUMBER OF WEDGE      =  ";N
8050 PRINT:PRINT
8060 IF I=1 THEN GOSUB 9000
8070 IF I<>1 THEN GOSUB 10000
8080 NEXT I
8090 RETURN
9000 PRINT "WEDGE NO. 1 ":PRINT
9010 PRINT " LEFT CRACK ABOVE COORDINATE  (X,Y)          =   ";LAX(1);",";LAY(
9020 PRINT " LEFT CRACK BELOW COORDINATE  (X,Y)          =   ";LBX(1);",";LBY(
9030 PRINT " RIGHT X COORDINATE                          =   ";X(1)
9040 PRINT " ANGLE OF BASE  (degree)                     =   ";ANGB(1)*180/3.1
9050 PRINT " ANGLE OF FACE  (degree)                     =   ";ANGF(1)*180/3.1
```

```
9060 PRINT " LEFT Y COORDINATE OF GROUND WATER TABLE   =   ";LWY(1)
9070 PRINT " RIGHT Y COORDINATE OF GROUND WATER TABLE  =   ";RWY(1)
9080 PRINT " AVERAGE UNIT WEIGHT OF WEDGE              =   ";UN(1)
9090 PRINT " COHESION                                  =   ";C(1)
9100 PRINT " ANGLE OF INTERNAL FRICTION (degree)       =   ";PHI(1)*180/3.14
9110 LOCATE 24,5,0
9120 PRINT "PRESS RETURN TO CONTINUE ";:INPUT "",A$
9130 RETURN
10000 PRINT "  WEDGE NO. ";I
10010 PRINT
10020 PRINT " RIGHT X COORDINATE                       =   ";X(I)
10030 PRINT " ANGLE OF BASE  (degree)                  =   ";ANGB(I)*180/3.1
10040 PRINT " ANGLE OF FACE  (degree)                  =   ";ANGF(I)*180/3.1
10050 PRINT " RIGHT Y COORDINATE OF GROUND WATER TABLE =   ";RWY(I)
10060 PRINT " AVERAGE UNIT WEIGHT OF WEDGE             =   ";UN(I)
10070 PRINT " COHESION                                 =   ";C(I)
10080 PRINT " ANGLE OF INTERNAL FRICTION (degree)      =   ";PHI(I) *180/3.1
10090 LOCATE 24,5,0
10100 PRINT "PRESS RETURN TO CONTINUE ";:INPUT "",A$
10110 RETURN
11000 CLS
11010 LOCATE 12,10,0
11020 PRINT " WANT TO COMPUTE  (Y/N)  ";:INPUT "  ",A$
11030 IF A$="N" THEN RETURN ELSE GOTO 400
11040 REM PRINT DATA ON PRINTER
11050 CLS
11060 LOCATE 12,10,0
11070 PRINT " PREPARED PRINTER AND THEN PRESS RETURN ";:INPUT "",A$
11080 IF SX=1 THEN GOSUB 12000
11090 GOSUB 16000
11100 RETURN
12000 LPRINT " FILE'S NAME   :  ";F$
12004 LPRINT " DRESCRIPTION  :  ";DD$
12008 LPRINT " PROJECT       :  ";Z$
12020 LPRINT " LOCATION      :  ";Y$
```

```
12030 LPRINT:LPRINT
12035 LPRINT " NUMBER OF WEDGE      =  ";N
12040 FOR I=1 TO N
12060 LPRINT
12070 IF I=1 THEN GOSUB 13000
12080 IF I<>1 THEN GOSUB 14000
12085 LPRINT
12090 NEXT I
12100 GOSUB 15000
12110 RETURN
13000 LPRINT " WEDGE NO. 1 ":LPRINT
13010 LPRINT " LEFT CRACK ABOVE COORDINATE  (X,Y)          =   ";LAX(1);",";LA
13020 LPRINT " LEFT CRACK BELOW COORDINATE  (X,Y)          =   ";LBX(1);",";LB
13030 LPRINT " RIGHT X COORDINATE                         =   ";X(1)
13040 LPRINT " ANGLE OF BASE  (degree)                    =   ";ANGB(1)*180/3
13050 LPRINT " ANGLE OF FACE  (degree)                    =   ";ANGF(1)*180/3
13055 LPRINT " LEFT Y COORDINATE OF GROUND WATER TABLE    =   ";LWY(1)
13060 LPRINT " RIGHT Y COORDINATE OF GROUND WATER TABLE   =   ";RWY(1)
13080 LPRINT " AVERAGE UNIT WEIGHT OF WEDGE               =   ";UN(1)
13090 LPRINT " COHESION                                   =   ";C(1)
13100 LPRINT " ANGLE OF INTERNAL FRICTION (degree)        =   ";PHI(1)*180/3.
13110 RETURN
14000 LPRINT "  WEDGE NO. ";I
14010 LPRINT
14020 LPRINT " RIGHT X COORDINATE                         =   ";X(I)
14030 LPRINT " ANGLE OF BASE  (degree)                    =   ";ANGB(I)*180/3
14040 LPRINT " ANGLE OF FACE  (degree)                    =   ";ANGF(I)*180/3
14045 LPRINT " LEFT Y COORDINATE OF GROUND WATER TABLE    =   ";LWY(I)
14050 LPRINT " RIGHT Y COORDINATE OF GROUND WATER TABLE   =   ";RWY(I)
14060 LPRINT " AVERAGE UNIT WEIGHT OF WEDGE               =   ";UN(I)
14070 LPRINT " COHESION                                   =   ";C(I)
14080 LPRINT " ANGLE OF INTERNAL FRICTION (degree)        =   ";PHI(I)*180/3.
14090 RETURN
15000 FOR I=1 TO N
15010 LPRINT " WEDGE NO. ";I
```

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```
15020 LPRINT USING " WEIGHT OF WEDGE                    = ####.##    ";W(I)
15030 LPRINT USING " WEIGHT OF WATER WEDGE              = ####.##    ";WW(I)
15040 LPRINT USING " PORE WATER PRESSURE RATIO          = ####.##    ";RU(I)
15050 LPRINT
15060 NEXT I
15070 RETURN
16000 LPRINT " TRIAL NO. ";SX:LPRINT
16010 FOR I=1 TO N
16020 IF PA(I)=0 THEN GOTO 16040
16030 LPRINT " PA(";I; USING ")                 = ####.##    ";PA(I)
16040 IF PP(I)=0 THEN GOTO 16070
16050 LPRINT " PP(";I; USING ")                 = ####.##    ";PP(I)
16070 NEXT I
16071 LPRINT
16073 FOR I=1 TO N
16075 IF PW(I)=0 THEN GOTO 16078
16077 LPRINT "  WATER FORCE  Pw(";I;:LPRINT USING ") = ####.##    ";PW(I)
16078 NEXT I
16079 LPRINT
16080 LPRINT USING " FACTOR OF SAFETY    = ####.##    ";FS
16090 LPRINT USING " SUM ACTIVE FORCE    = ####.##    ";SUMPA(N)
16100 LPRINT USING " SUM PASSIVE FORCE   = ####.##    ";SUMPP(N)
16110 LPRINT
16115 LPRINT:LPRINT
16120 RETURN
17000 LOCATE 24,10,0
17010 PRINT "PRESS RETURN TO CONTINUE ";:INPUT "",A$
17020 CLS
17030 RETURN
18000 CLS
18010 PRINT " PROJECT      :  ";Z$
18020 PRINT " LOCATION     :  ",Y$
18030 PRINT " FILE'S NAME  :  ";F$
18040 PRINT " DRESCRIPTION :  ";DD$
18050 PRINT
```

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```
18060 PRINT " CHANGE PROJECT DATA "
18070 PRINT
18080 INPUT " PROJECT      :  ",Z$
18090 INPUT " LOCATION     :  ",Y$
18100 INPUT " FILE'S NAME  :  ",F$
18110 INPUT " DRESCRIPTION :  ",DD$
18120 LOCATE 24,10,0
18130 PRINT " WANT TO CORRECTED DATA (Y/N) ";:INPUT " ",A$
18140 IF A$= "Y" THEN GOTO 18000
18150 RETURN
30000 CLS
30005 FILES "????????"
30010 LOCATE 22,10,0
30015 PRINT " INPUT FILE'S NAME TO BE USE     =====>    ";:INPUT "",F$
30020 IF F$="" THEN GOTO 30010
30030 OPEN F$ FOR INPUT AS #1
30035 INPUT #1 ,N
30040 INPUT #1 ,Z$,Y$,DD$,F$
30050 INPUT #1 ,LAX(1),LAY(1),LBX(1),LBY(1),LWY(1)
30060 FOR I=1 TO N
30070 INPUT #1,X(I),ANGB(I),ANGF(I),RWY(I),UN(I),C(I),PHI(I)
30080 NEXT I
30090 IF EOF(1) THEN CLOSE
30100 GOSUB 8000
30120 GOTO 450
40000 CLS
40010 SYSTEM
42000 REM THIS FOR COMPUTE PORE PRESSURE OF SUBMERGE WEDGE
42010 WX1(I)=(RWY(I)-LAY(I))/TAN(ANGF(I))
42015 IF LWY(I)>LBY(I) THEN WX1(I)=WRY(I)/TAN(ANGB(I))
42020 WLY(I)=LBY(I)-LWY(I)
42030 IF WLY(I)<0 THEN WLY(I)=0
42040 RBWY(I)=LBY(I)+WX1(I)*TAN(ANGB(I))
42050 WRY(I)=RBWY(I)-RWY(I)
42060 IF WRY(I)<0 THEN WRY(I)=0
```

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42080 WW1(I)=.5*(WLY(I)+WRY(I))*WX1(I)
42083 IF RWY(I)<LAY(I) THEN HWY(I)=RAY(I)-LAY(I) ELSE HWY(I)=RAY(I)-RWY(I)
42085 IF HWY(I)<0 THEN HWY(I)=0
42087 MRY(I)=RBY(I)-RWY(I)
42088 IF MRY(I)<0 THEN MRY(I)=0
42090 WW2(I)=.5*(WRY(I)+MRY(I))*(HX(I)-WX1(I))
42100  IF  LAY(I)>LWY(I)  THEN WW(I)= .5*((LBY(I)-LWY(I))+(RBY(I)-RWY(I)))*H
ELSE WW(I)=WW1(I)+WW2(I)
42105 RU(I)=WW(I)/W(I)
42110 REM THIS FOR COMPUTE Pw
42140 LLWY(I)=HWY(I)/SIN(ANGF(I))
42150  IF LAY(I)>LWY(I) THEN PW(I)= .5*((LAY(I)-LWY(I))+(RAY(I)-RWY(I)))*LLW
ELSE PW(I)=.5*1*HWY(I)*LLWY(I)
42160 RETURN
```

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ภาคผนวก ง

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SHEAR STRENGTH PARAMETER สำหรับการวิเคราะห์เสถียรภาพ กรณีที่ 1~4

โดยวิธี Bishop simplified method

SOIL NO.	DB	PI (%)	γ_t (t/m^3)	$\bar{\sigma}_{vm}$ (t/m^2)	$\overline{CK_oU}$ TC $\bar{c}/\bar{\sigma}_{vm}$	$\overline{CK_oU}$ TE $\bar{c}/\bar{\sigma}_{vm}$	AVG. $\bar{c}/\bar{\sigma}_{vm}$	AVG. $\bar{c}$ (t/m^2)	$\overline{CK_oU}$ TC $\bar{\phi}$ (°)	$\overline{CK_oU}$ TE $\bar{\phi}$ (°)	AVG. $\bar{\phi}$ (°)
1	3	12~23	1.98	16.8	0.086	0.186	0.14	2.35	23.6	26.7	25.2
2	2	12~23	1.71	13.2	0.086	0.186	0.14	1.84	23.6	26.7	25.2
3	1	12~23	1.86	12.5	0.086	0.186	0.14	1.75	23.6	26.7	25.2
4	1	12~23	1.86	12.5	0.086	0.186	0.14	1.75	23.6	26.7	25.2
5	3	12~23	1.98	21.6	0.086	0.186	0.14	3.02	23.6	26.7	25.2
6	2	12~23	1.90	15.0	0.086	0.186	0.14	2.10	23.6	26.7	25.2
7	1	12~23	1.96	16.8	0.086	0.186	0.14	2.35	23.6	26.7	25.2
8	1	12~23	1.96	16.8	0.086	0.186	0.14	2.35	23.6	26.7	25.2
9	3	35~40	1.98	26.7	0.083	-	0.08	2.14	14.4	-	14.4
10	2	12~23	1.98	15.6	0.086	0.186	0.14	2.78	23.6	26.7	25.2
11	1	12~23	1.98	23.0	0.086	0.186	0.14	3.22	23.6	26.7	25.2
12	1	12~23	1.98	23.0	0.086	0.186	0.14	3.22	23.6	26.7	25.2
13	1	35~40	1.98	27.0	0.083	-	0.08	2.16	14.4	-	14.4
14	1	35~40	1.98	27.0	0.083	-	0.08	2.16	14.4	-	14.4
15	1	35~40	1.6	27.0	0.083	-	0.08	2.16	14.4	-	14.4
16	1	35~40	2.00	30.0			0.08	2.40			37

Shear Strength Parameter สำหรับการวิเคราะห์เสถียรภาพ กรณีที่ 5

โดยวิธี Bishop simplified method

SOIL NO.	γ_t (t/m^3)	PI (%)	σ_{vc} (t/m^2)	σ_{vm} (t/m^2)	OCR	$\overline{CK_oU}$ TC	$\overline{CK_oU}$ TE	AVERAGE	
						S_u/σ_{vc}	S_u/σ_{vc}	S_u/σ_{vc}	S_u (t/m^2)
1	1.98	12~23	2.2	16.8	7.6	0.96	0.99	0.98	2.2
2	1.71	12~23	1.6	13.2	8.3	1.05	1.02	1.04	1.7
3	1.86	12~23	1.9	12.5	6.6	0.92	0.90	0.91	1.7
4	1.86	12~23	1.4	12.5	8.9	1.04	1.08	1.06	1.5
5	1.98	12~23	5.8	21.6	3.7	0.67	0.67	0.67	3.9
6	1.90	12~23	5.4	15.0	2.8	0.57	0.57	0.57	3.7
7	1.96	12~23	5.8	16.8	2.9	0.59	0.59	0.59	3.4
8	1.96	12~23	3.3	16.8	5.1	0.78	0.79	0.79	2.6
9	1.98	35~40	9.0	26.7	3.0	0.58	-	0.58	5.2
10	1.98	12~23	9.8	15.6	1.6	0.42	0.38	0.40	3.9
11	1.98	12~23	8.4	23.0	2.7	0.56	0.56	0.56	4.7
12	1.98	12~23	4.5	23.0	5.1	0.78	0.78	0.78	3.5
13	1.98	35~40	11.2	27.0	2.4	0.50	-	0.50	5.6
14	1.98	35~40	4.9	27.0	5.5	0.82	-	0.82	4.0
15	1.6	35~40	2.52	28.0	11.1	1.0	-	1.0	2.5
16	2.0	35~40	SPT VALUE = 16~32						16.0

NOTE $S_u = \dfrac{(\sigma_1 - \sigma_3)_f}{2}$

Shear Strength Parameter สำหรับการวิเคราะห์เสถียรภาพ กรณีที่ 6~7
โดยวิธีการ Simplified Bishop Method

SOIL NO.	γ_t (t/m³)	PI (%)	$\bar{\sigma}_{vc}$ (t/m²)	$\bar{\sigma}_{vm}$ (t/m²)	OCR	$\overline{CK_oU}$ TC	$\overline{CK_oU}$ TE	AVERAGE	
						$S_u/\bar{\sigma}_{vc}$	$S_u/\bar{\sigma}_{vc}$	$S_u/\bar{\sigma}_{vc}$	S_u (t/m²)
1	1.98	12~23	4.4	16.8	3.8	0.68	0.68	0.68	3.0
2	1.71	12~23	3.8	13.2	3.5	0.65	0.65	0.65	2.5
3	1.86	12~23	4.1	12.5	3.0	0.59	0.59	0.59	2.4
4	1.86	12~23	3.0	12.5	4.2	0.72	0.72	0.72	2.2
5	1.98	12~23	10.6	21.6	2.0	0.40	0.45	0.47	5.0
6	1.90	12~23	10.2	15.0	1.5	0.41	0.37	0.39	4.0
7	1.96	12~23	10.6	16.8	1.6	0.42	0.38	0.40	4.2
8	1.96	12~23	5.5	16.8	3.1	0.60	0.60	0.60	3.3
9	1.98	35~40	13.8	26.7	1.9	0.46	0.43	0.45	6.2
10	1.98	12~23	15.2	15.6	1.0	0.33	0.29	0.31	4.7
11	1.98	12~23	13.6	23.0	1.7	0.44	0.40	0.42	5.7
12	1.98	12~23	5.7	23.0	4.0	0.67	0.67	0.67	3.8
13	1.98	35~40	16.6	27.0	1.6	0.36	-	0.36	6.0
14	1.98	35~40	6.7	27.0	4.6	0.68	-	0.68	4.0
15	1.60	35~40	2.52	28.0	11.1	1.0	-	1.0	2.5
16	2.0	35~40	SPT N VALUE = 16~32						16.0

NOTE $S_u = \dfrac{(\sigma_1 - \sigma_3)_f}{2}$

Shear Strength Parameter สำหรับการวิเคราะห์เสถียรภาพ กรณีที่ 7

โดยวิธี Bishop simplified method

SOIL NO.	γ_t (t/m^3)	PI (%)	$\bar{\sigma}_{vc}$ (t/m^2)	$\bar{\sigma}_{vm}$ (t/m^2)	OCR	$\overline{CK_oU}$ TC $S_u/\bar{\sigma}_{vc}$	$\overline{CK_oU}$ TE $S_u/\bar{\sigma}_{vc}$	$\overline{CK_oU}$ TC $\cos\bar{\phi}$	$\overline{CK_oU}$ TE $\cos\bar{\phi}$	AVERAGE $\bar{\tau}_{ff}$ (t/m^2)
1	1.98	12~23	4.4	16.8	3.8	0.68	0.68	0.92	0.89	2.7
2	1.71	12~23	3.8	13.2	3.5	0.65	0.65	0.92	0.89	2.2
3	1.86	12~23	4.1	12.5	3.0	0.59	0.59	0.92	0.89	2.2
4	1.86	12~23	3.0	12.5	4.2	0.72	0.72	0.92	0.89	2.0
5	1.98	12~23	10.6	21.6	2.0	0.40	0.45	0.92	0.89	4.1
6	1.90	12~23	10.2	15.0	1.5	0.41	0.37	0.92	0.89	3.7
7	1.96	12~23	10.6	16.8	1.6	0.42	0.38	0.92	0.89	3.9
8	1.96	12~23	5.5	16.8	3.1	0.60	0.60	0.92	0.89	3.0
9	1.98	35~40	13.8	26.7	1.9	0.46	0.43	0.97	-	5.8
10	1.98	12~23	15.2	15.6	1.0	0.33	0.29	0.92	0.89	4.3
11	1.98	12~23	13.6	23.0	1.7	0.44	0.40	0.92	0.89	5.2
12	1.98	12~23	5.7	23.0	4.0	0.67	0.67	0.92	0.89	3.5
13	1.98	35~40	16.6	27.0	1.6	0.36	-	0.97	-	5.8
14	1.98	35~40	6.7	27.0	4.6	0.68	-	0.97	-	4.4
15	1.60	35~40	2.52	28.0	11.1	1.0	-	0.97	-	2.4
16	2.0	35~40	SPT N VALUE = 16~32					0.97	-	15.5

NOTE $\bar{\tau}_{ff} = \dfrac{(\sigma_1 - \sigma_3)\cos\bar{\phi}}{2}$

Shear Strength Parameter สำหรับการวิเคราะห์เสถียรภาพ กรณีที่ 7
โดยวิธี Wedge method รูปที่ 4.36

WEDGE	BORING NO.	γ_t (t/m^3)	PI (%)	$\bar{\sigma}_{vc}$ (t/m^2)	$\bar{\sigma}_{vm}$ (t/m^2)	OCR	$S_u/\bar{\sigma}_{vc}$	$\cos\bar{\phi}$	τ_{ff} (t/m^2)
1	2	1.97	12~23	4.5	13.2	2.90	0.58	0.92	2.4
2	1	1.98	12~23	12.1	19.5	1.63	0.40	0.92	4.2
3	1	1.98	35~40	13.2	24.3	1.80	0.39	0.97	5.0
4	1	1.98	35~40	4.1	24.3	5.90	0.82	0.97	3.3

NOTE $\tau_{ff} = \dfrac{(\sigma_1 - \sigma_3)_f \cos\bar{\phi}}{2}$

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Shear Strength Parameter สำหรับการวิเคราะห์เสถียรภาพ กรณีที่ 7 โดยวิธี Wedge method รูปที่ 4.37 รอยผิวการวิบัติเริ่มที่รอยผิวการวิบัติที่ปรากฏในสนาม

WEDGE	BORING NO.	γ_t (t/m^3)	PI (%)	$\bar{\sigma}_{vc}$ (t/m^2)	$\bar{\sigma}_{vm}$ (t/m^2)	OCR	$S_u/\bar{\sigma}_{vc}$	$\cos\bar{\phi}$	τ_{ff} (t/m^2)
1	3	1.97	12~23	4.3	16.6	3.90	0.69	0.92	2.8
2	2	1.97	12~23	12.0	14.2	1.20	0.36	0.92	4.0
3	1	1.98	12~23	14.6	24.2	1.65	0.42	0.92	5.6
4	1	1.98	35~40	15.0	24.3	1.62	0.37	0.97	5.4
5	1	1.98	35~40	13.2	29.0	2.03	0.44	0.97	5.2
6	1	1.80	35~40	3.2	27.2	8.5	0.94	0.97	3.5

NOTE $\tau_{ff} = \frac{(\sigma_1 - \sigma_3)_f \cos\bar{\phi}}{2}$

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ประวัติ

นายทศพร ศรีเอี่ยม เกิดเมื่อวันที่ 19 ตุลาคม 2507 ที่จังหวัดสงขลา สำเร็จการศึกษาปริญญาวิศวกรรมศาสตร์บัณฑิต สาขาวิศวกรรมโยธา จากมหาวิทยาลัยสงขลานครินทร์ ปีการศึกษา 2528 เข้าศึกษาต่อในภาควิชาวิศวกรรมโยธา บัณฑิตวิทยาลัยจุฬาลงกรณ์มหาวิทยาลัย ปีการศึกษา 2530

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