บรรณานุกรม

กองวิเคราะห์วิจัย. ข้อมูลสภาพดินบริเวณลุ่มแม่น้ำเจ้าพระยาตอนล่าง, เอกสารวิจัย, กรมทางหลวง, 2520

AKRAPONGPISAI, Somchai (1970), Comparison of Strengths Mesured by Vane Shear, Unconfined Compression and Triaxial Shear Test in Bangkok Clay, Thesis No.331, Asian Institute of Technology, Bangkok.

ANG, A.H-S., and TANG, W.H., Probability Concepts in Engineering Planning and Design, John Wiley and Sons, Inc., Newyork, N.Y., 1975.

ARAYASIRI, Manoon (1969), Shear Strength Characteristics of Bangkok Clay in the Weathered Zone, Thesis No 281, Asian Institute of Technology, Bangkok.

BENJAMIN, J.R. and CORNELL, C.A. (1970) Probability, Statistics and Decision for Civil Engineers, Mc Graw-Hill Book Company, Newyork.

BRAND, E.W. and KANJANOPHAS, Surindr (1971) Compressibility of Bangkok Clay, Research Report No 10, Asian Institute of Technology.

COX, J.B.(1968), A Review of Engineering Characteristics of the Recent Marine Clays in South East Asia, Research Report No.6, Asian Institute of Technology, Bangkok.

Cozzolini, E.V.M., (1961) Statistical Forecasting of Compression Index, Procedings, Fifth International Couference on Soil Mechanics and Foundation Engineering, Paris, Vol.1 p51

DRAPER, N.R. and SMITH, H. (1966), Applied Regression Analysis, John Wiley and Sons, Inc., Newyork.

Eide, O (1968), Geotechnical Problems with Soft Bangkok Clay on the Nakorn Sawan Highway Project, NGI Publicalion No.78, Norwegian Geotechnical Institute, Oslo

ELNAGGAR H.A. and KRIZEX,R.J. (1970), Statistical Approximation for Consolidation Settlement, Highway Research Record, No.323, PP 87-96.

HENGCHAOVANICH, DITI (1969), Shear Strength Characteristics of Stiff Bangkok Clay, Tesis No. 274, Asian Institute of Technology.

HOOPER, J. A., and Butler, F.G.(1966), Some Numerical Results Concerning The Shear Strength of London Clay, Canadian Geotechnical Journal Vol 16, PP 282-304.

KANJANOPHAS, Surindr (1969), Compressibility of Bangkok Clay in The Weathered Zone, M. Eng. Thesis, Asian Institute of Technology.

KAY, J.N., and KRIZEK, R.J. (1971) Analysis of Uncertainty in Settlement Prediction, Geotechnical Engineerings, Vol.2, P 119.

LUMB, P. (1966), The Variability of Natural Soil, Canadian Geotechnical, Vol.3, No.2, May, 1966, P 74 .

LUMP, P. (1970), Safty Factors and Probability Distribution of Soil Streugth, Canadian Geotechnical Journal, Vol 7, No. 3, Aug, 1970 P 225.

MOH, Z.C., NELSON, J.D. and BRAND E.W. (1969), Strength and Deformation Behavior of Bangkok Clay, Proc 7 th . Int. Conf. S.M.F.E., Mexico, Vol.1, PP 287-295.

MUKTAPHANT, Chai, TEERAWONG, Pairoj, TENGAMNUAY, Vichien (1963) Engineering Proporties of Bangkok Subsoils, Chulalongkorn University, Bangkok.

TEVES, A.S.(1967), The Compressibility of Bangkok Clay, M.Eng. Thesis No. 190, Asian Institute of Technology.

WANG, Wu-SANG (1967), Shear Strength Characteristics of Bangkok Clay, Thesis No. 180, SEATO Graduate School of Engineering, Bangkok, Thailand.

ภาคผนวก ก.

สัญญลักษณ์

ชั้นดินอ่อน ความลึก 0-14 เมตร

1. COMPRESSION INDEX
2. INITIAL VOID RATIO
3. NATURAL WATER CONTENT
4. LIQUID LIMIT
5. COMPRESSION RATIO
6. DEPTH
7. SPECIFIC GRAVITY
8. FIELD VANE SHEAR
9. SENSITIVITY (VANE SHEAR)
10. UNCONFINED COMPRESSIVE STRENGTH
11. SENSITIVITY (UNCONFINED)
12. LIQUIDITY INDEX

(หมายเลข 1, 2, ..., 12 หมายถึง INDEPENDENT และ DEPENDENT VARIABLE ในโปรแกรม)

INDEPENDENT VARIABLE 2

DEPENDENT VARIABLE 1

PARTIAL DERIVATIVES

0	.10000E+01	-.55749E+00
2	-.17337E+01	.10000E+01

VARIABLE.	BETAS	STD.ERRS.	RATIOS
0	-.285052	.141860	-2.00939
2	.628724	.080443	7.81584

STANDARD ERROR OF ESTIMATE = .226335

COEFFICIENT OF VARIATION = .281171

R-SQ. = .452207

ADJ.R-SQ. = .452207

	D.F.	SS	VAR	F
RGR.	1.	3.129360	3.129360	61.087487
RSD.	74.	3.790836	.051228	

D-W STAT. = 1.72977

INDEPENDENT VARIABLE 3

DEPENDENT VARIABLE 2

PARTIAL DERIVATIVES

0 .10000E+01 -.15257E-01
3 -.63474E+02 .10000E+01

VARIABLE	BETAS	STD.ERRS.	RATIOS
0	.468542	.149289	3.138487
3	.013932	.002315	6.611347

STANDARD ERROR OF ESTIMATE = .231154

COEFFICIENT OF VARIATION = .133331

R-SQ. = .500524

ADJ.R-SQ. = .500524

	D.F.	SS	VAR	F
RGR.	1.	3.962292	3.962292	74.155252
RSD.	74.	3.953997	.053432	

D-W STAT. = 1.35524

INDEPENDENT VARIABLE 4 6

DEPENDENT VARIABLE 8

PARTIAL DERIVATIVES

0	.10000E+01	-.12385E-01	-.25793E-01
4	-.60139E+02	.10000E+01	-.11328E-00
6	-.77297E+01	-.69911E-02	.10000E+01

VARIABLE	BETAS	STD.ERRS.	RATIOS
0	.093656	.072097	1.299026
4	-.001457	.001035	-1.408705
6	.032741	.004165	7.861383

STANDARD ERROR OF ESTIMATE = .114832

COEFFICIENT OF VARIATION = .422625

R-SQ. = .464073

ADJ.R-SQ. = .456831

	D.F.	SS	VAR	F
RGR.	2.	.833539	.416769	31.606275
RSD.	73.	.962599	.013186	

D-W STAT. = 1.17311

INDEPENDENT VARIABLE 3 6

DEPENDENT VARIABLE 10

PARTIAL DERIVATIVES

0	.10000E+01	-.12076E-01	-.25881E-01
3	-.68637E+02	.10000E+01	.63294E-00
6	-.11221E+02	.48262E-01	.10000E+01

VARIABLE	BETAS	STD.ERRS.	RATIOS
0	.320307	.127508	2.559114
3	-.003949	.001691	-2.334794
6	.029032	.006124	4.741016

STANDARD ERROR OF ESTIMATE = .156308

COEFFICIENT OF VARIATION = .532251

R-SQ. = .310025

ADJ.R-SQ. = .300701

	D.F.	SS	VAR	F
RGR.	2.	.907215	.453608	16.400478
RSD.	73.	2.019048	.027658	

D-W STAT. = 1.99174

INDEPENDENT VARIABLE 4 6

DEPENDENT VARIABLE 10

PARTIAL DERIVATIVES

0	.10000E+01	-.12385E-01	-.25793E-01
4	-.60139E+02	.10000E+01	-.11328E-00
6	-.77297E+01	-.69911E-02	.10000E+01

VARIABLE	BETAS	STD.ERRS.	RATIOS
0	.291708	.103387	2.821517
4	-.003931	.001484	-2.649900
6	.031977	.005972	5.354268

STANDARD ERROR OF ESTIMATE = .164667

COEFFICIENT OF VARIATION = .527002

R-SQ. = .323568

ADJ.R-SQ. = .314427

	D.F.	SS	VAR	F
RGR.	2.	.946846	.473423	17.459622
RSD.	73.	1.979417	.027115	

D-W STAT. = 2.16531

INDEPENDENT VARIABLE 6 8

DEPENDENT VARIABLE 10

PARTIAL DERIVATIVES

0	.10000E+01	-.10456E-00	-.60349E-01
6	-.44073E+01	.10000E+01	-.13799E+02
8	-.60051E-02	-.32576E-01	.10000E+01

VARIABLE	BETAS	STD.ERRS.	RATIOS
0	.053888	.054027	.997425
6	.024023	.008322	2.886827
8	.230491	.171270	1.345774

STANDARD ERROR OF ESTIMATE = .170306

COEFFICIENT OF VARIATION = .545047

R-SQ. = .276452

ADJ.R-SQ. = .256675

	D.F.	SS	VAR	F
RGR.	2.	.808972	.404486	13.945883
RSD.	73.	2.117290	.029004	

D-W STAT. = 2.02696

INDEPENDENT VARIABLE 3 8

DEPENDENT VARIABLE 10

PARTIAL DERIVATIVES

0	.10000E+01	-.13552E-01	-.41590E+00
3	-.65639E+02	.10000E+01	.79650E+01
8	-.36276E+00	.14344E-02	.10000E+01

VARIABLE	BETAS	STD.ERRS.	RATIOS
0	.461503	.120299	3.836303
3	-.004597	.001729	-2.659417
8	.525345	.128810	4.078624

STANDARD ERROR OF ESTIMATE = .171642

COEFFICIENT OF VARIATION = .549322

R-SQ. = .265055 .515

ADJ.R-SQ. = .255124

	D.F.	SS	VAR	F
RGR.	2.	.775522	.387811	13.163602
RSD.	73.	2.150641	.029461	

D-W STAT. = 1.89916

INDEPENDENT VARIABLE 4 8

DEPENDENT VARIABLE 10

PARTIAL DERIVATIVES

0	.10000E+01	-.13549E-01	-.50898E+00
4	-.63354E+02	.10000E+01	.84828E+01
8	-.34673E+00	.12286E-02	.10000E+01

VARIABLE	BETAS	STD.ERRS.	RATIOS
0	.352987	.108577	3.250562
4	-.003049	.001588	-1.920249
8	.536263	.131551	4.076506

STANDARD ERROR OF ESTIMATE = .175389

COEFFICIENT OF VARIATION = .561316

R-SQ. = .232613

ADJ.R-SQ. = .222243

	D.F.	SS	VAR	F
RGR.	2.	.680688	.340344	11.064026
RSD.	73.	2.245575	.030761	

D-W STAT. = 2.00812

สัญญลักษณ์

ชั้นดินแข็ง ความลึก 14-30 เมตร

1. COMPRSSION INDEX
2. INITIAL VOLD RATIO
3. NATURAL WATER CONTENT
4. LIQUID LIMIT
5. COMPRESSION RATIO
6. DEPTH
7. SPECIFIC GRAVITY
8. UNCONFINED COMPRESSIVE STRENGTH

(หมายเลข 1, 2, ..., 8 หมายถึง INDEPENDENT และ DEPENDENT VARIABLE ในโปรแกรม)

INDEPENDENT VARIABLE 2

DEPENDENT VARIABLE 1

PARTIAL DERIVATIVES

0	.10000E+01	-.99073E+00
2	-.89555E+00	.10000E+01

VARIABLE	BETAS	STD.ERRS.	RATIOS
0	-.200153	.041882	-4.778980
2	.563471	.044051	12.791239

STANDARD ERROR OF ESTIMATE = .116820

COEFFICIENT OF VARIATION = .333689

R-SQ. = .709473

ADJ.R-SQ. = .709474

	D.F.	SS	VAR	F
RGR.	1.	2.232832	2.232832	163.615794
RSD.	67.	.914335	.013647	

D-W STAT. = 1.88540

INDEPENDENT VARIABLE 3

DEPENDENT VARIABLE 2

PARTIAL DERIVATIVES

0 .10000E+01 -.27529E-01
3 -.31780E+02 .10000E+01

VARIABLE	BETAS	STD.ERRS.	RATIOS
0	.192155	.061163	3.141704
3	.022127	.001800	12.293778

STANDARD ERROR OF ESTIMATE = .179553

COEFFICIENT OF VARIATION = .200494

R-SQ. = .692854

ADJ.R-SQ. = .692854

	D.F.	SS	VAR	F
RGR.	1.	4.872530	4.872530	151.136967
RSD.	57.	2.160024	.032239	

D-W STAT. = 1.53632

INDEPENDENT VARIABLE 3 4

DEPENDENT VARIABLE 3

PARTIAL DERIVATIVES

0	.10000E+01	-.88918E-02	-.13079E-01
3	-.13253E+02	.10000E+01	-.37785E-00
4	-.30386E+02	-.58849E+00	.10000E+01

VARIABLE	BETAS	STD.ERRS.	RATIOS
0	2.445109	.325746	7.506179
3	-.051151	.008437	-6.062434
4	.015231	.006758	2.253706

STANDARD ERROR OF ESTIMATE = .742329

COEFFICIENT OF VARIATION = .473783

R-SQ. = .360601

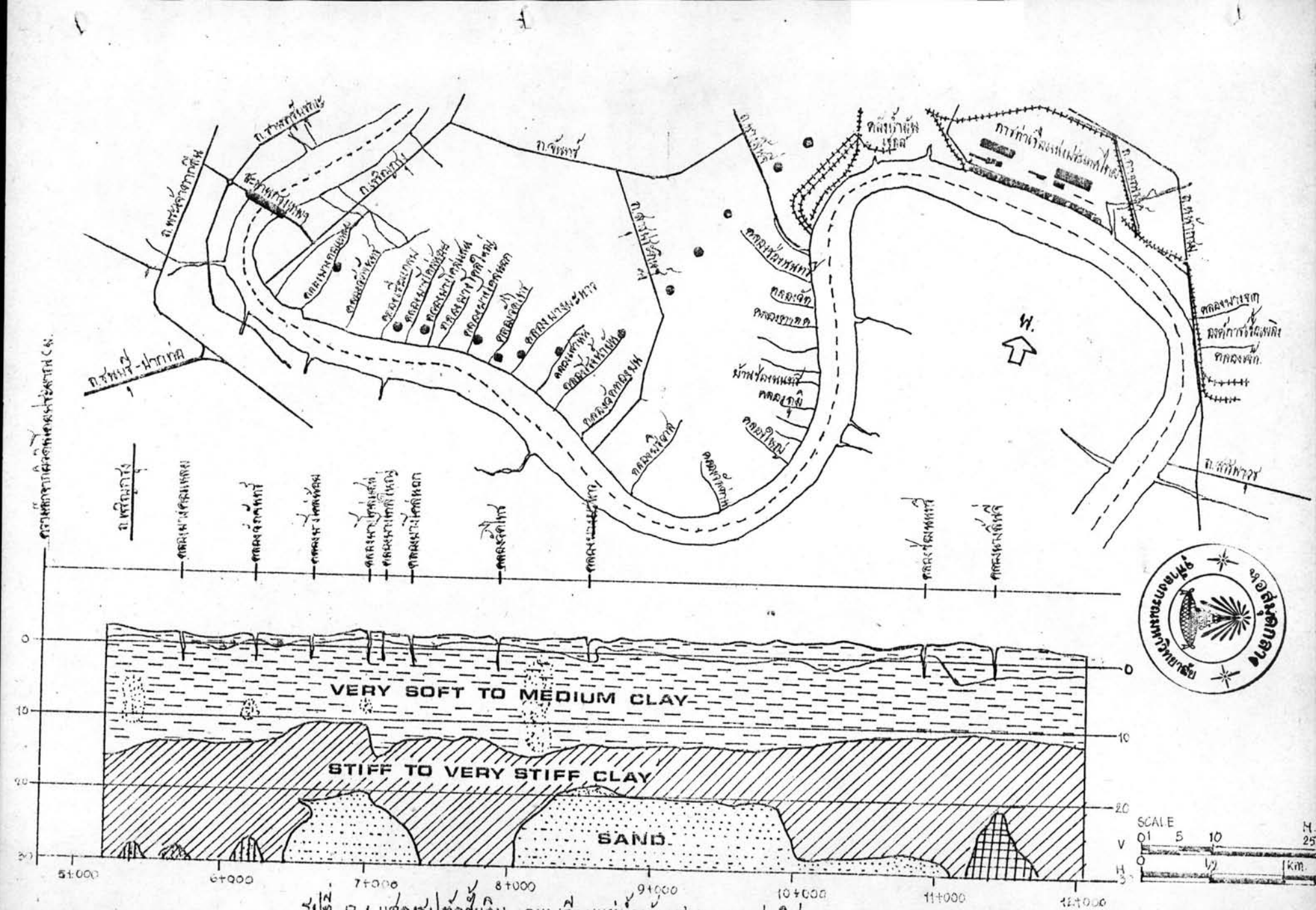
ADJ.R-SQ. = .351053

	D.F.	SS	VAR	F
RGR.	2.	20.511273	10.255637	18.610997
RSD.	66.	36.369466	.551053	

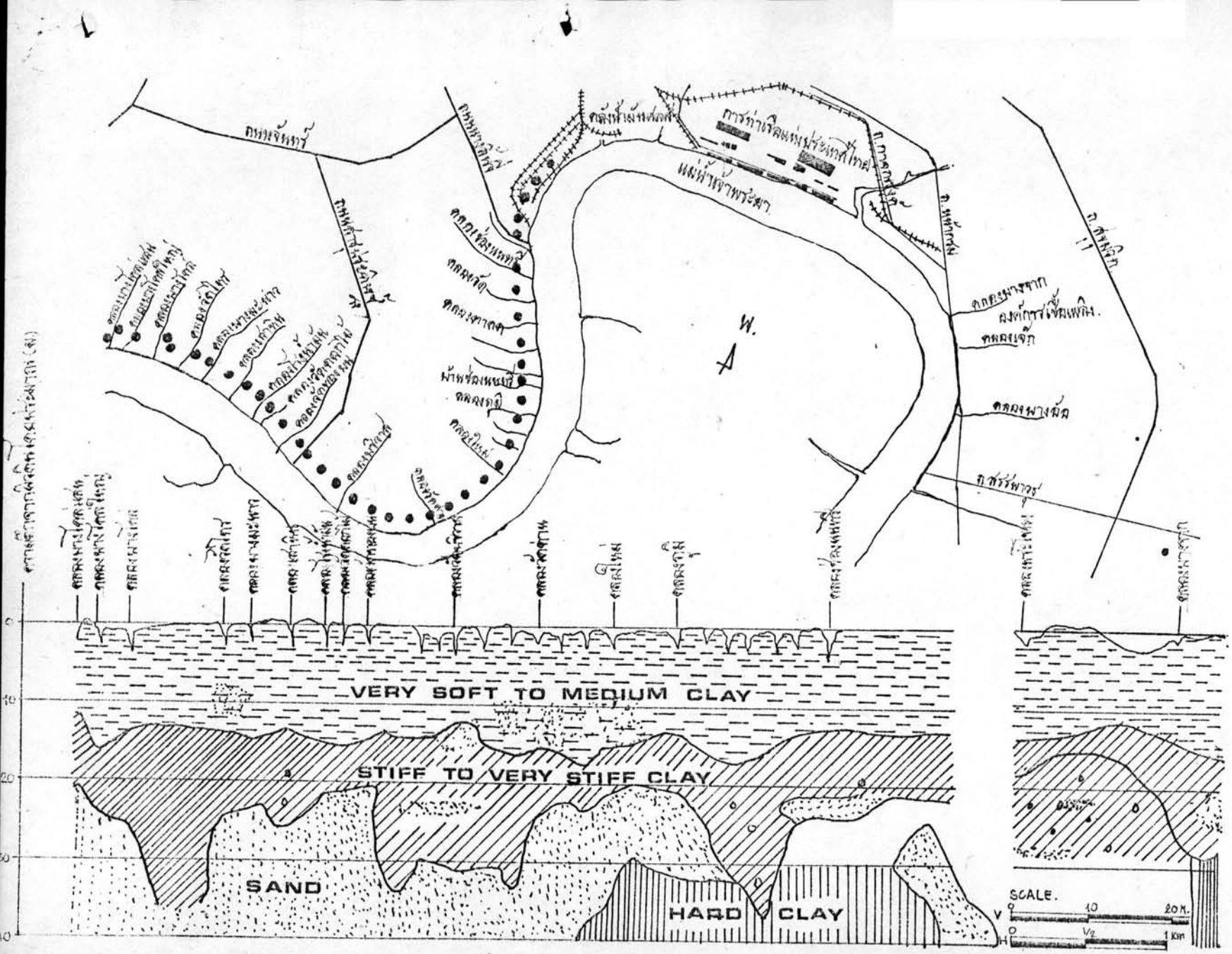
D-W STAT. = 2.05243

ภาคผนวก ข

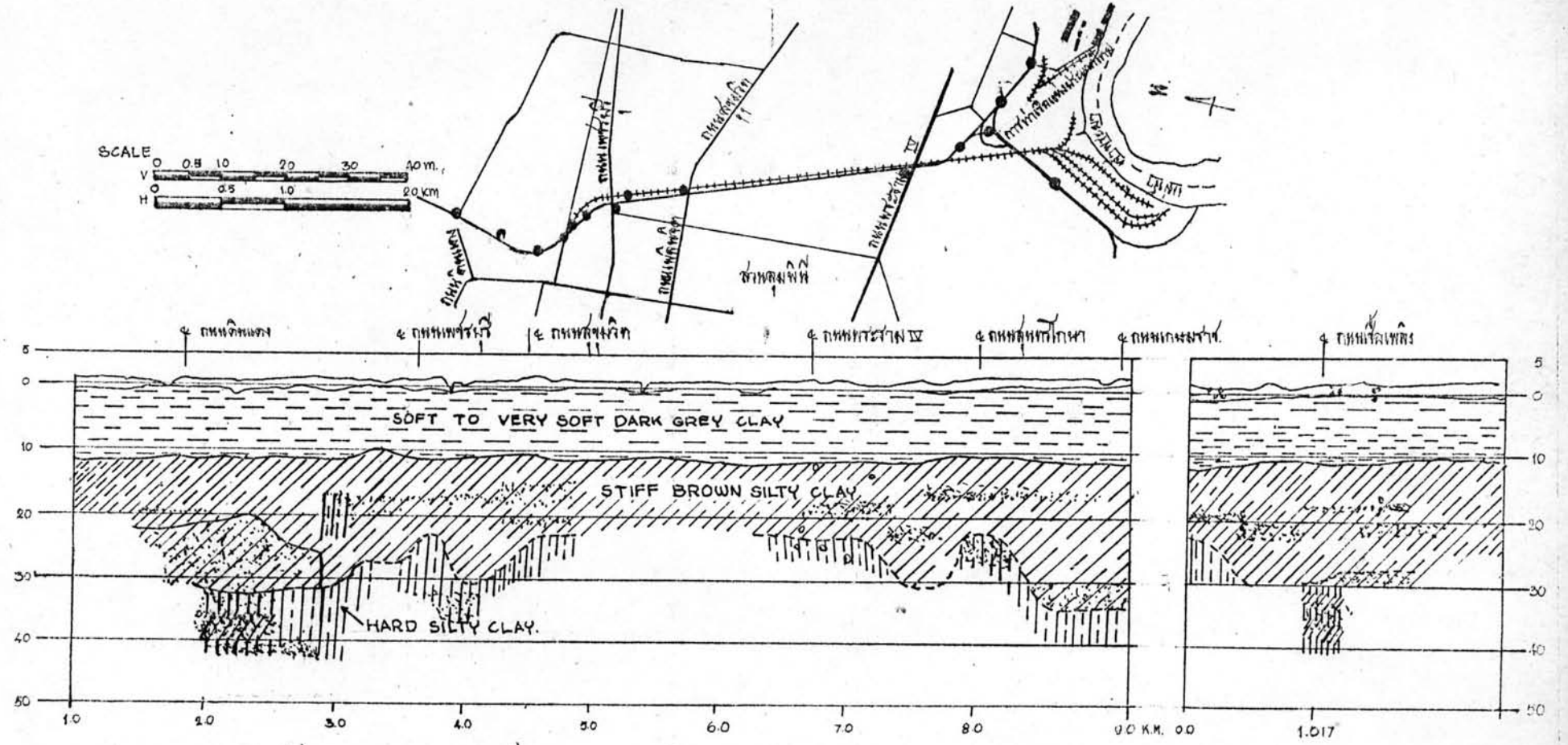
แสดงรูปตัดชั้นดินในบริเวณกรุงเทพฯ



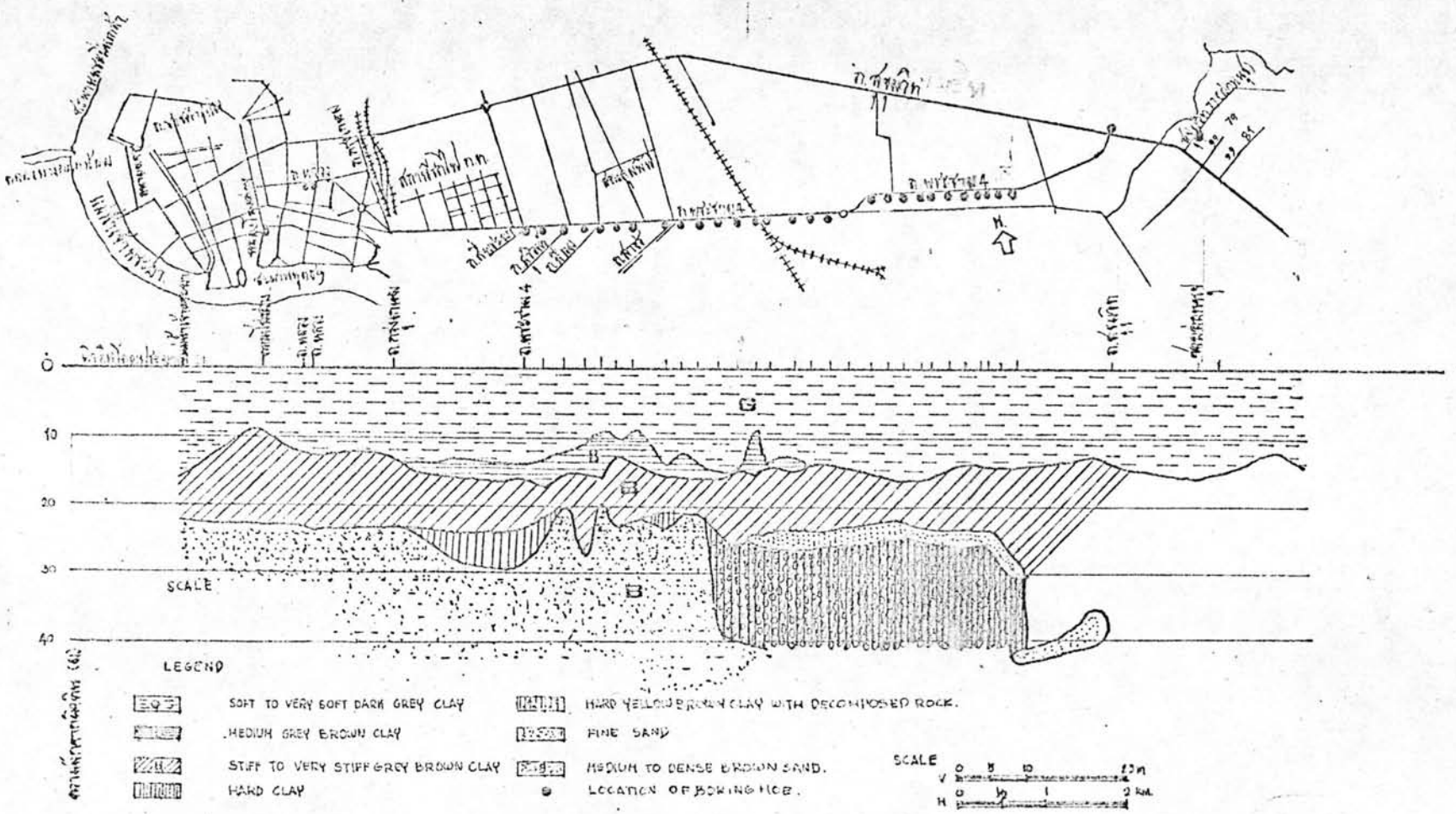
รูปที่ B.1 แสดงรูปตัดชั้นดิน ถนนเลียบแม่น้ำเจ้าพระยา (เอกสารสัมมนาทางพลาง 1977)



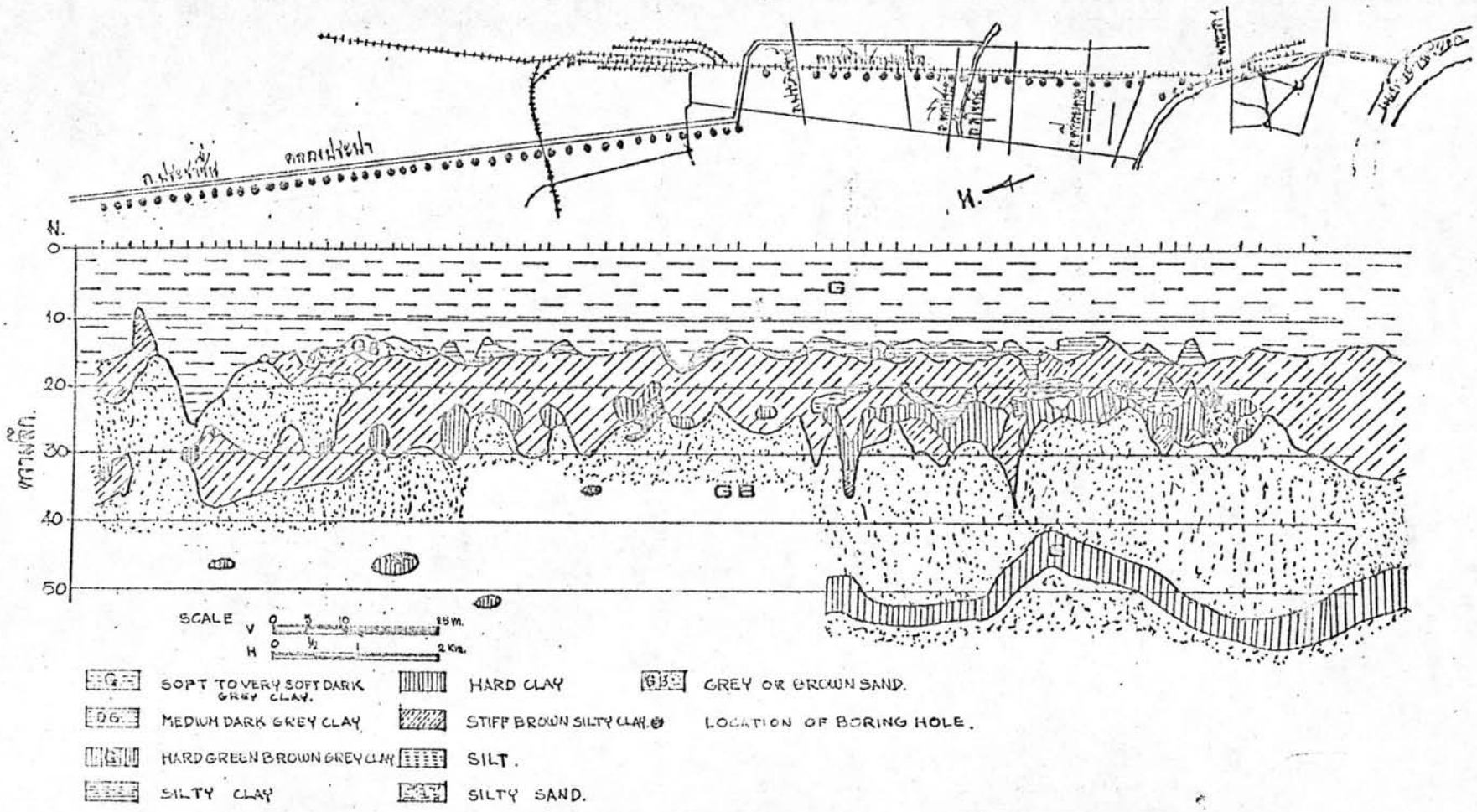
รูปที่ B.2 แสดงรูปตัดชั้นดิน กทม.เลียบแม่น้ำเจ้าพระยา (เอกสารวิชาการสมทางหลวง 1977)



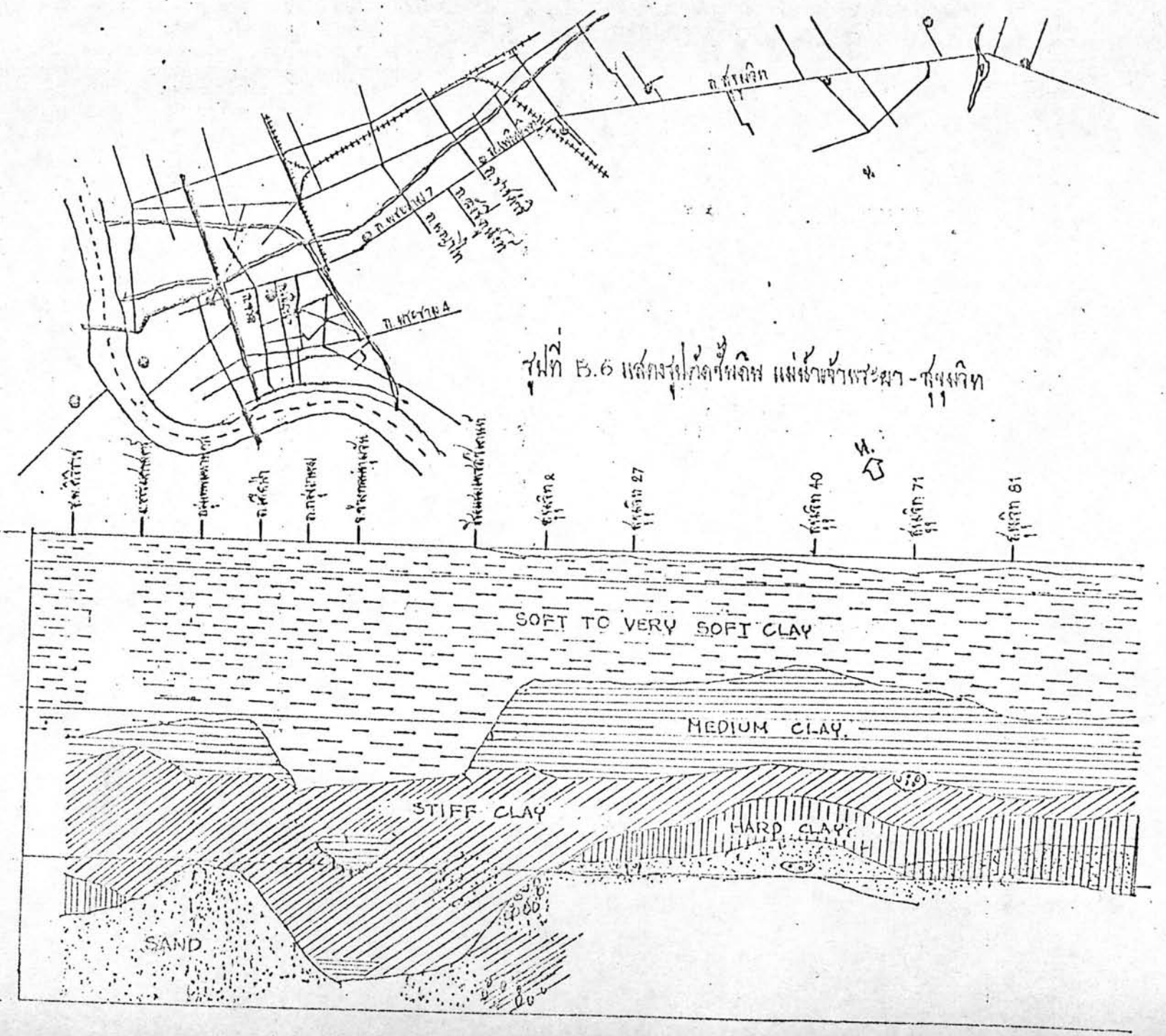
รูปที่ B.3 แสดงรูปตัดชั้นดิน ดินแดง-ท่าเรือ. (เอกสารวิจัยกรมทางหลวง 1977.)



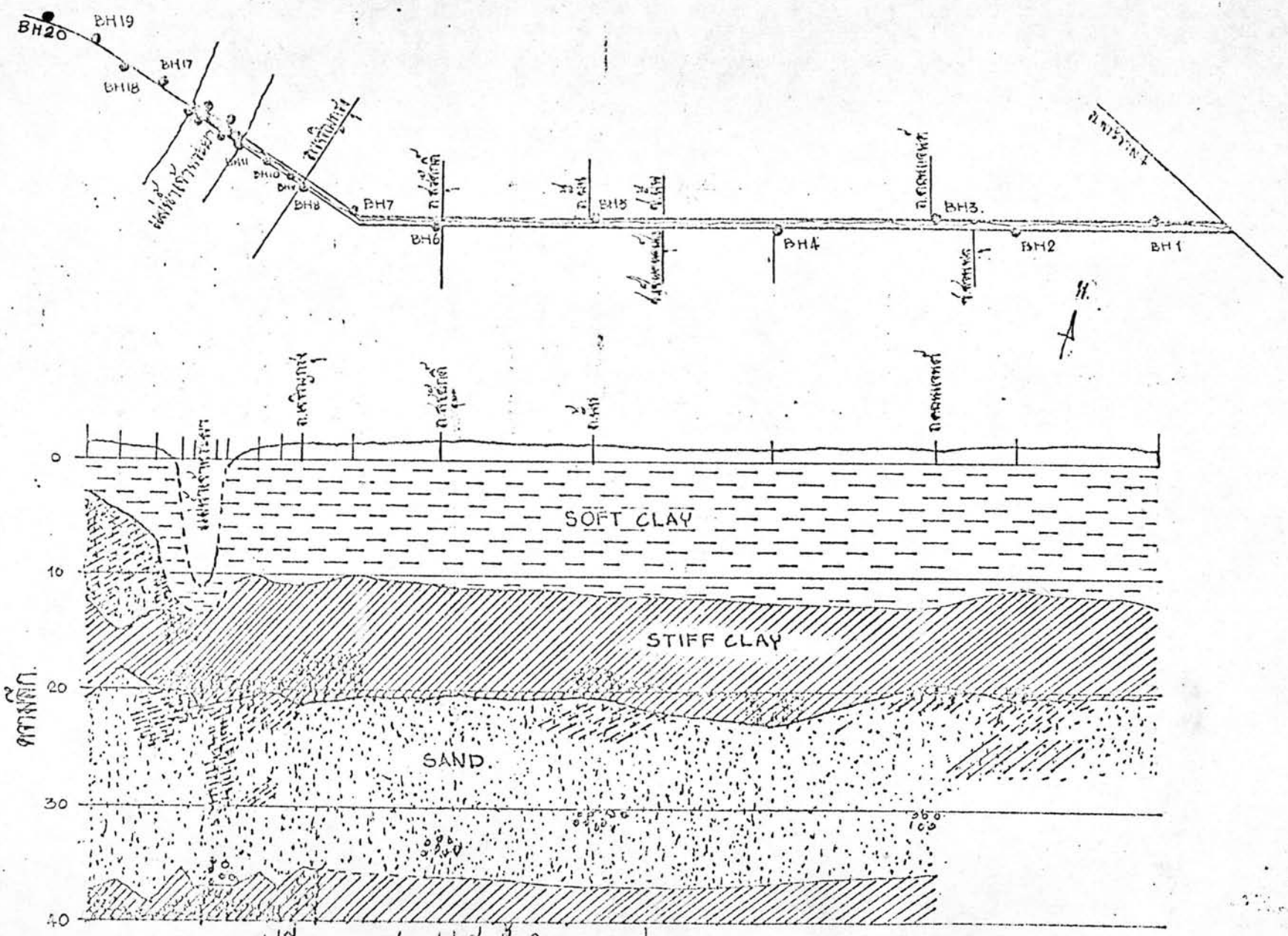
รูปที่ B.4 แสดงรูปตัดตามยาว แม่น้ำเจ้าพระยา - พระสมุทรเจดีย์ (กองสำรวจและออกแบบทางหลวง 1977)



รูปที่ B.5 แสดงชั้นดินตัดผ่านดิน แนวคลองประปา-แม่น้ำเจ้าพระยา (การประปานครหลวง)



รูปที่ B.6 แสดงชั้นดินตามแนวแม่น้ำเจ้าพระยา - ถนนเพชรบุรี 11



รูปที่ B.7 แสดงรูปตัดในดิน ถนนสาย

ประวัติการศึกษา

นายศิรัณยุทธ์ สุขัมนาถพงษ์ สำเร็จการศึกษาวิศวกรรมศาสตรบัณฑิต สถาบันเทคโนโลยีพระจอมเกล้า ปีการศึกษา 2517