

SOIL REPORT
Proposed New Thammasat Univ.
Located at Klongloun
Phaholyothin Road
Pratumthani Province

SOIL TESTING SIAM CO., LTD.
CONSULTING SOIL AND FOUNDATION ENGINEERING

218/8 PRADIPAT ROAD, BANGKOK.
TEL. 2780332 2785650

FOUNDATION BORINGS AND TESTING
FOUNDATION ANALYSES AND REPORTS
FOUNDATION PROTECTION QUALITY CONTROL
INSPECTION SUPERVISION
SURVEYING

TELEPHONE : 278-0332
278-5636

บริษัท ซอยล์เทสตั้งสยาม จำกัด
SOIL TESTING SIAM CO., LTD.
218/8 ถนนประดิพัทธ์ กรุงเทพฯ 4,
218/8 PATIPAT ROAD, BANGKOK 4

November 26, 1979

Thamasat University
Thaprachan, Bangkok

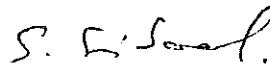
Attn: Khun Uruporn, Indhabhandhu

Ref: Subsurface Investigation for proposed New Thamasat University
located at Kloungloun District, Phaholyothin Road,
Prathomthane Province.

We are submitting herewith the result of our Geotechnical
Investigation performed at the above site.

We would welcome the opportunity to performed any herein
recommendation inspection service for you. If there are any question
regarding this report or if we can be of further service to you in
anyway, please do not hesitate to contact us.

Very truly yours,
SOIL TESTING SIAM CO., LTD.



Somboon Songpaibool
Managing Director

SS/put.

STS Job No 512

November 23, 1979.

INTRODUCTION

The Subsurface Investigation for proposed New Thammasat University Buildings and Dike around the campus region located at Klongloun, Phaholyothin Road, Prathoomthane Province closed to A.I.T.

Five (5) soil borings were required to perform at the site as located by planner at location diagram which is enclosed in the appendix of this report.

A visual inspection of proposed location revealed to be flat area and still flood at the time of investigation, the average water level was vary from 0.10 to 0.30 m. above the existing ground surface. East of the site is Phaholyothin road, North of the site is A.I.T. campus. West of the site there is a railway route to Bangkok.

The purpose of this report is to describe the soil condition encounter at the site, to analyze and evaluate the test data obtained. Recommendation regarding to the foundation, and dike design criteria are presented.

SUBSURFACE INVESTIGATION PROCEDURES

General:

The drilling was performed with skid mounted drilling rig. The bore holes were advanced by power auger and wash boring method depends on soil conditions are encountered. A 4 in.I.D. pipe casings were used to protect throughout the upper soft stratum of each bore hole.

Soil Sampling:

All soil samples were collected at 1.50 meters intervals or at changes of soil strata.

Undisturbed Sampling:

Undisturbed sampling utilized standard 3" I.D. thin wall seamless tubes with sharp cutting edge that were pushed hydraulically into cohesive soil in accordance with ASTM specification D 1587 - 63 T.

Disturbed Sampling:

A standard split spoon sampler was used where cohesionless and hard soil strata were encountered by driving a 2 in O.D. split barrel sampler into very stiff to hard clay or the cohesionless stratum with a 140 lbs. hammer falling through a distance of 30 in. The number of blows per foot of penetration was taken as the standard penetration resistance (N) value which give an indication of the relative density of the soil in place. The disturbed soil samplers in the split spoon were collected for soil type classification.

Field Vane Shear Test:

The field vane shear test were conduct at 3.0 m intervals at B-1 and B-2 by a rectangular standard size 3"x6" vane blade (Acker made). The vane was pushed into the soft soil. The torque was applied slowly through the drill rod at rate of approximately 6 degrees per minute, the maximum force to cause the soil failure to registered on the proving ring dial gauge. The strength was computed from the maximum torque that produced failure on a cylindrical surface around the vane. The remold shear strength was obtained by rapidly rotating the vane blade 2 revolutions after the undisturbed vane shear strength determination; the test procedure was then repeated until the peak torque was evaluated.

TESTING PROGRAM

The laboratory testing program consist of the following:

Natural Water Content

Unit Weight

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Atterberg Limits

Unconfined Compression Test

Specific Gravity

Consolidation Test

Consolidated Undrained Direct Shear Test

Sieve Analysis

as the requested of testing program.

SOIL CONDITIONS

The generalized profile of the subsoil conditions at these five (5) borings can be described briefly as beginning with top soil of clay, grass and roots of existing rice paddy field to the depth of 0.50 m. This top soil was immediately underlain by the following strata.

Very soft of clay trace of very fine sand was found to the depth ranging from 7.0 to 12.0 m. below the existing ground surface. It becomes deeper at middle of land.

Medium Dense of clayey sand, was found under the above layer to the depth ranging from 9.0 to 15.0 meters, and no any deposited at area of B-1 & B-2.

Stiff to very stiff of silty clay trace to some fine sand was found below the above layer to the depth ranging from 13.0 to 18.0 m at location of B-4 and B-5 was found medium dense of clayey sand to the depth of 15.0 to 18.0 m respectively.

Dense of fine to medium sand was found below the above stratum to the depth ranging from 23.0 to 26.0 m.

Very dense of sand and gravel was found under the above layer to the end of boring of 30.0 m.

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GROUND WATER CONDITIONS

The ground water level measurements obtained while the borings were performed to be at the depth ranging from + 0.30 to + 0.10 above the existing ground surface, and were - 1.10 to - 2.0 m below the existing ground surface after 24 hours reading. It is our opinion that the water table could extend as high as possibility of 1.0 m above the existing ground surface in high water level season.

Significant fluctuation in the location of ground water table should be anticipated throughout the year, depending upon the amount of precipitation, evaporation and surface runoff.

RECOMMENDATIONS

Based upon the available information and the soil conditions were encountered. It is recommended that long pile end bearing type foundation be employed to support all the building structures. The tip of concrete pile should be seated in the dense of fine to medium sand at the depth ranging from 15.0 to 18.0 m depends on the location of the building.

Pile Foundation:

For example if we use pile size of 0.35x0.35x16.0 m where pile top is at 2.0 m below the existing ground surface, and pile tip is at 18.0 m below the existing ground surface; at location of B-5 from Fig. 2 shown that the ultimate of pile capacity is 64 tons per pile, if factor of safety of 2.0 is used, the allowable of pile capacity is 32 tons per pile. (This is the worse condition at the site.)

Exbankment of Dike:

It is understood that the designer plan to build the dike around all the proposed campus. From our experience and soil properties, it is

recommended that dike - channel combinations are the most economical way to build, but care should be exercise for bank protection by installations of rock ribrab or grassing along side slopes, and the dike should be placed at a proper distance back from the channel stability of fills and slopes should be designed by the engineer by use of soil properties as shown in the appendix of this report.

GENERAL

The analysis and recommendations submitted in this report are based on available information. Since significant variations in soil conditions may occur between the boring locations, it is recommended that footing excavation and pile driving operations be inspected by an experienced soil engineer to assure that the bearing capacity conforms with the design and specifications.

This report has been prepared in order to aid in the evaluation of the site condition and only to assist the engineers in the design of the project, based on our understanding of the design details, criteria & utilization of the project as outlined herein. Also, if our understanding of the design and utilization is not correct, we should be promptly informed of the correct data so that we may revise our recommendations as appropriate.

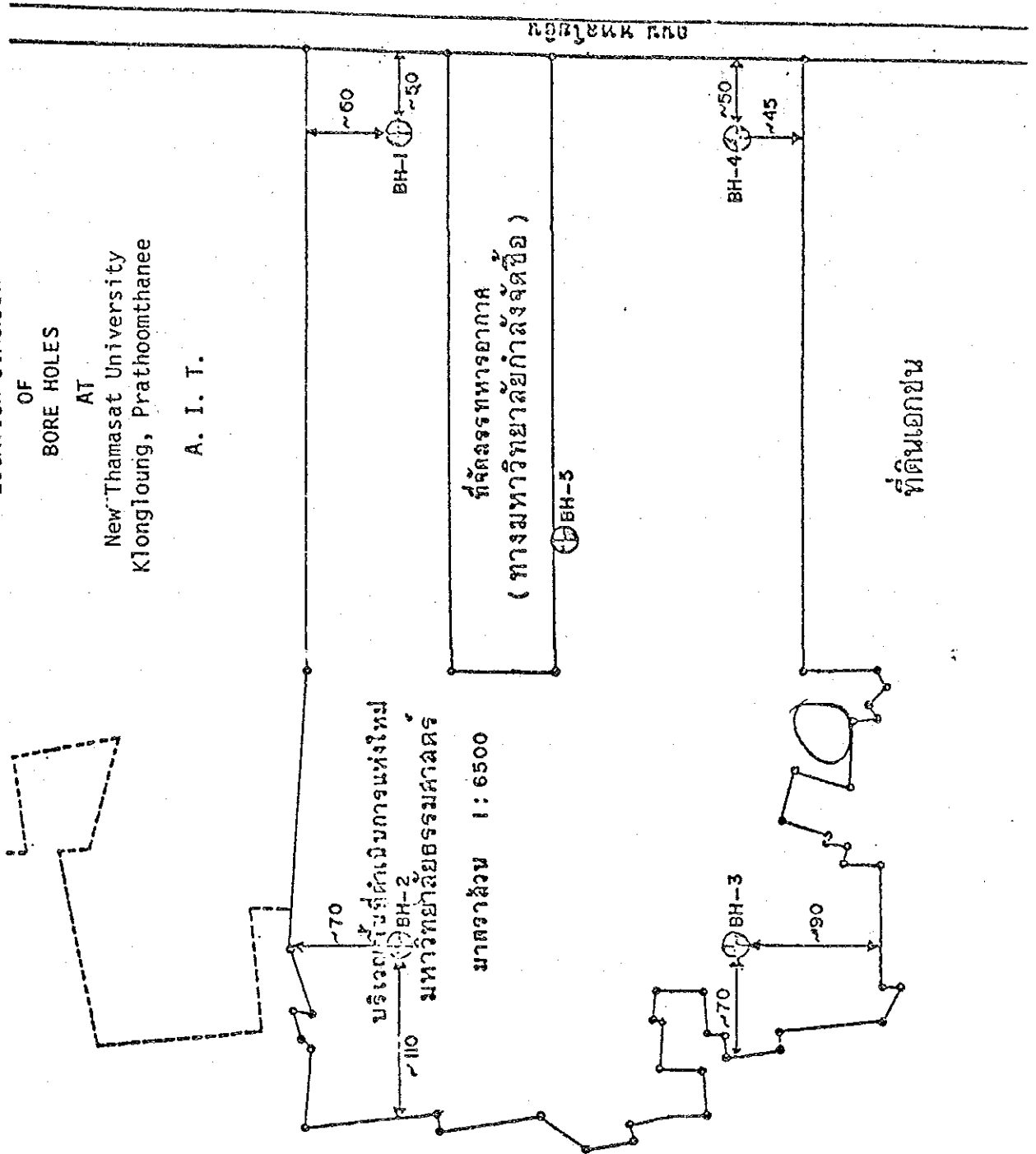
LOCATION DIAGRAM

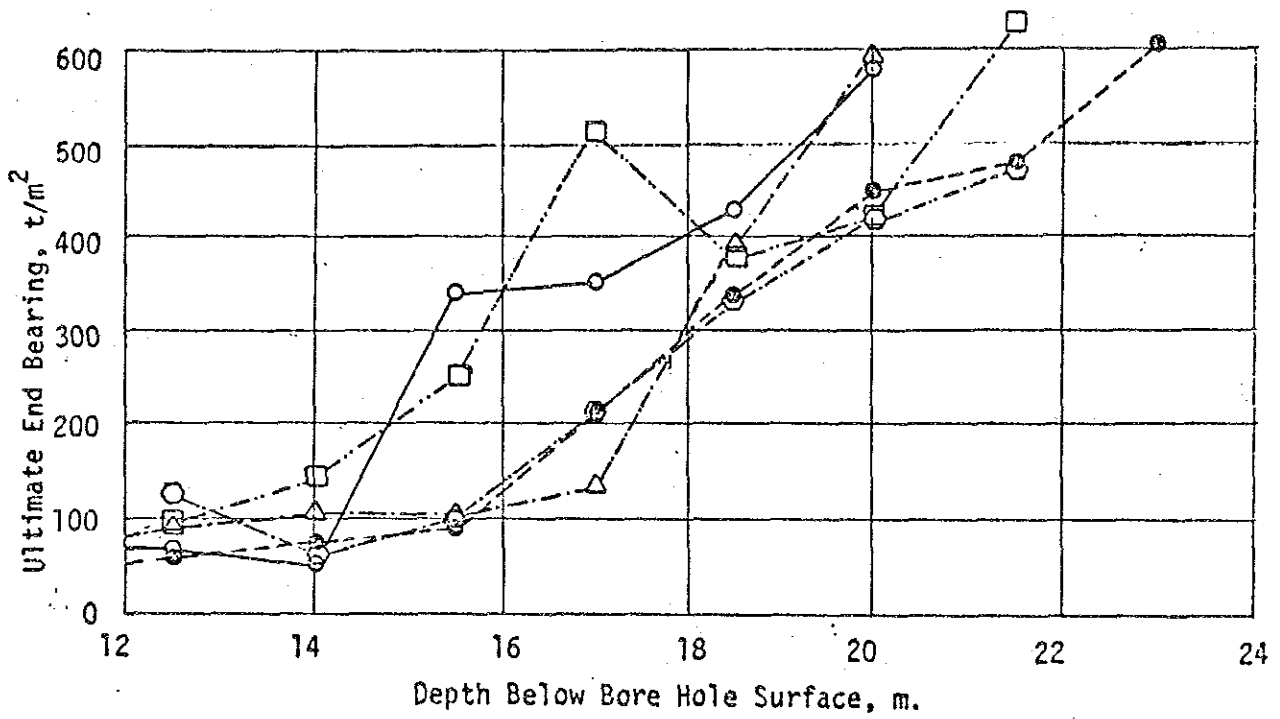
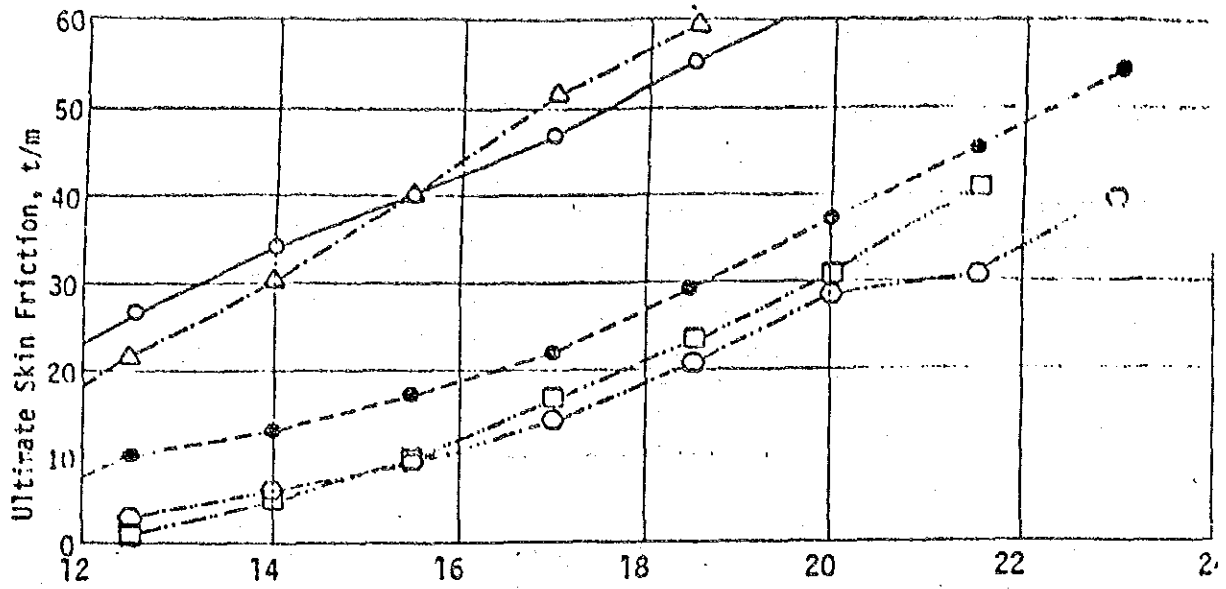
OF
BORE HOLES

AT

New Thamasat University
Klongloug, Prathoomthane

A. I. T.





- — B-1
- - - B-2
- △ - · B-3
- ··· B-4
- - - - B-5

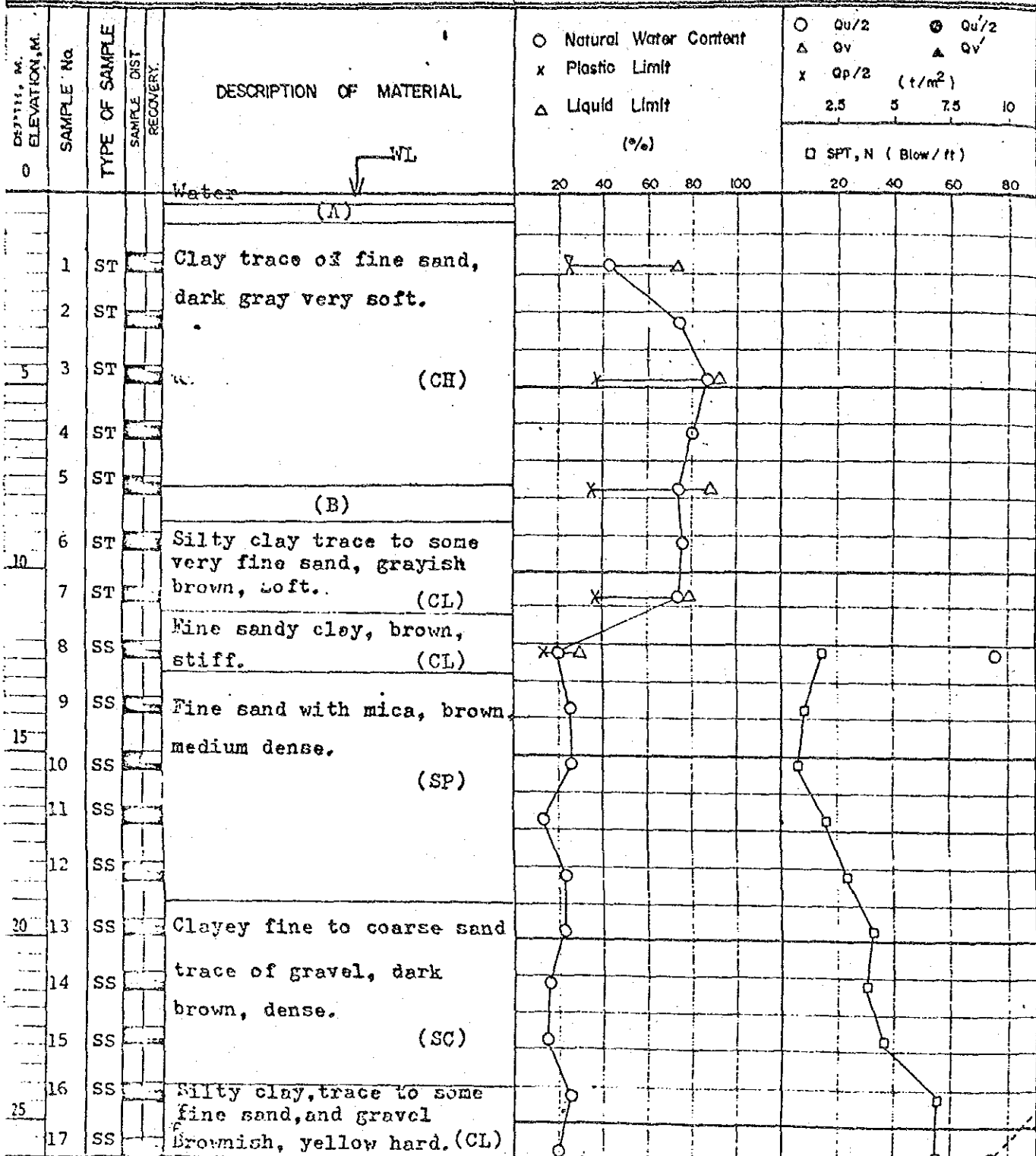
Fig. 2 : Suggested Ultimate End Bearing and Skin Friction Capacity

**SOIL TESTING SIAM CO, LTD.
SUMMARY OF TEST RESULTS**

PROJECT NEW THAMMASAT UNIVERSITY (RUNGSIT)		LOCATION. RUNGSIT, PATHUMTHANI													
DATE. Nov. 8, 1979		BORING No. B-2	JOB No. 514												
DEPTH M.		OBSERVED W.L.													
SAMPLE #	FROM	TO	WATER CONTENT %	ATTERBERG LIMIT %			KFT UNIT WEIGHT	SIEVE ANALYSIS % FINER		SOIL CLASSIFICATION	UNCONSOLIDATED SHEAR STRENGTH 1/m ²				STANDARD PENETRATION(N)
				LL.	PL.	PI.		No. 10	No. 40		No. 200	UNCONFINED SHEAR Qu/2	FIELD VANE SHEAR Qv	POCKET PENETRATION Qp	
ST-1	1.50	2.00	41.6	73.0	24.2	48.8	1.69			CH	-	1.24	0.53	0.5	
ST-2	3.00	3.50	74.9				1.42			CH	-				
ST-3	4.50	5.00	88.2	90.4	35.6	54.8	1.32			CH	-	0.30	0.10	0.1	
ST-4	6.00	6.50	80.3				1.34			CH	-			0.1	
ST-5	7.50	8.00	74.2	89.8	34.3	55.5	1.41			CH	-	0.35	0.12	0.1	
ST-6	9.00	9.45	78.2				1.48			CL	-			1.0	
ST-7	10.50	11.00	76.3	78.8	37.2	41.6	1.62			CL	-			7.5	
SS-8	12.00	12.45	20.9	30.7	17.7	13.0	2.19			CL	9.55			8.7	15
SS-9	13.50	13.95	25.1		NP					SP	-				8
SS-10	15.00	15.45	26.3							SP	-				7
SS-11	16.50	16.95	13.0							SP	-				17
SS-12	18.00	18.45	23.3							SP	-				25
SS-13	19.50	19.95	21.6							SC	-				33
SS-14	21.00	21.45	18.9							SC	-				32
SS-15	22.50	22.95	16.4							SC	-				38
SS-16	24.00	24.45	27.3				1.99			CL	15.50			16.2	56
SS-17	25.50	25.95	20.4				2.06			CL	9.30			12.5	55
SS-18	27.00	27.45	14.6							SM-GF	-				48
SS-19	28.50	28.95								SM-GF	-				59
SS-20	30.00	30.45								SM-GF	-				56

LOG OF BORING No. B - 2

PROJECT NAME. THAMMASAT UNIVERSITY	LOCATION. RUNGSIT , PATHUMTHANI
OWNER THAMMASAT UNIVERSITY	CONTRACTOR. -



WATER LEVEL OBSERVATIONS	SOIL TESTING SIAM CO., LTD.	BORING STARTED. Oct. 23/79
W. + 0.10 m. W.S. OR WD	BANGKOK.	BORING COMPLETED. Oct. 24/79
B.C.R. A.C.R.		RIG. J-2 FOREMAN. SK
W. - 2.00 24 HRS. AFTER BORING.		DRAWN. SRP APPROVED.
		JOB No. 514 SHEET. 1/2

LOG OF BORING No. B - 2

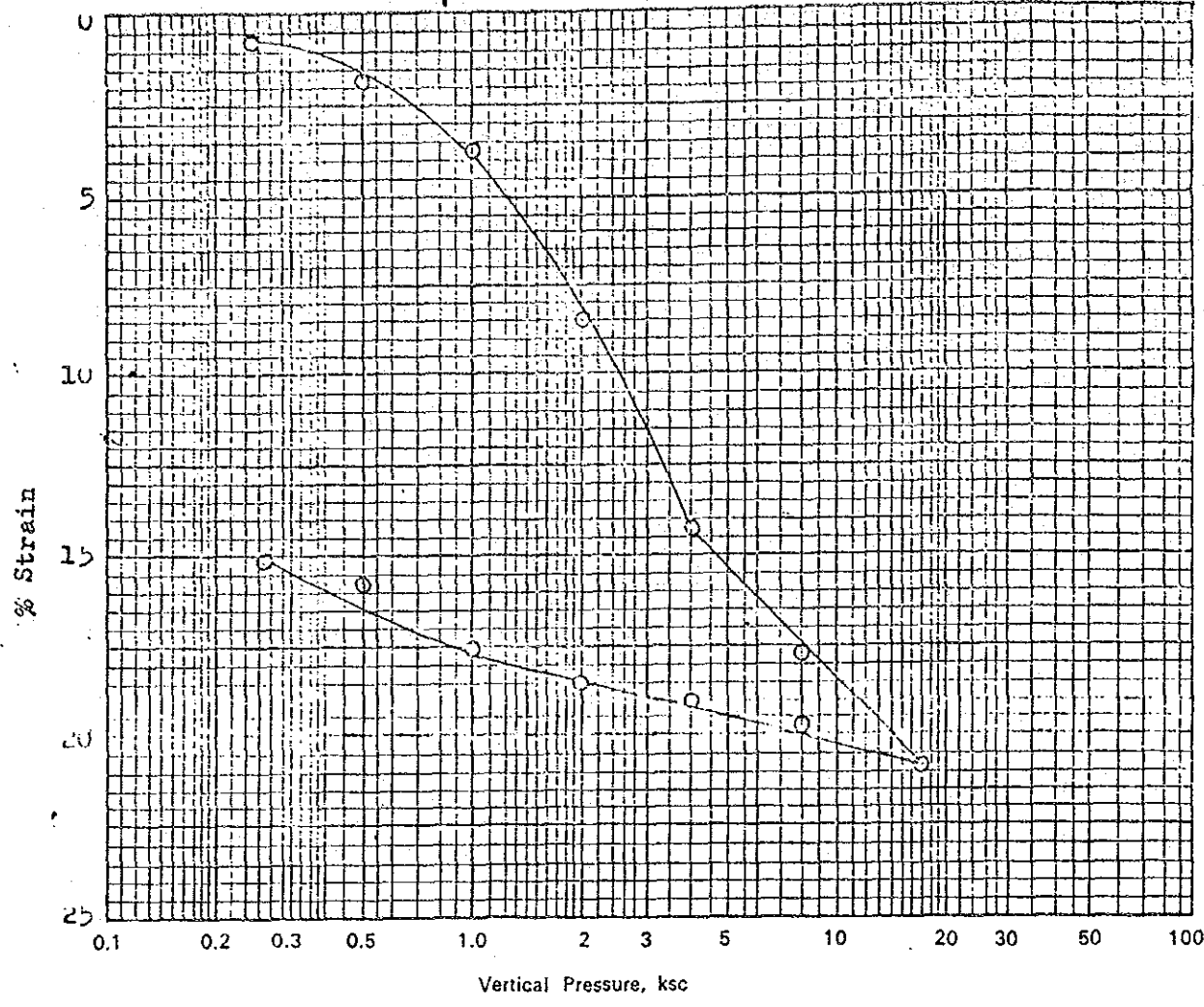
PROJECT NAME. THAMMASAT UNIVERSITY	LOCATION. RUNGSI , PATHUMTHANI
OWNER THAMMASAT UNIVERSITY	CONTRACTOR. -

DEPTH, M ELEVATION, M	SAMPLE No.	TYPE OF SAMPLE	SAMPLE DIST. RECOVERY.	DESCRIPTION OF MATERIAL	<input type="checkbox"/> Natural Water Content <input checked="" type="checkbox"/> Plastic Limit <input checked="" type="checkbox"/> Liquid Limit (%)				<input type="checkbox"/> Qu/2 <input checked="" type="checkbox"/> Qu/2 <input checked="" type="checkbox"/> Qv <input checked="" type="checkbox"/> Qv' <input checked="" type="checkbox"/> Qp/2 (t/m ²) 2.5 5 7.5 10 <input type="checkbox"/> SPT, N (Blow/ft) 20 40 60 80										
					20	40	60	80	100	20	40	60	80						
17	SS			Coarse sand and gravel, brown, very dense.															
18	SS																		
19	SS																		
20	SS			END OF BORING															
				(A) Clay with some roots and glass. (Top-Soil)															
				(B) Clay with pocket of sand, brown, soft. (CH)															

WATER LEVEL OBSERVATIONS WL. + 0.10 m. W.S. OR WD WL. B.C.R. A.C.R. WL. - 2.09 24 HRS. AFTER BORING.	SOIL TESTING SIAM CO., LTD. BANGKOK.	BORING STARTED. Oct. 23/79 BORING COMPLETED. Oct. 24/79 RIG. J-2 FOREMAN. SK DRAWN. SRP APPROVED. JOB No. 514 SHEET. 2/2
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CONSOLIDATION TEST RESULTS

Project NEW THANMASAT UNIVERSITY	Location RUNGSI	Job No. 514
Boring No. BH-2	Sample No. ST-1	Depth 1.50-2.00 m. Date 15/11/22

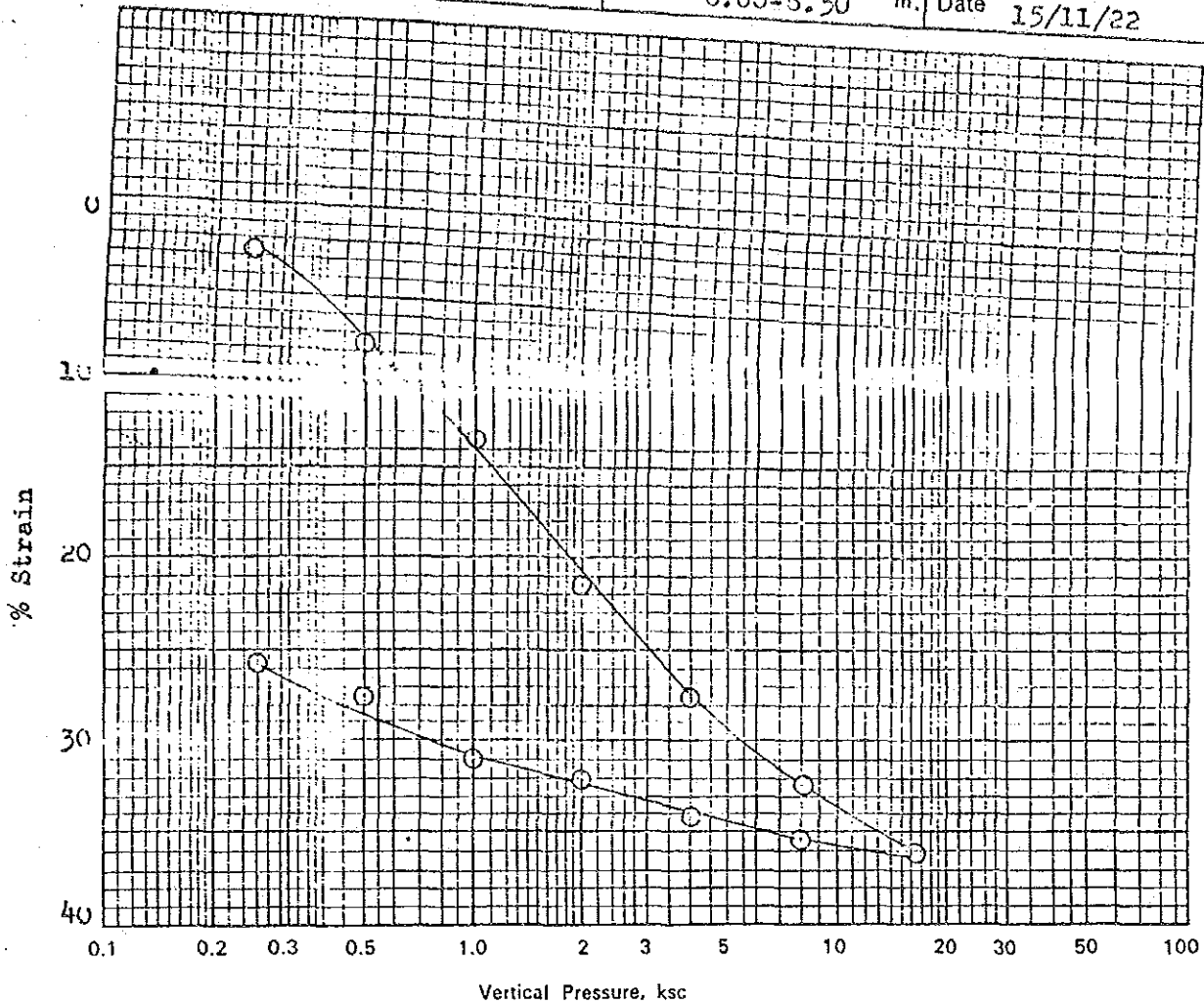


Pressure ksc	50% Consol. Time min	Coef. of Consolidation $C_v, 10^{-4} \text{ cm}^2/\text{sec}$	% Strain e	Initial		Final	
				Height of Sample, H cm.	Water Content, W %	Degree of Saturation, S %	Solid Height of Sample, Hs cm.
0.125	—	—	—	2.54			
0.25	—	—	—				Diameter of Sample D 6.3 cm.
0.50	9.0	5.70	1.90				Wet Unit Weight γ_t g/cc
1	0.5	5.13	4.74				Dry Unit Weight γ_d g/cc
2	21.0	2.18	8.53				Liquid Limit LL %
4	15.5	2.60	14.21				Plastic Limit PL %
8	11.0	3.49	17.53				Compression Ratio CR 0.102
16	18.0	2.03	20.38				Rebound Index C_r
Final	—	—	—				Specific Gravity G

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CONSOLIDATION TEST RESULTS

Project **NEW THANIASAT UNIVERSITY** Location **RUNGKIT** Job No. **514**
 Boring No. **BH-2** Sample No. **S_F-4** Depth **6.00-6.50 m.** Date **15/11/22**



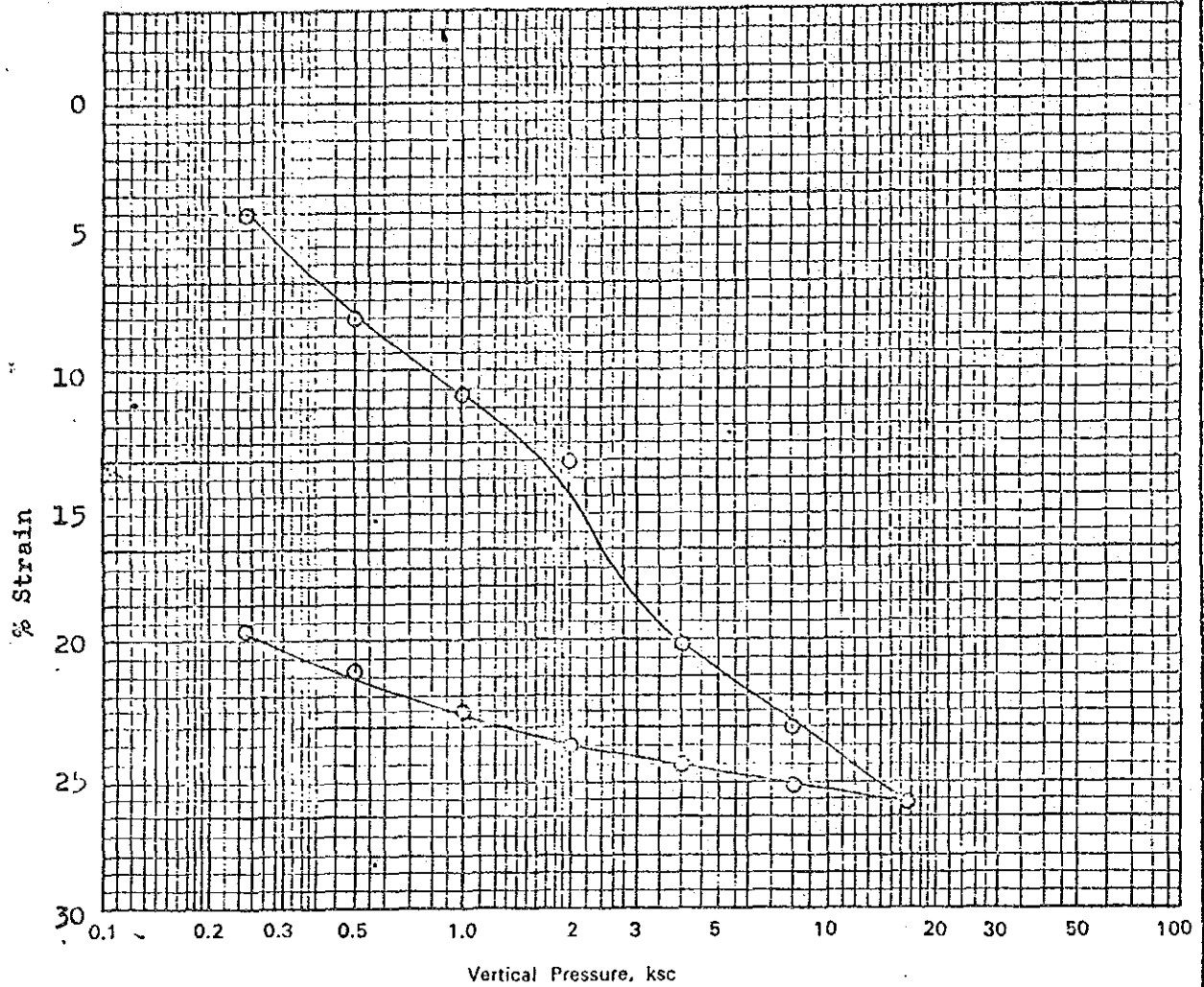
Pressure ksc	50% Consol. Time min	Coef. of Consolidation $C_v, 10^{-4} \text{ cm}^2/\text{sec}$	% Strain	Initial		Final	
				Height of Sample, H cm.	Water Content, W %	Degree of Saturation, S %	Solid Height of Sample, H _s cm.
0.125	—	—	—	2.54			
0.25	—	—	—				

Pressure (ksc)	Time (min)	Coef. of Consolidation (C_v)	% Strain	Dry Unit Weight (γ_d) g/cc	Liquid Limit (LL) %	Plastic Limit (PL) %	Compression Ratio (CR) 0.236	Rebound Index (C_r)	Specific Gravity (G)
1	22	1.89	15.74						
2	26	1.36	21.80						
4	15	1.20	27.96						
8	9	1.88	32.22						
16	12	2.16	36.01						
Final	—	—	—						

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CONSOLIDATION TEST RESULTS

Project NEW THAEMASAT UNIVERSITY	Location RUNGSIT	Job No. 514
Boring No. BH-2	Sample No. ST-7	Date 5/11/22
Depth 10.50-11.00 m.		



Pressure ksc	50% Consol. Time min	Coef. of Consolidation $C_v, 10^{-4} \frac{cm^2}{sec}$	% Strain		
				Initial	Final
				Height of Sample, H	cm. 2.54
				Water Content, W	%
Initial	—	—		Degree of Saturation, S	%
0.125				Solid Height of Sample, Hs	cm.
0.25				Diameter of Sample D	6.3 cm.
0.50	45	1.01	8.105	Wet Unit Weight γ_t	g/cc
1	35	1.25	10.90	Dry Unit Weight γ_d	g/cc
2	2	20.90	13.27	Liquid Limit LL	%
4	58	0.96	20.38	Plastic Limit PL	%
8	11	2.29	23.22	Compression Ratio CR	0.095
16	18	1.81	26.07	Rebound Index C_r	
Final	—	—		Specific Gravity G	

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Construction Implement Chart																
* Fiscal Year Start																
DESCRIPTION	1983 *				1984 *				1985 *				1986 *			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Infrastructure																
1. Water Supply				Oct.'83 (300 days)	Apr.'84											
2. Electricity				Oct.'83 (120 days)	Feb.'84											
3. Sewage										Apr.'85 (300 days)			Jan.'86			
4. Drainage										Apr.'85 (300 days)			Jan.'86			
5. Tele-Communication					1	Apr.'84	Jun				2	Jul.'85		Dec.'86		
Building																
1. Administration							Jul.'84			(660 days)				Apr.'86		
2. Lecture Theatre							Jun.'84			(540 days)				Nov.'86		
3. Audio - Vision							Jul.'84			(450 days)						
4. Dormitory							May.'84			(720 days)				Apr.'86		

付属資料9 タマサート大学ランシット新キャンパス建設実施予算

RUNGSIT CAMPUS BUDGET

Estimated Project Cost (1979 - 1986)

"Budget year (Oct. 1 - Sept. 30)

Estimated Cost	Budget	Total
1979 - 1982	42,970,700	42,970,700
1983	40,091,800	40,091,800
1984 (Oct. 1, 1983 - Sept. 30, 1984)	39,139,400	39,139,400
1985 - 1986	118,759,400	118,759,400

1986 - 1991 to 6th five years period of National
Economic and Social Development Plan

CONSTRUCTION PROJECT OF RUNGSIT CAMPUS (Oct. 1, 83 - Sep. 30, 84)

1.	Equipment, Land and Building	39,139,400.00 Bahts
1.1	Land and Building	39,139,400.00
1.2.1.	<u>Land Cost</u>	4,539,400 Baht
	Land to be purchased	4,539,400 Baht
	(Total cost 8,878,800 Baht	
	Budget for 1984 4,439,400 Baht	
	4,439,400 committed for 1985 budget)	
1.2.2.	<u>Building</u>	34,600,000 Baht
	a) Classroom Building (1 unit)	3,000,000 Baht
	(Total cost 16,000,000 of which	
	13,000,000 committed for 1985 budget)	
	b) Audio-visual Center (1 unit)	3,000,000 Baht
	(Total cost 8,480,000 of which	
	5,480,000 committed for 1985 budget)	
	c) Office Building for Admini- stration	4,000,000 Baht
	(Total cost 43,140,000 of which	
	19,570,000 committed for 1985	
	budget and 19,570,000 committed	
	for 1986 budget)	
	d) Students Dormitory (4 units)	6,300,000 Baht
	(Total cost 63,000,000 of which	
	35,000,000 committed for 1985	
	budget and 21,700,000 for 1986	
	budget)	
	e) Land Improvement	15,000,000 Baht
	f) Renovation of existing building	3,300,000 Baht

付属資料 10 タイ国における日本の国際交流機関

現在、タイ国にあって、日本に関する情報を提供し、日本に関する研究を奨励・援助している機関、または逆にタイに関する情報を日本人に提供している機関について、その主なものを説明する。

1 日本大使館広報文化センター

タイ国人に対して日本の実情を広報し、また文化交流を推進するためのセンターとして、1957年開設され現在に至っている。

当センターの広報文化活動は主として、日本政府の仕事の一部門として、組織的、計画的に行うものであって、活動の内容も、政府の政策や事業が中心を占めることとなる。

その活動は広報部門と文化部門とに大別できる。

〔広報部門〕

(1) マス・メディアに対するサービス

日本の実情を紹介する「プレス・サービス」「フォト・サービス」のタイ語による編集および配布

T.Vを活用して日本特集番組の放映

(2) 広報映画フィルム の貸出しと映画会

大半が外務省製作の日本紹介フィルムの貸出し、地方へは広報車を定期的派遣し、広報映画会、またバンコックでは毎月1回の映画会の実施

(3) 広報資料の発行・配布

外務省作成の英語版資料の他、センター編集・発行のタイ語版資料の配布

(4) 日本紹介催物の開催・協力

他の団体と日本紹介催物の共催やタイの大学が企画のセミナー、講演会等の協力

(5) インクワイアリーの処理

タイ国老若男女、手紙や電話、来訪などによる日本に関する種々の問合せに対する解答

〔文化部門〕

(1) 留学生の選考と受入れ

日本政府の奨学金で日本へ派遣されるタイ人学生は年60～80名、その大部分はセンターが選考する。

一方、日本からの留学生に対する学生の入学許可、大学との調整などの実施

(2) 帰国日本留学者に対する援助

戦前、戦中および戦後を通じてわが国の大学で学んだタイ人は2,000人を超えている。こ

の人々と交流を続け、可能な限りの援助を行う。主として、日本留学生会等に若干の資金面の援助、様々なプログラムへの協力の窓口

(3) 学者・文化人・教育関係者の招聘

文化交流、教育交流の中心となり影響力を有する人物を短期間日本へ招き、日本の実情をつぶさに視察せしめる。

(4) 教育・スポーツ・文化振興への援助

日本政府の「文化無償協力」の実施

日本の教育・文化団体や体育協会などの援助プログラムのあっせん・助言・通関援助

(5) 学術協力・日タイ大学間協力の促進

日本政府の海外学術研究助成金による学術調査団（タイへは年間7～9団）や日本学術振興会の開発途上国との学術協力事業で、年100名を越える学者が往来し、共同研究を行う。

(6) センター付属日本語学校の運営

日本人専門家2人により、タイで最も高い水準の日本語教育を目指している。

(7) 定期映画会・地方大学等巡回映画の実施

毎月1回、タイ人を対象に日本の映画会をセンター映写室で開催している。また2ヶ月に1回は地方の大学、師範学校、その他での映画会を行うため広報車を派遣する。

(8) 日本図書の貸出し

現在、約2,000冊の蔵書を擁し、図書室を設けている。

2 国際交流基金

国際文化交流事業を目的として、1972年（昭和47年）に設立された、外務省所管の特殊法人であり、その主な業務は次の通りである。

(1) 人物交流事業

人物の派遣と人物の招へい

(2) 日本研究等援助事業

日本語の普及と日本研究の援助

(3) 催しの実施・援助等事業

展示と公演

(4) 文化紹介資料作成・頒布事業

(5) 視聴覚啓発事業

国際交流基金は海外に10ヶ所の海外事務所を、ASEAN諸国ではジャカルタ日本文化センターとバンコック駐在員事務所をもっている。設立以降のタイ国での活動は次頁の表の通りである。（国際交流基金年報57年版）

また、日本研究の援助として、日本に関する研究蔵書約4,000冊を擁する図書室を設けている。

(国際交流基金のタイ国に関する活動)

事業	昭和47年～55年度	昭和56年度
人物交流		
派遣	長期派遣 8名	短期派遣 29名
招へい	短期派遣 113名	長期招へい 5名
	長期招へい 25名	短期招へい 4名
	短期招へい 35名	グループ招へい 21名
	グループ招へい 153名	
日本研究		
日本語の普及	日本語教育専門家派遣 29名	日本語教育専門家派遣 9名
	日本語弁論大会招へい 1名	
	日本語普及講座現地講師助成 24件	日本語普及講座現地講師助成 4件
	海外日本語弁論大会助成 6件	海外日本語弁論大会助成 1件
	海外日本語講師研修会 12名	海外日本語講師研修会 2名
	海外日本語講座成績優秀者研修会 18名	海外日本語講座成績優秀者研修会 3名
日本研究援助	日本研究講座への教授・講師の派遣 56名	日本研究講座への教授・講師の派遣 8名
	日本研究講座助手等招へい 5名	日本研究講座助手等招へい 2名
	日本研究に対する助成 21件	日本研究に対する助成 6件
催し物		
展示	海外巡回展主催 2件	海外巡回展主催 3件
公演	海外公演主催 7件	海外公演主催 1件
	海外公演助成 3件	海外公演助成 1件
	「第1回アジア伝統芸能の交流」招へい 1件	
資料		
	出版助成 5件	出版助成 3件
	図書購送 24件	図書購送 2件
	日本語普及講座教材購送 36件	日本語普及講座教材購送 9件
	日本研究講座教材購送 12件	
	講師用携行教材 2件	

3 日泰技術振興協会 Technological Promotion Association (Thai-Japan) (TPA)

タイにおける技術発展を促進することを目的として、1973年に登録された、日本の民間団体日泰経済協力協会 (Japan-Thailand Economic Cooperation Society) の協力のもとに設立された民間団体である。

その目的は次の通りである。

- (1) 協会の技術向上と支援および一般への伝達
- (2) 技術に関するセミナーと研修会の開催
- (3) 技術に関する資料収集、翻訳、出版
- (4) 技術書等の図書館の設置
- (5) タイ語および日本語の研修
- (6) 他と同類機関との協力

これらの目的達成のため次の事業が行われている。

- (1) セミナー事業、セミナーと研修会の開催
- (2) 工業技術援助事業
技術テキストの発行と調査、資料収集
- (3) 産業機械事業
技術機器の訓練と習得
- (4) 語学研修事業
タイ語および日本語の教育
- (5) TPA ジャーナルの出版および図書館 年8冊の技術の出版
- (6) 計画分析事業
- (7) エネルギー研究事業

これらの事業実施主体は、14名の理事によって構成される理事会がたずさわり、理事会のもとに各事業分担の実行委員会が設置されている。協会の運営組織は所長のもとに次の3部門が設置されている。

管理事務部

第1業務部 中小企業調査指導科

語学教育科

出版、図書科

第2業務部 セミナー科

産業機械科

省エネルギー科

品質管理科

現在職員数は27名であり、その中日本語教師と各プロジェクトの指導要員として2名の日

本人専門家が海外技術者振興協会を通じて派遣されている。運営費は年間予算1億円でその中60%が日本の団体からまかなわれている。

4 パンコック日本人商工会議所

商工業に関係ある在泰日本人および日本国法人の支店、出張所、駐在員並びに日本人の関与する現地法人を以って構成されている。会員数は369社(1983年4月1日現在)である。本会議所の目的は次の通りである。

(1) 日、タイ両国間の商工業および経済全般の促進

(2) 会員相互の親睦をはかる。

(3) 会員の商活動発展のための援助および便宜供与

(4) 仏暦2509年会議所法の規定に基き、会議所として行わねばならないその他の業務

これらの目的を達成するための必要に応じ部会および委員会が設けられ、現在20の委員会および部会があり、各々活動している。

商工会議所は、日本人会員のためにタイ国の社会経済、税制その他の情報を提供しており、年4～5冊の書籍を出版、販売している。

**Government Building Standard
1978**

Objective : To standardize government office building in terms of functional floor area and cost per squaremeter as stipulated by the Budget Bureau. The following guidelines for designing and specification writing are used for all building-those required piling or non piling.

Design : All designs are encouraged on applying modular coordination method according to standard of Institute of Applied Science Technology of Thailand.

Building : For purpose of estimating total floor area of a building, each functional area shall be estimated according to the following guidelines

- Office of Minister, Under Secretary of State
(including toilet) = 40 M²/person
- Office of Deputy under secretary of state,
Director general, Deputy Director General = 30 M²/person
- Office of Director of Division/Chief of
Division = 16 M²/person
- Office of the officials whom position
higher than level 6 = 12 M²/person
- Working space for other officials
employees = 4.5 M²/person
- Working space for professionals = 6 M²/person
- Auditorium = 2 M²/person
- Waiting area = 1 M²/person
- W.C. = 0.5 M²/person
- storage or other areas shall be considered according to the
needs of each government unit e.g. laboratory, sitting room
- service area, circulation core shall be provided 1/3 of total
above areas
- Building higher than 4 storeys shall have fire escape.

Remarks : Parking area shall follow the law. If there is a need to build a cars' park within the building it is required an approval from Budget Bureau as special case.

Structure : Floor and stairs shall be reinforced concrete or fire-proofed material; shall be economically designed. In the case that piling is required, the concrete pile or prestressed concrete pile shall be used.

- roof truss shall be wood, steel or reinforced concrete according to suitability and economical considerations
- longitudinal span of building each bay shall not exceed 4.20 meters, cross span shall not exceed 8.40 meters.
- height of building
 - ground floor shall not be higher than 4 M.
 - other floor shall not exceed 3.60 M.
- false cieling shall be provided where deemed necessary for example under the roof, under W.C. and the conference room
- corridor shall not exceed 2.70 meter wide except that emergency exit could be wider
- roof and slab overhang shall not exceed 2.10 meters
- sunscreen shall be provided where deemed necessary with economical design.

Building Materials :

All materials quoted here if not indicated source of origin, shall be used domestic products.

Reinforced Concrete Structure:

- cement shall be portland cement according to Industrial Standard Product
- sand aggregate or gravel shall be local material or of neighbouring sources acceptable with the technical requirement.
- reinforced steel shall meet Industrial Standard Product Wood structure
- shall be hard wood or chemical treated wood of similar strength Steel Roof
- shall meet Industrial Standard Product

Roof truss and Roofing

- Wood roof truss shall be hard wood or chemical treated wood of similar strength
- steel roof shall meet Industrial Standard Product
- reinforced concrete roof truss same as 3.1
- roofing shall be asbestos cement, shall meet Industrial Standard Product

Floor Stairs and Finishing

- reinforced concrete floor same as 3.1 or prefabricated floor system of equal allowable strength according to the requirement of the work
- floor finish of general building and stairs, general floor shall be terrazzo, the aggregates shall not larger than No. 3; shall be either cast in place or prefabricated. Venyle tile shall be at least 2 mm thick.
- toilet floor finish shall be of mosaic or ceramic with inexpensive price.

Wall

- exterior wall shall be of solid baked brick or hollowed baked brick or concrete baked brick veneer, non plastered or conglomerated wash. The end wall shall be reinforced concrete.
- interior wall shall be suitable and inexpensive material.
- toilet wall shall be the same material as exterior wall.
- The inside wall shall be finished with 2 meter high white ceramic or equivalent product.

False ceiling, Ceiling stud

- false ceiling shall be suitable and inexpensive material, wood ceiling stud shall be hard wood or chemical treated wood
- general ceiling shall be plastered or exposed concrete

Door and Door frame

- general door shall be glass with teak frame, steel frame aluminum frame or plywood door conforming to Industrial Standard Product
- frame shall be of hard wood/steel or aluminum

Hardwares

- hinges shall conform to Industrial Standard Product brass hinges shall be suitable to the weight of the door
- bolts, handles, door holders shall be anodized of chromium coated or aluminum alloy or brass
- lock shall be suitable for nature of work conforming to Japanese, European or American industrial standard.
- other shall be provided as necessary

Window and Window Frame

- window panel, general window shall be glass window with teak wood frame, aluminum frame, steel frame or teak wood panel or teak wood frame
- frame shall be of hardwood, steel or aluminum

Hardwares

hinges shall be galvanized iron, adjustable lock, handle and window holder shall be the same as door hardware size to be supplied according to size and weight of window. For glass window, steel or aluminum frame shall be used hardware as provided by the manufacturer's product.

Sanitary Fixtures

shall be white porcelain, model and size shall not be expensive and meet the needs.

- water closet shall be Western/Eastern type
- lavatory with wall hung shelf
- urinal shall be wall type
- lavatory accessories shall be provided according to need.

Domestic product shall be prime consideration.

Sewage, Drainage and Vent Pipe

- water supply pipe shall be galvanized iron or hard type P.V.C.
- drainage and vent pipe shall be galvanized iron or hard type P.V.C.
- sewage shall be cast iron with asphalt coated or hard type P.V.C.

The underground sewage shall be cement or ceramic locally made.

- Galvanized iron pipe, P.V.C. pipe and cast iron pipe shall meet with Industrial Standard Product

Electrical Equipment

- all wiring could be exposed
- the quality of wiring and electrical appliances shall meet with Industrial Standard Product
- lighting fixtures and accessories shall meet with Industrial Standard Product

Finishing Material

- primer
- dyer
- wood/brick preservatives
- oil paint, linseed, lacquer
- varnish, shellac, epoxy
- plastic emulsion paint
- water plastic paint
- cement paint
- metal paint

shall be considered according to the surface of the object, necessity and economical view point. If there is a required standard of material, all material shall conform to the standard.

Other Component of the Building

- septic tank, underground drainage shall provide with size, quantity and design conforming to sanitary technology
- pavement shall be provided where necessary
- rain gutter shall be provided where necessary

Other Conditions

- For office buildings to be designed and specified as special case besides the said guidelines are required to negotiate with Budget Bureau for special conditions, for example
 - Thai style building
 - Building with concrete decking or prefabricated material
 - Building with high live load other than stipulated by law
 - Special types of building that require an excessive strength due to site

- Building on stilt, reinforced concrete floor on girder shall estimate the cost, according to Budget Bureau, only the open part.
 - lifts, air conditions, furniture and site development, electrical system, water supply system
- When requesting budget the size of building shall be estimate according to the area as mentioned earlier with the projection number of staff requirement within the period of 5 year. The total floor area shall multiply by cost/sq.meter.
 - Room layout of the building shall be according to the nature or work.
 - The estimation of floor area of a building shall be the multiplying of the length and width of the building at center of the column.
 - When the design has been finished, it is required that median cost estimate be worked our for evaluation of the bids. The median cost estimate shall not exceed the cost estimate when caluculated by area/sq.m as previously mentioned.
 - If the design does not conform to the guideline, the building shall have cost per squaremeter with similar type of building.

JICA