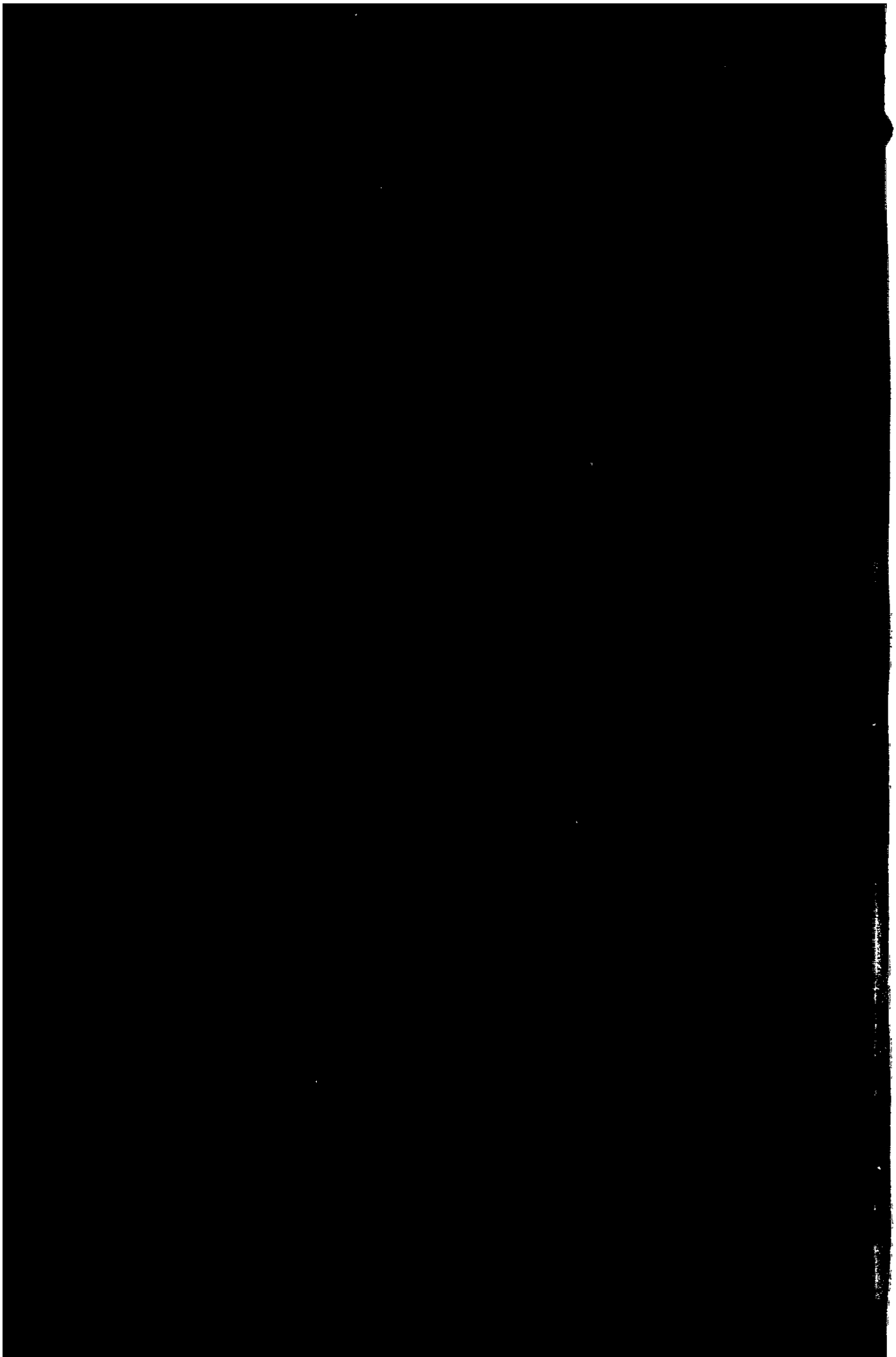


第5章 考察と提言



第5章 考察と提言

5-1 考察

下記の点により、施設の新設が大きな効果をもたらすことが予想される。

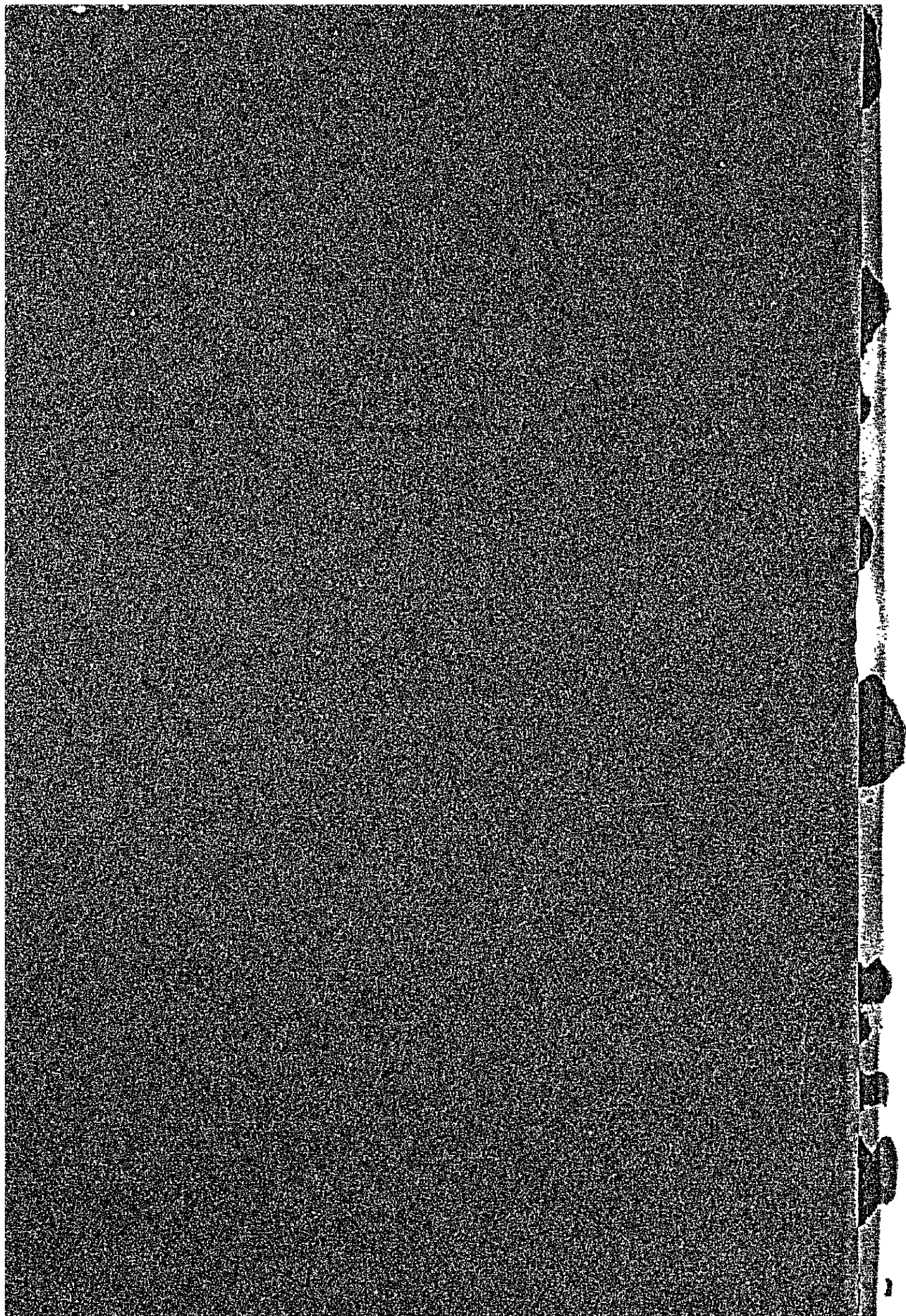
- (1) 本施設が完成すると、タイ国は勿論東南アジアで最高水準の海洋科学センターとなり、タイ国にとって重要な本分野における学術研究、水産資源の開発および教育の発展に対して大きな寄与をすることが期待される。
- (2) 本施設では、特にタイ近海の魚類の研究を研究の中心とする計画であり、特色ある研究機関として、国際的にも存在の意義が大きく、研究の成果が日本を含む諸外国の研究に貢献することが期待される。
- (3) シーナカリンウイロート大学は、本施設における研究の充実・促進に関し、極めて高い関心と熱意を持ち、学内におけるスタッフの充実のみならず、タイ国内の他大学・研究機関と協力態勢をとろうと計画しており、十分な成果が期待できる。
- (4) シーナカリンウイロート大学は、現施設によってこの種の施設の運営に経験を有しており、完成後の運営可能な態勢がある。
- (5) 本施設は教育の目的で、タイ国内の学生および一般大衆に公開されるので、多くのタイ国民の我が国に対する印象を高めることができ、両国間の友好親善を深めるために有効であると思われる。

5.2 提言

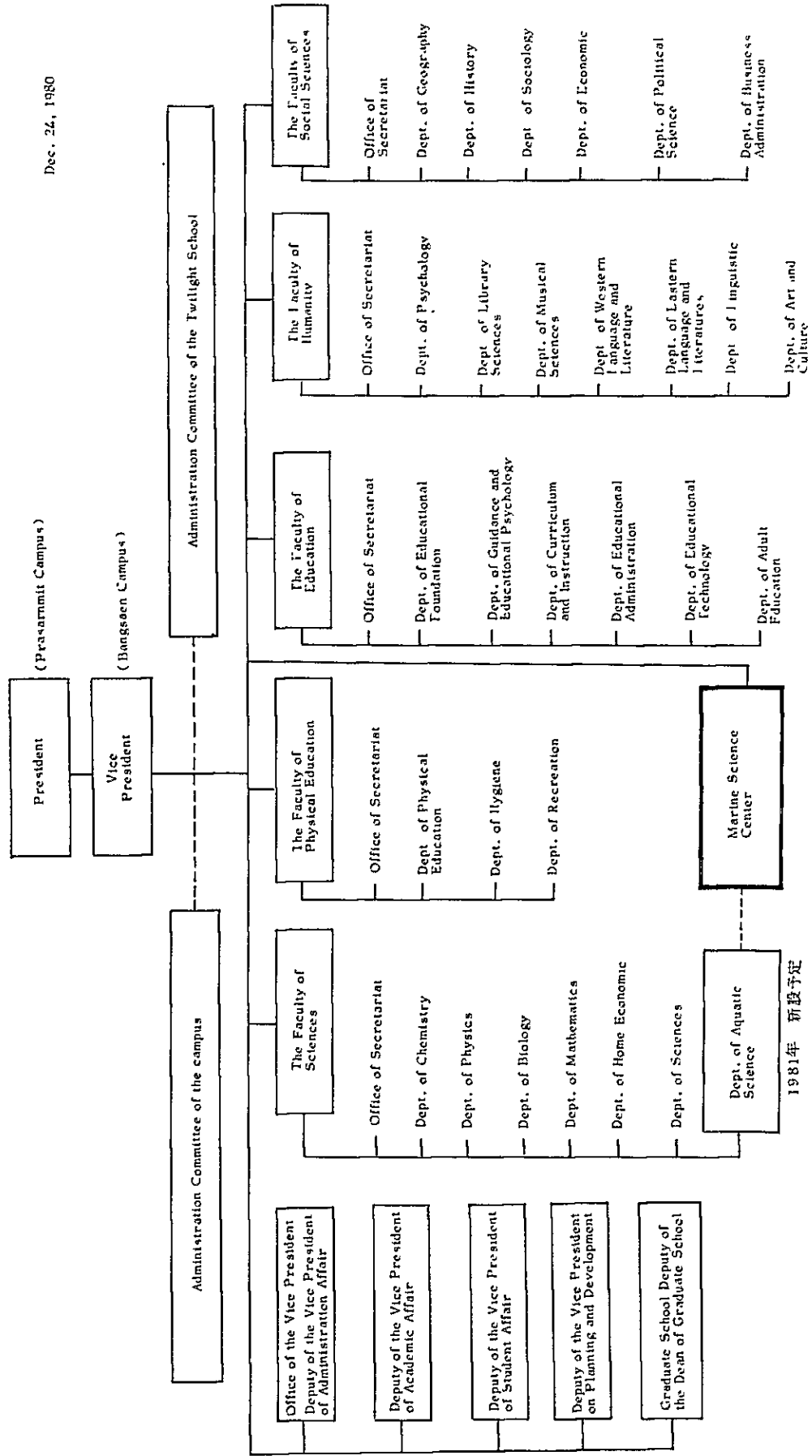
シーナカリンウイロート大学は、現施設の運営によって海洋生物の飼育・展示にすでに長年の経験を有しており、本施設を運営・維持・管理するために必要な基礎技術を所有している。しかし本施設は現施設に比較して規模も大きく、設備システムも異なり、飼育・展示する生物の数や種類も増えることになるため、大学側スタッフの受入れ、日本側専門家の派遣などの、我が国による技術協力が実施されると、本施設にとって有効であると考えられるので、その実施が望まれる。

附属資料 I

1. シーナカリンウイロート大学組織図
2. 基本設計調査日程
3. タイ国側参加者名簿



1. シーナカランウイロート大学組織図



2. 基本設計調査日程

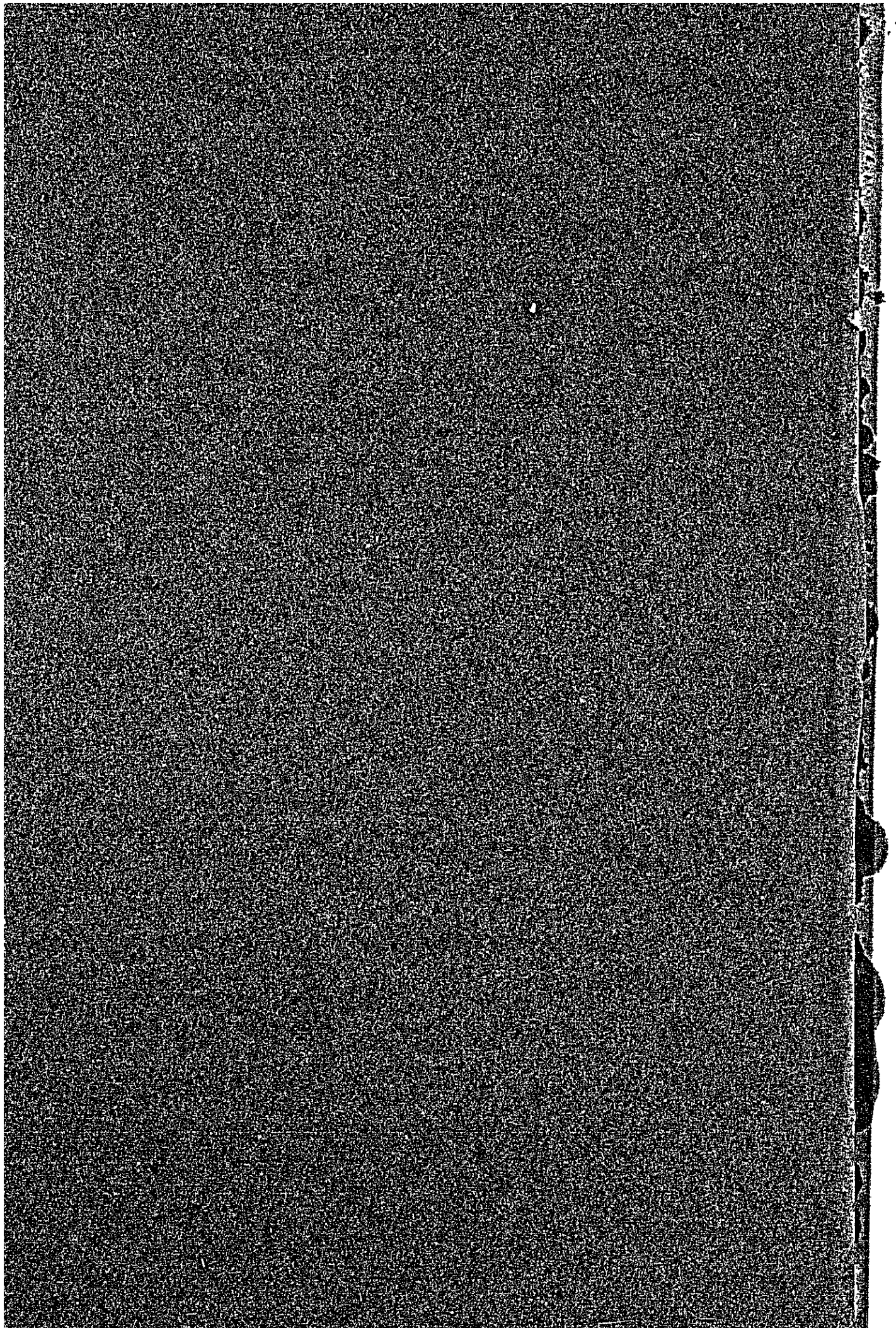
- 1981年2月4日(水) 日本出発, バンコック到着
JICA バンコック事務所担当者と調査日程打合
- 2月5日(木) [午前] JICA バンコック事務所およびタイ政府技術経済協力局
を訪問し, 調査目的・内容の説明を行なった。
[午後] シーナカリンウイロート大学学長・副学長を表敬訪問,
引続き関係者を加えて, 第1回協議を行なった。
- 2月6日(金) バンセンキャンパスに於いて, 敷地状況, 既存施設の調査を実施
した。引続き第2回協議を行ない, 施設内容・規模などについて
討議した。
- 2月7日(土) 大学本部にて第3回協議を行ない平面計画・海洋生物展示計画な
どについて討議した。
- 2月8日(日) 団内打合
- 2月9日(月) 大学本部にて第4回協議を行ない, 屋外展示水槽, 機材, 研究室
設備などについて討議した。
- 2月10日(火) [午前] 前日までの調査結果を JICA バンコック事務所・大使館
に報告。
[午後] 大学本部にてミニッツの調印を行なった。
引続き補足協議を行ない今回の調査を完了した。
- 2月11日(水) 今回の協議の会議録(Record of Discussion)を作成した。
- 2月12日(木) 大学・大使館・JICA 事務所を訪問し調査完了の挨拶を行なうと
ともに, 会議録を提出した。
- 2月13日(金) バンコック出発, 帰国。

3. タイ国側参加者名簿

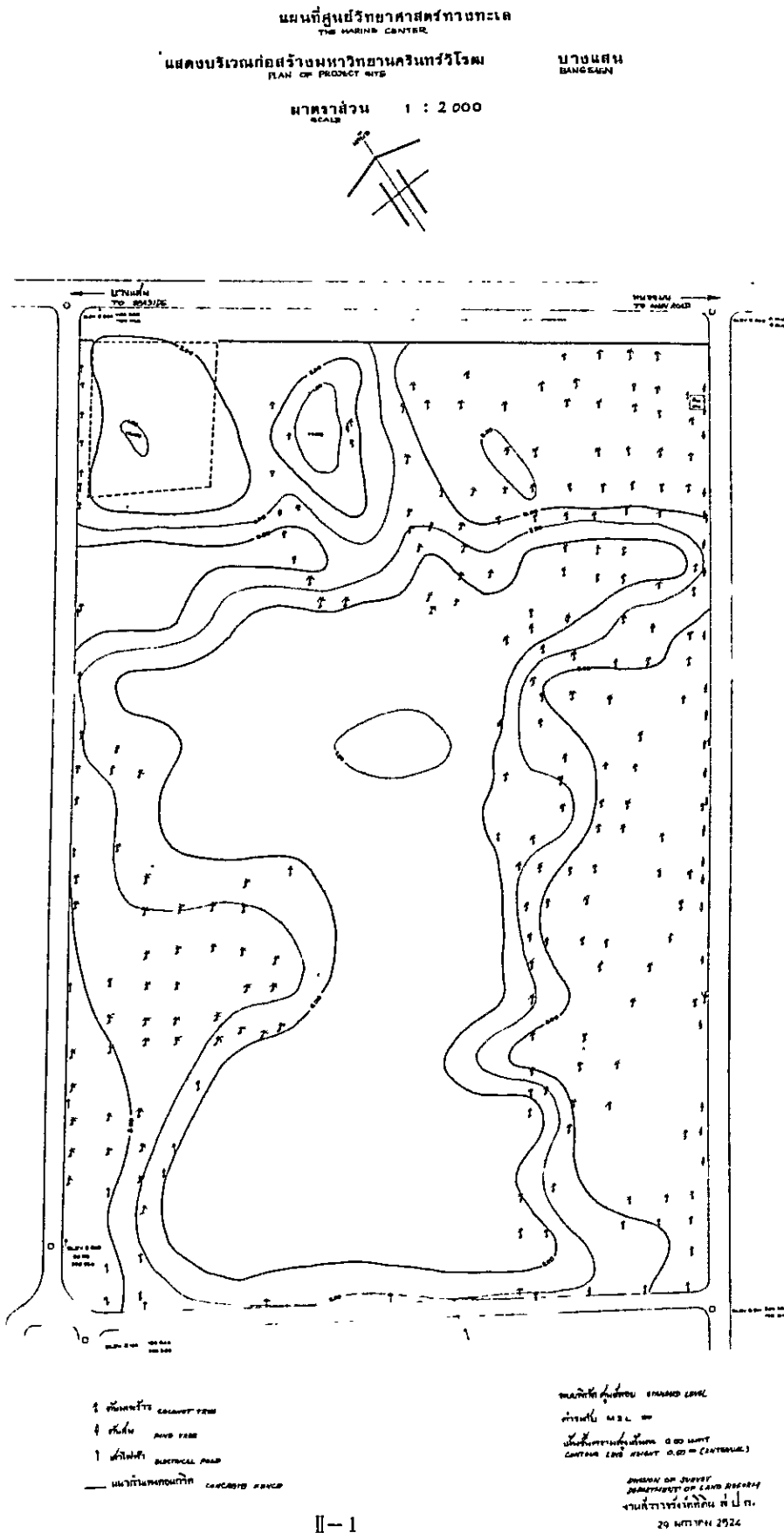
- (DTEC)
- Mr. Apilas Osatananda
Director General
- Mr. Pracha Chaowasilp
Director of Colombo Plan Div.
- Mr. Sutin Susila
Div. of External Cooperation-Office 2
- Mr. Jiroj Itharattana
Colombo Sub-Div.
- (Srinakarinwirot Univ.)
- Dr. Nibondh Sasidhorn
President
- Dr. Prasert Witayarut
Vice President for Planning & Development
- Dr. Twee Hormchong
Vice President, Bangsaen Campus
- Asst. Prof. Smarn Srithunya
Director of Zoological Museum &
Marine Aquarium
- Asst. Prof. Anan Bhumawarn
Deputy of Vice President
- Dr. Sumeth Deoisres
Secretary to Vice President
- Mr. Withaya Boonthanom
Chemistry Dept. Bangsaen Campus
- Mr. Sithipan Siriratanachai
Marine Scientist, Zoological
Museum & Marine Aquarium
- Mrs. Thanomsin Disathaporn
Bio-Chemist, Dept. of Chemistry,
Bangsaen Campus
- Mr. Chukiat Nuansang
Engineer, Main Campus
- Mr. Sittipun Sirirutanachai
Physical & Chemical Oceanography,
Bangsaen Campus

附属資料II

1. 敷地測量図
2. 気象資料
3. 既存施設平面図
4. 既存海洋生物標本及模型
5. 既存海洋生物



1. 敷地測量図



2. 氣象資料

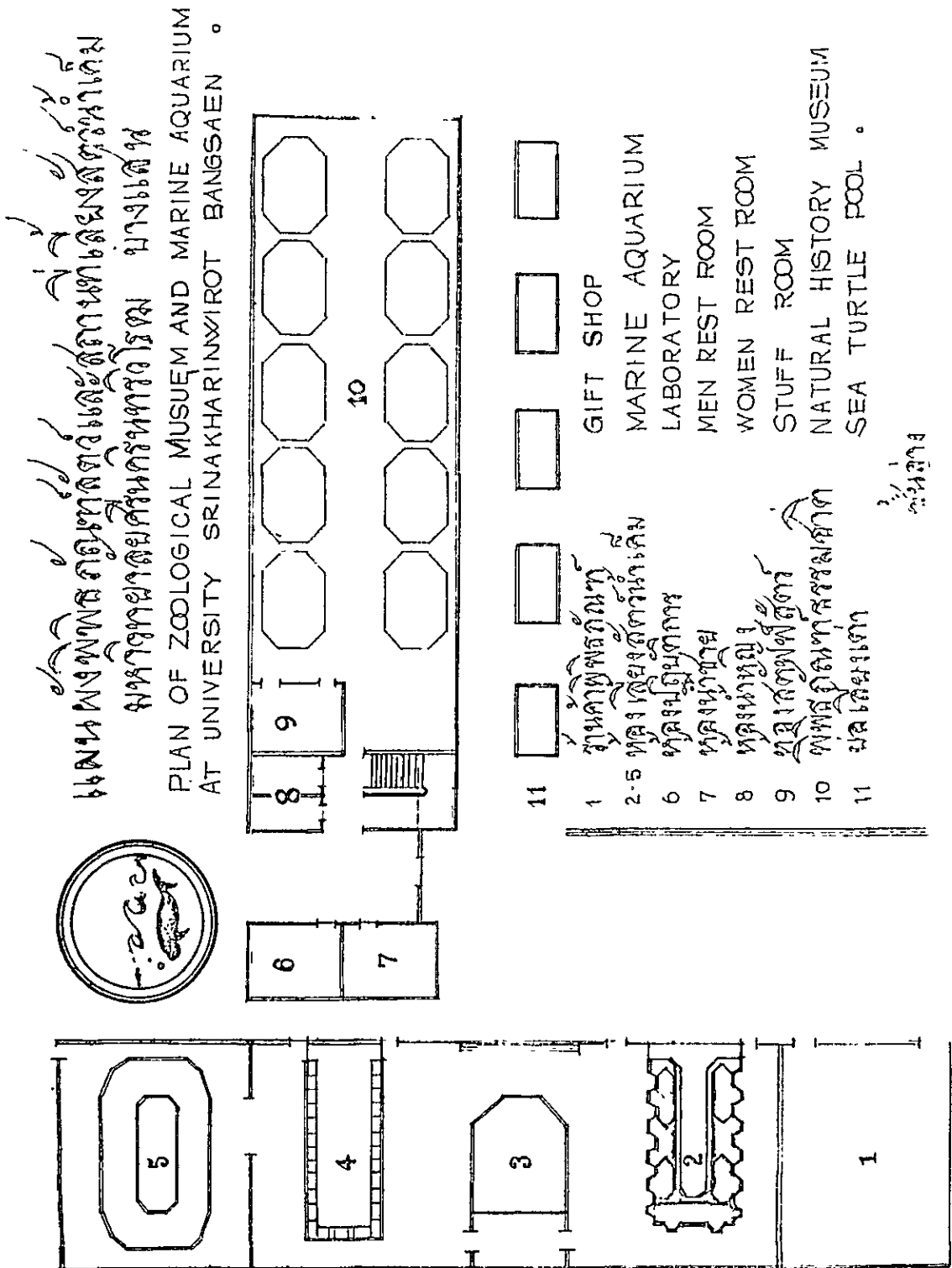
CLIMATOLOGICAL DATA FOR THE PERIOD 1951 - 1975

Station CHONBURI	Elevation of station above MSL.	3.00 meters
Index Station 48 459	Height of barometer above MSL.	4.22 meters
Latitude 13° 22' N.	Height of thermometer above ground	1.50 meters
Longitude 100° 59' E.	Height of wind vane above ground	12.00 meters
	Height of raingauge	0.56 meters

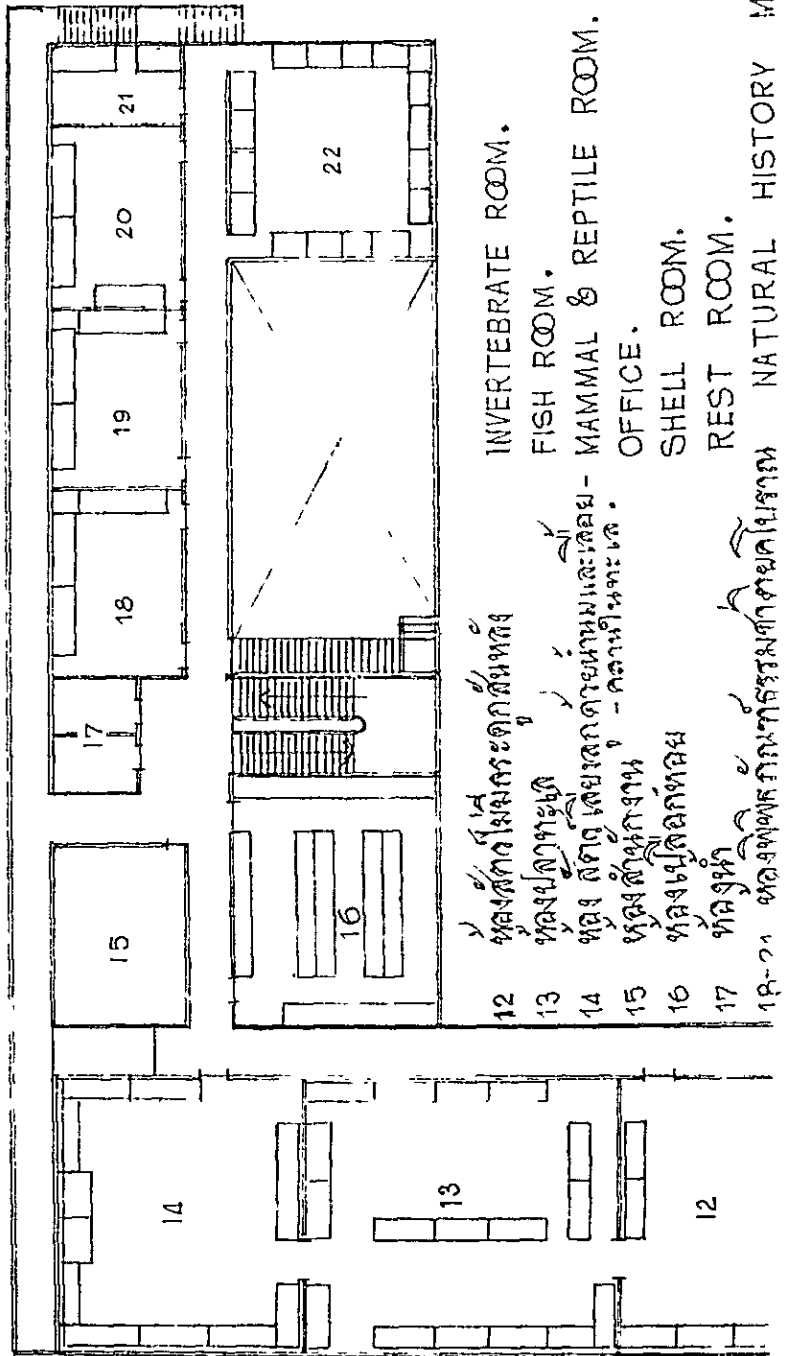
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Pressure (+ 1000 or 900 mbs)													
Mean	12.56	11.20	10.22	08.83	07.25	06.73	06.92	06.93	07.76	09.88	11.62	12.52	09.30
Ext. Max.	25.28	20.65	19.68	18.00	14.29	13.39	14.99	13.49	15.79	17.79	21.09	21.89	25.28
Ext. Min.	03.74	03.04	02.44	01.14	99.44	97.44	99.74	99.44	98.74	99.49	04.27	03.50	97.44
Mean daily range	4.57	4.66	4.69	4.61	4.27	3.65	3.48	3.76	4.22	4.41	4.29	4.43	4.25
Temperature (°C.)													
Mean	25.9	27.4	28.8	29.6	29.3	28.9	28.6	28.3	27.9	27.3	26.7	25.8	27.9
Mean Max.	31.3	32.1	33.2	34.1	33.3	32.5	31.9	31.6	31.2	31.3	31.1	31.0	32.0
Mean Min.	20.1	22.4	24.2	25.4	25.4	25.5	25.0	24.9	24.4	23.8	22.1	20.3	23.6
Ext. Max.	36.2	36.6	37.0	38.0	37.8	37.1	35.5	34.7	34.4	34.8	35.2	36.1	38.0
Ext. Min.	9.9	16.5	17.5	20.4	21.2	21.0	20.5	20.9	20.6	18.2	14.2	12.0	9.9
Relative Humidity (%)													
Mean	67.0	71.0	71.0	71.0	75.0	75.0	75.0	76.0	80.0	80.0	73.0	66.0	73.0
Mean Max.	85.0	88.2	87.8	87.6	88.8	87.6	88.5	90.0	92.3	93.0	89.5	85.1	88.6
Mean Min.	52.0	56.2	56.6	56.7	60.8	61.8	62.9	64.0	67.1	66.7	57.2	50.1	59.3
Ext. Min.	20.0	25.0	23.0	29.0	32.0	42.0	43.0	45.0	46.0	42.0	29.0	22.0	20.0
Dew Point (°C.)													
Mean	18.6	21.2	22.6	23.8	24.2	23.8	23.5	23.6	23.8	23.4	21.0	18.6	22.3
Evaporation (mm.)													
Mean - Piché	109.4	91.3	101.6	96.2	79.6	83.3	79.7	73.6	54.2	59.5	87.2	111.6	1027.2
- Pan						No	Observation						
Cloudiness (0-8)													
Mean	3.9	3.8	4.0	4.7	6.1	6.5	6.7	6.9	6.7	5.8	4.5	3.6	5.2
Visibility (Km.)													
0700 L.S.T.	6.9	6.4	7.1	8.6	10.7	11.2	10.7	10.2	9.7	9.3	8.2	7.6	8.9
Mean	8.0	7.8	8.2	9.8	11.7	12.2	11.7	11.2	10.7	10.3	9.8	9.1	10.0
Wind (Knots)													
Prevailing wind	E	S	S	S	S	S	S	S	S	NE	NE	NE	-
Mean Wind Speed	6.4	7.0	7.1	6.4	5.9	7.1	6.6	6.5	5.3	5.0	6.2	6.6	-
Max. Wind Speed	40 NE	36 S, SW	37 NNE, SW	50 ENE	47 S, NW	55 SW, W	55 SW	55 SW	60 W	63 S	40 NES	37 NE	-
Rainfall (mm.)													
Mean	12.6	22.1	40.9	77.9	166.5	118.8	168.0	166.3	302.0	230.1	64.1	10.1	1379.4
Mean rainy days	1.7	3.4	4.8	8.2	15.2	15.0	16.9	19.6	20.0	17.6	6.7	1.6	130.7
Greatest in 24 hr.	37.7	92.1	103.4	74.7	126.2	65.4	110.6	131.0	124.2	145.4	91.8	37.7	145.4
Day/Year	18/75	25/58	13/54	23/47	11/54	23/72	22/51	27/71	26/63	14/52	4/75	1/70	14/52
Number of days with													
Haze	27.2	24.6	25.2	16.6	3.6	2.5	1.1	2.7	2.1	5.8	16.2	21.6	149.2
Fog	2.9	3.3	2.2	0.7	0.3	0.0	0.4	0.2	0.6	0.6	1.6	1.1	13.9
Hail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thunderstorm	0.7	3.2	6.6	15.4	15.9	7.7	7.7	7.9	11.0	11.0	3.8	0.7	91.6
Squall	0.0	0.0	0.0	0.4	0.1	0.4	0.0	0.0	0.0	0.1	0.0	0.2	1.2

Remark : 1. Pressure 1953 - 1975
2. Evaporation 1954 - 1975

3. 既存施設平面図



UPSTAIR.



- 12 ห้องแสดงของกระดูกสัตว์บก
- 13 ห้องปลาทะเล
- 14 ห้องสัตว์โดยแสดงตามหม้อและโดย - คตามันทะเล
- 15 ห้องตัวนกต่าง
- 16 ห้องเปลือกหอย
- 17 ห้องหิน
- 18-21 ห้องจัดแสดงที่กรมวิทยาศาสตร์
- 22 ห้องจัดแสดงที่กรมวิทยาศาสตร์

INVERTEBRATE ROOM.
 FISH ROOM.
 MAMMAL & REPTILE ROOM.
 OFFICE.
 SHELL ROOM.
 REST ROOM.
 NATURAL HISTORY MUSEUM.

4. 既存海洋生物標本及模型

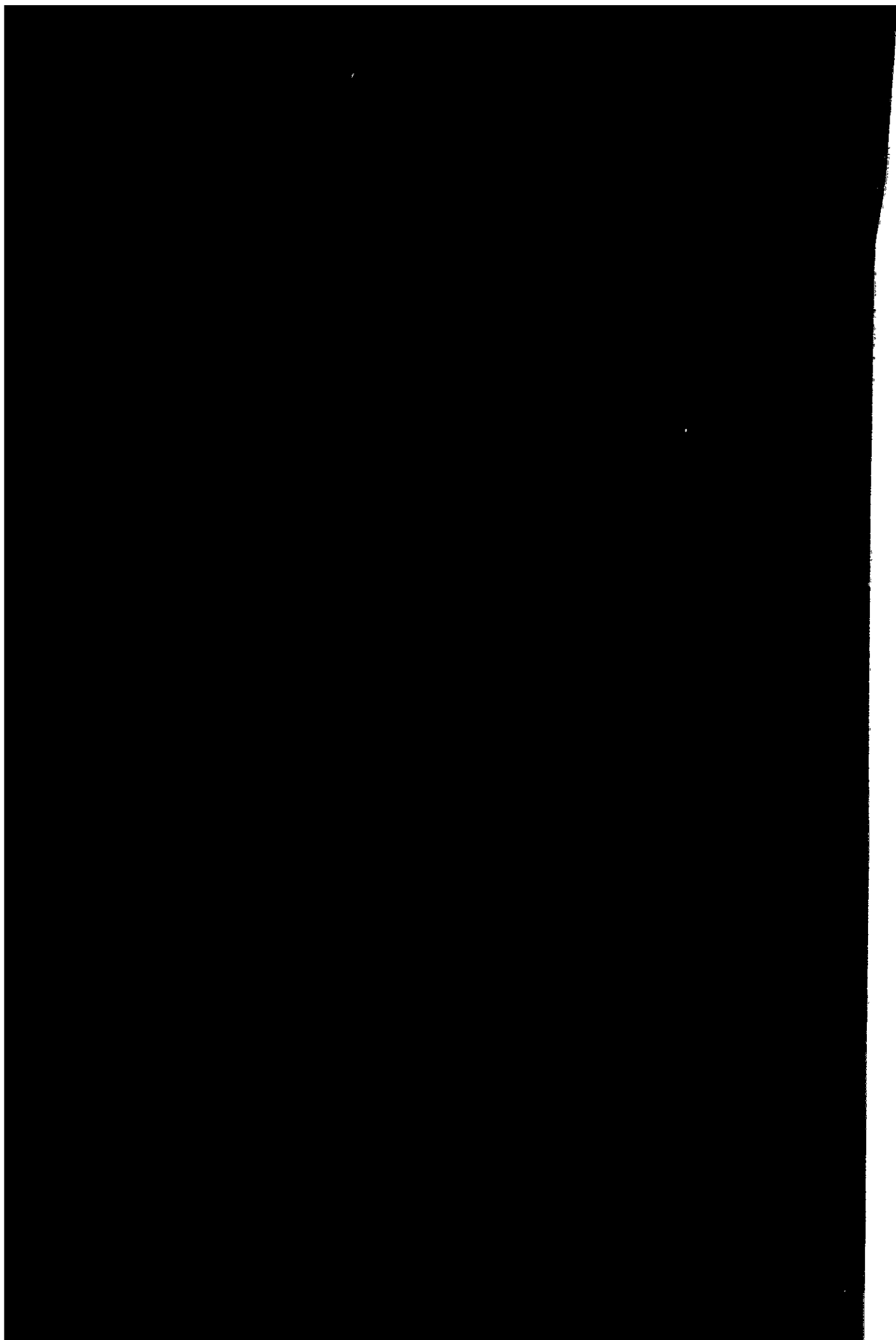
Shell collection	Amphineura (Chiton)	8 species	
	Bivalvia (Clam)	Approx. 200	"
	Gastropod (Shail)	Approx. 800	"
	Scaphopod (Tusk shell)	4	"
	Cephalopod (Nautilus)	2	"
Mammal, ave & reptile	Mammal	Approx. 24	"
	Ave	40	"
	Reptile	5	"
Marine fish	Shark	10	"
	Skate and ray	14	"
	Bony fish	Approx. 130	"
Invertebrate	Sponge	12	"
	Coelenterate	120	"
	Worm	30	"
	Arthropod	Approx. 180	"
	Echinoderm	40	"
Replicas demonstrating sea animals in their natural environment	Coral reef		
	Nekton & benthod		
	Cartilage fish		
	Dolphine		
	Deep-sea animal		
	Shark		
	Fishing trap		
	Sea turtle		
	Rocky shore		
	Mangrore swamp		
	Life in Cambrian		

5. 既存海洋生物

1st room	Damsel fish Filefish Soiny lobster etc.	Sea horse Porcupine fish	Grouper Corral trout
2nd room	Angelfish Soldierfish	Parrotfish Reefcord	Perch Batfish etc.
3rd room	Sea anemone Tube worm Spiny lobster Sea cucumber Damsel fish Sweetlip etc.	Coral Mantis shrimp Horse-shoe crab Feather star Wrasse	Sea fan Crab Sea star Butterfly fish Lion fish
4th room	Black-tipped sharks Golden sting ray etc.	Tiger-nurse shark	
Outdoor pool	Hawk's bill turtle Ridley turtle	Green turtle Loggerhead turtle	

附属資料Ⅲ 建設事情

1. 建設資材費
2. 労務費
3. 建設費
4. エネルギーコスト



1. 建設資材費

調査団はタイ国に於ける建設資材価格について調査を行った。下記のタイ政府科学研究技術局建築研究部発行の建設資材価格表により、最新の建設資材単価を示す。

この価格は調査団が現地調査を行った1981年1月末現在の価格である。

今後本単価を適用するためには補正を行う必要がある。

単価は、バンコック及びその周辺における現場渡し（現場渡し）の価格であるので本建設計画にはバンコック・サイトまでの輸送費を別に見る必要がある。

CONSTRUCTION MATERIAL PRICE LIST		Contents	Page
		1. Castings for	1
		2. Masonry - Bricks, Blocks	2
		3. Ready-made structural member	3
		4. Special member	4
		5. Piping	11
		6. Wire mesh	16
		7. Insulation	18
		8. Thin sheet	9
		9. Overlapping sheet	21
		10. Thick coating	20
		11. Hard board	20
		12. Tile	30
		13. Ceramic sheet	21
		14. Decorative tiles	22
		15. Clay roofing	22
		16. Ready made building	21
		17. Products for	40
		18. Material & equipment for plumbing electrically, sanitation, air conditioning and ventilation	40
		19. Material & equipment for electrical work	45
		20. Telephones - facilities	47

CONSTRUCTION MATERIAL PRICE LIST

ISSUED BY

BUILDING RESEARCH DEPARTMENT

INSTITUTE OF SCIENTIFIC RESEARCH & TECHNOLOGY

OF THAILAND

PRICE REVISED JANUARY 1981

TRANSLATED BY

WIRKUN SEKREI
Planners / Architects / Engineers

CONSTRUCTION MATERIAL PRICE THAILAND

1. Cast-in-situ

Code	Name of material	Unit	Unit Price Baht	Remarks
1.1	Ready-mix concrete (Transportation included within 5-10 kms)			
.1	Portland cement, elephant brand 250 kg/m ³	C.M.	920	
.2	Portland cement, elephant brand 300 kg/m ³	"	980	
.3	Portland cement, green serpent brand 250 kg/m ³	"	920	
.4	Portland cement, green serpent brand 300 kg/m ³	"	980	
.5	Portland cement, diamond brand 250 kg/m ³	"	920	
.6	Portland cement, diamond brand 300 kg/m ³	"	980	

CONSTRUCTION MATERIAL PRICE THAILAND

2. Masonry (Brick, Block) Size Width x Height x Length

Code	Name of material	Unit	Unit Price Baht	Remarks
2.1	CPAC block size 90 x 190 x 390mm (No.C4-1) weight 11.3 kg/pc	piece		
2.2	CPAC block size 190 x 190 x 390mm (No.CB-1) weight 16.7 kg/pc	"	7	
2.3	Concrete block size 70 x 190 x 390mm (Market in general)	"	2.75	
2.4	Concrete block size 90 x 190 x 390mm (Market in general)	"	3.25	
2.5	DETAC block size 70 x 190 x 390mm (No.D-701) weight 7.0 kg/pc	"	3.50	
2.6	DETAC block size 90 x 190 x 390 (No.D-910) weight 8.5 kg/pc	"	3.80	
2.7	D.A. block - ventilation type 90 x 190 x 390mm (No.DA-108)	"	7	
2.8	D.A. block - decoration type 90 x 190 (No.DA-127)	"	5	
2.9	Ordinary brick (MORH brick) size 70 x 35 x 160mm	1,000	300	
2.10	Chonburi brick (W/2 holes) size 70 x 30 160mm	1,000	500-550	
2.11	Hollow brick S.B.P. size 80 x 120 x 250mm (No.W4) non-bearing type	piece	3.15	
2.12	Hollow brick S.B.P. size 80 x 125 x 250 (No.W14) bearing type	"	4.35	
2.13	Hollow brick C.M. size 80 x 145 x 290 (No.1085) non-bearing	"	3.75	
2.14	Hollow brick C.M. size 80 x 145 x 290 (No.21A) decoration bearing type	"	6.50	

CONSTRUCTION MATERIAL PRICE THAILAND

3. Ready-made structural member

Code	Name of material	Unit	Unit Price Baht	Remarks
3.1	R.C. pile (Transportation included within BKK metropolis)			
.1	Hollow polygon (M.P.) size 150 x 150mm x 4.00m	pile	225	
.2	Hollow polygon (A.R.E.) size 150 x 150mm x 4.00m	"	227	
.3	Hollow polygon (S.T.) size 150 x 150mm x 5.00m	"	289	
.4	Centrifugal pile size ϕ350mm x 10.50m x 2 (composite)	"	6,300	
3.2	Prestressed concrete pile (Transportation Inc. in BKK area)			
.1	(CPAC) size 220 x 220mm x 10.50m	P	1,625	
.2	(CPAC) size 350 x 350mm x 21.00m	"	8,150	
.3	(CPAC) size 400 x 400mm x 21.00m	"	9,730	
.4	Solid square (super-P) size 180 x 180mm x 10.50m	"	1,100	
.5	Solid square (super-P) size 260 x 260mm x 10.50m	"	2,330	
.6	Solid square (TPC) size 250 x 250mm x 21.00m	"	4,250	
.7	Solid square (MCON) size 350 x 350 x 23.00m	"	9,875	
.8	Solid square (S.P.A.) size 180 x 180 x 21.00 x 3 (composite)	"	2,460	
.9	Solid square (U.C.M.) size 180 x 180 x 6.00m	"	750	
.10	Solid square (U.C.M.) size 180 x 180 x 21.00m	"	2,400	
.11	Solid square (M.P.) size 150 x 150 x 6.00m	"	515	
.12	Solid square (A.R.E.) size 180 x 180 x 5.00m	"	479	

CONSTRUCTION MATERIAL PRICE THAILAND

4. Sectional Member

Code	Name of material	Unit	Unit Price Baht	Remarks
4.1	Structural steel (length 6.00m per piece)			
.1	Angle steel (equal leg) size 3.0 x 40 x 40mm	piece	100	
.2	Angle steel (equal leg) size 4.0 x 40 x 40mm	"	130	
.3	Angle steel (equal leg) size 4.0 x 50 x 50mm	"	170	
.4	Angle steel (equal leg) size 6.0 x 50 x 50mm	"	215	
.5	Angle steel (equal leg) size 6.0 x 65 x 65mm	"	310	
.6	Angle steel (equal leg) size 8.0 x 65 x 65mm	"	390	
.7	Angle steel (equal leg) size 6.0 x 75 x 75mm	"	345	
.8	Angle steel (equal leg) size 9.0 x 75 x 75mm	"	500	
.9	Light angle steel size 3.0 x 40 x 40mm	"	90	
.10	Light angle steel size 6.0 x 50 x 50mm	"	205	
.11	Channel steel size 75 x 6.92kg/m	"	400	
.12	Channel steel size 100 x 9.36kg/m	"	530	
.13	Light channel steel size 2.6 x 45 x 38mm	"	110	
.14	Light channel steel size 2.0 x 80 x 40mm	"	110	
.15	Light lip channel steel size 2.3 x 100 x 50mm	"	200	
.16	Light lip channel steel size 3.2 x 150 x 50	"	335	
4.2	Round bar SR. 24 (length 10.00m/bar)			
.1	ϕ6mm weight 2.22kg/bar	bar	21	

CONSTRUCTION MATERIAL PRICE THAILAND

5. Piping

Code	Name of material	Unit	Unit Price Baht	Remarks
5.1	Asbestos cement drainage pipe, class A, single socket (length = 3.00m/p)			
.1	ø80mm	Pipe	55	
.2	ø100mm	"	94	
.3	ø150mm	"	134	
.4	ø200mm	"	189	
.5	90° bend ø 80mm	pc	11	
.6	90° bend ø100mm	"	12	
.7	90° bend ø150mm	"	22	
.8	90° bend ø200mm	"	31	
.9	90° Tee ø 80mm	"	15	
.10	90° tee ø100mm	"	19	
.11	90° tee ø150mm	"	31	
.12	90° tee ø200mm	"	48	
5.2	Concrete pipe (44mm THK, 1.00m length)			
.1	Bell & spigot type ø300mm	Pipe	100	
.2	Bell & spigot type ø600mm	"		
.3	Tongued & grooved type ø300mm	"	85	
.4	Tongued & grooved type ø600mm	"	230	
5.3	R.C. pipe (length 1.00m)			
.1	Bell & spigot type, class 3 ø300mm	"	135	
.2	Bell & spigot type, class 3 ø600mm	"		
.3	Tongued & grooved type, class 3 ø400mm	"	215	
.4	Tongued & grooved type, class 3 ø600mm	"	300	
5.4	Cast iron pipe - Asphalt coating for rust proofing (soil pipe) T.C.P			
.1	ø100mm, length 1.80m, weight 16.50 kg	P	135	
.2	Elbow 90°	"	30	

CONSTRUCTION MATERIAL PRICE THAILAND

6. Wire mesh

Code	Name of material	Unit	Unit Price Baht	Remarks
6.1	Wire mesh - Rhombus pattern			
.1	Mesh size 38mm, diameter of wire 3.0mm (No.11)	SQ.M	49	
2	Mesh size 50mm, diameter of wire 3.0mm (No.11)	"	39	
3	Mesh size 38mm, diameter of wire 3.15mm (No.10)	"	58	
.4	Mesh size 50mm, diameter of wire 3.15mm (No.10)	"	48	
6.2	Wire mesh - square pattern			
.1	Mesh size 38mm, diameter of wire 3.0mm (No.11)	"	55	
2	Mesh size 50mm, diameter of wire 3.0mm (No.11)	"	45	
3	Mesh size 38mm, diameter of wire 3.15mm (No.10)	"	65	
4	Mesh size 50mm, diameter of wire 3.15mm (No.10)	"	55	
6.3	Wire mesh - square pattern, welded (roll size 0.90 x 30.48m)			
1	Mesh size 13mm	M	30	
.2	Mesh size 19mm	"	26	
3	Mesh size 25mm	"	24	
.4	Mesh size 31mm	"	22	
6.4	Wire mesh - Polygon pattern, welded (roll size 0.90 x 45.72m)			
.1	Mesh size 13mm	"	15	
.2	Mesh size 19mm	"	13	
.3	Mesh size 25mm	"	11 50	
4	Mesh size 31mm	"	9	
6.5	Steel mosquito net (green color) width = 900mm	"	22	

CONSTRUCTION MATERIAL PRICE THAILAND

7. Insulation

Code	Name of material	Unit	Unit Price Baht	Remarks
7.1	Glass fibre			
.1	Glasswool w/alumi. foil (siam insulation) 25mm THK, roll size 1.22 x 30.48m	Roll	1,500	
.2	Microfibre w/alumi. foil (siam glasswool) 50mm THK, roll size 1.22 x 16.25m	"	1,380	
.3	Fibreglass crown w/resin bonded (YIP-IN-SOI) No.100 roll size 1.22 x 60.96m	"	720	
7.2	Polyfoam (size 600 x 1200mm THK 12.7 - 304.8mm)			
.1	size 600 x 1200mm 25.4mm THK (Density 1.0 lbs/block)	Sheet	22	
.2	size 600 x 1200mm 50.8mm THK (density 1.0 lbs/block)	"	44	

CONSTRUCTION MATERIAL PRICE THAILAND

8. Thin sheet

Code	Name of material	Unit	Unit Price Baht	Remarks
8.1	Aluminum foil (sisalation) No 402 roll size 1.35 x 60.00m	Roll	1,000	
8.2	Harvi foil (harvi-foil) No.405 roll size 1.35 x 60.00m	"	1,350	
8.3	Damp-proof sheet (sisalthene) No.353 roll size 1.80 x 50.00m	"	3,200	

CONSTRUCTION MATERIAL PRICE THAILAND

9. Overlapping sheet

Code	Name of material	Unit	Unit Price Baht	Remarks
9.1	CPAC Monier			
.1	Size 330 x 420mm - various colours	Tile	6.50	
.2	Ridge size 255 x 425mm - colours	"	11	
9.2	Vibulsi tile			
.1	Corrugated 240 x 390mm red colour	"	5	
.2	Ridge (3 pieces per meter) red colour	"	12	
.3	Shingle tile size 200 x 320mm red colour	"	1.25	
9.3	Carport unit size 980 x 5,000mm, 8mm THK, cement colour	"	490	
9.4	Glazed, burnt clay, shingle tile (grey)	"	3.50	
	Male (size 140 x 186mm) female (size 143 x 270mm)			
9.5	Roman tile - asbestos cement			
.1	Size 500 x 1200mm cement colour weight 6.2 kg/sheet	"	23.75	
.2	Size 500 x 1200mm red colour weight 6.2 kg/sheet	"	33.75	
.3	Ridge size 500 x 450mm cement colour weight 2.0 kg/sheet	"	14.50	
.4	Ridge size 500 x 450mm red colour weight 2.0 kg/sheet	"	20	
9.6	Corrugated asbestos cement sheet			
.1	Large size 1020 x 1200mm cement colour, weight 15.7 kg/sheet	"	72	
.2	Large size 1020 x 1500mm cement colour, weight 19.7 kg/sheet	"	91	
.3	Ridge for large size 1020 x 450 cement colour, weight 4.5 kg/sheet	"	32.75	
.4	Small 540 x 1200 cement colour, weight 5.3 kg/sheet	"	21.75	
.5	Small 540 x 1200 red, green weight 5.3 kg/sheet	"	29.50	

CONSTRUCTION MATERIAL PRICE THAILAND

10 Thick coating (10.1 - 10.3 labour included but scaffolding exc.)

Code	Name of material	Unit	Unit Price Baht	Remarks
10.1	Cen Wash Sprayed type (area over 300m ²)	SQ.M	50	
10.2	Sand-Tex Sprayed type (area over 400m ²)	"	60	
10.3	Arcl textured coating sprayed type (area over 50m ²)	"	65-105	
10.4	Terrazzo w/brass dividing strip, stone No.3 (labour included)	"		
10.5	Gravel wash dividing strip, stone No.3 (labour included)	"		

CONSTRUCTION MATERIAL PRICE THAILAND

11. Hard board

Code	Name of material	Unit	Unit Price Baht	Remarks
11.1	Asbestos cement flat sheet, size 1,200mm x 2,400mm			
.1	THK 4mm	Sheet	77	
.2	THK 6mm	"	116	
.3	THK 8mm	"	152	
11.2	Gypsum board			
.1	Ordinary type, size 1,200mm x 2,400mm, THK = 9mm	"	138	
.2	Ordinary type, size 1,200mm x 2,400mm, THK = 12mm	"	154	
.3	W/aluminum foil, size 1,200mm x 2,400mm, THK = 9mm	"	180	
.4	W/aluminum foil, size 1,200mm x 2,400mm, THK = 12mm	"	198	
.5	Textured board (relief pattern) 600 x 600mm, THK = 9mm	"	44	
11.3	Galvanized steel sheet			
.1	Size 910 x 1,825mm, THK 0.20mm (No.35)	"	50	
.2	Size 910 x 2,435mm, THK 0.25mm (No.32)	"	72	
.3	Size 910 x 2,435mm, THK 0.30mm (No.30)	"	91	
.4	Size 910 x 2,435mm, THK 0.40mm (No.28)	"	102	
.5	Size 910 x 2,435mm, THK 0.50mm (No.26)	"	128	
11.4	Black steel plate 1,215 x 2,435mm			
.1	THK 1.6mm weight 39.5 kg	"	338	
.2	THK 3mm weight 70 kg	"	546	
.3	THK 6mm weight 140 kg	"	1,090	
11.5	Stainless steel plate, size 1,215 x 2,435mm, THK 2mm (No.14)	"	2,499	
11.6	Aluminum plate, size 1,000 x 2,000mm			
.1	Weight 1.7 kg (No.30)	"	122.50	

CONSTRUCTION MATERIAL PRICE THAILAND

12. Tile (cont.)

Code	Name of material	Unit	Unit Price Baht	Remarks
.1	Teak, wood, THK 19mm	Sq. m	370	
2	Daeng, THK 19mm	"	280	
.3	Maka, THK 19mm	"	335	
4	Pladoo or daeng, THK 16mm	"	220	
12.10	Tongue & Groove Wooden Floor-Forest Ind. Orga., size 750 x 500mm, THK 22mm	"	-	
12.11	Vinyl asbestos tile, size 227 x 227mm, (9" x 9"), installation included			
.1	THK 1.6mm	"	90	
.2	THK 2.0mm	"	103	
.3	THK 2.5mm	"	130	

CONSTRUCTION MATERIAL PRICE THAILAND
13 Bendable Sheet (Installation & Supporting Vinyl Excluded) 1 sqm = 1 19599

CONSTRUCTION MATERIAL PRICE THAILAND
14. Decorative sheet (Installation Excluded), Imported

Code	Name of material	Unit	Unit Price Baht	Remarks	Code	Name of material	Unit	Unit Price Baht	Remarks
13.1	Carpet (Machine tufted carpet 100% virgin wool)	Sq. m	520-940		14.1	Wall paper, ordinary type (Vinyl coated paper)	Sq. m	80	
13.2	Carpet (Machine tufted carpet 100% acrylic)	"	320-530		14.2	Wall paper, vinyl type	"	180	

CONSTRUCTION MATERIAL PRICE THAILAND
15 Thin Coating (Can 3,785 litres)

CONSTRUCTION MATERIAL PRICE THAILAND
16. Ready made Fitting

Code	Name of material	Unit	Unit Price Baht	Remarks	Code	Name of material	Unit	Unit Price Baht	Remarks
15.1	Soubum (light brown, inter-, dark) Lerdpirasahakol Co., LTD	Can	245		16.1	Window-door steel (installation included)			
15.2	Silicone (R 221)	"	275		.1	Steel folded shutter (local steel) w/screen size 2.70m h x 3.50m w	Set	4,550	
15.3	Varnish, Sigmawa (Gloss type)	"	250		.2	Steel, solid type rolling shutter, steel galvanized slat, 0.7mm thickness (qa.no 22) width not more than 500m (Thai Rolling Products)	Sq. m	750	
15.4	Varnish, Sigmawa (Matt type)	"	280		.3	Steel rolling grille, steel gal, slat width not more than 5.50m	"	850	
15.5	Lacquer, -Camel brand (No. 6022)	"	350		.4	Steel-window frame & panel frame, 600 x 600mm (projected window top hinge)	Set	500	
15.6	Shellac Yellow	KB	29		5	Steel-window frame & panel frame, 980 x 1,200mm	"	1,440	
15.7	white	"	41		16.2	Aluminum window-door (installation included)			
15.8	Indotane (half semi gloss type)	Can	485		.1	Aluminum window frame & panel frame, 600 x 600mm (top hinge) included	"	760	
15.9	Oil paint (company's quoted price) Can cap., 3,785 litres (1 gallon)	"			.2	Aluminum window frame & double panel frame, 980 x 1,200mm, (installation included)	"	1,520	
.1	Alfa	"	298		3	Aluminum sliding door, size size 1,200 x 2,000mm, (w/fixd part same size)	"	2,530	
.2	Sigma (Matt type)-not gloss	"	320-352		16.3	Aluminum louvre, aluminum mosquito net window			
.3	I.C.I.	"	410		.1	Aluminum louvre, slat size 101.6mm 6-slat type (good)	"	133	
.4	Kansai	"	270-300		2	Aluminum louvre, slat size 101.6mm 13-slat type (good)	"	238	
.5	Pamastic	"	452.50		3	Aluminum mosquito net window panel, size 800 x 1,200mm	Panel	130-145	
.6	Mono	"	-		.4	Aluminum mosquito net door panel, size 600 x 2,000mm	"	385-405	
.7	Sinclair	"	405		16.4	Wooden window & door panel			
.8	Jotun	"	380		1	Plywood flush door, Yang/Yang, size 8-0 x 2,000mm	"	295	
15.10	Emulsion Paint (company's quoted price) 3,785 litre can (1 gallon)	"							
.1	Alfa interior paint	"	124						
2	Alfa exterior paint	"	220						
3	Sigma (Sigma wall) int.	"	169						
.4	Sigma ext	"	220-244						
.5	I.C.I. int.	"	320						
.6	I.C.I. ext.	"	320						
.7	Kansai int	"	150						

CONSTRUCTION MATERIAL PRICE THAILAND

17. Production

Code	Name of material	Unit	Unit Price Baht	Remarks
17.1	White Cement (weight 8 kg/bag)	Bag	7	
17.2	Cement			
.1	Tiger brand A (Retail price from general shop)	"	54 50	
.2	Tiger brand B (Delivery price for job site in BKK, within 50 km)	Ton	1,090	
3	Cobra brand A	Bag	54 50	
4	Cobra brand B	Ton	1,090	
5	Eagle brand A	Bag	54 50	
6	Eagle brand B	Ton	1,090	
7	Elephant brand A	Bag	64 75	
.8	Elephant brand B	Ton	1,295	
.9	Green serpent A	Bag	64 75	
10	Green serpent B	Ton	1,295	
11	Diamond brand A	Bag	64.75	
.12	Diamond brand B	Ton	1,295	
.13	Club brand A	Bag	64 75	
.14	White cement, White elephant brand (weight 40 kg/bag)	"	180	
.15	White cement, Kilane brand (weight 40 kg/bag)	"	180	
17.3	Sand, Soil, Stone (delivery charge included)			
1	Coarse sand, Retail sale	CU.M	175-185	
.2	Coarse sand, Whole truck sale	"	160-170	
3	Fine sand, Retail sale	"	180-190	
4	Fine sand, Whole truck sale	"	165-175	
.5	Embankment sand, Whole truck sale	"	100-110	
6	Aggregate No.1	"	180-190	
7	Aggregate No 2	"	180-190	

CONSTRUCTION MATERIAL PRICE THAILAND

18. Material & equipment for plumbing, electrical, sanitation, air-conditioning & ventilation

Code	Name of material	Unit	Unit Price Baht	Remarks
18.1	Plumbing equipment			
.1	Meter (Japanese made) nominal size 15mm	PC	323	
.2	Meter (Japanese made) nominal size 20mm	"	580	
.3	Meter (Japanese made) nominal size 25mm	"	880	
.4	Brass valve (Japanese made) nominal size 15mm	"	95	
.5	Brass valve (Japanese made) nominal size 20mm	"	127	
.6	Brass valve (Japanese made) nominal size 25mm	"	168	
7	Cast iron valve (local made) nominal size 100mm (gate valve)	150 Lbs	2,000	
.8	Cast iron valve (local made) nominal size 150mm (gate valve)	150 Lbs	3,450	
.9	Cast iron valve (local made) nominal size 200mm (gate valve)	150 Lbs	5,500	
10	Brass faucet (local made) nominal size 15mm (Hongkong type)	"	22	
11	Brass faucet (local made) nominal size 20mm (Hongkong type)	"	32	
12	Brass chromium plated faucet Brand name (bright) nominal size 15mm (wall type)	"	78	
.13	Brass chromium plated faucet Brand name (bright) nominal size 20mm (lav. type)	"	85	
18.2	Sewage aeration treatment system w/fittings (installation not included)			
1	SATS Gh.100 model included w/fittings (for 10 persons)	Set	12,200	
.2	SATS MA.576 model included w/fittings (for 50 persons)	"	44,800	
18.3	Cement pipe			
1	Ready-made cement pipe, hollow, height=400mm, Ø80mm	PC	50	

CONSTRUCTION MATERIAL PRICE THAILAND

19. Material & equipment for electrical work

Code	Name of material	Unit	Unit Price Baht	Remarks
19.1	Electrical wire (round copper), covered w/insulator & outer skin-PVC. (100m/roll)			
.1	PVC 60°, 250 volt, double core size 2 x 4.0 SQmm	Roll	857	
.2	PVC 60°, 250 volt, double core size 2 x 2.5 SQmm	"	548	
.3	PVC 60°, 250 volt, double core size 2 x 1.5 SQmm	"	359	
.4	PVC 60°, 250 volt, double core size 2 x 1.0	"	258	
.5	PVC 60°, 750 volt, single core size 1 x 4.0 SQmm	"	349	
6	PVC 60°, 750 volt, single core size 1 x 2.5 SQmm	"	232	
19.2	Electrical fittings & lighting fixture			
.1	Switch (single) 3 way flush type (VETO)	PC	31 50	
.2	Switch (single) 3 way flush type (TICHINO)	Set	80	
.3	Switch (single) 3 way flush type (UROPA)	"	80	
.4	Plug (single) flush type (VETO)	PC	25	
.5	Plug (single) flush type (TICHINO)	Set	83	
.6	Plug (single) flush type (UROPA)	"	80	
7	Egg shaped switch (VETO)	PC	19	
.8	Short cut switch, 25 ampers (TICHINO)	"	245	
.9	Circuit breaker 1p size 10 - 25 ampere	"	75	
.10	Switch panel 12 parts	Panel	630	
.11	Ballast 40 watts (phillips)	PC	58	
.12	Starter 40 watts (phillips)	"	8	
.13	Fluorescent lamp 40 watts (phillips)	"	43	
.14	Steel fixture w/extensioning for fluorescent lamp (2 x 40 watt)	Set	120	

CONSTRUCTION MATERIAL PRICE THAILAND

20. Equipment - facilities

Code	Name of material	Unit	Unit Price Baht	Remarks
20.1	Toilet fixture water closet (w/seat & tank fittings)			
.1	W.C. eastern style, pail-flush type white vitreous china (No.TF-100)	PC	220	
.2	W.C. eastern style, pail-flush type white vitreous china (SQUAT 2)	"	190	
.3	W.C. eastern style, pail-flush type w/pedestal, white vitreous china (No.TF-100p)	"	575	
.4	W.C. eastern style, pail-flush w/pedestal, white vitreous china (SQUAT 1)	"	570	
.5	W.C. eastern style, flush type, white vitreous china (No TF-100T)	"	365	
.6	W.C. eastern style, flush type, white vitreous china (SQUAT 2F5")	"	320	
.7	W.C. eastern style, flush type w/pedestal white vitreous china (No TF-100FT)	"	750	
.8	W.C. eastern style, flush type w/pedestal white vitreous china (SQUAT 1 flush)	"	750	
.9	W.C. western style, w/tank, white vitreous china (No.TF-2106)	Set	1,775	
.10	W.C. western style, w/tank, white vitreous china (No.C 73)	"	1,640	
.11	W.C. western style, w/tank, coloured vitreous china (No.TF-2106)	"	2,225	
.12	W.C. western style, w/tank, coloured vitreous china (No.C 73)	"	1,950	
.13	W.C. eastern style, pail flush type w/pedestal-terrazzo	PC		
20.2	Toilet fixture urinal, bidet (fittings not included)			
.1	Urinal, wall type, white vitreous china (No.TF 412)	Set	4.0	

2. 労 務 費

以下にタイ国の労務費についての資料を示す。タイ国の賃金水準は全体として未だ低水準にあるといえるが、1973年以降、生計費の高騰、最低賃金制度の導入によって改善されて来ている。

平均賃金月額（バンコク，1977）

産業	職業	専門技術	事務	販売	サービス補助	農・園芸等	生産労働	平均給者
製造		3,097	2,218	2,618	1,143	1,334	1,263	1,390
電気・ガス・水道		3,106	2,179	3,578	1,332	1,404	1,693	1,900
建設		4,068	2,438	2,335	1,194	420	1,753	1,859
運輸		4,115	2,186	3,702	2,453	1,283	1,487	2,487

資料 内務省労働局

(バーツ)

製造業未熟練労働者賃金（バンコク）

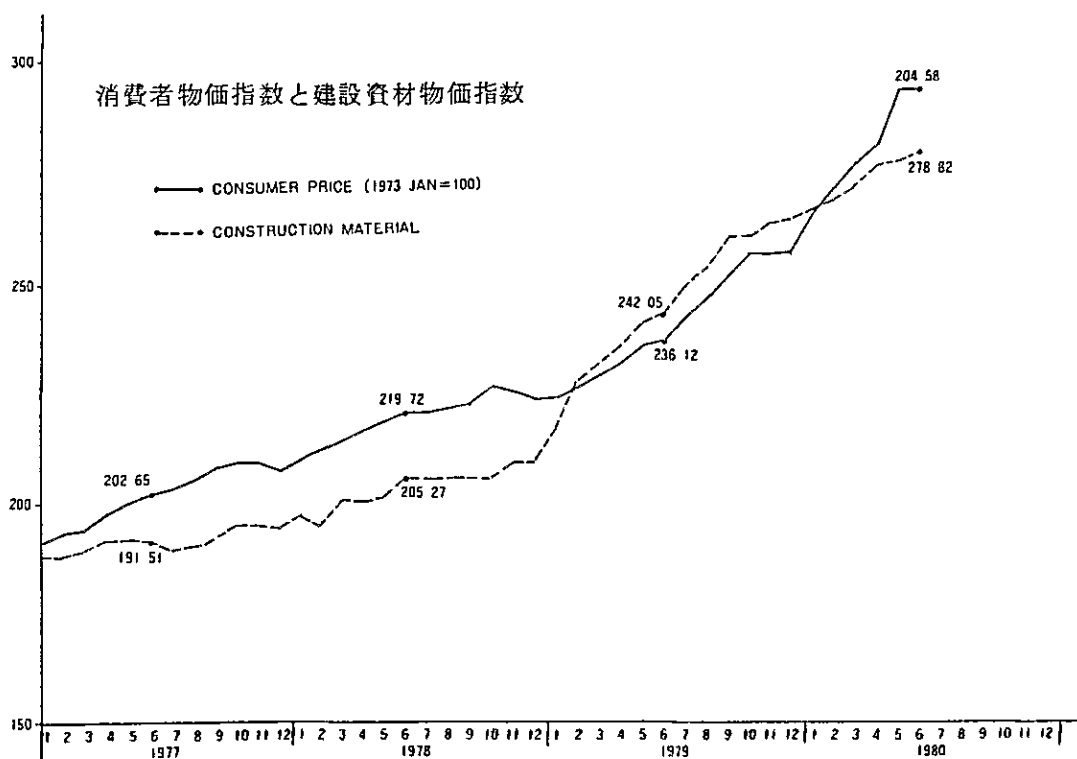
産 業	1977年12月	1978年12月
建設資材	39.4	46.1
木材・木具	35.8	42.5
非金属・ガラス	41.8	48.8
鉄・銅・金属	33.7	39.7

資料 Bank of Thailand (日額：バーツ)

最低賃金の推移

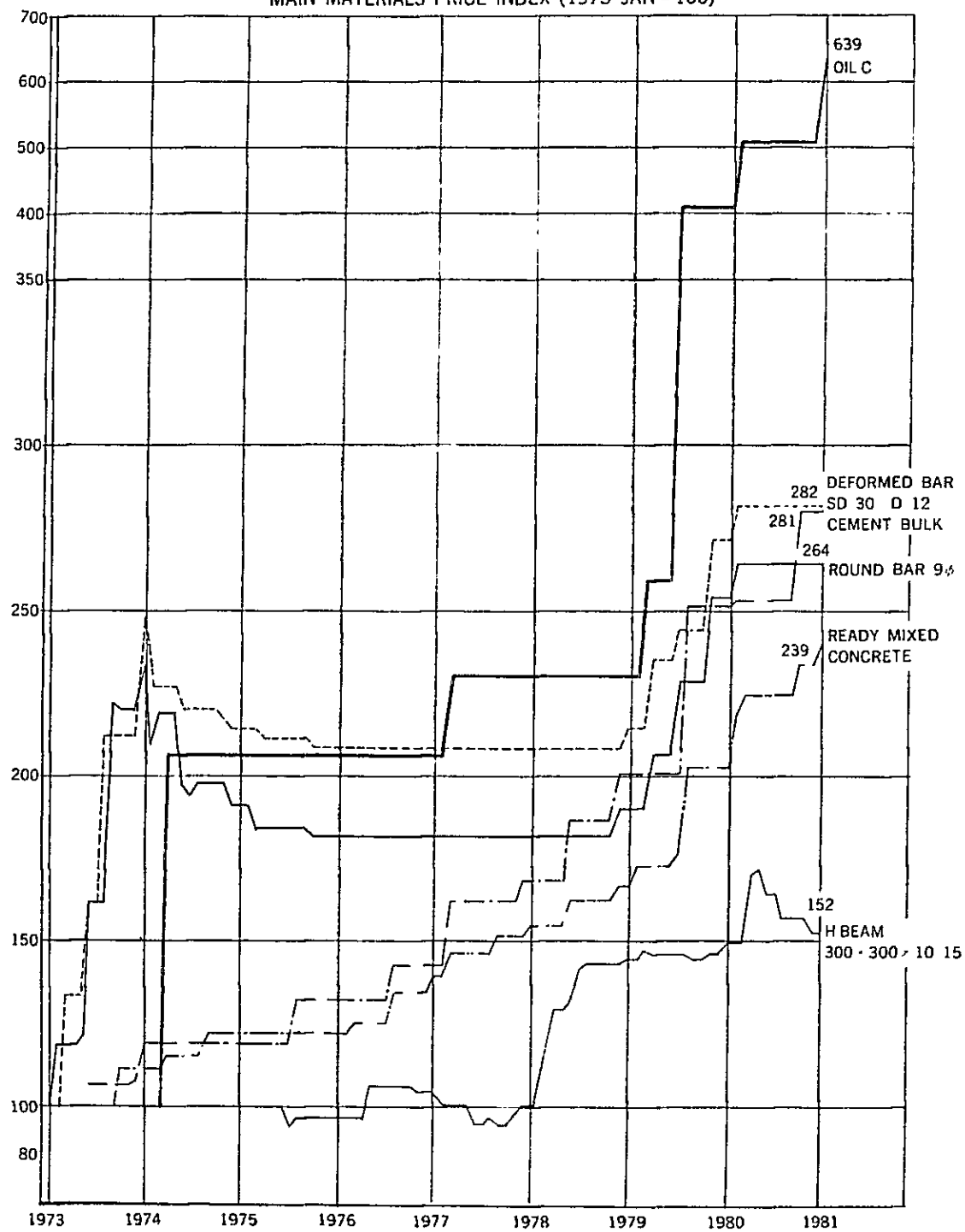
実施年月	首都圏	北部・東北部
77年10月	28	19
78年10月	35	25
79年10月	45	35
80年10月	54	44

(日額：バーツ)



主要資材物價指數

MAIN MATERIALS PRICE INDEX (1973 JAN = 100)



3. 建設費

- 1) タイ国に於ける建設費の動向については、現在全国で高進しているインフレのあおりを受け前述通り建設資材価格と労務費の値上りに伴って建設費も急上昇している。調査団の現地調査時にも、石油製品価格の値上りにつき政府発表があり1月末より新料金で実施しており一般物価上昇と重なって建設費高騰への悪影響が更に表われそうである。本計画実施のためには以上の価格上昇を勘案し計画規模・要請内容と工事費とのバランスを常にコントロールしながら設計にあたるべきと考える。

4. エネルギーコスト

電気料金 石油・ガス価格、水道料金等のエネルギー費用を下記のように調査した。

(1) 電気料金（地方料金、P・E・A）

1) 一般家庭	基本料金		5 パーツ
	使用料金	1~5 KWH	5 パーツ
		6~15 "	0.7 パーツ/KWH
		16~25 "	0.9 "
		26~35 "	1.17 "
		36~100 "	1.3653 "
		101~150 "	1.4653 "
		151~300 "	1.5453 "
		301~400 "	1.5953 "
		400 以上	1.6653 "
2) 業務用（小口契約）6~30KW	基本料金		89.765 パーツ
	使用料金	1~50 KWH	89.765 パーツ
		51~300 "	1.4953 パーツ/KWH
		301~1,000 "	1.5453 "
		1,000~3,000 "	1.6453 "
3) 業務用（大口契約）30KW 以上	基本料金		98 パーツ/KWH
	使用料金		1.153 "
4) 工業用（小口契約）30~499KWH	基本料金		9.2 パーツ/KWH
	使用料金	1~50KWH	1.1353 パーツ/KWH
		51~150	1.1053 "
		151~200	1.0753 "
		200 以上	1.0453 "
5) 工業用（大口契約）500KW 以上	基本料金		8.8 パーツ/KWH
	使用料金	1~50 KWH	1.1153 パーツ/KWH
		51~150	1.0753 "
		151~200	1.0353 "
		200 以上	0.9953 "

(2) 軽油 (ソーラー) 654 パーツ/ℓ

(3) 市水 250 パーツ/m³

(4) ガス

シリンダー径 (Kg)	バンコック料金 (パーツ)
12	1145
145	138
15	143
25	225
45	405
50	450

JICA