

月 日	曜日	内 容
11. 4	火	コーンケーン コーンケーンで以下の施設見学 Khon-Ke an 大学 看護学部 " 教育病院 " 地区病院 職業訓練センター (日本政府無償資金協力 プロジェクト)
11. 5	水	コーンケーン発→バンコック着(陸路バスにて) 途中以下の施設見学 Nakhorn Rajasima 看護大学と国立病院 Sara Buri 看護大学
11. 6	木	バンコック 大使館にて打合せと現地調査結果報告 保健省にて計画案と技術的問題について打合せ 高橋団長バンコック着
11. 7	金	バンコック 調査団 保健省 Dr. プラコーブ次官に表敬訪問 マハサラカム看護学校の施設規模について協議
11. 8	土	バンコック マハサラカム バンコック 高橋団長以下団員2名と保健省係官と共にマハサラカ ムに赴き敷地と病院の詳細な調査を行う。 残留団員は、計画案作成、概算検討案の作業を行う。
11. 9	日	コーンケーン バンコック バンコック 高橋団長以下調査団はコーンケーン大学を訪問後空路 バンコックに帰着 他の団員は前日と同様の作業を行った。
11. 10	月	バンコック 保健省にて教育機材と計画案についての協議を行った。 高橋団長より現地視察調査の報告
11. 11	火	バンコック 保健省にて教育機材と建設計画案図についての協議。 保健省次官 Dr. プラコーブ主催の昼食会。
11. 12	火	バンコック 保健省にて、タイ政府側工事等について協議。午後同 じく保健省にて教育機材打合せについて

月 日	曜日	内 容
11.13	水	バンコック 日本大使館にて MINUTES 原稿と計画規模について 打合せ 保健省と同じく MINUTES 原稿と計画規模について 協議
11.14	木	バンコック 保健省最終訪問 保健省次官補 Dr. Winit と高橋団長により MINUTES 調印 保健省にて最終協議（主にタイ政府側責任範囲の諸 工事） 日本大使館に同じく説明報告
11.15	金	バンコック 団員、本調査の協議事項、調査事項メモランダムと して作成。 同書、保健省に提出
11.16	土	バンコック発→東京着

2) 確認調査

調査団の日程

月 日	曜日	内 容
1. 26	月	東京発→バンコック着
1. 27	火	バンコック 保健省表敬訪問 ドラフトリポート確認協議(第1日) D E E C表敬訪問 タイ側予算措置、ドラフトリポート 説明 日本大使館、J I C A事務所、訪問、説明報告、タイ 側予備措置について
1. 28	水	バンコック 保健省訪問、ドラフトリポート確認、協議(第2日) 基本設計図、建築設計、設備設計について
1. 29	木	バンコック 保健者訪問、ドラフトリポート確認協議(第3日) 教育機材、建築設計について
1. 30	金	バンコック 保健者訪問、ドラフトリポート確認協議(第4日) 建築設計、設備設計
1. 31	土	バンコック 基本設計図、リポート訂正、変更 確認調査メモランダム作成
2. 1	日	chonburi chonbri 看護大学訪問 同大学施設現状調査見学
2. 2	月	バンコック 保健省訪問、基本設計ドラフト最終まとめ 確認調査メモランダム打合せ。
2. 3	火	バンコック 保健省、PAGA 看護教育部長と辛島団長により、 確認調査、メモランダム調印 日本大使館、J I C A事務所 確認調査報告
2. 4	水	バンコック発→東京着

3) 基本設計調査 メモランダム写(一部)

THE MEMORANDUM OF DISCUSSION

on

The Basic Design Survey

For

The Construction of the Mahasarakham Nursing College

November 14 1980

Japanese Basic Design Survey Team

Bangkok : 14th November, 1980

Miss. Paga Sriyuktasuth
Director
Nursing College Division
Ministry of Public Health

Dear Miss. Paga,

The Construction of the Mahasarakham Nursing College

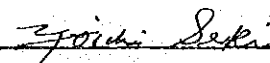
It is our pleasure to submit you the Memorandum of Discussion on the Basic Design Survey for the Construction Project of the Mahasarakham Nursing College, which the finding and the discussion held by the Japanese Basic Design Survey Team are described.

You will find that the Memorandum contains further details, based on the summary of the Minutes signed on 14th November, 1980.

We would like to mention that the Basic Design Report will be prepared immediately after our return to Japan, and submitted to you as Draft Report in January, 1980.

Taking this opportunity, we thank you very much for your cooperation in discussion with us and in providing with us necessary data and information during our stay in your country.

Very truly yours,


YOICHI SEKI
Project Coordinator
Japan International
Cooperation Agency (JICA)

9. Memorandum of Discussion

The Japanese Basic Design Survey team hold discussions as follows with the Thai Government officials concerned to develop the Basic Design

1. Project Site

The land for the project has been secured near the Mahasarakham Hospital with area of 20 Rai (32,000 m²), however, the area is not suitable in size for layingout of the facilities necessary for construction of the college and dormitories.

Additional land of 10 rai (16,000 m²) are provided suitably for the project. Total Area of the land will be in size of 30 Rai (48,000 m²) as shown on the sheet "proposed site" in Attachment.

The land will have to be filled and leveled upto high as top of the existing main road. The land fill and levelling work should be completed by Thai side before start of construction of Japanese side.

2. Access Road

Access road to the land connected from existing main road will be also constructed by Thai side before start of construction of Japanese side. Access road will be provided with pavement as shown on the sheet "ACCESS ROAD" in the ATTACHMENT

3. Capacities of the Educational Facility

The educational facilities, dormitories and ancillary building for the construction of the Nursing College of Mahasarakham have been requested for the Accomodation of 800 students, 200 students 4 years program, by the Thai side. However, after study and review by the Japanese Team facilities for the accomodation of the 480 students, 120 students 4 years program were proposed as the suitable size for the project of Japanese Grant. The site plan and floor plan of each facilities and buildings are indicated for 480 students base in the sheets of the ATTACHMENT

4. Soil Test and Land Survey

Soil test in the project site are requested by the Japanese Team to be conducted by the Thai side, so the basic design can be commenced for Building Structural work.

The Specification and Boring plot plan as attached are to be provided with the Thai Government official.

Land Survey of the project site conducted by the Thai Government are requested to provide the Survey map with the Japanese Team as soon as possible to commence the Basic Design.

5. Utilities Services

Electrical Supply, Telephone service and Water Supply works are carried out by Thai side to connect to the designated facilities of the construction by the Japanese work as indicated in the sheet attached. Sewage work also to connect to the existing disposal will be conducted by Thai side.

4) 確認調査 メモランダム写

THE MEMORANDUM OF DISCUSSION
ON
THE CONFIRMATION SURVEY
FOR
THE CONSTRUCTION OF THE MAHASARAKHAM NURSING COLLEGE

FEBRUARY 3, 1981

JAPANESE BASIC DESIGN SURVEY TEAM

On the basis of the Basic Design Survey November 1980, a basic design was carried out in Japan and compiled in the Report on Basic Design-Draft-, Mahasarakham Nursing College in the Kingdom of Thailand.

The Confirmation Survey Team was dispatched to submit and explain the Report and to conduct further investigation and discussion necessary for finalizing the Basic Design.

The Team made a presentation of the basic design and discussed it with the Thai counterparts of the Ministry of Public Health. The discussion were held on mainly the works conducted by the Thai side, the building design, the electrical and mechanical system and educational equipment as follows.

1. Works to be conducted by the Thai Government

The team confirmed that the works to be conducted by the Thai side, such as the Soil testing, preparation of Survey map of additional land, land filling of the site and construction of the access road now have been started to be carried out by the time required for this project in accordance with the statement of the MINUTES OF DISCUSSION, NOVEMBER 14, 1980 as follows

1) The Soil Testing

By allocating budget for the Soil test to be conducted in accordance with the specifications furnished by the Team November 1980, it was confirmed the Soil test is carried out by the Thai side to be scheduled to provide with the report of the result of the test to Japanese Side by end of March 1981.

2) Survey map of additional land

It was confirmed to furnish with the Survey map of the additional land Area to the team by end of February 1981.

3) Land filling

It was confirmed that the land filling work with allocated budget in addition to the works by the cooperation^e of the Mahasarakham Governor is now carried out to complete before start of the construction of the project in accordance with the ^Mminutes of Discussion .

4) Access Road

Construction of the access Road conducted by Thai side was confirmed to have started to complete for three months after from now. The ^aprovement work will be carried out by also the Thai side after completion of the construction of the project in the site.

Time schedule at the works undertaken by Thai side

JAN	FEB	MAR	APR	MAY	JUN
	1) Soil test -----				
	2) Survey map of additional land -----				
	3) Land filling -----				
	4) Construction ^{of} Access Road -----				

2. Building Design

With regard to the Basic Design of the Buildings for the college, dormitories, cafeteria and lecture theater, the Thai side made the following request to the Japanese Survey Team who agreed to incorporate them into the Final Report.

1) College Building

Lecture rooms to be provided in 2nd floor replaced with administration and staff rooms.

Typing and Duplication room enclosed with partition to be incorporated in administration office and staff room to be divided by wall partitions spaced for two bays. One of staff rooms will have two compartments for consulting room.

2) Dormitories

Laundry, study room, ironing room, shower room and toilet to be accommodated in each block of the dormitory buildings.

3) Cafeteria

Kitchen compared with capacity of dining room to require more space for arrangement of the equipment and toilet for diners to be provided.

4) Visitors pavilion

Reception counter to be provided for receiving visitors.

5) Auditorium

Stage partly to be caved in wall and dressing room to be situated directly to connect to stage.

3. Electrical and Mechanical System

- 1) It was confirmed that the Thai side agreed on basically the design of electrical and mechanical system.

At the meeting with architects and engineers from the Thai side the comment was presented and the discussion was held as follows.

- a. Lighting system in the dormitories and outdoors at the electric power failure is required.

Japanese team suggested that hand lamps with batteries (flashlight) are provided, but if the project budget is enough to cover, a small stand - by generator will be installed.

- b. Design value of B.O.D. for sewage treatment is recommended to be 20 P.P.M. in principle, but actually 40 P.P.M. is applied sometimes.

Japanese team suggested that the sewage treatment should be designed with 40 P.P.M. if possible 60 P.P.M. because the Project is for a construction of college, not for a factory.

- 2) It was agreed that the following items were revised and added.

- a. Capacity of the water reservoir and the elevated tank is revised.

Water reservoir	120 m ³ → 100 m ³
Elevated tank	30 m ³ → 50 m ³

- b. Simple lightning protection system is added.

- 3) It was agreed that the following items were confirmed.

- a. Type of water closet

For staff	Western type
For students	Local type

- b. Rooms where required ceiling fans, exhaust fans for ventilation, air coolers, hoods for cooking stove, a draft chamber for chemical laboratory etc. are needed as shown in the attached drawings.

4. Educational Equipment

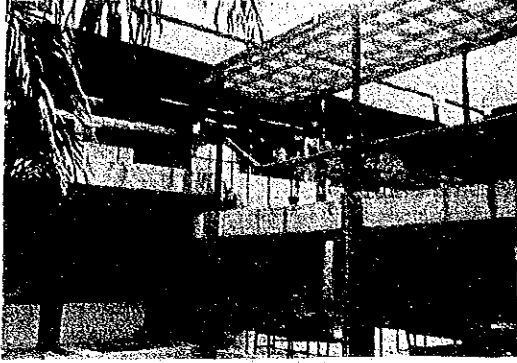
- 1) Discussion about the educational equipment based on the list made at the basic design survey was held.

The equipment except for consumption articles are able to be covered in this Project.

As the results of discussion, some items in the list were deleted and some items were added.

The revised list is attached in the appendix.

既設病院看護学校写真



MAHIDOR UNIV.
SHOOL OF NURSING



MAHIDOR UNIV.
DORMITORY



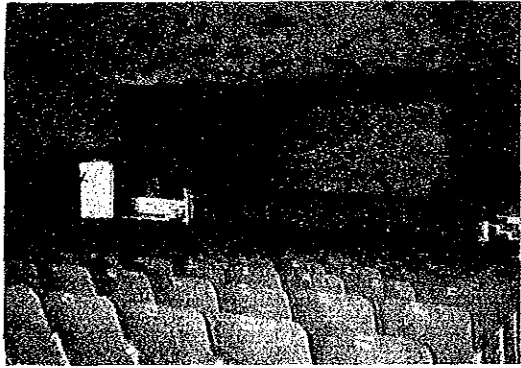
BANGKOK
COLLEGE OF NURSING



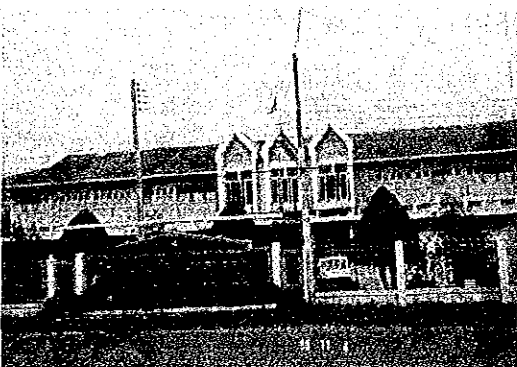
BANGKOK
COLLEGE OF NURSING
DORMITORY



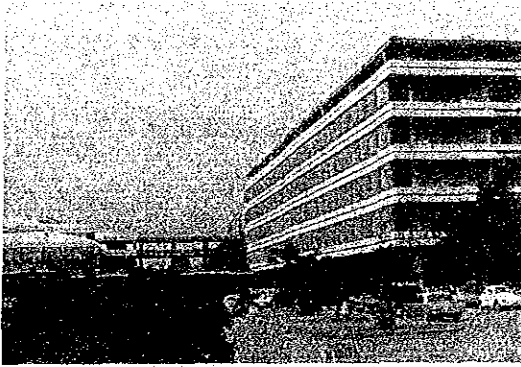
BANGKOK
COLLEGE OF NURSING
LECTURE ROOM



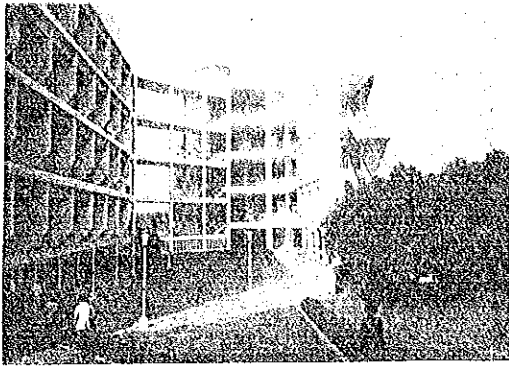
BANGKOK
COLLEGE OF NURSING
AUDITORIUM



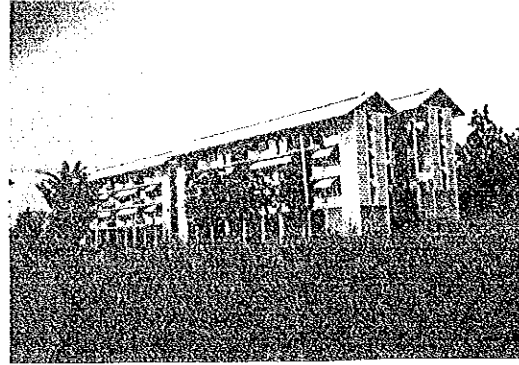
MAHASARAKHAM
REGIONAL HOSPITAL



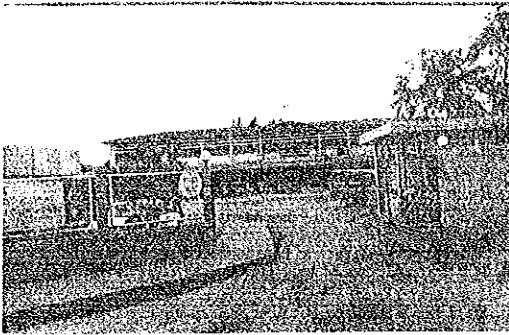
KHON KAEN
REGIONAL HOSPITAL



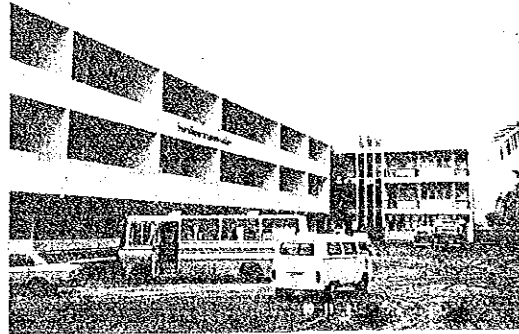
KHON KAEN UNIV.
FUCULTY OF NURSING



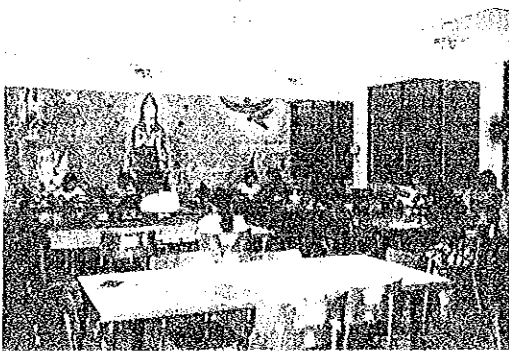
KHON KAEN UNIV.
DORMITORY



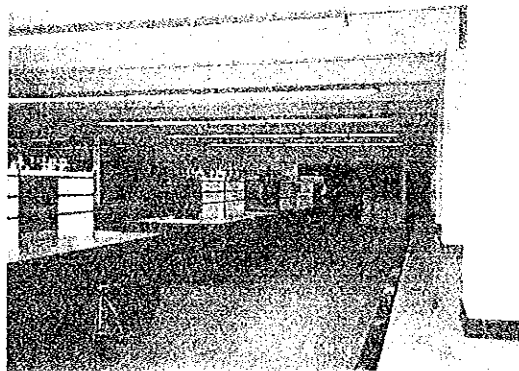
NAKHORN RAJASIMA
PROVINCIAL HOSPITAL



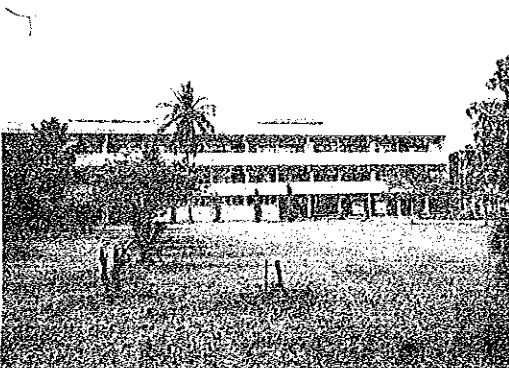
NAKHORN RAJASIMA
COLLEGE OF NURSING



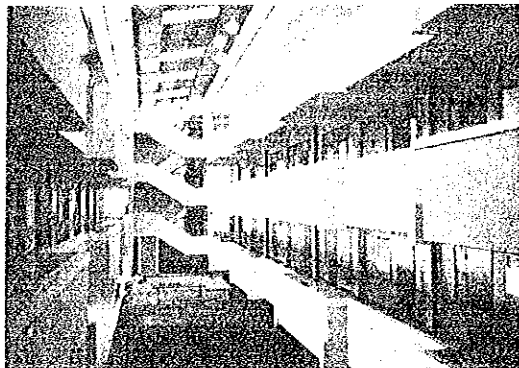
SARA BURI
COLLEGE OF NURSING
STUDY ROOM



SARA BURI
COLLEGE OF NURSING
LABORATORY



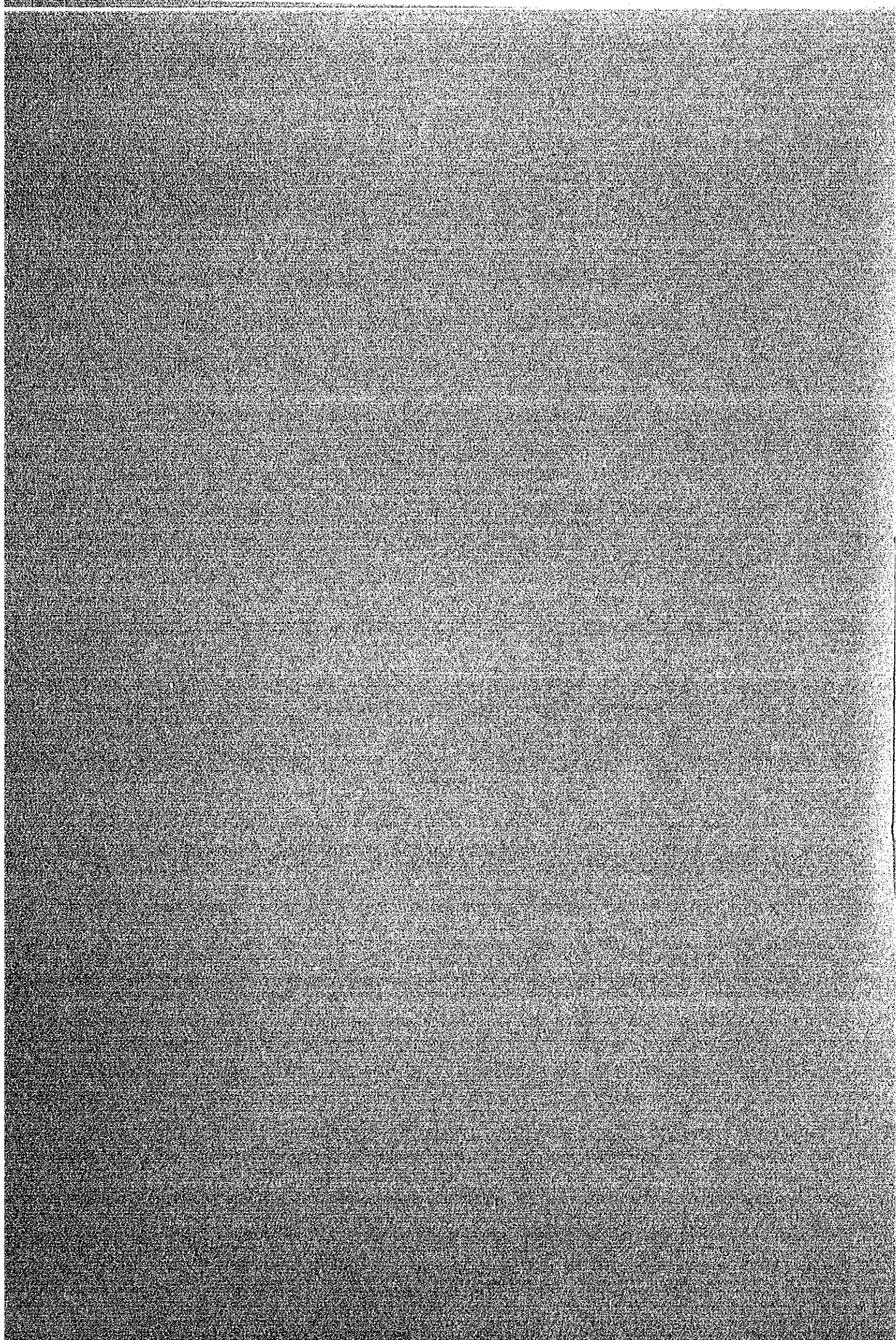
CHOL BURI
COLLEGE OF NURSING



CHOL BURI
DORMITORY

附属資料 Ⅱ

1 関係法規	Ⅱ-1
2 関係規則・規準	Ⅱ-3
3 関係官庁	Ⅱ-5
4 地域水道局水質表	Ⅱ-6
5 気象データ	Ⅱ-8



1 関係法規 (1)

List of Law, Acts and Regulations (1)

1. Building Control Act B.E.2522
2. Bye-Laws of the Bangkok Metropolis
Re: Control of the Construction of Building 1974
3. Bye-Laws of the Bangkok Municipality (B.B.M.) = M
Re: Control of the Construction of Buildings
Building Construction Control Act B.E.2479 (B.C.A.) = A
4. Act on the Architectural Profession B.E.2508
5. Act on the Engineering Profession B.E.2505
6. Re-Construction of Fire Area Control Act B.E.2476
7. Prevention and Repression of Fire Risk Act B.E.2495
8. Ministerial Regulation
Issued under the Prevention & Repression of Fire Risk Act
B.E.2495
9. Construction Profession Act 1979
10. Alien Work Permit Act 1978

1 關係法規 (2)

List of Law, Acts and Regulations (2)

1. Act for cleanliness and orderliness of the country B.E.2503
2. Ministerial Regulation No.1 (B.E.2508)
Issued under the Engineering Profession Act B.E.2505
3. Medical Premises Act B.E.2504
4. WHO Regulations No.2 International Sanitary Regulations
5. Factories Act B.E.2512
6. Factories Act (No.2) 1975
7. Factories Act (No.3) 1979
8. Ministerial Regulations
Issued under the Factories Act B.E.2512
9. Notification of the Ministry of Industry
Issued under the Factories Act B.E.2512
10. Fuel Oil Act 1978
11. Fuel Oil Act 1979
12. Act relating to the storage of oil fuel B.E.2474
13. Ministry of Interior's Regulations
Issued under Section 56 of the Act relating to the Storage
Oil Fuel B.E.2474
14. Notification of the Ministry of Interior
Re: Safety in Working with Machinery
15. Notification of the Ministry of Interior
Re: Working Safety in Respect to Environmental Condition

2 関係規則・規準

設備関連法規等

タイ国における設備関連法規等とはここに示すふうにタイ国自身の定めるものと国際機関あるいは外国の法規、規準を準用するものがあり、設備全般についての法規等は必ずしも十分に整備されていない。

電力供給に関してはM.E.A.(Metropolitan Electrical Authority)の基準があるが今回はP.E.A(Provincial Electrical Authority)の所轄なのでM.E.A.の基準に準拠するものと考えられる。

給水、ガス、防災等についてはタイ国自身のものがなく、防災に関してはNFPAの基準に準拠している。

排水基準に関しては工場法に関連の記述があるのみで、学校建築の排水基準は保健省と打合せて決めることになろう。

電話に関しては特定の基準はない。

公害に関する法規は現在整備中とのことであった。

設備工事に関連する所轄官庁を付属資料Ⅱ-(3)に示す。

2 關係規則、規準

Relevant Code, Regulation and Standard

- | | |
|--|--|
| 1. Electrical Code | • MEA Code (Metropolitan Electrical Authority Code)
This is almost same as N.E.C. |
| 2. Fire Protection Code | • Comply with NFPA |
| 3. Standard for Equipment and Material | • Thai Industrial Standard (TIS) |
| 4. Standard for Sewage Treatment | • |
| 5. Drainage | • Factory Act and Ministerial Regulations |

3 關係官庁

Relevant Authorities

1. Water Supply : Department of Health
2. Drainage : Municiple Authority of Mahasarakham
Department of Public Work, Ministry
of Interior
3. Sewage Treatment : Department of Health
Municiple Authority of Mahasarakham
4. Power Supply : Provincial Electricity Authority (P.E.A.)
5. Telephone : Telephone Authority of Thailand (T.A.T.)
6. Gas : Ministry of Industry
Ministry of Commercial
7. Fire Protection : Municiple Authority of Mahasarakham
8. Pollution Control : Department of Health
Municiple Authority of Mahasarakham

4 地域水道局水質表

Quality of Water

Sample from Mahasarakham water work,
tested date May 1980

I. Physical feature

1. True color in Pt units		5
2. Odour		unobjectionable
3. Taste		"
4. Turbidity in Silica units	120	120
5. PH value		7.5
6. Electrical conductivity at 20°C (micromhos/cm)		390

II. Chemical feature

1. Acidity total solids		2
2. Suspended solids		-
3. Dissolved solids		-
4. Hardness expressed as calcium carbonate		54
5. Carbonate hardness	ditto	54
6. Non-carbonate hardness	ditto	0
7. Total alkalinity		140
8. Total organic matter (Oxygen consumed)		2.4
9. Total organic nitrogen, expressed as nitrogen		-
10. Albuminoid nitrogen	ditto	-
11. Nitrate,	ditto	0.0400
12. Nitrite,	ditto	-
13. Carbon chloroform extract (CCE)		-
14. Alkyl benzyl sulfonates (ABS)		-
15. Dissolved oxygen (DO)		7.1
16. Chloride	(Cl)	53.4
17. Iron	(Fe)	1.75
18. Manganese	(Mn)	-
19. Copper	(Cu)	-
20. Lead	(Pb)	-
21. Zinc	(Zn)	nil
22. Calcium	(Ca)	20
23. Magnesium	(Mg)	1

24.	Sulfate	(S04)	-
25.	Fluoride	(F)	-
26.	Arsenic	(As)	-
27.	Residual chloride		-

5 気象データ (I)

CLIMATOLOGICAL DATA FOR THE PERIOD 1951 - 1975

Station ROI ET
 Index Station 48 405
 Latitude 16° 03' N.
 Longitude 103° 41' E.

Elevation of station above MSL. 140.00 meters
 Height of barometer above MSL. 141.35 meters
 Height of thermometer above ground 1.20 meters
 Height of wind vane above ground 13.00 meters
 Height of rain gauge 0.65 meters

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
<u>Pressure (+1000 or 900 mbs.)</u>													
Mean	13.87	11.44	09.79	08.12	06.45	05.22	05.19	05.17	06.94	10.36	12.81	14.21	09.13
Ext. Max.	27.48	24.30	22.86	21.42	15.06	13.04	12.36	12.78	14.82	18.55	22.24	24.72	27.48
Ext. Min.	02.08	08.44	09.47	08.69	07.73	05.24	01.44	06.91	07.68	01.48	03.04	03.36	01.44
Mean daily range	5.30	5.61	5.84	5.72	5.23	4.37	4.18	4.21	4.54	4.62	4.60	4.86	4.92
<u>Temperature (°C.)</u>													
Mean	23.7	26.0	28.7	30.2	29.6	28.8	28.4	27.8	27.5	26.9	25.1	23.2	27.1
Mean Max.	30.0	32.2	34.6	35.7	34.3	32.6	32.0	31.3	30.9	30.8	30.2	29.4	31.9
Mean Min.	16.2	18.9	22.0	24.1	24.7	24.7	24.4	24.3	24.1	22.4	19.3	16.7	21.8
Ext. Max.	36.4	38.7	40.5	41.5	40.0	37.8	36.0	37.5	34.7	34.6	34.8	35.8	41.5
Ext. Min.	6.3	9.8	11.5	15.0	20.4	19.7	21.4	21.1	20.0	15.2	11.4	7.0	6.3
<u>Relative Humidity (%)</u>													
Mean	63.0	62.0	60.0	63.0	72.0	76.0	77.0	80.0	82.0	76.0	70.0	66.0	71.0
Mean Max.	87.0	84.5	81.9	83.7	89.7	91.8	91.5	93.4	93.8	91.3	90.0	88.5	88.9
Mean Min.	43.5	42.6	42.4	45.0	55.3	62.0	63.2	66.8	68.4	61.9	53.0	48.1	54.4
Ext. Min.	22.0	13.0	20.0	20.0	29.0	40.0	42.0	42.0	49.0	41.0	25.0	25.0	13.0
<u>Dew Point (°C.)</u>													
Mean	15.7	17.4	19.7	21.8	23.7	24.0	23.8	23.8	23.8	22.1	19.2	16.2	20.9
<u>Evaporation (mm)</u>													
Mean-Piche	92.4	92.1	113.7	103.9	81.5	63.0	62.2	53.5	47.6	60.8	74.5	85.4	930.6
-Pan	163.8	158.9	196.6	190.4	165.0	135.4	141.8	122.5	101.0	140.3	155.3	163.0	1834.0
<u>Cloudiness (0-8)</u>													
Mean	2.8	3.3	3.7	4.5	5.8	6.5	6.5	6.9	6.3	4.8	3.6	3.0	4.8
<u>Visibility (Km)</u>													
0700 L.S.T.	4.6	4.9	5.2	6.4	8.3	9.0	9.1	8.5	8.1	8.1	7.2	5.6	7.1
Mean	7.8	7.0	6.5	7.7	9.6	10.2	10.3	9.8	9.6	9.6	10.0	8.9	8.9
<u>Wind (Knots)</u>													
Prevailing wind	E	E	E	S	S	SW	SW	SW	SW	E	E	E	-
Mean Wind Speed	4.2	4.0	4.2	4.1	4.1	4.9	4.8	4.4	3.2	3.9	4.7	4.7	-
Max. Wind Speed	24 NE	33 NE	34 SW	36 N	36 S	27 ^S _{NW}	33 NW	36 NE	33 SW	28 SE	27 E	27 E	-
<u>Rainfall (mm)</u>													
Mean	3.5	19.0	31.1	82.3	192.4	197.6	207.3	252.7	314.1	93.7	9.9	1.2	404.8
Mean rainy days	0.8	2.2	3.7	7.2	14.5	15.2	15.7	17.9	19.1	8.7	1.8	0.5	107.3
Greatest in 24 hr.	26.0	59.6	63.0	88.5	118.0	140.6	135.0	140.2	230.6	80.0	33.0	21.9	230.6
Day/Year	25/74	10/75	7/61	23/51	31/70	6/55	12/65	25/63	22/64	11/75	5/64	3/75	22/64
<u>Number of days with</u>													
Haze	23.6	23.2	28.0	21.8	7.6	1.3	0.6	0.6	1.6	8.5	14.8	21.7	153.3
Fog	7.1	3.8	1.8	2.6	2.1	0.1	0.1	0.1	0.3	0.4	2.0	5.0	25.4
Hail	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Thunderstorm	0.2	1.1	4.2	8.1	14.4	9.0	9.1	11.9	9.9	5.1	0.4	0.1	72.6
Squall	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1

5 気象データ (2)

Station KHOM KAEN
 Index Station 4B 381
 Latitude 16° 26' N.
 Longitude 102° 50' E.

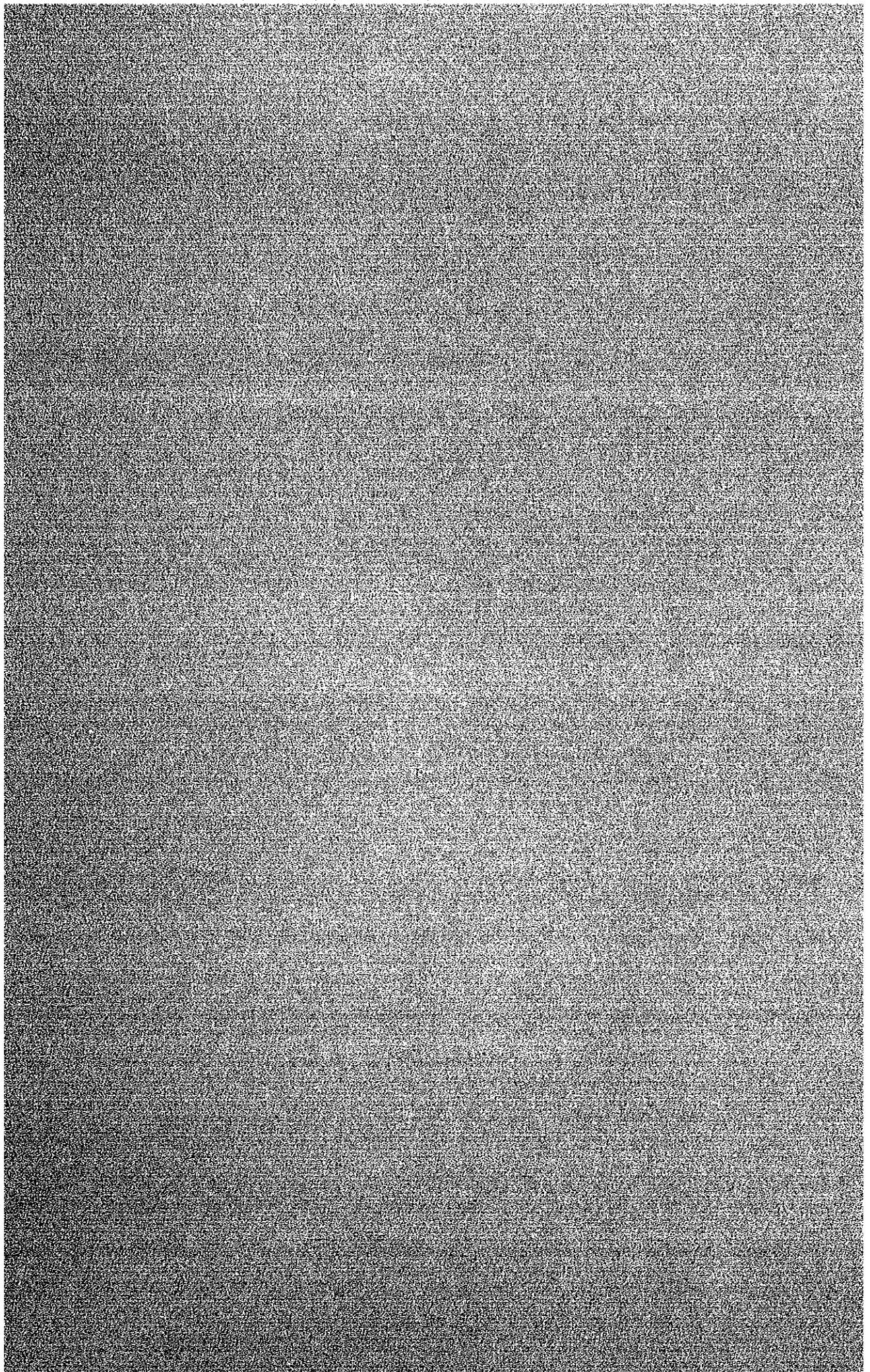
Elevation of station above MSL. 164.63 meters
 Height of barometer above MSL. 165.41 meters
 Height of thermometer above ground 1.50 meters
 Height of wind vane above ground 14.50 meters
 Height of rain gauge 0.60 meters

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
<u>Pressure (+1000 or 900 mbs.)</u>													
Mean	13.99	11.62	09.72	07.98	06.34	05.15	05.05	05.10	06.97	10.55	13.00	14.40	09.16
Ext. Max.	28.70	24.62	23.60	21.68	14.90	13.70	12.50	13.92	15.10	18.90	23.42	25.08	28.70
Ext. Min.	02.66	00.90	99.98	98.61	97.40	94.92	95.05	95.58	94.32	01.90	03.30	03.44	94.32
Mean daily range	5.61	6.05	6.01	5.76	5.18	4.29	4.07	4.17	4.58	4.77	4.80	5.10	5.03
<u>Temperature (°C.)</u>													
Mean	23.2	25.9	28.7	30.3	29.5	28.7	28.2	27.7	27.2	26.7	25.1	23.2	27.0
Mean Max.	30.3	32.8	35.3	36.5	34.9	33.1	32.6	32.0	31.6	31.4	30.9	29.8	32.4
Mean Min.	15.7	18.7	21.9	24.1	24.6	24.6	24.1	24.0	23.6	22.2	19.3	16.1	21.7
Ext. Max.	37.2	41.0	41.8	42.8	41.2	37.4	36.8	37.0	35.5	35.8	37.2	35.8	42.8
Ext. Min.	5.7	10.4	10.3	14.0	20.9	20.7	20.2	20.8	19.3	14.0	9.4	5.6	5.6
<u>Relative Humidity (%)</u>													
Mean	64.0	62.0	61.0	64.0	72.0	76.0	77.0	80.0	82.0	80.0	70.0	66.0	71.0
Mean Max.	86.1	83.9	82.0	82.5	87.5	88.8	90.0	91.4	92.7	90.8	88.1	87.2	87.6
Mean Min.	43.6	42.3	41.3	43.9	53.8	60.7	62.3	65.0	66.6	60.3	50.7	45.7	53.0
Ext. Min.	11.0	10.0	12.0	18.0	29.0	33.0	41.0	37.0	46.0	26.0	21.0	15.0	10.0
<u>Dew Point (°C.)</u>													
Mean	15.5	17.7	19.0	22.8	23.4	23.7	23.8	23.7	23.0	22.1	19.8	16.6	20.8
<u>Evaporation (mm.)</u>													
Mean-Piche	No Observation												
-Pan	169.1	174.2	218.0	231.5	210.9	169.6	176.4	159.9	144.3	163.7	164.8	167.6	2149.0
<u>Cloudiness (0-8)</u>													
Mean	2.8	2.8	3.2	4.0	5.6	6.4	6.4	6.7	6.2	4.7	3.6	3.0	4.6
<u>Visibility (Km.)</u>													
0700 L.S.T.	5.3	5.1	4.8	6.2	7.8	8.0	8.2	7.9	7.5	7.5	7.2	6.4	6.8
Mean	7.4	6.6	5.9	7.3	8.4	8.7	8.7	8.6	8.4	8.9	8.6	8.3	8.0
<u>Wind (Knots)</u>													
Prevailing wind	NE	NE	NE	SW	SW	SW	SW	SW	SW	NE	NE	NE	-
Mean Wind Speed	3.5	3.3	3.7	4.0	3.8	4.2	4.5	4.0	3.1	3.7	4.2	4.0	-
Max. Wind Speed	33 NE	33 N, SW, NW	40 NE	46 W	47 SW, WHW	39 SW, W	55 W	40 E	33 N, SW, W	34 NE	35 N	38 NE	-
<u>Rainfall (mm.)</u>													
Mean	8.9	18.0	37.2	61.6	165.4	179.6	156.3	186.8	266.0	89.4	15.9	2.7	1187.8
Mean rainy days	1.3	2.8	4.4	6.4	13.9	14.4	16.2	17.8	18.0	9.6	1.7	0.6	107.1
Greatest in 24 hr.	29.2	63.4	70.2	65.7	96.9	123.8	92.8	99.0	141.6	124.5	81.0	26.6	141.6
Day/Year	24/69	3/66	12/52	6/65	10/52	12/70	26/63	14/61	8/51	26/69	10/74	20/71	8/51
<u>Number of days with</u>													
Haze	22.6	23.8	24.1	13.8	1.4	0.0	0.1	0.4	0.7	3.1	8.1	19.0	117.1
Fog	5.2	3.3	3.9	1.4	0.4	0.1	0.1	0.2	0.3	1.5	5.9	5.8	28.1
Hail	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Thunderstorm	0.3	1.4	6.1	11.9	17.6	13.6	13.4	11.7	13.4	6.0	0.5	0.0	96.1
Squall	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

Remark : Evaporation - Pan 1961-1975

附属資料 Ⅲ

1	建設資材費	Ⅲ-1
2	労務費	Ⅲ-7
3	建設費	Ⅲ-9
4	エネルギーコスト	Ⅲ-10
5	輸送	Ⅲ-12



1 建設資材費

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

CONSTRUCTION MATERIAL PRICE LIST

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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.H.	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.C8-1) 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 (MORN 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.W9) 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.10B5) 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 4350mm 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 (NCON) 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	"	490	
.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	65mm weight 2.22kg/bar	Bar	21	

CONSTRUCTION MATERIAL PRICE THAILAND

5. Piping

CONSTRUCTION MATERIAL PRICE THAILAND

6. Wire mesh

Code	Name of material	Unit	Unit Price Baht	Remarks	Code	Name of material	Unit	Unit Price Baht	Remarks
5.1	Asbestos cement drainage pipe, class A, single socket (length = 3.00m/p)				6.1	Wire mesh - Rhombus pattern			
.1	Ø80mm	Pipe	55		.1	Mesh size 38mm, diameter of wire 3.0mm (No.11)	SQ.M	49	
.2	Ø100mm	"	91		.2	Mesh size 50mm, diameter of wire 3.0mm (No.11)	"	39	
.3	Ø150mm	"	134		.3	Mesh size 38mm, diameter of wire 3.15mm (No.10)	"	58	
.4	Ø200mm	"	189		.4	Mesh size 50mm, diameter of wire 3.15mm (No.10)	"	48	
.5	90° bend Ø 80mm	pc	11		6.2	Wire mesh - square pattern			
.6	90° bend Ø100mm	"	12		.1	Mesh size 38mm, diameter of wire 3.0mm (No.11)	"	55	
.7	90° bend Ø150mm	"	22		.2	Mesh size 50mm, diameter of wire 3.0mm (No.11)	"	45	
.8	90° bend Ø200mm	"	31		.3	Mesh size 38mm, diameter of wire 3.15mm (No.10)	"	65	
.9	90° Tee Ø 80mm	"	15		.4	Mesh size 50mm, diameter of wire 3.15mm (No.10)	"	55	
.10	90° tee Ø100mm	"	19		6.3	Wire mesh - square pattern, welded (roll size 0.90 x 30.48m)			
.11	90° tee Ø150mm	"	31		.1	Mesh size 13mm	M	30	
.12	90° tee Ø200mm	"	48		.2	Mesh size 19mm	"	26	
5.2	Concrete pipe (44mm THK, 1.00m length)				.3	Mesh size 25mm	"	24	
.1	Bell & spigot type Ø300mm	Pipe	100		.4	Mesh size 31mm	"	22	
.2	Bell & spigot type Ø600mm	"			6.4	Wire mesh - Polygon pattern, welded (roll size 0.90 x 45.72m)			
.3	Tongued & grooved type Ø300mm	"	85		.1	Mesh size 13mm	"	15	
.4	Tongued & grooved type Ø600mm	"	230		.2	Mesh size 19mm	"	13	
5.3	R.C. pipe (length 1.00m)				.3	Mesh size 25mm	"	11.50	
.1	Bell & spigot type, class 3 Ø300mm	"	135		.4	Mesh size 31mm	"	9	
.2	Bell & spigot type, class 3 Ø600mm	"			6.5	Steel mosquito net (green color) width = 900mm	"	22	
.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) I.C.P.								
.1	Ø100mm, length 1.80m, weight 16.50 kg	P	135						
.2	Elbow 90°	"	30						

CONSTRUCTION MATERIAL PRICE THAILAND

7. Insulation

CONSTRUCTION MATERIAL PRICE THAILAND

8. Thin sheet

Code	Name of material	Unit	Unit Price Baht	Remarks	Code	Name of material	Unit	Unit Price Baht	Remarks
7.1	Glass fibre				8.1	Aluminum foil (sisalation) No.402 roll size 1.35 x 60.00m	Roll	1,000	
.1	Glasswool w/alumi. foil (siam insulation) 25mm THK, roll size 1.22 x 30.48m	Roll	1,500		8.2	Harvi foil (harvi-foil) No.405 roll size 1.35 x 60.00m	"	1,350	
.2	Microfibre w/alumi. foil (siam glasswool) 50mm THK, roll size 1.22 x 15.25m	"	1,380		8.3	Damp-proof sheet (sisalthene) No.353 roll size 1.80 x 50.00m	"	3,200	
.3	Fibreglass crown w/resin bonded (YIP-IN-SOI) No.109 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

9. Overlapping sheet

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
9.1	CPAC Monier			
.1	Size 330 x 420mm - various colours	Tile	6.50	
.2	Ridge size 255 x 425mm - colours	"	11	
9.2	Vibulsri 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) Male (size 140 x 186mm) female (size 143 x 270mm)	"	3.50	
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	

Code	Name of material	Unit	Unit Price Baht	Remarks
10.1	Cem 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

CONSTRUCTION MATERIAL PRICE THAILAND

12. Tile (cont.)

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	"	333	
.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	

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	Pladon 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) Lerdsirisahakol 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 6,50m	"	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	Indolane (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 1,200 x 2,000mm, (w/fix 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	Parmastic	"	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

CONSTRUCTION MATERIAL PRICE THAILAND

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

Code	Name of material	Unit	Unit Price Baht	Remarks	Code	Name of material	Unit	Unit Price Baht	Remarks
17.1	White Cement (weight 8 kg/bag)	Bag	7		18.1	Plumbing equipment			
17.2	Cement				.1	Meter (Japanese made) nominal size 15mm	PC	323	
.1	Tiger brand A (Retail price from general shop)	"	54.50		.2	Meter (Japanese made) nominal size 20mm	"	580	
.2	Tiger brand B (Delivery price for job site in BKK, within 50 km)	Ton	1,090		.3	Meter (Japanese made) nominal size 25mm	"	880	
.3	Cobra brand A	Bag	54.50		.4	Brass valve (Japanese made) nominal size 15mm	"	95	
.4	Cobra brand B	Ton	1,090		.5	Brass valve (Japanese made) nominal size 20mm	"	127	
.5	Eagle brand A	Bag	54.50		.6	Brass valve (Japanese made) nominal size 25mm	"	168	
.6	Eagle brand B	Ton	1,090		.7	Cast iron valve (local made) nominal size 100mm (gate valve)	150 Lbs	2,000	
.7	Elephant brand A	Bag	64.75		.8	Cast iron valve (local made) nominal size 150mm (gate valve)	150 Lbs	3,450	
.8	Elephant brand B	Ton	1,295		.9	Cast iron valve (local made) nominal size 200mm (gate valve)	150 Lbs	5,500	
.9	Green serpent A	Bag	64.75		.10	Brass faucet (local made) nominal size 15mm (Hongkong type)	"	72	
.10	Green serpent B	Ton	1,295		.11	Brass faucet (local made) nominal size 20mm (Hongkong type)	"	32	
.11	Diamond brand A	Bag	64.75		.12	Brass chromium plated faucet Brand name (bright) nominal size 15mm (wall type)	"	78	
.12	Diamond brand B	Ton	1,295		.13	Brass chromium plated faucet Brand name (bright) nominal size 20mm (lav. type)	"	65	
.13	Club brand A	Bag	64.75		18.2	Sewage aeration treatment system w/fittings (installation not included)			
.14	White cement, White elephant brand (weight 40 kg/bag)	"	180		.1	SATS GK.100 model included w/fittings (for 10 persons)	Set	12,800	
.15	White cement, Kilane brand (weight 40 kg/bag)	"	180		.2	SATS MA.576 model included w/fittings (for 50 persons)	"	44,800	
17.3	Sand, Soil, Stone (delivery charge included)				18.3	Cement pipe			
.1	Coarse sand, Retail sale	CU.M	175-185		.1	Ready-made cement pipe, hollow, height=400mm, 4800mm	PC	50	
.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

19. Material & equipment for electrical work

CONSTRUCTION MATERIAL PRICE THAILAND

20. Equipment - facilities

Code	Name of material	Unit	Unit Price Baht	Remarks	Code	Name of material	Unit	Unit Price Baht	Remarks
19.1	Electrical wire (round copper), covered w/insulator & outer skin-PVC. (100m/roll)				20.1	Toilet fixture water closet (w/seat & tank fittings)			
.1	PVC 60°, 250 volt, double core size 2 x 4.0 SQmm	Roll	857		.1	W.C. eastern style, pail-flush type white vitreous china (No.TF-100)	PC	220	
.2	PVC 60°, 250 volt, double core size 2 x 2.5 SQmm	"	548		.2	W.C. eastern style, pail-flush type white vitreous china (SQUAT 2)	"	190	
.3	PVC 60°, 250 volt, double core size 2 x 1.5 SQmm	"	359		.3	W.C. eastern style, pail-flush type w/pedestal, white vitreous china (No.TF-100p)	"	575	
.4	PVC 60°, 250 volt, double core size 2 x 1.0	"	258		.4	W.C. eastern style, pail-flush w/pedestal, white vitreous china (SQUAT 1)	"	570	
.5	PVC 60°, 750 volt, single core size 1 x 4.0 SQmm	"	349		.5	W.C. eastern style, flush type, white vitreous china (No.TF-100f)	"	365	
.6	PVC 60°, 750 volt, single core size 1 x 2.5 SQmm	"	232		.6	W.C. eastern style, flush type, white vitreous china (SQUAT 2F5")	"	320	
19.2	Electrical fittings & lighting fixture				.7	W.C. eastern style, flush type w/pedestal white vitreous china (No.TF-100FT)	"	750	
.1	Switch (single) 3 way flush type (VETO)	PC	31.50		.8	W.C. eastern style, flush type w/pedestal white vitreous china (SQUAT 1 flush)	"	750	
.2	Switch (single) 3 way flush type (TICHIRO)	Set	80		.9	W.C. western style, w/tank, white vitreous china (No.TF-2106)	Set	1,775	
.3	Switch (single) 3 way flush type (UROPA)	"	80		.10	W.C. western style, w/tank, white vitreous china (No.C 73)	"	1,640	
.4	Plug (single) flush type (VETO)	PC	25		.11	W.C. western style, w/tank, coloured vitreous china (No.TF-2106)	"	2,225	
.5	Plug (single) flush type (TICHIRO)	Set	83		.12	W.C. western style, w/tank, coloured vitreous china (No.C 73)	"	1,950	
.6	Plug (single) flush type (UROPA)	"	80		.13	W.C. eastern style, pail flush type w/pedestal-terrazzo	PC		
.7	Egg shaped switch (VETO)	PC	19		20.2	Toilet fixture urinal, bidet (fittings not included)			
.8	Short cut switch, 25 amper (TICHIRO)	"	245		.1	Urinal, wall type, white vitreous china (No.TF 412)	Set	430	
.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						

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

（バツ）

製造業未熟練労働者賃金（バンコック）

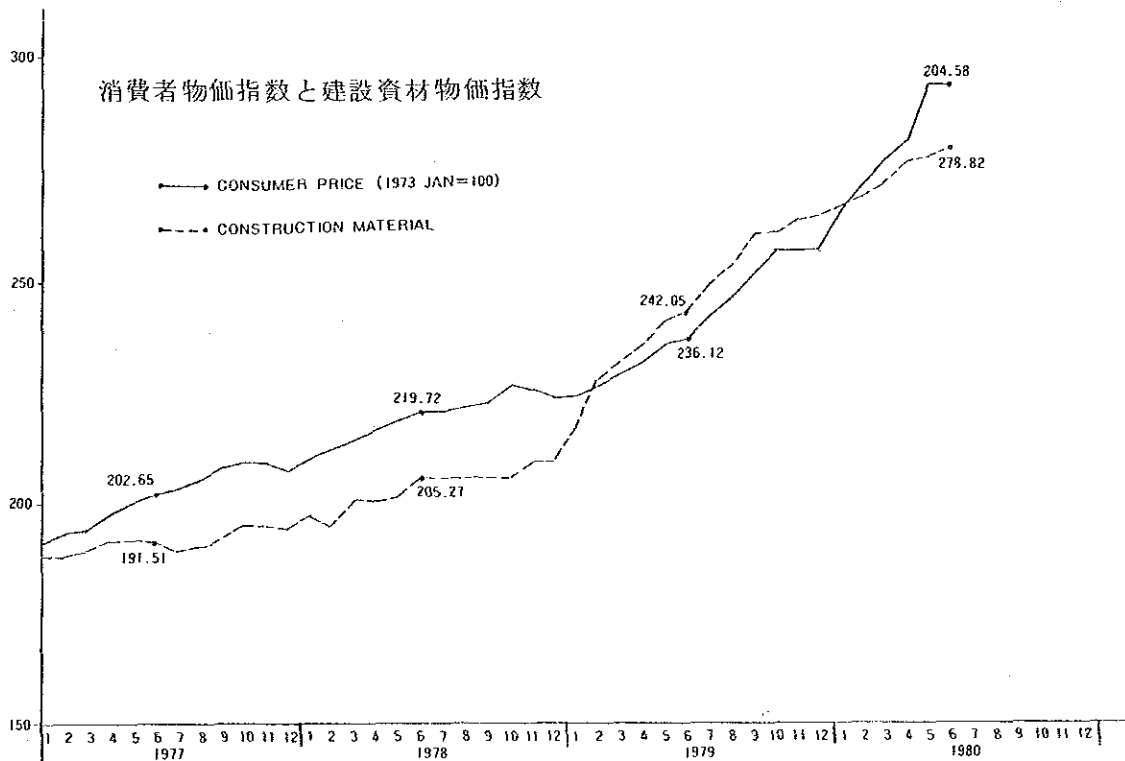
産 業	1977年12月	1978年12月
建設資材	39.4	46.1
木材・木具	35.8	42.5
非金属・ガラス	41.8	48.8
鉄・銅・金属	33.7	39.7

資料 Bank of Thailand（日額：バツ）

最低賃金の推移

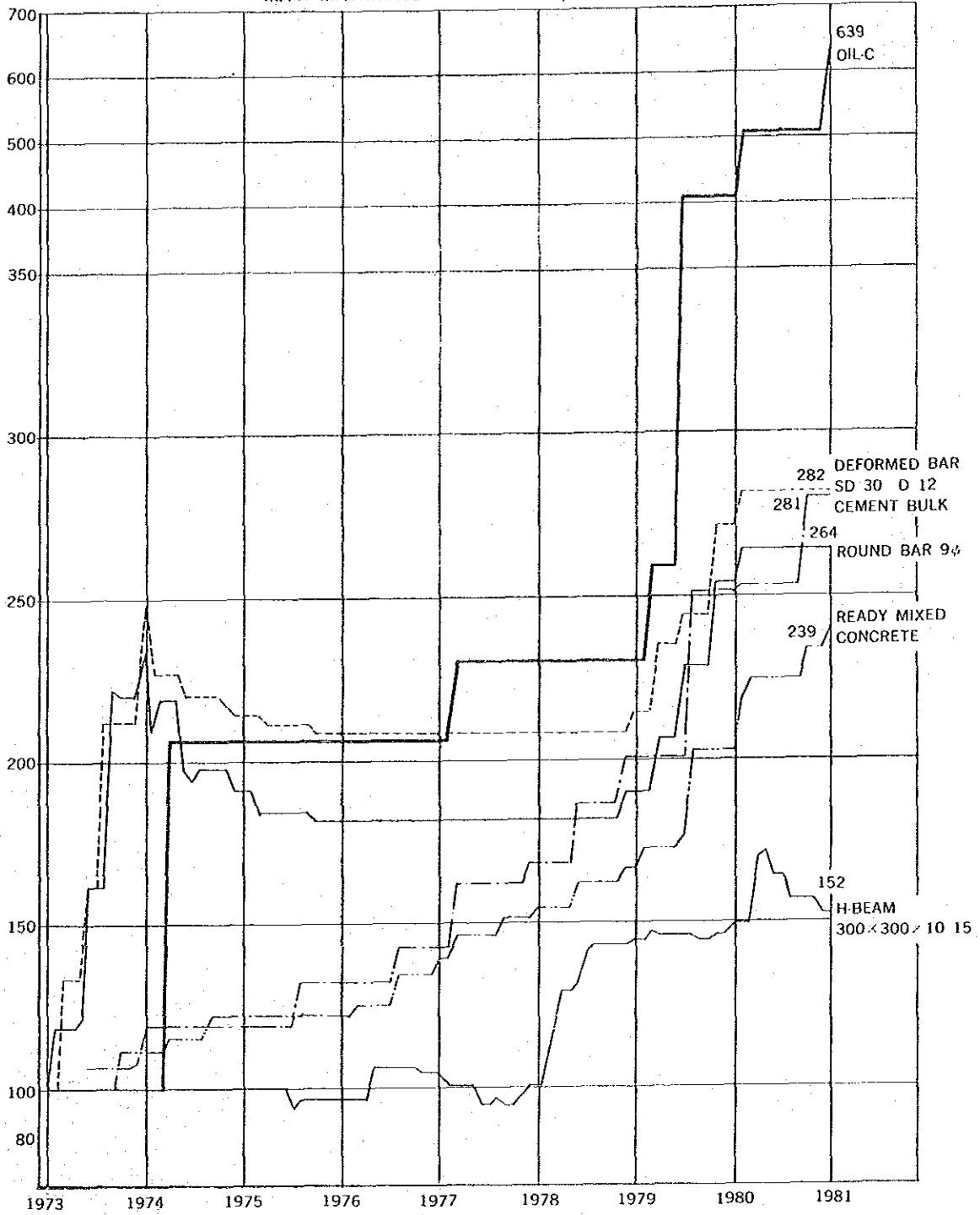
実施年月	地域	首都圏	北部・東北部
77年10月		28	19
78年10月		35	25
79年10月		45	35
80年10月		54	44

（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(1981年1月末、確認調査)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。
- 2) タイ政府保健省では下記の如き標準単価を所轄の国立病院、看護学校等の諸施設に設定しているが本建設計画には工事発注方式、地域、工期等の条件差があるのでこのまゝでは適用しない。

保健省 標準単価 (1980年) パーツ/ m^2

・看護学校校舎	4,500 B/ m^2
・講堂	6,000 B/ m^2
・学生寮	4,500 B/ m^2
・食堂	5,000 B/ m^2

これら単価には以下の各工事は含まれていない

- ・教育機材、家具・備品の取付及供給
- ・空調設備、特殊設備工事
- ・供給設備(給水、電力、排水、等引込)工事
- ・屋外工事(道路、駐車場、造園、フェンスほか)

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。

電気料金についてはマハサラカム県電力局の使用別料金まで表わしている。

(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			92	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			88	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) 6.54 パーツ/ℓ

(3) 市水 2.50 パーツ/m³

(4) ガス

シリンダー径(kg)	バンコック料金(パーツ)	マハサラカム料金(パーツ)
12	114.5	126
14.5	138	152
15	143	158
25	225	248
45	405	446
50	450	495


5 輸 送

建設資材等の輸送に関して、日本からの輸入資機材及び国内輸送について調査団は下記のように調査を行った。

1. 日本からの建設資材等の輸送及び手続

日本から輸送を要する資機材は本プロジェクトの場合、設備機器、設備工事材料、教育機材等が対象と考えており、一般建築材料等は現地製品の使用を考えている。

マハサラカム敷地までの輸送ルートは次のようになる。

日本（横浜・神戸等の港）→バンコック港  →現地マハサラカム

(1) 日本の港からバンコック港へは横浜、名古屋、神戸等の港から10数社の船舶会社（日本企業）による定期便が就航しており、所要日数10日～20日位の間にバンコック港に着港する。

(2) 通関手続は先ず shipping 前に

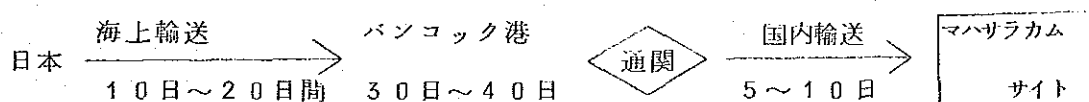
- ・輸入品リストをタイ政府担当部局へ提出→DTEC承認を受けておく
- ・次に各便毎にPackingリスト写→担当部局→DTEC→税関手続

着港から通関まで約30日～40日かゝるものと考えておくべきである。

(3) 国内輸送は、この場合タイ政府側によって行われTOTが担当する。

バンコック港よりサイトまでは手続含めて5月～10日位かゝるものと見積っておくべきである。サイトでは現地検収に担当部局の立会いと必要によって保税手続も考えておくべきである。

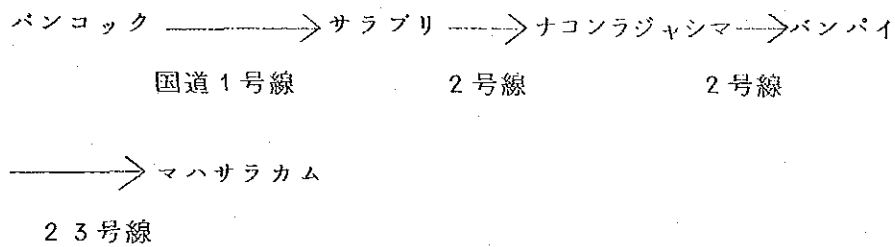
以上日本からの資機材の輸送及び手続は下記の全体フローと期間を要しこれを建設工期と建設費に適切に見込んでおく配慮が必要である。



2. 場合によって顕微鏡などの精密機器は空輸によって日本からバンコックまで輸送が便宜である。

3. バンコックよりマハサラカムへのルート

バンコックよりの資材輸送はトラック等の陸上輸送による。コンクリート骨材、コンクリートブロック、練瓦等のマハサラカム周辺地域で入手出来る建設資材以外はバンコックからの輸送になる。陸送は次のルートによりバンコックからマハサラカムに至り全長約600km、所要時間は10～15時間かかる。



鉄道輸送は、鉄道がマハサラカムに通じていない(最寄駅はコーンケーン)ので利用は考えられない。

JICA