REPUBLIC OF THE PHILIPPINES

THE HOSPITAL DEVELOPMENT PROJECT

FEASIBILITY STUDY REPORT

VOLUME I

FEBRUARY 1980

JAPAN INTERNATIONAL COOPERATION AGENCY

PREFACE

In respones to a request of the Government of the Republic of the Philippines, the Government of Japan decided to conduct a feasibility study on the Hospital Development Project in the Cagayan Valley Region (Region I) and the Ilocos Region (Region II), and entrusted the Japan International Cooperation Agency (JICA) with its work, to carry out the study.

In view of the importance of this Project which will have a great impact upon health, medical care and socio-economic development of the country, the Government of Japan despatched to the Philippines the Urabe Mission in June, 1977, and the Tanabe Mission in June, 1978, for general descussions. Further in November, 1978, the JICA despatched a Preliminary Study Mission led by Dr. Hitoshi Kasuga, Professor, Department of Public Health, School of Medicine,Tokai University, to descuss the Scope of Work with Philippine officials, and in March-April, 1979, despatched a Preliminary Survey Team for detailed study of the 19 hospitals involved.

As the result of those studies, a draft report was prepared in July-August, 1979, and finally, this report has been formulated.

I hope this report will contribute not only to the development of the Project but also to the strengthening of the ties of friendship between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of the Philippines and others who have extended generous assistance and cooperation to the Survey Team.

1980

Keisuke Arita

Keisuke Arita
President
Japan International Cooperation Agency

CONTENTS

		Page
CHAPTER 0	STUDY PROCEDURE	
0-1	CONTENTS OF THE HOSPITAL DEVELOPMENT PROGRAM AND AN OUTLINE OF THE DETAILS	0-1
0-2	THE PARTICULARS	0-2
0-3	OBJECTIVES	0-12
0-4	THE RELATIONSHIP BETWEEN THE NATIONAL HEALTH CARE SERVICES PROGRAM AND THIS STUDY	0-13
0-5	REGIONS AND HOSPITALS STUDIED	0-15
0-6	SCHEDULE	0-19
0-7	ORGANIZATION & COMPOSITION	0-20
0-8	STUDY TEAM MEMBER	0-21
0-9	PARTICIPATING INSTITUTIONS AND PERSONS INVOLVED ON THE PHILIPPINE SIDE	0-22
0-10	FIELD SURVEY SCHEDULE	0-23
0-11	LIST OF ATTENDANTS AT THE MEETING OF EACH HOSPITAL	0-25
0-12	MEMBER OF FIELD STUDY TEAM	0-27
0-13	MINUTES OF THE MEETING	0-28
0-14	EXPLANATION OF DRAFT FINAL REPORT	0-41
CHAPTER I	SUMMARY AND CONCLUSION	
I-0	SUMMARY OF THE PHILIPPINE HOSPITAL DEVELOPMENT PROJECT STUDY REPORT	I-1
I-1	GENERAL OUTLINE OF REGIONS I AND II	I-5
I-2	OUTLINE OF REGION I AND II's HEALTH CARE	I-7
I-3	PROJECT HOSPITALS' CONDITIONS AND FEASIBILITY DEVELOPMENT PLAN	I-12

Page

I-4 PRESENT CONDITION AND THE SUPPLY PLAN OF MEDICAL EQUIPMENT I-17

I-5 THE ALLOCATION OF HEALTH-CARE RELATED PERSONNEL I-20

I-6 MORBIDITY STRUCTURE AND PARTICULARS OF DIAGNOSIS AND TREATMENT I-21

I-7 PROPOSED STANDARDIZATION OF MEDICAL CARE FACILITIES I-24

I-8 MAINTENANCE PLAN I-31

I-9 CASE STUDY FOR THE CONSTRUCTION IMPLEMENTATION PLAN I-34

I-10 CONSTRUCTION COSTS, CURRENT EXPENDITURE AND PROJECT FUND OPERATIONS FOR PLAN I I-46

I-11 CONSTRUCTION COSTS, CURRENT EXPENDITURE AND PROJECT FUND OPERATIONS FOR PLAN II I-54

I-12 RELATIONSHIP BETWEEN THE IMPROVEMENT PLAN AND CAPITAL EXPENDITURE, CURRENT EXPENDITURE, ETC. IN THE PHILIPPINES I-60

I-13 ANTICIPATED RESULTS OF THE IMPROVEMENT PLAN I-64

I-14 CONCLUSION I-69

CHAPTER II PRESENT CONDITION OF REGION I & II

II-1 WEATHER, TOPOGRAPHY AND POPULATION II-1

II-2 THE PRESENT CONDITION OF THE HEALTH SYSTEM II-41

II-3 THE PRESENT CONDITION OF REGIONAL HEALTH SERVICE II-58

CHAPTER III PRESENT CONDITION OF EACH PROJECT HOSPITAL

III-1 PRESENT CONDITION OF MEDICAL SERVICE IN EACH PROJECT HOSPITAL III-1

III-2 PRESENT INFRASTRUCTURE SITUATION III-67

Page

CHAPTER IV STANDARDIZATION PLAN

IV-1 PURPOSES AND EFFECTS OF STANDARDIZATION IV-1

IV-2 ANALYSIS AND PROPOSAL FOR PHILIPPINES STANDARDS IV-3

IV-3 BASIC PLAN FOR STANDARDIZATION IV-89

IV-4 HOSPITAL STANDARDIZATION PLAN PROPOSALS IV-156

CHAPTER V UPGRADING PLAN FOR PROJECT HOSPITALS

V-1 FLOOR AREA V-1

V-2 MEDICAL SERVICE V-7

V-3 MANPOWER V-8

V-4 MEDICAL EQUIPMENT V-12

V-5 BUILDING PLAN V-14

V-6 ELECTRICITY V-93

V-7 AIR CONDITIONING AND PLUMBING V-126

CHAPTER VI CONSTRUCTION PLAN

VI-1 ORGANIZATION VI-1

VI-2 CONSTRUCTION COST VI-10

VI-3 WORK ARTS AND CONSTRUCTION MATERIALS VI-11

VI-4 FLUCTUATION OF THE CONSTRUCTION COST VI-12

VI-5 DISTRIBUTION OF MEDICAL EQUIPMENT VI-17

VI-6 CONSTRUCTION PLAN AND COST ESTIMATE VI-19

CHAPTER VII MAINTENANCE PLAN

VII-1 MAINTENANCE AND MANAGEMENT OF HOSPITAL FACILITIES VII-1

VII-2 PREVENTIVE MAINTENANCE PLAN VII-6

VII-3 MAINTENANCE COST VII-13

Page

CHAPTER VIII FINANCIAL PLAN

VIII-1 CONSTRUCTION COSTS VIII-1

VIII-2 INVESTMENT PLANNING VIII-5

VIII-3 CURRENT EXPENDITURE (MEDICAL INCOME & EXPENDITURE) VIII-16

VIII-4 PROJECT FUND OPERATION VIII-62

VIII-5 RELATIONSHIP BETWEEN THE IMPROVEMENT PLAN AND CAPITAL EXPENDITURE AND CURRENT EXPENDITURE ETC. IN THE PHILIPPINES VIII-69

CHAPTER IX EXPECTED RESULTS

IX-1 EVALUATION OF THE PROJECT IX-1

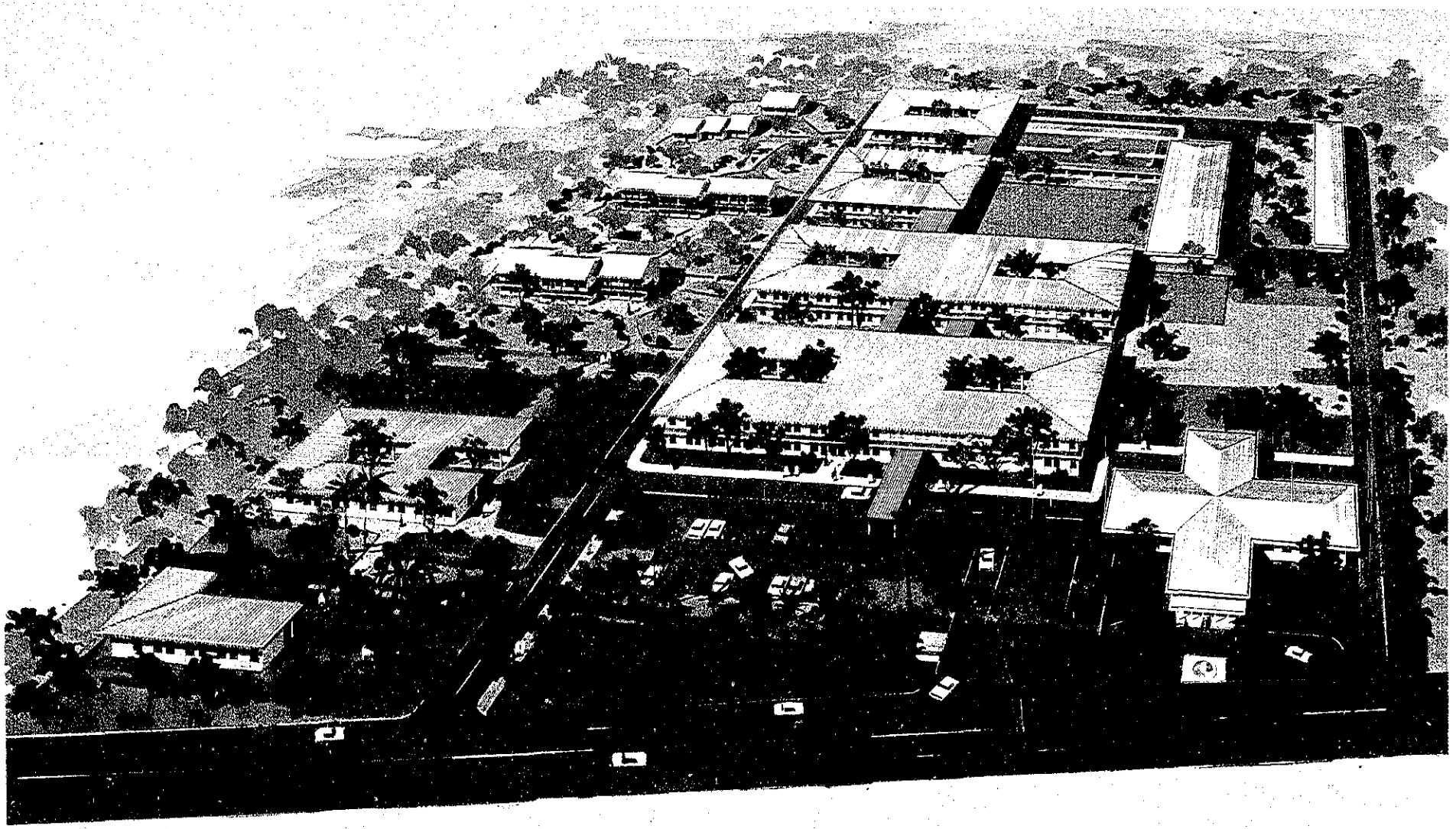
IX-2 EXPECTED RESULTS BY UPGRADING THE MEDICAL EQUIPMENT IX-5

CHAPTER X SUMMARY

X SUMMARY X-1

CHAPTER XI COST ESTIMATE (SEPARATE VOLUME)

CHAPTER XII DRAWINGS (SEPARATE VOLUME)



HOSPITAL DEVELOPMENT PROJECT

PANGASINAN MEDICAL CENTER

CHAPTER 0

STUDY PROCEDURE

CONTENTS

		Page
0-1	CONTENTS OF THE HOSPITAL DEVELOPMENT PROGRAM AND AN OUTLINE OF THE DETAILS	0-1
0-2	THE PARTICULARS	0-2
0-3	OBJECTIVES	0-12
0-4	THE RELATIONSHIP BETWEEN THE NATIONAL HEALTH CARE SERVICES PROGRAM AND THIS STUDY	0-13
0-5	REGIONS AND HOSPITALS STUDIED	0-15
0-6	SCHEDULE	0-19
0-7	ORGANIZATION & COMPOSITION	0-20
0-8	STUDY TEAM MEMBER	0-21
0-9	PARTICIPATING INSTITUTIONS AND PERSONS INVOLVED ON THE PHILIPPINE SIDE	0-22
0-10	FIELD SURVEY SCHEDULE	0-23
0-11	LIST OF ATTENDANTS AT THE MEETING OF EACH HOSPITAL	0-25
0-12	MEMBER OF FIELD STUDY TEAM	0-27
0-13	MINUTES OF THE MEETING	0-28
1.	Preliminary Discussion on the Inception Report and Field Studies	0-28

Page

0-14 EXPLANATION OF DRAFT FINAL REPORT 0-41

1. Schedule 0-41

2. Members of the Japanese Party 0-41

3. Members of the Philippine Party 0-41

4. Minutes and Comments 0-41

0-1 CONTENTS OF THE HOSPITAL DEVELOPMENT PROGRAM AND AN OUTLINE OF THE DETAILS

This program forms a part of the Philippine National Development Plan (1978 ∿ 1982). The Ministry of Health determined that the systematic development of medical facilities should be carried out in order to promote adequate health services for the entire nation and this program is a link in that design.

The Ministry of Health's Health Care Facilities Development Program is administered by an interlocking chain of governmental bodies -- the sitio, balangay, municipality, chartered city, province and region. The provisioning from the municipal level downward is being made possible through the assistance of the World Bank. This Plan covers the development of hospitals under the upper level province, region and chartered city. It includes the carrying out of research from field studies on up, and the executing of plans, based on Ministry of Health Standards, which are most appropriate for the supplying of facilities and medical equipment, the management, maintenance and financing of each of the 19 hospitals (see Fig. A) in Ilocos (Region I) and the Cagayan Valley (Region II), together with carrying out evaluations of the results.

Through these studies, analyses and plans, the Philippine Hospital standards may be reviewed as a matter of course and improvements may be proposed.

0-2 THE PARTICULARS

1977, June	On the occasion of the 7th Yen Credit Plan Conference the Philippine side requests a proposal. As it can not be handled by the Conference it becomes a subject for the Technical Cooperative program. (Urabe, Mission)
1978, June	During the Conference on Technical Cooperation Matters, optimum subjects for cooperation are taken up. (Tanabe, Mission)
1978 Nov. 19th ∿ Dec. 8th	Preliminary JICA Study Group visits Philippines. Getting a grasp on the existing conditions of the targeted regions, reviewing the content of the project and conferring with the Philippine side on the scope of work of the Main Study. (Kasuga, Group leader)
1979 March 1st ∿ April 8th	JICA Study Group visits the Philippines. Conference on the Preliminary Study Results, Reaching mutual agreement on the execution of the Main Study. (Ozaki, Group leader)
1979 March 1st ∿ April 8th	JICA Field Study Group visits the Philippines. Field studies are carried out as part of the Main Study. (Suzuki, Group leader)
1979 April 5th ∿ 6th	Confirmation of the Feasibility Study Progress Report with MOH. Feasibility Study Progress Report submitted to NEDA. (Kasuga, Advisor) (Suzuki, Group leader)
1979 July 30th ∿ August 10th	Conference to explain the Draft Final Report. (Ozaki, Group leader)
1979, August	Submission of the Final Report.

SCOPE OF WORK FOR FEASIBILITY STUDY OF THE HOSPITAL DEVELOPMENT PROJECT IN REGION I & II

I. OBJECTIVE

The objective of this study is to prepare a feasibility report of the proposed standardization, development construction, and expansion of the various indicated hospitals in Regions I and II; incorporated in the proposed upgrading of hospital and supported by the National Health Plan, to further develop the implementation of the restructured Rural Health Care Delivery Systems.

II. PROJECT AREAS AND HOPSITALS

2.1 Project Area

The study covers particularly Regions I composed of the following provinces: Abra, Benguet, Pangasinan, Ilocos Norte, Ilocos Sur, La Union and Mt. Province; and the four cities of Baguio, Dagupan, Laoag and San Carlos.

In Region II, the provinces which are in the study are: Batanes, Cagayan, Ifugao, Isabela, Kalinga-Apayao, Nueva Vizcaya and Quirino.

2.2 Project Hospitals

Region I

2.2.1 Medical Center

Don Mariano Memorial Hospital (Batac, Ilocos Norte)
Baguio General Hospital
Pangasinan Medical Center

2.2.2 Regional Hospital

La Union Regional Hospital

2.2.3 Provincial Hospitals

Abra Provincial Hospital
Bontoc Provincial Hospital

Benguet Provincial Hospital
Gabriela Provincial Hospital
Ilocos Norte Provincial Hospital

Region II

2.2.4 Regional Hospitals

Cagayan Regional Hospital
Regional Mental Hospital
Maj. F. Marcos Vet. Memorial Hospital

2.2.5 Provincial Hospitals

Cagayan Provincial Hospital (Aparri)
Ifugao Provincial Hospital
Kalinga-Apayao Provincial Hospital
Isabela Provincial Hospital
Batanes Provincial Hospital
Nueva Vizcaya Provincial Hospital (Magsaysay)
Quirino Provincial Hospital

III. SCOPE OF THE STUDY

The following studies will be performed by the team of the basis of the Hospital Development and Standardization Program and relevant studies which were conducted by the Government of the Republic of the Philippines.

3.1 Study of the Project in relation to the Hospital Development Plan

3.1.1 The priority of the Project in the National Development and Regional Development Plans;

3.1.2 The relationship between the Project and the National Health Care Delivery System;

3.1.3 The relationship between the Project and the Manpower Training Program;

3.2 Study of the General Conditions (economic, social, medical care), of the Project Areas

3.2.1 Survey of climate, rainfall, temperature, topography and other natural environmental parameters

3.2.2 Study of present population and economic activities, and rate of increases, in the next 10 years

3.2.3 Study of literary profiles of the project areas

3.2.4 Study of the public health indicators

3.3 Study of Existing Condition of Medical Care Services and Facilities in Regions I and II

3.3.1 Study of hospitals and other medical are facilities in public and private sectors

3.3.2 Study of number of beds for population in the hospital catchment areas

3.3.3 Study of number, distribution, and necessary source of manpower

3.4 Review of the Standardization Program

The Hospital Standardization Program proposed by the Government of the Republic of the Philippines will be reviewed concerning the following items and alternative programs will be prepared if necessary.

3.4.1 Standardization program for diagnostic and treatment capabilities

3.4.2 Standardization program for manpower

3.4.3 Standardization program for facilities

3.4.4 Standardization program for equipment and furniture

3.5 Preparation of Equipment List for Project Hospitals

Based on the results of 3.4; the following equipment list will be prepared considering the new requirements, additional equipment to complete, and conditions of existing equipment. Considering further cost of repair and maintenance.

3.5.1 The list of equipment and furniture of each hospitals

3.5.2 The list of expendable supplies for initial operation of the project hospitals

3.6 Preparation of the hospital design concept for the project hospitals

Based on the result of 4.4; the following items will be studied for the construction of new regional hospitals and Regional Mental Hospital, expansion and completion of the project hospitals

3.6.1 Probability of obtaining a suitable site of hospital which must be owned by the ministry of Health

3.6.2 Consideration of Geographical orientations

3.6.3 Scoial Welfare activities available in the hospital

3.6.4 Total floor space of hospital and individual floor spaces of each service area

3.6.5 Number of beds required for each of the project hospital, and standard floor area for a single bed

3.6.6 Types and quantities of outpatient and emergency services

3.6.7 Number and description of services
(Pediatrics, Surgery, Nursing, Dietary, Adm., Psychiatry, OB Gyne, Medicine, etc.)

3.6.8 Type of room for installation of specific equipment and facility

3.6.9 Power source, gas supply, method of lighting and necessity for air-conditioning

3.6.10 Type of water supply, drainage and sewerage system

3.6.11 Control and other measures against various hazards

3.6.12 Quality and quantity of dietary services

3.7 Preliminary Engineering

Based on the results of 3-6, the preliminary design of the following items will be performed, considering economy and maintenance systems.

3.7.1 Preliminary Engineering Design

a. Preparation of site plan (including boundary and existing facilities)

b. Topographic survey and study and planning of infrastructural facilities such as access road, water supply and drainage, sewerage, power and telephone, etc.

c. Geological and underground water survey

d. Consideration of alternative site

e. Design of access roads, landscape and parking areas

f. Design of hospital building and structures

g. Design of water supply, drainage and sewerage system, special waste disposal system (including nuclear waste disposal system)

h. Design of facilities for power and gas supplies, lighting, ventilation and air-conditioning

3.7.2 Preliminary Specification

Preliminary technical specifications will be prepared in depth considering local conditions.

3.7.3 Labor, material and machines for construction

a. Sutdy of available manpower for construction and local contractors and labor cost.

b. Study of available local construction materials such as cement, steel, aggregates, concrete block, lumber, pipes and etc., and their unit prices.

3.8 Preparation of Construction Plan

Construction plan will be prepared by following items after in depth consideration of local characteristics of climate and operation of existing hospitals during construction.

3.8.1 Construction methods considering sufficient availability of local labor.

3.8.2 Construction plan

3.8.3 Tendering procedures

3.9 Preparation of Facilities and Equipments Maintenance Plan

Maintenance plan will be prepared after in depth consideration on the following items.

3.9.1 Existing and future organizations for maintenance and management of hospitals.

3.9.2 Existing and future number of available manpower and their training program

3.9.3 Characteristics of equipment and facilities

3.9.4 Available financing

3.10 Project Cost Estimation

Based on the result of 3-7, 3-8, and 3-9, bill of quantities and project cost estimation will be prepared. Project cost will be divided into foreign currency indirect foreign currency and local

currency and costs of recent hospital construction in the Philippines and maintenance costs of existing hospitals will be considered in detail.

3.10.1 Construction cost including engineering, administration and contingencies

3.10.2 Cost of additional equipment and furniture

3.10.3 Meintenance cost

3.11 Benefits and Evaluation of the Project

Since it is difficult to calculate the economic rate of return of medical care project, qualitative evaluation will be performed rather than quantitative estimation of benefits. For the evaluation, following items will be considered.

3.11.1 Influence of the project on the improvement of health of people in the project area.

3.11.2 Influence of the project on the qualitative and quantitative improvement of hopsital manpower.

3.11.3 Economic effects induced by the construction, expansion and completion of the project hospitals.

IV. STUDY SCHEDULE

The study will be executed in accordance with the study schedule. (See Appendix I)

V. REPORTS

The JICA shall prepare and submit the following reports in English.

5.1 Inception Report

Ten copies of Inception Report will be prepared and submitted at the commencement of the study in the Philippines.

5.2 Progress Report

Ten copies of Progress Report will be prepared and submitted at the end of the study in the Philippines.

5.3 Draft Final Report

Twnety copies of Draft Final Report will be prepared and submitted within two and a half months after the commencement of the study in the Philippines. Within twenty days or receipt of the Draft Final Report, the JICA will be provided with comments on it.

5.4 Final Report

Complete sets of Final Report (twenty copies) will be prepared and submitted within one month of receipt of the comments on the Draft Final Report.

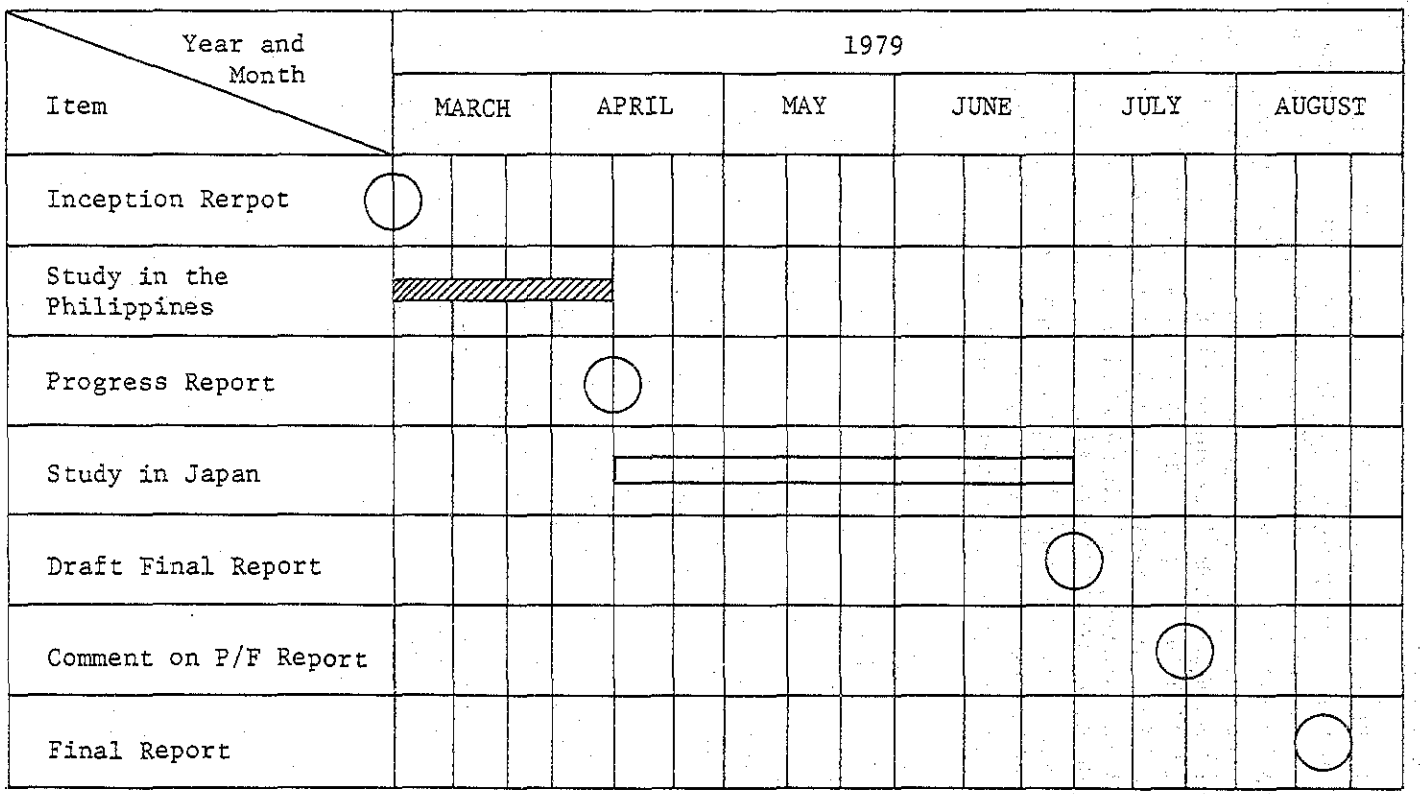
VI. MODIFICATION OF THE SCOPE OF WORK

During the execution of the study, changes can be made in the text of the scope of work by mutual agreement considered useful by both parties in facilitating the work to be performed.

APPENDIX I

STUDY SCHEDULE

The study will be executed in accordance with the following schedule.



0-3 OBJECTIVES

This Study is a part of the Philippine Government and Ministry of Health supported program for the improvement of health care services. In order to realize the development of provincial and regional hospitals and medical centers, field studies on the condition of the facilities, surrounding environs, medical equipment and fixtures, management and finances at the 19 Region I and Region II Hospitals will be carried out based upon the Ministry of Health Comprehensive Development Program's Standardization Plan. On the basis of the analyses of these studies feasibility planning of the upgrading of hospital facilities as suitable in light of the premised objectives is to be conducted. Through these field studies, analyses and plans, the standardization of the Philippine Hospital Development Program may be rationally studied and reported upon.

0-4 THE RELATIONSHIP BETWEEN THE NATIONAL HEALTH CARE SERVICES PROGRAM AND THIS STUDY

In the National Comprehensive Health Care Services Plan the medical facilities are divided into 3 gradings depending on their service grade.

Primary health care services are provided by Rural Health Units (R.H.U.), Balongay Health Units (B.H.U.), Community Hospitals and Health Centers (C.H., H.C.) and Puericulture Centers (P.C.).

The lower secondary health care services are normally, provided by Emergency Hospital -- 25 bed capacity hospitals used for short term services. The secondary health services are ordinarily provided by 50-100 bed capacity provincial hospitals built in provincial capital cities.

Tertiary health care services are provided by regional hospitals and medical centers serving units of several provinces together which also serve as centers for the dispersal of health care guidance for rural health clinics.

In addition, medical treatment health services systems education and the education of nurses and other health workers, which fall under the area covered by the program will be carried out. (See the following Table)

This study, analysis and plan covers the higher secondary health care services and tertiary health care services included in the above-mentioned Comprehensive Health Care Services System. It is for the purpose of studying, planning and evaluating the development of provincial and regional hospitals and medical centers. Also this development will necessarily lead toward promoting the growth of the Philippine national power and economy.

Table - The Relationship between Health Care Grades, Project Health Facilities and Administrative Bodies

Health Care Grade	Health Care Facility	Administrative Body	
Tertiary Health care	Medical Center (M.C.) Regional Hospital (R.H.)	Region & Chartered City	The subject for this study
Secondary Health care (Higher)	Provincial Hospital (P.H.)	Province	
Secondary Health care	Emergency Hospital (E.H.)	Municiparity	
Primary Health care	Rural Health Unit (R.H.U.)	Balangay	
	Balangay Health Center (B.H.C.)	Citio	
	Community Hospital & Health Center (C.H.H.C.)		
	Puericulture Center (P.C.)		

0-5 REGIONS AND HOSPITALS STUDIED

The regions targeted for this study are Ilocos (Region I) and Cagayan Valley (Region II) in the Northern part of the Island of Luzon. Region I includes the 7 Provinces of Abra, Benguet, Pangasinan, Ilocos Norte, Ilocos Sur, La Union and Mt. Province, and the 3 cities, Baguio, Dagupan and Laoag. Cagayan Valley (Region II) includes the 7 Provinces of Batanes, Cagayan, Ifugao, Isabela, Kalinga Apayao and Nueva Vizcaya and Quirino.

Project hospital facilities

- Ilocos (Region I)

  i) Medical Centers

     Don Mariano Marcos Memorial Hospital

     Baguio General Hospital

     Pangasinan Medical Center

  ii) Regional Hospitals

     La Union Regional Hospital

  iii) Provincial Hospitals

     Abra Provincial Hospital

     Bontoc Provincial Hospital

     Benguet Provincial Hospital

     Gabriela Silang Provincial Hospital

     Ilocos Norte Provincial Hospital

  iv) New Sites Proposed (for use of the Pangacinan Medical Center)

- Cagayan Valley (Region II)

  i) Regional Hospitals

     Cagayan Regional Hospital

     Regional Mental Hospital

     Major F. Marcos Veteran Memorial Hospital

ii) Provincial Hospitals

Cagayan Provincial Hospital

Ifugao Provincial Hospital

Kalinga Apayao Provincial Hospital

Isabela Provincial Hospital

Batanes Provincial Hosptial

Nueva Vizcaya Provincial Hospital

Quirino Provincial Hospital

iii) Sites Proposed for the Construction of New Hospitals

For the Cagayan Regional Hospital and Regional Mental Hospital

For the Major Marcos Veteran Memorial Hospital

For the Cagayan Provincial Hospital

For the Ifugao Provincial Hospital

19 Hospitals* and 5 New Hospital Construction Sites in total (See Fig. B)

Note: Cost estimate of I-8 (Don Mariano Marcos Memorial Hospital) is made excluding the cost of completion of the building (which was under construction at the moment of field survey), the water work and electrical work in its new building but including the cost of medical equipment and furniture, necessary water work and electrical work.

No costs for the renovation of existing old facilities are included.

Cost estimate of II-8 (Major F. Marcos Veteran Hospital) is made in the same way like I-8 but including the cost of construction of additional facilities (service I & II and staff acommodation facilities), electrical work and mechanical work.

Cost estimate of II-4 (Cagayan Provincial Hospital) is made based on standard cost, assuming that the feasible site will be shown later on by Philippine side.

Actually 18 separate hospitals as the Cagayan Regional Mental Hospital, which is currently under construction, will become part of the Cagayan Hospital upon its completion.

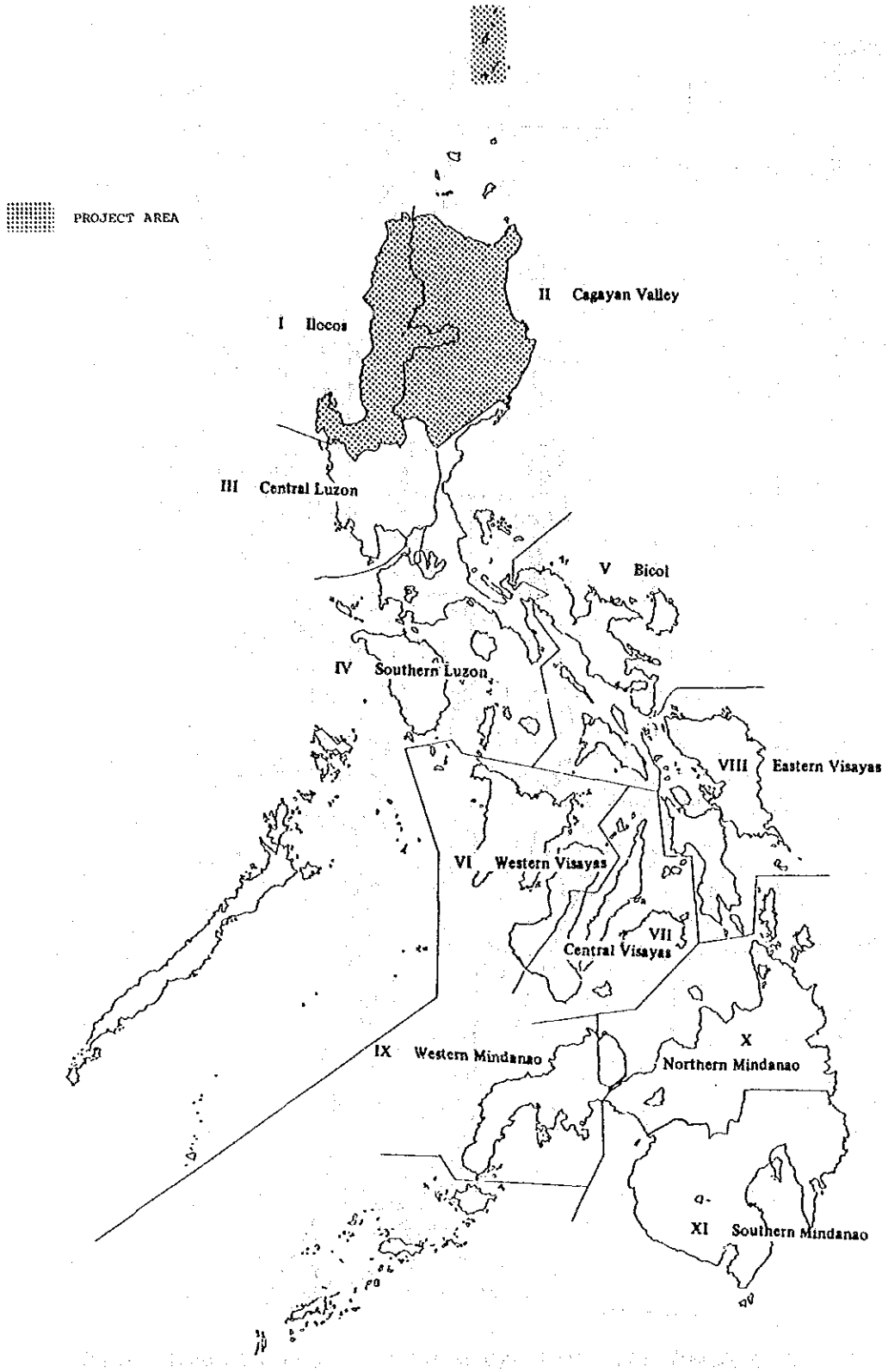


Fig. 1 REGIONAL MAP OF THE PHILIPPINES PROJECT AREA

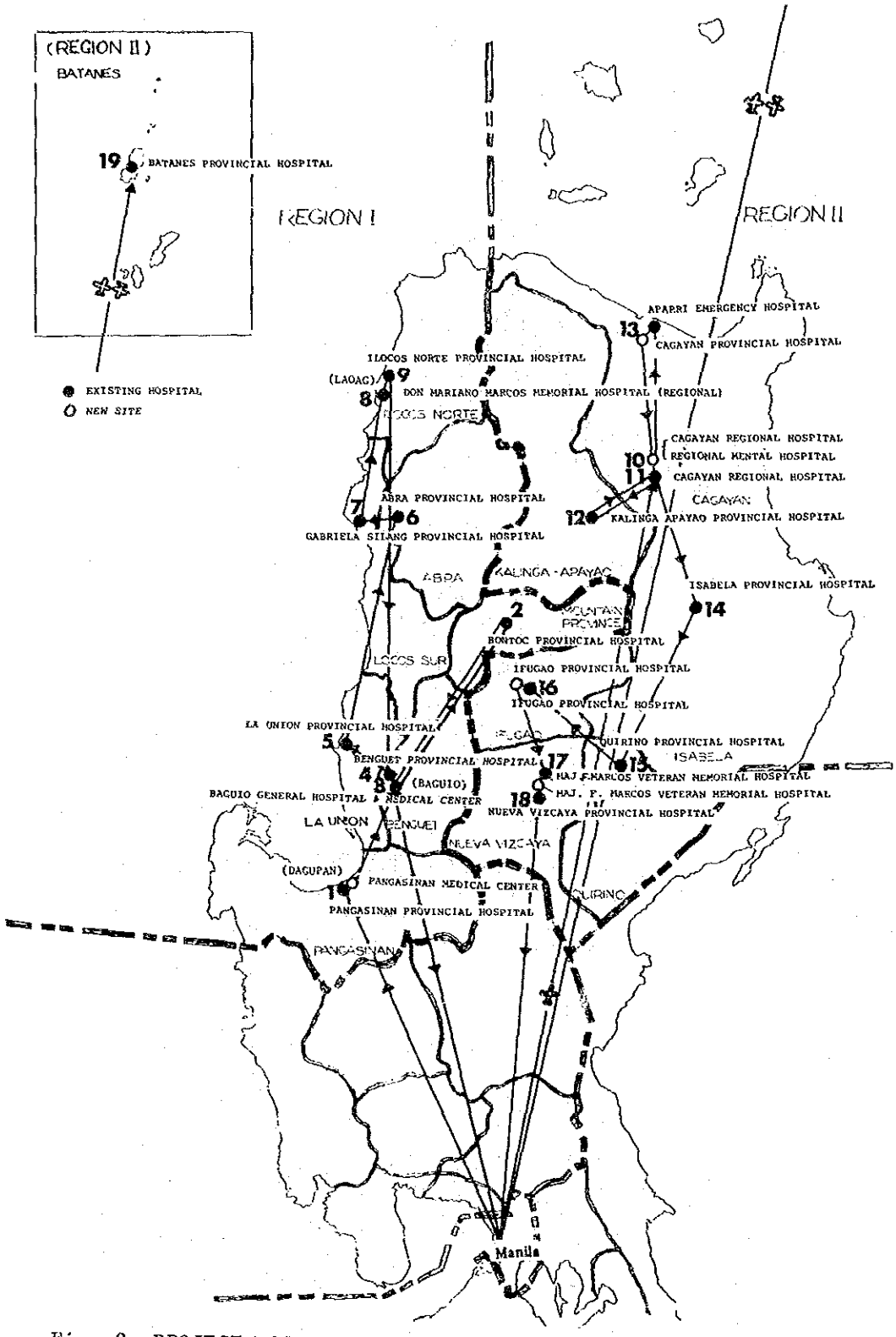
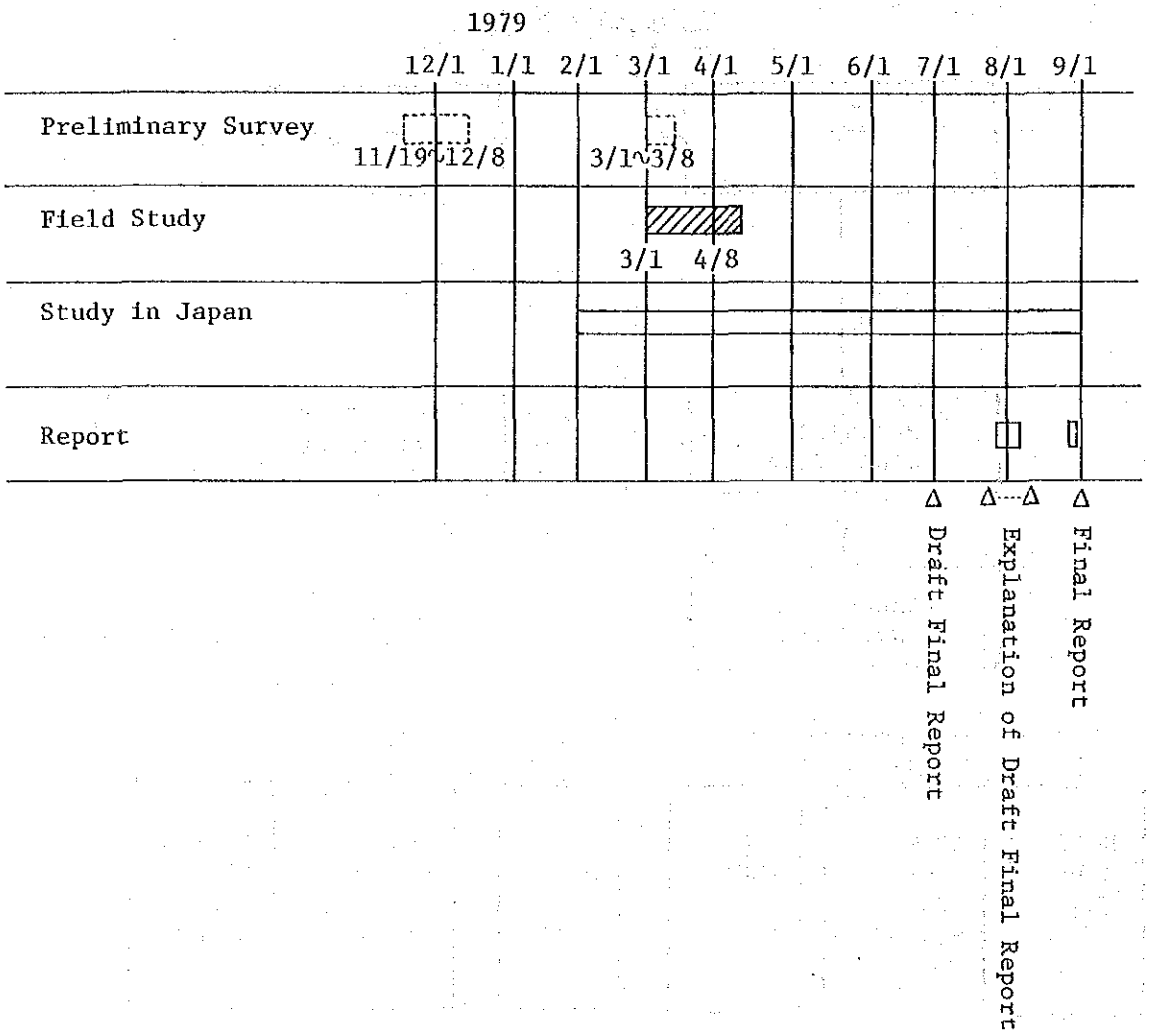


Fig. 2 PROJECT HOSPITALS AND ROUTE OF THE FIELD SURVEY TEAM

0-6 SCHEDULE

This study may be divided into 2 major parts, the Field Study which is based upon the contents agreed upon as a result of the Preliminary Survey and the Study in Japan.

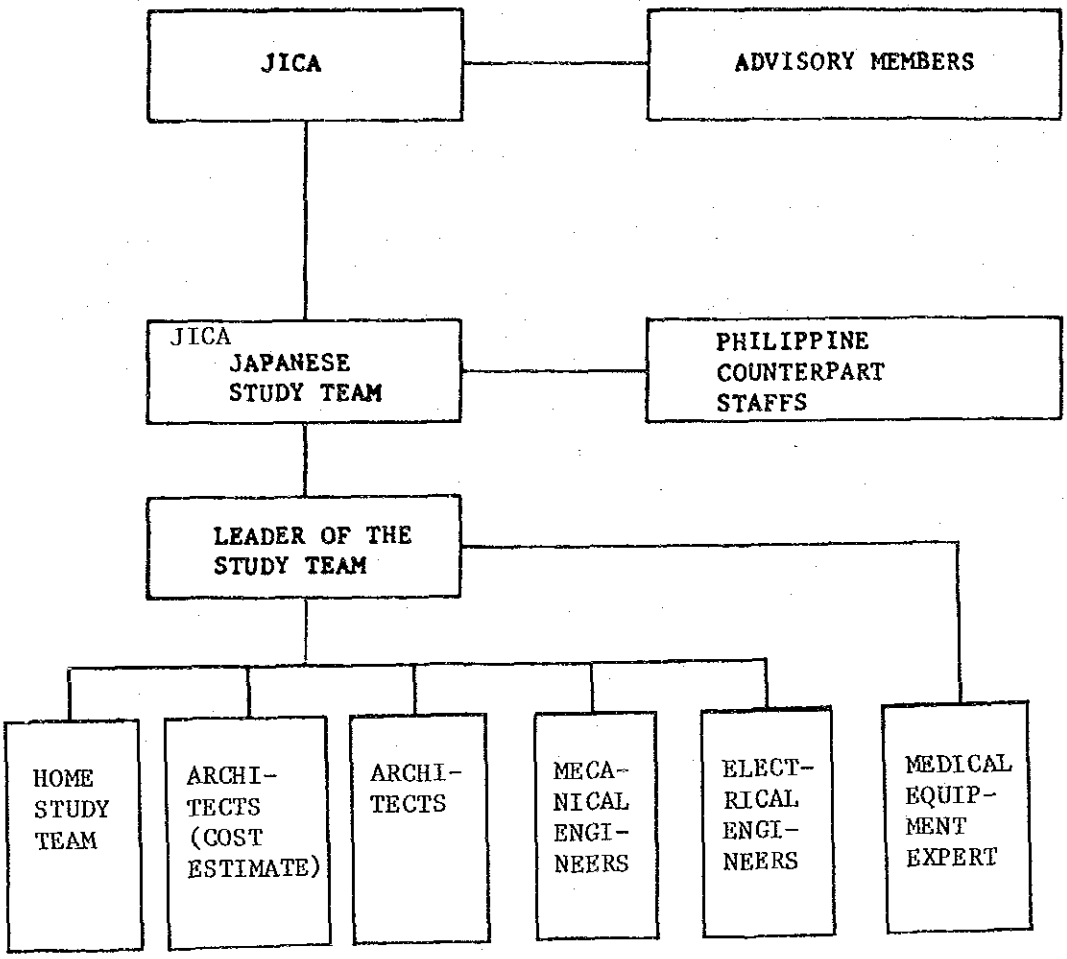
The schedule for this Work's study, analysis and plan is as follows.



0-7 ORGANIZATION & COMPOSITION

This Study has developed out of the preliminary survey and the Main Study, which is itself divided into the Field Study and the Study in Japan. The overall organization, Field Study Team Members and Advisory Members are as shown below.

ORGANIZATION CHART



0-8 STUDY TEAM MEMBER

FIELD STUDY TEAM MEMBER

LEADER OF THE STUDY TEAM	Mr. Jiro SUZUKI		
	Director	Mechanical Engineer	Nihon Architects Engineers & Consultants Inc. (NAEC)
STAFF	Mr. Shimematsu NAKAYAMA		
	Architect		NAEC
	Mr. Shunji KAWADA		
	Architect		NAEC
	Mr. Yutaka SAITO		
	Mechanical Engineer		NAEC
	Mr. Shigeo NAGASE		
	Electrical Engineer		NAEC
SPECIAL STAFF	Mr. Kyoichi IZAWA		
	Director	Planning Div. Medical Treatment Corp. SHOWA-KAI	

ADVISORY MEMBERS

CHIEF ADVISER	Dr. Hitoshi KASUGA	
	Professor	Dept. Public Health School of Medicine Tokai University
ADVISER	Dr. Kiyosuke OZAKI	
	Professor	Dept. Hospital Administration School of Medicine Tokai University
	Dr. Eizo OKAMOTO	
	Professor	Dept. Surgery Hyogo College of Medicine
	Mr. Tsutomu OKAMOTO	
	Senior Architect	Supplies & Equipment Section Medical Affairs Bureau Ministry of Health & Welfare

0-9 PARTICIPATING INSTITUTIONS AND PERSONS INVOLVED ON THE PHILIPPINE SIDE

Study and Project Executing Bodies:

i. Philippine Ministry of Health (MOH)

ii. Philippine National Economic Development Authority (NEDA)

iii. Japanese Embassy in the Philippines

iv. Philippine Branch of the Japan International Cooperation Agency, Manilla Office

Philippine Counterparts

Dr. Francisco N. Aguilar:	Project Management Staff, Ministry of Health:	Executive Director
Dr. Manuel F. Juan:	Bureau of Medical Services, Ministry of Health:	Head of the Hospital Standards Division
Mr. Samuel A. Alapan:	Project Management Staff, Ministry of Health:	Architect

0-10 FIELD SURVEY SCHEDULE

A total of 19 hospitals and 5 proposed sites -- 9 hospitals and 1 new hospital site in Region I and 10 hospitals and 4 new hospital sites in Region II -- were visited in the order shown below.

FINAL SCHEDULE OF FIELD STUDY TEAM ON THE HOSPITAL DEVELOPMENT PROJECT

REGION I

March 8 (THURS)
900 Manila ---------- 1200 Dagupan ---------- 1600 Baguio 1830
① PANGASINAN M.C.

March 9 (FRI)
1000 Baguio ---------- 1700 Bontoc
② 1700 - 200 BONTOC P.H.

March 10 (SAT)
1000 Bontoc ---------- 1800 Baguio
② 800 - 100 BONTOC P.H.

March 11 (SUN)
Baguio

March 12 (MON)
Baguio ---------- Benguet ---------- 1730 Baguio
③ 900 - 1400 BAGUIO M.C.
④ 1500 - 1700 BENGUET P.H.

March 13 (TUES)
900 Baguio ---------- 1100 San Fernando ---------- Abra
⑤ 1100 - 1400 LA UNION P.H.
⑥ 1600 - 1800 ABRA P.H.

March 14 (WED)
900 Abra ---------- 1100 Vigan 1300 ---------- 1400 Batac
⑦ 1100 - 1300 GABRIELA SILANG P.H.
⑧ MARIANO MARCOS M.C.

March 15 (THURS)
900 Batac ---------- 1030 Laoag 1400 ---------- 2000 Baguio
⑨ ILOCOS NORTE P.H.

March 16 (FRI)
Baguio
900 - 1800 - 2100
Meeting with all Hospital Directors and Provincial/ Regional Representatives

March 17 (SAT)
1300 Baguio ---------- 1500 Benguet ---------- 2000 Manila
900 - 1200
Meeting

FINAL SCHEDULE OF FIELD STUDY TEAM ON
THE HOSPITAL DEVELOPMENT PROJECT (2)

REGION II

March 19 (MON.)
600 Hotel ---------- 830 Manila -------- 930 Tuguegarao 1800

1000 - 1800
①② Cagayan PH & Mental H.

March 20 (TUES)
900 Tuguegarao------1100 Tabuk ---------- 1400 ---------- 1600 Tuguegarao

1100 - 1400
③ Kalinga-Apayao P.H.

March 21 (WED)
900 Tuguegarao------1100 Aparri----------1500----------1600 Tuguegarao

1100 - 1500
④ Aparri P.H.

March 22 (THURS)
900 Tuguegarao-------1200 Ilagan----------1500----------1630 Santiago

1200 - 1500
⑤ Isabela P.H.

March 23 (FRI)
800 Santiago-------100 1200 Quirino--------1400 Lagawe ----------1730 1830 Banawe

1000 - 1200
⑥ Quirino P.H.

1400 - 1730
⑦ Ifugao P.H.

March 24 (SAT)
800 Banawe------930 Lagawe--------1100 1200 Bayombong----------1600 1700 Bambang 2300

1200 - 1600
⑧ MAJ. MARCOS M. C. (Nueva Vizcaya M.C.)

1700 - 1900
⑨ NUEVA VIZCAYA P.H.

March 25 (SUN)
400 A.M.
Manila

March 29 (THURS)
915 Manila ----------1230 Basco

1300 - 1800
⑲ Batanes P.H.

3/30 900 - 1000

March 31 (SAT)
1335 Basco ---------- Manila

April 4 (TUES)
Manila
900 - 1800
Meeting with all Hospital Directors and Provincial/ Regional Representatives of Regions I, II.

0-11 LIST OF ATTENDANTS AT THE MEETING OF EACH HOSPITAL

REGION I

1. Pangasinan Provincial Hospital (Dagupan)	Chief of Hospital	Dr. Fe Cruz-Manaois, FPCS; FICS
	Administrative Officer	Mr. Pedro B. Ugto
	Chief of Nurse	Ms. Fausta C. Versoza
	Administrative Assistant	Mr. Herminigildo M. Mejia
	Hospital Mechanical Engineer	Engr. A. Mauang
	Supervising Civil Engineer Zoning Administrator, City Hall Dagupan City	Engr. Johnny F. Calimlim
2. Bontoc General Hospital (Bontoc)	Chief of Hospital	Dr. Rosita D. Macliing
	Administrative Officer	Mr. Nemesio P. Nuñez
	Chief of Nurse	Mrs. Adelaine A. Cadiogan
3. Baguio General Hospital, Medical Center (Baguio)	Chief of Hospital	Dr. Sotero B. Torralba, Jr.
	Administrative Officer	Mr. Artemio C. Rivera
	Chief of Nurse	Miss Araceli Piong
	Chief of Clinics	Dr. Jesus del Prado
	Administrative Assistant II	Ms. Romana C. Flores
	Senior Resident Physician	Dr. Vicente Calucut
	Hospital Engineer	Mr. Armenio Manarang
4. Benguet General Hospital (Benguet)	Chief of Hospital	Dr. Bayani N. Genabe
	Administrative Officer	Mr. Robert O. Cirilo
	Chief of Nurse	Mrs. Elsie L. Mateo
5. La Union Provincial Hospital (San Fernando)	Chief of Hospital	Dr. Juan Mabutas, Jr.
	Administrative Officer	Dr. Ricardo G. Tariga, DMD
	Chief of Nurse	Mrs. Magdalena A. Hidalgo
	Chief of Clinics	Dr. F. Agcaoili
	Senior President Physician	Dr. Rodolfo Calbagesa
	Senior President Physican	Dr. Antonio F. Estioco
	Medical Technologist	Mrs. Remedios T. Feliciano
6. Gabriela Silang General Hospital (Vigan)	Chief of Hospital	Dr. Rosario A. Quitiquit
	Administrative Officer	Mr. Demetrio L. Navarro
	Chief of Nurse	Ms. Josefa U. Benedito
7. Abra Provincial Hospital (Abra)	Chief of Hospital	Dr. Nonito C. Barbero
	Administrative Officer	Atty. Roberto V. Benedito
	Chief of Nurse	Mrs. Clarita L. Ballena
8. Don Mariano Marcos Memorial Hospital (Batac)	Chief of Hospital	Dr. Maximiano Agbayani
	Administrative Officer II	Mr. Esteban R. Obein
	Chief of Nurse	Mrs. Fredita Daradar
	Supervising Resident Physican	Dr. Quintina D. Duque
9. Ilocos Norte Provincial Hospital (Laoag)	Chief of Hospital	Dr. Maximiano L. Agbayani
	Administrative Officer II	Mr. Victorino Manuel
	Chief of Nurse	Mrs. Teresa Ericta

Region II

1.	Cagayan Regional Hospital (Tuguegarao)	Chief of Hospital	Dr. Juan Turingan
		Administrative Officer	Mr. Eric P. Perez, Jr.
		Chief of Nurse	Ms. Maria Macadandang
		X-Ray Dept.	Dr. Ramelo C. Ramirez
2.	Regional Mental Hospital	Officer - in Charge- Regional Health Office No. II	Dr. Roberta Hernandez
3.	Kalinga-Apayao Provincial Hospital (Tabuk)	Chief of Hospital	Dr. Laureano T. Rigor
		Administrative Officer	Mr. Loreto M. Dulay
		Chief Nurse	Ms. Catherine F. Banggay
4.	Aparri Emergency Hospital (Aparri)	Chief of Hospital	Dr. Rodrigo Flores
		Administrative Officer	Mr. Juan Peralta
		Chief Nurse	Mrs. Nora Catalon
5.	Isabela Provincial Hospital (Ilagan)	Chief of Hospital	Dr. Jesus L. Maddela
		Administrative Officer	Mr. Dionision B. Ammugauan
		Chief Nurse	Ms. Rosemir R. Sanches
6.	Quirino Provincial Hospital (Quirino)	Chief of Hospital	Dr. Conrado F. Panganiban
		Administrative Officer	Mr. Recolito Agcaoili
		Chief Nurse	Mrs. Leticia G. Lozano
7.	Ifugao General Hospital (Lagawe)	Chief of Hospital	Dr. Luis A. Genato
		Administrative Officer	Mr. Enrique Talic
		Chief Nurse	Mrs. Sofia Buenaventura
8.	Major F.E. Marcos Veterans Regional Hospital (Bayombong)	Chief of Hospital	Dr. Loreto E. Nagtalon
		Administrative Officer	Mrs. Salvacion M. Nasia
		Chief Nurse	Mrs. Corazon A. Alejandro
9.	Nueva Viscaya Provincial Hospital (Bayombong)	Chief of Hospital	Dr. Florentino C. Bernardo
		Administrative Officer	Mrs. Flordelino Arellano
		Chief Nurse	Mrs. Juanita Palma
10.	Batanes Provincial Hospital (Basco)	Chief of Hospital	Dr. Ceferino Q. Aguinaldo
		Administrative Officer	Mrs. Esperanza B. Santana
		Chief Nurse	Mrs. Generosa S. Castro

0-12 MEMBER OF FIELD STUDY TEAM

HOSPITAL	JAPANESE FIELD STUDY TEAM		COUNTER PARTNER
PANGASINAN MC. (Dagupan)			Dr. Manuel F. Juan Mr. Sammy Alapan
BONTOC P.H. (Bontoc)			Mr. Mike S. Talusan
BAGUIO M.C. (Baguio)			Mr. Hermie G. Dionco Mr. Rene T. Ongcoy Mr. Sammy Alapan
BENGUED P.H. (Benguet)	Mr. Jiro Suzuki	Mr. Kyoichi Izawa (Special Staff)	Mr. Bernabe C. Hizon Regional Health Office Region I
LA UNION R.H. (San Fernando)	Shunsatsu Nakayama		
ABRA P.H. (Abra)	Shunji Kawada	Mr. Kyoichi Izawa	Mr. Sammy Alapan: LEFT Mr. Mike S. Talusan: Accompanied to Mr. Izawa
GABRIELA SILANG P.H. (Vigan)	Yutaka Saito	COST SURVEY IN MANILA	
MARIANO MARCOS M.H. (Batac)	Shigeo Nagase		
ILOCOS NORTE P.H. (Laoag)			
CAGAYAN M.C. (Tuguegarao)			Mr. Herminio Ortiz Leader of counterpart in charge
KALINGA-APAYAO (Tabuk)			
APARRI P.H. (Aparri)			
ISABELA P.H. (Ilagan)			Dr. Manuel F. Juan Mr. Sammy Alapan Mr. Herminio Ortiz
QUIRINO P.H. (Quirino)			Mr. Noli Parcon Mr. Mike S. Talusan
IFUGAO P.H. (Lagawe)			Mr. Hermie G. Dionco Mr. Rene T. Ongcoy
MAJOR MARCOS M.C. (Bayombong)			
NUEVA VIZCAYA P.H. (Bonbang)			Dr. Dominador R. Perez (Regional Health Office) Region I
BATANES P.H. (Basco)			Mr. Noli Parcon Dr. Dominador R. Perez
MEETING I MEETING II	JAPANESE FIELD STUDY TEAM, MOH ALL HOSPITAL DIRECTORS & PROVINCIAL/REGIONAL REPRESENTATIVES.		

O-13 MINUTES OF THE MEETING

1. Preliminary Discussion on the Inception Report and Field Studies

MINUTES OF THE MEETING BETWEEN THE MINISTRY OF HEALTH AND THE JAPANESE FIELD STUDY TEAM ABOUT THE EXPLANATION OF THE INCEPTION REPORT FOR THE FEASIBILITY STUDY OF THE HOSPITAL DEVELOPMENT PROJECT IN REGIONS I AND II

1. Date: 2 March 1979

2. Attendants:

PHILIPPINE REPRESENTATIVES :

Dr. Francisco N. Aguilar	- Executive Director Project Management Staff Ministry of Health
Dr. Manuel F. Juan	- Head of the Hospital Standards Division Bureau of Medical Services Ministry of Health
Mr. Samuel A. Alapan	- Project Architect Project Management STaff Ministry of Health

JAPANESE REPRESENTATIVES

Dr. Kiyosuke Ozaki	- Head of the Japanese Mission
Mr. Tsutomu Okamoto	- Member of the Mission
Mr. Jiro Suzuki	- Leader of the Japanese Field Study Team
Mr. Shimematsu Nakayama	- Member of the Japanese Field Study Team
Mr. Shunji Kawada	- "
Mr. Yutaka Saito	- "
Mr. Shigeo Nagase	- "
Mr. Kyoichi Izawa	- Special Staff
Mr. Yano	- Embassy of Japan
Mr. Koichi Goto	- JICA
Mr. Ogonuki	- Observer

3. EXPLANATION AND MUTUAL AGREEMENT OF THE INCEPTION REPORT

"Inception Report of the Feasibility Study of the Hospital Development Project" is explained by Japanese Field Study Team, reading and confirming through all items, and finally recognized as a whole by both parties.

Questions and answers about Inception Report (page 1-17) and confirmation about the "List of the Survey and Datum to be Requested to the Philippine Side" are made.

3.1 Questions and Answers

As implementing planning and surveillance is legally allowed in Philippines only by licensed architect, Japanese side should show only feasibility planning, the scales of the drawings is discussed, in site plan 1/1000 1/500 and in other drawings 1/500 1/200, and finally accepted by both parties as is submitted in the Inception Report.

4. ASCERTAINED ITEMS ABOUT "THE LIST OF THE SURVEYS AND DATUM TO BE REQUESTED TO THE PHILIPPINE SIDE" (Appendix 8)

Following items are ascertained by both parties:

4.1 Drawings of the three projected hospitals are ready and the rest of them are not made

4.2 Standardization about this project are available as floor area lists by each hospital rank and as the lists of medical equipment and furniture but no detailed standardization plans are available.

4.3 About reutilization of extreme old facilities may be judged by Japanese side after survey.

4.4 The drawings of the existing facilities are to be tried to submit by Philippine side to Japanese Study Team and the drawings of those which are constructed about 1940 are not available.

4.5 Topographic survying maps of each projected hospitals are now coming ready by Philippine side and will be submitted to Japanese side before the end of the field survey.

4.6 Maps (1:50000 1:250000) which Japanese side couldn't succeeded to obtain will be tried to get by Philippine side.

4.7 70M boring for water source check of each site will be done by the Philippine side and result will be submitted to Japanese side.

4.8 Sub-soil conditions in northern parts of Luzon Islands is generally good (2000 psi/) and only in Manila district boring and penetration test are obligated. In case of necessity Philippine side will ask those corresponding datum from Public Work Office Regional Distric Branches.

4.9 Enlargement of power ~~receive~~ reserve is not considered in this project and mainly problem resolved by using generators.

4.10 Enlargement of tele-communication receive is not considered in this project .

4.11 No city gas (territorical) in Region I and II

4.12 No water supply (territorical) in Region I and II except in Baguio City

4.13 No sewerage service (territorical) in Region I and II

4.14 For the meeting at project hospitals in such area where there is no territorical supply of city gas, water supply and sewerage system, corresponding representatives are not necessary to be invited.

4.15 As for the price list to types of medical equipments and furniture etc. Mr. Izawa will make survey with the aid of Philippine side in Manila after his return from the survey trip in Region I and II

4.16 As for the average labor price in Philippine, Datum will be asked from NEDA same time so Japanese mission visit its office.

4.17 As for the delivery collection of the questionnaires listed below, Philippine side promised to make a quick arrangements.

QUESTIONAIRE OF

I	Design Concept	- to each project hospital
II	Electrical and Mechanical Items	- "
III	Water Quality	- "
IV	Hospital Management And Control	- No. 2 is to each project hospital rest of the questions are to be answered in Manila
V	Mechanical Facility	- to be answered in Manila
VI	Electrical Facility	- "

JIRO SUZUKI
LEADER OF THE JAPANESE FIELD
STUDY TEAM

6th March
1979

050479

PROGRESS REPORT

This report describes that the field study of the Feasibility Study of the Hospital Development Project in accordance with the IMPLEMENTING ARRANGEMENT concluded between MINISTRY OF HEALTH OF REPUBLIC OF THE PHILIPPINES and JAPAN INTERNATIONAL COOPERATION AGENCY in March 1979, was performed as follows:

I. OBJECTIVES OF FIELD STUDY

This study was conducted for a feasibility study of 19 Project Hospitals in the Republic of the Philippines.

II. FIELD STUDY SCHEDULE AND PROJECT HOSPITALS

See Appendix 1 and 2

III. MEMBER OF FIELD STUDY TEAM

See Appendix 3

IV. ATTENDANCE AT THE MEETING IN EACH PROJECT HOSPITALS

See Appendix 4 and 5

V. CONTENTS OF FIELD STUDY

a. Collection of supplemental information related to the superior plans.

b. Collection of supplemental information on natural environmental conditions.

c. Collection of supplemental information on social and economic conditions.

d. Collection of information on the conditions of health and medical services and facilities.

e. Collection of information for design concept.

f. Collection of information on engineering design.

g. Collection of datum on construction costs, unit prices of building materials, and conditions of supply and transportation of building materials.

VI. METHOD AND STATE OF FIELD STUDY

This Field Study was performed as follows, except for that shown in VIII.

a. Collection of questionnaires requested to each hospital in advance.

b. Hearing of checklist prepared in advance.

c. Investigation of sites by rough measurings and photographing.

d. Request for submission of drawings of existing buildings and sites, etc.

e. Collection of statistics and publications.

f. Investigation of market prices.

VII. UNOBTAINED INFORMATIONS

Names of unobtained informations and responsible personnel to their submission are shown in Appendix 6.

VIII. MEDICAL EQUIPMENT

The Japanese feasibility team will modify the medical equipment of the Project Hospitals.

IX. STANDARDIZATION PROGRAM

The Japanese feasibility team will comment on the standardization program based on the just concluded field survey.

X. OTHERS

Unfinished buildings and mechanical and electrical equipments will be completed in principle by the Philippines funds of the total project funds.

Medical equipments, furnitures etc. will be supplied by the foreign funds.

XI. SCHEDULE OF FEASIBILITY STUDY IN JAPAN

Feasibility study will be performed by general datum from Philippines and datum which were collected during the field study.

Draft final report will be submitted on middle of July, and final report will be submitted on middle of August, 1979.

We sincerely ask you the continuous help and cooperation for the collection of unobtained and additional informations etc. and the framing of REPORT.

05 APRIL 1979, MANILA

Representative of MOH

Leader of the Japanese Field Study Team

APPENDIX I

FINAL SCHEDULE OF FIELD STUDY TEAM ON
THE HOSPITAL DEVELOPMENT PROJECT

REGION I

March 8 (THURS)
900 Manila ---------- 1200 Dagupan ---------- 1600 Baguio 1830
① PANGASINAN M.C.

March 9 (FRI)
1000 Baguio ---------- 1700 Bontoc
② 1700 - 200 BONTOC P.H.

March 10 (SAT)
1000 Bontoc ---------- 1800 Baguio
② 800 - 100 BONTOC P.H.

March 11 (SUN)
Baguio

March 12 (MON)
Baguio ---------- Benguet ---------- 1730 Baguio
③ 900 - 1400 BAGUIO M.C.
④ 1500 - 1700 BENGUET P.H.

March 13 (TUES)
900 Baguio ---------- 1100 San Fernando ---------- Abra
⑤ 1100 - 1400 LA UNION P.H.
⑥ 1600 - 1800 ABRA P.H.

March 14 (WED)
900 Abra ---------- 1100 Vigan 1300 ---------- 1400 Batac
⑦ 1100 - 1300 GABRIELA SILANG P.H.
⑧ MARIANO MARCOS M.C.

March 15 (THURS)
900 Batac ---------- 1030 Laoag 1400 ---------- 2000 Baguio
⑨ ILOCOS NORTE P.H.

March 16 (FRI)
Baguio
900 - 1800 - 2100
Meeting with all Hospital Directors and Provincial/ Regional Representatives

March 17 (SAT)
1300 1500 2000
Baguio ---------- Benguet ---------- Manila
900 - 1200
Meeting

050479

APPENDIX 2

FINAL SCHEDULE OF FIELD STUDY TEAM ON THE HOSPITAL DEVELOPMENT PROJECT (2)

REGION II

March 19 (MON.)
600 Hotel ---------- 830 Manila -------- 930 Tuguegarao 1800
① ② 1000 - 1800 Cagayan PH & Mental H.

March 20 (TUES)
900 Tuguegarao------Tabuk 1100 ---------- 1400 ---------- Tuguegarao 1600
③ 1100 - 1400 Kalinga-Apayao P.H.

March 21 (WED)
900 Tuguegarao------Aparri 1100 ---------- 1500 ---------- Tuguegarao 1600
④ 1100 - 1500 Aparri P.H.

March 22 (THURS)
900 Tuguegarao-------Ilagan 1200 ---------- 1500 ---------- Santiago 1630
⑤ 1200 - 1500 Isabela P.H.

March 23 (FRI)
800 Santiago------- 100 Quirino-------- 1200 1400 Lagawe ---------- 1730 Banawe 1830
⑥ 1000 - 1200 Quirino P.H. ⑦ 1400 - 1730 Ifugao P.H.

March 24 (SAT)
800 Banawe------ 930 Lagawe-------- 1100 1200 Bayombong---------- 1600 1700 Bambang 2300
⑧ 1200 - 1600 MAJ. MARCOS M. C. (Nueva Vizcaya M.C.) ⑨ 1700 - 1900 NUEVA VIZCAYA P.H.

March 25 (SUN)
400 A.M. Manila

March 29 (THURS)
915 Manila ----------Basco 1230
⑲ 1300 - 1800 Batanes P.H. 3/30 900 - 1000

March 31 (SAT)
1335 Basco ---------- Manila

April 4 (TUES)
Manila
900 - 1800
Meeting with all Hospital Directors and Provincial/ Regional Representatives of Regions I, II.

050479

APPENDIX 3

MEMBER OF FIELD STUDY TEAM

HOSPITAL	JAPANESE FIELD STUDY TEAM		COUNTER PARTONER
PANGASINAN MC. (Dagupan)			Dr. Manuel F. Juan Mr. Sammy Alapan
BONTOC P.H. (Bontoc)			Mr. Mike S. Talusan Mr. Hermie G. Dionco
BAGUIO M.C. (Baguio)			Mr. Rene T. Ongcoy Mr. Sammy Alapan Mr. Bernabe C. Hizon
BENGUED P.H. (Bengued)	Mr. Jiro Suzuki	Mr. Kyoichi Izawa (Special Staff)	Regional Health Office Region I
LA UNION R.H. (San Fernando)	Shmematsu Nakayama	Mr. Kyoichi Izawa	Mr. Sammy Alapan — LEFT Mr. Mike S. Talusan — Accompanied to Mr. Izawa
ABRA P.H. (Abra)	Shunji Kawada	COST SURVEY IN MANILA	
GABRIELA SILANG P.H. (Vigan)	Yutaka Saito		
MARIANO MARCOS M.H. (Batac)	Shigeo Nagase		
ILOCOS NORTE P.H. (Laoag)			Mr. Herminio Ortiz Leader of counterpart in charge
CAGAYAN M.C. (Tuguegarao)			
KALINGA-APAYAO (Tabuk)			
APARRI P.H. (Aparri)			Dr. Manuel F. Juan Mr. Sammy Alapan Mr. Herminio Ortiz
ISABELA P.H. (Ilagan)			
QUIRINO P.H. (Quirino)			Mr. Noli Parcon Mr. Mike S. Talusan
IFUGAO P.H. (Lagawe)			Mr. Hermie G. Dionco Mr. Rene T. Ongcoy
MAJOR MARCOS M.C. (Bayombong)			Dr. Dominador R. Perez (Regional Health Office) Region I
NUEVA VIZCAYA P.H. (Bonbang)			
BATANES P.H. (Basco)			Mr. Noli Parcon Dr. Dominador R. Perez
MEETING I MEETING II	JAPANESE FIELD STUDY TEAM, MOH & PROVINCIAL/REGIONAL REPRESENTATIVES.	ALL HOSPITAL DIRECTORS	

APPENDIX 4

050479

LIST OF ATTENDANTS AT THE MEETING
OF EACH HOSPITAL

REGION I

1. Pangasinan Provincial Hospital (Dagupan)	Chief of Hospital	Dr. Fe Cruz-Manaois, FPCS; FICS
	Administrative Officer	Mr. Pedro B. Ugto
	Chief of Nurse	Ms. Fausta C. Versoza
	Administrative Assistant	Mr. Herminigildo M. Mejia
	Hospital Mechanical Engineer	Engr. A. Mauang
	Supervising Civil Engineer Zoning Administrator, City Hall Dagupan City	Engr. Johnny F. Calimlim
2. Bontoc General Hospital (Bontoc)	Chief of Hospital	Dr. Rosita D. Macliing
	Administrative Officer	Mr. Nemesio P. Nuñez
	Chief of Nurse	Mrs. Adelaine A. Cadiogan
3. Baguio General Hospital, Medical Center (Baguio)	Chief of Hospital	Dr. Sotero B. Torralba, Jr.
	Administrative Officer	Mr. Artemio C. Rivera
	Chief of Nurse	Miss Araceli Piong
	Chief of Clinics	Dr. Jesus del Prado
	Administrative Assistant II	Ms. Romana C. Flores
	Senior Resident Physician	Dr. Vicente Calucut
	Hospital Engineer	Mr. Armenio Manarang
4. Benguet General Hospital (Benguet)	Chief of Hospital	Dr. Bayani N. Genabe
	Administrative Officer	Mr. Robert O. Cirilo
	Chief of Nurse	Mrs. Elsie L. Mateo
5. La Union Provincial Hospital (San Fernando)	Chief of Hospital	Dr. Juan Mabutas, Jr.
	Administrative Officer	Dr. Ricardo G. Tariga, DMD
	Chief of Nurse	Mrs. Magdalena A. Hidalgo
	Chief of Clinics	Dr. F. Agcaoili
	Senior President Physician	Dr. Rodolfo Calbagesa
	Senior President Physican	Dr. Antonio F. Estioco
	Medical Technologist	Mrs. Remedios T. Feliciano
6. Gabriela Silang General Hospital (Vigan)	Chief of Hospital	Dr. Rosario A. Quitiquit
	Administrative Officer	Mr. Demetrio L. Navarro
	Chief of Nurse	Ms. Josefa U. Benedito
7. Abra Provincial Hospital (Abra)	Chief of Hospital	Dr. Nonito G. Barbero
	Administrative Officer	Atty. Roberto V. Benedito
	Chief of Nurse	Mrs. Clarita L. Ballena
8. Don Mariano Marcos Memorial Hospital (Batac)	Chief of Hospital	Dr. Maximiano Agbayani
	Administrative Officer II	Mr. Esteban R. Obein
	Chief of Nurse	Mrs. Fredita Dar[illegible]lar
	Supervising Resident Physican	Dr. Quintina D. Duque

9. Ilocos Norte Provincial Hospital (Laoag)	Chief of Hospital	Dr. Maximiano L. Agbayani
	Administrative Officer II	Mr. Victorino Manuel
	Chief of Nurse	Mrs. Teresa Ericta

050479

APPENDIX 5

Region II

1.	Cagayan Regional Hospital (Tuguegarao)	Chief of Hospital	Dr. Juan Turingan
		Administrative Officer	Mr. Eric P. Perez, Jr.
		Chief of Nurse	Ms. Maria Macadandang
		X-Ray Dept.	Dr. Ramelo C. Ramirez
2.	Regional Mental Hospital	Officer - in Charge- Regional Health Office No. II	Dr. Roberta Hernandez
3.	Kalinga-Apayao Provincial Hospital (Tabuk)	Chief of Hospital	Dr. Laureano T. Rigor
		Administrative Officer	Mr. Loreto M. Dulay
		Chief Nurse	Ms. Catherine F. Banggay
4.	Aparri Emergency Hospital (Aparri)	Chief of Hospital	Dr. Rodrigo Flores
		Administrative Officer	Mr. Juan Peralta
		Chief Nurse	Mrs. Nora Catalon
5.	Isabela Provincial Hospital (Ilagan)	Chief of Hospital	Dr. Jesus L. Maddela
		Administrative Officer	Mr. Dionision B. Ammugauan
		Chief Nurse	Ms. Rosemir R. Sanches
6.	Quirino Provincial Hospital (Quirino)	Chief of Hospital	Dr. Conrado F. Panganiban
		Administrative Officer	Mr. Recolito Agcaoili
		Chief Nurse	Mrs. Leticia G. Lozano
7.	Ifugao General Hospital (Lagawe)	Chief of Hospital	Dr. Luis A. Genato
		Administrative Officer	Mr. Enrique Talic
		Chief Nurse	Mrs. Sofia Buenaventura
8.	Major F.E. Marcos Veterans Regional Hospital (Bayombong)	Chief of Hospital	Dr. Loreto E. Nagtalon
		Administrative Officer	Mrs. Salvacion M. Nasia
		Chief Nurse	Mrs. Corazon A. Alejandro
9.	Nueva Viscaya Provincial Hospital (Bayombong)	Chief of Hospital	Dr. Florentino C. Bernardo
		Administrative Officer	Mrs. Flordelino Arellano
		Chief Nurse	Mrs. Juanita Palma
10.	Batanes Provincial Hospital (Basco)	Chief of Hospital	Dr. Ceferino Q. Aguinaldo
		Administrative Officer	Mrs. Esperanza B. Santana
		Chief Nurse	Mrs. Generosa S. Castro

APPENDIX 6
LIST OF UNOBTAINED INFORMATIONS

050479

	Questionnaire about the Design Concept	Management and Control of Hospital	Drawing	Water Quality Data	Others
Don M. Marcos	-	-	-	0 4/10	-
Baguio	-	-	-	-	-
Pangasinan	-	-	-	-	-
La Union	-	-	-	-	-
Abra	-	-	-	-	-
Bontoc	-	-	-	0 4/10	0 4/10 (Water Resource)
Benguet	-	-	-	-	-
Gabriela Silang	-	-	-	-	0 4/b (Single Diagram)
Ilocos Norte	-	-	-	0 4/10	-
Cagayan Regional	-	-	-	0 4/17	-
Cagayan Mental	-	-	0 4/10 (New bldg)	0 4/17	0 4/10 (Bill of Materials)
Maj. F. Marcos	-	-	Δ 4/10 (Plumbing)	0 4/10	-
Aparri	Δ 4/6 (Annual Report)	0 4/6	-	0 4/6	-
Ifugao-	-	0 4/10	-	0 4/10	0 4/10 (Water Resource)
Kalinga-Apayao	-	0 4/10	0 4/10 (Existing site)	0 4/10	-
Isabela	Δ 4/10 (Annual Report)	0 4/10	-	0 4/10	-
Batanes	-	-	-	0 4/10	-
Nueva Vizcaya	-	-	-	0 4/10	-
Quirino	-	-	-	0 4/10	0 4/10 (Water Resource)

NOTE: 0 - Unobtained Informations
Δ - Insufficient Informations
Number: date to be obtained

O-14 EXPLANATION OF DRAFT FINAL REPORT

1. Schedule

July 30th	Tokyo - Manila.
July 31st ∿ Aug. 4th	Contents of draft final report explained to Dr. Aguilar, Dr. Juan and Mr. Allapan of Project Management Staff Dept., Philippine MOH.
Aug. 4th	Contents of draft final report explained to Mr. Jesus Azurin and Mr. Antonio Acosta, Deputy-Ministers of Health.
Aug. 7th	Courtesy call on Mr. Enrique Garcia, Minister of Health.
Aug. 7 ∿ 10th	Draft final report explained to NEDA and MOH.
	Attendants: MOH Deputy-Minister Jesus Azurin. NEDA Assistant Director Eduardo G. Corpuz

2. Members of the Japanese Party

Leader:	Kyosuke Ozaki.	Tokai University.
	Jiro Suzuki,	Nihon Architects, Engineers & Consultants, Inc. (NAEC).
	Kyoichi Izawa,	Planning Division, Medical Treatment Corp (SHOWAKAI).
	Shunji Kawada,	NAEC.

3. Members of the Philippine Party

MOH: Minister Enrique Garcia
Deputy-Minister Jesus Azurin
Deputy-Minister Antonio Acosta

MOH Project Management Staff Division:

Director Dr. Francisco N. Aguilar
Dr. Manuel F. Juan
Mr. Samuel A. Allapan

NEDA: Assistant Director Eduardo G. Corpuz

4. Minutes and Comments

As per attached.

MINUTES OF DISCUSSIONS

During the discussion held between the JICA Mission of the Hospital Development Project for the Explanation of the Draft Report and the Philippine Government on August 9, 1979, the following major points were taken up:

1. The Philippine Panel found the draft report fairly acceptable. However, comments and/or recommendations on certain specific details will be forwarded to the JICA Office, Manila on or before August 21, 1979.

2. The Philippine Panel took note of the comments of the JICA Mission on the treatment of 3 problematic hospitals, namely: Cagayan Provincial Hospital, Don Mariano Marcos Memorial Hospital, and Major Ferdinand Marcos Veterans Memorial Hospital. The Philippine Panel decided to hold in abeyance its position on the matter until a decision is reached by its Ministry of Health.

3. The JICA Mission agreed to provide an additional chapter in the Final Report which will contain all the items which were discussed during the meeting including the comments and recomendations of the Philippine Panel and a cost list for each hospital under Plan I and Plan II.

EDUARDO G. CORPUZ
Assistant Director-General
National Economic and Development Authority

KYOSUKE OZAKI
Team Leader
JICA Mission of the Hospital Development Project for the Explanation of the Draft Report

Republic Philippines
PROJECT MANAGEMNENT STAFF
Ministry of Health

August 3, 1979

JAPANESE INTERNATIONAL
COOPERATION AGENCY
Tokyo, Japan

Dear Sir:

Draft Summary Report of the Hospital Development Project is acceptable only with the following comments on the submitted plans.

It is, therefore, suggested that the following comments be studied before making the Final Report.

COMMENTS ON THE SUBMITTED PLANS:

1. Emergency and Treatment Rooms must be provided with emergency waiting hall, capacity 20 persons.
2. The Out-patient Department each consultation must be provided with separate examination room; provide separate staff toilet
3. The Family Planning Room must be provided with doctor's office, showing the interviewing room and with two separate rooms
4. Interconnecting doors at OPD not necessary
5. Increase floor area of lobby

II. Administrative Service:

1. Medical records room must be near the business office
2. The director's, chief nurse, and administrative offices are inadequate in sizes.
3. Provide a separate cashier's office adjacent to the business office;
4. Provide toilet and bath of the Director's Office;

III. The Ancillary Department:

1. All x-ray rooms must be provided with a single passenger toilet, dressing room and control
2. Bacteriology and laboratory rooms are inadequate. The door must be separate with the rest of the laboratory facilities.
3. Size of storage room in the pharmacy room is inadequate. Relocate Pharmacy nearer to OPD and Emergency Room;

- m o r e -

IV. Surgery Department:

1. No clean-up, necessary after operation;
2. Scrub-up to be relocated nearer to OR/DR
3. Provide surgical supervising area
4. Provide anesthesia storage room
5. Provide steril. inst. storage for due operation in use
6. Provide for stretcher/area and closet of janitor
7. Delete the nurse station in the aseptic area.
8. Provide another cubicle for suspect nursery, nearby the well baby cubicles, and provide formula area and utility for the nursery;
9. Doctor's locker room should be provided with door before the aseptic and door going to the aseptic
10. Labor room must be provided with toilet and bath
11. Delete the machinery room
12. Aseptic area must be well defined
13. Provide nurses locker room

V. Nursing Units:

1. Limit ward room to over 6 beds maximum, if possible with toilet for each within the room
2. Specify the following nursing units:
   a. Pedia
   b. Ob-gyn
   c. Surgical Ward
   d. Medical
   e. Provide isolation room (male & female)
   f. Medicare ward and private room (single and semi-private)
3. Segregate the dirty and clean linen rooms

VI. Dietary:

1. Provide staff dining;
2. Provide day food storage
3. Separate the cafeteria from hospital dietary processing and preparation areas.
4. Relocate the laundry area at the hospital maintenance block;

Very truly yours,

MANUEL F. JUAN, JR., M.D.
Officer-in-Charge

CHAPTER I

SUMMARY AND CONCLUSION

CONTENTS

		Page
I-0	SUMMARY OF THE PHILIPPINE HOSPITAL DEVELOPMENT PROJECT STUDY REPORT	I-1
I-1	GENERAL OUTLINE OF REGIONS I AND II	I-5
I-2	OUTLINE OF REGION I AND II's HEALTH CARE	I-7
1.	Helth Care Indicators and International Level	I-7
I-3	PROJECT HOSPITALS' CONDITIONS AND FEASIBILITY DEVELOPMENT PLAN	I-12
1.	Development Priorities	I-12
I-4	PRESENT CONDITION AND THE SUPPLY PLAN OF MEDICAL EQUIPMENT	I-17
1.	Examples of Upgrading of Medical Equipment	I-18
I-5	THE ALLOCATION OF HEALTH-CARE RELATED PERSONNEL	I-20
I-6	MORBIDITY STRUCTURE AND PARTICULARS OF DIAGNOSIS AND TREATMENT	I-21
I-7	PROPOSED STANDARDIZATION OF MEDICAL CARE FACILITIES	I-24
1.	Determination of the Hospital Scale	I-24
2.	Specific Hospital Development Plan	I-28
I-8	MAINTENANCE PLAN	I-31
1.	Maintenance Plan for Buildings and Facilities	I-31
2.	Maintenance Plan for Medical Equipment	I-32
I-9	CASE STUDY FOR THE CONSTRUCTION IMPLEMENTATION PLAN	I-34
I-10	CONSTRUCTION COSTS, CURRENT EXPENDITURE AND PROJECT FUND OPERATIONS FOR PLAN I	I-46
1.	Construction Costs	I-46

Page

2. Current Expenditure (Income and Expenditure) I-50

3. Secular Changes in Project Fund Operations I-51

I-11 CONSTUCTION COSTS, CURRENT EXPENDITURE AND PROJECT FUND OPERATIONS FOR PLAN II I-54

1. Construction Costs I-54

2. Current Expenditure (Income and Expenditure) I-57

3. Secular Changes in Project Fund Operations I-58

I-12 RELATIONSHIP BETWEEN THE IMPROVEMENT PLAN AND CAPITAL EXPENDITURE, CURRENT EXPENDITURE, ETC. IN THE PHILIPPINES .. I-60

1. Capital Expenditure I-60

2. Current Expenditure I-61

3. Debt Service Ratio I-62

4. Ratio of Medical Expenditure to National Household Expenditure I-63

I-13 ANTICIPATED RESULTS OF THE IMPROVEMENT PLAN I-64

1. Expected Direct Results (Manpower) I-64

2. Other Anticipated Results I-67

I-14 CONCLUSION I-69

APPENDIX THE TREATMENT OF 3 PROBLEMATICAL HOSPITALS I-70

1. CAGAYAN PROVINCIAL HOSPITAL I-70

2. DON MARIANO MARCOS MEMORIAL HOSPITAL I-74

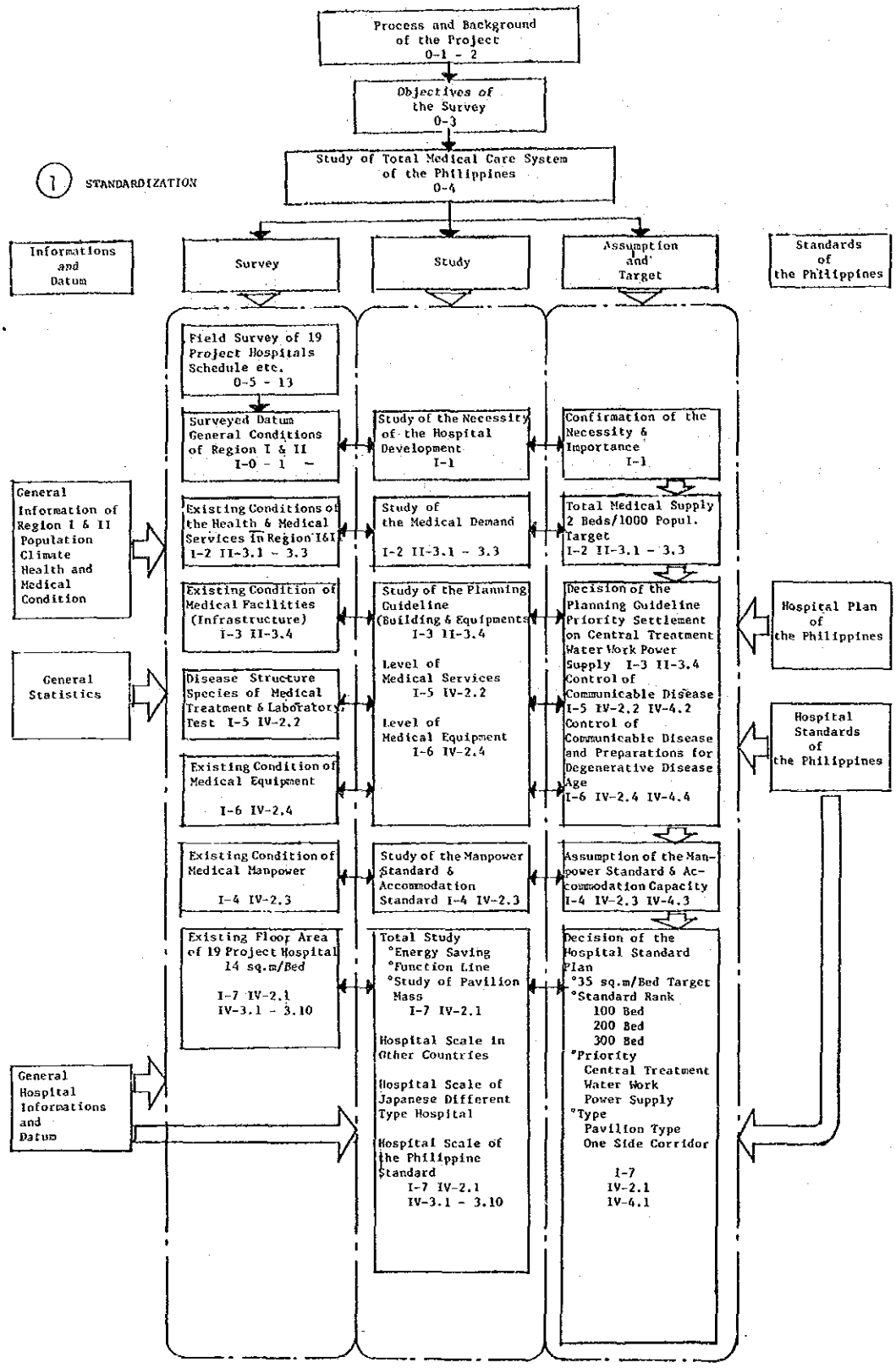
3. MAJOR F. MARCOS VETERAN MEMORIAL HOSPITAL I-74

I-0 SUMMARY OF THE PHILIPPINE HOSPITAL DEVELOPMENT PROJECT STUDY REPORT

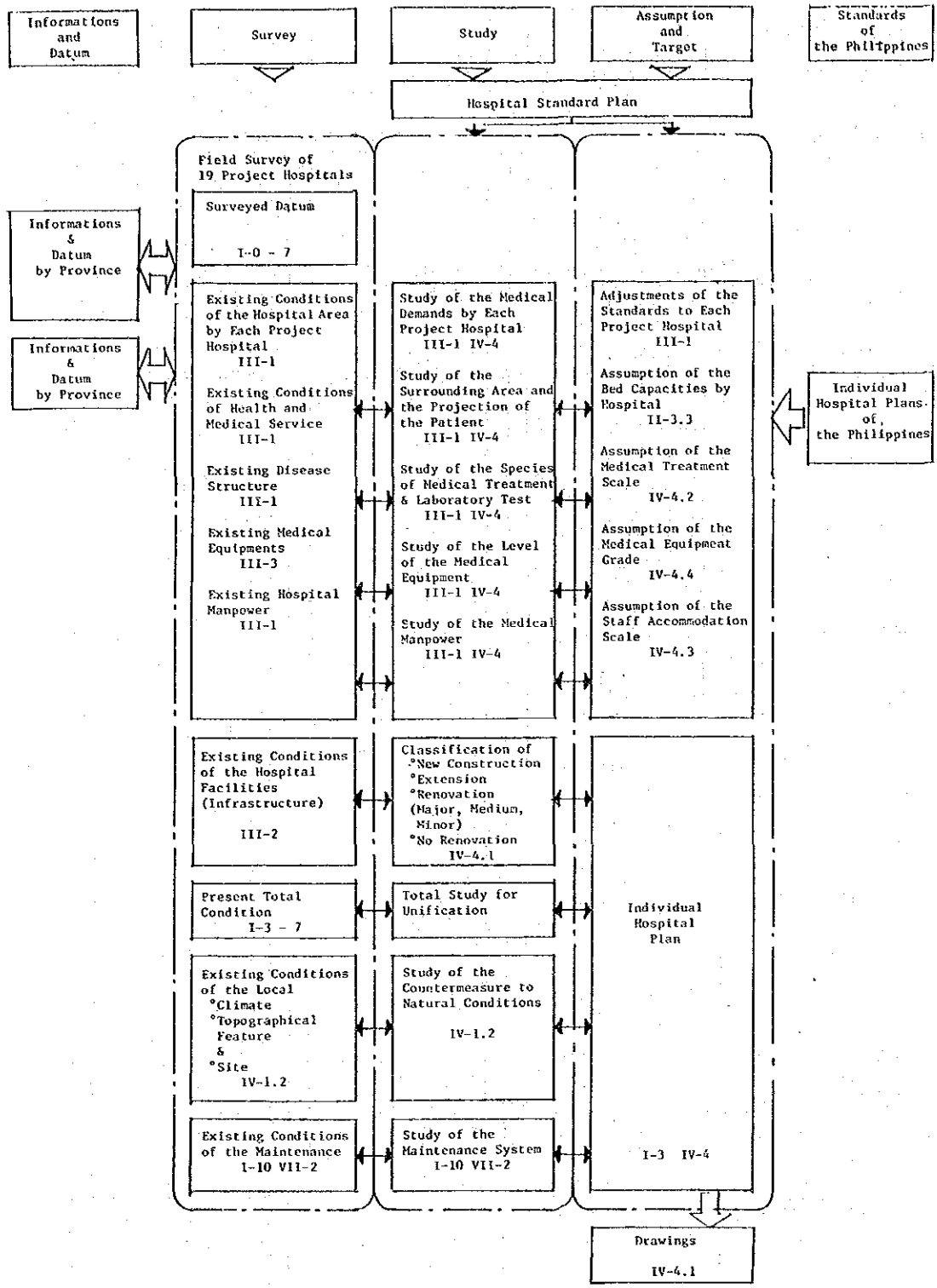
This is a summary of the report that was written based upon the results of the in-detail Study which was made over a 40-day period of the 19 hospitals and the prospective sites in Region I and II. The report was based upon the "Scope of Work" agreed upon by Philippine Health Officials and the JICA under the Technical Assistance Program between Japan and the Philippines.

The Department of Health's National Health Care Services Standards, being extremely well though out, the Study followed its standards in its planning, while taking into consideration present conditions, the international level which the Philippine healthcare ought to attain and the need to cope with future eventualities.

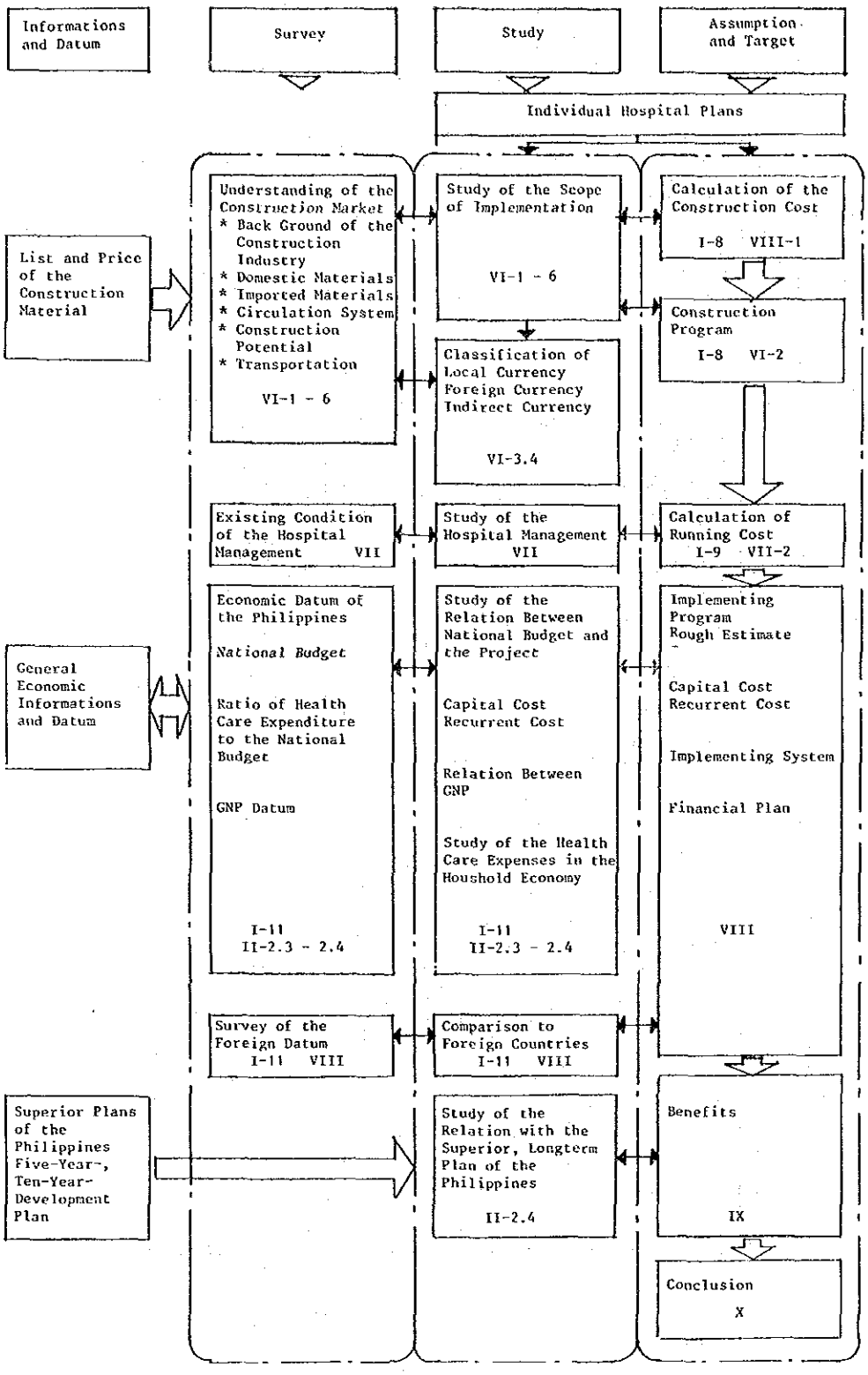
It is hoped that this report be studied in reference to the Philippine Comprehensive Health Care System and the Philippine hospital Development Program Standards.


Process and Background of the Project 0-1 - 2
Objectives of the Survey 0-3
Study of Total Medical Care System of the Philippines 0-4
① STANDARDIZATION
Informations and Datum
Survey
Study
Assumption and Target
Standards of the Philippines
Field Survey of 19 Project Hospitals Schedule etc. 0-5 - 13
Surveyed Datum General Conditions of Region I & II I-0 - 1 ~
Study of the Necessity of the Hospital Development I-1
Confirmation of the Necessity & Importance I-1
General Information of Region I & II Population Climate Health and Medical Condition
Existing Conditions of the Health & Medical Services in Region I&II I-2 II-3.1 - 3.3
Study of the Medical Demand I-2 II-3.1 - 3.3
Total Medical Supply 2 Beds/1000 Popul. Target I-2 II-3.1 - 3.3
Existing Condition of Medical Facilities (Infrastructure) I-3 II-3.4
Study of the Planning Guideline (Building & Equipments) I-3 II-3.4
Level of Medical Services I-5 IV-2.2
Level of Medical Equipment I-6 IV-2.4
Decision of the Planning Guideline Priority Settlement on Central Treatment Water Work Power Supply I-3 II-3.4 Control of Communicable Disease I-5 IV-2.2 IV-4.2 Control of Communicable Disease and Preparations for Degenerative Disease Age I-6 IV-2.4 IV-4.4
Hospital Plan of the Philippines
General Statistics
Disease Structure Species of Medical Treatment & Laboratory Test I-5 IV-2.2
Hospital Standards of the Philippines
Existing Condition of Medical Equipment I-6 IV-2.4
Existing Condition of Medical Manpower I-4 IV-2.3
Study of the Manpower Standard & Accommodation Standard I-4 IV-2.3
Assumption of the Manpower Standard & Accommodation Capacity I-4 IV-2.3 IV-4.3
Existing Floor Area of 19 Project Hospital 14 sq.m/Bed I-7 IV-2.1 IV-3.1 - 3.10
Total Study °Energy Saving °Function Line °Study of Pavilion Mass I-7 IV-2.1
Hospital Scale in Other Countries
Hospital Scale of Japanese Different Type Hospital
Hospital Scale of the Philippine Standard I-7 IV-2.1 IV-3.1 - 3.10
Decision of the Hospital Standard Plan °35 sq.m/Bed Target °Standard Rank 100 Bed 200 Bed 300 Bed °Priority Central Treatment Water Work Power Supply °Type Pavilion Type One Side Corridor I-7 IV-2.1 IV-4.1
General Hospital Informations and Datum

(2) INDIVIDUAL PLANS OF 19 PROJECT HOSPITALS



③ IMPLEMENTING PLAN



I-1 GENERAL OUTLINE OF REGIONS I AND II

The Project area for this feasibility study (hereinafter study), Regions I and II are situated on the Northernmost end of the Island of Luzon, with a combined total area of 57,971 km^2 (Region I - 21,568 km^2, Region II - 36,403 km^2), thus occupying approximately 19.3% of the total national land area of 300,000 km^2. In respect to population, their combined total of 5,202,000 (Region I - 3,269,000, Region II - 1,933,000) is 12.4% of the national total.

The Western portion of these two regions; which extend from 16° to 19° latitude in the Northern part of the Philippines, comprises a level plain running alongside the coast; the central portion and eastern sea coast is a rolling, mountainous zone. The Cagayan river flows northward through the center of Region II, which lies between the central mountainous zone and the eastern coast mountainous zone. The river basin is composed of wide and flat plains. But, as these two regions' western sea coasts and Cagayan valley are enclosed by the central mountaineous zone, at present communications are not very easily made.

The main products of both regions are agricultural with rice and tobacco being the major crops, in addition to which, there is an off-shore fishing industry on the western coast and a dried fish processing plant near Pangasinan. In the eastern sea coast's mountainous zone there are forestry, lumbering and other such kinds of industries. Moreover, recently, forestation, dam building and the rationalization of agriculture, etc. have been strongly advanced in the central mountaineous zone.

Weather-wise, Region I has a dry season from November to April and a rainy season from May to November. Region II on most years suffers damage from tropical cyclones and floods.

The temperature is, on the whole, tropical with temperatures in most of this area in excess of 30° celsius; but Baguio, the region's largest city, being 1,500 meters above sea level, has a year-round temperature between 18.2 and 20.6° celsius. Besides Baguio,Bontoc, Ifugao and other locations over 1,000 meters above sea level also have low temperatures.

Regarding traffic connections, a Philippine-Japanese Friendship Highway has been built running North-South through the two regions, and the traffic running on this national road is convenient. Yet, the roads running to the mountainous area are is not sufficient. In the case of the project hospitals, as well, there is a great difference in transportation conditions; and it was felt that this has great effect on health care service (Bontoc, Ifgao, Quirino PHs, among others, are either distant from National highways or accessible only by poor roads).

There are airports in San Fernando, Ilocos Norte, Tuguegarao, Aparri and Basco. As Batanes PH is on a distant island, the airplane is its major mode of transportation. Also, the educational level and rate of literacy is relatively high.

A comparison of the regions' vital statistics gives:

	Region I	Region II	Total
Land area	37.2%	62.8%	100%
Population	62.8%	37.2%	100%
Population density	2.85	1	——

From which it can be seen that Region II's development is lagging that of Region I. This is thought to be attributable to Region I's having had traffic from Manilla from years back along a level coastal road, whereas Region II's broad plain land, being on the other hand blocked from traffic by the Dalton pass and mountain range, hasn't developed. These conditions, are seen in the medical statistics we will next bring up, and in other areas; but after improvements in transportation due to national highways are completed, the population growth rate in Region II will exceed by a large margin that of Region I and the rapid development of this region is expected through Cagayan River management and the development of agriculture, electric power, waterworks and other industrial infrastructure. It is absolutely necessary that healthy manpower be provided for this development by improved health care.

For this, it is desirable to situate a string of private and government main hospitals in the plain running north-south in Region I and sufficient government hospitals (100 bed scale) for the inhabitants of the central mountain range and, in Region II, to situate a string of government and private central hospitals running north-south from Tuguegarao along the Cagayan river basin, and to lay roads to assure the connection of East and West in several places in the central mountain range.

With the development of this group of hospitals, the improvement in the quality of health care will mean that the supply of sufficient healthy manpower for the rapid development expected in the regions may be anticipated, as the completion of this Hospital Development Program will be most influential in satisfying this demand.

I-2 OUTLINE OF REGION I AND II's HEALTH CARE

35.3% of the hospitals in Region I are government facilities and 47% in Region II, for a combined total of 40.5%; and 50.6% of the beds in Region I are government, and 74.9% in Region II, for a combined total of 58.4%, which shows the role played by government hospitals to be very large. It is judged that the role played by public hospitals in Region II will become especially vital with the completion of the present development program.

The Philippine regional medical health care system comprises of puericulture centers (P.C.), community hospitals and health centers (C.H.H.C.), barangay health stations (B.H.S.), rural health units (R.H.U.), emergency hospital (E.H.) provincial hospitals (P.H.) regional hospitals (R.H.) and medical centers (M.C.) built and provisioned in accordance with the respective needs of sitio, barangay municipality, chartered city, province and region and operating under the three level health care service appropriate to each facility.

This hospital development program covers the upper part of the system described above and is to serve as the key to the development of all regional health care services.

1. Health Care Indicators and International Level

The condition of Region I and II health care facilities and the health indicators, shown in the Philippine Report, and DOH data, are as follows.

1) Health care facilities

	Region I	Region II
Medical center	1	-
Regional hospital	1	1
Provincial hospital	7	7
Total	9	8

2) Health care manpower

	Region I	Region II	Distrib.	
Physician	891 (0.25 phys./ 1,000 pop.)	210 (0.09 phys./ 1,000 pop.)	81%	19%
Nurse	865	331	75%	25%
Nurse Attendant	367	199	65%	35%
Dentist	Unknown	40	-	
Mid-wife	687	287	70%	30%
Sanitation Inspector	218	113	66%	34%

3) Health Indicators

	Region I	Region II	2 Region Total and average
Crude Birth rate per 1,000 pop.	37.2	31.8	32.05
Crude Death rate per 1,000 pop.	7.6	7.4	7.53
No. of hospitals gov./gov. and priv.	36/102	34/72	70/173
No. of Beds gov./gov. and priv.	2248/4834	1700/2269	4148/7103
Beds/1,000 pop. (gov't)	0.7	0.85	0.75
Beds/1,000 pop. (gov't and priv.)	1.39	1.06	1.23

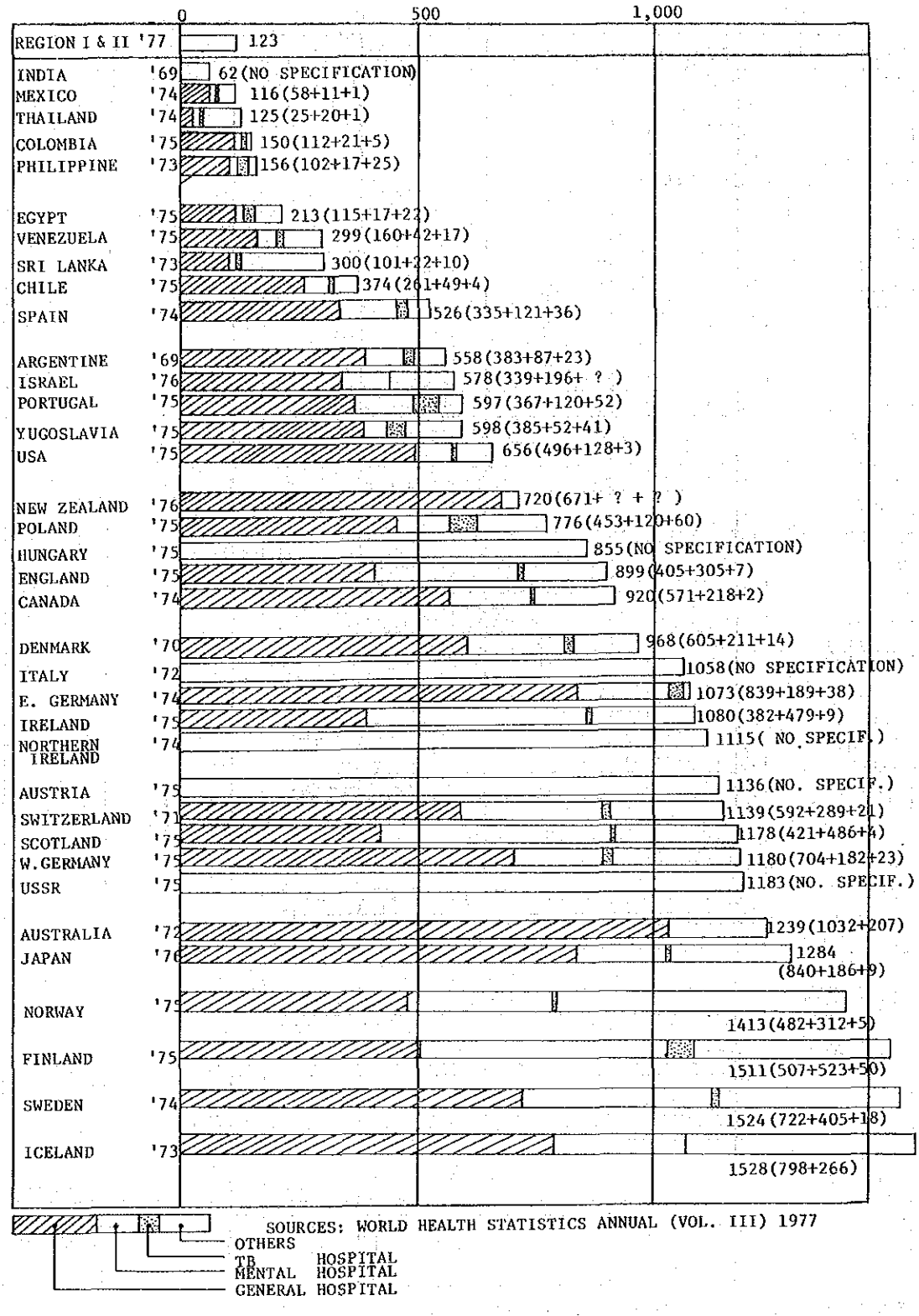
The above figures are on the same order as the Philippine national average and the 19 hospitals actually studied. They are low by international standards, in this connection, the health care facilities and health indicators of 38∿40 nations were compared to those of the Philippines by dividing them into 8 groups of which the Philippines pertains to the 7th.

	Grade	No.
Beds	7th group	153/100,000 pop. (30th place among 35 nations)
Physicians	"	22/100,000 pop. (39th out of 40)
Nurses	"	31/100,000 pop. (35th out of 38)

(refer to following table)

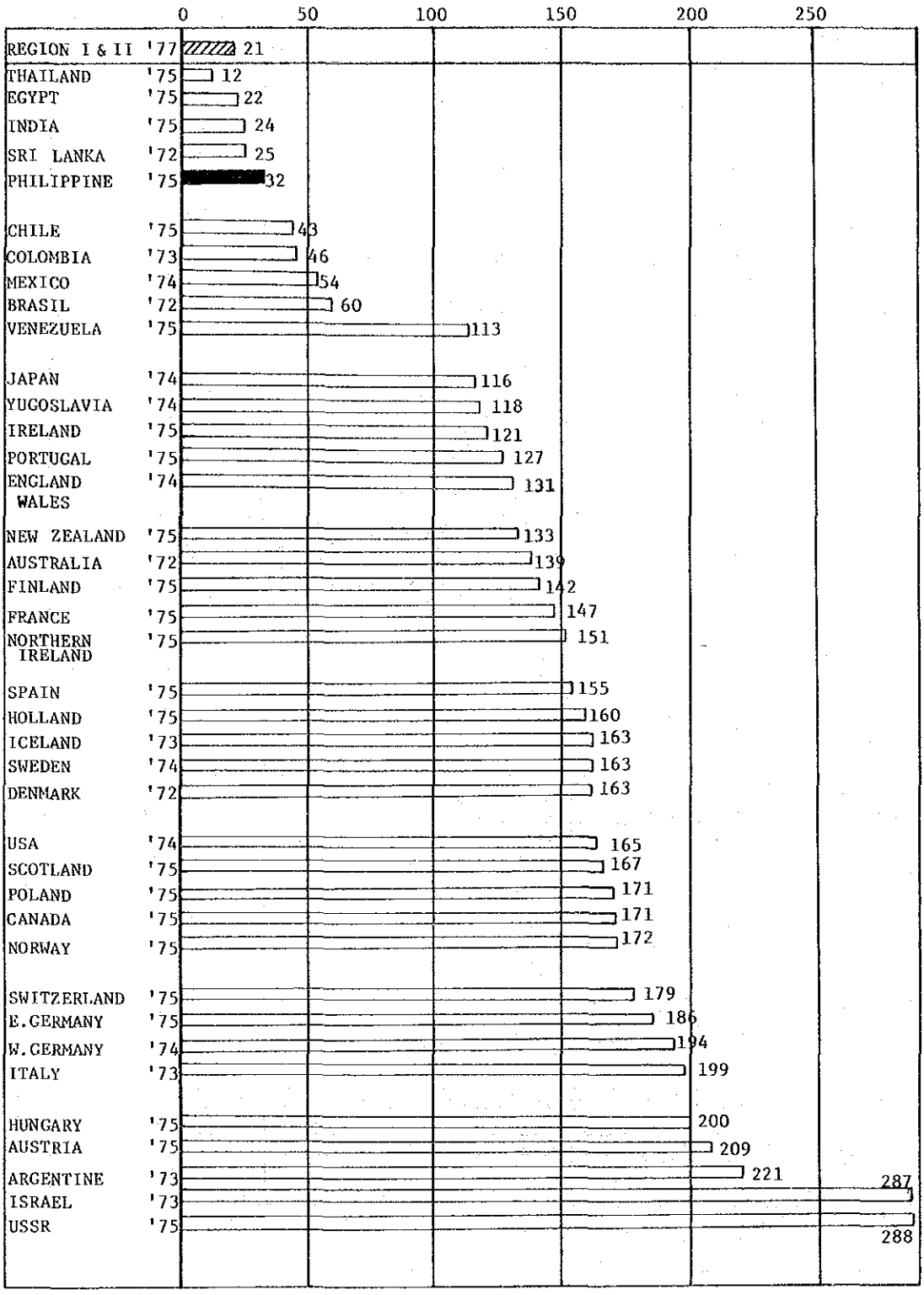
In its capacity to authorize private and government health care facilities and provide health care supplies, there is a need for national health care administration to provide more government hospitals for isolated and low-income areas.

NUMBER OF BEDS BY COUNTRY: PER 100,000 POPULATION



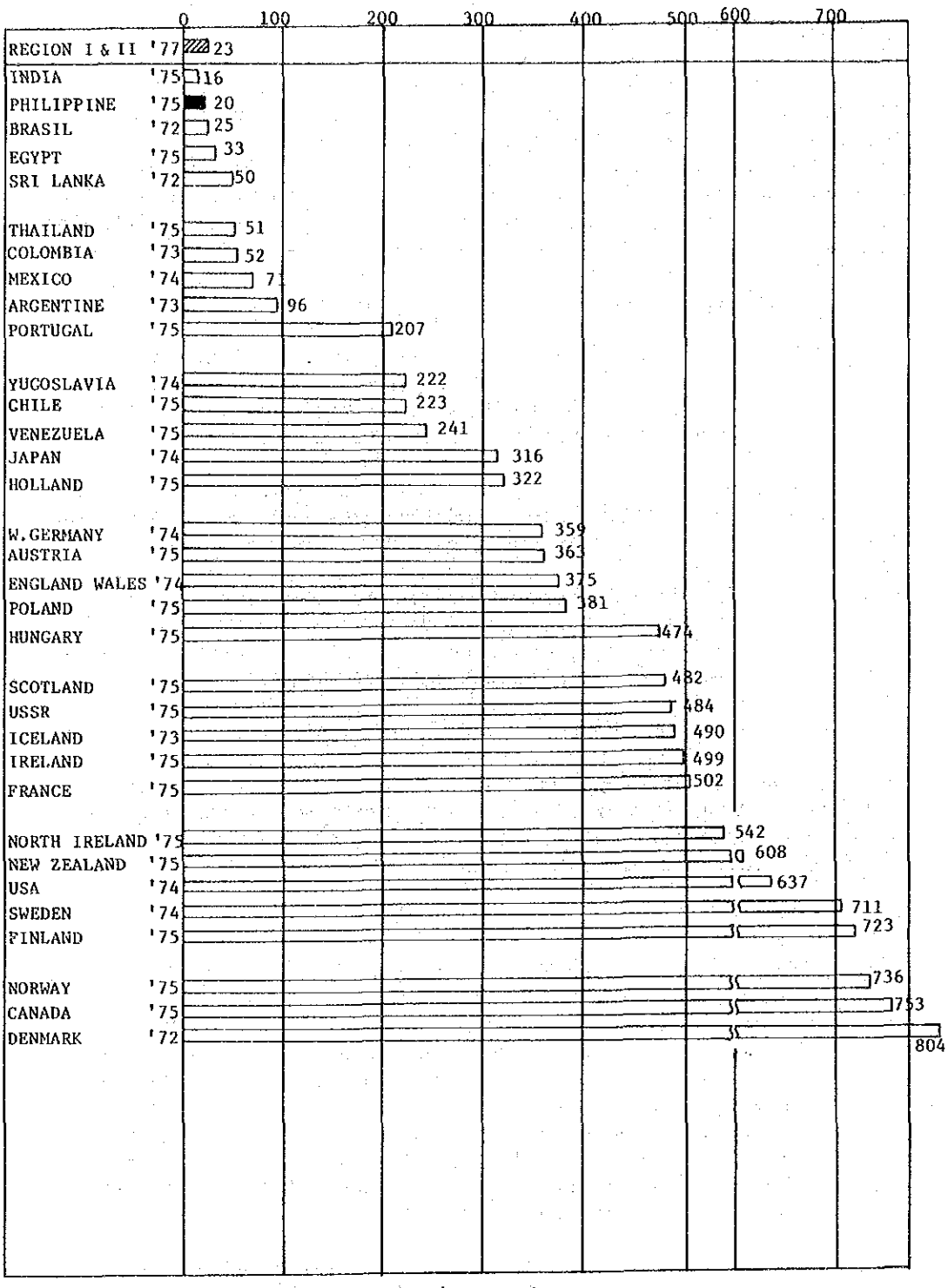
SOURCES: WORLD HEALTH STATISTICS ANNUAL (VOL. III) 1977

NUMBER OF PHYSICIANS BY COUNTRY: PER 100,000 POPULATION



SOURCES: WORLD HEALTH STATISTICS ANNUAL (VOL. III) 1977

NUMBER OF NURSES BY COUNTRY: PER 100,000 POPULATION



SOURCES: WORLD HEALTH STATISTICS ANNUAL (VOL. III) 1977

I-3 PROJECT HOSPITALS' CONDITIONS AND FEASIBILITY DEVELOPMENT PLAN

1. Development Priorities

As the study clearly revealed that, with the exception of two or three hospitals, the hospitals are aged, the medical equipment is extremely antiquated, the toilets and other facilities are unsanitary owing to insufficient water and electric supplies and, moreover, the quality control of vaccine and other medicine is less than perfect owing to the insufficient electric power, the development priorities are as listed below.

1) Bringing Infectious Diseases Under Control

(1) To give priority to developing the diagnosis and treatment related buildings and medical equipment which make up the core hospital function to plan the rapid control of infectious disease.

(2) To give priority to the development of water supply and drainage to erradicate the causes of infection within and in the vicinity of the hospital.

(3) To provide separate electric power installations, to at least guarantee a small quantity of power around the clock from one system in order to improve vaccine and medicine quality control.

Through taking these measures, the prevention of infection, etiological studies and treatment may be properly carried out. Thus it can be expected that the incidence of such diseases as infectious phneumonia, influenza, TB, gastro-enteritis and tetanus which presently are the leading diseases, may be drastically reduced within a short time period.

2) Building

The results of this study of project hospitals show that, excluding 2 facility's with new main buildings under construction (Don Mariano Marcos, Major Marcos Veteran). 1 hospital under construction (Cagayan Mental Hospital) and 4 hospitals (Don Mariano Marcos Hospital, Kalinga Apayao, Aparri, Nueva Viscaya) which are of relatively recent construction, 14 hospitals -- as shown in the following Table, the main parts of the hospitals -- having been constructed in the early 50's or earlier are already over 25 years old.

Those of wood construction are extremely rotted and require rebuilding, and those of brick construction also need extensive rennovation to be used again. The

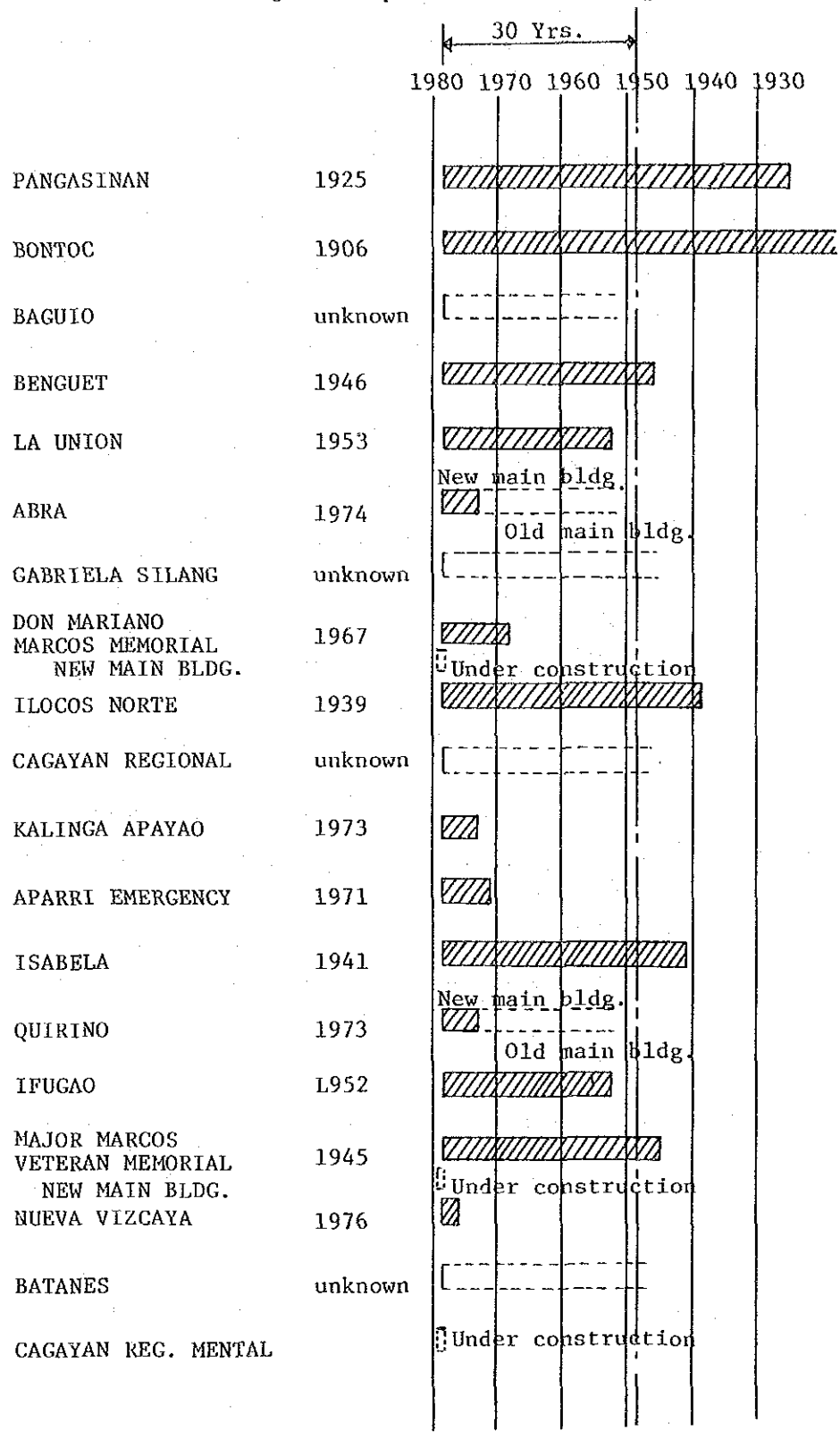
construction year of additional and annex buildings varies widely, but excluding some exceptions, they are also worn out like the main buildings. The equipments and spaces of these existing buildings are not suitable for an upgraded hospital. Therefore, while new building construction will be primarily for the diagnosis and treatment portions, existing buildings are to be converted into wards and the like.

3) Water Work Utility

In the Philippines a public water supply development programm is now under way by the LWUA (Local Water Works Utility A.D.M.) and B.P.W (Bureau of Public Work), but the degree of deffusion is not yet enough. Water supply equipment, capacity and the distribution area in main cities are still limited and most of the inhabitants still get water from wells, springs and rivers. In the case of these project hospitals, only Baguio, Bontoc, Don Mariano Marcos, Ifugao and Batanes are getting water from public water net works, but most of their water quantity is insufficient and often cut off. Only Baguio city has a sufficient water supply system. Also only Baguio city has a public sewage system but the treatment facility is at present under construction and drainage is let to flow directly into the rivers without treatment. In the rest of the project hospitals, drainage treatment is done mainly by septic tank, and further drainage is let into to creeks, rivers or rice paddies.

Because of the above mentioned conditions of water supply, sewage treatment facilities and capacities, flush toilets in hospitals cause give rise to an insanitary environment and "Inside the Hospital Infection". Thus, in this plan, the development of water supply facilities including water source, and sewage facilities including sewage and drainage treatment systems for the aim of realizing of sanitary hospitals is given top priority.

Year of Construction of Project Hospitals Main Building(s)



4) Electricity supply

In the Philippines, power plant projects are now under way by the NPC (National Power Corporation), but the development is not sufficient at this moment.

In Region I, one of project areas, there is a power supply from the N.P.C. (only Bontoc city from private franchaise). In Region II, a public power supply is not available and Cagayan RH Kalinga Apayao PH, Aparri EH, Maj. F. Marcos are supplied power by private franchise.

The reliability of the power supply is low because of long blackouts in the wet season and the low quality and small quantity of the power supply being insufficient, ensuring that hospital functions go on is difficult. In this program, while supporting the saving of energy, the developing of electric power source facilities, including the provision of generators, and the installation of parallel transmission is to be given priority in order to guarantee minimal hospital functioning at all times.

The expected results of this in terms of the Hospital Development Program in general, and the improvement of health care services in particular are:

1. introduction of new top quality examination, diagnosis and treatment facilities (X-ray related equipment);

2. creation of complete laboratory facilities (pathology);

3. upgrading and development of health care;

4. ward development;

5. preventative measures, etc.

As a result of the field survey and analysis of data, strengthening of hospital functions and provision of related construction and facilities were selected as they seemed to be appropriate for regional medical and health care service and expected to be cost-effective in terms of investments.

Actual planned scale.

In preparing the actual plan, standard scales of 100, 200 and 300 beds were first set, followed by planning for each scale in respect of buildings (central treatment, surgery, administration, services, etc.), facilities (water supply and drainage, air-conditioning and power) and medical equipment. At the same time, based on the survey of each hospital, the grade of the hospital concerned (scale of treatment and the bed capacity) was determined in the light of the population of the area covered. The improvement plan for each hospital was then formulated by coordinating these operations. The resulting proposal regarding the scale of facilities and the contents of the improvement plan for each hospital is given below.

		Current figure or ratio.
Determination of bed capacity per population.	1.5 ∿ 1.6 Beds / 1,000 persons	0.75 Beds / 1,000 persons
Floor area per bed (excluding living quarters).	35 m^2 / Bed	14 m^2 / Bed
Planned scale of treatment	Equivalent to 2,775 Beds	Approx. 250%
Planned bed capacity	3,175 Beds	2,170 Beds

Building area

Hospital section	109,000 m^2	Approx. 250%
Living quarters	21,200 m^2	
Total	130,200 m^2	

Hospital area ratio by sector (standard)

	Proposed	Current
Central treatment (ANC)	20%	15.3%
Outpatient (OPD)	10%	9.0%
Administration (ADM)	10%	17.2%
Ward (WARD)	40%	38.8%
Service (SERVICE)	20%	19.7%

I-4 PRESENT CONDITION AND THE SUPPLY PLAN OF MEDICAL EQUIPMENT

The results of the present study show that much of the equipment currently in use has passed its better years. Further, probably because they came to the hospital under UNICEF, WHO and Japanese aid programs, supplies of maintenance parts were not adequate. In addition, there is a shortage of service personnel in hospitals. As a result, they do not seem to be functioning satisfactorily.

What was also common to all the hospitals covered by the study was the insufficient power and water facilities for medical equipment.

In view of the above mentioned situation, not only a large increase in medical equipment and the establishment of a training system for handling the equipment but also provision of power and water facilities and the establishment of a maintenance system combining the appointment of a maintenance officer for each hospital and a circulating guidance service provided by the central administration will be necessary under the present plan.

The attached standard table of medical equipment has been compiled for the purpose of upgrading the capacity of medical and health service of each project hospital by a few grades.

The major diseases treated by the project hospitals may, in most cases, be placed in the category of infectious disease at present. In the near future, however, with the expansion of the public medical health service by the Philippine Department of Health and the implementation of the Hospital Development Project covered by the present study, the distribution of diseases handled by these medical facilities is expected to undergo a major change. Accordingly, the standard table contains the data in anticipation of future development.

The table has been prepared with the emphasis in the supply of medical equipment placed on the central treatment sector including higher accuracy in diagnoses, improved sterilization and disinfection, and the strengthening of surgical, post-surgical, premature birth and neo-natal sections. The present situation revealed by the study can be upgraded considerably by the table.

Normally, a public hospital development program of this kind is not implemented all at once, but is carried out in phases or by fiscal year. Accordingly, the table has been prepared on the basic assumption that as prerequisites (manpower and economic factors) for the public health care service are gradually supplied, medical equipment is either added or replaced according to the needs of each hospital for possible doubled effects.

With regard to the relationship between medical equipment and building area, the present area per bed is extremely small at 14 m^2, clearly inadequate for good health care service. However, the present plan proposes 35 m^2 per bed with planning for easy extension in the case of a change in medical load in future, medical equipment is expected to be sufficiently utilized.

Under the planned improvement in medical equipment, accuracy in medical treatment and examinations is expected to increase markedly with the strengthened central treatment, particularly in X-ray and surgery, diagnostic and pathological examinations, and sterilization, thus making the control of infectious diseases in a short period. Further, it has a sufficiently wide scope to be able to cope with diversified diseases of the advanced country type in future. (For the change in the distribution of diseases, refer to the previous section.)

1. Examples of Upgrading of Medical Equipment

Those medical equipment recommended under the present improvement plan are markedly advanced compared with the existing equipment. Specifications of the equipment for the central treatment sector which was given emphasis in planning may be outlined as below.

1) X-ray Room

(1) General X-ray apparatus.

All wave silicon rectifying system, top performance for normal fluorscopy radiography and hitention radiography with motor-driven Examining couch with exploration and shot radio graphic unit vertical horizontal, Trandentenburg positions. With bucky apparatus and floor side X-Ray tube stand.

Output. 150 KV 300 mA, 125 KV 500 mA 120 KV 4 mA

(2) X-ray apparatus for TB cases.

X-Ray Tomograph Apparatus.

(3) X-ray apparatus for gastroenterological cases.

Diagnostic X-Ray television Apparatus.

2) Sterilizer

In addition to the autoclave equipped with a large sterilization precision guarantee device, ethylene oxide gas sterilizer is to be installed at those hospitals with a bed capacity of 200 beds and above.

3) Laboratory

In addition to BHR, ECG and PCG, the standard equipment is to include Spectro photometer Electro-phoresis appratus, Fluoresence microscope.

4) Post-operative control sector

The standard equipment, based on ICU, is to include patient heart recording monitor, Automatic respirator, O^2 Tent ε.

5) Delivery Room

The equipment for neonates and premature cases is to include Infant incubalor (Regulates temprature by electronic control and automatically contorol type), Infant CPAP System (continuos positive air way pressure).

6) Operating Room

The standard equipment is to include operating table (Full automatic electro motive) Electro-surgical unit (solid state type) Anesthesia Apparatus (11" long flow meter type) Infant circle absober.

I-5 THE ALLOCATION OF HEALTH-CARE RELATED PERSONNEL

The most serious manpower problem is the shortage of physicians. The shortage is particularly acute in Region II, where the rapid deployment of physicians by administrative initiative -- eg. by putting into law the obligation for new med. school graduates to serve in regional hospitals for a fixed period of time and training them -- must be carried out.

Nurse and paramedical personnel are relatively abundant, but the development of medical facilities, introduction of medical machines and disembursement of the budget is not going smoothly. The introduction of many more radiologists, paramedical and other personnel to accompany the up-grading of the diagnosis, treatment and examination facilities ought to be considered. Maintenance personnel, especially those for maintaining medical equipment are lacking. It is an urgent task to train maintenance personnel within hospitals concordant to strengthening maintenance systems throughout the nation.

	Project hospitals' current deployment of personnel			Suggested standards			
Hosp. Scale / Type of personnel	100 bed scale average	200 bed scale average	300 bed scale average	100 bed standard	200 bed standard	300 bed standard	450 bed standard
Physician	10	20	52	11	24	41	63
Nurse	39	36	110	46	76	141	201
Paramedical	9	10	19	17	28	44	55
Key dietary personnel	7	10	17	8	13	20	26
Key service personnel	20	32	56	23	33	52	65
Key maintenance personnel	4	5	12	6	7	12	13
Key transportation personnel	1	4	2	3	3	5	5
Key administrative personnel	11	17	31	18	22	44	55
Total	89	125	264	132	206	359	483
Personnel/Bed	0.89	0.63	0.88	1.32	1.03	1.20	1.07

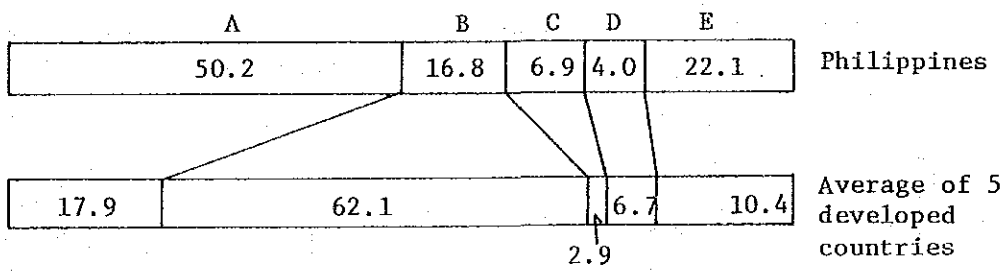
I-6 MORBIDITY STRUCTURE AND PARTICULARS OF DIAGNOSIS AND TREATMENT

° Distribution of diseases

The Philippine morbidity pattern given in the following table of the ten leading diseases and ten leading causes of death shows a classical infections disease pattern.

10 leading diseases			10 leading causes of death		
Influenza	A	33.3%	Pneumonia	A	26.3%
Gastro-enteritis and colitis	A	27.6	Tuberculosis all Forms	A	17.9
Tuberculosis (all forms)	A	15.9	Disease of the Heart	B	14.6
Pneumonia	A	10.4	Diseases of the Vascular System	B	8.2
Malaria	A	3.1	Malignant Neoplasms	B	7.6
Measles	A	2.6	Gastro-Enteritis & Colitis	A	7.0
Dysentery (all forms)	A	2.6	Avitaminosts & other Nutritional Deficiency	E	6.8
Whooping cough	A	2.5	Accidents	D	5.0
Malignant neoplasms	B	1.4	Bronchitis, Emphyserma Asthma	A+E	4.0
Infectious Hepatitis	A	0.6	Tetanus	A	2.6

Comparing this morbidity pattern with that of developed countries' shows a large difference which stresses the desireability of quickly upgrading the health-care services. Classifying the morbidity into 5 types -- A = infectious diseases, B = geriatric diseases, C = childbirth-related complic, D = externally caused injuries E = others - and comparing the 1974 ratios of causes of death broken-down by these types for the Philippines and an average of 5 developed nations gives the following:



The Philippines shows an infectious disease pattern and the developed nations a geriatric disease pattern.

o Particulars of diagnosis and treatment given the current conditions noted above, the stress in health care at high ranking hospitals needs to be strongly weighted in favor of bringing these infectious diseases to a standstill,

Concrete objectives are:

1 Infectious disease control - perfection of the examination dept. backed up by preventive activities

2 Conquering malnutrition, especially protein deficiency

3 Preparing geriatric disease countermeasures for the future

4 Measures to reduce neonatal, infant and maternal mortality

5 The increase of happy, healthy families and a proper social structure through family planning and related activities.

Moreover, EET and dental departments will definitely be added to the internal medicine, surgery, pediatrics and OB-GYNE which form the core departments at 100∿200 bed scale hospitals; and in 300 bed and up hospitals the internal medicine department will be divided into its specialities, a separate plastic surgery department will differentialed from the main surgery department and the EET department will also separate. Further, rehabilitation, will be limited to physical therapy, and ICU's will be established at 200∿300 bed scale hospitals.

o Laboratory tests and other tests

The following table gives the details on laboratory, physiological and radiological diagnosis.

(Shows how many types of examinations/tests may be given)

Examin./Tests \ Scale		Current situation at Project Hospitals (average)			Suggested Capabilities		
		100 bed	200 bed	300 bed	100 bed	200 bed	300 bed
Laboratory tests	General examination	5	6	6	6	6	6
	Blood	5	5	6	5	5	7
	Chemical	5	10	9	11	11	11
	Bacteriology	0	0	1	3	5	5
	Pathology	0	2	2	1	4	4
Diagnostic Radiology	General	3	4	4	5	5	5
	Special	1	3	4	4	6	7
	Physiological examination	1	1	1	4	6	12

The Philippine morbidity pattern resembles that of Japan's before 1947. In the case of Japan, the subsequent improvement of health care services resulted in halving the incidence of infectious disease within several years, with the pattern thus shifting to a geriatric one after 1955. Together with this change in the morbidity, the mortality rate diminished, with it dropping by about 1/2 in the 3 years between 1947 and 1950 (900/100,000 → ≒ 400/100,000).

The result of this development program may be expected to be similar to that in Japan because diagnosis and treatment are stressed.

I-7 PROPOSED STANDARDIZATION OF MEDICAL CARE FACILITIES (including the review of the Philippine standard).

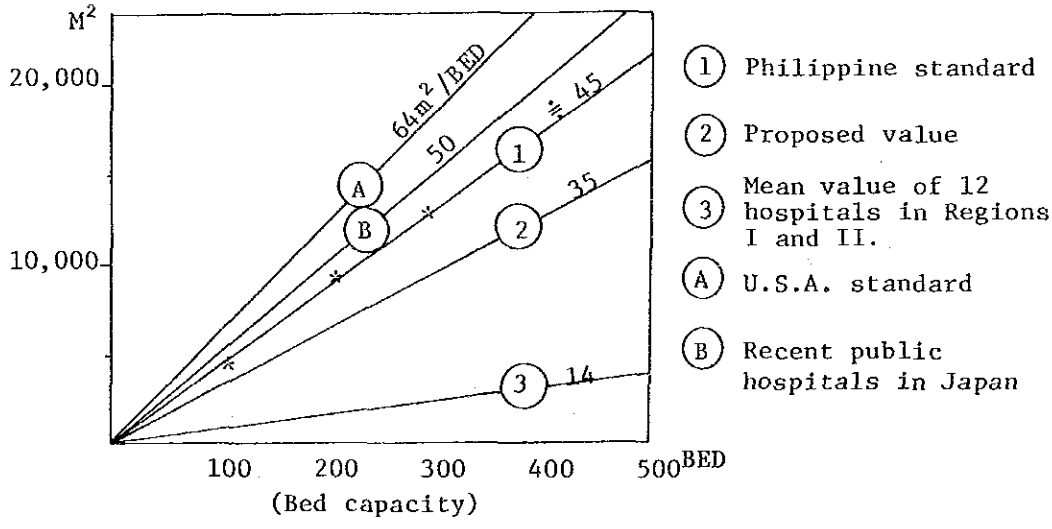
In connection with the planned improvement in government hospitals in Region I and II, the Philippine Department of Health has proposed standardization covering from soft ware such as the contents of medical care service to hard ware such as buildings and medical equipment prior to the nation-wide application.

The Japanese side has conducted a detailed study of 19 hospitals and planned for hard ware such as buildings and facilities. At the same time, the scale of hospital facilities, allocation of personnel, medical departments, examination items, medical equipment, etc. have been examined with a view to standardization. Since these have been outlined in 04-06, this section will be devoted to the determination of standards for construction and the scale of construction, and to the examination of the standardization of construction and facilities.

1. Determination of the Hospital Scale

Since the building area per bed is an important factor in ascertaining the scale of a hospital, the present condition of the Philippine project hospitals, the Philippine Department of Health standard, the U.S. standard and Japanese public hospitals have been compared. (Figure below.)

According to the comparative study, the floor area per bed at the Philippine project hospitals is extremely small at = 14 m^2 compared with 45 m^2 recommended by the Philippine Department of Health and 50 m^2 at recently constructed public hospitals in Japan.



1) Scale

As a result of the analysis of the present condition at the Philippine project hospitals and the medical environment of each hospital, it has been decided to set the standard scale at 35 m^2.

2) Sectors and the area ratio by sector

Hospital functions have been classified into Ward, Outpatient Department, Central Treatment Department, Administration, Service I and Service II. The table below gives the area ratio by sector, which corresponds approximately to that at public hospitals in Japan.

Departments	Proportion	(Reference: Public Hospitals in Japan)
WARD	40%	42%
O.P.D.	10%	13%
ANC	20%	18%
ADM	10%	8%
SERVICE-1, -2	20%	19%
	100%	100%

3) Standardization of buildings and facilities

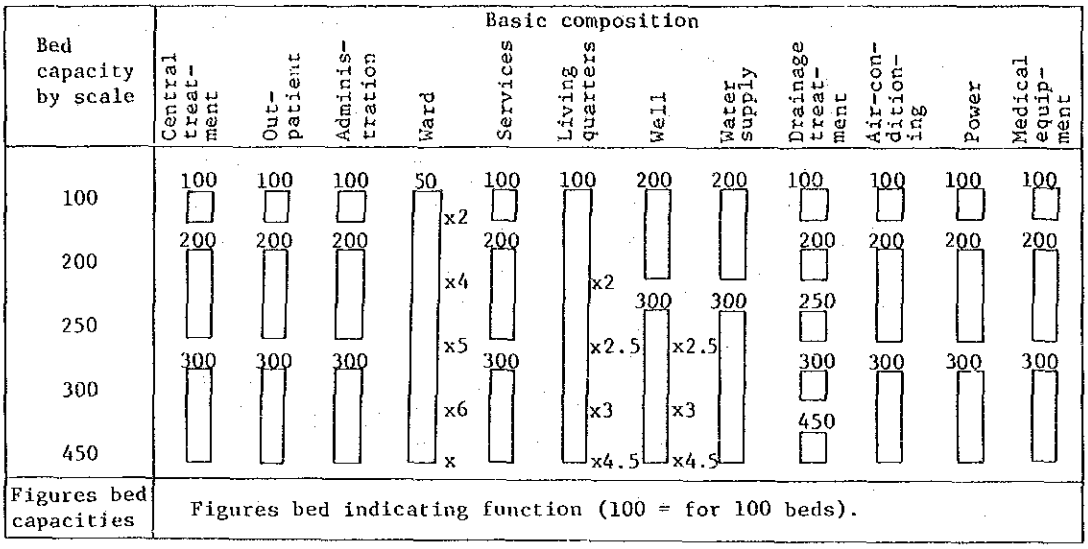
Standard capacities of hospital buildings are to be 100, 200 and 300 bed. Since the hospitals are to be built in the tropics, they are to have the architectural form of the single-corridor type with a sunshade provided on the concrete roof. The standard span is 6.0m × 5.4m with both ends of the building constructed for easy extension in future. It is to be single-storied for 100 beds and two-storied for 201-450 beds. The plan is shown on the next page.

In addition, service sector and living quarters for physicians and nurses are to be standardized.

4) Standardization of water supply, drainage and power facilities

With regard to water source, terminal treatment and power source, the facilities are classified by bed capacity, e.g., 100, 200, 300 and 450 beds, for the standardization within the classification.

5) Functional unit composition and structural composition of each hospital



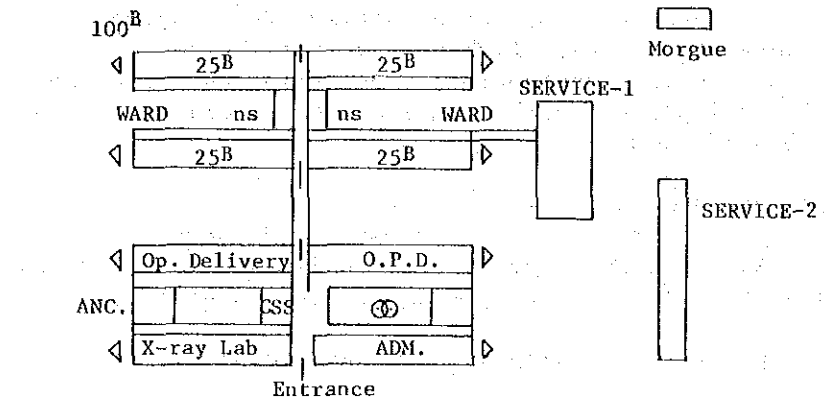
6) Effects of standardization

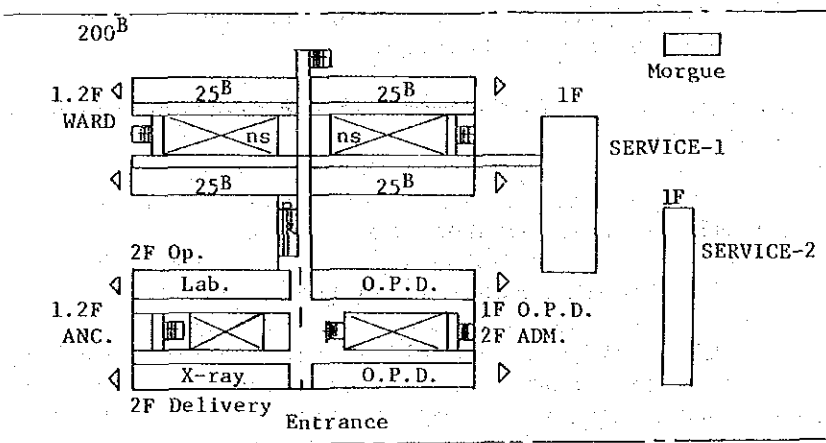
- o The standardization of medical functions (facilities, medical equipment, manpower) has marked effects in the standardization of wide-ranging medical service, organic services and mutual assistance.

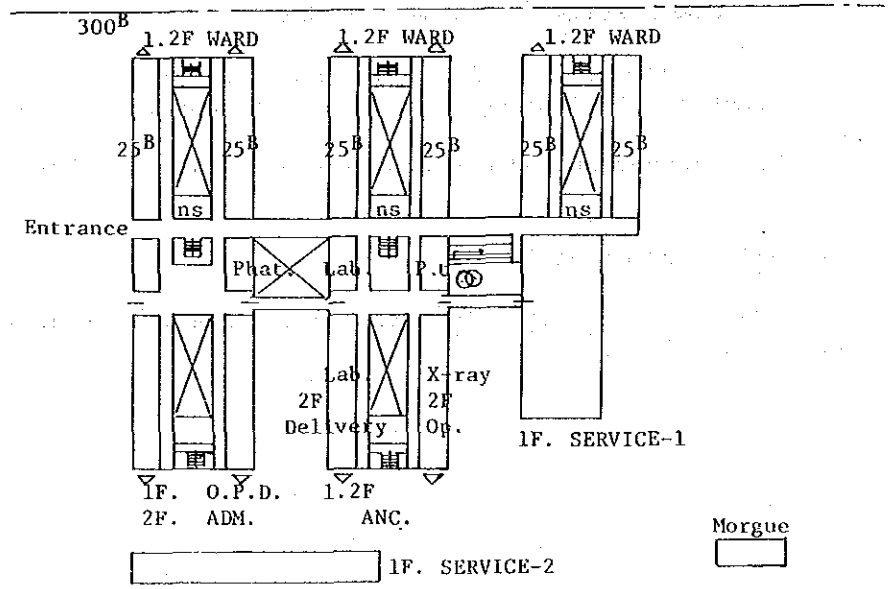
- o The standardization of hardware is extremely advantageous in productivity, workability, interchangeability, handling, prices and repairs, and is to construct the basis of stable medical care service together with the standardization of functions.

◁Indicates the direction of scheduled extension.

Composition of the departments according to the standard plans of 100B, 200B and 300B is shown below.







2. Specific Hospital Development Plan

In respect to the above-mentioned 5 ∿ 9 Philippine health care services, while the Philippine standards are highly regarded, upon analysis of the findings of the field studies, the make-up, scale and form of buildings, etc. of the hospitals providing regional health care services was established as written below. Still, these suggested standards are substantial, considering that the present conditions in Philippine health care are not especially high by international standards.

1) Strengthened Policies

As the control of infectious disease is the first objective, the following measures are to be carried out.

- o Improvement of diagnosis and treatment -

  (the control of infectious disease through up-grading the hospital by developing appropriate examination, diagnosis and treatment)

- o Construction of improvement of the drainage and water supply system -

  (to prevent the spread of contagion within and in the vicinity of the hospital)

- o Installation of electrical equipment -

  (installing a special circuit to ensure quality control of the vaccine, medicines and specimens, and the provision of electrical equipment for other diagnosis and treatment uses)

In addition to the above, the improvement and construction of accommodation to attract and keep physicians.

- o The improvement and construction of living quarters -

2) Establishment of Scale

The study resulted in establishing the following as proposed values:

	Alternative Plan I	Alternative Plan II
o Floor area/bed (not including personnel quarters)	35 m^2	30 m^2
o Planned scale of treatment	Equivalent to 2,775 beds	same as on left
o Planned bed capacity	3,175	2,900
o Building area-hospital	109,000 m^2	95,000 m^2
- personnel accommodation	21,200 m^2	15,000 m^2
- Total	130,200 m^2	110,000 m^2

3) Energy conservation measures

With petroleum and other energy resources being in scant supply, the minimization of operating expenses and particularly the conservation of energy by public facilities is taken into consideration for planning purposes. Concretely speaking, plan for the adoption of one-story building with well ventilated (flow-through) rooms, making air conditioning unnecessary, and aside from a special electrical circuit for the refrigerators, electrical equipment using a minimum amount of energy through use of parallel electrical systems are to be implemented.

4) Development Outline - 19 Hospital Breakdown

Project Grade of Hospitals
(Planned scale of each hospital)

( ) The figures within Parenthesis are for Plan II

No.	HOSPITAL NAME	(BED) STANDARD GRADE		FLOOR AREA (m^2)			(BED) MEDICAL EQUIP. GRADE	WATER SUPPLY L/D·B	ELECTRIC POWER KVA	SATISFACTION RATE (%)	
		ANC	WARD	HOSPITAL	DOCTOR QUATER DORMITORY ETC.	TOTAL				BLDG.	FUNCTION
I-1	Pangasinan MC.	300 (300)	450 (450)	13,960 (13,210)	3,860 (2,340)	17,820 (15,550)	300	800 (400)	530 (430)	102 (89)	100 (60)
2	Bontoc P.H.	100 (100)	100 (100)	3,460 (†)	1,080 (770)	4,540 (4,230)	100	500 (300)	255 (180)	100 (93)	100 (60)
3	Baguio MC.	300 (300)	450 (250)	16,340 (9,370)	Unknown (†)	16,340 (9,370)	300	800 (400)	530 (430)	93 (-)	100 (62)
4	Benguet P.H.	100 (100)	100 (100)	4,260 (4,120)	1,020 (930)	5,280 (5,050)	100	500 (300)	255 (180)	116 (110)	100 (63)
5	La Union R.H.	200 (200)	250 (250)	8,010 (6,830)	1,680 (1,220)	9,690 (8,030)	200	800 (400)	405 (330)	101 (83)	100 (61)
6	Abra P.H.	100 (100)	100 (100)	2,910 (†)	1,070 (650)	3,980 (3,560)	100	500 (300)	255 (180)	87 (78)	100 (64)
7	Gabriela Silang P.H.	100 (100)	100 (100)	3,590 (3,410)	970 (660)	4,560 (4,070)	100	500 (300)	255 (180)	100 (89)	100 (64)
8	Don Mariano Marcos M.H.	150 (150)	100 (100)	6,830 (†)	1,130 (†)	7,900 (†)	200	500 (300)	255 (180)	134 (-)	100 (64)
9	Ilocos Norte P.H.	200 (200)	200 (200)	6,200 (4,650)	510 (†)	6,710 (5,160)	200	500 (300)	405 (330)	77 (59)	100 (70)
II-1	Cagayan R.H.	300 (300)	300 (300)	10,700 (10,140)	2,630 (1,740)	13,330 (11,880)	300	800 (500)	530 (430)	100 (89)	100 (70)
2	Cagayan M.H.	M100 (100)	150 (100)	2,340 (1,550)	- (-)	2,340 (1,550)	M100	- (-)	- (-)	- (-)	- (-)
3	Kalinga Apayao P.H.	100 (100)	100 (100)	3,700 (3,180)	970 (800)	4,670 (3,980)	100	500 (300)	255 (180)	102 (87)	100 (64)
4	Cagayan P.H.	100 (100)	100 (100)	3,590 (3,410)	970 (660)	4,560 (4,070)	100	500 (300)	255 (180)	100 (-)	100 (64)
5	Isabela P.H.	100 (100)	150 (150)	5,000 (4,890)	1,020 (670)	6,020 (5,560)	100	500 (300)	255 (180)	113 (103)	100 (64)
6	Quirino P.H.	100 (100)	100 (100)	3,730 (3,370)	1,010 (660)	4,740 (4,030)	100	500 (300)	255 (180)	104 (88)	100 (64)
7	Ifugao P.H.	100 (100)	100 (100)	3,810 (†)	1,030 (660)	4,840 (4,470)	100	500 (300)	255 (180)	106 (98)	100 (64)
8	Maj. Marcos V.H.	150 (150)	150 (150)	5,300 (†)	1,140 (740)	6,440 (6,040)	200	500 (300)	255 (180)	103 (-)	100 (64)
9	Nueva Vizcaya P.H.	100 (100)	100 (75)	3,090 (2,400)	1,070 (880)	4,160 (3,280)	100	500 (300)	255 (180)	91 (72)	100 (64)
10	Batanes P.H.	75 (75)	75 (75)	2,200 (†)	- (-)	2,200 (†)	100	500 (300)	255 (180)	48 (†)	100 (64)

MEDICAL EQUP. GRADE — Bed grade of correspondence to bed number

WATER SUPPLY GRADE — Supply water pump capacity

ELECTRICAL GRADE — Electric Power Capacity

$$\text{Satisfaction rate} = \frac{\text{new construction area}(m^2)+\text{renovation area}(m^2)+\text{using area of old facilities}(m^2)}{\text{Standard area}(m^2)} \times 100(\%)$$

(†) Same as above listed

I-8 MAINTENANCE PLAN

For the implementation of this hospital development project sufficient and adequate maintenance plan of buildings, and facilities is necessary to maintain the hospital function. In the field surveyed hospitals the actual conditions of buildings, facilities & medical equipments are in most cases insufficient and therefor it is strongly advisable to establish the maintenance system, the maintenance expert personnels and the maintenance method.

1. Maintenance Plan for Buildings and Facilities

For these maintenance work, daily, weekly, monthly and annual regular consolidations (ordinary overhaul, regular overhaul) and repairs are necessary for each building part (structural part, roof, fixture, exterior and interior finish etc.) electrical equipment part, airconditioning part, water work equipment part and medical equipment part.

Following are examples of building maintenance.

Structural Part

subsidance, crack	:	annual check
neutralization, seismic proof)	:	every 5 years overhaul

Roof

leakage of water, crack corrosion, gutter clogging	:	monthly overhaul

Fixture

aluminum, steel doors and windows	:	annual overhaul

Interior and Exterior Finish : monthly ∿ 2/year overhaul

Maintenance System of buildings, facilities and medical equipments is shown in Page I-33.

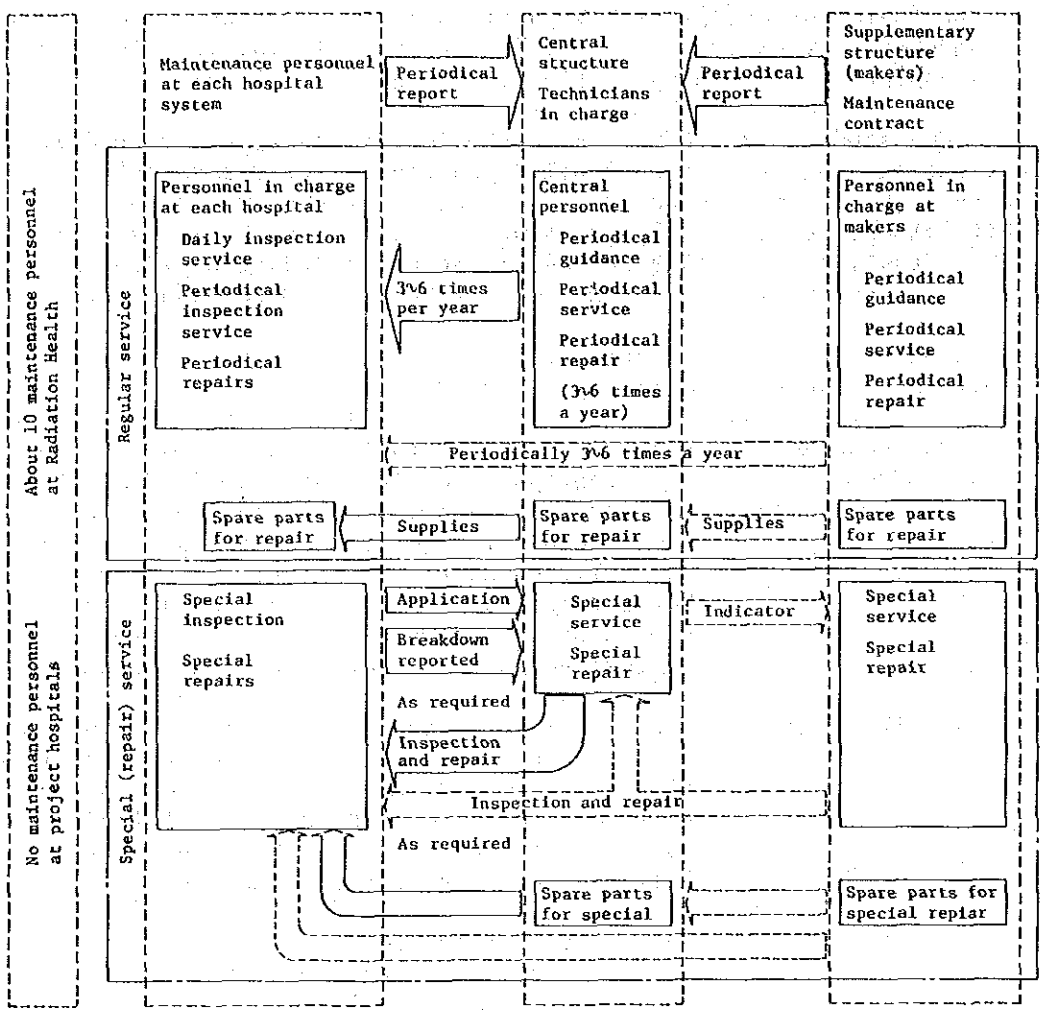
2. Maintenance Plan for Medical Equipment

The present survey reveraled that some of the facilities and medical equipment were left unrepaired due to the lack of spare parts, skills and technicians. Since the present improvement plan proposes upgrading on a large scale of facilities, particularly equipment and medical equipment, it may result in effective functioning of these equipments. Improvement in service organization is thus proposed as shown by the figure below in respect of training in handling method, allocation of maintenance personnel to each hospital, improvement in central structure, recruitment of manpower, maintenance contract with makers, securing of spare parts, etc.

With the provision of the maintenance system, the hospital functions to be upgraded under the existing and the present plans will be able to build up the basis for maintaining adequate functions.

Under DOH's current service system, there are no maintenance personnel except at two or three large scale hospitals, and there are only about ten technicians in Manila forming the central structure of the national service.

Proposed structure of the facilities and medical equipment maintenance service



* Number of personnel based on the standard proposed by the Japanese side.

I-9 CASE STUDY FOR THE CONSTRUCTION IMPLEMENTATION PLAN

The present development plan is formulated based on the Philippine Standard, analysis of the Philippine data and the results of the field survey, placing emphasis on the actual aspect of health and medical care services of the Philippines; it is, therefore, in many aspects below the Philippine Standard.

The study of the ratio to an the impact on capital expenditure, current expenditure and national expenditures shows favorable results. However, Development Plan is not so small for the expenditure of the Philippines, and total capital expenditure will amount to 952 million pesos (early August, 1979 at the moment of the additional field survey), for the implementation of the Hospital Development Project.

Following two alternative plans (I & II) are studied in this report as implementation plans.

ALTERNATIVE PLAN I : Plan for implementing the entire contents of the Development Project at once (5 years term) and includes as a principle the constructions of the central function of the hospital, like central treatment, laboratory, OPD, ADM, Service section and additional wards, and also the supply and development of sufficient medical equipments, water and power facilities.

ALTERNATIVE PLAN II: The plan is made to reduce capital expenditure at the initial stage and includes the construction of minimized facilities at once (5 years term) and supplement the additional facilities continuously and as phase by phase investment. Following are contents of this plan.

1) In principle construct new facilities of central treatment, service section and other necessary minimum facilities.

   For other sections existing facilities are reused as much as possible after renovation.

2) Cut-off the non-essential medical equipment and existing beds and other furniture are used again but supply lacking furnitures.

3) Minimize the capacities of mechanical and electrical facilities.

   water work facilities 50%
   electrical facilities 75%
   compared to the alternative plan I.

The gaps between plan I & II shall be supplemented as soon as possible in future as a second phase project.

During these two phases, the shortage which will be caused by super-annuated facilities and medical equipments shall be supplemented continously due to the actual aspect of each hospital.

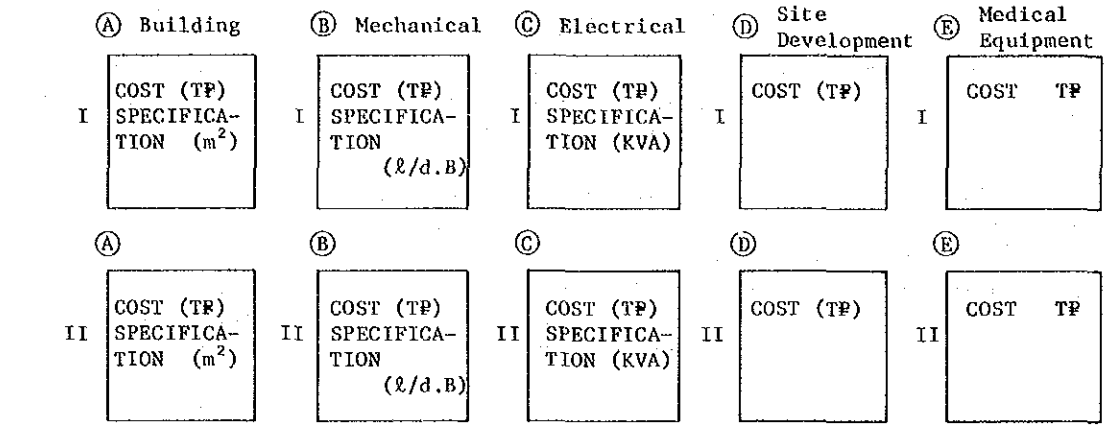
The cost estimate of this project is made on the following condition:

The cost for Alternative Plan I is total cost of the project, and the cost for Alternative Plan II is the cost of I phase of total project.

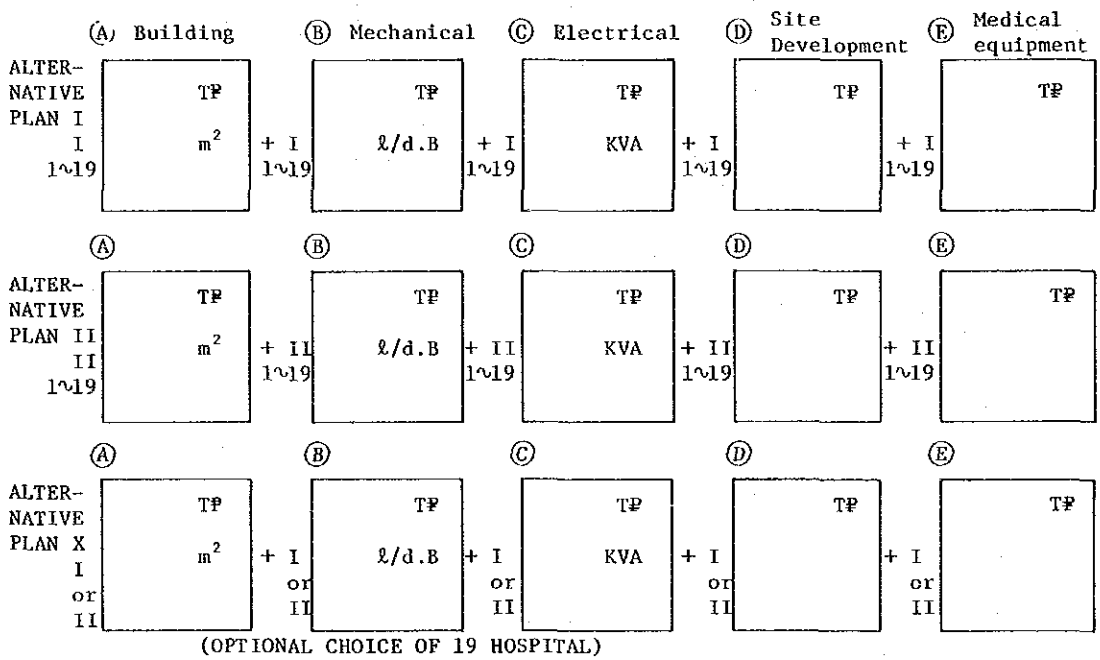
Above mentioned Alternative Plan I, II are combinations of following construction cost by hospital. And in addition to the Alternative Plan I & II the Plan X is possible with optional choice of each hospital by necessity and therefore wide range of selective possibilities are available as the capital outlay for the initial stage.

Cost Components by Hospital

₱ = Thousand Pesos



Composition



(OPTIONAL CHOICE OF 19 HOSPITAL)

Construction Cost by Hospital

NOTE; INDIRECT COST LIKE CONTINGENCY etc. are included in each cost component in the proportion of each cost component.

Pangasinan MC

	Ⓐ Building	Ⓑ Mechanical	Ⓒ Electrical	Ⓓ Site Development	Ⓔ Medical Equipment
I	66,848 TP 17,820 m²	24,162 TP 800 ℓ/d.B	14,329 TP 530 KVA	3,472 TP	18,748 TP
II	Ⓐ 58,011 TP 15,550 m²	Ⓑ 17,663 TP 400 ℓ/d.B	Ⓒ 8,068 TP 430 KVA	Ⓓ 3,476 TP	Ⓔ 11,025 TP

Bontoc P.H.

	Ⓐ Building	Ⓑ Mechanical	Ⓒ Electrical	Ⓓ Site Development	Ⓔ Medical Equipment
I	7,709 TP 4,540 m²	10,308 TP 500 ℓ/d.B	5,249 TP 255 KVA	107 TP	7,605 TP
II	Ⓐ 6,575 TP 4,230 m²	Ⓑ 7,910 TP 300 ℓ/d.B	Ⓒ 3,149 TP 180 KVA	Ⓓ 103 TP	Ⓔ 4,504 TP

Baguio M.H.

	Ⓐ Building	Ⓑ Mechanical	Ⓒ Electrical	Ⓓ Site Development	Ⓔ Medical Equipment
I	35,351 TP 16,340 m²	9,308 TP 800 ℓ/d.B	9,811 TP 530 KVA	318 TP	18,729 TP
II	Ⓐ 7,696 TP 9,370 m²	Ⓑ 7,287 TP 400 ℓ/d.B	Ⓒ 3,050 TP 430 KVA	Ⓓ 0 TP	Ⓔ 12,205 TP

Benguet P.H.

	Ⓐ Building	Ⓑ Mechanical	Ⓒ Electrical	Ⓓ Site Development	Ⓔ Medical Equipment
I	17,966 TP 5,280 m²	10,555 TP 500 ℓ/d.B	6,536 TP 255 KVA	2,221 TP	7,551 TP
	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
II	16,696 TP 5,050 m²	8,166 TP 300 ℓ/d.B	3,709 TP 180 KVA	2,224 TP	4,190 TP

La Union R.H.

	Ⓐ Building	Ⓑ Mechanical	Ⓒ Electrical	Ⓓ Site Development	Ⓔ Medical Equipment
I	29,738 TP 9,690 m²	19,511 TP 800 ℓ/d.B	8,579 TP 405 KVA	1,979 TP	11,846 TP
	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
II	20,934 TP 8,030 m²	14,951 TP 400 ℓ/d.B	5,359 TP 330 KVA	1,982 TP	8,031 TP

Abra P.H.

	Ⓐ Building	Ⓑ Mechanical	Ⓒ Electrical	Ⓓ Site Development	Ⓔ Medical Equipment
I	11,306 TP 3,980 m²	10,868 TP 500 ℓ/d.B	5,483 TP 255 KVA	78 TP	7,546 TP
	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
II	10,139 TP 3,560 m²	8,482 TP 300 ℓ/d.B	3,797 TP 180 KVA	78 TP	4,187 TP

Gabriela Silang P.H.

	Ⓐ Building	Ⓑ Mechanical	Ⓒ Electrical	Ⓓ Site Development	Ⓔ Medical Equipment
I	18,119 TP 4,560 m²	10,677 TP 500 ℓ/d.B	6,013 TP 255 KVA	1,051 TP	7,551 TP
II	16,232 TP 4,070 m²	8,291 TP 300 ℓ/d.B	3,782 TP 180 KVA	1,051 TP	4,190 TP

Don Mariano Marcos M.H.

	Ⓐ Building	Ⓑ Mechanical	Ⓒ Electrical	Ⓓ Site Development	Ⓔ Medical Equipment
I	294 TP 7,960 m²	7,415 TP 500 ℓ/d.B	4,160 TP 255 KVA	398 TP	9,946 TP
II	294 TP 7,960 m²	5,336 TP 300 ℓ/d.B	2,291 TP 180 KVA	398 TP	8,723 TP

Ilocos Norte P.H.

	Ⓐ Building	Ⓑ Mechanical	Ⓒ Electrical	Ⓓ Site Development	Ⓔ Medical Equipment
I	20,985 TP 6,710 m²	13,605 TP 500 ℓ/d.B	7,281 TP 405 KVA	175 TP	11,384 TP
II	12,939 TP 5,160 m²	10,425 TP 300 ℓ/d.B	4,291 TP 330 KVA	175 TP	6,148 TP

Cagayan R.H.

	Ⓐ Building	Ⓑ Mechanical	Ⓒ Electrical	Ⓓ Site Development	Ⓔ Medical Equipment
I	53,541 TP 13,330 m²	20,582 TP 800 ℓ/d.B	9,491 TP 530 KVA	1,931 TP	18,124 TP
II	Ⓐ 48,231 TP 11,880 m²	Ⓑ 15,643 TP 500 ℓ/d.B	Ⓒ 5,665 TP 430 KVA	Ⓓ 1,934 TP	Ⓔ 12,060 TP

Cagayan Mental H.

	Ⓐ Building	Ⓑ Mechanical	Ⓒ Electrical	Ⓓ Site Development	Ⓔ Medical Equipment
I	5,021 TP 2,340 m²	1,919 TP ℓ/d.B	473 TP KVA	222 TP	4,229 TP
II	Ⓐ 1,871 TP 1,550 m²	Ⓑ 1,051 TP ℓ/d.B	Ⓒ 276 TP KVA	Ⓓ 172 TP	Ⓔ 1,915 TP

Kalinga Apayao P.H.

	Ⓐ Building	Ⓑ Mechanical	Ⓒ Electrical	Ⓓ Site Development	Ⓔ Medical Equipment
I	13,502 TP 4,670 m²	11,584 TP 500 ℓ/d.B	6,388 TP 255 KVA	748 TP	7,697 TP
II	Ⓐ 10,271 TP 3,980 m²	Ⓑ 9,117 TP 300 ℓ/d.B	Ⓒ 3,744 TP 180 KVA	Ⓓ 750 TP	Ⓔ 4,277 TP

Cagayan P.H.

	Ⓐ Building	Ⓑ Mechanical	Ⓒ Electrical	Ⓓ Site Development	Ⓔ Medical Equipment
I	18,387 TP 4,560 m²	10,886 TP 500 ℓ/d.B	6,144 TP 255 KVA	1,178 TP	7,698 TP
	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
II	16,540 TP 4,070 m²	8,448 TP 300 ℓ/d.B	3,854 TP 180 KVA	1,179 TP	6,260 TP

Isabela P.H.

	Ⓐ Building	Ⓑ Mechanical	Ⓒ Electrical	Ⓓ Site Development	Ⓔ Medical Equipment
I	16,325 TP 6,020 m²	14,730 TP 500 ℓ/d.B	8,483 TP 255 KVA	876 TP	8,122 TP
	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
II	12,707 TP 5,560 m²	11,360 TP 300 ℓ/d.B	5,940 TP 180 KVA	877 TP	5,411 TP

Quirino P.H.

	Ⓐ Building	Ⓑ Mechanical	Ⓒ Electrical	Ⓓ Site Development	Ⓔ Medical Equipment
I	15,813 TP 4,740 m²	14,574 TP 500 ℓ/d.B	8,122 TP 255 KVA	656 TP	7,696 TP
	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
II	12,992 TP 4,030 m²	12,118 TP 300 ℓ/d.B	6,159 TP 180 KVA	639 TP	3,476 TP

Ifugao P.H.

	Ⓐ Building	Ⓑ Mechanical	Ⓒ Electrical	Ⓓ Site Development	Ⓔ Medical Equipment
I	17,478TP 4,840m²	11,227TP 500ℓ/d.B	8,788TP 255KVA	1,268TP	7,694TP
II	15,688TP 4,470m²	8,753TP 300ℓ/d.B	6,461TP 180KVA	1,270TP	4,271TP

Maj. F. Marcos Veteran M.H.

	Ⓐ Building	Ⓑ Mechanical	Ⓒ Electrical	Ⓓ Site Development	Ⓔ Medical Equipment
I	6,396TP 6,400m²	12,277TP 500ℓ/d.B	7,523TP 255KVA	1,695TP	10,510TP
II	5,067TP 6,040m²	8,892TP 300ℓ/d.B	6,162TP 180KVA	1,698TP	8,552TP

Nueva Vizcaya P.H.

	Ⓐ Building	Ⓑ Mechanical	Ⓒ Electrical	Ⓓ Site Development	Ⓔ Medical Equipment
I	11,594TP 4,160m²	10,247TP 500ℓ/d.B	7,261TP 255KVA	323TP	7,687TP
II	8,025TP 3,280m²	7,829TP 300ℓ/d.B	5,858TP 180KVA	283TP	3,986TP

Batanes P.H.

	Ⓐ Building	Ⓑ Mechanical	Ⓒ Electrical	Ⓓ Site Development	Ⓔ Medical Equipment
I	7,067 TP 2,200 m^2	9,323 TP 500 ℓ/d.B	7,531 TP 255 KVA	68 TP	7,719 TP
II	7,133 TP 2,200 m^2	6,984 TP 300 ℓ/d.B	5,916 TP 180 KVA	68 TP	3,582 TP

PLAN (I) COST FOR EACH HOSPITAL

(₱1,000)

	Hospital	Standard Grade (Bed) ANC	WARD	A Building	B Mechanical	C Electrical	D Site Development	E Medical Equipment	F Miscellaneous = γG+0.65H+δ	α% (γG)	G = A+B+C+D	H = G+E (0.65H)	δ	Ⓐ = A(1+F/H)	Ⓑ = B(1+F/H)	Ⓒ = C(1+F/H)	Ⓓ = D(1+F/H)	Ⓔ = E(1+F/H)	Total = A+B+C+D+E+F = Ⓐ+Ⓑ+Ⓒ+Ⓓ+Ⓔ
	450[B] Standard	300	450																
	300[B] Standard	300	300																
	200[B] Standard	200	200																
	100[B] Standard	100	100																
I	1. Pangasinan MC	300	450	40,103	14,495	8,596	2,083	11,247	51,034	1.5% (979)	65,277	(49,741) 76,524	314	66,848	24,162	14,329	3,472	18,748	127,559
	2. Bontoc PH	100	100	4,590	6,137	3,125	64	4,528	12,535	3.0 (417)	13,916	(11,989) 18,444)	129	7,709	10,308	5,249	107	7,605	30,978
	3. Baguio MC	300	450	21,229	5,590	5,892	191	11,247	29,368	1.5 (494)	32,902	(28,697) 44,149	177	35,351	9,308	9,811	318	18,729	73,517
	4. Benguet PH	100	100	10,773	6,329	3,919	1,332	4,528	17,949	1.5 (335)	22,353	(17,473) 26,881	141	17,966	10,555	6,536	2,221	7,551	44,829
	5. La Union RH	200	250	17,834	11,701	5,145	1,187	7,104	28,683	1.5 (538)	35,867	(27,939) 42,971	214	29,738	19,511	8,579	1,979	11,846	71,653
	6. Abra PH	100	100	6,784	6,521	3,290	47	4,528	14,112	1.5 (250)	16,642	(13,761) 21,170	101	11,306	10,868	5,483	78	7,546	35,281
	7. Gabriela Silang PH	100	100	10,866	6,403	3,606	630	4,528	17,778	1.5 (323)	21,505	(16,921) 26,033	134	18,119	10,677	6,013	1,051	7,551	43,411
	8. Don Mariano Marcos MH	150	100	177	4,469	2,507	240	5,994	8,827	1.5 (111)	7,393	(8,702) 13,387	14	294	7,415	4,160	398	9,946	22,213
	9. Ilocos Norte PH	200	200	12,586	8,160	4,367	105	6,828	21,385	1.5 (378)	25,218	(20,830) 32,046	177	20,985	13,605	7,281	175	11,384	53,430
II	1. Cagayan RH	300	300	31,500	12,109	5,584	1,136	10,663	42,677	5.4(2,718)	50,329	(39,645) 60,992	314	53,541	20,582	9,491	1,931	18,124	103,669
	2. Cagayan Mental H	100	150	2,980	1,139	281	132	2,510	4,822	5.4 (245)	4,532	(4,577) 7,042	0	5,021	1,919	473	222	4,229	11,864
	3. Kalinga-Apayao PH	100	100	7,943	6,815	3,758	440	4,528	16,435	5.4(1,024)	18,956	(15,265) 23,484	149	13,502	11,584	6,388	748	7,697	39,919
	4. Cagayan PH	100	100	10,815	6,403	3,614	693	4,528	18,240	5.4(1,162)	21,525	(16,934) 26,053	144	18,387	10,886	6,144	1,178	7,698	44,293
	5. Isabela PH	100	150	9,601	8,663	4,989	515	4,777	19,990	5.4(1,283)	23,768	(18,554) 28,545	153	16,325	14,730	8,483	876	8,122	48,536
	6. Quirino PH	100	100	9,304	8,575	4,779	386	4,528	19,288	5.4(1,244)	23,044	(17,922) 27,572	122	15,813	14,574	8,122	656	7,696	46,861
	7. Ifugao PH	100	100	10,286	6,607	5,172	746	4,528	19,116	5.4(1,232)	22,811	(17,770) 27,339	114	17,478	11,227	8,788	1,268	7,694	46,455
	8. Maj. F. Marcos MH	150	150	3,758	7,213	4,420	996	6,175	15,839	5.4 (885)	16,387	(14,665) 22,562	289	6,396	12,277	7,523	1,695	10,510	38,401
	9. Nueva Vizcaya PH	100	100	6,829	6,036	4,277	190	4,528	15,252	5.4 (936)	17,332	(14,209) 21,860	107	11,594	10,247	7,261	323	7,687	37,112
	10. Batanes PH	75	75	4,062	5,359	4,329	39	4,437	13,482	11.2(1,544)	13,789	(11,847) 18,226	91	7,067	9,323	7,531	68	7,719	31,708
	Total			222,020	138,724	81,650	11,152	111,734	386,412	(16,098)	453,546	(367,441) 565,280	2,884	373,440	233,758	137,645	18,764	188,082	951,689

· Based on the prices of August 1 '79

$F = \alpha(A+B+C+D+E) + \beta(A+B+C+D+E) + \gamma(A+B+C+D) + \delta$
$= (\alpha+\beta)(A+B+C+D+E) + \gamma(A+B+C+D) + \delta = \gamma G+0.65H+\delta$

H: Facility G: Civil work

α: Arch, & Engineering 10% + Consultant fee 5% + Supervision 5% + Administration 5% = 25%
β: Physical Contingency 10% + Price Contingency 30% = 40%
γ: Local revise (1.5%, 3.0%, 5.4%, 11.2%)
δ: Surveying & Subsoil exploration + Water Source and Quality Survey.
α + β = 65%

PLAN (II) COST FOR EACH HOSPITAL

(₱1,000)

	Hospital	Standard Grade (Bed) ANC	Standard Grade (Bed) WARD	A Building	B Mechanical	C Electrical	D Site Development	E Medical Equipment	F Miscellaneous = γG+0.65H+δ	α% (γG)	G = A+B+C+D	H = G+E (0.65H)	δ	Ⓐ = A(1+F/H)	Ⓑ = B(1+F/H)	Ⓒ = C(1+F/H)	Ⓓ = D(1+F/H)	Ⓔ = E(1+F/H)	Total = A+B+C+D+E+F = Ⓐ+Ⓑ+Ⓒ+Ⓓ+Ⓔ
	450B Standard	300	450																
	300B Standard	300	300																
	200B Standard	200	200																
	100B Standard	100	100																
I	1. Pangasinan MC	300	450	34,765	10,585	4,835	2,083	6,607	39,367	1.5% (784)	52,268	(38,269) 58,875	314	58,011	17,663	8,068	3,476	11,025	98,243
	2. Bontoc PH	100	100	3,905	4,698	1,870	61	2,675	9,031	3.0 (316)	10,534	(8,586) 13,209	129	6,575	7,910	3,149	103	4,504	22,241
	3. Baguio MC	300	250	4,612	4,367	1,828	0	7,314	12,118	1.5 (162)	10,807	(11,779) 18,121	177	7,696	7,287	3,050	0	12,205	30,238
	4. Benguet PH	100	100	9,998	4,890	2,221	1,332	2,509	14,036	1.5 (277)	18,441	(13,618) 20,950	141	16,696	8,166	3,709	2,224	4,190	34,985
	5. La Union RH	200	250	12,538	8,955	3,210	1,187	4,810	20,557	1.5 (388)	25,890	(19,955) 30,700	214	20,934	14,951	5,359	1,982	8,031	51,257
	6. Abra PH	100	100	6,075	5,082	2,275	47	2,509	10,695	1.5 (202)	13,479	(10,392) 15,988	101	10,139	8,482	3,797	78	4,187	26,683
	7. Gabriela Silang PH	100	100	9,721	4,965	2,265	630	2,509	13,457	1.5 (264)	17,581	(13,059) 20,090	134	16,232	8,291	3,782	1,051	4,190	33,546
	8. Don Mariano Marcos MH	150	100	177	3,217	1,381	240	5,259	6,767	1.5 (75)	5,015	(6,678) 10,274	14	294	5,336	2,291	398	8,723	17,042
	9. Ilocos Norte PH	200	200	7,743	6,239	2,568	105	3,679	13,644	1.5 (250)	16,655	(13,217) 20,334	177	12,939	10,425	4,291	175	6,148	33,978
II	1. Cagayan RH	300	300	28,328	9,188	3,327	1,136	7,083	34,471	5.4(2,267)	41,979	(31,867) 49,062	314	48,231	15,643	5,665	1,934	12,060	83,533
	2. Cagayan Mental H	100	100	1,111	624	164	102	1,137	2,148	5.4 (108)	2,001	(2,040) 3,138	0	1,871	1,051	276	172	1,915	5,285
	3. Kalinga-Apayao PH	100	100	6,025	5,348	2,196	440	2,509	11,642	5.4 (756)	14,009	(10,737) 16,518	149	10,271	9,117	3,744	750	4,277	28,159
	4. Cagayan PH	100	100	9,721	4,965	2,265	693	3,679	14,957	5.4 (953)	17,644	(13,860) 21,323	144	16,540	8,448	3,854	1,179	6,260	36,281
	5. Isabela PH	100	150	7,461	6,670	3,488	515	3,177	14,984	5.4 (979)	18,134	(13,852) 21,311	153	12,707	11,360	5,940	877	5,411	36,295
	6. Quirino PH	100	100	7,622	7,109	3,613	375	2,039	14,626	5.4(1,011)	18,719	(13,493) 20,758	122	12,992	12,118	6,159	639	3,476	35,384
	7. Ifugao PH	100	100	9,212	5,140	3,794	746	2,508	15,044	5.4(1,020)	18,892	(13,910) 21,400	114	15,688	8,753	6,461	1,270	4,271	36,443
	8. Maj. F. Marcos MH	150	150	2,972	5,215	3,614	996	5,016	12,558	5.4 (691)	12,797	(11,578) 17,813	289	5,067	8,892	6,162	1,698	8,552	30,371
	9. Nueva Vizcaya PH	100	75	4,713	4,598	3,440	166	2,341	10,723	5.4 (698)	12,917	(9,918) 15,258	107	8,025	7,829	5,858	283	3,986	25,981
	10. Batanes PH	75	75	4,062	3,977	3,369	39	2,040	10,197	11.2(1,339)	11,447	(8,767) 13,487	91	7,133	6,984	5,916	68	3,582	23,683
	Total			170,761	105,832	51,723	10,893	69,400	281,022	(12,540)	339,209	(265,575) 408,609	2,884	288,041	178,706	87,531	18,357	116,993	689,628

- Based on the prices of August 1 '79

$F = \alpha(A+B+C+D+E) + \beta(A+B+C+D+E) + \gamma(A+B+C+D) + \delta$
$= (\alpha+\beta)(A+B+C+D+E) + \gamma(A+B+C+D) + \delta = \gamma G+0.65H+\delta$

H: Facility G: Civil work

α: Arch, & Engineering 10% + Cosultant fee 5% + Supervision 5% + Administration 5% = 25%
β: Physical Contingency 10% + Price Contingency 30% = 40%
γ: Local revise (1.5%, 3.0%, 5.4%, 11.2%)
δ: Surveying & Subsoil exploration + Water Source and Quality Survey.
α + β = 65%

I-10 CONSTRUCTION COSTS, CURRENT EXPENDITURE AND PROJECT FUND OPERATIONS FOR PLAN I

1. Construction Costs

1) Conditions of Estimation

Estimation of construction costs was made for Plan I and Plan II on the conditions given below.

(1) Unit prices and prices of construction materials, machinery and equipment, medical equipment and labor are those as of August 1, 1979.

(2) In so far as possible, construction materials, machinery and equipment, and medical equipment are to be obtained in the Philippines.

(3) With regard to materials, machinery and equipment to be imported, transport cost, import duties, import procedure expenses and other necessary expenses were included in the estimates.

(4) Miscellaneous expenses

- o Survey cost : for the survey of site, foundation, water quality, source of water supply, etc.
- o Design and supervision
- o Consultant fees : consultation fees in respect of hospital management, medical equipment, etc.
- o Management expenses: project management.
- o Local revise of construction costs
- o Reserve funds : Physical contingency 10%, price contingency 30%.

(5) Construction costs of new building for Don Mariano Marcos Memorial and Major F. Marcos Veteran Memorial Hospitlas are excluded, though the cost of medical equipment is included.

Construction costs, equipment and fixtures costs for 19 hospitals are given below.

(in Million Pesos)

Section		Table value	Currencies		
			Local	Foreign	Indirect Foreign
Facilities	Construction	222	133	0	89
	Electrical work	139	57	65	17
	Mechanical work	82	33	43	6
	Site development work	11	7	0	4
	Sub-total	454	230	108	116
Medical equipment		112	9	95	8
Design and consultant fees, etc.		386	136	193	57
Total (US$ Equivalent)		952 (126.93)	375 (50.00)	396 (52.80)	181 (24.13)

The total cost of the Project (PLAN I) is estimated at 952 million pesos (US$126.93 million), including the foreign and the indirect foreign currency component of 577 million pesos (US$76.93 million).

Annual allocation of construction costs based on annual construction schedule for 19 hospitals is given below.

(in Million Pesos)

Year	1	2	3	4	5	6
Construction year	0	1	2	3	4	5
Hospital	Survey Basic design	Cagayan R.H Benguet P.H Ifugao P.H Don Mariano Marcos M.H. Bontoc P.H.	Pangasinan MC. Qurino P.H Isabela Batanes	La Union R.H. Gabriela-Silang Nueva Vizcaya Abra Ilocos Norte	Cagayan P.H. Cagayan MH. Kalinga-Apayao P.H. Baguio M.C. Major Marcos Veteran H.	
Construction phase		1st phase	2nd phase	3rd phase	4th phase	
Construction costs for the year	47 (6.27)	94 (12.53)	238 (31.73)	237 (31.60)	217 (28.93)	119 (15.87)

CONSTRUCTION COSTS FOR PLAN I BY YEAR AND ITEM

(in Million Pesos)

Year			1			2			3			4			5			6			
Construction Year			0			1			2			3			4			5			
Currencies			L	F	I	L	F	I	L	F	I	L	F	I	L	F	I	L	F	I	
			Total			Total			Total			Total			Total			Total			
Facilities	Civil Work	Construction	-	-	-	14.0	-	6.0	36.3	-	15.6	36.4	-	15.6	31.4	-	13.5	17.1	-	7.3	
			-			20.0			51.9			52.0			44.9			24.4			
		Electrical Work	-	-	-	3.1	4.0	0.5	8.2	10.5	1.2	8.4	10.8	1.2	7.5	9.7	1.1	4.1	5.3	0.6	
			-			7.6			19.9			20.4			18.3			10.0			
		Mechanical Work	-	-	-	7.0	6.2	-	17.8	15.8	-	18.5	16.4	-	16.8	14.9	-	8.0	7.1	-	
			-			13.2			33.6			34.9			31.7			15.1			
		Site Development Work	-	-	-	0.9	-	0.4	2.0	-	0.9	1.6	-	0.7	1.4	-	0.6	0.9	-	0.4	
			-			1.3			2.9			2.3			2.0			1.3			
		Civil Work Total	-	-	-	25.0	10.2	6.9	64.3	26.3	17.7	64.9	27.2	17.5	57.1	24.6	15.2	30.1	12.4	8.3	
			-			42.1			108.3			109.6			96.9			50.8			
	Medical Equipment		-	-	-	1.8	9.7	0.2	4.1	22.7	0.6	3.8	21.0	0.5	4.1	22.7	0.6	2.5	14.0	0.3	
			-			11.7			27.4			25.3			27.4			16.8			
	Facility Total (at the end of March, 1979)		-	-	-	26.8	19.9	7.1	68.4	49.0	18.3	68.7	48.2	18.0	61.2	47.3	15.8	32.6	26.4	8.6	
			-			53.8			135.7			134.9			124.3			67.6			
Price Increase (March ~ August, 1979) *1			-			5.1			13.0			13.0			11.6			6.2			
Facility Total (at August 1, 1979)			-			58.9			148.7			147.9			135.9			73.8			
Miscellaneous	Survey (Subsoil, water source and water quality)		2.9			-			-			-			-			-			
	Design, Consultant, Supervision and Administration Fees *2		44.2			10.0			25.3			25.6			23.1			13.0			
	Local Revise + Freight Revise		-			1.9			4.8			4.1			3.0			2.3			
	Physical Contingency *3		-			5.9			14.9			14.8			13.6			7.4			
	Price Contingency *4		-			17.7			44.6			44.4			40.8			22.1			
Total (August I, 1979)			47.1 Say 47			94.4 Say 94			238.3 Say 238			236.8 Say 237			216.4 Say 217			118.6 Say 119			952

L: Local Currency
F: Foreign Currency
I: Indirect Foreign Currency

*1 Price increase is estimated based on the results of additional survey in August, 1979. 15% increase in local and indirect foreign currencies during the term of March-August- 1979 about following items

Item	Rate of Currencies	Increase Rate
Construction	(L-70% F-0% I-30%)	→ 15%
Electrical Work	(L-41% F-53% I-6%)	→ 7%
Mechanical Work	(L-53% F-47% I-0%)	→ 8%
Medical Equipment	(L-15% F-83% I-2%)	→ 3%
Site Development	(L-70% F-0% I-30%)	→ 15%

*2 Design fee 10%, Consultant Fee 5%, Supervision 5% Administration 5% Total 25% of facility total

*3 Physical Contingency 10% of facility total

*4 Price Contingency 30% of facility total

Price Contingency is estimated uniformly 30% (rough target year is 3rd year)

Note: o 1st year's cost is composed only by survey costs + 1/3 × (design-, consultant-, supervision-, and administration fee)

o From the costs of each hospital 40% is allocated in the beginning year and 60 in the ending year.

2. Current Expenditure (income and expenditure)

Under the present improvement plan, the first group will commence operation in the third year and it will be after the seventh year when all hospitals are ready for operation with the improvement. The scale of current expenses at that point is expected to be in the region of 117 million peso (excluding Cagayan Mental Hospital). The table below gives income and expenditure of each hospital.

(in 1000 pesos)

Income and expenditure / Hospital	Income			Expenditure			
	1977 Actual (a)	Peak (b)	(b)/(a) %	1977 Actual (c)	Peak (d)	(d)/(c) %	Remarks
I-1 Pangasinan	764	1,461	191	3,807	21,573	566	
2 Bontoc	115	254	221	1,221	4,209	345	
3 Baguio	1,054	1,652	157	10,139	20,042	198	
4 Benguet	75	236	315	1,571	4,221	269	
5 La Union	-	(616)	-	1,928	9,094	472	
6 Abra	167	252	151	1,197	4,017	336	
7 Gabriela Silang	312	340	109	1,398	4,112	294	
8 Don Mariano Marcos	537	334	62	2,932	4,466	152	
9 Ilcos Norte	326	512	157	1,871	6,985	373	
Sub-total	3,350	5,041 (5,657)	150	26,064	78,719	302	
II-1 Cagayan R.	442	777	176	4,478	13,757	307	
2 Cagayan M.	-	-	-	-	-	-	
3 Kalinga Apayao	-	(284)	-	947	4,058	429	
4 Cagayan P.	*1 48	216	450	*1 288	4,059	1,409	*1 Aparri E.H.
5 Isabela	-	(375)	-	2,132	5,624	264	
6 Quirino	202	300	149	1,455	4,179	287	
7 Ifugao	116	247	150	1,184	4,227	357	
8 Major Marcos	-	(358)	-	3,333	5,394	162	
9 Nueva Vizcaya	165	237	144	674	4,019	596	
10 Batanes	68	140	206	1,000	3,237	324	
Sub-total	1,041	1,917 (2,934)	184	15,491	48,554	313	
Total	4,391	6,958 (8,591)	158	41,555	127,273	306	
per Bed (peso)	2,590	2,706		19,230	40,086		