No.

BASIC DESIGN STUDY REPORT
ON
THE PROJECT FOR IMPROVEMENT OF MONG KUL BOREY HOSPITAL
IN
BANTEAY MEANCHEY PROVINCE, THE KINGDOM OF CAMBODIA

JUNE, 2005

JAPAN INTERNATIONAL COOPERATION AGENCY

AZUSA SEKKEI CO.,LTD.

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MINISTRY OF HEALTH
THE KINGDOM OF CAMBODIA

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PREFACE

In response to a request from the Government of the Kingdom of Cambodia, the Government of Japan decided to conduct a basic design study on the Project for Improvement of the Mong Kul Borey Hospital in Banteay Meanchey Province and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to the Kingdom of Cambodia a study team from 28th November to 22nd December, 2004.

The team held discussions with the officials concerned of the Government of the Kingdom of Cambodia, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Cambodia in order to discuss a draft basic design, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly, relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Kingdom of Cambodia for their close cooperation extended to the teams.

June, 2005

Seiji Kojima
Vice-President
Japan International Cooperation Agency

June, 2005

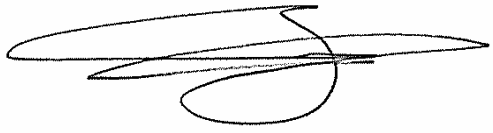
LETTER OF TRANSMITTAL

We are pleased to submit to you the basic design study report on the Project for Improvement of the Mong Kul Borey Hospital in Banteay Meanchey Province, the Kingdom of Cambodia.

This study was conducted by Azusa Sekkei Co., Ltd. under a contract to JICA, during the period from 19th November, 2004 to 30th June, 2005. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Cambodia and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,



Hozumi Ogawa
Project manager,
Basic design study team on The Project for Improvement of the Mong Kul Borey Hospital in Banteay Meanchey Province,
the Kingdom of Cambodia
Azusa Sekkei Co., Ltd.

LOCATION MAP

THE KINGDOM OF CAMBODIA

BANTEAY MEANCHEY PROVINCE

THE PROJECT FOR IMPROVEMENT OF THE MONG KUL BOREY HOSPITAL IN BANTEAY MEANCHEY PROVINCE,
THE KINGDOM OF CAMBODIA

LIST OF FIGURES & TABLES

ABBREVIATIONS

Abbreviation	Idiom	Original Name
ADB	English	Asian Development Bank
ADRC	English	Asian Disaster Reduction Center
AIDS	English	Acquired Immune Deficiency Syndrome
ALC	English	Average Length of Stay
ARI	English	Acute Respiratory Infection Disease
ART	English	Antiretrovirals Treatment
BHN	English	Basic Human Needs
BOR	English	Bed Ocupancy Rate
CARE	English	Cooperation for Assistance and Relief Everywere
CFDS	English	Cambodian Family Development Services
CPA	English	Comlementary Package of Activity
DFID	English	Department for International Development
DOTS	English	Directly Observed Treatment, Short Course
EDC	French	Electricite du Cambodge
E/N	English	Exchange of Notes
EP	English	Emulsion Paint
FDH	English	Former District Hospital
GL	English	Ground Level
HC	English	Health Cenrter
HIV	English	Human Immunodeficiency Virus
HSP	English	Health Sector Strategic Plan
HSSC	English	Health Sector Steering Committe
HSSP	English	Health Sector Support Project
HWDP	English	Health Work Force Development Plan
JICA	English	Japan International Cooperation Agency
JIS	English	Japanese Industrial Standard
JOCV	English	Japan Overseas Cooperation Volunteers
MOH	English	Ministry of Health
MPA	English	Minimum Package of Activity
NGO	English	Nongovernmeatal Organization
OD	English	Operational District

Abbreviation	Idiom	Original Name
PHD	English	Provincial Health Department
PMTCT	English	Prevention of Mother to Child Transmission
RACHA	English	Reproductive and Child Health Alliance
RC	English	Reinforced Concrete
RH	English	Referral Hospital
RTC	English	Regional Trainning Center
SEVA	English	Seva Foundation
STI	English	Sexually-Transmitted Infection
TSMC	English	Technical School of Medical Care
UNICEF	English	United Nations Children's Foundation
URC	English	University Research Co.
USAID	English	U.S.Agency for International Development
US-CDC	English	U.S.Centers for Disease Control and Prevention
VCCT	English	Voluntary Confidential Counseling and Testing
VSO	English	Voluantary Services Overseas

SUMMARY

SUMMARY

The Kingdom of Cambodia (hereafter referred to as Cambodia) is located on the Indochinese Peninsula and has a population of 13.81 million people (UNICEF White Paper on Children of the World, 2004) and a land area of 181,035 Km^2. The country shares boundaries with Thailand, Laos and Vietnam. Banteay Meanchey Province (land area: 6,670 Km^2, population: 714,000), in which Mong Kul Borey is located, is in the northwestern part of Cambodia and serves as a principal center for distribution that borders Thailand. However, the province is home to numerous former Khmer Rouge soldiers and encompasses many land mine facilities, as well as including the most poverty-stricken region in Cambodia.

The Ministry of Health of Cambodia formulated a master plan for the health sector called "Health Sector Strategic Plan 2003-2007 (HSP)" in 2002, under which it implements various projects. Among them, the Health Sector Support Project (HSSP) is positioned as an implementation project associated with improvement of medical facilities is. HSSP is comprised of activities of 1. Improvement of Service Supply; 2. Support for Disease Control; and 3. Organizational Reinforcement of the Ministry of Health and working toward improvement, dissemination, and expansion of basic healthcare services. In those projects, this project—construction of the Mong Kul Borey Hospital and procurement of equipment—will contribute to the improvement in provision of the hospital service. Moreover, although the Provincial Health Department in Banteay Meanchey Province, under the HSP formulated by the Government, is promoting measures to deal with both infectious and non-infectious diseases, the cultivation of human resources, facility refurbishment and other aspects of health care, progress has been inadequate because of insufficient budgets and other problems, and support for the province is a focal point among efforts on the part of other donors as well. With respect to these plans, the construction of the Mong Kul Borey Hospital and the procurement of equipment and supplies, which comprise this project, will contribute to the improvement of hospital services.

The Mong Kul Borey Hospital (seven buildings with a total floor space of approximately 1,900 m^2) was built in 1964 through cooperation from the Government of Japan granted in response to Cambodia's waiver of the right for postwar reparation, and opened in that year. Seven physicians and nurses were dispatched to the hospital through technical cooperation that began in 1964, and activities were carried out on an ongoing basis in such fields as internal medicine, surgery, obstetrics and gynecology, focusing in particular on countermeasures against tuberculosis and various preventive inoculations, until civil war began in 1975. Additions were made repeatedly to the building by the Red Cross associations of several nations, the Pol Pot administration and other entities during the 1980s and 1990s, and the hospital has developed into a general hospital with 240 beds and buildings totaling approximately 6,900 m^2 in floor space, constructed on a site spanning approximately 50,000 m^2. The Mong Kul Borey Hospital now ranks as the top referral hospital in Banteay Meanchey Province, and is

the only hospital in the province that has operating rooms and can provide surgical services.

At the same time, however, 40 years have passed since the building was constructed through support from Japan, and the ceilings have begun to collapse in some areas, while the floors are collapsing in other areas and the concrete is deteriorating. All of the buildings are in a state of advanced dilapidation. In addition, it has become difficult to keep the operating rooms and patients' rooms in a clean state because of the deterioration of the facilities. Furthermore, facilities that were constructed by other donors during the 1990s are also deteriorating here and there.

Given this background, and because Banteay Meanchey Province does not have an adequate budget to undertake projects such as refurbishing the facilities, the Government of Cambodia requested grant aid cooperation from Japan for the funding needed in order to rebuild the hospital and construct additions, as well as to procure the necessary medical equipment and supplies accompanying the construction.
Based on that request, the Government of Japan decided to implement a Basic Design Study, and the Japan International Cooperation Agency, an independent administrative organization, dispatched a Basic Design Study Team from November 28 to December 22, 2004. Through a field study, the study team discussed and confirmed the background and content of the project and other topics with related persons in the Government of Cambodia, as well as compiling documents. Additionally, the study team put together a Basic Design Study Report through domestic analysis conducted subsequently, and through a explanation of the Draft Basic Design Study Report that was implemented between April 18 and April 29, 2005.

The project was formulated based on the following indicators.
Initially, the Cambodian side requested that the overall hospital be rebuilt and significantly expanded. However, because of concerns that an abrupt expansion of the scale would increase the burden of expenses and would present obstacles to hospital management, and because of concerns that the benefits could not be sustained, the project planning focuses on building an Emergency/Imaging Building, an Operation Theater Building, a Surgical Ward Building, and an Obstetrics/Gynecology Ward Building, where deterioration is severe, as well as procuring related medical supplies and equipment.

The facilities targeted by the project were selected based on the following policies.

(1) Priority will be given to relocation of the Surgery Department which is in a hazardous condition, with buildings and facilities having seriously deteriorated, and the Operation Theater, the Department of Radiology and the Emergency Department which are associated with the Surgery Department and the Obstetrics/Gynecology Ward Building (including the Labor and Delivery Department) which is associated with the Operation Theater will be relocated together.
(2) In light of the importance of the Mong Kul Borey Hospital as the only hospital that can provide surgical operations in Banteay Meanchey Province, the Surgery Department will be strengthened.

(3) A total of 56 beds will be provided for the Surgical Ward Building (including postoperative beds) and 20 beds will be provided for the Obstetrics/Gynecology Ward Building. In principle, patient rooms will be equipped with six beds.

(4) With respect to the hospital, buildings with two stories or more need to be equipped with elevators for transfer of patients as well as equipment and supplies. However, the equipment of elevators is deemed to be inappropriate for this project because the geographical distance from the capital city precludes taking action in emergency situations, and because of the high maintenance cost required. In addition, the construction of slopes is also inappropriate from the standpoint that they would require excess space and that they would increase the workload of the staff. Because of the above considerations, all of the buildings will be designed as single-story buildings.

(5) The facilities will be constructed in accordance with the grade and the scope appropriate for the operation and maintenance of the hospital.

(6) Being the top referral hospital in Banteay Meanchey Province, the Mong Kul Borey Hospital is expected to be the base for restoration in the event of a disaster. In consideration of the functional importance, the building shall be constructed with strong structural specifications.

The contents of principal facilities are as outlined below.

Building	Facility contents	Construction and scale		
Emergency/ Imaging Building	Treatment rooms, observation rooms, x-ray rooms, ultrasonic diagnosis rooms, etc.	RC construction	Single-story building	614.1 m^2
Operation Theater Building	Operating rooms, postoperative recovery room, equipment analysis and cleaning room, etc.	RC construction	Single-story building	1,099.0 m^2
Surgery Ward Building	General hospital rooms, private rooms available at extra charge, treatment rooms, nurse station, etc.	RC construction	Single-story building	720.0 m^2
Obstetrics/ Gynecology Building	General hospital rooms, private rooms available at extra charge, labor rooms, nurse station, etc.	RC construction	Single-story building	720.0 m^2
Mechanical Room Building	Electrical room, generator room, maintenance room, etc.	RC construction	Single-story building	223.5 m^2
Others	Garage/parking facilities, guardhouse, connecting corridors, drying spaces, kitchens	RC construction	Single-story building	475.3 m^2
Total				3,851.9 m^2

The equipment and materials targeted by the project were selected based on the following policies.

(1) In formulating the equipment planning, equipment items meeting the diagnosis and treatment functions that new facilities should possess shall be selected by comprehensively considering the ranking of the Mong Kul Borey Hospital, as well as the contents of activities, technical levels and financial capacity of existing and related facilities, in addition to the Cambodian guidelines of the CPA3 (Complementary Package of Activity 3) and other factors.

(2) The equipment grades will conform to the CPA3 medical treatment service level diagnosis, and the equipment specifications will be capable of accommodating the technical levels of current health care personnel. In order to minimize the burden of maintenance and control, priority will be given to consumables with lower costs.

The contents of principal equipment and materials are as outlined below.

Dept.	Equipment name	Qty.	Purpose of use
Operation Theater	Anesthesia equipment	2	Used to put patients under general anesthesia when performing operations.
	Patient monitoring unit	3	Used for ongoing monitoring of patient vital sign information in the operating rooms and intensive care unit.
	Operating table, general	1	Used to secure the patient physically in the appropriate position for various types of operations.
	Operating table, orthopedic	1	Used to secure the patient physically in the appropriate position for various types of orthopedic operations.
	Set of surgical instruments	1	A set of instruments made of steel, used to carry out orthopedic operations.
Central Sterilizing and Supply Division	High-pressure steam sterilizer	2	Used to sterilize small steel items and linens using steam under high-pressure.
Department of Radiology	X-ray apparatus, general	1	Used to take abdominal x-rays and x-rays of the limbs.
	X-ray apparatus, portable	1	Used to take simple x-rays in emergency situations where it would be difficult to move the patient.
	Ultrasonic diagnosis unit, portable	1	Used for imaging diagnosis of the state and functions of tissues and for lesions in the abdominal area, the thyroid gland which is close to the skin surface, the uterus, and other organs.
Management Division	Ambulance	1	Used to safely transport emergency patients and patients in unstable condition to other facilities.

The total project amount if this project were to be implemented through grant aid cooperation from Japan is estimated to be 699 million yen (695 million yen from the Japan side and 4 million yen from the Cambodia side). It is estimated that the project would be implemented in a single fiscal year, and a construction period of 13 months is planned.

The program targeted by the project includes the construction of hospital facilities primarily centering around surgery-related departments, including the Operation Theater, Emergency Department and Department of Radiology, and the Obstetrics/Gynecology Department, including the Labor and Delivery Department and mother-child infection prevention facilities, as well as the refurbishment of medical equipment and supplies, and the benefits expected from implementing the project can be categorized as described below.

・The Surgical Ward Building and Obstetrics/Gynecology Ward Building will be improved, and the augmentation of the facilities and equipment is expected to increase the number of in-patients.

・Improving the Operation Theater is expected to help prevent infection within the hospital, increase the number of planned operations, and improve the surgical environment.
・Installing an ultrasound diagnosis unit in the Department of Radiology is expected to increase the number of diagnoses and improve medical care services.
・Creating connecting corridors in the Department of Radiology will clarify the stream of traffic of patients, families and staff, and will increase safety, as well as facilitating the prevention to infection within the hospital.
・A dedicated PMTCT room will be established in the Obstetrics/Gynecology Ward Building, and this will provide increased benefits for persons receiving mother and child health care.
・Providing private rooms at extra charge is expected to increase medical care revenues for the hospital.
・Refurbishing the surgery-related divisions, which form the nucleus of the Mong Kul Borey Hospital, will contribute to improving the referral system in Banteay Meanchey Province.

It was decided, for the reasons numbered (1) through (7) below, that this planning is appropriate as a project component to be undertaken through grant aid cooperation from Japan.

(1) The Mong Kul Borey Hospital is the only top referral hospital in Banteay Meanchey Province where operations can be carried out. Patients come to the hospital not only from all over the province, but also from the northern part of the neighboring Siem Reap Province and from the northern part of Bat Dambang. Consequently, it is thought that this project will provide benefits for residents across a broad area. A total of approximately 770,000 people, including those living in all of Banteay Meanchey Province and those living in neighboring localities in the northern parts of Siem Reap Province and Bat Dambang, will benefit from the project.

(2) Currently, facility restrictions are posing obstacles to the Mong Kul Borey Hospital being able to provide medical services. However, implementing the project will result in strengthening the functions of central medical care divisions such as the Emergency Department, the Department of Radiology, and the Operation Department, and of wards such as the Surgical Ward and the Obstetrics/Gynecology Ward, and will increase the confidence and satisfaction of people living in the area.

(3) Following the relocation, the Mong Kul Borey Hospital will not require particularly sophisticated technology in either the facilities or the equipment and materials, and it will be possible for the hospital to be run with the current personnel. Moreover, judging from the trend in past budget allocations from the Ministry of Health to the Mong Kul Borey Hospital, it should be possible to assure an operating budget for the Mong Kul Borey Hospital following the relocation without overextending.

(4) The Ministry of Health of Cambodia formulated a Master Plan for its Health Division in 2002, titled “Health Sector Strategic Plan 2003-2007 (HSP)”, and one part of that plan is a project called

the Health Sector Support Project (HSSP), which is ranked as an implementation project involving the refurbishment of medical care facilities. HSSP is comprised of the following activities: 1. improving the supply of services; 2. supporting disease control; and 3. organizational reinforcement of the Ministry of Health, and is aimed at working towards the improvement, dissemination and expansion of basic healthcare services. With respect to these plans, the construction of the Mong Kul Borey Hospital and the procurement of equipment and supplies, which comprise this project, are in accordance with improving hospital services, and will contribute to realizing the overall planning of the Ministry of Health of Cambodia.

(5) In Cambodia, examination fees at hospitals and doctors' offices, hospitalization fees, test fees and other fees are determined by the individual hospital, under the guidance of the Ministry of Health, and are collected from the patients. At the Mong Kul Borey Hospital, international organizations provide funding support for patients in the poverty bracket, so there is no uncertainty about the collection of revenues for medical care. However, treatment revenues account for around 30% of all revenues, and additionally, increasing treatment revenues will make it possible for the hospital to carry out independent operating and maintenance control of the facilities and equipment more smoothly, although the project is not necessarily aimed at profitability.

(6) Large-sized trash items at the Mong Kul Borey Hospital are handled as ordinary trash and disposed of by burning, and items such as syringes that are used in medical treatments, including those from other medical institutions (handled at a fee) are disposed of using a special incinerator. Because there is no public sewerage equipment, ordinary drainage water passes through small-sized purification tanks located at 15 locations on the site and is discharged into a swamp on the north side of the site. In this planning, as well, measures that will eliminate adverse effects on the environment such as installing purification tanks are thought to be appropriate.

(7) The construction site being planned belongs to the Ministry of Health of Cambodia, and it has been confirmed that there will be no obstacles to the project construction. The amount that it will cost to remove existing buildings and for development construction will not pose an excessive burden to the Cambodian side. Plans are underway to begin public electricity supply in October 2005, and because the refurbishment of the new infrastructure is within the site of the existing hospital, this will not need to be done. Moreover, the Ministry of Health of Cambodia has been the recipient of grant aid cooperation projects from Japan in the past, and no particular difficulties are foreseen in implementing this project under Japan's system for grant aid cooperation.

The following outlines the issues that must be addressed by the Cambodian Government in order to utilize the new facilities and new equipment to the maximum possible limit, and to exercise and sustain the full benefits from the project.

(1) Medical treatment revenues

Hospital revenues are divided into three categories: those allocated from the Ministry of Health,

medical treatment revenues, and support from other donors. Although allocations from the Ministry of Health tend to be increasing, they have also been suppressed since last year because of the national budget. Support from donors fluctuates greatly from year to year, and reliable profit cannot be counted on. At the same time, medical treatment revenues make up over a 30% of all revenues, and have been steadily increasing. Ideally, medical treatment revenues will continue to show steady growth in the future in order to assure smooth project maintenance and control.

(2) Maintenance of facilities and equipment

The Mong Kul Borey Hospital has two maintenance and control technicians; the chief technician is 55 years old and the other technician is 35 years old. However, neither of these persons has progressed beyond the intermediate school level, and they possess no specialized technologies. Because of this, maintenance of the facilities and equipment is currently limited. With respect to operation and maintenance of the facilities, the planning for this project calls for facility contents that are within the scope that can be handled technically by the current maintenance and control personnel, as well as selecting facilities and equipment with low maintenance costs, and reducing running costs. However, there is a need to further improve the maintenance and control engineering. There are plans to begin a technical cooperation project within fiscal 2005 relating to the improvement of medical equipment maintenance and control capabilities at regional hospitals, and ideally the engineers at the Mong Kul Borey Hospital will also take part in this project. Additionally, maintenance and control expenses for facilities and equipment are largely constant at around 5% of all hospital expenditures, but these need to be assured for each year as a given amount of fixed expenses that does not fluctuate greatly from one year to the next.

(3) In-hospital education

Construction of a new operating room and upgrading of equipment and materials through the project will bring about significant changes in the Operation Theater environment. To make good use of this environment, it will be extremely important to continue the in-hospital education that is currently being carried out for physicians and nurses with respect to case reports and diagnosis and treatment methods. Furthermore, it is hoped that in-hospital training can be augmented beyond the current level by using case reports and diagnosis and treatment methods from hospitals and health centers in the same province and from referral hospitals at the same level in other provinces.

(4) Mother/child health and medical care

In the Obstetrics/Gynecology Department, it is important that expectant mothers be guided towards safe delivery by providing health education, prenatal examinations, care during the perinatal period, and PMTCT, and at the same time to carry out comprehensive mother/child health services that combine medical checkups for infants, preventive inoculations, guidance in nutrition, and family planning. Ideally, stronger protection of patient privacy will be assured so that patients can undergo treatment without worrying, and the Obstetrics/Gynecology Department will be further strengthened.

Contents

[Appendices]

1. Member List of the Study Team
2. Study Schedule
3. List of Parties Concerned in the Recipient Country
4. Minutes of Discussions
5. Equipment

Chapter 1　BACKGROUND OF THE PROJECT

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The Mong Kul Borey Hospital (seven buildings with a total floor space of approximately 1,900 m^2) was built in 1964 through cooperation from the Government of Japan granted in response to Cambodia's waiver of the right for postwar reparation, and opened in that year. Seven physicians and nurses were dispatched to the hospital through technical cooperation that began in 1964, and activities were carried out on an ongoing basis in such fields as internal medicine, surgery, obstetrics and gynecology, focusing in particular on countermeasures against tuberculosis and various preventive inoculations, until civil war began in 1975. Additions were made repeatedly to the building by the Red Cross associations of several nations, the Pol Pot administration and other entities during the 1980s and 1990s, and the hospital has developed into a general hospital with 240 beds and buildings totaling approximately 6,900 m^2 in floor space, constructed on a site spanning approximately 50,000 m^2.

At the same time, however, 40 years have passed since the building was constructed through support from Japan, and the ceilings have begun to collapse in some areas, while the floors are collapsing in other areas and the concrete is deteriorating. All of the wards are in a state of advanced dilapidation. In addition, it has become difficult to keep the operating rooms and patients' rooms in a clean state because of the deterioration of the facilities. Furthermore, facilities that were constructed by other donors during the 1990s are also deteriorating here and there.

Despite this background, because the Government of Cambodia and Banteay Meanchey Province do not have adequate budgets to undertake projects such as refurbishing the facilities, the Government of Cambodia requested grant aid cooperation from Japan for the funding needed in order to rebuild the hospital and construct additions, as well as to procure the necessary medical equipment and supplies accompanying the construction.

The contents of the final request are as outlined below. Basically, the items follow CPA guidelines and are based on the results of the Basic Design Study.

1. Facilities (target divisions)

- Surgery Department
- Obstetrics and Gynecology Department
- Operation Theater (including Department of Disinfection)
- Emergency Care Division (including Department of Radiology)
- Service Division

2. Equipment and materials

- Medical care equipment and instruments selected based on CPA3 (108 types): Anesthesia machines, inhalers, defibrillators, delivery tables, walkers, incubators, operating lights for operating rooms, operating tables, respirators, X-ray apparatus, treatment instruments, surgical forceps, etc.
- Medical care equipment and instruments not selected based on CPA3 (3 types): Neonatal photo-therapy instruments, cystoscopes, instrument sets for blood vessel surgery.
- Medical care equipment and instruments not included in CPA3 (22 types): Ambulances, pickup trucks, patient beds, desks and chairs for examinations, chairs for patients, chairs for nurses, computers, emergency carts, examination tables, storage shelves, lockers, instrument cabinets, wheelchairs, sterilization work tables, etc.

Chapter 2　CONTENTS OF THE PROJECT

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2-1　Basic Concept of the Project

2-1-1 Objectives of the Project

The Ministry of Health of Cambodia formulated a master plan for the health sector called "Health Sector Strategic Plan 2003-2007 (HSP)" in 2002, under which it implements various projects. Among them, the Health Sector Supprot Project (HSSP) is positioned as an implementation project associated with improvement of medical facilities is. HSSP is comprised of activities of 1. Improvement of Service Supply; 2. Support for Disease Control; and 3. Organizational Reinforcement of the Ministry of Health and working toward improvement, dissemination, and expansion of basic healthcare services. In those projects, this project—construction of the Mong Kul Borey Hospital and procurement of equipment—will contribute to the improvement in provision of the hospital service.

In terms of the organizational system for medical treatment in regional areas of Cambodia, Provincial Health Departments (PHD) have been established, with each PHD overseeing 24 provinces, and these serve as direct liaisons with the Ministry of Health. Under the Provincial Health Departments, Divisional Offices (OD) have been established in each medical care bloc, and these preside over hospitals, health centers, and other institutions. Banteay Meanchey Province has Divisional Offices in four locations under the jurisdiction of the Provincial Health Department, and the Mong Kul Borey Hospital is located in the Mong Kul Borey medical care bloc.

The Mong Kul Borey Hospital was opened in 1964 with the building (seven buildings of approximately 1,900 m^2 in total floor area) and facilities constructed with the aid of the Japanese government granted in response to the Cambodia's waiver of the right for postwar reparation. In the technical cooperation started in 1964, seven doctors and nurses were dispatched to the hospital and activities were continued in such fields as internal medicine, surgery, obstetrics and gynecology especially focusing on countermeasures against tuberculosis and various preventive inoculation until the civil war started in 1975. The building was added repeatedly by Red Cross associations of several nations during the period from the 1980s to 1990s and the hospital has developed into a general hospital with 240 beds and buildings of approximately 6,900 m^2 in total floor area constructed on the site of approximately 50,000 m^2 in area.

However, with 40 years passed since it was constructed with the aid of Japan, the whole building has been seriously deteriorated with areas with the ceiling almost collapsed down, areas in a hazardous condition with the floor dented, and areas with deteriorated concrete. In

addition, the facilities have been deteriorated too badly to keep the cleanliness in operation rooms and patients rooms. Furthermore, the facilities constructed by other donors during the 1990s were in a condition where aging is seen here and there, and many of the medical equipment have been used past their estimated service life. Thus the hospital needs to be improved both in quality and quantity of the healthcare services.

In order to solve those problems, this project will aim to improve the healthcare services of the Mong Kul Borey Hospital that have been deteriorated both in quality and quantity.

2-1-2 Outline of the Project

Positioned as the top referral hospital in Banteay Meanchey Province, the Mong Kul Borey Hospital is playing a central role in the medical care system of the northwestern part of Cambodia with the target population in healthcare provision of 700 thousand (sum of 650 people from Banteay Meanchey Province and 50 thousand people from Siem Reap Province and the northern part of Bat Dambang Province). However, the hospital is facing difficulties in maintaining functions as a hospital due to aging of facilities and equipment. It is provided that this project will, in order to maintain the health care provision system of Banteay Meanchey Province, newly construct a part of the facilities of the Mong Kul Borey Hospital as well as reallocating the departments in exploitable existing facilities. It is expected that those activities will help improve the quality of the healthcare services of the Mong Kul Borey Hospital as the top referral hospital. Of this project, the Grant Aid Project will cover construction of the Emergency/Imaging Building, the Operating Theater Building, the Surgical Ward Building, and the Obstetrics/Gynecology Ward Building, and procurement of medical equipment and so on.

2-2 Basic Dsign of the Requested Japanese Assistance

2-2-1 Design Policy

(1) Basic Policy

1) Assistance Scale and Grade Planning

The facilities of present Mong Kul Borey Hospital have been seriously deteriorated including areas in a hazardous condition with the light gauge steel corroded from aging, areas with a corroded roof letting rainwater leak into the room, and areas with cracks. In addition, many of the medical equipment have been used past one's estimated service life and thus the healthcare services have been deteriorated both in quality and quantity. Under such circumstances, it is evaluated appropriate as the cooperation purpose of this project to recover the functions of the Mong Kul Borey Hospital and improve the healthcare services of the hospital.

At first, the Cambodian side requested the Japan government to greatly extend the scale of the hospital by reconstructing the whole hospital. However, due to the shortage of the absolute number of health care workers in the nation, the Mong Kul Borey Hospital also suffers from the shortage of health care workers. Nevertheless, the hospital is not expected to dramatically increase the number of its healthcare workers. In addition, while the hospital is not expected to increase the budget, maintenance costs for the facilities and equipment is expected to be costly due to its location far away from the capital city—Phnom Penh. Under such circumstances, there is a danger that sharp expansion in size may hinder the securing of continued effects of the project with the expense burden increased and the operation of the hospital hindered. Based on that consideration, it was determined more appropriate to provide a project within a scope manageable by the Cambodian side.

The departments targeted for the project will be selected based on the following policies.

- Relocation of Surgery Department which is in a hazardous condition with buildings and facilities seriously deteriorated will be prioritized and the Operation Theater; the Department of Radiology; and the Emergency Department which are associated with the Surgery Department and the Obstetrics/Gynecology Ward (including the Labor and Delivery Department) which is associated with Operation Theater will be relocated together.
- In light of importance of the Mong Kul Borey Hospital as the only hospital that can provide surgical operation in Banteay Meanchey Province, the Surgery Department will be strengthened.
- The number of beds shall be 56 for the Surgical Ward Building (including postoperative beds) and 20 for the Obstetrics/Gynecology Ward Building, and a patient’s room shall be equipped with six beds in principle.

- A multi-storied hospital with two stories or more need to be equipped with elevators for transfer of patients as well as equipment and supplies. In this project, however, equipment of elevators are evaluated to be improper because of the difficulty in taking emergency measures due to its location being far away from the capital city and of the costly maintenance cost required. In addition, construction of slopes is also improper from the points that they require excess space and that they will load the work of the staff. From the above considerations, all the buildings will be designed as single-story buildings.
- The facilities shall be constructed in accordance with the grade and the scope appropriate for the operation and maintenance of the hospital.
- Being the top referral hospital in Banteay Meanchey Province, the Mong Kul Borey Hospital is expected to be the base for restoration in the event of a disaster. In consideration of the functional importance, the building shall be constructed with strong structural specifications.

2) Basic Policy for Determining Equipment

In formulating the equipment procurement program, equipment items meeting the diagnosis and treatment functions that new facilities should possess shall be selected by comprehensively considering the positioning; technical level; financial capacity of the Mong Kul Borey Hospital; the guideline of CPA3; and so on. The equipment shall be selected based on the following policies:

(i) Departments to be covered in this Project

This Grant Aid Project shall be an equipment procurement program for the Department of Surgery, the Department of Obstetrics/Gynecology and the Operation Theater (including the Department of Disinfection) that are targeted for construction of facilities by the Japanese side and the equipment items shall meet the requirements of the activities of those departments. While other existing departments shall be out of the scope, improvement of vehicles shall be considered in light of the need of the whole facilities.

(ii) Equipment items

In this Grant Aid Project, the equipment items shall conform to the guideline of CPA3 developed by Cambodia. However, CPA3 provides that the equipment improvement in hospitals shall be made in consideration of the regionality and activities and does not exclude equipment items other than CPA3.

The equipment items provided in CPA3 were selected by seeking advices from donors including JICA and based on the present medical care level; operation and maintenance status; operation and maintenance costs; etc. and consist of minimum medical equipment and appliances required to raise the level of the healthcare services. In addition, with HSSP supported by the World Bank, etc. pushing forward with the improvement of facilities on the basis of CPA3, projects need to be formulated in accordance with CPA3 to unify the level of

healthcare services (for donor nations to keep pace with other donor nations) in all over Cambodia.

In the meantime, most of the equipment in the Definitive List of Requested Equipment attached to the minutes is equipment and appliance items selected by CPA3. In addition, it was confirmed by consultation that consumables and general furniture that are included in CPA3 but not suitable for Grant Aid will be excluded from the program and have been already deleted from the Definitive List of Requested Equipment.

(2) Policy on Natural Conditions

Cambodia belongs to the tropical monsoon climate, where one year is largely divided into the rainy season and the dry season. The rainy season starts in late May and lasts until late October and the country has the largest rainfall during the two months (September-October) in the late rainy season. The dry season starts in early November and lasts until the middle of May, during which the country has very little rainfall and has high temperature exceeding 37℃ from March to April. In order to enhance the habitability of the hospital with those climate conditions taken into consideration, the project shall include placement of eaves for avoiding penetration of direct sunlight and preventing rain from blowing into the building plan layouts with natural draft taken into consideration. Although Cambodia has few earthquakes, because the Mong Kul Borey Hospital is the top referral hospital in the Banteay Meanchey Province that is expected to be a base for medical activities, the structure shall be designed with an eye on safety and durability. Although the Ministry of Health of Cambodia formulated the Complementary Package of Activity (CPA) in 2003, which acts as the guideline for establishing a hospital, Japanese design standards shall be applied to general buildings because there is no design standard or design code intended for them.

(3) Policy on Social Conditions

An architectural style characteristic of general private houses in Cambodia is a wooden building on stilts with a high-pitched roof. It can be said that it is a waterproof architectural style suitable for the natural conditions in Cambodia with consideration paid to ventilation. A temple architecture called pagoda is also characterized by the high-pitched roofs layered several times over. While old temples were constructed in combination of wood and bricks, relatively new temples consist of reinforced concrete for the main structure and light gauge steel for the complicated roofs.

This project will adopt the reinforced concrete rigid frame structure based on the locally popular construction method and the outer wall will be made of concrete bricks with surface mortar finish. In terms of the construction plan for roofs, roofs in areas where patients reside shall be pitched to secure airspace within the roofs so as to improve the heat insulation effect and roofs in the other areas shall be flat.

(4) Policy on Construction and Procurement Conditions

1) Building Plan

In Cambodia, large-scale construction projects implemented in local cities other than the capital city of Phnom Penh are very few. For this reason, cultivating skilled workers to engage in construction is extremely difficult especially in local regions and it is often the case that work forces and skilled workers are invited from the capital city in case of a project requiring a certain extent of quality. Instruction on construction management by Japanese engineers is essential in this project. In designing, complicated and difficult combination of structural components shall be avoided and easy construction enabling solidity shall be considered instead. Because many of the construction materials will be imported from neighboring Thailand, process control is especially important. Quality inspection and inventory control of the materials need to be sufficiently implemented. Such procedures as application for construction approval prior to the commencement of the construction works are not necessary; however, an approval from the Provincial Department of Land Management, Urban Planning and Construction and the Provincial Governor needs to be obtained via the Ministry of Health with required documents submitted.

The present condition of major infrastructures and planning policies will be described below:

Electricity: Electricity is purchased (4 lines of 400V) from a private ice plant 2 Km away from the hospital but the voltage is unstable and the power is frequently interrupted. At present, the EDC is in the process of constructing an electric power station in Sisophon by ADB loan which is expected to be completed in October 2005 and the power generated at the power station is expected to be distributed to Mong Kul Borey as well. This project shall use the electricity distributed by the EDC.

- Electric power will be supplied to the existing buildings of the hospital at 400/230V by January 2006.
- Electric power will be supplied to the newly constructed buildings on a separate line from that of the existing buildings at a voltage of 22KV.
- The power capacity for the newly constructed building will be 160KVA.
- The incoming line and the leading-in pole are expected to be constructed by the EDC whereas the power-cut switch is expected to be constructed by the Japan side.
- The electric power meter will be supplied by the EDC, with the installation expense covered by the user.

Water supply: Feed water is taken from the Mong Kul Borey River across the road on the south side of the hospital, transmitted between private houses across the road through a water receiving tank, pumped up to an elevated reservoir water and supplied to various places of the

hospital. The river water is not suitable for drinking but used as water for washing, shower, toilets and so on. As for drinking water, water filtration devices were installed without charge by a Japanese private company in April 2004 and the water filtrated by the devices is supplied to the Operation Theater and the Labor and Delivery Department as well as for general drinking and food service; however, the quantity of water supplied is limited. Wells are not used at present for failure of pumps. This project will plan to dig wells for stable supply of water and to store rainwater in the underground pit of the building to use as a supplementary water source.

Septic tank: At present, filthy water and sewage are discharged into a pond in the precincts of the hospital through a simplified septic tank. A septic tank will be planed to be provided in this project, too, for treatment of sewage discharged from the newly established facilities.

2) Equipment Plan

None of the requested medical equipment and appliances is manufactured in Cambodia and most of them widely distributed are made in Japan, Europe, USA, China or Taiwan. However, many health care workers and agents of medical equipment in Cambodia have an idea that medical equipment and appliances made in China or Taiwan are cheap but poor in quality. In relation to the regular maintenance required of medical equipment, many public hospitals ask for repair on a chargeable basis when their equipment or appliance is out of order without concluding a maintenance agreement with an agent. In addition, many hospitals do not have replacement parts or consumables in stock and are seemingly in such condition that they cannot deal with such an easy problem as lamp replacement. In this Grant Aid Project, for equipment requiring replacement parts or consumables, or maintenance services by the relevant manufacturers, the equipment will be selected among manufacturers with their agents located in Cambodia or neighboring countries (such as Thailand or Vietnam) with specifications of products, with procurement from third countries taken into consideration as well.

(5) Policy on Practical Use of Local Contractors

1) Building Plan

There are approximately 180 local construction companies engaged in activities in Cambodia including several Japanese-affiliated firms branching out in Phnom Penh. Local construction companies regarded as industry giants have experience in Japan’s Grant Aid projects. Because people are less conscious of quality control or safety control in Cambodia, it is hard to say that they have comprehensive construction capabilities and therefore they need to be instructed on Japanese-style control methods. Since the number of local skilled workers is small, it is important to send out Japanese field superintendents to provide guidance on construction while making the most of points available from local constructors.

2) Equipment Plan

In order to ensure that the equipment items planned to be procured are utilized effectively for a long time, equipment items requiring procurement of consumables proprietary to them and repair/regular inspection by the relevant manufacturers shall be selected out of equipment manufactured by manufacturers who have their agents in Cambodia or neighboring countries in principle. As for radiological equipment, respirators, patient monitors, ECG unit and so on selected in CPA3, because it is uneasy to leave the maintenance only to the engineers on the side of the hospital in terms of maintenance, equipment shall be selected from candidate equipment with agents located in Cambodia or the neighboring countries. Agents located within Cambodia are very limited and many agents of medical equipment provide their service from neighboring Thailand or Vietnam. Because the target area for the project—Mong Kul Borey—is close to the national border with Thailand, service provision from Bangkok is considered relatively easy in geographical terms. On the other hand, some items of equipment and appliances selected in CPA3 require a few of consumables and replacement parts to be replaced periodically such as lamps for examination lights; lamps for film viewers; and electrodes for ECG unit and patient monitors. That maintenance will be facilitated only if the procurement routes are secured.

(6) Policy on Operation and Maintenance Abilities of Execution Organization

1) Building Plan

Two maintenance technicians—a chief technician (55 years old) and a staff member (35 years old) — have been allocated to the Mong Kul Borey Hospital. However, with the academic levels short of graduation from a junior highschool for both of them, they do not have specialized expertise in the equipment. Thus the maintenance of the facilities and equipment they provide are limited.

This plan shall design specifications of facilities within a range technically feasible by present personnel of the Maintenance Department in relation to the operation and maintenance of the facilities and shall select facilities and equipment entailing low maintenance cost. In addition, the plan shall aim at reducing the running cost. On the other hand, a plan needs to be formulated to increase the number of maintenance engineers and have them receive training on maintenance at a mother and child hospital etc. in Phnom Penh.

2) Equipment Plan

With no maintenance system for medical equipment established in Cambodia yet, there is no maintenance personnel with sufficient knowledge and expertise allocated in the existing Mong Kul Borey Hospital either. In addition, even operators of medical equipment hardly have 100% of knowledge about the maintenance for medical equipment. On the other hand, with a

plan to improve the maintenance technology in local hospitals underway, it is desired that the technicians of the Mong Kul Borey Hospital get involved in the plan in some way associated with the construction of a new hospital.

In addition, in order to appropriately use and maintain the equipment to be procured, the following training shall be provided by suppliers at the time of their delivery with technical data, operation/maintenance manuals, agent lists, etc. required for maintenance equipped.

- Operating instructions (outline of equipment, procedures, points to be checked, etc.)
- Periodical maintenance methods (on cleaning/adjustment, repair of insignificant failures, etc.)

In addition, because few personnel use English in the hospital, the above operation manual needs to be partly translated into Cambodian.

(7) Policy on Gradation of Building and Equipment

1) Building Plan

The facility grade of the building shall be determined with the present hospital as a guide to be an appropriate grade not imposing an excessive burden in technical or economical terms on the operation and maintenance of the Mong Kul Borey Hospital in future. In addition, because the Mong Kul Borey Hospital is the only one core hospital that can provide surgical operation among the top referral hospitals in Banteay Meanchey Province, the building shall be constructed with solid structural specifications in consideration of the hospital's role in functioning as a base for restoration in the event of a disaster.

In terms of the maintenance of the building, construction materials to be adopted shall be those in widespread use on site that are easy to repair and replaceable. As for construction method as well, construction methods that are popular on site shall be adopted instead of special construction methods. Machines for electricity and facilities shall be planned with ease in maintenance and operation and durability taken into consideration.

2) Equipment Plan

(i) Specifications of equipment

Specifications described in CPA3 shall be adopted in principle with specifications difficult to operate or maintain avoided. However, for equipment with special specifications intended for developing countries (such as a gas burner type sterilizer etc.), specifications of equivalent equipment shall be considered in light of a problem in maintenance terms because such specifications are not suitable for competition principles. In the meantime, with regard to anesthesia apparatus, it should be taken in to consideration that the hospital does not use laughing gas for anesthetic gas.

As for precision medical equipment sensitive to voltage fluctuations (such as patient monitors, ECG unit, and scanner ultrasound), provision of voltage stabilizer shall be

considered for individual equipment.

(ii) Quantity of equipment

The quantity shall be planned in accordance with the diagnostic functions and the number of health care workers of the hospital. In particular, in light of the limited number of the health care workers, the quantities shall be minimum quantities in principle. Although backup quantities need to be planned to be provided for surgical forceps from an operational aspect (because forceps always need to undergo a sterilization process after they are used), their minimum quantities shall be one set in principle. In addition, there are several medical equipment/appliances, and medical furniture in existing departments that seem to be still utilizable. Those equipment and so on shall be relocated to the new facilities and excluded from the scope of the target for the aid program by the Japanese side. The equipment and so on that can be relocated to the new facilities shall be determined as per the following conditions:

- Medical equipment: Those used for less than four years since they were procured (used for less than seven years at the time of the new hospital's opening)
- Medical appartus: Those used for less than four years since they were procured (used for less than seven years at the time of the new hospital's opening)
- Medical furniture: Those used for less than seven years since they were procured (used for less than ten years at the time of the new hospital's opening)

However, in regard to equipment and so on procured at second hand (mostly aid supplies), because the original years of manufacture are unknown for most of them, evaluation of consultants shall be added on the availability in light of the conditions at the investigation stage (due to the record of such equipment and so on described in the hospital ledger limited to the year when they were delivered to the hospital).

⑻ Policy on Method of Construction, Procurement and Schedule

1) Building Plan

Because Cambodia relies on imports for most construction equipment and materials including framework materials; cladding; and facility equipment, construction methods shall be selected in terms of compatibility with local construction technologies with due consideration given to the future maintenance. In regard to the procurement of materials, careful preparation needs to be made on such plans as temporary construction/employment plans, import/transport plans, and construction plans. When finishing work needs to be executed in the rainy season, the construction period needs to be assigned with sufficient flexibility allowed for the period required for curing of the bed. In regard to the provision of aggregate required in the period of placing framework concrete, the aggregate needs to be procured earlier than in other cases. The plan shall give due consideration to the preventive measures against mold and rust generated by humidity. Dry process shall be adopted for the finishing work as much as

possible. Because most of the construction materials will be imported, the procurement of equipment and materials will exert a great influence on the construction period. Therefore, the planned quantities of equipment and materials and the existing inventory shall be checked one by one to so that delay in time schedule may not arise from material shortage.

2) Equipment Plan

Due attention should be paid to construction schedules of radiological equipment, surgical lights and the like that need to be installed in accordance with the construction schedule of buildings. Because existing equipment will be relocated by the Cambodian side after the completion and transfer of the facilities to them in this project, due caution needs to be given to the securing of the place for installation of the planned equipment and the delivery route for the equipment to be relocated.

2-2-2 Basic Plan

(1) Site Plan

The Mong Kul Borey Hospital, where the planned construction site is located, is situated approximately 200 m to the west of the point on Route 5—a trunk line connecting the capital city of Phnom Penh and the capital city of Thailand, Bangkok, through the national border town, Poi Pet—approximately 365 km away from Phnom Penh. The position figure will be shown below.

The site area of the hospital, approximately 50,000 m^2, is mostly flat with a gentle slope extending from the west side to the east side and a pond and a low-lying area located at the northwest side of the site. There are approximately 24 buildings in the hospital site, with big ones and small ones combined, scattered around the building constructed with the aid of the Japan government in 1964.

The planned construction site will be prepared by removing a part of the existing buildings with the entrance of the hospital moved to the front of the Emergency Ward expected to be constructed by the Japanese side. All the buildings on the planned construction site—the Tuberculosis Ward, the Physical Therapy Ward, the garage, etc.—are significantly deteriorated. It has been affirmed that those buildings are expected to be removed by the Cambodian side. The Tuberculosis Ward is expected to be removed after the contents of the building are moved to the new ward to be constructed by the Cambodian side and the contents of the Physical Therapy Ward are expected to be moved to an existing building after new facilities are completed. In the meantime, it has been recognized that the planned construction site is land possessed by the Ministry of Health.

The building was added repeatedly by Red Cross associations of several nations during the period from the 1980s to 1990s and the hospital has developed into a general hospital with 240 beds and buildings of approximately 6,900 m^2 in total floor area constructed on the site of in area.

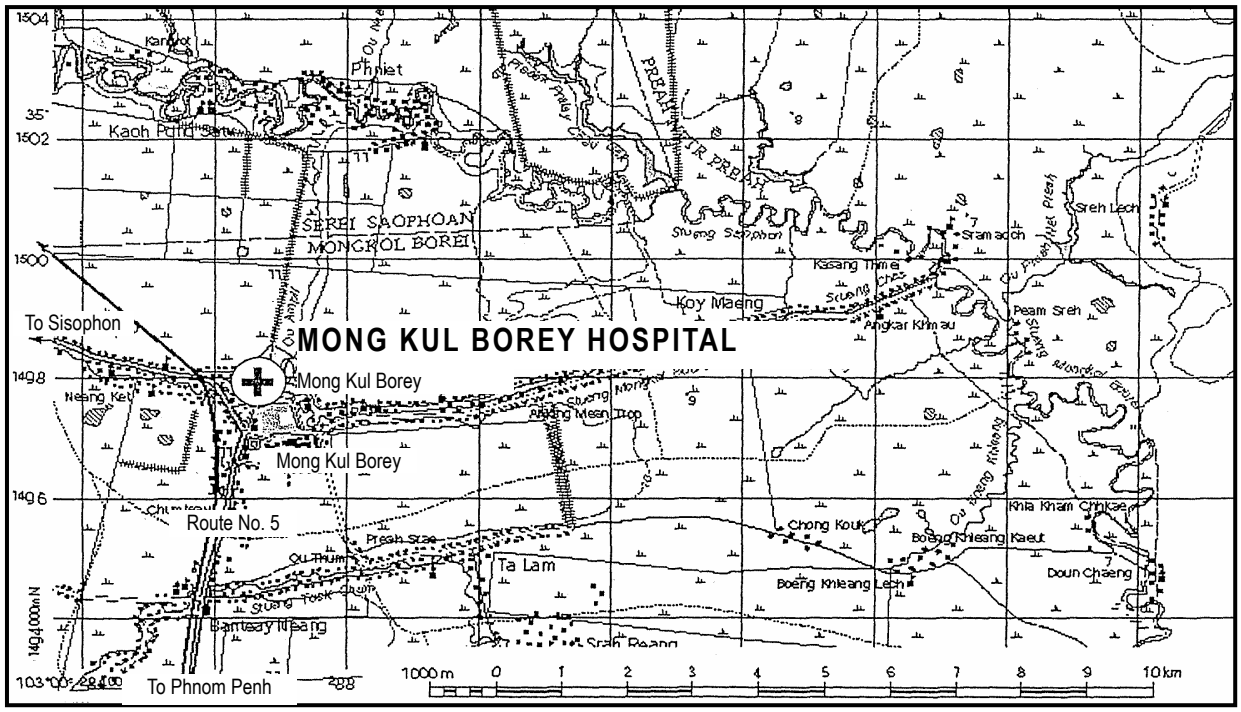


Figure 2-1 Location of Mong Kul Borey Hospital

In consideration of minimizing the influence of construction works on the patients hospitalized in the facilities, vacancy in the site and removable buildings, the area centering the playground on the east side of the hospital shall be assigned as the planned construction site. However, if the building is constructed in this area, the newly constructed building will be further apart from the entrance of the hospital, resulting in worsened access to the Emergency Department. Therefore, it will be planned to move the entrance of the hospital approximately 50 m eastward and utilize the front yard as a playground with the present entrance closed. The present entrance and the front yard will be left as they are as a planned construction site for the future.

Relocation plan for the existing facilities will be shown below:

(i) Tuberculosis Ward: To be removed by the Cambodian side. The Tuberculosis Ward will be relocated to a building to be newly constructed by the Cambodian side as the Surgical Ward.

(ii) Rehabilitation Ward: To be moved to an existing building with the existing facilities demolished.

(iii) Garage: To be removed by the Cambodian side.

(iv) Kitchen for Patient Family: To be romoved by the hospital side.

(v) Water tank: Removed by the Cambodian side. The moved Kitchen for Patient Family will be equipped with water faucets.

The climate of the planned construction site is characterized by high temperature and high

humidity of the tropical monsoon type and is divided into the rainy season (May to October) and the dry season (November to April). In order to cope with the high temperature and the high humidity, the buildings shall be laid out particularly in consideration of solar radiation and draft in rooms not equipped with air-conditioning equipment. More specifically, the Emergency Department and the Department of Radiology shall be allocated to areas close to the entrance with the Operation Theater, the Postoperative Ward, and the Central Supply Department gathered next to them. The Surgical Ward Building and the Obstetrics/ Gynecology Ward Building shall be allocated to the north of the above wards with both connected with a connecting corridor.

Further allocation shall be determined according to the following layout improving the hospital environments:

(i) Layout with consideration given to separation in pedestrian flow between medical staff, and patients and their families.
In the present hospital, the main corridor passes through the center of individual wards, where patients; visitors; and medical staff cross one another. This is not acceptable in terms of hospital management and prevention of infectious diseases. This project shall plan pedestrian flows with an eye to improvement of the above situation.

(ii) Layout with consideration given to prevention of infectious diseases
Such departments as the Operation Theater shall be laid out so that clean areas and unclean areas are clearly indicated with the pedestrian flows separated. The X-ray room shall be laid out so as to eliminate the risk that an operator is exposed to radiation.

(iii) Layout improving the narrow nursing environment and patient environment
Because the present wards are mostly comprised of large patient rooms with narrow space between beds and narrow nursing space where privacy is difficult to be ensured, this project shall lay out the wards with 6-bed rooms as the nucleus.

⑵ Building Plan

1) Floor Plan

① Departmental scheme

It is not realistic for the Mong Kul Borey Hospital to sharply increase the operational cost and labor cost with the size enlarged. The scale of the cooperation shall be determined based on the number of consultation rooms and operation rooms at present and planned with an eye toward restoring and strengthening of departments that are significantly hindered from ensuring medical activities by constraints associated with the facilities at present.

The number of rooms required for individual departments were calculated from their achievements during the period with data recorded relatively completely between 2000 and 2004 and from the estimated population growth rate in Banteay Meanchey Province of Cambodia of 10 years after completion of the facilities (2016) (2.5%). The population growth rate was calculated based on the census of Cambodia and the statistical data of PHD, Banteay Meanchey Province.

i. Surgical Ward Building and Obstetrics/Gynecology Ward Building

The number of beds possessed by the Mong Kul Borey Hospital at the time when it was opened with the aid of Japanese government was only four. Then additional construction was continued and the hospital has developed into a top referral hospital in Banteay Meanchey Province with 240 beds in total (53 beds for the Internal Medicine Department, 68 beds for the Surgery Department, 25 beds for the Obstetrics/Gynecology Department, 35 beds for the Pediatrics Department, 14 beds for the Ophthalmology Department, and 45 beds for the Tuberculosis Department). One of the characteristics of the hospital is that it does not have a general Outpatient Clinic Department but has consultation rooms in individual wards; a delivery room and the related rooms in case of the Obstetrics/Gynecology Ward; and an Ophthalmic Operation room and the related rooms in case of ophthalmology.

In addition, another characteristic of the wards is that families of patients support nursing for the patients because the number of nursing staff allocated to wards is limited (only five nurses consisting of one chief nurse and four nurses in case of the Surgical Ward). Under such circumstances, patients' families function as a nurse call and provide the patients with such care as serving of meals (the hospital serves to patients only rice gruel twice a day), cleaning of clothes, and care of the personal or bodily needs.

The numbers of inpatients, the average lengths of the hospital stay, and the bed occupancy rates of individual departments will be described below. The number of inpatients has been on an upward trend as approximately 4,000 per year since 2001. Although the record lacks complete data for the period from 2000 to 2002, comparison of the data between 2003 and 2004 indicates that the numbers of inpatients, the average lengths of the hospital stay, and the bed occupancy rates are all on an upward trend or stay flat. The reason that the Internal Medicine Department holds a high bed occupancy rate is considered to be the large number of inpatients with AIDS resulting in a high annual death toll of approximately 40 persons. The Ophthalmology Department also has a large number of patients and shows a high increasing trend in the bed occupancy, because the hospital is the only hospital where an ophthalmic specialist is stationed in Banteay Meanchey Province. On the contrary, the small number of patients in the Pediatrics Department is attributed to Kanta Boppa Children Hospital in Siem Reap that provides free diagnosis and treatment where many patients of the

hospital are flowing into. In addition, the number of patients with tubercular is on a downturn trend. Comparison of the data between 1999 and 2004 indicates that the number of patients decreased to approximately 75% and the bed occupancy rate to roughly a half.

While all the departments showed approximately 60% of bed occupancy rates in 2003, most departments showed relatively high bed occupancy rates in 2004 as represented by 82% of the Internal Medicine Department and 71% of the Ophthalmology Department. However, The Surgery Department and the Obstetrics/ Gynecology Department remained low as 63% and 59% respectively. To cope with the situation, the numbers of beds for the Surgery Department and the Obstetrics/ Gynecology Department shall be calculated based on the actual number of inpatients so that the project may not turn out to be an excessive plan.

In the meantime, since the hospital does not have complete data for the period from 2000 to 2002, the data for 2003 and 2004 shall be used for calculation of the planned number of beds.

Table 2-1 Data on Inpatients

	No. of beds		1999	2000	2001	2002	2003	2004
Internal Medicine	53	No. of inpatients (persons)	716	-	-	-	1,126	1,132
		Average no. of days in hospital (days)	9.85	-	-	-	11.50	14.01
		Bed occupancy rate (%)	27.0	-	-	-	67.0	82.0
Surgery	68	No. of inpatients (persons)	698	-	-	-	1,076	1,206
		Average no. of days in hospital (days)	9.97	-	-	-	12.64	13.04
		Bed occupancy rate (%)	27.0	-	-	-	55.0	63.0
Obstetrics/Gynecology	25	No. of inpatients (persons)	368	-	-	-	613	697
		Average no. of days in hospital (days)	7.41	-	-	-	7.77	7.73
		Bed occupancy rate (%)	30.0	-	-	-	52.0	59.0
Ophthalmology	14	No. of inpatients (persons)	70	-	-	-	229	434
		Average no. of days in hospital (days)	7.68	-	-	-	7.69	8.37
		Bed occupancy rate (%)	11.0	-	-	-	34	71.0
Pediatrics	35	No. of inpatients (persons)	267	-	-	-	427	324
		Average no. of days in hospital (days)	5.32	-	-	-	7.14	9.01
		Bed occupancy rate (%)	11.1	-	-	-	24.0	22.0
Tuberculosis	45	No. of inpatients (persons)	200	160	178	174	179	149
		Average no. of days in hospital (days)	-	-	-	-	-	-
		Bed occupancy rate (%)	63.0	61.0	67.0	52.0	49.0	34.0
Total/ Average	240	No. ofin patients (persons)	2,383	2,770	4,300	4,261	3,474	3,942
		Average no. of days in hospital (days)	-	-	-	-	-	-
		Bed occupancy rate (%)	44.0	51.0	59.0	52.0	50.0	46.0

Source: Interview with the hospital

The number of required beds was calculated by deriving the total lengths of the hospital stay from the estimated number of inpatients and the estimated average length of the hospital stay of 10 years after completion of the construction based on the numbers of inpatients in 2003 and 2004. On the other hand, the bed occupancy rate for the Surgical Ward and the Obstetrics/Gynecology Ward was estimated to be 90% in light of the current bed occupancy rates of the two departments remaining as low as approximately 60%. As a result, the numbers of the required beds were estimated to be 56 for the Surgical Ward and

20 for the Obstetrics/Gynecology Ward, and thus the future numbers of beds are expected to be reduced from the current number of beds. However, that scale is considered to be appropriate judging from the actual bed occupancy rate at present of 60%. For the reference sake, 20 beds (two of which shall be used in ICU also functioning as isolation room) out of the number of beds in the surgery department will be placed next to the Operation Theater as the Postoperative Ward.

Table 2-2 Estimated numbers of beds for Surgical Ward and Obstetrics/Gynecology Ward

	Annual average no. of inpatients (persons) A	Estimated no. of inpatients (persons) B	Average no. of days in hospital (days) C	Total no. of days in hospital (days) D	No. of beds (beds) E	Bed occupancy rate 90% (beds) F	Planned no. of beds (beds)	Requested no. of beds (beds)	Present no. of beds (beds)
Surgical Ward	1,141.0	1,414.8	12.38	18,166.5	49.8	55.3	56	85	68
Obstetrics/ Gynecology Ward	613.9	846.3	7.70	6,516.3	17.9	19.7	20	45	25

A No. of inpatients in 2003 and 2004

B Estimated no. of inpatients of 10 years after completion of the construction (2016) based on the population growth rate of Banteay Meanchey Province, 2.5%. (1.24 times)

C Average no. of days in hospital

D Total no. of days in hospital D=BxC

E No. of beds E=D/365

F Bed occupancy rate 90% F=E/90%

ii Operation Theater

There are 30 medical workers on the register in the hospital consisting of eight doctors—six doctors and two medical assistants, two chief nurses (one for the Operation Theater and one for Postoperative Room), two nurses in charge of anesthesia, 17 nurses, one nurse in charge of sterilization. Although there were originally three operation rooms, operation is implemented in two rooms at present with one room deteriorated due to factors such as rainwater leakage. Although the breakdown of the number of planned operations and the number of emergency operations in 2001 and 2002 are unknown, the average number of operations implemented per year exceeds 1,700. For reference sake, a Caesarean operation is implemented in the Operation Theater as a planned operation in principle instead of in the Delivery Room.

In terms of the breakdown of planned operations, appendectomy; perforating appendicitis; intestinal obstruction; bladder stones; and groin hernia among abdominal surgeries, pleuritis among thoracic surgery, and hysterotomy; Caesarean operation; ectopic pregnancy; ovariectomy; etc. among operations associated with Obstetrics/Gynecology account for approximately 85% of the planned operations implemented by the hospital per year, amounting to 1,100 operations. In terms of the breakdown of emergency operations, the

hospital implements more than 700 operations per year including quadruple amputation of patients affected by land-mine accidents or bomb accidents specific to this region, operations of patients affected by traffic accidents associated with increase of traffic on Route 5, and appendicitis among surgical operations, and Caesarean operation among operations associated with Obstetrics/Gynecology.

Table 2-3 Number of Surgical Operations (cases)

Operation Theatre	2001	2002	2003	2004	Average between '01-'04
No. of planned operation	-	-	937	1,089	1,013.0
Caesarean operations	134	197	140	87	139.5
Total no. of planned operations	-	-	1,077	1,176	1,126.5
No. of emergency operations	-	-	716	765	740.5
Total no. of operations	1,686	2,078	1,793	1,941	1,874.5

Source: Interview with the hospital

The present Operation Theater has a corridor passing through it in the center, along which aligned are, from the entrance of the Operation Theater, Doctor's Anteroom, Dressing Room, Office, and Warehouse. In addition, there are a double door and a corridor doubling as a front room for the Operation room; Operation room and a toilet zone on both sides of the corridor; and the Central Supply Room and a washing room for operating gowns at the back of the corridor, which have been allocated without being divided into the clean area and unclean area. This project shall ensure improvement in relation to those points.

The number of operation rooms shall be determined based on the planned number of operations and are estimated to be two from the following calculation. Operation rooms are disinfected by a UV lamp and with such an antimicrobial agent as chloramine after an operation for a patient with such infectious disease as HIV, of planned operations. If the number of operation rooms planned to be allocated for the hospital is only one, the operation room will become unavailable after operation of an infectious disease until the operation room completes disinfection, resulting in difficulty in responding to needs of planned operations or frequently implemented emergency operations. For the above reason, two operation rooms will be planned to be allocated for the hospital. Of the two operation rooms, one shall be intended for general operations and orthopedic surgery, and the other shall be intended for operations associated with Obstetrics/Gynecology.

Table 2-4 Estimated Number of Operation Rooms

Operation Theatre	Average no. of operations per year (cases) A	Average no. of operations per day (cases) B	Estimated no. of operations per day (cases) C	Average time taken per operation (min.) D	No. of operations per day 1 room/day (cases) E	Estimated no. of operation rooms C÷E (rooms) F	No. of planned operations (rooms)	Requested no. of operation rooms (rooms)	Present no. of operation rooms (rooms)
No. of operations	1,126.5	3.7	5.8	150	3.4	1.7	2	5	2

A Average no. of planned operations per year between 2001 and 2004 (including Ceasarean operations)

B No. of operating days of the Operation Theatre 240 days B=A÷240

C Estimated no. of patients of 10 years after completion of the construction (2016) based on the population growth rate of Banteay Meanchey Province, 2.5%. (1.24 times)

D No. of operating hours of the Operation Theatre for planned operations 6 hours 30 minutes (8:30-17:00, 510 minutes); One operation is assumed as to take 150 minutes including preparation and cleaning.

E No. of operations per operation room per day (510 minutes)/150 minutes=3.4 cases

The present number of beds in the Postoperation Room where postoperative patients will be moved to is 20. Of the beds, two are placed in ICU and the remaining 18 are in the general Postoperation Room. Postoperative patients will be provided with such treatment as injection and drip infusion and will be transferred to the general outpatient ward after staying there for a certain period. In the Postoperation Room, patients will be attended by their families similarly as in the general ward and will be provided with more intensive nursing care than in the general ward. The space called ICU is, however, faces the general aisle with five beds of the postoperative beds placed on the balcony, and is a condition far from a treatment area intended for patients with advanced disease.

The number of beds to be placed in the Postoperation Room was estimated from the number of operations. It will be calculated similarly as the estimation for wards on the assumption that 70% of postoperative patients of the number of operations except for operations associated with Obstetrics/Gynecology such as Caesarean operation and minor surgeries number of operations will stay in the Postoperation Room for five days. The result of the estimation indicated that the planned number of beds to be placed in the Postoperation Room will be 20 similarly as in the present status. Of the above beds, two shall be placed in a partitioned ICU with patients with infectious diseases taken into consideration. Although access of patients' families to the Postoperation Room is not restricted at present, this project shall limit the number of patients' families allowed to access the room to one per one patient and encourage hand washing before and after entering the room to enhance cleanliness.

Table 2-5 Estimated Number of Postoperation Rooms

	Average no. of patients per year (persons) A	No. of patients in post-operation rooms (persons) B	Estimated no. of patients in post-operation rooms (persons) C	Average no. of days in post-operation rooms (days) D	Total no. of days in post-operation rooms (days) E	No. of beds (beds) F	Bed occupancy rate 90% (beds) G	Planned No. of beds (beds)
No. of beds	1,487.5	1,041.3	1,291.2	5	6,456.0	17.7	19.6	20

A No. of patients in 2003 and 2004 except for those of operations associated with Obstetrics/Gynecology and minor operations

B Assuming 70% of postoperative patients to be transferred to the Postoperation Ward.

C Estimated no. of patients of 10 years after completion of the construction (2016) based on the population growth rate of Banteay Meanchey Province, 2.5%. (1.24 times)

D Average no. of days in postoperation rooms

E Total no. of days in postoperation rooms D=BxC

F No. of beds E=D/365

G Bed occupancy rate90% F=E/90

The Central Supply Department will be established in addition to the Operation Theater similarly as at present with clean areas and unclean areas separated more clearly than they are at present. A room for equipment disassembly and washing, a room for equipment assembly, a sterilization room, an equipment storage room, shipment zone, etc. will be set up, and at the same time, a washing room for operating gowns and other clothes used for operation will be established in the Central Supply Department similarly as at present because the hospital has no specific washing room.

iii Emergency Department

The table below shows the number of outpatients of the Mong Kul Borey Hospital. While the number of patients has been significantly increasing, it still remains an extremely small number of a little less than 12,000 per year, corresponding to a daily number of approximately 32.8 patients. Although not supported numerically, it has been reported that most patients transferred from health centers are those in need of operations or blood transfusion in principle. In addition, it is likely that the cases that patients in need of healthcare services unavailable in hospitals other than the Mong Kul Borey Hospital in the province directly visit the hospital will increase.

Table 2-6 Number of Emergency Cases in Mong Kul Borey Hospital (2000-2004)

Year	Transferred from health centers		Visit to the hospital		Total
	In OD	Out of OD	In OD	Out of OD	
2001	n.a.	n.a.	n.a.	n.a.	8,717
2002	n.a.	n.a.	n.a.	n.a.	11,931
2003	940	1,925	6,066	2,965	11,896
2004	1,424	2,309	5,497	2,777	12,007

Source: Annual Activity Report of Mong Kul Borey Hospital 2003 and 2004, and the hospital's response to the questionnaire prepared by the Basic Study Team

The number of operation tables placed in minor operation rooms and the number of beds to

be placed in observation rooms were calculated based on the above-mentioned number of emergency patients. It is assessed that two units of operation tables will be enough for the minor operation room of the Emergency Department to accommodate the estimated future patients.

Table 2-7 Calculation of the Number of Operation Tables

	Average no. of emergency patients per year (persons) A	Average no. of emergency patients per day (persons) B	No. of emergency patients at the peak (persons) C	Estimated no. of patients at the peak (persons) D	Average time taken for treatment (minutes) E	No. of patients to be treated per table (persons) F	Estimated no. of operation tables D/F (rooms)	No. of operation tables needed (rooms)	Requested no. of operation tables (rooms)	Preset no. of operation tables (rooms)
No. of operation tables	11,137.8	30.5	21.4	26.5	25	16.8	1.6	2	4	2

A Average no. of emergency patients per year between 2001 and 2004.
B Average no. of emergency patients per day B=A/365 days
C Assuming the peak time as 8:00 a.m. to 3:00 p.m. and 70% of patients visiting the hospital during this time period.
D Estimated no. of patients of 10 years after completion of the construction (2016) based on the population growth rate of Banteay Meanchey Province, 2.5%. (1.24 times)
E 25 minutes is assumed for the time taken to treat one patient, including preparation and cleaning.
F Assuming the peak time, (420 minutes)/25 minutes/patient=16.8 patients/room

The number of beds required for the observation room was calculated as follows. Of the emergency patients in 2004, patients considered as to need to be temporarily accommodated in the observation room were patients with diarrhea, acute respiratory disease, and heart diseases, and patients affected by an accident including traffic accidents, representing approximately 19.1% of the total cases. Because, in most cases, patients targeted for accommodation will be accommodated in the Emergency Department during nighttime and will leave the hospital on the following day; or accommodated in the morning due to bad physical condition during the midnight and will leave the hospital within the same day, the number of required beds was calculated on the assumption that the average length of hospital stay is half a day (0.5 days). The result of the above calculation becomes four beds.

Table 2-8 Calculation of the Number of Beds in the Observation Room

	Average no. of emergency patients per year (person) A	Average no. of emergency patients per day (person) B	Estimated no. of patients per day (person) C	No. of patients in need of observation (person) D	No. of days in observation room (days) E	Estimated no. of beds in observation room (beds) F	Planned no. of beds in observation room (beds)	Requested no. of beds in observation room (beds)	Present no. of beds (beds)
No. of Observation rooms	11,137.8	30.5	37.8	7.2	0.5	3.6	4	4	0

A Average no. of emergency patients per year between 2001 and 2004.
B Average no. of emergency patients per day B=A/365 days
C Estimated no. of patients of 10 years after completion of the construction (2016) based on the population growth rate of Banteay Meanchey Province, 2.5%. (1.24 times)

D No. of patients in need of observation per day =C × 19.1%
E Setting the average number of days in observation room as half a day.
F Estimated number of beds in observation room =D × E

Other rooms to be established in the Emergency Department shall include an around-the-clock reception (doubling as a casher), a hall that can accommodate even sharply increased patients in the event of a catastrophic disaster, a consultation room, a doctors' room serving as an anteroom for duty doctors, a nurse station facing the observation room, a utility room, an oxygen room, a staff room, and a warehouse.

iv Department of Radiology

The number of annual radiographic examinations and ultrasonic diagnoses implemented from 1999 to 2004 will be shown below.

Table 2-9 Number of Radiation Cases (cases)

	2000	2001	2002	2003	2004	Average
No. of radiographic examinations	1,515	2,265	2,240	2,023	2,286	2,065.8
No. of ultrasonic diagnoses	678	1,025	721	446	509	675.8

Source: Interview with the hospital

At present, the Department of Radiology implements more than 2,000 cases of radiographic examinations per annum by using a mobile type general-purpose X-ray apparatus in a fixed manner but the measures for radiological protection remains insufficient. The image development is implemented manually. The demand for the ultrasonic diagnosis reached its peak in 2001 and decreased thereafter. The reason is as follows: The hospital was provided with an scanner ultrasound by Kanta Boppa Children's Hospital (Switzerland) located in Siem Reap and had sharply increased number of patients in the following year; however, the number of the patients decreased because several private diagnostic clinics in the periphery of the hospital introduced the same equipment.

In this project, an operational corridor shall be established from the viewpoint of radiological protection to ensure high safety both for patients and staff. In addition, a reception for the Department of Radiology (including night watch), an ultrasonic laboratory, a dark room, a film warehouse, an equipment ware and so on shall be established.

② Calculation of sizes of facilities

The area per bed of a public general hospital in modern Japan is 50 m^2 to 80 m^2. On the other hand, the present Mong Kul Borey Hospital has 240 beds and its total floor area is 6,905 m^2. Thus its area per bed becomes 28.8 m^2, which is roughly a half of the hospital size

recommended in Japan.

In February 2003, the Ministry of Health of Cambodia formulated a guideline on establishment of hospitals with the support of aid organizations. It consists of a guideline on buildings such as specifications and room areas associated with hospital facilities (Complementary Package of Activity, CPA Building Brief-Referral Hospitals) and guidelines for equipment to be installed in individual departments of hospitals (Medical Equipment Standard-List for CPA3 Referral Hospital). The CPA's guideline specifies the size of a referral hospital to be 40 m^2 per bed. On the basis of the present hospital size of 240 beds, the appropriate size will become 9,600 m^2. With the area as a guideline for the total size, and with the ratio of individual departments of an average public general hospital in Japan as a guideline for a parameter for size calculation, the sizes of departments associated with this project will be calculated as follows. The calculated area will be validated based on the area ratios that the present facilities ought to be.

Table 2-10 Calculation of Scale of Facilities

Department	Standard area ratio (%)	Calculated area (m^2) (Total 9,600 m^2)	Planned area (m^2)
Wards (*1)	35.0	3,360.0	1,729.0
Emergency Department	5.0	480.0	359.0
Department of Radiology	4.0	384.0	250.0
Operation/Central Sterilizing & Supply Division (*1)	9.0	864.0	809.0
Service Ward, etc.	10.0	960.0	695.0
Total floor area		6,048.0	3,842.0

(*1) The area for the postoperative room in the operation ward (289 m^2) is included in the wards above.

The validation indicates that the planned area of wards is approximately half the calculated area. However, it is because the Internal Medicine Ward and the Pediatrics Ward are out of the scope of this project. If those present ward areas are added to the planned area, it will become 2,918 m^2, which is approximate to the calculated area with an error of approximately 10%. In addition, for the other departments, the calculated areas and the planned areas are approximate with errors of approximately 10%. From the above findings, the planned hospital size is assessed as appropriate.

Comparison of areas of individual departmental rooms between the present condition and the plan will be shown in the following pages.

Table 2-11 Calculation for Area Comparison (unit: ㎡)

BLDG. Name	Division Name	Room Name	Existing			Application			Plan			Note
			Q'ty	Unit Area	Total	Q'ty	Unit Area	Total	Q'ty	Unit Area	Total	
EMERGENCY/ IMAGING BUILDING	Emergency	Entrance Hall	1	36.4	36.4	-	-	-	1	62.1	62.1	
		Reception/Cashier	1	11.9	11.9	1	30.0	30.0	1	21.0	21.0	
		Minor O.P. Room (inc. Shower)	2	18.0	36.0	1	44.0	44.0	1	42.0	42.0	
		Consultation Room				1	84.0	84.0	1	14.0	14.0	
		Doctor Room (inc. Toilet/Shower)				1	18.0	18.0	1	14.0	14.0	
		Nurse Station	-	-	-	-	-	-	1	14.0	14.0	
		Observation Room	(inc. Minor O.P. Room)			(inc. minor O.P. Room)			1	45.0	45.0	
		Utility Room	-	-	-	(inc. Toilet)			1	4.0	4.0	
		Oxygen Room	-	-	-	-	-	-	1	9.0	9.0	
		Store	1	11.4	11.4	-	-	-	1	11.0	11.0	
		Staff RM (M) (inc. Toilet/Shower.)	-	-	-	1	85.0	85.0	1	13.0	13.0	
		Staff RM (F) (inc. Toilet/Shower)	-	-	-	1	85.0	85.0	1	13.0	13.0	
		Family Waiting Corner	-	-	-	-	-	-	1	21.0	21.0	
		Corridor	1	26.5	26.5	-	-	158.4	1	75.0	75.0	
		Other			65.4			287.6	0	0.0	0.0	
	Total of Emergency				187.6			792.0			358.1	
	Imaging Division	Reception (inc. Duty Corner)	(Duty)	25.7	25.7	-	-	-	1	14.0	14.0	
		Ultrasound Room	1	11.9	11.9	1	21.0	21.0	1	14.0	14.0	
		X-ray Room	1	11.6	11.6	1	50.0	50.0	1	24.0	24.0	
		Control Corridor	-	-	-	-	-	-	1	26.0	26.0	
		Dark Room	1	8.8	8.8	-	-	-	1	9.0	9.0	
		Film Store	-	-	-	-	-	-	1	12.0	12.0	
		Equipment Store	-	-	-	-	-	-	1	16.0	16.0	
		Cleaning Stock Room	(Toilet)	7.5	7.5	-	-	-	1	8.0	8.0	
		Family Waiting Corner	-	-	-	-	-	-	1	21.0	21.0	
		Pump Room	-	-	-	-	-	-	1	3.0	3.0	
		Corridor		26.9	26.9	-	-	-	1	109.0	109.0	
		Other						250.0	0	0.0	0.0	
	Total of Imagine Division				92.4			321.0			256.0	
	Total of Emergency and Imagine Division				280.0			1,113.0			614.1	
OPERATION THEATER BUILDING	Operation/Central Sterilizing & Supply Division	Ante Room	1	15.2	15.2	-	-	-	1	38.0	38.0	
		Reception	-	-	-	1	14.0	14.0	1	30.0	30.0	
		Gown Changing Room (M) (inc. Toilet/Shower)	1	17.1	17.1	1	21.0	21.0	1	16.0	16.0	
		Gown Changing Room (F) (inc. Toilet/Shower)	(Combine with Reception & Staff Room)			1	21.0	21.0	1	28.0	28.0	
		Operation Hall (inc. Hand Washing)	1	14.3	14.3	1	57.0	57.0	1	96.0	96.0	
		Preparation Room	-	-	-	1	72.0	72.0	1	20.0	20.0	
		General & Gynecological O.P. Room	1	25.1	25.1	2	39.0	78.0	1	42.0	42.0	
		Orthopedic O.P. Room	1	30.4	30.4	3	36.0	108.0	1	42.0	42.0	
		Collection Corridor	-	-	-	-	-	-	1	17.0	17.0	
		Meeting Room	-	-	-	1	30.0	30.0	1	26.0	26.0	
		Doctor Room	(Duty)	10.8	10.8	1	22.0	22.0	1	14.0	14.0	
		Staff Room (M)	-	-	-	-	-	-	1	11.0	11.0	
		Staff Room (F)	-	-	-	-	-	-	1	11.0	11.0	
		Equipment Store	1	30.4	30.4	1	101.5	101.5	1	7.0	7.0	
		Corridor	-	-	-	1	38.8	38.8	1	22.0	22.0	
		Pump/AC Room	-	-	-	-	-	-	1	18.0	18.0	
		Oxygen Room	-	-	-	1	27.0	27.0	1	14.0	14.0	
		Ante Room for Post-Ope. Room	-	-	-	-	-	-	1	24.0	24.0	
		Post Operation Room	2		97.5	11		418.0	1	186.0	186.0	
		Minor operation room	1	20.3	20.3				0	0.0	0.0	
		ICU	1	13.0	13.0	1	35.0	35.0	2	12.0	24.0	
		Nurse Station	1	7.4	7.4	-	-	-	1	20.0	20.0	
		Utility Room	-	-	-	-	-	-	1	9.0	9.0	
		Toilet/Shower	1	6.1	6.1	-	-	-	1	9.0	9.0	
		Corridor	1	15.8	15.8	-	-	-	1	17.0	17.0	
		Linen Washing Room	1	28.2	28.2	4		67	1	36.0	36.0	
		Instrument Washing Room	1	24.0	24.0	3		319.8	1	36.0	36.0	
		Instrument Assembling Room							1	24.0	24.0	
		Sterilization Room							1	22.0	22.0	
		Sterilized Equipment Room	1	27.6	27.6				1	28.0	28.0	
		Dispatch Corner	-	-	-	-	-	-	1	10.0	10.0	
		Corridor	3		67.8	-	-	-	1	196.0	196.0	
		Other				-	-	-	1	6.0	6.0	
	Total of Operation and CSSD				451.0			1430.1			1,099.0	

BLDG. Name	Division Name	Room Name	Existing			Application			Plan			Note
			Q'ty	Unit Area	Total	Q'ty	Unit Area	Total	Q'ty	Unit Area	Total	
SURGERY WARD BUILDING	Surgery Ward	Nurse Station	-	-	-	1	16.0	16.0	1	42.0	42.0	
		Minor operation room	1	24.3	24.3	1	36.0	36.0	1	21.0	21.0	
		6-Bed Room	4		326.7	7		446.0	4	39.0	156.0	
		4-Bed Room							2	30.0	60.0	
		1-Bed Room							2	20.0	40.0	
		Amenity Bed Rm (inc. Toilet/Shower.)	-	-	-	5	15.0	75.0	2	20.0	40.0	
		Equipment Room/Toilet	-	-	-	-	-	-	1	19.0	19.0	
		Toilet/Shower (M)	Separate					40.0	1	20.0	20.0	
		Toilet/Shower (F)	Separate						1	18.0	18.0	
		Handicapped Toilet	-	-	-				1	4.0	4.0	
		Toilet/Shower (Staff)	1	24.3					1	4.0	4.0	
		Washing Room	Separate			1	40.0	40.0	1	11.0	11.0	
		Store	-	-	-	-	-	-	1	9.0	9.0	
		Cleaning Stock Room	-	-	-	-	-	-	1	2.0	2.0	
		Pump Room	-	-	-	-	-	-	1	6.0	6.0	
		Corridor			272.2	-	-	130.6	1	252.0	252.0	
		Other			57.8				1	16.0	16.0	
	Total of Surgery Ward				681.0			783.6			720.0	
OBSTETRICS/GYNECOLOGY WARD BUILDING	Delivery Div. and Obstetrics/gynecology ward	Entrance Hall	-	-	-	-	-	-	1	29.0	29.0	
		Nurse Station	1	14.0	14.0	1	27.0	27.0	1	41.0	41.0	
		Ultrasound Room	1	9.8	9.8	1	18.0	18.0	1	16.0	16.0	
		Gynecological Consulting Room	1	13.1	13.1	2	24.0	48.0	1	14.0	14.0	
		Consultation Room for PMTCT	-	-	-	-	-	-	1	13.0	13.0	
		Vaccine Room	-	-	-	-	-	-	1	13.0	13.0	
		Obstetrics Consultation Room	-	-	-	-	-	-	1	20.0	20.0	
		Preparation Room	1	13.7	13.7	-	-	-	1	30.0	30.0	
		Labor Room (inc. Toilet)	1	13.1	13.1	-	-	-	1	23.0	23.0	
		Delivery Room	1	34.2	34.2	Inc. Operation Div.			2	20.0	40.0	
		Eclampsia Room	-	-	-	-	-	-	1	20.0	20.0	
		Doctor Room	1	13.7	13.7	-	-	-	2	10.0	20.0	
		Store	-	-	-	-	-	-	1	5.0	5.0	
		6-Bed Room	1	156.6	156.6	12		352.0	3	39.0	117.0	
		1-Bed Room							1	19.0	19.0	
		Amenity Bed Rm (inc. Toilet/Shower.)	-	-	-	5	15.0	75.0	1	19.0	19.0	
		Toilet/Shower			60.0	2		42.0	1	18.0	18.0	
		Handicapped Toilet	-	-	-			36.0	1	5.0	5.0	
		Toilet/Shower (Staff)	-	-	-				1	3.0	3.0	
		Washing Room	Inc. Toilet/Shower			1	40.0	40.0	1	12.0	12.0	
		Store	1	9.5	9.5	-	-	-	1	7.0	7.0	
		EPS	-	-	-	-	-	-	1	4.0	4.0	
		Corridor	1	72.4	286.3	-	-	102.0	1	232.0	232.0	
		Other	-	-	-				0	0.0	0.0	
	Total of Obstetrics/Gynecology Ward				624.0			740.0			720.0	
MECHANICAL ROOM	Mechanical Div.	Maintenance Room	1	63.0	63.0	1	108.0	108.0	1	42.0	42.0	
		Electrical Room	-	-	-	1	49.0	49.0	1	54.0	54.0	
		Generator Room	1	63.0	63.0	1	21.0	21.0	1	18.5	18.5	
		Pump Room	1	98.0	98.0	-	-	-	1	36.0	42.0	
		Reservoir Tank	-	-	-	-	-	-	1	67.0	67.0	
		Pump Room for Well	-	-	-	-	-	-	2	7.5	15.0	
		Other										
	Total of Mechanical Room				224.0			571.0			238.5	
OTHER		Store/Parking			164.0			348.0	1	126.0	126.0	
		Connection Corridor			141.0			144.0	1	81.0	811.0	
		Kitchen/Dry Room	-	-	-	3		185.0	1	56.0	56.0	
		Family Waiting Corner	-	-	-			300.0	1	155.8	155.8	
		Toilet for Family	-	-	-	1	40.0	40.0	1	31.5	31.5	
		Guard House			6.0	-	-	-	1	10.0	10.0	
	Total of Other				311.0			1017.0			460.5	
Total Floor Area					2,571.0			5,654.7			3,851.9	

(Application Total 10,801.0)

③ Floor Plan

i Minor operation room (Emergency Imaging Building)

- The module for the Minor operation room is set as 3.0m x 7.0m. Two opertaion tables are installed with a curtain between them. A shower booth is installed for washing unclean bodies of patients who had traffice accidents, etc.
- Work tables, sink and slop sink are installed by the window.

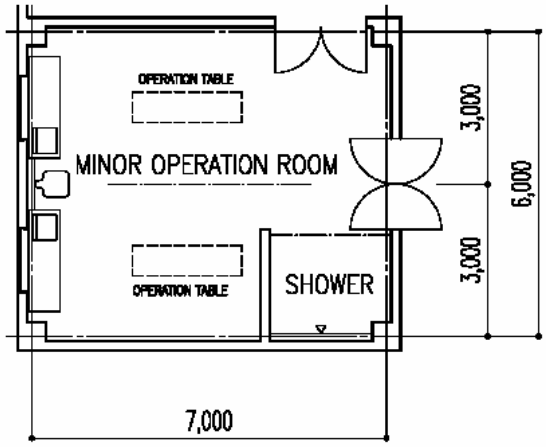


Figure 2-2 Minor Operation Room

ii X-ray Room and Ultrasound Room (Emergency Imaging Building)

- The X-ray Room is set as 4.7m x 4.6m and the Ultrasound Room 4.3m x 3.3m, allowing space for multi-purpose equipment.
- Conrol corridor connects the X-ray room, ultrasound room, radiation operating corner, dark room, film store and reception including duty corner.

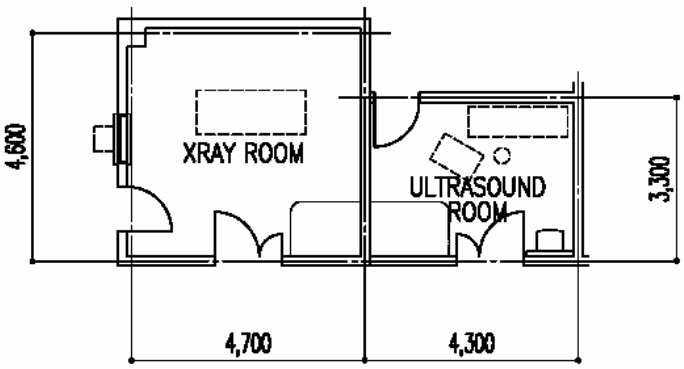


Figure 2-3 X-ray Room and Ultrasound Room

iii Operation Room (Operation Theater Building)

- The module for the operation room is 6.0 m × 7.0 m. Two rooms will be prepared for Orthopedics and General and Obstetrics/Gynecology.
- Collection corridor will be prepared as a flow line for used equipment, operation gown, etc.
- A medical gas outlet for oxygen will be installed at each operation room.

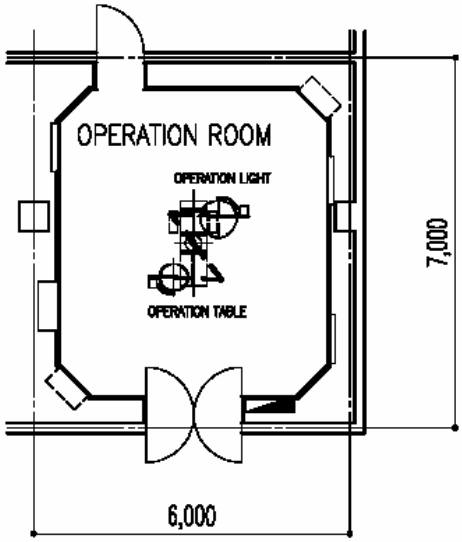


Figure 2-4 Operation Room

iv Bed Room (Surgical Ward, Obstetrics/Gynecology Ward)

- The module for general bed rooms is set as 6.0 m × 6.5 m for 6-bed room, 6.0 m × 5.0 m for 4-bed room, and 3.0 m × 6.5 m for 1-bed room.

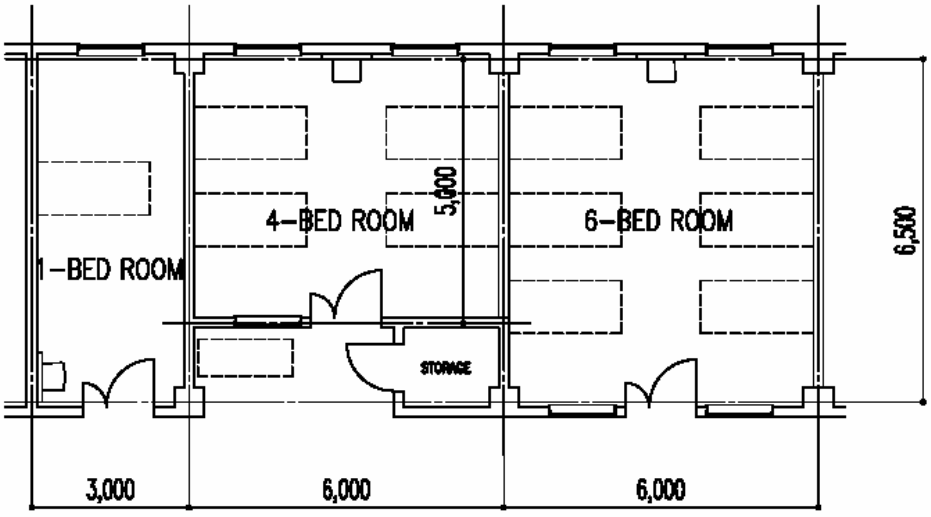


Figure 2-5 Bed Rooms

v Amenity Bed Room (Surgery Ward, Obstetrics/Gynecology Ward)

- The module for amenity bedroom is set as 3.0m x 6.5m with a toilet and a shower room installed.

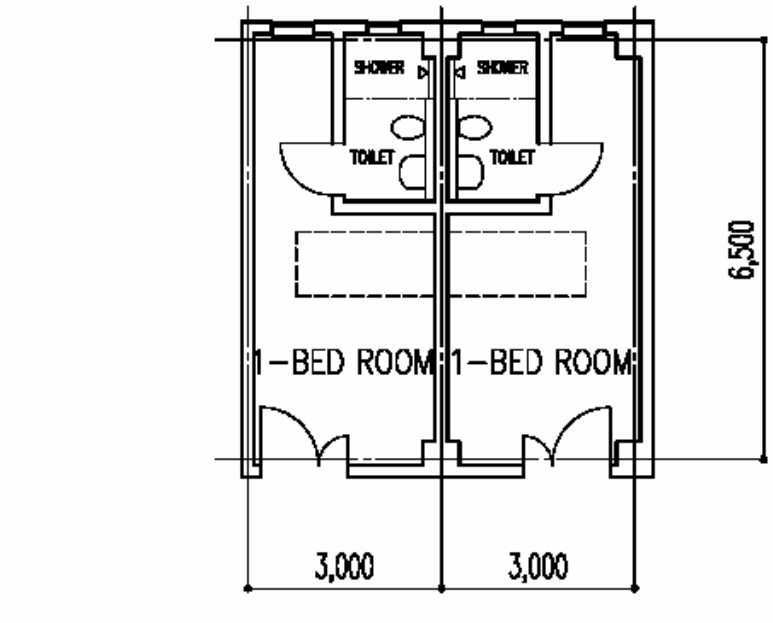


Figure 2-6 Amenity Bed Room

vi Delivery Room (Obstetrics/Gynecology Ward Building)

- The module for the Delivery Room is set as an open floor plan of 5.0m × 4.0m.
- Work table, sink and slop sink will be installed by the window.

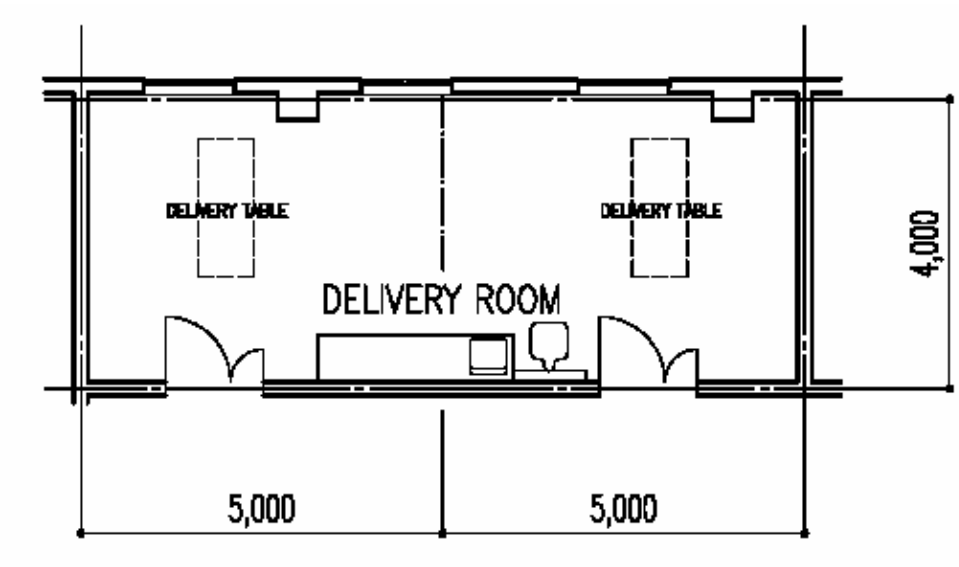


Figure 2-7 Delivery Room

2) Sectional Plan

The site has a slight slope (about 2 % of gradient) from south side to north side. And the difference is about 1 m between the south end of the site and the north end of the site at the current condition. However, no large-scale civil works for grading that Marshall side will have to carry out will be needed since the ground levels of the buildings on the north side and south side can be changed.

The floor level of the first floor will be set at 30 cm above the ground level to avoid flood damage caused by concentrated heavy rain. Slope will be set to respond to wheelchairs, stretchers and carrying in and out of supplies.

Roofs will be both truss and flat. As for the former, ceiling will be applied in order to create an air layer to release heat in patient rooms and other areas where multiple patients stay, and the latter will collect rainwater and forwarded it to a water tank.

Living rooms will be provided with ceiling. Airspace of inside of the ceiling also will be provided with heat insulation.

Each building will be provided with eaves to avoid the direct sunlight coming through into the room as much as possible.

The story heights of the various surgical wards (the height from the floor to the peak of the roof) were decided as indicated below.

－Emergency Imaging Building　This was decided based on the height of 2.8 m required for the ceiling fans in rooms in which people reside.

－Operation Theater Building　This was decided based on the height of 3 m required for the shadowless lights of the operating rooms. A ceiling height of 4 m was decided for the postoperative recovery room, based on CPA standards.

－ Surgery Building and Obstetrics/Gynecology Building

The necessary ceiling height for the postoperative recovery room was decided to be 4 m, based on CPA standards.

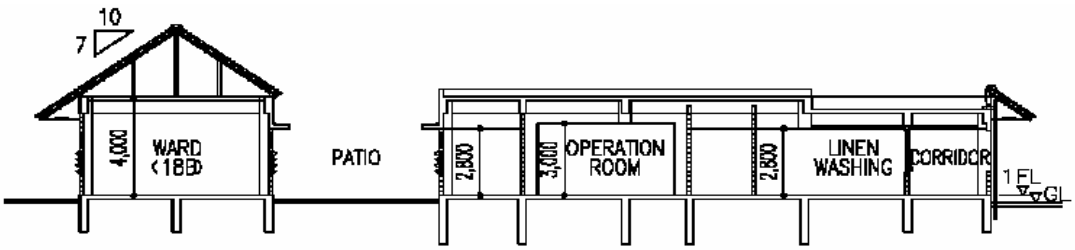


Figure 2-8 Sectional Diagram

3) Structural Plan

① Conditions for structural planning

- Earthquake: Cambodia is far away from the circum-Pacific earthquake belt, and there is no record of earthquake damage.
- Typhoon: Though Cambodia often encounters with foods (*1), there us no specific record of flood damage. As for typhoon, the country is out of reach of the developing area or path of typhoon, hence there is no record of typhoon damage.

  *Asia Disaster Reduction Center (ADRC) Highlight Vol. 28: Research report from an ADRC corresponding member
- Ground conditions: According to the geological report of the project construction site, the part from the surface to the depth of 1.5 m is earth filling, and in the deeper part lie silty clay layers. The N Value is 4-5 for earth filling and approximately 4-8 for the bottom silty clay strata. Since the N value for earth filling shows that it contains gravels, particular consideration should be given when construction takes place.

② Structural Plan

- Type of Structure: The site is located in the inland part and hence impact from typhoons and earthquakes can be considered very little. The reinforced concrete structure will be adopted in consideration of benefits in local procurement of materials, cost and past experiences.
- Frame Structure: The simple rigid frame structure will be adopted for structural lightweight having the fact that strong bearing capacity of soil cannot be expected. No record of earthquake eliminates the need for concrete walls in principle. Lightweight roof will be adopted rejecting the roof of concrete slab, except for corridors, etc. where flat roof with concrete slab will be adopted in light of the sectional planning and drainage slope. Structural slab will be adopted for major parts on the first floor considering the pit under the floor and the soil condition (instability of earth filling).

③ Foundation Plan

- Planned buildings are basically one-storied buildings except for the Mechanical Room Building, and their weight is classified as light in general terms.
- Since earth filling, which is geologically uneven, is used as surface soil, the bearing capacity will not be strong, and hence the foundation shall be continuous footing connecting columns instead of independent footing.
- Floating foundation based on the whole pit will be adopted for the areas in conjunction with water tanks having the structural slab for the under floor.
- The Mechanical Building will have independent footing, for it has multiple layers and hence a large column axial force capacity, but soil improvement work will be implemented.
- Due to lack of detailed soil property data for earth filling, the bearing capacity will be estimated based on other factors such as setting depth at the design stage, and the safety will

be verified by bearing capacity test after the commencement of construction.

- The geological survey has found out the ground water level of −1.5m at one point. Considering this figure, it is important to design with consideration given to not only the Df effect (setting effect) but also the impact of the depth of foundation on the construction cost.

④ Design Load

- Earthquake load: There is no record of earthquake so far, and the earthquake load will not be taken into account. However, considering the past records, a study on 50% of the Japanese standard will be carried out.
- Wind load: Although there is no record of typhoon, it is assumed as at the Japanese standard level, and the Japanese inland standard level will be adopted. The relative roughness of the construction site is set as III (coastline).
- Live load: It is determined as the table down below referring to the building standards and regulations of Japan.

Table 2-12 Representative Live Load

Room	Live Load (N/ m^2)			Remarks
	Floor	Frame	Earthquake	
Examination and related rooms	2900	1800	800	
X-ray and related rooms	5000	2400	1300	Heavy equipment
Waiting rooms	2900	2600	1600	
Offices and related rooms	2900	1800	800	

Source: Building Standards of Japan, etc.

⑤ Structural Material

- Concrete: Based on the results from the field survey, concrete shall be made of coral aggregates to be procured in the country and cement from Thailand. Although it must be mixed at the site instead of mixing at plants, etc., design strength will be secured through adequate mixing plans and test mixing.
- Steel bar: To be made in Japan or Thailand.
- Steel frame: To be made in Japan or Thailand. Steel frames will be used as support for roofs. Considering the durability and the fact that maintenance of steel frame will not take place for a long term, heavy steel frames with the PL thickness of 6mm or more will be used as a rule, except for, however, the main building where light steel frames will also be used in light of the importance of the building and cost.

4) Electrical and Mechanical Plan

① Electrical Installation

i High Voltage Installation

a Main Power Installation

Electric wire will be introduced from the eastside border of the hospital into the hospital site, which is supplied by the EDC's power plant in Sisophon under construction by assistance from the ADB. The transformer will be installed on the concrete column in the hospital premise to step down the pressure from 3 phase/3 wire 22KV to 3 phase/4 wire 380V/220V. Distribution wire is buried to convey electricity from the transformer to the Electrical Room.

b Distribution Facility

A distribution panel is installed in the Electrical Room to supply power to each building. One unit of automatic pressure regulator with 100KVA will be installed for the purpose of protecting medical equipment. The scope of power supply is constrained to the scope of this Project.

c Privately-owned Electrical Power Facility

As a countermeasure against power failure, an emergency power generator will be installed in the Electrical Room. The capacity of the generator will be 3-phase/4-wire 50KVA50Hz so as to be able to supply power for the plug outlets, lighting apparatus, incubators, water supply and water pumps for miscellaneous purposes in the Operation Room, ICU, Postoperative Room, Minor Operation Room, Observation Room, Nurse Station, and Delivery Room. As for fuel, 10 hours is assumed as the operating time. Since the ward buildings and the Mechanical Room are physically apart, a muffler will be installed to the exhaust opening of the engine.

d Main Line and Engine Facility

After the Electrical Room, the buried pipeline will convey electricity to the Pump Room in the Obstetrics/Gynecology Building. In the Pump Room, the cable rack will connect wire to each distribution board for power supply. As for wiring to the air conditioners, a switch box will be installed for maintenance. Anomalies of the pumps or overcharge of the water tank will be alerted on each distribution board. These signals will be consolidated into one signal to be transmitted to the engine distribution board in the Mechanical Room. The alarms will then be indicated on the alarm panel to be installed in the Operators' Room. Furthermore, switchover to the rainwater pump will be enabled on the engine board in the Mechanical Room by installing a selector switch.

e Lamp/Plug Outlet Facility

A power board will be installed in each distribution area to connect to lighting apparatus and outlets. The number of lighting apparatus units will be determined based on the existing building (C.f. Table below.) Emergency lamps will be installed in the Operation Room, ward buildings and corridors for the sake of emergency evacuation. Four different types of plug outlets according to the use will be installed with clear marking of each power type: general, privately-generated, automatically-regulated, and medical. Earth connection for medical plug outlets will be set separately from power supply so as to prevent micro-shock and macro-shock at the time of medical practice. Two outdoor lights will be installed for the Entrance.

Table 2-13 Lighting Intensity Plan

Rooms	Lighting Intensity	Lighting Facilities
Treatment room	－200Lux、	Recessed fluorescent lamp
Operation room	－300Lux、	Recessed fluorescent lamp
Nurse station	－200Lux、	Recessed fluorescent lamp
Waiting hall	－ 50Lux、	Recessed fluorescent lamp
Doctor's rooms	－300Lux、	Recessed fluorescent lamp
Staff rooms	－200Lux、	Recessed fluorescent lamp
Entrance hall	－100Lux、	Recessed down-light
Corridor	－ 50Lux、	Surface-mounted fluorescent lamp
Toilets	－100Lux	Recessed down-light
Shower rooms	－100Lux	Drop-proof ceiling light
Parking	－200Lux、	Surface-mounted drop-proof fluorescent lamp
Bed rooms	－100Lux、	Surface-mounted wiring duct fluorescent lamp

ii Low Voltage Equipment

a Telephone Exchange Facility

No telephone line will be installed from outside. Phones are used only for internal line.

② Mechanical Facility

i Air-conditioning Facility

Air-conditioning facilities will be installed in the following rooms.

-Emergency Imaging Building

Minor operation room	Ceiling cassette-type cooling splitter air-conditioner
X-ray room	Wall-type room air conditioner
Ultrasound room	ditto

-Operation Theater Building

Operation room	Cooling duct-connection-type package air-conditioner

(Although it does not control the cleanliness of the Operation Room, the wall return type will be adopted for the ceiling blowing.)

ICU Wall-type room air conditioner

-Surgery Ward Building

Amenity Bed Room ditto

-Obstetrics/Gynecology Building

Amenity Bed Room ditto

Ultrasound room ditto

Cooling conditions in the rooms will be set as 26℃ cooling in conformity to the standard air conditioning design in Japan and no heating function will be equipped.

As for ambient air condition, the climate data of Bat Dambang will be referred to. The indoor equipment for the Operation Room will be installed in the Pump/AC Room and fresh air is taken into the Operation Room using an air blower to maintain a positive pressure in the room. Furthermore, installation space will be secured for the case when heap-filters are stably procured in future. The outdoor equipment will be installed on the nearest roof area.

ii Ventilation facility

Ventilation facilities will be installed in operation rooms, X-ray room, and ultrasound room. Natural ventilation will be assumed in the other rooms. As for the following rooms, however, ceiling cassette-type ventilation fans will be installed for ventilation.

-Emergency/Imaging Building

Shower treatment room

Dark room

Film store

-Operation Theater Building

Toilets

Shower room

Operation hall

Reception

Collecting corridor

Exhaust from the ventilation facilities will be emitted from the outlet to be installed on the exterior walls or under the eaves. Ceiling fans or electric fans will be installed in offices and bedrooms in accordance with the size of room.

iii Water facility

The Mong Kul Borey River is the water source of the current hospital facilities, however, the water volume differs from the rainy season to the dry season and hence is very

unstable, and moreover, the water quality is poor. It also poses a problem in introducing water from the River because the pipes will have to cross general residential areas and roads. For these reasons, wells will be excavated under this Project to serve as water source. As the result of the field survey, it was assessed that two wells were needed in consideration of the limited amount of water a well can provide. It is difficult at this stage of the Project to determine the locations for wells, trial drilling will be performed at five locations and the quantity and quality will be investigated to select best two from those. The depth of well will be 100m. Water will be conveyed by water pump to be installed in the well to the well water storage tank and then to the receiving tank.

An alternative water source is rainwater. Storage tanks will be installed in the underground pits of the Operation Theater Building and Surgery Ward Building to collect rainwater precipitated on the roof surfaces. The stored water will then be sent to the receiving tank via pump. Water in the receiving tank will be pumped up to the elevated tank from which water will be supplied to each necessary area. A portion of water in the receiving tank will be purified using the sand filtration equipment and the chlorinate sterilizer and stored in the elevated water tank so that it will be supplied and used as clean water for washing hands, etc.

Water supply hereof is targeted at the facilities to be constructed under this project only, and not the existing facilities.

iv Hot Water Supply System

Wall-type electric instantaneous hot-water supply systems with 1.5kW will be installed as necessary. The following rooms will have the systems.

-Emergency/Imaging Building
Shower treatment room

-Operation Theater Building
Instrument Washing Room

-Obstetrics/Gynecology Building
Preparation Room
Delivery Room

v Drainage Facility

Rainwater, wastewater and miscellaneous drainage will be separated and rainwater and miscellaneous drainage will be discharged directly into the pond in the hospital premise. Wastewater will be discharged into the pond after treated in the purification tank to be installed on the east side of the pond. The purification tank will have the sprinkling filter type.

vi Sanitary Fixture Facility

Lavatory bowls, Western-style and flush-type, and wash basins will be installed in each toilet room. Slop sinks, wash bowls and showers will be installed as necessary.

vii Medical Gas Equipment

The Emergency Imaging Building and the Operation Theater Building only have oxygen facilities. Oxygen cylinders will be installed in the Oxygen Room in each of the buildings to supply oxygen to the following points.

-Emergency/Imaging Building

Minor operation room	x 1 (wall-mounted)
Observation room	x 4 (wall-mounted)

-Operation Theater Building

Postoperative room	x 5 (wall-mounted)
ICU	x 1 (wall-mounted) each
Operation room	x 1 (wall-mounted) each

5) Construction Materials

In Cambodia, most construction materials are imported products, but in this project, major construction materials will be selected from the products generally available in the country so that the Cambodian side can carry out the maintenance on its own.

The following tables show the exterior and interior finishes.

Table 2- 14 Exterior Finish Schedule

Position	Finish Schedule
Roof	Bituminous Membrane Waterproofing (Asphalt Waterproof Roofing) Corrugated Fiber Reinforced Cement Roof
Outside Wall	Acrylic Resin Paint on Mortar Trowel
Windows/Doors	Colored Aluminum Sash

Table 2- 15 Interior Finish Schedule

Build. Name	Section Name	Room Name	Finish Schedule			
			Floor	Basement	Wall	Ceiling
EMERGENCY/IMAGING BUILDING	Emergency	Minor O.P. Room	Ceramic Tile(300x300)	Ceramic Tile (100x00)	Ceramic Tile (100x200)	Acoustic Board
		Consultation Room, Doctor Room, NS	Ceramic Tile (300x300)	Emulsion Paint	Emulsion Paint	do.
		Shower Treatment, Toilet/Shower, Utility Room	Non Slip Ceramic Tile(100x100)	Ceramic Tile (100x00)	Ceramic Tile (100x200)	Emulsion Paint
		Observation Room	Ceramic Tile (300x300)	Emulsion Paint	Emulsion Paint	Emulsion Paint
	Imaging Division	Ultrasound Room, X-ray Room, Film Store, Control Corridor	Ceramic Tile (300x300)	Emulsion Paint	Emulsion Paint	Acoustic Board
		Dark Room	Ceramic Tile (300x300)	Ceramic Tile (100x00)	Ceramic Tile (100x200)	Emulsion Paint

Build. Name	Section Name	Room Name	Finish Schedule			
			Floor	Basement	Wall	Ceiling
	Common	Entrance Hall, Family Waiting Corner, Corridor	Ceramic Tile (500x500)	Ceramic Tile (100×500)	Emulsion Paint	Emulsion Paint
		Reception/Cashier, Duty Corner, Store, Equipment Store, Staff Rm, Cleaning Stock	Ceramic Tile (300x300)	Emulsion Paint	Emulsion Paint	Acoustic Board
		Oxygen Room	Dust Preventive Resin	Dust Preventive Resin	Exposed CB	Exposed RC
		Toilet/Shower Staff	Non Slip Ceramic Tile(100x100)	Ceramic Tile (100x00)	Ceramic Tile (100x200)	Emulsion Paint
OPERATION THEATER BUILDING	Operation/Central Sterilizing & Supply Division	Ante Room, Reception, Operation Hall, Post Operation Room, ICU, NS, Meeting Room, Gown Changing Room, Preparation Room, Sterilization Room, Dispatch Corner, Instrument Assembling Room, Sterilized Equipment Room, Staff Room, Dr. Room	Ceramic Tile (300x300)	Emulsion Paint	Emulsion Paint	Acoustic Board
		Utility Room, Toilet, Shower, Linen Washing	Non Slip Ceramic Tile (100x100)	Ceramic Tile (100x00)	Ceramic Tile (100x200)	Emulsion Paint
		Storage	Dust Preventive Resin	Dust Preventive Resin	Exposed CB	Acoustic Board
		Operation Room	Vinyl Flooring Sheet (Load Preventive & Conductive Type)	Vinyl Flooring Sheet	Acrylic Resin Baked Aluminum Panel	Emulsion Paint
		Correction Corridor, Instrument Washing Room	Ceramic Tile (300x300)	Ceramic Tile (100x00)	Ceramic Tile (100x200)	Acoustic Board
		Oxygen Room, AC Room	Dust Preventive Resin	Dust Preventive Resin	Exposed RC	Exposed RC
		Corridor, Connection Corridor	Ceramic Tile (500x500)	Ceramic Tile (500x100)	Emulsion Paint	Emulsion Paint
SURGERY WARD BUILDING	Surgery Ward	Amenity Bed Room, NS, Minor operation room, Store	Ceramic Tile (300x300)	Emulsion Paint	Emulsion Paint	Acoustic Board
		Toilet, Shower, Washing Room	Non Slip Ceramic Tile (100x100)	Ceramic Tile (100x00)	Ceramic Tile (100x200)	Emulsion Paint
		6-Bed Room 4-Bed Room	Ceramic Tile (300x300)	Emulsion Paint	Emulsion Paint	Emulsion Paint
	Common	Kitchen	Non Slip Ceramic Tile (100x100)	Ceramic Tile (100x100)	Ceramic Tile (100x200)	Emulsion Paint
		Dry Room	Ceramic Tile (300x300)	Ceramic Tile (100x100)	Emulsion Paint	Emulsion Paint
		Family Waiting Corner, Corridor	Ceramic Tile (500x500)	Ceramic Tile (500x100)	Emulsion Paint	Emulsion Paint
OBSTETRICS/GYNECOLOGY WARD BUILDING	Obstetrics/gynecology ward	Amenity Bed Room, Dr. Room, Vaccine Room, Consultation Room for PMTCT , NS, Consulting Room, Ultrasound Room	Ceramic Tile (300x300)	Emulsion Paint	Emulsion Paint	Acoustic Board
		Toilet, Shower, Washing Room	Non Slip Ceramic Tile (100x100)	Ceramic Tile (100x100)	Ceramic Tile (100x200)	Emulsion Paint
		6-Bed Room	Ceramic Tile (300x300)	Emulsion Paint	Emulsion Paint	Emulsion Paint
	Delivery	Eclampsia Room, Labor Room, Storage, Preparation Room	Ceramic Tile (300x300)	Emulsion Paint	Emulsion Paint	Acoustic Board
		Delivery Room	Ceramic Tile (300x300)	Ceramic Tile (100x00)	Ceramic Tile (100x200)	Emulsion Paint
		Toilet	Non Slip Ceramic Tile (100x100)	Ceramic Tile (100x00)	Ceramic Tile (100x200)	Emulsion Paint
	Common	Entrance Hall	Ceramic Tile (300x300)	Ceramic Tile (100x500)	Emulsion Paint	Emulsion Paint
		Toilet, Shower, Washing Room	Non Slip Ceramic Tile (100x100)	Ceramic Tile (100x100)	Ceramic Tile (100x200)	Emulsion Paint
		Storage	Ceramic Tile (300x300)	Emulsion Paint	Emulsion Paint	Acoustic Board

(3) Equipment Plan

1) Examination on the requested equipment

Based on the design policies, the necessity and appropriateness of the requested equipment were examined in consideration of the field survey results on the function, role, technical level, financial capability, and maintenance capacity of the hospital. Then comprehensive evaluation was carried out as follows. Detailed evaluation results per equipment are given in Appendices 5, Appendix 5-1 “Examination of Requested Equipment”.

1-1) Classification

A. Replacement: Equipment to replace the existing equipment

B. New: Equipment to be newly-procured; no such equipment is or has been used in the target department.

C. Additional: Equipment to be procured to supplement the quantity of existing equipment.

1-2) Selection Criteria

①Examination of purpose

○: Basic equipment that complies with the activities of the target facility

×: Equipment that does not comply with the activities of the target facility, that can be replaced with another, more convenient equipment, or that may be replaced with multiple devices that meet individual activities.

②Examination of necessity

○: Equipment that is selected in CPA3 or deemed as inevitable for the current activities of the target department.

×: Equipment that is not selected in CPA3 and has low necessity and benefits compared to the activities of the target department or can be replaced with another existing device.

③Examination of technical level

○: Equipment appropriate for the current technical level of the hospital

×: Equipment that requires advanced technical skills that cannot expectedly be achieved in foreseeable future.

④Examination of operation organization

○: Operating staff is or will likely be assigned.

×: Operating staff is not or will not likely be assigned.

⑤Examination of maintenance organization

○: The current staff can implement maintenance of the equipment; the maintenance system of the manufacturer has been established or the consumables and spare parts can easily be procured in the country.

×: It is difficult to carry out the maintenance and is likely to pose maintenance problems

after the installation; the consumables and spare parts cannot easily be procured in the country.

⑥Examination of operation and maintenance cost

○: Equipment that requires only a minimum operation and maintenance cost or that renews the current equipment incurring additional burden on the Cambodian side's budgetary planning.

×: New or additional equipment that requires a considerable amount of operation and maintenance cost, posing a difficulty on the Cambodian side's budgetary planning.

⑦Final judgment

○: Deemed as appropriate and to be included under this Project.

×: To be excluded from this Project.

1-3) Outline of review on major equipment

Although most of the major equipment has been selected in accordance with the CPA3 guidelines, consideration has been also added to the contents in light of the local situations.

・Anesthesia apparatus

The existing equipment was procured around 1980 and the replacement time has passed. Although the equipment is indispensable in an operation room, with no strict anesthesia control necessary at the present medical level, low to medium class equipment will be enough for the hospital. The vaporizer to be procured shall be halothane, which is popular in Cambodia. In addition, it should be taken into consideration that laughing gas is hardly used from the viewpoint of maintenance.

・Defibrillator

Although the equipment is not possessed by the hospital at present, it will become necessary for defibrillation in the Emergency Department and the Operation Theater. The paddles shall be ones available both for adults and children and only outer paddles shall be included in the procurement plan. Quantities of equipment shall be adjusted for those that can be shared in individual departments.

・ECG unit

Although it is a new device for the hospital, it will be procured based on the judgment that it should be normally equipped to an emergency outpatient unit. The procured type shall be low to medium grade ECG with small number of channels. Although the printer is equipped with the ECG unit as standard equipment, a procurement route for the paper for the printer must be secured.

・Electro surgical unit

The existing electro surgical unit was procured around 1980 and has been seriously deteriorated with the cut/coagulation mode change function out of order. Because it is indispensable equipment for operations, replacement of it is assessed appropriate.

・Infant incubator

While a newborn will be treated in the Pediatrics Ward in principle, infant incubators will be required for temporary measures in the event that an immature (premature) newborn or a newborn with serious condition is born during the nighttime or early in the morning. A low to medium grade of equipment shall be provided.

・Light, operating, ceiling mount

The existing seven-light single type equipment was procured around 1980 and has been out of order. In order to secure work space in the operation room and to prevent overturning of apparatuses at the feet, operating lights to be mounted from the ceiling shall be equipped. Necessary and sufficient illuminance shall be equipped on the operating table with excess specifications avoided.

・Operating Light, with emergency power

The operation room is equipped with three units of operating lights at present; however, all of them were procured around 1980 and one of them is out of order. Because operating lights are useless if they cannot be used in emergency, operating lights for emergency use shall be equipped to the Emergency Room and the Operation room to enable operations during power failure.

・Patient monitor

The existing equipment currently equipped to the Operation Room was procured around 1980 and is out of order. Because patient monitors are necessary to continuously monitor the condition of patients, they will be equipped to the Operation Room and to ICU. The monitoring items shall be standard cardiography; respiration; SPO2 (oxygen partial pressure); noninvasive blood pressure (NIBP); and body temperature and a printer shall not be included. Because the electrodes are consumable, equipment whose electrodes are procurable at site shall be selected.

・Portable ultrasound scanner

An ultrasound scanner is effective equipment to diagnose the physical condition along with radiological diagnostic imaging. The existing ultrasound scanners have been allocated in the Obstetric Department and in the Department of Radiology. The ultrasound scanner in the Obstetric Department, which was procured at second hand with the support of a children's hospital in Siem Reap is in a relatively acceptable condition, shall be considered for relocation to the new facilities. The ultrasound scanner in the Department of Radiology, a Japanese product which has been used for more than 10 years after procured, is at a moment when it should be replaced. The number of patients who underwent ultrasonography tended to decrease perhaps because the relevant equipment became out of order and because other institutions got equipped with ultrasound scanners. It is considered appropriate for a top referral medical institution to replace the ultrasound scanners. The probe to provide shall be one capable of diagnosing at general depths.

・Pressure type sterilizer

A pressure type sterilizer is equipment that is indispensable to sterilize forceps and operating gowns for prevention of infectious diseases. The hospital has been equipped with two horizontal-type (electric-type) sterilizers and two vertical-type (propane-gas type) sterilizers. Of them, the electric type sterilizers are out of order and have been assessed to be unrepairable by the vendor of the replacement parts. On the other hand, the vertical-type sterilizers have been modified and there are problems whether they ensure sufficient sterilization. Thus they also need to be replaced.

The capacity of the pressure type sterilizer shall be designed in accordance with the following estimation of objects needing to be sterilized in the facilities.

"Preconditions"

*Number of beds : 240

*Number of outpatients : 33 persons/day (12,007/year as of 2004; calculated on the basis of 365 days year because the number includes the emergency patients)

*Number of delivery : 1.2 cases/day (448 cases/year on an average of the period from 2001 to 2004; calculated on the basis of 365 days year)

*Number of operations : 6.7 cases/day (on an average of the period from 2001 to 2004, 1,126.5 cases/year (planned operations) × 1/240 + 740 cases/year (emergency operations) × 1/365; including Caesarean operations)

"Quantity of objects required to be sterilized by sector" (average)

* Ward sector : 0.003M/bed (linens, treatment instruments etc.)

*Outpatient sector : 0.001 M^3/ patients (treatment instruments etc.)

*Delivery : 0.002 M^3/ births (treatment instruments etc.)

*Operation : 0.120M^3/ operations (surgical instruments, operating gowns)

*Incidental objects : 25% of objects on weekdays of individual sectors. (Emergency sterilization in instances such as instruments being dropped on the floor)

"Volume of objects required to be sterilized per day"

* Ward sector : 240 beds × 0.003 M^3/beds =0.720 M^3

*Outpatient sector : 33 patients/day × 0.001 M^3/patients=0.033 M^3

*Delivery : 1.2 births/day × 0.002 M^3/births =0.002 M^3

*Operation : 6.7 operations/day × 0.120 M^3/operations =0.804 M^3

*Incidental objects :1.559 M^3 (volume for Ward + volume for Outpatient + volume for Delivery + volume for Operation) × 25% = 0.390 M^3

Total : 0.720 + 0.033 + 0.002 + 0.804 + 0.390 = 1.949 M^3/day

"Required capacity of sterilizer"

*Load efficiency: 60%

*Number of operation/day: 5 times

Required capacity of sterilizer: 1.949 M^3 ÷ 60% ÷ 5 times = 0.239 M^3

In this Grant Aid Project, sterilization shall be made not by a single sterilizer at once but by one or more sterilizers as needed. The sterilization volume per unit shall be designed with 0.15 M^3 class and the quantity shall be two units. In addition, a water softener shall be provided because the water quality of the target region is hard.

・Operating table, general

Because the existing operating table has been deteriorated so badly that it cannot be adjusted with a crank, an operating table intended for general operations and Caesarean operation shall be planned to be provided. The equipment shall be an ordinary hydraulic type equipped with standard accessories.

・Operating table, orthopedic

The existing operating table cannot be used for other operations than general operations and, in addition, they are badly rusted in the body and the caster part for aging. Because the Mong Kul Borey Hospital treats an extremely large number of orthopedic patients affected by traffic accidents, this project shall provide the hospital with an operating table that can be used for orthopedic surgery as well as general operations. The equipment shall be an ordinary hydraulic type equipped with minimally required accessories.

・Respirators

Although provision of respirators is required in CPA3, the hospital is not equipped with respirators at present. Because the equipment involves human life, it is considered difficult to operate by the present personnel of the Mong Kul Borey Hospital in terms of the operation and measures to be taken in the event of failure. In addition, the operation of the equipment is considered difficult in terms of coverage of expenses involved in the repair and inspection to be made by an agent. From the above consideration, this item shall be excluded from the items to be provided in this Grant Aid Project.

・X-ray apparatus, general

The radiation room is forced to provide patients with X-ray photography by using an aging mobile X-ray apparatus at present and therefore provision of a basic X-ray apparatus is considered appropriate. Provision of a standard type shall be planned including a bucky table and a bucky stand. For film cassette, frequently used four sizes—35×43cm, 30×40cm, 24×30cm, 18×24cm—shall be provided.

・X-ray apparatus, mobile

Emergency X-ray photography in the Emergency Ward shall be implemented in the X-ray Room partly because the X-ray Room is located close to it. On the other hand, provision of a standard equipment shall be planned for the Surgery Ward and the in the Obstetrics/ Gynecology Ward because there may be a case that a patient cannot be transferred.

・Ambulance, pickup truck

The vehicles that the hospital possesses at present are two ambulances (with mileages for 300 thousand kilometers for one, 150 thousand kilometers for the other), one cargo truck (a hand-made truck with an engine for a tractor modified, years of use unknown). The ambulance is used not only for transfer of patients but also for transportation of pharmaceuticals and for attendance to meetings and seminars implemented in other areas. The cargo truck is used for transportation of pharmaceuticals and transfer of patients.

This Grant Aid Project shall give the first priority to the use of an ambulance with transfer of patients as the primary application and shall plan to replace for the aging one. As for the pickup track, the need for it shall be managed by continuously using the existing one.

・Cystoscope

Because the Mong Kul Borey Hospital implements two to three operations for patients with kidney stones or bladder stones, there is high need for cystoscope. However, it is included in the object for provision for CPA3. In addition, because the relevant equipment has not been equipped for the hospital and thus they are not used to it, a concern remains about whether they can deal with it in terms of technical maintenance requirements in the case that it is newly provided for them. From the above consideration, this item shall be excluded from the scope of provision in this Grant Aid Project.

1-4) Consideration of quantities

(i) Emergency/Imaging Ward

The quantities of the equipment shall be planned on the assumption that the upper limit of users is two doctors and two nurses on day duty based on the present number allocated to the Emergency Department―three doctors (medical assistants) and three nurses.

・Emergency consultation room:

One set of ECG unit, examination table, examination light, and examination equipment shall be planned to be provided.

・Minor operation room:

Two operation tables shall be provided for the hospital so that they can deal with more than one emergency patients. The operation tables will be used in one room with a screen set up between them. The quantity of equipment to be utilized by a doctor such as mobile astral lamp and otoscope shall be one set in principle and the quantities of treatment apparatuses shall be two sets including those to be disinfected/sterilized.

・Observation room:

The number of beds and drip stands shall be four. The quantities of hospital equipment to be allocated to the nurse station on assumption that two nurses will be allocated to it in principle. The quantities of oxyflow care, oxygen generator and so on to be shared in the sickbed room shall be one set respectively.

The Imaging Department shall be equipped with equipment in minimum quantities enough to utilize both in the daytime and during the nighttime in light of the number of the staff—three nurses and one chief nurse.

・Radiation room:

One unit each of plain radiography apparatus and wheelchair shall be planned to be provided to the room. One unit of dosimeter shall be planned to be provided to the room because it is indispensable for radiation exposure management.

・Ultrasonic Diagnosis Room:

One unit of ultrasound scanner and examination table shall be planned to be provided.

・Dark room:

One set of manual developing tank shall be planned to be provided.

(ii) Operating Ward

Two nurses in charge of anesthesia, 10 nurses, one nurse in charge of sterilization and six doctors, who are assigned to ICU, will be in charge of the Operating Ward. The equipment shall be planned to be provided in quantities enough to enable two operation rooms to function in relation to both planned operations and emergency operations.

・Operation room:

On the assumption that the room will be divided into two rooms—an operation room for general/gynecological operations and an orthopedic surgery—and that the room will be also used for emergency operations, minimum quantities of equipment shall be planned to be provided to the room. One defibrillator shall be shared by two rooms and one set of instrument set shall be provided to the rooms in principle. On the other hand, while ceiling type astral lamps shall be provided to the individual operation rooms, one unit of astral lamp for mobile use equipped with emergency battery shall be shared.

・Recover Room:

Of the planned bed quantity of 18, 10 are available from the existing beds and eight beds will be planned to be provided. For drip stands, 18 units for all the beds will be planned to be provided. Although the number of beds planned to be allocated to the ICU in the recovery room is two and a patient monitor has been standardized in CPA3, this project shall provide only one unit of patient monitor partly because the equipment is new to the hospital. The bed to be provided shall be a type that can be adjusted to a height convenient for treatment. The defibrillator, the emergency cart, the oxyflow care, and the oxygen generator shall be placed in the nurse station and one unit each of the above equipment shall be planned to be provided per 20 beds at minimum.

・Sterilization Room:

On the assumption that the volume of objects that can be sterilized by one unit of sterilizer is approximately 0.225 M^3, two units of sterilizers shall be planned to be provided for sterilization of instrument sets and operating gowns. In addition, the sterilizer to be provided shall be equipped with steam generator because steam is not planned to be supplied by the

facilities, and a water softener will be provided in addition because the water quality of the target region is hard.

(iii) Surgical Ward

The quantities of equipment shall be adjusted on the assumption that the upper limit of nurses in the Surgical Ward is two including the night shift in light of the present number of nurses in Surgical Ward of five. For reference sake, because there no serious patients in the general ward, nursing by patient's families constitute a great part of nursing with a small number of nurses expected to be allocated to the ward.

・Ward:

Beds shall be planned to be provided in quantities corresponding to the need of a 28-bed room. Four beds out of 10 beds available from the existing facilities will be allocated to the Surgical Ward with 24 beds newly procured. In the meantime, although there are two chargeable beds, no discrimination shall be made on them in terms of contents of the equipment. The quantity of the hospital equipment to be allocated to the nurse station shall be determined by adjusting the quantity to be used within the ward by the number of nurses with two nurses as an upper limit. In addition, one unit of mobile X-ray apparatus shall be allocated to the Surgical Ward, which shall be used in the Obstetrics/Gynecology Ward as needed.

・Treatment room:

On the assumption that one doctor will be allocated to the room as needed, treatment apparatuses and emergency carts shall be provided to the room in minimum quantities accordingly.

(iv) Obstetrics and Gynecology Ward (including delivery)

To the Obstetrics and Gynecology, where four doctors (including one medical assistant) and nine maternity nurses are allocated, the quantities of equipment to be provided shall be adjusted in accordance with the size of the facilities.

・Consultation rooms (vaccination room, guidance room for mother and children, gynecological consultation room):

The contents of one set of hospital equipment shall be adjusted on the assumption that one room will be operated by one doctor + one nurse. Thermometer to be provided for the Obstetrics/Gynecology Department shall be a mercury thermometer in accordance with the CPA Guideline stipulating that the Obstetrics/Gynecology Department shall use a mercury thermometer, although it is considered that there is no large difference between a mercury thermometer and a digital thermometer.

・Ultrasonic Diagnosis Room:

Because the ultrasound scanner that has been allocated to the existing facilities is utilizable, it shall not be included in the scope of this project. However, desks for doctors and examination tables shall be planned to be provided in minimum quantities.

・Delivery Room:

Although the number of births delivered in the hospital is small, two delivery beds are considered necessary including a case where more than one patients need the delivery bed. Because there is one delivery bed available from the existing facilities, this project shall provide one delivery bed. Delivery instrument set shall be provided in two sets in principle with deficiencies to be converted by using equipment that are in service at present.

・Labor Room, Eclampsia Room:

Necessary beds shall be provided to the rooms in accordance with the planned bed quantities—two beds for each.

・Beds for Obstetrics and Gynecology Ward:

Although necessary beds are expected to be provided in accordance with the planned bed quantity, 20, six beds shall be allocated out of the existing available beds in coordination with the above mentioned Surgical Ward with 14 beds newly procured. The hospital equipment to be shared in the ward shall be two sets in principle on the assumption that two nurses will be allocated to the nurse station.

2) Master plan

The equipment to be procured in this Grant Aid Project shall be allocated to the Surgery Department, the Obstetrics/Gynecology Department, the Operation Theater (including the sterilization section), and the Emergency Department (including the Department of Radiology) that will be newly established in the Mong Kul Borey Hospital with consideration given to their conformance to the functions and the activities of the hospital and to their consistency with the facility plan.

The equipment shall be allocated as per Appendices 5, Appendix 5-2 "Equipment Delivery List"

3) Equipment procurement program

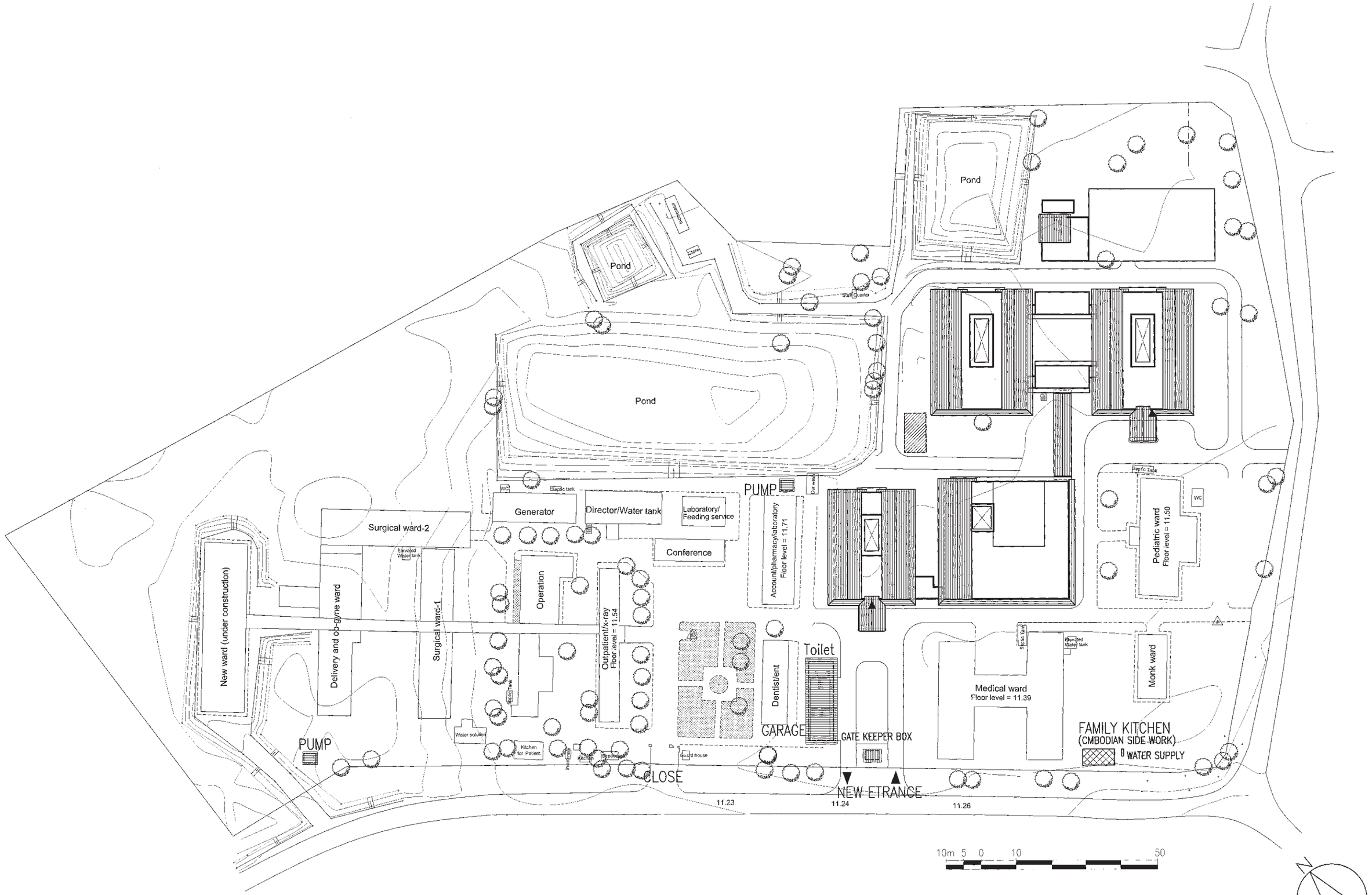
The outline of major equipment planned in this Grant Aid Project after reviewing the requested equipment and the details of the finalized equipment are as per attached sheet. (Appendices 5, Appendix 5-3 "Outline of Main Equipment" and Appendix 5-4 "Equipment List").

2-2-3 Basic Design Drawings

01	Site plan		1/1,000
02	Emergency /Imaging Building, Operation Theater Building	Floor plan of the first floor	1/200
03	Surgery Ward Building, Obstetrics/Gynecology Building	Floor plan of the first floor	1/200
04	Emergency/Imaging Building, Operation Theater Building	Elevation	1/300
05	Surgery Ward Building, Obstetrics/Gynecology Building	Elevation	1/200
06	Emergency/Imaging Building, Operation Theater Building	Section	1/200
07	Surgery Ward Building, Obstetrics/Gynecology Building	Section	1/200

Table 2- 16 Planning Contents

Building	Structure/Scale		
Emergency/Imaging Building	RC	One-story	614.1 m^2
Operation Theater Building	RC	One-story	1,099.0 m^2
Surgery Ward Building	RC	One-story	720.0 m^2
Obstetrics/Gynecology Building	RC	One-story	720.0 m^2
Mechanical Room Building	RC	One-story	223.5 m^2
Others	RC	One-story	475.3 m^2
Total			3,851.9 m^2



CAMBODIAN SIDE WORK

SITE PLAN S 1/1000

MONG KUL BOREY HOSPITAL

Future Construction Area

Emergency / Imaging Building

Store
Oxygen Room
Utility Room
Observation Room 4B
Nurse Station
Doctor Room
Toilet Shower
Consultation Room
Minor O.P.Room
Shower Treatment
Entrance Hall
Toilet
Shower
Staff Room
Staff Room
Toilet
Shower
EPS
for Cleaning Stock Room
Store Equipment
Film Store
Dark Room
Control Corridor
Patio
Reception/Cashier
Patient Waiting Corner
Xray Room
Ultrasound Room
Reception
Duty Corner
Imaging Div.
Familiy Waiting Corner
Familiy Waiting Corner
Emergency

Operation Theater Building

Utility Room
Shower
Store
Toilet
Patio
Post-Operation Word 18B
ICU
Nurse Station
Meeting Room
Ante Room
Reception
Pump/AC Room
Oxygen Room
Dr. Room
Staff Room
Staff Room
Orthopedic O.P. Room
Equipment Store
Linen Washing Room
Collection Corridor
Instrument Washing Room
General & Gynecological O.P. Room
Ooeration Hall
Preparation Room
Instrument Assembling Room
Toilet
Shower
Gown Changing
Gown Changing
Ante Room
Sterilized Equipment
Sterilization Room
Dispatch Corner
Toilet
Shower

10m 5 0 10

MONG KUL BOREY HOSPITAL
Emergency / Imagine Building & Operation Theater Building 2-50

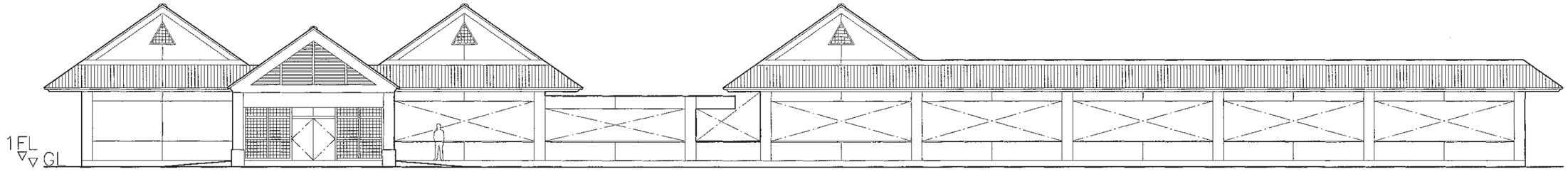
Surgery Ward Building

Obstetrics/Gynecology Ward Building

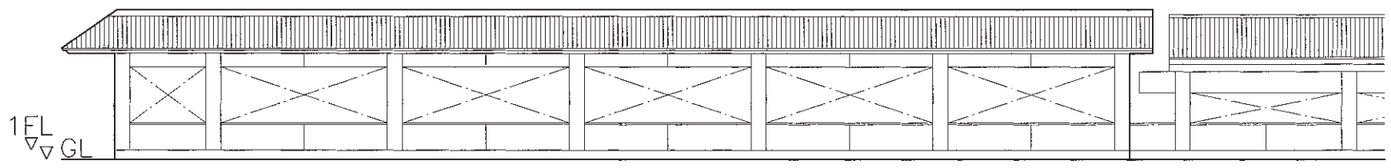
Staff Toilet Shower
Toilet Shower
Pump Room
Store
Washing
Handicaped Toilete
Toilet Shower
for Cleaning Stock Room
Kitchen
Dry Room
Washing
Store
EPS
Handicaped Toilete
Toilet Shower
Staff Toilet Shower
6B
6B
6B
6B
6B
6B
6B
Obstetrics Ward
Patio
Patio
Gynecology Ward
Patio
Eclampsia Room 2B
1B
1B
Toilet Shower
Doctor Room
Doctor Room
Delivery Room
ST.
ST.
4B
4B
Familiy Waiting Room
Familiy Waiting Room
Preparation Room
Delivery Div.
1B
1B
N.S.
Staff Room
Equipment Store
Toilet
Treatment Room
1B
1B
Toilet Shower
Toilet Shower
Vaccine Room
Consultation room for PMTCT
Gynecological Counseling room
Ultrasound Room
Staff Room
N.S.
Entrance Hall
ST.
O. Toilet
Labor Room 2B
Obstetrics Consaltation Room

10m 5 0 10

MONG KUL BOREY HOSPITAL
Surgery Ward Building & Obstetrics/Genecology Ward Building 2-51

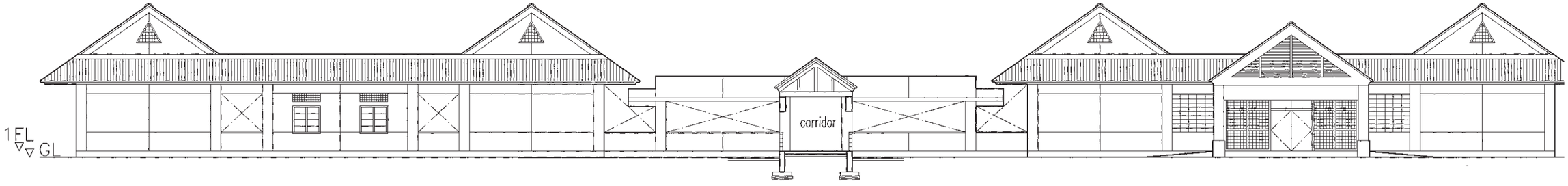


Emergency / Imaging Build. and Operation Theater Build. SOUTH EVEV.

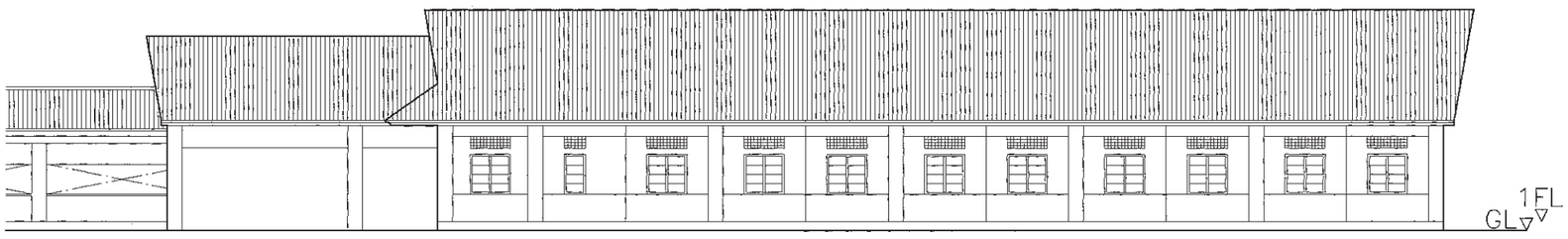


Operation Theater Build. EAST EVEV.

ELEVATION S=1/200

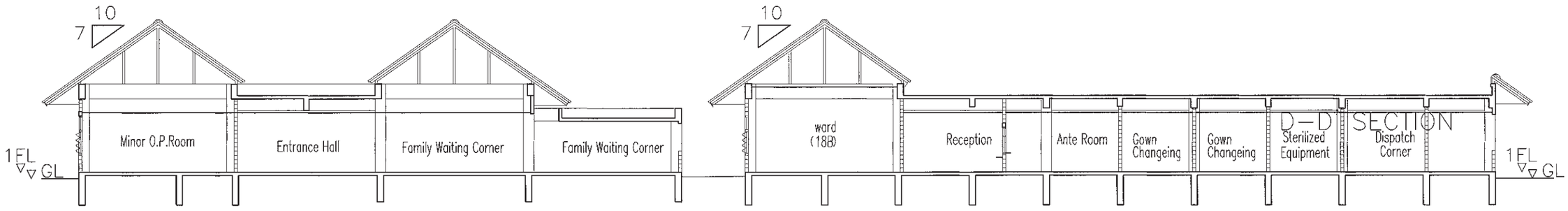


Ward Build. SOUTH ELEV.

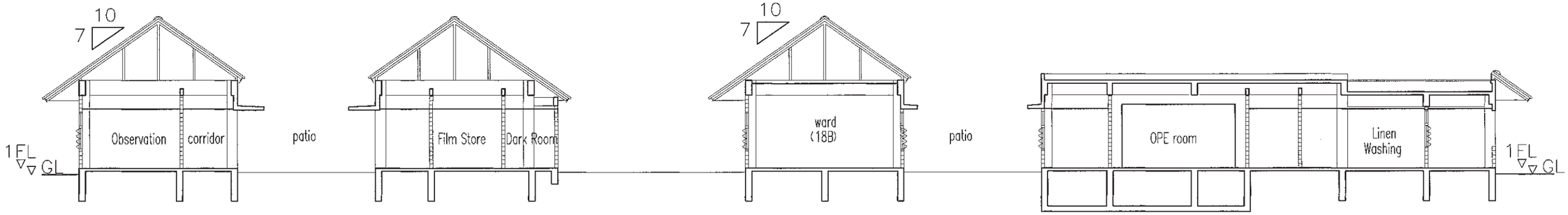


Ward Build. EAST ELEV.

ELEVATION S=1/200
MONG KUL BOREY HOSPITAL
Surgery Ward Building and Obstetrics/Genecology Ward Building 2-53



Emergency / Imaging Build. and Operation Theater Build. A–A' SECTION



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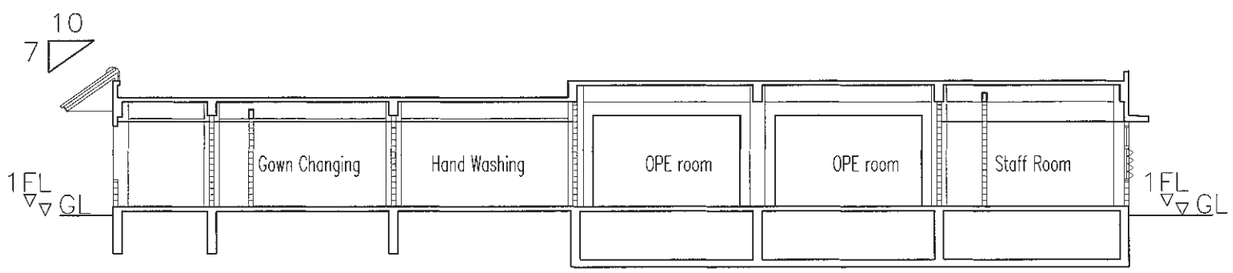
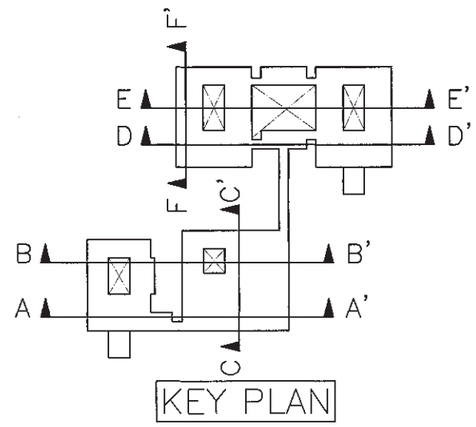


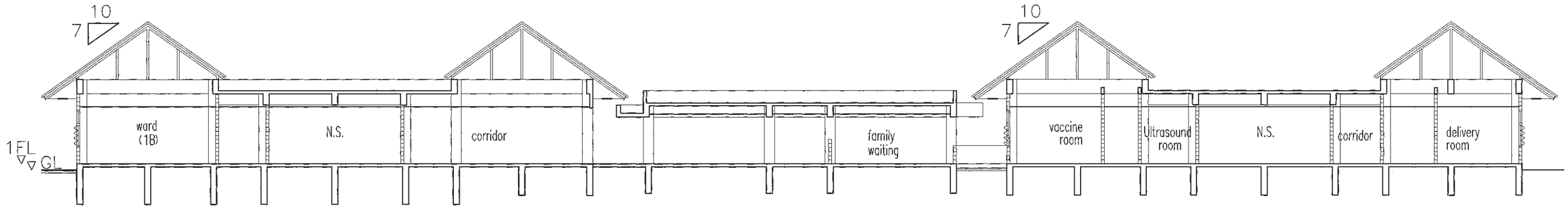
Operation Theater Build. C–C' SECTION



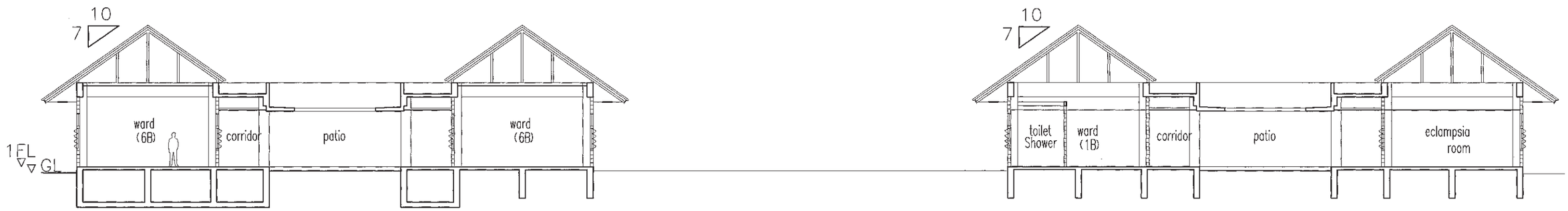
SECTION S=1/200

MONG KUL BOREY HOSPITAL

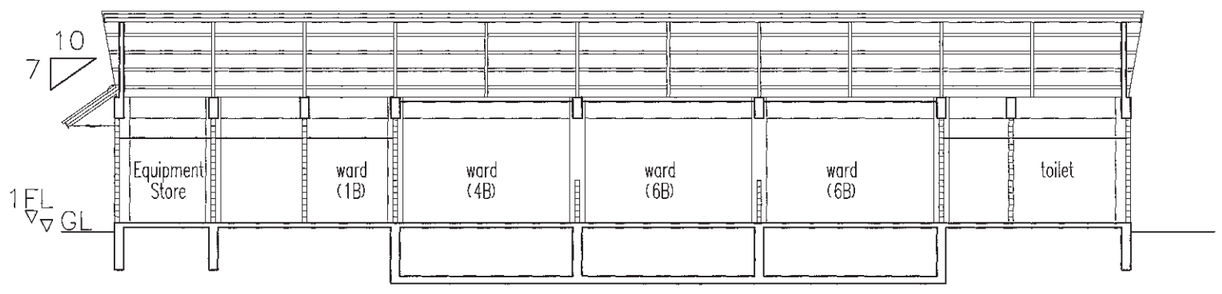
Emergency / Imagine Building and Operation Theater Building 2-54



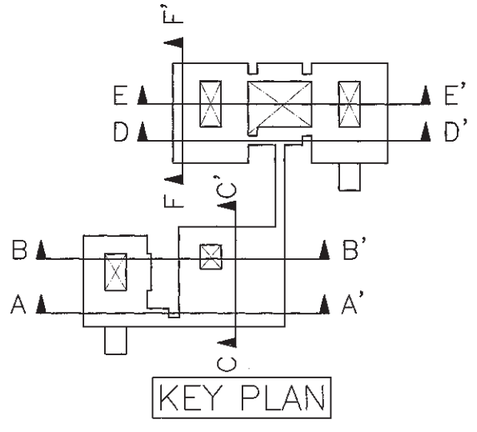
D–D' SECTION



E–E' SECTION



F–F' SECTION



KEY PLAN

SECTION S=1/200

MONG KUL BOREY HOSPITAL

Surgery Ward Building and Obstetrics/Genecology Ward Building 2-55

2-2-4 Implementation Plan

(1) Implementation Policy

The elements of this project include facility construction work, supply and installation of equipment, and the scope of cooperation regarding to the project undertaken by the Japanese side will be implemented according to the framework of Japanese grant aid. Implementation of this plan shall be initiated officially only after it is approved by the Governments of both countries and the exchange of notes (E/N) is signed. Immediately after signing of the E/N, the Cambodian organization that is responsible for implementation of this project and the Japanese consultant firm shall enter a contract and initiate the detail design work of the project. When the design is completed, the Japanese construction companies and equipment supply and installation companies participate in the tender for their works. The successful tenderers for construction of facilities and supply and installation of the equipment proceed to their work. The basic principles and items to be proposed for implementation of this project are described below.

1) Executing organization

The implementing entity in the project is the Ministry of Health of Cambodia, and the Provincial Health Department of Banteay Meanchey and Mong Kul Borey Hospital will be responsible for operation and maintenance of the facilities and the equipment provided by Japan.

2) Consultant

After signing of the E/N, the Japanese consultant firm and the Government of Cambodia enter a consultant contract according to the formal procedure for the Grant Aid System of the Government of Japan. This consultant firm executes the following activities under this Contract.

① Detail design of the project: To prepare the design documents (specifications and technical reference materials on the facilities and equipment included in the project).

②Tender: To cooperate in selection of the construction firm(s) and equipment supply and installation firm(s) through the tender and in transaction of procedures required under the contract.

③Construction supervision: To supervise so that instructions for construction of facilities, delivery and installation of the equipment, operation and maintenance are given properly.

In the detail design stage, the consultant determines the construction plan and the equipment supply plan in detail based on the basic design investigation of the project, reviews the

equipment, and prepares the tender documents consisting of specifications of the project plan, tender terms and conditions, draft of the contracts required for the construction work and procurement of equipment.

Cooperation to the tender procedure means to observe selection of the construction firm(s) and the equipment supply and installation firm(s) through the tender and to help them transact the formal procedures required for execution of their contracts and preparation of the reports to be submitted to the Government of Japan.

Construction supervision means to check whether or not each work item done by the construction firm and the equipment supply and installation firm as specified in each contract and to confirm that the contents of their contracts are executed appropriately. In addition, to promote smooth implementation of the project, the consultant shall, in the neutral position, provide related parties with advice and guidance and serve as a coordinator among them.

Listed below are major items in the scope of the construction supervision work.

① Procedures required for verification and approval of the work implementation plan, implementation drawings, equipment specifications and other documents submitted by the construction firm(s) and equipment supply and installation firm(s).

② Inspection and approval prior to shipment of the construction materials, supply, installation and handling of the equipment.

③ Confirmation of instructions for the construction machines and materials, supply, installation and handling of the equipment.

④ Checking and reporting the progress of the construction.

⑤ Observation of handing over the completed facilities and equipment.

The consultant shall execute above items and report to the related authorities of the Government of Japan about the progress of this project, the payment procedure and handing over of the completed facilities.

3) Construction firm(s) and equipment supply and installation firm(s)

The construction firm(s) and the equipment procurement firm(s) shall be selected through the open tender for the Japanese corporations that are qualified to the specific requirements. In principal, contracts will be made through the negotiation between the Ministry of Health and the construction firm(s) and the equipment procurement firm(s) that proposed the lowest price and succeed in the subsequent negotiations.

The construction firm(s) and the equipment supply and installation firm(s) shall construct the facilities, supply, deliver and install necessary construction materials and equipment according to the terms and provisions of contracts, and provide technical guidance for operation, maintenance and management of the procured equipment to the Cambodian side. Furthermore, besides providing guidance for securing a system of supply by suppliers, manufacturers and

agencies of spare parts and consumables needed for the different equipment for continuous use of it after it is procured, providing of support to make it possible to receive services such as gratis repair during the period of guarantee, paid repair after the period of guarantee, technical guidance, etc.

4) Japan International Cooperation Agency

The Grant Aid Management Department of Japan International Cooperation Agency shall give due advice to the consultant, construction firm(s) and equipment supply and installation firm(s) so that the project is implemented in conformity with the Grant Aid System. Also, it shall hold consultations with the executing organizations of this project as necessary for untroubled implementation of the project.

5) Preparation for implementation plan

The representatives of the executing organization on the Cambodian side and the consultant shall review the implementation plan during the implementation design period. They shall make clear the scopes of the construction work Japan and Cambodia take charge, confirm through consultations the starting time and the method of each work and discuss so that all the works carried out smoothly according to the implementation schedule in this report. In particular, the Cambodian side has to be sure to carry out, at its own expense before commencement of the facility construction work, such as to secure and prepare the land, to dismantle the road and to shift the existing the water pipe, etc.

(2) Implementation Conditions

Described below are those items to be noted for implementation of the project. They should be fully taken into consideration when making the implementation plan.

1) Schedule Management

In order to avoid the rainy season the foundation work will be started, if at all possible, before the rainy season. In the work scheduling, adequate consideration will also be given to the fact that if the rainy season is avoided for the finishing work, that with ensure better quality thereof.

2) Sending of Technicians for Equipment Installation

It is extremely important to impart knowledge and skills regarding appropriate operation and maintenance of the equipment so as to contribute to Medical services through continuous proper operation of the supplied equipment after implementation of the project. That being the case, technicians who are thoroughly familiar with the operation of the different equipment will be selected as the equipment installation technicians, and sufficient time will be allotted for them to explain operation thereof (operation techniques, simple repair techniques, inspection methods, etc.) and to make sure that those concerned on the receiving side acquire sufficient understanding concerning its operation and maintenance.

3) Safety Control

Temporary fence will be established and persons in charge of giving direction to enter within the site, and other measures will be provided to give sufficient safety control since the construction under this project will be implemented within the premise of the hospital in service.

(3) Scope of Works

It is mutual cooperation between Japan and Cambodia that makes implementation of this project successful. When this project is implemented under the Japan's Grand Aid, it is advisable that the Governments of Japan and Cambodia undertake the scopes of works as described below respectively.

1) Undertakings borne by the Government of Japan

The Government of Japan undertakes consultation of this project and the works related to construction of the facilities, procurement and installation of equipment as described below.

① Consultation

i. To prepare implementation design documents for the facilities and equipment subject for this project and their tender terms documents.

ii. To cooperate in selecting the construction firm(s), and equipment supply and installation firm(s) and executing contracts for the project.

iii. To supervise the instructions for the construction of the facilities and delivery, installation, operation and maintenance of the equipment.

② Construction of facilities, supply and installation of equipment

i. To construct facilities subject to this project.

ii. To procure construction materials and equipment subject to this plan, transport and deliver them to the site.

iii. To instruct installation of the equipment subject to this project, conduct a trial run and make adjustments.

iv. To explain and instruct operation and maintenance methods for the equipment subject to this project.

2) Undertakings borne by the Government of Cambodia

The Government of Cambodia is to bear the cost of, and implement, the following work concerning, among other things, preparation of the facility construction site.

① Preparation of the construction site

i. To secure and prepare the land for the construction and the temporally work.

ii. To clear the existing facilities (tuberculosis ward, physical therapy ward, garage, structure such as water tank, etc.) and trees and plants in the project site and to transfer overhead electric wire.

iii. To reclaim the project site.

iv. To connect electricity line in the project site, install connecting poles and take necessary procedure.

v. To secure water supply and take necessary procedure.

② Outdoor work

i. Boundary fence work

ii. Landscape planting, etc.

③ To purchase medical equipment, furniture and equipment to be procured by the Cambodian side as well as transfer of the existing machines, furniture and equipment.

④ To make measures so that the Japanese firms will be exempted from the tax, local tax and various financial loads imposed by the Government of Cambodia on purchase of goods and provision of services executed according to the formally approved contracts.

⑤ To provide measures to facilitate speedy custom clearance and surface transportation procedure for the equipment and materials to be exported from Japan and other foreign countries according to the approved contracts.

⑥ To provide measures to facilitate procedures for those Japanese who enter Cambodia and stay here to carry out their roles for the project.

⑦ To issue approvals and permissions required for implementation of this project.

⑧ To pay all the necessary expenses other than those borne by the Government of Japan.

(4) Consultant Supervision

1) Implementation supervision policy

Under the policy of the Grant Aid System of the Government of Japan, the consultant forms, based on the concept of the basic design, a team that is responsible to execute the project including preparation of the implementation design to achieve smooth and successful implementation. The implementation supervision policy for this project is outlined below.

① To keep close contact with those who are in charge of the project representing related organizations of both countries so that construction of the facilities and installation of equipment will be completed without delay.

② To provide quick and appropriate advice and suggestions from the neutral standpoint to the construction firm(s), equipment supply and installation firm(s) and others concerned.

③ To provide appropriate guidance and suggestions regarding suitable equipment layout and adjustment of tie-in with facilities as well as operation and management after handing over. And to confirm that implementation has been completed and terms of each contract are fulfilled, to observe handing over the facilities and equipment and obtain an approval of receipt from the Cambodian side.

2) Construction supervision plan

As the types of construction works involved in this project are versatile, a resident supervisor

(in charge of construction) is appointed and the following engineers are dispatched from time to time, keeping step with the progress of the construction works.

- Manager of general affairs (Overall coordination, process control)
- Engineer in charge of construction (Confirmation of construction methods, design concept, construction drawings, specifications of materials, etc.)
- Engineer in charge of structure (Confirmation of the ground conditions, foundation work, framework)
- Engineer in charge of electrical installation (Power supply & distribution system, electric service and substation, etc.)
- Engineer in charge of mechanical installation (Utility supply and processing system, air conditioning, water supply, drainage and hygiene system, etc.)
- Engineer in charge of equipment (Instruction for equipment installation, adjustment with the facility, confirmation of operation instructions, etc.)

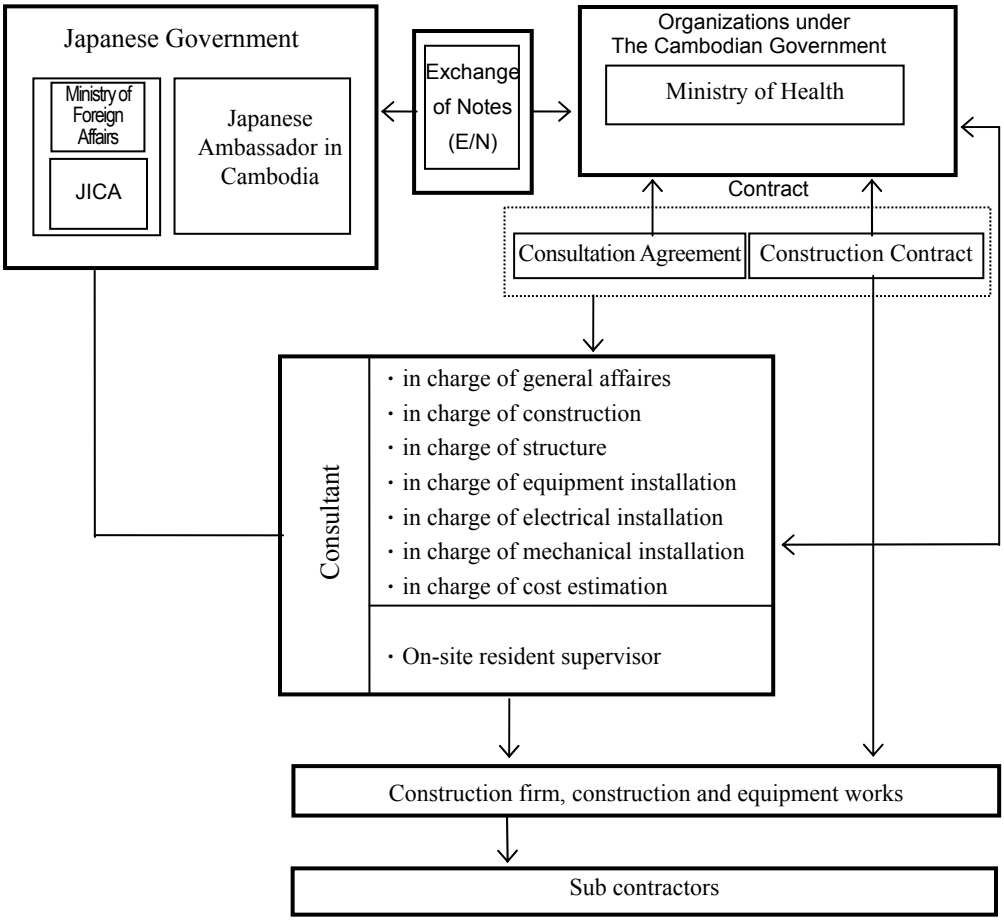


Figure 2-9 Construction Administration System

(5) Quality Control Plan

1) Quality Control of Facility

The Construction firm(s) will submit the documents of construction plans in advance to the consultant according to the construction contract (drawings, specifications and etc.) The consultant will verify the adequacy prior to the commencement of construction listing the specific inspection items and indicating the frequency to work for securing high level of quality control.

Major controlling items are listed below.

① Material

On-site resident supervisor will implement the inspection of receiving construction materials.

i. Reinforcing mill sheets, results of tension strength tests and makers names

ii. Analysis tables of cement material identification, tables of test results and makers names

iii. Analysis of salt components in aggregate, size distributions, densities and percentages of absorption

iv. Reinforced concrete

iv-1 Checking Mixing Plans

Confirmation and determination of the aggregate quantity, slump, cement-water ratio, air quantity and salt components through test mixings

iv-2 Compression Tests

Determination of the standard control values from analysis of result tables

iv-3 Control of material quantity measures and complete control of material storage

iv-4 Prior submittals of concrete casting plans

② Standards of Control

The consultant will carry out the construction supervision with certain standards of control based on the approved construction schedule plans. The standards of control will be basically governed by the standards of Japan.

③ Soil Bearing Capacity

Confirmation of the soil bearing capacity will be carried out with the presence of on-site resident supervisor on the site by implementing plane table loading tests.

2) Quality Control of Equipment

Ready-made medical equipment to be procured for this project will be selected from the equipment that complies with JIS, UL, IEC, ISO and other international standards. The consistencies between the equipment to be procured and the contents of the contract will be confirmed at the inspections carried out before shipment together with the inspections carried out by the third agencies for the components of shipment and containers.

(6) Procurement Plan

1) Construction material

The construction materials that can be procured domestically are limited to sand and gravels, lumber, cavity bricks, unglazed bricks, concrete blocks, etc. Therefore, body materials or finish materials, including cement and reinforcing steels, and equipment will be procured from Japan or the third countries (Thailand, Vietnam, Singapore, Indonesia, etc.)

As for the labor services, very few engineers are available in Cambodia, and there have not been many construction projects implemented in the country. Under these circumstances, Cambodia has not been able to cultivate skilled engineers and hence suffer from chronic shortage of skilled engineers and insufficient labor conditions. Therefore, the dispatch of Japanese supervisory staff in accordance with the progress of construction is essential.

Table 2-17 Procurement of Construction Materials and Equipment

Material/ Equipment	Cambodia	Japan	Third Countries	Note
Sand/Gravel	○			
Cement	○			made in Thailand
Brick	○			
Lumber	○			
Steel Bar	○			made in Japan or Thailand
Steel Beam	○	○		made in Japan or Thailand
Concrete Blocks	○			
Stone	○			made in Thailand, China or Singapore
Tile	○			made in Thailand or Singapore
Wooden Fittings	○			made in Thailand
Metal Fittings			○	made in Thailand or Singapore
Glass	○			made in Thailand or Singapore
Waterproofing	○			made in Thailand or Singapore
Plywood Bed	○			made in Japanese material will be recommended.
Metal Roofing Material	○			made in Thailand or Singapore
Vinyl Tile	○			made in Thailand or Singapore
Ceiling Board	○			made in Thailand or Singapore
Paint	○			made in Thailand
Ready-made Metallic Material	○			made in Japan
Miscellaneous Metallic Material	○			made in Thailand
Distribution Board		○	○	made in Japan, Thailand or Indonesia
Lighting Equipment		○	○	made in Japan, Thailand or Indonesia

Wires, cables		○	○	made in Japan, Thailand or Indonesia
Wiring Equipment		○	○	made in Japan, Thailand or Indonesia
Incoming/ distribution Board		○	○	made in Japan, Thailand or Indonesia
Transformers			○	made in Thailand, Indonesia or Singapore
Light Electrical Appliance		○	○	made in Japan, Thailand or Indonesia
PVC Pipe			○	made in Thailand or Indonesia
Plumbing Fixtures		○	○	made in Japan, Thailand or Indonesia
Elevated Water Tank（Ready-made）		○	○	made in Japan, Thailand or Indonesia
Pump		○	○	made in Japan, Thailand or Indonesia

2） Equipment

Among the medical equipment to be procured under this project, such equipment that require unique spare parts or consumables or technical services will be procured from those manufactures who have distributors or branches in Cambodia or neighboring Thailand or Vietnam. Moreover, while the medical equipment to be procured under this project shall in principle be procured from Japan or in Cambodia, some may also be procured in third countries such as DAC member states if deemed as more favorable for the project in consideration of the following conditions with prior approval of the Government of Japan.

The equipment to be procured is not manufactured in Japan.

Although the equipment is manufactured in Japan, limiting the procurement country to Japan may undermine the fairness in the tender.

The transportation of equipment is extremely high; the procurement from Japan may have a negative impact on the efficacy of the project; or maintenance of the equipment is fairly difficult due to lack of the manufacturer’s agency or other factors.

Such equipment that will assumedly be procured from third countries and that need agency or branch in the country is summarized in Attached-4 Equipment List.

3）Method of Transportation and the Point of Delivery

When transporting medical equipment from overseas to the Mong Kul Borey Hospital, the most general transportation route starts at the Sihanoukville port in Cambodia where the equipment is landed, and takes National Route No. 4 to Phnom Penh and National Route No. 5 to the hospital. Even when transporting from Thailand, which has a border with Cambodia, landing at the Sihanoukville port and taking the same land route are most common, considering that transshipment at the border is time-consuming, that duty free procedures have to be taken in Phnom Penh, and that the security in the border area is poor.

(7) Implementation Schedule

1）Project Implementation Schedule

To implement this project by the Grand Aid from the Government of Japan, E/N will be made and entered by and between the both countries followed by the tender for selecting construction firm(s) and equipment supply and installation firm(s) and Contracts, thereafter construction, equipment supply and installation will be implemented in a single fiscal year. The periods of detail design, tender, construction/procurement and installation stages are as follow.

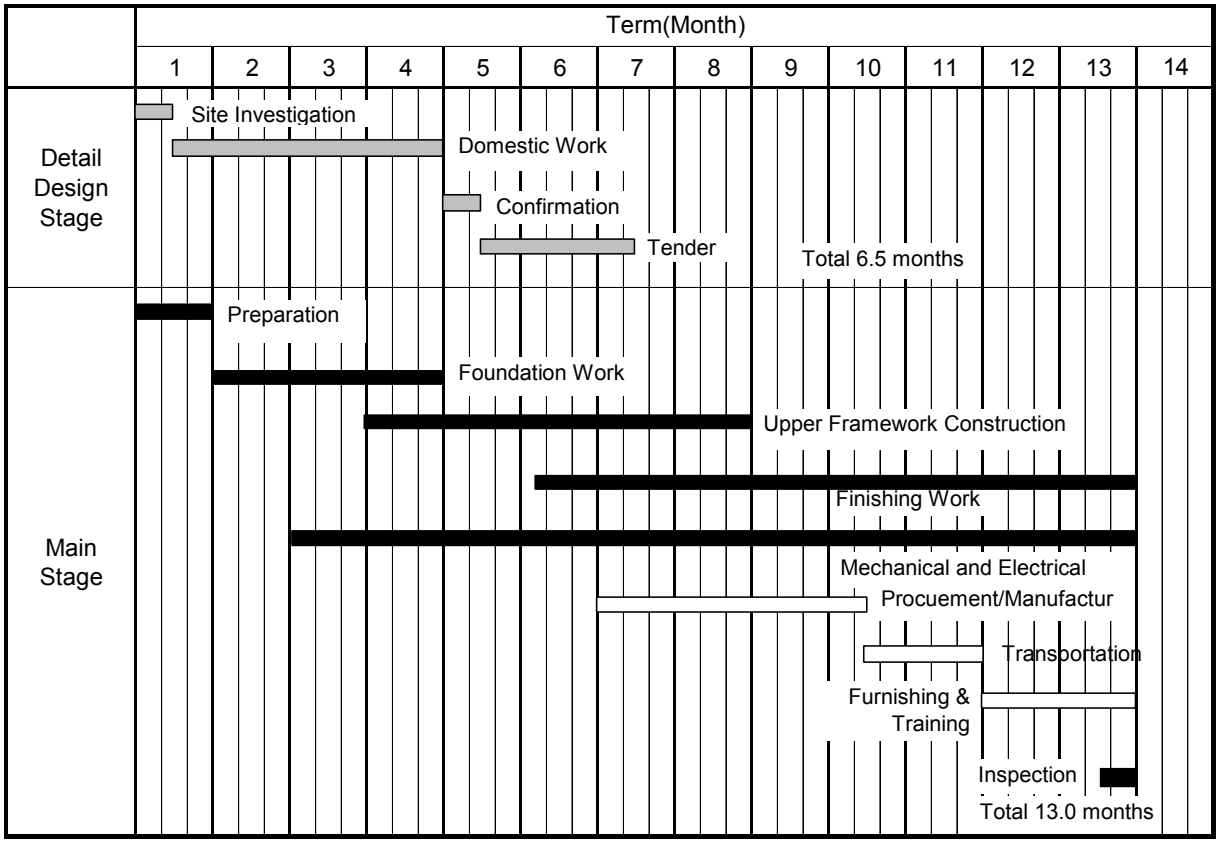
Table 2-18 Project Implementation Schedule

	Period
Detail Design Stage (Including field survey)	4.5 months
Tender Stage	2.0 months
Construction / Procurement & Installation Stage	13.0 months

2) Implementation Schedule

The following table shows the implementation schedule of this Project.

Table 2-19 Implementation Schedule



2-3 Obligation of the Recipient Country

The scope of works regarding to this project is described in "2-4 (3) Scope of Works". The outlines of the scope of works on the Cambodian side are as follows.

(1) Procedures

1) Acquisition of the site

The site is owned by the Government of Cambodia.

2) Exemption from tax

When Japanese companies and building constructors working on this project procure construction materials and equipment within the country, or import from abroad to Cambodia for this project during the period of execution of construction, the exemptions from custom duty, consumption tax, other inclusive tax, surcharge and etc. will be required. And measures should be taken for the prompt landing procedures required for custom clearances.

3) Accommodation given to the imported materials and equipment from Japan or the third countries

The Ministry of Health will provide required accommodations for prompt custom clearances and inland transportation procedures concerning to the imported materials and equipment from Japan or the third countries.

4) Acquisition of Building Permission

The application and acquisition of building permission regarding to this project have to be completed without delay prior to the commencement of construction. The other applications and acquisitions required for the commencement of construction is the same.

5) Issuance of Banking Arrangement and Authorization to Pay

The Ministry of Health will be the contact person on this project, and promptly issue the Banking Arrangement and the Authorization to Pay based on the agreement of the consultant and the contract of the executing agency.

(2) Obligation of Cambodia

The obligations of the Cambodian side that is essential for smooth implementation of this project are outlined as follows.

1) Clearance of obstacles and grading work in the site

Structures such as Tuberculosis Ward, Physical Therapy Ward, and Garage, structure such as water tank, trees and others stand in the site, and need to be removed or transferred. There is a slight slope of about 2% from southwest to northeast, though the most part of the site is flat. Prior to the commencement of construction, the Cambodian side needs to clear these buildings,

structures, trees and other obstacles as well as completing rough grading works in accordance with the designed ground of the site.

None of the above works does not cost high and require high technology, and certainly could be undertaken by the Cambodian side.

2) Infrastructure

①Electric Power

Electricity is introduced into the project site via power supply wire provided by the EDC. The voltage is 22KV and the capacity is 160KVA. A lead-in column with a switch will be installed in the site so as to introduce electricity via elevated wire. Having the switch as a demarcation point, the Japan side will be responsible for construction of the secondary side. The current electric poles and wire in the site will be transferred.

②Medical gas

To supply oxygen to the operation room, postoperative room, ICU, observation room and recovery room, it is necessary to regularly supply oxygen cylinders in the Oxygen Room.

3) Transferring works of existing equipment and furniture

Transferring works of existing equipment and furniture and purchasing of necessary equipment are in the range of works to be undertaken by the Cambodian side. These works can be accomplished by efforts of the Hospital staff, instead of having contractors, hence will not incur any additional cost.

Those works will be done right after the commencement of construction, though the specific timing will depend on the progress of the construction.

2-4 Project Operation Plan

2-4-1 Administration Plan

(1) Operation System and Organization

The supervisory authority and executing agency of this project is the Ministry of Health of Cambodia. But the Mong Kul Borey Hospital and the Provincial Health Department of Banteay Meanchey will undertake the management and maintenance after handover. The project aims at improving the healthcare services to be provided by the Mong Kul Borey Hospital, which are degrading in terms of both quality and quantity. Still, the project focuses on continuity of the existing departments, instead of creating new departments, and hence the present organizational system is sufficient to manage the post-project hospital.

(2) Staffing Plan

The total number of staff members at the Mong Kul Borey Hospital as of 2004 is 151 comprised of 16 medical doctors (including the hospital director), 10 medical assistants, 8 chief nurses, 48 nurses, 2 nurses in charge of anesthesia, 1 chief midwife, 9 midwives, 1 dentist (doubling as the assistant director of the hospital), 1 chief pharmacist, 3 pharmacists, 1 chief physical therapist, 3 physical therapists, 1 chief radiological technologist, 2 radiological technologists, 1 ultrasound diagnostician, 1 chief laboratory technician, technician in charge of sterilization, and 38 administrative or other staff members. Since this project is to retain and continue with the existing departments, the present number of staff members is sufficient to run the post-project hospital.

2-4-2 Maintenance System

(1) Maintenance System of the Mong Kul Borey Hospital

There is no department of maintenance in the Ministry of Health and hence hospitals must cover the maintenance of facilities and equipment maintenance by themselves. Accordingly, the Mong Kul Borey Hospital carries out the maintenance of its facilities and equipment. The hospital has 2 technicians in charge of maintenance, who are 55 and 35 years old. Unfortunately, however, they are both not graduated from secondary schools nor furnished with technical skills. What they can do at the moment is replacing or connecting electric wire in the hospital, changing room lamps and repairing the electric generator in the aspect of facility, and in the aspect of medical equipment, changing lamps for operation lighting, replacing battery of the Doppler, fetal heart detector, repairing pumping equipment such as absorber, and the like. They do not manage manuals.

In the meantime, the hospital has no maintenance contract entered with a medical equipment

manufacturer's agency, and as for only just the ultrasound scanner, they asked for paid repair to the agency.

The accounting section keeps the list of equipment and fixtures in the hospital by entering new data into the personal computer at the time of procurement. The list is improved with support from an NGO; They have added the year of procurement and the condition of equipment (good/normal/poor) in the list and they review the list once a year and prepare an annual report. Nevertheless, the technicians in charge of maintenance do not make use of this list at the moment. It is essential to establish a maintenance system in which the list is fully utilized.

2-4-3 Financial Plan

(1) Budgets of the Ministry of Health and Banteay Meanchey Province

The following table summarizes the budgets of the Ministry of Health and Banteay Meanchey PHD. The budget of the Ministry of Health increases at around 15%. Although it slightly decreases in 2004, it is still at least 35% growth compared with 2000. Similarly, the budget of Banteay Meanchey PHD is increasing but not as rapidly as the Ministry. In addition, the budget of Banteay Meanchey PHD only accounts for 2% more or less of the Ministry's budget.

Table 2-20 Budgets of the Ministry of Health and Banteay Meanchey Province PHD

	2000	2001	2002	2003	2004
Ministry of Health (million Riel)	81,000.0	94,620.0	113,260.0	132,100.0	124,695.0
Increase rate (%)		16.8	19.7	16.6	−5.6
Banteay Meanchey PHD (million Riel)	2,295.2	2,342.0	2,680.0	2,836.0	2,141.1
Increase rate (%)		2.0	14.4	5.8	-24.5
Percentage of Banteay Meanchey PHD's budget in the Ministry's entire budget	2.8	2.5	2.4	2.1	1.7

Source: Ministry of Health

(2) Financial Situation of the Mong Kul Borey Hospital

The revenues of the Mong Kul Borey Hospital depend on budget allocation from the Ministry of Health, payment by patients, and others. The budget from the Ministry accounts for approximately 60% of the total revenue, the payment by patients 35% and other items the rest. Among the "other items", assistance by NGOs occupies the largest segment although it fluctuates depending on the amount of aid. Although the total revenue has been steadily increasing at about 20% per annum since 2001, no significant, rapid increase can be expected in future. The budget from the Ministry has been fairly constant at 130 billion Riel or so for the last few years, which is very unlikely to increase in the future. The budget from the Ministry in 2004 was noticeably high, but the percentage of the allocation in the total revenue

is more or less 60% throughout those years except for 2003 when the assistance from NGOs was significantly high and assumedly had an impact on the share. Revenue from medical fee payment from patients has also been increasing at a constant rate for the past few years, but unless medical fees in conjunction with traveling healthcare for SEVA, ophthalmology, etc. will be raised, no further increase in the revenue cannot be expected. From the above, the revenue of the hospital is estimated as to transit between 1 to 1.2 billion Riel in the next few years.

(3) Projected Operation Cost of the Mong Kul Borey Hospital

The following table shows the transition of working budget of the Mong Kul Borey Hospital between 2001 and 2004.

Table 2-21 Analysis of Actual Budget of the Mong Kul Borey Hospital

	Year	2001		2002		2003		2004	
	Item	Budget (Riel)	Ratio (%)	Budget (Riel)	Ratio (%)	Budget (Riel)	Ratio (%)	Budget (Riel)	Ratio (%)
Revenue	Budget from MOH	366,000,000	62.67	485,900,000	64.5	424,000,000	43.0	740,000,000	61.6
	YoY growth rate (%)			32.8		-12.7		74.5	
	Clinic revenue	198,000,000	33.90	217,000,000	28.8	379,000,000	38.4	420,000,000	35.0
	YoY growth rate (%)			9.60		74.7		10.8	
	Others	20,000,000	3.43	50,000,000	6.7	183,000,000	18.6	41,000,000	3.4
	YoY growth rate (%)			150.0		266.0		-77.6	
	Total revenue	584,000,000	100.0	752,900,000	100.0	986,000,000	100.0	1,201,000,000	100.0
	YoY growth rate (%)			28.9		31.0		21.8	
Expenditure	Labor cost	324,000,000	50.2	407,000,000	47.4	398,000,000	43.7	517,000,000	49.4
	YoY growth rate (%)			25.6		-2.2		29.9	
	Medicines	32,000,000	5.0	54,000,000	6.3	72,000,000	7.9	84,000,000	8.0
	YoY growth rate (%)			68.8		33.3		16.7	
	Food service	57,981,000	9.0	68,649,000	8.0	72,432,000	8.0	76,461,000	7.3
	YoY growth rate (%)			18.4		5.5		5.6	
	Low-cost medical equipment	17,000,000	2.6	26,000,000	3.0	59,000,000	6.5	30,000,000	2.9
	YoY growth rate (%)			52.9		126.9		-49.2	
	Electricity	129,000,000	20.0	200,245,000	23.3	211,000,000	23.2	216,000,000	20.6
	YoY growth rate (%)			55.2		5.4		2.4	
	Fuel	24,000,000	3.7	24,000,000	2.8	24,000,000	2.6	24,000,000	2.3
	YoY growth rate (%)			0.0		0.0		0.0	
	Maintenance	34,000,000	5.3	46,475,000	5.4	35,000,000	3.8	56,000,000	5.4
	YoY growth rate (%)			36.7		-24.7		60.0	
	Stationery expense	13,000,000	2.0	14,500,000	1.7	20,000,000	2.2	20,000,000	1.9
	YoY growth rate (%)			11.5		37.9		0.0	
	Cleaning	12,000,000	1.9	14,000,000	1.6	15,000,000	1.6	18,000,000	1.7
	YoY growth rate (%)			16.7		7.1		20.0	
	Consumables	3,000,000	0.5	3,000,000	0.3	4,000,000	0.4	5,000,000	0.5
	YoY growth rate (%)			0.0		33.3		25.0	
	Total expenditure	645,981,000	100.0	859,144,000	100.0	910,432,000	100.0	1,046,461,000	100.0
	YoY growth rate (%)			33.0		6.0		14.9	
Balance		□ 61,981,000		□ 106,244,000		75,568,000		154,539,000	
Growth rate (%)				71.4		171.1		104.5	

Source : Mong Kul Borey Hospital YoY growth rate : year-on-year growth rate

(4) Expenses Analysis and Perspectives After Handover

An outstanding characteristic of the expenditure structure of the Mong Kul Borey Hospital is that labor cost and electricity occupy approximately 70% of the total expenditure while every other spending item remains below 10%. Medicines, food service and maintenance occupy only 5-8% each and equipment, office supplies and consumables even less. In addition, it is noteworthy that, although the labor cost slightly fluctuates in accordance with the change in the number of staff members at the hospital, the electricity expense has been quite the same since 2002. In this report hereunder are a study and an estimate on the expense under each category of the hospital in year 2007, the time of handover of the Project, provided that the inflation rate is 1.3%, an average of the past five years in Cambodia (Source: Consumer Price Index, 2004).

1) Labor

The ratio of labor cost to the total expenditure at the hospital has been fluctuating at around 50% in and after FY2001. And the year-on-year increase ratio has been upward except FY2003. This has been mainly due to the increase in the number of staff. The labor cost after handover is calculated from an estimated natural increase such as basic wage hike, assuming that a major increase in staff will not be necessary. With average annual wage per capita derived from the total labor cost and the number of staff members for individual years, the increase rate of average per-capita annual salary is calculated as to each year. As for 2002 and 2003, specifically, the actual labor costs and the number of staff members informed by the hospital were used in the calculation. The result has turned out to be 2.1% for the increase rate of per-capita salary. Thus, a budget for labor cost at the time of handover will be secured on the assumption that the increase rate of labor cost is 2.1% as the same as that of per-capita salary.

2) Medicines

The medicine expense ratio has been on constant rise around 5-8% of the total expenditure. It jumped 2.6 times from 2001 to 2004. Usage of medicines and pharmaceuticals is assumed as to increase in accordance with expansion of medical and health activities. The percentage of medicines in the total expenditure has been steadily growing and reached 8% in 2004. It is projected that the number of critical patients will increase after the handover of the Project, and accordingly so will the usage of medicines. Therefore, a budget for medicine expense at the time of handover will be secured on the assumption that the ratio of the medicine expense is 10% of the total expenditure.

3) Food Service for In-patients

While the absolute amount of food service expense has been increasing every year, the ratio of this category to the total expenditure has been declining. Considering the fact that

the occupancy rate of beds in each department ward has been quite constant for the past few years, no major change is assumed in the number of in-patients at the time of handover. A budget for expenses associated with food service for in-patients will be secured based on the occupancy rate and the inflation rate of 1.3%.

4) Low-cost medical equipment

Low-cost medical equipment indicates equipment for basic medical care such as stethoscopes and surgical knives, and its cost varies with the actual procurement of such equipment in the year. In 2003, it seems that a large quantity of low-cost medical equipment was purchased. Except for this year, the share of this category in the total expenditure is fairly constant at around 3.0% and no particular trend can be discerned. Therefore, the budget for low-cost medical equipment will be secured based on the annual average of the past years and the inflation rate of 1.3%.

5) Electricity

Electricity comes the second after the labor cost in terms of percentage in the total expenditure and also exceeds 20% of the total. Since 2002, the consumption has been, although slightly increasing as a whole, quite constant. Once power supply by the EDC starts in October 2005 as planned, the unit cost for electricity will be 1,100 Riel/KVA. Therefore, the electricity expenses for the existing buildings can be derived by multiplying the annual average of the actual consumption for the past years by the new unit price. As for new buildings, power consumption is assumed based on the load capacity and multiplied by the EDC's unit price.

6) Fuel

Since the fuel expense has been fixed since 2001, the same amount is applied to the existing buildings after the completion of the project. The electric generator to be newly constructed under this project will also require fuel, which will be calculated on the assumption that blackout of 2 hours per week occurs due to lightning, equipment failure, overload, or other factors.

7) Facility Maintenance

The ratio of facility maintenance expenses has accounted for a small ratio, 0.1 – 0.7% of the total, and some years had no budget. There was an explanation that the years without budget utilized the remaining budget of previous year, but still, it should be small amounts. At the early time from the handing-over, the newly established buildings will be almost maintenance-free. But they will require the regular annual maintenance expenses for such as replacement of electric bulbs and consumptions as the same as the existing buildings. The current area is 5,875 m^2, and it will be increased by 50% at the completion of the

project. Thus, the budget for the facility maintenance expenses at the time of handing-over should be arranged to secure the 50% increased budget of the largest expenses from the FY1999 to FY2003 in addition to the price increase rate of 5.3%.

8) Stationery expense

While spending on stationery expense is on an upturn trend, that of 2003 and that of 2004 were about the same. The percentage of this category in the total expenditure is as small as 2% more or less every year, a budget for stationery expense will be secured based on the estimated amount at the time of handover, derived from the increasing rate from 2001 to 2004 (53.8% for the four years, and the annual average is 53.8%/4 years=13.45%/year) and the inflation rate of 1.3%.

9) Cleaning

Cleaning expenses are expanding every year. Since the percentage of this category in the total expenditure is as small as 1.7% more or less every year, a budget for cleaning will be secured based on the estimated amount at the time of handover, derived from the increasing rate from 2001 to 2004 (50% for the four years, and the annual average is 50%/4 years=12. 5%/year) and the inflation rate of 1.3%.

10) Consumables

Spending on consumables is increasing every year. Since the percentage of this category in the total expenditure is as small as 0.5% or less every year, a budget for consumables will be secured based on the estimated amount at the time of handover, derived from the increasing rate from 2001 to 2004 (66.6% for the four years, and the annual average is 66.6%/4 years=16.65%/year) and the inflation rate of 1.3%.

2-4-4 Operation and Maintenance Expense

The expenses in year 2007 are assumed as follows based on the prospect after the handover described previously in the facility maintenance expense section.

Table 2-22 Estimation of Expenses in FY2007 of the Mong Kul Borey Hospital

(Unit: Thousand Riel)

	2004 Budget	2007 Estimate	Percentage (%)	Remarks
Labor cost	517,000	550,260	35.0	Since there is no plan to increase the number of staff after the handover, it is calculated based on FY 2004 budget and the increase rate of labor cost per capita, 2.1%/year. $517,000 \times (1.021)^3 = 550,260$
Medical expense	84,000	157,042	10.0	In light of the likelihood of increase in the amount of medicine and pharmaceuticals in accordance with an increase in the number of critical cases, it is calculated as 10% of the total expenditure. A/(1,413,380(Sum of the other)＋A) =10% A=157,042 Where A is the medical expense.
Food service	76,461	79,482	5.1	Assuming no major change in the number of in-patients, it is calculated from the inflation rate of 1.3%. $76,461 \times (1.013)^3 = 79,482$
Low-cost medical equipment	33,000 (Average)	34,304	2.2	Calculated based on the average of the actual spending on low-cost medical equipment between 2001 and 2004 and the inflation rate of 1.3%/year. $33,000x \times (1.013)^3=34,304$
Electricity	209,082 (Average)	462,018	29.4	Derived from the average of past electricity expenses as to the existing buildings and an estimate for new buildings. See Section (1) Facility Running Cost below for details.
Fuel	24,000	26,340	1.7	Derived from the average of past fuel expenses as to the existing buildings and an estimate for new buildings. See Section (1) Facility Running Cost below for details.
Maintenance cost	56,000	195,728	12.3	Sum of the product of the maximum budget record between 2001 and 2004 with a 55.7% addition of total floor area and the inflation rate of 1.3%/year and the maintenance cost for new equipment (See Attached-5). $(56,000 + 56,000 \times 55.7\%) \times (1.013)^3 + 105,092=195.728$
Stationary expanse	20,000	30,357	1.9	Derived from the annual increase rate of expenses for OA supplies between 2001 and 2004 (13.45%) and the inflation rate of 1.3%/year. $20,000 \times (1.1345)^3 \times (1.013)^3 = 30,357$
Cleaning	18,000	26,641	1.7	Derived from the annual increase rate of expenses for cleaning between 2001 and 2004 (12.5%) and the inflation rate of 1.3%/year. $18,000 \times (1.125)^3 \times ((1.013)^3=26,523$
Consumables	5,000	8,250	0.5	Derived from the annual increase rate of expenses for consumables between 2001 and 2004 (16.65%) and the inflation rate of 1.3%/year. $5,000 \times (1.1665)^3 \times (1.013)^3=8,250$
Total	1,046,461 (Actual)	1,570,422	100	

As described in the table above, the estimated expenditure in FY2007 is 1,570,422 thousand Riel, increased by 50.1% from 2004 and 16.7% of the annual average. Although it is uneasy to predict, the above estimation is adequately feasible, considering that the annual increase rate for the past three years is 17.9% ((33.3% + 6.0% + 14.9%)/3 years) and that the revenues both from the Ministry's budget allocation and medical fee payment by patients are on the rise, and that the annual budgets of the Ministry of Health and the PHD in Banteay Meanchey Province have been increasing every year.

(1) Facility Running Cost

Expenses for electricity and fuel are estimated as follows.

① Electricity expense

Electricity consumption (for new buildings): {160KVA(Planned contract unit price) × 0.8(power factor) × 0.6(daytime demand factor) × 8Hr(hour of use) + 160KVA × 0.8(power factor) × 0.3(nighttime demand factor) × 8Hr(hours of use)} × 365 days = 336,384KVA/year

Electricity charge (for new buildings): 336,384KVA/year x 1,100 Riel/KVA
=370,022,400 Riel/year

Electricity charge (for existing buildings): 209,082,000 Riel/year (Average from the past records) x 1,100 Riel/2,500Riel
=91,996,080Riel/year

Total electricity charge: new buildings + existing buildings = 462,018,480 Riel/year

② Fuel expense

Fuel consumption (new buildings): 9.0L/Hr (fuel consumption) x 2Hr/week (blackout occurrence) x 52 weeks/year=936.0L/year

Fuel charge (for new buildings): 936.0 L/year x 2,500 Riel/L=2,340,0000 Riel/year

Fuel charge (for existing buildings): Fixed 24,000,000 Riel/year

Total fuel charge: new building + existing buildings = 26,340,000 Riel/year

(2) Equipment Running Cost

Expenses for maintenance of medical equipment and vehicles to be provided under this cooperation project are described in Appendices 5, Appendix 5-5 “Operation and Maintenance Fee for the Equipment”.

2-5 Project Cost Estimation

The total project amount if this project were to be implemented through grant aid cooperation from Japan is estimated to be 699 million yen (695 million yen from the Japan side and 4 million yen from the Cambodia side). Also, this cost estimate is provisional and would be further examined by the Government of Japan for the approval of the Grant.

(1) Cost Estimation to be borne by the Japanese side

Table 2-23 Cost Estimation

Cost Estimation App. 695 million Japanese Yen

Mong Kul Borey Hospital in Banteay Meanchey Province

6 buildings and total floor area 3,851.9m^2

Item		Cost Estimation (million Japanese Yen)		
Building	Emergency/Imaging Building	81	503	596
	Operation Theater Building	143		
	Surgery Ward Building	94		
	Obstetrics/Gynecology Building	94		
	Mechanical Room	29		
	Parking and others	62		
Equipment			93	
Detail Design, Supervising & Technical Cooperation				99

(2) Cost Estimation to be borne by the Cambodian side

1) Clearance of existing facilities	US$ 13,700	(App. 1.5 million Japanese yen)
2) Grading works at the site	US$ 20,000	(App. 2.2 million Japanese yen)
3) Transfer of electric poles	US$ 2,300	(App. 0.3 million Japanese yen)
Total	US$ 36,000	(App. 4.0 million Japanese yen)

(3) Condition of Cost Estimation

1) Time of Cost Estimation	From June 2004 to November 2004 (half year average rate)
2) Exchange rate	US$1 = 109.88 Japanese yen
3) Construction term	It is estimated that the project would be implemented in a single fiscal year, and a period of detailed design, construction and procurement of equipment is identified in the implementation schedule.
4) Other	This project will be implemented through the system of the grant aid cooperation by the Government of Japan.

Chapter 3 PROJECT EVALUATION AND RECOMMENDATIONS

Chapter 3 PROJECT EVALUATION AND RECOMMENDATIONS

3-1 Project Effect

The Mong Kul Borey Hospital is ranked as a top referral hospital in Banteay Meanchey Province, and is the only hospital in the province where operations can be carried out. Traffic accidents in the province are on the rise, and as the Mong Kul Borey Hospital sees the greatest number of injured patients, it can easily be predicted that the needs of the Surgery Department and Operation Theater will increase in the future. However, because of the deterioration of the facilities and equipment, it will be difficult for the hospital to fulfill the expected functions.

Implementing the project will make it possible to upgrade the environment in which medical treatment services are provided by surgery-related departments and obstetrics- and gynecology-related departments.

The Mong Kul Borey Hospital provides medical treatment to approximately 720,000 residents in Banteay Meanchey Province (estimated figure for 2007) as well as approximately 50,000 people in the neighboring Siem Reap and Bat Dambang Provinces. The total number of people receiving services from the hospital is thought to be around 770,000 (approximately 5% of the entire population of Cambodia), so this number of residents will benefit from the project.

The effects resulting from implementing the project can be categorized as described below.

Table 3-1 Project Effects and Degree of Improvement over Current State

Current state and problems	Countermeasures through the project (project component to be undertaken)	Effects from the project and degree of improvement
As the number of traffic accidents increases, the population increases, and the environment deteriorates, the need for medical treatment is rising. However, the facilities at the Mong Kul Borey Hospital have deteriorated severely, and much of the medical equipment is already being used beyond its service life, so that the quality and volume of medical treatment services are being compromised.	Construction of key facilities such as surgery-related departments at the hospital, including the Operation Theater, Emergency Department, and Department of Radiology, as well as obstetrics/ gynecology-related departments, including the Labor and Delivery Department and the Mother/Child Infection Prevention program, and procurement of medical equipment	・ Augmenting the facilities and equipment will increase the number of patients and will increase the percentage of space occupied by beds. ・A dedicated PMTCT room will be established in the Obstetrics and Gynecology Ward Building, and this will heighten the benefit to patients receiving mother/child health care. ・ Inpatient Wards and Operation Department will be more clearly separated, and this will help to prevent the spread of infection in the hospital. ・Relocating the four central wards in the existing building will facilitate future expansion of the hospital.

The facilities and equipment will be refurbished in surgery-related departments, including the Operation Theater, Emergency Department, and Department of Radiology, as well as in obstetrics-/gynecology-related departments, where the degree of deterioration is advanced, thus improving the medical treatment service environment in these departments. This is expected to provide positive results in terms of the number of hospitalized patients and the number of operations carried out in the Surgery and in the Obstetrics/Gynecology Departments. The success indicators for the project objectives are as indicated below. Incidentally, it is thought that evaluations should be conducted in 2007 and subsequently, when the final transfer of the facilities and equipment has been carried out.

Table 3-2 Indicators of Project Achievements

Success indicator	2004	2007 and subsequent years
No. of hospitalized patients	1,903	Increase
No. of planned operations	1,176	Increase
No. of abdominal and urinary organ ultrasonic diagnoses	Cannot be performed	Can be performed

(1) No. of hospitalized patients

Renovating the Surgical Ward Building and the Obstetrics/Gynecology Ward Building and augmenting the facilities and equipment is expected to increase the number of patients hospitalized in the Surgery Department and in the Obstetrics/Gynecology Department.

(2) No. of planned operations

In the Operation Theater, where clean and dirty areas are not currently separated, severely dilapidated operating rooms will be renovated and surgical equipment will be updated and procured. This will clarify the movement patterns of patients, staff, and objects, and will clearly define clean and dirty areas, and this is expected to help prevent the spread of infection in the hospital, as well as increasing the number of planned operations and improving the operating environment.

(3) Ultrasonic diagnoses

Installing an ultrasonic diagnosis unit in the Department of Radiology will make it possible to carry out highly accurate diagnoses of abdominal areas, urinary organs, and other areas,

and will increase the number of diagnoses. Also, because diagnoses will be more accurate, the appropriate measures can be taken with respect to operations such as kidney stones and cystoliths, and an improvement is expected in medical treatment services.

In addition to the above, implementing the project is expected to produce the direct and indirect effects described below in the Mong Kul Borey Hospital.

(1) Direct effects

- Four beds for monitoring patients will be provided in the Emergency Care Department, which will reduce the burden on the treatment rooms and hospital wards in terms of medical care for emergency patients being treated as a result of the rapidly increasing number of traffic accidents.
- The wards consist primarily of large rooms in which patient beds are jammed tightly together. This leaves little room for nursing care to be carried out and also makes it impossible to protect patient privacy. This will be alleviated by planning six-bed wards, in keeping with CPA guidelines.
- A connecting corridor for use only by staff will be provided in the Department of Radiology. This will prevent intersection of the traffic lines of patients/families and staff and will clearly separate the traffic flows, both heightening the level of safety in the hospital and helping to prevent the spread of infection.

(2) Indirect effects

- The Mong Kul Borey Hospital is the top referral facility in Banteay Meanchey Province. Through the project, the surgery-related departments that are the nucleus of the hospital will be refurbished, and this will contribute to improving the referral system within the province.
- In terms of administrative effects, introducing beds for which a fee is charged in the Surgical Ward Building and the Obstetrics/Gynecology Ward Building is expected to increase medical treatment revenues at the hospital.

3-2 Recommendations

(1) Issues and proposals

The following outlines the issues that must be addressed by the Cambodian Government in order to utilize the facility construction and equipment procurement resulting from implementation of the project to the maximum possible limit, and to exercise and sustain the

full effects of the project.

① Medical treatment revenues

Hospital revenues are divided into three categories: those allocated from the Ministry of Health, medical treatment revenues, and support from other donors. Although allocations from the Ministry of Health tend to be increasing, they have also been suppressed since last year because of the national budget. Support from donors fluctuates greatly from year to year, and reliable profit cannot be counted on. At the same time, medical treatment revenues make up over a 30% of all revenues, and have been steadily increasing. Ideally, medical treatment revenues will continue to show steady growth in the future in order to assure smooth project maintenance and control.

② Maintenance of facilities and equipment

The Mong Kul Borey Hospital has two maintenance and control technicians; the chief technician is 55 years old and the other technician is 35 years old. However, neither of these persons has progressed beyond the intermediate school level, and they possess no specialized technologies. Because of this, maintenance of the facilities and equipment is currently limited. With respect to operation and maintenance of the facilities, the planning for this project calls for facility contents that are within the scope that can be handled technically by the current maintenance and control personnel, as well as selecting facilities and equipment with low maintenance costs, and reducing running costs. However, there is a need to further improve the maintenance and control engineering. There are plans to begin a technical cooperation project within fiscal 2005 relating to the improvement of medical equipment maintenance and control capabilities at regional hospitals, and ideally the engineers at the Mong Kul Borey Hospital will also take part in this project. Additionally, maintenance and control expenses for facilities and equipment are largely constant at around 5% of all hospital expenditures, but these need to be assured for each year as a given amount of fixed expenses that does not fluctuate greatly from one year to the next.

③ In-hospital education

Construction of a new operating room and upgrading of equipment and materials through the project will bring about significant changes in the Operation Theater environment. To make good use of this environment, it will be extremely important to continue the in-hospital education that is currently being carried out for physicians and nurses with respect to case reports and diagnosis and treatment methods. Furthermore, it is hoped

that in-hospital training can be augmented beyond the current level by using case reports and diagnosis and treatment methods from hospitals and health centers in the same province and from referral hospitals at the same level in other provinces.

④ Mother/child health and medical care

In the Obstetrics/Gynecology Department, it is important that expectant mothers be guided towards safe delivery by providing health education, prenatal examinations, care during the perinatal period, and PMTCT, and at the same time to carry out comprehensive mother/child health services that combine medical checkups for infants, preventive inoculations, guidance in nutrition, and family planning. Ideally, stronger protection of patient privacy will be assured so that patients can undergo treatment without worrying, and the Obstetrics/ Gynecology Department will be further strengthened.

(2) Items related to technical cooperation and other donors

The project planning encompasses relocation of central medical care departments such as the Emergency Care Department, the Department of Radiology, and the Operation Theater, as well as the Surgical Ward and the Obstetrics/Gynecology Ward. Consequently, rather than building new departments, existing departments would be relocated, making it possible for the Mong Kul Borey Hospital to be run with the current number of staff following the transfer. Additionally, no problems are foreseen with respect to the equipment planned for procurement. For these reasons, it is judged that technical cooperation from Japan is not necessary in direct regard to the project. It is hoped, however, that the persons carrying out maintenance and control of the facilities and equipment will actively participate in technical cooperation projects involving the improvement of medical equipment maintenance and control capability that are planned to begin at regional hospitals.

At the same time, however, the NGOs and other organizations providing assistance to the Mong Kul Borey Hospital are providing various forms of technical support, among them assistance in support funding for patients at the poverty level, support in improving medical treatment services, the implementation of VCCT, activities aimed at preventing mother/child infection, technical support in ophthalmology, the dispatch of hospital administration advisers, and support in family planning activities. Continuing to receive technical support in these forms is expected to enable the hospital to achieve further progress in the qualitative improvement of medical treatment services and efficient administration.

APPENDICES

1. Member List of the Study Team
2. Study Schedule
3. List of Parties Concerned in the Recipient Country
4. Minutes of Discussions
5. Equipment

1. Member List of the Study Team

1-1 Basic Design Study

Position	Name	Period (2004)	Organization
1.Leader	Ms. Ako MUTO	10/Dec.-18/Dec.	Health Team, Project Management Group II, Grant Aid Management Department Japan International Cooperation Agency
2.Adviser	Dr. Yumiko EGAMI,M.D, MPH,Ph.D	10/Dec.-18/Dec.	International Affaires Division, Minister's Secretariat Ministry of Health, Labor & Welfare
3.Chief Consultant/ Architect	Mr. Hozumi OCAWA	28/Nov.-22/Dec.	Azusa Sekkei Co., Ltd.
4.Health Sector Analyst	Mr. Naoki TAKE	28/Nov.-17/Dec.	International Total Engineering Corporation
5.Arhitect/ Mechanical Engineer	Mr. Hiroyuki KOIKE	28/Nov.-22/Dec.	Azusa Sekkei Co., Ltd.
6.Execution Planner/ Quantity Surveyor	Mr. Yasuhiko YANAGI	29/Nov.-18/Dec.	Azusa Sekkei Co., Ltd.
7.Medical Equipment Operation/ Management Planner	Mr. Shigehito AKAGI	28/Nov.-22/Dec.	International Total Engineering Corporation
8.Cost Estimation/ Procurement	Mr. Hideki MIYAMAE	29/Nov.-18/Dec.	International Total Engineering Corporation
9. Mechanical Engineer	Mr. Ryo TANADA	29/Nov.-14/Dec.	Azusa Sekkei Co., Ltd.

1-2 Draft Report Explanation

Position	Name	Period (2005)	Organization
1.Leader	Mr. Juro CHIKARAISHI	19/Apr.-27/Apr.	Resident Representative, Cambodia Office Japan International Cooperation Agency
2.Adviser	Dr. Yumiko EGAMI,M.D, MPH,Ph.D	18/Apr.-22/Apr.	International Affaires Division, Minister's Secretariat Ministry of Health, Labor & Welfare
3.Chief Consultant/ Architect	Mr. Hozumi OCAWA	18/Apr.-29/Apr.	Azusa Sekkei Co., Ltd.
4.Medical Equipment Operation/ Management Planner	Mr. Shigehito AKAGI	18/Apr.-29/Apr.	International Total Engineering Corporation

2. Study Schedule

2-1 Basic Design Study

From 28 November, 2004 to 22 December, 2004 (25days)

No.	Date	Time	Activity
01	28 Nov. (Sun)	10:55 18:45	Lv. Tokyo by JL-717/TG-698 (Mr. Ogawa, Mr. Take, Mr. Koike & Mr. Akagi) Ar. Phnom Penh via Bangkok
02	29 Nov. (Mon)	08:30 10:00 10:551 8:45	Courtesy call to the Embassy of Japan and submission and explanation of the inception report and the questionnaire Courtesy call to the MOH and submission the inception report and the questionnaire Lv. Tokyo by JL-717/TG-698 (Mr. Yanagi, Mr. Miyamae, & Mr. Tanada) Ar. Phnom Penh via Bangkok
03	30 Nov. (Tue)	08:30 10:00 14:30 All day	Courtesy call to JICA and submission and explanation of the inception report and questionnaire (Mr. Ogawa, Mr. Take, Mr. Koike & Mr. Akagi) Meeting with JICA experts and submission and explanation of the inception report and the questionnaire Meeting with the MOH and submission and explanation of the inception report and the questionnaire Research of local contractors (Mr. Yanagi & Mr. Tanada) Research of local equipment suppliers (Mr. Miyamae)
04	1 Dec. (Thu)	09:55 10:40 16:00	Lv. Phnom Penh by FT-992 (all consultants & Mr. Matsuo) Ar. Siem Reab Courtesy call to the Banteay Meanchey Province PHD and submission and explanation of the inception report and the questionnaire
05	2 Dec. (Thu)	08:30 All day	Courtesy call to the Mong Kul Borey Hospital and submission and explanation of the inception report and the questionnaire (all consultants & Mr. Matsuo) Observation of the Mong Kul Borey Hospital
06	3 Dec. (Fri)	07:00 15:00 All day	Observation of the Thmar Puok Referral Hospital (Mr. Ogawa, Mr. Take, Mr. Koike, Mr. Akagi & Mr. Tanada) Observation of the Sisophon Health Center Research of local contractors (Mr. Yanagi) Research of local equipment suppliers (Mr. Miyamae)
07	4 Dec. (Sat)	07:00 11:30	Observation of the Kob Health Center, Poi Pet Health Center & Or Chrov Referral Hospital (all consultants) Observation of the customs clearance condition at Poi Pet
08	5 Dec. (Sun)	All day	Internal meeting Filing documents
09	6 Dec. (Mon)	08:30 Research of infrastructure (Mr. Yanagi & Mr. Tanda) Research of existing equipment (Mr. Miyamae)	Meeting with the Mong Kul Borey Hospital (Mr. Ogawa, Mr. Take, Mr. Koike, Mr. Akagi & Mr. Matsuo)
10	7 Dec. (Tue)	08:30 Research of infrastructure (Mr. Yanagi & Mr. Tanda) Research of existing equipment (Mr. Miyamae)	Meeting with the Mong Kul Borey Hospital (Mr. Ogawa, Mr. Take, Mr. Koike, Mr. Akagi & Mr. Matsuo)
11	8 Dec. (Wed)	08:30 14:30 15:30 19:05 19:55	Meeting with the Mong Kul Borey Hospital (Mr. Ogawa, Mr. Take, Mr. Koike, Mr. Akagi, Mr. Tanada & Mr. Matsuo) and local relegated companies Courtesy call to the Mong Kul Borey OD office Observation of the Posei Krok No.1 Health Center Lv. Siem Reab by FT-995 (Mr. Yanagi & Mr. Miyame) Ar. Phnom Penh
12	9 Dec. (Thu)	08:30 14:30 15:00	Meeting with the Mong Kul Borey Hospital (Mr. Ogawa, Mr. Take, Mr. Koike, Mr. Akagi & Mr. Tanada) Research of donors in the Mong Kul Borey Hospital (Mr. Take) Meeting with the Banteay Meanchey Province PHD (Mr.Take)

No.	Date	Time	Activity
		19:05	Lv. Siem Reab by FT-995 (Mr. Ogawa, Mr. Akagi & Mr. Tanada)
		19:55	Ar. Phnom Penh
		09:00	Research of construction material costs (Mr. Yanagi)
			Research of local equipment suppliers (Mr. Miyamae)
13	10 Dec.	09:00	Meeting with local relegated companies (Mr. Ogawa)
	(Fri)	13:00	Meeting with JICA(Mr. Ogawa & Mr. Akagi)
		14:00	Meeting with JICA experts
		09:00	Research of construction material costs (Mr. Yanagi & Mr. Tanada)
			Research of local equipment suppliers (Mr. Miyamae)
		09:00	Research of local buildings (Mr. Koike)
			Filing documents (Mr. Take)
		11:30	Ar. Phnom Penh (Ms. Muto)
		14:00	Meeting with JICA experts
14	11 Dec.	09:00	Research of construction material costs (Mr. Yanagi & Mr. Tanada)
	(Sat)		Research of local equipment suppliers (Mr. Miyamae)
		09:55	Lv. Phnom Penh by FT-992 (Ms. Muto, Mr. Ogawa, Mr. Akagi, Mr. Take, Mr. Matsuo & Ms. Kubota)
		10:40	Ar. Siem Reab
		08:00	Lv. Sisophon to Siem Reab by car (Mr. Koike & Mr. Take)
		11:00	Observation of the Siem Reab Referral Hospital (Ms. Muto, Mr. Ogawa, Mr. Take, Mr. Koike, Mr. Akagi, Mr. Take, Mr. Matsuo & Ms. Kubota)
		17:00	Internal meeting
15	12 Dec.	06:45	Lv. Phnom Penh by FT-992 (Dr. Egami)
	(Sun)	07:30	Ar. Siem Reab
		08:00	Internal meeting (Ms. Muto, Dr. Egami, Mr. Ogawa, Mr. Koike, Mr. Akagi, Mr. Matsuo & Ms. Kubota)
		16:00	Observation of the Mong Kul Borey Hospital
		16:30	Lv. Siem Reab by FT-995 (Mr. Take)
		17:20	Ar. Phnom Penh
		All day	Filing documents (Mr. Yanagi & Mr. Miyamae)
16	13 Dec.	08:30	Courtesy call to the Banteay Meanchey Province PHD at Sisophon (Ms. Muto, Dr. Egami, Mr. Ogawa, Mr. Koike, Mr. Akagi, Mr. Matsuo & Ms. Kubota)
	(Mon)	09:30	Courtesy call to the Mong Kul Borey Hospital, observation, meeting and in receipt of the answer of questionnaire
		09:00	Observation of the National Maternal and Child Health Centre (Mr. Yanagi & Mr. Tanada)
		11:00	Observation of the National Tuberculosis Control Centre
		09:00	Research of local equipment suppliers (Mr. Miyamae)
		20:25	Lv. Phnom Penh by TG-699 (Mr. Yanagi & Mr. Miyamae)
		21:30	Ar. Bangkok
		20:25	Lv. Phnom Penh by TG-699/JL-704 (Mr. Tanada)
17	14 Dec.	08:00	Meeting with the Mong Kul Borey Hospital (Ms. Muto, Dr. Egami, Mr. Ogawa, Mr. Koike, Mr. Akagi, Mr. Matsuo & Ms. Kubota)
	(Tue)	11:00	Discussion on the Minutes at the Banteay Meanchey Province PHD at Sisophon
		13:00	Lv. Sisophon by car (Ms. Muto, Dr. Egami, Mr. Matsuo & Ms. Kubota)
		19:00	Ar. Phnom Penh
		13:30	Supplement Research of the Mong Kul Borey Hospital (Mr. Ogawa, Mr. Koike & Mr. Akagi)
		16:00	Lv. Sisophon to Bat Dambang by car.
		09:00	Meeting with the MOH (Mr. Take)
		All day	Research of project costs at Bangkok (Mr. Yanagi & Mr. Miyamae)
		06:35	Ar. Tokyo (Mr. Tanada)
18	15 Dec.	09:00	Report to JICA (Ms. Muto, Dr. Egami, Mr. Matsuo & Ms. Kubota)
	(Wed.)	17:30	Discussion on the Minutes at the Banteay Meanchey Province PHD at Sisophon (Ms. Muto, Dr. Egami, Mr. Ogawa,Mr. Koike, Mr. Akagi, Mr. Take & Mr. Matsuo)

No.	Date	Time	Activity
		08:00	Lv. Bat Dambang to Phnom Penh by car (Mr. Ogawa, Mr. Koike & Mr. Akagi)
		13:30	Ar. Phnom Penh and filing documents
		09:00	Meeting with the MOH (Mr. Take)
		All day	Research of project costs at Bangkok (Mr. Yanagi & Mr. Miyamae)
19	16 Dec. (Thu)	08:45	Report to JICA (Ms. Muto, Dr. Egami, Mr. Ogawa, Mr. Koike, Mr. Akagi & Mr. Take)
			Internal meeting
		10:00	Filing documents
		20:25	Lv. Phnom Penh by TG-699/JL-704 (Mr. Take)
		All day	Research of project costs at Bangkok (Mr. Yanagi & Mr. Miyamae)
20	17 Dec. (Fri)	14:00	Signing on the Minutes of Discussion at the MOH (Mr. Chikaraishi, Ms. Muto, Dr. Egami, Mr. Ogawa, Mr. Koike & Mr. Akagi)
		16:00	Report to JICA and the Embassy of Japan (Ms. Muto, Dr. Egami, Mr. Ogawa & Mr. Akagi)
		09:00	Research of project costs at Bangkok (Mr. Yanagi & Mr. Miyamae)
		22:55	Lv. Bangkok by JL-704
		06:35	Ar. Tokyo (Mr. Take)
21	18 Dec. (Sat)	09:00	Meeting with the Director of the Mong Kul Borey Hospital (Mr. Ogawa, Mr. Koike & Mr. Akagi)
			Signing on the Memorandum with the Director of the Mong Kul Borey Hospital at Phnom Penh
			Lv. Phnom Penh (Ms. Muto & Dr. Egami)
		06:35	Ar. Tokyo (Mr. Yanagi & Mr. Miyamae)
22	19 Dec. (Sun)	All day	Internal meeting
			Filing documents
23	20 Dec. (Mon)	09:00	Internal meeting (Mr. Ogawa & Mr. Koike)
		14:00	Observation of the National Tuberculosis Control Centre (Mr. Ogawa, Mr. Koike & Mr. Akagi)
		16:00	Observation of the National Maternal and Child Health Centre
24	21 Dec. (Tue)	08:30	Report to the Embassy of Japan (Mr. Ogawa, Mr. Koike & Mr. Akagi)
		10:30	Report to JICA
		20:25	Lv. Phnom Penh by TG-699/JL-704
25	22 Dec. (Wed)	06:35	Ar. Tokyo (Mr. Ogawa, Mr. Koike & Mr. Akagi)

2-2 Draft Report Explanation

From 18 April, 2005 to 29 April, 2005 (12days)

No.	Date	Time	Activity
01	18 Apr. (Mon)	11:00	Lv. Tokyo by NH-953/TG-698 (Dr. Egami) & JL-717/TG-698 (Mr. Ogawa & Mr. Akagi)
		18:20	Ar. Phnom Penh via Bangkok
02	19 Apr. (Tue)	09:00	Courtesy call to JICA and JICA experts and submission and explanation of the draft report (Mr. Chikaraishi, Dr. Egami, Mr. Ogawa & Mr. Akagi)
		14:30	Courtesy call to the MOH and submission and explanation of the draft report
03	20 Apr. (Wed)	09:00	Discussion on the draft report at the MOH (Dr. Egami, Mr. Ogawa, Mr. Akagi, Mr. Matsuo & Ms. Muroi)
04	21 Apr. (Thu)	09:00	Discussion on the draft report at the MOH (Dr. Egami, Mr. Ogawa, Mr. Akagi, Mr. Matsuo & Ms Muroi)
		19:20	Lv. Phnom Penh by TG-699/NH-916 (Dr. Egami)4
05	22 Apr. (Fri)	07:00	Lv. Phnom Penh to Sisophon by car (Mr. Ogawa & Mr. Akagi)
		14:00	Meeting with the Mong Kul Borey Hospital (Mr. Ogawa, & Mr. Akagi)
		15:00	Meeting with the Sisophon EDC office and observation of the EDC under construction power plant
		07:55	Ar. Tokyo (Dr. Egami)
06	23 Apr. (Sat)	09:00	Meeting with the Mong Kul Borey Hospital (Mr. Ogawa & Mr. Akagi)
		14:00	Courtesy call to the Banteay Meanchey Province PHD and submission and explanation of the draft report (Mr. Ogawa & Mr. Akagi)
		16:00	Lv. Sisophon to Bat Dambang by car
07	24 Apr. (Sun)	09:00	Lv. Bat Dambang to Phnom Penh by car
		14:00	Supplement Research of Phnom Penh (Mr. Ogawa & Mr. Akagi)
08	25 Apr. (Mon)	08:30	Discussion on the draft Minutes at JICA (Mr. Ogawa, Mr. Akagi & Ms. Muroi)
		11:00	Discussion on the electricity supply at the EDC head office (Mr. Ogawa, Mr. Akagi
		14:30	Discussion on the draft Minutes at JICA and JICA experts (Mr. Chikaraishi, Mr. Ogawa, Mr. Akagi & Ms. Muroi)
09	26 Apr. (Tue)	09:00	Discussion on the draft Minutes at the MOH (Mr. Ogawa, Mr. Akagi, Mr. Matsuo & Ms. Muroi)
		14:30	Discussion on the draft Minutes at the MOH (Mr. Ogawa, Mr. Akagi, Mr. Matsuo & Ms. Muroi)
10	27 Apr. (Wed)	09:00	Supplement Research at Phnom Penh
		14:30	Signing on the Minutes of Discussion at the MOH (Mr. Chikaraishi, Mr. Ogawa, Mr. Akagi, Mr. Yamazaki, Mr. Matsuo & Ms. Muroi)
11	28 Apr. (Thu)	09:00	Supplement Research at Phnom Penh (Mr. Ogawa & Mr. Akagi)
		19:20	Lv. Phnom Penh by TG-699/JL-704
12	29 Apr. (Fri)	06:45	Ar. Tokyo (Mr. Ogawa & Mr. Akagi)

3. List of Parties Concerned in the Recipient Country

Organization	Position	Name
Ministry of Health	Secretary of State for Health	Prof. ENG HUOT
	Director of Department of Budget & Finance	Mr. CHEA KIM LONG
	Director of Department of Personal	Prof. KOEURTH MEACH
General for Health	Deputy Director	Dr. CHI MEAN HEA
Department of Planning & Health Information	Deputy Director	Dr. SAO SOVANRATANAK
Department of Budget & Finance	Staff	Mr. BORE LONG
HSSP	Executive Administrator	Dr. UY VENGKY
	Project Coordinator	Dr. CHAR MENG CHUOR
Banteay Meanchey Province (PHD)	Director	Dr. CHHUM VANNARITH
	Vice Director	Dr. TEAM LEANG CHHAY
	Chief, Technical Office	Mr. KEO SOPHEAKTRA, MD
	Vice Chief, Technical Office	Mr. KEO PECHSOVANN, MD
	Chief, Planning	Mr. SOY SAMPHOS
Mong Kul Borey Referral Hospital	Director	Dr. HOU SEREYWITCHOUK
	Chief of Doctor	Dr. SREY CHANRY
	Ophthalmologist	Dr. TOUK BARANG
	Chief of Administration	Mr. OR KANAL
VSO(NGO)	Hospital Management Adviser	Ms. NICKY JONAS
	Staff	Mr. LAY RAVUTH
Thmar Puok Referral Hospital	Vice Director	Mr. CHAV DARY
	Vice Chief, Technical Office	Mr. SAMUTH PONLORK
Or Chrov Referral Hospital	Director	Dr. SUTH KIM SAN
Sisophon Health Center	Director	Dr. EAV DARAVUTH
	Director of TB ward	Dr. SY PENG TANN
URC(NGO)	Banteay Meanchay Province Coordinator	Dr. SAMRITH SORIYA
Ministry of Planning National Institute of Statistics	Data Users' Service Center	Mr. THEY KHEAM
Ministry of Post and Telecommunications	In charge of Banteay Meanchay Province	MR. KHAM KY LIN
ELECTRICITE DU CAMBODGE(EDC)	Director Corporate	Mr. CLTAN SODAVATLTLIT
	Project Manager	Mr. CHIMM MAN
	Vice Project Manager	Mr. SAN VIRGAN
	Engineer(Sisophon)	Mr. PUTH SOPHEAK
	Engineer(Sisophon)	Mr. NHEP VANDY
PISNOKA INTERNATINAL CORPORATION	Managing Director (Topographical Survey and Geological Investigation)	Mr. SOK SOTHYRA
CITY CORPORATION	Managing Director (Water Quality Analysis & Tube Well Investigation)	Mr. TEA TONG
TCM	Managing Director Contractor	Mr. HUANG CHAO CHING
Embassy of Japan	Counselor	Mr. KAZUMI JIGAMI
	Second Secretary	Mr. TOMOAKI KOREZUMI
	Special Advisor	Ms. CHINAMI HANAZONO
JICA Cambodia Office	Resident Representative	Mr. JURO CHIKARAISHI

Organization	Position	Name
	Deputy Resident Representative	Mr. HIROTO MITSUGI
	Assistant Resident Representative	Ms. MAKI MUROI
	Assistant Resident Representative	Ms. RIEKO KUBOTA
	Program Assistant	Mr. PEONG VATTANA
	Program Assistant	Mr. LONG PISAK
Maternal & Child Health Project	Chief Advisor	Mr. KAZUHIRO KAKIMOTO
	Medical Equipment Advisor	Mr. TAKESHI MATSUO
	Project Coordinator	Ms. IZUMI SUZUMORI
National Tuberculosis Control Project	Chief Advisor	Mr. KOSUKE OKADA
	Project Coordinator	Mr. KAI YANAKA
Project for Human Resource Development for Co-Medicals	Chief Advisor	Mr. HIROAKI YAMAZAKI
	X-Ray Education	Mr. YOSHIZO SASAKI
Implementation of Grant Aid Project	Senior Advisor	Mr. SHIGETADA KAYUMI

4. Minutes of Discussions

4-1 Basic Design Study

MINUTES OF DISCUSSIONS
ON THE BASIC DESIGN STUDY
ON THE PROJECT FOR IMPROVEMENT OF MONG KUL BOREY HOSPITAL IN BANTEAY MEANCHEY PROVINCE

In response to a request from the Government of the Kingdom of Cambodia (hereinafter referred to as "Cambodia"), the Government of Japan decided to conduct a Basic Design Study on a Project for Improvement of Mong Kul Borey Hospital in Banteay Meanchey Province (hereinafter referred to as "the Project") and entrusted the Basic Design Study to the Japan International Cooperation Agency (hereinafter referred to as "JICA"). JICA sent to Cambodia the Basic Design Study Team (hereinafter referred to as "the Team"), headed by Ms. Ako MUTO, Health Team, Project Management Group III, Grant Aid Management Department, JICA. The team stayed in the country from 28 November to 22 December, 2004.

The Team held discussions with the officials concerned of the Government of Cambodia and conducted a field survey in the study area.

In the course of discussions and field survey, both parties confirmed the main items described on the attached sheets. The Team will proceed to further works and prepare the Basic Design Study Report.

Phnom Penh, 17 December, 2004

武藤亜子

Ms. Ako Muto
Leader
Basic Design Study Team
Japan International Cooperation Agency
Japan

Prof. Eng Huot
Secretary of State for Health
Ministry of Health
Kingdom of Cambodia

ATTACHMENT

1. Objective of the Project

The objective of the Project is to improve medical services provided by Mong Kul Borey Hospital (hereinafter referred to as "the Hospital") through construction of facilities and procurement of equipment.

2. Project site

The site of the Project is in the premises of the Hospital, Banteay Meanchey Province, Cambodia.

3. Responsible and Implementing Agency

The Responsible Agency is Ministry of Health. The Implementing Agency is the Hospital of Provincial Health Department of Banteay Meanchey.

4. Items requested by the Cambodian Side

After discussions with the Team referred to the Complementary Package of Activities-3 prepared by the Ministry of Health, the Project site plan described in Annex-1 and the equipment described in Annex-2 were requested by the Cambodian side. JICA will assess the appropriateness of the request.

5. Japan's Grant Aid Scheme

5-1 The Cambodian side understands the Japan's Grant Aid Scheme explained by the Team, as described in Annex-3 and Annex-4.

5-2 The Cambodian side will take the necessary measures, as described in Annex-5, for smooth implementation of the Project, as a condition for the Japanese Grant Aid to be implemented.

6. Schedule of the Study

6-1 The consultants will proceed to further studies in Cambodia until 21 December 2004.

6-2 JICA will prepare the draft report in English and dispatch the Team in order to explain its contents around April 2005.

6-3 In case that the contents of the report are accepted in principle by the Cambodian side, JICA will complete the Basic Design Study Report and send it to Cambodia around June 2005.

7. Other relevant issues

7-1 Both sides confirmed that the Project shall not expand the existing department and scale of the Hospital.

7-2 Both sides agreed that the maximum components of the facility plan are as follows;

-Surgery department

-Obstetrics/Gynecology department

-Operation Theater (including sterilization)

-Emergency (including Image section)

-Technical support service

Scale and contents of each component are to be decided based on the analysis of received data.

7-3 The Cambodian side agreed to provide sufficient number of staff for management and maintenance of the facilities and equipment provided by this Project before March 2007.

7-4 The Cambodian side agreed to allocate the Hospital necessary budget for management and maintenance cost such as salary, water and electricity charges for facilities, repairs, spare parts, reagents, consumables and periodical or annual maintenance contracts after delivery of the equipment provided by the Project.

7-5 The Cambodian side engaged to complete the necessary undertakings, as described in Annex-5 prior to the commencement of the construction works, at the latest by December 2005.

7-6 The Cambodian side clarified the above responsible stakeholders as follows;

-7-3 Provincial Health Department of Banteay Meanchey and personnel department, Ministry of Health

-7-4 Provincial Health Department of Banteay Meanchey and department of budget and finance, Ministry of Health

-7-5 Provincial Health Department of Banteay Meanchey and department of budget and finance, Ministry of Health

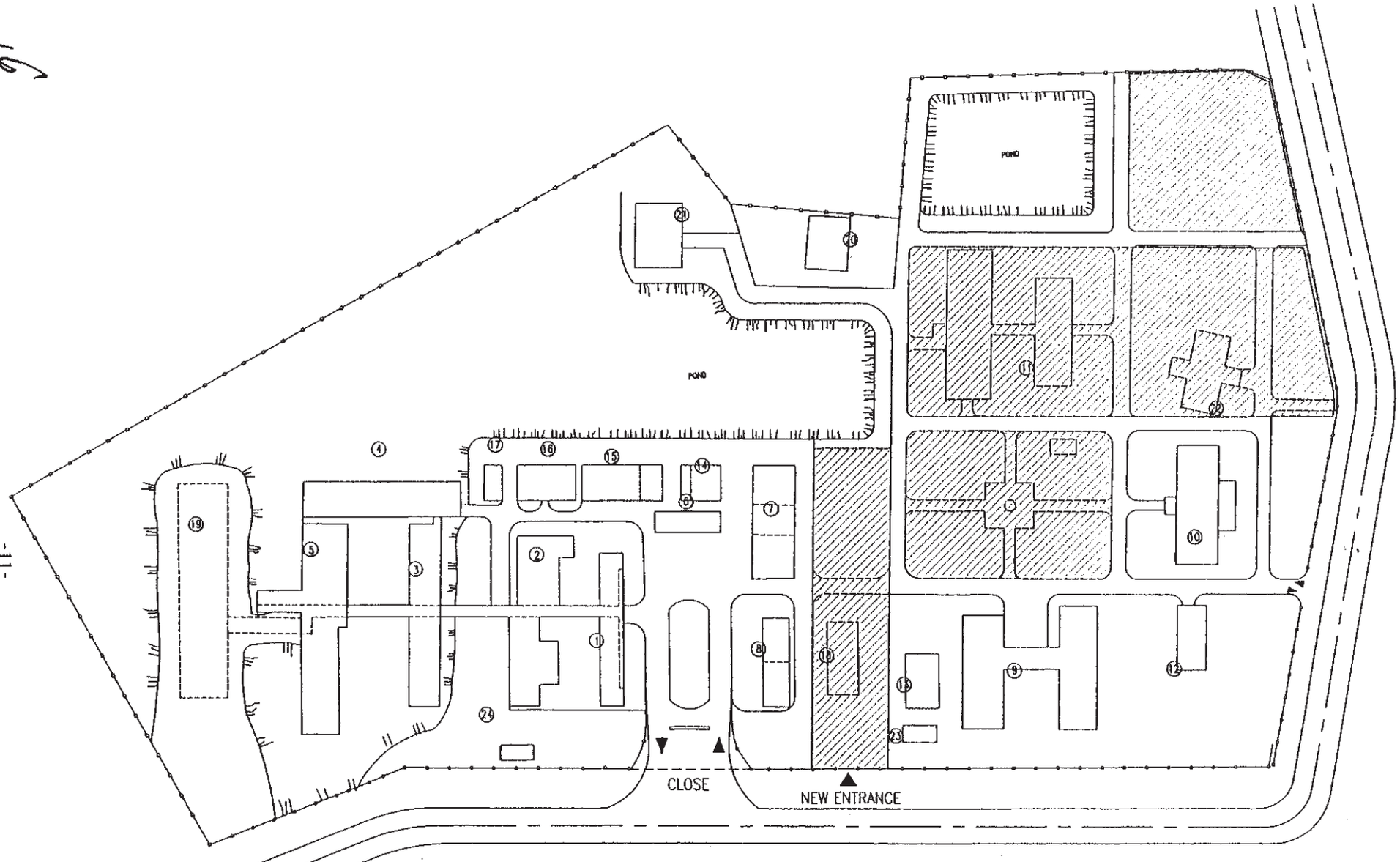
7-7 The Team recommended the Hospital to take necessary action for cleaning and management of garbage disposal in the Hospital.

7-8 Following the completion of the Project, Technical Assistance to the Hospital was requested from the Provincial Health Department. The Team would convey the request to the Government of Japan.

7-9 Both sides confirmed that the detailed specifications of the drawings, equipment and other technical information shall not be released before the tender to be held in the implementation stage of the Project.

List of Annexes

Annex-1	Project Site Plan
Annex-2	List of Requested Equipment
Annex-3	Japan's Grant Aid Scheme
Annex-4	Flow Chart of Japan's Grant Aid Procedures
Annex-5	Major Undertakings to be taken by Each Government



PROJECT SITE PLAN

REMARKS

① OUTPATIENT/X-RAY
② OPERATION
③ SURGICAL WARD--1
④ SURGICAL WARD--2
⑤ DELIVERY AND OB-GYNE WARD
⑥ CONFERENCE
⑦ ACCOUNT/PHARMACY/LABORATORY
⑧ DENTIST/ENT
⑨ MEDICAL WARD
⑩ PEDIATRIC WARD
⑪ TB INVESTIGATION AND WARD
⑫ MONK WARD
⑬ PHYSICAL THERAPY/STORE
⑭ LABORATORY/FEEDING SERVICE
⑮ DIRECTOR/WATER TANK
⑯ GENERATOR
⑰ TOILET
⑱ GARAGE/STORE
⑲ NEW WARD (UNDER CONSTRUCTION)
⑳ STAFF QUARTER
㉑ INCINERATOR
㉒ FORMER DISTRICT OFFICE (NO USE)
㉓ KITCHEN FOR PATIENT FAMILY-1
㉔ KITCHEN FOR PATIENT FAMILY-2

FENCE 3m HEIGHT
FENCE 2m HEIGHT

N
W
E
S

SITE OF MONKOUL BOREY HOSPITAL

10m 5 0 10 50

ANNEX - 1 -

Equipment List for the "Project for Improvement of Mong Kul Borey Hospital"

No.	Description
1	Air ventilator
2	Airway, adult
3	Airway, infant
4	Alphabet and number lead set
5	Anesthesia apparatus
6	Aspirator, electric
7	Aspirator, portable, foot operated
8	Basin kidney
9	Basin wash
10	Bed labor and delivery
11	Bed, ICU
12	Bistori blade (Two size)
13	Bottle, wash
14	Bowl, sponge
15	Cart dressing
16	Cart dressing/dispensing
17	Cassette (several size)
18	Consultation Gynecology set
19	Consultation Obstetric set
20	Dark room lamp
21	Defibrillator
22	Denudating set
23	Dilatation & Curettage set
24	Doppler, fetal heart detector
25	Dosimeter
26	Drum Sterilizing cylindrical small
27	ECG unit
28	Electro surgical unit
29	Film Dryer
30	Film hanger (several size)
31	Forceps, intubation Magill adult
32	Forceps, intubation Magill infant
33	Forceps, obstetric
34	Gynecological Table
35	Hammer, reflex testing
36	Hand scrub unit
37	Infant incubator
38	Instrument set, Amputation
39	Instrument set, Caesarian hysterectomy
40	Instrument set, Caesarian section
41	Instrument set, Cervic reparation
42	Instrument set, Craniotomy
43	Instrument set, Delivery
44	Instrument set, Episiotomy and Perino repair
45	Instrument set, Extension continue traction
46	Instrument set, Laparotomy
47	Instrument set, Minor surgery
48	Instrument set, Thoracic
49	Instrument set, Tubal Legation, Abdominal
50	Instrument set, Urology
51	Irrigator
52	Laryngoscope set, adult
53	Laryngoscope set, infant
54	Light, operating, ceiling mount

Equipment List for the "Project for Improvement of Mong Kul Borey Hospital"

No.	Description
55	Light, operating, emergency
56	Light, operating, stand type
57	Operating lamp, stand
58	Otoscope
59	Oxyflow care
60	Oxygen Concentrator
61	Patient Monitor
62	Protective apron
63	Pump breast, manual
64	Resuscitator, pediatric
65	Resuscitator, adult
66	Resuscitator, adult, automatic
67	Resuscitator, infant
68	Retractor plaster
69	Scale adult
70	Scale infant
71	Scalpel handle (Two size)
72	Scanner ultrasound portable
73	Scissors, bandage
74	Scissors, operating
75	Scissors, plaster
76	Speculum nasal child
77	Sphygmomanometer aneroid
78	Sphygmomanometer aneroid infant
79	Splint board
80	Splint Kramer
81	Splint board, leg
82	Stand double-bowl type without bowl
83	Stand irrigator double hook type
84	Stand single-bowl type without bowl
85	Sterilizer, pressure type
86	Stethoscope fetal Pinard monaural
87	Stethoscope-double headed
88	Stretcher, folding
89	Stretcher, wheel
90	Suction tube
91	Surgery set, Dressig
92	Syringe ear & ulcer rubber tip
93	Table anesthesia
94	Table operating, general
95	Table operating, orthopedic
96	Tank explorer
97	Tape-measure
98	Thermometer Digital
99	Thermometer mercury
100	Tray, instrument, medium
101	Tray, instrument, small
102	Urinal bottle, female
103	Urinal bottle, male
104	Vacuum-extractor
105	Ventilator
106	X-ray apparatus, general
107	X-ray film viewer
108	X-ray mobile

Equipment List for the "Project for Improvement of Mong Kul Borey Hospital"

No.	Description
109	Ambulance
110	Pickup truck
111	Bed, patient
112	Chair, doctor
113	Chair, patient
114	Computer, desk top type
115	Copier machine
116	Cupboard
117	Desk, doctor
118	Emegency trolley
119	Examination light
120	Examination table
121	Filing cabinet
122	Instrument set, orthopedic surgery
123	Locker
124	Screen
125	Shelving
126	Stool, nurse station
127	Table, sterilization room
128	Wheelchair
129	White board
130	Phototherapy lamp
131	Cystoscope
132	Instrument set, Vascular
133	Instrument Cabinet

Japan's Grant Aid

The Grant Aid Scheme provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulation of Japan. The Grant Aid is not supplied through the donation of materials as such.

1. Japan's Grant Aid Procedures

(1)The Japan's Grant Aid Program is executed by the following procedures.

Application (request made by a recipient country)

Study (Basic Design Study conducted by JICA)

Appraisal & Approval (appraisal by the Government of Japan and approval by the Cabinet of Japan)

Determination of Implementation (Exchange of Notes between both Governments)

Implementation (implementation of the Project)

(2)Firstly, an application or a request for a Grant Aid project submitted by the recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Japan's Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA to conduct a study on the request. If necessary, JICA sends a Preliminary Study Team to the recipient country to confirm the contents of the request.

Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firm(s).

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Program, based on the Basic Design Study Report prepared by JICA and the results are then submitted to the cabinet for approval.

Fourthly, the project approved by the cabinet becomes official with the Exchange of Notes signed by the Government of Japan and the recipient country.

Finally, for the implementation of the Project, JICA assists the recipient country in preparing contracts and so on.

2. Basic Design Study

(1)Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project") is to provide a basic document necessary for appraisal of the project by the Japanese Government. The contents of the Study are as follows:

a) Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation,
b) Evaluation of the appropriateness of the Project for the Grant Aid Scheme from a technical, social and economical point of view,
c) Confirmation of items agreed on by the both parties concerning a basic concept of the Project,
d) Preparation of a basic design of the Project,
e) Estimation of cost of the Project,

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even through they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

(2)Selection of Consultants

For smooth implementation of the study, JICA uses (a) registered consultant firm(s). JICA selects (a) firm(s) based on proposals submitted by the interested firms. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference set by JICA.

The consulting firm(s) used for the study is (are) recommended by JICA to a recipient country to also work in the Project's implementation after Exchange of Notes, in order to maintain technical consistency between the Basic Design and detailed Design.

3. Japan's Grant Aid Scheme

(1) Exchange of Notes (E/N)

Japan's Grant Aid is extend in accordance with the Notes exchanged by the two Government concerned, in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid etc., are confirmed.

(2)"The period of the Grant Aid" means one Japanese fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedure such as exchanging of the Notes, concluding a contract with (a) consulting firm(s) and (a) contractor(s) and final payment to them must be completed.

16

However, in case of delays in delivery, installation of construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

(3) Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant may be used for the purchase of products or services of a third country.

However the prime contractors, namely, consulting, contractor and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

(4) Necessity of the "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese tax payers.

(5)Undertakings Required to the Government of the Recipient Country

In the implementation of the Grant Aid project, the recipient country is required to undertake such necessary measures as the following:

a) To secure land necessary for the sites of the project, and to clear, level and reclaim the land prior to commencement for the construction,

b) To provide facilities for distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,

c) To secure buildings prior to the installation work in case the installation of the equipment,

d) To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid,

e) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts,

f) To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified Contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

(6)Proper Use

The recipient country is required to maintain and use the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for the operation and maintenance as well as to bear all expenses other than those covered by the Grant Aid.

(7) Re-export

The products purchased under the Grant Aid shall not be re-exported from the recipient country.

(8) Banking Arrangement (B/A)

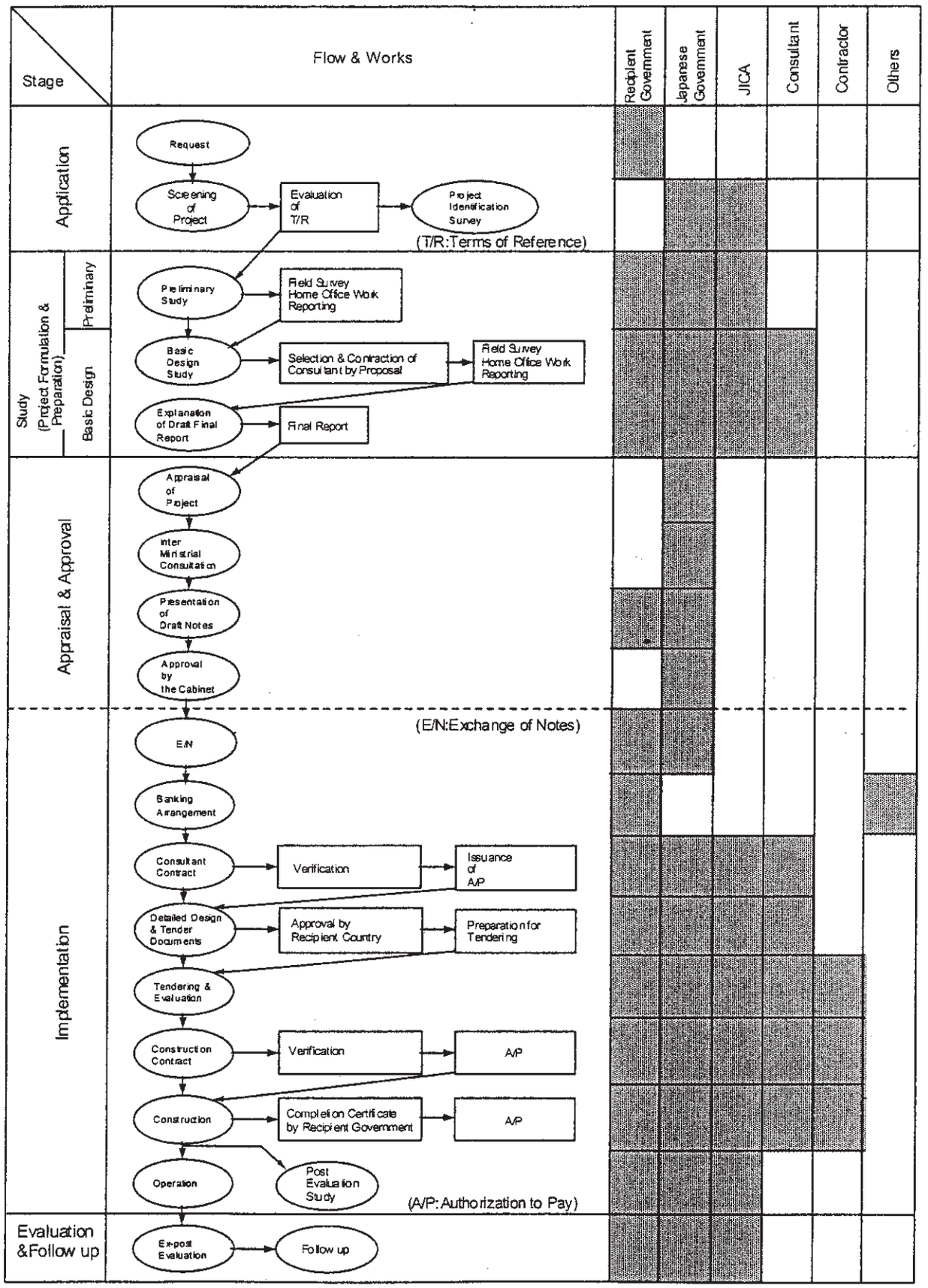
a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the bank to the Government of Japan under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9)Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions to the Bank.

Flow Chart of Japan's Grant Aid Procedures



Annex-5

Major Undertakings to be taken by Each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure land		●
2	To clear, level and reclaim the site when needed		●
3	To construct gates and fences in and around the hospital	(●)	(●)
4	To construct the parking lot	(●)	(●)
5	To construct roads		
	1) Within the site	●	
	2) Outside the site		●
6	To construct building facilities	●	
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		
	1) Electricity		
	a. The distributing line to the site		●
	b. The drop wiring and internal wiring within the site	●	
	c. The main circuit breaker and transformer	●	
	2) Water Supply		
	a. The city water distribution main to the site		●
	b. The supply system within the site (receiving and elevated tanks)	●	
	3) Drainage		
	a. The city drainage main (for storm, sewer and others to the site)		●
	b. The drainage system (for toilet sewer, ordinary waste, storm drainage and others) within the site	●	
	4) Telephone System		
	a. The main distribution frame/panel and the extension after the frame/panel	●	
	5) Furniture and Equipment		
	a. General furniture		●
	b. Project equipment	●	
8	To bear the following commissions to the Japanese bank for the banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
9	To ensure unloading and customs clearance at port of disembarkation in recipient country		
	1) Marine (Air) transportation of the products from Japan to the recipient	●	
	2) Tax exemption and custom clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	
10	To accord Japanese nationals, whose services may be required in connection with the supply of the products and the services under the verified contact, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
11	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts		●
12	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant		●
13	To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment		●

(B/A: Banking Arrangement, A/P: Authorization to pay)

4-2 Draft Report Explanation

MINUTES OF DISCUSSIONS
ON THE BASIC DESIGN STUDY
ON THE PROJECT FOR IMPROVEMENT OF MONG KUL BOREY HOSPITAL IN BANTHEAY MEANCHEY PROVINCE
(Explanation of Draft Final Report)

In November 2004, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Basic Design Study Team on the Project for Improvement of Mong Kul Borey Hospital (hereinafter referred to as "the Project") to the Kingdom of Cambodia (hereinafter referred to as "Cambodia"), and through discussion, field survey, and technical examination of the results in Japan, JICA prepared a draft report of the study.

In order to explain to the Government of Cambodia (hereinafter referred to as "The Cambodian side") the components of the draft report, JICA sent to Cambodia the Draft Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Mr. Juro Chikaraishi, Resident Representative, JICA Cambodia Office, from 18 April to 28 April 2005.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

Phnom Penh, 27 April, 2005

Mr. Juro Chikaraishi
Leader
Draft Report Explanation Team
Japan International Cooperation Agency
Japan

Professor Eng Huot
Secretary of State for Health
Ministry of Health
Kingdom of Cambodia

ATTACHMENT

1. Components of the Draft Report

The Cambodian side accepted in principle the components of the draft report explained by the Team.

2. Schedule of the Study

JICA will complete the final report in accordance with the confirmed items and submit it to the Cambodian side around August 2005.

3. Other relevant issues

3-1 The Team confirmed that Ministry of Health will take necessary action before the end of May 2005 and reply JICA Cambodia Office for the followings;

-Confirming that the construction of new power station will be completed by the end of October 2005.

-Confirming that the Director of Provincial Department of Country Planning Urbanization and Construction in Banteay Meanchey Provincial Office will authorize the construction of Mong Kul Borey Hospital by the end of July 2005.

3-2 The Team confirmed that Ministry of Health has already taken necessary action to allocate to Mong Kul Borey Hospital enough budgets for operation and maintenance cost such as water and electricity charges for facilities, repairs, spare parts, reagents, consumables and periodical or annual maintenance contracts after handing over the Project.

3-3 Ministry of Health understood that some patients should be transferred to other existing buildings in the Mong Kul Borey Hospital during the construction period. Ministry of Health promised that before the end of December 2005, patients will be transferred to the newly constructed ward, which is equipped with utility and water supply.

3-4 The Team confirmed that based on the Integrated Supervision Checklist of Referral Hospital for Ministry of Health in Annex 3, Ministry of Health will monitor operations and activities annually and take necessary actions to solve the problems, if any.

Annex-1: Japan's Grant Aid

Annex-2: Components of the request by the Cambodian side

Annex-3: Integrated Supervision Checklist of Referral Hospital (Cover page)

Japan's Grant Aid

The Grant Aid Scheme provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulation of Japan. The Grant Aid is not supplied through the donation of materials as such.

1. Japan's Grant Aid Procedures

(1)The Japan's Grant Aid Program is executed by the following procedures.

Application (request made by a recipient country)
Study (Basic Design Study conducted by JICA)
Appraisal & Approval (appraisal by the Government of Japan and approval by the Cabinet of Japan)
Determination of Implementation (Exchange of Notes between both Governments)
Implementation (implementation of the Project)

(2)Firstly, an application or a request for a Grant Aid project submitted by the recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Japan's Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA to conduct a study on the request. If necessary, JICA sends a Preliminary Study Team to the recipient country to confirm the contents of the request.

Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firm(s).

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Program, based on the Basic Design Study Report prepared by JICA and the results are then submitted to the cabinet for approval.

Fourthly, the project approved by the cabinet becomes official with the Exchange of Notes signed by the Government of Japan and the recipient country.

Finally, for the implementation of the Project, JICA assists the recipient country in preparing contracts and so on.

2. Basic Design Study

(1)Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project") is to provide a basic document necessary for appraisal of the project by the Japanese Government. The contents of the Study are as follows:

a) Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation,
b) Evaluation of the appropriateness of the Project for the Grant Aid Scheme from a technical, social and economical point of view,
c) Confirmation of items agreed on by the both parties concerning a basic concept of the Project,
d) Preparation of a basic design of the Project,
e) Estimation of cost of the Project,

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even through they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

(2)Selection of Consultants

For smooth implementation of the study, JICA uses (a) registered consultant firm(s). JICA selects (a) firm(s) based on proposals submitted by the interested firms. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference set by JICA.

The consulting firm(s) used for the study is (are) recommended by JICA to a recipient country to also work in the Project's implementation after Exchange of Notes, in order to maintain technical consistency between the Basic Design and detailed Design.

3. Japan's Grant Aid Scheme

(1) Exchange of Notes (E/N)

Japan's Grant Aid is extend in accordance with the Notes exchanged by the two Government concerned, in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid etc., are confirmed.

(2)"The period of the Grant Aid" means one Japanese fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedure such as exchanging of the Notes, concluding a contract with (a) consulting firm(s) and (a) contractor(s) and final payment to them must be completed.

However, in case of delays in delivery, installation of construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

(3) Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant may be used for the purchase of products or services of a third country.

However the prime contractors, namely, consulting, contractor and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

(4) Necessity of the "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese tax payers.

(5)Undertakings Required to the Government of the Recipient Country

In the implementation of the Grant Aid project, the recipient country is required to undertake such necessary measures as the following:

a) To secure land necessary for the sites of the project, and to clear, level and reclaim the land prior to commencement for the construction,

b) To provide facilities for distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,

c) To secure buildings prior to the installation work in case the installation of the equipment,

d) To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid,

e) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts,

f) To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified Contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

(6)Proper Use

The recipient country is required to maintain and use the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for the operation and maintenance as well as to bear all expenses other than those covered by the Grant Aid.

(7) Re-export

The products purchased under the Grant Aid shall not be re-exported from the recipient country.

(8) Banking Arrangement (B/A)

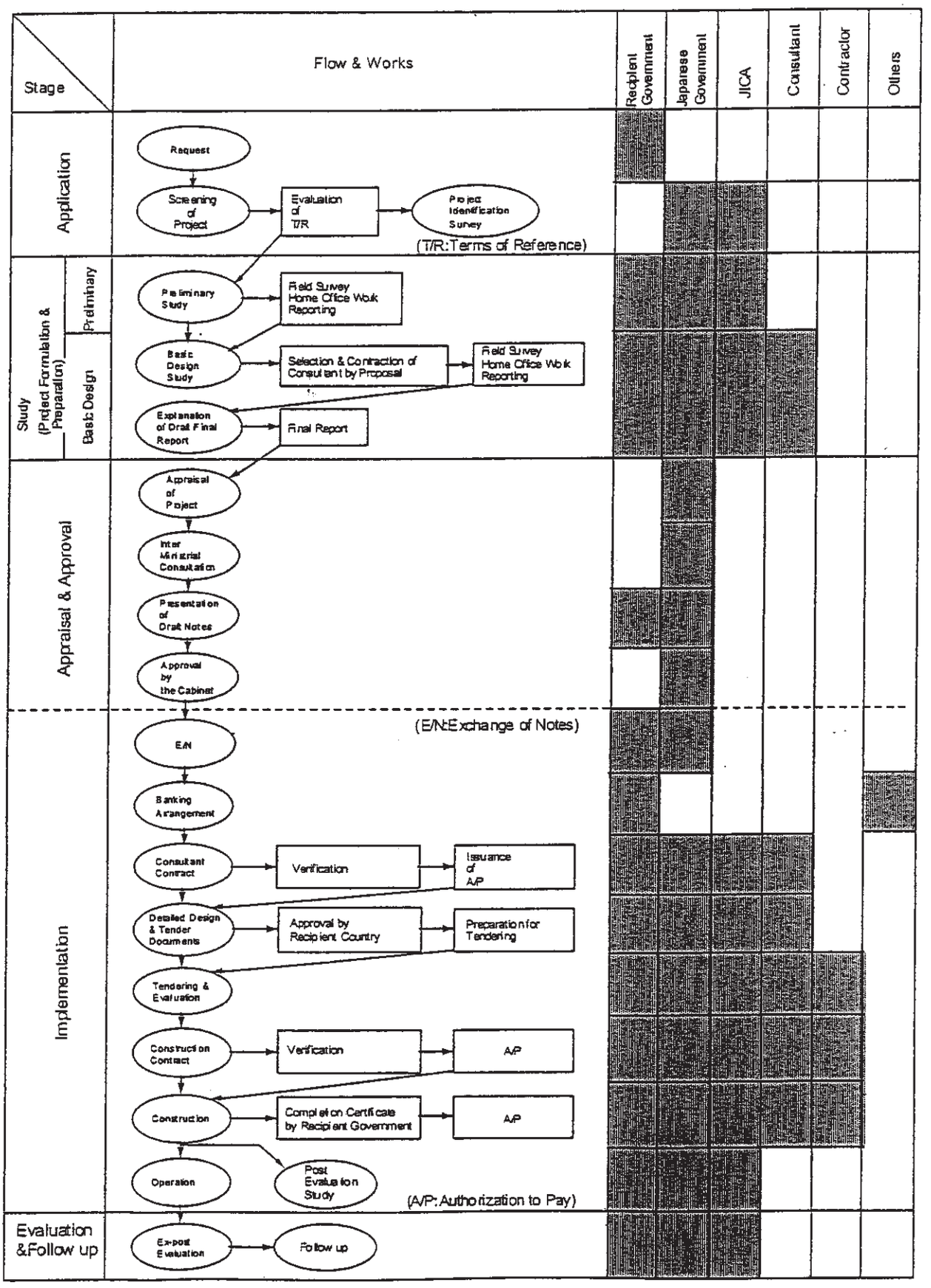
a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the bank to the Government of Japan under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9)Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions to the Bank.

Flow Chart of Japan's Grant Aid Procedures



Major Undertakings to be taken by Each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure land		●
2	To clear, level and reclaim the site when needed		●
3	To construct gates and fences in and around the hospital	(●)	(●)
4	To construct the parking lot	(●)	(●)
5	To construct roads		
	1) Within the site	●	
	2) Outside the site		●
6	To construct building facilities	●	
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		
	1) Electricity		
	a. The distributing line to the site		●
	b. The drop wiring and internal wiring within the site	●	
	c. The main circuit breaker and transformer	●	
	2) Water Supply		
	a. The city water distribution main to the site		●
	b. The supply system within the site (receiving and elevated tanks)	●	
	3) Drainage		
	a. The city drainage main (for storm, sewer and others to the site)		●
	b. The drainage system (for toilet sewer, ordinary waste, storm drainage and others) within the site	●	
	4) Telephone System		
	a. The main distribution frame/panel and the extension after the frame/panel	●	
	5) Furniture and Equipment		
	a. General furniture		●
	b. Project equipment	●	
8	To bear the following commissions to the Japanese bank for the banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
9	To ensure unloading and customs clearance at port of disembarkation in recipient country		
	1) Marine (Air) transportation of the products from Japan to the recipient	●	
	2) Tax exemption and custom clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	
10	To accord Japanese nationals, whose services may be required in connection with the supply of the products and the services under the verified contact, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
11	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts		●
12	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant		●
13	To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment		●

(B/A: Banking Arrangement, A/P: Authorization to pay)

SITE PLAN S 1/1000
MONGKUL BOREI REFERRAL HOSPITAL

LIST OF EQUIPMENT

Item No.	Description	Q'ty
1	Airway, adult	4
2	Airway, infant	4
3	Alphabet and number lead set	1
4	Anesthesia apparatus	2
5	Aspirator, electric	4
6	Basin kidney	10
7	Basin wash	7
8	Bed delivery	1
9	Bed labor	2
10	Bed for ICU	2
11	Bottle, wash	4
12	Bowl, sponge	2
13	Cart dressing	3
14	Cassette (several size)	1
15	Consultation Gynecology set	2
16	Consultation Obstetric set	2
17	Defibrillator	2
18	Denudating set	2
19	Dilatation & Curettage set	1
20	Doppler, fetal heart detector	1
21	Dosimeter	1
22	Drum sterilizing cylindrical small	7
23	ECG unit	1
24	Electro surgical unit	2
25	Film dryer	1
26	Film hanger (several size)	4
27	Forceps, intubation Magill adult	2
28	Forceps, intubation Magill infant	2
29	Forceps, obstetric	2
30	Gynecological Table	1
31	Hammer, reflex testing	1
32	Infant incubator	1
33	Instrument set, Amputation	1
34	Instrument set, Caesarian hysterectomy	1
35	Instrument set, Caesarian section	1
36	Instrument set, Cervic reparation	1
37	Instrument set, Delivery	1
38	Instrument set, Episiotomy and Perino repair	1
39	Instrument set, Extension continue traction	1
40	Instrument set, Laparotomy	1

LIST OF EQUIPMENT

Item No.	Description	Q'ty
41	Instrument set, Minor surgery	2
42	Instrument set, Thoracic	1
43	Instrument set, Tubal Legation, Abdominal	1
44	Instrument set, Urology	1
45	Irrigator	2
46	Laryngoscope set, adult	3
47	Laryngoscope set, infant	3
48	Light, operating, ceiling mount	2
49	Light, operating, emergency	2
50	Otoscope	1
51	Oxyflow care	6
52	Oxygen concentrator	4
53	Patient monitor	3
54	Protective apron	2
55	Pump breast, manual	2
56	Resuscitator, pediatric	3
57	Resuscitator, adult	5
58	Resuscitator, infant	2
59	Retractor plaster	1
60	Scale adult	2
61	Scale infant	3
62	Scalpel handle (Two size)	4
63	Scanner ultrasound portable	1
64	Scissors, bandage	6
65	Scissors, operating	6
66	Scissors, plaster	4
67	Speculum nasal child	1
68	Sphygmomanometer aneroid	8
69	Sphygmomanometer aneroid infant	2
70	Stand double-bowl type without bowl	2
71	Stand irrigator double hook type	34
72	Stand single-bowl type without bowl	3
73	Sterilizer, pressure type	2
74	Stethoscope fetal Pinard monaural	5
75	Stethoscope-double headed	11
76	Stretcher, folding	1
77	Stretcher, wheel	4
78	Surgery set, Dressig	6
79	Syringe ear & ulcer rubber tip	2
80	Table anesthesia	2

LIST OF EQUIPMENT

Item No.	Description	Q'ty
81	Table operating, general	1
82	Table operating, orthopedic	1
83	Tank explorer	1
84	Tape-measure	3
85	Thermometer digital	10
86	Thermometer mercury	3
87	Tray, instrument, medium	6
88	Tray, instrument, small	6
89	Urinal bottle, female	6
90	Urinal bottle, male	4
91	X-ray apparatus, general	1
92	X-ray film viewer	14
93	X-ray mobile	1
94	Ambulance	1
95	Bed, patient	52
96	Chair, doctor	8
97	Chair, patient	8
98	Cupboard	11
99	Desk, doctor	8
100	Emegency trolley	5
101	Examination light	7
102	Examination table	10
103	Filing cabinet	2
104	Instrument set, orthopedic surgery	1
105	Locker	4
106	Screen	10
107	Shelving	19
108	Stool, nurse station	8
109	Table, sterilization room	2
110	White board	6
111	Phototherapy lamp	1
112	Instrument set, Vascular	1
113	Instrument Cabinet	13

ព្រះរាជាណាចក្រកម្ពុជា

ជាតិ សាសនា ព្រះមហាក្សត្រ

Ministry of Health
Integrated Supervision Checklist
of Referral Hospital

ក្រសួងសុខាភិបាល

បញ្ជីឆ្លងផ្ទាត់រួមសំរាប់ចុះអភិបាលការងារ

មន្ទីរពេទ្យបង្អែក

ឈ្មោះមន្ទីរពេទ្យបង្អែក .....មន្ទីរសុខាភិបាលខេត្ត.....

Name of Referral Hospital

ថ្ងៃ-ខែ-ឆ្នាំ ខែការចុះអភិបាល.....

Date of Supervision

ក្រុមអភិបាលថ្នាក់មន្ទីរសុខាភិបាលខេត្ត *PHD Supervisory Team*

ប្រធាន *(Chief)* .....

សមាជិក *(Members)* .....

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សូមបញ្ជាក់បន្ថែមបើចាំបាច់

Comments

ហត្ថលេខា *(Signature)*

Appendix 5-1 Examination of Requested Equipment

Minutes No.	Description (Request)	Categ	①	②	③	④	⑤	⑥	⑦	Remarks	Item No.	Description (Project)
1	Air ventilator	A	×	○	○	○	○	○	×	Included in construction side as incidental equipment of the photo darkroom	—	
2	Airway, adult	B	○	○	○	○	○	○	○	Basic treatment tool	1	Airway, adult
3	Airway, infant	B	○	○	○	○	○	○	○	Basic treatment tool	2	Airway, infant
4	Alphabet and number lead set	A	○	○	○	○	○	○	○	Necessary for arranging films	3	Alphabet and number lead set
5	Anesthesia apparatus	B	○	○	○	○	○	○	○	Indispensable for anesthesia control at operation	4	Anesthesia apparatus
6	Aspirator, electric	B	○	○	○	○	○	○	○	Basic treatment device	5	Aspirator, electric
7	Aspirator, portable, foot operated	B	○	×	○	○	○	○	×	The existing equipment can be used	—	
8	Basin kidney	B	○	○	○	○	○	○	○	Basic examination tool	6	Basin kidney
9	Basin wash	B	○	○	○	○	○	○	○	Basic examination tool	7	Basin wash
10	Bed labor and delivery	B	△	○	○	○	○	○	○	Divided into delivery table and labor bed. One of two existing delivery table to be renewed	8	Bed delivery
—	Bed labor	A	○	○	○	○	○	○	○	Planning labor bed newly for labor pain patients	9	Bed labor
11	Bed, ICU	B	○	○	○	○	○	○	○	Necessary for treatment of critical patient	10	Bed, ICU
12	Bistori blade (Two size)	B	×	○	○	○	○	○	×	Planning as components of Scalpel handle, Minutes No. 71	—	
13	Bottle, wash	B	○	○	○	○	○	○	○	Basic examination tool	11	Bottle, wash
14	Bowl, sponge	B	○	○	○	○	○	○	○	Basic examination tool	12	Bowl, sponge
15	Cart dressing	B	○	○	○	○	○	○	○	Basic examination tool for emargency treatment	13	Cart dressing
16	Cart dressing/dispensing	B	○	×	○	○	○	○	×	The existing equipment can be used	—	
17	Cassette (several size)	B	○	○	○	○	○	○	○	Indispensable for radiographic examination	14	Cassette (several size)
18	Consultation Gynecology set	B	○	○	○	○	○	○	○	Basic examination instrument set	15	Consultation Gynecology set
19	Consultation Obstetric set	B	○	○	○	○	○	○	○	Basic examination instrument set	16	Consultation Obstetric set
20	Dark room lamp	A	×	○	○	○	○	○	×	Included in construction side as incidental equipment of the photo darkroom	—	
21	Defibrillator	A	○	○	○	○	○	○	○	Necessary for defibrillation treatment at emergency division and operation rooms. To be shared considering	17	Defibrillator
22	Denudating set	A	○	○	○	○	○	○	○	Basic treatment instrument set	18	Denudating set

Appendix 5-1 Examination of Requested Equipment

Minutes No.	Description (Request)	Categ	①	②	③	④	⑤	⑥	⑦	Remarks	Item No.	Description (Project)
23	Dilatation & Curettage set	B	○	○	○	○	○	○	○	Treatment instrument of obstetrics	19	Dilatation & Curettage set
24	Doppler, fetal heart detector	A	○	○	○	○	○	○	○	Basic examination equipment of obstetrics	20	Doppler, fetal heart detector
25	Dosimeter	A	○	○	○	○	○	○	○	Not being used presently, but necessary for control radiological dosage	21	Dosimeter
26	Drum Sterilizing cylindrical small	B	○	○	○	○	○	○	○	Necessary for urgent sterilization at each division	22	Drum Sterilizing cylindrical small
27	ECG unit	A	○	○	○	○	○	○	○	Basic examination equipment	23	ECG unit
28	Electro surgical unit	B	○	○	○	○	○	○	○	Basic treatment device at operation	24	Electro surgical unit
29	Film Dryer	B	○	○	○	○	○	○	○	Necessary for drying process of X-ray films	25	Film Dryer
30	Film hanger (several size)	B	○	○	○	○	○	○	○	Necessary tool for drying process of X-ray films	26	Film hanger (several size)
31	Forceps, intubation Magill adult	B	○	○	○	○	○	○	○	Basic instrument set in operation rooms	27	Forceps, intubation Magill adult
32	Forceps, intubation Magill infant	B	○	○	○	○	○	○	○	Basic instrument set in operation rooms	28	Forceps, intubation Magill infant
33	Forceps, obstetric	B	○	○	○	○	○	○	○	Basic instrument set of obstetrics	29	Forceps, obstetric
34	Gynecological Table	B	○	○	○	○	○	○	○	Basic instrument of gynecology	30	Gynecological Table
35	Hammer, reflex testing	B	○	○	○	○	○	○	○	Basic examination tool	31	Hammer, reflex testing
36	Hand scrub unit	B	×	○	○	○	○	○	×	Included in construction side as incidental equipment of the operation room	—	
37	Infant incubator	A	○	○	○	○	○	○	○	Minimum number is necessary for premature babies and critical newborn babies	32	Infant incubator
38	Instrument set, Amputation	B	○	○	○	○	○	○	○	Instrument set for surgical operations	33	Instrument set, Amputation
39	Instrument set, Caesarian hysterectomy	B	○	○	○	○	○	○	○	Instrument set for obstetrical and gynecological operations	34	Instrument set, Caesarian hysterectomy
40	Instrument set, Caesarian section	B	○	○	○	○	○	○	○	Instrument set for obstetrical and gynecological operations	35	Instrument set, Caesarian section
41	Instrument set, Cervic reparation	B	○	○	○	○	○	○	○	Instrument set for obstetrical and gynecological operations	36	Instrument set, Cervic reparation
42	Instrument set, Craniotomy	A	○	○	×	○	○	○	×	Many cephalic trauma patients, but surgical operation by existing technic is difficult	—	
43	Instrument set, Delivery	B	○	○	○	○	○	○	○	Instrument set for obstetrical and gynecological operations	37	Instrument set, Delivery
44	Instrument set, Episiotomy and Perino repair	B	○	○	○	○	○	○	○	Instrument set for obstetrical and gynecological operations	38	Instrument set, Episiotomy and Perino repair
45	Instrument set, Extension continue traction	B	○	○	○	○	○	○	○	Instrument set for orthopedic surgical operations	39	Instrument set, Extension continue traction

Appendix 5-1 Examination of Requested Equipment

Minutes No.	Description (Request)	Categ	①	②	③	④	⑤	⑥	⑦	Remarks	Item No.	Description (Project)
46	Instrument set, Laparotomy	B	○	○	○	○	○	○	○	Instrument set for surgical operations	40	Instrument set, Laparotomy
47	Instrument set, Minor surgery	B	○	○	○	○	○	○	○	Instrument set for surgical operations	41	Instrument set, Minor surgery
48	Instrument set, Thoracic	B	○	○	○	○	○	○	○	Instrument set for surgical operations	42	Instrument set, Thoracic
49	Instrument set, Tubal Legation, Abdominal	B	○	○	○	○	○	○	○	Instrument set for obstetrical and gynecological operations	43	Instrument set, Tubal Legation, Abdominal
50	Instrument set, Urology	B	○	○	○	○	○	○	○	Instrument set for surgical operations	44	Instrument set, Urology
51	Irrigator	B	○	○	○	○	○	○	○	Basic treatment tool	45	Irrigator
52	Laryngoscope set, adult	B	○	○	○	○	○	○	○	Basic treatment tool	46	Laryngoscope set, adult
53	Laryngoscope set, infant	B	○	○	○	○	○	○	○	Basic treatment tool	47	Laryngoscope set, infant
54	Light, operating, ceiling mount	B	○	○	○	○	○	○	○	Indispensable as light at operations	48	Light, operating, ceiling mount
55	Light, operating, emergency	B	○	○	○	○	○	○	○	Indispensable in case of power failure	49	Light, operating, emergency
56	Light, operating, stand type	B	×	○	○	○	○	○	×	Same as No. 55	—	
57	Operating lamp, stand	B	×	○	○	○	○	○	×	Examination light, same as No. 119	—	
58	Otoscope	B	○	○	○	○	○	○	○	Basic examination device	50	Otoscope
59	Oxyflow care	B	○	○	○	○	○	○	○	Basic treatment device	51	Oxyflow care
60	Oxygen Concentrator	B	○	○	○	○	○	○	○	Indispensable for the case oxygen supply is delayed	52	Oxygen Concentrator
61	Patient Monitor	B	○	○	○	○	○	○	○	Necessary for monitoring critical patients	53	Patient Monitor
62	Protective apron	B	○	○	○	○	○	○	○	Necessary for radiation shielding of radiologists and patients	54	Protective apron
63	Pump breast, manual	A	○	○	○	○	○	○	○	Necessary for postpartum care	55	Pump breast, manual
64	Resuscitator, pediatric	B	○	○	○	○	○	○	○	Basic treatment device	56	Resuscitator, pediatric
65	Resuscitator, adult	B	○	○	○	○	○	○	○	Basic treatment device	57	Resuscitator, adult
66	Resuscitator, adult, automatic	B	×	○	○	○	○	○	×	Same as No. 65 in CPA3	—	
67	Resuscitator, infant	A	○	○	○	○	○	○	○	Basic treatment device	58	Resuscitator, infant
68	Retractor plaster	A	○	○	○	○	○	○	○	Necessary for orthopedic plaster treatment	59	Retractor plaster

Appendix 5-1 Examination of Requested Equipment

Minutes No.	Description (Request)	Categ	①	②	③	④	⑤	⑥	⑦	Remarks	Item No.	Description (Project)
69	Scale adult	B	○	○	○	○	○	○	○	Basic examination device	60	Scale adult
70	Scale infant	B	○	○	○	○	○	○	○	Basic examination device	61	Scale infant
71	Scalpel handle (Two size)	B	○	○	○	○	○	○	○	Basic operating instrument	62	Scalpel handle (Two size)
72	Scanner ultrasound portable	B	○	○	○	○	○	○	○	Used at radiology division. The existing equipment can be used at obstetrics	63	Scanner ultrasound portable
73	Scissors, bandage	B	○	○	○	○	○	○	○	Basic treatment tool	64	Scissors, bandage
74	Scissors, operating	B	○	○	○	○	○	○	○	Basic treatment tool	65	Scissors, operating
75	Scissors, plaster	B	○	○	○	○	○	○	○	Basic treatment tool	66	Scissors, plaster
76	Speculum nasal child	A	○	○	○	○	○	○	○	Basic treatment device	67	Speculum nasal child
77	Sphygmomanometer aneroid	B	○	○	○	○	○	○	○	Basic examination device	68	Sphygmomanometer aneroid
78	Sphygmomanometer aneroid infant	B	○	○	○	○	○	○	○	Basic examination device	69	Sphygmomanometer aneroid infant
79	Splint board	A	○	○	○	○	○	○	×	consumable	—	
80	Splint Kramer	A	○	○	○	○	○	○	×	consumable	—	
81	Splint board, leg	A	○	○	○	○	○	○	×	consumable	—	
82	Stand double-bowl type without bowl	B	○	○	○	○	○	○	○	Necessary for prevention of nosocomial infection	70	Stand double-bowl type without bowl
83	Stand irrigator double hook type	B	○	○	○	○	○	○	○	Basic treatment tool	71	Stand irrigator double hook type
84	Stand single-bowl type without bowl	B	○	○	○	○	○	○	○	Necessary for prevention of nosocomial infection	72	Stand single-bowl type without bowl
85	Sterilizer, pressure type	B	○	○	○	○	○	○	○	Indispensable for sterilization of examination instruments and clothing	73	Sterilizer, pressure type
86	Stethoscope fetal Pinard monaural	B	○	○	○	○	○	○	○	Basic examination device	74	Stethoscope fetal Pinard monaural
87	Stethoscope-double headed	B	○	○	○	○	○	○	○	Basic examination device	75	Stethoscope-double headed
88	Stretcher, folding	B	○	○	○	○	○	○	○	Necessary for transporting patients	76	Stretcher, folding
89	Stretcher, wheel	B	○	○	○	○	○	○	○	Necessary for transporting patients	77	Stretcher, wheel
90	Suction tube	B	×	○	○	○	○	○	×	Accessory of Aspirator, included in No. 6	—	
91	Surgery set, Dressig	B	○	○	○	○	○	○	○	Basic treatment instrument set	78	Surgery set, Dressig

Appendix 5-1 Examination of Requested Equipment

Minutes No.	Description (Request)	Categ	①	②	③	④	⑤	⑥	⑦	Remarks	Item No.	Description (Project)
92	Syringe ear & ulcer rubber tip	A	○	○	○	○	○	○	○	Basic treatment tool	79	Syringe ear & ulcer rubber tip
93	Table anesthesia	A	○	○	○	○	○	○	○	Necessary for management of anesthesia material during operation	80	Table anesthesia
94	Table operating, general	B	○	○	○	○	○	○	○	Indispensable for general operations	81	Table operating, general
95	Table operating, orthopedic	A	○	○	○	○	○	○	○	Indispensable for orthopedic surgical operations	82	Table operating, orthopedic
96	Tank explorer	B	○	○	○	○	○	○	○	Necessary for developing X-ray films	83	Tank explorer
97	Tape-measure	B	○	○	○	○	○	○	○	Used for obstetrics examination	84	Tape-measure
98	Thermometer Digital	A	○	○	○	○	○	○	○	Basic examination tool	85	Thermometer Digital
99	Thermometer mercury	B	○	○	○	○	○	○	○	Basic examination tool. To be introduced mercury type as commanded in CPA3	86	Thermometer mercury
100	Tray, instrument, medium	B	○	○	○	○	○	○	○	Basic examination tool	87	Tray, instrument, medium
101	Tray, instrument, small	B	○	○	○	○	○	○	○	Basic examination tool	88	Tray, instrument, small
102	Urinal bottle, female	B	○	○	○	○	○	○	○	Basic tool of wards.	89	Urinal bottle, female
103	Urinal bottle, male	B	○	○	○	○	○	○	○	Basic tool of wards.	90	Urinal bottle, male
104	Vacuum-extractor	B	○	×	○	○	○	○	×	The existing equipment can be used	—	
105	Ventilator	A	○	○	×	×	×	×	×	Listed in CPA3, but technique and maintenance are highly insecure as new equipment	—	
106	X-ray apparatus, general	A	○	○	○	○	○	○	○	Being used Mobile type presently, but necessary to be introduced considering use	91	X-ray apparatus, general
107	X-ray film viewer	B	○	○	○	○	○	○	○	Necessary for examining X-ray films	92	X-ray film viewer
108	X-ray mobile	B	○	○	○	○	○	○	○	Necessary for radiographic examinations of un-walkable patients in emergency department and wards	93	X-ray mobile
109	Ambulance	B	○	○	○	○	○	○	○	Used for transportation of emergency patients	94	Ambulance
110	Pickup truck	B	×	×	○	○	○	○	×	Lower priority from purpose of use and necessity	—	
111	Bed, patient	C	○	○	○	○	○	○	○	Necessary for nursing patients, 10 sets usable existing	95	Bed, patient
112	Chair, doctor	B	○	○	○	○	○	○	○	Used for filling in medical records at consultation	96	Chair, doctor
113	Chair, patient	B	○	○	○	○	○	○	○	Patient chairs in consultation departments	97	Chair, patient
114	Computer, desk top type	A	×	×	○	○	○	○	×	No department for this item available	—	

Appendix 5-1 Examination of Requested Equipment

Minutes No.	Description (Request)	Categ	①	②	③	④	⑤	⑥	⑦	Remarks	Item No.	Description (Project)
115	Copier machine	A	×	×	○	○	○	○	×	No department for this item available	—	
116	Cupboard	B	○	○	○	○	○	○	○	Necessary for storage of tools	98	Cupboard
117	Desk, doctor	B	○	○	○	○	○	○	○	Used for filling in medical records at consultation	99	Desk, doctor
118	Emegency trolley	A	○	○	○	○	○	○	○	Necessary for putting medical equipment, medicines, etc. together	100	Emegency trolley
119	Examination light	B	○	○	○	○	○	○	○	Basic equipment necessary for treatment	101	Examination light
120	Examination table	B	○	○	○	○	○	○	○	Basic equipment necessary for treatment	102	Examination table
121	Filing cabinet	B	○	○	○	○	○	○	○	Necessary for arranging files	103	Filing cabinet
122	Instrument set, orthopedic surgery	B	○	○	○	○	○	○	○	Instrument set for orthopedic surgical operations	104	Instrument set, orthopedic surgery
123	Locker	A	○	○	○	○	○	○	○	Necessary for changing into operating gowns	105	Locker
124	Screen	B	○	○	○	○	○	○	○	Necessary for protecting patients privacy at treatment	106	Screen
125	Shelving	A	○	○	○	○	○	○	○	Necessary for storage of equipment/instruments	107	Shelving
126	Stool, nurse station	B	○	○	○	○	○	○	○	For nurses business use	108	Stool, nurse station
127	Table, sterilization room	B	○	○	○	○	○	○	○	Necessary for assembling tools, etc. in sterilization room	109	Table, sterilization room
128	Wheelchair	B	○	×	○	○	○	○	×	The existing equipment can be used	—	
129	White board	A	○	○	○	○	○	○	○	For recording operation schedule, etc.	110	White board
130	Phototherapy lamp	A	○	○	○	○	○	○	○	Necessary for newborn babies treatment	111	Phototherapy lamp
131	Cystoscope	A	○	○	×	×	×	○	×	Not the target equipment in CPA3. To be new equipment		
132	Instrument set, Vascular	B	○	○	○	○	○	○	○	Doing operations presently, highly necessary	112	Instrument set, Vascular
133	Instrument Cabinet	B	○	○	○	○	○	○	○	Necessary for storage of instruments	113	Instrument Cabinet

Category : A=New Equipment, B=Replacement, C=Additional
①=Porpose, ②=Necessity, ③=Technique, ④= Organizaition of Operation, ⑤=Organization of Maintenance, ⑥=Operation & Maintenance Fee, ⑦=Judgement

Appendix 5-2 Equipment Delivery List

Emergency & Imaging Building

Item No.	Description	Q'ty	unit	Entrance Hall	Minor O.P. Room	Consultation Room	Nurse Station	Observation Room	Reception / Casher	Reception	Ultrasound Room	X-ray Room	Control Corridor	Film Store	Dark Room	Cleaning Stock Room	Store Equipment
1	Airway, adult	4	pc		2		2										
2	Airway, infant	4	pc		2		2										
3	Alphabet and number lead set	1	set												1		
4	Anesthesia apparatus	2	set														
5	Aspirator, electric	4	set		1												
6	Basin kidney	10	pc		2												
7	Basin wash	7	pc		1												
8	Bed delivery	1	set														
9	Bed labor	2	set														
10	Bed, ICU	2	set														
11	Bottle, wash	4	pc		2												
12	Bowl, sponge	2	pc		1												
13	Cart dressing	3	set		1												
14	Cassette (several size)	1	set									1					
15	Consultation Gynecology set	2	set														
16	Consultation Obstetric set	2	set														
17	Defibrillator	2	set														
18	Denudating set	2	set		1												
19	Dilatation & Curettage set	1	set														
20	Doppler, fetal heart detector	1	set														
21	Dosimeter	1	pc									1					
22	Drum Sterilizing cylindrical small	7	pc		1												
23	ECG unit	1	set			1											

Operation Theater Building

Item No.	Description	Ante Room	Reception	Gown Changing	Gown Changing	Ante Room	Post-Operation Ward	I C U	I C U	Nurse Station	Meeting Room	General & Gyne O.P. Room	Orthopedic O.P. Room	Sterilized Equipment	Sterilization Room	Instrument Assembling Room	Instrument Washing Room	Linen Washing Room	Equipment Store
1	Airway, adult																		
2	Airway, infant																		
3	Alphabet and number lead set																		
4	Anesthesia apparatus											1	1						
5	Aspirator, electric									1		1	1						
6	Basin kidney											2	2						
7	Basin wash											2	2						
8	Bed delivery																		
9	Bed labor																		
10	Bed, ICU							1	1										
11	Bottle, wash																		
12	Bowl, sponge																		
13	Cart dressing											1	1						
14	Cassette (several size)																		
15	Consultation Gynecology set																		
16	Consultation Obstetric set																		
17	Defibrillator									1		1							
18	Denudating set																		
19	Dilatation & Curettage set											1							
20	Doppler, fetal heart detector																		
21	Dosimeter																		
22	Drum Sterilizing cylindrical small														4				
23	ECG unit																		

Surgical Ward Building

Item No.	Description	Nurse Station	Treatment Room	1 Bed Room/Pay	1 Bed Room/Pay	4 Beds Room	6 Beds Room	1 Bed Room	1 Bed Room	4 Beds Room	4 Beds Room	6 Beds Room
1	Airway, adult											
2	Airway, infant											
3	Alphabet and number lead set											
4	Anesthesia apparatus											
5	Aspirator, electric											
6	Basin kidney		2									
7	Basin wash											
8	Bed delivery											
9	Bed labor											
10	Bed, ICU											
11	Bottle, wash		2									
12	Bowl, sponge		1									
13	Cart dressing											
14	Cassette (several size)											
15	Consultation Gynecology set											
16	Consultation Obstetric set											
17	Defibrillator											
18	Denudating set											
19	Dilatation & Curettage set											
20	Doppler, fetal heart detector											
21	Dosimeter											
22	Drum Sterilizing cylindrical small		1									
23	ECG unit											

Obstetrics/Gynecology Ward Building; Oth

Item No.	Description	Vaccine Room	Consultation Room for PMTCT	Gynecological Consulting Room	Ultrasound Room	Nurse Station	Obstetrics Consultation Room	Preparation Room	Delivery Room	Labor Room	Eclampsia Room	1 Bed Room	1 Bed Room/Pay	6 Beds Room	6 Beds Room	6 Beds Room	Parking (Oth)
1	Airway, adult																
2	Airway, infant																
3	Alphabet and number lead set																
4	Anesthesia apparatus																
5	Aspirator, electric																
6	Basin kidney								2								
7	Basin wash								2								
8	Bed delivery								1								
9	Bed labor									2							
10	Bed, ICU																
11	Bottle, wash																
12	Bowl, sponge																
13	Cart dressing																
14	Cassette (several size)																
15	Consultation Gynecology set			2													
16	Consultation Obstetric set						2										
17	Defibrillator																
18	Denudating set								1								
19	Dilatation & Curettage set																
20	Doppler, fetal heart detector						1										
21	Dosimeter																
22	Drum Sterilizing cylindrical small								1								
23	ECG unit																

Appendix 5-2 Equipment Delivery List

Item No.	Description	Q'ty	unit	Emergency & Imaging Building													
				Entrance Hall	Minor O.P. Room	Consultation Room	Nurse Station	Observation Room	Reception / Casher	Reception	Ultrasound Room	X-ray Room	Control Corridor	Film Store	Dark Room	Cleaning Stock Room	Store Equipment
24	Electro surgical unit	2	set														
25	Film Dryer	1	set												1		
26	Film hanger (several size)	4	set												4		
27	Forceps, intubation Magill adult	2	pc														
28	Forceps, intubation Magill infant	2	pc														
29	Forceps, obstetric	2	pc														
30	Gynecological Table	1	set														
31	Hammer, reflex testing	1	pc			1											
32	Infant incubator	1	set														
33	Instrument set, Amputation	1	set														
34	Instrument set, Caesarian hysterectomy	1	set														
35	Instrument set, Caesarian section	1	set														
36	Instrument set, Cervic reparation	1	set														
37	Instrument set, Delivery	1	set														
38	Instrument set, Episiotomy and Perino repair	1	set														
39	Instrument set, Extension continue traction	1	set														
40	Instrument set, Laparotomy	1	set														
41	Instrument set, Minor surgery	2	set		1												
42	Instrument set, Thoracic	1	set														
43	Instrument set, Tubal Legation, Abdominal	1	set														
44	Instrument set, Urology	1	set														
45	Irrigator	2	pc														
46	Laryngoscope set, adult	3	set		1												

Item No.	Operation Theater Building																	
	Ante Room	Reception	Gown Changing	Gown Changing	Ante Room	Post-Operation Ward	I C U	I C U	Nurse Station	Meeting Room	General & Gyne O.P. Room	Orthopedic O.P. Room	Sterilized Equipment	Sterilization Room	Instrument Assembling Room	Instrument Washing Room	Linen Washing Room	Equipment Store
24											1	1						
25																		
26																		
27											2							
28											2							
29																		
30																		
31																		
32																		
33												1						
34											1							
35											1							
36											1							
37																		
38											1							
39												1						
40											1							
41											1							
42											1							
43											1							
44											1							
45																		
46											1	1						

Item No.	Surgical Ward Building										
	Nurse Station	Treatment Room	1 Bed Room/Pay	1 Bed Room/Pay	4 Beds Room	6 Beds Room	1 Bed Room	1 Bed Room	4 Beds Room	4 Beds Room	6 Beds Room
24											
25											
26											
27											
28											
29											
30											
31											
32											
33											
34											
35											
36											
37											
38											
39											
40											
41											
42											
43											
44											
45											
46											

Item No.	Obstetrics/Gynecology Ward Building															Oth
	Vaccine Room	Consultation Room for PMTCT	Gynecological Consulting Room	Ultrasound Room	Nurse Station	Obstetrics Consultation Room	Preparation Room	Delivery Room	Labor Room	Eclampsia Room	1 Bed Room	1 Bed Room/Pay	6 Beds Room	6 Beds Room	6 Beds Room	Parking
24																
25																
26																
27																
28																
29								2								
30						1										
31																
32					1											
33																
34																
35																
36																
37								1								
38																
39																
40																
41																
42																
43																
44																
45					2											
46																

Appendix 5-2 Equipment Delivery List

Item No.	Description	Q'ty	unit	Emergency & Imaging Building: Entrance Hall	Minor O.P. Room	Consultation Room	Nurse Station	Observation Room	Reception / Casher	Reception	Ultrasound Room	X-ray Room	Control Corridor	Film Store	Dark Room	Cleaning Stock Room	Store Equipment
47	Laryngoscope set, infant	3	set		1												
48	Light, operating, ceiling mount	2	set														
49	Light, operating, emergency	2	set														
50	Otoscope	1	set			1											
51	Oxyflow care	6	set		1		1										
52	Oxygen Concentrator	4	set				1										
53	Patient Monitor	3	set														
54	Protective apron	2	pc									2					
55	Pump breast, manual	2	set														
56	Resuscitator, pediatric	3	set		1												
57	Resuscitator, adult	5	set		1												
58	Resuscitator, infant	2	set		1												
59	Retractor plaster	1	pc														
60	Scale adult	2	pc			1											
61	Scale infant	3	pc			1											
62	Scalpel handle (Two size)	4	pc														
63	Scanner ultrasound portable	1	set								1						
64	Scissors, bandage	6	pc		2												
65	Scissors, operating	6	pc		2												
66	Scissors, plaster	4	pc		2												
67	Speculum nasal child	1	pc			1											
68	Sphygmomanometer aneroid	8	set			1	1										
69	Sphygmomanometer aneroid infant	2	pc			1											

Item No.	Operation Theater Building: Ante Room	Reception	Gown Changing	Gown Changing	Ante Room	Post-Operation Ward	I C U	I C U	Nurse Station	Meeting Room	General & Gyne O.P. Room	Orthopedic O.P. Room	Sterilized Equipment	Sterilization Room	Instrument Assembling Room	Instrument Washing Room	Linen Washing Room	Equipment Store
47											1	1						
48											1	1						
49											1							
50																		
51									1		1	1						
52									1		1							
53							1				1	1						
54																		
55																		
56									1		1							
57									1		1							
58																		
59																		
60																		
61																		
62											2	2						
63																		
64																		
65																		
66																		
67																		
68									2									
69																		

Item No.	Surgical Ward Building: Nurse Station	Treatment Room	1 Bed Room/Pay	1 Bed Room/Pay	4 Beds Room	6 Beds Room	1 Bed Room	1 Bed Room	4 Beds Room	4 Beds Room	6 Beds Room
47											
48											
49											
50											
51											
52											
53											
54											
55											
56											
57	1										
58											
59		1									
60											
61											
62											
63											
64		2									
65		2									
66		2									
67											
68	2										
69											

Item No.	Obstetrics/Gynecology Ward Building: Vaccine Room	Consultation Room for PMTCT	Gynecological Consulting Room	Ultrasound Room	Nurse Station	Obstetrics Consultation Room	Preparation Room	Delivery Room	Labor Room	Eclampsia Room	1 Bed Room	1 Bed Room/Pay	6 Beds Room	6 Beds Room	6 Beds Room	Oth: Parking
47																
48																
49								1								
50																
51								1								
52					1											
53																
54																
55					2											
56																
57					1											
58					1											
59																
60		1														
61		1						1								
62																
63																
64								2								
65								2								
66																
67																
68					2											
69					1											

Appendix 5-2 Equipment Delivery List

Emergency & Imaging Building

Item No.	Description	Q'ty	unit	Entrance Hall	Minor O.P. Room	Consultation Room	Nurse Station	Observation Room	Reception / Casher	Reception	Ultrasound Room	X-ray Room	Control Corridor	Film Store	Dark Room	Cleaning Stock Room	Store Equipment
70	Stand double-bowl type without bowl	2	pc														
71	Stand irrigator double hook type	34	pc		2			4									
72	Stand single-bowl type without bowl	3	pc		1												
73	Sterilizer, pressure type	2	set														
74	Stethoscope fetal Pinard monaural	5	pc			1											
75	Stethoscope-double headed	11	set			1	2										
76	Stretcher, folding	1	pc		1												
77	Stretcher, wheel	4	pc	1								1					
78	Surgery set, Dressig	6	set		2												
79	Syringe ear & ulcer rubber tip	2	set														
80	Table anesthesia	2	set														
81	Table operating, general	1	set														
82	Table operating, orthopedic	1	set														
83	Tank explorer	1	pc												1		
84	Tape-measure	3	pc														
85	Thermometer Digital	10	pc			1	2										
86	Thermometer mercury	3	pc														
87	Tray, instrument, medium	6	pc		2												
88	Tray, instrument, small	6	pc		2												
89	Urinal bottle, female	6	pc				2										
90	Urinal bottle, male	4	pc				2										
91	X-ray apparatus, general	1	set									1					
92	X-ray film viewer	14	pc		1	1	1				1	1		1			

Operation Theater Building

Item No.	Ante Room	Reception	Gown Changing	Gown Changing	Ante Room	Post-Operation Ward	I C U	I C U	Nurse Station	Meeting Room	General & Gyne O.P. Room	Orthopedic O.P. Room	Sterilized Equipment	Sterilization Room	Instrument Assembling Room	Instrument Washing Room	Linen Washing Room	Equipment Store
70											1	1						
71						18	1	1			1	1						
72																		
73														2				
74																		
75									2									
76																		
77	1				1													
78																		
79																		
80											1	1						
81											1							
82												1						
83																		
84																		
85									2									
86																		
87																		
88																		
89									2									
90									2									
91																		
92									1	1	1	1						

Surgical Ward Building

Item No.	Nurse Station	Treatment Room	1 Bed Room/Pay	1 Bed Room/Pay	4 Beds Room	6 Beds Room	1 Bed Room	1 Bed Room	4 Beds Room	4 Beds Room	6 Beds Room
70											
71											
72											
73											
74											
75	2										
76											
77											
78		2									
79											
80											
81											
82											
83											
84											
85	2										
86											
87		2									
88		2									
89											
90											
91											
92	1	1									

Obstetrics/Gynecology Ward Building; Oth

Item No.	Vaccine Room	Consultation Room for PMTCT	Gynecological Consulting Room	Ultrasound Room	Nurse Station	Obstetrics Consultation Room	Preparation Room	Delivery Room	Labor Room	Eclampsia Room	1 Bed Room	1 Bed Room/Pay	6 Beds Room	6 Beds Room	6 Beds Room	Parking (Oth)
70																
71								2	2	2						
72								2								
73																
74		1			2	1										
75		1	1		2											
76																
77																
78					2											
79					2											
80																
81																
82																
83																
84		1	1			1										
85					2	1										
86			1		2											
87					2											
88					2											
89					2											
90																
91																
92				1	1											

Appendix 5-2 Equipment Delivery List

Item No.	Description	Q'ty	unit	Emergency & Imaging Building														Operation Theater Building																		Surgical Ward Building										Obstetrics/Gynecology Ward Building																				Oth
				Entrance Hall	Minor O.P. Room	Consultation Room	Nurse Station	Observation Room	Reception / Casher	Reception	Ultrasound Room	X-ray Room	Control Corridor	Film Store	Dark Room	Cleaning Stock Room	Store Equipment	Ante Room	Reception	Gown Changing	Gown Changing	Ante Room	Post-Operation Ward	I C U	I C U	Nurse Station	Meeting Room	General & Gyne O.P. Room	Orthopedic O.P. Room	Sterilized Equipment	Sterilization Room	Instrument Assembling Room	Instrument Washing Room	Linen Washing Room	Equipment Store	Nurse Station	Treatment Room	1 Bed Room/Pay	1 Bed Room/Pay	4 Beds Room	6 Beds Room	1 Bed Room	1 Bed Room	4 Beds Room	4 Beds Room	6 Beds Room	Vaccine Room	Consultation Room for PMTCT	Gynecological Consulting Room	Ultrasound Room	Nurse Station	Obstetrics Consultation Room	Preparation Room	Delivery Room	Labor Room	Eclampsia Room	1 Bed Room	1 Bed Room/Pay	6 Beds Room	6 Beds Room	6 Beds Room	Parking	
93	X-ray mobile	1	set																																1																													
94	Ambulance	1	pc																																																										1
95	Bed, patient	52	pc					4														8															1	1	4	6	1	1	4		6									2	1	1	6	6		
96	Chair, doctor	8	pc			1					1																									1									1	1	1	1		1											
97	Chair, patient	8	pc			1					1																									1									1	1	1	1		1											
98	Cupboard	11	pc				1		1	1			1						1						1	1									1										1	1		1											
99	Desk, doctor	8	pc			1					1																									1									1	1	1	1		1											
100	Emegency trolley	5	pc		1																				1		1								1														1											
101	Examination light	7	pc		1	1	1																		1											1														1			1							
102	Examination table	10	pc		2	1					1														1											1									1	1	1	1		1											
103	Filing cabinet	2	pc						1										1																																									
104	Instrument set, orthopedic surgery	1	pc																									1																																
105	Locker	4	pc																	2	2																																							
106	Screen	10	pc		1	1					1																									1										1	1	1		1		1	1								
107	Shelving	19	pc											4			2			1	1								4	1		1	2	2																											
108	Stool, nurse station	8	pc				2										2								2										2																2											
109	Table, sterilization room	2	pc																												1		1																											
110	White board	6	pc				1										1	1							1	1									1																1											
111	Phototherapy lamp	1	pc																																																			1											
112	Instrument set, Vascular	1	set																								1																																	
113	Instrument Cabinet	13	set		1	1	1				1														1	1	1	1							1									1			1	1	1		1											

Appendix 5-3 Outline of Main Equipment

Item No.	Description	Main specifications or components	Grade	Q'ty	Purpose Appropriateness of equipment grade
4	Anesthesia apparatus	1. Closed circuit type 2. O_2 Flow meter range : 0.1～10L/min. or more 3. N_2O Flowmeter range : 0.5～10L/min. or more 4. Vapolizer : Halothane 5. Attached with Ventilator	Middle Grade	2	For general anesthesia before operations
53	Patient Monitor	1. Parameter : ECG, Respiration, SpO_2, NIBP, Temperature 2. Function of safety ararm 3. Rechargeable battery operation	Middle Grade	3	For continuous monitoring and measuring patient's vital sign in wards, ICU, etc.
63	Scanner ultrasound, portable	1. Accessories with convex probe 2. Available number of probe connection : 1 pc or more 3. Black and White monitor : 9 inches size or more	Middle Grade	1	For ultrasound tomographic examination of symptoms of tissue and function, lesion, etc. of abdominal part, superficial part of thyroid gland, and/or uterus, etc. at each department.
73	Sterilizer, pressure type	1. Single door type 2. Capacity : within 130～170 little 3. Built-in steam generator 4. With water treatment softner	Middle Grade	2	For high pressure sterilizing of small steel tools, linens, etc. used in hospitals
81	Table operating, general	1. Arm board, Shoulder support, Body support, Knee crutch, and Waste receptacle can : Provided 2. Operation 1) Height elevator : Hydraulic oil pump by foot pedal 2) Positioning : Pedal operating by foot and/or two handle by manual 3. Height adjustment : Possible 4. Slant : Trendelenburg, Lateral tilting, Back-section, etc.	Middle Grade	1	For positioning patients suitably at various operations
82	Table operating, orthopedic	1. Leg support for Orthopaedic operation : Provided 2. Radio translucence : Possible 3. Height adjustment : Possible 4. Slant : Trendelenburg, Lateral tilting, Back-section, etc.	Middle Grade	1	For positioning patients suitably at orthopedic surgery operations
91	X-ray apparatus, general	1. Max tube voltage : 100kV or more 2. Max tube currency : 200mA or more 3. With bucky stand	Middle Grade	1	For radiographic examinations of abdomen and limbs.
93	X-ray mobile	1. Inverter or high frequent generator 2. Max tube voltage : 100kV or more 3. Max tube currency : 100mAs or more	Middle Grade	1	For emergency and/or brief radiographic examinations for un-walkable patients
94	Ambulance	1. 4 wheel drive, wagon type 2. Manual 5 speed 3. Engine displacement : 2800cc or more 4. Diesel Engine	Middle Grade	1	For transportation of emergency and/or critical patients to other hospitals safety
104	Instrument set, orthopedic surgery	1. Material : Stainless steel2. Component : 60 items	Middle Grade	1	Stainless steel instrument set for orthopedic surgical operations

Appendix 5-4 Equipment List

Item No.	Description	Q'ty	Unit	Procured from	Country of Origin	Agent required for	
						Consumable /Reagent /Parts Supply	Maintenance
1	Airway, adult	4	pc	Japan	Japan		
2	Airway, infant	4	pc	Japan	Japan		
3	Alphabet and number lead set	1	set	Japan	Japan		
4	Anesthesia apparatus	2	set	Japan	Japan	○	○
5	Aspirator, electric	4	set	Japan	Japan	○	
6	Basin kidney	10	pc	Japan	Japan		
7	Basin wash	7	pc	Japan	Japan		
8	Bed delivery	1	set	Cambodia	Thailand		
9	Bed labor	2	set	Cambodia	EU		
10	Bed, ICU	2	set	Cambodia	Thailand		
11	Bottle, wash	4	pc	Japan	Japan		
12	Bowl, sponge	2	pc	Japan	Japan		
13	Cart dressing	3	set	Cambodia	EU		
14	Cassette (several size)	1	set	Japan	Japan		
15	Consultation Gynecology set	2	set	Japan	Japan		
16	Consultation Obstetric set	2	set	Japan	Japan		
17	Defibrillator	2	set	Cambodia	EU	○	○
18	Denudating set	2	set	Japan	Japan		
19	Dilatation & Curettage set	1	set	Japan	Japan		
20	Doppler, fetal heart detector	1	set	Japan	Japan		
21	Dosimeter	1	pc	Japan	Japan		
22	Drum Sterilizing cylindrical small	7	pc	Japan	Japan		
23	ECG unit	1	set	Cambodia	EU	○	○
24	Electro surgical unit	2	set	Japan	Japan	○	
25	Film Dryer	1	set	Japan	Japan	○	
26	Film hanger (several size)	4	set	Japan	Japan		
27	Forceps, intubation Magill adult	2	pc	Japan	Japan		
28	Forceps, intubation Magill infant	2	pc	Japan	Japan		
29	Forceps, obstetric	2	pc	Japan	Japan		

Appendix 5-4 Equipment List

Item No.	Description	Q'ty	Unit	Procured from	Country of Origin	Agent required for	
						Consumable /Reagent /Parts Supply	Maintenance
30	Gynecological Table	1	set	Japan	Japan		
31	Hammer, reflex testing	1	pc	Japan	Japan		
32	Infant incubator	1	set	Japan	Japan	○	
33	Instrument set, Amputation	1	set	Japan	Japan		
34	Instrument set, Caesarian hysterectomy	1	set	Japan	Japan		
35	Instrument set, Caesarian section	1	set	Japan	Japan		
36	Instrument set, Cervic reparation	1	set	Japan	Japan		
37	Instrument set, Delivery	1	set	Japan	Japan		
38	Instrument set, Episiotomy and Perino repair	1	set	Japan	Japan		
39	Instrument set, Extension continue traction	1	set	Japan	Japan		
40	Instrument set, Laparotomy	1	set	Japan	Japan		
41	Instrument set, Minor surgery	2	set	Japan	Japan		
42	Instrument set, Thoracic	1	set	Japan	Japan		
43	Instrument set, Tubal Legation, Abdominal	1	set	Japan	Japan		
44	Instrument set, Urology	1	set	Japan	Japan		
45	Irrigator	2	pc	Japan	Japan		
46	Laryngoscope set, adult	3	set	Japan	Japan		
47	Laryngoscope set, infant	3	set	Japan	Japan		
48	Light, operating, ceiling mount	2	set	Japan	Japan	○	
49	Light, operating, emergency	2	set	Japan	Japan	○	
50	Otoscope	1	set	Japan	Japan		
51	Oxyflow care	6	set	Japan	Japan		
52	Oxygen Concentrator	4	set	Japan	USA	○	
53	Patient Monitor	3	set	Japan	Japan	○	○
54	Protective apron	2	pc	Japan	Japan		
55	Pump breast, manual	2	set	Japan	Japan		
56	Resuscitator, pediatric	3	set	Japan	Japan		
57	Resuscitator, adult	5	set	Japan	Japan		
58	Resuscitator, infant	2	set	Japan	Japan		
59	Retractor plaster	1	pc	Japan	Japan		

Appendix 5-4 Equipment List

Item No.	Description	Q'ty	Unit	Procured from	Country of Origin	Agent required for	
						Consumable /Reagent /Parts Supply	Maintenance
60	Scale adult	2	pc	Cambodia	EU		
61	Scale infant	3	pc	Cambodia	EU		
62	Scalpel handle (Two size)	4	pc	Japan	Japan		
63	Scanner ultrasound portable	1	set	Japan	Japan	○	○
64	Scissors, bandage	6	pc	Japan	Japan		
65	Scissors, operating	6	pc	Japan	Japan		
66	Scissors, plaster	4	pc	Japan	Japan		
67	Speculum nasal child	1	pc	Japan	Japan		
68	Sphygmomanometer aneroid	8	set	Japan	Japan		
69	Sphygmomanometer aneroid infant	2	pc	Japan	Japan		
70	Stand double-bowl type without bowl	2	pc	Japan	Japan		
71	Stand irrigator double hook type	34	pc	Japan	Japan		
72	Stand single-bowl type without bowl	3	pc	Japan	Japan		
73	Sterilizer, pressure type	2	set	Japan	Sweden	○	
74	Stethoscope fetal Pinard monaural	5	pc	Japan	Japan		
75	Stethoscope-double headed	11	set	Japan	Japan		
76	Stretcher, folding	1	pc	Japan	Japan		
77	Stretcher, wheel	4	pc	Japan	Japan		
78	Surgery set, Dressig	6	set	Japan	Japan		
79	Syringe ear & ulcer rubber tip	2	set	Cambodia	Thailand		
80	Table anesthesia	2	set	Japan	Japan		
81	Table operating, general	1	set	Japan	Japan		
82	Table operating, orthopedic	1	set	Japan	Japan		
83	Tank explorer	1	pc	Japan	Japan		
84	Tape-measure	3	pc	Japan	Japan		
85	Thermometer Digital	10	pc	Japan	Japan		
86	Thermometer mercury	3	pc	Japan	Japan		
87	Tray, instrument, medium	6	pc	Japan	Japan		
88	Tray, instrument, small	6	pc	Japan	Japan		
89	Urinal bottle, female	6	pc	Japan	Japan		

Appendix 5-4 Equipment List

Item No.	Description	Q'ty	Unit	Procured from	Country of Origin	Agent required for	
						Consumable /Reagent /Parts Supply	Maintenance
90	Urinal bottle, male	4	pc	Japan	Japan		
91	X-ray apparatus, general	1	set	Japan	Japan	○	○
92	X-ray film viewer	14	pc	Japan	Japan	○	
93	X-ray mobile	1	set	Japan	Japan	○	○
94	Ambulance	1	pc	Japan	Japan	○	○
95	Bed, patient	52	pc	Cambodia	EU		
96	Chair, doctor	8	pc	Japan	Japan		
97	Chair, patient	8	pc	Thailand	Thailand		
98	Cupboard	11	pc	Thailand	Thailand		
99	Desk, doctor	8	pc	Thailand	Thailand		
100	Emegency trolley	5	pc	Japan	Japan		
101	Examination light	7	pc	Japan	Japan	○	
102	Examination table	10	pc	Japan	Japan		
103	Filing cabinet	2	pc	Thailand	Thailand		
104	Instrument set, orthopedic surgery	1	pc	Japan	Japan		
105	Locker	4	pc	Thailand	Thailand		
106	Screen	10	pc	Japan	Japan		
107	Shelving	19	pc	Thailand	Thailand		
108	Stool, nurse station	8	pc	Thailand	Thailand		
109	Table, sterilization room	2	pc	Japan	Japan		
110	White board	6	pc	Japan	Japan		
111	Phototherapy lamp	1	pc	Japan	Japan	○	
112	Instrument set, Vascular	1	set	Japan	Japan		
113	Instrument Cabinet	13	set	Japan	Japan		

Appendix 5-5 Operation and Maintenance Fee for the Equipment

(unit: Thousand Riel)

Item No.	Description	Q'ty	Disposable/parts	Packing Unit	Q'ty estimation	Q'ty	Unit Price	Unit Price / 1 equipment	Total
4	Anesthesia apparatus	2						4,967	9,934
	(Estimation of Medical gas shall be included in running fee of Facility)			4.5kg/pack	240days × 3hours/day × 0.05kg/hour＝48kg 48kg ÷ 4.5kg＝10.7packs	11	323	3,553	
			Tube set		2sets/year	2	300	600	
			Mask set		2sets/year	2	407	814	
17	Defibrillator	2						700	1,400
			Gel	100g/pc.	360days × 0.06person/day × 20g/person＝430g 430g ÷ 100g＝4.3pcs	5	17	85	
			Disposable electrode	150pcs/set	360days × 0.06person/day × 3pc./person＝ 65pcs.	1	600	600	
			Recording Paper	30m/roll	360days × 0.06person/day × 1m/person＝22m 22m ÷ 30m＝0.7 roll	1	15	15	
20	Doppler, fetal heart detector	1						165	165
			Ultrasound gel	250ml/pc.	240day × 1person × 5ml/person＝1200ml 1200ml ÷ 250ml＝4.8pcs.	5	33	165	
23	ECG unit	1						2,003	2,003
			Cream	100g/pc.	240days × 5person/day × 5g/person＝6000g 6000g ÷ 100g＝60rolls	60	18	1,080	
			Recording Paper	30m/roll	240days × 5person/day × 1m/person＝1200m 1200m ÷ 30m＝40rolls	40	15	600	
			Chest electrode set	6pc./set	1set/year	1	150	150	
			Limb electrode set	4pc./set	1set/year	1	173	173	
24	Electro surgical unit	2						1,334	2,668
			Electrode	set	2sets/year	2	667	1,334	
32	Infant incubator	1						594	594
			Air filter	5pc./set	1pc./2months × 12months ÷ 5＝1.2sets	2	267	534	
			Iris access port cover	5pc./set	1set/year	1	60	60	
48	Light, operating, ceiling mount	2						960	1,920
			Lamp	pc.	Lamp life=1000hours/lamp. 3hours/day × 240days ÷ 1000hours × 8 lamps=5.76pcs.	6	160	960	
49	Light, operating, emergency	2						160	320
			Lamp	pc.	Lamp life=1000hours/lamp. 0.1hours/day × 240days ÷ 1000hours × 4 lamps=0.09pc	1	160	160	
52	Oxygen Concentrator	4						200	800
			Filter	pc.	2sets/year	2	100	200	

Appendix 5-5 Operation and Maintenance Fee for the Equipment

(unit: Thousand Riel)

Item No.	Description	Q'ty	Disposable/parts	Packing Unit	Q'ty estimation	Q'ty	Unit Price	Unit Price / 1 equipment	Total
53	Patient Monitor	3						4,693	14,079
			Disposable electrode	150pcs/set	240days × 1.0person/day × 3pcs./person＝720pcs.	5	600	3,000	
			Recording Paper	30m/roll	240days × 3times/day × 1m/time＝720m 720m ÷ 30m＝24rolls	24	15	360	
			SpO2 electrode	reusable	1pc./year	1	1,333	1,333	
63	Scanner ultrasound portable	1						1,000	1,000
			Ultrasound gel	250ml/pc.	240days × 4person × 5ml/person＝4800ml 4800ml ÷ 250ml＝19.2pcs.	20	50	1,000	
73	Sterilizer, pressure type	2						1,853	3,706
			Filter for Water Softner	pc.	6sets/year	6	93	558	
			Ion exchange resin for Water Softner	1kg	1 set/year	1	63	63	
			Solt for Water Softner	10kg/set	3kg/week × 52weeks＝156kg 156kg ÷ 10kg＝15.6sets	16	77	1,232	
83	Tank explorer	1						6,023	6,023
			Developer	19L/set	15L × 2times/month × 12months＝360L 360L ÷ 19L＝18.9set	19	200	3,800	
			Fixer	19L/set	15L × 2times/months × 12months＝360L 360L ÷ 19L＝18.9set	19	117	2,223	
91	X-ray apparatus, general	1						47,988	47,988
			Film	100pcs./box	240days × 10person/day × 1.5pc./person＝ 3600pcs. 3600pcs. ÷ 100pcs.＝36boxes	36	1,333	47,988	
93	X-ray mobile	1						1,333	1,333
			Film	100pcs./box	240days × 0.2person/day × 2pcs./person＝ 96pcs.	1	1,333	1,333	
94	Ambulance	1						8,760	8,760
			Fuel	1L	365days × 80km ÷ 10km/L＝2920L	2920	3	8,760	
101	Examination light	7						320	2,240
			Lamp	pc.	2 sets/year	2	160	320	
111	Phototherapy lamp	1						159	159
			Fluorescent lamp	pc.	Lamp life=2000hours. 240days × 4hours＝ 960hours. 2000hours ÷ 960=2.08	3	53	159	
									105,092