NO.

MINISTRY OF HEALTH AND EDUCATION
THE KINGDOM OF BHUTAN

BASIC DESIGN STUDY REPORT
ON
THE PROJECT
FOR
IMPROVEMENT OF MATERNAL AND CHILD HEALTH, AND ESSENTIAL EQUIPMENT
IN
THE KINGDOM OF BHUTAN

JUNE 2000

JAPAN INTERNATIONAL COOPERATION AGENCY

BINKO LTD.

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PREFACE

In response to a request from the Royal Government of Bhutan, the Government of Japan decided to conduct a basic design study on the project for Improvement of Maternal and Child Health, and Essential Equipment in the Kingdom of Bhutan and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Bhutan a study team from November 20th to December 28th, 1999.

The team held discussions with the officials concerned of the Royal Government of Bhutan, 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 Bhutan 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 Royal Government of Bhutan for their close cooperation extended to the teams.

June, 2000

Kimio Fujita
President
Japan International Cooperation Agency

June, 2000

Letter of Transmittal

We are pleased to submit you the basic design study report on the project for Improvement of Maternal and Child Health, and Essential Equipment in the Kingdom of Bhutan.

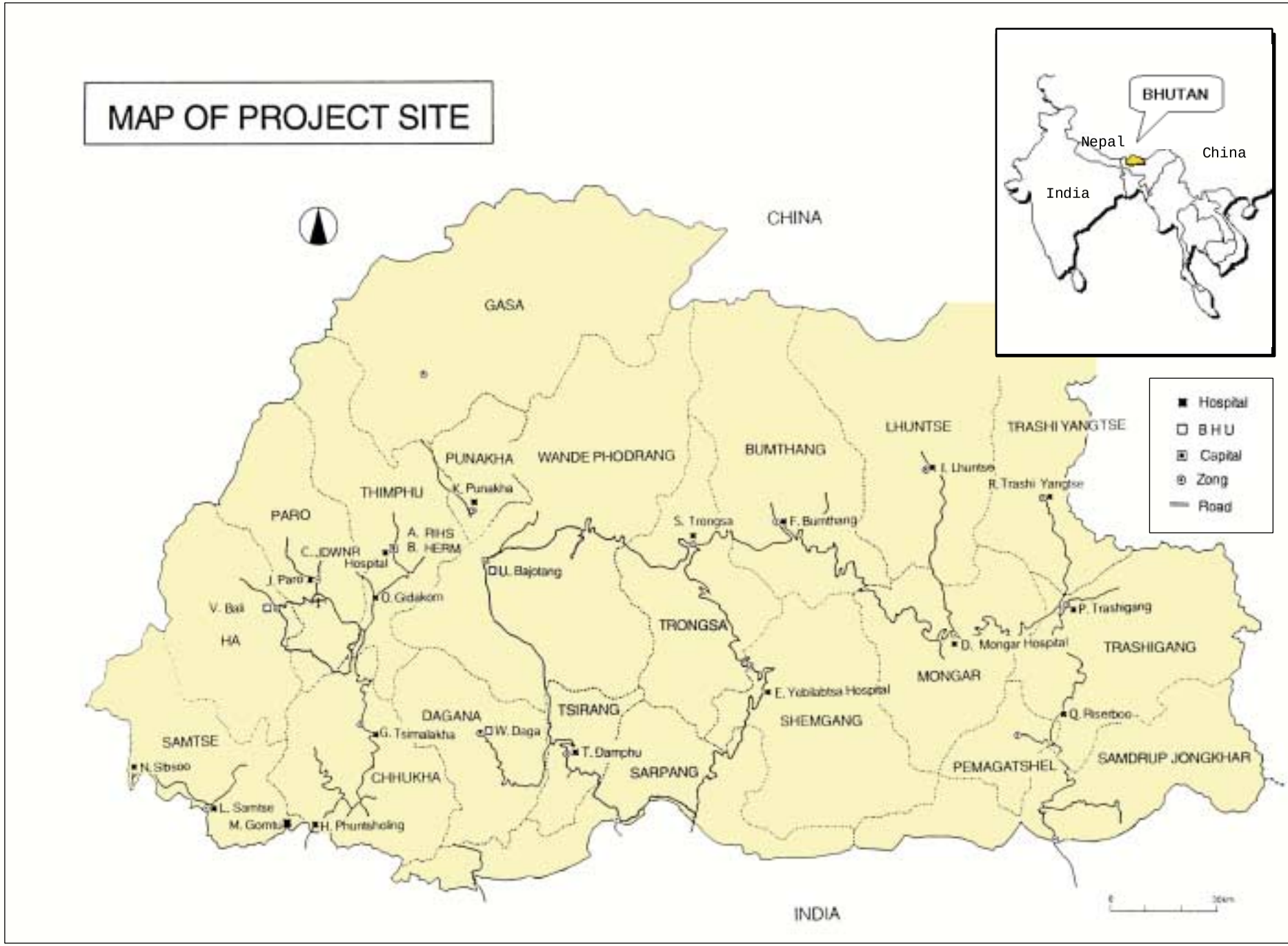
This study was conducted by Binko Ltd., under a contract to JICA, during the period from November 17th, 1999 to July 3rd, 2000. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Bhutan and formulated the most appropriate 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,

Shinichi Kimura
Project manager,
Basic design study team on
Improvement of Maternal and Child
Health, and Essential Equipment
Binko Ltd.

MAP OF PROJECT SITE



ABBREVIATION

AN	Assistant Nurse
ANM	Auxiliary Nurse Midwife
AVR	Auto Voltage Regulator
BHN	Basic Human Needs
BHU	Basic Health Unit
BHW	Basic Health Worker
DANIDA	Danish International Development Agency
E/N	Exchange of Notes
GNM	General Nurse Midwife
HA	Health Assistant
MCH	Maternal and Child Health
NGO	Non Governmental Organization
NPO	Non Profit Organization
ORC	Outreach Clinic
PHC	Primary Health Care
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNICEF	United Nations International Children's Fund
UPS	Uninterrupted Power Supply
VHW	Village Health Worker
WHO	World Health Organization

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Chapter 1. Background of the Project

CHAPTER 1 BACKGROUND OF THE PROJECT

1-1 Details of the Request

The Royal Government of Bhutan (hereinafter referred to as "Bhutan") promoted the 7th 5-year plan (1992～1997) with the basic strategy of the sustainable development of national economy through environmental protection and population control. This plan was promoted, in the health and medical field, putting emphasis on improvement of basic medical services, preventive education for main diseases, hygiene control and improvement of nutrition. And those undertakings, such as primary health care, measures against infectious diseases, maternal and child health services, and family planning, had been implemented.

Nevertheless, the mortality rate of newborn babies in Bhutan is 114/1000 births according to a health survey conducted in 1996/1997, and it exceeds the rate in the neighbor countries, such as Nepal, Bangladesh and India. Moreover, the mortality rates of pregnant women and infants under 5 years old are respectively very high, and maternal and child health problem are still great concern to the country. Therefore, further efforts have been made for the improvement of the health and medical services in the 8th 5-year plan (1997～2002).

The health and medical service system of Bhutan is composed of 28 hospitals on national/regional/district (Dzongkhag) levels, 145 basic health units (BHU) and 454 outreach clinics (ORC). Those facilities, disposed in the respective districts, blocks (Gewog) and villages, play the key role in the maternal and child health and medical activities. However, at almost all the facilities, the medical equipment and materials have completed their life span and many of them are in a state unfit for practical use.

Such human resources and equipment necessary for treating mothers and infants, are lacking in all medical facilities. For that reason, those patients are transferred to some particular hospitals in urban areas for proper treatment. However, this often results in a fatal delay in the supply of medical treatment, and thus leading to death of the patients before arriving at a n upper-level hospital.

Improvement of the system of patient transfer as well as improvement of insufficient medical equipment is great concern to the country in the health and medical field.

Under such circumstances, a Study Team was dispatched to Bhutan in February 1998, in order to see the feasibility of cooperation under a Japan's grant aid program for the health and medical field. According to the result of the survey, the necessity was confirmed for improvement of the essential medical equipment in the field of maternal and child health. Hereby, the Government of Bhutan elaborated this project and submitted a request for Japan's grant aid program for procurement of the essential medical equipment.

1-2 Outline of the Request

(1) Purpose of the request

Yet putting emphasis on improvement of medical system in the field of maternal and child health in Bhutan, the equipment procured in 1960s, when the Western medical service system was introduced into Bhutan, is still used in almost all the medical facilities. Therefore, those are very much old and many of them are unfit for practical use. Accordingly, shortage of the medical equipment in its quantity and quality is a big problem.

This project aims at improvement of maternal and child health services of the medical facilities at every level through procurement of equipment to the designated facilities, and thus aiming at improvement of the health indicators of pregnant women and infants.

(2) Outline of the request

The equipment originally requested for procurement in this project is 63 items for the 33 project facilities. According to the contents of the requested equipment and the services extended by those facilities, the request is classified into the following 7 facility-groups.

1. JDWNR Hospital

Obstetric laparotomy/caesarean section pack, Normal delivery pack, Neonatal resuscitation pack, Mobile X-ray unit, Transport incubator, Phototherapy unit, Fetal doppler, Ultrasound scanner, Colposcope, etc.

2. RIHS

Pelvis for delivery set, Pelvis for copper T-insertion, Adult doll for nursing procedure, Delivery forceps, Fetal doppler, Normal delivery pack, Oxygen tent, Video tape set, Kidney tray set, Steel bowl set, Forceps, Thermometer, Bath tub, Personal computer set, etc.

3. Public Laboratory

Fluorescence microscope, Biological microscope, CO_2 incubator, Microbiological incubator, Freeze dryer, etc.

4. HERM

Maintenance tool set

5. Regional Hospital (2 facilities)

Obstetric Laparotomy/caesarean section pack, Normal deliver pack, Neonatal resuscitation pack, Transport incubator, Phototherapy unit, Ultrasound scanner, Fetal doppler, Colposcope, Oven, Refrigerated centrifuge, etc.

6. District Hospital (24 facilities)

Obstetric laparotomy/caesarean section pack, Normal delivery pack, Neonatal resuscitation pack, Haematology analyzer, High pressure steam sterilizer, spectrophotometer, ambulance, etc.

7. Basic Health Unit (3 facilities)

Obstetric laparotomy/caesarean section pack, Ambulance, etc.

Chapter 2. Contents of the Project

CHAPTER 2 CONTENTS OF THE PROJECT

2-1 Objectives of the Project

The health and medical service system of Bhutan is composed of 28 hospital on national, regional and district levels, 145 basic health units (BHU) and 454 outreach clinics (ORC). Those facilities, disposed in the respective districts, blocks and villages, play the key role in the maternal and child health and medical activities. However, at almost all the facilities, the medical equipment and materials are old and many of them are in a state unfit for practical use. The situation is that human resources and equipment necessary for diagnosing and treating pregnant women and infants are insufficient in any facilities of various levels. For that reason, the patients' confidence in medical facilities is rather low and, also because many of the patients are women and children living in rural villages who are underprivileged, the rate of hospital utilization is extremely low.

This project is intended to restore the medical function of the facilities concerned, through supply and improvement of medical equipment at 2 regional hospitals, 15 district hospitals, 3 BHUs, JDWNR hospital, Health Equipment Repair and Maintenance (HERM), and Royal Institute of Health Sciences (RIHS), to improve the maternal and child health services in Bhutan and thus improve the health indicators of pregnant women, infants, etc.

2-2 Basic Concept of the Project

The problems about the health and medical services in Bhutan may be roughly classified as (1) shortage of human resources in specialized fields, (2) shortage of equipment in its quantity and quality, and (3) insufficient maintenance control of medical equipment.

A medical system functions properly in a state in which human resources, equipment, maintenance and funds are well harmonized. From such point of view, this project is intended to provide support in the material aspect through supply

and improvement of medical equipment, aiming at improvement of such systems in the aspects of human resources, equipment and maintenance, as follows:

(1) To promote improvement of educational system for assistant physicians, general nurse midwives, nurses, paramedical, basic health assistants (BHA), etc., through supply and improvement of the equipment used for educational purposes at Royal Institute of Health Sciences.

(2) To promote improvement of quality of medical service system at 21 facilities related to maternal and child health all over the country, through supply and improvement of the equipment in the facilities concerned.

(3) To supply and improve the maintenance tools at Health Equipment Repair and Maintenance (HERM), which is the only maintenance organization of medical equipment in Bhutan.

As a result of study in Japan, the facilities mentioned below, which are adjacent to the Indian borders, were eliminated from this project.

1. Pemagatshel Hospital
2. S/Jongkhar Hospital
3. Deothang Hospital
4. Sarpang Hospital
5. Gaylegphug Hospital
6. Kalikhola BHU

2-2-1 Cooperation Policies

Based on the above-mentioned basic concept, cooperation policies of the project are as follows:

① The equipment for examination and treatment, which is used for pregnant women and infants under 5 years old, shall be procured.

② The essential equipment for the hospitals that is suffering from financial difficulties shall be procured, in order to restore the medical function and fulfill the role as a main hospital for each district.

③ The equipment to be procured should be restricted to which to be essential for basic medical services for mothers and children, and also which to be admitted the necessity of prompt procurement due to loss of its original function for being overage or shortage in quantity.

④ In principle, procurement should be done by renewal and supplementation of the existing equipment. The equipment shall need neither securing new personnel, the acquisition of the new operating techniques nor a large sum of operation and maintenance budget.

⑤ The equipment shall be selected to meet the current status of the facility by examining the scale, the activity, the number of patients, and the disease tendencies.

⑥ The equipment of which spare parts and consumables can be procured and for which after-sale services such as maintenance can be easily accessed at a local agent in the neighbor countries such as India, shall be selected for the project.

2-2-2 Examination of the Request

(1) Necessity and appropriateness of the project

Main diseases in Bhutan are infectious disease of respiratory organs, dermal disease and infectious disease of intestinal tracts such as diarrhea, and this tendency remains unchanged for the past 11 years. Moreover, malaria is still a big problem in the southern areas, and outbreak of infectious diseases such as typhoid and cholera is seen almost every year.

Therefore, Bhutan is putting emphasis in health services on PHC (primary health care), and has been promoting such activities as securing of human resources for BHU and dispensaries, supply of pharmaceuticals and exertion on immunization. However on a village community level in remote rural areas, because of very severe geographical conditions, difficulties in the access

to a medical facility disturb the efficacy of those activities. At the hospitals taking charge of PHC activities, the lack of physicians is a big problem. At the district hospitals, general physicians are the majority and only a few specialized doctors such as surgeons, obstetricians and gynecologists are disposed. For that reason, many of the patients requiring treatment by a specialist, even mild cases, are transferred to JDWNR hospital in Thimphu or other regional hospitals where specialized doctors are disposed. Ambulance is used as means of transportation, but it takes very long hours for transportation because of unfavorable road condition.

For that reason, the Government of Bhutan is promoting decentralization of medical service system along a health development program, and has been improving regional and local medical facilities, so that people living in remote rural areas may a lso benefit from medical services equally with people living in metropolitan areas. This project is focused on improvement of health and medical services especially for mothers and children, who are the weak in the society, within the scope of the program for improvement of medical services promoted by the Government of Bhutan. Accordingly, it is deemed that the necessity and appropriateness of implementation of this project are very high.

(2) Study on role and function of the designated hospitals

1) Medical facilities

① JDWNR Hospital

This hospital having 38 physicians and 200 sickbeds plays the role of a regional hospital in the western region of Bhutan and that of the top referral hospital of the country at the same time. This is a general hospital which is provided with departments of surgery, internal medicine, pediatrics, obstetrics & gynecology, ophthalmology, dental surgery, ENT, dialysis, physiotherapy, radiology, examination room, etc. Patients to

whom treatment is difficult at the level of district hospital are all referred to this facility. Patients who cannot be treated in this facility are sent at the government's expenses to a hospital in foreign countries such as India and Thailand.

② Regional Hospital

Two (2) regional hospitals are disposed across the country. The facilities concerned have specialized departments such as ophthalmology and dental surgery, in addition to the 4 basic departments of surgery, internal medicine, pediatrics and obstetrics & gynecology. These are the upper referral hospitals in the region, and the district hospital refers patients to a regional hospital depending on the condition of the patient. The regional hospitals are also functioning as district hospital, and control the basic health units (BHU) which are medical facilities of lower rank.

③ District Hospital

There are twenty-five (25) district hospitals all over the country. A district hospital, having 1 to 3 physicians and 10 to 60 sickbeds on the average, is provided with 4 basic departments of surgery, internal medicine, pediatrics and obstetrics & gynecology. Each district hospital controls 3 to 5 BHUs. Also, it conducts outreach clinics (ORC) and is engaged in MCH activities.

④ Basic Health Unit (BHU)

BHUs are classified into Grade 1, Grade 2 and Grade 3. At least one physician is assigned to a BHU of Grade 1. No physician is assigned to Grade 2 and Grade 3, but only an assistant physician called health assistant (HA) is assigned there.

The three (3) designated facilities in this project are all of Grade 1 and have physicians assigned. They are equipped with 5 to 20 sickbeds and providing services in internal medicine, pediatrics and obstetrics.

2) Royal Institute of Health Sciences (RIHS)

RIHS was established in 1974 as a health school for the purpose of forming human resources who work for promoting health of the people in Bhutan, in receiving support from UNICEF and WHO.

RIHS is the only educational organization of the medical workers such as nurses and medical technicians, belonging to the Health Division, the Ministry of Health and Education.

In a long-span perspective, the purpose of education at RIHS is to form proper medical workers to be engaged in the promotion of primary health care in Bhutan. In a short-span perspective, it is to form health assistants at basic health units, nurses in hospitals and medical technicians in a variety of fields, and to provide post-graduate educational courses for medical workers.

No less than 4,000 graduates have already been sent out from this school, and all of them are playing important roles in the medical facilities in Bhutan.

3) Health Equipment Repair and Maintenance (HERM)

HERM was established in 1985 under an aid from UNICEF. The current staff includes 6 technicians (3 electricians and 3 mechanicians) and 1 assistant, under an Indian Maintenance Manager dispatched from WHO.

HERM takes charge of maintenance of all medical equipment as well as laundry equipment, incinerator, etc., at any medical facilities across the country.

HERM covers the entire country with patrols of 3 times a year separately in the eastern area, the central area and the western area, and performs inspection and repairs. In addition, in case of equipment troubles, either of the following transactions is taken according to a written request for repair submitted by a hospital director. In case of large equipment, HERM

members visit the site for repair by carrying maintenance tools and necessary parts. And in case of small equipment, the equipment was sent to Thimphu for repair.

(3) Study on the requested equipment

This project will aim at improving the hospital functions for preservation and recovery of maternal and child health, especially for the health of mothers in a perinatal period, safe delivery, and early diagnosis and treatment of diseases in newborn babies and infants, so as to reinforce the current diagnosing and treating activities.

Therefore, the equipment used for purpose other than diagnosing and treating activities (example: computer and copying machine in the administrative department) will be excluded from the scope of equipment supply under this project, and improvement will be made on medical equipment necessary for restoration and improvement of the basic medical activities currently being promoted in the designated hospitals.

The equipment under review is which posing problems of completion of its life span or shortage in quantity, and also the equipment of which the necessity of procurement should be checked carefully, in each project facility. The results of this study are the following:

1) Study of the main equipment

① B-4-A, B-4-B Ultrasound scanner

Facility: JDWNR Hospital
Supplement Procurement: 1

At present, one unit of ultrasound scanner is provided respectively to both departments of MCH and gynecology outpatient at the facility concerned. Ultrasound scanner is an equipment indispensable for obstetrical medical treatment, and which can perform diagnosis of extra-uterine pregnancy, agrippa, etc.

Of the annual deliveries of 1,483 cases, approximately 13% (190 cases) presents some abnormality of pregnancy. For that reason, there are many cases of examination conducted by using an ultrasound scanner, and there are always many patients on the waiting list. Examination is also conducted for pregnant women immediately before delivery but, since no ultrasound scanner is provided in the obstetrics ward, pregnant women who fell in an unusual state are carried on the stretcher to the department of gynecology outpatient in another building of this hospital.

In this project, disposition of one mobile type ultrasound scanner will be planned in the obstetrics ward, to be used for safe and prompt examination for the diagnosis of any abnormal pregnancy during hospitalization and delivery of pregnant women. This will make it possible to perform all necessary examinations in the obstetrics ward, without requiring any transfer of patients to the department of gynecology outpatient in another building, which used to be made customarily even with patients in serious condition in the past.

Facility: Phuntsholing Hospital
New Procurement: 1

There are currently 6 obstetricians in Bhutan, and one of them is disposed in Phuntsholing Hospital. This hospital is positioned by the government as the leading hospital in obstetrics in the southeast region.

The annual total number of deliveries here is 159 cases. Since this region is contiguous to the Indian border and Indian people living in the frontier areas cross the border for diagnosis and treatment at this hospital, there are a lot of outpatients in obstetrics with approximately 450 cases of consultation annually. The outpatients who come to this hospital include many suspected cases of abnormality of pregnancy, but they are sent to Thimphu, the capital, because no ultrasound scanner is provided in this hospital. Some wealthy patients are referred to private clinics in India.

In this project, procurement of one unit of ultrasound scanner will be planned to enable accurate and quick diagnosis of abnormal pregnancy, etc. This will make it possible to conduct ultrasonic image diagnosis of approximately 400 patients a year, thus contributing to improvement of quality of medical services.

Facility: Yebilabtsa Hospital
Procurement: 0

A small ultrasound scanner was recently installed to the hospital by the Ministry of Health and Education. Accordingly, this equipment will not be procured under this project.

② B-6 Incubator

Facility: JDWNR Hospital
Renewal Procurement: 1

Incubator is equipment essential for saving premature babies who are incapable of any autonomous temperature control and for whom contraction of infectious disease is feared because of poor physical strength. In this facility, there are 120 cases of delivery of premature baby (8% of the total deliveries) per year. At present, 2 old incubators of Indian manufacture are installed in the pediatrics department and 1 unit in the obstetrics ward, but the equipment in the obstetrics ward often gets into trouble and also presents a problem of shortage in quantity during a period with many deliveries. In this project, those old equipment will be renewed to make a system for providing safe and accurate nurture of premature babies.

Facility: Trashigang Hospital
Renewal Procurement: 1

There are about 15 cases of delivery of premature baby a year. The patients are mostly inhabitants in poor rural communities, and the rate of delivery of premature baby is about 3 times higher than that in urban

areas. For that reason, incubator is an important medical equipment in maternal and child health services in this facility. One incubator of Indian manufacture is currently disposed, but renewal of this unit is requested because it is very much old and its temperature control does not work correctly. In this project, one unit of incubator will be procured to enable safe temperature control for premature babies who have so far been kept warm by wrapping in cloth because of equipment troubles, thus improving medical services in this facility.

③ B-7 Infant warmer

Facility: Tsimalakha Hospital, Phuntsholing Hospital, Lhuntse Hospital, Paro Hospital, Samtse Hospital, Gomtu Hospital, Gidakom Hospital, Trashigang Hospital, Trashi Yangtse Hospital, Damphu Hospital, Bali BHU TOTAL: 11 facilities

Renewal Procurement: 1 (for each facility)

In Bhutan, infectious diseases of respiratory system and digestive system are frequently seen, and the disease prevailing rate in newborn babies and infants is rather high. Infant warmer is equipment essential for MCH services. This performs resuscitation for newborn babies and infants who are seriously ill because of infectious disease and so on, while performing proper temperature control for them. Especially during the winter season, this equipment is indispensable at medical facilities in mountainous areas or provincial areas of Bhutan where the external temperature sharply drops. At the designated facilities, simple warmers provided with electric heaters and incandescent bulbs are currently used. However, such devices are unfit for temperature control of sick infants because of instability of temperature. Patients requiring temperature control represent about 20% of newborn babies and about 2% of infant outpatients, with an average number of 45 cases in each facility.

In this project, one warmer will be procured for each of the designated facilities. This will enable accurate temperature control and respiration control, and a substantial increase in the saving rate of

newborn babies can be expected.

2) Study of the equipment needed procurement of several units

① A-6 Magnal board

Facility: JDWNR Hospital, District Hospitals and BHUs
TOTAL: 21 facilities

Supplement Procurement: 2 (for each facility)

Plastic models of male and female genital organs. The models provided with magnet are used by putting on a white board in the educational programs of MCH and family planning to inhabitants. This equipment is carried from regional hospitals, district hospitals and BHUs to ORCs, for giving regular guidance to the local inhabitants by general nurse midwife, nurse or assistant physician. Although 1 or 2 units of this equipment are provided in each project facility, renewal is required because of breaking, deformation, etc., due to high frequency of use.

In this project, procurement of 2 units in total (1 unit for MCH services in the facility and 1 unit to be used for activities outside the facility) is planned for each facility.

② A-7 Neonatal resuscitation pack

Facility: JDWNR Hospital, District Hospitals and BHUs
TOTAL: 21 facilities

Supplement Procurement: 2 (for each facility)

This is an emergency resuscitation set composed of a hand-operated resuscitator for newborn babies, a stepped type suction unit, etc. This equipment is used for emergency lifesaving of newborn babies who fell in a difficulty of breathing in the delivery room and also in home delivery. Each facility must generally have a plural number of this pack. While the exact quantity of this equipment set currently disposed in each facility is unknown, each should have been equipped with at least one set. However, if the emergency cases occur simultaneously at many localities (such as cases of emergency outpatient, labor in delivery room, delivery at home), a problem of shortage in quantity appears.

In this project, disposition of 2 units in total (1 unit in the emergency outpatient unit and 1 unit in the delivery room) will be planned for each designated facility, to improve medical services in maternal and child health.

③ A-8 Normal delivery pack

Facility: JDWNR Hospital, District Hospitals and BHUs
TOTAL: 21 facilities

Supplement Procurement: 4 (for each facility)

This equipment set, composed of hemostatic clamp, scissor, pus basin, square basin, etc., is used for the treatments during and after the delivery. Although at least 2 to 3 sets are disposed in each facility, those have problems such as unmatching of clamp hook and poor cutting performance of scissors due to long period of use, and such situation is interfering with the daily medical services. Supplementation of this equipment is urgently required, because it is used not only in the delivery room of the facility but also on the occasion of house call for delivery at home.

There are some occasions which several delivery cases are conducted on one same day. For the repeat use of the same unit, the equipment must be washed, sterilized and dried without fail after its use. Therefore, at least 3 sets must be provided in a delivery room. In this project, procurement of 4 sets will be planned including 3 sets in the delivery room and 1 set for the occasion of house call.

④ A-9 Obstetric stethoscope

Facility: JDWNR Hospital, District Hospitals and BHUs
TOTAL: 21 facilities

Supplement Procurement: 2 (for each facility)

This equipment is used for diagnosing the fetus development, presence of disease, etc., by being put on the abdomen of the mother and directly

listening to the cardiac sound of the fetus. It is disposed in the departments of MCH and obstetric outpatient, delivery room and for activities outside the facility such as activity at ORC. Although 2 to 3 units of obstetric stethoscope are disposed in the designated facilities on the average, those units of Indian manufacture present a problem of quality with mixing of external noise and so on, because they are made of thin aluminum sheet.

In this project, procurement of 2 sets will be planned for each designated facility including 1 set for common use among departments of MCH and obstetric outpatient and delivery room in the facility, and 1 unit for activities outside the facility. This will enable to listen to the small heart sound which used to be difficult to check in the past, and enable to expect the improvement of diagnosing functions.

⑤ A-10 Electric thermometer

Facility: JDWNR Hospital, District Hospitals and BHUs
TOTAL: 21 facilities

Renewal Procurement: 2 (for each facility)

2 to 3 units are disposed in the departments of MCH and outpatient, delivery room, rehabilitation room, and for activities at ORC (outreach clinic). Although mercury thermometer made of glass is now disposed and used, it is not so suitable to take a temperature of newborn baby because of too much time for thermometry, breaking of glass, etc.

This equipment is capable of measuring temperature instantly by applying infrared rays to the eardrum. In this project, supply of 2 units (1 unit in the department of MCH where the frequency in use of this equipment is very high, and 1 unit in ORC where thermometry in short time is required in the activities) will be planned. Accordingly, it will be possible to conduct temperature taking of newborn babies safely and accurately, thus leading to improvement of medical services.

⑥ A-15-A Sphygmomanometer (mercury type)

⑦ A-16 Stethoscope

Facility: JDWNR Hospital, District Hospitals and BHUs
TOTAL: 21 facilities

Supplement Procurement: 2 for each equipment (for each facility)

The sphygmomanometer and the stethoscope are used in a set, for checking blood pressure of the mother and the infant. They are disposed in the departments of MCH and outpatient, delivery room, rehabilitation room and for activities at ORC. At present, 1 to 2 sets are commonly used among those sections. However, such cases that require diagnosis by using this set often arise simultaneously, and the medical activities cannot be made smoothly in such a situation. In this project, 2 sets (one for the delivery room where common use with other sections is difficult and one for ORC) will be procured. It is deemed that this will help performing diagnosis smoothly in proper places without keeping the patients waiting.

3) Study of the equipment which needs electricity for its operation

① A-14 Examination lamp (200W)

Facility: JDWNR Hospital, District Hospitals and BHUs
TOTAL: 21 facilities

Renewal Procurement: 1 (for each facility)

This equipment consumes only a small amount of electric power, and it was also confirmed, through field survey and research by interview, that at least one unit of equivalent equipment is currently disposed and used, and that power supply is secured. It is judged that there is no particular problem about procurement of this equipment, because it is simple in structure with an electric section mainly composed of electric bulb and cord, also because no special maintenance is required for it. The supply of this equipment is made for the purpose of renewing and supplementing the old existing equipment. With this supply, recovery of diagnosing functions can be expected in the department of MCH outpatient.

② A-17 Autoclave (table top) (1000W)

Facility: District Hospitals and BHUs TOTAL: 20 facilities
Renewal Procurement: 1 (for each facility)

This equipment, which generates high-temperature steam by means of an electric heater, is subject to hardly any influence of fluctuations of power supply. According to field survey and research by interview, it was confirmed that at least one unit of equivalent equipment is currently disposed and used in all the designated facilities, and that power supply is secured. Moreover, there is no difficulty in maintenance of this equipment. For those reasons, it is judged that there is no particular problem about procurement of this equipment. The supply of this equipment is made for the purpose of renewing and supplementing the old existing equipment. This will make it possible to supply the disinfected and clean instruments, thus leading to improvement of medical services.

③ A-19 Centrifuge (300W)

Facility: District Hospitals and BHUs TOTAL: 20 facilities
Renewal Procurement: 1 (for each facility)

This equipment with a simple structure composed of motor and timer, consumes little electric power and is subject to hardly any influence of fluctuations of power supply. Moreover, one equivalent unit is disposed in the respective facilities and power supply is secured. The maintenance is taken care by the Ministry of Health and Education of Bhutan. For those reasons, it isjudged that there is no particular problem about procurement of this model. Centrifuge is equipment essential for MCH services, and is used for separating serum from the blood of pregnant woman for examination of hepatic function in case of hepatitis or examination of AIDS, etc. However, the existing centrifuges in the designated facilities are already old and present problems with the operational precision such as unstable rotation, etc. The supply of this equipment is made for the purpose of renewing and supplementing the old existing equipment. The supply of this equipment will make it possible to perform

highly accurate biochemical analyses, thus achieving improvement of medical services.

④ A-22 Microscope binocular (50W)

Facility: District Hospitals and BHUs TOTAL: 20 facilities
Supplement Procurement: 1 (for each facility)

It was confirmed, through field survey and research by interview, that this equipment is currently disposed and used in the designated facilities. The electric section of this equipment is an illuminator, and it consumes only a small amount of electric power. The equipment performance is subject to hardly any direct influence of fluctuations of power supply. Moreover, procurement of automatic voltage regulator (AVR) as well as this microscope binocular is planned for the protection of the illuminator, and no particular techniques are required for the operation and maintenance. For those reasons, it is judged that there is no problem about procurement of this equipment. No exact quantity of the existing equipment is known, but at least one unit is disposed mainly in the examination room. However, the equipment completed its life span often raises troubles, and such situation is interfering with the daily examination work. In this project, procurement of such equipment that is short in quantity will be planned to enable expeditious and smooth execution of the daily examination work.

⑤ B-1 Boiling sterilizer (950W)

Facility: Mongar Hospital, Bumthang Hospital, Phuntsholing Hospital, Lhuntse Hospital, Paro Hospital, Samtse Hospital, Sibsoo Hospital, Trashigang Hospital, Riserboo Hospital, Trashi Yangtse Hospital, Trongsa Hospital
TOTAL: 11 facilities
Renewal Procurement: 1 (for each facility)

This is equipment of simple structure used for boiling water with an electric heater, and is hardly influenced by electric fluctuations. It was confirmed through field survey and research by interview that at least

one unit of equivalent equipment has already been used, and that all necessary conditions such as securing of power source, maintenance and necessity of procurement. Accordingly, it is deemed there is no problem about procurement of this equipment. The boiling sterilizers currently disposed in the designated facilities are not functioning normally with overage heater, etc., and are required for its renewal. The necessity of procurement of this equipment is very high, because it is a basic equipment related to medical services and submitted to sterilization and disinfections of instruments used in the consultation room, etc.

The supply of this equipment is for the purpose of renewing and supplementing the old existing equipment. This will enable proper sterilization of injectors, operation instruments, etc., in the outpatient department, consultation room, small operation room, etc.

⑥ B-4-A Ultrasound scanner (with cart) (200W)

Facility: Phuntsholing Hospital
Renewal Procurement: 1

Electric power is consumed for the image screening and the scanning system, and this equipment works even with power supply in general household. It is judged that there is no problem about procurement of this equipment because, in the designated facilities, many different kinds of electric medical equipment are currently used and there are not much fluctuations of power supply. Moreover, disposition of UPS (uninterruptible power supply unit) is planned at the time of procurement of this equipment and, therefore, there will be no problem with power supply. Furthermore, it is judged that no problem will be raised also with the equipment operation, because a specialized obstetrician is disposed in the designated facilities. The result of a study about the necessity of procurement is as described earlier.

⑦ B-5-A Vacuum extractor (electric type) (90W)

Facility: JDWNR Hospital, Mongar Hospital, Phuntsholing Hospital, Samtse Hospital, Trashigang Hospital
TOTAL: 5 facilities

Renewal Procurement: 1 (for each facility)

This equipment is of simple structure for sucking by producing a negative pressure with a diaphragm pump by rotation of motor. Equivalent equipment is currently used though old, and power supply is secured, as it was confirmed through field survey and research by interview. No particular techniques are required for its operation and maintenance. For those reasons, it is deemed that there is no problem about procurement of this equipment. At present, at least one suction unit is owned by each designated facilities but, because the extraction is made by utilizing a general suction unit, there is a problem about the stability of suction force. Accordingly, renewal of these units is required. In this project, renewal of the old equipment will be planned to secure safe delivery with little pain for pregnant women requiring help for abnormal labor, etc. (30 to 40 cases on an average annually at the respective facilities)

⑧ B-6 Infant incubator (200W)

Facility: JDWNR Hospital, Trashigang Hospital
TOTAL: 2 facilities

Renewal Procurement: 1 (for each facility)

This equipment is designed to keep the temperature of the nurturing unit at the same temperature as newborn baby’s by heating a small electric heater by means of thermostat. According to field survey and response to the questionnaire, it was confirmed that equivalent equipment is currently used and power supply is secured. The electrical structure of the equipment is rather simple and the power consumption is small. The maintenance is also easy. Considering those, no particular problem is found about procurement of this equipment. The result of a study about necessity of procurement is as described earlier.

⑨ B-7 Infant warmer (250W)

Facility: Tsimalakha Hospital, Phuntsholing Hospital, Lhuntse Hospital, Paro Hospital, Samtse Hospital, Gomtu Hospital, Gidakom Hospital, Trashigang Hospital, Trashi Yangtse Hospital, Damphu Hospital, Bali BHU TOTAL: 11 facilities

Renewal Procurement: 1 (for each facility)

This equipment, intended to directly warm a newborn baby by means of a ceramic heater above the baby, is comparatively simple in itsstructure, comprising a heater unit at the upper part of the equipment and a bed unit at the lower part. At present, some facilities use self-made warmers prepared by simply attaching an incandescent lamp or electric heater to the baby bed. In this way, similar equipment is currently used and power supply is secured. Therefore, it is judged that there is no problem about procurement of this equipment. The result of a study about necessity of procurement is as described earlier.

⑩ B-8 Phototherapy unit (140W)

Facility: Mongar Hospital, Tsimalakha Hospital, Phuntsholing Hospital, Paro Hospital, Samtse Hospital, Gomtu Hospital, Trashigang Hospital, Trashi Yangtse Hospital, Damphu Hospital
TOTAL: 9 facilities

Renewal Procurement: 1 (for each facility)

This is equipment for treating neonatal jaundice, by applying ultraviolet rays with 4 pieces of fluorescent tubes similar to ordinary 30W fluorescent lamps. It was confirmed, through field survey and response to the questionnaire, that equivalent equipment is currently in use and power supply is secured. This equipment consumes little electric power and is easy to handle. No technical difficulty is involved in its maintenance. For those reasons, it is judged that there is no particular problem about procurement of this equipment. According to a research by questionnaire, although beam treatment is currently practiced, no satisfactory treating effects are obtained because of using old and hand-made equipment.

In this project, the equipment concerned which is problematic from the

viewpoint of quality will be renewed, so as to improve the level of medical services. It is expected that procurement of this equipment will contribute to a short-time treatment of jaundice of the newborn (roughly 25 cases per facility on an annual average), and thus leading to reduction of the treating costs.

⑪ B-9 Colposcope (50W)

Facility: JDWNR Hospital, Mongar Hospital, Yebilabtsa Hospital
TOTAL: 3 facilities

New Procurement: 1 (for each facility)

This equipment, used for diagnosing the diseases in obstetrics such as cervical erosion and myoma of uterus by means of microscope, has a 12V, 50W electric bulb as electrical section. Since the operating method is almost the same as that of existing microscopes, this equipment can be used by the current medical staff and its maintenance is also easy. For those reasons, it is judged that there is no particular problem about procurement of this equipment. Moreover, procurement of AVR (automatic voltage regulator) is also planned in this project, and it is deemed that troubles due to sudden fluctuations of power supply can be avoided. With the use of this equipment, diagnosis and treatment of 20 women annually may be expected at each facility.

⑫ B-10 ECG (100W)

Facility: JDWNR Hospital, Mongar Hospital, Yebilabtsa Hospital, Phuntsholing Hospital TOTAL: 4 facilities

Renewal Procurement: 1 (for each facility)

Although the power source of this equipment is AC 240V, this equipment also works on a battery by conversion to DC 12V, and is subject to hardly any influence of fluctuations of power supply on the equipment performances and accuracy. Moreover, the equipment works with battery even during a power failure. It was confirmed, through field survey and research by interview, that the equivalent equipment is currently used

in the facilities concerned. The equipment is workable with the existing power supply system in the facility and with small power consumption. Considering those situations, it is deemed that there is no problem about procurement of this equipment. In each facility, one unit has been disposed at least, including which is now unfit for use due to completion of its life span.

In this project, procurement of one unit of ECG will be planned for which urgent renewal is required. Procurement of this equipment will enable accurate diagnosis of a pregnant woman with cardiac insufficiency and supply of high-accuracy treatment.

⑬ B-12-B High pressure steam sterilizer (vertical type) (5000W)

Facility: JDWNR Hospital, Mongar Hospital, Yebilabtsa Hospital, Trashigang Hospital, Riserboo Hospital, Daga BHU
TOTAL: 6 facilities

Renewal Procurement: 2 for JDWNR and 1 each for other facilities
TOTAL: 7 units

This equipment, which generates high-temperature steam by means of an electric heater, is subject to hardly any influence of fluctuations of power supply. According to research by interview and response to the questionnaire, it was confirmed that at least one unit of equivalent equipment is currently used and that power supply is secured, yet the power consumption of this equipment is not so small. Moreover, the equipment structure is simple and there is no difficulty in maintenance. For those reasons, it is judged that there is no particular problem about procurement of this model. The supply of this equipment is made for the purpose of renewing and supplementing the old existing equipment. This procurement will make it possible to perform efficient sterilization without such operative vacuum when the sterilizer cannot be used due to troubles as heretofore.

⑭ B-14 Hot air sterilizer (1500～2000W)

Facility: JDWNR hospital, Yebilabtsa Hospital, Tsimalakha Hospital, Phuntsholing Hospital, Gomtu Hospital, Gidakom Hospitalm, Riserboo Hospital, Damphu Hospital, Bali BHU
TOTAL: 9 facilities

Renewal Procurement: 1 (for each facility)

This equipment is used for sterilization of instruments by heating air by means of an electric heater. The electrical section of this equipment is mainly the electric heater, and it is subject to hardly any influence of fluctuations of power supply. According to research by interview, it was confirmed that at least one unit of equivalent equipment is currently used, and that power supply is secured. Moreover, the equipment structure is simple and its maintenance is easy. Therefore, it is judged that there is no problem about procurement of this equipment. The supply of this equipment is made for the purpose of renewing and supplementing the old existing equipment. This supply will make possible to perform, at any time and in a short time, sterilization of instruments such as glasswares requiring dry sterilization in the examination room.

⑮ B-15 Photometer (150W)

Facility: Yebilabtsa Hospital

Procurement: 0

Because no clinical examination requiring this equipment has yet been practiced at the hospital and no technical staff for handling this equipment is disposed there, this item will be excluded from the scope of supply under this project.

⑯ B-16 Water bath (300～500W)

Facility: Yebilabtsa Hospital, Tsimalakha Hospital, Phuntsholing Hospital, Gidakom Hospital, Bali BHU
TOTAL: 5 facilities

Renewal Procurement: 1 (for each facility)

This equipment promotes reaction of sample in a test tube by heating water to 30℃～60℃ by means of an electric heater. Electric power is

mainly used for the electric heater, and the power consumption of the equipment is comparatively small at about 300～500W. In the designated facilities, one unit of equivalent equipment is used in the examination room and a clinical technologist for operating the equipment is also secured, as it was confirmed through research by interview. It is judged therefore that there is no problem about operation of this equipment after procurement. Water bath, which is used for examination of blood solidification and examination of hepatic function, is basic equipment for grasping the state of health of pregnant women.

At some facilities, the water bath is currently out of order and the reaction of samples is made by controlling the temperature manually with hot water in bucket. By renewing and supplementing those equipment units, it will become possible to detect samples easily andwith a good accuracy, so as to secure improvement of quality of medical services through accurate examination results.

4) Study of other equipment

① A-1 Height scale

Facility: JDWNR Hospital, District Hospitals and BHUs
TOTAL: 21 facilities

Renewal Procurement: 1 (for each facility)

② A-2-B Weighing scale (health meter)

Facility: JDWNR Hospital, District Hospitals and BHUs
TOTAL: 21 facilities

Renewal Procurement: 1 (for each facility)

At least one unit for the each equipment is disposed in the department of MCH and used for physical examination of pregnant women. As a result of field survey and research by questionnaire, it has been found that the existing equipment is old and that it makes difficult to perform any accurate measurement. In this project, those equipment units shall be renewed so as to improve MCH medical services through accurate measurement

of weight and height.

③ A-3 Delivery bed

Facility: JDWNR Hospital, District Hospitals and BHUs
TOTAL: 21 facilities

Renewal Procurement: 2 for JDWNR and 1 each for other facilities
TOTAL: 22 units

④ A-4 Instrument cabinet

Facility: JDWNR Hospital, District Hospitals and BHUs
TOTAL: 21 facilities

Renewal Procurement: 1 (for each facility)

⑤ A-5 Kerry pad

Facility: JDWNR Hospital, District Hospitals and BHUs
TOTAL: 21 facilities

Renewal Procurement: 1 (for each facility)

At least one set of those equipment units is disposed in the delivery room of each facility. However, the existing equipment is so old and it is rather difficult to provide medical services of good quality. In this project, those equipment units will be renewed, and thus securing safe and clean delivery environments through improvement of delivery room.

⑥ A-13 Diagnostic apparatus set

Facility: JDWNR Hospital, District Hospitals and BHUs
TOTAL: 21 facilities

Renewal Procurement: 1 (for each facility)

One unit is usually disposed in department of obstetric outpatient, and used for examination of eyeground, ear and nostril. However, troubles such as malfunctioning due to completion of its life span or partial loss of functions due to breaking of component part, interfere with the routine diagnostic and treating operations. In this project, those equipment units will be renewed, so that quick diagnosis may be made in department of obstetric outpatient.

⑦ A-18 Blood sedimentation set

Facility: District Hospitals and BHUs TOTAL: 20 facilities

Renewal Procurement: 1 (for each facility)

One unit is disposed in the examination room of each facility, and used for blood analysis. However, many of the glass tubes for blood sedimentation are broken, and there are some facilities in which the volume of examination made at a time is reduced to less than one half of the normal volume, presenting such problem as taking too much time for examination.

In this project, those equipment units will be renewed so as to stabilize the accuracy of examination and shorten the examination time.

⑧ A-20 Hemo meter

Facility: District Hospitals and BHUs TOTAL: 20 facilities
Renewal Procurement: 1 (for each facility)

This equipment is used for the examination of hemoglobin in blood. Although one unit is disposed each for both examination room and the department of MCH in the designated facilities, the actual situation is that only one unit is available for normal use in each facility because of completion of the life span, etc. For that reason, there are cases where it cannot be used for activities outside the facility of MCH.

In this project, one unit will be supplied for MCH, aiming at improvement of quality of physical examination and diagnosis for mothers and children in activities outside the facility such as ORC.

⑨ A-21 Hemacytometer set

Facility: District Hospitals and BHUs TOTAL: 20 facilities
Renewal Procurement: 1 (for each facility)

At least one unit of this equipment is disposed in the examination room, and used for measuring blood cells of patient under microscope. Because the instrument is made of glass, the actual situation is that the examination accuracy has become low because of flaw, breaking or dirt.

In this project, those units will be renewed, with a view to providing proper medical services to pregnant women suspected of anemia, etc.,

through accurate measurement of blood cells.

⑩ B-11 Examination table

Facility: Mongar Hospital, Yebilabtsa Hospital, Phuntsholing Hospital, Samtse Hospital, Riserboo Hospital
TOTAL: 5 facilities

Renewal Procurement: 1 (for each facility)

At least one unit of this equipment is disposed in either of the departments of MCH or obstetric outpatient, for diagnosis of pregnant women. However, the existing equipment is much old and an ordinary examination table is substituted for it in some facilities. It makes accurate diagnosis difficult.

Through renewal of those units under this project, it becomes possible to provide a system enabling accurate and expeditious diagnosis by examination in normal posture of pregnant women.

⑪ B-13 Glass ware set

Facility: Yebilabtsa Hospital, Tsimalakha Hospital, Phuntsholing Hospital, Punakha Hospital, Gomtu Hospital, Gidakom Hospital, Trashigang Hospital, Riserboo Hospital, Bajotang BHU, Bali BHU TOTAL: 10 facilities

Renewal Procurement: 1 (for each facility)

This equipment is composed of beaker, flask, laboratory dish, test tube, etc., and is disposed in the examination room. Because those are glass products, the use for long years causes shortage of this equipment by breaking, etc. For that reason, examination must be made many times by using a few apparatuses.

In this project, those units will be renewed to improve examination efficiency.

(4) Study on procurement of ambulances

1) Outline of the Disposition Plan

1. Road condition

Transportation means available inside Bhutan are vehicles only. The greater part of the national territory is in mountainous areas, and the roads pass through along or between mountains. For that reason, the actual driving distance between Mongar andTrashigang, which are separated from each other by 25 km in a straight line, is 2.5 to 3.5 times longer than that and, moreover, it takes as long as 4 to 5 hours to cover this distance because the roads are curved in many parts and the pavement is defective. Transportation means such as taxi and rent-a-car, are not much developed and, besides, they are very expensive and unavailable for ordinary inhabitants in rural areas. Ambulance car is therefore the only transportation means available for emergency patients.

Bhutan aims at disposition of 40 ambulances over the county. By giving first priority to the area along a principal road (named "highway"), emergency vehicles have so far been disposed in hospitals and BHUs (basic health units) in 27 places all over the country, thus improving the emergency medical service system. The hospitals selected for the disposition of ambulances are those which are the most advanced medical facilities in the respective areas and located near the center of each area from the viewpoint of access from other medical facilities in the vicinity. As a result, it has become possible to cover all medical facilities accessible by vehicle with the emergency medical service system. However, the maintenance and repair of vehicles are constantly delayed because of budgetary restrictions, etc. Also, the vehicles have completed their life span, many of them are required to be renewed, and lightweight truck, pickup van or truck is used as substitute for ambulance at some facilities.

2. Current status and problems of emergency referral system

27 ambulances are disposed in the entire country. The priority was given to renewal of the old ambulances, and the request of procurement was initially made for those 16 ambulances.

Disposition is made by the Ministry of Health and Education, and the cost for its operation and maintenance is charged to the Health Division, the Ministry of Health and Education.

3. Background of the request

As a result of field survey, it was turned out that a decision of aid by DANIDA had already been made for a part of the project facilities. Therefore, ambulances requested from those facilities were excluded from the scope of this project and the requests from the remaining facilities were studied. A result of the study is shown in the following "Current Situation of Ambulances and Further Procurement Plan". The condition of vehicles is classified into 4 groups, A: good condition, B: fit for use yet that is not in good condition, C: renewal due to completion of its life span, D: supplement due to completion of its life span. While those in group C and D have been used for a long period (7〜9 years), accumulating repair and maintenance, those have completed their life span and also procurement of spare parts is difficult due to the long service of those vehicles.

4. Result of the site survey

7 ambulances in group C and D shall be renewed under this project. By implementation of this project, the entire country will be covered by 27 ambulances in total including the existing 20 vehicles. Since the Gasa District is located in mountainous area and it is delayed in its road maintenance and improvement, procurement of ambulance is not planned. For other districts, one ambulance shall be disposed for each nucleus medical facility of district such as regional hospital, district hospital

and BHU. Accordingly, the referral system shall be completed.

5. Contents of the project

Cooperation to Pemagatshel Hospital, Gaylegphug Hospital and Kalikhola BHU will be eliminated from this project, as a result of the study in Japan.

Table 2-1 Current Situation of Ambulances and Further Procurement Plan

	Facility	Existing Vehicles			Initial Request	This Project		
		Total Q'ty	Aid from DANIDA	Condition		Procurement	Total Q'ty after execution	
1	JDWNR Hospital	3	-	A: 1 B: 2	-	-	3	1unit : Still workable 2units: Still workable
2	Mongar Hospital	1	-	C	-	1	1	Renewal under this project
3	Yebilabtsa Hospital	1	1	A	-	-	1	Renewed by DANIDA
4	Bumthang Hospital	1	1	A	-	-	1	Renewed by DANIDA
5	Tsimalakha Hospital	1	-	B	1	-	1	Still workable
6	Phuntsholing Hospital	1	-	C	1	1	1	Renewal under this project
7	Lhuntse Hospital	1	-	C	1	1	1	Renewal under this project
8	Paro Hospital	1	-	B	1	-	1	Still workable
9	Pemagatshel Hospital	1	-	C	1	-	1	Eliminated from this project, as a result of the study in Japan
10	Punakha Hospital	1	-	B	1	-	1	Still workable
11	Samtse Hospital	1	-	C	1	1	1	Renewal under this project
12	Gomtu Hospital	1	-	A	-	-	1	Recently renewed
13	Sibsoo Hospital	0	-	-	-	-	0	No disposition
14	S/Jongkhar Hospital	1	-	B	-	-	1	Still workable
15	Deothang Hospital	1	-	A	1	-	1	Recently renewed
16	Sarpang Hospital	1	1	A	1	-	1	Renewed by DANIDA
17	Gaylegphug Hospital	1	-	D	1	-	1	Eliminated from this project, as a result of the study in Japan
18	IBF Hospital	0	-	-	-	-	0	No disposition
19	Lungtenphug Hospital	0	-	-	-	-	0	No disposition (Paro Hospital)
20	Gidakom Hospital	0	-	-	-	-	0	No disposition
21	Trashigang Hospital	1	-	C	1	1	1	Renewal under this project
22	Riserboo Hospital	1	1	A	-	-	1	Renewed by DANIDA
23	Yomphula Hospital	0	-	-	-	-	0	No disposition
24	Trashi Yangtse Hospital	1	-	B	-	-	1	Still workable
25	Trongsa Hospital	1	1	A	1	-	1	Renewed by DANIDA

Facility		Existing Vehicles			Initial Request	This Project		
		Total Q'ty	Aid from DANIDA	Condition		Procurement	Total Q'ty after execution	
26	Damphu Hospital	1	-	C	1	1	1	Renewal under this project
27	Wangdi Hospital	0	-	-	-	-	0	No disposition
28	Bali BHU	1	-	B	1	-	1	Still workable
29	Kalikhola BHU *	0	-	-	1	-	0	Eliminated from this project, as a result of the study in Japan
30	Daga BHU	1	-	A	1	-	1	Recently renewed
31	Bajotang BHU	1	-	C	-	1	1	Renewal under this project
32	Panbang BHU	1	1	A	-	-	1	Renewed by DANIDA
TOTAL		27	6 units provided in 1999	A: 10 B: 8 C: 8 D: 1	16	7	27	

* Any ambulance has not yet been disposed.

Current condition of the existing vehicle

A: Good condition
B: Fit for use yet that is not in good condition
C: Renewal due to deterioration
D: Scrapped car; supplementation due to detarioration

7 ambulances of group C and D shall be procured under this project.

(5) Study on power supply

Bhutan produces a large amount of electric power, and the power supply is stable except in seasons with unfavorable weather conditions such as rainy season. The amount of power production exceeds the demand throughout the year, and the excessive electric power is exported to India. The electric rate is inexpensive at 1.62 yen/kw for general households, which is a level no more than one tenth of the price in Japan. For that reason as well as for fear of pollution problems due to smoke produced by wood or charcoal, room heating by electric heater is getting more and more popular. The power supply conditions in medical facilities are also the same, and the supply voltage is comparatively stable.

Table 2-2 indicates power fluctuation data at the facilities surveyed this time. Because the power fluctuation was surveyed around noon when the power consumption is relatively high, the data given here are generally low voltage, and the power fluctuation ratio almost remains no higher than 15% constantly. For the heating equipment, the equipment to be procured under this projectis formed the large majority by which is hardly affected by voltage drop of this much. Moreover, for electronic equipment, procurement of uninterruptible power supply unit, voltage regulator, etc., is also planned. For those reasons, there is no problem about the supply under the project. This situation is believed to be about the same also with the facilities which could not be covered by the field survey of this time, and general medical equipment can be used without problem.

Table 2-2 Fluctuation of the electricity

Hospital	Paro Hospital	Gidakom Hospital	Phuntsholing Hospital	Punakha Hospital	Tsimalakha Hospital	Bajotang BHU	Bali BHU
Date of Measurement	99-12-07	99-11-26	99-12-01	99-12-02	99-11-30	99-12-03	99-12-06
Fluctuation Ratio	10.1	2.8	9.2	4.3	19.0	15.1	11.2
Average	218.7	241.5	225.3	232.3	200.4	210.6	223.9
Maximum	223.2	247.4	233.6	235.1	207.2	215.1	233.1
Minimum	215.8	233.2	218.0	229.6	194.4	203.8	213.2

(6) Study on third country products

In Bhutan, after-sale service is provided through Indian agents for almost all the equipment. For X-ray systems and biochemical analyzers, etc., the Ministry of Health and Education concludes an annual maintenance service agreement with an agent. The 16 units of X-ray systems disposed in the whole country, for which maintenance service agreement is concluded, are all working normally and are very well maintained. For procurement of ultrasound scanner of which procurement is planned in this project, it is preferred to conclude a similar maintenance agreement.

The following table indicates a list of agents for third-country products in India. Only one agent has a service base in Bhutan, while the greater part of agents have service bases in Calcutta (approximately an hour-flight to Bhutan), and they provide such maintenance services as supply of spare parts and consumables after procurement of the equipment.

Table 2-3 Local Agent of Medical Equipment in Bhutan and India

Company	Products	Service to Bhutan		Remarks
		base	engineer	
Nicolas Piramal	Equipment for medical analysis	Calcutta	5 persons	This company is under maintenance contract of biochemical analyzer with MOHE.
Surgical Export Corporation	Figures and models for medical education	Paro (Bhutan)	-	There are 4 engineers at the workshop in New Delhi.
Usha Drager	Incubator, Ventilator, Anesthesia	Calcutta	3 persons	
Nat Steel Equipment	High pressure steam sterilizer	Calcutta	5 persons	Equipment made in India. Abundant sales result.
Wipro GE Medical System	X-ray system, Ultrasound scanner	Calcutta	9 persons	This company had business in Bhutan in the past.
Yorco Sales	High pressure steam sterilizer	Delhi	10 persons	Equipment made in India. Abundant sales result.
Siemens	X-ray system, Ultrasound scanner	Calcutta	27 persons	This company is under maintenance contract of X-ray system with MOHE.
Delhi Hospital Supply	Incubator, Infant warmer, Phototherapy unit	Calcutta	2 persons	
Wipro Biomed	Equipment for medical examination	Calcutta	4 persons	
Shimadzu	X-ray system, Ultrasound scanner, Equipment for medical examination	Calcutta	5 persons Analyzer(3) Ultrasound(2)	Local corporation

Company	Products	Service to Bhutan		Remarks
		base	engineer	
PES Insulation	Incubator, Infant warmer, Phototherapy unit	Delhi	5 persons	
Vishal Surgical Equipment	Incubator, Infant warmer, Phototherapy unit	Delhi	4 persons	
Instruments Corporation and Agencies	Centrifuge	Delhi	4 persons	
Towa Optics	Microscope	Calcutta	2 persons	

2-2-3 Necessity of Technical Cooperation

From the technical viewpoint, the equipment to be procured under this plan can be operated and maintained by the hospital's current capability of medical staff, because most of those are for renewal and supplementation of the equipment currently available in the designated facilities.

Even though it is the renewed equipment such as infant incubator, ECG and ultrasound scanner, for which operating method is deemed to be different from the existing ones, a training course to the technicians of Bhutan will be provided on its operation at the time of installation of the equipment and after implementation of this project. The new operating techniques can be acquired sufficiently well through the training. Accordingly, technical cooperation from the Japanese side under this project is not necessary.

2-3 Basic Design

2-3-1 Design Concept

(1) Policy on natural condition

Dust proof, wet proof and high-temperature resistance are considered to the selection of equipment, as the project sites are located in mountainous areas along Himalayan mountains where is high in the temperature gradient.

And it is necessary to promote such a work plan as the term of works, especially the terms of delivery, to keep away from winter season (around from December to March) when the temperature is very low and the roads are sometimes frozen in some areas. Since delivery of equipment in winter season seems to be difficult, the delivery should be made later than the middle of March when the temperature rises.

(2) Policy on social background

In Bhutan, the 80% of parturitions still take place at home. It is scarcely to call in a doctor or a trained specialist for the parturition, and most of those parturitions are made with the help of her husband and mother-in-law. This is according to the customs of Bhutan. Such geographical environment of whom living in the areas not easily accessible to a medical facility, and such poor function of medical service system that any transportation means (e.g. vehicle) and enough medical equipment are not secured for a specialist such as midwife to make a house call, are also other factors of increasing such parturition cases. In order to meet such a situation, procurement of ambulance and equipment carried for a house call (normal delivery pack, sphygmomanometer, stethoscope, etc.) is promoted under this project.

(3) Policy on procurement of equipment

If the equipment requires consumables, the model of which consumables can be procured in the local market or the market of India shall be selected. Moreover, it shall be proposed to make a maintenance contract with a local

agent of the manufacturer established in India or Thailand, for the precision machines that require regular maintenance, i.e. ultrasonic diagnostic equipment, etc.

(4) Policy on maintenance ability of agency

It is difficult to repair some special medical equipment in HERM and the hospital side, such as X-ray apparatus. In such a case, the model that the local service system has been established shall be selected. In choice of equipment, it is taken into consideration that the manufacturer's agent is disposed in an accessible county to Bhutan, such as India.

(5) Policy on range and grade of procuring equipment

① It is assumed to be a procurement plan to supply equipment mainly for the disease diagnosis and treatment for pregnant women and infants.

② The specifications of the existing equipment are assumed to be a standard bench mark for equipment selection in this project.

(6) Policy to work periods

The term of works of the project shall be within 10.4 months after the Exchange of Notes is concluded between both governments.

2-3-2 Basic Design

(1) Overall Plan

1) Design concept

This project aims at improving the health and medical services for mothers and children in Bhutan, and the basic design will be made according to the following policies:

【Design policy on demand】

① The procuring equipment shall be used directly for diagnosis or treatment of diseases and shall not be used for experimental medicine or research.

② The procuring equipment shall be principally renewal or supplementation of the existing equipment that does not accomplish its original function for superannuating.

【Design policy on financial aspects】

① The operating cost after introduction of the procuring equipment shall be comparatively cheap so that the recipient facilities can maintain it economically.

② The scale of the project shall be within a scope that the operating cost to the procuring equipment can be covered within the limits of the current funds for the equipment operation and maintenance. In case the scope of the operating cost for the planned equipment is by far exceeded (applying such criteria as the economic growth, rate of price increases, and rate of budgetary growth) as a result of a financial analysis, the planned equipment should be reduced to a level of which the operating cost can be borne by the side of Bhutan.

③ The scale of the project shall be operable by the administrative capacity of each facility and in the range where their financial and technological sustainability is secured. (The equipment which requires expensive consumables after its installation, is not selected under this project.)

【Design policy on technological aspects】

① The procuring equipment shall not require any special training for its operation and is possible to deal with existing workers and technological level.

【Design policy on aspects of infrastructure and natural condition】

① The planned equipment should have performances resistible to the natural conditions of climate of the mountainous areas in Bhutan, i.e. cold and humid.

② The disposition of an uninterruptible power supply (UPS) shall be planned for the equipment that continuously needs the stable electric power such as ultrasound scanner, in order to defend the equipment from fluctuation of electric displacement.

③ To evade breakdown of the equipment by fluctuation of the voltage, the disposition of an automatic voltage regulator (AVR) coping with the voltage fluctuation at ±15%, shall be considered for some electronic medical equipment.
(Either slide type or thyristor type will be adopted for this AVR to control instantaneous rush current at the time of recovery from a power failure.)

④ To avoid influences of hard water on the equipment, a water softener will be incorporated, depending on the hardness of the supply water.

【Design policy on procurement plan】

① For the planned equipment, arrangement of minimum required consumables may be planned, necessary for operation (the time gap between placing of order and delivery: 3～6 months) after implementation of the project.

② As for ultrasound scanner, high-pressure sterilizer and equipment used in operation rooms, procurement from third countries (Europe, U.S.A. & India) shall be considered. However, the followings should be ensured that the medical technicians in the local areas have a thorough knowledge of the operation, and that maintenance and control system by a local agent are already established, as well as superiority in the matter of prices.

【Design policy on environment and others】

① The regulations on exhaust fumes are enforced in Bhutan. Import of used cars, which exhaust fumes are exceeded the criterion, is prohibited according to the regulations. For the selection of vehicle, the model which meets the Bhutan standard of exhaust fumes shall be selected.

【Design policy on operation and maintenance】

① The equipment that can be maintained by current capacity of those technicians of the Ministry of Health and Education (HERM) or the local agents of manufacturers in surrounding countries such as India, shall be procured.

② Ultrasound scanner of which procurement is planned, requires maintenance by either the manufacturer or its local agent. It is preferable to conclude a maintenance contract with the manufacturer or the agent for the services thereafter. The budgetary allocation by the recipient country shall be proposed.

③ Operation and regular maintenance training for the technicians of HERM and the persons in charge at each project facility shall be required at the occasion of delivery and installation. Especially, for the main equipment such as ultrasound scanner and high pressure steam sterilizer, the engineer of manufacturer or its agent shall hold training on the operation and maintenance.

④ In principle, the instruction manual for the procuring equipment shall be presented in English language. Especially, for the equipment which needs detailed instruction for its operation and daily maintenance (Infant incubator, High pressure steam sterilizer, Ultrasound scanner), the operation manuals must be supplied in form of those packed in a case and appended to the equipment.

2) Selection of equipment

According to the design concepts and policies above-mentioned, effectiveness on the project target scheduled by Bhutani side, exigency of needs and financial conditions were discussed, and the following "Basic Criteria for Selecting the Equipment" were established. Adequacy, necessity, and the quantity of disposed equipment were analyzed according to this principle, and the result was shown at table 2-5.

【Basic Criteria for Selecting the Equipment】

《Criteria for giving high priority》

(a) Equipment that is to be a replacement of the existing but old and decrepit equipment.
(b) Equipment that is to be a supplementation for the equipment lacking distinctly in its quantity.
(c) Equipment that is required for basic hospital treatment and diagnosis.
(d) Equipment that is easy to operate and maintain.

《Criteria for giving low priority》

(e) Equipment that requires high operation and maintenance cost.
(f) Equipment that has limited benefits and effects to the hospital.
(g) Equipment that is low cost-effective.
(h) Equipment that the recipient has more than minimum required quantity (or inefficient/redundant equipment).

Selection of equipment was made by the above-mentioned procedure and the result was shown as follows.

Comprehensive evaluation: ○ ·····Acceptable
× ·····Not acceptable

The following equipment is excluded from the "Equipment List", confirmed by both the Ministry of Health and Education and the consultant after signing of minutes according to the criteria aforementioned.

Table 2-4 Reason of Equipment Excluded from Procurement Plan

NO	Equipment	Q'ty	Reason of Exclusion
B-4-A	Ultrasound scanner	1	This equipment has recently been procured in Yebilabtsa Hospital under a program of other development assistance agency. Accordingly, this was excluded from the procurement list under this project.
B-12-A	High pressure steam sterilizer (horizontal type)	1	A vertical type which does not require any installation work will be procured instead of a horizontal type which needs installation work, because no field verification has been made.
B-15	Photometer	1	As a result of an analysis made in Bhutan, operation of this equipment was judged as impossible with the current technical level at the designated facility.
RIHS-10	OHP	1	At the time of the field survey, it was explained that 2 units out of 4 were in trouble. However, it was found with later investigation that actually in trouble were 2 units out of 8. The number of classrooms requiring projector in the facility concerned is 7, and one of them is already provided with a computer slide projector. So, the 6 projectors to be disposed in the remaining 6 classrooms are already owned by the facility. For that reason, this equipment was excluded from the scope of supply under this project.

Table 2-5 Requested Equipment List

Item No.	Description	RIHS A.				HERM B.				JDWNR Hospital C.				Mongar Hospital D.				Yebilabtsa Hospital E.			
		Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned
A-1	Height scale	0	-	×	0	0	-	×	0	1	AD	○	1	1	AD	○	1	1	AD	○	1
A-2-A	Weighing scale, automatic	0	-	×	0	0	-	×	0	1	AD	○	1	1	AD	○	1	1	AD	○	1
A-2-B	Weighing scale (Health meter)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
A-3	Delivery bed	0	-	×	0	0	-	×	0	2	BC	○	2	1	AC	○	1	1	AC	○	1
A-4	Instrument cabinet	0	-	×	0	0	-	×	0	1	AD	○	1	1	AD	○	1	1	AD	○	1
A-5	Kerry pad	0	-	×	0	0	-	×	0	1	AB	○	1	1	AB	○	1	1	AB	○	1
A-6	Magnal board	0	-	×	0	0	-	×	0	2	AB	○	2	2	AB	○	2	2	AB	○	2
A-7	Neonatal resuscitation pack	0	-	×	0	0	-	×	0	2	AC	○	2	2	AC	○	2	2	AC	○	2
A-8	Normal delivery pack	0	-	×	0	0	-	×	0	4	AB	○	4	4	AB	○	4	4	AB	○	4
A-9	Obstetric stethoscope	0	-	×	0	0	-	×	0	2	AC	○	2	2	AC	○	2	2	AC	○	2
A-10	Electric thermometer	0	-	×	0	0	-	×	0	2	BC	○	2	2	BC	○	2	2	BC	○	2
A-11	Infant laryngoscope	0	-	×	0	0	-	×	0	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-12	Infant weighing scale	0	-	×	0	0	-	×	0	1	AC	○	1	1	AC	○	1	1	AC	○	1
A-13	Diagnostic apparatus set	0	-	×	0	0	-	×	0	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-14	Examination lamp	0	-	×	0	0	-	×	0	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-15-A	Sphygmomanometer, mercury type	0	-	×	0	0	-	×	0	2	AB	○	2	2	AB	○	2	2	AB	○	2
A-15-B	Sphygmomanometer, aneroid type	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
A-16	Stethoscope	0	-	×	0	0	-	×	0	2	AB	○	2	2	AB	○	2	2	AB	○	2
A-17	Autoclave, table top	0	-	×	0	0	-	×	0	0	-	×	0	1	AC	○	1	1	AC	○	1
A-18	Blood sedimentation set	0	-	×	0	0	-	×	0	0	-	×	0	1	BC	○	1	1	BC	○	1
A-19	Centrifuge	0	-	×	0	0	-	×	0	0	-	×	0	1	AC	○	1	1	AC	○	1
A-20	Hemo meter	0	-	×	0	0	-	×	0	0	-	×	0	1	AB	○	1	1	AB	○	1
A-21	Hemacytometer set	0	-	×	0	0	-	×	0	0	-	×	0	1	BC	○	1	1	BC	○	1
A-22	Microscope binocular	0	-	×	0	0	-	×	0	1	AB	○	1	1	BC	○	1	1	BC	○	1
B-1	Boiling sterilizer	0	-	×	0	0	-	×	0	0	-	×	0	1	AC	○	1	0	-	×	0
B-2	Fetal doppler	0	-	×	0	0	-	×	0	2	BC	○	2	1	BC	○	1	1	BC	○	1
B-3	Obstetric Laparotomy/caesarean section pack	0	-	×	0	0	-	×	0	1	AB	○	1	1	AB	○	1	1	AB	○	1
B-4-A	Ultrasound scanner, with cart	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	1	H	×	0
B-4-B	Ultrasound scanner, portable	0	-	×	0	0	-	×	0	1	BC	○	1	0	-	×	0	0	-	×	0
B-5-A	Vacuum extractor (Electric Type)	0	-	×	0	0	-	×	0	1	AC	○	1	1	AC	○	1	0	-	×	0
B-5-B	Vacuum extractor (Manual Type)	1	BD	○	1	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-6	Infant incubator	0	-	×	0	0	-	×	0	1	AC	○	1	0	-	×	0	0	-	×	0
B-7	Infant warmer	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-8	Phototherapy unit	0	-	×	0	0	-	×	0	0	-	×	0	1	AC	○	1	0	-	×	0
B-9	Colposcope	0	-	×	0	0	-	×	0	1	BC	○	1	1	BC	○	1	1	BC	○	1
B-10	ECG	0	-	×	0	0	-	×	0	1	BC	○	1	1	BC	○	1	1	BC	○	1
B-11	Examination table	0	-	×	0	0	-	×	0	0	-	×	0	1	AB	○	1	1	AB	○	1
B-12-A	High press. steam sterilizer (horiz.)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-12-B	High press. steam sterilizer (vertical)	0	-	×	0	0	-	×	0	1	BC	○	1	1	BC	○	1	1	BC	○	1
B-13	Glass ware set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	1	BC	○	1
B-14	Hot air sterilizer	0	-	×	0	0	-	×	0	1	AC	○	1	0	-	×	0	1	AC	○	1

Item No.	Description	RIHS A.				HERM B.				JDWNR Hospital C.				Mongar Hospital D.				Yebilabtsa Hospital E.			
		Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned
B-15	Photometer	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	1	EF	×	0
B-16	Water bath	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	1	AC	○	1
B-17	Ambulance	0	-	×	0	0	-	×	0	0	-	×	0	1	AC	○	1	0	-	×	0
B-18	Power generator, portable	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
JDWNR-21	Autoclave (bottle sterilizer)	0	-	×	0	0	-	×	0	1	AC	○	1	0	-	×	0	0	-	×	0
JDWNR-22	Automatic slide stainer	0	-	×	0	0	-	×	0	1	EF	×	0	0	-	×	0	0	-	×	0
JDWNR-26	Uterine evacuation kit	0	-	×	0	0	-	×	0	2	AC	○	2	0	-	×	0	0	-	×	0
RIHS-1	Pelvis for copper T insertion set	1	AB	○	1	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-2	Pelvis for delivery set	1	AB	○	1	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-3	Pelvis for procedures set	1	AB	○	1	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-4	Adult doll for nursing procedure	2	AB	○	2	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-5	Blood collection and intravenos injection simulator	1	CD	○	1	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-6	Microscope slide set	1	BD	○	1	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-8	Baby CPR set	1	AB	○	1	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-9	Adult CPR set	1	AB	○	1	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-10	OHP	1	FH	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-11	Video tape set (Software)	0	GH	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-12	Slide set (Software)	0	GH	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
HERM-1	Maintenance tool set	0	-	×	0	1	AB	○	1	0	-	×	0	0	-	×	0	0	-	×	0

Item No.	Description	Bumthang Hospital F.				Tsimalakha Hospital G.				Phuntsholing Hospital H.				Lhuntse Hospital I.				Paro Hospital J.			
		Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned
A-1	Height scale	1	AD	○	1	1	AD	○	1	1	AD	○	1	1	AD	○	1	1	AD	○	1
A-2-A	Weighing scale, automatic	1	AD	○	1	1	AD	○	1	1	AD	○	1	1	AD	○	1	1	AD	○	1
A-2-B	Weighing scale (Health meter)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
A-3	Delivery bed	1	AC	○	1	1	AC	○	1	1	BC	○	1	1	AC	○	1	1	AC	○	1
A-4	Instrument cabinet	1	AD	○	1	1	AD	○	1	1	AD	○	1	1	AD	○	1	1	AD	○	1
A-5	Kerry pad	1	AB	○	1	1	AB	○	1	1	AB	○	1	1	AB	○	1	1	AB	○	1
A-6	Magnal board	2	AB	○	2	2	AB	○	2	2	AB	○	2	2	AB	○	2	2	AB	○	2
A-7	Neonatal resuscitation pack	2	AC	○	2	2	AC	○	2	2	AC	○	2	2	AC	○	2	2	AC	○	2
A-8	Normal delivery pack	4	AB	○	4	4	AB	○	4	4	AB	○	4	4	AB	○	4	4	AB	○	4
A-9	Obstetric stethoscope	2	AC	○	2	2	AC	○	2	2	AC	○	2	2	AC	○	2	2	AC	○	2
A-10	Electric thermometer	2	BC	○	2	2	BC	○	2	2	BC	○	2	2	BC	○	2	2	BC	○	2
A-11	Infant laryngoscope	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-12	Infant weighing scale	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1
A-13	Diagnostic apparatus set	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-14	Examination lamp	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-15-A	Sphygmomanometer, mercury type	2	AB	○	2	2	AB	○	2	1	AB	○	1	2	AB	○	2	2	AB	○	2
A-15-B	Sphygmomanometer, aneroid type	0	-	×	0	0	-	×	0	1	BC	○	1	0	-	×	0	0	-	×	0
A-16	Stethoscope	2	AB	○	2	2	AB	○	2	2	AB	○	2	2	AB	○	2	2	AB	○	2
A-17	Autoclave, table top	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1
A-18	Blood sedimentation set	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-19	Centrifuge	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1
A-20	Hemo meter	1	AB	○	1	1	AB	○	1	1	AB	○	1	1	AB	○	1	1	AB	○	1
A-21	Hemacytometer set	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-22	Microscope binocular	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1
B-1	Boiling sterilizer	1	AC	○	1	0	-	×	0	1	AC	○	1	1	AC	○	1	1	AC	○	1
B-2	Fetal doppler	0	-	×	0	1	BC	○	1	1	BC	○	1	0	-	×	0	1	BC	○	1
B-3	Obstetric Laparotomy/caesarean section pack	0	-	×	0	0	-	×	0	1	AB	○	1	0	-	×	0	0	-	×	0
B-4-A	Ultrasound scanner, with cart	0	-	×	0	0	-	×	0	1	BC	○	1	0	-	×	0	0	-	×	0
B-4-B	Ultrasound scanner, portable	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-5-A	Vacuum extractor (Electric Type)	0	-	×	0	0	-	×	0	1	AC	○	1	0	-	×	0	0	-	×	0
B-5-B	Vacuum extractor (Manual Type)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-6	Infant incubator	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-7	Infant warmer	0	-	×	0	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1
B-8	Phototherapy unit	0	-	×	0	1	AC	○	1	1	AC	○	1	0	-	×	0	1	AC	○	1
B-9	Colposcope	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-10	ECG	0	-	×	0	0	-	×	0	1	BC	○	1	0	-	×	0	0	-	×	0
B-11	Examination table	0	-	×	0	0	-	×	0	1	AB	○	1	0	-	×	0	0	-	×	0
B-12-A	High press. steam sterilizer (horiz.)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-12-B	High press. steam sterilizer (vertical)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-13	Glass ware set	0	-	×	0	1	BC	○	1	1	BC	○	1	0	-	×	0	0	-	×	0
B-14	Hot air sterilizer	0	-	×	0	1	AC	○	1	1	AC	○	1	0	-	×	0	0	-	×	0

Item No.	Description	Bumthang Hospital F.				Tsimalakha Hospital G.				Phuntsholing Hospital H.				Lhuntse Hospital I.				Paro Hospital J.			
		Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned
B-15	Photometer	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-16	Water bath	0	-	×	0	1	AC	○	1	1	AC	○	1	0	-	×	0	0	-	×	0
B-17	Ambulance	0	-	×	0	0	-	×	0	1	AC	○	1	1	AC	○	1	0	-	×	0
B-18	Power generator, portable	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
JDWNR-21	Autoclave (bottle sterilizer)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
JDWNR-22	Automatic slide stainer	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
JDWNR-26	Uterine evacuation kit	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-1	Pelvis for copper T insertion set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-2	Pelvis for delivery set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-3	Pelvis for procedures set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-4	Adult doll for nursing procedure	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-5	Blood collection and intravenos injection simulator	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-6	Microscope slide set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-8	Baby CPR set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-9	Adult CPR set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-10	OHP	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-11	Video tape set (Software)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-12	Slide set (Software)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
HERM-1	Maintenance tool set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0

Item No.	Description	Punakha Hospital K.				Samtse Hospital L.				Gomtu Hospital M.				Sibsoo Hospital N.				Gidakom Hospital O.			
		Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned
A-1	Height scale	1	AD	○	1	1	AD	○	1	1	AD	○	1	1	AD	○	1	1	AD	○	1
A-2-A	Weighing scale, automatic	1	AD	○	1	1	AD	○	1	1	AD	○	1	1	AD	○	1	1	AD	○	1
A-2-B	Weighing scale (Health meter)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
A-3	Delivery bed	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1
A-4	Instrument cabinet	1	AD	○	1	1	AD	○	1	1	AD	○	1	1	AD	○	1	1	AD	○	1
A-5	Kerry pad	1	AB	○	1	1	AB	○	1	1	AB	○	1	1	AB	○	1	1	AB	○	1
A-6	Magnal board	2	AB	○	2	2	AB	○	2	2	AB	○	2	2	AB	○	2	2	AB	○	2
A-7	Neonatal resuscitation pack	2	AC	○	2	2	AC	○	2	2	AC	○	2	2	AC	○	2	2	AC	○	2
A-8	Normal delivery pack	4	AB	○	4	4	AB	○	4	4	AB	○	4	4	AB	○	4	4	AB	○	4
A-9	Obstetric stethoscope	2	AC	○	2	2	AC	○	2	2	AC	○	2	2	AC	○	2	2	AC	○	2
A-10	Electric thermometer	2	BC	○	2	2	BC	○	2	2	BC	○	2	2	BC	○	2	2	BC	○	2
A-11	Infant laryngoscope	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-12	Infant weighing scale	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1
A-13	Diagnostic apparatus set	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-14	Examination lamp	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-15-A	Sphygmomanometer, mercury type	2	AB	○	2	2	AB	○	2	2	AB	○	2	2	AB	○	2	1	AB	○	1
A-15-B	Sphygmomanometer, aneroid type	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	1	-	○	1
A-16	Stethoscope	2	AB	○	2	2	AB	○	2	2	AB	○	2	2	AB	○	2	2	AB	○	2
A-17	Autoclave, table top	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1
A-18	Blood sedimentation set	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-19	Centrifuge	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1
A-20	Hemo meter	1	AB	○	1	1	AB	○	1	1	AB	○	1	1	AB	○	1	1	AB	○	1
A-21	Hemacytometer set	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-22	Microscope binocular	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1
B-1	Boiling sterilizer	0	-	×	0	1	AC	○	1	0	-	×	0	1	AC	○	1	0	-	×	0
B-2	Fetal doppler	1	BC	○	1	1	BC	○	1	1	BC	○	1	0	-	×	0	0	-	×	0
B-3	Obstetric Laparotomy/caesarean section pack	0	-	×	0	1	AB	○	1	0	-	×	0	0	-	×	0	0	-	×	0
B-4-A	Ultrasound scanner, with cart	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-4-B	Ultrasound scanner, portable	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-5-A	Vacuum extractor (Electric Type)	0	-	×	0	1	AC	○	1	0	-	×	0	0	-	×	0	0	-	×	0
B-5-B	Vacuum extractor (Manual Type)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	1	BD	○	1
B-6	Infant incubator	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-7	Infant warmer	0	-	×	0	1	AC	○	1	1	AC	○	1	0	-	×	0	1	AC	○	1
B-8	Phototherapy unit	0	-	×	0	1	AC	○	1	1	AC	○	1	0	-	×	0	0	-	×	0
B-9	Colposcope	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-10	ECG	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-11	Examination table	0	-	×	0	1	AB	○	1	0	-	×	0	0	-	×	0	0	-	×	0
B-12-A	High press. steam sterilizer (horiz.)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-12-B	High press. steam sterilizer (vertical)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-13	Glass ware set	1	BC	○	1	0	-	×	0	1	BC	○	1	0	-	×	0	1	BC	○	1
B-14	Hot air sterilizer	0	-	×	0	0	-	×	0	1	AC	○	1	0	-	×	0	1	AC	○	1

Item No.	Description	Punakha Hospital K.				Samtse Hospital L.				Gomtu Hospital M.				Sibsoo Hospital N.				Gidakom Hospital O.			
		Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned
B-15	Photometer	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-16	Water bath	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	1	AC	○	1
B-17	Ambulance	0	-	×	0	1	AC	○	1	0	-	×	0	0	-	×	0	0	-	×	0
B-18	Power generator, portable	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
JDWNR-21	Autoclave (bottle sterilizer)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
JDWNR-22	Automatic slide stainer	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
JDWNR-26	Uterine evacuation kit	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-1	Pelvis for copper T insertion set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-2	Pelvis for delivery set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-3	Pelvis for procedures set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-4	Adult doll for nursing procedure	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-5	Blood collection and intravenos injection simulator	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-6	Microscope slide set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-8	Baby CPR set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-9	Adult CPR set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-10	OHP	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-11	Video tape set (Software)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-12	Slide set (Software)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
HERM-1	Maintenance tool set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0

Item No.	Description	Trashigang Hospital P.				Riserboo Hospital Q.				Trashi Yangtse Hospital R.				Trongsa Hospital S.				Damphu Hospital T.			
		Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned
A-1	Height scale	1	AD	○	1	1	AD	○	1	1	AD	○	1	1	AD	○	1	1	AD	○	1
A-2-A	Weighing scale, automatic	1	AD	○	1	1	AD	○	1	1	AD	○	1	1	AD	○	1	1	AD	○	1
A-2-B	Weighing scale (Health meter)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
A-3	Delivery bed	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1
A-4	Instrument cabinet	1	AD	○	1	1	AD	○	1	1	AD	○	1	1	AD	○	1	1	AD	○	1
A-5	Kerry pad	1	AB	○	1	1	AB	○	1	1	AB	○	1	1	AB	○	1	1	AB	○	1
A-6	Magnal board	2	AB	○	2	2	AB	○	2	2	AB	○	2	2	AB	○	2	2	AB	○	2
A-7	Neonatal resuscitation pack	2	AC	○	2	2	AC	○	2	2	AC	○	2	2	AC	○	2	2	AC	○	2
A-8	Normal delivery pack	4	AB	○	4	4	AB	○	4	4	AB	○	4	4	AB	○	4	4	AB	○	4
A-9	Obstetric stethoscope	2	AC	○	2	2	AC	○	2	2	AC	○	2	2	AC	○	2	2	AC	○	2
A-10	Electric thermometer	2	BC	○	2	2	BC	○	2	2	BC	○	2	2	BC	○	2	2	BC	○	2
A-11	Infant laryngoscope	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-12	Infant weighing scale	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1
A-13	Diagnostic apparatus set	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-14	Examination lamp	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-15-A	Sphygmomanometer, mercury type	2	AB	○	2	1	AB	○	1	2	AB	○	2	2	AB	○	2	2	AB	○	2
A-15-B	Sphygmomanometer, aneroid type	0	-	×	0	1	-	○	1	0	-	×	0	0	-	×	0	0	-	×	0
A-16	Stethoscope	2	AB	○	2	2	AB	○	2	2	AB	○	2	2	AB	○	2	2	AB	○	2
A-17	Autoclave, table top	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1
A-18	Blood sedimentation set	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-19	Centrifuge	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1
A-20	Hemo meter	1	AB	○	1	1	AB	○	1	1	AB	○	1	1	AB	○	1	1	AB	○	1
A-21	Hemacytometer set	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-22	Microscope binocular	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1	1	BC	○	1
B-1	Boiling sterilizer	1	AC	○	1	1	AC	○	1	1	AC	○	1	1	AC	○	1	0	-	×	0
B-2	Fetal doppler	1	BC	○	1	1	BC	○	1	0	-	×	0	0	-	×	0	1	BC	○	1
B-3	Obstetric Laparotomy/caesarean section pack	1	AB	○	1	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-4-A	Ultrasound scanner, with cart	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-4-B	Ultrasound scanner, portable	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-5-A	Vacuum extractor (Electric Type)	1	AC	○	1	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-5-B	Vacuum extractor (Manual Type)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	1	BD	○	1
B-6	Infant incubator	1	AC	○	1	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-7	Infant warmer	1	AC	○	1	0	-	×	0	1	AC	○	1	0	-	×	0	1	AC	○	1
B-8	Phototherapy unit	1	AC	○	1	0	-	×	0	1	AC	○	1	0	-	×	0	1	AC	○	1
B-9	Colposcope	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-10	ECG	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-11	Examination table	0	-	×	0	1	AB	○	1	0	-	×	0	0	-	×	0	0	-	×	0
B-12-A	High press. steam sterilizer (horiz.)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-12-B	High press. steam sterilizer (vertical)	1	BC	○	1	1	BC	○	1	0	-	×	0	0	-	×	0	0	-	×	0
B-13	Glass ware set	1	BC	○	1	1	BC	○	1	0	-	×	0	0	-	×	0	0	-	×	0
B-14	Hot air sterilizer	0	-	×	0	1	AC	○	1	0	-	×	0	0	-	×	0	1	AC	○	1

Item No.	Description	Trashigang Hospital P.				Riserboo Hospital Q.				Trashi Yangtse Hospital R.				Trongsa Hospital S.				Damphu Hospital T.			
		Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned
B-15	Photometer	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-16	Water bath	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
B-17	Ambulance	1	AC	○	1	0	-	×	0	0	-	×	0	0	-	×	0	1	AC	○	1
B-18	Power generator, portable	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
JDWNR-21	Autoclave (bottle sterilizer)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
JDWNR-22	Automatic slide stainer	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
JDWNR-26	Uterine evacuation kit	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-1	Pelvis for copper T insertion set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-2	Pelvis for delivery set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-3	Pelvis for procedures set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-4	Adult doll for nursing procedure	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-5	Blood collection and intravenos injection simulator	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-6	Microscope slide set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-8	Baby CPR set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-9	Adult CPR set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-10	OHP	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-11	Video tape set (Software)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-12	Slide set (Software)	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0
HERM-1	Maintenance tool set	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0	0	-	×	0

Item No.	Description	Bajotang BHU U.				Bali BHU V.				Daga BHU W.			
		Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned
A-1	Height scale	1	AD	○	1	1	AD	○	1	1	AD	○	1
A-2-A	Weighing scale, automatic	1	AD	○	1	0	-	×	0	1	AD	○	1
A-2-B	Weighing scale (Health meter)	0	-	×	0	1	AD	○	1	0	-	×	0
A-3	Delivery bed	1	AC	○	1	1	AC	○	1	1	AC	○	1
A-4	Instrument cabinet	1	AD	○	1	1	AD	○	1	1	AD	○	1
A-5	Kerry pad	1	AB	○	1	1	AB	○	1	1	AB	○	1
A-6	Magnal board	2	AB	○	2	2	AB	○	2	2	AB	○	2
A-7	Neonatal resuscitation pack	2	AC	○	2	2	AC	○	2	2	AC	○	2
A-8	Normal delivery pack	4	AB	○	4	4	AB	○	4	4	AB	○	4
A-9	Obstetric stethoscope	2	AC	○	2	2	AC	○	2	2	AC	○	2
A-10	Electric thermometer	2	BC	○	2	2	BC	○	2	2	BC	○	2
A-11	Infant laryngoscope	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-12	Infant weighing scale	1	AC	○	1	1	AC	○	1	1	AC	○	1
A-13	Diagnostic apparatus set	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-14	Examination lamp	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-15-A	Sphygmomanometer, mercury type	1	AB	○	1	1	AB	○	1	1	AB	○	1
A-15-B	Sphygmomanometer, aneroid type	1	-	○	1	1	-	○	1	1	-	○	1
A-16	Stethoscope	2	AB	○	2	2	AB	○	2	2	AB	○	2
A-17	Autoclave, table top	1	AC	○	1	1	AC	○	1	1	AC	○	1
A-18	Blood sedimentation set	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-19	Centrifuge	1	AC	○	1	1	AC	○	1	1	AC	○	1
A-20	Hemo meter	1	AB	○	1	1	AB	○	1	1	AB	○	1
A-21	Hemacytometer set	1	BC	○	1	1	BC	○	1	1	BC	○	1
A-22	Microscope binocular	0	-	×	0	1	BC	○	1	1	B C	○	1
B-1	Boiling sterilizer	0	-	×	0	0	-	×	0	0	-	×	0
B-2	Fetal doppler	0	-	×	0	0	-	×	0	0	-	×	0
B-3	Obstetric Laparotomy/caesarean section pack	0	-	×	0	0	-	×	0	0	-	×	0
B-4-A	Ultrasound scanner, with cart	0	-	×	0	0	-	×	0	0	-	×	0
B-4-B	Ultrasound scanner, portable	0	-	×	0	0	-	×	0	0	-	×	0
B-5-A	Vacuum extractor (Electric Type)	0	-	×	0	0	-	×	0	0	-	×	0
B-5-B	Vacuum extractor (Manual Type)	0	-	×	0	1	BD	○	1	1	BD	○	1
B-6	Infant incubator	0	-	×	0	0	-	×	0	0	-	×	0
B-7	Infant warmer	0	-	×	0	1	AC	○	1	0	-	×	0
B-8	Phototherapy unit	0	-	×	0	0	-	×	0	0	-	×	0
B-9	Colposcope	0	-	×	0	0	-	×	0	0	-	×	0
B-10	ECG	0	-	×	0	0	-	×	0	0	-	×	0
B-11	Examination table	0	-	×	0	0	-	×	0	0	-	×	0
B-12-A	High press. steam sterilizer (horiz.)	0	-	×	0	0	-	×	0	0	-	×	0
B-12-B	High press. steam sterilizer (vertical)	0	-	×	0	0	-	×	0	1	BC	○	1
B-13	Glass ware set	1	BC	○	1	1	BC	○	1	0	-	×	0
B-14	Hot air sterilizer	0	-	×	0	1	AC	○	1	0	-	×	0

Item No.	Description	Bajotang BHU U.				Bali BHU V.				Daga BHU W.			
		Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned	Quantity Requested	Criteria for Priority	Eval.	Quantity Planned
B-15	Photometer	0	-	×	0	0	-	×	0	0	-	×	0
B-16	Water bath	0	-	×	0	1	AC	○	1	0	-	×	0
B-17	Ambulance	1	AC	○	1	0	-	×	0	0	-	×	0
B-18	Power generator, portable	0	-	×	0	0	-	×	0	0	-	×	0
JDWNR-21	Autoclave (bottle sterilizer)	0	-	×	0	0	-	×	0	0	-	×	0
JDWNR-22	Automatic slide stainer	0	-	×	0	0	-	×	0	0	-	×	0
JDWNR-26	Uterine evacuation kit	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-1	Pelvis for copper T insertion set	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-2	Pelvis for delivery set	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-3	Pelvis for procedures set	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-4	Adult doll for nursing procedure	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-5	Blood collection and intravenos injection simulator	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-6	Microscope slide set	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-8	Baby CPR set	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-9	Adult CPR set	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-10	OHP	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-11	Video tape set (Software)	0	-	×	0	0	-	×	0	0	-	×	0
RIHS-12	Slide set (Software)	0	-	×	0	0	-	×	0	0	-	×	0
HERM-1	Maintenance tool set	0	-	×	0	0	-	×	0	0	-	×	0

(2) Equipment Plan

1) Equipment Procurement Plan

Based on the above examination and evaluation, the planned equipment for this project is listed in Table 2-6 "Equipment Procurement Plan".

Table 2-6 Equipment Procurement Plan

Item No.	Description	Total Q'ty	RIHS	HERM	JDWNR Hospital	Mongar Hospital	Yebilabtsa Hospital	Bumthang Hospital	Tsimalakha Hospital	Phuntsholing Hospital	Lhuntse Hospital	Paro Hospital	Punakha Hospital	Samtse Hospital	Gomtu Hospital	Sibsoo Hospital	Gidakom Hospital	Trashigang Hospital	Riserboo Hospital	Trashi Yangtse Hospital	Trongsa Hospital	Damphu Hospital	Bajotang BHU	Bali BHU	Daga BHU
			A.	B.	C.	D.	E.	F.	G.	H.	I.	J.	K.	L.	M.	N.	O.	P.	Q.	R.	S.	T.	U.	V.	W.
A-1	Height scale	21	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
A-2-A	Weighing scale, automatic	20	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
A-2-B	Weighing scale (Health meter)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
A-3	Delivery bed	22	0	0	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
A-4	Instrument cabinet	21	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
A-5	Kerry pad	21	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
A-6	Magnal board	42	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
A-7	Neonatal resuscitation pack	42	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
A-8	Normal delivery pack	84	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
A-9	Obstetric stethoscope	42	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
A-10	Electric thermometer	42	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
A-11	Infant laryngoscope	21	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
A-12	Infant weighing scale	21	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
A-13	Diagnostic apparatus set	21	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
A-14	Examination lamp	21	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
A-15-A	Sphygmomanometer, mercury type	36	0	0	2	2	2	2	2	1	2	2	2	2	2	2	1	2	1	2	2	2	1	1	1
A-15-B	Sphygmomanometer, aneroid type	6	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0	1	1	1
A-16	Stethoscope	42	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
A-17	Autoclave, table top	20	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
A-18	Blood sedimentation set	20	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
A-19	Centrifuge	20	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
A-20	Hemo meter	20	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
A-21	Hemacytometer set	20	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
A-22	Microscope binocular	20	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
B-1	Boiling sterilizer	11	0	0	0	1	0	1	0	1	1	1	0	1	0	1	0	1	1	1	1	0	0	0	0
B-2	Fetal doppler	13	0	0	2	1	1	0	1	1	0	1	1	1	1	0	0	1	1	0	0	1	0	0	0
B-3	Obstetric Laparotomy/caesarean section pack	6	0	0	1	1	1	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0
B-4-A	Ultrasound scanner, with cart	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-4-B	Ultrasound scanner, portable	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-5-A	Vacuum extractor (Electric Type)	5	0	0	1	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0

Item No.	Description	Total Q'ty	RIHS	HERM	JDWNR Hospital	Mongar Hospital	Yebilabtsa Hospital	Bumthang Hospital	Tsimalakha Hospital	Phuntsholing Hospital	Lhuntse Hospital	Paro Hospital	Punakha Hospital	Samtse Hospital	Gomtu Hospital	Sibsoo Hospital	Gidakom Hospital	Trashigang Hospital	Riserboo Hospital	Trashi Yangtse Hospital	Trongsa Hospital	Damphu Hospital	Bajotang BHU	Bali BHU	Daga BHU
			A.	B.	C.	D.	E.	F.	G.	H.	I.	J.	K.	L.	M.	N.	O.	P.	Q.	R.	S.	T.	U.	V.	W.
B-5-B	Vacuum extractor (Manual Type)	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	1
B-6	Infant incubator	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
B-7	Infant warmer	11	0	0	0	0	0	0	1	1	1	1	0	1	1	0	1	1	0	1	0	1	0	1	0
B-8	Phototherapy unit	9	0	0	0	1	0	0	1	1	0	1	0	1	1	0	0	1	0	1	0	1	0	0	0
B-9	Colposcope	3	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-10	ECG	4	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-11	Examination table	5	0	0	0	1	1	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0
B-12-B	High pressure steam sterilizer (vertical type)	7	0	0	2	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
B-13	Glass ware set	10	0	0	0	0	1	0	1	1	0	0	1	0	1	0	1	1	1	0	0	0	1	1	0
B-14	Hot air sterilizer	9	0	0	1	0	1	0	1	1	0	0	0	0	1	0	1	0	1	0	0	1	0	1	0
B-16	Water bath	5	0	0	0	0	1	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
B-17	Ambulance	7	0	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	0	0	0	1	1	0	0
JDWNR-26	Uterine evacuation kit	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIHS-1	Pelvis for copper T insertion set	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIHS-2	Pelvis for delivery set	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIHS-3	Pelvis for procedures set	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIHS-4	Adult doll for nursing procedure	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIHS-5	Blood collection and intravenos injection simulator	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIHS-6	Microscope slide set	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIHS-8	Baby CPR set	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIHS-9	Adult CPR set	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HERM-1	Maintenance tool set	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	772	10	1	40	41	40	32	37	44	34	35	33	39	36	32	36	41	37	34	32	37	33	35	33

2) Specification of the main equipment

The detailed specifications of main equipment procured in the project are shown in the following Table 2-7.

Table 2-7 List of Main Equipment

NO.	Equipment	Specification	Classi-fication	Q'ty	Appreciations
B-4-A	Ultrasound scanner (with cart)	Display mode: B, M, B/M Monitor: 9 inch white and black Probe: Linear, Convex Adaptability: Detecting and observing the echoes of abdomen	Equipment for general purpose	1	It enables to diagnose pregnancy and the progress at Obstetrics.
B-4-B	Ultrasound scanner (portable)	Display mode: B, M, B/M Monitor: 9 inch white and black Probe: Linear, Convex Adaptability: Detecting and observing the echoes of abdomen Portable type	Equipment for general purpose	1	It enables to diagnose pregnancy and the progress at Obstetrics. Portable type is selected in order to be easily carried in obstetrics wards.
B-17	Ambulance	Driving method: 4WD Engine capacity: More than 3,000cc Body: Bonnet type Fuel: Light oil	Equipment for general purpose	7	It is used for transfer of serious cases to upper referral hospitals. 4WD vehicles are selected due to the geographical reason of mountainous reagion.

3) Equipment layout drawing

The layout drawings for main equipment in the designated facilities covered by the filed survey and the research through interview are given in the appendix 5.

Since this project mainly concerns renewal of the existing equipment, most of the procuring equipment units are to be replaced in the rooms where the old equipment is currently installed. For the facilities fallen from site survey list in this Basic Design Study, confirmation was made on the rooms where the procuring equipment is installed, the water supply & drainage and the power supply, through the research by interview in respect of replies submitted to a questionnaire.

Chapter 3. Implementation Plan

CHAPTER 3 IMPLEMENTATION PLAN

3-1 Implementation Plan

3-1-1 Implementation Concept

This project will be implemented officially in accordance with the grant aid framework of the Government of Japan after approval of both Japanese and Bhutan Governments and the conclusion of the Exchange of Notes (E/N). Prior to the implementation, a Japanese consulting company will be selected by the Bhutan side, and the company will commence their work for the approval of tender documents for equipment procurement. After completion of tender documents, a Japanese trading company which will be chosen by tender for the project will implement actual work of equipment procurement and installation. The contracts on the consultation and the equipment procurement will come into effect after verification of the Government of Japan.

For the implementation of the project conducted within the framework of the Japan's grant aid, the following items should be considered:

(1) The work schedule should be confirmed by both Japanese and Bhutan staff in charge. Both sides should clarify the scope of work and the starting and completion dates of each task to avoid confusion in mutual work plans.

(2) In order to shorten the work period as much as possible, the trading company must investigate the project facilities by 2 months before delivery of the equipment. The company also must check delivery routes, power supply, water supply and drainage, and prepare a delivery schedule.

(3) It is considered to take about 2.4 months for delivery and installation. Three technical expert teams will be sent in order to shorten the term of works.

(4) An instruction and training seminar will be held for Bhutan technicians, at which the trading company will teach operation and regular maintenance methods for the equipment other than instrument cabinet and surgery instrument set.

(5) As for the medical equipment such as ambulance, ultrasound scanner and high pressure steam sterilizer, which needs regular maintenance, sales engineers of the manufacturer of each equipment or the local agent will give instruction in its operation and maintenance at each facility.

(6) As for the equipment procured in Japan, Japanese engineer or Indian engineer (local agent) specializing in each electronic medical equipment and general medical equipment will give instruction in its operation.

3-1-2 Implementation Conditions

Taking into account that the project facilities are the medical facilities in practice, the delivery and installation procedures, such as installation schedule, delivery routes and depository of equipment, should be duly considered through the consultation with each project facility so that the daily medical activities may not be disturbed.

3-1-3 Scope of Works

(1) The scope of responsibility of the Japanese side for this project covers the procurement and subsequent set-up/installation of medical equipment for the 23 medical facilities, in accordance with the grant aid scheme. As the set-up/installation works and operating guidance are required at the respective facilities, the equipment shall not be delivered en bloc to the Ministry of Health and Education. The scope is limited to as described below:

1. The equipment that is shown in the requested equipment list aforementioned.
2. Expenses for ocean transport, land transport and domestic transport to the project facilities.
3. Expenses for installation of equipment (expenses for dispatch of engineers, local workers, tools and measuring meters).
4. Expenses for test runs, operating guidance, inspections and maintenance management relating to all the procured equipment.

(2) Items to be covered by the Government of Bhutan

1. During the implementation period of the project, Bhutan side should accommodate a place used as a temporary office for this project in each project facility.
2. The infrastructures (electricity, water supply, drainage and other facilities) needed for the project should be provided or improved before installation of the equipment, and the existing equipment should be removed from places where the new equipment will be installed.
3. The equipment that will be imported for this project should be unloaded without delay and necessary conveniences for customs clearance.
4. Payments of customs duties and other taxes should be exempted for the Japanese nationals who stay therein for the performance of their work under the Verified Contract.
5. For the Japanese nationals whose services may be required in connection with the supply of the equipment and necessary services for the implementation of the project, necessary conveniences for their stay in Bhutan should be accorded and sufficient considerations should be taken for their security as well.
6. In accordance with the Banking Arrangements, theBhutan side should pay the commissions for Banking Arrangements and for the issuance of the "Authorization to Pay" to the authorized foreign exchange bank in Japan.
7. The equipment procured through the grant aid should be maintained properly and used effectively. For this purpose, necessary budget and personnel should be assured.

3-1-4 Consultant Supervision

(1) Implementation system

This project is implemented by the following four parties:

1) Project implementing bodies

The executing agency for this project is the Ministry of Health and Education. And the Health Division, the Ministry of Health and Education, is the responsible agency for the implementation of the project. The

designated facilities are 23 medical facilities.

2) Consultant

Since the project is implemented under the Japanese grant aid program, it is stipulated by its rule that a Japanese consultant gives instructions, advises and coordinates from a fair standpoint at each stage of the project, according to the contract with the executing agency of Bhutan. Besides, the consultant performs necessary works for smooth implementation of the project.

The specific tasks are as follows:

・Approval of tender document

Confirmation of tender documents for procurement (documents of tender conditions, equipment specifications and budget reports).

・Promotion of tender and supply contract

Decision on the supply contract system, preparation of supply contract draft, examination on the contents of the report for equipment installation work, and selection of suppliers (public announcement of tender, tender and tender evaluation, contract negotiation and contract witnessing).

・Inspection and approval of work execution drawings

Inspection and approval of equipment specification reports, work execution drawings, and work execution plans submitted by the suppliers.

・Report on work progress

Report on progress of work execution to the implementing bodies and the related organizations.

・Cooperation in payment approval procedures

Investigation on bills relating to the remuneration to be paid after shipment, and cooperation in these procedures.

・Consulting work

Witnessing of various works from the beginning through the completion.

3) Supplier

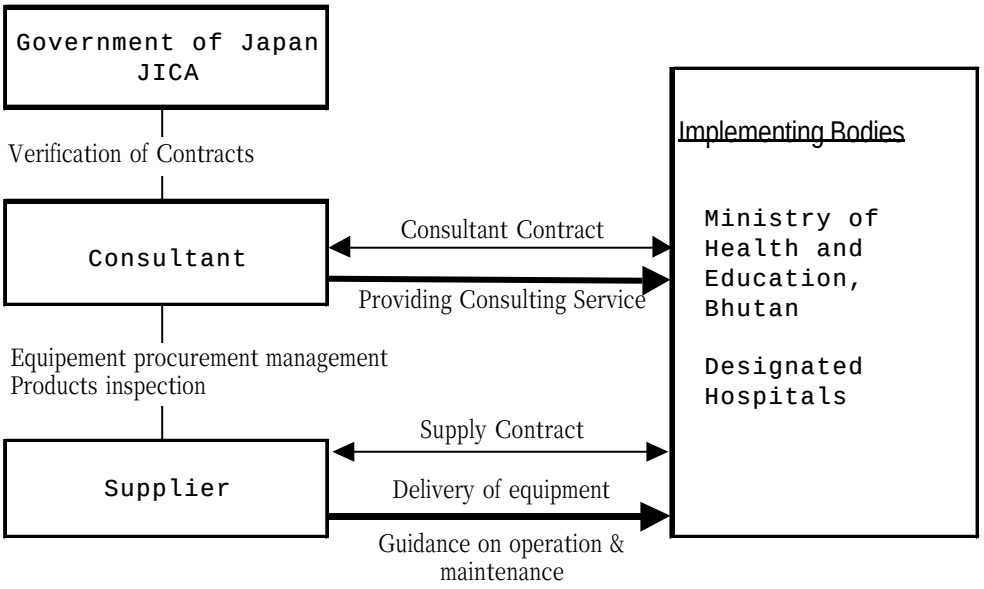
A Japanese supplier (trading company) who will be selected by tender implements procurement of the equipment. The supplier, based upon the contract with the Bhutan side, is responsible for manufacturing, supply, delivery and installation of equipment, and gives instructions on equipment operation and maintenance to the Bhutan side before hand-over.

4) JICA

Japan International Cooperation Agency (JICA) leads the consultant and the supplier so that the project can be implemented properly in accordance with the Japan's grant aid system. Moreover, JICA discusses with the project implementing bodies in order to further the project, if necessary.

The implementation system is shown as follows.

Flowchart of Implementation System



(2) Implementation design and supervision

The consultant, based on the contract with the Bhutan side, performs implementation design and supervision for the project. The implementation design is made, in accordance with the basic design study, to determine detailed specifications of the equipment and to prepare the tender documents comprised of such the specifications, tender guidance, draft of supply

contract, etc.

The supervision is made to assure that the work of the supplier is implemented in accordance with the contract, and to give instructions, advice and coordination from a fair standpoint to promote the project.

The supervision consists of the following:

1) Stage of implementation design

Confirmation of tender documents, and preparation for tender and contract documents.

2) Stage of tender

Prior screening of applicants for tender, implementation of tender, evaluation of the contents of tender, and conclusion of contract.

3) Stage of work execution

Supervision of work execution (inspection and approval of equipment specifications, supervision of shipment/ocean-transport/domestic-transport, instruction and supervision of installation, and supervision of work to be covered by the Bhutan side), report on the work execution progress, and issuance of certificates.

Upon confirming that the equipment installation is completed and the contract conditions are conformed, the consultant witnesses delivery of the equipment and completes its duty after obtaining acknowledgement of receipt of the equipment from the Bhutan side.

(3) Personnel plan

Those who will be engaged in the consulting work for the implementation design and the supervision of the work execution are as follows:

1) Project manager : 1 person

Japanese consultant

2) Medical equipment planner I : 1 person

Japanese consultant

3) Medical equipment planner II : 1 person

Japanese consultant

4) Medical equipment planner III : 1 person

Japanese consultant

3-1-5 Procurement Plan

(1) Procurement of equipment

For procurement of the equipment in the Table 3-1, it is necessary to apply to the following conditions. Procurement from a third country shall be considered as for those equipment.

1) Medical equipment manufactures and the agents have their own maintenance network and have their service base in the neighbor countries such as India.

2) Competing principle in the tender can be expected.

Table 3-1 Equipment to be procured from a third country and its origin

Equipment	Origin
Teaching materials for nursing procedure and others	Japan, USA
Phototherapy unit	Japan, Europe
High pressure steam sterilizer (desk top type)	Japan, India
Ultrasound scanner	Japan, Europe, India

(2) Method of delivery of the medical equipment

The equipment will be transported to Calcutta port in India by sea, and from Calcutta to Phuntsholing in Bhutan by land. All the shipment will pass the custom at Phuntsholing, and then to each site ahead by land. In order to protect from damage and robbery, the equipment will be packed in container site by site. In case the traffic between Thimphu and Bumthang, and Bumthang

and Trashigang, is impracticable in rainy season, the delivery to those sites in the middle eastern area of Bhutan will be made by long detour.

3-1-6 Implementation Schedule

(1) Implementing process

When Cabinet meetings of the Government of Japan approves this project and the Exchange of Notes (E/N) relating to the implementation is concluded between both relevant countries, the project will be carried out in the following procedures:

1. Conclusion of the E/N between both governments.
2. Conclusion of contract between the executing agency and an authorized foreign exchange bank in Japan on payment of the grant aid fund from the Japanese side required for implementation of this project (Banking Arrangements).
3. Conclusion of the consultant contract between the executing agency and the Japanese consultant.
4. Issuance, by the executing agency, of authorization to pay (A/P) according to the consultant contract.
5. Verification of the above contract.
6. Implementation design and preparation of tender documents by the consultant.
7. Approval of the tender documents by the executing agency and preparation of tender by the consultant.
8. Tender and evaluation of tender documents.
9. Conclusion of supply contract (sales contract) relating to equipment procurement between the executing agency and a Japanese trading company.
10. Verification of the above contract by the Government of Japan.

11. Issuance, by the executing agency, of authorization to pay (A/P) according to the supply contract (sales contract).

12. Approval to manufacture of equipment and work execution drawings. (The consultant examines and approves the equipment specifications submitted by the suppliers, gives necessary instructions, and coordinates for smooth implementation of the project by making close contacts with the executing agency.)

13. Witnessing for equipment inspection. (The consultant witnesses factory inspection before shipment, if necessary, and approves the inspection as the proxy of the executing agency.)

14. Supervision of work execution. (In accordance with the contract, the consultant, as the proxy of the executing agency, scrutinizes and approves the equipment specifications, inspects and approves the equipment, supervises shipment and inland transportation, and supervises work execution covered by the partner county.)

15. Progress management. (The consultant supervises work progress so that the supply contract can be completed within the period stated in the E/N, and gives necessary directions to the supplier.)

16. Final inspection and test runs. (The consultant conducts final inspection and test-run to the procured equipment after all works are completed, confirms that the performance is as described in the specifications, and submits a certificate of the work completion to the executing agency.)

17. Completion and hand-over.

(2) Period of implementation

After conclusion of the E/N, the period required for each task on the Japanese side is roughly as follows:

Table 3-2 Period of implementation and content of work

Content of Work	Work Period
1. Confirmation of tender document draft	1.0
2. Approval of tender documents	0.5
3. Tendering, conclusion of contract and approval	2.5
4. Manufacture of equipment	4.0
5. Delivery	1.5
6. Installation (including an initial test, adjustment, operation guidance, training, maintenance instruction and confirmation of hand-over, etc.)	0.9
TOTAL	10.4 months

The work progress chart is the following:

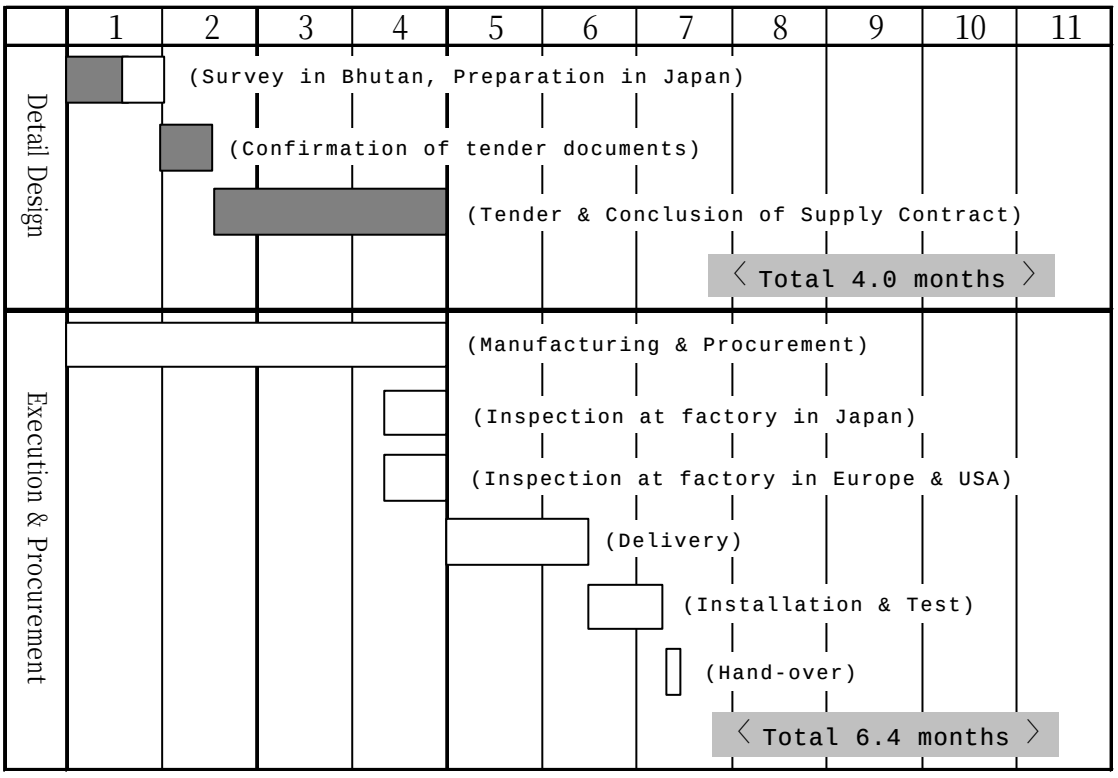


Figure 3-1 Work Execution

3-1-7 Responsibility of the Recipient Country

For the implementation of this project, Bhutan is required to undertake the following necessary measures:

(a) To execute all items stated in (2) of Chapter 3-1-3.

(b) To maintain and use properly and effectively the equipment procured under the grant aid program, and to report its condition to the Government of Japan on a regular basis.

(c) To bear all the expenses other than those to be borne by the grant aid within the scope of this project.

3-2 Operation and Maintenance Costs

Procurement of the equipment under this project aims at renewal of the existing equipment which is not fit for use due to superannuating, and supplementation of the existing equipment which runs short quantitatively. It is assumed little technical trouble for its maintenance and operation after its installation.

The costs required for the operation and maintenance, such as spare parts and consumables, for the medical equipment newly procured under this project, are shown in the following table 3-3.

Table 3-3 Cost Estimation for Maintenance and Operation

Equipment	Q'ty	Consumables	Cost	Maintenance Contract Price
Ultrasound scanner	2	-	-	250,000 × 2= 500,000 JPY
ECG	4	Recording paper	48,000	
Infant incubator	2	Filter	24,000	
TOTAL			72,000	500,000 JPY
TOTAL OPERATION & MAINTENANCE COST			572,000 JPY	

The actual budget of MOHE was 2,199 million yen (883 million Ngultum) in 1998. The maintenance costs newly required after implementation of the project will be 0.57 million yen, and it is only 0.026% of the total budget of the Ministry of Health and Education. The budget of MOHE has been increased by more than

6～8% on an average in the past two years. Considering raising rate of prices of 4.5% (according to the statistics of 1997), it seems possible for MOHE to defray the allotment for the costs' increase.

Chapter 4. Project Evaluation and Recommendation

CHAPTER 4 PROJECT EVALUATION AND RECOMMENDATION

4-1 Project Effect

4-1-1 Verification and Substantiation of Appropriateness

The beneficiaries of this project are mothers and children of the general public including poor classes in Bhutan, or approximately 150,000 women of ages capable of childbirth and approximately 32,000 infants under 5 years old.

Implementation of this project is expected to promote the level-up of maternal and child medical services in Bhutan, through improvement of medical equipment in the designated hospitals and referral system of emergency vehicles disposed in various areas of the country.

This will contribute to improvement of health of inhabitants, especially maternal and child health, and demonstrate positive effects also for early achievement of policy targets in the health and medical field within the national development plan currently being promoted by the central government.

Since this project is mainly intended to promote renewal of the existing equipment in the designated hospitals, there is no technical problem about operation and maintenance of the equipment to be procured.

Moreover, the maintenance work of medical equipment in Bhutan is taken charge by HERM. And, the equipment to be procured is a commodity of the manufacturer having its service base in the neighbor countries, and thus enables to obtain cooperation from private companies about maintenance after implementation of the project. Therefore, the maintenance system is judged as secured,

In addition, since this project does not include any of such equipment that exert negative influences on environments, the project is believed to be practicable with no particular difficulty under the system of Japan's grant aid.

The purpose of this project agrees with "Basic Human Needs" and leads to improvement of people's life, and it is therefore judged as appropriate to implement the project by Japan's grant aid.

4-1-2 Benefits

The following effects can be expected as a result of implementation of this project:

(1) Benefits of major equipment

1) By improving the equipment relating to functional diagnosis such as ultrasound scanner and ECG, it becomes possible to perform health examination and diagnosis of the disease conditions of digestive system and circulatory system with accuracy and rapidity, and thus enables proper treatment.

2) By improving the equipment in the Clinical Laboratory, it becomes possible to accurately judge the physical conditions and disease conditions of pregnant women and infants from the clinical data with more reliance, and thus enables proper treatment.

3) By improving the equipment in the Obstetrics Department and Delivery Room such as delivery bed and vacuum extractor, it becomes possible to perform safety delivery care of mothers and fetuses, and thus reduces mortality, etc., of mothers and neonates in delivery period.

4) By improving the equipment relating to the Neonatal Department such as infant warmer and infant incubator, it becomes possible to perform proper observation and treatment of neonates and infants with diseases.

(2) By improving simultaneously the medical equipment in the primary medical facilities such as district hospitals and BHUs located all over the country, the medical service system in those medical facilities will improve. Also, it will help normalize the health and medical service system as a whole, by enabling the patients with relatively slight diseases, who were liable to rush to secondary and tertiary medical facilities in the past, to avail themselves of medical services at nearby primary medical facilities.

(3) Improvement of equipment in the medical facilities all over the country will not only enable to provide medical services consistently through all stages in the respective regions, but also help improve the primary, secondary and tertiary medical facilities as a whole.

(4) In Bhutan, where public means of transportation are not much developed and the greater parts of the national territory are mountainous, improvement of ambulances will help secure the means of transportation of emergency patients. This will make it possible to establish referral system among the respective facilities, benefiting the patients who require emergency medical services.

(5) In the top educational organization (RIHS) of medical workers in Bhutan, educational equipment on MCH and family planning are quantitatively short because of completion of their life span, etc. By improving such educational equipment, it will become possible to provide approximately 400 students with effective lessons on the science of nursing and clinical examination throughout the year.

(6) Improvement of maintenance tools in HERM will promote reinforcement of medical equipment maintenance system in Bhutan, enabling not only maintenance of the equipment to be procured under this project but also effective implementation of the activities such as repairs and adjustments of medical equipment which are currently unfit for use because of troubles, etc.

(7) Since the designated hospitals are upper referral hospitals in Bhutan, the above-described improvements will enable to provide accurate diagnosis and treatment to local inhabitants and patients referred from the lower-rank facilities in the region. This will help to improve the patient referral system in the region and to regain patients' confidence in the medical facilities.

4-2 Recommendation

As described above, this project is expected to produce a lot of positive effects and widely contribute to the improvement of BHN of inhabitants, and implementation of this project is judged as quite significant. Furthermore, it is believed that there is no particular problem on the internal structure of the Bhutani side with about both personnel and fund for operation and management of the project. However, for smooth and effective implementation of this project, improvement of the following points will be required:

1) The equipment to be procured under this project include those requiring operating and maintenance costs. Moreover, some of the equipment require maintenance and inspection by maintenance contract concluded with the manufacturer. In order to use the equipment in a favorable state as long as possible, it is necessary to secure a budgetary allocation required for equipment operation, maintenance and such maintenance contract.

2) In order to further enhance the effects by implementation of this project, it is desired to establish such a maintenance system as improving the repair system in addition to daily inspections, by regularly dispatching maintenance engineers to the respective facilities.

Appendices

APPENDIX 1

MEMBER LIST OF THE SURVEY TEAM

Basic Design Study Team on the Project for Improvement of Maternal and Child Health, and Essential Equipment in Bhutan

LIST OF TEAM MEMBERS:

No.	Name	Job title	Occupation
1.	Dr. Tsuyuki Yoshiko	Leader	Bureau of International Cooperation, International Medical Center of Japan, Ministry of Health and Welfare
2.	Ms. Morita Chiharu	Coordinator	Grant Aid Management Dept., JICA
3.	Mr. Kimura Shinichi	Project Manager	BINKO, LTD.
4.	Mr. Iwasaki Kenji	Equipment Planner	BINKO, LTD.
5.	Mr. Mikami Junjiro	Facility Planner	BINKO, LTD.
6.	Mr. Ogawa Takashi	Cost & Procurement Planner	BINKO, LTD.

(Draft Explanation)

No.	Name	Job title	Occupation
1.	Dr. Tsuyuki Yoshiko	Leader	Bureau of International Cooperation, International Medical Center of Japan, Ministry of Health and Welfare
2.	Mr. Komori Masakatsu	Coordinator	Grant Aid Management Dept., JICA
3.	Mr. Kimura Shinichi	Project Manager	BINKO, LTD.
4.	Mr. Iwasaki Kenji	Equipment Planner	BINKO, LTD.

APPENDIX 2

SURVEY SCHEDULE

Itenerary of the Project for Improvement of Maternal and Child Health and Essential Equipment in the Kingdom of Bhutan

Official Member	Consultant Member
1. Leader	A. Project Manager
2. Coordinator	B. Equipment Planner
	C. Facility Planner
	D. Cost & Procurement Planner

	DATE		SCHEDULE	Official		Consultant			
				1	2	A	B	C	D
1	20 Nov	SAT	Narita → Bangkok	○	○	○	○	○	○
2	21 Nov	SUN	Bangkok → Paro	○	○	○	○	○	○
			Paro → Thimphu *(car)*	○	○	○	○	○	○
3	22 Nov	MON	Meeting with JICA in Bhutan	○	○	○	○	○	○
			Visit to the Ministry of Finance, Discussion & Meeting	○	○	○	○	○	○
			Visit to the Ministry of Health and Education, Discussion & Meeting	○	○	○	○	○	○
4	23 Nov	TUE	Thimphu → Phuntsholing	○	○	○	○	○	○
			Survey on Tsimalakha Hospital (Chhukha)	○	○	○	○	○	○
5	24 Nov	WED	Survey on Phuntsholing Hospital (Chhukha)	○	○	○	○	○	○
			Phuntsholing → Thimphu	○	○	○	○	○	○
6	25 Nov	THU	Thimphu ←→ Paro	○	○	○	○	○	○
			Survey on Paro Hospital (Paro)	○	○	○	○	○	○
			Meeting with MOHE	○	○	○			
7	26 Nov	FRI	Survey on JDWNR Hospital (Thimphu)	○	○	○	○	○	○
			Survey on Gidakom Hospital (Thimphu)	○	○	○	○	○	○
8	27 Nov	SAT	TEAM Meeting & Filing of Data	○	○	○	○	○	○
9	28 Nov	SUN	TEAM Meeting & Filing of Data	○	○	○	○	○	○
10	29 Nov	MON	Meeting with MOHE	○	○	○	○	○	○
			Survey on RHIS (Thimphu)	○	○	○	○	○	○
			Survey on HERAI (Thimphu)	○	○	○	○	○	○
			Survey on Public Lab. (Thimphu)	○	○	○	○	○	○
11	30 Nov	TUE	Interim Report to MOHE, Minutes of Discussions	○	○	○			
			Thimphu → Phuntsholing				○	○	○
			Survey on Tsimalakha Hospital (Chhukha)				○	○	○
12	01 Dec	WED	Signature to "Minutes of Discussions"	○	○	○			
			Second Survey on Phuntsholing Hospital (Chhukha)				○	○	○
			Phuntsholing → Thimphu				○	○	○
13	02 Dec	THU	Thimphu → Punakha			○	○	○	○
			Survey on Punakha Hospital (Punakha)			○	○	○	○
			Official Members： Paro → Delhi	○	○				
			Report to Embassy of Japan/JICA in India	○	○				
14	03 Dec	FRI	Thimphu ←→ Wangdi Phodran			○	○	○	○
			Survey on Bajotan BHU (Wangdi Phodran)						
			Official Members： Arrival at Narita	○	○				
15	04 Dec	SAT	TEAM Meeting & Filing of Data			○	○	○	○
16	05 Dec	SUN	TEAM Meeting & Filing of Data			○	○	○	○
17	06 Dec	MON	Thimphu → Haa			○	○	○	○
			Survey on Bali BHU (Haa)			○	○	○	○

	DATE		SCHEDULE	Official		Consultant			
				1	2	A	B	C	D
18	07 Dec	TUE	Thimphu ←→ Paro			○	○	○	○
			Second Survey on Gidakom Hospital (Thimphu)			○	○	○	○
			Second Survey on Paro Hospital (Paro)			○	○	○	○
19	08 Dec	WED	Meeting with MOHE			○	○	○	○
			Second Survey on HERAI (Thimphu)			○	○	○	○
20	09 Dec	THU	Second Survey on RIHS (Thimphu)			○	○	○	○
			Second Survey on JDWNR Hospital (Thimphu)			○	○	○	○
21	10 Dec	FRI	Second Survey on JDWNR Hospital (Thimphu)			○	○	○	○
			Visit UNFPA Office			○			
			Visit UNICEF Office			○			
22	11 Dec	SAT	TEAM Meeting & Filing of Data			○	○	○	○
23	12 Dec	SUN	TEAM Meeting & Filing of Data			○	○	○	○
24	13 Dec	MON	Visit DANIDA Office			○	○		○
			Meeting with MOHE			○	○		○
			Facility Planner： Paro → Delhi					○	
25	14 Dec	TUE	Visit WHO Office			○	○		○
			Survey on Dechencholing BHU (Thimpu)						
			Survey on HERM (Thimphu)						
			Facility Planner： Arrival at Narita					○	
26	15 Dec	WED	Meeting with MOHE			○	○		○
27	16 Dec	THU	Survey on National Institute of Traditional Medicine (Thimphu)			○	○		
			Meeting with MOHE			○	○		
			Cost & Procurement Planner： Paro → Delhi						○
			Market Research on carriers & installation agencies in India						○
28	17 Dec	FRI	Filing of Data (National Holiday)			○	○		
			Market Research on carriers & installation agencies in India						○
29	18 Dec	SAT	TEAM Meeting & Filing of Data			○	○		
			Market Research on carriers & installation agencies in India						○
30	19 Dec	SUN	TEAM Meeting & Filing of Data			○	○		
			Market Research on carriers & installation agencies in India						○
31	20 Dec	MON	Meeting with Medical Supply Unit			○	○		
			Survey on HERM (Thimphu)				○		
			Survey on JDWNR (Thimphu)			○	○		
			Market Research on carriers & installation agencies in India						○
			Cost & Procurement Planner： Delhi → Narita						○
32	21 Dec	TUE	Meeting with MOHE (Discussion on Technical Specification)			○	○		
			Interview with Manager of Hospital and BHU			○	○		
33	22 Dec	WED	Interview with Manager of Hospital and BHU			○	○		
34	23 Dec	THU	Interview with Manager of Hospital and BHU			○	○		
			Meeting with MOHE			○	○		
35	24 Dec	FRI	Meeting with MOHE (Discussion on Technical Specification)			○	○		
			Report to JICA in Bhutan			○	○		
36	25 Dec	SAT	TEAM Meeting & Filing of Data			○	○		
37	26 Dec	SUN	TEAM Meeting & Filing of Data			○	○		
38	27 Dec	MON	Project Manager/Equipment Planner： Paro → Delhi			○	○		
			Report to Embassy of Japan/JICA in India			○	○		
			Delhi →			○	○		
39	28 Dec	TUE	Arrival at Narita			○	○		

PROPOSED SCHEDULE :

Draft Final Report Explanation Study Team on the Project for Improvememt of MCH and Essential Equipment in The Kingdom of Bhutan

	Date & Time		Activities	Accommodation	Remarks
1	18.Mar		NRT→BKK (by TG641 10:30→15:30)	BKK	Consultant members
2	19.Mar	AM	BKK→PARO (by KB106 8:00→11:35)		Consultant members
		PM	Move to Thimpu by car	Thimphu	
3	20.Mar	9:00	Meeting with JOCV office		Consultant members
		10:30	Discussion on the Draft Report with related authority: Joint Director Dr.Rinchen Chophel		
		PM	Discussion on the Draft Report with related authority	Thimphu	
4	21.Mar	9:00	Explanation of Draft Report with JDWN Referral Hospital		Consultant members
		10:00	Explanation of Draft Report with RIHS		
		11:00	Explanation of Draft Report with HERM (Hospital Equip.Repair M)		
		14:00	Visit DANIDA Office and explain Draft Report	Thimphu	
5	22.Mar	10:00	Continue to discuss on the Draft Report with related authorities		
		14:00	Two officials arrive at thimphu		
		15:00	Discussion on the Draft Report with Dr.Gado Tshering	Thimphu	
6	23.Mar	10:00	Courtesy call to Minister of Health and Education		Official & Consultant members
		11:00	Courtesy call to Secretary of Health and Education		
		PM	Discussion on Minites of Discussions	Thimphu	
7	24.Mar	AM	Discussion on Minites of Discussions		" "
		PM	**Signing on Minites of Discussion** & Report to JOCV office	Thimphu	
8	25.Mar		Internal meeting	Thimphu	" "
9	26.Mar	AM	(Dr. Tsuyuki and Mr. Komori) PARO→NEW DELHI (by KB107 9:00→12:10)	New Delhi	Oficial members
		8:00	Consultants move to Trongsa		Consultant members
		15:00	Visit Trongsa Hospital	Trongsa	
10	27.Mar	AM	JICA, EOJ (Dr. Tsuyuki and Mr.Komori)		Oficial menbers
		PM	NEW DELHI→TOKYO (Mr. Komori by SQ407 23:15)	(Over-night flight)	
		8:00	Consultants move to Zhemgang		Consultant members
		13:00	Visit Yebilabtsa Referral Hospital		
		15:30	Move to Zhemgang	Zhemgang	
11	28.Mar	7:00	Leave for Bumthang		Consultant members
		13:00	Visit Bumthang Hospital		
		15:30	Leave for Mongar	Mongar	
12	29.Mar	8:00	Visit Mongar Hospital		Consultant members
		11:30	Leave for Tashigang	Tashigang	
13	30.Mar	8:00	Visit Tashigang Hospital	Bumthang	Consultant members
		11:30	Leave for Bumtang	(Hotel in Jakar)	
14	31.Mar	8:00	Leave for Thimphu	Thumphu	" "
15	1.Apr		Internal discussion	Thimphu	" "
16	2.Apr		Internal discussion	Thimphu	" "
17	3.Apr		Discussions at the Ministry of Health & Education	Thimphu	" "
18	4.Apr		Discussions at the Ministry of Health & Education	Thimphu	" "
19	5.Apr	AM	Move to Paro by car		Consultant members
			PARO→NEW DELHI (by KB205 7:30→9:20) Report to JICA & EOJ	(Over-night flight)	
20	6.Apr		→TOKYO (by AI304 21:30→8:00)		" "

APPENDIX 3

LIST OF PARTY CONCERNED IN THE KINGDOM OF BHUTAN

LIST OF PARTY CONCERNED IN THE KINGDOM OF BHUTAN

Ministry of Health & Education		Sanjay Nedup Dorji
Ministry of Health & Education		Dr. Sangay Thinley
Ministry of Health & Education		
Ministry of Health & Education	Program Manager, Reproductive Health & Population	Dr. Nawang Dorji
Ministry of Health & Education	Chief, Medical Supply Unit	Dr. Kunzang Jigmi
Ministry of Finance	Director General	Mr. Yanki Tobany
Ministry of Finance	Head	Mr. Karma Tshiteem
JDWNR Hospital	M.B.B.S. M.P.H.	
		Dr. Gado Tshering
	Bio-Medical Engineer	Mr. Tshering Dorji
RIHS	Principal	Mr. Dorji Wangchuk
HERM	Health Equipment Enginner	Mr. B.S. Taneja
Public Laboratory	Medical Technologist	Mr. Sonam Wangchuk
Tshimalakha Hospital	District Medical Officer	Dr. Hemlal Sharma
Tshimalakha Hospital		
Phuntsholing Hospital	Superintendant	Dr. Ugen Dophu
Phuntsholing Hospital		
Paro Hospital	District Medical Officer	Dr. Nado Zangpo
Gidacom Hospital	Superintendant	Dr. Steen M Andersen
Punakha Hospital	District Medical Officer	Dr. Nor Tshering
Damphu Hospital	District Medical Officer	Dr. Gosar Pemba
Gaylegphug Hospital	Administration Officer	Dr. Viarchung
	Ex District Medical Officer	Dr. Chencho Dorjee
	District Medical Officer	Dr. Sonam Duptho
	District Medical Officer	Dr. Chandra Monara
	District Medical Officer	Dr. Ngawang Tenzin
	District Medical Officer	Dr. Yeshey Pentone
	District Medical Officer	Dr. D.K. Nirola
Bajotang BHU	District Medical Officer	Dr. Naresh Sharma
Bali BHU	District Medical Officer	Dr. G.P. Dhakal
DAGA BHU	District Medical Officer	Dr. Pakila Drukpa
	District Medical Officer	Dr. Namgay Dawa
Dechencholing BHU	Asistant Nurse Mid-wife	Ms. Denka
National Institute of Traditional Medicine	Superintendant	Dr. Dungisho Tshering Tashi
UNICEF	Project Officer, Health and Nutrition	Ms. Bindhya Pradhan
DANIDA	Chief Technical Advisor	Dr. Bjarne O. Jensen
WHO	Resident Representative	Dr. Orapin Singhadej
UNDP	Resident Representative	Mr. Shun-ichi Murata
ASIAN DEVELOPMENT BANK	Senior Project Specialist	Mr. Edgar A. Cua
JICA Bhutan Office	Resident Representative	Mr. Yasuyuki Mori
		Mr. Seiji Komatsu
JICA India Office	Resident Representative	Mr. Tadashi Sato
		Mr. Touru Take
	Assistant Resident Representat	Mr. Tsuyoshi Shimada

APPENDIX 4

MINUTES OF DISCUSSION

MINUTES OF DISCUSSION
ON THE BASIC DESIGN STUDY
ON THE PROJECT
FOR IMPROVEMENT OF MCH AND ESSENTIAL EQUIPMENT
IN THE KINGDOM OF BHUTAN

In response to a request from the Royal Government of Bhutan (hereinafter referred to as " Bhutan"), the Government of Japan decided to conduct a Basic Design Study on the Project for Improvement of MCH and Essential Equipment in the Kimgdom of Bhutan (hereinafter referred to as the "Project") and entrusted the Study to the Japan International Cooperation Agency (JICA).

JICA sends to the Bhutan the Basic Design Study Team (hereinafter referred to as the "Team") which is headed by Dr.YoshikoTsuyuki, Bureau of International Cooperation, International Medical Center of JAPAN, Ministry of Health and Welfare and is scheduled to stay in the country from November 21 to December27, 1999.

The Team held discussions with the officials concerned of the Government of Bhutan and conducted site surveys.

In the course of the discussions and site surveys, 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.

Thimphu, December 1, 1999

Dr. Yoshiko Tsuyuki
Leader,
Basic Design Study Team, JICA

Dr. Sangay Thinley
Director,
Health Division,
Ministry of Health and Education

ATTACHMENT

1. Objective
   The objective of the Project is to improve the quality and efficacy of the Maternal and Child Health Care service in Bhutan through procurement of medical equipment.

2. Project Sites
   The site of the Project is as described in Annex 1.

3. Responsible and Executing Organization
   (1)The responsible agency is Ministry of Health and Education.
   (2)The implementing agency is Health Division.

4. Items Requested by the Government of Bhutan
   After discussions with the Team, items listed in Annex 2 were finally requested by the Government of the Bhutan. JICA will further assess the appropriateness of the request in Japan to prepare a draft report.

5. Japan's Grant Aid System

5-1. The Government of Bhutan understands the Japan's Grant Aid Scheme as described in Annex 3.

5-2. The Government of Bhutan will take the necessary measures as described in Annex 4 for smooth implementation of the Project as a condition for the Japanese Grant Aid to be implemented to the Project.

6. Schedule of the Study

6-1. The consultant members of the Team will proceed to further studies in Bhutan until December27, 1999.

6-2. JICA will prepare a draft report in English and dispatch a mission in order to explain its contents around April 2000.

6-3. If the contents of the draft report are accepted in principle by the Government of the Bhutan, JICA will complete the final report and send it to the Government of the Bhutan around June 2000.

Project Sites (29 sites)

◎Jigmi Dorgi Wangchuk National Referral Hospital (JDWNRH)

◎2 Regional Referral Hospitals

(1)Mongar Hospital
(2)Yebilabtsa Hospital

◎20 District Hospitals

(1) Bumthang Hospital
(2) Damphu Hospital
(3) Deothang Hospital
(4) Gaylegphug Hospital
(5) Gidakom Hospital
(6) Gomtu Hospital
(7) Lhuntse Hospital
(8) Paro Hospital
(9) Pemagatsel Hospital
(10)Punakha Hospital
(11) Puntsholing Hospital
(12) Riserboo Hospital
(13) Samdrup Jongkhar Hospital
(14) Samtse Hospital
(15) Sarpang Hospital
(16) Sibsoo Hospital
(17) Trashigang Hospital
(18) Trashi Yongtse Hospital
(19) Trongsa Hospital
(20) Tsimalakha Hospital

◎4 Basic Health Units (BHU) Grade-I

(1) Bajo thang BHU
(2) Bali BHU
(3) Daga BHU
(4) Kalikhola BHU

◎Royal Institute of Health Sciences (RIHS)

◎Hospital Equipment Repair and Maintenance Unit (HERM)

1. Equipment list A

The standard equipment required for all hospital and BHU in the project, except JDWNR.

Item No.	Department	Description	Q'ty
A-1	Obstetric	Height scale	1
A-2	Obstetric	Weighing scale	1
A-3	Obstetric	Delivery bed	1
A-4	Obstetric	Instrument cabinet	1
A-5	Obstetric	Kerry pad	1
A-6	Obstetric	Magnal board	2
A-7	Obstetric	Neonatal resuscitation pack	2
A-8	Obstetric	Normal delivery pack	4
A-9	Obstetric	Obstetric stethoscope	2
A-10	Neonatal unit	Electric thermometer	2
A-11	Neonatal unit	Infant laryngoscope	1
A-12	Neonatal unit	Infant weighing scale	1
A-13	Gynecology	Diagnostic apparatus set	1
A-14	Gynecology	Examination lamp	1
A-15	Gynecology	Sphygmomanometer	2
A-16	Gynecology	Stethoscope	2
A-17	Clinical Lab.	Autoclave, table top	1
A-18	Clinical Lab.	Blood sedimentation set	1
A-19	Clinical Lab.	Centrifuge	1
A-20	Clinical Lab.	Hemo meter	1
A-21	Clinical Lab.	Hemacytometer set	1
A-22	Clinical Lab.	Microscope binocular	1

1. Equipment list B

The additional equipment required for selected hospitals and BHU in the project, except JDWNR.
The selected project sites will be decided through further survey, depending on its situation.

Item No.	Department	Description	Q'ty
B-1	Obstetric	Boiling sterilizer	1
B-2	Obstetric	Fetal doppler	1
B-3	Obstetric	Obstetric Laparotomy/caesarean section pack	1
B-4	Obstetric	Ultrasound scanner	1
B-5	Obstetric	Vacuum extractor	1
B-6	Neonatal unit	Infant incubator	1
B-7	Neonatal unit	Infant warmer	1
B-8	Neonatal unit	Phototherapy unit	1
B-9	Gynecology	Colposcope	1
B-10	Gynecology	ECG	1
B-11	Gynecology	Examination table	1
B-12	CSSD	High pressure steam sterilizer	1
B-13	Clinical Lab.	Grass ware set	1
B-14	Clinical Lab.	Hot air sterilizer	1
B-15	Clinical Lab.	Spectrophotometer	1
B-16	Clinical Lab.	Water bath	1
B-17	Others	Ambulance	1
B-18	Others	Power generator, portable	1

2. Equipment for JDWNR Hospital

Item No.	Department	Description	Q'ty
JDWNR-1	Obstetric	Height scale	1
JDWNR-2	Obstetric	Weighing scale	1
JDWNR-3	Obstetric	Delivery bed	2
JDWNR-4	Obstetric	Instrument cabinet	1
JDWNR-5	Obstetric	Kerry pad	1
JDWNR-6	Obstetric	Magnal board	2
JDWNR-7	Obstetric	Neonatal resuscitation pack	2
JDWNR-8	Obstetric	Normal delivery pack	4
JDWNR-9	Obstetric	Obstetric stethoscope	2
JDWNR-10	Neonatal unit	Electric thermometer	2
JDWNR-11	Neonatal unit	Infant laryngoscope	1
JDWNR-12	Neonatal unit	Infant weighing scale	1
JDWNR-13	Gynecology	Diagnostic apparatus set	1
JDWNR-14	Gynecology	Examination lamp	1
JDWNR-15	Gynecology	Sphygmomanometer	2
JDWNR-16	Gynecology	Stethoscope	2
JDWNR-17	Obstetric	Fetal doppler	2
JDWNR-18	Obstetric	Obstetric Laparotomy / caesarean section pack	1
JDWNR-19	Obstetric	Ultrasound scanner	1
JDWNR-20	Gynecology	Colposcope	1
JDWNR-21	Clinical Lab.	Autoclave (bottle sterilizer)	1
JDWNR-22	Clinical Lab.	Automatic slide stainer	1
JDWNR-23	Clinical Lab.	Hot air sterilizer	1
JDWNR-24	Clinical Lab.	Microscope binocular	1
JDWNR-25	Obstetric	Infant incubator	1
JDWNR-26	Obstetric	Uterine evacuation kit	2
JDWNR-27	Obstetric	Vacuum extractor	1
JDWNR-28	Gynecology	ECG	1

3. Equipment for RIHS

Item No.	Department	Description	Q'ty
RIHS-1	RIHS (Teaching Materials Models)	Pelvis for copper T insertion set	1
RIHS-2	RIHS (Teaching Materials Models)	Pelvis for delivery set	1
RIHS-3	RIHS (Teaching Materials Models)	Pelvis for procedures set	1
RIHS-4	RIHS (Teaching Materials Models)	Adult doll for nursing procedure	2
RIHS-5	RIHS (Teaching Materials Models)	Blood collection and intravenos injection simulator	1
RIHS-6	RIHS (Teaching Materials Models)	Microscope slide set	1
RIHS-7	RIHS (Equipment for Practice)	Vaccum extractor	1
RIHS-8	RIHS (Equipment for Practice)	Baby CPR set	1
RIHS-9	RIHS (Equipment for Practice)	Adult CPR set	1
RIHS-10	RIHS (Audio Visual Equipment)	OHP	1
RIHS-11	RIHS (Audio Visual Equipment)	Video tape set (Software)	1
RIHS-12	RIHS (Audio Visual Equipment)	Slids set (Software)	1

4. Equipment for HERM

Item No.	Department	Description	Q'ty
HERM-1	HERM	Maintenance tool set	1

Japan's Grant Aid Program

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.

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.

Fourth, 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. Contents of the Study

(1) Contents of the Study
The purpose of the Basic Design Study conducted by JICA on a requested 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, benefits of the project and

also institutional capacity of agencies concerned of the recipient country necessary for project 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.

Final project components are subject to approval by the Government of Japan and therefore may differ from an original request. Implementing the project, the Government of Japan requests the recipient country to take necessary measures involved which are itemized on Exchange of Notes.

(2) Selection of Consultants

For smooth implementation of the study, JICA uses (a) registered consulting firm(s). JICA selects (a) firm(s) based on the 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 after Exchange of Notes, in order to maintain technical consistency and also to avoid any undue delay in implementation should the selection process be repeated.

3. Japan's Grant Aid Scheme

(1) What is Grant Aid?

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

(2) Exchange of Notes (E/N)

Both Governments concerned extend Japan's Grant Aid in accordance with the Exchange of Notes in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid etc., are confirmed.

(3) "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 Exchange of Notes, concluding a contract with (a) consulting firm(s) and (a) contractor(s) and a final payment to them must be completed.

(4) Under the Grant, in principle, products and services of origins of Japan or 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.)

(5) Necessity of the "Verification"
The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. The Government of Japan shall verify those contracts. The "Verification" is deemed necessary to secure accountability to Japanese tax payers.

(6) 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 prior to the installation work in case the project is providing equipment,

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 project is providing 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 will 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.

(7) Proper Use

The recipient country is required to maintain and use the 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.

(8) Re-export

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

(9) Banking Arrangement (B/A)

a) The Government of the recipient country or its designated authority shall open an account in the name of the Government of the recipient country in a bank in Japan. 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 issued by the Government of the recipient country or its designated authority.

ANNEX- 4

Major Undertakings to be taken by Each Government

NO	Items	To be coveredby Grant Aid	To be coveredby Recipient side
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
2	To ensure prompt unloading and customs clearance at the port of disembarkationin recipient country		
	1) Marine(Air)transportation of the products from Japan to the recipient country	●	
	2) Tax exemption and custom clearanceof the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkationto the project site	(●)	(●)
3	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performanceof their work		●
4	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 contract		●
5	To maintain and use properly and effectivelythe facilities constructed and equipment provided under the Grant Aid		●
6	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for the transportation and installation of the equipment		●

MINUTES OF DISCUSSION
ON THE BASIC DESIGN STUDY
ON THE PROJECT
FOR IMPROVEMENT OF MATERNAL AND CHILD HEALTH,
AND ESSENTIAL EQUIPMENT
IN THE KINGDOM OF BHUTAN
(EXPLANATION ON DRAFT REPORT)

In November 1999, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Basic Design Study Team on the Project for Improvement of Maternal and Child Health, and Essential Equipment (hereinafter referred to as the "Project") to the Kingdom of Bhutan (hereinafter referred to as "the Bhutan"), and through discussions, site survey, and technical examination of the result in Japan, JICA has prepared the draft report of the study.

In order to explain and to consult the Bhutan on the components of the draft report, JICA sends to the Bhutan the Draft Report Explanation Team (hereinafter referred to as the "Team") which is headed by Dr. Yoshiko Tsuyuki, Bureau of International Cooperation, International Medical Center of JAPAN, Ministry of Health and Welfare and is scheduled to stay in the country from March 19 to, April 5, 2000.

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

Thimphu, March 24, 2000

Dr Yoshiko. Tsuyuki
Leader,
Draft Explanation Team, JICA

Dr. Sangay Thinley
Secretary
Ministry of Health and Education

ATTACHMENT

1.Project title is to be changed as follows;

The Project for Improvement of Maternal and Child Health, and Essential Equipment in the Kingdom of Bhutan.

2. Components of draft report

The Government of the Bhutan agreed in principle the components of the draft report.

3. Japan's Grant Aid System

The Bhutan side understands the Japan's Grant Aid Scheme and the necessary measure to be taken by the Government of the Bhutan as explained by the Team and described in Annex-3 and Annex-4 of the Minutes of Discussions signed by both parties on December 1, 1999.

4. Schedule of the Study

JICA will complete the final report in accordance with the confirmed items and send it to the Government of the Bhutan around June 2000.

5. Other Relevant Issues

5-1. The consultants will proceed to further studies in the Bhutan until 5th April.

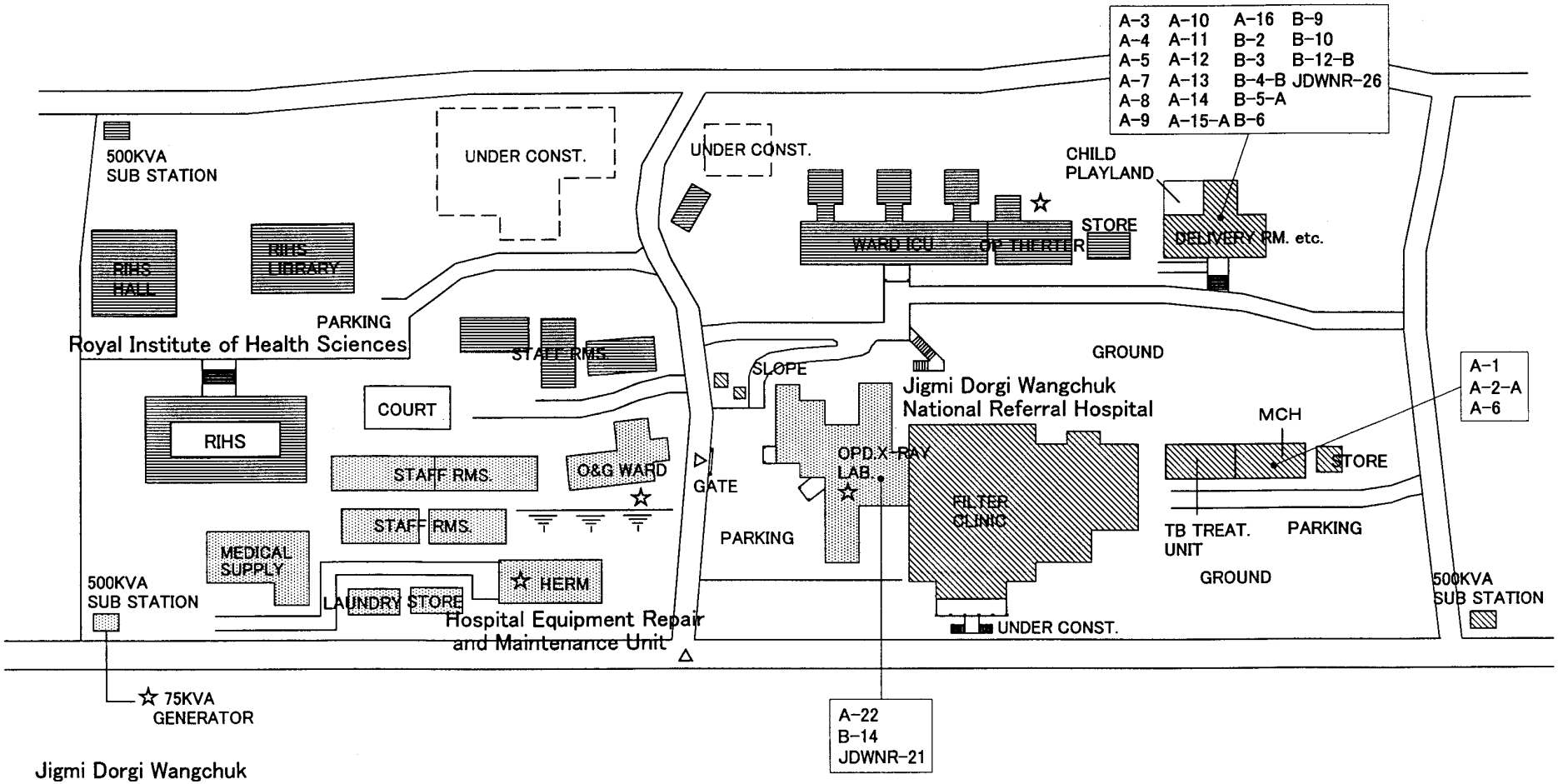
5-2. The Team will hand one copy of the draft detailed specification of the equipment to the Bhutan. Both sides agreed that the draft specification is confidential and should not be duplicated or released to any outside parties.

5-3. Both sides agreed that the status of existing ambulance and necessity for new one at Bajo thang BHU must be re-examined.

5-4. The Bhutan side requested to include the deleted project sites in the Project, since it was felt the sites except S/Jongkhar, Deothang, and Kalikhola did not pose security risk. The Team, while expressing the concerns of the Japanese Government, agreed to discuss this further with the Japanese Government.

APPENDIX 5

EQUIPMENT LAYOUT DRAWING

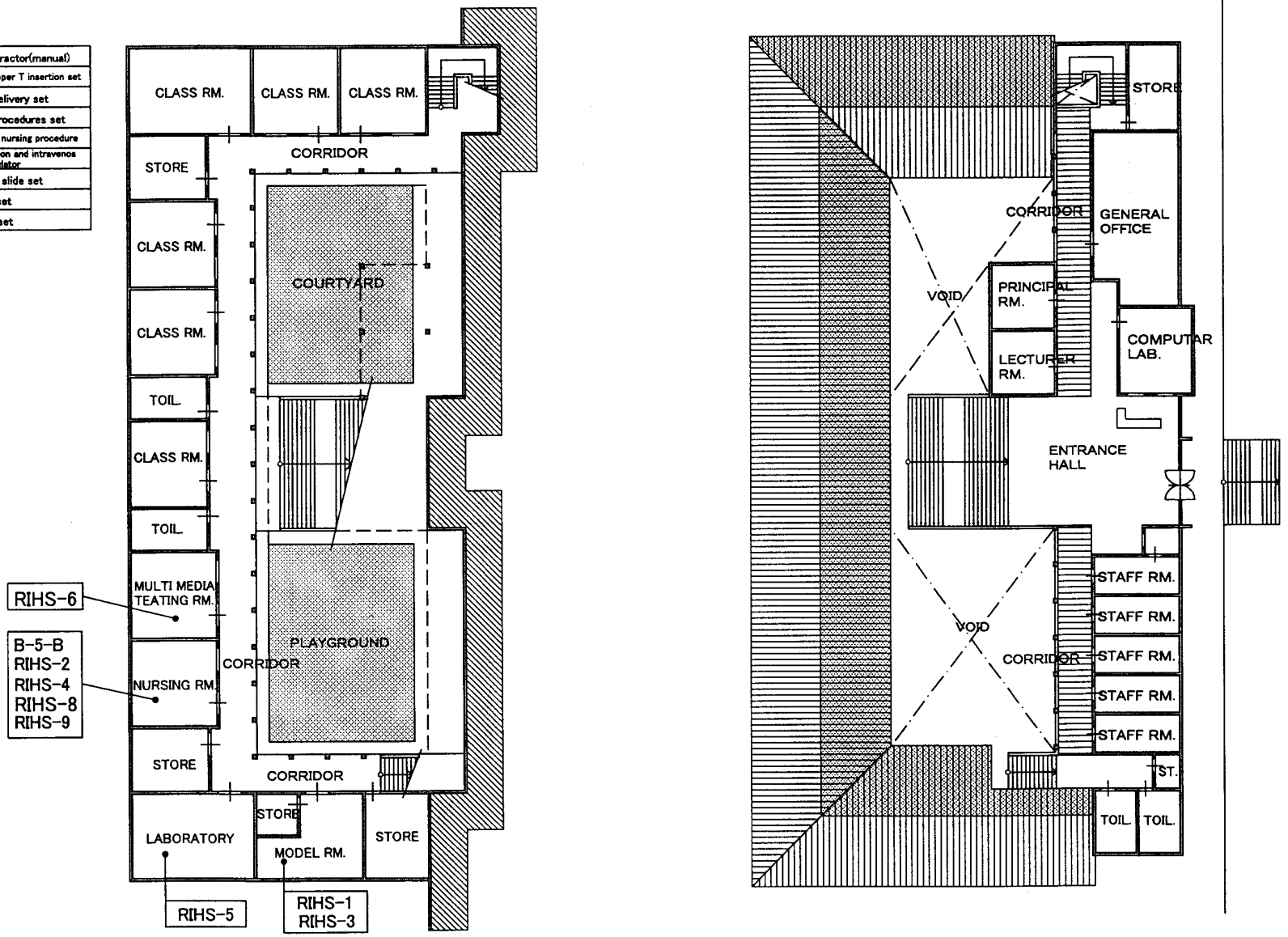


Jigmi Dorgi Wangchuk
National Referral Hospital

A-1	Height scale	A-12	Infant weighing scale	B-9	Colposcope
A-2-A	Weghing scale	A-13	Diagnostic apparatus set	B-10	ECG
A-3	Delivery bed	A-14	Examination lamp	B-12-B	High pressure steam sterilizer (vertical type)
A-4	Instrument cabinet	A-15-A	Sphygmomanometer	B-14	Hot air sterilizer
A-5	Kerry pad	A-16	Stethoscope	JDWNR-21	Autoclave(bottle sterilizer)
A-6	Magnal bord	A-22	Microscope binocular	JDWNR-26	Uterine evacuation kit
A-7	Neonatal resusciation pack	B-2	Fetal doppler		
A-8	Normal delivery pack	B-3	Obsteric Laparotomy /caesarean section pack		
A-9	Obstetric stethoscope	B-4-B	Ultrasound scanner(portable)		
A-10	Electric thermometer	B-5-A	Vacuum extractor(electromotion)		
A-11	Infant laryngoscope	B-6	Infant incubator		

JDWNRH・RIHS・HERM etc SITE PLAN

B-5-B	Vacuum extractor(manual)
RIHS-1	Pelvis for copper T insertion set
RIHS-2	Pelvis for delivery set
RIHS-3	Pelvis for procedures set
RIHS-4	Adult doll for nursing procedure
RIHS-5	Blood collection and intravenos injection simulator
RIHS-6	Microscope slide set
RIHS-8	Baby CPR set
RIHS-9	Adult CPR set

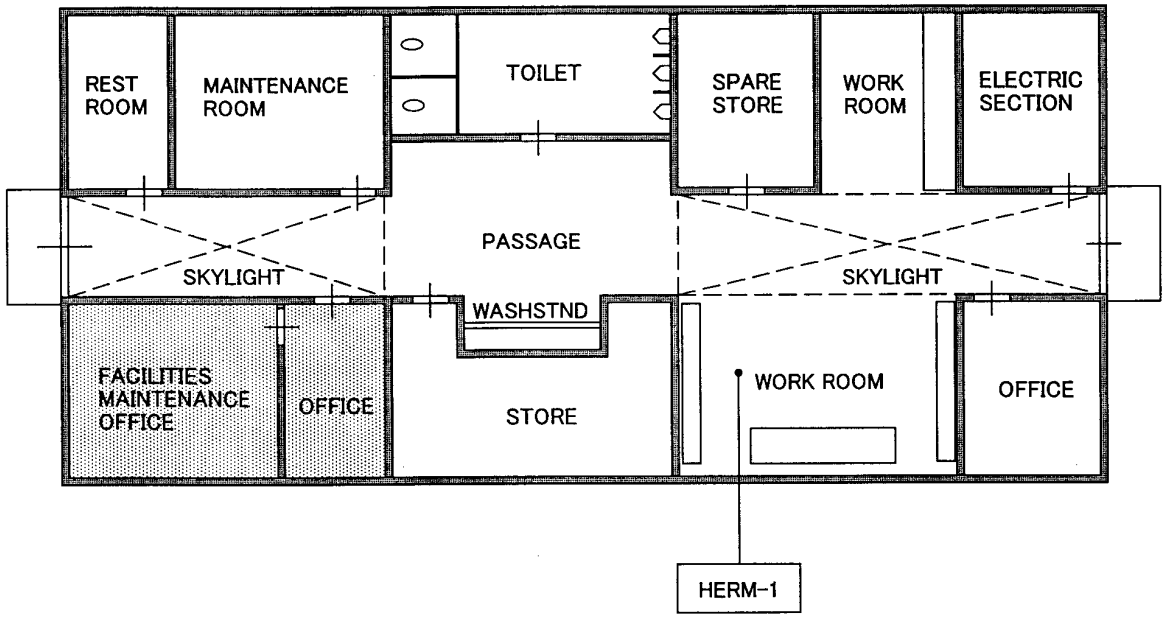


1st FLOOR PLAN

0m 10m 20m

2nd FLOOR PLAN

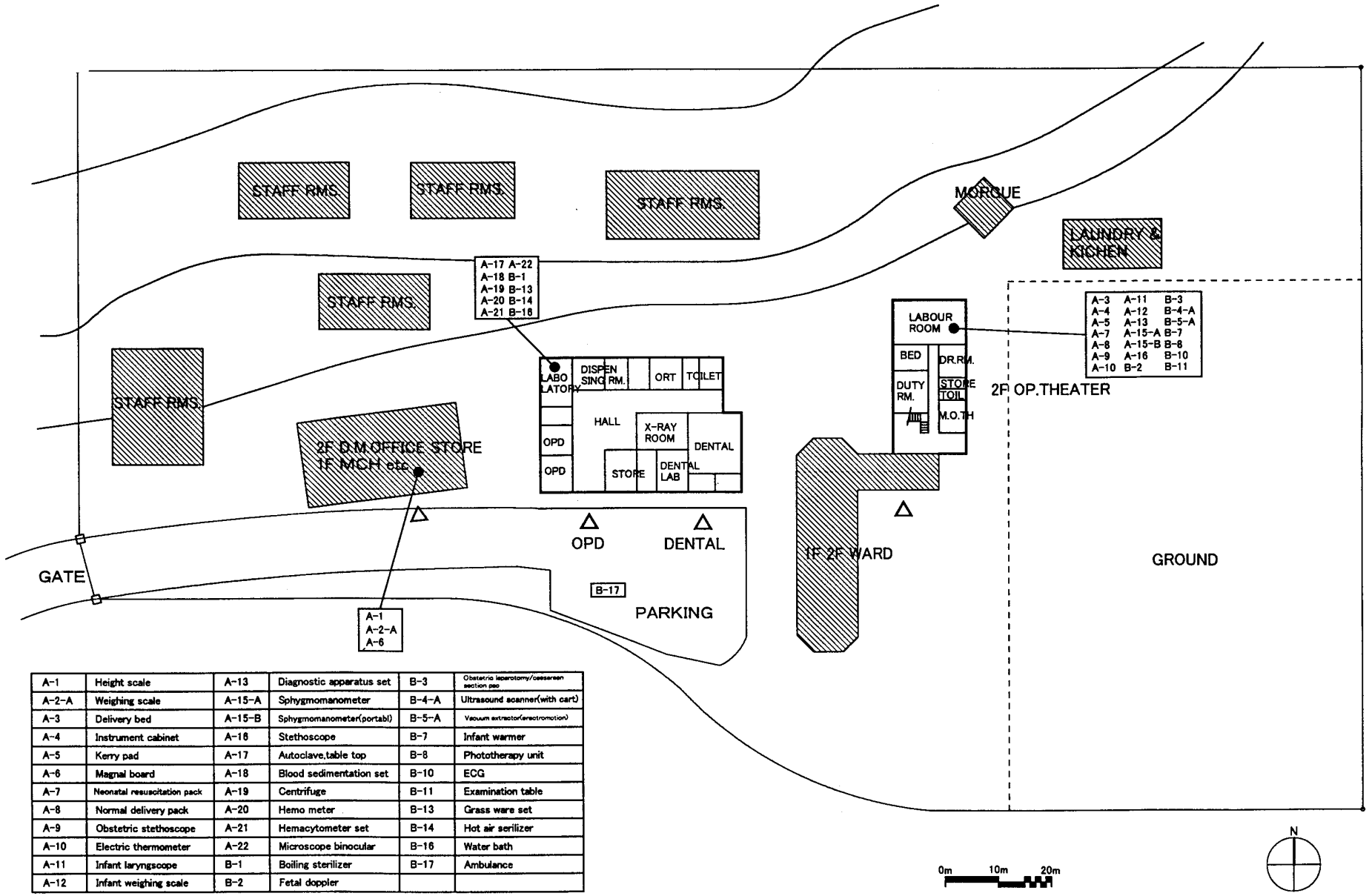
RIHS PLAN



HERM-1	Maintenance tool set

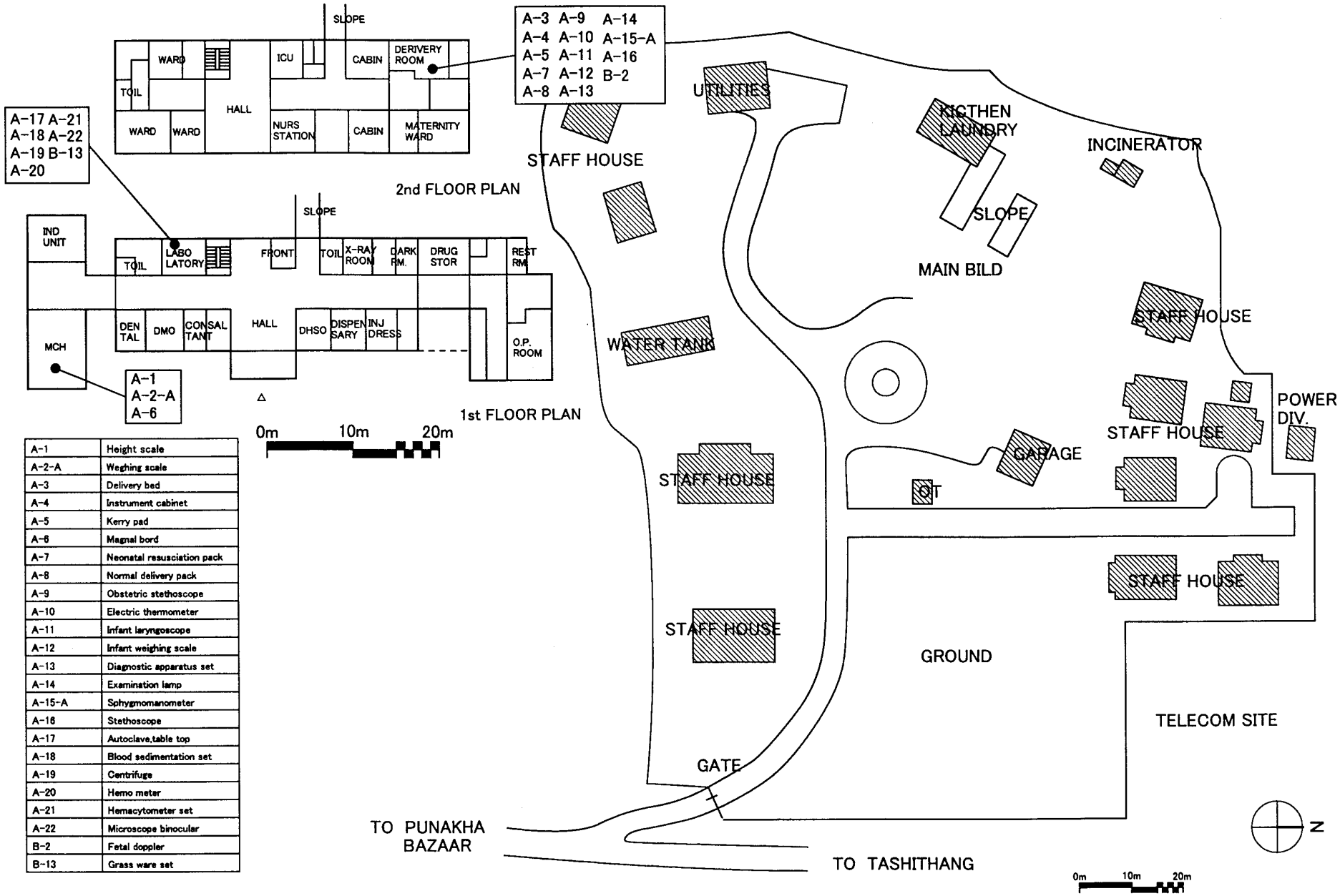
0m 10m 20m

HERM PLAN



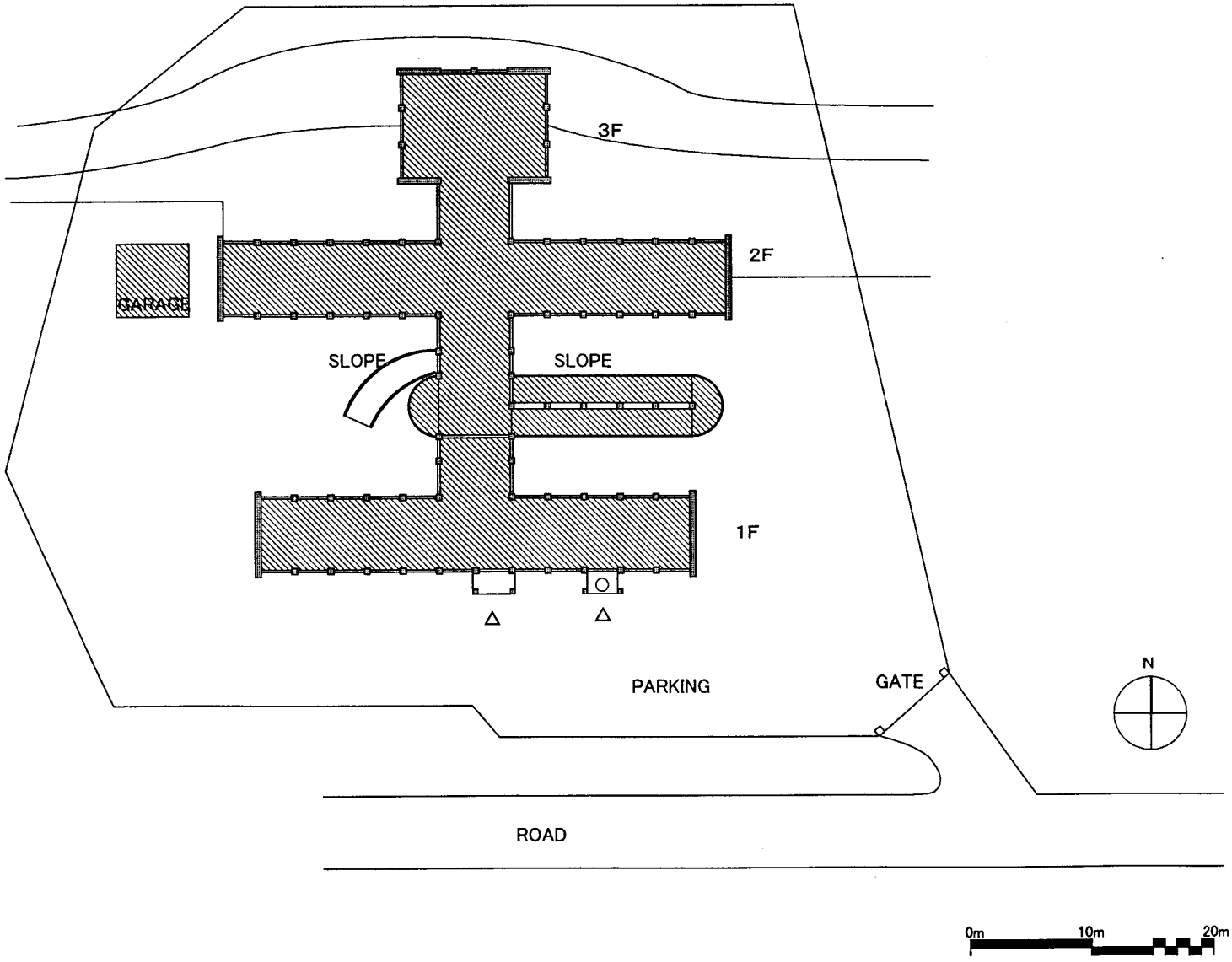
A-1	Height scale	A-13	Diagnostic apparatus set	B-3	Obstetric laparotomy/caesarean section pac
A-2-A	Weighing scale	A-15-A	Sphygmomanometer	B-4-A	Ultrasound scanner(with cart)
A-3	Delivery bed	A-15-B	Sphygmomanometer(portabl)	B-5-A	Vacuum extractor(erastromotion)
A-4	Instrument cabinet	A-16	Stethoscope	B-7	Infant warmer
A-5	Kerry pad	A-17	Autoclave,table top	B-8	Phototherapy unit
A-6	Magnal board	A-18	Blood sedimentation set	B-10	ECG
A-7	Neonatal resuscitation pack	A-19	Centrifuge	B-11	Examination table
A-8	Normal delivery pack	A-20	Hemo meter	B-13	Grass ware set
A-9	Obstetric stethoscope	A-21	Hemacytometer set	B-14	Hot air serilizer
A-10	Electric thermometer	A-22	Microscope binocular	B-16	Water bath
A-11	Infant laryngscope	B-1	Boiling sterilizer	B-17	Ambulance
A-12	Infant weighing scale	B-2	Fetal doppler		

PHUNTSHOLING HOSPITAL SITE PLAN

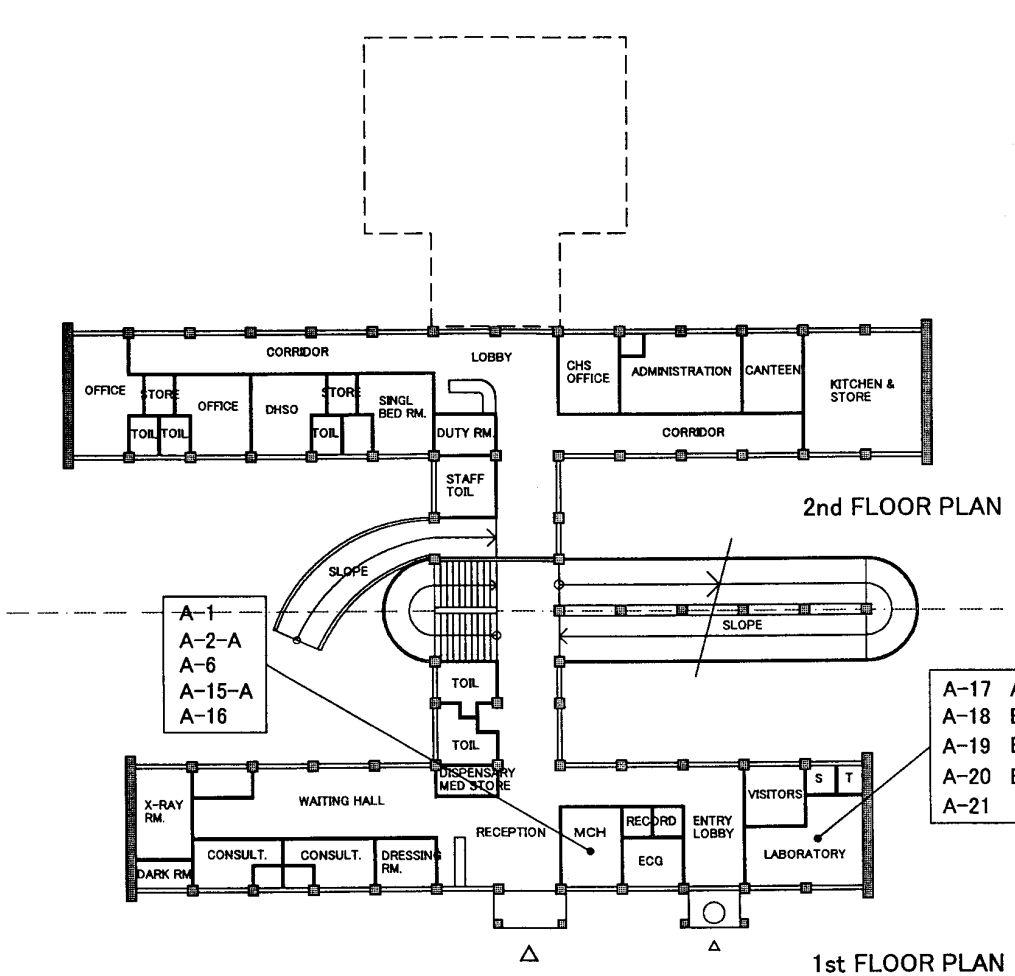


A-1	Height scale
A-2-A	Weghing scale
A-3	Delivery bed
A-4	Instrument cabinet
A-5	Kerry pad
A-6	Magnal bord
A-7	Neonatal resusciation pack
A-8	Normal delivery pack
A-9	Obstetric stethoscope
A-10	Electric thermometer
A-11	Infant laryngoscope
A-12	Infant weighing scale
A-13	Diagnostic apparatus set
A-14	Examination lamp
A-15-A	Sphygmomanometer
A-16	Stethoscope
A-17	Autoclave,table top
A-18	Blood sedimentation set
A-19	Centrifuge
A-20	Hemo meter
A-21	Hemacytometer set
A-22	Microscope binocular
B-2	Fetal doppler
B-13	Grass ware set

PUNAKHA HOSPITAL SITE PLAN

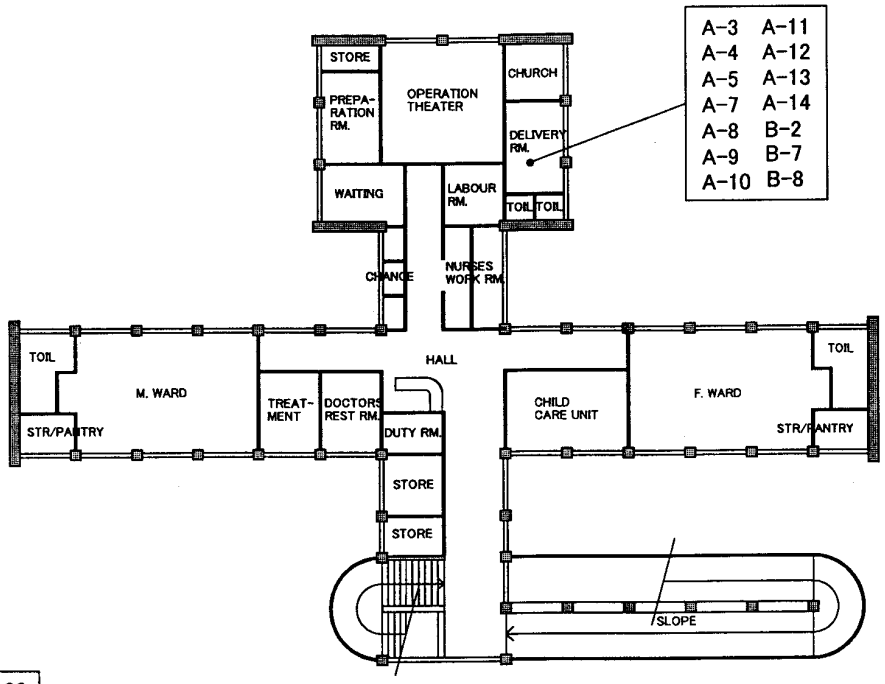


TSIMALAKHA HOSPITAL SITE PLAN



2nd FLOOR PLAN

1st FLOOR PLAN

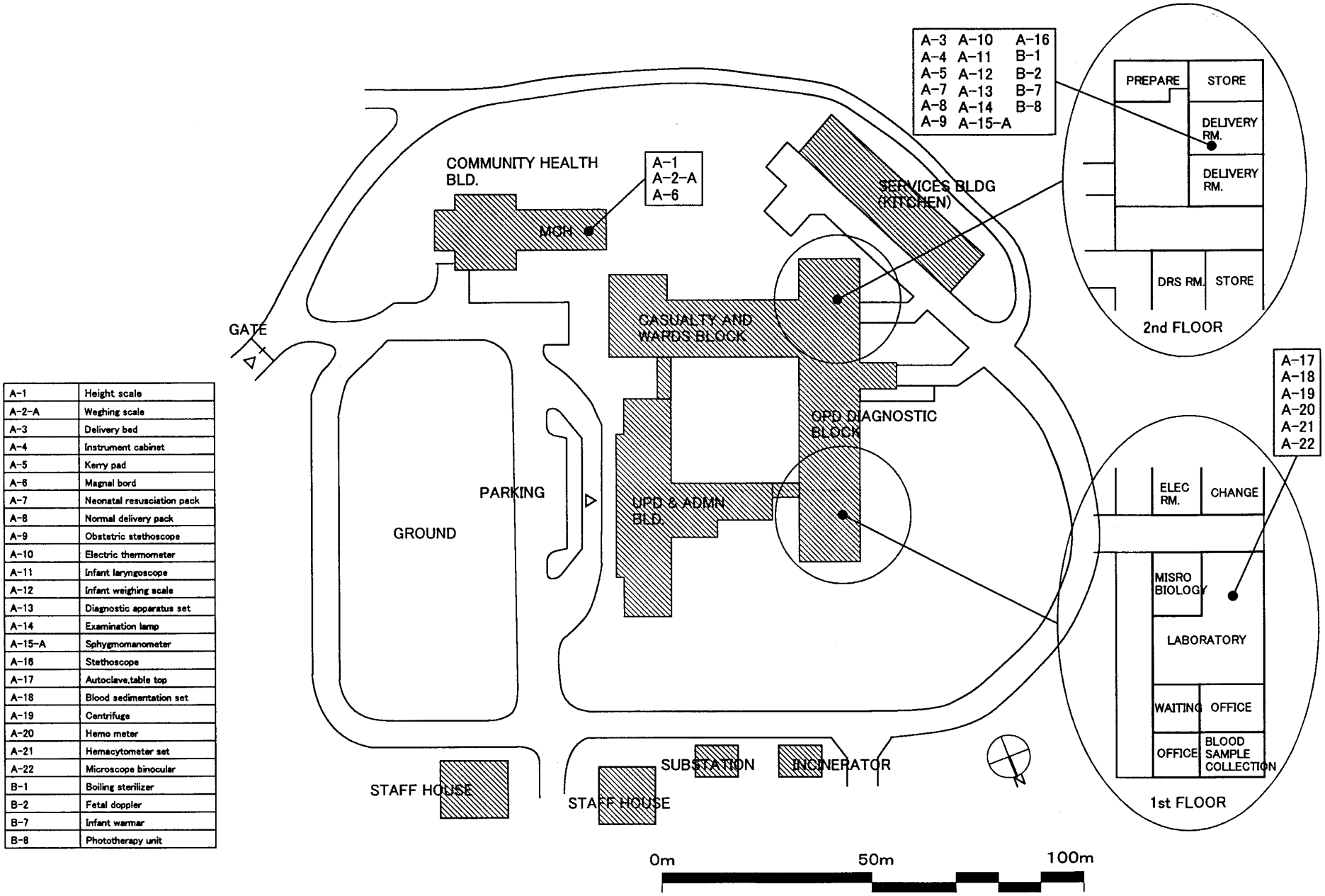


3rd FLOOR PLAN

A-1	Height scale	A-9	Obstetric stethoscope	A-17	Autoclave,table top	B-8	Phototherapy unit
A-2-A	Weghing scale	A-10	Electric thermometer	A-18	Blood sedimentation set	B-13	Grass ware set
A-3	Delivery bed	A-11	Infant laryngoscope	A-19	Centrifuge	B-14	Hot air sterilizer
A-4	Instrument cabinet	A-12	Infant weighing scale	A-20	Hemo meter	B-16	Water bath
A-5	Kerry pad	A-13	Diagnostic apparatus set	A-21	Hemacytometer set		
A-6	Magnal bord	A-14	Examination lamp	A-22	Microscope binocular		
A-7	Neonatal resusciation pack	A-15-A	Sphygmomanometer	B-2	Fetal doppler		
A-8	Normal delivery pack	A-16	Stethoscope	B-7	Infant warmar		

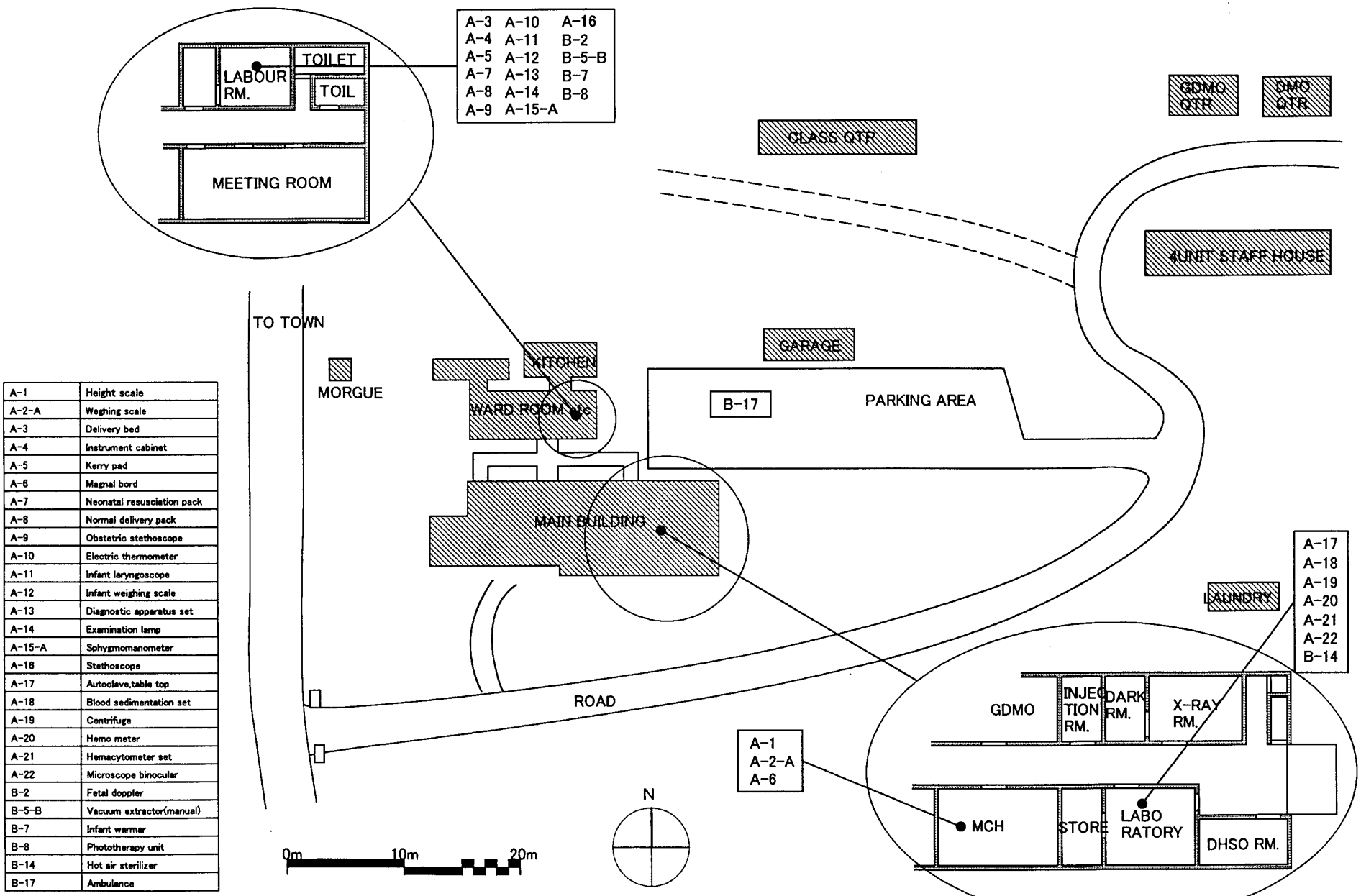
0m 10m 20m

TSIMALAKHA HOSPITAL PLAN



A-1	Height scale
A-2-A	Weghing scale
A-3	Delivery bed
A-4	Instrument cabinet
A-5	Kerry pad
A-6	Magnal bord
A-7	Neonatal resusciation pack
A-8	Normal delivery pack
A-9	Obstetric stethoscope
A-10	Electric thermometer
A-11	Infant laryngoscope
A-12	Infant weighing scale
A-13	Diagnostic apparatus set
A-14	Examination lamp
A-15-A	Sphygmomanometer
A-16	Stethoscope
A-17	Autoclave,table top
A-18	Blood sedimentation set
A-19	Centrifuge
A-20	Hemo meter
A-21	Hemacytometer set
A-22	Microscope binocular
B-1	Boiling sterilizer
B-2	Fetal doppler
B-7	Infant warmar
B-8	Phototherapy unit

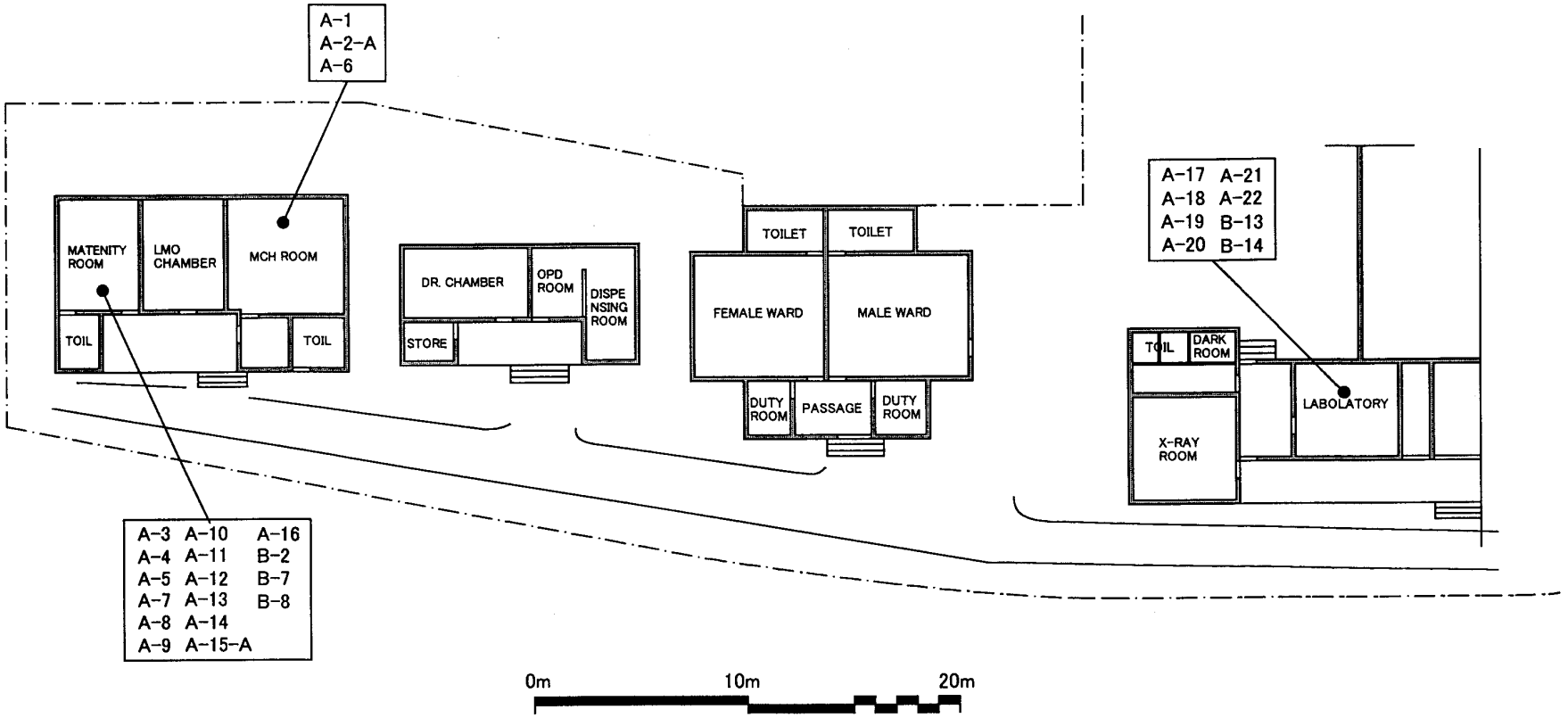
PALO HOSPITAL SITE PLAN



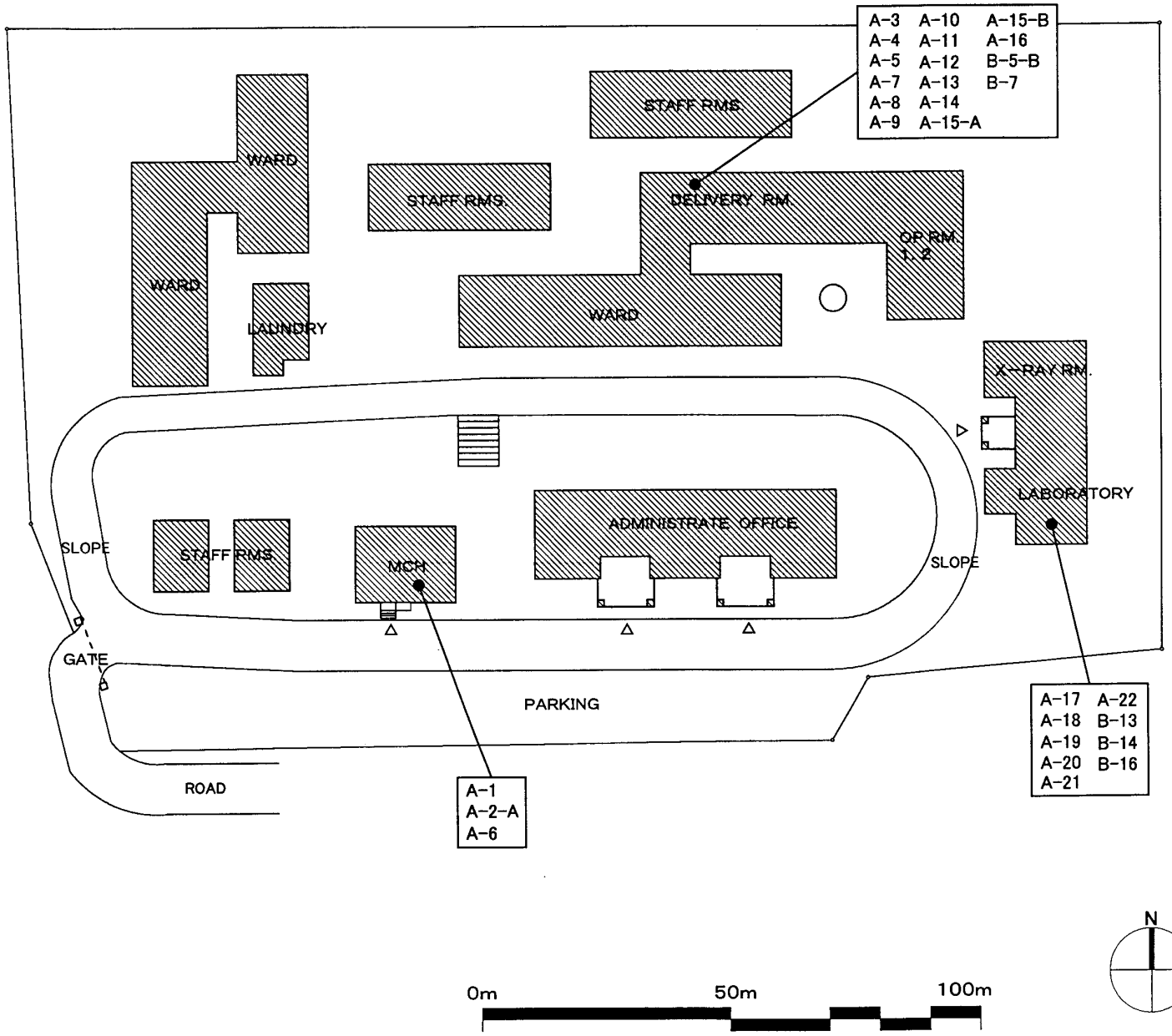
A-1	Height scale
A-2-A	Weghing scale
A-3	Delivery bed
A-4	Instrument cabinet
A-5	Kerry pad
A-6	Magnal bord
A-7	Neonatal resusciation pack
A-8	Normal delivery pack
A-9	Obstetric stethoscope
A-10	Electric thermometer
A-11	Infant laryngoscope
A-12	Infant weighing scale
A-13	Diagnostic apparatus set
A-14	Examination lamp
A-15-A	Sphygmomanometer
A-16	Stethoscope
A-17	Autoclave,table top
A-18	Blood sedimentation set
A-19	Centrifuge
A-20	Hemo meter
A-21	Hemacytometer set
A-22	Microscope binocular
B-2	Fetal doppler
B-5-B	Vacuum extractor(manual)
B-7	Infant warmer
B-8	Phototherapy unit
B-14	Hot air sterilizer
B-17	Ambulance

DAMPHU HOSPITAL SITE PLAN

A-1	Height scale	A-15-A	Sphygmomanometer
A-2-A	Weghing scale	A-16	Stethoscope
A-3	Delivery bed	A-17	Autoclave,table top
A-4	Instrument cabinet	A-18	Blood sedimentation set
A-5	Kerry pad	A-19	Centrifuge
A-6	Magnal bord	A-20	Hemo meter
A-7	Neonatal resusciation pack	A-21	Hemacytometer set
A-8	Normal delivery pack	A-22	Microscope binocular
A-9	Obstetric stethoscope	B-2	Fetal doppler
A-10	Electric thermometer	B-7	Infant warmar
A-11	Infant laryngoscope	B-8	Phototherapy unit
A-12	Infant weighing scale	B-13	Grass ware set
A-13	Diagnostic apparatus set	B-14	Hot air sterilizer
A-14	Examination lamp		

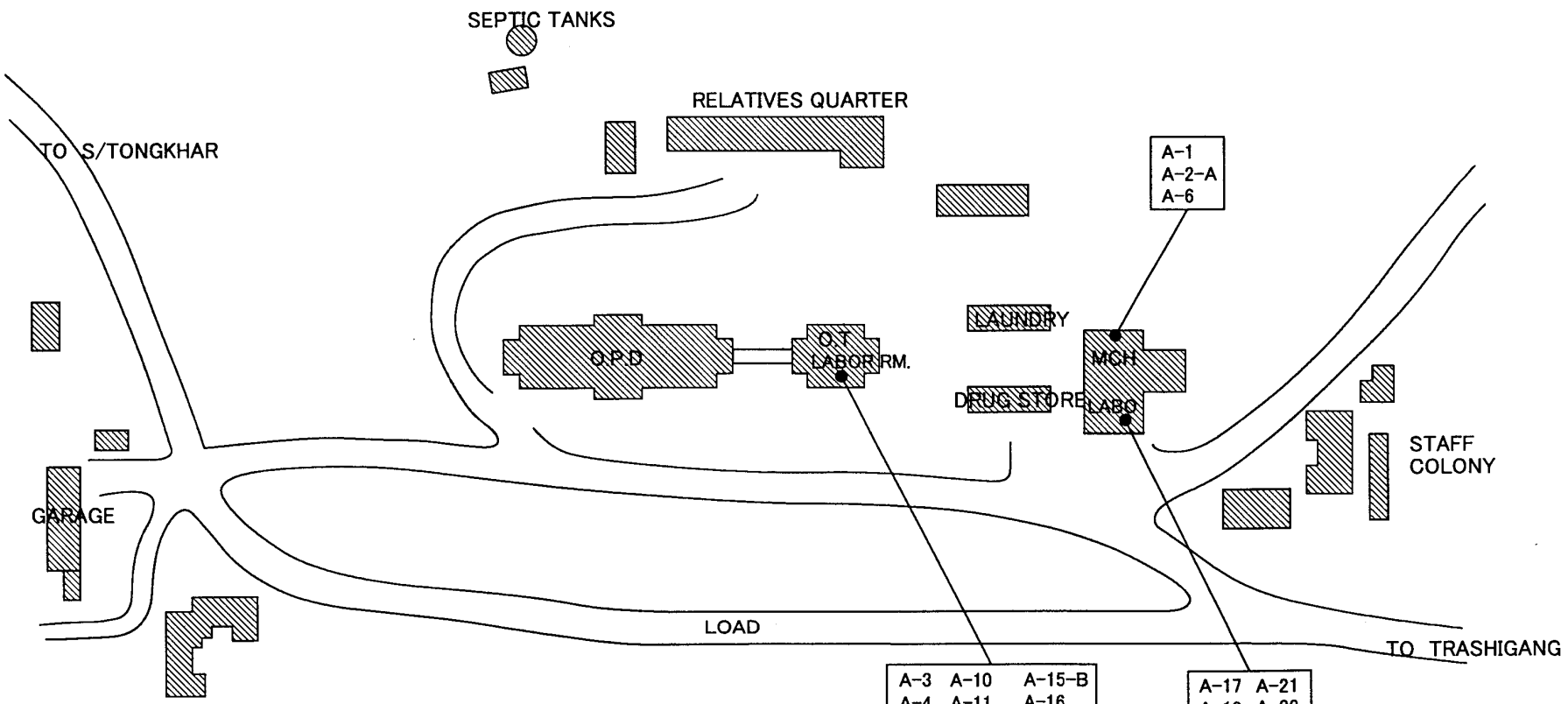


GOMTU HOSPITAL PLAN



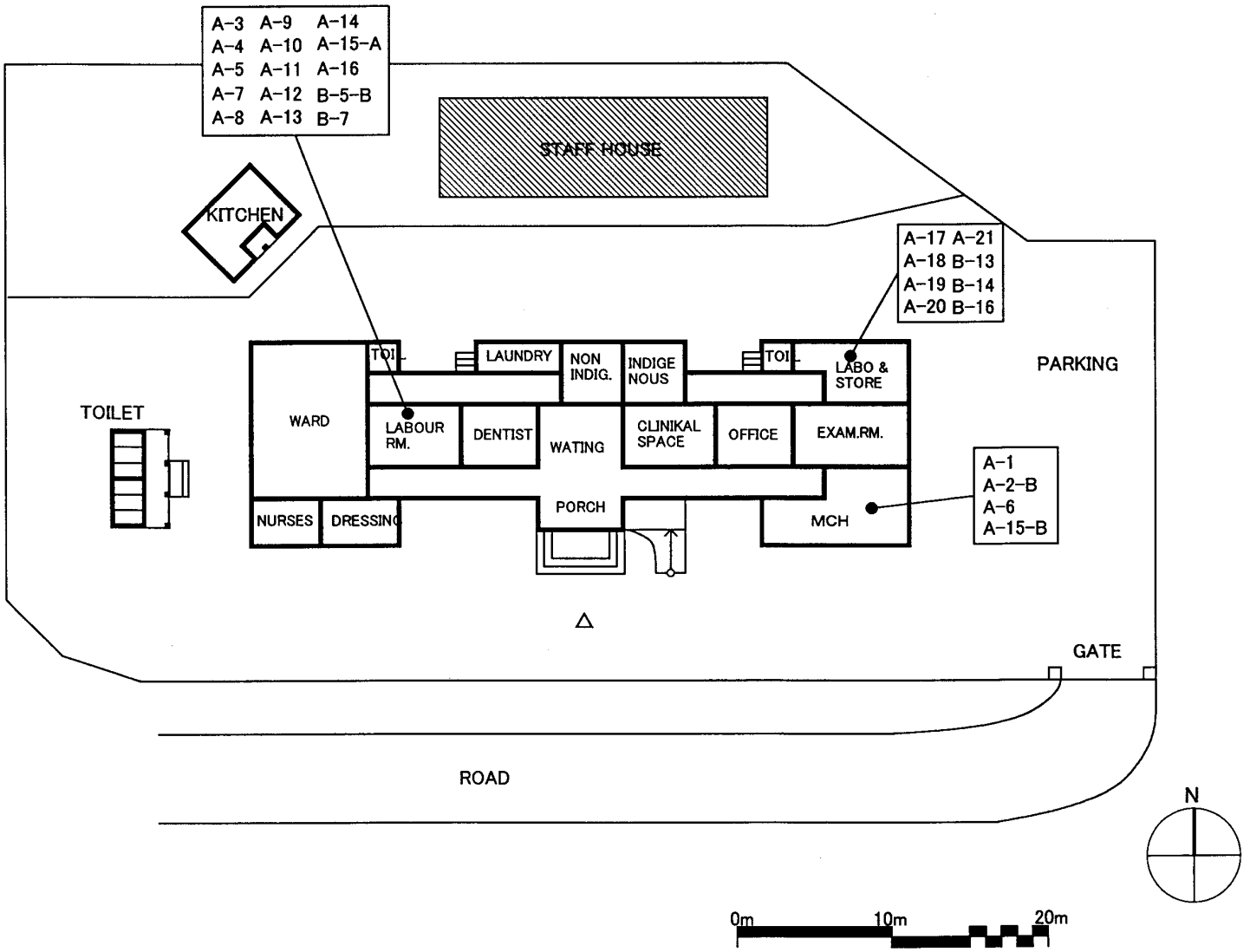
A-1	Height scale
A-2-A	Weghing scale
A-3	Delivery bed
A-4	Instrument cabinet
A-5	Kerry pad
A-6	Magnal bord
A-7	Neonatal resusciation pack
A-8	Normal delivery pack
A-9	Obstetric stethoscope
A-10	Electric thermometer
A-11	Infant laryngoscope
A-12	Infant weighing scale
A-13	Diagnostic apparatus set
A-14	Examination lamp
A-15-A	Sphygmomanometer
A-15-B	Sphygmomanometer(portable)
A-16	Stethoscope
A-17	Autoclave,table top
A-18	Blood sedimentation set
A-19	Centrifuge
A-20	Hemo meter
A-21	Hemacytometer set
A-22	Microscope binocular
B-5-B	Vacuum extractor(manual)
B-7	Infant warmar
B-13	Grass ware set
B-14	Hot air sterilizer
B-16	Water bath

GIDAKOM HOSPITAL SITE PLAN



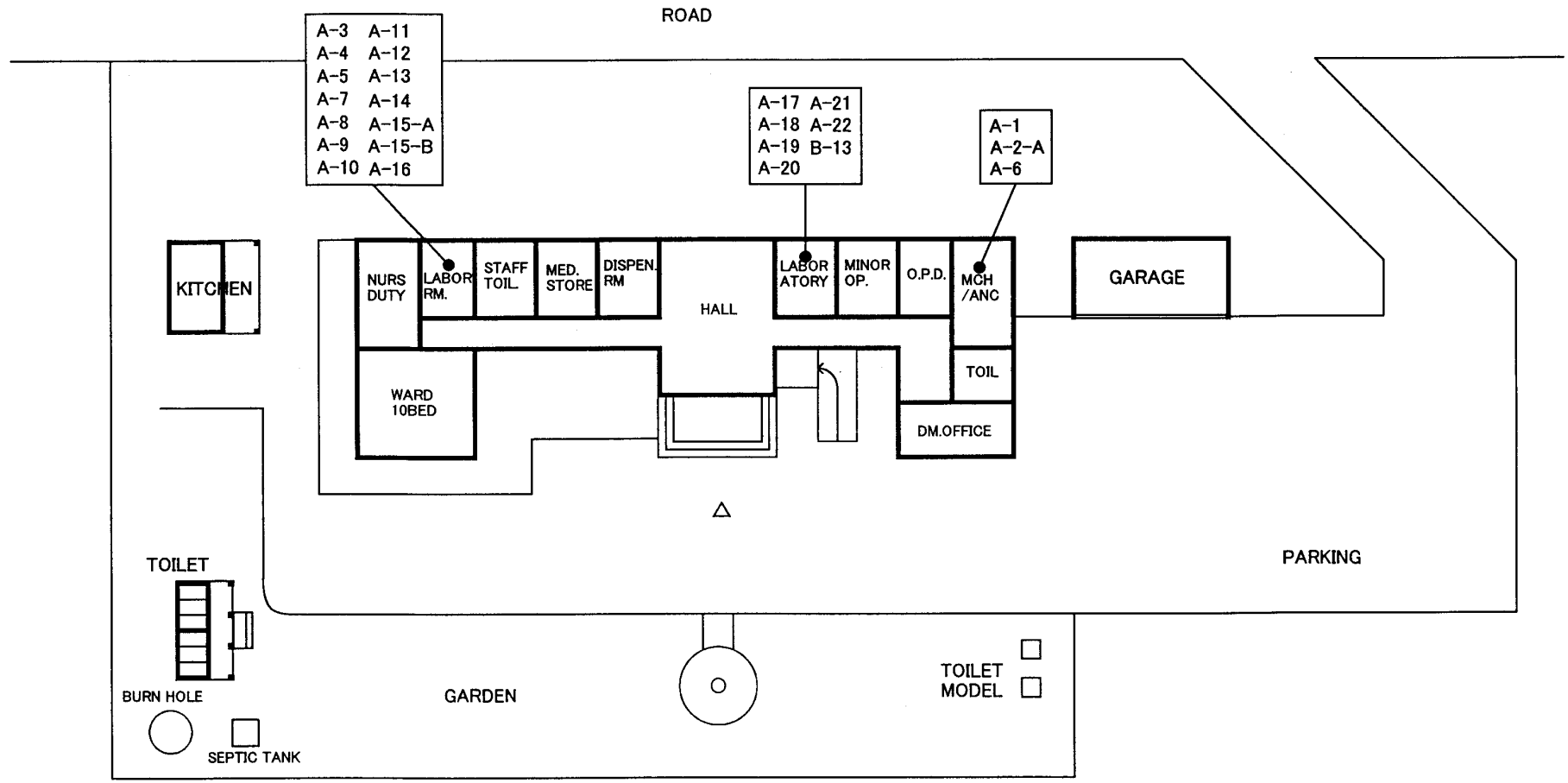
A-1	Height scale	A-11	Infant laryngoscope	A-20	Hemo meter
A-2-A	Weghing scale	A-12	Infant weighing scale	A-21	Hemacytometer set
A-3	Delivery bed	A-13	Diagnostic apparatus set	A-22	Microscope binocular
A-4	Instrument cabinet	A-14	Examination lamp	B-1	Boiling sterilizer
A-5	Kerry pad	A-15-A	Sphygmomanometer	B-2	Fetal doppler
A-6	Magnal bord	A-15-B	Sphygmomanometer(portable)	B-11	Examination table
A-7	Neonatal resusciation pack	A-16	Stethoscope	B-12-B	High pressure steam sterilizer (stand type)
A-8	Normal delivery pack	A-17	Autoclave,table top	B-13	Grass ware set
A-9	Obstetric stethoscope	A-18	Blood sedimentation set	B-14	Hot air sterilizer
A-10	Electric thermometer	A-19	Centrifuge		

RLSERBOO HOSPITAL SITE PLAN

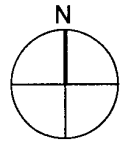


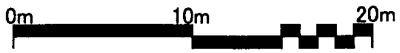
A-1	Height scale
A-2-B	Weghing scale(Health meter)
A-3	Delivery bed
A-4	Instrument cabinet
A-5	Kerry pad
A-6	Magnal bord
A-7	Neonatal resusciation pack
A-8	Normal delivery pack
A-9	Obstetric stethoscope
A-10	Electric thermometer
A-11	Infant laryngoscope
A-12	Infant weighing scale
A-13	Diagnostic apparatus set
A-14	Examination lamp
A-15-A	Sphygmomanometer
A-15-B	Sphygmomanometer(portable)
A-16	Stethoscope
A-17	Autoclave,table top
A-18	Blood sedimentation set
A-19	Centrifuge
A-20	Hemo meter
A-21	Hemacytometer set
B-5-B	Vacuum extractor(manual)
B-7	Infant warmer
B-13	Grass ware set
B-14	Hot air sterilizer
B-16	Water bath

BALI BHU SITE PLAN

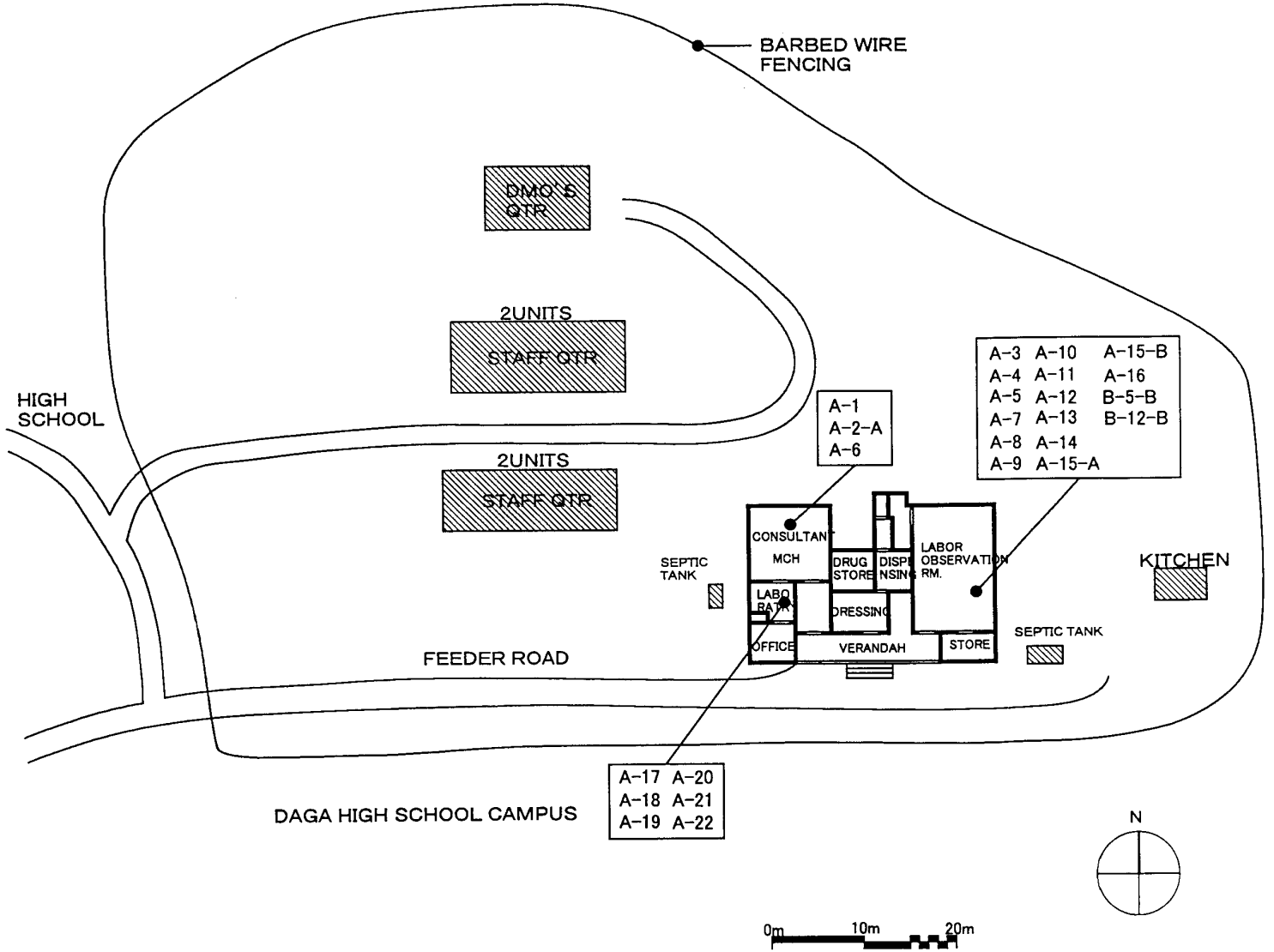


A-1	Height scale	A-9	Obstetric stethoscope	A-16	Stethoscope
A-2-A	Weghing scale	A-10	Electric thermometer	A-17	Autoclave,table top
A-3	Delivery bed	A-11	Infant laryngoscope	A-18	Blood sedimentation set
A-4	Instrument cabinet	A-12	Infant weighing scale	A-19	Centrifuge
A-5	Kerry pad	A-13	Diagnostic apparatus set	A-20	Hemo meter
A-6	Magnal bord	A-14	Examination lamp	A-21	Hemacytometer set
A-7	Neonatal resusciation pack	A-15-A	Sphygmomanometer	A-22	Microscope binocular
A-8	Normal delivery pack	A-15-B	Sphygmomanometer(portable)	B-13	Grass ware set





BAJOTANG BHU SITE PLAN



A-1	Height scale
A-2-A	Weghing scale
A-3	Delivery bed
A-4	Instrument cabinet
A-5	Kerry pad
A-6	Magnal bord
A-7	Neonatal resusciation pack
A-8	Normal delivery pack
A-9	Obstetric stethoscope
A-10	Electric thermometer
A-11	Infant laryngoscope
A-12	Infant weighing scale
A-13	Diagnostic apparatus set
A-14	Examination lamp
A-15-A	Sphygmomanometer
A-15-B	Sphygmomanometer(portable)
A-16	Stethoscope
A-17	Autoclave,table top
A-18	Blood sedimentation set
A-19	Centrifuge
A-20	Hemo meter
A-21	Hemacytometer set
A-22	Microscope binocular
B-5-B	Vacuum extractor(manual)
B-12-B	High pressure steam sterilizer (stand type)

DAGA BHU SITE PLAN