

MINISTRY OF HEALTH
THE REPUBLIC OF ZAMBIA

**BASIC DESIGN STUDY REPORT
ON
THE PROJECT FOR IMPROVEMENT OF
THE DEPARTMENT OF PEDIATRICS AND CHILD HEALTH
OF
UNIVERSITY TEACHING HOSPITAL
IN
THE REPUBLIC OF ZAMBIA**

February, 1996

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JAPAN INTERNATIONAL COOPERATION AGENCY

YAMASHITA SEKKEI INC.

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PREFACE

In response to a request from the Government of the Republic of Zambia, the Government of Japan decided to conduct a basic design study on the Project for Improvement of the Department of Pediatrics and Child Health of University Teaching Hospital and entrusted the study to the Japan International Cooperation Agency (JICA).

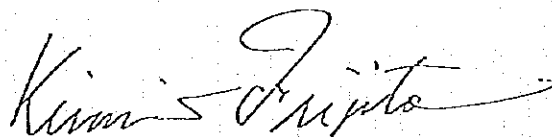
JICA sent to Zambia a study team from July 30 to September 1, 1995.

The team held discussions with the officials concerned of the Government of Zambia, 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 Zambia in order to discuss a draft basic design, and as this result, the present report was finalized.

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

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

February, 1996



Kimio Fujita
President

Japan International Cooperation Agency

February, 1996

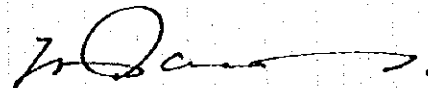
Letter of Transmittal

We are pleased to submit to you the basic design study report on the Project for Improvement of the Department of Pediatrics and Child Health of University Teaching Hospital in the Republic of Zambia.

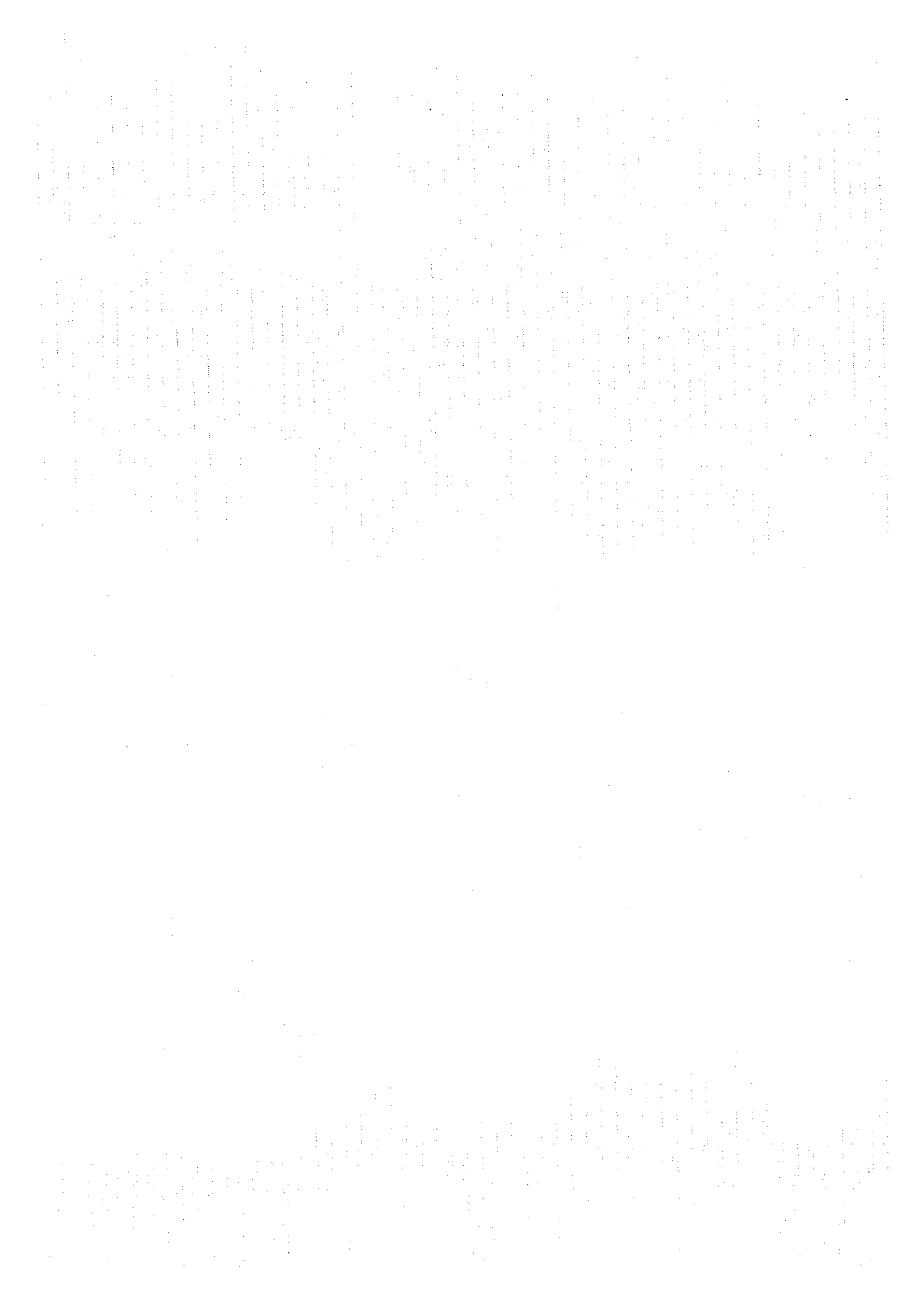
This study was conducted by Yamashita Sekkei Inc., under a contract to JICA, during the period from July 7, 1995 to March 25, 1996. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Zambia and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

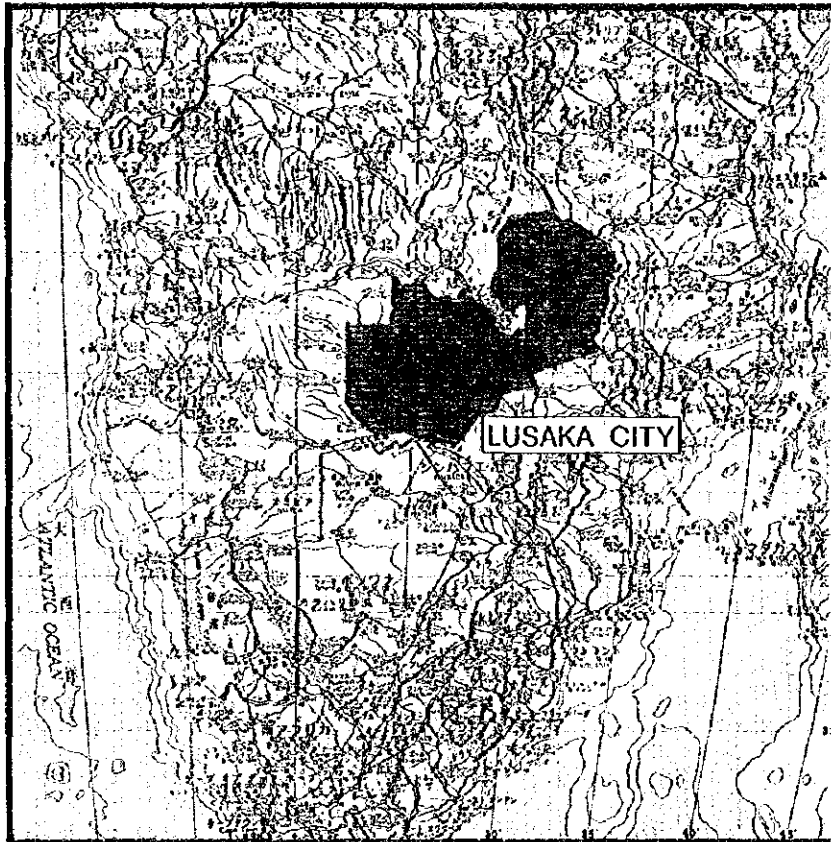
Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,

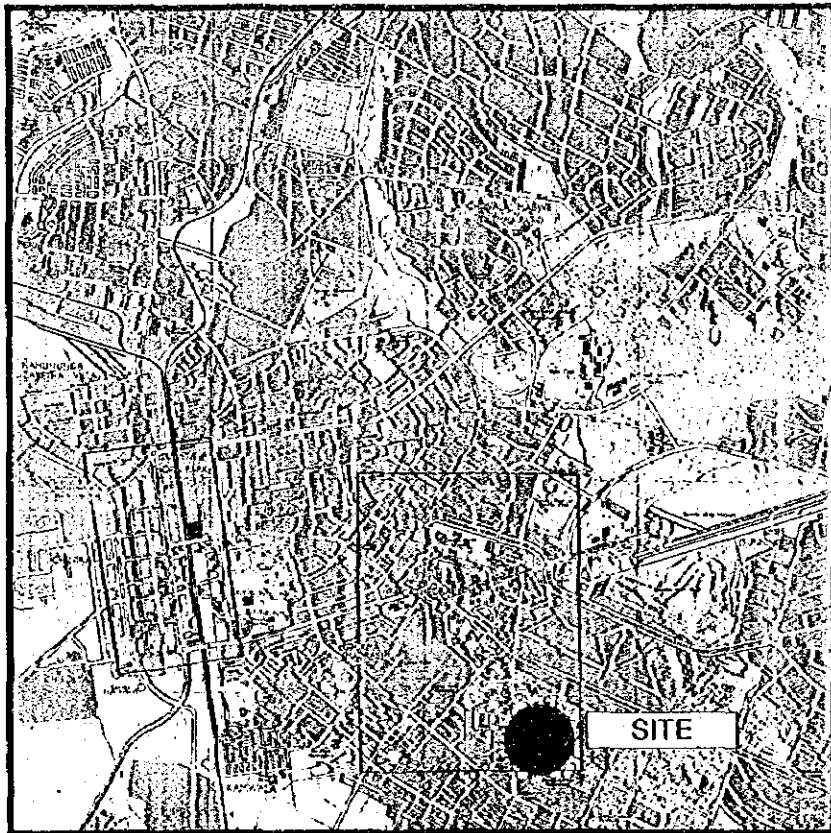


Minoru Tanaka
Project manager,
Basic design study team on
The Project for Improvement of
the Department of Pediatrics
and Child Health of University
Teaching Hospital
Yamashita Sekkei Inc.

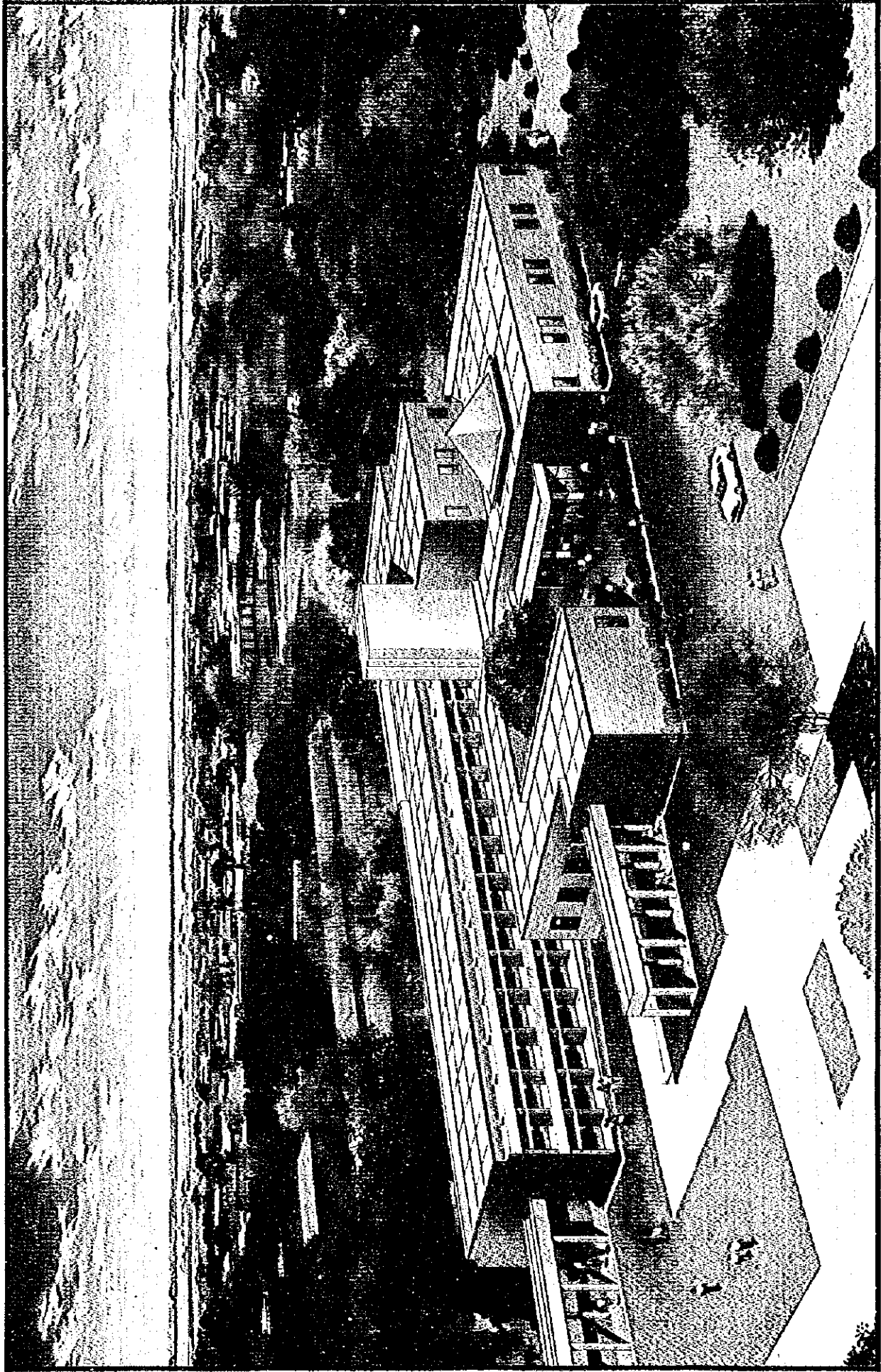




SOUTHERN AFRICA



CENTER OF LUSAKA CITY



THE DEPARTMENT OF PEDIATRICS AND CHILD HEALTH

PERSPECTIVE



PROPOSED PROJECT SITE

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CHAPTER 1 BACKGROUND OF THE PROJECT

THE HISTORY OF THE UNITED STATES

OF THE

AMERICAN PEOPLE

FROM 1776 TO 1876

BY

W. W. HARRIS

NEW YORK

1876

THE

AMERICAN

BOOK CONCERN

NEW YORK

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NEW YORK

1876

CHAPTER 1 BACKGROUND OF THE PROJECT

The Zambian economy has long been dependent on the production and export of copper. Recently, however, copper's international prices have gone down and the country's copper deposits have begun to decrease. The Government of Zambia, therefore, has been urging the necessity of shifting away from dependence on copper, but no significant progress has been made in the diversification of income sources. Furthermore, the country is faced with such problems as an explosion of urban population, the slowdown in the growth of personal incomes with unstable employment, a high inflation rate (67.4 percent as of 1992) and a serious fiscal deficit.

As to Zambia's main health indicators (as of 1992), the average life expectancies are 46 for males and 49 for females, the mortality rate for children under 5 is 202/1,000 and that for infant is 113/1,000. The main diseases in the country include malaria, pneumonia and diarrhea. In recent years, there has been a marked increase in AIDS cases, which has become a serious social problem. Primary health care (PHC) is the backbone of Zambia's health policy. PHC services are provided in local communities to prevent, diagnose and treat these diseases. In Zambia, the health centres are expected to play a pivotal role in primary health care. In actuality, however, they are not provided with sufficient facilities, equipment and medical staffs. In the case of the urban health centres (UHCs), which are providing PHC services in urban areas where there has been a remarkable increase in population, it is urgent that their facilities and equipment should be improved. In reality, however, no efforts have so far been made to expand and improve medical facilities, the per capita number of hospital beds being virtually on the decrease. There has always been a shortage of medical professionals, such as medical

doctors and nurses, and medicines. As a result, the country is heavily dependent on international organizations and foreign countries for their supply.

This project is aimed at establishing a full-scale referral system for the University Teaching Hospital (UTH) and the Urban Health Centres (UHCs) by improving the facilities of the Department of Pediatrics and Child Health of UTH, as well as of the department's medical care functions and environment, by establishing within the department a training centre to conduct Outreach program to train the medical staff members of the UHCs whose mainrole is to promote primary health care (PHC) activities in and around Lusaka City, and by having patients who tend to frequent the UTH, which is the country's main tertiary health care institution, visit the UHCs regularly.

In implementing this project, the Government of Zambia requested the Government of Japan's grant aid cooperation. The request was made against the background of a slowdown in the growth of Zambia's economy, the obsolescence of the country's main medical facilities and a shortage of medical professionals.

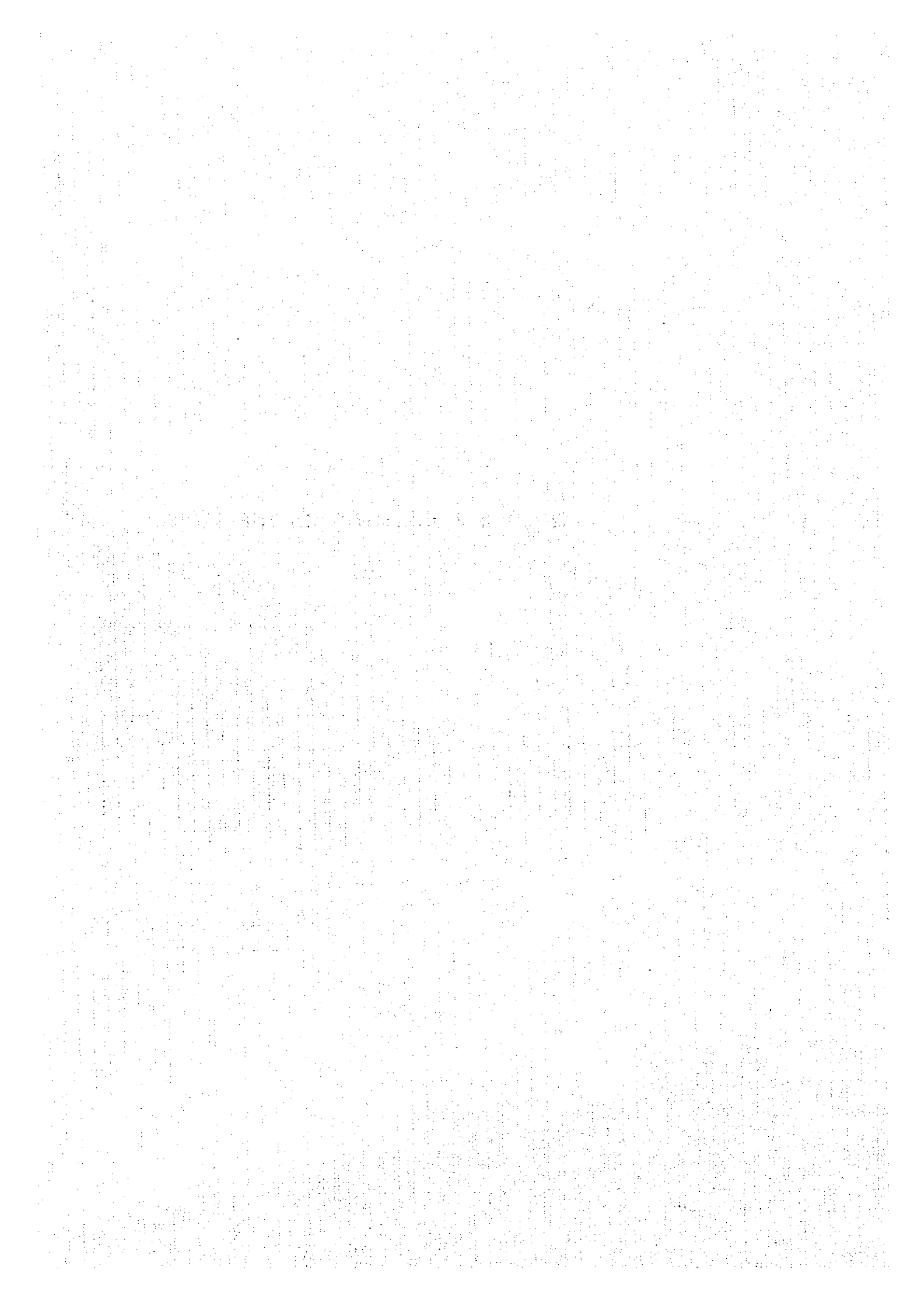
In the Government of Zambia's national health policy, top priority is given to the provision of high-quality health care services to the people, particularly both qualitative and quantitative improvement of PHC activities, the nurturing of medical professionals for the improvement of the functions of the UHCs and the UTH and the establishment of a system for close cooperation between the UHCs and the UTH in the provision of health care services.

At present, basic urban health plans are being worked out and proposals have been made to improve the facilities and equipment of the UHCs with

the cooperation of the World Bank, foreign country's aid-providing organizations and NGOs in urban areas. Strenuous efforts are being made to decrease the population per UHC from 52,000 to 15,000. In the Government of Zambia's "National Strategic Health Plan 1995-1999," top priority is given to the improvement of the country's primary health care system, more specifically the expansion of the facilities of the UHCs and the improvement of the country's referral system. With the Government of Japan's grant aid cooperation, the Government of Zambia carried out "Lusaka City Primary Health Care Equipment Improvement Plan," which covered 21 UHCs in Lusaka City and the UTH's pediatrics, obstetrics and gynecology, and maintenance departments, in 1995.

If this project is implemented, the facilities and equipment of the UTH's pediatrics department will be improved and an outreach centre will be set up, which will result in the improvement in the pediatrics department's diagnosis and treatment functions. Activities conducted by the outreach centre will contribute to the improvement in medical technologies at the UHCs. This project thus will contribute to the establishment of a system for cooperation between the UTH and the UHCs in the provision of health care services.

CHAPTER 2 CONTENTS OF THE PROJECT



CHAPTER 2 CONTENTS OF THE PROJECT

2-1 Objectives of the Project

This project is aimed at enhancing the health care services and health care environment of Zambia University Teaching Hospital (UTH), which is responsible for tertiary health care in Zambia, by improving the facilities and equipment of the Outpatient Ward and Isolation Ward of the Department of Pediatrics and Child Health. At the same time, it is also aimed at making the referral system function by enhancing quality of health care services offered at Urban Health Centres (UHCs) through outreach activities (medical guidance/training), which are planned to carry out by UTH to medical staff of UHCs. At present patients tend to visit tertiary health care facilities instead of UHCs, which are responsible for provision of primary health care in and around Lusaka, due to their poor medical services.

2-2 Basic Concept of the Project

(1) Guidelines for Cooperation

As a result of a close review of the contents of the request, it has been concluded cooperation should be offered in accordance with the following guidelines.

Guideline-1 Improvement of the Health Care Environment

Cooperation should be offered for the improvement of the facilities (the Outpatient Ward and the Isolation Ward) and equipment of the

Department of Pediatrics and Child Health for the purpose of enhancing its health care services and health care environment.

Guideline-2 Improvement of the Quality of Child Health Care at the Primary Health Care Level

Cooperation should be offered for the establishment of facilities (rooms) and the procurement of equipment required in the newly constructed Outpatient Ward to carry out out-reach activities for the purpose of enhancing primary health care in and around Lusaka.

Guideline-3 Budgetary Appropriations for the Operation of the Project

Cooperation for the Department of Pediatrics and Child Health should be offered on a scale that matches the scope of the department's current operations, in light of the present size of the department's staff and operating budget. Cooperation for the establishment of facilities and the procurement of medical equipment should be offered within the frame-work of the department's financial plan, in light of the department's current ability to bear expenses.

Guideline-4 Ease of Operation and Management

The facility and equipment plans to be worked out for cooperation purposes should be premised on low maintenance cost and ease of operation.

(2) Results of the Examination of the Contents of the Request

The UTH is a central hospital and is the largest of the three referral hospitals in Zambia. This project is aimed at improving the facilities and equipment of the Department of Pediatrics and Child Health, UTH. The four main functions of the UTH are as follows.

- Provision of high-quality medical services to of Zambia
- Cooperation for the improvement of the quality of primary health care in the country
- Education and training of medical professionals
- Provision of advanced medical services to people referred from less equipped medical facilities throughout Zambia.

1) Present State of Health Care Services Offered at the Department of Pediatrics and Child Health

The following statistics give an outline of the present state of health care services for outpatients offered at the Department.

Table 2 - 1 1994 Statistics on the UTH and the Department of Pediatrics and Child Health

Item	UTH	Dept. of PCH
Annual No. of new outpatients	116,235	24,623
Annual No. of revisit outpatient	107,079	13,930
Average daily no. of outpatients	1,053	182
Annual no. of inpatients	61,140	11,755
Annual no. of inpatient discharges	49,968	9,568
Annual no. of inpatient deaths	6,459	2,187

(Source: UTH statistical data)

In 1994, the Department of Pediatrics and Child Health accepted a total of 38,553 outpatients (24,623 new outpatients plus 13,930 revisit outpatients), or 182 outpatients per day. Of the total annual number of the outpatients accepted, 11,755 outpatients, or about 30 percent, were hospitalized.

2) Present State of the Use of the Ward

At present, the Department of Pediatrics and Child Health has 388 beds. Although the average annual rate of occupancy of these beds is

less than 100 percent, the bed occupancy rate exceeds 100 percent in October, November and December, when sanitary conditions deteriorate due to high temperatures and humidity.

Table 2-2 Bed Occupancy Rate at UTH, Department of Pediatrics and Child Health

(Unit: %)

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1993	76.7	69.3	72.9	66.4	71.9	55.4	61.6	61.8	88.5	91.4	70.7	78.1
1994	67.4	66.9	64.7	74.9	61.5	38.9	60.7	67.5	89.6	109.8	119.9	103.1

(Source: UTH statistical data)

3) Present State of Activities of the UTH as a Teaching Hospital

The University of Zambia, the School of Medicine offers a 7-year undergraduate course, a 2-year intern course and a 4-year Post graduate course. The following table gives an outline of the curriculum for the School of Medicine.

Table 2-3 System of the School of Medicine

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Undergraduate course	████████████████████															<ul style="list-style-type: none"> • Students who finish this course can be GMO's after two years of medical practice. • Students who finish this course can be specialist/Consultant after two years of medical practice.
Intern course								████████████████████								
Post Graduate course								████████████████████								

• GMO: General Medical Officer

The Department of Pediatrics and Child Health is also serving as a teaching hospital and is therefore a place for training of medical students taking the undergraduate and intern courses. Its head of the department and consultants are serving concurrently as professors at the University of Zambia and therefore practical training for the medical students is conducted at the hospital by these professors.

(3) Summary of the Results of the Examination of the Contents of the Request

The UTH's facilities have been expanded a number of times since 1934 when the hospital was founded. At present, the hospital is positioned both as a general hospital in Lusaka and as one of the country's referral hospitals. The hospital, notably its Department of Pediatrics and Child Health, is also playing a pivotal role in the country's health care (medical examination, treatment, research and health care measures) for mothers and children.

The Department accepts more than 35,000 outpatients every year. Its annual average bed occupancy rate reached 77.1 percent in 1994. During the rainy season the bed occupancy rate exceeds 100 percent.

However, most of the Department's facilities, which were constructed in the mid 1930s, are quite superannuated and are too small for the increased number of patients. They are unable to fulfill their functions as the facilities to accept a large number of patients. The Department's Isolation Ward, which is designed primarily to accommodate patients suffering from tuberculosis or measles, is most superannuated and it is difficult to use the building during the rainy season.

In the National Strategic Health Plan (NSHP), utmost emphasis, is placed on the improvement of the quality of primary health care. Outreach activities by upper level health organization are indispensable in improving the quality of primary health care. For these reasons, the Government of Zambia requested the establishment of an outreach centre in connection with this project. Outreach activities to be carried out at the UTH are aimed at enhancing the quality of medical examination and treatment conducted at the UHCs through lecturing tours, seminars and

workshops, and at the same time helping the UHCs to educate community residents on the importance of primary health care and establishing a referral system.

Against such a background, the Government of Zambia requested the Government of Japan, Aid Cooperation on the Improvement of Outpatient Ward and Isolation Ward at the Department of Pediatrics and Child Health, UTH. The purpose of the request is to enhance the Department's functions as a referral hospital, to meet the increased demand for health care services due to the rapid increase in urban population through its outreach activities, to enhance its medical examination and treatment functions through the improvement of the quality of medical equipment and to nurture medical professionals through the enhancement of medical examination and treatment functions.

The examination of the requested facilities and items of equipment will be conducted on the basis of the above-mentioned facts.

1) Requested Room

Table 2-4 Examination of the Requested Rooms

Room	No. of rooms in the request	No. of room in the basic design	Result of the examination
(1) Outpatient Ward			
• Reception			
Waiting hall	1	1	• It is expected that about 200 outpatients and their attendants are to use the waiting hall a day on average.
Cashier	1	1	• A cashier's office is needed to receive and keep medical fees.
Maid room	1	1	• This is a room for daily maintenance staff in the outpatients ward.
Social worker's room	1	1	• A social worker's room is needed to give guidance to those patients who cannot afford to pay medical fees.
Toilet	1	0	• The toilet in the outpatient area can be used.

Room	No. of rooms in the request	No. of room in the basic design	Result of the examination
• Outpatient			
Examination room	4	4	• Assuming that about 200 outpatients visit the section a day on average, each of them being examined for about 7 minutes on average, and that the examination rooms are visited by many outpatients for 6 hours a day, the required number of consultation rooms is 4 (=200 outpatients×7 minutes÷360 minutes).
Emergency treatment room	1	1	• An emergency treatment room to operate round the clock is needed.
Treatment room	1	1	• One treatment room will suffice for the four examination rooms.
Observation room	1	1	• This is a room where patients who have fever are observed. It is estimated that about 5 percent of all outpatients will go to observation room.
Doctor's room	1	1	• This room is to serve as an anteroom, as well as a night duty room, for the doctors.
Nurse station	1	1	• This is a nurse station to be used by the nurses for observation purposes. It is also to be used as an anteroom for the nurses.
Store room	1	1	• This is a store room to stock supplies for the examination rooms and the treatment room.
Security room	1	1	• This is a room where the security is to check the in and out of patients.
Toilet	1	2	• There should be men's and women's toilets for outpatients and their attendants.
• Admission			
Admission	5	1	• This is a room where outpatients are observed for first 24 hours to determine whether or not they should be hospitalized. The number of beds should be about 60, or 25 percent of the average daily number of outpatients. The room itself should be like a nightgale ward so that there may be no need to increase the number of nursing units.
Treatment room	1	1	• This is a treatment room attached to the ward.
Nurse station	1	1	• This is a nurse station for the nurses to manage the 50-bed admission ward. It is also to serve as a workshop for the nurses.
Doctors' room	1	1	• This is a room to serve as an examination room, as well as an anteroom for the doctors.
Nurses' room	1	1	• This is a room to serve as a resting room for the nurses working at the admission ward.
Toilet	1	1	• There should be toilets and bathrooms for the use of patients staying in the admission ward.
• Acute			
Acute bay	1	1	• There should be about 10 beds for outpatients who need special medical attention. The number of beds should be determined on the basis of that for the existing beds.
Treatment room	1	1	• This is a treatment room for serious cases.

Room	No. of rooms in the request	No. of rooms in the basic design	Result of the examination
• Laboratory			
Laboratory	1	1	• This is a room where ordinary tests are conducted. Since it is expected that the hospital's present laboratory function will be transferred to this room, the size of the planned laboratory should be decided on the basis of that of the existing laboratory.
• Pharmacy			
Pharmacy	1	1	• This is a pharmacy where drugs sent from the main pharmacy are distributed.
Store room	1	1	• A warehouse to store temporarily drugs sent from the main pharmacy is needed.
• Nutrition			
Kitchen	1	1	• A kitchen to supply meals to patients and to provide a training place for mothers in cooking is needed.
Nutrition office	1	1	• This is an anteroom for the staff members of the nutrition.
Nutrition educational room	1	1	• This is a room where guidance on nutrition is to be given to patients' mothers.
• Washing			
Washing room	1	1	• Since it is expected that the present washing function will be transferred to this room, the size of the planned washing room should be decided on the basis of that of the existing washing room.
• Administration			
Head of the Department room	1	1	• An office for the head of the Pediatric Department is needed.
Secretary room	1	1	• This is a room for the secretary.
Matron room	1	1	• This is an office for the head nurse who supervises all the nurses.
Senior doctor room	4	4	• There are 8 senior doctors working at the Department. If a senior doctor room is to be shared by two senior doctors, the total number of the senior doctor rooms should be 4. These rooms should serve also as senior doctors' offices, examination rooms and anterooms for the senior doctors.
Registrars' room	1	1	• This is an anteroom for the use of about 10 registrars.
PG room	2	2	• PG rooms are offices/anterooms for doctors who plan to become consultant.
HO room	1	1	• This is a room to serve as an anteroom or a lounge for the house officers.
Night duty room	1	1	• This is a night duty room where two doctors keep night watch.
Outreach centre	1	1	• This room is to serve as the office for the doctors who train staff members of the urban health centres (UHCs) in Lusaka areas. It should also function as the UHC training headquarters.
Board room	1	1	• The board room will be used effectively for meetings of all the staff members of the administration.
Lecture room	1	1	• The lecture room, where lectures are to be given to medical students, should have a seating capacity of about 30.
Library	1	1	• The library should also serve as a study for the staff members and medical students.

Room	No. of rooms in the request	No. of room in the basic design	Result of the examination
Computer room	1	1	• This room, where information within the Pediatric Department is to be managed, should be provided with about 5 personal computers.
Machine room	1	1	• A machine room is needed.
Housekeeping office	1	1	• This is an office for the head of the section responsible for the operation and maintenance of the Department's facilities and equipment.
Store room	1	1	• A room to function as a store room for the administration is needed.
Toilet	2	2	• There should be mens' and women's toilets for the use of the staff members on both sides of the building.
(2) Isolation ward			
• Tuberculosis			
Tuberculosis ward	2	3	• This will be an rebuilt of existing facility. It should have 25 beds in light of the size of the existing ward.
Treatment room	1	1	• A treatment within the ward is needed.
Acute room	1	1	• There should have about 4 beds.
Bathroom/toilet	1	1	• Toilets and bathrooms for the use of patients are needed.
• Measles			
Measles ward	1	2	• In light of the size of the existing measles ward, the new ward should have 20 beds.
Treatment room	1	1	• A treatment room within the ward is needed.
Acute room	1	1	• The planned serious case room should have about 4 beds.
Bathroom/toilet	1	1	• Toilets and bathrooms for the use of patients are needed.
• Meningitis			
Meningitis ward	1	1	• The size of the planned ward should be decided on the basis of that of the existing.
• Other			
Other ward	1	1	• The size of the planned ward should be decided on the basis of the existing.
• Administration			
Reception office	1	1	• A reception office to manage the hospital's acceptance of patients is needed.
Doctor room	1	1	• This room should serve as a locker room.
Nurse station	1	1	• The nurse station should be located in a place where it is possible to taken an extensive view of all the rooms.
Toilet	1	2	• The toilet should serve also as the locker room for the staff members.
Store room	1	1	• This is a store room to stock linen and medical equipment.

2) Requested Items of Equipment

• Existing Items of Equipment

a. Medical Equipment

As a result of the examination conducted of the existing medical equipment, it has been confirmed that most of the existing items of equipment are well maintained. Except for some items, however, they were procured more than 10 years ago and difficult to procure spare parts for them. As can be seen from a list of the existing items of equipment (Appendix 2), which is attached to this report, only a few required items of equipment have thus far been procured. There is a serious shortage of basic items of medical equipment, such as desktop sterilizer, sphygmomanometer, laryngoscope, stethoscope and thermometer.

b. Isolation Ward

There is a total of 49 beds in use in the existing isolation ward, of which 12 beds, including 6 cots, are for the use of children, and 38 for the use of infants. Of these beds, only two beds for the use of infants are kept in good condition. Of the other beds, 29 beds are usable although partially damaged, 15 beds are usable although considered not suited for use in medical treatment, and 3 beds cannot be used for medical treatment. In view of this fact, it can be said that the existing isolation ward has a very poor medical treatment environment. Moreover, the existing isolation ward has only 6 IV stands despite the fact that these stands are used very frequently for treatment of infectious diseases. It has no bedside cabinet or tables. The whole ward looks dusky. Most of its walls are damaged heavily and its toilets are superannuated. As such, the ward compares

rather unfavorably with the other facilities of the Pediatric Department.

The beds installed in the other ward of the Department are not in good condition either. Compared with those installed in the isolation ward, however, they are well maintained. It seems as if beds which had become unusable at the other ward were taken to the isolation ward as a temporary expedient.

The examination of the requested items of equipment was conducted on the basis of the above descriptions.

Table 2-5 Examination of the Requested Items of Equipment

No.	Description	Request Qty	Basic Design	Using purpose
(1) Outpatient Ward				
100 Reception				
101	Filing cabinet	2 pcs	20 pcs	To stock document
102	Electric calculator	2 pcs	2 pcs	To make calculation
103	Photocopy machine	1 pc	1 pc	To make paper copies
104	Filing cabinet	2 pcs	2 pcs	To stock documents
105	Wheel chair	3 pcs	3 pcs	To assist patient to move
106	Stretcher	3 pcs	3 pcs	To assist patient to move
200 Outpatient				
201	Sphygmomanometer	4 pcs	4 pcs	To measure blood pressure
202	Examination couch	4 pcs	8 pcs	Basic equipment to examine patient
203	X-ray film illuminator	4 pcs	6 pcs	To view X-ray film
204	Filing cabinet	4 pcs	4 pcs	To stock documents
205	Examination light	4 pcs	4 pcs	Light for examination
206	Foot step	4 pcs	4 pcs	For patient use
207	Diagnostic set	4 sets	4 sets	Basic instruments set (thermometer, forceps, scissors, stethoscope, diagnostic set, tongue depressor, laryngoscope, etc.) for diagnosis
208	Forceps (L, S, M)	2 sets	0	Including in diagnostic set
209	Scissors (L, S, M)	2 sets	0	Including in diagnostic set
210	Stainless tray (L, S, M)	3 sets	4 sets	To keep instruments
211	Kidney tray (L, M, S)	3 sets	7 sets	Receptacle for waste
212	Dust bin	2 pcs	16 pcs	Receptacle for waste
213	Tongue depressor	4 pcs	0	Including in diagnostic set
214	Dressing container	2 pcs	8 pcs	To put instruments for sterilization

No.	Description	Request Q'ty	Basic Design	Using purpose
215	Laryngoscope	1 pc	0	Including in diagnostic set
216	Boiling sterilizer	4 pcs	4 pcs	To sterile instruments
217	Sphygmomanometer	3 pcs	5 pcs	To measure blood pressure
218	ECG monitor	1 pc	1 pc	Monitoring patient's condition (heart, body temperature, blood pressure, breath, etc.)
219	Examination couch	3 pcs	3 pcs	Basic equipment to examine patient
220	X-ray film illuminator	2 pcs	6 pcs	To view X-ray film
221	Filing cabinet	1 pc	0 pc	To stock documents
222	Examination light	2 pcs	3 pcs	Light for examination
223	Suction unit	1 pc	1 pc	To extract substance by vacuum
224	Stretcher	2 pcs	3 pcs	To assist patient to move
225	Foot step	2 pcs	3 pcs	For patient use
226	Minor operating sets	2 sets	3 sets	Set of surgical instruments (Hemostatic forceps, forceps, needle holder, scissors, scalpel, tourniquet, etc.)
227	Sterilizer, small	1 pc	1 pc	To sterile instruments
228	Examination couch	2 pcs	2 pcs	Basic equipment to examine patient
229	Instruments trolley	2 pcs	5 pcs	To transport instruments
230	Nebulizer	2 pcs	3 pcs	Treatment for respiratory organs
231	Medicine trolley	1 pc	2 pcs	To transport medicine
232	Sterilizer, small	1 pc	1 pcs	To sterile instruments
233	Foot step	1 pc	2 pcs	For patient use
234	Refrigerator	1 pc	2 pcs	To keep medicine under low temperature
235	IV stand	3 pcs	5 pcs	Basic equipment to use blood and liquid transfusion
236	Suction unit	1 pc	1 pc	To extract substance by vacuum
237	Instrument cabinet	1 pc	3 pcs	To store instruments
238	Hospital bed with mattress	4 pcs	5 pcs	For patient use
239	Pediatric bed with mattress	4 pcs	5 pcs	For patient use
240	IV stand	8 pcs	5 pcs	Basic equipment to use blood and liquid transfusion
300 Admission				
301	Hospital bed with mattress	25 pcs	25 pcs	For patient use
302	Bedside cabinet	25 pcs	25 pcs	For patient use
303	Over bed table	25 pcs	25 pcs	For patient use
304	Pediatric bed with mattress	25 pcs	25 pcs	For patient use
305	Bedside cabinet	25 pcs	25 pcs	For patient use
306	Over bed table	25 pcs	0	For patient use
307	Stretcher	5 pcs	5 pcs	To assist patient to move
308	Wheel chair	5 pcs	5 pcs	To assist patient to move
309	IV stand	3 pcs	25 pcs	Basic equipment to use blood and liquid transfusion

No.	Description	Request Qty	Basic Design	Using purpose
310	Examination coach	2 pcs	2 pcs	Basic equipment to examine patient
311	Instrument trolley	2 pcs	2 pcs	To transport instruments
312	Medical trolley	2 pcs	2 pcs	To transport medicine
313	Sterilizer, small	2 pcs	2 pcs	To sterile instruments
314	Refrigerator	1 pc	2 pcs	To keep medicine under low temperature
315	IV stand	3 pcs	2 pcs	Basic equipment to use blood and liquid transfusion
316	Suction unit	2 pcs	1 pc	To extract substance by vacuum
317	Foot step	2 pcs	2 pcs	For patient use
318	Wheel chair	2 pcs	2 pcs	To assist patient to move
319	Instrument cabinet	1 pc	2 pcs	To store instruments
320	Instrument sets (Diagnostic set)	2 set	4 set	Basic instruments set (thermometer, forceps, scissors, stethoscope, diagnostic set, tongue depressor, laryngoscope, etc.) for diagnosis
321	Diagnostic sets	1 set	2 set	Basic instruments set (thermometer, forceps, scissors, stethoscope, diagnostic set, tongue depressor, laryngoscope, etc.) for diagnosis
322	Filing cabinet	1 pc	4 pcs	To stock documents
323	X-ray film illuminator	1 pc	2 pcs	To view X-ray film
324	Stethoscope	1 pc	0	Including in diagnostic set
325	Stethoscope	5 pcs	0	Including in diagnostic set
326	Sphygmomanometer	5 pcs	6 pcs	To measure blood pressure
327	Thermometer	10 pcs	0	Including in diagnostic set
328	X-ray film illuminator	2 pcs	4 pcs	To view X-ray film
329	Medicine cupboard	1 pc	3 pcs	To storage medicine
330	Refrigerator	1 pc	2 pcs	To keep medicine under low temperature
331	Instrument cabinet	1 pc	2 pcs	To store instruments
332	Emergency cart	2 pcs	4 pcs	Cart for emergency use
333	Bedpan	10 pcs	35 pcs	For serious patient use
334	Urine pan	10 pcs	35 pcs	For serious patient use
335	Bedpan washer	1 pc	2 pcs	Washing and sterilizing bedpan and urine pan
400 Acute bay				
401	2 crank gatch bed with mattress	10 pcs	10 pcs	For serious patient use
402	ECG monitor	3 pcs	3 pcs	Monitoring patient's condition (heart, breath, body temperature, blood pressure, etc.)
404	Ambu bag	5 pcs	9 pcs	Treatment for artificial respiration by manual
405	Nebulizer	5 pcs	7 pcs	Treatment for respiratory organs
406	Suction unit	2 pcs	3 pcs	To extract substance by vacuum
407	Oxygen tent	1 pc	2 pcs	Tent to provide oxygen
408	IV stand	10 pcs	10 pcs	Basic equipment to use blood and liquid transfusion
409	Emergency cart with defibrillators	1 pc	1 pc	Cart for emergency use, with defibrillator

No.	Description	Request Q'ty	Basic Design	Using purpose
500 X-ray				
504	X-ray film illuminator	1 pc	1 pc	Basing equipment
505	X-ray protective set	1 set	1 set	Protect body from radiation
506	Foot step	1 pc	1 pc	For patient use
508	ECG, 3 channel	1 pc	1 pc	Measuring patient's condition (heart, breath, body temperature, blood pressure, etc.)
509	Examination couch	1 pc	1 pc	Basic equipment to examine patient
511	Name printer	1 pc	1 set	Film maker
512	Cassettes	10 pcs	10 set	Film cassettes, assorted size
513	Film hunger	10 pcs	10 pcs	To dry film after development
600 Laboratory				
601	Microscope	3 pcs	3 pcs	To observe small object by magnifying
602	Spectrophotometer	1 pc	1 pc	To analyze for bio chemistry test
603	Calorimeter	1 pc	1 pc	Analytical equipment red blood cell
604	Analytical balance	1 pc	1 pc	Precision balance
605	Differential leukocyte counter	1 pc	1 pc	Leukocyte counting equipment
606	Blood cell counter	1 pc	1 pc	To analyze for hematology test
607	Centrifuge	2 pcs	2 pcs	Basic equipment in laboratory
608	Blood bank refrigerator	1 pc	1 pc	To store blood bag under low temperature
609	Ultra low temperature freezer	1 pc	1 pc	To storage specimen under freezing
610	Water bath	2 pcs	2 pcs	To process sample reaction
611	Dry air oven	1 pc	1 pc	To sterile instrument
612	Sterilizer	1 pc	1 pc	To sterile instrument
613	Distiller	1 pc	1 pc	To still water
700 Pharmacy				
702	Medical refrigerator	1 pc	1 pc	To keep medicine under low temperature
900 Laundry				
901	Washer and extractor	2 pcs	2 pcs	Washing/extracting linen
902	Dryer	1 pc	1 pc	To dry linen
903	Laundry cart	3 pcs	3 pcs	Equipment to transport linen
904	Laundry bag	3 pcs	3 pcs	Equipment to collect linen
905	Laundry store rack	2 pcs	2 pcs	To stock linen
1500 Administration				
1501	X-ray film illuminator	1 pc	1 pc	To view X-ray film
1502	Photocopy machine	1 pc	1 pc	To make paper copy
1503	X-ray film illuminator	1 pc	1 pc	To view X-ray film
1504	Over head projector	1 pc	1 pc	For education use
1505	X-ray film illuminator	1 pc	4 pcs	To view X-ray film

No.	Description	Request Q'ty	Basic Design	Using purpose
1506	X-ray film illuminator	1 pc	4 pcs	To view X-ray film
1507	Over head projector	1 pc	1 pc	For education use
1508	X-ray film illuminator	1 pc	1 pc	To view X-ray film
1509	Slide projector	1 pc	1 pc	For education use
1510	Portable TV with video recorder	1 pc	1 pc	To record data and statistic work
1511	Computer	1 pc	1 pc	To record data and statistic work
1512	Computer	5 pcs	5 pcs	To record data and statistic work
1513	Medical gas piping system (O ₂ /vacuum)	1 pc	1 pc	To supply medical gas
1514	Incinerator	1 pc	1 pc	To burn medical waste
(2) Isolation Ward				
1000 Tuberculosis				
1001	Hospital be with Mattress	14 pcs	15 pcs	For patient use
1002	Beside cabinets	14 pcs	15 pcs	For bedside use
1003	Over bed table	14 pcs	15 pcs	For bedside use
1004	Pediatric bed with Mattress	11 pcs	10 pcs	For pediatric patient use
1005	Beside cabinet	11 pcs	10 pcs	For bedside use
1006	Over bed table	11 pcs	0	For bedside use
1007	IV stand	25 pcs	13 pcs	Basic equipment to use blood and liquid transfusion
1008	Double basin with stand	2 pcs	2 pcs	To wash and disinfect hands
1009	Examination coach	2 pcs	1 pc	Basic equipment to examine patient
1010	Instrument trolley	2 pcs	1 pc	To transport instrument
1011	Medicine trolley	2 pcs	1 pc	To transport medicine
1012	Sterilizer, small	1 pc	1 pc	To sterile instruments
1013	Suction unit	2 pcs	1 pc	To extract substance by vacuum
1014	Instrument cabinet	1 pc	1 pc	To store instruments
1015	Foot step	2 pcs	1 pc	For patient use
1016	Refrigerator	1 pc	1 pc	To keep medicine under low temperature
1017	Instrument set (Diagnostic set)	2 set	1 set	Basic instruments set (thermometer, forceps, scissors, stethoscope, diagnostic set, tongue depressor, laryngoscope, etc.) for diagnosis
1018	Crank gatch bed with mattress	4 pcs	4 pcs	To serious patient use
1019	Oxygen tent	1 pc	1 pc	Tent to provide oxygen
1020	Double basin with stand	1 pc	1 pc	To wash and disinfect hands
1021	IV stand	4 pcs	4 pcs	Basic equipment to use blood and liquid transfusion
1100 Measles				
1101	Hospital bed with Mattress	6 pcs	10 pcs	For patient use
1102	Beside cabinet	6 pcs	10 pcs	For bedside use

No.	Description	Request Q'ty	Basic Design	Using purpose
1103	Over bed table	6 pcs	10 pcs	For bedside use
1104	Pediatric bed with mattress	5 pcs	10 pcs	For pediatric patient use
1105	Bedside cabinet	5 pcs	10 pcs	For bedside use
1106	Over bed table	5 pcs	0	For bedside use
1107	IV stand	5 pcs	10 pcs	Basic equipment to use blood and liquid transfusion
1108	Double basin with stand	1 pc	2 pcs	To wash and disinfect hands
1109	Examination coach	2 pcs	1 pc	Basic equipment to examine patient
1110	Instrument trolley	2 pcs	1 pc	To transport instruments
1111	Medicine trolley	2 pcs	1 pc	To transport medicine
1112	Sterilizer, small	1 pc	1 pc	To sterile instruments
1113	Suction unit	2 pcs	1 pc	To extract subscript by vacuum
1114	Instrument cabinet	1 pc	1 pc	To store instruments
1115	Foot step	2 pcs	1 pc	For patient use
1116	Refrigerator	1 pc	1 pc	To keep medicine under low temperature
1117	Instrument set (Diagnostic set)	2 set	1 set	Basic instruments set (thermometer, forceps, scissors, stethoscope, diagnostic set, tongue depressor, laryngoscope, etc.) for diagnosis
1118	2 Crank gatch bed with mattress	4 pcs	4 pcs	For serious patient use
1119	Oxygen tent	1 pc	1 pc	Tent to provide oxygen
1120	Double basin with stand	1 pc	1 pc	To wash and disinfect hands
1121	IV stand	2 pcs	4 pcs	Basic equipment to use blood and liquid transfusion
1122	Over bed table	6 pcs	0	For bedside use
1123	Pediatric bed with mattress	5 pcs	0	For pediatric patient use
1124	Bedside cabinet	5 pcs	0	For bedside use
1125	Over bed table	5 pcs	0	For bedside use
1126	IV stand	10 pcs	0	Basic equipment to use blood and liquid transfusion
1127	Double basin with stand	1 pc	0	To wash and disinfect hands
1200 Meningitis				
1201	Hospital bed with mattress	6 pcs	5 pcs	For patient use
1202	Bedside cabinet	6 pcs	5 pcs	For bedside use
1203	Over bed table	6 pcs	5 pcs	For bedside use
1204	Pediatric bed with mattress	5 pcs	5 pcs	For pediatric patient use
1205	Bedside cabinet	5 pcs	5 pcs	For bedside use
1206	Over bed table	5 pcs	0	For bedside use
1207	IV stand	10 pcs	5 pcs	Basic equipment to use blood and liquid transfusion
1208	Double basin with stand	1 pc	1 pc	To wash and disinfect hands

No.	Description	Request Q'ty	Basic Design	Using purpose
1300 Others				
1301	Hospital bed with mattress	10 pcs	5 pcs	For patient use
1302	Bedside table	10 pcs	5 pcs	For bedside use
1303	Over bed tale	10 pcs	5 pcs	For bedside use
1304	Pediatric bed with mattress	10 pcs	5 pcs	For pediatric patient use
1305	Bedside cabinet	10 pcs	5 pcs	For bedside use
1306	Over bed table	10 pcs	0	For bedside use
1307	IV stand	10 pcs	5 pcs	Basic equipment to use blood and liquid transfusion
1308	Double basin with stand	10 pcs	1 pcs	To wash and disinfect hands
1400 Administration				
1401	X-ray film illuminator	1 pc	5 pcs	To view X-ray film
1402	Stethoscope	10 pcs	0	Including in instrument set
1403	Sphygmomanometer	5 pcs	4 pcs	To measure blood pressure
1404	Thermometer	10 pcs	0	Including in instrument set
1405	Medicine cupboard	1 pc	2 pcs	To keep medicine
1406	Refrigerator	2 pcs	2 pcs	To keep medicine under low temperature
1407	Diagnostic set (instrument set)	1 set	2 set	Basic instruments set (thermometer, forceps, scissors, stethoscope, tongue depressor, etc.) for diagnosis
1408	Forceps (L, M, S)	5 set	0	Including in instrument set
1409	Scissors (L, M, S)	5 set	0	Including in instrument set
1410	Stainless jar	2 pcs	5 pcs	To keep instruments
1411	Kidney tray (L, M, S)	5 set	2 set	Receptacle for waste
1412	Dust bin	3 pcs	2 pcs	Receptacle for waste
1414	Ambu bag	2 pcs	2 pcs	Treatment for artificial respiration by manual
1415	Dressing container	3 pcs	2 pcs	To put instruments for sterilization
1416	Instrument cabinet	1 pc	2 pcs	To stock instruments
1417	Emergency cart	2 pcs	2 pcs	For emergency use
1418	Bedpan	10 pcs	20 pcs	For serious patient use
1419	Urine pan	10 pcs	20 pcs	For serious patient use
1420	Bedpan washer	1 pc	2 pcs	Washing and sterilizing bedpan and urine pan