

MINISTRY OF HEALTH AND CHILD WELFARE
REPUBLIC OF ZIMBABWE

No. 013

**BASIC DESIGN STUDY REPORT
OF
THE PROJECT FOR CONSTRUCTION OF
THE PAEDIATRIC FACILITIES OF
HARARE CENTRAL HOSPITAL
IN
THE REPUBLIC OF ZIMBABWE**

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DECEMBER, 1995

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JICA BASIC DESIGN STUDY REPORT OF THE PROJECT FOR CONSTRUCTION OF
THE PAEDIATRIC FACILITIES OF HARARE CENTRAL HOSPITAL IN THE REPUBLIC OF ZIMBABWE

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PREFACE

In response to a request from the Government of the Republic of Zimbabwe, the Government of Japan decided to conduct a basic design study on the Project for Construction of the Paediatric Facilities of Harare Central Hospital and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Zimbabwe a study team from 26th, May to 24th, June 1995.

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

December, 1995



Kimio Fujita

President

Japan International Cooperation Agency

December, 1995

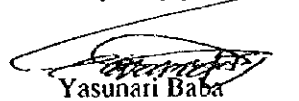
Letter of Transmittal

We are pleased to submit to you the basic design study report on the Project for the Construction of Paediatric Facilities of Harare Central Hospital in Zimbabwe.

This study was conducted by Sozosha Co., Ltd., under a contract to JICA, during the period from May 19, 1995 to December 15, 1995. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Zimbabwe and formulated the most appropriate basic design for the project under Japan's grant scheme.

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

Very truly yours,



Yasunari Baba

Project Manager,
Basic design study team on
the Project for the Construction
of Paediatric Facilities of Harare
Central Hospital
Sozosha Co., Ltd.



ジンバブエ国
ハラレ中央病院小児科病棟建設工事
THE CONSTRUCTION OF PAEDIATRIC UNIT OF HARARE CENTRAL HOSPITAL
IN
THE REPUBLIC OF ZIMBABWE

ABBREVIATION

AIDS:	Aquired Immunodeficiency Syndrome
ARI:	Acute Respiratory Infection
CDD:	Control of Diarrhea Disease
CIDA:	Canadian International Development Agency
CSO:	Central Statistical Office
DANIDA:	Danish International Development Agency
DDC:	District Development Committee
DHE:	Distrtict Health Executive
DMO:	District Medical Officer
DNO:	District Nursing Officer
DHSA:	District Health Service Administrator
DDT:	Dichloro-Diphenyl-Trichloroethane
EC:	The European Community
EHT:	Environmental Health Technician
EPI:	Expanded Programme on Immunization
ESAP:	Economic Structural Adjustment Programme
FHP:	Family Health Project
FP:	Family Planning
GDP:	Gross Domestic Product
GMO:	Government Medical Store
GOZ:	Government of Zimbabwe
HIV:	Human Immunodeficiency Virus
IDRC:	International Development Research Council
IEC:	Information Education and Communication
LSCF:	Large Scale Commercial Farm
MCH:	Maternal and Child Health
MPCNH:	Ministry of Public Construction and Housing
MOH:	Ministry of Health
MOHCW:	Ministry of Health and Child Welfare
NACP:	National Aids Coordination Program
NGO:	Non-Governmental Organization
NORAD:	Norwegian Agency for International Development
ODA:	Overseas Development Administration

ORS:	Oral Rehydration Salts
PHE:	Provincial Health Executive
PMD:	Provincial Medical Director
PNO:	Provincial Nursing Officer
PHSA:	Provincial Health Service Administrator
PDC:	Provincial Development Committee
PHC:	Primary Health Care
RHC:	Rural Health Center
SCN:	State Certified Nurse
SDF:	Social Development Fund
SIDA:	Swedish International Development Association
SRN:	State Registered Nurse
SSCF:	Small Scale Commercial Farm
SADCC:	Southern African Development Co-ordination Conference
SSS:	Sugar and Salt Solution
STD:	Sexually Transmitted Disease
UNICEF:	United Nation Children's Fund
UNFPA:	United Nations Fund for Population Activities
USAID:	United States Agency for International Development
VCW :	Village Community Worker
VIDCO:	Village Development Committee
VIP:	Ventilated Improved Pit(Latrine)
WADCO:	Ward Development Committee
WHO:	World Health Organization
ZANU:	Zimbabwe African National Union
ZAPU:	Zimbabwe African People's Union
ZEDAP:	Zimbabwe Essential Drug Action Program
ZEPI:	Zimbabwe Expanded Programme on Immunization
ZNFPA:	Zimbabwe Family Planning Council

THE PROJECT FOR CONSTRUCTION OF THE PAEDIATRIC OF HARARE CENTRAL HOSPITAL IN THE REPUBLIC OF ZIMBABWE BASIC DESIGN STUDY REPORT

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- 3. List of Party Concerned in the Recipient Country**
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Chapter 1 Background of the Project

Chapter 1 Background of the Project

The three big diseases in Zimbabwe are measles, pneumonia and diarrhea besides malaria and schistosomiasis. The medical levels of Zimbabwe are 46.5/1000 on infant mortality rate (1990), 53.8/1000 on child mortality and 330/10,000 (1988) on material death rate and these medical levels are comparatively high levels in surrounding African countries. The number of doctor per head in the population is one doctor for 7,180 patients (1990) and it has become worse in comparison with one doctor for 6,300 patients (1970).

On the other hand, The Government of Zimbabwe had to reduce the amount of budget for medical field due to the introduction of ESAP which recommended by the World Bank in 1990. Because of that, the hospitals had changed their policy of free medical system to paid medical system and strengthening collection of the medical fee from patients in order to recover short of budget and get smooth management of the hospital.

Nevertheless, the amount of that collected medical fee cover only recurrent cost and can not cover the repairing or re-constructing cost of the old facilities and equipments of the Hospital. And these conditions reduce workmanship of the doctors and other medical staff of the hospital and also reduce efficiency of their medical work too.

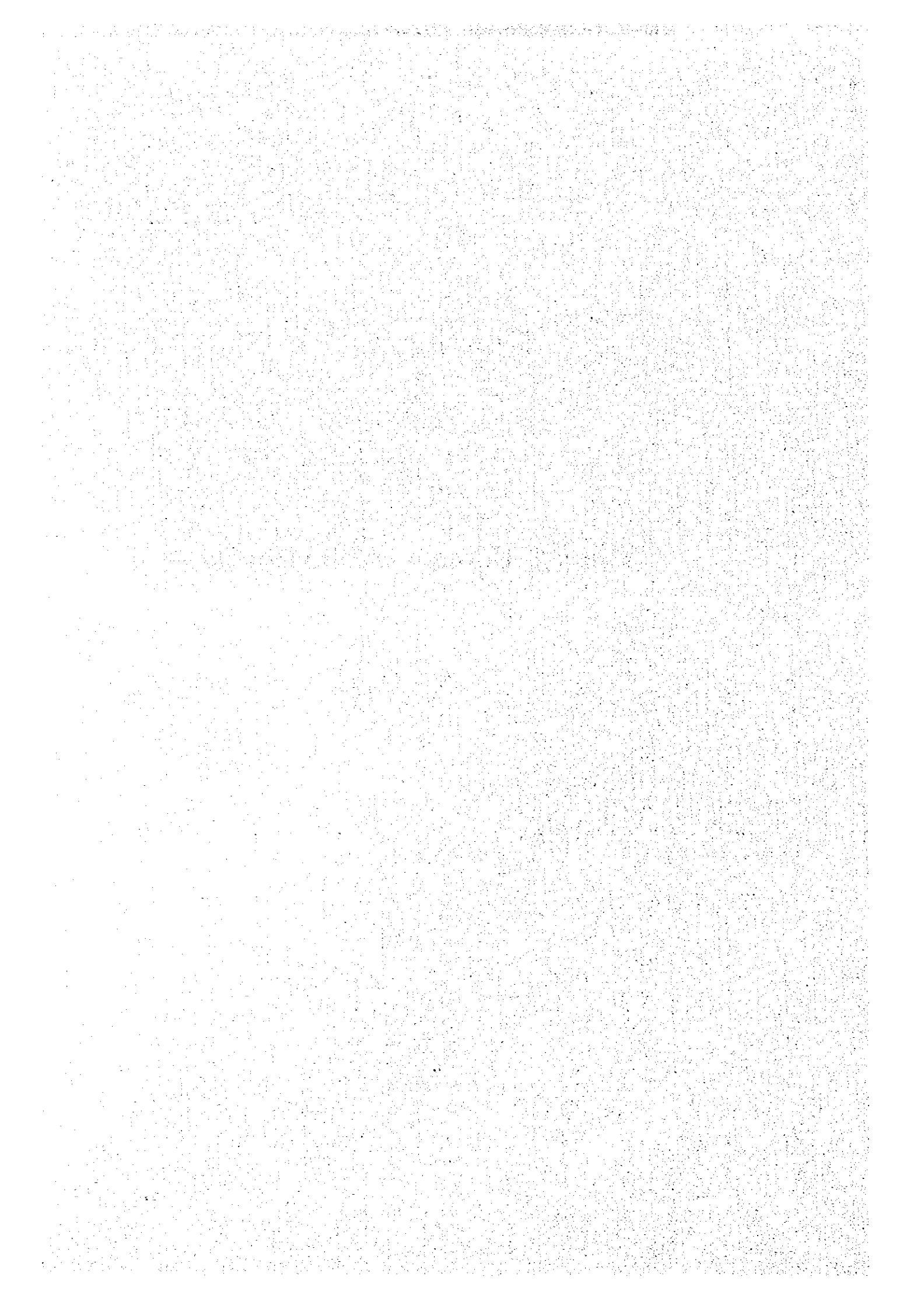
On above mentioned conditions of the hospital are notable in rural hospitals and some of doctors are not happy to work in rural areas and trying to work in metropolitan areas. Therefore, the gravitation of the doctors in metropolitan had happened in Zimbabwe and also had happened the gravitation of the patients in same areas with doctors. On these trends of the doctors and patients, the congestion of the higher levels of the hospital in metropolitan areas becoming worse.

The Ministry of Health and Child Welfare positioned the pediatric field is the most been affected from above mentioned current conditions of the medical field and raised the "Reduction of 50% of Child Mortality" as a top priority of their task work and had appointed Harare Central Hospital as a target of this project for construction of the paediatric facilities.

This Harare Central Hospital had been built in the 1950's for the adult patients and not been provided facilities for childhood. Most of facilities and equipments are superannuated and it seems not to have a proper treatment for patients under such conditions of facilities and equipments. Nevertheless, the hospital having 28 paediatricians and it is 7.4% of 380 paediatricians in whole country.

On above circumstances of the hospital, the Ministry of Health and Child Welfare made this plan and has requested assistance to CIDA for phase-1 and also has requested assistance to the Government of Japan for phase-2.

Chapter 2 Contents of the Project



Chapter 2 Contents of the Project

2-1 Objectives of the Project

The appointed Harare Central Hospital for this project had been built in 1950's for an adult patients as a top referral national hospital in Zimbabwe. At the time when this hospital was built, the total population of the country was only 3.85 million (1962) and number of medical covering population was only 2.31 million. Since then the population of the country has increased to about 10.4 million at 1995 and now the hospital has to cover near 6 million of population in its territory for medical treatment.

In such increase in population, the scale of the hospital become too small in space for bed occupancy and working space for medical staff. Beside on most of the facilities and equipments are superannuated and even medical treatment seems not to be done properly.

For example, 2 ~ 3 patients are in one bed and there are 180 ~ 200 inpatients in spite of 126 beds which is official number of bed of this hospital. Especially, there are many infectious disease patients in this paediatric unit and these conditions such as sharing bed will expand infectious disease in stead of protection. By the way, the child mortality rate in this country is 53.8/1000 (1978-88) and because of this high child mortality rate, the MOHCW raised "50% reduction of child mortality rate" as a top priority in their medical target.

The objectives of this plan is to build Operation theatre included CSSD and 4 beds recovery room, Surgical ward with 52 beds and 2 storey of Medical ward with 104 beds in Harare Central Hospital and to reduce the congestion of this unit in short term and also to contribute on MOHCW's target as "50% reduction of child mortality rate" in mid-long term.

2-2 Basic Concept of the Project

2-2-1 Basic policies for Assistance

Since construction of this project being assisted by two countries, the plan will be drawn up exercising full caution to the following items:

- In drawing up the plan in a Japanese style, the facilities being built by CIDA and equipment to be procured in Phase I will be examined and studied carefully to achieve a balance in function, quantity,

grade, construction cost and other aspects with the entire facilities after Phases II under Japanese cooperation are completed.

- On consideration of the present status of the financial situation in medical field which is affected by the ESAP implemented by the Government of Zimbabwe at present, a plan shall be maintained by the Government of Zimbabwe easily after completion of the project.

2-2-2 Results of Study of the Request

(1) Facilities

1) Operation Theatre

There are seven operation theatres in the existing main hospital building and performing about 80 cases of operations per week. This facility was built in 1950's specially for adults and is substantially obsolete. This project has been planned to construct paediatric unit on the other side of a road which runs in front of the existing hospital building. The scope of construction on Phase I (grant aided by CIDA) are the ICU facility and OPD/casualty and administration block and these facilities are under construction. The construction of operation theatre with 20 recovery beds was requested the assistance to the Government of Japan as Phase II in the first stage and it was decided to build the facility with 4 recovery beds after discussion with concerned officials from the Government of Zimbabwe.

2) Medical and Surgical Wards

According to original request, the construction of four medical wards with 120 beds and two surgical wards with 60 beds were requested. On such expansion of the existing number of beds from 126 at present to 180 would require an additional personnel increase such as doctors, nurses and medical staff, as well as an increase in the maintenance and management expenses commensurate with the facility scale. After the consultation with the concerned officials from the Government of Zimbabwe, it was found that the budgetting plan for big expansion of the facilities have not been concreted yet at this moment. The study team, therefore, has considered this project as transfer of the existing paediatric department and had mutual consent to built 160 facilities as mentioned below.

So that;

Two 52-bed medical wards	104 beds
One 52-bed surgical ward	52 beds
Recovery beds in 4-beds Operation Theatre	4 beds
<hr/> Total	<hr/> 160 beds

3) Convalescent

This facility had excluded from the scope of this project.

4) Service block

This facility had excluded from the scope of this project. However, to install a kitchen for heating and mixing milk in each ward.

(2) Equipment

The basic policy for the selection of equipment to be purchased under this project shall take into consideration the technical level, as well as capabilities of maintenance and management costs of Zimbabwean side and to avoid duplication of the equipment to be purchased in Phase I assisted by the CIDA. Furthermore, the following equipment were excluded from the scope of procurement under this project:

- Simple equipment which can be purchased in Zimbabwe, such as medical furniture and beds.
- Equipment which may present problems in maintenance and management, parts supply and service.

One ambulance with radio system will be included in the project to prevent deterioration in condition of illnesses of seriously ill patients caused by an inadequate referral system in the peripheral areas.

2-3 Basic Design

2-3-1 Design Concept

The facilities, buildings and equipments proposed in this project shall be designed on the policy described para 2-2-1 by taking into consideration of various conditions such as the natural and social conditions of Zimbabwe, conditions of construction works and materials/equipment procurement, maintenance and management capabilities of the implementing agency, the construction period based on grant aid, and the uniqueness of this project as well as the following design policies:

- The design shall be suitable for the natural conditions of Harare City, where the project site is located.
- The buildings shall be so designed that local laborers can handle the construction work at their technical level.

- As a rule, only the kind of construction materials produced or obtainable in Zimbabwe at reasonable prices without any possibility of supply shortage shall be selected and used.
- The facilities and equipment shall be so designed that, after completion, they will require minimum maintenance and management costs and can be maintained by the Government of Zimbabwe on its own account.
- The scales and the number of rooms required shall be determined based on the numbers of staff, patients, beds as well as the organization and the structure of the hospital, by taking into consideration of possibility of future changes.

The design policies for various conditions are as follows:

(1) Policy for Natural Conditions

- 1) There are localized torrential downpour in the rainy season. The average of annual precipitation is 821 mm.
The designing shall ensure adequate eaves and weathering that can prevent rain water to coming into the bulidings.
- 2) The desingning shall ensure sufficient ventilation so that the facilities will function poperly.
- 3) As most of the land of Zimbabwe is situated on bedrock and there is no record of earthquake occurrence, local construction methods shall be refered to the construction of the facilities.
- 4) Thuder and lightning are observed about 80 days in each year. In order to protect the facilities from thunderbolt damages, lightning rods shall be installed.
- 5) Large windows shall be built in at many places to utilize natural lighting.

(2) Policy for Social Conditions

- 1) The complehensive lock system shall be incorporated in the design of the facility.
- 2) The local customs such as the people like socially high position or senior officer are not used to share certain types of facilities shall be taken into consideration in the designing work.
- 3) Since the facilities to be constructed in Phase I and Phase II will be connected in one unit, the architectural design and style shall be consisted each other.

(3) Policy for Construction Conditions

- 1) The facilities shall be designed in accordance with the "MODEL BUILDING BY-LAW" and other relevant laws and regulations of the Republic of Zimbabwe.
- 2) All necessary measures such as application for construction approval, requests for official inspections, and other application and filing procedures necessary for the construction shall be followed on above mentioned law and regulations.
- 3) The above procedures shall be followed in consultation with the Ministry of Public Construction and National Housing of Zimbabwe.

(4) Policy for Using Local Contractors, Materials, and Equipment

- 1) The cooperation with appropriate local contractors is the key to the success of the construction. Division of work, personnel allocation, and other organizational arrangements shall be worked out carefully.
- 2) Construction materials and equipment shall be selected only from those manufactured or obtainable locally so that they can be easily maintained and managed after completion.
- 3) Normal construction methods like as not beyond the capability or technical levels of local contractor and engineers shall be taken.
- 4) Securing and allocation of personnel and construction schedule shall be planned by taking into account the work efficiency of local laborers and the deadline for the completion of the construction.

(5) Policy for Maintenance and Management Capability of Executing Agency

- 1) Due to proposed facilities consists of CSSD + Theaters, Surgical Ward, and Medical Ward will be connected to CIDA Phase I facilities, facility shall be so designed to be operated and maintained easily.
- 2) In order to minimize the operational cost, energy-saving measures shall be adopted as much as possible.

- 3) Construction materials and methods shall be suited to the local condition of construction material market.
- 4) Selected medical equipment shall be easy handled by the personnel concerned and can be maintained by the local staff after the hand-over of the equipment.

(6) Policy for Scope and Grade of Facility and Equipment

In view of the various conditions of Zimbabwe, following guidelines are established for designing of the facility and selection of the equipments;

- 1) The function and the grade of the facilities and the equipments shall be coordinated and consistent with facilities in Phase I assisted by CIDA.
- 2) The plan shall allow for future expansion due to the requirement such as an increase of the number of patients, development in medical science, and sophistication in diagnosis/treatment procedures.
- 3) The number of structural posts and bearing walls shall be reduced as much as possible for the areas where expected of future expansion.
- 4) Covers and other protective fixtures shall be installed on walls, comers, doors, and windows in consideration of damage by stretchers and wheel chairs.
- 5) Medical equipment shall be selected for easy operation and maintenance and shall be familiar with by the local staff.

(7) Policy for Construction Period

The construction period of the facility shall be determined upon consideration of the procurement conditions of materials and equipment, technical level of local laborers, situations concerning supply volumes, conditions of the construction site and its environs, etc..

2-3-2 Basic Design

(1) Site and Facility Layout Plan

The shape of the construction site, the status of its environs and infrastructure are outlined below:

1) Outline of the Site

① Location

Approximately 7 km southeast from the central part of Harare City.

The Harare Central Hospital is situated in a corner of a heavy industry zone.

② Shape of Site

The site of Harare Central Hospital encompasses an about 96 hectares of land, which is bordered by approx. 15-meter High Field Road on the west and approx. 15-meter Lobengula Road on the south. Both of these wide roads provide smooth access to the hospital.

The construction site for the Paediatric Unit is located on the south side of the existing Obstetric Ward and the site ground slopes down at an incline of about 5% from the front road in the southwest direction.

③ Conditions of Existing Buildings

Because the site for CIDA Phase I buildings was originally inclined at an angle of about 5% from the front road to the southwest direction, the Ministry of Public Construction of Zimbabwe reduced the gradient to about 3% by lowering the foundation level of the front building by about three meters in order to save the construction cost. The construction of the CIDA Phase I buildings is currently being carried out.

④ Environs

The environs around the construction site of this project is located next to the existing hospital and these areas having many trees and very quiet due to its location that is located at center of the hospital land as 96 hectares and therefore, there are no big noise or dust from industrial zone.

⑤ Infrastructure

The access roads are paved with asphalt, and electricity, water supply pipes, and sewer pipes are fully in place.

⑥ Nature of the Soil

The surface soil is similar to clay type of loam, and the lower layer is granite rock beds. As the entire country of Zimbabwe sits on various kinds of rock beds, there has been no record of earthquake in this country. Thus, the ground does not require pile foundation.

2) Suitability as Construction Site

As outlined above, the shape, environs, infrastructure, and other factors of the site, the site is considered as suitable for the project.

3) Basic Policy for Site Utilization Plan

The facility is composed of the following sections and designed in harmonized and coordinated with the CfDA Phase I facility:

- CSSC + Theaters : 2 theaters + recovery room (4 beds)
- Surgical Ward : 52 beds
- Medical Ward : 2 storeys, 104 beds
- Communal section : Corridors, etc.

Floor areas are determined as follows based on the space required for each of the above sections to function properly:

● CSSC + Theaters	1,147.82m ²
● Surgical Ward	1,045.44m ²
● Medical Ward	2,143.68m ²
● Communal section	511.50m ²
<hr/> Total	<hr/> 4,848.44m ²

4) Basic Policy for Layout Plan

- The existing ICU + Special Ward is situated center of the site and the operation theatre will be constructed across from the west corridor thereof.
- The Surgical Ward will be built across from the east corridor of the existing ICU + Special Ward.
- The east corridor of the existing ICU + Special Ward will be extended to the south, on the east side of which the 2-storey Medical Ward will be constructed.
- Floor levels of ICU + Special Ward, Surgical Ward, operation theatre and Medical Ward shall be same level.

(2) Architectural Design

Based on the basic policies described in 3) and 4) above, details and results of examination of each ward plans are summarized below:

1) Floor plan

Scale and grade of the facilities are determined base on those of similar facilities in Zimbabwe.

① Policy for determination of the Scale of each facility

The total area of the facility and the floor space of each room are calculated based on the following concept:

- a. The total floor area for the entire facilities will be harmonized and coordinated with Phase I under the CIDA assistance.
- b. Areas for the various rooms will be calculated based on Zimbabwe standard.
- c. Areas for facilities and rooms, which cannot be decided only by the numbers of persons accommodated, will be calculated based on the layout of equipment and apparatuses.
- d. Areas for rooms which can be calculated based on the numbers of persons accommodated will be calculated on the basis of unit areas per person. However, the equipment installed and conditions of related rooms also will be considered.

② Calculations of room sizes

The scale of the facilities and each room size under this plan shall be set in accordance with the areas requested by Zimbabwe and drawings received from Zimbabwe (Phase I of CIDA).

Study of room spaces

● Office space

Calculation of the office space will be made by providing spaces for each officers with each own desk. Basically, the desks in offices will be arranged with two persons facing each other. The floor space will be allocated with 7m²per person.

● Bed ward

The floor space per bed is 6m² based on the standard in Zimbabwe.

● Space for operation theatre

Operation usually take a long time. Spaces of the room shall have a functional working size for doctors and nurses work and 50m² for each theatre was allocated on MPCNII'S standard.

● Other spaces

The scales of other special rooms will be set in accordance with the layout of various equipment and other articles.

Size of main rooms are as follows;

a. CSSD & Theatre Ward

- Theatre Matron 1 head nurse, 1 secretary
Floor space : 15.0m²
- Staff Room (include shower and toilet)
Floor space : 26.4 m²
- Theatre 2 surgeons, 1 anaesthesiologist, 4 nurses
Floor space : 56.76 m² (Various instruments will be installed.)
- Recovery Room 4 beds
Floor space : 44.55 m² (Various instruments and beds will be installed.)

b. Medical Ward

- Treatment Room 1 bed (for examination)
Floor space : 32.67 m² (Room for instruments and work space is secured.)
- Resuscitation Room
Floor space : 21.78 m² (Instruments to be installed)
- Staff Room Nurse station
Floor space : 38.2 m² (Instruments to be installed)
- Bed Ward
Floor space : 65.34 m² (Instruments to be installed)

c. Surgical Ward

Each Spaces for the rooms are same with Medical ward.

③ Setting the Grade of the Facility

The grade of the facility is set as follows:

a. Overall Grade of the Facility

The overall grade of the facility is determined by coordinating the grade of the phase I facilities been assisted by CIDA.

Surgical Ward	Reinforced concrete	Rahmen structure	Brick wall
Medical Ward	Same as above		
Theatre Ward	Same as above		

b. Grade of each section

Grade of each section is determined by taking into account the function, price, life limit, maintenance, and other factors.

The table below is a comparison with CIDA Phase I facility and this proposed project.

Table 2-1 Facility Comparison with CIDA Phase I and This Project

Section		CIDA Phase I	This Project
Exterior	Roof	slate roofing, 3.5/10 slope	slate roofing, 3.5/10 slope, wooden truss structure
	Wall	brick masonry	brick masonry
Interior	Floor	terrazo, polished artificial stone, parquet flooring	terrazo, polished artificial stone, parquet flooring
	Wall	paint finish on mortar	paint finish on mortar
	Ceiling	paint finish on plaster board	paint finish on plaster board

Table 2-2 Overall Scale

Name of facility	Area (m ²)	Remarks
CSSD & Theatres	1147.82	
Subtotal	1147.82	
Medical Ward		
G.Floor	1071.84	
1st Floor	1071.84	
Subtotal	2143.68	
Surgical Ward	1045.44	
Subtotal	1045.44	
Corridors	511.5	
Subtotal	511.5	
Total	4848.44 m ²	

Table 2-3 List of Floor Area of Main Room (1/3)

FACILITY	AREA (m ²)	REMARKS	
CSSD + Theatres	Transfer Lobby	44.88	
	Porter	13.5	
	Matron	15.0	
	On Call Room	19.5	
	Staff Room	20.0	
	Equipment Store	19.0	
	Linen	19.0	
	Senior Male Change	26.4	
	Senior Female Change	26.4	
	Scrub Up Room	10.4	
	Setting Up Room	10.0	
	Theatre	56.76	2 Rooms × 56.76 = 113.52
	Anaesthetic Lobby	16.0	2 Rooms × 16.0 = 32
	Sluice Room	14.4	2 Rooms × 14.4 = 28.8
	Nurse Station	12.0	
	Recovery	44.55	
	Dirty Corridor	224.55	
	Sterile Coridor	124.0	
	CSSD Staff Room	20.0	
	Sterile Store	6.25	
	Autoclave Room	34.5	
	Clean Packing Area	40.5	
	Gloves Packing Area	15.0	
	Supervisor Room	15.0	
	Clean Store	16.5	
	Others	298.73	
Total	1,147.82 m²		

Table 2-3 List of Floor Area of Main Room (2/3)

FACILITY		AREA (m ²)	REMARKS
Surgical Ward	Kitchen	21.78	
	Linen, Kit Store	14.52	
	Stretcher bay	13.2	
	Sluice Room	21.78	
	Treatment Room	32.67	
	Side Ward	27.06	
	Resuscitation	21.78	
	Nurses Station	12.76	
	Staff Room	27.6	
	On Call Room	21.78	
	Female Toilet	10.89	
	Parents' Bathroom	16.50	
	Parents' Room	26.4	
	Bed Ward	261.36	4 Rooms × 65.34 = 261.36
	Doctor Room	14.52	
	Bed Ward (Acutenutrition)	65.34	
	Bed Ward (High Care)	65.34	
	Play Room	48.18	
	Corridor	188.76	
	Others	160.61	
Total	1,045.44	m²	

Table 2-3 List of Floor Area of Main Room (3/3)

FACILITY		AREA (m ²)	REMARKS
Medical Ward	Kitchen	21.78	
	Linen, Kit Store	14.52	
	Stretcher Bay	13.2	
	Sluice Room	21.78	
	Treatment Room	32.67	
	Side Ward	27.06	
	Resuscitation Room	21.78	
	Nurses Station	12.76	
	Staff Room	27.6	
	On Call Room	21.78	
	Parents' Room	26.4	
	Bed Ward	261.36	4 Rooms × 65.34 = 261.36
	Doctor Room	14.52	
	Bed Ward (Acute nutrition)	65.34	
	Bed Ward (High Care)	65.34	
	Living/ Teaching/ Play Area	48.18	
	Corridor	188.76	
	Stairs	26.40	
	Others	160.61	
		1,071.84	
Total (2 storey included)	2,143.68 m ²	1,071.84 × 2	
Corridor & Slope		511.5	
	Total	511.5 m ²	

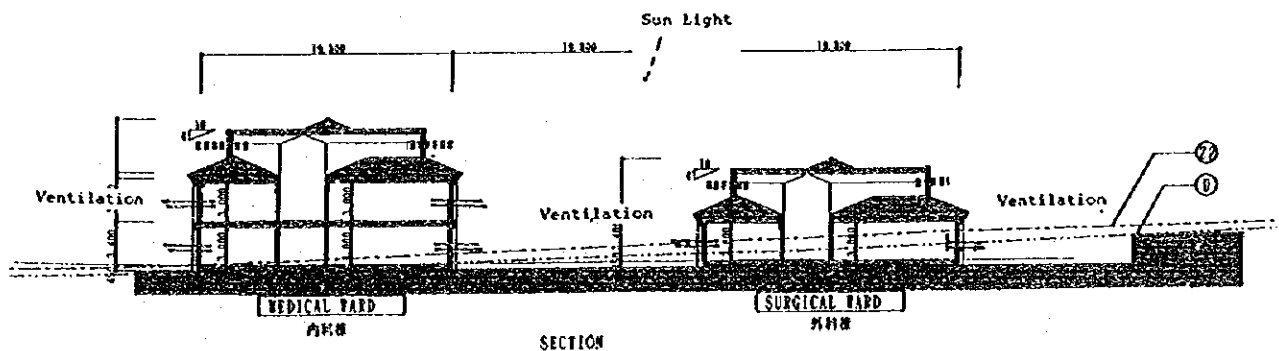
2) Elevation and section planning

Elevation and section plan shall be designed in consideration of a storm water disposal plan and on a security, day lighting and ventilation plan during the rainy season.

- ① The floor heights of the ground floor in the operation theatre shall be the same level as existing ICU & Special ward by reason why the new ward will be connected to the existing facilities via connecting corridors. Floor level of the surgical and medical wards shall be same level with the floor level of existing ICU ward.

- ② The storey heights will be 3.4m and will be the same as that of the existing ICU + Special ward.
- ③ The ceiling height will be 2.4 to 3.0m and will be the same as that of the existing ICU + Special ward.
- ④ The size of windows shall be large and wide and shall take a good day light and ventilation into consideration.
- ⑤ The roof of the building shall be sloped, gabled roofs to cope with local heavy rains during the rainy season. The gradients will be 3.5" or more and the roofing materials shall be clay tiles of quality equal to that of tiles used in Phase 1. The eaves shall be about 1m long to prevent direct sunshine and entry of storm water.
- ⑥ Top lights will be installed in the central corridors in order to reduce the maintenance and management cost of the facilities and to create brightness and well-ventilated spaces.
- ⑦ Glass partitions between central corridor and sickrooms can have easy management of patients by nurses and good ventilation.

A standard section showing the foregoing concepts is given below.



3) Structural plan

① Structure design policy

The building shall be free from vibration and flexion in long-term load. The basic design policy will assure adequate safety against an earthquake load and wind pressure. The building shall be designed based on the "Model Building by-Law" of Zimbabwe.

② Structural design standard

The structural design shall be followed the British Structural Design Standard specifies as follows:

Load	CAS 160	Specification of Load and Stress
Design of reinforced concrete	CAS 164	Specification of Reinforced Concrete Structures
Design of steel frame structures	CAS 157	Specification of Architectural Steel Frame Structures

※CAS : (Central African Standard)

③ Frame Structural type

The type of frame will be Rahmen structures with reinforced concrete, which will easily allow free planning in floor plan, relatively easily accommodate changes in partitions and will not require earthquake resistant walls. The roofs will have wood truss structures.

④ Seismic load

As most of the land of Zimbabwe is situated on bedrock and there is no record of earthquake occurrence, local construction methods shall be referred to the construction of the facilities.

⑤ Combination of loads

Type of Design Load	Estimated State	Stress Combination
Long term	Normal time	G + P
Short term	In earthquake	G + P + K

G: Stress by fixed load (Total weight of building including finish, joinery, partitions and others)

P: Stress by live load

K: Stress by seismic force

Other factors, such as a wind load and roofs, will be considered separately.

⑥ Live load

The buildings will be single and two-storey buildings. The floors on the first floor will be supported slab in consideration of load. The floors on the ground floor will be slab-on-earth floors and the load will not be considered.

The live load of roof will be considered as a load roughly equal to a work load. The live load will be decided in accordance with the actual condition.

⑦ Foundation construction method

The buildings will be reinforced concrete single and two-storey building. The ground is very hard geology and has a bearing capacity of soil of approximately 20 tons/m² can be expected. Therefore, the spread foundation type will be used.

4) Building Facility Plan

① Power Facilities

a. Power supply

Zimbabwe Electricity Supply Authority (ZESA) supplies 11,000 V of electricity to the main substation situated in the existing hospital through an underground cable.

The electricity is transformed to 6,600 V at this substation and sent to secondary substations situated at various points on a loop. The secondary substation closest to the project site is one of the newest stations built in CIDA Phase I and has a space for an additional transformer that may be installed in the future. This project will be utilizing this particular substation. The capacity of the transformer is kept at the same level as that of the existing ones (12,000 KVA) for safety reasons.

b. Power receiving method

Electric power will be received by a transformer to be installed in the above mentioned substation. Power will be then distributed from a newly installed low-voltage distribution board via main cables to a panel board installed at each ward. Voltages are 110 V, 220 V, and 380 V.

c. Lighting outlet plan

Energy-conserving measures that does not depend on sophisticated technology need to be taken as much as possible. Thus, linear light from fluorescent lamps is generally used. Also, the lightness requirement of each room shall be examined so that excessive light will not be provided. Basic points for designing of lighting plan is as follows:

- Secure the minimum lightness required for each room in consideration of local life standard.
- Give priority to efficiency and energy conservation.
- Select items that generate less heat.
- Select a good tone of light color to provide comfort.
- Avoid sharp contrast of light and shade.
- During the day time, utilize natural lighting as much as possible by installing large glass windows.

In deciding the number of receptacle outlets, spare outlets shall be included to cope with additional appliances in the future.

d. Lightning conductor

Thunderbolt strikes have been recorded at an average of 80 days per year.

To prevent the proposed facility from being struck by lightning, conductors will be installed on top of the ridges.

e. Emergency power generating facility

A power generator will be installed as an emergency power source in order to secure necessary power for the lighting and air conditioning of the operation theatre, nurse station and high care bay of each ward, emergency lighting, etc.. The generator will be installed at the provided space in one of the CIDA substations. The capacity will be 350 KVA, the same capacity as that of existing facilities. The cable for the emergency power supply will be wired separately from ordinary cables.

Table 2-4 Illumination Plan

Room name	Target design illumination [lx]	General standard in Japan [lx]
Operating theatre	1,000	1,000
Operating table	20,000	10,000 ~ 40,000
Recovery room	150	300
Matron room	400	500
Sterile room	500	500
Sterile store	150	500
Autoclave	150	500
Treatment room	1,000	1,000
Sickroom	80	100 ~ 200
Sickroom	5 (all-night light)	
High care bay	100	300
Kitchen	150	150
Linen room	70	100
Disinfection room	400	500
Play room	70	200
Parent room	70	150
Toilet	70	100
Corridor	70	100
Corridor	5 (all-night light)	
Storage	70	100

Table 2-5 Basic Illumination of Each Room

Room name	Illumination measured at Harare Central [lx]	Standard illumination on Japan side [lx]	Value adopted in basic design [lx]
Office (M.S.)	431,485,335,374,228	700 ~ 300	500 ~ 400
Office (Matron)	285,130,115,255,189	700 ~ 300	500 ~ 400
Office (general)	202,272,375,315,289	700 ~ 300	500 ~ 400
Office (nurse)	150,144,135,123,102	700 ~ 300	500 ~ 400
Sickroom (general)	105,58,78,66,56,89	300 ~ 150	80
Sickroom (special)	291,198,256,213,235	300 ~ 150	150
Operating theatre	1034,998,1225,1356	1500 ~ 1000	1000
Corridor	46,27,15,4,6,11,5,25	150 ~ 70	70
Entry	5,8,11,38,54,94,80	150 ~ 70	70

Existing illumination were measured at three different occasions, and a huge gap between the measurements and the Japanese illumination standards was observed. In this project, illumination shall be suitable for local customs.

② Water Supply, Drainage and Sanitation Facility

a. Water supply system

City water is managed and supplied from a lake in the suburb of Harare City by the "Harare Department of Works". Since there was a rumor that the water source was contaminated by the dumping of waste materials, the water was examined in Zimbabwe (by the waterworks) and in Japan (by a public institution). As shown in Table 2-6, the result of the water analysis confirmed that the water quality was suitable for drinking. (The test results in Japan was turned out to be "not suitable" in terms of organic substances and color are not reliable due to the tests were conducted two weeks after the water was collected, so that the data taken in Zimbabwe were given priority.) However, because the water has high conductivity and is high in the concentrations of such corrosive ions such as chlorine and sulfuric acid. Copper pipes as those used in existing facilities will be used for plumbing instead of steel pipes that rust easily.

In the water supply system of existing facilities, water is stored in an underground receiving tank with a capacity of 1,800 kl situated in the central part of the existing area and then distributed by pressure pump. The hospital is currently using 1,130 kl of water a day. The existing water supply system can easily accommodate the demand for water even if about 25 kl/day of additional demand by this project is created.

Calculation of water usage in the proposed facility

Water usage per bed: 250 l/day

250 l/day x 160 beds = 40,000 l (about 40 kl)

A branch of supply pipe will be created from one of the existing CIDA's facilities to the proposed facility.

Table 2-6 Comparison of Water Analysis

Item		Harare Dept. of Works	Japanese public institution	Standard value	Target value	Unit
Nitric acid, nitrite nitrogen		0.04	0.75	10 or less		mg/l
Chlorine ion	○	55.0	72.9	200 or less	20 or less	mg/l
Organic substance, etc.	○	0.55 5 day	16.2	10 or less		mg/l
pH	○	8.30	7.5	5.8~8.6	6.5~8.5	
Chromaticity	○	5.0	7.0	5 or less	...	degree
Turbidity	○	0.6	less than 1	2 or less	...	degree
Smell	○	No abnormality	No abnormality	No abnormality	...	
Taste	○	No abnormality	No abnormality	No abnormality	...	
Iron	○	0.05	0.06	0.3 or less	...	mg/l
Copper	○	0.04	less than 0.01	1 or less	...	mg/l
Zinc	○	...	0.074	1 or less	...	mg/l
Lead	○	...	less than 0.002	0.05	...	mg/l
Residue on evaporation	△	367.25	421	500	150 or less	mg/l
Sulfuric acid ion	△	86.5	92.4	...	20 or less	mg/l
Alkalinity	△	105.0	115	...	50~100	mg/l
Silica		1.00	1.0	mg/l
Hardness	△	123.0	132	300 or less	80 or less	mg/l
Conductivity	△	502.0	700	...	200 or less	μ s/Cm
Manganese	○	0.08	0.0377	0.05	0.1 or less	mg/l
Ammonium ion	△	0.08	less than 0.03	...	0	mg/l

○: Suitability based on waterworks law

△: may corrode steel pipes

b. Sanitary fixture

Locally made sanitary fixtures will be procured. Plumbing layout shall be simplified as much as possible for easy installation.

c. Hot water supply system

Although LPG gas is considerable as a heat source, it is expensive and not commonly used in Zimbabwe. Thus, electric water boilers shall be provided for this project.

d. Sewage system

Waste water and rainwater will be discharged downwards on a slope by gravity through existing sewage pipes of CIDA facilities. Waste water is carried through the sewage pipes that are connected to the main sewage pipe and sent to water treatment facility.

③ Air Conditioning and Ventilation System

a. Air conditioning system

Air conditioning system will be installed only for operation theatre.

A heat pump, split-type system which uses a medium-grade filter for purification and introduction of outside air will be installed.

The air cleanliness level is set around 10,000.

Ventilation is made 10 to 15 times per hour.

b. Ventilation system

In order to secure maximum effectiveness of ventilation, natural and mechanical ventilation will be used.

Planned number of ventilations (per hour)

Bedroom:	2-3 times	Office:	2-3 times
Sterile area:	10-13 times	Waiting room:	2-3 times
Operation theatre:	10-13 times	Toilet:	10-15 times
Kitchen:	13-15 times	Parents' room:	2-3 times
Corridor:	2-3 times	Play room:	4-5 times

- ④ Outlet and piping for medical gas and suction will be applied only for 2 operation theatres such as Oxygen gas, Nitrogen gas and outlet for suction
- ⑤ Fire Extinguisher
ABC foam extinguishers will be installed inside the rooms and on the walls of the corridors according to the local fire code.
- ⑥ Fire Hydrant
Fixed-type fire hydrants will be installed on the walls of indoor corridors according to the local fire code.
- ⑦ Automatic Fire Alarm System
Private fire alarm receiver will be installed at each new ward. An alarm signal will also be sent to the existing receiver in the CIDA outpatient ward. Heat sensors and smoke detectors with detection ranges of 50 m² and 100 m² respectively will be installed according to the local fire code. As the detection ranges are too broadly set in the existing facilities, it is necessary to install sub-receivers to enable more sensitive detection.
- ⑧ P.A. System
An amplifier will be installed at the nurse station of each ward. All buildings will be fitted with public address system.
- ⑨ Guiding Light and Sign
In accordance with the local fire code, guiding lights and signs will be installed at various places in order to clearly indicate the escape routes, stairs, and emergency exits.
- ⑩ Nurse Call System
A set of nurse call response devices will be installed at each nurse's station.

5) Construction Material Plan

① Finishing of Each Section

Table 2-7 shows the finishing and the reason of choice. Local method means the method been used in CIDA Phase I facility.

Table 2-7 Major Finish Method and Reason for Selection

Room	Section	Local method	Method will be applied in this project	Reason for selection
Office Marton	floor	wooden parquet floor	wooden floor	Harmonize and consistenize with Phase I facilities as well as easy maintenance for local staff after completion
	base board	paint finish on mortar	wooden, H=160	
Staff room	wall	same as above	paint finish on mortar	
Change room	molding	wood	wood	
	ceiling	paint finish on plaster board, h=3,000	paint finish on plaster board, h=3,000	
Sickroom	floor	terrazzo finish, metallic joiner	terrazzo finish, metallic joiner	Harmonize and consistenize with Phase I facilities as well as easy maintenance for local staff after completion
	base board	terrazzo finish, h=160	terrazzo finish, h=160	
	wall	paint finish on mortar	paint finish on mortar, protectors on doors & windows	
	molding	wood	wood	
	ceiling	paint finish on plaster board, h=3,000	paint finish on plaster board, h=3,000	
Corridor Passageway	floor	grind finish, metallic joiner	grind finish, metallic joiner	Harmonize and consistenize with Phase I facilities as well as easy maintenance for local staff after completion
	base board	grind finish, h=160	grind finish, h=160	
	wall	paint finish on mortar	paint finish on mortar, protectors on doors & windows	
	molding	wood	wood	
	ceiling	paint finish on plaster board, h=2,750 beam; h=2,100	paint finish on plaster board, h=2,400	
Toilet	floor	grind finish	grind finish	Harmonize and consistenize with Phase I facilities as well as easy maintenance for local staff after completion
	wall	tile, h=2,200 paint finish on mortar	tile, h=2,200 paint finish on mortar	
	molding	wood	wood	
	ceiling	paint finish on plaster board	paint finish on plaster board	

Table 2-8 Construction Method, Finish Material, and Reason for Selection

Section		Local method	Method used in this project	Reason for selection
Foundation		spread foundation	spread foundation	Harmonize and consistenize with Phase I facilities as well as easy maintenance for local staff after completion.
Post & beam		reinforced concrete	reinforced concrete	
Floor	frame	reinforced concrete	reinforced concrete	
	finish	vinyl tile, terrazzo finish, grind finish, wooden parquet floor	vinyl tile, terrazzo finish, grind finish, wooden parquet floor	
Wall	frame	brick masonry	brick masonry	
	finish	print finish on mortar	paint finish on mortar	
Ceiling		paint finish on ceiling board	paint finish on mortar, sprayed	
Exterior wall	frame	brick masonry	brick masonry	
	finish	paint finish on mortar, sprayed resin coating on mortar	paint finish on mortar, sprayed resin coating on mortar	
Roof	frame	wooden framing reinforced concrete	wooden framing reinforced concrete	
	finish	tile (slate, cement, Spanish tile, Italian tile, French tile)	tile (slate, cement, Spanish tile, Italian tile, French tile)	
Doors, windows, etc.		aluminum sash aluminum door steel sash steel door glass louver (aluminum/steel frame) wooden window wooden door	aluminum sash aluminum door steel sash steel door glass louver (aluminum/steel frame) wooden window wooden door	

(3) Equipment Plan

1) Policy for Equipment Design

- ① This proposed project is considered as transferring of existing facilities to new facilities only. Thus, beds and medical furnitures of the current Paediatric Ward will be transferred to and unilized at the new facility.

- ② As most of the patients are in sufferers by child infectious diseases, medical equipment to be procured in this project shall be suited for secondary-level of medical treatment rather than expensive equipment.
- ③ Due to the referral system of the surrounding areas is not sufficiently developed, ambulance cars with radio system will be provided for transportation of patients.

2) Basic Plan of Equipment

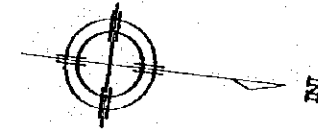
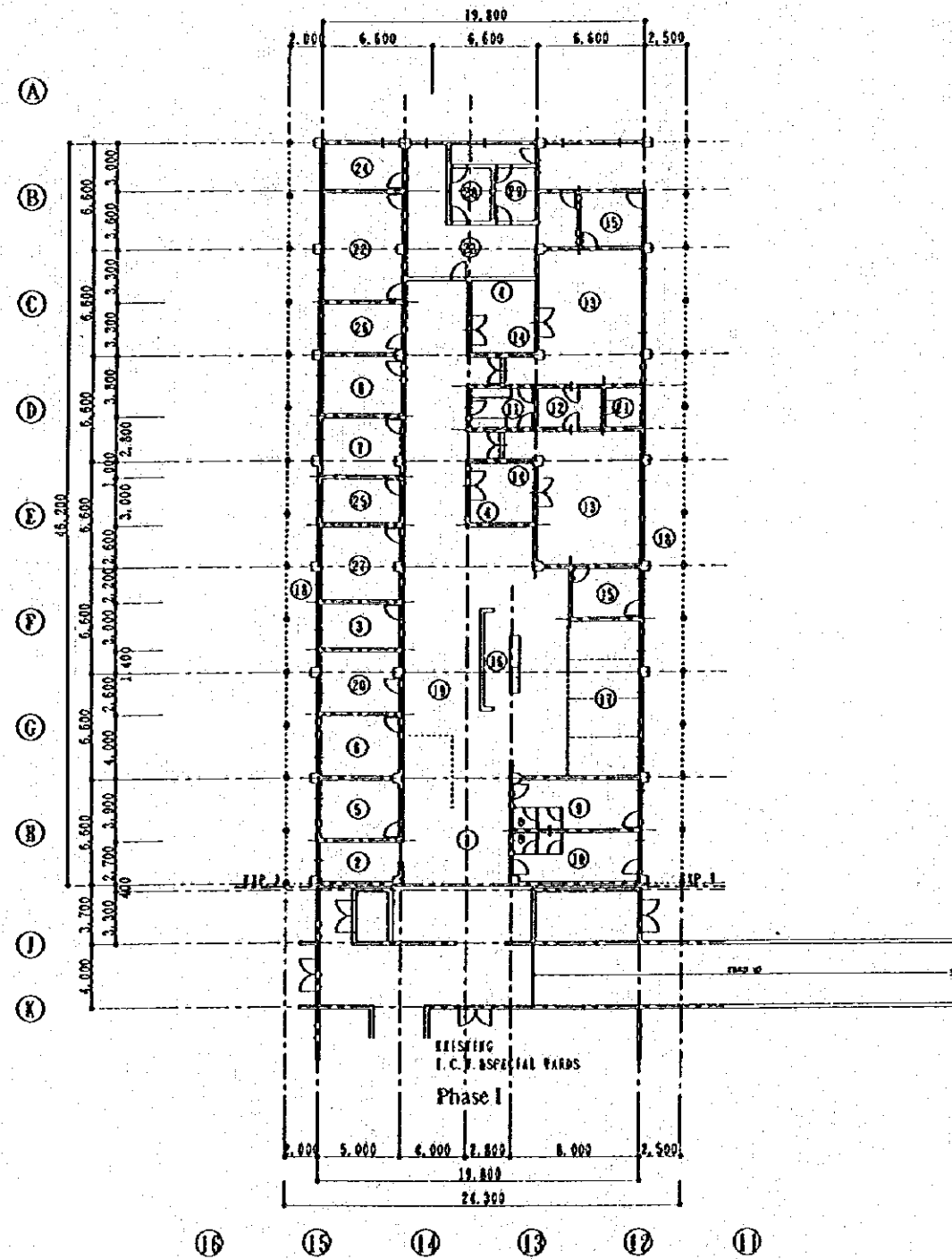
Equipment articles which are deemed as necessary for the project were summarized upon discussion with the staff in charge of the Harare Central Hospital.

Table 2-9 Medical Equipments to be purchased

No.	Description	Qty
M	Medical Equipment	
M-1	Anaesthetic Machine, Complete	2
M-2	Autoclave, Table Top	1
M-3	Bedpan Washer/Starilizer	2
M-4	Bedside Monitor	3
M-5	Bronchoscope (for Paediatrics)	4
M-6	Crash Cart, Resuscitation, Complete	2
M-7	Defibrillator	1
M-8	Diagnostic Set (Otoscope/Ophthalmoscope)	4
M-9	EEG Machine (18 Channel)	1
M-10	Electrosurgical Unit	2
M-11	Flow Meter, oxygen	6
M-12	Gastroscope (for Paediatrics) with TV System	1
M-13	High Pressure Stream Starilizer, Complete	1
M-14	Infusion Pump, Volumetric	1
M-15	Laryngoscope (for Paediatrics)	4
M-16	Movable X ray unit (for paediatrics)	2
M-17	Monitor, Vital Sigh (for Paediatrics at operation theatre)	2
M-18	Operating Light (Fix)	2
M-19	Operating Light (Mobile)	2
M-20	Pulse Oxymeter	5
M-21	Pump Suction, Electric, Double	8
M-22	Pump Suction, Electric, Single	4
M-23	Pump Suction, Wall Mounted	2
M-24	Recorder, Electrocardiogram (3 Channel)	1
M-25	Scale Platform	2
M-26	Sphygmomanometer, Portable (for Paediatrics)	4
M-27	Surgical Instruments (for Paediatrics/General)	1
M-28	Surgical Instruments (for Paediatrics/Orthopaedics)	1
M-29	Table Operating, complete	2
M-30	Ultra Sonography (Cardiology/Monochrome)	1
M-31	Ultra Sonography (general)	1
M-32	Ultrasonic Washer	1
O	Other Equipment	
O-1	Ambulance	1
O-2	Radio Communication System	1

(4) Basic Design Drawings

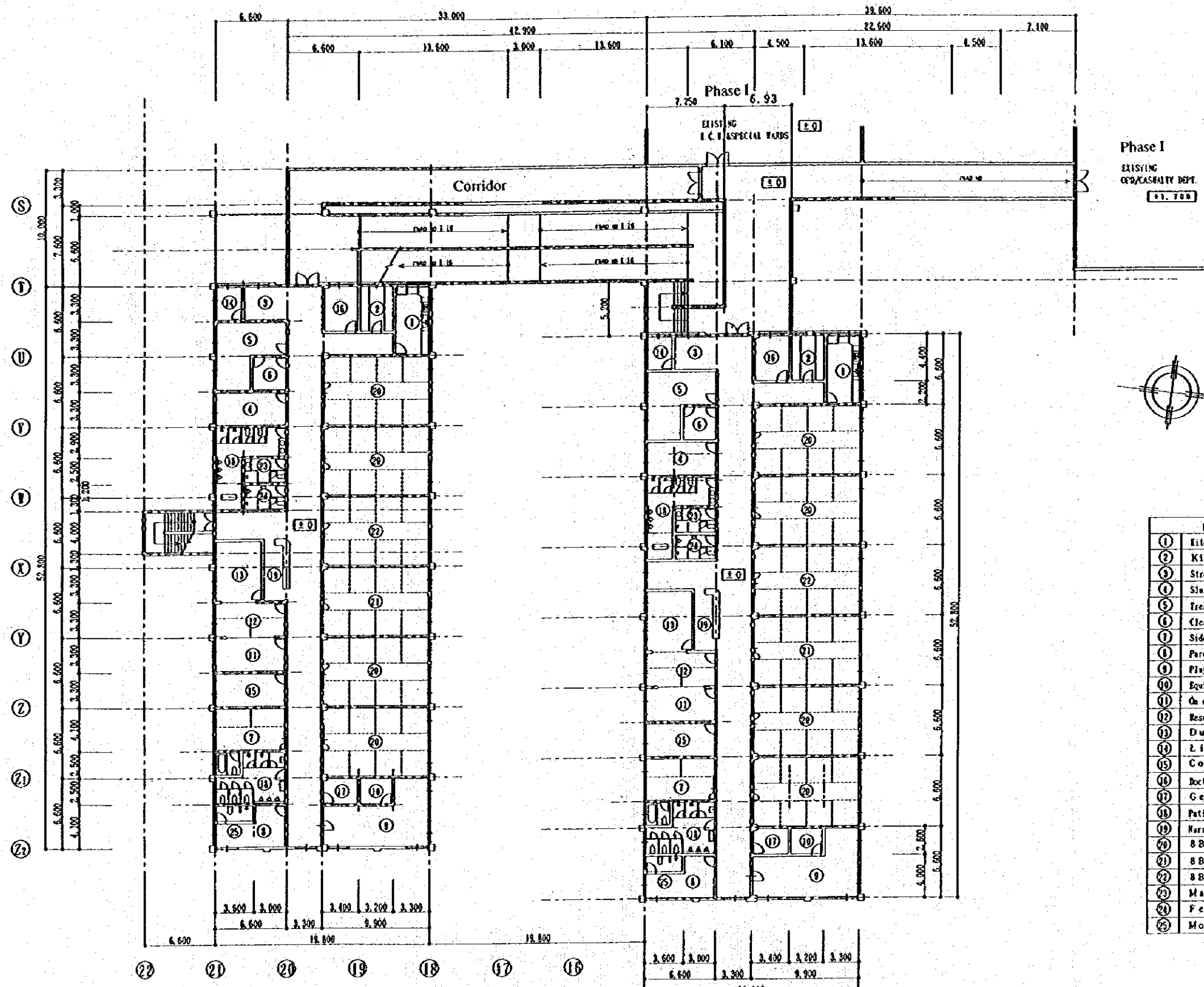
- 1) Plot plan
- 2) Floor plan
- 3) Elevation, Section



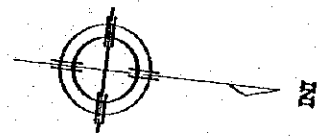
Name of rooms	
①	Transfer lobby
②	Porter
③	Theatre patron
④	Patients' waiting
⑤	On call room
⑥	Staff room
⑦	Equipment
⑧	lines
⑨	Senior female change
⑩	Senior male change
⑪	Scrub & gown up
⑫	Set up room
⑬	Theatre
⑭	Anaesthetic lobby
⑮	Stalce room
⑯	Horses' station
⑰	Recovery room
⑱	Dirty corridor
⑲	Sterile corridor
⑳	C.S.S.D. staff room
㉑	Clean store
㉒	Autoclaves
㉓	Clean packing area
㉔	Gloves packing
㉕	Supervisor
㉖	Sterile store
㉗	Doctor room
㉘	CSSD staff change. Male
㉙	CSSD staff change. Female

G. FLOOR PLAN

C. S. S. D & THEATRES DEPT.



Phase I
EXISTING
OPD/CASUALTY DEPT.
41.700

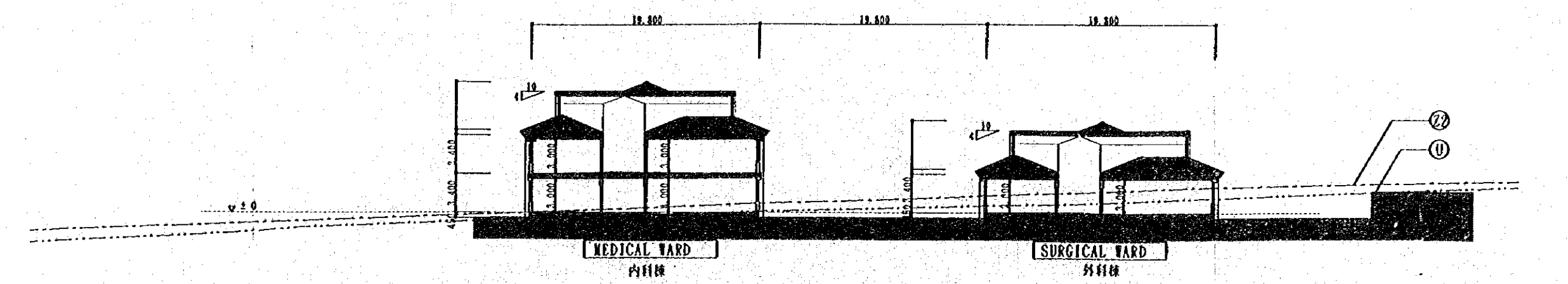
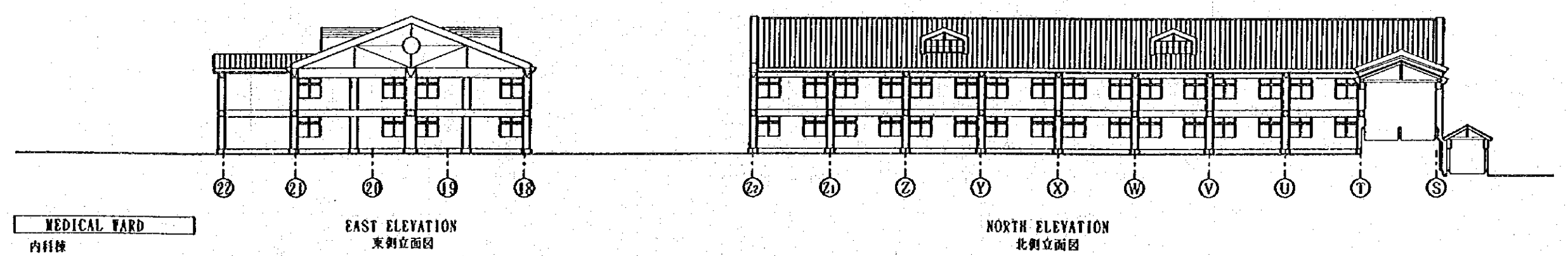
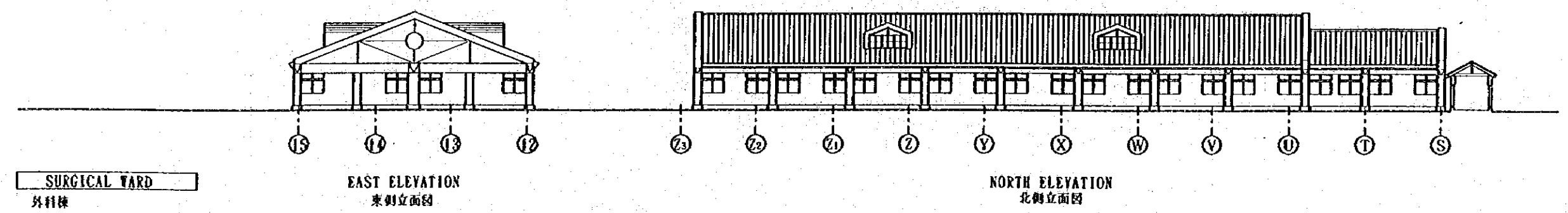
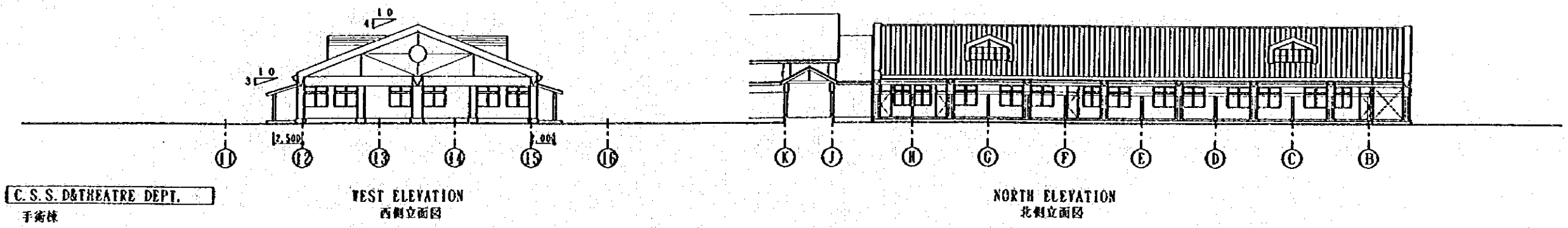


Name of rooms	
①	Kitchen
②	Kit store
③	Stretcher & wheelchair bay
④	Sluice room
⑤	Treatment room
⑥	Clean utility room
⑦	Side ward
⑧	Parents' room
⑨	Play room
⑩	Equipment room
⑪	On call room & Sister's room
⑫	Resuscitation
⑬	Duty room
⑭	Linen room
⑮	Counselling & Consultant room
⑯	Doctor's room
⑰	General Store
⑱	Patients' toilet
⑲	Nurses' station
⑳	8 Bed bay
㉑	8 Bed high care bay
㉒	8 Bed crude nutrition bay
㉓	Male staff toilet
㉔	Female staff toilet
㉕	Mother's toilet

G. 1st. FLOOR PLAN
MEDICAL WARD 2,143.68 m²

G. FLOOR PLAN
SURGICAL WARD

CORRIDOR & RAMP



Chapter 3 Implementation Plan

Chapter 3 Implementation Plan

3-1 Implementation Plan

On implementation of this project under Japan's Grant Aid system, following procedures shall be taken in consideration.

3-1-1 Implementaion Concept

(1) Implementation Plan

- Before implementing this project, an Exchange of Notes (E/N) is signed by both the Government of Japan and the Government of Zimbabwe. After the signing of the E/N, Japan makes official commitment of assistance, and start the execution of the grant aid.
- After signing of the E/N, Japanese consultant firm and the Government of Zimbabwe conclude Design Contract. Upon execution of the contracts, the consultant firm will start design work immediately.
- The consultant firm prepares a set of drawings and specifications required for the construction and shall obtain approval by the Government of Zimbabwe.
- The consultant firm selects construction contractors through prequalification (P/Q) and through tendering by qualified tenderes.
- The breakdown of the bid price of the successful tenderer is evaluated. When the appropriateness of the bid price is confirmed, the successful tenderer concludes construction agreement with the Government of Zimbabwe. After the construction agreement is verified by the Government of Japan, the contractor proceeds the construction.
- The Government of Zimbabwe completes all necessary preparation work for the construction, including ground preparation, setting in place water supply/disacharge system, electric power, and telephone cables, and obtaining construction permit, so that the construction work can be started without any hindrance.

(2) Positioning and scope of work of parties involved in construction work

1) Consultant

The consultant will be entrusted by the Ministry of Public Construction & National Housing of Zimbabwe to perform design of the project and supervision of the construction, which consists of the following work:

[Scope of work]

① Preparation of detail drawing and documents for the tender

- Tender documents including detail drawings specifications, calculation sheet, estimation sheet, etc. shall be prepared based on the basic design. The consultant prepares these documents through close discussions with the concerned parties of Zimbabwe (Ministry of Public Construction & National Housing and Ministry of Health) whole through the preparation period. Final documents shall be approved by the Government of Zimbabwe before tendering.

② Supervision of Construction

- The consultant have a meeting thoroughly with a relevant authorities such as the Ministry of Public Construction & National Housing and the Ministry of Health and Japanese contractor about the construction work. The consultant supervise the construction work by checking whether the work is carried out according to the working drawings and specifications and make report on the progress. The consultant periodically submit their report of the progress on the project to the both parties concerned in Zimbabwe and in Japan.
- The consultant issues a completion certificate at the end of each construction stage and get approval from the Government of Zimbabwe.
- The consultant dispatches a full-time supervisor to the construction site and technical engineer shall be dispatched to the site when the medical equipment be installed.
- When handing over the equipment to the Zimbabwean side, the consultant checks the items, quantities, etc. on the record in the presense of supplier and issues a certificate of delivery and receives a completion certificate from the Government of Zimbabwe.

2) Executing company (construction work, equipment procurement)

① Contractor

A Japanese contractor carries out the construction work as a principal contractor and manages the construction schedule, quality, materials, safety, etc. while maintaining close communication with parties concerned in order to make the construction work be completed smoothly without delay.

② Equipment supplier

Japanese equipment suppliers procure equipment articles which satisfy the specifications and deliver them before a specified date. When delivering the equipment, the suppliers explain how to operate, maintain, and repair the equipment to the hospital staff.

3) Local consultant

When the Japanese consultant deems necessary to hire a local consultant, the local consultant will conclude a contract with the Japanese consultant and check whether the working drawings and specifications comply with relevant laws and regulations of Zimbabwe.

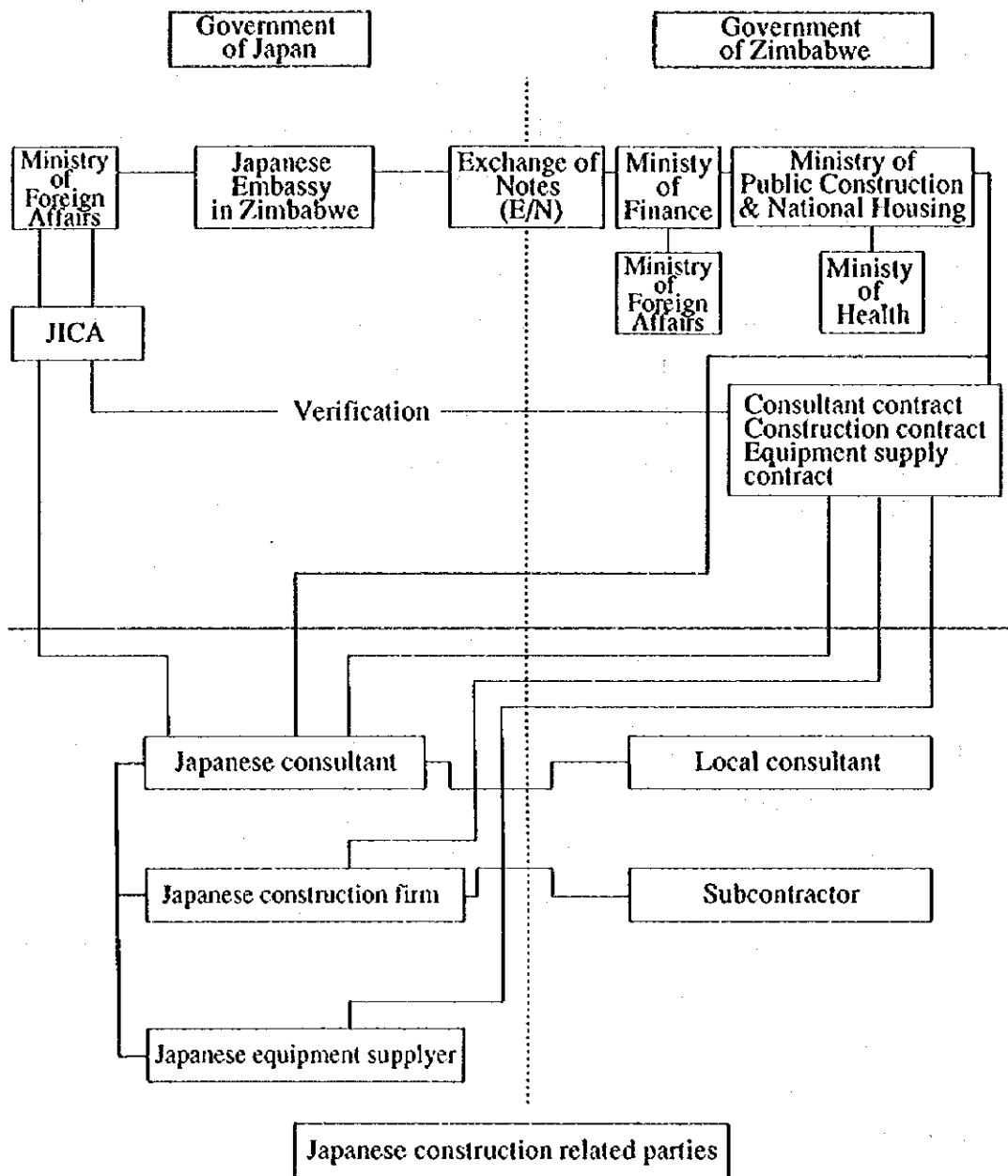
When relevant authorities request explanation of submitted documents, the local consultant will assist the Japanese consultant.

(3) Execution System (Project implementation system)

The implementing system of this project under Japan's grant aid is as follows:

- 1) The Ministry of Finance is in charge of the signing of Exchange of Note (E/N) and Banking Arrangement (B/A) between the governments of Japan and Zimbabwe.
- 2) The executing agency of this project on the Zimbabwean side is the Ministry of Health. The Ministry of Public Construction & National Housing is in charge of signing contracts with Japanese consultant, construction firm, and equipment supplier as well as permitting and approving the designing and construction work of this project.

Relations among the relevant agencies of Zimbabwe and Japanese agencies, consultant, construction firm, and equipment supplier are outlined in the diagram below:



Relations Among Relevant Organizations

3-1-2 Implementation Conditions

Basic policies for the construction of the proposed facility under the grant aid system are as follows:

(1) Strict observance of construction period

The entire construction process shall be designed on the premise that the construction work will be carried out under the guidance of Japanese engineers.

(2) Securing of quality and quantity

All of the qualities and quantities specified in the design drawings and specifications shall be secured at all stages of the construction.

(3) Safety during construction

Considerations must be given to safety during the construction.

Sufficient safety considerations shall be given to the temporary construction plan.

3-1-3 Scope of Works

In the event that the proposed project is implemented under Japan's grant aid system, the respective scope of work to be undertaken by the Japanese side and the Government of Zimbabwe are summarized below:

Table 3-1 Scope of Works

Work to be undertaken by Japan	Work to be undertaken by Zimbabwe
<p>1. Construction work Structural framework, architectural finish</p>	<p>1. Ground preparation Removal of existing facilities, grading</p>
<p>2. Electrical installation Electric service and substation, motive power, main cables, lighting outlets, telephone system, emergency alarm system, lightning protection system</p>	<p>2. Exterior site Landscaping, tree planting, fencing</p> <p>3. Infrastructure connection Connecting to main supply lines of electric power, telephone, and water, installing portable fire extinguishers</p>
<p>3. Plumbing and air conditioning Water supply system, sewerage system, sanitary fixtures, air conditioning and ventilation system, fire extinguishing system, kitchen, incinerator</p>	<p>4. Furniture and equipment Desks, chairs, office equipment, medical equipment (beds, furniture)</p>
<p>4. Exterior site Passageways, street lamps</p>	<p>5. Fixtures Curtains, window shades, general furniture</p>
<p>5. Equipment Medical equipment, automobile equipment including inland transportation, installation at site and test operation after installation.</p>	<p>6. Miscellaneous Various application procedures and application fees, application for connecting to infrastructure and application fees, customs clearance at the time of unloading and tax exemption procedure</p> <p>7. Maintenance, management, and operation Ceremony expense</p>

3-1-4 Consultant Supervision

In the construction supervision, the consultant will dispatch a technically-qualified, full-time supervisor to the construction site. The consultant will also, according to the progress of the construction, dispatch to the site short-term engineers, who will inspect, witness, and instruct the construction work. The scope of work during the construction period is as follows:

(1) Assistance for concluding construction agreement

Consultant shall have a selection of Japanese contractor, decision of contract method, drafting of construction agreement, examination of details of tender documents, and witnessing of the execution of the agreement.

(2) Inspection and approval of shop drawings, etc.

Inspection of shop drawings, material sheet, finishing samples, and equipment presented by the contractors.

(3) Construction guidance

Reviewing of construction plan and schedule, guidance for construction workers, report to the owner about the progress of the construction work.

(4) Assistance for payment authorization procedure

Inspection of the work at each construction stage, and examination of invoices, etc..

(5) Final inspection

Inspection of work value in each construction stage and issuance of completion certificate.

Whole scope of work of the consultant, will complete by witnessing the hand-over of the facility based on the construction agreement and obtaining acceptance and approval from the owner.

The consultant will report the progress of the construction work, payment procedures, and completion and hand-over of the facility to relevant agencies of the Government of Japan.

3-1-5 Procurement Plan

(1) Construction work

Materials and equipment to be procured for the project need to be maintained easily and repaired quickly in case of damage or breakage. In this project, materials and equipment shall be procured locally.

(2) Equipment procurement

Most of the medical equipment in Zimbabwe is imported from other countries. Thus, it is important that, after the hand-over of the facility, the hospital can quickly receive technical services such as supplies of consumable items, repair work, and operational instructions when needed.

In this project, manufacturers (or models) that have "experience in supplying equipment to Zimbabwe," "the capacity to provide basic trouble shooting services in Zimbabwe or its neighboring countries," and "a network of service agents that have stock capacities of repair and consumable parts" are given priority.

Among the equipment articles to be used in the project which satisfy the following requirements are given priority. These requirements will be specifically defined in the technical specifications of tender documents as the conditions for technical service providers that need to:

- be technically certified for repair services by the maker of the equipment,
- be equipped with workshop and technicians that have technical capabilities of maintaining the equipment,
- have, in principle, sufficient stock to handle the hospital's orders for general-purpose repair and consumable parts and/or a system for importing specialized items.

3-1-6 Implementation Schedule

The length of time needed to implement the portion of the project to be undertaken by the Japan side (detailed design, construction, and equipment procurement) is as follows:

(1) Construction documents stage

The time needed to produce construction documents and specifications is estimated at 6.5 months after the conclusion of the Consultancy Agreement. When construction documents are completed, tender applicants for the construction work are examined beforehand. Based on the preliminary examination, the executing agency will summons qualified tenderers and conduct a tender.

The bidder who offers the lowest price will conclude a construction agreement with the Government of Zimbabwe. The work from the preliminary examination to the conclusion of construction agreement is estimated to take two months.

(2) Construction work

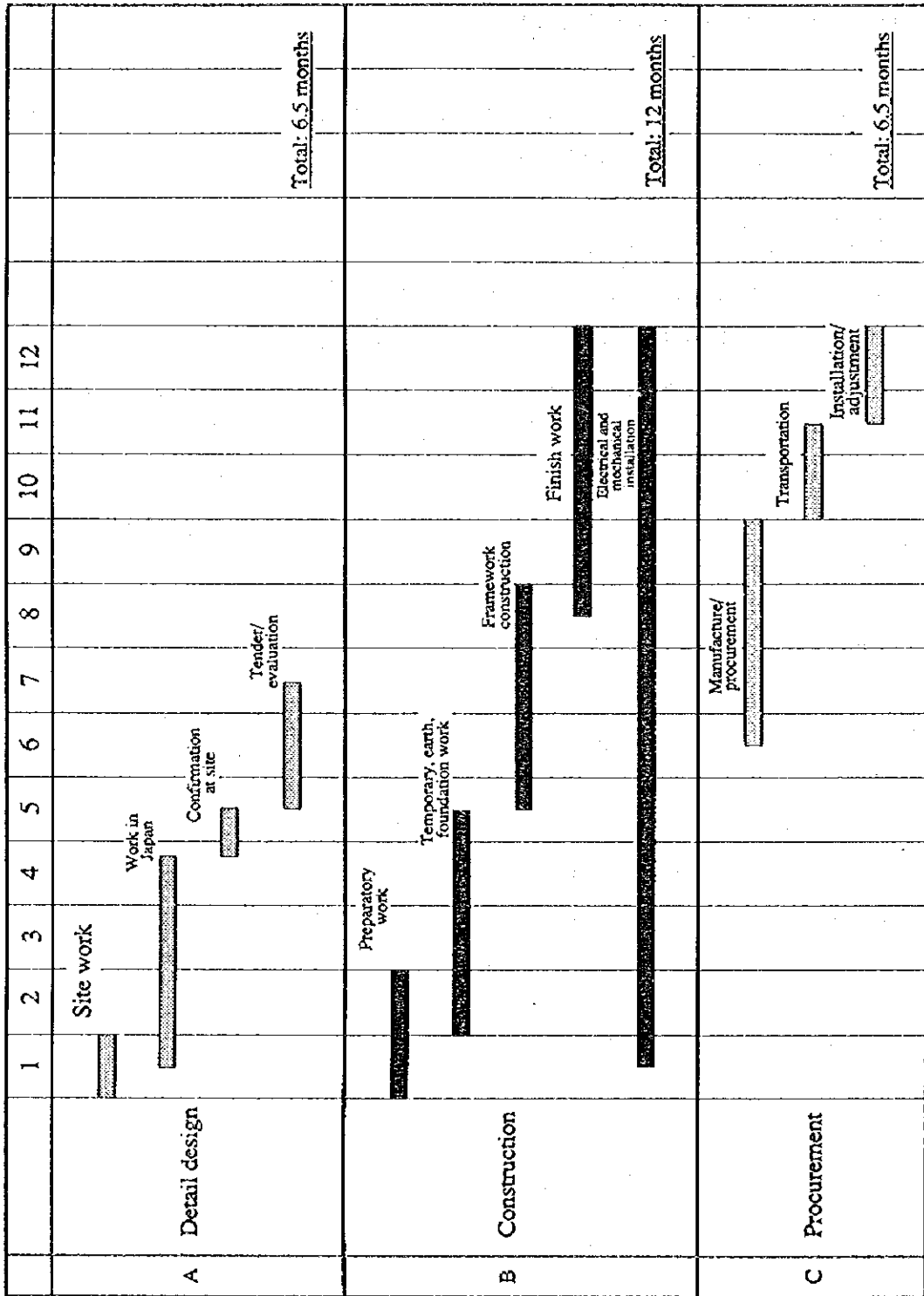
It is estimated that construction of the facility will take 12 months after the conclusion of a construction agreement with the Government of Zimbabwe.

(3) Equipment procurement

Manufacture, procurement, installation, and adjustment of equipment are estimated to take 6.5 months after the conclusion of an equipment procurement contract with the Government of Zimbabwe.

Project execution schedule described above is summarized in the following chart.

Table 3-2 Project Execution Schedule



3-1-7 Obligations of Recipient Country

On implementation of this project, the obligations of the Government of Zimbabwe are as follows:

(1) Signing of E/N Between Two Governments

The Government of Japan sets forth the objective, contents, and the grant limit of the proposed project at the Cabinet meeting and negotiates with the Government of Zimbabwe for the signing of the E/N. On signing of the E/N, the execution of the project will be started.

(2) Bank Arrangements (B/A)

The Government of Zimbabwe concludes a Banking Arrangement (B/A) and agrees on payment terms with an authorized Japanese foreign exchange bank to open a special account for the purpose of receiving the funds granted by the Government of Japan and making payments to the contracting companies. The banking arrangement serves as the basis for the Government of Zimbabwe to issue the Authorization to Pay (A/P). Any banking charges that accompany the transactions under the banking arrangement, are borne by the Government of Zimbabwe.

(3) Authorization to Pay (A/P)

Japanese contracting companies carry out their contract responsibilities after receiving verified contracts and the A/P issued by the Government of Zimbabwe.

(4) Other

Other obligations of the Government of Zimbabwe are carried out according to the scope of work to be undertaken by Zimbabwe side described in section 2-1-3.

3-2 Project Cost Estimation

Cost to be borne by the Zimbabwe side: Z\$ 882,300-

- Site preparation (filling, excavation): Z\$ 7,300-
- Furnishings, fixtures (curtains, fire extinguishers, furniture): Z\$ 610,000-
- Miscellaneous (application fees, etc.): Z\$ 265,000-

3-3 Operation and Maintenance Cost

Maintenance cost necessary for the hospital (excluding that for the existing facilities) after the implementation of the project is as follows. (Labor cost not included.)

Table 3-3 Expected maintenance cost for new paediatric unit (Unit: Z\$)

Fiscal year	Expected Maintenance Cost	Details of expected maintenance cost and payer					
		Utility	Communication	Office-expenses	Facility	Building Equipment	Medical Equipment
Payer for each cost -- --		(HCH)	(HCH)	(HCH)	(MOPCNH)	(MOHCH)	(MOHCH)
96/97	4,603,705	595,591	29,322	35,600	0	79,552	3,863,640
97/98	8,578,584	664,033	32,694	39,694	21,090	88,700	7,727,273
98/99	10,216,306	740,452	36,453	44,258	23,515	98,900	9,272,728
99/00	10,324,814	825,603	40,644	49,347	26,219	110,273	9,272,728

Table 3-4 Transition of Forecasts of Annual Budgetary Allocations and Collected Medical Treatment Charges of Harare Central Hospital (Unit: Z\$)

Revenues								
Year	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/2001	2002/2003
Annual budget	23,182,411	28,959,462	36,176,170	45,191,273	56,452,932	70,521,000	88,094,832	110,048,065
Medical treatment charges collected	3,532,305	3,627,687	3,710,026	3,794,243	3,880,373	3,968,457	4,058,541	4,150,670
Total annual earnings	26,714,716	32,587,140	39,886,196	48,985,516	60,333,305	74,489,457	92,153,373	114,198,735

NOTE: Annual budget forecast uses 2.173% (91/92 allocation rate) of annual budget of Ministry of Health and Child Welfare.
Forecast of medical treatment charges collected uses population increase rate of 2.27% for 91/92 as a rate of increase in charges collected for each year basing charges collected in 91/92 as a basis.

Table 3-5 Forecasts of Current Expenditure and Maintenance and Management Expenses of Harare Central Hospital (Unit: Z\$)

Expenditure			1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year
Year	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/2001	2001/2002
Annual current expenditure	25,853,300	28,826,430	32,141,469	35,837,738	39,959,078	44,554,372	49,687,125	55,391,110
Forecast of maintenance and management expense for the project	0	0	4,603,705	8,573,534	10,216,306	10,324,814	10,445,799	10,580,698
Total annual expenditure	---	---	36,754,174	44,411,272	50,175,384	54,879,186	60,123,924	65,971,808

NOTE: Annual current expenditure uses average increase rate of 11.5% calculated based on the actual expenditure in 91/92 to 94/95 shown in the report of MOHCW (1995).
Annual maintenance and management expenses: Include facilities, equipment, medical equipment and other items related to the entire project (combines CIDA and Japanese grant aids)

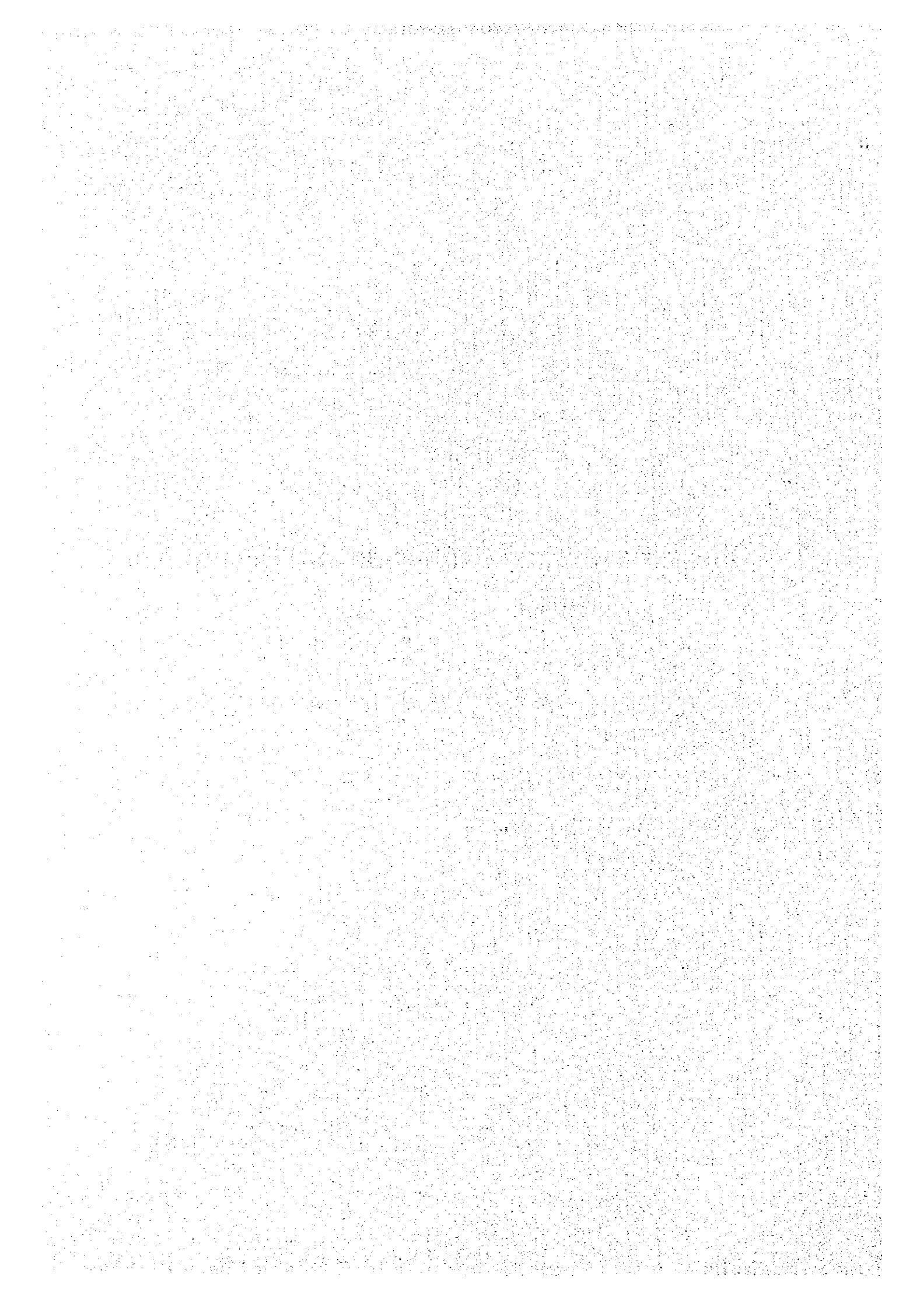
**Table 3-6 Forecast of Balance Between Revenues and Expenditure After
Completion of the Project**

(Unit: Z\$)

			1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year
Year	1994/95	1995/96	1966/67	1997/98	1998/99	1999/2000	2000/2001	2001/2002
Total earnings	26,714,716	32,587,140	39,886,196	48,985,516	60,333,305	74,489,457	92,153,373	114,198,735
Total expenditure	---	---	36,745,174	44,4111,272	50,175,384	54,879,186	60,123,924	65,971,808
Balance (Loss or profit)			3,141,022	4,574,244	10,157,921	19,610,271	32,029,449	48,226,927

The foregoing analysis described above verifies that the maintenance and management expenses which will newly be occurred at beginning of the time when the paediatric unit is built by the CIDA and Japanese aids under this project will not hinder hospital management as long as anual budgets are allocated as in the past also the hospital continue their effort to collect medical charges properly and the personnel expenses is paid directly under the budget of Ministry of Health and Child Welfare.

Chapter 4 Project Evaluation and Recommendation



Chapter 4 Project Evaluation and Recommendation

4-1 Project Effect

From the point of view that the objectives of this project is to construct new paediatric unit in the Harare Central Hospital and transfer existing paediatric unit to new unit in order to reduce the congestion of the hospital in short term and also contribute to the medical target of MOHCW as "50% reduction of child mortality" in mid-long term, propriateness of implementation of this project was verified as follows:

The current condition of facilities and staff of Harare Central Hospital are ① 126 beds in official capacity, ② Total floor areas of existing paediatric unit is 1,512 m², ③ Total number of medical staff is 3,000 plus, ④ Number of doctor concerned paediatric unit is 28 out of total number of doctor 220 in this hospital, ⑤ Number of nurses is 1,010 plus. And there are many high level of medical equipments and also there are high level engineers for maintenance for those equipments.

One of main cause to raising the child mortality rate in this country is that the number of patients exceeded the capacity of medical facility. For example, country average of congestion rate which is calculated in comparison with the number of official beds and number of patients is 1.25 ~ 1.50 (1992 MOHCW) and it shows 1.65 in this Harare Central Hospital. It means this Harare Central Hospital having much higher congestion rate than country average.

Most of the patients in this hospital sharing one bed by 2 to 3 patients and it is deemed that these condition of inpatients might be increased the child mortality rate especially in paediatric unit which having many infectious disease inpatients.

After completion of this project, the official number of bed in Harare Central Hospital will be increased from current number 126 to 160 and congestion rate also be reduced from current 1.65 to 1.25. It means that the number of patients sharing bed will be reduced and most of patients can be stayed bed alone as normal style and also the inner-infection rate can be reduced as a result.

In this project, 3,189 m² of total floor areas is secured in whole unit and it is double space of existing unit. And medical equipments also be purchased in almost same numbers and same level compare with existing equipments for only paediatric usage.

Further more, the theatres to be built will be used only for paediatric patients not like existing one was using for adults and childrens.

As a results under these new conditions mentioned above after completion of this project, following effectiveness can be expected. Such as ① Reduction of the number of bed sharing patients, ② Reduction of the inner-infection rate, ③ Improvement of medical work by securing double size of working space, ④ Improvement of medical treatment by purchasing of new medical equipments and finally implementation of this project will contribute to "50% reduction of child mortality" which is medical target of the MOHCW.

On above verification of effectiveness of the implementation of this project, propriateness of the project which will be done under Japanese Grant Aid has been confirmed.

4-2 Recommendations

This section identified task work which Zimbabwe and the Harare Central Hospital facing in the medical field and described into short-term and medium and long-term separately based on the analysis and results. This section also recommends some of the measures to be taken to solve these task work.

(1) Short-term task work

- * Provision of facilities and equipments in medical institutions especially in lower level of medical treatment.
- * Expansion of facilities and installation of more equipment to alleviate congestion in top referral medical institutions.
- * Leveling of population of patients to be covered by each top referral medical institution by re-arrangement of covering area of medical treatment for each institutions.
- * Enhanced awareness of cost recovery by medical staff.

(2) Medium and long-term task work

- * Reduction in personnel expenses which account for slightly more than 60% of annual budget of the Ministry of Health and Child Welfare.
- * To secure more specialist doctors with high level of expertise and prevention of doctors in Zimbabwe flowing out to foreign countries.
- * To improve patient referral system.
- * Reduction in burden to national coffer to medical institution by promoting of self-supporting accounting system in each medical institutions.

The above-mentioned task works are found that these are facing both in the medical field and the Harare Central Hospital as a result of analysis and study of data and information obtained. Paying

attention and effort to solve these task work one by one will make the medical system of Zimbabwe a more substantial one. The following are our recommendation as specific solution of these taks work even though there seem to be many problems should be solved beforehand, such as political, policy, economic policy, and tribe customs of Zimbabwe.

(3) Recommendation for solving short-term task work

1) Provision of facilities and equipments in medical institution especially in lower level of medical treatment

It is recommended that the survey plan of medical institutions throughout Zimbabwe shall be prepared and conduct a survey team to collect real information of present status of medical maintenance and personnal allocation of each medical institutions.

2) Expansion of facilities and installation of more equipment to alleviate congestion in top referral medical institutions.

There are four top referal hospitals in Zimbabwe, including the Harare Central Hospital, which is covered under this project. All these four hospitals are on the same level as medical institutions. However, the numbers of specialist doctors assigned to these hospitals and medical equipments in them are not on the same level. Because of this, congestion at these hospitals is uneven. Such as in the Harare Central Hospital, they do not have adequate working spaces for medical staff and the other hand, the Parirenyatwa Hospital, which treated only the white people before, has few patients and the medical environment is much better. This is caused by a disparity in the quantitative and qualitative levels of doctors and medical equipment allocated to the Parirenyatwa Hospital and Harare Central Hospital. In view of this, it is recommended that the levels of facilities and medical equipment in the four top referral hospitals be equalized.

3) Leveling of population of patients to be covered by each top referral institutions by re-arrangement of covering area of medical treatment for each institutions.

The allocation of service areas of the four top referral hospitals in Zimbabwe was decided before her independence and has been maintained ever since that time. In the beginning, two hospitals were built specially for the white people near residential areas for the whites. The remaining two hospitals were built for the black people near residential areas for the black people. The population proportion of the black people is predominantly high compared with that for the white people. Needless to say, the population of patients seeking medical treatment at the two hospitals for the black people are overwhelmingly small compared with that with the two hospitals for the white people. This phenomenon is still maintained today and has resulted in the uneven congestion phenomenon described in 2). As mentioned in 2), this requires only equalizing the levels of

specialist doctors and medical equipment, as well as the populations for medical treatment, at the four hospitals, namely, reallocation based on the population densities of the medical treatment areas. It is recommended that this work be undertaken immediately.

4) Enhancement of awareness of cost recovery by medical staff.

This subject has been taken up in detail in the analysis and study of the collected data. However, the effects of implementing the Economic Structure Adjustment Policy (ESAP) have not been accomplished satisfactorily yet. It is recommended that a program for education and training of medical staff throughout the country shall be prepared and shall augment education and training of staff in specific curricula.

Further more, the following survey report of the method to collect medical fee properly on effort of Hospital themself. (by "Public Hospitals in Developing Countries." edited by Dr. Howard & Barnum)

In a survey of free collection systems in West Africa, Vogel (1988) gives some useful pointers for successful fee collection systems:

- Well-defined entrance points for the hospital
- The issuance of receipts, with duplicate copies, to serve as evidence of payment
- A rigorously enforced system for determining those eligible for exemption
- Training for all staff to confirm the importance of enforcing collection
- Periodic spot checks to establish that the above points are being carried out by all staff
- Periodic audits of the financial transactions and flow of funds.

These elements are needed for successful collection with even the most simply defined fee schedule. Daunting though this may seem, the practicality of fees in diverse settings is demonstrated by the existence of active fee collection in nongovernmental, non profit hospitals, often in geographic areas where governmental hospitals provide services without charge.

(4) **Recommendations for solving medium and long-term task work**

1) Reduction in personnel expenses which account for slightly more than 60% of annual budget of the Ministry of Health and Child Welfare.

According to the 1991/1992 annual report compiled by the Ministry of Health and Child Welfare, a total number of 27,133 persons were working at medical institutions in Zimbabwe in 1992. Of this total, nurses accounted for 12,825 persons, or 47.3% of the total. The number of other staff

members other than doctors and specialists equals that of nurses. Therefore, nurses and other staff account for 95% of the total staff members. This trend is clearly shown in numerics of the central hospitals. As shown in Table 3-12, in 1992, a total of 7,205 persons were working at the four central hospitals. Of this total number, nurses and other staff members excluding doctors and specialists totaled 7,162 persons, accounting for 99.4% of the total. Conversely, this shows how doctors are in short supply.

The personnel expenses can be reduced substantially by eliminating unnecessary and excessive work force. It is recommended that a plan for a general check of work performed at the various medical institutions throughout Zimbabwe shall be prepared and try to eliminate the unnecessary and excessive work force.

2) To secure more specialist doctors with high level of expertise and prevention of doctors medical students in Zimbabwe flowing out to foreign countries.

According to the hearing survey with doctors, nurses and medical employees at the Harare Central Hospital, other central hospitals and regional hospitals during the survey by the study team, the following reasons were given why doctors could not be motivated to stay in Zimbabwe a. Doctor education and training facilities and equipment are not adequately provided. b. Harsh labor conditions for doctors at the hospitals. c. The training hospitals themselves are busy coping with the congestion of patients everyday and cannot provide sufficient training. d. Medical students prefer to study abroad.

As a means to solve these task work, it is recommended that subcommittees shall be formed and have periodically survey of the actual condition and to explain the present situation to the Ministry of Health and Child Welfare and other relevant government agencies and to try to secure enough budgets, by having problem awareness.

3) To improve patient referral system.

It is believed that this task work will be solved gradually in the process of solving the above-mentioned short- and medium/long-term task works.

4) Reduction in burden to national coffer to medical institutions by promoting self-supporting accounting system in each medical institution.

This task work is very difficult to solve and even in the industrially-advanced countries have not been able to solve this problem yet. The hospital management of Harare Central Hospital can stand only if the national treasury subsidizes it as before and medical cost is fully recovered by the hospital. If the subsidy of the personnel expenses of medical staff by the national treasury is

included in the hospital management cost, hospital management will run into deficit.

Nevertheless, Zimbabwe has to solve the matter sooner or later to accomplish ESAP now being introduced. Consistent efforts are recommended made to accomplish the final goals by starting periodical subcommittee activities and by enhancing problem awareness to all of medical staffs.

[APPENDIX]

Appendix - 1

MEMBER LIST OF SURVEY TEAM FOR BASIC DESIGN STUDY

Survey Period: May 26 to June 24, 1955

Name	Work Responsibility & Organization
Mr. Nobuo Toida	Team Leader Managing Director. Hachioji International Center. Japan International Cooperation Agency (JICA)
Mr. Kiyoto Kurokawa	Project Coordinator First Basic Design Division, Grant Aid Study Department. Japan International Cooperation Agency
Mr. Shigeki Asahi	Technical Adviser Bureau of International Cooperation. International Medical Center of Japan. Ministry of Health and Welfare
Mr. Yasunari Baba	Project Manager Sozosha Co., Ltd.
Mr. Kenji Tomaru	Architect Planner Sozosha Co., Ltd.
Mr. Yasuo Horigome	Facilities Planner Sozosha Co., Ltd.
Mr. Koichi Murao	Equipment Planner Daiichi Health Care Facility Consultants Inc.
Mr. Isao Kaneko	Cost Planner Sozosha Co., Ltd.

MEMBER LIST OF SURVEY TEAM FOR DRAFT MISSION

Survey Period: October 17 to October 28, 1995

Name	Work Responsibility & Organization
Mr. Nobuo Toida	Team Leader Managing Director. Hachioji International Center. Japan International Cooperation Agency (JICA)
Ms. Yuko Ishizawa	Project Coordinator First Basic Design Division, Grant Aid Study Department. Japan International Cooperation Agency
Mr. Yoichi Horikoshi M.D.	Technical Adviser Bureau of International Cooperation. International Medical Center of Japan. Ministry of Health and Welfare
Mr. Yasunari Baba	Project Manager Sozosha Co., Ltd.
Mr. Koichi Murao	Equipment Planner Daiichi Health Care Facility Consultants Inc.

Appendix - 2

SURVEY SCHEDULE OF BASIC DESIGN STUDY

No.	Date	Contents of Work	
1	26, May (Fri)	Dept. from Narita	Movement
2	27, May (Sat)	Via Singapore, Johannesburg	Movement
3	28, May (Sun)	Arrive at Harare	
4	29, May (Mon)		*Courtesy call on the Embassy of Japan and JOCV office *Discussion at the Ministry of Health
5	30, May (Tue)		*Visit Harare Central Hospital (Field survey and meeting with staff)
6	31, May (Wed)		*Visit the Ministry of Public Construction & National Housing, CIDA Office
7	01, Jun (Thu)		*Discussion at the Ministry of Health (Regarding facilities and equipments to be assisted without commitment by Study team)
8	02, Jun (Fri)		*Visit Provincial Hospital of Mroudera
9	03, Jun (Sat)		*Visit Provincial Hospital of Bindura
10	04, Jun (Sun)		Make-up of Materials
11	05, Jun (Mon)		*Signing of the Minutes at the Ministry of Health
12	06, June (Tue)		*Official Team leave for Tokyo Two consultant member leave for Tokyo
13 to 27	07, Jun (Wed) to 21, Jun (Wed)		*Survey will be continued by consultants
28	22, Jun (Thu)	Dept. from Harare	*Courtesy call to Ministry of Health and Embassy of Japan *Leave for Japan
29	23, Jun (Fri)	Via Johannesburg, Singapore	Movement
30	24, Sun (Sat)	Arrive at Narita	

SURVEY SCHEDULE OF DRAFT EXPLANATION SCHEDULE

No.	Date	Contents of Work	
1	17, Oct (Tue)	Dept. from Narita	Movement
2	18, Oct (Wed)	Arrive at Harare	
3	19, Oct (Thu)		*Courtesy Call on the Embassy of Japan and JOCV Office *Discussion at the Ministry of Health
4	20, Oct (Fri)		*Visit Harare Central Hospital *Discussion at the Ministry of Health
5	21, Oct (Sat)	Dept. from Harare to Brawayo	*Visit Mpilo Central Hospital
6	22, Oct (Sun)	Dept. from Brawayo to Harare	Movement *Meeting of Survey Team
7	23, Oct (Mon)		*Discussion at the Ministry of Public Construction & National Housing *Discussion at the Ministry of Health
8	24, Oct (Tue)		*Discussion at the Harare Central Hospital
9	25, Oct (Wed)		*Signing of the Minutes at the Ministry of Health *Courtesy Call on the Embassy of Japan and JOCV Office
10	26, Oct (Thu)	Dept. from Harare	*Official Team Leave for Paris *Consultant Member Leave for Tokyo
11	27, Oct (Fri)		Movement
12	28, Oct (Sat)	Arrive at Narita	*Consultant Member Arrive at Tokyo
13	29, Oct (Sun)	Arrive at Narita	*Official Team Arrive at Tokyo

Appendix-3

MEMBER LIST OF PARTY CONCERNED IN THE RECIPIENT COUNTRY (BASIC DESIGN STUDY/DRAFT REPORT EXPLANATION)

Ministry of Finance, Economic Planning and Development

Mrs. A. Gunduza	Assistant Secretary
Miss. L. R. Kahari	Desk Officer

Ministry of Health

Mrs. Serima	F. H. P. Coordinator
Mr. Rutsate	Deputy F. H. P. Coordinator
Mr. Pfunye	Assistant Secretary
Mr. Taonana	Admin. Officer
Mr. I.C.P. Murapa	P.E.O. Personnel
Mr. M. Kateketa	Under Secretary

Ministry of Public Construction & National Housing

Mrs. F. Teckie	Chief Architect
Mr. T. Musuga	Deputy Directory
Mr. K.N. Kibria	Senior Architect

Harare Central Hospital

Dr. M.Y. Ali	Medical Superintendent
Mr. Chengeta	Principal Nursing Officer
Ms. A.H. Chiutsu	Health Services Administrator

Canadian International Development Agency (CIDA)

Mr. Pierre-Paul Perron	First Secretary
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Embassy of Japan

Mr. Haruo Okamoto	Minister
Mr. Yasuo Shoji	First Secretary

JOCV Zimbabwe Office

Mr. Mutsumi Narawa	Coordinator
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