## 2-3 Basic Design

### 2-3-1 Design Concept

In working out the equipment plan, which is to be proposed as the optimal plan, the natural and social conditions in Suriname, the following guidelines were first drawn up taking into consideration the present state of the Surina- mese organization to implement this project and the major problems involved in the procurement of the planned items of equipment and the characteristics of this Project.

[1] Guideline Relating to the Natural Conditions

Paramaribo City is situated in a tropical zone characterized by high tempera- tures and humidity. There are few changes in temperature throughout the year in and around the city. But the rainy season lasts long and it is very sultry during the rainy season. The equipment plan should therefore be worked out giving due consideration to such climatic conditions

[2] Guideline Relating to the Social Conditions

Many of the patients serviced by this hospital are at low socioeconomic levels and it is difficult for them to defray all the medical expenses they incur. In working out the equipment plan, therefore, minute care should be taken so that the introduction of equipment under this product may not result in an increase in the maintenance and management costs and the subsequent increase in these patients' financial burden in health care.

[3] Guideline Relating to the Utilization of Local Suppliers and Locally Available Equipment

Local medical equipment distributors have a profound knowledge of the products they handle and are also well skilled in their maintenance and manage- ment. They are also providing replacement parts and expendables, as well as technical guidance on the operation of the products they offer and after-sales services. The equipment plan should therefore be one that utilizes items of equipment available from manufacturers who have distributors in the country so that equipment maintenance and management after the implementation of this project may be easy.

[4] Guideline Relating to the Surinamese Project Implementing Organization's Equipment Maintenance and Management Capabilities

Training is given in operation and maintenance for the personnel concerned, at the time the requested apparatuses are delivered. As most of the apparatuses provided under the project are replacements of old ones, there will be no problem in their operation and maintenance after the project's completion. The hospital has five departments for equipment maintenance, namely, the departments of medical electronics, electrical engineering, mechanical engineering, woodwork and painting, which are operating under the direction of a technical manager. With a view to further securing equipment maintenance, importance is laid on whether manufacturers have an established maintenance system or not, and priority is given to those manufacturing companies which have local agents.

[5] Guideline Relating to the Range of Items and the Grades of Equipment

The range of items and the grades of equipment should be determined in ac- cordance with the criteria set based on the results of the field survey after discussions with the Surinamese side. Consistency with the hospital's functions and technical level, compatibility with the existing items of equipment, ease of use for the medical professionals working at the hospital and lack of overlaps with the contents of assistance by the other aid providing organizations are the four basic principles. The equipment plan should also give precedence to the basic items of equipment necessary for the medical care services offered at the hospital, the items of equipment to replace the existing ones and

those items of equipment which are easy to main- tain and manage. In the case of the same items of equipment which are requested by more than two clinical departments, the equipment plan should include a plan to establish a centralized maintenance and management system to contribute to a reduction in the maintenance and management costs.

[6] Guideline Relating to the Period of Project Implementation

The period of implementation of this project should be determined taking into account the natural conditions and the schedule for the repair of the facilities and equipment being carried out on the project site. The equipment arrangement and installa- tion work should be completed efficiently in a short period of time in order to minimize its effects on the medical care activities carried out at the hospital.

## * Study of the Design Conditions

[1] Examination of the Natural and Facility Conditions

In Suriname the humidity is high throughout the year, and therefore careful attention must be paid to indoor dehumidification if the equipment is to be operated normally in stable condition.

The clinical departments where the items of equipment for use in radiological diagnosis, analysis of the results of clinical examinations, operations and patient monitoring, in which many elec- tronic parts are incorporated, are provided with sufficient air-conditioning.

Although at the time of the field survey, no significant voltage fluctuations were observed, X-ray machines and other similar precision instruments should be provided with automatic voltage stabilizers as a safeguard against possible damage.

The results of an examination of the quality of the water taken from the project site show that the water is rather hard perhaps because of the project site's proximity to the sea.

It will be necessary to soften the hard water when it is to be used with the high-pressure steam sterilizing equipment and the like.

[2] Examination of the Equipment and Facilities and the Technical Conditions Special attention should be paid to the following points in working out the equipment plan.

(1) In the equipment plan, priority should be given to those items of equipment which are urgently needed to replace the existing superannu- ated ones or those which are to be added to the exiting ones in short supply.

(2) Items of equipment to be procured under this project should be on the same technical level as the existing ones so that they may match the technical level of the hospital's medical professionals.

(3) Items of equipment to be procured under this project should be of relatively simple structure, sturdy and unlikely to break down easily. It is also necessary that they be handled easily by the hospital's engineers, as well by local distributors, under the present equipment mainte- nance and management system.

(4) Items of equipment to be procured under this project. should be operated, maintained and managed within the limits of the Ministry of Health of Suriname's budget.

(5) Items of equipment to be procured under this project. should be conducive to the revitalization of the hospital's medical care activi- ties, which are now on the decline, and to the recovery of the hospital's func- tions as the country's top referral hospital.

### 2-3-2 Basic Design

The hospital has complete, basic equipment, which are operable, though superannuated, as a result of the systematic rehabilitation of the facilities and equipment. The apparatuses provided under the project are installed in the rooms of the departments and divisions in the existing facilities. As most of the apparatuses to be provided are replacements of superannuated ones, the disabled ones and those which are disposed of are removed. It is therefore unnecessary to construct facilities for the new apparatuses.

### [2] Equipment Plan

1. Guidelines for the Selection of Items of Equipment

The following guidelines were worked out for the selection of items of equip- ment to be procured under this Project.

#### Criteria Principles

(1) Basic Principles
   1) Aptitude for the function and referral of the hospital.
   2) Consistency with the existing equipment.
   3) Equipment which don't require new medical staff (doctors, paramedical staffs).
   4) To avoid overlapping of the item and quantity with existing equipment.
   5) To avoid overlapping from other donors.

(2) Criteria for Priority
   1) Basic equipment for medical services.
   2) Equipment for the renewal or replacement of the existing equipment.
   3) Equipment which you can handle by simple and established skills.
   4) Equipment which you can goodly confirm the necessity condition and propriety for the medical services. (i.e. numbers of patients, number of materials...).
   5) Equipment which is more effective per cost.
   6) Equipment of which the receptor can afford the maintenance cost.

(3) Criteria for Deletion
   1) Equipment which have any danger of conflict for the laws and regulations on the Environment in force in both in Suriname and/or Japan.
   2) Equipment which require new construction or big reconstruction of the building.
   3) Radioisotope equipment and relating equipment.
   4) Equipment which use chloro-fluorine-carbon and/or other materials which involve environmental problem.
   5) Equipment which requiare new clinical department or introduction of new clinical technic.
   6) Requirement of articles for consumption and reagent by themselves.
   7) Equipment easy to furnish in the country and easy to purchase by the budget of the hospital itself.
   8) Equipment which overlap the item and/or its function in the equipment list required.
   9) Equipment which already have been acquired or have been included in the budget after

the request.

10) Equipment without agency available for maintain and control and which seem to be hard to maintain in the country.

## 2. Expendables and Replacement Parts

Expendables and replacement parts are among the items of equipment to be procured under this project. Their quantities for each item of equipment should be examined and determined taking into consideration the period of equipment procurement by the Surinamese side.

## 3. Operation of the Equipment and Equipment Operation Training

Regarding the operation of equipment and equipment operation training, guid- ance on the operation of equipment should be given directly to the prospective users of individual items of equipment on an as needed basis at the time of their procurement. 4. The uses of the main items of equipment to be procured for the clinical departments and a list of items of equipment to be procured under this project are as shown below.

Equipment Specifications

1 Patient monitor [1-2]
Main specifications
Measurement items: electrocardiogram, respiration, skin oxygen concentration, blood pressure
Measuring method:
-Electrocardiogram and respiration: three-electrode
-Skin oxygen concentration: optical pulse
-Blood pressure: cuff
Purpose
This apparatus, being used under the control of the anesthetist, is used for monitoring biological information of the patient during a surgical operation. The apparatus shall be capable of conducting electrocardiography, counting respirations and measuring epidermal oxygen concentration and blood pressure, in the wire system.

2 Defibrillator [1-3] [8-1]
Main specifications
1) Prescribed energy: 3 - 360 J
2) Paddle: outside
3) With electrocardiographic function
4) With a stand
Purpose
This apparatus is used for patients in whom ventricular fibrillation has occurred during surgical operations, for the purpose of bringing them back to life. Though the apparatus is not usually used, it is necessary in an emergency. The apparatus shall be equipped with the most basic electrocardiographic function, with a stand for moving.

3 Anesthesia apparatus [1-7]
Main specifications
1) Type: manual control of oxygen and nitrous oxide volumes
2) Vaporizer: halothane
3) With a respiratory ventilator for anesthesia apparatus
Purpose
This apparatus is used in general anesthesia using a vaporized anesthetic for surgical operations. A basic type of apparatus shall be chosen. Volumes of oxygen and nitrous oxide are manually controlled. The apparatus shall be provided with a respiratory ventilator for anesthesia, because it is difficult for the anesthetist to manually control the patient's respiration during a surgical operation lasting for hours.

4 Respiratory ventilator [9-50]
Main specifications
1) Type: Volume/pressure-control type
2) Operational modes: SIMV, IMV, ASSIST, PEEP, CPAP
3) Volume per respiration: 50 ml to (1200 - 3500) ml

4) Maximum quantity of flow: 20 ml to 50 ml
5) Auxiliary equipment: humidifier, nebulizer
Purpose
This apparatus is used in treatment of respiratory insufficiency and management of postoperative patients. An apparatus which can be volume- and pressure-controlled shall be chosen so that it can be used in treating both adults and children (weighing at least 10 kg). Operational modes shall be DIMV, IMV, PEEP and CPAP. The apparatus shall, therefore, be capable of ventilating a maximum of 1300 ml per respiration, with the quantity of flow exceeding 50 ml. The apparatus shall be provided with a humidifier and a nebulizer, which are auxiliaries necessary in treatment while respiratory ventilation is required for patients.

5 Rhino-laryngofiberscope with light supply [1-10]
Main specifications
Outside diameter at the tip: 4.8 mm
Channel diameter: 2.2 mm
Effective length: 365 mm
Visual range: 85 degrees
Purpose
This apparatus is used widely in pectoral surgery, internal medicine, otolaryngology, etc. It is used especially for diagnosing bronchial diseases and extracting foreign matter, as well as for treatment. It is used at the time of inserting the tube before anesthesia.

6 Pulse oximeter [1-13]
Main specifications
Measurement items: arterial blood oxygen saturation, number of pulse waves
Digital display type
With a memory unit
Purpose
This apparatus is used for measuring oxygen saturation of hemoglobin in arterial blood and identifying the condition of gas exchange in the patient. The apparatus is used for managing the patient during anesthesia.

7 Cardiovascular application version color Doppler echocardiograph [2-6]
Main specifications
Scanning method: linear, sector, convex
Display mode: BM mode, Doppler, color Doppler
Purpose
This apparatus is used in cardiac examination by scanning with ultrasonic beams. The apparatus is used for identifying

valvular troubles, ischemic heart diseases, congenital heart diseases, etc. It is used also for measuring cardiac structures and blood flow and evaluating cardiac functions.

8 Solid-state electrosurgical unit [3-37]
Main specifications
High frequency output
Incision: 250 W
Coagulation: 120 W
Mixing: 200 W
Purpose
This is a basic apparatus used in incision, hemostatis and coagulation in a surgical operation. The apparatus shall be of floating type.

9 Full automatic photomicrographic system [3-48]
Main specifications
Dimming: automatic dimming
Dimming range: 1/125 sec. - 68 min.
35-mm camera with a control unit
Purpose
This apparatus is used for recording results of microscopic examination and preparing materials for research and training. Especially the results of fluorescent antibody examination need to be recorded in photographs, because the life of fluorescent matter is very short (about 30 minutes).

10 Cryosurgery system [3-57]
Main specifications
Refrigerant: liquid nitrogen
Lowest temperature: -190oC
Purpose
This system is used in treatment through destroying the tissue of a limited region of a patient by lowering the temperature of the region up to a super low temperature

11 Fetal monitor [5-6]
Main specifications
1) Measurement items: fetal heart rates, labor pains
2) Measuring method: pulse Doppler method
3) Oscillation frequency: 1.15 Mhz
Countable heart rates: 50 - 210 PBM
Labor pain transducer: 0 - 100
Recording range: 30 - 210 PBM
Purpose
This apparatus is used in the labor pain room and the delivery room, for monitoring conditions of a pregnant woman and her fetus at the time of delivery. The apparatus is indispensable for safe delivery. For the measurement of fetal heart rates, the pulse Doppler method is adopted, with a view to reducing impact to the mother's womb. For the measurement of

labor pains, an apparatus with which measurement from the outside is possible shall be adopted, also with a view to reducing impact to the mother's womb. The electronic fetal monitor shall have a recording unit for recording measurement results.

12 Instrument sterilizer [5-20]
Main specifications
High pressure steam sterilization
With a built-in boiler
Chamber size: 500W x 600D x 500H
Purpose
This apparatus is used for sterilizing medical instruments. The apparatus shall be capable of simultaneously sterilizing two Kasten (cases, 450mm x 250mm x 300mm each) in which surgical instruments are placed.

13 Stereo colposcope [7-1]
Main specifications
Working distance: 250 - 600 mm
Illumination intensity: 30,000 - 60,000 Lux
Magnification: three-step (8X, 12.6X, 20X)
With a 35-mm camera
Purpose
This apparatus is used for precise gynecological diagnosis.

14 Cryosurgery system [7-2]
Main specifications
Refrigerant: carbon dioxide
Lowest temperature: -50oC
Purpose
This system is used in treatment through destroying the tissue of a limited region of a patient by lowering temperature of the region up to a super low temperature.

15 Fetal electrocardiograph [7-8]
Main specifications
Measurement items: fetal pulse rates
Measuring method: pulse Doppler method
Oscillation frequency: 1.15 Mht
Countable pulse rates: 50 - 210 BPM
Purpose
This apparatus is used for observing and examining physiological indicators of a fetus, by recording its cardiac functions in an electrocardiogram.

16 Respiratory ventilator (for children) [8-16]
Main specifications
Modes: CMV, IMV, ZEEP, PEEP/CPAP
Tidal volume: 0 - 999 ml/min
I/E ratio: 1 : 0.5 - 1 : 99

O2 blender: 21 - 100%
Display: digital
With a humidifier
Purpose
This apparatus is used as an auxiliary for those children who can ventilate spontaneously, and for regulated ventilation for those children who require forced respiration.

17 Autospirometer [9-30]
Main specifications
Measurement items:
-Pulmonary ventilation
-Maximal ventilation
-Minute ventilation
Purpose
This apparatus is used for examining ventilating functions. Examination is conducted in a process in which oxygen is taken from the air and carbon dioxide is discharged out of blood.

18 Gastrointestinal fiberscope [9-34]
Main specifications
Outside diameter at the tip: 9.8 mm
Channel diameter: 2.8 mm
Effective length: 1,025 mm
Visual range: 120 degrees
Purpose
This apparatus is used for examining mainly the stomach and diagnosing internal cases.

19 Colonofiberscope [9-35]
Main specifications
Outside diameter at the tip: 13.8 mm
Channel diameter: 3.2 mm
Effective length: 1,325 mm
Visual range: 140 degrees
Purpose
This apparatus is used for the examination of the large intestine and diagnosis of cases.

20 Bronchofiberscope [9-36]
Main specifications
Outside diameter at the tip: 4.9 mm
Channel diameter: 2.2 mm
Effective length: 550 mm
Visual range: 120 degrees
Purpose
This apparatus is used for examining the inside of the bronchus, conducting biopsy with a forceps, and collecting cells, for the purpose of diagnosing pulmonary and bronchial cases.

21 Lecturescope [9-37]
Main specifications
Connection with an endoscope possible
Effective length: 790 mm
Purpose
This apparatus, being connected with an endoscope, makes it possible for assistants and doctors under on-the-job training to have endoscopic observation together with the surgeon.

22 Halogen light source for endoscopes [9-38]
Main specifications
Lamp: halogen lamp
Photographable type
With air sending function
Connection with an endoscope possible
Purpose
This unit supplies light to the endoscope, making it possible to examine diseased regions. The unit, being used in connection with the endoscope, is capable of photographing and air sending.

23 Electrosurgical unit [9-39]
Main specifications
Wave-form: incision, mixing, coagulation
Frequency: 500 KHz
Output: incision 300 W, mixing 180 W, coagulation 100 W
Purpose
This is a high-frequency, caustic light source unit and used in treatment of digestive organs and urinary organs, and in obstetrics and gynecology.

24 Endoscopic suction unit [9-40]
Main specifications
Evacuation method: rotary decompression method
Sucking force: 640 mmHg - 300 mmHg
Automatic float type
Two-bottle type
Purpose
This apparatus is used for sucking waste fluid produced in bronchoscopic examination and large intestinal examination.

25 Endoscopic TV system [9-41]
Main specifications
Endoscopic method: interline system
Sensitivity: 1,400 LUX
Automatic dimming: connection with a light supply unit
Purpose
In this system, a TV camera is connected with an endoscope, and endoscopic images are, being enlarged, displayed on the TV screen, for the purpose of making it possible to examine minute regions of the body.

26 Video endoscope system [9-42]
Main specifications
Color system: 3CCD
Television system: NTSC
White balance: automatic correction
Black balance: automatic correction
Purpose
In this system, an endoscope is loaded with a small-sized camera. The system is used for recording endoscopic images on video tapes and reproducing them on a TV screen.

27 Mobile X-ray unit [23-6]
Main specifications
1) Type: condenser type
2) X-ray tube voltage: 4 - 125 KV
3) X-ray tube current: a maximum of 300 mA
4) X-ray tube: 140 - 270 KHU
5) Traveling: self-propelled
Purpose
This apparatus is used for patient with advanced diseases or seriously injured patients for whom it is difficult to visit the radiographic room by themselves. It is used in simple radiography for necessary regions of the body. The apparatus shall have an X-raying capacity at 125 KV and 100 MAS. The apparatus shall be of self-propelled type, for the purpose of facilitating its moving.

28 Microscope [10-3]
Main specifications
Body: 6 V, 20 W halogen lamp
With a built-in transformer
Press stage: 124 x 153 mm
Body tube: binocular 45 degrees
Objectives: 4x, 10x, 40x, 100x
Purpose
This apparatus is used for observing microorganisms in the laboratory.

29 Glucose analyzer [10-11]
Main specifications
Measurement range: 20 - 800 mg/dl
Specimen: whole blood
Memory capacity: 99 specimens
Purpose
This apparatus is used in the ICU, the CCU, the examination room, the operating room, the wards and the laboratory, for measuring glucose concentrations in the blood.

30 Na-K analyzer [10-13]
Main specifications

1) Sample: whole blood, blood plasma, serum, urine
2) Measurement range: serum mode
Na: 80 - 200 mmol/L
K : 0.50 - 9.99 mmol/L
3) Measurement range: urine mode
Na: 10 - 350 mmol/L
K : 5 - 250 mmol/L
Purpose
This apparatus is used for measuring electrolytes in the blood or urine. An analysis of electrolytes makes it possible to diagnose cases, based on measurement results of Na, K, CL, etc.

As analysis results require high accuracy, the apparatus shall have the functions of self diagnosis and automatic calibration for always checking the working of the electrodes.

31 Blood gas analyzer [10-14]
Main specifications
1) Specimens: blood, emitted breath
2) Range of measurement:
pH 6.000 - 8.000 Hg
pO2 0.0 - 800.0 mmHg
pCO2 5.0 - 150.0 mmHg
Hb 5.0 - 2.5 g/dl
Purpose
This is the most typical apparatus for analyzing the blood and measuring concentrations of O2, CO2, etc., in it, for the purpose of ascertaining whether the respiratory organs are working normally or not. This apparatus is used also for managing respiration during surgical operations and examining metabolic rates of water and electrolytes and acid-base balance in the blood.

32 Spectrophotometer [10-15]
Main specifications
1) Wavelength range: 200 - 100 nm
Wavelength display: 0.1 nm
Wavelength accuracy: 1.0 nm
Wavelength speed: about 6000 nm/min
Purpose
This apparatus is used for measuring protein, acids and enzymes in the blood or urine. It is the most basic analyzer used in a laboratory, for diagnosis of cases.

33 Blood cell counter [10-18]
Main specifications
Measurement items: number of white corpuscles, number of red corpuscles, quantity of hemoglobin,
hematocrit value, mean red corpuscle volume,
mean quantity of red corpuscle hemoglobin,
mean concentration of red corpuscle

hemoglobin
Measuring time: 25 seconds/specimen
Purpose
This apparatus is the most basic one used for white/red corpuscle counting and blood examination. Examination results make diagnosis of cases possible.

34 Clinical chemistry analyzer (for emergencies) [10-24]
Main specifications
Measurement items: 23 items
Wavelength: seven wavelengths
interference filter method
Processing capacity: 100 tests/hour
Purpose
With this apparatus, immediate examination is possible in an emergency. An examination requires about six minutes, and 23 items of biochemical examination are possible. Only very small quantities of specimens are needed. Examination is possible on a 24-hour basis.

35 Automated coagulation system [10-26]
Main specifications
Measurement items: PT, APTT, Fib, HPT
Measuring range: PT, TT 7 - 300 seconds
APTT, HPT 7 - 300 seconds
Fib. 5 - 60 seconds
Measuring method: identifying coagulation points by scatter photometry
Wavelength: 660 mm
Purpose
This apparatus is used for measuring blood coagulation factors, activation value and ratios, and conducting INR conversion and Fib concentration conversion. Measurement results make diagnosis of cases possible.

36 High pressure steam sterilizer [10-34]
Main specifications
1) Holding capacity: 150 l
2) Control: micro-processor
3) Sterilization method: steam pressure
4) Cycle display: LED
5) Temperature display: digital
6) Safety: for opening/closing the door
7) With a built-in steam boiler
Purpose
This apparatus is used for sterilizing examination appliances in the laboratory. The door shall be a single swing door opened/closed by hand. The apparatus shall have an automatic control unit for its operation.

37 Air pressure skull operating set [12-38]

Main specifications
Pressure: 8 kg/cm2
Revolutions: 25,000 rpm for opening
Gas used: nitrogen or air
Attachments: a standard set
Purpose
This apparatus, being driven by compressed air, is used for opening the skull.

38 Solid-state bipolar coagulator unit [12-47] [17-1]
Main specifications
Power consumption: 160 VA
Carrier frequency: 450 kHz
Output: 15.0 W, 100 ohm
Insulation resistance: 1,000 megohms
Bipolar set
Purpose
This apparatus is used for coagulation treatment of minute regions.

39 Electroencephalograph [13-4]
Main specifications
1) Number of channels: 21
2) With a program memory unit
3) With a photic stimulation unit
Purpose
This apparatus is used for measuring electric potential produced in the brain and diagnosing diseases originated from brain trouble. The apparatus shall have 21 channels so that it can be used in usual diagnosis on a specialized level. The apparatus shall be capable of storing measuring programs and automatically carrying out measurement. The apparatus shall be attached with a photic stimulation unit, an apparatus which is used very often in measurement.

40 Evoked potential measuring system [13-6]
Main specifications
Number of channels: 4
With a photic stimulation unit
With a sound stimulation unit
With an electric stimulation unit
Examination items: dielectric potential, electromyogram processing
With a memory unit
Purpose
This system is used for adding active electric potential produced in the brain, by giving the patient an electric, photic or sound stimulus, for the purpose of finding audiovisual disorders.

41 Electromyograph [13-7]

Main specifications
1) Number of channels: 2
2) Input resistance: 200 megohms
3) Amplification degree: 94 dB
4) Noise level: 1 Hz - 10 kHz
Purpose
This apparatus is used for finding functional disorders caused by motor troubles, peripheral nervous troubles or myogenic troubles.

42 Dental chair unit [14-1]
Main specifications
1) Components: patient chair, astral lamp, air turbine, suction unit, gargling unit, air compressor
Purpose
This unit is a basic apparatus for dental diagnosis and treatment. It shall be equipped with attachments necessary for theses purposes.

43 High pressure steam sterilizer [15-1] [15-2]
Main specifications
1) Holding capacity: 429 & 230 l
2) Control: microprocessor
3) Sterilizing method: steam pressure
4) Cycle display: LED
5) Temperature display: digital
6) Safety: for opening/closing the door
7) With a built-in steam boiler
Purpose
This apparatus is used for sterilizing medical instruments. Its capacity shall be determined on the basis of the number of medical instruments used in surgical operations, etc. The apparatus, having a single swing door manually opened/closed, shall have an automatic control unit for its operation.

44 Urological examination and treatment table [15-5]
Main specifications
Manual type
With casters
Equipped with a footrest
Purpose
This apparatus is used in urological examination.

45 Binocular operating microscope [15-15]
Main specifications
Stand type
Angle of inclination of opposed binocular tube:
variable, about 15 degrees - 65 degrees
Adjustable range of eyepiece width:
about 52 - 76 mm
Overall magnification: about 5.3 - 27 magnifications

Illumination intensity: a maximum of about 97,000 lux
Light source: 15 V, 150 W halogen lamp
Purpose
This apparatus is used in surgical operations for minute regions and deep regions.

46 Automatic gas insufflator for laparoscopes [15-30]
Main specifications
Working discharge: 1 l/min
Supply pressure: 14 mmHg
High flow discharge: 2.5 l/min
Purpose
This apparatus is used for filling the abdominal cavity with gas for laparoscopic examination.

47 Laparoscope set [15-32]
Main specifications
Type: medical laparoscope
Optical ocular tube: 45 degrees, 10-mm diameter
Examination instrument set
With a light supply unit
With an automatic gas insufflator
Purpose
This apparatus is used for finding abdominal diseases such as in the liver or the gallbladder.

48 Slit lamp [16-48]
Main specifications
Binocular microscope:
Galilean stereoscopic, direct-vision, erect image type
Magnification variation method:
5 variations through drum rotation
Overall magnification: 6X, 10X, 16X, 25X, 40X
Purpose
This apparatus is used for examining anterior parts of eyeballs.

49 Arthroscopic set with camera and monitor [17-28]
Main specifications
1) Power source unit
2) Camera and monitor
3) Light guide scope
4) Forceps for tissue sampling
Purpose
This apparatus is used for the examination of diseases in articular cavities and arthroscopic operations for them.

50 Complete microscope system with camera and TV set [18-2]
Main specifications
Body: 12 V, 100 W halogen lamp
With a built-in transformer

Camera/TV monitor
Video recorder
Purpose
This apparatus shall have a camera and a TV monitor, for the purpose of storing examination results for a long time and using them in research presentation.

51 Distillation apparatus [18-10]
Main specifications
Distillation capacity: 1.8 l/h
Purity of distilled water: 1 micro-s/cm
Purity of ion exchange water: 1 micro-s/cm
Purpose
This apparatus is used for producing distilled water and ion exchange water. Distilled water, being stored in a tank, can be used any time.

52 Slide stainer for cytology [18-12]
Main specifications
Processing capacity: a maximum of 60 sheets at a time
Shaking method: up and down shaking
Shaking width: 15 mm
Number of processing steps: 50 steps/program
Purpose
This apparatus is used for automating the staining of specimens for hemograms. The apparatus automatically stains solutions in prescribed periods of time.

53 Leitz microscope for photomicrography and photomicrograph [18-13]
Main specifications
Body: 12 V, 100 W halogen lamp
With a built-in transformer
With a 35-mm camera
Photomicrographic speed: 1/125 sec
Purpose
This apparatus is used for recording and storing microscopic examination results through photomicrography.

54 Shaker for tissue fixation [18-35]
Main specifications
Dimensions of shake plate: 350 x 250 mm
Shaking method: inclined rotation
Maximum load: 10 kg
Timer: 12 hours
Revolutions: 10 - 66 revolutions/min
Purpose
This apparatus is used for fixing samples in tissue processing such as in pathological dissection. The apparatus ensures that fixatives will work.

55 Automatic cytosedimentation machine [18-37]
Main specifications
Number of specimens to be processed: 12 specimens at a time
Range of revolutions: 500 (30G) - 2,500 (750G)
Timer: 1 - 60 min
Purpose
This machine is used for preparing cell smears necessary for cell examination.

56 Roller mill for ointment [20-3]
Main specifications
Speed change: non-step
Revolutions: 61 - 369 rpm
Bowl capacity: about 5 kg
Purpose
This apparatus is used for agitating and mixing ointment in the dispensary.

57 Rotor stator mixer [20-5]
Main specifications
Pulverized grain size: 1 micrometer
Maximum size of input: 6 mm
Vibrations: 150 - 1,800 rpm
Amplitude: 16 mm
Purpose
This apparatus is used for dry- or wet-pulverizing soft, fibrous, hard or short samples. The apparatus is used also for fine-pulverizing and mixing small quantities of samples.

58 Ball mill [20-6]
Main specifications
Grain size: 1 micrometer
Jar revolutions: 0 - 450 rpm
Timer: 0 - 60 min
Purpose
This apparatus can be used for the preparation of analysis samples and material testing of organic and inorganic substances. The apparatus is used also for super fine pulverization.

59 Autoclave [20-7]
Main specifications
Type: tabletop type
Capacity: at least 20 l
Working pressure: 1.0 - 1.3 kg/cm2
Purpose
This apparatus is used for sterilizing a small number of medical instruments and metal containers.

60 Whirlpool bath for arms and legs [21-1]
Main specifications

Temperature: within 35oC - 45oC
Bathing time: 30 minutes
Inside dimensions of bath: about 470 x 750 x 595D
Purpose
This apparatus is used in whirlpool bathing for the whole body, in which jet stream stimulation is utilized. It is a water therapy apparatus for recovering the functions of diseased parts.

61 Electric traction [21-23]
Main specifications
Maximum traction force: 99 kg
Duration: 0 - 99 sec or continuous
Traction time: 1 - 99 minutes
With a safety device
Purpose
This apparatus is used for the traction of lumbar and cervical vertebrae.

62 Stress test system [21-43]
Main specifications
Walk speed: about 0.3 - 10 km/h
Angle of inclination: about 0 - 25%
Walking belt: about 400 x 1100 mm
Purpose
This system is used in rehabilitation and the examination of motor load and functions. The system is used for identifying ability to walk, observing and correcting postures at walking, developing energy for walking, and examining capability of working.

63 Remote-controlled universal diagnostic table [23-1]
Main specifications
Automatic cassette type
1 channel/4 sizes
14 x 17, 14 x 14, 11 x 14, 10 x 12 inches
Mobile range: 90 - 30 degrees
Tomographic angles: 40, 20, 8 degrees
Purpose
This apparatus is used in a gastric examination for a number of people. With this apparatus, the examiner closely observes a patient through a lead windowpane of another room. The examiner tells the patient to move or change his/her postures through a microphone, in order to conduct fluoroscopy, adequate pressing, consecutive photography, etc., through remote control.

64 Floating top Bucky table complete with generator [23-7]
Main specifications
1) Radiographic table: Bucky table, tabletop, slide type
2) Stand: a set of Bucky stand

3) High-voltage X-ray generator: (40 - 90) - (125 - 150) KV
(20 - 230) - (500 - 630) mA
4) X-ray tube: 140 - 170 KHU
5) X-ray tube support: floor traveling type
Purpose
This apparatus, being installed in the radiographic room, is used in simple radiography for the whole body. It is used for the examination of a wide range of diseases and injuries such as fractures, pulmonary diseases, heart diseases and brain diseases. The apparatus shall have a Bucky table and a Bucky stand, which are now used in the target hospital, for the purpose of obtaining clear-cut X-ray photographs. As X-raying the abdominal region requires a voltage of as high as 150 KV and a capacity of as large as 500 mA, a high-voltage X-ray generator which satisfies these conditions shall be chosen.

65 X-ray film processor [23-14]
Main specifications
Film size: 4 x 5 & 14 x 17 inches
Developing capacity: 220 films/h
Developing speed: 90 sec/film
Automatic conveyance type
Purpose
This apparatus is used for automatically developing, fixing, washing and drying X-ray photographs and other photosensitive materials for image diagnosis.

66 Interferential therapy unit [24-21]
Main specifications
Maximum output voltage: 80 V
Maximum output current: 45 mA
Interference frequency: 0 - 100 Hz
Basic frequency: 3,900 - 4,000 Hz
Purpose
This unit is an internal device in which two medium-frequency currents are used.

67 Power generator [30-6]
Main specifications
Generation capacity: more than 250 KVA
Size: about 3,900L x 1,400W x 1,800H
With a fuel tank
Purpose
This apparatus is used for automatically generating and supplying power, in cases of power failures in the hospital.

68 Oxygen supply system [30-9]
Main specifications
1) Oxygen generation apparatus
-Generation capacity: more than 50 m3/day
-With a gas filler

-Oxygen concentration: more than 95%
2) Manifolds
-Manifolds for oxygen
-Automatic double side switching

69 Incinerator [30-10]
Main specifications
Incinerating capacity: more than 180 kg/hour
Incineration chamber: 3 chambers
Incineration temperature: about 600 - 900oC
Purpose
This apparatus is used for the incineration disposal of waste matter and medical waste produced in the hospital.

| ITEM NO. | DESCRIPTION | Q'ty |
|---|---|---|
| | 1 : ANESTHESIOLOGY | |
| 1-1 | RHINO-LARYNGOFIBERSCOPE WITH LIGHT SUPPLY | 2 |
| 1-2 | PATIENT MONITOR | 6 |
| 1-3 | DEFIBRILLATOR | 1 |
| 1-4 | RECOVER STRETCHER | 3 |
| 1-5 | PULSE OXIMETER + CAPNOGRAPH | 6 |
| 1-6 | LARYNGOSCOPE | 12 |
| 1-7 | ANESTHESIA APPARATUS | 6 |
| 1-9 | VENTILATOR (PORTABLE) | 2 |
| 1-10 | RHINO-LARYNGOFIBERSCOPE WITH LIGHT SUPPLY | 1 |
| 1-11 | PATIENT MONITOR | 3 |
| 1-12 | EXPIRED GAS MONITOR | 6 |
| 1-13 | PULSE OXIMETER | 3 |
| 1-14 | DEFIBRILLATOR | 1 |
| 1-24 | INFANT STRETCHER | 1 |
| | 2 : CARDIOLOGY | |
| 2-3 | CENTRAL MONITOR | 1 |
| 2-4 | BEDSIDE MONITOR | 9 |
| 2-5 | DEFIBRILATOR | 1 |
| 2-6 | CARDIOVASCULAR APPLICATION VERSION COLOR DOPPLER ECHOCARDIO | 1 |
| 2-9 | ELECTROCARDIOGRAPH | 1 |
| | 3 : DERMATOLOGY | |
| 3-1 | INSTRUMENT CABINET | 3 |
| 3-2 | TREATMENT TABLE | 3 |
| 3-4 | SPHYGMOMANOMETER GEAVANCEERDE METERS | 3 |
| 3-5 | DIAGNOSTIC SET | 2 |
| 3-6 | MEDICINE CABINET | 1 |
| 3-7 | SCISSORS, METZENBAUM 12CM, 6CM, 6 STRAIGHT , 6 CURVED | 6 |
| 3-8 | DRESSING FORCEPS | 6 |
| 3-9 | TISSUE FORCEPS | 6 |
| 3-10 | NEEDLE HOLDER | 6 |
| 3-11 | MATHIEU NEEDLE HOLDER | 6 |
| 3-12 | WAGNER NEEDLE HOLDER | 6 |
| 3-13 | LISTER BANDAGE SCISSORS | 12 |
| 3-14 | BACKHAUS TOWEL FORCEPS | 6 |
| 3-15 | SHEDE BONE CURETTE | 2 |
| 3-16 | RECTAL SPECULUM | 2 |
| 3-17 | RECTAL SPECULUM | 2 |

| ITEM NO. | DESCRIPTION | Q'ty |
|---|---|---|
| 3-18 | RECTAL SPECULUM | 2 |
| 3-19 | YASARGIL'S SCISSORS | 6 |
| 3-20 | EXAMINING TABLE FOR GYNECOLOGY | 1 |
| 3-21 | CUSCO'S VAGINAL SPECULUM L/M/S | 4 |
| 3-22 | EXAMINATION LIGHT | 3 |
| 3-23 | CONTINUOUS SUCTION UNIT | 1 |
| 3-24 | PORTABLE SUCTION UNIT | 1 |
| 3-25 | REVOLVING CHAIR | 2 |
| 3-26 | STORING CABINET | 1 |
| 3-27 | NEW GENERATION POWER & ECONOMY MICROSCOPE + DARKFIELD ATTACHMENT | 1 |
| 3-30 | INSTRUMENT TABLE | 2 |
| 3-31 | DRESSING DRUM | 2 |
| 3-32 | FORCEPS STAND | 4 |
| 3-33 | FORCEPS TISSUE | 6 |
| 3-37 | SOLID-STATE ELECTRO-SURGICAL UNIT | 1 |
| 3-39 | DRESSING CONTAINER | 6 |
| 3-40 | DRESSING CONTAINER | 6 |
| 3-41 | DRESSING DRUM | 3 |
| 3-42 | HOT AIR STERILIZER | 1 |
| 3-43 | STAINING JAR | 8 |
| 3-44 | COLOR SOLUTION BOTTLE | 12 |
| 3-46 | VERSATILE INVERTED MICROSCOPE | 1 |
| 3-47 | PRECISION INVERTED MICROSCOPE | 1 |
| 3-48 | FULL AUTOMATIC PHOTOMICROGRAPHIC SYSTEM | 1 |
| 3-49 | MICROSCOPIC STAGE WARMER | 1 |
| 3-50 | TABLE TOP CENTRIFUGE | 1 |
| 3-51 | ELECTRONIC ANALYTICAL BALANCE | 2 |
| 3-54 | BOTTLE, ASPIRATOR | 2 |
| 3-56 | TRAY, POLYPROPHYLENE S, M, L | 12 |
| 3-57 | CRYOSURGERY SYSTEM (LIQUID NITROGEN) | 1 |
| 3-58 | DOPPER FLOW SYSTEM FOR VESSEL EXAMINATION | 1 |
| | **4 : DIETICIAN** | |
| 4-1 | AUTOMATIC WEIGHING SCALE | 1 |
| | **5 : EMERMENCY ROOM** | |
| 5-1 | SPHYGMOMANOMETER, MERCURIAL A STAND TYPE B DESK TYPE | 2 |
| 5-2 | SPHYGMOMANOMETER, ANEROID, WALL TYPE B | 4 |
| 5-3 | STETHOSCOPE | 10 |
| 5-6 | FETAL MONITOR | 2 |

| ITEM NO. | DESCRIPTION | Q'ty |
|---|---|---|
| 5-7 | SUCTION PUMP | 2 |
| 5-8 | INSTRUMENT TABLE | 5 |
| 5-9 | HI-LO STRETCHER TROLLEY | 5 |
| 5-11 | SHOWER COMMODE CHAIR | 2 |
| 5-12 | OXYGEN FLOWMETER WITH HUMIDIFIER BOTTLE FOR PIPING SYSTEM | 10 |
| 5-13 | TREATMENT TABLE | 6 |
| 5-14 | STANDARD OPERATING SCISSORS | 48 |
| 5-15 | MAYO DISSECTING SCISSORS | 48 |
| 5-16 | SCISSORS METZEMBAUM | 12 |
| 5-17 | LISTER BANDAGE SCISSORS | 48 |
| 5-18 | TISSUE FORCEPS | 48 |
| 5-19 | DRESSING FORCEPS | 48 |
| 5-20 | INSTRUMENT STERILIZER | 1 |
| 5-21 | UNIVERSAL OPERATING TABLE | 2 |
| 5-22 | ANESTHESIA APPARATUS | 2 |
| 5-23 | PATIENT MONITOR | 2 |
| 5-24 | INSTRUMENT TABLE | 2 |
| 5-25 | MAYO'S INSTRUMENT TABLE | 2 |
| 5-26 | INSTRUMENT TABLE | 2 |
| 5-27 | MEDICINE CABINET | 2 |
| 5-28 | OPERATING LIGHT | 1 |
| 5-29 | ELECTRO SURGICAL UNIT | 1 |
| 5-30 | DEFIBRILLATOR | 1 |
| 5-31 | SURGICAL OPERATING INSTRUMENT SET FOR ADULT | 4 |
| 5-32 | SURGICAL OPERATING INSTRUMENT SET FOR CHILD | 2 |
| 5-33 | SMALL OPERATING INSTRUMENT SET | 6 |
| | 6 : E.N.T. | |
| 6-1 | LEMPERT HEAD MIRROR WITH HEADBAND AND BEADBAND | 2 |
| 6-2 | VOLKMAN BONE CURETTE SIZE : 000 to 6 | 1 |
| 6-3 | SHEA STAPES SURGERY INSTRUMENTS | 1 |
| 6-4 | ZOLLNER TYMPANOPLASTY INSTRUMENT SET | 1 |
| 6-6 | SUCTION PUMP | 2 |
| 6-7 | MICRO MOTOR HAND DRILL | 2 |
| 6-8 | SET STARRBBRONCHOSCOPE (SIZE 2MM-4MM NO FIBER) | 1 |
| 6-9 | BEAVER HANDLE WITH KNIFE | 1 |
| 6-10 | FRAENKEL LARYNGEAL FORCEPS | 2 |
| 6-11 | LARYNGEAL FORCEPS | 1 |
| 6-12 | TYMPANOMETER | 1 |

| ITEM NO. | DESCRIPTION | Q'ty |
|---|---|---|
| | **7 : GYNECOLOGY** | |
| 7-1 | STEREO COLPOSCOPE | 1 |
| 7-2 | CRYOSURGERY SYSTEM | 1 |
| 7-4 | DELIVERY TABLE | 2 |
| 7-5 | SUCTION UNIT | 1 |
| 7-6 | FETAL DOPPLER | 2 |
| 7-7 | PORTABLE DOPPLER | 4 |
| 7-8 | FETAL ACTOCARDIOGRAPHS | 2 |
| 7-9 | CUSCO'S VAGINAL SPECULUM | 16 |
| 7-10 | ANDO'S ABDOMINAL RETRACTOR | 1 |
| 7-11 | MM TYPE HYSTERECTOMY FORCEPS | 6 |
| 7-12 | KEVORKIAN | 4 |
| 7-13 | KOBAK'S NEEDLE | 24 |
| 7-14 | BIOPSY PUNCH | 4 |
| | **8 : INTENSIVE CARE UNIT** | |
| 8-1 | DEFIBLILLATOR | 1 |
| 8-5 | SPHYGMOMANOMETER, MERCURIAL | 2 |
| 8-6 | ICU BED | 9 |
| 8-7 | BEDPAN FLUSHING AND SANITIZING APPARATUS STEAM TYPE | 2 |
| 8-8 | AUTOMATIC BEDPAN FLUSHING AND SANITIZING APPARATUS | 1 |
| 8-10 | SYRINGE INFUSION PUMP | 18 |
| 8-11 | INFUSION PUMP | 9 |
| 8-12 | PORTABLE SUCTION UNIT | 2 |
| 8-15 | VENTILATOR FOR ADULTS | 3 |
| 8-16 | VENTILATOR FOR INFANTS | 2 |
| | **9 : INTERNAL MEDICINE** | |
| 9-1 | AUTOMATIC WEIGHING SCALE | 4 |
| 9-2 | EXAMINING COUCH | 4 |
| 9-3 | X-RAY FILM ILLUMINATOR | 4 |
| 9-6 | SPHYGMOMANOMETER, MERCURIAL, (A) | 8 |
| 9-7 | SPHYGMOMANOMETER, MERCURIAL (B) | 8 |
| 9-9 | DIAGNOSTIC SET | 8 |
| 9-12 | PERCUSSION HAMMER | 12 |
| 9-15 | LARYNGOSCOPE WITH FIBER OPTICS ILLUMINATION | 4 |
| 9-17 | GLYCERINE ENEMA SYRINGE | 10 |
| 9-19 | ASCITES TROCAR | 10 |
| 9-21 | TRUE-CUT BIOPSY NEEDLE | 10 |
| 9-22 | MENGHINI'S PUNCTURE NEEDLE | 20 |

| ITEM NO. | DESCRIPTION | Q'ty |
|---|---|---|
| 9-23 | BIOPSY NEEDLE FOR LUNG TISSUE | 20 |
| 9-24 | BIOPSY NEEDLE FOR PLEURAL TISSUE | 10 |
| 9-25 | MARROW BIOPSY NEEDLE | 20 |
| 9-26 | JAMSHIDI'S MARROW BIOPSY NEEDLE | 20 |
| 9-27 | ELECTRICAL PEAK FLOW METER | 4 |
| 9-29 | MICROSPIROMETER | 2 |
| 9-30 | AUTOSPIROMETER | 4 |
| 9-31 | AIRWAY HYPERSENSITIVITY MEASURING SYSTEM | 2 |
| 9-33 | EXERCISE TESTING SYSTEM | 1 |
| 9-34 | GASTROINTESTINAL FIBERSCOPE | 2 |
| 9-35 | COLONOFIBERSCOPE | 2 |
| 9-36 | BRONCHOFIBERSCOPE | 2 |
| 9-37 | LECTURESCOPE | 2 |
| 9-38 | HALOGEN LIGHT SOURCE FOR ENDOSCOPES | 2 |
| 9-39 | ELECTRO SURGICAL UNIT | 2 |
| 9-40 | ENDOSCOPIC SUCTION UNIT | 2 |
| 9-41 | ENDOSCOPIC TV SYSTEM | 2 |
| 9-42 | VIDEO ENDOSCOPE SYSTEM | 2 |
| 9-46 | ENDOSCOPE TABLE | 2 |
| 9-47 | ENDOSCOPIC CABINET | 2 |
| 9-48 | AUTOMATIC ENDOSCOPIC CLEANER | 1 |
| 9-49 | ECG APPARATUS (1-3 CHANNEL) | 1 |
| 9-50 | RESPIRATORY VENTILATOR | 2 |
| | **10 : LABORATORY** | |
| 10-1 | MICRO SLIDE CARRIER | 5 |
| 10-2 | UNIVERSAL RESEARCH MICROSCOPE | 2 |
| 10-3 | NEW GENERATION POWER AND ECONOMY SYSTEM MICROSCOPE | 5 |
| 10-4 | WATER BATH (TEMP. RANGE UP TO 99 CELCIUS) | 2 |
| 10-5 | WATER BATH (TEMP. RANGE ROOM TO 56 CELCIUS) | 1 |
| 10-6 | MIXER | 2 |
| 10-7 | DIFFERENTIAL LEUCOCYTE COUNTER | 2 |
| 10-8 | DIFFERENTIAL LEUCOCYTE COUNTER | 2 |
| 10-10 | ELECTROPHORESIS | 1 |
| 10-11 | ANALYZER GLUCOSE | 2 |
| 10-13 | ANALYZER Na-K | 2 |
| 10-14 | BLOOD GAS ANALYZER | 1 |
| 10-15 | UV-VIS RECORDING SPECTROPHOTOMETER | 1 |
| 10-18 | BLOOD CELL COUNTER | 1 |

| ITEM NO. | DESCRIPTION | Q'ty |
|---|---|---|
| 10-20 | pH METER | 2 |
| 10-21 | AUTOMATIC DISPENSER | 2 |
| 10-22 | TABLE TOP CENTRIFUGE | 4 |
| 10-23 | ELECTRIC ANALYTICAL BALANCE | 1 |
| 10-24 | CLINICAL CHEMISTRY ANALYZER | 1 |
| 10-26 | AUTOMATED COAGULATION SYSTEM | 1 |
| 10-27 | LAMINAIR AIRFLOW CABINET | 1 |
| 10-29 | SPHYGMOMANOMETER | 6 |
| 10-32 | IMX (ABBOTT) | 1 |
| 10-34 | HIGH PRESSURE STEAM STERILIZER | 2 |
| | **11 : MEDICAL REGISTRATION** | |
| | | |
| | **12 : NEUROSURGERY** | |
| | | |
| | **13 : NEUROLOGY** | |
| 13-4 | ELECTROENCEPHALOGRAPH 21ch | 1 |
| 13-5 | ELECTROENCEPHALOGRAPH 6ch | 1 |
| 13-6 | EVOKED POTENTIAL MEASURING SYSTEM | 1 |
| 13-7 | EMG | 1 |
| | **14 : ORAL & MAXILLA FACIAL SURGERY** | |
| 14-1 | CHAIR UNIT | 1 |
| 14-3 | VACUUM MOTOR | 1 |
| 14-6 | DENTAL X-RAY UNIT | 1 |
| | **15 : OPERATING ROOM** | |
| 15-1 | HIGH PRESSURE STEAM STERILIZER | 1 |
| 15-2 | HIGH PRESSURE STEAM STERILIZER | 1 |
| 15-3 | INSTRUMENT STERILIZER | 3 |
| 15-4 | LIGHT SOURCE UNIT | 1 |
| 15-5 | UROLOGICAL EXAMINING AND TREATMENT TABLE | 1 |
| 15-6 | RESECTOSCOPE IGLESIAS Fr 24 of 26 | 1 |
| 15-7 | RESECTOSCOPE IGLESIAS' CONTINNOUS IRRIGATION Fr 26 | 1 |
| 15-8 | RESECTOSCOPE McCarthy's Fr 24 or 26 | 1 |
| 15-9 | RESECTOSCOPE BAUMRUCKER'S Fr 24 or 26 | 1 |
| 15-10 | RESECTOSCOPE ROTATABLE Fr 24 or 26 | 1 |
| 15-11 | RESECTOSCOPE ROTATABLE CONTINNOUS IRRIGATION Fr 26 | 1 |
| 15-12 | CYSTO-URETHROSCOPE A SET | 1 |
| 15-13 | CYSTO-URETHROSCOPE B SET | 1 |

| ITEM NO. | DESCRIPTION | Q'ty |
|---|---|---|
| 15-14 | CYSTO-URETHROSCOPE C SET | 1 |
| 15-15 | BINOCULAR OPERATING MICROSCOPE | 1 |
| 15-16 | GRUENWALD NASAL FORCEPS | 1 |
| 15-17 | INSTRUMENT STERILIZING TRAY | 1 |
| 15-18 | STERILIZING TRAY STAND | 1 |
| 15-19 | INSTRUMENT TABLE | 1 |
| 15-20 | AUTOMATIC STILL DIASTILL | 1 |
| 15-21 | ELECTRO SURGICAL UNIT | 1 |
| 15-22 | ELECTRIC SUCTION UNIT | 1 |
| 15-23 | ELECTRIC SUCTION UNIT | 1 |
| 15-24 | OPERATING TABLE | 4 |
| 15-25 | ORTHOPEDIC TRACTION FLUOROSCOPIC OPERATING TABLE | 1 |
| 15-26 | OPERATING LIGHT | 1 |
| 15-27 | MIKULIXZ'S PERITONEAL FORCEPS | 4 |
| 15-28 | MASSON'S DIAMOND JAW NEEDLE HOLDER | 1 |
| 15-30 | AUTOMATIC GAS INSUFFLATOR FOR LAPAROSCOPES | 1 |
| 15-31 | LAPAROSCOPE FOR CHOLECYSTECTOMY SET | 1 |
| 15-32 | LAPAROSCOPE SET | 1 |
| 15-33 | AUS SUCTION UNIT | 1 |
| 15-34 | SCRUB UNIT | 4 |
| 15-35 | OPERATING MICROSCOPE | 1 |
| 15-36 | C-ARM X-RAY APPARATUS | 1 |
| 15-37 | METZEMBAUM SCISSORS STRAIGHT 16 CM | 2 |
| 15-38 | METZEMBAUM SCISSORS STRAIGHT 18 CM | 2 |
| 15-39 | METZEMBAUM SCISSORS CURVED 14 CM | 2 |
| 15-40 | METZEMBAUM SCISSORS CURVED 16 CM | 2 |
| 15-41 | METZEMBAUM SCISSORS CURVED 18 CM | 2 |
| 15-42 | SCHEDE BONE CURETTE NO 1 | 1 |
| 15-43 | SCHEDE BONE CURETTE NO 2 | 1 |
| 15-44 | SCHEDE BONE CURETTE NO 3 | 1 |
| 15-45 | SCHEDE BONE CURETTE NO 4 | 1 |
| 15-46 | SCHEDE BONE CURETTE NO 5 | 1 |
| 15-47 | SCHEDE BONE CURETTE NO 6 | 1 |
| 15-48 | KOCHER RETRACTOR TWO-PRONG | 2 |
| 15-49 | KOCHER RETRACTOR THREE-SPRONG | 2 |
| 15-50 | LANGENBECK RETRACTOR | 2 |
| 15-51 | LANGENBECK RETRACTOR | 2 |
| 15-52 | LANGENBECK RETRACTOR | 2 |
| 15-53 | AIR PRESSURE SKULL OPERATING SET | 1 |

| ITEM NO. | DESCRIPTION | Q'ty |
|---|---|---|
| 15-54 | AIR PRESSURE SURGIA OPERATING SET | 1 |
| 15-55 | AIR PRESSURE SURGIA OPERATING SET | 1 |
| 15-56 | GAS ADJUSTOR | 1 |
| 15-57 | SOLID STATE BIPOLAR COAGULATOR UNIT | 1 |
| 15-58 | NEUROSURGERY INSTRUMENT SET | 2 |
| 15-59 | MICROVASCULAR SURGICAL INSTRUMENTS SET | 1 |
| 15-60 | MICRO SCOPE FOR NEUROSURGERY | 1 |
| | **16 : OPHTHALMOLOGY** | |
| 16-1 | CURETTE (SKEELE) 2MM | 6 |
| 16-2 | CURETTE (MEYERHOEFER) 3MM | 6 |
| 16-3 | LACRIMAL PROBE (BOWMAN) 0-01 | 6 |
| 16-4 | DILATATOR, LACRIMAL (WINDER) 3 TYPES | 6(2X3) |
| 16-5 | ASPIRATION / IRRIGATION(SIMCOE) | 6 |
| 16-6 | CANNULA, INTRAOCULAIR 1/2/3 | 6(2X3) |
| 16-7 | MICROLENSHOOK(SINSKEY) | 2 |
| 16-8 | IRISHOOK AND LENSMANIPULATOR (PUSH AND PULL) | 2 |
| 16-9 | IOL IMPLANT AND CAPSULE FRAGMENT FORCEPS | 6 |
| 16-10 | FORCEPS SUTURING(CASTROVIEJO) | 2 |
| 16-11 | FORCEPS CORNEAL SUTURING | 2 |
| 16-12 | FORCEPS TYING | 6 |
| 16-13 | FORCEPS TYING | 6 |
| 16-14 | FORCEPS CHALAZION (DESMARRES) | 6 |
| 16-15 | FORCEPS ENTROPION (KUHNT) | 2 |
| 16-16 | MARKING & DIOIDING CALIPER (CASTROVIEJO) | 2 |
| 16-17 | SCISSORS, EYE STRAIGHT, POINTED | 3 |
| 16-18 | SCISSORS, EYE STRAIGHT, BLUNT | 3 |
| 16-19 | SCISSORS,EYE CURVED , BLUNT | 3 |
| 16-20 | SCISSORS, EYE CURVED, POINTED | 3 |
| 16-21 | SCISSORS, EYE STRAIGHT, POINTED | 5 |
| 16-22 | SCISSORS, EYE CURVED, POINTED | 5 |
| 16-23 | SCISSORS, CORNEAL SECTION LEFT | 5 |
| 16-24 | SCISSORS, CORNEAL SECTION RIGHT | 5 |
| 16-25 | SCISSORS LAMELLAR CORNEAL | 10 |
| 16-26 | SCISSORS, IRIS (DE WECKER) AND IRIS INSICION (MISHIMA) | 6 |
| 16-27 | SCISSORS, IRIS (BARRAQUER) | 6 |
| 16-28 | SCISSORS, IRIS | 2 |
| 16-29 | DELICATE SCISSORS (NAGATA) | 2 |
| 16-30 | CAPSULOTOMY SCISSORS | 2 |

| ITEM NO. | DESCRIPTION | Q'ty |
|---|---|---|
| 16-31 | SCISSORS TENOTOMY | 10 |
| 16-32 | SPECULUM (PARRAQUER) | 6 |
| 16-33 | SPECULUM (WEISS) | 6 |
| 16-34 | PASDOZEN (TRIAL LENS SET) | 4 |
| 16-35 | PASMONTUREN (TRIALFRAME) | 4 |
| 16-36 | CROSS-CYLINDER (+-0.5) | 4 |
| 16-37 | CROSS-CYLINDER (+-1.0) | 4 |
| 16-40 | TRAILFRAME | 6 |
| 16-42 | LASERGECOATE MAINSTER PANFUNDUSCOPE - CONTACTLENS | 1 |
| 16-45 | PRISMALATTEN | 1 |
| 16-46 | OK-STOEL VOOR DE CHIRURG | 1 |
| 16-47 | POLI-STOEL VOOR DE OOGARTS B.V. GREINER | 6 |
| 16-48 | HAAY STREIT SLITLAMP | 1 |
| 16-51 | FORCEPS; MAC PHERSON, TYING ANGLED 7 MM | 2 |
| 16-52 | FORCEPS; KELMAN-MAC PHERSON TYING, ANGLED 10 MM | 2 |
| 16-53 | FORCEPS; MAC PHERSON, TYING, WITH PLATFORM | 2 |
| 16-56 | FORCEPS; MAC PHERSON, TYING,TEETH (0.15 MM) ANGLED | 2 |
| 16-57 | FORCEPS; MAC PHERSON, TYING, WITH PLATFORM TEETH (0.12 MM) | 2 |
| 16-61 | FORCEPS;BARRAQUER CILIA | 2 |
| 16-62 | FORCEPS;WEISS FIXATION 1/2 TEETH (1.0 MM) | 12 |
| 16-63 | DASTOOR RECTUS 1/2 TEETH(1.5 MM) | 3 |
| 16-64 | FORCEPS;WILLS EYE HOSPITAL,UTILITY,FINE SERRATED JAWS | 12 |
| 16-65 | FORCEPS; MOORFIELD'S CONJUNCTIVAL | 6 |
| 16-66 | FORCEPS; DESMARRES CHALAZION, OVAL PLATE WIDTH 20MM | 2 |
| 16-67 | FORCEPS; DESMARRES CHALAZION, OVAL PLATE WIDTH 26MM | 2 |
| 16-68 | FORCEPS; DESMARRES CHALAZION, OVAL PLATE WIDTH 30MM | 2 |
| 16-69 | FORCEPS; DESMARRES CHALAZION, OVAL PLATE WIDTH 16MM | 2 |
| 16-70 | FORCEPS; DESMARRES ENTROPION, RIGHT | 1 |
| 16-71 | FORCEPS; DESMARRES ENTROPION, LEFT | 1 |
| 16-72 | FORCEPS; WILDE ENTROPION | 1 |
| 16-73 | FORCEPS; WELL'S ARTERY,STRAIGHT, 95MM | 6 |
| 16-74 | FORCEPS; WELL'S ARTERY, CURVED, 95MM | 6 |
| 16-80 | SCISSORS; CASTROVIEJO WOUND ENLARGING R.15 MM CUTTING LENGTH | 1 |
| 16-81 | SCISSORS; CASTROVIEJO WOUND ENLARGING R.15 MM LENGTH | 1 |
| 16-83 | SCISSORS; WESTCOTT TENOTOMY, 9 MM CUTTING LENGTH, ROUND ENDED | 2 |
| 16-88 | SCISSORS; CASTROVIEJO-VANNAS CAPSULOTOMY.WIDE HANDLE STRAIGHT, 6 MM | 1 |
| 16-89 | SCISSORS; CASTROVIEJO-VANNAS CURVED.6MM CUTTING LENGTH | 1 |
| 16-90 | SCISSORS; SMAAL-VANNAS STRAIGHT.3MM CUTTING LENGTH | 1 |
| 16-91 | SCISSORS; SMAAL-VANNAS CURVED, 3MM CUTTING LENGTH | 1 |

| ITEM NO. | DESCRIPTION | Q'ty |
|---|---|---|
| 16-92 | SCISSORS; ONG TYPE ANGLED CAPSULOTOMY, 8 MM CUTTING LENGTH | 1 |
| 16-98 | SCISSORS; EXCISION C.O.F., EXTRA STRONG, 13 MM CUTTING LENGTH | 2 |
| 16-99 | SCISSORS; EXCISION STRAIGHT, 13 MM CUTTING LENGTH | 2 |
| 16-100 | SCISSORS;GRAY-CUEGG EXCISION,STRAIGHT SHARP BLADES,14 MM | 2 |
| 16-108 | NEEDLE HOLDER; CASTROVIEJO CURVED WITHOUT CATCH | 4 |
| 16-109 | NEEDLE HOLDER; CASTROVIEJO CURVED WITHOUT CATCH HEAVY JAWS | 4 |
| 16-110 | NEEDLE HOLDER; TROUTMAN CURVED WITHOUT CATCH | 4 |
| 16-111 | NEEDLE HOLDER; BARRAQUER CURVED WITHOUT CATCH | 4 |
| 16-112 | NEEDLE HOLDER; SPECULAE:BARRAQUER, ADULT , GILDED | 6 |
| 16-113 | NEEDLE HOLDER; SPECULAE:BARRAQUER, CHILD, GILDED | 2 |
| 16-114 | NEEDLE HOLDER; SPECULAE:CLARKE, ADULT, R | 3 |
| 16-115 | NEEDLE HOLDER; SPECULAE : CLARKE, ADULT , L | 3 |
| 16-116 | NEEDLE HOLDER; SPECULAE : CLARKE, CHILD, R | 1 |
| 16-117 | NEEDLE HOLDER; SPECULAE : CLARKE, ADULT , L | 1 |
| 16-118 | HOOK & PROBES; WILDER LACRIMAL DILATOR, FINE TAPER, 22MM LENGTH | 2 |
| 16-119 | HOOK & PROBES;WILDER LACRIMAL DILATOR,MEDIUM TAPER,16MM LENGTH | 2 |
| 16-120 | HOOK & PROBES; INFANT LACRIMAL DILATOR, STAINLESS STEEL DELICATE TAPER, 23MM | 1 |
| 16-121 | HOOK & PROBES; BOUWMANS LACRIMAL PROBES, DOUBLE ENDED SET OF 4 | 1 |
| 16-122 | HOOK & PROBES; LIEBREICHS LACRIMAL PROBES. SILVER SET OF 4 | 2 |
| 16-127 | HOOK & PROBES; GRAEFE STRABISMUS HOOK, MEDIUM | 2 |
| 16-128 | HOOK & PROBES; GRAEFE STRABISMUS HOOK, LARGE | 2 |
| 16-129 | HOOK & PROBES; JAMESON STRABISMUS HOOK 9x1.3 MM, SQUARE HANDLE | 2 |
| 16-130 | HOOK & PROBES; PIGTAIL PROBE, WITH HOLES, HEXAGONAL HANDLE | 1 |
| 16-132 | RYCROFT AIR INJECTION NEEDLES, 30 GAUGE, BOX OF 10 | 1 |
| 16-135 | CURETTE /SHARPS : CURETTE, SHARP, CORNEAL ULCERS AND TARSAL CYSTS | 4 |
| 16-137 | CURETTE /SHARPS : CURETTE, SHARP, CORNEAL ULCERS AND TARSAL CYSTS | 4 |
| 16-138 | FOREIGN BODY SPUD AND GAUGE COMBINED | 6 |
| 16-139 | FOREIGN BODY NEEDLE AND SPUD IN CASE | 6 |
| 16-140 | OINTMENTS RODS (GLAZEN ATAAFJES) SINGLE ENDED QUANTITY 50 | 6 |
| | **17 : ORTHOPEDICS** | |
| 17-1 | SOLID STATE BIPOLAR COAGULATOR UNIT | 2 |
| 17-2 | KIRSCHNER WIRE TRACTION INSTRUMENT SET | 4 |
| 17-3 | CANNULATED FLEXIBLE REAMER INSTRUMENT SET | 2 |
| 17-4 | OVERLEAF TYPE INTRAMEDULLARY PIN SET | 2 |
| 17-5 | WIRE TIGHTENER | 2 |
| 17-7 | ACCESSORIES SET FOR K-U PLATE | 1 |
| 17-8 | BONE SCREW SET | 6 |
| 17-9 | STAPLE | 6 |

| ITEM NO. | DESCRIPTION | Q'ty |
|---|---|---|
| 17-10 | STAPLE HOLDER | 2 |
| 17-11 | HAND SURGERY OPERATING SET | 2 |
| 17-12 | IMPROVED FINGER OPERATING INSTRUMENT SET | 2 |
| 17-13 | WEIGHING SCALE | 1 |
| 17-14 | ARTERIAL FORCEPS | 1 |
| 17-17 | SPANNER | 1 |
| 17-18 | REVOLUTION AXIS FIXING BAR | 1 |
| 17-19 | BAR | 1 |
| 17-20 | BAR FORCEPS | 1 |
| 17-21 | LEAD HOSE | 1 |
| 17-22 | BAR | 1 |
| 17-24 | MEDICINE CABINET | 4 |
| 17-25 | X-RAY FILM ILLUMINATOR | 4 |
| 17-26 | MEASURING ROD | 1 |
| 17-27 | SITTING LENGTH SCALE | 1 |
| 17-28 | ARTHROSCOPIC SET WITH CAMERA AND MONITOR | 1 |
| 17-30 | GAS ADJUSTOR | 1 |
| 17-32 | ANTERIOR SPINAL INSTRUMENTATION SET COMPLETE | 1 |
| 17-33 | SPINAL BACKWARD OPERATION FRAME | 1 |
| | **18 : PATHOLOGICAL LABORATORY** | |
| 18-1 | SCISSORS METZEMBAUM STRAIGHT OR CURVED, 12, 14, 16, 18 CM LONG | 6 |
| 18-2 | COMPLETE MICROSCOPE SYSTEM WITH CAMERA AND T.V, SET | 1 |
| 18-3 | MICROSCOPE WITH DISCUSSIONBAR OF 3 PAIN UNIT AND T.V.EXIT | 1 |
| 18-4 | MICROSCOPE FOR ROUTINE WORK | 1 |
| 18-5 | 3 UNITS REFRIGERATOR | 10 |
| 18-7 | AUTOPSY SAW WITH VACUUM | 1 |
| 18-9 | WESCOR CYSTOCENTRIFUGE ROTOR (MODEL CYTOPRO) | 1 |
| 18-10 | DESTILLITATION APPARATUS | 1 |
| 18-11 | SLIDE STAINER FOR HEMATOXILINE EOSINE STAINING | 1 |
| 18-12 | SLIDE STAINER FOR CYTOLOGY | 1 |
| 18-13 | LEITZ MICROSCOPE FOR PHOTOMICROGRAPHY AND PHOTOMICROGRAPH | 1 |
| 18-14 | MAYO DISSECT.SCISS.STRAIGHT OR CURVED SCREW LOCK 14,16,18CM | 6 |
| 18-15 | STANDARD OPERATING SCISSORS | 6 |
| 18-16 | LISTER BANDAGE SCISSORS SCREW LOCK 14,5,18,23CM | 6 |
| 18-18 | BRAIN SECTIONING KNIFE | 3 |
| 18-19 | CARTILAGE KNIFE | 5 |
| 18-20 | CARTILAGE KNIFE | 5 |
| 18-21 | EXCISION (RESECTION )KNIFE | 5 |

| ITEM NO. | DESCRIPTION | Q'ty |
|---|---|---|
| 18-22 | EXCISION (RESECTION )KNIFE | 5 |
| 18-23 | EXCISION (RESECTION )KNIFE | 5 |
| 18-24 | PERIOSTEOTOME WITH RASP BLADE | 5 |
| 18-25 | ABDOMINAL SCISSORS | 10 |
| 18-26 | DISSECTING SCISSORS | 10 |
| 18-27 | TISSUE FORCEPS | 10 |
| 18-28 | BONE CHISELS | 5 |
| 18-29 | AMPUTATING BONE SAW | 1 |
| 18-30 | SAW | 2 |
| 18-31 | RETRACTOR HOOK | 10 |
| 18-32 | GROOVED DIRECTOR | 10 |
| 18-33 | PROBE | 10 |
| 18-34 | BLOW PIPE | 10 |
| 18-35 | SHAKER FOR TISSUE FIXATION | 1 |
| 18-36 | PARAFFIN OVEN | 1 |
| 18-37 | AUTOMATIC CYSTOSEDIMENTION MACHINE | 1 |
| | **19 : PEDIATRICS** | |
| 19-1 | INFANT INCUBATOR | 2 |
| 19-3 | PORTABLE INFANT INCUBATOR | 1 |
| 19-4 | PHOTOTHERAPY UNIT | 2 |
| 19-10 | BILIRUBIN METER | 1 |
| 19-12 | NEONATAL MONITOR | 2 |
| 19-15 | INFUSION PUMP(5ML-10ML/H) | 2 |
| 19-16 | INFANT VENTILATOR | 2 |
| 19-21 | LARYNGOSCOPE (FOR PEDIATRIC,STRAIGHT) | 1 |
| 19-22 | OXYGEN MONITOR | 1 |
| | **20 : PHARMACY** | |
| 20-1 | BALANCE RANGE 0-200 G, READIBILITY 0.10 MG | 1 |
| 20-2 | ANALYTICAL BALANCE RANGE 0-162G,READIBILITY 0.1MG | 1 |
| 20-3 | ROLER MILL FOR OINTMENT,CAPACITY 5 KG | 1 |
| 20-5 | ROTOR STATOR MIXER (COLLOID MILL ) CAPACITY 5 L | 1 |
| 20-6 | BALL MILL FOR MICRONIZING PHARMA POWERS CAPICITY 50 G | 1 |
| 20-7 | AUTOCLAVE (TABLE MODEL) CAPICITY 20 L (WITH PRESSURE GAUGE) | 1 |
| 20-8 | PLANITORY MIXER FOR PREPARATION OINTMENT,CREAMS ETC.CAP.5KG | 1 |
| 20-9 | PH METER (STANDARD) | 1 |
| 20-10 | ELECTRONICAL BALANCE CAPACITY 2000G | 1 |
| 20-11 | ELECTRONICAL BALANCE CAPACITY 25-35G | 1 |
| 20-12 | STAINLESS STEEL POT CAPACITY 25 L | 1 |

| ITEM NO. | DESCRIPTION | Q'ty |
|---|---|---|
| 20-13 | STAINLESS STEEL POT (ROUND BOTTOM) CAPACITY 7 L | 1 |
| 20-14 | STAINLESS STEEL POT (HALF BALL MODEL, HIGH)CAPACITY 20 L | 1 |
| 20-15 | STAINLESS STEEL POT WITH NOZZLE CAPACITY 1 L | 1 |
| 20-16 | CONYCHAL FLASKS CAPACITY 6 L | 4 |
| 20-17 | THERMOMETERS 0-100 GR. CELSIUS | 2 |
| 20-18 | SEALING APPARATUS WITH SPARE PARTS | 1 |
| 20-19 | RACK FOR SUPPOSITORIES STRIPS | 10 |
| 20-20 | SYNTHETIC MORTAR WITH DEKORIT HEAD + WOODEN HANDLE )L 27 CM | 2 |
| 20-22 | LIQUID DISPENSORS (CAP.;5-25 ML,25-100ML,1-10ML) | 2 |
| 20-23 | APPARATUS FOR MEASURING SPECIFIC GRAVITY RANGE 0.7 -1.4 | 2 |
| 20-24 | MORTARS COMPLETE,TENGHT 14CM-18CM-20CM-23CM | 10 |
| 20-25 | ELECTR,HEATING PLATE 150 GR,WITH SPARE PARTS CAP.2000 VA | 2 |
| 20-26 | BALANCE | 3 |
| 20-27 | ELECTRONIC ANALYTICAL BALANCE | 1 |
| 20-28 | ANALYTICAL BALANCE | 1 |
| 20-29 | MEDICAL REFRIGERATOR | 1 |
| 20-30 | MEDICAL REFRIGERATOR | 1 |
| 20-31 | HOT PLATE | 1 |
| 20-33 | PROTECTIVE GLASSES | 20 |
| 20-34 | HIGH PRESSURE STEAM STERILIZER | 1 |
| 20-38 | DRYING OVEN | 1 |
| | **21 : PHISIOTHERAPY** | |
| 21-1 | WHIRLPOOL BATH FOR ARMS AND LEGS | 1 |
| 21-2 | HOT PACK UNIT | 1 |
| 21-3 | HOT PACKS | 5 |
| 21-5 | BICYCLE EXERCISER | 2 |
| 21-6 | QUADRICEPS TABLE | 1 |
| 21-7 | RESTRATOR | 1 |
| 21-8 | LOWER LIMB EXTENSION FLEXION EXERCISE CHAIR | 1 |
| 21-9 | PARALLEL BARS | 2 |
| 21-10 | CHEST PULLEY | 1 |
| 21-11 | ALTERNATE TRACTION PULLEY EXERCISER | 1 |
| 21-12 | OVERHEAD FRAME | 1 |
| 21-13 | ELECTRIC TILT TABLE | 1 |
| 21-14 | AIR MASSAGER | 2 |
| 21-15 | PULSE GENERATOR | 1 |
| 21-16 | LOW FREQUENCY THERAPY | 1 |
| 21-17 | LOW FREQUENCY THERAPY UNIT, PORTABLE | 1 |

| ITEM NO. | DESCRIPTION | Qty |
|---|---|---|
| 21-18 | INTERFERENTIAL THERAPY UNIT | 1 |
| 21-19 | SHORTWAVE DIATHERMY(PREFERABLY PULSATOR) | 2 |
| 21-20 | ULTRASOUND THERAPY UNIT | 1 |
| 21-21 | ULTRAVIOLET LAMP | 2 |
| 21-22 | INFRARED RAY ENERGY AND THERMAL STIMULATION | 1 |
| 21-23 | ELECTRIC TRACTION | 1 |
| 21-25 | TREADMILL | 2 |
| 21-26 | HAND DYNAMOMETER | 1 |
| 21-27 | STATIC SENSE MEASURING SYSTEM | 1 |
| 21-28 | ANTEFLEXION FLEXIBILITY MEASURING INSTRUMENT | 1 |
| 21-29 | BEAM TYPE FLEXIBILITY MEASURING INSTRUMENT | 1 |
| 21-30 | HAND FINGER DYNAMOMETER | 1 |
| 21-31 | GONIOMETER SET | 2 |
| 21-33 | WEIGHT BALANCE ANALYZER | 1 |
| 21-34 | HUMAN BONE SKELETON MODEL | 1 |
| 21-35 | MALE FIGURE | 1 |
| 21-36 | WEIGHING SCALE, | 1 |
| 21-37 | STETHOSCOPE(A) | 5 |
| 21-38 | SPHYGMOMANOMETER, MERCURIAL(B) | 2 |
| 21-39 | SPHYGMOMANOMETER, ANEROID(C) | 1 |
| 21-40 | PERCUSSION HAMMER(B) | 5 |
| 21-41 | HANDY SPIROMETER | 1 |
| 21-42 | LISTER BANDAGE SCISSORS | 5 |
| 21-43 | STRESS TEST SYSTEM | 1 |
| | **22 : PLASTIC AND RECONSTRUCTIVE SURGERY** | |
| 22-1 | PLASTIC SURGERY SISSORS CURVED 10.5 CM FROM MEDICON 0211.10 | 100 |
| 22-2 | COMPLETE MICRO SURGICAL SET | 1 |
| 22-3 | COMPLETE PLASTIC SURGERY LIPO-SUCTION SET | 1 |
| 22-4 | TOURNIQUET MANCHETTE WIDTH UPPERARM | 3 |
| 22-5 | TOURNIQUET MANCHETTE WIDTH UPPERLEG | 2 |
| 22-6 | TOURNIQUET MANCHETTE WIDTH CHILDREN | 2 |
| 22-7 | COAGULATOR FOR SMALL SURGERY | 1 |
| 22-11 | PLASTIC SURGERY SCISSORS STRAIGHT 10.5cm FROM MEDICON 0220.10 | 100 |
| | **23 : RADIOLOGY** | |
| 23-1 | REMOTE CONTROLLED UNIVERSAL DIAGNOSTIC TABLE | 1 |
| 23-2 | DIAGNOSTIC TABLE R/F SYSTEM COMPLETE | 1 |
| 23-6 | CONDENSOR TYPE MOBILE X-RAY UNIT | 1 |
| 23-7 | FLOATING TOP BUCKY TABLE COMPL.WITH GENERATOR | 1 |

| ITEM NO. | DESCRIPTION | Q'ty |
|---|---|---|
| 23-8 | PROTECTION APRON, 0.5mm Pb | 6 |
| 23-9 | PROTECTIVE HALF APRON VELCRO FASTENERS TYPE 0.5 MM PB | 6 |
| 23-10 | PROTECTIVE HALF APRON SPRING CLAMP TYPE | 6 |
| 23-11 | PROTECTIVE GLOVES, 0.5mmPb | 6 |
| 23-12 | CASSETTE PASS BOX | 2 |
| 23-14 | X-RAY FILM PROCESSOR | 1 |
| 23-15 | NAME PRINTER | 3 |
| 23-16 | DARKROOM LAMP | 2 |
| | **24 : REHABILITATION** | |
| 24-1 | LIFTER | 3 |
| 24-2 | EVOKED POTENTIAL MEASURING SYSTEM | 1 |
| 24-5 | ELECTRO HYDRAULIC LIFT TROLLY | 1 |
| 24-6 | PARAFFIN BATH FOR ARM AND LEGS | 1 |
| 24-8 | SHOULDER WHEEL | 2 |
| 24-9 | WRIST ROLL | 1 |
| 24-10 | BICYCLE EXERCISER | 2 |
| 24-11 | QUADRICEPS TABLE | 1 |
| 24-12 | ANKLE EXERCISE SANDAL | 1 |
| 24-13 | PARALLEL BARS, FLAT BARS | 2 |
| 24-14 | POSTURE TRAINING MIRROR | 2 |
| 24-15 | CHEST PULLEY | 1 |
| 24-16 | ELECTRIC TILT TABLE | 1 |
| 24-18 | 6-SECTION TREATMENT TABLE | 2 |
| 24-19 | STANDING TABLE | 1 |
| 24-20 | HIRSCHMANNS GALVANIZATION & FARADIZATION UNIT | 1 |
| 24-21 | INTERFERENTIAL THERAPY UNIT | 1 |
| 24-22 | MICROWAVE THERAPY UNIT | 1 |
| 24-23 | SHORTWAVE DIATHERMY | 1 |
| 24-24 | ULTRASOUND THERAPY UNIT | 1 |
| 24-25 | HOT & COLD THERMO SIMULUS | 1 |
| 24-27 | ELECTRIC TRACTION | 1 |
| 24-28 | SPORTS ERGO TREADMILL | 1 |
| 24-29 | HAND FINGER DYNAMOMETER | 1 |
| 24-30 | HYDRAULIC PINCH GAUGE | 1 |
| 24-31 | GONIOMETER SET | 1 |
| 24-32 | HAND DYNAMOMETER | 1 |
| 24-33 | FEEDER SEAT | 1 |
| 24-34 | FLOOR SITTER | 1 |

| ITEM NO. | DESCRIPTION | Q'ty |
|---|---|---|
| 24-38 | ECONOMY STEEL COMMODE | 3 |
| 24-39 | AUDIOMETER FOR CHILDREN | 1 |
| 24-40 | AUDIOMETER FOR ADULT | 1 |
| 24-41 | SOUND PROOF BOX | 1 |
| 24-42 | CASETTE TAPE RECORDER | 1 |
| | 25 : SURGERY | |
| 25-2 | SURGICAL INSTRUMENT SET, FOR INFANT, IN WOODEN CASE | 2 |
| 25-3 | GASTRECTOMY INSTRUMENT SET , IN METAL CASE | 2 |
| 25-4 | THYROIDOTOMY INSTRUMENT SET , IN METAL CASE | 2 |
| 25-5 | EMERGENCY BREAST OPERATING INSTRUMENT SET , IN METAL CASE | 1 |
| 25-6 | APPENDECTOMY INSTRUMENT SET IN METAL CASE | 2 |
| 25-7 | MOTH'S SPREADER | 52 |
| 25-8 | ARTERIAL FORCEPS | 3 |
| 25-9 | SATINSKEY ARTERIAL FORCEPS | 2 |
| 25-10 | ARTERIAL FORCEPS | 1 |
| 25-11 | ARTERIAL FORCEPS | 2 |
| 25-12 | SATINSKEY AORTA CLAMP | 1 |
| 25-13 | AORTA CLAMP | 1 |
| 25-14 | SATINSKEY VASCULAR | 1 |
| 25-15 | SATINSKEY PERIPHERAL VASCULAR CLAMP | 2 |
| 25-16 | PERIPHERAL VASCULAR CLAMP | 2 |
| 25-17 | SATINSKEY PERIPHERAL VASCULAR CLAMP | 2 |
| 25-18 | PERIPHERAL VASCULAR CLAMP | 2 |
| 25-19 | SATINSKEY VASCULAR CLAMP | 1 |
| 25-20 | EMBOLECTOMY CLAMP | 5 |
| 25-21 | EMBOLECTOMY CLAMP | 2 |
| 25-22 | HEGAR MAYO NEEDLE HOLDER | 5 |
| 25-23 | NEEDLE HOLDER | 5 |
| 25-24 | MATHIEU NEEDLE HOLDER | 5 |
| 25-25 | MATHIEU NEEDLE HOLDER | 5 |
| 25-26 | BLOOD VESSEL NEEDLE HOLDER | 2 |
| 25-27 | SIGMOIDOSCOPE SET | 1 |
| 25-28 | RECTOSCOPE | 2 |
| 25-29 | RECTAL SPECULUM | 2 |
| 25-30 | ANAL RETRACTOR | 2 |
| 25-31 | BALFOUR ABDOMINAL RETRACTOR | 2 |
| 25-32 | GOSSETT SELF-RETAINING ABDOMINAL RETRACTOR | 2 |
| 25-33 | FORESTER SPONGE HOLDING FORCEPS | 5 |

| ITEM NO. | DESCRIPTION | Qty |
|---|---|---|
| 25-34 | DOYEN INTESTINAL CLAMP FORCEPS | 3 |
| 25-35 | CHOLECYSTOTONY INSTRUMENT SET ,METAL CASE | 2 |
| | **26 : UROLOGY** | |
| 26-1 | OTIS-KEITZER URETHROTOME FOR CHILDREN WITH 2 KNIVES | 1 |
| 26-2 | COLD KNIFE,ONLY , FOR 27579 | 1 |
| 26-3 | BOUGIES, CATHETER INSERTION MANDRIN FOR CATHETERS | 1 |
| 26-4 | BOUGIES, BENIQUE URETHRAL CURVED SET ,WITHOUT CHANNEL | 1 |
| 26-5 | CATHETER ADAPTER,ONLY,FOR 27211 LO 27218 LO | 1 |
| 26-6 | TOONEY SYRINGE ,50CC | 1 |
| 26-7 | TOONEY SYRINGE ,100CC | 1 |
| 26-8 | RUBBER,BULB,ONLY FOR 27224 | 1 |
| 26-9 | KIDNEY STONE CRUSHER,FOR USE WITH FORWARD-OBLIQUE TELESCOPE | 1 |
| 26-10 | ADAPTOR,FOR USE WITH KIDNEY STONE CRUSHER 27094 B + SHEATH | 1 |
| 26-11 | UROFLOWMETER + ACCESSORIES(E.G.DISA) | 1 |
| 26-12 | CYSTOMETRIE APPARATUS | 1 |
| 26-13 | INFUUS PUMP LARGE 5-250 ML/MM | 1 |
| 26-14 | METAL-SHEATH WITH LUER-LOCK STOPCOCK INCL. CONNECTING ; BLUE | 1 |
| 26-15 | CUTTING LOOP, ANGLED, BLUNT; BLUE | 1 |
| 26-16 | COAGULATING ELECTRODE,ANGLED,BLUNT ;BLUE | 1 |
| 26-18 | COAGULATING ELECTRODE,HOOK-SHAPED,POINTED ;RED | 1 |
| 26-19 | COAGULATING ELECTRODE,HOOK-SHAPED,BALL-END ;RED | 1 |
| 26-20 | COAGULATING ELECTRODE,ANGLED,POINTED ;RED | 1 |
| 26-21 | TELESCOPE BRIDGE WITH ONE INSTRUMENT CHANNEL | 1 |
| 26-22 | HIGH FREQUENCY CORD FOR USE WITH WORKING ELEMENTS | 1 |
| 26-24 | COLD KNIFE, STRAIGHT | 1 |
| 26-25 | COLD KNIFE, ROUND | 1 |
| 26-26 | COLD KNIFE, SICKLE-SHAPED | 1 |
| 26-27 | COLD KNIFE, HOCK-SHAPED | 1 |
| 26-28 | LATERAL TELESCOPE 90 GRADE, DIAMETER 2.7.MM YELLOW | 1 |
| 26-29 | CYSTOSCOPE-URETHROSCOPE SHEATH, 13 FR.WITH INSTRUM.CHANNEL | 1 |
| 26-30 | CATHER DEFLECTING MECHANISM FOR INSTRUMENTS 3 FR. | 1 |
| 26-31 | NEEDLE ELECTRODE, 3 FR., LENGTH 53 CM | 1 |
| 26-32 | NEEDLE ELECTRODE, 5 FR., LENGTH 53 CM | 1 |
| 26-33 | CONNECTING CORD FOR ELECTRODES | 1 |
| 26-34 | RUBBER TIP,PERFORATION 0.8 MM | 1 |
| 26-35 | TOOMEY SYRINGE,50CC | 1 |
| 26-36 | CHATHETER ADAPTOR | 1 |
| 26-37 | ADAPTOR TO CONNECT SYRINGE 27211 LO TO CYSTOSC.-URETHRESCOPE | 1 |

| ITEM NO. | DESCRIPTION | Q'ty |
|---|---|---|
| 26-38 | LUER-LOCK CONNECTOR | 1 |
| 26-39 | LUER-LOCK CONNECTOR,WITH STOPCOCK, DETACHABLE | 1 |
| 26-40 | WORKING ELEMENT.SET | 1 |
| 26-41 | STRAIGHT FORWARD TELESCOPE O GRADE,DIAMETER 1.9 MM ;GREEN | 1 |
| 26-42 | FORWARD-OBLIQUE TELESCOPE 30 GRADE,DIAMETER 1.9 MM,RED | 1 |
| 26-43 | CYSTOSCOPE-URETHROSCOPE SHEATH FOE EXAMINATION 7 FR. BLUE | 1 |
| 26-44 | CYSTOSCOPE-URETHROSCOPE SHEATH 9 FR.WITH OBTURATOR,RED | 1 |
| 26-45 | GRASPING FORCEPS,DOUBLE ACTION JAWS,FLEX.3 FR.LENGTH 28 CM | 1 |
| 26-46 | BIOPSY FORCEPS, DOUBLE ACTION JAWS,FLEX.3 FR.LENGTH 28 CM | 1 |
| 26-47 | CYSTOSCOPE-URETHROSCOPE SHEATH,10 FR WITH CHANNEL 4 FR. | 1 |
| 26-48 | CYSTOSCOPE-URETHROSCOPE SHEATH,11 FR WITH OBTURATOE 27032 | 1 |
| 26-49 | CATHETER DEFLECTING MECHANISM FOR INSTRUMENTS 3 FR. | 1 |
| 26-50 | TELESCOPE BRIDGE | 1 |
| | **27 : WARD** | |
| 27-1 | MAYO DISSECTING SCISSORS | 20 |
| 27-2 | LISTER BANDAGE SCISSORS | 20 |
| 27-3 | DRESSING FORCEPS | 50 |
| 27-4 | TISSUE FORCEPS | 50 |
| 27-6 | BABY STETHOSCOPE | 4 |
| 27-7 | SCISSORS | 2 |
| 27-8 | SCISSORS, METZEMBAUM | 2 |
| 27-9 | LISTON BONE CUTTING FORCEPS | 2 |
| 27-10 | WEIGHING SCALE | 2 |
| 27-15 | SUCTION PUMP | 2 |
| 27-17 | DRESSING DRUM | 10 |
| | **28 : MAINTENANCE DEPT** | |
| 28-1 | UNIVERSAL ELECTRIC TESTER | 1 |
| 28-2 | SMALL TAKE ANYWHERE OSCILLOSCOPE FOR FIELD FLUKE | 1 |
| 28-5 | CURRENT PLEIRS 3 1/2 DIG MAX 400 AMPERE | 1 |
| 28-9 | DESOLDER SUCKER STATION | 1 |
| 28-15 | ECG PATIENT SIMILATOR WITH EGG - BLOODPERSSURE-RESPITATION AND TEMP | 1 |
| 28-16 | DEFIBRILLATOR TESTER | 1 |
| | **29 : NURSE TRAINING CENTER** | |
| 29-4 | OVERHEAD PROJECTORS | 2 |
| 29-5 | CAMERA TO MAKE SLIDES | 1 |
| 29-6 | SLIDE PROJECTORS | 2 |
| 29-7 | COPYING MACHINE | 1 |
| 29-8 | COMPUTER WITH PRINTER | 1 |

| ITEM NO. | DESCRIPTION | Q'ty |
|---|---|---|
| 29-9 | TELEVISION SET | 1 |
| 29-10 | VIDEORECORDER | 1 |
| | 30 : Others | |
| 30-3 | VEHICLES;ONE-PATIENT AMBULANCE (DIESEL) | 2 |
| 30-6 | ELECTRICITY GENERATORS (250 KVA) (MAIN BUILDING) | 2 |
| 30-9 | OXYGEN PLANT | 1 |
| 30-10 | ENVIRONMENTALLY SAFE INCINERATOR | 1 |
| 30-12 | PERSONAL COMPUTERS | 2 |
| 30-13 | PRINTERS | 2 |

# Chapter 3
# Implementation Plan

# Chapter 3 Implementation Plan

## 3-1 Implementation Plan

### 3-1-1 Implementation Concept

#### [1] Project Implementing System

**(1) Project Implementing Organization**

The Ministry of Health of Suriname is to be responsible for the management of the implementation of this Project and Academic Hospital Paramoribo is to take charge of the implementation of this Project. The Minister of Health of Suri- name, who acted as the representative of the Government of Suriname at the time of implementation of the basic design study, is to be responsible for the supervision of this Project, and the director of Academic HospitalParamoribo for the practical aspects of this Project.

**(2) Consultant**

Immediately after the signing of the Exchange of Notes (E/N) by the Govern- ment of Japan and the Government of Suriname, the consultant from Japan is to conclude a consultant agreement with the Ministry of Health of Suriname as the representative of the Government of Suriname in accordance with the procedures under the Government of Japan's grant aid cooperation system. Under this agreement, which is to take effect upon its certification by the Government of Japan, the consultant shall engage in the following activities.

1) Detail design: Preparation of detail design specifications and other technical data.

2) Tender: Preparation of tender documents, selection of the equipment supplier through tender documents, cooperation in matters relating to the supply contract.

3) Equipment procurement/construction supervision: Management of equipment procurement, pre-shipment inspection of equipment, installation and operation of maintennance and management guidance.

**3) Equipment Supplier**

The equipment supplier is to be selected through tender and to conclude a contract with the Ministry of Health of Suriname. Under the contract, which is also to take effect upon its certification by the Government of Japan, the equipment supplier shall engage in the supply and transportation of necessary items of equipment and provide training in installation, operation, maintenance and management of equipment. The equipment supplier is also to develop an equipment maintenance and management system, which is to include the methodology of supply of spare parts and expendable after the delivery of such items of equipment and a training program. Items of equipment which are to be Procured under this project include those manufactured in Suriname and third countries. It is expected, therefore, that it will take a little more time to procure such items of equipment compared with procurement of Japanese-made items of equip- ment. For this reason, the equipment supplier is to coordinate closely with the Surinamese project implementing organization concerning the delivery and instal- lation of equipment so that the project may be implemented smoothly.

### [2] Implementation Concept

(1) After the signing of the E/N, the consultant shall coordinate closely with the Surinamese government agencies concerned, the Japanese government agencies concerned, the equipment supplier and other related organizations at each of the stages of detail design, tender, selection of the equipment supplier, conclusion of the equipment supply contract, confirmation of the equipment manufacturing schedules, pre-shipment inspection of equipment and payment of the costs of implementation of this Project so that the Project may be implemented smoothly.

(2) The consultant and the officials concerned of the hospital shall make adequate arrangements in the stage of detailed design, regarding the project implementation schedule, etc., for the smooth progress of the project, in order that the requested apparatuses will be carried in and installed, without impeding medical activities in the hospital.

(3) Those items of equipment which are to be procured in Japan should undergo sufficient quality control, product testing and pre-shipment inspection in Japan and those which are to be procured in Suriname and third countries should under- go pre-shipment inspection in the countries where they are manufactured for the smooth progress of the entire Project.

(4) As regards those items of equipment which require special installation work, the equipment supplier is to dispatch their manufacturers' engineers to the project site to install such items of equipment. As to those items of equipment with which it is difficult to dispatch their manufacturers' engineers to the project site, the consultant shall give guidance on steps to be taken with such items of equipment to their manufacturers' distributors and sales offices in the country so that the engineers from such distributors and sales offices may install such items of equipment.

(5) At the time of delivery of equipment, the consultant shall give pertinent instructions as to equipment arrangement in each clinical department and confirm the completion of delivery of all the items of equipment ordered under this Project after conducting acceptance tests.

(6) The consultant shall cause the equipment supplier to hold a meeting of the clinical departments' staff members in charge to train them in the operation, maintenance and management of the items of equipment procured under this P

roject. The consultant shall also cause the staff members in charge of the hospital's maintenance and management division to get a firm grasp of the method of regular equipment inspection with the aim of enhancing the quality of equip- ment maintenance and management activities at the hospital.

### 3-1-2 Implementation Conditions

The climate of the city of Paramaribo, the target region of the project, belongs to tropical climate dividing a year into the rainy season and the dry season. In the rainy season, which lasts for six months, roads in the city are flooded by heavy rains, sometimes obstructing automobile traffic.

In transporting the imported items of equipment from the ports to the project site, it will be necessary to make a sufficient preliminary survey of the inland transportation routes, as well as one of the bypasses, and to take proper steps against heavy rainfalls and their consequences. In

unloading, transporting and storing the items of equipment delivered to the hospital, it will also be neces- sary to take measures against rainfalls and thefts. At the hospital, the repair work is now under way at the ward of its 6-story
main building, which has become superannuated, and the other facilities of the hospital are also expected to be repaired by 1998, the cost being shared by the hospital and the Netherlands. All the repair works for the facilities of the hospital's clinical departments, which are included in this project, are sched- uled to be completed in September 1997. However, there is a plan to repair the hospital's laundly and the kitchen with the financial assistance of the Netherlands. It will therefore be necessary to conduct construction supervision very carefully during the period of transportation and installation of the items of equipment procured under this project (November 1997 to March 1998).

### 3-1-3 Scope of Work

Given below is the outline of the scope of the work to be carried out by the Japanese side and the scope of the work to be conducted by the Surinamese side.

[1] Scope of the Work to be carried out by the Japanese Side

1. To supply the selected items of equipment.
2. To transport the procured items of equipment to the project site (the marine and inland transportation costs to be defrayed by the Japanese side).
3. To install the procured items of equipment, take charge of their storage until their formal delivery and complete agreement/contract- related operations.
4. To make trial runs of all the supplied items of equipment and gives technical guidance on their operation, maintenance and management.

[2] Scope of the Work to be carried out by the Surinamese Side

1. To present the information and data necessary for the implementation of this project.
2. To provide a space which can be used as an office within the hospi- tal.
3. To provide spaces and equipment necessary for the installation of the procured items of equipment.
4. To prepare and provide utilities (electrical, plumbing and other systems) necessary for the installation of the procured items of equipment before the installation work is started (the subsidiary work to be carried out by the hospital) and remove the existing items of equipment located in places where the procured ones are to be installed.
5. To provide a space or spaces to store the supplied items of equipment until the installation work is started.
6. To offer facilities for smooth unloading at the. Surinamese ports, customs clearance and inland transportation of the items of equipment procured overseas.
7. To exempt the Japanese nationals and other foreigners concerned with the supply of equipment and labor under this Project from duties and taxes.
8. To offer facilities for the transportation by Japanese nationals and other foreigners of those items of equipment which are necessary for the imple- mentation of this Project to the project site, as well as for their stay in the country, and pay close attention to their safety.
9. To defray the costs necessary for the bank arrangement (B/A) and the authorization of payment (A/P) procedure.
10. To arrange for the human resources and budgetary . appropriations (including the cost of operation, maintenance and management of the equipment procured under the grant aid cooperation).

11. To provide training in the method of handling of the equipment Procured under this project.
12. To submit a plan for the use of the equipment to be procured under this project.
13. To take charge of proper and effective maintenance and management of the equipment procured under this product and defray the cost of maintenance and management of the equipment.
14. To issue permits, licenses and authorizations necessary for the smooth implementation of this Project.
15. To defray the costs incurred in following the tax . exemption procedures related to the implementation of this Project.
16. To periodically (thrice a year) submit an inventory check list of all the items of equipment procured under this Project to the Japanese embassy in Surinamese.
17. To defray the other costs necessary for the. the implementation of this Project than those which are included in the scope of the work to be carried out by the Japanese side or the scope of the work to be carried out by the Surinamese side.

### 3-1-4 Consultant Supervision

The consultant, which is a Japanese corporation, is to conclude a consultant agreement with the Ministry of Health of Suriname and Academic Hospital Pramaribo, which are the Surinamese organizations responsible for the supervision of and imple- mentation of this Project respectively, and carry out the detail design work, the tender-related work and the consultant supervision work under this project. The main objectives of these operations are to ensure that this Project is implemented in accordance with the contents of the drawings and specifications and to provide guidance, advisory and coordination services to the equipment supplier from an impartial standpoint for the purpose of enhancing the quality of the services provided by the equipment supplier during the period of imple- mentation of this Project.

The consultant shall, in performing its duties of supervision, dispatch implementation supervisors, in order to establish a spot supervision system for the overall process of carrying in and installing the apparatuses and technical training.

The implementation supervisors shall be experts on medical equipment, clinical examination equipment and facilities equipment, and take charge of guidance, adjustment, supervision and inspection efficiently in accordance with the installation process of the apparatuses. These technical experts shall have thorough knowledge on the apparatuses related to their respective fields and perform implementation supervision based on a full understanding of the contents and objectives of the project. In addition, they report to the agencies concerned of the Japanese government on the necessary matters such as the progress of the project, formalities of payment and transfer.

Supervision work is composed of the following.

1. Tender/Contracting Out

The consultant shall prepare tender documents necessary for the tender through which to select the Japanese equipment supplier to engage in the equipment supply/ installation work, make a public announcement of the ten- der, accept tender applications, screen the applicants, conduct the tender, and prepare a report on the results of the tender and their evaluation. The consultant shall also provide advice as to the contract to be concluded between the Ministry of Health of Suriname/Paramaribo Academic Hospital Paramaribo andthe equipment supplier for the supply of the selected items of equipment.

2. Guidance, Advisory and Coordination Services to the Equipment Supplier The consultant shall examine the project implementation schedule, the scheme of execution, the equipment supply plan and the equipment installation plan and provide guidance, advisory and coordination services to the equipment supplier.

3. Examination of and Approval for the Manufacturing and Working Drawings
The consultant shall examine the manufacturing/ working drawings and other documents concerning the supply of the equipment, which are to be submitted by the equipment supplier, and give guidanceto the equipment supplier and finally approve these documents.

4. Confirmation of and Approval for the Procured Items of Equipment
The consultant shall confirm the consistency between the procured items of equipment and the contents of the contract documents (including the provi- sions applicable to equipment procurement) and give its approval for their adoption.

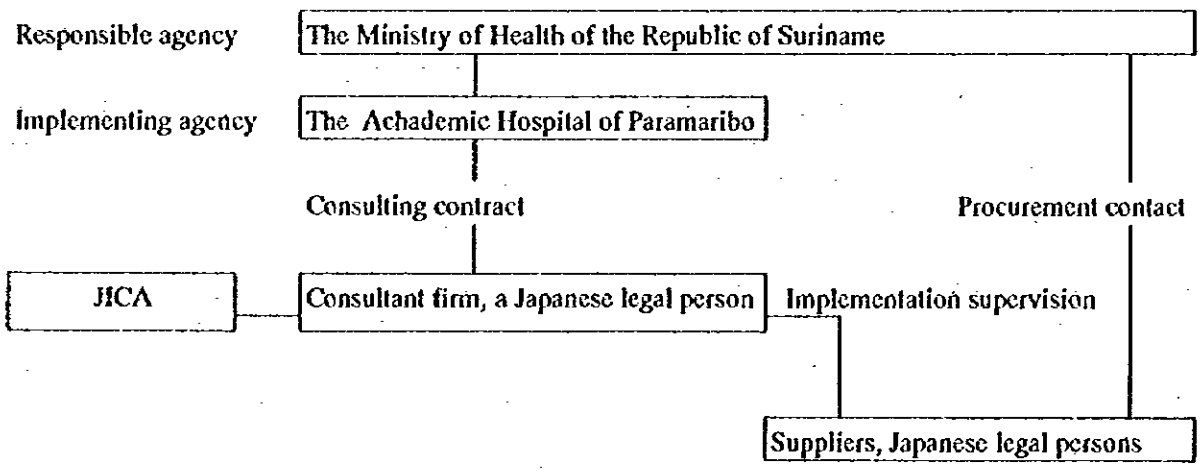
5. Factory Inspection
The consultant shall be present at inspections of factories where the select- ed items of equipment are manufactured on an as needed basis to check their quality and performance.

6. Reporting on the Progress of the Project
The consultant shall report the progress of the project to all the organiza- tions concerned of the two countries based on the latest information and data it obtains about the implementation schedule and the status of the construc- tion site.

7. Trial Runs of the Installed Items of Equipment and Tests of the Completed Facilities
The consultant shall make trial runs of the installed items of equipment and tests of the completed facilities to ensure that they are all consistent with the contents of the contract documents and submit a certificate of completion of tests to the Surinamese side.

8. Technical Guidance and Advice on the Operation, Maintenance and Management of theEquipment
The items of equipment to be Procured under this project include those which require technical knowledge of the methods of their operation, maintenanceand management on the part of their users and therefore it will be necessary to provide training in their operation, inspection and repair to the staff members in charge of the clinical departments. The consultant shall give guidance and advice about this matter.

**Implementation supervision system**



### 3-1-5 Procurement Plan

The procurement of the apparatuses necessary for the project's implementation shall be conducted on the basis of the following policy.

1. Possibility of Procurement of Items of Equipment Manufactured in Third Countries in Suriname

In Suriname, many items of medical equipment used to be European- or U.S.- made ones partly because they were procured with the financial assistance of the Netherlands. Except for some special ones, it was difficult to procure Japa- nese-made items of medical equipment. There are even items of equipment whose manufacturers are yet to establish viable maintenance and management systems in the country. Judging from the present situation in Suriname, many of the se- lected items of medical equipment will have to be procured in third countries or Suriname. In principle, therefore, those items of equipment which are the products of manufacturers who have sales offices and/or distributors, which can be installed safely and for which after-sales services are available after delivery should be selected. In selecting other items of equipment than Japanese-made ones, due considera- tion should be given not only to prices (lower prices) but also to their mainte- nance and management in the future and the present level of the Surinamese engineers' technical capabilities. The degree of difficulty/ease of procurement in Suriname, the local repair/after-sales systems (including supply of spare parts and expendables) and the degree of market penetration are the main factors to be noted in procuring other items of equipment than Japanese-made ones.

2. Equipment Unit Prices and Local Distributors' Equipment Maintenance and Management Systems

When it is concluded that those items of equipment which are procured in Suriname or third countries can be procured at lower unit prices and are backed up by local distributors' and sales offices' sufficient maintenance and manage- ment systems as a result of a comparison of unit prices (including the packing, transportation and insurance costs) of the items of equipment to be procured in Suriname, Japan and third countries, top priority should be given to those which can be procured in Suriname or third countries. Those items of equipment which had better be imported from third countries or procured in Suriname include those for use in clinical examinations, radiology, operations (including general anesthesia), endoscope-related ones, the oxygen supply system for medical use, the private electric generator, and steel preci- sion tools for use in operations. These items of equipment are already used widely in Suriname and there is no problem with the maintenance and management systems of local distributors and sales offices.

3. Means of Transportation

In the case of the items of equipment to be procured in Japan, it will take about 4 weeks to transport them to Suriname by sea, and in the case of those which are to be procured in third countries (the United States and European countries) 2 to 4 weeks. In addition, it will take about 1 week to clear them through the customs, and it will take about 1 to 2 days to transport them in the country. Thus, it will take 7 to 9 weeks in total to have them arrive at the project site. The procurement plan should therefore be worked out taking these time factors into consideration.

### 3-1-6 Implementation Schedule

When the Exchange of Notes concerning this project is signed by the Govern- ment of Japan and the Government of Suriname, the implementation schedule after this stage will be divided into three stages--the detail design work, the ten- der-related work and the equipment procurement/

construction supervision work.

1. Detail Design Work

After the conclusion of the consultant agreement between the Ministry of Health of Suriname representing the Government of Suriname and the consultant, which is a Japanese corporation, the consultant shall start the detail design work subject to the Government of Japan's certification of the agreement. In this stage detail drawings, specifications, a draft contract with the equipment supplier, specifications of items of equipment to be procured under this project, tender documents and other documents shall be prepared. The consultant shall also discuss the details of the facilities and equipment to be procured under this project with the Surinamese side and finally obtain the Surinamese side's approval for these documents. It is expected to take about 3 months to complete the detail design work (including the detail design work in Suriname and Japan as well as the approval for the tender documents).

2. Tender-related Work

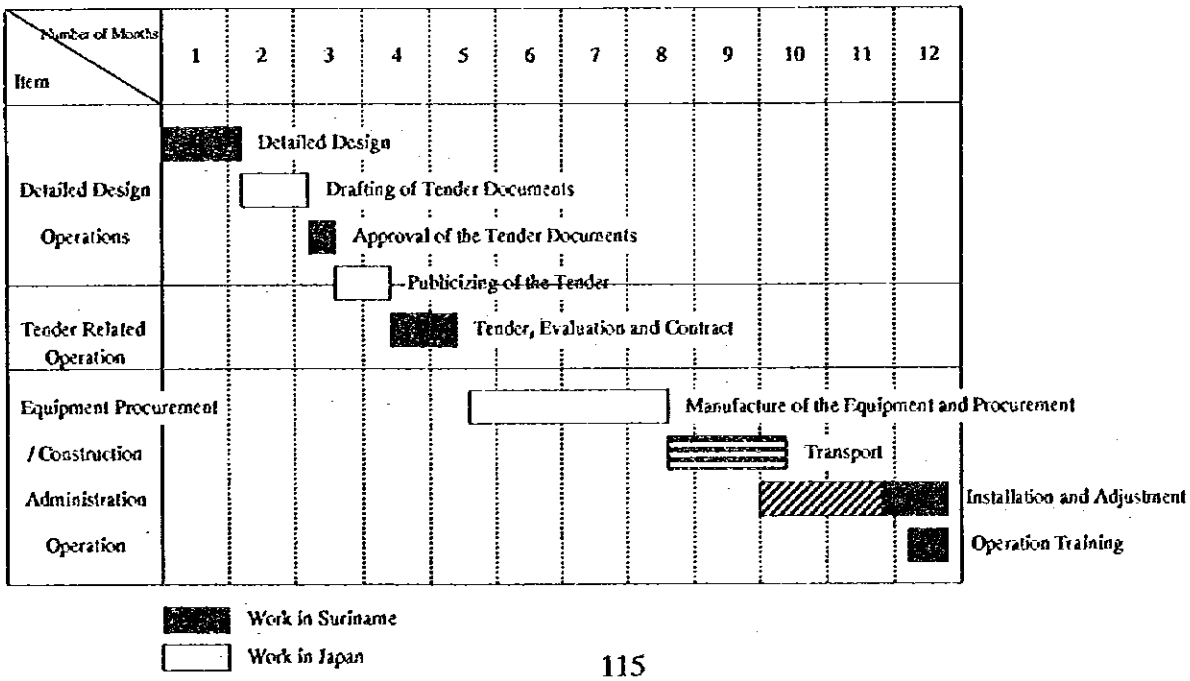
The equipment supplier is to be selected through tender. The tender business is to be carried out in the order of public announcement of the tender, accept- ance of tender applications, screening of the applicants, distribution of the tender documents, tender, reporting on the results of the tender, reporting on the evaluation of the results of the tender, appointment of the equipment sup- plier and conclusion of the equipment supply contract. It will take about 1.5 months to complete this work.

3. Equipment Procurement/Construction Supervision Work

After the conclusion of the agreement and the contract, this project is to be started subject to the Government of Japan's certification of these contract documents. As a result of the test calculation conducted on the basis of the details and scale of the hospital, as well as the local environmental and cli- matic conditions, it is expected to take about 7 months to complete this project.

The implementation schedule from the signing of the Exchange of Notes until the completion of this project is as shown below.

Implementation Schedule of the Project



### 3-1-7 Undetakings of the Government of the Republic of Suriname

The Government of Suriname shall perform the following undertakings on the installation of the apparatuses and tax exemption, which are not included in the undertakings of the Government of Japan.

1) Conclusion of a banking arrangement (B/A) with a bank possessing Japanese nationality.
2) Issuance of the Authorization to Pay for the Japanese legal persons concerned with the project's implementation.
3) Securing and preparation of installation sites for the apparatuses.
4) Completion of preparatory work for the installation of the apparatuses.
   -Preparation of electric circuits (single-phase and three-phase) to the installation sites, and fitting of outlets.
   -Water supply and drainage piping to the installation sites, and fitting of outlets.
5) Exemption or bearing of customs duties which are usually imposed by the Government of Suriname on equipment imports, internal taxes and other financial surcharges ("other financial surcharges" include indirect costs adopted in Suriname for buying articles of foreign make).
6) Provision of facility for quick customs clearance and inland transportation of the apparatuses and materials imported from Japan.
7) Provision of a place where the apparatuses provided under the project are kept until the installation of them.
8) Provision of facility necessary for the Japanese who enter Suriname and stay there in order to perform their duties for the project's implementation.
9) Issuance or permission of permits necessary for the project's implementation, tax exemption and other permits, in accordance with the laws of the Republic of Suriname.
10) Bearing of all expenses, except for those borne by the Government of Japan, necessary in the project's implementation.
11) Presentation of a Report to the Japanese government, regarding the uses of the apparatuses provided under the project, an each year through the Japanese Embassy.

## 3-2 Project Cost Estimation for Suriname Side

The Project is implemented under cooperation between Japan and the Republic of Suriname. Undertakings of the Government of the Republic of Suriname to be implemented at its expense are described below.

(1) Construction of facilities for equipment installation

**Total Amount Cost : Sf 3,600,000 guilder**

1) Expense for foundation work for the incinerator and electricity generators

**Cost : Sf 1,600,000 guilder**

2) Expense for electrical work for the sterilizers

**Cost : Sf 2,000,000 guilder**

(2) Others

In accordance with Japan's grant aid scheme, the Government of Suriname exempts the equipment from import tariffs and the Japanese legal persons concerned from internal taxes such as enterprise tax and value-added tax. Otherwise these tariffs and taxes shall be paid by the Government of Suriname. In addition to these, the Suriname government is expected to bear the following expenses for covering commissions, taxes and construction cost.

1) Expense for official formalities necessary in the delivery of equipment.

2) Import tariffs imposed on the equipment.

3) Commissions for banking arrangement (B/A) and for the issuance of authorization to pay (A/P).

4) Expense for tax exemption formalities on internal taxes and other financial surcharges, and expenses necessary for value-added tax payment.

## 3-3 Operation and Maintenance Costs

Most of the apparatuses provided under the Project are replacements for superannuated ones. The equipment plan has been formulated for easier management and maintenance with smaller expenses. It is necessary, however, that an effective management and maintenance system be established, as described below, for improving the present situation of the management and maintenance of apparatuses.

(1) System for supplying spare parts and expendable articles

Regarding spare parts and expendable articles necessary for the maintenance of apparatuses, a system shall be established in which suppliers of apparatuses are responsible for keeping spare parts and expendable articles available for at least seven years after their guarantee periods are over until apparatuses are replaced. Regarding those spare parts and expendable articles which are frequently needed, suppliers shall present written estimates beforehand to the Ministry of Health of the Republic of Suriname, and the ministry makes tentative calculations of expenses for buying spare parts and expendable articles, and thereby takes budgetary measures.

(2) Training for maintenance personnel

The Ministry of Health has GMTD (Gemeenschappelike Medish Technische Dienst), a medical apparatus maintenance firm, under its control. This firm provides maintenance and repairing services, for ensuring that apparatuses will properly work. The maintenance personnel are eager to acquire maintenance and repairing techniques through training given, with the cooperation of experts from the Netherlands.

(3) Formulation of maintenance plans

The Maintenance and Management Council, organized in the hospital, formulates a daily inspection plan, gains a full understanding of the operating conditions of the apparatuses, and regularly reports to the Management Department. The council keeps a record of stocks of spare parts, prepares documents on the management of apparatuses regularly in the forms of a daily report, a weekly report and a monthly report, and thereby builds a system for obtaining a proper understanding of the conditions.

(4) Cooperation of private dealers

In the Republic of Suriname, medical apparatuses are seldom manufactured, and they are mostly imports. For the maintenance of these imported apparatuses, contracts are concluded with local agents. These contracts range from contracts on spot repairs (dealers come to repair apparatuses each time they have gone wrong) to contracts on comprehensive maintenance including regular inspections. These contracts are concluded in accordance with the frequency of the use of apparatuses, grades of apparatuses and the urgent necessity of repairs. Private medical institutions which have sufficient funds receive perfect after-sales service, by concluding contracts on the maintenance of high-grade medical apparatuses. Apparatuses of these private medical institutions are in good maintenance, and there are few which have gone wrong or are inoperable. Also spare parts and expendable articles are smoothly supplied.

(5) Maintenance and management cost

The following table shows estimated expenses for the maintenance and management of main apparatuses. There are especially high-grade appratuses among those which are provided under the Project, expect radiographic apparatuses biopsy apparatuses and laaboratory apparatuses.It is therefore necessary for the hospital autorities too estab;ish a management system for these apparatuses and make it the maintenance personal's duty to conduct maintenance and inspections of the apparatuses. It is also necessary to strengthen the Maintenance and Manegement Depatment and

establish a cooperation system with local agents for the purpose of ensaring that the apparatuses will continue to be in good condtion.
Expenses necessary for condluding maintenance contracts with local agents amount to about ¥7,300 thousand/year, while ¥62,000 thousand/year is needed for purchasing expendable articles. From most of the apparatuses which need expendable articles, incomes from medical examination/treatment can be expected. As these apparatuses produce incomes exceeding expenses for expendable articles, cost for the purchase of expendable articles can be circulated. It is necessary for the hospital authorities to take a budgetary measure, because about ¥14,600 thousand is necessary to conclude maintenance contracts and purchase maintenance parts. It is also necessary to strengthen the Maintenance and Management Department, with the cooperation of GMTD and the local agents.

-1 Maintenance and management system

The maintenance and management of the apparatuses are conducted mainly by the Maintenance and Management Department of the hospital, with the cooperation of GMTD (Gemeenschappelike Madish Technische Dienst), and based on the maintenance contracts with local agents dealing with medical apparatuses. GMTD is a firm under the control of the Ministry of Health, providing guidance for the hospitals in Suriname. Maintenance work is now provided for the echo apparatus and the radiographic equipment under contracts with local agents, while the Maintenance and Management Department provides maintenance work for those apparatuses used in biopsy such as patient monitors, with the guidance of GMTD. Regarding the equipment of the Laboratory, a technician specializing in examination equipment is in charge of regular maintenance, as a staff member of the Laboratory. For the other apparatuses, technicians of the Maintenance and Management Department conduct maintenance work. Now technical training in equipment maintenance is given by specialists from the Netherlands, which is planned to last for three years. Maintenance work for the apparatuses to be provided under the project is completely possible, because they are replacements of superannuated apparatuses, and no new technologies are needed for the maintenance of them.

-2 Maintenance and management cost

The echo apparatus and the radiographic equipment need the conclusion of a maintenance contract, and maintenance cost for these apparatuses is estimated at approximately 8,700,000 guilders annually (about ¥2,400,000). In the hospital's maintenance and management system, spare parts are not supplied beforehand, as a general rule. Repairs are made on apparatuses as they go wrong, and if they cannot be rehabilitated, a budgetary measure is taken for procuring spare parts for them. Expenses for buying spare parts for those main apparatuses which are frequently used are estimated at approximately 26,320,000 guilders annually (about ¥7,262,000). Consumable supplies are procured any time, in accordance with an application made as necessary, with the frequency of use being taken into consideration. Expenses for consumable supplies are estimated at approximately 181,000,000 guilders annually (about ¥50,000,000), on the assumption that main apparatuses are in full operation. Consequently the total cost for the maintenance and management of the apparatuses provided under the project is estimated at approximately 216,020,000 guilders annually (about ¥59,662,000).

-3 Finances

As mentioned above, the "maintenance and management cost for the apparatuses provided under the project" is estimated at approximately 216,020,000 guilders annually (about ¥59,662,000). This figure accounts for 27.5% of the maintenance and management cost in The Academic Hospital of Paramaribo for fiscal 1995, namely, 817,848,914 guilders (about ¥216,774,030). This shows the necessity of a new budgetary measure by the Government of Suriname. An increase by 27.5%, however, is not always necessary, because most of the apparatuses provided under the project are replacements of existing ones, for which a budgetary measure has been taken basically. The Government of Suriname plans to increase budgetary appropriations for maintenance and

management by about 87.6% in fiscal 1997 (*1) as compared with those in fiscal 1995 (*2), as mentioned in the table below. If this budget is executed as requested, the ratio of "maintenance and management cost for the apparatuses provided under the project" is reduced from 27.5% to 14.0%. With the whole situation being taken into consideration, it is concluded that the Government of Suriname is capable of and willing to bear the expenses.

*1: Appropriations for maintenance and management are raised from the items of "medical expenses (for procuring consumable supplies for equipment)" and "maintenance and management expenses (for maintenance contracts and spare parts procurement)."

*2: Data are not available on the budgetary result for fiscal 1996.

**Budget of The Academic Hospital of Paramaribo**

| | (1US$=Sf=409) (in 1997) | | (1US$=Sf=415) (in 1995) | |
|---|---|---|---|---|
| Item of expense | Sf | US$ | Sf | US$ |
| Personnel expenses | 1,061,646,694 | 2,595,713 | 569,156,467 | 1,371,428 |
| Food expenses | 148,000,000 | 361,858 | 67,894,583 | 163,597 |
| Fuel & light expenses | 132,600,000 | 324,205 | 54,946,888 | 132,399 |
| Medical expenses | 1,374,600,000 | 3,360,880 | 755,194,480 | 1,819,702 |
| Overhead cost | 313,900,000 | 767,481 | 34,974,292 | 84,273 |
| Office supplies | 84,675,000 | 207,029 | 39,230,780 | 94,530 |
| Maintainance & management | 160,165,000 | 391,601 | 62,654,434 | 150,971 |
| Total : | 3,275,586,694 | 8,008,767 | 1,584,051,924 | 3,816,900 |

## Maintenance and Management Cost

| Item | Description | Q'ty | Maintenance Contracts | | Spare Part | | Consume Item | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | | Unit Price | Amount | Unit Price | Amount | Unit Price | Amount | |
| 1--2 | PATIENT MONITOR | 6 | 0 | 0 | 38,000 | 228,000 | 188,000 | 1,128,000 | 1,356,000 |
| 1--7 | ANESTHESIA APPARATUS | 6 | 0 | 0 | 0 | 0 | 1,307,000 | 7,842,000 | 7,842,000 |
| 1--9 | VENTILATOR (PORTABLE) | 2 | 0 | 0 | 0 | 0 | 570,000 | 1,140,000 | 1,140,000 |
| 1--11 | PATIENT MONITOR | 3 | 0 | 0 | 38,000 | 114,000 | 188,000 | 564,000 | 678,000 |
| 1--14 | DEFIBRILLATOR | 1 | 0 | 0 | 40,000 | 40,000 | 88,000 | 88,000 | 128,000 |
| 2--6 | CARDIOVASCULAR APPLICATION VERSION COLOR DOPPLER ECHOCARDIO | 1 | 57,000 | 57,000 | 227,000 | 227,000 | 210,000 | 210,000 | 494,000 |
| 2--9 | ELECTROCARDIOGRAPH | 1 | 0 | 0 | 30,000 | 30,000 | 67,000 | 67,000 | 97,000 |
| 5--6 | FETAL MONITOR | 2 | 0 | 0 | 40,000 | 80,000 | 78,000 | 156,000 | 236,000 |
| 5--22 | ANESTHESIA APPARATUS | 2 | 0 | 0 | 0 | 0 | 1,307,000 | 2,614,000 | 2,614,000 |
| 5--23 | PATIENT MONITOR | 2 | 0 | 0 | 38,000 | 76,000 | 188,000 | 376,000 | 452,000 |
| 5--30 | DEFIBLILLATOR | 1 | 0 | 0 | 40,000 | 40,000 | 88,000 | 88,000 | 128,000 |
| 8--1 | DEFIBLILLATOR | 1 | 0 | 0 | 40,000 | 40,000 | 88,000 | 88,000 | 128,000 |
| 8--11 | INFUSION PUMP | 9 | 0 | 0 | 0 | 0 | 90,000 | 810,000 | 810,000 |
| 8--15 | VENTILATOR FOR ADULTS | 3 | 0 | 0 | 0 | 0 | 570,000 | 1,710,000 | 1,710,000 |
| 8--16 | VENTILATOR FOR INFANTS | 2 | 0 | 0 | 0 | 0 | 570,000 | 1,140,000 | 1,140,000 |
| 9--41 | ENDOSCOPIC TV SYSTEM | 2 | 0 | 0 | 305,000 | 610,000 | 890,000 | 1,780,000 | 2,390,000 |
| 9--49 | ECG APPARATUS (1-3 CHANNEL) | 1 | 0 | 0 | 30,000 | 30,000 | 67,000 | 67,000 | 97,000 |
| 9--50 | RESPIRATORY VENTILATOR | 2 | 0 | 0 | 0 | 0 | 570,000 | 1,140,000 | 1,140,000 |
| 10--10 | ELECTROPHORESIS | 1 | 0 | 0 | 425,000 | 425,000 | 1,220,000 | 1,220,000 | 1,645,000 |
| 10--11 | ANALYZER GLUCOSE | 2 | 0 | 0 | 0 | 0 | 70,000 | 140,000 | 140,000 |
| 10--13 | ANALYZER Na-K | 2 | 0 | 0 | 410,000 | 820,000 | 516,000 | 1,032,000 | 1,852,000 |
| 10--14 | BLOOD GAS ANALYZER | 1 | 0 | 0 | 569,000 | 569,000 | 916,000 | 916,000 | 1,485,000 |
| 10--15 | UV-VIS RECORDING SPECTROPHOTOMETER | 1 | 0 | 0 | 74,000 | 74,000 | 129,000 | 129,000 | 203,000 |

Maintenance and Management Cost

| Item | Description | Q'ty | Maintenance Contracts | | Spare Part | | Consume Item | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | | Unit Price | Amount | Unit Price | Amount | Unit Price | Amount | |
| 10--18 | BLOOD CELL COUNTER | 1 | 0 | 0 | 128,000 | 128,000 | 368,000 | 368,000 | 496,000 |
| 10--24 | CLINICAL CHEMISTRY ANALYZER | 1 | 0 | 0 | 185,000 | 185,000 | 3,340,000 | 3,340,000 | 3,525,000 |
| 13--4 | ELECTROENCEPHALOGRAPH 21ch | 1 | 0 | 0 | 80,000 | 80,000 | 730,000 | 730,000 | 810,000 |
| 13--5 | ELECTROENCEPHALOGRAPH 6ch | 1 | 0 | 0 | 80,000 | 80,000 | 730,000 | 730,000 | 810,000 |
| 13--6 | EVOKED POTENTIAL MEASURING SYSTEM | 1 | 0 | 0 | 38,000 | 38,000 | 180,000 | 180,000 | 218,000 |
| 13--7 | EMG | 1 | 0 | 0 | 38,000 | 38,000 | 180,000 | 180,000 | 218,000 |
| 15--36 | C-ARM X-RAY APPARATUS | 1 | 150,000 | 150,000 | 553,000 | 553,000 | 4,140,000 | 4,140,000 | 4,843,000 |
| 18--11 | SLIDE STAINER FOR HEMATOXILINE EOSINE STAINING | 1 | 0 | 0 | 80,000 | 80,000 | 450,000 | 450,000 | 530,000 |
| 18--12 | SLIDE STAINER FOR CYTOLOGY | 1 | 0 | 0 | 80,000 | 80,000 | 450,000 | 450,000 | 530,000 |
| 19--12 | NEONATAL MONITOR | 1 | 0 | 0 | 38,000 | 38,000 | 180,000 | 180,000 | 218,000 |
| 19--16 | INFANT VENTILATOR | 2 | 0 | 0 | 0 | 0 | 570,000 | 1,140,000 | 1,140,000 |
| 23--1 | REMOTE CONTROLLED UNIVERSAL DIAGNOSTIC TABLE | 1 | 800,000 | 800,000 | 698,000 | 698,000 | 1,400,000 | 1,400,000 | 2,898,000 |
| 23--2 | DIAGNOSTIC TABLE R/F SYSTEM COMPLETE | 1 | 800,000 | 800,000 | 698,000 | 698,000 | 1,400,000 | 1,400,000 | 2,898,000 |
| 23--6 | CONDENSOR TYPE MOBILE X-RAY UNIT | 1 | 150,000 | 150,000 | 553,000 | 553,000 | 4,140,000 | 4,140,000 | 4,843,000 |
| 23--7 | FLOATING TOP BUCKY TABLE COMPL. WITH GENERATOR | 1 | 450,000 | 450,000 | 530,000 | 530,000 | 1,485,000 | 1,485,000 | 2,465,000 |
| 24--2 | EVEKED POTENTIAL MEASURING SYSTEM | 1 | 0 | 0 | 80,000 | 80,000 | 730,000 | 730,000 | 810,000 |
| 30--3 | VEHICLES;ONE-PATIENT AMBULANCE (DIESEL) | 2 | 0 | 0 | 0 | 0 | 431,000 | 862,000 | 862,000 |
| 30--6 | ELECTRICITY GENERATORS (500 KVA) (MAIN BUILDING) | 2 | 0 | 0 | 0 | 0 | 28,000 | 56,000 | 56,000 |
| 30--10 | INCINERATOR | 1 | 0 | 0 | 0 | 0 | 2,190,000 | 2,190,000 | 2,190,000 |
| | **TOTAL** | | | **2,407,000** | | **7,262,000** | | **48,596,000** | **58,265,000** |

# MAINTENANCE, MANAGEMENT COST

UNIT : ONE THOUSAND YEN

| NO | MATERIAL NAME | MAINTENANCE | | | SPARE PART | | | | CONSUME ITEMS | | | | TOTAL | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | UNIT PRICE | times | AMOUNT | MATERIAL NAME | UNIT PRICE | QTY | | PARTS NAME | UNIT PRICE | QTY | AMOUNT | | |
| 1 | X-RAY EQUIPMENT | INCLUDED | | 450 | X-RAY TUBE | 1000 | 0.5 | 500 | FILMS | 0.045 | 27000 | 1215 | | |
| | | TECHNICAL, | | | (TWICE A YEAR) | | | | DEVELOPING | 0.01 | 27000 | 270 | | |
| | | PARTS, | | | | | | | FIXING | | | | | |
| | WORKING DAYS:30DAYS | CHARGE | | | | | | | SOLUTION | | | | | |
| | PATIENTS:30PERSONS/DAY | TWICE A YEAR | | | | | | | | | | | | NOT INCLUDED ELECTRIC CHARGE |
| | FILMS:3SHEETS/PERSON | 3.00% | | | | | | | | | | | | ENDURANCE:6YEARS |
| | | TOTAL | | 450 | TOTAL | | | 500 | TOTAL | | | 1485 | 2435 | |
| 2 | MOVABLE X-RAY | | | 150 | X-RAY TUBE | 1000 | 0.5 | 500 | FILMS | 0.45 | 9000 | 4050 | | |
| | EQUIPMENT | INCLUDED | | | (TWICE A YEAR) | | | | DEVELOPING | 0.01 | 9000 | 90 | | |
| | | TECHNICAL, | | | | | | | FIXING | | | | | |
| | WORKING DAYS:300DAYS | ELCTRIC | | | | | | | SOLUTION | | | | | |
| | PATIENTS:15PERSONS | CHARGE | | | | | | | | | | | | |
| | /A DAY | TWICE A YEAR | | | | | | | | | | | | NOT INCLUDED ELECTRIC CHARGE |
| | FILMS:2SHEETS/PERSON | -3.00% | | | | | | | | | | | | ENDURANCE:6YEARS |
| | | TOTAL | | 150 | TOTAL | | | 500 | TOTAL | | | 4140 | 4790 | |
| 3 | ULTRASONIC WAVES | INCLUDED | | 150 | PROV.A | 1000 | 0.5 | 500 | | 3 | 150 | 450 | | GEL:300 X 20 X 25ml |
| | DIAGNOSIS EQUIPMENT | TECHNICAL, | | | PROV.B | 1000 | 0.5 | 500 | DOCUMENTS | 3.5 | 90 | 315 | | 150000ml=150Kg |
| | | ELECTRIC | | | PROV.C | 1000 | 0.5 | 500 | | | | | | DOCUMENTS:300 x 20 x3SHEETS |
| | WORKING DAYS:300DAYS | CHARGE | | | 1TIME/2YEARS | | | | | | | | | =18,000 SHEETS |
| | NUMBER OF PATIENTS: | TWICE A YEAR | | | | | | | | | | | | 18,000 ÷ 200=90 |
| | 20PERSONS/DAY | -3.00% | | | | | | | | | | | | NOT INCLUEDED ELECTRIC CHARGE |
| | | | | | | | | | | | | | | ENDURANCE:6YEARS |
| | | TOTAL | | 150 | TOTAL | | | 1500 | TOTAL | | | 765 | 2415 | |
| 4 | ANESTHESIA EQUIPMENT | | | 80 | | | | | HALOTHENE | 1.5 | 100 | 150 | | |
| | ONLY FOR VAPORIZE | | | | | | | | ISOFLURANE | 26.9 | 23 | 618.7 | | |
| | MACHINE | INCUDED | | | | | | | ENFLURANE | 26.9 | 20 | 538 | | |
| | | TECHNUCAL , | | | | | | | | | | | | |
| | | ELECTRIC, | | | | | | | | | | | | |
| | WORKING DAYS:250DAYS | CHARGE | | | | | | | | | | | | |
| | PATIENTS:4PERSONS/DAY | -3.00% | | | | | | | | | | | | DO NOT INCLUDED ELECTRICAL CHARGE |
| | | | | | | | | | | | | | | ENDURANCE:6YEARS |
| | | TOTAL | | 80 | TOTAL | | | 0 | TOTAL | | | 1306.7 | 1386.7 | |

# MAINTENANCE. MANAGEMENT COST

UNIT : ONE THOUSAND YEN

| NO | MATERIAL NAME | MAINTENANCE | | | SPARE PART | | | | CONSUME ITEMS | | | | TOTAL | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | UNIT PRICE | times | AMOUNT | MATERIAL NAME | UNIT PRICE | QTY | | PARTS NAME | UNIT PRICE | QTY | AMOUNT | | |
| 5 | HUMAN WORK BREATH EQUIPMENT | | | 90 | | | | | FILTER | 1.5 | 90 | 135 | 6YEARS | |
| | | | | | | | | | WET CHANBER | 2.8 | 90 | 252 | | |
| | | INCLUDED | | | | | | | FLOW SENSOR | 6 | 24 | 144 | | |
| | | TECHNICAL, | | | | | | | OXYGEN SENSOR | 39 | 1 | 39 | | |
| | | PARTS, CHARGE | | | | | | | | | | | | |
| | WORKING DAYS :300DAYS | ONECE A YEAR | | | | | | | | | | | | NOT INCLUDED |
| | NUMBER OF PATIENTS | 3.00% | | | | | | | | | | | | ELECTRICAL CHARGE |
| | 1PERSON/DAY | | | | | | | | | | | | | ENDURANCE:6YEARS |
| | | TOTAL | | 90 | TOTAL | | | 0 | TOTAL | | | 570 | 660 | |
| 6 | AMBULANCE | | | 60 | | | | | GASOLINE | 0.05 | 6250 | 312.5 | 5YEARS | |
| | | | | | | | | | OIL | 3 | 5 | 15 | | |
| | | INCLUDED | | | | | | | TIRE | 80 | 1.3 | 104 | | |
| | | TECHNICAL, | | | | | | | | | | | | |
| | | PARTS, | | | | | | | | | | | | |
| | WORKING DAYS:300DAYS | CHARGE | | | | | | | | | | | | |
| | NUMBER OF PATIENTS | ONCE A YEAR | | | | | | | | | | | | |
| | 1PERSON/DAY | 3.00% | | | | | | | | | | | | ENDURANCE:6YEARS |
| | | TOTAL | | 60 | TOTAL | | | 0 | TOTAL | | | 431.5 | 491.5 | |
| 7 | Na,K ANALYZER | | | 100 | Na ELECTRODE | 60 | 2 | 120 | REAGENT | 32 | 12 | 384 | | |
| | | INCLUDED | | | K ELECTRODE | 60 | 2 | 120 | SOLUTION | 5 | 2 | 10 | | |
| | | TECHNICAL, | | | | | | 0 | CALIBRATION | 10 | 5 | 50 | | |
| | | PARTS, | | | TUBE KIT | 15 | 1 | 15 | RECORDING P. | 4 | 5 | 20 | | |
| | | CHARGE | | | CASETTE | 35 | 1 | 35 | RIBBON | 0.5 | 5 | 2.5 | | NOT INCLUDED |
| | WORKING DAYS:250DAYS | TWICE A YEAR | | | | | | | CAPILLARY | 10 | 5 | 50 | | ELECTRICAL CHARGE |
| | 20INSPECTION BODY/DAY | 3.00% | | | | | | | | | | | | ENDURANCE:6YEARS |
| | | TOTAL | | 100 | TOTAL | | | 290 | TOTAL | | | 516.5 | 906.5 | |
| 8 | BLOOD GAS ANALYZER | INCLUDED | | 300 | ELECTROAD | 237 | 2 | 474 | REAGENT | 52 | 12 | 624 | | |
| | | TECHNICAL, | | | (PH,PCo2,PO2) | | | | SOLUTION | 17 | 8 | 136 | | |
| | | PARTS, | | | ELECTROAD KIT | 80 | 1 | 80 | CALIBRATION-A | 43 | 1 | 43 | | |
| | | CHARGE | | | TUBE KIT | 15 | 1 | 15 | CALIBRATION-B | 43 | 1 | 43 | | NOT INCLUDED |
| | WORKING DAYS/250DAYS | TWICE A YEAR | | | | | | | RECORDING P. | 4 | 5 | 20 | | ELECTRICAL CHARGE |
| | 20INSPECTION BODY/DAY | 3.00% | | | | | | | TUBE SET | 25 | 2 | 50 | | ENDURANCE:6YEARS |
| | | TOTAL | | 300 | TOTAL | | | 569 | TOTAL | | | 916 | 1,785.0 | |

## MAINTENANCE. MANAGEMENT COST

UNIT : ONE THOUSAND YEN

| NO | MATERIAL NAME | MAINTENANCE | | | SPARE PART | | | | CONSUME ITEMS | | | | TOTAL | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | UNIT PRICE | times | AMOUNT | MATERIAL NAME | UNIT PRICE | QTY | | PARTS NAME | UNIT PRICE | QTY | AMOUNT | | |
| 9 | BLOOD CELL COUNTER | | | | LAMP | 8 | 1 | 8 | CELL BOTTLE | 22 | 5 | 110 | | |
| | | | | | TUBE-RBC | 60 | 1 | 60 | DISPOSAL BEAKER | 32 | 4 | 128 | | |
| | | | | | TUBE-WBC | 60 | 1 | 60 | DILUTION | 6 | 10 | 60 | | |
| | | | | | | | | | REACT LIQUID | 6 | 10 | 60 | | |
| | | | | | | | | | STANDARD CELL | 10 | 1 | 10 | | |
| | WORKING DAYS/250DAYS | | | | | | | | | | | | | NOT INCLUDED |
| | 30INSPECTION BODY/DAY | | | | | | | | | | | | | ELECTLICAL CHARGE |
| | | | | | | | | | | | | | | ENDURANCE:6YEARS |
| | | TOTAL | | 0 | TOTAL | | | 128 | TOTAL | | | 368 | 496.0 | |
| 10 | BED SIDE MONITOR | | | | PROVE | 50 | 1 | 50 | ELECTRODE | 7 | 12 | 84 | | |
| | | | | | | | | | MONITORING KIT | 20 | 1 | 20 | | |
| | | | | | | | | | PAD | 20 | 10 | 200 | | |
| | | | | | | | | | DOCUMENTS | 6 | 10 | 60 | | |
| | | | | | | | | | | | | | | NOT INCLUDED |
| | | | | | | | | | | | | | | ELECTRICAL CHARGE |
| | | | | | | | | | | | | | | ENDURANCE:6YEARS |
| | | TOTAL | | 0 | TOTAL | | | 50 | TOTAL | | | 364 | 414.0 | |
| 11 | INCINERATOR | | | | | | | | OIL | 0.05 | 43,800 | 2,190 | | 40 LITER / HOUER |
| | | | | | | | | | | | | | | 3 HOUER / DAY |
| | | | | | | | | | | | | | | NOT INCLUDED |
| | | | | | | | | | | | | | | ELECTRICAL CHARGE |
| | | | | | | | | | | | | | | ENDURANCE:6YEARS |
| | | TOTAL | | 0 | TOTAL | | | 0 | TOTAL | | | 2190 | 2,190.0 | |
| 12 | POWER GENERATE EQUIPMENT | INCLUDED TECHNICAL, PARTS, CHARGE TWICE A YEAR 3.00% | | 300 | | | | | OIL | 0.05 | 564 | 28.2 | | 47 liter / houer |
| | | | | | | | | | | | | | | 12TIMES/YEAR |
| | | | | | | | | | | | | | | ONE HOUR/TIME |
| | | TOTAL | | 300 | TOTAL | | | 0 | TOTAL | | | 28.2 | 328.2 | |

## MAINTENANCE. MANAGEMENT COST

UNIT : ONE THOUSAND YEN

| NO | MATERIAL NAME | MAINTENANCE | | | SPARE PART | | | | CONSUME ITEMS | | | | TOTAL | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | UNIT PRICE | times | AMOUNT | MATERIAL NAME | UNIT PRICE | QTY | | PARTS NAME | UNIT PRICE | QTY | AMOUNT | | |
| 13 | AUTOMATIC BIOCHEMICAL ANALYZER | | | 900 | POMP TUBE | 10 | 2 | 20 | REAGENT | 90 | 3 | 270 | | |
| | | | | | TUBING | 53 | 1 | 53 | SAMPLE CUP | 10 | 5 | 50 | | 30INSPECTION BODY/DAY |
| | | INCLUDED | | | LAMP | 12 | 2 | 24 | PAPER | 20 | 5 | 100 | | 250DAYS WORKING/YEAR |
| | | TECHNICAL, | | | PROVE TIP" | 44 | 2 | 88 | CALIBRATOR | 60 | 7 | 420 | | |
| | | PARTS, | | | | | | | CONTROL LIQUID | 350 | 2 | 700 | | |
| | | CHARGE | | | | | | | REAGENT SET | 1,800 | 1 | 1800 | | DO NOT LAST MORE THAN |
| | | 3.00% | | | | | | | | | | | | 6YEARS |
| | | TOTAL | | 900 | TOTAL | | | 185 | TOTAL | | | 3340 | 4,425.0 | |
| 14 | REMOTE CONTROLLED X-RAY | | | 800 | GENERATOR PART | 162 | 1 | 162 | X-RAY FILMS | 0.4 | 2500 | 1000 | | |
| | | | | | IGBT DRIVER | 30 | 2 | 60 | "12 x10" | | | | | |
| | | INCLUDED | | | IGBT | 35 | 4 | 140 | X-RAY FILMS | 0.4 | 1000 | 400 | | |
| | | TECHNICAL, | | | FUSE | 4 | 2 | 8 | "14 x14" | | | | | |
| | | PARTS, | | | TABLE UNIT SET | 180 | 1 | 180 | | | | | | |
| | | CHARGE | | | PARTS SET | 148 | 1 | 148 | | | | | | |
| | | TWICE A YEAR | | | | | | | | | | | | DO NOT LAST MORE THAN |
| | | 3.00% | | | | | | | | | | | | 6YEARS |
| | | TOTAL | | 800 | TOTAL | | | 698 | TOTAL | | | 1400 | 2,898.0 | |
| 15 | ENDOSCOPE SYSTEM | | | 400 | BIOPSY FORCEPS | 25 | 2 | 50 | DRAINAGE TUBE | 25 | 10 | 250 | | |
| | | | | | BIOPSY VALVE | 3 | 10 | 30 | ABSORB TUBE | 7 | 20 | 140 | | |
| | | INCLUDED | | | XENON LAMP" | 110 | 1 | 110 | TRACAL SET | 50 | 10 | 500 | | |
| | | TECHNICAL, | | | ADAPTOR | 50 | 1 | 50 | | | | | | |
| | | PARTS | | | ELECTRODE | 65 | 1 | 65 | | | | | | |
| | | CHARGE | | | | | | | | | | | | |
| | | 3.00% | | | | | | | | | | | | |
| | | TOTAL | | 400 | TOTAL | | | 305 | TOTAL | | | 890 | 1,595.0 | |
| 16 | CEREBRAL WAVE EQUIPMENT | | | | REPORT PEN | 8 | 10 | 80 | INK | 10 | 20 | 200 | | |
| | | | | | | | | | PASTE | 5 | 10 | 50 | | 6INSPECTION/DAY |
| | | | | | | | | | PAPER | 4.8 | 100 | 480 | | 250DAYS WORKING/YEAR |
| | | TOTAL | | 0 | TOTAL | | | 80 | TOTAL | | | 730 | 810.0 | |

# Chapter 4
# Project Evaluation and Recommendation

## Chapter 4 Project Evaluation and Recommendations

### 4-1 Project Effect

In this chapter, an examination is made on whether it is appropriate or not to implement the project under Japan's grant aid scheme. The extent of effects from the project's implementation, the characteristics of the project, and the feasibility of the operation and management of the project are studied.

(1) Verification of appropriateness

The Academic Hospital of Paramaribo, the target of the project, is the government-managed top referral hospital providing basic medical services for the low income brackets which account for 31% of the people of Suriname. Through the project's implementation, the level of basic medical care will be raised and medical services will be substantiated. The Academic Hospital of Paramaribo, a large-scale medical institution, plays an important role in providing proper medical services for the people in the region.

The operation system, budgetary measures and management of the hospital are studied in the following pages.

1) Operation system

The Academic Hospital of Paramaribo is operated under the control of the Ministry of Health. The pieces of equipment to be provided under the project are operated and maintained together with the existing pieces of equipment now in operation. The project mainly concerns the rehabilitation of the existing medical equipment, and the project's implementation does not produce essential changes in medical activities of the hospital. No addition of personnel is necessary after completion of the project, but increased fees for medical examination and treatment could create new employment opportunities. It is concluded, therefore, that the hospital can be operated without any problem under the present system after completion of the project.

2) Budgetary measures

As most of the pieces of equipment to be provided under the project are replacements of existing ones, it is expected that only a slight increase will be necessary in operation and maintenance costs. For fiscal 1997, the total budget of the hospital is estimated at 3,275 million Suriname guilders (approximately 880 million yen), and part of this sum is appropriated to the operation and maintenance of the equipment. If this budget is executed as planned, it is sufficient for The Academic Hospital to manage its equipment, because repairing expenses and wasteful uses of electric power and water, which result from the use of superannuated equipment, can be eliminated.

3) Operation and maintenance

The project has been formulated so that the operation and maintenance of the pieces of equipment to be provided will be conducted easily by the personnel concerned of Suriname. Regarding those pieces of equipment whose operation and maintenance require special technologies, importance is laid on the existence of local agents of manufacturers of them. There are no drastic changes in the methods of basic operation and inspection of the pieces of equipment to be provided, because they are mostly replacements of existing ones. The replacement of superannuated pieces of equipment eliminates repairing expenses and the procurement of spare parts for repairs.

The project's implementation is urgently necessary for the benefit of the people of Suriname, including the poor, for the purpose of im-proving public welfare and stabilizing the people's living.

In addition, the project can be operated by the personnel of Suriname with their own funds, human resources and technologies. The project contributes to the achievement of the goals of Suriname's long- and medium-term development plans. It can be concluded that the appropriateness of the project is great, because it can be implemented without special difficulty under Japan's grant aid scheme.

(2) Resulting benefit

If this project for the improvement of medical equipment is implemented and operated properly by the personnel of Suriname, the following effects are produced, resulting in improvement of the present conditions in the field of health and medical care.

1) Improved medical services

The hospital functions will be totally improved by the replacement of medical equipment under the project, making it possible to provide smoother and quicker medical services. Improvement in medical services for people in the region, including the poor, and the substantiation of the public medical service system will result. The population covered by The Academic Hospital of Paramaribo, the target hospital of the project, accounts for 80% (about 350 thousand people) of the total population of the country.

2) Strengthened educational function

If training is given for medical workers with pieces of equipment to be provided, more doctors, nurses and other paramedical workers can be trained. These medical workers will perform medical activities all over the country. The project's implementation makes it possible to raise the level of medical services and strengthen hospital functions nationwide, because The Academic Hospital of Paramaribo plays the important role of giving guidance to the country's medical institutions and training for medical workers, as the top of 95 medical institutions under the control of the Ministry of Health, namely, four referral hospitals, three regional hospitals, 11 health centers, 28 clinics and 49 health posts.

3) Improved hospital operation

The replacement of superannuated pieces of equipment under the project will produce improvement in the efficiency of medical examination and treatment and make it possible to accept a larger number of fee-charged patients. This produces increased examination/treatment fees and result in the improvement of hospital finances.

4) Promotion of policy on health and medical care

The expansion of the medical service functions of The Academic Hospital of Paramaribo, the central institution of the country's referral medical system, makes it possible not only to provide medical services for the regional people, including the poor, but also to assist the government in achieving the goal of "providing health and medical services for the aged and the poor," its policy on health and medical care.

## 4-2 Recommendation

As mentioned thus far, it is expected that the project's implementation will produce great benefit and contribute to the improvement of BHN of the people. It is appropriate, therefore, to implement the project under Japan's grant aid scheme. There is no problem in Suriname's human resources and funds for the operation of the project. The project's implementation, however, will be smoother and more effective if the following problems are solved.

1) Quicker procedures of contract and approval

The project, being implemented under Japan's grant aid scheme, is restricted in time. It is therefore necessary for the Government of the Republic of Suriname to quickly go through the necessary formalities especially such as the conclusion of the Exchange of Notes and a consulting contract, the approval of the document on detailed design based on the basic design study report, and the conclusion of a construction contract.

2) Smooth execution of Suriname's undertakings

An explanation has already been made to the officials concerned of Suriname by the basic design study team on Japan's grant aid scheme. It is necessary for the Government of Suriname to take budgetary measures in proper timing for executing its undertakings. It is also necessary that Suriname's undertakings be completed before the installation of the provided pieces of equipment is started.

3) Regular inspection and maintenance work

It is important to conduct inspections and maintenance work regularly for the pieces of equipment so that they will be operable for a long period of time. It is necessary to provide an equipment register and a regular inspection book for effective operation and maintenance. It is also necessary to prepare operation and maintenance manuals for the proper operation and maintenance of the pieces of equipment in the hospital.