

## **Chapter 2 Contents of the Project**



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### **2-1 Objectives of the Project**

#### **2-1-1 National Plan**

Tamil Nadu State government has been undertaking maternal and children welfare programmes in accordance with the 8<sup>th</sup> Five Year National Development Plan (1992-1997) based on the National Health Policy. However, ICH & HC, which is an affiliated teaching hospital to Madras Medical College located in the largest city of Madras of the south India, unable to provide necessary medical services for children due to the lack of the necessary equipment, while needs for the services have been increasing since when ICH & HC was established 30 years ago. In consideration of this situation, the objectives of this Project is decided to facilitate basic and essential medical equipment required so as to improve the quality of maternal and children health services in Tamil Nadu.

### **2-2 Basic Concept of the Project**

In Madras city, unlike the other regions in Tamil Nadu, relevant administrative institutions do not exist to secure primary/secondary health care services and the health care provision is totally shouldered by the teaching hospitals attached to the Government Medical College.

9 Medical Colleges and its 24 affiliated teaching hospitals have implemented health care services in Tamil Nadu. They are operated under the direction of the Director Education, Health & Family Welfare Dept. in term of financial allocation and personnel management. Among them, 3 Medical Colleges and 14 affiliated teaching hospitals are located inside Madras, responsible for primary/secondary/tertiary level health care services of the society.

ICH & HC is the specialized pediatric hospital attached to Madras Medical College, which includes general services for children. ICH & HC has been mainly providing health care service to child patient (age from 0 to 12) belonging to relatively low income family (monthly wage less than 1,000 rupees) and also providing under-graduate/post-graduate students of Madras Medical College including public health education to the community people extensively. In addition, this Institution gives ample opportunity to the paramedics for practical training.

Though ICH & HC is the hospital that offers specialized, highly technical level of health care for the population of a large region known as tertiary care facility, they receive child patients of the society to provide as well as primary and secondary care services. Such being the situation, ICH & HC is regarded as the top referral hospital in the South East India not

only in Tamil Nadu but also neighboring Karnataka and Andhra Pradesh and has received every and all child patients who are unable to be treated in the Institute of Obstetrics and Gynecology & Government Hospital for Women and Children and the Government General Hospital and Stanley Hospital. (number of the referred patients were 1850 in 1993, 1952 in 1994 and 2110 in 1995)

Equipment planning under the Project has been made carefully considering the following principles.

- ① Equipment must meet the needs and incidence of the mortality/morbidity of the area and the level of the health care services implemented by ICH & HC.
- ② Replacement and supplementation of the existing equipment should be considered basically for the proper operation and maintenance to be secured with the existing staff (number and level).
- ③ Equipment whose necessary O/M cost must be covered by ICH & HC.
- ④ Equipment whose coordination with the existing facility should be taken note and the eligibility of the procurement from the third countries other than India and Japan also should be studied considering the operation and maintenance cost to be incurred to the Equipment.

The survey team made comprehensive investigation covering function of ICH & HC, its health care services, discussions on the request, including the availability of the local maintenance service conditions.

When selecting the equipment, intensive and series of discussions were made with relevant governmental officers concerned in connection with the confirmation of the present hospital services, technical level of the personnel concerned and the financial availability.

Thus each Dept. of ICH & HC raised the request and final selection of the Equipment was made. Following concepts were confirmed and the priority ranking put by the hospital (A: as Essential, B: as Necessary and C: as If possible) was marked to individual equipment.

- ① Equipment to be replaced with the existing ones and the equipment to be supplemented should be planned by taking note of the present conditions and its necessity.
- ② New equipment should be planned by taking note of its urgency and appropriateness.

- ③ Equipment to be required for the hospital administration should meet the benefit of whole hospital
- ④ The quantity should be determined in consideration of the usage, frequency and number of patients to be benefited.
- ⑤ Equipment should be commonly used among departments in ICH & HC in consideration of the administrative effects advised by the team and the responsible officers should be appointed.
- ⑥ Equipment must be the one to be utilized to upgrade the quality of the health care services and it will be served for the specific function as the special hospital for children.

The survey team admitted that existing equipment is not enough to provided proper health care services. It also recognized that the provision of the primary and secondary health care service are the in the immediate need for ICH & HC. Considering the basic conditions carefully, essential equipment was listed to enable to provide primary and the secondary health care services, and the equipment categorized as the tertiary care level will be covered later on.

The list of equipment can cover the requirements of each department of ICH & HC, however, sizable reduction were made to the request from some department particularly that from Pediatric Cardiology and Cardiothoracic Surgery. Some department have had additional equipment which has been ranked as priority B. Some duplicated equipment, requested and selected by two or more departments, were subjected to further discussions for number adjustment, and 375 items were raised for request from 26 departments and finally it was fixed to 214 items from 27 departments. The details are shown in the Table-2-1 EQUIPMENT LIST of 2-3-2 Basic Design.

Its summary is al follows:

- ① Equipment to be supplemented
  - Incubator
  - Infant Warmer
  - Phototherapy unit
  - Patient monitor
  - Infusion pump
  - Ventilator
  - Automated Blood Counter
  - Ultra sound scanner
  - Pediatric upper garstro intestinal endoscope
  - Centrifuge

- ② Equipment to be replaced with new one
- Operating table for Orthopedics surgery
  - Microscope
  - Mobile X-ray unit
  - Operating table
  - Operating light
  - Operating instrument I set
  - Anesthetic apparatus
  - Electro encephalogram monitor
  - EMG with evoked probe
  - Materials for physical therapy
  - ENT examination instrument set
  - Dental clinic set
  - Blood gas analyzer
  - Heart lung machine
  - Autoclave
  - Generator

- ③ New equipment
- whole body CT scanner
  - X-ray unit with C-arm
  - Hand washing sink unit
  - Personal Computer
  - Mobile education vehicle
  - Fluorescent microscope
  - Autopsy table with shower
  - Morgue refrigerator

## 2-3 Basic Design

### 2-3-1 Design Concept

Design concept for this Project is mentioned hereunder as follows.

#### 1) Natural conditions

Madras has a harbor facing to Bay of Bengal, located at the point of India sub-continent. It is the capital of the state of Tamil Nadu which forms Southern India together with the states of Kerala, Karnataka and Andhra Pradesh. It belongs to the climate of tropical humid, where massive rain even out of rainy season, still its climate is humid with high temperature all through the year. Therefore, special precaution for anti-rust and anti-humidity should be devised.

2) Sociological conditions

Until 1858, when the administration of India was formally transferred to the British Crown, the East India Company suppressed native uprisings and extended British rule. In 1919 the British gave added responsibility to Indian officials, and in 1935 India was given a federal form of government and a measure of self-rule. Finally, in February 1947, the Labor government announced its determination to transfer power to "responsible Indian hands" by June 1948.

Reviewing the historical background, India has been keeping close relations with Great Britain. Even though dominant majority of people are Hindi, Moslem influence is small (11%). Cast system is still influential among Hindi's throughout the country except in larger cities where education and industrial development have been gradually diminishing. In view of the above, any specific religious or sociological taboos do not exist in the equipment planning for the Project.

3) Industrial conditions

Industrial development taken place last few decades has shifted its base from agriculture to heavy industry. Thus, India is proud of its self-sufficient economy and industry. Basic heavy industry has been managed by public entity, while other light industry is run by private enterprises. Recently due to successful introduction of overseas investment, its economy has enjoyed active operation.

As for medical equipment supply, private enterprises are emerging for production and supply earnestly. Commercial market of Madras which is active as it has a harbor, expecting commercial activities from outside should be taken note.

4) Local agent and its capability and reliability

Transportation means have been being developed remarkably from Madras to Bombay, one of the industrial center and third largest city in India. There are sizable numbers of agent (including trading firm) dealing with medical equipment supply covering Bangalore, the capital of Karnataka, Hyderabad, the capital of Andhra Pradesh. Therefore, sufficient number of agents can supply good quality of maintenance service of various medical equipment to be imported from Japan and any eligible countries other than Japan.

5) Capability of executing agencies

Dominant majority of the annual revenue ICH & HC is required is depending upon the subsidies from the government of Tamil Nadu. In view of the maintenance system which is managed by the outside local agents including Elcot Ltd. under the Annual Maintenance Contract, for which maintenance fees are required to be secured from the

government budget for ICH & HC. As for the medical personnel strength such as doctors, nurses, technicians by whom the equipment could be utilized is sanctioned according to the government norms. In addition to this, the level of such personnel matter little.

6) Grade of the Equipment to be supplied

The Basic Concept of the Project mentioned already, would be reflected for the planning of the level, grade and specifications of the equipment after consideration of the needs and incidence of the mortality/morbidity of the area and the level of the health care services implemented by ICH & HC.

7) Implementation period

It is expected that 12 months would be enough to implement the whole Project after the exchanging of the Notes between India and Japan. Project implementation schedule is mentioned in detail in 3-1-6 hereof.

8) Locally procured equipment

Procurement among the equipment list, patient bed, suction unit, photocopy machine, printing machine and generator could be procured locally. Other equipment will be imported from Japan and some eligible countries.

9) Transportation

Equipment will be brought by ocean vessel(s) to Madras port and inland transportation will be made by vehicle. Some elaborate equipment will be brought by air cargo if necessary.



### 2-3-2 Basic Design

Following Equipment List (Table-2-1) shows the results of the discussions and evaluation of the request. This list contains details of the considerations on the equipment categories and the following criteria set forth in the Minutes of Discussion signed on 9 September, 1996, Delhi on the Project;

Equipment to be included in the Project is;

- 1) equipment to be utilized with ordinal and already established technique,
- 2) equipment utilized without O/M cost,
- 3) equipment whose O/M cost can be covered by the Hospital,
- 4) basic equipment to be utilized for diagnosis/treatment of the patients,
- 5) equipment whose cost effectiveness is higher,
- 6) equipment to be replaced with the existing equipment,
- 7) equipment required in accordance with the hospital function and the level of the health care services of the Hospital,
- 8) equipment technically/co-ordinary utilized with the existing/related apparatus,
- 9) equipment to be utilized within the present manpower resources.

While, the equipment to be excluded from the Project is;

- 10) equipment whose operation requires materials such as flon gas and causes the
- 11) environmental problems accordingly,
- 12) equipment which may be contradictory to the regulations on the waste water/medical wastes treatment and radiation,
- 13) equipment whose purpose is advanced research activities,
- 14) equipment by which maintenance difficulties arises as financial problem,
- 15) equipment requires installation difficulties such as modification and/or additional facility change,
- 16) equipment requires special technology transfer for operation/utilization,
- 17) equipment available locally from the Hospital recurrent cost,
- 18) equipment requested in duplicate from the different departments which could be utilized and managed commonly,
- 19) equipment already acquired or to be procured through the Hospital budget after the Request,
- 20) equipment also requested to other external assistance agencies,
- 21) equipment without local agent which causes difficulties on its utilization/maintenance, and,
- 22) equipment with financial/marketing difficulties on the procurement of consumable and spare parts etc.
- 23) equipment unnecessary to be replaced under the Project,
- 24) others.

While, the legend applied for the category;

- (A) refers to the equipment mainly used for (“I” for primary health care, “II” for secondary health care and III for exclusively for tertiary health care and “O” for hospital administration)
- (B) refers to the equipment to be required for the teaching hospital
- (C) refers to the equipment to be utilized commonly.

The Major Equipment Table attached to the Equipment List (Table-2-1) is the discussions on the major equipment and its rough specifications.





U : UTILIZED, N : NOT UTILIZED, Q : QUANTITY, P : PRIORITY

EQUIPMENT LIST		REQUEST		EXISTING QTY		FINAL REQUEST		CATEGORY			CRITERIA TO BE INCLUDED										CRITERIA TO BE EXCLUDED			FINAL PLAN													
NO.	ITEM	Q	P	U	N	Q	P	A	B	C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Q			
4-12	Patient Monitor	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	
4-13	Laryngoscope Fiberoptic	2	B	-	-	2	B	II	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	
4-14	Portable Operating Light	13	A	-	-	13	A	I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	
4-15	Irrigating Stand	6	B	-	-	6	B	I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	
4-16	Instrument Trolley Table	26	A	-	-	26	A	I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	
4-17	Instrument Cart with Tray	6	B	-	-	6	B	I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	
4-18	Instrument Cabinet	6	B	-	-	6	B	I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O		
4-19	Operating Instrument Set	6	A	-	-	6	A	I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O		
4-20	Operating Instrument Control Machine	13	A	-	-	13	A	II	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O		
4-21	Patient Temperature Control Machine	4	B	-	-	4	B	II	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O		
4-22	Blood Gas Analyzer	12	C	-	-	12	C	I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O		
4-23	Stretchers	6	C	-	-	6	C	I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X		
4-24	Recovery Stretchers	6	C	-	-	6	C	I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X		
4-25	Handwashing Sink Unit	6	B	-	-	6	B	I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O		
4-26	Refrigerator	3	C	-	-	3	C	I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O		
4-27	Pulse Oxymeter	3	A	1	1	3	A	II	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	
4-28	Electro Cautery	-	-	2	3	12	B	II	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	
4-29	Air Conditioner	-	-	-	-	8	B	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	
4-30	Vacuum Cleaner	-	-	-	-	3	B	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	
4-31	Operating Loop	-	-	-	-	4	B	II	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	
4-32	Emergency light	-	-	-	-	12	B	I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	
4-33	Infant Warmer	-	-	-	-	3	B	II	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	
4-34	Resuscitation Bag	-	-	-	-	5	B	I	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	
4-35	Foot Operated Suction Apparatus	-	-	-	-	4	B	I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	
4-36	BP Monitor	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	
4-37	Air Compressor	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	
4-38	Oxygen Monitor	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	
4-39	Body Temperature Monitor	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	
4-40	Temperature Monitor	-	-	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	
4-41	Autoclave (Small)	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	
4-42	Autoclave (Large)	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O	
<b>PEDIATRIC HEMATOLOGY AND ONCOLOGY</b>																																					
5-1	Automatic Blood Cell Counter	1	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O
5-2	Automatic Blood Cell Counter	1	A	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O
5-3	Binoctular Microscope with Camera	-	-	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O
5-4	Binoctular Microscope	1	A	-	-	1	A	II	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O
5-5	Binoctular Microscope with 3 Teaching Adapter	1	A	-	-	1	A	II	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	O
5-6	Projecting Microscope	-	-	-	-	1	A	II	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X





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EQUIPMENT LIST		REQUEST		EXISTING QTY		FINAL REQUEST		CATEGORY			CRITERIA TO BE INCLUDED										CRITERIA TO BE EXCLUDED			FINAL PLAN													
NO.	ITEM	Q	P	U	N	Q	P	A	B	C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Q			
9-3	Electrolyte Analyzer	2	A	1		2	A	II	O	-																								1	O		
9-4	Calorie Meter	4	A	5		4	A	I	O	-																								2	O		
9-5	Aminoacid Analyzer	1	B			1	B	III	O	-																								-	X		
9-6	Autoanalyzer					1	B	III	O	-																								-	X		
9-7	Blood Gas Analyzer			1	1																																
9-8	Deep Freezer			1																																	
10	<b>HOSPITAL ADMINISTRATION</b>																																				
10-1	Personal Computer with Printer	2	B			2	B	0	-	O																								2	O		
10-2	Photocopy Machine	2	A			1	A	0	-	O																								1	O		
10-3	Cyclostyle Machine					1	B	0	-	O																								1	O		
10-4	Typewriter			3	3																																
11	<b>MEDICAL REGISTER - TEACHING</b>																																				
11-1	Slide Projector	5	A	1		2	A	0	-	O																								2	O		
11-2	Overhead Projector	5	A	3		5	A	0	-	O																								2	O		
11-3	Public Addressing System	10	A			10	A	I	-	-																								-	X		
12	<b>MEDICAL RECORDS DEPARTMENT</b>																																				
12-1	Personal Computer with Printer	1	A			1	A	0	-	O																								1	O		
12-2	Photocopy Machine	1	A			1	A	0	-	O																								1	O		
12-4	Automatic Numbering Machine					2	B	0	-	-																								-	X		
12-5	Air Conditioning Machine					6	B	0	-	-																								-	X		
12-6	Typewriter			1																																	
13	<b>PEDIATRIC PULMONOLOGY</b>																																				
13-1	Spirometer	2	B	1		2	B	I	O	-																								1	O		
13-2	Fiber Bronchoscope with TV Monitor					1	A	II	O	-																								1	O		
13-3	Pulse Oximeter	2	A			2	A	II	O	-																								1	O		
13-4	Ultrasonic Nebulizer	10	A	2		10	A	I	-	-																								5	O		
13-5	Sweat Chloride Analyzer					1	B	II	-	-																								-	X		
14	<b>PEDIATRIC NEUROLOGY</b>																																				
14-1	EEG	1	A	1		1	A	II	O	-																								1	O		
14-2	EMG with Evoked Probe	1	A	1		1	A	II	O	-																								1	O		
15	<b>PHYSICAL MEDICINE AND REHABILITATION</b>																																				
15-1	Microwave Therapy Apparatus	2	A			1	A	I	-	-																								1	O		



U : UTILIZED, N : NOT UTILIZED, Q : QUANTITY, P : PRIORITY

EQUIPMENT LIST		REQUEST		EXISTING Q:QTY		FINAL REQUEST		CATEGORY			CRITERIA TO BE INCLUDED												CRITERIA TO BE EXCLUDED					FINAL PLAN											
NO.	ITEM	Q	P	U	N	Q	P	A	B	C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Q	P				
15-2	Paraffin Bath	1	A	1		1	A	I	-	-	○	○	○	○	○	○	○	○	○																	1	○		
15-3	Dumbbell Set	2	A			1	A	I	-	-	○	○	○	○	○	○	○	○	○																	1	○		
15-4	Laser Therapy Unit	1	A			1	A	II	○	-	○	○	○	○	○	○	○	○	○																	1	○		
15-5	Ultrasound Therapy			1																																			
15-6	Muscle Stimulator			1	2																																		
15-7	Shortwave Diathermy			1																																			
<b>PEDIATRIC ORTHOPEDICS</b>																																							
16-1	Electrical Surgical Saw	1	A	1		1	A	II	○	-	○	○	○	○	○	○	○	○	○																		1	○	
16-2	Spinal Surgical Set	1	A			1	A	III	○	-	○	○	○	○	○	○	○	○	○																		1	○	
16-3	Nerve Stimulator System	1	A			1	A	II	○	-	○	○	○	○	○	○	○	○	○																		1	○	
16-4	Bone Plate Set	1	A			1	A	II	-	-	○	○	○	○	○	○	○	○	○																		1	○	
16-5	Bone Screw Set	1	A			1	A	II	-	-	○	○	○	○	○	○	○	○	○																		1	○	
16-6	Orthopedic Bed	1	A	10	5	5	B	I	-	-	○	○	○	○	○	○	○	○	○																	5	○		
16-7	Traction Unit			5		5	B	II	○	-	○	○	○	○	○	○	○	○	○																	5	○		
16-8	Autoclave (Small)			1		1																																	
16-9	Electric Plaster Cutting Saw			2		2																																	
16-10	Slice Projector			1		1																																	
<b>SCHOOL HEALTH CELL - PREVENTIVE AND SOCIAL-HEALTH EDUCATION DEPT.</b>																																							
17-1	Van	1	A			1	A	I	○	-	○	○	○	○	○	○	○	○	○																		1	○	
17-2	Refrigerator	1	A			1	A	I	-	-	○	○	○	○	○	○	○	○	○																		1	○	
17-3	Weighing Machine	2	A			2	A	I	-	-	○	○	○	○	○	○	○	○	○																		2	○	
17-4	Public Address System	2	A			2	A	I	-	-	○	○	○	○	○	○	○	○	○																			2	○
17-5	Sphygmomanometer			1		1																																	
17-6	Testing Glasses			1		1																																	
17-7	Electric Sterilizer			3		3																																	
17-8	Weighing Machine			1		1																																	
17-9	Pediatric Weighing Machine			1		1																																	
<b>PARENT CRAFT CENTRE</b>																																							
18-1	Exhibition Display System			30	B	30	B	I	-	-	○	○	○	○	○	○	○	○	○																		10	○	
18-2	Exhibition Display Kit			5	B	5	B	I	-	-	○	○	○	○	○	○	○	○	○																		2	○	
18-3	Combination Board Magnetic Cum Felt			12	B	12	B	I	-	-	○	○	○	○	○	○	○	○	○																		4	○	
18-4	Infant Weighing Machine			2	A	2	A	I	-	-	○	○	○	○	○	○	○	○	○																		2	○	
18-5	Mixer			1	B	1	B	I	-	-	○	○	○	○	○	○	○	○	○																			2	○
18-6	Refrigerator			1	A	1	A	I	-	-	○	○	○	○	○	○	○	○	○																			2	○



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EQUIPMENT LIST		REQUEST		EXISTING QTY		FINAL REQUEST		CATEGORY			CRITERIA TO BE INCLUDED										CRITERIA TO BE EXCLUDED					FINAL PLAN										
NO.	ITEM	Q	P	U	N	Q	P	A	B	C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Q		
20-15	Pediatric Ventilator	1	C			1	C	II	O	-																									X	
20-16	Defibrillator	1	A			1	A	II	O	-																									O	
20-17	Laryngoscope	2	A			2	A	I	-	-																									O	
20-18	Emergency Power Unit	2	A			2	A	O	-	-																									X	
20-19	Examination Table	10	C			10	C	I	-	-																									X	
20-20	Examination Unit	10	B			10	B	I	-	-																									X	
20-21	Examination Light	5	A			5	A	I	-	-																									O	
20-22	Diagnostic Set	2	A			2	A	I	-	-																									O	
20-23	Medicine Cabinet	4	C			4	C	I	-	-																									X	
20-24	Instrument Cabinet	5	C			5	C	I	-	-																									X	
20-25	Dressing Cart with Drawers	1	C			1	C	I	-	-																									X	
20-26	Instrument Cart with 3 tray	1	C			1	C	I	-	-																									X	
20-27	Chair for Patient	20	C			20	C	I	-	-																									X	
20-28	Clothes Basket	2	C			2	C	I	-	-																									X	
20-29	Treatment Bed	2	C			2	C	I	-	-																									X	
20-30	Autoclave					2																													X	
20-31	Electric Sterilizer					2																													X	
20-32	Microscope					2																													X	
20-33	Hot Air Oven					1																													X	
21	<b>ENT DEPARTMENT</b>																																			
21-1	Otorhinolaryngological Examination Table	3	A			3	A	I	O	-																									O	
21-2	Portable Operating Light	1	A			1	A	II	O	-																									O	
21-3	Optical Fiber Light source for E.N.T.	2	A			2	A	II	O	-																									O	
21-4	Micro Surgery Instrument for E.N.T.	1	A			1	A	II	O	-																									O	
21-5	Pediatric Hearing Tester	1	A			1	A	II	O	-																									O	
21-6	Otorhinolaryngological Treatment Unit	1	A			1	A	I	-	-																									O	
21-7	Instrument Set for Otorhinolaryngological Examination	5	A			5	A	I	-	-																									O	
21-8	Audiometer	1	A			1	A	I	-	-																									O	
21-9	Otorhinolaryngoscope	3	A			3	A	I	-	-																										O
21-10	Laryngeal Fiber Scope	2	A			2	A	I	-	-																									X	
21-11	Ear Drum Fiber Scope	2	A			2	A	I	-	-																									X	
21-12	Fiber Scope Light Source	2	A			2	A	I	-	-																									X	
21-13	Head Mirror	6	A			6	A	I	-	-																									O	
21-14	ENT Examination Instrument Set	6	A			6	A	I	-	-																									X	
21-15	Instrument Cabinet	1	C			1	C	I	-	-																									X	
21-16	Phonometer	1	B			1	B	II	-	-																									X	
21-17	Electro-Chocleo-Grphy	1	A			1	A	II	-	-																									X	



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EQUIPMENT LIST		REQUEST		EXISTING QTY		FINAL REQUEST		CATEGORY		CRITERIA TO BE INCLUDED										CRITERIA TO BE EXCLUDED										FINAL PLAN								
NO.	ITEM	Q	P	U	N	Q	P	A	B	C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Q				
22-38	Pulse Oxymeter	7	A			7	A	II	O	O	O																								3			
22-39	Electronic BP Apparatus	7	C			7	C	II	-	-																												
22-40	Fixograph	7	C	9		7	C	II	-	-																												
22-41	Patient Bed	140	C	140		140	C	I	-	O																												
22-42	Medical Refrigerator	7	C			7	C	I	-	O																												
22-43	Conventional Refrigerator	7	C	9		7	C	I	-	O																												
22-44	Oxygen Hood	14	C			14	C	I	-	O																												
22-45	Overhead Table 1x7	7	C			7	C	I	-	O																												
22-46	Suction Unit 2x7	14	C	9		14	C	I	-	O																												
22-47	Resuscitation Bag	14	C	9		14	C	I	-	O																												
22-48	Stretcher	14	C	2		14	C	I	-	O																												
22-49	Diagnostic Set	7	C	2		7	C	I	-	-																												
22-50	Chart Film Cot	7	C			7	C	I	-	O																												
22-51	Instrument Cabinet	14	C			14	C	I	-	O																												
22-52	Examining cot with 3 trays	7	C			7	C	I	-	O																												
22-53	Examining Light	7	A			7	A	I	-	O																												
22-54	Dressing Cot with Drawer	7	C			7	C	I	-	O																												
22-55	Medicine Cabinet	7	C			7	C	I	-	O																												
22-56	Vacuum Cleaner	7	C			7	C	O	-	-																												
22-57	Infant Warmer	7	C			7	C	I	-	O																												
22-58	Wheel Chair	7	C			7	C	I	-	O																												
23	BLOOD BANK																																					
23-59	Refrigerated Centrifuge	1	A			1	A	II	O	-																												
23-60	Laminar Flow Bench	1	B			1	B	II	O	-																												
23-61	Weighing Machine (Kitchen type) for weighing blood	3	A			3	A	I	-	-																												
23-62	Domestic Refrigerator 300 Little	2	A	2		2	A	I	-	-																												
23-63	Plasma Extractor	1	A	1		1	A	II	-	-																												
23-64	Air conditioners 2 Tons	2	C			2	C	O	-	-																												
23-65	Emergency Lamps	2	A			2	A	I	-	-																												
23-66	Laboratory Incubator	1	A	1		1	A	I	-	-																												
23-67	Water Bath	1	A			1	A	I	-	-																												
23-68	Hand Sealer	1	A			1	A	I	-	-																												
23-69	Electrical Sealer	1	A			1	A	I	-	-																												
23-70	Weighing Machine Baby			1				I	-	-																												
23-71	Sphygmomanometer			10				I	-	-																												
23-72	Blood Cell Processor			1				I	-	-																												
23-73	Autoclave			2				I	-	-																												



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EQUIPMENT LIST		REQUEST		EXISTING QTY		FINAL REQUEST		CATEGORY			CRITERIA TO BE INCLUDED										CRITERIA TO BE EXCLUDED			FINAL PLAN															
NO.	ITEM	Q	P	U	N	Q	P	A	B	C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Q	P				
24-98	Stretcher Trolley	1	A			1	B	I	-	-																									1	O			
24-99	Wheel Chairs	2	C			2	C	I	-	-																													
24-100	Refrigerator (Automatic defrosting 300 l)	1	A			1	A	I	-	-																													
24-101	Computer with Software	1	A			1	A	II	-	-																													
24-102	Ophthalmoscope			1																																			
24-103	ECC			1																																			
25	AUTOPSY ROOM																																						
24-102	Autopsy Table with Shower	1	A			1	B	I	O	-																													
24-103	Shadowless Light 5000 lux.	1	A			1	B	I	O	-																													
24-104	Morgue Refrigerator, Two Bodies	1	A			1	B	I	O	-																													
24-105	Photographic Unit with Camera	1	A			1	B	I	O	-																													
24-106	Autopsy Instrument	2	A			2	B	I	O	-																													
26	PEDIATRIC CARDIOLOGY AND CARDIOTHORACIC SURGERY																																						
26-1	Focus Lamp	2	A																																				
26-2	Laryngoscope	3	A																																				
26-3	Sterilizer	2	A																																				
26-4	Suction Apparatus	2	A																																				
26-5	Microscope	2	A																																				
26-6	Ultrasonogram	2	B	1																																			
26-7	Resuscitation Bag	4	A																																				
26-8	Calorimeter	2	B																																				
26-9	Emergency Lamp	3	A																																				
26-10	Microscope	2	A																																				
26-11	Ultrasonic Nebulizer	3	A			3	A	I	-	-																													
26-12	Generator	2	A																																				
26-13	Anesthesia Machine	2	A	2																																			
25-14	Autoclave	2	A																																				
26-15	Horizontal Sterilizer	1	A			1	A	II	-	-																													
26-16	Centrifuge	1	A																																				
26-17	Refrigerator	18	A																																				
26-18	Phototherapy Unit	1	A																																				
26-19	Infant Warmer	3	A			3	A	II	-	-																													
26-20	Oxygen Hood	3	A			3	A	I	-	-																													
26-21	Infant Scale	2	A																																				
26-22	Ambu Bag	5	A																																				

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EQUIPMENT LIST		REQUEST		EXISTING QTY		FINAL REQUEST		CATEGORY			CRITERIA TO BE INCLUDED										CRITERIA TO BE EXCLUDED										FINAL PLAN					
NO.	ITEM	Q	P	U	N	Q	P	A	B	C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Q		
26-23	Electrocardiograph	2	A			2	A	I	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
26-24	Infant Ventilator	2	B	1		2	B	II	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
26-24	Pediatric Ventilator	2	B	2		2	B	II	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
26-25	Pulse Oxymeter	4	B	1		4	B	II	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2		
26-26	Glucose meter	1	A			1	A	II	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X	
26-27	Open Care System	1	A	1		1	A	II	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
26-28	Modern Laundry	1	A			1	A	II	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
26-29	Ophthalmoscope	3	B			3	B				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
26-30	ECG Monitor	2	A			2	A				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
26-31	Computer	3	B			3	B				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
26-32	Manual Cell Counter	1	A			1	A				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-33	Anesthetic Ventilator	1	B			1	B				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-34	Syringe Infusion Pump	1	A	2		1	A	II	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	
26-34	Syringe Infusion Pump	5	A	4		5	A	II	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	
26-35	Infusion Pump	2	B			2	B				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
26-36	Micro Laryngeal Instruments	4	C	1	1	4	C	III	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
26-37	Heart Lung Machine	8	A	1		8	A	III	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
26-38	Hypothermia Machine	18	A	1		18	A	III	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
26-39	Patient Monitor, 6 Channels	10	A	5		10	A	II	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
26-40	Patient Monitor, 4 Channels	5	A	2		5	A	II	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-41	Transport Monitors	6	A	2		6	A	II	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-42	Defibrillator	6	A	2		6	A	II	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-43	Surgical Diathermy	6	A	2		6	A	II	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-44	Intravenous Infusion Pumps	50	A			50	A				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-45	Syringe Infusion Pumps	25	A			25	A				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-46	Portable Echo Machine	2	A			2	A	II	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-47	Operating Light with TV Monitor	6	A			6	A	III	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-47	Operating Light	6	A			6	A	II	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-48	Operating Tables	6	A	3		6	A	II	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-49	Anesthesia Machine with Ventilator	6	A	1		6	A	II	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-50	Centrifugal Pump with ECMO	4	A			4	A	III	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-51	Blood Coagulation App.	6	A			6	A	III	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-52	Head Light with Cold Light Source	7	A			7	A				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-53	Fiberoptic Laryngoscope	7	A			7	A	II	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-54	Tagarno (Cinefilm Projector)	2	A			2	A	III	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-55	Ethylene Oxide Gas Sterilizer	1	A			1	A	II	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-56	Table Top Sterilizer	6	A			6	A	I	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-57	Loupe for Micro Surgery	8	A			8	A				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-58	Surgical Instruments	7	A			7	A				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0







### MAJOR EQUIPMENT TABLE

ITEM NO.	EQUIPMENT	B/D	DISCUSSIONS	ROUGH SPECIFICATIONS
<b>I. NEONATOLOGY</b>				
1-1	Incubator	5	Necessary to keep an immature baby in a natural condition like in the mother's breast until the body's weight reaches standard. Against 55 beds, 5 units are necessary including 1 existing one to be renewed and 4 to be newly added.	Temp. Control: 35°~37° approx. Temp. Indicate: LCD Alarm : Audible and Visible Oxygen Flow meter: Equipped IV Pole: Equipped
1-2	Open Care System	2	Body temperature control is important. Temperature drop should be avoided at treatment, and immediate resuscitation also be secured if required. Priority B, but its importance for this dept. is high. Then 2 units are to be supplied.	Body Temp.: Thermister Method Temp. Range: 35°~37° Approx. Heater: Infrared Heater Fluorescent Lamp: Equipped Oxygen Cylinder Assy: 2pcs Type Reduce Control: Equipped Demand Resuscitator: Equipped
1-3	Infant Warmer	5	Necessary to keep body temperature of infant during treatment. Against 55 beds, 7 units are necessary. Then new 5 units should supplied.	Temp. Control: Manual Temp. Range: 35°~37° approx. Heater: Infrared Heater Power: 700 W Approx. Treatment Table: Stainless Steel Oxygen Cylinder Assy: 2pcs Type.
1-6	Patient Monitor	0	This item should be incorporated in 1-10.	
1-8	Neonatal Ventilator	1	Artificial respiration is necessary for IRDS and respiratory failure. Considering current usage, one new unit should be supplied.	Modes: Assist/Control, CPAP, SIMV Tidal Volume: 20~900ml Approx. Inspiratory Time: 0~100BPM or more Air Compressor: Available
1-10	Neonatal Monitor	5	Necessary to monitor electrocardiogram, pulse and respiration to notify abnormality. This equipment is superior to item 1-6 in terms of the range of function. All functions required for 2 units of 1-6 can be covered by additional one unit of 1-10 to be supplied.	Monitoring System: Hardwired Measurement Mode: ECG. RR Display: 2 Trace Recorder: Equipped Cart: Equipped
1-17	Blood Gas Analyzer	0	The hospital has already had this equipment installed in the laboratory	
1-18	Room Heater	0	Can be procured by ICH & HC (Madras) with their own budget.	

ITEM NO.	EQUIPMENT	B/D	DISCUSSIONS	ROUGH SPECIFICATIONS
1-25	Automatic Infusion Pumps	7	Necessary for constant feeding. Priority B but essential. In addition to the existing 3 units that are currently workable, 7 new units should be supplied.	Type: Volumetric Flow Rate: 1~999ml/H, $\pm 10\%$ 1ml/H increments approx. Infusion Pressure: $1.2 \pm 0.2 \text{ kg/cm}^2$ Approx. Quick Feed Rate: 1,900ml/H Approx. Power Source: AC/DC Stand: Provided
<b>2. RADIOLOGY DEPT.</b>				
2-1	500mA X-ray Unit	1	Necessary for angiography and fluoroscopy. Remote control device can prevent doctors and technicians from exposure to X-ray. The existing equipment is workable but too old. One as a replacement planned.	Radiographic Rating: 500mA-100kv or more Image Intensifier: 9 inch or more Tilting: $90^\circ/15^\circ$ or more Remote Control: TV Monitor System Ceiling Suspending Tube: Available Stand Bucky Table: Available
2-2	Color Doppler Ultrasound Scanner	1	Necessary for diagnosis for neuroplasma, malignant lymphoma, and acute abdomen disorder etc. Multi-purpose one is needed.	Scanning Method: Electronic Sector Electronic Linear Electronic Convex Display Mode: B,M, Doppler Flow Indicate: Color CRT: Color 12 inch or more Color Video Printer: Equipped Probe: Convex x 1; 3~5MHZ; for Abd., Head Linear x 1; 2~5MHZ; for Abd., Cardio Sector x 2; 2~5MHZ; for Vascular and Small Parts VTR: Equipped AVR: Equipped
2-3	Ultrasonic Scanner	1	Necessary for diagnosis of malignant tumor, pyelitis, hepatitis etc. There are two units installed, one of which is too old and thus to be replaced with new one.	Scanning Method: Electronic Linea, Electronic Convex Display Mode: B,M,B/M CRT: 12 inch or more Probe: Convex x 1; 3~5MHZ; for Abd., Head and Cordio. Linear x 1; 5~7MHZ; for Abd., Printer: Equipped AVR: Equipped

ITEM NO.	EQUIPMENT	B/D	DISCUSSIONS	ROUGH SPECIFICATIONS
2-4	Whole Body CT Scanner	1	Necessary for detecting intracranial tumor, epilepsy etc. Recent method of pediatric diagnosis includes this as a part of the routine work. Thus, essential though priority C.	Scanning Method: Helical Scanning Tube Capacity: 2.0 MHU Approx. 3D System : Available; 512 Matrix Scanning Speed: 0.7~3 Sec. or more Slice Thickness : 1~10mm Approx. Field of View: 48cm $\phi$ or more Reconstruction time: 2mm/0.5% Approx. UPS: Provided Multi Photomat: Equipped
2-5	Mobile X-ray Unit	2	Useful for emergency case of on-site care when unable to transfer a patient to a X-ray room. Priority is B, but six existing units were purchased more than 10 years ago, 2 units of which need to be replaced with new ones.	Tube Voltage: 40-125kv Max. Tube Current: 140mA
2-6	X-ray Unit with C arm and Image Intensifier	1	Necessary for orthopedic surgery and useful to detect abnormality after bone conjunction or other surgery. Priority C, but useful.	Radiographic Rating: 40-100kv 20mA or more Fluoroscopy: 40-100KV 3mA or more CRT: 12 inch or more Image Intensifier: 6 inch or more
2-7	Dark Room Accessories Film Processor 2 Lead Protection Screen 2 Chest Stand 2 etc.	1	Automatic film processing is needed as the hospital print 60,000 pictures annually. A processor is newly supplied and other relevant devices, which have already been installed in the hospital but too old, should be replaced to new ones.	Auto Film Processor: Pressing Film Size; 14"x5"~14"x17" Processing Speed: 90 Sec. Processing Capacity: 220 Sheets/H (10"x12")
<b>4. ANESTHESIOLOGY DEPT.</b>				
4-1	Operating Table	6	The item allows various adjustment according to the method of operation. 6 units among the existing 11 should be replaced.	Control: Motor powered Oil-hydraulic Type: For Pediatric Use Orthopedic Attachment: Available (Only 1 pce out of 6)
4-5	Operating Lights with TV Monitor	1	Necessary for operation. Priority B, but also necessary for medical education.	Type: Combination ; 10 Bulbs + 4 Bulbs or more Intensity at 1 meter: 100,000lux + 60,000Lux or more TV Camera: center of main light head Monitor: 2 pcs.

ITEM NO.	EQUIPMENT	B/D	DISCUSSIONS	ROUGH SPECIFICATIONS
4-6	Operating Light	6	The existing 8 units are too old and should be replaced. In addition to one with TV (4-5) and one with spotlight (4-7), 6 units are planned for the operation of contagious patients.	Dia. of Light Head: 90cm Approx. Nos of Bulbs: 10 pcs or more Intensity at 1 meter: 100,000Lux or more
4-7	Operating Light with focused spot light	2	Necessary for operating small parts like Orthopedic and ENT surgery.	Dia. of Light Head: Main; 90cm Approx. Sub; 55cm Approx. No. of Bulbs: Main; 10pcs or more Sub; 4pcs or more Intensity at 1 meter: Main; 100,000Lux. or more Sub; 90,000Lux. or more
4-8	Anesthesia Machine	6	Necessary for general anesthesia. To secure safety, this equipment should be equipped with ventilator. Among the 11 existing units, 6 units should be replaced.	Flowmeter: O <sub>2</sub> +N <sub>2</sub> O with Safety Function Vaporizer: Halothane, Isoflurane Ventilator: Electrical Operation Monitor: ECG, RR Cylinder Yoke: O <sub>2</sub> x 2 + N <sub>2</sub> O x 1 Monitor Tray: Equipped Sphygmomanometer: Aneroid, Large
4-9	Defibrillator	2	Necessary to defibrillate at emergency case and usable for monitor at operation. 2 units will be required as the operation rooms being located in different building.	Energy Capacity: 5~300J or more Discharge Time: 15 sec. or less Display: Nonfade 2 Trace Recorder: Provided Cart: Provided
4-11	Multi-Channel Patient Monitor	2	To monitor electro-cardiogram, temperature, SpO <sub>2</sub> in blood, pulse etc. during operation. Under the current situation, 2 units are necessary.	Display: Nonfade 2 Trace Wave forms: ECG,BT,RR,SpO <sub>2</sub> Recorder: Provided Cart: Provided
4-17	Instrument Cabinet	6	To keep instruments clean and safe. Priority B, but necessary.	Material: Stainless Steel Door: Hinged with Key Shelves: 6 pcs or more Dia.: 120(W)x45(D)x170(H)cm Approx.
4-19	Patient Temperature Control Machine	6	Necessary to control patient temperature at operation.	Modes: Assist/Control,CPAP,SIMV Tidal Volume: 20~900ml Approx. Inspiratory Time: 0~100BPM or more Air Compressor: Available

ITEM NO.	EQUIPMENT	B/D	DISCUSSIONS	ROUGH SPECIFICATIONS
4-20	Blood Gas Analyzer	1	To monitor pO <sub>2</sub> and pCO <sub>2</sub> in blood. Priority B, but necessary.	Parameter Measured: pH, pO <sub>2</sub> , pCO <sub>2</sub> , tHb Measurement Range: pH; 6.0~8.0 Approx. pCO <sub>2</sub> ; 5.0~200mmHg Approx. pO <sub>2</sub> ; 0~700mmHg or more tHb; 3~24g% Approx.
4-23	Handwashing Sink Unit	6	The sterile condition is imperative for any operation. Priority B, but necessary.	Scrub Water Processed: Ultra Filter and Sterilization Shower Sink: Stainless Steel, 2 Persons Type Brush Dispenser: Provided Disinfectant Dispenser: Provided, Stand Type
4-26	Electro Cautey	6	Used for operation. Priority B, 3 units for replacement, and 3 units for new supplement.	Output Power: Cutting; 250W(500Ohm) or more Coagulation; 150W(500Ohm) or more Blend; 200W(500Ohm) or more Bipolar: 18W or more Cant: Provided
4-31	Infant Warmer	2	Necessary to keep temperature constant during operation. Priority B, one unit for each of 2 stations.	Temp. Control: Manual Temperature Range: 35° ~37° Heater: Infrared Heater Power: 700 W Approx. Treatment Table: Stainless Steel Oxygen Cylinder Assy: 2pcs Type.
<b>5. PEDIATRIC HEMATOLOGY</b>				
5-2	Binocular Microscope with camera	1	Necessary for blood test. Photography unit is necessary for the purpose of medical education.	Observation Tube: Trinocular Revolving Nosepiece: Quintuple Condenser: Abbe Eyepiece Lens: 15x, 10x Objective Lens: 4x, 10x, 20x, 40x, 100x oil Semi-Automatic Photographic Apparatus: Provided
5-3	Binocular Microscope (Multi-viewer)	1	Multi-viewing attachment is necessary for educational purpose, that allows 3 persons to observe simultaneously.	Observation Tube: Trinocular Revolving Nosepiece: Quintuple Condenser: Abbe Eyepiece Lens: 15x, 10x Objective Lens: 4x, 10x, 20x, 40x, 100x oil Multi-Viewing attachment: Provided.

ITEM NO.	EQUIPMENT	B/D	DISCUSSIONS	ROUGH SPECIFICATIONS
5-4	Projecting Microscope	0	The item is no longer in production. Item No. 5-5 Microscope w/ TV can substitute for this purpose.	
5-5	Binocular Microscope with Video	0	The equipment is useful for education purpose.	
5-7	Spectrophoto-meter	0	One in Biochemistry Dept. should be used in common.	
5-10	Immuno-electrophoresis Apparatus	0	One in Biochemistry Dept should be used in common.	
5-12	Infusion Pumps (Volume type)	10	Necessary for infusion purpose.	Type: Volumetric Flow Rate: 1-999ml/H, $\pm 10\%$ 1ml/H Increments Approx. Infusion Pressure: $1.2 \pm 0.2 \text{ kg/cm}^2$ Approx. Quick Feed Rate: 1,900ml/H Approx. Power Source: AC/DC Stand: Provided
5-13	Personal Computer	0	This should be common equipment used for the whole hospital.	
5-15	Personal Computer	0		
5-14	Slide Projector	1	Used for conference meetings. Priority B, but necessary for educational purpose.	Lamp: 24V-250W or more Halogen Slide Size: 2x2 Mount Slide or more Projection: F2.9, 140mm F4.5, 180-300mm Zoom Slide Tray: Circular and Straight Slide Transport: Remote Control Screen with Stand: Provided
5-16	Infusion Pump (syringe type)	5	Priority B, but essential. The ratio of the number of patients who need Volume type (Item 5-12), and those who need Syringe type is 2:1. Accordingly 5 units should be supplied.	Flow Rate: 0.1-99.9ml/H 0.1ml/H Increments Approx. Infusion Precision: $\pm 1\%$ (mechanical) Syringe: 20ml or more Power Source: AC/DC Stand with Gray: Provided



ITEM NO.	EQUIPMENT	B/D	DISCUSSIONS	ROUGH SPECIFICATIONS
<b>6. PEDIATRIC SURGERY</b>				
6-8	Infant Ventilator	1	Useful for pre/after operation. Priority is C, but existing 1 is out of order to be replaced by new one.	Modes: Assist/Control, CPAP, SIMV Tidal Volume: 20-900ml approx. Inspiratory Time: 0-100BPM or more Air Compressor: Available
6-9	Pediatric Ventilator	1	Useful for pre/after operation. 1 is planned as replacement of existing one.	Modes: Assist/Control, CPAP, SIMV Tidal Volume: 20-900ml approx. Inspiratory Time: 0-100BPM or more Air Compressor: Available
6-12	Multichannel Patient Monitor	2	Useful for serious cases. Priority is C, but planned as replacement of the existing one which is out of order.	Display: Nonfade, 2 Trace Measurement: ECG, RR, BT, SpO <sub>2</sub> , NIBP Recorder: Provided Cart: Provided
6-15	Infant Incubator	2	Useful to maintain temperature and Oxygen ratio in the blood before and after operation. Currently 6 units useless. Priority B, 2 units to be replaced. This equipment to be used with 6-16.	Temp. Control: 35° ~37° approx. Temp. Indicate: LCD Alarm : Audible and Visible Oxygen Flow meter: Equipped IV Pole: Equipped
6-16	Open Care System	2	Priority B but necessary. This equipment to be used with 6-15 (2 units), totaling 4 units.	Body Temp.: Thermister Method Temp. Range: 35° ~37° Approx. Heater: Infrared Heater Fluorescent Lamp: Equipped Oxygen Cylinder Assy: 2pcs Type Reduce Control: Equipped Demand Resuscitator: Equipped
6-17	Pulse Oxymeter	4	Oxygen ratio in blood be measured to get quick and right diagnosis possible. Priority B, but 4 units enough as necessary quantity.	SpO <sub>2</sub> : Range; 0-100% Interval; 10sec, 5sec Pulse each or more Pulse Rate: 30~200bpm or more Power Source: AC/DC
<b>7. PEDIATRIC NEPHROLOGY</b>				
7-1	Haemodialysis Unit with Bed	0	Current 2 unit is still useful.	
7-4	Peritoneal Dialysis Dispensable Pediatric Catheters	0	ICH & HC (Madras) can procure it with it own cost.	

ITEM NO.	EQUIPMENT	B/D	DISCUSSIONS	ROUGH SPECIFICATIONS
7-7	Patient-cot with Body Weight Measurement	2	Body weight should be carefully checked during dialysis. Existing 2 units are in order for which 2 beds are planned.	Measurement Range: Weight Change; -9.99~+9.99kg minimum increment 10g Original Weight; -20.0~+151.0kg minimum increment 100g Present Weight; -20.0+151.0kg minimum increment 100g Alarm Setting Range: 0.05~9.95kg
7-8	Binocular Microscope	1	Priority B but it is necessary to check germs in Solution for dialysis.	Revolving Nosepiece: Quintuple Condenser: Abbe Eyepiece Lens: 15x, 10x Objective Lens: 4x, 10x, 20x, 40x, 100x Oil
<b>8. PEDIATRIC PATHOLOGY</b>				
8-7	Fluorescent Microscope with Auto-photography Apparatus	1	This equipment is essential for pathological purpose.	Revolving Nosepiece: Quintuple or more Objective Lens: 4x, 10x, 20x, 40x, 100x Oil Condenser: Achromat Fluorescence Attachment: Filter Position; Capacity up to 4 Filter Blocks Field Number; 25 ND: Equipped Light Source: Mercury Lamp 100W or Xenon Lamp 100W Autophotographic System: Provided
8-8	Auto Blood Cell Counter	1	Necessary for screening of patients who have blood diseases. This equipment is shared with Pediatric Hematology, Oncology and Immunohaematology.	Parameter: WBC, RBC, HGB, HCT, PLT, MCV, MCH, MCHC Throughput: WB Mode; 80 sample/H Approx CAP Mode; 60 sample/H Approx. Sample Volume: WB Mode; 100 $\mu$ Approx. CAP Mode; 40 $\mu$ Approx.
<b>9. BIOCHEMISTRY DEPT.</b>				
9-3	Electrolyte Analyzer	1	To detect Na <sup>+</sup> and K <sup>+</sup> for circulatory and kidney trouble.	Measuring Item: Blood; K <sup>+</sup> , Na <sup>+</sup> , Ca <sup>++</sup> , Cl <sup>-</sup> Urine; Na <sup>+</sup> , K <sup>+</sup> , Cl <sup>-</sup>

ITEM NO.	EQUIPMENT	B/D	DISCUSSIONS	ROUGH SPECIFICATIONS
<b>10. HOSPITAL ADMINISTRATION</b>				
10-1	Personal Computer with Laser Printer	2	Useful to make hospital operation more effective by keeping hospital's desk works properly. Priority B but necessary.	Processor: Pentium 100MHZ or more Memory: 16MB, EDO&ECC or more Hard Disk: 1 GB or more Printer: Provided
10-3	Cyclostyle Machine	1	Printing cost is cheaper than photocopy machine. Priority B but necessary for large volume printing.	Type: Electrical, Variable Adjustment Printing Speed: 40-130RPM Paper Size: 76x127mm~276x396mm Approx.
<b>11. MEDICAL REGISTER-TEACHING</b>				
11-2	OHP	2	2 sets to be replaced. Because existing 3 sets are too old.	Light Source: 24-300 W or more (Halogen ) Projection Lens: f=245mm or more Paper Size: 254x254mm or more Screen with Stand: Provided
11-3	Speaker System	0	ICM & HC (Madras) can manage with its own cost.	
<b>13. PEDIATRIC PULMONOLOGY</b>				
13-1	Spirometer	1	Used for examining respiratory function. Priority B, but existing 1 unit to be replaced.	Measurement Item: VC, FVC, MVV, FEV Display: LCD Detector: Fleisch Pneumatic Sensor
13-2	Fiber Optic Bronchoscope with Video System	1	Use for examining bronchus and its function. Video set is necessary for education purpose.	Field of View: 120° (Forward Viewing) Distal End: O.D.3.5mm Bending Section: Up 180°, Down 130° Working Length: 550mm Channel: I.D. 1.2mm TV System: Provided
<b>14. PEDIATRIC NEUROLOGY</b>				
14-1	EEG	1	Complications and neurology disorder resulting from epilepsy cerebrovascular accidents etc. to be examined. Existing one was purchased 15 years ago and it is high time to be replaced.	Frequency Response: 3000 Hz Display: CRT Photoc Stimulation Unit: Equipped Number of Channels: Signal; 18 Marker; 2
14-2	EMG with Evoked Probes	1	Voluntary muscle disorder to be detected with this equipment. Purchased 15 years ago to be replaced.	Number of Channels: 4 Sensitivity: 1μV/div-10mV/div Display: CRT Electric Control Power: 0~100mA Evoked Function: Provided

ITEM NO.	EQUIPMENT	B/D	DISCUSSIONS	ROUGH SPECIFICATIONS
<b>15. PHYSICAL MEDICINE AND REHABILITATION</b>				
15-4	Laser Therapy Unit	1	Useful to enhance nerve fiber function resulting from myopathic headache, cervical spine sprain. This equipment is essential for physiotherapy.	Laser Output: 40-100cm V Approx. Wave Length: 810um Approx.
<b>16. PEDIATRIC ORTHOPEDICS</b>				
16-2	Spinal Surgical Set	1	Required to restore spinal operation.	Contents: Operating Knife Holder, Bone Knife, Chisel (12mmx1, 18mmx1, 25mmx1) Bone Curette (1x1, 3x1, 5x1) Scissors Straight, Mayo Scissors Tissue Forceps, Needle Holder Periosteal Raspatory, Bone Punch, Retractor etc.
16-4	Bone Plate Set	0	Can be purchased by ICH & HC (Madras) on its cost.	
16-5	Bone Screw Set	0	Ditto	
16-6	Orthopedic Bed	5	Existing 15 beds are too old and 5 of them are no more useful. Priority B, but 10 to be planned.	Material: Pressed Steel Bottom Back Raise Adjustment: Crank Operated Caster with Brakes on Diagonal: Equipped Dimensions: 165(W)x78(D)x123(H)cm Approx.
16-7	Traction Unit	5	Currently substituted with something else. Necessary to improve quality of patient service.	Material: Extruded Aluminum Pipe Construction Drawn Clamps: Chromium-Plated Pulley: Bearing Type
<b>17. SCHOOL HEALTH CELL-PREVENTIVE AND SOCIAL-HEALTH EDUCATION DEPT.</b>				
17-1	Van for School Health Education Purpose	1	Currently school health care activities are restricted due to lack of vehicles. Within 15km circle area, pupil of 159 schools a year are being health checked under this activities. Useful to activate children health campaign for better health.	Engine: Diesel Wheelbase: 4WD Displacement: 4000cc Seating Capacity: 8
17-4	Speaker System	0	To be purchased by ICH & HC (Madras) with its own cost.	
<b>18. PARENT CRAFT CENTER</b>				
18-1	Exhibition Display System	10	Priority B, but existing ones are too old and hand made easy to break. Renewal is necessary.	
18-2	Exhibition Display Kit	2	Ditto	
18-3	Combination Board Magnetic	4	Ditto	

ITEM NO.	EQUIPMENT	B/D	DISCUSSIONS	ROUGH SPECIFICATIONS
18-6	Refrigerator	0	To be purchased by ICH & HC (Madras) with its own cost.	
18-7	Computer with Printer	0	This item should be commonly used by ICH & HC (Madras) alone.	
18-9	Cordless Mike	0	To be purchased by ICH & HC (Madras) with its own cost.	
18-10	Speaker System	0	Ditto	
18-16	Still Camera	0	Ditto	
18-19	Model Human System	1	Practical equipment for medical education	Figure: Female Figure Material: Plastic Height: 150cm Approx. Parts: 100 parts Stand with Caster: Provided
<b>19. GASTROENTEROLOGY DEPT.</b>				
19-4	Esophageal pH Meter	0	To be purchased by ICH & HC (Madras) with its own cost.	
19-5	Pediatric Upper Gastro Intestinal Endoscope with Video Monitoring	1	Useful for Pediatric Upper Gastro Intestinal treatment. Existing one was purchased 10 years ago and to be replaced.	Field View: 120° Distal End: O.D. 5.0mm Bending Section: Up 180°, Down 180° Light 160°, Left 160° Working Length: 925mm Channel: I.D. 2.0mm TV System: Provided
<b>20. EMERGENCY CASUALTY OP.</b>				
20-7	Emergency Light	0	To be purchased by ICH & HC (Madras) with its own cost.	
20-8	Anesthetic Machine	1	Necessary for minor operation. Standard/simple model is planned as essential one for casualty OP	Flowmeter: O2+N2O Vaporizer: Halothan Cylinder Yoke: O2x2, N2Ox1 Monitor Table: Equipped Sphygmomanometer: Aneroid - Large
20-10	ECG, 1 channel	2	Priority is C, but planned as essential for OPD. 2 are planned according to the daily numbers of patients.	Recording Speed: 25mm/s Input Method: Floating Number of Channel: 1
20-14	Emergency Communication System	0	This request should be managed by ICH & HC (Madras).	
20-16	Defibrillator	1	This equipment is essential for casualty OP to normalize fibrillation.	Energy Capacity: 5~300J or more Discharge Time: 15 sec. or less Display: Nonfade 2 Trace Recorder: Provided Cart: Provided

ITEM NO.	EQUIPMENT	B/D	DISCUSSIONS	ROUGH SPECIFICATIONS
20-18	Emergency Power Unit	0	This unit is planned as whole hospital use as 27-1.	
<b>21. ENT DEPT.</b>				
21-4	Micro surgery Instrument Set for Ear and Throat	1	Replacement necessary, existing one is too old.	Contents: Hartman Ear Forceps Sterilizer Forceps Tissue Forceps Lucae Ear Forceps Lucae Ear Tissue Forceps etc.
21-6	Otorhinolaryngological Treatment Unit	1	Essential for ENT Dep.	Maximum Pressure: 5kg/cm <sup>2</sup> Volume Capacity: 25l/M Tank Capacity: SS Made 8.5 l Vacuum Pressure: -600mmHg Exhaust Capacity: 60 l/M Illuminator: Provided
21-10	Laryngeal Fiber Scope	0	Existing ones still useful	
21-11	Ear Drum Fiber Scope	0	Ditto	
21-12	Fiber Scope Light Source	0	Ditto	
21-17	Electrocholeography	0	Ditto	
21-19	Deep Freezer	1	Priority B, but necessary to keep sample in good conditions.	Effective Capacity: 80 l or more Minimum Temperature: -80°C Approx. Inner Material: Stainless Steel Temperature Display: Digital Temperature Recorder: Provided, Dry Battery Type Buck Up Method: CO2
21-20	ENT Operating Microscope	1	Priority B, existing ones too old and time for replacement.	Eyepiece Tube: Binocular Light Source: Halogen Magnification: 5x Zoom: 1:5 Motorized
21-22	Fiber Optic Flexible Bronchoscope	0	ICH & HC (Madras) can purchase it with its own cost	
21-23	Hopkin model 0 and 30 sinus Endoscope	0	Ditto	
21-24	Light Guide Cable	0	Ditto	

ITEM NO.	EQUIPMENT	B/D	DISCUSSIONS	ROUGH SPECIFICATIONS
21-26	Impedance Audiometer	1	Necessary for various hearing tests for children.	Test Item: Tympanometry Acoustic Reflex Test Probe Tone: 226Hz Approx. Compliance Measurement Range: 0.2-5.0 ml Approx.
21-28	Dental Unit	1	Necessary for curing cavity tooth. Existing one used for 40 years. 2 units requested but planned 1 unit as appropriate.	Seat Movement Method: Hydraulic Height of Seat: Max 800mm Min 450mm Backrest Angle: Upright; 73° Reclined; 0° Light Curing Unit: Provided Chair for Doctor: Provided
21-32	Cephalogram Tomogram & Orthopanatomogram Unit	0	Intra Oral X-ray unit is planned as 21-31. It is convertible.	
21-34	Welding and Soldering Equipment	0	To be purchased by ICH & HC (Madras) by own cost.	
21-36	Camera Equipment	0	Ditto	
21-38	Lab Equipment	0	Ditto	
<b>22. GENERAL PEDIATRIC MEDICAL WARD 7 UNITS</b>				
20 bed/unit × 7(140 beds) & Diarrhea Ward (45 beds) × 2=Total 230 beds				
22-37	Ophthalmoscope	9	Priority B, but additional necessity for diarrhea unit.	Contents: - Diagnostic Oscope - Ear Scope with Speculum - Throat - Tongue Depressor etc.
22-53	Examining Light	9	5 lights additionally planned for diarrhea unit.	Lamp Head: Dia. 200mm Approx. Light Intensity: 30,000Lux. Approx. (At 80cm Distance) Lamp; Halogen or alternative
<b>23. BLOOD BANK</b>				
23-59	Refrigerated Centrifuge	1	Necessary to formulate RBC solution and platelet plasma.	Max. Cap.: 6000ml Max. RPM: 7000 Max. XG: 8660XG Rotor: Swing Bucket: 6 pcs Bag: Double and Single
23-61	Weighing Machine	0	ICH & HC (Madras) can purchase with its own cost.	
23-63	Plasma Extractor	0	Ditto.	
23-65	Emergency Lamps	0	Ditto.	
23-68	Hand Sealer	0	Ditto.	
23-69	Electrical Sealer	0	Ditto.	

ITEM NO.	EQUIPMENT	B/D	DISCUSSIONS	ROUGH SPECIFICATIONS
<b>24. ICU</b>				
24-71	Defibrillator with cardiac meter	1	Versatility for emergency as well for monitoring. Priority B, but necessary for emergency resuscitation.	Energy Capacity: 5~300J or more Discharge Time: 15 sec. or less Display: Nonfade 2 Trace Recorder: Provided Cart: Provided
24-74	Infant Warmer	3	Priority B, but necessary to keep baby warm.	Temp. Control: Manual Temp. Range: 35° ~37° approx. Heater: Infrared Heater Power: 700 W Approx. Treatment Table: Stainless Steel Oxygen Cylinder Assy: 2pcs Type
24-75	Pediatric Ventilator	1	Necessary for child patient who needs emergency ventilation.	Modes: Assist/Control, CPAP, SIMV Tidal Volume: 20-900ml approx. Inspiratory Time: 0-100BPM or more Air Compressor: Available
24-76	Neonatal Ventilator	1	Considering current 12 beds, one more unit necessary to the existing one as supplement.	Modes: Assist/Control, CPAP, SIMV Tidal Volume: 20~900ml Approx. Inspiratory Time: 0~100BPM or more Air Compressor: Available
24-79	Microscope	1	Ordinary one necessary for simple examination. Individual examination as side-labo function in case of urgency, very effective.	Revolving Nosepiece: Quintuple Condenser: Abbe Eyepiece Lens: 15x, 10x Objective Lens: 4x, 10x, 20x, 40x, 100x Oil
24-80	Capnograph with Accessories	1	Necessary to confirm vital sign in case of ventilation. Priority B, but necessary for pediatric ICU Dept.	Measurement Range: CO <sub>2</sub> ; 0~15% SpO <sub>2</sub> ; 0~100% Respiratory Rate; 4~60RPM Pulse Rate; 30~250RPM Warm Up: 5 minutes Sampling: 20 ml/M Approx.
24-82	Bilirubin Meter	1	Used for jaundice inspection and determination. Priority B, but necessary for quick evaluation.	Measurement Range: 0~30mg/dl ± 10% Analysis: 0.1mg/dl Total Bilirubin Display: LED Detector: Silicone Photo-Cell
24-83	Ophthalmoscope	3	Used for preliminary examination by doctor and nurse. Priority B, but necessary for ICU	Contents: Diagnostic Otoscope Ear Scope with Speculum Throat Tongue Depressor etc.



ITEM NO.	EQUIPMENT	B/D	DISCUSSIONS	ROUGH SPECIFICATIONS
24-93	Electrolyte Analyzer	1	Blood examination is mandatory for respiratory organ check and ventilation check. This item can save to bring sample to laboratory. Side-labo examination save time and improve effect.	Measuring Item: Blood; K <sup>+</sup> , Na <sup>+</sup> , Ca <sup>++</sup> , Cl <sup>-</sup> Urine; Na <sup>+</sup> , K <sup>+</sup> , Cl <sup>-</sup>
24-97	Examining Light	1	Priority B, but necessary to remove patients.	Lamp Head: Dia. 200mm Approx. Light Intensity: 30,000Lux. Approx. (At 80cm Distance) Lamp; Halogen or alternative
24-98	Stretcher Trolley	1	Priority B, but necessary for transporting patients	Material: Aluminum IV Pole: Equipped Oxygen Cylinder Rack: Provided Stopper of Caster: Provided
24-100	Refrigerator	0	ICH & HC (Madras) can purchase with its own cost.	
24-101	Computer with Software	0	This item should be installed to cover whole hospital activity.	
<b>25. AUTOPSY ROOM</b>				
25-104	Morgue Refrigerator	1	Priority B, but necessary to prevent dead body from putrefaction by keeping in refrigerator.	Material: Stainless Steel Capacity: Two-Body
<b>26. PEDIATRIC CARDIOLOGY AND CARDIOTHORACIC SURGERY</b>				
26-13	Anesthetic Machine	0	Same request by 26-49.	
26-15	Horizontal Sterilizer	1	Many items to be strictly sterilized and this Dept is away from Central Autoclave Room. 1 unit is needed.	Effective Inner Dimensions: 500(W)x960(D)x500(H)cm Approx. Soft Water System: Provided Generator: Provided Door: 1 Door with Safety Function
26-24	Ventilator (Neonatal)	1	Respiratory control for before /after operation. Priority B, but 2 sets planned as appropriate.	Modes: Assist/Control, CPAP, SIMV Tidal Volume: 20~900ml Approx. Inspiratory Time: 0~100BPM or more Air Compressor: Available
	Ventilator (Infant)	1	Respiratory control for before /after operation. Priority B, but 2 sets planned as appropriate.	Modes: Assist/Control, CPAP, SIMV Tidal Volume: 20900ml Approx. Inspiratory Time: 0~100BPM or more Air Compressor: Available

ITEM NO.	EQUIPMENT	B/D	DISCUSSIONS	ROUGH SPECIFICATIONS
26-25	Pulse Oxymeter	2	Priority B, essential for cardiothoracic surgery.	SpO2: Range; 0-100% Interval; 10sec, 5sec Pulse each or more Pulse Rate: 30-200bpm or more Power Source: AC/DC
26-27	Open Care System	0	To be deleted because item 26-19 can fulfill the function.	
26-37	Heart Lung Machine	1	ICH & HC (Madras) has reputed as the specialized teaching hospital as pediatric cardiothoracic surgery activities with teaching practice. Only 1 unit is currently utilized which is more than 7 years usage. Priority C, but 1 unit to be replaced.	Number of Pump Head: 5 Pediatric Computer Interface: RS232C and Analog Control: Microprocessor Operation Time: 20-130 minutes Approx. Max. Flow: 10.0 l or more Max. RPM: 250 RPM
26-38	Hypothermia Machine	1	Used to keep low body temperature during surgery. Existing one too old and to be replaced.	Modes: Assist/Control, CPAP, SIMV Tidal Volume: 20-900ml Approx. Inspiratory Time: 0-100BPM or more Air Compressor: Available
26-39	Patient Monitor 6-channel	1	Monitoring at operation from remote-place necessary. Considering surgery frequency and number of beds - 2 sets necessary.	Type: Hard Wire Measurement Item: ECG, BT, BP, SpO2 Recorder: Provided Cart: Provided
26-40	Patient Monitor 4-channel	4	Around the clock monitoring-necessary for inpatients.	Display: Nonfade, 2 Trace Measurement: ECG, RR, BT, SpO2, NIBP Recorder: Provided Cart: Provided
26-41	Transports Monitors	0	Same function as 26-40 above and deleted.	
26-42	Defibrillator	1	Necessary for emergency defibrillation. 1 unit each for Cardiology Dept. and Cardiothoracic Surgery Dept.	Energy Capacity: 5-300J or more Discharge Time: 15 sec. or less Display: Nonfade 2 Trace Recorder: Provided Cart: Provided
26-43	Surgical Diathermy	2	Existing 2 sets are not enough. 2 more sets planned as necessary.	Output Power: Cutting; 250W(500Ohm) or more Coagulation; 150W(500Ohm) or more Blend; 200W(500Ohm) or more Bipolar: 18W or more Cant: Provided

ITEM NO.	EQUIPMENT	B/D	DISCUSSIONS	ROUGH SPECIFICATIONS
26-46	Portable Echo Machine	1	Commonly used by Cardiology and Cardiothoracic Surgery.	Probe: Convex, Linear Mode: B,M,B/M ECG Function: Provided CRT: 12 Inch
26-47	Operating Light (with TV Camera)	1	Medical education available by built-in TV monitor. Requested 6 - but considering 3 existing operation light are too old to be replaced, out of which 1 is with TV monitor.	Type: Combination ; 10 Bulbs + 4 Bulbs or more Intensity at 1 meter: 100,000Lux + 60,000Lux or more TV Camera: center of main light head Monitor: 2 pcs
	Operating Light	2		Dia. Of Light Head: Main; 90cm Approx. Sub; 55cm Approx. No. of Bulbs: Main; 10pcs or more Sub; 4pcs or more Intensity at 1 meter: Main; 100,000Lux. or more Sub; 90,000Lux. or more
26-48	Operating Table	2	Among existing 3 sets, 2 sets are too old and to be replaced with new ones.	Control: Motor powered Oil-hydraulic Type: For Pediatric Use
26-49	Anesthetic Machine	2	To secure patient safety, monitor, and ventilator equipped as function. Existing 2 sets, too old and to be replaced.	Flowmeter: O2+N2O with Safety Function Vaporizer: Halothane, Isoflurane Ventilator: Electrical Operation Monitor: ECG, RR Cylinder Yoke: O2 x 2 + N2O x 1 Monitor Tray: Equipped Sphygmomanometer: Aneroid, Large
26-50	Centrifugal Pump with ECMO	1	Useful for IRDS, congenital diaphragm hernia to recover respiratory insufficiency. 1 is planned as appropriate judging from operation numbers.	Pressure Gauge: 0~300mmHg Flowmeter: 0~5 l/M or 10 l/M RPM: 0~4,500 RPM Internal Flow Detector Probe: Provided Filling Capacity: 48 ml Connector: 1/4 Inch Max. Volume: 1.5 l/M Hand Crank: Equipped Outer Drive Unit: Provided
26-51	Blood Coagulation Apparatus	1	Necessary to monitor blood coagulation during surgery. One unit planned as appropriate.	Sampling Blood: Whole Blood Test Item: ACT,ARTT,PT, etc. Power Source: DC

ITEM NO.	EQUIPMENT	B/D	DISCUSSIONS	ROUGH SPECIFICATIONS
26-54	Tagarno	1	Necessary for conference and teaching purpose before surgery. 1 unit planned as appropriate.	Film Size: 35mm X-Ray Cine Film Film Capacity: 200m(660 ft) Projector: 16-Faced Prism Light Source: 24V-300W Film Drive Speed: 1~100Flam/sec. Zoom Function: Provided
26-55	Ethylene Oxide Sterilizer	1	To sterilize catheter that requires low temperature sterilization by EOG.	Control System: Micro Sensor Effective Inner Dimensions: 350 $\phi$ x650(D)mm Approx. Airation Function: Provided Sterilizing Temperature: 35~70° Approx. Door Operation: Center Shut System
26-63	Doppler Flow Meter	1	Necessary to meter blood flow at open heart surgery and after operation observation. Non-invasive blood flow metering is available.	Display: LCD Measurement Item: Max. & Min. Blood flow Velocity, Max. & Min. Blood flow Volume, Pulse Rate, RP,PI Measurement Range: Blood flow Velocity ;0~135cm/S Blood Vessel Dia.; 0.0~9.0mm Probe: 5~10MHz
26-64	Thoracoscope	0	One set available at Pulmonology Dept and to be commonly used.	
26-65	Fiberoptic Bronchoscope Neonates	0	Ditto	
26-72	AV Sequential Pacemaker	2	Necessary for patient experiencing ventricle block due to poor atria beat and heart disease. Considering of bed strength of this Dept., 2 units planned as appropriate.	Pacing Rate: 30~250 ppm Approx. Sensitivity: Max. 0.2mV Approx. Alarm: Lead Defect Back Up Battery: Provided Mode: SSI, SOO, OFF
26-73	Demand Pacemaker	2	Ditto.	Pacing Rate: 30~250 ppm Approx. Sensitivity: Max. 0.2mV Approx. Alarm: Lead Defect Back Up Battery: Provided
26-82	Blood Gas Analyzer	1	Commonly used in this Dept. 1 unit planned as appropriate.	Parameter Measured: pH,pO <sub>2</sub> ,pCO <sub>2</sub> ,tHb Measurement Range: pH; 6.0~8.0 Approx. pCO <sub>2</sub> ; 5.0~200mmHg Approx. pO <sub>2</sub> ; 0~700mmHg or more tHb; 3~24g% Approx.

ITEM NO.	EQUIPMENT	B/D	DISCUSSIONS	ROUGH SPECIFICATIONS
26-90	Color Doppler Ultrasound Scanner	1	Request 2 from both Cardiology and Cardiothoracic Surgery but one unit planned as common usage available.	Scanning Method: Electronic Sector Electronic Linear Electronic Convex Display Mode: B,M, Doppler Flow Indicate: Color CRT: Color 12 Inch or more Color Video Printer: Equipped Probe: Convex x 1; 3~5MHZ; for Abd., Head Linear x 1; 2~5MHZ; for Abd., Cardio Sector x 2; 2~5MHZ; for Vascular and Small Parts VTR: Equipped AVR: Equipped
<b>27. HOSPITAL</b>				
27-1	Generator	1	Among the existing two units, one is working well, another is too old to be repaired. Unable to cope with unexpected power failure. One generator for whole hospital use to be replaced considering power capacity increment required to utilize planned Equipment.	Out Put Power: 250KVA 200W 3 phase Dynamo: 1500 RPM Voltage Control: Automatic Control Panel: Provided
27-2	PB. Box	1	Too old (30 years) to be replaced.	Outer Line: 10 Lines Internal Line: 100 Lines or more



## **Chapter 3 Implementation Plan**





## **Chapter 3 Implementation Plan**

### **3-1 Implementation Plan**

#### **3-1-1 Implementation Concept**

This Project shall be implemented strictly in accordance with the Japanese Grant-in-aid principle. After signing exchange of notes (E/N) a Japanese Consultant shall assist ICH & HC in implementing the Project in accordance with the consultant agreement made between ICH & HC and Consultant that specifies the scope of services as follows.

The Consultant shall:

- (1) support to select and finalize the specifications of the equipment under the Project.
- (2) support to select and determine the Supplier (Japanese enterprise) who will procure the equipment and necessary services therewith upon evaluation thereof.
- (3) inspect the quality of equipment strictly in accordance with the technical specifications and the relevant tender requirements to give approval to Supplier.
- (4) supervise shipment and in-land transportation.
- (5) supervise commissioning of the equipment which includes initial operational training to the end users

Furthermore, until the fulfillment of the warranty, careful supervision shall be done by the Consultant and when some default will be found, such remedy shall be done immediately by the Supplier upon the direction and supervision of the Consultant

No specific measures in relation to the infrastructure would be required for the Project implementation as ICH & HC is located in the central part of Madras with good traffic access and other relevant conditions. The equipment under the Project will be procured from Japan, India and the eligible source countries. Specifications of the equipment should be carefully arranged in consideration of the operation and maintenance procedures including necessary consumable goods for the initial operation (kind/quantity required for the time of initial operation, after handing over until ICH & HC could procure them after their order), which could be specified in the Specifications. The initial operational training to be made after installation of the equipment should be provided by the Supplier and/or local agents of each equipment. Pre-shipment inspection of the equipment should be made to secure the installation works on schedule. The installation works will be made by using local laborers except any equipment require special techniques. Intimate discussions will be made at the supervising stage and thereafter between the representatives of the Supplier and the project officers of ICH & HC as to the equipment transportation, installation, initial operation and commissioning until the final acceptance of the Project equipment. To lead the discussions to be successful, following will be required.

- (1) India is located in the tropical humid area and some difficulties are anticipated for transportation, storage and opening the packages during rainy season. Also special care will be needed to prevent from thievery during the storage from opening package to the final delivery. Therefore, both parties should have mutual consultation well in advance about delivery, storage and installation procedures
- (2) Some equipment will need modification work to the existing facility (partition, switch board, outlet fixing etc.). Detailed drawings will be prepared to fix the scope of work between the parties in order to avoid unnecessary troubles from such modification work.
- (3) Diversified items of the Equipment will be procured. Reasonable period of time should be assigned to secure successful technical training from the manufacturers to the relevant personnel including doctors and paramedical personnel of ICH & HC. Time schedule of such training will be prepared by mutual consultation between the parties well in advance.
- (4) Safety precaution should be made as to the installation and operation of the specific equipment. Sufficient care should be taken to minimize trouble and accident with enough preparation and discussions.
- (5) Sufficient volume of the electricity supply, water supply, enough care to sanitary system and pollution to the community and safety precaution would be secured. These considerations are inevitably required for the successful operation of the equipment as appropriate.
- (6) The consultant will supervise the Supplier if they will fulfill all the duties and obligations specified in the Supply Contract until the completion of the Project. The Consultant will make the Supplier to submit necessary reports to ICH & HC from time to time in due course of the procedure.

The Project shall be implemented on the following responsibility of each party concerned.

(1) Project Executing Institution

Health & Family Welfare Dept. of the government of Tamil Nadu is responsible to direct the Project in India and ICH & HC will be acting as the executing institution.

Director of ICH & HC is responsible for the Project as the Project management in India. Director of ICH & HC should select and appoint relevant experts including facility engineers according to the necessity.

The Supplier is further responsible for proper operation and maintenance of the equipment even after the acceptance of the equipment during its warranty period. During the mechanical warranty period, the Supplier will replace any and all the defaults with new one at the cost of the Supplier. Indian party shall be cooperative to carry out such remedy and modification work smoothly.

The relevant experts are totally responsible for the following scope of work during the period from storage, package opening, installation and commissioning until final acceptance.

- ① Set up the Project implementation by which you can ensure smooth technical training at commissioning stage.
- ② Select and appoint qualified technical experts to attend/supervise the initial operational training and trouble shooting of the equipment.
- ③ Select and appoint qualified engineers who are responsible for electricity and water supply and drainage facility.

(2) Consultant

Consultant will execute Consultant Agreement with ICH & HC within reasonable period of time after signing E/N between the governments concerned. This agreement extensively covers from detailed designing, Project supervision to the completion of the Project. This agreement becomes valid upon approval of the Japanese Government. The Consultant is responsible for the following services at each stage of the Project:

- ① To prepare and finalize tender documents for the procurement of the equipment
- ② To evaluate the tenders and recommend the Supplier
- ③ To supervise the procurement procedures and make inspection as well as managing initial operational training after installation to be made by the Supplier
- ④ To confirm the completion of the Project

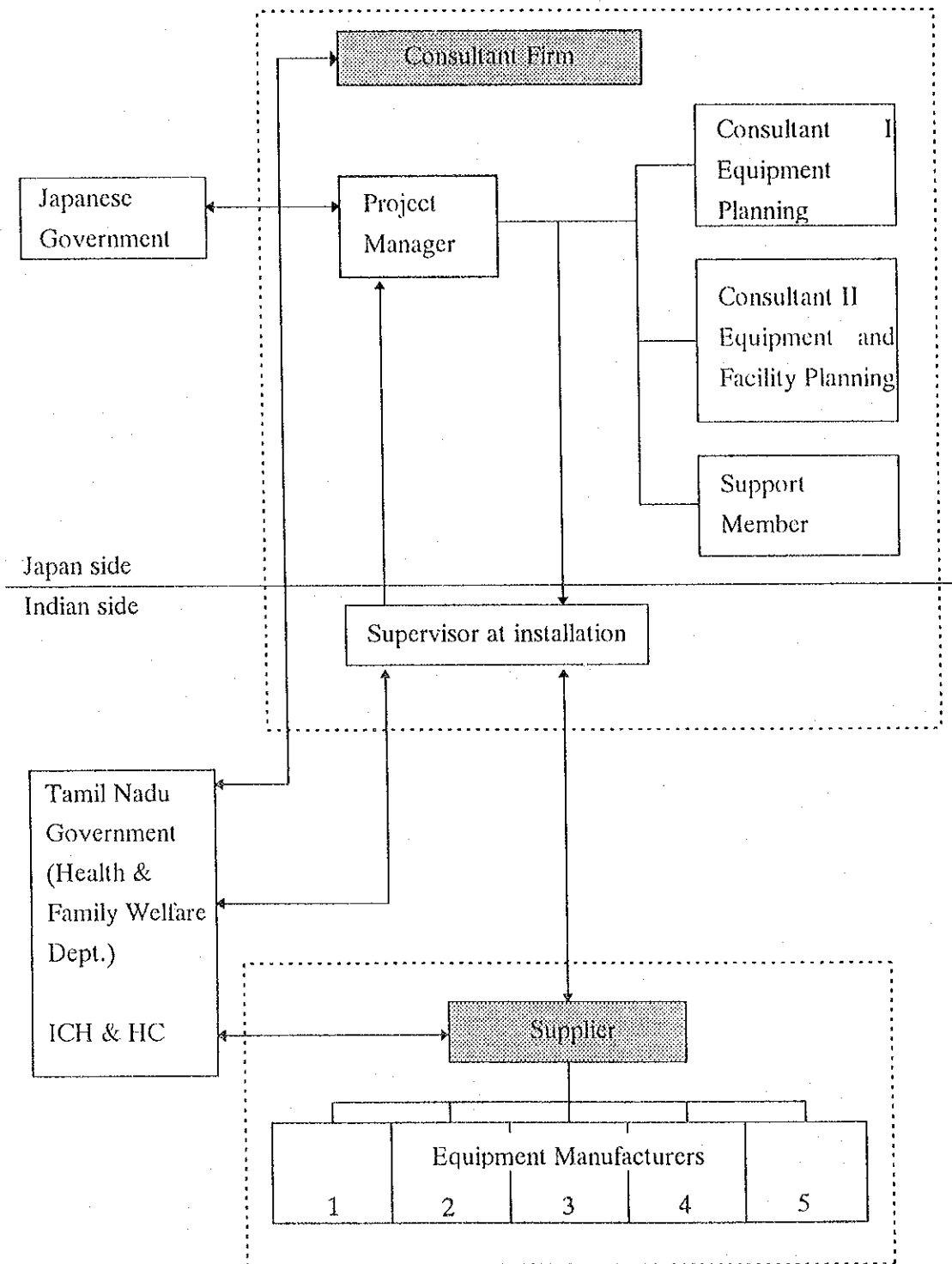
(3) Procurement of the Equipment

The Supplier who will procure the equipment will be selected after the tendering, and the Supply Contract will be signed between ICH & HC and the Supplier. This Contract will become valid upon approval of the Japanese Government.

The Supplier is responsible to procure the equipment and make smooth delivery thereof to India after installation and commissioning for which the Consultant will supervise every services performed by the Supplier to the satisfaction of ICH & HC under the Contract. Regarding the warranty conditions such as provision of the necessary spares with its technical services by the manufacturers and/or the local agents will be organized by the parties concerned of the Project.

The Project implementation organization chart is shown as follows.

**Project Implementation Organization Chart**



### **3-1-2 Implementation Conditions**

ICH & HC does not have any in-house engineers who are in charge of the maintenance of the equipment inclusive of water supply and drainage facility, electricity supply etc. Currently engineers to cover the same facility maintenance works are dispatched from time to time to ICH & HC to inspect and repair if necessary under the direction and supervision of the Director and Superintendent and/or the ministerial officers of ICH & HC weekly basis.

Currently it is observed as follows:

① Electricity supply conditions

Voltage is fluctuating in the range 6-10% and unexpected power failure takes place occasionally. Electricity capacity is 400KVA and the peak load so far is recorded as 300KVA. If whole body CT scanner and 500mA X-ray unit be installed, additional 115KVA of electricity will be required. Capacity increase from 400KVA to 540KVA will be required and individual AVR device be required to be provided to some of the equipment.

② Tap water and well water were examined regarding their quality and any specific problems were not detected, and therefore any pre-treatment will not be required.

### **3-1-3 Scope of Works**

Scope of work of each party concerned is confirmed as follows:

1) Scope of work by Indian side

- \* To secure enough space for large scale equipment to be installed and to remove existing facility and equipment if necessary.
- \* To secure enough space for storage of the equipment to be procured.
- \* To bear cost not attributable to the Japanese grant aid budget.

2) Scope of work by the Japanese side

- \* To procure the equipment under the Project
- \* To transport the equipment to ICH & HC
- \* To install with its commissioning.
- \* To give orientation of the initial operational training of the equipment.

### **3-1-4 Consultant Supervision**

Consultant Agreement will be executed by and between the Executing Organization and the Japanese Consulting Firm strictly in accordance with the current grant-in-aid scheme. The Consultant is neutrally responsible to conduct detailed designing, and execution of the Project supervision. The Consultant will supervise every actions taken by the Supplier during the Project implementation whether they are made in accordance with the requirements under

the tender documents. The details of the services are specified as follows:

- 1) Tendering followed by the Supply Contract  
All the tender documents will be prepared and delivered to all the eligible tenderers. These documents become executed upon approval by ICH & HC.  
All the tender procedures will be organized and managed by the Consultant and all the tenders are carefully and extensively evaluated by the Consultant joined by ICH & HC. ICH & HC and the Supplier will execute the Supply Contract for the fulfillment of the services for the Project.
- 2) Advice, instruction and adjustment to be given to the Supplier.  
Procurement and installation schedule are prepared by the Supplier and the Consultant will give advice, instruction and adjustment on behalf of ICH & HC.
- 3) Careful check in conformity with the tender documents.  
The Consultant is solely responsible to check the quality and workmanship of the equipment if they are procured strictly in accordance with the tender documents.
- 4) Pre-shipment Inspection  
Pre-shipment inspection will be done by the Consultant to confirm if the equipment is procured in accordance with the specifications and give approval on behalf of ICH & HC before its shipment.
- 5) Periodic Report to ICH & HC and JICA.  
Consultant is responsible to make periodic report to ICH & HC and JICA in connection with the procurement/shipment as well as the installation progress.
- 6) Test Run and Final Acceptance  
When all the equipment is properly installed, the Consultant will give order to the Supplier to implement test run and necessary commissioning services until final acceptance by ICH & HC. The Consultant will prepare necessary report and make them known to all the people concerned for the issuance of the Completion Certificate when the Project is completed.

### **3-1-5 Procurement Plan**

Dominant majority of pharmaceutical and medical equipment circulated in Indian market are imported ones. Therefore, manufacturers and its local agents should be responsible to render spare parts supply, and various technical services including repair and replacement. Such being the situation, the local agents should have the comprehensive maintenance and after sales service capability. It would be therefore preferred that the equipment could be planned to be procured from the manufacturers who have its local agents in India and/or in the neighboring countries. The general conditions should be as follows.

- 1) X-ray apparatus, electronics and laboratory equipment must meet the following preference which will be so mentioned in the specifications included in the tender

documents.

- ① Technical Certificate from the original manufacturer will be required to be attached in the tender documents to prove the provision of the proper maintenance service ability of the local agent.
- ② The local agents who will provide maintenance services must have their own workshops with adequate engineers.
- ③ ICH & HC must keep necessary spare parts and consumable items for the essential equipment.

Local agents and their respective capability have been checked at the site survey and it is concluded that they are equipped with technical ability.

- 2) Some equipment to be procured from the third country other than India and Japan will be planned in consideration of the service availability by the relevant local agents and the compatibility with the existing equipment.

Procurement of the local products is limitedly possible on the conditions that the quality is good and acceptable and their delivery schedule meets with the supply schedule. Patient bed, suction unit, personal computer, photocopy machine, printing machine and generator for emergency power cut will be the items.

- 3) The equipment for which ELCOT LTD. cannot give maintenance services, the specific manufacturers and/or its local agents will be responsible to conclude the Annual Maintenance Contract with ICH & HC. Thus maintenance services covering such items other than the equipment ELCOT can cover will be hereby secured.

When the warranty period is over, the Consultant will give advice as shown hereunder to conclude AMC to secure necessary maintenance services be given under the reasonable cost to ICH & HC.

- ① Maintenance agents will be appointed item wise.
- ② Detailed procedure will be set forth covering periodical check and emergency on call basis. Details on the periodical/corrective maintenance services will be included in AMC.
- ③ Terms and conditions on the supplying necessary spare parts and consumable items must be decided in advance.
- ④ Maintenance service period inclusive of the extension thereof must be clearly defined.

- 4) It takes for 40 days from shipment to proper storage at the site. More exactly 30 days for ocean transportation and 10 days for customs clearance and inland transportation. Procurement schedule must have sufficient time allowance including these period.
- 5) Japanese trading firms will be basically eligible as the prospective Suppliers. Tender procedures are carefully managed by the Consultant and the Supplier will be decided by the competitive tender price and the compliance with the tender requirements.

The Supplier shall be the one who has submitted the lowest tender price. The tender price will be made on the lump sum basis.

- 6) The equipment will be brought to Japanese port by rail and truck and the ocean vessel will bring them to Indian port (Madras). Inland transportation thereafter will be made by truck. Some sophisticated equipment will be required for special export package as fragile one or water proof. The Supplier must provide special care and attention to the equipment while they are kept in India until their handing over.

Equipment delivery requirement is shown in the Table-3-1.



**TABLE -3-1 EQUIPMENT DELIVERY REQUIREMENT LIST**

NO.	ITEM	PLANNED Q'TY	Delivery Requirement		
			Installation	Operation Manual	Training
<b>1</b>	<b>NEONATOLOGY</b>				
1-1	Infant Incubator	5	○	○	○
1-2	Open Care System	2	○	○	○
1-3	Infant Warmer	5	○	○	○
1-4	Phototherapy Unit	8	○	○	○
1-5	Syringe Infusion Pump	5	○	○	○
1-7	Pulse Oxymeter	2	○	○	
1-8	Neonatal Ventilator	1	○	○	○
1-9	Resuscitation Bag with Laryngoscope	3		○	
1-10	Neonatal Monitor (HR,ECC,RR)	5	○	○	○
1-16	Oxygen Hood	10		○	
1-19	Bilirubin Analyzer	1	○	○	○
1-20	Transport Incubator	1	○	○	
1-22	Microscope	1	○	○	○
1-23	Ophthalmoscope	3	○	○	
1-25	Infusion Pump	7	○	○	○
<b>2</b>	<b>RADIOLOGY DEPARTMENT</b>				
2-1	500mA X-ray TV Unit with Image Intensifier	1	○	○	○
2-2	Color Doppler Ultrasound Scanner	1	○	○	○
2-3	Ultrasound Scanner	1	○	○	○
2-4	Whole Body CT Scanner	1	○	○	○
2-5	Mobile X-ray Unit	2	○	○	○
2-6	X-ray Unit with C Arm	1	○	○	○
2-7	Dark Room Accessories	1	○	○	○
<b>3</b>	<b>MICROBIOLOGY</b>				
3-3	Incubator	1	○	○	
3-4	Water Bath	1	○	○	
3-5	Medical Refrigerator	2		○	
3-6	Mixer for Test Tube	1	○	○	
<b>4</b>	<b>ANESTHESIOLOGY DEPARTMENT</b>				
4-1	Operating Table	6	○	○	
4-2	Suction Unit	10	○	○	
4-3	Infusion Pump	5	○	○	○
4-4	Syringe Infusion Pump	5	○	○	○
4-5	Operating Light with TV Monitor	1	○	○	○
4-6	Operating Light	6	○	○	
4-7	Operating Light with Focused Spot Light	2	○	○	
4-8	Anesthesia Machine with Ventilator and Monitor	6	○	○	○
4-9	Defibrillator	2	○	○	○
4-11	Multi Channel Patient Monitor	2	○	○	○
4-13	Portable Light	6	○	○	
4-15	Instrument Trolley Table	26	○		
4-17	Instrument Cabinet	6	○	○	
4-18	Operating Instrument Set	6		○	
4-19	Patient Temperature Control Machine	6	○	○	○
4-20	Blood Gas Analyzer	1	○	○	○
4-23	Handwashing Sink Unit	6	○	○	

NO.	ITEM	PLANNED Q'TY	Delivery Requirement		
			Installation	Operation Manual	Training
4-25	Pulse Oxymeter	6	○	○	
4-26	Electro Cautey	6	○	○	○
4-31	Infant Warmer	2	○	○	○
<b>5</b>	<b>PEDIATRIC HEMATOLOGY AND ONCOLOGY</b>				
5-2	Binocular Microscope with Camera	1	○	○	○
5-3	Binocular Microscope with 3 Teaching Adapter	1	○	○	○
5-6	Hand Tally Counter	1		○	
5-12	Infusion Pump	10	○	○	○
5-14	Slide Projector	1	○	○	
5-16	Syringe Infusion Pump	5	○	○	○
<b>6</b>	<b>PEDIATRIC SURGERY</b>				
6-6	Infant Warmer	4	○	○	○
6-7	Infusion Pump	10	○	○	○
6-8	Infant Ventilator	1	○	○	○
6-9	Pediatric Ventilator	1	○	○	○
6-10	Phototherapy Unit	2	○	○	○
6-11	Syringe Infusion Pump	5	○	○	○
6-12	Multichannel Patient Monitor	2	○	○	○
6-15	Infant Incubator	2	○	○	○
6-16	Open Care System	2	○	○	○
6-17	Pulse Oxymeter	4	○	○	
<b>7</b>	<b>PEDIATRIC NEPHROLOGY</b>				
7-7	Patient Cot with Weighing Machine	2	○	○	
7-8	Binocular Microscope	1	○	○	○
<b>8</b>	<b>PEDIATRIC PATHOLOGY</b>				
8-1	Binocular Microscope	4	○	○	○
8-2	Water Bath	1	○	○	○
8-3	pH Meter	1	○	○	○
8-4	Haematocrit Centrifuge	1	○	○	○
8-5	Hand Tally Counter	3		○	
8-6	Centrifuge	2	○	○	○
8-7	Fluorescent Microscopy with Photomicrographic App.	1	○	○	○
8-8	Automated Blood Cell Counter	1	○	○	○
8-10	Slide Projector	1	○	○	
<b>9</b>	<b>BIOCHEMISTRY DEPARTMENT</b>				
9-2	pH Meter	1	○	○	○
9-3	Electrolyte Analyzer	1	○	○	○
9-4	Calorie Meter	2	○	○	○
<b>10</b>	<b>HOSPITAL ADMINISTRATION</b>				
10-1	Personal Computer with Printer	2	○	○	○
10-2	Photocopy Machine	1	○	○	○
10-3	Cyclostyle Machine	1	○	○	○
<b>11</b>	<b>MEDICAL REGISTER - TEACHING</b>				
11-1	Slide Projector	2	○	○	

NO.	ITEM	PLANNED Q'TY	Delivery Requirement		
			Installation	Operation Manual	Training
11-2	Overhead Projector	2	○	○	
<b>12</b>	<b>MEDICAL RECORDS DEPARTMENT</b>				
12-1	Personal Computer with Printer	1	○	○	○
12-2	Photocopy Machine	1	○	○	○
<b>13</b>	<b>PEDIATRIC PULMONOLOGY</b>				
13-1	Spirometer	1	○	○	○
13-2	Fiber Bronchoscope with TV Monitor	1	○	○	○
13-3	Pulse Oxymeter	1	○	○	
13-4	Ultrasonic Nebulizer	5	○	○	
<b>14</b>	<b>PEDIATRIC NEUROLOGY</b>				
14-1	EEG	1	○	○	○
14-2	EMG with Evoked Probe	1	○	○	○
<b>15</b>	<b>PHYSICAL MEDICINE AND REHABILITATION</b>				
15-1	Microwave Therapy Apparatus	1	○	○	○
15-2	Paraffin Bath	1	○	○	○
15-3	Dumbbell Set	1		○	
15-4	Laser Therapy Unit	1	○	○	○
<b>16</b>	<b>PEDIATRIC ORTHOPEDICS</b>				
16-1	Electrical Surgical Saw	1		○	
16-2	Spinal Surgical Set	1		○	
16-3	Nerve Stimulator System	1	○	○	○
16-6	Physiotherapy Bed	5	○	○	
16-7	Traction Unit	5	○	○	
<b>17</b>	<b>SCHOOL HEALTH CELL - PREVENTIVE AND</b>				
17-1	Van	1		○	
17-2	Refrigerator	1		○	
17-3	Weighing Machine	2		○	
<b>18</b>	<b>PARENT CRAFT CENTRE</b>				
18-1	Exhibition Display System	10	○	○	
18-2	Exhibition Display Kit	2	○	○	
18-3	Combination Board Magnetic Cum Felt	4	○	○	
18-4	Infant Weighing Machine	2	○	○	
18-11	Close Circuit TV	1	○	○	○
18-12	V.C.R.	1	○	○	○
18-13	Video Camera	1	○	○	○
18-14	Epidiascope OHP	1	○	○	○
18-15	Slide Projector	1	○	○	
18-17	Photocopy Machine	1	○	○	○
18-18	Tape Recorder	1	○	○	
18-19	Model Human System	1	○	○	○
<b>19</b>	<b>GASTROENTEROLOGY DEPARTMENT</b>				
19-1	Pediatric Crosby Jejunal Mucosal Biopsy Set	1		○	
19-2	Microscope	1	○	○	○
19-5	Pediatric Upper Gastro Intestinal Endoscope	1	○	○	○

NO.	ITEM	PLANNED Q'TY	Delivery Requirement		
			Installation	Operation Manual	Training
20	<b>EMERGENCY CASUALTY OP.</b>				
20-1	Medicine Refrigerator	1		○	
20-2	Refrigerator	1		○	
20-3	Ultrasonic Nebulizer	4	○	○	
20-4	Stretcher with O2 and IV Set	3		○	
20-5	Wheel Chair	3		○	
20-6	Suction Apparatus	3	○	○	○
20-8	Anesthetic Machine	1	○	○	○
20-10	ECG, 1ch	2		○	○
20-13	Infant Warmer	2	○	○	○
20-16	Defibrillator	1	○	○	○
20-17	Laryngoscope	2		○	
20-21	Examination Light	3		○	
20-22	Diagnostic Set	3		○	
21	<b>ENT DEPARTMENT</b>				
21-1	Otorhinolaryngological Examination Table	3	○	○	
21-2	Mobile Operating Light	1	○	○	
21-3	Optical Fiber Light source for E.N.T.	1	○	○	○
21-4	Micro surgery Instrument for E.N.T.	1		○	
21-5	Pediatric Hearing Tester	1	○	○	○
21-6	Otorhinolaryngological Treatment Unit	1	○	○	○
21-7	Instrument Set for Otorhinolaryngological Examination	5		○	
21-9	Otorhinolaryngoscope	3		○	
21-13	Head Mirror	5		○	
21-19	Deep Freezer	1		○	
21-20	ENT Operating Microscope with TV Set	1	○	○	○
21-25	Telescopic F.B. Forceps No.3.5	1		○	
21-26	Impedance Audiometer	1	○	○	○
21-27	Dental Chair	1	○	○	
21-28	Dental Unit	1	○	○	○
21-29	Ultrasonic Scaler	1	○	○	○
21-30	Light Cure Apparatus	1		○	
21-31	Intra Oral X-ray Unit	1	○	○	○
21-33	Dark Room Equipment	1		○	
21-35	Hand Instrument	1		○	
21-37	Hot Air Sterilizer	1	○	○	○
22	<b>GENERAL PEDIATRIC MEDICAL WARDS 7 UNITS</b>				
22-27	Weighing Machine	9		○	
22-28	Infant Weighing Machine	9		○	
22-29	Static Meter	9		○	
22-30	Infantmeter	9		○	
22-34	Infusion Pump	18	○	○	○
22-37	Ophthalmoscope	9		○	
22-38	Pulse Oxymeter	3	○	○	
22-44	Oxygen Hood	18		○	
22-47	Resuscitation Bag	18		○	
22-53	Examining Light	9		○	

NO.	ITEM	PLANNED Q'TY	Delivery Requirement		
			Installation	Operation Manual	Training
23	BLOOD BANK				
23-69	Refrigerated Centrifuge	1	○	○	○
23-66	Laboratory Incubator	1	○	○	
23-67	Water Bath	1	○	○	
24	INTENSIVE MEDICAL CARE UNIT				
24-70	Infusion Pump	10	○	○	○
24-71	Defibrillator	1	○	○	○
24-73	Pulse Oxymeter	2	○	○	
24-74	Infant Warmer	3	○	○	○
24-75	Pediatric Ventilator	1	○	○	○
24-76	Infant Ventilator	1	○	○	○
24-78	Ultrasonic Nebulizer	2	○	○	
24-79	Microscope	1	○	○	○
24-80	Capnograph	1	○	○	○
24-82	Bilirubinmeter	1	○	○	○
24-83	Ophthalmoscope	3	○	○	○
24-91	Syringe Infusion Pump	5	○	○	○
24-92	Multichannel Monitor	2	○	○	○
24-93	Electrolyte Analyzer	1	○	○	○
24-97	Examining Light	1		○	
24-98	Stretcher Trolley	1		○	
25	AUTOPSY ROOM				
25-101	Morgue Refrigerator, Two Bodies	1	○	○	
26	PEDIATRIC CARDIOLOGY AND				
26-11	Ultrasonic Nebulizer	3	○	○	
26-15	Horizontal Sterilizer	1	○	○	○
26-19	Infant Warmer	3	○	○	○
26-20	Oxygen Hood	3		○	
26-23	Electrocardiogram	1	○	○	○
26-24	Infant Ventilator	1	○	○	○
	Pediatric Ventilator	1	○	○	○
26-25	Pulse Oxymeter	2	○	○	
26-31	Syringe Infusion Pump	5	○	○	○
26-35	Infusion Pump	5	○	○	○
26-37	Heart Lung Machine	1	○	○	○
26-38	Hypothermia Machine	1	○	○	○
26-39	Patient Monitor, 6 Channels	1	○	○	○
26-40	Patient Monitor, 4 Channels	4	○	○	○
26-42	Defibrillator	1	○	○	○
26-43	Surgical Diathermy	2	○	○	○
26-46	Portable Echo Machines	1	○	○	○
26-47	Operating Light with TV Monitor	1	○	○	○
	Operating Light	2	○	○	
26-48	Operating Tables	2	○	○	
26-49	Anesthesia Machine with Ventilator	2	○	○	○
26-50	Centrifugal Pump with ECMO	1	○	○	○
26-51	Blood Coagulation App.	1	○	○	○
26-53	Fiberoptic Laryngoscope	2	○	○	○
26-54	Tagarno (Cinefilm Projector)	1	○	○	○

NO.	ITEM	PLANNED Q'TY	Delivery Requirement		
			Installation	Operation Manual	Training
26-55	Ethylene Oxide Sterilizer	1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26-56	Table Top Sterilizer	6	<input type="radio"/>	<input type="radio"/>	
26-63	Doppler Flow Meter	1	<input type="radio"/>	<input type="radio"/>	
26-72	AV. Sequential pacemaker	2		<input type="radio"/>	
26-73	Demand Pacemaker	2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26-82	Blood Gas Analyser	1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26-90	Color Doppler Ultrasound Scanner	1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27	HOSPITAL (FACILITY)				
27-1	Generator	1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27-2	PB. Box	1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* Operation Manual includes explanation of the manual to be provided with the Equipment.

\*\* Training includes initial operational training after installation of the Equipment.

### 3-1-6 Implementation Schedule

The Project implementation schedule will be divided into following stages on which every party concerned should be kept informed and communicated for the smooth implementation of the Project.

- 1) Exchange of notes by both governments:  
Official notes exchanged for the execution of the Project.
- 2) Banking arrangement:  
Suitable bank will be selected for necessary banking procedures for the payment of the Project costs.
- 3) Consultant Service Agreement:  
Agreement to be concluded between ICH & HC and the Consultant.
- 4) Verification:  
Verification to be made to the Consultant Service Agreement by the government of Japan.
- 5) Authorization to Pay:  
A/P to be issued by the Indian authority after banking arrangement for the payment to the Consultant service remuneration.
- 6) Detailed Designing:  
Consultant will prepare the Tender Documents to select the Supplier.  
The evaluation on the submitted tenders will be made jointly by ICH & HC.  
Supply Contract will be concluded between ICH & HC and the Supplier.
- 7) Validation:  
Verification to be made to the Supply Contract by the government of Japan.
- 8) Authorization to Pay:  
A/P to be issued by the Indian authority for the payment to the Supplier.
- 9) Equipment procurement:  
Final approval of the specifications and layout plan prepared and submitted by the Supplier to the Consultant. Careful check will be done by the Consultant on behalf of ICH & HC and the approval to the Supplier will be made.
- 10) Pre-shipment Inspection:  
Pre-shipment inspection will be done by the Consultant on behalf of ICH & HC if the equipment is made in accordance with the specifications and all the requirements in the tender documents.
- 11) Supervision by the Consultant:  
The Consultant will dispatch its technical experts to the site to enable necessary commissioning be made successfully to ICH & HC.
- 12) Schedule Management:  
The Consultant will carefully manage the procurement and installation schedule so





### 3-1-7 Obligations of Recipient Country

Necessary measures to be taken by the government of India and the government of Tamil Nadu for the execution of the Project are summarized as follows.

- (1) To exempt taxes and to take necessary measures for customs clearance of the materials and equipment purchased for the Project at port of disembarkation.
- (2) To exempt Japanese nationals involved in the Project from customs duties, internal taxes including sales tax and other fiscal levies which may be imposed in India with respect to the supply of the products and the services under the verified contracts.
- (3) To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contract such facilities as may be necessary for their entry in India and stay therein for the performance of their work.
- (4) To maintain and use properly and effectively the equipment purchased under the Grant.
- (5) To bear all the expenses other than those to be borne by the Grant, necessary in connection with the implementation of the Project.
- (6) To bear commissions to the Japanese foreign exchange bank for the banking services based on Banking arrangement

### 3-2 Project Cost Estimation

- (1) Cost to be borne by the government of India

Prior to the implementation of the Project, which is to procure medical the Equipment, other necessary construction works of the relevant facilities, such water supply, drainage system, electric supply, wiring and piping etc. must be completed under the responsibility of ICH & HC and the government of Tamil Nadu. Currently, some works remain to be done for the modification of some existing rooms and supporting facilities required in relation to the installation of the equipment, and the cost estimate for them is around 100,000 rupees (approximately ¥345,000.00) to be borne by the government of Tamil Nadu. In addition, some administrative costs, including bank commissions also shall be borne by the government.

- (2) Base of Estimates

The cost estimates given herewith are calculated upon the following basis.

Date of Estimates:	February, 1997
Exchange Rate:	1US\$ = ¥112.00
	1R. = ¥ 3.45

### 3-3 Operation and Maintenance Cost

#### (1) Equipment Maintenance System

Currently, all the existing medical equipment are given under the proper maintenance either by ELCOT LTD and the local engineers dispatched from manufacturer's agents in India. ICH & HC has been keeping away from any maintenance and its related works at all. Each department has recording book and each equipment is recorded when it is purchased. In addition, all these equipment are subjected to registering in the inventory book by the administrative officer belonging to the Surgical Store Office.

When problem on the equipment happens, chief of each department will notice it to either ELCOT LTD. or the local agents immediately and proper repair work will be done in time. Maintenance system is summarized as follows:

- 1) ELCO LTD executed the Annual Maintenance Contract with seven public hospitals located in Madras including ICH & HC in accordance with the Abstract, Government of Tamil Nadu on February 16, 1995. And full turn key maintenance services have been secured to all the equipment listed up by ELCOT LTD. under AMC which covers following points.

- ① Periodic check 4 times a year
- ② Maintenance cost is worked out 10% of the local market rate of the equipment in each year.
- ③ Payment will be done in exchange of work certificate issued by the Director of ICH & HC and submitted to the Director of Medical Education of the Health & Family Welfare Dept. of the state government.

Fundamental equipment are covered by ELCOT LTD for maintenance and any serious problems have not occurred so far because these equipment is rather simple for maintenance.

Osmania General Hospital in Hyderabad has some equipment supplied by the grant-in-aid by Japanese Government and ELCOT LTD. is responsible for their maintenance as well.

- 2) Other equipment are dealt by the local engineer of each agent under AMC with ICH & HC. As the repairing spare parts are different from the equipment and limited in kind and quantity, conditions on AMC is decided in each equipment individually after negotiation between the parties. (When these spare parts are imported by the agent, import tax must be imposed on, however, in case of import by ICH & HC, it is tax-exempted). DME affirmed that AMC with each local agent is in dominant majority. The survey team had extensive and far-reaching investigation on available maintenance service in term of frequency, swiftness and workmanship.

Such being the situation, it is confirmed that some leading local agents have proper communication channel with the manufacturers and have been given proper on the job training.

Any serious problems were not observed as to the supply of reagents and consumable which are constantly supplied through the local agents.

Now, great many numbers of medical equipment are imported and the after-sales services have been considered highly as the sales factor. These service will be improved from now on.

## (2) Operation and Maintenance Cost

All the fee accrued from the medical treatment in ICH & HC are returned to the state government and all the expenses are made by totaling the revenue other than Medical treatment, Other than medical income and Subsidy for operating cost. The financial data shows only 1% of the total expenses is from totaling the above 3, i.e. 649,200 rupees being total income in 1995, against 62,853,000 rupees being total expenses in 1995. This means that ICH & HC is utterly depending upon the government subsidy.

Annual budget of ICH & HC in 1996 for Operation and maintenance cost is worked out as 8,942,000 rupees by totaling the medical consumable such as X-ray film/surgical items, and electricity/water/medical gases. Maintenance cost (AMC) and operation cost (consumable etc.), which were estimated by the Consultant as shown by Table-3-2 attached, to be incurred for the equipment under the Project will be 1,747,550 rupees and 5,409,700 rupees respectively as of 1996. If the equipment start operation from April 1998, the operation and maintenance cost will be 17,704,700 rupees for 1998 and 21,802,000 rupees for 1999 when the warranty period expires. Thus, all the expenses for the hospital operation cost which include salary and others for 1998 will be 82,854,800 rupees and for 1999 will be 91,063,400 rupees as summarized hereunder. (This calculation is made considering inflation factor 10% for goods and 5% for personnel cost. The following list shows the breakdown of the above calculation.

Table-3-3 Hospital Running Cost (1996- Actual & 1997/98/99-Estimation)

(Unit: 1000rupees)

Fiscal Year	Personnel Cost	OM COST			Others	Total	% against previous year
		Maintenance	Consumable	Electricity & Water			
1996	43,604.0	811.0	5,327.0	2,804.0	14,113.0	66,659.0	106.0
1997	45,784.2	892.1	5,859.7	3,084.4	15,524.3	71,144.7	106.7
1998			(Existing)6,445.6 (Procured)6,545.7	(Existing)3,392.8 (Procured)339.3			116.5
<b>Total</b>	<b>48,073.4</b>	<b>981.3</b>	<b>12,991.3</b>	<b>3,732.1</b>	<b>17,076.7</b>	<b>82,854.8</b>	
1999		(Existing)1,079.4 (Procured)2,325.9	(Existing)7,090.1 (Procured)7,200.3	(Existing)3,733.0 (Procured)373.3			109.9
<b>Total</b>	<b>50,477.0</b>	<b>3,405.3</b>	<b>14,290.4</b>	<b>4,106.3</b>	<b>18,784.4</b>	<b>91,063.4</b>	

TABLE-3-2 ANNUAL OPERATION AND MAINTENANCE COST ESTIMATION(as of 1996)

(UNIT: RP.)

NO.	ITEM	QTY	MAINTENANCE COST		OPERATING COST		OPERATIONAL DETAILS
			UNIT	AMOUNT	UNIT	AMOUNT	
1	Infant Incubator	7	3,000	21,000	2,000	14,000	cover etc.
2	Open Care System	4	1,000	4,000	500	2,000	matless etc.
3	Syringe Infusion Pump	30	1,000	30,000	1,000	30,000	10 rp x 100-time
4	Infusion Pump	65	2,000	130,000	3,000	195,000	20 rp x 200-time
5	Pulse Oxymeter	20	3,000	60,000	5,000	100,000	Censor etc.
6	Ventilator	7	15,000	105,000	30,000	210,000	1,000 rp/time x 60
7	Patient Monitor	19	1,200	22,800	15,000	285,000	200 rp/time x 150
8	Portable Ultrasound Scanner	1	5,000	5,000	7,500	7,500	10 case/day x 30 rp x 250-day
9	500mA X-ray TV Unit	1	75,000	75,000	-50,000	-50,000	10 case/day x 3 film 100 rp/film x 300-day
10	Multi Purpose Ultrasound Scanner	1	3,750	3,750	-40,000	-40,000	10 case/day x 200-day x 20 rp.
11	Whole Body CT Scanner	1	500,000	500,000	900,000	900,000	10 case/day x 300-day x 300 rp.
12	Automatic Film Processor	2	3,000	6,000	50,000	100,000	Processing Solution etc.
13	60mA X-ray TV Unit	2	1,000	2,000	-	-	No need because of replacement
14	C Arm X-ray TV Unit	1	35,000	35,000	20,000	20,000	film etc.
15	Operating Tables	8	1,000	8,000	-	-	Electricity cost only
16	Operating Light w/ TV	2	10,000	20,000	5,000	10,000	spare bulb etc.
17	Operating Light	8	3,000	24,000	1,000	8,000	spare bulb etc.
18	Anesthesia Machine w/ Ventilator and Monitor	8	11,000	88,000	-10,000	320,000	200 time x 200 rp.
19	Anesthesia Machine	1	10,000	10,000	-	-	No need because of replacement
20	Defibrillator	6	4,000	24,000	1,000	6,000	paper etc.
21	Portable Light	6	2,000	12,000	4,000	24,000	spare bulb etc.
22	Patient Warming System	8	1,000	8,000	6,000	48,000	cover etc.
23	Handwashing Sink Unit	6	2,000	12,000	1,200	7,200	filter etc.
24	Electro Cautey	8	3,000	24,000	20,000	160,000	200 x 100 rp.
25	Suction Apparatus	15	500	7,500	2,000	30,000	200 x 10 rp.
26	Automatic Blood Cell Counter	1	50,000	50,000	200,000	200,000	50 case/day x 300-day
27	Photocopy Machine	2	15,000	30,000	120,000	240,000	100 sheet/day x 250-day x 7 rp.
28	EKG	1	30,000	30,000	100,000	100,000	5 case/day x 200-day x 300 rp.
29	EMG	1	30,000	30,000	180,000	180,000	3 case/day x 200-day x 300 rp.
30	Surgical Diathermy	1	5,000	5,000	-	-	Electricity cost only
31	ENT Apparatus	1	5,000	5,000	3,000	3,000	Rubber tube etc.
32	Dental Unit	1	10,000	10,000	10,000	10,000	1,000 film x 10 rp.
33	Morgue Refrigerator	1	3,000	3,000	-	-	Electricity cost only
34	Heart Lung Machine	1	30,000	30,000	500,000	500,000	5000 rp/time x 100
35	Tagarno	1	10,000	10,000	10,000	10,000	spare bulb etc.
36	Horizontal Autoclave	1	24,000	24,000	50,000	50,000	sterilization bag etc.
37	EOG Sterilizer	1	25,000	25,000	50,000	50,000	sterilization bag etc.
38	Colour Doppler Ultrasound Scanner	2	40,000	80,000	100,000	200,000	10 case/day x 200-day x 50 rp.
39	Electrolyte Analyzer	2	10,000	20,000	100,000	200,000	20 rp/sample x 5,000
40	Calorie Meter	2	500	1,000	3,000	6,000	5 rp/sample x 600
41	Blood Gas Analyzer	2	10,000	20,000	200,000	400,000	50 rp/sample x 400
42	Centrifuge	1	500	500	20,000	20,000	Test tube etc.
43	Hematocrit Centrifuge	1	500	500	100,000	100,000	Test tube etc.
44	Centrifuge Refrigerator	1	3,000	3,000	-	-	Electricity cost only
45	Endoscope	2	10,000	20,000	12,000	24,000	spare bulb etc.
46	Microscope	7	500	3,500	10,000	70,000	spare bulb etc.
47	Personal Computer	2	5,000	10,000	5,000	10,000	Printing paper
48	Other equipment	1 set	100,000	100,000	70,000	70,000	Other materials
			Total	1,747,550	Total	5,409,700	

1997

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1998

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6,545,737

1999

2,325,989

7,200,311

## **Chapter 4 Project Evaluation and Recommendation**



## **Chapter 4 Project Evaluation and Recommendation**

### **4-1 Appropriateness of the Implementation of the Project**

#### **1) Endorsed by the National Policy**

The Eighth Five Year National Development Plan (1992-1997) stipulates the national target in health sector as the upgrading of the public health services at all level from primary health care through tertiary care. In particular for Tamil Nadu state, the reduction of the mortality rates of infant and new-born baby is the higher prioritisation projection to improve mother and children health conditions.

ICH & HC is the only and top referral hospital specialized in pediatrics and general child health care in Tamil Nadu state as well as in the whole India. Therefore, the upgrading of the hospital is expected to give some significant impacts on the overall improvement of health care services and family welfare of Tamil Nadu state as well as of the national states of India.

#### **2) Social Implications**

ICH & HC is the only health care institute specialized in pediatrics in Tamil Nadu state, and ranked as the top referral hospital covering the broad beneficiaries of as much as 24 million children in Tamil Nadu state and 2 million in Madras city. The average of the number of child patients coming to the hospital annually counts 520,000, and this figure implies that the Project has great potential to contribute to fulfill the social needs.

### **4-2 Expected Results of the Project**

The expected results of this Project are:

- 1) To improve medical services of the hospital by strengthening the diagnostic functions;**  
By procuring diagnostic equipment such as X-ray unit of various kind and Ultrasound scanner, the current functions of Radiology Department would be strengthened with expanding the scope of diagnosis and improving the quality of services. For instance, patients who need examination by CT scanner are currently transferred to one of the other hospitals (Government General Hospital located 5km away from ICH & HC, or Stanley Medical College Hospital, which is 15km away). However, each of these hospital has limited capacity to accept only 2 patients per day (one for CT, and one for angiography) under the quota basis from ICH & HC, then this results in leaving a number of patients waiting for long time until they receive necessary examination and diagnosis.
- 2) To improve health status of the children by strengthening the treatment unit;**  
By procuring some essential equipment such as infant incubator and lung ventilator, wide range of the treatment to cope with various kinds of diseases would be secured. Consequently, infant and child mortality rate could be reduced.
- 3) To improve medical education activities by strengthening the laboratory unit;**

By procuring some basic equipment such as microscope and blood gas analyzer, the unit could manage most kinds of examination, some of which have been subcontracted to other laboratory institutes outside hospital. This would contribute to the strengthening of the educational training/activities necessary for the trainees and laboratory technicians.

- 4) To improve the quality of the basic and bed-side training for the medical students including doctor/nurse/technician;

By procuring some equipment such as operating light with TV and Tagarno cinefilm projector, the quality of the basic and bed-side training for medical students including doctors, nurses and technicians specialized in pediatrics would be improved. This would contribute to the qualitative improvement of the health educational function of the hospital.

- 5) To promote public health care education for the community people;

By procuring some equipment such as overhead projector and vehicles for outreach activities, the public health related services would be promoted to disseminate preventive health services among the community people through regular health examination of children at school and the parents at the parent craft centers.

- 6) To establish the basic platform for further development of health programmes in the State;  
By realizing the above expectations, the platform for further development of maternal and child health of Tamil Nadu state as well as the whole country of India would be reinforced.

#### 4-3 Recommendations

As this Project is expected to contribute largely to the improvement of health care services for mother and children. The Project has an implication of indirect improvement of the life environment of the people, which is one of the factors to cause diseases for children. Therefore, the implementation of the Project has a significant implication. It is expected that fulfillment of the following recommendations could smoothen further the implementation of the Project.

##### 1) Institutional aspect

Every department is so managed independently that there is lack of inter-departmental communication, resulting in unsystematic hospital administration as a whole. In order to make the most of the procured equipment, some measures concerning to the inter-relation measures within the hospital should be taken into consideration by;

- Establishing the common facilities utilization system

Though, currently, the management of the equipment is undertaken by a surgical store officer of the department of hospital administration, organizational re-arrangement should be taken further regarding to the overall management of the equipment commonly controlled and shared by several departments jointly by the technical personnel.

- Upgrading individual skills and reallocation of nurses



Upgrading the skills of the medical staff, such as nurses and laboratory technicians, need to be considered. Furthermore, in order to optimize nursing function as a whole, reallocation of the nursing staff should be considered, and if necessary, inter-departmental cooperation should be called for.

## 2) Management aspect

In order for ICH &HC to provide proper hospital services and contribute to the improvement of the referral system, it has to have not only proper management and maintenance system for the equipment to be procured, but also a concrete program or strategy of planning, monitoring and evaluation for the continuous and further development of the medical services as well as educational/research functions.

