CHAPTER III. DESCRIPTION OF THE PROJECT

CHAPTER III

DESCRIPTION OF THE PROJECT

3.1 BIRDEM

3.1.1 Objective of the Project

In order to upgrade its functional level and to provide patients with more effective curative services, BIRDEM devised a development plan. The Government of Bangladesh, with the intention to carry out the plan, requested the Government of Japan for Grant Aid for the Project for the Medical Equipment Supply to BIRDEM.

Objective of this Project is to supply and install the medical equipment to BIRDEM and also to render operational guidance to the personnel concerned through Japanese Government's Grant Aid.

3.1.2 Study on the Request Components

(1) Study on the Project

Medical equipment to be supplied which the Government of Bangladesh requested for the Japanese Government's Grant Aid is mentioned in "The List of Requested Equipment" in Appendix 2,2-2 Table (4). On the basis of field survey as well as further studies, the study team selected the equipment shown in 4-1-3. The medical equipment to be installed in the various divisions and sections of BIRDEM will significantly contribute to the strengthening of functional standard in clinical, educational and research fields of BIRDEM. This Project has been incorporated in the Third Five-Year Plan of the Government of Bangladesh.

(2) Selection of the Medical Equipment to be Supplied

Selection of the equipment to be supplied was made after careful and detailed studies on the original request taking into consideration the scale of expansion plan of building, significant operational ability of the present equipment installed, experience of the personnel concerned and capability of maintenance etc. As a result of these studies, the equipment considered to be appropriate was incorporated into the supply plan.

The following is the main equipment excluded from the supply plan:

Main equipment excluded	Main reasons for exclusion
Cargo lift	Since the expansion work of the building is still going on, it is difficult to secure safety of installation work of the lift.
Kitchen equipment	Since most of the equipment being used are made in Europe, Japanese standardized equipment will not match.
Laundry equipment	Priority on the requested dry cleaning machine etc. was removed, because the water cleaning facilities for linens etc. necessary for the operation of wards are available.

3.1.3 Project Components

3.1.3.1 Executing Body

Authorities in Bangladesh related to the Project are as follows:

(1) Executing Body: The Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM)

(2) Ministry in Charge : Ministry of Social Welfare and Women's Affairs

(3) Subject Facility: BIRDEM

3.1.3.2 Project Component

Original development programme of BIRDEM incorporated into the Third Five-Year Plan was divided in four fiscal years from 1985-86 to 1988-89. Total amount of budget for this Project is Taka 737.20 million (including Taka 39.77 million for estimated cost escalation), of which Taka 280.06 million is to be covered by The Development Budget of the Government, and the remaining Taka 457.14 million (including Taka 39.77 million for estimated cost escalation) for the equipment and freight of the equipment is expected to be covered by the Japanese Government's Grant Aid. However, according to the revised request submitted to the basic design study team, total amount for the Project was Taka 400 million, the breakdown of which was Taka 367.64 million for equipment, Taka 17.40 million for the freight of the equipment, Taka 17.22 million for technical assistance (visit of Japanese experts to Bangladesh to assist BIRDEM in installation and training of personnel as well as training and visit of BIRDEM personnel in Japan) and Taka 17.43 million for vehicles

(including freight), respectively. (Both sides agreed, as a result of consultations to exclude the technical assistance so that only equipment shall be supplied.)

The plan for reinforcement of manpower of BIRDEM from 644 in 1985-86 (actual number as of February 1988 was 752) to 1,073 in 1988-89 is to be covered either by the Revenue Budget of the Government or by the fund of BIRDEM itself.

Outline of the original plan for the development of BIRDEM is as follows:

(1) Expansion of buildings: 3,482m^2 shall be added by 1889

(2) Medical Equipment : 448 items of equipment shall be supplied. Total amount of Taka 442.03 million (including estimated cost escalation) shall be expected from Japanese Government's Grant Aid.

(3) Spare Parts : 1,803 items shall be procured in 1988-89. The cost of Taka 8.25 million shall be covered by the Development Budget of the Government.

(4) Furniture : 246 items shall be procured in 1988-89. The cost of Taka 3.81 million shall be covered by the Development Budget of the Government.

(5) Vehicles : 3 vehicles amounting to Taka 15.11 million shall be expected from Japanese Government's Grant Aid.

3.1.3.3 Selection of the Equipment

The study team has concluded that the following equipment is appropriate as the subject of the Japanese Government's Grant Aid through its further studies on the data brought back to Japan:

Division	Equipment to be supplied
1. CT Scan & X-Ray	CT Scanner X-Ray Unit with Angiograph
2. Hospital	Ultrasound Scanner
3. General Lab. & Biochemistry	Clinical Chemistry Analyzer Blood Gas Analyzer Gel Electrophoresis, etc.
4. Eye	Eye Perimeter, Computerized Ultrasonic Eye Diagnostic System Ophtalmological Surgical Instruments etc.
5. Library & Medical Photograpy	Video Projection with Camera Photomicrographic Equipment, etc.
6. Research Lab.	Gamma Scintillation Ultra Centrifuge Liquid Chromatograph Amino Acid Analyzer L.S. Spectrophotometer, etc.
7. Maintenance	Boiler Auxiliary Generator Power Conditioner Ambulance, etc.

3.2 Further Development of TB Control Services

3.2.1 Objective of the Project

The Project for Further Development of TB Control Services was initiated to strengthen early detection, treatment and follow-up of the TB patients. The Government of Bangladesh intends to supply medical equipment to the medical facilities concerned and to render operational guidance to the personnel concerned through the Japanese Government's Grant Aid.

3.2.2 Study on the Request Components

(1) Study on the Project

(1) Medical equipment to be supplied, which the Government of Bangladesh requested from the Japanese Government's Grant Aid, is contained in the "List of Requested Equipment" in Appendix 2,2-2 Table (5). On the basis of field survey as well as the further studies as shown in 4.2.3, this equipment will significantly contribute to the Project for Further Development of TB Control Services as useful means for early detection and treatment of TB, proper education and knowledge of TB to the patients and training of medical personnel concerned.

(2) Selection of the Medical Equipment to be Supplied

Selection of the equipment to be supplied was made after careful and detailed studies on the original request taking into consideration the objectives and contents of the Project for Further Development of TB Control Services which has been incorporated into the Third Five-Year Plan of the Government of Bangladesh, experience and educational level of the personnel engaging in the Project and the maintenance

capacity of the equipment. As a result of the studies mentioned above, the equipment considered to be appropriate was included in the supply plan.

The following are the equipment excluded from the supply plan:

Equipment excluded	Main reasons for exclusion
. PH/Blood Gas Analyzer . Blood Cell Analyzer . Clinical Chemistry Analyzer	The need for these three items is very two since they are intended only for the patients in serious conditions. In addition, costs for consumables and maintenance of them are high.
. Microcomputer	Japanese makers have no reliable maintenance system in the market yet.

3.2.3 Project Components

3.2.3.1 Executing Body

Authorities of Bangladesh related to the Project are as follows:

(1) Executing Body : Health Services, Ministry of Health and Family Planning

(2) Subjected Facilities :
- (a) National TB & Leprosy Control Project
- (b) TB Control & Training Institute
- (c) 4 TB Hospitals
- (d) 8 TB Segregation Hospitals
- (e) 44 TB Clinics

3.2.3.2 Project Components

The Project for Further Development of TB Control Services which has been incorporated into the Third Five-Year Plan is scheduled to be implemented in three phases of fiscal year 1987-88, 1988-89 and 1989-90. Total amount of budget is Taka 92 million, of which Taka 13.55 million is covered by the Development Budget of the Government of Bangladesh while the remaining Taka 78.45 million is expected to be covered by the Japanese Government's Grant Aid.

The Government of Bangladesh hopes that the above-mentioned Japanese Government's Grant Aid shall be rendered in the fiscal year of 1987-88. The breakdown of Taka 78.45 million is: Taka 11.90 million for technical assistance (Taka 752,000 for the training of Bangladesh personnel by the Japanese expert and Taka 11.15 million for the training of Bangladesh personnel in Japan), Taka 66.44 million for equipment including vehicles and Taka 110,000 for the development of model area. (Both sides agreed, as a result of discussions, to exclude the technical assistance so that only equipment shall be supplied.)

3.2.3.3 Selection of the Equipment

The study team has concluded that the following equipment is appropriate for the subject of Japanese Government's Grant Aid through its further studies on the data brought back to Japan:

Equipment to be supplied	Quantity
. X-ray 500mA	2
. X-ray 100mA	5
. Microscope	50
. Centrifuge	49
. Laboratory Refrigerator	62
. Etc.	

CHAPTER IV. BASIC DESIGN

CHAPTER IV

BASIC DESIGN

4.1 BIRDEM

A basic design was prepared based on analyses and studies on the data and information obtained through discussions with the Bangladesh side and field surveys.

4.1.1 Basic Design Policy

Selection of the equipment to be supplied was made in line with the following criteria:

(1) To be such equipment as contributing to effective functions of BIRDEM in view of the balance between the existing equipment as well as the ongoing expansion programme.

(2) To be durable equipment with very little possibility of breaking down, maintenance of which is easy.

(3) The running cost of the equipment after installation shall be as low as possible.

(4) As for procurement of the equipment requiring maintenance services by professionals, the priority shall be given to manufacturers whose agents and/or service stations are located either in Bangladesh or in neighbouring countries.

(5) Considerations should be given to supply periodical replacement units which secure maintenance of the equipment for three years and operational capability even at the time of unforeseen

accident due to climatic nature of the region and unreliable power supply. Consideration should also be given to supplement the equipment with higher electrical circuits by such apparatuses as automatic voltage regulator and uninterruptible power supply unit.

(6) In installing the major equipment, the makers concerned shall take the responsibility of giving the relevant personnel sufficient training by the technicians invited by the makers concerned.

4.1.2 Study on the Conditions of Basic Design

(1) The appropriate equipment for the Project was selected in accordance with the policy mentioned in 4.1.1 above and included in the "Equipment List to be Supplied". This list includes items, main specifications, reasons for selection, quantity, divisions and rooms and conditions of installation. Detailed explanations of the List are as follows:

(a) Items, divisions and places of installation

Each piece of equipment is indicated by common name together with the name of division of usage. Place of installation is indicated by room name or room number. Main specifications and purpose of the equipment are also shown.

(b) Reasons for selection

The following letters indicate the reason for the selection from the functional viewpoint of each piece of equipment:

A : To replace the aged equipment in order to regain the original functional ability.

B : To supplement the functions of the existing equipment

which is not sufficient enough for the strengthened activities of BIRDEM. (Additional supply of the same kind of equipment can expect more activated functions of BIRDEM.)

C : To upgrade the services of BIRDEM by supplying new equipment which will give BIRDEM additional functions.

(c) Conditions for selection

The following conditions were set in selecting the equipment:

a. To be operable through the same level of skill operating the existing equipment.
b. To be comparatively easy for maintenance and durable for long-term operation.
c. To have an agent for repair in Bangladesh or in a neighbouring country.
d. To be usable even in the area where availability of power resources is unreliable.
e. To be easy for installation and to require no large-scale installation works.
f. To be durable for severe climate of high temperature and heavy humidity.

(d) Considerations for installation

The following considerations were given in selecting the equipment from the viewpoint of distribution and installation:

(1) The equipment which requires installation, test and explanation for its operation
(2) The equipment which requires explanation for its operation only
(3) The equipment which requires no explanation for its operation, installation and test
(4) The equipment which requires installation only.

The above-mentioned conditions were marked in the columns of "Selection and Criteria" and "Instruction Setting & Trial Run" of the "List of Equipment to be Supplied" in the following pages with symbols written in (b), (c), (d) above.

4.1.3 List of Equipment to be Supplied

The equipment to be supplied under the Project is shown in the attached "BIRDEM List of Equipment to be Supplied". As for the major equipment, the main specification, and purpose and reason are also described in the attached "List of Major Equipment For BIRDEM".

B I R D E M
List of Equipment to be Supplied

ITEM NO. & ITEM		QUT.	SELECTION AND CRITERIA	INSTRUCTION SETTING & TRIAL RUN
1. CT. Scan & X-Ray				
1-1	CT Scanner	1	C, c	(1)
1-2	X-Ray Unit w/Angiograph Injector	1	B, c	(1)
2. Hospital				
2-1	Ultrasound Scanner	1	B, c	(1)
2-2	Electrocardiograph	1	B, c	(3)
2-3	Nerve Conduction Apparatus	1	C, c	(2)
2-4	Operating Lamp (multibeam)	1	B, a	(4)
2-5	Operating Theatre Equipment	2	B, a	(3)
2-6	Operating Instruments	2	B, a	(3)
2-7	Operating Lamp (single)	1	B, a	(4)
2-8	Endoscopic Apparatus Set	1	C, b	(2)
2-9	Operating Microscope	1	C, b	(3)
2-10	Laboratory Fume-hood	1	C, b	(4)
2-11	Portable Defibrillator	1	C, b	(3)
2-12	Ventilator, mobile type	1	C, b	(3)
2-13	Brush Dispensers	8	B, a	(3)
2-14	Electro Surgical Equipment	1	C, b	(3)
2-15	Anaethesia Apparatus	1	C, b	(2)
2-16	Time Elapsed Clock	3	C, b	(4)
2-17	High-Low Stretcher	2	B, b	(3)

B I R D E M
List of Equipment to be Supplied

ITEM NO. & ITEM		QUT.	SELECTION AND CRITERIA	INSTRUCTION SETTING & TRIAL RUN
2-18	Patient Transfer Trolley	2	B, b	(3)
2-19	Autoclave, portable	2	B, b	(4)
2-20	Instrument Cabinet	10	B, a	(4)
2-21	Wheel Chair	6	B, a	(4)
2-22	Blood Bank Refrigerator	1	C, b	(4)
2-23	Urological Operating Table	1	C, b	(4)
2-24	Urological Apparatus	1	B, a	(4)
2-25	X-Ray Unit (C-Arm)	1	C, c	(4)
2-26	Bed Pan Washer	4	C, b	(4)
2-27	Nurse Call System	2	C, b	(4)
2-28	Curtain Rail System	10	C, b	(4)
2-29	Instrument Carriage	12	C, b	(3)
2-30	Treatment Carriage	12	C, b	(3)
2-31	Dental Treatment Unit	1	C, b	(4)
2-32	Dental X-Ray Unit	1	C, b	(4)
2-33	X-Ray Film Processor	1	C, b	(4)
3. General Lab. & Biochemistry				
3-1	Clinical Chemistry Analyzer	2	C, c,d	(2)
3-2	Gel Electrophoresis	1	A, a	(2)
3-3	Blood Gas Analyzer	1	A, a	(2)
3-4	H.P.L. Chromatograph	1	C, c	(1)
3-5	Glassware Washing Machine	1	C, c	(4)
3-6	Glassware Drying Machine	1	C, c	(4)
3-7	Refrigerator	2	B, b	(4)

B I R D E M
List of Equipment to be Supplied

ITEM NO. & ITEM		QUT.	SELECTION AND CRITERIA	INSTRUCTION SETTING & TRIAL RUN
4. Eye				
4-1	Eye Lensmeter, Computerized	1	C, b	(4)
4-2	Eye Perimeter, Computerized	1	C, b	(4)
4-3	Ultrasonic Eye Diagnostic System	1	C, b	(4)
4-4	Trial Lens Set & PD Meter	1	C, b	(4)
4-5	Ophtalmological Equipment	1	C, b	(4)
4-6	Ophtalmological Surgical Instruments	1	C, b	(4)
4-7	Autoclave Hot Air	1	C, b	(4)
4-8	Chair for Doctor & Patient	3	C, b	(4)
4-9	Ultrasonic Cleaner	1	C, b	(4)
5. Library & Medical Photography				
5-1	Slide Film Processor	1	C, c	(4)
5-2	Photomicrographic Equipment	1	C, c	(4)
5-3	Guillotine	1	C, b	(4)
5-4	Binding System	1	C, b	(4)
5-5	Auditorium Lighting System with Dimmer Control	1	C, b	(1)
5-6	Loud Speaker System	1	C, b	(1)
5-7	Video Projection with Camera	1	C, b	(1)
5-8	Slide Projector	1	B, a	(4)
6. Research Laboratory				
6-1	Gamma Scintillation	1	C, c	(1)
6-2	Ultra Centrifuge	1	C, c	(1)
6-3	Amino Acid Analyzer	1	C, c	(1)

B I R D E M
List of Equipment to be Supplied

ITEM NO. & ITEM		QUT.	SELECTION AND CRITERIA	INSTRUCTION SETTING & TRIAL RUN
6-4	Refrigerator	1	B, b	(4)
6-5	D.B. Spectrophotometer	1	C, c	(1)
6-6	L.S. Spectrophotometer	1	C, c	(1)
6-7	Analytical Balance	1	B, a	(4)
6-8	Gas Chromatograph	1	C, c	(1)
6-9	Liquid Chromatograph	1	C, c	(1)
6-10	Research Microscope	1	C, c	(4)
6-11	Photographic Apparatus for Microscope	1	C, c	(4)
6-12	Refrigerated Centrifuge	1	C, c	(4)
6-13	Ultrasonic Cleaner	1	C, c	(4)
6-14	Power Supply Unit, Uninterruptible	2	C, b	(4)
6-15	Medical Refrigerator	2	B, b	(4)
6-16	Analytical Balance	1	B, a	(4)
6-17	Microscope	2	C, b	(4)
6-18	Microscope, Phase Contrast	2	C, b	(4)
6-19	Ultra Low Temp. Freezer	1	C, b	(4)
6-20	Cathater Tube Dryer	2	C, b	(4)
6-21	Room Air Cooler, Split Type	3	B, a	(4)
6-22	Glassware Washing Machine	1	C, b	(4)
6-23	Glassware Drying Machine	1	C, b	(4)
6-24	Spray Gun	2	C, b	(3)
6-25	Ultrasonic/Heat Sealer Machine	1	C, b	(3)

B I R D E M
List of Equipment to be Supplied

ITEM NO. & ITEM		QUT.	SELECTION AND CRITERIA	INSTRUCTION SETTING & TRIAL RUN
7. Maintenance				
7-1	Boiler	1	B, a	(1)
7-2	Auxiliary Generator	1	B, a	(1)
7-3	Oscilloscope	1	B, a	(2)
7-4	Signal Generator	2	C, b	(4)
7-5	Electrical Hand & Bench Tool	1	B, a	(4)
7-6	Vacuum Cleaner	2	C, b	(4)
7-7	Floor Scrubber	2	C, b	(4)
7-8	Paging System	1	C, b	(4)
7-9	Power Conditioner	10	B, b	(4)
7-10	Time & Date Stamping	2	C, b	(4)
7-11	Incinerator	1	C, b	(4)
7-12	K.V. Meter	1	A, a	(4)
7-13	M.A. Meter	1	A, a	(4)
7-14	Multi-Meter, Digital Type	1	A, a	(4)
7-15	Ambulance	1	C, b	(4)
7-16	Vehicle (4 Wheel Drive)	1	C, b	(4)
7-17	Microbus	1	C, b	(4)
7-18	Mortuary Refrigerator	1	C, b	(4)

LIST OF MAJOR EQUIPMENT FOR BIRDEM

Equipment	Main Specification	Purpose & Reason
CT Scanner	Specification Gantry dia.: 600mm or more Pulserate scan: 100 pulse/sec. or more Image recon- struction time: less than 10 sec. Slice thickness: approx. 2,5,10mm or more selection Image recon- struction: matrix : 512 x 512 or more CPU : Open system Composition Gantry 1 Patient bed 1 X-Ray high voltage generator 1 X-Ray high voltage controller 1 Computer 1 Switchboard 1 Multiformat Camera 1	Purpose Diagnosis of head injuries, intracranial space occupying lesions, intracramial haemorrhages cerebral degenerative, inflamatory diseases, abdominal tumours, liver and pancreating diseases, adrenal and renal tumours, spinal tumours, prolapsed dise, cervical spondglosis etc. Reason Replacement of a defective unit (1977, US make). The unit is not repairable because spare parts are no longer available. There is no CT scanner available in Bangladesh. Patients go to India or Singapore for scanning. Poor people can not afford the great cost. BIRDEM has 20 patients daily for CT scanning. BIRDEM will have maintenance contract with supplier/manufacturer at its own expense.

	Emergency power supply unit 1 Automatic processor 1 Spare X-ray tube & other parts 1	
X-ray Unit with Angiograph Injector	Specification Remote controlled X-ray TV system with angiography function Composition Remote controlled diagnostic table 1 X-ray high voltage generator 1 X-ray controller 1,000mA 1 Image amplifier 1 TV monitor 1 Injector 1 Automatic processor 1	Purpose Diagnosis of digestive system, liver, pancreas, lien, ren, chest or spinalis. Angiography in any parts. Reason To be equipped with an X-ray unit which is available for angiograph for diagnosing. The X-ray unit has a remote controlled diagnostic table for safty operation.
Ultrasound Scanner	Specification 3.5 MHz linear array and sector (or connex) probe equipped. Composition Main unit 1 Probes(linear array, Sector(or Convex) 2-3 Poraloid Camera 1	Purpose Diagnosis of digestive system, liver, pancreas, lien, ren, urethra, soft tissue, mamma, testis, etc. Reason To be equipped with a unit available to diagnose of deep parts and selectable probes for choice.

Nerve Conduction Apparatus	Composition Main unit 1 Input box 1 Contact lens for porbe 1	Purpose Diagnosis of diseases of optic nerves, cranial nerves, neuromus cular system by ERG. Reason To be equipped with a high sensi-tive unit available for disease monitoring and data print out.
X-ray Unit (C-Arm)	Specification Mobile C-Arm, Monitoring on TV Monitor and radiography Composition Main unit with Image Intensifier 1 TV monitor 1 Image recorder 1	Purpose To monitor operation process by X-ray for observation and teaching purposes. Reason A mobile unit selected to use with a universal operating table or a urological operating table.
Clinical Chemistry Analyzer	Specification Semi-automatic system, End point method: 480tests/h.or more Rate method: 240tests/h.or more Composition Main unit 1 Vaccum pump 1 (CPU, Printer built-in)	Purpose Measuring of glucose, urea-nitrogen, creatinine in serum or urine for routine examination at general lab. Reason Original requirement was a full automatic analyzer but two sets of semi-automatic unit are se-lected to cover any interruption of work by machine trouble in use of two units in parallel.

Blood Gas Analyzer	Composition		Purpose
	Main unit	1	Measuring of pH and oxygen, carbonic acid gas in serum or urine.
	Gas regulator	1	
	Gas cylinder	1	
H.P.L. Chromatograph	Composition		Reason
	Main unit	1	Replacement of old machine
	UV/visible rays detector	1	Purpose
	Column oven	1	Measuring of glucose, hormone in blood or metabolite in urine at general lab.
	Auto sample injector	1	
	Floppy disk	1	
	Chromato pack	1	Reason
	CRT	1	A high performance unit selected for quick analyzing for limited testing items.
	System controller	1	
Auditorium Lighting System w/Dimmer Control	Specification		Purpose
	6 auditorum lights in seminar room. These lights are dimmer controlled at a control room in 3 systems		Improvement of lighting system of the seminar hall.
Speaker System	Specification		Purpose
	2 large speakers 2 small speakers with a microphone and a stage. Volume must be controlled at the control room.		Setting up a microphone system in the seminar hall.

Video Projection with Camera	Specification Universal video projection system remote controlled at control room. A video camera to be installed in the operation room.	Purpose Medical students can learn operation process through video system at the seminar hall. Patients can learn correct control of diseases by system.
Gamma Scintillation	Composition Main unit 1 Unit table 1 Printer cartridge 2 Bio-vial 2	Purpose Diabetic mellitus pancreatic beta cell function assessment and research insulin and C-peptidic RIAs. Research of T3, T4 and TSH RIAs for thyroid diseases. Research of FSH, LH, prolactin GH RIAs. Research of ACTH, cortisol (radioodine 125 labelled RIAs) Replacement of aged machine.
Ultra Centrifuge	Specification Max. speed: Approx. 80,000 rpm Max. RCF : Approx. 600,000xG	Purpose Receptors preparation for receptor assays and lipoprotein separations. Molecular weight determination and receptor protein characterization by density gradient ultracentrifugation.

Amino Acid Analyzer	Composition		Purpose
	Liquid pump	2	Measuring of amino acid in blood and urine.
	Fluorescence detector	1	
	Column oven	1	
	Auto injector	1	
	System controller	1	
	Data processor	1	
	Reaction pump	1	
	Piping unit	1	
D.B. Spectro-photometer	Composition		Purpose
	Main unit	1	Measuring of nucleic acid, enzyme, protein, etc.
	Control panel	1	
	Floppy disk	1	
	CRT	1	
	Recorder	1	
L.S. Spectro-photometer	Composition		Purpose
	Main unit	1	Measuring of endocrine lysbolism by trace of steroid hormone and adrenalin hormone labeled by tritium or carbon.
	Monitor	1	
	Unit desk	1	
Gas Chromatograh	Composition		Purpose
	Main unit	1	Measuring of lipids and individual fatty acids in diabetic patients.
	Column oven	1	
	Keyboard	1	
	Chromato pack	1	
	Cylinder	1	Analyzing of diabetogenic samples such as alkaloides glucosides subsances in local food.
	Compressor	1	
	Pressure regulator	1	

Boiler	Specification Capacity: Approx. 700kg/h Natural gas fired type	Purpose 1) To cover shortage of present ones. 2) Back-up for an interruption of steam supply for annual inspection of other machines.
Auxiliary Generator	Specification Output : 650KVA or more at 440v. 50Hz. Diesel operation type	Purpose 1) To cover shortage of capacity of present unit for expansion of the facility.

4.2 Further Development of TB Control Services

The basic design was prepared on the basis of analyses and studies on the data and information obtained through the discussions and field surveys.

4.2.1 Basic Design Policy

(1) To be essential equipment for the execution of the Project mainly in rural areas, which are comparatively easy for ecquiring the skill for operation.

(2) To be durable equipment with very little possibility of breakdown, maintenance of which is easy.

(3) As for procurement of the equipment requiring maintenance services by professionals, the priority should be given to those manufactureres whose agents and/or service stations are located either in Bangladesh or in neighbouring countries.

(4) Considerations should be given to supplying periodical replacement units and spare parts which secure maintenance of the equipment for three years and operational capability even at the time of unforeseen accidents due to climatic nature of the region and unreliable power supply.

4.2.2 Study on the Conditions of Basic Design

The appropriate equipment for the Project was selected in accordance with the Basic Design Policy and shown in the "List of TB Control Project Equipment to be Supplied". The above-mentioned List also describes "Selection and Criteria" and "Instructions Setting & Trial Run" under the same conditions as mentioned in 4.1.2 above.

4.2.3 List of Equipment to be Supplied

The equipment to be supplied under the Project is shown in the attached "List of Equipment to be Supplied for TB Control Project". As for the major equipment, the main specifications, and purpose and reasons are also described in the attached "List of Major Equipment for TB Control Project".

Furthermore, the name of each medical facility where each equipment shall be installed is shown in attached "TB Control Project Delivery Schedule of the Equipment".

TB CONTROL PROJECT
List of Equipment to be Supplied

ITEM NO. & ITEM	QUT.	SELECTION AND CRITERIA	INSTRUCTION SETTING & TRIAL RUN
1. Vehicles (Jeep)	4	B, a	(4)
2. Vehicle (Microbus)	1	C, a	(4)
3. X-Ray Unit, 500mA	2	A, a	(1)
4. X-Ray Unit (capacitor type) with Mirror Camera	5	C, c	(1)
5. Microscope	50	B, a	(4)
6. Audio Visual Equipment	2	C, c	(4)
7. Petri Dishes (10 pc./set)	150	B, a	(4)
8. Fine Analytical Balance	2	C, c	(4)
9. Centrifuge	49	A, a	(4)
10. Ultra Violet Lamp	10	C, c	(4)
11. Security Chamber	6	B, a	(4)
12. Sputum Destroyer	6	C, c	(4)
13. Air Conditioner	10	A/B, a	(4)
14. Lab. Refrigerator	62	A/B, a	(4)

LIST OF MAJOR EQUIPMENT FOR TB CONTROL PROJECT

Equipment	Main Specification	Purpose & Reason
Vehicles(Jeep)	Specification Four-wheel drive, diesel, 5 seater left-hand drive	Purpose For transportation of TB Control Project staff to TB Clinics, Upazila Health Complex or volunteer for instruction, training or delivery of small equipment etc. and visiting patients' homes for motivation of correct health care etc.
Vehicles (Microbus)	Specification Microbus, diesel, 12 seater, Left-hand drive	Purpose For transportation of staff to be trained at a seminar in many facilities under TB control project.
X-ray Unit (500mA)	Composition X-ray tube assembly 1 X-ray tube stand 1 Collimator 1 X-ray high voltage generator 1 X-ray controller 1 Dark room access. 1	Purpose Each unit is for replacement of old and not repairable one for TB Control Project and TB Control & Training Institute. Diagnosis of chest TB in direct radiography.

X-ray Unit (Capacitor type)	Composition X-ray tube assembly 1 X-ray tube stand 1 Collimator 1 X-ray high voltage generator 1 X-ray controller 1 Cassette stand 1 Mirror camera assembly 1 Dark room access. 1 Dark room access. 1	Purpose Each unit to be installed at each TB clinic for finding TB patient and diagnosing TB disease. Reason A capacitor discharge X-ray unit is selected to achieve fine results even under unsuitable electrical conditions. A mirror camera assembly is to be supplied together to make small picture for reduceing running cost.

TB CONTROL PROJECT

Delivery Schedule
of
Equipment

ITEM	National TB Control Project	TB Control & Training Inst.	TB Hospital, Dhaka(500)	- do - , Rajshahi(150)	- do - , Chittagon(100)	- do - , Khulna(100)	- do - , Sylhet(56)	TB Segregation Brahmanbaria Comilla(20) Hospital	- do - , Feni Noakhali(20)	- do - , Barisal(20)	- do - , Jessore(20)	- do - , Faridpur(20)	- do - , Pabna(20)	- do - , Bogra(20)	- do - , Rangpur(30)	TB Clinic, Dhaka Div. 1)	2) , Dhaka	3) , Munshiganj	4) , Mymensingh	5) , Jamalpur	6) , Kishoregahj
1. Vehicles (Jeep)	2	2																			
2. Vehicle (Microbus)	1																				
3. X-Ray Unit, 500mA	1	1																			
4. X-Ray Unit																					
5. Microscope	30			1	1	1	1													1	
6. Audio Visual Equipments	1	1																			
7. Petri Dishes	150																				
8. Fine Analytical Balance	1	1																			
9. Centrifuge	1	1		1	1	1	1									1		1	1	1	1
10. Ultra Violet Lamp	5	5																			
11. Security Chamber	1	1		1	1	1	1														
12. Sputum Destroyer	1	1		1	1	1	1														
13. Air Conditioner	5	5																			
14. Lab. Refrigerator	4	2		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

TB CONTROL PROJECT

Delivery Schedule of Equipment

I T E M	7) , Tangail	8) , Faridpur	9) , Gopalganj	10) , Madaripur	TB Clinic, Chittagon Div. 1) , Chittagon	2) , Cox's Bazar	3) , Rangamati	4) , Comilla	5) , Brahmanbaria	6) , Chandpur	7) , Maijdee	8) , Feni	9) , Sylhet	10) , Moulvibazar	11) , Sunamganj	TB Clinic, Khulna Div. 1) , Khulna	2) , Bagerhat	3) , Satkhira	4) , Barisal	5) , Pirojpur	6) , Bhola
1. Vehicles (Jeep)																					
2. Vehicle (Microbus)																					
3. X-Ray Unit, 500mA																					
4. X-Ray Unit															1			1			
5. Microscope			1	1			1				1	1		1	1			1			1
6. Audio Visual Equipments																					
7. Petri Dishes																					
8. Fine Analytical Balance																					
9. Centrifuge	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10. Ultra Violet Lamp																					
11. Security Chamber																					
12. Sputum Destroyer																					
13. Air Conditioner																					
14. Lab. Refrigerator	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

TB CONTROL PROJECT

Delivery Schedule
of
Equipment

ITEM	7) , Patuakhali	8) , Jessore	9) , Magura	10) , Kushtia	11) , Meherpur	12) , Chuadanga	TB Clinic, Rajshahi Div. 1) , Rajshahi	2) , Natore	3) , Ch.Nowabgonj	4) , Pabna	5) , Serajgonj	6) , Bogra	7) , Tajhat(Rangpur)	8) , Gaibandha	9) , Kurigram	10) , Dinajpur	11) , Thakurgaon	TOTAL
1. Vehicles (Jeep)																		4
2. Vehicle (Microbus)																		1
3. X-Ray Unit, 500mA																		2
4. X-Ray Unit					1	1										1		5
5. Microscope			1		1	1								1	1		1	50
6. Audio Visual Equipments																		2
7. Petri Dishes																		150
8. Fine Analytical Balance																		2
9. Centrifuge	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	49
10. Ultra Violet Lamp																		10
11. Security Chamber																		6
12. Sputum Destroyer																		6
13. Air Conditioner																		10
14. Lab. Refrigerator	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	62

4.3 Expenditure on the Project

The Government of Bangladesh will bear no costs since the medical equipment to be supplied to the existing facilities needs no extra work for the installation of the equipment. In additions, existing water supply, serverage and power supply systems will function without imposing any obstructions on the installation and operation of the new equipment to be supplied.

However, the Government of Bangladesh is responsible for the costs mentioned in 5.2.2.

CHAPTER V. PROJECT IMPLEMENTATION AND MANAGEMENT

CHAPTER V

PROJECT IMPLEMENTATION AND MANAGEMENT

5.1 Implementation

(1) Implementation Body

The implementation bodies are BIRDEM, which is under the supervision and control of the Ministry of Social Welfare and Women's Affairs for BIRDEM, and the Director General of Health Services of the Ministry of Health and Family Planning for the Further Development of TB Control Services and for the purchase and installation of the equipment to be supplied.

(2) Implementation Method

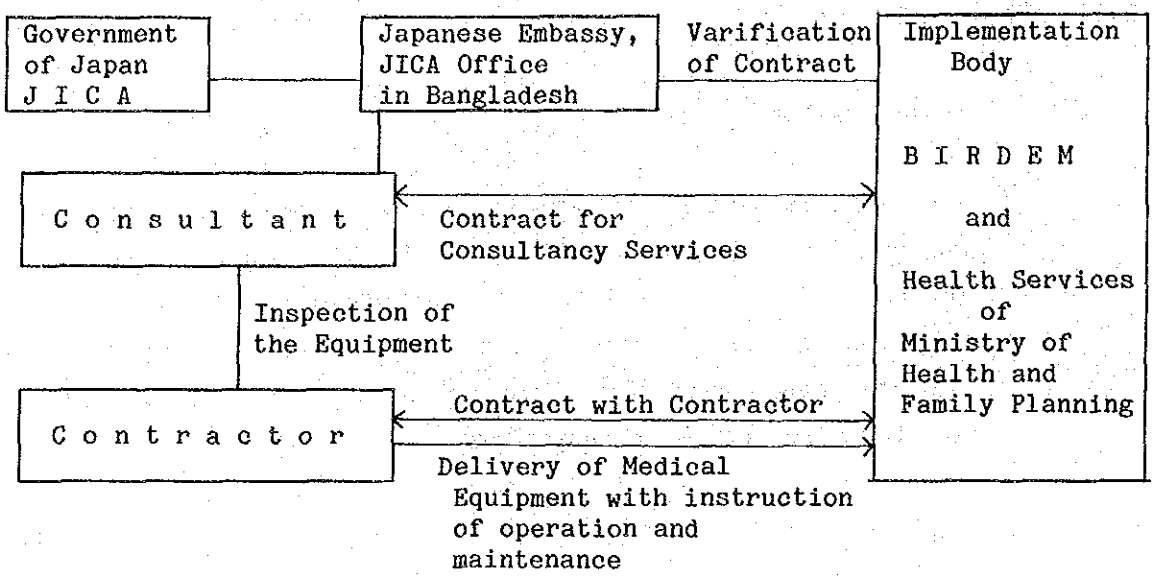
In the case where the Project is implemented under the Japanese Grant Aid, the Japanese Consultant will conclude contracts for consultancy services with the implementation bodies concerned of Bangladesh in accordance with the procedures of the Japanese Grant Aid System. Under the contracts the Consultant will carry out the following consultancy services for the Government of Bangladesh:

- Detailed design : to execute a detailed design study and to prepare specifications of medical equipment and related technical materials.

- Tendering : to assist selection of Contractor including preparation of tender documents and tendering procedures and to cooperate in concluding contract agreements.

- Procurement : to supervise procurement of medical equipment to be carried out by the Contractor.

The procurement of the medical equipment shall be carried out by (a) Japanese firms(s) selected through tendering. The implementation mechanism is shown in the following chart:



5.2 Undertakings of Both Governments

In the case where the Project is implemented under the Japanese Grant Aid, it is appropriate to define the undertakings of both Governments as follows:

(1) Undertakings of the Government of Japan:

(a) The equipment to be supplied by the Government of Japan is is indicated in lists 4.1.3. and 4.2.3.

(b) Sea and land transportation costs of the equipment and installation costs if necessary.

(c) Installation and initial test as well as instruction in operation and maintenance of the equipment as required.

(2) Undertakings of the Government of Bangladesh:

(a) Provision of space and facilities for the installation of the equipment.

(b) Provision of utilities such as electricity, gas, water, drainage, etc. which are required for the installation of the equipment.

(c) Provision of storage facilities where the equipment will be stored until the installation works begin.

(d) Assurance of smooth proceedings of unloading and customs clearances as well as prompt land transportation to the site of the equipment.

(e) Exemption from taxes, duties for the equipment to be supplied under Japanese Grant Aid programme as well as exemption from income taxes and duties on personal items to be brought into the country in the case of Japanese nationals providing services under the Project.

(f) Bearing of charges for the Banking Arrangement (B/A) and authorization to Pay (A/P).

(g) Provision of licences, approval and other authorizations required for the execution of the Project.

(h) Bearing of the other costs than the grant aid which is required for the execution of the Project.

(i) Proper and effective operation and maintenance of the equipment to be supplied under the Japanese Grant Aid.

5.3 Implementation Schedule

The following is the work programme for the implementation of the Project.

(1) The Consultant will conclude the Contract for Consultancy Services with the Ministries concerned of the Government of Bangladesh as soon as possible after the conclusion of E/N.

(2) The Consultant will conduct the detailed design study within approximately two (2) months after the conclusion of the Contract for Consultancy Services.

(3) Tendering will require about two (2) months.

(4) The selected Contractor will enter into a contract with the authorities concerned of Bangladesh.

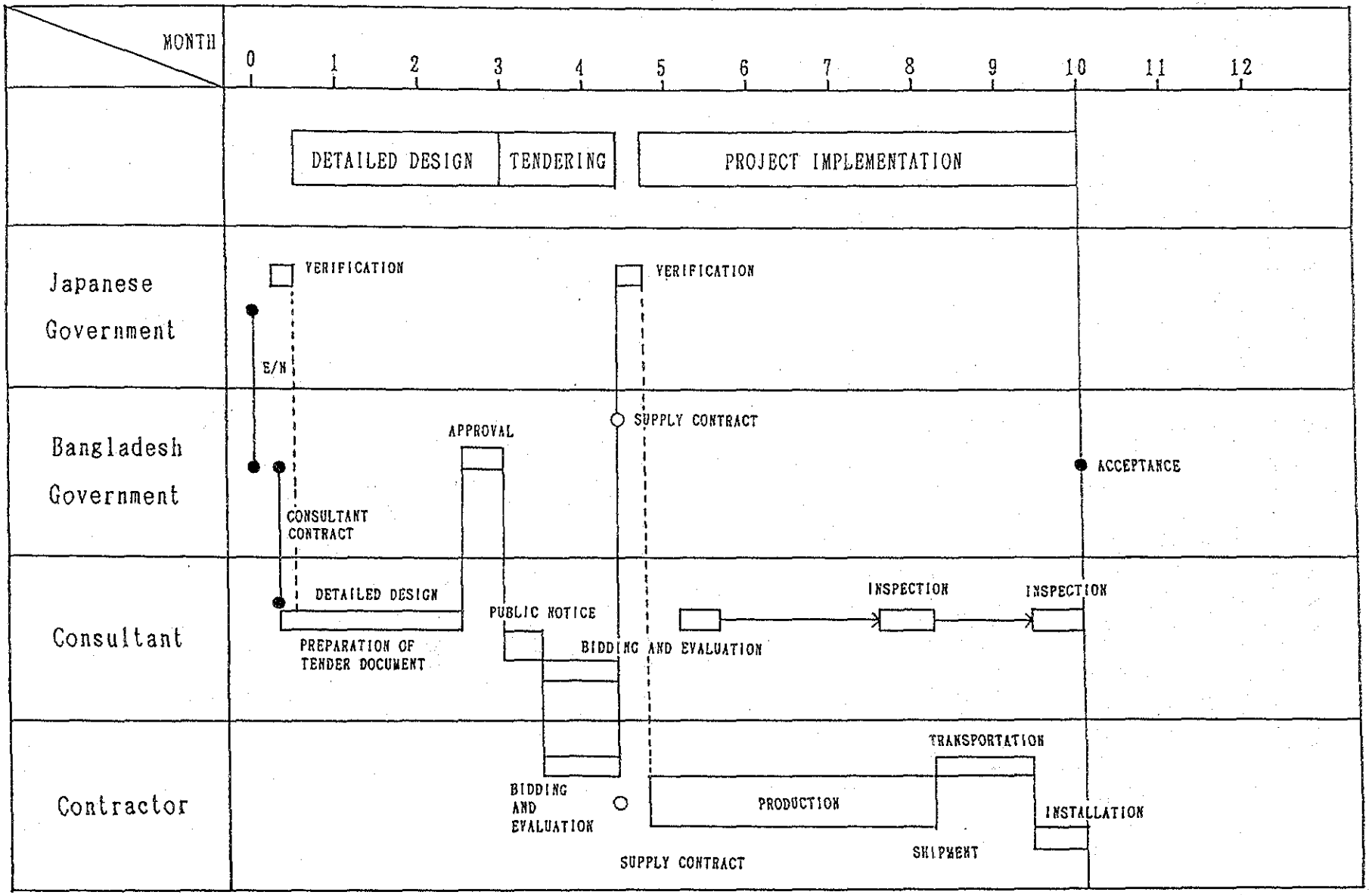
(5) Procurement of the medical equipment will require about four (4) months.

(6) Shipment and delivery will require about one and a half (1.5) months.

(7) Inspection and supervision including instructions in operation and maintenance will be conducted in a period of about 15 days.

As seen in the Basic Design, the Contractor is responsible for the installation and instructions in operation and maintenance of the specific medical equipment. Procurement of the labour services for unpacking and installation works will be made in principle inside Bangladesh.

WORK PROGRAMME



CHAPTER VI OPERATION AND MAINTENANCE

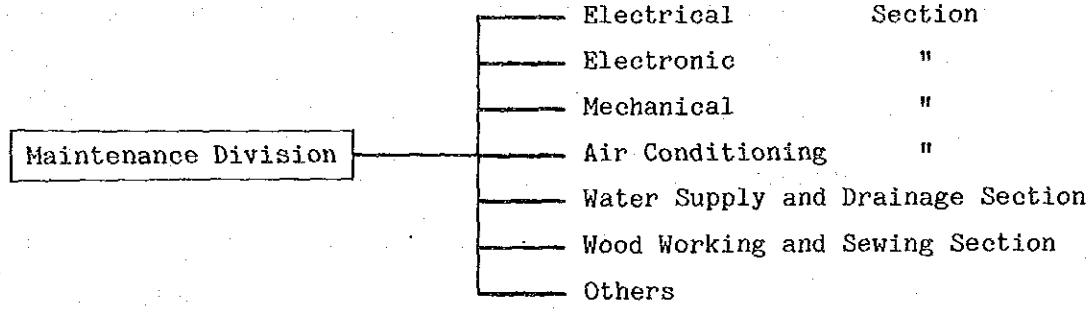
CHAPTER VI

OPERATION AND MAINTENANCE

6.1 BIRDEM

6.1.1 Operation and Maintenance Organization

BIRDEM has a maintenance division under the Director General. It is manned by well-trained qualified and experienced engineers and technicians and supporting staff having its own repair shop. The organizational chart is as follows and skilled technicans are in charge of their respective sections. Engineers in charge of the operation of equipment are responsible for starting, checking-up, cleaning, oiling, etc.



Besides its own in-house maintenance, BIRDEM is willing to enter into a service contract with outside expert organizations or engage very specialized individuals for maintenance and regular checking of equipment if this is advantageous in maintaining the high quality of their services.

As an example it already has agreement for:

Equipment	Suppliers
Computer	(IBM) with IBM Agent in Dhaka
Medical Gases System	(BOL) with British Oxgen, Dhaka
Orbiscope	(Siemens) with Siemen, Dhaka
Xenon Lamp	(Zeiss) with BUET, Dhaka
Laser Coagulator	(Coherent) Coherent Agent in India

BIRDEM is ready to enter into a service contract with outside expert organizations or engage specialized individuals for maintenance of newly introduced equipment if their services are necessary.

As for the procurement of spare parts, common items are available in the local market. However, sophisticated spare parts have to be imported when required. BIRDEM can import required spare parts whenever necessary as permission is granted to import equipment without import licence by the Government and it is exempted from the payment of custom duties and sales tax on imported items.

6.1.2 Operation and Maintenance Costs

Budgetary provision to meet expenditures for maintenance of equipment is kept in the annual budget of BIRDEM. Anticipated added expenditure required towards maintenance of equipment that has been acquired is provided for fiscal allocation.

Expenditures related to the maintenance for the fiscal year 1986-87 are as follows:

Electricity and Gas	731,050.00	Taka
Medicines, Chemicals and Reagents (excluding Insulin)	2,744,526.00	"
Repair & Maintenance of Building & Equipment	519,190.00	"
Workshop Expenses	170,298.00	"
Petrol & Mobil & Maintenance of Vehicles	387,920.00	"

6.1.3 Operation and Maintenance Costs of Major Equipment

Expenditure for maintenance of major equipment is approximately as follows:

			Taka
CT Scanner	a. Maintenance contract (including 3 or 4 regular check-ups a year)	approx.	345,000
	b. Film and other consumable goods (assuming 20 patients per day and 460 taka per patient) 115 Taka x 20 x 20 days x 12 months	"	552,000
X-Ray unit with Angiogram Injector	a. Three regular checks per year by specialist 2,300 taka for each check, adjustment of KV.MA etc.	"	7,000
	b. Film and other consumable goods (20 patients per day 46 taka per patient) 46 Taka x 20 x 20 days x 12 months	"	221,000
Ultrasound Scanner	a. Polaroid film and other consumable goods (23 taka per patient, 50 patients per day) 23 Taka x 50 x 20 days x 12 months	"	276,000
Nerve Conduction Apparatus	a. Two regular checks per year (2300 taka for each check, probe amendment)	"	5,000
	b. Record paper and other consumable goods (11.5 taka per patient, 30 patients per day) 11.5 Taka x 30 x 20 days x 12 months	"	83,000
X-Ray Unit (C-arm)	a. Regular checks 3 times per year by specialist (1,150 taka for each check, adjustment of KV, MA, etc.)	"	3,000
	b. Film and other consumable goods (46 taka per patient 20 times per months) 46 Taka x 20 x 12 months	"	11,000

Clinical Chemistry Analyzer	a. Two regular checks per year (2 units) (1,000 taka, adjustment)	approx.	5,000
	b. Reagents and other consumable goods (1.1 taka 3,000 times/day) 4.6 Taka x 3000 x 20 days x 12 months	"	792,000
Blood Gas Analyzer	a. Two regular checks twice per year by specialist (1,000 taka for each check, adjustment)	"	2,000
	b. Reagents and other consumable goods (23 taka x 40 times per day) 23 Taka x 40 x 20 days x 12 months	"	221,000
H.P.L. Chromatograh	a. Two regular checks twice per year by specialist (1000 taka for each check, adjustment)	"	2,000
	b. Reagents and other consumable goods (11 taka, 200 times/months) 11 Taka x 200 x 20 days x 12 months	"	528,000
Gamma Scintillation	a. Two regular checks twice per year(by specialist (1000 taka for each check, adjustment)	"	2,000)
	b. IR, Other consumable goods ((22 taka, 30 times per day) 22 Taka x 30 x 20 days x 12 months	"	158,000)
Ultra Centrifuge	a. Consumable goods and others (7 taka x 60 times per month) 7 Taka 60 x 12 months	"	5,000
Amino Acid Analyzer	a. Two regular checks twice per year by specialist (1000 taka for each check, adjustment)	"	2,000
	b. Reagents, column, chart, etc. (41 taka, 20 times/day) 41 Taka x 20 x 20 days x 12 months	"	196,000
D.B. Spectrophotometer	a. One check per year by specialist (1000 taka for adjustment)	"	1,000
	b. Reagents, other consumable goods (11 taka, 10 times per day) 11 Taka x 10 x 20 days x 12 months	"	26,000

L.S. Spectrophotometer	a. Two regular checks per year by specialist (1000 taka for check and adjustment)	approx.	(2,000)
	b. IR, Other consumable goods (460 taka x 45 times per month) 460 Taka x 45 x 12 months	"	(248,000)
Gas Chromatograph	a. Two regular checks per year by specialist (1000 taka, check, adjustment)	"	2,000
	b. Reagents, Other consumable goods (9 taka, 25 times per day) 9 Taka x 25 x 20 days x 12 months	"	54,000
Boiler	a. Maintenance for regular inspection once per year, daily checking shall be done.	"	7,000
Auxiliary Generator	a. Two regular checks per year by specialist (2000 taka for each time)	"	4,000
	b. Cost for fuel heavy oil not included		
		Total approx.	3,350,000 (410,000)

Remarks : The amounts in parentheses are for the equipment to be replaced; therefore, they are not regarded as added expenditure. However, in BIRDEM, revenue from diagnosis and general laboratory and bio-chemistry work corresponds to expenditures for diagnosis and general laboratory and bio-chemistry, and is therefore counted on annual balance sheet. As a result, maintenance expenditures for the above equipment are generally covered by this revenue.

6.1.4 Staff Increasing by Major Equipment Supply

The number of medical personnel should be increased to correspond with introduction of the major equipment.

Equipment	Doctor	Technician	Medical Assistant
CT Scanner (Renewal)		(2)	(1)
X-Ray Unit with Angiogram (increase)	1	1	1
Ultrasound Scanner (increase)	(1)		
Nerve Conduction Apparatus (new introduction)	1		1
X-Ray Unit (C-arm)(new)		1	
Clinical Chemistry Analyzer 2 sets (increase)		2	4
Blood Gas Analyzer (increase)		1	
H.P.L. Chromatograh (increase)		1	2
Gamma Scintillation (renewal)		(1)	(1)
Video Camera & Display (new) (Seminar Hall Operator)		1	
L.S. Spectrophotometer (renewal)		(1)	(1)
Amino Acid Analyzer (new)		1	1
D.B. Spectrophotometer (new)		1	1
Gas Chromatograph (new)			
Ultra Centrifuge (new)	(Can be met with staff already secured)		
Personnel in Research Division for Microscope etc.		3	6
Auxiliary Generater		(2)	(2)
Vehicle Drivers		3	
	2	15	16
	(1)	(6)	(5)

Remarks: Personnel in parentheses are already secured because they are for the equipment to be renewed.

Together with the increase in the number of personnel as above, expenditure for employment of the personnel is estimated to be as follows:

Doctor	2,500 taka/month increase	2	60,000 taka/year	
Technician	1,800 " / " "	15	324,000 " / "	
Medical assistant	1,000 " / " "	15	180,000 " / "	

The increase of expenditure for employment of the personnel is expected to be covered by increasing the annual budget.

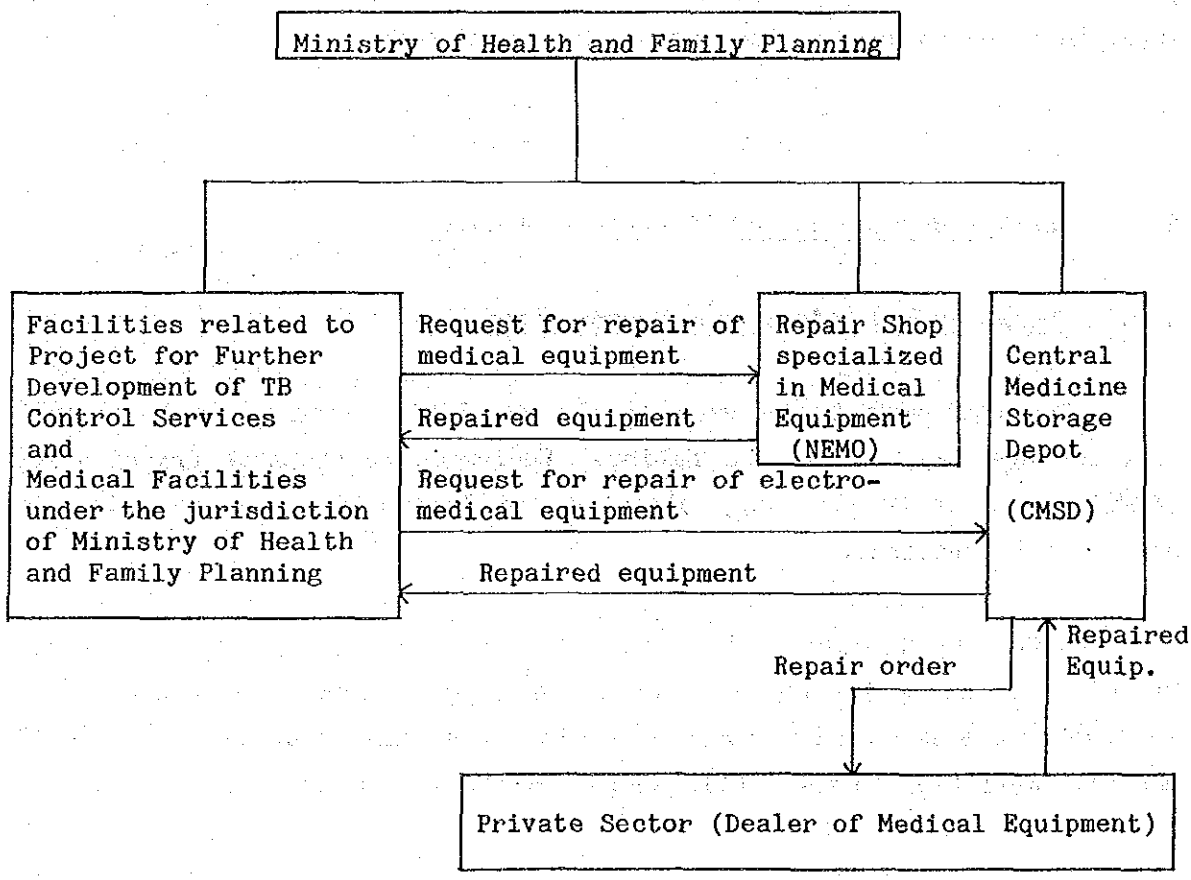
6.2 Further Development of TB Control Services

6.2.1 Operation and Maintenance Organization

The equipment to be used at all facilities engaged in TB control services are repaired by the National Equipment Maintenance Organization (NEMO) while daily check-up, cleaning and lubrication are done by the operating technicians.

NEMO is an organization under the Ministry of Health and Family Planning and has a 3-story workshop in Dhaka with approx. 84 personnel. It is responsible for repair works of medical equipment that is used by all medical facilities in the public sector.

However, since only two years has passed since the establishment of the workshop, they do not repair electro-medical equipment or X-ray units. Central Medicine Storage Depot (CMSD) takes care of the repair of these equipment. The repair by these two organizations is done under their own budgets; however, the equipment related to the Project for Further Development of TB & Leprosy Control Services is repaired free of charge. The following is the organizational chart for repair works.



6.2.2 Operation and Maintenance Costs

Operation and maintenance expenditures are met by annual revenue budget for respective facilities. The respective budgets for the fiscal year 1987-88 are as follows.

1. National TB & Leprosy Control Project		1,951,000	taka	(approx.	8,486,000	yen)
2. TB Control & Training Institute		1,951,000	"	("	8,486,000	")
3. TB Hospital (each)	approx.	2,846,250	"	("	12,381,000	")
4. TB Segregation Hospital (each)	"	450,000	"	("	1,957,000	")
5. TB Clinic	"	440,000	"	("	1,914,000	")

All operation expenses including personnel costs are counted in the budget. After the installation of the equipment to be supplied by this project, increases in these revenue budgets will be approved to maintain and operate the equipment smoothly.

6.2.3 Operation and Maintenance Costs of Major Equipment

Amount to be increased in the Operation and Maintenance Expenditures after the supply of the equipment is as follows.

X-Ray Diagnosis Unit (500mA)	a. Three regular checks per year by specialist (2000 taka each, KV, MA adjustment)	approx. 6,000	taka
	b. Film and consumable goods (46 taka 50 times per day) 46 Taka x 50 x 20 days x 12 month x 2 units	(" 1,104,000	")
X-Ray Unit (Capacitor type) with Mirror Camera	a. Three regular checks per year by specialist (1000 taka each, KV, MAS adjustment)	" 3,000	"
	b. Film and consumable goods 9 taka, 20 times per day (9 taka x 20 x 20 days x 12 months) approx. 43,000 taka x 5 units	" 216,000	"

Sputum Destroyer	a. Electricity and others 11 taka once per day (11 taka x 20 days x 12 months)	approx. 18,000 taka
Vehicles	a. Regular check is done by TEMO (Governmental workshop)	" 17,000 "
	b. Fuel and other consumable goods (14 taka, 15 Km per day) 14 taka x 15 x 20 days x 12 months 50,000 x 5 vehicles	" 250,000 "
		Total approx. 510,000 taka (approx. 1,104,000 taka)

Remarks: The amount in parentheses does not compose a portion of expenditures to be increased because of the renewal of the equipment.

6.2.4 Staff Increasing by Major Equipment Supply

The number of personnel should be increased as follows with the introduction of the major equipment for the execution of this project.

Equipment		Doctor	Technician	Medical Assistant
Vehicle (Four-wheel drive microbus)	5 units		5	
X-ray diagnosis unit (500 mA)	2 units		(2)	(2)
X-ray diagnosis unit (Capacitor type) with mirror camera	5 units		(5)	(5)
Microscope	50 units	Required personnel are already secured		
Centrifuge	49 units	Same as above		
			5	0
			(7)	(7)

Remarks: Number of personnel in parentheses are already secured because of the renewal of the equipment.

Technician	approx. 1,800 taka (7,800 yen/month) increase of 5 persons	Annually 21,600 taka
Medical Assistant	approx. 1,000 taka (4,350 yen/month) no increase of persons	None

6.3 Cooperation from Private Sector

Main local representatives or service centres (located in Bangladesh or neighboring countries) for the major equipment to be supplied to the project for further development of TB & leprosy control services and to BIRDEM are as follows.

Regular checks and repair of the equipment to be supplied is obtainable directly or indirectly by these firms.

Representatives or Service Centres	Manufacturers
A.Q. Chowdhury & Co.	Shimazu Corporation Ciba Corning Diagnostics Ltd.
Haroom Enterprises Ltd., Dhaka	Tokyo Optical Co., Ltd.
Technotrade International, Dhaka	Smithkline Beckman Company
Stadmax Ltd., Dhaka	Yokogawa Medical Systems
Hitachi Medical Corp. Singapore Office	Hitachi Medical Corporation
PHULHAL, Dhaka	Fukuda Denshi Co., Ltd. Toshiba Corporation Nihon Kohden Corporation
Sarbam International Enterprise, Dhaka	Olympus Optical Co., Ltd.
Pimco Instruments, Dhaka	Nihon Kohden Corporation

CHAPTER VII PROJECT EVALUATION

CHAPTER VII

PROJECT EVALUATION

7.1 BIRDEM

BIRDEM is carrying out the expansion scheme of its facilities under the present Third Five-Year Plan, contemplating to strengthen its capability with 300 beds, as an institute of research and rehabilitation in diabetes, endocrine and metabolic disorders.

At present BIRDEM has 124 beds for in-patients and has accomplished remarkable achievement since its establishment.

Most of its exsisting equipment was introduced in the years between 1977 and 1979. Some of the equipment is old now, while others are insufficient in their capacities to meet the expansion scheme of its facilities.

Under such circumustances, therefore, the execution of this medical equipment supply project will greatly contribute to the expansion scheme of facilities of BIRDEM. Equipment incorporated in the Project has been selected along with the purpose of reinforcement of functions such as diagnosis, treatment, clinical examinations, research, education and management and also taking into due consideration the present facilities and future of the plan.

It is evident that BIRDEM will contribute a great deal to the promotion of national health through the development of medical services in Bangladesh, and no fear will be anticipated in the execution of the project, as medical service staff are quite used to handling the equipment.

7.2 Further Development of TB Control Services

The activities of Further Development of TB & Leprosy Control Services on national level commenced in 1976 as one of the important tasks incorporated in the Second Five-Year Plan and continued by in the Third Five-Year Plan.

The target of the activities is to prevent the occurence of TB by removal at the source by way of the prevention of diseases, the early detection of patients, treatment and proper health guidance.

For the promotion of this service, it is indispensable to have a scrutinized plan, well-trained medical staff, appropriate laboratory equipment, and sufficient supply of anti-TB drugs.

Although the strengthening of medical staff is one of the most important elements for the facilities which will promote this service, the support of the present working medical staff with the renewal of old equipment and introduction of new equipment should be regarded as the most urgent matters to strengthen the services.

The equipment to be supplied are X-ray diagnosis apparatus, microscope and others, which are directly useful for the detection of patients; the result of the supply of the equipment is considered great.

Much of the equipment will be used in rural areas, and therefore a direct contribution is anticipated for the betterment of health of rural people through the detection of TB patients.

The equipment to be supplied are mainly renewed ones or equipment so easily manipulated that there are no difficulties in their operation. As durable equipment is particulary needed to meet local conditions, there may be some problems of break down and repair will be easily done within the level of trained technique.

CHAPTER VIII CONCLUSION AND RECOMMENDATION

CHAPTER VIII

CONCLUSION AND RECOMMENDATION

8.1 Conclusion

Bangladesh is presently in its Third Five-Year Plan (1985-90). The Government plans to strengthen the health services for the entire nation by incorporating in the plan the project of Medical Equipment Supply to BIRDEM and Project for Further Development of TB & Leprosy Control Services as the important schemes in the medical and health services area.

Remarkable development has been achieved by BIRDEM since its establishment as a center for research and rehabilitation in diabetes endocrine and metabolic disorders.

Although its own efforts are being directed to improvement of the facilities and medical personnel for its future development, on account of its financial limitations, request has been placed to the Grant Aid of the Government of Japan for the replacement and reinforcement of its medical and laboratory equipment. The project for supplying the equipment has been designed through surveys and careful considerations; therfore, this project after its execution will contribute to upgrading the level of medical research and promoting the health of Bangladesh people by strengthening the functions of BIRDEM.

The Project for Further Development of TB & Leprosy Control Services is basically designed to supplement the shortage of equipment and renewal of obsolete equipment which has been an obstacle to the promotion of this project. The introduction of the equipement will promote the detection of TB patients which tends to be too late. It can be said that the contribution will be made to the promotion of health of rural people through the control of diseases.

Equipment to be granted is easy to use. As it is merely renewed

or combined with others which are easy to learn, and highly applicable to the circumustances peculiar to localities such as unstable electric supply, etc. Moreover, the choice of the equipment was made in such a way that the technical level of local mechanics can cope with repair work.

Therefore, because of the aforementioned reasons, it is deemed appropriate that Medical Equipment Supply Project for BIRDEM and Further Development of TB & Leprosy Control Services be executed.

8.2 Recommendation

As there is newly introduced equipment such as nerve conduction apparatus among the equipment to be supplied to BIRDEM, it is essential to secure medical personnel, namely doctors and para-medicals, who are accustomed to use such equipment. It is also essential that sufficient budget fundsbe allocated for increased amount of maintenanece when this project is executed.

The supply of equipment to Further Development of TB & Leprosy Control Services takes into consideration the existing facilities and the number of medical personnel; however, the present Project for Further Development of TB & Leprosy Control Services is not sufficiently planned. Accordingly, it is suggested that surveys in Bangladesh should be resumed for positive review for this project and for the establishment of a fundamental execution plan. Based on the surveys, consideration must be paid to the arrangement for the co-operation between the project executing body and its related organizations, upgrading of medical personnel skills, and ample supply of anti-TB drugs together with sufficient supply of equipment.

It is recommended that favourable consideration should also be paid to the dispatch of an administrative expert for the purpose of implementing the above matters if the request is made.

APPENDIX

APPENDIX 1

Appendix 1
1-1

MEMBERS LIST OF JAPANESE BASIC STUDY TEAM

1. Dr. Sadashige KAMIYA Director, Chiba Branch Office, Tokyo Quarantine Station, Ministry of Health and Welfare.	Team Leader
2. Dr. Naruo UEHARA Medical Official, International Medical Cooperation Department, National Medical Center, Ministry of Health and Welfare.	Hospital Management
3. Mr. Tamio TOMIZAWA Official, Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs.	Project Coordination
4. Mr. Chikashi OZAKI (From 14 Jan. to 23 Jan., 1988) Chief Consultant, Consultant Division, Binko Ltd.	Medical System Planning
5. Mr. Yukio CHUJO (From 24 Jan. to 5 Feb., 1988) Director, Consultant Division, Binko Ltd.	Medical System Planning
6. Mr. Yoshinobu NAGASHIMA Advisor, Consultant Division, Binko Ltd.	Medical Equipment
7. Mr. Junjiro MIKAMI Architect, Consultant Division, Binko Ltd.	Facility Engineering

Itinerary of Basic Design Study Team

Jan. 14 (Thu.)	Leaves Tokyo by TG-643 (Via Bangkok)
Jan. 15 (Fri.)	Arrives at Dhaka by TG-321 Courtesy call to and preliminary consultation at JICA Office
Jan. 16 (Sat.)	Courtesy call to the External Resources Division, Ministry of Planning and Planning Commission
	Courtesy call to the Ministry of Health & Family Planning (MOH & FP)
	Courtesy call to the Ministry of Social Welfare & Women's Affairs (MOSW & WA)
Jan. 17 (Sun.)	Call to the BIRDEM, Survey of facilities and Discussion on the Project
	Survey of ICVD
	Courtesy call to the Embassy of Japan
Jan. 18 (Mon.)	Discussion on the Project and survey at BIRDEM Discussion on the Draft Minutes at MOSW & WA
	Visit to WHO Office
	Meeting with Japan Overseas Cooperation Volunteers
Jan. 19 (Tue.)	Survey on the facilities of National TB & Leprosy control Project (TB Control Project), Discussion on the Draft Minutes
	Survey on the facilities of TB Control & Training Institute
	Survey on the BRAC
Jan. 20 (Wed.)	Discussion on the Request submitted by the BIRDEM and Draft Minutes

Jan. 21 (Thu.)	Discussion on the Request submitted by the BIRDEM and Draft Minutes
	Discussion on the Request on TB Control Project and Draft Minutes
Jan. 22 (Fri.)	Inside discussion on the Draft Minutes of the Team
Jan. 23 (Sat.)	Conclusion of Minutes with MOH & FP Surven on the BIRDEM site (Dr. UEHARA)
	Discussion on the Draft Minutes with MOSW & WA
Jan. 24 (Sun.)	Conclusion of Minutes with MOSW & WA
	Government members of the Team report to the Embassy of Japan and JICA Office (Leave for Japan by TB-322, via Bangkok)
	Remaining members prepare check-list and guestionnaire for TB Control Project and collection of data
Jan. 25 (Mon.)	Government members arrive at Tokyo by TG-640
	Remaining members submitt check-list and questionnaire on TB Control Project and collection of data
Jan. 26 (Tue.)	Discussion in detail on the requested equipment for BIRDEM
Jan. 27 (Wed.)	Site survey on TB Control Project and TB Control & Training Institute and discussion on the requested equipment
	Discussion on the requested equipment for BIRDEM
	Collection of related data
Jan. 28 (Thu.)	Survey on the TB Clinic, Munshingang Discussion on the requested equipment for BIRDEM
	Collection of related data at MOH & FP, Ministry of Establishment and WHO Office etc.
Jan. 29 (Fri.)	Collection of related data
	Inside meeting of the Team

Jan. 30 (Sat.)	Site survey on BIRDEM
	Collection and study of related data
Jan. 31 (Sun.)	Site survey on BIRDEM
	Discussion on the check-list and questionnaire at TB Control Project
Feb. 1 (Mon.)	Visit to NEMO for survey and collection of data
	Analysis on the collected data
Feb. 2 (Tue.)	Survey on CMSD, Tejgaon on check-list and questionnaire of BIRDEM
Feb. 3 (Wed.)	Visit to TB Hospital
	Discussion in detail on requested equipment for BIRDEM
	Report to JICA Office
	Analysis of related data collected
Feb. 4 (Thu.)	Report to the Embassy of Japan
	Leave for Tokyo via Bangkok
Feb. 5 (Fri.)	Arrive at Tokyo by TG-740, (via Bangkok)

Appendix 1

1-3 List of Personnel Concerned

External Resources Division, Ministry of Planning

1. Mr. Md. Nasim
   Deputy Secretary
   External Resources Division
   Ministry of Planning

2. Mr. Kamal Gooin Ahmed
   Research Officer
   External Resources Division
   Ministry of Planning

Government of Bangladesh,
Ministry of Social Welfare & Womens Affairs

1. Mr. Syed Magbul Hossain
   Division Cheif
   Planning Commission
   Ministry of Social Welfare & Womens Affairs

2. Mr. A. B. M. Nazmul Kawnine
   Deputy Chief
   Health Wing, Planning Commission
   Ministry of Social Welfare & Womens Affairs

3. Mr. Abul Hashem
   Joint Secretary
   Ministry of Social Welfare & Womens Affairs

4. Mr. S. S. Nath
   Deputy Chief
   Ministry of Social Welfare & Womens Affairs

5. Mr. M. G. Sarwar
   Assistant Chief
   Ministry of Social Welfare & Womens Affairs

6. Mr. Abdul Awal
   Director General, Dep. of Social Services
   Ministry of Social Welfare & Womens Affairs

Government of Bangladesh, Ministry of Health and Family Planning

1. Mr. Kazi Golaw Rahman
   Joint Secretary

2. Mr. S. Y. Khan Majlish
   Dy. Chief, Planning Cell

3. Dr. M. S. Islam
   Project Director,
   TB & Leprusy Control Seruces

4. Mr. Asadul Heco
   Dy. Secretary

5. Dr. Azizul Haoul
   Assistant Secretary

6. Mr. Azizul Haoue
   Assistant Secretary

7. Dr. Imdadul Islam
   Deputy Director

8. Dr. Moffd Serajul Islam
   Project Director
   TB & Leprosy Control Services

Bangladesh Institute of Research and Rehabilitation
in Diabetes Endocrine and Metabolic Disorders

1. Prof. M. Ibrahim
   President

2. Mr. S. M. Hosain
   Secretary General

3. Maj. Gen (Rtd) A. R. Khan
   Director General and Chief Consultant

4. Mr. S. M. Abul Hussain
   Coordinator

5. Prof. A. K. Azad Khan
   Director, Research and Development

6. Dr. Hajera Mahtab
   Medical Director

7. Mr. Ahsan Ahmad Ashk
   Treasurer

8. Dr. Anwarul Azim
   Consultant

9. Mr. Syed Ahmed
   Director, Education

10. Col (Rtd) Loqman Molla
    Director Hospital

11. Mr. A. K. M. Shahjahan
    Deputy Director

12. Mr. F. A. Chowdhury
    Executive Secretary

National TB. Control Project

1. Dr. Mehd. Serajul Islam
   Project Director
   TB. & Lepresy Control Services

2. Dr. Abul Quasem Syed Ahmed
   Assistant Director
   TB. Control & Administration

3. Dr. A. M. I. Imanuzzaman
   Officer-in-Charge
   National TB. Control Project

4. Dr. M. A. Wadud
   Junior Consultant
   National TB. Control Project

TB Control and Training Institute

1. Dr. Diloose Baw
   Superintender

2. Dr. Isubal Mahuiud
   Senior Medical Officer

3. Dr. Rashid Abuil
   Epidemiologist

4. Dr. Vikarmrs
   Bacteriologist

5. Dr. Nagnal Islam
   Medical Officer

6. Dr. Ibrahim
   Medical Officer

7. Dr. Anisnl Islam
   Medical Officer

8. Dr. Khursuid Herider
   Medical Officer

Bangladesh Rural Advancement Committee

1. Md. Shidol Hassan
   Sinior Area Manager

2. Dr. Usha Ranjan
   Medical Officer

3. Dr. Monoronjon Sarker
   Assistant Medical Officer

4. Md. Sahajahan Chy
   Area Manager

5. Mr. Biswas Abubakar
   Programme Organiser

Central Medical Store Department

1. Dr. Colovel Fazlul Haq
   Director
   Central Medical Store Department

2. Dr. Abdul Halim Mia
   Assistant Director
   Central Medical Store Department

Institute of the Disease of Chest & Hospital

1. Dr. A. K. Md. Ahsan Ali
   Director
   I.D.C. & Hospital

2. Dr. B. R. Khan
   Assoc. Professor of Pathology
   I.D.C. & Hospital

3. Dr. S. R. Khan
   F.R.C.S.
   I.D.C. & Hospital

Medical Equipment Maintenance Organization

1. Mr. Nazrul Islam
   Engineer

2. Mr. Abdullah Al Quayyum
   Engineer

Embassy of Japan in Bangladesh

Mr. Yoshitomo TANAKA,
Ambassador Extraordinary and Plnipotentiary

Mr. Toshihiro TAKAHASHI,
Minister-Counsellor

Mr. Yuji OKADA,
Second Secretary

JICA Bangladesh Office

Mr. Norio MATSUZAWA,
Resident Representative

Mr. Keizo EGAWA,
Deputy Resident Representative

Appendix 1

1-4 Minutes of Discussion (Copy)

1-4-1 BIRDEM

Minutes of Discussions

On

The Project for Procurement of Equipment for the Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM)

In

The People's Republic of Bangladesh

In response to the request by the Government of People's Republic of Bangladesh, the Government of Japan decided to conduct a basic design study on the Project for Procurement of Equipment for the Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (hereinafter referred to as "the Project") and the Japan International Cooperation Agency (JICA) despatched a study team (hereinafter referred to as "the Team") headed by Dr. Sadashige KAMIYA, Director, Chiba Branch Office, Tokyo Quarantine Station, Ministry of Health and Welfare from January 14 to February 3, 1988.

The Team conducted a site survey, held discussions and exchanged views with the officials concerned of the Government of Bangladesh.

As a result of the survey and discussions, both sides have agreed to recommend their respective Governments to examine the Major Points of Understanding attached herewith towards the realization of the Project.

Dated: January 24, 1988

Dr. Sadashige Kamiya
Team Leader
Basic Design Study Team
Japan International
Cooperation Agency
Tokyo

24/1/88

Abul Hashem
Joint Secretary
Ministry of Social Welfare
and Women's Affairs
Government of the People's
Republic of Bangladesh
Dhaka

The Major Points of Understanding

1. The objective of the Project is to upgrade functions of the BIRDEM by providing necessary equipment and promote the study on diabetes and allied diseases, from which considerable number of the population of Bangladesh are suffering.

2. The site of the Project is the Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM) in Dhaka. The List of Main Equipment requested by Bngladesh side is shown in ANNEX I.

3. The BIRDEM under the supervision and control of the Ministry of Social Welfare and Women's Affairs is the executing body of the Project.

4. The equipment will be selected by the Team based on the list requested by the Bangladesh side and the result of the survey conducted by the Team.

5. The Bangladesh side has understood Japan's Grant Aid System explained by the Team which includes a principle of use of a Japanese Consultant firm recommended by JICA and Japanese Contractor selected by the open tendering.

6. Both Governments will take necessary measures listed in ANNEX II on condition that the Grant Aid would be extended to the Project.

24/1

ANNEX I

1. Equipment for Diagnostic Centre
2. Operating Theatre Equipment
3. Laboratory Equipment
4. Equipment for Seminar and Lecture
5. Equipment for other Departments

ANNEX II

Necessary measures to be taken by both Governments

	Japan	Bangladesh
1. To submit the Basic Design Report by the end of March 1988.	*	
2. To provide equipment (including transportation to the site)	*	
3. To ensure prompt unloading and customs clearance at the port of disembarkation in Bangladesh of imported materials.		*
4. To exempt Japanese nationals concerned from duties, internal taxes and other fiscal levies which may be imposed in Bangladesh with respect to the supply of materials and services for the Project.		*
5. To bear commissions to the Japanese foreign exchange banks for the banking services based upon the Banking Arrangement.		*
6. To accord Japanese nationals, whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into Bangladesh and stay therein for the performance of their work.		*
7. To maintain and use properly and effectively the equipment provided under the Grant.		*
8. To bear all the expenses other than those to be borne by the Grant, necessary for the Project.		*

Appendix 1

1-4 Minutes of Discussion (Copy)

1-4-2 TB Control Project

Minutes of Discussions

on

The Project for Further Development
of Tubercurosis and Leprosy Control Services

in

The People's Republic of Bangladesh

In response to the request by the Government of People's Republic of Bangladesh, the Government of Japan decided to conduct a basic design study on the Project for Further Development of Tubercurosis and Leprosy Control Services (hereinafter referred to as "the Project") and the Japan International Cooperation Agency (JICA) despatched a study team (hereinafter referred to as "the Team") headed by Dr. Sadashige KAMIYA, Director, Chiba Branch Office, Tokyo Quarantine Station, Ministry of Health and Welfare from January 14 to February 3, 1988.

The Team conducted a site survey, held discussions and exchanged views with the officials concerned of the Government of Bangladesh.

As a result of the survey and discussions, both sides have agreed to recommend their respective Governments to examine the Major Points of Understanding attached herewith towards the realization of the Project.

Dated: January 23, 1988

Dr. Sadashige Kamiya
Team Leader
Basic Design Study Team
Japan International
Cooperation Agency
Tokyo

Dr.(Mrs) Mumtara Bint-A Rahman
Director General of Health
Services
Government of the People's
Republic of Bangladesh, Dhaka

The Major Points of Understanding

1. The objective of the Project is to provide equipment for Further Development of Tubercurosis and Leprosy Control Services in the People's Republic of Bangladesh.

2. The equipment will be selected by the Team based on the list requested by the Bangladesh side and the result of the survey conducted by the Team. The List of Main Equipment requested by Bangladesh side is shown in ANNEX I.

3. The Director General of Health Services, Ministry of Health and Family Planning is the executing agency of the Project.

4. The Bangladesh side has understood Japan's Grant Aid System explained by the Team which includes a principle of use of a Japanese Consultant firm recommended by JICA and Japanese Contractor selected by the open tendering.

5. Both Governments will take necessary measures listed in ANNEX II on condition that the Grant Aid would be extended to the project.

ANNEX I

List of Equipment Requested

1. X-Ray Unit
2. Microscope
3. Equipment for the Motivation and Health Education
4. Equipment for Laboratory
5. Medical Refrigerator
6. Other Equipment

ANNEX II

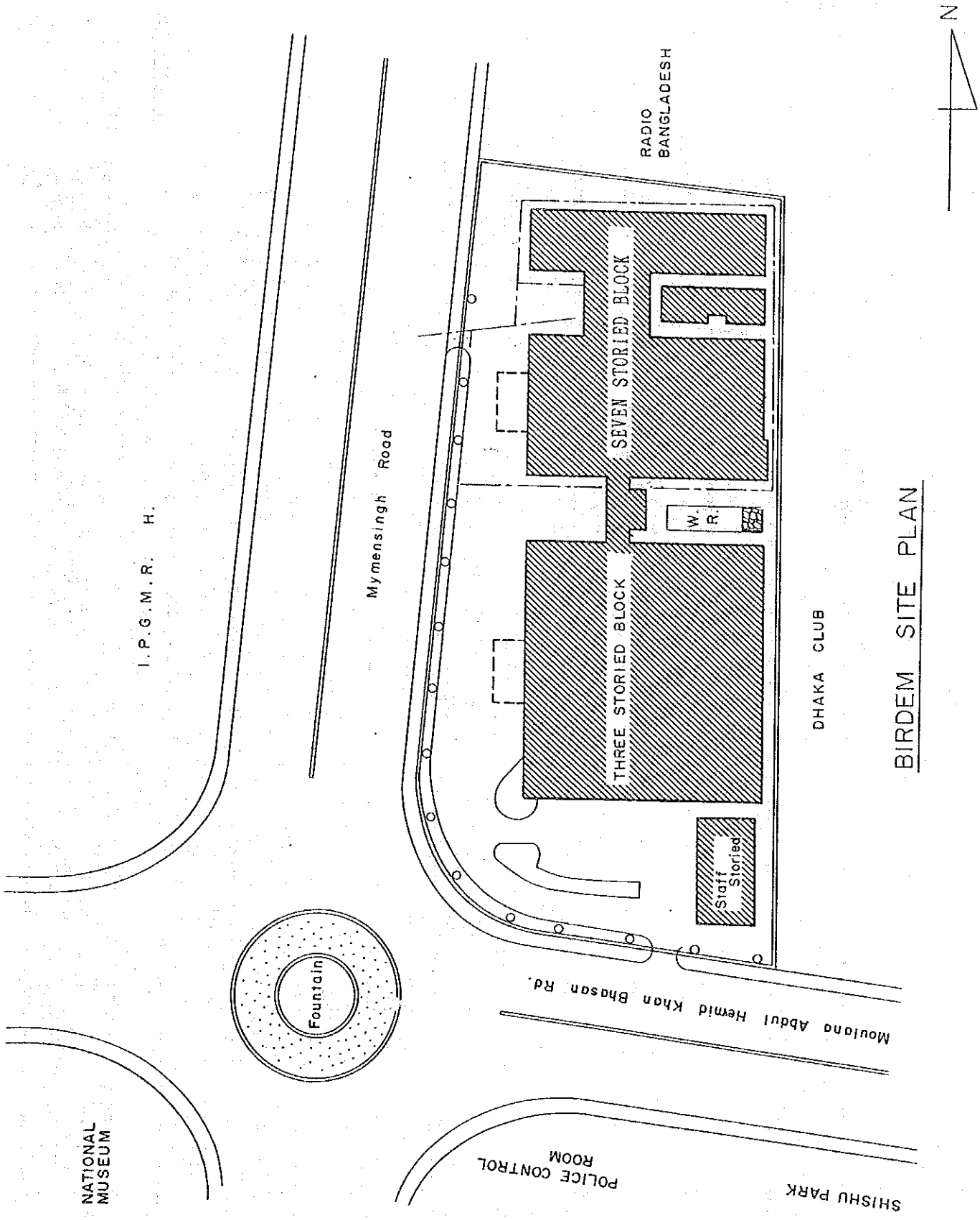
Necessary measures to be taken by both Governments

	Japan	Bangladesh
1. To submit the Basic Design Report by the end of March 1988.	*	
2. To provide equipment (including transportation to the site)	*	
3. To ensure prompt unloading and customs clearance at the port of disembarkation in Bangladesh of imported materials.		*
4. To exempt Japanese nationals concerned from duties, internal taxes and other fiscal levies which may be imposed in Bangladesh with respect to the supply of materials and services for the Project.		*
5. To bear commissions to the Japanese foreign exchange banks for the banking services based upon the Banking Arrangement.		*
6. To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into Bangladesh and stay therein for the performance of their work.		*
7. To maintain and use properly and effectively the equipment provided under the Grant.		*
8. To bear all the expenses other than those to be borne by the Grant, necessary for the Project.		*

APPENDIX 2

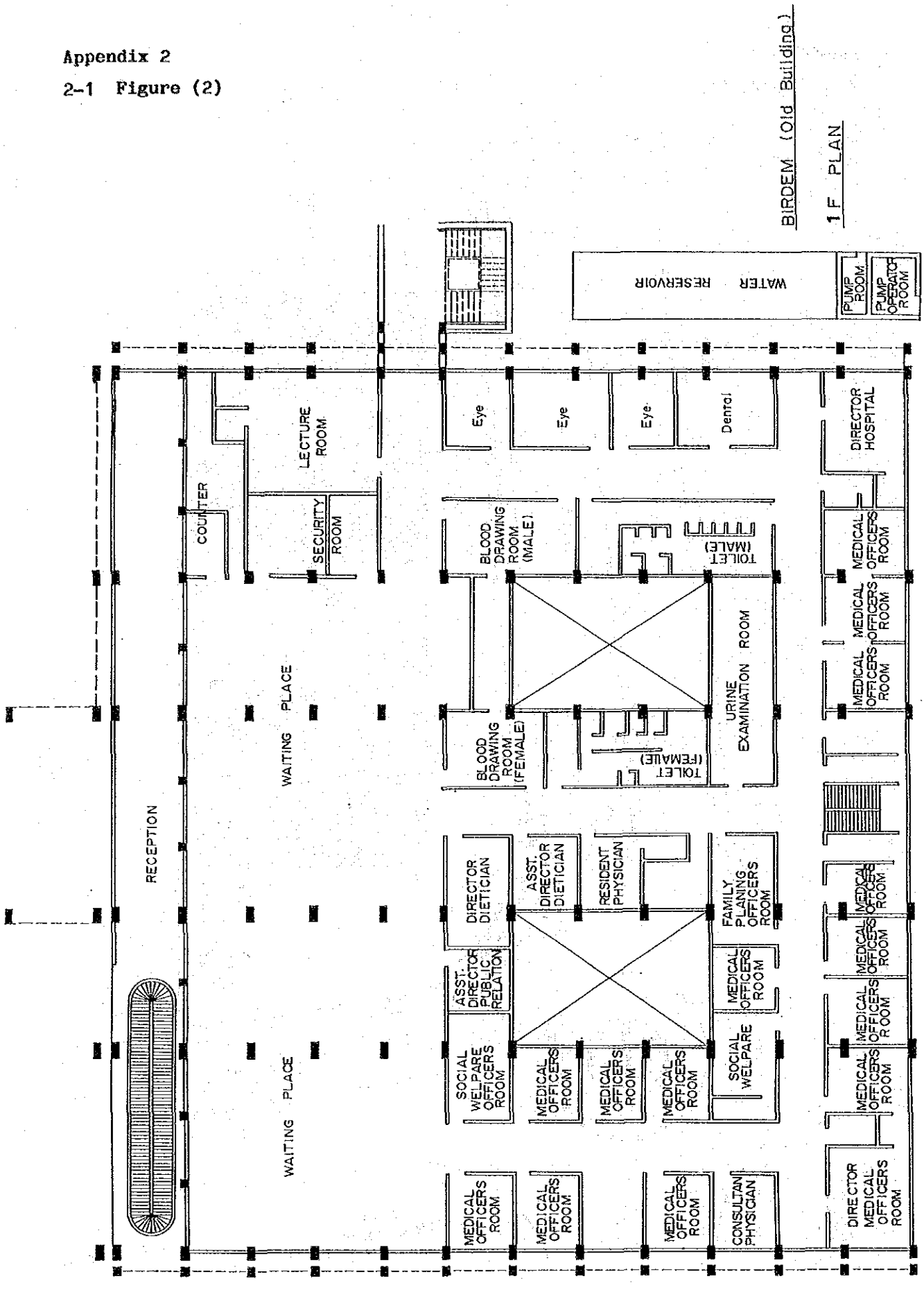
Appendix 2

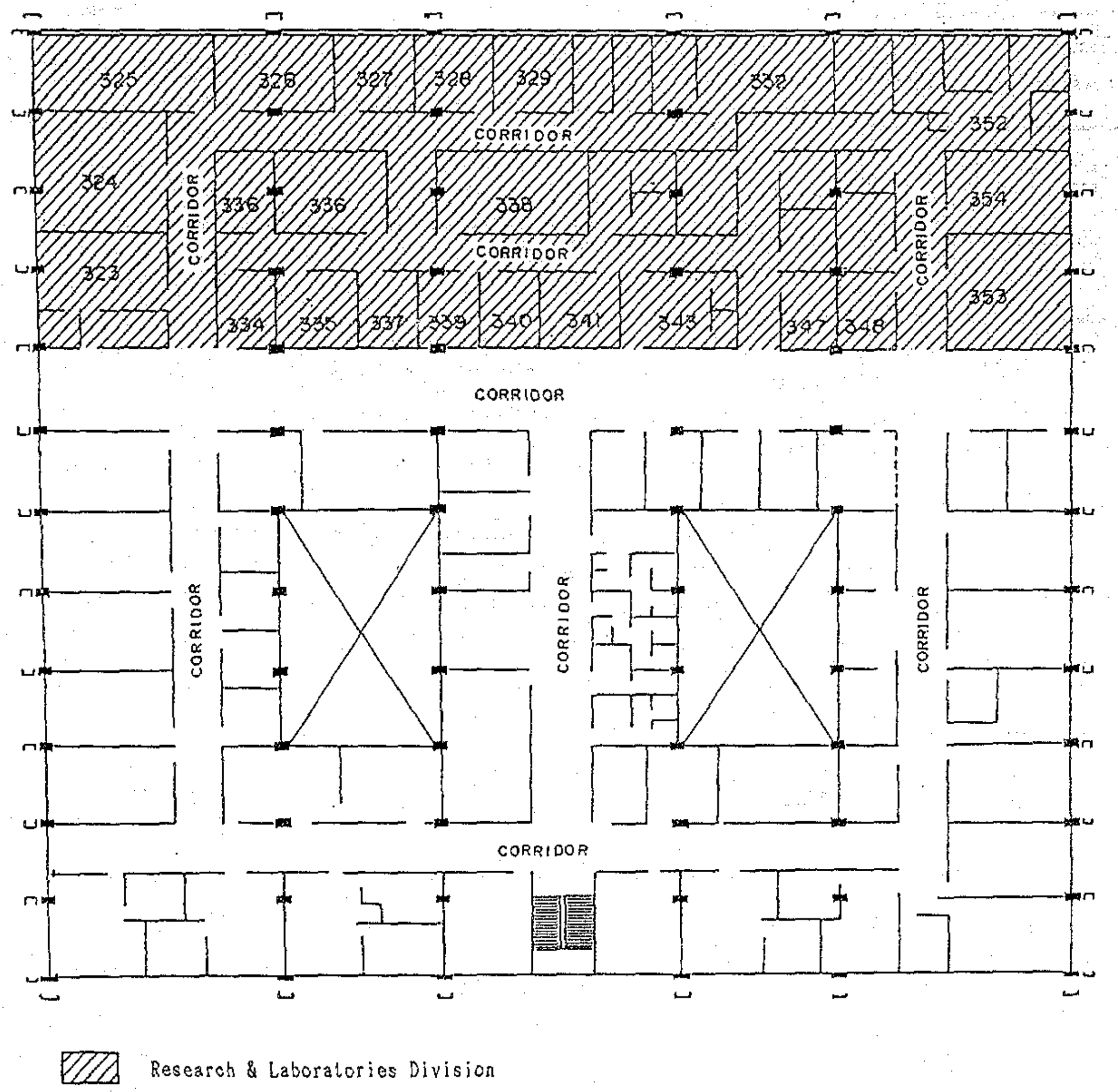
2-1 Figure (1)



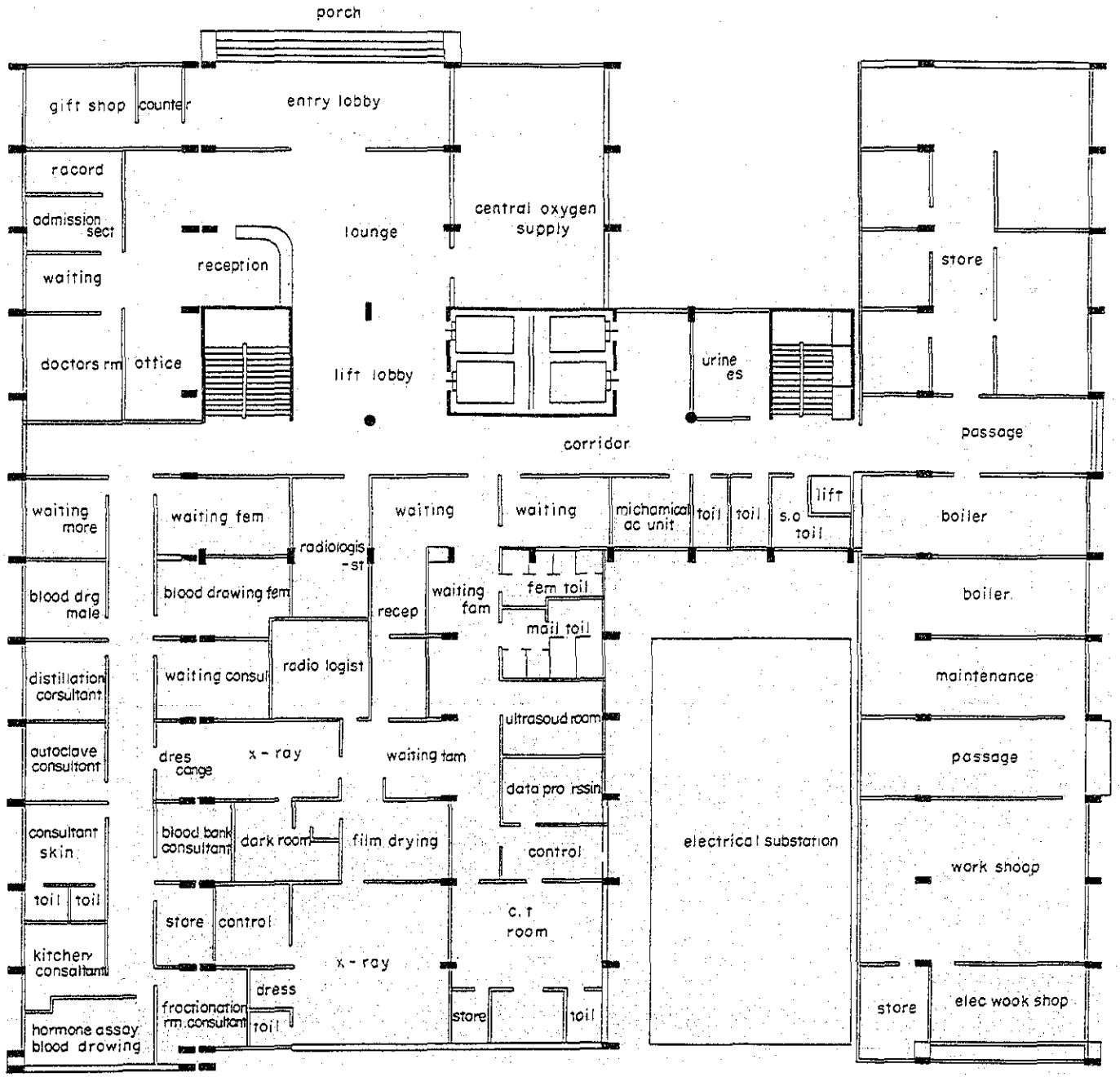
Appendix 2

2-1 Figure (2)

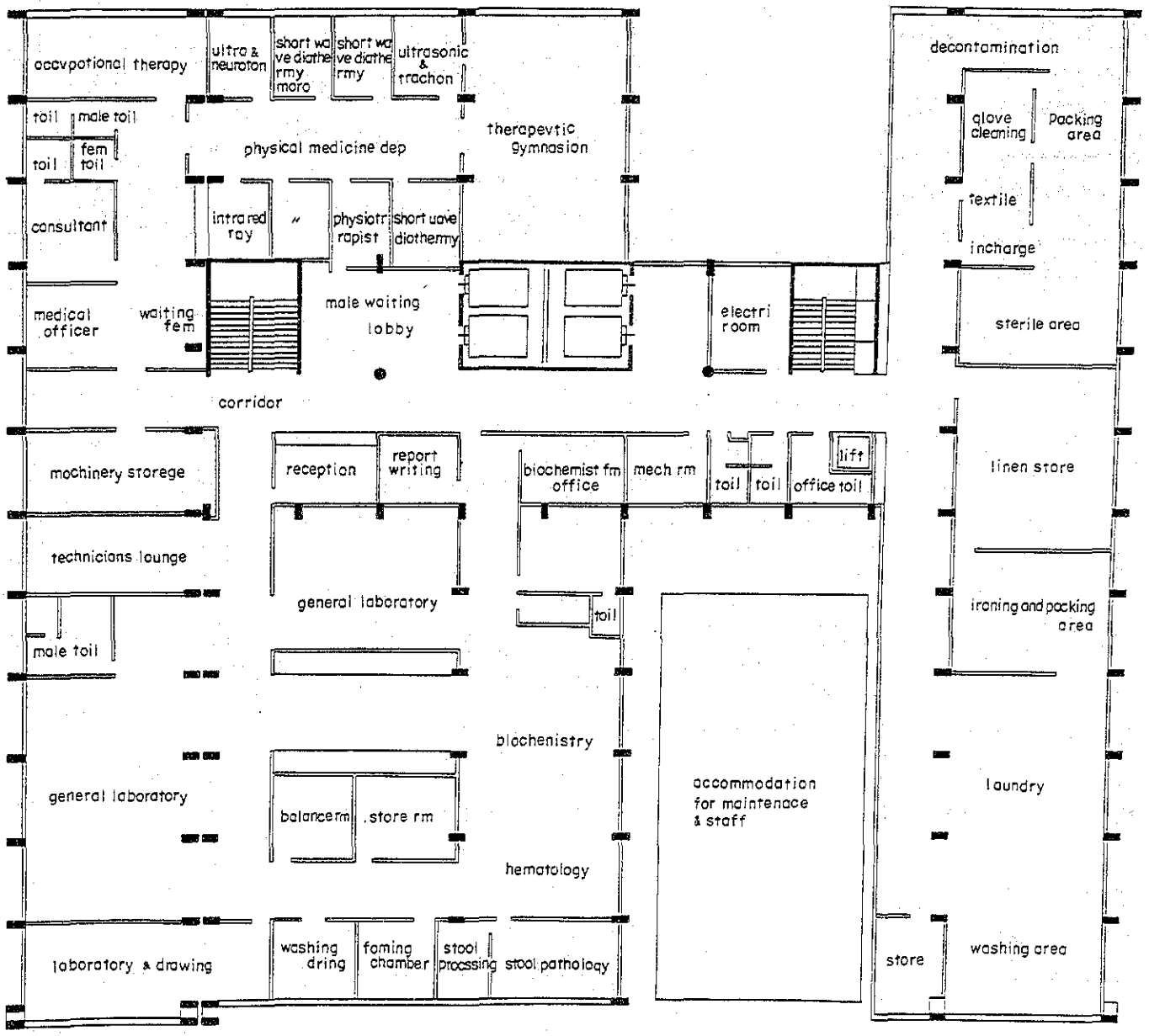




BIRDEM (Old Building) 3F PLAN



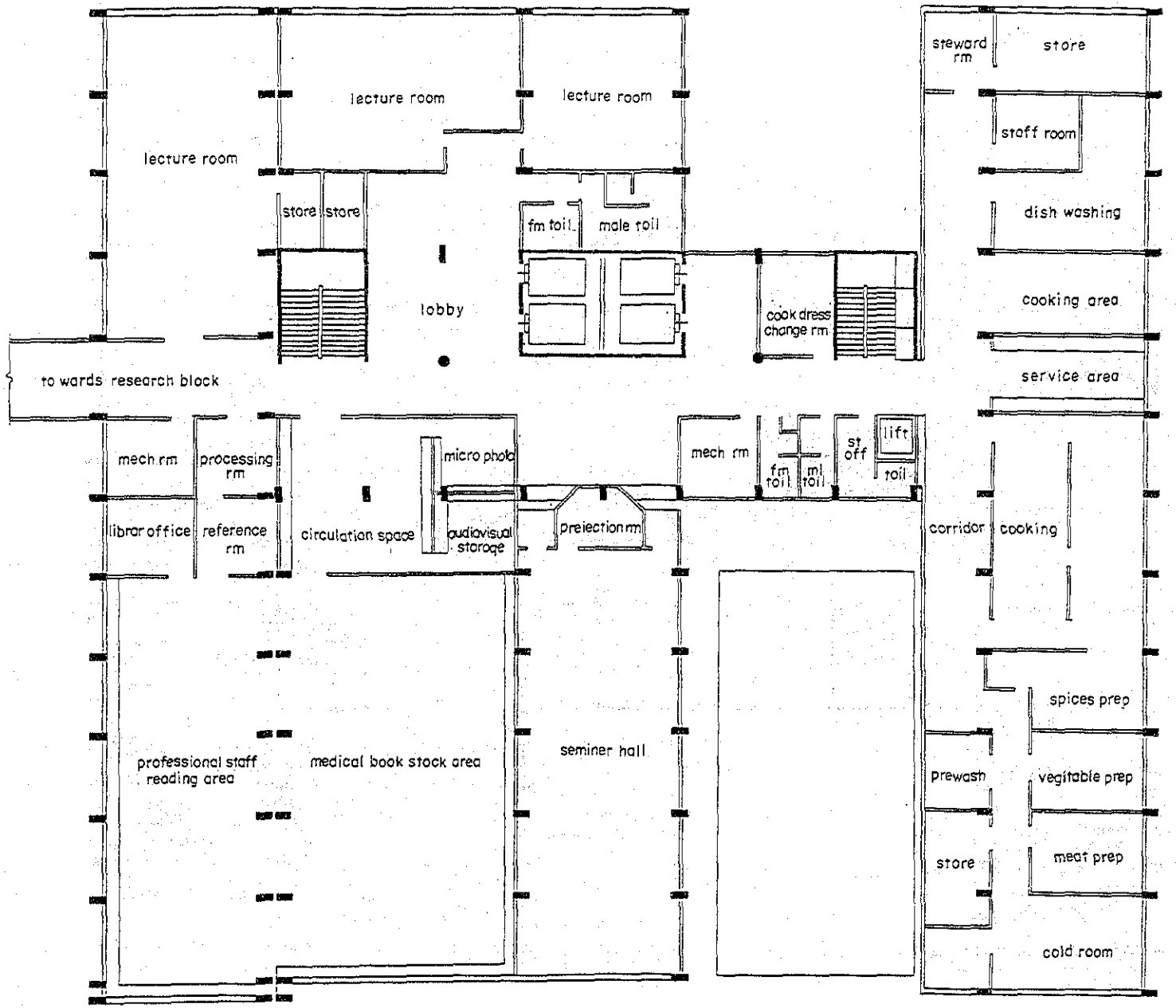
BIRDEM
New Building
IF PLAN



BIRDEM

New Building

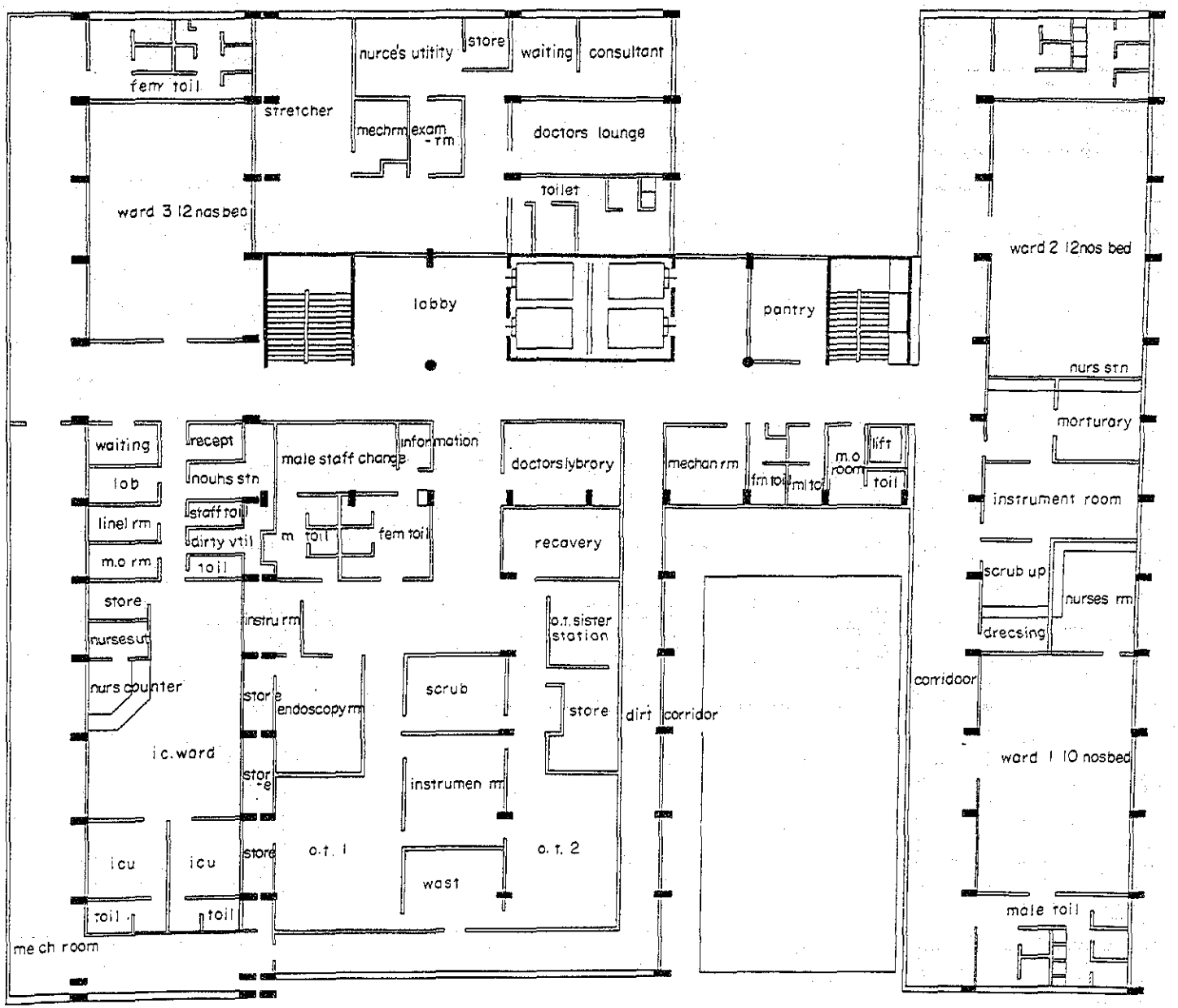
2F PLAN



BIRDEM

New Building

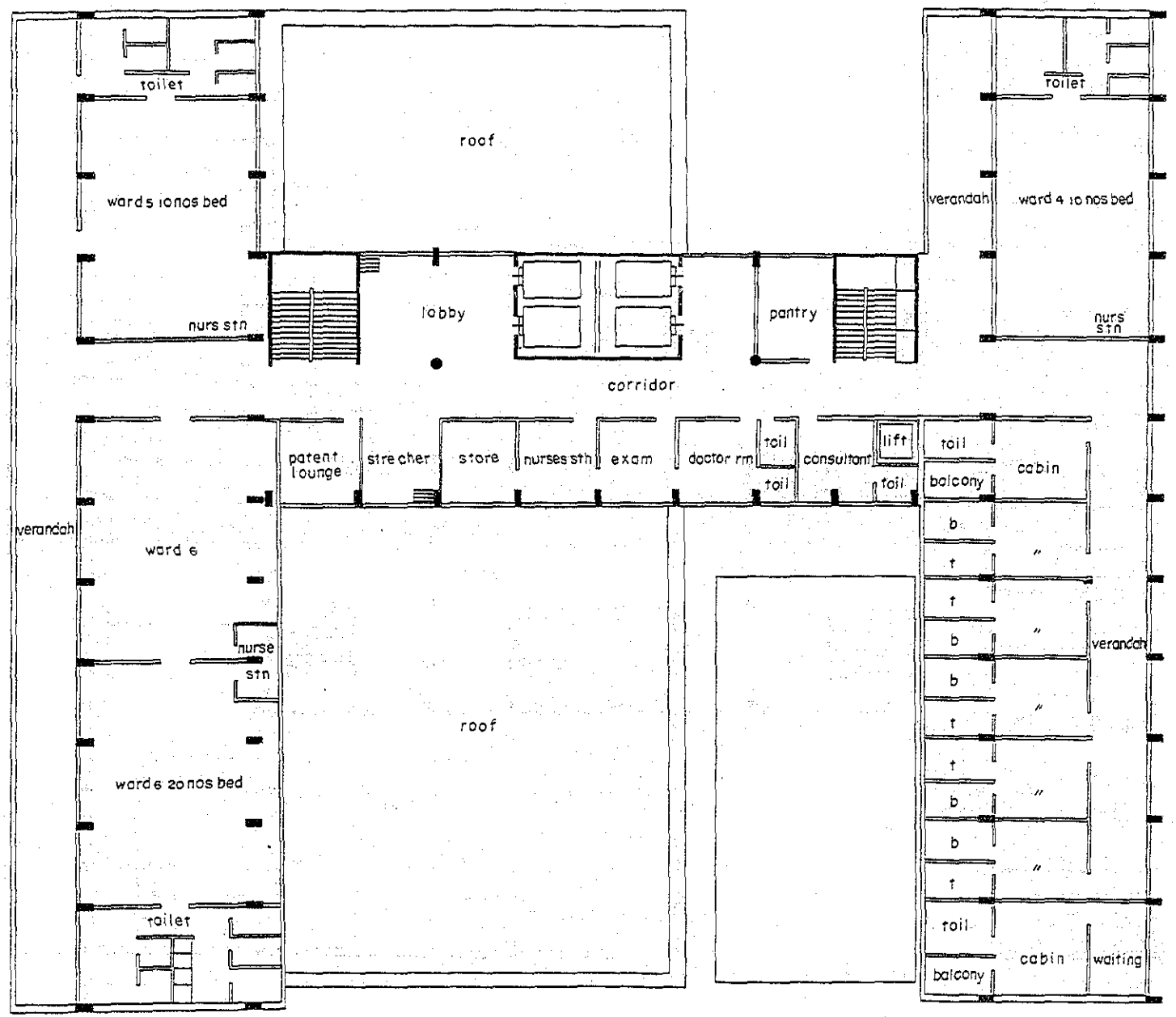
3F PLAN



BIRDEM

New Building

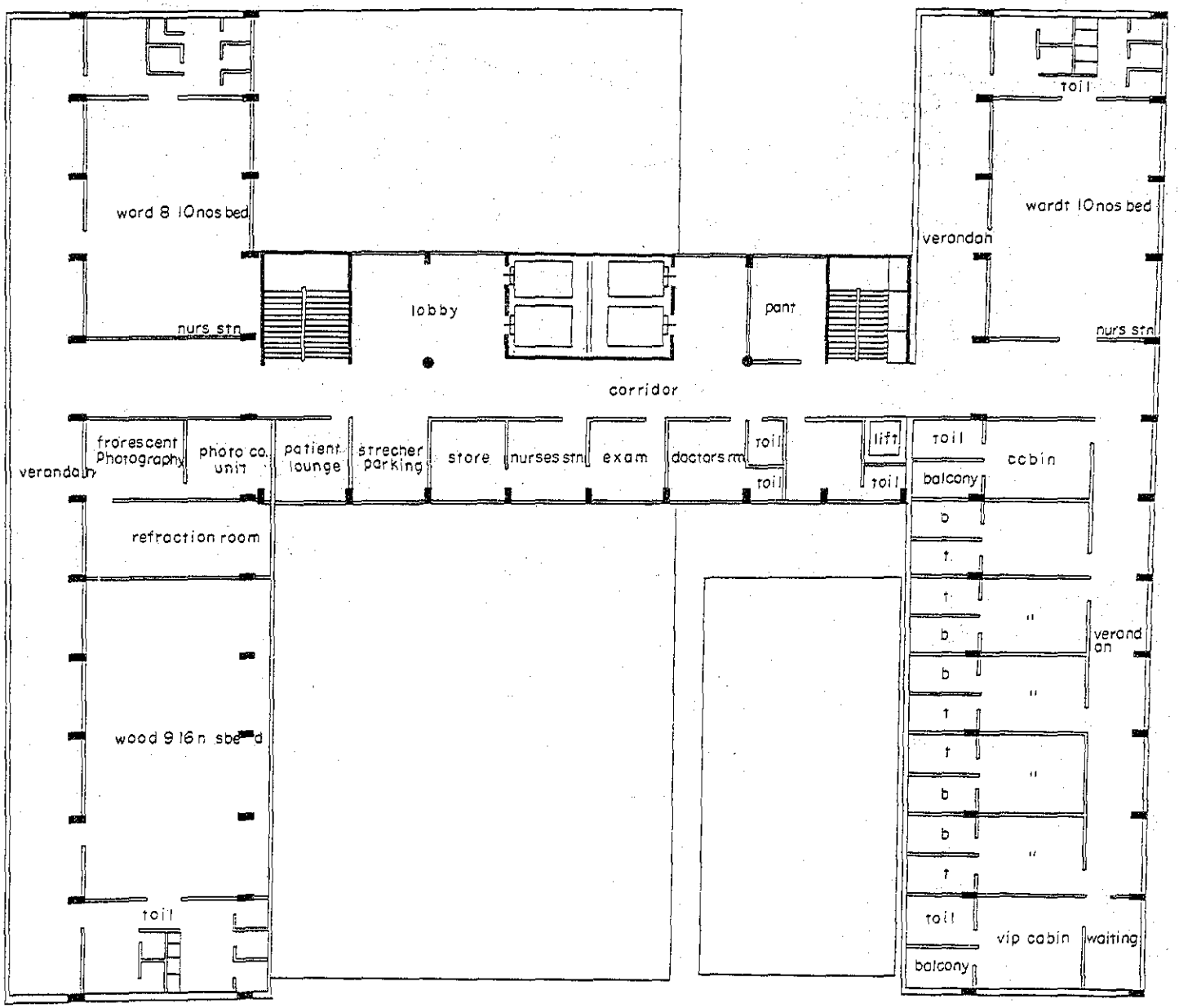
4F PLAN



BIRDEM

New Building

5F PLAN



BIRDEM

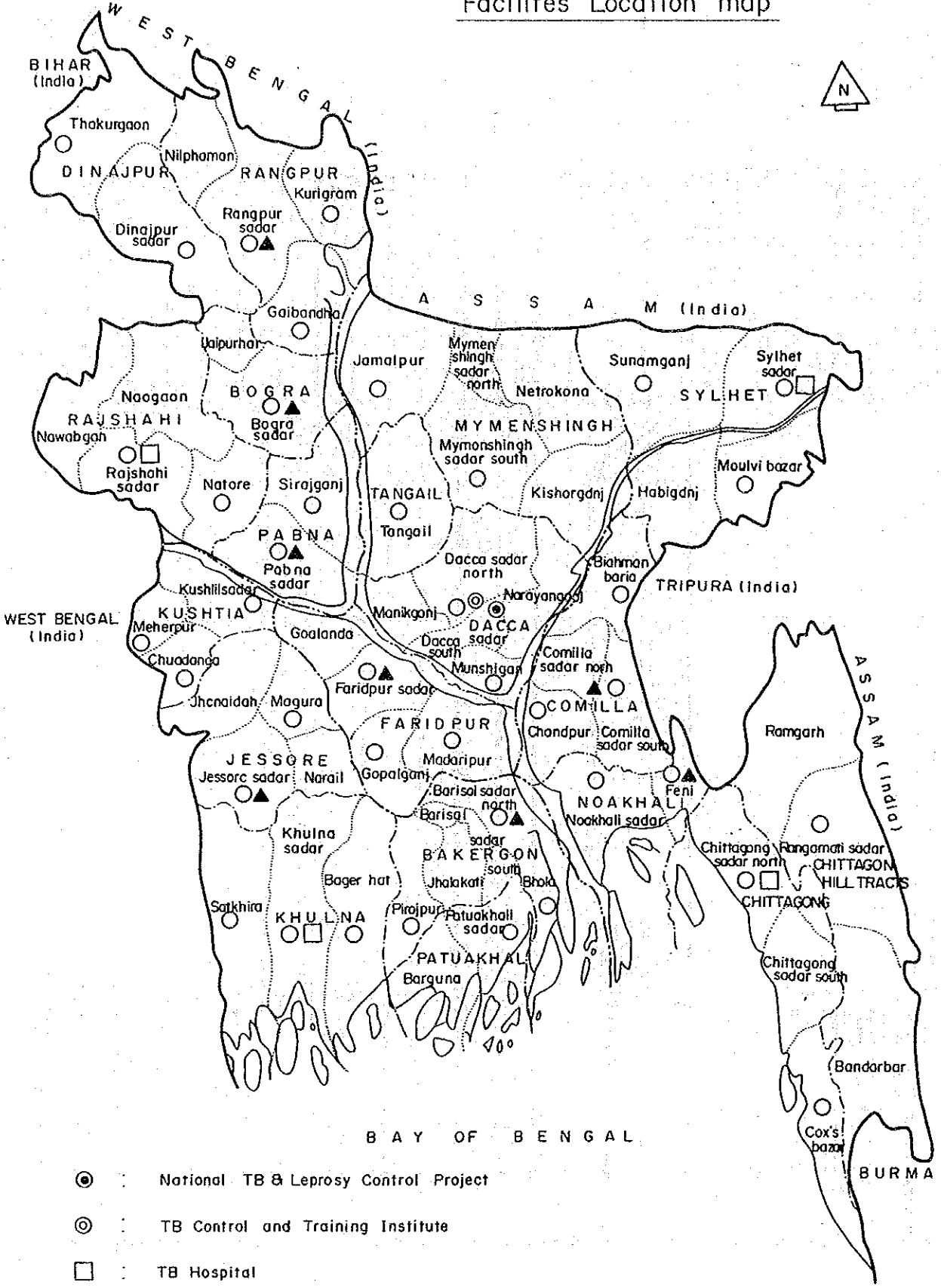
New Building

6F PLAN

Appendix 2

2-1 Figure (3)

TB Control Services, Facilites Location map



◉ : National TB & Leprosy Control Project

◎ : TB Control and Training Institute

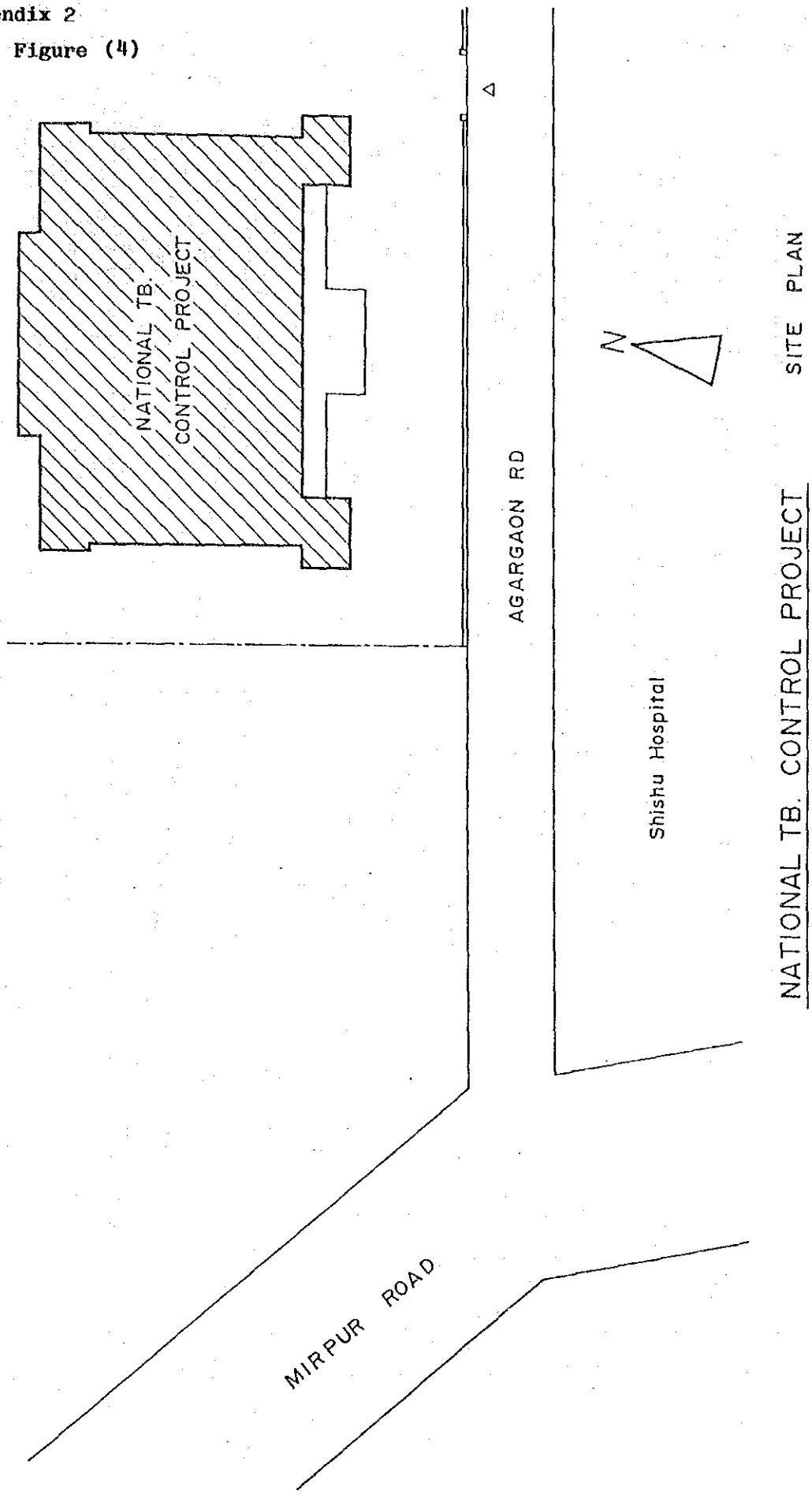
□ : TB Hospital

▲ : TB Segregation Hospital

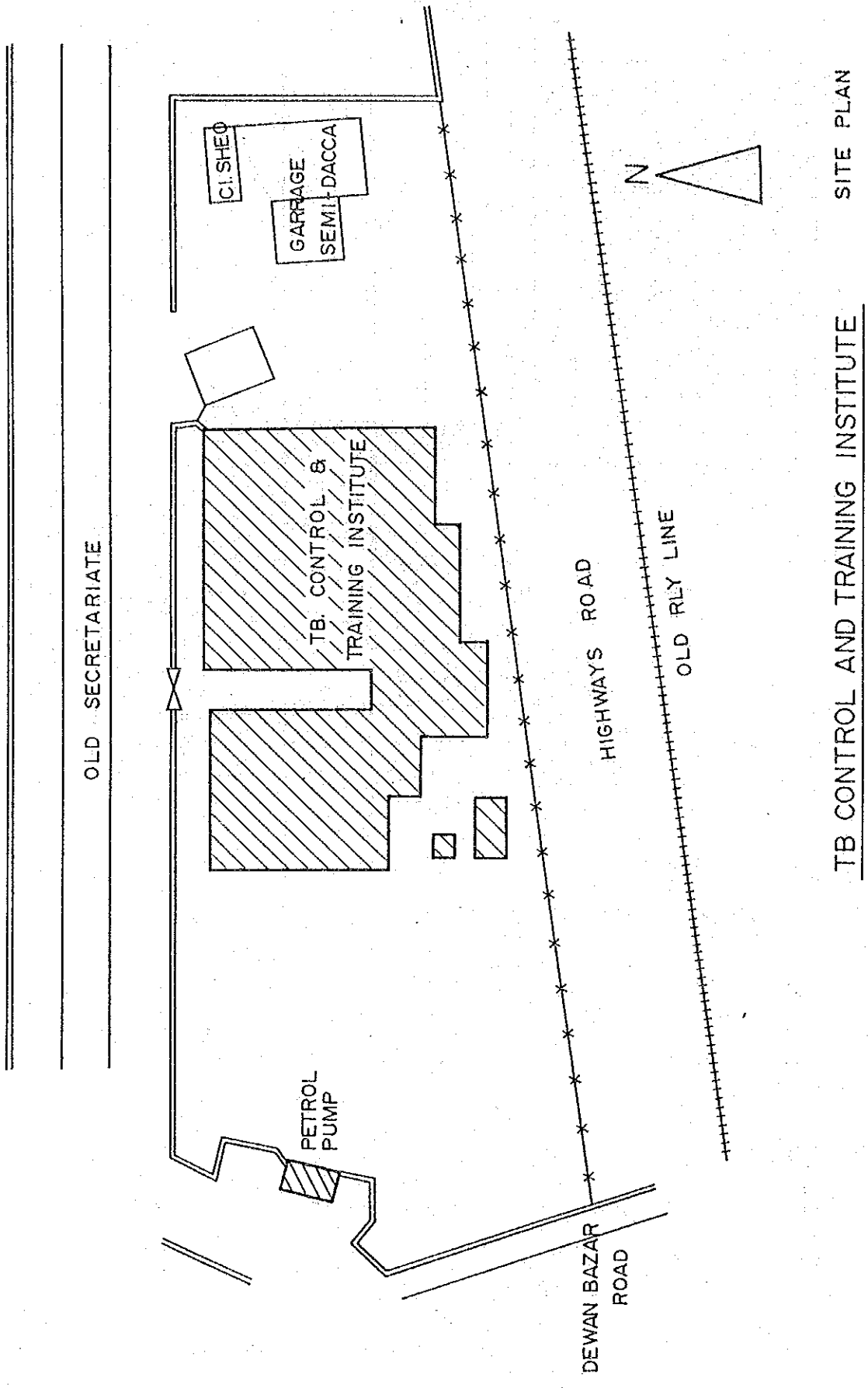
○ : TB Institute

Appendix 2

2-1 Figure (4)



Appendix 2
2-1 Figure (5)



Appendix 2
2-2 Table(1)

Development expenditure of the Government by sector

(million taka)

Sectors	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84 actual	1984-85 Estimated
1. Agriculture	1,642.83	3,684.36	4,179.34	4,386.30	5,968.57	3,945.89	7,497.13	10,314.62
2. Industry	2,399.31	2,409.45	2,625.86	3,070.62	2,225.18	1,963.24	2,872.78	2,555.40
3. Flood Control and Water Resources	1,539.16	1,764.90	2,682.87	4,508.48	4,219.31	4,124.42	3,381.89	6,272.29
4. Rural institution	422.20	744.59	865.18	916.13	912.50	662.59	452.52	743.04
5. Power and Natural Resources	1,400.68	2,131.08	3,349.00	3,672.62	4,611.18	5,354.89	7,170.32	8,770.03
6. Transport	1,713.94	2,282.13	3,899.65	4,448.92	3,633.49	3,183.12	3,040.69	4,295.65
7. Communication	484.31	369.61	770.32	662.42	786.87	697.90	766.91	1,150.74
8. Education and Training	475.96	374.53	446.61	631.69	828.31	1,009.51	1,276.48	1,375.35
9. Health	401.98	424.12	541.27	483.04	627.80	718.67	762.15	886.94
10. Population Control and Family planning	312.82	246.99	228.79	220.24	518.81	787.75	705.50	755.55
11. Physical planning and Housing	804.49	877.34	1,172.94	1,114.91	466.18	1,067.89	1,074.50	832.74
12. Others	598.66	236.86	423.86	567.62	731.07	756.19	737.86	841.57
Total	12,196.34	15,545.96	21,725.69	24,682.99	25,529.37	24,272.06	29,738.73	38,793.92

Notes : Others include Social Welfare,Labour Training and Cyclone Re-constraction.Science and Technology Research and Public Administration.
Figures worked out by B.B.S. may differ with those of ADP,Ministry of planning as those are based on estimates.

Source : B.B.S.

Appendix 2
2-2 Table (1)

Appendix 2

2-2 Table (2)

B I R D E M

Existing Equipment List

ITEM	QUT.	REMARKS
Diagnosis/X-Ray		
CT Scanner	1	Unuseful
X-Ray Unit with TV	1	
X-Ray Unit (100mA)	1	
X-Ray, Mobile Type	1	
Bucky Wall Stand		
Portable Ultrasound Scanner	1	
E.C.G. Unit	1	
Bucky Examination Table	1	
X-Ray Film Viewer	3	
etc.		
Operation Theater		
Operation Lamp	1	
Operation Lamp (Mobile)	1	
Operation Table	1	
etc.		
IUC Room		
Cardiac Monitor	6	
Gatch Bed	6	
Sterelizer	2	
etc.		
Ward		
Patient Beds	124	
etc.		

ITEM	QUT.	REMARKS
General Lab./Research Lab.		
(Biochemistry) pH Blood Gas Analyzer	1	Old
Auto Dispenser	8	
Auto Pipette	19	
Water Bath	3	
Centrifuge	3	
Na./K. Analyzer	1	
Calcium Analyzer	1	
Co2 Analyzer	1	
Flame-Photometer	1	Old
PH Meter	1	
Coulter Counter System	1	
Deionizer	1	
Drying Oven	2	
Electrothermal Heating Mantle	1	
Electrophoresis System	1	Old
Filtration Unit	1	
Haemoglobinometer	1	
Refrigerator	1	
Hot Water Bath	1	
Magnetic Stirrer	1	
Electric Balance	1	
Microheamacrit Centrifuge	2	
Binocular Microscope	4	Partially unuseful

ITEM	QUT.	REMARKS
Refrigerator	2	
Roller Mixer	1	
Centrifuge	1	
Electric Pan Balance	1	
Shaking Water Bath	1	
Calorimeter	1	
Creatininemeter	1	
Double Pen Recorder	1	
Sampler	1	
Mixer	1	
Chloridemeter	1	
Horizontal Shaker	1	
Osmometer	1	
etc.		
(Endocrinology & Metabolism) Animal Balance	1	
Deep Freezer, -115C		
Deep Freezer, -70C	1	Unuseful
Electronic Macrobalance	1	
Electronic Macrobalance	1	
Freeze Dryer	1	
Gamma Counter, Mannual	1	Unuseful
Gamma Counter, Automatic	1	
High Speed Refrigerated Centrifuge	1	
Hot Water Bath Incubator	1	
Hot Water Bath Shaking Incubator	1	

ITEM	QUT.	REMARKS
Liquid Scintillation Counter	1	Old
pH Meter	1	
Precision Micropipettes	1	
Programmable Calculator	1	
Refrigerated Incubator	1	
Thermo Incubator	1	
Thin Layer Gel Plate Maker	1	
UV Microscope	1	
Water Distillation, Double Type	1	
Incubator	1	
Lamina Flow (small)	1	
Lamina Flow	1	
Liquid Nitrogen Cylinder	1	
Microscope		
a) Compound Binocular Microscope	1	
b) Research Microscope, Trinocular	1	
c) Inverted Microscope	1	
Refrigerator	1	
Spinmix	1	
etc.		
(Immunology)		
Immunoviewer	1	
Coagulometer	1	
Centrifuge	1	
Water Bath	1	
etc.		

ITEM	QUT.	REMARKS
(Microbiology)		
Microscope	3	
Incubator	2	
Freezer	1	
Sterilizer	2	
Water Distillation Plant	1	
Centrifuge	1	
Oven Hot Air	1	
etc.		
Maintenance		
Boiler	1	
Sterilization with Heater System	1	
Diesel Generator, 150KVA	1	
Transformer, 800KVA	1	
Ocilloscope	1	
Digital Mulltimeter	2	
etc.		
Ophthalmology		
Argon Laser Apparatus	1	
Binocular Ophthalomoscope	1	
Bjerrums Screen Chart	1	
Fundud Camera Set	1	
Eyelid Spatula	2	
Foci Meter	1	
Oculus Enthyscope	1	
Oculus Viewerscope	1	
Tonometer	1	

ITEM	QUT.	REMARKS
Dialysis Spatula	1	
Slit Lamp	1	
Sterilizer	1	
etc.		
Kitchen Cleaning Equipment	1	
Cold Room	1	
Kitchen Cano	6	
Air Conditioner	1	
Deep Fat Fryer	1	
Dish Washing Machine	1	
Refrigerator	1	
Freezer Room	1	
Food Transort Trolley	1	
Frying Table	1	
Hot Food Unit Electrically Heated	1	
Meat Band Saw	1	
Sink, Mobile Type	4	
Mixer	1	
Range, Gas Type	1	
Scale	1	
Service Trolley	4	
Sink, Stainless Steel	4	
Table, Stainless Steel	3	
Steam Boiling Pan	1	
Steam Boiling Pan	1	

ITEM	QUT.	REMARKS
Tray/Crockery Cabinet	2	
Vegitable Mill	1	
etc.		
Laundry		
Washing Machine	1	
Ironing Machine	1	
Iron	1	
Dryer	1	
etc.		

Appendix 2

2-2 Table (3)

TB CONTROL PROJECT

Existing Equipment List

ITEM	QUT.	REMARKS
1) TB Control Project		
X-Ray Unit (Large Film)	1	Out of order
X-Ray Unit (70mm Film)	1	
Flourscent Microscope	1	
Binocular Microscope	12	
Autoclave	3	
Incubator	5	
Cecurity Chamber	1	
Inspissator	1	
Centrifuge	2	
Spectrophotometer	1	
Water Bath	1	
Sterilizer	4	
Germination Oven	1	
Dry Sterilizer	1	
Shaker	1	
Distilled Water Maker	1	
Chemical Balance	1	
Air Conditioner	10	8 sets out of order
etc.		
2) TB Control & Training Institute		
X-Ray Unit (Large Film)	1	Out of order
X-Ray Unit (70mm Film)	1	
Centrifuge	1	

ITEM	QUT.	REMARKS
Incubator	1	Old
Flourscent Microscope	1	
Binocular Microscope	1	
Refrigerator	2	1- Out of order 1- Old
Autoclave	1	Old

Appendix 2

2-2 Table (4)

B I R D E M
Required Equipment List

ITEM NO.	ITEM	QUT.
1. CT. Scan & X-Ray		
1-1	CT Scanner	1
1-2	X-Ray Unit with Angiogram Injector	1
2. Hospital		
2-1	Ultrasound Scanner	1
2-2	Electrocardiograph	1
2-3	Nerve Conduction Apparatus	1
2-4	Operating Lamp (multibeam)	1
2-5	Operating Theatre Equipment	2
2-6	Operating Instruments	2
2-7	Operating Lamp (single)	1
2-8	Endoscopic Apparatus Set	1
2-9	Operating Microscope	1
2-10	Laboratory Fume-hood	1
2-11	Portable Defibrillator	1
2-12	Ventilator, mobile type	1
2-13	Brush Dispensers	8
2-14	Electro Surgical Equipment	1
2-15	Anaethesia Apparatus	1
2-16	Time Elapsed Clock	3
2-17	High-Low Stretcher	2

ITEM NO.	ITEM	QUT.
2-18	Patient Transfer Trolley	2
2-19	Autoclave, portable	2
2-20	Instrument Cabinet	10
2-21	Wheel Chair	6
2-22	Blood Bank Refrigerator	1
2-23	Urological Operating Table	1
2-24	Urological Apparatus	1
2-25	X-Ray Unit (C-Arm)	1
2-26	Bed Pan Washer	4
2-27	Nurse Call System	6
2-28	Curtain Rail System	10
2-29	Instrument Carriage	12
2-30	Treatment Carriage	12
2-31	Dental Treatment Unit	1
2-32	Dental X-Ray Unit	1
2-33	X-Ray Film Processor	1
3. General Lab. & Biochemistry		
3-1	Autoanalyzer	1
3-2	Gel Electrophoresis	1
3-3	Blood Gas Analyzer	1
3-4	H.P.L. Chromatograph	1
3-5	Glassware Washing Machine	1
3-6	Glassware Drying Machine	1
3-7	Refrigerator	2

ITEM NO.	ITEM	QUT.
4. Eye		
4-1	Eye Lensmeter, Computerized	1
4-2	Eye Perimeter, Computerized	1
4-3	Ultrasonic Eye Diagnostic System	1
4-4	Trial Lens Set & PD Meter	1
4-5	Ophtalmological Equipment	1
4-6	Ophtalmological Surgical Instruments	1
4-7	Autoclave Hot Air	1
4-8	Chair for Doctor & Patient	3
4-9	Ultrasonic Cleaner	1
5. Library & Medical Photography		
5-1	Slide Film Processor	1
5-2	Photomicrographic Equipment	1
5-3	Guillotine	1
5-4	Binding System	1
5-5	Auditorium Lighting System with Dimmer Control	1
5-6	Loud Speaker System	1
5-7	Video Projection with Camera	1
5-8	Slide Projector	1
6. Research Laboratory		
6-1	Gamma Scintillation	1
6-2	Ultra Centrifuge	1
6-3	Amino Acid Analyzer	1

ITEM NO.	ITEM	QUT.
6-4	Refrigerator	1
6-5	D.B. Spectrophotometer	1
6-6	L.S. Spectrophotometer	1
6-7	Analytical Balance	1
6-8	Gas Chromatograph	1
6-9	Liquid Chromatograph	1
6-10	Research Microscope	1
6-11	Photographic Apparatus for Microscope	1
6-12	Refrigerated Centrifuge	1
6-13	Ultrasonic Cleaner	1
6-14	Power Supply Unit, Uninterruptiable	2
6-15	Medical Refrigerator	2
6-16	Analytical Balance	1
6-17	Microscope	2
6-18	Microscope, Phase Contrast	2
6-19	Ultra Low Temp. Freezer	1
6-20	Cathater Tube Dryer	2
6-21	Room Air Cooler, Split Type	3
6-22	Glassware Washing Machine	1
6-23	Glassware Drying Machine	1
6-24	Spray Gun	2
6-25	Ultrasonic/Heat Sealer Machine	1

ITEM NO.	ITEM	QUT.
7. Maintenance		
7-1	Boiler	1
7-2	Stand-by Generator	1
7-3	Oscilloscope	1
7-4	Signal Generator	2
7-5	Electrical Hand & Bench Tool	1
7-6	Vacuum Cleaner	2
7-7	Floor Scrubber	2
7-8	Paging System	1
7-9	Power Conditioner	10
7-10	Time & Date Stamping	2
7-11	Incinerator	1
7-12	K.V. Meter	1
7-13	M.A. Meter	1
7-14	Multi-Meter, Digital Type	1
7-15	Ambulance	1
7-16	Vehicle (4 Wheel Drive)	1
7-17	Microbus	1
7-18	Mortuary Refrigerator	1
8. KITCHEN EQUIPMENT		
8-1	Table, Stainless	4 (*)
8-2	Sink, Stainless	4 (*)
8-3	Freeze Room	1 (*)

ITEM NO.	ITEM	QUT.
8-4	Gastonorm Container	1 (*)
8-5	Roller Conveyer System	2 (*)
8-6	Table	5 (*)
8-7	Cleaning Equipment	1 (*)
8-8	Refrigerator	1 (*)
8-9	Trolley	1 (*)
8-10	Cafeteria Equipment	2 (*)
8-11	Rice Washer	1 (*)
9. LAUNDRY EQUIPMENT		
9-1	Roller Ironing Machine	1 (*)
9-2	Dry Cleaning Machine	1 (*)
10. WORKSHOP MACHINE		
10-1	Semi-Industrial Sewing Machine	3 (*)
10-2	Wood & Metal Working Machine	1 (*)
11. OTHERS		
11-1	Service Lift	1 (*)

Appendix 2

2-2 Table (5)

TB CONTROL PROJECT
Required Equipmemts List

ITEM NO.	ITEM	QUT.
1.	Vehicles (Jeep)	4
2.	Vehicle (Microbus)	1
3.	X-Ray Unit, 500mA	2
4.	X-Ray Unit (capacitor type) with Mirror Camera	5
5.	Microscope	50
6.	Audio Visual Equipments	2
7.	Petri Dishes (10 pc./set)	150
8.	Fine Analytical Balance	2
9.	Centrifuge	49
10.	Ultra Violet Lamp	10
11.	Security Chamber	6
12.	Sputum Destroyer	6
13.	Air Conditioner	10
14.	Lab. Refrigerator	62
15.	pH/Blood Gas Analyzer	1 (*)
16.	Blood Cell Analyzer	1 (*)
17.	Clinical Chemistry Analyzer	1 (*)
18.	Micro Computor	1 (*)

APPENDIX 3

Appendix 3

3-1 Country Data

Attached Data 3

3-1 Data on the Country

(1) Basic Data

Name of Country	The People's Republic of Bangladesh Capital: Dhaka
Date of Independence	March 26, 1971
Area Size	143.998 sq. km. (0.38 times larger than Japan)
Land	Most of the country is situated on a delta region where the Ganges and Brahmaputra rivers flow. The southern part of Bangladesh is made up of many humid regions.
Climate	The annual rainfall is 2,300 mm., and the climate is of the tropical monsoon type. Winter is from Nov. to Feb. Summer is from March to May, and the rainy season lasts from June to Nov.
Population, etc.	Population: 100,500,000 (according to 1985 Bangladesh Statistical Yearbook) Population density: 699 people/sq. km. (1985) Rate of population increase: 2.6% (1985)
Nationality of People	The majority are Bengalese.
Religions	About 86.6% are Islamites, 12.1% Hindus, 1.3% Buddhists and followers of other religions.
Literacy Rate Among Adults	26% (as of 1986; people 15 years and older)
Language	Bengalese (both native and official language)
System of Gov't.	Republic
Sovereign	President Ershad
Currency	One unit of currency: Taka Exchange rate (Taka currency against US$) 30,625 taka per 1 $ (Statistical yearbook, 1985)
Time Difference	3 hours behind Japanese time

(2) Exponent Index Regarding Society and Economy

Gross National Product (GNP), etc.	Gross National Product	$13,954,000,000 (1984/85)
	GNP per capita	$130 (1984)
	Recent actual growth rate of GDP	3.8% (1984/85)
Rate of Rise in Prices	Prices of income earners and consumers in Dacca	10.9% (1985/86)
Main Industry	Jute industry, rice, tea	

INTERNATIONAL ACCOUNTS

(1 Unit: $1,000,000)

	'81/82	'82/83	'83/84	'84/85	'85/86
Exports	626	686	811	943	953
Imports	2,572	2,309	2,353	2,633	2,500
Trade Balance	-1,946	-1,623	-1,542	-1,690	-1,546
Balance of Current Accounts	-142	+242	-181	-135	-42

Source: Protocal (Jan., 1987) of Southwest Asian Section, Asian Bureau of Foreign Ministry.

TRADE

(a) Total Sum of Exports and Imports (One Unit: $1,000,000)

	'80/81	'81/82	'82/83	'83/84	'84/85
Exports	711	626	686	811	943
Imports	2,533	2,572	2,309	2,353	2,633
Balance	-1,822	-1,946	-1,624	-1,542	-1,690

Source: Protocal (Jan., 1987) of Southwest Asian Section, Asian Bureau of Foreign Ministry

(b) Main Exports and Imports and Their Respective Percentages (1984/85)

(1 Unit: $1,000,000)

Exports			Imports		
Item	Amount	Percentage	Item	Amount	Percentage
Jute products	399	42.3%	Capital goods	616	23.4%
Raw jute materials	151	16.0	Intermediate goods/industrial goods	670	25.0
Fish, shrimp, frog legs	87	9.2	Crude oil/ petroleum products	367	13.9
Leather, raw hides	69	7.3	Food/grain	513	19.5
Tea	60	6.4	Raw cotton/ cotton yarn	141	5.4
Textiles	117	12.4	Fertilizer	137	5.2
Others	60	6.4	Cooking oil/ oil stuff seeds	112	4.3
			Cement	32	1.2
			Others	45	1.7

Source: Protocal (Jan., 1987) of Southwest Asian Section, Asian Bureau of Foreign Ministry.

(c) Main Trading Partners and Respective Percentages (1984/85)

Exports		Imports	
Name of Country	Percentage	Name of Country	Percentage
United States	18.9%	Singapore	22.1%
Japan	6.8	Japan	21.1
Pakistan	5.4	United States	18.0
England	5.2	United Arabian Emirates	11.7
Iran	5.1	India	6.6

Source: Protocal (Jan., 1987) of Southwest Asian Section, Asian Bureau of Foreign Ministry

(d) Gains in Foreign Currency Reserve (1 Unit: $1,000,000)

End of June	1984	539
"	1985	404
"	1986	362 (Prediction)

(e) Total Financial Aid from Foreign and International Organizations (Dec., 1971 - June, 1985) (1 Unit: $1,000,000)

	Total	Food Provisions	Project Assistance	Commodity Provisions
Commitment	17,730.6	3,477	8,963.2	5,290.4
Disbursement	12,700.6	3,285.5	4,511.6	4,903.2

(f) Course of Recent Total Amount of Financial Aid

(Expenditure base, 1 Unit: $1,000,000)

	'80/81	'81/82	'82/83	'83/84	'84/85
Food Provisions	194.1	230.5	255.5	276.4	244.5
Commodity Provisions	392.5	419.8	452.0	439.2	431.6
Project Assistance	559.9	589.3	469.9	552.8	590.9
Total	1,146.5	1,239.6	1,177.4	1,268.4	1,267.0

(g) Main Food Provisions and Technical Aid from Foreign Countries

(1 Unit: $1,000,000)

	1980	1981	1982	1983	1984
Japan	215.1	144.9	215.8	104.2	213.3
United States	174.0	118.0	185.0	200.000	206.0
West Germany	114.6	101.2	82.7	35.3	46.1
England	99.2	67.6	38.8	36.3	46.5
Canada	57.1	58.0	72.2	87.5	84.5
Holland	53.2	54.7	88.1	30.9	61.0
Sweden	13.3	25.8	37.1	17.8	10.9

(h) Main Food Provisions and Technical Aid from International Organizations

(1 Unit:)

	1980	1981	1982	1983	1984
Asian Development Bank	155.7	159.0	187.1	199.2	246.8
European Economic Fellowship	57.4	44.8	33.3	49.2	77.8
U.N. Development Program	33.2	53.8	67.5	40.8	49.4
U.N. Children's Fund	18.8	23.1	21.5	24.5	26.0
World Food Provisons Program	13.2	28.0	44.1	35.4	71.8
U.N. Refugee High Commissioner's Office	0.7	0.7	0.6	0.05	0.1

Source: Protocal(Jan., 1987) of Southwest Asian Division,
Asian Affairs Bureau, Ministry of Foreign Affairs, Japan.