Thereby expansion of training facilities is earnestly desired. Moreover, the clinical departments are fulfilling the functions of local health centers as well as the initial function to supply samples and specimens to the research departments. They are making strenuous efforts to make full use of the confined facilities. The clinical departments are thus indispensable for the residents in the Alabang Compound.

3-3 Present status of the existing facilities

As six years have already passed since the opening of the RITM, the original layouts of the buildings have already been partly modified because the number of staff engaged in research and clinical services has been increased and partly because the nature of the research and training activities have been changed. In March 1985, an experimental animal laboratory was constructed using research base funds available under technical cooperation. As a result, the old animal laboratory has been modified into research rooms for tuberculosis and medical entomology. In general, almost all the stockrooms and lockers rooms have been changed into experimental rooms and staff rooms, and so machines, maintenance equipment and repair parts which were once stored therein are now occupying corridors and staircases. The present condition of the RITM a research institute which also serves as a clinical institute, is not good in terms of safety and hygiene.

Almost all the rooms of the Research and Training Department have been used in ways other than what was originally intended. A training room is now used as an analysis room for the public hygiene. It is reported that the room will be returned to its original use just before the third country training programs begin in October 1987. At the same time, the lecture rooms are now used as work rooms for the public hygiene, and so construction of new lecture rooms and experimental rooms will be required to further activate training activities in the future.

As has been explained, the RITM has coped with the problem of narrow facilities by means of modifying uses and layouts, but such efforts seem to have been exhausted.

Figures 3-2 and 3-3 show the layouts of the existing facilities.

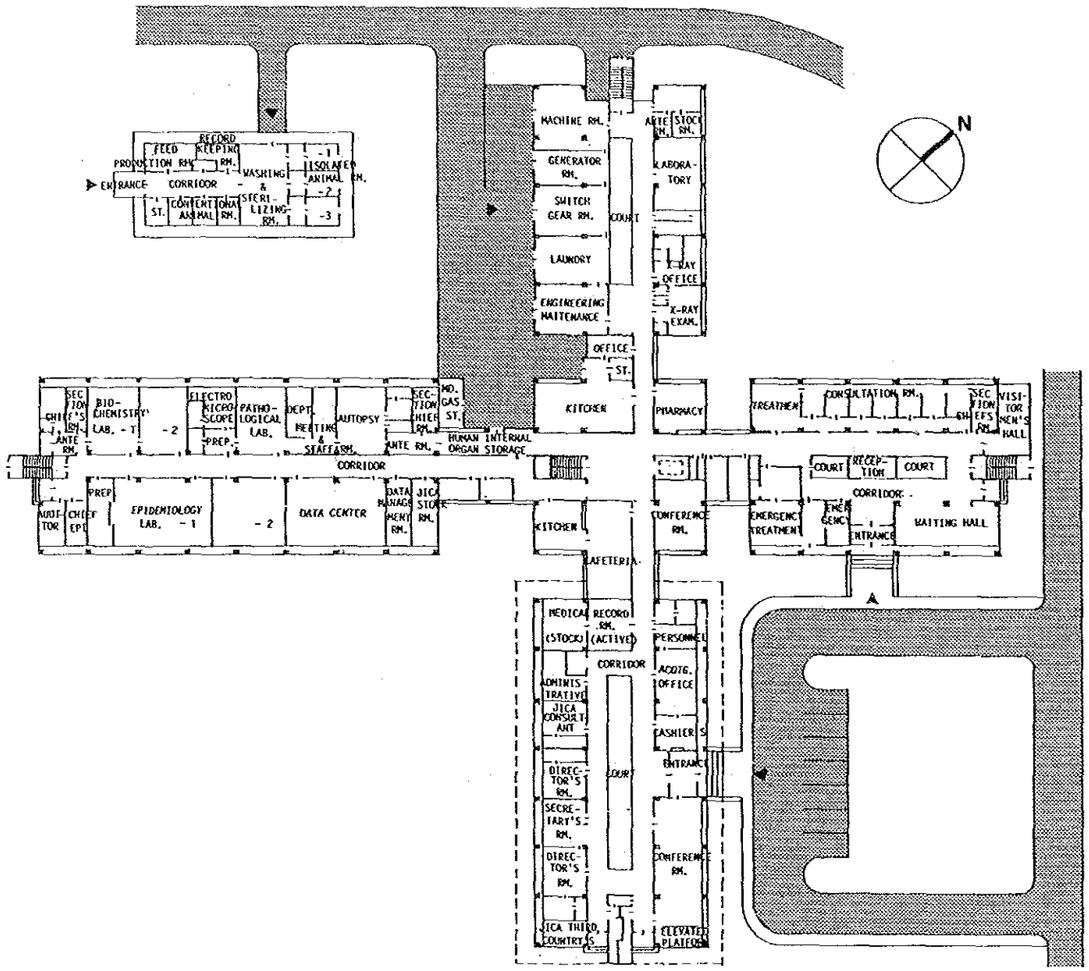


Fig. 3-2 RITM EXISTING BUILDING
1ST FLOOR PLAN

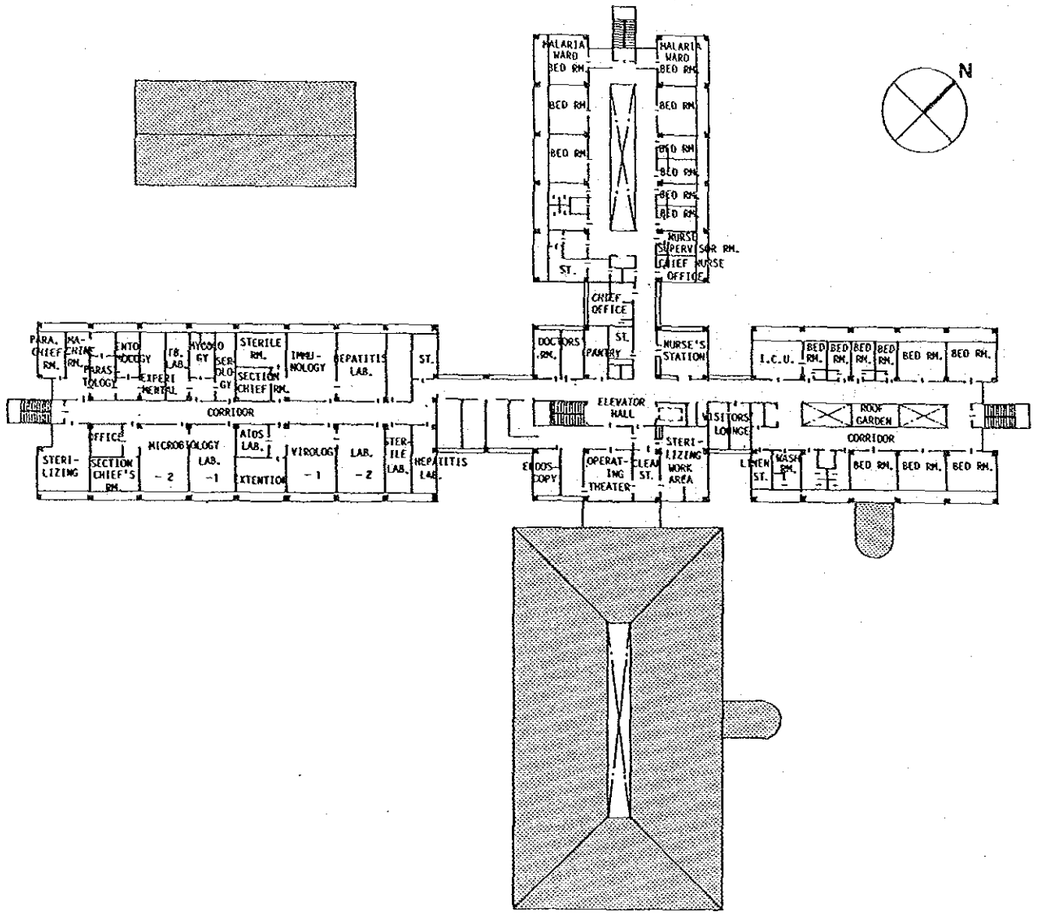


Fig. 3-3 RITM EXISTING BUILDING
2ND FLOOR PLAN

1) Administrative Division

The Administrative Division presently encompasses the four functions of clinical out-patients, admitting, research, and training. Many different activities become confused because of the lack of space. For example, patients of infectious diseases and related staff sometimes enter the general administration room for the purpose of paying fees. The need to separate office work sections from the clinical ones has been highlighted. An increase in the number of patients has resulted in shortage of space for storing medical records.

The conference room is used for seminars and scientific meetings which are held several times a year. About 150 to 200 persons come to the room each time. Since the room can accommodate about 100, those participants who cannot enter must stand out in the corridor during the meeting. The increased staff has extremely reduced space available for working in offices, and an increase in documents and furniture has further narrowed the working space.

The maintenance and administrative departments have changed the original uses and layouts of available rooms and spaces, but maintenance equipment and materials which should have been stored in warehouses are sometimes left on the corridors and staircases of the facilities. Material storage yards are therefore also required.

2) Clinical Research Division

When the Study Team visited, three infants were being treated in the ICU. The ICU room is very small, and since it is not provided with a preliminary room or lounge for patients' visitors, it is difficult to fully separate the ICU from other sections. In the out-patient section, patients with diversified diseases stay in a single waiting room, and it has been pointed that patients with infectious diseases should be separated from others. In spite of the reconstruction in the past, the medical treatment room for emergency patients has less beds than are actually required.

The pharmacy lacks storage space. It has a small warehouse on the second floor, but it is so small that boxes containing medicine are placed along the corridors.

The clinical facilities operate 24 hours and doctors, nurses, and radiologists work there. Their lodging space includes locker rooms in the main building or the warehouses in addition to the normal staff dormitory, and this is far from being a satisfactory environment to ensure their continued dedication.

3) Research and Training Division

Applications of almost all the rooms have been changed from those originally intended. For example, the training room is presently employed as a sample analysis room in the public hygiene section. This analytical work will be moved to another location immediately before the third country training program starts in October 1987. The lecture room is used as a workshop for 38 staff members of the public hygiene section. Although their job includes more field work than work in the laboratory, the lecture room is too small for that number of members and there are lots of obstacles found in the lecture room as places to hold training programs. Generally speaking, the experiment rooms for microbiology and similar sciences are too small, and should training courses or workshop start, research activities in such rooms have to be temporarily suspended. Lockers for the personnel were moved to the liver research room and the aseptic research room and put along corridors. Some parts of warehouses are used for AIDS research and the manager's office.

Some research activities require continuous experiments over three or four days, and staff may engage in them by forsaking days off. Even in such cases, no satisfactory dormitory facilities are offered for them to take a brief rest.

4) Present state of the dormitory for the RITM staff

The RITM is located approximately 20 kilometers from the city center of Manila, on a hill two kilometers from the entrance of Alabang Compound. There are only several houses located on the way. No street lamps are provided.

Under the research and clinical system of the RITM, there are 50 or more staff members on the afternoon shift (from 3PM to 11PM) and in the night shift (from 11PM to 7AM). About 80% of them are female. It is therefore dangerous for them to commute to the RITM late at night.

Consequently, the staff members have taken up residence at an old temporary building which was built when the construction work of the main building was carried out; but seven years have passed since then. About 40 female staff including nurses, clinical technologists, and pharmacists are living in this temporary structure, but the projected limit of use for one or two years has already passed and the building is now in a dilapidated condition. Since neither water nor drainage facilities are provided, th ground under the building floor is far from being hygienic. The building is provided with double-decked beds and the living space is overcrowded (2.2 m^2 per person). The dormitory for male staff was constructed by the RITM by utilizing a parking lot. It is not fully equipped with draining facilities and it is time to rebuild it. A dormitory for scrubmen and guards is nothing more than a hut, having neither a kitchen, water supply or drainage facilities.

3-4 Instruments and equipment presently provided

The RITM was established in 1981 under the grant aid cooperation of the Government of Japan, and the technical cooperation has continued for six years thereafter. At present, it operates under the system of the below-mentioned three departments:

1) Research and Training Division

This department aims at performing research activities of tropical medicine and training of medical staff engaged in this field.

2) Clinical Research Division

This division aims at the research and development of better diagnosis and treatment of patients with tropical diseases caused by infection.

3) Administrative Division

This division plays a role of administering the RITM overall and controlling all activities related to tropical medicine.

The present situation of the instruments and equipment which were granted to support the above-mentioned activities are listed below, according to department and existing problem:

List of instruments and equipment belonging to departments
(main items only)

Research and Training Division

. Biochemical laboratory

Centrifuge (x 2)	Atomic absorption spectrophotometer
Spectrophotometer	Flame photometer
Blood gas analyzer	Biological microscope
Others	

. Microbilogical Department

Centrifuge	Electrophoretic unit
Anaerobic culture unit	CO_2 thermostatic oven
Others	

. Sterilizing room

Sterilizer (vertical (x 3)	High-pressure sterilizer (x 2)
Pure water generator (x 2)	Others

. Tubercle Bacillus Laboratory

CO_2 thermostatic oven	Serum coaggulator
Others	

. Bacteria Laboratory

Thermostatic oven (incubator)	Microscope (x 3)
Others	

. Diarrheas Laboratory

Centrifuge	Microscope (x 2)
Thermostatic oven (incubator)	Others

. Immunofluorescence Laboratory

Fluorescent microscope (x 3)	Thermostatic oven (incubator)
Others	

. Serum Laboratory

High-speed cooling centrifuge	Water distiller

. Virological Laboratory

Water-jacketed thermostatic oven	Culture microscope (x 2)
Spectrophotometer	Cooling centrifuge
Fluorescent microscope (x 2)	Others

. Immunological Laboratory

UV photometer	HPLC
Cooling centrifuge	Low-temperature freezer
Others	

. Axenic Room

Clean bench (x 2)	Automatic cell collector
Others	

. Hepatitis Laboratory

High-speed cooling centrifuge	Super centrifuge
Abbe refractometer	Others

. Parasitological Department

Binocular stereoscopic microscope	Biological binocular microscope
16-pc. rat cage	Clean bench
Others	

. Experimental Animal Laboratory

Rabbit weighing scale	Hot-air dryer/sterilizer
Automatic mouse weighing scale	Pellet mixer
Feedstuff crusher	Others

. Pathological Department

Electron microscope (transmission type)	Freezing microtome
Ion coater	Tilting microscope
Inhaler	Others

. Preparation room

Scanning electron microscope	Freezing microtome (x 2)
Others	

. Clinical examination room

Spectrophotometer	Centrifuge (x 2)
Biological microscope	Blood preserver
Others	

. Epidemiological Laboratory

Microcomputer (x 6, including IBM XA and AT)
(Mainly for statistical work of data)

. Emergency out-patient department

Supersonic neblizer	Electrocardiograph
Others	

. Out-patient department

Sphygmomanometer	Height meter
Weighing scale	Others

Clinical Research Division

. Operation room

Polygraph system	Anesthetic unit
Oxygen tent (x 3)	Infant incubator (x 2)
Endoscope	Others

. X-ray (radiological) Laboratory

X-ray camera (x 2)	TV camera unit
Others	

. Pharmacy

Medicine packing unit	Blood preserver
Others	

. Nurses' room

ECG monitor	Nurse call system
Others	

. Central material room

Large-scale high-pressure sterilizer	
EOG sterilizer	Inhaler (x 8)
Electrocardiograph (x 2)	Bed-side monitor (x 2)
Respiratory function meter	Others

. ICU room

ICU bed for infants (x 2)

The foregoing list indicates that the RITM is furnished with the necessary instruments and equipment required for the research activities. Though there are some which are not fully utilized, most of the instruments and equipment have been effectively employed.

The RITM's capability to identify ordinary germs has reached a certain level of development, and both its success to isolate this rotavirus from a patient and advanced analyses based on utilization of electron microscopes have been highly valued in the academic world. These are a result of the full utilization of the sophisticated instruments and equipment. There are not instances that erroneous selection of instruments or equipment has lead to unsatisfactory display of performances that may have hindered research activities in the RITM's responsibilities. As a result these instruments and equipment have contributed fully to the research activities. The only exception is that experiments to separate tubercle bacillus which require advanced techniques have resulted in the need for a higher degree of cleanliness in the chamber. However, this problem may be solved by adding the necessary equipment to the items to be granted under this project.

The following problems have been found with instruments and equipment:

1) Not usable through lack of consumables or spare parts:

   Flame photometer
   Atomic absorption spectrophotometer

2) Not in use because maintenance by a specialist is required but local agencies cannot meet such demands:

   Flame photometer
   X-ray camera (due to defective tube)

3) Not usable because technology transfer did not adequately cover operation procedures:

   Anaerobic culture unit
   High-performance liquid chromatography

4) Should be replaced with new products since they have been excessively worn as a result of frequent use:

Autoclave
Hot-air dryer

5) Precision instrument which can be repaired only by replacing with parts guaranteed by the manufacturer:

Centrifuge for high-speed separation

6) Not usable because of mold as a result of poor storage or maintenance:

Object lenses and eye pieces of biological optical microscope

Of the facilities belonging to the clinical department in which out-patients suffering from infectious diseases are located, the frequency of use of operation units is extremely low, in marked contrast to shortage of ICU facilities required for providing intensive medical treatment to infants with acute symptoms who are found very often in the Philippines.

Some of the instruments and equipment which were allocated to the research and training departments at the initiation of the Institute are now found to be short supply or of poor quality as a result of the qualitative improvement of and striking progress and development in the research and training since the institute was established. The technical cooperation which has been carried out in parallel has supplemented or included new products, so that such equipment and instruments have been fully utilized.

The equipment and instruments which have been or will be granted under the technical cooperation in fiscal 1986 (already arrived at the port of destination and under customs clearance) and fiscal 1987 (items requested but not finally determined yet) are attached in Appendix.

Since the technical cooperation by the Government of Japan is to be completed in fiscal 1987, the request has been concentrated mainly on those instruments and equipment which are especially short or will be required to support those research and training activities which are expected to be increased in the near future. Additionally, due consideration has been given to supplement the consumable goods and reagents which will reportedly be difficult to procure after the completion of the technical cooperation.

3-5 Operation system and budget

The operation of the RITM is executed by the Director and Assistance Director who oversee the three divisions.: Administrative, Clinical Research, and Research and Training. The Director and Assistant Director are in the position to decide and carry out operational policies of the RITM and all the research, training, and other programs. (For the organizational chart, refer to Fig. 3-1.)

An advisory board independent of the RITM acts under the control of the Ministry of Health as an advising organization for the Director. This advisory board is presided over by the Minister of Health and is composed of the Chief of the National Scientific Technology Agency (NSTA) and Chief of the University of the Philippines, Health Science Center (UPHSC). The board gives the RITM political and technical recommendations on the operation of the RITM, and calls for participation of the NSTA and the UPHSC in the process of preparing research and training programs of the RITM.

The presence of the advisory board which reviews the RITM's operation from the political and technical viewpoints enables the RITM to always be operated in accordance with the basic policy of the Philippines and in a manner that cooperation from related institutions can be expected. This means that the RITM is obliged to function as one of the leading institutes in the health care policy in the future as well and is to be expanded and reinforced in pace with the development of the country.

An important factor in the operation of the RITM has been the contribution of the Japanese technical cooperation teams in the preparation and execution of the research and training programs since the establishment of the RITM in 1981. Although the technical cooperation will end by March 1988, it is planned that some Japanese experts will be dispatched to the third country training programs to be held by the RITM. Japanese cooperation with the RITM is still expected and welcomed.

The RITM has received assistance in the research of tropical medicine from various organizations throughout the world via the Foundation for Research of Tropical Medicine which was established in 1984. It has received assistance funds for expanding research programs and for commencing research on dengue, AIDS, Hansen's disease, and others from WHO, the Australian Development Assistance Bureau (ADAB), the Bureau of Scientific Technology International Development (BOSTID), the National Academy of Science, U.S.A., the Edna McConnell Clark Foundation, the International Research and Development Center (IRDC), the Mission Fund of the Canadian Government and other organizations.

The revenue for operating the RITM since 1982 has been allocated from the national budget, assistance from NSTA, MOH, UPHSC, and so on, various other assistance, amounts carried over, and income from the clinical departments. The expenditure is classified into personnel expenses and maintenance and operation expenses, with the former occupying 58% in 1985.

Actual budgets of the RITM are as shown below:

Table 3-6 Budgets of the RITM

	Government of the Philippines	NSTA-MOH-UPHSC	Others	Total amount
1982	6,300,000 Peso	1,300,000 peso	340,000 peso	7,900,000 peso
	(79.3%)	(16.4%)	(4.3%)	(100.0%)
1983	5,696,363	1,154,962	289,633	7,140,358
	(79.8%)	(16.2%)	(4.0%)	(100.0%)
1984	6,655,000	1,420,838	1,777,520	9,853,358
	(67.5%)	(14.4%)	(18.1%)	(100.0%)
1985	9,503,656	1,000,000	656,606	11,160,262
	(85.2%)	(8.9%)	(5.9%)	(100.0%)

According to the table above, the ratio of assistance other than national funds varies in the range from 32.5% to 14.8% depending on years. However, the ratio of the national funds indicates an increasing tendency, and the RITM's budgets as a whole are increasing gradually.

The amount allocated by the national budget in 1987 is 14,641,000 pesos, 54% up when compared with that in 1985, suggesting that the RITM's results have been highly valued and that great national expectation is placed upon the RITM.

3-6 Contents of the request

The RITM was established in 1981 with the objectives of undertaking immunological survey research, etiological research for eradicating tropical infectious diseases, and clinical survey and research closely connected thereto, and training medical staff who engage in tropical medicine.

During its six years of existence, the RITM has accumulated good results in the fields of research, training, and medical treatment, with its volume of work being expanded strikingly. Under the Japanese technical cooperation given to the research departments, the RITM has made many advances in the study of wooping cough, acute respiratory diseases, diarrhea, dengue, meningitis, hepatitis type B, and other infectious diseases, and it now enjoys a high reputation for such results both at home and abroad. It is now desired that the training departments should be reinforced and expanded for the purpose of spreading this knowledge to enhance public hygiene and environmental hygiene policies. On the other hand, the clinical department which supports such research activities has adopted a 24-hour coverage system and assumed the role of a local health care institute. As a result of an increase in the number of patients and that of the staff in turn to cope with such an increase, the facilities have become overcrowded and it is no longer possible for the RITM to make improvements by its own efforts. Moreover, dormitories for on-duty staff members under the 24-hour coverage and for researchers engaging in on-going experiments in the research departments are very crowded and poorly equipped. Construction of dormitories is urgently required for further growth of the RITM.

Under these circumstances, the Government of the Republic of the Philippines set up a project to construct a training center attached to the RITM and has requested of the Government of Japan grant aid cooperation for the construction of and supply of necessary instruments and equipment for the training center.

The facilities and instruments and equipment requested are listed below:

1. Facilities

1) Training Center consisting of:

Conference theatre for 200 people
Library for 25 people
Lecture rooms for 30 people, (3)
Student laboratory with preparation room (3) for 20 trainees (one each for virology, bacteriology, and chemistry)
Sterilizing room
Administration office
Lobby and lounge room
Dormitory facilities for holding 20 trainees (equipped with toilet/bath facilities)
Guest rooms (3) for lecturers with individual toilet/bath facilities)
Dining area and kitchen
Laundry area
Storeroom

2) Building for dormitory facilities for 80 people from the staff of the RITM

Bedrooms for 80 staff members
Toilet/bath facilities
Lounge area
Dining area and kitchen
Laundry area
Storeroom

2. Instruments and equipment

The instruments and equipment requested by the Government of the Philippines are listed below. (For a detailed list refer to the data attached at the competion of this document.)

1) Instruments and equipment for training facilities

AV equipment for the conference room
Personal computers, typewriters, and copying machines for the library
AV equipment for classrooms
Clean benches, incubators, centrifuges, etc., for virological and mycological laboratories
Draft chamber, flame photometer, ultra centrifuges, etc., for biochemical laboratory
Autoclave for sterilizing rooms
Typewriters for administration office
Furniture and others

2) Instruments and facilities for dormitory of on-duty staff

Furniture and others

CHAPTER 4

PROJECT DESCRIPTION

CHAPTER 4 PROJECT DESCRIPTION

4-1 The objectives of the project

The objectives of this project are 1) to contribute to the development of measures to prevent major tropical diseases, 2) to train those personnel who are engaged in the research activities with an aim to achieve that purpose, and 3) to help medical studies in those Asian countries where similar tropical diseases occur.

Specifically, it aims to improve the organization and function of the RITM, and to promote educational activities to make available the research attained to the Philippines and to those countries which are under a similar environment.

In order to implement these objectives, it is important to construct the facilities of a training center as a place for these research activities, to purchase necessary equipment, to renovate the existing inadequate facilities and improve their functions, and to maintain living quarters attached to the center including those for duty staff involved in clinical work.

The objectives of the Project is to constract a training center and a dormitory, and to provide necessary equipment under a grant aid by the Government of Japan.

4-2 Evaluation for Requested Items

4-2-1. Evaluation for feasibility of the plan

1) Training plan

The Research and Training Division of the RITM has undertaken educational training since its establishment. In recent years 110 people were trained in ten courses in 1985, and 137 trained in ten courses in 1986. From 1987 it is planning the Third Country Training Program in addition to that of its own domestic program. The target is 335 staff in sixteen courses. (See Form A.)

In the future it plans to add five courses and train 451 staff in twenty courses. (See Form B).

In regard to engaging instructors other than RITM staff it has received due cooperation from other organizations such as UP-PGH, UP-CPH and WHO and this cooperation is expected to continue. No major problems are foreseen in the RITM budget for training expenses as it has been greatly increased in 1987 by the Ministry of Health. Moreover, Japan is to absorb costs incurred by the Third Country Training.

Many of the courses involve the study of infectious diseases, particularly acute respiratory infection and diarrhoeal disease. They comply with what have been actually undertaken by its research activities and successful results are anticipated from these courses.

As for the number of trainees in 1987, it is planned to be more than twice that of last year. Although difficulties are foreseen in training this number in the existing facilities, it is understood that a professional and responsible attitude will prevail to those involved in the training.

With regard to the future plan, no great problem is expected in its implementation, as new facilities will be built and the maximum number of trainees at one time kept to a similar level to that of 1987.

The following facilities will be required to implement these training plans: lecture rooms, laboratories, offices, printing rooms, central laboratory, sterilizing rooms, conference rooms, instructors' dormitory facilities, participants' dormitory facilities, library, dining hall, kitchens, etc.

Tab. 4-1

FORM A ANNUAL TRAINING SCHEDULE (1987)

Legend Participants/Total Instructors (Other Institutions)

Name of Training Course	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total	Result in 1986	Result in 1985
1. Fellowship in Infectious Diseases (first year)	3/20(8)												3(p) 12(m)	3(p)	6(p)
1' Fellowship in Infectious Diseases (second year)	3/20(8)												3(p) 12(m)	3(p)	—
2. Straight Residency in Infectious Diseases	1/20(8)			1/20(8)			1/20(8)						3(p) 12(m)	2(p)	1(p)
3. Rotating Residency in Infectious Diseases	10/20(8)		10/20(8)		10/20(8)		10/20(8)		10/20(8)		10/20(8)		60(p) 12(m)	55(p)	44(p)
4. Rural Health Practicing Physician													—	2(p)	5(p)
5. Research Design and Methodology											20/12(6)		20(p) 2(w)	20(p)	—
6. Epidemic Investigation Service Training						5/8(4)							5(p) 7(m)	—	—
7. Institutional Strengthening Program in Infectious Diseases for Ministry of Health Regional & Provincial Hospitals for Doctors	5/20(8)						5/20(8)						10(p) 12(m)	—	—
8. Institutional Strengthening Program in Infectious Diseases for Ministry of Health Regional & Provincial Hospitals for Medical Technologists	4/20(8)				3/20(8)				3/20(8)				10(p) 12(m)	—	—
9. Third Country Training Program										24/20(5)			24(p) 4(w)	—	—
10. Basic Electron Microscopy													—	—	10(p)
11. Medical Technology Internship	16/30												16(p) 5(m)	16(p)	12(p)
12. Individual Training Courses in Microbiology, Diagnostic Parasitology, Medical Entomology and Clinical Laboratory	4/4			4/4			4/4			4/4			16(p) 12(m)	12(p)	10(p)
13. Experimental Animal Laboratory Procedures											8/3		8(p) 2(m)	8(p)	6(p)
14. In-service Training on Computer Technology			6/3							6/3			12(p) 6(m)	4(p)	4(p)
15. Mother's Class	15/5			15/5			15/5			15/5			60(p) 4(m)	12(p)	12(p)
16. Pediatric Intensive Care Nursing							10/13(3)				10/13(3)		20(p) 2(m)	—	—
17. National Workshop on the Laboratory Diagnosis of Diarrheal Diseases											20/5		20(p) 2(w)	—	—
18. Research Management Course for Middle Level Supervisors							45/6(6)						45(p) 2(w)	—	—
Total Number of Participants	61		46		52		68		52	35 max	105 max	80	35 min	79	98	68	335	137	110
Total Number of Instructors (RITM / Other / Total)	39 / 8 / 47		34 / 8 / 42		37 / 8 / 45		42 / 8 / 50		37 / 8 / 45	32 / 12 / 44	42 / 21 / 63	32 / 18 / 50	32 / 12 / 44	52 / 17 / 69	40 / 17 / 57	36 / 8 / 44			

Tab. 4-2

FORM B ANNUAL TRAINING SCHEDULE (1988 - 1992)

Legend Participants/Total Instructors (Other Institutions)

Name of Training Course	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
1. Fellowship in Infectious Diseases (first year)	3/20(8)												3(p) 12(m)
1' Fellowship in Infectious Diseases (second year)	3/20(8)												3(p) 12(m)
2. Straight Residency in Infectious Diseases	1/20(8)			1/20(8)			1/20(8)						3(p) 12(m)
3. Rotating Residency in Infectious Diseases	10/20(8)		10/20(8)		10/20(8)		10/20(8)		10/20(8)		10/20(8)		60(p) 12(m)
5. Research Design and Methodology											20/12(6)		20(p) 2(w)
6. Field Epidemiology Training Programme	5/1(1)						5/1(1)						10(p) 12(m)
7. Institutional Strengthening Program in Infectious Diseases for Ministry of Health Regional & Provincial Hospitals for Doctors	5/20(8)						5/20(8)						10(p) 12(m)
8. Institutional Strengthening Program in Infectious Diseases for Ministry of Health Regional & Provincial Hospitals for Medical Technologists	4/20(8)				3/20(8)				3/20(8)				10(p) 12(m)
9. Laboratory Diagnosis and Research Techniques in Acute Respiratory Infections and Diarrheal Diseases											D.D. 24/20(5)	ARI 24/20(5)	48(p) 2(m)
11. Medical Technology Externship Programme	6/6						6/6						12(p) 12(m)
12. Individual Training Courses in Diagnostic Parasitology and Medical Entomology	4/4			4/4			4/4			4/4			16(p) 12(m)
13. Experimental Animal Laboratory Procedures											5/4(1)		5(p) 2(m)
14. In-service Training on Computer Technology			6/3							6/3			12(p) 6(m)
15. Mother's Class	15/2			15/2			15/2			15/2			60(p) 4(m)
16. Pediatric Intensive Care Nursing Course							10/13(3)				10/13(3)		20(p) 2(m)
18. Research Management Course for Middle Level Supervisors							45/6(6)						45(p) 2(w)
19. Workshop on Laboratory Diagnosis of Antibodies to HIV Infection			24/6			24/6			24/6				72(p) 3(w)
20. Laboratory Animal Science											2/2(1)		2(p) 2(m)
21. Clinical Pharmacy				12/4(2)									12(p) 3(m)
22. Workshop on Immunological and Molecular Biology Techniques Applicable to the Study of Schistosomiasis	24/3(1)												24(p) 2(w)
23. Practicum in Hospital Dietetics	2/3						2/3						4(p) 4(w)
Total Number of Participants	82		41 min	71	75	59	77	113 max	86	65	61	107	77	451
Total Number of Instructors RITM / Other / Total	32/10	42	24/9	33	33/9	42	33/11	44	31/11	42	34/11	45	39/18	57	24/15	39	30/9	39	29/9	38	43/25	68	37/16	53	

Tab. 4-3
FORM C CONTENTS OF TRAINING -1

Name of Training Course	Major Training Items	Qualifica. of Participants	Sending Instructor Institution	Rooms to be used
1. Fellowship in Infectious Diseases	Clinical, research and laboratory training in infectious and tropical diseases	M.D. plus 3 years of residency in internal medicine or pediatrics	UP-PGH MCM JICA QMC PMCM UERMMMC	Ex.- Conf. Rm, Student Lab. Microbial Diagnostic Parasitology Virology Clinical Facilities New- Lab-1, Lec. Rm, Conf. Rm
2. Straight Residency in Infectious Diseases	Clinical and laboratory training in infectious and tropical diseases	M.D., post-internship plus 2 years of residency	- do -	- do -
3. Rotating Residency in Infectious Diseases	Short-term clinical training in infectious diseases	M.D., post-internship, ongoing residency in affiliate institution	- do -	- do -
4. Rural Health Practicing Physician	Training in community medicine/research	M.D., post-internship		Ex.- Conf. Rm, Clinical Fac. New- Lec. Rm
5. Research Design and Methodology	Biostatistics, classification of epidemiologic studies sampling, sample size, research evaluation, data processing	M.D., B.S. Nursing, B.S. Public Health or related field	UP-CPH CEU UP-PGH WHO	Ex.- Conf. Rm New- Lec. Rm
6. Epidemic Investigation Service Training	Didactics; filed investigation of outbreaks/epidemics	M.D.	- do -	Ex.- Conf. Rm, Student Lab., Micro/Viro/D. Parasitology New- Conf. Rm, Lec. Rm, Lab-1
7. Institutional Strengthening Program in Infectious Diseases for Ministry of Health Regional & Provincial Hospitals for Doctors	Didactics; clinical & laboratory training in infectious diseases & tropical diseases	M.D. with 1 year training in Medicine or Pediatrics	UP-IPH UP-PGH JICA	Same as No. 1
8. Institutional Strengthening Program in Infectious Diseases for Ministry of Health Regional & Provincial Hospitals for Medical Technologists	Laboratory training in infectious & tropical diseases	Medical Technologist with Board certification from Phil. Board of Medical Technologist	- do -	Ex.- Conf. Rm, Student Lab., Micro/Viro/Parasit. Lab. New- Lab-1 & 2, Lec. Rm, Conf. Rm
9. Third Country Training Program	Workshop on the Laboratory Diagnosis & Research Techniques in Acute Respiratory Infections (ARI) & Diarrheal Diseases (DD) - to provide the opportunity for updating knowledge & improving skills in modern medical technology for incumbent medical & paramedical personnel in developing countries.	B.S., M.D., or related profession	UP-PGH JICA UP-CPH	Ex.- Conf. Rm, Student Lab., Micro/Viro/Parasit. Lab. New- Lab-1 & 2, Lec. Rm
10. Basic Electron Microscopy	Basic principles & operation of electron microscope and accessory equipment; theoretical and practical aspects of specimen preparation; interpretation of electron micrographs & correlation of results obtained by light microscopy	B.S., M.D., or related profession		Ex.- Student Lab., Pathology, EM Rm (2), Prep. Rm, Lec. Rm, Conf. Rm New- Central Lab., Lab-2, Lec. Rm

FORM C CONTENTS OF TRAINING -2

Name of Training Course	Major Training Items	Qualifica. of Participants	Sending Instructor Institution	Rooms to be used
11. Medical Technology Internship	Basic concepts, theories & techniques in Clinical Laboratory Medicine; and essential skills needed in the operation & maintenance of clinical laboratory instruments & equipment. In the fields of Histopathology, Clinical Microscopy, Hematology, Blood Banking & Serology, Biochemistry, Microbiology, & Diagnostic Parasitology.	B.S. Medical Technology		Ex.- Conf. Rm, Student Lab., Clinical Lab., Micro/ Parasit./Viro/Patho Lab. New- Lec. Rm, Lab-1 & 2, Central Lab.
12. Individual Training Courses in Microbiology, Diagnostic Parasitology, Medical Entomology and Clinical Laboratory	Refresher Course for individuals seeking further training in the various research laboratories of RITM i.e., the Department of Microbiology, Parasitology & Medical Entomology and Pathology-routine and special laboratory procedures in ARI, DD, parasitic and/or vector-borne diseases AIDS, other tropical diseases of major public health importance and/or clinical interest.	B.S., M.D., or related profession		Same as No. 11
13. Experimental Animal Laboratory Procedures	Principles & Practices in an Experimental Animal Laboratory of familiarize research personnel in the maintenance, care proper methods of restraint and manipulation of laboratory animals, including animal nutrition, sanitation and infection control.	B.S., or under graduate		Ex.- Animal Lab. New- Lec. Rm
14. In-service Training on Computer Technology	EDP Fundamentals; FORTRAN Programming., BMDP/File Handling	B.S., M.D., or related profession		Ex.- Data Management Rm New- Lec. Rm
15. Mother's Class	Functions & Conservation of Nutrients; Pregnancy & Lectation; Infant Feeding & Supplementary Foods-for mothers and companions of patients confined in the hospital or those seeking consultation at the Out-Patient Department.	Undergraduates		Ex.- OPD Facilities, Dietary Dept. New- Lec. Rm
16. Pediatric Intensive Care Nursing	Respiratory Care, Update on Cardio-Pulmonary Resuscitation, Physical Assessment, Bi-monthly Care Presentation, Update on Nursing Procedures	B.S.N.	UP-PGH UP College of Nursing JICA, PCMC	Ex.- ICU, Conf. Rm New- Lec. Rm
17. National Workshop on the Laboratory Diagnosis of Diarrheal Diseases	Laboratory training in the detection of bacterial, viral and parasitic agents of diarrheal diseases	B.S.M.T. or M.D. with 2 years experience	WHO UP-IPH	Ex.- Student Lab., Conf. Rm Micro/Viro/Diagnostic Parasit. Lab. New- Conf. Rm, Lec. Rm, Lab-1 Central Lab.
18. Research Management Course for Middle Level Supervisors	In-service training on planning and resource management, research administration and coordination	Senior staff	WHO DAP DOH- Management staff CSC COA	Ex.- Conf. Rm New- Lec. Rm
19. Workshop on Laboratory Diagnosis of Antibodies to HIV Infection	Impact knowledge & provide skills in screening procedures and dignosis of HIV infection perform the actual procedures and interpret results	M.D., B.S. Med. Tech w/ 2 years experience in bacteriology and/or virology	WHO Representatives of drug companies CDC (U.S.)	Ex.- Micro/Viro/Student Lab. New- Lec. Rm, Lab-1

FORM C CONTENTS OF TRAINING -3

Name of Training Course	Major Training Items	Qualifica. of Participants	Sending Instructor Institution	Rooms to be used
20. Laboratory Animal Science	Laboratory Animal Management, breeding, nutrition, genetics, pathology and microbial monitoring of patholgens of laboratory animals	DVM, Animal Science or Husbandry Major and related paramedical courses	UP College of Veterinary Medicine	Ex.- Animal Lab. New- Lec. Rm
21. Clinical Pharmacy	Train Clinical Pharmacists in drug-related functions in Nursing Unit; Interpretations of Doctor's Medication Orders; Preparation of all unit-dose medication	Licensed Pharmacist	UP College of Pharmacy UP-PGH	Ex.- Clinical Pharmacy New- Lec. Rm
22. Workshop on Immunological and Molecular Biology Techniques Applicable to the Study of Schistosomiasis	Provide hands-on training on the specific immunological and molecular biology techniques in the study of S. japonicum infection	M.S. or Ph. D.	WHO SEAMEO-TROPMED UP	Ex.- Immunology Lab., Student Lab. Conf. Rm New- Lab-1, Lec. Rm
23. Practicum in Hospital Dietetics	Nutritional & Dietary evaluation of patients; dietary counselling; nutrition education; Ward rounds; Planning and preparation of Therapeutic Diets and diets for Infectious Diseases; Preparation and presentation of Case Study.	Nutritionist-Dietician	UP-PGH UP-CPH	Ex.- Dietary Dept., Conf. Rm New- Lec. Rm

2) Equipment arrangement plan

Although the equipment requested includes furniture and electrical, mechanical service this paper deals only with those required for the training.

Laboratory equipment

Laboratories are used for training purposes, not for research, and the existing research laboratories are in a far distance. It is difficult to conduct joint experiments using sophisticated equipment with existing laboratories. Therefore, equipment to be used for independent experiments shall be installed in the training center laboratory.

Equipment for conference and lecture rooms

Audio-visual equipment is required for large audiences involved in training in the conference room. The 16 m/m film projector unit can be transferred from the existing conference room and used on these occasions. It is preferable to install a microphone unit which is suitable both for lecture and discussion purposes.

Equipment for print room

Basic printing equipment is required to arrange training materials when necessary.

3) Duty staff dormitory facilities

The clinical department of the RITM is managed on a 24 hour basis. A certain number of afternoon or night shift staff are on duty to maintain this system.

The details are as follows:

	Afternoon Shift PM3:00 - PM11:00	Night Shift PM11:00 - AM7:00
Doctors	2	2
Nurses	10	10
Assistant Nurses	5	5
Institutional Workers	2	2
Medical Specialists	2	2
Pharmacy	2	1
Engineering	4	4
Maintenance	4	6
Clerks	2	2
Researchers	5	5
Cooks	5	5
X-ray technicians	2	1
Autopsy aid	1	1
Drivers	1	1
Total	57	57

Transportation to RITM is poor and security inadequate when commuting at night. It is difficult for these afternoon or night shift workers to get public transport, therefore dormitory facilities are required.

The reason for security guards to be stationed at the institute is for protection against intruders, as well as to prevent family members of a patient from leaving the premises without authorization.

Cooking staff are on stand by 24 hours to provide food for emergency patients and their families, as well as the provision of three regular meals. This policy has been established based on an experience at RITM of which a family member of a patient who was carried in at night collapsed due to hunger.

In the RITM even night time dissections are undertaken to deliver the remains to the family as soon as possible after a patient has died. For this purpose autopsy aid are on standby 24 hours.

4) Renovation of existing facilities

The developing extension of research functions in the RITM over the past six years has left various facilities in poor condition. Utilization of public space such as part of the lounge and pharmary leaves room for improvement. That is, minor renovations to existing facilities are required from the point of promoting research activities, and to the management of the clinical department.

Furthermore, when the training center and dormitory buildings are constructed, some of the new facilities can take over part of the functions from the existing facilities. Consideration may be given to renovate and expand the storeroom and office areas. RITM plans to renovate the existing facilities in line with the above two points. It hopes to achieve this from the grant aid given by the Japanese government.

Major items for renovation to existing facilities under the RITM plan are as follows:

a. First floor OPD waiting room

Various out-patients despite their age or type of disease contracted share the same waiting room and therefore are constantly exposed to a danger of other infections from fellow patients. This exposure is to be prevented by dividing waiting room, with partitions, into sections, thus eliminating contact amongst patients.

b. First floor OPD consultation room

In order to streamline the movements of patients, the social worker's room shall be relocated, and an accounting office shall be constructed. A blind shall be installed to the northwest window to screen the afternoon sun.

c. First floor emergency treatment room

The increase in the number of emergency out-patients results in a shortage of observation beds. Therefore the office compartment of the emergency treatment room shall be redesigned to increase the number of beds. A nurse station shall be built.

d. First floor pharmacy

The increase of patients results in a shortage of available space for the pharmacy. Using the outside space between the pharmacy and the treatment room, rooms shall be expanded to allow for more space for the office and storeroom of the pharmacy.

e. Second floor nurse station (ICU)

Due to the afternoon sun the working environment of the nurse station is poor. It shall be airconditioned and have a glass screen installed where the corridor adjoins the counter and downward wall. The ICU is exposed to dangerous germs due to the passage of family members moving freely about, therefore a anteroom shall be built to stop entry to the ICU. Relatives shall observe the patient from the outside balcony, and shall be prohibited to enter the ICU. A patients lounge shall also be expanded in the outside space between the ICU and the nurse station. A patients lounge was previously available, however, it was changed to a doctors call room.

f. First floor kitchen

The dietitians office attached to the kitchen shall be renovated. It shall be partially expanded and a dietary consultation room shall be installed. A formula room shall also be arranged.

g. First floor clinical laboratory

The environment in the laboratory is unsatisfactory due to the increase in the number of patients reducing the available work space and already part of its space is occupied for bleeding work. The neighboring rooms for supply office shall be relocated and changed to the laboratory office and bleeding room.

h. Cafeteria on the first floor

The cafeteria, kitchen, and medical record room shall be partially expanded and renovated. In this space the supply office, which is removed with the expansion of the clinical laboratory, and also the medical and general record rooms shall be arranged. Accounting office shall also be removed from the current position at the staff entrance to this area. It will enable patients and their relatives to complete paper work without entering the administration wing.

i. First floor administration office

To relieve the narrow space in the administration office due to the increase in the number of staff, the personnel, accounting and cashier's rooms shall be changed to the auditor's, general services, and casher's rooms, respectively.

j. First floor conference room

Construction of a conference room in the new training center enables rooms in the existing facilities to be used for other purposes. This area shall be used for the personnel, accounting and budget offices, respectively.

4-2-2. Evaluation for facilities and equipment

1) Evaluation for facilities

A. Training Center

The training center requires facilities which can provide education such as laboratories, lecture rooms, etc. in the training building and which can accommodate instructors and participants in the dormitory.

The required facilities are as follows:

(1) Laboratory

In view of the training carriculum, we shall design two rooms, that is, the laboratory 1 and laboratory 2. A preparation room and a clean bench room shall be attached to them. In addition, we shall provide a central laboratory to avoid installing the same equipment elsewhere, in which experiments for analysis and measurement are undertaken.

Each laboratory shall accommodate a maximum of 24 persons, and shall have four six-man experimental tables.

(2) Lecture rooms

There will be three lecture rooms, each of which will accommodate 24 persons. As some of the courses will have as many as 45 persons, the screens between two of these rooms shall be movable so that the rooms can become one large room to accommodate 48 persons.

(3) Sterilizing room

A sterilizing room shall be built in order to prevent glassware, used at laboratory training from being taken out unsterilized. Exits, entrances and equipment shall be arranged so that unsterilized and sterilized equipment is not mixed.

(4) Printing room

A print room shall be built to print educational materials and brochures etc. Basic printing and bookbinding equipment shall be installed.

(5) Conference room

The Department of Health has few facilities accommodating large conference rooms, and large gatherings are held on the second floor of the storeroom of the Department's Medical Section. Therefore it is necessary that a conference room be provided in the proposed training center for those meetings which will exchange information regarding health and medical treatment, or discuss RITM administration. The RITM is considering to use the conference room for the following meetings:

a. Research forum (Regular activities of Internal Review Board)

Meetings to review suggestions for research and to hear an interim report of projects in progress.
50 - 150 persons, once or twice a month

b. Symposium for science

Meetings to review the result of research activities, and to discuss trends in research, diagnosis, medication and prevention of infectious diseases.
150 - 200 people, four times a month.

c. Meeting to plan RITM activities

Meetings for diagnostic treatments, reports of disease cases, financial accounts for medical treatments, administration and workshop activities, etc.
50 - 200 people, once per week, month, season.

d. Public Relations

Guidance and orientation for visitors.
50 - 200 people, once a month.

e. RITM Annual General Assembly

To report the result of activities, planning, research, training, medical services by the RITM.
50 - 200 people, once a year.

There are other meetings, as follows, which are held by other organizations other than RITM who hope to use the conference room in the RITM.

a. As for projects by the Department of Health, i.e., countermeasures for tuberculosis, plans to extend vaccinations, promotion of health for mothers and babies, countermeasures for schistosomiasis japonica and malaria, each project has an attendance of approximately 180 people every month.

b. The hospital in the medical department, University of the Philippines holds a regular meeting every week to discuss infectious diseases. A lot of RITM staff attend this meeting.

c. In RITM, WHO has held four workshops for epidemic science workshops, and medical inspection technique workshops, the new conference room will greatly increase the number of meetings.

d. It has been decided that NSTA holds a science and research conference once a year from 1987. Many RITM staff will attend. The total attendance is expected to be 150 - 200.

In consideration of the above, a conference room for 180 persons will be designed and used for visual training with such educational tools as movies or slides. Desks and chairs shall be a fixed type, arranged in tires and a stage shall be built so that it can be also used as a lecture room.

(6) Instructors' dormitory facilities (for six persons)

A dormitory facilities shall be provided for visiting instructors. RITM is expected to have a minimum of nine and a maximum of 25 visiting instructors at any one time. Most of them will be dispatched from Metro Manila, and can commute by themselves.

Although it is difficult to estimate the number of instructors dispatched from foreign countries or other Philippine cities, we have estimated six, which is two thirds of the minimum number and a third of the average number.

This dormitory facilities consist of single rooms, and each room has a toilet, shower and an airconditioner.

(7) Dormitory facilities for participants (for 50 people)

According to the training schedule, the number of participants at any one time is a minimum of 41, and a maximum of 113, with 76 the average. Some of the participants involved in the training courses do not require domitory facilities. If these courses are excluded, there will be a minimum of 30, a maximum of 88 and 56 the average. Furthermore, if the 45 participants in the national workshops are not provided with a dormitory facilities, the number will become a minimum of 30, a maximum of 86 and 49 the average. Fig. 4-1 diagrams the number of participants and instructors by month.

This project assumes 50 people will stay over at any one time, based on the average figure.

It is preferable to have enough single rooms to accommodate those participants from other countries. This is to avoid possible trouble due to different customs involved when they gather from Southeast Asia for the Third Country Training Program.

Therefore, the plan is to accommodate twenty-four out of the fifty participants in twenty-four single rooms, and the remaining twenty-six in thirteen double rooms.

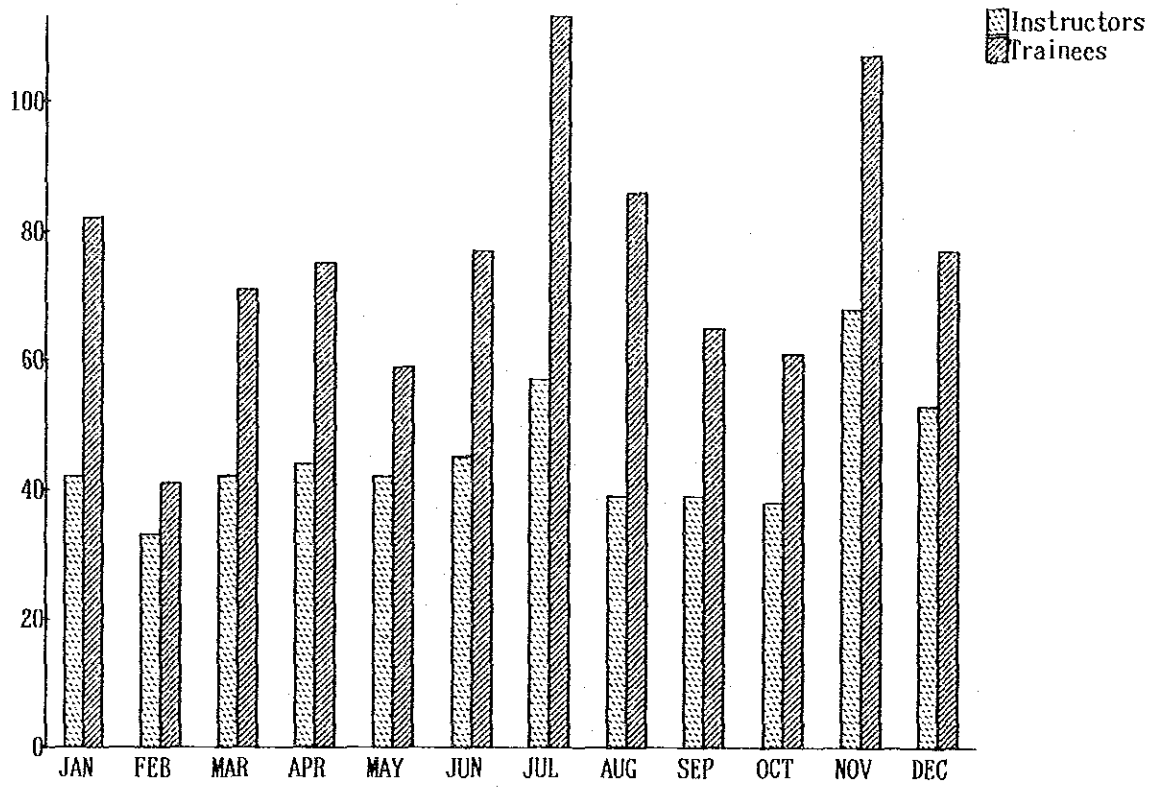


Fig. 4-3

(8) Kitchen, dining room and laundry

Although there is a restaurant in the lodging wing, there is a possibility that some of the instructors and participants from foreign countries who stay a long time will want to cook by themselves instead of taking meals at the dining hale. This is due to different culinary tastes or for religious reasons. A kitchienette and small cafeteria shall be installed in each floor for the benefit of these people.

A laundry shall also be built for them to wash their personal effects.

(9) Library

As the training function is strengthened, it becomes more important to maintain informational material. The existing library is too small for this purpose, so a new library room with toilet and airconditioners shall be built.

It will have a capacity to hold some 2000 books, to accommodate 24 people in its reading room, and shall have twelve carrels in addition to other seating.

It shall be built in the dormitory building to enable convenient access in the evening for participants staying over.

B. Dormitory facilities for staff on duty

Dormitory facilities shall be provided for the workers in the afternoon (3pm - 11pm) and night (11pm - 7am) shifts, as the clinical department is operated 24 hours. There are two types of dormitory facilities: one for technical staff and the other for clerical workers according to their job assignments. The required facilities and their outlines are as follows:

(1) Paramedical staff dormitory facilities

A dormitory facilities shall be provided to accommodate a total of 44 people such as nurses, nurse assistants, medical specialists, pharmacists, X ray technicians and system engineers. The ratio of men to women is 12 to 32.

The paramedical staff dormitory facilties consist of double rooms, with toilets and showers in common use.

(2) Clerical workers dormitory facilities

A dormitory facilities shall be provided for twelve out of the total thirty-two people such as institutional workers, mechanics, clerks, cooks, autopsy aides and drivers, and is some forty per cent of the total. This dormitory facilities shall also be used for doctors and researchers who wish to take a rest. The dormitory facilties consist of large rooms for six men with toilets and showers in common use.

(3) Dining hall and kitchen

The existing cafeteria has a capacity for fifty people, which is inadequate to cater to the increasing number of workers, therefore, it is inevitable that a new dining hall needs to be built. We expect the dining hall shall cater to a total of 320 people, consisting of 200 normal RITM commuters, seventy researchers and fifty instructors on average. Therefore, a dining hall which has a capacity of 110 seats available for the three daily rotations is planned.

As RITM is expected to have participants and instructors from foreign countries, and taking a leading role in tropical medical science, it receives a number of visitors not only domestically but also from foreign countries. To keep the ties of friendship with these visitors, smaller dining room (30 seats) will be provided, preparing partition at the one corner of dining hall.

2) Evaluation for Equipment

During the past six years since RITM was established, some of the original research equipment has deteriorated. Therefore, all equipment shall be improved and upgraded to successfully conduct all training courses affect the new training center is built. As a result of our survey on the condition of the existing equipment being used and in regular discussions with RITM as well, we have drafted the following plan for equipment to be installed in each department.

Please refer to the "5-5 Equipments Plan" which relates to equipment required for each department and all equipment already in use.

Plan for equipment to be supplied for each department

Equipment for bacteriology and parasitology research and experiments
Equipment for virology and tissue culture research and experiments
Equipment for the clinical medicine and biochemistry central laboratory
Equipment for sterilizing room
Audio-visual training equipment
Administrative equipment for library
General administrative equipment and vehicles

4-3 Outlines of the Project

4-3-1 Organization and administrative system

The Research Institute for Tropical Medicine, (RITM), in the Department of Health is in charge of implementing and promoting this project. Its organization is shown in Chart 3-1.

The Advisory Board in this chart is composed of the Minister of Health, the chairman of National Science and Technology Authority (NSTA), the director of the university of the Philippines Health Service Center (UPHSC). It advises the director of the RITM on managerial and technical matters in RITM administration, and assists him in arranging participation by NSTA and UPHSC in the implementation of research programs.

Even after the training center is built, the organization will be basically unchanged. The research and training division is in charge of the research projects and the dormitory administrative department is established in the administrative division. In regards to the research and training division's clinical department, which is involved in its own activities such as the areal medicine with a lot of staff, there seems to be some room for reconsideration which we would like to leave to the discretion of the RITM.

4-3-2 Planned activities

In addition to the RITM activities mentioned in Chapter 3, the research projects are to be strengthened and extended. Items for future projects are shown in Table 4-2 form B.

Regarding the training for personnel from neighboring countries, R/D was signed between the Philippine government and the Japanese government in October 1986 and it is to start from October 1987.

This means that the result of all research accumulated over the past six years since the center opened is now highly regarded both in and out of the country, and that demand is increasing to make available these results to other countries under similar environments and to implement the training which will contribute to their future health and medical projects. The RITM has achieved a high level of research documentation and information.

Lectures will be undertaken in the training building, experiments and practices in laboratories of the training building as well as existing facilities, clinical training in the facilities of the existing clinical department.

4-3-3 Facilities and equipment

1) Facilities

The training center and the dormitory facilities for on duty staff shall merge to comprise the training and dormitory buildings.

The training center building

Reinforced concrete structure, two-storied with basement, total 2,194.3 m^2
Training administrative office (six people)
Printing room
Laboratory 1 (24 people) and its preparation room
Laboratory 2 (24 people) and its preparation room
Central laboratory
Clean bench room (two)

Lecture rooms (three rooms for 24 people each, two are able to be used combined)
Sterilizing room
Conference room (182 pairs of desks and chairs, arranged in tiers, stage, projection room)
Lounge

The dormitory building

Reinforced concrete structure, three-storied with basement, total 4,443.5 m^2
Dormitory facilities for instructors (six individual rooms, toilets, showers, airconditioning)
Dormitory facilities for participants (24 single rooms, 13 twin rooms, total 50 people)
Toilets
Dining room (three rooms)
Laundries (two)
Library (2000 books, 24 people)
Dormitory administrative office
Paramedical stall dormitory facilities (For men, six double rooms, total 12 people. For women, 16 double rooms, total 32 people. Grand total 44 people)
Clerical workers dormitory facilities (For men, two six-man rooms, total 12 people)
Dining hall (110 seats)
Dining room (30 seats)
Kitchen
Kitchen and dining rooms (three rooms)
Laundries (three)
Machine room
Electric room

Covered walkway

Steel structure, one floor, total 250 m^2

Guard house

Reinforced concrete structure, one floor, total 4 m^2

Total floor area for the facilities

6,890 m^2

2) Outline for renovation to existing facilities

(1) To divide OPD waiting room on the first floor with movable screens and wooden partition.

(2) To relocate the social workers room in OPD consultation room, to arrange a new billing office, to install new sunshade.

(3) To renovate the emergency office on the first floor and to arrange a new nurse station.

(4) To expand the office and store room adjoining the pharmacy on the first floor.

(5) To install an airconditioning unit in the nurse station, to renovate ICU, and to add a lounge for patients on the second floor.

(6) To expand the dietary office in the kitchen on the first floor.

(7) To reform the supply office on the first floor into the office and bleeding room.

(8) To reform the cafeteria, kitchen, and medical record room on the first floor into the accounting office, the supply, medical record, and general record rooms, and to expand the stock rooms.

(9) To reform the personnel, accounting, and cashier's offices into the auditor's, general services' rooms, and cashier's office.

(10) To reform the conference room on the first floor into the personnel, accounting, and budget offices.

3) Equipment planning

The list of equipment is as follows:

(1) Laboratory 1

Centrifugal separator
Incubator
Medical refrigerator
Constant-temperature water bath
Electrophoresis equipment
Eraser leader
Discussion microscope
Binocular biological microscopes
Binocular stereoscopic microscopes
Dark view microscopes
Mixer (vortex)
Electronic balance (digital type)
Microscopic projector
Central experiment platforms

Preparation room
- Electronic balance (digital type)
- Magnetic stirrer
- Medical refrigerator
- Constant-temperature water bath
- PH meters
- Timer
- Clean bench (class 1)

(2) Laboratory 2

Incubator
CO_2 Incubator
Centrifugal separator
Medical refrigerator

Inverted culture microscopes
Florescent microscope
Constant-temperature water baths
Microplate mixers
Mixers (vortex)
Microplate shakers
Peristatic pump
Liquid nitrogen tanks
Fraction collector
Dryer shelves
Central experiment platforms

Clean bench room
  Clean benches (class 1)
  Sucking-in pump units

(3) Central laboratory

Draft chamber
Iron coater
Spectrophotometers
Electrophoresis equipment
Densitometer
Ultracentrifuge
Cooling centrifuge
Swing type centrifuge
Micro centrifuge
Medical refrigerators
Constant-temperature constant-humidity chambers (prefabricated)
Central experiment platform

(4) Sterilizing room

Autoclaves (longitudinal)
Dry sterilizers
Pure water makers
Pipette washers
Micro pipette chip washer
Micro plate washers

Electric burners
Pipette dryers
Carts
Stainless wire baskets
Basins

(5) Epidemiology department

Multiple memory capacity personal computers
Accessory units
Color display
Graphic monitor
Disk dram unit
Printer (two kinds)
AVR

(6) Conference and lecture rooms

Slide projectors (with a zoom lens)
Slide projector alignment unit
Overhead projectors
Sound units
VHS video unit and monitor
Microphone unit (for 24 people)
Roll up type screens
Mobile screen

(7) Printing room

Typewriters
Scanner
Mimeographic machine (printer)
Copy machines
Overhead projector film maker
Binder unit

(8) Library

Personal computer (multiple memory capacity)
Copy machine

(9) Administrations

Small drawing kit
Middle-sized microbus (for 24 - 28 people)
(with airconditioning and microphone)

4-3-4 Technical cooperation

The Japanese government has signed R/D with the RITM on 17 October 1980, and provided technical cooperation for the following five years until 1985. This R/D has now been extended up to 31 March 1988. The following areas are objectives for the technical assistance to RITM:

A. Epidemiology, microbiology and immunology and their countermeasures for contagious diseases.

Immunology and microbiology for diphteria, whooping cough and tetanus.
Dengue fever (diarrhoeic disease), meningitis and B-type hepatitis; their microbiology, hosts, environmental factors, medical treatments.
Other areas mutually agreed upon:

B. Training for health workers engaged in preventing contagious diseases.

During this technical cooperation period, the total number of 32 Japanese specialists were dispatched from such fields as public hygiene, microbiology, epidemiology, parasitology, biochemistry, pathology, clinical medicine, biomedical technology, animal experiment etc.

The role of the RITM is highly appreciated in its contribution to the health and hygiene of the Philippines through this technical assistance, and in promoting friendship between both countries.

The research activities have been based on the Japanese technical assistance such as the dispatch of Japanese experts, training of their Philippine counterparts in Japan and provision of equipment, and on other assistance by WHO, NSTA (National Science and Technology Authority), and the Australian government.

In october 1986 both governments signed R/D regarding training for third country personnel.

The contents are as follows:

1. The name of the project

   Workshop for diagnoses of acute respiratory infection in laboratory and its research technic.
   Diagnoses of diarrhoeic disease patients in the laboratory and its research technic.

2. Objective

   To renew and upgrade the related technology regarding ARI and DD.

3. Period

   The first one will be from 5 - 30 October 1987.

4. Countries invited for this project.

   Brunei, Burma, China, Fiji, Hong Kong, Indonesia, Malasia, Korea, Papua New Gunea, Western Samoa, Singapore, Solomon Islands, Thailand, Tonga, Vanuatu, total 15 countries.

5. The number of participants accepted

   A total of sixteen people
   Not more than twelve people will be accepted from third countries. The number of Filipinos accepted will not exceed half of the registered number.

6. Share of expenses.

(1) Japan

Expenses in accepting participants in the training

Expenses in the training courses.

Expenses to dispatch two specialists.

(2) The Philippines

All other expenses shared by Japan.

Provision of the training facilities.

4-3-5 Proposed construction site

1) Alabang Compound Master Plan

The Alabang Compound is a research complex in the region of Alabang, and is under the jurisdiction of the Department of Health. It comprises three different research facilities, the vaccine research institute, the RITM and the food and drugs laboratory, with an area of 25 ha, 20 ha and about 4 ha, respectively within a total area of 68 ha. The remaining space is unutilized.

One idea being promoted is for the formation of a large research complex in this area by concentrating all health and medical service institutions from all parts of the country. However, the idea is still in the planning stage.

At present, regular inter-office meetings held directors representing the three research institutes to discuss the problems of access road improvement, safety security and maintenance that can be attached through joint efforts. It is expected that this kind of meeting will satisfy the immediate needs for mutual cooperation and produce a cooperative system among the three different facilities through joint research work and exchange of material.

2) Proposed site

The land for this project is in the RITM compound.

RITM is located some 20 km from central Manila (at North 14°30', East 121°00', about 30 min by car on Hiway Nr1). It is in the Alabang Compound, owned by the Department of health, which is located in Alabang district of the municipality of Muntinlupa in the Metropolitan Manila Area.

This compound has Biological and BCG Laboratories run by the Department of Health, and the food and drugs laboratory which were completed through grant aid by the Japanese government in 1987.

RITM was completed on 20 ha of a hillside area in the southernmost part of the compound in March 1981 due to the grant aid by the Japanese government.

For the past six years since, trees have grown and the area within the fence has been well tended. It is some two kilometers from the compound front gate to the RITM,to which an unpaved road is still used as it was at the time of the opening.

The site is on a rather rapid downward slope (some 4 - 6%) at the area where existing facilities stand. Except for some flat portions, most of the site is on a slope. Hard ground foundation in a rock form called "Adobe" extends under the thin topsoil (50 - 80 cm) over the whole site. This suggests that the construction cost for excavation will be high.

In view of the scale of this project and the tiered floor plan, part of the facilities must be constructed on the sloped area, regardless of where facilities are to be distributed.

There is some fear that basic construction costs may be excessive in comparison with construction of facilities on level land. However, consideration shall be given to a building plan on this sloped site.

Most land in the northeastern part where existing facilities are is comparatively flat, and is suitable to build facilities on, however, currently there are two temporary staff dormitories there and these shall be removed prior to any new construction work being undertaken.

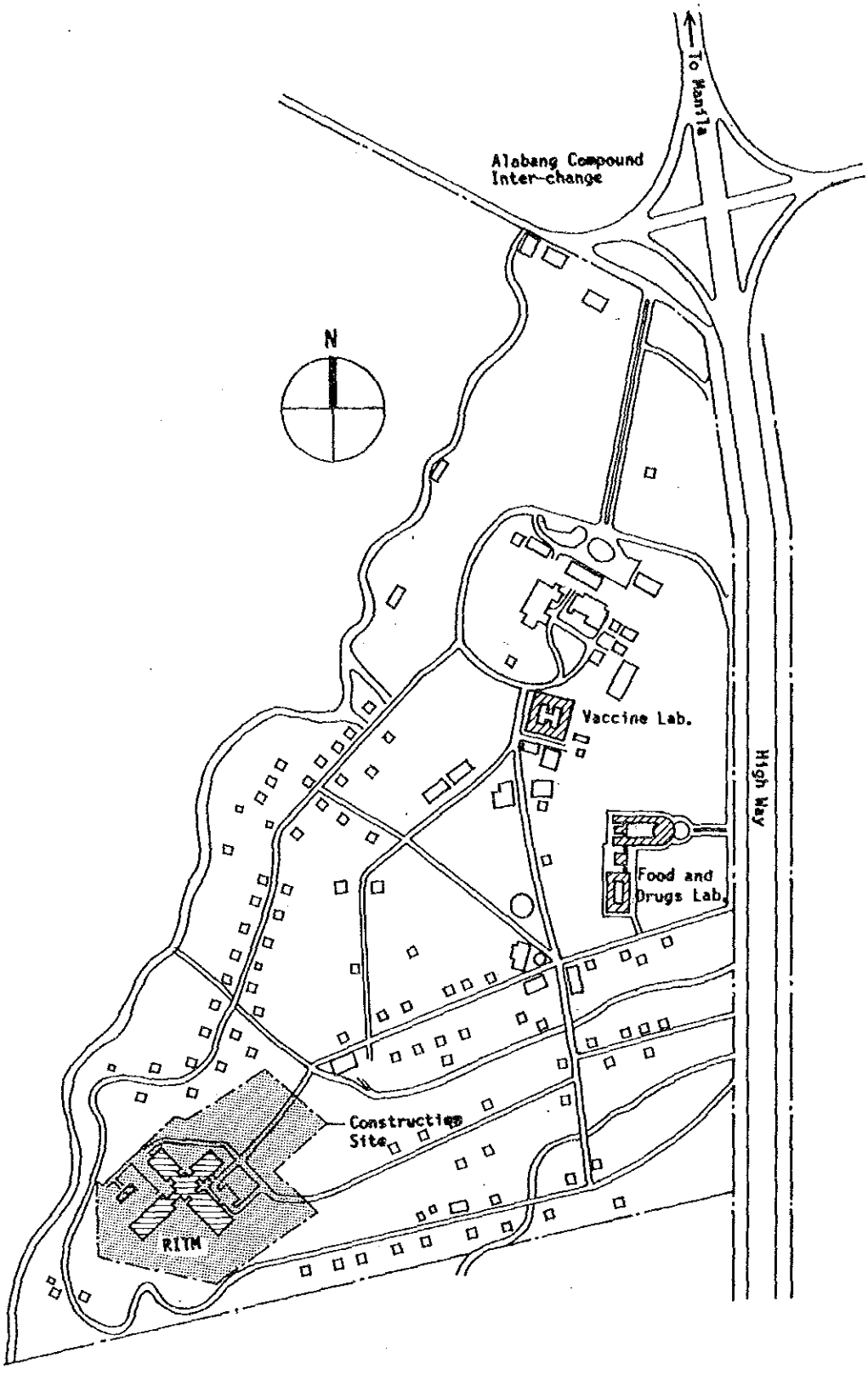


Fig. 4-2 Alabang Compound Map

CHAPTER 5

BASIC DESIGN

CHAPTER 5 BASIC DESIGN

5-1 Basic Principles

In line with the contents of the Project, the basic principles for designing the facilities should be as follows.

(1) The new facilities included under the Project and the existing RITM facilities should complement each other functionally; the design of the new facilities should also take into account the functions of the existing facilities to initiate improvements and coordinate the existing and new functions.

(2) Considering that the research and training focuses on infectious diseases and that most of the patients treated at the clinical department of the existing facilities are suffering from infectious diseases, a traffic line layout should be worked out to prevent the lines of the research, medical treatment, and training activities from intersecting one another.

(3) In the design of the Training Center, the merits and demerits of the existing facilities should be taken into consideration so that the Training Center can also be used for research activities.

(4) The site planning, structural planning, building service planning should be scheduled so as not to interfere with the activities of the existing RITM.

(5) The laboratories and lecture rooms necessary for training, and rooms needed to be used as quarters, should be laid out so that they can coordinated with the relevant rooms of the existing facilities.

5-2 Considerations in Design

In view of the nature of this Project, being principally intended to facilitate the activities required for the RITM but unable to be initiated because of the overcrowded existing facilities, the Project must consider the compatibility of its design with the design of the existing facilities, the compatibility of its traffic lines with the existing ones, and its infrastructural service requirements, in addition to the natural and locational conditions and the functional conditions required by the RITM authorities in line with the general basic design. Furthermore, the control of construction work noise is also an important requirement since there always will be many patients in the premises of the existing facilities. As important considerations, the following were selected for specific study.

(1) Natural Environment and Weather Conditions

Under the restrictions inherent in the existing buildings and the physical layout of the premises, it is impracticable to locate the training building in an east-west direction and with openings on its north and south sides. The residential building should have large openings for natural ventilation, and the living rooms be arranged to avoid the intense afternoon sun as far as possible.

To increase the insulation effect against the radiation heat of the sun on the roofs, insulation method on rooftop slabs will be considered.

(2) Site Conditions

The main utility service system of the existing facilities has no extra capacity for the new buildings to be added. The installation of new water supply, sewerage and power supply systems is necessary. The site planning of new buildings must be made so as not to affect the existing main utility lines and the existing passages.

(3) Space Utilization

Specimens, reagents, materials and equipment used for the training at the existing laboratories will be closely related with those used for the training at the new laboratories in the Training Center. The handling of some of them may be dangerous. Therefore, the traffic lines should be as short as practicable, and both the existing and the new traffic lines should preferably be level.

The conference room and lecture rooms with desks and chairs for training should ideally also be usable as lecture rooms for seminars and other types of places for information transfer, and open to those outside people who work in health and medical services. Such outside people who visit the Training Center must be allowed to use the traffic lines away from the existing facilities and clinical facilities where they could be infected, and the traffic lines should not intersect the traffic lines of the existing facilities.

Concerning the dormitory building, the length of stay of occupants varies; some may stay only for a short time and some may stay over two years. The building should therefore have variations in quality and grade suitable for the various types of occupants. It will be necessary to geographically separate this building as a place of rest and relaxation from the Training Center building which is the place of training, and also to ensure that it serves as the place for people to live in, at a distance from patients.

(4) Construction Work

The primary consideration for the construction work will be to keep the activities of the existing facilities from being affected by the construction work. For this reason, connecting new utility systems with the existing ones should be avoided as much as possible. Schedules and plans should be carefully made in advance for carrying in construction materials and handling them on the premises.

Considering possible noise, dust and required security precautions, the layout of the temporary work should be at an adequate distance from the existing facilities.

(5) Building Design

The existing buildings were constructed under the grant aid of the Japanese government, and the design of the buildings to be constructed under this Project should resemble that of the existing ones so that people can have an impression of the progress made by the institute.

5-3 Size of facilities

1) Training Center

Basement	sq.m	
Machine room	120	
1st Floor	**sq.m**	
Office	36	6 persons
Printing room	38	4 persons
Laboratory 1	166	24 persons
Preparation room	31	
Clean bench room	45	
Sterilizing room	83	
Lecture room 1	60	
Conference room	444	182 persons (with stage)
Toilet/pantry	63	
Hall, staircase, and corridor (internal)	264	
Staircase and corridor (external)	107	
Sub total	1,337	
2nd Floor	**sq.m**	
Projection room	38	
Ante-room	16	
Laboratory 2	166	24 persons
Preparation room	24	
Clean bench room	45	
Refrigerator room	22	
Central laboratory	61	

Preparation room	22	
Lecture room 2	60	24 persons
Lecture room 3	60	24 persons
Toilet/shower room	44	
Corridor and staircase (internal)	148	
Staircase (external)	5	
Sub total	737	

Training center Total 2,194 sq.m

Dormitory building

Basement	sq.m	
Machine room	198	Electrical room, water tank room, pump room

1st Floor	sq.m	
Dining hall	175	114 chairs
Dining room	53	32 chairs
Kitchen	56	
Office	18	2 persons
Night duty room	18	
Double rooms for participants	128	18 sq.m x 6 rooms
Single rooms for participants	147	18 sq.m x 8 rooms
Double rooms for staff	74	18 sq.m x 4 rooms
Dining/kitchen	60	30 sq.m x 2 rooms
Laundries	51	18 sq.m x 2 rooms
		15 sq.m x 1 room
Storerooms	37	18 sq.m x 2 rooms
Toilet/shower room	27	
Staircase, hall, and corridor	792	
Sub total	1,637	

2nd Floor	sq.m	
Double rooms for staff	92	18 sq.m x 5 rooms
6-bed rooms for staff	74	37 sq.m x 2 rooms
Double rooms for participants	128	18 sq.m x 7 rooms

Single rooms for participants	165	18 sq.m x 9 rooms
Dining/kitchen	86	30 sq.m x 2 rooms
		26 sq.m x 1 room
Laundries	30	18 sq.m x 1 room
		12 sq.m x 1 room
Toilet/shower room	54	
Storeroom	18	
Corridor and staircase	543	
Sub total	1,190	

3rd Floor	sq.m	
Double rooms for staff	239	18 sq.m x 13 rooms
Single rooms for instructors	110	18 sq.m x 6 rooms
Single rooms for participants	129	18 sq.m x 7 rooms
Library	227	
Dining/kitchen	60	30 se.m x 2 rooms
Laundries	30	
Toilet/shower room	54	
Storeroom	18	
Corridor and staircase	480	
Sub total	1,373	

Pent house Floor	45 sq.m
Dormitory Building Total	4,443 sq.m
Connecting Corridors	252 sq.m
Guardhouse	4 sq.m
Total	6,894 sq.m

5-4 Building Layout and Sites

The layout of the buildings should incorporate the following points.

. The building position should minimize the amount of afternoon sun that enters rooms.

. The building axis should utilize natural ventilation as much as possible, with wind direction being taken into account.

. The buildings should be located to ensure integrated effective functions of the whole facilities, with their traffic lines and connections with the existing RITM facilities taken into account.

. The buildings should be located to ensure shortest possible runs of utility systems.

. Since the site is on undulating land, the buildings should be located on ground with a gradient as small as possible, to save the additional costs involved in constructing on slopes.

Based on these basic requirements, four sites - A, B, C and D - were selected for consideration for the buildings. Comparison and discussion now follow.

Site A

This site lies to the southwest of the Research and Training Division, and currently has a basketball court on it. It contains a plane portion, and traffic lines based on this site will have no problem in connection with those of the existing facilities.

But the distance from the entrance of RITM is long, and the movement of many people in the RITM facilities over the long distance will cause problems. The cost of newly constructing power supply, water supply and sewerage lines from the nearest available main line will be high. (These service lines cannot be connected to those of the existing facilities because the capacities of the latter are in full use.)

Site B

Situated adjacent to the Research and Training Division and the Administrative Division, this site consists mostly of a small hill and very few plane areas, and will require leveling of the ground.

There will be no traffic line problems, although the same problems of the service line construction and the movement of many people referred to for site A also apply.

Site C

Lying along the access road, this site is currently unoccupied.

The line of traffic to and from the Research and Training Division is a little longer and, therefore, undesirable.

This site can have an entrance leading to the forecourt of the entrance of the existing facilities, and is suitable for use by many people. Power and water supplies and sewarage line construction will be costly. The slopes contained on the site will require geography being taken into account in the building layout.

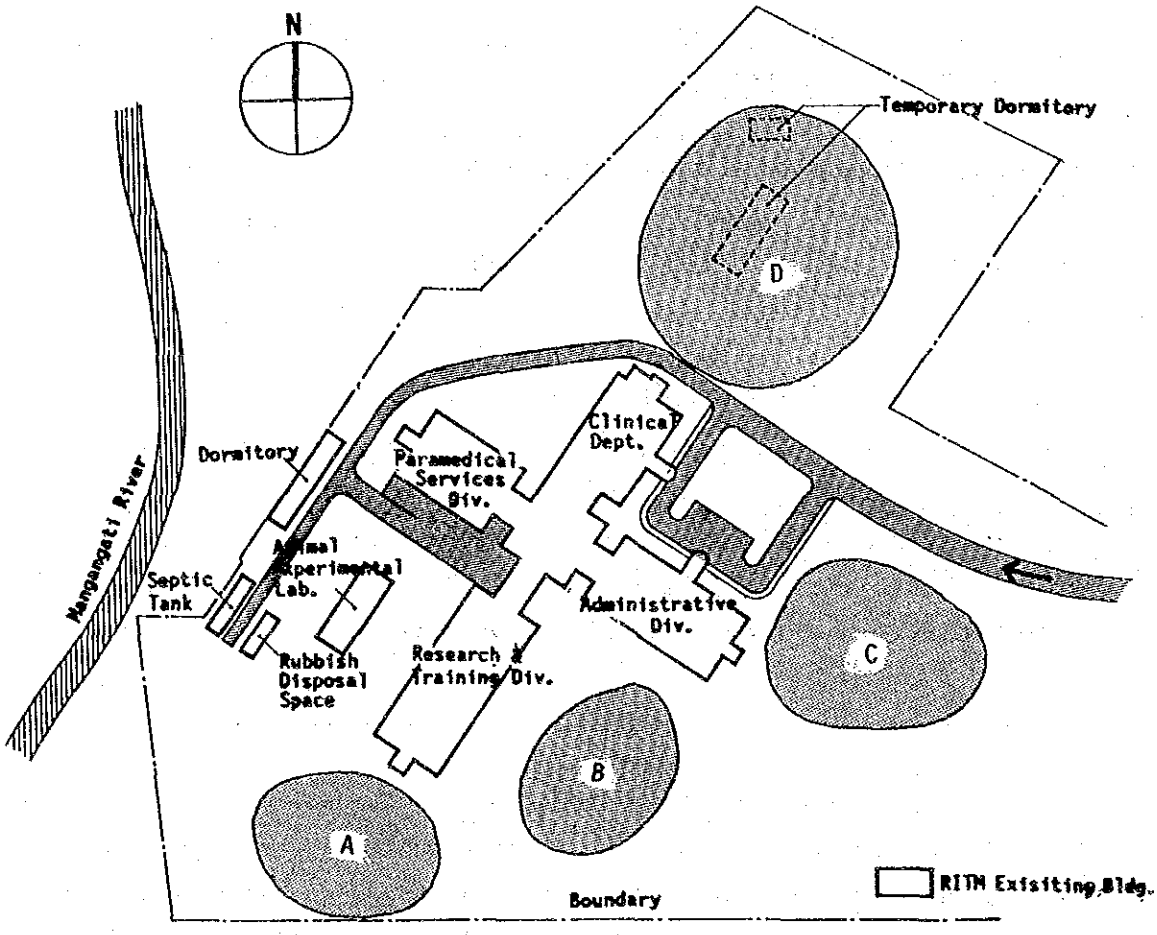


Fig. 5-1 Proposed Construction Site

Site D

Located to the northeast of the clinical department, this site faces the existing facilities, separated by a road, on the premises of the Institute. The site is currently occupied by temporary dormitory facilities for the Institute personnel. These facilities would have to be removed.

In terms of traffic lines, there would be some problems if the Training Center building is placed on this site, but there would be few problems if the dormitory building is built on it.

	Site A	Site B	Site C	Site D
Distance to existing Research and Training Division	o	o	x	x
Distance to existing Administrative Division	x	o	o	x
Direct Access	x	x	o	o
Distance from water supply source	x	x		o
Distance from power supply source		x		o
Distance to sewage outlet	o		x	
Leveling of ground, required or not	o	x	o	o
Existing buildings to be removed, if any or none		o	o	x
Afternoon sun condition	x	o	o	x

All the above conditions considered, site C is deemed suitable to have on it the training center building which is required to be capable of functioning as an independent facility with independent entrances, while also being capable of functioning jointly with the existing facilities. The dormitory building will be located on site D. For connection to the existing facilities, the training building will be connected to the existing Administrative Division building, and the dormitory building to the existing core building, by the medium of covered walkways.

5-5 Architectural Plans

5-5-1 Floor planning

a) Training Center Building

The training center building will have laboratories, lecture rooms, incidental rooms, conference room, and an administrative office. Primary considerations will be given to the interrelation of their functions, and also to the traffic lines of persons and materials. The laboratories will comprise a laboratory 1, a laboratory 2, and a central laboratory. All these laboratories should preferably be located on one floor, but will be located separately on two floors under the restrictions by size and topography of the site.

The first floor will have a laboratory 1, an adjoining preparation room, a clean bench room and a sterilizing room. The second floor will have a laboratory 2, an adjoining preparation room, a central laboratory, and a clean bench room.

Column grid size were decided to meet the specific purposes of the rooms.

For the laboratories and related rooms, the basic grid size of 6.0 m x 9.0 m was decided in view of the installation of a laboratory table for six persons, the traffic lines of participants and instructors, and the layout of equipment.

The conference room, a large-span structure, will be on the first floor, and its column grid size will be 6.0 m laterally and 18.0 m longitudinally.

b) Dormitory Building

The Dormitory building will have five components: (1) dormitory facilities for instructors, (2) dormitory facilities for participants, (3) dormitory facilities for on duty persons, (4) a library, and (5) a dining hall and kitchen.

With traffic lines between these locations and the geometrical conditions of the site taken into consideration, this building will be a three-storied building. The dormitory facilities for instructors, dormitory facilities for participants and dormitory facilities for on duty personnel will be separated by doors, etc.

For better natural lighting and natural ventilation, each floor will have an open-type side corridor, the axis of the building will be in a direction to avoid direct sun, particularly afternoon sun, into the rooms, and a canopies will be provided.

Thus, the residential building will be a side-corridor type facing the court, and will be constructed with the basic grid sizes of 7.0 m x 7.5 m and 7.5 m x 7.5 m.

5-5-2 Elevation planning

The primary importance of the elevation planning is harmonizing the new buildings with the existing facilities. There should be relatively similar in appearance.

1) The same specifications will apply to the outer wall finishing materials and color tones.

2) The exterior window sashes used in the existing facilities are steel sashes that have problems in their opening/closing mechanism. The new buildings will have aluminum exterior sashes.

3) Canopies featured by straight horizontal lines will be provided for the outside wall on each floor.

4) Any residential room not furnished with air-conditioning equipment will have an opening as large as possible in the walls for natural ventilation.

5-5-3 Sectional planning

The basic story height of the training center building will be 3.8 m, and that of the dormitory building will be 3.5 m, the former being higher because the training center building contains large rooms such as laboratories, a conference room and a dining hall that require adequate natural ventilation. The outside of the buildings will be fitted with canopies for protection against direct sun and rain. The building roofs will have a double structure of concrete slab deck and steel truss roof, except for the roof of the conference room which, being of large-span construction, will have only a steel truss structure.

A standard sectional view is shown below.

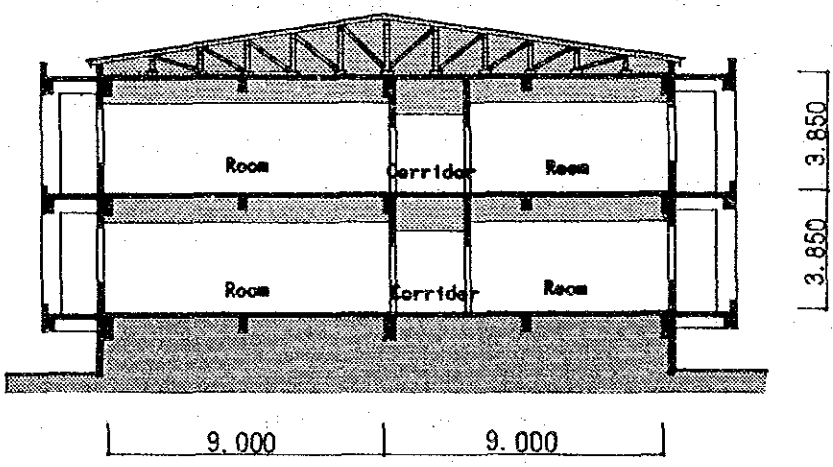


Fig. 5-2 Section Plan Training Center

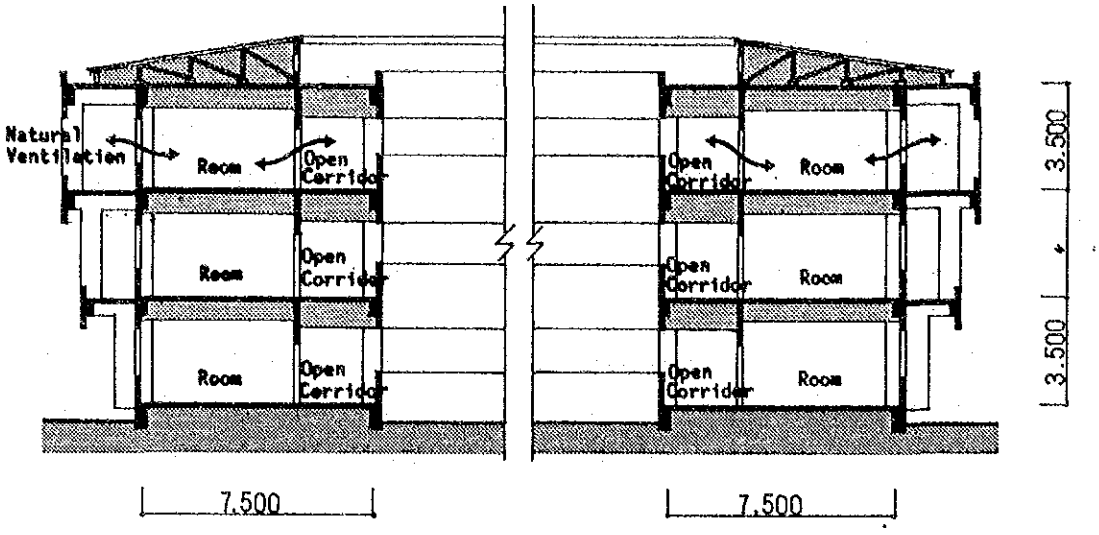


Fig. 5-3 Section Plan Dormitory

5-5-4 Material planning

The facilities of RITM have been in existence for 6 years, and the qualities of the materials used in them are known. In order to maintain the harmony and resemblance in appearance between the existing and new facilities, the same materials as used in the existing facilities will be used if their quality is acceptable. For materials known to cause problems in the existing facilities, locally available materials will be used to replace them.

Main External Materials

Framing	Reinforced concrete structure, partially steel truss: structure for roofing
External Wall	Finished with epoxy tile sprayed on plastered surface, in view of design and waterproof performance.
Roofing	For heat insulation and waterproofness against downpour rain, a steel truss roofing frame will be laid on a concrete slab deck, and the frame will be covered with coloured asbestos boards (except the roof of the conference room where no concrete slab deck will be used).
Sashes	Aluminum, anodized color finish, and steel doors.

Main Interior Materials

Partitions	In consideration of the need for flexibility to make possible future modifications, insulation against sound, termite protection, and ease of piping, most partitions will be concrete blocks. For simple partitions, however, light-weight steel structures will be used.
Floors	Floors of laboratories will be coated with epoxy resin for resistance to chemicals and water and to allow for easy maintenance; floors of classrooms and offices will be covered with PVC tiles. The residential rooms in the dormitory building will have finished wooden floors to give a residential atmosphere. Outdoor corridors will be washed finish. The dining room floor with locally produced marble.
Walls	For the walls of both the training center building and the dormitory building, appropriate materials will be selected in view of sanitation and ease of maintenance.
Ceilings	In locations where floors below are composed of hard materials, sound absorbing materials will be used; and is places where relatively much water is used, waterproof materials will be employed.

5-5-5 Structural planning

1) Design principle

In The Republic of the Philippines, the regulations under which all buildings are designed and constructed, are found in "The National Building Code" and "National Structural Code for Building (NSCB)". The new buildings will be designed, therefore, to comply with these Codes. The structural planning of the existing RITM buildings were made in accordance with the NSCB.

2) Foundation Design

As one building under this Project is two-storied and the other three-storied, and that the ground to support the buildings has a comparatively high yield strength, reinforced concrete buildings will be directly founded on the adobe ground, as the existing RITM buildings are so founded. The adobe bed is expected to have a long-term bearing capacity of soil of 20 tons/m^2.

3) Superstructure

The superstructure will have a reinforced concrete structure, in rigid frame construction, with earthquake resistant walls used in suitable places.

For wind loads, wind pressure will be calculated in accordance with NSCB as follows:

Wind pressure = P x wind pressure coefficient

The project site falls within Zone II, and the value of P at a wind velosity of 50 m/sec is:

Height of building

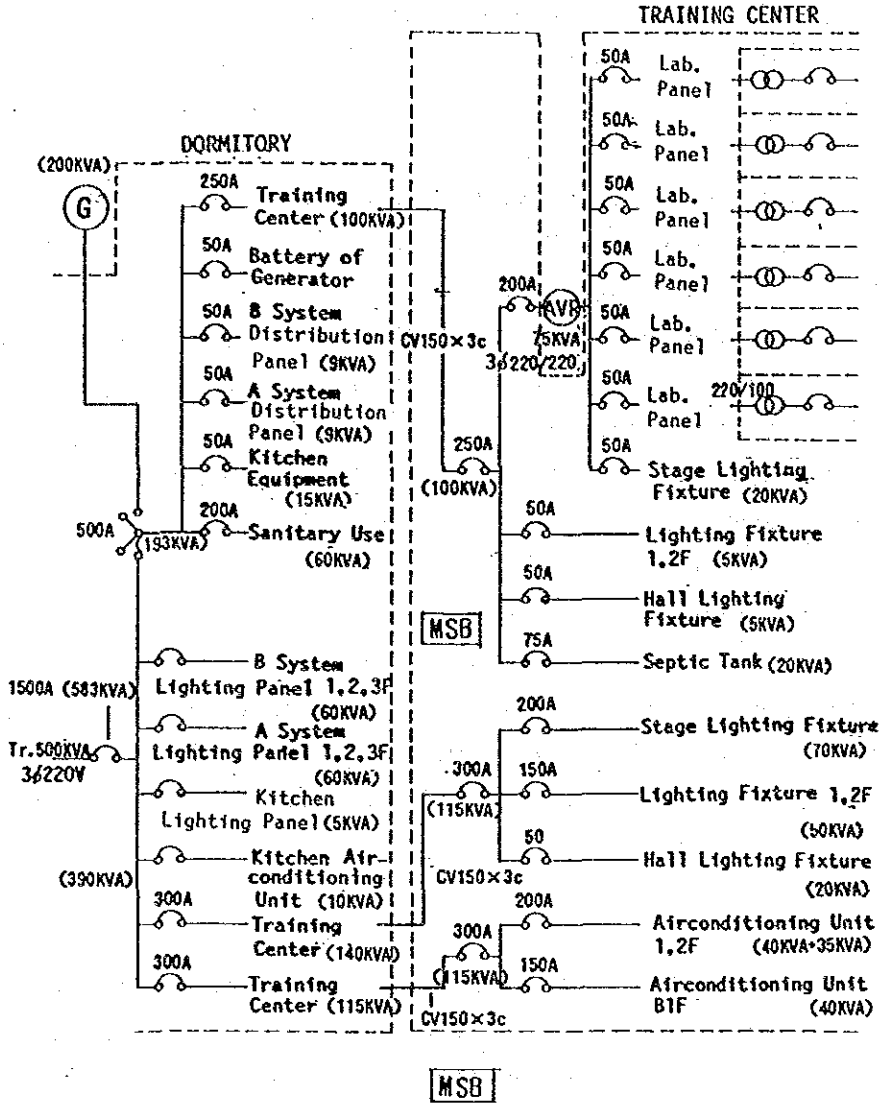
Below 9 m	P = 150 kg/m^2
9 m to 30 m	P = 200 kg/m^2
Over 30 m	P = 250 kg/m^2

Seismic force will be set as follows:

V = 0.15w

V = total horizontal force in foundation surface

w = total dead load



G :Generator
SMB:Sub Main Switch Board
MSB:Main Switch Board
AVR:Auto Voltage Regurator

Fig. 5-4 Power Distribution Diagram

5-5-6 Electrical and Mechanical Service Design

1) Electrical Service Design

The electrical service will be composed of systems which are safe in operation and easy in maintenance and control, and which are made of reliable and durable apparatus and materials.

Power Supply

The power source for the existing RITM facilities has no extra capacity to supply power to the new facilities. Therefore, new power service lines must be brought from the main line into the new facilities. From the 34,500-volt overhead line of the electric power company to the existing RITM, service cables will be strung on concrete poles in the premises, and 3 phase 3W220V60Hz service wires will be laid in the electrical room from the secondary side of a transformer mounted on one of the concrete poles.

Power Receiving System

The necessary power connections to main lines will be made in a electrical room. For laboratories that require a power supply at a constant voltage, an automatic voltage regulator will be provided.

Generator System

In preparation for power service interruptions, a backup generator capable of supplying power for laboratory equipment, fire fighting equipment, security equipment and special equipment will be installed.

Main Power Supply System

General power, laboratory equipment power, and lighting power will be supplied. Power supply control will be designed for easy operation, as well as for easy maintenance.

Lighting and Receptacles

The general interior lights will be mainly fluorescent lights. Receptacles for specific purposes will be provided.

The luminous intensity of main rooms will conform to that of the existing building.

Office	300 lx
Lecture room	300
Laboratories	500
Conference room	200
Dining room	200
Dormitories	200
Toilet, corridors	100

Telephone System

Although telephone exchange with 30 local lines is installed in existing building, the capacity is not enough to connect to the new buildings. Because new telephone system should function totaly in RITM facilities, the old exchange will be removed and new exchange with 55 local lines will be installed to make possible to connect with outside and inside of RITM.
A private branch exchange will be installed to permit telephone communications within, to and from the Center.

Public Address System

Public address system for broadcasting throughout the Center will be installed.

TV Receiving System

A TV master antenna system will be installed, and its terminal outlets for connection with TV sets will be provided for the dining hall and other necessary places.

Lightning Arresting System

The elevated water tank will be equipped with a lightning arrester.

Fire Alarm System

For the early detection and the prevention of fire, automatic fire alarm system to detect fire will be provided.

2) Water Supply, Drainage and Sanitary System

Water Supply System

There are two wells (150 meters deep) in the premises of the RITM which are used in full capacity as water sources for RITM. A new deep well will be dug within the premises for the new facility. From the well, water will be drawn up by an submerged pump into an untreated water tank through sand separator and one line will be pumped up into an elevated tank, the other line will be pumped up into an another elevated tank through water softner and chlorinator from which water will be distributed by gravity. The water supply capacity will be about 87 c.m. per day and the storage capacity of the tank will be about 48 c.m.

The necessary places in the kitchen will be provided with hot water.

Drainage System

The drainage system will consist of the three systems for rainwater, sewage and general waste water, and special waste water (waste water from laboratories).

- Rainwater will be discharged directly into a river.
- Sewage and general waste water will be treated in a septic tank and then discharged into a river.
- Special waste water from the laboratories will be treated in a reservoir tank, neutralizing tank or neutralizing precipitation tank, as applicable, and then discharged into a river.

The waters from the training center building will be discharged to the small river about 320 m to the east, and those from the dormitory building will be fed into the Mangangati River about 200 m to the northwest.

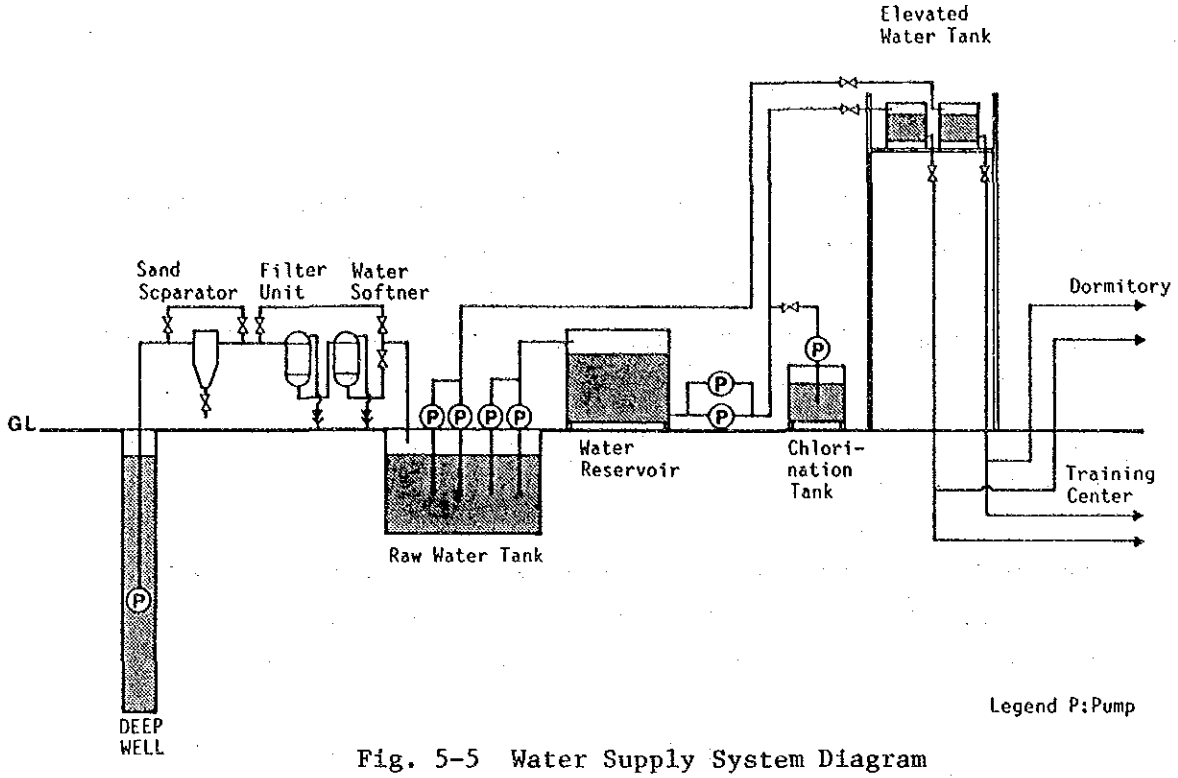


Fig. 5-5 Water Supply System Diagram

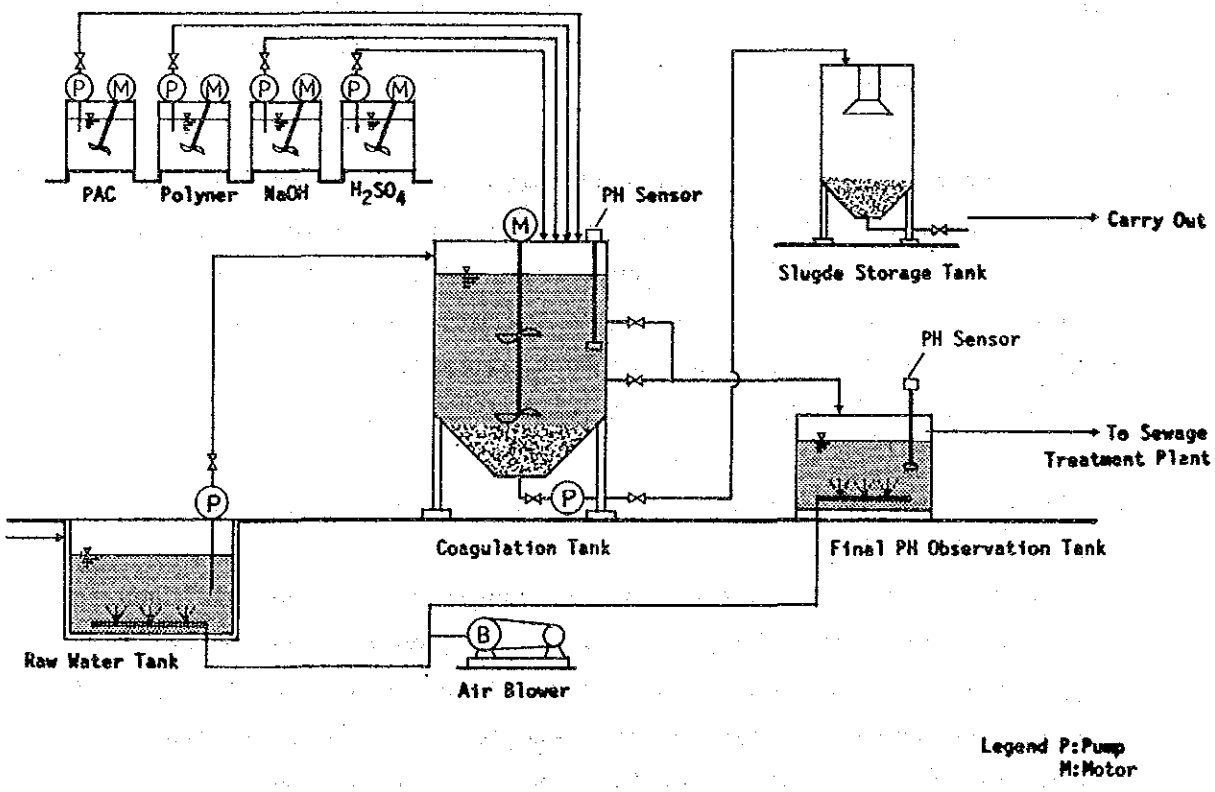


Fig. 5-6 Special Drainage System

Gas Supply System

Gas supply system will be provided for the training laboratories and central laboratory.

The heat source for the kitchen will be LPG, and LPG cylinders will be installed in appropriate places.

Sanitary Fixture

Western-type toilet stools and urinals will be installed in toilets, and the flushing will be by lever. Longlasting washstands and shower fittings will be provided.

Fire Extinguishing Equipment

Fire extinguishers will be provided in complaince with the regulations.

3) Air Conditioning System

The air temperature and humidity are high in the Philippines, and the cost of room airconditioning will account for a considerably high percentage of the total maintenance cost. Natural ventilation will be utilized as far as possible, and cooling by air conditioners will be used in special places only. For ease of maintenance, locally available air conditioners will be employed.

Air Conditioning System

Window-mounted or separate-type air conditioners generally used in the Philippines will be employed. To save energy and to meet the specific purposes, individual air conditioners will be installed in the necessary places such as laboratories, lecture rooms, the conference room, library and bedrooms for instructors. In some places not furnished with air conditioners, overhead fans will be installed for ventilation and cooling.

Ventilation System

Rooms or places (kitchen, laundries, power room, etc.) where heat or odor may be produced will be mechanically ventilated.

5-6 Equipment Design

1) Equipment Design Principle

Equipment to be used in the limited applications of the three laboratories and the one sterilizing room mainly for the training courses under this Project will be selected. The selection will be made on the following bases.

(1) Equipment necessary for the studies in the training and usable also in the existing facilities will be selected.

(2) Upgraded versions of currently used equipment whose functions and characteristics are well known by instructors will be selected.

(3) Strongly-built and durable equipment which can easily be maintained so that they may not excessively increase the operation and maintenance expenses at RITM will be selected.

(4) Under the present power supply circumstances at RITM, the secondary voltage is not stable enough to be fully covered by the central automatic voltage regulator (AVR). In view of this, equipment fully protected against voltage fluctuations will be selected. For those that will be selected but not capable of withstanding against voltage fluctuations, AVR will be provided.

(5) Water is very hard and poor in quality, and the water to be used for research and experiments needs to be pretreated in two steps. For this reason, water purifing and distilled water making apparatus will be selected.

(6) Equipment will be selected from among the products of manufacturers who can provide sufficient technical instruction to ensure that their functions will be fully understood and used.

(7) Spare parts and consumables should be available through local agents.

(8) Products should be purchased from manufacturers who provide adequate after-scale services.

2) Equipment for Specific Sections

The following equipment will be selected on the bases specified in 1) above, for the reasons stated in the following.

(1) Laboratory 1

Main Objectives: The separation and identification of microorganisms, and studies in the training courses.
Microbiological, virological, bacteriological and mycological new technologies and applications for the study of inpatients.

Main Equipment : Centrifuge, incubator, binocular stereomicroscope, biomicroscope, dark-field microscope, discussion microscope, electrophoretic apparatus, chemical balance.

In the training courses to discover microorganisms that cause infectious diseases, the separation and identification of bacteria and other microorganisms are very important. For this purpose, the centrifuge must have a sufficiently high performance. Optical microscopes are quite useful for the observation of micro-organisms. This Project will provide four types of microscope: a general biomicroscope of high power, a binocular stereomicroscope that can give stereoscopic views of microorganisms at low magnification, a dark-field microscope that can present clearer

views of microorganisms at an increased contrast by darkening the background field of view, and a discussion microscope to permit simultaneous observations of an object by an instructor and participants so that they can discuss while observing.

A high-performance incubator and a low-temperature thermostatic case for storing specimens are also necessary for microbiological tests.

An electrophoretic apparatus and elisa analyzer, pH meter, and chemical balance will be also provided.

(2) Laboratory 2

Main Objectives: The studies in the training courses of microorganic tissue cultures necessary for the research departments.

Main Equipment : Clean bench, incubator, CO_2 incubator, centrifuge, image-inverted microscope, fluorescence microscope, low-temperature storing case, thermostatic water bath.

The laboratory 2 will be related to the Microbiology Department and will be available also to the Immunology Department, Pathology Department, and Experimental Zoology Department for common use. Since, however, objects handled will differ from department to department, several clean benches will be necessary. In a corner of this laboratory, a clean bench room will be located to house four class II clean benches.

The observations of cultures in liquid form will also be necessary, and an image-inverted microscope will be provided for that purpose. A fluorescence microscope with a fluorescent light source will be provided for the identification of objectives by fluorescent antibody technique.

(3) Central Laboratory

Main Objectives: The equipment for common use of instruments and apparatus necessary for the training courses including clinical pathology and biochemistry.

Main Equipment : Cryostat, spectrophotometer, electrophoretic apparatus, fume hood, centrifuge, ion coater, large refrigerator.

This is a centrally located laboratory equipped with various instruments and apparatus for common use by each department. A cryostat will be needed for preserving subjects and chemicals. Since the installation of more than one centrifuge in a laboratory is undesirable because of vibrations and other influences, they will be collectively installed in this room.

Analytical apparatus covered in this Project will be installed in this room.

Harmful gases be rarely used, but LPG may be used as a heat source for long periods, for which reason a fume hood will be installed in this room.

In an annex to this room will be installed two large refrigerators to store reagents and other materials that need to be cold-stored for the training and other purposes.

(4) Sterilizing room

The distance between the planned training center and the existing one is great, and the route between the two passes via the central area where the clinical department is located. Under these circumstance infection through contact may occur if contaminated goods from each laboratory are carried. To prevent such mishaps from occurring, a sterilizing room shall be built and have the necessary equipment installed.

(5) Epidemiology department (mainly for statistics handling)

Currently, there is only one personal computer equipped with a large memory capacity, and as it is so frequently used for epidemiological statistics that little time is available to input data for training processes of infectious diseases, biological statistics, or management courses.

Meanwhile, even though the statistics for administrative data in the clinical department are not yet implemented, various statistics among others in the RITM are vital to the Ministry of Health. The trend, therefore, is that the volume of various statistical work will increase. These factors being considered a large memory capacity personal computer shall be ordered.

(6) Conference and lecture rooms

Main equipment :

Conference room	Multi-type slide projector, sound system.
Lecture rooms	Over-head projector, micorophone system.

Because of the expansion of activities of training, audio-visual systems will be needed. Especially, for field surveys, handy cameras will be easy to be used and using handy cameras, multi-type slide projector will be very useful for explanation.

(7) Printing room

Main equipment : Stencil cutter, copy machine, automatic duplicator.

Equipment necessary to print educational material shall be installed in the RITM to enable it to print the extra materials needed in the coming research programs.

(8) Library

Main equipment : Personal computer.

As it will be possible to move the library from the existing laboratory department to the new building, some of the equipment required for managerial work which previously could not be afforded is to be purchased.

In view of the unlimited range of library work, an additional personal computer, necessary to promote future managerial work is planned.

(9) Administrations

Main equipment: Drafting machine, micro bus

The RITM will be a rarely large scale Philippine domestic research organization once completed. Administrative work is expected to be extremely complicated, not only because of the facility maintenance, but also the necessity of its involvement in the complex plan for the existing Alabang area. A drafting machine shall be purchased to do the related mapping work. This machine is listed as equipment, although it has been impossible to provide it in connection with the budget.

As the RITM is far from downtown Manila and its access road is very poor, a middle-sized micro bus is required not only for field research but to carry those foreign participants who come to the Philippines according to this project.

Equipment List for the Project

Notes on the remarks:

AA: Both operation instructions and istallations are needed.
AB: Operation instructions will be provided but no installation work is needed.
BA: Installation work is required but instructions of operation are not needed. (Operation manuals will be supplied.)
BB: Neither operation istructions nor installation work is needed. (Operation manuals will be supplied.)

1) Laboratory 1

No.:	Name of Equipment	:Qty:	Specification	Remarks
1	Centrifuge with Roter, F assemble & tube set	1	Speed: 300 - 5,000rpm Relative Centrifuge force: 16 - 4530xg Max. capacity: 15ml x 40pcs (600ml) Dimensions: 430 x 555 x 270mm	AB
2	Incubator	1	Temp. range: 0 - 50deg.C Temp. control accuracy: ±0.5deg.C Uniformity : ±1 deg.C Overall dimensions : 700 x 665 x 500 mm Effective dimensions: 600 x 500 x 500 mm	AB
3	Refrigerator	1	Capacity: 511 lit. Temp. control range : 0 - 14 deg.C Temp. control system: Gas thermostat Dimensions: 800 x 832 x 1,810 mm Effective dimensions: 640 x 620 x 1,240	BB

No.:	Name of Equipment	:Qty:	Specification	Remarks
4	Water bath shaker with shaking rack set	1	Temp. range: Ambient +5 - 80 deg.C Temp. control Accuracy: ±0.02 - 0.08 deg.C Temp. Uniformity: ±0.05 deg.C Shaking speed: 20 - 120 strokes/min. Effective dimensions: 480 x 280 x 170 mm Overall dimensions : 760 x 340 x 390 mm	BB
5	Electrophoresis apparatus (Cellulose acetate membrane electrophoresis app)	1	No. of sampler: 20 Constant current: 0 - 50 mA Constant voltage output: 0 - 600 mA Dimensions: 185 x 260 x 210 mm	BB
6	Elisa analyzer with microprocessing control unit, printer and rack	1	System: Two wave length measuring sys. Wave length width: 8 - 12 mm Absorbance range: 0.00 to 2.50A in a range of 0.00 to 2.00A Dimensions: 550 x 410 x 300 mm	AB
7	Discussion microscope	1	Total magnification: 40x - 1,000x Objective: 4x, 10x, 20x, 40x, 100, Eye piece: 10x 5 persons viewing system	BB
8	Binocular biorogical microscope	24	Total magnification: 40x - 1,000x Objective: 4x, 10x, 20x, 40x, 100x Eye piece: 10x Abb condenser	BB
9	Stereoscope binocular microscope	4	Total magnification: 7x - 80x Eye piece: 10x, 20x Zoom system type	BB

No.:	Name of Equipment	:Qty:	Specification	Remarks
10	Darkfield contrast microscope 2	2	Total magnification: 40x - 1,000x Objective: 4x, 10x, 20x, 40x, 100x Eye piece: 10x DCW condenser	BB
11	Mixer	1	No. of revolution: 600 - 3,000 rpm Dimensions: 128 x 165 x 125 mm Dia. of surface vibration: 70 mm	BB
12	Electric balance	1	Capacity: 200 g Readability: 0.1 mg Reproductibility: 0.1 mg Dimensions: 205 x 410 x 290 mm	BB
13	Projection microscope attachment	1	High-resolution type Effective diameter: 155 mm	BB
14	Auto still	1	Production method: Ion exchange to 2-stage distillation Distilling capacity: Approx. 1.8 lit/h Distilling water storage tank capacity: 4 lit. Still: Quartz glass Dimensions: 500 x 560 x 1,310 mm	AB
15	Central laboratory table	4	Dimensions: 4,200 x 1,200 x 800 mm Laboratory rack: 3,600 x 300 x 750 mm Table top: Plywood with anti-heating, anti-humidity painting	BA

2) Preparation room

No.:	Name of Equipment	:Qty:	Specification	Remarks
1	Electric balance	1	Capacity: 200 g Readability: 0.1 mg Reproductibility: 0.1 mg Dimensions: 205 x 410 x 290 mm	
2	Magnetic stirrer	1	Capacity: 0.1 - 5 lit No. of revolution: 200 - 2,300 rpm Dimensions: 186 x 207 x 115 mm	
3	Refrigirator (Deep freezer)	1	Capacity: 180 lit. Ultimate temp.: -85 deg.C Overall dimensions: 1,500 x 700 x 945 mm Effective dimensions: 760 x 420 x 565 mm	
4	Water bath shaker with shaking rack set	1	Temp. range: Ambient +5 - 80 deg.C Temp. control Accuracy: ±0.02 - 0.08 deg.C Temp. Uniformity: ±0.05 deg.C Shaking speed: 20 - 120 strokes/min. Effective dimensions: 480 x 280 x 170 mm Overall dimensions: 760 x 340 x 390 mm	
5	PH meter	3	PH range: 0 - 14 Readability: ±0.01 pH Display: 3 1/2 digital Dimensions: Approx. 350 x 250 x 125 mm	
6	Timer	1	Setting Graduation: 15 min. Size: 180 x 150 x 70 mm	

7	Clean bench	1	Material of table: SUS 304 Duct collecting efficiency: More than 99.99% 0.3 micrometer particle Duct collecting element: HEPA filter Air volume: 8 cubic meter/min. Dimensions: 1,500 x 780 x 2,200 mm	

3) Laboratory 2

No.:	Name of Equipment	:Qty:	Specification	Remarks
1	Incubator	1	Temp. range: 0 - 50 deg.C Temp. control accuracy: ±0.5 deg.C Uniformity: ±1 deg.C Overall dimensions: 700 x 665 x 500 mm Effective dimensions: 600 x 500 x 500 mm	AB
2	CO2 Incubator with CO2 cylinder & regulator set	1	Temp. range: Ambient temp. +5 - 500 deg.C Control humidity range: 95%RH or more Overall dimensions: 710 x 600 x 984 mm Effective dimensions: 550 x 450 x 600 mm Capacity: Approx. 148 lit	AB
3	Centrifuge with Roter, F assembly & tube set	1	Speed: 300 - 5,000 rpm Relative Centrifuge force: 16 - 4530 xg Max. capacity: 15 ml x 40 pcs (600 ml) Dimensions: 430 x 555 x 270 mm	AB

No.:	Name of Equipment	:Qty:	Specification	Remarks
4	Refrigerator (Deep freezer)	1	Capacity: 180 lit. Ultimate temp.: -85 deg.C Overall dimensions: 1,500 x 700 x 945 mm Effective dimensions: 760 x 420 x 565 mm	BB
5	Inverted culture microscope	2	Total magnification: 40x - 400x Objective: 4x, 10x, 20x, 40x Eye piece: 10x	BB
6	Fluorescent microscope	1	Total magnification: 40x - 1,000x Objective: 4x, 10x, 20x, 40x, 100x Eye piece: 10x Achromatic Condenser Reflected light fluorescence type	BB
7	Water bath shaker with shaking rack set	2	Temp. range: Ambient +5 - 80 deg.C Temp. control Accuracy: ±0.02 - 0.08 deg.C Temp. Uniformity: ±0.05 deg.C Shaking speed: 20 - 120 strokes/min. Effective dimensions: 480 x 280 x 170 mm Overall dimensions: 760 x 340 x 390 mm	BB
8	Microplate mixer	2	Stirring speed: Variable Dimensions: 225 x 200 x 135 mm	BB
9	Vortex mixer	2	Rotation: 20 - 200/min Dimensions: 380 x 380 x 180 mm	BB
10	Microplate shaker	2	Stirring speed: Variable Dimensions: 225 x 200 x 135 mm	BB

No.:	Name of Equipment	:Qty:	Specification	Remarks
11	Peristalitic pump	1	Capacity: 0.06 - 380 ml/min Revolution: 1 - 100/min Pump lead: 1 - 4 pcs Motor: 100 W	BB
12	Liquid nitrogen tank	2	Capacity: 17.5 lit. Evapolution: 0.13 lit./day Mouth dia: 51 mm Body dia: 375 mm Height: 635 mm	BB
13	Fraction collector	1	Sample collection method Drop count method: 1 - 999 drops Volume method: 2 - 30 ml Test tube rack: 102 tubes Dimensions: 312 x 340 x 170 mm (Main body)	BB
14	Drying shelf	4	Shelver: 3 Water receptable: 1 Dimensions: 600 x 800 x 1,200 m	BB
15	Auto still	1	Production method: Ion exchange to 2-stage distillation Distilling capacity: Approx. 1.8 lit/h Distilling water storage tank capacity: 4 lit Still: Quartz glass Dimensions: 500 x 560 x 1,310 mm	AB
16	Central laboratory table	4	Dimensions: 4,200 x 1,200 x 800 mm Laboratory rack: 3,600 x 300 x 750 mm Table top: Plywood with anti-heating, anti-humidity painting	BA

4) Clean Bench Room

No.:	Name of Equipment	:Qty:	Specification	Remarks
1	Clean bench	4	MaTERIAL of table: SUS 304 Duct collecting efficiency: More than 99.99% 0.3 micrometer particle Duct collecting element: HEPA filter Air volume: 8 cubic meter/min. Dimensions: 1,440 x 760 x 2,120 mm	AA
2	Vacuum pump	4	Ultimate vacuum: 5/10,000 torr. Exhaust: 60 lit./min Revolution: 1730 rpm Dimensions: 160 x 468 x 240 mm	BB

5) Central Laboratory

No.:	Name of Equipment	:Qty:	Specification	Remakrs
1	Fume hood with air supply and exhaust fan	1	Dimensions: 1,500 x 750 x 2,350 mm Outer material: Cold rolled steel with baked on melamine resin finish Inner material: Absert sheet baked on acrylic resin finish	AA
2	Ion coater	1	Vacuum chamber: 130 dia. x 110 Ionization voltage: DC 0 - 1,400 V Ionization current: 10 mA (Max.) Operating vacuum: 0.05 - 0.2 torr. Dimension: 384 x 220 x 390 mm	BB

No.:	Name of Equipment	:Qty:	Specification	Remarks
3	Spectrophotometer	2	WL range: 200 x 1,100 mm Measuring range: -0.5 - 2.0 ABS Band width: 5 mm Dimensions: 354 x 450 x 223 mm	BB
4	Electrophoressis apparatus (Cellulose acetate membrane electrophoresis app)	1	No. of sampler: 20 Constant current: 0 - 50 mA Constant voltage output: 0 - 600 mA Dimensions: 185 x 260 x 210 mm	BB
5	Densitometer	1	No. of sampler: 25/sheet (Max.) Density range: 0 - 40D Measuring time: 20 sec/sample	AB
6	Ultra centrifuge with angle rotor	1	Max. speed: 55,000 rpm Max. R.C.F.: 393,600 x g Speed control accuracy: ±10 rpm Dimensions: 975 x 695 x 930 mm	AA
7	Centrifuge with rotor, F assembly	1	Speed: 300 - 50,000 rpm Relative centrifugal force: 16 - 4,530 x g Max. capacity: 15 ml x 40 pcs (600 ml) Dimensions: 430 x 555 x 270 mm	AB
8	Centrifuge with angle rotor	1	Max. speed: 20,000 rpm Max. R.C.F.: 45,170 x g Dimensions: 750 x 770 x 797 mm	BB
9	Micro centrifuge with type rotor	1	Max. speed: 15,000 rpm Max. R.C.F.: 16,100 x g Dimensions: 620 x 420 x 395 mm	BB

No.:	Name of Equipment	:Qty:	Specification	Remarks
10	Refrigerator (Deep freezer)	1	Capacity: 180 lit. Ultimate temp.: -85 deg.C Overall dimensions: 1,500 x 700 x 945 mm Effective dimensions: 760 x 420 x 565 mm	BB
11	Prefabricated constant temp room	2	Dimensions: 2,400 x 2,400 x 2,500 mm Setting temp.: +5 deg.C	BB
12	Central laboratory table	1	Dimensions: 4,200 x 1,200 x 800 mm Laboratory rack: 3,600 x 300 x 750 mm Table top: Plywood with anti-heating, anti-humidity painting	BA

6) Sterilizing Room

No.:	Name of Equipment	:Qty:	Specification	Remarks
1	Autoclave	3	Temp range: 100 - 130 deg.C Max. pressure: 1.7 kg/sq.cm Overall dimensions: 680 x 450 x 980 mm Effective dimensions: dia 300 x 450 mm Capacity: 30 lit	BB

No.:	Name of Equipment	:Qty:	Specification	Remarks
2	Drying sterilizer	2	Temp. range: 40 - 200 deg.C Temp. control accuracy: ±1 deg.C (at 200 deg.C) Capacity: 294 lit. Overall dimensions: 726 x 685 x 1,550 mm Effective dimensions: 600 x 490 x 1,000	BB
3	Auto still	2	Production method: Distillation to Ion exchange to 2-stage distillation Distilling capacity: Approx. 10 lit/h Distilling water storage tank capacity: 100 lit. Dimensions: 900 x 610 x 1,485 mm	AB
4	Pipet washer	2	No. of pipet (Capacity) 1 ml: 264 pcs 5 ml: 216 pcs 10 ml: 136 pcs Dimensions: 390 x 400 x 875 mm	BB
5	Micro pipet washer	3	Capacity: 4 x 4 micro-plate Operating required water: 10 lit./min Dimensions: 900 x 440 x 1,400 mm	BB
6	Loop cinerator	2	Temp. range: 800 - 850 deg. C Inner diameter: 15 ml Dimensions: 95 x 170 x 200 mm	BB

No.:	Name of Equipment	:Qty:	Specification	Remarks
7	Pipet dryer	2	Temp. range: Ambient +10 - 80 deg.C Overall dimensions: 410 x 350 x 1,140 mm Effective dimensions: 250 x 250 x 550 mm	BB
8	Cart	4	Material: SUS 304 Load Capacity: 60 kg Dimensions: 600 x 450 x 800 mm	BB
9	Stainless steel wire basket	12	Size: 210 dia x 200 mm	BB
10	Basins	10	Material: SUS Diameter: Approx. 300 mm	BB

7) Epidemiology Department

No.:	Name of Equipment	:Qty:	Specification	Remarks
1	Personal computer	3	IBM-/AT or Compatible machine CPU: System clock: 8 MHz Main memory: 512 KB RAM W/80287-8 MATH co-processor Expansion slots: 8 AUX storage: Internal 20 MB fixed disk drive: 1 5.25" 1.2MB/720KB 2HD floppy disk drive: 2 AST 206 ram page W/512 KB RAM:1	BB

No.:	Name of Equipment	:Qty:	Specification	Remarks
1	Personal computer		Key board: 101 keys Option Board: Color monitor board/adapter card Hard disk drive controller card Printer interface card Floppy disk interface board Monitor: 14" color display Printer: Wire dot matrix printer (FX-1000) -240 cps 136 column width Soft ware: Wordstar Mailmarge Tutorial VIDEO tape Lotus 1-2-3	

8) Conference and Lecture Room

No.:	Name of Equipment	:Qty:	Specification	Remarks
1	Slide Projector	3	35 mm Slide projector Power required; AC single phase 50/60Hz Power consumption: 1,500W Light condensing system: Large spherical condenser, cold mirror & heat reflection mirror Special visual effects: Dissolve by mechanical shuter Blink, freeze and cut possible Slide: 2 x 2 mount slide Slide tray: Ektagraphic type 80 slide trays Projection lens: F 4.5 180 - 300 mm zoom	AA
2	Slide projector synchronism unit	1	Compositions: 1) Micro programmer: Capacity: 32 projectors Feed Rated: Hard cut, 0.25, 0.5, 1, 1.5, 2, 2.5, 3, 3.5 4 - 16 and even rates through 100 seconds Memory capacity: 8,000, 12,000 or 16,000 steps Signal out: Approx. 1Vp-p Signal in/out connection: Standard phone jacks Line voltage: AC 110/220V	AA

No.:	Name of Equipment	:Qty:	Specification	Remarks
2	Slide projector synchronism unit		2) Projector controller Power consumption: 15W Indicators: LED indicator Line voltage: AC 110/220 V 3) Fader module Capacity: 1,200 watts standard Supply voltage: Regulated 5 V DC Attachment: Plug-in type for any standard Kodak Ektagraphic projector Switching: Solid state switching	
3	Over head projector	3	Power source: AC line voltage Aperture size: 254 x 254 mm Projected material: Transparency and roll Projection lamp: 1,000 W Halogen lamp Tilting angle adjustment: Up to 33 deg.	BB
4	Sound system	1	Composition: 1) Mixing console Frequency response: 20 Hz - 20 kHz THD: <0.1% Noise level: Equivalent input noise: -120 dB Power requirement: 110 V - 120 V/220 V - 240 V 80W 2) Graphic EquaLizer Frequency response: 20 Hz - 20 kHz THD: <0.1% Ham & noise: -96 dB Controls: GEQ 31 band (1/3 oct)	AA

No.:	Name of Equipment	:Qty:	Specification	Remarks
4	Sound system		3) Power amplifier Power output level: 170W + 170W Frequency response: 10 Hz - 50 kHz THD: <0.003% 4) PA speaker system Frequency range: 50 Hz - 16 kHz Power capacity: 240 W Nominal impedance: 8 ohm Dimensions: 632 x 821 x 457 mm 5) Stage monitor speaker system Power rating: 100 W Nominal impedance: 8 ohm 6) Compact PA/monitor speaker system Power: 75 W Frequency range: 65 Hz - 20 kHz Nominal impendance: 6 ohm 7) Dynamic microphone Frequency response: 40 Hz - 18 kHz Directivity: Undirectional Impedance: 250 ohm (balanced) Output level: -76 dB/micro bar at 1 kHz 8) Microphone floor stand Height: Max. 1,600 mm Min. 898 mm External dimension: 360 mm 9) Microphone boom stand Height: Max. 1,600 mm Min. 1,020 mm External dimension: 870 mm Boom length: 900 mm 10) Table top stand Dimensions: Steam: 223 - 392 mm Stand base: dia 150 mm	

No.:	Name of Equipment	:Qty:	Specification	Remarks
4	Sound system		11) UHF band wireless microphone UHF carrier frequency: A: 470.40 MHz B: 471.50 MHz C: 472.25 MHz Frequency response: 40 - 16,000 Hz Dimensions: 18 x 64.5 x 88.5 m 12) UHF diversity receiver Receiving Frequency: 470.40/471.50/472.25 MHz Power supply: 110/120/220/240V Receiving system: Space diversity system Frequency response: 50 Hz to 10,000 Hz 13) UHF booster antenna Receiving band: 470 MHz - 48MHz Power input: 12 - 15 VDC Gain: 15 dB±3 dB	
5	Microphone unit	1	1) Chairman's unit (1 person/set) Supplied voltage: 24 V DC Input: Microphone input -60 dBV Line input -20 dBV Output: Line output -20 dBV Headphone output Monitor speaker: 150 mW (80 ohms) 2) Delegat's unit (23 person/set) Same specification as above 3) Central amplifier Imput: Microphone input -60 dBV	BB

No.:	Name of Equipment	:Qty:	Specification	Remarks
6	Video unit monitor	1	1) 26" Color video monitor Television system: PAL and NTSC 2) Video cassette recorder Television system: NTSC TaPE format: Tape width 1/2" High density tape	BB

9) Printing Room

No.:	Name of Equipment	:Qty:	Specification	Remarks
1	Electric typewriter	2	Paper capacity: 420 mm Typing capacity: 335 mm	BB
2	Automatic duplicator	1	Duplicating area: 246 x 350 mm Stancil size: 246 x 355 mm	BB
3	Stencil cutter	1	Master size: 286 x 390 mm Imazing size: 270 x 345	
4	Copy machine	2	Desk top type w/desk Max. original paper size: A3 Copy size: From A6 (105 x 148 mm) to A3	BB
5	Transparency maker	1	Original size: 8 1/2" x 14"	BB
6	Auto punching machine	1	Punching hole: 26 holes	BB

10) Library

No.:	Name of Equipment	:Qty:	Specification	Remarks
1	Personal computer	1	IBM-/AT or Compatible machine CPU: System clock: 8 MHz Main memory: 512 KB RAM w/80287-8 MATH co-processor ExpaNSION SLOTS: 8 AUX storage: Internal 30 MB fixed disk drive: 1 5.25" 1.2MB/720KB 2HD floppy disk drive: 2 AST 206 ram page w/512 KB RAM: 1 Key board: 101 keys (ENHANCED) Option Board: Color monitor board/adapter card Hard disk drive controller card Printer interface card Floppy disk interface board Monitor: 14" color display Printer: Wire dot matrix printer (FX-1000) -240 cps 136 column width Soft ware: Wordstar Mailmarge Tutorial VIDEO tape Lotus 1-2-3	BB

No.	Name of Equipment	Qty	Specification	Remarks
2	Copy machine	1	Desk top type w/desk Max. original paper size: A3 Copy size: From A6 (105 x 148 mm) to A3	BB

11) Administration Department

No.	Name of Equipment	Qty	Specification	Remarks
1	Drafting machine	1	Usable drawing area: 756 x 1,025 mm Horizontal rail length: 1,284 mm Vertical rail length : 1,005 mm	BB
2	Light duty bus (Micro bus)	1	Seating capacity: 26 Engine displacement: 3,268 cu.cm No. of cylinder: 4	BB