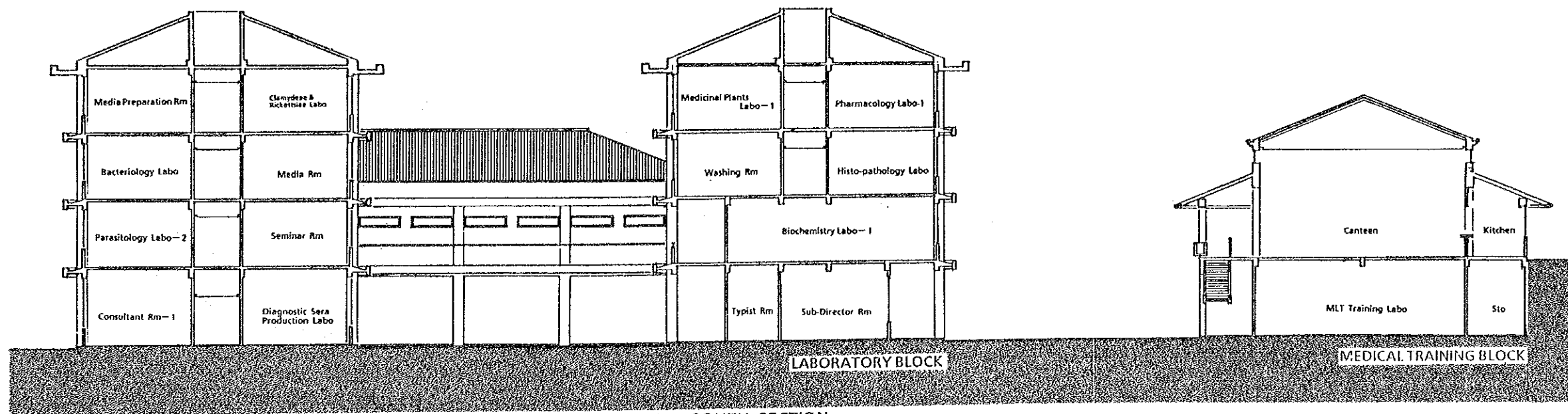
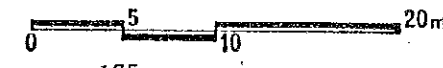


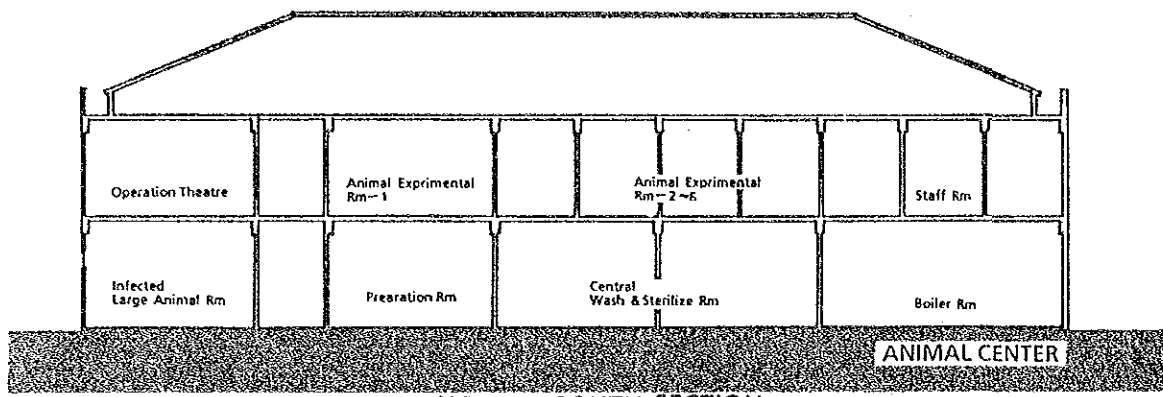
EAST - WEST SECTION



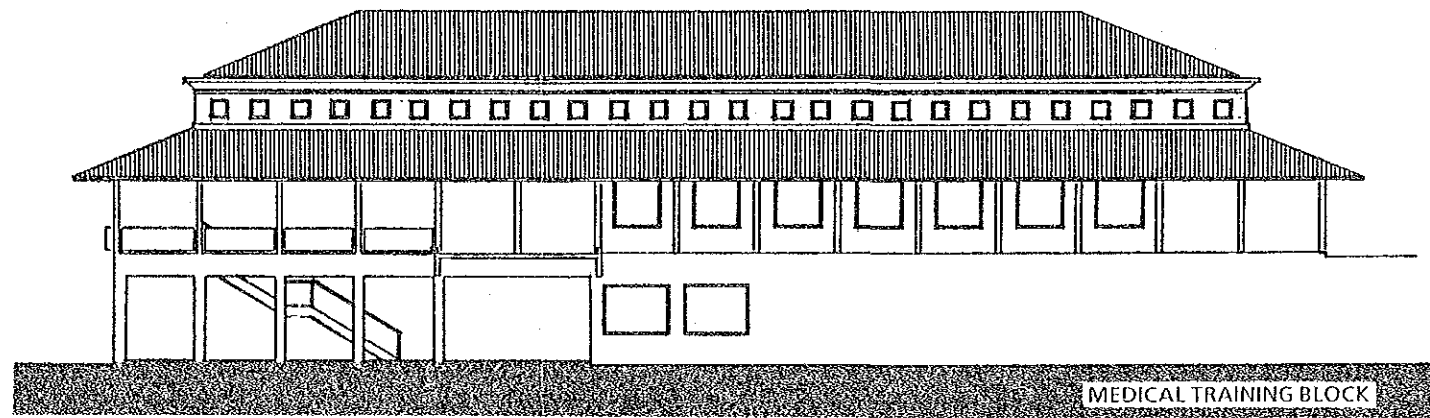
NORTH - SOUTH SECTION

SECTION

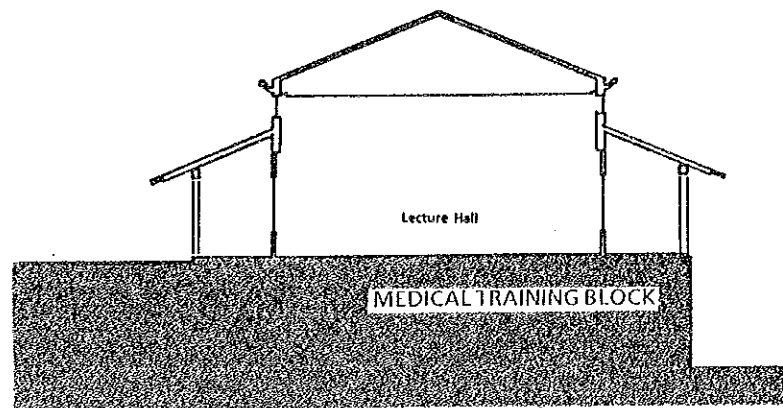




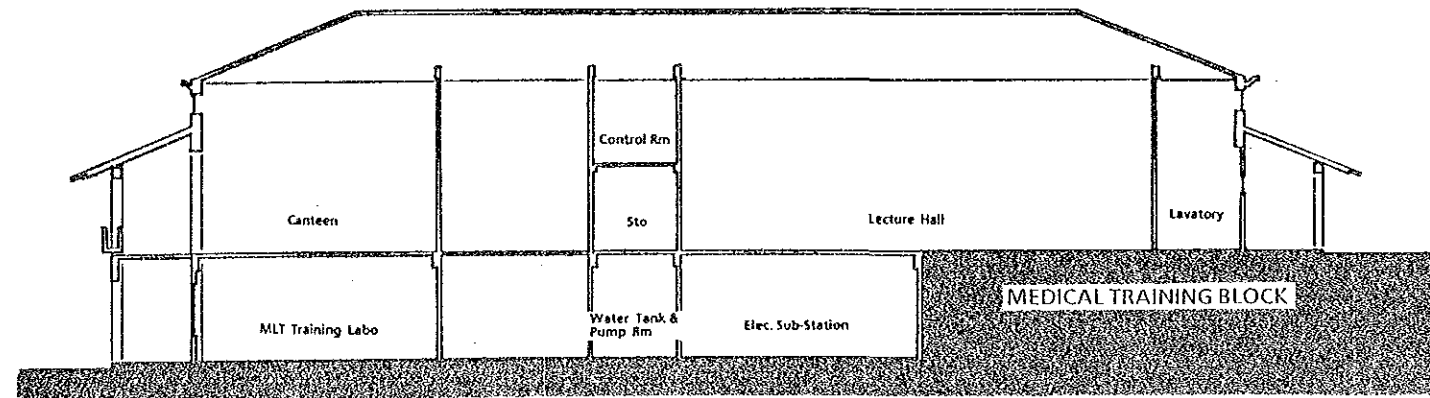
NORTH-SOUTH SECTION



NORTH SIDE ELEVATION

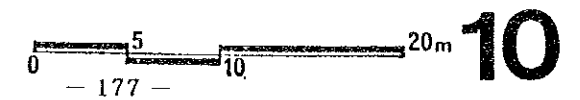


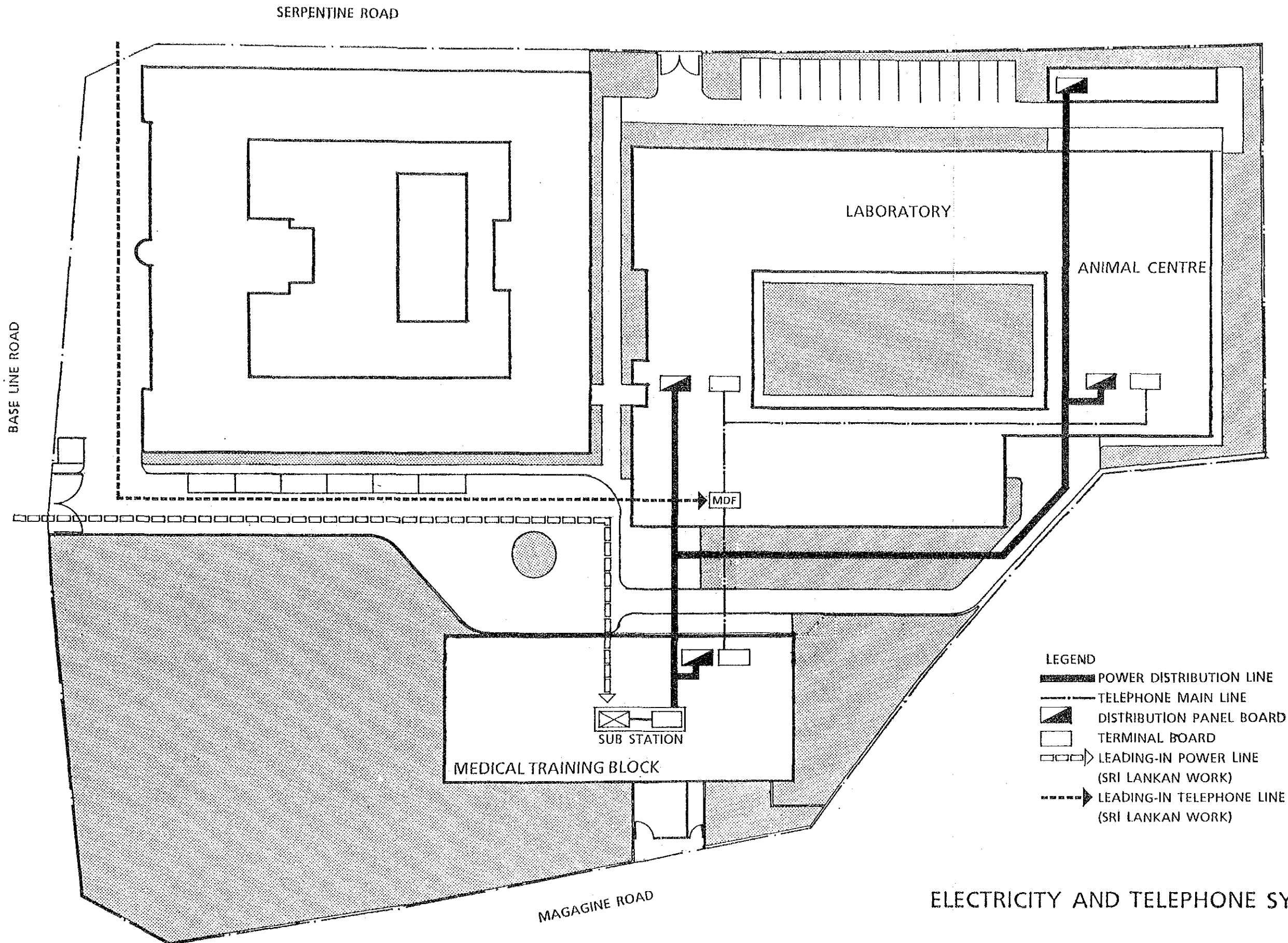
NORTH-SOUTH SECTION



EAST-WEST SECTION

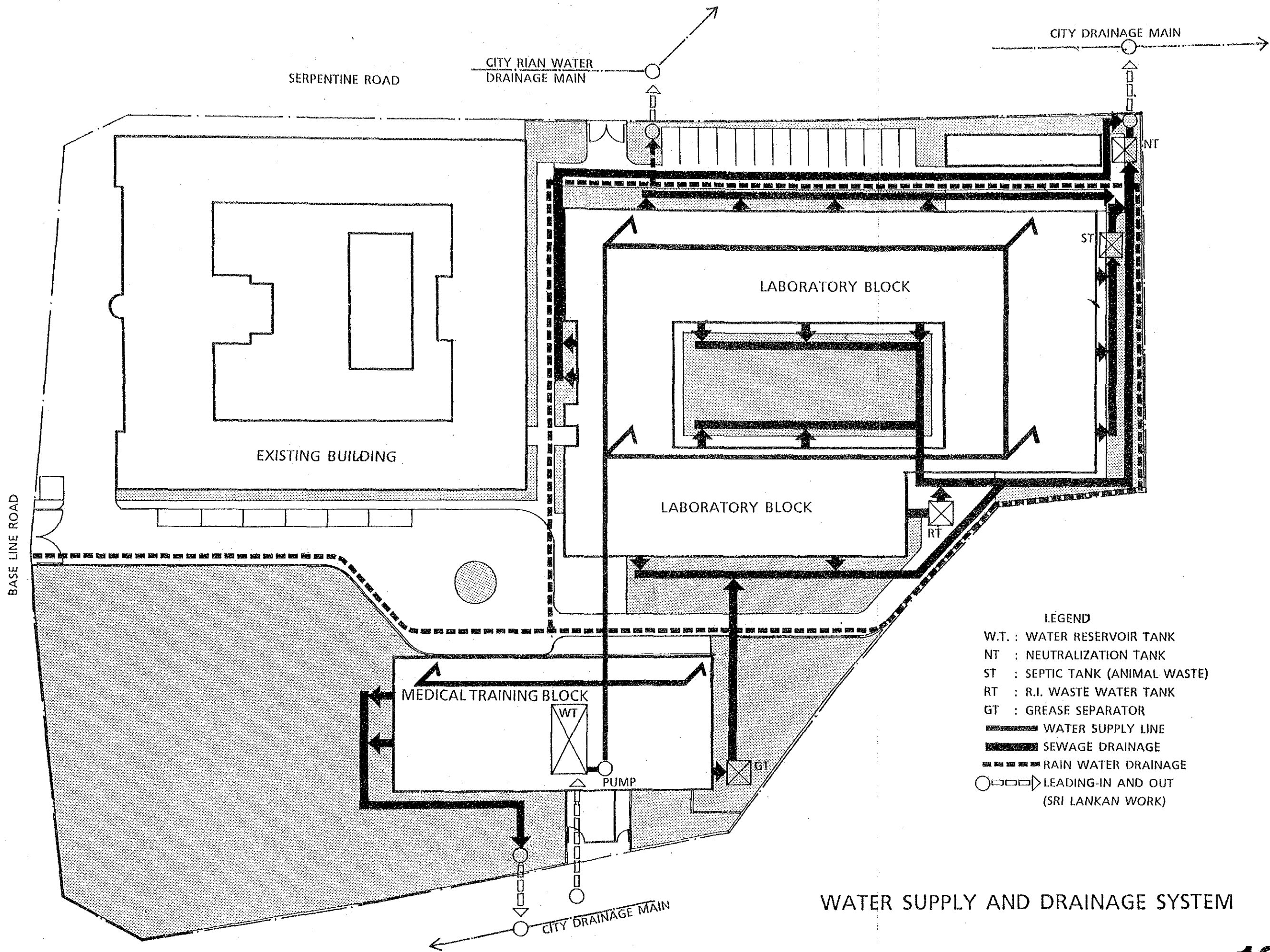
ELEVATION SECTION





- LEGEND
- POWER DISTRIBUTION LINE
 - TELEPHONE MAIN LINE
 - ▲ DISTRIBUTION PANEL BOARD
 - TERMINAL BOARD
 - - - - - LEADING-IN POWER LINE (SRI LANKAN WORK)
 - - - - - LEADING-IN TELEPHONE LINE (SRI LANKAN WORK)

ELECTRICITY AND TELEPHONE SYSTEM



- LEGEND
- W.T. : WATER RESERVOIR TANK
 - NT : NEUTRALIZATION TANK
 - ST : SEPTIC TANK (ANIMAL WASTE)
 - RT : R.I. WASTE WATER TANK
 - GT : GREASE SEPARATOR
 - WATER SUPPLY LINE
 - SEWAGE DRAINAGE
 - - - - - RAIN WATER DRAINAGE
 - □ ▸ LEADING-IN AND OUT (SRI LANKAN WORK)

WATER SUPPLY AND DRAINAGE SYSTEM

CHAPTER 6
PROJECT EXECUTION PLAN

CHAPTER 6. PROJECT EXECUTION PLAN

6-1. Execution System

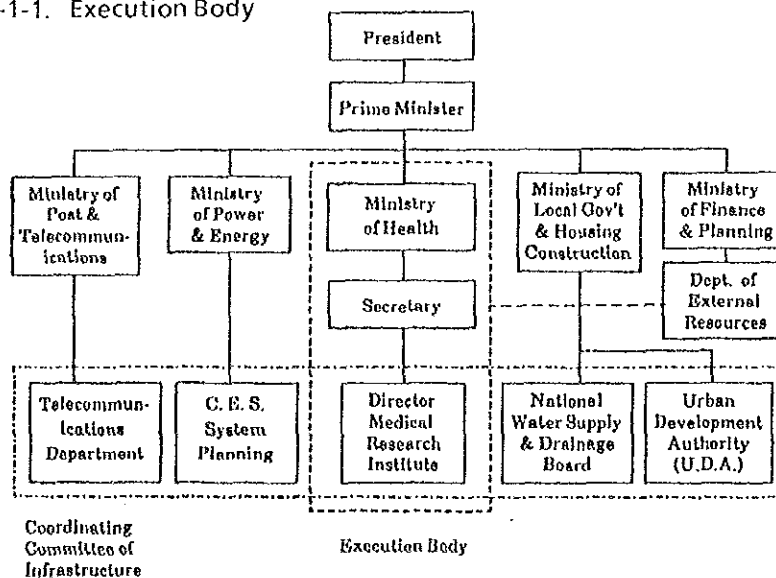
6-1-1. Project Execution Body

The ministry responsible for the planning and execution of the Project on the Sri Lankan side is the Ministry of Health with the Medical Research Institute under the jurisdiction of the Department of Laboratory Services acting as the execution body. The execution of the Project is coordinated by the Coordinating Committee of Infrastructure, headed by the Secretary of Health, with the participation in this Committee of related ministries and agencies in view of the smooth progress of the Project.

With regard to such necessary steps as the consultant contract, construction contract and bank arrangement which are required for the finalization of the grant-aid cooperation, the Secretary of Health represents the Sri Lankan Government and is responsible for their execution. The Director of the Medical Research Institute is responsible for consultations regarding the Project contents and the coordination of the different opinions and requests of the heads of the various research departments.

The Department of External Resources of the Ministry of Finance and Planning acts on behalf of the Sri Lankan Government in regard to receiving foreign aid and is responsible for conduction the necessary work relating to the Grant-aid Cooperation of the Japanese Government.

Fig. 6-1-1. Execution Body



6-1-2. Consultant

The Japanese consultant will conclude the design and supervisory contract with the Sri Lankan Ministry of Health immediately following the completion of the Exchange Note between the two countries concerning the grant-aid cooperation after the decision to execute the Project has been made. The consultant will then carry out the detail design, tender and construction supervisory work following thorough consultations with the Execution Body and the Coordinating Committee of Infrastructure.

6-1-3. Contractors

Japanese companies with the proper qualifications will submit tenders for the construction work and equipment supply with installation work. The respective work will commence upon the conclusion of the contract with the Sri Lankan Government, will be completed within the contracted period and will then be delivered to the Sri Lankan side.

6-2. Scope of Work

In the execution of the Project, the Japanese side will carry out the required construction of the research facilities and the supply, as well as the installation, of the equipment within the scope of the grant-aid cooperation of the Japanese Government. The Sri Lankan side will be responsible for the provision of the Project site, preparatory work, including the removal of obstructing structures, the provision of the infrastructure and the operation and maintenance of the facilities after their completion. The scope of work responsibilities for both countries will be as follows.

6-2-1. Japanese Side

(1) Facility Construction

- 1) Laboratory Block
- 2) Animal Center
- 3) Medical Training Block
- 4) Animal Quarantine Shed
- 5) Others

(2) Infrastructure

- 1) Water supply facilities
- 2) Drainage and water treatment facilities
- 3) Fireplugs
- 4) Power reception and transformer facilities, independent power generator
- 5) Telephone switchboard

(3) Exterior

- 1) Paving of roads and carpark on the premises
- 2) Outdoor Lighting
- 3) Gates and guardhouse
- 4) Retaining walls

(4) Equipment

- 1) Equipment for laboratory experiments and research
- 2) Equipment for biological production
- 3) Equipment for animal experiments
- 4) Equipment for common use
- 5) Equipment for administrative and educational use

6-2-2. Sri Lankan Side

(1) Construction-Related Work

- 1) Provision of Project site
- 2) Removal of obstructing structures prior to the commencement of the construction work
- 3) Exterior, including ditches and gardens
- 4) Acquisition or construction of substitute flats for MLTs (duty staff)
- 5) Infrastructure
 - Reinforcement of existing water tank No.2
 - Sewage pipe connection
 - Main power supply : 800KVA
 - Telephone connection to switchboard (MDF)
- 6) Procurement of general furniture, fixtures, utensils and curtains, etc.
- 7) Provision of stock yard for construction (appx. 5,000 m²)

(2) Other Responsibilities

- 1) Provision of technological information required for the execution of the Project
- 2) Sharing of Costs
 - Banking Commission
 - Costs associated with the main power and telephone extensions to the site
 - Costs associated with the application for development permission
 - Costs associated with the tax exemption procedure
- 3) Implementation of measures for smooth customs clearance and inland transportation
- 4) Facility and equipment maintenance cost

- 5) Exemption of Japanese nationals from customs duties, domestic taxes and other fiscal levies which may be imposed in Sri Lanka with respect to the execution of the Project under the verified contracts.
- 6) Facilitation of the entry of the Japanese nationals required for the execution of the Project into Sri Lanka and the provision of the necessary facilities for their stay therein.
- 7) Provision of the required staff for the operation and management of the Project based on a carefully prepared staff plan.

6-3. Construction Supervision Plan

6-3-1. General Circumstance of the Construction

(1) Execution System

Sri Lanka's system is based on the principle of democratic socialism, and government ministries has public corporations and agencies to execute the works under its respective jurisdiction such as Buildings Department, State Engineering Corporation etc. therefore, the big public works had been monopolized by the public corporations and agencies, with most of them carrying out all work from project development to design supervision, equipment procurement to construction execution. Because of this, the fostering of private construction contractors, as a result, has not made much progress. The actual situation so far has been that most of the private construction contractors were handled like to subcontractors who supplied the laborers.

Subcontractors in the construction industry are not specialized like the subcontractors in Japgn. Each subcontractor executes all sorts of work. However, since the capability of these contractors cannot be claimed to be sufficient, every kind of work has to be split and subcontracted to a number of subcontractors if the scale of construction work is large.

(2) Construction Laborers

Local laborers are abundant but there is no subcontractor who has on hand technical workers in various specialized fields. The situation is such that the one who has

worked as a reinforcement man yesterday may be working as a form carpenter today. Their level of technical competence is therefore low.

Also, the local engineers and laborers who have been trained at the construction sites of foreign construction companies and who have thereby acquired the new technical know-how almost always, upon completion of work at these sites, leave the country in search of higher paying new jobs in Singapore, the Middle East and other places. This vicious cycle has been repeated through the years.

1) Ability to manage materials and laborers

The method of subletting the necessary quantity of tools for pit excavation and plastering to the subcontractor and of letting that subcontractor control them is often employed, but the ratio of loss and damage is extremely high. The subcontractors should be given detailed guidance and the tools should be checked more closely. The subcontractors exercise their own control over the laborers so that there is no particular problem as far as labor control is concerned.

2) Ability to control quality and working steps

The subcontractors' managerial ability cannot be trusted sufficiently so that guidance by Japanese supervisors is indispensable. With proper guidance and systematic assignment, however, they should be able to control the quality of work and the work schedule sufficiently.

3) Other technical ability

On the whole, the number of skilled technical workers is small, and the number of skilled technical workers with a complete set of working tools and implements is very few. Considerable improvement in the required skill would be attainable with proper guidance by Japanese supervisors and other means, but because it is difficult for the subcontractors to retain them after completion of work, their skill acquired with much trouble is seldom utilized in the next work, and it is difficult to sound them up when they are needed.

(3) Matters that Require Considerations

1) Unseasonable weather

Normally, July through September and December through February are the dry seasons, but unseasonable weather frequently prevails lately, which must be taken into full consideration in scheduling the working steps.

2) Shortage of skilled workers

As the number of skilled workers available locally is small, it would be necessary to dispatch supervisors from Japan to provide the local workers with adequate technical guidance and also to split each type of work among a multiple number of companies to alleviate the burden on each company.

3) Unstable supply of locally procured materials

In order to secure a stable supply of sand and crushed stone, plants shall be preferably owned by the executing company.

6-3-2. Construction Plan

As the Project site is located in Columbo, the procurement of equipment, materials and labour is easy and there are good communication and transportation conditions. The site area is, however, rather small vis-a-vis the proposed facilities and the existing buildings are scattered over the premises. The following points should be noted in the preparation of the construction plan.

- (1) It is unlikely that enough space for the temporary structures and the stockyard will be secured on the site. It is important, therefore, that the Sri Lankan side make strong efforts to secure sites for these purposes and that the subcontractor carefully prepare the temporary structure and material stock plans.
- (2) The removal of existing structures by the Sri Lankan side is included in the Project. The early completion of this work in line with the Project schedule will be critical to keep within the planned construction period.
- (3) As the existing research facilities will continue their activities during the construction period, protective measures for the continuation of these activities should be included in the temporary structure plan.
- (4) The current power and water supply capacities are likely to be inadequate to meet the requirements during the construction period. The Sri Lankan side should implement the necessary measures in this regard as soon as possible, taking the power, water supply and telephone services for the new facilities into consideration.
- (5) A number of experimental facilities and research equipment are included in the Project. In view of the resulting relative complexity of the proposed facilities, therefore, the scopes of work and responsibilities of those responsible for the building construction, utility construction and equipment installation must be clearly defined in the construction plan in order that the construction schedule can be prepared with a clear understanding of the work assignments and responsibilities.
- (6) The delivery time for the equipment and materials, as well as the dispatch of specialists in equipment/facility installation, should be coordinated with the construction schedule to avoid either an oversupply or shortage.

6-3-3. Supervision Plan

Based on the basic policy of the grant-aid cooperation of the Japanese Government, the consultant will, following the execution design work, be responsible for supervision, taking the main objectives of the basic design into consideration. The consultant will dispatch a full-time site supervisor with an appropriate technical background at the stage of construction supervision to control the work schedule and the quality of the work. In addition, in accordance with the progress of the construction work, the consultant will dispatch technical experts for a short period of time whenever it is deemed appropriate to carry out inspections and examinations and to provide instruction and guidance.

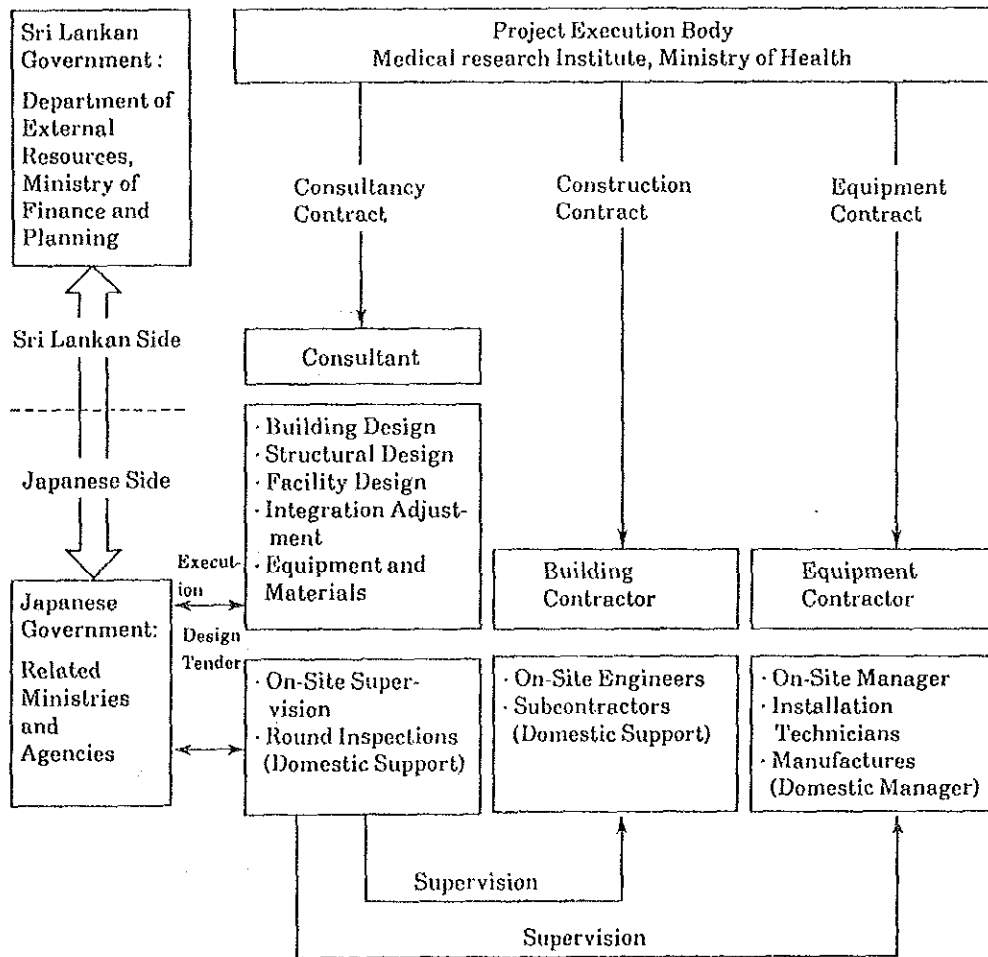


Fig. 6-1 Project Execution System

6-3-4. Procurement of Construction Materials and Equipment

In principle, procurement of locally available construction materials and equipment shall be given preference as much as possible. Also, adequate considerations shall be given to the construction period, supply capacity, durability, quality, workability, cost, and ease of maintenance. Based on the results of the survey of local construction materials conducted at the time of the Basic Design Study, procurement of construction materials and equipment to be used in the construction of this Project shall be planned as follows.

1. Building Materials

<Building Construction Work>

Material of equipment	Procurement in		Remark
	Sri Lanka	Japan and the third countries	
Cement : for framework for finishing	- ○	○ -	Periodic supply is questionable because of that the cement mill in Twincomaly has stopped operating, but imported cement is available at local market.
Sand	○	-	River sand in the catchment basin of the Kelaniya River will be used. It runs short of supply, however, at time of flooding during the rainy season.
Gravel	○	-	Crushed mountain rock will be used.
Reinforcing Bar	-	○	As Sri Lanka depends on imports, bars made in Japan will be used.
Steel Frame	-	○	Same as above.
Forms & Panels	-	○	Plywood forms and panels not produced locally.
Concrete Block	○	-	Light-weight block is unavailable but no particular problem is seen. Will be used for partitioning walls.

Material of equipment	Procurement in		Remark
	Sri Lanka	Japan and the third countries	
Brick	○	-	Sun-dried bricks mainly. Unusable for face finishing. Some problem in procurement during rainy season. Will be used for partitioning walls.
Stone	○	-	Supply capacity somewhat limited but considered important as the best raw material available.
Terrazzo Tile	○	-	Few in variety and small in tip stone size but popular as flooring material locally. Durability and workability considered good.
Ceramic Tile	○	-	Manufactured by a public corporation. Few in number and type of products.
Plywood	-	○	Questionable quality. Local product is expensive.
Lumber	-	*	Supply availability questionable as felling is restricted at present. Difficult to obtain well seasoned and dried lumber.
Metal Sashes	-	○	Not manufactured locally.
Wooden Sashes	-	*	In terms of process, procurement of wood and manufacturing are difficult.
Metal Fixtures/ Hardware	-	○	Problems in quality and available varieties.
Glass	○	○	Depend on size and thickness.
Paints	○	-	High priced but local products must be used because of future maintenance needs.
Asphalt Water Proofing	-	○	Working experience inadequate as only simple water proofing has been done.

Material of equipment	Procurement in		Remark
	Sri Lanka	Japan and the third countries	
Currugated Asbestos Slate	○	-	No problem both in quality and available quantity.
Roof Tile	○	-	Brittle as the baking temperature is low, but it is the traditional roofing material in Sri Lanka.
Furniture	○	○	Depend on quality, usage and manufacturing term.

< Building Equipment Work >

Material of equipment	Procurement in		Remark
	Sri Lanka	Japan and the third countries	
Vinyl Pipe	-	○	Not manufactured locally. Locally available pipes too thin in wall thickness and not strong.
Steel Pipe	-	○	Cast iron pipe questionable in accuracy.
Valve, Pipe Fittings	-	○	Large dispersion in quality and accuracy.
Pump	○	-	Procurement and maintenance is available.
Sanitary Fixture (China)	-	○	Pose problems in maintenance as pipe jointing section being inaccurate.
Air Conditioner	-	○	Not manufactured locally.

<Electrical Work>

Material of equipment	Procurement in		Remark
	Sri Lanka	Japan and the third countries	
Transformer	-	○	Not manufactured locally.
Power Board	-	○	“
Telephone Exchange	-	○	“
Wires and Cables	-	○	“
Lighting Fixture	-	○	“
Electric Appliances	-	○	“

* indicate the materials from the third country.

2. Laboratory Equipment

Laboratory equipment shall be procured from Japan as a rule.

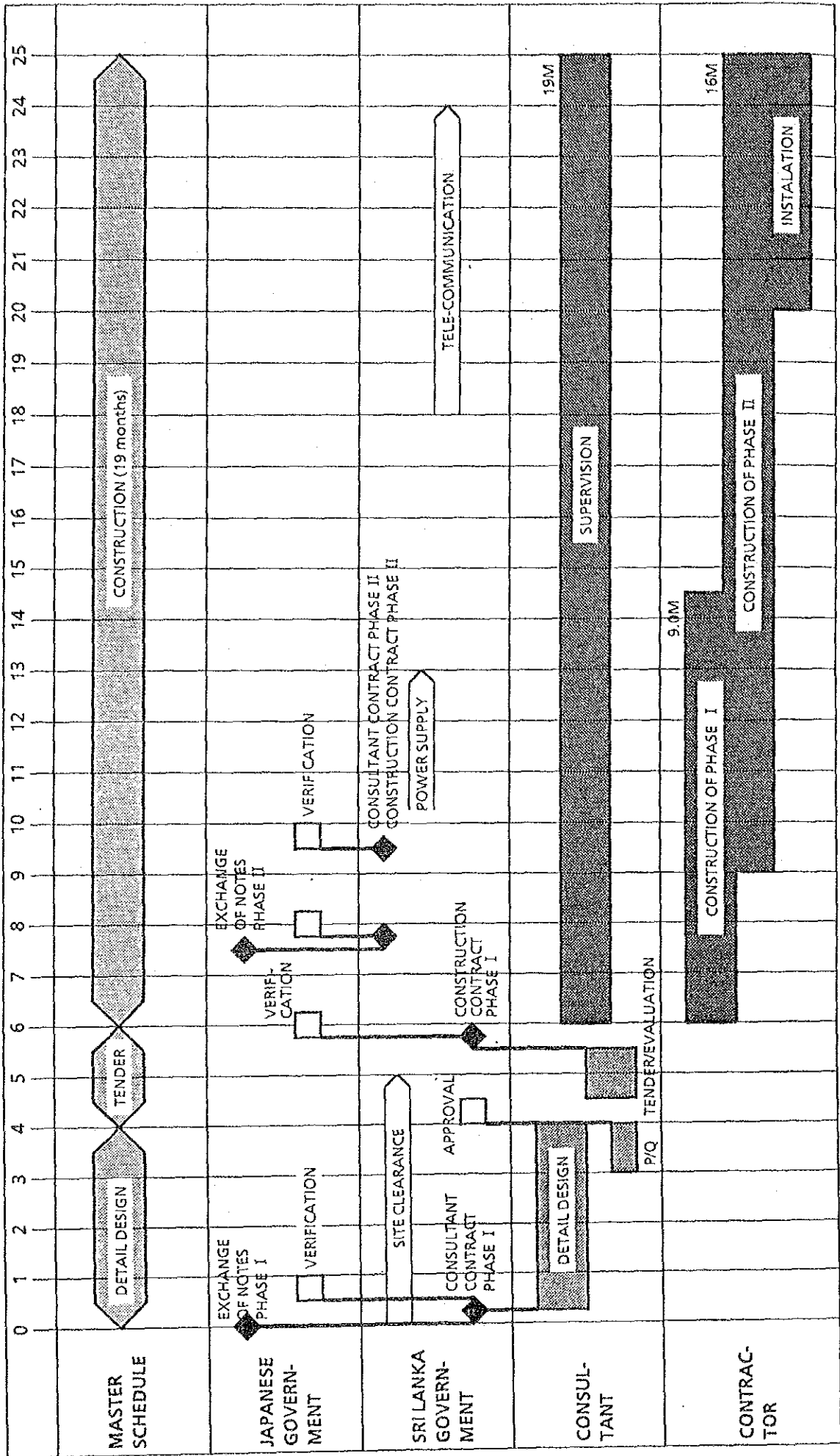
However, it is considered preferable to procure the following equipment in Sri Lanka depending on the supply of expendables, maintenance service and other conditions.

- * Copying machine
- * Computer
- * Electric Typewriter

Procurement from third countries is not planned.

Since many of the equipment are weak against impact, humidity and high temperature, adequate cares is needed in packing and transporting them. Particularly, a mode of packing which is highly resistant to moisture is planned for some equipment in order to cope with transport in hot and humid tropical zone.

EXECUTION SCHEDULE



6-4. Project Implementation Schedule

In the event that establishment of this Centre is to be effected under the Grant-aid Cooperation of the Government of Japan, after signing of the Exchange of Note between the two governments (E/N) and conclusion of the consultancy agreement, the construction of the facilities and the installation of equipment shall be carried out in three stages of totaling 25 months, namely, 4 months for preparation of detailed drawings and documents, 2 months for tendering and construction contract procedures and 19 months for the execution of construction work and equipment work.

1) Detailed Design Work

The contract documents shall be prepared on the basis of the Basic Design. The documents consist of detailed design drawings, specifications, calculation sheets, and cost estimation, in which the margin of error by comparison to the Basic Design shall be held within 10%. At each necessary time during the detail design stage, the consultant shall discuss details with the authorities concerned of the Sri Lankan side, and shall proceed to the next stage, tendering, only after obtaining the approval of the Sri Lankan side on the final contract documents. The period of time required for the detailed design work is estimated to be four months.

2) Tendering

Upon completion of detailed design, prequalification (P/Q) of eligible tenderers through public announcement shall be carried out in Japan, according to which results the executing agency of the Sri Lankan side shall invite the eligible contractors to participate in the tender, and the tenders submitted shall be opened in Japan. At the time of opening the tenders, the officer in charge of executing this project on the Sri Lankan side is anticipated to be present as the witness.

The contractor who submits the lowest quotation in the public competitive tender shall conclude the contract with the executing agency of the Sri Lankan side. The period of time required for tendering and contracting procedures is estimated to be two months.

3) Construction and Equipment Work

The construction work shall be started after the signing of the contract and verification thereof by the Government of Japan.

Considering from the scale and description of the facilities of this Project, the period required for the construction is estimated to be approximately 19 months, provided that procurement of the construction materials and equipment will proceed smoothly and the works to be undertaken by the Government of Sri Lanka will be executed satisfactorily.

6-5. Estimated Project Cost to be borne by Sri Lankan Government

1)	Dismantling and removal of existing buildings (including the Food Supply Center)	Rs 840,000
2)	Subsidy for Food Supply Center (to Marketing Department)	Rs 400,000
3)	Reinforcement of water tank (No.2 will be used exclusively for the existing main building)	Rs 60,000
4)	Relocation of city gas blower pump (including pump hose)	Rs 50,000
5)	Provision of power sub-station (800KVA)	Rs 800,000
6)	Relocation of telephone lines (12trunk lines)	Rs 200,000
7)	Fence (100m on the Food Supply Center side)	Rs 50,000
8)	Gardening	Rs 30,000
9)	Furniture and fixtures (those not included in the grant-aid)	Rs 250,000
10)	Renovation of existing MRI building	Rs 900,000
11)	Bank commission	Rs 105,000
12)	Import tax (approximately 20% of the CIF price)	+ a
	Total	Rs 3,685,000 + a

(Approx. 18 Million yen + a)

CHAPTER 7
MAINTENANCE PLAN

CHAPTER 7 MAINTENANCE PLAN

7-1 Operation and Control Plan

7-1-1 Operation and Control System

The MRI will be the main body responsible for the operation and control of the facilities after the completion of their construction and delivery to the Sri Lankan Government. The MRI will operate these facilities as independent public research facilities to smoothly conduct research activities in line with the Project objectives described in Chapter 4. In regard to administrative control and budgetary appropriation, however, the MRI will continue to be under the jurisdiction of the Department of Laboratory Services of the Ministry of Health.

Apart from the provision of facilities and equipment in the Project, the provision of Project-type Technical Cooperation by the Japanese Government is also planned. In addition, a plan and system should be established whereby the Sri Lankan side will be able to independently maintain the research facilities and equipment even after the completion of this technical cooperation. In a case like the present Project which involves research facilities, a strong control and maintenance system must be established to successfully conduct highly precise experiments and research and to clarify safety measures for researchers.

The general maintenance of the new facilities will be carried out by the Administration Section of the MRI. With regard to such facilities as power, Air-conditioning, sanitation and special purpose facilities, full-time technicians and operators should be employed in each field. In addition, full-time electro-medical engineers should also be employed for the maintenance and regular inspection of the research equipment.

In view of the public nature of the MRI, the maintenance and repair of the facilities and equipment are currently conducted by Ministry of Health engineers while the Building Section of the Ministry of Health is responsible for the maintenance and repair of the MRI buildings. However, with the completion of the Project, the level of the MRI's research facilities will seem the highest of the facilities of the Ministry, necessitating the employment and training of full-time engineers in view of the importance of its research activities. Maintenance staff should be present at the installation and adjustment of these facilities and equipment to obtain a good understanding of the relevant systems for their smooth maintenance after their delivery to the Sri Lankan side.

7-1-2 Staff Recruitment Plan

New staff recruitment will become necessary with the improvement and expansion of the existing facilities and the advancement of the research contents through the execution of the Project. The Staff Recruitment Plan prepared by the MRI is shown in Table 7-1-2. In addition to those shown in the Table, 30 workers and 20 casual workers are also currently employed, bringing the total number of workers to 260. The following should be taken into consideration when new staff recruitment is planned.

- 1) The person responsible for each department should be clearly designated to strengthen the operation and control system.
- 2) Vacant positions should be filled and the number of middle-standing researchers should be increased.
- 3) A large increase in the number of laboratory technologists, especially LOs and LAs, will not be necessary due to the modernization of the facilities and the number of researchers should be increased instead.
- 4) The number of professional staff working in such common use sections as the Center for Medical Instrumentation, the Animal Center, Maintenance, Library and Administration should be increased.

Table 7-1-2 Staff Recruitment Plan (SMLT Excluded)

	Research Sections			Common* Use Sections	Total
	Research Officers MC, MO, RO	Assistants MLT	Supporting Staff LO, LA		
1987 (Present)	34	71	61	44	210
1990 (Project Completion)	57	109	93	79	336
1995 (5 Years Later)	73	137	117	79	406
2000 (10 Years Later)	79	153	124	79	435

MC : Medical Consultant

MO : Medical Officer

RO : Research Officer

LA : Laboratory Administration Staff

MLT: Medical Laboratory Technologists

* Including those working for the Center for Medical Instrumentation, the Animal Center, Library and the Administration Department.

The staff recruitment plan for the maintenance and control of the common use sections is as follows.

1) Center for Medical Instrumentation	
Electro-Medical Engineer	1
Engineer	1
Technicians	6
Carpenters	2
Medical Labo Technologist	1
Orderlies	5
	Total
	16
2) Animal Center	
Veterinary Surgeon	1
Medical Labo Technologists	2
Animal Supervisors	4
Orderlies	20
	Total
	27
3) Library	
Librarians	3
Orderlies	2
	Total
	5
4) Administration	
Director and Assistants	4
Administration Officer	1
Accountant	1
Clerks	18
Typists	6
Bio-Statistician	1
	Total
	31

7-1-3 Operation Expenses

The annual budgetary appropriation for the MRI has been steadily increasing, as shown in Table 3-6-3. Its original budget and actual expenditure for FY 1986 are as shown in Table 7-1-3 below.

Table 7-1-3 Budget and Expenditure of the MRI (FY 1986)

MRI (Medical Research Institute)	Budget	Expenditure
1) Salaries	5,227,000	5,384,166
2) Travelling Expenses	140,000	123,877
3) Supplies & Requisites	4,038,500	1,587,195
4) Repairs & Maintenance	40,000	40,143
5) Transportation, Communication & Other Services	1,540,617	1,338,038
6) Glassware & Equipment	5,000,000	3,061,340
7) MRI Building Maintenance	150,000	150,000
sub total	16,136,117	11,684,759
MLT School		
1) Salaries	1,667,910	1,261,837
2) Books & Journals	15,000	-
sub total	1,682,910	1,261,837
Total	17,819,027	12,946,596

Consequently, the net revenue and expenditure of the MRI's current activities are the totals of the above, i.e. Rs 17,819,027 for the budgetary appropriation and Rs 12,946,596 for the expenditure.

7-2 Facility and Equipment Maintenance Plans

7-2-1 Facility Maintenance Plan

1. Buildings

The main components of the building maintenance are the implementation of regular cleaning, the repair of worn, damaged or deteriorated parts and security consisting of building safety control and crime prevention.

The implementation of regular cleaning will have a positive effect on the attitudes of those using the buildings in the sense that they will treat the facilities with more care. In addition, regular cleaning will also be important to maintain the required level of cleanness for the research facilities. The early detection of damage or failures will lead to early repairs, in turn firmly contributing to the extension of the life expectancies of the facilities and equipment.

In the case of the repair work, the main component will be the repair or improvement of the interior and exterior finishes protecting the structural bodies. The additional construction or reconstruction following changes in the activities and/or a staff increase is expected to be necessary at 10 year intervals. While the detailed items for which periodical inspection and repair work will be crucial to determine the life expectancies of the buildings will be submitted in the Maintenance Manual at the time of the buildings' delivery to the Sri Lankan side, they are outlined below.

Items for Periodical Inspection

<u>Exterior</u>	
Repair and repainting of exterior finishes	every 5 years
Repair, repainting and inspection of roofing slabs	Inspection : every year Others : every 5 years
Inspection and partial repair of roof water-proofing	Inspection : every year Others : as required
Periodical cleaning of downspouts and drains, etc.	every month
Inspection and repair of sealings of exterior doors and windows	every year
Periodical inspection and cleaning of drainage gutters and manholes, etc.	every 5 years
Repainting of fences	every year
Periodical check of landscaping and gardens	as required
<u>Interior</u>	
Changes in interior finishes	as required
Repair and repainting of interior walls	as required
Repapering of ceilings	as required
Retightening or changing of fittings	every year or as required

With regard to security, it will be necessary to check the visitors to the facilities, particularly those visiting dangerous areas and those areas where aseptic conditions are required. In order to assure the testing precision and safety of the research facilities, a system to prevent the intrusion of bacilli to the facilities and the leakage of pathogens and infection outside the facilities and the leakage of pathogens and infection outside the facilities must be thoroughly implemented. Furthermore, a system to prevent the theft of the research equipment and dangerous substances, etc. must be established.

2. Utilities

Maintenance work, including repair work and parts exchange, will be required for utilities in addition to the ordinary operational control and regular inspections. Although the life expectancies of the utilities and equipment can be determined in terms of the actual operating hours, the life expectancies can be prolonged by proper operation and regular checks oiling, readjustment, cleaning and repair. Breakdowns and accidents should be prevented so that adverse effects on the buildings do not occur. Furthermore, proper attention should be paid to the safety aspects of the utilities and equipment. The overhaul and replacement of the equipment's expendable parts etc. should be carried out in accordance with the Maintenance Manual during the regular inspections.

The building utilities of the MRI will be of higher grades than those of other buildings in Sri Lanka in terms of their precision and safety to meet the requirements of the research facilities. The Maintenance Engineer, therefore, should have a thorough understanding of their character, a capacities and systems etc. as envisaged in their designs so that accidents can be prevented. To be more precise, a full-time technician should be employed in each of the electric, water supply/drainage and sanitation, air-conditioning and special facilities fields. These technicians should undergo on-the-job training from the installation and adjustment stage of the utilities and equipment in order to have a thorough understanding. While an operation manual will be submitted for each utility or equipment at the time of its delivery, the standard life expectancies of the main equipment are as follows.

Life Expectancies of Equipment

<u>Electrical Equipment</u>	
Generator	15-20 years
Panel Boards	20-30 years
Fluorescent Lamps	5,000-10,000 hours
Incandescent Lamps	1,000-1,500 hours
Telephone Switchboard	40 years
Public Address System Equipment	10-20 years
Lift	20 years
Dumb Waiter	15 years

<u>Plumbing Equipment</u>	
Pumps	10-15 years
Tanks	15-20 years
Pipes and Valves	10-15 years
Plumbing Fixtures	25 years
Fire Extinguishers	20 years
Gas Equipment	6 years
Sewage Treatment Equipment	7 years

<u>Air-Conditioning and Ventilation Equipment</u>	
Pipes	10-15 years
Fans	10-15 years
Air-Conditioners	10-15 years
Package-Type Air-Conditioners	5-10 years
Chilling Units	5-10 years

7-2-2 Equipment Maintenance Plan

(1) Research Equipment

With regard to the maintenance of the laboratory equipment, regular maintenance and inspection will be extremely important to secure the accuracy of the research results and the safety of the researchers. Moreover, in view of the conspicuous development and progress of research methods due to the advancement of modern medicine, the system to be established must be able to cater for the introduction of more complicated equipment than that currently envisaged.

Some of the equipment to be provided in the Project in particular appears to be a relatively high grade vis-a-vis the present medical standard in Sri Lanka.

However, as high grade equipment, such as that introduced in the Project, will be actively adopted by other medical institutions in the near future, the fostering of maintenance technicians, especially by the Ministry of Health, will be urgently required.

A realistic maintenance system will be for ordinary maintenance, inspection and repair work to be carried out by the technicians of the MRI while maintenance agreements with agents are established for some equipment where deemed appropriate. The periodical inspection of the laboratory equipment should be roughly conducted as shown in the table below. More details will be given in the form of manuals at the time of equipment delivery.

Periodical Inspection of Laboratory Equipment

	MRI	Agent
Experimental Apparatus for General Use	(4 times/year)	(once/year)
Analytical Apparatus	(inspection only, 4 times/year)	(twice/year)
Optical Apparatus	(twice/year)	(once/year)
Isolation, Analytical Apparatus	(inspection only, regular)	(once/year)
RI & Biohazard Experimental Apparatus	(twice/year)	(once/year)
Precision Research Apparatus	(inspection only, regular)	(twice/year)
Sterilization Apparatus	(3 times/year)	(once/year)

(2) Consumable Materials and Chemicals

The inventory control, supply to departments and procurement of consumable materials and chemicals for testing, experiments and research should be centrally planned and controlled. However, as many of these articles will be imported, attention should be paid to the fact that it may take a few months for delivery. Examples of the subject items are as follows.

Consumable Materials and Chemicals

- Glassware for experiments
- Reagents for research
- Culture media for research
- Antigens and antisera for research
- Expendable auxiliary materials
- RI reagents
- Expendable parts for research apparatus
- Special gas for experiments
- Antiseptics and other chemicals

7-3 Operation and Maintenance Cost Estimate

The annual maintenance cost of the new facilities to be borne by the Sri Lankan side after their delivery is estimated in this section. The items of expenditure are given as the personnel cost, facility operating cost, repair cost, equipment maintenance cost and animal maintenance cost. In addition, the future cost of the existing main building is estimated based on the current expenditure level and is added to the above.

(1) Personnel Emolument

The personnel emolument is the largest item of expenditure in the annual cost. The personnel cost at the time of the Project's completion (1990) is estimated based on the Sri Lankan staff recruitment plan while the average monthly wage is estimated based on the survey data.

Consultant	6,000 Rs x 11 psn =	66,000 Rs
MO, RO	3,600 Rs x 46 psn =	165,600 Rs
MLT	1,500 Rs x 109 psn =	163,500 Rs
Supporting Staff	1,100 Rs x 93 psn =	102,300 Rs
Average of Other Staff	900 Rs x 79 psn =	71,100 Rs
	(Sub-Total	568,500 Rs)
MRI :	568,500 Rs x 12 months =	6,822,000 Rs /year
SMLT :		1,262,000 Rs /year
	<u>Total Personnel Cost =</u>	<u>8,084,000 Rs /year</u>

(2) Facility Operating Cost

The annual operating cost of the facilities is estimated by assuming the standard consumption volumes of electricity, water, LPG, fuel oil and special gas.

1) Electricity Cost

(a) Assumed Maximum Electricity Consumption

The total load of the entire facilities will be approximately 950KVA and the transformer capacity is set at 800KVA (1,000KVA x 0.8). As the maximum electricity consumption is assumed to be some 60% of the transformer capacity, the monthly maximum electricity consumption is estimated to be 320KW (800KVA x 0.4).

(b) Assumed Electricity Consumption

	<u>(KVA)</u>	<u>(Hours/Day)</u>	<u>(Days/Year)</u>	<u>(KWH/Year)</u>
Lighting	260	x 0.4	x 8 x 260	= 216,320
Laboratory Egruipment	380	x 0.2	x 8 x 260	= 158,080
Freezer/ Refrigerator	10	x 0.3	x 24 x 365	= 26,280
Special Air- Conditioning	40	x 0.4	x 24 x 365	= 140,160
Ordinary Air- Conditioning	180	x 0.6	x 8 x 260	= 224,640
Ventilation	30	x 0.3	x 24 x 365	= 78,840
Waste Water Treatment	20	x 0.2	x 8 x 260	= 8,320
Water Supply	22	x 0.2	x 8 x 260	= 9,152

Total = 861,792

(c) Electricity Cost Calculation

◦ Demand Charge

$$320\text{KW} \times 115 \text{ Rs/KW month} \times 12 \text{ months} \doteq 442,000 \text{ Rs/year}$$

◦ Fixed Charge

$$200 \text{ Rs/month} \times 12 \text{ months} = 2,400 \text{ Rs/year}$$

◦ Unit Charge

$$861,792 \text{ KWH/year} \times 1.5 \text{ Rs/KWH} \doteq 1,293,000 \text{ Rs/year}$$

$$\text{Total} = 1,737,000 \text{ Rs/year}$$

The electricity bill for the existing main building is expected to be halved.

$$482,993 \text{ Rs/year} \times 0.5 \doteq 242,000 \text{ Rs/year}$$

$$\text{Total Electricity Cost} = 1,979,000 \text{ Rs/year}$$

2) Water Cost

◦ New Facilities

$$160 \text{ m}^3/\text{day} \times 365 \text{ days} \times \frac{5}{7} \times 5.5 \text{ Rs/m}^3 \doteq 229,500 \text{ Rs/year}$$

- Existing Main Building (estimated cost is half of the current level)
 $90,000 \text{ Rs/year} \times 0.5 = 45,000 \text{ Rs/year}$
- Total Water Cost = 275,000 Rs/year

3) LPG Cost

- Laboratories
 $50 \text{ outlets} \times 300 \text{ kcal/hour} \times 0.5 \text{ hours/day} \doteq$
 $11,000 \text{ kcal/kg} \times 365 \text{ days} \times \frac{5}{7} \times 500 \text{ Rs/m}^3 \doteq 22,000 \text{ Rs/year}$
 - Canteen
 $300 \text{ meals/day} \times 200 \text{ kcal/meal} \doteq 11,000 \text{ kcal/kg}$
 $\times 365 \text{ days} \times \frac{5}{7} \times 500 \text{ Rs/40kg} \doteq 18,000 \text{ Rs/year}$
 - Existing Main Building (estimated cost is half of the current level)
 $25,000 \text{ Rs} \times 0.5 = 13,000 \text{ Rs/year}$
- Total LPG Cost = 53,000 Rs/year

4) Fuel Oil Cost

- Generator
 $10 \text{ hours/month} \times 12 \text{ months} \times 200 \text{ KVA} \times 0.8 \times$
 $0.3\ell/\text{KWH} \times 7.83 \text{ Rs}/\ell \doteq 45,000 \text{ Rs/year}$
 - Autoclaves
 $50,000 \text{ kcal/hour} \times 2 \times 4 \text{ hours/day} = 9,300 \text{ kcal}/\ell \times$
 $365 \text{ days} \times \frac{5}{7} \times 7.83 \text{ Rs}/\ell \doteq 88,000 \text{ Rs/year}$
 - Incinerator
 $10 \ell/\text{hour} \times 3 \text{ hours/day} \times 365 \text{ days} \times \frac{2}{7} \times$
 $7.83 \text{ Rs}/\ell \doteq 25,000 \text{ Rs/year}$
- Total Fuel Oil Cost = 133,000 Rs/year

5) Special Gas Cost

- | | | |
|---------------------------|----------------------------------|-------------------|
| Liquid CO ₂ | 500 kg/year x 35 Rs/kg | = 17,500 Rs/year |
| Liquid N ₂ | 40 kg/year x 50 Rs/kg | = 2,000 Rs/year |
| N ₂ | 300 gallons/year x 1.3 Rs/gallon | = 390 Rs/year |
| H ₂ (Imported) | 5,000ℓ /year x 184 Rs/ℓ | = 920,000 Rs/year |
| | Total Special Gas Cost | 940,000 Rs/year |

Total Operating Cost : 3,380,000 Rs/year

(3) Repair Cost

While the repair cost largely fluctuates from year to year, it is estimated using an assumed cost of 50Rs/m²/year based on a span of 30 years.

$$50 \text{ Rs/m}^2/\text{year} \times 9,000 \text{ m}^2 = 450,000 \text{ Rs/year}$$

The equipment repair cost will be low for the first 5 years. Afterwards, however, the replacement cost of parts and utilities will increase. Here, the estimate is made assuming an annual average repair cost in a 10 year span to be 2% of the original utility cost.

$$67,000,000 \text{ Rs} \times 0.02 = 1,340,000 \text{ Rs/year}$$

The repair cost for the existing main building is estimated to increase by 50%.

$$150,000 \text{ Rs} \times 1.5 = 225,000 \text{ Rs/year}$$

Total Repair Cost : 2,015,000 Rs/year

(4) Equipment Maintenance Cost

- Laboratory Equipment Maintenance and Repair Costs

These costs will vary depending on their frequency of use and the length of use. 1.5% of the original equipment cost is assumed here.

$$1,500,000 \text{ Rs/year}$$

- Consumable Materials and Chemicals

The cost of consumable materials and chemicals will largely vary depending on their consumption and 4% of the original equipment cost is assumed here.

$$4,000,000 \text{ Rs/year}$$

Total Equipment Maintenance Cost : 5,400,000 Rs/year

(5) Animal Maintenance Cost

The estimate is based on the number of experiments and the animal purchase cost obtained during the field survey.

- Animal Purchase Cost

$$\text{MRI Bred Animals } 22,000 \text{ Rs} \times 4 \text{ times/year} = 88,000 \text{ Rs/year}$$

$$\text{Purchased Animals } 45,000 \text{ Rs} \times 12 \text{ times/year} = 540,000 \text{ Rs/year}$$

- Feed Cost $18,000 \text{ Rs} \times 12 \text{ months} = 216,000 \text{ Rs/year}$

- Auxiliary Materials Cost (10%) $= 84,000 \text{ Rs/year}$

Total Animal Maintenance Cost : 928,000 Rs/year

(6) Total Estimate	
1) Personnel Emolument	8,084,000 Rs/year
2) Operating Cost	3,380,000 Rs/year
3) Repair Cost	2,015,000 Rs/year
4) Equipment Maintenance	5,400,000 Rs/year
5) Animal Maintenance Cost	<u>928,000 Rs/year</u>
Grand Total	19,807,000 Rs/year

Since annual budget for 1986 was Rs. 17,819,027 as discribed 7-1-3, the proposed annual cost for 1990 of Rs. 19,807,000 could be arranged by Sri Lankan Side.

CHAPTER 8
PROJECT EVALUATION

CHAPTER 8 PROJECT EVALUATION

8-1 Effects of Project Execution

The objective of the Project is to both improve and expand the facilities and equipment owned by the Medical Research Institute and also to strengthen its functions and to vitalize its activities by restructuring its organization. Although a quantitative appraisal of the effects of the Project execution is difficult due to the nature of the facilities concerned, the following effects on Sri Lanka's health care sector can be expected.

(1) Direct Effects

- 1) With the improvement of the research facilities, basic research on the causal relationship of various diseases, particularly infectious diseases, and preventive medicine will become possible by the strengthened research and testing functions.
- 2) With the integration and restructuring of the research departments, so far organized on the basis of minor distinctions, together with their respective functions and activities under the Project, research activities will be revitalized and mutually stimulated.
- 3) In addition to the conventional production of vaccines, research in the production of vaccines, research in the production of anti-venin will become possible.
- 4) With the new provision of training laboratories, highly capable laboratory technologists will be fostered.

(2) Indirect Effects

- 1) The MRI and the School of Medical Laboratory Technology are expected to mutually stimulate each other to produce better results. With the highly capable laboratory technologists graduating from the SMLT being assigned to various organizations, Sri Lanka's 16 inspection institutions (with the MRI at the core) may become capable of conducting independent activities without relying on the MRI.

As a result, the volume of the routine work currently assigned to the MRI will be reduced and the MRI will be able to promote basic research, largely contributing to the improvement of Sri Lanka's medical sector.

As the research level of the MRI is necessarily improved, it will attract more young researchers, thus promoting the further advancement of medical research in Sri Lanka.

- 2) The results of the MRI's successful basic research in preventive medicine and immunological studies will improve Sri Lanka's general medical service.

8-2 Suitability of the Project

The Ministry of Health, the organization responsible for the execution of the Project, has a great amount of experience in executing grant-aid projects, including the construction of teaching hospitals, the improvement and expansion of base hospitals in local areas, the supply and storage of necessary pharmaceuticals and the construction of administrative facilities, etc., and has been actively engaged in improving the medical service in Sri Lanka. The present Project, under which the new construction of the MRI and the renewal of its equipment is intended in order to revitalize its inadequate activities due to the deteriorated condition of the facilities and equipment, is in line with Japanese assistance to Sri Lanka's medical field in the past and supplements it and is, therefore, considered to be highly effective and to command high priority.

The facilities to be constructed under the Project and their sizes are believed to be highly efficient in view of their correspondence to the restructured research system, in turn based on the integration and reorganization of the present departments and the duplication of the facilities and equipment has been carefully avoided. The anti-venin sera production department to be newly introduced under the Project is considered to be a facility for experimental laboratory activities. As the high risk testing facility and the animal experiment facilities have been planned taking the required research levels and available control technologies in Sri Lanka into consideration, the provision of these facilities is, therefore, realistic and appropriate in terms of Sri Lanka's economic and technological levels.

The success of the planned Technical Cooperation by Japanese Government will contribute to solving such urgent problems of the MRI as the strengthening of its diagnostic and reference functions, the qualitative improvement of laboratory staff and the development of more advanced basic medical research activities.

CHAPTER 9

CONCLUSION AND RECOMMENDATION

CHAPTER 9 CONCLUSION AND RECOMMENDATION

9-1 Conclusion

The Project, the planned contents and scope of which have been so far described, will play an extremely significant role in restoring the research functions of Sri Lanka's medical administration while the strengthening of the educational system for laboratory technologists will prove highly effective in raising the general standard of medical laboratory technology.

As the MRI is the highest medical research institute in Sri Lanka, a country aiming at "guaranteeing the satisfactory health of all nationals" in the near future, its consolidation must be achieved from an academic, as well as research, point of view.

While some suggestions are given in the following section for the effective and efficient utilization of the new facilities, the early execution of the Project by Japanese grant-aid is hoped for in view of the Project's significance.

9-2 Recommendation

The following recommendations are made to the Sri Lankan Government for the effective execution of the Project and the successful achievement of its objectives.

(1) Smooth Project Execution

The complete removal of the existing obstacles on the Project site and land clearance in accordance with the respective schedules is absolutely necessary for the Project to be completed by the planned completion date.

(2) Establishment of Maintenance and Control System for Facilities and Equipment

1) For the efficient operation of the new facilities, special maintenance staff responsible for the facilities and medical equipment should be recruited at the beginning of the Project execution so that they can participate in the Project right through to its completion and, therefore, can competently carry out their work assignments following the Project completion based on the knowledge acquired during the execution period.

2) Budgetary appropriation for the facility and equipment maintenance cost should be secured.

(3) Establishment of Effective Management and Research System

- 1) Although the annual recruitment plan for researchers and assistants has already been drafted, their total number is currently insufficient. Vacant position (cadre) should be steadily filled and mid-level researchers should be newly appointed.
- 2) The testing functions of local hospitals should be improved in order to reduce the volume of service work, including routine tests, currently entrusted to the MRI so that the MRI can extensively pursue basic research.
- 3) To achieve the above objective, the relationship between the MRI and related medical, research and educational institutions should be strengthened and researchers/ technologists should be newly appointed.

(4) Improvement of Technical Level

- 1) The facilities to be constructed under the Project are designed to prevent infections or contamination inside them. However, effective prevention is only possible with the proper use and management of these facilities. Therefore, careful attention should be paid to the garments worn by the staff and to the careful handling of infected items, etc.
- 2) The technical level required for handling specimens should be both improved and maintained so that the relevant work can be efficiently conducted.
- 3) Various departments, including the research, production, animal experiment and education/training department, should be provided with Technical Cooperation by Japanese experts so that further development based on the Project can successfully achieved in the future.

APPENDIX

1. **Organization of the Study Team**
2. **Cooperative Officials in the Survey**
3. **Minutes of Discussions**
 - 1) **The Preliminary Study - 1**
 - 2) **The Preliminary Study - 2**
 - 3) **The Basic Design Study**
 - 4) **The Draft Report**
4. **Existing Facilities around the Site**
5. **List of Equipment to be shifted**

1. Organization of the Study Team

(1) The Basic Design Study Team

Dr. Ken-ichi KOJIMA	Team Leader Dean, College of Biomedical Technology Niigata University
Dr. Masao MITSUYAMA	Bacteriologist Professor, School of Medicine, Niigata University
Mr. Yoshiki MIYANISHI	Project Coordinator Grant Aid Cooperation Division Bureau of Economic Cooperation Ministry of Foreign Affairs
Mr. Ryoji HIRANO	Architectural Planner Kume Architects-Engineers
Mr. Tetsuro NISHIMURA	Architectural Designer Kume Architects-Engineers
Mr. Mitsuo MIMOTO	Electrical Designer Kume Architects-Engineers
Mr. Shigeru NAKABAYASHI	Mechanical Designer Kume Architects-Engineers
Mr. Hiroshi INOUE	Structural Planner Kume Architects-Engineers
Mr. Genji SUGANUMA	Equipment Planner Isou-Ken Co.,

(2) The Draft Final Report Confirmation Team

Dr. Yoshihisa ONISHI	Team Leader Dean, School of Medicine Niigata University
Dr. Tadahiro HAMADA	Virologist Professor, School of Medicine Niigata University
Mr. Toshio NAMAI	Project Coordinator Grant Aid Cooperation Division JICA
Mr. Ryoji HIRANO	Architectural Planner Kume Architects-Engineers
Mr. Tetsuro NISHIMURA	Architectural Designer Kume Architects-Engineers
Mr. Genji SUGANUMA	Equipment Planner Isou-Ken Co.,

2. Cooperative Officials in the Survey

(1) Concerned Persons on the Sri Lankan Side

• Ministry of Health

Dr. R. Attapatu	Minister
Dr. S. D. M. Fernando	Secretary
Dr. Joe Fernando	Director General, Health Services
Dr. Gorge Fernando	Deputy Director General, Laboratory Services
Mr. A. N. R. Amaratunga	Director, Buildings & Transport
Mr. Jayatilake	Electro Medical Engineer

• Medical Research Institute

Dr. U. T. Vitarana	Director
Dr. Mrs. M. Attapattu	Consultant (Mycology)
Dr. T. J. P. Ratnayake	Consultant (Serology)
Dr. A. Sathasivam	Consultant (Rabies)
Dr. Mrs. N. Withane	Consultant (Virology)
Dr. Mrs. S. Gunasekera	Consultant (Pathology)
Dr. Mrs. P. Premachandra	Research Officer (Biochemistry)
Dr. P. A. Jayasinghe	Consultant (Vaccine)
Dr. L. B. De Silva	Research Officer (Medicinal Plant)
Dr. Mrs. B. V. De Mel	Medical Officer (Nutrition)
Mrs. N. Jayasekera	Research Officer (Entomology)
Dr. V. K. Samuel	Research Officer (Biochemistry)
Mr. D. W. Ratunayake	Administration

• Ministry of Finance and Planning

Mr. S. Weerapana	Additional Director, Department of External Resources
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• Sri Jayawardenapura General Hospital

Dr. Rienzie Peiris

- Peradeniya Teaching Hospital
Dr. R. M. R. S. Ratnayake
Ms. L. S. Weerasinghe
- Atomic Energy Authority (AEA)
Dr. K. G. Dharmamardena Chairman
- Urban Development Authority (UDA)
Mr. Prasanna Gunawardena
Mr. Dharmasiri
- Ceylong Electricity Board (CEB)
Mr. Jude Perera Regional Manager
- National Water Supply & Drainage Board
Mr. Jagath Peiris Regional Manager
- Telecommunication Department
Mr. K. Mattendran Regional Engineer
- Colombo Gas Company
Mr. Nandana Panga Divisional Engineer

(2) Concerned Persons on the Japanese Side

- The Embassy of Japan in Sri Lanka
Mr. Yasunari Hamamoto Ambassador Extraordinary and
Plenipotentiary
Mr. Toshinao Urabe Councilor
Dr. Yuichiro Hirano First Secretary
- JICA Sri Lanka Office
Mr. Jiro Hashiguchi Resident Representative
Mr. Tetsuo Amagai Assistant Resident Representative

3. Minutes of Discussions

- 1) The Preliminary Study - 1
- 2) The Preliminary Study - 2
- 3) The Basic Design Study
- 4) The Draft Report

Supplementary Notes
to
the Minutes of Discussions

With regard to the tentative implementation program of the Project for the improvement of the Medical Research Institute (Project), Dr. Vitarana, Director, MRI, and Prof. Kojima, Leader, Japanese Preliminary Study Team, agreed to record the following for further discussion :

1. Visit of Japanese experts to Sri Lanka

- (1) Since the construction of new MRI building and facilities by the Japanese grant aid is not likely to be completed in the first year of the Project, training of Sri Lankan personnel in the first year should be done primarily in Japan, rather than in Sri Lanka by visits of Japanese experts.
- (2) However, early visits of Japanese experts to Sri Lanka are important to encourage the Sri Lankan Project members and to promote various Project activities.
- (3) Therefore, the possibility of dispatching Japanese experts in the first year of the Project should be explored, especially to the Departments of Bacteriology and Virology, which are relatively well-equipped than other departments and where training and guidance by Japanese experts are possible.
- (4) If such visits by Japanese expert(s) are possible, the program for training Sri Lankan personnel in Japan would be modified accordingly.
- (5) Planning on the visits of Japanese experts to Sri Lanka in and after the second year of the Project will be decided by the start of the Project.

2. The following information will be provided to the Japanese side for information and for further study.

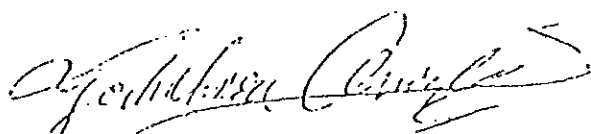
- (1) Details of medical and technical subjects on which Japanese technical guidance is sought.
- (2) A new personnel allocation plan of the MRI based on the new organizational structure; and
- (3) Names and necessary references of the candidates for training in Japan in the first year.

MINUTES OF DISCUSSIONS
ON
THE STUDY
OF THE PROJECT FOR THE IMPROVEMENT AND EXPANSION
OF
MEDICAL RESEARCH INSTITUTE (MRI)
IN
THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

In response to the request of the Government of the Democratic Socialist Republic of Sri Lanka, the Government of Japan decided to conduct a study on the Project for the improvement and expansion of the Medical Research Institute (hereinafter referred to as "the Project") and entrusted the study of Japan International Cooperation Agency (JICA). JICA sent the Contact team for Technical Cooperation headed by Dr. Yoshihisa Onishi, Dean of School of Medicine, Niigata University together with the Preliminary Study team for Grant Aid headed by Dr. Kenichi Kojima, Dean of College of Biomedical Technology, Niigata University to Sri Lanka from 22nd of February to 4th of March, 1987.

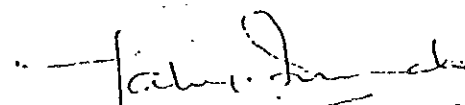
The teams had a series of discussions on the Project with the officials concerned of the Government of the Democratic Socialist Republic of Sri Lanka and conducted a field survey in Colombo. As a result of the study, both parties agreed to recommend to their respective Government that the major points of understanding reached between them, attached herewith, should be examined towards the realization of the Project.

Colombo, February 28, 1987



Dr. Yoshihisa Onishi
Leader

Contact Team for Technical Cooperation
Japan International Cooperation Agency

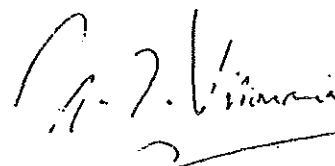


Dr. S.D.M. Fernando
Secretary
Ministry of Health



Dr. Kenichi Kojima
Leader

Preliminary Study Team for Grant Aid
Japan International Cooperation Agency



Dr. U.T. Vitarana
Director

Medical Research Institute
(MRI)

ATTACHMENT

1. The objective of the Project is as follows:
 - 1) To develop and improve the functions of the existing Medical Research Institute through reconstruction of building and provision of equipment,
 - 2) To improve the technical capability and knowledge of the MRI staff through technical guidance and/or joint research based on Japanese technical cooperation scheme.

2. Matters regarding Grand Aid

- 1) The Sri Lanka side made the following requests to the Government of Japan:
 - (1) Reconstruction of buildings of MRI for a laboratory production unit, audio visual hall, animal house and other related facilities such as educational ones.
 - (2) Provision of equipment necessary for the above mentioned facilities. The list of equipment is attached as Annex I.
- 2) The proposed site is the area that Ministry of Health owns and situated at Baseline Road, Colombo 8. The map is attached as Annex II.

Regarding the site, Japanese Teams recommended that it is preferable that the site should be expanded for the functional activities of MRI. Sri Lanka side appreciated the recommendation of the Japanese side as mentioned above, and they stated that they would take necessary measures to get extra space as suggested.
- 3) Ministry of Health is responsible for the execution of the Project. The Secretary of Ministry of Health is responsible for the managing matters of the Project and the Director of MRI is for the practical matters.
- 4) The Sri Lanka side understood the system of Grant Aid Programme explained by the team.
- 5) The scope of cooperation in grant aid form to be extended by the Government of Japan will be studied and clarified by the following basic design study, when the Project has been recognized as feasible by the Government of Japan.
- 6) The Sri Lanka side will cooperate to collect data and information related to the Project.

3. Matters regarding Technical Cooperation

Sri Lanka Side requested Japanese side to execute technical cooperation for MRI and it's outline is as follows:

- 1) Contents of the technical cooperation would be expected to be implemented through the despatch of Japanese experts, acceptance of Sri Lanka personnel for training in Japan and provision of equipment.
- 2) The field of technical cooperation is expected to cover animal house operation, diagnostic laboratory tests, production of vaccines and reagents, research implementation and management of MLT school etc...
- 3) The period of technical cooperation is expected to be for 5 years and it would be started from 1988.
- 4) The concrete scope and schedule of technical cooperation should be made through discussion by both sides in the next stage when Japanese side will dispatch the Preliminary Study Team for the Technical Cooperation in May or June 1987.
- 5) Sri Lanka side submit the request for the technical cooperation to the Japanese side at the earliest possible opportunity through official channels.
- 6) Japanese side stated that qualified personnel should be assigned to MRI appropriately to carry the Project on.

MINUTES OF DISCUSSIONS
BETWEEN
THE JAPANESE PRELIMINARY STUDY TEAM AND THE SRI LANKAN AUTHORITIES
ON THE SRI LANKA-JAPAN COOPERATION PROJECT
FOR THE IMPROVEMENT OF THE MEDICAL RESEARCH INSTITUTE

The Japanese preliminary study team concerning the project for the improvement of the Medical Research Institute, organized by the Japan International Cooperation Agency (JICA) and headed by Prof. Kenichi Kojima, visited the Democratic Socialist Republic of Sri Lanka from June 26 to July 3, 1987. The purpose of the visit was to discuss with the Sri Lankan authorities over the future development plan of the Medical Research Institute (MRI) and to formulate a possible scheme of the Sri Lanka-Japan technical cooperation project. The composition of the team is given in Annex I. The Sri Lankan officials who had discussions with the Japanese team are listed in Annex II.

After a series of discussions, the Sri Lankan authorities and the Japanese team have come to share the common tentative understanding as given below, and agreed to convey it to their respective Governments.

I. Restructuring of the MRI

1. Both parties observed that the present organizational structure of the MRI, i.e. existence of twenty-one sections not sufficiently linked, coordinated and stratified with each other, is an obstacle to the future development of the MRI as well as to successful implementation of the Sri Lanka-Japan cooperation. Hence both parties agreed on the necessity of the restructuring of the existing sections of the MRI. Recommended scheme for the restructuring is given in Annex III.

2. Major reasons for this recommendation are as follows:

(1) The present organizational structure will hamper future development of interdisciplinary approach to services and research works;

(2) Existence of too many sections will make a well-organized technical cooperation impossible.

Moreover, bearing in mind that the possibility of a Japanese grant-aid cooperation for the construction of new MRI buildings and other facilities is presently investigated, both parties observed that the present organizational structure of the MRI would hamper optimal designing of the buildings, facilities and equipment.

3. It was agreed that, before the start of the technical cooperation project, the Sri Lankan side will take the necessary measures to:

(1) have this restructuring authorized by the authorities concerned; and

(2) establish the new organizational structure by appointing department heads.

11 Framework of Technical Cooperation

Having agreed upon the organizational restructuring scheme of the MRI, both parties discussed a possible framework of the Sri Lanka-Japan technical cooperation project. Major points of discussion included the following:

1. Project Title

Both parties agreed tentatively to make the project title as "the project for the improvement of the Medical Research Institute (hereinafter referred as "the Project")."

2. Purpose and Objectives of the Project

(1) The purpose of the Project in general terms is to develop the various functions of the MRI and enable it to play more active roles in the control of diseases in Sri Lanka.

(2) In order to achieve the purpose set above, the following specific objectives will be pursued:

- a. strengthening of diagnostic functions of the MRI;
- b. strengthening of reference functions of the MRI;
- c. strengthening of educational functions of the MRI;
- d. strengthening of production function of the MRI;
- e. strengthening of research functions of the MRI.

3. Implementation Program

Both parties agreed that, in order to carry out the Project effectively, it is important to prioritize the objectives, and agreed in principle on the following:

(1) In the first phase of the Project (1988-90/91), objectives a., b. and c. will be given priority.

(2) Based on the achievements of the first phase, objectives d. and e. will be given priority in the second phase of the Project (1990/91-93).

However, the Sri Lankan side, stressing the importance and urgency of the objectives d. and e., expressed its wish to get them started earlier. The Japanese side agreed to explore its feasibility. The Japanese side stated, however, that further study and discussion are necessary on the technical possibility of anti-snake venom production.

Thus both parties jointly formulated a tentative implementation program as given in Annex IV for consideration by their respective Governments. Both parties understand that this tentative implementation program is subject to future modification.

4. Japanese Cooperation :

It was agreed that, in order to achieve the objectives set in 2. (2), the Japanese side will cooperate with the Sri Lankan side through:

- (1) guidance by visiting Japanese experts to Sri Lankan personnel;
- (2) training of Sri Lankan personnel in Japan;
- (3) provision of equipment.

Both parties noted that in order to pursue the objective c., organization of workshops and/or seminars designed for MLTs and other

medical/health professionals will be extremely effective. Both parties also agreed to note that support by the Japanese side to such activities, if possible, would greatly benefit the Project.

5. Term of Cooperation

The term of cooperation for the Project will be five years from 1988. The exact date of its commencement will be fixed later.

6. Measures to be taken by the Sri Lankan side

The Sri Lankan side agreed to take the following measures to make the Project successful:

(1) provide sufficient number of personnel to be guided by visiting Japanese experts and/or to be trained in Japan, and to assure that such personnel will continue to work for the development of the MRI;

(2) provide sufficient number of personnel for the maintenance and development of the functions of the MRI; and

(3) allocate sufficient amount of budget for the maintenance and operation of the MRI as well as for the implementation of the Project.

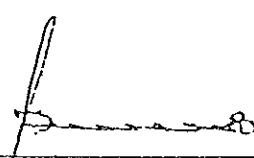
7. Responsible Organization

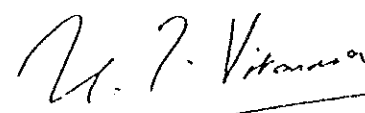
Previous agreement of February 28, 1987 between the Japanese contact team and the Sri Lankan authorities on the responsible organization for the Project was confirmed: The Ministry of Health will bear the overall responsibility for the successful implementation of the Project. The Secretary of Health will be responsible for the managerial/policy matters of the Project, and the Director, MRI, for technical and practical matters.

Colombo, July 3, 1987

小島 健一

Prof. Kenichi Kojima
Leader
Preliminary Study Team
JICA


Dr. Joe Fernando
Director-General of Health Services
Ministry of Health



Dr. U.T. Vitarana
Director
Medical Research Institute

Supplementary Notes
to
the Minutes of Discussions

With regard to the tentative implementation program of the Project for the improvement of the Medical Research Institute (Project), Dr. Vitarana, Director, MRI, and Prof. Kojima, Leader, Japanese Preliminary Study Team, agreed to record the following for further discussion :

1. Visit of Japanese experts to Sri Lanka

- (1) Since the construction of new MRI building and facilities by the Japanese grant aid is not likely to be completed in the first year of the Project, training of Sri Lankan personnel in the first year should be done primarily in Japan, rather than in Sri Lanka by visits of Japanese experts.
- (2) However, early visits of Japanese experts to Sri Lanka are important to encourage the Sri Lankan Project members and to promote various Project activities.
- (3) Therefore, the possibility of dispatching Japanese experts in the first year of the Project should be explored, especially to the Departments of Bacteriology and Virology, which are relatively well-equipped than other departments and where training and guidance by Japanese experts are possible.
- (4) If such visits by Japanese expert(s) are possible, the program for training Sri Lankan personnel in Japan would be modified accordingly.
- (5) Planning on the visits of Japanese experts to Sri Lanka in and after the second year of the Project will be decided by the start of the Project.

2. The following information will be provided to the Japanese side for information and for further study.

- (1) Details of medical and technical subjects on which Japanese technical guidance is sought.
- (2) A new personnel allocation plan of the MRI based on the new organizational structure; and
- (3) Names and necessary references of the candidates for training in Japan in the first year.

3. Dr. Vitarana suggested that the basic design team for the grant aid cooperation include the following :

- (1) A specialist in anti-venin
- (2) A specialist in animal house management; and
- (3) A pharmacologist (if possible).

This suggestion will be conveyed to the Japanese authorities concerned.

Colombo, July 5, 1987

小島 健一

Prof. Kenichi Kojima
Leader
Preliminary Study Team
JICA

U. T. Vitarana

Dr. U.T. Vitarana
Director
Medical Research Institute

PROPOSAL FOR THE RE-GROUPING OF THE EXISTING SECTIONS OF THE MRI

- 1 Department of Entomology and Parasitology
 - Entomology
 - Parasitology
 - 2 Department of Clinical Pathology and Immunology
 - Pathology
 - Immunology
 - 3 Department of Nutrition and Biochemistry
 - Nutrition
 - Biochemistry
 - RI Diagnosis
 - 4 Department of Pharmacology and Medicinal Plant
 - Pharmacology
 - Natural Products
 - 5 Department of Bacteriology
 - Bacteriology I
 - Bacteriology II
 - Enteric Bacteriology
 - Mycology
 - Leptospira
 - Food and Water
 - Mycoplasma
 - Quality Control
 - 6 Department of Virology
 - Tissue Culture
 - Diarrhoea and Enterovirus
 - Arbovirology
 - Rabies and Neurological
 - Respiratory and Congenital
 - Chlamydiae and Rickettsiae
 - Dangerous Viruses
 - 7 Department of Biological Production
 - Diagnostic Sera and Lab. Pharmaceuticals
 - Anti-venin (snake)
 - Bacterial Vaccines
 - Viral Vaccines
- *****
- 8 Center for Medical Instrumentation
 - Photomicrography and Medical Illustration
 - Maintenance and Heavy Instruments
 - Carpentry and Glass Blowing
 - Computer
 - 9 Center for Education and Training → → → → KLT
 - 10 Animal Center
 - Animal-breeding
 - Animal-diagnostic and Experimental
 - Insectory
 - Animal Production
 - 11 Administration
 - 12 Library

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Tentative Implementation Program

Annex IV

▲ = Training in Japan

Year Dep't	1	2	3	4	5
1 Entomology & Parasitology	▲ General Training				
2 Clinical Pathology & Immunology	▲▲ Diagnosis (Reagents)		▲ Histopathology (Histochemistry)	▲ Hematology (Coagulation Systems) (Immunological Diseases)	
3 Nutrition & Biochemistry	▲ Metabolic Diseases		▲ Quality Control		▲ Study of Lipids
4 Pharmacology & Medicinal Plant	▲ General Training *				
5 Bacteriology	▲ Anaerobic Bacterial Infections	▲ Enteric Bacterial Infections	▲ Mycotic Infections		
6 Virology	▲ Respiratory Diseases	▲ Viral Diarrhea	▲ Rickettsiae & Chlamydiae	▲ Oncogenic Viruses	
7 Biological Production	▲▲ Anti-Venin		▲ Tissue Culture Vaccines		
8 Medical Instrumentation	▲▲ General Training (incl. computer)				
9 Education & Training	MLT School { Curriculum Development Development of Teaching Methods				
10 Others	▲ Molecular Biology				

▲▲ → priority in 1st year

* → Post Graduate level training requested by Sri Lanka side

MINUTES OF DISCUSSION
ON
THE BASIC DESIGN STUDY
ON
THE PROJECT FOR IMPROVEMENT AND EXPANSION
OF
THE MEDICAL RESEARCH INSTITUTE
IN
THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

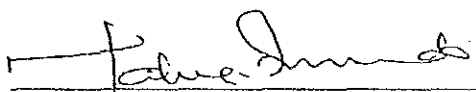
In response to the request made by the Government of the Democratic Socialist Republic of Sri Lanka for Grant Aid for the Project for Expansion of the Medical Research Institute (hereinafter referred to as "The Project"), the Government of Japan decided to conduct a Basic Design Study on the Project and entrusted the Japan International Cooperation Agency (JICA) to send the Basic Design Study Team headed by Dr. Ken-ichi KOJIMA, Dean, College of Biomedical Technology, Niigata University to Sri Lanka from August 11 to August 31, 1987.

The Team had a series of discussions with the Authorities concerned of the Government of the Democratic Socialist Republic of Sri Lanka and conducted a field survey in Colombo. As the result of the study, both parties have agreed to recommend to their respective Governments that the major points of understandings reached between them as attached herewith should be examined towards the realization of the Project.

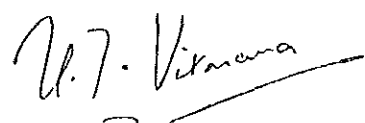
Colombo, August 19, 1987



DR. KEN-ICHI KOJIMA
Leader
The Basic Design Study Team
Japan International Cooperation
Agency (JICA)



DR. S.D.M. FERNANDO
Secretary
Ministry of Health

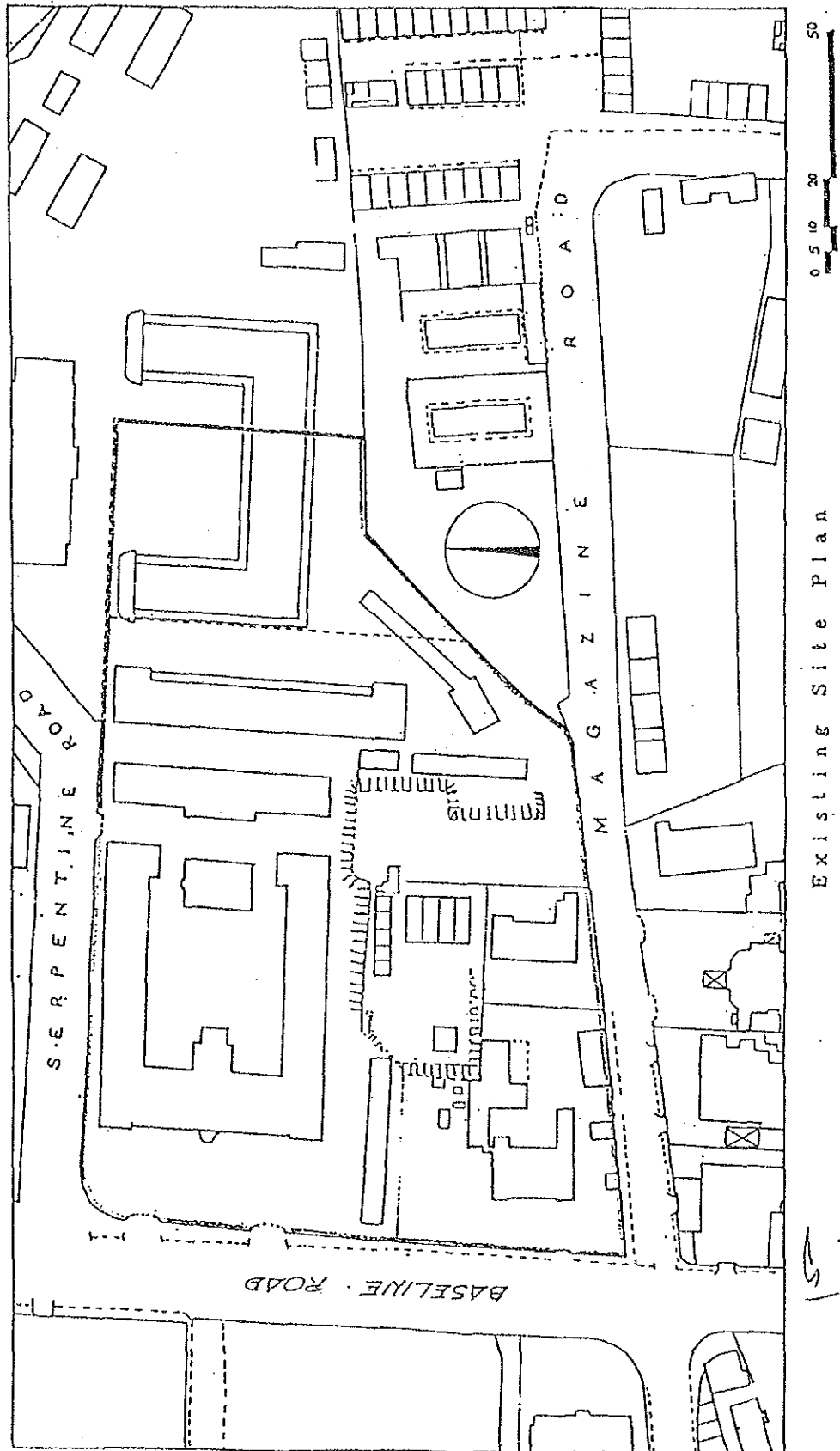


DR. U.T. VIPARANA
Director
Medical Research Institute

ATTACHMENT

1. The objective of the Project is to improve and expand the function of the Medical Research Institute (MRI) through reconstruction of buildings and supply & installation of equipment.
2. The Project site is located at the Medical Research Institute, Danister de Silva Road, Colombo 5 as seen in Annex I. The whole site area which is owned by the Ministry of Health is ca. 14,000 square meters.
3. The functions of the facilities are as follows:
 - (1) To improve the quality of existing research and diagnostic activities and to enable the MRI to function more effectively as the National Reference Laboratory.
 - (2) To permit the production of improved vaccines and the introduction of new vaccines and antisera.
 - (3) To provide the necessary back up services for research, reference, diagnostic and production activities.
 - (4) To strengthen and upgrade teaching and training facilities.
4. The Ministry of Health is responsible for the administration and execution of the Project. The Secretary of Ministry of Health is responsible for the managing matters of the Project and the Director of MRI for the practical matters.
5. The Japanese Study Team will convey to the Government of Japan the desire of the Government of the Democratic Socialist Republic of Sri Lanka that the former takes necessary measures to cooperate by providing the buildings and other items listed in Annex II within the scope of Japanese economic cooperation programme in grant form.
6. The Sri Lankan side has understood Japan's Grant Aid System explained by the Team which includes a principle of use of a Japanese Consultant Firm and Japanese General Contractor(s) for the implementation of the Project.
7. The Government of the Democratic Socialist Republic of Sri Lanka will take necessary measures listed in Annex III on condition that the Grant Aid would be extended to the Project.

ANNEX I



Existing Site Plan

(4)

ANNEX II

THE REQUEST MADE BY THE GOVERNMENT OF
THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

1. Construction of the following facilities:
 - (1) New Laboratory Complex including Centre for Medical Instrumentation
 - (2) Animal Centre
 - (3) Biological Production Unit
 - (4) M.L.T. School
 - (5) New Audiovisual Hall
 - (6) 4 Flats as M.L.T. quarters

2. Provision of equipment and materials to the above mentioned facilities such as:
 - (1) Laboratory equipment
 - (2) Teaching equipment
 - (3) Others

ANNEX III

MAJOR UNDERTAKINGS TO BE TAKEN BY THE SRI LANKAN SIDE

1. To secure the site for the Project.
2. To clear, level and reclaim the site prior to the commencement of the construction.
3. To undertake incidental out-door work such as gardening, fencing gate and exterior lighting in and around the site.
4. To construct the access road to the site prior to the commencement of the construction as needed.
5. To provide facilities for ^{provision} ~~distribution~~ of electricity, water supply, telephone, drainage and other incidental facilities before the commencement of the Project.
 - (1) Electricity distribution line to the site;
 - (2) City water distribution main to the site;
 - (3) Drainage city main to the site;
 - (4) Telephone trunk line to the main distribution panel of building.
6. To provide general furnitures such as carpets, curtains, tables, chairs and others.
7. To take necessary measures for customs clearance of the materials and equipment brought for the Project at the port of disembarkation.
8. To exempt Japanese nationals from custom duties, internal taxes and other fiscal levies which may be imposed in the Democratic Socialist Republic of Sri Lanka with respect to the supply of the products and services under the Verified Contracts.
9. To accord Japanese nationals whose services may be required in connection with the supply of products and the services under the verified contract such facilities as may be necessary for their entry into Sri Lanka and stay therein for the performance of their work.

10. To maintain and use properly and effectively those facilities constructed and equipment purchased under the Grant.
11. To bear the expenses other than those borne by the Grant (Grant includes transportation and the installation of the equipment)

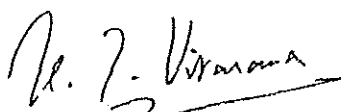
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A circled number 11.

NOTES

1. The tentative scope of the Project
 - 1) Construction of the following;
 - (1) New laboratory complex including branch library, staff room, and director's office.
 - (2) Animal Centre excluding the horse stable
 - (3) Biological production unit
 - (4) Three flats: These will be constructed provided a site is obtained outside the project site
 - 2) To provide the following equipment.
 - (1) Laboratory equipment
 - (2) Teaching equipment
 - (3) Other necessary equipment
 - 3) The following will be subjected to future discussion.
 - (1) The expansion of laboratory space
 - (2) Large lecture hall (for 150 persons)
 - (3) Conference room (for 20 persons)
2. The following will be prepared by the Sri Lankan side.
 - 1) To provide a stock yard and other necessary space for construction work.
 - 2) To prepare the horse stable.
 - 3) To provide the boring data.
 - 4) To provide the survey map and the contour map of the project site.
3. The MRI requested that space will be left within the present MRI building site for the following;
 - 1) Four flats for MLT Quarters
 - 2) Garage and parking space for 35 vehicles
 - 3) Security post
 - 4) Snake room and space for 8 horses including a horse stable
 - 5) Audio-visual hall and conference room if these are not being constructed within this project

Colombo, August 20, 1987


DR. KEN-ICHI KOJIMA
Leader
The Basic Design Study Team
Japan International Cooperation
Agency (JICA)


DR. U.T. VIPARANA
Director
Medical Research Institute

4) The Draft Report

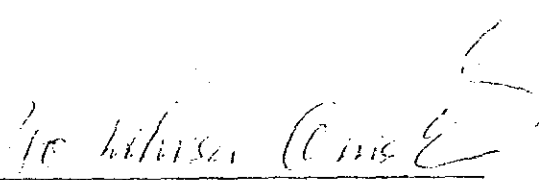
MINUTES OF DISCUSSIONS
ON
THE DRAFT REPORT OF THE BASIC DESIGN STUDY
ON
THE PROJECT FOR IMPROVEMENT AND EXPANSION
OF
THE MEDICAL RESEARCH INSTITUTE
IN
THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

At the request of the Government of the Democratic Socialist Republic of Sri Lanka for Grant Aid for the Project for Improvement and Expansion of the Medical Research Institute (hereinafter referred to as "The Project"), the Government of Japan decided to conduct a Basic Design Study on the Project and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent the Basic Design Study Team headed by Dr. Kin-ichi KOJIMA, Dean of College of Biomedical Technology, Niigata University to Sri Lanka from August 11 to August 31, 1987.

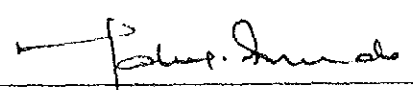
As the result of the survey and discussions, JICA prepared a Draft Final Report on the study and dispatched a Mission to explain and discuss the Report starting from November 12 to November 26, 1987.

Both parties had a series of discussions on the Report and have agreed to recommend to their respective Governments that the major points of understanding reached between them, attached herewith, should be examined towards the realization of the Project.

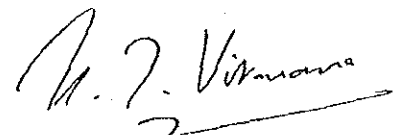
Colombo, November 24, 1987



DR. YASHIHISA ONISHI
Leader
The Basic Design Study Team
Japan International Cooperation
Agency (JICA)



DR. S.D.M. FERNANDO
Secretary
Ministry of Health



DR. U.T. VITARANA
Director
Medical Research Institute

ATTACHMENT

1. The Sri Lankan side principally has agreed to the basic design proposed in the Draft Final Report (with minor but appropriate alterations in design, facilities and equipment, mutually agreed upon to be incorporated in the Final Report).
2. The Final Reports (10 copies in English) on the Project will be submitted to the Sri Lankan side by December, 1987.
3. The Sri Lankan side understood the system of Japan's Grant Aid Programme and confirmed the arrangements to be taken by the Government of the Democratic Socialist Republic of Sri Lanka for the realization of the Project as agreed upon in the "Minutes of Discussions" dated August 19, 1987.
4. The Government of the Democratic Socialist Republic of Sri Lanka will release the necessary budget at the proper time in conjunction with the Japanese side construction.