

2-3 Basic Design

2-3-1 Design concept

The following design concept for the facility plan and the equipment plan were worked out on the basis of the natural conditions in Samoa, the actual situation of the project site, the results of the survey of the present situation of the local construction industry, the objective of this project, and the project implementing system of Samoa.

(1) Site Planning

- To preserve the existing trees and other natural resources.
- To take measures to prevent rainwater from flowing into the project site from the new SPREP headquarters facilities.
- To take into consideration the possibility of future extension on the northern side of the project site.
- To pay special attention to the surrounding environment by minimising site reclaiming area and to reduce the total project cost.

In accordance with the above-mentioned concept, the planned facilities are to be constructed on the southern part of the project site, using the northern part, which is likely to be affected by the inflow of rainwater, as a space for future extension of the facilities or as a parking space. As in the case of the new SPREP headquarters facilities, the planned facilities are to be arranged in parallel with the contour lines.

(2) Building Shape

- The building surface area should be minimal so that heat generation and loss may be reduced.
- The building should be rectangular with an east to west axis so that heat from solar radiation may be minimised.

- The building should be lower than the surrounding trees so that the surrounding forest landscape may not be destroyed.

In light of the above concept, it will be efficient and environment-friendly that the planned facility be of two-storied structure.

(3) Floor Planning

- In principle, at least two sides of each room should be open to the air, considering full use of natural lighting and natural ventilation.
- Some of the training rooms should be used also as meeting rooms or anterooms for lecturers, so that the rate of use of facility may be increased as much as possible.
- The training facilities should be located in a block different from those for the teaching material production room and the staff room.
- Spaces which give shade and which may be exposed to the open air should be secured, respecting the Samoan way of life and customs.

In accordance with the above concept, building should be provided with balconies, both on the southern side and on the northern side of the building. The passageways and the openings in the building should be provided with large awnings, which give shade and protect against heavy rainfalls. The ancillary facilities, such as the machine room and the toilets, should be located on the eastern or western end of the building. From the standpoint of functionality, it is desirable that the training rooms be located on the first floor, and the teaching material production room and the staff room, on the second floor.

(4) Increasing the Life of the Planned Facilities and Reducing the Quantity of Construction Waste

- To minimise the number of structural walls to cope with the future modification of room arrangement.

- To improve the renewability of facility equipment by simplifying equipment operating systems and minimising plumbing.
- To choose items of facility equipment which are highly durable and moisture-proof in light of the local climatic conditions and the level of equipment maintenance technologies available in the country.
- To choose highly reliable structure system to protect the planned facilities against natural disasters such as cyclones and earthquakes.
- To reduce the use of tropical lumber for concrete form work.

The building frame should be of reinforced concrete rigid frame structure, and the walls should be mainly reinforced concrete block walls, which do not require the use of wooden form.

(5) Reduction of Running Costs through the Use of Natural Energy and Energy-saving Methods of Construction

- To reduce the usage of city water through the use of rainwater
- To reduce the usage of air conditioners and lighting fixtures through the use of natural lighting and natural ventilation.
- To reduce the air-conditioning load through the introduction of building shapes suited for natural ventilation.
- To examine the possibility of introduction of partial use of solar batteries based on the results of a cost-effectiveness analysis.

In light of the above concept, each room should be provided with windows which are large enough for natural lighting and natural ventilation. It is also important to ensure that the ceilings are high enough to diffuse heat. The double-roof system and external louvers should be installed in order to reduce the air-conditioning load to result from strong solar radiation.

(6) Concept Relating to the Situation of the Local Construction Industry

Construction materials which can be procured in the country including only sand, gravel, ready-mixed concrete, lumber for concrete form and concrete

blocks. Finishing materials and aluminium sash are manufactured in the country, but they are mostly of poor quality. For this reason, general construction materials (finishing materials) should be those imported from other pacific-region countries, such as New Zealand, Australia and Fiji. There are many distributors of imported construction materials in the country. When a certain type of construction material is to be procured in large quantities, it will be more economical to import such construction material directly from the third country. In light of such situation of the local construction industry, in principle, construction materials and construction methods which are widely used in the country should be used. In procuring such construction materials, those which are readily available in the country should be chosen.

2-3-2 Basic Design

(1) Site Utilising Plan

1) Site Planning

From the standpoint of convenience and difference in ground level, it is desirable that all the planned facilities be located on the southern side of the project site. In consideration of the proper space between two adjoining buildings, however, the building should be located about 15 meters apart from another buildings. As many as possible of the plants growing on the northern side of the project site should be preserved.

2) Connection to the New SPREP Headquarters Facilities

The planned Centre is to be connected to the new SPREP headquarters facilities by means of roofed connecting corridor. It is imperative for the project implementing organisation to pay special attention to the convenience of physically handicapped persons since the organisation is expected to actively promote public welfare. For example, all the roofed connecting corridor should be provided with ramps.

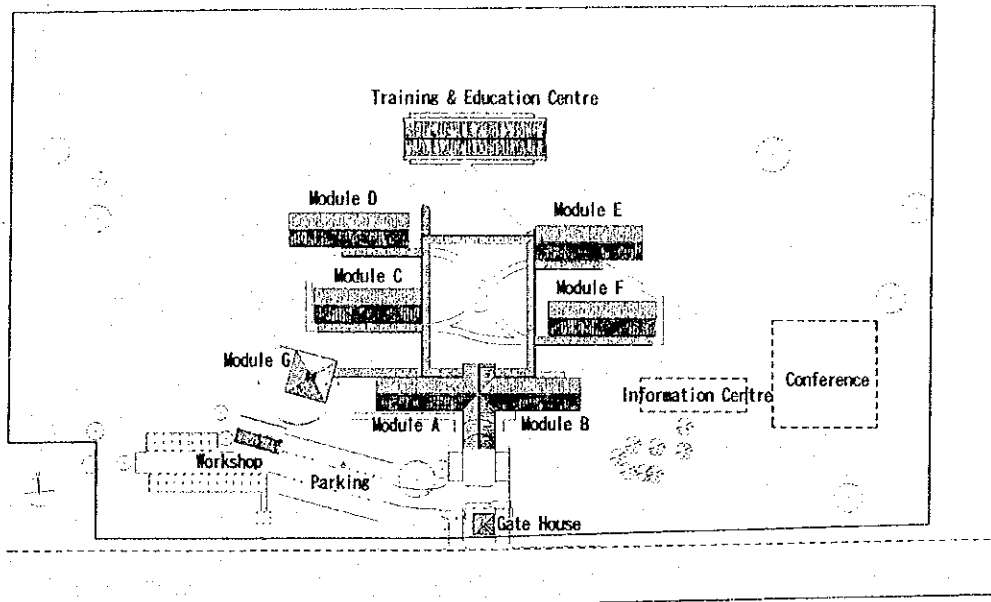


Fig.2-3 Site Plan

(2) Architectural Planning

1) Floor Planning

From the standpoint of harmony with the new SPREP headquarters facilities, the planned facilities should be rectangular in shape and arranged in parallel with the new SPREP headquarters facilities. The span should be 3.6 meter-grid span which is same as the new SPREP headquarters facilities.

The training facilities where utilised by outside trainees, are to be located on the first floor, and those for the SPREP's staff members, on the second floor.

In light of the nature of this project, the balconies are to face the botanical garden in a lot bordering the project site on the north so that both the staff members and the trainees may enjoy a sight of tropical ecosystem.

2) Section Planning

In working out the section planning, special attention should be paid to effective use of natural ventilation and natural lighting, avoidance of direct solar radiation and protection against rainwater. The floor height should be four meters so that enough air volume for comfortable indoor environment may be secured. The roofs should be the same metallic gabled roofs as the new SPREP headquarters facilities for the sake of harmony and continuity in external appearance of buildings.

The double-roof system, in which roof frames are placed on concrete slabs, is to be employed so that the planned facilities may be well insulated.

The following table shows floor spaces of the main rooms and the reasons for determining floor spaces.

Table 2-13 Floor Area Schedule

Room name	Area (m ²)	Nos. of User	Remarks
Large Training Rm.	120	50	50psn. × 2.4m ² /psn. = 120 m ²
Training Rm. (1)	69	30	Utilise large training room with movable partition
Training Rm. (2)	51	20	Utilise large training room with movable partition
Small Discussion Rm.	18 × 2	10	10psn. × 1.5 m ² /psn. = 15 m ²
Computer Lab.	68	16	16psn. × 4.25 m ² /psn. = 68 m ²
Staff Rm. (1)	124	14	9psn. × 13 m ² /psn. + (common space) 7 m ² = 124 m ²
Staff Rm. (2)	65		
Entrance Hall	36	5	Passage 18 m ² + Exhibition 18 m ²
Multi-Media Production Rm.	41	3	By equipment arrangement
Recording Booth	13	2	By equipment arrangement
Reception/repairation	18	1	By equipment arrangement
Server Rm.	12.5	—	By equipment arrangement
Mapping Rm.	12.5	1	By equipment arrangement
Fire-proof Store	15.5	—	Store video tapes, equipment, publication etc.
Store	15.5	—	Store Stationary, paper, etc.
Pump Rm.	4	—	
Elec. Rm. 1	5	—	
Elec. Rm. 2	4	—	
Sub total	590		

Room name	Area (m ²)	Nos. of User	Remarks
Corridor, Toilet, Pantry	338		
Total Building Floor Area	928		1 st Floor 464 m ² , 2 nd Floor 464 m ²
Connecting Corridor (1)	40		1/12 slope ramp for handicapped person
Connecting Corridor (2)	52		
Grand Total	1,020		

3) Structural Planning

- Outline of the Structure

The planned building is to consist of general training rooms, computer laboratory/training room, multi-media/video production room, staff room, a mapping room and other rooms. The basic span for the building is 3.6m x 9.0m, the floor height being 4.0m. The planned facilities are to be connected to the new SPREP headquarters facilities by means of roofed connecting corridor provided with ramps.

- Foundation System

According to the results of the geological investigation of the project site, which was conducted during the field survey, the project site has a volcanic silty clay layer with basalt at 0.5 to 2.5 meter below ground (N values: 18 at a depth of 1.0 meter, 35 at a depth of 2.0 meters). It also has a basaltic layer at more than 2.75 meters below ground (N values: 50 and over). Since the planned building is a two-storied building, the foundation system of the planned building should be strip foundation with a supporting layer at 1.0 to 1.5 meters below ground. The supporting layer will have a satisfactory allowable bearing capacity of 15.0 to 20.0 t/m².

- Superstructure

Judging from the size, workability and economic efficiency of the

planned building (two-storied building) as well as the local natural conditions (earthquakes, cyclones, etc.), the superstructure of the planned building should be reinforced concrete rigid frame structure. The walls should be reinforced concrete blocks from the standpoint of the workability and economic efficiency of the planned building as well as preservation of the natural environment. The floor structure of the first floor should be suspended slab, from the standpoint of moisture-proofing and prevention of crack damage due to subsidence of earth refilled.

- Structural Standards

Specifications (live load, seismic coefficient, coefficient of wind force, etc.) to be used in the structure analysis of the planned building should be based on the National Building Code for Western Samoa. Standards applicable for design of section member shall be in accordance with the Building Standards Act of Japan and Standards for Reinforced Concrete Structural Calculation and the Commentary, AIJ.

4) Utility Planning

① Electrical Facility Planning

- Power Substation

A service line will be connected to the 6.6 kV elevated electric power line installed along Avele Road via a trolley pole installed inside the project site. Electric power is to be distributed to the low-tension panel board installed in the workshop via a cable laid underground after its voltage is reduced to 415V/240V with a pad mount transformer (500kVA).

It should be noted that the Government of Samoa is to carry out the work to procure and install the pad mount transformer and the wattmeter (including attachments) at its own expense.

Power receiving system : 3 ϕ 3W 6.6kV
 Low-tension electricity system: 3 ϕ 4W 415-240V
 Transformer capacity : 250~500kVA

The generator (77kVA) is to be relocated from the existing SPREP headquarters to new SPREP headquarters building as a means to protect against power failures and voltage fluctuations. The generator is to cover the computers, communications equipment and 20% of general lighting fixtures. For items of equipment which require more stable power sources are to be provided individually with a static voltage regulator with high response speed.

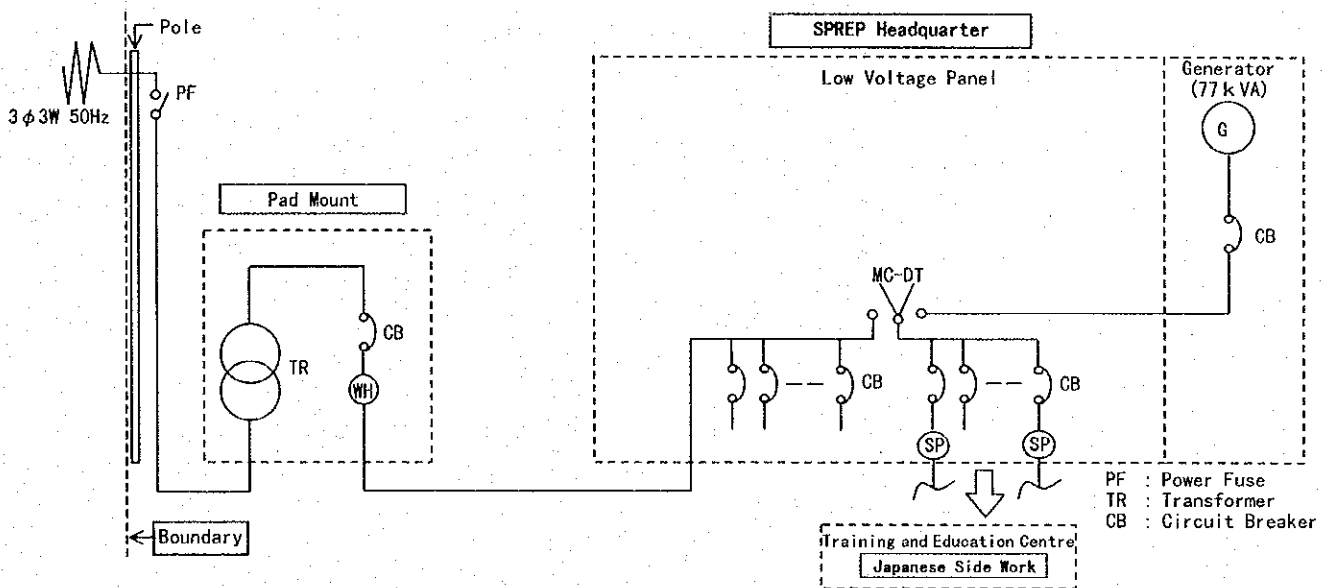


Fig.2-4 Diagram of Electric Power Supply

- Main Line Feeder Power Equipment

Electric power is to be supplied to the power distribution board and the power control board in each building through the low-tension power board installed in the power distribution room. The main line feeders between two adjoining buildings is to be laid underground.

The main line feeder voltage are as follows.

Motor power : 3 ϕ 3W 415V

Electric lights, wall outlets : 3 ϕ 4W 240V

- Electric Lights, Wall Outlets

- a) Lighting Equipment

The light source for use with the lighting fixtures are mainly to be fluorescent lights. Energy-saving type switches suited for the uses of the rooms shall be installed.

The target illumination values for the main rooms are as shown in the following table.

Table 2-14 Target Illumination Level

Room name	Illumination level
Training Room	300
Computer Laboratory	500
Staff Room	300
Storage	100

- b) Wall Outlets

Proper types of wall outlets are to be installed throughout the planned facilities. Specifications for these wall outlets should be based on NZS198.

- Telephone System

A lead-in wire from the PBX installed in Module E building is to be connected to the elevated telephone wire installed along Avele Road. Pipes to house telephone wires are to be laid underground. In principle, extension circuit lines from the PBX in Module E building are to be connected to the extension outlets in each room via the terminal board installed in the proposed centre. The existing switchboard is to be reused. Telephones are to be installed in the main rooms, such as training rooms, the computer rooms and the staff rooms.

- Fire Alarm System

For early detection of fires and quick evacuation, an automatic fire alarm system is to be introduced. The receiver, which is already installed in the guard house, is to be connected to the relay terminal board installed in Module E building.

② Air-conditioning/Ventilating Equipment Plan

In consideration of the costs required for the maintenance, management and troubleshooting of air conditioners, separate-type air-cooled air conditioners are to be installed. The spaces to be air-conditioned should be minimal so that the construction and running costs may be kept to a minimum.

- Design Temperature and Humidity

a) Design Outdoor Temperature and Humidity

Dry-bulb temperature 30.3°C DB

Relative humidity 80%RH

b) Design Indoor Temperature and Humidity

Dry-bulb temperature 26°C DB

Relative humidity Not specified

- Air conditioners

Separate-type air-cooled air conditioners are to be installed. The facilities to be air-conditioned are as shown in the following table.

Table 2-15 Rooms to be Air-conditioned

Rooms to be Air-conditioned
computer Laboratory, Server Rm., Staff Rm., Fire-proof Store, Mapping Rm., Multi-media Production Rm., Store

- Ventilating Equipment

In principle, the planned facilities are to be ventilated by means of natural ventilation. Some of the rooms and all of the toilets are to be equipped with ventilators to discharge offensive odors and heat. Each of the training rooms is to be equipped with ceiling fan.

③ Water Supply and Sanitary Plan

- Water Supply Equipment

A water main with a diameter of 50mm is installed along Avele Road. A service pipe with a diameter of 40mm is to be connected to the water main. City water supplied via the service pipe is to be stored in a water tank before being supplied to each building. At the proposed training centre, which is also likely to be affected by water shortages during the dry season, rainwater should be used for cleaning and other purposes. Rainwater falling on the roofs is to be stored in a water tank and then supplied with a water supply pumping unit. Both city water and rainwater should be supplied through filters since they are likely to contain foreign bodies.

The water supply plan is as shown below.

Number of user:	Staff members	15
	Trainees	60

Quantity of water supplied:

	Staff members	100 l /day · person
	Trainees	60 l /day · person

Planned total quantity of water supplied:

$$15\text{persons} \times 100 \text{ l /day} \cdot \text{person} + 60\text{persons} \times 60 \text{ l /day} \cdot \text{person}$$

$$= 5,100 \text{ l /day} \approx 5\text{m}^3/\text{day}$$

Thus the capacity of the water tank to store city water is 15m³/day.

- Drainage

As there are no public sewers in and around the project site, waste water from the planned buildings is to be treated in septic tanks installed in the project site. The total capacity of the septic tanks to be installed under this project will be the same as that of the existing ones. It has been requested, however, that the total septic tank capacity be doubled in order that the septic tanks may cover the training building as well. Treated waste water is made to permeate the soil since there is no place to which treated waste water can be discharged. Waste water from the planned buildings is to merge with sewage and other waste water. The plumbing method should be compliant with the standard set by the Ministry of Public Works.

- Sanitary System

Toilets, urinals and washstands of such types as are widely used in the country are to be procured under this project.

5) Construction Material/Equipment Plan

In consideration of the local climatic conditions, customs and construction methods, construction materials which are highly durable and economical are to be chosen.

Basically, construction materials which are the same as those which are used for the new SPREP headquarters facilities are to be procured whenever possible to facilitate future maintenance, including the stockpiling of repair materials and expendables.

① Main Structural Materials

The main structural materials are as shown in the following table.

Member	Materials	Remarks
Beam, Girder Column Slab Foundation	Reinforced Concrete	Ready-made concrete of fine quality is available in the country
Roof truss	Light weight steel truss	Steel frames of high quality are imported from New Zealand. These steel frames are always in plentiful supply.
Wall	Concrete Block	Concrete blocks are used widely in the country. They excel in workability. Fijian-made concrete blocks are of high quality and are therefore most in demand.

② Exterior Finishing Materials

The main exterior finishing materials are as shown in the following table.

Member	Materials	Remarks
Roof	Coloured steel corrugate plate	Iron roofs are used so widely in the country, but they are short-lived. Factory-painted steel roofs, which are better in quality, are to be procured under this project.
Exterior Wall	Resin paint	As in the case of the new SPREP headquarters facilities, this exterior wall finishing material, which is in widespread use, is to be chosen.
Doors & Windows	Aluminium	In light of high humidity and frequent cyclones, aluminium furniture which is highly moisture-proof and waterproof is to be procured.

③ Interior Finishing Materials

The main interior finishing materials are as shown in the following.

Main Rooms	Floor	wall	Ceiling	Remarks
Training Rm., Entrance Hall, Multi-media Production Rm.	Floor tile	Resin paint	Mineral acoustic tile	As evidenced through the construction work for the new SPREP headquarters facilities, this material is highly durable and economical.
Computer laboratory	Access floor with carpet tile	Resin paint	Mineral acoustic tile	These materials excel in terms of ease of computer wiring and equipment replacement.
Recording Booth	Carpet tile	Perforated steel/ acoustic	Perforated steel/ Acoustic	This material was chosen because it excels in sound absorption.
Toilet	Mosaic tile	Porcelain tile	Fibre cement board	This material was chosen because it is highly durable, water-resistant and easy to clean.

6) Equipment Plan

Considering the request by Samoan Government, SPREP's activities in the past and future action plan, the items and their appropriate quantities which are required for this project were examined.

The equipment for this project are broadly divided into the following categories.

1. Equipment for training rooms
2. Equipment for multi-media materials production
3. Equipment for computer training
4. DTP equipment
5. Equipment for information technology
6. Equipment for GIS/RS and mapping
7. Common equipment

The result of the examination for the main items of each categories are as shown below.

① Equipment for Training Rooms

- Seminar tables/chairs, Whiteboard

Necessary numbers of seminar tables/chairs and whiteboards will be installed in each of the training rooms. A wall-mounted whiteboard is also to be installed in each training room.

- LCD projector, Video cassette Recorder, Audio mixer

A set of audio visual equipment is planned to be installed in the training room since those items are considered to be indispensable for seminars/workshops proceeding with video and audio materials. SPREP owns many teaching materials which were developed by the

National University of Samoa (NUS), the University of the South Pacific (USP) and other international organisations as well as those which were developed by SPREP itself. These teaching materials will be able to be used with such a planned equipment. LCD projector, which should be a 3LCD type will be set up on a movable rack along with a video cassette player and an audio mixer.

- Roll screen

A roll screen on which video image is projected will be installed in each training room. The size of projection area of the screen will be about 100 inches, and can be rolled up and down manually.

② Equipment multi-media material production

- Video Editing Equipment

Basic items of equipment required for the production of video teaching materials are planned to be installed in multi-media production room. The equipment chosen for this purpose should suite for non-linear editing method which is popular and widely adopted at related organisations in Samoa such as NUS and USP. This editing method, which utilises commercial application software for video editing, is easy to operate and helps to minimise the number of costly equipment such as video cassette recorders.

The system is basically consist of a personal computer (workstation), video cassette recorders, monitor TVs, audio-mixer, etc. Two different types of video cassette recorders, one is for analogue format such as VHS/S-VHS and the other is digital format which is expected to come into widespread use, will be included in this system considering flexible use of the equipment.

Since the SPREP's staff in charge of operation of these items (information/publishing technical officers) has sufficient

experience of video editing using similar systems owned by the related organisations, there will be no problem in operation.

- Equipment for recording booth

Audio visual materials developed by SPREP, as a general rule, are translated into some different languages except English such as French, Samoan, Vanuatu, etc. For this reason, a monitor TV, speakers, an announcer's table and a microphone will be provided in the recording booth.

- Equipment for electronic field production

A video camera (mini-digital format, provided with a tripod) and a portable videotape recorder with accessories are planned for collection of visual and audio source.

③ Equipment for computer training

- Personal Computers

Fifteen (15) sets of personal computers for the trainees, one (1) set of personal computer for the lecturers and a UPS to protect data against power failures will be installed in the computer training room. Also one (1) each of the laser printer (A3 size) and the colour printer (A3) will be provided for use in common.

SPREP, a member of the ITPacNET which is a Pacific information network comprising the various organisations of the neighbouring island countries, has procured many computers complying with the standard recommended by ITPacNet. The recommended specifications for desktop computers and server by as of April 1999 are as follows.

Table 2-16 Recommended specifications for the computers by ITPacNET

	Desktop type computer	Server
Processor	Pentium III, 400MHz	Pentium III, 600MHz
SDRAM	128MB	256MB
HDD	8GB	18GB
Display	Min. 15" (colour)	Min. 15" (colour)
Video memory	8MB	8MB
CD-ROM drive	32X	40X
Backup device	Not necessary	By HDD or tape
OS	Windows 95 or equivalent	Windows NT 4.0 equivalent

The recommended specifications are considered to be at the general level to compare with those of personal computers in the local market of Samoa. Therefore, the level of the computers planned for this project should refer to this recommendation. This may also contribute to promote the development of a common computer communication environment within the related neighbouring organisations.

Software applied to the computers for this category will include two different operating systems (one for network computers and the other for servers), and the application software suitable for documentation, tabulation, database development, communications and network management, all of which are required for computer training.

④ DTP equipment

- Personal computer (work station), Colour Printer

A personal computer (workstation) including software for DTP such as paging software, photographic data processing software and a colour printer for editing teaching materials, textbooks for training, etc. will be installed in the multi-media production room.

⑤ Equipment for information technology

- A computer server connected with other computers within the centre is planned to be installed in the server room for data management/backup. This server also will be used for training on information technology. In consideration of the estimated size of handled data, two hard disks, each with a capacity of about 18 GB, will be mounted on the server. Also, for the purpose of data saving, a cassette-type backup device is planned to be attached to the server in accordance with the recommendation of ITPacNET.

⑥ Equipment for Use in GIS/RS and Mapping

- Personal computer (work station), digitizer, colour Printer

SPREP established the Pacific Environment and Natural Resource Information Centre (PENRIC) in the early 1990s with the financial assistance of the United Nation Environment Program (UNEP), and has utilised the Geographical Information System/Remote Sensing (GIS/RS) technology for the purpose of analysing geographical data (such as information on the sea-level raising due to climate change) and mapping. In 1997, SPREP launched training programmes on GIS/RS and mapping. At present, maps of A1 size are mainly developed at SPREP. Due to the superannuating of the equipment, however, SPREP finds it difficult to carry out activities smoothly. For this reason, a personal computer (work station) to analyse geographical data, a digitizer for data entry, and a colour printer to print out maps are to be installed in the mapping workshop.

⑦ Common equipment

- Photocopier

A photocopier, with printing capacity of about 45 sheets/min. (at A4 size) attached with a document feeder and a sorter, to duplicate

teaching materials, brochures and other documents for training will be installed in the workshop secretariat room.

The data processing equipment for this project is planned to be connected to each other through LAN as shown below.

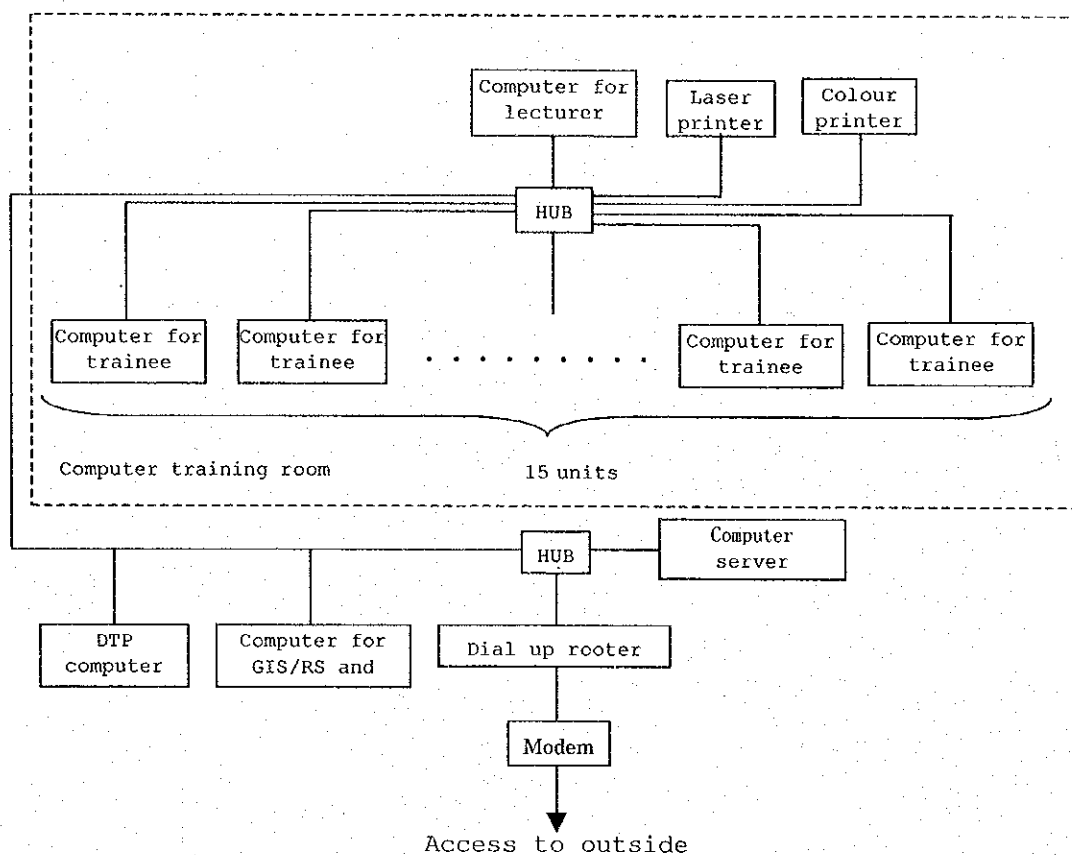


Fig.2-5 System diagram of data processing equipment for the project

Table 2-17 shows the specifications and usage of the main items of planned equipment this project as a result of the examination.

Table 2-17 Outline of specification and usage of the main equipment

Equipment	Outline of specifications	Usage
<Equipment for training rooms>		
• LCD projector	3LCD panels, single lens Resolution: 1,024x768pixels Brightness: 600ANSI Lumen	For projection of video materials
• Video presentation stand	Camera:1/3", CCD Stage size: 320x240mm Zoom: X12	For projection of printed matters
• Overhead projector	Screen size: 285x285mm Lamp: Halogen	For projection of transparent materials
• Roll up screen	Size of projection area: 100" Manually rolling up/down	For projection of video materials

Equipment	Outline of specifications	Usage
• Audio system	Component: Video cassette recorder, audio mixer, speaker, microphone, etc.	To amplify sound of audio and video materials, and record the content of seminars/workshops
<Equipment for multi-media materials production>		
• Personal computer for video editing	processor: 600MHz Memory(RAM): 256MB HDD: 18GB Display: 19" Including software	For editing video source
• VCR for editing (analogue format)	Format: S-VHS,VHS Resolution: 400lines(S-VHS) 240lines(S-VHS) With remote controller	Ditto
• VCR for editing (digital format)	Applicable format: All the digital format With remote controller	Ditto
• VCR for dubbing	Format: S-VHS,VHS Resolution: 400lines(S-VHS) 240lines(S-VHS)	For dubbing video material to distribute to related Organisations.
• Video camera	Format: Mini DV With LCD display	For collection of video source in the field
• <Equipment for computer training>		
• Personal computer for trainee	Processor: 500MHz Memory(RAM): 128MB HDD: 8GB Display: 15" Including software	Used for computer training
• <DTP equipment>		
• Personal computer for DTP/colour printer	Processor: 600MHz Memory(RAM): 256MB HDD: 16GB Display: 19" Including software Colour printer: A3size	For editing and printing teaching materials, text books, etc.
• Digital camera		For taking photographs for editing printed matters
• <Equipment for information technology>		
• Computer server	Processor: 600MHz Memory(RAM): 256MB HDD: 18GBx2 Display: 19" Including software	For data management/backup of training data
• <Equipment for GIS/RS and mapping>		
• Personal computer	Processor:600MHz Memory(RAM):256MB HDD:18GB Display:19" Including software	For analysis of GIS/RS data
• Colour printer	Printing method: Inkjet Max. size of handling paper:A1	To output maps
• <Common equipment>		
• Photocopier	Applicable paper size:A5-A3 Printing speed:45/min. With document feeder and sorter	For duplicating teaching materials and other documents for training

The necessary equipment for this project is shown in the following list.

Table 2-18 Equipment List

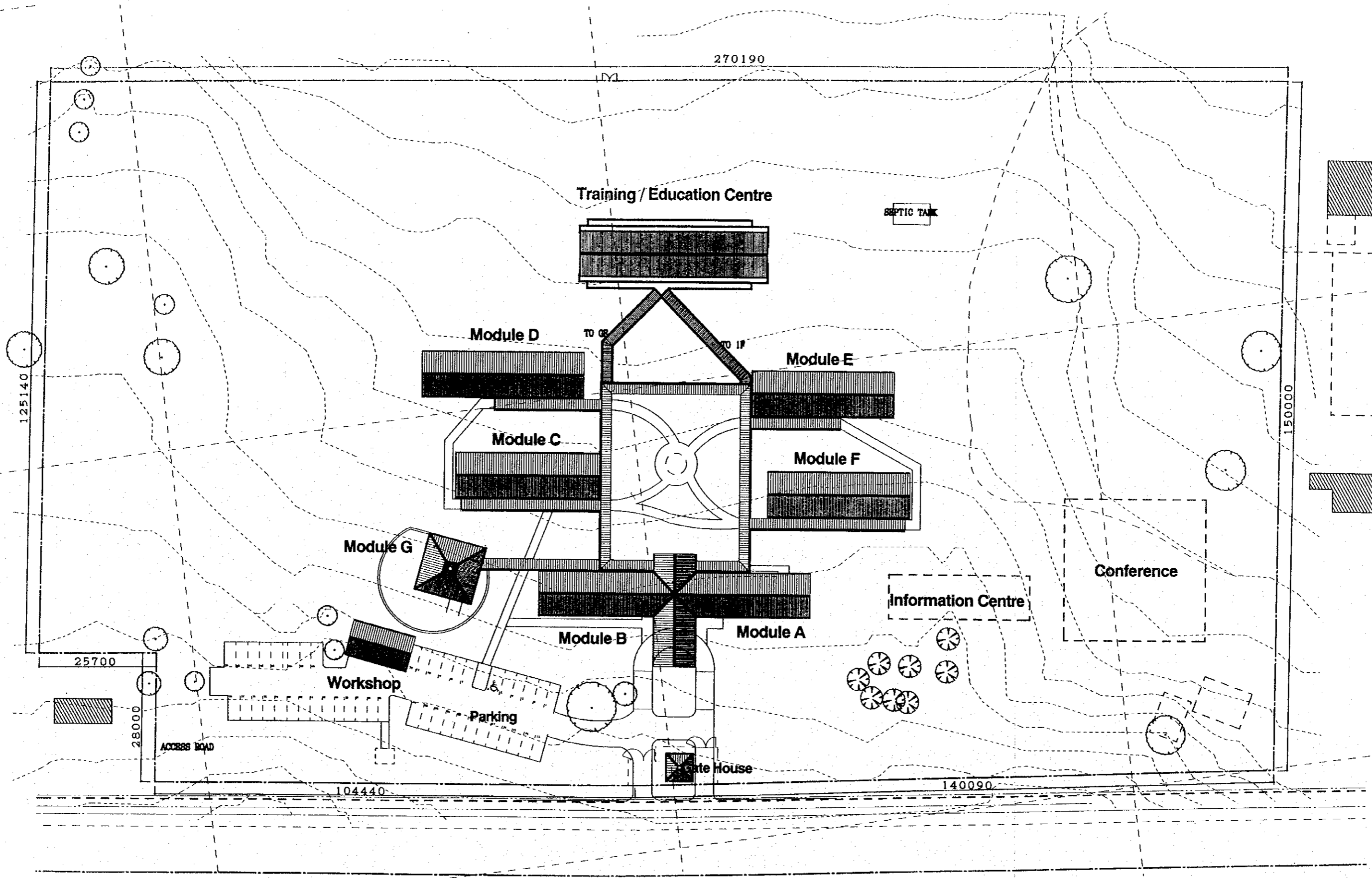
No.	Name of Equipment	Quantity
	<Equipment for Training Rooms>	
	1. Training Room (2 rooms)	
A-1	Seminar Table	24 units
A-2	Seminar Chair	48 units
A-3	Table for Lecturer	2 units
A-4	Chair for Lecturer	2 units
A-5	LCD Projector	1 unit
A-6	Roll Screen (Manual type, Mounted type)	2 units
A-7	Video Presentation Stand	1 unit
A-8	Overhead Projector	1 unit
A-9	Screen (Movable type)	1 unit
A-10	Video Cassette Player	1 unit
A-11	Sound System	1 set
A-12	Whiteboard (Wall mounted type)	2 units
	2. Small Group Discussion Room (2 rooms)	
A-13	Seminar Table	8 units
A-14	Seminar Chair	22 units
A-15	Whiteboard (Movable type)	2 units
A-16	Monitor TV Set	1 set
	3. Training Store Room	
A-17	Storage Cabinet	6 units
A-18	Storage Rack	9 units
	<Equipment for Multi-Media Materials Production>	
	1. Multi-Media Facilities	
B-1	Personal Computer for Video Editing (Software included)	1 unit
B-2	VCR for Editing	2 units
B-3	Monitor TV	2 units
B-4	CD Player	1 unit
B-5	Audio Cassette Tape Recorder	1 unit
B-6	Audio Mixer	1 unit
B-7	Monitor Speaker	2 units
B-8	VCR for Dubbing	1 unit
B-9	Equipment Table	2 units
B-10	Work Table (For 4 persons)	1 unit
B-11	Work Chair	6 units
B-12	Storage Cabinet	5 units

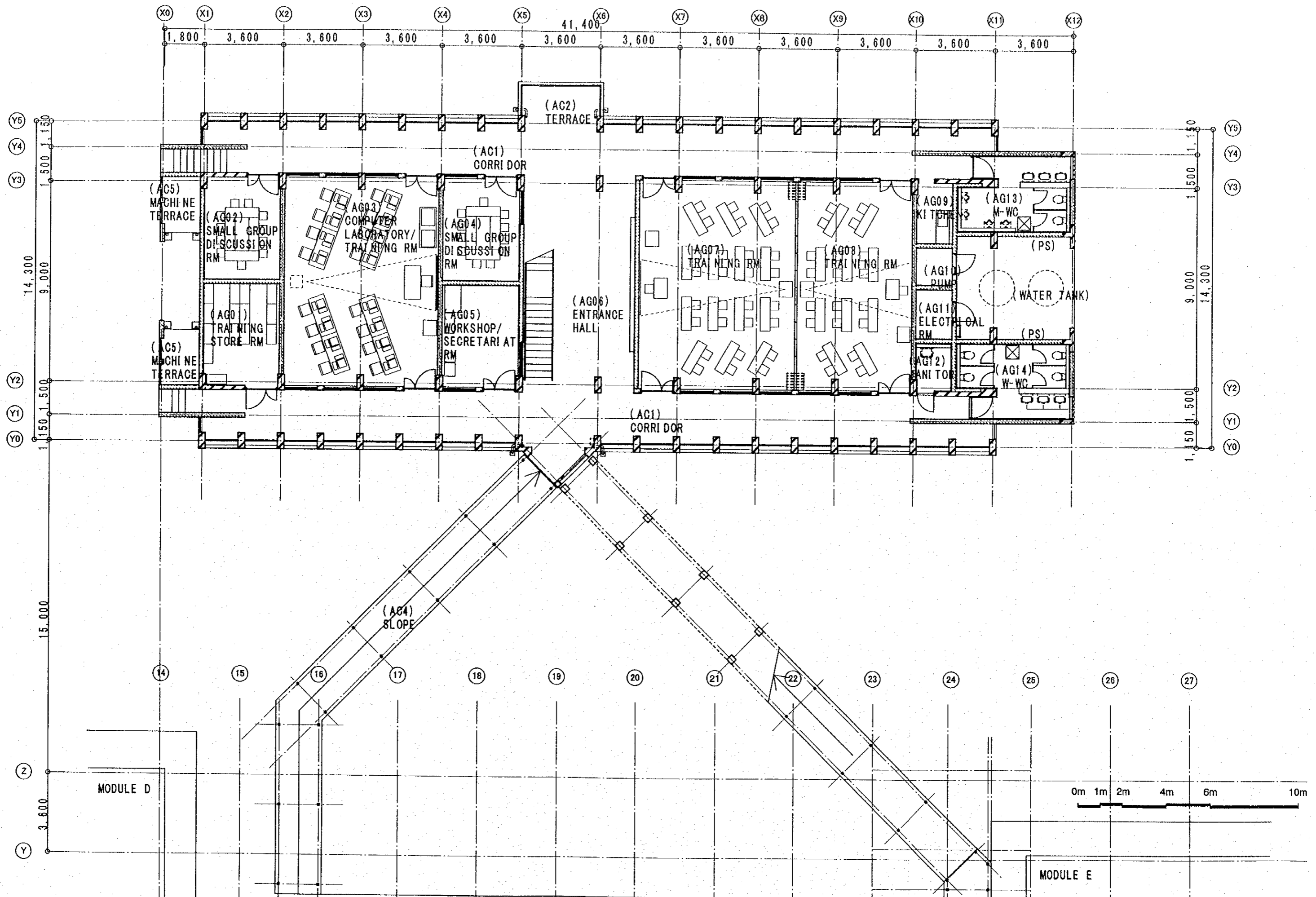
No.	Name of Equipment	Quantity
B-13	Storage Rack	5 units
	2. Recording Booth	
B-14	Monitor TV	1 unit
B-15	Monitor Speaker	2 units
B-16	Table for Announcement	1 unit
B-17	Microphone	1 unit
B-18	Cough Box	1 unit
B-19	Work Chair	2 units
	3. Electronic Field Production (EFP)	
B-20	Video Camera (Tripod, Case included)	1 unit
B-21	Portable Tape Recorder	1 unit
	<Equipment for Computer Training>	
	1. Computer Laboratory	
C-1	Personal Computer for Trainee (Software included)	15 units
C-2	Personal Computer for Lecturer (Software included)	1 unit
C-3	Laser Printer (B/W, A3)	1 unit
C-4	Colour Printer (A3)	1 unit
C-5	UPS	1 unit
C-6	Computer Table	9 units
C-7	Table for Lecturer	1 unit
C-8	Computer Chair	1 unit
C-9	Chair for Lecturer	1 unit
C-10	LCD Projector	1 unit
C-11	Roll Screen (Manual type, Mounted type)	1 unit
C-12	Whiteboard (Wall mounted type)	1 unit
	<DTP Equipment>	
	1. Multi-Media Facilities	
D-1	Personal Computer for DTP (Software included)	1 unit
D-2	Colour Printer (A3)	1 unit
D-3	Digital Camera	1 unit
D-4	35mm Camera	1 unit
D-5	Equipment Table	2 units
D-6	Work Chair	2 units
	<Equipment for Information Technology>	
	1. Server Room	
E-1	Computer Server (Software included)	1 unit
E-2	Equipment Table	2 units
E-3	Work Chair	2 units

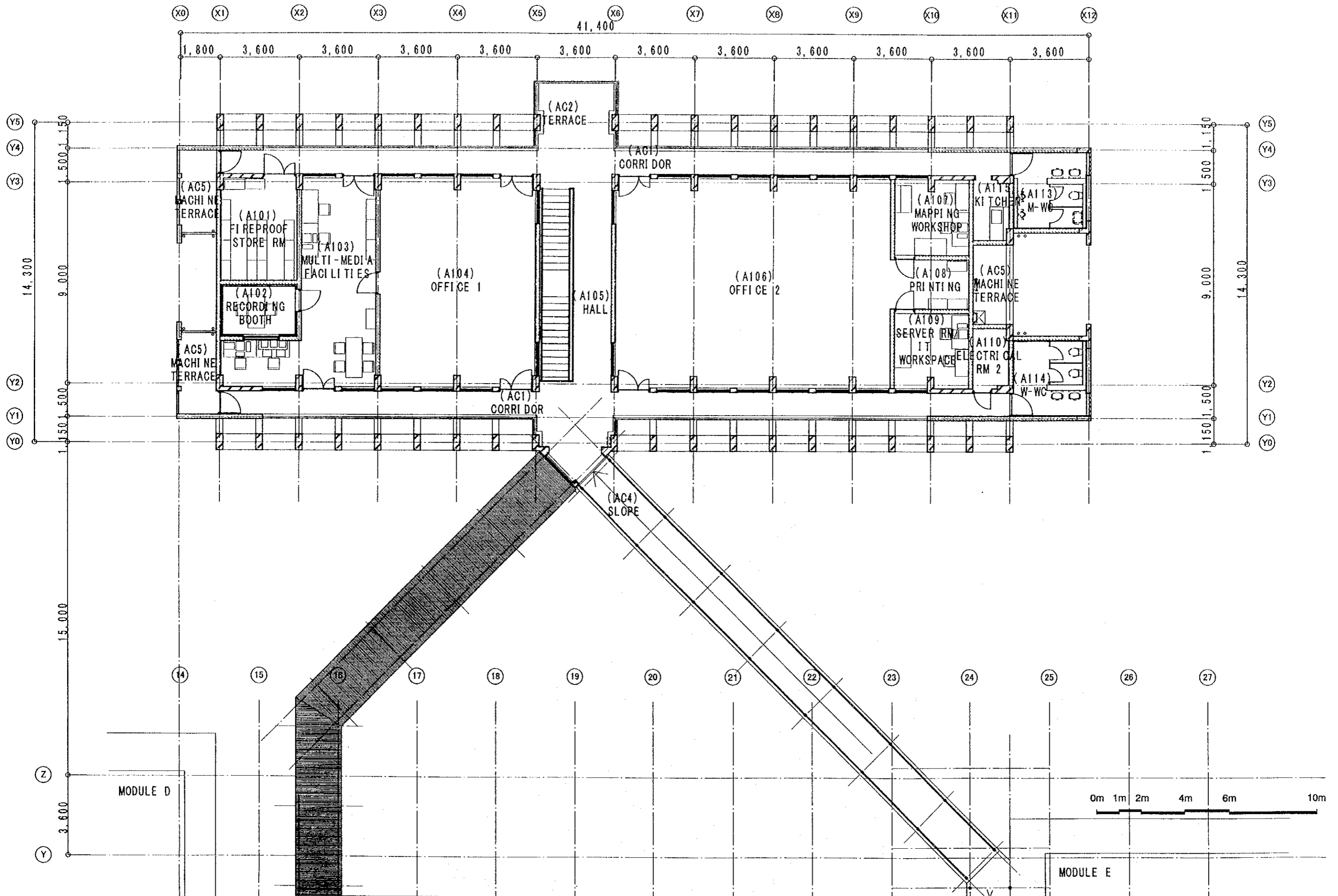
No.	Name of Equipment	Quantity
E-4	Storage Cabinet	1 unit
	<Equipment for GIS / RS and Mapping>	
	1. Mapping Workshop	
F-1	Personal Computer for GIS/RS and Mapping (Software included)	1 unit
F-2	Digitizer (A1)	1 unit
F-3	Colour Printer (A1)	1 unit
F-4	Equipment Table	2 units
F-5	Work Chair	2 units
F-6	Map Cabinet	1 unit
	<Common Equipment>	
	1. Workshop / Secretariat Room	
G-1	Photocopier (A3)	1 unit
G-2	Equipment Table	1 unit
G-3	Work Chair	1 unit
G-4	Storage Cabinet	1 unit
	2. Fireproof Store Room	
G-5	Storage Cabinet	15 units
	3. Printing Corner	
G-6	Storage Rack	1 unit

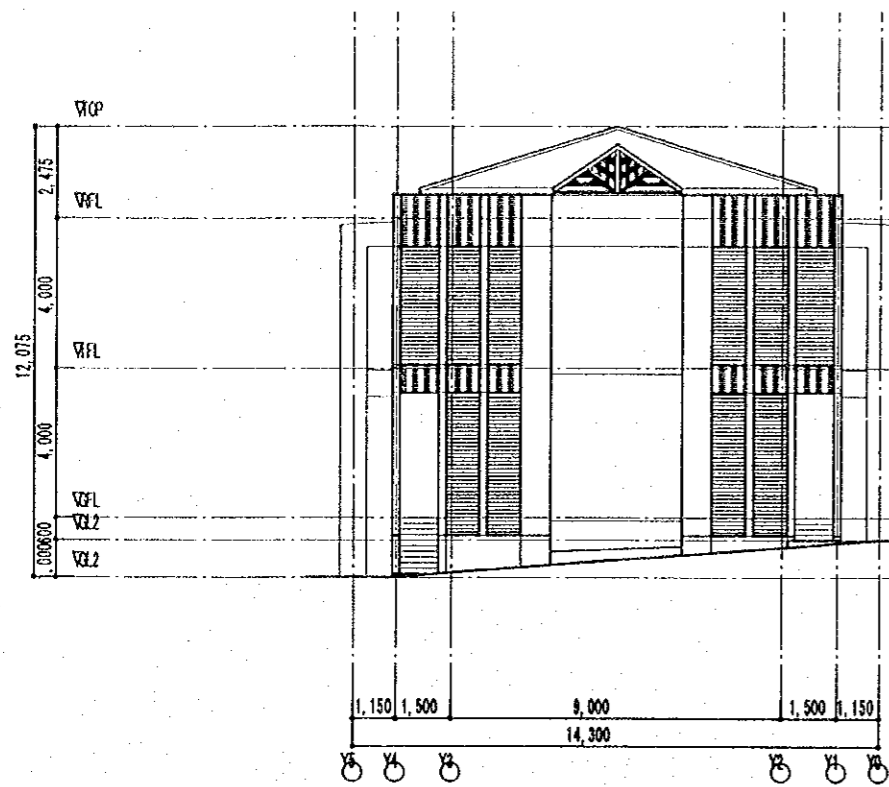
(6) Preliminary Drawings

1. Site Plan
2. Floor Plan for the First Floor
3. Floor Plan for the Second Floor
4. Section
5. Elevation

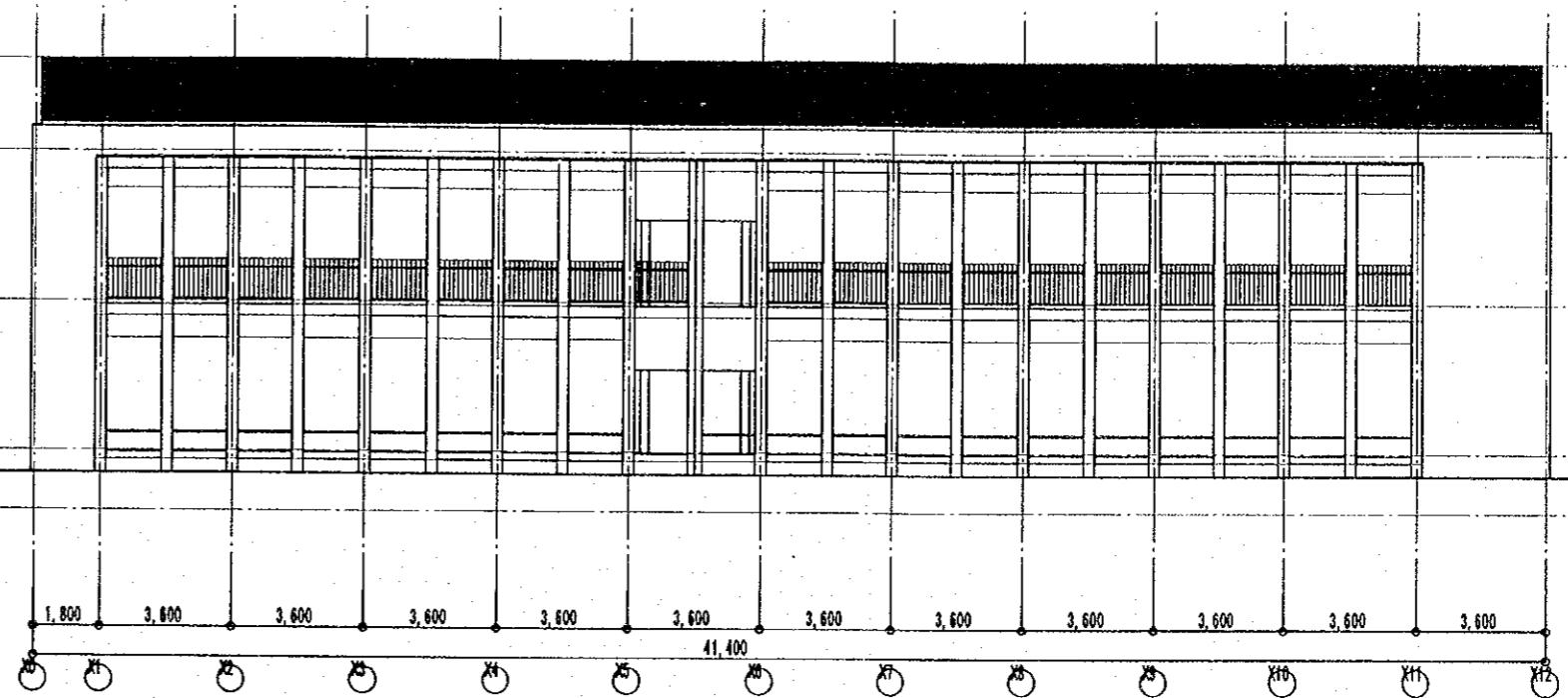




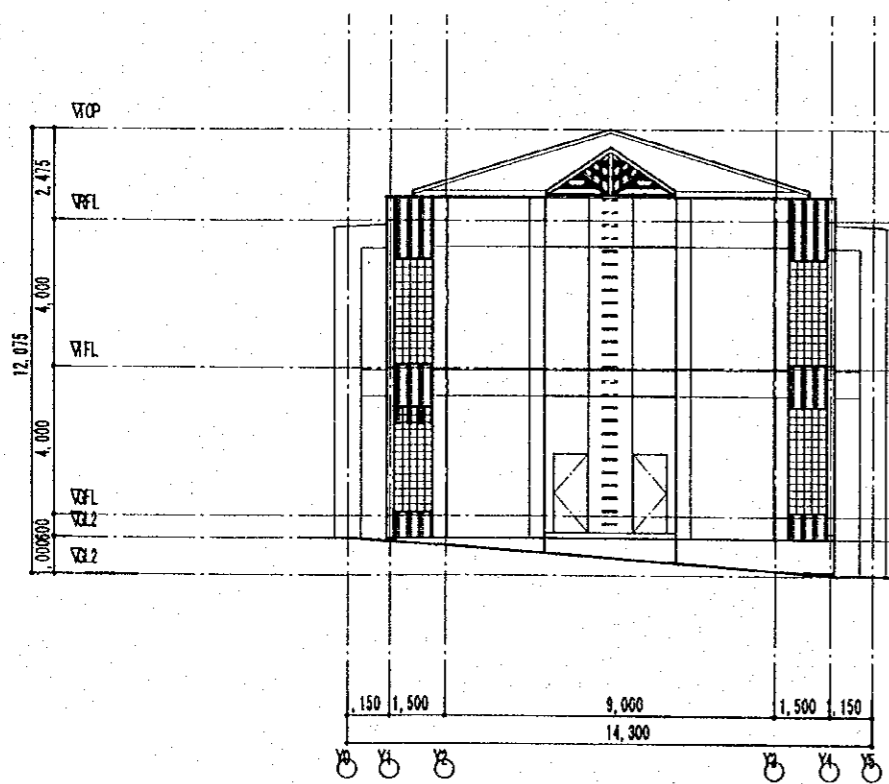




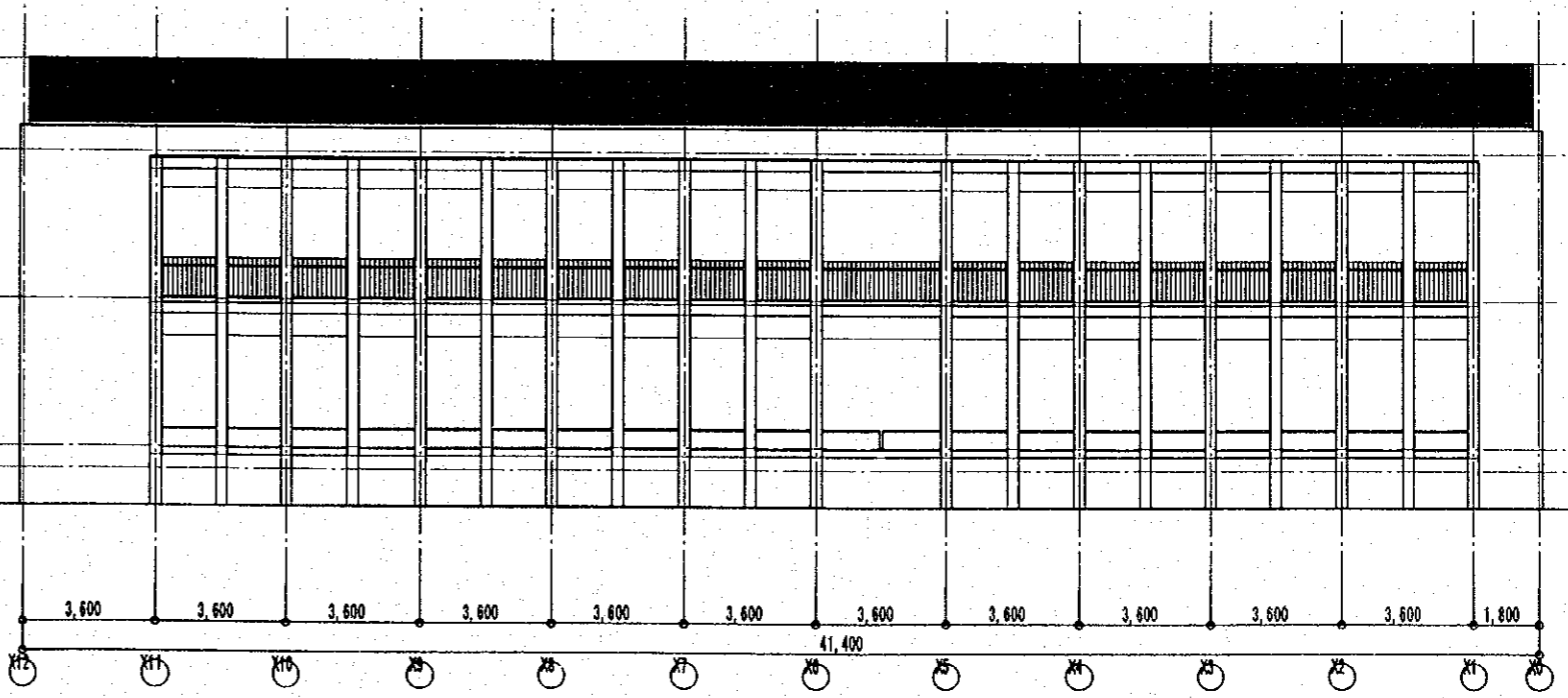
West Elevation



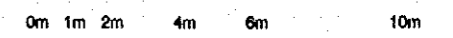
South Elevation

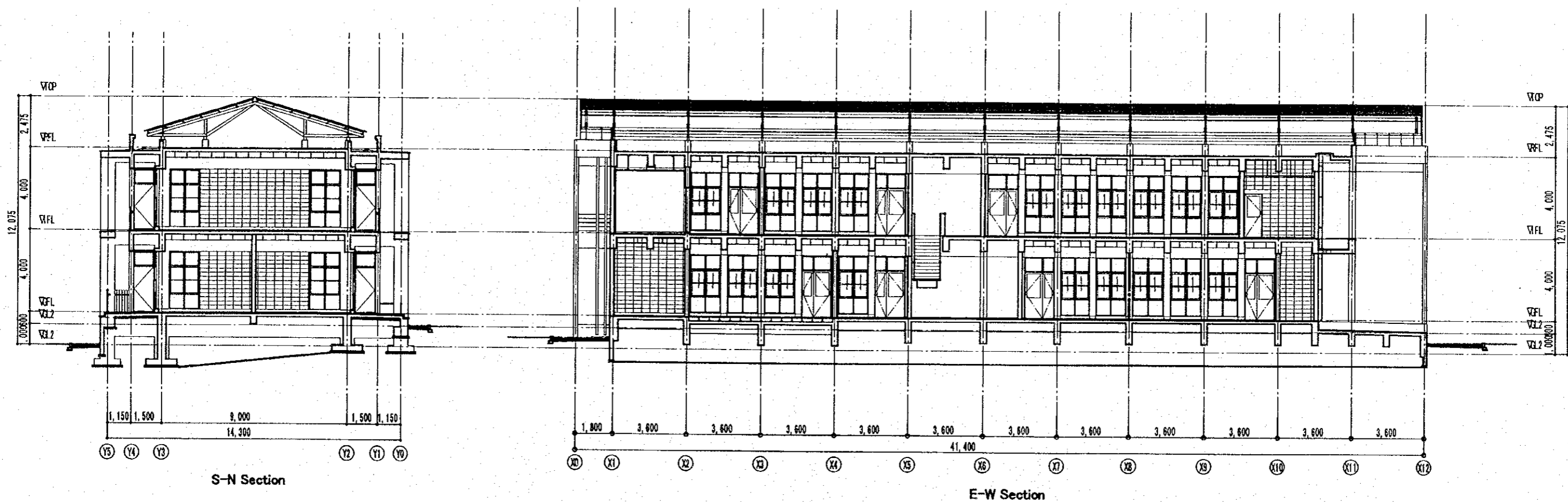


East Elevation



North Elevation





Chapter 3 IMPLEMENTATION PLAN

Chapter 3 IMPLEMENTATION PLAN

3-1 Implementation Plan

3-1-1 Implementation Concept

This project shall be implemented under the Government of Japan's grant aid cooperation after the signing of an Exchange of Notes by the governments of both countries, subject to the Government of Japan's approval for it at a Cabinet meeting. Basic matters in implementation of the Project are described as below.

(1) Construction Period

The Project includes the construction work of a building with a floor area of approximately 1,000m² and the equipment work, which is to procure and install equipment. Necessary period for both construction work and equipment work is concluded to be 12 months in consideration of contents and scale of each work, condition of the project site, local construction situation, required construction technology.

(2) Contracting System

Judging from the size of both construction work and equipment work as well as the relations between those works, it is appropriate to contract the two works in one package. Contractor for the works shall be selected among Japanese companies through pre-qualification evaluation and open tender.

(3) Implementation System of the Samoan Government

The Project is to be implemented under the jurisdiction of Ministry of Foreign Affairs of Independent State of Samoa. The South Pacific Regional Environment Programme (SPREP) will be the party responsible for implementing the Project. The Treasury Department of Samoa will take necessary measures through Ministry of Foreign Affairs for importing construction materials and equipment such as customs clearance as well as allocation of budget for

customs duties. Implementing parties will be in charge of necessary procedures such as consultant contract, construction contract and banking arrangement of the Project. SPREP, to which the Project will be extended, will be in charge of providing necessary information and technical advice and will execute the Samoan side work.

(4) Execution system

1) Consultant

Immediately after signing of the Exchange of Notes between both governments, the Ministry of foreign Affairs and SPREP will conclude a supervision contract with a selected Japanese consultant and have the agreement verified by the Government of Japan. The consultant will carry out tenders as well as construction and procurement supervision based on the tender documents and the contents of this study report.

2) Contractors

Contractor for both the construction work and the equipment work is to be selected from among qualified Japanese companies through public tender. The Ministry of Foreign Affairs and SPREP are to conclude construction and equipment supply contract with the successful tenderer and have the contract verified by the Government of Japan. It is possible for Japanese contractor to utilise local subcontractors in recruiting labours, procurement of local materials, customs clearance etc.

3-1-2 Implementation Condition

In implementing this project, special attention should be paid to the following matters.

(1) Legal procedure for building construction

It is necessary for the Samoan side to obtain building permit from the Public Works Department, Fire Department and the Health Department for the

construction of this project. After completion of the construction work, the completed building have to be inspected by the officials of the above-mentioned offices so that the completion certificate will be issued. As stated above, legal procedure must be cleared at relevant times till actual use of the facilities. Therefore, it is important for the Samoan side not to cause inconvenience which may delay the implementation of the project.

(2) Procurement of Building Materials

Basic building materials, such as aggregate and cement and reinforcing bars are procured without problems in Samoa. But not a few items of steel frames, aluminium sashes, electrical equipment and mechanical equipment are to be procured and transported from the third countries (New Zealand, Australia etc.). It is therefore important to give due consideration to the marine transport schedule, thefts and damage during transportation which may cause hindrance to the progress of the construction work.

(3) The Rain Season and Measures against Cyclones

In Samoa the rainy season lasts from November to March, during which period there will likely be much rainfall. Also, during the rainy season the project site will likely be hit by cyclones. The execution plan should therefore include measures against rainfall and damage due to cyclones as well as necessary safety measures.

3-1-3 Scope of Works

The Project is to be implemented through close cooperation between the Government of Japan and the Government of Samoa within the framework of grant aid extended by the Government of Japan. It is reasonable for the Governments of the two countries to undertake scope of works as shown below.

(1) The Work to be done under Japan's Grant Aid

1. Facilities

- Construction of the buildings described in this study report

- Electrical including data & voice communication, mechanical and sanitary installations

2. Equipment

- Equipment procurement work
- Equipment installation work

3. Infrastructure

- Connection of water supply, electric cabling and drainage work within the premises

4. Exterior works

- Rainwater disposal around the building

5. Other works related to the above work

- Transportation of equipment and materials from Japan and third countries to the Samoa
- Necessary procedure for transportation

(2) The Work to be done by the Government of the Samoa/SPREP

1. Site and exterior works

- Securing the site for the project
- Removing existing structures, trees and so on from the project site
- Construction of access roads to the project site
- Construction of exterior structures including fence
- Planting and gardening

2. Infrastructure

- Supply of electricity up to the site
- Installation of telephone lines up to the Main Distribution Frame
- Water supply up to the reservoir and connection of the drainage line

3. Preparatory work

- Provision of sites for temporary construction site office, workshops and material storage places
- Installation of temporary electricity supply and telephone lines

4. Fixtures and furniture

- Fixtures, curtains, furniture, etc. other than those supplied under the grant aid of the Government of Japan

5. Procedural work and its expenses borne by the Samoan side

- Banking arrangement expenses
- Tax exemption procedure expenses
- Prompt action related to customs clearance and inland transportation
- Necessary measures for exempting the Japanese nationals engaged in the implementation of the Project from customs duties, domestic taxes and other fiscal levies in accordance with the verified agreement
- Arrangement to expedite acquisition of visas, customs clearance, and any other formalities that may be necessary for the entry of Japanese nationals engaged in the implementation of the project
- Maintenance and management expenses for ensuring that the facilities constructed and the equipment installed are operated properly and effectively
- Expenses for obtaining formal permits necessary for construction

3-1-4 Construction Supervision

In accordance with Japan's grant aid system, the Japanese consultant firm will conclude a consultant agreement with the implementing organisation of the Government of Samoa and SPREP. After concluding the agreement, the consultant will assist in the tender procedures and supervise the construction work in compliance with the provisions of the consultant agreement. Construction supervision is aimed at ensuring that the

construction work will be carried out in accordance with the design documents, and at providing direction, technical advice and coordination throughout the term of services from a fair point of view for the proper implementation and quality control of the construction work. The construction supervision service includes the following.

1. Assistance in tendering

The consultant shall prepare the documents necessary for tendering the construction work and the equipment procurement/installation work, and assist the client in carrying out tasks such as the public announcement of invitation to tender, acceptance of applications, pre-qualification, distribution of documents to the tenderers, acceptance of tender, evaluation of the tender results. And the consultant also advise the client on concluding the contract.

2. Instruction, advice and coordination to the contractor

The consultant shall examine the construction schedule, construction plan, the building materials procurement plan and the equipment procurement/installation plan, and shall give the instruction, advice and coordination to the contractor.

3. Examination and approval of shop drawings and manufacturing drawings

The consultant shall examine and approve the shop drawings, manufacturing drawings and other relevant documents submitted by the contractor.

4. Confirmation and approval of building materials and equipment

The consultant shall confirm the consistency with the contract documents of the building materials and equipment which the contractor propose to procure, and shall approve their adoption.

5. Inspection

The consultant shall inspect the building materials and equipment at the

manufacturers' factories to ensure their quality and performance.

6. Reporting on progress of the construction work

The consultant shall grasp the actual conditions of the construction site and progress, and report them to both Governments.

7. Completion inspection and test operations

The consultant shall inspect the completed facilities and the installed equipment, and make a test run of each piece of equipment, in order to ascertain that all the works of facilities and equipment are completed in compliance with the provisions of the contract documents, and shall submit the Inspection Certificate to the Samoan side.

8. Training in operation of the equipment

Some equipment installed under the Project will require considerable operating skills as well as good knowledge of their maintenance. For this reason, it will be necessary to have the engineers of the Samoan side receive on-site training in proper equipment operation and troubleshooting techniques during the installation/adjustment/test-run period. The consultant shall give instruction and advice concerning the training programme.

Judging from the scale of the Project, it is advisable that, in carrying out the aforementioned tasks, the consultant shall station one architect/engineer to the Samoa throughout the term of works. The consultant shall also dispatch necessary engineers to the site at relevant occasions for inspection, instruction and coordination, and at the same time assign necessary engineers in Japan to establish a communication and backup system. The consultant shall report the progress of the works, payment procedures, completion of the construction of the facilities and installation of the equipment, and any other relevant matters to the competent agencies of the Japanese Government.

3-1-5 Procurement Plan

(1) Guidelines for Procurement of Building Materials

Materials and equipment for use in this project are to be procured in accordance with the following guidelines.

1. Local procurement

In principle, building materials for this project should be procured in Samoa so that they can be easily repaired, managed and maintained by the Samoan side after the completion of the facilities. Especially, heavy building materials such as cement, gravel and concrete blocks, which are to be used in large quantity, should be procured in the country from the standpoint of advantage in transportation. In case of equipment, which require periodical maintenance services by the local distributors, imported one should be procured from local distributor.

2. Import

Those materials and items of equipment which are not available in Samoa, which can be procured locally but are judged to be defective in terms of quality or which are in short supply and expensive in Samoa, should be procured in Japan or other third countries (New Zealand, Australia, Fiji).

(2) Materials/Equipment Procurement Plan

Materials and equipment to be used in the project are planned to be procured as listed in the following table.

1) Materials Procurement Plan

Table 3-1 Procurement Plan of Building Materials

Work	Material/Equipment	Countries			Remarks
		Samoa	Japan	Third country	
Building Work	Cement	<input type="radio"/>		<input type="radio"/>	Procurable locally
	Sand	<input type="radio"/>			Ditto
	Gravel	<input type="radio"/>			Ditto
	Re-bar	<input type="radio"/>		<input type="radio"/>	Reliable and less expensive in third country
	Form	<input type="radio"/>			Procurable locally
	Concrete block	<input type="radio"/>		<input type="radio"/>	Reliable and less expensive in third country
	Waterproofing			<input type="radio"/>	Reliable and less expensive
	Terrazzo tile			<input type="radio"/>	Ditto
	Ceramic tile			<input type="radio"/>	Ditto
	Glass			<input type="radio"/>	Ditto
	Timber	<input type="radio"/>		<input type="radio"/>	Procurable locally
	Aluminium windows			<input type="radio"/>	Reliable and less expensive
	Hardware			<input type="radio"/>	Ditto
Paint	<input type="radio"/>		<input type="radio"/>	Procurable locally	
Mechanical & Sanitary Work	Pump			<input type="radio"/>	Reliable and less expensive
	Fan			<input type="radio"/>	Ditto
	Sanitary fittings			<input type="radio"/>	Ditto
	PVC pipe			<input type="radio"/>	Ditto
	Galvanised steel pipe			<input type="radio"/>	Ditto
	Water tank	<input type="radio"/>		<input type="radio"/>	Procurable locally
	Fire extinguisher	<input type="radio"/>		<input type="radio"/>	Ditto
Electrical Work	Distribution panel			<input type="radio"/>	Reliable and less expensive
	Lighting fixture			<input type="radio"/>	Ditto
	Wiring conduit			<input type="radio"/>	Ditto

2) Equipment Procurement Plan

Table 3-2 Procurement Plan of Equipment

Equipment	Country			Remarks
	Samoa	Japan	Third country	
Seminar table/chair			○	Less expensive
LCD projector/screen		○		Reliable
Video presentation stand		○		Ditto
Video cassette recorder		○		Ditto
Audio system		○		Ditto
Monitor TV		○		Ditto
Personal computer for video editing			○	Less expensive
Video cassette recorder/player		○		Reliable
Audio mixer		○		Ditto
Equipment table			○	Less expensive
Storage cabinet/rack			○	Ditto
Video camera		○		Reliable
Portable tape recorder		○		Ditto
Personal computer for trainee			○	Less expensive
Colour printer			○	Ditto
Computer table			○	Ditto
Personal computer for DTP			○	Ditto
Computer server			○	Ditto
Digitizer			○	Ditto
Map cabinet			○	Ditto
Photocopier			○	Ditto

3-1-6 Implementation Schedule

When the Exchange of Notes concerning the implementation of the Project is concluded between the Government of Japan and the Government of Samoa, the construction and equipment works will be implemented with the following procedures.

1. Tendering

The contractor to take charge of the construction work and the equipment work will be selected by tender. The tender work includes tender announcement, pre-qualification, acceptance of tenders, evaluation of the tenders, designation of the contractor and conclusion of the contract. The estimated period required for completing this procedure is approximately 3 months.

2. Construction work and equipment work

Judging from the contents and scale of the work and the actual situation of the local construction industry, it will take 12 months to complete the entire project, including the equipment work, provided the procurement of building materials and the customs clearance of imported articles proceed smoothly.

The overall implementation schedule from the conclusion of the Exchange of Notes to the completion of the project which includes above-mentioned factors will be as shown below.

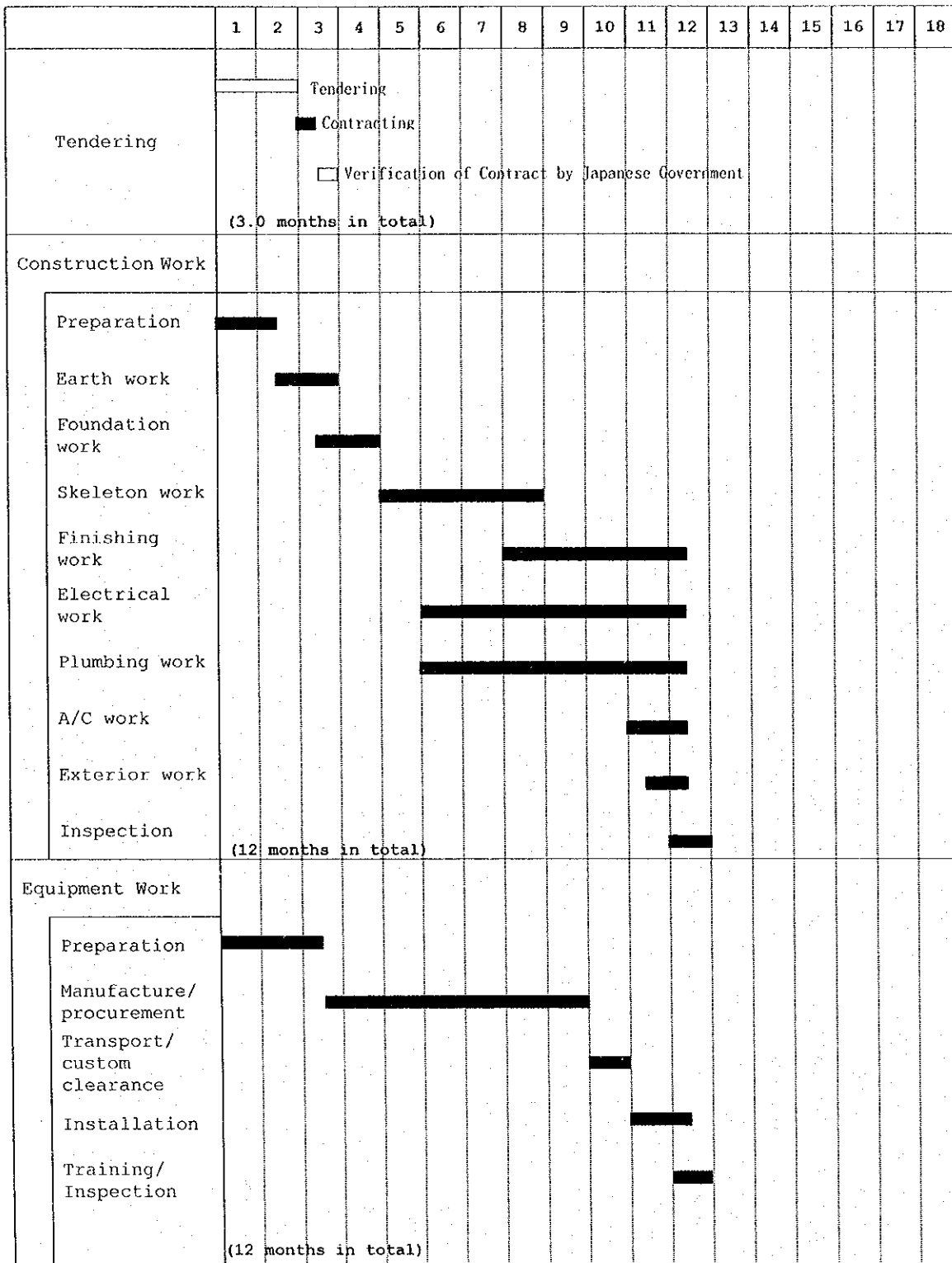


Fig. 3-1 Implementation Schedule

3-1-7 Obligations of Recipient Country

Following necessary measures shall be taken by the Government of Samoa on the condition that the Grant Aid by the Government of Japan is extended to the Project.

1. To secure lots of land necessary for the Project including temporary stockyard;
2. To clear and level the site for the Project prior to the commencement of the construction;
3. To provide a proper access road to the Project site;
4. To provide facilities for distribution of electricity, water supply, telephone trunk line and drainage and other incidental facilities outside the site;
5. To undertake incidental outdoor works, such as gardening, fencing, exterior lighting, and other incidental facilities in and around the Project site, if necessary;
6. To ensure prompt unloading and customs clearance of the products purchased under the Japan's Grant Aid at ports of disembarkation in Samoa;
7. To exempt Japanese nationals from customs duties, internal taxes and fiscal levies which may be imposed in Samoa with respect to the supply of the products and services under the verified contracts;
8. To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such facilities as may be necessary for their entry into Samoa and stay therein for the performance of their work;
9. To bear commissions, namely advising commissions of an Authorisation to Pay (A/P) and payment commissions, to a Japanese bank for the banking services based upon the Banking Arrangement (B/A);

10. To provide necessary permissions, licenses, and other authorisation for implementing the Project, if necessary;
11. To ensure that the facilities constructed and equipment purchased under the Japan's Grant Aid be maintained and used properly and effectively for the Project; and
12. To bear all the expenses, other than those covered by the Japan's Grant Aid, necessary for the Project.

3-2 Operation and Maintenance plan

Budgetary appropriations which the SPREP is to make for the operation, maintenance and management of the procured facilities and equipment when this project is completed are estimated as follows.

Item	Estimated Cost
Consumable and Maintenance Expenses	70,000WS\$
Consumable cost	45,000WS\$
Maintenance cost	25,000WS\$
General Expenses	220,150WS\$
Electricity charge	47,600WS\$
Fuel for generator	8,700WS\$
Water charge	1,700WS\$
Building maintenance	27,000WS\$
New headquarter facilities	135,150WS\$
Total	290,150WS\$

1) Personnel Expenses

There will be no increase in the number of the staff members. The personnel expenses are to be included in the SPREP headquarters' overall budget.

2) Consumables and Maintenance Cost

Consumable and maintenance cost for equipment include; floppy disc for computer, tapes for backup use, toner for printer, printing paper, video tapes for multi-media materials, cassette tapes, toner for copy machine, spare ramp for projector and OHP and periodical maintenance contract for computer and copy machine.

Though annual maintenance contract fee defers by contents of contract, 10% of computer equipment cost can be assumed.

① Consumable expenses

Floppy disc, video tape, cassette tape, toner etc. 45,000 WS\$

② Equipment maintenance and management expenses

Annual maintenance contract fee for computer and copy machine
25,000 WS\$

3) General Expenses

The communication fee are to be included in the SPREP headquarters overall budget since there will be no increase after the completion of this centre.

① Electricity charge

Electricity consumption

Lighting/Power outlets

$$50W/m^2 \times 1,000m^2 = 50kW$$

$$A/C \quad 760m^2 \times 200kcal/m^2 \div (860kcal \times 2.5) = 70kW$$

$$Ventilation \quad 3W/m^2 \times 1,000m^2 = 3kW$$

$$Equipment \quad = 30kW$$

$$Total \quad 153Kw$$

Annual electricity charge

$$153kW \times 240day/year \times 0.3(demand) \times 0.6WS\$/kW \cdot hr \times 0.9 \times 8hr/day = 47,600WS\$/year$$

② Generator fuel expenses

Fuel consumption of 77kVA generator 30 l/hr

Assume operation of generator 1.0hr/day, the total cost per year will be;

$$30 \text{ l/hr} \times 1.0 \text{ hr} \times 240 \text{ day} = 7,200 \text{ l/year}$$

$$7,200 \text{ l/year} \times 12 \text{ WS\$/l} = 86,400 \text{ WS\$/year}$$

③ Water charge

Consumption of water

$$15 \text{ staff} \times 100 \text{ l/day} \cdot \text{psn.} + 60 \text{ trainee} \times 60 \text{ l/day} \cdot \text{psn.} = 5,100 \text{ l/day} =$$

$$5 \text{ m}^3/\text{day}$$

Annual water charge

$$5 \text{ m}^3 \times 240 \text{ day} \times 1.4 \text{ WS\$/m}^3 = 1,680 \text{ WS\$/year}$$

④ Facility maintenance expenses

Assume 1.0% of direct construction cost

$$2,700,000 \text{ WS\$} \times 0.01 = 27,000 \text{ WS\$/year}$$

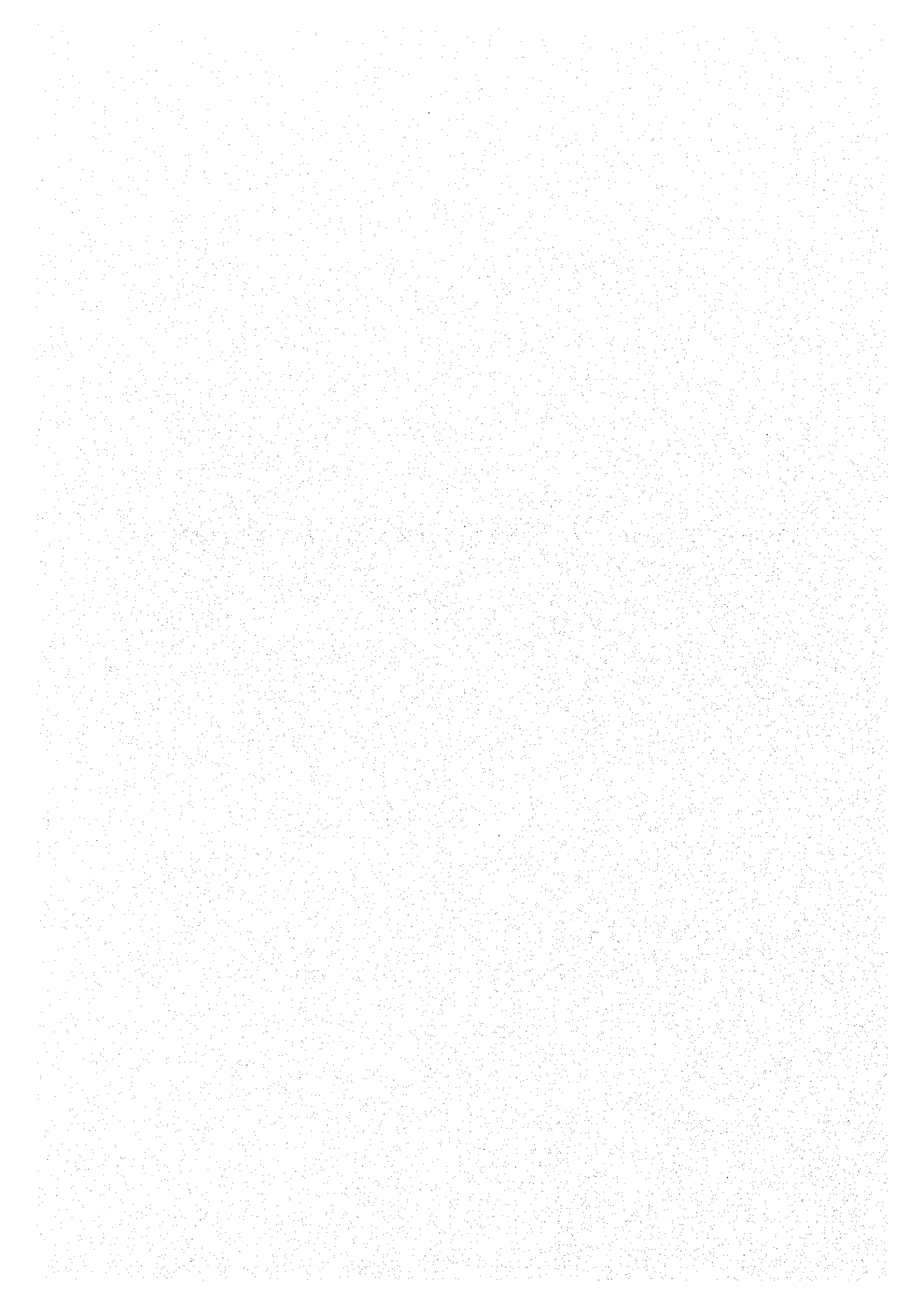
⑤ New Headquarter facilities

Effective building area 1,590 m²

Maintenance expenses per area 85 WS\$/m²· year

$$85 \text{ WS\$/m}^2 \times 1,590 \text{ m}^2 = 135,150 \text{ WS\$/year}$$

Chapter 4 PROJECT EVALUATION AND RECOMMENDATIONS



Chapter 4 PROJECT EVALUATION AND RECOMMENDATIONS

4-1 Project Effect

(1) Expected Positive Effect of the Project

When this project is implemented, and managed and operated sufficiently by the Samoan side, improvement to the current state and positive effect as described below can be obtained.

1) Direct Effects

Effective training and education

Training and education (general and computer training) for the SPREP member countries is one of SPREP's main roles. At present SPREP has no facilities for such training and education, and therefore there is no choice but to use hotels and other facilities as the venues for such training and education or the facilities in other member countries (such as Fiji, New Zealand and Australia). When the Project is implemented, it will not only solve the problem of training room shortage but also make possible to implement training, education and seminar programmes smoothly and effectively.

① Efficient training/education and seminar programme planing:

When the project is implemented, it will be possible to implement all training/education and seminar programmes at the projected facilities, eliminating the need for lecturers and other instructors to move from one place to another. As a result, it will be possible to plan and execute training schedules efficiently.

2) Indirect Effects

Through the result of above direct effects, following indirect effects can be expected.

① Contribute to raise the awareness on environmental problems to the Samoan residents:

SPREP is carrying out activities to raise the Samoan people's awareness of environmental problems. These activities include preparation and distribution of environment concerned posters, brochures and stickers, and development of environmental education curricula at the primary and secondary education levels and its related teaching materials. These activities will contribute to raise the awareness on environmental problems through teaching, based on these curricula and teaching materials as well as through training of the teachers responsible for environmental education. And also through inspection tours of this Centre for the students as part of the open learning resource programme by SPREP.

② Contribute to the promotion of SPREP's "Action Plan":

Through the above-mentioned direct effects, it will be possible establish a system for enhancing national capacity to conserve, protect and improve the Pacific region environment. One of the main objectives of "Action Plan 1997/2000" is to strengthen environmental education, training and information systems which are aimed at enhancing national capacity to conserve, protect and improve the environment in Pacific island region. When the Project is implemented, it will contribute to the promotion of the Action Plan.

③ Contribute to raise the awareness on environmental problems to the community residents of the region:

Environmental problems in the South Pacific region have become diversified. Therefore, it is imperative to improve and solve those problems in the region. It should be noted that these issues can not be solved by concerned organisation alone. It is essential to raise the awareness on those environmental problems among community residents of the region. In this context, enlightenment activities, environmental education and training for community residents will become important.

It is imperative to train such personnel to take the lead in those

activities. When the Project is implemented, it will contribute to raise the awareness on environmental problems in the community residents through enlightenment and environmental training/education activities by those leaders.

4-2 Points to Note in Implementing the Project

- **Technical Cooperation or Cooperation with Other Donors**

In order to maximise the positive effects of this project, a regional information network covering all member countries of SPREP is to be developed. The information network will be utilised to share information with experts engaged in environmental education and policy making and to use the Internet to conduct public education programmes to raise public awareness of environmental problems, accept applications for training, and make public the SPREP's activities. As is clear from the above descriptions, it is expected that the development of a regional information network and information sharing through the Internet will make the benefits of this project wide-ranging. The programmes requested by the Samoan side include a technical cooperation programme concerning the development of a regional information network and Internet technologies. It is desirable, therefore, that this programme, which is certain to make the benefits of this project wide-ranging, be implemented as quickly as possible.

4-3 Recommendation

This project includes many advanced items of equipment, since SPREP, implementing organisation of the project, has advanced technologies. The equipment, to be procured under this project, such as computers for use in preparation of teaching materials and network equipment are very likely to require advanced specifications to cope with the high performance of the software to be used in the future and addition and/or replacement of components. It is necessary, therefore, that the Samoan side should make adequate budgetary appropriations and plan adequate equipment replacement for above addition and/or replacement.

APPENDICES

**1. List of Party Concerned in
the Independent State of
Samoa**

1. LIST OF PARTY CONCERNED IN THE INDEPENDENT STATE OF SAMOA

1. Ministry of Foreign Affairs

Mr. Aiono Mose Pouvi Sua Secretary
Mr. F. Vitolio Lui Deputy Secretary

2. Treasury Department

Ms. Hinauri Petana Financial Secretary
Mr. Iulai Lavea Assistant Financial Secretary
Ms. Ane L. Moananu Chief Finance Officer

3. South Pacific Regional Environment Programme (SPREP)

Mr. Tamari'i Tutangata Director
Ms. Pisaina Leilua-Lei Sam Executive Officer Management
Ms. Neva Wendt Head of Environmental Education,
Information and Capacity-Building
Division
Mr. Herve Dropsy Information Technology Manager
Mr. Ray Wright Head of Finance and Administration
Ms. Seema Deo Environmental Education Officer
Ms. Audrey Dropsy Training Officer
Mr. Fatu Tauafiafi Information and Publication Officer
Ms. Dorothy Kamu Personal Assistant
Mr. Petelo Ioane Geographic Information System/
Database Assistant Officer

4. Department of Lands, Survey and Environment

Hon. Tuala Sale Tagaloa Minister
Mr. Tuuú Ieti Taulealo Director
Mr. Elisaia Talouli Assistant Director

5. Public Works Department

Mr. Isikuki Punivalu Director of Works
Ms. Sofaea Alo Acting Director
Mr. Lauvi Parataiso Chief Building Inspector

6. Ministry of Health

Ms. Frances Brebner Director, Health Planning, Health
Dept.

- | | | |
|-----|-------------------------------------|--|
| | Mr. Sinei Fili | Senior Environment Health Officer |
| 7. | Custom Department | |
| | Mr. Fuimaono P. Teo | Comptroller of Customs |
| 8. | National University of Samoa | |
| | Mr. Akira Hara | Advisor to the Vice Chancellor |
| 9. | The University of the South Pacific | |
| | Mr. Rudolf Bartley | Video Officer |
| 10. | Fire Brigade | |
| | Mr. Falaula | General Manager |
| 11. | Electric Power Corporation | |
| | Mr. Toluono Feti | General Manager |
| 12. | Samoa Water Authority | |
| | Mr. Sitivi F. Leota | Head, Design Engineering |
| 13. | Samoa Communication Ltd. | |
| | Mr. Taimang Jensen | Assistant Director, Telecom
Commercial Operations |
| 14. | Tinai, Gordon & Associates Ltd. | |
| | Mr. William Gordon | Local Consultant |