

Fig. 5-3 Diagram of Water Supply and Drainage

5-3-5 Construction Material Plan

The construction method and materials for each portion of the proposed facilities should be selected after examination of local climate, required performance, construction period, construction costs and facility maintenance and management costs.

(1) Structure

The main structural material will be reinforced concrete, the most common structural material in Western Samoa and the most reasonable material for the proposed facilities. In Western Samoa, pillars, beams and floors are generally made of reinforced concrete. Roofs are generally made of either steel or wood frame truss, and walls are made of concrete blocks. However, the roofs of the proposed facilities should be made of reinforced

concrete to ensure good waterproofing, heat insulation and wind resistance.

(2) Exterior Finishing Materials

1) Roofs

In Western Samoa, the most common roofing materials are corrugated steel sheets on wood or steel frame trusses. However, corrugated steel sheets are very likely to rust; sheets for the proposed facilities should be finished with acrylic-based coating for high corrosion-resistance and wind-resistance, since the site is on the side of a hill facing the sea, and the roofs will therefore always be exposed to sea breezes. Roofs should be reinforced concrete pitched ones, on which the aforementioned steel sheets will be laid to ensure good waterproofing and heat insulation.

2) External Walls

External walls will be made of concrete blocks and sprayed with synthetic resin emulsion paint, which is more durable and weatherproof than ordinary paint or sprayed resin paint, and more economical because it does not require repair or repainting.

3) Doors and Windows

External windows should be aluminum sash windows. Sliding windows, which are airtight and watertight, should be installed in air-conditioned rooms. Glass louver sash (jalousie sash), which have a greater opening ratio, should be installed in other rooms.

(3) Interior Finishing Materials

Table 5-8 shows interior finishing materials selected in consideration of the required function.

Table 5-8 Interior Finishing Schedule

Room Name	Floor	Wall	Ceiling
Lecture Rooms	Vinyl Tiles	Textured coating on concrete Block Wall	Sprayed Perlite Based Coating
Lecture Theater	Vinyl Tiles	Paint on Perforated Board, Glasswool	Mineral Acoustic Panels
Laboratories	Vinyl Sheet	Textured coating on concrete Block Wall	Mineral Acoustic Panels
Music Room, Language Lab.	Vinyl Sheet	Paint on Perforated Board, Glasswool	Mineral Acoustic Panels
Vice Chancellor's Rm, HOF's Rm	Vinyl Sheet	Paint on Gypsum Board	Mineral Acoustic Panels
Academic Staff Rm	Vinyl Sheet	Textured coating on concrete Block Wall	Sprayed Perlite Based Coating
Shelving Area, Library	Vinyl Sheet	Paint on Gypsum Board	Mineral Acoustic Panels
Reading Room	Vinyl Sheet	Textured coating on concrete Block Wall	Sprayed Perlite Based Coating
Dining Rm, Kitchen	Ceramic Tile	Textured coating on concrete Block Wall	Sprayed Perlite Based Coating
Office	Vinyl Sheet	Textured coating on concrete Block Wall	Mineral Acoustic Panels
Corridor	Floor Coating on Concrete	Textured coating on concrete Block Wall	Paint on Calcium Silicate Panels
Toilet	Ceramic Tile	Ceramic Tile	Paint on Calcium Silicate Panels

(4) Falé

Since the falé will be used for lectures organized by the Center for Samoan Studies, as mentioned earlier, traditional Samoan construction methods should be used. Pillars and beams should be made of wood, and construction methods should be as faithful to traditional methods as possible.

5-3-6 Equipment Plan

The proposed items of equipment consist of:

- Experimental Equipment
- Language Laboratory Equipment
- Computers
- Audio-Visual Equipment
- Lecture Tables, Laboratory Tables and Chairs

The following criteria are considered in determining types, specifications and grades of equipment for the Project:

- Quality and quantity of equipment should be selected according to proposed academic activities.
- The number of duplicate pieces and models should be minimized by sharing the pieces among lecture rooms.
- Equipment which NUS can not easily maintain should be eliminated.
- Specifications and grades of equipment should be consistent with proposed academic activities and equipment used by the similar institutions in and around Western Samoa.

(1) Experimental Equipment

- 1) Equipment which should be installed in the proposed facilities will be provided under this Project.

(2) Language Laboratory Equipment

- 1) 20 pieces of language laboratory equipment for intensive English sessions should be provided.
- 2) Students will also be able to use the aforementioned language laboratory equipment for individual English learning.

(3) Computer

- 1) Administrative and academic staff will be able to process large quantities of educational and administrative records efficiently by building a Local Area Network (LAN) within the campus and by preparing the database. NUS will be able to connect this LAN with computers at other institutions to collect and exchange data in the future.
- 2) In the proposed facilities, two computer laboratories equipped with 42 personal computers and a LAN system will significantly improve computer education.
- 3) Software for a computer-aided catalog system will be provided to manage 20,000 books efficiently.
- 4) The existing 10 personal computers should be relocated in the library for individual student use.
- 5) Photocopy machines should be provided in sufficient numbers for reproducing documents.

(4) Audio-Visual Equipment

- 1) Video projection and PA systems should be installed in 200-seat and 100-seat lecture theaters.
- 2) Printing and video production systems should be procured for the Resource Center.

(5) Lecture Tables, Laboratory Tables and Chairs

A plan to procure desks and chairs in the lecture rooms/theaters and laboratories should be devised in accordance with the activity plan for NUS. Also, a plan to reuse existing office desks and chairs,

meeting room tables and personal computer room tables should be drawn up and examined.

- 1) Tables and chairs in lecture rooms, seminar rooms and offices should be procured.
- 2) Laboratory tables and working tables should be procured.
- 3) 300 desks and 300 chairs for use in the lecture theaters (200 seats and 100 seats, respectively) should be procured.
- 4) Tools and other items of repair/maintenance equipment should be procured for repair and maintenance of the University facilities and equipment.

Table 5-9 Functions of Proposed Equipment

Items	Proposed functions
Chemistry Lab., Faculty of Science Fume hood Emergency eyeshower	To exhaust fume emitted by experiments Emergency shower for eyes
Science Lab., Faculty of Education Fume hood Emergency eyeshower	To exhaust fume emitted by experiments Emergency shower for eyes
Carpentry Equipment, Faculty of Education Electric belt sander Grinder Lathe machine	For sanding wooden materials For grinding wooden materials For shaping wooden materials
Metalwork Equipment, Faculty of Education Lathe machine Cutting machine Grinder	For shaping metal materials For cutting metal materials For grinding metal materials
Art Equipment Drafter	Drawing equipment
LL Equipment Master console LL booth	For controlling booth tape recorder For student usage

Items	Proposed functions
Computer Equipment	
Computer LAN system	For management and computer education
PC LAN Lab. system	For computer education, 42 PCs for 2 PC Labs.
AV Equipment	
Video projection system	For lecture halls, 150-100 inches video projector
PA system	For lecture halls
Printing system	Stencil cutting type printing system
Loose Furniture	
Lab. tables & chairs	For Chemistry, Biology, Physics and Basic Science Laboratories
Work tables & chairs	For Woodwork, Metalwork, Home economics and sewing
Lecture tables & chairs	For ordinary lecture rooms
Office desks & chairs	For management offices

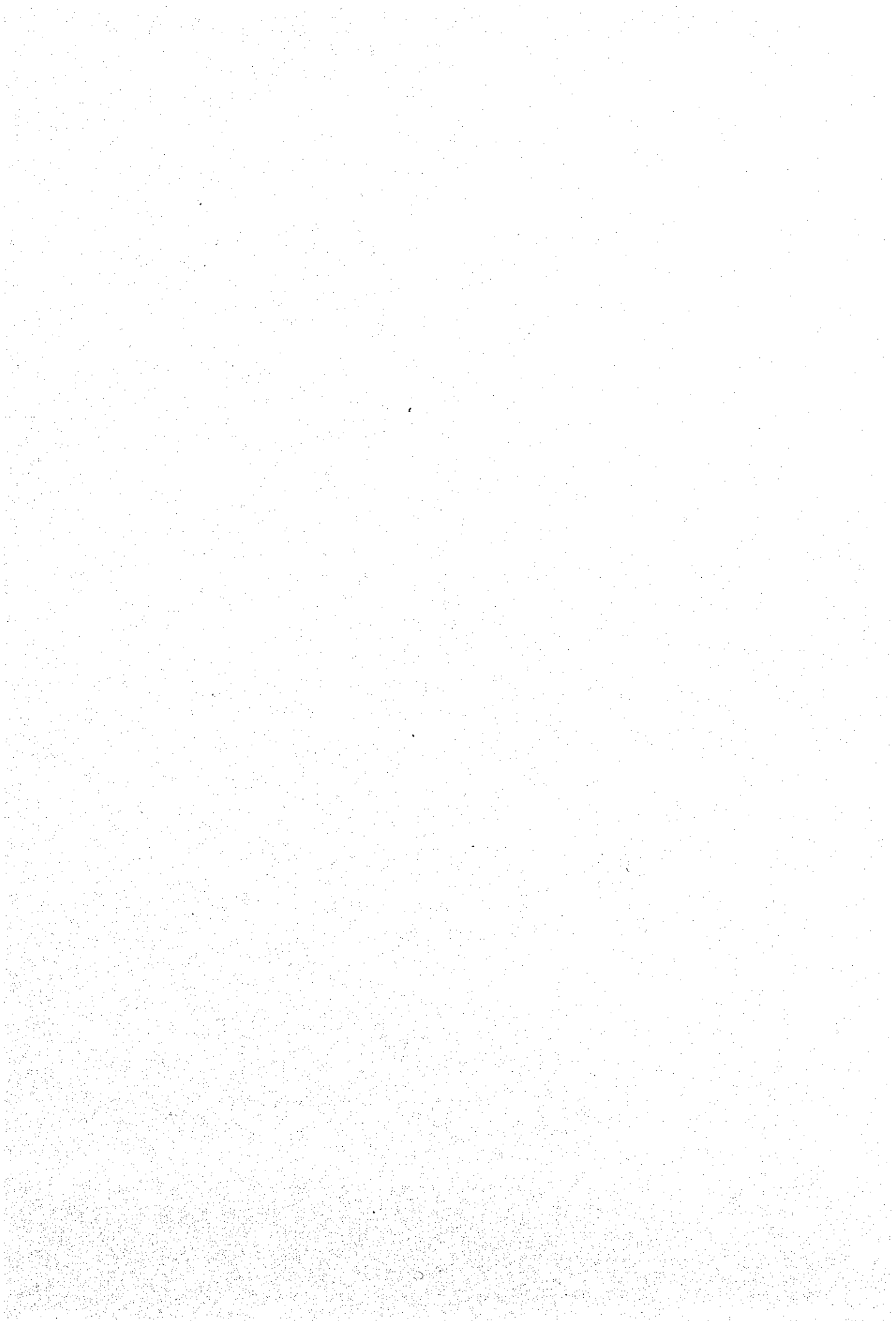
5-3-7 Basic Design Drawings

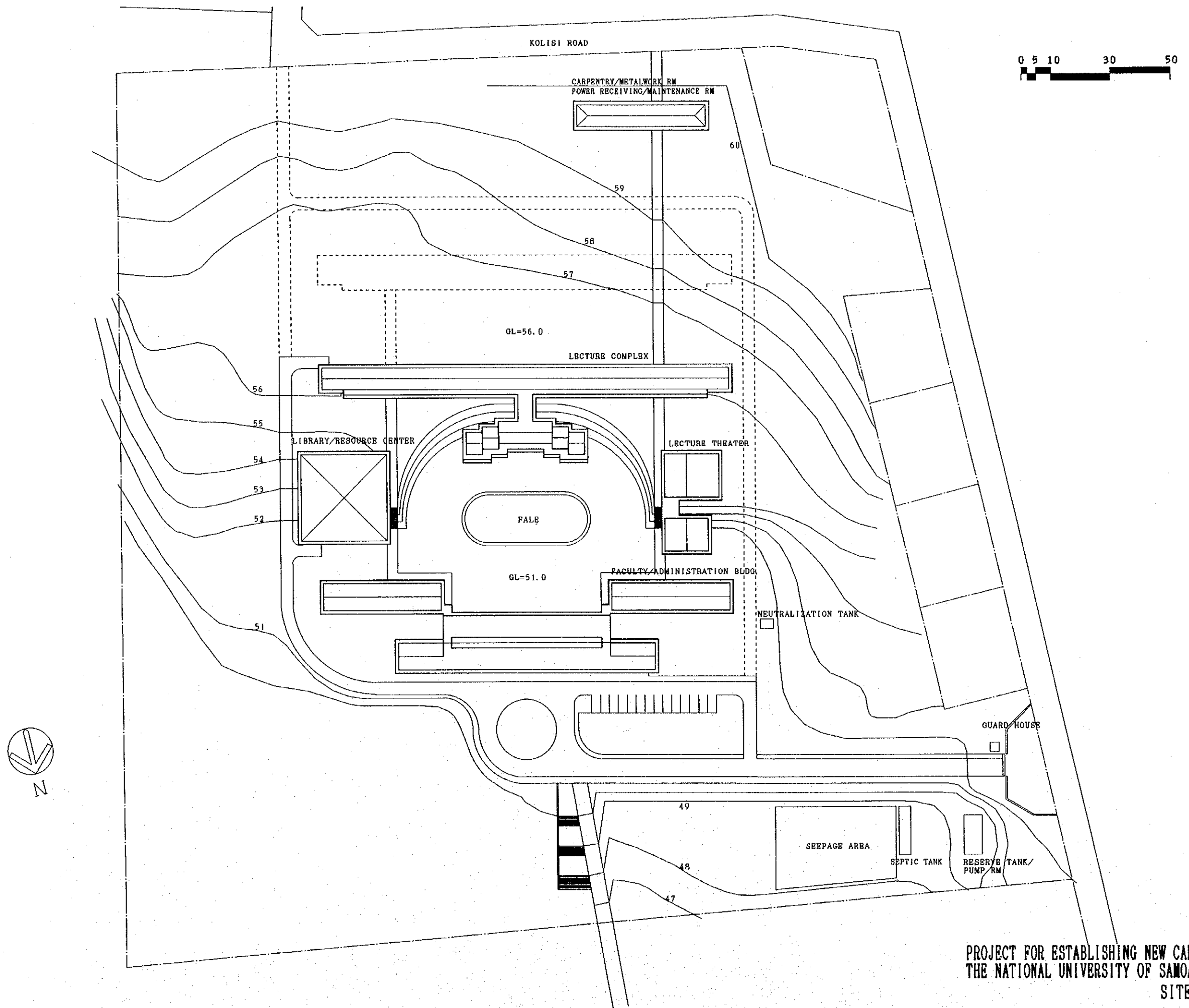
(1) Area Table

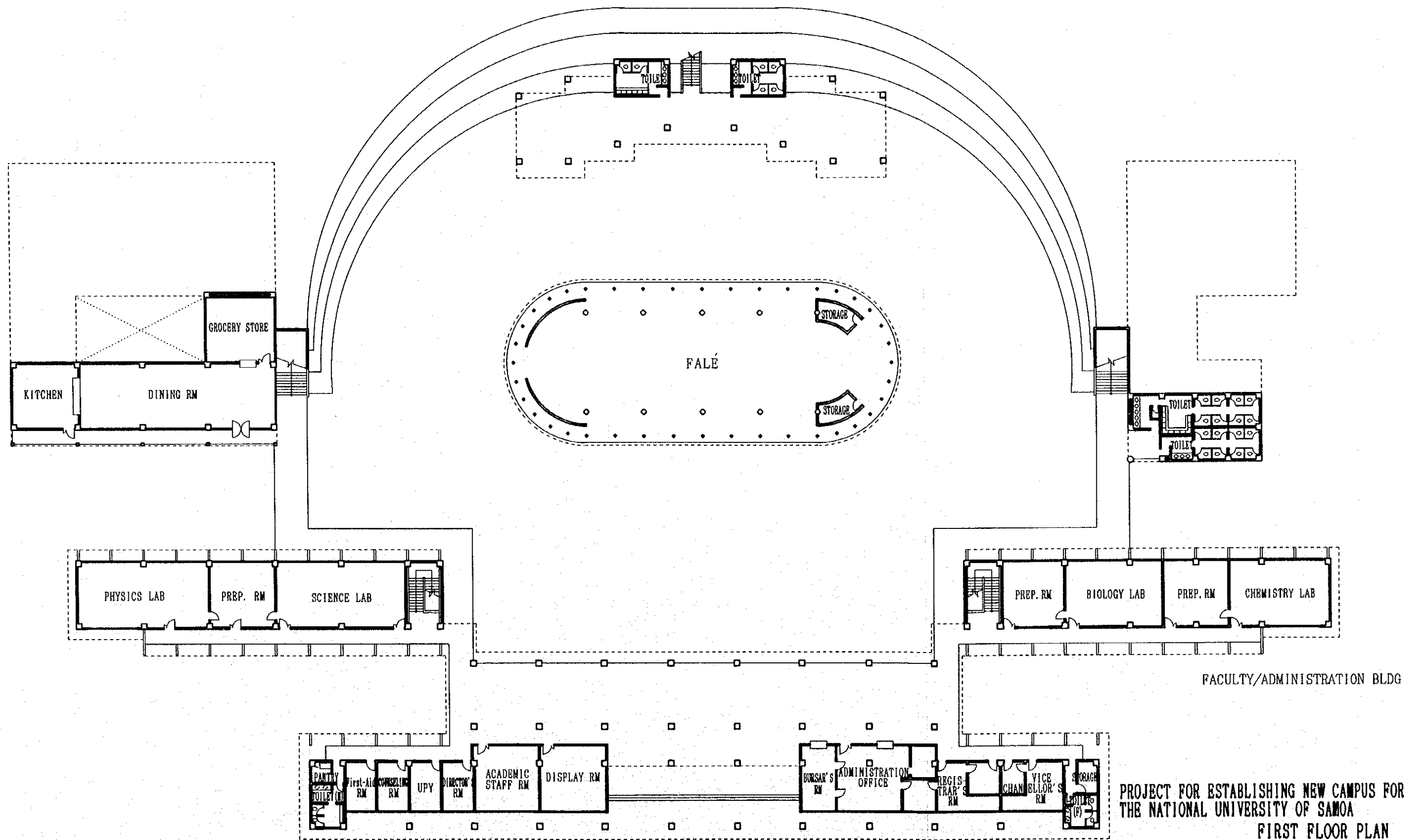
Building \ Floor	First Floor (m ²)	Second Floor (m ²)	Third Floor (m ²)	Total (m ²)
Library/Resource Center	—	680	—	680
Faculty/Administration	1,780	1,780	—	3,560
Lecture Complex	449	1,996	1,556	4,001
Falé	604	—	—	604
Student Amenities	260	—	—	260
Ancillary Buildings	117	—	—	117
Total	3,210	4,456	1,556	9,222

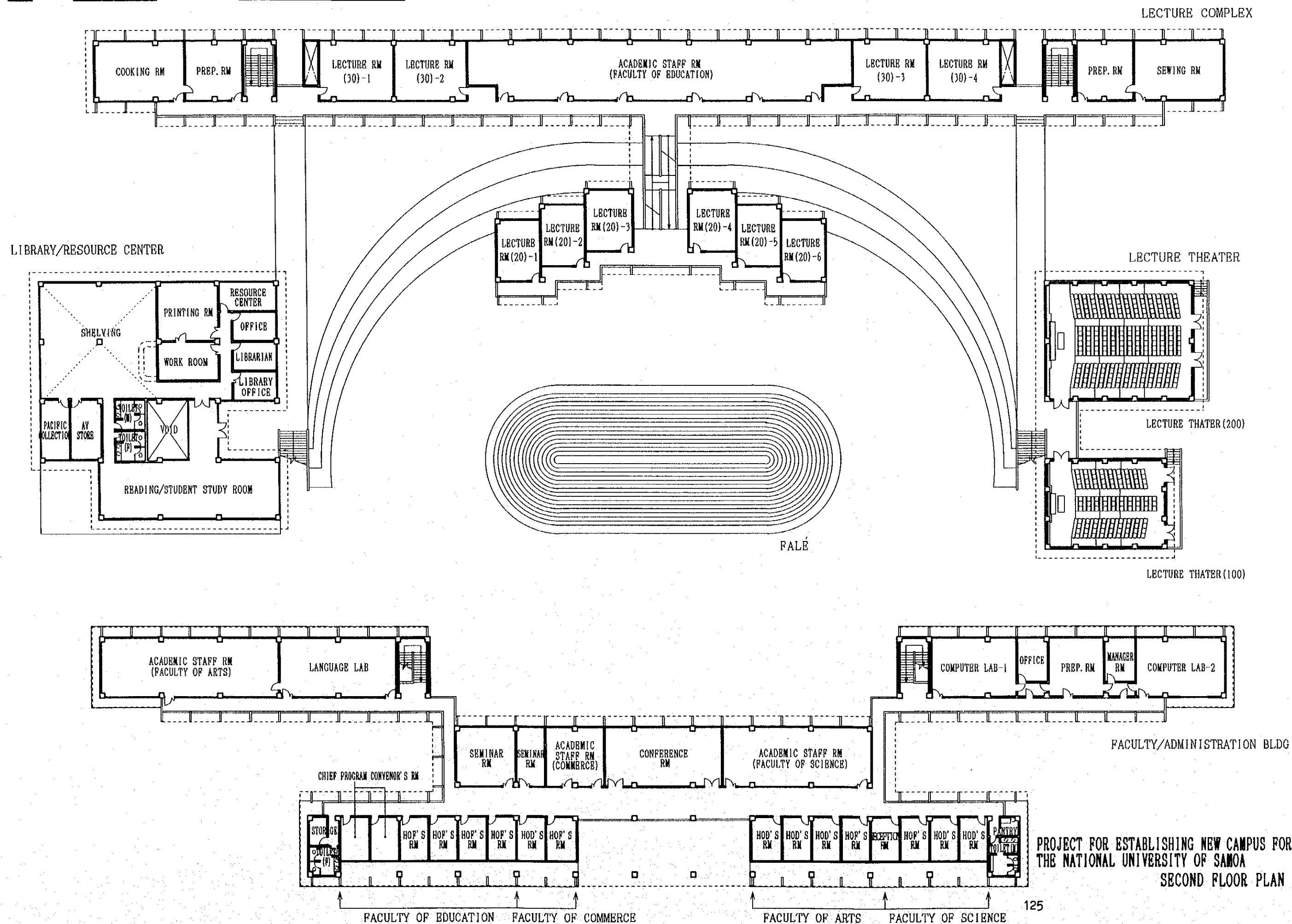
(2) Basic Design Drawings

- 1) Site Plan 1/1200
- 2) First Floor Plan 1/400
- 3) Second Floor Plan 1/400
- 4) Third Floor Plan 1/400
- 5) Elevation 1/400
- 6) Section 1/400



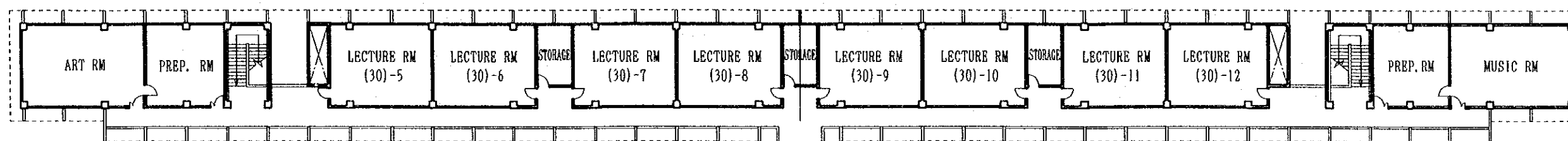




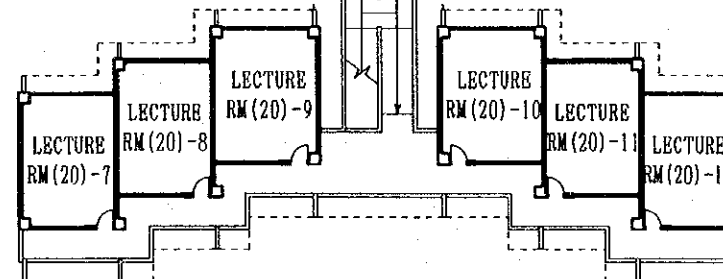
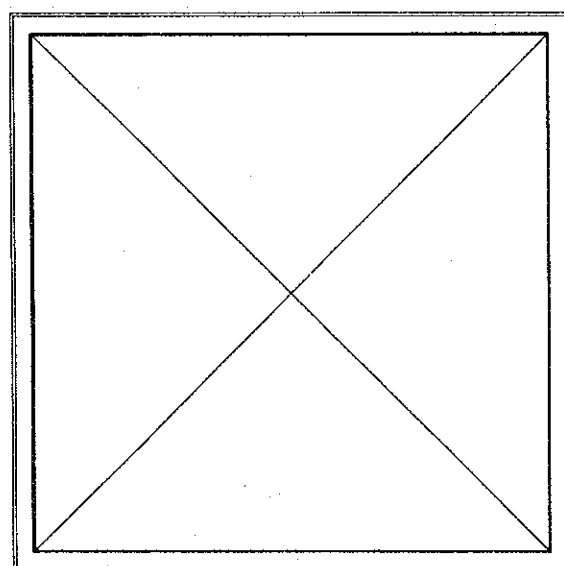




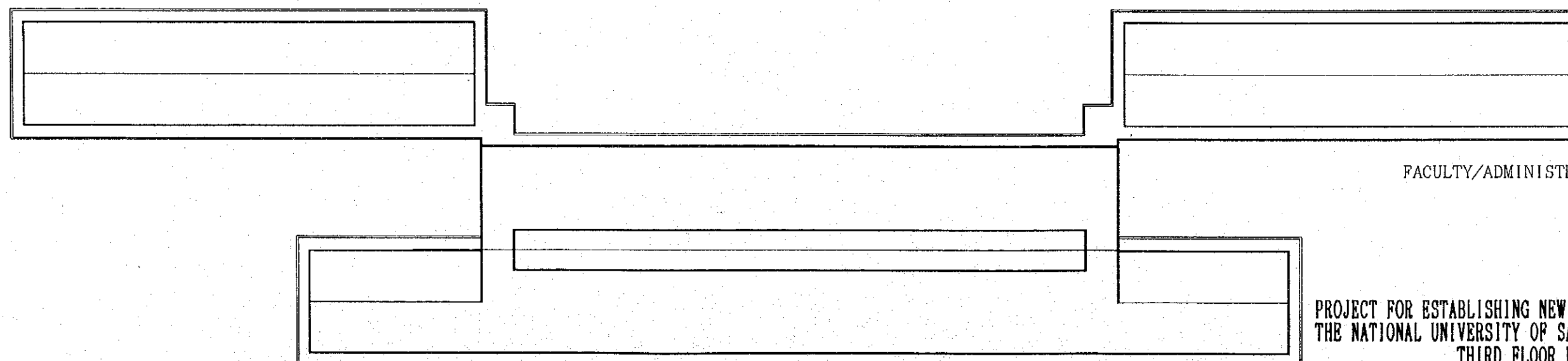
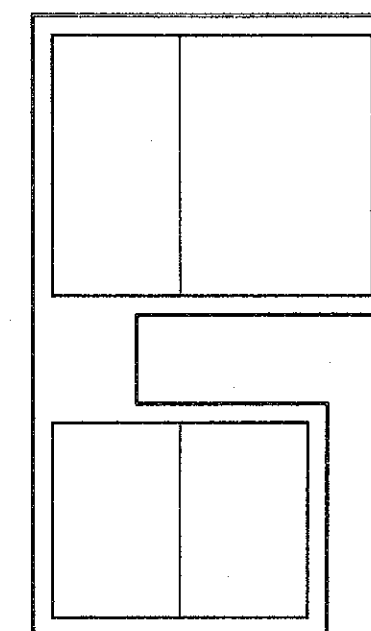
LECTURE COMPLEX



LIBRARY/RESOURCE CENTER

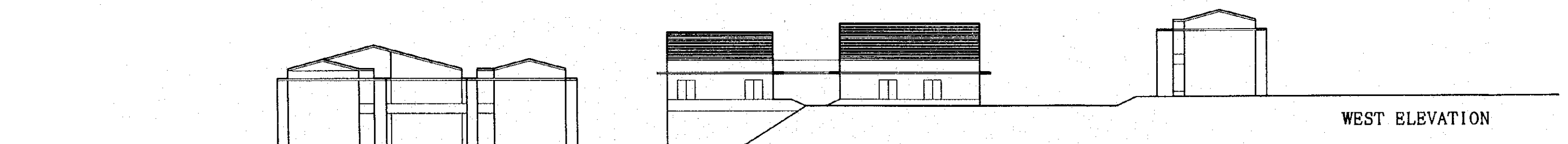
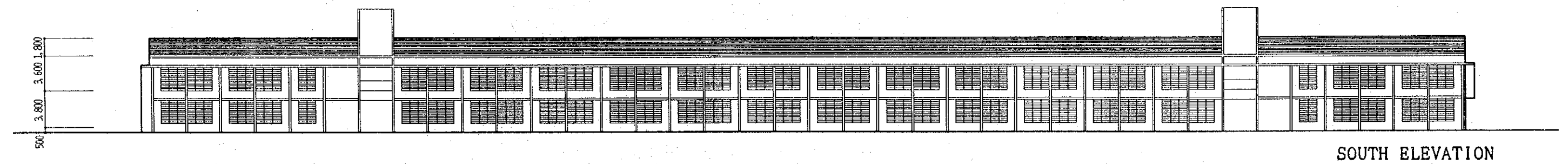
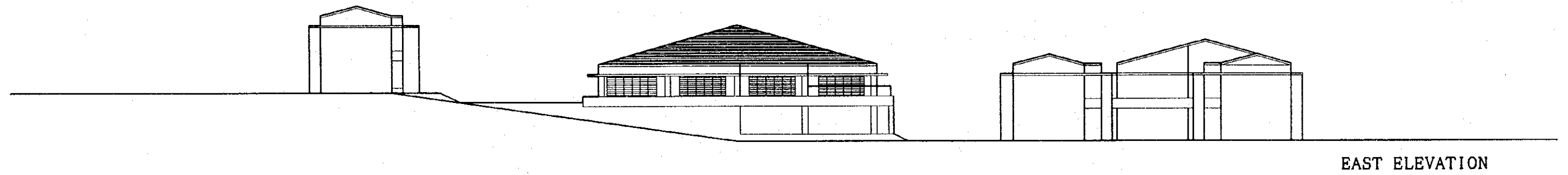
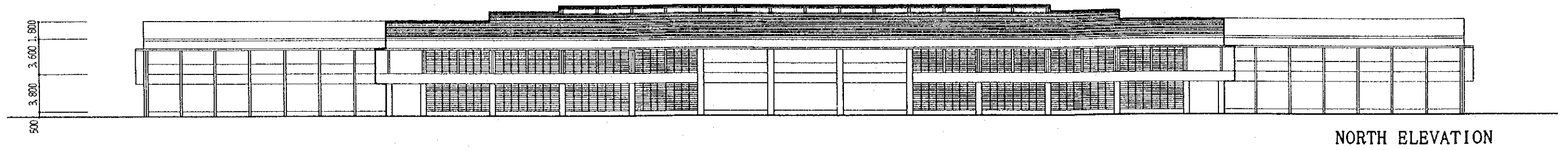


LECTURE THEATER

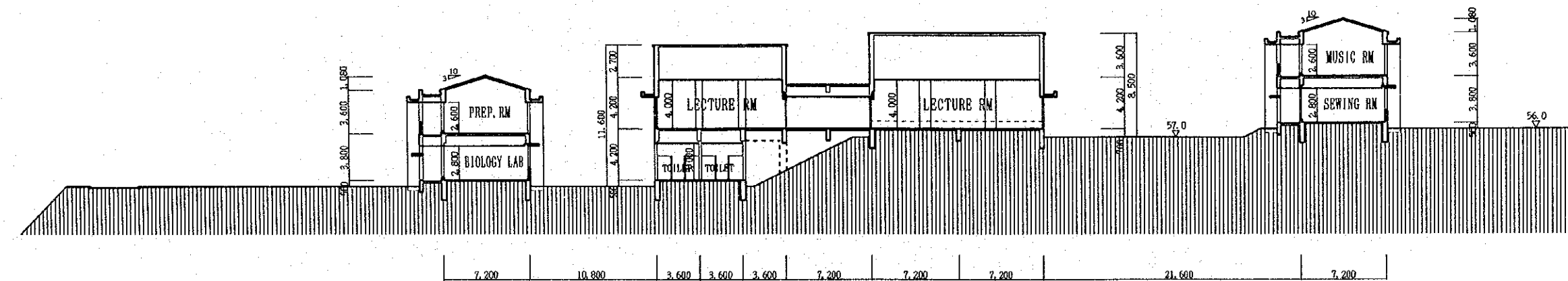
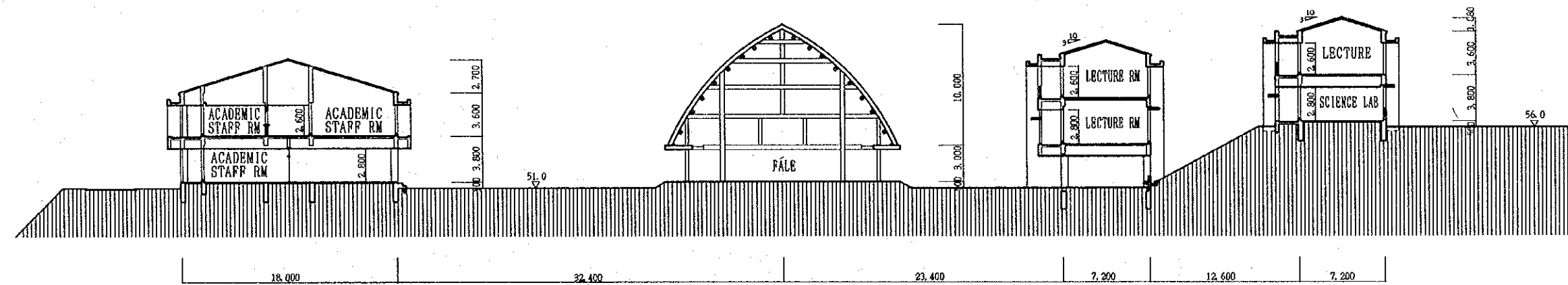
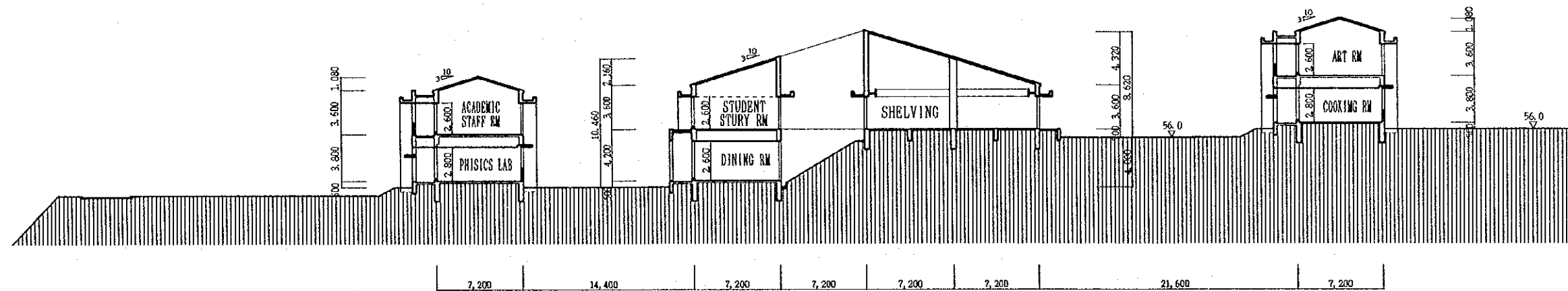


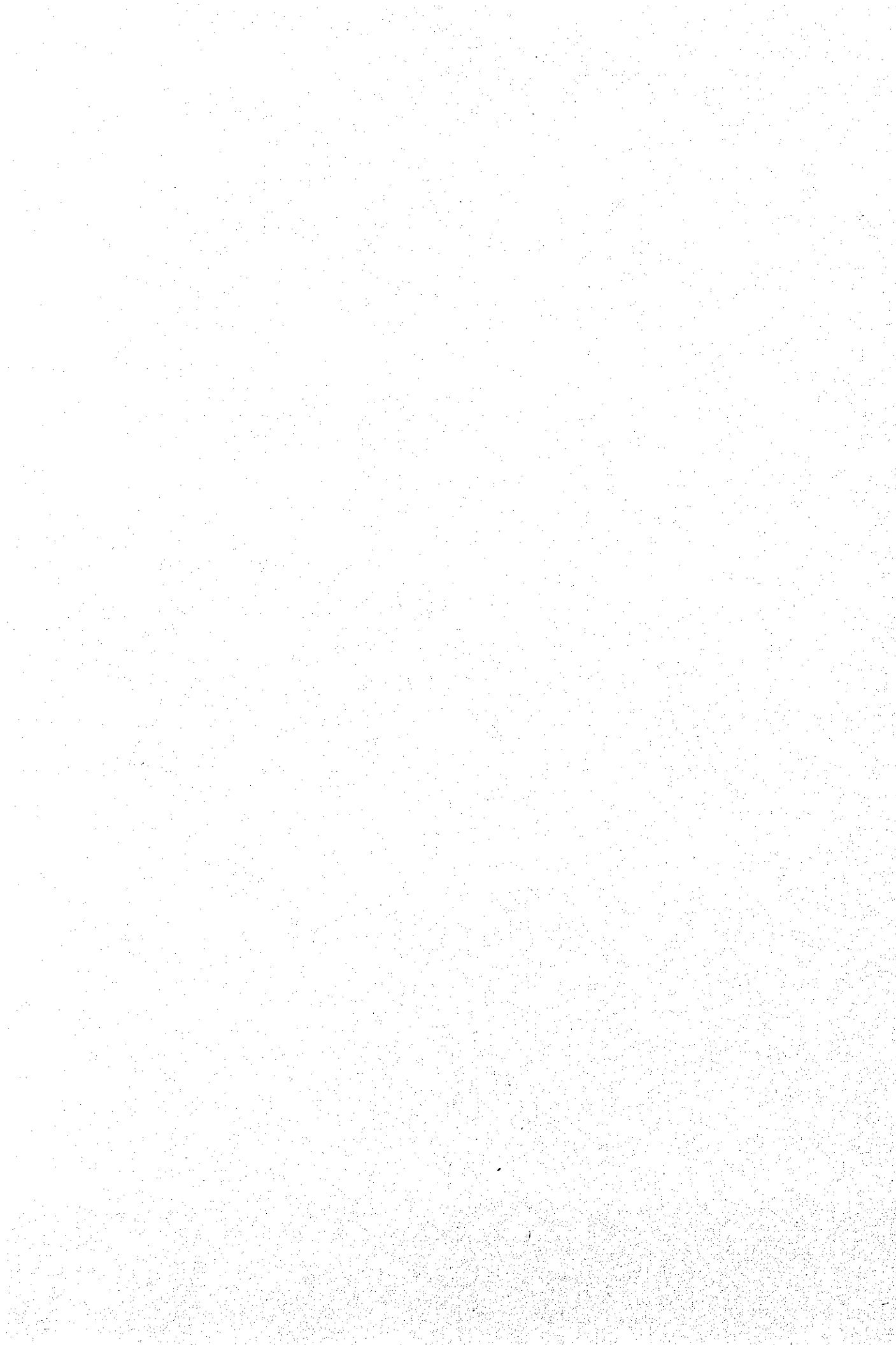
FACULTY/ADMINISTRATION BLDG

PROJECT FOR ESTABLISHING NEW CAMPUS FOR
THE NATIONAL UNIVERSITY OF SAMOA
THIRD FLOOR PLAN



PROJECT FOR ESTABLISHING NEW CAMPUS FOR
THE NATIONAL UNIVERSITY OF SAMOA
ELEVATION





5-4 Project Implementation Plan

5-4-1 Policies for the Implementation of the Project

Under this project, construction work and equipment procurement are to be carried out by the Japanese side, and the rest by the Western Samoan side. In view of the fact that this project is going to be implemented on a large scale and that the proposed facilities are to be built on an inclined plane, the construction period should be long. However, based on an analysis of site survey and soil investigation results, it was concluded that an 17-month construction period is reasonable and appropriate.

Since the construction period allows sufficient time for equipment procurement and installation, local or third-country procurement of some furniture can be prepared in an orderly manner. Regarding the work to be carried out by the Western Samoan side, both sides must discuss the details fully so that the work may be completed within the time limit. This project should be implemented in accordance with the following guidelines:

- 1) Equipment and materials should be procured locally and from third-countries in the Pacific region as much as possible to make effective use of the project costs and to make it easy to maintain and manage and completed facilities and equipment.
- 2) Both sides should make every effort to assure the smooth execution of work by the Western Samoan side.

**5-4-2 Actual Situation of the Western Samoan Construction Industry and Points to
Note in Implementing the Project**

(1) Actual Situation of the Western Samoan Construction Industry

1) Local Consultants

The detail design work is to be carried out through sophisticated coordination of details of architectural, structural, electrical, mechanical and equipment design. It will be difficult to find and use qualified local consultant.

2) Department of Public Work (PWD)

The Department of Public Works of Western Samoa has three divisions -- Construction, Technology and General Affairs. Its staff of about 240 plans, designs, supervises and maintains public buildings. It screens applications for building certification and makes final decisions concerning building permission. In the process of detail design and construction supervision, this Project will be subjected to screening of application for building permission, work inspection and completion inspection by the Department. It will therefore be necessary for both sides to discuss details of this Project fully and without delay so that both sides may have a thorough understanding of the local situation.

3) Location Contractors

There are many contractors in Western Samoa but none of them are full-service contractors. In large-scale construction projects or those where high quality is required, the Department of Public Works and foreign contractors are responsible for material procurement and comprehensive construction management; local contractors provide

labor. The country's major contractors include two local contractors, two local steel work companies and two New Zealand contractors. The main utility subcontractors include three electrical, three plumbing and three mechanical contractors. There will be no problem using them as subcontractors to the Japanese general contractor.

4) Construction Materials

Except for concrete products, almost all construction materials are imported. Products sold at local construction material stores are made in New Zealand, Australia, the United States, China and Taiwan, most of which are imported from New Zealand. Those which can be procured locally are sand, gravel, concrete blocks, ready-mixed concrete, lumber and paints.

5) Building Permission

It is not necessary to apply for building permission for government agencies' facilities designed by the Department of Public Works. But building permission must be applied for if government agencies' facilities are to be designed by organizations other than the Department of Public Works. The process from application to obtaining building permission is as described below:

1. An application for building permission is filed with each of the following authorities.

Department of Land, Survey & Environment

Department of Transport, Fire Brigade

Department of Health

2. An application for building permission is filed with the Department of Public Works.

An application for building permission is filed with the Department of Public Works after obtaining building permission from the three authorities above. The Department screens each application for building permission to verify that layout, structure, fire prevention and equipment are in accordance with the National Building Code for Western Samoa. Usually it takes two weeks to one month to complete screening an application. The Department issues a building permit after confirming the appropriateness of an application.

(2) Points to Note in Implementing the Project

Important points to note in implementing the Project are described below: It is essential to pay special attention to these points to assure the required standards of quality of the proposed facilities and equipment, and to complete the entire work within the allotted period.

1) Site Preparation

Removal of trees and other objects from those portions of the project site where the planned facilities are to be built and site preparation are to be carried out by the Western Samoan side. Existing trees should be utilized as much as possible to protect the environment.

2) Obtaining Building Permission and Temporary Power and Water Supply

Both sides should have prior discussions concerning the Western Samoan side's work: obtaining building permission, temporary power and water supply, so that construction work may start on schedule.

3) Rainy Season and Measures against Cyclones

In Western Samoa, the rainy season lasts from November to March. During the rainy season, it is likely that the project site will be hit by cyclones. Therefore, steps should be taken to cope with large quantities of rainwater from cyclones. Plans should be made for disaster prevention and safety measures.

4) Environmental Protection

It is necessary to prevent soil and sand from a ravine on the eastern side of the project site from flowing into the sea.

5-4-3 Construction Supervision Plan

In accordance with the procedure of Japanese grant aid programs, the Japanese consultant firm will conclude a consultant agreement with the implementing organization of Western Samoa. After the conclusion of the agreement, the Japanese consultant firm will prepare detailed design documents and supervise the construction work. The purpose of construction supervision is to ensure that the project construction work is executed in strict accordance with the design documents. Direction, technical advice and coordination will also be provided throughout the term of services. The construction supervision services include the following:

(1) Cooperation in Tendering and Conclusion of Construction Contract

The consultant shall prepare tender documents necessary for tendering the construction, and equipment procurement and installation work. The consultant shall also assist the client in carrying out tendering (tender announcement, acceptance of applications, prequalification, distribution of the tender documents to the tenderers, acceptance of tenders,

evaluation of the tender results, and awarding the contract to the successful tenderer). The consultant shall further assist the client in concluding a contract with the contractor.

(2) Direction, Advice and Coordination with the Contractor

The consultant shall examine the schedule, the scheme of construction, the construction material procurement plan and the equipment procurement and installation plan, and give the contractor direction, advice and coordination.

(3) Examining and Approving Working and Production Drawings

The consultant shall examine and approve the working drawings, production drawings and other related documents submitted by the contractor.

(4) Confirmation and Approving of Construction Materials and Equipment

The consultant shall confirm the consistency of the construction materials and equipment between those in the contract documents and those which the contractor proposes to procure.

(5) Factory Inspection

The consultant shall present at factory inspections of building components and equipment to ensure their quality and performance.

(6) Reporting on the Progress of the Construction Work

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

(7) Completion Inspection and Test Operation

The consultant shall inspect the facilities constructed and the equipment installed, and make a test run of each piece of equipment to ascertain that the facilities and equipment comply with the provisions of the contract documents, and shall submit an inspection certificate to the Western Samoan side.

(8) Training in Operation of the Facilities and Equipment

Some of the building appliances and equipment to be procured under this project require basic operator knowledge of operation, maintenance and management. It is therefore necessary to train local staff members in charge, including engineers, to operate, inspect and repair such equipment during installation, adjustment and test run of such equipment. The consultant shall give guidance and advice on such training program.

Judging from the scale of the project, the consultant shall station one engineer in Western Samoa to carry out the aforementioned services. The consultant shall also dispatch to the project site the number of engineers needed for inspection, direction and coordination. At the same time, communication and backup systems shall be established in Japan, and managed by the engineer in charge. The engineer in charge of such systems shall report to the Japanese government agencies concerned on progress, payment procedures, completion of the construction of the facilities, installation of the equipment and any other relevant matters.

The following diagram shows the construction supervision system, organizations concerned and their departments.

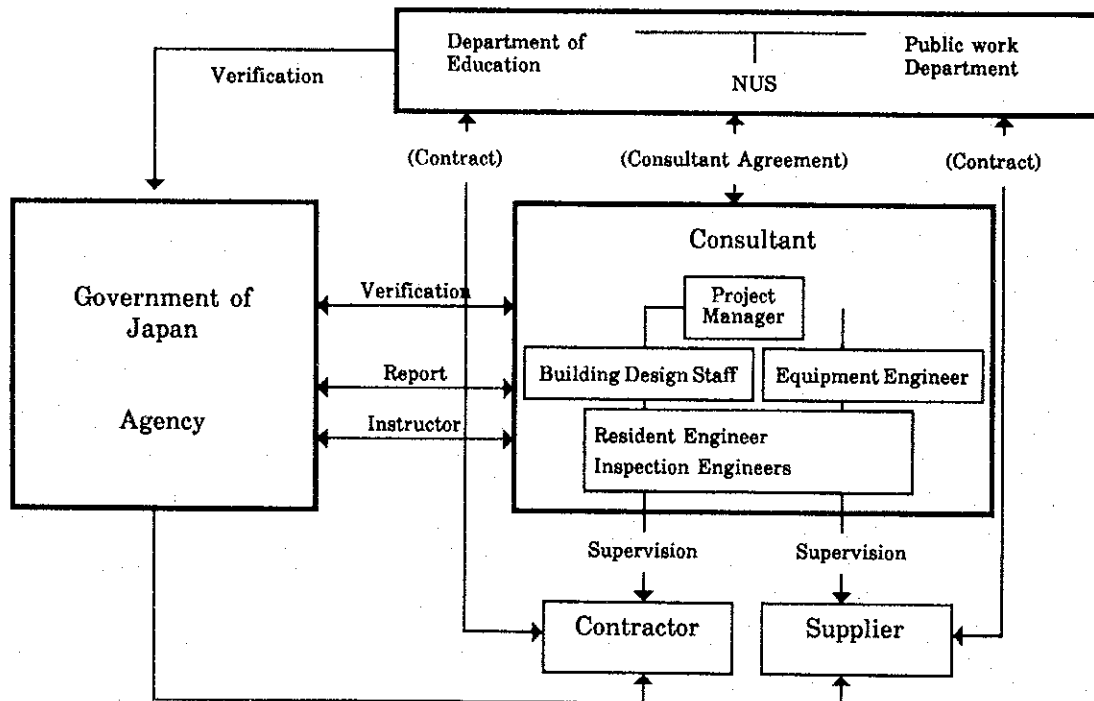


Fig. 5-4 Construction Supervision System

5-4-4 Equipment and Material Procurement Plan

(1) Guidelines for Procurement of Equipment and Materials

In procuring the planned equipment and materials, special attention should be paid to the following points.

1) Local Procurement

Equipment and materials which can be procured locally of sufficient quality and supply should be procured locally.

2) Procurement from Third Countries

Equipment and materials not procured locally should be procured from third countries in the Pacific region as much as possible to facilitate repair, maintenance and management. In this case, however, it will be necessary to place orders for equipment and materials after confirming the size of supplies so that the entire work may progress smoothly.

3) Procurement from Japan

Equipment and materials to be procured locally or from third countries that prove to be of poor quality, of insufficient supply or which can be procured more cheaply from Japan should be imported from Japan.

4) Comparison of Unit Prices of Equipment and Materials

After comparing equipment and material unit prices (including packing, shipping and insurance costs) among Japanese, local and third country sources, it is determined that Japanese-made is cheapest, such equipment and materials should be procured from Japan in consideration of ease of repair, maintenance, management.

(2) Construction Material Procurement Plan

Construction materials should be procured locally and from Japan as follows in accordance with the above guidelines.

Table 5-10 Material Procurement Plan

Component	Appliance/Material	Procurement	Quantity	Notes
Structure	Ready-mixed Concrete	Western Samoa	Average	Desalination of sand and aggregate is necessary
	Reinforcing Bar	Others	Fine	
	Concrete Block Pre-cast Concrete	Western Samoa	Average	Commonly used, quality is not stable
	Corrugate Sheet	Others		Most reliable material
	Asphalt membrane	Others	Average	Most reliable material
Finishing	Aluminum Sash	Others	Average	
	Wood Door	Western Samoa Others	Average	Local products (to check termite-proof and other work)
	Vinyl Tile/Sheet	Others	Average	Commonly used, but not produced locally
	Floor Coating	Others	Average	Commonly used, but not produced locally
	Tile	Others	Average	Floor for toilet
	Paint	Western Samoa	Average	Durable maintenance-free materials
	Mineral Acoustic Panel	Others	Average	To control acoustic performance
Others	Building Equipment	Japan		Reliable maintenance-free appliances

(3) Education Equipment Procurement Plan

Japanese-made educational equipment should be imported only when it is feasible to import such equipment from Japan in consideration of quality

and cost. In the case of educational equipment requiring advanced maintenance skills and expendable supplies, however, it will be necessary to select products whose manufacturers have reliable distribution and maintenance systems in Western Samoa.

Since the planned equipment includes that which is likely to be damaged by impact, humidity and high temperatures, it will be necessary to pay close attention when packing and transporting such equipment.

5-4-5 Implementation Schedule

The schedule after the signing of the Exchange of Notes for this Project by the Governments of Japan and Western Samoa will be executed in the following three stages:

(1) Detail Design

After the conclusion of the consultant agreement and the verification of the agreement by the Government of Japan, the consultant shall prepare detailed design documents, such as detail design drawings, technical specifications, and tender documents, based on the contents of the Basic Design Study Report. The consultant shall also obtain approval on the aforementioned documents from the Western Samoan side. The time required to complete this procedure is estimated to be two months.

(2) Tendering

The Japanese general contractor responsible for the construction and equipment procurement/installation work will be selected by tender. The tender work includes tender announcement, acceptance of applications, prequalification, distribution of tender documents, evaluation of the tender, appointment of the contractor and conclusion of the contract. The time required to complete this procedure is estimated to be two months.

(3) Construction Work and Equipment Procurement/Installation Work

The general contractor shall start the work after the contract is verified by the Government of Japan. After a tentative calculation is conducted, accounting for scale and details of the proposed facilities and equipment, the situation of the local construction industry, the possible decline in construction efficiency during the rainy season (on the assumption that no accident which delays construction progress occurs), it is concluded that it will take about 17 months to complete the entire project.

The following chart shows the execution schedule from the signing of the Exchange of Notes to completion of the entire project.

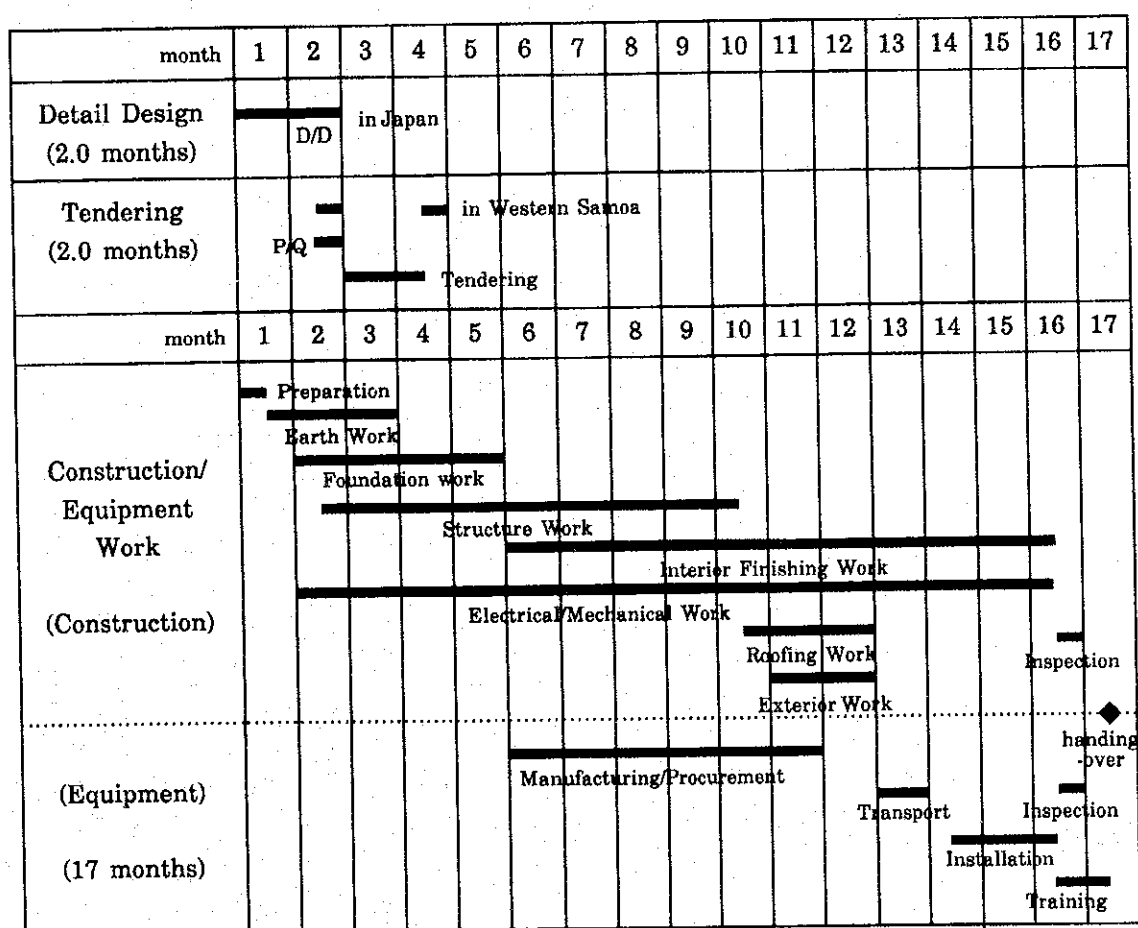


Fig. 5-5 Implementation Schedule

5-4-6 Scope of Work

The costs of this Project are estimated as follows:

(1) Scope of Work

This Project will be implemented through close collaboration between the Government of Japan and the Government of Western Samoa within the framework of Japanese grant aid. The scope of work to be undertaken by respective governments is listed below:

1) Scope of work to be undertaken by the Government of Japan

a) Facilities

- The building construction stated in this Basic Design study Report.
- Electrical, air-conditioning and plumbing work related to the above proposed facilities.
- Packing, insurance, loading, shipment, ocean transport, unloading, forwarding and inland transport of materials to be used for the above proposed facilities.

b) Equipment

- Procurement, transport and installation of equipment stated in this Basic Design Study Report.
- Packing, transport and re-installation of the existing equipment which is stated in this Basic Design Study Report to be re-used. (Repair cost of these items in case of disorder shall be borne by Western Samoan side.)

c) Infrastructure

- Low-tension power line from the electric distribution room.
- Plumbing work within the project site.

- MDF and telephone facilities within the proposed facilities, but excluding central office lines.

2) Scope of work to be undertaken by the Government of Western Samoa

a) Site preparation

- Removal of obstructions and land leveling of the project site.
- Construction of the access road to the project site.

b) Preparatory work for the construction work

- Supply of temporary electric power, telephone lines and water.

c) Infrastructure (the work and payment of the following works)

- High-tension power line and transformer.
- Telephone central office line up to the MDF.
- Water supply up to the reservoir of the proposed facilities.

d) Exterior work

- Landscaping, fence, gate, etc.

e) Fittings and furniture

- Fittings and furniture other than those to be supplied by this Project.

f) Miscellaneous procedures and costs

- To conclude a Banking Arrangement (B/A) with an authorized Japanese foreign exchange bank to bear necessary payment commission for Authorization to Pay (A/P).
- Prompt action related to tax exemption, customs clearance and forwarding of imported building materials and equipment.

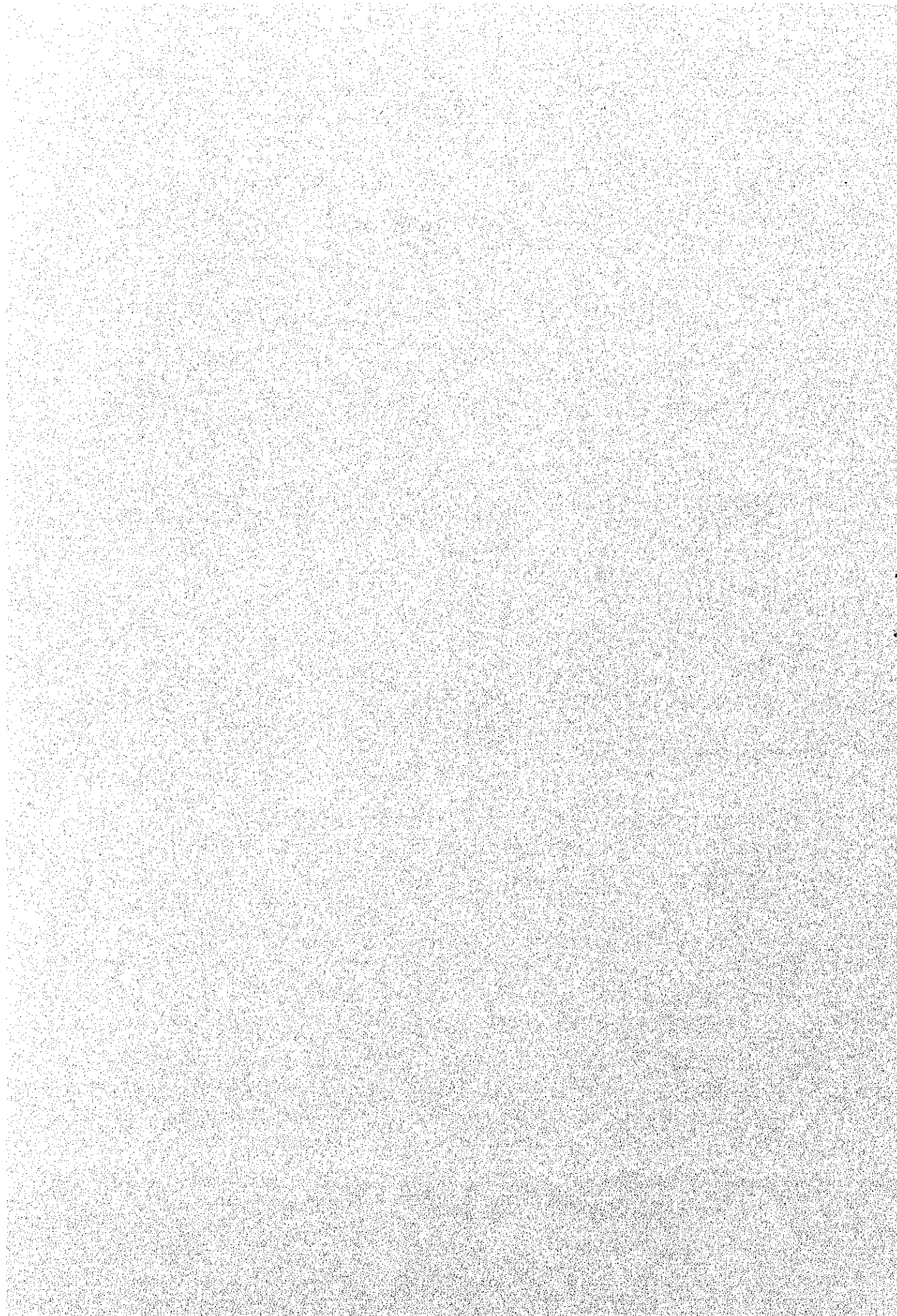
- Formalities of, and expenses for obtaining building permits.
- Exemption or subrogation of excise taxes, VAGST and any other taxes and financial charges incurred as a result of work stated in this Basic Design Study Report.
- Provision of every facility to the Japanese nationals engaged in this Project under the verified contracts for their entry into and stay in Western Samoa.
- Exemption of customs duties, internal taxes and other financial charges which can be imposed on the Japanese nationals engaged in this Project.
- Maintenance and operational expenses for the facilities and equipment.

(2) Estimated Costs of Work to Be Borne by the Government of Western Samoa

1) Site preparation	WS\$152,905
2) Preparatory work for construction	WS\$20,650
3) Infrastructure	WS\$153,250
4) Exterior work	WS\$619,500
<hr/>	
Total	WS\$946,305

The Government of Western Samoa is required to allocate necessary budget as mentioned above and to complete their scope of work at the relevant time.

CHAPTER 6 PROJECT EVALUATION AND RECOMMENDATIONS



CHAPTER 6 PROJECT EVALUATION AND RECOMMENDATIONS

6-1 Expected Positive Effects of the Project

When this Project is implemented and the proposed facilities and equipment are operated and managed properly by the Western Samoan side, it is expected that the following positive effects and improvements will be realized.

Present state and problems	Measures to be taken under this project	Expected positive effects and improvements
There is a shortage of people of academic standing that are required by private businesses and government agencies for the country's economic and social development. The main reasons for this are as follows.	Quantitative and qualitative improvement of the following facilities and items of equipment.	The university's functions will be improved by increasing the total floor space of the university's facilities from 5,900m ² to 9,500m ² and procuring the required items of equipment. The university's enrollment can increase by about 30% from 731 to 950.
① There are many students wishing to enroll at the university, but the university is not in a position to accept more students for lack of facilities, equipment and instructors.	① Chemical, physical and biological laboratories and a language laboratory will be newly constructed and the existing computer room will be enlarged by increasing the total floor space of the university's existing facilities from about 1,825m ² to about 3,000m ² . Required items of equipment will be procured.	① <u>Faculty of Arts</u> Bachelor's degree/diploma courses in English and practical English will be opened in addition the existing bachelor's degree/diploma courses in Samoan studies. Practical diploma/certificate courses can also be opened. <u>Faculty of Commerce</u> The foundation of this faculty will consolidate on-going popular courses. <u>Faculty of Science</u> Bachelor's degree course in mathematics and senior certificate courses in mathematics and general science will be opened in addition to the existing certificate courses in mathematics and computer science. Bachelor's degree level courses in physics, chemistry and biology can also be opened.
② As a result, the country is suffering from a brain drain, which is aggravating the shortage of human resources.	② Quantitative and qualitative improvement of the university's facilities and equipment as a whole, instructor's rooms, and library.	② A substantial increase in the university's enrollment will meet the needs of students wishing to enroll at the university. It is also expected that those who have been qualified as university instructors in foreign countries will return home to teach at the university.
③ Primary school (G1 to G8) pupils' attendance rate is about 85%, which is rather high. But that for G13 of senior secondary school students is only 15%, which has resulted in a labor shortage and inadequately qualified labor force. Despite the fact that there is a strong need for improvement in the quality of primary and secondary school teachers, the country is unable to provide education for that purpose for lack of required facilities and equipment.	③ The total floor space of the facilities of the teachers' college will be increased from 4,077m ² to about 6,000m ² and the required facilities and equipment will be procured.	③ There is stronger need for qualitative improvement than for quantitative improvement. In addition, it is imperative to improve the quality of secondary education, particularly senior secondary education. Such a situation will be met by a program to step up teacher training. It is expected that an improvement in the quality of secondary education as a result of the improvement in the quality of secondary school teachers will lead to an improvement in the level of university education.

Present state and problems	Measures to be taken under this project	Expected positive effects and improvements
<p>④ In the process of modernization of school education, the Samoan cultural tradition and language was neglected, which has made it difficult to maintain and advance the Samoan tradition. As a result, Samoans have become increasingly unaware of their identity.</p>	<p>④ Improvement of the facilities of the Samoan Studies Center and related facilities.</p>	<p>④ It is expected that the project will contribute to a society whose members keep open minds about their cultural tradition.</p>
<p>④ Improvement of the capabilities of nurses.</p>	<p>④ Improvement of natural science/computer laboratories and procurement of related items of equipment.</p>	<p>④ It is expected that nurturing nurses who can effectively cope with health care advancements will contribute to the improvement in health care quality.</p>

6-2 Examination of the Appropriateness of the Project and Factors Evidencing Its Appropriateness

The National University of Samoa (NUS), which was founded in 1984, now consists of the Faculty of Arts, the Faculty of Science, the Faculty of Nursing and the UPY Course. It has been decided that the Western Samoa Teachers' College (WSTC), which is training primary and secondary school teachers, should be reorganized and integrated into NUS to form the Faculty of Education. It is also expected that with the opening of the Samoan Studies Center, NUS will become one of the world's most prominent centers for Polynesian studies striving to raise the level of its general university education and putting a great deal of energy into practical university education such as English, computer training and accounting.

The number of students at NUS in the target year of the Development Plan will be 950, of which 470, or about half, will be students of the Faculty of Education. At present, it is imperative for the Government of Western Samoa to increase the number of middle level workers and improve these workers' capabilities to promote the growth of the country's economy. In fact, there is a growing need to nurture secondary school teachers and

train those in service. In this context, this Project, aimed at integrating teacher training into university education is timely. The Faculty of Nursing is expected to open bachelor's degree/senior diploma/certificate courses and have an enrollment of 80 by the target year of the Development Plan. It is expected that the Faculty of Nursing will provide technical training with emphasis on PHC, public health and training nurses to deal with health care advancements made in the field of.

The expected positive effects of this Project in teacher and nurse training, in particular, will benefit Western Samoa's public at large.

It is also expected that the number of students of the Faculty of Arts will increase to 110 (an increase of 81 over 1994), and that of the Faculty of Science to 80 (an increase of 77 over 1994), by the target year as a result of the opening of additional bachelor's degree/diploma/certificate courses. The number of students to take the accounting course will also be increased from 50 in 1994 to 70 in the target year. Thus, the University's higher education function will meet basic human needs in the country and constitute the core of the country's efforts to develop human resources. NUS's expansion will certainly be conducive to better public welfare and higher quality of life.

It is expected that Western Samoan government agencies, including the Department of Education, the National University of Samoa, which is an autonomous organization stipulated by the National University of Samoa Act, and the Western Samoa Teachers' College, which is expected to be integrated into the University, will interact in the operation, management and maintenance of the facilities and equipment procured under this Project. These organizations are already moving to secure the required number of additional staff members and the required budget. The academic

staff and administrative/clerical staff of NUS will increase from 46 to 96 and from 20 to 52, respectively, in the target year. The budget of NUS for F/S 1994-95 will be WS\$1,570,009, a 35% increase over the previous fiscal year, which will mark the first step toward the implementation of the Development Plan. The Western Samoan side is not completely certain of future budgetary appropriations for the planned increase in the number of school teachers and the operation, maintenance and management of the facilities and equipment procured under this Project. But it is very likely that the Western Samoan side will be able to secure funds required for the immediate future. Thus, both sides must fully discuss future budgetary appropriations.

The Government and people of Western Samoa have long wanted to improve the NUS's facilities and equipment. The 7th Development Plan (1992-94) put utmost emphasis on human resources development and improvement of the NUS's facilities and equipment; it is expected that the Western Samoan side will promote this Project. The University's new campus is to be constructed in Vaivase, which should cause no environmental problems. Furthermore, there will be no difficulty in implementing this Project under the Government of Japan's grant aid.

6-3 Recommendations

As stated earlier, the implementation of this Project is expected to bring about great positive effects, including major improvement of the University's facilities and equipment. It is also expected to contribute greatly to the country's education and human resources development. It is therefore appropriate to implement this project under the Government of Japan's grant aid. The National University of Samoa (NUS) and the Department of Education of Western Samoa have committed themselves to secure the necessary manpower and financing required for the immediate future.

On the other hand, this Project raises the possible problems. It will be difficult for NUS to increase enrollment as initially planned unless the following problems are overcome:

(1) Securing the Required Number of Academic Staff Members

Under this Project, the academic staff of NUS is expected to increase by 19 from 43 to 62 by the year 2000. The academic staff of the Western Samoa Teachers' College, which is scheduled to be integrated into NUS and become the Faculty of Education, is expected to remain present staff of 41 by the same year. Thus, the academic staff of NUS is expected to increase by 19 by the year 2000. That number represents 22.6 percent of the combined total of the two institutions' present academic staff of 84. Hence, quantitative improvement in NUS teaching staff is realistic. Inviting people of high academic standing will improve the quality of education provided by the University and enhance its name; at least one professor or lecturer up to the international academic level should be recruited for each of the faculties of the University.

(2) Expanding the Scope of Educational Activity and Improving the Quantity of Education

Most of the Western Samoan people are well aware of the importance of education, as is evidenced by the fact that the number of students wishing to enroll at university educations increases each year. From 1992 afterwards, the number of students taking the examination for entrance to the UPY Course exceeded 500. In 1993, on the other hand, only 167 students (about 31.5 percent of the total number of applicants) were admitted to the NUS's UPY Course, of which 91, or about 54 percent, have completed the course. In the same year, of the 144 students taking the bachelor's degree course (3-year course) at NUS, only 10 graduated. These figures point to the following two problems.

The first is the quantity issues. Of the students wishing to enter University (those taking the examination for qualification for the UPY Course), only about 30 are admitted to take bachelor's courses of the University. More than half of the students who have completed the UPY Course are studying on scholarships in foreign countries. Even if the number of those studying abroad is accounted for about 80 students go on to University every year.

The second is the quality issues (the scholastic ability of the students). Only a small number Western Samoan students complete their respective courses, whether studying at home or aboard.

It will be necessary to take the following measures to solve the two problems and make effective use of the country's limited human resources.

① Making the University's Degree Courses More Efficient

It is imperative to improve the academic ability of college graduates and to allow only those who have sufficient scholastic ability to study at universities.

Therefore, in principle, students wishing to study liberal arts should take bachelor's degree courses at NUS. Only students who have mastered English as well as other academic skills as Samoans will be allowed to take postgraduate courses at foreign universities. Students who have completed their postgraduate courses overseas will be required to return to Western Samoa after ten-year practical experience there.

On the other hand, students wishing to study science or technology should first take the NUS's UPY Course, period of which is advisable to extend to two years, and consolidate their abilities of mathematics and natural science. Only students who have successfully mastered sufficient academic capabilities will be allowed to take bachelor's degree courses overseas. These students will also be required to return home after acquiring experience abroad.

This should cultivate academic achievement for practical business applications. Such human resources are urgently needed for the country's social and economic development. However, utmost emphasis should be placed on qualitative rather than quantitative improvements.

② Expansion of Business Education

To train middle-rank professionals that are urgently needed in Western Samoa, the quality of the NUS's Diploma/Certificate courses in accounting, commerce, business management and computer technology

should be improved, and the quality of English education at the University should also be improved to meet the demand of the country's industry for university education.

③ Improvement of the Quality of Teacher Training and Implementation of Training of In-service Teachers

Although the immediate effect of improving the quality of ordinary workers who are attached to the economic activities in Western Samoa is not explained clearly, such efforts are vital to the country's further economic growth. In Western Samoa, the level of primary education is rather high, but secondary education is not yet full-fledged. Apart from the fact that the number of students going on to national senior secondary schools (5-year course) is very small (about 360), high priority is put on implementing policies to improve the quality of junior secondary education (up to G11), which is expected to be an important source of middle-ranking manpower.

Improving the quality of facilities and equipment of science laboratories at schools may be effective as part of such measures, but it is more important to improve quality of schoolteachers themselves. For this reason, it is imperative to improve the quality of training courses for the in-service teachers as well. Under the 20-year Development Plan for the National University of Samoa, the Western Samoa Teachers' College is scheduled to be integrated into the University and become its Faculty of Education in 2000. But such integration should be realized earlier through implementation of this Project.

(3) Securing the Costs of Operation, Maintenance and Management of the Facilities and Equipment Procured Under This Project

This Project will prove futile unless the budget for the operation, maintenance and management of the proposed facilities and equipment is secured. Although the proposed facilities is designed to maximize the effective use of natural lighting and ventilation, a large proportion of the increase in the operation costs after implementation of the Project will be incurred by operation and management of the air-conditioners. Thus, it is important for NUS to try to minimize running time of the air conditioners while keeping rooms cool. On the other hand, computers, language laboratory, audio-visual equipment and some items of experimental equipment, copiers and printers will require annual maintenance costs equivalent to about 5 percent of their purchase price on average. The longer they are used, the higher will be the costs of floppy disks, ink, paper, and experimental chemicals. So there will be a limit to the University's efforts to reduce these costs without impairing functions.

Personnel expenses account for 75 to 80 percent of the University's total expenditures. In the tentative calculation of the University's annual expenditures after the completion of this Project, personnel expenses account for a high percentage of the University's total annual expenditures: 70 percent at the time of completion of the Project and 75 percent in the year 2000.

It will be necessary to recruit competent lecturers to raise reputation of the University; it will be difficult to drastically cut University personnel expenses.

It will therefore be impossible to save on facility/ equipment operation, maintenance and management costs substantially. Thus, the Government of

Western Samoa, which played a central role in founding the National University of Samoa and which is responsible for the University's budget, should make adequate budgetary appropriations for operation, maintenance and management of the facilities and equipment procured under this Project.

(4) Developing a Sympathetic Understanding of Aid-providing Countries

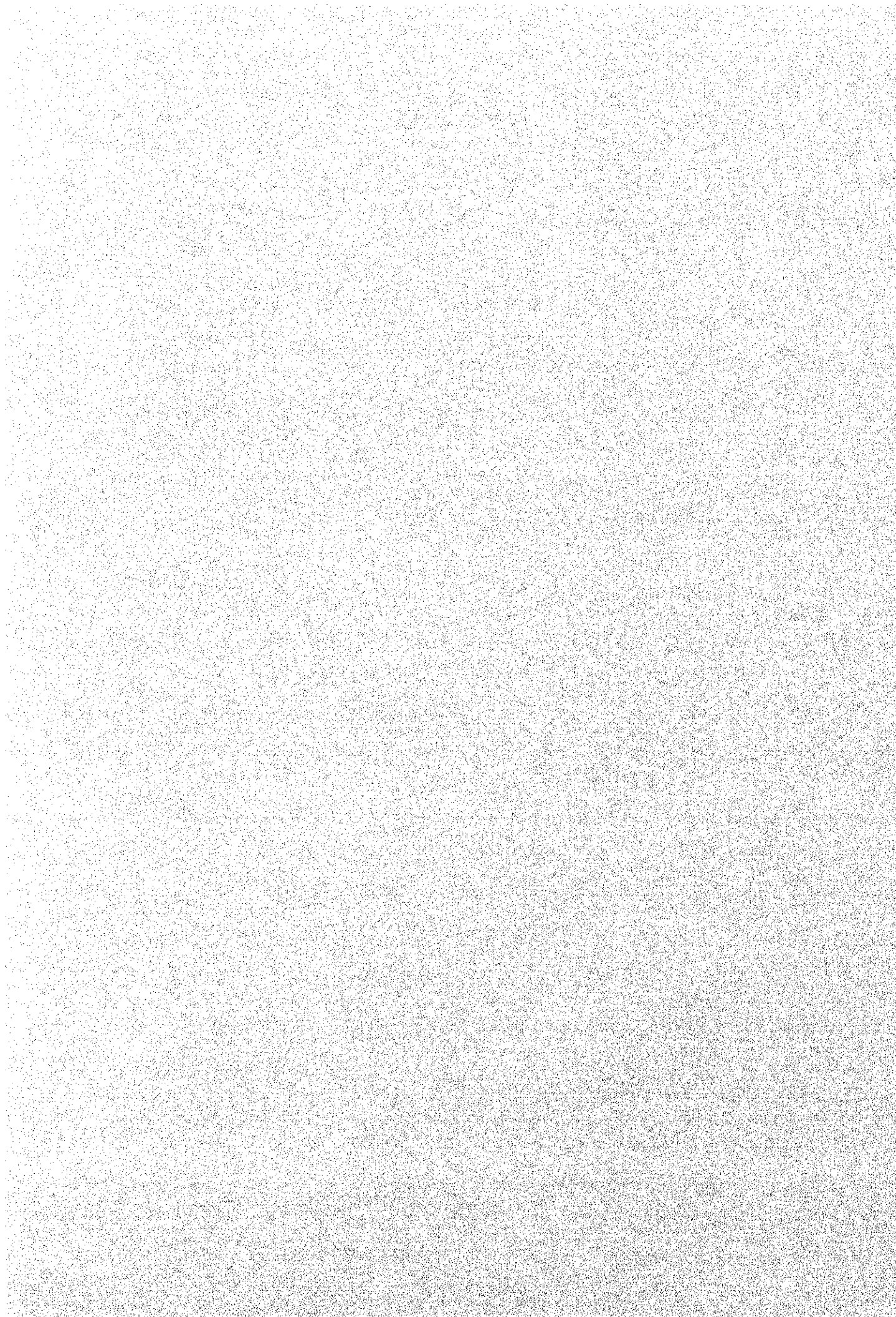
It is indeed a great financial burden on a country with a population of a little over 160,000 to operate a national university. In Japan, however, Kushiro Municipal University, which is operated and managed by a city with a population of about 160,000, is a viable college of economics with an enrollment of 1,200. There is no denying the rationale for a country operating and managing a national institution of higher education to preserve and advance its cultural tradition. Such an institution of higher education is certain to contribute to socioeconomic stability and development of the country and its region. In the case of the National University of Samoa, it is important to obtain an understanding of countries such as New Zealand, Australia, the United States, especially, the State of Hawaii, located in the Polynesian cultural sphere, and Japan so that these countries will commit to continued financial and technical assistance to the University. Of particular importance are scholarships provided by the Governments of New Zealand and Australia. It will be necessary for the University's management to fully discuss continuation and expansion of such scholarships and the possibility of the scope of such scholarships being broadened with the Governments of the two countries.

As regards such basic subjects as English, mathematics and natural science, the U.S. Peace Corps program, whose members in Western Samoa serve as university instructors, should be expanded, and a similar program

should be launched with the cooperation of the Governments of New Zealand, Australia and Asian countries to revitalize the University's educational activities.

By cultivating such international understanding, the Government of Western Samoa will be able to develop human resources for the international community at a time of growing cultural globalization.

ANNEX



1. Member Lists of the Field Study Teams

(1) Basic Design Study Team (August 16 ~ September 14, 1994)

Mr. Fumio KIKUCHI	Team Leader	Deputy Director, Consultant Contract Division, Procurement Department, JICA
Mr. Norio KATOH	Project Coordination	Associate Development Specialist in the field of Education, Environment, WID and other global issues Division, Planning Department, JICA
Mr. Kan MAJIMA	Project Manager, Architect	Yamashita Sekkei Inc.
Mr. Satoshi OKAMOTO	Architectural Designing and Implementation Planning, Architect	Yamashita Sekkei Inc.
Mr. Masayoshi MASUZAWA	Sanitary Facilities Planning and Survey Planning	Yamashita Sekkei Inc.
Mr. Yasuhiro TAKASHINA	Equipment Planning	Yamashita Sekkei Inc.

(2) Explanation of Draft Final Report (November 7 ~ 18, 1994)

Mr. Ichiro MUKAI	Team Leader	Second Basic Design Study Division, Grant Aid Study & Design Department, JICA
Mr. Kan MAJIMA	Project Manager, Architect	Yamashita Sekkei Inc.
Mr. Satoshi OKAMOTO	Architectural Designing and Implementation Planning, Architect	Yamashita Sekkei Inc.

2. Survey Schedule

(1) Basic Design Study (August 16 ~ September 14, 1994)

No.	Date	Place	Schedule
1	Aug. 16 (Tue)	Tokyo	<ul style="list-style-type: none"> • Lv. Tokyo
2	Aug. 17 (Wed)	Wellington Apia	<ul style="list-style-type: none"> • Ar. Wellington (via. Auckland) • Courtesy call on the Embassy of Japan • Ar. Apia (via. Auckland) • Meeting at JICA office • Courtesy call on Department of Foreign Affairs • Courtesy call on Department of Education (DOE)
3	Aug. 18 (Thu)	Apia	<ul style="list-style-type: none"> • Meeting at NUS (Explanation of Japan's Grant Aid system, Survey schedule, Inception report etc.) • Courtesy call on Australia and New Zealand High Commission • Meeting at JICA office
4	Aug. 19 (Fri)	Apia	<ul style="list-style-type: none"> • Courtesy call on Treasury Department • Survey on USP, Alafua • Meeting at NUS (discussion on the contents of M/D, Submission of questionnaire and introductory discussion of the questionnaire with respective counterpart) • Courtesy call on Head of State • Dinner hosted by DOE
5	Aug. 20 (Sat)	Apia	<ul style="list-style-type: none"> • Survey on the proposed construction site and WSPoly • Dinner hosted by the Survey Team
6	Aug. 21 (Sun)	Apia	<ul style="list-style-type: none"> • Preparation of the additional questionnaire • Preparation of the specifications of site survey
7	Aug. 22 (Mon)	Apia	<ul style="list-style-type: none"> • Signing of Minutes of Meeting • Meeting at NUS (Discussion of the contents of the request and verification of the Development Plan) • Report on the survey result to JICA and Department of Foreign Affairs
8	Aug. 23 (Tue)	Apia	<ul style="list-style-type: none"> • Lv. Apia for Tokyo (Mr. Kikuchi, Mr. Kato) • Survey on NTS • Survey on WSTC • Meeting at PWD (Mr. Masuzawa)
9	Aug. 24 (Wed)	Apia	<ul style="list-style-type: none"> • Survey on WSpoly • Survey on USP, Alafua • Survey on construction industry (Mr. Masuzawa)
10	Aug. 25 (Thu)	Apia	<ul style="list-style-type: none"> • Meeting at NUS • Meeting at Post & Telecommunication Dept. (Mr. Masuzawa) • Survey on USP (Mr. Masuzawa)
11	Aug. 26 (Fri)	Apia	<ul style="list-style-type: none"> • Meeting at NUS • Meeting at Water Authority

No.	Date	Date	Schedule
12	Aug. 27 (Sat)	Apia	<ul style="list-style-type: none"> • Survey on the existing facilities of NUS and WSTC
13	Aug. 28 (Sun)	Apia	<ul style="list-style-type: none"> • Meeting within the Team
14	Aug. 29 (Mon)	Apia	<ul style="list-style-type: none"> • Meeting at NUS • Placing order of the site survey and bore hole tests • Meeting at Electric Power Corporation (Mr. Masuzawa)
15	Aug. 30 (Tue)	Apia	<ul style="list-style-type: none"> • Meeting at NUS • Meeting at Electric Power Corporation (Mr. Masuzawa)
16	Aug. 31 (Wed)	Apia	<ul style="list-style-type: none"> • Meeting at NUS • Survey on Malifa Primary School • Meeting at PWD
17	Sept. 1 (Thu)	Apia	<ul style="list-style-type: none"> • Meeting at NUS • Survey on construction industry • Lv. Apia for Tokyo (Mr. Takashina)
18	Sept. 2 (Fri)	Apia	<ul style="list-style-type: none"> • Meeting at NUS • Survey on construction industry
19	Sept. 3 (Sat)	Apia	<ul style="list-style-type: none"> • Survey on primary schools
20	Sept. 4 (Sun)	Apia	<ul style="list-style-type: none"> • Meeting within the team
21	Sept. 5 (Mon)	Apia	<ul style="list-style-type: none"> • Meeting at NUS • Meeting at Australian High Commission
22	Sept. 6 (Tue)	Apia	<ul style="list-style-type: none"> • Survey on the construction site at the Tuasivi Hospital, Savai
23	Sept. 7 (Wed)	Apia	<ul style="list-style-type: none"> • Courtesy call on the Director of PWD • Survey on the factory of Yazaki, Samoa • Meeting at NUS
24	Sept. 8 (Thu)	Apia	<ul style="list-style-type: none"> • Meeting at NUS • Meeting at New Zealand High Commission
25	Sept. 9 (Fri)	Apia	<ul style="list-style-type: none"> • Report to and discussion with the Minister, DOE • Report to JICA
26	Sept. 10 (Sat)	Apia	<ul style="list-style-type: none"> • Lv. Apia (Mr. Okamoto, Mr. Masuzawa)
27	Sept. 11 (Sun)	Apia/ Auckland	<ul style="list-style-type: none"> • Ar. Auckland (Mr. Okamoto, Mr. Masuzawa) • Lv. Apia (Mr. Majima)
28	Sept. 12 (Mon)	Apia/ Auckland	<ul style="list-style-type: none"> • Ar. Wellington (via Auckland, Mr. Majima) • Survey on construction industries in Auckland (Mr. Okamoto, Mr. Masuzawa)
29	Sept. 13 (Tue)	Auckland	<ul style="list-style-type: none"> • Report to the Embassy of Japan in New Zealand (Mr. Majima) • Survey on construction industries in Auckland (Mr. Okamoto, Mr. Masuzawa) • Lv. Wellington Ar. Sydney (Mr. Majima)
30	Sept. 14 (Wed)	Tokyo	<ul style="list-style-type: none"> • Lv. Sydney for Tokyo (Mr. Majima) • Lv. Auckland for Tokyo (Mr. Okamoto, Mr. Masuzawa)

(2) Explanation of Draft Final Report (November 7 ~ 18, 1994)

No.	Date	Place	Schedule
1	Nov. 7 (Mon)	Tokyo	<ul style="list-style-type: none"> ● Lv. Tokyo (Mr. Majima, Mr. Okamoto)
2	Nov. 8 (Tue)	Wellington	<ul style="list-style-type: none"> ● Ar. Wellington (via. Auckland) ● Courtesy call on the Embassy of Japan in New Zealand
		Apia	<ul style="list-style-type: none"> ● Lv. Tokyo (Mr. Mukai) ● Ar. Apia (via. Auckland) ● Survey on the proposed construction site
3	Nov. 9 (Wed)	Apia	<ul style="list-style-type: none"> ● Meeting at JICA office ● Courtesy call on Department of Foreign Affairs ● Courtesy call on Australia and New Zealand High Commission ● Meeting at Department of Education (DOE), Explanation of Draft Final Report ● Meeting with the member of the Council, NUS ● Meeting at JICA office
4	Nov. 10 (Thu)	Apia	<ul style="list-style-type: none"> ● Survey on USP, Alafua ● Survey on Samoa College ● Meeting at NUS
5	Nov. 11 (Fri)	Apia	<ul style="list-style-type: none"> ● Meeting at NUS ● Preparation of Minutes of Meeting
6	Nov. 12 (Sat)	Apia	<ul style="list-style-type: none"> ● Survey on the construction site at the Tuasivi Hospital, Savai (Mr. Mukai) ● Meeting with Dr. K. Back
7	Nov. 13 (Sun)	Apia	<ul style="list-style-type: none"> ● Meeting within the team
8	Nov. 14 (Mon)	Apia	<ul style="list-style-type: none"> ● Singing of Minutes of Meeting ● Lunch hosted by JICA ● Dinner hosted by DOE
9	Nov. 15 (Tue)	Apia	<ul style="list-style-type: none"> ● Lv. Apia
10	Nov. 16 (Wed)	Wellington	<ul style="list-style-type: none"> ● Ar. Wellington (via. Auckland)
11	Nov. 17 (Thu)	Wellington / Sydney	<ul style="list-style-type: none"> ● Report to the Embassy of Japan in New Zealand ● Lv. Wellington Ar. Sydney
12	Nov. 18 (Fri)	Tokyo	<ul style="list-style-type: none"> ● Lv. Sydney for Tokyo

3. Member List of Concerning Party in Western Samoa

His Highness Susuga Malietoa Tanumafili II, Head of State

(1) Department of Foreign Affairs

Mr. Mose Pouvi Sua	Secretary
Ms. Noumea Simi	Assistant Secretary, Aid/Economic Division
Ms. Perina Sila	Officer, Japanese Aid Program

(2) Treasury Department

Mrs. Pisaina Leilua Lei-Sam	Assistant Secretary Finance
Mr. Mose Asani	Senior Finance Officer

(3) Department of Education

Hon. Fiame Naomi Mataafa	Minister/Pro-Chancellor
Mr. Tupae Esera	Director
Ms. Nuufou Petaia	Deputy Director
Mr. Ed Hankin	Education Planner, EPPD Project
Ms. Eve Coxon	Education Policy Adviser, EPPD Project

(4) National University of Samoa

Dr. Tauialo Lanu Palepoi	Vice-Chancellor
Mr. Nase Nicholas Levy	Registrar
Pro. Aiono Fanaafi Le-Tagaloa	Head of Faculty of Arts
Ms. Breda Tipi-Faitua	Head of English Department
Mr. Mafatia Tapelu	Acting Head of Faculty of Science
Mr. Folomalo Toepupe	Coordinator of UPY Course
Mr. Iovitana Leauga	Computer Laboratory Manager
Mrs. Siavata Gale	Librarian
Ms. Emma Kruse Vaai	Lecturer (English)
Ms. Lynne Enari	Lecturer (English)
Mr. Leslie Bissel	Lecturer (Physics)
Dr. Kenneth Back	Consultant
Mrs. Margaret Ryan	Member of Council (Chamber of Commerce)

- | | |
|---|---|
| Rev. Lalomilo Kamu | Member of Council (Methodist Schools) |
| Rev. Mike Tarburton | Member of Council (Seventh-Day Adventist Schools) |
| Mrs. Maria Kerslake | Member of Council (Staff Representative) |
| Ms. Sanae Fujimoto | JOCV |
| (5) Western Samoa Teacher's College | |
| Mrs. Tilianamua Afamasaga | Principal |
| (6) Western Samoa Nurse's College | |
| Mrs. Pelenatete Stowers | Director Nursing |
| (7) Western Samoa Polytechnic | |
| Mr. Magele Mauiliu | Principal |
| Mr. Yoshiaki Iwasaki | JICA Expert |
| Mr. David Lowther | New Zealand Aid Adviser |
| (8) University of the South Pacific, Alafua | |
| Dr. W. A. Pattie | Pro Vice-Chancellor |
| Dr. Peggy Fairbairn Dunlop | Acting Pro Vice-Chancellor |
| Mr. Mikki Valasi Suaesi | Senior Assistant Librarian |
| Mr. Rudolf Bartley | Director, PEACESAT Alafua Terminal |
| (9) Auckland College of Education | |
| Mr. Richard Thompson | Deputy Librarian, Sylvia Ashton-Warner Library |
| (10) Public Works Department | |
| Mr. Isiluki Punivalu | Director of Works |
| Mr. Etuale Ioane | Chief Architect |
| Mr. Mila Posini | Chief Building Inspector |
| Mr. Katsumi Nao | JOCV |
| (11) Western Samoa Water Authority | |
| Mr. Sebastian Mariner | Technical Manager |

Mr. Peter Grove Acting Chief Engineer

(12) Electric Power Corporation

Mr. Aumalaga Tiotio Electrical Engineer, Distribution

(13) Post & Telecommunication Department

Mr. Talitiga Pemia Deputy Director
Mr. Colin Schulz Chief Engineer
Mr. Asamu E. Ah Sam Telecommunication Controller

(14) Australian High Commission

Mr. David Ritchie Australian High Commissioner
Mr. Greg Robertson Second Secretary

(15) New Zealand High Commission

Mr. Peter Heenan New Zealand High Commissioner
Mr. Bill Dobbie Second Secretary

(16) Yazaki, Australia, Western Samoa

Mr. Akihiro Kishida Vice President
Mr. Yasutoshi Nakada Senior Manager

(17) Embassy of Japan in New Zealand

Mr. Sadakazu Taniguchi Ambassador to New Zealand
Mr. Masaaki Miyashita Minister
Mr. Yoshikazu Takeuchi First Secretary
Mr. Kinji Ichimura First Secretary

(18) JICA Western Samoa Office

Mr. Kai Yanaka Resident Representative
Mr. Rei Nishimoto

4-1. Minutes of Discussions (Basic Design Study)

Minutes of Discussions
on
the Basic Design Study on the Project for
Establishing the New Campus for the National University of Samoa
in Western Samoa

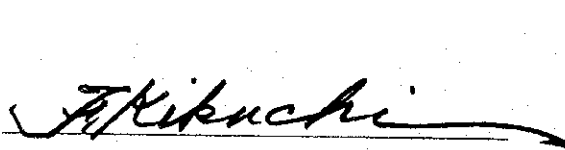
In response to a request from the Government of Western Samoa, the Government of Japan has decided to conduct a Basic Design Study on the Project for Establishing the New Campus for the National University of Samoa in Western Samoa (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Western Samoa the Basic Design Study Team headed by Mr. Fumio KIKUCHI, Deputy Director, Consultant Contract Division, Procurement Department, JICA, and is scheduled to stay in the country from the 17th August to the 11th September, 1994.

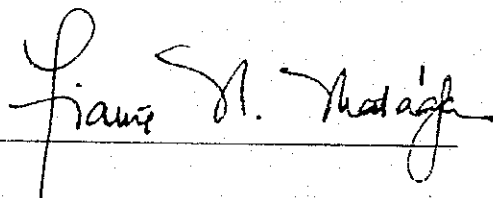
The team held discussions with the officials of the Government of Western Samoa of the National University of Samoa and conducted the field survey at the study area.

As a result of discussions and field survey, both parties confirmed the main items described on the attached sheets.

Apia, the 22nd August, 1994



Fumio KIKUCHI
Leader,
Basic Design Study Team, JICA



Hon. Fiamé NAOMI MATA'AFA
Pro-Chancellor,
The National University of Samoa,
Western Samoa

ATTACHMENT

fm.

1. OBJECTIVE OF THE PROJECT

The objective of the Project is to contribute to social, economic and human resources development in Western Samoa by providing facilities for the National University of Samoa.

2. PROJECT IMPLEMENTING AGENCY

The National University of Samoa is the Implementing Agency of the Project.

3. PROJECT SITE

The Project site location is shown in Annex 3.

4. CONTENTS OF THE REQUEST BY THE WESTERN SAMOAN SIDE

i) After a series of discussions, the Western Samoan side finally requested the Project contents as shown in Annex 1 for Japan's Grant Aid. However, the contents of the Project, which are to be recommended in the Basic Design Study Report, will be finalized after further study by the Team.

ii) Both parties have agreed that the following items originally requested from the Western Samoan Side will be eliminated from the contents of the Project.

- Religious Center
- Refurbishment of Malifa Site
- Books for Library.

5. CHARACTERISTICS OF THE JAPAN'S GRANT AID PROGRAMME

The Western Samoan side has understood the system and characteristics of Japan's Grant Aid Programme explained by the Team including following matters:

i) Japan's Grant Aid is extended in the form of financial assistance which makes available the funds for procuring services and products necessary for implementing the project defined in "The Exchange of Notes" (E/N). Therefore the usage of the fund

- provided under the Japan's Grant Aid is strictly limited by the stipulation of E/N.
- ii) A Project assisted by the Japan's Grant Aid must be implemented under "Japanese single-year budget system". This means that the project cycle must be, as a rule, completed, from signing on E/N to the final payment, within the same fiscal year in which the E/N was signed.
- iii) For smooth implementation of the Project, the consulting firm that was selected by JICA for the Basic Design Study is to be employed, in principle, as the Project Consultant by the Western Samoa side.
- iv) The Western Samoan side will conclude the contract for implementing the Project with Japanese company(-ies). All such contract to be concluded shall be verified by the Ministry of Foreign Affairs of Japan through JICA.
- v) Procuring services and products for implementing the Project shall be executed in accordance with "GUIDELINES FOR PROCUREMENT UNDER THE JAPANESE GRANT, 1991, JICA".

6. NECESSARY MEASURES TO BE TAKEN BY THE WESTERN SAMOAN SIDE

The Government of Western Samoa will take the necessary measures described in Annex 2 for smooth implementation of the Project on condition that the Grant Aid by the Government of Japan is extended to the Project.

7. FURTHER SCHEDULE OF THE STUDY

- i) The Consultants will proceed to further studies in Western Samoa until the 14th of September, 1994.
- ii) JICA will prepare the Draft Study Report and dispatch a Draft Report Explanation Team to Western Samoa in November, 1994 in order to explain and to confirm the contents of the Draft Final Report.
- iii) On acceptance of the Draft Final Report by the Western Samoan side, JICA will complete the Final Report and send it to the Western Samoan side by February, 1995.

ANNEX-1 CONTENTS OF THE REQUEST FOR JAPAN'S GRANT AID

fu

The contents of the Project covered under the Japan's Grant Aid finally requested by the Western Samoan side are as follows in the order of the priority.

1. The main construction elements will be:

- Library and resource center
- Center for Samoan Studies
- School of education
- Humanities, computing and general science
- Administration
- Lecture theatre complex
- Large general purpose fale
- Staff housing
- Student residences
- Student amenities
- Sporting facilities
- Maintenance/service center
- Site works, road works and services

2. Equipment

- General laboratory
- Language laboratory
- Computer laboratory
- Audio-Visual
- Loose furniture

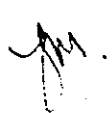
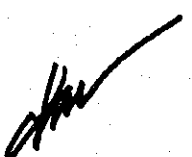
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ANNEX-2

NECESSARY MEASURES TO BE TAKEN BY THE WESTERN SAMOAN SIDE

The following necessary measures shall be taken by the Government of Western Samoa on condition that the Grant Aid by the Government of Japan is extended to the Project:

1. to provide data and information necessary for the Project;
2. to secure the land for the Project;
3. to clear, level and reclaim the site for the Project prior to the Project implementation;
4. to provide a proper access road to the Project area;
5. to undertake gardening, fencing, exterior lighting, and other incidental outdoor works in and around the Project site; and temporary road access, electricity and water supply for the construction;
6. to provide the following incidental facilities to the Project:
 - (i) electricity distributing line to the site,
 - (ii) city water distribution main to the site,
 - (iii) drainage main to the site,
 - (iv) telephone trunk line to the site,
 - (v) general furniture such as carpet, curtain and others, and
 - (vi) other incidental facilities necessary for the Project realization;
7. to bear commissions to the Japanese foreign exchange bank for its banking services based upon the Banking Arrangement, namely the advising commission of the "Authorization to Pay" and payment commission;
8. to ensure prompt unloading, tax exemption, customs clearance at the port of disembarkation in Western Samoa and prompt internal transportation therein of the materials and equipment for the Project purchased under the Grant Aid;
9. to exempt Japanese juridical and physical nationals engaged in the Project from customs duties, internal taxes and other fiscal levies which may be imposed in Western Samoa with respect to the supply of the products and services under the verified contracts;
10. to accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into Western Samoa and stay therein for the performance of their work;

- 
11. to provide necessary permissions, licenses and other authorizations for implementing the Project, if necessary;
 12. to appropriate a budget for NUS so that it can appoint sufficient teaching and administrative staff for the proper and effective operation and maintenance of the facilities and equipment provided under the Grant Aid;
 13. to maintain and use properly and effectively the facilities constructed and the equipment provided under the Project; and
 14. to bear all the expenses, other than those to be borne by the Japan's Grant Aid, within the scope of the Project.
- 

2/11



4-2. Minutes of Discussions (Draft Final Report)

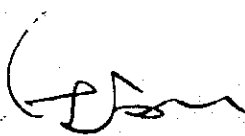
Minutes of Discussions
on
the Basic Design Study on the Project for
Establishing the New Campus for the National University of Samoa
in Western Samoa
(Draft Study Report Explanation)

From the 17th August to the 11th of September, 1994, the Japan International Cooperation Agency (JICA) dispatched a Basic Design Study Team on the Project for Establishing the New Campus for the National University of Samoa in Western Samoa (hereinafter referred to as "the Project"), to Western Samoa, and through discussions, field surveys and technical examination of the results in Japan, has prepared a Draft Study Report.

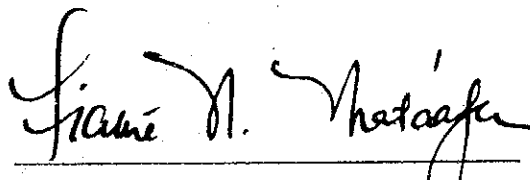
In order to explain to and consult with the Western Samoan side on the components of the Draft Study Report, JICA sent to Western Samoa the Draft Study report Explanation Team headed by Mr. Ichirou MUKAI, Second Basic Design Study Division, Grant Aid Study and Design Department, JICA, from the 8th to the 15th of November, 1994.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

Apia, the 14th November, 1994



MUKAI ICHIROU
Leader,
Draft Study Report
Explanation Team, JICA



Hon. Fiame NAOMI MATA'AFU
Pro-Chancellor,
The National University of
Samoa,
Western Samoa

A T T A C H M E N T

1. CONTENTS OF THE DRAFT STUDY REPORT

The Government of the Western Samoa has agreed and accepted in principle the components of the Draft Study Report proposed by the Team.

2. CHARACTERISTICS OF THE JAPAN'S GRANT AID PROGRAMME

The Western Samoan side has understood the system and characteristics of Japan's Grant Aid Programme explained by the Team including following matters.

- 1) Japan's Grant Aid is extended in the form of financial assistance which makes available the funds for procuring services and products necessary for implementing the project defined in "Exchange of Notes" (E/N). Therefore the usage of the fund provided under the Japan's Grant is strictly limited by the stipulation of E/N. .
- 2) For smooth implementation of a Project, a consulting firm that was selected by JICA for the Basic Design Study will be recommended as a Project Consultant to the Western Samoan side by JICA.
- 3) The Western Samoan side will conclude the contract for implementing the Project with Japanese company (-ies). And all such contract to be concluded shall be verified by the Ministry of Foreign Affairs of Japan through JICA.
- 4) Procuring services and products for implementing the Project shall be executed in accordance with "GUIDELINES FOR PROCUREMENT UNDER THE JAPANESE GRANT, 1991, JICA".

3. NECESSARY MEASURES TO BE TAKEN BY THE WESTERN SAMOAN SIDE

The Western Samoan side will take necessary measures described in Annex for smooth implementation of the Project on condition that the Grant Aid by the Government of Japan is extended to the Project.

4. FURTHER SCHEDULE OF THE STUDY

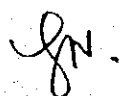
JICA will complete the STUDY REPORT and send it to the Western Samoan side by March, 1995.

ANNEX

NECESSARY MEASURES TO BE TAKEN BY THE WESTERN SAMOAN SIDE

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

1. To provide data and information necessary for the Project;
2. To secure a land for the Project;
3. To clear, level and reclaim the site for the Project prior to the Project implementation;
4. To provide proper access road to the Project area;
5. To undertake gardening, fencing, exterior lighting, and other incidental outdoor works in and around the Project site;
6. To provide the following incidental facilities to the Project:
 - (1) Electricity distributing line to the site,
 - (2) City water distribution main to the site,
 - (3) Drainage main to the site,
 - (4) Telephone trunk line to the site,
 - (5) General furniture such as carpet, curtain and others, and
 - (6) Other incidental facilities necessary for the Project realization;
7. To bear commissions to the Japanese foreign exchange bank for its banking services based upon the Banking Arrangement, namely the advising commission of the "Authorization to Pay" , and payment commission;
8. To ensure prompt unloading, tax exemption, customs clearance at the port of disembarkation in Western Samoa and prompt internal transportation therein of the materials and equipment for the Project purchased under the Grant Aid;
9. To exempt Japanese juridical and physical nationals engaged in the Project from customs duties, internal taxes and other fiscal levies which may be imposed in Western Samoa with respect to the supply of the products and services under the verified contracts;
10. To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into Western Samoa and stay therein for the performance of their work;
11. To provide necessary permissions, licenses and other authorizations for implementing the Project, if necessary;
12. To assign appropriate budget and teaching and administrative staff for proper and effective operation and maintenance of the facilities and equipment provided under the Grant Aid;
13. To maintain and use properly and effectively the facilities constructed and the equipment provided under the Project; and
14. To bear all the expenses, other than those to be borne by the Japan's Grant Aid within the scope of the Project.





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5. Soil Investigation Data

PROPOSED UNIVERSITY OF SAMOA VAIVASE

GEOTECHNICAL INVESTIGATION



Our Ref: 12776
October 1994

Distribution:

Tinai, Gordon & Associates Ltd - 4 copies
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TINAI, GORDON & ASSOCIATES LTD
PROPOSED UNIVERSITY OF SAMOA, VAIVASE
GEOTECHNICAL INVESTIGATION

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EXECUTIVE SUMMARY

A geotechnical investigation of the site for the Proposed University of Samoa Campus, Vaivase was undertaken by Tonkin & Taylor Ltd in association with Tinai, Gordon & Associates Ltd on behalf of the Japan International Co-operation Agency (JICA). The site is located on the outskirts of Apia on Upolu Island in Western Samoa.

Investigations undertaken included the following:

- * topographic survey
- * machine drilling of 5 N° of borehole
- * SPT tests at 1 m intervals in all boreholes
- * collation of borelogs and retention of samples for tests
- * laboratory testing of selected samples including point strength test, water content, grading and density.

The site is underlain by a relatively uniform sequence of medium to dense silt containing gravel and boulders overlying a moderately thick (>3m) layer of basalt, to a depth of 1.5-3.0m. Borehole investigations indicate that the silts on the western side contain predominantly boulders while those on the east contain mostly gravels.

The strength of the underlying basalt varies from moderate to strong with laboratory testing giving values for unconfined compression strength ranging from 8 to 61 MPa. Site investigations also revealed that the upper region of this basalt layer is comprised predominantly of boulders in some locations.

Shallow strip and pad footings are expected to be suitable for the proposed development. Provided care is taken to ensure that competent material is present beneath the footings an allowable bearing capacity of 150 kPa is achievable. Where loose or sub-standard materials is encountered, this should be subexcavated and replaced with a suitable compacted fill.

Pile options may also be considered but are not likely to be required for the proposed structures. If this option is utilised then a bearing capacity of 450 kPa should be used for piles which extend onto the basalt layer at a depth of 1.5-3.0 m.

Compaction of the ground surface, using a vibrating compactor, should be undertaken where floor slabs are to be cast directly on grade.

The site is characterised as a stiff soil/rock category for seismic design and the soils are not expected to be affected by liquefaction.

1.0 INTRODUCTION

1.1 General

Tinai, Gordon & Associates Ltd were engaged in association with Tonkin & Taylor Ltd were engaged in association with Tonkin & Taylor Ltd on behalf of Japan International Co-operation Agency (JICA) to undertake a geotechnical investigation of the site of the proposed National University of Samoa Campus, Vaivase. The site is located on the Island of Upolu in Western Samoa.

The investigation comprised of an on site, subsurface soil investigation (including drilling and logging of boreholes), laboratory testing of samples, interpretation and analysis of results and study of feasible foundation options. This report presents the findings of the investigation.

1.2 Scope of Works

The scope of works for the investigation is summarised below:

1. Site Work

- * topographic survey
- * drilling of 5 N° of boreholes
 - 1 N° to 25 m depth
 - 4 N° to 5 m depth
- * SPT test m intervals in all holes
- * collation of borelogs

2. Laboratory Testing

- * moisture content
- * grading
- * density, solid density
- * unconfined compression tests

3. Analysis

- * preparation of geological model
- * calculation of soil parameters
- * investigation of feasible foundation options
- * report.

2.0 SITE

The site is situated on the island of Upolu in Western Samoa and is located on the outskirts of Apia, see Drawing 12776-1. It is fronted on the northern boundary by the Samoa College and bounded by Kolisi Road on the southern and western boundaries. The surface profile is gently sloping and falls at a gradient of 1:13 to the north east as shown on Drawing 12776-2, Appendix A. At present it is covered by vegetation consisting dense undergrowth and trees.

3.0 INVESTIGATION

A topographic survey was carried out by Tinai Gordon & Associates. Plans showing RL's and contours are contained in the back of this report, under Appendix O.

On site subsurface investigations were carried out during late September 1994 by the Observatory Drilling Rig which is based on Upolu. A total of five boreholes were drilled. The first was advanced to a depth of 25 m with the remaining 4 being terminated at 5 m in basalt rock. Locations of the boreholes are shown on Drawing 12776-2. Borelogs of the underlying soils were recorded during drilling and core samples were retained for laboratory testing. SPT's were conducted at one metre intervals in all boreholes and the results recorded on the borelogs.

Representative samples from each of the boreholes were airfreighted back to New Zealand and underwent a series of laboratory testing conducted by Geotechnics Ltd which is the testing laboratory operated by Tonkin & Taylor Ltd.

Records of borelogs and the results of testing are contained under Appendices B and C respectively.

4.0 GEOLOGY

The site has a gently sloping surface profile which falls at a gradient of about 1:13 to the northeast. The total area is approximately 86 hectares.

Information from the borelogs indicate that a simple subsurface strata exists in the upper 5 m of the site.

This is summarised in Table 1 below:

UNIT	NATURE	DISTRIBUTION	Depth Below Ground Level
SILT & Boulders	SILT with coarse gravels and basalt boulders medium density	covers entire site	up to 3.0 m
BASALT	BASALT brown with boulders in upper layer	underlies entire site	1.5 to >5.0

4.1 Silt

The upper layer overlying the site to a depth varying from 1.5-3.0 m, is comprised predominantly of SILT, containing mostly gravels on the eastern side and grading to boulders on the west. SPT results indicate that the silt exists typically in a medium-dense state with local regions of loose or very dense material.

Laboratory particle size analysis of the samples provided indicate a large portion of sand is also present in the upper layers ranging from 30-50% of total volume of samples. The sample material was generally well graded. Bulk density averaged 2.2 t/m³ at 1.0 m depth and increased to 2.65 t/m³ below this.

Laboratory test also indicated that water contents in the upper 2.0 m of the soil profile appeared to be much higher on the eastern side of the site averaging 27% as opposed to 7.8% on the western side.

4.2 Basalt

Underlying the silt layer is basalt varying in strength from moderately strong to strong. The boreholes indicate that on the eastern side of the site the upper region of this layer contains boulders.

No suitable core samples were available for unconfirmed compression tests. Instead point load tests were conducted and the results converted to give equivalent unconfined compression strengths. These strength values ranged from 8.1 to 61.6 MPa. Visual inspection of the samples revealed that the basalt exists in a range of states from vesicular, scoriaceous material to finer grained dense rock.

4.3 Deep Surface Profile

Borehole 1 reveals that a reasonably complex system of strata exists beneath the top basalt layer. Beds of sand, gravels and boulders are present to a depth of 14.5 m. Below this depth is clay with some sandy layers. SPT values are low and range from $N=3$ to $N=18$ in the sandy clay. Basalt was struck again at a depth of 24.9 m.

4.4 Subsurface Model

The subsurface model is simple and relatively uniform across the site. Silt with gravel and boulders comprise the upper layer overlying basalt to a depth of 1.5 m to 3.0 m. The basalt layer extends to a depth > 5 m. These layers generally follow the surface profile of the site.

Drawings 12776-3 and 12776-4 contained in Appendix A show cross-sections of the subsurface profile.

It should be noted that the information used to formulate this model has been obtained from boreholes. Material between boreholes has been inferred, however actual conditions on site may vary.

5.0 ENGINEERING

The buildings to be constructed on site are one to two storey reinforced concrete structures. Based on this information a selection of suitable foundation options has been compiled. The main alternatives are as follows.

- Option 1 : Shallow footings located on the natural soils at approximately 0.5 m depth.
- Option 2 : Short end bearing piles founded on the basalt rock and boulders at approximate depths of 1.5-3.0 m.

5.1 Option 1 - Shallow Footings

Based on testing and analysis the near surface soils would have a safe bearing capacity of 150 kPa, for footings at a depth of 0.5 m. Either strip or pad footings could be utilised. An allowable distributed floor load of up to 15 kPa has been determined. Care would need to be exercised to ensure the quality of the material below the base of the footing was adequate. These can be checked during excavation by probe testing or proof rolling. Any sub-standard or loose material would need to be subexcavated and recompacted with suitable hard fill.

Settlement of the foundations under these conditions would be expected to remain within normally allowable limits for total and differential settlements.

5.2 Option 2 - Pile Foundations

Short piles extending down to competent basalt at a depth of approximately three metres could be installed to give greater load carrying capacity. We would not expect that this option would be necessary for the buildings which are currently proposed for the site. However if this option is utilised an end bearing capacity of 450 kPa should be used. This is a moderately conservative figure due to the existence of boulders and vesicular basalt in the upper region of the basalt layer over parts of the site. The load carrying capacity of the boulders would be substantially less than the capacity of competent solid rock.

The presence of boulders in the upper silt layer in some areas is likely to exclude the use of driven piles as driving them to sufficient depth may be difficult to achieve. We would recommend the use of bored cast in situ piles if this option is used.

5.3 Floor Slabs

Where floor slabs are to be cast directly onto the soil a vibrating compactor should be used to compact the surface prior to construction.

5.4 Seismicity

Western Samoa is characterised as a high potential seismicity area for design of structures in accordance with NZS4203:1992. The soil conditions on site are characterised by category (a) - rock or very stiff soil site due to the presence of the basalt close to the surface.

The surface soils are well graded and not expected to be affected by liquefaction under design seismic loading. The basalt is also expected to provide adequate rafting over the deeper low strength soils to ensure that the site is not influenced by the seismic response of these soils.

6.0 CONCLUSIONS & RECOMMENDATIONS

From the investigation we can conclude the following. The site is underlain by a simple sequence of medium to dense silt with gravel and boulders, overlying a moderately thick (>3m) layer of basalt. Borehole investigations indicate that the silt contains predominantly boulders on the western side of the site grading to coarse gravels on the east. The strength of the underlying basalt is variable ranging from moderate to strong. Laboratory tests give values for unconfined compression strength spanning from 8 to 61 MPa.

Site investigations also suggest that the upper region of the basalt layer is comprised of boulders in some areas thereby reducing available bearing capacity.

Shallow strip and pad footings are suitable for the proposed redevelopment. Analysis shows that an allowable bearing capacity of 150 kPa may be used for footings at a depth of 0.5 m. Care would need to be exercised to ensure that material beneath the footings is adequate.

Any sub-standard material would need to be removed and replaced with suitable compacted fill.

If piled foundations are to be used an allowable bearing capacity of 450 kPa can be achieved for piles extending onto the basalt layer at a depth of 1.5-3.0 m. We would recommend the use of bored case in situ piles as the presence of boulders in the upper layers would make the installation of driven piles difficult.

Where floor slabs are to be cast directly onto the soil a vibrating compactor should be used to first compact the surface prior to construction of the slabs.

The soils are not expected to be susceptible to liquefaction and the site is characterised by the rock or stiff soils category for seismic design of structures.

6.1 Limitation

Recommendations and opinions contained in this report are based on data from 5 N° of boreholes and a limited amount of laboratory testing. Inferences are made about the nature and continuity of subsoil away from the boreholes but cannot be guaranteed.

During construction the site should be examined by an engineer competent to judge whether the exposed subsoils are compatible with the assumptions upon which this report is based. If variations in the subsoil occur which differ from that described or assumed to exist then the matter should be referred back to us.

This report has been prepared for the particular project described in the brief to us and no responsibility is accepted for the use of any part of this report in other contexts or for any other purpose.

TONKIN & TAYLOR LTD



P J Milner

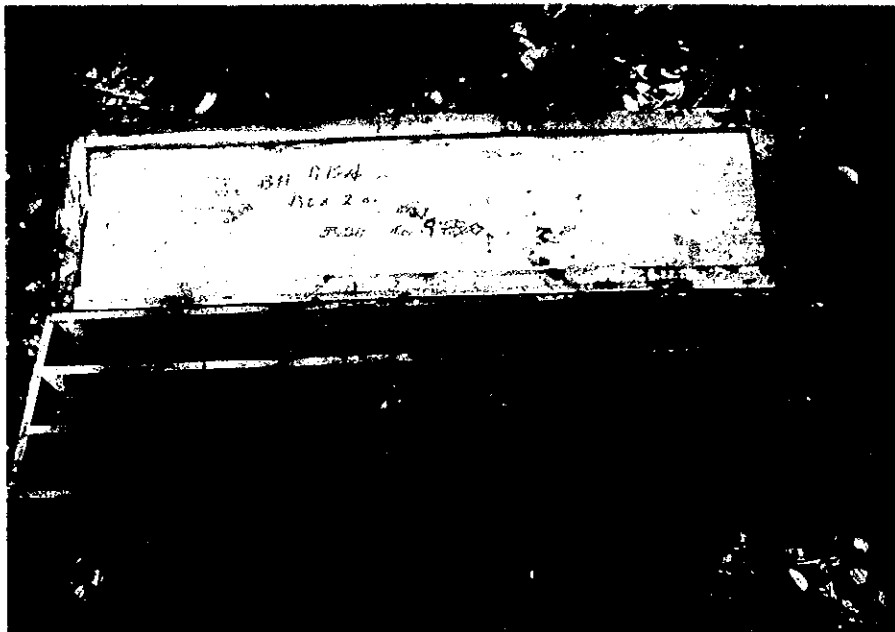
GEOTECHNICAL GROUP MANAGER



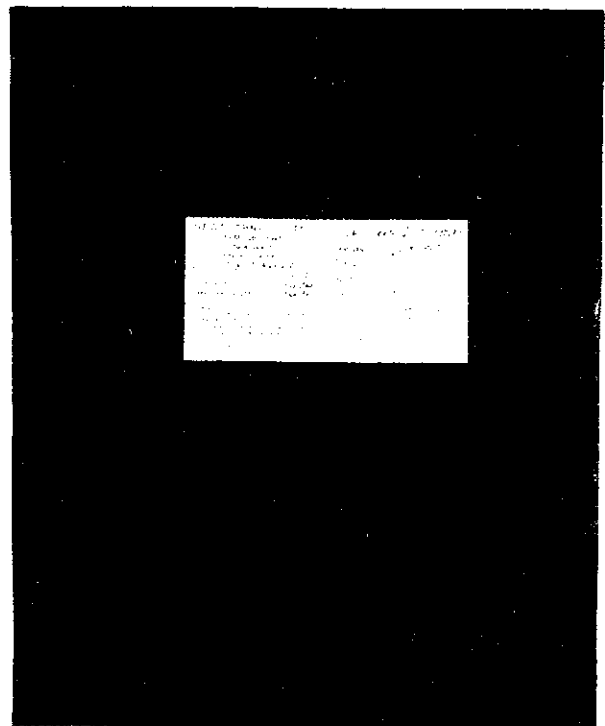
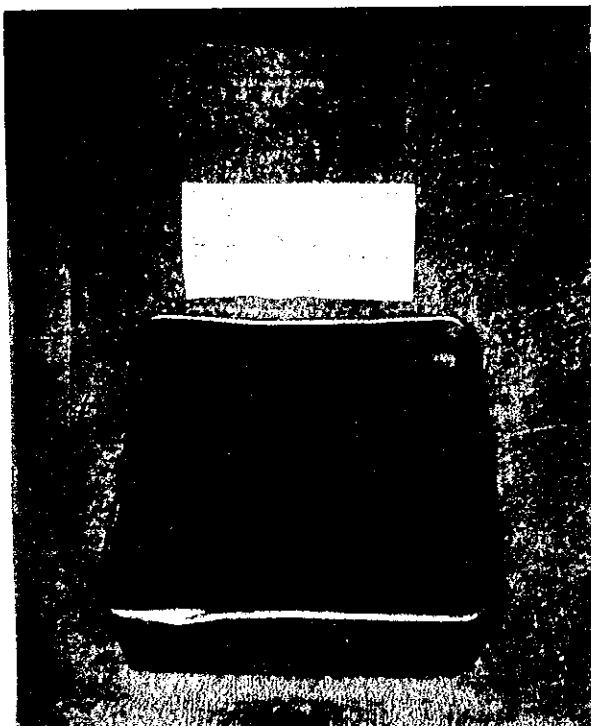
View of site from BH1 looking North.



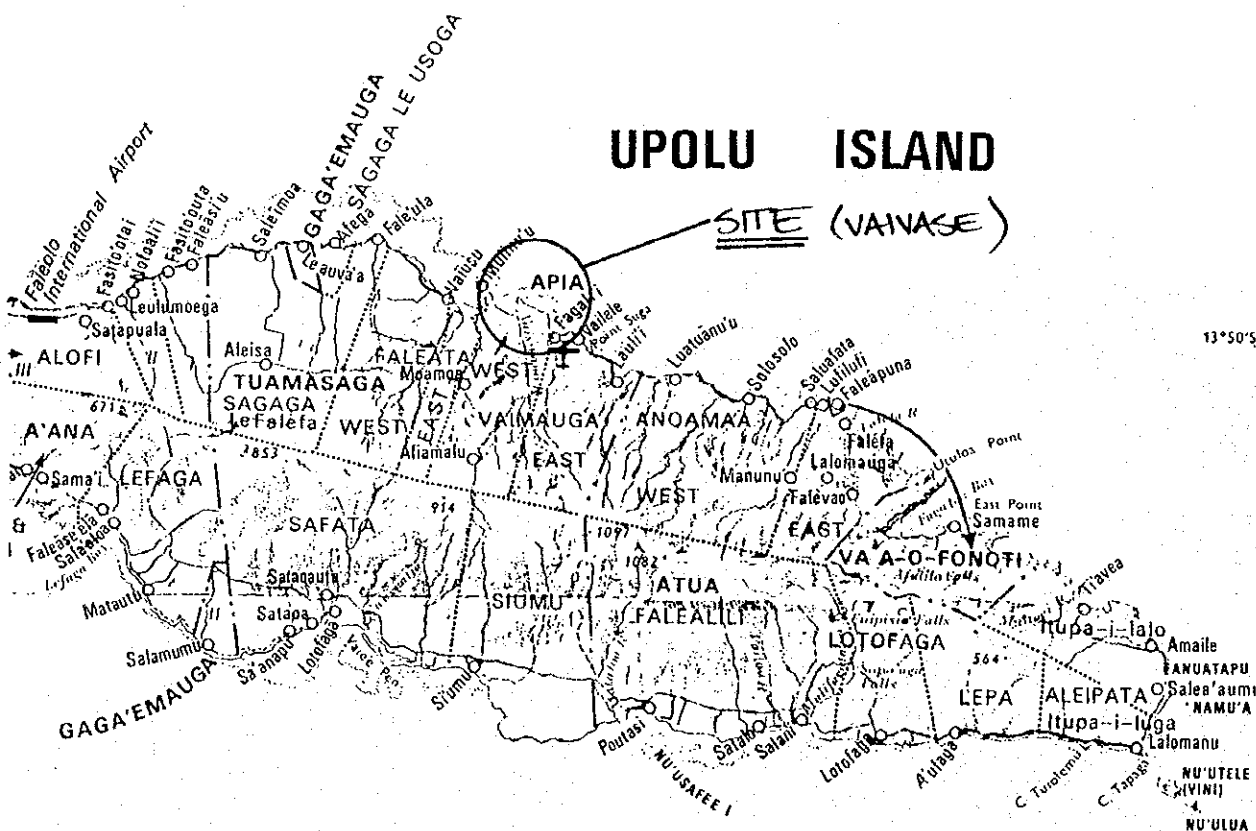
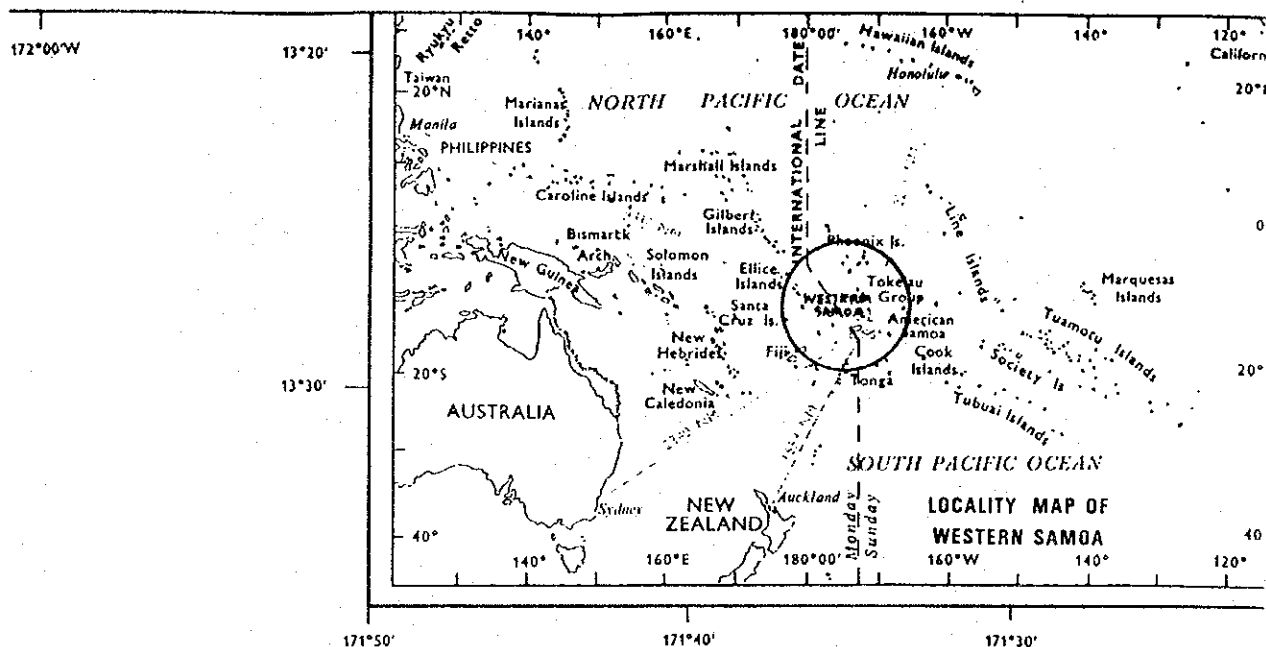
Typical surface vegetation.



Typical core log.



Typical laboratory samples.



NATIONAL UNIVERSITY OF SAMOA
GEOTECHNICAL INVESTIGATION
SITE LOCATION PLAN



TONKIN & TAYLOR
CONSULTING ENGINEERS

Drawing No

7/12T16-1

Rev.

Date

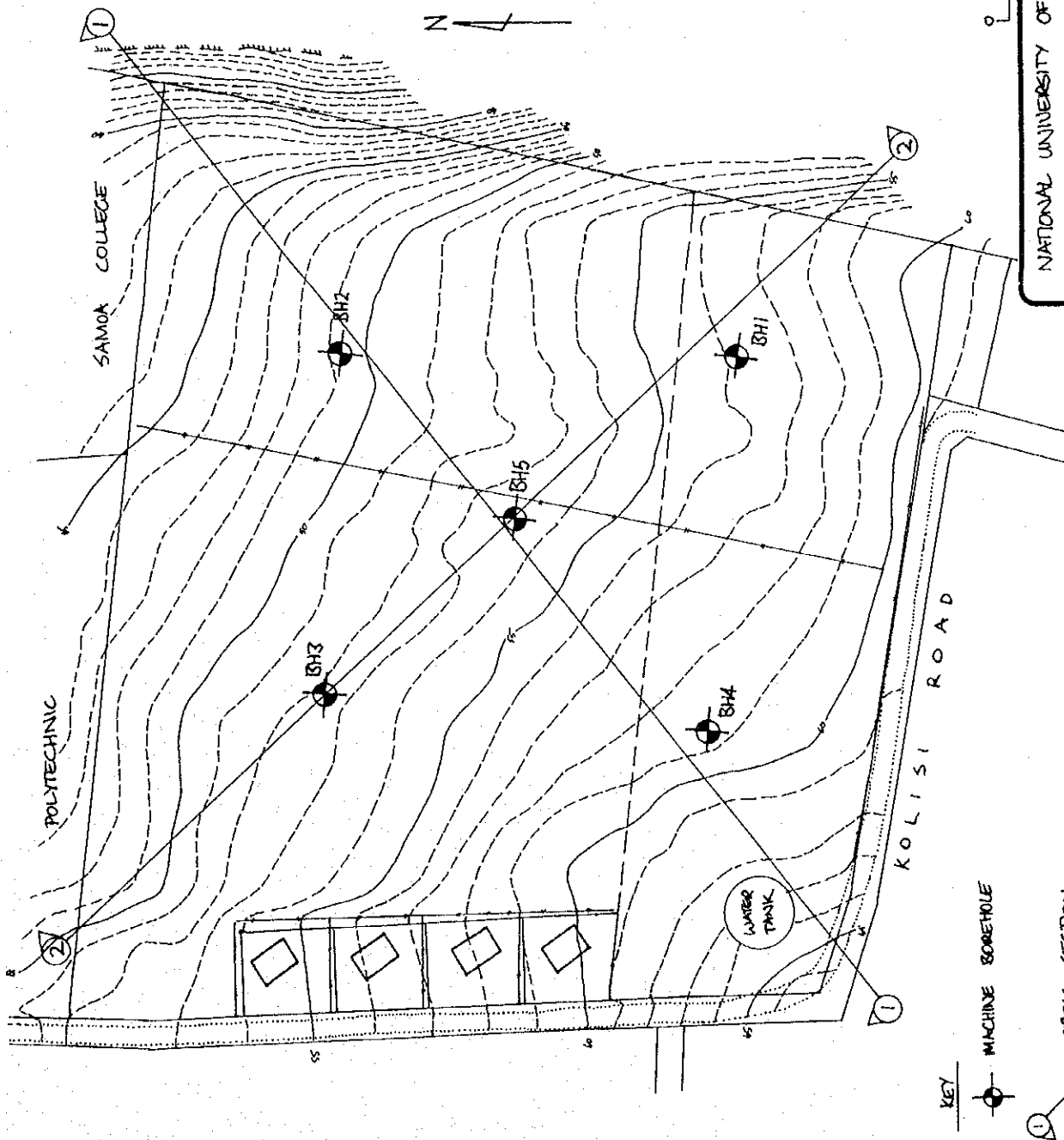
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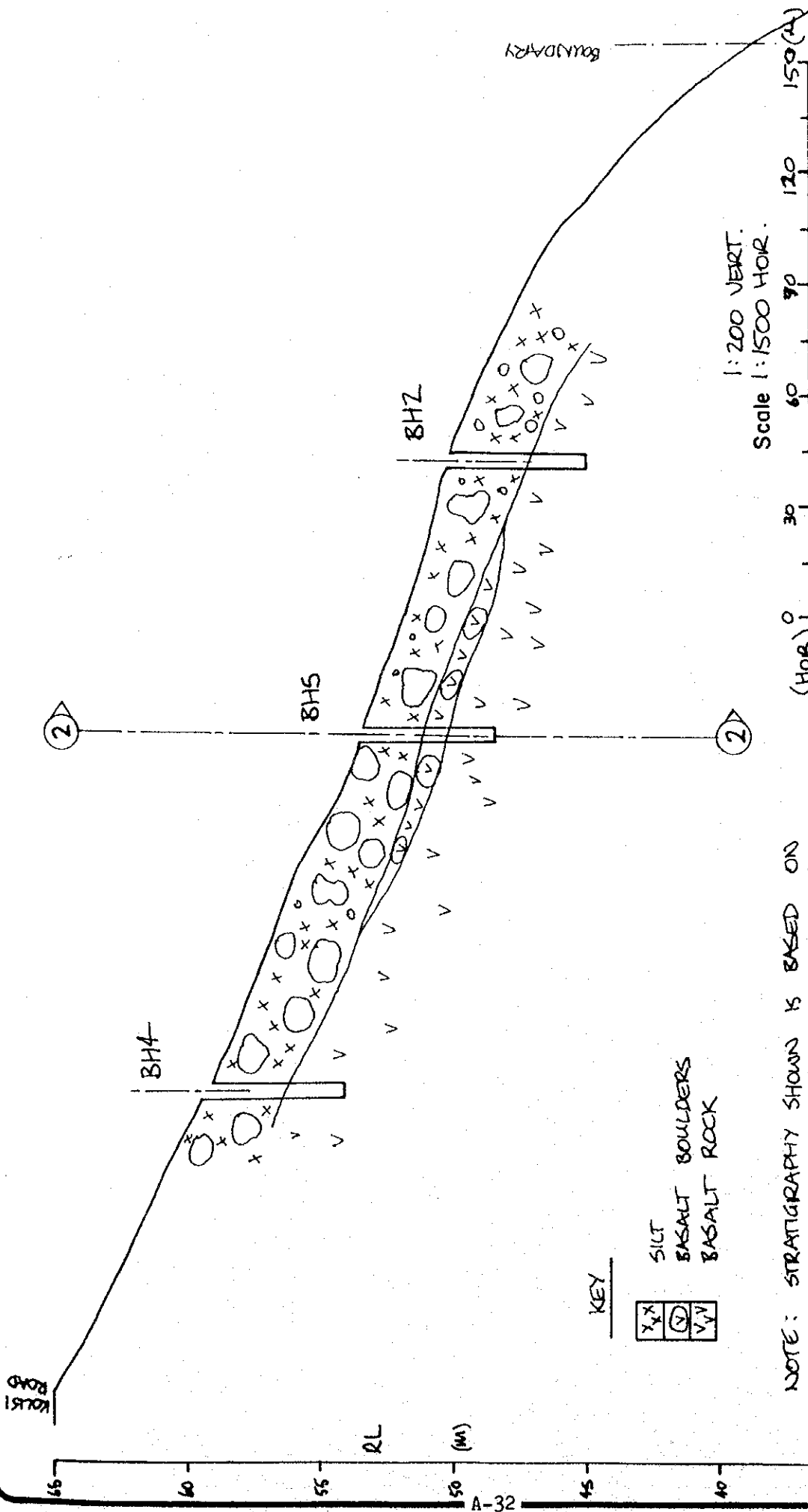
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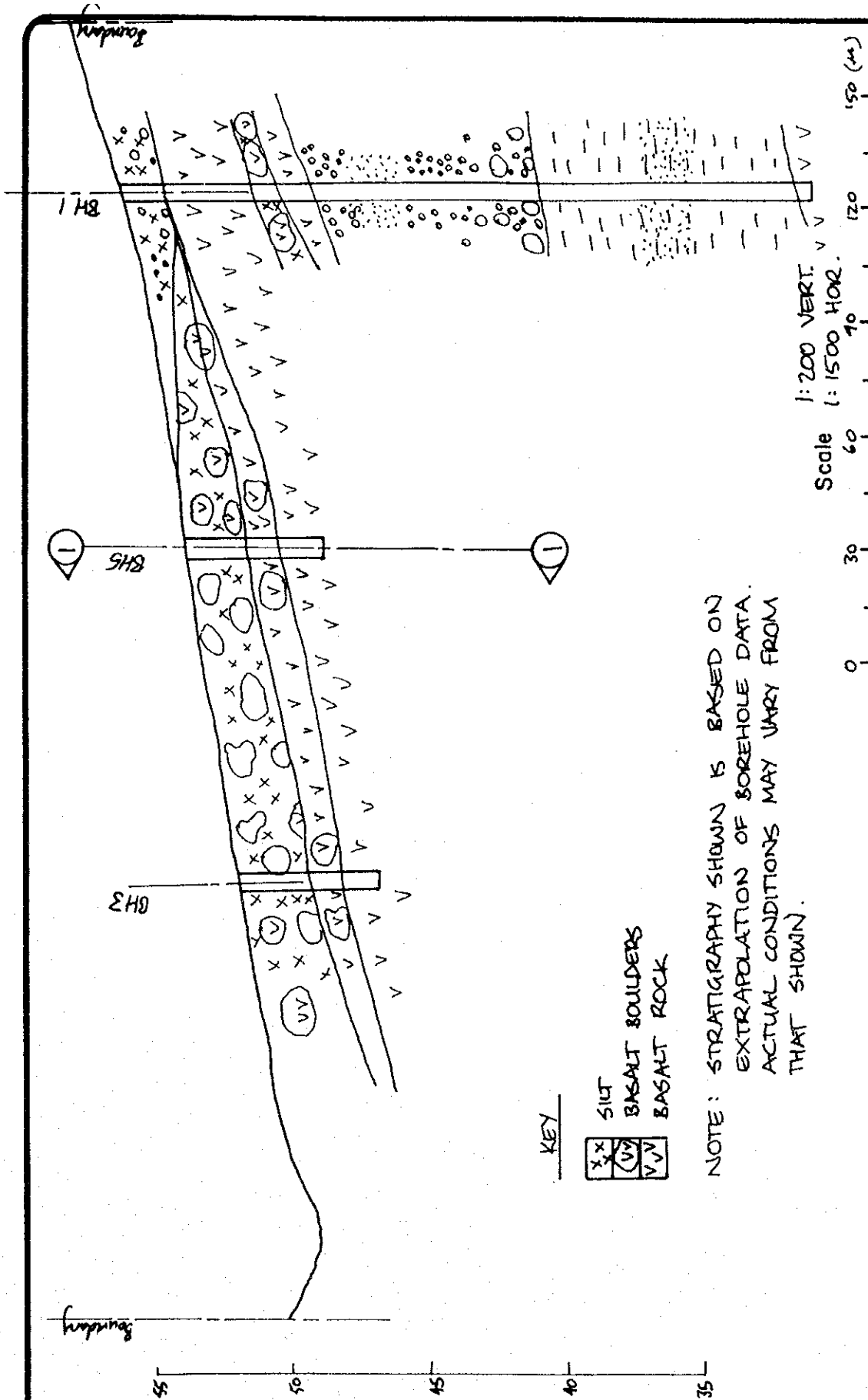
NATIONAL UNIVERSITY OF SAMOA
 GEOTECHNICAL INVESTIGATION
 BOREHOLE LOCATION PLAN



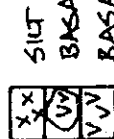
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NATIONAL UNIVERSITY OF SAMOA
GEOTECHNICAL INVESTIGATION
CROSS SECTION ①



KEY



NOTE: STRATIGRAPHY SHOWN IS BASED ON
EXTRAPOLATION OF BOREHOLE DATA.
ACTUAL CONDITIONS MAY VARY FROM
THAT SHOWN.

NATIONAL UNIVERSITY OF SAMOA
GEOTECHNICAL INVESTIGATION
CROSS SECTION (2)

Drawing No. 7/12776-4

Rev.

Date: OCT 1994

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