c. Main feeder system

From the main switchboards in the electricity or generator room, power will be supplied to the lighting and power distribution panels and power control panels in each building. Panels in each building will be installed for the power supply, training equipment and lighting respectively.

Lighting distribution panel	3 φ	4 W	380/220 V	50 Hz
Power distribution panel	3 φ	3 W	380 V	50 Hz

d. Outlet system

Socket outlets will be provided in each room where necessary. The rated voltage is designed at 1φ 220V and 3φ 380V, depending on the specified usage.

e. Telephone system

One circuit will lead into the Zimba Junior Secondary School and wireless telephone systems utilising solar power will be provided for the Lukona and Jumbe schools. Four receiver sets will be provided, one each in the headmaster's room, deputy headmaster's room, office and headmaster's house. The telephone exchange will be the type that allows both extension calls and public calls.

f. Lightning protection system

A lightning arrester will be installed on top of the elevated water tank and connected to earth rod in each site.

(6) Equipment Plan

For planning the equipment for the project schools, an equipment list will be prepared based on the list used in a project supported by the WB in the Fifth Education Project as a Zambian standard. The following considerations were taken into account in drawing up the equipment list.

a. Equipment necessary for basic practical training shall be selected.

b. Equipment which is not included in the project buildings are not considered. (E.g. Gymnastic equipment is included in the Zambian standard equipment list but the gymnasium is not included in this project.)

c. Teaching materials shall be given equal consideration among the various subjects so as not to favor any particular subject.

d. The kinds and amounts of equipment shall be determined according to the conditions of each site to realise effective and efficient learning activities. (E.g. the ratio of electrical and manual tools shall depend on whether or not electricity is supplied to the site.)

The following points also need to be considered for in the overall equipment plan.

a. Spare and maintenance parts for each item of equipment shall be provided in adequate quantities at the time of installation for the convenience of maintenance after the completion of the project.

b. It is recommended that furniture be purchased in Zambia considering maintenance troubles and transport costs.

In review of the above considerations, the following equipment is planned for this project.

1) Homecraft
cooking stoves, pans, pots, dishes, utensils
sewing tables, sewing machines, irons, knitting tools,
nursery training equipment, etc.
Electric cooking stoves are to be provided for the Zimba school, and charcoal cooking stoves for the other two schools. In principle, pedal-operated sewing machines will be provided for all sites.

2) Science

Physics experimental equipment

equipment for optics

equipment for dynamics

equipment for thermal engineering

Biological experiments

dissection tools, microscopes, etc.

Chemical experiments

test tubes, beakers, alcohol lamps, etc.

Climatological experiments

anemometers, rain gauges

Alcohol lamps will be provided instead of laboratory burners because LPG is scarce around the site area.

3) Technical art

Metalwork equipment : lathes, drills, shear, grinders, other electrically and manually operated equipment

Woodwork equipment : planers, circular saws, etc.

For Jumbe and Lukona, manual type equipment and portable electric equipment will be provided instead of heavy machines because there is no power supply.

A small generator will be considered for portable electric equipment separately from the generator system for the entire facility.

4) Arts

Potter's wheels for clay craft, watercolors, drawing boards, etc.

Though an electric oven is requested for ceramics, a portable kerosene oven will be considered.

5) Physical training equipment

goal posts, nets and balls for football, basketball, etc.

other equipment for sports ground use

Gymnastic equipment is not considered though it is included in the standard list, because a gymnasium is not a part of this project.

6) Agricultural science

Training use : spades, hoes, spraying equipment, etc.

7) A-V equipment

16 mm projector, OHP, tripod screen, etc.

8) Others

Library : book stacks with a capacity for about 3,000 books

Mathematics : compasses for chalkboard use, random digit dice

Furniture : chalkboard, desks and chairs in each classroom, desks and chairs in the teachers' room

9) Kitchen equipment

Kitchen : pans, pots

Dining room : dishes, knives and forks, etc.

10) School repair tools

maintenance equipment, hammers, paint brushes, etc.

11) Common equipment

Clinic : equipment and furniture

Fire extinguisher, cleaning tools, etc.

The equipment necessary for school repairs and maintenance will be provided.

12) Vehicles

A pick-up truck and a 4-ton truck will be provided for transportation of materials. The pick-up truck shall be a 4-wheel-drive car to adapt to the road conditions in Zambia. A tractor may be considered instead of the 4-ton truck for Lukona, where the road conditions are even less favourable.

(7) Basic Design Drawings

Floor areas of the facilities at each site are as follows:

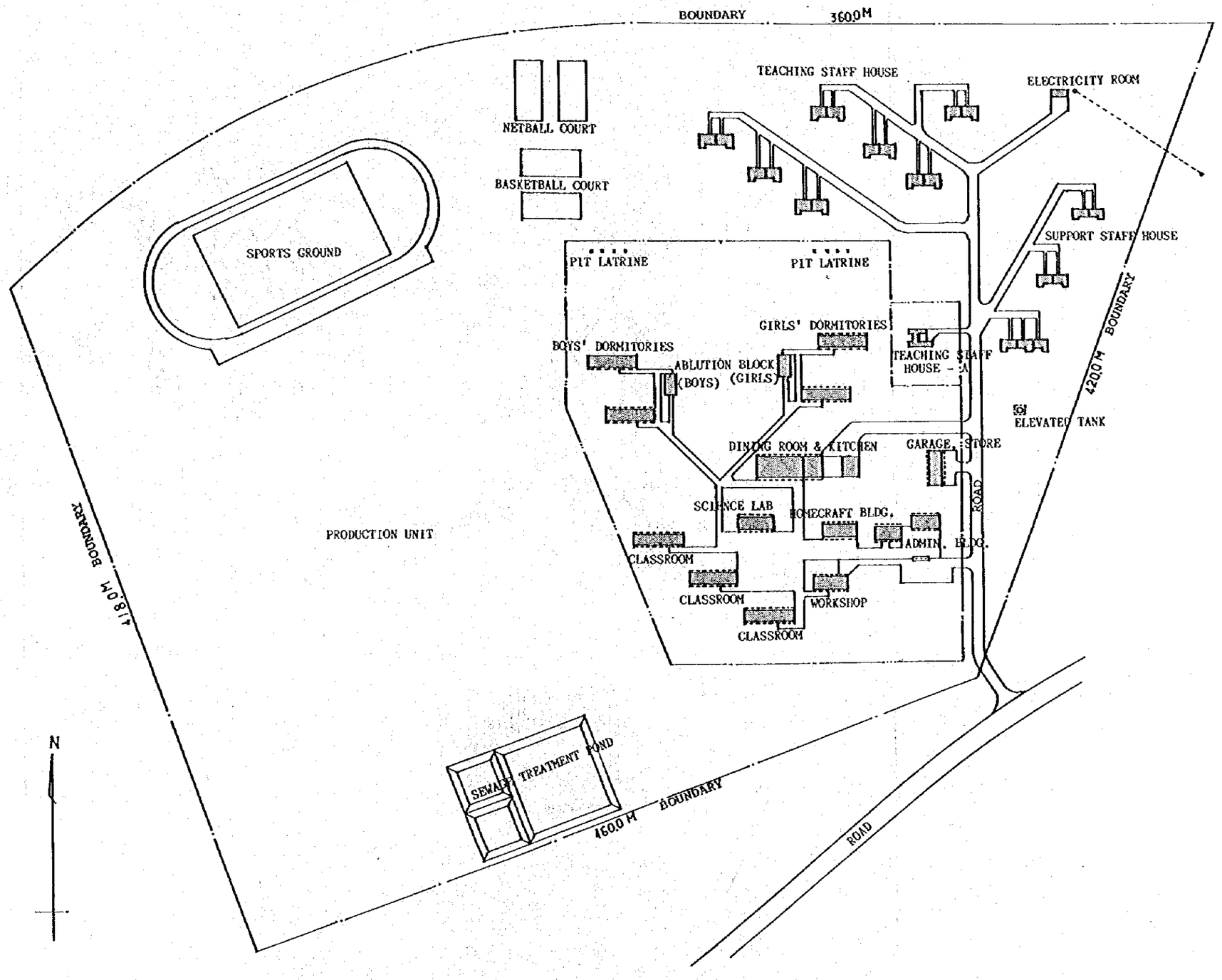
TABLE 19 FLOOR AREA OF EACH FACILITY

(in m²)

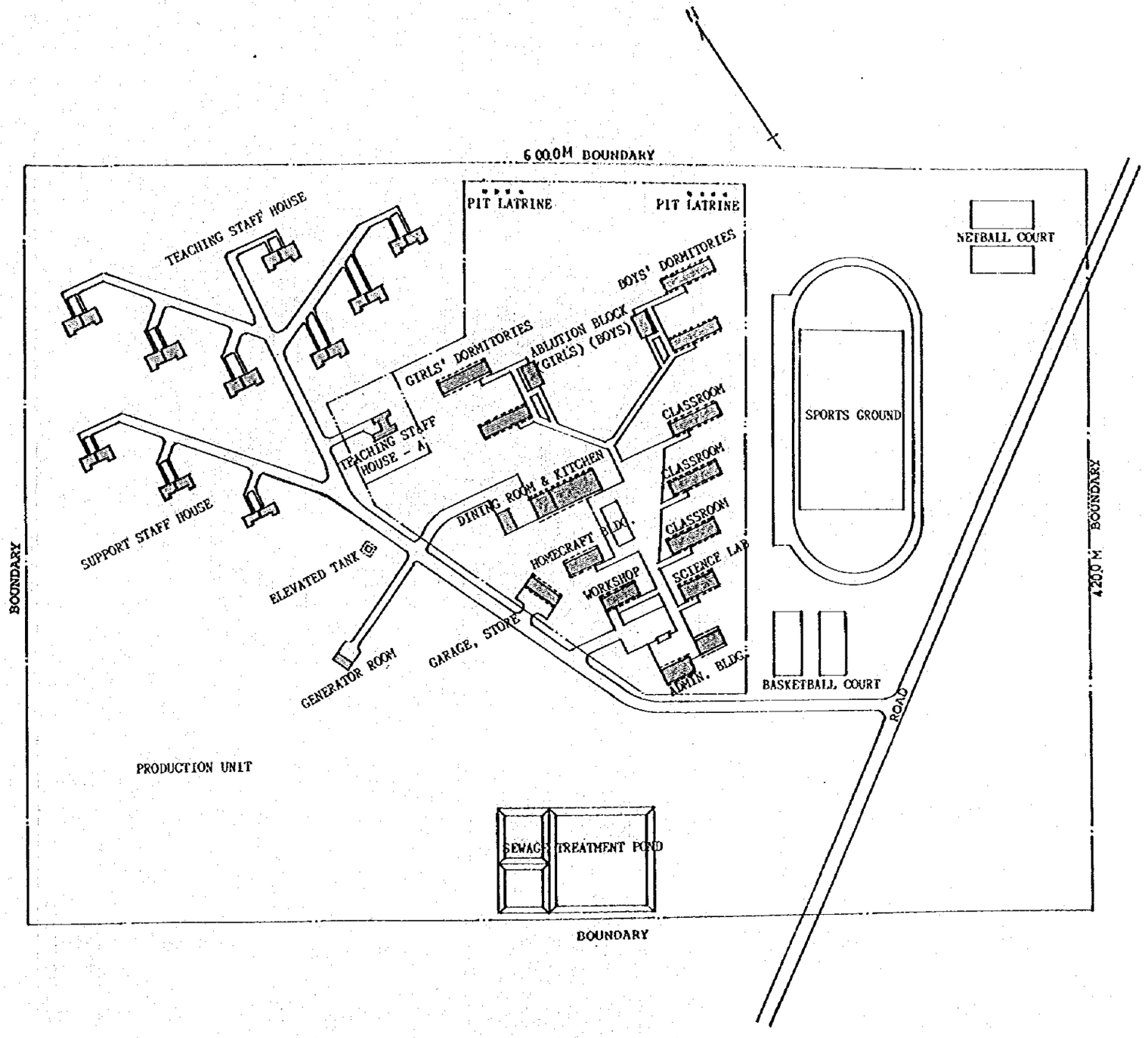
Sites / Buildings	ZIMBA Floor Area	JUMBE Floor Area	LUKONA Floor Area
Classroom Bldgs.			
Administration Building	261.9	261.9	261.9
Headmaster's Rm + Passage	(132.7)	(132.7)	(132.7)
Teachers' Room	(129.2)	(129.2)	(129.2)
Classroom Bldgs.	630.0	630.0	630.0
Workshop	176.4	176.4	176.4
Science Laboratory	176.4	176.4	176.4
Homecraft Building	147.0	147.0	147.0
Dining Room and Kitchen	622.0	622.0	622.0
Dormitories	840.0	840.0	840.0
Ablution Block	207.1	207.1	207.1
Garage and Storeroom	119.0	119.0	127.8
Electricity Room	6.8		
Generator Room		33.6	33.6
Pump Room	7.8		
Pit Latrine	8.0	8.0	8.0
Sub total	3,202.4	3,221.4	3,230.2
Housing Block			
Teaching Staff House - A	112.2	112.2	112.2
Teaching Staff Houses - B	1,043.0	1,043.0	1,043.0
Support Staff Houses	388.5	388.5	388.5
Sub total	1,543.7	1,543.7	1,543.7
T O T A L	4,746.1	4,765.1	4,773.9

List of the Basic Design Drawings

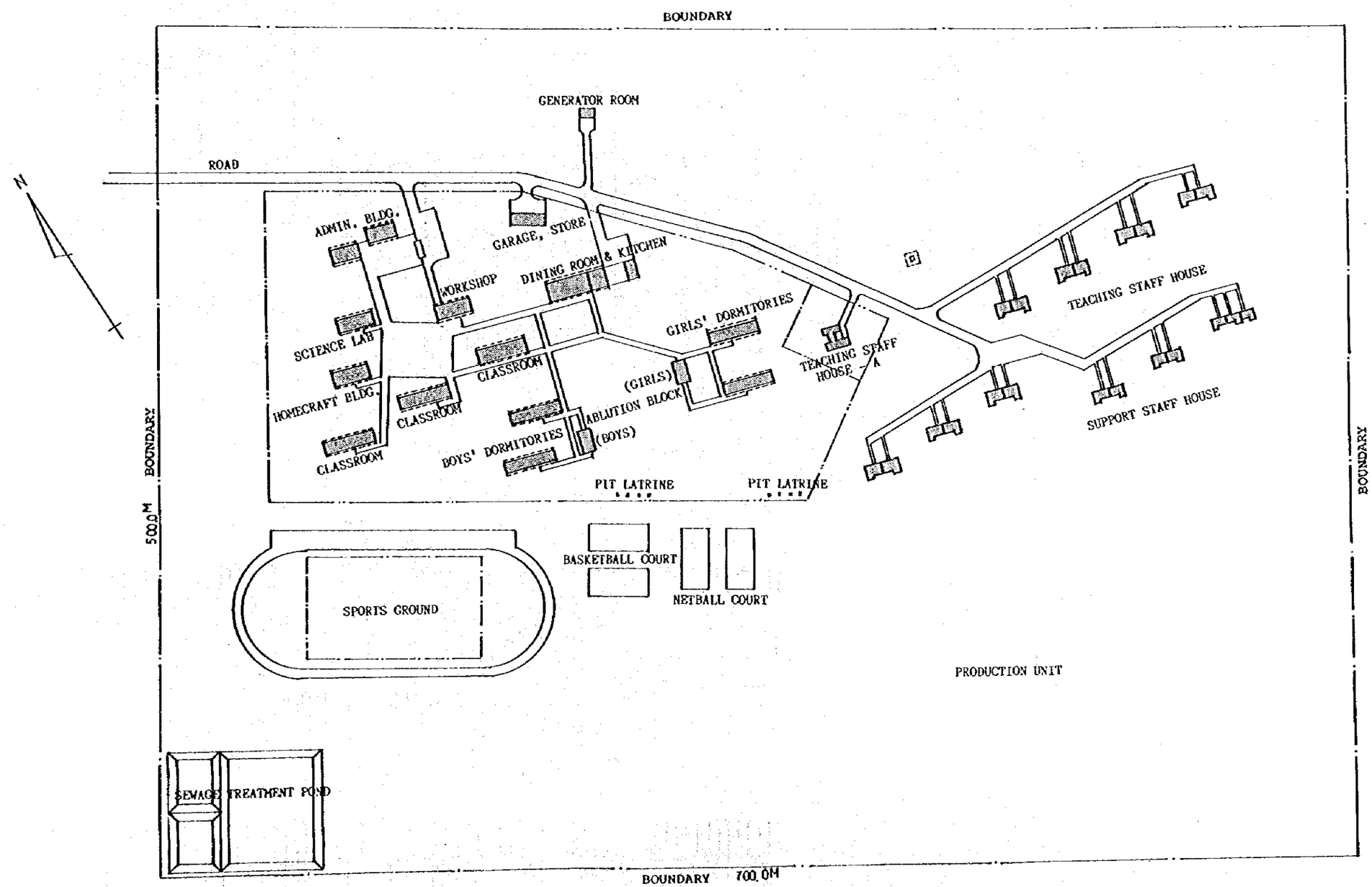
01 PLOT PLAN (ZIMBA)
02 PLOT PLAN (JUMBE)
03 PLOT PLAN (LUKONA)
04 ADMINISTRATION BUILDING
05 CLASSROOM BUILDING, WORKSHOP
06 SCIENCE LABORATORY, HOMECRAFT BUILDING
07 DINING ROOM AND KITCHEN
08 DORMITORY, ABLUTION BLOCK
09 GARAGE, STOREROOM
10 ELECTRICITY ROOM, PUMP ROOM
11 STAFF HOUSING: TYPE A, TYPE B, SUPPORT STAFF HOUSE



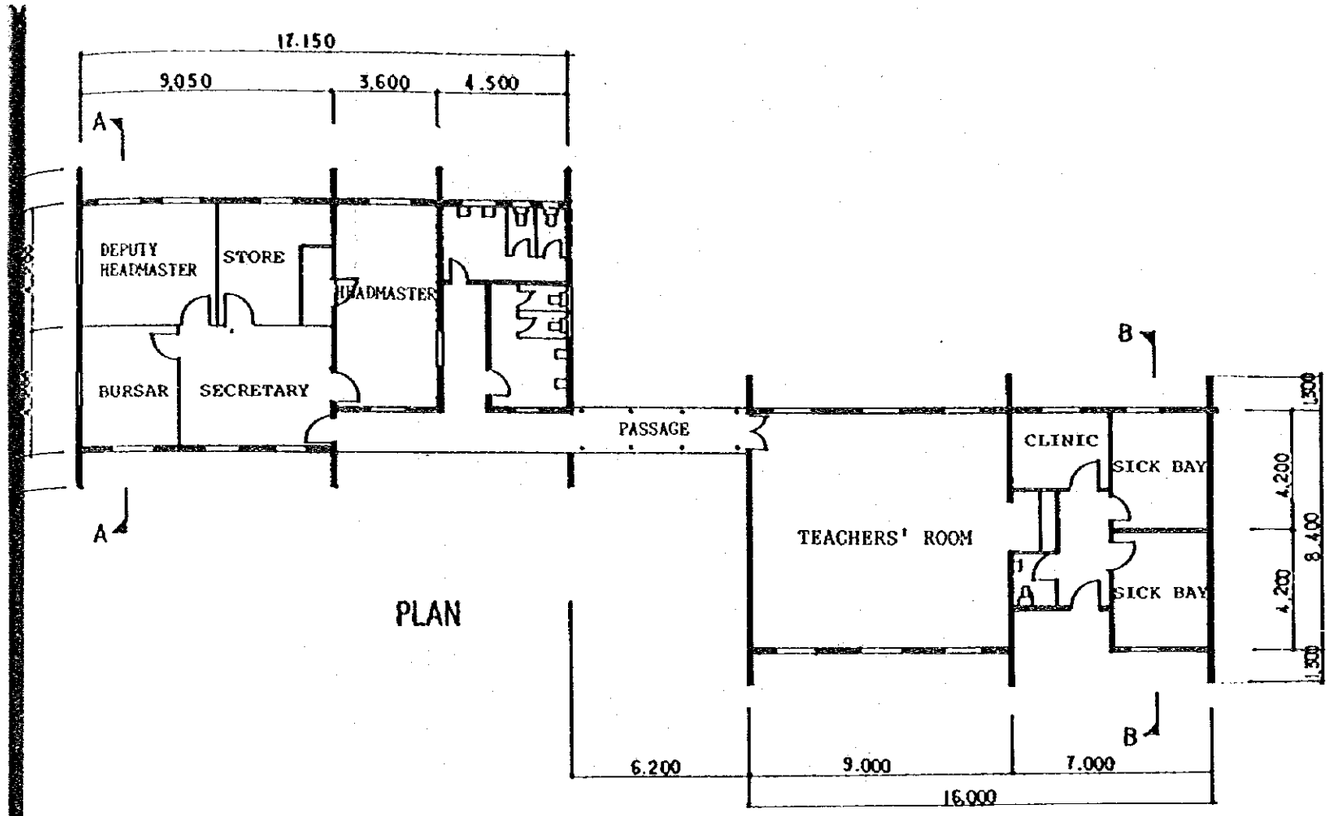
PLOT PLAN (ZIMBA) 01



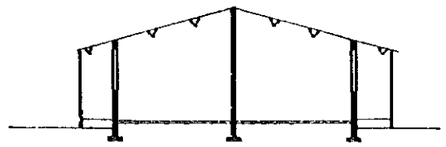
PLOT PLAN (JUMBE) 02



PLOT PLAN (LUKONA) 03



PLAN



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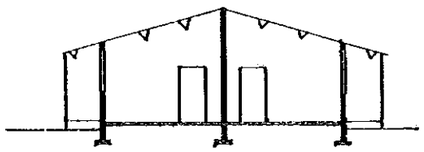
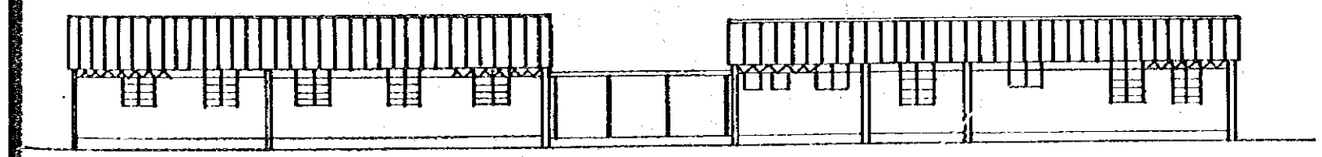


B – B SECTION



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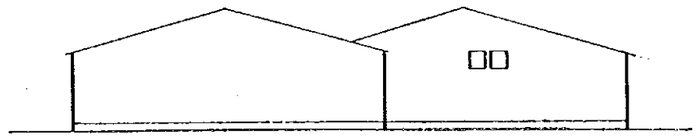
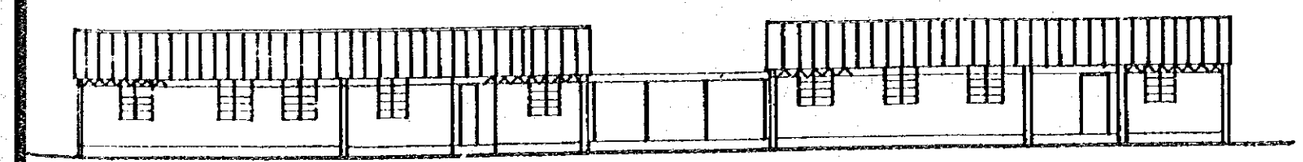
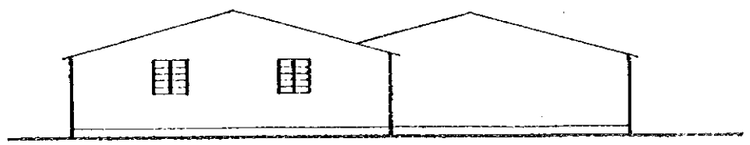


EAST ELEVATION



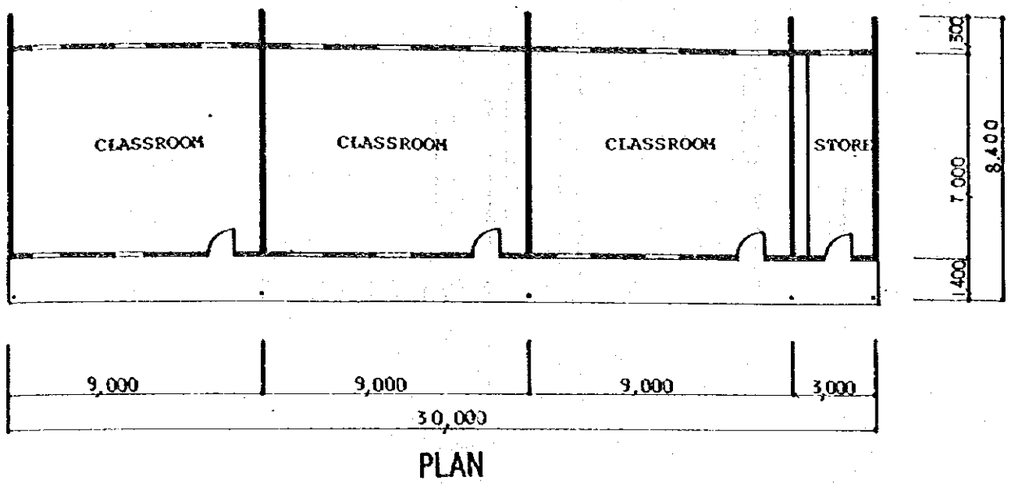
SOUTH ELEVATION



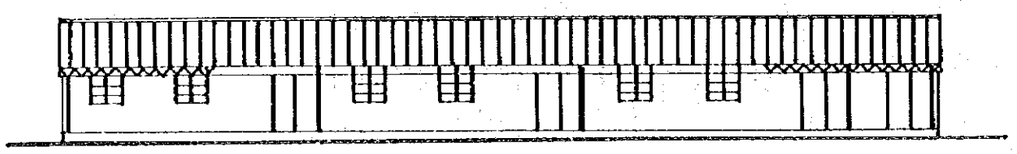
WEST ELEVATION

ADMINISTRATION BUILDING S = 1 : 200

04



PLAN



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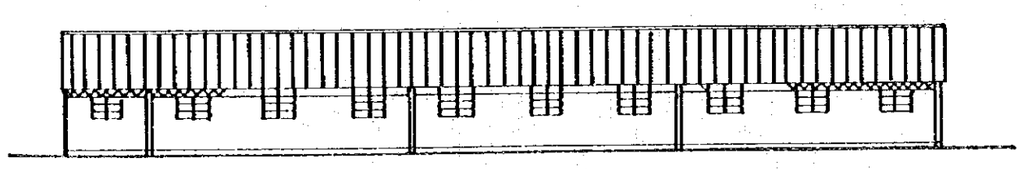

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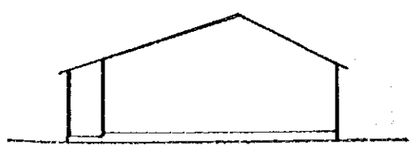

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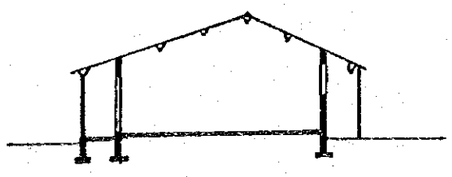
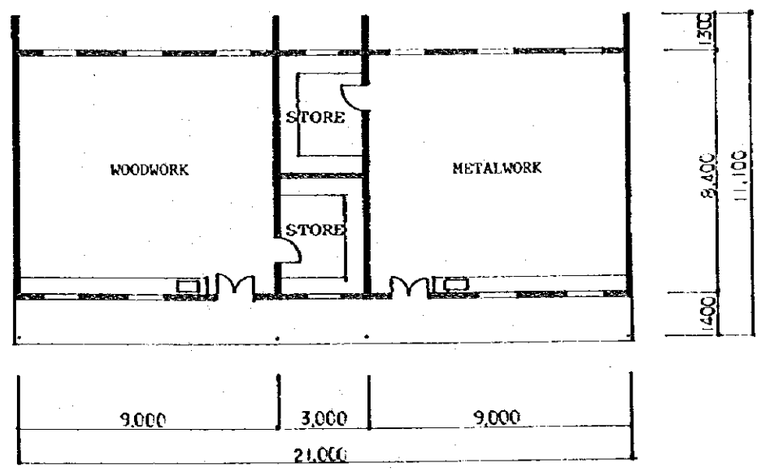


SECTION

CLASSROOM BLDG.



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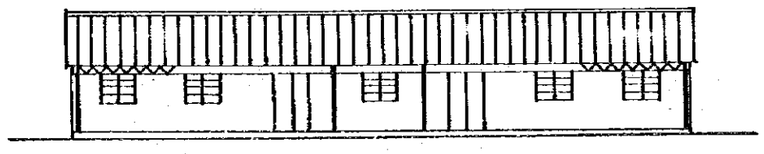

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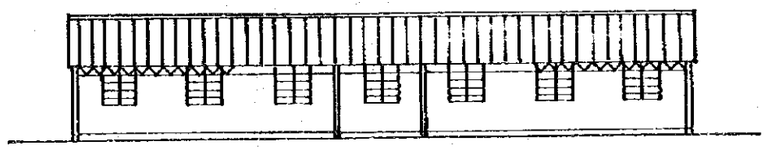

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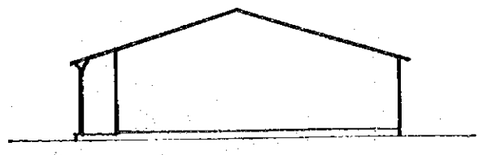


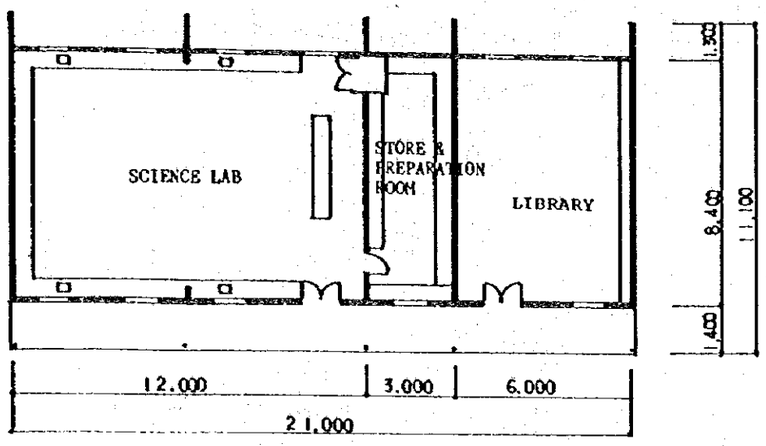
EAST ELEVATION

SECTION

WORKSHOP

CLASSROOM BUILDING, WORKSHOP S = 1 : 200

05



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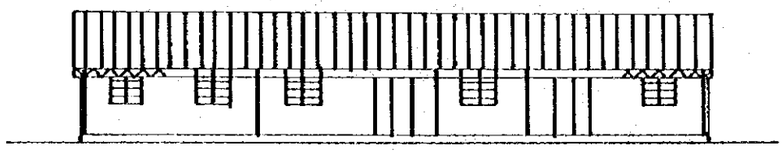

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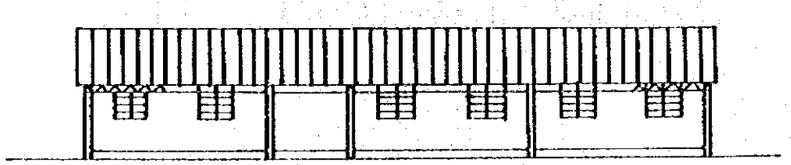

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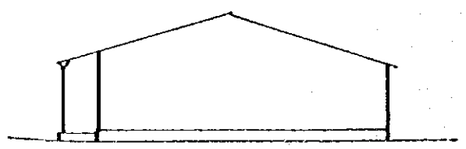

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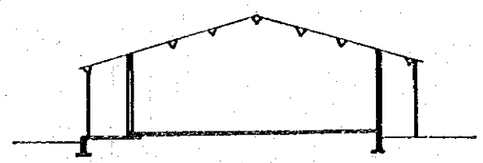
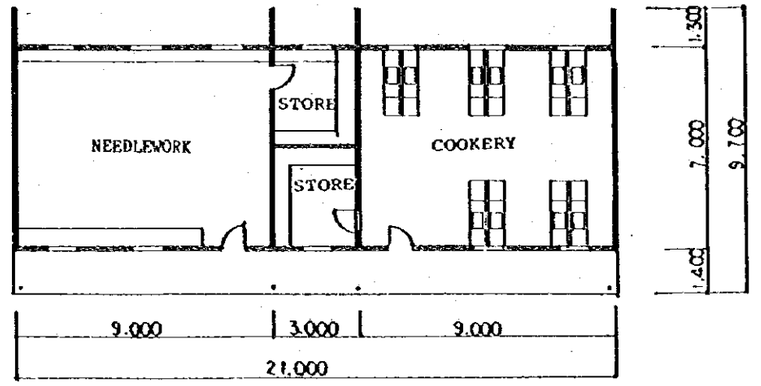


SECTION

SCIENCE LAB. BLDG.



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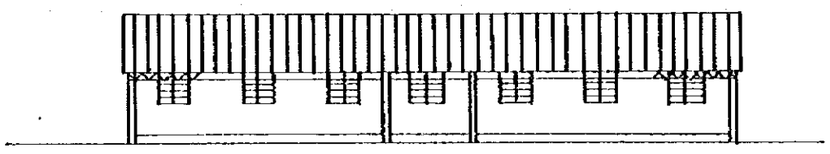

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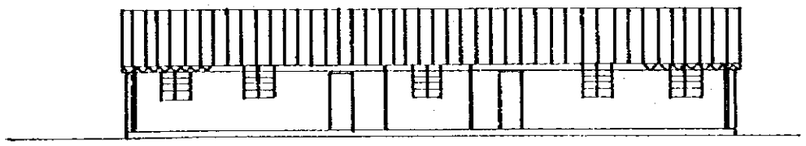

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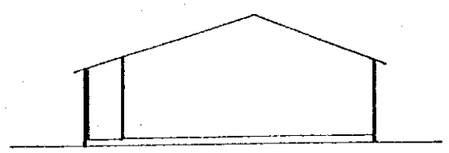


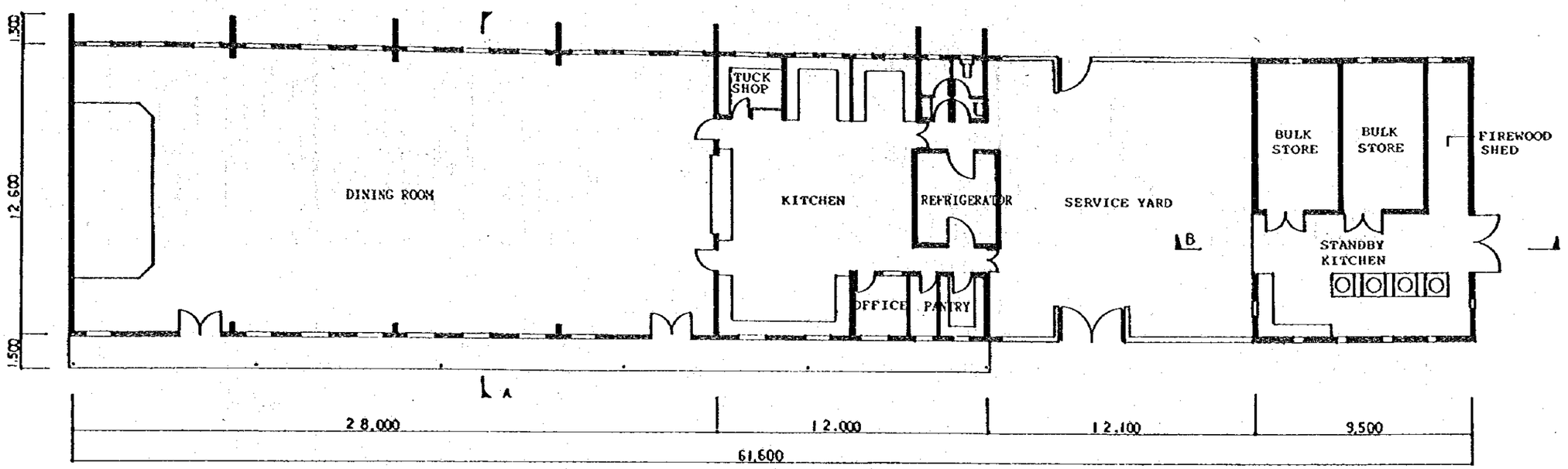
EAST ELEVATION

SECTION

HOMECRAFT BLDG.

SCIENCE LABORATORY, HOMECEAFT BUILDING S=1:200

06



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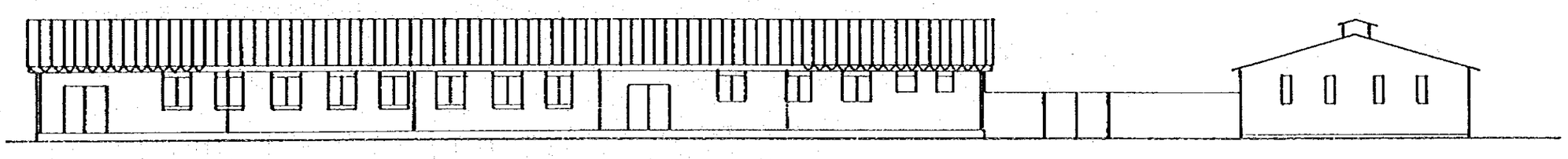

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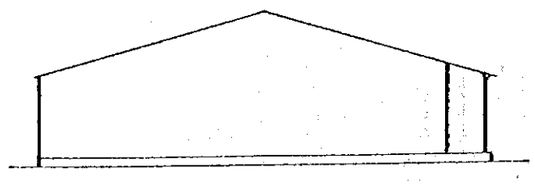
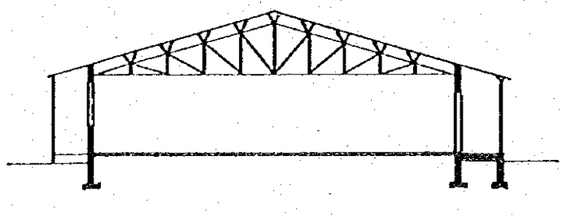
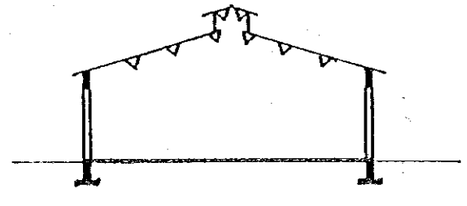


WEST ELEVATION



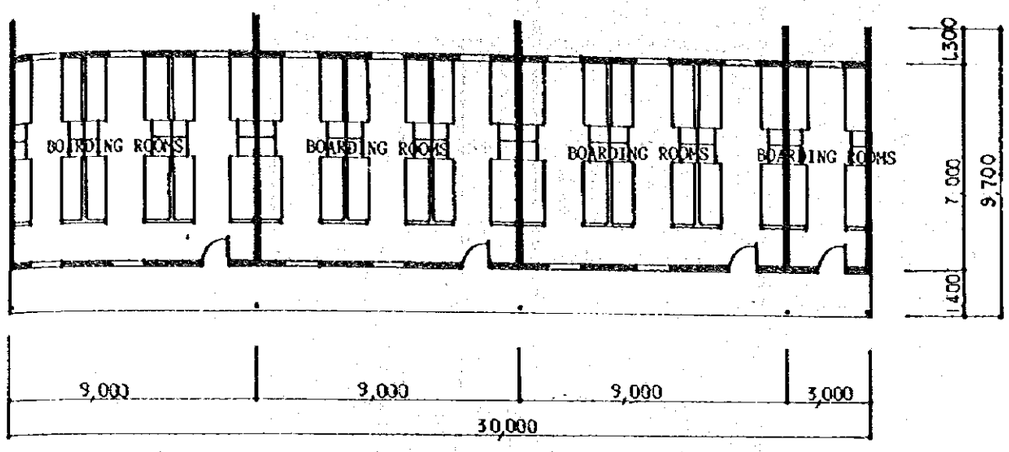
A – A SECTION



B – B SECTION

DINING ROOM AND KITCHEN S = 1 : 200

07



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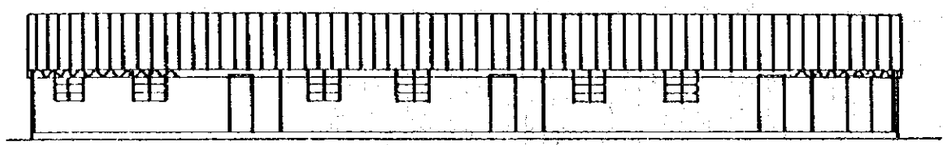

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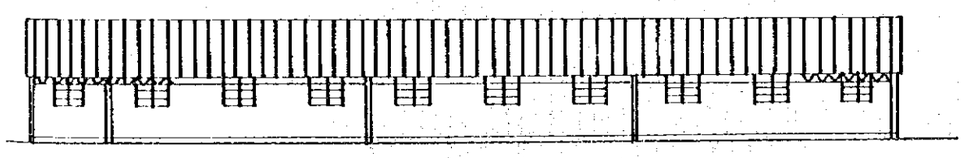

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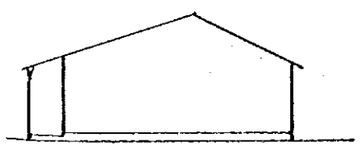
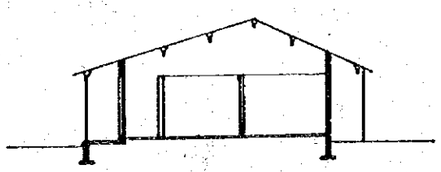
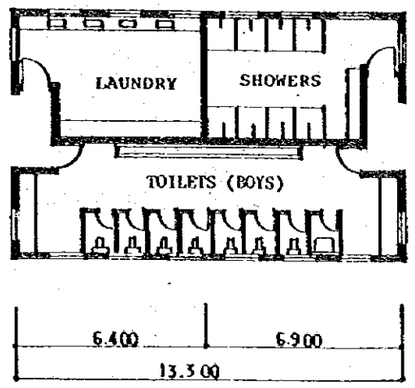


EAST ELEVATION

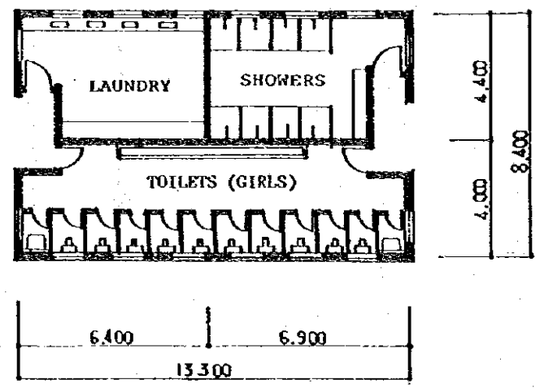


SECTION

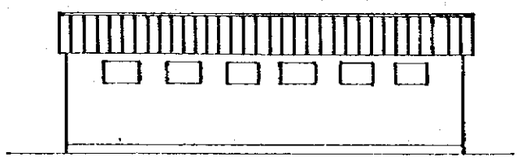
DORMITORY



PLAN (BOYS)



PLAN (GIRLS)



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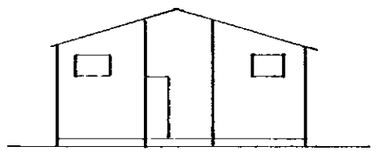

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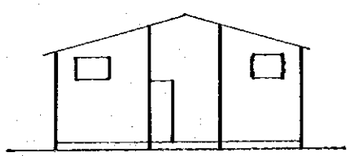
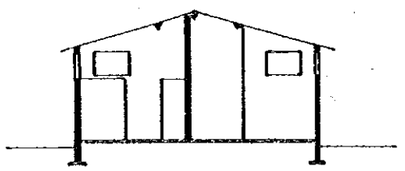


EAST ELEVATION

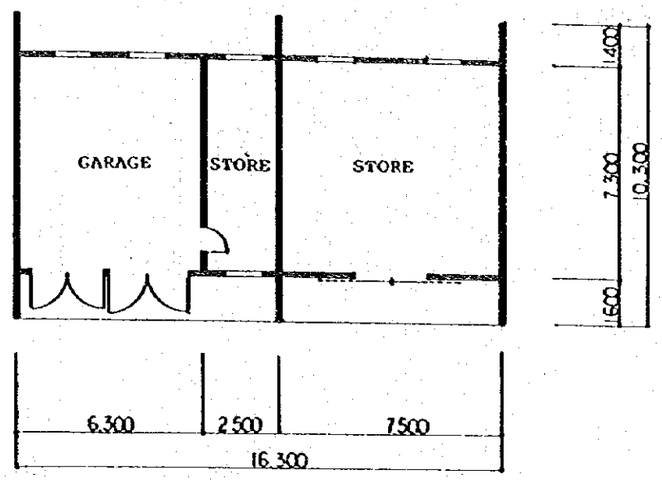


SECTION

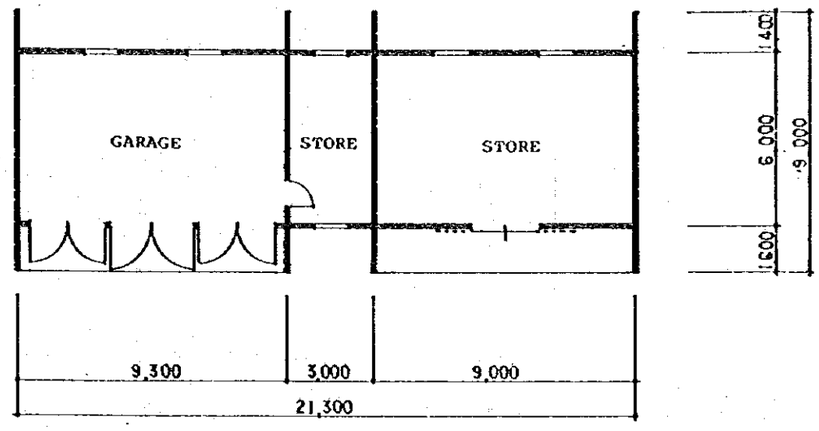
ABLUTION BLOCK

DORMITORY, ABLUTION BLOCK S=1:200

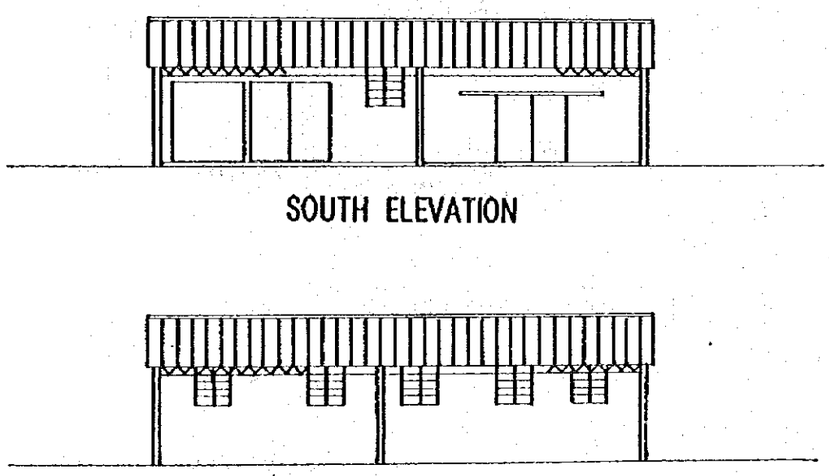
08



PLAN

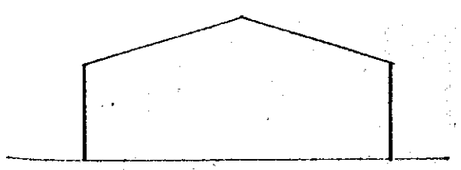


PLAN



SOUTH ELEVATION

NORTH ELEVATION



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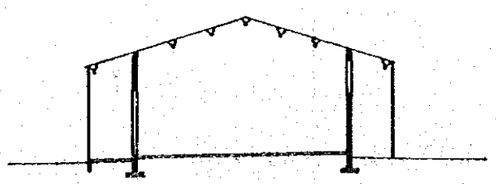
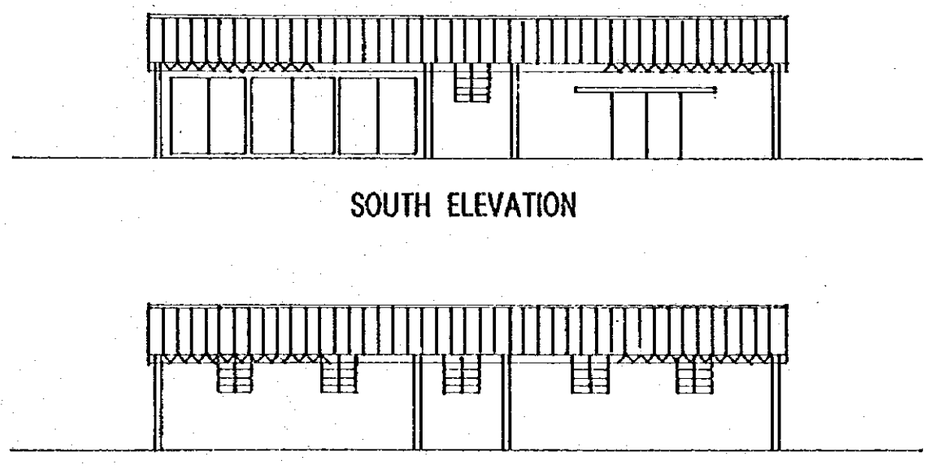


SECTION

(ZIMBA, JUMBE)



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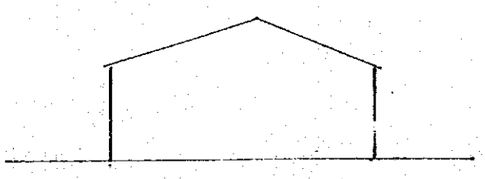

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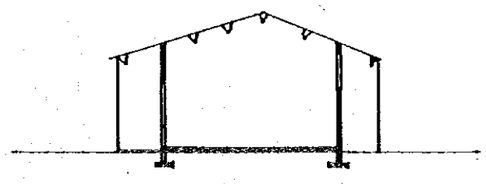
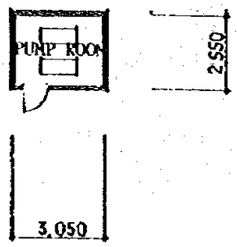


SECTION

(LUKONA)

GARAGE, STOREROOM S=1:200

09



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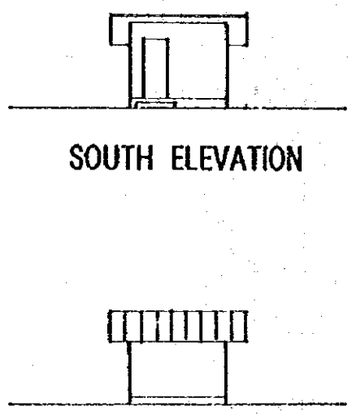

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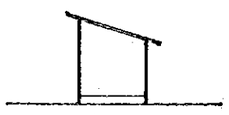
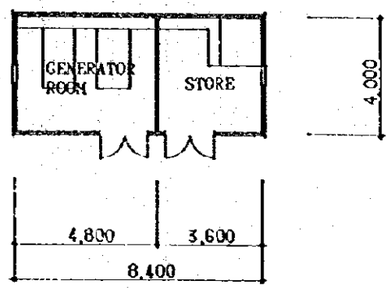


EAST ELEVATION

SECTION

PUMP ROOM (ZIMBA)



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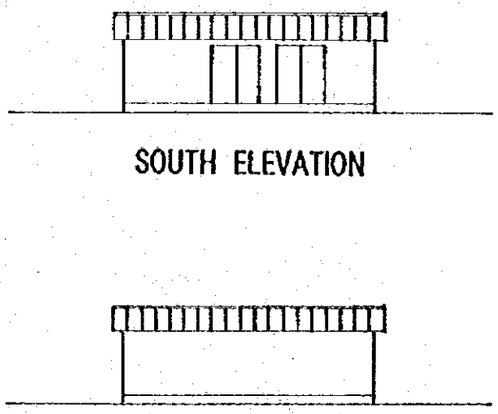

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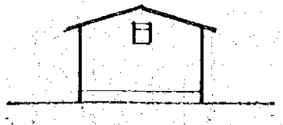
NORTH ELEVATION



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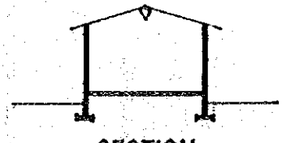
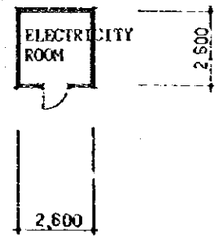


SECTION

GENERATOR ROOM (JUMBE, LUKONA)



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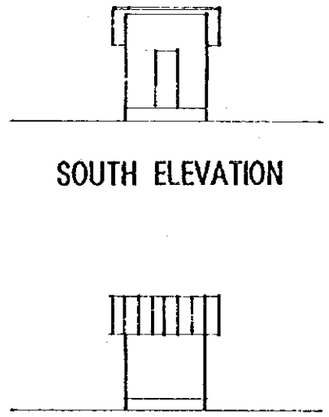
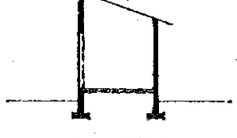


SOUTH ELEVATION

NORTH ELEVATION

EAST ELEVATION

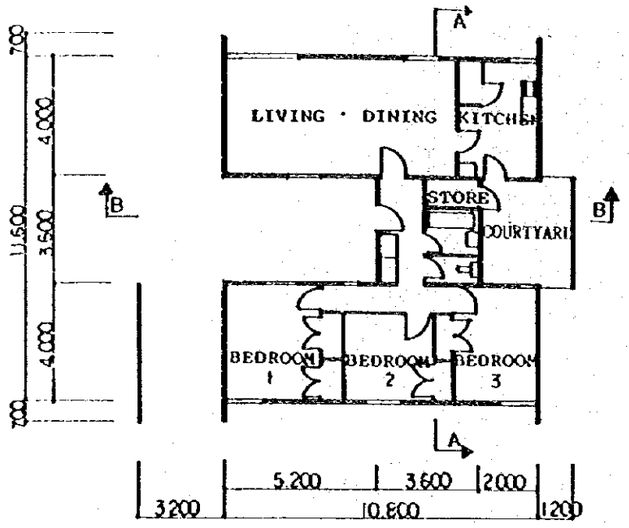


SECTION

ELECTRICITY ROOM (ZIMBA)

ELECTRICITY ROOM, PUMP ROOM S=1:200

10



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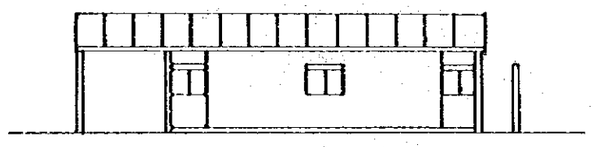

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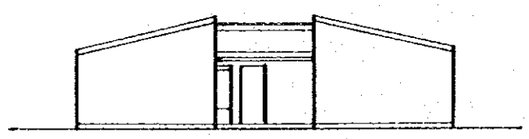
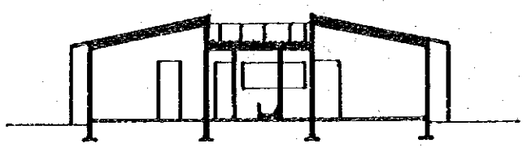
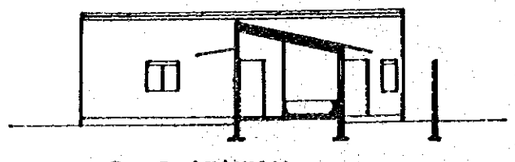


WEST ELEVATION

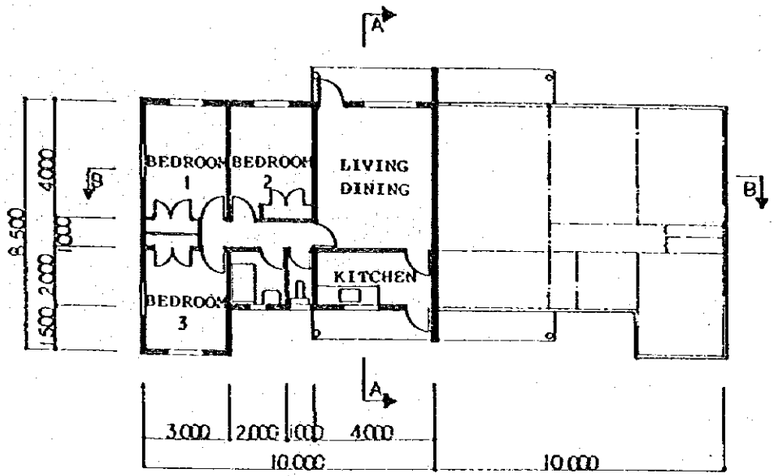


A – A SECTION



B – B SECTION

TEACHING STAFF HOUSE – A



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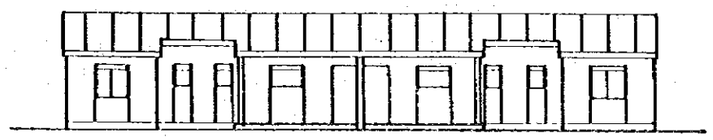
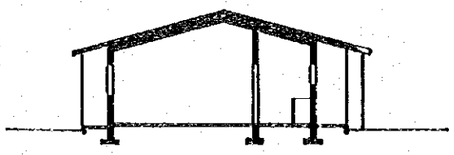
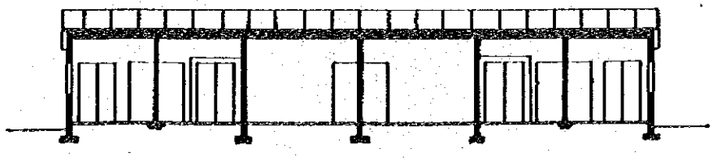


SOUTH ELEVATION

WEST ELEVATION

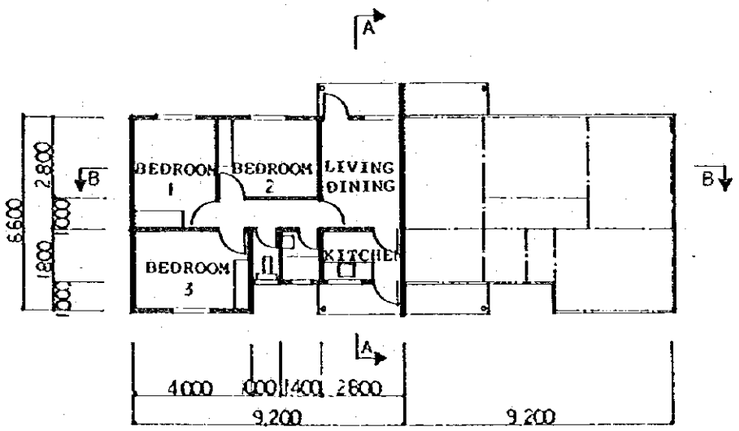


A – A SECTION



B – B SECTION

TEACHING STAFF HOUSE – B



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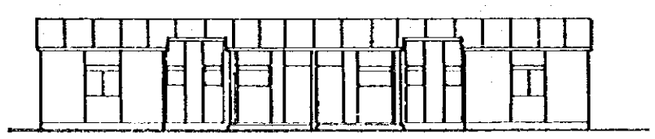
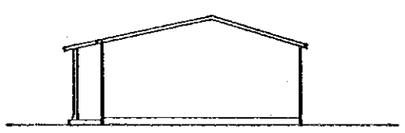


SOUTH ELEVATION



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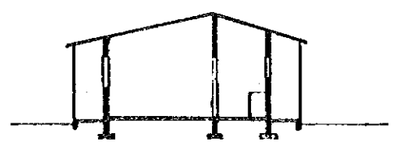
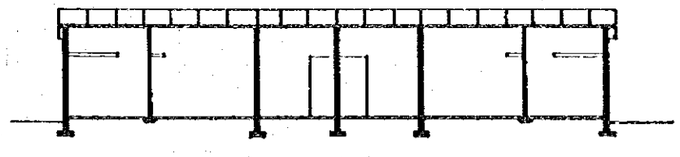


A – A SECTION



B – B SECTION

SUPPORT STAFF HOUSE

STAFF HOUSING : TYPE A, TYPE B, SUPPORT STAFF HOUSE S = 1 : 200

11

CHAPTER 5
IMPLEMENTATION OF THE PROJECT

CHAPTER 5 IMPLEMENTATION OF THE PROJECT

When this project is realised through Japanese grant aid, it will be implemented in accordance with the following procedures.

5-1 Structure for Implementation

The organisation for implementation of this project is as shown below. The implementing organisation of the Government of Zambia is the Ministry of General Education, Youth and Sport (MGEYS), and the MGEYS entrusts the implementation of this project to the Zambia Education Projects Implementation Unit (ZEPIU). The ZEPIU will be in charge of the contracts with the consultant and the contractor.

The consultant promotes this project under this arrangement until the completion of construction maintaining close contact with the people concerned in the ZEPIU. The contractor for the construction will be selected by open bidding from among eligible Japanese firms.

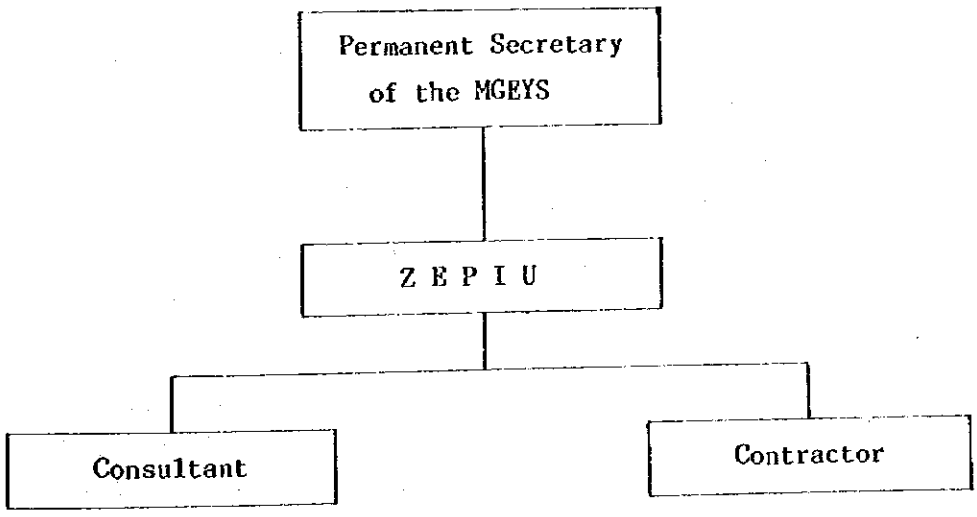


FIGURE 13 ORGANISATION FOR IMPLEMENTATION OF THE PROJECT

5-2 Scope of Responsibilities

For the realisation of this project, the following arrangements are to be undertaken by the respective governments.

(1) Japanese responsibilities

1) To construct the buildings and facilities mentioned in Chapter 4 "Basic Design" of this basic design report,
2) To provide and install utilities for these buildings and facilities,
3) To provide and install the equipment which is mentioned in Chapter 4 of this report,
4) To do exterior work including road construction in each site.

(2) Zambian responsibilities

1) To secure the land for the project,
2) To demolish obstacles and prepare the land at the project sites before the commencement of construction,
3) To do exterior work not included in the Japanese responsibilities, such as sports grounds, production units, etc.,
4) To construct the access road to the boundary of each site from the main road,
5) To drill a bore hole at the Jumbe and Lukona sites before the start of construction,
6) To extend the water pipe to the border of the Zimba site,
7) To provide materials, equipment and consumable supplies not included in the Japanese responsibilities,
8) To undertake the following necessary formalities:
   a. Make banking arrangements and bear required expenses,
   b. Exempt the materials and equipment to be used in this project from Zambian taxes and levies,
   c. Handle official formalities and give approval necessary for entering and residing in Zambia to the Japanese whose services may be required in connection with the supply of products and services,
   d. Exempt the Japanese whose services may be required in connection with this project from Zambian taxes and levies.

5-3 Construction Plan

(1) Basic Construction Policy

The following shall be well reviewed and investigated for the implementation of this project.

1) The rainy season in Zambia begins in November and continues till March. The construction schedule shall be so decided that the earth work and foundation work may not fall in the rainy season, which is the least suitable time. It is necessary to set the work schedule to avoid inefficiency in construction from the beginning which may have bad effects on the construction procedure afterwards. Futhermore, as the ground of the sites for this project is sandy soil, it is necessary to prevent soil erosion due to heavy rainfall during the rainy season.

2) Manufacturing and building materials used in Zambia are mostly imported from foreign countries. The supply of materials may be interrupted frequently when a shortage of foreign currency reserves results in inadequate imports. It is therefore necessary to make a procurement schedule as early as possible. In addition, materials imported from Japan have to be transported by way of neighbouring countries as Zambia is an inland country. It is also necessary to draw up the construction schedule considering the capacity of transportation facilities and the time required.

In addition to the above, it is necessary to consider the following points regarding the Lukona site:

Sand is the only construction material available around Lukona, and all the other materials have to be delivered from Lusaka. During transportation, measures need to be taken to ensure the transport of materials in every season because the powerful Zambezi River may change its aspect drastically in rainy and dry seasons.

(2) Supervisory Plan

The supervisory services are planned so that the designers and engineers of the consultant with the ZEPIU will periodically visit the sites and supervise the construction work, assuming that the local construction company can fully understand the design concept as this project design is based on the standard design of school facilities in Zambia.

The consultant will call for tenders for the work, and give instructions for bidding documents on behalf of the MGEYS, owner of the project according to the contract, and open the bids in the presence of the owner's representative in Japan. After the bidding, the consultant will evaluate the bids and witness the construction contract between the owner and the successful contractor.

At the time of commencement of construction, the architects and engineers of the consultant with the ZEPIU will give instructions to and discuss the construction schedule with the contractor at the sites. Meanwhile, the consultant will check the shop drawings from the contractor, reply to questions from the site, inspect and give approval of the fabrication drawings of the equipment and samples of construction materials, design color schedules, and perform other services in Japan.

The monthly report furnished by the contractor will be checked, approved by the ZEPIU and the consultant and presented to JICA headquarters. The architects and engineers of the consultant will be dispatched according to the progress of the work for discussions, inspections and instructions. The ZEPIU and the consultant will attend the inspections of the completed portions and give approval.

The final inspection will be made just prior to the completion of the work and the consultant will give instructions of any required repairs and then proceed with application documents for completion of the work. The consultant will provide assistance

and direction to the MGEYS personnel concerned as to the operation and maintenance of the facilities after their transfer to facilitate smooth management of the schools.

The consultant, after confirming that the conditions of the contract are fulfilled, will assist in the handing over of the facilities. His services will terminate at the approval of the MGEYS.

(3) Procurement Plan for Materials

The construction materials manufactured in Zambia are cement, sand, gravel, concrete blocks, bricks, asbestos-cement boards (raw materials imported), etc. Other construction materials are imported. Materials to be used in this project will be, in principle, purchased in Zambia regardless that they are manufactured in the country or imported.

There are two main routes to transport imported goods: one is by road or railway from the port of Dar es Salaam in Tanzania, and the other by road through Zimbabwe from the port of Durban in South Africa.

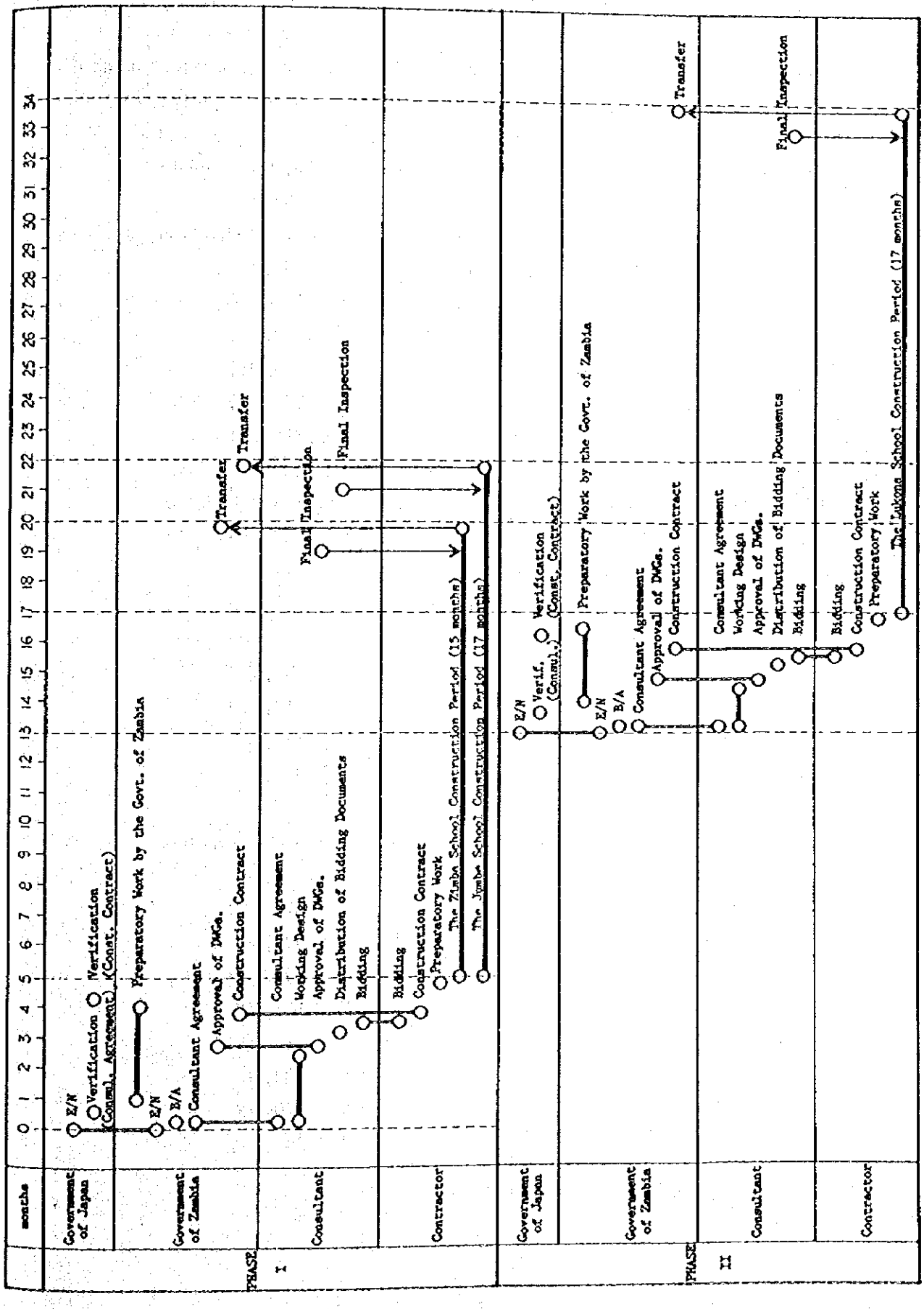
Most of the construction machinery and materials for the three sites need to be purchased in Lusaka, and except for Zimba, transport may require considerable time and expense, due to unfavourable road conditions. The road to Jumbe is sometimes closed because of flooding and loosening of the soil. The route across the plains from Mongu to Lukona is over sandy soil and difficult to use due to standing water. It is unsuitable as a transport route, being usable only three months a year. Thus, transportation to the Lukona site will rely on shipping by canal. As the water depth varies season to season, care shall be taken in preparing transport schedules.

5-4 Tentative Schedule of the Project

After signing the Exchange of Notes, the MGEYS, owner of the project, will carry out scheduled formalities including the Banking Arrangement and enter into an agreement for consulting services with a Japanese consultant. The consultant will prepare the working design documents and will assist the MGEYS in bidding procedures. The successful contractor will conclude a construction contract with the MGEYS and start construction work.

The construction period will be divided into two phases, phase I for the construction of the Zimba and Jumbe schools, and phase II for the Lukona school. The Government of Zambia shall complete the work in the area of his responsibilities before the commencement of construction of each phase. Table 20 shows the tentative schedule of the project.

TABLE 20 TENTATIVE SCHEDULE OF THE PROJECT



5-5 Operation and Maintenance Costs

The annual costs for operation and maintenance of the project schools are estimated as follows:

(1) Zimba Junior Secondary School approx. 1,215,000 kwachas

- wage 17 teachers	K	208,284
- wage 28 support staff	K	114,210
- meals for the boarding pupils	K	594,360
- teaching materials	K	157,600
- utilities	K	7,200
- fuel for vehicles	K	13,030
- maintenance	K	120,000
total	K	1,214,684

(2) Jumbe Junior Secondary School approx. 1,315,500 kwachas

- wage 17 teachers	K	208,284
- wage 28 support staff	K	114,210
- meals for the boarding pupils	K	594,360
- teaching materials	K	157,600
- utilities	K	108,000
- fuel for vehicles	K	13,030
- maintenance	K	120,000
total	K	1,315,484

(3) Lukona Junior Secondary School approx. 1,398,000 kwachas

- wage 17 teachers	K	208,284
- wage 28 support staff	K	114,210
- meals for the boarding pupils	K	594,360
- teaching materials	K	157,600
- utilities	K	108,000
- fuel for vehicles	K	12,000
- transport by barges	K	83,200
- maintenance	K	120,000
total	K	1,397,654

Budgetary allowments for the operation and maintenance costs can be secured from the Government of Zambia considering that the government gives high priority to education and that there has been no primary or secondary school that has lacked funds for operation and maintenance costs.

5-6 Approximate Project Cost

The project cost to be born by the Government of Zambia is estimated at about 1,017,000 kwachas in total.

Zimba (site preparation, extension of water piping)
approx. 297,000 kwachas
Jumbe (site preparation, drilling bore hole)
approx. 300,000 kwachas
Lukona (site preparation, drilling bore hole)
approx. 420,000 kwachas

CHAPTER 6 EVALUATION OF THE PROJECT

CHAPTER 6 EVALUATION OF THE PROJECT

The Government of Zambia, in an attempt to develop human resources, is aiming for qualitative improvement and quantitative expansion of education. To attain this goal, the improvement of educational facilities, upgrading and expansion of teaching materials, improvement and increase of teaching personnel, and assurance of financial support become significant. The construction of the three junior secondary schools in this project is in line with the government policy to institute a nine-year basic education system and equal educational opportunities.

6-1 Contribution to Equal Educational Opportunities

The regional progression rates to junior secondary schools in 1988 were not equal, as shown in Table 12 in Section 3-3 (2). The three project schools are located in Southern, Eastern and Western Provinces, whose rates are fairly low compared to 31.6% in Northern Province and 30.6% in Copperbelt Province. The construction of the three schools will thus contribute to the correction of imbalances in educational opportunities.

Table 21 indicates how much the construction of the project schools will contribute numerically to an increase in the progression rate based on figures as of 1988.

When this project is implemented, the rate will increase by 0.37% for the whole country, with Southern and Western Provinces catching up with the country's average progression rate. As there are few secondary schools and the progression rate remains rather low in the Kalabo District, where Lukona is located, the construction of the Lukona Junior Secondary School will induce a great improvement in the progression rate of this district and thus contribute to the correction of the imbalance.

TABLE 21 CONTRIBUTION OF THE PROJECT SCHOOL TO THE PROGRESSION RATE

	Eastern Province Jumbe	Southern Province Zimba	Western Province Lukona	Whole Country
No. of present grade 8 classes	96	144	82	1,093
Increase of grade 8 classes	5	5	5	15
No. of present grade 7 classes	403	530	314	3,997
Progression rate when the project is completed	25.06%	28.12%	27.70%	27.72%
Progression rate in 1988	23.82%	27.17%	26.11%	27.35%
Contribution of the project	1.24%	0.94%	1.59%	0.37%

6-2 Contribution to Industrial Sector

When the three project schools are completed, the number of junior secondary school pupils will increase by an annual 600 nationally, with 200 graduates every year from each school. They will either proceed to higher education or enter the industrial sector. By fostering the youths who have taken practical knowledge and skills through technical training and activities in the production units during the secondary education, it is expected that they will vitalise the economy in the rural areas by contributing to improvement of efficiency in traditional industries, formation of new communities and development of new industries.

6-3 Contribution to Rural Development

In addition, as the project schools, designed as boarding schools, require a quantity of food, they are expected to stimulate the agricultural production in the surrounding districts. This will lead to an increase in the numbers of residents and the formation of communities, which help prevent the outflow of population into urban areas.

In particular, the Lukona site lies in an area where construction work is very difficult due to insufficient means of water and land transport, though the inhabitants scattered around need a junior secondary school because there are many small and medium scale primary schools around but no junior secondary school nearby. The construction of the junior secondary school in this district is believed to offer such advantages as better transport facilities and utilities and more public services available as the population increases.

These effects expected by the project will also contribute to the government's rural development programme.

6-4 Education Finance

Education is the foundation of the permanent development of a country. For example, Japan's outstanding development since 1945 can be attributed to the nation's high standard of education owing to a thorough diffusion of education throughout the country since the 1880s.

Though education may not have immediate visible effects for the development of the country, for the sake of the future it is recommended to provide adequate financial support for education. In the 1987 budget, education received about 10% of the national budget, the second highest portion to the Ministry of Finance, though the share was lower than before. Considering that the Government of Zambia gives high priority to education, it is assumed that the management of the project schools will receive adequate financial support.

CHAPTER 7
CONCLUSION AND RECOMMENDATIONS

CHAPTER 7 CONCLUSION AND RECOMMENDATIONS

7-1 Conclusion

The Government of Zambia has decided to renovate its education system for a qualitative improvement and quantitative extension of education because the country is in need of more human resources with appropriate skills and technology to assist in productive activities for the development of the country.

However, the severe condition of the economy does not permit the government to construct on its own the school facilities necessary to implement education reform. Thus, the government has planned the construction of junior secondary schools through international financial aid and has requested the Government of Japan to provide a part of it.

The three junior secondary schools designed in this project are located in areas where junior secondary schools are few in number. The establishment of these schools will give more educational opportunities to the children in these districts, who have not had adequate facilities for junior secondary education, and will greatly contribute to the realisation of the new nine-year basic education system which the government has decided to implement.

The project is therefore regarded as well worth realising through grant aid from the Government of Japan, with considerable benefit thereby engendered. Prompt implementation is highly desirable.

7-2 Recommendations

The following recommendations are presented for implementation of the project.

(1) Prompt Completion of Work by the Government of Zambia

As for water supply in the Jumbe, Zimba or Lukona sites, proper water supply work, in the form of extending a water pipe in Zimba and drilling bore holes in Jumbe and Lukona, needs to be completed by the Government of Zambia prior to the construction work.

There are various trees and bushes obstructing construction at the Jumbe and Lukona sites. These shall be removed and the grading work of the site shall be completed before the commencement of construction.

As this work is the responsibility of the Government of Zambia, necessary budgetary measures shall be taken by the government. As of November 1988, the MGEYS confirmed that it had requested an appropriation for the project in the 1989 government budget. It is indispensable for the implementation of the project that the project budget be appropriated and the work completed as scheduled.

(2) Securing Operation Costs

Electricity will be supplied by a generator installed in the schools in Jumbe and Lukona. This power is to be distributed to the bore hole pump system and for evening activities of the pupils. Since most of the pupils at these schools are assumed to be boarding pupils, supply of electricity and water is essential for the school functions. For the pupils' learning, at least a 4-hour supply of electricity will be needed in the evening.

An adequate budget for energy supply is indispensable to operate the generator system at sufficient capacity.

(3) Securing Transport Facilities

1) Construction stage

A vast amount of construction materials and machinery need to be transported across the Zambezi River to the Lukona site. Barges for this purpose are, at present, owned by the Department of Water Affairs and the Ministry of Power, Transport and Communication. Thus, it shall be requested that these ministries offer barges at their convenience to the project's construction company so that they can utilise them.

2) Management of the school

To facilitate procurement and transport of daily commodities (fuel, food) to the Lukona Junior Secondary School, water transport between Mongu and Kama or Mongu and Kalabo shall be secured by the Government of Zambia. For this purpose, dredging of the waterway from Mongu and regular operation of a small boat are recommended.

At present, medium-size boats can run from Mongu to Kama or Kalabo in the rainy season, but even small ones cannot run in the dry season because the waterways become shallow. Still, water transport is considered the best way, because land transport on the flood plains is available for a few months in the dry season and such transport is attended with difficulties.

If the Lukona school has its own barge, maintenance will be troublesome due to the long distance from the school to Kama (the unloading port). It is therefore suggested that the MGEYS or the Department of Water Affairs or the Ministry of Power, Transport and Communication owns and operates the barges.

(4) Technical Cooperation

Various science laboratory equipment as well as technical (metalwork, woodwork) tools and equipment are to be provided for the three schools. To utilise the equipment effectively and efficiently for the improvement of education standards in Zambia, which has a shortage of teachers with science and engineering degrees, it shall be examined that some JOCV members be sent there as science or engineering teachers.

ANNEX

ANNEX

I MINUTES OF DISCUSSIONS (BASIC DESIGN STUDY)

MINUTES OF DISCUSSIONS
ON
THE PROJECT FOR THE CONSTRUCTION
OF JUNIOR SECONDARY SCHOOLS
IN
THE REPUBLIC OF ZAMBIA

In response to the request made by the Government of the Republic of ZAMBIA for the Construction of Junior Secondary Schools (hereinafter referred to as "the Project"), the Government of Japan sent, through the Japan International Cooperation Agency (JICA), a team headed by Mr. Tetsufumi MIKAMI, Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs, to conduct a basic design study from August 10th to September 18th, 1988.

The team has carried out a field survey, held a series of discussions, and exchanged views with the Zambian authorities concerned with the Project.

As a result of the study and discussions, both parties have agreed to recommend to their respective Governments consideration of the survey results attached hereto with a view to implementing the project.

Lusaka, August 24th, 1988.

三上哲史

Tetsufumi MIKAMI
Leader
Basic Design Study Team
JICA

Vukani G. Nyirenda (Dr)
Permanent Secretary
Ministry of General
Education and Culture

ATTACHMENT

1. The objective of the Project is to provide the necessary facilities and equipment for the establishment of the Junior Secondary Schools, (hereinafter referred to as "the Schools").

2. The proposed sites of the Project are located in Zimba, Jumbe and Lukona, in Kalomo, Chipata and Kalabo Districts respectively, are allocated for the Project by the Government of the Republic of ZAMBIA. The Project sites are shown in Annex I.

3. The basic concepts for the Schools are as follows:

   (1) A class consists of 40 students. The students would follow a 2 year course.

   (2) The Schools will be managed under the control of the Ministry of General Education and Culture. Curricula and syllabi executed in the Schools will be the same as in other junior secondary schools in the Republic of ZAMBIA.

4. The team will convey the desire of the Government of the Republic of ZAMBIA to the Government of Japan that the latter will take the necessary measures to co-operate in implementing the Project and will provide the facilities and equipment as listed in Annex II within the scope of the Japanese Grant Aid.
   The list is provided in the order of priority and the items of low priority may be deleted or adjusted according to the budget allocated by the Government of Japan.

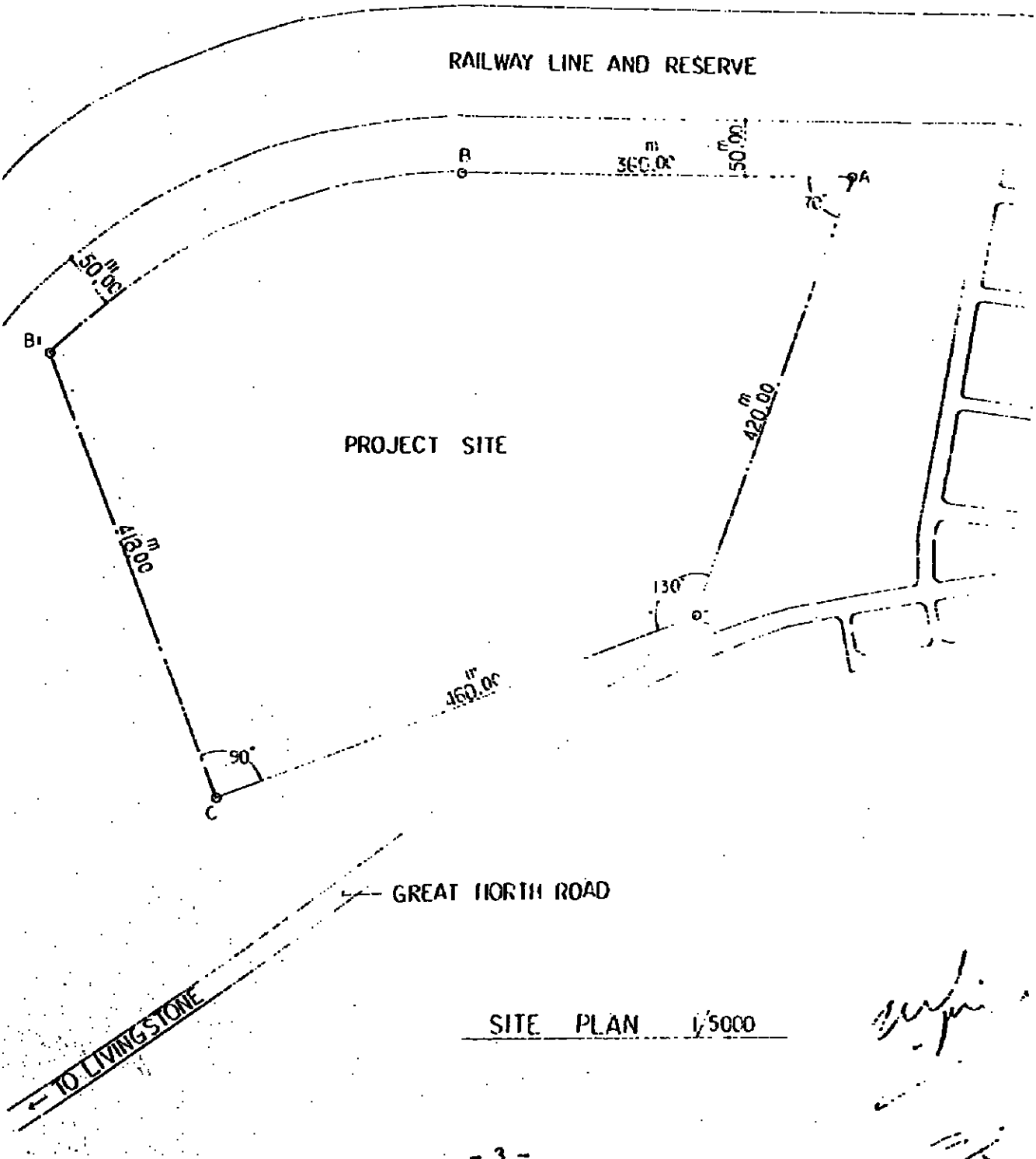
5. The Zambian side has understood Japan's Grant Aid System explained by the team which includes a principle of use of a Japanese consultant and a Japanese general contructor for the construction of the Schools.

6. The Government of the Republic of Zambia will take the necessary measures as listed in Annex III on condition that the Grant Aid by the Government of Japan shall be extended to the Project.

7. The Ministry of General Education and Culture through Zambia Education Projects Implementation Unit is the implementing body for the Project and will be responsible for the implementation of the preparatory work and construction work of the Project.

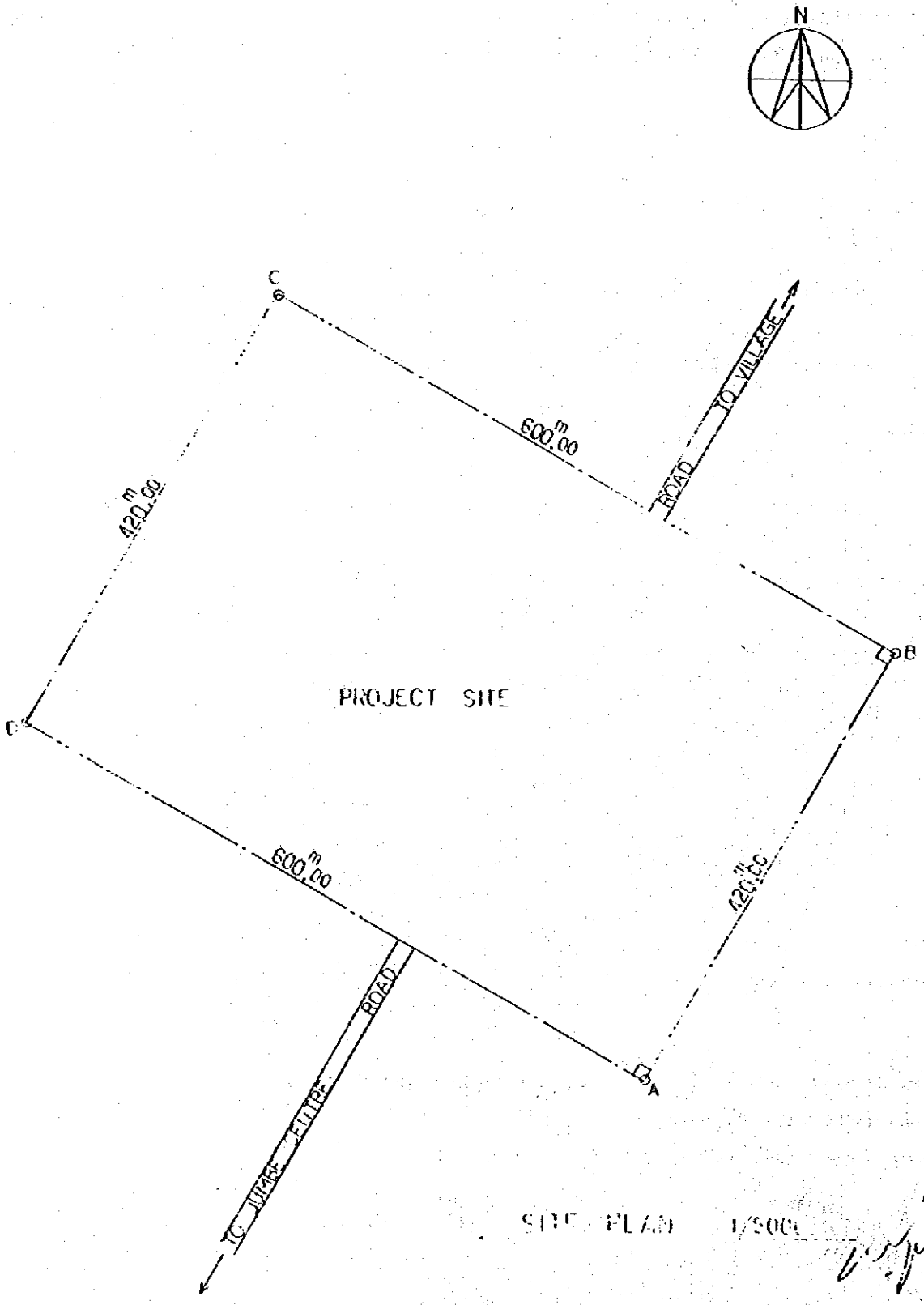
ANNEX I

PROJECT SITE - ZIMBA



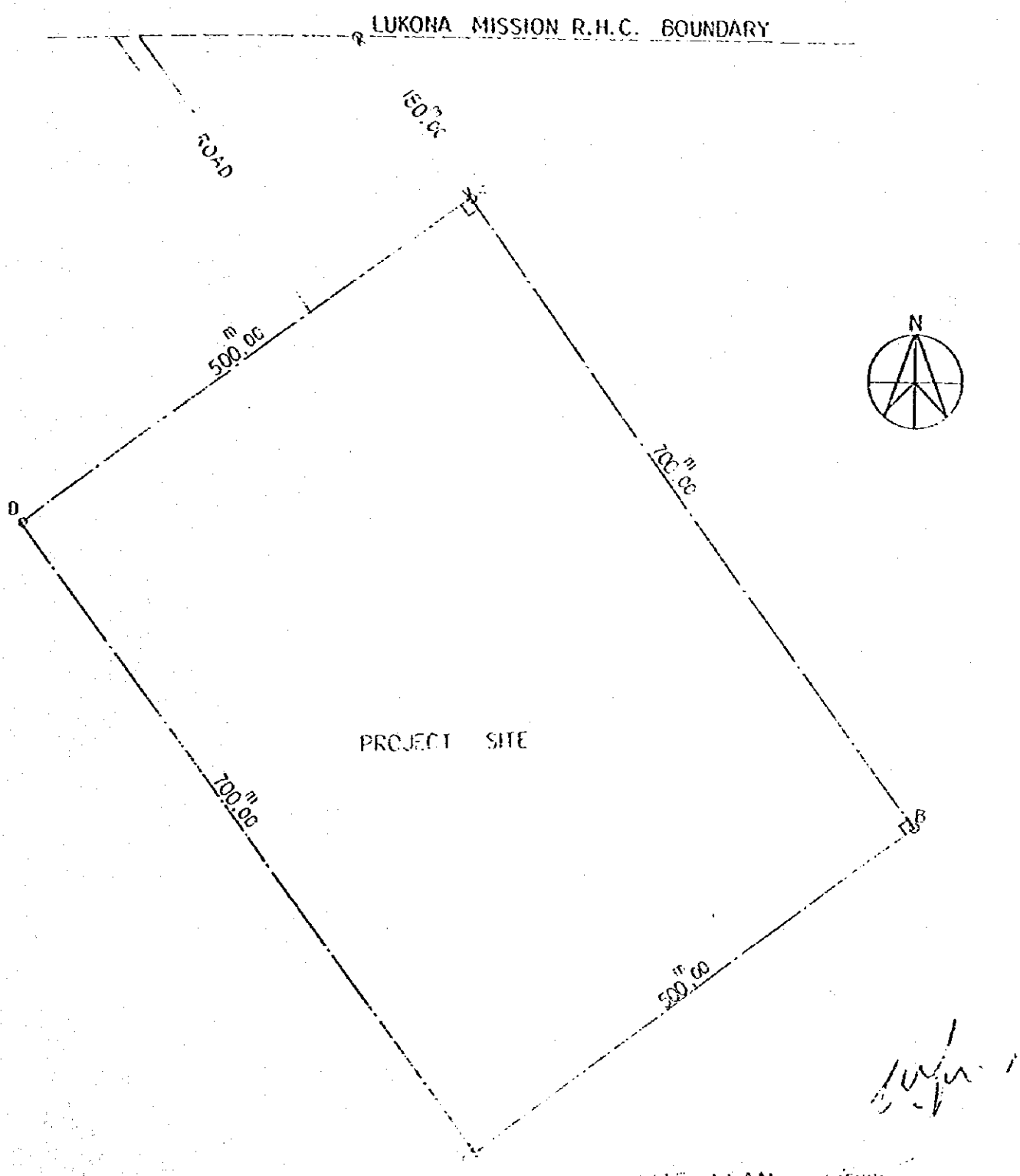
SITE PLAN 1/5000

PROJECT SITE – JUMBE



SITE PLAN 1/500

PROJECT SITE – LUKONA



SITE PLAN 1/5000

Annex II

Major items required for the Project by the Government of the Republic of Zambia are:

(1) Facilities:

A) Academic and Communal Facilities

1. Class Rooms (for 40 students per class)
2. Science Laboratory
3. Domestic Science
4. Workshops
5. Library
6. Administration Offices
7. Dining Room and kitchen
8. Sick bay unit

B) Boarding Facilities:

1. Dormitories
2. Ablutions

C) Staff Housing:

1. Teachers' Houses
2. Headmaster's House
3. Supporting Staff Houses

D) Others:

1. Storage House
2. Garage

(2) Equipment:

Related equipment of the Project.

Annex III

Necessary measures to be taken by the Government of the Republic of Zambia are:

1) To secure land necessary for the construction of the facilities and to clear, fill and level the sites as needed before the start of the construction.
2) To construct and prepare the access road to the Project sites.
3) To provide facilities for distribution of electricity, water supply, drainage, telephone system and other incidental facilities to the sites.
4) To ensure prompt unloading, tax exemption and custom's clearance at ports of disembarkation in Zambia and prompt internal transportation therein of the products purchased under the grant.
5) To exempt Japanese nationals engaged on the Project from custom's duties, internal taxes and other fiscal levies which may be imposed in Zambia with respect to the supply of the products and the services under the verified contracts.
6) To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contract such facilities as may be necessary for their entry into Zambia and their stay therein for the performance of their work.
7) To maintain and use properly and effectively the facilities constructed and equipment purchased under the grant.
8) To bear all the expenses, other than those to be borne by the grant, necessary for the construction of the facilities as well as for the internal transportation of the products and services under the grant.
9) To undertake incidental civil works such as planting and fencing, if needed.
10) To provide the space necessary for such construction as temporary offices, working areas, stock yards and others.

II MINUTES OF DISCUSSIONS (DRAFT MISSION)

MINUTES OF DISCUSSIONS
ON
THE PROJECT FOR THE CONSTRUCTION OF
JUNIOR SECONDARY SCHOOLS
IN
THE REPUBLIC OF ZAMBIA

In response to the request of the Government of the Republic of Zambia for Grant Aid for the Construction of Junior Secondary Schools (hereinafter referred to as "the Project"), the Government of Japan decided to conduct a basic design study on the Project and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent the basic design study team headed by Mr. Tetsufumi MIKAMI, Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs, from August 10th to September 18th, 1988.

As a result of the study JICA prepared a draft report and dispatched a team headed by Mr. Tetsufumi MIKAMI, to explain and discuss it, from November 18th to 29th, 1988.

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

LUSAKA, November 24th, 1988.

三上哲史

Tetsufumi MIKAMI
Leader
Basic Design Study Team
JICA

Vukani G. Nyirenda (Dr)
Permanent Secretary
Ministry of General Education,
Youth and Sport.

ATTACHMENT

1. The Zambian side agreed in principle on the basic design proposed in the Draft Report, with minor alterations, which will be incorporated in the Final Report.

2. The Government of Zambia shall undertake preparation of the budget and execution of all items under the Zambian Government's responsibilities, and these are:

   1) To secure the land for the Project,
   2) To demolish obstacles and prepare the land at the Project site before the commencement of construction,
   3) To do exterior work not included in the Japanese responsibilities, such as sports grounds, Production Units, etc.,
   4) To construct the access road to the boundary of each site from the main road,
   5) To drill one borehole each at the Jumbe and Lukona sites before the start of construction,
   6) To extend the water pipe to the border of the Zimba site,
   7) To provide materials, equipment and consumable supplies not included in the Japanese responsibilities,
   8) To undertake the following necessary formalities:
      a. Make banking arrangements and bear required expenses,
      b. Exempt the materials and equipment to be used in this project from Zambian taxes and levies,
      c. Handle official formalities and give approval necessary for entering and residing in Zambia to the Japanese whose services may be required in connection with the supply of products and services,
      d. Exempt the Japanese whose services may be required in connection with this project from Zambian taxes and levies.

3. Ten copies of the Final Report in English will be submitted to the Zambian side through JICA by the end of January 1989.

4. The Government of Zambia will take necessary measures for proper and effective operation and maintenance of the facilities and equipment provided by the Project after handover of the Project.

III MEMBERS OF THE STUDY TEAM

(1) Basic Design Study

Mr. Tetsufumi MIKAMI	Team Leader	Chief Officer Grant Aid Division Economic Cooperation Bureau Ministry of Foreign Affairs
Mr. Osamu NAKAGAKI	Project Coordinator	Deputy Head Second Overseas Assignment Div. Japan Overseas Cooperation Volunteers, JICA
Mr. Takeo ETOH	Architectural Planning	Yokogawa Architects & Engineers, Inc.
Mr. Shoichi TASHIRO	Architectural Design	Yokogawa Architects & Engineers, Inc.
Mr. Yokichi FUJITA	Mechanical Planning	Yokogawa Architects & Engineers, Inc.
Mr. Shuhei KUBOTA	Educational Equipment Planning	Yokogawa Architects & Engineers, Inc.
Mr. Kisen MISAWA	Cost Estimation	Yokogawa Architects & Engineers, Inc.

(2) Draft Mission

Mr. Tetsufumi MIKAMI	Team Leader	Chief Officer Grant Aid Division Economic Cooperation Bureau Ministry of Foreign Affairs
Mr. Takeo ETOH	Architectural Planning	Yokogawa Architects & Engineers, Inc.
Mr. Shoichi TASHIRO	Architectural Design	Yokogawa Architects & Engineers, Inc.

IV SCHEDULE OF THE STUDY TEAM

(1) Basic Design Study

No.	Date	Activities	
1	Aug. 10 Wed.	Tokyo to London (BA 008) (Etoh, Tashiro, Fujita)	
2	11 Thu.	London to Lusaka (QZ 003)	
3	12 Fri.	Arrive in Lusaka Courtesy visit to the Japanese Embassy, Discussion at the JICA Office Courtesy visit & discussions with MGEC	
4	13 Sat.	Lusaka to Mongu	
5	14 Sun.	Mikami & Nakagaki (w/ Misawa & Kubota) Tokyo to London (BA 008)	Consultant team Mongu to Kalabo
6	15 Mon.	London to Lusaka (BA 7305)	Kalabo to Lukona, site survey
7	16 Tue	Arrive in Lusaka Courtesy visit to the Japanese Embassy, JICA, Courtesy visit to MGEC	Survey at MGEC Western Provincial Office, etc.
8	17 Wed.	Lusaka to Chipata	
9	18 Thu.	Jumbe site survey Survey at Office of Water Resources & MGEC Eastern Provincial Office	
10	19 Fri.	Chipata to Lusaka Visit Petauke & Nyimba Junior Secondary Schools	
11	20 Sat.	Lusaka to Kalomo Visit Kalomo Secondary School	
12	21 Sun.	Kalomo to Zimba, site survey Zimba to Livingstone	
13	22 Mon.	Visit Southern Province Education Office Livingstone to Lusaka	
14	23 Tue.	Discussion with MGEC	
15	24 Wed.	Discussion with MGEC, Signing of the Minutes of Discussions Visit Chibombo Junior Secondary School	
16	25 Thu.	Discussion with ZEPIU	
17	26 Fri.	Mikami & Nakagaki Report to the Japanese Embassy, JICA Office Leave Lusaka	Consultant team Discussion with ZEPIU

No.	Date	Activities	
18	27 Sat.	Research in Lusaka, Team meeting	
19	28 Sun.	Data editing	
20	29 Mon.	Data editing	
21	Aug. 30 Tue.	Group 1 (Etoh & Fujita) Discussion with ZEPIU Research	Group 2 (Misawa, Kubota, Tashiro) Lusaka to Mongu
22	31 Wed.	Lusaka to Livingstone	Research in Mongu
23	Sep. 1 Thu.	Survey of concerned authorities in Livingstone	Kalabo Lukona Kama Site survey & Kama port
24	2 Fri.	Livingstone to Zimba Site survey, etc. Zimba to Lusaka	Kalabo to Mongu
25	3 Sat.	Discussion with ZEPIU	Mongu to Lusaka
26	4 Sun.	Data editing	
27	5 Mon.	Group 1 (Etoh & Tashiro) Lusaka to Chipata	Group 2 (Others) Discussion with ZEPIU Survey of const. situation
28	6 Tue.	Survey of concerned authorities in Chipata & Jumbe Chipata to Jumbe Jumbe site survey	Survey of const. situation
29	7 Wed.	Survey of const. situation	Discussion with ZEPIU
30	8 Thu.	Chipata to Lusaka	Survey of const. situation
31	9 Fri.	Discussion with ZEPIU Survey of concerned authorities & construction situation Leave Lusaka (QZ 006) (Fujita, Kubota)	
32	10 Sat.	Survey of construction situation Discussion with ZEPIU	
33	11 Sun.	Data editing	
34	12 Mon.	Discussion with ZEPIU Survey of construction situation, etc.	
35	13 Tue.	ditto	
36	14 Wed.	ditto	
37	15 Thu.	ditto	

No.	Date	Activities
38	Sep. 16 Fri.	Signing of the Min. of Discussions at ZEPIU, Field survey Report to the Japanese Embassy, JICA Office Leave Lusaka (QZ 006)
39	17 Sat.	London to Tokyo (BA 007)
40	18 Sun.	Arrive in Tokyo

(2) Draft Mission

No	Date	Activities	
		Mr. Mikami	Consultant Team
1	Nov.18 Fri.		Tokyo to London (BA 008)
2	19 Sat.		London to Lusaka (QZ 003)
3	20 Sun.	Team meeting	Arrive in Lusaka, Team meeting
4	21 Mon.	Discussion at the Japanese Embassy and JICA Office Courtesy visit to NCDP Discussion with MGEYS	
5	22 Tue.	Discussion with ZEPIU	
6	23 Wed.	Discussion with ZEPIU	
7	24 Thu.	Signing of the Minutes of Discussions at MGEYS Discussion with ZEPIU	
8	25 Fri.	Discussion with ZEPIU Leave Lusaka	Discussion with ZEPIU Discussion with MGEYS
9	26 Sat.		Discussion with ZEPIU Field survey of construction materials Lusaka to London (BA 044)
10	27 Sun.		Arrive in London
11	28 Mon.		London to Tokyo (BA 007)
12	29 Tue.		Arrive in Tokyo

V LIST OF PERSONNEL INTERVIEWED

(1) Zambian People Concerned

Ministry of General Education, Youth and Sport (MGEYS)

Central Office

Permanent Secretary	Mr. V. J. Nyirenda
Asst. Secretary (Admin. & International Cooperation)	Mr. E. N. Phiri
Acting Sr. Planning Officer	Mr. M. M. Sikuyuba
Acting Sr. Building Officer	Mr. B. D. Kasezya
Chief Building Officer	Mr. Sunny Mwelwa
Chief Inspector of Schools	Mr. Frank K. Chelu
Acting Dir. for Continuing Educ.	Mr. Austin Mulluga

Mongu

Chief Education Officer	Mr. K. Maswengeho
Deputy Chief Education Officer	Mr. J. N. Ndilubile
Building Officer	Mr. E. K. Ululi

Kalabo

District Executive Secretary	Mr. W. Simbotwe
Primary School Inspector	Mrs. A. N. Sililo

Chipata

Chief Education Officer	Mr. K. Simalimbu
Deputy Chief Education Officer	Mr. F. J. C. Kapatamoyo
Regional Inspector (Primary)	Mr. J. C. Nyamakopa
Acting S. P. S. I.	Mr. R. M. Mwenda
Sr. Building Officer	Mr. M. J. C. Chumvwa
Building Officer	Mr. A. M. Ngwenya
District Education Officer	Mr. B. Y. Nyirenda

Livingstone

Education Officer Planning	Mr. T. Maheritona
Sr. Building Officer	Mr. L. Mikunga

Kalomo

District Education Officer	Mr. Albert Y. Nkhata
Education Officer	Mr. Philip Libongani

National Commission of Development Planning (NCDP)

Director General	Dr. L. S. Chivuno
Principal Economist	Mr. A. Muchanga

Ministry of Higher Education

Asst. Statistical Officer	Mr. Aaron Banda
Planning Officer	Mr. Besta Mphande

Zambia Education Projects Implementation Unit (ZEPIU)

Central Office

Project Director	Mr. J. Z. Banda
Deputy Project Director	Mr. T. G. Msusa
Maintenance Coordinator Counterpart	Mr. M. C. F. Sakala
Sr. Water & Sanitary Engineer	Mr. D. M. Kabumu
Sr. Electrical Engineer	Mr. Bernard Mwange
Supervisory Engineer	Mr. Ian Mpuku
Supervisory Engineer	Mr. J. M. Mazyopa

Mongu

Resident Engineer	Mr. Eddie Phiri
Asst. Resident Engineer	Mr. Killian Zulu

Ministry of Power, Transport and Communication

Building Dept. Architect	Mr. Ludo Cardonaels

Central Statistics Office

MGEYS Development Planning & Research Unit	Mr. A. N. Mehra
Information & Research Div.	Mr. Lawrence Chanda

Livingstone Provincial Office

Acting Sr. Accountant & Provincial Tender Board	Mr. E. M. Nakwambwa

Principal Telecommunication Office (PTC)

Department of Marketing	Mr. S. L. Chilala

Zambian Electric Supply Corporation (ZESCO)

Commercial Engineer	Mr. D. V. Godfree

Fire Department

Chief Fire Officer	Mr. A. M. A. Zyambo
Deputy Fire Officer	Mr. D. K. Ndotolo

Zimba Water Supply

Officer In Charge	Mr. Joseph G. Phili

(2) Japanese People Concerned

Japanese Embassy in Zambia

Ambassador	Mr. Toshio Saiki
Second Secretary	Mr. Yukio Kitamura
Second Secretary	Mr. Takahiro Jonishi

JICA Zambia Office

Resident Representative	Mr. Kozo Tomita
Asst. Resident Representative	Mr. Ryosuke Kojima
Coordinator	Mr. Hiroaki Oshiba
Coordinator	Ms. Yoshiko Sato
JOCV Members	Mr. Kazuo Nishikawa
	Mr. Takashi Aikawa
	Ms. Naoko Kawanishi
	Mr. Yasuhiro Hyuga

VI OVERVIEW OF THE REPUBLIC OF ZAMBIA

(1) Geography

The Republic of Zambia lies from 8 to 18° south latitude and from 22 to 34° east longitude, situated in the southern part of central Africa. It is an inland country facing Tanzania and Zaire on the north, Malawi and Mozambique on the east, Angola and Namibia on the west and Zimbabwe and Botswana on the south. The land area is about 750,000 square kilometers, twice as large as Japan.

Most of the land except for the watersheds of the Zambezi and Luangwa Rivers is in the highland savannah at 1,000 to 1,350 meters above sea level, covered with tall reeds and bushes. The Zambezi River, collecting rain water in the northwest regions of Zambia to Angola, has a flood plains as wide as 30 kilometers in the west of Zambia.

(2) Climate

The climate of Zambia is made up of three seasons.

1) "Cool dry season" from May to August
Average temperatures extend from 17°C to 22°C and average humidities from 50% to 70%. The minimum temperature sometimes falls to 5°C in Lusaka.

2) "Hot dry season" from September to October
Average temperatures extend from 21°C to 24°C with rather wide temperature changes between the maximum and minimum temperatures, and average humidities from 40% to 60%.

3) "Hot rainy season" from November to March
Average temperatures extend from 20°C to 22°C with small temperature changes, and average humidities from 75% to 85%.

As trade winds blowing from the northwest into Zaire Basin bring rain in the rainy season, the rainfall is higher in the north (1,600 mm/year) and lower in the south (800 mm/year). Southeast

ANNUAL TEMPERATURES, HUMIDITIES AND RAINFALLS

LUSAKA

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Avg. Temperature (℃)	20.6	20.5	20.3	19.7	17.5	15.3	15.6	18.0	21.4	24.0	22.6	21.1
Avg. Max. Temp. (℃)	25.9	25.9	26.1	26.3	24.7	22.8	22.9	25.5	28.9	31.1	28.7	26.5
Avg. Min. Temp. (℃)	17.2	17.1	16.3	14.9	12.3	10.1	9.6	11.7	14.7	17.8	17.8	17.2
Avg. Humidity (%)	81	84	77	72	70	67	55	47	43	41	63	78
Monthly Rainfall (mm)	217.7	196.3	105.9	20.6	3.6	0.3	0	0.3	0.5	14.7	91.2	186.4
Annual Rainfall (mm)												837.5

MONGU

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Avg. Temperature (℃)	23.1	22.8	23.0	22.3	19.8	17.3	16.8	20.4	24.3	25.5	23.9	23.1
Avg. Max. Temp. (℃)	27.7	28.0	28.7	29.3	28.2	26.2	26.7	29.7	33.0	34.0	30.9	28.9
Avg. Min. Temp. (℃)	18.5	18.6	18.3	16.4	12.2	8.6	9.1	11.7	15.9	17.6	17.9	18.3
Avg. Humidity (%)	73	73	73	64	52	48	45	35	31	41	61	73
Monthly Rainfall (mm)	179.4	179.4	195.3	7.5	1.7	0	0	2.3	3.2	35.9	135.9	203.5
Annual Rainfall (mm)												944.1

CHOMA

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug	Sep.	Oct.	Nov.	Dec.
Avg. Temperature (℃)	26.7	26.4	26.6	26.5	25.0	22.5	22.6	25.4	29.0	31.2	28.9	26.9
Avg. Max. Temp. (℃)	34.9	31.7	33.9	31.6	30.7	28.7	30.1	33.1	35.6	37.2	37.0	34.3
Avg. Min. Temp. (℃)	16.5	16.3	15.0	12.3	7.9	4.7	4.1	6.4	10.5	14.0	16.0	16.6
Avg. Humidity (%)	79	79	73	68	63	62	58	48	43	44	61	73
Monthly Rainfall (mm)	204	174	91	25	9	1	0	0	4	25	104	202
Annual Rainfall (mm)												839

CHIPATA

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Avg. Temperature (℃)	22.2	22.2	22.2	21.8	20.0	18.0	18.1	20.3	23.6	25.9	25.0	22.9
Avg. Max. Temp. (℃)	24.4	24.0	23.5	24.1	23.5	21.8	21.8	22.4	26.9	28.6	26.6	25.3
Avg. Min. Temp. (℃)	19.0	20.0	19.4	17.0	14.8	13.1	12.3	12.4	15.9	19.9	20.6	21.0
Avg. Humidity (%)	79	79	82	75	70	62	63	59	51	46	58	73
Monthly Rainfall (mm)	260	241	159	54	3	0	0	0	0	10	88	219
Annual Rainfall (mm)												1034

trade winds prevail in the dry season. The table in the preceding page shows temperatures, humidities and rainfalls in Lusaka, Mongu (near Lukona), Choma (near Zimba) and Chipata (near Jumbe).

(3) Population, Tribes, Religions

The census was taken in 1963, 1969 and 1980. As of 1980 the population was about 5.56 million with a very high annual increase rate of 3.1%. This is because of the high birth rate of 5.1% (4.8% in 1969) compared to the declining death rate of 1.66% (1.97% in 1969).

Most people are Bantus from a linguistic categorization, which are further divided into 73 tribes according to differences in languages, customs, etc. Major tribes are Tonga, Nyamja, Bemba and Lunda. Administrative regions are demarcated by tribes out of respect for their strong tribal consciousness. Members of Parliament are representatives of the tribes.

Most of the tribes in remote areas believe in traditional spirits (animism), but since the first missionary, Livingstone entered Zambia in 1851, many missionaries of various sects have spread the gospel, and today Christian chapels can be seen throughout the country. There are also Moslems, Hindus and Jews though their numbers are not very great. They are mostly immigrants.

(4) Economy

Ever since independence, copper production has accounted for about 90% of all foreign currency earnings. Copper allowed the economy to attain strong development in the 10 years after independence, but then, the balance of international payments deteriorated mainly due to a heavy decline of international copper prices in 1975, and the successive price increases of imports caused by worldwide inflation. As shown in Table A-2, the amount of external debt increased tremendously in 1980 - 1982, and the accumulated external debt at the end of 1982 reached 45 million US dollars.

Consumption by the people of Zambia tends to rely on imports owing to the high level of foreign currency acquisition up to 1974. Later, the import restrictions were enforced for the purpose of saving foreign currency reserves, which led to shortages in raw materials, machine parts and semi-processed products, lower rates of capacity in operation due to delay of maintenance or repairs by the manufacturers, and stagnation of the commercial markets. For example, total imports in 1983 were 32% of those of 1974. However, since 1980, though the metal and chemical industries have been continuing to decline, the food, beverage, and textile industries using domestic materials, have shown proper growth and resulted in an increase of gross national production.

Though the increase rate of the Zambia's gross domestic products (GDP) had recorded 4% increase on the average from 1964 to 1974, it turned negative due to a heavy fall of international copper prices in 1975, which recovered in two years later, and has been decreased again since 1981 because of corruption of the copper market. A large debt of repayment was delayed in 1982, and negotiations took place in 1983 regarding repayment of debts with the IMF and OECF member countries. This triggered an increase in the inflation rate, which had stayed around 15% before then, and the inflation rate reached 55% in 1986 and 1987 (Figure A-2).

The exchange rates for foreign currencies worsened according to the rate of inflation. Since the value of kwacha rated down to 1:2.5 against the international currency at the auctions held in the fourth quarter of 1985, kwacha became more unstable and it was temporarily at 21.14 per US dollar in April 1987. In May, the fixed exchange rate system was introduced with a rate of 8.0 kwachas per dollar, which has been decreased to 10.0 kwachas per dollar since November 1988 (Figure A-1).

Table A-1 shows the gross domestic products and gross domestic yields, and Table A-2 the tendency of international payments. In Figure A-1 is shown the exchange rate of kwacha for US dollar and in Figure A-2 consumer price index and construction price index.

TABLE A-1 GDP AND GDY

(in million kwachas, price as of 1970)

	1970	1974	1975-79	1980-83
GDP (elementary prices)	1,083	1,414	1,318	1,314
GDP (market prices)	1,269	1,474	1,444	1,459
Terms of trade effect	--	Δ105	Δ429	Δ417
GDY (income)	1,269	1,369	1,015	1,042
Ratio of GDY to GDP (%)				
1970 = 100	100	93	70	71
1974 = 100	108	100	75	77
GDP per capita (kwacha)	305	314	250[1)]	237[1)]
GDY per capita (kwacha)	305	291	189[1)]	168[1)]

Note 1) These figures are as of the last year of the period.
Source : World Bank, Zambia Country Economic Memorandum Issues and Options for Economic Diversification, 1984

TABLE A-2 INTERNATIONAL PAYMENTS (1974 - 1983)

(in million US dollars)

	1974	(mean) 1975-79	1980	1981	1982	(provisional) 1983
Current Items						
Exports	1,467	1,101	1,611	1,126	1,050	1,065
Imports	1,190	1,142	1,795	1,608	1,499	1,130
Trade	277	41	Δ183	Δ482	Δ449	Δ 65
Trade service, income & expend.	Δ211	Δ201	Δ322	Δ270	Δ238	Δ241
Private sector income & expend.	Δ61	Δ53	Δ144	Δ101	Δ 29	
Current income & expenditure	5	Δ295	Δ649	Δ853	Δ716	Δ306
Financial Items						
IMF net loans	--	65	8	366	Δ49	64
SDR allocations	--	4	19	18	--	--
Delayed payments	--	98	135	53	186	14
Foreign currency reserves	Δ12	23	Δ1	38	Δ88	25
Reference						
Currency reserves at the end of the term	205	91	89	51	140	115
Ratio of current income & expend. to GDP (%)	0	Δ12	Δ17	Δ22	Δ19	Δ9

Note 1) Imports using 204 million US$ disbursement in 1979 from the USSR are not included.
Source : World Bank, Zambia Country Economic Memorandum Issues and Options for Economic Diversification, 1984

TABLE A-3 SECONDARY SCHOOL ENROLLMENT BY MODE OF ACCOMMODATION, SEX AND REGION, 1983 ALL SCHOOLS

ACCOMMODATION / REGION		GRADE 8		GRADE 9		GRADE 10		GRADE 11		GRADE 12		TOTAL 8-12	
		BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRLS
COPPERBELT	DAY	4,761	2,840	4,265	2,736	4,261	2,830	2,343	1,249	2,308	1,004	17,938	10,659
	BOARDING	262	367	320	369	376	362	145	292	142	215	1,245	1,515
	TOTAL	5,023	3,207	4,585	3,105	4,637	3,192	2,488	1,451	2,450	1,219	19,183	12,174
KABWE	DAY	582	569	769	603	824	666	298	187	285	134	2,738	2,079
	BOARDING	694	348	760	420	797	420	321	139	339	156	2,911	1,483
	TOTAL	1,276	917	1,529	1,023	1,621	1,026	619	306	601	290	5,649	3,562
LUSAKA	DAY	1,854	1,463	1,830	1,396	1,712	1,114	920	559	884	496	7,200	5,028
	BOARDING	717	160	802	100	798	132	378	67	436	66	3,131	525
	TOTAL	2,571	1,623	2,632	1,496	2,510	1,246	1,298	626	1,320	562	10,331	5,553
SOUTHERN	DAY	756	489	544	278	406	186	120	65	110	69	1,936	1,087
	BOARDING	1,918	1,027	1,991	971	2,062	1,016	975	520	944	391	7,890	3,925
	TOTAL	2,674	1,516	2,535	1,249	2,468	1,202	1,095	585	1,054	460	9,826	5,012
LUAPULA	DAY	202	208	169	170	116	179	54	20	43	14	584	591
	BOARDING	1,015	794	1,052	792	1,131	933	520	262	543	242	4,261	3,023
	TOTAL	1,217	1,002	1,221	962	1,247	1,112	574	282	586	256	4,845	3,614
NORTHERN	DAY	527	170	469	175	369	131	163	54	45	6	1,573	536
	BOARDING	1,565	1,025	1,693	1,066	1,595	976	724	385	791	460	6,368	3,912
	TOTAL	2,092	1,195	2,162	1,241	1,964	1,107	887	439	836	466	7,941	4,448
EASTERN	DAY	318	373	470	298	179	104	83	48	79	31	1,529	854
	BOARDING	1,174	591	1,201	661	1,258	594	588	281	570	231	4,791	2,358
	TOTAL	1,492	964	1,671	959	1,437	698	671	329	649	262	6,320	3,212
NORTH-WESTERN	DAY	493	182	413	122	208	57	35	7	20	1	1,169	369
	BOARDING	603	319	666	334	646	328	277	157	338	154	2,530	1,292
	TOTAL	1,096	501	1,079	456	854	385	312	164	358	155	3,699	1,661
WESTERN	DAY	305	208	91	71	141	77	111	18	68	8	716	382
	BOARDING	1,035	592	1,175	668	1,159	703	527	270	558	273	4,454	2,506
	TOTAL	1,340	800	1,266	739	1,300	780	638	288	626	281	5,170	2,888
TOTAL	DAY	10,198	6,502	9,020	5,849	8,216	5,284	4,127	2,187	3,822	1,763	35,383	21,585
	BOARDING	8,983	5,223	9,660	5,381	9,822	5,464	4,455	2,283	4,681	2,188	37,581	20,539
	TOTAL	19,181	11,725	18,680	11,230	18,038	10,748	8,582	4,470	8,483	3,951	72,964	42,124

FIGURE A-1 EXCHANGE RATE OF KWACHAS FOR US DOLLARS

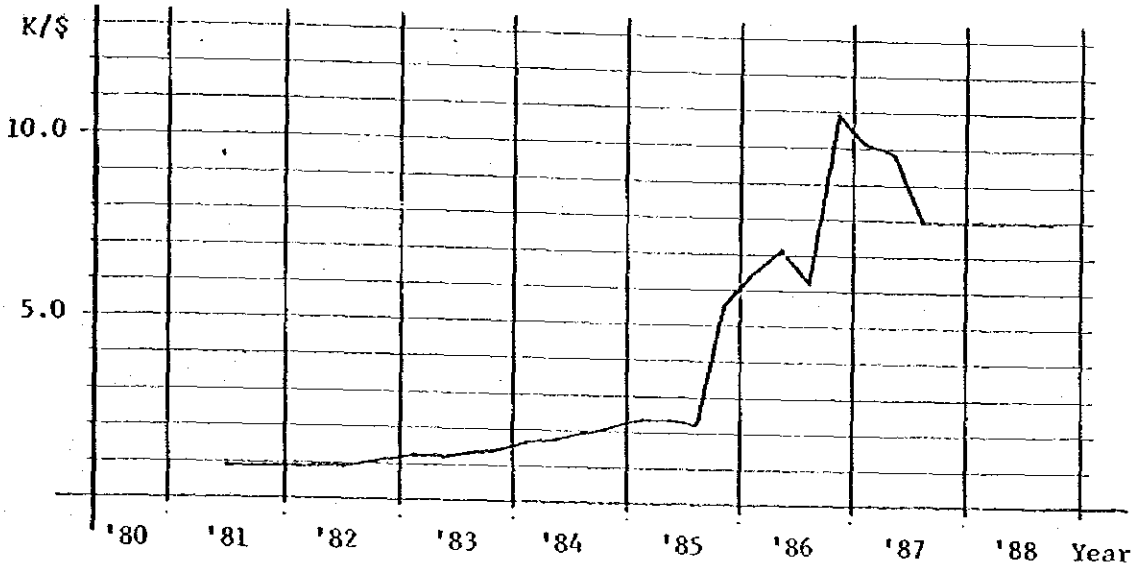
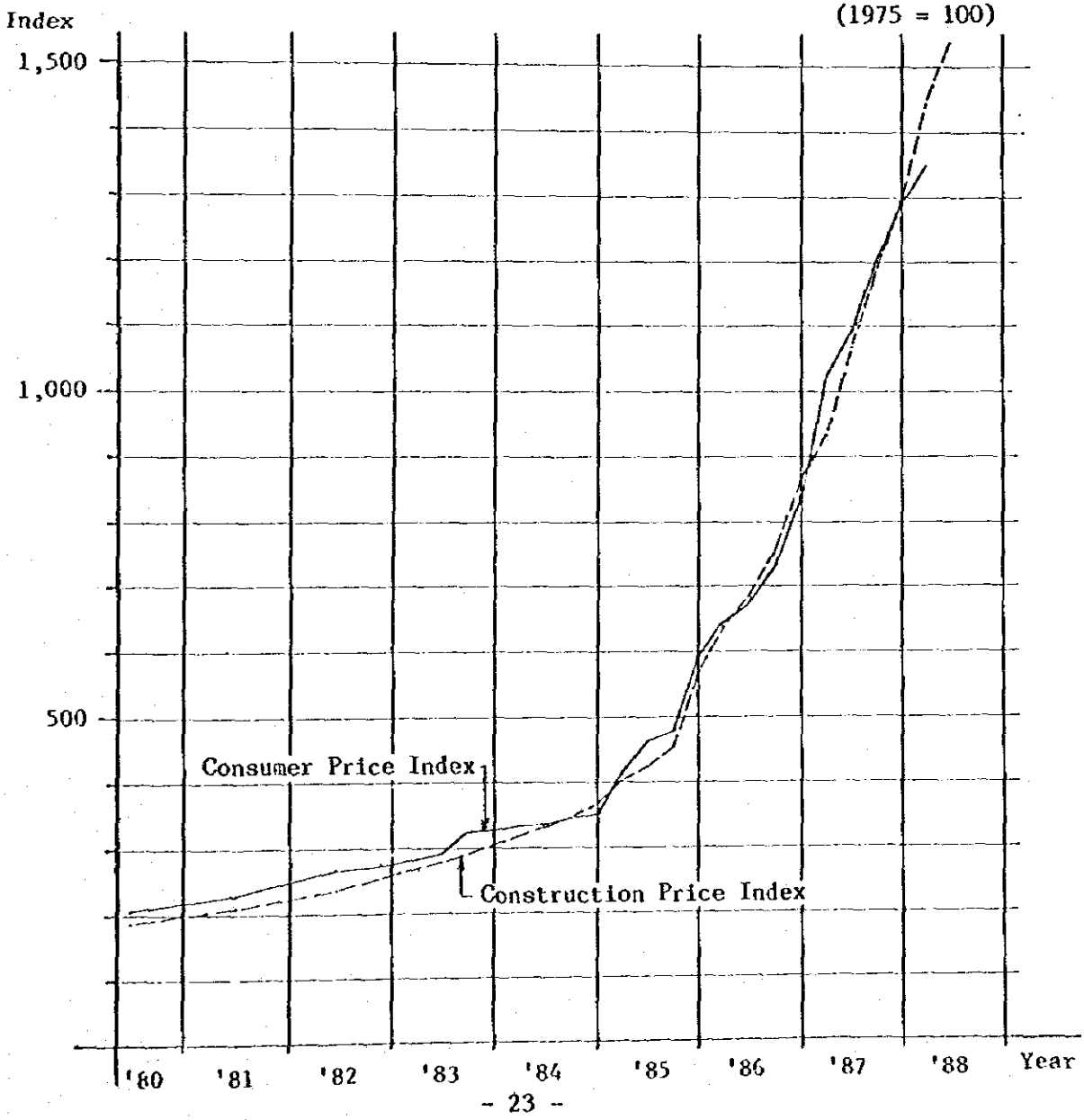


FIGURE A-2 CONSUMER PRICE INDEX AND CONSTRUCTION PRICE INDEX



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