

FACULTY OF ENVIRONMENTAL AND DEVELOPMENT STUDIES

INSTITUTE OF BOOK INDUSTRY

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KUMASI-GHANA

**A DESIGN THESIS REPORT PRESENTED TO THE
DEPARTMENT OF ARCHITECTURE, UNIVERSITY OF
SCIENCE AND TECHNOLOGY IN PARTIAL FULFILMENT
OF THE REQUIREMENTS FOR THE POST-GRADUATE
DIPLOMA IN ARCHITECTURE.**

BY
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DEDICATION

I am glad to dedicate this thesis report to my parents, Col. (rtd) and Mrs. W.A. Thompson, my brother Nii Ako and my sisters Naa Odoley and Doreen.

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CHAPTER 1

1.0 DESCRIPTION OF THE BOOK INDUSTRY

The book industry refers to the single industry that embraces all the various stages and processes of book publishing. It is indeed a very broad field involving some parties directly and others indirectly.

The book industry involves four main partners in formal terms although all four could be found in just one person. These are the Author, the printer, the bookseller and the publisher. Today, the first three of the partners are well-known in almost all civilizations but the fourth and normally a silent partner, the publisher is less known especially in developing nations or areas.

The publisher is that person in the central position of the industry who normally organises and coordinates the activities of all the other parties involved in book publishing.

In most cases too, the publisher is the risk-taker since it is he/she who organises the funding of and any particular publishing project.

Book publishing itself has 4 main areas of specialization or branches. They are:

- (a) Editing
- (b) Designing
- (c) Production
- (d) Distribution & Marketing

1.1 THE IMPORTANCE OF THE BOOK INDUSTRY

The importance of National Development is one that cannot be over-emphasised. All around the world nations seek to develop to the highest possible level because of the various benefits that accompany national development. These includes general high standards of living which is characteristic of better health, better technology and the availability of jobs.

Book publishing in turn is the key to educational and social economic development and hence to true nationhood.

It is often said, at a more practical level, that education is the basic investment for economic development, and that books are the basic tools of education.

In addition for books to be truly useful to the consumers or users they must respond to the actual needs and interests of the readers. This means that as much as possible books must originate from societies or cultures that use them. This is necessary for cultural enrichment, for the opportunities for self expression by the nation's thinkers and writers and artists, and for development of a sense of national unity as well as a sense of historic tradition. This is why the book industry in any country especially developing countries require special attention.

In recent times as awareness is on the rise in developing nations for bridging the gap between them and the developed countries, the increasing use of computers and their continual development that the information age has brought about makes the dream seem an illusion.

For now, the only hope of bridging this ever-widening gap of development between the developed and developing countries lies in social and national development on the part of the developing countries and as explained earlier it is only a successful book industry that can bring this about through human development.

1.2 THE BOOK INDUSTRY IN GHANA

Historical Development

As it were, Ghana like most of Africa south of the Sahara had no history of writing, reading or book publishing before the first contact was made with Europeans and people from other cultures. Other forms of record keeping however existed in one way or the other among the various numerous and scattered civilizations of Africa.

It is interesting to note here, that the basis or roots of modern civilization is easily traced to the fertile crescent in north-eastern African most of which is now known as Egypt. Writing and reading was developed. Other areas of learning developed include engineering construction, medicine. Most of these can be seen as foundations to modern development which in turn owe themselves to reading and writing which was later was developed into book production.

Unfortunately this early development trend did not benefit the continent of Africa until only lately. The development took a northern and eastern trend to Europe and Asia and then later a western trend to the American but never to the south.

It is again interesting to note how the art and skill of reading and writing returned to the continent over 3000 years later, this time starting from West Africa and spreading rapidly to the heart and most corners of the continent.

Over the last quarter of a century during which Ghana has been able to assert its sovereign existence and national personality - Independence, there are visible signs of a higher standard of living and a general awareness of the important role of education in national development.

Free and compulsory education introduced by the late Dr. Kwame Nkrumah played a significant role in establishing the basis of the existing Ghanaian Book Industry.

As mentioned earlier reading and writing as known universally today was introduced to Ghana by European Missionaries who first made contact with our soils in 1461 at Elimina in the Central Region of Ghana. Education generally spread across the country like other parts of the continent at a moderate rate through the work of the missionaries.

At the time the basis of printing as known to us today in publishing had just been invented by Guttenburg, a German in 1415 and was unknown in many parts of the world.

Publishing was therefore done manually. This was a highly skilled and tedious process and often only engaged in by noble people. This kind of publishing was done mainly by missionaries and monasteries and here it is also interesting to note that most of the writings or publications were along the lines of gospel propagation.

Slaves were often used in this kind of publication because it was so laborious. The missionaries also engaged in the publication of material that they employed in educating the natives.

In Ghana although journalism started in the first quarter of the 19th Century with the launching of an official Royal Gold Coast Gazette in Cape Coast in 1822, it was not until the last quarter of the century that books started to appear. It was the Christian Missionaries who took the initiative in setting up book printing units with the limited objective of serving their respective religions sects. The first half of the 20th Century saw the establishment of government printing presses for the printing of mainly government reports, forms, stationary and the Gazette. Private commercial printing houses, however, began to appear in the 1940s in Accra and the provincial capitals. There were medium and small size printing units, many of which were still owned by the mission houses. the first private, modern and large-scale press, now called Graphic corporation, was set up in Accra in 1950 in the wake of intense political activity. This again was a newspaper establishment rather than a book publication or book printing organisation.

The late fifties and the sixties marked the beginning of serious book printing in Ghana as a result of educational explosion, which was a natural corollary to the country's political independence in 1957. A scheme of free and compulsory primary education was introduced in 1961, which had to be supported by free textbook supply to all pupils. Since the country was not geared to meet the unprecedented demand of printed books of all kinds, the needs was felt for the establishment of a large

modern printing press capable of providing urgently the services which could not be made available by existing printing houses. Hence the Ghana Publishing Corporation (GPC) was established in 1965 by legislative instrument "to print, publish distribute and market books and other educational materials for schools, higher educational institutions and the public. Meanwhile, many private presses of all sizes and description appeared on the scene like mushrooms to meet the over-growing need for the printed word.

By 1981 there were about 120 printing establishment in the country. Today there exist probably, about 350 press houses in the country with Accra alone accounting for about 65% of this figure.

1.3 The Problem

Although the number of printing houses and establishments have risen steadily and probably more than proportionately to the national population it is interesting to note that publishing houses or establishment make only a small percentage of this figure.

Book publishing is rather on the low side with only a few such as the modern SEDCO Publishing House, GPC, Afram Publication and Woeli. Publishing standing out and doing their best to function as Publishers and having credit to their name.

Out of all the close to 300 presses in Accra alone the following are equipped to do book printing.

1. Advent Press
2. Assemblies of God Literature Centre Ltd.
3. Commercial Associates Ltd.
4. Billy Ham Press
5. Nsamankow Press

The bulk of the presses do general printing.

Book writing has not been the problem of the book industry in the country and indeed Africa. There are countless publishable volumes awaiting to undergo the necessary publishing procedure. It is usual for manuscripts to pile up in the production units of the country more often than not, awaiting the necessary investment or production material. Other frustrations such as undue delays are not uncommon.

When production is successfully completed other problems such as distribution and marketing also set in and this could be a rather expensive venture and one major contributor to a resultant loss in a book publishing venture.

Book promotion was rare until the formulation of the Book Promotion Council which is doing all it can to save the situation. Reading habits of Ghanaians are not encouraging. The literacy rate for Ghana is about 50% and this might be considered high in the general African context. Incidentally there is also a very large percentage of the literate non-reader. Surveys on reading habits reveal that the Ghanaian reader is interested in achievement reading to pass an examination or learn

a skill. High prices of books and lack of information about their availability continue to discourage potential reading.

Enduring reading habits are best formed at a young age when the mind of most is impressionable. Children's books therefore play an important part in developing reading habits. Despite the fact that most of Ghana's population is under 16 years of age, the Ghanaian child is not exposed to adequate reading material with the exception of textbooks. The absence of relevant and meaningful reading material contributes to the high percentage of drop-outs after the first circle of schooling. The stated problems of the Ghana Book Industry highlights the salient features of the book publishing scene in Ghana. It has not covered the training needs and facilities in the field and this has resulted in an industry which lacks trained personnel at the managerial level.

Book production in Ghana just like other more technologically advanced countries started on an artisanal level but with modern trends in development the industry has become highly industrial and this calls for intensive training of personnel to man this single important industry in the country. The situation can be generalised to most of Africa.

1.4 IMPORTANCE OF BOOK INDUSTRY TRAINING

The development of human resources is an essential requisite for the development of any industry and has a special significance in the development of the book industry in Africa, which has been manned largely by people who stepped into

the book business as a family profession and who have had no urge or opportunity to have any formal training in publishing. Whatever they learned was just from on-the-job experience, by using what is called "trial-and-error" method. Striking development and far reaching innovations have been taking place in the skills and techniques of book production and distribution. With increasingly tough competition in the book trade, a person would be ill-advised to enter this profession without any adequate training. The availability of adequately trained book industry personnel is therefore the sine qua non of a viable book industry.

1.5 THE NEED FOR A BUILDING COMPLEX TO FACILITATE THE ACTIVITIES OF THE INSTITUTE

Having dissected the book industry in Ghana, generalising the situation to the rest of Africa and establishing its problems through history a need has clearly been established for book industry training for the continent.

The existing facility for the degree programme which operated since the establishment of the programme in 1984 as a section under one of the departments of the College of Art on the U.S.T. campus and has now gained a departmental status has come a long way through unfavourable operating conditions. The programme continues to face numerous problems which are often facility related.

In view of the established problem of facility above, it is fitting and proper that a new design be evolved to facilitate the proposed institute. Spatial requirements and logical functional flows would have to be seriously considered and an appropriate complex of buildings and other operational facilities provided.

CHAPTER 2

2.0 MAJOR FUNCTIONS

The major functions of the proposed institute are the following.

- (a) To train students to take up managerial positions in the industry within the West Africa sub-region. For that matter the institute will organised both undergraduate and post graduate programmes.
- (b) The institute will ran short courses for industrial personnel. This will enrich the quality of the staff already existing in the book industry.
- (c) Scholarly publications will be undertaken by the institute. This involves the publishing of material that are used for educative purposes such as text books, manuals, reference books etc.
- (d) The institute will undertake both academic and industrial research into explored and unexplored areas of the African book industry.
- (e) A consultancy will be run by the institute where orders will be taken from the general public in a continuously monitored and controlled way so as not to distort the performance or effectiveness of the other functions of the institute.

- (f) A resource centre will be run by the institute. This will be open to both students and the general public. The centre will organise seminars, forums, exhibitions, conferences workshops and the like on regular basis. Research finding and other resource materials will be made available to the general public.

The centre will run a library. In addition, students from other faculties and institutions of the university and the general public will be eligible to undertake short courses in photography, typing skills, writing skills and desk-top publishing.

2.1 AIMS/OBJECTIVES

The aims and objectives of the scheme are detail below:

- (a) To provide a modern complex of buildings to facilitate the proper function of the institute.
- (b) To pay particular attention to the function of spaces, technical flows, functional relationships, logical functional flows and above all, the needs of users to ensure the evolution of a useful design.
- (c) To create a user-friendly and serene environment that every user of the facility deserves.

- (d) To create a formal architectural piece that will reflect the status of the institute.

2.2 SCOPE

The scheme will cover all spaces and provisions necessary to enhance the proper function of the institute while satisfying all normal standards and requirements.

This includes all spaces and provisions necessary for the smooth operation of both academic and public activities of the institute.

The scope of the scheme is thus summarised below:

- (a) Lecture rooms
- (b) Computer studio
- (c) Design/illustration studio
- (d) Workshops
- (e) Laboratories
- (f) Library
- (g) Administration/Staff offices
- (h) Resource centre
- (i) Conference room
- (j) Exhibition space
- (k) Audio-visual theatre

2.3 CLIENTS

The clientele consists of two parties. These are the University of Science and Technology, Kumasi in collaboration within the United Nations Education, Science and Culture Organisation (UNESCO).

2.4 FUNDING

The major sponsor of the institutional facility is UNESCO, with assistance from the Ghana Government.

Other sponsors include the British Council of Ghana and some N.G.Os

2.5 METHODOLOGY

A tactical methodology was composed and adhered to so as to ensure a thorough and exhaustive scheme.

Below are the highlights

(a) Interviews

A wide range of well designed interviews was conducted to cover relevant target groups

This involved a number of personnel from the client's party, a host of book industry personnel and a wide range of students.

The essence of the interviews was to gain a thorough understanding of the clients needs and requirement of the book industry as a whole. Interviews with students contributed to understanding immensely students activities due to the programme and the needs of the students in general.

(b) Visual Studies

Visual studies were made throughout the series of surveys partly to understand better the peculiarities of such an institute and in the search for appropriate forms to shell for the proposed institute.

(c) Situational Survey

This was conducted to get better acquainted to the existing situation at the present facility. Particular interest was taken in spaces and technical and environmental requirement.

(d) Technical Studies

This study was undertaken to get acquainted with standards and requirements of such a facility. Spacial and environmental determinants were thoroughly exhausted.

(e) Case Studies

These were undertaken to get an insight into how such a facility functions. This also to a large extent contributed to concluding on the provisions to be made in the facility.

(f) Analysis

CHAPTER 3

All information and findings of the above mentioned were critically analysed on logic basis. Implications and justifications were arrived at and this to a large extent distant the exact nature of the facility.

(g) Brief Development

The original brief by the client was carefully analysed. The results of the analysis of the studies undertaken were applied to it and thus its development.

Here additional spaces and provisions necessary or crucial in some cases to the proper performance of the new facility were provided or made.

(h) Design Processes

After the above had been completed the design processes were carried out. This included conceptualisation and development of the site and the general evolution of the design.

CHAPTER 3

3.0 JUSTIFICATION

3.1 HISTORICAL DEVELOPMENT

In the 1970s when the need for a viable book industry for Africa was felt the search for a country with appropriate institutions singled out Ghana's College of Art within the University of Science and Technology in Kumasi to host programmes to train personnel to man the industry on the continent.

In 1984 with the help of the Ghana Government and UNESCO, the Book Industry programme was mounted to train students for the award of the B.A Book Industry degree. The programme was originally meant to take off as a department under the College of Art and expected to grow a regional centre.

Unfortunately due to financial and other constraints the programme had to take off as a section under the department of General Art Studies. Numerous problems were encountered due to the sectional status of the programme. The programme was however, recently granted a departmental status.

The next step, and the time is now, is for the facility to progress to achieve an institutional status. This proposal is currently being seriously considered at the University Council Level and an institutional status is expected to be granted to institution soon and this calls for an appropriate design for its proper function.

3.2 INAPPROPRIATE STRUCTURES

The programme due to the nature of its take off in 1988 was housed temporarily. The asbestos and timber structures of the College of Art where the department is currently still located are in poor physical state. Spacial and technical requirements are hardly met.

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3.3 UNFAVOURABLE WORKING CONDITIONS

Due to the fact that the structures were not designed to specifically meet the needs for the programme, basic requirements for tropical design such a cross-ventilation are found wanting in some cases.

The desk-top publishing space proves to be woefully inadequate both in serving its functions and in fulfilling industrial requirements and standards of modern times. The existing pre-press and printing workshop also lack basic provisions, a situation which is unacceptable to health standards.

The availability and state of staff spaces and conditions leave much to be desired not to mention sanitary spaces.

3.4 REGIONAL STATUS

The centre is one that would serve the whole of the West Africa sub-region and implies an influx of foreign students, staff and industrial personnel onto the campus to use the facilities of the institute such a facility with such a status deserve proper architectural treatment to added meaning to it and depict its significance.

The facility must meet functional and more so formal expectations merited by its type.

3.5 SUMMARY OF CLIENT'S ACTION PLANS

Client's Short Term Action Plan (1995-2000)

- (a) To upgrade the section to a department
- (b) To mount post-graduate programmes
- (c) Strengthening research programmes
- (d) Establishing a resource centre
- (e) Organising short course

Clients Long Term Action Plan (2000-2015)

- (a) To upgrade the department to an institution to serve the West Africa Sub-region.
- (b) To create four department
- (c) Establish specialised degree programmes (Masters, Ph.D).
- (d) To expand research programmes and activities based upon production methods and processes.
- (e) To continue offering short courses.

In view of the above mentioned points and summary of client's action plan it is clear that a need exists to provide a new facility with logical functional flows and both modern and futuristic considerations to house the proposed institute.

CHAPTER 4

4.0 STATISTICAL STUDIES

4.1 STUDENTS POPULATION

Table 1 shows the pattern of students' intake and population since the programme was established in 1984. Low figures recorded in the Mid 80's was due to the fact that the programme was new.

Academic Year	Total Annual intake	Male	Female	Total Students Population	Male	Female
1984/85	9	9	-	9	9	-
1985/86	11	11	-	20	20	-
1986/87	11	9	2	31	29	2
1987/88	14	13	1	36	33	3
1988/89	19	13	6	44	35	9
1989/90	18	13	5	51	39	12
1990/91	44	27	17	81	53	28
1991/92	30	22	8	92	62	30
1992/93	9	6	3	83	55	28
1993/94	19	11	8	58	39	19
1994/95	34	21	10	59	38	21

Table 1

4.2 GENDER RATIOS

Female students enrollment was low in the early years of the establishment of the programme. This trend changed in the early 1990's after a government directive to that effect was issued.

4.3 STUDENTS POPULATION PROJECTIONS

- (a) The maximum class size of the under-graduate programme will be pegged at 30 to maintain a high lecturer-student ration at 1:12. This will ensure good quality training.
- (b) The formally three-year under-graduate programme has been restructured and will now take four years to complete.
- (c) The institute will introduce post-graduate programmes including post-graduate dip (1-year) and master degree programmes (2-years)

Expected students intake is

	No. of students	Year	No. of Students	Year
(i) Post Graduate Dip -	20	(2000)	45	(2015)
(ii) Masters Degree -	10	(2000)	25	(2015)

- (d) In addition to the regular stream of students, short courses will be organised by the institute for industrial personnel. A maximum of two streams of at most 30 students per class is the expected intake per session.

(e) Training courses will be organised for interested students from other faculties as well as the general public. The programmes include

(i) Writing skills

(ii) Photography

(iii) Desk top publishing

(iv) Typing skills

The average class size is expected to be 20 for each class. These courses will be organised frequently.

(f) Foreign students are expected to make up about 55-60% of the total students population in the long term.

4.4 STAFF POPULATION

4.5 TEACHING STAFF

At the moment the department has four full time lectures and 1 technical instructor. It also make use of some lectures and technical instructors from other department of the College of Art as well as from other faculties of the university on part time basis.

Some staff from the central university library are also invited regularly to deliver lectures.

The following is a summary of the present population.

Full time departmental staff	4
Part time College of Art staff	5
Part time lecturers from other department of the University	5

4.6 NON-TEACHING STAFF PROJECTIONS

The department depends heavily on the college's design press staff of this academic and consultancy activities. This involves 10 persons.

They include:

Description		Short Term	Long Term
1	Production Manager/Estimator	1	1
1	Camera man	1	2
1	Store keeper	1	1
4	Machine minders (Printing technicians)	1	1
1	Compositor	1	2
1	Intertype casting machine minder	1	1
1	Receptionist/Secretary	1	1

This department make use of the college's darkroom technician and also depends on the college's clerical staff for general administrative work.

In addition to the department has a personnel in its computer room and a secretary/receptionist at the head of departments office. Cleaners and maintenance workers of the college take care of the department spaces.

4.7 STAFF POPULATION PROJECTIONS

Client's Short and Long Term Projections

No. of Staff

Section	Description	Short Term	Long Term
Typesetting & Printing	Professor	1	1
	Senior/lecturer	1	2
	lecturers		1
	Technical instructor	1	1
Book Design & Illustration	Professor	1	1
	Senior lecturer	1	2
	lecturers		2
	Technical instructor	1	1
Editing Writing Translation	Professor	1	1
	Senior lecturer	1	2
	lecturers	1	2
	Technical instructor	1	2
Publishing Management	Professor	1	1
	Senior lecturer	1	2
	lecturers	1	2
Research Fellows		2	3
		4	6
Administration		3	8

Table 2

Summary of clients projections

- (a) In the long term the institute will have a total of 23 full-time teaching staff.
- (b) There will be a total of 17 full-time non-teaching staff
- (c) The total number of the institute's full-time staff will be 40.

4.8 DEVELOPMENT OF THE CLIENTS PROJECTIONS

After carefully analysing the above information it was realised that additional staff will be needed for the proper function of the institute.

- (a) An additional administrative staff of 3 will be needed.
- (b) A production staff of 3 will be needed for the production unit.
- (c) Six additional personnel will be required to do actual production work.
- (d) About 3 attendants will be needed for the library and resource centre.
- (e) Additional clerical staff/receptionists/secretaries of about 4 will be needed for the resource centre.
- (f) About 4 persons will be needed as cleaners and maintenance workers.
- (g) There will be about 6 drivers and security personnel.
- (h) Part time teaching staff of about 6 will be expected to lecture and the institute on regular basis.

The general expected population of the institute is summarised below

(a)	Full-time students	-	215
(b)	Part-time students	-	145
(c)	Total projected student population	-	360
(d)	Teaching staff	-	23
(e)	Non-teaching staff/personnel	-	46
(f)	Total projected staff population	-	69
(g)	Part-time teaching staff	-	6

ORGANISATIONAL UNITS

The institute offers a variety of special modules required of the institute. They include

CHAPTER 5

5.0 FUNCTIONAL STUDIES

This study was undertaken to gain an insight into the detailed activities of the institute and as much as possible, the exact way it is expected to function.

The study also is the basis for establishing planning modules.

Here the organisational components are classified as organisational units and variables.

5.1 ORGANISATIONAL UNITS

The term refers to spacial modules required of the institute. They include the following.

- (a) Instruction area
- (b) Research area
- (c) Resource area
- (d) Consultancy
- (c) Administration

5.1.1 INSTRUCTION AREA

This include all the spaces that are used solely for the purposes of academic instruction. This area is categorised in a twin manner.

(i) Intellectual instruction

(ii) Practical instruction

Intellectual instruction is used to describe the instruction activities that involve mainly theory courses or classroom work.

They include:

1. Lecture rooms
2. Computer studio
3. Drawing/illustration studio
4. Typing room

Practical instruction is used to describe the instruction activities that involve practical work or workshop activities. They include:

1. Pre-press workshop
2. Printing workshop
3. Print-finishing workshop

5.1.2 RESEARCH AREA

This will mainly involve the use of laboratories which ideally must be within the workshops.

5.1.3 RESOURCE AREA

This will act as a centre to serve the needs of both students and industrial personnel. Indeed it would serve the industrial needs of the general public.

Among activities to be organised by the centre are seminars, conferences, public lectures, forum, debates, book launching ceremonies, exhibitions etc. The centre will also run a library. It expected that receptions will be held after activities. Special implication of the above will be manifested by way of the requisition of the following space.

- (i) Resource Offices
- (ii) Audio-visual theatre
- (iii) Multi-purposes Hall
- (iv) Conference room
- (v) Library

5.1.4 CONSULTANCY

This is the unit that will serve the production needs of the industry and the general public as a whole. Spaces required here are:

- (i) Staff offices
- (ii) Production room

5.1.5 ADMINISTRATION

A configuration of administrative spaces will be required to serve the managerial needs of the institute. For that matter the following spaces will be required.

- (i) Staff Offices
- (ii) Staff lounge

5.2 ORGANISATIONAL VARIABLES

The term refers to the various category of users of the facility.

These are listed below:

- (a) **Students**
 - (i) Full-time students
 - (ii) Part-time students
- (b) **Industrial Personnel**
- (c) **Staff**
 - (i) Full-time teaching staff
 - (ii) Part-time teaching staff
 - (iii) Non-teaching staff/personnel
- (d) **Visiting Groups**
 - (i) Lecturers
 - (ii) Students
 - (iii) General public
 - (iv) Inspectors

(e) **The General Public.**

It can readily be deduced from the above that the facility will be used simultaneously by a wide range of users with the major category being students. Various categories of staff will also be required to manage and run the facility and attend to the needs of the public.

The main student areas of the facility will be the instruction areas while the general public is expected to frequently use the resource area and consultancy. The administration which is central to this facility will be occasionally used by students and the general public.

5.3 ACADEMIC PROGRAMME INFORMATION

5.4 DESCRIPTION OF MAIN CAUSES

5.4.1 CORE COURSE

Editing, Writing and Translation

Book design/Illustration

Printing Techniques, Typography

Marketing, Sales and Distribution

Publishing Administration

5.4.2 ALLIED COURSES

Desk-Top Publishing

Publishing Law

Library Studies

English Language

Photography

Communication Research Methodology

Advertising and Book Promotion

Art Appreciation

Print Finishing

5.4.3 GENERAL STUDIES

African studies

Introductory Economics

Social Psychology

Career Education

History of Cultures

Political History of Ghana

Weekly Instruction Projection

	Theory Instruction		Practical Instruction	
	Hour/Week		Week/Hour	
<u>Full-Time Students</u>				
First year	11		14	
Second year	16		15	
Third year	12		-	
Fourth year	15	54	18	47
<u>Mean/Class</u>	14		15	
Post-graduate dip.	14		15	
Masters degree I	14		15	
Masters degree II	14	42	15	45
<u>Part-Time Students</u>				
Typing			4	
Desk-top publishing			4	
Photography	2		4	12
Writing skills	4	6		
<u>Industrial Personnel</u>				
Stream 1	6		6	
Stream 2	6	12	6	12
		-----		-----
		114		116

From the above it can be deduced that

- There will be a total of about 114 hours of theoretical instruction weekly.
- There will be a total of about 116 hours of practical instruction weekly.

Theoretical instruction spaces will include lecture rooms, seminar rooms, and an audio-visual theatre.

Practical instruction spaces will include a pre-press workshop, a printing workshop and print finishing workshop. The rest are a photography studio a computer studio a typing room and an illustration and drawing studio.

6.0 TECHNICAL STUDIES

6.1 SPACE DETERMINANTS

For the purposes of determining spaces for the proposed institute, standards normal for universities and polytechnics were applied. The activities of the institute are rather peculiar and therefore space standards for a combination of traditional standards were applied. These include:

- (a) Arts
- (b) Mathematics
- (c) Social Sciences
- (d) Architecture

LIBRARY
UNIVERSITY OF SCIENCE AND TECHNOLOGY
KUMASI-GHANA

Spacial provisions for various areas in the above combination of programmes are as follows:

Category of space	Special provision (m ² /student)
Administrative, technical, secretaries	0.5
Staff offices and research spaces	1.55
Classrooms, seminar rooms, etc.	0.65
Library	1.25
Drawing studios	6.55
Workshops	4.25

6.2 PART TIME STUDENT

For the purposes of planning every unit of part time student is converted into a full time student equivalent (F.T.E). This is so because part-time students are not regular and use the facility less regularly.

The applicable conversions are as follows:

- (a) **Full-Time** - Has no other occupation and probably attends a minimum of 20 hours of lectures a week - 1 (FTE)
- (b) **Block Release student** - Attend a few months full-time while being trained in industry - $\frac{1}{3}$ (F.T.E)
- (c) **Part-Time Student** - Attend 1 day a week plus two or more evening - $\frac{2}{9}$ (F.T.E.)

6.3 BALANCE AREAS

These include allowances for corridors, stairs, entrances, foyers, enquiry counter, intake rooms, plant rooms, delivery bays etc. The relevant balance areas detailed below

- | | | |
|-----|------------------------|-----|
| (a) | General teaching areas | 40% |
| (b) | Academic workstaff | 50% |
| (c) | Non-academic workstaff | 40% |
| (d) | Workshops | 25% |
| (e) | Library | 25% |

5.4 DENSITY OF FACILITIES FOR ACADEMIC AREAS

No. of students/hectre

Plot Ratio	Arts Based	Science Based
0.5:1.0	395	200
1.0:1.0	790	400
1.5:1.0	1185	600

6.5 TEACHING SPACES

For the purposes of the calculation of teaching spaces or the number of classrooms to be provided the following formula is used.

$$N_T = \frac{N_s \times H_s}{H_w \times F} \times 100$$

N_t = No of teaching places required

N_s = No of students

H_s = Hours per week per student in the accommodation

H_w = Total no of available hours a week for the accommodation.

F = net utilisation factor.

6.6 USABLE SPACES

Unusable spaces for working spaces for teaching accommodation are as follows

Description of Space	Provision m ² /space
Tutorial rooms:	
Formal seating	1.85
Informal seating	2.30
Lecture theatres (close seating)	1.00
Drawing rooms - A1 and smaller	3.70
Laboratories	
Advanced science and engineering	5.60
Non-advanced science and engineering	4.60
Typewriting	3.20
Workshops involving large scale machines & equipment	8.40

6.7 LECTURE THEATRES

These are designed to hold students of between 50-500. However it has been found that academic groups are normally of between 30-60 students.

6.8 SPACE DETERMINATION

Student Population Projection

	Projection	FTE
Full-time student	215	215
Industrial Personnel	60	20
Part-time student	80	18
Total	355	253

6.9 SPACIAL PROJECTION

Major Spaces	Provision	Balance Areas	Total
Administration	126	50	176
Staff offices	392	196	588
Lecture roms/theatres	165	66	231
Library	316	79	395
Drawing studio	80	32	112
Workshops	1075	269	1334
Grand total			2848

6.10 TEACHING PLACES

$$N_s = 25 + 38 \text{ (F.T.E.)} = 253$$

$$H_s = 11 \text{ hrs}$$

$$H_w = 12 \text{ hrs} + 5 = 60 \text{ hrs}$$

$$F = 60\%$$

$$NT = 253 \times \frac{11}{10} \times \frac{100}{60}$$

$$= \frac{278300}{3600}$$

$$NT = 77 \text{ places}$$

5.1.1 DETAILED SPACIAL PROVISION

Types of Space	Area (m ²)/Space	No. of Students	Area (m ²)
Lecture rooms	1.85	35	64.75
Drawing studio	3.75	35	135.00
Typewriting	3.20	35	112.00
Lecture theatre	1.00	110	110.00
Library	2.30	35	100.50
Workshops	8.40	35	294.00
Laboratories	4.60	5	23.00

5.12 ENVIRONMENTAL PROVISIONS

Types of Space	Internal environmental temp - (°C)	Air Change Rate H ⁻¹	Illumination level (lux)
Lecture rooms	18	4-6	300
Lecture theatre	18	6-10	300
Studio	18	4-6	750
Library	20	3-4	500
Workshops	16	6-10	500
Laboratories	20	4-6	500
Exhibition hall	18	6-10	500
Offices	20	4-6	750

From the above it can be deduced that

- (a) Plot ratio for the facility must be at least 0.5:1:0
- (b) The facility is expected to have an estimated floor area of about 2848m^2
- (c) For the 77 space required at least three classroom must be provided.
- d) Plot ratio standard implies that the facility will require a site of at least 8544m^2 (0.854 Ha)

7.0 CASE STUDIES

The essence of these studies was to identify institutions or facilities that are similar to that proposed, make comparisons and to make deductions and these were used as a guide to achieve a good and functional design.

The two institutions considered were the Tema Technical Institute - Tema and the University Press Limited - Kumasi.

7.1 TEMA TECHNICAL INSTITUTE

Introduction

The institute was established in the late 1950's by the late Osagyefo Dr. Kwame Nkrumah after the independence of Ghana.

In all the institute has 9 departments. The printing department is one of the youngest departments and was established in 1988. It however, actually started operating in 1992. The department runs a certificate in printing programme.

Under the department are 4 sections, namely:

1. The composing/letterpress section
2. Offset lithography section
3. Graphic reproduction section
4. Print-finishing section

Major course offered include maths, applied science, composition, english and library studies and technical drawing.

7.2 STATISTICAL STUDIES

7.3 STUDENTS POPULATION

In all there are three classes of an average of 25 students each. There are a total of 75 students and a female population of 30%.

7.4 STAFF POPULATION

The staff population is made up of a head of department, 4 sectional heads, 4 masters and two Japanese volunteer workers. The others are 7 technicians, 4 other workers and 4 casual workers. The rest are 2 security men, an estimator and a typesetting personnel. In all there were a total of 30 members of staff.

7.5 CHECKLIST OF MAJOR EQUIPMENT

Below are a checklist of major equipment

- | | |
|----------------------------|---------------------------|
| 1. Gang stitcher | 11. Proofing machine |
| 2. Stitching machine | 12. Keyboard |
| 3. Gathering machine | 13. Monotype caster |
| 4. 3-knife trimmer | 14. Melting machine |
| 5. Guillotine | 15. Melting pot |
| 6. Blocking machine | 16. Platon offset printer |
| 7. Folding machine | 17. Process camera |
| 8. Platon printing machine | 18. Plate maker |
| 9. Cylinder printer | 19. Drying machine |
| 10. Exercise book machine | |

7.6 OBSERVATIONS

7.6.1 SITE

The institute itself is situated on a site of about 8.8ha which is generally flat.

7.6.2 ORIENTATION

The orientation of the facility is generally satisfactory. Most of the buildings have an east-west orientation.

7.6.3 ACCESS

The Approach is satisfactory. But the administration which is the main point of orientation is away from the main entrance

7.6.4 CONFIGURATION/FUNCTIONAL RELATIONSHIP

These are generally satisfactory considering the fact that the department itself is only part of the institute. One of the department's classrooms is unfortunately some 190m away from the other classrooms.

7.6.5 CIRCULATION

Institutional circulation is satisfactory with covered walkways linking most buildings. The departments circulation is acceptable except for the connectivity with lavatories and the third classroom.

7.6.6 ADEQUACY OF SPACE

In most cases spaces provided are generous enough and ideal for group training . The platemaking area and the monotype casting area are however not as spacious enough.

7.6.7 STRUCTURES AND MATERIALS

Construction is generally of concrete floors and cement block construction with reinforced concrete columns. Floors and walkways are finished with screed

and walls are finished with cement plaster and emulsion paint. The workshops have a portal frame structural system

7.6.8 VENTILATION

Spaces artificially ventilated include the dark-rooms, the print-finishing workshop and part of the printing workshop. Others spaces rely on cross ventilation.

7.6.9 ILLUMINATION

Daylighting is satisfactory except for parts of the printing and print-finishing workshops which are artificially supplemented. The darkrooms have special lighting.

7.6.10 SAFETY AND SECURITY

Inadequate emergency exits.

Burglar proofing is supplemented with security men.

7.6.11 SERVICES

The institute has a central transformer. For the pre-press workshop water is supplied and drainage provided. Paper waste is disposed of through agents and by burning.

7.7 CONCLUSION

Generous spaces for group training and circulation. Artificial illumination and ventilation are required. Emergency exits and good security are required. A good waste disposal arrangement/system required.

7.8 UNIVERSITY PRESS LIMITED

7.9 INTRODUCTION

The press is located on the University of Science and Technology campus. It was established to serve the printing needs of the university. The press has however been recently privatised.

The press was chosen for the study because it remains one of the few presses in the country that has all the three workshops for book production namely,

- (a) Pre-press section
- (b) Printing section
- (c) Print finishing section

7.10 OBSERVATIONS

7.10.1 ORIENTATION

The building is aligned to the Ayeduasi road to the disadvantage of solar penetration.

7.10.2 ACCESS

The facility is easily accessible by visitors and maintenance and delivery vehicles.

7.10.3 CONFIGURATION AND FUNCTIONAL RELATIONSHIP

These are very good with three main activities forming a courtyard of an ideal logical flow.

7.10.4 CIRCULATION

This is generally satisfactory. However the link between the printing section and the print-finishing section is broken by the wrongful position of an office.

7.10.5 ADEQUACY OF SPACE

The spaces provided are generally sufficient.

The only exception is the print finishing workshop which is over-crowded.

7.10.6 STRUCTURES AND MATERIALS

The press building is of cement block and concrete construction. The pre-press workshop has a truss roof while other spaces have partial farmers.

7.10.7 VENTILATION

All spaces within this facility rely on cross ventilation with the exception of the darkroom which is air conditioned and the monotype casting chamber where a mechanical extractor has been installed.

It was observed generally that the absence of air conditioning had a negative impact on the quality of work being doing.

7.10.8 ILLUMINATION

Daylight was found to be insufficient and for that matter, artificial illumination had been introduced into almost all spaces.

The darkroom which also serves as the production manager's office didn't have the appropriate lighting.

7.10.9 SAFTY AND SECURITY

Door-openings where found to be enough to serve as emergency exists.

A security man who was always at post at the reception was found to be extremely vigilant.

Fire-fighting equipment were absent.

7.10.10 SERVICES

With the exception of the darkroom where the use of water is crucial in plate-making processes water supply to other spaces was found wanting.

There were also no wash hand basins in the production rooms.

Paper waste was disposed of through burning around the press.

7.11 CONCLUSION

- (a) Good configuration of production spaces and good functional flows.
- (b) Certain spaces such as the accountants office and the production manager's office are improperly located within the press.
- (c) Fire fighting equipment must be provided.
- (d) Artificial ventilation and illumination are required.
- (e) A better paper waste disposal system is required.

8.0 THE BRIEF

8.1 THE CLIENT'S REQUIREMENT

A building complex to facilitate the activities of the institute.

Academic work

Consultancy

Research work

Scholarly publication

Resource services

8.2 BRIEF DEVELOPMENT

8.3 PRIMARY SPACIAL REQUIREMENT

Lecture rooms

Workshops

Typing room

Library

Illustration studio

Audio-visual theatre

Computer studio

Staff offices

Administration

8.4 SECONDARY SPACIAL REQUIREMENT

Multi-purpose room	Changing rooms		
Conference room	Waste disposal		
Staff lounge	Lavatories		
Kitchenettes	Recreational areas		
Porters' lodge	Maintenance rooms		
Receptions	Security checks		
Store rooms	Parking spaces		
Laboratories			
Production offices			
First aid room			
Delivery bay			
Plant rooms			
Light lobbies			

8.5 FINAL BRIEF

Description of Space	No.	Unit (m ²)	Area (m ²)	m ²
Theory instruction				
Lecture rooms	3	5.98	179.4	
Seminar rooms	1		73.6	
Design/illustration studio	1		73.6	
Computer studio	1		73.6	
Staff office	3		33.8	
Typing room	1		73.6	
Lavatories	4	4.6	18.4	526
Circulation			195.0	195.0
Workshops				721.0
Pre-press workshop				
Photography studio	1		27.6	
Process camera room	1		27.6	
Film developing room	1		27.6	
Light lobby	1		7.4	
Strip-in room	1		10.4	
Plate-making/etching room	1		41.6	150.2

Description of Space	No.	Unit (m ²)	Area (m ²)	m ²
Printing workshop				
Main workshop	1		276	
intertype casting	1		18.4	294
Printing finishing workshop				
Main workshop	1		294.4	294
Ancillary spaces				
Staff offices	7	9.2	64.4	
Staff lavatories	2		4.6	
Store room	1		23	
First aid room	1		9.2	
Female changing room	1		9.2	
Male changing room	1		9.2	
Entrance lobby	1		30.0	
Delivery bay	1		22.0	
Plant room	1		30.0	
Paper waste chamber	1		18.4	
Input store	1		27.6	
Outfit store	1		27.6	
Laboratories	2	18.4	36.8	215.2
Production unit				
Reception	1		27.6	
Consulting room	1		27.6	
Production office	1		27.6	
Production chamber	1		13.8	
Lavatories	2	3.1	9.2	105.8
Circulation				
				381.0
				1060.0

Description of Space	No.	Unit (m ²)	Area (m ²)	m ²
Resource centre				
Audio-visual theatre	1		128	
Equipment stores	2	4.2	8.4	
Library	1		128	
Multi-purpose room	1		154	
Kitchenette	1		15	
Conference room	1		113	
Kitchenette	1		9	
Reception	1		18	
Resource offices	3	18	54	
Maintenance store	1		16.5	
Lavatories	3	2	6	
Wash area	1		3	
Lobby	1		165	617.4
Circulation				200.4
Administration				871
Reception	1		18	
Staff office	8	18	144	
General office	1		36	
Staff lounge	1		24	
Kitchenette	1		13.5	
Lavatories	2	2	8	
Plant room	1		22	
Circulation				265
Fast food bar				180
Fast foods hut				445
	1	3.1	12.5	125
Total floor area				2535
				956
				3491

9.0 THE SITE

9.1 CRITERIA FOR SITE SELECTION

- (a) The site should be easily accessible by students as well as by the general public.
- (b) In conformity to the development procedure of the university, the site should ideally fall within the general academic area, or the College of Art area which acts as a satellite to the former.

In all, three sites were considered. Their merits and demerits were critically analysed and the most ideal, site B was selected for the facility.

9.2 SITE A

The site lies to the east of the College of Art and has an area of about 2.3ha. Currently situated on the site are the soon-to-be vacated old temporary structures of the Biological Sciences Department and also the sculpture and ceramics sections of the College of Art.

9.2.1 MERITS

- (a) The site is easily accessible by students as well as the general public.
- (b) The site has an advantageous proximity to the College of Art.

9.2.2 DEMERITS

- (a) The site is surrounded by two primary roads and a secondary road.
- (b) The commercial area lies to the north of the site and is expected to grow southwards towards the site.
- (c) The Technology Secondary School breaks the physical link between the site and the college of Art.

9.3 SITE B

The site lies to the north of the Unity Hall, between the college of Art and the Stadium Road. It covers a total area of about 3.2 ha.

9.3.1 MERITS

- (a) The site is easily accessible by students as well as the general public.
- (b) The site is adjacent to the college of Art.
- (c) With the exception of the stadium road which is a major traffic route the area has a low activity level.

9.3.2 DEMERITS

- (a) The eastern end of the site is cut through by a stream in a north - south direction.
- (b) the stream renders the immediate banks a swampy area.

9.4 SITE C

This site is located just south of the mechanical engineering workshops and falls within the general academic area.

9.4.1 MERITS

- (a) Apart from the mechanical engineering workshops the area is one of low activity level.
- (b) The area has a good sensory.

9.4.2 DEMERITS

- (a) The site is relatively less easily accessible from the main university entrance and the halls of residence.
- (b) The programme is hardly related to programmes offered by faculties in the area.

9.5 CONCLUSION

- (a) Site B proves itself as the most ideal and advantageous of the three sites.
- (b) The location of the site along the stadium road together with its slope and good sensory offers an opportunity to create an interesting architectural piece to enhance the architectural state of the otherwise, rather bare and uninteresting main access corridor of the university.
- (c) The institute with its sub-regional status merits the described architecture and location.

CHAPTER 10

10.0 SITE ANALYSIS

10.1 GRADIENT

The site has an average gradient of about 1: 14. some areas however slope more steeply and others more gently.

10.2 CLIMATE

The site like the rest of the campus has a micro-climate which deviates slightly from the general warm humid conditions in the rest of Kumasi. More rainfall and humidity are experienced.

10.3 VEGETATION

The site is covered by trees and shrubs. Shrubs are particularly found along the stream. Some farming activities are evident on the site.

10.4 CONSTRAINTS

The site is cut through on the western end by a stream rendering the areas 8m to both sides quite swampy.

10.5 THOROUGHFARE

Two paths that run around the east and west of the Unity hall meet on the site to form a common path that runs through the Protestant Church premises and continues northwards to the Accra-Kumasi road. This path is often used by hawkers who operated on the campus.

10.6 CONCLUSION

- (a) The site slopes in an east-west direction and for good orientation, terracing will have to be resorted to .
- (b) Cross- ventilation and good drains will be required due to the micro-climate of the campus area.
- (c) As many tree as possible will be presented to maintain the micro-climate.
- (d) A distance of 15m from the stream will be left undeveloped in conformity to the campus development regulations.
- (e) The paths that run through the site must be retained in one way or the other but away from the facility so that the premises of the institute is not used as a thoroughfare.

11.0 EVOLUTION OF CONCEPT

11.1 MAJOR CHARACTERISTICS OF THE INSTITUTE

- (a) Simultaneous multi-function
- (b) A multi-category of users
- (c) Sub-regional status
- (d) Unsuitable operating conditions/facilities of the existing facility.

11.2 MAJOR STATEMENT

Need for an appropriate operating complex of building

11.3 ORGANISATIONAL VARIABLES

11.3.1 PRIMARY USERS

- (a) Full-time/Part-time student
- (b) Industrial personnel
- (c) Consulting public
- (d) Resource seeking Public

11.3.2 SECONDARY USERS

Teaching staff

(a) Lectures

(b) Instructors

Non-teaching staff

(a) Administrative clerks

(f) Cleaners/Maintenance

(b) Secretaries

(g) workers

(c) Receptionist

(h) Caretakers

(d) Receptionist

(i) Caretakers

(e) Attendants

(j) Security personnel/Drivers

Visiting groups/individuals

(a) Seminars

(d) Exhibitions

(b) Workshops

(e) Tours

(c) Conferences

(f) Inspections

11.4 HUMAN NEEDS - ARCHITECTURAL CONTEXT

Physical needs

(a) Provision of space

(c) Treatment of space circulation

(b) Disposition of space

(d) Circulation

Biological need

(a) Sanitary provisions

(b) Waste disposal

Social needs

(a) Interaction spaces

(b) Concourse

Recreational needs

(a) Landscaping

(b) Outdoor seating

Psychological needs

(a) Sensory

(b) Adaptability

Aesthetic needs

(a) Evolution of form

(b) Finishing and landscaping

11.5 DESIGN PHILOSOPHY

Space is life. It is medium for living

(a) Feeling

(b) Hearing

(c) Moving

(d) Seeing

(e) Smelling

(f) Interacting

Addressing human needs spacially with strong cultural emphasis

11.6 DESIGN CONCEPT

User-friendly with distinctive function

CHAPTER 12

12.0 SITE DEVELOPMENT

12.1 CONCEPTUAL SITE PLANNING

For the purpose of planning the site was considered in the context of its neighbourhood or surroundings. For that matter all surrounding buildings and activities were carefully considered and the most probable future linkages established.

The existing road network was carefully considered and for the purposes of accessing the facility a new access road was proposed. To access the facility therefore, in driving south along the Stadium Road, one turns to the right just after crossing the culvert over the stream. This road leads right up into the College of Art site and ends up joining the existing road network. On the other hand, in driving up towards the College of Art site along the proposal road, one could turn off to the left at the end of the proposed site and join the existing campus road network to the west of Unity hall and then on to the Ayeduasi Road.

Also considered for the purposes of conceptual site development was the inflow of the major users of the facility who are the general public, students and staff. The public are largely expected to approach from the main university entrance while students, by the network of roads around the halls of residence are expected to all coverage from various directions at the western side of Unity hall and thereafter access the facility northwards along the direction of proposed road network. Lecturers are likely to access the facility in the similar manner.

The paths that run through the site will be maintained but re-directed so that they do not disturb the operations of the facility.

Also considered were linkages between the facility and other buildings and activities in the areas. For example, students might want to visit the outdoor canteen behind Unity Hall or the students club house for launch. Others might like to visit Republic Hall for similar purposes. Other considerations were the possibility of undesired lines of view from tall structures around the site such as the Unity Hall and the top slab of the diving board at the swimming pool. The possibility of noise reaching the facility from the Paa Joe Stadium was also considered. For the above problems tree buffers were resorted to as solutions.

At this stage of planning, services were considered. The possibility of tapping power from the University transformer located just south-west of the site and connecting sewerage to the central university sewerage system were considered viable. The same applied to channelling all run-off and waste water into the stream.

12.2 SITE DEVELOPMENT CONCEPT

Dual-User Concept

This concept was evolved for the purpose of site development. Here the major users of the facility were considered and the concept is a manifestation of two users of the facility using it simultaneously with minimum conflict.

12.3 CONCEPTUAL SITE DEVELOPMENT

Concept: Dual User Concept

As mention earlier the concept aims at developing the site so as to minimise conflict. The task here, therefore was, to position the main organisational units which are the workshops, the theory teaching areas, the resource centre and the administration in logical ways to ensure proper function.

As a solution the various spaces or organisational units were positioned along the most probably flow lines of the users. In effect the resource centre was positioned at the public approach and the students areas positioned along the student approach lines.

A parking space to be share by staff and the public was introduced close to the resource centre and the administration. This was complemented by a forecourt from which the administration and the resource centre can be accessed. The four main organisational units were arranged in such a way to form a courtyard at a central position. The courtyard will act as an interface area and would also serve as a concourse for all the various users of the facility.

The theory instruction area was also organised around a second and smaller courtyard.

A second access road was introduced to serve the workshop area. It was established that paper stocks would be brought in and finished products taken out of the premises. This route will also afford the public access to the production offices.

13.0 DESIGN APPRAISAL

13.1 APPROACH

The facility can be approached from the stadium road, the Unity road or downwards from the College of Arts. It's location is interesting because of its centrality. The complex jumps into view some one hundred and fifty metres before the main university entrance where the public is expected to approach the facility. Thereafter it remains in view from the back, the eastern side and then finally the southern side as one turns right onto the Publishing road. The building complex still remains in view even if one turns onto the Protestant Church road towards the commercial area of the campus. This means that a member of the general public is treated to exciting and anxious moments on approach during which the person gets an opportunity to see the complex from almost all around before accessing it.

Students are expected to approach the facility in a north-eastern manner. Their path has been organised in such a way that they are away from the roads and this will minimise conflicts with vehicles.

13.2 ACCESS

For the general public and staff a parking lot for 35 cars and at least a bus is logically put at the end of the axial access road which bends to the right as one descends towards the facility. Otherwise, pedestrians access via an axial pavement

that leads to the forecourt mentioned earlier. Visitors or staff who alight at the parking lot also go through the forecourt.

From the forecourt, one can directly access the resource centre and administration. The concourse area can also be accessed from the forecourt. Once a person stands in the courtyard or the concourse area which is the centre of the facility every other space can be accessed quite conveniently. The workshops, the production offices and the theory instruction areas are the major spaces found on the other side of the courtyard.

13.3 POINT OF ORIENTATION

For the general public a reception located in the resource area will be the point of orientation. This is particularly so in the case of first timers.

For students the main point of orientation will be the students forecourt on the western side of the facility.

13.4 ADEQUACY OF SPACE

The provision of space as listed in the brief was a careful exercise. This was done with reference to standards which have been detailed in the technical studies which was undertaken for the purposes of the design. Circulation space was considered critically to complement actual operational space. Outdoor spaces such as the courtyards and spaces between builds were cut with reference to the scale of the complex as a whole and also with reference to human scale.

13.5 FUNCTIONAL RELATIONSHIP

As mentioned in the conceptual site development this was considered critically to ensure proper function. The various buildings of the complex were positioned in a logical manner for perfect functional relationship.

The spaces within the various buildings were arranged in the same manner. The courtyard as pointed out earlier acts as an interface for the various activities arranged around it.

13.6 CIRCULATION

The concourse acts as the central hub of circulation. From here, walkways and corridors of 2000mm and 1600mm respectively link the various buildings of the facility. Some of these have been strategically shaded so that circulation within the complex is still possible to a large extent even in unfavourable weather conditions.

13.7 PLACES OF CONVENIENCE

This was done strategically so that one travels only short distances to reach such spaces. The various categories of users were considered and provisions made accordingly.

For the resource area, lavatories were placed in the basement and the same was done for the workshops. The theory instruction area, the production area and the administration all have their own lavatories to serve their users.

13.8 RECREATIONAL AREAS

Wherever possible in the design, spaces between buildings were covered with pergolas to create a comfortable micro-environment where students, visitors and staff can recreate themselves. In addition a students piazza which can easily be used by the public was placed east of the resource centre in the curvature of the deliberately meandered stream.

This curvature is a direct geometrical derivative of the curvature of the multi-purpose room. A second piazza designed for junior staff is positioned behind the workshops. Here fast foods bought from lunch breaks can be eaten as typical of staff in this category. The students piazza also has a fast foods bar and a fairly large seating area. A huge tree stands right in the centre of the piazza and this provides shade for the whole area.

13.12 EVOLUTION OF FORM

13.9 TERRACING

The site has a slope of about 1:14. For the purpose of visual and spacial continuity, terracing was done using gentle steps of 750mm throughout most of the design.

13.10 MATERIALS AND STRUCTURES

Generally the structural frames of all the buildings of the complex are of reinforced concrete beams and columns. Some columns are however curved and are therefore manifested in the form of curved ribs or hoops. This is particularly so in

the case of the structures of the resource area and the administration.

The workshops have portal frames on which gutters are mounted to in turn support barrel roofs.

The remaining parts of the structures are of blockwork construction and cement plaster finish. Corridors and walkways are finished with screed while indoor spaces are largely finished with terrazzo which is hard wearing.

13.11 ORIENTATION

Almost all buildings were positioned in an east-west manner so as to avoid solar radiation. This was also done so that window openings could be put along the lines of air movement.

13.12 EVOLUTION OF FORM

For a facility of a sub-regional status and of such a key location on the university campus it was established that interesting forms are a pre-requisition.

The forms took shape from the workshop area where after considering visual appropriateness it was decided that barrel roofs would be most ideal. By the deposition of the theoretical instruction area on the layout it was considered logical to also roof this area with barrel roofs. However, the industrial effect given by the use of barrel roofs was toned down by the use of a concrete fascia on the facades.

For the resource and administration areas juxtaposition was carefully considered. The complementary forms used in these areas were derived mainly from

the platonic forms of cylinders and a sphere. The dominant form that runs through most of this area specifically the administration, the audio-visual theatre, the library and the resource offices was derived from a cylinder that is split in two equal halves along its central axis and made to sit on its flat broad base. The theory of subtractive forms was applied and quite a sculptural form emerged.

For the multi-purpose and conference rooms a cylinder sitting on one end and a hemisphere over it was used. The theory of subtractive forms was applied here too to achieve yet another sculptural piece.

On the whole the configuration of forms appears appealing and there is order when the forms of the complex are viewed collectively.

13.13 COLOUR SCHEME

Some aspect of organic architecture was applied during the formulation of a colour scheme concept. Frank Lloyd Wright who stood for organic architecture believed that buildings must be seen to evolve from their natural surroundings. A green colour scheme was therefore chosen to blend the complex with the green vegetation surrounding it. This makes a great site to watch.

13.14 RICHNESS

African symbols were introduced in balustrade designs, on walls, columns and along pavements.

13.15 LANDSCAPING

The major considerations for landscaping included shading, creating effects and for the purposes of buffering noise and sight. Trees were mostly used for shading and as buffers while some shrubs were also introduced to create effects. Grass was widely used as ground cover.

Hard landscaping was applied in the piazza areas and for walkways and embankments. Retaining walls were carefully designed of quarry stones. Stones were also used in paving forecourts and courtyards.

Murals were widely used to create interest and to complement the fine architecture achieved.

14.0 SERVICES

14.1 POWER SUPPLY

Power will be tapped from the central university transformer located close to the site behind the Unity Hall.

14.2 WATER SUPPLY

Water will be tapped from the Unity Hall and networked on the proposed site for efficient distribution.

14.3 AIR CONDITIONING

All interior spaces within the facility with the exception of lecturer rooms, storerooms, lavatories and plant rooms will be air conditioned for one reason or the other.

The workshops and the administration area will operate on a packaged split central system while the theoretical instruction area and the resource centre spaces will use package split units. The central systems are housed in the basements of the respective areas which have courts just outside where the condensing units will sit.

14.4 DRAINAGE

Drains are provided along the roads and along strategic lines on the premises of the facility to drain away run-off water. These together with drains containing waste water are channelled into the nearby stream.

14.5 SEWERAGE

All sewerage pipes from the lavatories are connected through man holes and channelled into the central university sewerage system near the Unity Hall.

14.6 WASTE DISPOSAL

For the purposes of waste disposal refuse boxes are provided at vantage points of the facility. These in turn will be emptied into a central box close to the print finishing workshop where it could conveniently be collected regularly by the sanitary trucks of the central maintenance unit of the university.

14.7 PAPER WASTE

In recent times the recycling of paper has gradually picked up in the country. For that matter storing paper waste is a thing that was seriously considered.

A paper waste chamber located in the basement of the printing workshop handles all paper waste. Paper waste is deposited here through a hatch opening in the printing workshop. This chamber is spacious enough to store offcuts for weeks. Its doorway is strategically positioned so that it can easily be accessed by trucks or other vehicles.

14.8 FIRE PROTECTION

Paper is found almost everywhere in the facility and so the use of water in fighting fire was considered as improper. Instead a network system of extinguishing gas will be laid in the ceiling and fire sensors strategically positioned throughout interior spaces.

Fire extinguisher will also be located strategically all over the facility.

15.0 PHASING

The facility covers a total floor area of about 3,490m². Fortunately the nature of the building complex allows for advantageous phasing so that funding is done conveniently.

Phase one

The workshops and theoretical instruction area. $1441 + 721 = 2163\text{m}^2$

Phase two

The administration block - 445m²

Phase three

The resource centre - 871m²

Phase four

Site works.

15.1 COSTING

Estimated cost per square metre = €320,000

Cost per Phase:

Phase One € 691,840,000

Phase Two € 142,400,000

Phase Three € 278,720,000

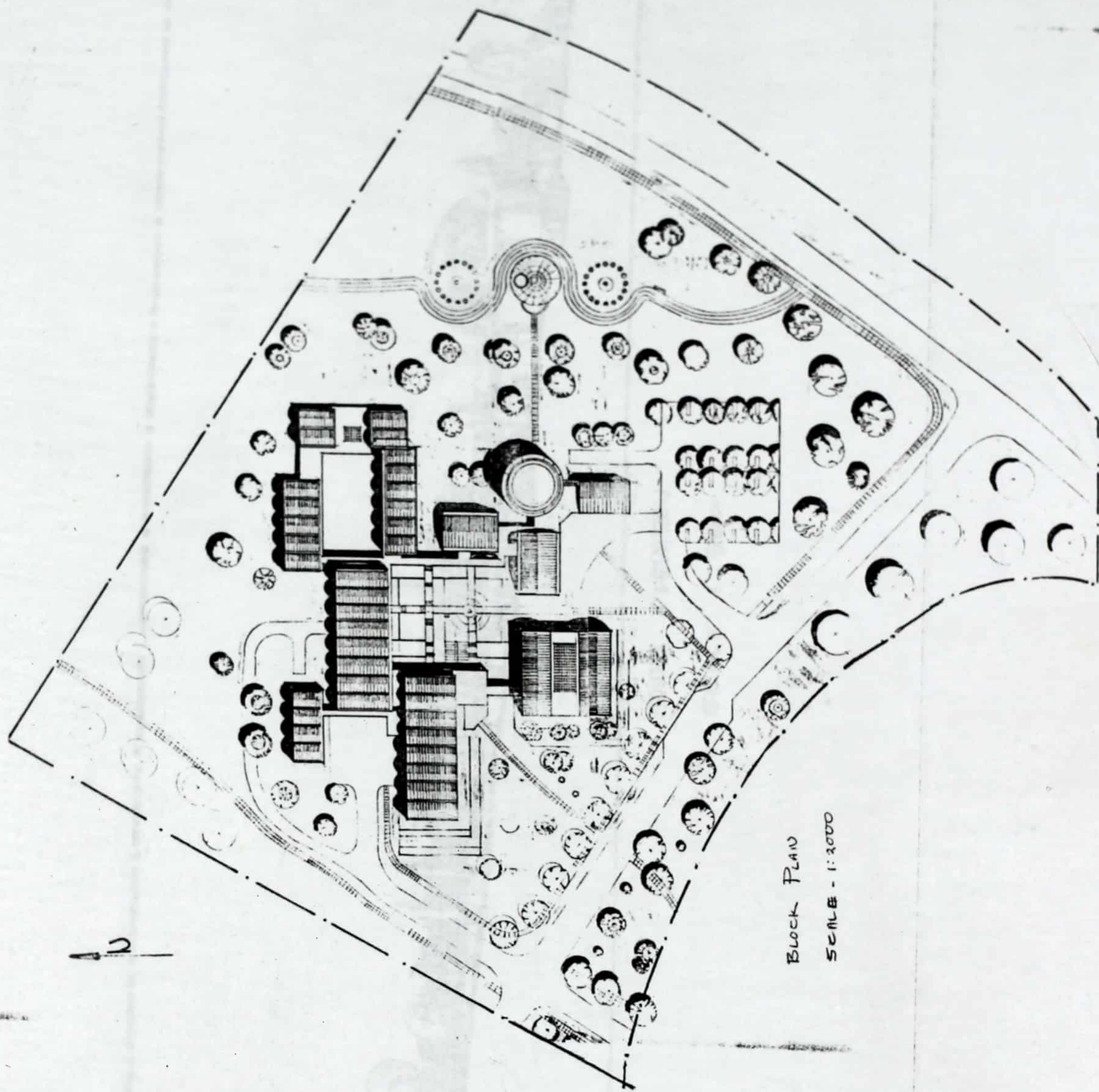
€1,112,960,000

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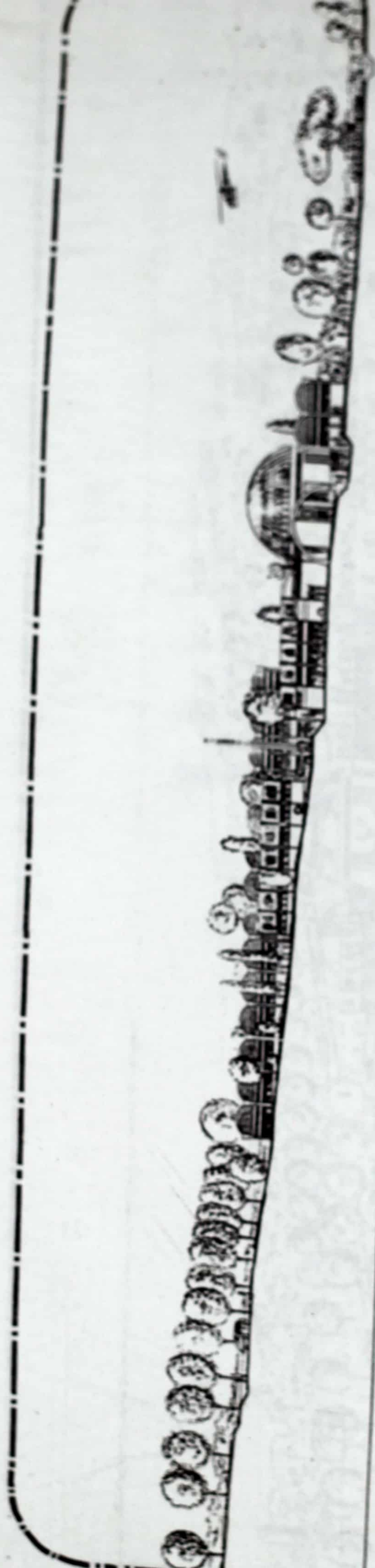
Phase Four

Allow 20% for site works € 222,592,000

Total cost of project €1,335,552,000

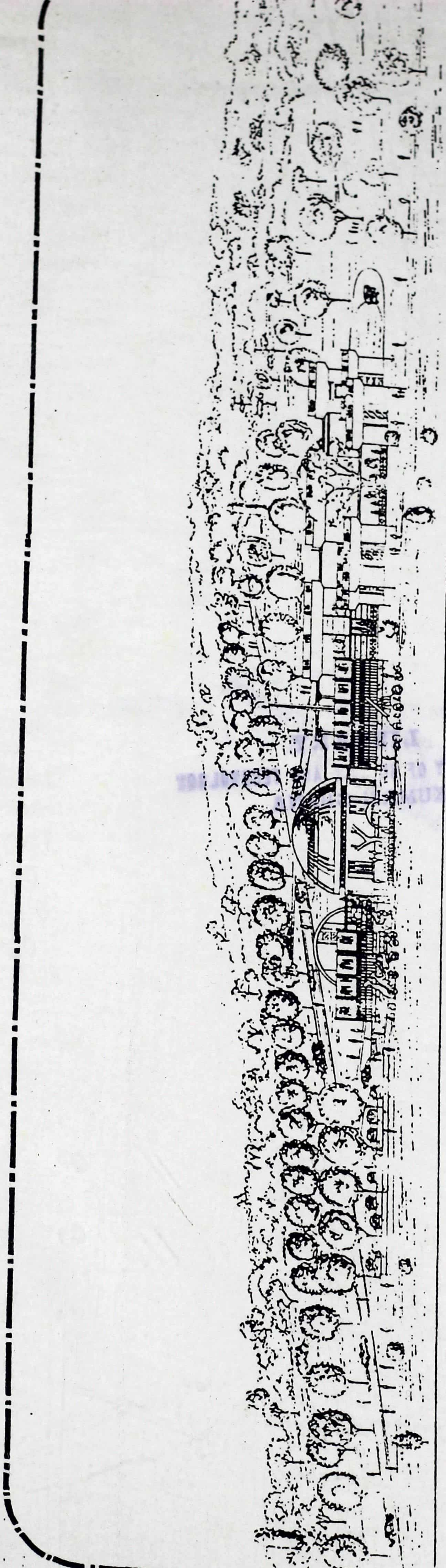


Block Plan
SCALE - 1:2000



SOUTH ELEVATION

SCALE 1:500



EAST ELEVATION

SCALE 1:800