

HIJRA FOUNDATION FOR ISLAMIC EDUCATION

PROMOTER OF PROPOSED UNITY UNIVERSITY EDE, OSUN

STATE, NIGERIA, AFRICA

INTRODUCTION:

THE PROPOSED UNITY UNIVERSITY

The proprietors of the proposed Unity University, Hijra Foundation For Islamic Education and Hijra Educational Services Limited, with the intention to make the University one of the leading private universities in the country, acquired a total of 138 hectares of land at Ede, Osun State in 2001. The proposed Unity University will, as matter of deliberate design, strive to achieve academic excellence and moral integrity of the students through well-packaged programmes. The values of the Institution have been predicated on the acquisition of a good blend of secular and divine (Islamic) knowledge as well as purification of self, coupled with a very clear vision, a well-defined mission statement as well as lucid philosophy and objectives as aforesaid

The proposed Unity University intends to be one of the leading private Universities in the country and as such, will strive through its provision of teaching, research and public service, to solve problems of the society. In the process of learning, students will similarly be oriented towards use of their education to solve problems for their own benefit and that of the Nigerian society. In effect, Unity University graduates will be able to use the knowledge and skills acquired at the institution to contribute meaningfully to the development of Nigeria. Efforts will be made to ensure that the students acquire both secular and Islamic knowledge to enable them become complete gentlemen. In totality, the University will seek to produce graduates (irrespective of race, gender, political and religious affiliations) with a wide and ordered knowledge in a discipline area of study, ability for critical and logical reasoning, effective communication skills, numeric skills and computer literacy, sound moral development, well developed interpersonal skills as well as capacity for team work.

The institution intends to take off at Ede with the Faculties of Science and Management and Social Sciences.

Unity University is conceived primarily as a degree awarding institution that:

- Will draw students from across Nigeria and the West African sub-region;

- Will pursue curricular that are relevant to the socio-economic development of Nigeria and generally geared towards self-employment;
- Will provide an avenue for youths, especially women, to find their own voice and space for social and intellectual growth in the current climate of pervasive institutional, social and economic discrimination;
- Intends to provide students drawn from diverse social, economic and ethnic backgrounds with an opportunity to come together in an Islamic setting to enhance their own knowledge, capabilities and reflect on their individual and collective roles in shaping the values, economic and social structures that inhibit the actualization of their potential;
- Is designed to enable Nigeria join the league of countries such as Egypt, Algeria, Libya Sudan, Mali and Senegal that have delved into Islamic higher Education that will provide for the needs of both the body and the soul , and
- Believes that education cannot be divorced from religion and moral values in moulding a complete human being to accept he divinity of Allah in all endeavours.

The proposal to establish the proposed Unity University, at Ede, Osun State is therefore regarded as a noble effort towards solving the perennial problems of admission with a view to equipping and producing qualified graduates that will be useful in nation's development.

The proposed Unity University is set to produce skilful graduates who can compete with their peers in this modern age and embrace the challenges of development. There is also the determination to produce academically and morally sound graduates who will combine moral rectitude with scholastic attainment in their careers.

Furthermore, it is planned that the products of the proposed University will not be mere certificate carriers searching for employment but creators of employment for others. They will be mentally resourceful, intellectually reinforced, entrepreneurial, self-dependent and reliant, futuristically visionary and responsibly sensitive to changes demanded of the leadership role or dominion nature he is made for.

It is to be noted that the proposed Unity University will not be a profit making venture but an avenue to reduce financial burden on parents and guardians for the education of their children and wards.

THE UNIVERSITY MOTTO, LOGO AND COLOURS

The motto

The Motto of the proposed Unity University is “Flight to Excellence”

LOGO

The Logo of the institution shown on the cover of this Masterplan Report document, has the following:-

- (i) Light emanating from a pen, as a source of illumination
- (ii) Pen is an instrument used to write (or communicate) this knowledge; and
- (iii) a Slate

The aforementioned three principal items challenge the thought and existence of human beings and they are cardinal means through which knowledge is creation could have been in jeopardy since it is light and remove people from darkness to light.

UNIVERSITY COLOURS

The colours of the proposed University are green and yellow.

THE MASTERPLAN DOCUMENT

Nature of the Masterplan

The Masterplan should be seen as an interpretation, in terms of space of the University programme in its broadest sense, skilfully adapted to the requirement of the proposed site and the needed interaction between the University and its immediate neighbours.

SCOPE OF THE MATERPLAN

The Masterplan consists firstly of this report, which describes and explains:

- The envisaged arrangement and outlines of the University
- The procedures necessary for the materialization of those ideals;
- Recommended guidelines for the executive designers;
- Implementation guidelines; and
- Cost estimates

The drawings accompanying this report, illustrate in detail all facets of the plans

Purpose of the Masterplan

The Masterplan drawings are in no case to be considered technical working documents, for use by contractors. The Masterplan, once approved, will provide groundwork for ensuing activities of town planners, architects, engineers, landscape designers, etc., who will be called in for detailed designing of their respective portions of the project.

Process Planning

Any thriving institution will, from the very start, find itself involved in a continuous process of change and growth, with ever-changing ideas on goals, means and methods. The Masterplan, though seeming to portray the University's ultimate physical shape, in reality, adapts to this process of growth and change. This obviously asks for a high degree of adaptability and extensibility, not only of the masterplan itself, but also the materialized infrastructures and buildings contained in the plan.

Main Determinants For Masterplan

The contents and composition of the physical Masterplan are determined by two specifications:

- One, applying to the University Programme in its broadest sense that is, the catalogue of requirements, motives, perspectives, preferences, and suggestion, explicitly or implicitly conveyed either by NUC or by the University. This is abstract, man-made, and more or less subjective in its preference and priorities, liable to periodical revision; and
- Another applying to the Site; its characteristics, scope and limitations. This is an amalgamation of visible durable data, provided by nature and history.

TEACHING DEPARTMENT AND PROGRAMMES IN THE COLLEGES

The Table 1.1 shows the Faculties and Teaching Department to be mounted in the University

Table 1.1: Teaching Departments in the Colleges

FACULTIES	DEPARTMENT
Science	Computer Science Biological Science Chemistry Physics
Social and management Sciences	Mass communication Economics

	Psychology Insurance and Actuarial Science Marketing Management Science Accounting
Arts and Humanities	European Languages Asian languages African languages Religious Studies
Engineering and Technology	Civil Engineering Electrical/Electronics Engineering Mechanical Engineering Food Technology
Health Science	Medical Science Pharmaceutical Sciences

POPULATION OF THE UNIVERSITY CAMPUS

Residents Population

The plan for students' housing on campus shows that accommodation will be provided for 50% of the students on campus. For the staff, accommodation also shall be provided on campus for 50% of the entire staff including the principal officers. The total campus resident population at optimum level of development is projected as follows:

(i)	Residents Students (50% of 8,000)	= 4,000
(ii)	Residents Staff (+ Dependants) (288 x 6)	= 1,728
(iii)	Total Campus resident Population	=5,728

Daytime Population

The Campus daytime population estimate takes into consideration the visitors and the Staff School (Primary and Secondary) population. The figure arrived at when the University gets to its optimum level of development is as given below:

• University Students population	8,000
• Staff Population	576
• Staff Dependants	1,440
• Staff Schools	800
• Visitors (25% of campus residents)	1,432

SPACE PROJECTIONS

The various spaces projected for the development of the University have been based on factors germane to the efficient planning of the University campus. These factors include the academic pattern, the headcount of students enrolment into various academic programmes, staff strength, residential pattern for students and staff as well as all the social and communal facilities and services which are required for achieving the goals and objectives of the University.

In determining the space needs, the campus activities were broadly classified into five major areas.

These are:

- (i) Academic area;
- (ii) Administrative area;
- (iii) Communal and Social Services area;
- (iv) Staff and Students Housing areas; and
- (v) Ground areas.

Academic Space Needs

The academic spaces consist of the following:

- (i) Departmental areas which embrace the provision for the academic staff offices, seminars rooms, tutorial rooms, research spaces. Laboratories, workshops, drawing offices, non-academic staff offices including allowance for faculty offices and all teaching areas other than centrally time-tabled classrooms and lecture theatres;
- (ii) Lecture theatres and classrooms (centrally time-tabled areas), and
- (iii) Peculiar space needs of each department, which is commonly referred to as base area.

The space required for the academic area has been derived from the product of FTE student population in each department/faculty and the usable area per student with the required balance area and buffers.

FTE students are used because student's enrolment does not necessarily represent the actual numbers of students using space in any particular department. The usable areas are defined as spaces provided for the basic activities in a building such as those meant exclusively for teaching, research or administrative purposes. Balance areas represent the auxiliary spaces meant for circulation, toilet and storage in a building. The use of the above elements in the derivation of the

space required for the academic area and their uses within the University is based on the NUC guidelines.

It is envisaged that the physical image of the University will be that of a compact development for the purpose of achieving economy of space and infrastructure, promotion of social interaction and aesthetics in a high quality academic environment. From the space schedule of the academic area as contained in 2.10 to 2.13, the vertical development will be on 3 floors while density of development is put at 40%. The estimated land area for the academic use of the University is put at 12. Hectares.

Site Location Accessibility

The Proposed Unity University is to be located along Kuta Road on a parcel of 138.12 hectares of land in Ede north Local Government Area of Osun State. The site lies at Latitude 7° 47' North of the Equator and Longitude 40° 33' East of the Greenwich Meridian and at an elevation that varies between 250m and 300m above mean sea level. The University site is part of a larger parcel of land covering 545.5 hectares.

The site is accessible through the adjoining Ede –Kuta Road and Ede – Osun River Road. The proposed campus is also very accessible from Ibadan, Ile-Ife, Ilorin, Abeokuta, Ado-Ekiti, Akure, Ogbomoso, Ondo, Ijebu-Ode, Offa, Osogbo and Owo which all fall within a 150km radius from the site. Apart from regional accessibility, through consideration of alternative local access points into the campus was however, made considering the following factors:

1. the nature of the sites' terrain and existing development;
2. the adjoining land uses;
3. linkages with the existing road network, and
4. safety and security within the University campus

Distance between the site and neighbouring urban centres by existing roads to the site are:

- Ibadan 79km
- Ikeja 227km
- Akure 128km
- Ilorin 125km
- Abuja 438km
- Osogbo 11km

Infrastructural services such as electricity power supply and road network are not yet present around the site. This existing situation will require the University to tap into these facilities in order to meet its needs.

Within a radius of 150km or two hour journey from the proposed university site are several tertiary educational institutions with which the proposed university could establish and maintain mutual and beneficial relationship. Some of these educational institutions are:

- (i) University of Ibadan, Ibadan;
- (ii) Lead City University, Ibadan;
- (iii) Al-Hikmah University, Ilorin;
- (iv) Osun State University of Science and Technology, Osogbo;
- (v) Olabisi Onabanjo University , Ago –Iwoye;
- (vi) University of Agriculture, Abeokuta;
- (vii) Babcock University, Ilishan;
- (viii) Obafemi Awolowo University, Ile-Ife;
- (ix) University of Ilorin;
- (x) University of Ado-Ekiti
- (xi) Federal University of Technology, Akure;
- (xii) Ladoke Akintola University of Technology, Ogbomoso;
- (xiii) Adekunle Ajasin University, Akungba-Akoko;
- (xiv) Bowen University, Iwo;
- (xv) Igbinedion University, Okada
- (xvi) Tai Solarin University of Education, Ijebu-Ode and
- (xvii) Fountain University, Osogbo

Site's Suitability For Campus Development

Campus development suitability is defined for the purpose of this Masterplan, by a combination of environmental factors, including soils characteristics, vegetation quality, geological characteristics and quality of climate and nature of terrain. These factors were mapped and analysed. No environmental factor is particularly meaningful, by itself, to determine sites for campus development suitability. Interpretation and correlation is required to transform them into useful measures for site evaluation. Key positive-and-negative criteria were employed. A set of most important positive qualities for the campus site includes:

- Configuration to allow maximum, choice of campus form
- Sufficient size to accommodate future growth
- Minimum topographic restrictions precluding the possibility of an efficient circulation system and organisation of land uses
- Buildable soils and geologic conditions not requiring unusual engineering measures for construction
- Unique natural features for campus design purposes

In order to select the site which best meets these criteria, the site was analysed with respect to the above factors to indicate areas of varying environmental suitability for the support of campus development. In general, the central area of the site was found to be the most environmentally suitable area for the campus.

Site Development Potentials

A synthesis of site assets and constraints as shown in the Site assets and constraints drawing reveals the site development potential. Three broad zones of land development potential have been identified based on capacity and suitability for building and construction works. Accommodating the University campus physical development programmes and ease of growth and change. The determination of the development potentials of the different segments of the site was based on such criteria as:

- Availability of developable expanse of land;
- presence of or level exposure to environmental constraints; and
- Accessibility or remoteness from transportation route (i.e. external link/approach roads).

Goals, Objectives And Criteria

Key Goals

The Unity University will be a private initiative tertiary institution providing the best of facilities, appointing and retaining top-rated staff and admitting students that will be responsive to the challenges of a modern University run efficiently by a private organisation. Then new University's central administration buildings (Senate Building, auditorium, Library, etc) and academic faculty buildings should be designed with the aim of giving the campus a level of campus architecture and built environment commensurate with that of a modern University. Thus, the fundamental goal in planning and designing a major teaching, and living environment of this nature together with adequate campus facilities, is to create an efficient, pleasant and compact environment in which to live, learn and play.

In planning terms, this university will in effect constitute a new town development, the main activity being teaching, learning and community service but at the same time the development must physically and functionally inter-relate with its neighbour communities.

Objective And Criteria

Generalized objectives

The major objectives of the Unity University Masterplan as regards to the Academic Brief are as provided by the clients. Further objectives and criteria have been clarified in the light of past experiences and research. Thus, a number of specific objectives and criteria have been identified and considered in formulating alternative Masterplan for the university. These are categorized as:

Efficiency

- In reflecting functional inter-relationships between various campus uses and facilities; and
- In form, layout and design of buildings and spaces.

Accessibility

- Within the University campus;
- Between the University campus and outside neighbouring communities; and
- For different modes of transport;

Campus Design Aesthetics

- Balance between monumentality and human scale; and
- As perceived by different groups of people- students, staff, visitors

Environment

- Compatibility with natural environment –climate vegetation, landforms;
- Compatibility with man-made developments on site nearby; and
- Pleasant, safe learning and living environment;

Flexibility

- To allow for changes in timing;
- To incorporate changes in objectives;
- To allow for changes and advancement in technology;
- To allow for expansion; and
- To allow for adjustments to the plan as necessitated by changes in circumstances through time

Feasibility

- In terms of availability of resources- labour, finance, materials
- In terms of management capability;
- In terms of physical, political, legal, or social constraints; and
- In terms of economic use of resources in both construction and operation of development

CLIMATIC CONSIDERATION AND ARCHITECTURAL PHILOSOPHY

The goals and aspirations behind this Masterplan aim to create model University Campus with all its relevant elements in place, unique and functional, capable of contributing adequately to the building up of a total Man. To this end, the following architectural guidelines and design criteria are set to achieve this vision.

The architectural character adopted is aimed at creating an environment that blends the cosmopolitan nature that conforms to the usual University landscape and serenity, with the rural setting of its host community. The traditional courtyard enhancing ventilation and ventilation should be adopted most of the designs with the aim of achieving a comfortable and conducive environment. Also all engineering services will not deviate from the norms set up by the layout of the Masterplan.

The University site poses various challenges to the Materplanners, architects, engineers and environmentalists with its unique nature, terrains and river valley which will bring out interesting architectural Configurations if the physical development observes very strictly the challenges posed by the site. Hence, he new environment that would evolve from the natural terrain should therefore take advantage of the site to achieve a good scenic view. The following architectural guidelines are to be followed by the executive consultants at the implementation stage to achieve a good environment.

DETAILED MASTERPLAN LAYOUT

The Central Administrative and Academic Core

The Central Administrative and Academic Core Area is centrally located on the campus. No other location within the site is considered more appropriate than the chose area in terms of ground area, land and locational suitability, accessibility, ease of development and topography. This location of the Academic Core and the Central Administration is influenced by a number of factors, which include:

- Availability of large contiguous usable land area;
- Freedom of the area from any physical constraint;
- Good access connections with the other parts of the University land;
- Imposing surprising element character to the outside public; and
- Emergence of the area as the centre of gravity of the entire campus activities.

The zone spans about 400m in both the north-south and east –west axis making all points within the zone less than 5 minutes walking distance to each other. This area is planned to be pedestrianised precinct, with the Central Administration to the north of the precinct and the faculties enframing it. Buildings in this area have skilfully been arranged to form a series of courtyard and a Pedestrian.

Mall and the area is linked to the other parts of the campus through distributor roads. All the buildings have ample spaces, which should be developed in attractive landscape settings. Parking core area is to be the University's social meeting place and, on occasions, be the centre-point for important function, large open air gathering, etc., The Mall gives access to important buildings such as the Senate Building, Library, Auditorium, faculties buildings, etc. The Auditorium is centrally placed within the Academic Core. It is equidistant from all the car parks serving the core.

Central Administration

This is the heart of the University and the architecture of the buildings within it should reflect this. The Senate Building will contain provision for offices of the Vice Chancellor, Deputy Vice Chancellor, Bursary, Registry, Audit Office, Central Administration, Physical Planning Unit, Public Relations Unit, Council and Senate chambers, Committee rooms and Administrative Archives. The 4.08Ha site also accommodates the University Library and Auditorium and it has easy access to all the main academic and supporting facilities and also accessible to routes into and out of the campus and to staff housing areas. The Library must be a pride both in architecture and as the central service-oriented resource centre. It is very accessible from all parts of the campus, especially the academic zone. The computer and Internet Centre is meant to support teaching, research, consultancy and administration activities of the University. The University Library and the Computer Centre are therefore located within the Central area with easy reach of the faculties.

Academic Area

The different buildings of the academic departments and faculties are arranged within the Academic area. These are the faculties of Sciences, social and management Sciences, Arts and Humanities, Engineering and Technology and health Sciences. The Academic area covers a total of 11.33 hectares (8.2% of the campus area).

Communal Uses

Health Centre

The university Centre (0.8Ha) is located close to the Administration and Fire Station and the Centre for Development Studies. This facility is meant to take care of the health of students and staff, for minor ailments and emergencies. It should have provision for at least 10 beds, doctors' nurses, etc.

Shopping Facilities

A shopping centre (1.43Ha) is provided for in the Masterplan, The Shopping Centre is located beside the Staff School and across the road from the Academic Core. The shopping facility accommodates provision for bookshop, cafeteria, banks, telephone, and launderette, barbing salon, daily needs, general goods services, post office and other conveniences.

ELECTRICITY SUPPLY

Design Criteria

The proposed electrical services infrastructures design are based principally on:

- I. Safety of life and equipments
- II. Reliability, efficiency and flexibility of the system;
- III. Ease of operation and maintenance;
- IV. Cost of effective- equipment/material specifications and selection with long economic service life; and
- V. Consideration for other services to enhance an overall pleasant outlook based on the above criteria, the electrical services infrastructure proposed for the College has been carried out in accordance with
 - (i) The 16th Edition of IEE Regulations
 - (ii) Chartered Institution of Building Services Engineers Publication
 - (iii) Electrical Supply Regulation of Nigeria and
 - (iv) Ultimate day-time population, residential factors and recreational provision

However the basic areas for electrical infrastructural services provision have been grouped into:

- Electrical power supply distribution network
- Generation and distribution of alternative power supply
- Lightning protection/earthing
- Road and Street Lightning network
- Telecommunication system network

Electrical Power Supply Distribution Network

The Tee-off point for the proposed University high voltage power distribution shall be from the nearest 33kilovolt PHCN grid line. This shall be stepped down to 11 kilovolt pressure for distribution within and around the University complex.

To effect this transformation (i.e. 33 kilovolt – 11 kilovolt) a 3.0 MVA 33/11Kv 50Hz bulk power transformer shall be required complete with all stations ancillaries such as

- o 33Kv gang isolators;
- o 33Kv lightning arrestor; and
- o 11Kv switchgear panel complete with breakers and unit for metering. The outgoing breakers for the switchgear panel shall be multiple to allow for flexibility

Distribution to various sub-stations shall be done via concrete poles. Concrete poles are specified for low voltage distribution network too. For cost effectiveness the selected poles conductors for High voltage and low voltage respectively, while 35mm² shall be employed for Street lightning network. 500KVA/11Kv/0.415Kv distribution transformer shall be employed for sub-station, in conformity with PHCN distribution standards. Termination to buildings and various end users shall be via appropriate Recline cable sizes. The layout of power distribution is as shown in fig. 6.7

The 11Kv Net work shall be in ring system incorporating ring main unit (R.M.U.) for obvious advantages of the system; it improves the distribution schemes as well as power reliability. It becomes easier to isolate defective zones in such occurrence and power restored to the non-defective Zone of the network. It is important to state that distribution of electrical power shall be by both overhead and underground cables.

LOAD FORECAST

Availability site drawings show in details, facilities layout of the proposed university. These are mainly

- Central Administration and Auditorium;
- Sports Area;
- Faculty of Sciences;
- Faculty of Social and Management Sciences;
- Faculty of engineering and Technology;
- Faculty of Health Sciences;
- Institutes and Centres;
- Students Housing;
- Staff Housing;
- Student Centre;
- University Mosque;
- Guest House;
- Conference Centre;
- Staff Club
- Shopping Centre;
- Staff C School
- Health Centre;
- Workshop and Power House
- Fire Station;
- Library and Research Centres;
- University Farm and Gardens; and

Apart from the University farmland and garden areas, load computation for other facilities listed above have been carried out with the following considerations which are common to all. These are:

- Lighting fittings with fluorescent, incandescent and discharge tubes/bulbs as appropriate for 20w, 40w, 250w, & 400w power utilization
- Power receptacle (single & twin sockets) for 300w and 2 x 300w power requirements
- Ceiling fans for 100w
- Air conditions units for 2000w power consumption
- Cooker unit for 4000w utilization
- Water heater for 2000w requirement

- Water pumps for 1500 consumption
- ii. An accurate load requirement could not be ascertained in view of the fact that detailed information on structure and usage of various facilities mentioned above were not available. The only option available for this exercise therefore is estimation per land space of the University complex in question and the proposed facilities indicated on the drawing.
- iii. Total land area inclusive of space earmarked for future development, gardens and university farm approximates $1.4 \times 10^6 \text{m}^2$
- iv. Proposed farmland and Gardens cover only approximately 30% of the total land area and the balance of 70% totalling approximately 980,000m² is earmarked for other facilities listed above.
- v. Adopting a 7.5va/m² for the purpose of projection with 60% utilization for development of this magnitude brings the projected energy demand to 4.5 Va (0.0045KVa) An average load diversity factor of 0.6 is applied for optima power demand.
- vi. Considering an approximate land of 980,000m² computed in)iv) above, brings the optima electrical load demand for the proposed University to $(0.6 \times 980,00 \times 0.0045) \text{KVA} = 2.646 \text{MVA}$
- vii. The above consideration is in due cognizance of normal rates of increase within the first ten (10) years of establishment, the possible agro service equipment and materials that may be installed in the University farm land, as well as the proposed buildings.
- viii. For the total estimated load of the entire university built-up are 2.5MVA transformer would be able to cope with the load. But considering the proposed farmland, conservation area, possible load expansion from the area marked for future development as well as PHCN standard, the next available power Transformer rating of 3.0MVA is recommended. A total of five sub-stations of 500KVA, 11/0.415KV, 50Hz transformer would be required to achieve this.

Generation And Distribution Of Alternative Power Supply

In event of power failure from the supply authority (PHCN) mains, two proposals of alternative power shall be considered in this proposal:

- I. 11Kv Generating set
- II. 0.415Kv Generating set

1. 11Kv Generating Set

This shall generate electric power at 11Kv pressure into the 11Kv switch-gear for distribution into the various sub-stations distribution transformer. 2 No.1.5MVA, 11Kv, 100rpm diesel generating sets shall be appropriate for this distribution.

2. 0.415Kv Generating sets

To allow for selective provision and decentralization of power generation, 0.415 generating set shall be provided as alternative power source at each transformer sub-station complete with change-over accessories.

General Lightning Protection/Earthing

Building that are at height above risk index value require consideration for lightning arrestors.

Also, in our days of information technology with the use of modern sophisticated equipment and gadgets (Computers etc) there is therefore the need to have a perfect lightning preventors and earthing.

To achieve this, an array of non-radio active indelec lightning preventor shall be included in this proposal.

These shall be mounted on a 15m steel pole and arranged to provide needed protection around the academic area, information technology building, and residential areas.

- I. Appropriate copper tapes and earth electrode shall be specified for the grounding of the lightning preventors at various earth points for effective protection.
- II. Earthing systems are proposed to protect equipment as well as lives and properties. Central earthing as well as individual eathing system are recommended in this proposal for arrears like electrical power switch room, transformer sub-stations, generating plants as well as individual low voltage distribution boards in various buildings etc.

Road and Street Lighting Network

Road and street lighting design becomes pertinent in view of the need to provide well-lit roads and streets in the campus at night and dark hours of the day. This shall be done in accordance with illumination Engineering Society (IES) code and installation shall be as follows:

- I. Luminaries mounted on distribution poles (single and double)
- II. Luminaries mounted on complete street lighting poles with single and double arms as appropriate on all major roads for effective lighting coverage; and
- III. The average span of the poles shall be 45m

Generally, concepts of single sided arrangement for arterial roads and double sided pole with double outreach arrangement (as in ii) on the median for major roads shall be adopted. The street light

control panels shall employ photocells and this shall be located in controlling sub-stations. (see street lighting details)

In the choice of street lighting fittings two requirements are specified. Luminaries so selected shall be equipped with:

- a) Glare free refraction for easy cleaning/maintenance
- b) Internal refractors for good optical performance

Generally, choice of fittings shall be weather proof and vandal resistance type complete with lamps.

TELECOMMUNICATION NETWORK SYSTEM

- I. With the advent of GSM and other private operated wireless telephone, communication problems in Nigeria are gradually getting resolved. Possibility of one or more of the PTO's to establish a base station within or around the college campus can not be overruled in view of the envisaged large volume of subscribers in the community. However, for the purposes of Administrative use and interdepartmental communication this proposal shall include a distribution network capable of accommodating a minimum of 25 trunk line and 300 extensions.
- II. Distribution frames (MDF/PABX) for the Networking shall be so arranged to ease the distribution. Specifications for the main Distribution Frames, number of outlet points as well as actual location of boxes and cabinets shall be effected after an in-depth survey and space function has been carried out.