

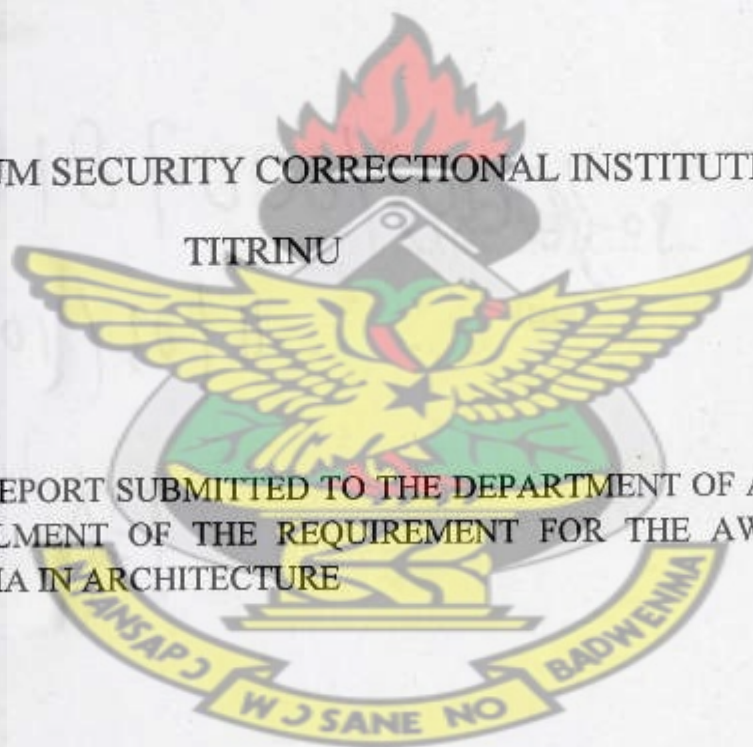
**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND
TECHNOLOGY, KUMASI**

COLLEGE OF ARCHITECTURE AND PLANNING

DEPARTMENT OF ARCHITECTURE

KNUST

**HIGH MEDIUM SECURITY CORRECTIONAL INSTITUTION,
TITRINU**



**A DESIGN THESIS REPORT SUBMITTED TO THE DEPARTMENT OF ARCHITECTURE
IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF POST
GRADUATE DIPLOMA IN ARCHITECTURE**

BY

**KWAKU LETSU KEDDEY
(POST GRADUATE DIPLOMA)**

MAY, 2009

DECLARATION

I declare that I have personally under supervision undertaken the design thesis herein



Kwaku Letsu Keddey

18-09-09

Date

I hereby declare that this work is an original research undertaken by my student and has been done under my supervision



Mr G.F.A Olympio

(Supervisor)



18-09-09

Date

Prof. G.W.K Intsiful

(Head of Department)

Date

DEDICATION

This design thesis report is dedicated to my parents, Mr E.K Keddey and Mrs Rose Keddey for their immense support and encouragement in my study of Architecture.

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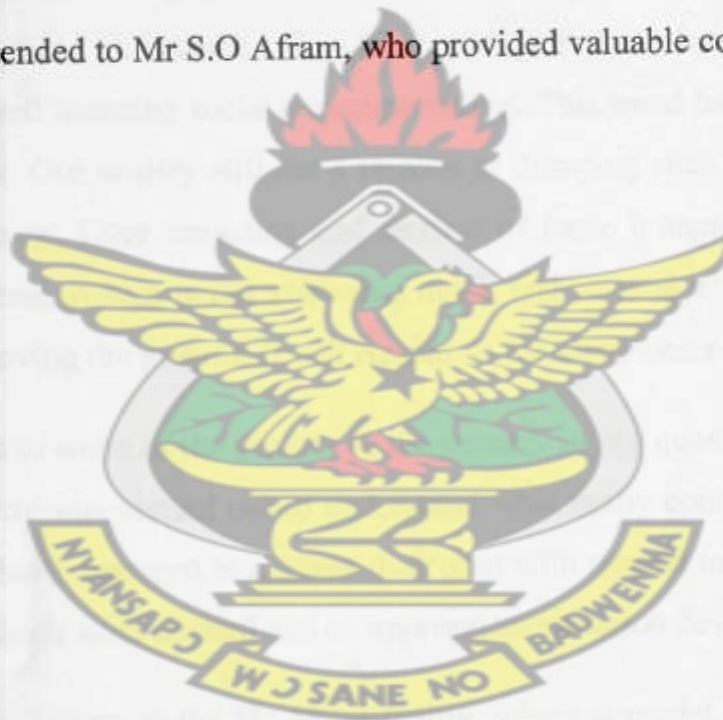
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Specific thanks are due to D.S.P Yaw Mensah of the Ghana Prison Service, for the tour of Nsawam Medium Security Prison and extensive discussions of the Penal System in Ghana.

Considerable credit must also be given to Mr Steve Oosthuizen, Deputy Director of the South African Prison Service for providing information which contributed to me having a better understanding of prison design.

Finally appreciation is extended to Mr S.O Afram, who provided valuable comments at all stages of the report compilation.



ABSTRACT

Prisons have been in existence for centuries, as a means of punishing citizens who have committed crimes, and yet in our world today crime is still on the increase. A perfect solution to crime will still evade us since the root causes have not been dealt with appropriately but let it not be said that Prisons don't have a role to play in the fight of crime.

Prison designs have taken a different trend, doing away with the ugliness, vulgarity and indifference which was an intrinsic element in earlier designs. Reformation, re integration and rehabilitation are philosophical directions being taken today. Prisons have become places of humane aspirations and well meaning social experimentation. This trend has not caught up well with the Ghanaian society. Our society still see's prisons as dumping sites and are unmoved by what really goes on in there. Over crowding and neglect of basic human needs characterizes Ghanaian Prisons. The penal system is not achieving much and as long as revenge remains the philosophical direction moving the prisons, it will remain so for many years to come.

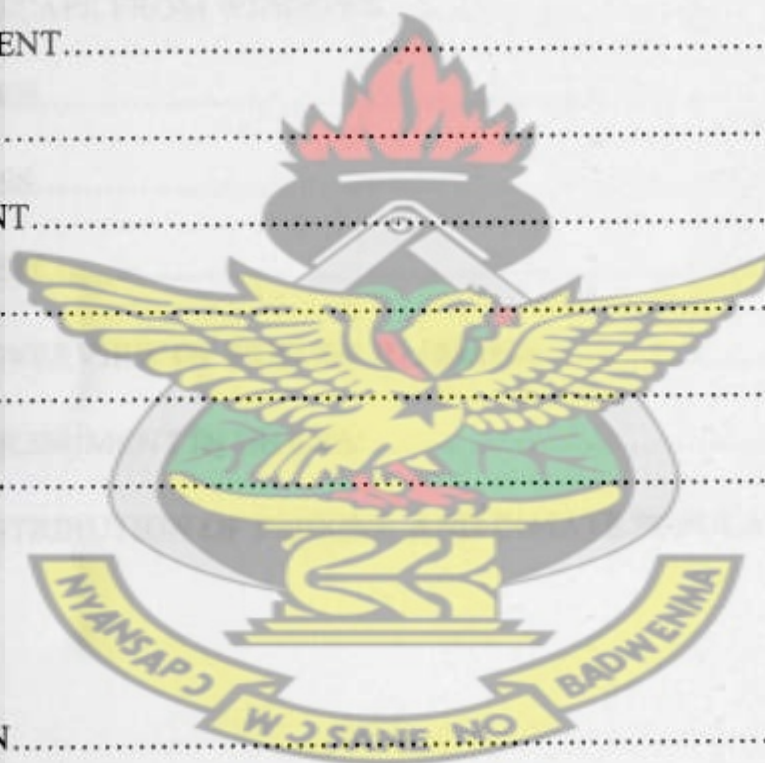
This necessitated my visit to some of the prisons in the country in my quest to find some sort of remedy. An extensive study was carried out to understand what really constitutes a correctional facility. Some countries have managed to achieve their goal with respect to turning inmates into model citizens. Their methods were studied and an appropriate variation developed for Ghana.

A site was then picked at Titrinu in the Ho Municipality, where a model Correctional Facility designed based on my research will be sited. This functional facility will correct the draw backs in the design of correctional facilities in Ghana.

This will give the government and concerned citizens an insight of the steps to be taken in our goal to achieving an effective Penal System.

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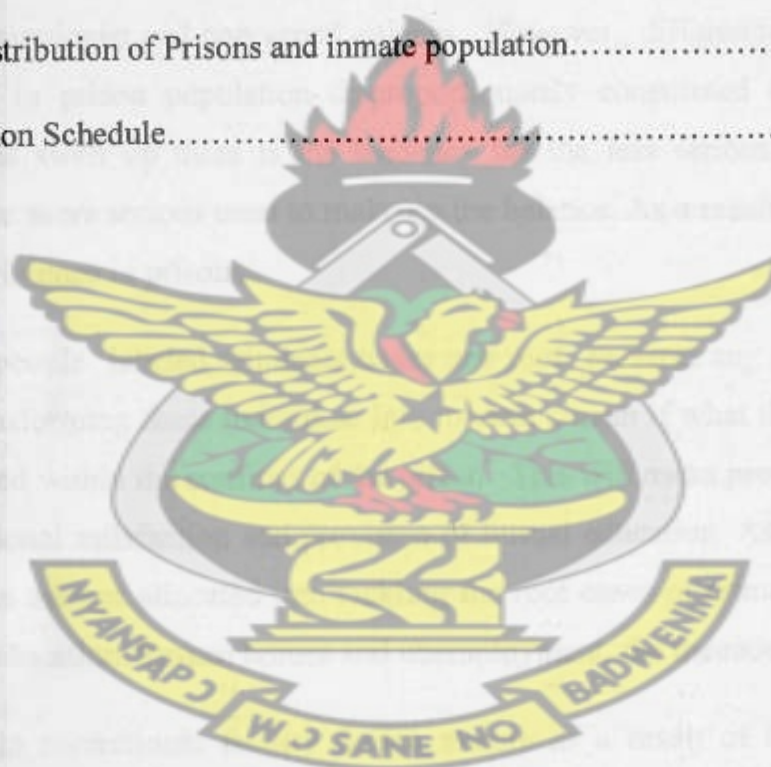
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CHAPTER ONE

1.1 INTRODUCTION

A society is judged by the quality of its prisons and an enlightened society is judged by the treatment of its prisoners. Any member of society who commits a crime is punished accordingly, mainly with a prison sentence, his liberty is taken away but the human essence still remains. Prison walls are what separates the prisoner from freedom but prison walls must not come between the prisoner and human dignity. These are the words of Aaron Baral, President of Israeli high courts.

It is an undeniable fact that many countries of the world have been battling crime for ages. Some have resorted to harsher penalties including longer sentences for criminal activities as advocated by many criminologists and concerned citizens. However, differential access to legal assistance has resulted in prison population disproportionately constituted of the poor and minority, and as prisons swell up there is the tendency for the less serious offenders to be released first, leaving the more serious ones to make up the balance. As a result there appears to be increasing levels of violence in prisons.

Having this group of people labeled criminals under one roof presents any government with the opportunity of transforming these individual into model citizen if what they lacked in the outside world is provided within the confines of the prison. This will mean proper medical care, skill acquisition, nutritional satisfaction and provision of formal education. As long as they are neglected and resources are not allocated into tackling the root causes of crime: poverty, racial discrimination, lack of education, broken homes and unemployment, the menace still remains.

There is a new trend in correctional facility design mainly as a result of the philosophical direction of reformation, rehabilitation and reintegration adopted by many countries. It is definitely not enough to put a man behind bars and expect all to be well, for steel and concrete alone do not ensure successful outcomes.

Designers are creating more humane environment for medium and minimum security facilities with the use of softer materials like carpeting, wooden doors, tiles, addition of more colour, better acoustics and more natural lighting in cells. Softer materials serve as an incentive for

prisoners to be responsible for their surroundings. Attention is also been paid to the needs of correctional officers and others who toil daily in correctional facilities. Well equipped exercise areas, changing rooms and other amenities are becoming more common as a way to create less stressful working environment

1.2 PROBLEM STATEMENT

The situation in Ghana with regards to prisons is not the best. The treatment of prisoners can be likened to what existed 200 years prior to the sixteenth century in Europe where the main goal of imprisonment was revenge. Though some of the Prisons like Nsawam Medium Security Prison represented advanced thinking for their time, they offer an inappropriate response to today's correctional ideals.

With the Police far too anxious to arrest persons and keep them in remand as well as having a situation where there is too great a tolerance for adjournment in our court system, the situation gets worse by the day. The worse is that, there is too little concern that prisoners are not been produced and examined on designated days for flimsy reasons resulting in the remand population growing at a geometric progression. There is as such an unbearable load on the few obsolete, low capacity prisons in the country.

Yet very harsh sentences are given to criminals in this country, which in itself, is not bad if results are achieved but the situation remains that many receive inadequate treatment. They are filled with rage and if we consider that over 95% of prisoners rejoin society at a point in time, then the high rate of recidivism is understandable.

Research indicates that there is no relationship between length of imprisonment and recidivism, Hence the need for a second look at state of prisons in this country.

1.3 JUSTIFICATION

1. High levels of overcrowding in majority of prisons in Ghana. Authorized capacity of the 42 prisons in Ghana is 7875 inmates but the population as at 06/02/2009 was 14,023
2. Obsolete prisons which clearly do not meet United Nations Standard. There has been no purposely built prisons in Ghana since 1962 except for the Ankaful Maximum Security prison which is yet to be operational.
3. New direction by the Ghana Prison Service to reform, rehabilitate and reintegrate inmates.

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1.4 OBJECTIVES

1. The project seeks to provide a modern prison facility to meet functional operation ideals of the present day
2. To ease over crowding by building a high capacity Prison

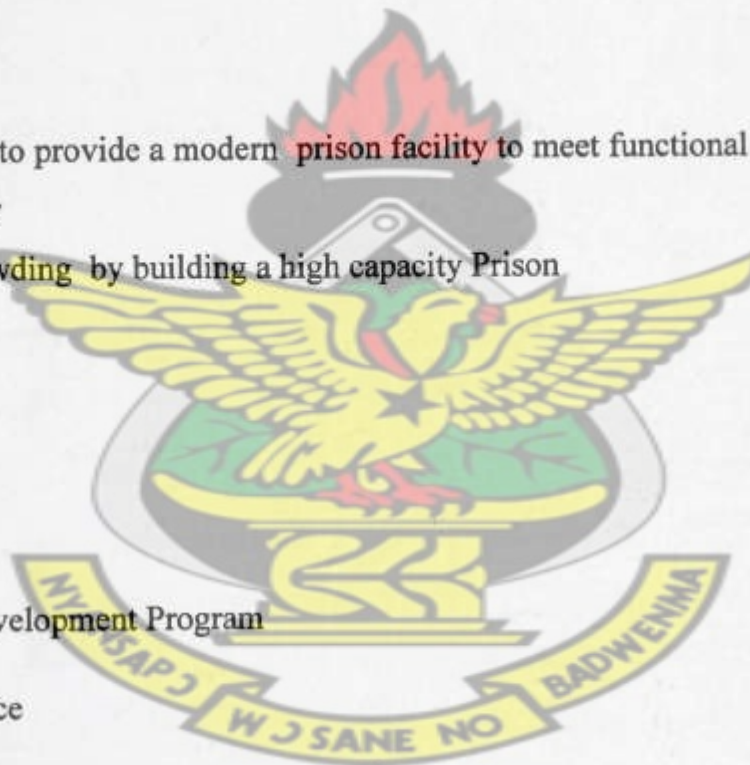
1.5 FUNDING

United Nations Development Program

Ghana Prison Service

African Development Bank

Letch Foundation



1.6 RESEARCH METHODOLOGY

The research methods for data collection to be utilized can be put under 2 categories namely primary and secondary sources

The primary sources being

Consultations

Interviews

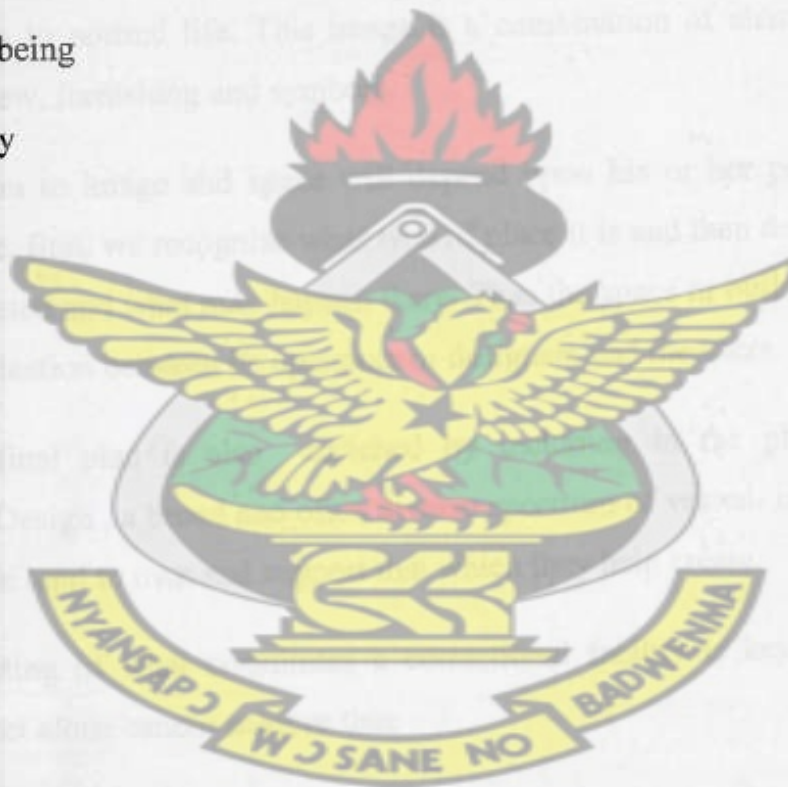
Visual surveys

The secondary sources being

Information from library

World wide web

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1.2 FACILITIES OF A CORRECTIONAL INSTITUTION

1.2.1 PUBLIC LOBBY

The public lobby is the public lobby of a Correctional Institution. It is a reception point for visiting family members, friends, lawyers, clergy and other visitors.

LITERATURE REVIEW

2.1 INTRODUCTION

To remain consistent with professional, humanitarian and legal requirement, loss of liberty- in and of itself is punishment enough, further deprivation and degradation could be expected to embitter inmates, almost all of whom will return to society one day. There are a lot of components that help make a correctional facility a successful way of changing criminals to model citizens.

The physical appearance of the correctional facility and its spaces creates its image and indicates its degree of closeness to normal life. This image is a combination of elements such as size, shape, colour, light, view, furnishing and symbols.

An individuals reaction to image and space will depend upon his or her past experience and reasons for being there, first, we recognize what type of place it is and then develop expectations of how we may be treated and what may happen there. Thus the space or building itself serves as a medium of communication between its operators or designers and the users.

The quality of the final plan is also enriched by including in the planning process of Correctional Facility Design , a broad and often diverse spectrum of vested- interest groups from the community. People tend to own and support that which they help create.

A greater understanding of what constitutes a correctional facility is key to any successful design and the architect alone cannot achieve that.

2.2 FACILITIES OF A CORRECTIONAL INSTITUTION

2.2.1 PUBLIC LOBBY

Like many other Institutions the public lobby of a Correctional Institution serves as a reception point for visiting family members, friends, lawyers, clergy and a list of others.

It stands as the first checkpoint and processing area for the public who are scheduled to visit inmates and those scheduled to meet with administrative staff for official business. Upon entering the public lobby the visitor is required to register with a receiving officer, who will screen and admit persons into either the administrative office area for legitimate business with the staff or will admit visitors into the facility after the approval process, including metal detection and possible search. Its operational objectives are mainly to maintain the security of the facility with the screening and processing of visitors prior to their admission into the facility's secure perimeter and visitation areas. Contraband is thus prevented from entering the facility. It also coordinates the processing of visitors in and out of the facility in an orderly, safe and controlled manner while projecting a professional appearance and tone to all those entering the facility.

Some of the prototypical spaces of a public lobby are the washrooms, locker rooms, public telephones, Public waiting area and information center.

2.2.2 INMATE VISITATION

Frequent visits by family members and friends can help the inmate maintain family unity and ties to the community. A visitation program is therefore put in place to enable inmates receive visitors. This goes a long way to relieve the inmate of some of the psychological effects of incarceration and paving the way for positive attitude for reentry into society. Strengthening inmate attitudes can improve the operations of the institution by reducing tension. There is a total separation of visitor and inmate access to the visitation area for reasons of security and safety of the visitors.

The operational objectives of this unit is to

1. Provide a secure environment for lawyers, clergy persons and criminal justice personnel to meet with inmates.
2. Prevent contraband from entering the main facility from within the visitation area
3. Provide contact and non contact visitation as appropriate for the inmate population

Visitors deposit all personal belongings in lockers off the entry area and are screened

2.2.3 HEARING AND INVESTIGATION

This component is provided to enhance an orderly operation of the institution by ensuring that reasonable and necessary disciplinary standards of conduct are prescribed and enforced and by providing for a procedurally efficient and fair system of managing inmate proceedings for other criminal justice agencies. Hearings provide for prompt, fair, safe, orderly and efficient conduct of the releasing authority, disciplinary, court and other fact-finding and decision making proceedings.

Investigation provide for prompt, thorough and professional investigation and reporting to facilitate discipline and criminal proceedings, the resolution of inmate claims and provide needed data for administrative action and policy determination. It has its operational objectives as follows

1. To facilitate other related criminal justice proceedings, thereby reducing transportation time and cost
2. To provide a dedicated space for conducting disciplinary hearings
3. To provide a dedicated space for facilitating release protocols
4. To provide a fair, neutral and appropriate setting in which to conduct judicial and facility due process hearings

Evidence storage room, Public waiting area, Hearing room, Inmate holding cell and search rooms are some of the prototypical spaces.

2.2.4 EXECUTIVE ADMINISTRATION

The executive administration provides leadership and support for a correctional institution to operate in an orderly and effective manner.

The operational objectives of the executive administration are

1. To facilitate conduct of business
2. Project image to public visitors
3. Functional use of administrative spaces
4. Appropriate configuration for functions

Conference room, interview room , Payroll office, Storage room and Inmate account station are some of the prototypical spaces.

2.2.5 CASE MANAGEMENT AND RECORDS

Case management develop inmate records. These records maintain the most accurate information on each inmate including background in order to successfully track the inmates progress through the system. The records department is assigned the responsibility of providing timely and accurate information to individuals responsible for making decisions regarding inmates and the operation of the facility.

Operational Objectives

1. Develop an inmate record system consistent with state requirements and the facility policies and procedures
2. Maintain a secure records storage area where all active and inactive inmate case records will be stored
3. Maintain pertinent information reflecting an inmate's institutional adjustment and behaviour history
4. Provide safeguards to protect an inmate's right to privacy and prevent unauthorized disclosure of confidential information
5. Encourage inmate access to/responsiveness of case workers since they represent their lifeline to the facility administration, program committee and the outside world.

2.2.6 STAFF DEVELOPMENT

The purpose of this area is to provide staff with the necessary resources for continued growth and professional development through pre service and in-service training. These services include training in the following areas of instruction: general institution policy, training for specific job assignment, training in electronic communication, human relations and dynamics, emergency procedures, cultural diversity issues, weapons and restraint, supervision, self defense, and security issues

Operational objectives

1. Provide adequate training to facility staff
2. Promote staff development by providing access to training opportunities and materials
3. Provide staff with physical fitness opportunities through fitness equipment and training
4. Provide a specific area for the dissemination of information to staff
5. Provide an area for staff to change into/out of uniform at shift changes.

Prototypical spaces: wellness center, Toilets, showers and lockers, Armory readiness room, Assembly room, training equipment storage and training rooms

2.2.7 INTAKE/TRANSFER/RELEASE

All inmates entering a detention or correctional facility must be legally admitted to the system by proper identification and physical condition, to protect the institution and inmates alike. This area involves the orderly receiving, identification, screening and processing of all new inmates entering the facility. In general first admissions are screened for medical conditions, identification records taken or updated and property/clothing exchanged

The transfer and release area is used for processing inmates that are going to court, being transferred to another facility and those being released from the facility

Operational Objectives

1. Accept custody of newly admitted inmates and ensure that they are properly and legally received into and eventually discharged from the facility
2. Thoroughly search all new inmates and inventory their property
3. Fingerprint and photograph all new inmates
4. Store all permitted inmate property and properly dispose of property not permitted for storage
5. Provide inmate orientation for their understanding of the facility's rules and regulation
6. Provide inmate with institutional clothing, bedding and personal hygiene items
7. Prepare and store inmate records and legal documents associated with their incarceration.

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Prototypical spaces: Clothing exchange rooms, search rooms, Group holding cell, individual holding cell, Clothing storage rooms, Medical screening room and property storage.

2.2.8 COMMUNICATIONS

These systems are provided to assure the necessary communications throughout the entire institution in order to maintain an orderly operation. Systems that are currently available must be flexible, serviceable, upgradable, expandable and designed to maintain the security and privacy requirements of an institution. They must operate under the most intensive of emergency situations and therefore require 100% backup electric power. A communication system should be capable of paging to the general population and to individual staff on a personal emergency basis

Operational objective

To provide secure operational equipment space for the installation and maintenance of essential security, safety and communication equipment

Prototypical spaces: Main distribution frame, Intermediate distribution frame, Main computer frame, Recording equipment room, safety equipment room and communication equipment room.

2.2.9 MASTER CONTROL CENTER

This is the life line and nerve center of the institution. It is responsible for successful and trouble free operation. It oversees and monitors all facility operations and communications, including life- safety emergency equipment, procedures and exiting. It electronically controls and monitors all movement in and out of the facility

Operational objectives:

1. Provide 24-hour control of all external security systems, including all entrances and exits
2. Provide 24 hour control of all internal security systems, controlling movement from one area to another. Monitor all alarm and CCTV systems
3. Provide 24 hour control of all life safety monitor and control panels
4. Provide 24 hour coordination and communication of all emergency responses to events and situations in the facility.
5. Maintain accountability for all security keys used for access to restricted areas of the facility and maintain key control procedures.

Prototypical spaces: Master control center, Armory, key maintenance and general storage rooms.

2.2.10 CUSTODY OPERATIONS (COMMAND CENTER)

This component is responsible for the total security operations of the institution. The commanding officers, including the assistant warden of operations, heads this department and is responsible for all staff assignments and monitoring of activities

Operational Objectives;

1. Ensure compliance with the facility established policies and procedure for all line staff
2. Provide line staff with assistance and guidance in the completion of their assigned duties
3. Conduct routine safety and security inspections to ensure a high level of safety and security

4. Monitor and improve employee behaviour to create a high level of staff professionalism
5. Provide opportunity for staff improvement and development with training facilities
6. Conduct emergency operation drills to ensure prompt and appropriate response to all emergency situations.

Prototypical spaces: Security squad room, Secured evidence storage, reception area, conference room supplies room.

2.2.11 GENERAL INMATE HOUSING

The housing area for the inmate population is the heart of every institution since it provides the living area for inmates for the majority of a typical day. Numbers also typically represent 50 percent or more of the total area required for the facility. Thus this area deserves considerable time and attention to assure proper design. When dining occurs in the dayroom, it is often preferred to design the tables for use for passive recreation activities, such as reading and table games as well.

Operational objectives;

1. Provide a safe and secure environment for inmates confined to housing units
2. Provide manageable sized groups of inmates in each housing unit
3. Provide separation of inmate types by classification determined at admissions
4. Provide programs and services to inmates within their housing unit and/or adjacent it to limit movement.
5. Provide appropriate number and quality of staff to efficiently operate each housing unit
6. Provide housing unit design that meets all applicable local and state standards and life safety requirements
7. Provide staff and inmate with an environment that is free of physical and psychological danger.
8. Provide housing unit environments within the overall facility capacity with different privilege opportunities to encourage a positive attitude and behaviour and to discourage unacceptable or disruptive behaviour.

Prototypical spaces: Dayroom, Officers control station, laundry facilities, program space, group shower areas, individual cells and medical exam/ screening room.

2.2.12 SPECIAL INMATE HOUSING ○

In many institutions the general population is represented by approximately 90 percent of the total population. The other 10 percent, on average, has special needs. The typical categories of special needs range from protective custody to punitive segregation

Operational objectives

1. Provide a safe and secure environment for inmates confined to special housing units
2. Provide manageable sized groups of inmates in each housing unit
3. Provide appropriate number and quality of staff to efficiently operate each housing unit
4. Provide housing units with a less normative environment and without privilege opportunity to encourage movement toward a change in attitude and behaviour
5. Provide staff and inmates with an environment that is free of physical and psychological danger

Prototypical spaces: Individual cells, dayroom, Laundry facilities, general storage, showers and officers control station.

2.2.13 UNIT MANAGEMENT

The staff assigned to this area is responsible for all inmate activities associated within the housing unit population located there

Operational objectives;

1. To provide ongoing personal involvement with the conditions, needs and activities in the housing areas that comprise the unit management area
2. To provide for the safety of officers and inmates by facilitating communication with the unit

3. To provide a level of understanding and communication with inmates in the unit that is not otherwise possible in a large facility

Prototypical spaces: Unit Manager office, Assistant unit manager office, staff offices, meeting room and laundry facilities.

2.2.14 INMATE/SOCIAL SERVICES PROGRAM

Many institutions provide this important service to inmates from outside community-based groups in addition to facility staff. These inmate-social service program staff and volunteers work with inmates by providing reentry programming, coordination of legal activities and educational and cultural opportunities. This program is designed to create an improvement to the quality of life while serving time in a correctional facility. A home base area for volunteers should be provided in the education area on the inside of the secure perimeter.

Operational objectives;

1. To inmate access to positive, rehabilitative reinforcement activities and ties to the community
2. To prepare inmate for reentry into the community.

Prototypical spaces: small multipurpose room, group activity room, social services director's office and clerical/support area.

2.2.15 EDUCATION

This area provides spaces for a variety of inmate activities oriented toward self improvement, education and group interaction. Services include education, vocational education, library services, and administrative/support services.

Academic and vocational education are given to provide inmates with competency-based functional mathematics, reading and writing skills.

Library services are provided for comprehensive library services for the inmate population including reference, information referral, interlibrary loan, periodicals, and audio visuals.

Recreational reading materials appropriate to the interest and reading levels of the inmates are also provided.

Operational objectives

1. Provide classrooms with supplies and materials to support the academic program
2. Provide programs of interest to inmates
3. Provide basic literacy assessment and remedial academic training for interested inmates
4. Provide community involvement with the utilisation of volunteers

Prototypical spaces: Teacher preparation area, general storage, Academic classrooms, General library, Audio visual room, Vocational education classrooms, Tool storage, material storage and testing cubicles.

2.2.16 RELIGIOUS SERVICES

This area should provide an inmate with an opportunity to express their religious beliefs in a space conducive to this quiet activity. The right of religious expression is a constitutional guarantee and courts have upheld these rights of inmates to engage in this activity during their confinement. The space should provide flexibility for many religious dominations with a character of environment that is serene

Operational objectives:

1. Provide inmates with regularly scheduled religious access to programs to fulfil their individual spiritual needs and requirements
2. Provide inmates with the opportunity for individual religious , spiritual and crisis-prevention counseling
3. Provide an appropriate architectural environment to conduct these activities
4. Provide and encourage community religious volunteers to support the facility's religious programs
5. Accommodate a variety of religious denominations/orientations with acceptable physical space.

Prototypical spaces: Religious storage room, multipurpose chapel, meeting rooms, chapel and reception area.

2.2.17 INDUSTRY

Industry programs provide the benefit for comprehensive work to the inmate population who are willing and able to work. Generally this space should be designed with flexibility in size and shape to provide for a variety of industrial activities

Operational objectives:

1. Provide inmate with work opportunities with industry programs similar to those available in the community
2. Provide inmate with industry training opportunities, with associated vocational programs
3. Provide useful products for use by government agencies that can be sold to cover the cost of running the industry program

Prototypical spaces: Industry production area, Raw material storage, Finished product storage, secured tool storage, search room and industry clerical support staff offices.

2.2.18 RECREATION

This activity is a fundamental program in providing a physical activity to the inmate population. Providing inmates with constructive means for relieving and challenging their tensions inherent in institutional living can provide for an improvement in the operation of a facility. Recreational activities provide inmates with an opportunity to improve their physical and mental health, develop good sportsmanship and improve morale.

Operational objectives

1. Provide inmates with a variety of healthy and safe recreational activities
2. Provide inmates with leisure time recreational activities
3. Maintain inmate safety and security in delivering these recreational programs

4. Provide inmates housed in segregation housing the opportunity for at least one hour of daily recreational activity.

Prototypical spaces: Weight lifting area, Athletic equipment storage room, outside recreational activities and chair storage room.

2.2.19 HEALTH SERVICES

A wide range of medical and mental health services are normally provided for the inmate population to assure care and treatment opportunities and to contain potential contagious diseases. The health services area generally consist of an out patient medical clinic, medical health inpatient infirmary and a mental health infirmary. Each of these areas is interrelated in terms of operations, require free access throughout the area by staff with controlled access to each by inmates and observable from a controlled position

Operational objectives(medical)

1. Provide medical screening of all inmates entering(admissions) the facility to determine medical condition requiring special needs or treatment
2. Provide inmates confined to the facility with medical and dental general services in a secure environment
3. Provide inmates with special medical needs in separated housing units
4. Provide inmates with continual medical assessment to promote early identification of problems/conditions in support of medical care and maintenance programs
5. Provide inmates with emergency medical and dental services
6. Provide pharmacy, laboratory and other support functions in the day to day health care of the inmate population
7. Provide appropriate medical , dental and mental health staff for inmate examination and treatment services
8. Provide inmates with legally approved medication as required for treatment
9. Provide physically disabled inmates with continual health assessment and appropriate care

10. Provide inmate with adequate nutrition and therapeutic diets as medically required
11. Provide for functional and operational interrelationship of the three areas of medical clinic, medical/mental housing, and medical administration

Operational objectives(mental)

1. Provide inmates with continual mental health assessment and treatment for serious mental disorders
2. Provide assessment to prevent potential suicides and homicides
3. Provide aggressive inmates with appropriate isolation and treatment
4. Assess sudden inmate behavioural changes that pose a threat or danger to institutional safety and order
5. Provide inmates who arrive at the institution with mentally impaired conditions with evaluation and treatment
6. Identify inmates with developmental disabilities and provide them with proper classification and referrals
7. Provide inmates those who require psychopharmacological intervention and programs with medication review and treatment
8. Provide 24 hour supervision of inmates requiring crisis intervention.

Prototypical spaces:

Medical administration: Dental storage, dental office, Conference room, general medical offices, and records/files/clerical room.

Medical clinic: Inmate medical waiting, dental waiting, secure inmate waiting, Examination rooms, trauma room, Physical therapy, tub room, laboratory, X ray room and dental examination rooms

Medical infirmary: Pharmacy, officers duty station, Dayroom, laundry room, pantry, Infirmary ward, Individual patient rooms and general storage.

2.2.20 FOOD SERVICES

This component should provide wholesome, nutritious meals to inmates, three meals per day, seven days a week. Provide therapeutic diets meals or special meals to inmates requiring diet therapy for medical reasons and religious reasons, respectively.

Operational objectives:

1. Provide inmates with nutritious meals three times daily, seven days a week
2. Provide inmate requiring special therapeutic diets for medical and /or religious dietary restrictions with appropriate menus
3. Provide and ensure all meals are prepared and delivered under sanitary conditions, consistent with regulation of the country
4. Provide inmates with work opportunities in food service, an important cadre assignment.

Prototypical spaces

- a. Receiving and delivery: dock, receiving refrigerator, receiving freezer, receiving dry food/ supply storage, secure storage, walk in freezer, meat freezer, walk in produce refrigerator, walk in meat refrigerator and cool commodity storage
- b. Production: Vegetable preparation/ cold food mixing, Hot food production and bakery
- c. Sanitation: pot and pan washing, dish washing and stores
- d. Cafeteria: Serving line, dining rooms, control platform and staff dining rooms
- e. Staff Area: Managers office, chef's office and inmate employee break room

2.2.21 COMMISSARY (CANTEEN)

The commissary or canteen provides inmates with items for purchase for personal use and convenience. The commissary sells items not routinely issued to inmates by the institution such as candy, cookies, soda, deodorant, greeting cards, radios and sundries.

Operational objectives:

1. Provide inmates with a procedure to purchase approved items for personal use
2. Maintain an automated inmate account system for order deduction

3. Maintain special accounts for profits obtained from commissary operations for purchasing items for inmate welfare, such as recreational equipment
4. Mitigate against providing unfair advantage to wealthy inmates by limiting the total amount of weekly, monthly purchases.

Prototypical spaces: Inmate work area, Staff support room, storage area and receiving/staging

2.2.22 LAUNDRY

Provide adequate laundry services for all inmates

Operational objectives

1. Provide a procedure for regularly scheduled collection of inmate clothing, bedding and towels for cleaning
2. Provide inmate distribution of clean clothing, bedding and towels on regular basis.
3. Maintain an adequate supply of clean inmate clothing, bedding and towels to support the facility's daily operations and intake facilities
4. Provide work opportunities to inmates who express interest in an active work program.

Prototypical spaces: Inmate break area, laundry office, secure detergent storage, mending area, Laundry area (washers and dryers) and staging area.

2.2.23 PHYSICAL PLANT

The physical plant is the energy center of the institution. Included in this area are the boilers, chillers, electrical switch gear to produce power, water and electricity to the institution

Operational objectives:

1. Provide all essential utility services to all areas of the facility 24 hours a day, 7 days a week, 365 days a year
2. Maintain security control of this area.

Prototypical spaces: sewage treatment plant, water treatment /storage, Emergency generator rooms, Electrical room and mechanical equipment room.

2.2.24 TRANSPORTATION/SECURITY PERIMETER ACCESS

Safe, secure, and timely transportation and of inmates to and from the institution is provided from this component. Transportation needs of staff, public officials, visitors and vendors are the responsibility of the staff who are assigned to this department.

Operational objectives:

1. Provide a secure area for transportation vehicles to unload inmates being admitted to and transferred from the facility
2. Provide a secure area for transporting vehicles entering the secure perimeter with a sally port of size for the largest anticipated delivery vehicle.
3. Provide convenient parking areas for staff, visitors, and handicap-accessible, public transportation discharge and loading areas.

2.3 PERIMETER SECURITY SYSTEMS

2.3.1 Taut wire:

Consist of an array of sense wires under tension, with each wire connected to a sensor located at the midpoint of the wire. The spacing of the wire is selected such that an intruder must displace the wires in order to pass through the array. Upon deflecting the wires greater than a predetermined amount, the sensor is activated and an alarm signal is generated.

2.3.2 Microwave systems :

Provide detection by sensing changes in the received radio frequency carrier resulting from disturbances in a radio frequency field. Typically operate in the 10 and 24 Ghz frequency

2.3.3 Seismic geophone- provide detection based on processing electrical signals generated via discrete geophone. Geophones generate electrical signals when relative motion exist between a permanent magnet and a suspended sense coil. The geophone translates motion or vibrations of the medium to which the geophone is attached to electrical signals. Geophone translate only vibrations which exist in the plane in the plane of the axis of the sense coil.

2.3.4 Ported cable:

Provide detection by sensing variations in electromagnetic surface waves generated in the VHF radio spectrum. Certain systems employing this detection concept generate the surface wave via a leaky transmission line excited by a signal source operating in 40 MHZ region. The signal coupled to a receiver cable has characteristics which dictated by the dielectric constant between the cables and the conductivity of the materials in which the lines are buried. Objects of a certain size and composition, such as a human body, entering the field change the effected dielectric constant and this results in perturbation in the signal sensed by the receiver cable. These perturbations are detected, processed, and the alarms are generated if these disturbances characterize the presence of an intruder.

2.3.5 Electret Cable:

Employs the principle of a continuous microphone cable to detect noise generated on a fence. The noise is processed by observing the signal magnitude and the number of detector threshold crossings within a selected time frame. The system consist of a sensitized cable attached to a fence using cable ties. The cable is terminated in a signal processor.

2.3.6 Infrared Systems:

Provide detection by sensing a change in the received level of infrared energy at a receiver. The zone of detection is defined by a vertical plane between the transmitter and receiver posts.

2.3.7 Electromagnetic cables:

Incorporate a strain sensitive technology within a cable configuration to affect a linear transducer. The cable system detects fence movement and possesses the cable signals to generate alarms based on signal characteristics.

2.3.8 Post Mounted Electromagnetic Line:

Provide detection by sensing an unbalance in an electric field. The electric field is typically established by exciting a transmit line and sensing the field using one or more sense lines or by sensing current changes resulting from changes in the dielectric constants.

2.3.9 Video Motion Detection:

Employs advanced signal processing techniques to assess the video field and define the presence of an intruder. After generating an alarm condition, the video may be automatically displayed on a monitor to provide security staff with visual assessment of the alarm event.

2.3.10 Electric Fence:

Typically consist of an array of electrically charged wires which are post mounted and located between the interior and exterior perimeter fences.

2.4 SECURITY WALLS

Security walls are one of the most important components forming a perimeter. Walls must be constructed of materials that are impenetrable and can withstand environmental decay, as in long term exposure to salt and corrosive elements. All reinforcing must be continuous, in the horizontal and/or vertical plane

Poured in place concrete or precast concrete should have a minimum compressive strength of 4000 PSI and have a minimum thickness of four inches with an amount of reinforcing required for structural integrity

Concrete masonry unit should be reinforced based on the degree of security required

Maximum security walls should fill the voids with grout and provide no. 4 reinforcing steel bars at 8 inches on center, both horizontally and vertically

Medium security walls should fill the voids with grout and provide no. 4 reinforcing steel bars at 16 inches on center vertically

Minimum security walls should fill the voids solidly with grout only. In both medium and minimum security walls, joint reinforcement should be provided at 16 inches on center vertically.

Steel bars security walls: they are constructed of tool resistant steel and welded to embedded steel plates in adjacent walls. They provide complete visibility into cells.

Steel Panels: should have a minimum of 3/16 inches thick or could be fabricated of hollow metal steel similar to door construction

Wooden wire mesh: The mesh is welded to a minimum of 10- gauge steel tubes which in turn are welded to supporting walls or other members

Security gypsum board: by it self does not provide any type of security. It is thus used in conjunction with a heavy expanded wire between layers to achieve some level of security. Typically used where inmates are occupying spaces for short duration.

Glass blocks: are used to provide natural light into space and for clear or obscure visibility from interior spaces to the outside. Glass blocks are manufactured in two types: a hollow unit two-wall product and a solid one- piece product. Hollow- type units are used only for non secure areas where preventing wall penetration is not a requirement. Solid type glass blocks can be used in secure areas with the product strengthened for security by placing the units into a wire window frame assembly provided with steel grids that allow the units to be inserted and mortared in place.

2.5 SECURITY CEILINGS

The intent of a security ceiling is to prevent the inmate from gaining access into an interstitial space located between the ceiling and structure and /or for hiding contraband and weapons. Exterior walls, roofs and security ceilings form the security perimeter for a building which can prevent inmate escape.

Metal security ceilings: provides a system that is durable and economical. A plank system is usually fabricated of either 14-, 16- or 18- gauge steel and is available in 12 inches widths. Walls and intermediate support are provided to add additional strength to the system

Security gypsum board systems: require two layers of sheetrock with an expanded mesh inter-layer. A third layer of glued/adhered acoustical tile can be applied for spaces requiring quiet environments. Where access panels are required, a security type access panel should be used.

Metal Panel ceiling: may be used in lieu of a sheetrock system. These panels are fabricated of 18-or 20-gauge steel or aluminium and are available in either 2 x 4 foot panels or 2x2 footpanels. This type of ceiling is available with perforations and insulation to add an acoustical value to a ceiling surface

Hollow metal ceilings: They are fabricated similar to hollow metal door construction, with internal reinforcement either as a truss type or high-hat sections.

2.6 SECURITY WINDOWS

A window must be well anchored to a wall to ensure that a frame cannot be removed from its opening. The anchors must be of sufficient strength to hold a window in place

Split window frames: are used when a window is required to be installed after an opening has been made. Weld plates are provided around the opening to secure the window in place. The frame has factory installed clip angles which are welded to the weld plates. Once the window is installed, the closure plates are attached to the frame with security type – fasteners

Casting the frame into a precast concrete panel is another method of attachment. The frame is provided with weld-on type anchors. The frame is then fastened to the form work. Once the form work is stripped, the frame becomes an integral part of the precast concrete panel.

2.7 PREVENTING ESCAPE FROM WINDOWS

Security glazing specified for windows should provide the appropriate degree of security for an intended program and/or activity space

Tool resistant bars: should be provided with a maximum opening between stops of 5 inches. IN this application, tool resistant bars must be welded to a flat bar installed within the frame it self. This will maximize the security of the window and offer a strong and integral building component which should be equal in strength to the adjacent wall.

2.8 SECURITY LOCKS

Mechanical type locks: are generally used in areas where officers are required to manually open doors for inmates where remote operation is not a requirement. They are manufactured with a dead bolt or a latch bolt.

Electric type doors: are used in areas where remote locking and /or unlocking is required. Doors can be locked and unlocked without jeopardizing the electrical function of the lock. Locks are manufactured with either electromechanical or solenoid specification. Electromechanical locks are generally for interior use only; solenoid locks can be used for both interior and exterior building applications.

Sliding door type mechanism: Are another form of electric hardware most commonly used for safety doors. This type of door operation permits doors to slide open and closed without a person physically pushing or pulling the door.

Similar to swinging door locks, sliders can be opened from a remote location and /or by key operation at the door itself.

Pneumatic- type locks: Their operation requires air compressors located in a remote secure room. Air is sent through a nylon tube which activates the locking mechanism. As a result of this type of operation, fewer moving parts are in the lock itself, suggesting less maintenance, according to industry manufactures. The air tubes must be kept dry and free of moisture in order to maintain proper operation.

2.9 SECURITY GLASS

A correctional facility requires natural light meet national building code requirements. A correctional facility also requires additional use of interior glazing in support of security observation, supervision, and control, however unlike other buildings, they require glazing to have specific degrees of security. It is important to understand that security glazing will fail when exposed to sustained periods of attacks with objects such as sledge hammers, fire extinguishers, chisels, fire axes, and battering rams.

The intent of specifying the appropriate type and thickness of glass is to prolong the time of an escape(not to prevent it) by providing an officer (or riot) squad time in order to regain control of a facility. Two areas most commonly utilizing glazing as a barrier are the non contact visitation booths and between the interior and exterior functions of a building.

1. Polycarbonate plastics are comprised of a single or multiple layers of material and offer a high degree of security. They provide one of the lowest material and replacement cost of all security glass currently available.

2. Glass laminates are comprised of multiple layers of glass bonded with an interlayer material
3. Replacement glass systems are composed of a layer of polycarbonate, an air gap and a sacrificial piece of heat treated glass. The polycarbonate and the glass are held together a perimeter piece of foam tape.
4. Glass-clad polycarbonate are comprised of a combination of polycarbonate and glass bonded together using a urethane interlayer

2.10 CONJUGAL VISITS

A scheduled extended visit during which an inmate of a correctional facility is permitted to spend several hours or days in private usually with a legal spouse.

Reasons

1. Preserve family bonds
2. Increase the chance of success for a prisoners eventual to life outside the correctional facility.

In the Russian penal system for example, well behaved inmates are granted an eighteen day holiday furlough from incarceration to see loved ones. Inmates also get extended on site family visits approximately once a month.

2.11 HISTORICAL OVERVIEW OF PRISONS IN GHANA

The first purpose built slave prison was developed in the second fort at Anomabo in 1770 and many more forts and castles were converted to prison facilities. A few prisons were built in addition but after independence all the facilities began to deteriorate. It is important that after the overthrow of Kwame Nkrumah, the National Liberation Council authorized a civilian commission to investigate the prison system and make recommendations for improvement. The commission report issued in 1968 revealed numerous problems. Of the country's 29 prisons, 9 were judged unfit for human habitation, 20 were suitable only for police lock ups and 13 were

appropriate for short term detainment. It is amazing to note that Nsawam Medium Security Prison became operational in 1962 yet by 1968 it had been run down. Since then there has been no remarkable improvement in the Prison in the country.

2.12 PRISON ESTABLISHMENT IN GHANA

The prison service is made up of 45 establishment

- A. Prison Headquarters
- B. Prison Officers Training School
- C. Senior correctional center
- D. 7 female Prisons
- E. 7 Central prisons
- F. 15 Local prisons
- G. 2 open camp prisons
- H. 10 Agricultural Settlement prisons
- I. 1 medium security Prison

2.13 REGIONAL DISTRIBUTION OF PRISONS AND INMATE POPULATION

NORTHERN REGION

POPULATION	PRESENT POPULATION	AUTHORISED
Gambaga local Prison	34 inmates	46 inmates
Tamale Female Prison	11 inmates	6 inmates
Tamale Central Prison	255 inmates	78 inmates
Yendi Local Prison	160 inmates	120 inmates
Salaga local Prison	160 inmates	30 inmates

BRONG AHAFO REGION

POPULATION	PRESENT POPULATION	AUTHORISED
Sunyani Central Prison	772 inmates	430 inmates
Sunyani Female Prison	18 inmates	60 inmates
Duayaw-Nkwanta Settlement camp	125 inmates	150 inmates
Yeji settlement Camp	173 inmates	250 inmates
Kenyasi Settlement Camp	194 inmates	108 inmates

KNUST

ASHANTI REGION

POPULATION	PRESENT POPULATION	AUTHORISED
Kumasi Central Prison	1753 inmates	416 inmates
Kumasi Female Prison	44 inmates	30 inmates
Manhyia Local Prison	181 inmates	120 inmates
Ahinsan Local Prison	124 inmates	80 inmates
Amanfrom Settlement camp	161 inmates	140 inmates
Obuasi Local Prison	258 inmates	100 inmates

WESTERN REGION

POPULATION	PRESENT POPULATION	AUTHORISED
Tarkwa Local Prison	353 inmates	100 inmates
Hiawa Settlement Camp	131 inmates	75 inmates
Sekondi Central Prison	902 inmates	412 inmates
Sekondi Female Prison	32 inmates	30 inmates
Ekuasi Settlement Camp	164 inmates	144 inmates

UPPER EAST REGION

POPULATION	PRESENT POPULATION	AUTHORISED
Wa Central Prison	205 inmates	50 inmates

VOLTA REGION

POPULATION	PRESENT POPULATION	AUTHORISED
Ketekrachi Local Prison	190 inmates	250 inmates
Kpando local Prison	224 inmates	150 inmates
Ho Central Prison	507 inmates	170 inmates
Ho Female Prison	17 inmates	18 inmates

GREATER ACCRA REGION

POPULATION	PRESENT POPULATION	AUTHORISED
James Camp Local Prison	52 inmates	560 inmates
Ghana Borstal Institution	128 inmates	340 inmates

EASTERN REGION

POPULATION	PRESENT POPULATION	AUTHORISED
Koforidua Local Prison	477 inmates	300 inmates
Akuse Local Prison	281 inmates	300 inmates
Akuse Female Prison	12 inmates	12 inmates
Nsawam Female Prison	138 inmates	200 inmates
Nsawam Medium Prison	3031 inmates	851 inmates
Forifori Settlement camp	147 inmates	300 inmates

CENTRAL REGION

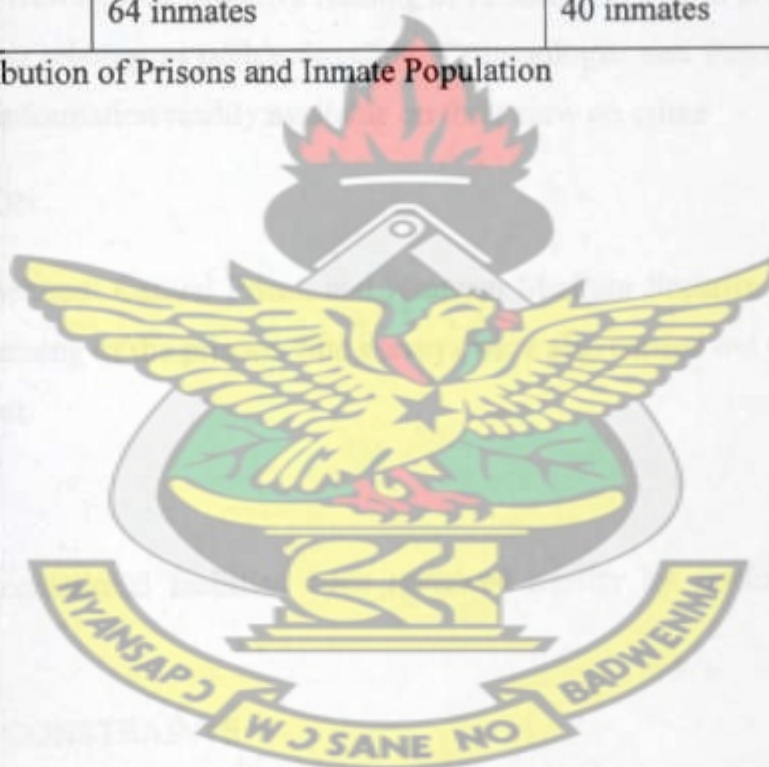
POPULATION	PRESENT POPULATION	AUTHORISED
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Ankaful CDP Local Prison	52 inmates	100 inmates
Ankaful Main Central Prison	748 inmates	562 inmates
Ankaful Annex Local Prison	580 inmates	500 inmates
Winneba Local Prison	276 inmates	59 inmates
Awutu Settlement Camp	161 inmates	250 inmates
Osamkrom Settlement Camp	102 inmates	70 inmates

UPPER EAST REGION

POPULATION	PRESENT POPULATION	AUTHORISED
Navrongo Central Prison	194 inmates	108 inmates
Bawku Local Prison	64 inmates	40 inmates

Table 2.0 Regional distribution of Prisons and Inmate Population



CHAPTER THREE

RESEARCH METHODOLOGY

3.0 INTRODUCTION

The gathering of information for the design thesis involved a series of interviews, field observation and desk research

3.1 INTERVIEWS

Prison officers at the Nsawam Medium Security Prison and Sekondi Central Prison were interviewed to know their views on the effective running of Prisons. Official at the Ghana Prison Service offered information relating to policy direction. Criminologist and Penologist in some advanced countries made information readily available on their view on crime

3.2 FIELD OBSERVATION

Visits were made to the Sekondi Central Prison and Nsawam Medium Security Prison to have visual proof of the daily running of the prisons. Site surveys were also carried out to ascertain the sites viability for the project.

3.3 DESK RESEARCH

Published literature on correctional facilities were reviewed mostly by reading text books, journals and articles

3.4 LIMITATIONS AND CONSTRAINTS

There was the difficulty of documenting information from the two prisons for security reasons. Photographs were not allowed and the inability to interview some inmates to know their view on certain critical issues was a great limitation.

CHAPTER 4

FINDINGS AND DISCUSSIONS

4.0 INTRODUCTION

There are specific guidelines by the United Nations on Prison Design and treatment of Prisoners. However, most countries do not adhere to it and as such face difficulties in running their prisons. Every country has its own peculiar Penal system. To have a first hand knowledge of how Ghanaian prisons are run, a case study was carried out at the Sekondi Central Prison. It afforded me the opportunity to identify the problems they faced and how they could be corrected.

4.1 SEKONDI CENTRAL PRISON



The Sekondi Central Prison is located in the western region of Ghana, 20 meters from the Shama Ahanta East Metropolitan Assembly building and was built in 1906 to decongest the fort Orange Prison of the Colonial era.

The authorities of the Prison used the following classification to separate the prisoners

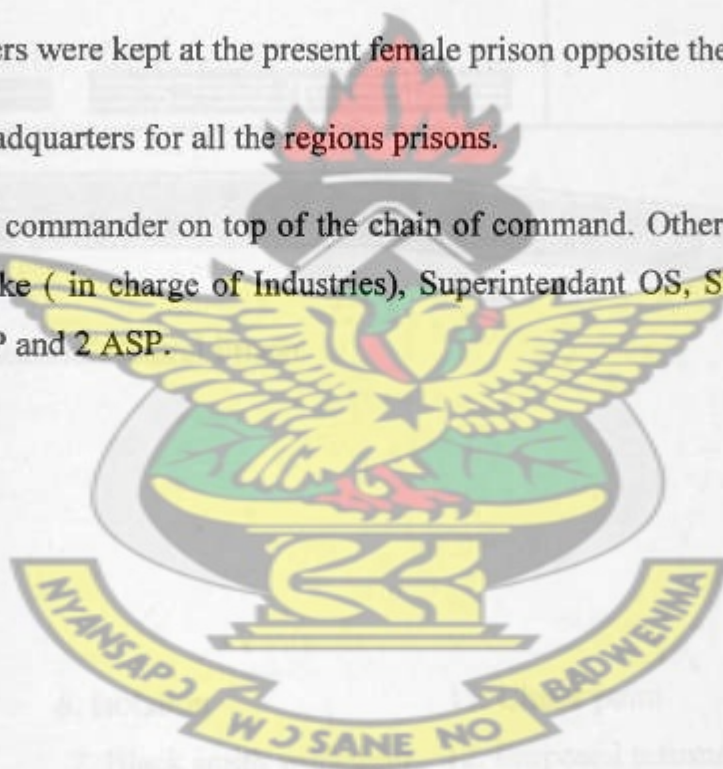
1. European inmates
2. Local inmates
3. Female inmates
4. Remand Prisoners

The male block of the Sekondi Central Prison which is presently used by male inmates was used to house the European inmates and long sentence local prisoners.

At the time, remand prisoners were kept at the present female prison opposite the central prison.

The Prison serves as the headquarters for all the regions prisons.

The Facility has a regional commander on top of the chain of command. Other officials are the superintendant Auditor, Take (in charge of Industries), Superintendant OS, Superintendant of Operations, a chaplain, DSP and 2 ASP.



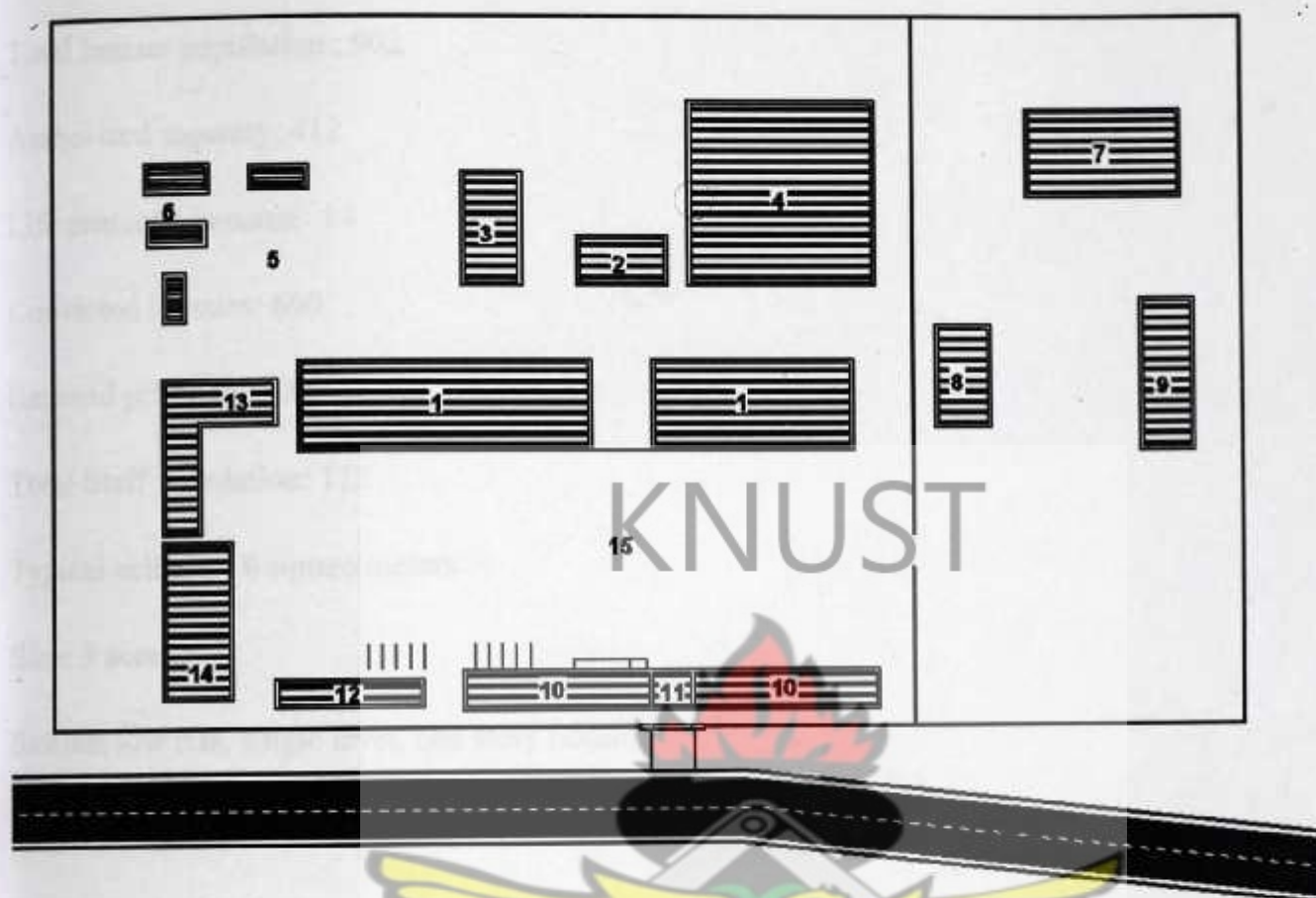


Fig 4.0: Site layout of the Sekondi Central Prison

LEGEND

- | | | |
|----------------------|-------------------------|------------------------|
| 1. Main cell block | 6. Isolation | 11. Check point |
| 2. Church | 7. Black smith workshop | 12. Proposed infirmary |
| 3. Kitchen | 8. Carpentry workshop | 13. Tailoring |
| 4. Door mat workshop | 9. Stores | 14. Infirmary |
| 5. European Yard | 10. Administration | 15 Forecourt |

4.1.1 SEKONDI CENTRAL PRISON STATISTICS

Total inmate population : 902

Authorized capacity: 412

Life sentence inmates: 14

Convicted inmates: 690

Remand prisoners: 174

Total Staff population: 112

Typical cell size: 6 square meters

Size: 3 acres

Stories: low rise, single level, one story housing

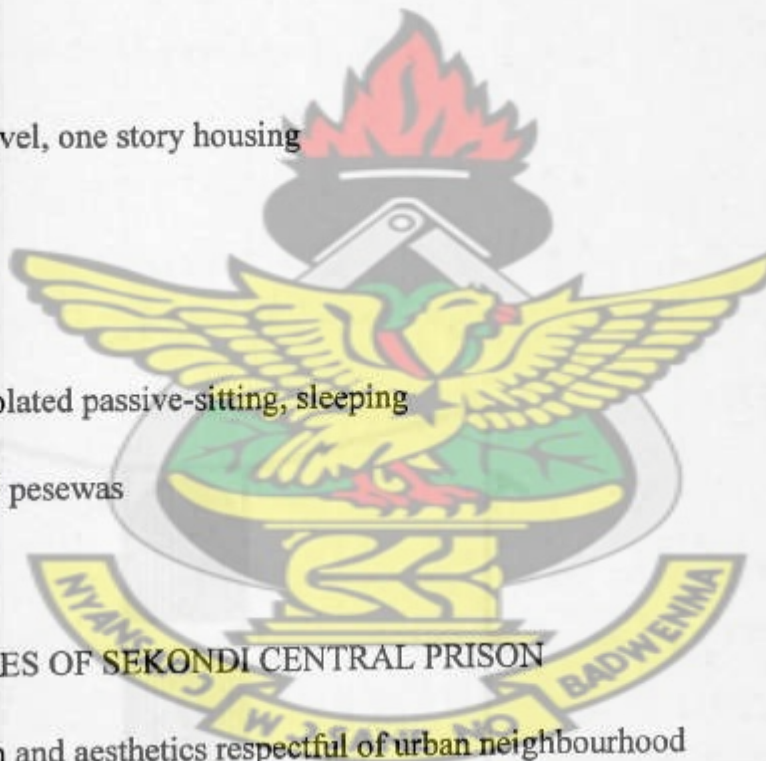
Type: state prison

Operational: 1912

Observable behaviour: Isolated passive-sitting, sleeping

Daily cost per inmate: 60 pesewas

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4.1.2 DESIGN FEATURES OF SEKONDI CENTRAL PRISON

1. Architectural plan and aesthetics respectful of urban neighbourhood
2. High walls screen public view of inmate activities
3. The prison has a centralized system of administration and cell blocks
4. Two watch towers constructed outside perimeter wall
5. Cell blocks designed to provide single occupancy though 6 inmates occupy single occupancy rooms
6. All facilities including sanitary and kitchen are close to inmates accommodation

7. The facility lacks ICT equipments for monitoring inmate movement in the compound.



FIG 4.1 Elevation of housing block

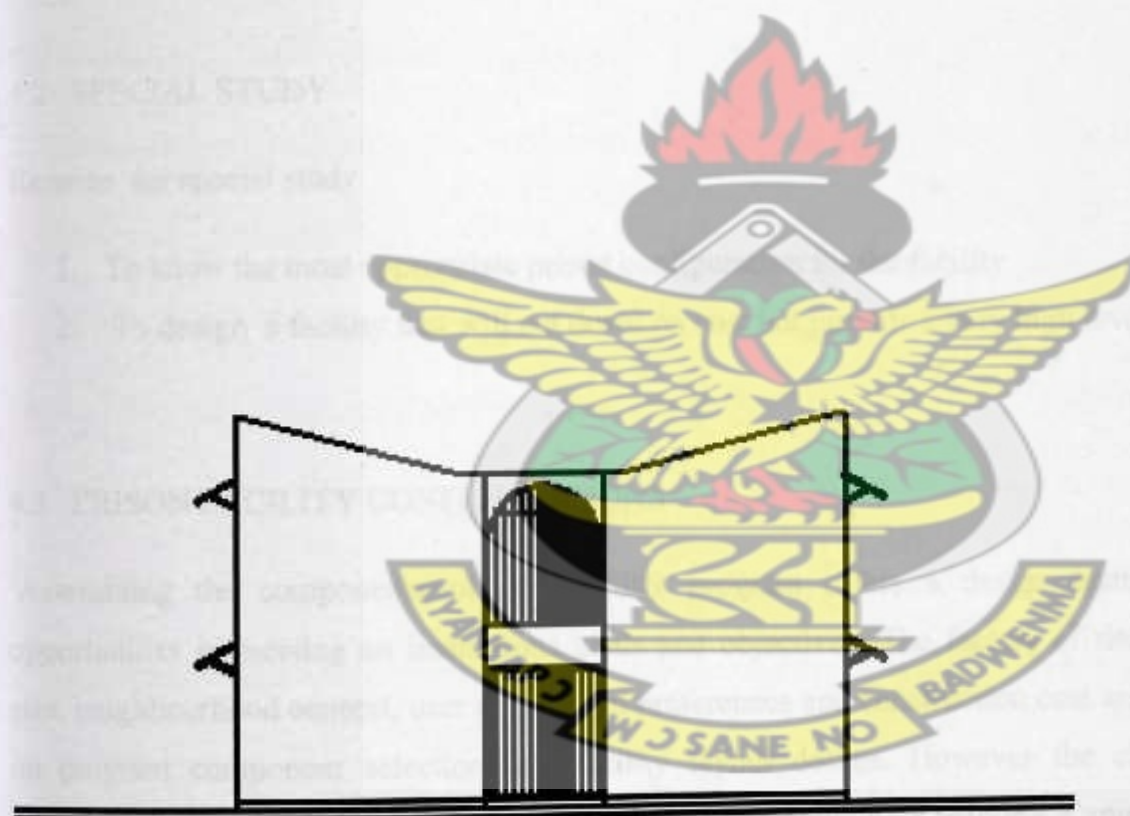


Fig 4.2: Side Elevation of Housing Block

4.3.1 CAMPUS TYPE FACILITY FEATURES

- a. Separated buildings for administration, services , program and housing
- b. Single story building heights
- c. Single floor for dormitories and cells
- d. Exterior circulation to all building functions
- e. Out door recreation between or behind buildings
- f. Perimeter security fence with detection depending on inmate population classification

EXAMPLE OF CAMPUS TYPE FACILITY

CARL ROBINSON CORRECTIONAL INSTITUTION, CONNECTICUT , UNITED STATES

Site: 50acres

Type: state prison

Stories: Low rise, single level support, one level housing

Building area: 900beds- minimum

Housing: Two 75-bed dormitories per building each with control center

Management: Indirect supervision

Staff: 340

Operational: 1990

School type housing environment with housing surrounding open spaces

Maximize inmate free movement to all program activities and visitation

Reconstruction building program, without operational interruption

Construction is phased over a 7 year period

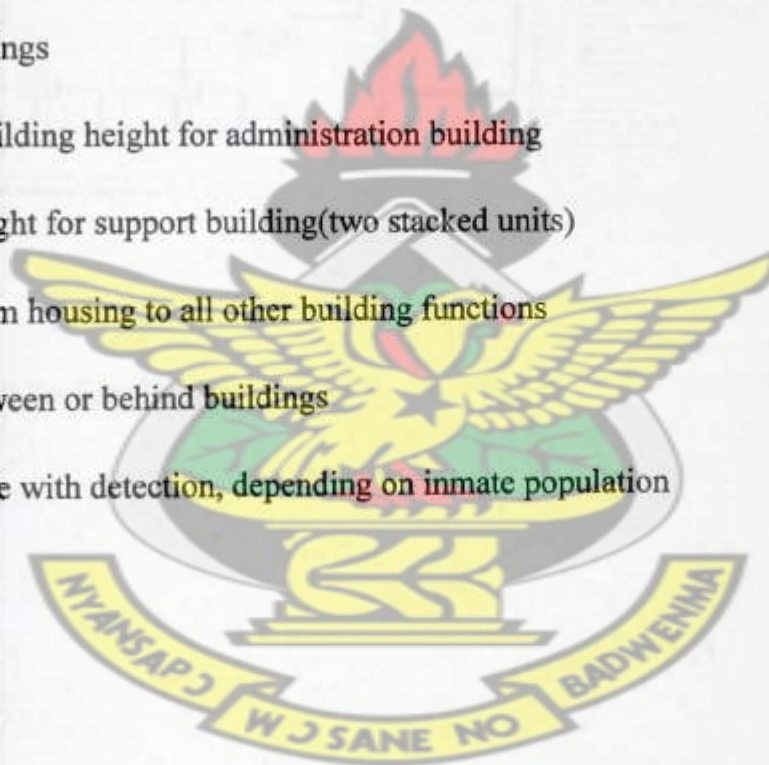
Administration/ visitor building screen public view of inmate activities

Architectural plan and aesthetics respectful of suburban neighbourhood

4.3.2 CAMPUS MODIFIED FACILITY

FEATURES

- a. Combined building for administration, program services and housing
- b. Separate housing buildings
- c. Single-or two- story building height for administration building
- d. Single-or two story height for support building(two stacked units)
- e. Exterior circulation from housing to all other building functions
- f. Outdoor recreation between or behind buildings
- g. Perimeter security fence with detection, depending on inmate population



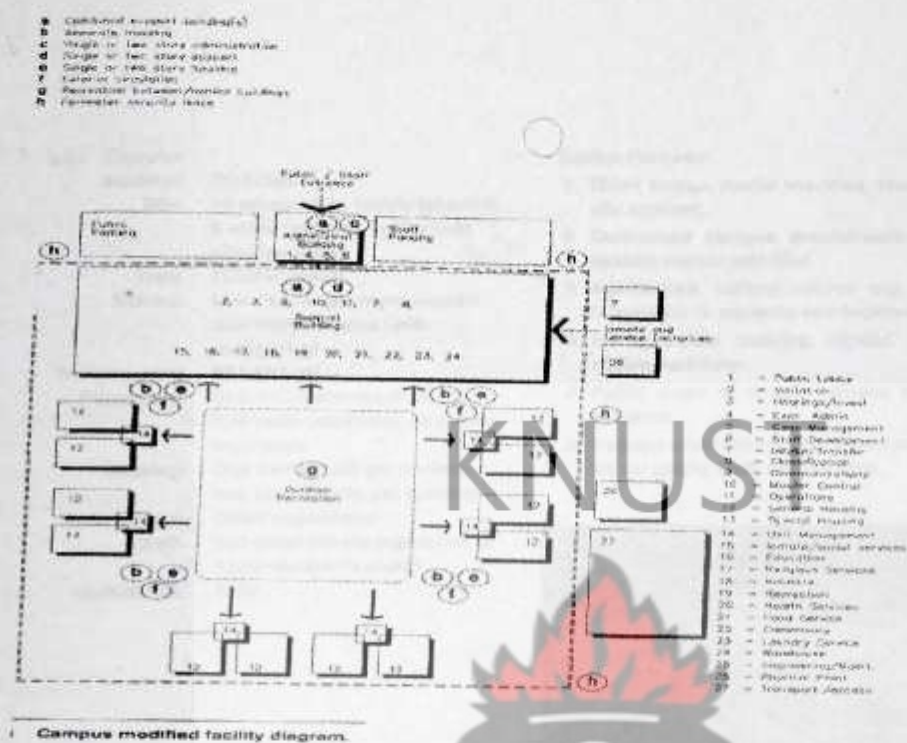


Fig 4.3: Campus Modified Facility Diagram



Fig 4.4 Housing Plan of Federal Correctional Institution

FEDERAL CORRECTIONAL INSTITUTION, MANCHESTER, KENTUCKY,

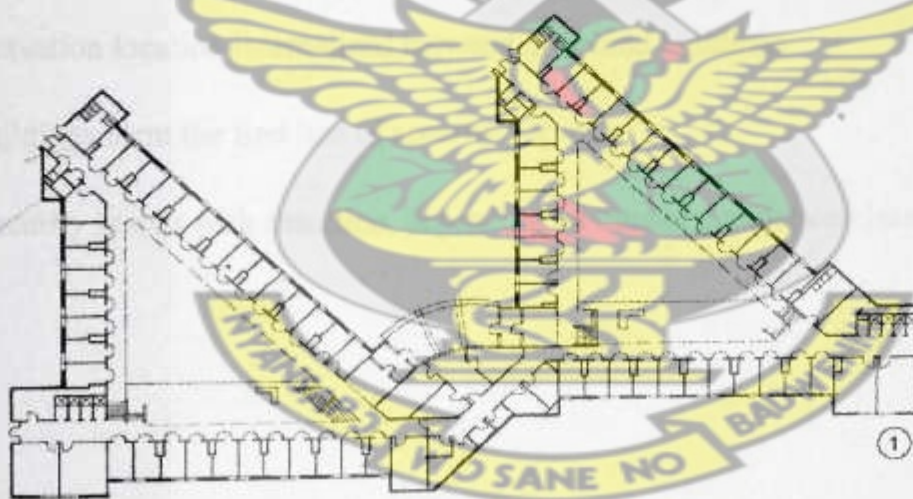
4.23 Campus

Modified Statistics

Site:	45 acres—main facility (shown); 5 acres—satellite facility (see site examples)
Type:	Federal prison
Stories:	Low-rise, single-level support, one-story housing (with mezzanine)
Building area:	554,663 gsf
Population:	816: 512 cells—medium; 256 beds—minimum; 48 cells— maximum
Housing:	One 64-cell unit per control; two 64-cell units per building
Management:	Direct supervision
Staff:	250 (total inmate population of 1588—double-bunked)
Operational:	1992

Design Features

1. Client design model modified, improved, and site adapted.
2. Centralized campus amphitheater focus for passive inmate activities.
3. Architecture utilized natural site conditions (mountain) to separate two facilities.
4. Administration building located outside of secure perimeter.
5. Public views of inmate campus screened at entrance.
6. Relaxed architectural plan layout and aesthetics for public, staff, and inmates.



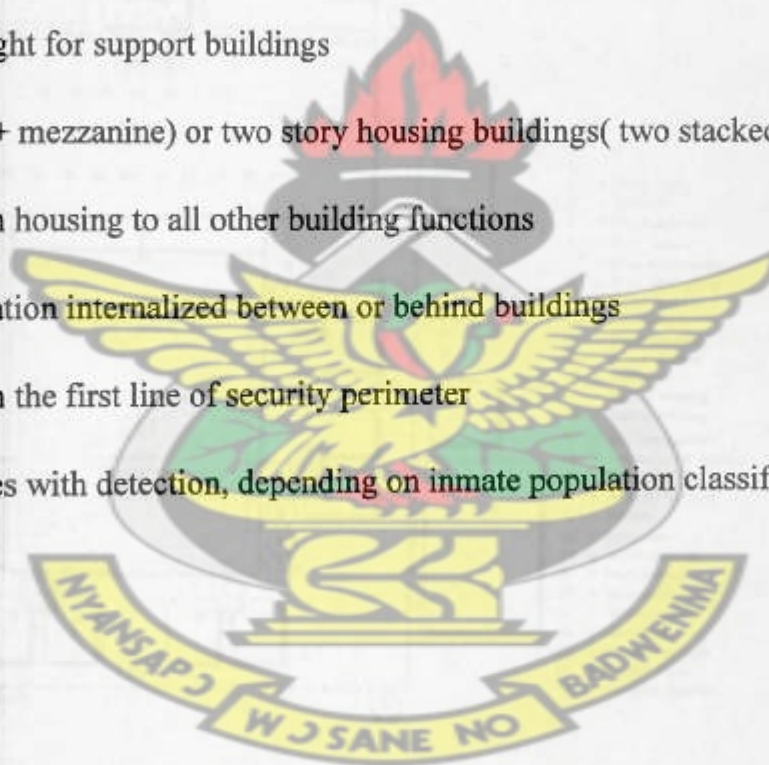
Housing plan.

Fig 4.4 Housing Plan of Federal Correctional Institution

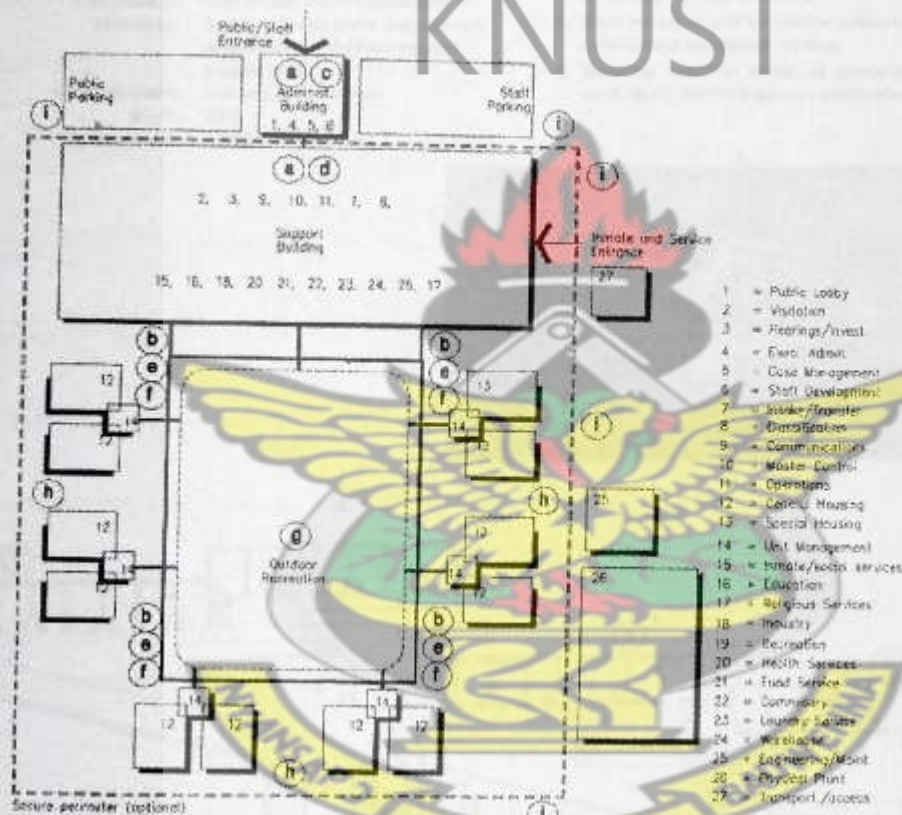
4.3.3 INTERCONNECTED FACILITY

FEATURES

- a. Combined buildings for administration, program and services- one or several buildings
- b. Connected housing buildings
- c. Multistory administration building
- d. Two story building height for support buildings
- e. One story(grade level + mezzanine) or two story housing buildings(two stacked units)
- f. Interior circulation from housing to all other building functions
- g. Outdoor recreation location internalized between or behind buildings
- h. Housing buildings form the first line of security perimeter
- i. Perimeter security fences with detection, depending on inmate population classification



- a Combined support building(s)
- b Housing buildings connected
- c Multiple story administration
- d Two story support building
- e Single or two story housing
- f Interior/external circulation to buildings
- g Recreation internalized
- h Housing buildings form security perimeter
- i Perimeter security fence



Interconnected facility diagram.

Fig 4.5: Diagram of an Interconnected Facility

OAK PARK HEIGHTS MAXIMUM SECURITY PRISON, MINNESOTA, USA

CONTAINED FACILITY

FEATURES

4.28 Inter-connected	Statistics
Site:	60-acre building development—208 acres of rugged terrain
Type:	State prison
Stories:	Mid-rise, single-level program support on top of one-story housing (with mezzanine)
Building area:	330,000 gsf
Population:	400 single cells—maximum
Housing:	Seven 52-cell units per control; one 42-bed medical/mental health unit
Management:	Indirect supervision
Staff:	353
Operational:	1982

Design Features

1. Building exterior buried into hill on three sides, bridged and open on other.
2. Majority of facility hidden from neighborhood views.
3. Housing and support windows face internally onto courtyard for natural light.
4. Programs stacked above each housing unit to minimize inmate movement.
5. Each housing unit's outdoor recreation leads to centralized recreation space.
6. Building exterior walls, at grade-level courtyard, form facility's secure perimeter.

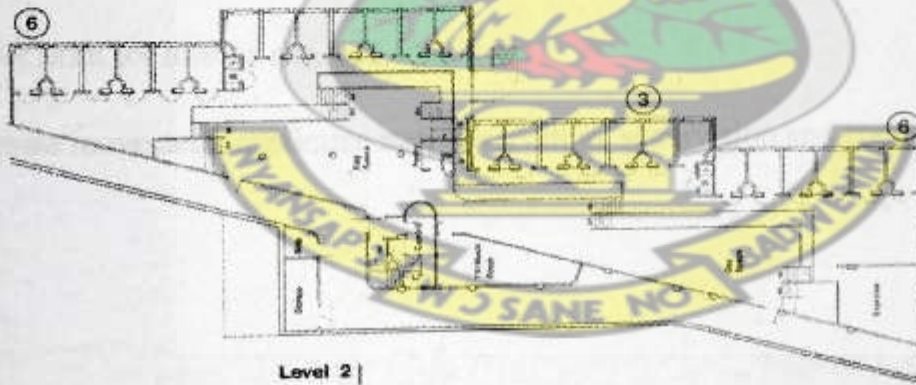


Fig 4.6: Housing Plan of Prison

4.3.4 CONTAINED FACILITY

FEATURES

- a. Combined and centralized administration, program, and services functions into one building
- b. Connected housing buildings
- c. Multistory administration building
- d. Two story building height for support buildings
- e. One story (grade level + mezzanine) or two story housing buildings (two stacked units)
- f. Interior circulation from housing to all other building functions
- g. Outdoor recreation location internalized and localized between building components.
- h. Support and housing buildings form the security perimeter
- i. Optional perimeter security fences with detections (user preference)
- j. Compact foot print for limited site area conditions
- k. Limited inmate movement, maximize staff observation, supervision and control.

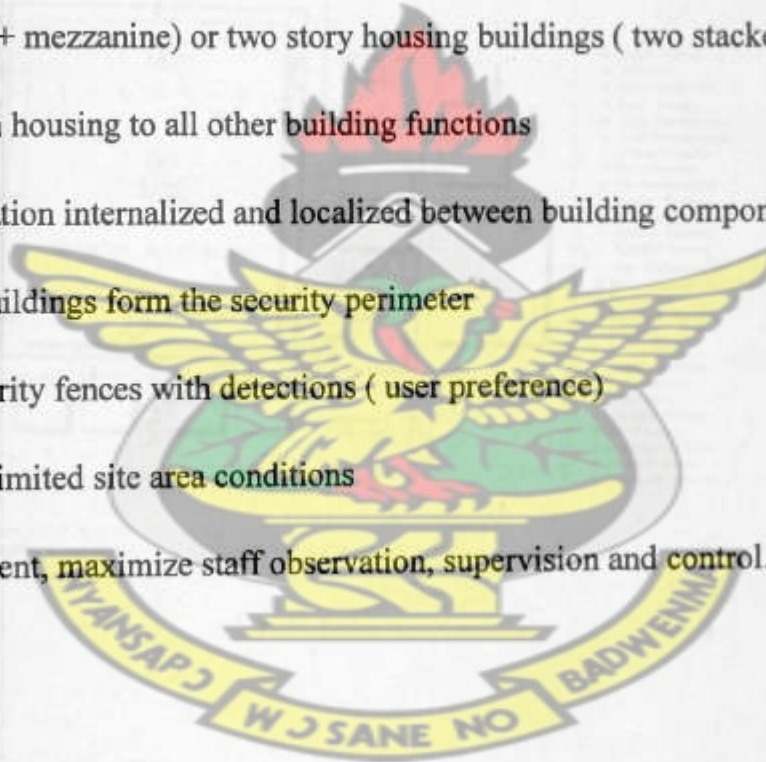


Fig 4.7: Diagram of Contained Facility

OVERSIDE TECHNICAL, VIRGINIA, USA

- a Combined & centralized support building
- b housing buildings connected
- c Multiple story administration
- d Two story support building
- e Single or two story housing
- f Interior circulation
- g Reception internalized
- h Support/housing form secure perimeter
- i Optional perimeter security fence
- j Compact footprint
- k Limited inmate movement

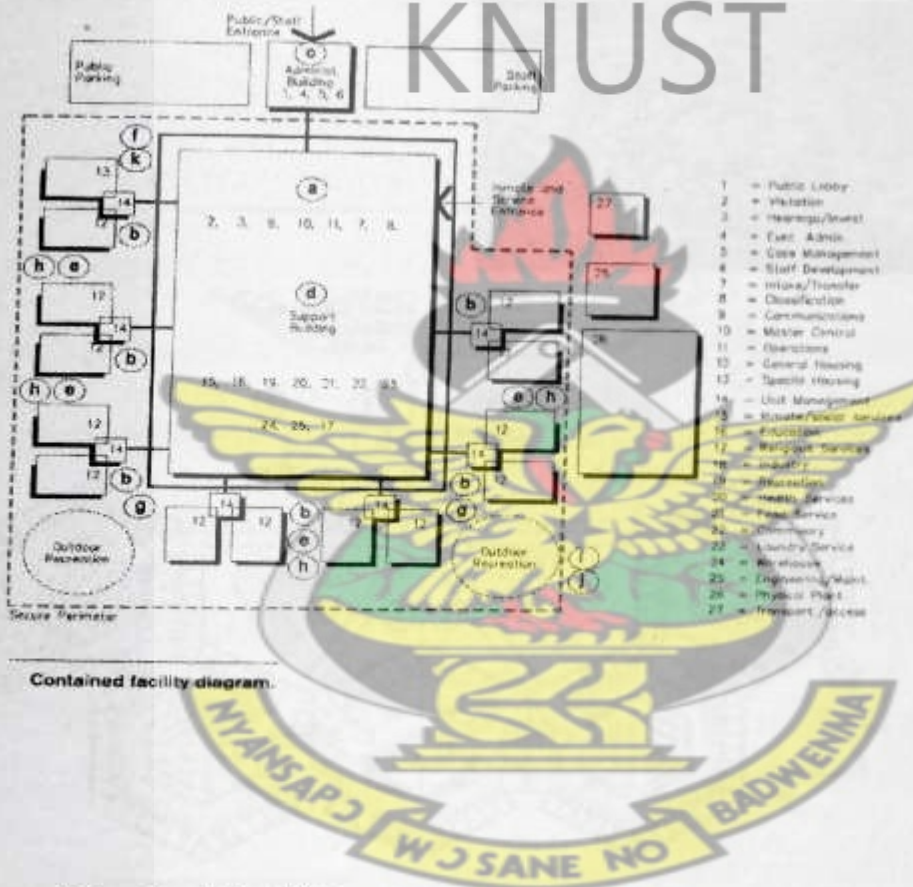


Fig 4.7: Diagram of Contained Facility

Fig 4.8: Location Plan of River Side Jail, Virginia, U.S.A.

RIVER SIDE REGIONAL JAIL, VIRGINIA, USA

4.31 Contained Statistics
 Site: 50 acres
 Type: Seven-county regional jail facility
 Stories: Low-rise, two-level support, one-level housing (with mezzanine)
 Building area: 571,000 gsf
 Population: 720 single cells—maximum/medium; planned expansion to 1200
 Housing: Five 48-cell housing units per unit management control
 Management: Direct supervision
 Staff: 259
 Operational: 1987

Design Features

1. Separate, public (upper) and inmate (lower) level circulation centrally observed.
2. Unit management groups of 240, include programs and visitation.
3. Unit management housing with equal distance linkage to central functions.
4. Each housing unit has separate outdoor recreation, screened from public view.
5. Architectural plan and aesthetics appropriate to neighborhood context.
6. Facility location adjacent to federal facility and public park.

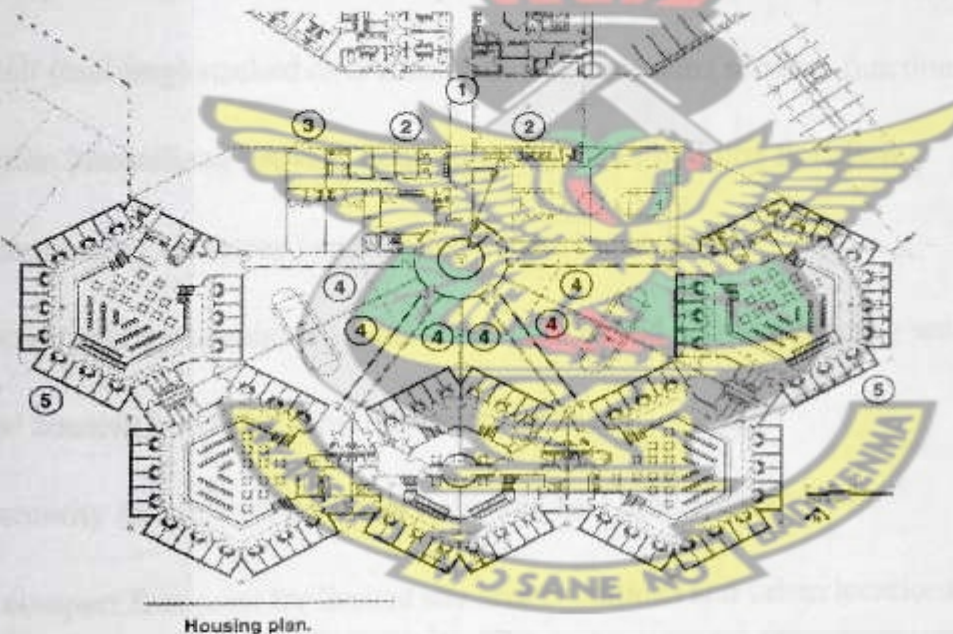
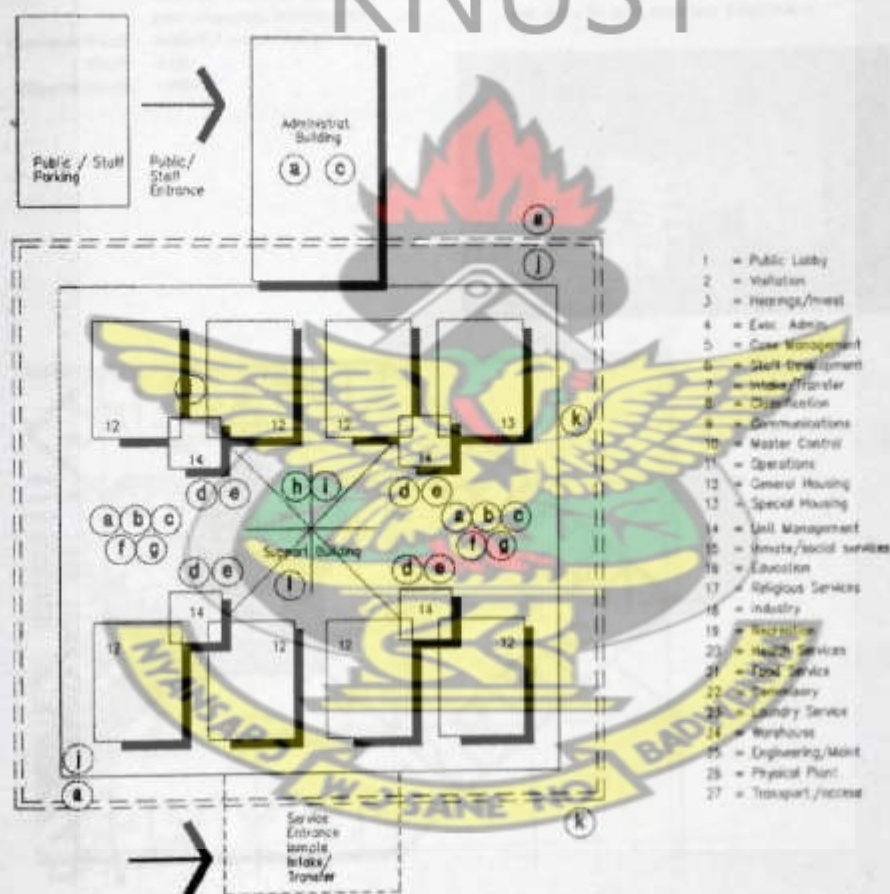


Fig 4.8: Housing Plan of River Side Jail, Virginia, U.S.A

4.3.5 CONTAINED AND STACKED FACILITY

- a. Mega structure; all building functions connected
- b. Combined and centralized administration, program and services functions
- c. Midrise/ high rise building
- d. Multiple story housing buildings (two or more stacked units)
- e. Housing unit (building) stacked over administrative, programs services functions
- f. All circulation internalized between housing and all other building functions
- g. Vertical circulation (elevators) and limited inmate movement
- h. Interior recreation (gymnasiums) centralized and shared between housing units
- i. Support and housing buildings form the secure perimeter
- j. Perimeter security fences with detection optional (user preference)
- k. Optimum compact foot print for limited site area conditions and urban locations

- a Mega-structure
- b Combined & centralized support
- c Mid-rise/high-rise building
- d Multiple story housing
- e Housing stacked over support functions
- f Circulation internalized
- g Vertical circulation
- h Gymnasium centralized (optional)
- i Outdoor recreation intermediate
- j Support/housing form the secure perimeter
- k Optional perimeter security fence
- l Optimum compact footprint



Contained and stacked facility diagram.

Fig 4.9: Contained and Stacked Facility Diagram

Statistics

Type: Municipal jail and sentenced facility connected to existing courthouse

Stories: High-rise, multiple-level support with three-story housing (with mezzanines) above

Population: 848 single cells--maximum

Housing: One 56-cell housing unit per control and four per floor (two per separate buildings)

Staff: 326

Operational: 1983

1. Separated jail and sentenced population buildings, linked to each other and existing courthouse

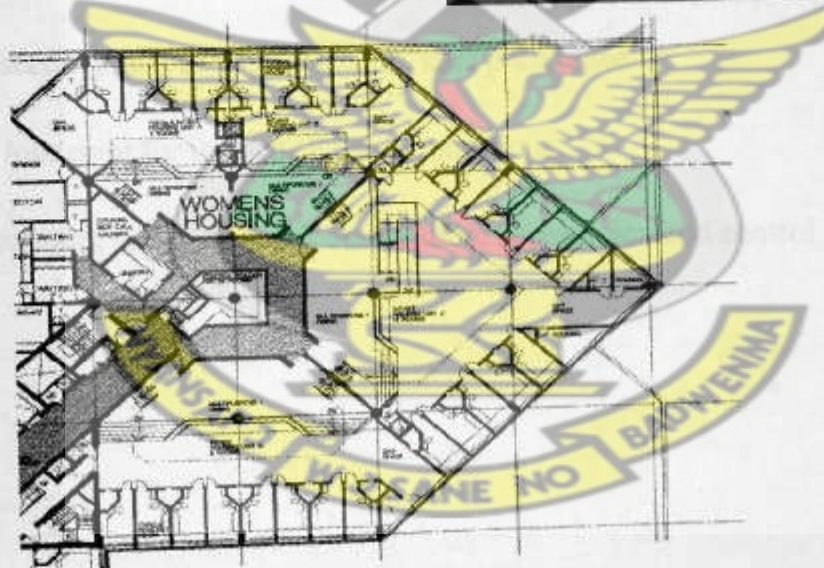
- Public plaza created between buildings with interior lobby artwork display.

3. Jail facility built above new courts and support functions.

4. Separate drive-through, service, and intake sales ports are screened from public view.

5. Building exterior walls are only security perimeter barrier.

6. Urban area commercial building aesthetics; linear facade and window treatment.

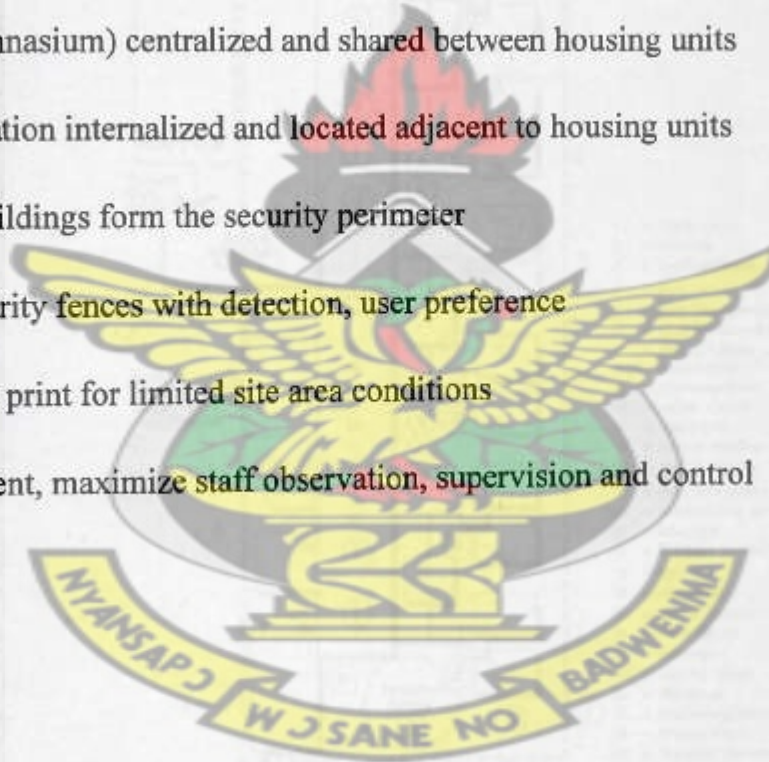


Housing plan.

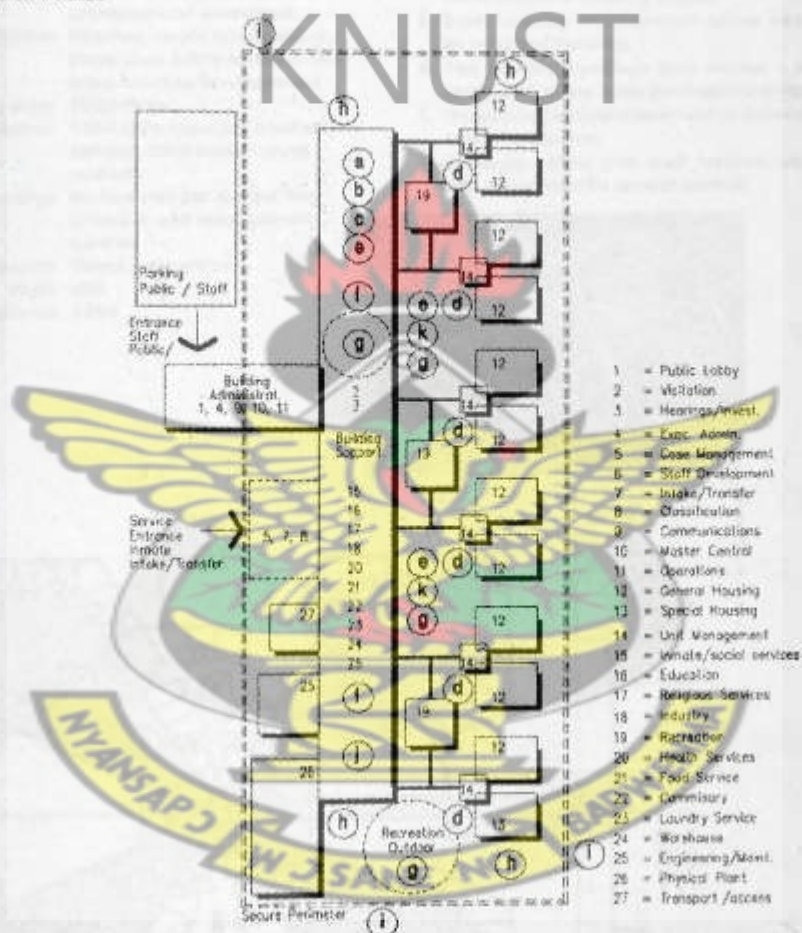
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4.3.6 CONTAINED AND LINEAR FACILITY

- a. Mega structure: all building functions connected
- b. Combined and centralized administration, program and services functions
- c. Single or multiple building height for administration, program and services functions
- d. One-or multiple housing buildings (one or multiple stacked units)
- f. All circulation internalized between housing and all other building functions
- g. Interior recreation (gymnasium) centralized and shared between housing units
- h. Outdoor recreation location internalized and located adjacent to housing units
- i. Support and housing buildings form the security perimeter
- j. Optional perimeter security fences with detection, user preference
- k. Optimum compact foot print for limited site area conditions
- l. Limited inmate movement, maximize staff observation, supervision and control



- a Mega structure
- b Combined & centralized support
- c Multiple story support
- d Multiple story housing
- e Circulation internalized
- f Indoor recreation externalized
- g Outdoor recreation internalized (aproned)
- h Support/housing form secure perimeter
- i Optional perimeter security fence
- j Optimum compact footprint
- k Limited inmate movement



Contained and linear facility diagram.

Fig 4.11: Contained and Linear Facility Diagram

CURRAN FROMHOLD CORRECTIONAL FACILITY

4.34 Contained

and Linear Statistics

Site: 20.6 acres

Type: Municipal reception center, presentenced-sentenced

Stories: Mid-rise, single-level support, three-level administration, two-story housing (mezzanines)

Building area: 750,000 gsf

Population: 1000 cells (doubled-bunked yielding 2000 beds)—close custody

Housing: 64-bed unit per control, four units per unit management control

Management: Direct supervision

Staff: 525

Operational: 1995

Design Features

1. Large population located on a limited acre site.
2. Unit control observes all four housing unit interiors/supports housing officer.
3. Each housing management group separated by level and building.
4. Two housing buildings (two stories + mezzanine each) share large gymnasium programs.
5. Unescorted inmate movement to decentralized inmate programs.
6. Separate public and staff lobbies, observed and supervised by central control.

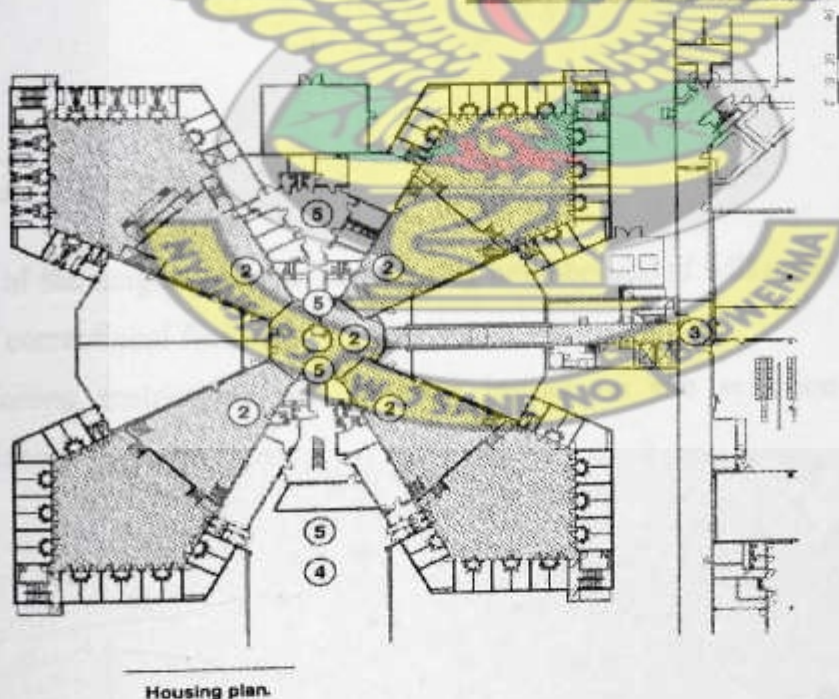


Fig 4.12: Housing Plan of Curran Fromhold Correctional Institution

4.4 SITE SELECTION

4.4.1 PHYSICAL CRITERIA

1. Area: Site must be large enough to support the required building and outdoor activity space
2. Soil: Sufficient bearing value to support a building of the proposed site and type of construction without inordinately high construction cost
3. It should be free of drainage problems
4. Utilities: Water, sewer, power may not easily be provided or may not be available at all
5. Exposure and orientation: Will influence energy and operating cost. The substantial building mass typical of detention facilities provides opportunities for careful building orientation, solar heat gain, thermal insulation and other elements of active and passive solar design
6. Ecology: Potential threat to fragile eco systems may have to be minimized by sometimes costly methods

4.4.2 LOCATIONAL CRITERIA

1. Character of the neighbourhood: surrounding neighbourhood will undoubtedly affect the location of correctional facilities
2. Zoning: Zoning restrictions will have an impact on site selection and should be considered from the onset

4.4.3 ACQUISITION CRITERIA

The site must be obtainable. Once ownership is determined, there are three highly critical aspects of acquisition

1. Can the property be obtained through negotiation or condemnation
2. What are the cost to acquire, develop, and operate the site
3. How much time is required to acquire and develop the property (for example, are zoning changes or other time consuming permissions needed)



4.5 SITE LOCATION

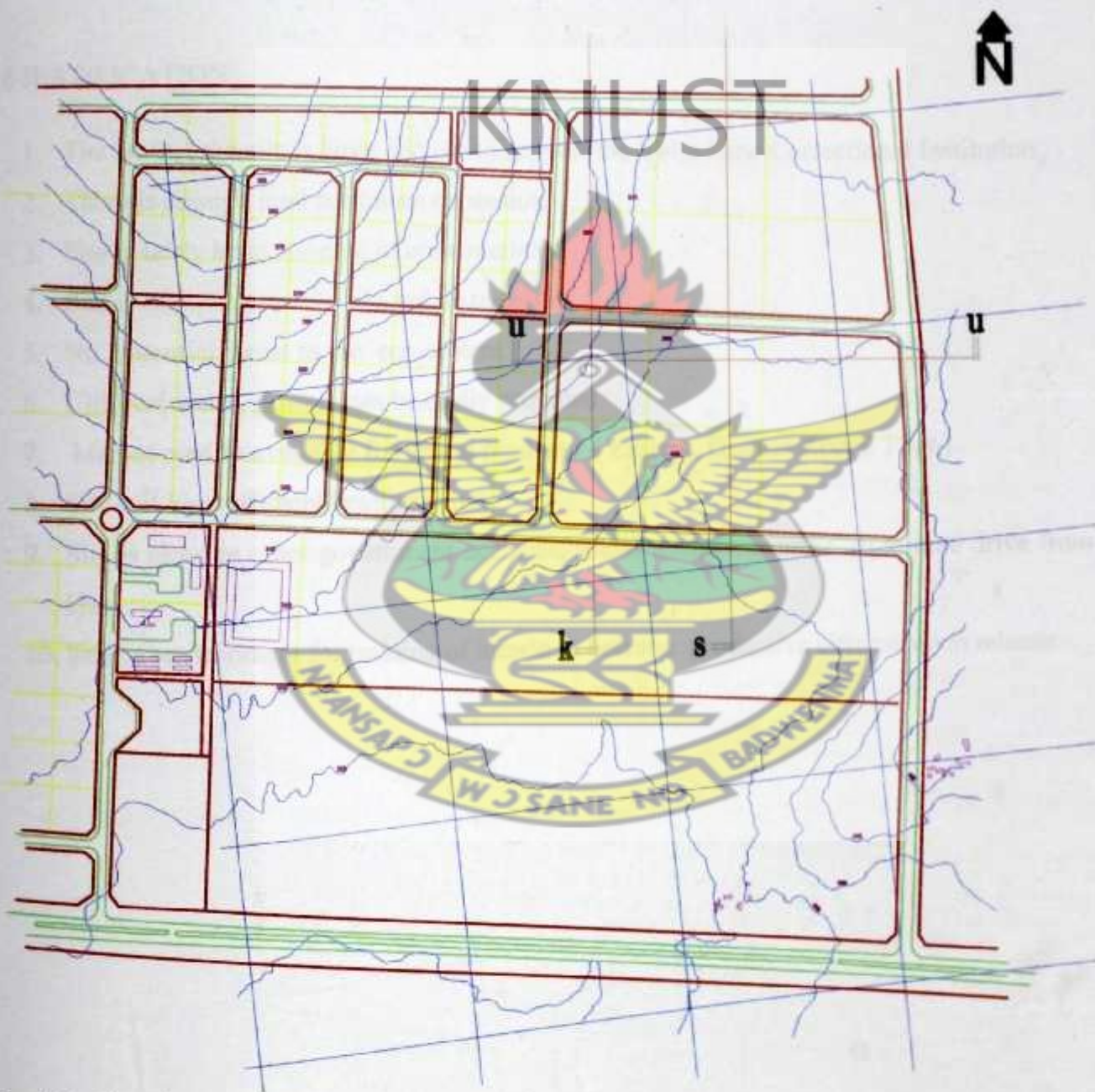


Fig 4.13: Site plan

This 72 acre site is located in Titrinu which is part of the Ho Municipality lies between latitude 6 20'N and 6 55'N and longitude 0 12'E and 0 53'E and covers an area of 2660 sq km. The municipality shares boundaries with the Adaklu-Anylbe district to the south, Hohoe district to the north, South Dayi district to the west and the republic of Togo to the east.

4.6 JUSTIFICATION

1. The area of the site is large enough to support the Volta-Lane Correctional Institution
2. There is enough land for future expansion
3. Site is fairly level for ease of construction
4. Site is easily accessible via public transport
5. No potential threat to the eco-system
6. Utilities(water, power) can be easily provided
7. Market readily available for prison products (Eastern, Greater Accra, Togo)
8. Site soil has sufficient bearing value
9. Site is close to other government agencies, social welfare, courts (10 minute drive from Ho)
10. Serene environment for training of inmate to become productive citizens upon release.

4.7 ACCESS

Site is located off the Ho-Aflao road which is a first class tarred road and as such serves as its main access. All other roads on the site are proposed



Plate 4.1 Ho -Aflao road

4.8 ORIENTATION

Site is oriented in the north- south and as such longest sides of all buildings can take advantage to reduce solar ingress. Extensive sun shading will however be employed when there is the need

4.9 VEGETATION

Site falls within the moist-deciduous forest which mostly cover the hills in the Ho municipality and the Savannah wood land which covers the rest of the municipality



Plate 4.2 Vegetative cover on site

4.10 CLIMATE/TEMPERATURE

Mean monthly temperatures range between 22 C and 30C while annual mean temperature range from 16.5 C and 37.80 C. In effect temperatures are generally high.

4.11 TOPOGRAPHY

The north and north western parts of the district are mountainous, comprising part of the Togo ranges. The southern section of the district comprises low lands in the main

CHAPTER 5

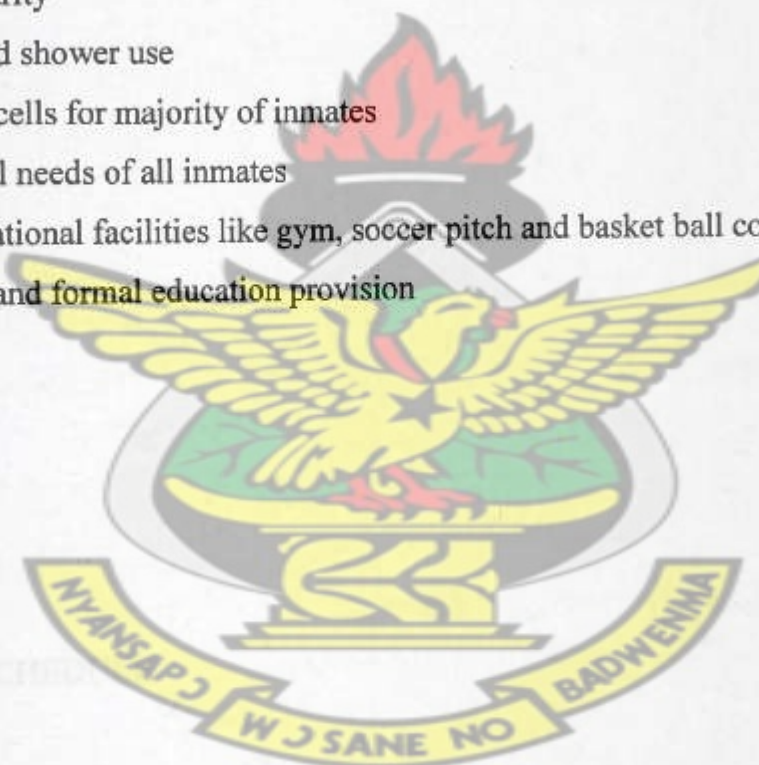
CONCLUSION AND RECOMMENDATION

5.1 DESIGN PHILOSOPHY

Revolutionary mechanism to achieving humane conditions and greater welfare of the incarcerated population. SERVING TIME WITH DIGNITY

5.2 CONCEPT

1. Ventilation, lighting and thermal conditions will be greatly improved without compromising security
2. Privacy in toilet and shower use
3. Single Occupancy cells for majority of inmates
4. Meet the nutritional needs of all inmates
5. Provision of recreational facilities like gym, soccer pitch and basket ball court
6. Trade acquisition and formal education provision



5.3 DESIGN BRIEF

Medical Block

Administration

Intake/transfer/release

Food Services

Laundry

	AREA (meter squared)
Food Services	20
Laundry	16
	16

Recreational

Inmate Housing

Visitation Unit

Religious Services

Case Management

Industry

Transportation

Staff Development

Commissary

Educational Block

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5.4 ACCOMODATION SCHEDULE

A.MEDICAL UNIT

SRL NO	SPACE	AREA (meter squared)
1	Physical Therapy	20
2	Trauma room	16
3	Laboratory	16

4	Lab Storage	8
5	Examination room	32
6	Staff toilet	6
7	Reception/ Records	24
8	X ray room	24
9	Dark room	8
10	General Storage	32
11	Pharmacy	24
12	Ward Type 1	64
13	Ward Type 2	80
14	General ward	76
15	Day room	32
16	Kitchen	24
17	Waiting area/ Entrance	40
18	Waiting area 2	84
19	File room	16
20	Records/ Clerical Files	16
21	Consulting rooms	80
22	Storage	48
23	Conference room	48
24	Health Administrator's Office	36
25	Offices	32

B. ADMINISTRATION

SRL NO	SPACE	AREA(meter squared)
1	Class room	36
2	Staff Lounge	64
3	Wellness Center	90
4	Male Changing room	25

5	Female Changing room	25
6	Wardens Office	30
7	Conference room	36
8	Associate warden office	30
9	Finance director's office	20
10	Special Investigation office	60

11	Human Resource Office	60
12	Inmate Account Station	60
13	General records	36
14	General working area	60
15	Active Files room	25
16	Inactive files room	25
17	File review room	25
18	Computer room	36
19	Shift supervisors Office	20
20	Canteen	60
21	Pay roll office	36
22	Security storage	36
23	Finance office	20
22	Executive secretary	25

C. EDUCATIONAL BLOCK

	SPACE	AREA (meter squared)
1	Class room 1	192
2	Class room 2	120
3	Workshop	384
4	Library	192

D. RELIGIOUS

SRL NO	SPACE	AREA(meter squared)
1	Female changing room	45
2	Back stage	48
3	Conference room	48
4	Worship area	550
5	Storage	48
6	Practise stage	70
7	Screening room	32
8	Male changing room	48

E. INMATE HOUSING

SRL NO	SPACE	AREA (meter squared)
1	Individual Cell	6220
2	Group cell	2160
3	Day room	700
4	General Storage	175
5	Laundry rooms	175
6	Staff offices	8
7	Unit management office	8

F. INMATE VISITATION

SRL NO	SPACE	AREA(meter squared)
1	Lawyer visitation rooms	24
2	Non contact visitation booths	48
3	Contact visitation	84
4	Inmate screening room	48
5	Visitor waiting room	16
6	Visitor reception	48
7	Visitor screening room	24
8	Inmate waiting	48

G. COMMUNICATION/MASTER CONTROL

SRL NO	SPACE	AREA
1	Main distribution room	12
2	Intermediate dist frame	12
3	Main computer room	50
4	Recording equipment room	24
5	Communication equipment room	24
6	Armory	60
7	Master control room	72
6	General Storage	60

H. INDUSTRY

SRL NO	SPACE	AREA(meter squared)
1	Offices	112

2	Industry production area	320
3	Raw material area	144
4	Finished product storage	144
5	Industry Directors office	24
6	Exhibition room	96
7	Secured tool storage	64
8	Printing press	192
9	Inmate toilet	12

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I. TRANSPORTATION

SRL NO	SPACE	AREA (meter squared)
1	Offices	32
2	Tool shop	16
3	Storage	16
4	Staff toilet	10
5	Motor Pool Garage	48

J. COMMISARY

SRL NO	SPACE	AREA(meter squared)
1	Receiving/ Staging	16
2	Storage area (cold and dry)	16
3	Staff support room	8

Table 5.0 Accommodation schedule

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5.5 CONCEPTUAL SITE PLANNING

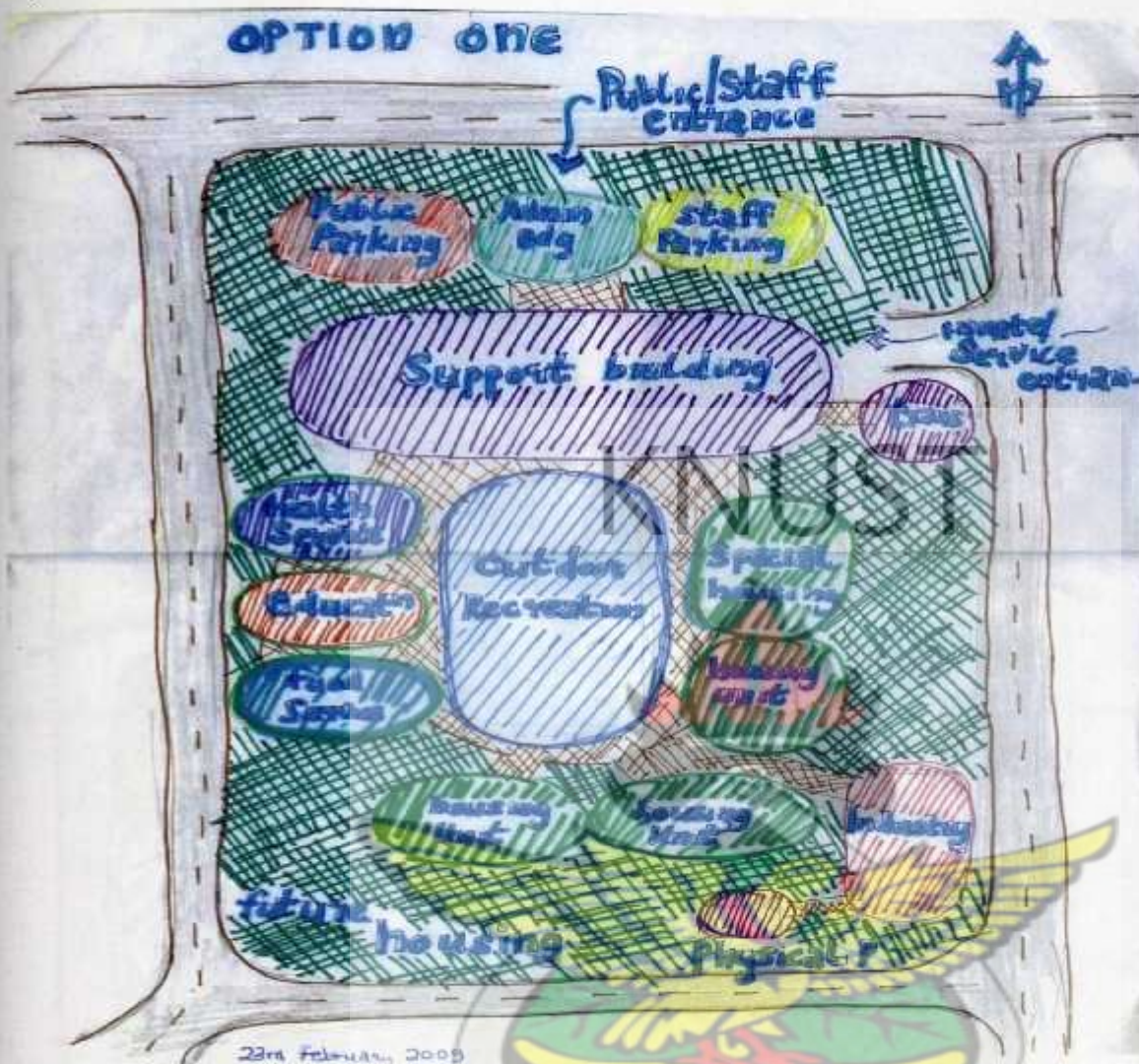


Fig. 5.0 Conceptual Site Planning option 1

OPTION 1 (FEATURES)

1. Two main entrances to the facility to cater for the public and staff on one hand and inmates on the other
2. All units structured around the outdoor recreation area making movement patterns easier to monitor.

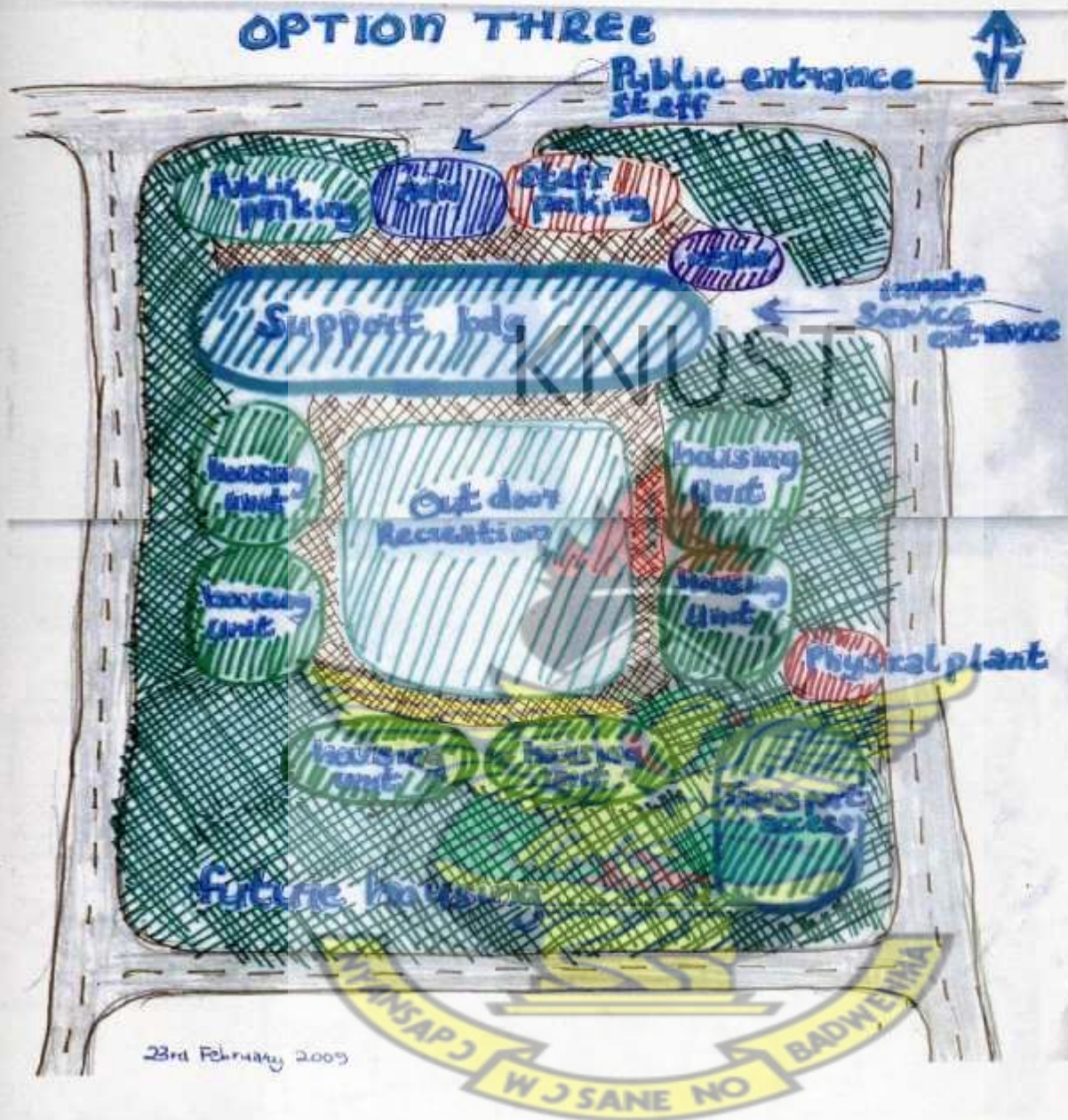


Fig 5.2 Conceptual site planning option 3

OPTION THREE(FEATURES)

- 1.Two entrances to the facility for inmates and the public
- 2.One building houses all support facilities.

The merits and demerits of the three option were assessed. Building forms were used to develop two new options.

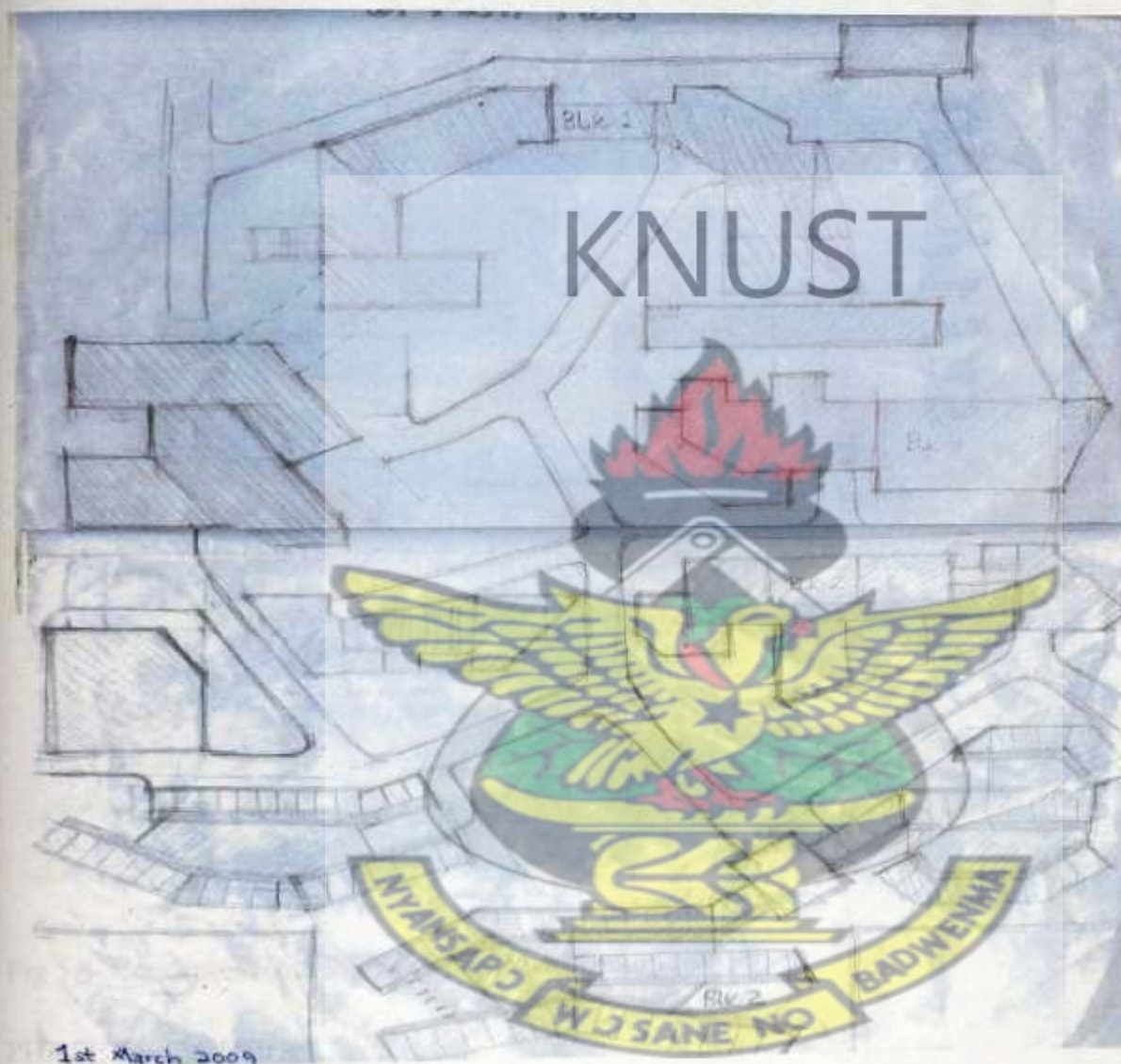


Fig 5.3 Conceptual site planning phase two option 1

PHASE TWO OPTION 2



Fig 5.4 Conceptual Site Planning phase two Option two

PHASE TWO OPTION TWO

5.6 SERVICES

5.6.1 WATERSUPPLY

Water is not being supplied to the site presently though there are plans to do that very soon. Due to this fact. A water supply system would be designed for the facility. Water harvesting would be employed. The roofs of the facility are specifically designed to collect water which are then transferred to underground tanks. The housing unit which make use of the greatest volume of water will have water tanks on the reinforced concrete roof.

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5.6.2 ELECTRICITY SUPPLY

In addition to supply from Electricity Company of Ghana, Stand by generators will be used to provide power. Photovoltaic Panels will be mounted on the roof of the housing unit where power will be generated from the sun.

5.6.3 TELECOMMUNICATION

Intercommunication between the various blocks of the facility. Radio frequency communication between control room and prison staff

5.6.4 LANDSCAPING

For soft landscaping trees were avoided within the facility. Area leading to the gate lodge were fitreated with trees for aesthetics and for direction purposes

5.6.5 DRAINAGE

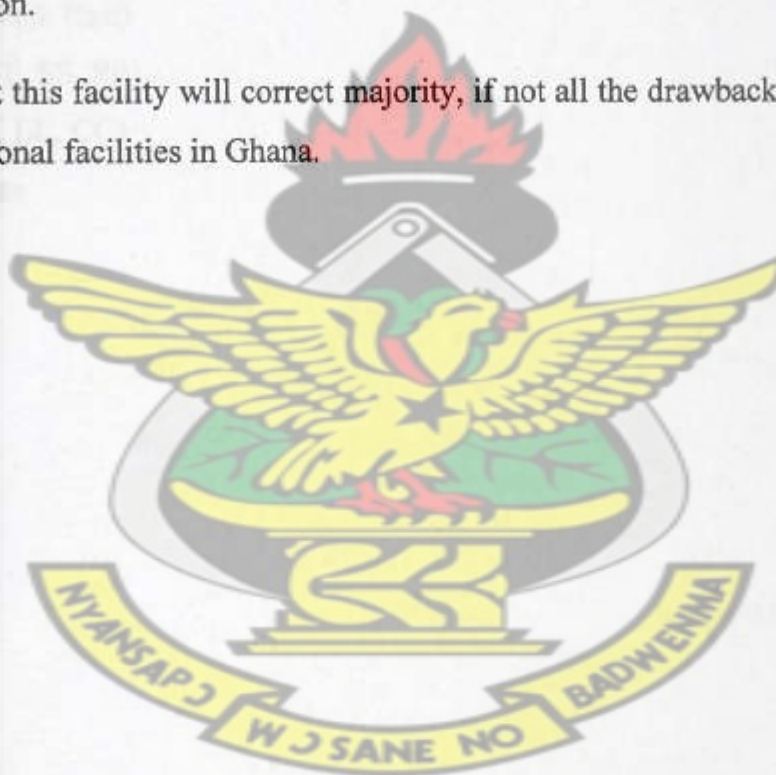
Soil waste is piped to a septic tank located at the south western part of the site.

5.7 CONCLUSION

This adult male correctional Institution has a mandate of making sure inmates remain incarcerated until legally released while providing basic human needs and program opportunities in Education and Trade acquisition. It will seek to make sure staff, inmates and visitors are not subjected to physical, emotional or psychological abuse or danger as well as reducing enforced idleness by making inmates spend majority of their waking hours doing things of constructive nature to occupy their time and above all providing reentry assistance to reduce the trend of arrest, incarceration and re-arrest.

Adequate measures have been put in place to make sure revenue is generated by the prison to help in regular maintenance and offer financial packages for well deserving inmates who are employed in the Institution.

It is my firm believe that this facility will correct majority, if not all the drawbacks in the design and operation of correctional facilities in Ghana.



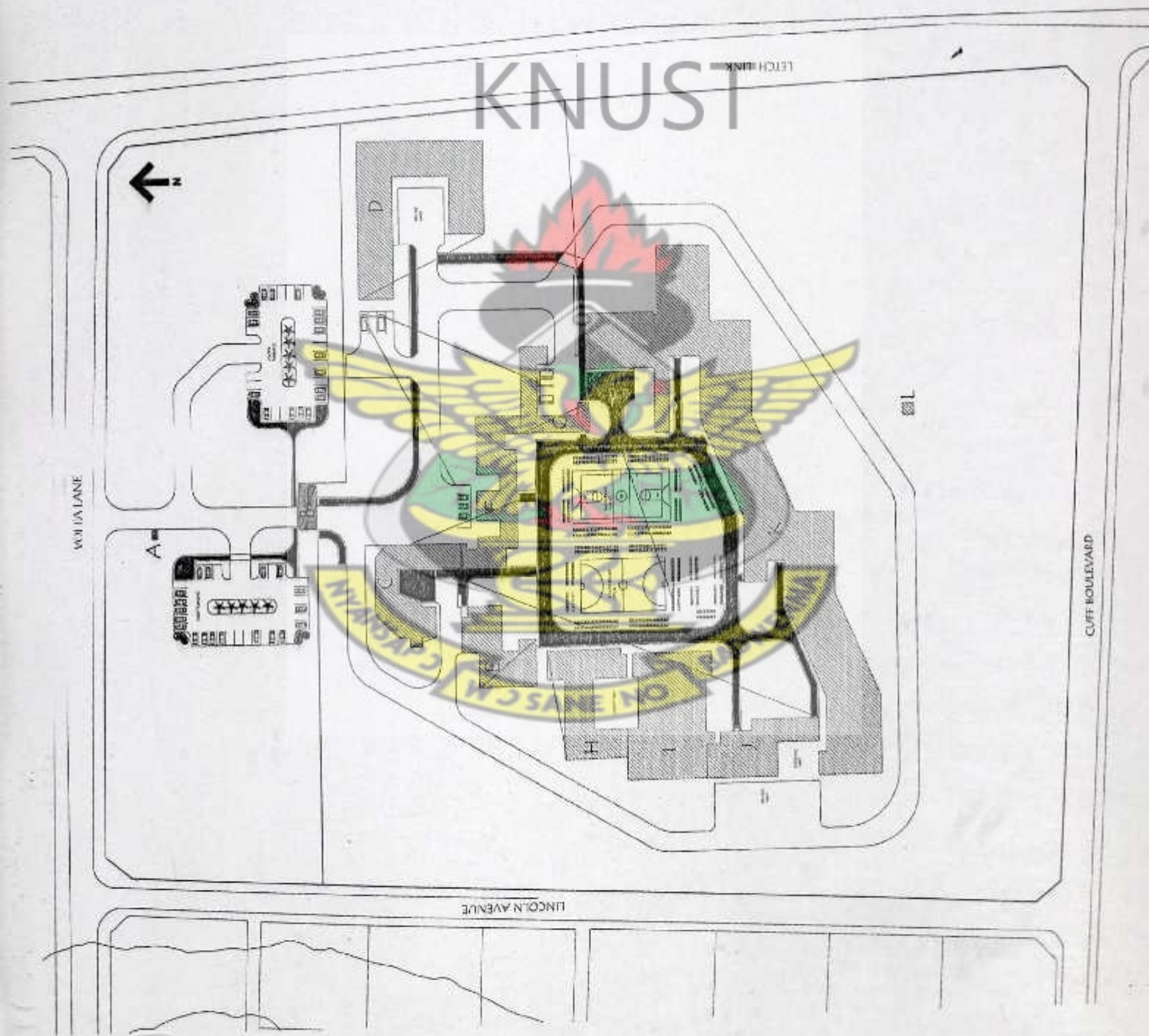
APPENDICES

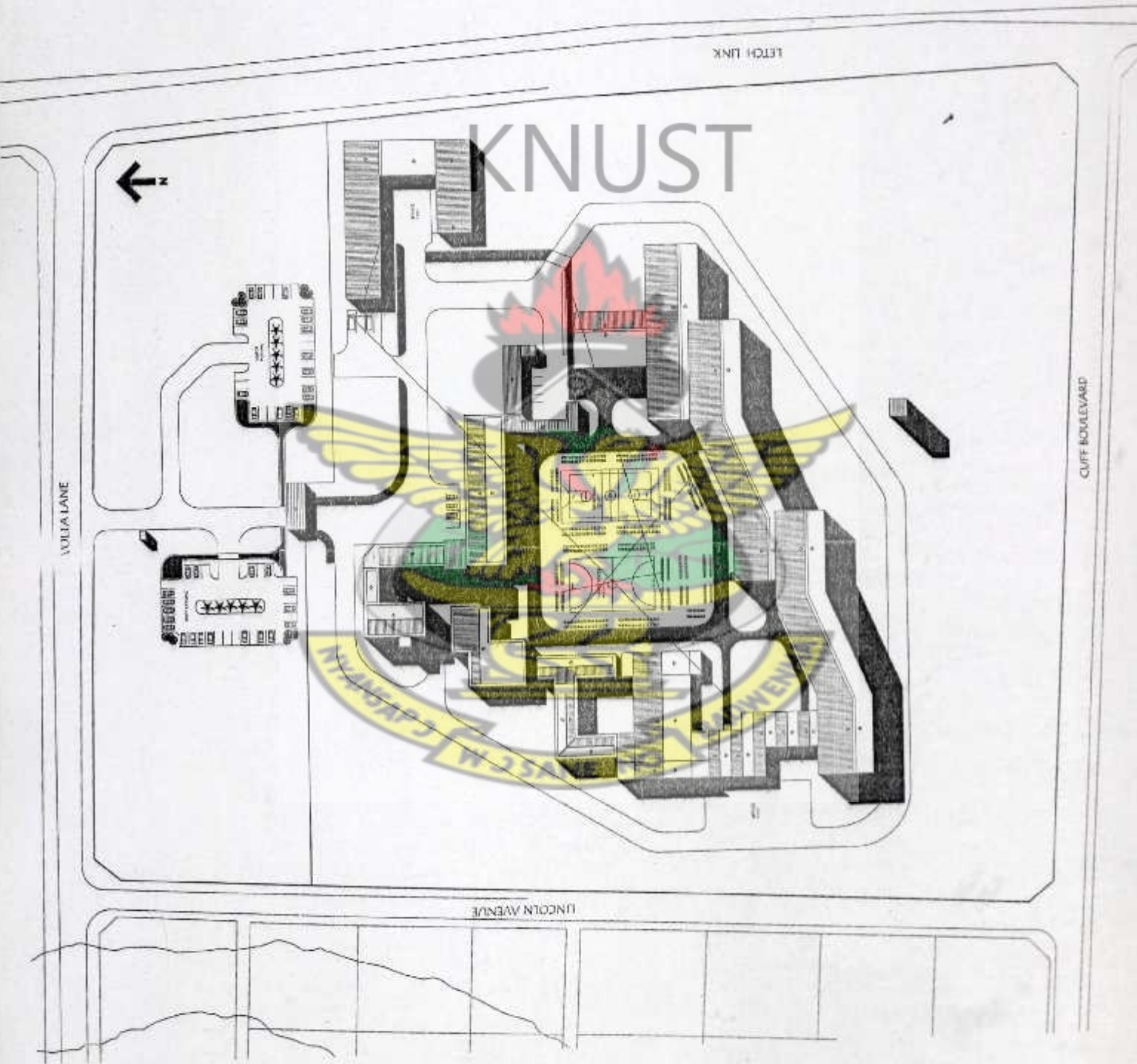
1. Site Layout
2. Block Plan
3. Ground Floor Plan
4. Second Floor plan
5. Third floor Plan
6. Roof Plan
7. Elevations (South & West)
8. Elevations (North & East)
9. Sections (KK, TT, SS, PP)
10. Sections(JJ, AA, LL, CC)
11. Plan Enlargements
12. Perspectives

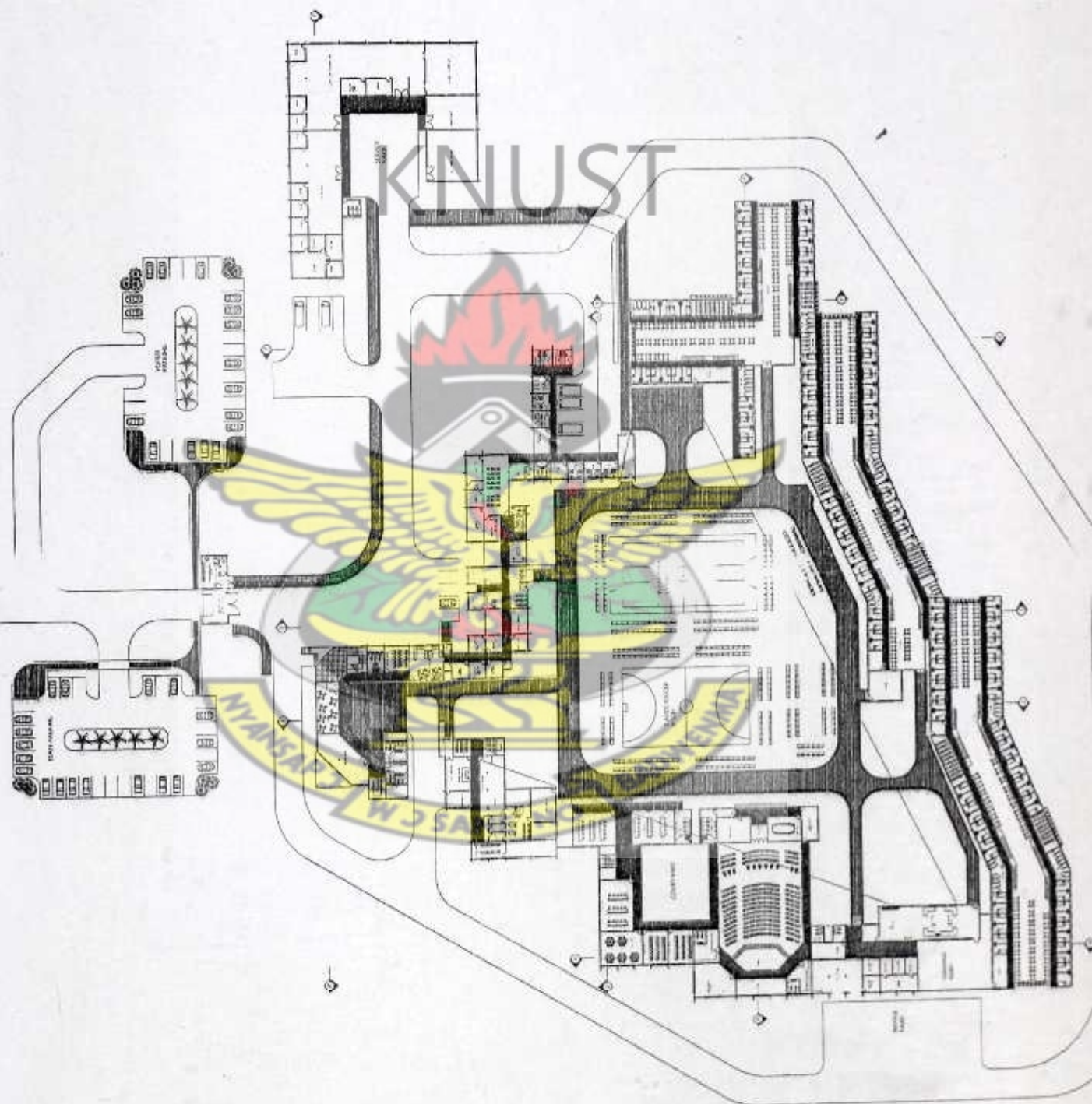
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- A - CHECK POINT
- B - GATE TOWER
- C - ADMINISTRATION
- D - INDUSTRY
- E - VISITATION
- F - MEDICAL UNIT
- G - INTAKE/TRANSFER
- H - EDUCATIONAL UNIT
- I - RELIGIOUS SERVICES
- J - FOOD SERVICES
- K - HOUSING
- L - GUARD TOWER

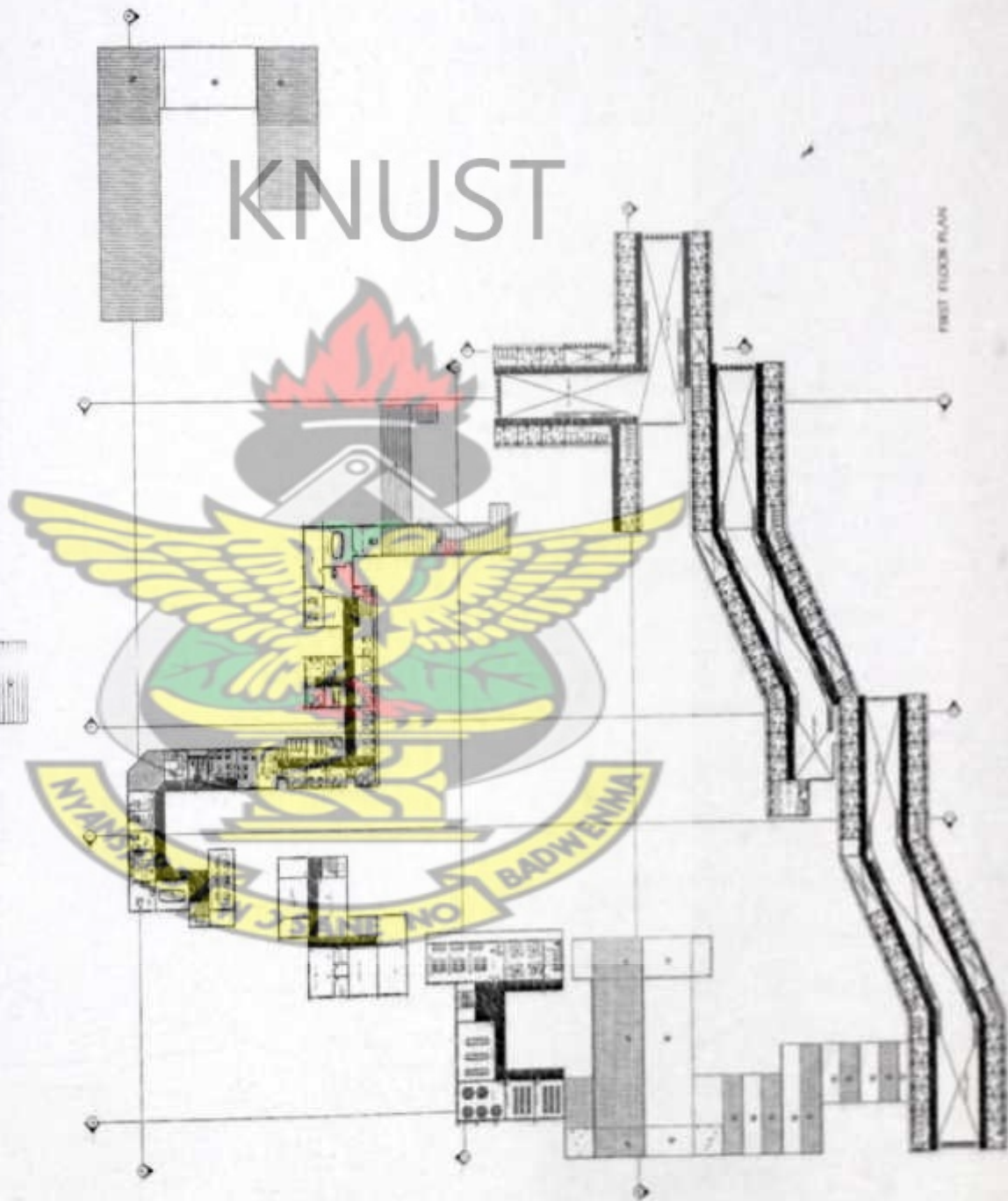




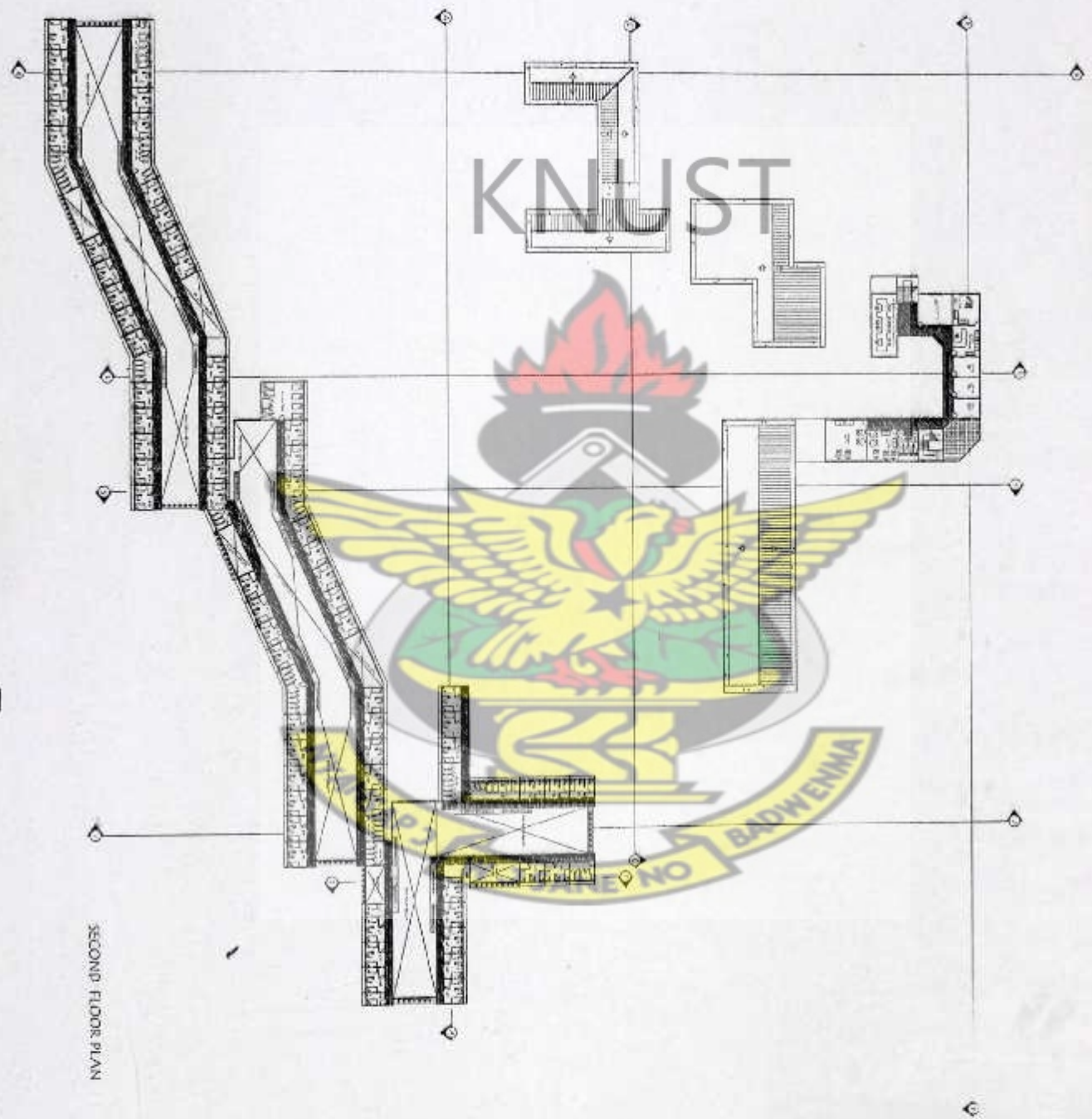
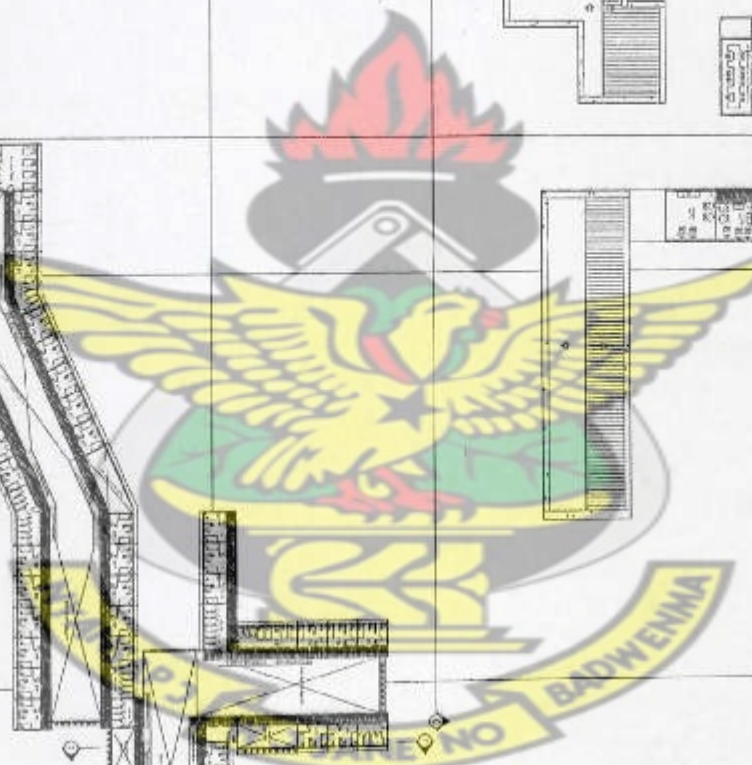




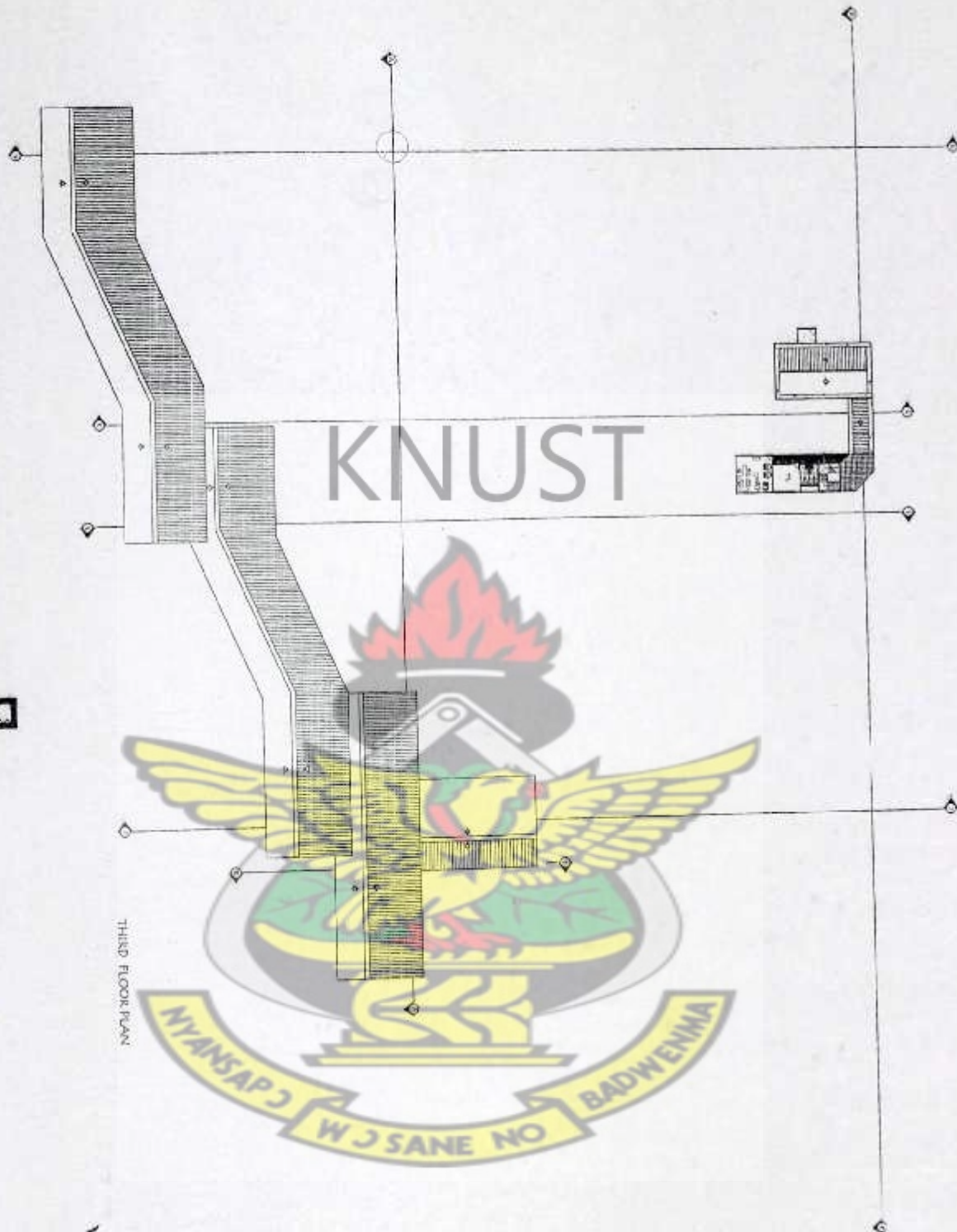
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SECOND FLOOR PLAN



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THIRD FLOOR PLAN

FOURTH FLOOR PLAN



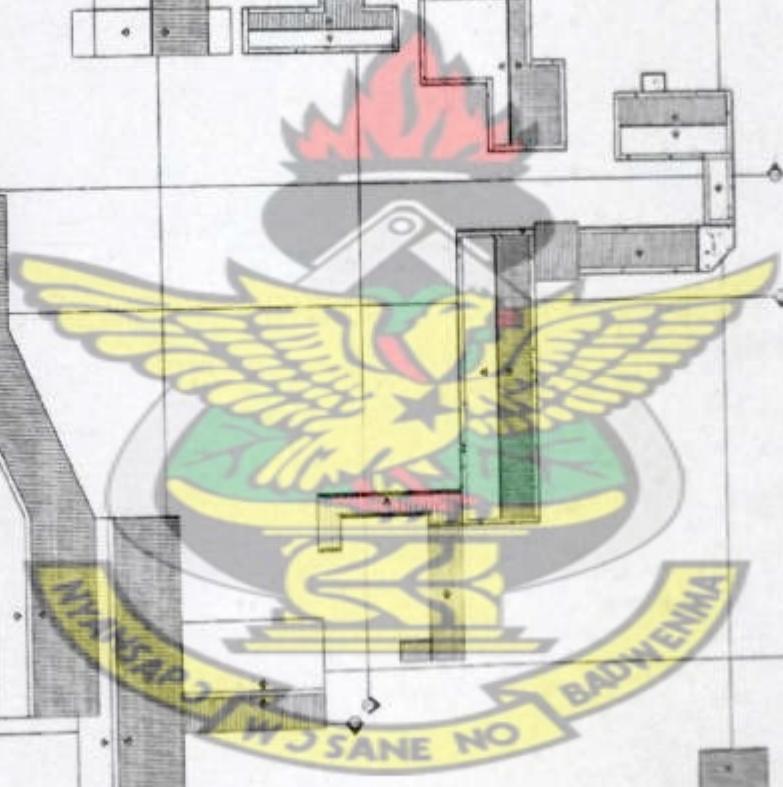
FIFTH FLOOR PLAN



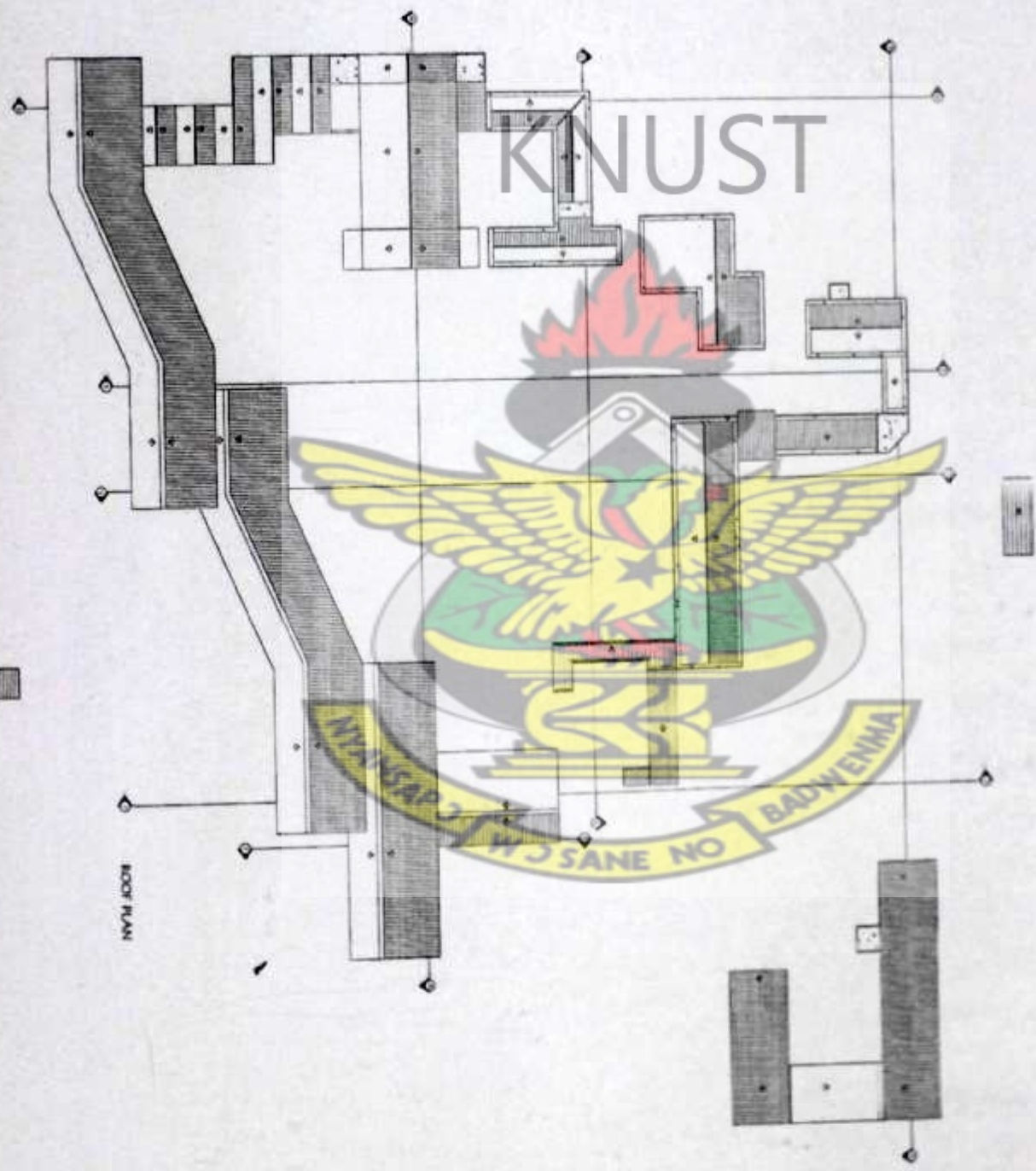
SIXTH FLOOR PLAN



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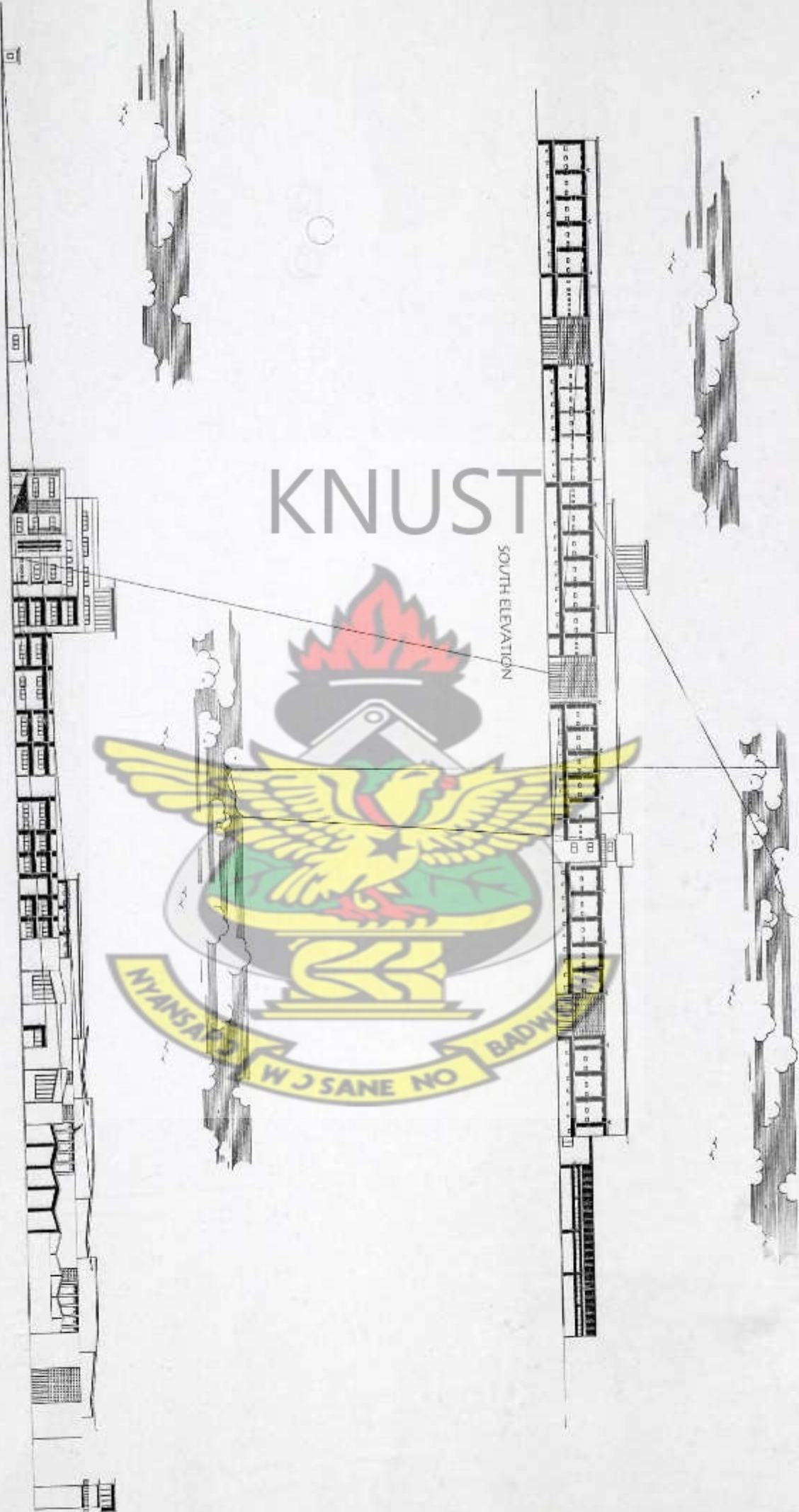
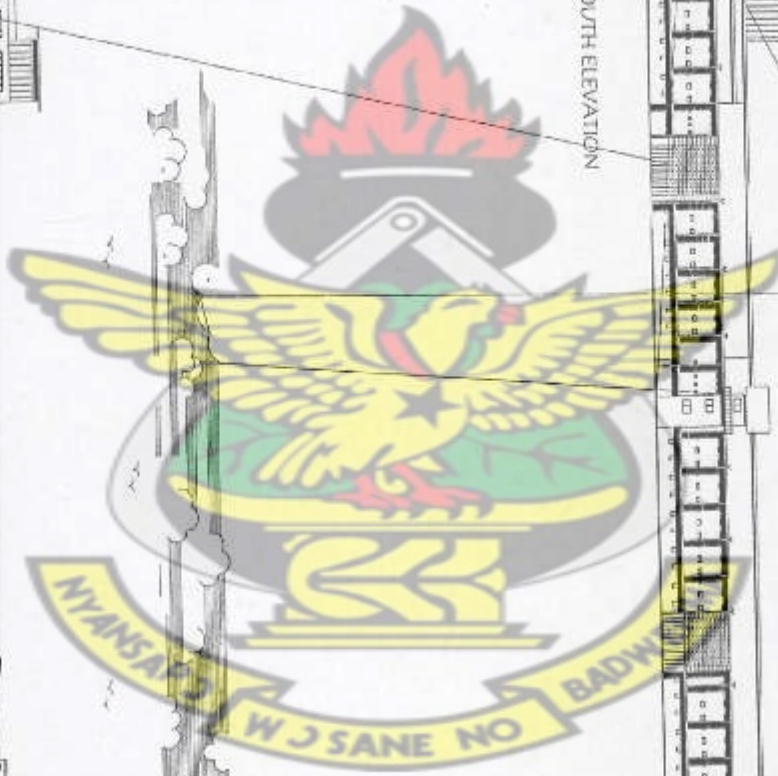
FLOOR PLAN

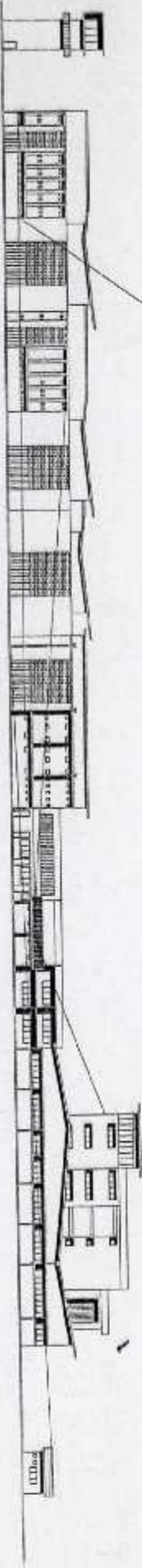


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SOUTH ELEVATION

WEST ELEVATION





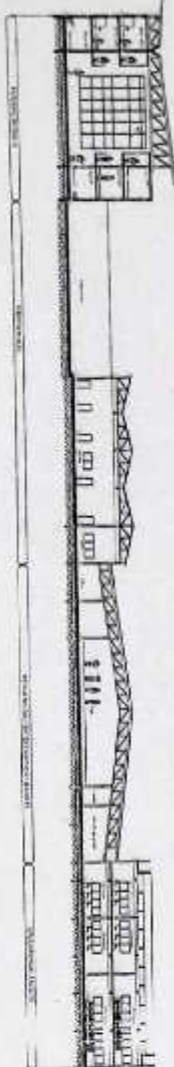
EAST ELEVATION

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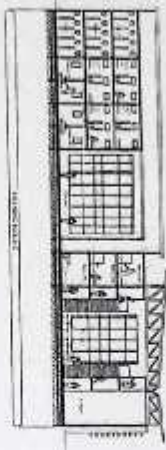


NORTH ELEVATION

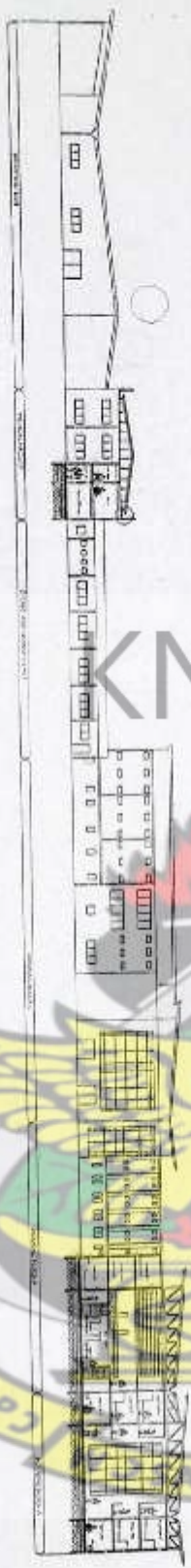




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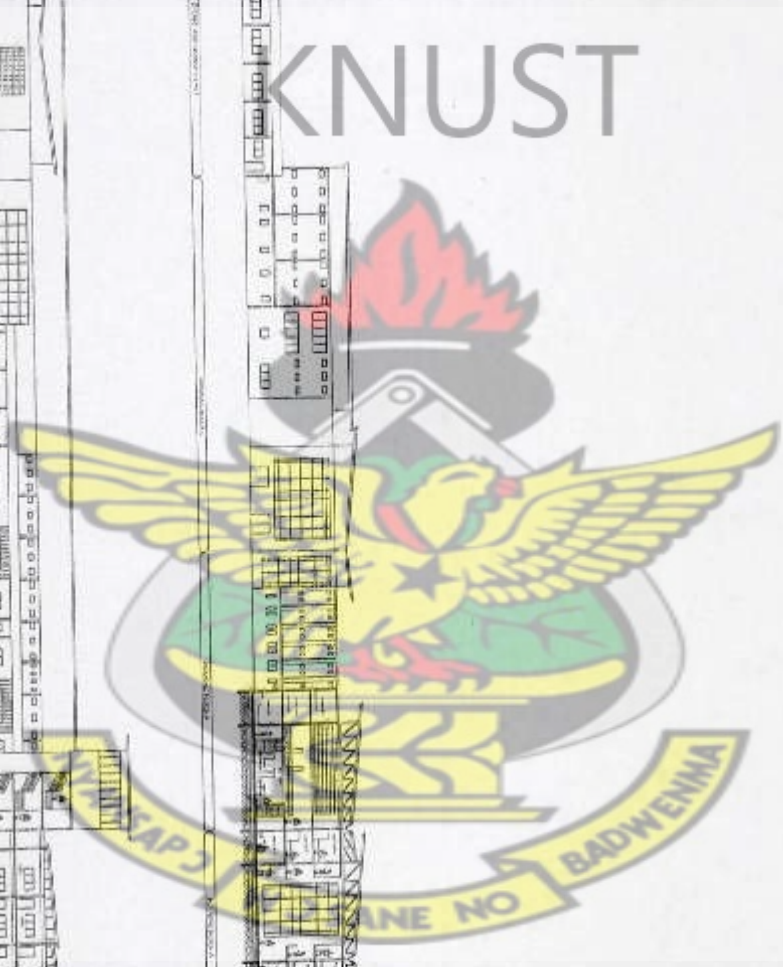
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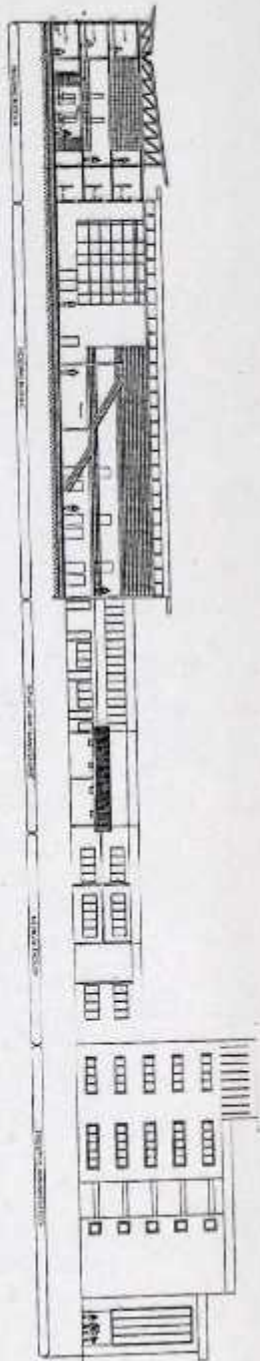


SECTION SS



SECTION PP

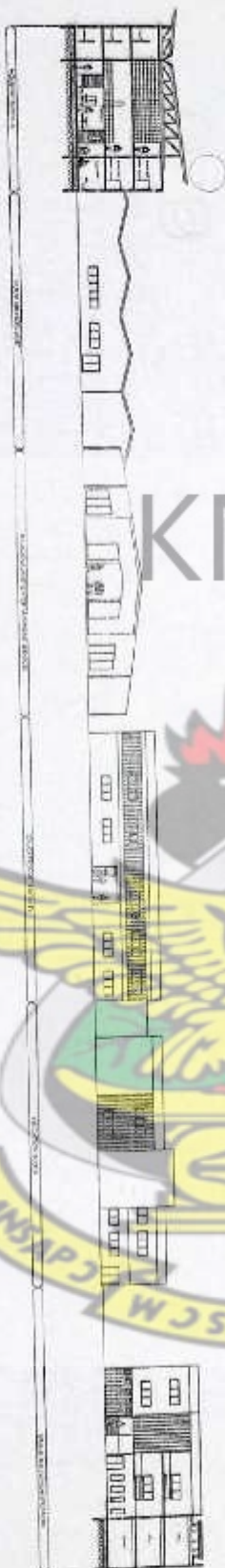




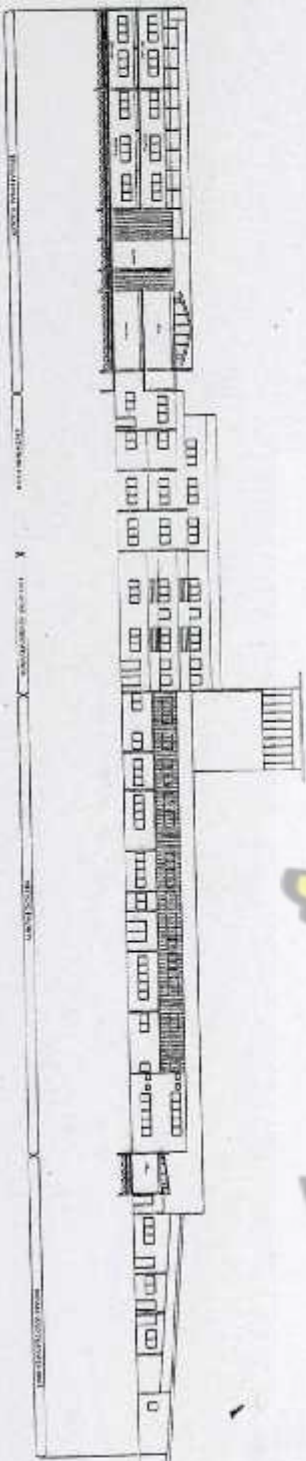
SECTION JJ



SECTION AA

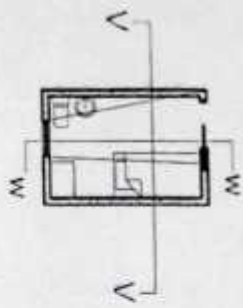


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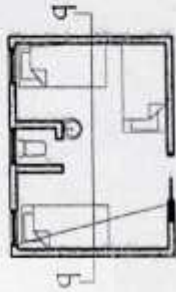


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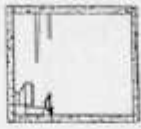
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OCCUPANCY
CELL



TRIPLE
OCCUPANCY
CELL



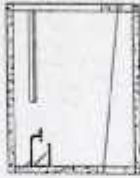
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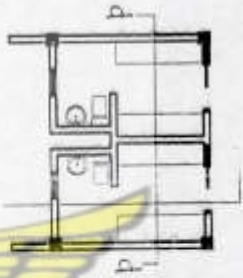


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KNUST

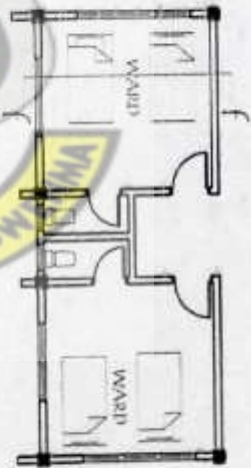
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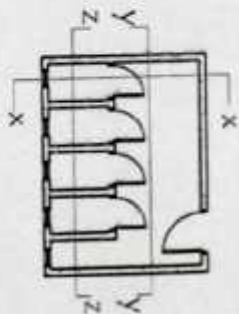
MEDICAL
CELL



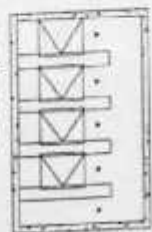
section ff



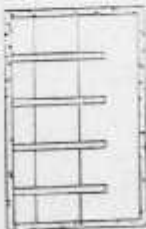
SHOWER AREA



section yy



section zz



section xx





