

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND
TECHNOLOGY
COLLEGE OF ARCHITECTURE AND PLANNING
FACULTY OF ARCHITECTURE AND BUILDING TECHNOLOGY
DEPARTMENT OF ARCHITECTURE**

**THESIS TOPIC: KESSBEN COMMERCIAL CENTER-
ABUAKWA**

**BY
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JUNE 2009

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KESBEN COMMERCIAL CENTER, ABUAKWA - ATWIMA

by

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Kwame Nkrumah University of Science and

Technology

in partial fulfillment of the requirement for the degree

of

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College of Architecture and Planning

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DECLARATION

I declare that I have personally undertaken this study under the supervision of Mr. Amoateng-Mensah and that no portion of this study has been presented to any university anywhere for any degree.

18/08/2009

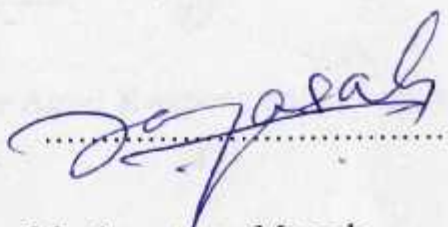


Date

Annor Isaac

I declare that I have supervised the student above in undertaking the study.

15/09/2009



Date

Mr. Amoateng- Mensah.

DEDICATION

This report is dedicated to my family, for the valuable investment they have made in my education.

ACKNOWLEDGEMENT

I am grateful to the Most High God whose bountiful grace and unfailing love made this thesis report possible

My most earnest thanks to my supervisor, Mr. Amoaateng-Mensah for the precious time taken of his busy schedules to see to the crystallization of the thesis.

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Finally to all whom in one way or the other help to put a smile on my face on seeing this thesis completed, I give you my heartfelt thanks.

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CHAPTER ONE

INTRODUCTION

1.0 PREAMBLE

Over the past ten years, consumer demand for convenience and quality has grown considerably and modern retail has been expanding at a very fast pace in the emerging markets. Although some critics have questioned the impact of modern retail growth on emerging economies, it is generally considered beneficial as it produces a myriad of positive benefits that far outweigh any perceived disadvantages. A growth in the retail industry has been a catalyst for job creation, the reduction of protectionism, infrastructural improvements, improved standards of living, competitive advantages and economic growth.

Urban commercial structure comprises of a hierarchy of business centres from isolated convenient stalls to regional shopping centres to serve urban needs. These centres display spatial patterns that conform to the geographic distribution of consumers. The ideal urban commercial structure is thus to have commercial facilities for the local, to the neighbourhood, to the community, to district and finally the regional levels with varied degrees of sizes, composition, form, among others. This helps to prevent the situation where everybody (consumer) has to travel to the Central Business District (CBD), of a city to transact business and thereby reduce traffic, overcrowding, and its associated problems.

The case of Kumasi's commercial structure contrast the ideal situation described above as there are less or no commercial activities at the community levels but all

commercial activities are concentrated at the CBD of the city leading to the problems mentioned above. Most of the suburban areas are service deficient and as a result, many people still depend on the CBD for various services. About 44.3 percent of all trips in the city have either their origin or destination in the CBD compared with 65 percent 25 years ago. This figure may be due to the development of commercial activities in various residential areas. (Adarkwa *et al*). Worldwide urban design history has shown that this phenomenon will eventually result in the congestion of the city, which culminates in commercial thus economic breakdown.

Urban design History has shown that one of the most logical means of decongesting the city centre is by a conscious creation of suburban centers. In most cases CBD's have evolved naturally over time, as such suburban centers may never gain the requisite strength to act as an urban decongestor without a conscious sense of physical planning in location and design – a conscious dotting of the city with replica's of the city centre in microcosm – the commercial centre.

There is therefore a high demand for an alternative and diverse commercial system to take care of growing problems within the CBD. The crude responds to the current situation can be seen in the proliferation of wooden and container kiosks and other unauthorized shanty commercial structures within the city enclave. Shopping activities, which used to be the preserve of Adum, are now springing up in areas such as Bantama and other adjoining suburbs.

1.1 PROBLEM STATEMENT

A CBD is usually referred to as the heart of the city, meaning that it's accurate to equate its health to that of the city as a whole. In Kumasi, the excessive reliance on ADUM for commerce is already evident in how in a few years, freely trudged

terrains such as the Tafo road have become immensely frustrating to use, due to long traffic jams of cars all almost invariably trying to get to the city center. It appears safe then to say that the rate of growth of the city (physically) seems to be woefully trailing behind the increase in vehicular and commercial population. These issues if not checked represent a recipe for economic breakdown in the nation's second largest city.

The real solution to the problem however rests in the decentralization of the commercial nerve centre – CBD, to alleviate the plight of commuters and workers that ply the area.

The lack of a one stop shopping center which will provide food and products as well as leisure facilities in a safe and congenial environment in Kumasi has created difficulty in transactions of various kinds: these transactions ranges from the everyday buying and selling of goods as well as the rendering of services. The need for such a one stop facility in alleviating the stress of the people of Kumasi is long overdue. It is therefore important in given thoughtful consideration to this basic need so as to ease the overwhelming demand on the CBD in Adum.

1.2 OBJECTIVES

A commercial centre at Abuakwa-Atwima is being proposed as an urban design measure primarily to serve shopping and associated needs of the urban periphery of the city and decongest the Central Business District for convenience. The proposal will seek to pursue the following objectives.

- To decentralize the commercial centre of the city to serve the commercial needs of suburban populace.

- To create convenient shopping environment for the family and people of all income levels.
- To attract big retail and department stores to set up outlet shops in sub urban areas of the city in order to augment city expansion.
- To enable Kumasi to take advantage of the new challenges created because of changing world economic environment.
- To bring major retailers to the doorstep of sub urban city dwellers.
- To create employment within the city.

1.3 JUSTIFICATION

- Both the economic and leisure activities will directly and /or indirectly help improve the economy of Kumasi.
- The complex will provide users with a complete range of goods and services and under “one roof” thereby reducing resources expended in shopping and conducting business.
- It has the potential to enhance night life.
- There will be job creation.

1.4 SCOPE

The complex will compose of:

- Offices and banking facilities.
- An Entertainment arena.-cinema, club and bar, games area.
- Food arena- a food court, restaurant.
- Parking lots
- Shopping activities.

- ICT centre.

1.5 PROJECT LOCATION

The commercial centre is located beyond the central business centre (CBD) along the main Sunyani-Kumasi road specifically Abuakwa, in the Atwima Kwawnoma District.

1.6 CLIENT

KESBEN GROUP OF COMPANIES

KUMASI METROPOLITAN ASSEMBLY

ATWIMA KWAWNOMA DISTRICT ASSEMBLY

1.7 CLIENT BRIEF

- OFFICES
- I C T CENTRE
- BANKS
- FOOD ARENA; FOOD COURT, RESTAURANT
- SHOPPING MALL
- ENTERTAINMENT ARENA; CINEMA, GAMES AREA
- PARKING LOTS
- ANCILLARY FACILITIES

1.8 SPONSORS

The project would be co-financed by the major share holder of the facility, thus KESSBEN GROUP OF COMPANIES, Kumasi metropolitan assembly, Atwima Kwawnoma district assembly and the main anchor shop in the facility.

1.9 TARGET GROUP

The commercial complex is expected to meet the needs of the following groups of peoples.

- Local retail business groups
- Foreign retail business group, for instance the shoprite.
- Banks and financial institutions
- Entertainment organizers
- Artists and performers
- The general public.

1.10 METHODOLOGY

The methods this program seeks to employ are:

- Interviews
- Visual Surveys
- Photographic recordings
- Literature review
- Case studies
- Internet.

CHAPTER TWO

LITERATURE REVIEW

2.1 DEFINITION

The term “Commercial Center” would be define after separately defining the various words that made up the phrase, for the purpose of a clearer understanding of the subject matter.

According the Concise Oxford Dictionary, “Commercial” which is derived from the word Commerce, is “the activity of buying and selling especially on a large scale”. A “Centre” may be explained to indicate a unit or an entity which consists of many different and connected parts. Conclusively, a Commercial Center can be interpreted as a Business Complex which contains a concentration of Business, Civic and Cultural activities, creating conditions that facilitate interaction and exchange. In simple terms, it is a building or set of buildings that contain a variety of retail units with interconnecting walk ways enabling visitors / consumers to easily walk from unit to unit to transact a business or perform a trading activity.

Again shopping center is a complex of retail stores and related facilities planned as a unified group to give maximum shopping convenience to the customer and maximum exposure to the merchandise. The concept is not new. The agora of the typical city of ancient Greece was essentially a shopping centre in the heart of the business district.

2.2 HITORY OF COMMERCIAL CENTRE

Before the late 1940s, following the convention of the day, practically all commercial services were located in downtowns. Situated at the centre of town, at a major crossroads, near a train station or a river forks, usually on the most level land

around, one would find a relatively dense, compact cluster of building with shops and offices on the first floor and apartment or offices on the upper floors.

What we now know as “shopping centre” sprang up along these routes into and out of town. Freestanding grocery stores and mail-order catalog stores were generally the first to identify the potential of inexpensive sites at the edge of town, large enough to accommodate both the building and the necessary parking to support it.

The Emperor Trojan’s architect, the Greek slave Apollodorus, built a shopping center adjacent to the Roman Forum in AD 110; it had a two-level enclosed and ventilated mall lined with open-fronted shops startlingly similar to today’s concept. The typical Arabian souk, or market, of the Middle Ages also had narrow, weather protected malls lined with open-fronted shops.

2.2.1 TYPES OF CENTERS

- **Neighbourhood center (suburban)**

This is a row of stores customarily (but not always) in a strip, or line, paralleling the highway and with parking between the line of store fronts and the highway. Service is by alley in the rear, ranging from 20,000 to 100,000 square feet, these projects usually contain a supermarket and a drugstore, often a variety store, and a half dozen or more service type store.

- **Regional Center (Suburban)**

This contains one to four department stores plus 50 to 100 or more satellite shops and facilities, all fronting on an internal pedestrian mall, or shopping walkway, parking completely surrounds the building group to that all stores face inward to the mall with their “backs” to the parking.

With today's rising land costs and diminishing supply of suitable large tracts, there has been a trend toward double-decked parking to save land area. It is simply a matter of the relation between the land cost and the cost of the parking deck.

There is also a strong trend toward double decking of the stores themselves so that the central pedestrian mall has two interconnecting levels. Each lined with shops. The double level mall is also due, in part to the need to keep horizontal walking (shopping distances within reason. As land costs continue to rise and projects to grow large, three and four level malls will become more common.

- **Community centres**

In addition to convenience goods and personal services, community centers typically offer a selection of apparel and home furnishings. Anchors commonly consist of a junior department store and/or a large variety store in addition to one or more super market. The size ranges from 100,000 to 300,000 square feet of GLA and the land area from 10 to 30 acres.

- **Regional Centres**

Regional centres are always anchored by one full-line department store (or more) and include enough other stores to provide a broad selection of general merchandise in both hard and soft lines, plus food and personal services. Regional centres are designed to meet all the shopping needs of large residential areas and usually range in size from about 300,000 to 1,000,000 square feet of GLA, occupying 30 to 50 acres. A shopping centre, regional centres have had an enormous impact on the industry and were the first to challenge down town shopping districts.

- **Supper regional Centres**

Similar to regional centres, but are bigger and draw upon a large trade area, supper regional centres include three or more full line department stores and well over 100 tenants. They offer a wide variety of personal services. Super regional centres, which usually cover 50 or more acres, comprise at least a million square feet of GLA and some are larger than 2.5 million square feet.

- **Specialty Centers and Theme Centers**

Generally appealing to a relatively narrow segment of the total market, specialty and theme centers are almost always anchorless and their tenants are mainly local stores rather than chains. Frequently, such centers are located in high tourist and or high income areas, and restaurants contribute greatly to their drawing power. They are sometimes located in historic landmark buildings or districts. They use existing or newly constructed space in unusually creative ways. Because their regular customers come from only a limited area, most are kept relatively small, usually less than 25,000 square feet of GLA and often in the 50,000 to 70,000 square foot range.

- **Mixed use centres**

Mixed use centres typically combine at least three revenue producing uses from among retail, office parking restaurant, hotel residential and entertainment facilities. they may be built in suburban or urban areas, and in the latter often contribute significantly to the revitalization of inner cities, in downtown areas, where land costs are high, a multilevel or high rise, single mass design is commonly use to minimize the land area needed. A key requirement for the success of a mixed used centre is that even though the uses work synergistically to enhance one another's performance, each use must be independently successful.

- **Urban Centers**

Also contributing to the revitalization of downtown areas, urban centers are usually part of a city's urban renewal program. They usually include a pedestrian mall and/or covered walkways (particularly in areas of climate extremes) and are built right in the traditional shopping district. Characteristically, urban centers feature a park like atmosphere, absence of cars, freedom to move about among a variety of retail stores, and in many cases, a food court.

- **Outlet Centers**

Designed to sell goods at lower than normal prices outlet centers are of two type: One is the factory, or manufacturer's outlet where retail stores are owned and operated by manufacturers and sell the manufacturers' own irregular or overrun merchandise bought on consignment or as factory overruns, irregulars, or overstocked items. A majority of outlet center sell clothing; but overs carry luggage, books home textiles, house wares, and home decorating accessories. They are found mostly in the South and East.

- **Off price Centers**

Not to be confused with outlet centers, off price centers sell branded merchandise that can be found in conventional specialty and department stores at higher prices. Usually, the merchandise is first quality –some manufacturers require that their merchandise be sold without labels in off price centers. The early off price centers usually had no frill stores with minimal or no displays, basic lighting, and open dressing rooms. However, as such centers became more popular; the developers tended toward an upgraded design and offered more amenities

2.2.2 MALLS

A mall can refer to a shopping mall, which is a place where a collection of shops all adjoin a pedestrian area, or an exclusively pedestrian street, that allows shoppers to walk without interference from vehicle traffic. Mall is generally used to refer to a large shopping area usually composed of a single building which contains multiple shops, usually "anchored" by one or more department stores surrounded by a parking lot, while the term arcade is more often used, especially in Britain to refer to a narrow pedestrian-only street, often covered or between closely spaced buildings. The majority of British shopping centers are in town centers, usually inserted into old shopping districts, and surrounding by subsidiary open air shopping streets.

In most of the world the term 'shopping center' is used especially in Europe and Australasia; however 'shopping mall' is also used, predominantly in North America, but also to a large extent in Asia. Shopping precinct and shopping arcade are also used. In North America, the term shopping mall is usually applied to enclosed retail structures (and may be abbreviated to simply mall) while shopping centre usually refers to open-air retail complexes.

Malls in Ireland, pronounced "maills", are typically very small shopping centers placed in the center of town. They average about twenty years in age, with a mix of local shops and chain stores. These malls do not have shops found in the high street or modern shopping centers.

Shopping centers in the United Kingdom are referred to as "shopping precincts" or just "precincts", but with American-style centers becoming more common in the UK, they are increasingly being referred to as "malls".

HISTORY

The first indoor mall in the United States was the Lake View Store Morgan Park, Duluth, Minnesota, built in 1915, and held its grand opening on July 20, 1916. The architect was Dean & Dean from Chicago and the building contractor was George H. Lounsberry from Duluth. The building is two-stories with a full basement and shops were originally located on all three levels. All of the stores were located within the interior of the mall with some shops being accessible from both inside and out.

Initially, malls were designed in straight-line fashion, allowing an almost uninterrupted view the length of the space. Now they follow design concepts gleaned from an earlier time, utilizing small pedestrian spaces (30 to 50) between the storefronts and using angles or turns to reduce the visual distance and focus attention and interest while traversing the space.

In the mid-20th century however, after the economic boom period which followed World War II, people began to escape from their crowded apartments located between the downtowns and their associated industrial belts that surrounded them. Larger numbers than ever before escaped to the newly developed suburbs in newly acquired automobiles. This generated a trend of the suburb and automobile culture especially in the United States. That is to say, a new style of shopping was created away from downtown. The Second shopping center in the United States was Country Club Plaza, which opened in 1924 in Kansas City, Missouri. An Austrian-born architect and American immigrant Victor Gruen pioneered the concept of the fully enclosed mall. This type of malls that eventually came out included Northgate Mall, built in north Seattle, Washington U.S.A in 1950, Victor Gruen's Northland Shopping Center built near Detroit, Michigan, U.S.A in 1954, and the Southdale Center, which opened in the twin cities suburb of Edina, Minnesota, U.S.A in 1956 as the first fully enclosed shopping mall. In the U.K, Chrisp Street Market was the first pedestrian shopping area built with a road at the shop fronts.

West Edmonton Mall in Edmonton, Alberta, Canada has the title of the largest enclosed shopping mall since 1986. West Edmonton Mall is listed in the Guinness Book of world Records for the "largest shopping centre in the world" and "world's largest parking lot".

One of the world's largest shopping complexes at one location is the two-mall agglomeration of the Plaza at King of Prussia and the Court at King of Prussia in the Philadelphia suburb of King of Prussia Pennsylvania, U.S.A. The King of Prussia mall has the most shopping per square foot in the US. The most visited shopping mall in the world and largest mall in the United States is the Mall of America, located near the Twin Cities in Bloomington, Minnesota, U.S.A. However, several Asian malls are advertised as having more visitors, including Taman Anggrek Mal, Kelapa Gading Mall and Megamal Pluit, all in Jakarta -Indonesia, Berjaya Times Square in Malaysia and SM Megamall in the Philippines.



Figure 1 the mall of Arabia

2.2.2.1 Characteristics

- **Inward looking**

All shops front an internal pedestrian mall or shopping walks way.

- **Magnets**

These are big name retail shops that attract the most shoppers to the shopping mall.

They are referred to anchor shops.

2.3 ECONOMIC OVERVIEW OF KUMASI

2.3.1 Brief economic background

Kumasi is strategically located in relation the whole of Ghana. All major roads and rail way lines converge in Kumasi and make the city a commercial nerve centre and

second most important city in Ghana. Urban economies of developing countries have been described as dualistic. This is basically because of the fact that research has shown that two basic features, namely the formal and informal sectors generally coexist and interact with each other in the four interrelated areas of supply, production, distribution and consumption in the economy.

2.3.2 Commercial structure

Economic activities in the city can be categorized in to three main areas namely, agricultural, industrial, and services (which include commerce). The services sector employs about 71 percent. The agricultural and industrial sectors employ 5 percent and 21 percent respectively. The commercial sector is mostly concentrated in and around the CBD that is the Adum. Some commercial satellites also exist in area such as Asafo, Bantama, Asawase, Ayigya, Ahinsan, Oforikrom, etc. forming an integrated system of urban markets sprawling from the Adum-central market precinct.

2.3.3 Retail types

- **Traditional market**

A typical market is a regular gathering place where people buy and sell goods. This is the open air sometimes covered market made up of stalls of standard sizes. Facilities in the market mostly include stalls, variety shops, storage, milling and grinding facilities and other service shops. There are other ancillary facilities such as health posts, drug stores and financial institutions which are sometimes found in bigger markets. These markets are mostly owned by the city authorities and are located strategically in all major suburbs in the city. The Kumasi Central Market one of the largest in West Africa is located in the central business precinct of Kumasi.

• **Retail Stores**

These retail types specialize in variety of merchandize. They are mostly specialty shops which sell merchandise ranging from fashion to provisions as well as building materials and food. The merchandise sold largely depends on the location of such a shop. They are the commonest type of retail type in the city.

They are mostly located on the ground floors of building along major or busy streets. Almost all shops within the Adum area apart from purpose built shops built by colonial retail chains can be categorized under this retail type. Virtually all buildings along all major streets in Kumasi have converted their ground floor spaces into this type of shops. These can be found in places such as Bantama, Ashanti new town, Asafo areas. Most of these shops are converted residential spaces.

• **Kiosk**

The average size of kiosk is 6sqm. They are generally made up of wooden structures. A large percentage of this type of retail activity is unauthorized. The proliferation of such illegal structures becomes an eye sour to the urban landscape. Steel containers are gradually taking the place of the wooden kiosks. They are durable and blend easily with the streetscape.

• **Supermarkets**

They are the major large space retailers in the city. Big super markets are located in the main central business with smaller ones in suburbs around the city. Most filling stations such as Shell and Mobile all have supermarkets at their stations.

CHAPTER THREE

3.0 CASE STUDIES AND TECHNICAL STUDIES.

3.1 CASE STUDIES

3.1.1 ACCRA MALL

3.1.1.1 Location

The Accra mall is located along the Spintex Road near the Tetteh Quashie Round About in Accra. It is bounded by high income residential areas like airport residential area and cantonment. Shangri- La and African Regent Hotels are walking distance from the mall.



Figure 2 Front view of the Accra mall

3.1.1.2 Reasons for Study

- Accra mall is one of the few purpose built commercial facilities in Ghana.
- It signifies a crisp shopping environment.
- Location within strategic catchment area.
- Modernity of the facilities, equipment and services is worthy of study.

3.1.1.3 Main Spatial Features

- Parking lot
- Sub basement parking for staff
- Service yard
- Management unit.
- Banks
- Cinemas(5)
- The mall
- Restaurants
- Fast food joints
- Coffee shop
- 2 Anchor shops specifically

GAME and SHOPRITE

- Lettable shops
- Liquid waste recycling unit
- Night club

3.1.1.4 Tenant mix

The facility has a mixture of shops such as electronic shop such as Nike shop, fashion shops like Mr. Price and woodin, pharmacy, salon and shop for kids.

3.1.1.5 Architecture and planning

- The height of the facility is basically two floors because of where it is located, that is, the aviation zone.
- The parking lot is well advertised.
- The facility has two celebrated entrances which are accessed from the lot.
- The facility has few windows leaving the walls facing outside blank for advertising.
- The design is inward looking, that is, all the shop fronts face the main walkway (mall).

3.1.1.6 Spatial configuration

The facility has multiple accesses. The accesses to the service yard and customer parking lot are segregated. Parking facilities are in front of the facility. The management of the facility is at the sub basement of the facility which also has parking lot for the staff of the facility. It also has the security point at the entrance. The banks are also at the same level, but face the spintex road.

Lower Level

	SQM
01 Lower Ground 1	302.88
02 Lower Ground 2	243.70
03 Lower Ground 3	305.01
04 Lower Ground 4	303.68
05 Lower Ground 5	190.14

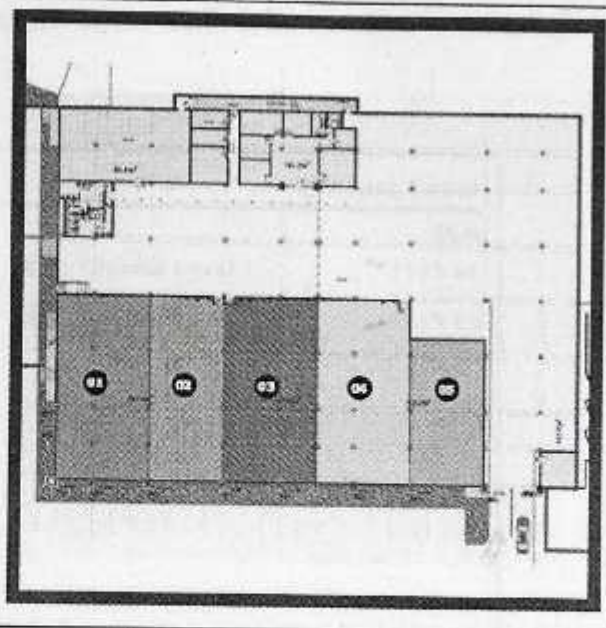


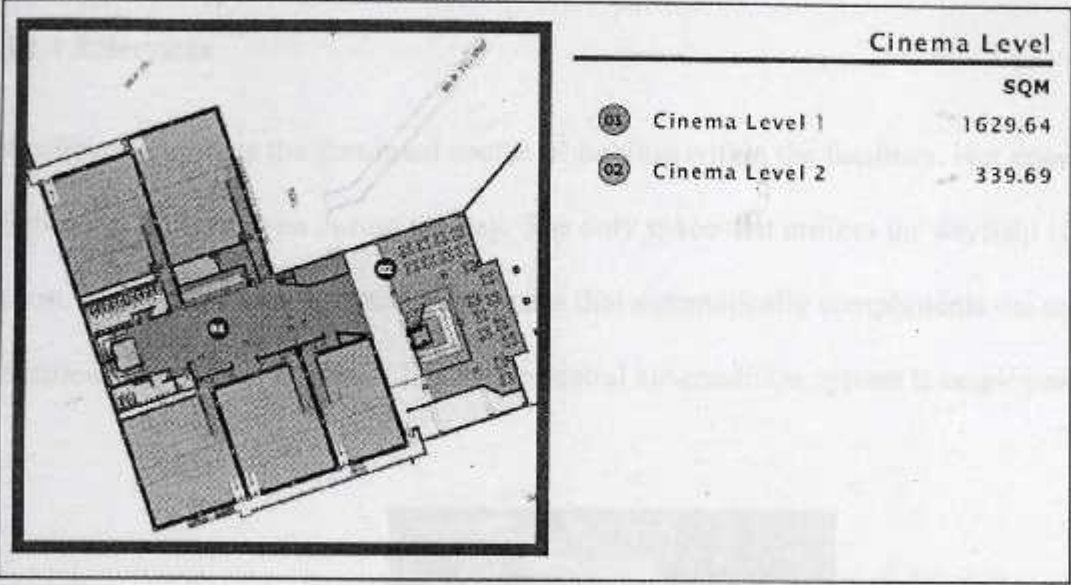
Fig.3. Plan showing the sub basement of the facility.

The main shopping floor, that is, the ground floor houses the anchor shops, the lettable shops and the food court which is at the centre of the facility.



Fig. 4. Plan of shopping floor and the food court.

The first floor of the facility houses the cinemas of the mall. It houses five cinema halls with different capacities.



Fig, 5 Plan of the cinema level.

3.1.1.7 Circulation

The service trucks of the anchor shops have their entry at rear of the facility. The sub basement of the facility serves as the bullion van entry and for the banks. The customer entries are in front of the facility. The wide walkways in the facility make movement in the facility more relaxed and enjoyable. The walkway is about eight metres wide. For vertical circulation, stairs and lift are used. They lead to the cinema floor.

3.1.1.8 Waste management

Bins are positioned at a regular interval within the walkway in the facility. The refuse is taken away periodically by a waste management company. There are cleaners always on the walkway cleaning the floor when it gets dirty. The anchor shops have their own cleaners and bins. Their wastes are gathered at the service yard at the rear for it to be carried away by

trucks. There is also a liquid waste recycling unit which collects all the liquid waste and recycles them to be used.

3.1.1.9 Services

Artificial lighting is the dominant source of lighting within the facilities. Not enough natural lighting is utilized even during the day. The only space that utilizes the daylight is the food court. There is an onsite standby generator that automatically complements the mains.

Artificial ventilation is also utilized. The central air-condition system is employed here.



Fig. 6. Lighting used in the facility.

3.1.1.10 Merits

- Strategic location
- Magnetic atmosphere created by visible parking and colourful facades.
- Range of goods displayed sold in the facility.
- Food court utilizes daylight.

3.1.1.11 Demerits

- The parking lot is very close to the entrance which does give room for free pedestrian movements.
- High running cost due to the fact that the facility depends solely on artificial lighting and ventilation.

3.1.1.12 Conclusion

Strategic placement of shopping centre in relation to the trade area is a key to the success of the shopping centre. Parking lots should be adequate and properly advertised to attract shoppers. The various accesses to the facilities should be very well celebrated for easy identification.

3.2 BULLRING SHOPPING CENTRE BIRMINGHAM, UK



Fig 7 – England's gleaming new shopping complex is known by the name Bullring

3.2.1 Location

The shopping centre is located within a historic market centre in the heart of Birmingham. Its proximity to St. Martin's Church and composition of squares and open spaces with links to the open markets, Digbeth and beyond provides a gateway to the east side of the city.

3.2.2 Reason for study

Birmingham's boldly designed Bullring replaces an enclosed mall built during a disastrous, pedestrian-unfriendly reconstruction of the city's center during the 1960s.

3.2.3 Main features

- 3100 parking spaces.
- Bullring provides over 110,000 sq m (1.2m sq ft) of retail space
- Over 140 shops and kiosks including anchor shops and restaurants.

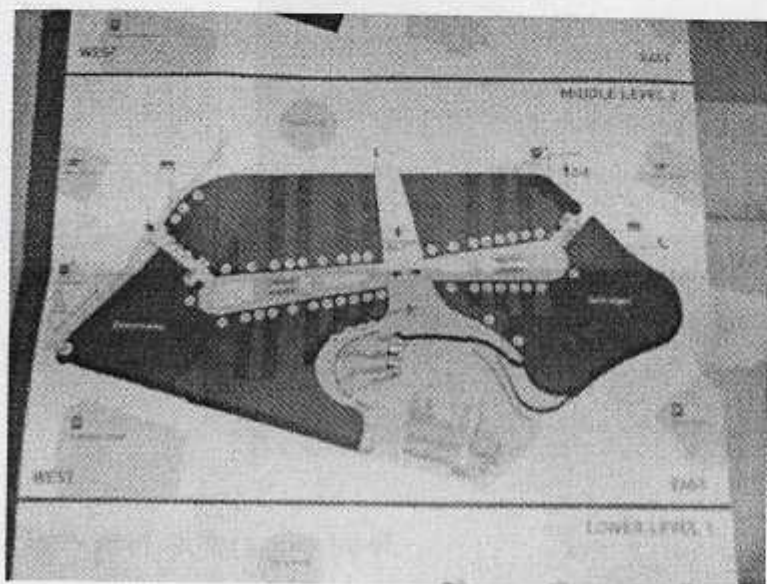


Fig.8- second floor plan of the bullring shopping mall.

3.2.4 Architecture

Continuing Birmingham's historic street pattern has been a major influence on Bullring's design. The scheme is composed on three axes, two of which form a natural extension to the city's principal shopping streets of New Street and High Street. Between the two, St Martin's Walk, a new pedestrian boulevard, restores historic linkages to the city's traditional markets beyond St Martin's Church. Designed by architects Benoy, Bullring has been conceived as a series of malls, open spaces, covered 'streets' and public piazzas, with the two department stores, Dagenham's and Selfridges, providing an anchor on each side of the scheme. The

design of Bullring's mall pattern has created a unique opportunity to cluster brands in a series of prime locations across three trading levels. Defined by different design treatments, each trading level has its own distinct personality in terms of retail mix: high street fashion and al fresco dining at Lower Level; younger fashion and lifestyle retailing at Middle Level; and inspirational fashion on the Upper Level, East Mall.

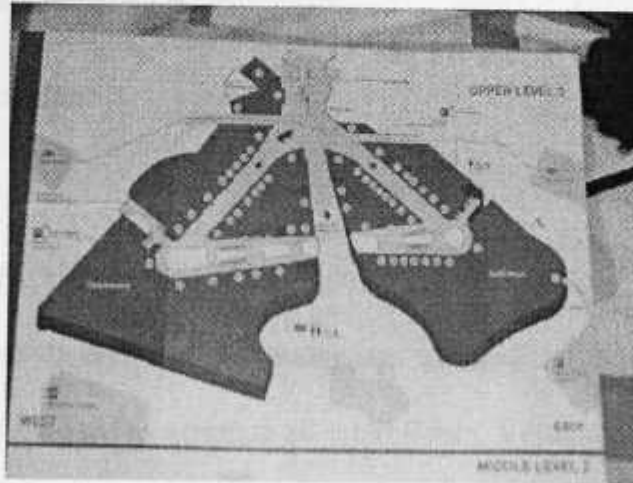


Fig.9- plan of the upper level.

One of the more dramatic features of Bullring's design is its spectacular 7,000m² sky plane roof. This virtually invisible expanse of glass forms a 'floating' covering over Bullring's seemingly 'open' malls, to give the impression of a natural extension of the city's key shopping streets linking them to Dagenham's and Selfridges respectively. These elements, like all such roofs offer opportunities such as provision of natural lighting with all its desirable qualities. Customer services provided in the centre include customer service desk, cash points, baby care centres, telephones, shoppers' lockers, interactive travel and traffic information, among other things.



Fig 10 – interior caption



Fig 11- atrium open to skywalk

3.2.5 Services

There is unobtrusive system of artificial lighting for the normally day lit areas. In the evenings, all other interior spaces make use of artificial lighting. Central air-condition systems are used to ventilate all retail floors. Vertical conveyors employed in the centre include Lifts and escalators. Goods and equipment also make use of goods lifts and hoist systems located at service areas.

3.2.6 Merits

Provision of extra facilities other than shopping serves as an attraction. There is much emphasis on shopper comfort. Bullring provides an excellent platform to gain exposure for any Marketing campaign. Multi-media opportunities are in place to promote to a captive audience, reaching thousands of consumers daily.

3.2.7 Demerits

Glazed skylighting poses problems such as control of glare, solar gain, and heat loss resulting in heavy dependence on artificial air conditioning systems.

3.2.8 Conclusion

To satisfy tropical design, open planning with light wells and courtyard will ideal for shopping. Circulation should be structured for equal shopper distribution within shopping centre

3.3 TECHNICAL AND SPECIAL STUDIES

3.3.1 Fitting and fixtures

- **Shelving, Display and Clearance**

The relative anthropometrics of the following were studied:

- Cabinets- both wall units and counters, gondolas etc
- Clothing rails and cases
- Panels
- Security safes
- Display counters

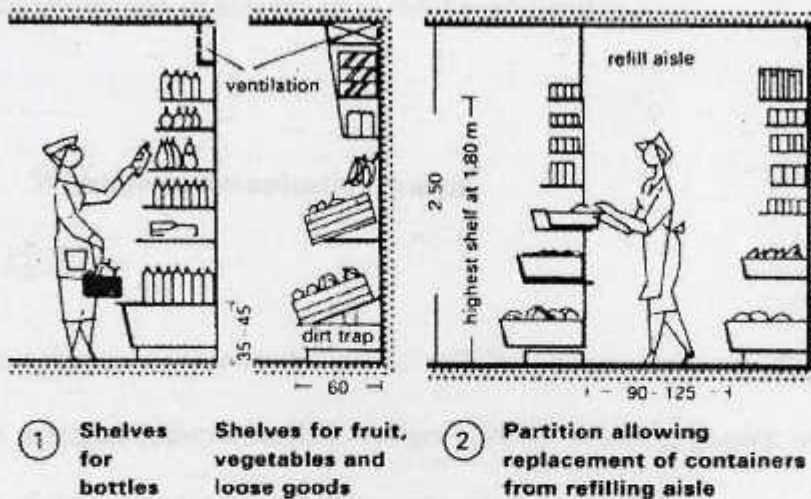


Fig 12 anthropometrics of shelving

3.3.2 Shop front

- **The shop window**

The shop front is the first point of call for the shopper. Persuading the shopper actually to enter the shop and to buy the goods on display is an art form of which the shop front plays a major role. Typical shop front components includes a fascia for shop identification and identity, blind lath lighting, ventilation, entrance doors, enclosed screen with corner mullion and ventilation duct. Light source, window bed, and entrance walkway into the shop.

3.3.3 Security system

3.3.3.1 Electronic systems

- **Electrical security systems**

This includes communication security layout, sizing of electric equipment, and detailed consideration of system equipment specification.

- **Wireless communication system**

Wireless PBX:

Mobile telephones similar to the public cellular phones used outside buildings also known as personal communications systems (PCS). Wireless pagers: may be radio or infrared. Some can locate and identify users automatically. Two-way radios: "walkie-talkies" used by security and Personnel.

Wireless LANS:

Takes many forms, using radio and infrared; there is little standardization.

Wireless modems:

Also called radio modems, are incorporated into laptop PCs for mobile computing.

▪ **Data Communication Systems**

There are many types of special data combinations systems for automatic teller machines, point-of-sale devices, specialized systems for reservation, customer service and telemarketing centers (often integrated electronically with voice systems) control communications used for building management systems, telemetry and supervisory communications and data acquisition (SCADA). Many of these systems use standard LAN components and can be accommodated on EIA cabling systems.

▪ **Video Communication Systems**

Video communications systems include closed circuit TV (CCTV), cable TV (CATV), master antenna TV (MATV), and video conferencing systems.

A closed circuit television (CCTV) is a video magnification system consisting of a video screen interfaced with a video camera. Video magnification is achieved in two ways-the electronic conversion from the small camera imager to the larger display screen and the optical effect of the cameras zoom lens.



Fig 13 picture showing control room

- **Alarm equipment**
- Protective switches

Used for unlawful opening of doors and windows. There are two types, mechanical and magnetic. The mechanical ones rely on physical force to operate the mechanism. The magnetic switches contain contacts what are held in closed position by the permanent magnet. Opening the doors removes the magnetic field and the contact opens to create the alarm situation.

Wired panels

These are suitable for doors, windows, walls and eve ceiling. Magnetic protective switches are fixed to the door and window frames and the plunger magnet in the jamb. An unlawful removal of the plunger activates an alarm.

3.3.5 Environmental Services

3.3.5.1 Lighting

Day lighting

apart from aiding visibility, day lighting is essential for the following purposes.

- Aesthetics: the play of light from windows on surfaces and textures casting interesting shadows: the endless variety of mood and appearances due to the movement or the sun.

- Psychological responds: the sense of well being associated with day light and the sense of orientation that comes with being "connected" with the exterior.
- Health: improved resistance to infections, skin disorders, and cardiovascular impairment
- Energy/cost: reduction in electricity and related air conditioning loads from electric lighting.

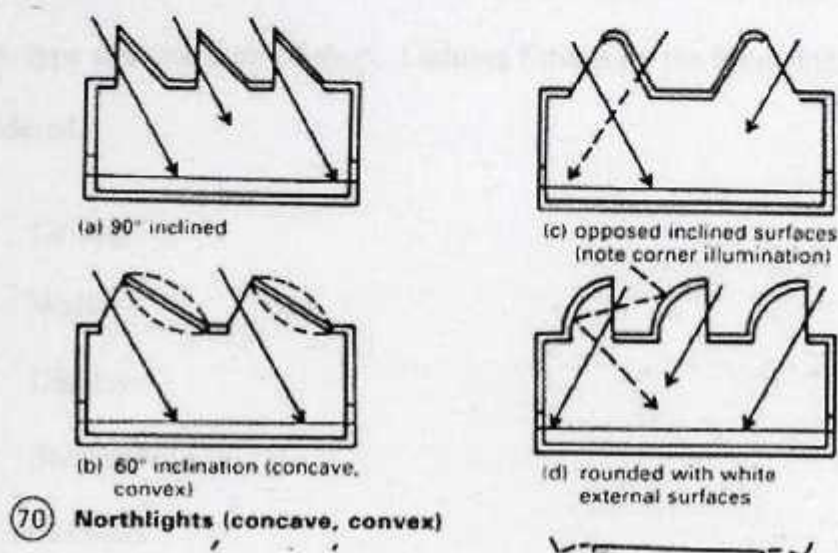


Fig 14- skylight design

• Artificial Lighting

In shopping mall design, artificial lighting must not be regarded solely as alternative to day lighting but as one of the essential features of good interior design. The main purposes, which artificial lighting should fulfill include the following:

- To show goods on display as clearly and attractively as possible in a way that will attract customers' attention to merchandise.
- To employ colour in a manner that suits and compliments the display.
- To be flexible enough to accommodate changes in display or layout.
- To use the right illumination level for each task and avoid the uneconomical use of electricity.

- To avoid glare.

The Shop Window: the degree to which a shop window should be illuminated depends on the general lighting level of the neighbourhood in which they are situated is high, medium, or low. As a general guide, 600 to 900 watts per a unit window run a suitable for a district of high lighting levels.

The Interior: the requirements for interior lighting will vary according to the size, shape, type and character of shop. Lighting fittings on the following spaces has been considered.

- Ceiling
- Walls
- Displays
- Showcases
- Counters

Emergency lighting

Escape lighting: this is needed to enable the building to be evacuated quickly and safely in case of a disaster. They should be fed from power sources independent on the main lighting system. The following factors must be considered for the design of such lights:

- All escape routes and exit doors should be clearly visible.
- All changes in level such a stairs, ramps etc should be clearly illuminated.
- There must not be interference with the ventilation and sprinkler system.

Stand-by lighting: this is needed to allow activities to continue during power failure and it's usually suitable only for the larger department stores and malls.

3.3.5.2 Ventilation

Ventilation may be natural or mechanical. Natural ventilation requires effective temperature difference or wind to induce air movement. The methods which can be used for ventilation can be classified as follows:

- Natural inlet and extract: this applies to small shops where occupancy is low.
- Natural inlet and mechanical extract this method is for supplying fresh air but not for extracting smoke unless the supply of air is adequate to balance the volume, which has to be extracted.
- Mechanical inlet and extract: this method is capable of the widest application because distribution, pressure and temperature can all be controlled.
- Mechanical inlet and natural extract: this method delivers air to the interior through ducted systems, allowing extracted air to pass through door and openings. Facilities for filtering and heating air are usually incorporated.

3.3.5.3 Air conditioning

Air conditioning is the process of treating air in an internal environment to establish and maintain required standards of *temperature, humidity, cleanliness and motion*.

- Stores where large crowds of people congregate at a time
- Stores where natural ventilation is inadequate to the depth of the core behind window areas.
- Stores which experience considerable heat gains from solar exposure or incidental sources such as lighting occupants and any heat producing equipment.
- Exclusive stores where the comfort of the customer is a major priority.

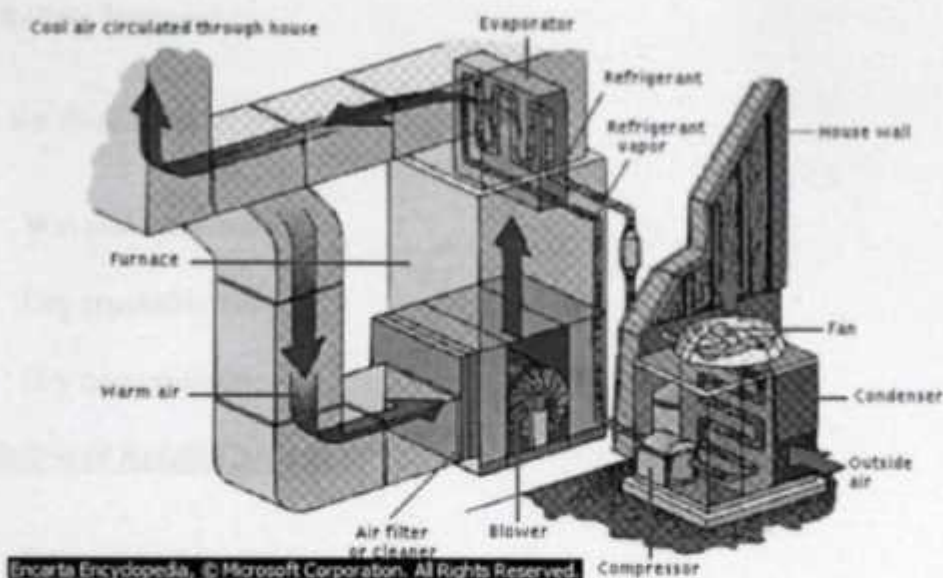


Fig 15-air conditioning unit

❖ Types of systems

Central Plants: this is suitable for supermarkets and hypermarkets where there is one large space to be air conditioned (i.e. only one set of conditions has to be provided for). The elements in the system such as filters, refrigeration plant, heating coils, humidification parts and control system) are all housed in the central plants

Zonal System: in this method, the building is divided into units with as similar conditions as possible. These units receive air to an average temperature and humidity from a central plant.

Self-contained units: they are designed either solely for the purpose of recirculating internal air or for drawing in fresh air through an intake. There is window small units as well as split system. The split system has a relatively small distribution and the central unit housed separately from the bulkier compressor unit.

3.3.6 Refuse Disposal

There are three types of refuse namely;

- Wet and semi-wet.
- Dry crushable
- Dry non crushable

Calculation of Refuse Capacity

- Commercial facilities required

2cubic meters of refuse is produce for every 1000sqm gross floor area,

- Retail facilities

Minimum of 4cubic meters of refuse is produced for every 1000sqm gross floor area.

- Restaurant /café

Minimum of 1cm/m required/20 dinners.

Refuse containers

The popular forms of refuse containers are as follows:

- Paladins

Cylindrical containers on wheels, measuring 1220mm diameter x 1830mm high;
their approximate weight when full is 70 to 90 kg

- Box containers

Measurement: 1.0 x 0.5 x 3.0

- Dustbins

460mm in diameter x 610 mm high, its approximate full weight is 15 to 20kg

- Disposal sacks

These are wet strength paper or plastic bags fixed to a metal ring with a hinged cover; they may be free standing or bolted to the well. They measure about 400mm in diameter x 750mm high; their approximate capacity is 0.10cubic meters.

Refuse yards

An approximate capacity of 2.3 cubic meters of refuse capacity should be allocated for each store. The yards should conform to the following guidelines:

- The floor of the yard should be of a smooth and impervious material.
- The floor should be able to withstand impact on loading without damage.
- Yard should be supplied with hoses and water supply for washing.
- Yards should securely be enclosed to avoid unauthorized entities and animals.

3.3.7 Fire Fighting

Usually, large shops require extensive use of fire alarms and fighting appliances but for most shops ordinary hand held extinguishers are enough. In a shopping mall, a combination of various equipments will be required.

- **Fire protection**

In order to reduce the risk of fire from spreading, the building can be divided into compartment not exceeding 1860sq.m with a cubic area not exceeding 7080cu.m. Escalators should be enclosed within fire proof construction and their openings protected by automatic fire doors.

- **Fire fighting equipment and systems**

- Fire extinguishers

They provide adequate fire protection and are cheap. Some of the most common types are the water based; dry powder or foam type and the ones that use carbon dioxide

- Sprinklers

It extinguishes fire by soaking the burning material and charging the atmosphere with excessive water so that it will not support combustion. Sprinkler heads are supplied by water mains or by pressurized storage cylinders of 22.5 to 50cu.m capacity usually housed in the basement.

- Fire hoses

Unlike sprinkler, which is indiscriminate, the fire hose is directional and controllable. They may be connected to the mains along as the mains pressure is adequate. Otherwise, tanks (usually, 1150litre capacity) are require to feed the hoses by gravity or pumps. The hydraulic requirements are that, the hoses should be able to deliver 22 litres of water per minute at a distance of 6metres from its nozzle and those three nozzles should be in operation at a time.

- Fire alarms

Fire alarms may be automatic or manually operated. For the purpose of this discussion, the automatic type will be considered. The automatic alarm system operates in a command chain explained in the diagram below.

- Emergency voice communication panel.
- Fire department communication panel.
- Fire detection and alarm system enunciators.
- Sprinkler and stand pipe supervisory display panel.
- Status indicators and control for smoke control system.

- Fire and sprinkler pump control and status indicator.
- Emergency and stand-by power indicator and controls.
- Special extinguishing monitoring.
- Elevator control panels with elevator positions and status indicators.

3.3.8 Mechanical conveyors

• KONE EcoDisc®: A Solution to Meet Unique Requirements

EcoDisc Hoisting Technology

The EcoDisc hoisting machine is an AC gearless machine that uses a permanent magnet synchronous motor (PMSM). EcoDisc requires less space than conventional geared, gearless or hydraulic elevator technology. Its energy efficient, with savings of up to 40% compared to geared elevator and up to 60% compared to hydraulic power units. KONE's vector controlled V3F drive system is a perfect match for the gearless EcoDisc machine, delivering outstanding performance and an extraordinarily smooth, quiet and silent ride.

Machine-Room-Less (MRL)

The EcoDisc hoisting machine is mounted to the back of the guide rail at the top landing. All logic and control systems are contained in the front wall of the hoistway or in a small, adjacent control closet. Reaction weight is transferred down the rails to the pit floor. Compared to traction elevators, this arrangement greatly reduces structural design requirements and lowers construction costs. Compared to hydraulic elevators, this configuration removes the machine room and does not require drilling a well hole.

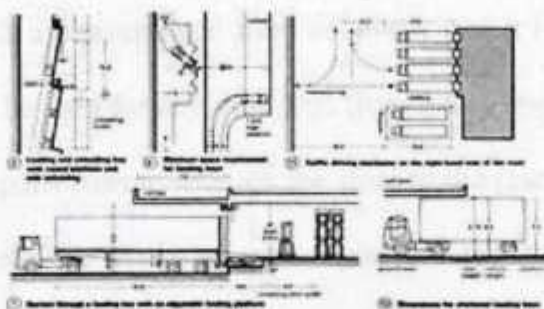
KONE's EcoDrive™ is compact, chainless, and features a planetary gear arrangement that is 96% efficient, reducing energy consumption and environmental impact. **KONE EcoStart®** is an option that conserves energy by adjusting voltage and current up to 120 times per second in response to the escalator work load. When ramping up to accommodate a load, EcoStart® reduces in-rush current up to 75%.

An adjustable, timed ramp circuit gradually increases power until the motor reaches full operating speed.

3.3.9 Transportation

Transportation standards have been studies to aid the design. Parking

- Lay by
- Turning Radii
- Service bay
- Drive-in-racking
- Parking
- Types of Loading / Storage System



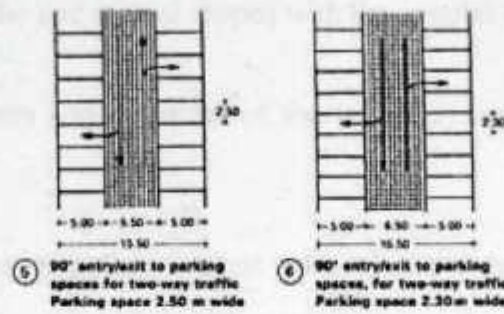


Fig 16- parking and turning angles.

3.3.10 Spatial Requirements

• Shops spatial planning and layout

There are two basic planning guidelines for laying out a retail sales floor:

- use 100 percent of the space allocated
- do not sacrifice function for aesthetic

There are six basic plan types are can help the designer to carry out these basic planning guideline. These plan types are:

- Straight plans use walls and projections to create smaller spaces and are economical. It is a conventional form of layout which is economical plan to execute. It can be used for any shop type from gift to apparel.
- Pathways plan pulls patrons through the store to the rear without interruption by floor fixtures. The merits of such layout are that the path can take any shape and that it creates a design pathway. Virtually applicable to any store. It is however suited for larger stores of about 1500 square meters and on one floor.
- Diagonal patterns permits angular traffic flow and create perimeter design interest and excitement in movement. Central placement of the cash-wrap permits security.

People respond to circular and curved shapes with the angular and square plan.

- Varied plan illustrates added variety of forms, which can work to a designer's advantage.
- Geometric plan can establish interest without excessive cost, if the store's product can accept it. Ceiling and floors can be lowered or raised to create zones and department.

- **Offices layout**

- Design Motives

Offices can be speculative or custom design. Speculative offices are for lettable purposes and thus there is the need for flexibility to accommodate changes. Custom-built offices on the other hand are designed to occupy/satisfy a specific organization or need. Thus, the second option is not feasible for the project since most of the offices are to be rented out to different companies and organizations.

- **Cinema**

The cinema recommended for this design is a standard state of the art auditorium with an average 120-seated capacity. The auditorium aims at the following functional

- Every member of the auditorium requires an unobstructed view of the whole picture area on the screen without visual and physical discomfort and picture distortion.
- Picture sharpness and luminance need to be uniform and satisfactory.
- An auditorium giving distortion free sound production.

In order that these functional requirements are satisfied, all design specifications with its appropriate spaces will be provided. These include projection criteria for the

required screen format. Sight lines to the screen from various points of the auditorium, light, sound and dimmer controls were also studied.

▪ Restaurant, coffee shops and food court

Restaurants should be designed so that variety of seating arrangements can be achieved. Interior decor, lighting and ventilation all aimed at customer as well as worker comfort should be an integral part of the design. Factors considered for the design include the following:

- Aisle width
- Layout arrangements
- Seating arrangements
- Circulation
- Standardized area requirements

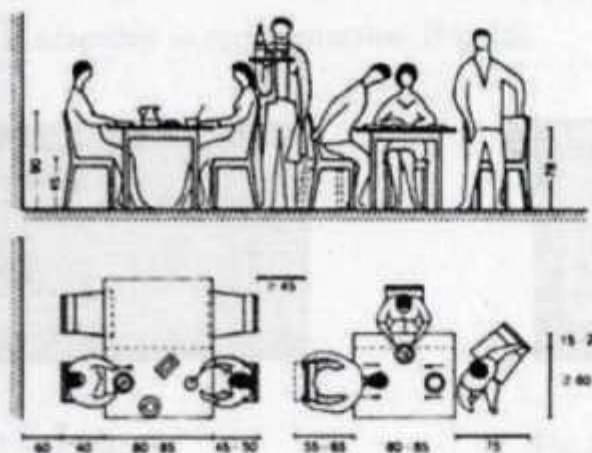


Fig 17 seating arrangement for restaurant

3.3.11 Shopping centre patterns

Though site the main determinant, most centres follow these patterns.

- **Strip Shaped**

A straight line of stores with parking in front and service lane in the rear. The anchor shop is placed either at one end or in the centre of the strip. (fig 15)

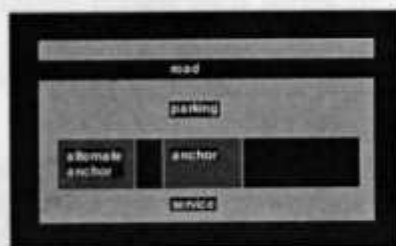


Fig 18 – strip shaped



Fig 19 – L shaped

- **L Shaped**

A strip centre with a line of stores placed at a right angle to it, forming an L-shape with parking in front and service at the rear. Anchor shop is placed at the end. It is possible however to place it in the crook formed by the two lines of stores. The l-shape is adaptable to corner situation. (Fig 16)



Fig 20 – U shaped

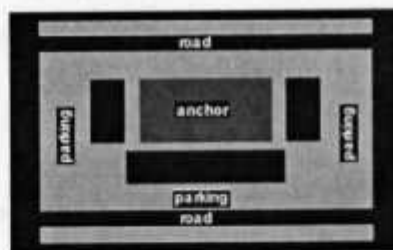


Fig 21 – Cluster shaped

- **U Shaped**

A stripped centre two lines of stores placed at right angle to the strip forming a U, with parking in front and service lanes at the rear. They have as many as three anchors one at each ends and the main mall in the centre. (Fig 17)

- **Cluster Shaped**

Shops are arranged in a rectangular area with parking on all four sides of the centre. Service is provided through tunnels or concealed or shielded service yards. The design results in a series of malls. A single-anchor cluster will probably have its anchor store extending from the periphery to the centre of the cluster. (Fig 18)

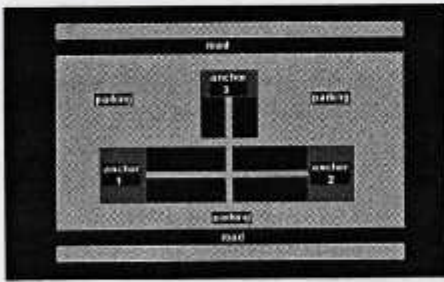


Fig 22 – T shaped

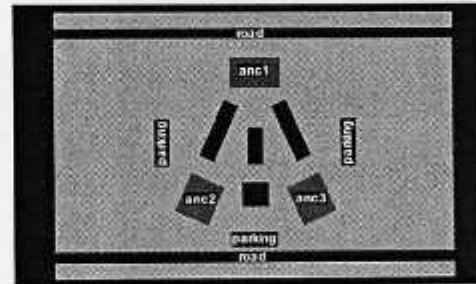


Fig 23 – Triangle shaped

- **T Shaped**

A centre designed to accommodate three anchor shops, the type has parking on all sides, and with all service provided through a tunnel or shielded service bays or a combination of both. T centres may be either enclosed or open. (Fig 19)

- ❖ **Triangle shaped**

Similar in form to the t shaped with an added factor of providing visibility of all anchor stores from the front of each. A triangular design is likely to be somewhat wasteful of land, but it may be the optimum design for those sites that are not rectangular. Designed to accommodate three anchors, the triangle centre may have two levels, with parking around its perimeter. In most cases, what a center has two levels without a parking structure, a U is designed with graded parking lots to allow entry at each level. (Fig 20)

❖ Dumbbell Shaped

A double strip of shops placed face-to-face along the, with anchor stores placed at both ends of the mall, and with parking on all sides. The dumbbell is designed so that the anchors will attract traffic along the mall in an effort to achieve maximum interchange of shoppers. (Fig 21)

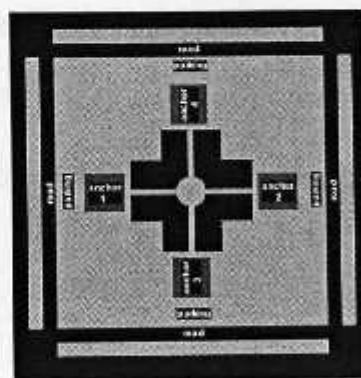
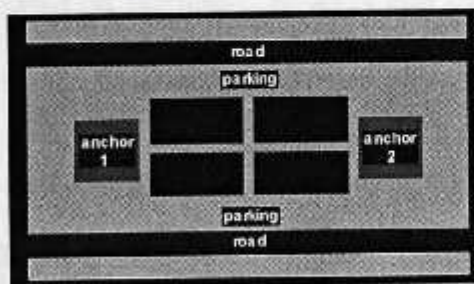


Fig 24 – Dumbbell and double dumbbell shape.

CHAPTER FOUR

4.0 THE SITE

• LOCATION

The site is located between Tanoso and Abuakwa off the Kumasi- Sunyani road. It is approximately 250 metres away from Yaa Asantewaa Senior High School. The site is located on latitude- $6^{\circ} 41'N$ and longitude- $1^{\circ} 36'W$. It is about 20minutes drive from the CBD and about 10 minutes drive from Asuoyeboa SSNIT flats.

• LOCATION MAPS



Fig 25 – Map of Ghana showing the location of Kumasi

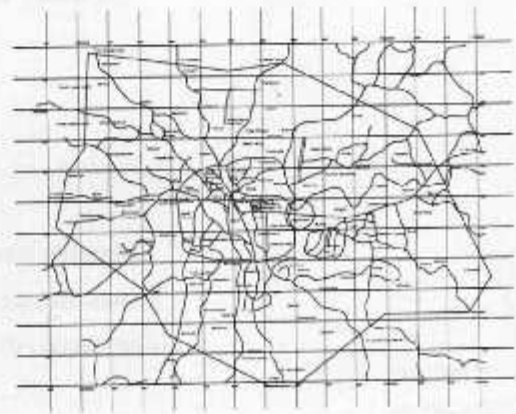


Fig 26 – Map of the Kumasi metropolitan area

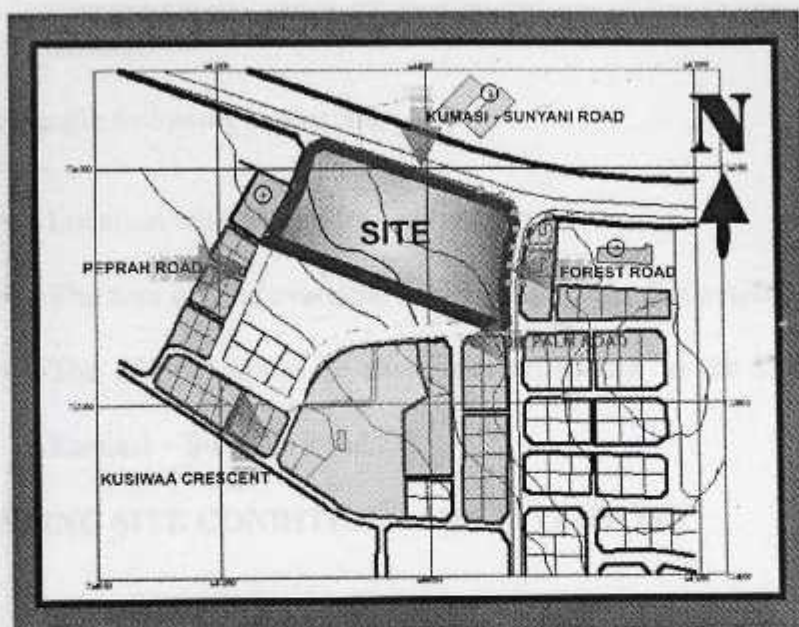








Fig 27- Location of the site in relation to major roads.

LEGEND

	RESIDENTIAL BUILDINGS		PARAMOUNT DISTILLERIES
	EXISTING SHOPS OUTCROP		COCO BOARD WAREHOUSE
	GREENERY AREAS		HATCHERY (ABANDONED)

4.1 SITE SELECTION CRITERIA AND JUSTIFICATION

As an overall urban solution, the author proposes that commercial centers be located at 4 prime locations along and beyond the Kumasi major ring road, thereby circumventing the city center:

- Tafo/Pankrono
- Kokoben
- Kentinkrono/Oduom
- Abuakwa/Tanoso

The site at Abuakwa/Tanoso was chosen primarily because of the vision of the owners of the site correlate with the proposed project (commercial centre).

- **Potentials**

The site has the following potentials,

- Location within a potent catchment area.
- The area of land available is large enough for the project
- The facility would be easily advertised due to the intensity of use the Kumasi – Sunyani Road.

4.2EXISTING SITE CONDITIONS AND INVENTORY

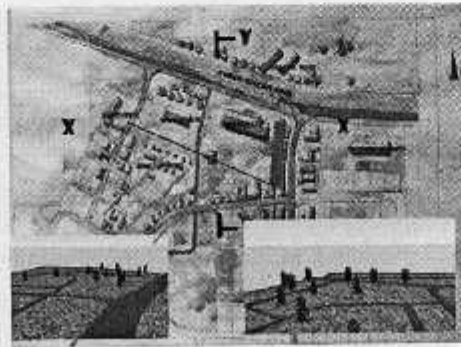


Fig 28 – Site plan

The site occupies an area of 10.5 acres. The structures found on the site include the following,

SAMFORD LTD.

WAREHOUSE.

SHEDS FOR WELDERS AND ELECTRICIANS.



Fig 29 sheds along the main road.



Fig 30 samford

4.4 SITE ANALYSIS

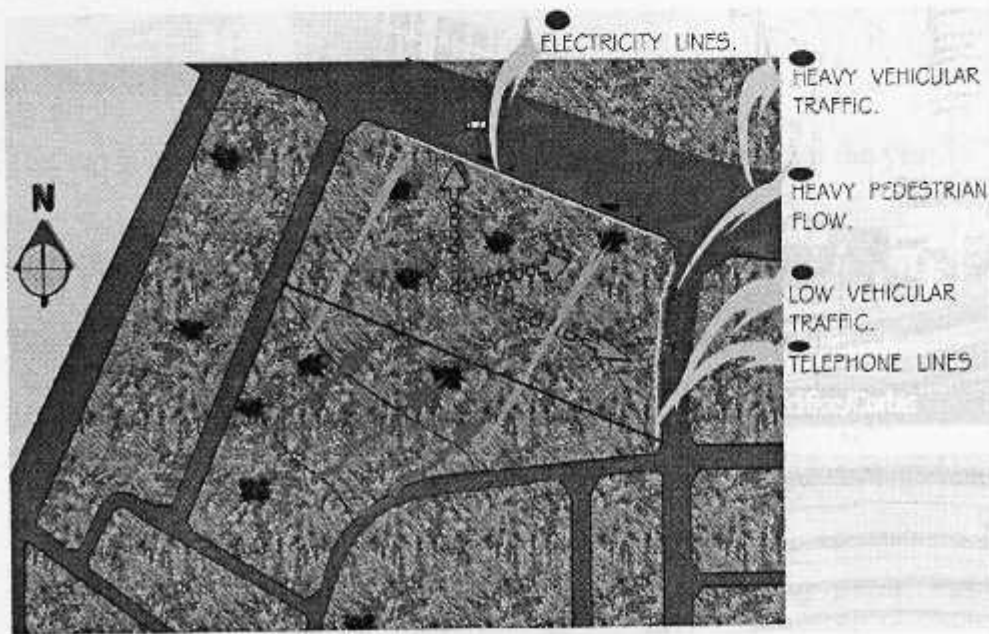


Fig 31 - Site analysis

- CLIMATE

Macroclimate: Generally, the climate of the region is warm and humid with prevailing winds from the south - west to the north - east direction.

- VEGETATION

The site is generally made up of trees, shrubs and grass.

GEOLOGY

- By inspection, the general soil type observed on the site is loamy with laterite on the south- eastern part of the site.

• RAINFALL

Averagely there is rainfall about half the year with an average depth of 151mm.

• TEMPERATURE

Annual mean maximum is 31.6°C; Annual mean minimum is 22.2°C.

• SUNSHINE DURATION

The sun is up on the average of about 8 hours daily throughout the year.

• TOPOGRAPHY

The site slopes generally from the north-western area down to the south-eastern area of the site with an average of 1.5m difference in spot heights.

• SERVICES

The site has access to all the utility services including water, electricity and telecommunication.

• TRAFFIC AND NOISE

- It was also observed that there was a high traffic level along the dual carriage with about 25 cars passing in one direction in a minute during peak hours (between 9am and 11am, and, between 3pm and 6pm) generating a lot of noise into the site. The proposal to expand the main road to a dual carriage road is underway. It is hoped that with the manifestation of this proposal traffic will be decongested drastically.

4.5 SITE PERIPHERAL STUDIES AND ARCHITECTURAL CHARACTER

4.5.1 Peripheral Landuse

To the northern side of the site is the cocoa marketing board silos. At the western side to exist light industries, example, hatchery of Kwabena Darko farms. To the southern and eastern sides are residential facilities, petty trading and small shops.



Fig 32 entrance to hatchery



Fig 33 Kumasi-Sunyani road to the north

4.6 MARKET RESEARCH

To establish the economic viability of the project, certain studies were undertaken to establish the population within reach and the market potential of the catchment area.

4.6.1 TRADE AREA

The trade area is the catchment area of the project. It is made up of three levels; primary, secondary and tertiary. For the purpose of this work, economic and market

analysis will be concentrated within the primary trade area. The primary trade area is the area from which 80 percent of continuing patronage necessary for the support of the commercial center is obtained.

- **Primary Trade Area**

This area encompasses Abuakwa, Tanoso, Asuoyeboa, Yaa Asantewaa Senior High School and UEW-K. Travel time to the site from this trade area is within 5 to 10 minutes drive. As the area largely responsible for the survival of the project most of the study will be based on the primary trade area.

- **Secondary Trade Area**

This area encompasses Kwadaso, Boko, Maakro, Akropong, and Manshia,. Travel time to the site from this trade area is within 10 to 20 minutes drive.

- **Tertiary trade Area**

This zone, which is usually not considered critical for a mall's survival, can be considered to include; areas beyond Akropong and Maakro to the west and areas beyond Kwadaso to the east. And areas north, west and south of Kumasi, patrons from which may be attracted to the center.

4.6.2 DEMOGRAPHY AS A MARKET FORCE (primary trade area)

The trade area need to be sufficiently populated to ensure success of the facility. The total population of Kumasi, as of 2004, was approximately 1,017,246 with growth rate of 36% per annum. Currently, residential development (new site) is mostly towards Kumasi west.

4.6.3 INCOME LEVELS (primary trade area)

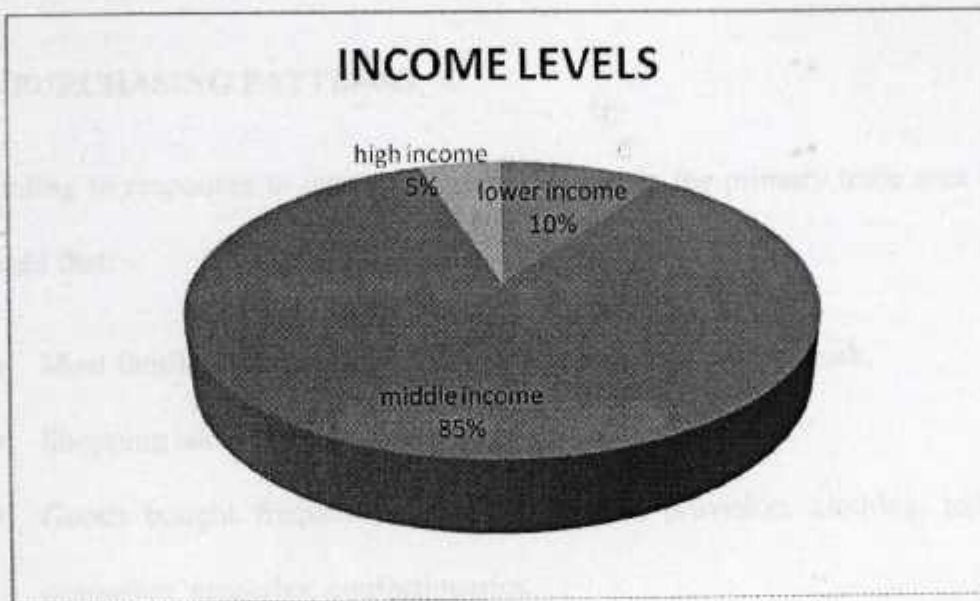


Fig 34 – Income levels, primary trade area

- High income areas: UEW-K campus
- Middle income areas: Asuoyeboa, major part of Abuakwa, Yaa Asantewaa Senior High School and Tanoso.
- Low income: Partly Tanoso, Partly Abuakwa, and Partly Asuoyeboa.

4.6.4 TRAFFIC AS A MARKET FORCE

It was also observed that there was a high traffic level along the Kumasi-Sunyani road (which forms the site's northern boundary) with about 25 cars passing in one direction in a minute during peak hours (between 9am and 11am, and, between 3pm and 6pm). The following traffic composition was also observed;

Intracity commuters – 89%

Intercity commuters – 11%

Such traffic intensity represents a natural source of patronage for the facility, given that the latter aims at giving Kumasi east inhabitants, using the road in question, a reason to stop over and not proceed to Adum.

4.6.5 PURCHASING PATTERNS

According to responses to interviews, administered in the primary trade area it was deduced that:

- Most families within the middle-income belt shop once a week.
- Shopping takes place at Adum the main CBD of Kumasi.
- Goods bought frequently include foodstuff, provision, clothing, toiletries, cosmetics, groceries, confectionaries.
- They only buy from shops around for convenience.
- Women and children products form the chunk of merchandise purchased.

CHAPTER FIVE

5.0 DESIGN EVOLUTION

5.1 BRIEF DEVELOPMENT

The intention of the clients is to convert the site which is originally demarcated for light industries to a commercial centre (shopping mall). About 40% of the site is occupied by samford limited which is no more functioning.

The brief for the facility has been carved around two major factors;

- The functional needs of the clients
- The need to create a functional replica of the urban elements prevailing in Adum

5.1.1 TRAFFIC NEEDS AND RESPONSES

- Anticipated range of vehicles

- | | |
|------------------------|--|
| ▪ Private cars | ▪ Long distance passenger vehicles |
| ▪ Taxis | |
| ▪ Trotros | ▪ Corporate and institutional vehicles |
| ▪ Public buses | |
| ▪ Large goods vehicles | |

5.1.3 Potential tenants

A survey was conducted on commercial facilities within the city as well as Accra to make certain the willingness of these shops to become potential tenants in the

proposed shopping mall. The results of the survey have been summarized in the table below.

SHOPS	NUMBER VISITED	NUMBER INTERESTED
Super markets	4	1
Leading shops	10	5
Financial institutions	4	4
Other shops (store owners)	30	15
Entertainment operators	4	2
Restaurants and food stores	10	7

Table 1 – visited vis-à-vis interested tenants

- Major Banks and insurance companies worry about market potential vis-à-vis Adum.
- Some companies expressed optimism about office spaces due to perceived low rent charges as compared to the CBD.
- **Commercial tenants**

Potential commercial tenants include the following:

- Anchor shops which include department store, multiple store and a supermarket. The other shops include :
 - Pharmacy
 - Specialty shops

- Service shops
- Household and furniture
- Books and stationary
- Fashion and accessories
- **Service**
- Convenient shops
- Night shops
- Standard lettable shops

The following are possible service providers proposed for shopping mall.

- Restaurants
- Internet cafe
- **Entertainment**

Potential entertainment tenets are as follows:

- Cinema
- Drinking bar and pubs
- Night club
- Games room
- **Business and finance**

The following entities are proposed financial institutions for the shopping centre design. Some will occupy purposed design spaces while others will occupy standardized lettable office spaces.

- Bank
- Estate agencies
- Professional service offices
- Lettable offices
- Travel agencies

5.1.4 DESIGN REQUIREMENTS AND USER FUNCTION

Design requirements are different for different users. Tenants demand design features that will attract and even distribute shoppers. In addition, tenants demand design that

emphasizes merchandise and products. Shoppers on the other hand demand design features and components that provide comfort.

- **Tenants**

- Populated trade area
- Accessibility
- Parking

- **Shoppers**

- Convenient shopping
- Public transport
- Spacious parking

5.1.5 DESIGN BRIEF

5.1.5.1 Landuse brief (macro)

- The mall
- Future development

5.1.5.2 Brief – the mall

- **Retail**

- Anchor Shops
 - Supermarket
 - Multiple store
- Specialty Stores
- Convenient Stores
- Food and drink Stores
- The Mall
- Lavatories

- **Offices**

- Administration
- Lettable Offices
- Security

- **Parking**

- Customer
- Employee
- Service

- **Eating and Drinking**

- Restaurants
- Fast Food
- Food Court

- Ancillary facilities

- Entertainment Centre
 - Cinema
 - Night Club
- Services
 - Bank/Cash Points
 - Ware Houses
- Communication Facilities
 - Internet Café

5.1.6 SCHEDULE OF ACCOMMODATION

SPACE	STANDARDS	QUALITATIVE MEASUREMENT	AREA(M ²)
SUPERMARKET	SALES AREA RANGES FROM 1000-2500M ²	1200+120+60+360.BECAUSE STAFF FACILITY TAKES 10% OF SALES AREA AND OFFICES TAKES 5% AND 30% FOR STOCKROOM	1740
FOOD COURT (RESTAURANT AND FAST FOOD	LOCAL (1.8-1.9M ² /P) CONTINENTAL(1.2M ² /P) 20% OF EATING SPACE	50 PERSONS 1.8+20% OF THE SPACE FOR KITCHEN 90M ² +18M ² 60PERSONS 1.4+20% KITCHEN SPACE 84M ² +16.8	350
GENERAL PUBLIC AREAS AND CIRCULATION			1050
OFFICES			4500
PARKING			

CUSTOMER	STANDARD CARS 2.5*6,	FOR THIS STANDARD	12400
	5CARS TO 100M²	S=100M²	
	RETAIL SPACE	X=6373M²	
		X=310CARS	
STAFF	35 CARS FOR STAFF OF		1356
PARKING	BANK MANAGEMENT		
	& ANCHOR SHOPS		
SERVICE	MAINLY FOR THE	3 15 METRE ARTICULATOR	2500
PARKING	ANCHOR SHOP	TRUCKS FOR EACH	
TOTAL			30948

5.2 PLANNING AND DESIGN

5.2.1 Space Allotments

The following categories of space allotments were observed in the site planning process:

- **Structures**

- Retail areas
- Service areas (HVAC plants, equipment storage, maintenance, etc.)
- Other commercial uses (offices, recreational, etc)
- Public uses, civic and social facilities.

- **Car storage areas**

- Surface parking lots

- **Pedestrian areas**

- Malls, courts, lanes

- **Automobile movement areas**

- Distribution road system on site

- **Buffer areas**

- Landscaped areas separating car storage areas from the public road system
- Landscaped areas separating parking areas from one another
- Landscaped areas separating parking areas from service areas

5.2.2 Site planning principles

The allocation of space for these and possibly other uses should be guided by certain planning principles in order to attain the highest feasible productivity of the land over an extended period of time. The principles aim at the following:

1. Safeguard surrounding areas against blight.
2. Expose retail facilities to maximum foot traffic.
3. Separate various mechanized traffic types from one another and from foot traffic.
4. Create a maximum of comfort and convenience for shoppers and merchants.
5. Achieve orderliness, unity and beauty.

- **Foot traffic**

Exposure of all individual stores in a shopping center to the maximum amount of foot traffic is the best assurance of high sales volume. Suburban business real estate often has been evaluated on the basis of passing automobile traffic – an evaluation that overlooks the fact that automobiles do not buy merchandise. It is only after the driver of even the most expensive car leaves it and becomes a pedestrian that she can become a buyer. Therefore, if shopping centers are to prosper, dense foot traffic must be created. Shopping traffic, the act of walking from store to store, creates the

lifeblood of a shopping center; and proper circulation of this shopping traffic ensures business success.

- **Separation of traffic types**

- Pedestrian from transportation

The constant movement of vehicles within transportation areas inevitably creates a certain amount of danger, noise fumes and confusion, which diminishes shopper enjoyment. The degree of separation between transportation and pedestrian areas depends on the size of the shopping center. In intermediate and regional centers where there may be two or more distinctive buildings, it might be possible to arrange a separate pedestrian between them. However, no matter how small the center, it is possible to achieve a certain amount of separation by means of wide sidewalks with landscaping, low garden walls, etc.

- Service from customer traffic

In planning the mall, the topography of the site has allowed a conglomeration of non-merchandizing activity, including service traffic, in the basement, leaving the ground level to assume a fully productive mode free from servicing.

- Public transportation from customer traffic

- As a shopping center requirement, generous provision has been made for a taxi and trotro station, conceived in such a manner as to invite transport operators, though the rank is likely to be administered by the client.

5.3 CONCEPTS AND PHILOSOPHY OF DESIGN

5.3.1 Design Philosophy

Because of the reason, aim and location of the facility, the philosophy **"ACCESSIBLE BY ALL, CONVENIENT USE BY ALL AND RECOGNISABLE BY ALL"** was chosen for the design.

To achieve this philosophy, the facility was considered as a magnet which would attract all class of people, both young and old, workers and students, able and physically challenged.

5.3.2 Concept

In achieving the philosophy of the design, some concepts were used.

- Use of wide ramps in the design.
- Use of wide corridors for easy pedestrian movement.
- Use of escalator for easy movement of pedestrians.
- Use of court yards and openings for natural ventilation.

5.4 CONCEPTUAL SITE PLANNING

The site was planned in stages, gravitating from a macro zoning level to the planning of the mall.

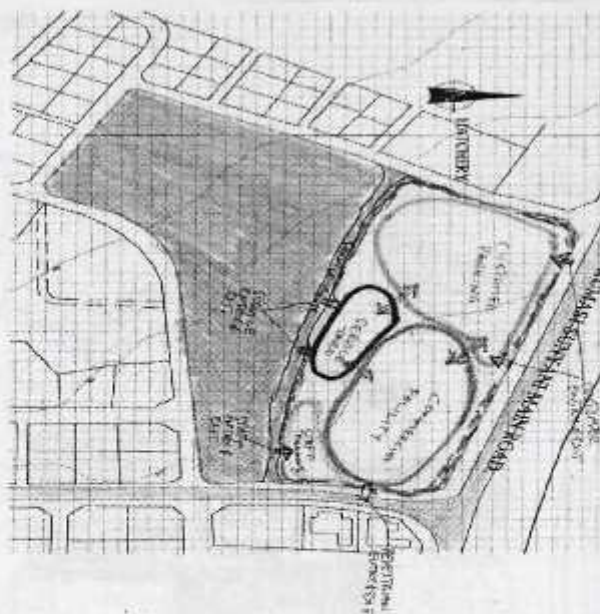


Fig 36 Option two

▪ Option 2

This option features the mall placed at the eastern side and the customer parking to the western side.

Merits:

- The mall is totally exposed to the main road, which makes the facility well advertised.
- The customer parking is totally segregated from the staff parking.
- Pedestrian accesses can be easily segregated from the vehicular traffic.
- Accesses to the mall, that is, pedestrian accesses can be made close to the people.

The option two was chosen, because it has a lot of advantages to help me achieve my philosophy **"ACCESSIBLE BY ALL, CONVENIENT USE BY ALL AND RECOGNISABLE BY ALL"**.

5.5 Idea development

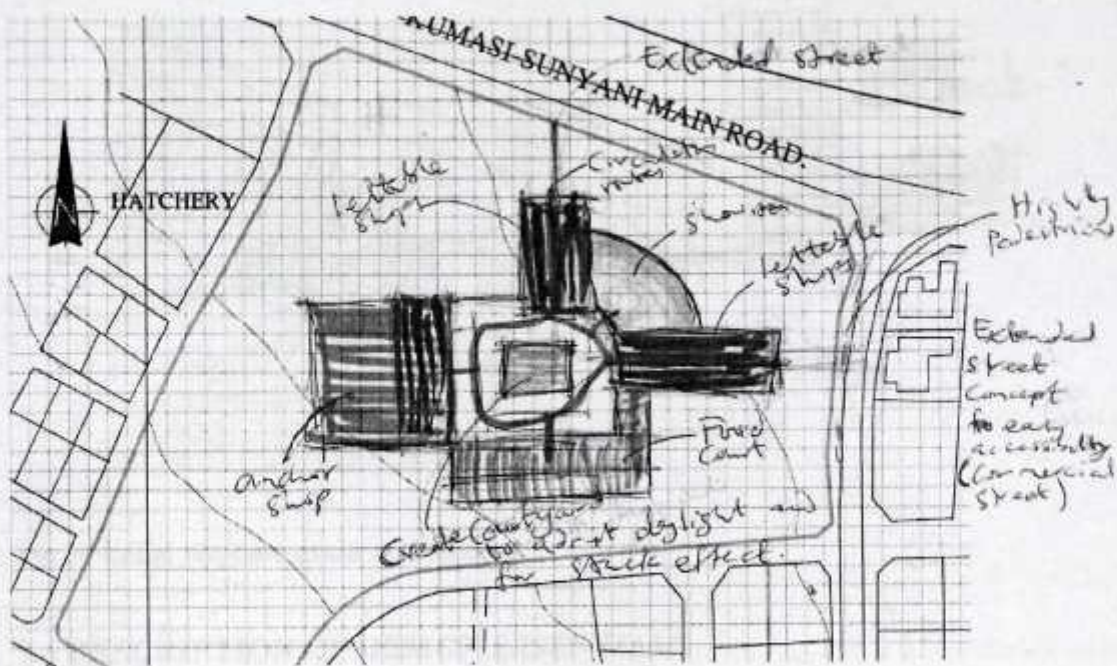


Fig 37 Initial response to site

The basic factors that influenced and decided the form and planning of my facility include:

The kind of activity

Technical issues(location of anchor shop)

Orientation (sun and wind analysis)

Topography and size of site

Views to and from the facility

Closeness of entrances to pedestrian.

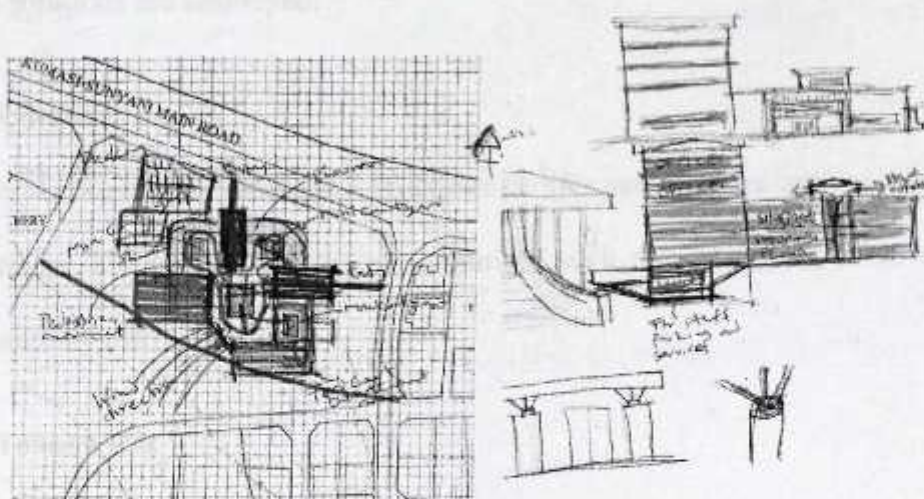


Fig 38 Initial response to site and scheme

5.6 DESCRIPTION OF DESIGN ESSENTIALS

"In order to get people to buy, you have to get them there, and the entertainment coefficient in a mall is something that builds traffic-pure and simple" - PacoUnderhill

author "Why We Buy"

In this age of easy internet purchasing and one stop buying, practical design ideas to attract shoppers and their families are inevitable.

Success of shopping centers depends on the whims of its customers, mostly women. This is because, 70 percent of shopping trip and purchase decisions are made by women. It is therefore important to meet the woman's needs at shopping destinations. This means also meeting the needs of families or the children when they accompany their mother on the shopping trip. Then design consequently considers strategies and design solutions for family entertainment and other family-targeted experiences to

attract the essential female and family markets to their facilities. The following design solutions are employed:

5.6.1 Column spacing

A general column grid dimension of 8metre centres and 10metre centres are used for this design. The column centres are organised such that spaces for store units are economically distributed.

5.6.2 Tenant Mix

The anchor shops utilize spaces with multi delivery areas. They occupy double volumes and basement service. They are designed to take advantage of dominant locations with good display. The idea is to expose the shopper to varying sequence of differing merchandise as much as possible. Consequently, each store is designed and properly located in relation to each and every store type. The mall incorporates entertainment tenants, specialty food-service tenants, high-service stores, display-only stores and other destination-oriented uses.

5.6.3 Mall Flexibility

While still providing passage from shop to shop, the mall with its courtyards flows into each other and forms a large, income-generating store containing, self-service machines, kiosks, carts, wall shops and open display merchandising. Opportunity is given to stores to parade new clothing line in the form of fashion shows and other forms of exhibition within these areas. In effect, the mall will become more like a bazaar, more exciting and less predictable. Interior design utilizes the tools of the computer age to constantly provide a changing interior environment in the form of interactive multimedia and advertising. The mall commons space have been designed to achieve unlimited flexibility to regularly alter its appearance, amenities and

merchandising to satisfy the ever-changing entertainment-shopping needs of a generation weaned on videos, computer games, large-screen cable TV, and the Internet. Interactive multimedia display will stir up shopper interest with revolutionalised interior spaces through texture, sound, colour and movement

5.6.4 Merchandising

Merchandising the stores is influenced by spatial disposition concept that will create a store that emphasizes the product. The materials of the store frame will enhance rather than detract while creating the proper image for the store.

5.6.5 Lighting

Lighting is a critical designer's tool to emphasize the product. If the lighting is diffuse, the product will appear common even if it is very expensive and unique. High-intensity lighting which is particularly effective has been employed to illuminate unique, single products, and fluorescent lighting, properly shielded with parabolic diffusers is used to effectively emphasize grouped common products.

CHAPTER SIX

6.0 SERVICES AND CONSTRUCTION TECHNOLOGY

6.1 SERVICES

6.1.1 Water Supply

Water supply is required for the purposes of drinking, cleaning, washing, heating, and fire fighting. Water is tapped from the mains, which runs along the road adjoining the site. Water is stored in tanks at the basement. It will be pumped by the use of pneumatic pumps into overhead tank and then redistributed by gravity. The mains are however connected direct to areas such as the fountains and hose reels and sprinkler systems. The control to these areas are centralised at the basement.

Hot water is supplied through the local system. Here facilities such as the restaurant and washrooms that require hot water have water heating appliances that heats water by electricity. This is because hot water usage is intermittent and will not be used by all the tenants in the building.

6.1.2 Electricity

A transformer has been located on the site by the developer to ease connection of the proposed development. The building therefore obtains its main power supply from the transformer. The shopping mall is also sub sectioned into four areas. The power distribution is grouped in accordance with the various load centres. The various load centres have independent power distribution systems but are centrally monitored from a main switch board located in the basement.

Three on site generators with an automatic start and stop equipment has been provided for the various parts of the mall. This is to achieve minimal distortion in the supply of electricity, with the generator starting up immediately when main electricity supply fails. The automatic disconnects the mains power supply circuits and automatically starts the electric generator. When power is restored, it disconnects the consumption from the generator and restores the main power supply.

The generator has been designed to take care of all the sectioned load centres. Power from the generators distributes power to only to areas that demands constant uninterrupted power supply as well as essential services areas. The generators are located on the south-western side of the site. The central electrical control gear (consisting service cable, a triple face supply head, metres, a mains switch, fuse box, time clock and bank of master switches) will be housed in the central control room located in the basement and will act as an engineers monitoring chamber. Other equipment requiring the same storage conditions will be housed with the control gear. This consists of fire and security control units. Sockets are installed within the facility to aid kiosk, cleaning equipments, exhibition fashion shows, and other functions.

6.1.3 Lighting and ventilation

- **Ventilation**

Natural ventilation system is employed within the facility by design. Elements such as courtyard and high volume roof system, all used to effect natural ventilation. The aim is for the mall to be able to operate effectively in the absence of artificial ventilation systems.

Central air conditioning systems are used for the large space stores and covered malls. Some offices and speciality shops require the central system. Entertainment areas such as the cinema also makes use of the central air-condition systems. Other tenants also use the split air conditioning system. The facades are designed to conceal all ac systems. Mechanical ventilation is also employ in areas that does not necessary need air conditioning. Sanitary area and storerooms have extractor fans that will draw out odour and introduce fresh air. Extractor systems are installed at the basement and sub basement-parking areas. Some accommodations within the basement however use window unit air conditioning systems.

- **Lighting**

Natural lighting is used during the day for malls and service bays during the day time. However, some levels of artificial lighting will be required to supplement day lighting in some specific areas like the basement.

For overall artificial lighting, fluorescent lights will be used. Intensity of lights will be graded increasing towards the entrances and exits and courtyards. General lighting is design with a flexible switching system controlled from various points. Some of the lights will have automatic control system.

Special effects lighting will be used for advertising and signage. It will be also used for interior deco and interactive multimedia purposes.

Security lighting will be designed by arranging the switching of the light such that certain patterns of light can be left on during non trading hours and be operated by separate and automatic time switches and circuit breakers.

6.1.4 Information system

A central information centre is located within the mall for customer service and general information. The information centre will operate audio and information system.

6.1.5 Security Control

- **Security**

Two forms of security are taken care of in the facility. These are petty theft, shoplifting and vandalism during the day as well as burglary during the night. During trading hours, closed circuit television is used for monitoring. CCTV also enables management to be aware of incidents such as sickness, accidents and vandalism within the mall. It can also be used as a crowd control device.

A central security department comprising of an administration headed by a security manager is located within the shopping mall. The security control room is specially designed with pedestal desks, incorporating night service switch boards , fire alarm detector panels and public address system. They are responsible for the monitoring of the security equipment. Security check points have been provided at major exit and entrance points to check movement of people and vehicles. They offer night patrol in and around the facility.

6.1.7 Fire

- **Fire Protection and Prevention**

Fire controls systems such as smoke detectors and fire alarms systems are controlled from a central control board located at the basement. The electrical system where the

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6.1.7 Fire

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Fire controls systems such as smoke detectors and fire alarms systems are controlled from a central control board located at the basement. The electrical system where the

building has been sectioned into independent load centres act as fire protection. Here, electrically induced fire outbreak can be prevented from one area to other.

Sprinkler heads and Hose reels supplied by mains are placed at strategic location within the shopping mall as a fire fighting measure. Automatic fire alarm systems are installed.

6.1.8 Landscaping and accessibility

- **Landscaping**

Both hard and soft landscape is used to enhance aesthetics effect both inside and outside the facility. The aim is also to relax the shopper and to create an enabling environment for shopping. Unpleasant area such as service bays and electric transformer are screened off by the use of plants shrubs and trees. Roads and walkways have varied surfaces for aesthetics and functionally.

- Hard landscape: Asphalt finishes and pavement blocks are used in varied ways for driveways and car parks. Pavement materials such as concrete blocks, stone finishes are employed. Soft landscape: Fountains are used at strategic locations. Specimen plants are used for aesthetics. Grass is planted to reduce glare and heat generation in open areas.

6.1.10 Telecommunication

Ghana telecom has serviced the site with telecommunication lines along the streets adjoining the site. It is therefore easy to tap telephone line into the facility. A central exchange point will be used for the facility. However, direct lines will be available for major components such as department store, supermarket and multiple store as well as the security department. The basement may have a secondary exchange

service on their own. Some tenants who may want to have direct lines may negotiate with the developer.

6.1.11 Waste Management and Sewerage System

- **Waste Management**

Three types of refuse are produced in the facility. Wet and semi wet refuse from restaurants, cafes, and groceries. Dry non crushable such as wood, metal, plastics and glass. Thirdly, dry easily crushable such as card board's boxes and paper are also produced. Central collection system of refuse disposal is used in the facility. Waste from shops and other tenants can be disposed off via waste chute system. Waste chutes in the mall leads to waste collection points at the basement. They are waste bins and disposed of by waste vans periodically. The floors of this waste yard are reinforced concrete to take care of impact from falling refuse and laid to fall to allow for adequate drainage. Dustbins are located in pedestrian walkways in and around the shopping mall.

- **Sewerage**

Surface drains will take care of storm water. A network of covered and open drains along the slope will discharge into the Abuakwa main drains. Soil and waste are to be discharged by underground pipe work into a septic tank and filtration bed within the site.

6.2 CONSTRUCTION TECHNOLOGY

6.2.1 Glazed curtain walling

Even though conscious effort was made to use glass curtain wall only on north and south facades of the structure, control of solar ingress into the facility remains critical. Both vertical and horizontal shading devices have been used on the facades of the facility taking into consideration the calculated shadow angles of these facades.

The material for the curtain walling is Zinc coated Aluminum oxide heat reflecting glass, which reflects about 70% of the solar radiation incident on it and converts the remaining 30% into a red bias light. The red bias light is very good for computer fitted rooms since it does not create glare. The glass panels are supported using planer bolts on a four-node connector. The cast-steel brackets resist horizontal wind loads.

6.2.2 Floors

Asphalt finishes and pavement blocks are used in varied ways for driveways and car parks. Pavement materials such as concrete blocks, stone finishes are employed. Materials used for steps, ramps and retaining wall definition are consistent with general hard landscape finishes. Heavy-duty contract textured carpets are used in cinema and internet café.

6.2.3 Walls and Cladding

Stone and concrete masonry as well as brickwork finishes are employed on retaining walls as part of external landscaping. Wall cladding makes use of combination of

concrete masonry units, structural clay tiles and facing tiles. Some external freestanding columns have stainless steel cladding on the fair faced concrete.

6.2.4 Curtain wall

Glass curtain walls used are fire resistant and have effective sound and solar control properties. Combination of framed, transparent, and opaque glazing types of varied colours are use in different sections of the design.

6.2.5 Signage

Multi coloured diverse materials from glass to plastic are employed for these elements. Directional signs are all made of stainless steel satin finishes.

CHAPTER SEVEN

7.0 CONCLUTION

In pursuance of the aims and objectives of the this design, it is hoped that the Kessben Commercial Centre when constructed will revolutionalize shopping, serve as a yard stick for commercial infrastructural development and urban design standards for Kumasi, and also strategize the city to take advantage of the new challenges created because of changing world economic environment.

7.1 COSTING

7.2 PHASING

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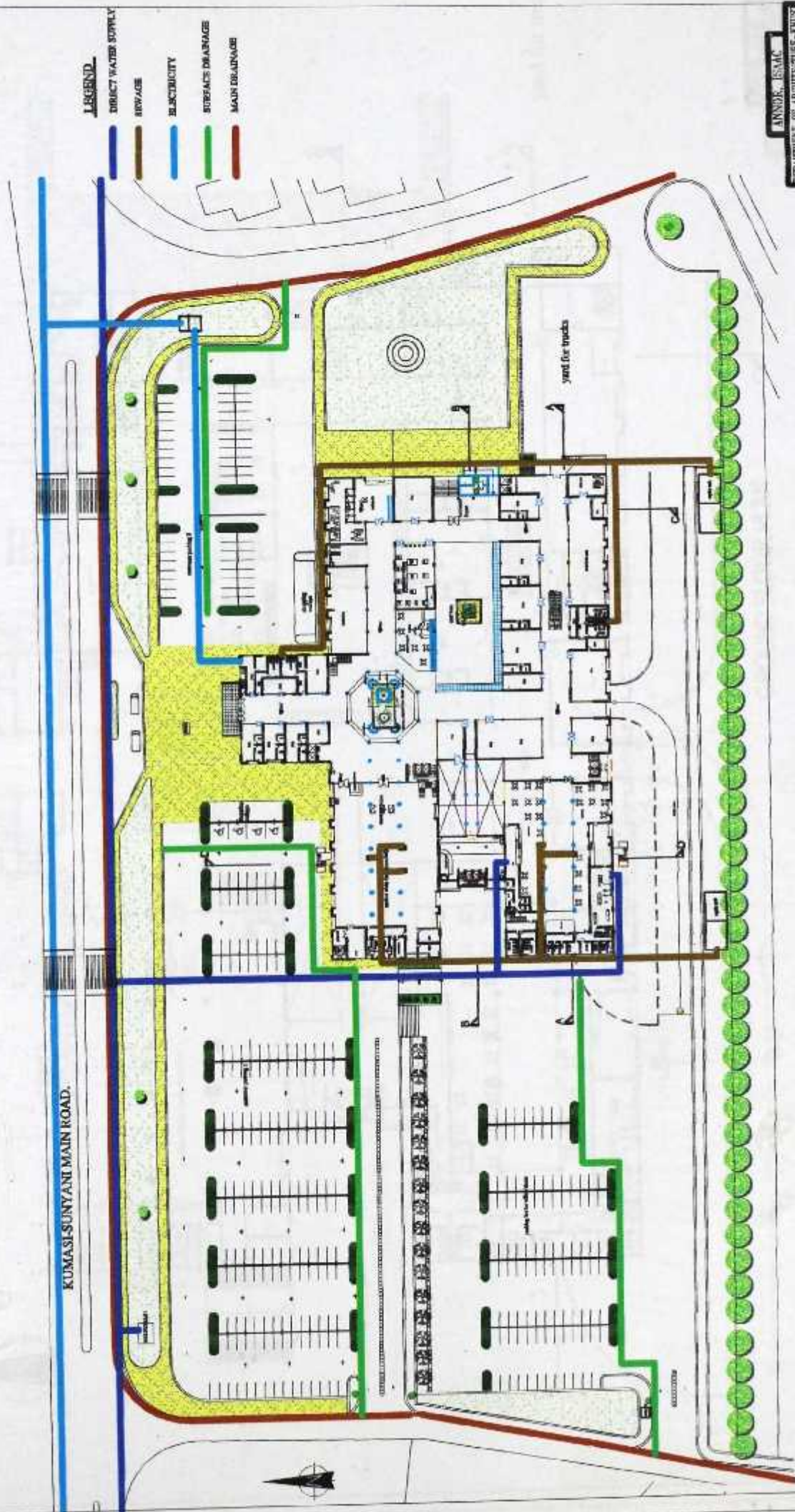
- A LAY-B
- B PLAZA
- C CUSTOMER PARKING
- D PARKING LOT (TOWER)
- E TRUCK YARD
- F LAWN
- G PROPOSED COMMERCIAL CENTRE

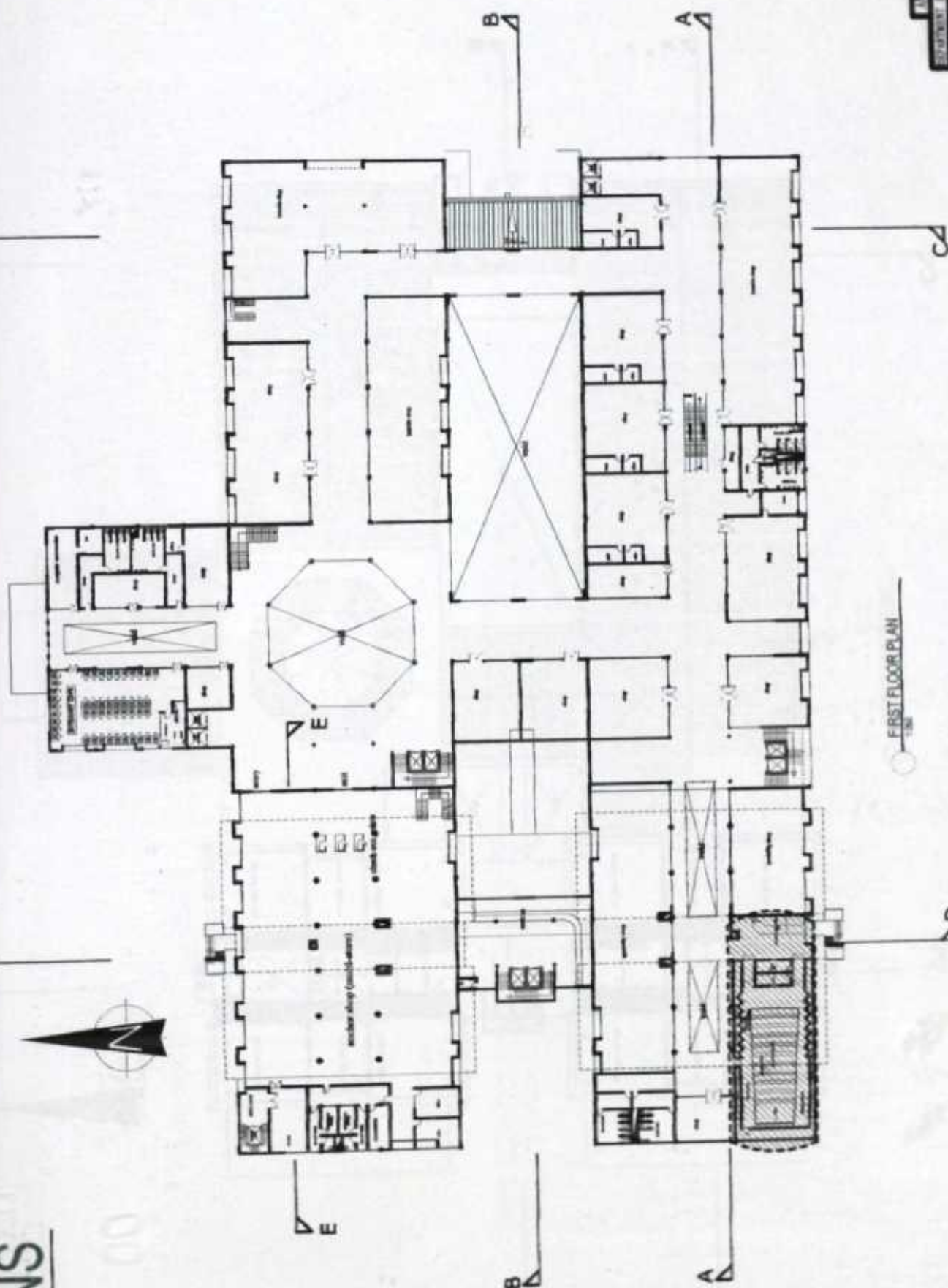


BLOCK PLAN
1:500

KESSBEN COMMERCIAL CENTRE - ABUAKWA, ATWIMA

NAME	ESTAC
DEPARTMENT OF ARCHITECTURE	ARCH
P.L. NO.	2
DATE	MAY 2008
DESIGN	THESIS
SCALE	1:500

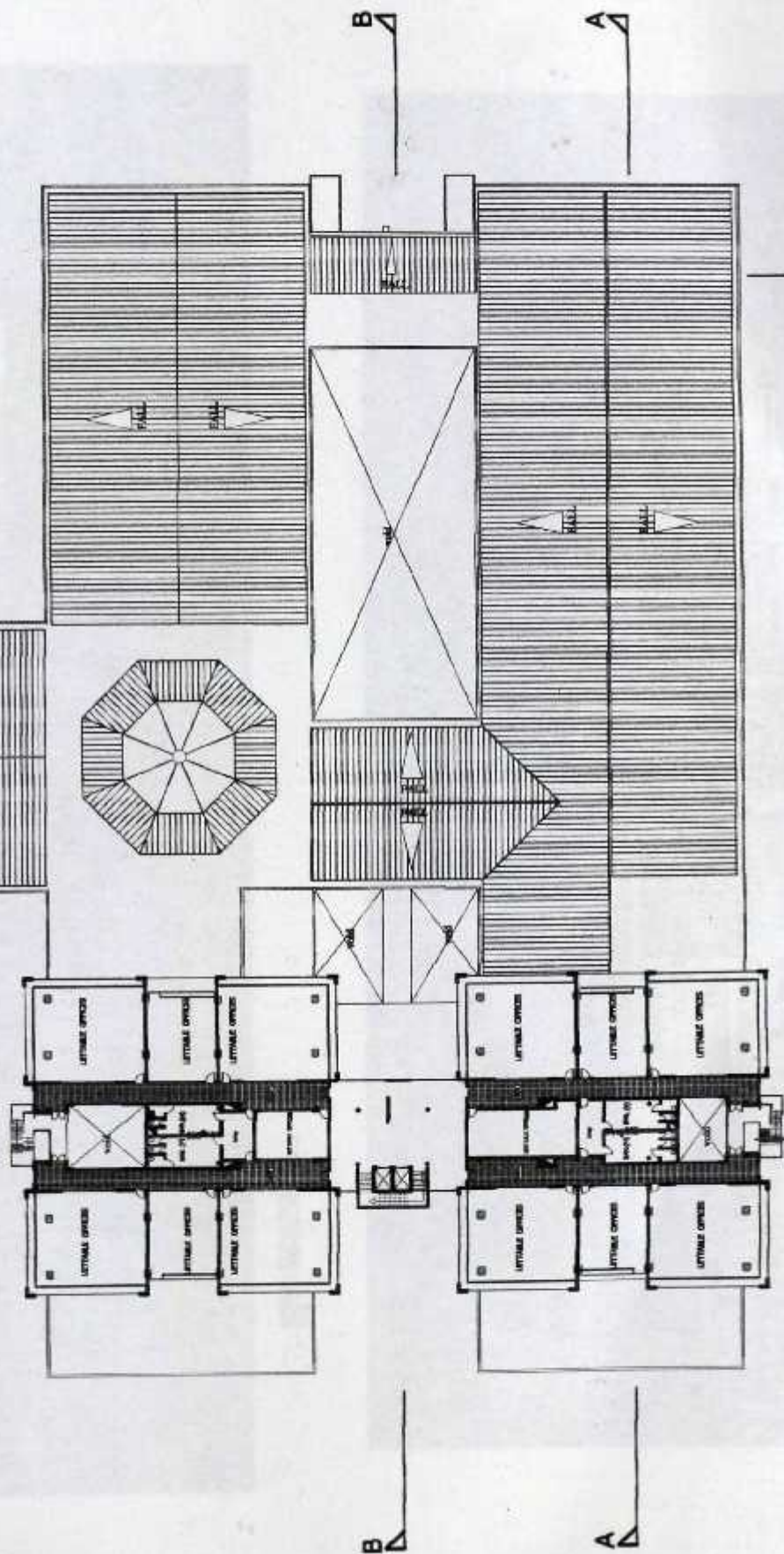




FIRST FLOOR PLAN
1:50

KESSBEN COMMERCIAL CENTRE - ABUJAWA, ATWIMA

DESIGNED BY	DATE
DRAWN BY	DATE
CHECKED BY	DATE
APPROVED BY	DATE



SECOND FLOOR PLAN
1:250

KESSBEN COMMERCIAL CENTRE - ABUJAWA, ATWIMA.

ELEVATIONS



1 NORTH ELEVATION
1:250



2 WEST ELEVATION
1:250

KESSBEN COMMERCIAL CENTRE-ABUJA KWA, ATWIMA.

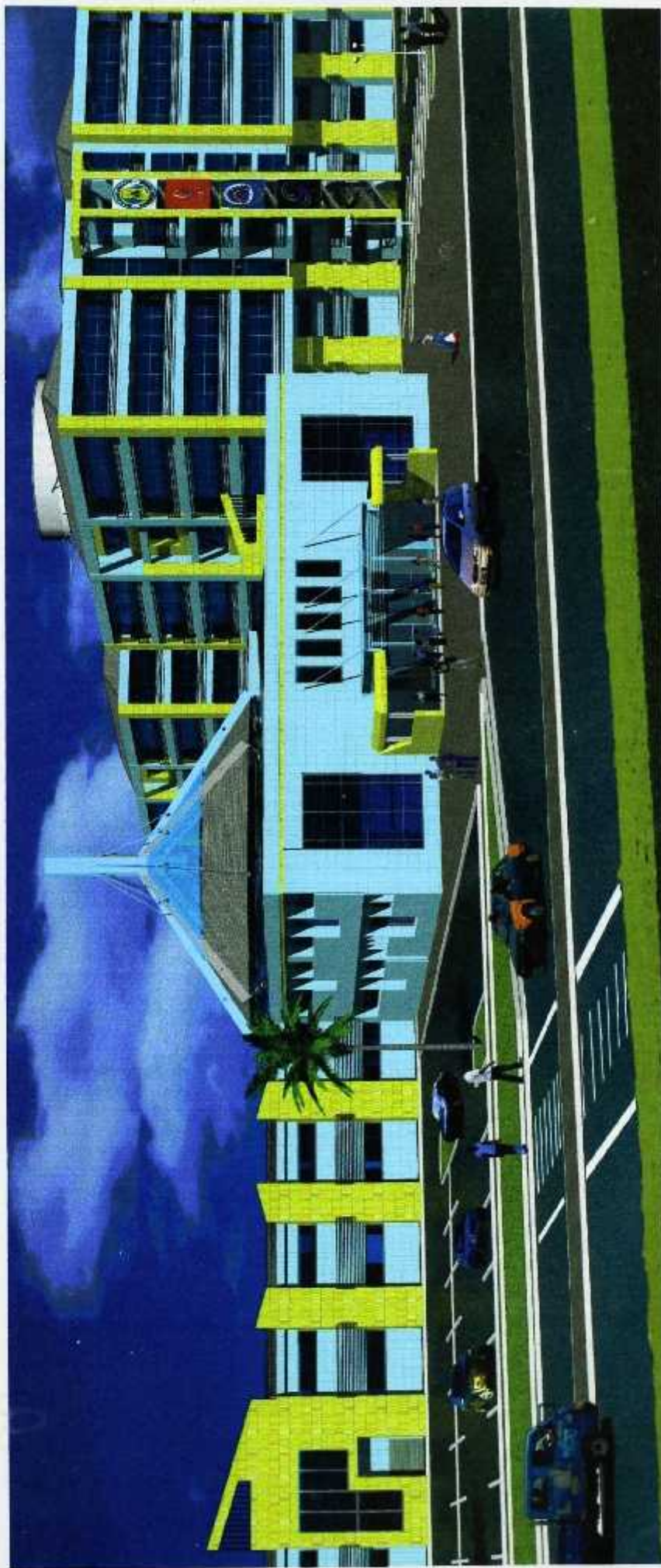


CLOSE UP VIEW OF THE WESTERN ENTRANCE



CLOSE UP VIEW TOWARDS THE OFFICE TOWER ENTRANCE

PERSPECTIVES

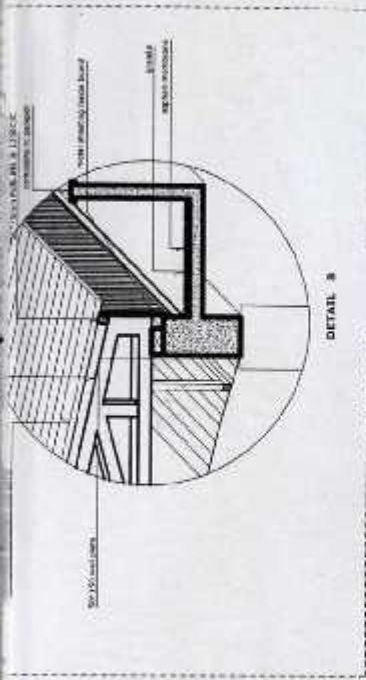


○ CLOSE UP VIEW TOWARDS THE NORTH

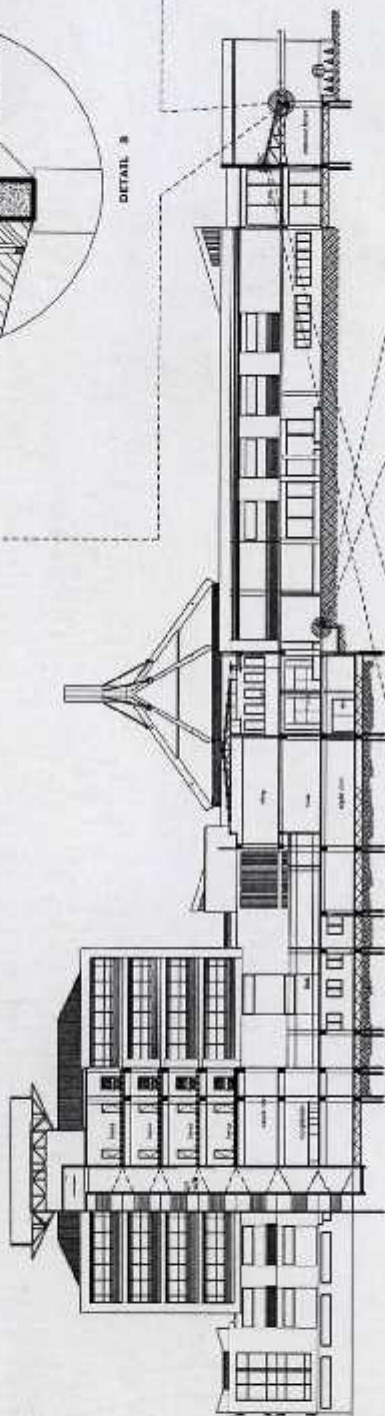
ANNOR, ISAAC	
DEPARTMENT OF ARCHITECTURE - ENUS	
P.O. DIP 2	MAY, 2008
DESIGN THESIS	
SCALE 1/100	

KESSEBEN COMMERCIAL CENTRE - ADUAKWA, ATWIMA.

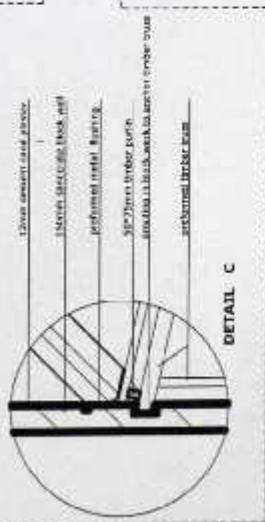
SECTIONS



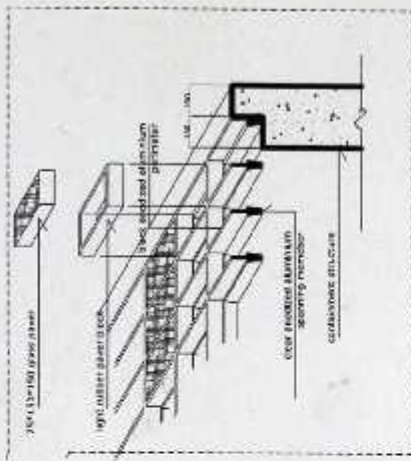
DETAIL B



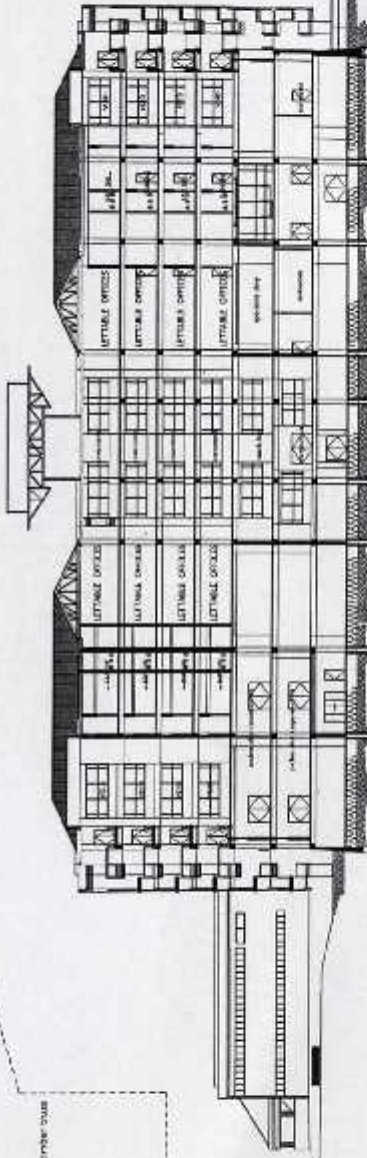
SECTION B-B
1:250



DETAIL C



DETAIL A



SECTION D-D
1:250

KESSBEN COMMERCIAL CENTRE - ABUAKWA, ATWIMA.