

**CLOTHING FACTORY, SPINTEX ROAD- ACCRA**

**BY**

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## DECLARATION

I hereby declare that this thesis report has been undertaken solely by me, except for portions where references and acknowledgement have duly been given, and not a duplicate work. It has resulted from thorough research and logical analysis and synthesis under department staff supervision.

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

  
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(DATE)



## DEDICATION

This work is dedicated to a very special people in my life- my nephews and nieces- Phillip, David, Michael, Othniel, Jason, Priscilla, Josel, Jelibia, Gytha and Samuel Jnr.

You are my joy.

It is also dedicated to all under privileged and unemployed people all around the world.



*Clothing Factory- Spintex road, Accra*

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## ABSTRACT

An outfit is the quickest way to make an impression. Whether you prefer classic cuts, are a fashion guru, or wear the same style every day, the way you dress can speak volumes about your personality.

The African textile and clothing (T&C) industry is in a major crisis. Domestically it is hit by imports (in particular from Asian countries) with which it finds it difficult to compete. Not much of the once impressive T&C sector built during the phase of import substitution is left. It is hit on foreign markets, where it has made some inroads in recent years, and where fierce competition among suppliers is now threatening exports from Africa.

The future and, to some extent, even the survival of the African textile and clothing industry is closely linked to two international processes: The changes taking place on the global T&C market after the expiry of the Agreement on Textiles and Clothing (ATC) on 1 January 2005; and the restructuring of the multilateral trade system, being negotiated in the current World Trade Organization (WTO) Doha round.

The expiry of the ATC marks the end of a period of some 40 years, during which much of the global T&C trade was subject to a special regime which centred on a politically motivated quota system. With the end of the quota system, the T&C trade is moving inside the world of WTO agreements, becoming an integral part of the WTO system, governed by the general rules and principles of this multilateral trading system.

The WTO Doha round is the second major reference. Current WTO agreements do allow the use of certain rules, which can provide protection for national T&C companies through customs duties or safeguard measures and promote exports through preferential market access. All these policy instruments are on the WTO table for negotiations again. The survival of the T&C sector and the design of domestic and international trade and industrial policies is of major relevance for the development prospect.

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## CHAPTER ONE

### 1.0 INTRODUCTION

The cultural policy of Ghana states categorically the following concerning the Ghanaian clothing industry- "The state shall assist the small and medium scale indigenous clothing industries to develop and improve their marketing strategies and their presence on the world market."

In fact, clothing constitutes an important aspect of any culture in the world today; be it American, British, French or Japanese culture. Apart from giving identity to a nation, it identifies individuals as to where he or she comes from. It also advances and enhances the image of a country. Clothing therefore plays a very important role in the development and propagation of any culture in the world; and has also great potential of contributing to the development of a nation's economy.

The textile industry is indeed a lucrative business on the world market today. The most economically powerful countries of the world such as the U.S, Britain, France, Japan, China etc have a large part of the revenue generated for their economies coming from the textile industry. Thus, these countries do make great investments in their textile industries with the view to boosting their economies.

It is unfortunate however, to note that Ghana has never taken into consideration the great economic potential that the Clothing industry (for example Kente) has for Ghana. The Clothing industry has been neglected and not given the necessary attention and development as it deserves to the detriment of the country. Thus, Ghana is losing heavily in terms of her economic potential in the textile industry on the world market today.

In order to reverse this unfortunate situation in the interest of the country, some drastic measures must be taken as a matter of urgency to develop the industry so that it can compete favourably with other industries on the world market scene.



It is also unfortunate to note that many Ghanaians have developed a strong taste for wearing European clothes at work places, offices, churches, social gatherings, state functions etc. at the expense of Ghanaian clothing such as the Kente cloth, smock etc.

Opinion leaders and influential Ghanaians, who are in positions to advance the cause of the industry, have failed to do so because they are somehow affected by the European cultural influence by the way they eat, dress and project themselves generally. For instance, one can often see Ghanaian lawyers, doctors, academicians etc. dressed in suit and tie to work, church, parties etc and occasionally putting on the Kente cloth, smock etc. as a way of projecting the Ghanaian culture.

In fact, Ghana is losing heavily on the world market as a result of her continued neglect to develop the industry which has great economic potential as other textiles industries of many rich and powerful countries of the world.

It is therefore high time that Ghana turned her attention to the development of her clothing industry in order to bring economic benefits to the country. This should take place right now!

### **1.1 PROBLEM STATEMENT**

In a space of two decades 23,000 workers in Ghana's textile sector have lost their jobs because Ghana's clothing industry has fallen victim to a flood of cheap Asian textiles. Now the sector that used to employ around 25,000 workers employs a mere 2000 workers countrywide.

Textile industry watchers argue that if trade policies had been favourable to local industries, the alarming loss of jobs and livelihoods would have been minimal. Cheap textiles from countries such as China have flooded Ghana's market which has seriously injured the local industry. Stakeholders say the onus is on the government to act quickly to save the textile industry which has the potential to create new jobs.



Globally, there has been a decline in the performance of the textile sector. A meeting held in January, 2009 in Durban, South Africa union representatives of clothing, textile, footwear and leather workers from ten African countries, including Ghana, brought to light that Africa has lost over 250,000 clothing workers over the past few years.

Countries worse affected are Ghana, South Africa, Nigeria and Swaziland. The rest include Mauritius, Zambia, Madagascar, Namibia, Kenya, Malawi and Tanzania.

As clothing makers around the world adjust to brave new ways to save their local industries, Ghana's textile industry remains one of the biggest casualties of trade liberalization.

Ghana Textile Print, (GTP), which used to hold its own against multinational textile companies, is currently finding it hard to stand on its feet and recently laid off 60 workers as part of measures to resuscitate its operations. Juapong Textiles has totally collapsed.

GTP is not the only textile industry hit by trade liberation. GTP is arguably the country's flagship textile producer and is branded with producing some of the most traditional prints in Ghana.

Unfortunately, some popular traditional GTP prints, such as Afi bi esan', 'entwa woho nkyere me', 'subura', among others are now being pirated in India, China and South Korea and smuggled into Ghana to undercut GTP.

In interviews with several importers of cheap textile they said the cost of labour in the textile industry in Ghana is high, compared to China for instance which produces reduced costs besides making enormous efforts at restructuring its textile sector. Consequently, they can afford to flood them cheaply here.

The textile sector in Ghana has in recent years come under intense pressure on issues of wages and conditions of service. This has led to an increase in underpayment of workers, engaging workers on casual bases and contract work in the textile industries.



The unionists further stressed the need to address the issue of building the capacity of workers so as to increase productivity and efficiency.

In their opinion, governments must ensure that measures are put in place minimize the impact of trade in imported second-hand clothing while at the same time ensuring that Africa's domestic industries are able to provide affordable clothing to the continents populace.

The trade unionists proposed a summit in Africa on the future of the textile, clothing and footwear industries with greater participation by trade unions, investors and governments, in order to develop commitments for a common action plan towards the growth of the industry.

## 1.2 JUSTIFICATION

An outfit is the quickest way to make an impression. Whether you prefer classic cuts, are a fashion guru, or wear the same style every day, the way you dress can speak volumes about your personality.

Since everyone in one way or the other wears a type of clothing everyday, it would be very profitable if we sought to made in Ghana clothing. If we calculate the total population in Ghana by the clothing that has to be produce if everyone has to wear a made- in- Ghana fabric, it would be noted that the number of people would out way the current number clothing factories in Ghana; therefore the need to design purpose- built clothing factories which would also reduce the rate of unemployment and at the same time generate revenue for the government and the nation as a whole.

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### 1.3 OBJECTIVES

- ❖ To design a facility that will ensure effective and efficient production of clothing.
- ❖ To come up with a serene industrial environment that will ensure health and safety for both staff and customers.
- ❖ To design a facility that will aid the education and tourism of our traditional heritage

### 1.4 CLIENT

The client is the Ministry and of Trade and Industry in collaboration with the Presidential Special Initiative (P.S.I).

### 1.5 FUNDING

The project will be sponsored by the Whitaker Group with the support of the Government of Ghana.

### 1.6 SCOPE OF STUDY

The thoughtful design of the factory would include the provision of these facilities:

- ❖ Production unit
- ❖ Changing rooms
- ❖ Raw materials and finished goods warehouse
- ❖ Cutting and sampling room
- ❖ First aid unit



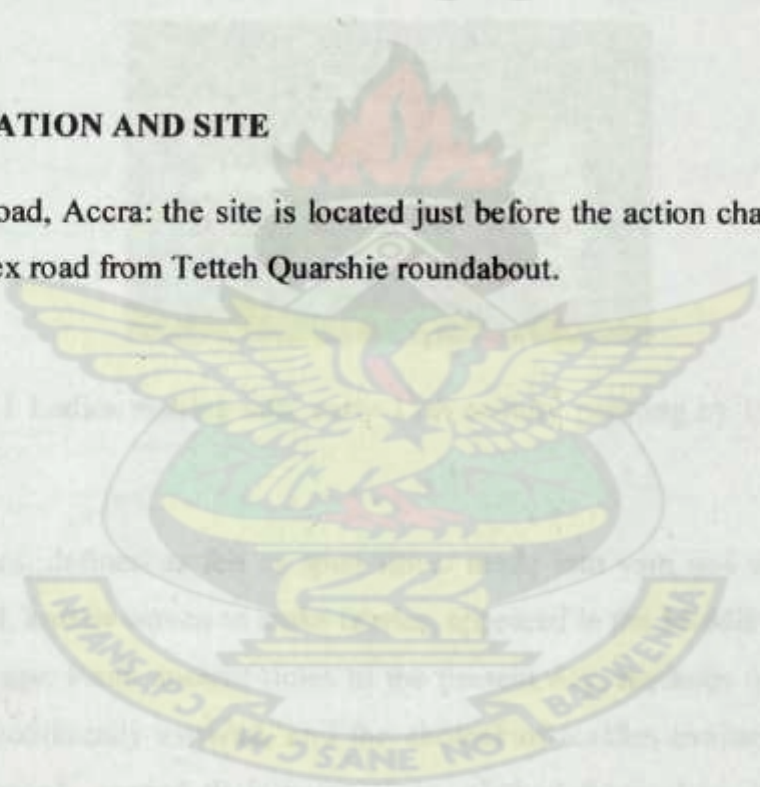
- ❖ Maintenance section
- ❖ Administration
- ❖ Design center
- ❖ Runway showroom (Auditorium)
- ❖ Exhibition centers
- ❖ Cafeteria

### 1.7 TARGET GROUP

The target group of the project is the youth all over the world.

### 1.8 LOCATION AND SITE

Spintex road, Accra: the site is located just before the action chapel International on the Spintex road from Tetteh Quarshie roundabout.



## CHAPTER TWO

### 2.0 LITERATURE REVIEW

#### 2.1 HISTORY OF CLOTHING AND TEXTILES

The history of clothing and textiles attempts an objective survey of clothing and textiles throughout human history, identifying materials, tools, techniques, and influences, and the cultural significance of these items to the people who used them.



Fig 2.1 Ladies making silk, early 12th century painting by Emperor Huizong of Song

Textiles, defined as felt or spun fibers made into yarn and subsequently netted, looped, knit or woven to make fabrics, appeared in the Middle East during the late stone age. From ancient times to the present day, methods of textile production have continually evolved, and the choices of textiles available have influenced how people carried their possessions, clothed themselves, and decorated their surroundings.



## 2.2 WHY DID CLOTHING EMERGE?

Since prehistoric times, people in almost all societies have worn some kind of clothing. Many theories have been advanced as to why humans began to wear clothing. One of the earliest hypotheses is the so-called modesty/shame theory, also known as the fig leaf theory. This theory is based on the biblical story of creation. In the book of Genesis, Adam and Eve, the first human beings, realize they are naked after they eat an apple from the tree of knowledge. Ashamed of their nakedness, they make clothing for themselves out of fig leaves. As late as the 19th century, most Europeans and Americans believed that people wore clothing primarily for reasons of modesty. With the rise of a nonreligious worldview, however, people began to offer other theories. Some argued that the origin of clothing was functional—to protect the body from the environment. Others argued that some clothing was designed for sexual attraction—to display the body's beauty.

Evidence that early clothing was indeed functional came from a 1991 discovery of a 5,000-year-old male body, frozen on top of a glacier near the Austrian-Italian border. It was clothed in a fur cap, a crudely tanned leather cape, a *loincloth* (strip of cloth wrapped around the waist and between the legs), leggings, and leather shoes. A grass cloak covered the fur and leather clothing. These clothes would have provided protection against the cold and rain. The Iceman, as he is called, also had tattoos, which may have been marks of decoration or tribal identity, or were perhaps intended to provide magical protection.

Decoration seems to satisfy a fundamental human need. Other animals groom themselves, but only human beings have ornamented themselves. Although in some societies people have worn little or no clothing, so far as we know, people have decorated their bodies in some way in all societies throughout history. Archaeological and anthropological evidence suggest that early people may have decorated their bodies with paint, tattoos, and other types of ornamentation even



before they began wearing clothing made of fur or fabric. Body decoration, like clothing, has served a variety of social and symbolic purposes.

Modern scholars believe that clothing provides a mark of identity and a means of nonverbal communication. In traditional societies, clothing functions almost as a language that can indicate a person's age, gender, and marital status, place of origin, religion, social status, or occupation. In modern industrialized societies, clothing is not so rigidly regulated and people have more freedom to choose which messages they wish to convey. Nevertheless, clothing can still provide considerable information about the wearer, including individual personality, economic standing, even the nature of events attended by the wearer. When a woman who usually wears blue jeans puts on a frilly, flowered dress, she may be stating that she wants to look more traditionally feminine. A person wearing a T-shirt emblazoned with the name of a rock band is probably a fan of that music group and may have attended one of the group's concerts.

A society's economic structure and its culture, or traditions and way of life, also influence the clothing that its people wear. In many societies, religious laws regulated personal behavior and permitted only members of an elite class to wear certain prestigious items of clothing. Even in modern democracies, clothing may represent social standing. Clothing with a designer label tends to be relatively expensive, so it may function as an outward sign of a person's economic standing. Clothing most obviously defines a social role in the case of uniforms, such as those worn by police officers and nurses, and garments worn by clergy or members of religious orders. Clothing metaphors—blue-collar and white-collar workers, for example—are used to distinguish between types of work (factory or office, in this example).

Clothing also derives meaning from the environment in which it is worn. In most cultures brides and grooms as well as wedding guests wear special clothes to celebrate the occasion of a marriage. The clothing worn for rituals such as weddings, graduations, and funerals tends to be formal and governed by unwritten



rules that members of the society agree upon. Clothing may also signal participation in leisure activities. Certain types of recreation, especially active sports, may require specialized clothing. For example, football, soccer, and hockey players wear matching jerseys and pants designed to accommodate such accessories as protective pads.

Most modern societies comprise different social groups, and each group has its own beliefs and behaviors. As a result, different clothing subcultures exist. Within a single high school, for example, teenagers known as jocks are likely to wear different styles of clothing than teens called nerds. This difference can indicate to which group a teen belongs.

### 2.3 HIGH MIDDLE AGES AND THE RISE OF FASHION

Clothing in 12th and 13th century Europe remained very simple for both men and women and quite uniform across the subcontinent. The traditional combination of short tunic with hose for working-class men and long tunic with over gown for women and upper class men remained the norm. Most clothing, especially outside the wealthier classes, remained little changed from three or four centuries earlier.



Fig 2.2 14th century Italian silk damasks

The 13th century saw great progress in the dyeing and working of wool, which was by far the most important material for outer wear. Linen was increasingly



used for clothing that was directly in contact with the skin. Unlike wool, linen could be laundered and bleached in the sun. Cotton, imported raw from Egypt and elsewhere, was used for padding and quilting, and cloths such as buckram and fustian.

Crusaders returning from the Levant brought knowledge of its fine textiles, including light silks, to Western Europe. In Northern Europe, silk was an imported and very expensive luxury. The well-off could afford woven brocades from Italy or even further afield. Fashionable Italian silks of this period featured repeating patterns of roundels and animals, deriving from Ottoman silk-weaving centres in Bursa, and ultimately from Yuan Dynasty China via the Silk Road.

Cultural and costume historians agree that the mid-14th century marks the emergence of recognizable "fashion" in Europe. From this century onwards Western fashion changes at a pace quite unknown to other civilizations, whether ancient or contemporary. In most other cultures only major political changes, such as the Muslim conquest of India, produced radical changes in clothing, and in China, Japan, and the Ottoman Empire fashion changed only slightly over periods of several centuries.

In this period the draped garments and straight seams of previous centuries were replaced by curved seams and the beginnings of tailoring, which allowed clothing to more closely fit the human form, as did the use of lacing and buttons. A fashion for *mi-parti* or *parti-coloured* garments made of two contrasting fabrics, one on each side, arose for men in mid-century, and was especially popular at the English court. Sometimes just the hose would be different colours on each leg.



## 2.4 HISTORY OF CLOTHING INDUSTRY IN GHANA

Industrial development has been recognised as one of the surest means of ensuring higher and sustained growth rates. Hence, African countries including Ghana pursued import substitution industrialisation in the 1960s and 1970s. The rationale was to move African economies from their agrarian state to modern industrialized economies as has been the case of the east and south-east Asian economies.



Fig 2.3 Kente cloth

Consequently, policies to promote import substitution industrialisation were pursued and this led to the establishment of light industries to produce goods locally and operate behind tariff barriers. Like many African countries, Ghana's industrial strategy was meant to reduce economic dependence; hence, manufacturing industries were established to produce items that were previously imported. Consequently, industries making textiles, soap, wood works, aluminium, metal, to mention but a few, were established. However, during the initial stages, the sector was largely dominated by foreign owned firms but a shift of government policies in the mid 1970s led to increased state participation in the sub-sector. For over two decades after ISI was started, the textile sub-sector dominated the manufacturing sector and contributed significantly to livelihood. It employed about 25,000 of the labour force, accounted for 27% of total manufacturing employment and operated at about 60% of plant capacity (MOTI, 2004). The textile sub-sector has also been an important source of foreign exchange in Ghana<sup>2</sup>. However, by 1982, shortage of foreign exchange for



importing raw materials resulted in the sub-sector operating at extremely low capacity. Consequently, most of these industries went out of business and the situation deteriorated under trade liberalization, which formed part of the Structural Adjustment Programmes pursued in the 1980s and 1990s. Hence, employment declined from 7,000 in 1995 to 5,000 in 2000.

The reforms led to increased importation of textiles and other used apparel, which facilitated the death and closure of many textile industries in Ghana. Over the past few years, the sector has shown considerable interest to increase production for the local market and also to take advantage of the opportunities provided under AGOA but the threat of cheap imports (including smuggled items) from China and Pakistan remains a major challenge to the survival of the few existing industries.

#### **2.4.1 Profile of the Textile Industry in Ghana**

This section discusses employment trends, number of companies, importance of the sub-sector, local production versus imports, and the importance of the sector to Ghana's economy. In view of data limitation, survey data is used where time series data could not be obtained.

#### **2.4.2 Employment Levels**

Ghana's textile industry employed some 25,000 people and accounted for 27 percent of total manufacturing employment in 1977. However, by 1995, employment within the sub-sector had declined to a mere 7,000 declining further to 5,000 by the year 2000. As the situation continues to deteriorate, employment continues to decline; as at March 2005 the four major textile companies in Ghana employed a mere 2,961 persons. A survey of 40 textile and garments industries in 2005 also confirmed that the situation is getting worse.



### **2.4.3 Number of Companies and Investments**

By mid 1970s about 16 large and medium sized textile companies had been established in Ghana. The garment industry also had some 138 medium and large-scale garment manufacturing companies during that time. However, inconsistent government policies over the years have contributed greatly to the decline in the sub-sector's activity levels. As at 2002, the four major companies that survived the turbulence in the sub-sector are the Ghana Textile Manufacturing Company (GTMC), Akosombo Textile Limited (ATL), Ghana Textile Product (GTP), and Printex with GTP maintaining the lead in the industry. The garment industry comprised of numerous small-scale enterprises which took the form of a sole proprietorship and were engaged in making garments for individuals as well as uniforms for schools, industries and governmental institutions such as the police, the army, hospitals, etc, and also for the exports market. The garment industry, however, depended directly on the textile industry. Investments within the textile industry are mainly by local firms. A survey of 40 textile and garment industries within Accra-Tema revealed that only 5% were involved in joint ventures with foreign investors. The rest (95 percent) were locally owned and none was solely foreign owned.

### **2.4.4 Production and Textile Imports**

Ghana's textile industry is mainly concerned with the production of fabrics for use by the garment industry and also for the export market. The sub-sector is predominantly cotton-based although the production of man-made fibres is also undertaken on a small scale. The main cotton-based textile products include: African prints (wax, java, fancy, bed sheets, school uniforms) and household fabrics (curtain materials, kitchen napkins, diapers and towels). These products form the core of the sub-sector.

The main products of the man-made fibres (synthetics) and their blends include: uniforms, knitted blouses, socks etc. These are mainly made from polyester, acryl and other synthetics. There are also a number of small firms which hand-print their own designs onto bleached cotton fabrics, also known as tie and dye or batik



cloth. Also, traditional or indigenous textiles such as Kente cloth (traditional woven fabric), Adinkra cloth (traditional hand printed fabric) and other types of woven fabrics used for various purposes such as smock making etc. are proposed. Total industry output peaked at 129 million yards in 1977 with a capacity utilisation rate of about 60 percent. GTP maintained the lead in the industry with an annual production of 30.7 million yards (includes the outputs of Juapong and Tema plants). This was followed by GTMC, ATL, and Printex with production levels of 15 million, 13 million and 6 million yards, respectively. Unfortunately, total industry output declined from its 1970 level to 46 million yards in 1995 but recovered to 65 million yards in 2005. As at March 2005, GTP was producing 9 million yards, ATL 18 million yards, GTMC 2.24 million yards and Printex 9.84 million yards. A total annual output of 39.04 million yards was produced by the industry as at March 2005, which translates to an average of 49.4% of initially installed capacity of the four firms. Thus, output had declined from 65 million yards; in 2000 to 39 million yards in 2005.

#### **2.4.5 Imports**

Ghana's textile industry imports a lot of its raw material inputs for its operations, and also finished goods. Imports of raw materials are mainly from the Netherlands, China, India, the U.S, the E.U, Nigeria, Thailand to mention but a few. Textile imports into the country comprises of dye stuffs and chemicals, calico, khaki fabric, prints and finished textiles and garments of various kind like new dresses, bed sheets, used textile goods like blankets clothing curtains, accessories, like zippers, fasteners etc. Machinery and equipment and spare parts are also imported for use in the sub-sector. Whereas raw material imports such as cotton are complementary to local production, imported African prints from Nigeria, Côte d'Ivoire and South-East Asia tend to crowd out local production. These finished products often bear the patent designs, logo and trademarks of local textile industries, which are sold on the local market at a very cheap price. Imports of textile have grown steadily over the years. In 1992, the country imported US \$ 35 million worth of fabrics and garments. This increased to US \$



57 million in 1998 and by the first half of 1999 US \$ 42 million worth of fabrics and garments were imported (MOTI, 2002). It is estimated that at the end of the first quarter of 2005, imported textile prints will have accounted for 48% of total textile prints in the Ghanaian market (Ghana Employers Association, 2005).

The local market is facing stiff competition from finished imported textile prints such as calico, grey baft, furnishing materials usually from Côte d'Ivoire, Nigeria, China, and most recently from India and Pakistan. Consumers have argued that although the locally produced finished fabrics are relatively better in terms of quality, the market for imported products has increased because the products have attractive colours, new designs, a softer and glossier finish. Table 2 indicates the trend in imported fabrics from 1997-2000.

#### **2.4.6 Importance of Textile Exports to Ghana's Economy**

Textile exports are an important source of foreign exchange and revenue to textile manufacturing firms. Textile exports generated \$ 27.2 million dollars in 1992 and this increased to \$ 179.7 million in 1994 but revenue from exports declined consistently thereafter, and by 1998 they had fallen to US \$ 3.173 million.

It is worth mentioning that in 2000, Ghana qualified for AGOA, and exports of Ghanaian textile and apparel to the US market amounted to \$550,000 in 2002, \$ 4.5 million in 2003 and \$ 7.4 million in 2004. Imports of US textile and apparel were \$ 8.87 million, \$ 12.73 million and \$ 11.48 million, respectively, over the same period.

The decline in textile exports from 1992 to 1998 can be attributed to internal and external bottlenecks. Ghanaian manufacturers of textiles generally agree that the market for exports is huge, but have reservation about operating in some of these markets, particularly within the ECOWAS sub-region due to trade barriers. Some of the trade barriers include, among others, imposition of 20% duty by Côte d'Ivoire (contrary to ECOWAS regulations), transit tax collected at Benin, extortion by Nigerian authorities, and the risk of currency devaluation. Poor packaging of some manufacturers/exporters also serves as a barrier to exports to markets such as the EU and the United States of America. Also, poor finishing of



products (quality/ conformity to standards), technical barriers, inability of some manufacturers to meet export orders on schedule, high tariffs charged in some export destinations of Ghanaian textile, to mention but a few.

The main export destination for made-in-Ghana textiles as at 2004 includes EU countries (55%), the USA (25%), and ECOWAS (15%). The remaining 5% percent exported to other countries, mostly Southern and East African states (mainly South Africa, Zimbabwe, Namibia, Ethiopia etc). Textile and garment exports from Ghana comprise of fancy prints, wax prints, Java prints, calico smock, ladies dresses, men's wear, etc. The indigenous textile products like Kente, a special fabric produced on traditional loom, Adinkra (hand-prints) smock or Fugu are also exported. Batik or tie and dye fabrics are also used to produce all kinds of products for the exports market.

These products include: a unique brand of carefully crafted handbags, casual wear for ladies and gents, shirts, dresses, napkins, cushion covers, bedspreads, chair backs, curtains, toys and many others.

#### **2.4.7 National Economic Policies towards Promoting Growth of Textile and Clothing Industry**

The textile sub-sector has the potential of accelerating growth in the industrial sector and the economy as a whole and has, therefore, become one of the main priority areas of government. The government initiated various programmes aimed at restructuring and improving the textile and garment industry. These programmes were meant to enable the industry to take full advantage of the African Growth and Opportunity Act (AGOA)<sup>9</sup> and increase employment opportunities for the growing population, expand and diversify the economy, promote both domestic and foreign investment as well as stimulate exports. Some of the national economic policies aimed at stimulating the sector include the following:

- ❖ **Textile/Garment Cluster Network:** A Spinnet Textile/Garment Cluster has been formed by the government in collaboration with UNIDO to bring together micro, small and medium scale operators in the textile industry. The cluster was formed



to address the problems faced by the sub-sector. Since its inception, the cluster had assisted in training in mass production strategies, sub-contracting, up-grading of technical and marketing/managerial skill of members, and financial assistance.

- ❖ **Textile/Garment Training Centre:** This is a training centre or laboratory established by the government in collaboration with UNIDO to be used to upgrade skills of textile and garment industries that take advantage of AGOA and exports in other destinations. The industry is also currently supported by 21 national vocational training institutes, which provide basic practical and theoretical training in tailoring and dressmaking.
- ❖ **PSI-Export Action Programme on Textiles and Garment:** Export Action Programme on Textiles and Garments is a special initiative of Ghana's president designed to enhance private sector growth and development within the president's vision of creating a "Golden Age of Business" in Ghana.
- ❖ **Tariffs:** The current tariff structure is being revised to conform to the actual economic trends. It has been proposed that import duties on all imported clothing should be increased to create a level playing field for all textile products in Ghana. In addition, tariffs on all textiles manufacturing raw materials are to attract zero rate of tariffs in order to reduce cost of production for locally manufactured textiles.

#### 2.4.8 Credit

A long-term concessionary credit for expansion, rehabilitation and modernisation of the textile sub-sector sector is under consideration besides an amount of US \$50 million that has been recommended by the United Nations Industrial Development Organization (UNIDO) to be given to the subsector based on a study it conducted in 1995.

- ❖ **New Administrative Procedures:** In view of the threat to Ghana's textile industry, new administrative procedures for importing textile print into the country were introduced. Takoradi port has been identified as the single designation for textile imports, which means that all goods will be physically examined by the Customs Excise and Preventive Services. Also, an Economic



Intelligence Task Force comprising the security services, public and private sector institutions was to be set up to check trade malpractices, including textile products. The government has also proposed to establish a consumer protection authority and small claims courts to address consumer complaints.

#### **2.4.9 Reactions of Trade Unions towards the Crisis**

The textile industry represents one of the more graphic examples of de-industrialisation over the last few decades and raises the need for serious rethinking of national economic policies. From the 1970s into the early 1980s, the sector used to employ over 25,000 workers nationwide. The textile industry has suffered and continues to suffer unjustifiably from unbridled importation of all manner of textile and garment products, some through dubious means with questionable origin and quality. These products have flooded the local market and have led to the collapse of many local textile industries. It is against this threat that the Textile Garments and Leather Employees Union (TGLEU) was established as a national union outside the Trade Union Congress (TUC); a radical departure from established practice. TGLEU used to be a pressure group within the Industrial and Commercial Workers Union (ICU) and its activities were trade centred until it broke away from the ICU to set up an independent office in Tema in 1993. Although TGLEU was initially conceived in 1984, it was officially certified in 1993. TGLEU was formed in 1993 after its leaders had accused the ICU for not pursuing the interest of the textiles sub-sector. Thus, it was the urgent need to save the textiles sub-sector from total collapse and the refusal of the TUC to grant TGLEU affiliate status that led to the secession and formation of the TGLEU. Subsequently, several attempts have been made by TGLEU to save the textile industry from total collapse. One of such attempts was in the form of a letter sent by the union to parliament. Parliament responded that "Much as Mr. Speaker appreciates your confidence in Parliament to assist in addressing the issues, he would very much appreciate if your Association would be encouraged to continue with the measures it has already initiated to resolve the problem after which Parliament would be pleased to redress any residual matters". Other attempts by the union to save the textile industry include:



(a) In 1994, TGLEU appealed to parliament to introduce a legislation abolishing the 12½ per cent sales tax on locally manufactured African prints to end unfair competition with similar imported goods.

(b) Sensitisation of the civil society through the print and electric media.

(c) Organised labour within the national tripartite dialogue presented a proposal to the government in the 2006 budget to focus on TGLEU.

Although the Government of Ghana has responded to calls from organised labour to save the textile industry, these were not supportive or have been cosmetic only.

Some of the reactions include:

(a) The National Tripartite Committee, including organised labour presented a proposal to the government to be incorporated into the 2006 budget. The proposal was not incorporated, but instead the government focused its attention on AGOA.

(b) Ex- president Kufuor, in his May Day speech (2005), stated that Ghana cannot subsidise the textiles companies, as in the case of Nigeria, because the country does not have resources to do so ([www.ghanaweb.com](http://www.ghanaweb.com): General News of Tuesday, 3 May 2005). It is speculated that some people in government are benefiting from the textile imports.

(c) The government suggested that political party cloths and Friday wears to offices should be manufactured in Ghana. Although a few people have heeded to the call, ironically, most of these special cloths worn on Fridays were imitated fabrics printed and sown in China before being exported to Ghana. Thus, apart from the political party cloths of the New Patriotic Party (NPP) and National Democratic Congress (NDC), the rest are printed fabrics from China.

TGLEU believes that in order to save the textile and garments industry from virtual collapse, the government has to rethink its policies. Firstly, importers could be given a quota or pay higher tariffs to create a level playing field or promote healthy competition. Secondly, the government should encourage Ghanaians to order their mourning cloths from the local textile industries. It is a known fact that Ghanaians have maintained the culture of using mourning clothes and that may save the textile industry from eventual collapse. Finally, it is also recommended that state institutions,



religious bodies, schools and colleges and the private sector should be encouraged to order their anniversary clothes from the local textile industries.

#### **2.4.10 Outlook**

Nearly two decades after independence, the textile sub-sector was the major key player in Ghana's industrial sector, contributing significantly to employment and growth in the economy. However, the sub-sector which was once the leader in Ghana's industrial sector has undergone a considerable decline over the years due largely to the liberalisation programmes which made it almost impossible for Ghana's textile products to compete with the cheap imports, particularly from Asia.

It is, however estimated that the few companies that managed to survive operated at just about 5 percent installed capacity since 1995. Various reasons have accounted for the decline. Some of the major ones mentioned include: low demand for local textile products and influx of second hand clothing; lack of competitiveness of local textiles against imported textiles due to high cost of local textiles which resulted from high cost of production, and smuggling. In view of the current crisis faced by the industry, its outlook remains bleak and, therefore, calls for pragmatic policies that will lead to both local and global restructuring of the industry. Locally, it is necessary that concrete steps are taken to address the problem of cheap imports, under-declared imports, wrongly described textile imports, and copied brands, markings, tickets and labels including those of the Ghana Standards Board. In this regard, recent proposal by government to establish an Economic Intelligence Unit to arrest and punish those engaged in trade malpractices is timely. The penalty for those caught engaging in these malpractices should be severe to serve as a deterrent to other perpetrators of the crime. Secondly, the Unit should be proactive and effectively managed, otherwise, arresting the perpetrators will prove elusive. On the global level, trade negotiations and fair trade practices, particularly within the textile and garments sub-sector, should be made explicit and adhered to. Instances where countries copy brands and other product markings from other countries should be discouraged. This should go together with fair trade practices and preferential access to markets in developed countries.



## 2.5 TYPES OF CLOTHING AND REASONS FOR WEARING CERTAIN TYPES

### 2.5.1 Social status

In many societies, people of high rank reserve special items of clothing or decoration for themselves as symbols of their social status. In ancient times, only Roman senators were permitted to wear garments dyed with Tyrian purple; only high-ranking Hawaiian chiefs wore feather cloaks and palaoa or carved whale teeth. Under the Travancore kingdom of Kerala (India), lower caste women had to pay a tax for the right to cover their upper body. In China before the establishment of the republic, only the emperor could wear yellow. In many cases throughout history, there have been elaborate systems of sumptuary laws regulating who could wear what. In other societies (including most modern societies) no laws prohibit lower-status people wearing high status garments, but the high cost of status garments effectively limits their purchase and display. In current Western society, only the rich can afford haute couture. The threat of social ostracism may also limit garment choice. If one is not wearing a specific brand or style of clothing one's social status may fall. Yet, retailers have converted to fast fashion techniques that provide trendy pieces of clothing at lower price points.



Fig 2.4 Alim Khan's bemedaled robe is a social message



### 2.5.2 Marital status

Traditionally Hindu women, once married, would wear *sindoor*, a red powder, in the parting of their hair. If widowed, they would abandon *sindoor* and jewelry and wear simple white clothing. Men and women of the Western world may wear wedding rings to indicate their marital status. Also women in the United States, depending on their heritage and/or religion, will usually wear a white gown, although some movie stars have been known to wear a black party dress for their wedding. Observant Jewish women cover their hair if they are married. There is a sect of Judaism in which girls who are old enough to be looking for a husband wear their hair in two braids as opposed to the one braid they wore before they were of a marriageable age.

### 2.5.3 Religious habits and special religious clothing

Religious clothing might be considered a special case of occupational clothing. Sometimes it is worn only during the performance of religious ceremonies. However, it may also be worn everyday as a marker for special religious status. For example, Jains wear unstitched cloth pieces when performing religious ceremonies. The unstitched cloth signifies unified and complete devotion to the task at hand, with no digression. The cleanliness of religious dresses in Eastern Religions like Hinduism, Buddhism and Jainism is of paramount importance, which indicates purity. Clothing figures prominently in the Bible where it appears in numerous contexts, the more prominent ones being: the story of Adam and Eve, Joseph's cloak, Judah and Tamar, Mordechai and Esther. Furthermore the priests officiating in the Temple had very specific garments, the lack of which would make one liable to death. Jewish ritual also requires rending of one's upper garment as a sign of mourning.



#### 2.5.4 Sport and activity

Most sports and physical activities are practiced wearing special clothing, for practical, comfort or safety reasons. Common sportswear garments include shorts, T-shirts, tennis shirts, tracksuits, and trainers. Specialized garments include wet suits (for swimming, diving or surfing), salopettes (for skiing) and leotards (for gymnastics). Also, spandex materials are often used as base layers to soak up sweat. Spandex is also preferable for active sports that require form fitting garments, such as wrestling, track & field, dance, gymnastics and swimming.

#### 2.5.5 Clothing materials

Common clothing materials include natural fibers, which are renewable, biodegradable, such as:

- ❖ Cloth, typically made of viscose cotton, flax, wool, ramie, silk
- ❖ Down for down-filled parkas
- ❖ Fur
- ❖ Leather
- ❖ Denim

And synthetic fibers which are manmade and not biodegradable, made primarily from petrochemicals:

- Spandex
- Polyester
- Nylon

Less-common clothing materials include: Bamboo , Hemp ,Jute, Lyocell ,Recycled paper ,PVC-Polyvinyl chloride ,Rayon ,Rubber ,Recycled or Recovered Cotton, Recycled PET ,Soy , Other Natural Fibers

Reinforcing materials such as wood, bone, plastic and metal may be used in fasteners or to stiffen garments.



### 2.5.6 Clothing maintenance

Clothing suffers assault both from within and without. The human body sheds skin cells and body oils, and exudes sweat, urine, and feces. From the outside, sun damage, moisture, abrasion and dirt assault garments. Fleas and lice may hide in seams. Worn clothing, if not cleaned and refurbished, will itch, look scruffy, and lose functionality (as when buttons fall off and zippers fail).

In some cases, people wear an item of clothing until it falls apart. Cleaning leather presents difficulties, and bark cloth (tapa) cannot be washed without dissolving it. Owners may patch tears and rips, and brush off surface dirt, but old leather and bark clothing will always look *old*.

But most clothing consists of cloth, and most cloth can be laundered and mended (patching, darning, but compare felt).

### 2.5.7 Laundry, ironing, storage

Humans have developed many specialized methods for laundering, ranging from the earliest "pound clothes against rocks in running stream" to the latest in electronic washing machines and dry cleaning (dissolving dirt in solvents other than water).

Many kinds of clothing are designed to be ironed before they are worn to remove wrinkles. Most modern formal and semi-formal clothing is in this category (for example, dress shirts and suits). Ironed clothes are believed to look clean, fresh, and neat. Much contemporary casual clothing is made of knit materials that do not readily wrinkle, and do not require ironing. Some clothing is permanent press, having been treated with a coating (such as polytetrafluoroethylene) that suppresses wrinkles and creates a smooth appearance without ironing.

Once clothes have been laundered and possibly ironed, they are usually hung on clothes hangers or folded, to keep them fresh until they are worn. Clothes are folded to allow them to be stored compactly, to prevent creasing, to preserve creases or to



present them in a more pleasing manner, for instance when they are put on sale in stores.

Many kinds of clothes are folded before they are put in suitcases as preparation for travel. Other clothes, such as suits, may be hung up in special garment bags, or rolled rather than folded. Many people use their clothing as packing material around fragile items that might otherwise break in transit.

### **2.5.8 Mending**

In past times, mending was an art. A meticulous tailor or seamstress could mend rips with thread raveled from hems and seam edges so skillfully that the darn was practically invisible. When the raw material — cloth — was worth more than labor, it made sense to expend labor in saving it. Today clothing is considered a consumable item. Mass-manufactured clothing is less expensive than the labor required to repair it. Many people will buy a new piece of clothing rather than expend time mending. The thrifty still replace zippers and buttons and sew up ripped hems.

### **2.5.9 The life cycle of clothing**

Used, unwearable clothing was once used for quilts, rag, rugs, bandages, and many other household uses. It could also be recycled into paper. Now it is usually thrown away. Used but still wearable clothing can be sold at consignment shops, flea markets, online auction, or donated to charity. Charities usually skim the best of the clothing to sell in their own thrift stores and sell the rest to merchants, who bale it up and ship it to Third World countries, where vendors bid for the bales, then sell the used clothing.

There are many concerns about the life cycle of synthetics which come primarily from petrochemicals. Unlike natural fibers, their source is not renewable (in less than millions of years) and they are not biodegradable.

### 2.5.10 Working conditions

Garment workers often have to labor under poor conditions. Mass-produced clothing is often manufactured in Sweatshop conditions, typified by long work hours, lack of benefits, and lack of worker representation. While most sweatshops are found in developing countries, clothes made in industrialized nations may also be manufactured in sweatshops, most often staffed by undocumented immigrants.

Coalitions of NGOs, designers (Katharine Hamnett, American Apparel, Veja, Quiksilver, eVocal, Edun,...) and campaign groups like the Clean Clothes Campaign (CCC) seek to improve these conditions as much as possible by sponsoring awareness-raising events, which draw the attention of both the media and the general public to the workers' conditions.

Outsourcing production to low wage countries like Bangladesh, China, India and Sri Lanka became possible when the Multi Fibre Agreement (MFA) was abolished. The MFA was deemed a protectionist measure which placed quotas on the exports of textiles.<sup>[citation needed]</sup> Globalization is often quoted as the single most contributing factor to the poor working conditions of garment workers. Although many countries recognize treaties like the ILO, many have also made exceptions to certain parts of the treaties. India for example has not ratified sections 87 and 92 of the treaty.



## **CHAPTER THREE**

### **3.0 RESEARCH METHODOLOGY AND CASE STUDIES**

#### **3.1 RESEARCH TOOLS**

The information used to write this thesis was acquired through the adoption of a number of tried and tested research methodologies. These research methods made the acquisition of information very easy as explained below. The information gathered was carefully evaluated to ensure that only the one that would aid the execution of the task was collected. Interviews, Journals, magazines and literature reviews, taking of photographs, measurement of buildings, personal observations, photographic recordings, case study and internet café as well as the World Wide Web research were the research methods employed.

##### **❖ Literature Review**

Published and unpublished literature on the topic was reviewed. This involved the examination of written material such as books, journals, periodicals etc. and video recordings. A lot of literature was also gathered from various web sites associated with clothing history and design.

##### **❖ Internet Searches**

The World Wide Web, a giant library with extensive information, was greatly used in the research. It provided answers and clues to some problems encountered whilst undertaking the project.

##### **❖ Case Study**

Local and foreign buildings which serve some or all of the functions of the project to be undertaken were studied to enable the author draw conclusions on design decisions to be taken in tackling the scheme.

##### **❖ Measured Drawings**

Existing Clothing factories whose drawings were not available had to be measured to enable the author draw useful conclusions.

#### ❖ Photographic Recordings

Photographs of critical and important facilities and activities that will aid the completion of the project at hand were taken.

#### ❖ Personal Observations

Some of the information used came about through careful personal observations made by the author. This was important because the taking of photographs was not allowed in some areas visited.

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### **3.2.0 CASE STUDY 1: MAS INTIMATES THURULIE CLOTHING FACTORY- SRI LANKA**

#### **3.2.1 SITE LOCATION**

MAS Fabric Park is located in Thulhiriya, five kilometers from a hub where two highways intersect. The park possesses well-developed infrastructure with roads, all utilities, and a water treatment plant. It includes zones for industrial, warehousing, residential, commercial, institutional, and religious uses.

The site measures 3.32 hectares and is roughly trapezoidal, bordering Kurunegala Main road to the East, the Ma Oya River to the West, a DogiEFA factory to the South, and an electrical substation to the north. The general orientation is toward the northwest. The rolling terrain tumbles six meters from the highest point in the Southeast corner to the lowest in the West. Slopes are steep only along the



Southern boundary. The soil is laterite with high clay content.



Fig. 3.1 showing the Entrance of the factory

The wooded site was previously undeveloped. A manmade pond, measuring about 6,900 square meters, occupied much of the western half of the site. The site had been used earlier as a recreational park, and it also had been a deer park. Tall trees grew on some parts of the site, and tall grass and bushes covered other parts. The climate is typical of the lowland wet-zone of southwest Sri Lanka. Diurnal temperature fluctuation is greater than annual or seasonal fluctuation. Average daily temperatures vary from 23° to 30° Celsius.

High temperatures exceeding 32° occur on about 65 days a year. The region has more than 100 rain days a year, with approximately 2,400 millimeters per year of rainfall. Humidity averages 74 percent, but can easily approach 90 percent in early morning and late evening during most of the year.





Fig. 3.2 showing the Site description

### 3.2.2 SITE DESIGN

The thrust of the site design is to accommodate the building on one hand and to respect nature on the other. The architects' approach was to limit the intrusion of the building on the land and to treat the unbuilt areas of the site as a natural habitat. This was achieved by planning a compact building with a footprint of only 6,780 square meters, leaving a maximum of open space, which was either left undisturbed or improved with erosion control and new planting. The lake and the heavily wooded western part of the site were protected. Most large trees on the site were preserved.

The building is located near the center of the site, situated in response to the terrain, climate, soil, and hydrology. Natural topography and drainage patterns were preserved as much as possible by situating the building along the contour



lines and raising Building G on stilts. The footprint of the two-story building covers about fifteen percent of the site.

The entrance to the site is at the southeast corner. Pedestrian and vehicular circulation are segregated at the entrance, and routed along efficient pathways. The main road for trucks hugs the eastern boundary of the site, merging midway with the shipping-and-receiving court. The employee entrance is north of the main gate, the visitor entrance is to the northwest, and ten parking spaces for cars of visitors and staff are to the west.

Parking for 25 bicycles is provided next to the locker rooms and showers at the employee entrance. All roads, walks, and terraces on the site are paved with cement-stabilized earth instead of sealed pavement. The porous surface, including gravel in the mix of the top layer, reduces runoffs and helps recharge the groundwater. Paving covers about ten percent of the site.

Three quarters of the site is left to nature, including the lake, large areas of undisturbed terrain, and the densely overgrown western part of the site. Over 300 trees were planted, doubling the number on the site. Essentially all areas not taken by the building, lake, or pathways were planted with trees, most of them in the courtyards and in the green belt to the east of the building. Requirements for watering and maintenance are half the usual, due to the use of efficient drip irrigation and endemic and adapted species. Rare, endangered, and medicinal species are planted as well.





Fig. 3.3 Shows the densely overgrown western part

Thurulie is in the intermediate climatic zone of Sri Lanka. The site can host plants from the country's wet zone and dry zone. Species from both zones are present. For example, at the top of the cascade, dry-zone plants thrive in the strong sun. At the base, where water accumulates, wet-zone plants thrive in the moisture. The green roofs of the building support a local grass variety and some medicinal herbs. These plants require little maintenance. No drop of water that enters the site is lost without providing a benefit. Green areas are designed to absorb up to 25 millimeters of rain before runoff begins. Erosion is controlled by porous surfaces, dense planting, and where necessary on steep slopes, stabilized soil. An innovative feature is the "cascade" – a terraced slope built of cement-stabilized rammed earth. The pattern is reminiscent of terraced rice paddies in mountains. All runoff is channeled to the retention pond, which is the primary irrigation source for the greenery on the site.

The pond was dredged and enlarged. Native fish species and indigenous water plants were introduced to create a sustainable and diverse biotope. With the lake and green areas, biodiversity on the site has expanded significantly. In particular, reptiles and birds, including waterfowl, have increased in number and variety. The facility is used during daylight hours only. At night the site is left to nature, and emissions of light and noise are kept low.



With abundant greenery, undulating slopes, and the lake, the site is a beautiful setting for the factory. The vegetation helps keep the factory cool. Shading of the building and grounds will keep the building an estimated 1 to 2° Celsius cooler, especially when the trees mature and the green canopy spreads.



Fig. 3.4 showing the Site layout

**LIBRARY**  
Kwame Ninsin University of  
Science and Technology  
KUMASI-GHANA



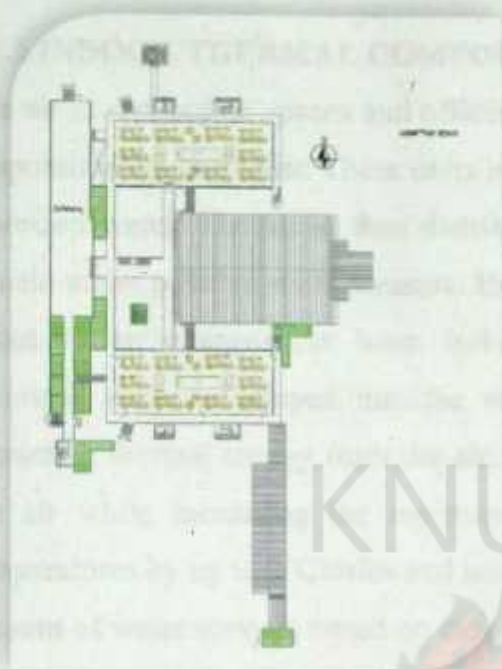


Fig. 3.5 showing the first floor plan

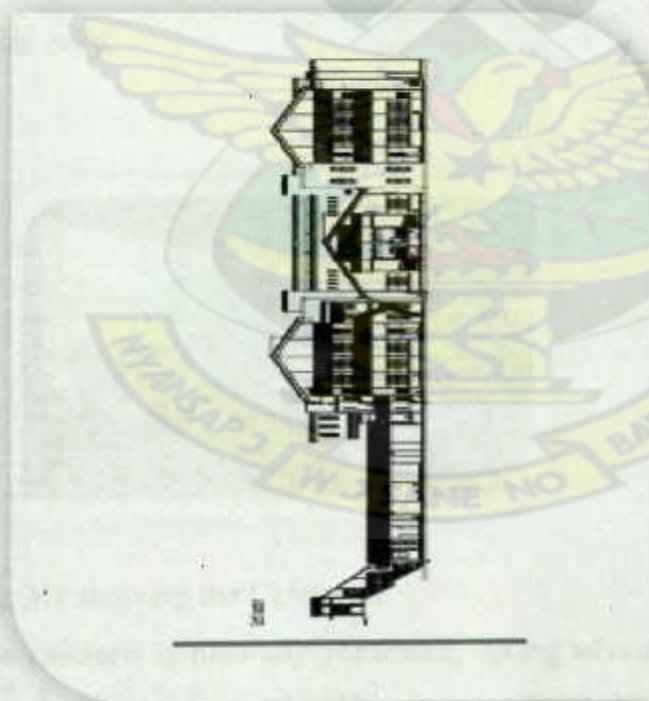


Fig 3.6 showing the Site elevation



### 3.2.3 INDOOR THERMAL COMFORT

The air in production spaces and offices is cooled and exchanged by a system of evaporative cooling units. These units intake outdoor air, filter it, and treat it with atomized water. The air is then distributed through ducts to the spaces, which remain under positive static pressure. Exhaust fans help replace the air at a rate of about 40 air changes per hour. Indoor air movement is perceptible. When atomized water is sprayed into the warm make-up air, the water evaporates, extracting thermal energy from the air. This reduces the dry-bulb temperature of the air while increasing the moisture content. The system reduces dry-bulb temperatures by up to 3°Celsius and increases humidity by about ten percent. The amount of water spray is based on the indoor relative humidity, and thus depends on the diurnal variation of relative humidity on the site. More water is used at midday, and little or none in the mornings and evenings. When the outdoor humidity is high, no water is sprayed, and the units operate in the ventilation mode only.



Fig. 3.7 showing the Cafeteria

The cafeteria is naturally ventilated, taking advantage of its situation on the top floor overlooking the lake. The green roof and shade of trees helps keep the space cool. A steady breeze usually provides adequate ventilation, eliminating the need for mechanical ventilation.

### 3.2.4 CONSTRUCTION MATERIALS

To reduce the gray energy in the building, the main exterior walls are made of compressed stabilized-earth blocks manufactured forty kilometers from the site. The blocks, made of local soil, sand, and locally manufactured cement, are machine molded with a wire-cut finish and chamfered corners. They are laid in a cement-soil-sand mortar in the ratio of 1:3:6, matching the color of the blocks. The large blocks minimize mortar joints. The walls require no plaster finish and are simply sealed with varnish on the interior and exterior.



Fig. 3.8 Showing the exterior walls made of compressed stabilized earth

The building is framed in concrete and steel with a high recycling content. Roofing is zinc-aluminum. Windows are metal framed. Floor finishes include polished concrete tile, rendered and cut concrete, tile, and wood. Bamboo is used for window blinds and various forms of sunscreen. Non-hazardous finishes and materials are used throughout the building, ensuring good indoor air quality, which is aided by a high rate of air exchange. Partitions are gypsum board, and tabletops MDF. No viable greener alternatives are available in Sri Lanka. The construction process was managed with a special emphasis on minimizing negative impacts to the environment. Topsoil was separated during excavation and preserved to be used later for landscaping. To prevent soil erosion during construction, measures were taken such as planting, silt traps, and storm water-collection ponds. Special mechanisms were introduced to recycle construction waste, reducing the amount of waste that went into landfills. Aesthetics of MAS Intimates Thurulie is fashioned by the interplay of linear structures softened by



the organic forms of trees. The structure is finished with exposed steel and ducting, with soft brown brick walls.

Vibrant purple, orange, and green accents create a dynamic feel. The pond has a calming influence as a serene counterbalance to the busy operations in the factory. Visuals are dominated by lush greenery. A boulder-garden centerpiece dominates the entrance. Art and antiques add character to the spaces, and the bare walls are adorned by colorful posters of lingerie models and the key environmental messages of the factory.

### **Merits**

- ❖ Health and well-being of staff are central to the design of MAS Intimates Thurulie. The building offers a comfortable, healthful, and attractive indoor environment for all users.
- ❖ The production floor is divided into separate areas where workers collaborate in autonomous teams, enhancing productivity and employee satisfaction.
- ❖ As part of its service to employees, the plant buses employees to and from work, provides free lunches for staff, trains workers, and provides on-site conveniences such as medical care and banking.
- ❖ The beautiful and stimulating environment is uplifting; the factory is a place where people feel respect and dignity.

### 3.3 CASE STUDY 2 WOODIN, GHANA

#### 3.3.1 Location

Woodin- Ghana is located at the Tema free zone in the Greater-Accra Region.

Woodin - Ghana is a leading Ghanaian fashion label popular for the production of African cloth and clothes. The company is under Textile Products Limited, along with GTP.

The administrative structure of Woodin is as follows; *managing director, country manager, fashion design and sewing team, boutique managers, boutiques supervisors, sales personnel.*

The company seeks to expand to meet its current local client demands and for export.



Fig. 3.9 showing Woodin-Ghana in Accra



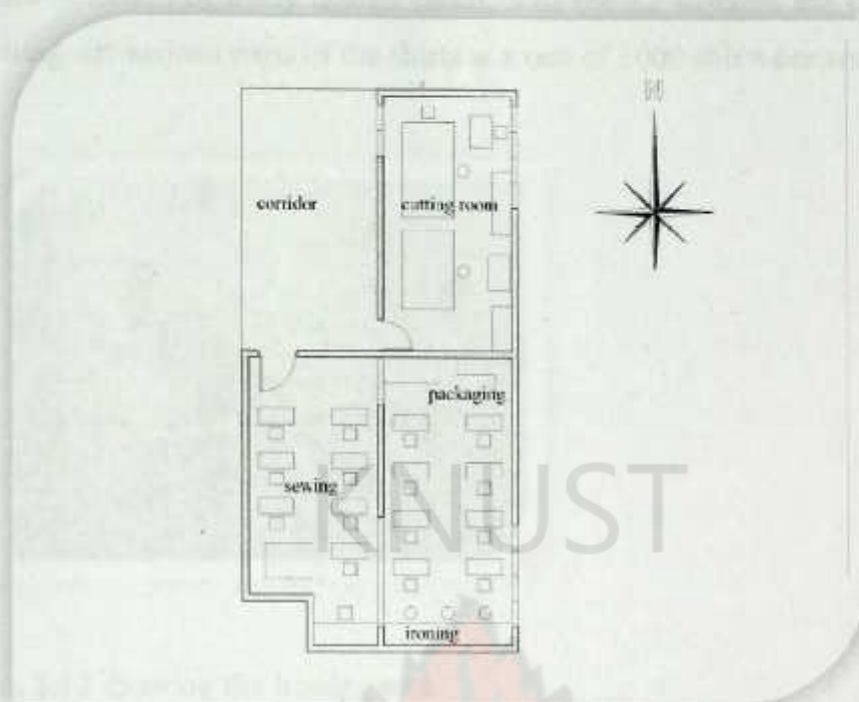


Fig. 3.10 showing the Layout of Woodin

Woodin currently makes only male shirts for sale. The sewing department currently has 15 workers and produces 800 shirts per month. Woodin boutiques in Accra sell up to 80 shirts per day.



Fig 3.11 showing the Production floor.

Of the 15 workers, 12 are trained tailors / seamstresses and the rest are ironers. Sometimes, national service persons join the staff. Of the 12 tailors/seamstresses,

7 are female. For every design batch, 5 of the 12 workers are put in charge of cutting out various parts of the shirts at a rate of 1000 shirts per week.



Fig. 3.12 showing the Ironing area

With the expansion, Woodin aims to triple production and add an in-house female clothing line.



Fig. 3.13 showing the Cutting room





Fig. 3.14 showing the Packaging room



Fig.3.15 showing the Storage facility



Fig. 3.16 showing the Storage facility

### 3.3.2 Lighting

The factory basically depends solely on artificial lighting



Fig. 3.17 showing the artificial lighting



Fig. 3.18 showing Fire extinguisher in the cutting room





Fig.3.19 showing the artificial ventilation



Fig. 3.20 showing how sockets are fixed up to window sill height.

### 3.3.3 Merits

- ❖ Although the work force is small, production and demand on the market is high.
- ❖ Making room for the disabled, thereby reducing the unemployed rate in the country

### 3.2.4 Demerits

- ❖ Building does not conserve much energy since windows and openings are ignored.
- ❖ Spaces are too small for such a large scale production
- ❖ Production line is not determined since it is not a purpose built clothing factory.

### 3.4 SPECIAL STUDIES

When it comes to sewing, the adage "A place for everything and everything in its place" is certainly true. Setting up and putting away every time you want to sew uses precious time that could be better spent sewing a new dress, blouse or jacket.

A well-designed convenient sewing area, whether large or small saves time and energy. It does not have to be a whole room dedicated just to sewing. It can be a seldom used closet, an out-of-the-way corner or a cabinet especially designed for sewing. Wherever you sew, careful planning is important for the area to be functional. And, whether it is a corner or an entire room, the basic requirements are the same.

The type of sewing center you design depends on the amount of sewing you do. A person who only has short blocks of time to sew needs a place where things can be left out until a project is completed. Someone who does small sewing jobs every once in a while needs a place where things can be stored and taken out easily. A professional seamstress would need a more organized, quiet place with space for business records, as well as space to store equipment, notions, fabrics, finished garments and other related supplies. Also consider when the sewing will be done. If you do tailoring with meal preparation or supervising children at play, a sewing center near the kitchen may be desirable. A spot in or near the family room may be your choice if you sew in the evening. A sewing center in the laundry lets you handle quick mending chores before clothes are laundered. Equipment for pressing darts, hems and other parts of garments is usually available and will save you steps.

Ask yourself a few questions before you decide on a location. It is convenient when you have only a few minutes to work? Can you leave it a little untidy and not worry about people seeing it? Can you easily supervise the children from where you are working?





Fig. 3.21 showing a typical sewing center

### 3.4.1 DESIGNING A SEWING CENTER

The sewing center can be a U-shape, L-shape, along parallel walls or on a single wall. The U-shape provides a convenient, ready-to-use arrangement, and is the plan preferred by many home sewers. The L-shape, single wall or parallel wall arrangement may require moving a table or ironing board to make a "U" arrangement. The "U" requires at least 2 feet in front of the work table, sewing machine and ironing board. A swivel chair in front of the sewing machine puts each part of the sewing process within easy reach.

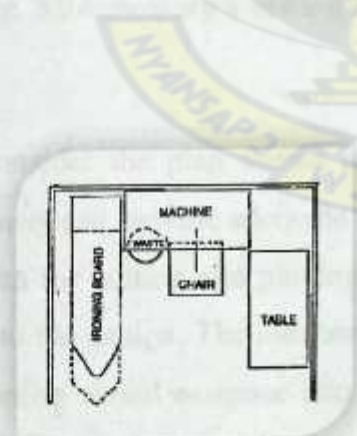


Fig.3.22 showing a sample layout



Fig 3.23 showing a sewing cabinet

Some people are fortunate enough to be able to devote an entire room, or most of a room, to a sewing center. In this case, there will be more space to plan around and the design can be more flexible. When you don't have a specific room that can be the sewing center, consider building yourself a sewing cabinet with features designed to make sewing easier, and to organize your sewing items. Plans are available for many such projects.

A sewing closet may not be as spacious as a sewing room, but if it is well-designed, it can be as functional. Bi-fold or double doors make it easy to hide clutter, if needed, during a sewing project. Your sewing closet could be an elaborate custom made one, but with a small closet, minimum amount of money and a bit of ingenuity you can create a good sewing center.

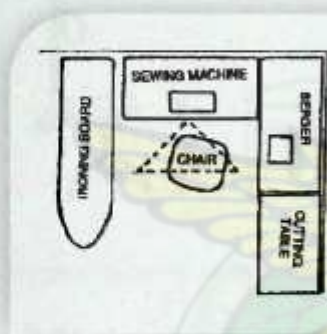


Fig. 3.24 showing a sewing closet



Fig. 3.25 serger close to a traditional sewing machine

Consider the plan shown at right. With careful planning, a permanent sewing closet can provide adequate space for sewing, pressing and storage. A small work area for cutting and pinning can be provided if a drop-leaf table is incorporated into the design. The number of drawers for storing small equipment and supplies can be varied as space allows. A space for hanging garments in-progress and a mirror for checking fit are important feature. If you have a serger, locating it near your traditional sewing machine will be important. Setting the serger up close by will speed production and save steps.



Special tables/cabinets are available that are designed for sewing machine/serger use. A drop leaf can

### 3.4.2 ANTHROPOMETRICS

Whatever space available, design a sewing center that fits you and your work habits. Have the cutting, sewing and pressing areas separate, but close to one another to provide the most efficient work area. The height of equipment should be given special consideration.

The average height person should have the sewing machine table 28 inches from the floor and the chair seat 16 inches from the floor.



Fig. 3.26 showing the appropriate height of a chair for sewing

A swivel secretary-type chair on casters makes an ideal sewing chair because it provides maximum mobility. Most of these chairs can be adjusted to different working heights.

### 3.4.3 SEWING CENTER

#### 3.4.3.1 CORRECT WORK HEIGHT

Basic Requirements	Adult (65")*	Age (58.5)*	12 Minimum area
Sewing machine	28"	25"	18" - 24" to left of needle
Chair (swivel preferred)	16"	13"	--
Work table or chest to right of machine	24" - 28"	18" x 36"	--
Ironing board to left of machine (for use while seated)	24"	--	--
Cutting table	36" - 40"	32" - 36"	30" x 36" (36" x 72" preferred)

\*Heights of average persons are used. Table heights can be adjusted for individual needs

#### 3.4.3.2 THE CUTTING AREA

The cutting area should be efficient and easy to use. Plan for a work surface that will accommodate most fabric pieces used, perhaps 28-36 inches wide and 72 inches long. A height of 34-40 inches is recommended for comfort when working. Adjust the height so you do not need to stoop, and make the area accessible on at least two sides. Three sides would be better to allow ease in movement.



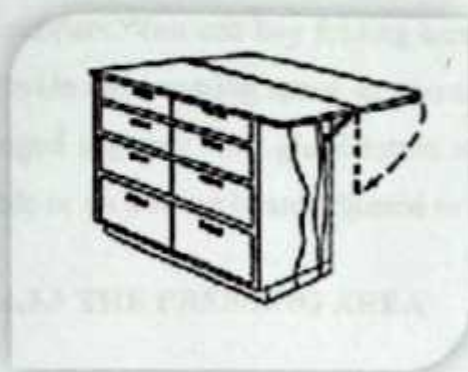


Fig. 3.27 showing a cutting table



Fig. 3.28 showing a drop table

A table may be built for cutting and marking, or this surface may be incorporated into some other part of the sewing center. It might be joined to a sewing chest or counter as a drop-leaf or folding top.

A drop-table on the door of a wall storage cabinet may also be used. If a drop table is incorporated on the door of a sewing closet, a solid core or reinforced hollow core door should be used.

Another alternative for a cutting table can be made with two card tables pushed together and set on bricks, blocks of wood or large cans of food, so they are 36 inches high.

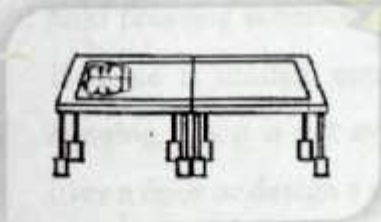


Fig 3.29 showing two card tables pushed together



Fig. 3.30 showing a cardboard for boards.

If you do not have a table large enough to serve as a cutting table, use table expanders. You can buy folding cardboard cutting boards in most fabric stores to provide more cutting space, or you can make your own out of 1/4-inch hard board hinged together with glued fabric or heavy tape. Place these boards on a small table or an ironing board adjusted to a 36-inch height.

### 3.4.3.3 THE PRESSING AREA

If the ironing board or pressing area is part of a sewing "U," the height of the ironing board can be adjusted so pressing can be done while seated. If the board is placed farther away from the sewing machine, standing height for pressing may be preferred. When space is limited, a small, table-top ironing board can be used.



Fig. 3.31 showing the ironing board



Fig. 3.32 showing the hanging space

The pressing area should include space for pressing cushions, spray bottles, press cloth and other pressing equipment. A special rack can be attached to the board to hold pressing accessories or they can be stored in nearby cabinet, chest or closet. If space is limited, consider a wall ironing board or one attached to a door. If hanging space is not available close to the pressing area, use a bracket that fits over a door or design a swing-out rod for the wall using a pipe or dowel.

### 3.4.3.4 LIGHTING

Good lighting is essential for good sewing. Natural lighting and general incandescent or fluorescent lighting may provide enough light for cutting and



pressing, but extra lighting may be necessary for sewing at the machine by hand. Lighting experts recommend at least 150 watts incandescent or 40 watts florescent of shaded lighting for marking and machine sewing. Wall, ceiling or table lamps can be used as long as they do not shine directly into your eyes or cast shadows over your work. When sewing by hand, even more lighting directed at your work is recommended to prevent unnecessary eye strain.



Fig.3.33 showing lighting source

Fig. 3.34 showing a lamp for sewing

Be sure electrical outlets are located so your machine lamps, iron and other equipment can be plugged in easily. Grounded outlets are recommended and a surge protecting device should be considered if your machine is computerized. A multiple outlet board with surge protector may be desired so iron, lamp and machine can all be turned off with one switch. Avoid plugging the items in where cords must cross traffic paths. And, some sewing machine manufacturers recommend their machine always be unplugged when not in use.

#### 3.4.3.5 OTHER POINTS TO CHECK

Light colored walls and work surfaces reflect light and help make the sewing area brighter and more cheerful. Counter and table tops should be durable, scratch resistant and easy to clean. Window treatments should allow as much natural light as possible without glare.

Floor covering should be given special consideration. A smooth surface is recommended because of ease in cleaning. Carpet, thread ends and fabric clippings do not mix. Pins can be a special problem if they get caught in the

carpet. If the floor is carpeted, consider buying a protective office mat like those used under a secretary's desk. The hard surface will make clean-up easier. The mat will also make it easier to move from machine to serger to ironing board if your chair has rollers or casters. Keep a powerful magnet on hand to quickly retrieve pins and needles which fall to the floor.

Storing notions, small equipment and thread will be less of a hassle if a peg board is mounted near your sewing machine. A piece of cork on the wall is also useful for pinning up pattern pieces, notes about supplies needed or the pattern guide sheets. A full length mirror will be helpful to check garment fit as you sew. Be sure there is sufficient free space in front of the mirror to allow for easy viewing- front, back and sides. A free space of about 4'x 5' is needed in front of the mirror if you are fitting another person.

#### **3.4.3.6 STORAGE IDEAS**

Once general needs for a sewing space are met, storage of supplies, fabrics and equipment becomes a consideration. Special storage units can be designed in closets as wall units or as free standing cabinets.

A closet storage idea with suggested dimensions is shown at the right. The unit is divided into a variety of compartments to accommodate most items used in sewing. The dimensions can be changed to meet your individual needs.

A simple sewing center can be made from an old chest of drawers. If the drawers do not have dividers, add your own by cutting slots in cardboard or wood and fitting them together. If the chest is tall enough, a hinged panel can be attached on one side to provide a cutting surface.



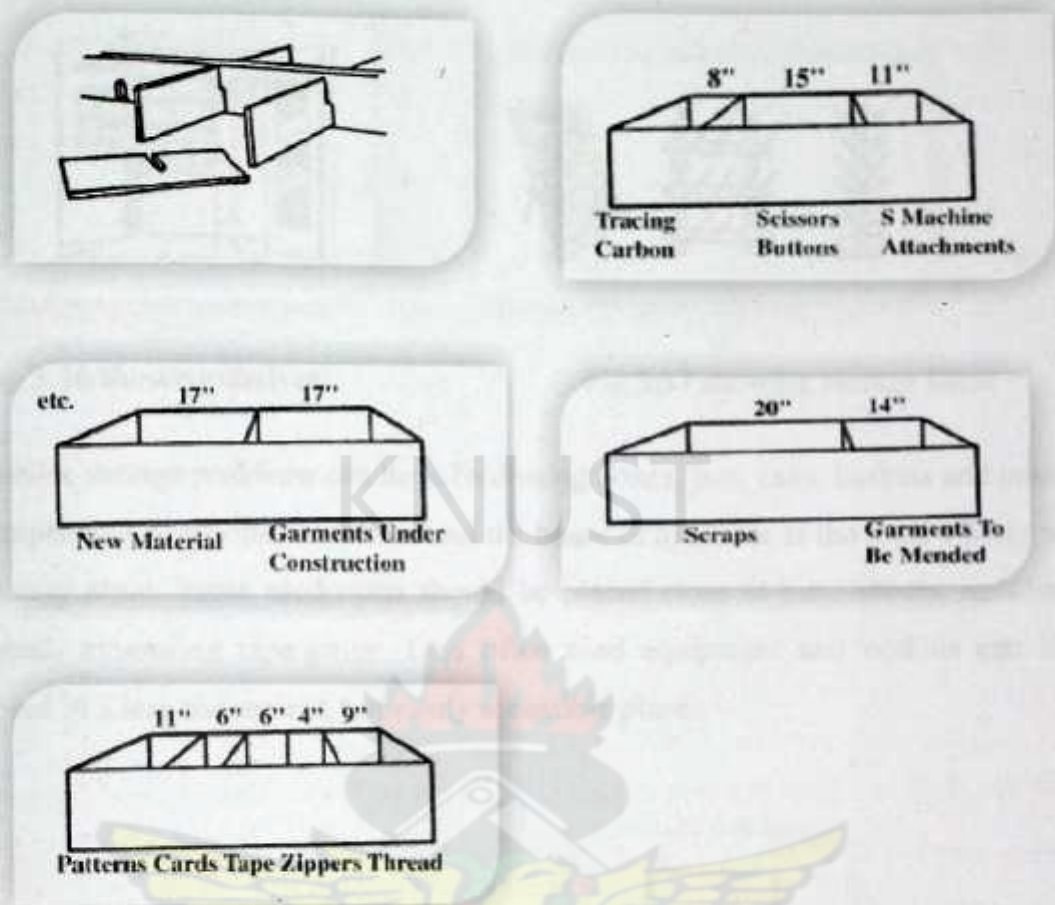


Fig 3.35 showing the types of drawers for storage

Building shelves at the end of the room or next to the sewing machine will also provide good storage. Be sure to consider the weight of the items to be stored, and add wall supports and plugs if necessary.

Narrow shelves added to the inside of a closet door may be a good addition. Or consider a wire shelving unit that hangs over the top of the door, if available in the correct width for your closet door.

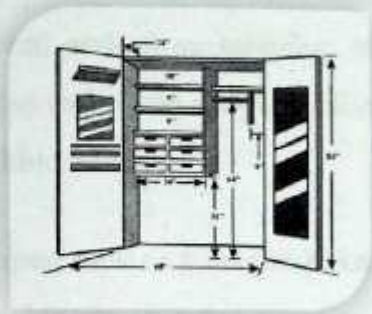


Fig. 3.36 showing shelves

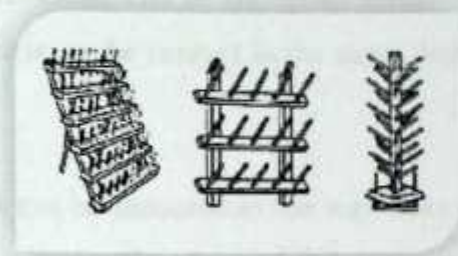


Fig 3.37 showing storage ideas

Smaller storage problems can be solved using boxes, jars, cans, baskets and other inexpensive items often found around the house or available at the local variety or grocery store. Items used often should be placed close at hand—shears, needles, thread, measuring tape/gauge. Less often used equipment and notions can be stored in a less convenient, but easily accessible place.



Fig. 3.38 showing storage ideas

Thread storage is often more than a small problem. A pegboard is an easy and visible solution. Special thread racks can be purchased to hang on the wall or set on storage shelves. A special thread tree that pivots will store cones of thread used for serger sewing.

Or use long narrow boxes to arrange thread in rows by color for easy visibility and access. Another good method is to create rows by gluing strips of wood or



cardboard in a drawer or box to organize and separate thread by color. To keep thread ends from tangling, return the thread end to the spool notch or tape the loose end to the spool. Smaller channels can be created in the same drawer box or bobbin storage.

A mug rack or a magnetic knife rack can be mounted to the wall near the sewing machine to organize a variety of small items. Tie a loop of ribbon through scissors handles for easy hanging.

Buttons snaps and hooks and eyes can be stored in small jars that allow immediate visibility. Nail jar lids to the bottom of a shelf so jars are securely suspended and out of the way. Coffee cans also make good storage for elastic. Cut a slot in the cover and pull elastic through as needed. Or use compartmentalized stacking cabinets that usually come filled with screws, nuts and bolts.

Clear storage boxes, stacking baskets or plastic crates are useful to store fabric. Fold fabrics to fit and stack neatly so edges can be seen easily. Interfacings and lining fabric can be stored in the same way. Use shoe boxes for storing lace, ribbon and other trims. Zippers and belting also store well in boxes. Be sure to prewash all items before storing so they will be ready to use. Label boxes clearly to identify all contents.

Plastic zipper-top bags make excellent storage containers for sewing supplies. When fabric, thread, pattern, interfacing and all notions for a garment are on hand, put everything in a bag to store the items together until you are ready to sew. Zipper bags are especially handy containers to store projects that have been cut out. Fabric scraps can also be stored in plastic bags by fabric type and/or color.

Under bed storage boxes or stacking file boxes make excellent containers for fabric and patterns. Sort patterns by size and type and store in a metal file cabinet or in a bureau drawer. Pattern storage boxes are available and shoe boxes are just the right size to stand patterns in for storage. If pattern envelopes are damaged,

switch patterns to manila envelopes. Glue picture and fabric requirements to the front for easy access and store them in a metal file box.

Small equipment such as hem gauges, marking pencils, chalk and measuring tape can be stored in a cutlery tray or in a desk divider tray. A kitchen or desk lazy Susan can be useful too. Use a large waste basket to help keep your yardstick, L- or T-square, rolls of pattern paper and hem marker organized.



Fig 3.3 9 showing cutlery tray



Fig.3.40 showing the Straight Stitch Machine





Fig.3.41 showing the Knitting Machine      Fig.3.42 showing the Feed- off- arm

### 3.5 CONCLUSIONS OF CASE STUDIES AND SPECIAL STUDIES

- ❖ A clothing factory falls under the light industry and the machinery involved does not create industrial noise. Therefore the factory could be sited in the city centre instead of at an industrial zone.
- ❖ A clothing factory should have spaces that encourage the flow of production
- ❖ Security is also a key point in a clothing factory
- ❖ The need for a maintenance section on the factory site to quicken production in case of breakdown of machinery.
- ❖ The need for observation and supervision is high in a clothing factory; thus the use of transparent partitions for supervisors is very necessary to facilitate easy supervision.

The case studies were primarily done to know the spaces needed in a clothing factory. It was also carried out to understand the basic production flow of a clothing factory and the future demands of its users.

The spaces considered include

- ❖ The production floor (sewing room)
- ❖ The cutting room
- ❖ Ironing area

- ❖ Storage rooms
- ❖ First aid unit
- ❖ Relationship of the storage to the production floor
- ❖ Relationship of the loading bay to the storage area

Among these observations was that

- ❖ There was lack of personal lockers for workers
- ❖ No changing rooms
- ❖ Loading and off-loading bays were at the same place with the same storage for both
- ❖ No cafeteria or eating area close-by

### **3.6 DEVELOPED BRIEF**

From the research and case studies done, a well equipped and functional clothing factory should also stimulate users for the activity for which the facility is intended. As a design measure to primarily provide a factory that has a serene environment, the proposal will seek to provide the following:

#### **Production floor**

- ❖ Cutting and Sampling
- ❖ Sewing room
- ❖ Ironing room
- ❖ Packing and finishing
- ❖ Storage
- ❖ Maintenance unit
- ❖ Sanitary

#### **Parking spaces**

- ❖ Customers
- ❖ Staff



### **Cafeteria**

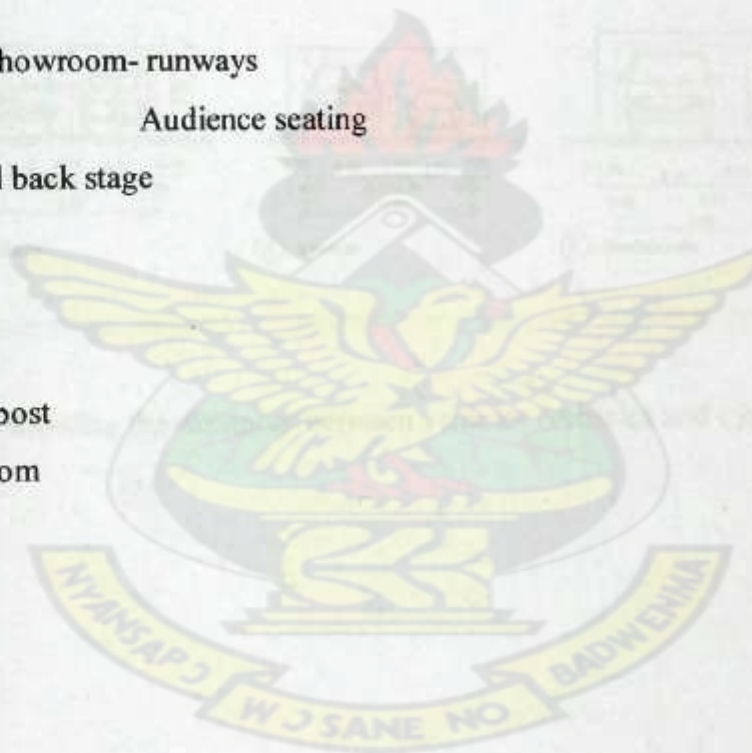
- ❖ Eating area
- ❖ Kitchen
- ❖ Sanitary
- ❖ Counter
- ❖ Changing rooms
- ❖ Locker room
- ❖ Stores
- ❖ Matron's office

### **Commercial facility**

- ❖ Fashion showroom- runways

Audience seating

- ❖ Stage and back stage
- ❖ Lockers
- ❖ Sanitary
- ❖ Shops
- ❖ Security post
- ❖ Ticket room



### 3.7 TECHNICAL STUDIES

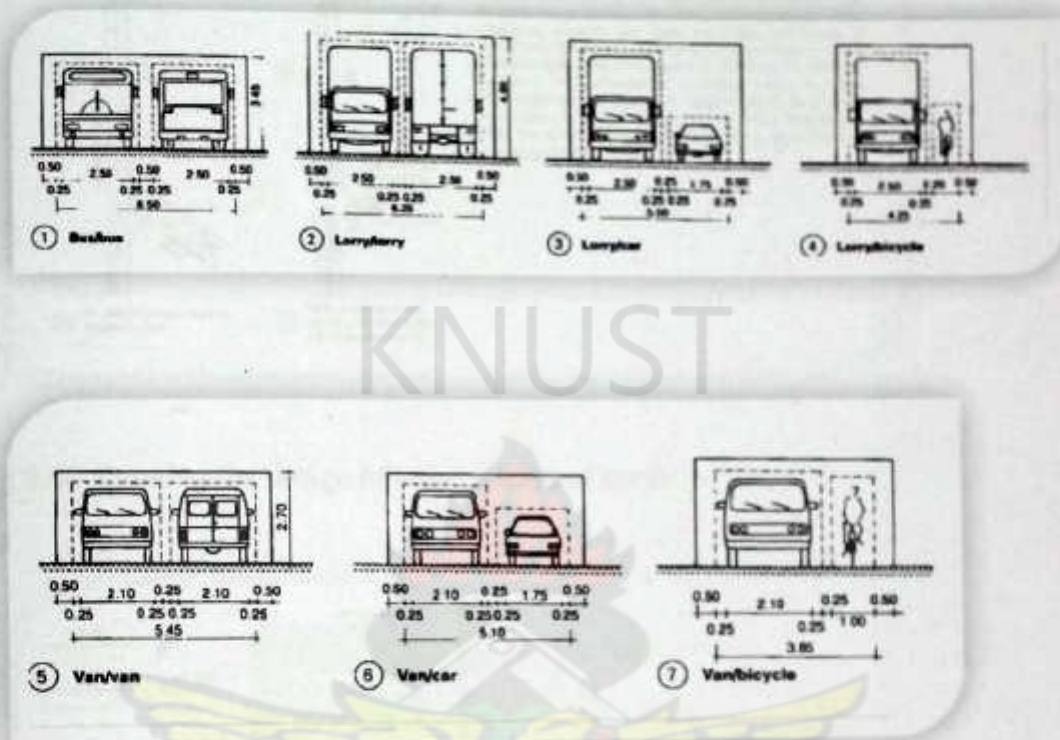


Fig. 3.43 showing the distances between vehicles /vehicles and cycles



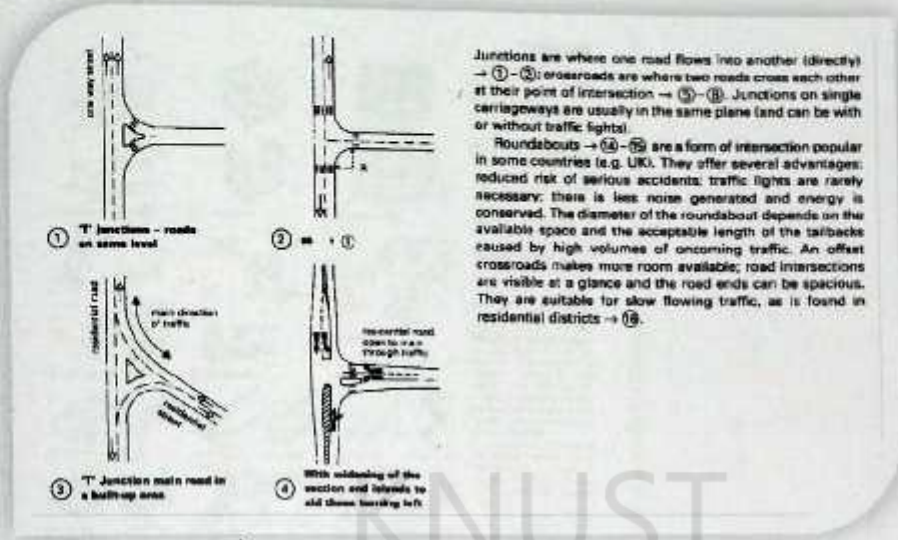


Fig 3.44 showing the design of intersections of roads

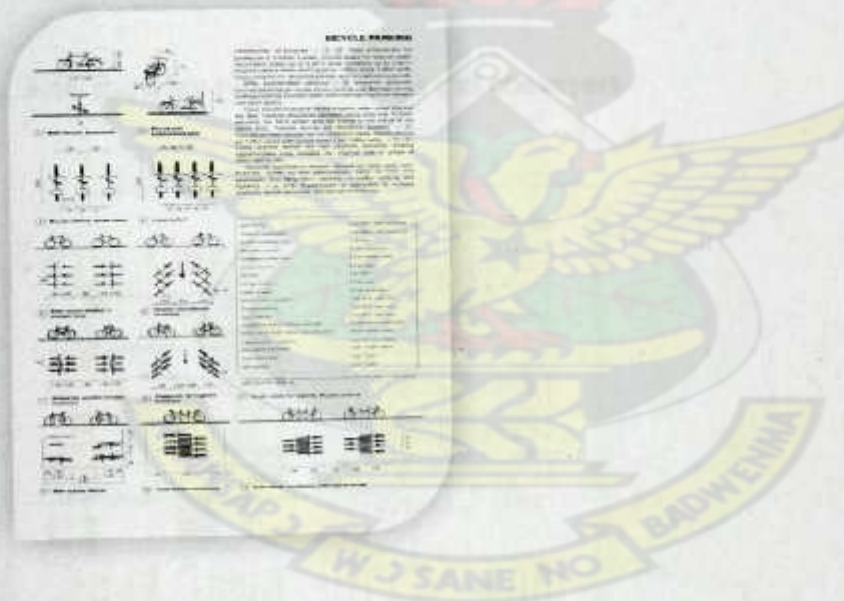


Fig 3.45 showing the dimensions of bicycle parking





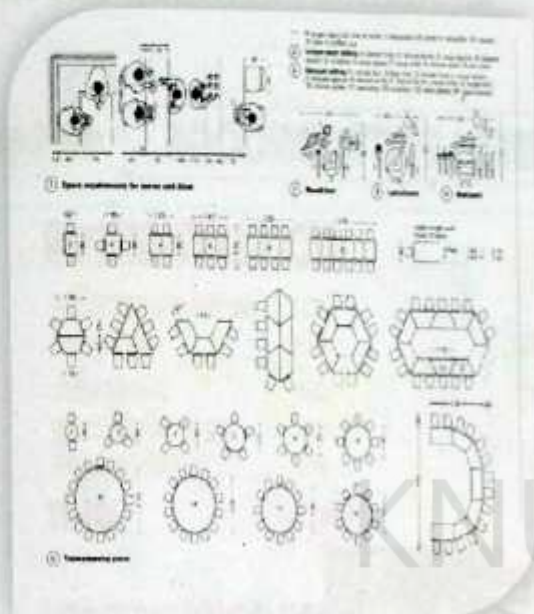


Fig.3.48 showing types of seating in a restaurant or cafeteria



Fig. 3.49 showing the spatial requirements of a restaurant

### 3.8 ACCOMODATION SCHEDULE

ACCOMODATION SCHEDULE		
<b>ADMINISTRATION</b>		
RECEPTION AND WAITING	12M	
OFFICES (10)	180M	
STAFF LOUNGE	48M	
MULTI PURPOSE ROOM	90M	
ENTRANCE FOYER	84M	
<b>TOTAL</b>	<b>314M</b>	
<b>ENTRANCE</b>		
SECURITY CHECK POINT	4M	
STAFF CHECK POINT	48M	
<b>TOTAL</b>	<b>52M</b>	
<b>PRODUCTION UNIT</b>		
CUTTING AND SAMPLING	120M	
SEWING ROOM (3)	3000M	
IRONING ROOM (3)	100M	
GENERAL STORES	120M	
MAINTENANCE SHED	20M	
SANITARY	96M	
PARKING AND FINISHING	50M	
LOCKER ROOMS (3)	30M	
<b>TOTAL</b>	<b>3570M</b>	
<b>ENTERTAINMENT SECTION</b>		
FASHION SHOWROOM	300M	
HUNGRY	20M	
STAGE	80M	
LOCKER AND CHANGING ROOMS(3)	30M	
SANITARY(3)	48M	
BOUTIQUE	120M	
SECURITY POST AND TICKET ROOM	4M	
<b>TOTAL</b>	<b>804M</b>	
<b>CLINIC</b>		
DOCTOR'S OFFICE	8M	
CONSULTING ROOM(2)	8M	
UTILITY AND STORE	6M	
SANITARY (3)	8M	
<b>TOTAL</b>	<b>28M</b>	
<b>CAFETERIA</b>		
EATING AREA	120M	
KITCHEN	40M	
SANITARY (4)	24M	
CHANGING ROOMS(3)	10M	
STORES	6.5 M	
COUNTER	4.5 M	
MATRONS' OFFICE	6M	
<b>TOTAL</b>	<b>236.75M</b>	
<b>CLOTHING FACTORY- ACCRA</b>		





## CHAPTER FOUR

### 4.0 THE SITE

#### 4.1 SITE SELECTION- REGIONS CONSIDERED

The siting of industrial buildings are governed by four major factors:

- ❖ Availability of raw materials
- ❖ Market
- ❖ Work force, and
- ❖ Transportation systems

In choosing a site for the this facility, two regions were considered;

##### 4.1.2 Ashanti Region- Kumasi

- In Ashanti region, Kumasi was considered because it is the second largest city in Ghana; but the demand for fashion is not greatly experienced in this city and also it is very far from export places like Tema and Accra.

##### 4.1.3 Greater Accra Region- Tema

- Tema was considered because it is an industrial town but a site was not chosen because: it has a purpose built clothing factory which I have used as my case study- 'P.S.I Garments Village'.

Tema also has Ghana Textiles Prints (GTP) and Woodin located at the free zone.

##### 4.1.4 Greater Accra Region- Accra

Accra is the heart of Ghana. Accra was considered and chosen because it does not have a purpose built clothing factory and since the force of market boils down to Accra, it would generate a lot of revenue for the development of the country.

Spintex area was chosen in Accra because it is in-between the two places where exports can be done- Accra and Tema.

Also Spintex was chosen because of the availability of raw materials to the facility.

Lastly, the demand of fashion is high in Accra.

## 4.2 PLACES CONSIDERED

There were two main sites to choose from. Both sites are located along the Spintex road in Accra.

### 4.2.1 SITE A

#### Location

The site is located along the Spintex road just before the Action Chapel

- International from Tetteh- Quarshie round about.



Fig. 4.1 showing Site A



### Merits

- ❖ The site is easy to access and to locate from the CBD.
- ❖ The site is sizeable and allows for future expansion
- ❖ The site has a gentle slope and it is recommended for an industrial setting.
- ❖ The site's proximity to public transportation routes.
- ❖ The site is close to the source of raw materials.

### Demerits

- ❖ The site is too close to the busy roads.

#### 4.2.2 SITE B



Fig. 4.2 showing Site B

## **Location**

The site is located along the Spintex road just after the Action Chapel International from Tetteh Quarshie roundabout.

## **Merits**

- ❖ The site is easy to access and locate
- ❖ The site is close to the source of raw materials.

## **Demerits**

- ❖ The site is not big enough and does not create room for future expansion.

## **4.2.3 CONCLUSION ON SELECTED OPTION**

- From the above considerations; merits and demerits of site A and B, site A was chosen for the proposed Clothing Factory due to its location, availability of raw materials, extent of land for future expansion and its gentle slope for good flow of production.

## **4.3 SWOT ANALYSIS OF SELECTED SITE**

### **4.3.1 STRENGTHS**

- ❖ The site is easy access and to locate
- ❖ There is the availability of land for future development.
- ❖ Large enough to support such a facility.
- ❖ The topography is good for drainage.
- ❖ There is the absence of vigorous human activities.



- ❖ The site has good soil for soft landscaping

#### **4.3.2 WEAKNESS**

- ❖ Intense vehicular traffic on the peripheral road of the site.

#### **4.3.3 OPPORTUNITIES**

- ❖ Soil supports good landscaping.
- ❖ The virginity of the site supports innovativeness in design.
- ❖ Take advantage of gentle slope to discharge sewage, etc.
- ❖ Trees on site could be preserved and used as part of the landscaping.

#### **4.3.4 THREATS**

- ❖ Noise from the Spintex road could be a threat.

The site was principally chosen because its strengths, potentials and opportunities far outweigh its threats and weaknesses

#### **4.3.5 SITE CONDITIONS**

An appropriate design responds positively both to its site and climate. The designer therefore has to get an intimate knowledge of both the site and the climate prevalent in the area for which she is designing. The correct selection of the site for the project or design is paramount and crucial to the optimum performance of any facility.



Fig. 4.3 showing an aerial photograph of the site

#### 4.4 SITE ANALYSIS

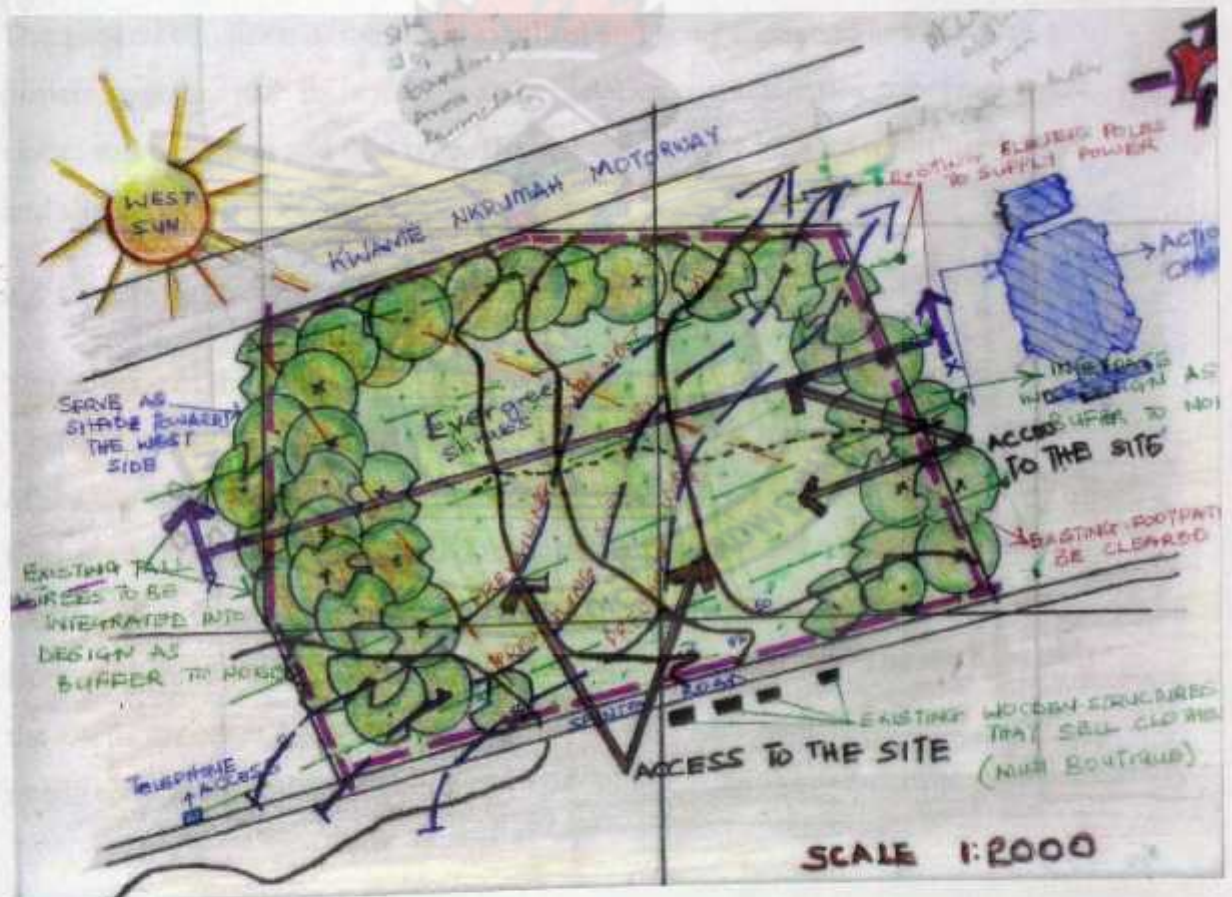


Fig. 4.4 showing the site analysis





Fig. 4.5 site picture showing the shrubs



Fig. 4.6 site picture showing  
Action Chapel International  
on the East

## 4.5 SITE FEATURES

The general condition of the site is excellent and good enough to hold up such a project, together with its landscape and vegetation characteristics, topography and slope, soil condition and land type. The site is covered with a lot of different trees and shrubs.

### 4.5.1 CLIMATE

The climate of the site is the semi-equatorial type. Average temperature is about 32 deg. Celsius and precipitation is moderately high due to the peripheral nature of the site which is covered by trees and greenery. The South Western wind which happens to be the prevalent wind direction is through the left corner of the site which makes it very strategic to place an entrance. The sun path is over the site from the east to the west for the sunrise and sunset respectively. The sunlight over the site is excellent and enough to take advantage of for such an industry which needs enough natural day lighting and ventilation.

#### 4.5.2 TOPOGRAPHY

The site slopes gently towards the west to east with a difference in height of about 1metre for every 30m. And it is fairly gentle toward the west. Below is a site map showing the contour lines, spot heights and sections to indicate the slope of the site.



Fig. 4.7 showing the site plan with contours



Fig. 4.8 showing the site slope

#### 4.5.3 GEOLOGY

The dominant soil is laterite which is compact enough to support such a facility.

#### 4.5.4 VEGETATION

Land is very fertile and almost covered with trees and shrubs.



#### 4.5.5 OTHER FEATURES

Views, accesses, utilities and services, noise source and direction were also analyzed to ascertain the correct area to position the facility on the site.

KNUST



## CHAPTER FIVE

### 5.0 THE DESIGN

#### 5.1 DESIGN PHILOSOPHY AND CONCEPT

The philosophy used for the design is "INDUSTRIAL SERENITY.... FLUIDITY IN FASHION"

This evolved from the objective which is to create an enabling environment for effective clothing design and manufacturing.

#### THE CONCEPTS

- ❖ Using forms and spaces that is rhythmic to ease flow of production

#### 5.1.1 CONCEPTUAL SITE PLANNING



The observations made are as follows:



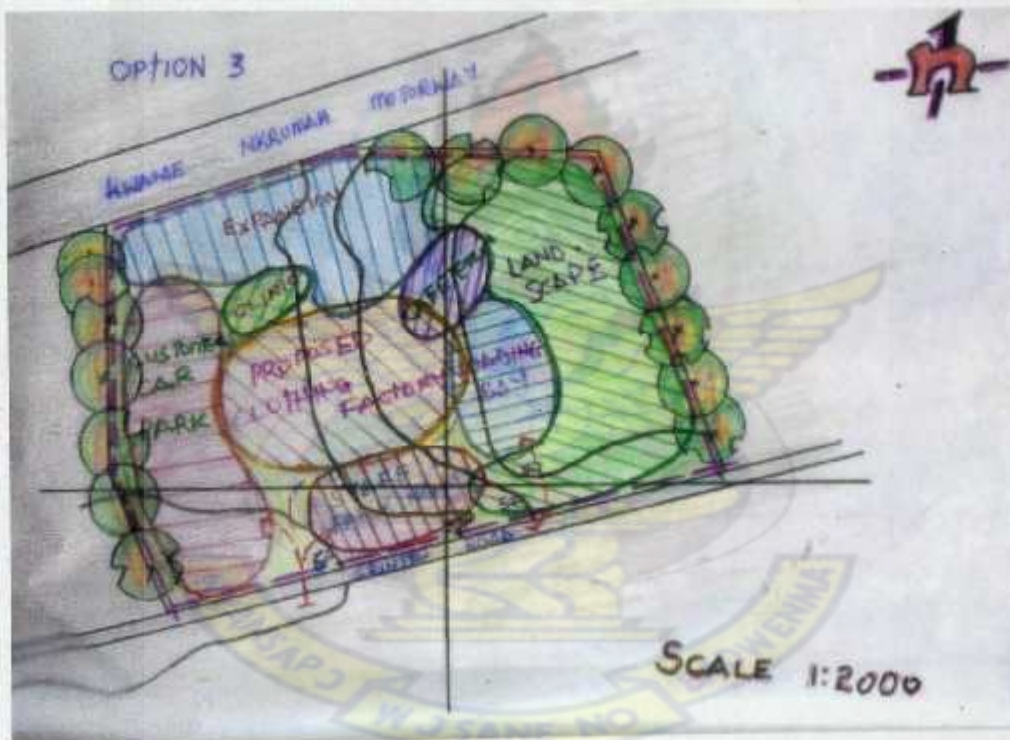
**Merits:**

- ❖ Good location of public parking
- ❖ Service yard easily accessible
- ❖ Future expansion can easily be integrated into the design without any difficulty.

**Demerits:**

- ❖ Cafeteria will not be open to the public so the position is misplaced.

**5.1.3 OPTION TWO**



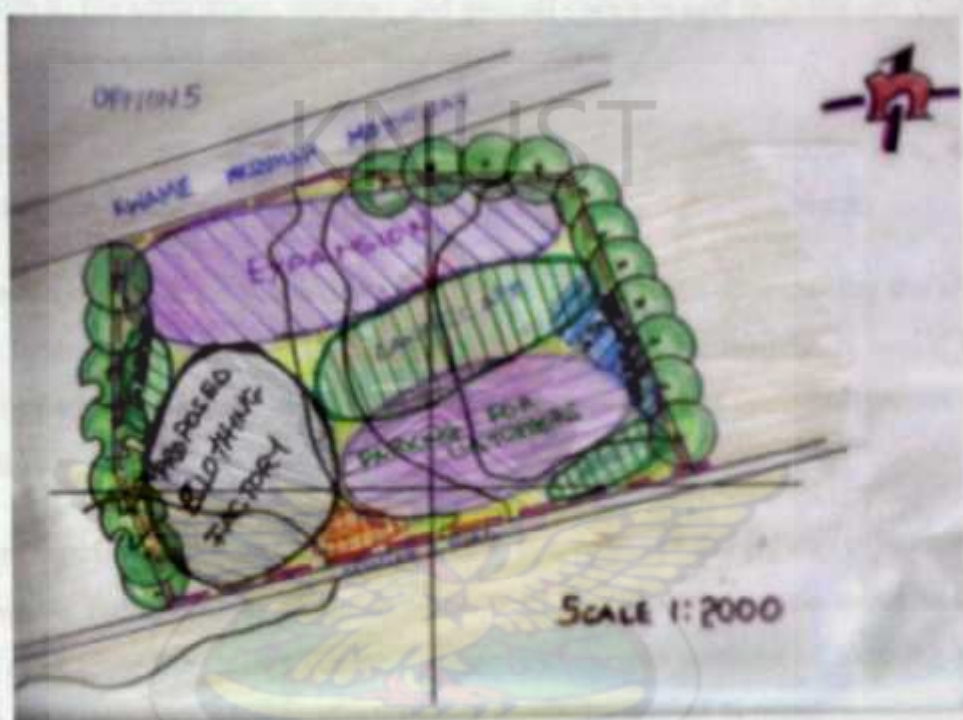
The following observations were made:

**Merits:**

- ❖ Access to the site is limited reducing the existing traffic situation on the site
- ❖ Good location of cafeteria
- ❖ Good landscape to compliment the philosophy of a serene environment.

### Demerits:

- ❖ Future expansion cannot be integrated into the design since parking is too far from it.
- ❖ Landscape area is too large and even bigger than the clothing factory





### 5.2.1 GENERAL DESIGN

Based on the functional relationship diagram of a factory, the philosophy and concept, the design process involved the arrangement and positioning of the desired spaces within an envelope in close proximity or remote from other related and unrelated spaces. As part of the design concepts applied, consideration was also given to the circulation, accesses and general views to and from the site (both wanted and unwanted).

The factory consists of five different blocks; the run-way auditorium, the administration, cafeteria, changing rooms and the main production block.

The run-way auditorium is the first facility that is seen when approaching the site. This is to draw the attention of passers-by to recognise the facility. It would be rented out to the general public to generate revenue to build the other phases of the factory.

- The next building is the administration block. It consists of the various offices that will help in the operation of the facility. It also has a conference room and a design center. At the design center, designs and sample patterns of clothing are created in cases where clients do not have a particular design in mind.

The cafeteria which is at the west side of the facility has been linked with a lobby to the administration and to the main production block with covered walk-ways.

- This is to facilitate production in case of rainfall.

The main production block is to the west of the facility and behind the administration block. It has been taken a little away from the main road and also pedestrians to reduce the noise impact of the surrounding facility and also to gain maximum concentration on production.

The changing rooms which is the last facility and on the north of the factory is where employees change into their working gears and most importantly that is

where workers swipe in their electronic identity to register the time they arrive to work and time they leave.

In between the changing room and the production block is the security check point. Since security is one of the paramount elements in a factory, I placed the security there to ensure there is no theft of materials or anything from the production room.

There are also two security posts at the far East and West of the facility. These security check points ensure maximum security of vehicles entering and leaving the facility.

I have also created a loop system of road network because of the existing traffic situation on the Spintex road. There are two entrances and exit to the facility. This loop system has been designed such that you only use it when you are actually coming to the facility and not a thoroughfare as the case is in most loop system road designs.

### **5.2.2 THE ORIENTATION:**

As an industrial facility the orientation of the building is very important. Because of this, the long sides of all the buildings on the facility have been oriented in the north-south direction. It has been aligned and orientated to minimise the solar ingress and maximise views and allow the best of prevalent wind to create the desired comfort levels indoors.

### **5.2.3 VENTILATION**

Adequate ventilation has been provided by the usage of large openable windows. The velocity of air flow and its directions which determine the cooling effect of natural ventilation has been exploited very well by the structure and form employed.



### 5.3 BLOCK PLAN

The facility sits on about 50% of the site with the remaining used for landscape.

The soft landscaped part of the site provides shade and aesthetics.

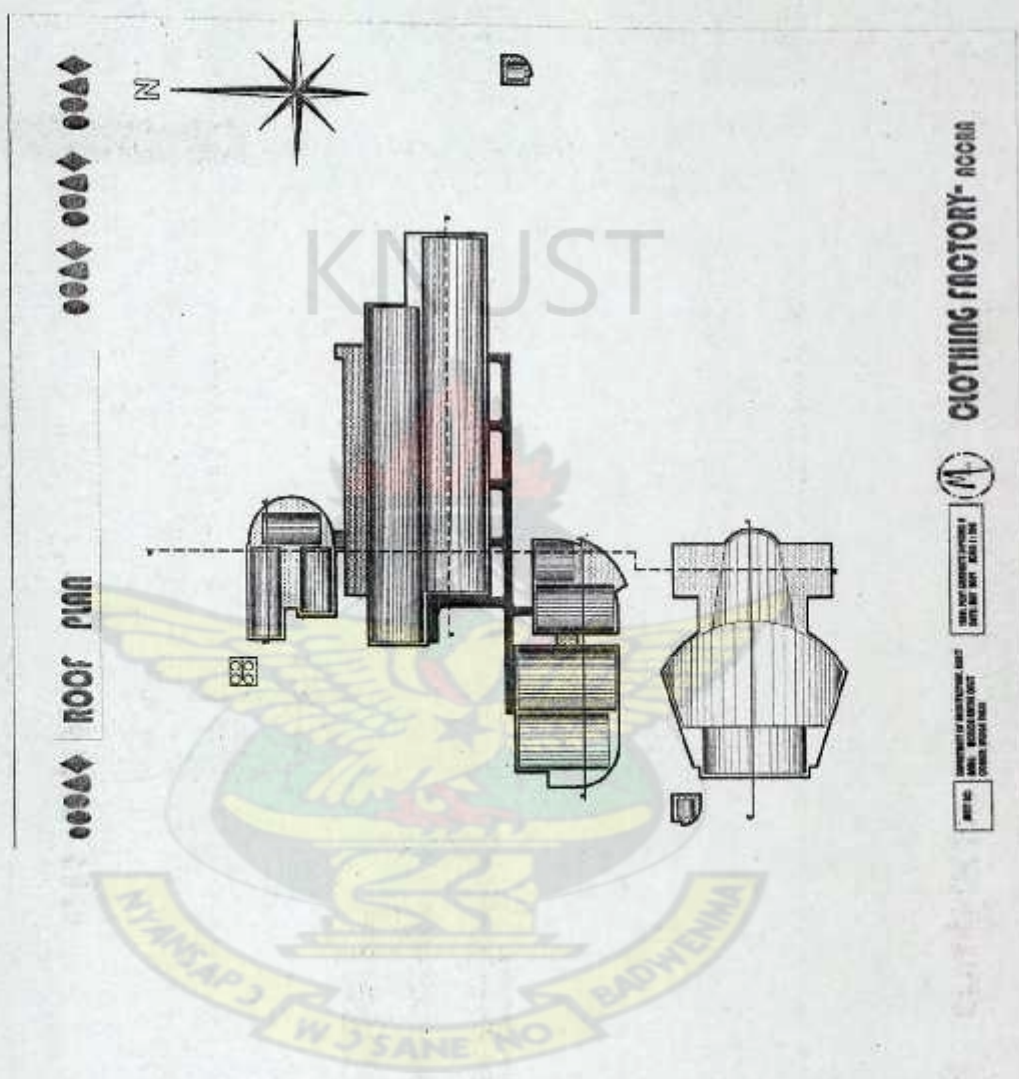


5.4 ISOMETRIC VIEW





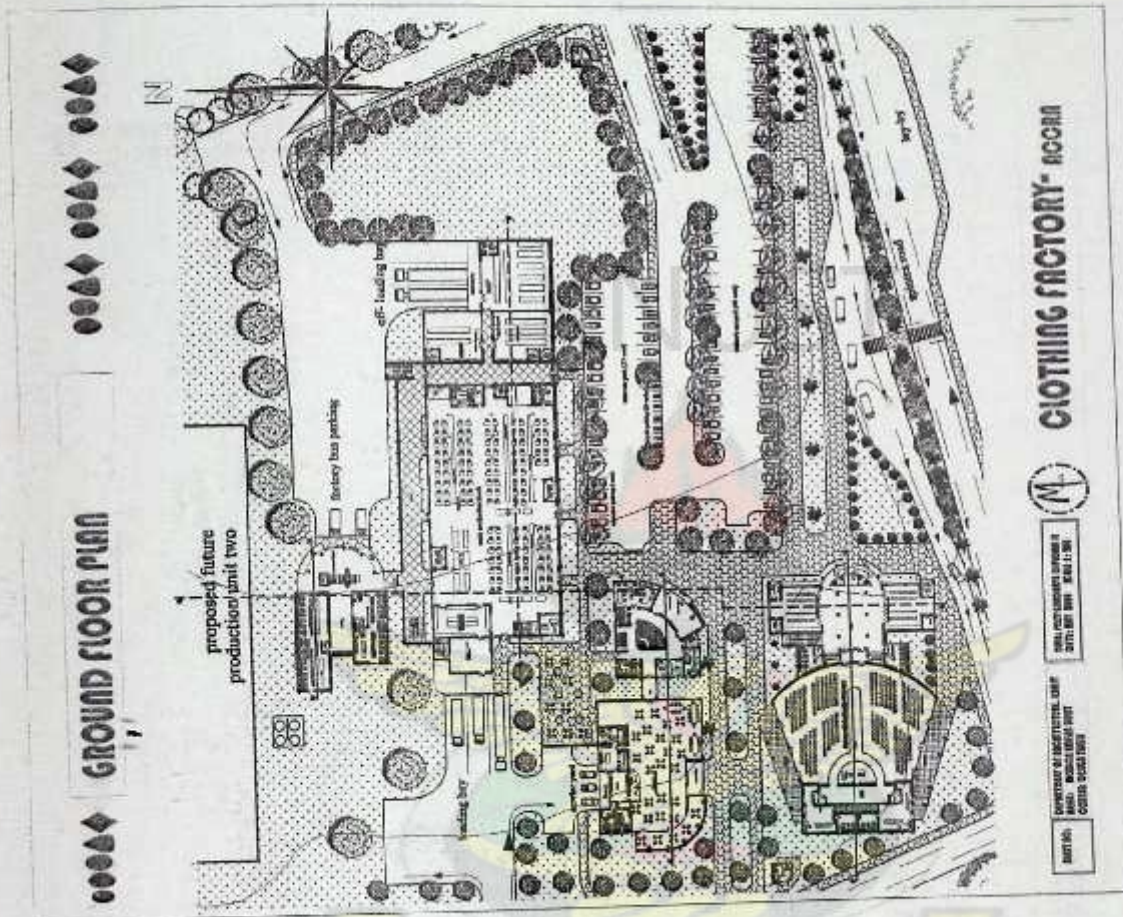
5.5 ROOF PLAN



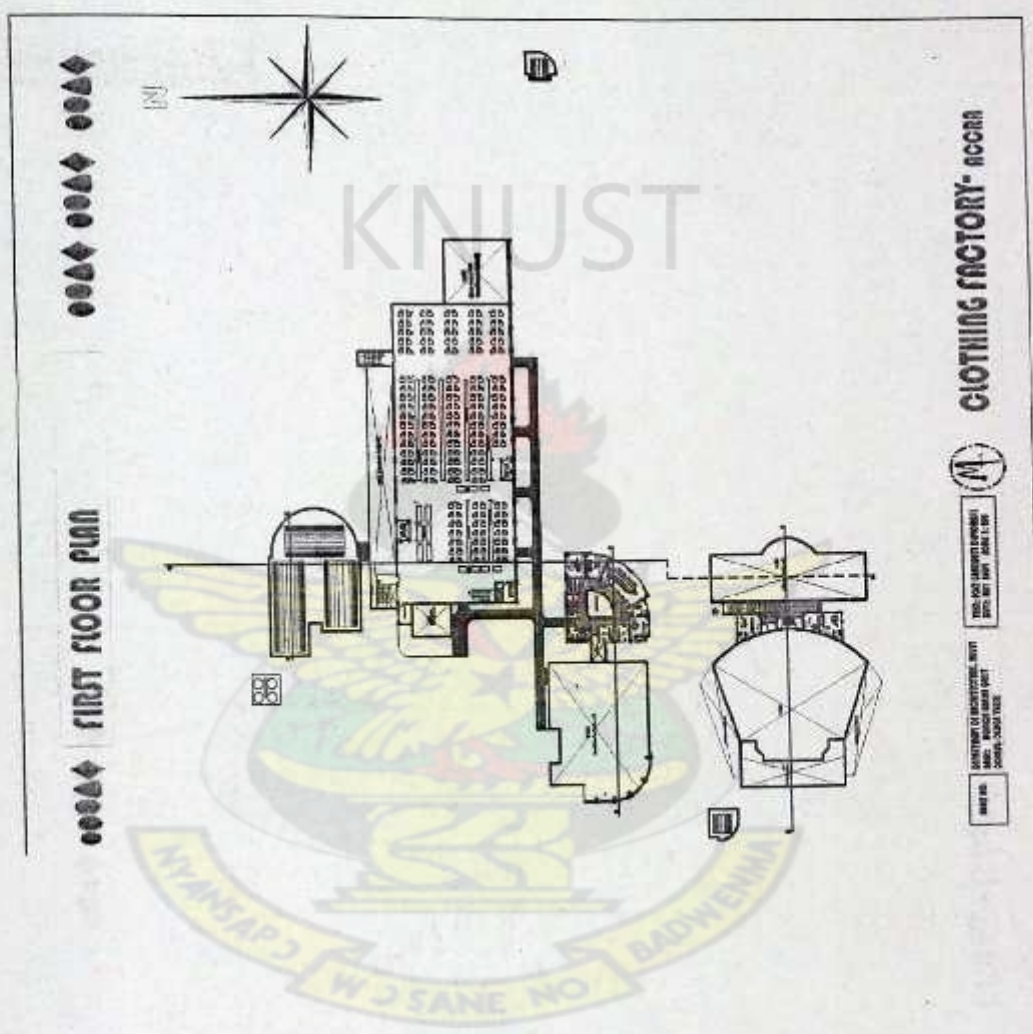




# 5. 7 GROUND FLOOR PLAN



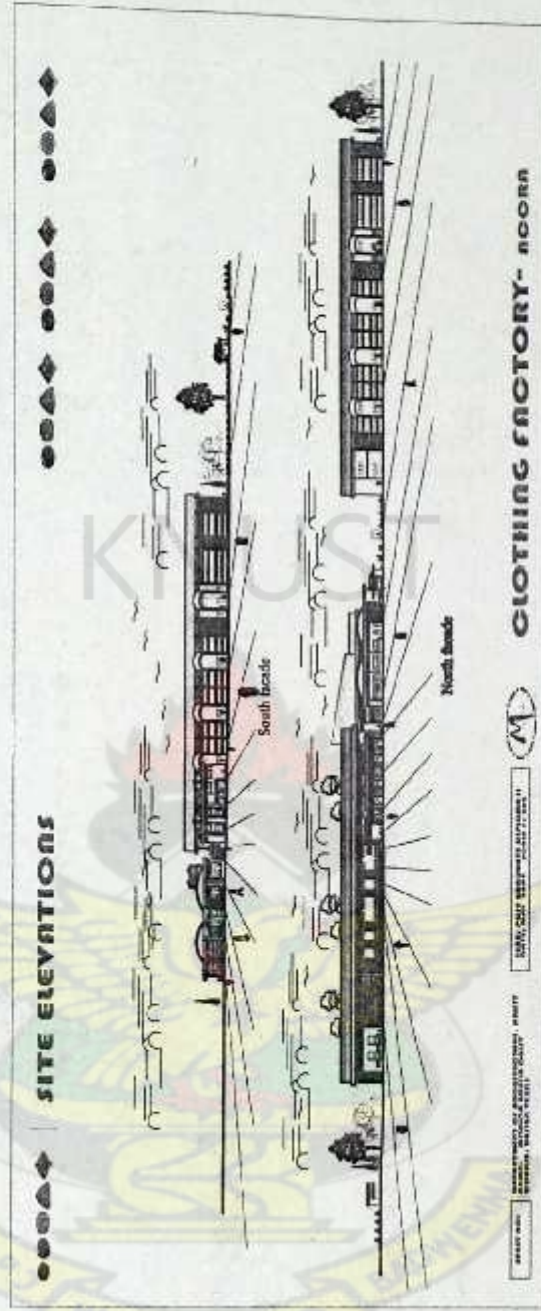
5. 8 FIRST FLOOR PLAN







# 5. 10 SITE ELEVATIONS 1





## 5.11 SITE ELEVATIONS 2







## 5.13 PERSPECTIVES

### EXTERIOR PERSPECTIVES



PERSPECTIVE VIEW OF THE RUN-WAY AUDITORIUM

CLOTHING FACTORY- ACCRA

### BLOCK PLAN



CHANGING ROOM



PRODUCTION BLOCK



OFFICE AND ADMINISTRATION



RUN-WAY AUDITORIUM



AERIAL VIEW OF THE PROPOSED CLOTHING FACTORY

CLOTHING FACTORY- ACCRA

## EXTERIOR PERSPECTIVES

ADMINISTRATION



CAFETERIA

CLOTHING FACTORY- ACCRA

MEET NO:

DEPARTMENT OF ARCHITECTURE, KNUST  
NAME: BOANER OMAR OLUYI  
COURSE: DESIGN THREE

TIME: FOUR LECTURES DURING 8  
CITY: NEW YORK (2024)



## INTERIOR PERSPECTIVE



INTERIOR VIEW OF THE SICK BAY



PLAN OF THE SICK BAY

UNIT NO. DEPARTMENT OF ARCHITECTURE, ADDIS ABABA, ADDIS ABABA UNIVERSITY, ADDIS ABABA, ETHIOPIA

UNIT NO. DEPARTMENT OF ARCHITECTURE, ADDIS ABABA, ADDIS ABABA UNIVERSITY, ADDIS ABABA, ETHIOPIA

CLOTHING FACTORY- ACCRA

## INTERIOR PERSPECTIVES



INTERIOR VIEW OF THE RECEPTION



PLAN OF THE CAFETERIA AND RECEPTION



INTERIOR VIEW OF THE CAFETERIA

UNIT NO. DEPARTMENT OF ARCHITECTURE, ADDIS ABABA, ADDIS ABABA UNIVERSITY, ADDIS ABABA, ETHIOPIA

UNIT NO. DEPARTMENT OF ARCHITECTURE, ADDIS ABABA, ADDIS ABABA UNIVERSITY, ADDIS ABABA, ETHIOPIA

CLOTHING FACTORY- ACCRA

## 5.5 MATERIALS (WALL, CEILING AND FLOOR FINISHES)

In industrial designs and construction, interior finishes and treatment are among the important considerations. This is because both interior and exterior, add to the whole environment.

### **Walls**

#### Exterior

Most of the exterior walls are finished in soothing coloured- paints such as the white emulsion paint and also murals of models. This is to create the awareness of the new factory to the public.

As a measure to generally make the space and environment lively, some of the walls have been rendered with brick and fur-faced finishes.

#### Interior

The choice of finish for interior walls was dependent on the location and use of the space. Most of the interior walls especially the production halls have been rendered with bright colours to increase the illumination of the room.

Brightly coloured paintings, murals and wall hangings have also been placed on the walls to make the spaces more friendly.

### **Floors**

When selecting flooring, the following factors must be taken into consideration: wearing surface durability, joints (in seams and at wall intersections), slip resistance, and stain resistance, scratch resistance, comfort underfoot, repair ability, life cycle, color selection, and cleanability. The order in which you rate these qualities is dependent on the designer. Semi-ploished tiles, could also be employed because of its high performance and easy maintenance.



Most of the floors are finished in semi-polished ceramic tiles because of its durability (easy to clean and maintain). Spaces that are in constant use such as the foyer and the lobbies as well as walkways, have been treated with terrazzo which is resistant to wear and tear.

## **5.6 LIGHTING**

As much as possible natural lighting have been used and complemented by artificial lighting where necessary. A lot of large openings have been designed to improve on the admittance of light from the natural source.

## **5.7 PHASING**

The brief of design shows that the project when is undertaken will require extensive planning and financial management, thus the construction will be put into three phases as follows:

### **Phase one**

- ❖ In phase one, there will be the development of production unit one changing rooms and the commercial facility which could generate income for the development of the other phases.

### **Phase two**

- ❖ This phase will see the development of production unit two and other supporting facilities.

### **Phase three**

- This phase will see the development of a training school and production block three.





## **5.9 SERVICES**

Services provided for the facility include water supply ,electricity, lighting, ventilation, security controls, telecommunication facilities, refuse disposal, storm water drainage, waste soil drainage and fire fighting.

### **Water supply**

Water to the facility would be from the mains along the Spintex road. Hot water would be provided where necessary.

### **Electricity**

Power will be tapped from the mains along the Spintex road and stepped down by a 500KW transformer before being sent to a switchboard and then distributed to the panel boards. A standby generator set with automatic switches will be provided and would be part of the distribution cable which will be loaded.

### **Lighting and Ventilation**

Due to the peculiar nature of the factory and its facilities, like the main production halls, natural and mechanical ventilation have been utilized. Artificial lighting have been hanged from the ceiling level and dropped to the machine level to enhance the lighting intensity in the production hall.

### **Emergency exits**

Emergency exits have been provided for escape routes. Fire alarm call points, fire assembly points and fire fighting equipment have also been used.

### **Telecommunication Facility**

Security guards shall use radio phones to communicate. Spaces such as the administration area and production halls will all have restricted codes of access.

### **Fire detection**

The fire alarm system shall be an automatic 1-24 zone single loop addressable fire detection and alarm system, utilizing conventional detection and alarm sounders.

Detection shall be by means of optical and heat detectors located throughout the factory building with break glass units on the corridors.

### **Fire Fighting Installation**

Fire fighting is to be effected by the use portable fire extinguishers located at vantage places in the factory. Automatic fire suppression system shall be proposed for the production halls. The suppression agent shall be safe, effective and environmentally friendly.

### **Fire Hydrants**

Fire hydrants shall be of the sluice valve type to BS 750 comprising a cast iron key operated sluice valve complete with a socket adapter, a duck foot bend and an outlet adaptor or approved equal. The adaptor shall have a standard Belfast Pattern Outlet with the female thread protected by a brass cap and chain. The hydrant fitting shall be tee off from the mains. Each hydrant shall be provided with a heavy duty cast iron hinged hydrant box to BS 750 with the words fire hydrant cast on the cover. The top of the hydrant box shall be painted red.

A 300 by 200 indicator plate of aluminum construction shall be provided with an inscription of "fire hydrant". The plate shall be supported at 600mm high above ground level by channel steel support. Both plate and support shall be painted in red colour and installed about 1,000m from the hydrant.

### **Security lighting**

To ensure safety and security in and around the factory premises day and night, security lighting would have to be provided at some vantage points.



### **Waste Disposal**

In draining the facility, the natural terrain was taken advantage of. The open system of drainage requiring covered drains will carry all surface water to the lowest section of the south slope where it joins the water in the storm drain.

Dry waste generally non-contaminated, and wet food remnants can be disposed of in public land fills.

Human excrement is washed down water closets, urinals and flushing sinks. Sewerage from various facilities takes their outlets at manholes provided at maximum at 9metres apart and at every change in direction. From the manholes the sewerage and waste water will be channeled into water tight septic tanks.

Production waste which is basically pieces of materials will be turned into pillow in the second phase of the factory. The rest of the pieces would be burnt on site.

### **Telephone**

The private branch exchange (PBX) telephone system is been used to facilitate communication at the centre. The PBX actually handles the processing of all calls within it. It also has all the built in features such as, Forwarding, Conferencing, Call Pick up Groups, Intercoms, and Transferring just to name a few.

### **Air conditioning**

Air- conditioning is needed in certain areas of the facility for the proper and efficient functioning or performance of the activities. Among the spaces to be air conditioned are the administration block, run-way auditorium and the cafeteria. These spaces will be served by the split air condition system.

### **Waste management**

Solid waste would be treated in an incinerator on site, at an area quite further away from the active part of the factory. Refuse and litterbins would be placed at

vantage points to suit the landscape furniture introduced and suitable for a clothing factory.

### **Storm management**

Storm water on the roofs would be directed to the underground tanks through drain pipes attached to columns. Surface runoff water would be directed to the tanks through surface drains to be used later to the lawns and flower gardens.

## **5.10 LANDSCAPING**

Landscape such as greenery, sculpture pieces, and pavers has been used by the designer. This is due to the fact that a serene and environmentally interactive space is needed in such a facility to promote and enhance production.

Shady trees have been provided in the restaurant, under which employees and workers can take their lunch.

Greenery in terms of grass, shrubbery and trees have been used extensively in the design to:

- ❖ direct circulation
- ❖ create and block views
- ❖ create privacy, serenity and quiet zones
- ❖ modify climate and
- ❖ generally add to the aesthetic appeal of the facility.

Plants that will be used include the following:

Ficus benjamina (yellow and green leaves)      ornamental and screen

Eucharua (all green tree)      ornamental and wind break



Yellow duranta (yellow and green leaves) defining walkways and for aesthetics

Royal palm ornamental

❖ Plants for visual impact

-Flowers: camellia, magnolia, orchid, peony, forsythia

-Leaves: weeping willow, maple, palm, privet

-Seeds: clematis tangutica, physalis, everlasting pea, eryngium.

The lawns will be planted and covered with paspolon grass; carpet grass and some artificial grass where needed.

## 5.11 COSTING AND ENVIRONMENTAL IMPACT ASSESSMENT

### 5.12 COSTING

For the sake of affordability and architectural expediency, the whole project has been broken down into three main stages. These are as follows:

The brief of design shows that the project when is undertaken will require extensive planning and financial management, thus the construction will be put into three phases as follows:

The first phase will comprise the production hall one and changing rooms to be constructed. Work on the vehicular access, car park and bicycle parking and fencing would be done.

During this phase the administration block would be put up as well as landscaping and pedestrian walkways.

The second phase would comprise the construction of the cafeteria, the kitchen and run-way auditorium.

The final phase would comprise the construction of the production units two and three and also the proposed training school for the factory. At this final stage all other finishes would be done to mark the final completion of the facility.

All the phases put together shall cost a total sum of 3,781,795 Ghana cedis. This is based upon the cost per unit area calculation of 250-350 Ghana cedis per unit area.

### 5.13 ENVIRONMENTAL IMPACT ASSESSMENT

The impact of the factory has both positive and negative on the immediate environment and as such measures should be taken to address any imminent situation. Environmental impact assessment is an activity that is designed to identify and predict the impact on the physical environment and on the human's life. A brief summary of such an impact by the design and planning can be outlined as follows:

#### ❖ Impact on Air Quality

Air pollution would be caused by dust during the construction stage through site clearance, excavation works, delivery and use of cement and aggregates.

#### ❖ Impact on flora and fauna

The clearing of vegetation cover and removal of topsoil during site preparation would result in the following:

- i. degradation of plant cover
- ii. Destruction of the natural habitat of fauna on site.



## 5.14 CONCLUSION

In conclusion, this Clothing Factory proposed at the Spintex road, Accra would help reduce the unemployment rate in the country and precisely Greater Accra district and its environs. Again it will serve as one of the places the government could generate revenue from.

Again if this facility is built and through the training school people are educated well enough about Ghanaian clothing, the public would no longer sort to the Asian textiles but rather be proud to wear Ghanaian textiles and clothing and also export to other neighbouring countries and the world at large

It is the sincerest anticipation of the author that this proposal would provide a rich source of reference material for all who have the love for Ghanaian clothing.



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