

UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI.

KOTOKO FOOTBALL COMPLEX, KWAMO

DESIGN THESIS REPORT

Presented to the Department of Architecture of the Faculty of Environmental and Development Studies in partial fulfilment of the Post-Graduate Diploma in Architecture Examinations.

LIBRARY
UNIVERSITY OF SCIENCE AND TECHNOLOGY
KUMASI-GHANA

By Tony Asare
Bsc. Hons (Design)

July 1997.

Dedicated to Ghana Football

ACKNOWLEDGEMENTS

It has been a long journey since November 1990 and I am grateful to God Almighty for whose guidance, protection and wisdom has seen me this far. I also wish to express my profound gratitude to the following who helped me in diverse ways to complete this design thesis. They are:

- Kotoko Football Club footballers and administrators
- Mr. S.O. Afram - my supervisor
- Mr. A.N.K. Laryea and Dr. Gilbert Narley - Studio Staff
- Mr. Oppong Kyekyeku - Architect and Landscape Designer
- Mr. Eningful Eghan - Enningful Design Service, Kumasi
- Mrs. Christiana Asmah-Lecturer, Department of Architecture, U.S.T.

I am also very grateful to Mr. Jesus Bram Birikorang, Mr. Edmund Larley and Mr. Tony Akahoho whose friendship and dedication has brought this work to a successful end. I am very grateful to my parents Mr. and Mrs. Asare who have afforded me this education and supported me through this course.

To Miss Jennifer Cooper whose love and dedication to me helped me immensely to complete this work. I say thank you and God Bless.

To my friends and coursemates whose advise, criticisms and help, especially Eric Kwaku Agyemang, Emmanuel Ampaabeng, Daniel Aryeetey and Solomon Addy have seen me to this remarkable end.

I also want to extend my warmest greetings to Mr. and Mrs. Forster Boateng by whose help these scripts were typed and printed. Finally to my brothers R.K. Asare and Kwesi Owusu Asare, and sister Mrs. Afia Asare-Botwe, thank you for the support and God bless you all.

TABLE OF CONTENTS

	Pages
Title Page	i
Dedication	ii
Acknowledgements	iii
Table of Contents	iv - vi
Abstract	vii - viii

CHAPTER 1

1.0	Introduction	1
1.1	The African Story - Zamalek F/C, Egypt	2
1.2	The Ghanaian Story - Obuasi Goldfields F/C	2
1.3	Justification	4
1.4	Target Group	5
1.5	Objectives	6
1.6	Client's Brief	6
1.7	Scope	7

CHAPTER 2

2.1	History of Football in Ghana	8
2.2	Football Organization in Ghana	8
2.3	First National Football League	9
2.4	Maiden League in Ghana	10
2.5	Infrastructural Appraisal of Football Facilities in Ghana	11
2.6	Infrastructure at Club Levels	13
2.7	The Need for a Professional League	15
2.8	The Professional League	15

CHAPTER 3

3.1	Choice of Case Studies	-	18
3.2	Alfred McAlpine Stadium, Huddersfield	-	19
3.3	Millwall Football Stadium, Millwall	-	24
3.4	Kumasi Sports Stadium	-	28
3.5	Accra Sports Stadium	-	31

CHAPTER 4

4.1	General Requirements	-	33
4.2	Spectator Requirements	-	38
4.3	Operating Requirements	-	40

CHAPTER 5

5.1	Site Selection	-	45
5.2	Inadequacy of the Kotoko Park	-	45
5.3	Site Analysis	-	46
5.4	Design Brief	-	47
5.5	Functional Relationships	-	52
5.6	Conceptual Layouts	-	54

CHAPTER 6

6.1	Design Concept	-	56
6.2	Design Philosophy	-	56
6.3	Form Development	-	56
6.4	Design Character	-	57
6.5	The Design	-	57

CHAPTER 7

7.1	Structural System	-	64
7.2	Electrical Installations	-	64

7.3 Mechanical Installations

7.4 Landscape

-
67

-
70

CHAPTER 8

Conclusion

Bibliography

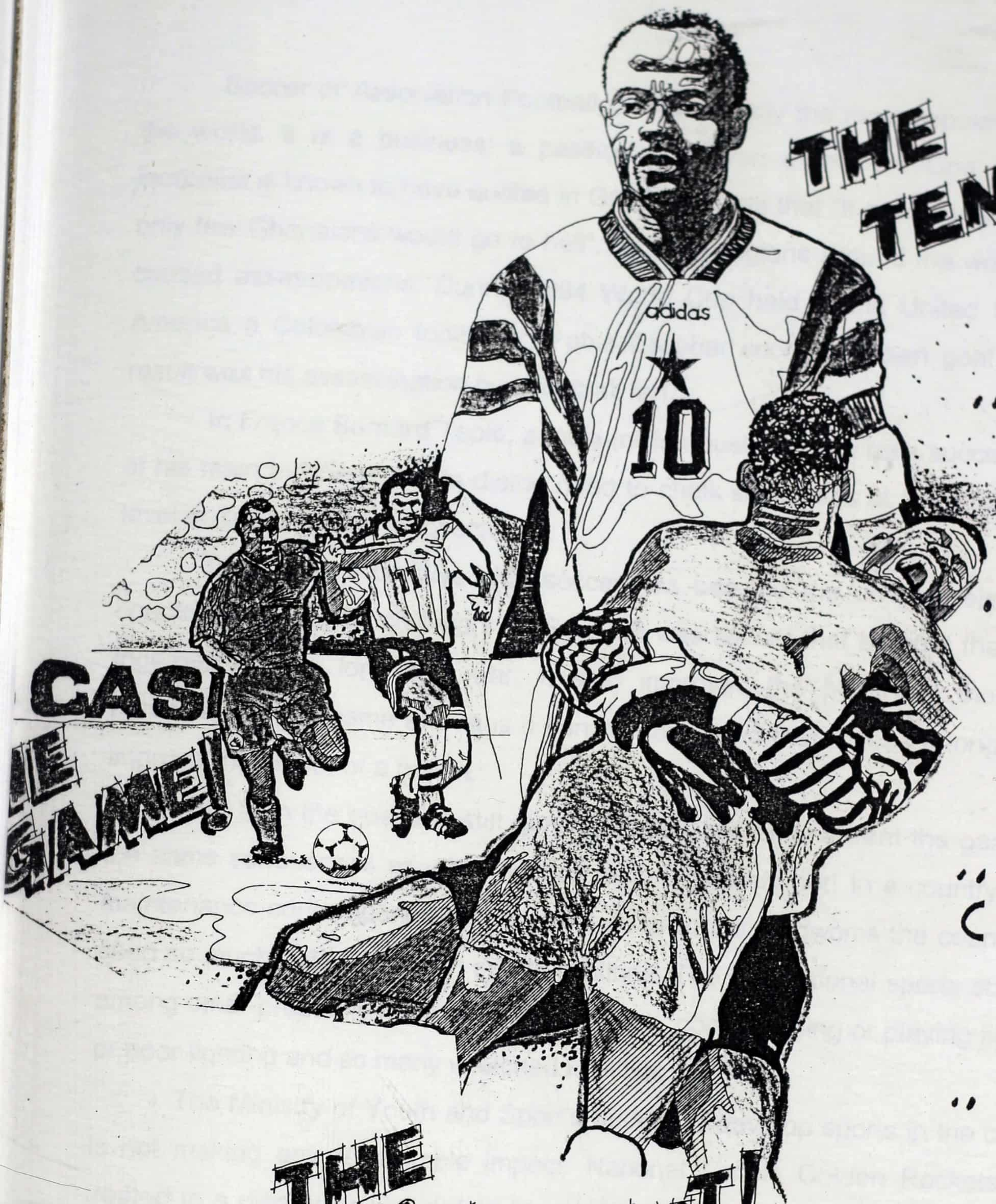
Accommodation Schedule

-
71

-
73

-
74

**THE
TENSION**



**CASI
THE
GAME!**

**THE
EXCITEMENT!**

ABSTRACT

Soccer or Association Football is undoubtedly the most popular game in the world. It is a business, a passion and even a religion. One Ghanaian journalist is known to have quoted in Graphic Sports that "If soccer were religion only few Ghanaians would go to hell". In some regions around the world it has caused assassinations. During 1994 World Cup held in the United States of America a Colombian footballer, Pablo Escobar scored an own goal and the result was his assassination by a football fan.

In France Bernard Tapie, a multi-million businessman runs soccer as one of his main business and in dieing need to chalk successes at the international level ended up in a bribery scandal.

To the more positive side soccer has become the unifying element in countries stricken by civil wars. In Sudan it was soccer that brought the people together after a long civil war. It also improves the health of those who participate in the game and thus it can be concluded that it goes a long way to improve the health of a nation.

But then the question still remains that "Does Ghana treat the game with the same seriousness as other nations do?" Obviously not! In a country where maintenance consciousness is non existent or at the duldwoms the country has seen so much deterioration in sports facilities. The two national sports stadiums among other problems have poor tartan tracks, poor grassing or playing field, no or poor lighting and so many wretched facilities.

The Ministry of Youth and Sport's budget to develop sports in the country is not making any remarkable impact. National Tennis Golden Rackets were treated to a disgracing 5-0 defeat by our former Colonial Masters, Great Britain in Accra last year and Poland defeated the team by the same margin. Poor funding is seen in the national soccer teams too ie BlackStars, Satellites and Starlets. This even came to light at the African Youth Championship held in Monrovia where the satellites, a favourite in the tournament were pushed to a

mere fourth position. The reason was poor motivation. Thus the funding factor was clear.

Until the teams in the country start treating the game as a business, go corporate as the professional league board is asking the teams to do the standard of football will continue with its downward trend. It is in this light that the putting up of Kotoko Football Complex is seen to be long overdue. The earlier soccer in the country is salvaged, the better.

CHAPTER ONE

1.0 INTRODUCTION

Gone are the days when Kumasi Asante Kotoko was about the most feared football clubside on the continent. Teams dreaded the Kumasi Sports Stadium, the intimidating den of this traditional Asante Club founded in 1935. Unfortunately since the inception of the Professional League by the Ghana Football Association (G.F.A) the first position has eluded them for three years.

This clearly has revealed the lack of total professionalism in both technical and management of the once glorious football club.

It is also plagued with poor and inadequate facilities, player exodus has nailed the team in its coffin and what is left now is the skeleton of professionalism.

It is in this light that this design thesis was chosen - to tackle the infrastructural development of the club that will help change the fortunes of the club.

With the improvement of facilities, performance of the players will also pick up. The performance of the team will thus boost spectator attendance and media coverage and this will certainly attract sponsorship. With more inflow of finance through these avenues the team could regain its lost image.

1.1 THE AFRICAN STORY - Zamalek F/C, Egypt

Zamalek Football Club of Egypt made history last year by winning the African Champion Clubs Cup for a record fourth time. This rich tradition of success stems from a very well organized club management and excellent facilities.

Unknown to many, Zamalek Football Club is only one of 27 different sporting outfits owned by the umbrella outfit Zamalek Sports Club of Egypt. Formed in 1910 it has undergone a metamorphosis that has resulted in probably the best clubside in Africa.

Zamalek is now situated on a 35acre land and has sprung up into a giant organisation with more than 23,000 card carrying members. It has its own 45,000 seater football stadium in addition to facilities needed for 26 other sports ranging from basketball, karate and swimming.

Incidentally Kumasi Asante Kotoko beat Zamalek F/C 5-1 at Kumasi in 1983 and lost to them in the 1993 finals 7-6 on penalties. These achievements by the club is the manifestation of what good facilities good management and sound policies can yield.

THE GHANAIAAN SUCCESS STORY

1.2 OBUASI GOLDFIELDS FOOTBALL CLUB

Until quite recently the name Obuasi Goldfields did not relate much to the game soccer. If anything, it reminded one of gold which gave Ghana its original name.

The club was formed in January 1978. It was formed in response to directive by the Kutu Acheampong regime to government corporations to sponsor football clubs at the national level. The management of Ashanti Goldfields Corporation embraced the idea and employee footballers were selected as the nucleus of the Obuasi Goldfields Football Club.

In 1991, the management contracted the world renowned English soccer legend, Bobby Charlton to show them how to organize a well bred soccer team. The result is that Goldfields have a well equipped stadium, a top class playing body, knowledgeable technical brains and are now on top of all.

From January 1978 the club was given the full blessings of succeeding managements and provided with equipment and finance. But progress was slow. It was not until 1984 that Goldfields gained admission into the national second division (now the first division). Unfortunately, however they could not qualify for the middle league which was a stepping stone to division one (now the professional league).

A sad moment in the history of the club occurred in June 10, 1984 when a motor accident on the Techiman-Kumasi road nearly crippled the team. Most of their key players were injured. They were returning after honouring a league match. However, they quickly put the misfortune behind them and put up a remarkable performance in the F.A. Cup competition and finally lost 1-0 to Kumasi Asante Kotoko.

The facilities which will go a long way to improve the performance of the club will mean that there will be an increase in match attendance, more people would want to watch matches on television so that the club will be able to get more money from T.V. rights.

Other related development include advertisement by sportswear on jerseys and sponsorship and this can run into hundreds of millions of cedis a season.

There is a need to bid farewell to the old order of sports management and facilities. It is hightime we considered football as a business' not just a recreation.

1.4 TARGET GROUP

The target group is three fold:

- i. The team itself ie. footballers, coaches and technical men of the club, the secretariat and those who run the affairs of the team.
- ii. The supporters of the club popularly known as the Kotoko Circles. These form the backbone of the supporting spirit of the club.
- iii. Guest teams of the club during both local and international encounters. It must also be added that guest teams such as the Black Stars could also come to the facility and rent the place for training.

1.5 OBJECTIVES

1. To use the design to investigate into symbolism of Ghanaian Clubs and slogans as well as how these can be inculcated in the design of these club facilities. As the epitome of culture, this club which has a remarkable link with the Asante Kingdom will serve as a good case study.
2. The design should also serve as a bench mark or model structure for professional clubs to emulate to uphold the standards of professionalism in the newly established scheme.
3. To serve as a nursery for future stars of the club's juvenile side. They will be trained here to feed the senior side of the team.
4. To serve as a basis for sponsorship by willing firms and companies.

1.6 CLIENT'S BRIEF

The use of the facility is basically to serve first the footballers, administration of the club, the Kotoko and other football fans, pressmen and the public at large. The following brief was suggested by the client.

- i. Stadium
- ii. Kotoko Secretariat (Administration)

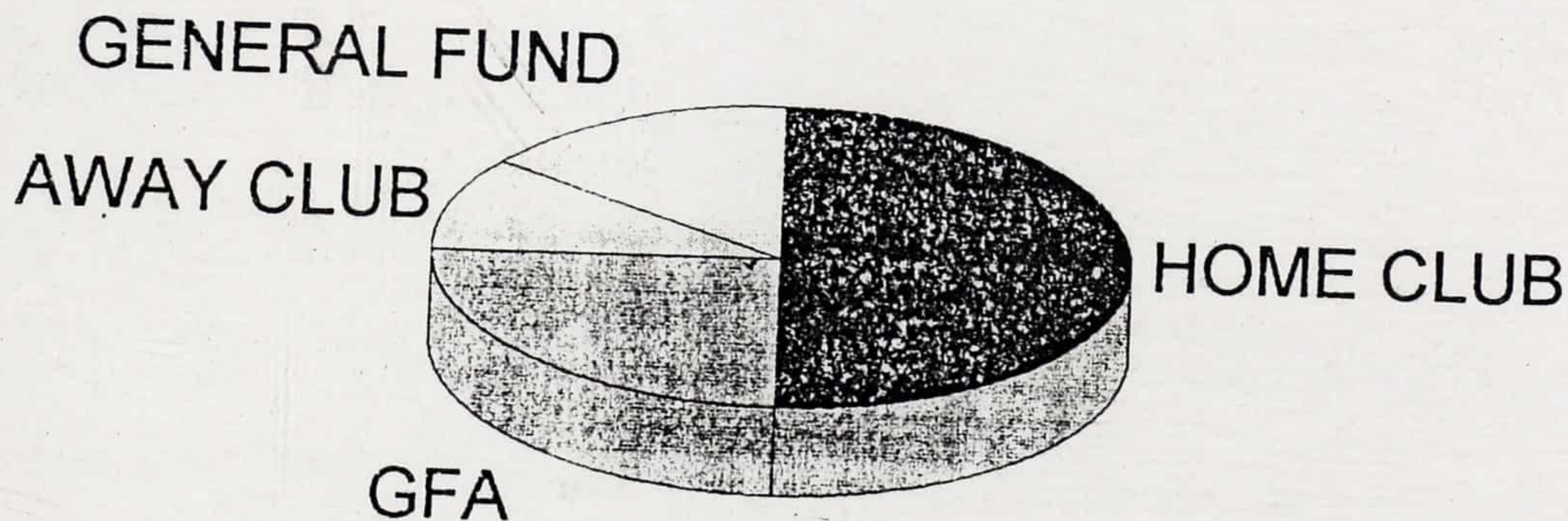
In 1986 they entered division one and has shown steady progress and the annexation of the league in 1994, 1995 and 1996 reflects the level of consistency.

JUSTIFICATION

The commercialization of football is on the increase around the world. But it is rather declining in the country. Money can be raised in many areas of soccer such as T.V. rights, advertisements as well as gate proceeds.

Presently the Kumasi Sports Stadium Estate office is able to raise about ₵48million from renting the spaces and bill-boards within the inner perimeter of the stadium every year.

Out of the gate proceeds that is collected for matches 25% goes to the Ghana Football Association 15% goes to a general fund which is used to service football teams who need financial assistance 50% goes to the home club and 10% to the away club.



- iii. Teaching Auditoria/T.V. & Video Halls
- iv. Residential facilities for footballers & coaches
- v. Clinic
- vi. Gymnasium
- vii. Kitchen & eating facilities
- viii. Laundry
- ix. Estate offices
- x. Shops

1.7 SCOPE

The design thesis is to tackle two main aspects of the needed infrastructure.

- a) Football stadium for the club which should include all the needed facilities to efficiently run the stadium including club offices.
- b) Residential facilities with an attached guest wing for guest teams to enable teams to camp and train effectively.

CHAPTER TWO

2.1 HISTORY OF FOOTBALL IN GHANA

Football is one of the colonial legacies bequeathed to Ghana by Great Britain. The game was introduced into Ghana by British Sailors. Cape Coast which was the former capital town of Gold Coast was the birth place of Ghana Soccer.

As the then seat of government, Cape Coast was home to a large number of British nationals and other European civil servants and company officials. And as they played the game of football regularly they influenced the formation of the first football club in the Gold Coast in 1903. The team was Cape Coast Excelsior.

The birth of Excelsior was followed eight years later by the emergence of Accra Hearts of Oak, the oldest existing top division club in Ghana at the moment. A few other clubs sprang up in the regions in early 1903. Among these were Kumasi Asante Kotoko in 1935.

2.2 FOOTBALL ORGANIZATION IN GHANA

Football organization in the country has come a long way since those early colonial days when Excelsior was born. Soccer historians tell us that around 1943 that some effort was made at the control and organization of the sport from Accra.

The early 40's brought onto the undefined soccer scene Mr. Richard Akwei popularly called "the lion heart". He made so much impact on the early days or organized football in Ghana.

First his efforts were directed at getting the Accra Football Association on solid grounds and in around 1947 Mr. Akwei, described as a shrewd soccer organizer, mooted the idea of bringing together the major associations which had sprung up in the country. But the baby was not to be spared the usual teething problems. First, a serious split in the Accra Association had a corresponding effect on the national body and two National bodies emerged from the crisis.

Mr. Akwei became the president of the Gold Coast Football Union. The other dubbed Gold Coast and Ashanti Union had Mr. John Darkwa of Kumasi as chairman, with Mr. A. W. Mills as secretary.

It was the projected tour of the United Kingdom by the Gold Coast national team in 1951 which brought the two factions together. At the Hudson Club, Kumasi in October 29 1950, the two sides agreed on the formation of a United Gold Coast Amateur Football Association. Mr Darkwa became the first chairman and Mr. Richard Akwei the vice chairman.

2.3 FIRST NATIONAL FOOTBALL LEAGUE

The first attempt at organizing a national league was during the turbulent last days of Mr. Richard Akwei in 1956. It was an idea mooted by the

Englishman, Mr. Ken Harrison resident manager of a trading firm R.E. HARDING & Co. This maiden contest was poorly organized.

Asante Kotoko and four other Kumasi based teams - Cornerstone, Great Ashanti, Dynamos and Evergreens - boycotted it. The Ghana Amateur Football Association reacted by suspending them. The competition took off with only the teams from the south. In the ensuing confrontation the four boycotting clubs were able to get some others to join them thus wrecking the league and flaunting the authority of the GFA.

The competition was eventually left with only Accra Hearts' of Oak and Sekondi Eleven Wise who were later declared gold and silver medalists. This was perhaps the beginning of the "traditional" friendship between Hearts and Wise.

2.4 MAIDEN LEAGUE IN GHANA

After a turbulent year of confusion a properly organized national league was launched in 1958 by the newly elected chairman of the Ghana Football Association, Mr. Ohene Djan who later became the first Director of Sports.

Eight clubs were selected from the municipalities of Accra, Kumasi, Sekondi and Cape Coast. Hearts won the maiden league with 21 points. The exciting discoveries in this historic league were Aggrey-Fynn of Hasaacas and Duncan of Vipers. They later played in the national team.

The League Table 1958

Teams	P	W	D	L	F	A	Pts
Hearts	14	10	1	3	38	20	21
Corners	14	9	2	3	28	17	20
Kotoko	14	7	1	4	43*	30	19
Olympics	14	7	3	4	29	22	17
Wise	14	6	2	6	24	29	13
Hasaacas	14	3	4	7	19	27	10
Dwarfs	14	2	4	8	14	32	8
Vipers	14	0	4	10	10	28	4

*It must be noted here that though Kotoko came third in this maiden league they scored the highest number of goals showing how potent their striking force were. It is not surprising that they won the next league with 22 points to their credit winning eleven matches out of fourteen, drew none and lost three.

2.5 INFRASTRUCTURAL APPRAISAL OF FOOTBALL FACILITIES IN GHANA

It is a sad thing to note that since 1978 when Ghana rehabilitated its stadiums to host that years African Nations Cup there has not been any

significant change in the state owned stadiums. It has rather been visited by deterioration of playing fields, poorly maintained tartan tracks, malfunction and total breakdown of scoreboard and absolute neglect of stands for spectators.

Accra Sports Stadium, the home ground of the national team and another elite club of Ghana seats 45,000 spectators. Its poor playing field has resulted from excessive use of the field and the poor maintenance level. Accra Great Olympics and Accra Hearts of Oak use the field for both training and league matches. It is also used by the national team for its international matches. Regressing is often not done and prolonged watering has robbed the soil of good nutrients.

Flood lights have broken down and on several occasions matches have had to be postponed due to poor visibility.

The gymnasium is totally out of function and the national team have on several occasions had to visit private ones for the needed physical training.

Live transmission is now a privilege on Ghana Television due to the continual use of absolute equipment. Whilst in some developing countries equipments for live transmission have been reduced to the size of a t.v. box we still carry around out of broadcast van (o.b. van) to locations before transmission can be achieved.

Similar things can be said about Kumasi Sports Stadium which boasts of its 65,000 seating capacity. Flood lights do function from time to time but there is still nothing to write home about.

2.6 INFRASTRUCTURE AT CLUB LEVEL

The level of sports infrastructure at the national level is so low that there is little to write about. It is sad to say that apart from a few facilities that were put up during the 60s very little has been added. Thus considering facilities at club level will be very difficult.

Considering some of the traditional big clubs in the country's elite division namely Obuasi Goldfields, Kumasi Asante Kotoko, Accra Hearts of Oak and Accra Great Olympics, Obuasi.

2.6.1 Goldfields Football Club

Though Goldfields came into existence not long ago it could be said that it is the only clubside which is running fully as a professional club. At the youth level it has a nursery where players are trained to feed the senior side. The Soccer Academy named after has already chalked enough successes at both the local and international scenes.

It is also the only team which has its own sports stadium, 25,000 seater Len Clay sports stadium and it is backed by the administration of the Ashanti Goldfield Corporation.

2.6.2 Kumasi Asante Kotoko

Considering the stature of Kumasi Asanti Kotoko at both the national and international scene it is difficult to believe the level of organization of the club. At its level and the history of a club which has been recently voted as the second all time best club in Africa, some level of infrastructure is expected to be in place.

Starting from administrative level; the Kotoko Secretariat which is the headquarters of the club. It is located in an office at Adum and it is in a disreputable state.

The place is devoid of good office equipment, bare offices and meeting rooms and staff of the club lurking around the office with all indication that it is every bit of an informal office. This shows the level of seriousness that club football is treated in Ghana and for that matter Kotoko.

The "den" of Kumasi Asante Kotoko - the Kumasi Sports Stadium is also the home grounds of tens of clubs in various divisions. It seats 65,000 spectators officially located at Asokwa, a suburb of Kumasi. This stadium is a national asset and the club is taxed for using it. Invariably this adds to the poor nature of the facilities at the sports stadium due to inordinate use of these facilities.

The club's residential accommodation is nothing to write home about. It consists of 3-bedrooms for footballers sharing a water closet at the ground level and 2-bedrooms for the coaches who share a bathroom. The sub-basement level

consists of two other bedrooms and a bathroom, a caretakers room and kitchen and bathroom scattered around the compound. There is a lecture hall measuring 5000 x 7900. The arrangement of the rooms gives very poor ventilation and lighting. The surroundings does not really look like a football training camp and thus it takes a long time for players to psyche up to play football.

2.7 THE NEED FOR A PROFESSIONAL LEAGUE

It is now a household fact that Ghana soccer is heading to a disastrous end. The indicators are numerous and they include poor infrastructure at club level, poor league, poor match attendance and poor performance of the clubs when they go for international matches.

Thus there is a need to establish a good local league which will invariably affect quality of play.

2.8 THE PROFESSIONAL LEAGUE

The introduction of professional soccer was decreed by the Ministry of Sports. All clubs were ordered to register as limited liability companies in October 1993 and the Ministry offered them 3 million cedis each to off-set their expenses at the early stages of the competition. But the amount turned out to be inadequate, as gate takings continued to dwindle because of poor patronage.

The Ministry of Sports set up a seven member Professional League Board to run the league.

The following was established for the smooth running of the board:

- i. to process licenses for all professional clubs and their players for authentication of the Ghana Football Authority.
- ii. at the instance of GFA, to prepare fixtures, to print and sell tickets for professional league and advise the GFA on fixture and printing and sale of tickets.
- iii. to monitor the implementation of GFA policies and programmes regarding the Professional League Competition and offer to GFA such advice as the Board may deem fit.
- iv. to recommend Match Commissioners and Referees to the GFA Management Board for appointment.
- v. to settle financial disputes between clubs.
- vi. to ratify results of matches.
- vii. to act as ex-officio representatives of the GFA at matches.

viii. to evaluate match reports and refer disciplinary committee for determination provided that this provision shall not be construed as ousting the authority of the GFA to refer disciplinary matters and protests direct to the Disciplinary Committee if the GFA considers that it is expedient to do so.

ix. to arrange for sponsorship for the league and notify the GFA for approval accordingly.

LIBRARY
UNIVERSITY OF SCIENCE AND TECHNOLOGY
KUMASI-GHANA

x. to recommend to the GFA such amendments in the GFA Rules and Regulations as the Board shall consider appropriate.

xi. to ensure that Professional League Clubs have been duly incorporated.

xii. to perform any other duties which the GFA may from time to time assign to the Board, provided always that the Board shall not have responsibility for and shall not in any way handle or execute any of the following:

- (a) international player transfer
- (b) disciplinary matters save as provided for in paragraph (viii) of this section. Appointment of match officials and
- (c) shall not commit the GFA financially without prior consultation with and approval by the GFA Management Board.

CHAPTER THREE

3.1 CHOICE OF CASE STUDIES

The choice of the case studies were done taking into consideration the traditional and cultural use of some of the stadiums in Ghana and combining it with two of the most modern football stadiums recently constructed in the U.K. Thus the Kumasi Sports Stadium, the venue of Kumasi Asante Kotoko's home matches, was studied to see how the stadium is both used and abused.

Secondly the inflow of spectators was carefully studied to show the seats which are most desirable and thus more premium placed on them to be able to generate more money.

Furthermore, there is no typical club football stadium in Ghana and as it is something that is now to be introduced studies were done on some existing and newly constructed football stadiums in the United Kingdom. Thus two stadiums were selected from Europe ie.

(a) The Alfred McAlpine Stadium, Huddersfield and

(b) Millwall's Football Stadium.

The studies took into consideration the needs of both spectators and management, crowd control and movement, refreshment cost and structural systems.

3.2 ALFRED McALPINE STADIUM, HUDDERSFIELD

This new stadium resulted from a critical assessment of Huddersfield's existing Leeds Road soccer ground following the tragedies of Bradford, Heysel and Hillsborough. The Taylor report required that stadia should be all seater.

The plan form of the scheme is based on a maximum viewing distance of 150m from the four corners of the pitch, resulting in four orange segment shapes as stands. It will seat a minimum of 25,000 when completed as the stadium was designed to be phased out since the funding was not all in place at the time of construction.

The stadium is on a 50 hectare site bounded by the River Colne to the west and the Wooded Wilner Bank to the east.

3.2.1 Materials

Elevations of the Wilner Bank and South stands are faced in profile sheeting and engineering bricks. There are also large expanses of curtain walling plus a mixture of blue engineering brick and glazed concrete blocks. These blocks have the advantage of being tough and moisture resistant, helping to prevent vandalism and graffiti as well as being attractive materials.

The roofs are blue profile-metal sheets that allow easy drainage into its siphonic drainage system. The steelwork is finished in white paint and the conscious use of vibrant colours is seen in the design.

3.2.2 Structural Design

Pile foundation was used for the construction due to the fact that the site had been a chemical waste tip since 1890s. The plan form of the design is such that there are different truss rise on each stand. This oval plan form gives a deep overhang at the centre of each stand and this leads itself to a support system at the front of the stand rather than a cantilever.

The solution provided, with the curved 'banana' truss sprung from concrete finger supports made from reinforced concrete sprung from piled ground beams. These also provide support for the floodlights and for the stadium control box.

Valuers have praised the design apart from its relatively weak corners. The traditional stadium was four-square with solid corners (though with poor visibility), the new arrangement has atmosphere spilling away and this can be turned into an advantage in this hot humid climate.

3.2.3 Cost Comment

While the traditional method of producing a cost analysis relies on the use of cost per square meter, the accepted form of cost comparison in the industry for stands in stadia is cost per seat.

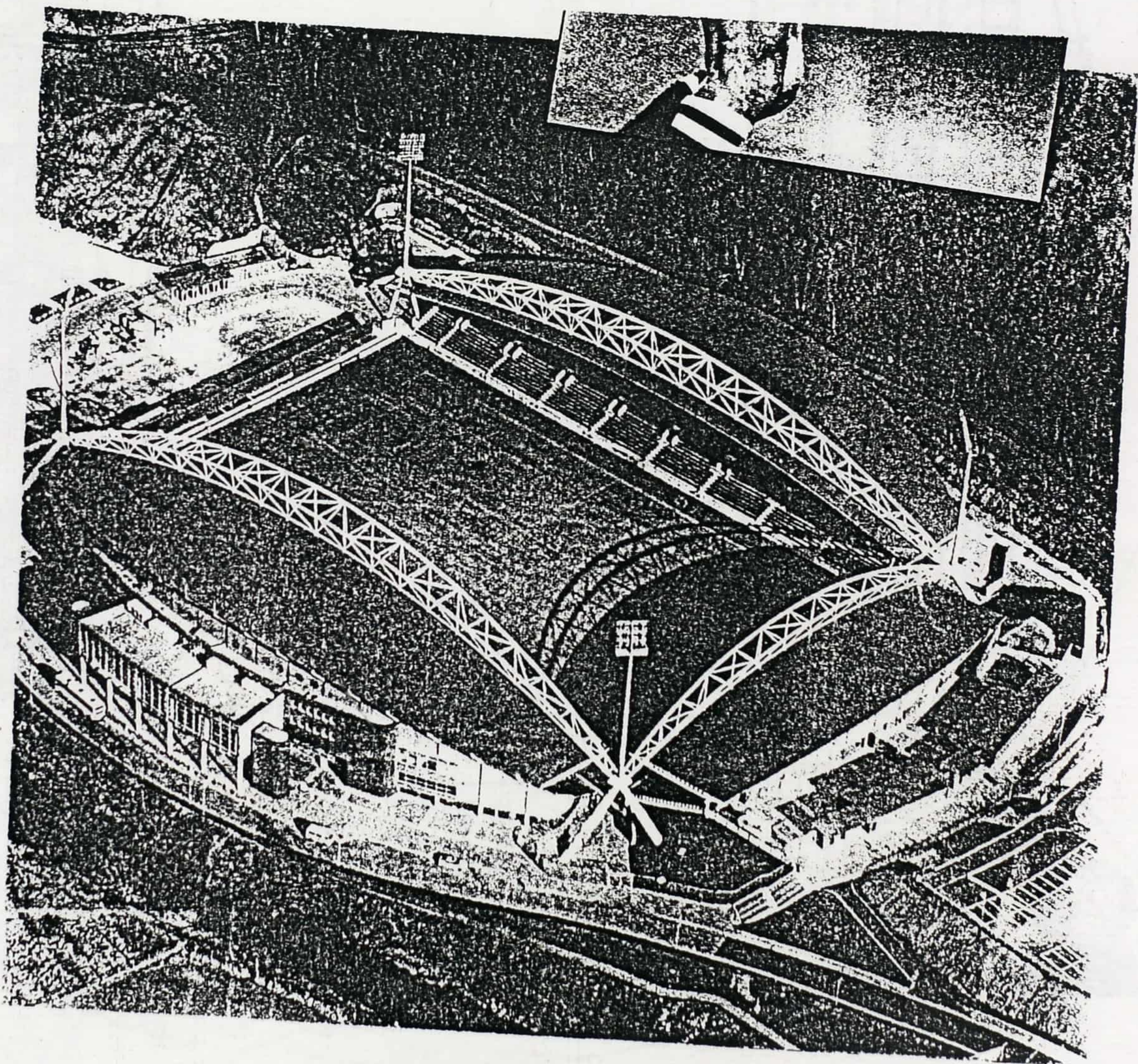
The three stands covered by the figures will vary in their form of construction and standard finish.

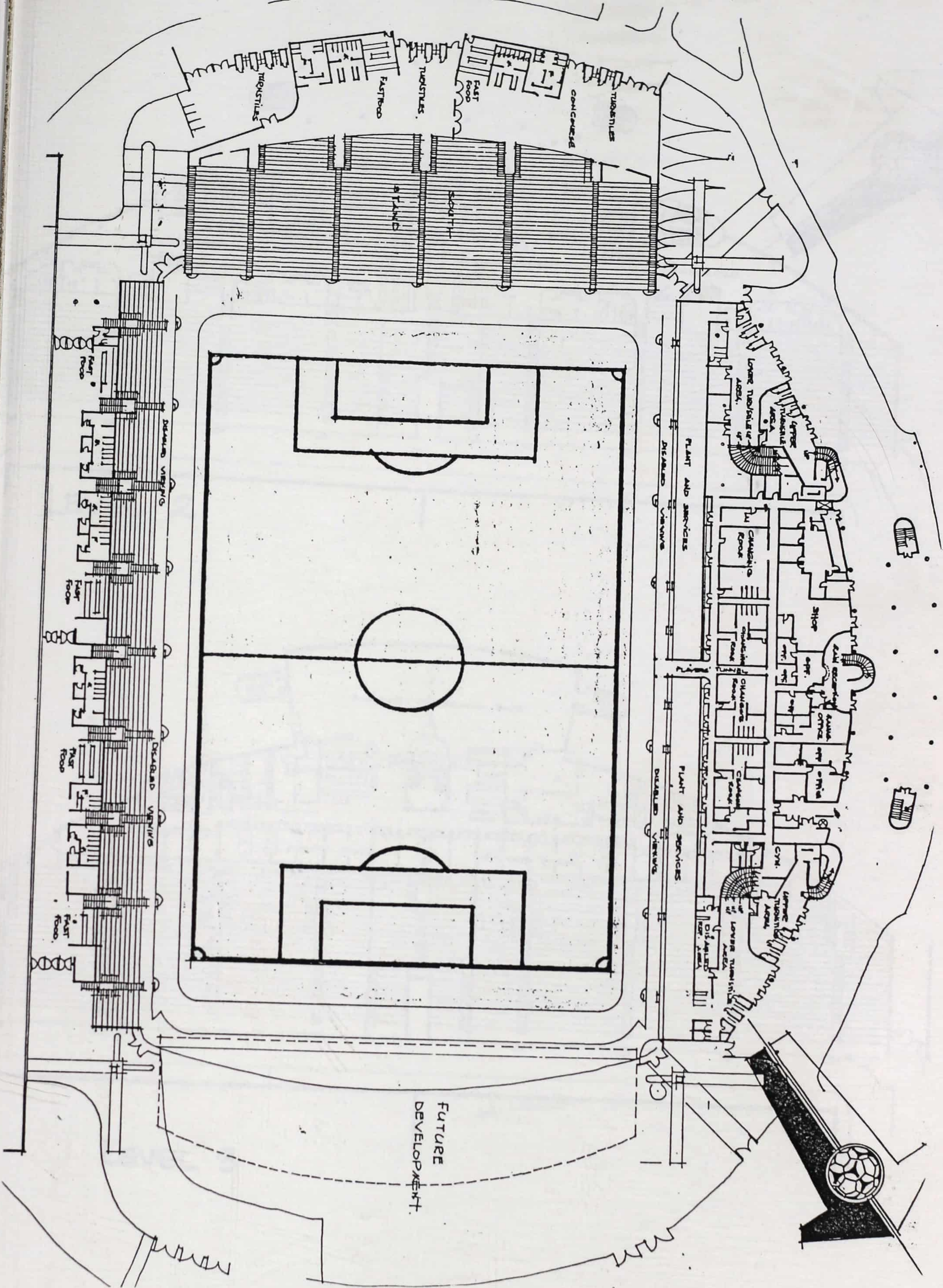
- (I) Grand stand - £880 per seat

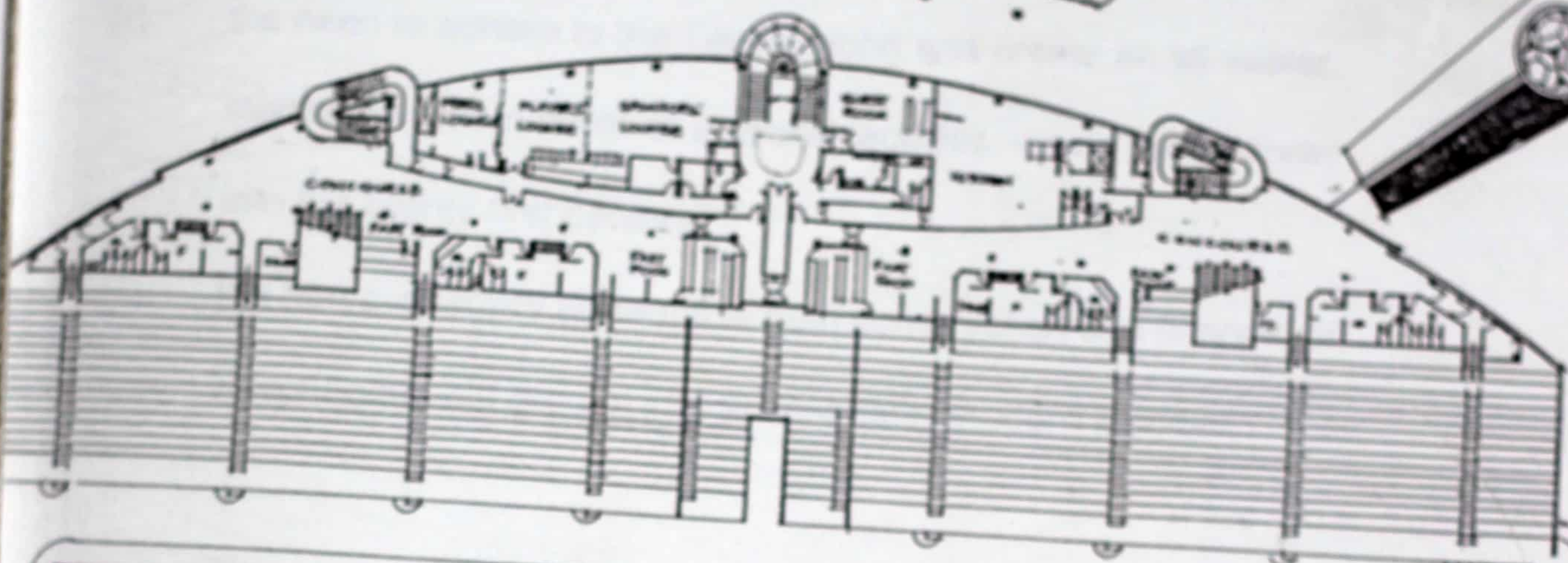
- (ii) East stand - £400 " "
- (iii) North/South stands £375 " "

These cost per seat figures will serve as a guide to the cost of the stadium of the proposed complex to be put up at Kwamo.

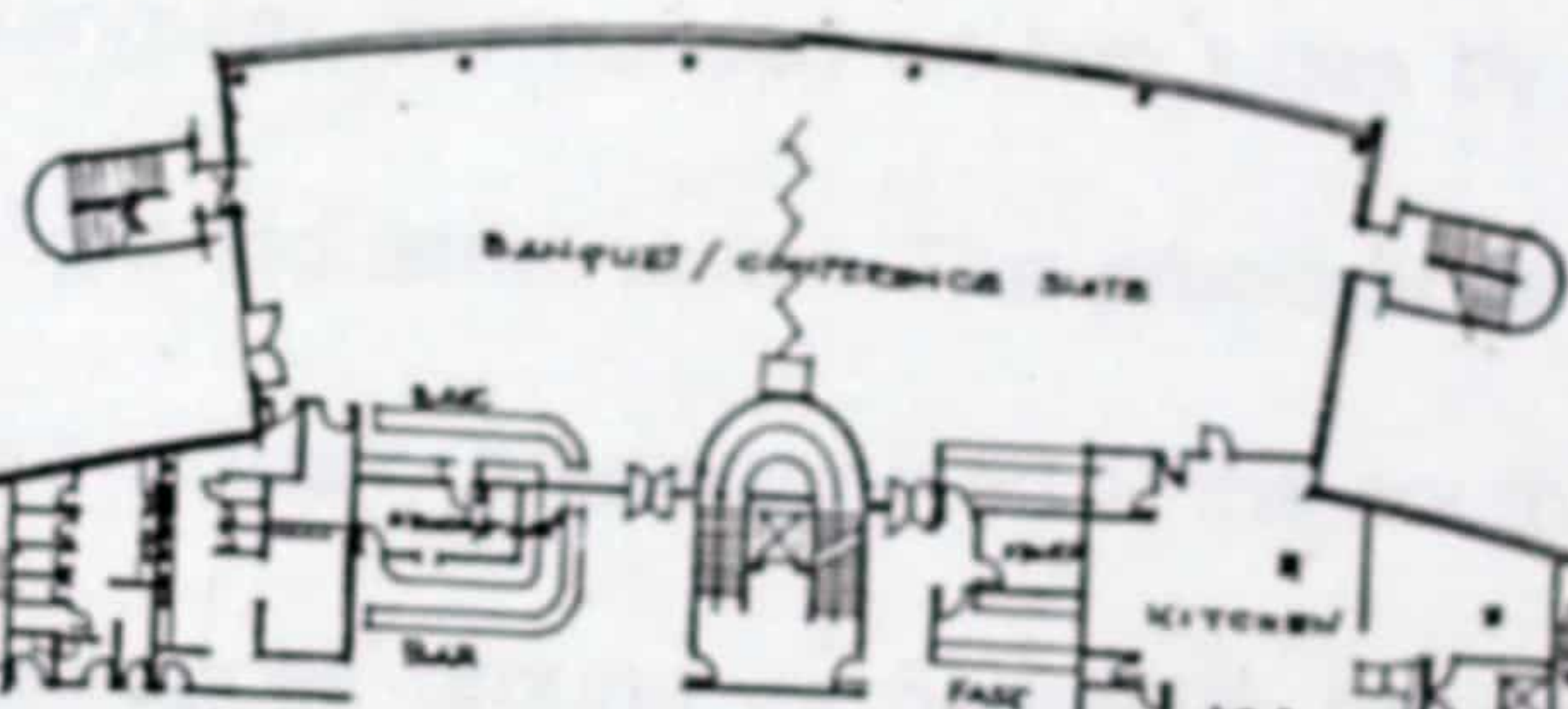
With a total cost of about 15 million pounds the frame formed the highest percentage of the cost with a 25.50 percent of the total cost followed by substructure and drainage.







LEVEL 2



LEVEL 3

3.3 MILLWALL FOOTBALL STADIUM

The club decided to put up this stadium based on two criteria:

- (i) the need to adhere to the Taylor report and create an all-seater stadium which, in terms of size and facilities, would take Millwall into the twenty-first century,
- (ii) the non availability (in terms of both construction and finance) of adapting the old ground into an all-seater modern stadium.

The project outline brief was to provide an economical 20,000-capacity all-seater football stadium which retained the close and compact atmosphere of the Den and would be available by the 1993 close-season deadline.

The site is triangular, surrounded on two sides by elevated railway lines and on the third by light industrial units. The proportions of the site were such that the positions were virtually predetermined at the southeast end of the site to ensure adequate clearances around its perimeter for emergency egress and access.

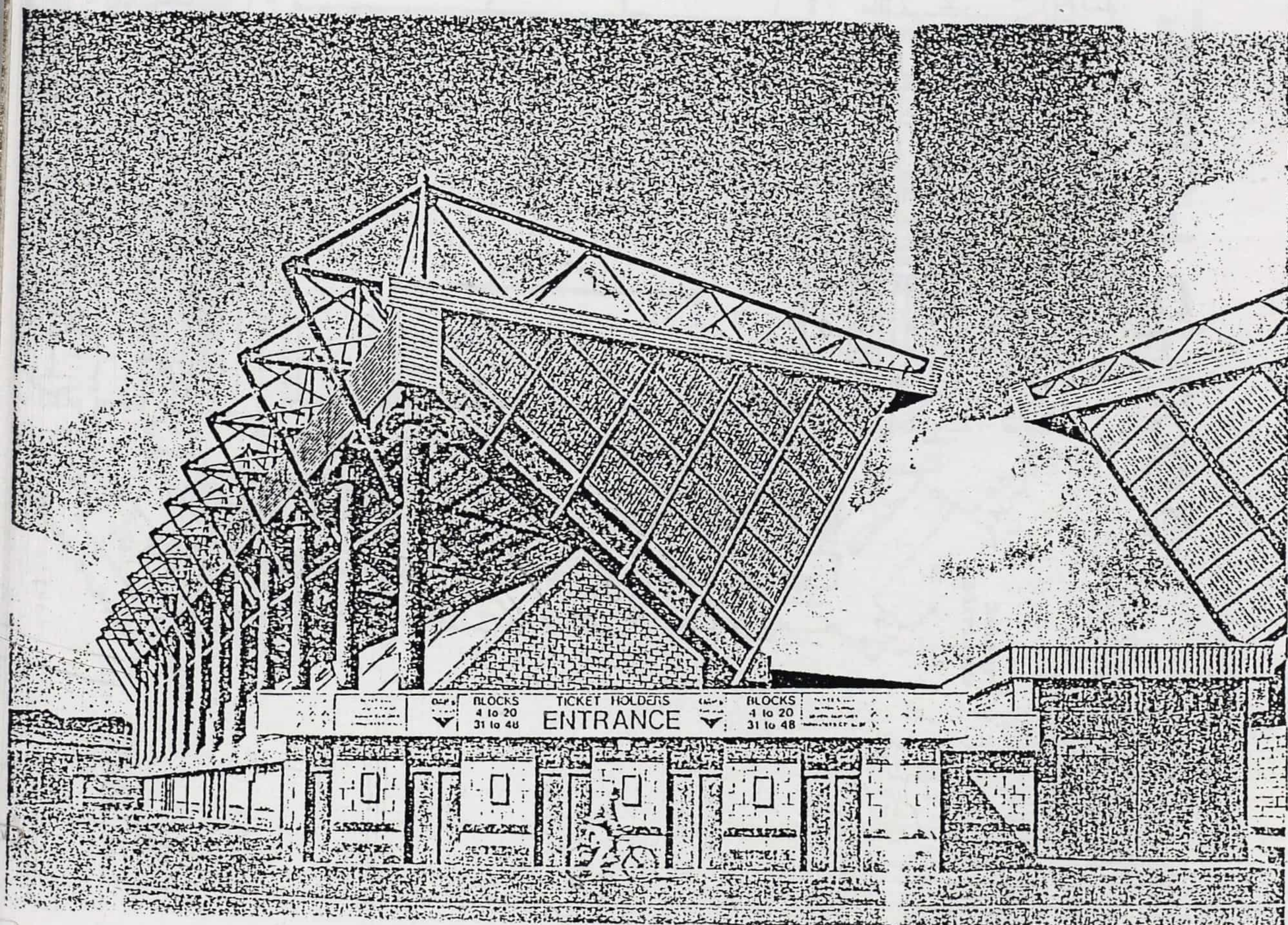
3.3.1 The Design

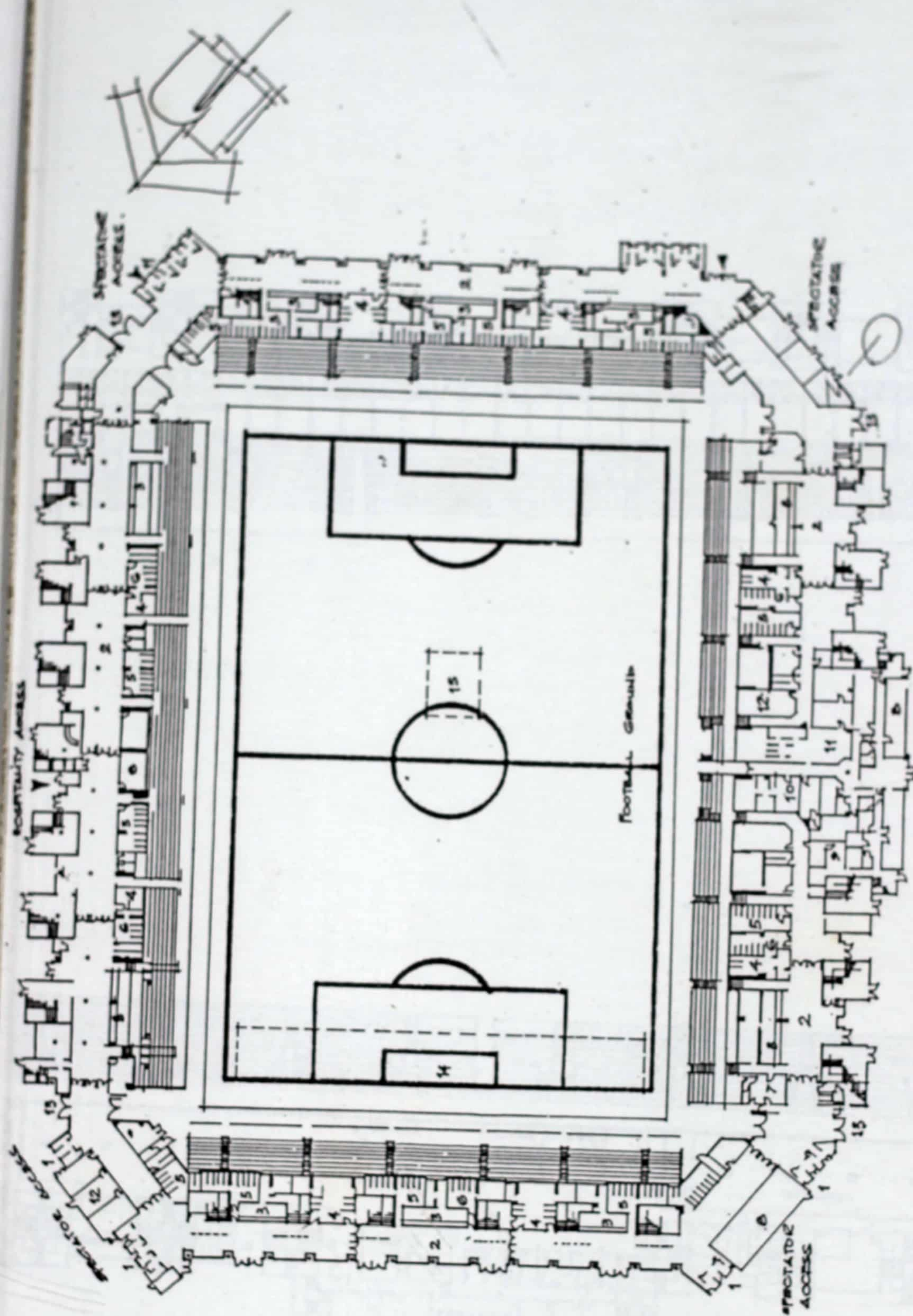
The stadium consists of four individual stands. The north and south stands are identical single-concourse stands, the west stand houses the club accommodation block and main hospitality suites and the east contains 32 executive boxes. Both west and east stands have concourses at two levels.

To maintain spectator proximity to the pitch, the design is such that the lower seating decks are quite shallow (14 seating rows maximum). As a result, the upper tiers are kept close to the pitch.

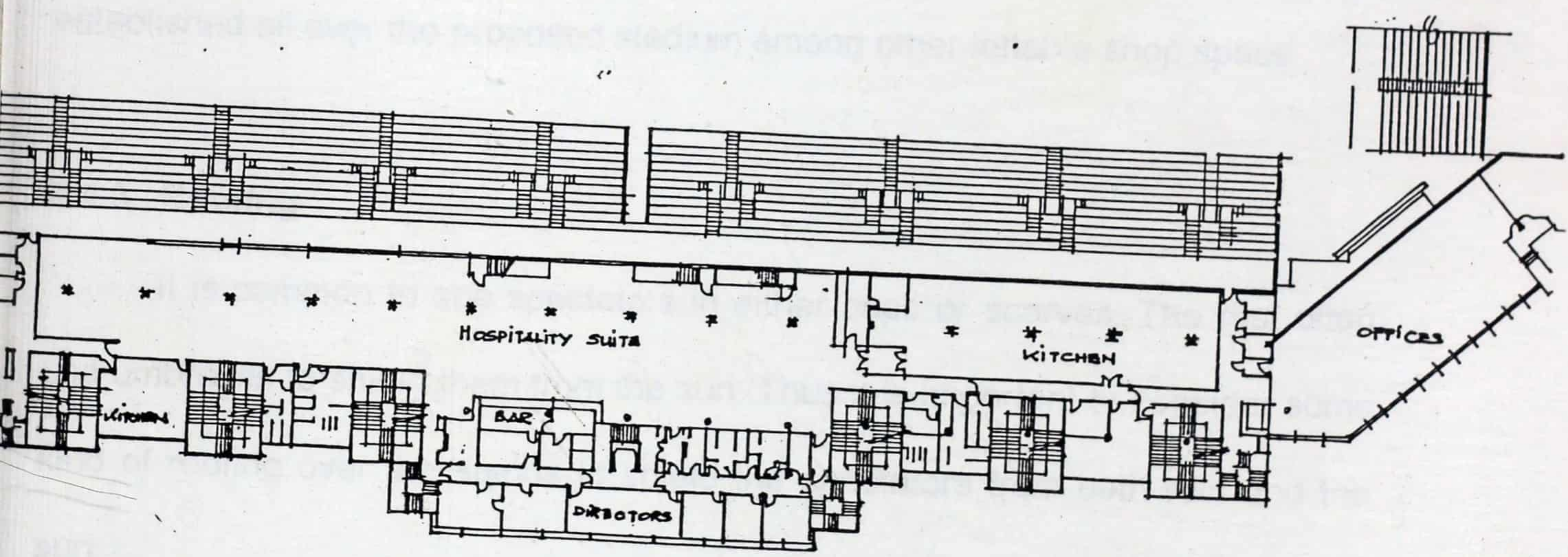
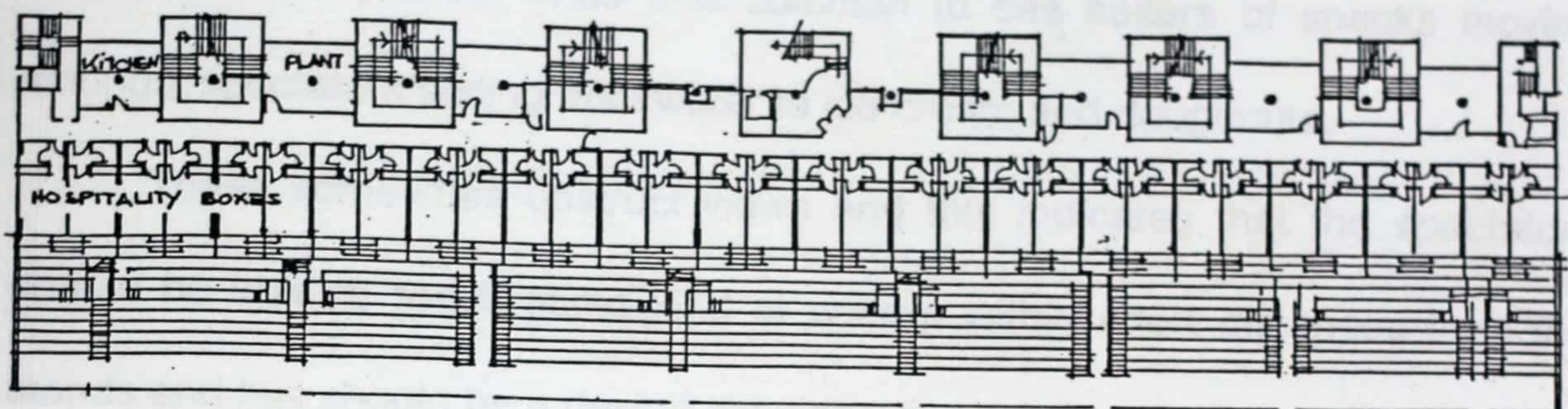
With safety of paramount importance in stadium design the escape routes carefully to be as short and direct as possible. All seating are designed to allow a five-minute escape time. The concourses themselves are segmented into 30m maximum lengths and are planned so that should an accident occur in any one concourse compartment, this can immediately be shut down without compromising the escape times.

Externally the stadium is dominated by the main circular structural columns and triangulated tie-bars which support the main cantilever roofs.





GROUND FLOOR PLAN (LEVEL 1).



3.4 KUMASI SPORTS STADIUM

Unlike some of the U.K. stadiums studied in this chapter there are no snack bars within the stadium apart from those on the peripheral walls. Due to the nature of ticket collection spectators and the distance spectators are not able to get to these places. Thus it is common to see sellers of snacks moving amongst spectators selling from water to ice-cream and doughnuts.

These sometimes obstruct views and this indicates that the spectators should be able to reach some kind of snacks within short distances from the stands and this should be a design consideration.

3.4.1 Souvenir Shops

It is common to see within the stands people selling souvenirs to spectators. Apart from the fact that this could be a way to raise funds for the club this also goes to reinforce the fact that there is a need for souvenir shops to be established all over the proposed stadium among other lettable shop space.

3.4.3 Roofing

It is common to see spectators in either caps or scarves. The rest often use umbrellas to shield them from the sun. Thus it is important to consider some kind of roofing over the stands to shield the spectators from both rain and the sun.

3.4.4 Security

The safety of both referees and footballers has been on top of the agenda of the Ghana Football Association ever since the professional league was established. Spectators often climb these inner fences to get to their "victims" and this should be an important design consideration.

3.4.5 Spectators

It was observed that spectators always moved to the higher levels of tiers whenever they got to the stands. Tickets towards the centre area or for that matter seats lateral to the pitch cost more than the rest of the stands. Thus it can be established that

- (i) spectators would want to have more elevated seats than the shallow seats. Thus these seats should therefore attract higher tagging.
- (ii) more spectators would want to be closer to the centre line of the pitch and this should be a design consideration.

Match statistics indicates that more spectators attended matches involving the big names in Ghana such as Hearts and Goldfields's encounters. Furthermore, this gives an indication of maximum and minimum spectator attendance and this should be a basis of establishing the capacity of this stadium, though international encounters sometimes attract more than these numbers.

**Table 2 - Kotoko home encounters -
1995-96 league season**

Team	V.I.P	INNER WINGS	OUTER WINGS	CENTRE LINE	POPULAR STAND	TOTAL
G'fields	295	228	1173	4239	10689	16625
R.T.U	55	56	420	722	3074	4327
Olympics	255	288	1137	3339	11215	16234
Hearts	287	274	1158	4241	11004	16964
Dawu	76	109	424	1246	5223	7078
Okwawu	127	201	773	2648	7834	11583
Dwarfs	94	86	546	2533	6473	9732
Afiencya	41	38	304	694	2560	3637
GHAPOHA	58	64	395	807	2208	3532
B.A. Utd	85	141	620	1112	2904	4952
Cornerstones	198	209	782	3041	8001	12231

- Maximum seating capacity of Kumasi Sports Stadium = 65,000
- Maximum seating capacity of Accra Sports Stadium = 45,000
- Maximum seating capacity of Len Clay Stadium = 25,000

Projections

It is estimated that if a club stadium it put up the spectator attendance could increase by about 30 percent. Furthermore Kumasi Asante Kotoko seems to have a slightly stronger image in football in Ghana and Africa as a whole and draws more crowd. It will thus be reasonable that their stadium seats more spectators - but it should however seat less than that of the two national stadiums.

The proposed stadium should seat approximately 30,000 spectators.

3.4.6 Use and Abuse of Kumasi Sports Stadium

The photograph above is a typical scene during match breaks. Moslems often perform ablution and say prayers during the fifteen minute break. There are no drains in place to take care of the run-off water during the performance of this ritual.

The result is that water run down stands getting unsuspecting spectators' clothen wet. Thus is sometimes very messy since it is often accompanied with spitting.

This is an indication that a conscious effort should be made in the design to take care of Moslems who would use this facility.

3.5 ACCRA SPORTS STADIUM

3.5.1 Columns

Columns are centred such that they coincide with some main circulation routes. Columns at certain points also obstruct viewing - at least for two rows of the upper tier stands. This calls for a structural system which eliminates the use of columns within stands to support the roof.

3.5.2 Stands

Fans seating in relation to the commentary box is such that noise generation could muffle commentary which is absent on the side of television broadcast area.

3.5.3 Sight Lines

Seats immediately flanking commentary box have obstructed viewing due to the location of the facility. Spectators have to stand and stretch forward to look at near cornerkicks which are furthest from them.

3.5.4 Commentators' Access

Commentators risk going through crowd to the public announce box. There is a need to design alternate access for commentators. This could alternatively serve as an escape route for commentators in situations where fans besiege them.

4.1 GENERAL REQUIREMENTS

4.1.1 Projected Use

Among the first program criteria to be determined regarding multipurpose arenas is the list of projected users or events which are intended to be hosted by the arena. Many events require their own unique features and supporting facilities. These should be considered in the initial design conceptualization. In this regard the facility is mainly a football stadium and could be used as the venue of both local and international engagements of football associations.

CHAPTER FOUR

TECHNICAL STUDIES

There are three primary sets of requirements which the sports arena designer should clearly define and then keep in proper focus during the planning process. These are

- (I) General planning requirements
- (ii) Spectator requirements
- (iii) Operation/Management requirements

Though conflicts will develop at various points there should be a conscious effort to optimize design solutions.

4.1 GENERAL REQUIREMENTS

4.1.1 Projected Use

Among the first program criteria to be determined regarding multipurpose arenas is the list of projected uses or events which are intended to be booked into the arena. Many events require their own unique features and supporting facilities. These should be considered in the initial design conceptualization.

In this regard this facility is mainly a football stadium and could be used as the premise of both local and international engagements of football encounters.

Apart from that it could be a venue for musical concerts and boxing bouts. These would require similar treatment of sight lines as well as supporting refreshment facilities.

4.1.2 Seating Capacity

The seating capacity should be carefully evaluated prior to the start of the design. This is determined by

- (i) spectator attendance
- (ii) projected attendance after the project is completed
- (iii) market area
- (iv) professional franchise
- (v) sponsor owner
- (vi) budget
- (vii) viewing distance limitations

LIBRARY
UNIVERSITY OF SCIENCE AND TECHNOLOGY
KUMASI-GHANA

4.1.3 Plan Configurations

This should be one of the earliest decisions to be made in the planning process. The basic physical form of the arena seating plan should be decided thus the relative merits and demerits should be clear to the designer in relation to the various plan configurations. The various general form are:

(a) Straight Rows Ends and Side

The straight-row arena is the simplest and most economical of all possible seating configurations. There is also minimum waste of seating area due to the absence of wedge-shaped sections between aisles. The seating sections are of course rectangular between pairs of parallel aisles. The aisle spacing can be set based upon the desired seat width and the maximum seats allowed between aisles and it will remain constant for all rows.

However for larger arenas there are spectator viewing problems when activity/event being watched goes beyond the cone of vision of 60°. But this is no problem since football viewing normally follow where the football action goes on.

(b) Straight-Row and Curved-Row

This is the most commonly employed plan for arenas now in use. It maintains the economy and efficiency for a good portion of the seating parallel playing floor but takes the end seats around in a circular configuration from a radius point near each end of the floor. If the two radii are short enough the viewing problem in the straight rows ends and side is slightly eliminated.

Also the line perpendicular to the seat falls much nearer to the centre of activity for most events.

(c) Straight Rows and Sides with Diagonal Corners

This plan configuration, also quite common. It has all the advantages and disadvantages described in (a). Only those seats in the diagonal corners have relief from the lateral head movement problem inherent in the side seats. In terms of construction economy it is the least costly of any configuration with full-perimeter seating, lending itself to precasting or other methods of repetitive tread/riser fabrication.

(d) Circular Seating with Straight Rows at Side Lines

Beyond the size of a boxing ring this configuration brings unresolvable problems.

4.1.4 Seating and Sight Lines

On the average a spectator needs about 0.46 square meters. This allows a seat length of 0.5m and 0.45m for the width and allows 0.35m for movement in front of seats.

Seating is arranged such that the clearance above the head of one sitting in front of another is enough to enhance good viewing. This has resulted in two floor slope systems

(I) Constant Rise Floor Slopes

Arrival point of sight is determined by intersection of sightlines from last or highest row at focal plane.

(ii) Iscidomal Floor Slopes

Exponential shape results from generation of sight lines from a single focal point or arrival point of sight.

Iscidomal floor slopes make more efficient use of a given total rise.

4.1.5 VORMITORIES

Type 1

Stairs leading to the upper seating flanks either side of the vormitory. Since it runs parallel to the longer side of it makes it economical and it is good for separation of seating.

But it usually brings a lot of congestions and it is not adviseable for free flowing stands and care should however be taken to work at sight lines.

Type 2

Similar to type 1 but stairs run parallel to stand before flanking the vormitories. Stairs are entered before the cross over aisle. Thus minimizes crowd conjection.

However, movement pattern is complex and one would have to be using facility to get used to it.

Type 3

This detail may be used either as part of a full vomitory or as a stair access only to upper seating tiers. Like the type 2 stairs are entered before the cross-over aisle thus minimizes congestion.

Serious congestion is created on the upper tiers cross-over aisle as stairs empty into traffic path between cross over and vomitory.

4.2 SPECTATOR REQUIREMENTS

4.2.1 Concessions

Concession stands for food, beverages and souvenirs shops should be provided at convenient locations in the promenade areas. Counter areas should be as long as practical and if possible recessed in alcoves to prevent backup of patrons into circulation spaces. Storage space should be provided immediately adjacent to each counter area so that food items can be restocked to the sales area during a game without a trip to the central supply point.

4.2.2 Toilet Rooms

Sets of men and women's rest rooms should be provided at one or more locations on each public level ie. the concourse. Their layout must provide for peak loads during 15 to 20 minute break or intermission periods when hundreds of patrons will pass through each room. It is ideal if a one-way traffic flow can be developed with an in and out doorway separated by some distance. Within, the

space should be divided with water closets and urinals located near the entrance and the lavatories in a space near the exit.

Also it is desirable if possible to design each toilet room so that half of the space can be closed off by some means during events of small attendance. This will save a good deal of operating cost for cleaning. Plumbing line capacity should be studied carefully for break use and generous pipe spaces with good access provided.

4.2.3 Graphics

A good graphics and sign control programme is important not only for an attractive appearance, but for controlling and expediting crowd movement. Sign controls should be centrally controlled if possible. Signing can help establish a clear pattern of movement which can easily be understood by the patrons. Signs for rest rooms concessions, telephones etc. should be of good size, clear and consistent in style.

4.2.4 Scoreboard

There are two basic types of scoreboards:

- (a) the centre-hung 4-sided type
- (b) the wall-mounted single faced type

Very often the stadium management will arrange for advertising display to be incorporated into the scoreboard design as a revenue-producing device.

4.3 OPERATING REQUIREMENTS

4.3.1 Administrative Offices

Areas for the Estate Manager, accounting, personnel, booking, publicity and engineer are generally provided within the building. In addition, office space may be required for the resident team.

Also the owner of the arena, if it is a private venture will require conference/meeting rooms suitable for entertaining dignitaries. Food may be catered to this area from a central kitchen - which should be within easy access.

4.3.2 Ticketing Facilities

This area will vary depending upon the intended scope of events to be booked. However in most situations, tickets booths will be required in the lobby area or an outer-lobby.

Also required will be a money room with vault, group sales office, ticket managers office and a work area for storing event posters and making up ticket pricing boards.

4.3.4 Storage

Large bulk storage areas will be needed for a variety of uses. The temporary seating setups for the arena floor will require space to store both chairs and riser platforms. Space for storing mowers, sprinkler systems, flag posts, etc. must be provided. All of these should be so located relative to the arena floor as to minimize time and cost for the setting up of each event.

4.3.5 Locker and Dressing Rooms

A pair of rooms for visiting and home teams are required. The dressing or changing rooms should include shower cubicles and toilets as well as lockers for storage of clothes taken off to allow players to wear jerseys. These two rooms can be located adjacent to each other.

All these spaces should be located at arena floor level with convenient vomitory access to the playing floor. Public exiting traffic should be routed away from the dressing area corridors.

4.3.6 Press Facilities

Many arenas which have been built with elaborate press booths high above the floor have discovered them unused. Reporters would rather prefer to sit at courtside near the action. Radio and T.V. announcers and commentators, however, usually prefer to sit high for an overall view of the action.

4.3.7 Television Broadcast

Facilities appropriate for the telecasting of events are an important ingredient of all new arenas. Consensus as to number, location, height, and angle of camera positions is hard to find, especially if several networks or local stations are likely to be working out of the building at various times. However, an attempt should be made during the design or planning stage to meet with those broadcasting groups most likely to use the building and build in as much as possible such items as camera platforms and cable runs.

Space will also be needed for the station's remote truck (out of broadcast van) or a permanent T.V. monitor room.

4.3.8 Structural System and Some Related Situational Studies

(I) Roofing

The concept of various roofing systems is to roof the stands without having columns obstructing sight lines of views from them. Three systems are studied here.

Type 1 - Roof and Beam type

In this system two pylons act as columns for a steel truss joins these two columns acting as a beam. It is the most economical roofing system but this poses a great danger during heavily attended matches when crowd control is very difficult.

It is known that several spectators have fallen off the pylons of the flood lights at the Kumasi Sports Stadium and died during heavily attended matches. Thus a system with pylons touching or standing close to the stands could pose problems when in use.

Type 2 - 'Banana' Truss System

This system needs a lot of technical expertise meaning it will be more expensive. It is such that it will encourage spectators climbing the 'banana' truss during heavily attended matches. This also means that this system should also be discouraged in an area where spectator control is difficult.

Type 3 - Cantilevered Truss System

Here the main roofing system is supported by a truss which is in turn supported by massive stanchions. This system is the most economical and the safest to use considering the behaviour of spectators.

(ii) Stands

There are two main structural systems in the construction of stands. They are:

- (1) In-situ concrete stands
- (2) In-situ beams for stands and pre-stressed slabs

The second is a better option when it comes to the construction of iscidomal floor systems of raking for stands. The various riser levels can be properly set to achieve proper sight lines.

CHAPTER FIVE

5.1 SITE SELECTION

As stated in earlier chapters Kumasi Asante Kotoko FC has a link with the paramouncy at Manhyia. With the Asantehene as the patron of the club, they found it necessary to allot a site which is quite close to the Manhyia Palace for the putting up of this project. This site which is now known as Kotoko Park is about 800 meters south west of the palace.

The site with a total area of about 2.2 hectares was given to the club by Otumfuo Opoku Ware and it is presently being used as the league centre for the Milo Colts League.

It must be mentioned here that though the site is ungrassed and has no properly designed facilities it sometimes serves as training grounds.

5.2 INADEQUACY OF THE KOTOKO PARK

A standard football pitch of size 125m x 105m without stands gives a total area of 1.4 hectares. With stands to take about 15000 spectators when summed up gives about 2.4 hectares.

Taking orientation of football pitch stands, parking, club facilities and residential accommodation for footballers into consideration this site will be woefully inadequate for the brief given by client.

There are secondary problems such as accessibility, traffic and other related problems that should also be looked at. This inadequacy led the club to acquire another site at Kwamo, about 15 minutes drive from Kumasi.

5.3 SITE ANALYSIS

The site acquired by the club is about 11 kilometres east of Kumasi, the old den of the club. The location is such that it will not discourage the faithful supporters from coming to watch the club. Looking at land values and the size of land needed it was cheaper to acquire land out of Kumasi.

Total area of site is about 14 hectares and it is about 600 meters from the Accra-Kumasi trunk road which is to the south of it.

The shape of site is near rectangle with the longer sides at North-South orientation. It is approximately 320m x 400m ie. 12.8 hectares.

5.3.1 Topography

The site slopes downwards from the north east towards southwest into a valley at the southwest of it. A section through the shorter length reveals that a headroom of about 3.0 metres is gained by moving from the south to the north. A perpendicular section to the first section gives a relatively flat land.

5.3.2 Services

There is a high tension line along the main road. Since the site is now being developed no other service lines are in place.

5.3.3 Climate and Landuse

Site falls within typical rainforest characteristics in terms of rainfall, relative humidity and vegetation. Maximum rainfall is in May/June and September/October.

The whole zone is presently mainly farmlands for small scale farming. But the proposed landuse includes civic/residential areas to the west, light industrial areas to the east and residential and educational areas to the south.

5.4 DESIGN BRIEF

From the client's brief the design brief consist mainly of the footballers' hostel and the football stadium.

5.4.1 Hostel (Footballers' hostel)

1. Footballers' rooms - two sharing a room - 16 No.
2. Footballers' bathrooms - four sharing a bathroom - 8 No.
3. Coaches'/doctors rooms - each to a room - 8 No.
4. Coaches'/doctors bathrooms - two to a bathroom - 4 No.
5. Janitors - Clinic

6. Doctors' consulting room
7. Recovery Ward
8. Clinic's Waiting area
9. Bathroom

There should not be any change in level on the floor to allow easy movement of wheel chair bound patients within the clinic.

Auxiliary Facilities

10. T.V./lecture halls
11. Footballers' common room
12. General storage area

Service Wing

13. Dining Hall
14. Preparation Kitchen
15. Chef's office
16. Sorting/Preparation Area
17. Cold store
18. Dry store
19. Laundry
20. Changing rooms (male and female)

Training Wing

- 21. Swimming Pool Area
- 22. Games hall and store
- 23. Gymnasium
- 24. Changing/locker rooms (male and female) estate office
- 25. Reception hall/lounge
- 26. Offices
- 27. Toilets/Urinals

Security Wing

- 28. Toll gate
- 29. Chief security officer's office
- 30. General office
- 31. Staff toilets/urinals
- 32. Change office
- 33. Detention room
- 34. Detention room's toilet

Guest Wing

- 35. Footballers' rooms - 16 No.
- 36. Coaches' and officials' rooms - 4 No.
- 37. Janitor
- 38. Lecture/T.V. Theatre
- 39. Footballers common room

40. Dining hall

41. Kitchenette

5.4.2 Stadium

Club Offices

42. Reception Hall

43. Toilets and urinals

44. Vault

45. Plantroom

46. Engineers office

47. Lounge

48. Banquet hall

49. Open office

50. Secretariat

51. Meeting room

52. Club Director's office

53. Footballers' lounge

54. First aid room

55. Changing rooms (Home and away clubs)

56. control room for broadcasting

57. Film store

58. Security's T.V. monitor room

59. Executive lounge and toilets and urinals

60. Commentary box

Public facilities

61. Turnstiles area - 24 No.

62. Disabled bars - 6 No.

63. Disabled toilets - 6 No.

64. Male toilets and urinals - 12 No.

65. Female toilets - 12 No.

66. Bar/Fast-food areas - 20 No.

67. Shops + WC + Storage - 24 No.

Maintenance Department

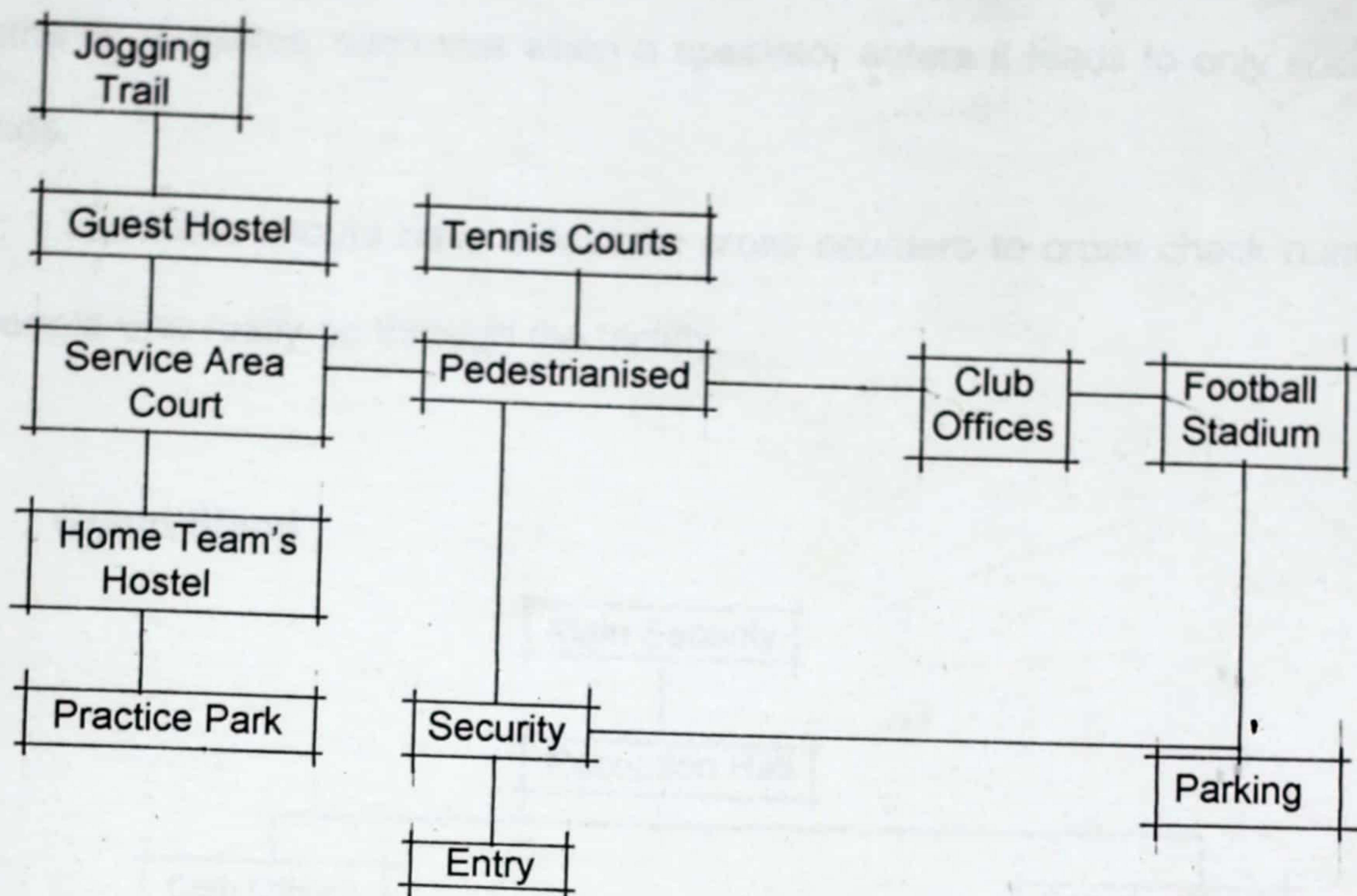
68. Maintenance Workshop

69. Offices

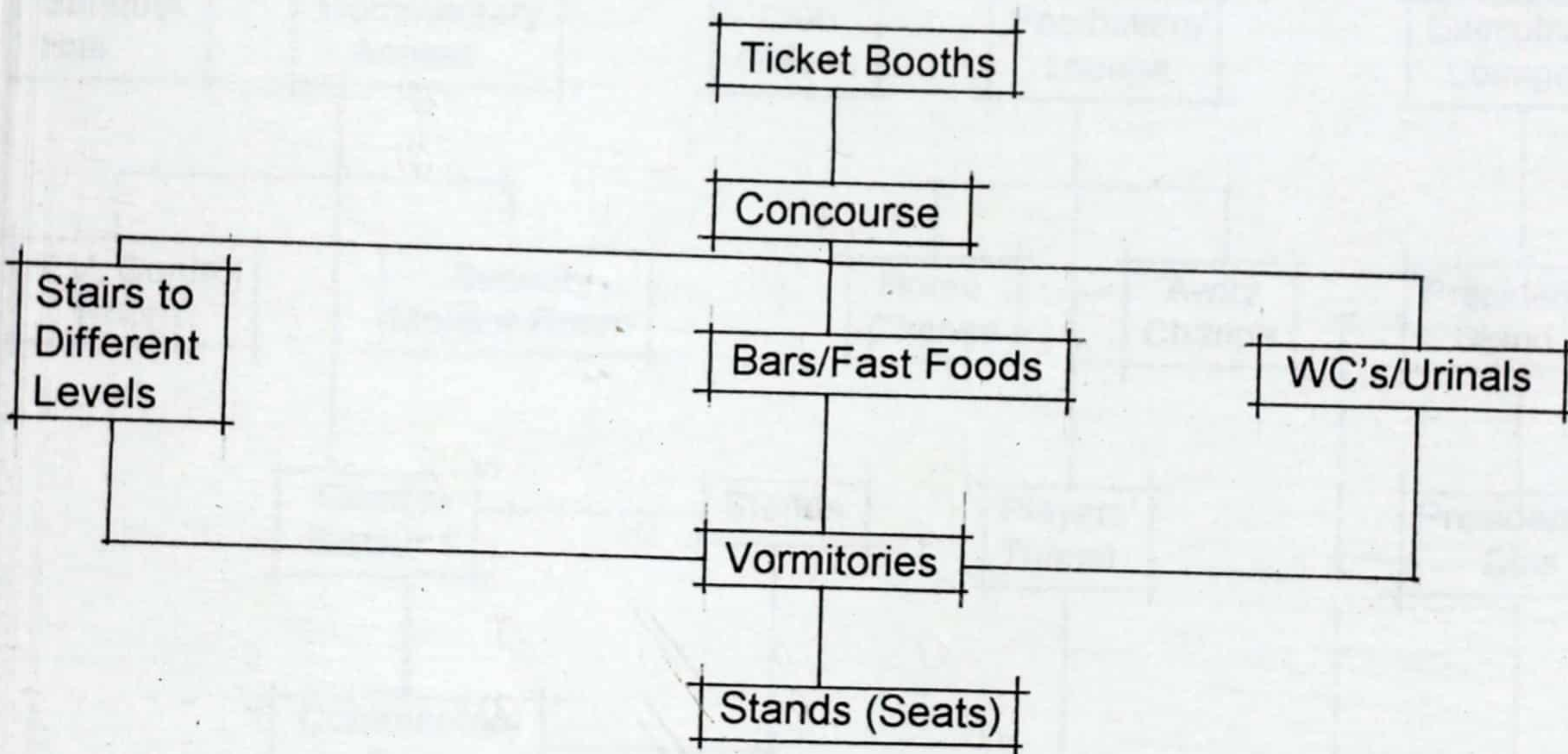
70. General Store

5.5 FUNCTIONAL RELATIONSHIPS

1. General Layout



2. Pedestrian/Public Movement

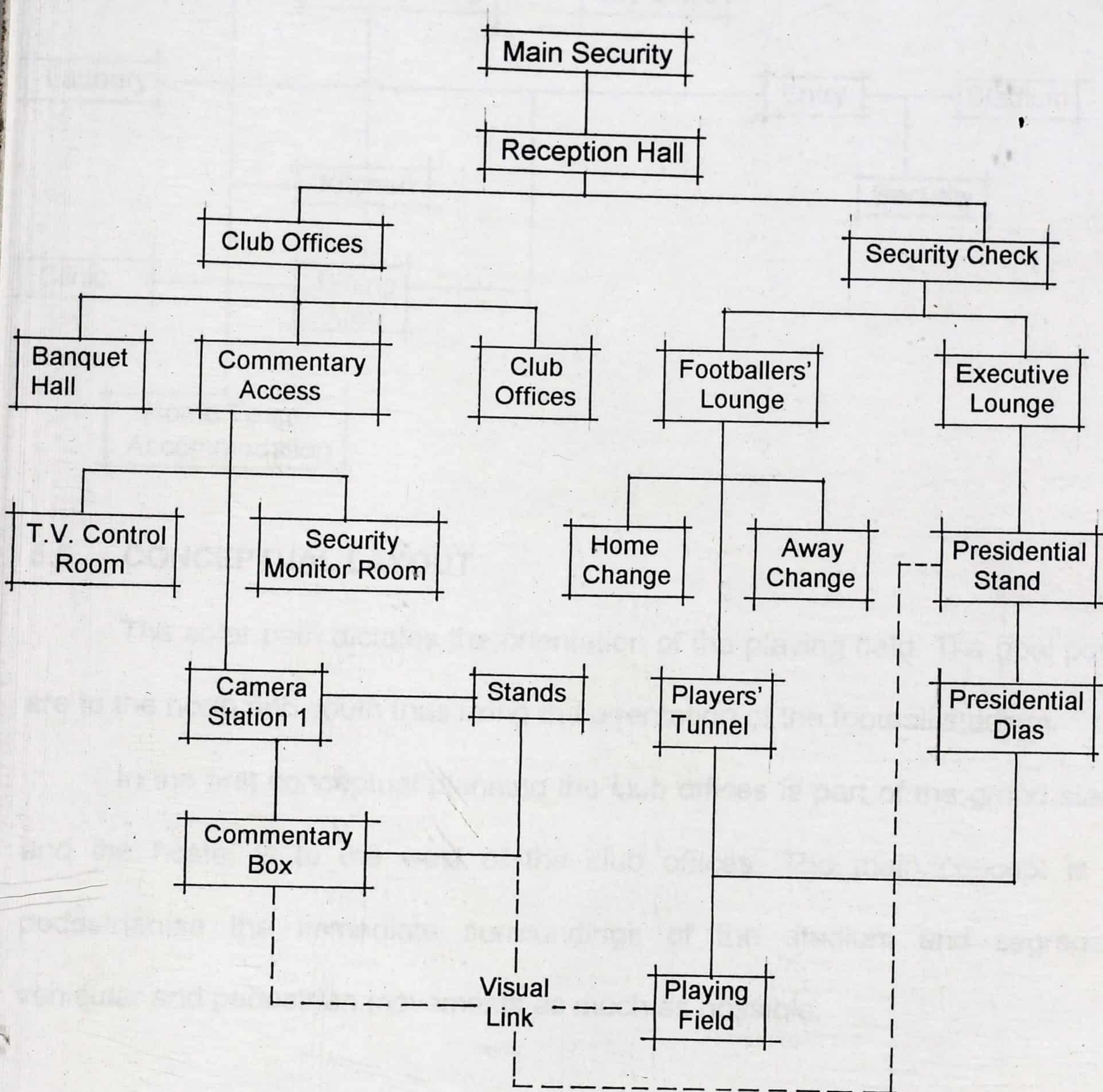


Design Consideration

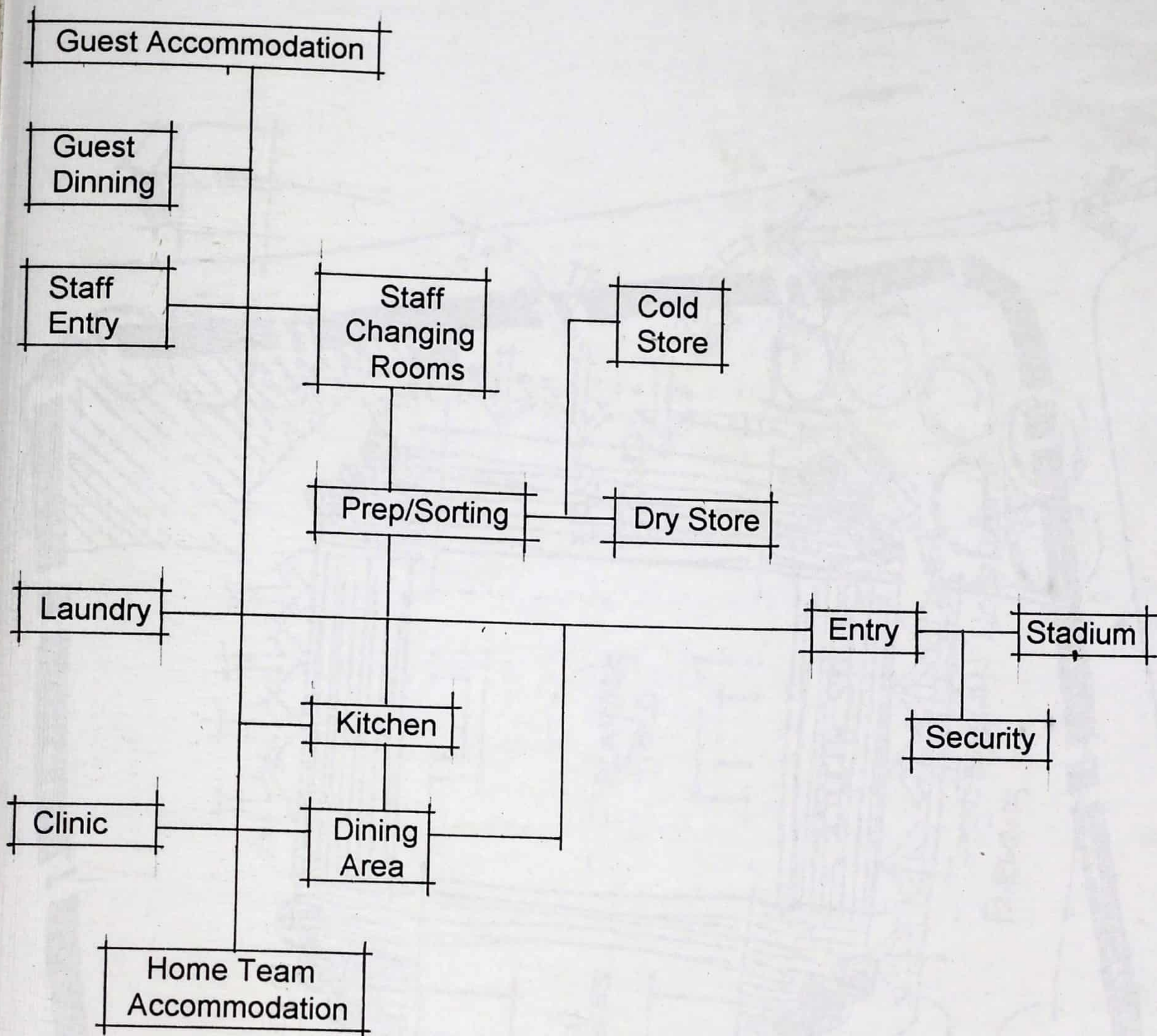
Separation to different seating categories should be done at the entry booths ie. turnstiles, such that when a spectator enters it leads to only specific stands.

Turnstiles should have electronic cross counters to cross check number of people who really go through the facility.

3. Grand Stand



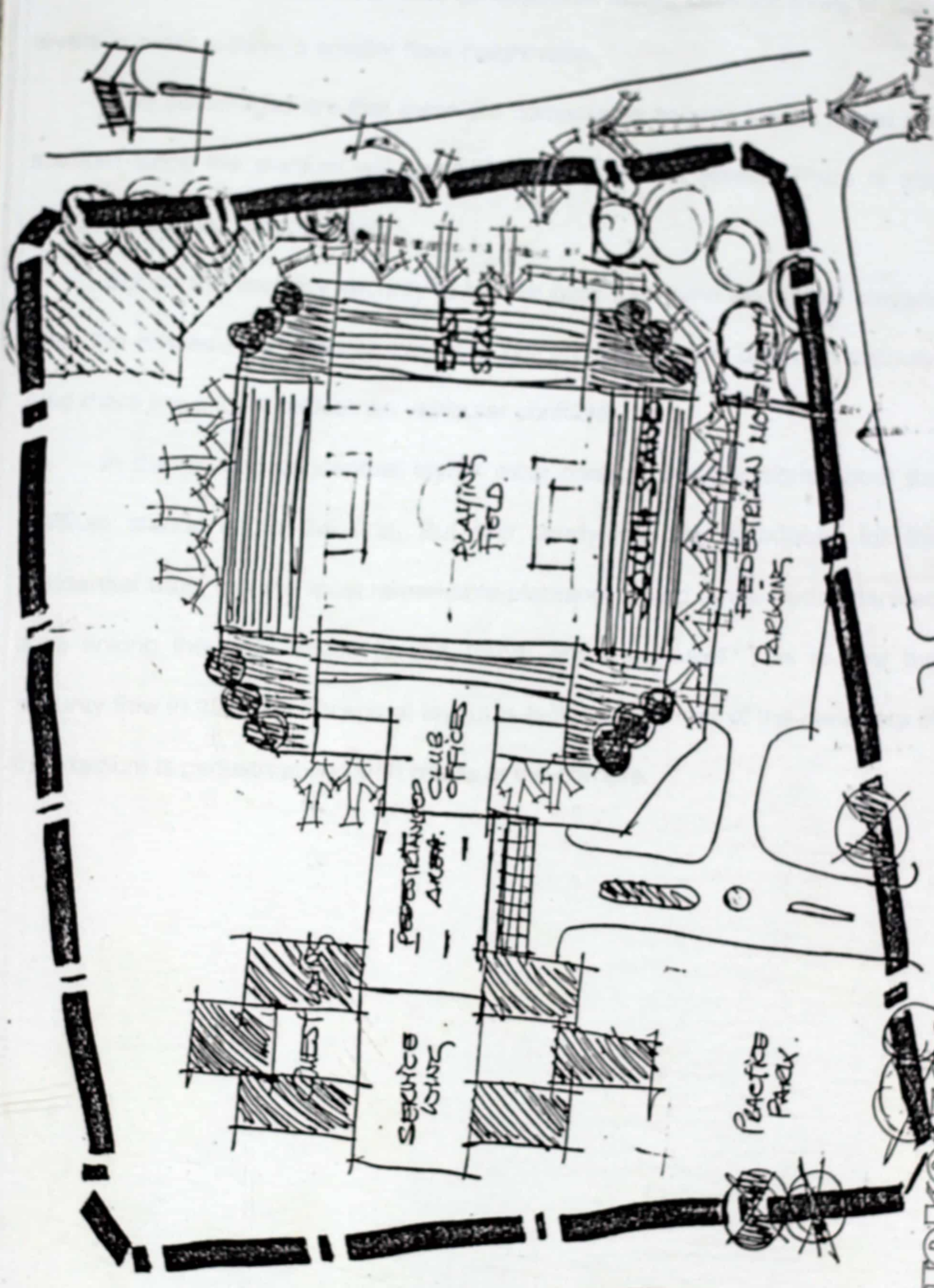
4. Service Wing



5.6 CONCEPTUAL LAYOUT

The solar path dictates the orientation of the playing field. The goal posts are to the north and south thus fixing the orientation of the football stadium.

In the first conceptual planning the club offices is part of the grand stand and the hostel is to the west of the club offices. The main concept is to pedestrianise the immediate surroundings of the stadium and segregate vehicular and pedestrian movements as much as possible.



KOTOHKO FOOTBALL COMPLEX - KWAMOO

Residential facilities of the hostel are east west with the auxiliary facilities over-looking the practice field. This conceptional layout calls for three or more levels in order to have a smaller floor-height ratio.

The advantages are that there are comparable heights for the hostel and stadium since the stadium will be in the region of four levels. There is also adequate parking for spectators.

But on the contrary security is low for both the home and guest players. After the Kotoko-Asec Mimosa riots it is not prudent to play down on security. Also there are a lot of pedestrian vehicular conflicts.

In the second conceptual layout most design considerations about the stadium stands as in the first. But two courtyards are introduced for the residential wing. But the most remarkable planning regard is the pedestrianised area linking the club offices (grand stand) and the hostel. This is how the security flow in the first conceptual layout is tackled. The rest of the periphery of the stadium is pedestrianised with shops at the corners.

CHAPTER SIX

6.1 DESIGN CONCEPT

The concept for a design for this football club complex is not too distant from its name. The insignia of this club was adopted from that of the Asante Kingdom's. The insignia of this traditional set-up is the porcupine and this is the concept of the design.

6.2 DESIGN PHILOSOPHY

The porcupine is a creature which has spear-like spokes almost all over its body. On provocation it has the ability to shoot these spokes and it can still grow more of it. It is out of this that the club derives its slogan "Kum apem a apem beba", meaning "You kill a thousand a thousand will come".

6.3 FORM DEVELOPMENT

1. In elevation the porcupine is abstracted to give the form below.
2. The arsenal of the porcupine brings spear-like weapons into mind.

The form of spears is mainly sharp ends and it gets broader towards the end.

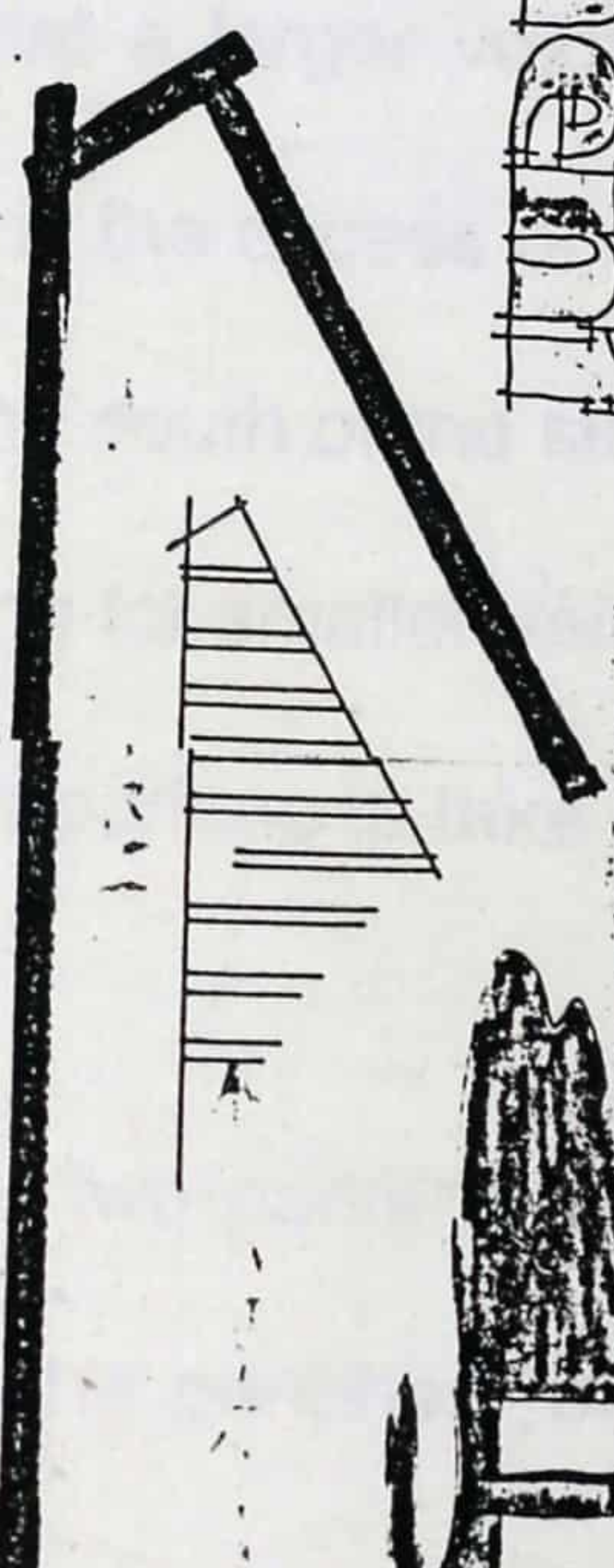
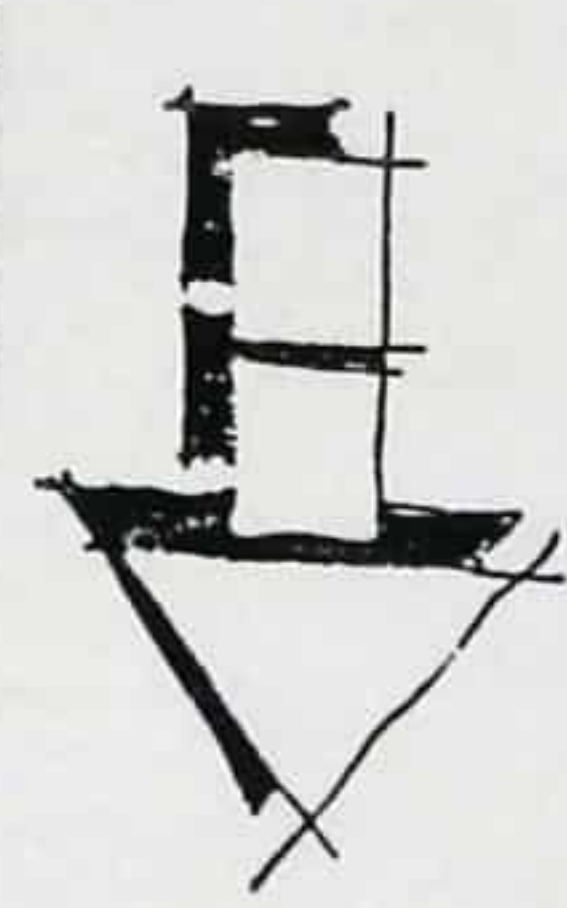
Thus planforms which would require broad roofs with sharp ends are used in the designs.

conceptual development

THE SUBJECT OF THE ASSYRIAN CIVILIZATION
THE DEVELOPMENT AND THE FORMS OF THE
BY THE OFFICE OF THE ARCHITECTS OF THE
ASSYRIAN CIVILIZATION THE OFFICE OF THE
ARCHITECTS OF THE ASSYRIAN CIVILIZATION
THE OFFICE OF THE ARCHITECTS OF THE
ASSYRIAN CIVILIZATION

NOV 20 1977

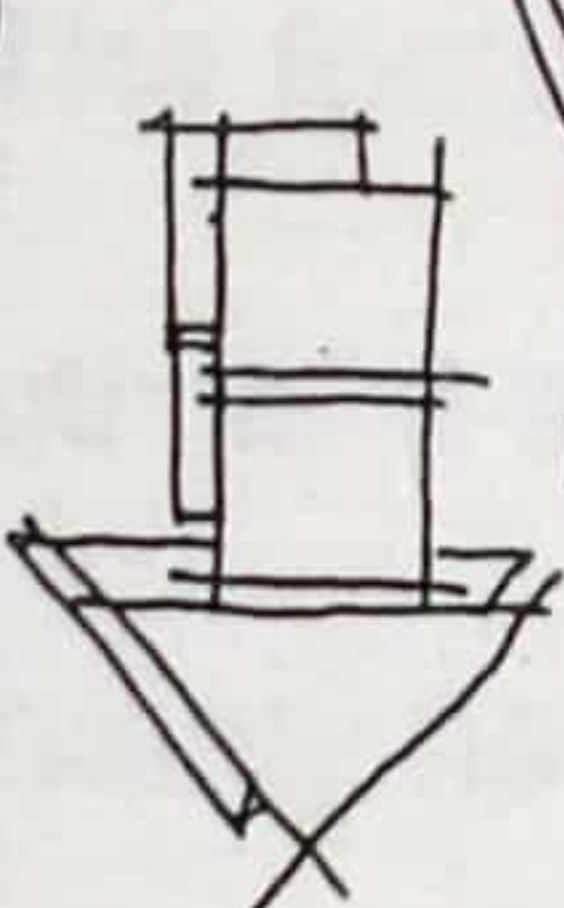
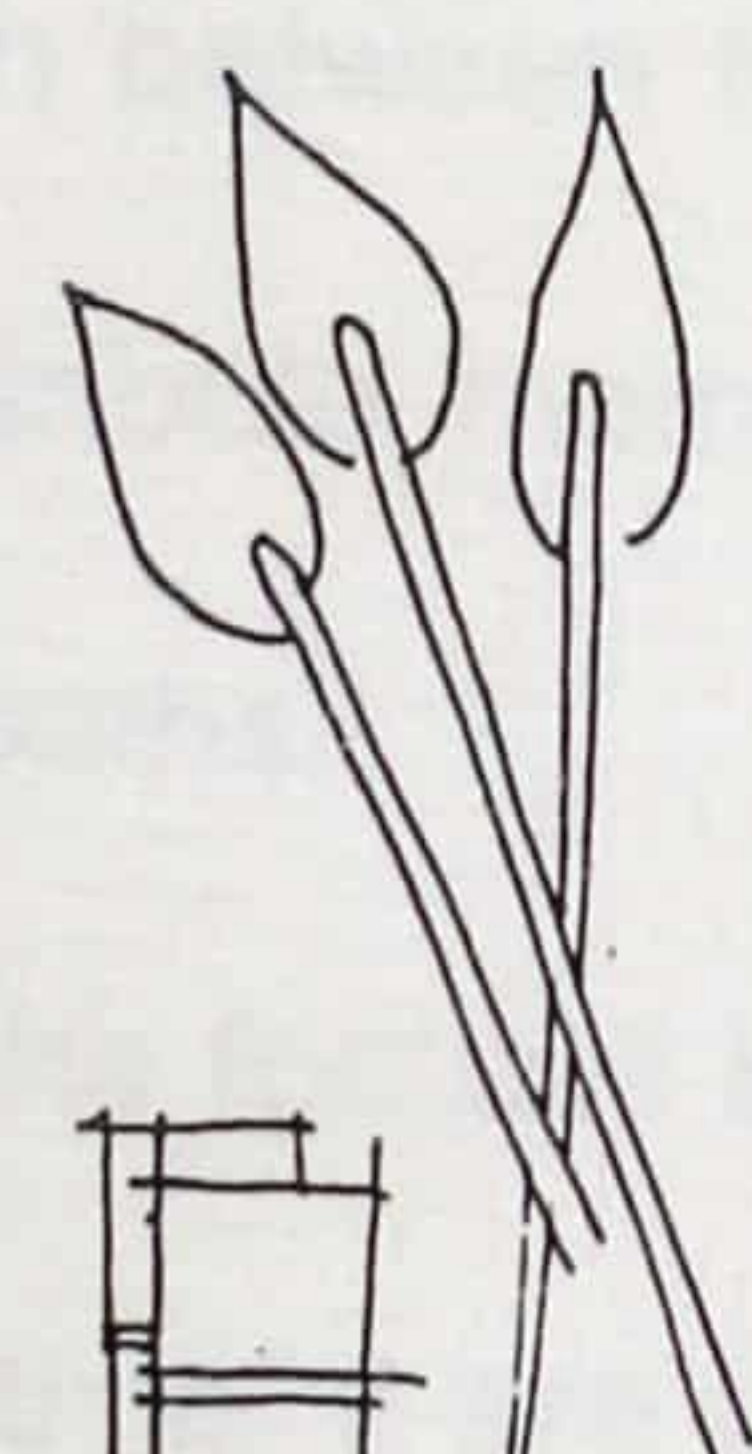
NOTION OF DEVELOPMENT



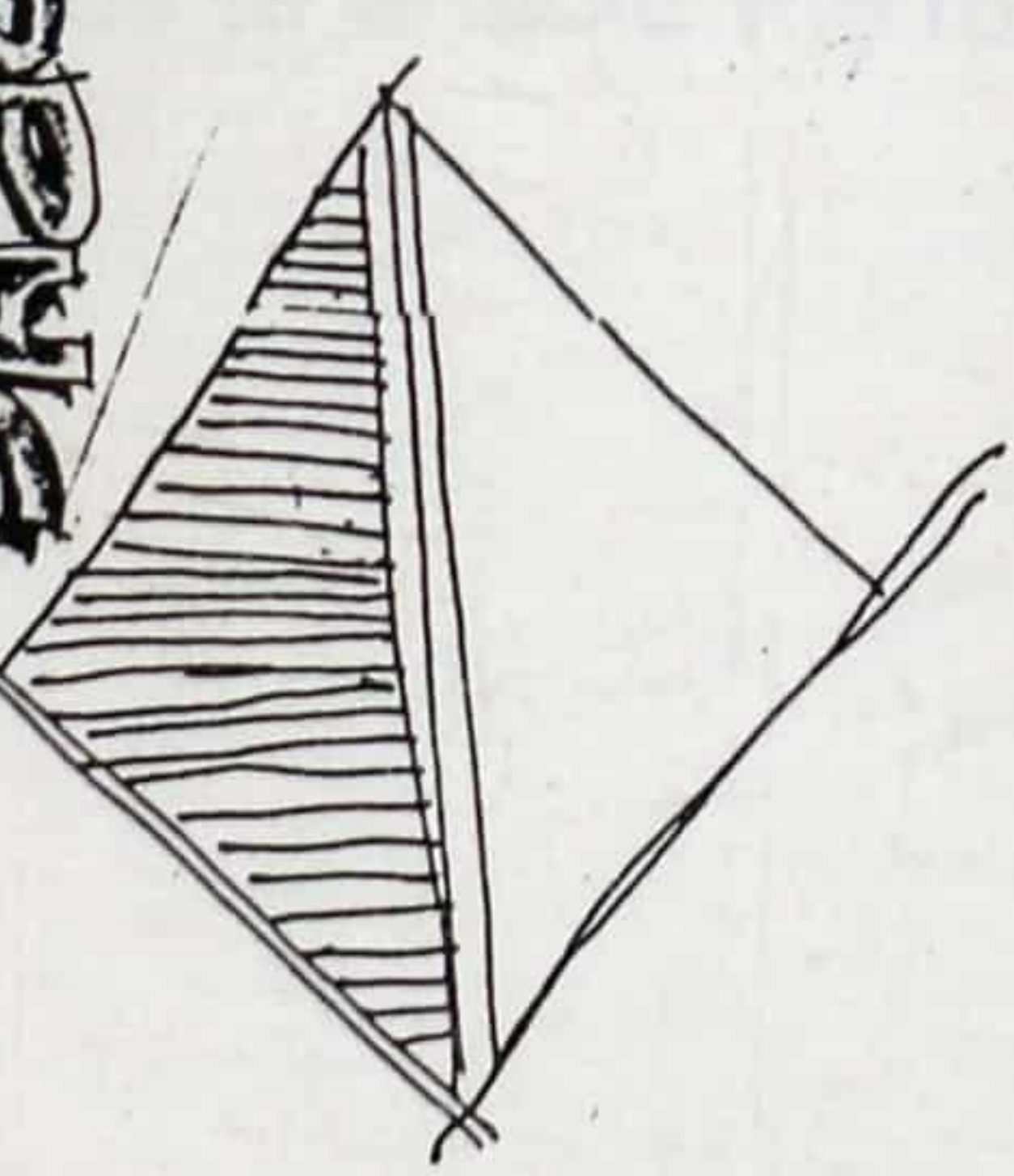
ENVISIONS

2 Slogan: "KUM APEN A APEN BEBA"

THE ASSYRIAN CIVILIZATION
THE OFFICE OF THE ARCHITECTS OF THE
ASSYRIAN CIVILIZATION



ROOF FORMS



KOTOKO FOOTBALL COMPLEX - KWAMBO

6.4 DESIGN CHARACTER

The character of the complex lie in these two fundamental design philosophy and concepts. Thus in elevation the porcupine is revealed and in the roofs which is the outer-most layer of the building the arsenal is revealed to totally manifest the porcupine.

6.5 THE DESIGN

6.5.1 Layout

It is assumed that a larger volume of the spectators will come from the south of the site which is the access of spectators from Kumasi. Thus the bulk of parking facilities is to the south of the stadium. The parking is in two categories:

- (a) Car parking for smaller vehicles consisting of about 200 slots.
- (b) Bus/coach parking to take about 20 coaches.

In between these two parks there is a large pavement to collect people and distribute them on the periphery of the stadium where they get access to ticket booths.

The football hostel is to the west of the site and it is flanked to the north and south of it are the jogging trails and practice field respectively. The jogging trail is mainly heavily landscaped area with stone and sand trails as well as other features to enable the footballer to vary his exercise.

There are lettable shops at all the four corners of the stadium and each has a display area (shop), storage and a water closet.

There are auxiliary parking to the east and north of east and north stands. The ambulance access is separated from all other accesses to enable it move out easily during emergencies.

6.5.2 Footballers' hostel

The entrance is such that it can take a bus load of footballers and there is a broad staircase with about seven risers which ushers one to the hostel. An emblem or insignia of the club is embossed on the entrance canopy with a flag mast above it.

The entrance is flanked on both sides by a gymnasium and the estate office with the spear-like character of their roofs. Straight on leads to the service wing which consists of the kitchen and laundry areas. It is so placed to service the club offices and other facilities with ease. The kitchen consists of a chef's office, cold and dry stores, preparation area and changing rooms (male and female).

The kitchen is also placed in such a way that it directly links the two eating areas and the clinic.

The dining hall overlooks a large paved courtyard and interrupted at various points by pockets of landscaped areas. In the middle of the courtyard is a bar which links not only the courtyard by the pool.

The swimming pool is part of the games wing which consist of a games hall for games like table-tennis, snooker etc. with a store attached to it, and a gymnasium.

The footballers common room and the 58-seater lecture/T.V. theatre located at the southeast and southwest ends of the hostel form boundaries of the footballers' rooms. These rooms are designed to take two players in a room and four players share a bathroom. The bathroom consists of shower room, a toilet and a wash-hand basin area.

A janitor's room links the raked floor 58-seater theatre to the management wing which houses the coaches, team managers, trainers, team doctor and his assistant.

The clinic consists of a small waiting area, doctor's consulting room and a recovery ward. This is so located away from anticipated noise sources.

The guest wing which is located to the northern portion of the hostel differs only in terms of the training wing and it has a smaller eating area with an attached kitchenette. This was added taking into consideration the superstition attached to football in our part of the world. Teams are known to have carried water from their home grounds to play matches away.

6.5.3 Security Block

The security block consists of a toll-gate located between two main gates; an in and out gates. To the east of the toll gate is an office for the chief of

security. The west houses the charge office, detention room, a general office and a washroom.

The character of the roof is still pronounced here; showing spear-like forms with the elevational treatment running as security walls.

6.5.4 Football Stadium

The stadium is categorized into four main stands; the grand, north, east and west stands. Each stand consists of a lower and upper tiers.

(I) The grand stand

The grand stand is made up of two main areas; public/spectator access which leads to the stands and executive entrance which takes one to the presidential stand, club offices, commentary box or changing rooms.

The reception hall has the reception desk sitting in the middle flanked on two sides by complimentary quarter-turn staircases. There are male and female washrooms which consists of wash hand basins, water closets and urinals. The reception desk has been designed as a feature rising through the void between the staircases to link the reception hall to the office lounge above. A goods-lift services the office and the executive lounge.

On the ground level (level1) the footballers lounge is linked to the reception hall by a security door. During matches it is expected that a guard will man the gate to check those who go through the door.

Next to the footballers' lounge are the changing rooms. It consists of a small lecture hall with a blackboard on one wall, a locker room and a washroom. The changing room is slightly smaller giving room for a first aid room.

On the public access side the ticket booths lead to two large concourses. Disabled accessed to the stands are to the ends of the concourses. There are two disabled bars with counter levels at 4000mm from finished floor level. Close to the bars are disabled washrooms.

The other washrooms (male and female) are located on the concourse. To reduce congestion the washrooms are designed for one way traffic.

The second level houses the office accommodation of the football club, the executive lounge and the access to the presidential stand. The executive lounge has its own bar and washrooms.

The access to the commentary box is such that though it is on the same level as the executive lounge there is no link. It must be mentioned here that there is a banquet hall which has a bar attached to it and is an ideal place where match officials could be refreshed.

The presidential stand has been designed to incorporate a presentational dais where medals and cups will be presented to footballers. There is a glass hood which ushers the players to the playing field.

The rest of the concourses harbours bar/fast-food areas and eight vomitories lead to two main cross-over aisles where distribution of spectators begin.

(ii) The South Stand

The south stand has four ticket booths which usher spectators onto its level 1 concourse. There are four staircases evenly distributed to give spectators easy access to them. The concourse houses two of male washrooms, female washrooms, disabled bars and disabled washrooms. There are lounge exit doors between the two sets of ticket booths fixed with sliding folding steel gates which will be controlled from security monitor room in the grand stand.

The rest of the concourses on the levels 2 and 3 only have snack/fast-food bars on them.

(iii) East Stand

This is a replica of the stands of the grand stand. The difference is the maintenance wing that is at the level 1. The maintenance wing consists of an office, general storage for bulky wares such as mowers, sprinklers, chairs, nets, flagpoles, etc, and a workshop to take care of the general maintenance of the place.

Thus at the upper levels the concourses are larger and it makes it easier to move around.

(iv) North Stand

The entrance or ticket booths of the northstand are located on the level 2.

This is due to the slope of the land as discussed in the section. It also houses the wall mounted scoreboard.

The rest of the levels are similar to the south stand.

CHAPTER SEVEN

7.1 STRUCTURAL SYSTEM

Mainly post and beam construction is used for the stands with pile foundation to support it. The beams are to be cast in-situ and the slabs of the stands will be pre-stressed.

The last set of circular columns go up to carry the roof acting as supports for the cantilevered trusses. The roof is supported under the trusses to prevent birds from nesting under the soffit of the stadium.

Only the east and grand stands are roofed.

7.2 ELECTRICAL INSTALLATIONS

The design is supposed to provide good accommodation for footballers and guest teams, spectators and journalists. As much as possible the various electrical and sanitary installations should be easy to maintain. The electrical services to be provided include:

- (I) Incoming Supplies
- (ii) Electrical Substation (transformer)
- (iii) Electrical Distribution Network
- (iv) Interior Lighting and Power Distribution
- (v) Audio-Video Distribution System

pipes/trunking. The power will be taken to switch rooms and local distribution will continue from there.

7.2.4 Lighting

For interior lighting, recommended levels for various applications shall be provided by use and the most efficient available luminaires and lamps except where aesthetic considerations dictate otherwise.

In rooms of footballers ceiling or wall mounted lights as well as supplementary lighting will be provided eg. writing desk, bedside reading lamps.

On concourses adequate illumination levels and signage to aid spectators in moving around will be provided.

For external lighting, sections of the complex shall be adequately lit for the security and safety of patrons. Roads/streets shall be lit using post top lanterns with mercury fluorescent lamps. Green areas shall be lit by bollards. Areas requiring special lighting (flood lights, special effects) shall be discussed with authorities and landscape designers.

Controls for street/road lights shall be centralized for ease of operation.

7.2.5 Audio-Video Distribution

The stadium shall be equipped with a colour screen score board and loudspeakers to augment matches. T.V./lecture theatres, footballers common

rooms, reception hall, executive lounge and control rooms shall be equipped with colour television sets.

A mini community antenna system shall be designed to "pipe off the air" T.V. programmes to T.V. socket outlets in the selected areas. The system shall include a facility for generating and transmitting video programmes from pre-recorded video tapes.

7.2.6 Telephone/Telecommunication System

A PABX shall be installed with sufficient direct exchange lines to facilitate both national and international telephone communication for guests, spectators and journalists.

Provision shall be made for the eventual installation of Telex/Fax and internet when required.

7.3 MECHANICAL INSTALLATIONS

The Mechanical Services to be provided comprise the following:

- (I) Air-conditioning, Refrigeration and Ventilation Installation
- (ii) Internal soil and Waste Piping
- (iii) Kitchen and Laundry Installation
- (iv) Fire fighting Installation

7.3.1 Air-Conditioning, Refrigeration & Ventilation

The areas to be air-conditioned shall be provided with either unit split air conditioners or split type central air conditioning systems. Ventilation standards for the air conditioning areas shall be as follows:

Reception hall	-	25cfm per person
Executive lounge	-	15cfm per person
Banquet hall	-	25cfm per person
Changing rooms	-	15cfm per person
Offices	-	20cfm per person

Internal Conditions

- (a) Air-conditioned Areas - 25°C 55%rh
- (b) Cold store - -18°C.

Unit split airconditioners will be provided at the estate offices, whilst the kitchen and laundry areas shall be kept well ventilated by means of roof mounted extractor fans, with facilities for stand by motors.

7.3.2 Internal soil and Waste Piping

The soil and waste effluent from water closets and other fixtures shall be connected through common manholes to main sewer line which shall discharge into sewer manholes. The space underneath the stands shall be used.

The connection of the waste line to the soil manhole shall be through gulley traps at each point of connection and vent pipes shall be provided for both the soil and waste lines at the high points of entry into the sewer system.

Floor channels shall be provided in the kitchen and laundry to collect the waste from the various equipment used in these areas. Trapped waste water manholes shall be provided to the respective floor channel discharge points before connection to the sewer system. The kitchen and laundry drains shall additionally be provided with grease traps before discharge into sewer line.

7.3.3 Kitchen and Laundry Equipment

The kitchen equipment shall have both electrical and gas operated units. The laundry equipment selection has been based on washing requirements of a football team - mainly washing of jerseys, bedsheets, etc. The equipments provided involve

- washers cap 15kg
- hydroextractor cap 12kg
- tumbler drier cap 12kg
- iron tables
- wash tubs
- laundry trucks

7.3.4 Fire Fighting

Portable fire extinguishers of the dry powder type shall be installed on the concourses and hostel corridors. The high risk areas such as the kitchen,

laundry and central air conditioning plan rooms shall be provided with twin trolley type carbon dioxide fire extinguishers for first aid fire fighting.

Additionally, the kitchen and kitchenettes shall be provided with wall hung fire blankets for smothering local fires from the cooking equipment.

7.4 LANDSCAPE

An appreciable amount of the natural vegetation destroyed or taken up by the design should be recovered in the landscape design. This is the main concept behind the landscape design.

The main dual carriage will be lined on both sides by decorative trees such as royal palm. Apart from the paved areas the whole areas will be grassed and dotted with shrubs.

Football pitches easily gets water-logged during heavy downpours. It is not strange to see muddy pitches in our parts of the world and the problem needs to be tackled.

The sub soil will be lined with pipes for the following reasons:

- (I) to eliminate surface flooding and so produce a dry pitch.
- (ii) to improve the stability of the pitch surface.
- (iii) to avoid or lessen the dampness occurring in certain basements.

CHAPTER EIGHT

CONCLUSION

For five months the world sat on thorns and watched the Peru hostage crises when the Tupac Amaru rebels held ambassadors and other diplomats as well as high ranking officers hostage on the Japan ambassador's premises. Then on one morning when the rebels were playing football on the compound, engrossed in the game a special police force stormed the compound and released the hostages, killing all of the rebels.

Well, this project has no objective of tackling any political and violent upheavals but seeks to throw football in the lives of everybody everywhere in the world. The emotional and latent role of the game of football in our society cannot be overemphasized. But an analogy can be drawn from this notorious hostage crisis.

The development of Ghana football has been held hostage by unknown circumstances. Policy makers blame footballers and coaches for not working hard enough or not creating the magic that will propel the game forward. The first casualty if a team loses an important match is the coach. The coach will blame authorities for poor management. The footballers often blame poor facilities and the cycle continues.

But as apostle of infrastructural development the first step should be the infrastructure. The next should be the release of funds for adequate training, good training skills should follow and finally expect the footballers to deliver.

What will follow is good sponsorship, good marketing opportunities for the footballers and there will be an improvement in the quality of football that will be played.

If clubs in the country will begin investing in football infrastructure and find ways of advertising the club and its players will have better deals and not go and warm benches in Europe.

The earlier Ghanaian clubs treat football as a business the better.

BIBLIOGRAPHY

1. The National Soccer League of Ghana
- By Ken Bediako
2. The constitution of Ghana Football Association
3. Football Grounds (Third Edition)
- By Dave Twydell
4. Architectural Detailing in Contract Interiors
- By Wendy W. Staebler
5. Architects' Data - Second (International) English Edition
- By Ernest Neufert
6. Planning and Design Data
- By Patricia Tutt and David Adler
7. Complete Football International Magazine
February 1997 Edition

ACCOMMODATION SCHEDULE

FOOTBALLERS' ACCOMMODATION

Footballers' Hostel

		Area/m ²
1. Footballers' room	-	336.00
2. Footballers' bathroom	-	40.00
3. Coaches'/doctors room	-	126.00
4. Coaches'/doctors bathrooms	-	20.00
5. Janitor	-	12.00
6. Doctors' consulting room	-	18.00
7. Recovery Ward	-	33.75
8. Clinic's Waiting area	-	18.00
9. Clinic's Bathroom	-	9.00
10. T.V./lecture hall	-	53.04
11. Footballers' common room	-	54.00
12. General storage area	-	2.70
Kitchen		
13. Dining Hall	-	93.60
14. Preparation Kitchen	-	36.42
15. Chef's office	-	8.75
16. Sorting/Preparation Area	-	16.00

17. Cold store	-	6.25
18. Dry store	-	6.25
19. Laundry	-	59.40
20. Changing rooms	-	28.00
Training Wing		
21. Swimming Pool Area	-	320.00
22. Gymnasium	-	53.20
23. Changing rooms	-	18.48
24. Games Hall	-	109.20
25. Games Store	-	10.00
26. Reception hall	-	53.20
27. Offices	-	52.00
28. Toilets/Urinals	-	36.00
Security Wing		
29. Toll gate	-	12.60
30. Chief security office	-	18.48
31. General office	-	18.90
32. Toilets/urinals	-	6.00
33. Change office	-	16.80
34. Detention room	-	21.00
35. Detention room's toilet	-	2.00

Guest Wing

36. Footballers' room	-	336.00
37. Coaches and officials	-	20.00
38. Janitor	-	12.00
39. Lecture/T.V. Theatre	-	53.04
40. Footballers common room	-	54.00
41. Dining hall	-	56.25
42. Kitchenette	-	53.04

5.4.2 Stadium

Club Offices

43. Reception Hall	-	193.50
44. Toilets and urinals	-	72.00
45. Vault	-	32.00
46. Plantroom	-	28.00
47. Engineers office	-	24.00
48. Lounge	-	165.00
49. Banquet hall	-	48.50
50. Secretariat	-	491.44
51. Meeting Room	-	37.84
52. Director's Office	-	67.84
53. Footballers' Lounge	-	36.80

54. First aid room	-	17.50
55. Changing rooms	-	72.50
56. Locker Rooms	-	108.00
57. T.V. Control Room (Broadcast)	-	48.60
58. Film Store	-	20.40
59. Security's TV Monitor Room	-	27.50
60. Executive Lounge	-	204.00
61. Executive Toilets	-	15.00
62. Commentary Box	-	39.00

Public facilities

63. Turnstiles area	-	121.44
64. Disabled bar/fastfood	-	47.00
65. Disabled toilets	-	24.00
66. Male toilets and urinals	-	208.50
67. Female toilets	-	102.50
68. Bar/Fast-food	-	281.40
69. Shops + WC + Storage	-	446.40

Maintenance Department

70. Maintenance Workshop & General Store	-	85.50
--	---	-------