A THESIS

PRESENTED TO THE DEPARTMENT OF ARCHITECT URE

FACULTY OF ENVIRONMENTAL DESIGN

OF

AHMADU BELLO UNIVERSITY

ZARIA

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN ARCHITECTURE

BY

AWELEMDI EMMANUEL ANAKO

ON

CITY HALL, NEW FEDERAL CAPITAL (ABUJA)

IN

JUNE, '78

ACCEPTED BY .....

....
HEAD OF DEPARTMENT
ARCHITECTURE

EXTERNAL EXAMINER/S

DATE .....

DEDICATION

TO THE UNITY OF THE ENTIRE ANAKO'S FAMILY,
AND TO ALL MEN OF YOUTHFUL MIND.

ACKNOWLEDGEMENT

To the following;

Mr. C.S. John	---	Snr. Lecturer Department of Architecture
Professor E.A. Adeyemi	-	Dean & Head of Department of Architecture
Mr. S. Adesina	---	Snr. Lecturer Department of Architecture
Mrs. M.B.A. Urbannwich	-	Associate Professor, Department of Architecture, A.B.U., Zaria.
The entire academic Staff	-	Department of Architecture, A.B.U., Zaria
The Secretary	---	Lagos City Council (1977)
The Secretary	---	Kano City Council (1977)
Dr. D. Awani	---	Consultant, Macgregor and Awani Associates
Uncle J.B.C. Odigbo	--	Student, Department of Architecture, A.B.U., Zaria
Mr. John Bello	---	Student, Department of Architecture, A.B.U., Zaria
Mr. L.O. Ugbabe	---	Student, Department of Architecture, A.B.U., Zaria
Mr. Amaechi Onyechi	--	O.S., Osigwe Nwogu & Associates
Mr. Joe Ezeaputa	--	Staff, Computer Science Dept., A.B.U., Zaria

I'd like to say, in retrospect, you are all nice people to know, deal or work with. Your contributions (direct or indirect) to the execution of this academic project is noteworthy and most warmly appreciated.

A special mention goes to my Mentor, Mr. C.S. John, who like a father consistently, encouraged, inspired and guided me to the very end.

I am grateful to one and to all.

CONTENTS

		Page
INTRODUCTION		1
CHAPTER ONE		
1. ROLE AND SIGNIFICANCE OF LOCAL GOVERNMENT INSTITUTION IN THE DEVELOPMENT OF THE COUNTRY		
(i) STRUCTURE		4
(ii) OBJECTIVES		4
2. EXCERPTS FROM THE NEW LOCAL GOVERNMENT EDICT		
(i) GENERAL APPRAISAL		5
(ii) COMPOSITION OF COUNCIL ..		5
(iii) COUNCIL PROCEEDINGS ..		6
(iv) COMMITTEES		7
(v) LOCAL GOVERNMENT SERVICE BOARD		9
(vi) COUNCIL EMPLOYEES		9
3. FUNCTIONS OF THE MUNICIPAL COUNCIL		10
4. SOURCES OF MUNICIPAL COUNCIL REVENUE		12
5. THE DEPARTMENTS		13
6. CASE FOR A SINGLE MUNICIPAL AUTHORITY		14
CHAPTER TWO		
HISTORICAL BACKGROUND OF THE DEVELOPMENT OF PRINCIPAL COMMUNITY SPACES		
1. GENERAL APPRAISAL		15
2. THE GREEK AGORA		15
3. THE ROMAN FORUM		17
4. OPEN SPACES IN MEDIEVAL CITIES ..		18
5. RENAISSANCE		20
6. BAROQUE		21
7. URBAN SPACES IN MODERN TOWNS ..		22
8. CONTEMPORARY LANDSCAPE ELEMENTS ..		23

CHAPTER THREE

CASE STUDIES

1. TORONTO CITY HALL 25
2. ANTRIM COUNTY HALL, ULSTER .. 30
3. LAGOS, CITY HALL 33

CHAPTER FOUR

ENVIRONMENTAL DETERMINATS

1. CLIMATE 38
2. TEMPERATURE AND HUMIDITY .. 39
3. RAINFALL 41
4. SOLAR RADIATION 42
5. VEGETATION 43
6. TOPOGRAPHY 43
7. SOIL COMPOSITION 44

CHAPTER FIVE

THE MAKING OF THE SITE PLAN

1. THE SITE IN RELATION TO THE PLAN STRUCTURE OF THE CITY CENTRE (EXCERPTS FROM THE THEORETICAL MASTER PLAN) 45
   (i) TRAFFIC CIRCULATION 45
   (ii) THE LINEAR PARK AND RECREATION FACILITIES 46
2. LOCATION CRITERIA 47
3. SITE PLANNING PRINCIPLES .. 49
4. DESIGN CONCEPTS FOR THE SITE PLAN 51

CHAPTER SIX

FUNCTIONAL ANALYSIS OF THE MAJOR ARCHITECTURAL SUBCOMPLIEXES OF THE SCHEME

1. INTRODUCTION 56
2. THE MULTIPURPOSE CIVIC HALL .. 56
   (i) SIZE AND HALL CAPACITY .. 57
   (ii) COMPONENTS PLANNING GUIDELINES AND DESIGN STANDARDS 58
   (iii) CRITICAL ANALYSIS OF PLAN SHAPES OF AUDITORIUM WITH RESPECT OF THEIR ACOASTIC & VISUAL CHARACTERISTICS 64
   (iv) TYPES OF SEATING ARRANGEMENTS 66
   (v) AUDITORUM/STAGE RELATIONSHIP 70
   (vi) ANALYSIS OF SHAPE AND ARRANGEMENT OF THE ACTING AREA IN RELATION TO PROGRAMME REQUIREMENTS .. 73
   (vii) SAFETY REGULATIONS AND MEANS OF ESCAPE 74
3. ELECTED MEMBERS ACCOMODATION .. 76
   (i) ANALYSIS OF ACCOMODATION REQUIREMENTS 76
   (ii) COUNCIL CHAMBER 79
   (iii) CIRCULATION PRINCIPLES .. 81
4. MUNICIPAL OFFICES 82
   (i) COMPONENTS 82
   (ii) THE SERVICE DEPARTMENTS .. 83
   (iii) DIRECT FUNCTIONAL SERVICE DEPT. 83
   (iv) ORGANISATIONAL SERVICE DEPT. 84
   (v) BROAD, PLANNING PRINCIPLES .. 85
   (vi) PROVISION OF SERVICE CORES .. 89
   (vii) DESIGN FOR VENTILLATION .. 90
   (viii) OPENNESS AND ACCESSIBILITY .. 90
   (ix) DEPARTMENTAL MANAGEMENT STRUCTURE 91
   (x) PLANNING CONCEPT BASED ON MANAGEMENT STRUCTURE 92

CHAPTER SEVEN

SCHEDULE OF ACCOMODATION

1.	OFFICE BLOCK	93
	(i) SECRETARY DEPARTMENT ..	93
	(ii) TREASURY DEPARTMENT ..	96
	(iii) CITY ENGINEER	98
	(iv) PUBLIC HEALTH ..	100
	(v) EDUCATION DEPARTMENT ..	103
2.	COMMON FACILITIES	105
3.	MULTIPORPOSE HALL	107
4	CAR PARKING FACILITIES	108
	CONCLUSION	109
	REFERENCES	113

LIST OF ILLUSTRATIONS

FIG.	TITLE	PAGE
1	Greek Agora	15
2	The Roman forum	17
3	Medieval civic space ..	18
4	St Peters Piazza, Rome ..	20
5	Piazza del popolo Rome ..	21
6	Normalem project stockholm ..	22
7a	Toronto City hall, Toronto ..	25
7b	Structure of Council Chamber, Toronto City Hall	28
8	Antrium County Hall, Ulster ..	30
	Lagos City Hall	33
9	Climatic map of Federal Capital Territory	38
	Temperature Chart	39
10	The Linear Recreational Network	46
11	The Nature of the Dynamic Vista	48
12	Dicotomy of Pedestrian and Vehicular Ways	49
13	Alternative A (Mixed use Prototype)	51
14	Alternative B (Free Standing Green	53
15	Diagramatic Method of Calculating Sight Line	60
16	Recommended Reverberation Time as a Function of Hall Volume ..	62

FIG.	TITLE	PAGE
17	Ceiling Profile to Concentrate Reflected Sound on the Remote Balcony Seating	64
18	Lateral Reflection Situations as Related to Plan Shape ..	64
19	Varing Shapes of Auditorium ..	62
20	Seating Layout & Design Standards	63
21	Design Criterium for Balcony Overhang	67
22	Space Standards for Dressing/ Changing Rooms	68
23	Stage Types	70
24	Free Form Theatre	72
25	Design Requirements for Varying Programme Types	73
26	Optimum Form of Seating Arrangement for varying Sizes of Council Chamber	79
27	Sizes of Office Space ..	86
28	Management Structure of Municipal Authority Working Departments	91
29	Functional Relationship Between Departmental Units	92 - 93
30	Central Administration as 'Nerve Centre' in the Disposition and Planning Functional Departments	93

INTRODUCTION

The city hall may be loosely defined as a venue for large scale administrative activity, ceremonial and political assembly connected with functions of local government.

Through its diverse municipal functions and by vitue of its varied recreational potentials it forms a critical focus of town life and city centre in particular.

As a civic centre it is a natural meeting place for the city fathers - the councillors; the place where policy decisions related to the management of city affairs and its development are formulated and action initiated. Associated with the administrative function of the hall is the local government or municipal offices which is the principal functionary organ of the system by means of which all official policies are executed.

About the most characteristic feature of the city hall complex is the city plaza which is easily the most prominent civic space of the city centre aswell as the chief meeting place for the inhabitants of the town as a whole. This is the place "towards which they naturally gravitate when something is going on and a place wherein they expend most money and care".

The concept of the city hall as a focal point in the political and cultural life of a city is in sympathy

with some of our local traditional cultures, in comparative terms. The modern city hall can functionally be equated to the familiar village squares and open play grounds. For in addition to their well established role as venues for small and large scale cultural and ceremonial gatherings, these squares are also outlate for the 'finest expressions of individual and group dialogue' - where on moonlight nights the women exchanged gossips, children told fairy tales, young men wrestled and the elders discussed events and exigencies of the time. Thus, in this respect, the city hall of the new capital city is repository of all the functions of the village square on a modern urban scale; architecturally, it must have to contend with the surrounding complex structures while satisfying the demands of a dynamic urban metropolis.

In terms of its social functions, it constitutes an interraction centre for the diverse national characters of the country and in this sense can be explored as a viable instrument for fostering national unity.

It is been rightly suggested that the control and management of developments within the new federal capital deserves the establishment of a powerful and efficient planning authority related to the municipal authority. The city council should however be responsible for far more than mere physical planning order within

the capital, for often the economic and social tempo of the city must be generated and sustained by decisions taken within the four walls of the city hall.

AIMS AND OBJECTIVES

The City Hall by virtue of its dominant location and architectural expression must reflect an enviable image of a chief civic building of the most important city in the country.

The architectural character of the building is made unique by its conflicting requirements. To express an authoritative image simultaneous with a democratic expression of openness and accessibility is one of the primary goals of this academic exercises. It is noteworthy that only Lagos amongst our numerous large urban centres spots a purpose - designed city hall of modern definition. This retrogressive disregard for such a potentially charged instrument for balanced civic life is the basis for my motivation and it is the ambition of this thesis to resolve a design complex conducive to the quick pursuits of business and pleasure.

CHAPTER ONE

ROLE AND SIGNIFICANCE OF LOCAL GOVERNMENT INSTITUTION IN THE DEVELOPMENT OF THE COUNTRY

STRUCTURE:- The native authority structure is based on a two tie system, consisting of divisional authority and town councils. The physical limits of each authority area is defined accordingly by the respective state governments ministries of local government in accordance with the requirements of the local government edict 1976. But it is in my considered opinion, more efficacious to retain a whole municipal area under the control of a single city council authority. Thus the proposed city hall is projected to serve the entire community of the capital town.

OBJECTIVES:- Based on the traditional principle that a service should be rendered by the most local body capable of effective administration. The various local government and municipal councils were established with duties and powers essential to the local execution of central established policies. Today these functions embrace all elements of social/economic/political system.

In addition the system provides a solid foundation which ensures stability of government at grass root through increased participation of the community in their administration while simultaneously opening up a channel of outlet for local feelings and enthusiasm.

This vent is a vital source of feedback useful in analysing the success of government sponsored economic and social programmes, throughout the country.

EXCERPTS FROM THE NEW LOCAL GOVERNMENT EDICT

GENERAL APPRAISAL:- The edict is a statutory measure aimed at widening the executive powers and improving the financial resources of each authority to enable it provide a wide range of valuable local services and funcitions.

The reorganisation exercise is calculated to bring the people close to their government and allow the tax payer a more active participation in the local administration of their area; most importantly, the new system seeks to guarantee a more equitable distribution of amenities amongsts the entire population; improving prospect for balanced rapid developement of both the rural areas and the city.

COMPOSITION OF COUNCIL:- The municipal council is composed of

a) Elected members:- On the assumption that a neighbourhood constitutes an electoral ward for the selection of councillors the projected maximum number of elected members for the new capital's municipal council is 60.

b) Nominated members:- Presently such members are

nominated by the state executive council. The total number of nominated members prescribed should never exceed one quarter of the councils' population. This gives a maximum of 20 nominated members.

On computation from the above projections the total maximum population of council is 80. Allowance should also be made for a limited number of invitees who on the invitation of the mayor or governor can attend a meeting but have no voting rights.

COUNCIL PROCEEDINGS:- The council holds a monthly meeting and an annual meeting for the transaction of general business. Emergency meetings may also be convened according to demand. Council meetings are normally held during the morning hours. Usually the Mayor/Chairman of the council presides over the meetings but may be relieved by the council's president on special occasions.

Any controvertial council decision is resolved by voting on a democratic principle. Minutes of all proceedings at every meeting of the council must be recorded and preserved by appointed officials. Such records are open to nominated inspectors as well as members of the public.

Every meeting of the council shall be open to the public apart from committee deliberations.

-

COMMITTEES

A) STANDING COMMITTEES:- Provisions are made for a number of standing committees whose duties are to formulate and supervise policy guardelines in some sensitive municipal functions. Below are three regular such committees.

1. FINANCE AND GENERAL PURPOSE COMMITTEE

COMPOSITION: (a) The Chairman

(b) Chairman of any other committees

(c) Not more than two other members

RESPONSIBILITIES:-

(i) Regulation and control of the Financies of the local government or municipal council.

(ii) Consideration and award of contract.

(iii) The implimentation of the decision of the council with which no other committee is charged and for the general running of the affairs of the council.

2. EDUCATION COMMITTEE

COMPOSITION:- (a) Chairman

(b) Not more than four other councillors

(c) Nominated members whose number is fixed by the education law.

FUNCTION:- As defined above (under general duties of standing committees), but with respect to Education function only.

3. POLICE COMMITTEE

COMPOSITION:- (a) Chairman

(b) A senior police officer

(c) A traditional chief

(d) An armed forces personel

(e) At most three nominated noncouncil members

(f) The secretary of the municipal council

FUNCTIONS:- (a) Is responsible for the enforcement of bye laws and other legislation made by the council.

(b) Gives advice relative to the maintenance of law and order within the municipal area.

B) OTHER COMMITTEE:- Other standing committees or adhoc committees are appointed according to the specific needs of the council.

The member of such committees should never exceed a total of three. Atleast two third of the members must be councillors. No member of council shall be chairman of more than two such committees. A committee is empowered to appoint a sub-committee for any special purpose. With approval of the commissioner a local government council can establish a joint committee with another for any purpose in which they are jointly interested.

LOCAL GOVERNMENT SERVICE BOARD

COMPOSITION:- A chairman and not more than five other members appointed by the governor.

FUNCTION:- Have powers to confirm appointments, dismissal, promotion and transfer of council officials. Excercize general disciplinary control over municipal officer staffs.

LOCAL GOVERNMENT INSPECTORS

Usually appointed by the government and have the rights to attend any council or committee meetings. Inspect records of council meetings and activities and report back to the Commissioner for Local Government for his information or action as the case may be.

COUNCIL EMPLOYEES

All posts in the employment of any local council or subordinate area of authority in the federal capital territory shall be post in the local government service of the capital territory.

THE SECRETARY:- The Secretary of the council is the chief executive officer and his functions include:-

a) The supervision and control of all employees of the council.

b) The coordination of all activities of the council.

c) The Secretary is the chief scribe for all council meetings and an official advicer to the president and chairman of the council.

THE HEADS OF DEPARTMENT:- Is the internal chief executive for their various departments.

Is subject to the general political direction of the chairman of his departmental committee.

Is under the general direction and control of the secretary to the council in all matters relating to the employees and internal control of the department.

FUNCTIONS OF THE MUNICIPAL COUNCIL

___ Prevention of crime within the area of its authority.

___ Provision and maintenance of works and services in respect of its responsibilities for the powers to make bye law for all of the following matters. Markets and motor vehicle parks; sanitary inspection, sewage, refuse and nightsoil disposal; Control of Vermin; slaughter houses, slaughter slabs; public conviniences; cemetary and burial grounds; registration of births, deaths and marriages; provision of community and recreational centres; parks, gardens and open spaces; grazing grounds; fuel plantations; licensing; supervision and regulation of bake houses, eating houses and laundries; licensing, and regulation of bicycles, handcarts and other types of vehicles and canoes; cartrol or keeping of animals; control of hoardings, advertisements, use of loudspeakers in or near public places and drumming; naming of roads and streets and numbering of plots

and buildings; control and collection of revenue from private forest estates; collection of vehicle parking charges, health centres, maternity centres, dispensaries and health clinics, ambulance services; leprosy clinics and preventive health services; meat inspection and abbatiors; nursary, primary and adult education; information and public enlightenment; provision of scholarships and bursaries; provision of public labraries and reading rooms; agriculture and animal health extension services and veterinary clinics; water supply; fire services, provision and maintenance of city roads, their lighting and drainage; support for arts and culture; control of pollution; control of beggars, prostitution and repatriation of destitutes; provision of homes for destitutes, the infirm and orphans; provision of public utilities road and water transport; public housing programmes; regulation and control of buildings, towns and country planning; operation of commercial undertakings; control of traffic and parkings; piped sewage systems.

SOURCES OF MUNICIPAL COUNCIL REVENUE

a) Moneys derived from community tax and any rate imposed by the authority by virtue of the provision of the new local government edict.

b) Moneys payable to the authority under the provisions of any other enactment.

c) Money derived from licences, permits, dues, charges or fees specified by any bye-laws or rules made by the authority.

d) Receipts derived from any public utility concern, or any service or undertaking belonging to or maintained by the authority either in whole or in part.

e) Rents derived from the letting or leasing of any building or land belonging to the authority.

f) Statutory allocations or grants-in-aid out of the general revenue of the country or of the state or other public revenue.

g) Any sums of money which may lawfully be assigned to the authority by any public corporation.

h) Interest on the investment funds of the authority.

i) Sush sums of money that may be granted to the authority by any other local government.

THE DEPARTMENTS

For the purpose of smooth execution of its function; the municipal office is grouped into four service departments under a central Administration.

a) CITY ENGINEER DEPARTMENT:- Responsible for all technical and physical planning functions of the council

b) HEALTH DEPARTMENT:- Charged with the responsibility of providing community health services for the entire city. Also deals with all other aspects of health matters as mentioned in the edict.

c) EDUCATION DEPARTMENT:- Handles all aspects of the councils functions that relates to education. It is particularly responsible for the successful execution of the U.P.E. programme.

d) FINANCE DEPARTMENT:- Handles all councils external and internal financial transactions. Also supervises all sources of the council's revenue.

e) SECRETARY DEPARTMENT:- Is the sole organisational arm of the municipal office. Co-ordinates all administrative function of all the other departments. Supervises the efficiency of the entire functional service system.

CASE FOR A SINGLE MUNICIPAL AUTHORITY

For the purpose of this academic excercize it is assumed that the entire area of the capital city falls under the jurisdiction of a single municipal authority.

Such a premise is advantageous for a good many reasons. It ensures:

(i) Efficient coordination of planning goals and objectives.

(ii) Maximal use of council resources.

(iii) A strengthened image of the authority as a dominant source of influence in city affairs.

(iv) A better platform for broad based policy decisions devoid of unhealthy local rivalries.



plan of the fifth
ıship of the main
Acropolis; B. the
Walls to Piraeus;
ıtted line through
ty, leading to the
Panathenaic Way



Figure 2.14 – Detail plan of the north-western part of Athens in the second century AD. The Agora is shown in its final form with the 'huge, clumsy structure of the Odeion' (Bacon) and that of the Middle Stoa, inserted into the central space. The line of the Panathenaic Way is shown by a sequence of arrows. East of the Agora, two important Roman buildings are shown; the library of Hadrian and the market of Caesar Augustus. A typical linear group of organic growth housing is shown south of Areopagus hill. This was the general pattern of housing in Athens.

bt partly accounts
mmodations and
d the Greek cities
t even later. The
nd and sun-dried
the quickest way
y digging through
the biggest cities
ergrown villages;
overgrowth and
re certainly much

... somewhere between the second and the first century BC, Dicaearchus could observe: 'The road to Athens is a pleasant one, running between cultivated fields the whole way. The city is dry and ill-supplied with water. The streets are nothing but miserable old lanes, the houses mean, with a few better ones among them. On his first arrival a stranger would hardly believe that this is the Athens of which he has heard so much.' The best one can say of the housing situation in Athens is that the quarters of the rich and the poor were side by side, and that except perhaps in size and inner furnishings were scarcely distinguishable ...

y
'e
e

CHAPTER TWO

HISTORICAL BACKGROUND OF THE DEVELOPMENT OF PRINCIPAL COMMUNITY SPACES

GENERAL APPRAISAL:- The subject of planning and organisation of public open spaces as the chief meeting place for the community has preoccupied the fancy of city planners right from earliest times. The Greek Agora, the Roman forum, the Italian piazzas up to our modern town squares and plazars are symbolic expressions of similar ideals on varied scales and concepts.

The shift in emphasis, from the individual to the collective epitonizes the dynamic goals and consistant trend of urban community planning. Civic spaces as the focal points of planned cities become the constant resort of most citizens - a daily scene or positive social, politician and business interactions.

THE GREEK AGORA: fig. (1). The agora is the dynamic centre of early Greek city. Principally, it is an open space loosely surrounded in an irregular fashion by building intended for public use.

The main buildings associated with the space include temples, municipal offices and later on, a range of buildings for commerce. The layout of these monumental buildings give rise to the freest interplay between their volumes. The spatial harmony is achieved through successful articulation of well defined surrounding spaces.

The early agora is characterized by its anorphous and irregular plan form. Its size varies from a spacious open square to a little more than the widening of the main street.

Functionally, the agora is the chief meeting place for the entire community of the town - 'a place of assembly where the town folks were gathered and elders gave their decision'. It was equally a venue for intense cultural display and festivity. But above all the Greek agora was a place for palaver where interchange of news was complimented by a regular exchange of goods and services. This later development as a centre of commerce, is not unconnected with its primary social functions - The coming together of consumers who had many other reasons for assembling than merely doing business.

It is noteworthy that although a part of the agora is often reserved for housewives, the space was predominantly a man's place - a sort of informal alub, where, if one waited long enough, one would meet ones friends and orpnoes.

These basic social funcitions of the agora are still reflected today by virtually all modern forms of open spaces. The agora at Athens and Miletus illustrate the major characteristics of the early Greek Agora. (fig. 1)



Figure 3.11 – The Forum Romanum, an artist's impression of the buildings and spaces of the later Empire period. The direction of this view is given in Figure 3.10. In the distance can be seen the temples on the twin eminences of the Capitoline Hill. The hollow on top of the Capitoline Hill was to become the location of Michelangelo's incomparable sixteenth century Capitoline Piazza in front of the mediaeval Palazzo del Senatore which, in turn, was built in part on ruins of the ancient Tabularium. (After Banister Fletcher, *History of Architecture on the Comparative Method*.)

Fig. 2

THE RC LN FORUM: (fig. 2) The Roman forum corresponds to the Greek agora in its function as a central communal space for recreation, commerce and political affairs.

It is physically more distorted than the agora for the Romans were more concerned with the mastary of interior spaces and were unable to carry through their perfection in the handling of internal spaces to their conception of external volumes.

Nonetheless, the Roman forum is designed to meet the needs of local requirements of citizens. Together with the surrounding buildings it reflects not only the religion, law and commerce, but also the busy corporate life of the city.

The forum complex by virtue of its monumental scale gives expression to the political power, organisation and grandeur of the old Roman empire.

In contrast to the Agora, the various elements of the forum are related to one anothers and to the enclosing space by an abstract system of proportion with no relation to human scale.

The 'forum Ronanum', Rome (fig. 2) which is the oldest and most important of all is laid out in the valley between the seven hills of the inperial city. It is used in early times as a hippodrome and for contests which later took place in amphitheatre. The chief public buildings are grouped around it, and its appearance in the heydays of ancient Rome, adorned with pillars of

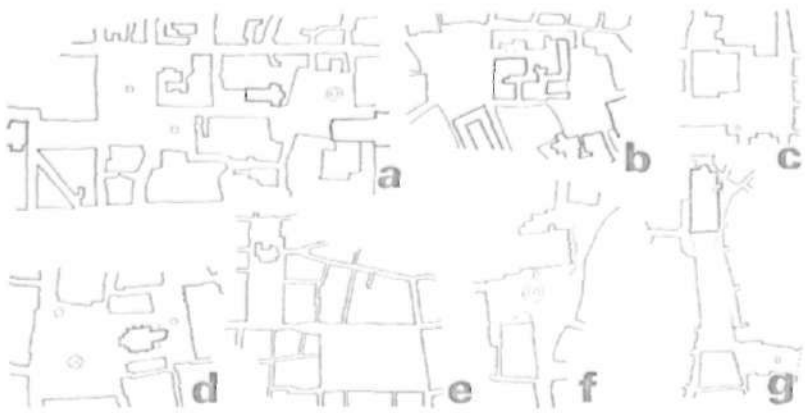


Figure 4.8 — Examples of mediaeval civic spaces in seven cities; in several instances two or more squares form a sequence of spaces. (In addition a number of these spaces were remodelled during the Renaissance period.) Key: a, Lucca, a complex *sequence of spaces, reading from left to right;* Piazza Grande (Napoleone), Piazza del Giglio, Piazza S. Giovanni, Piazza S. Martino, Piazza Antelminelli; b, Bruges, left the Grand'Place, right, Place du Bourg; c, Rothenburg, the market place *in front of the Rathaus; d, Nuremburg, the Hauptmarkt* in front of the Frauenkirche; e, Arras, Petite Place (top left) and the Grande Place; f, Perugia; g, Todi, the square in front of the cathedral.
See Paul Zucker, *Town and Squares* and Camillo Sitte, *City Planning According to Artistic Principles* (translated by George R. Collins and Christiane C. Collins), for detailed consideration of mediaeval civic space.

28. Lewis Mumford, *The City in History*.
29. Paul Zucker, *Town and Square*.

victory and statues, and surrounded by policoes, collonades, temples basilicas, and shops, must have been a sight of wonder and great beauty, indeed!

Some other forrus such as forum Banium, serve as a market for special purposes, but in general context, the typical Roman forum is the centre of civic life of the town which was crowded on festical day with sacrifices which took place before the temple.

Given a broad perception, the Greek Agora and the Roman forum show identical functions. The super ficial difference in physical form merely retlects the varying conception of planning ideals based on the different political and cultural orientations of the two communities.

<u>OPEN SPACES IN MEDIEVAL CITIES</u>: (fig. 3) Most medieval cities developed as compact nilitary establishments within rigidly defined borders. The desire for adequate security was paramount. The irregular winding street, the open market place, and the church square are the main characteristic features of medieval urban spaces. The winding streets preclude long vista, enphasizing linited views. The transition from narrow streets into moderately open and sometimes large market squares, poised at corner positions, is a dramatic and sometimes dazzling experience.

Walking on foot is the chief means of movement along streets intimately related to adjacent houses. The identity of human scale is re-emphasized and the concept of domestic gardens is well developed.

The market place is the counterpart of the agora or forum as a focal point for a wide range of social political and cultural activities. The typical market place is an irregular figure, with an arbitrary shape determined by the needs by the surrounding building. A good number of markets arrise at points of substantial widening of the narrow streets. These streets usually terminate at the boundary of a large market square, thus creating a pattern of interrelated spaces. The church square is another independent open space usually closely associated with the market square.

Religious buildings are the usual dominent architectural feature of the most important public spaces. They are strategically located amongst buildings of similar facade surrounding the church square and assume prominence by virtue of their contrasting forms and elevations. Initially the church and the market formed a two part nucleus characteristic of most medieval towns (planned and unplanned). Later commercial functions became so critical that virtualy all forms of urban spaces (religious or secular) ended up as commercial spaces of one type or the other.

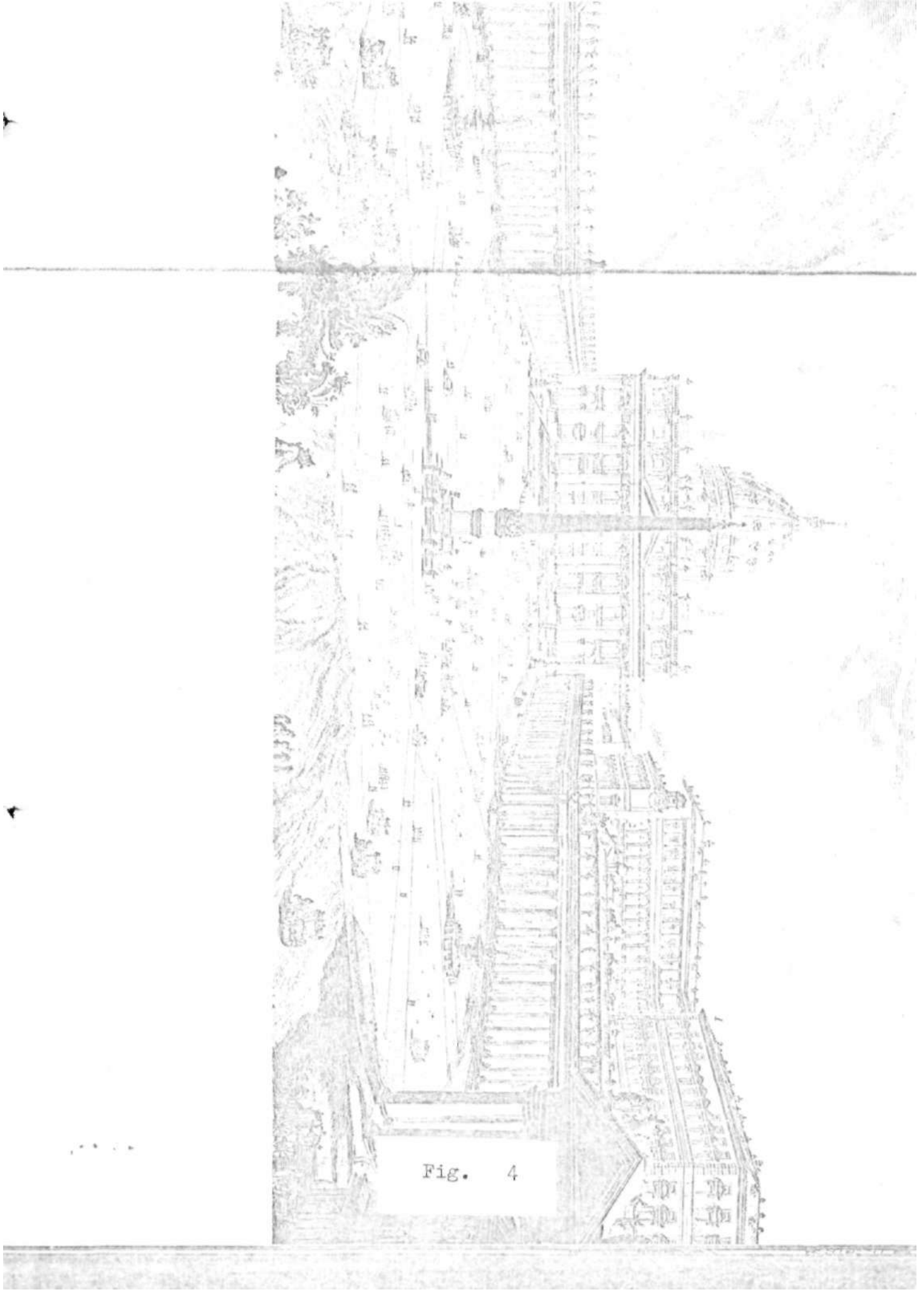


Fig. 4

RENAISSANCE: (fig. 4) Renaissance urban spaces are significant for their well defined traffic functions. There are distinct, traffic, pedestrian and residential spaces.

The dicotomy between major pedestrial and vehicle traffic movements are reflected in the planning of spaces which act as forecourt or public assembly areas in front of major civic and religious buildings. A common solution is to devert all rehicalar traffic ways away from the space, or as an alternative, to limit it to a part of the space.

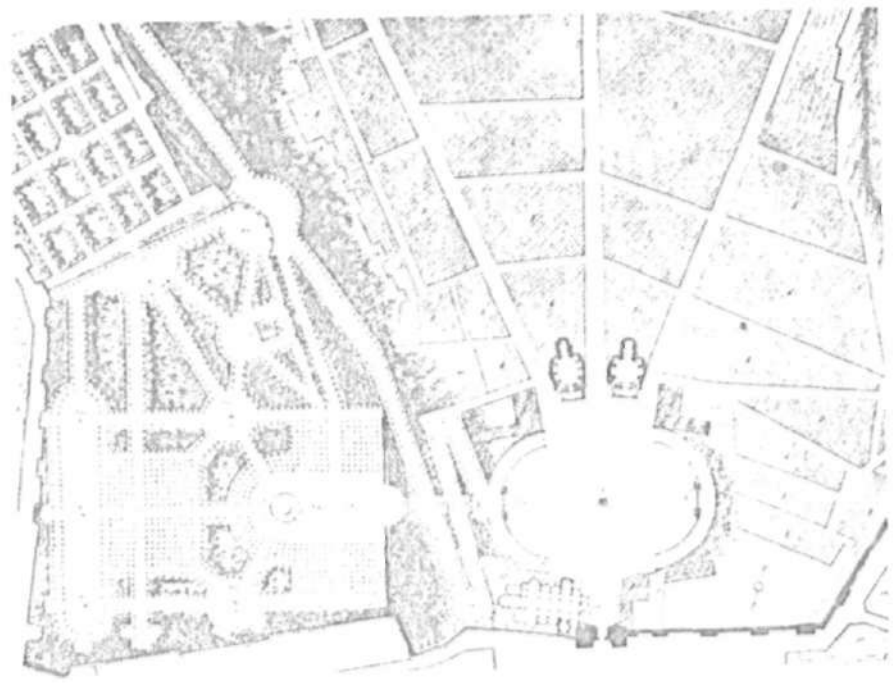
The renaissance plaza is an element of urban design per excellence. It is remarkably characterized by

(i) Symmetry about one or more axes.

(ii) Vast use of limited vista achieved by selective placement of imposing statues, obelisks and monumental buildings.

(iii) Enriched with fountains, sculptures and a variety of architectural landscape elements, trees and flowers.

(iv) The space is usually surrounded by important public buildings and unified by means of repetition of basic elevation design and articulation of details usually in conjuction with unbroken rows of collonades.



78. GIUSEPPE VALADIER. Scheme of the Piazza del Popolo, Rome, 1816. *This is the final scheme followed in the actual rebuilding.*



79. Piazza del Popolo, Rome. Section through the different levels and ramps. *Drawing by Edward W. Armstrong, 1924.*

Fig. 5

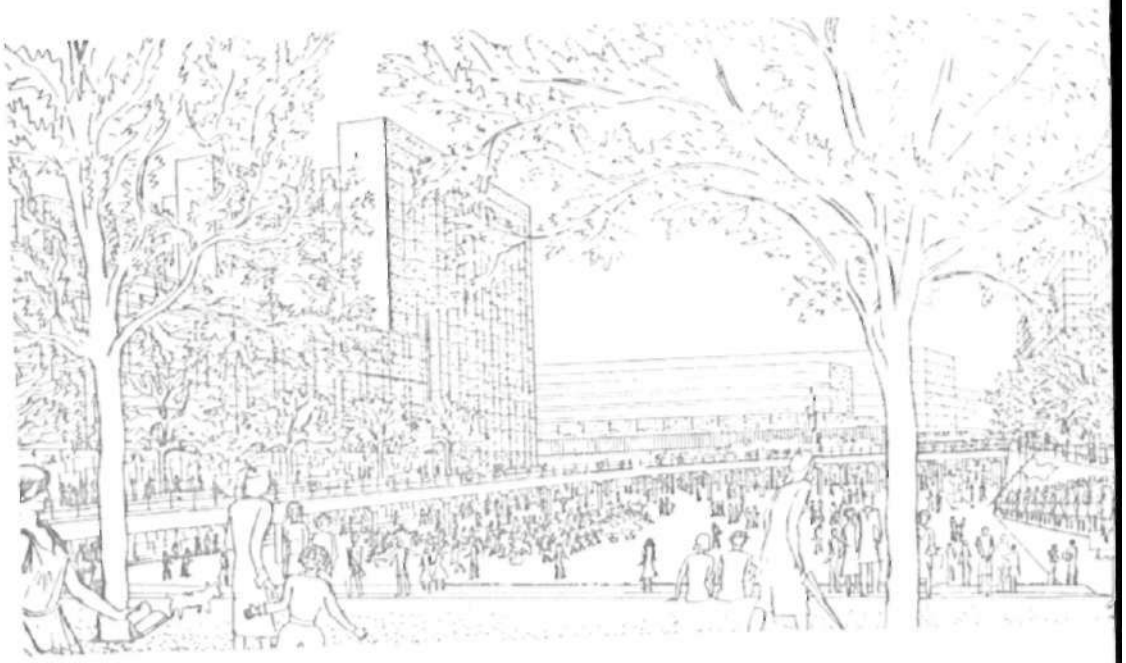
The renaissance era has been described as a period of evolution in the history of urban design, art and architecture. A new trend of thought identifies man as the centre of the universe - the scale of all measurements. This is consistent with the shift of emphasis from the sacred to the secular as palaces gradually replaced cathedrals as focal points of vista.

BAROQUE: (fig. 5) The baroque era was significant for its emphasis on the organisation of outer spaces. Openness replaced compactness in the spatial composition of free spaces. The space concept of the Baroque did not tend to enclose an object; it's aim was to lead to the important focus.

The fashion of isolating individual spaces, such as public squares and plazas, gave way to a more resolutionary spatial interlock of spaces.

'Baroque designers organised space and made it continuous, they reduced the space to measure and ordered it with motion and time'. To this effect, highways and boulevards became important urban space connectors. Unity and articulation in urban spatial composition was consequently achieved.

While obelisks, fountains and statues remain characteristic features of the important landscaped



public spaces they are organised as rythmical intersections along lines of movement. In particular, obelisks and important buildings strategically located along the space, are used to form lines of tension that regularized the movement system.

URBAN SPACES IN MODERN TOWNS: (fig. 6) Contemporary city planners continue to acknowledge the efficiency of well articulated open spaces in the social, cultural and political life of the city. In more recent urban planning projects, the virtues of extended open spaces were harnessed to give character and quality to city life.

'The baroque openness was augumented and further developed. Belts of open green flow from the surrounding greens deep into the very heart of the city. Proximity to nature, freshness, and a relationship to growing things are hallmarks of the new trend.

A sustained and continuous use of open space in city centre is achieved through the principles of mixed planning. Commercial plazas are surrounded by multi level concourses animated with activity which accentuate their three dimensional qualities. Typical examples include Back Bay Centre Boston and Rockefeller Centre, New York.

The growing impact of automobile in the circulation patterns of cities calls for improved traffic solutions

in respect of vehicular and pedestrian circulation. The popular approach is complete segregation of the two systems by use of fly-overs and under-passes which offer possibilities of development of large scale pedestrian malls and precincts.

CONTEMPORARY LANDSCAPE ELEMENTS

(i) GREENRY:- Assorted types of plants and grasses offer welcomed relief from the predominant visual impact of hard solid concrete structures of our built up environment. They also possess pleasent aesthetic qualities. The trees in addition offer shade to the buildings absorb distressing urban noises and may also be used to screen off undesirable views, such as cars and vehicular parks.

(ii) WATER POOLS AND FOUNTANS:- Used to give inpression of coolness and pleasant reflections of surrounding facades. Skillfully designed fountains and water jets are established landscape features of tremendous beauty.

(iii) PAVING SLAB, STONES, BRICKS AND CONCRETE:-

There are interesting features of most of the best known modern public spaces. They add variety and give expression to different functional zones of the space.

(iv) SCULPTURE AND STATUES:- These are symbolic expressions of our art and culture. They enrich space and could be used to define lines of movement.

CHAPTER THREE

CASE STUDIES

TORONTO CITY HALL: (fig. 7a) The new Toronto city hall, by Vigo Revell was designed to meet the needs of a rapidly expanding city aswell as to provide a dramatic visual focus for the whole city.

It is a composition of great strength and expresses monumental qualities of a very high order. It's shape is distinctive and dramatic, setting it apart from other structures in Toronto and office building anywhere. It is a sculpture in an urban scale aswell as a symbolic expression of the two tie power structure that runs the city - the city council and the metropolitan council.

THE MAIN SUBCOMPLEXES:- The complex is composed of four main elements.

a) THE CIVIC SQUARE:- This is located to the south end of the plot in the form of a largely open and well landscaped forecourt to the main structure. Functionally, it acts as a venue for a wide range of civic and political activities for the entire community.

The square is surrounded by a column of pilotis which supports an elevated walkway above, giving the enclosure a spatial sense of space in three dimensions and at the same time contributing to the subtle

articulation of the surrounding elevations.

As the principal meeting space for the entire community it is an ideal setting for open air concert shows, informal and ceremonial displays, and passive recreation activities - it is above all a retreat from the hustle and bustle of business and traffic characteristic of the town centre.

The rectangular pool with its dancing fountions, along with other sculptural elements and plantings together conjure an image of eloquent beauty in summer, and in winter the artificial frozen surface of the pool attracts throngs of skaters. This way a year round intensity of activity is sustained.

Good detailing and construction of paving slabs provides efficient drainage network to the roof surface of the large parking area beneath the square.

b) THE PODURIM:- This is a three story structure which forms the base for both the council chamber and the two blocks of office towers. There is a sub-basement floor that accomodates mechanical equipments and a basement floor entirely devoted to car parking.
A total of seventy five car parking space is provided in the area exclusively for council members use.

Entrances at the first floor level of the poduim ensures smooth pedestrian access to the building from the street and the square. Public intensive functions

such as library, registry offices and land title offices are well placed on the entry level while the elected members accomodation, the offices of the Toronto city clerk and Metropolitan Toronto clerk together with a set of committee rooms are arranged on the second floor level.

The third floor is essentially an entrance gallary for the council chamber from which a spectacular run of the rising rotanda is observed. The latter is the sole structural base supporting the oval council chamber.

c) STRUCTURE:- The construction of the podium floors is predominantly a system of reinforced concrete joist supported by reinforced concrete beams and columns. The columns rest on concrete based foundations, which are carried down to solid shale.

d) THE COUNCIL CHAMBER: Firmly poised within the space enclosed by the two shells of the office towers, is the dome toped structure that houses the council chamber.

In section the council chamber consists of a sunken area in the centre for the mayor and his fellow councillors. This is partly surrounded by a semi circular raked seating area for spectators.

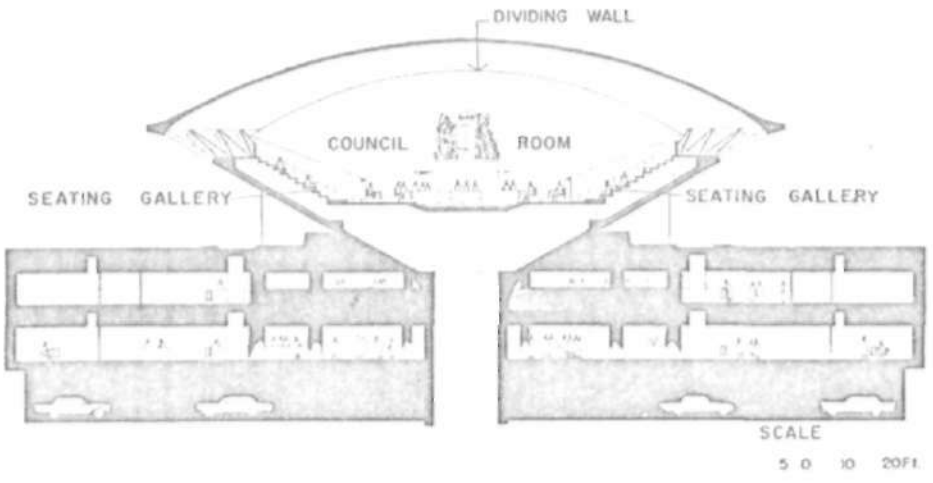


Fig. 5 — Section through council chamber

Fig. 7

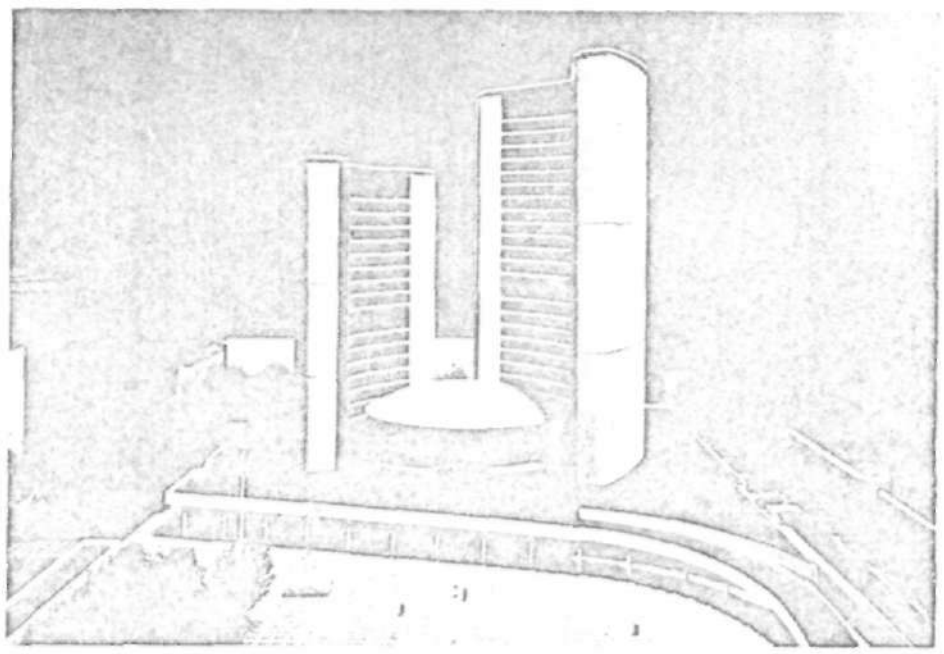


Fig. 1. — Photograph of model

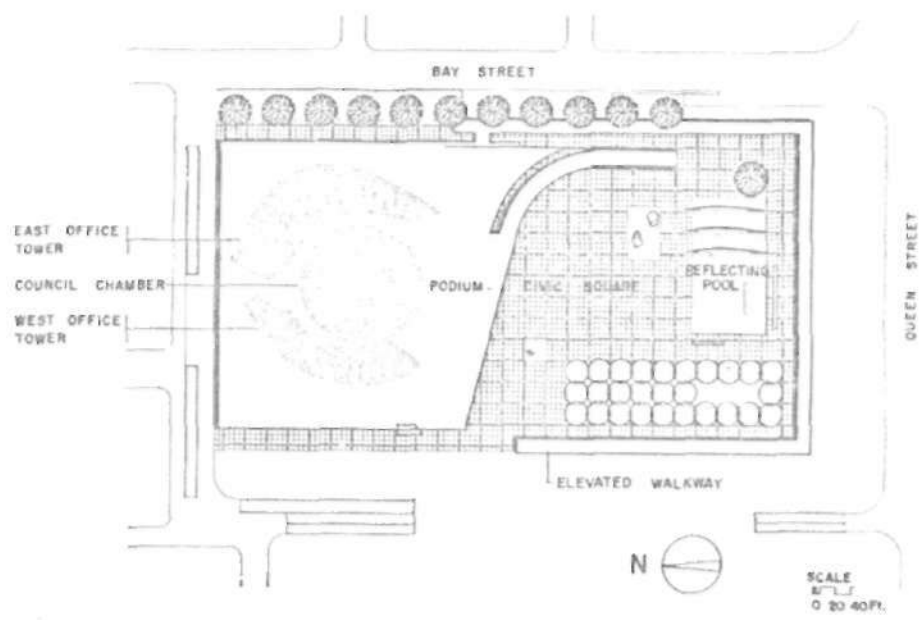


Fig. 2 — Site plan

Fig. 7

The second floor level consists of the gallary slab, behind the public seat raked gallary which connects up with the members lounge and anteroom on the same floor at the southern end.

A curved dividing wall seperates the council room from the lounge which is approximately one third the area of the whole structure. The kitchenette is centrally positioned in the lounge area and canouflages and executive elevator beneath, that transports the members from the parking area at the basement of the podium to the main council floor.

STRUCTURE: (fig. 7b) The structure of the council chamber is basically three fold. First, is the base rotanda, which is a cylinderically reinforced concrete shaft solidly grounded in a shale foundation beneath the podium. The rotanda suspends the main body of the chamber which is in the form of an inverted concrete cone reinforced in places by two prestressed ring beams. A system of inclined procast concrete shaft projects above the top ringed beam of the circular cone to support a reinforced concrete done roof with an outer prestressed ringed beam. The area between the concrete shaft is glazed, exposing a paranomic view of the plaza from the members lounge.

A detailed study of the structure reveals a well detailed interplay of forces achieved by means of struts, cables, redial beams and calculated angular disposition of structural members which act simultaneously together, to produce a practically sound structural solution to an architecturally complex design.

OFFICE TOWERS:- The various city and metropolitan departments are located in the two crescent shaped buildings which focus in upon the domed council chamber. The towers are unequal in height, constituting an unusual feature of Toronto Skyline. The West tower contains twenty floors and rises two hundred feet and six inches above the street level. The East tower contains twenty seven floors and extend sixty sic feet above the West tower. Interposed between the floors of offices in each tower are two mechanical equipment floors that provide sevices to the complex as a whole.

The outer curves present solid masses of well finished concrete and marble clad walls, reinforcing the outside impression of strength of character of the design. The walls support reinforced concrete office floors which are faced with huge areas of glass and nickel stainless steel. The twenty seventh floor of the east tower is open to the public and offers a spectacular view of the city and its environ.

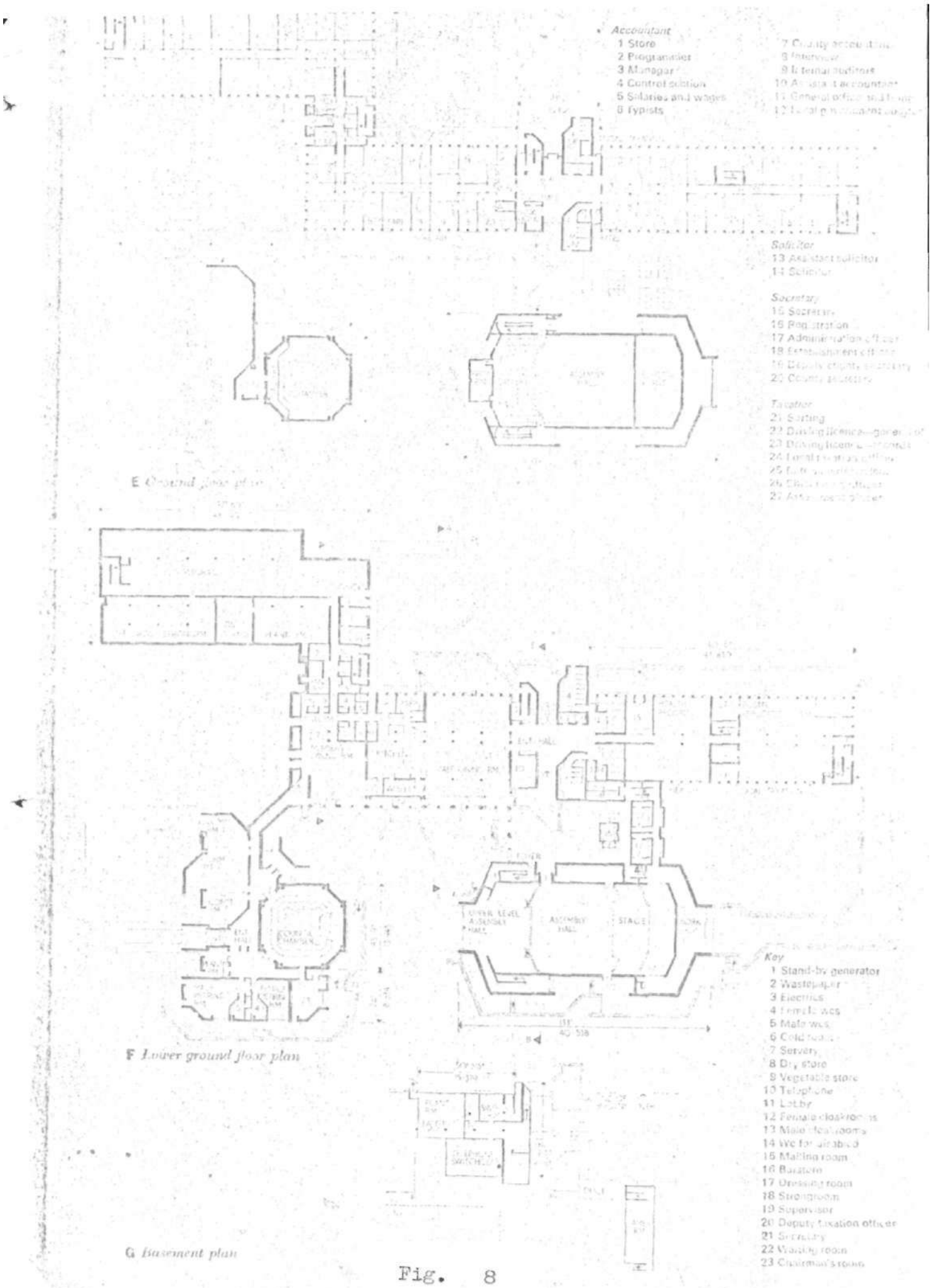

Accountant
1 Store
2 Programmer
3 Manager
4 Control section
5 Salaries and wages
6 Typists
Solicitor
13 Assistant solicitor
14 Solicitor
Secretary
15 Secretary
16 Registration
17 Administration officer
18 Establishment officer
Taxation
21 Sorting
Key
1 Stand-by generator
2 Wastepaper
3 Electrics
4 Female WCs
5 Male WCs
6 Cold room
7 Servery
8 Dry store
9 Vegetable store
10 Telephone
11 Lobby
12 Female cloakrooms
13 Male cloakrooms
14 WC for disabled
15 Mailing room
16 Bar/store
17 Dressing room
18 Strongroom
19 Supervisor
20 Deputy taxation officer
21 Secretary
22 Waiting room
23 Chairman's room
E Ground floor plan
F Lower ground floor plan
G Basement plan

Fig. 8

STRUCTURE:- The towers were designed as vertical cylinderical shells reinforced by a series of transverse diaghrams in conjuction with longitudinal columns. The presence of these reinforcing elements transforms the classical cylinderical shell into an arthotropic shell structure subjected to the action of vertical (gravity) forces and horisontal (wind) forces.

CONCLUSION:- The new Toronto City hall is undisputedly a modern break-through in the design of monumental urban structures. It's articulate and masterly relationship to the environment is remarkable, its structural composition a novelty. However its rigid structural disposition may be inimical to any proposal for a future expansion.

ANTRIUM COUNTY HALL, ULSTER: (fig. 8) Like the Toronto City hall described above, the Antrium County HALL IS A RESULT OF AN OPEN DESIGN COMPETITION. But in direct contrast to the other the latter is located in an isolated rural setting.

The original brief allowed for the following functional units.

a) Elected members accomodation comprising the council chamber, individual members' suites and committee rooms.

b) Municipal office accomodation for the various departments of the town council.

c) Municipal office accomodation for the various departments of the town council.

d) Communial facilities such as lounge and cafetaria for council members and employees.

e) Parking for approximately 1150 visitors, council members and staff.

The winning design by Anthony Burman and Tony Goodall is particularly remarkable for its fine touch of highly original detailing and its effective integration into the surrounding landscape.

The usual pump and grandeur associated with a well marked axial entrance was deliberately avoided. Instead the architects explored the exciting visual qualities of dramatic vista. From a neatly camoflaged visitors park, a dramatic entrance view around the coner reveals the free standing council chamber and chichester (multipurpose) hall in silhoutte against the enphatically horisontal office block in the background. On a fine day the walk along the brick paved concourse provides a marvellous architectural experience!

DESIGN CONCEPTS AND OBJECTIVES:- Some of the many design appeals of the project includes the use of grass banking to soften junctions of buildings to the ground,

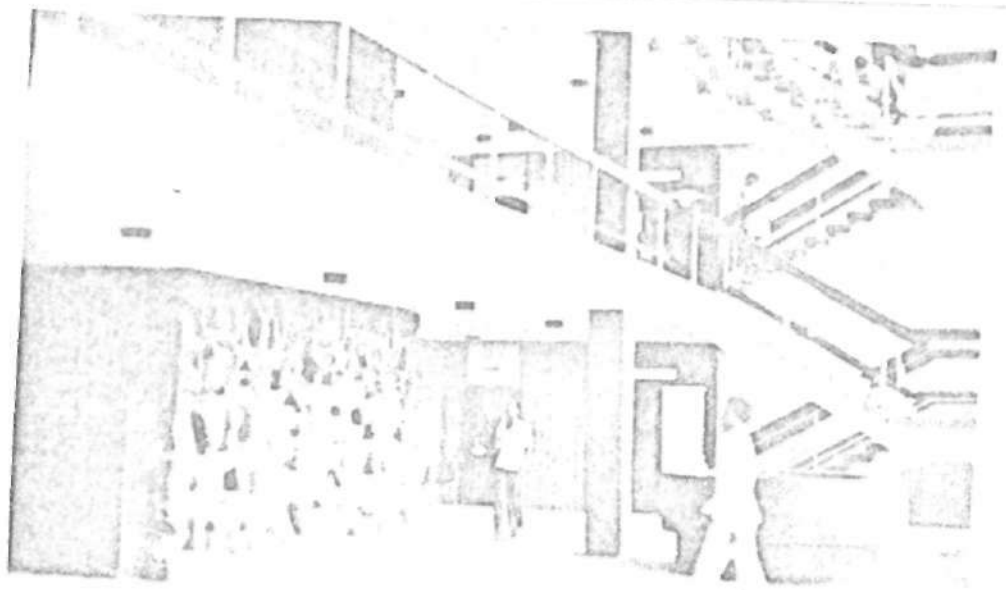
ensuring a smooth transition into the surrounding landscape.

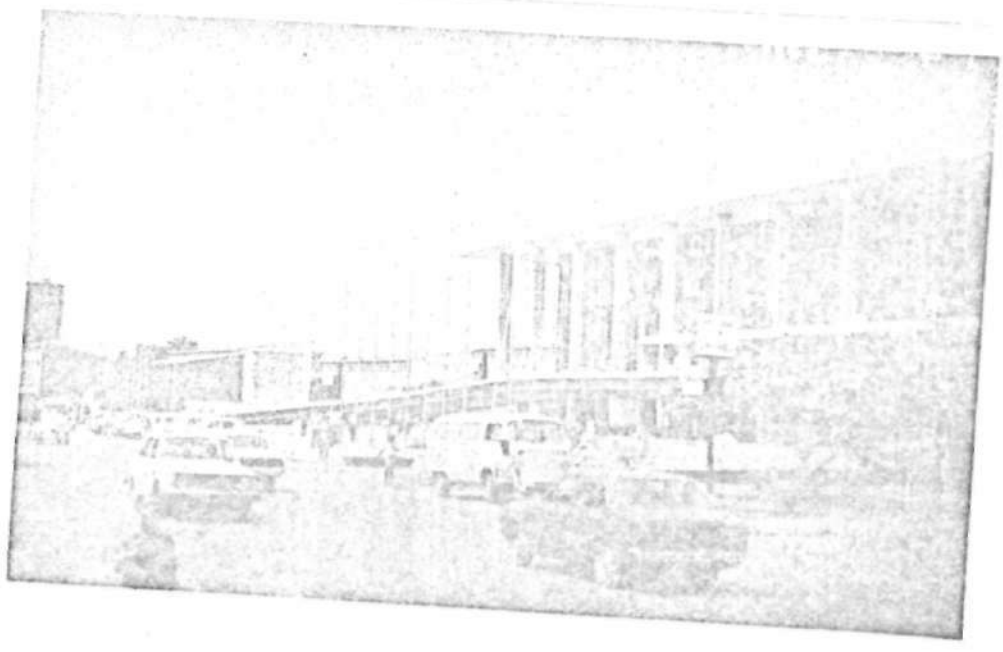
The various functions of the municipal building are given eloquent spatial expression as three distinct but interrelated elements. Nevertheless, the use of vertical circulation towers to link the elements of varing scale is commendable. Ultimately distinction and harmony were simultaneously achieved through articulation of the various subcomplexes of the project.

As usual the departments which attracted more intensive public visits like the treasury are located on the ground floor while the more functionally disposed ones are carried up to the upper floors. The internal planning of the office accomodation is based on the less adventurous cellular concept. A continuous band of windows on each free facade gives vent to pleasant surrounding views.

The council chamber and the multipurpose hall radiate strong sculptural qualities with wall surfaces folded back in places to achieve a noticeable introvert design character.

STRUCTURE:- The structure of the 5 storey office block is based on simple reinforced concrete grid principle comprising squares columns and reinforced concrete slab floor. The staircase and service floors are enclosed in insitu reinforced concrete walls.





The council chamber and assembly blocks are constructed on load bearing brick and concrete walls which support a lattice beam and slab and concrete beam roof structure.

CRITICAL APPRAISAL:- The rate and tax office although well located on the entrance floor lacks the magnificent outlook of a well appointed office interior. Another weak point of the design is evident in the clumsy padestrian/vehiclar traffic relationship around the staff entrance.

Thirdly, inspite of the concious effort by the architects to relate both the assembly hall and the council chamber into a visual harmorny the former consistently lacks the tough of finesse (in quality) of its neighbour.

Despite these isolated cases of weakness apparent in the overall design details, the high quality of design compitence and standard carried all through the various facets of the project is undisputeable.

LAGOS CITY HALL:- This municipal complex is centrally located in the region of the island's commercial and business district. The distinctiveness of its bold structural elements aswell as its predominant horisontal emphasis gives it a prominent place amongst its neighbouring high rise structures.

The main entrance to the building is to the south via Catholic Mission Street. The approach over a paved forecourt leads to a chunky ceremonial ramp that terminates in a conspicous entrance balcony at the first floor level. The chief entry space is well decorated with montiffs, cultural displays and artworks. Two main stairways and a corridors connect the entrance foyer to the various sections of the building. The first floor accomodates mainly the offices of the treasury department.

The north entrance from Igbosere road is on the ground floor and gives direct access to the post office aswell as the linconcing, cash and pay hall.

A small parking lot is provided off the minor road bordering the estern end of the building in addition to the twenty two car parking space in the ground floor level. General provision for parking is tight and only occasionally relieved by the temporary use of the paved forecourt as the public parking lot. The unresolved problem of parking together with the hotch potch treatment of the surrounding landscape are some of the most palpable weakness of the design.

DESIGN CONCEPT: In contrast to the previous case studies reviewed above, the Lagos city hall is conceived as a single compact design with no external emphasis given to any of its internal functions. The corporate image of the building is thereby emphasised.

Internally, two basic layout of functional zones can be observed - a rectangular arrangement of departmental offices and other common and an cilliary facilities plus a central spine block linking two opposite ends of the rectangular form in a north-south direction, to create two paved interval courts. This latter block contains both the multi purpose assembly hall below and the council chamber on top. The entrance to the council chamber is on the second floor level and together with the chairman's parlour, a number of committee rooms and the secretary's department complete the second floor space accomodation. The Secretary to the municipal council by this arrangement is closely related to his political counterpart - the Chairman of the council.

Consistent with the basis requirement of the design, public intensive functions like the treasury departments, weight and measures etc. are placed out lower floor levels, thus most readily accesible to the visiting public while the other departments with indirect service functions are moved up to higher floors.

A number of works of art are displayed at public areas. At the entrance to the barquet hall, there are two wooden carrings, each 5.2m by 2.9m of Nigerian montiffs. At the public entrance to the council chamber there is a mosaic mural showing typical Lagos festivals.

The main doors of the cash and pay offices are carved in local montif.

The various departments of the city council offices are laid out in cellular order with a central corridor looping round each floor. The respective departmental heads and meeting rooms take up accomadations at the end corners of the rectangular structure.

STRUCTURE:- The structure of the building is based on simply reinforced concrete columns and beams network. The external columns stand clear off the walls giving full expressions to their strength. They are decorated with slabs of marble claddings. The overall impression is a structurally rigid order that compliments the monumental image of an important and powerful institution.

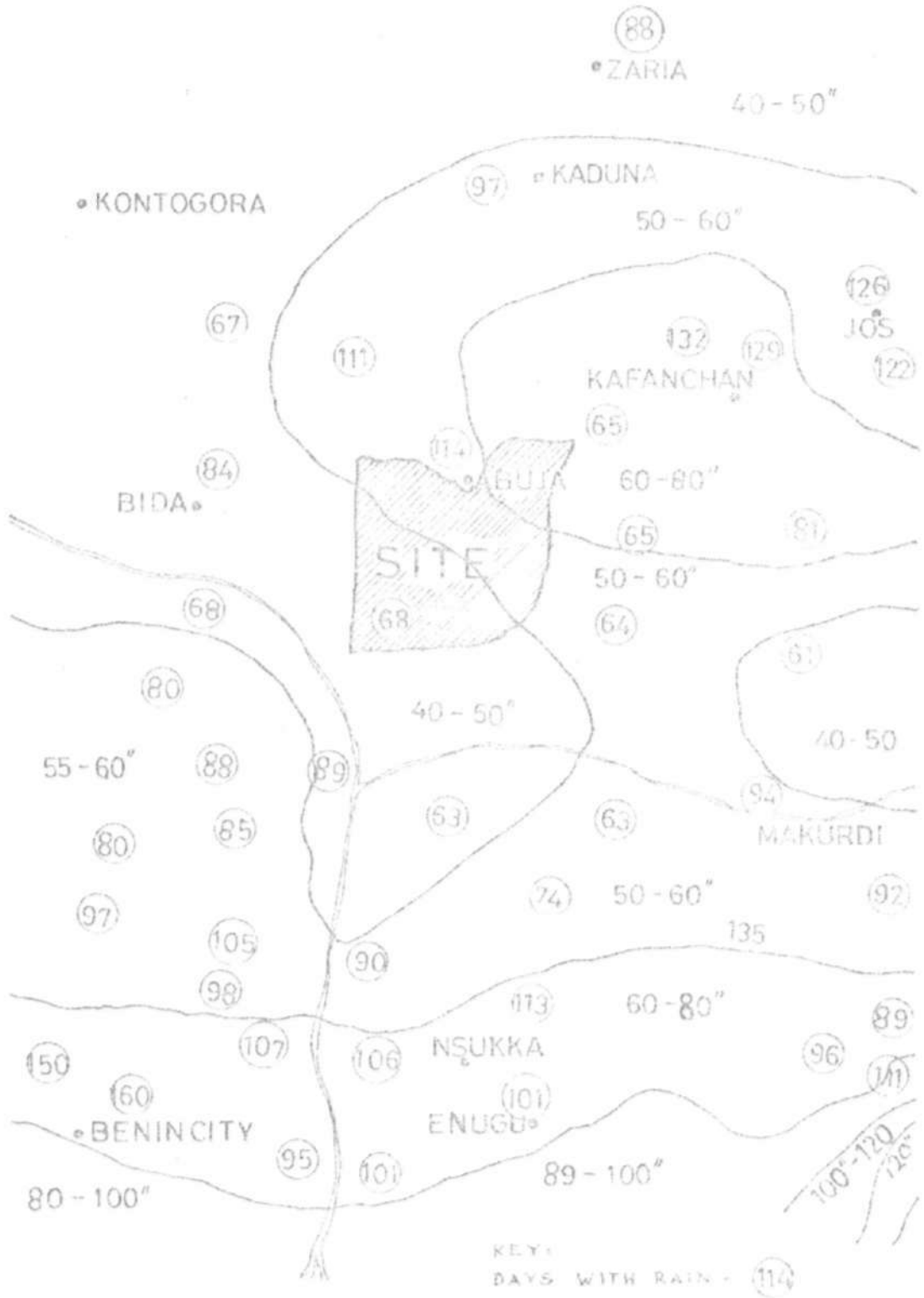
CRITICAL APPRAISEL:- The closed form of plan lay out in addition to its Limited plot area makes future horisontal expansions difficult if not impossible. This perhaps contributed to the present intersive use of internal spaces in a situation which is bound to deterioriate in future unless prospects for vertical expansion is explored or part of the accomodation transfered to a different site.

Despite the flamboyant use of glazing to enphasize openness and accessibility it is doubtful whether the desire to develope the complex as a meeting

place for the community is successful. This can be traced firstly to inadequacy of the forecount as an attractive meeting spot for relaxation and other form of social activities that could generate interse public interraction and secondly to the lack of well organised internal foyers and spaces.

Nevertheless the Lagos municipal building retlects a bold concious attenpt towards uplifting the general image of our civic building in particular and improving the quality of dosign of our important public buildings in general.

MEAN ANNUAL RAINFALL



SCALE 1 : 3,000,000

Fig. 9

CHAPTER FOUR

ENVIRONMENTAL DETERMINATS (fig. 9)

CLIMATE:- Basically the climate of our environment which determines the daily weather conditions of any place greatly influences our comfort and general sense of well being at any time. It is therefore pertinant that any successful attempt at building and environmental design must take into consideration the design influence and implication of the climate of the place.

The study of building science reflects a recognition by modern science of the influence of environmental conditions on building materials and modern methods of building and all other forms of physical structures originated as an attempt by man to moderate the extremeties of our climatic condition and protect himself from all forms of natural hazards; - a shade from the scortching sun and an artificial blanket against the biting cold. Down to the very modern times even as the functions of buildings become increasingly more complex, positive sympathy with existing, surrounding climatic influences continue to remain the hallmarks of the most successful man made structures and landscape treatments in any place.

CHAPTER FOUR

ENVIRONMENTAL DETERMINATS (fig. 9)

CLIMATE:- Basically the climate of our environment which determines the daily weather conditions of any place greatly influences our comfort and general sense of well being at any time. It is therefore pertinant that any successful attempt at building and environmental design must take into consideration the design influence and implication of the climate of the place.

The study of building science reflects a recognition by modern science of the influence of environmental conditions on building materials and modern methods of building and all other forms of physical structures originated as an attempt by man to moderate the extremeties of our climatic condition and protect himself from all forms of natural hazards; - a shade from the scortching sun and an artificial blanket against the biting cold. Down to the very modern times even as the functions of buildings become increasingly more complex, positive sympathy with existing, surrounding climatic influences continue to remain the hallmarks of the most successful man made structures and landscape treatments in any place.

MEAN ANNUAL MAXIMUM TEMPERATURE



SCALE 1: 3,000,000

The general climatic conditions of the site of the federal capital territory is considered under the following headings.

a) TEMPERATURE AND HUMIDITY: (see charts above)
The local temperature conditions of the site is typical of the tropical climatic type. Like all other areas in the country, its local day to day weather situation is heavily influenced by the action of the two major seasonal winds that sweep through the country yearly.

The highest temperature is recorded in the months just before the rains - March and April. The absence of cloud cover and the lack of any appreciable air movements are the main contributing factors. The following season which lasts for a period of approximately seven months, is generally hot and stuffy due to the high relative humidity of the moisture laiden air. This general hot situation is however punctuated with numerous instances of cool weather condition during and immediately after the rains - only then is the condition truely refreshing and temperature quite moderate.

Generally any form of air movement as this season brings in some measure of comfort and relief by virture of increased everparation of sweat from the body and its consequent cooling effect.

DESIGN IMPLICATION:- Building facade should be adequately fenestrated and well orientated to take advantage of local wind directions. Regular movement of air should be sustained by provision for cross ventillation of the building. Alternatively, optimal temperature and humidity condition can be artificially achieved by means of air conditioners, or more cheaply, though less efficiently, by the provision of mechanical fans to help generate regular air current.

During the harmattan season warm, afternoon temperature gives way to cool and sometimes cold late night and early morning conditions recording an appreciable diurnal range. The harmattan wind is dry and dusty and the relative humidity reaches on all time low. The harmattan season usually lasts for a (shorter) period of about five months commencing early in November and dying off by early March.

DESIGN IMPLICATIONS:- Building interiors should be protected against the dusty wind. This is best achieved by provision of well fitting shutters for all vents into the building while simultaneously limiting the amount of openings exposed to the general direction of the harmattan winds.

Reflections of the direct rays of the sun from the cloudless sky produces glare on striking any reflective surface, it is therefore necessary to limit

the use of landscaps elements with shinny reflective qualities. This imperative must however be balanced by the need to create an aesthetically pleasant reflection of vertical surfaces through 'mirroring of images'.

b) RAINFALL:- The federal capital territory falls largely within the rainfall savanah climatic belt with a mean annual rainfall of about 50". The period of rainfall is ofcourse coincident with the period of influence of the moisture laiden coastal winds from the South West direction. The rains set in early as April and lasts up till the month of October. The rest of the year up till the beginning of next year's rains is dominated by the dry wind of the North East direction.

The early wet season is characterized by thunder-storm and short spells of heavy downpours.as against the quiet and prolonged rain of the mid months. The late rains are as stormy as the former.

DESIGN IMPLICATIONS:- Roof coverings must be solidly anchored to the underlying structure to resist the violent forces of the furious storms of the early rains. Roof design should also ensure rapid descharge of inpinging water to avoid collection of pools of water at building tops and consequent problems of water leakages into the interior.

Given a retentive soil type, the amount of rainfall is sufficient to sustain a wide range of tropical trees all through the year. Characteristically, the vegetation is usually dense with green leaves during the wet season with flowers displaying their natural beauty under the bright sunlight. In contrast the plants wither during the dry season. The leaves turn drab gray, unless maintained reluarly with adequate water supply. The ground of the surrounding landscape should be protected from exerssive loss of surface moisture through evaporation.

C) SOLAR RADIATION:- Basically, the sun path diagram follows a general East - West direction. Exposing, the Eastern and Western facades to oppresive solar radiation impacts. Solar energy effects are most intersely felt during the mid day and afternoon periods when the sun assumes overhead position.

DESIGN IMPLICATION:- The office hour extends from morning up to 3.30 p.m. At this time the afternoon sun radiates downwards at a high angle of incidence thus openings into the building can be effectively shielded from direct exposure by means of limited protective overhangs. External walls should be made of highly insulating material to delay the transmission of heat energy into the building during its hours of use.

(morning - afternoon period). Roof surfaces should have a high reflective factor and little heat absorption capacity, to reduce impact of radiated energy into the building directly from above. Trees can be used to provide shade for building facades and the surrounding activity spaces in general.

d) VEGETATION:- The predominant vegetation is typically decidious. Leaves of plants are shed in the dry harmattan season but soon reappear at the unset of rains. Only a few 'all season' trees retain a substantial volume of leaves throughout the year. The more popular crop of trees commonly found in the area mangoes, melina, locust beans, shear butter and oil bean trees. Asorted types of palm tree grow around river banks.

DESIGN IMPLICATIONS:- New plantings should incorporate more of the all season trees. Choice of planting should be based on its aesthetic quality and overall positive contribution to the environment.

e) TOPOGRAPHY:- An analysis of the topography of the site shows a gentle slope from East to West and an even more gradual tilt southwards towards the valley of a small stream running roughly east-west along the central area of the master plan.

But in general, the capital territory is vandanly punctuated with strstches of low highland ranges which

CHAPTER FIVE

THE MAKING OF THE SITE PLAN

THE SITE IN RELATION TO THE PLAN STRUCTURE OF THE CITY CENTRE (EXCERPTS FROM THE THEORETICAL MASTER PLAN)

1. The dominant feature of the central traffic network is the fast traffic expressway that run approximately east-westerly, linking the national assembly building at one end through the region of the city centre to the super-terranean railway station at the opposite end. TRAFFIC CIRCULATION:- This central spinal road has a dual pattern based on the imperatives of a one way traffic solution. Lying between the two arms of the road is a central belt of greenery about 200m wide which stretches out linearly to connect the government area and recreational facilities of the chukuku highland area, to the east, with the vast area of virgin land to the west beyond the main super terranean railway station. It is proposed that all major public recreation spaces with the zone of the city centre should be positively physically related to central spinal park to achieve the spatial continuity of a linear recreation network.

The other strategic feature of the city's traffic network is the underground railway line running

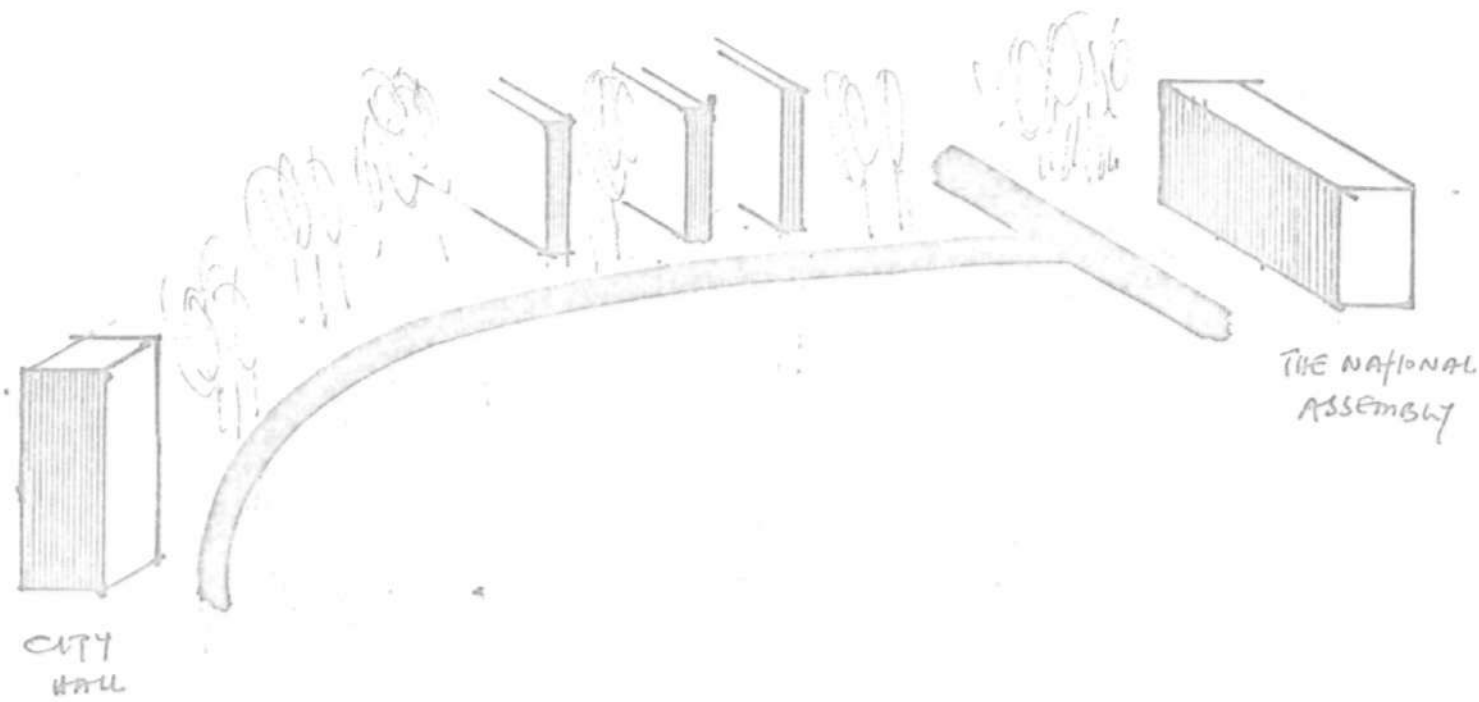
the otherwise, ghostly and drab characteristics of city centres at night times.

INTERNAL CIRCULATION:- The design of the internal circulation network within the entire city is based on a hierarcly of traffic routes. Thus, only the district roads connect the central spinal roadway to the surrounding settlements and layouts. The district main roads designed as six lanes and two way carriage-ways, pass between but outside the district. The district minor roads head a hierachy of road networks that permeate the community layout. It is usually a four laneway.

The site of the city hall is a large area of land lying at the junction of the central expressway with one of the district minor roads. Close to the heart of the city centre. The vehicular access into the complex is off an internal major road tapped off the minor district road, which runs deeply through the shopping and civic area. All vehiclar access into the site lead either to the car parking lots or some service yard and does not interfere with major pedestrian access into the complex.

2. LOCATION CRITERIA:- The following factors justify the choice of the site for the proposed municipal complex.

THE VISTA



THE NATIONAL ASSEMBLY & THE CITY HALL RELATED BY A SUBTLE DYNAMIC VISTA VIA THE EXPRESS ROADWAY.

Fig. 11

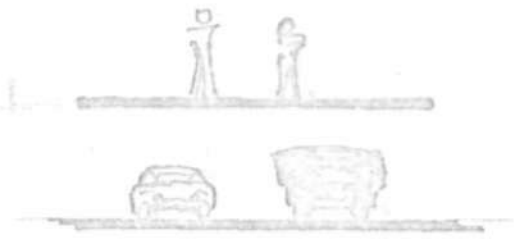
(i) ACCESSIBILITY TO USERS:

a) The efficiency of any government institution is directly related to its convinient location in respect of the majority of the community which it is required to serve. In this connection the city centre by virtue of its centrality and close physical relation with the centire planning districts of the masterplan is considered ideal.

b) Again accessibility is enhanced by close location the the centre of transportation and business activities. The central business district is the focus of the city's road network and accomodates the principal users of the civic facilities. In addition the site is closely associated with both vehiclar and railway traffic nodal points from which varying modes of public transport systems take off to serve the entire metropolis.

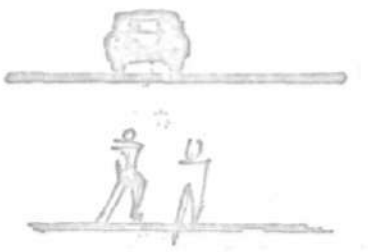
(ii) ZONING REGULATIONS:- The need for constant laison and interraction amongsts various government departments and co-operations with emphasis on public service, plus the advantages of proximity and access to services of professionals and the business world demand an organised close physical relationship between accomodations for similarly orientated and interdependent functions. It is anticipated that by locating the site of the proposed complex at the heart of the zone of

DICOTOMY OF PEDESTRIANS & VEHICULAR WAYS-

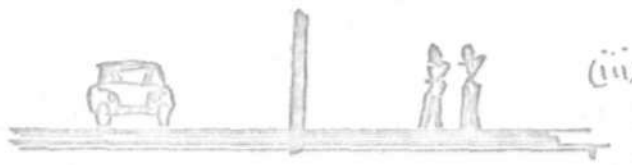


(i)

(i) & (ii) Vertical seperation by means of different levels



(ii)



(iii)

Horizontal seperation by means of physical barriers and obstacles.

Fig. 12

commercial activities and government cooperations the public can be served more effectively and efficiently.

(iii) The problem of parking space in the heart of the central commercial and business district of any big modern city is already well publicized. The location of any major public building should as a matter of good urban planning principle air at reducing parking requirements. People come to the city centre to do a lot of things, frequently they park and walk between different places of business, This habit underscores the need for a concentrated parking solution and the case (ii above) for grouping together public and commercial buildings of common service orientation.

3. SITE PLANNING PRINCIPLES: (fig. 11 & 12)

(i) The central spinal expressway links the national assembly building and the city hall in an even changing vista that reflects the dynamic visual tension relating the two most important public building in the city.

(ii) The municipal complex is conceived as a dominant focal point in an urban centre. This is consistent with :

a) Its function as an inviting meeting place for the community of the city - the building structures are orientated towards indoor meetings while the plaza and surrounding park are for outdoor gatherings.

b) Its image as the sole authority with absolute power of jurisdiction over city affairs.

(iii) Fore courts are desirable on all sides of the building, across which its three dimensional qualities can be appreciated. In addition they provide transitional spaces between the rigid architectural structures and the subtle pedestrian circulation networks surrounding them.

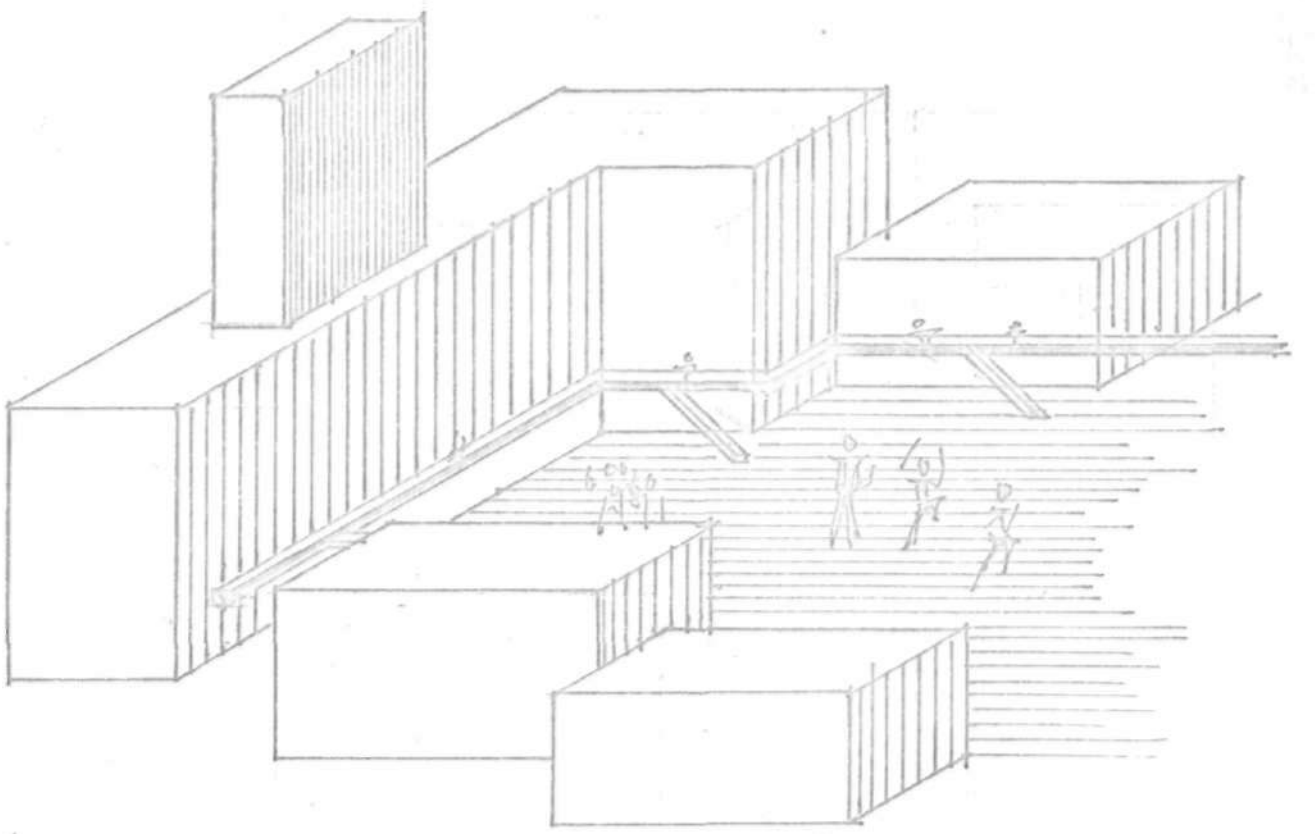
(iv) As a three dimensional form of plastic quality the buildings are integrated into the surrounding environment as a sculpture in space. This is achieved through well articulated composition and nessing of the various subconplexes of the project resulting in a unified spatial image.

(v) Fountains, sculptures and plantings are used to focus attention to the dominant object in the architectural space (i.e. the principal buildings). Lines of tension between sculptural objects arranged in the forecourts define lines of pedestrian movements.

(vi) The plaza is adorned with stone pavements and water pools and fountains, which reflect the forms of building fusing the vertical and horisontal planes.

(vii) The town hall and council chamber is intimately related to the chief civic space (plaza) being expressive of the corporate life of the town.

(viii) Pedestrian and vehicular access ways into the complex are destinctly defined and dicotomized to avoid any traffic chaos during rush hours.



ALTERNATIVE A - MULTI LEVEL CONCOURSE.
intimate spatial enclosure animated with life.

Fig. 13

(ix) The organisation of the main pedestrian and vehicular access to the complex is subtly arranged to provide a dynamic panoramic view of the main architectural features of the complex on approach.

An equally changing views of the complex is perceived by motorist along the express highway.

(x) Open spaces are organised in a hierarchial order from intimately private to modestly large seni public and finally to the large public spaces (plaza). Each has distinct functions of recreation.

(xi) NOISE ZONING:- All passive activity functions such as council meetings and lectures are accomodated at appreciable distances from serious noise sources within the environment, especially those due to traffic circulation within the site. To this effect the principal buildings are set back sufficiently away from the surrounding major roads and dense planting at critical areas are used to dampen the overall noise effects from such uncontrollable sources as car parks.

4. DESIGN CONCEPTS FOR THE SITE PLAN: (fig. 13)

ALTERNATIVE A - (MIXED USE PROTOTYPE):- The first alternative proposal for the site plan is in the form of an open rectangular plaza enclosed on three of its four sides by buildings of varying functional activities arranged on different levels. The municipal building

is located on the end opposite the free side; With the structures on either sides of the plaza arranged to focus in on it thereby emphasizing its dominance over the space and all other surrounding features.

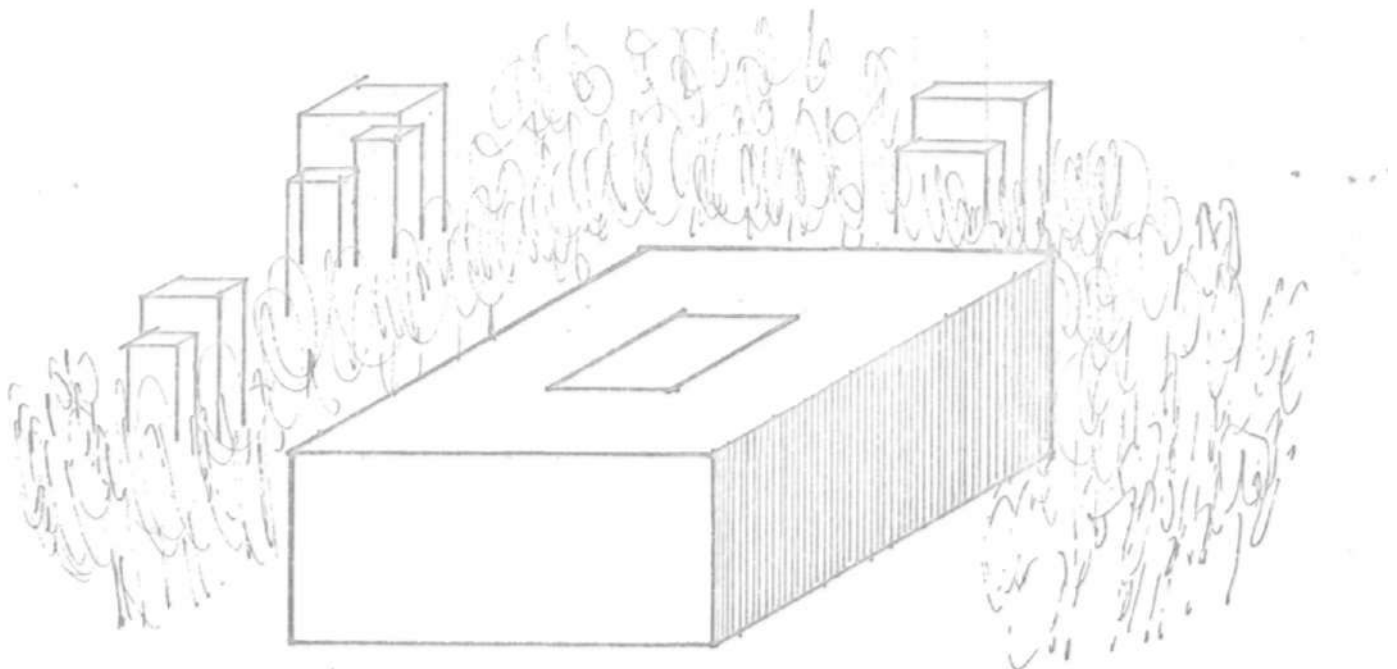
The focusing effect is achieved in plan by constricting the breadth of the plaza as one approaches the principal building direct from the free end, adjacent the expressway. The plan form is complimented in section by a successive increase in no of floor heights of adjacent buildings towards the city hall complex; which is ofcourse the tallest and heaviest structure in the immediate surrounding environs.

ADVANTAGES OF THE CONCEPT:

a) The central plaza appears intimate with a greater sense of spatial enclosure and the space is thus well defined.

b) Mixed use planning is conducive to a more intensive and sustained use of space all day long. Where residential accomodation is part of the space forming structure there is a good prospect of extending the use of the plaza deep into the night.

c) By virtue of its limited size and its high intensity of use this concept is considered economically satisfactory and suitable for conjested built up urban centres.



BUILDING IN THE GREEN — ALTERNATIVE 'B'

Contract with nature accentuates 3-dimensional form of blg
Continuity of space achieved.

Fig. 14

DISADVANTAGES:-

a) The coarse-grain nature of this type of spatial arrangement is usually in conflict with the scale of the surrounding structures.

b) The overemphasized focus on internal galleries and courtyards generelly lead to a loss of street life within the surrounding area diffusing the desirable bustle hustle character of the central business district.

c) The surrounding buildings limit the visual focus of the principal building from distant views aswell as the existing views of the beautiful surrounding, natural landscape, observeable from the main building.

d) The compact form is considered non ideal for a new capital city planned on a virgin land where spaceiousness and airiness is more desirable.

ALTERNATIVE B - FREE STANDING BUILDING IN THE GREENS:

(fig. 14)

In this alternative proposal the main building stands out distinctly as a three dimensional sculpture in space. Through complete isolation from all surrounding building stractures, the monumental and imposing qualities of the complex find their fullest expression.

The enclosing large area of greenry provides an adequate spatial setting for the key building, dominating the surrounding well landscaped urban spaces. A large

area of paved forecourt connects the building and the express spinal way to the south. From the latter a commanding impression of the former is readily observed.

The strategic position and design of the city hall complex is in agreement with the universal planning concept which maintains that the larger and more symmetrical the building and the nearer it is to the centre of gravity, the more significant it becomes as a dominant object within its setting. Conversely, the smaller it is and the closer it is placed to one side of the space the more it allows the space to become dominant. In the end a balance is struck between the spatial qualities of the square and the architectural qualities of the building. It is noteworthy that rather than follow the isolated characteristics of a rigidly defined spatial enclosure, similar to the alternative proposal above, the emphasis is on an outward extension of space beyong the limits of the site, ultimately integrating it into the linear recreation belt of greenry.

The principle of prominence by contrast is used to consolidate its dominance over all other surrounding structures. (see fig. 14). The site corresponds to a zone of tall structures (ten or more storey height). The building is projected out by adopting a non

comforming low horisontal form in contrast to the tall slender posture of its neighbours.

ADVANTAGES:- The concept is consistent with the goal of the adopted master plan. In the first place it is well related to the other important public spaces within the city centre through the linear recreation network. Again it fits well into the dynamic vista along the expressway and it is hence indirectly visually related to the national assembly building.

Another interesting aspect of this concept is that through isolation from surrounding buildings, probably disagreement with other geometric shape is resolved yielding maximum contrast with nature and the vast surrounding green can ofcourse be well developed for many forms of passive recreation.

CHAPTER SIX

FUNCTIONAL ANALYSIS OF THE MAJOR ARCHITECTURAL SUBCOMPLEXES OF THE SCHEME

INTRODUCTION:- The city hall is comprised of three basic functional areas:

a) The multipurpose hall

b) The municipal offices

c) The Elected members accomodation

The architectural character, form and planning requirements of each of the above elements is distinct and a direct function of the typical nature of the respective activities it accomodates. The planning solution to the design of the complex as a whole is based on a critical analysis of the functional requi ements of all the major architectural spaces corporate to it.

1. THE MULTI PURPOSE CIVIC HALL

The civic hall is primarily a venue for large scale ceremonial and political assembly connected with functions of the municipal authority. However, since the main functions are intermittent, economic dictates that such a 'hall' must be capable of dual use i.e. letting out to non-authority functions which permits additional revenue to the council. In this sense the city hall can provide a focus for the social and

floor is unraked. Such a dual use cannot be smoothly accomodated in the very large halls.

Economics viability is yet another factor that must be taken into consideration in deciding the ultimate size of the hall. Apart from the basic functions of political and ceremonial gathering the other related activities which occur in the hall are irregular and cannot justify any proposal for a very large hall that coulc well remain idle for many consecutive days. Nevertheless the size of the hall must be related to the scale of activities it is expected to accomodate, the status of the authority and the population of the community it must serve. In the end a compromise solution - a hall of moderate size and a seating capacity of about 700 audience or spectators - is projected. This is justified by impirical evidence of statistics of the sizes of similar, existing civic halls.

COMPONENTS PLANNING GUIDELINES AND DESIGN STANDARDS

Broadly speaking, the entire area of the civic hall falls into two main activity zone - the public area and the actors area. The planning guidelines and standards of the sub components of each zone are analysed below.

PUBLIC AREA

This includes all areas of the hall accessible to the audience and spectators at large.

(i) FOYER:- This is a social intercourse area and general meeting point for the public attending the show. It is very closely related to main entry point into the hall.

This is the nodal point for all public circulation relating the auditorium and its ancilliaary facilities and the ideal place for information displays relating to the immediate programme. This space is conducive for relaxation and entertainment either just before the show or at long intervals during shows.

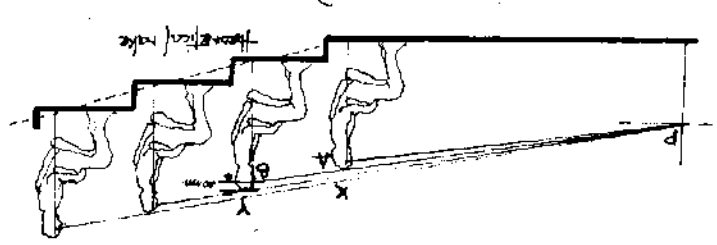
Routes to the entrances to various parts and levels of the auditorium should be clear and readily perceptable from the area. It is desirable that the foyer space conveys an atmosphere of anticipation and excitement. This enables the visitors to fix up their minds in the right psychological mood for the shows. The total area of the foyer is directly related to the total capacity of the hall. As a design standard $.5m^2$/seat is considered adequate.

(ii) LOUNGE:- This is a venue for both formal and informal entertainment as well as relaxation either

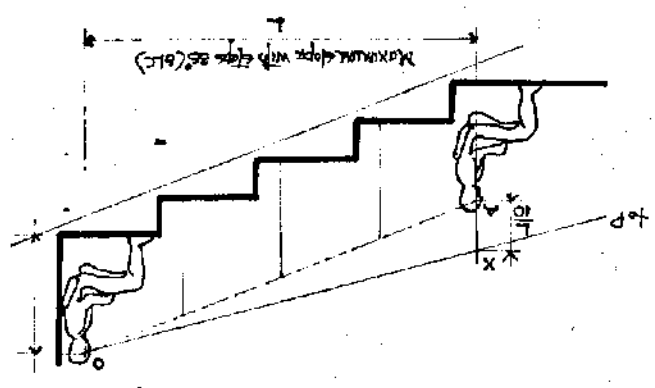
DESIGN OF SEAT &c.

THEATRE DESIGN.

Method of calculating design line with low P.



Graphical method for finding balcony note.

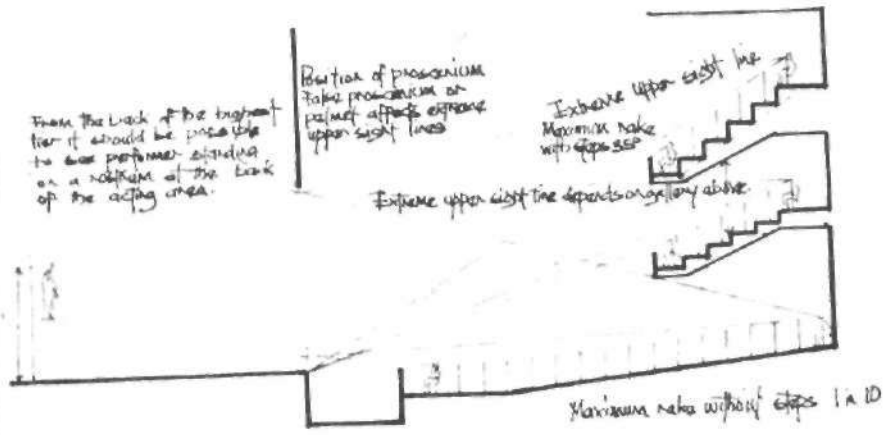


before the show or at intervals. The lounge must be accessible directly from the foyer and should preferably be provided with a snack bar and storage for provision supplies. It is necessary for the lounge to be designed and equiped to provide refreshment service and entertainment to both the staff and public visitors to the municpal building outside show time.

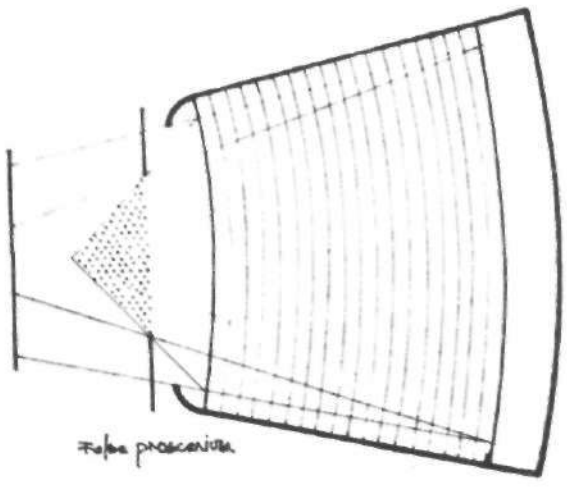
(iii) AUDITORIUM:- This is the chief public area of the hall from where action on the stage can be observed. It is the action area during parties and social gathering. This two polorised functions of the auditorium calls for distinct planning and design solutions for while the former would require a sloping floor rake to provide adequate visiual and aconstic contact with the stage, the other must take place on a flat platform in a level auditorium floor surface.

a) VISUAL LIMITS AND SIGHT LINE REQUIREMENTS:-
For drama shows and all other stage shows where the facial expression of the actors is critical, the limiting distance between the stage and the furthermost seats is 20m. Beyond this point facial expressions cannot be easily appreciated.

The provision of adequate sight line in an auditorium is most readily achieved by means of alwell calculated through a diagramatic principle of floor rake design as shown in fig. 15. Unfortunately, steep sloping floor or rake is undesirable in a multipurpose



VERTICAL SIGHT LINE.



HORIZONTAL SIGHT LINE.

hall of this nature. A compromise solution requires an adequate rise in stage level; use of staggered seating arrangement and the introduction of one or more raked floor balcony.

The plan shape is the main factor that determines the adequacy of horisontal sight lines. The ideal shape is one that fans out from the stage towards the auditorium.

b) ACOUSTICS:

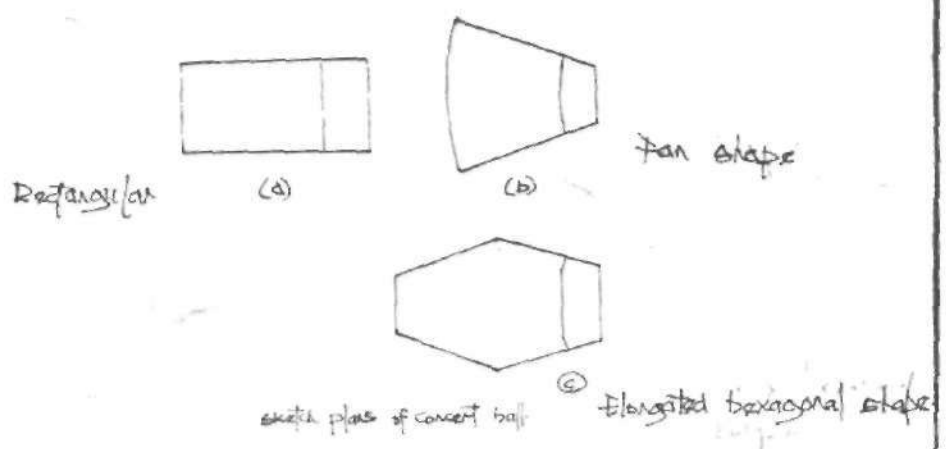
(i) EXTERNAL NOISE:- Theatres of all forms require a low tolerable noise level and uniform acoustic background. To this effect they should idealy be insulated from all forms of external noise preferably through appropriate location in quiet environments. If however it must be placed on a busy, noise prone setting the following measures must be taken to reduce the offensive aconstic impact of the surrounding.

_____ Limited provision of windows and doors leading from the auditorium direct to the outside.

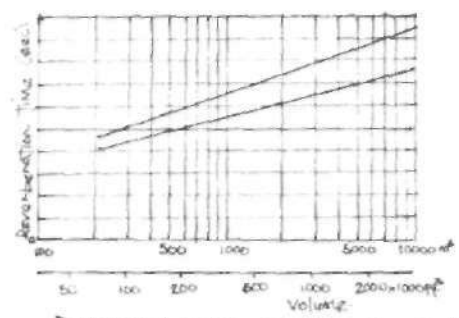
_____ Surrounding the auditorium with a set of ancilliary rooms.

_____ External walls must have highly insulating qualities.

(ii) INTERNAL ACONSTICS:- Reverberation time has been considered as the single most important physical quantity defining the aconstics of an auditorium for a



exotic plans of concert hall



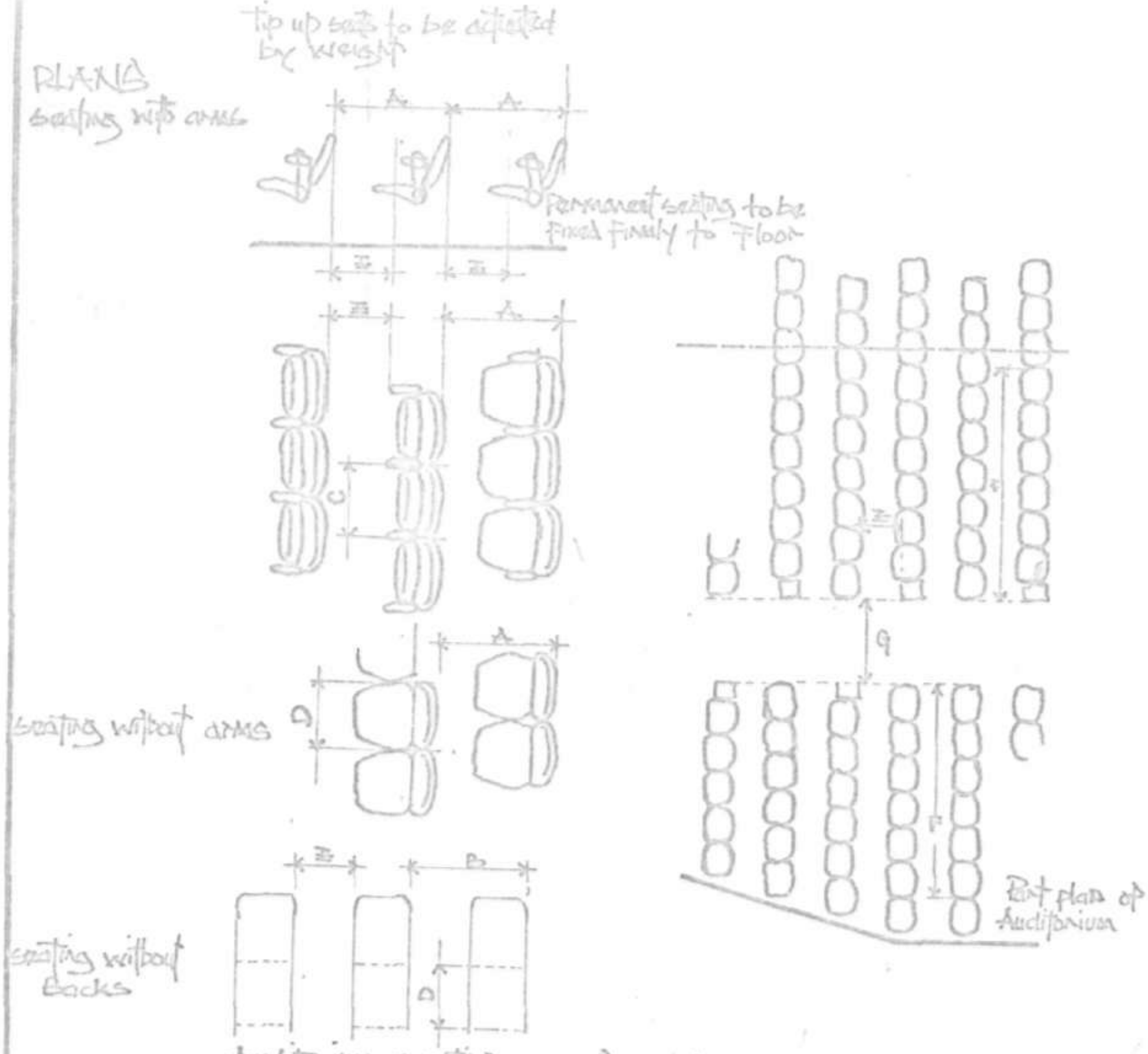
Recommended reverberation Time as a Function of hall Volume

multipurpose hall, optimum reverberation time is considered, essentially, a function of it's volume as indicated in fig. 16.

Sobire formula ($R = \frac{0.16V}{A}$) defines the relationship between the reverberation time (R) for any space with its volume V, and the accoustic absorption factor (A).

For speech in a medium sized auditorium with an audience present the average reverberation time should not be more than 1 second or less than 0.5 second for highest intelligibility. Intelligibility begins to suffer, first slowly, as the reverberation time is increased, but it deteriorates quite rapisly at about 2 seconds and above. For music, longer reverberation times are required depending on the type of music. Values between 1 and 2 seconds are satisfactory for most programme material. This value is thus optimal for a multipurpose hall - since it can be good for music without being unduly bad for speech.

However, it is also possible to achieve ideal reverberation conditions for specific programme in recent times by a sophisticated system of variable aconstics, whereby the volume and obsorption capacity of the hall is altered accordingly. As a general design principle, for good internal aconstic condition the height of the auditorium should not be less than 1/3 the minimum internal dimension (length or breadth.



Seating Layout — standard

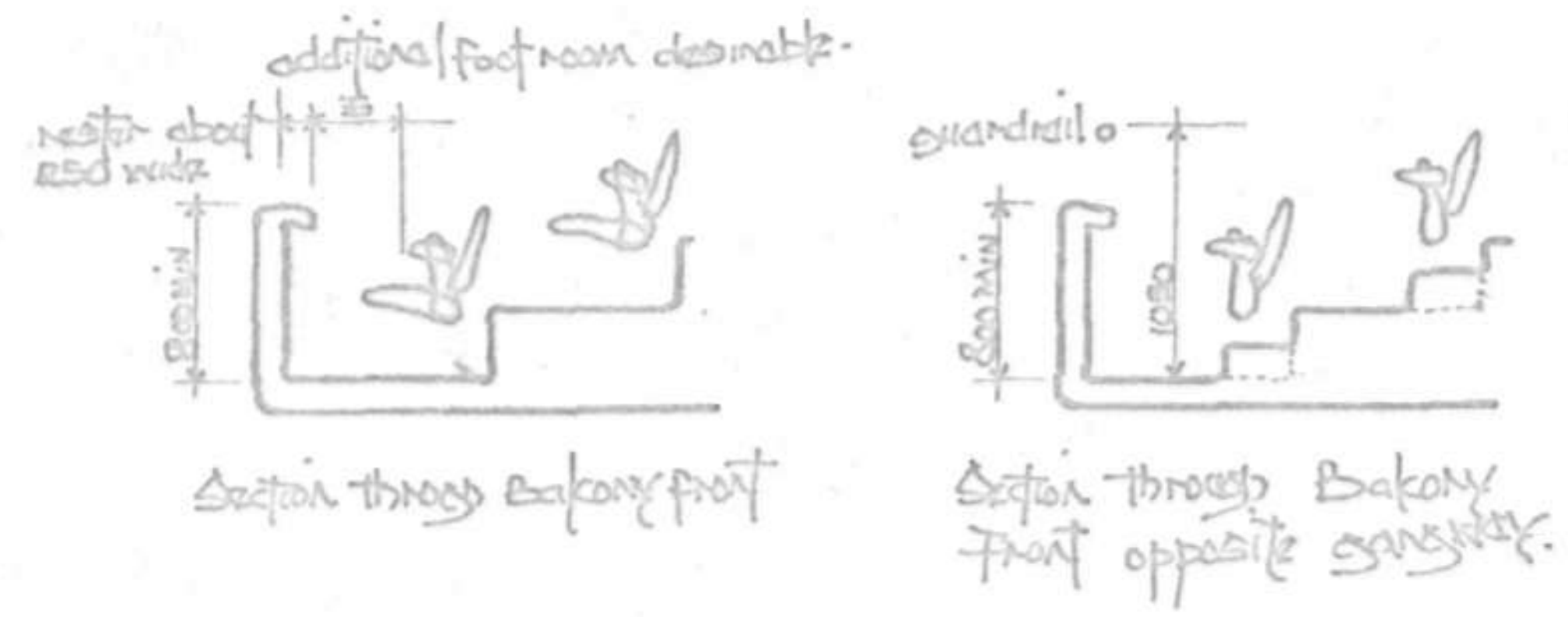


Fig. 20

DISTANCE OF SEATS FROM GANGWAYS TABLE I

Minimum Seatway Measured between perpendiculars E (mm).	Maximum distance of Seats from gangway (510 mm seats) F (mm).	Maximum number of seats 510mm wide per row.	
		Gangway both sides	Gangway one side.
305	3060	14	7
330	3570	16	8
355	4080	18	9
380	4590	20	10
405	5100	22	11

Fig. 20

REFLECTED SOUND:- The problem of auditorium acoustics is essentially to manipulate the auditional reflected energy to:

____ Provide uniform and pleasurable auditory sensations for the human hearing system.

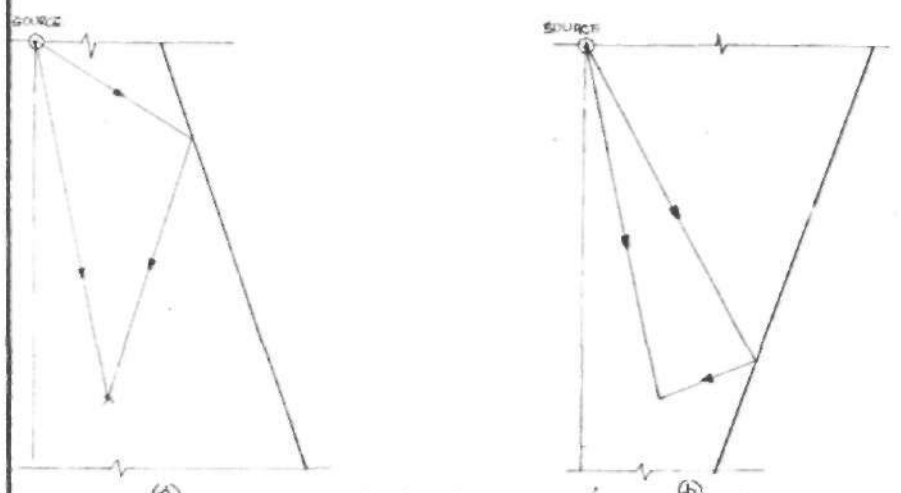
____ Reinforce the diminished effect of direct sound energy at rear seats.

DIRECT SOUND:- An obstructed passage of sound between the actors and the listeners is desirable if direct sound energy must be sustained over some reasonable distance. This criterion is satisfied if sight lines to the performers is maintained as explained in fig. 15 above, otherwise absorption capacity of the audience quickly dissipates the direct sound energy as it passes over the body in the multipurpose auditorium in which a flat floor is required, the performers should be placed on a platform to maintain good sight lines as much as possible.

APPLICATION OF THE ACOUSTIC PRINCIPLES TO DESIGN

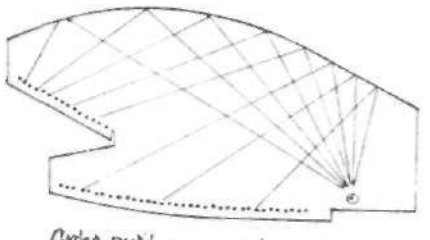
(i) Ceilings and walls should preferable be of diffusing surfaces (plaster or wood) to ensure uniformity of reflected sound in all directions and eliminate echoes and counter echoes. Simple plain surfaces, particularly any thing approaching a sphere, cube or other regular solid polygon should be avoided for their poor diffusing character.

Fig. 17



(a) (b)

Lateral reflection situation in (a) a fan shape ball and (b) a reverse spiky shape



Cusping profile to concentrate reflected sound on the remote balcony seating

(ii) The surface of the rear end wall of the auditorium should be so shaped as to avoid reflection of impinging sound waves back to the centre of the auditorium. In this respect a concave plan form is prefarable to a convex form. Besides an appropriate plan form, the back walls should have good absorbent quality as a conplinent to the reflecting characteristics.

(iii) Ceiling reflectors especially those overhead the sould source and ceiling shapes should be designed to concentrate their reflections more on the most distant seats (fig. 17). Materials for reflectors must be smooth and nonporoues and should weigh not less than 5kg/m^2 for speech only or 25/m^2 for music.

(iv) Early lateral reflections from the side walls contribute a sense of envelopement characteristic of prominent auditorium designs. (fig. 18) shows how the plan shape of the hall influences the nature of such reflections. The idea is that all seats should receive sufficiently large proportion of early lateral sound. In this respect a fan shape is considered less efficient than a reverse splay shape.

CRITICAL ANALYSIS OF PLAN SHAPES OF AUDITORIUM WITH RESPECT OF THEIR ACOUSTIC AND VISUAL CHARACTERISTICS

(i) RECTANGULAR SHAPE:- (fig. 19 a) This is typified by a high ceiling height, and a length breath ratio greater than one. Small halls based on this shape have

good acoustic qualities but in large hall the back seats suffer poor visual relationship to the stage unless the auditorium width is excessively increased.

(ii) FAN SHAPE: (fig. 19 b) This is a very economical design shape, containing the maximum number of people in a given angle for a specified maximum source receiver distance.

Unfortunately, this shape has inherent, poor acoustic shortcomings due to a poor early lateral reflection characteristics as explained above. This limitation can be considerable improved by giving a stepped form to the side walls.

(iii) ELONGATED HEXAGONAC SHAPE (fig. 19 c) This is a compromise plan shape in respect of (i) and (ii) avove. When properly designed, it is conceived to overcome the acoustic limitations of the fan shape while permitting a larger audience than the rectangular shape.

SEATING LAYOUT AND DESIGN STANDARDS (Table II and fig. 20) summerize the standard requirements for theatre seating arrangements. The following minimum dimensions are observed:

a) Back to back distance between rows of seat with backs - 760mm.

b) Back to back distance between rows of seats without backs - 610mm.

c) Width of seats with arms - 510mm.

d) Widths of seats without arms - 460mm.

e) Unobstructed vertical space between rows of seats - 305mm.

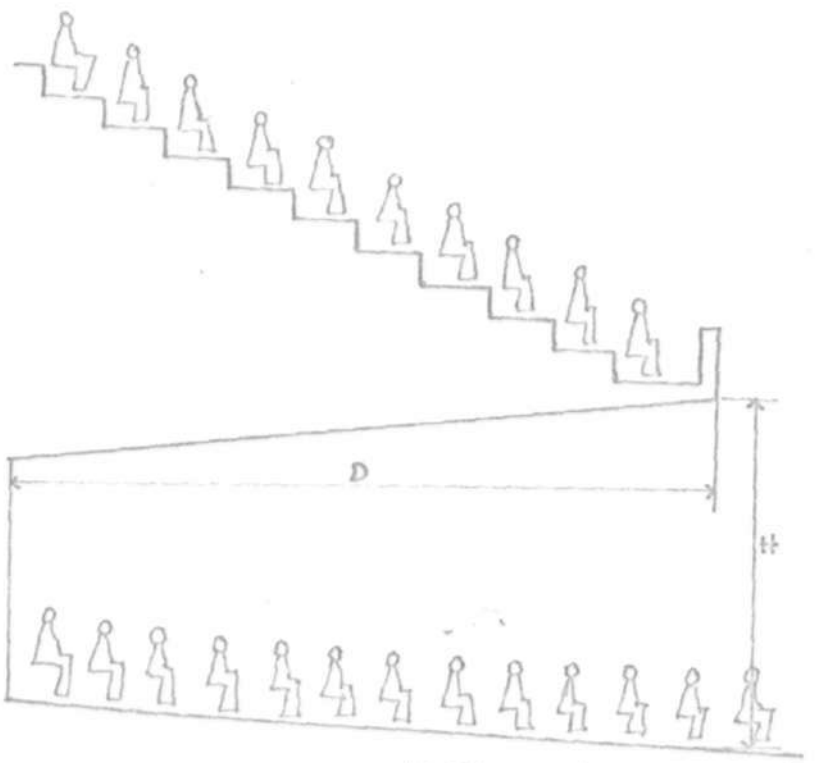
f) Minimum width of gangway - 1070mm.

TYPES OF SEATING ARRANGEMENTS

(i) CONTINENTAL SEATING ARRANGEMENT:- Have gangways only at the end rows of seats. The maximum number of seats within a row must conform to specified standards see table II above. The great advantage of continental seating is that non of the best viewing positions are lost to gangways, and from the actors point of view the audience is undivided.

(ii) ORTHODOX ARRANGEMENT:- Several gangways dissect rows of seat in compliance with set standards governing maximum distance of seats from gangway see table II. This form of seating arrangements permit closer spacing of rows, thereby reducing the overall length of dirculation with a comsequent aconstic and visual advantages. These positive attributes must be weighed against the discomfort of narrower knee room and the loss of good viewing position to circulation.

SEAT DESIGNS:- Non fixed padded seats with arm is recommended if economy of finance permits. Since an additional comfort of the audience is desirable for long



Recommended limiting balcony proportions for a theatre.

Fig. 21

shows. Being moveable, the seats are readily cated away to a storage area if need for a free floor space arises, (e.g. during dancing time).

(iii) BALCONY:- The balcony is a means of providing increased audience seating capacity without unduly increasing the distance from the stage. Fig. 15b illustrates one mathod of determining the slope of balcony seating rake to ensure adequate sight lines. The angular slope of balcony rake is usually steeper than the main auditorium floor rake.

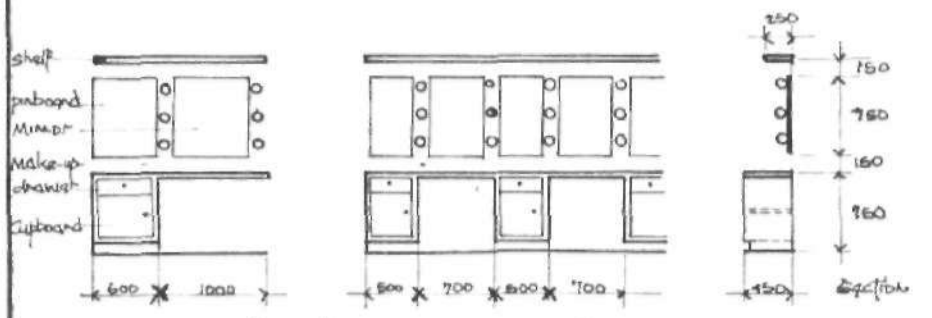
Balcony suffit should be designed to reflect direct sound unto listeners towards the rear below the balcony.

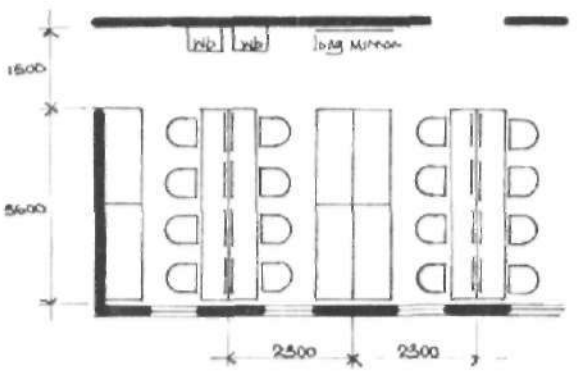
Balcony overhang relative to the seating below the balcony should not be excessive, fig. 21 for optimum design D should not exceed H (the height at the rear), and it should not be less than 3m.

BALCONY FRONTS:- The design of rester top must discourage its use for keeping any form of solid objects by spectators which if displaced could fall and harm members of the audience below. For the width of rester top a dimension range between 200mm to 300mm is acceptable.

ACTORS AREA:- The dominant activity space of this area is the stage. Since drama shows and concerts are irregular features of the multi-purpose hall, only a

STANDARD PROVISION FOR DRESSING ACCOMODATION





Communal dressing room area 8.3m² each bay.

modest provision is made for performer's accomodation and other backstage facilities. The following spaces discussed below are provided.

DRESSING AND CHANGING AREAS:- A communial dressing room for a minimum of ten actors is provided on the basis of 1.5m^2 per person. For flexibility this space should be adopted for use as changing room for musicians and others who change from out door clothes to evening dress for instance.

There are two of such spaces - one for the makes the other for females. Each dressing room is well provided with storage drawer and cupboard, mirror, make up top and a pin board. see fig. 22.

Group lavatories, washing and bathing facilities are provided close to the changing room. The costume store is also placed within easy reach of the changing area.

GREEN ROOM:- Is a form of relaxation area for actors either inbetween plays or at the end of an act. It should be provided with a kitchenette and self service bar and counter. As it is for the use of actors during performances, it should be near the dressing room, the stage and the stage entry points. This space can be adapted for use as a rehearsal area.

STORAGE ROOMS:- A good number of storage spaces is required to accomodate, scenery equipements, stage properties and performance outfits and costumes. Bulky scenery production can be stored in the basement level of the hall in a fire proofed accomodation. This can be easily lifted into place at stage level by means of mechanical hoists beneath the stage. Lighter scenic flats are paired up and stored in the pack at the side or rear end of the stage. Provision is also made within the basement level for bulkier stage properties such as furniture chairs etc. The handy properties are kept close to the stage.

THE STAGE:- This must be adopted to a variety of performances ranging from drama to music festivals. Maximum flexibility of stage is inherent in the use of mechanical lifts to adjust the height of part of the stage or even the entire area inorder to achieve a particular desirable effect in respect of different programmes.

The most strategic location of a lift is in the position of the orchestra pit. The lift can be stopped at various levels to act either as the pit, an extension to the auditorium seating or a forestage.

Entrance into the stage for actors should be on either sides of the former and this must be directly connected to actors dressing area. There should be an

Plan of Stage.
Plan of Stage.
Section of auditorium
Fig. 23

ample circulation space surrounding the stage in the back stage region where actors may hang around while awaiting their turn, or rest in between acts.

The procenium arch frames the action space in the tradition form of theatre; but the modern tendency is to paly down the procenium frame and make the transition from stage to auditorium inconspicuous.

AUDITORUM/STAGE RELATIONSHIP:- The two basic forms of auditorium stage relationship are symbolized by the

(i) Picture frame type

(ii) Open stage form

PICTURE FRAME:- (fig. 23a) In this, the stage is distinguished from the auditorium area by means of a procenium. The positional arrangement relating the actors to the audience is confrontational - actors at one end, the audience, the other end. This arrangement is conducive to elaborate use of scenery background to enliven shows, with a comparatively limited risk of fire hazard provided by the use of safety curtain. With this form the actors area is well organised and effectively related to the stage. Actors circulation is hence easily segregated from the audience movement paths.

The main disadvantage of the procenium form of theatre arises from the fact that the maximum width of auditorium is limited by the width of the procenuim

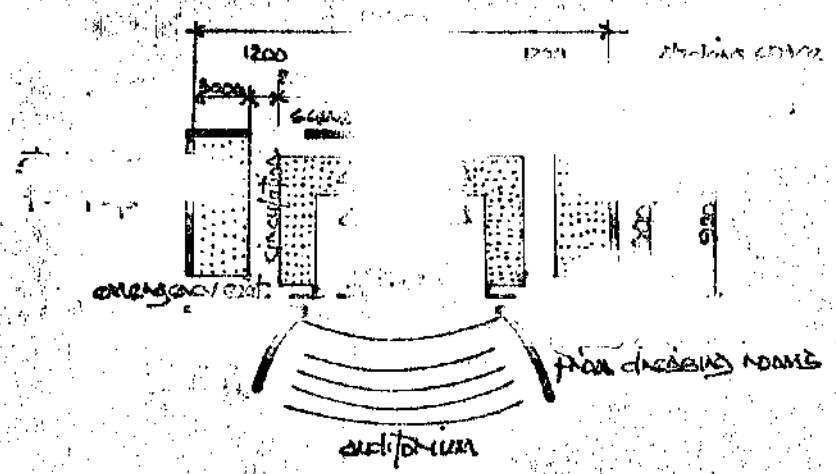
opening. Larger halls tend to be elongated in plan thus complicating both vitual and acoustic relationship between the stage and the rear seats. Another disadvantage of this form of theatre is the poor audience/actors relationship as expressed architecturally by a physical dicotomy (the proceniun frame) between the actors area and the audience position.

OPEN STAGE:- fig. 23b. In its widest application this form is characterized by a stage encircled completely by the audience. In the more moderate forms the stage is trust into the audience and its degree of encirclement by the audience exceeds 180°. Usually, the actors and the audience share a common architectural space as no rigid physical delineations of space exist between their accomodations. A greater sense of intimacy between the two groups results, which enhences the intensity of the dramatic experience of the action on the stage.

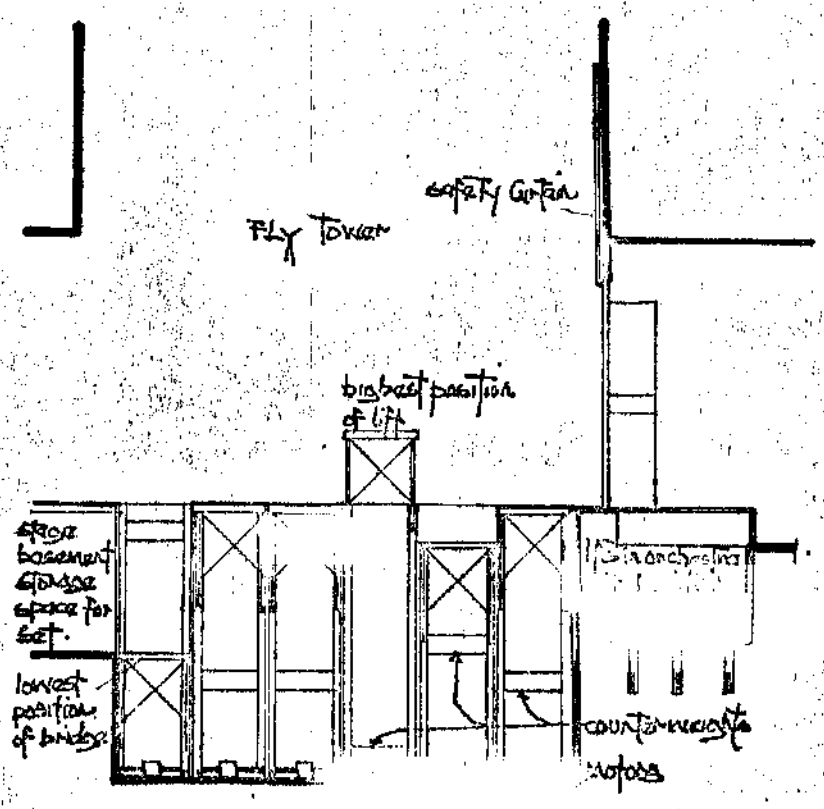
There is a more compact auditorium arrangement round the stage precipitating an improved acoustic and visual relationship between the two areas. Thus, this form is particularly efficacious for larger halls.

The few noteable disadvantages of the open stage is associated with the central location of the stage with respect to the auditorium which makes it difficult

Fig. 24



this diagram shows space requirements for a stage where sets are assembled and dismantled for each change. More width and more depth would be desirable



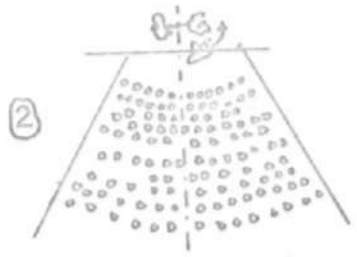
Section A-A. Section through fore stage and orchestra pit.

to apply the use of scenic decorations and background to dramatize shows. Another disadvantage of centralization is dramatized by the necessarily complicated solution to actors entrance unto the stage where passage through the audience is deemed inappropriate. Finally actors' frontal expression and sound impression are both directional and varies with different argular position within the auditorium. For the open theatre the consequence is a certain loss of total uniform effect.

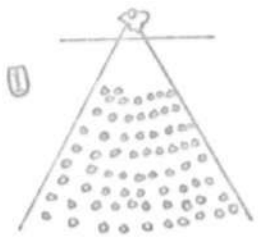
APRON STAGE: fig. 23c. By projecting the forestage beyond the procenium opening a compromise form is obtained which integrates the positive qualities of the above forms.

The flewibility of this concept is widened where mechanical hoists beneath the forestage is used to adjust its level as already discussed above. Hence the apron stage possesses a high flexibility factor adaptable to the functional requirements of a multipurpose theatre.

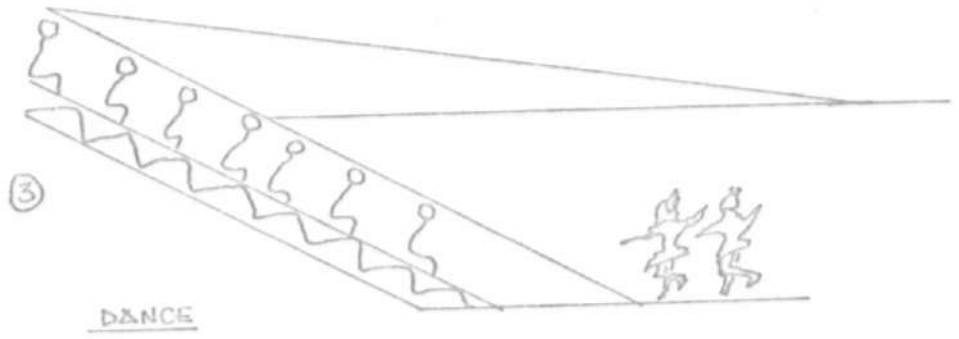
FREE FORM THEATRE: fig. 24. By definition this is essentially an architectural enclosure within which all parts, except the foundation exterior walls, and roof, front-of-house, and production service facilities, are moveable, so that the whole space in



DRAMA



CONCERT OR RECITATION



DANCE

Fig. 25



WRESTLING ARENA

which the performance is presented may be designed and arranged to become the space most congenial to the production to be presented.

The apron stage with a mechanical lift underneath is an example of the free form type.

ANALYSIS OF SHAPE AND ARRANGEMENT OF THE ACTING AREA IN RELATION TO PROGRAMME REQUIREMENTS

The shape and arrangement of the acting area are functions of the kind of action and amount of movement inherent in the production type, and the audience performance relationship which provides total uniform effect for the particular kind of action.

(i) CONCERT ORRENTATIONAL KIND (fig. 25a)
Facial expression is critical to full appraisal of the show. Face to face relationship between audience and performer is necessary. Procenium or apron stage adequate.

(ii) DRAMA: (fig. 25b) This kind is actors' interaction intensive. The shape and arrangement of the acting area must permit that action to take place on a line perpendicular to the general audience. This kind of show favours procenicion type arrangement.

(iii) BALLET AND CULTURAL DANCES: fig. 25c

The form of movement is considerably two dimensional. Optimum perception requires that the audience be elevated so that it may have a good view of the entire acting area; and thus become aware of the dimensionality of the movement. Either procenium or open type is workable.

(iv) INDOOR SPORTS, BOXING AND WRESTLING: fig. 25d

For truelly two dimensional shows where frontal expression is irrelevant, with no situation involving purely linear movement or action by performers, the acting area is best centrally located within a closed circle of audience.

SAFETY REGULATIONS AND MEANS OF ESCAPE

THE STAGE:- This is the region of greatest hazard within the theatre since scenery and many other stage equipements are readily combustible. The stage area thus require the greatest measure of fire safely precaution and security measure. The following safe-guards are recommended.

___ Materials for scenery should be fire resistant and so treated, chemically or otherwise to reduce their flamability.

___ Safety curtains should be introduced whenever possible at the junction of stage and auditorium to help check the rapid spread of fire beyond the stage during fire outbreak.

___ The ventillation of the auditorium should be designed to maintain a flow of air constantly towards the stage.

___ Fire fighting equipments and extinguishers should readily be dispersed for use around the stage area.

___ There should be at least one escape exit for actors from the stage and backstage areas direct to the outside.

AUDITORIUM:-

___ Interior wall and ceiling finishes of the auditorium should have good fire resistant quality.

___ Fire fighting equipments and distinquisher should be located at strategic positions within the auditorium and the foyer regions. Access for fire service trucks right up to the hall is imperative.

___ Every tier or floor of the auditorium must have two independent exits remotely displaced relative to one another.

___ Escape routes from the auditorium should be readily discernable to the audience by means of direction sign and lighting designation and located away from the stage area.

___ Doors which lead out of the escape exit should open in the direction of escape and be made of fire resisting material.

ELECTED MEMBERS ACCOMODATION

This consists essentially of the council chamber and its aucilliary facilities including accomodation for a very limited number of councillors.

For closer proximity and contact between the elected members and the community they serve, individual member's suite is best located among the respective electorates he represents rather thean within the city hall. However the Chairman of some special standing committees should have additional accomodation close to the respective departments they serve.

ANALYSIS OF ACCOMODATION REQUIREMENTS

MEMBERS LOUNGE:- This is the chief informal meeting place for council member - where they retire to during recess or immediately after council proceedings.

It should be located near the council chamber and committee rooms. The main provisions associated with the lourge include, bar and party, sanitary and washing facilities.

WORKING INTERVIEW ROOM:- This is required for elected members discussion with members of the public. It is usually two fold:-

(i) Informal reception/meeting space.

(ii) Private meeting room for more serious dialogues.

READING ROOM:- This provides for members' private study and may be integrated into members louge, but

should be associated with the library facilities in the administration function of organistional services.

SECRETARIAL SERVICE:- It is part of the central administrative function to provide secretarial services for the collective use of councillors. The service include private accretaries, clerks and typists accomodated close to or within the elected members area.

TOILET AND WASHING FACILITIES:- Provision for sanitary and washing facilities for both sexes is based on the assumption that about 1/5th of the members are female. The following standards is considered adequate.

1 w.c. for 5 female

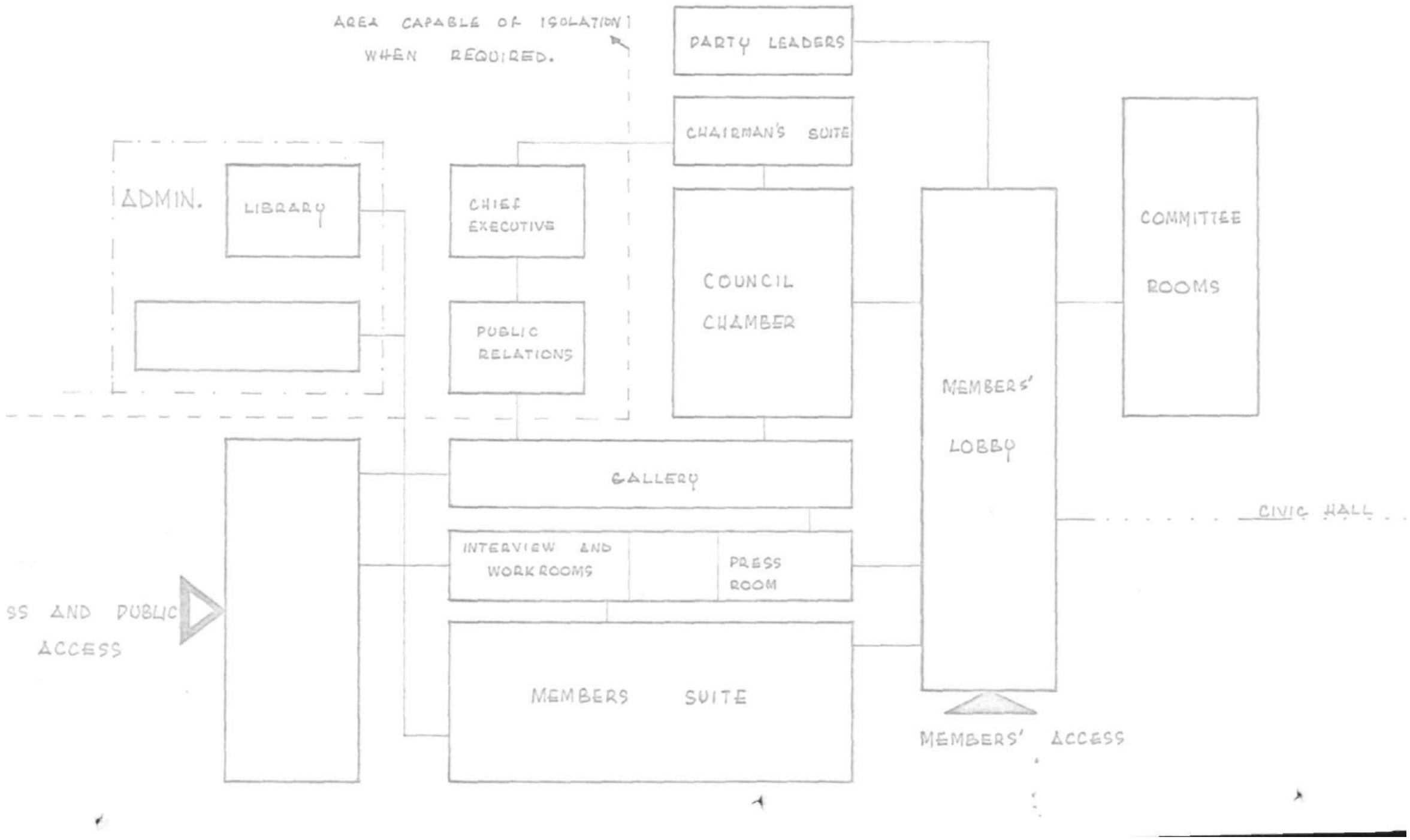
1 w.c. and 1 urinal for 10 males

The toilets should be easily accessible from the council chamber, committee rooms and members lounge.

MAYORS SUITE:- This is a multi-purpose interview, office and reception space, associated with the functions of the chairman of the city council. The secretarial service function mentioned above is usually associated with the mayor's suits.

This suite is also closely related to both the council chamber and the chief executive's suite. The following facilities are desirably provided in

ACCESS AND RELATIONSHIP FOR ELEMENTS IN ELECTED MEMBERS' ACCOMMODATION.



conjuction with the suite.

____ A private washing and sanitary facility

____ A luxurous meeting/interview space

____ A private secretary's apartment.

PARTY LEADERS SUITES:- Two similar accomodation facilities are provided for the party leader and the opposition leader; preferably close to the mayor's suite. They should be served by independent sanitary washing facilities.

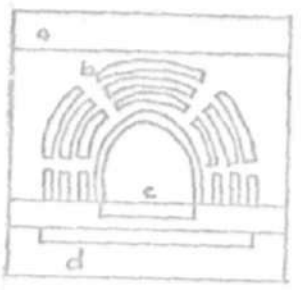
COMMITTEE ROOMS:- There are basically three standing committees - police, education and finance. However, other special service committee and sub-committee can be created according to need and requirements of the establishment.

Ample provision must be made for committee meetings since the frequency of assembling and size of the committee are variable and unpredictable.

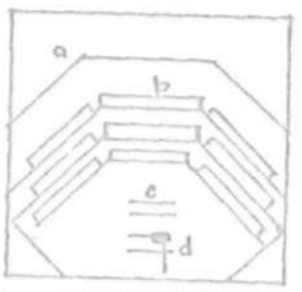
The obvious flexibility inherent in the design of committee rooms can generally be achieved by any or a combination of the followings:

____ Provision of several distinct spaces of varying sizes.

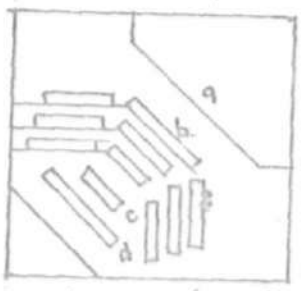
____ Provision of a singular large space capable of further subdivision into smaller spaces by means of aconstic partitions.



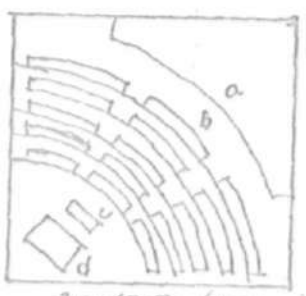
60 SEATS APPROX
3 TIER-SEAT TYPE B



100 SEATS (APPROX)
3 TIER-SEAT TYPE C



60 SEATS (APPROX)
3 tiers-seat type B



300 SEATS (APPROX)
5 TIERS-SEAT TYPE C.

TYPICAL LAYOUT FOR VARIOUS NO. OF SEATS

(a) - Gallery press & public
(b) - Ordinary members
(c) - officials
(d) - Chairman. etc

SEATING ARRANGEMENTS IN COUNCIL CHAMBER.

Generally, the standard design requirements of committee rooms are equated to that of conference room. External and internal acoustic treatment must gurantee minimum external noise penetration and sound deadening with respect to internal movements, respectively.

Each committee room must be readily accessible, without disturbance to any adjacent one. This underscores the advantage of provision of several, varying spaces of use. A minimum useable width of 4.5m for any committee room should be observed.

COUNCIL CHAMBER: (fig. 26) This space must provide a satisfactory setting for formal debate and policy making. Basically the debating function requires the maintenance of reality in large scale discussion achieved:

____ In plan form, through a solution relating the directional emphasis to the 'chair' and the visual awareness across the chamber of speaker, addressing the chair.

____ Through avoidance of sound amplification systems. In this respect optimal use is made of the sectional shape of the chamber and applied finishes to control acoustic.

ARCHITECTURAL SOLUTIONS:- For the maintenance of optimum internal debating condition, variation on a semi-circle or horseshoe give of the most successful arrangements of seating within the chamber. It should be noted that the division into two groups facing accross a central well tends to divide the council into parties, and encourage members to address each other instead of the chair.

SEATING ARRANGEMENT:- Seating should be arranged on a steep rake so that each fier has uninterruped sound and sight line. Seats should be adequetely treated with absorbent materials so that a near constant attenuation quality of the chamber is maintained either empty or full.

DESIGN REQUIREMENTS FOR GOOD ACOUSTICS:-

a) The maximum ceiling height should be 7.5m to take advantage of reflections available from appropriate ceiling profile.

b) The upper part of the wall should be absorbent and the lower reflective.

c) Volume/person should be limited to approximately $3m^3$.

Other subsidiary design requirement includes:-

(i) Limited views, allowing awareness of daylight change.

_____ Free public observers.

The first group is admitted into the chamber proper, close enough to the action place to be able to identify speakers and members reaction to events. Their accomodation is usually distinguished from the councillors' by means of level difference and such other physical delinections or security rail.

The 'general public' is preferably accomodated in either a gallary level towards the rear or a detached viewing gallary, commected to the chamber by means of a viewing screen and a sound relay system. The latter solution is appropriate where a large public attendance to council meetings is anticipated.

The gallary rake should be designed to provide adequate sound and sight lines. This can be readily achieved in a case where the gallery is wide and shall w in depth, incorporating two to four rows of seating.

The region of the gallery should be treated as accoustically dead with carpet, upholstered seating and sound absorbent linings to celings and walls.

3. MUNICIPAL OFFICES

A. COMPONENTS:- This subcomplex is composed of three major elements.

(i) Departmental accomodation. The service departments are categorised into two sorts.

Those founctional services oriented.

Those organisational service oriented.

(ii) A set of ancilliary facilities supporting the complex. This includes:-

a) Caretaking and cleaning facilities

b) Engine room, technicians room, maintenance workshops, telephone equipment and operations room.

c) Catering, rest and first aid facilities.

(iii) Common services.

a) Computer equipment and services area.

b) Central supplies and requisition area.

c) Central reprographic unit.

d) Decture and meeting rooms.

THE SERVICE DEPARTMENTS:- Departments are defined according to the nature of their functions vis-a-vis the public or other departments they serve. On this basic taree groupings are possible.

a) DIRECT FUNCTIONAL SERVICE DEPARTMENT:- This includes the following departments and subunits.

Education, (Library)

Health and social welfare

Finance

Public information Unit.

This function is characterized by intensive encounter with the public. Within the context of the arrangement

of offices, they are the most readily accessible - preferably located close or at the entrance level.

Usually local service outlets are created for some of these functions to improve their working efficiency vis-a-vis the public.

b) INDIRECT FUNCTIONAL SERVICE DEPARTMENTS:- These are essentially technically oriented, and includes planning, architecture, civil works, and survey units which are all grouped under City Engineer Department. Visits to these sections by individuals are occasional since their services are mostly rendered to the community as a group not usually individual persons. One notable exception is the housing plan approval section where plots belonging to individuals must be approved before developement.

c) ORGANISATIONAL SERVICE DEPARTMENTS:- These offer no service to the public as such, but are essential to the efficient execution of authority functions at any level or scale.

These include the central administration, establishment division and the chief executive's office which all come under the secretary's Department.

In addition to these are the various administrative wings or unit of all the above mentioned departments.

B BROAD, PLANNING PRINCIPLES

(i) Departments and units most frequented by the public are located on lower levels. They are most readily and easily accessible and correspond to the direct functional service units.

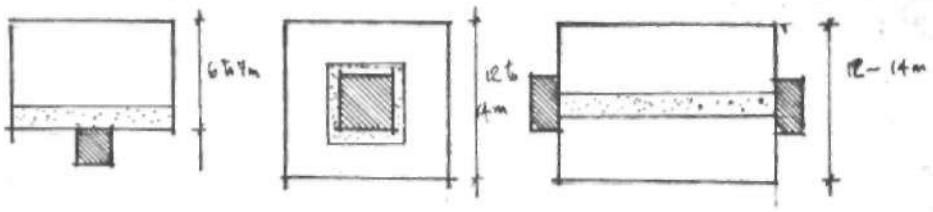
Indirect functions and organisational services are accomodated on upper floors.

EXCEPTIONS:- The chief excecutive's office must be physically, closely associated with the councillors area. He is the chief laison officer between the administration and the policy body.

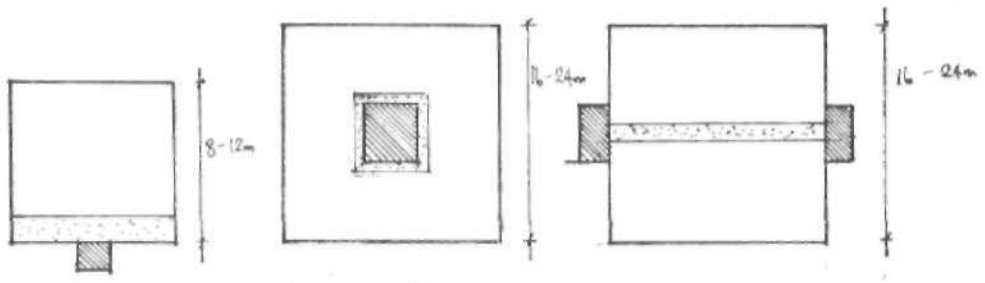
(ii) MIXED PLANNING CONCEPT:- Cellular or open planning structure is adopted as required and when deemed efficacious. Municipal office structure represents a combined top management and clerical types of office organisational setting.

The space organisation of the top management office must reflect confidentiality, intimacy and privacy. These requirements are readily satisfied by the traditional cellular form of interior office space division. The cellular concept is characterised by highly divided spaces for isolated individuals or small group of officers.

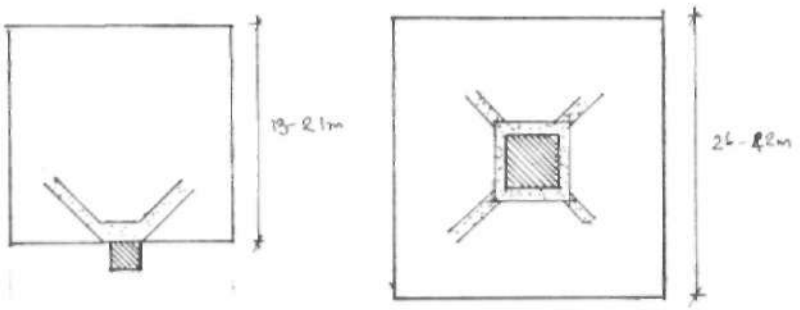
On the other hand the space organisation for clerical functions must be conducive for intensive



shallow depth space



medium depth space



deep space

communication amongst the office staff and should allow for easy and efficient supervision of large groups of workers in an open plan type of scenery.
(iii) Privacy and size of individual offices are used as means of reflecting status and hierarchy of position of departmental staff - an important aspect of municipal authority management system.

Top management executives are provided with individual office spaces whose sizes are appropriate to their respective functions. For departmental heads the space must allow for group meetings and interview.

Clerks, technicians, and other categories of staff in middly management positions are accomodated in group spaces ranging from medium size to large size.

CATEGORIES OF OFFICE WORKING SPACES

(a) CELLULAR SPACE:- fig. 27a. Typified by rooms of shallow depth and narrow width. Suitable for individual and small group accomodation only.

b) MEDIUM GROUP SPACES:- fig. 27b. Associated with shallow and sometimes medium shell depth. This is suitable for small sized departmental units and generally a limited group of personnels performing similar duties.

c) OPEN PLAN:- fig. 27c. Associated with deep shell space, suitable for a large clerical staff or

technically oriented units.

(iv) FLEXIBLITY:- To allow quick reactions to changes in management functions, or extensions or compressions of functions themselves. This is promoted by limited use of physical divisions within department and the use of demountable or folding portitions in place of rigid partition or structural walls.

The recent execize of reorganisation and restructuring of the local Government and allied authorities throughout the country aims at expanding the role of the local and municipal councils in government. In architectural terms, the immediate consequential implication of this developement will lead to not only expansion of present accomodation but reorganisation of the interior office shell to meet changing demands and functions within the secretariat.

Provision should be made for probable future expansion of the office accomodation either laterally or vertically without destroying the visual integrity and unity of composition of the whole complex.

(v) CONCEIT OF LIFE INTERFACE:- Potensially good contact between various departments is promoted by allowing the departments to be visually and physically integrated.

To this effect horisontal junctions amongst depart ıent is preferable t› the more rigi‹ vertical delineation, since horisontal travel is prefered to vertiaal. By this concept a department is spread vertically over a number of floor levels over-lapping with other departments across various horrisontal floors.

(vi) DES IGN FOR INTERRACTION AND MEETING:- The function of the authority building as an indoor public meeting place is emphasized through:

Clear orentation and articulation of circulation layout.

Generous provision for formal and informal public, semi public and private meeting spaces. Such as spacious lobbies, staff lounges, rest area forum, and departmental meeting rooms.

T..e chief formal meet.ng place of the council (i.e. council chamber and lecture room) are concieved as counterparts against the rythm of well articulated office block accomodation.

The wide range in sizes and form of the meeting areas is a reflection of the varying nature of public and official interactions vis-a-vis one another - from complete privacy to open transactions and deliberation.

(vii) Strategic location of common services and ancil'lary facilities.

____ Facilities commonly used by all departments such as the computer and the central reprographic units are centrally located in plan and thus readily accessible to all

____ Units requiring regular supplies, servicing and maintenance are placed close to the service lifts to avoid rigorous horisontal transportation of heavy equipments.

(viii) PROVISION OF SERVICE CO[illegible] Stairways, lifts, sanitory and washing facilities and stores are centrally grouped into cores distributed at strategic points along each f[illegible]or.

This arrangement has both economic and plan[illegible] advantages based on standardization and convincience respectively. For the location of staircases the following building regulation stangards were assumed.

____ A mazimum travel distance of 30.5m between stair case and exit point where excape is possible only in one direction only.

____ Distance between any two adjacent exits from the story or staircases should not be more than 60m.

____ Staircase for excape should be enclosed in iire resisting construction and preferally be isolated by a protected and ventillated lobby or corridor.

____ The minimum width of any escape staircase must not be less than 1020mm.

(ix) DESIGN FOR VENTILLATION:- The provision and location of open ventillated lobbies, waiting areas, staff lounges are so alternately arranged on either sides of the central corridor that every office space enjoys some measure of cross ventillation.

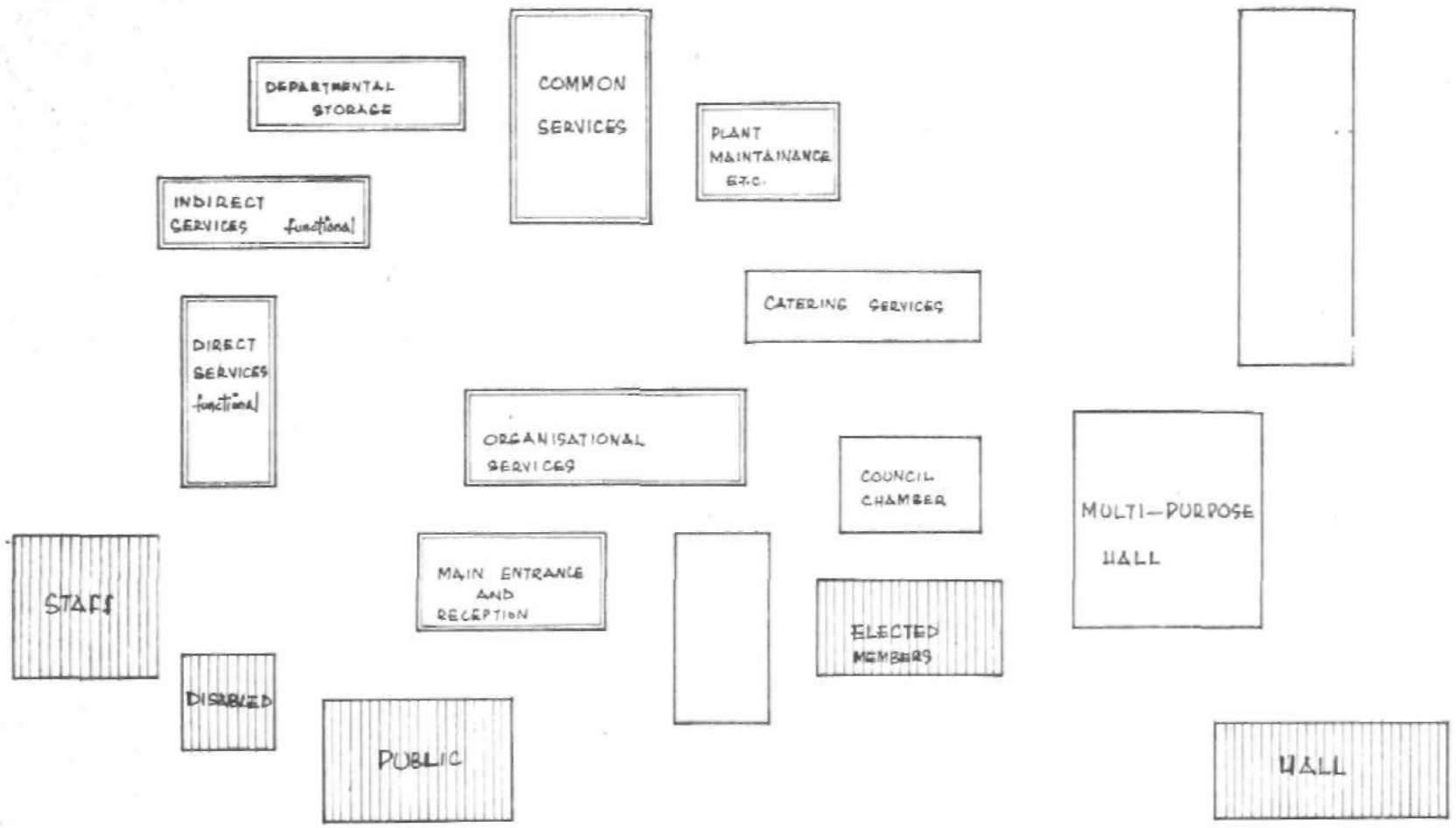
(x) OPENNESS AND ACCESSIBILITY:- Openness and accessibility is an epitome of democracy, symbolized by the institution of the municipal authority. Not only is the process of policy making of the authority open to the general public but the entire atmosphere of the building is made subtly inviting. Through

____ quick glimpsed of beautiful internal court.

____ open spacious entrance lobbies on the more public floors, ornamented with cultural artworks and montils.

____ large expanse of glazing providing views of interior landscapes and working modes of the office, interior (usually landscaped).

ACCESS AND RELATIONSHIP FOR ELEMENTS IN A CITY HALL COMPLEX.



ACCESS AND RELATIONSHIP FOR ELEMENTS IN THE CIVIC HALL.

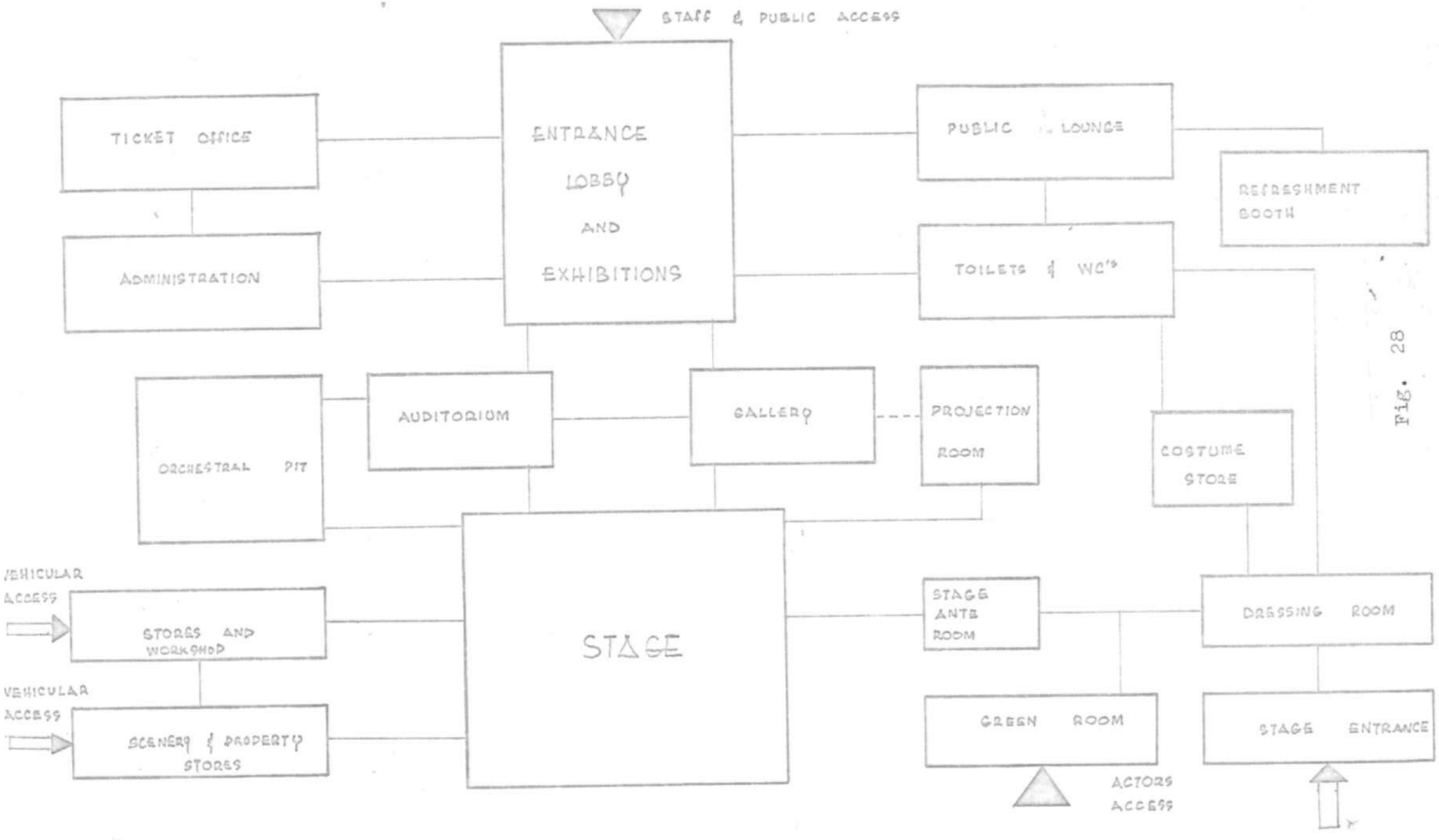
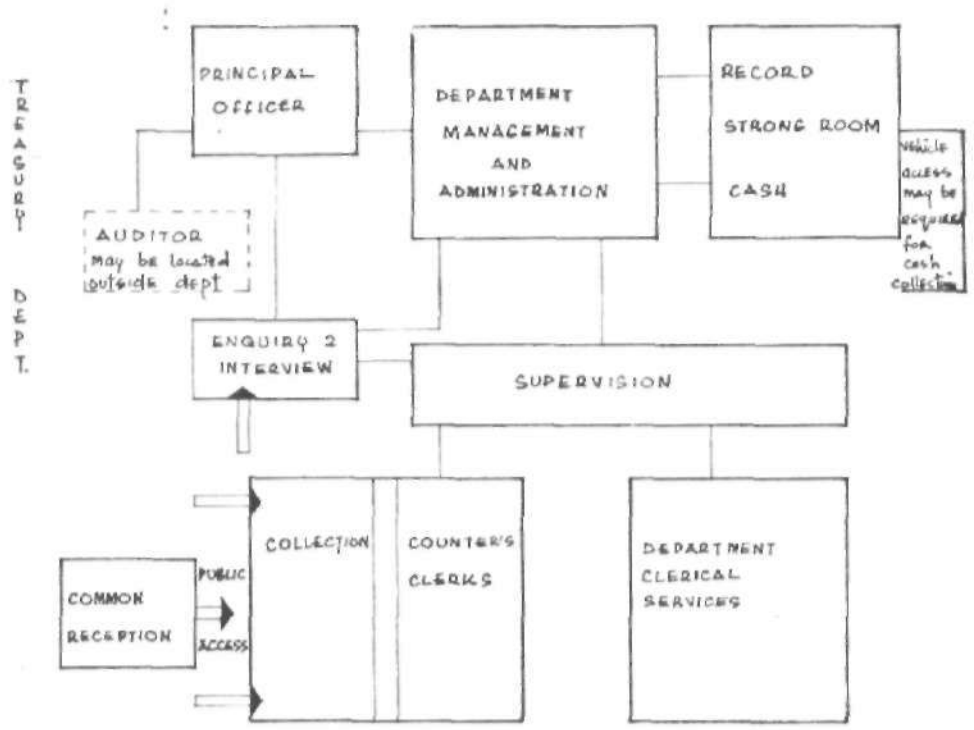
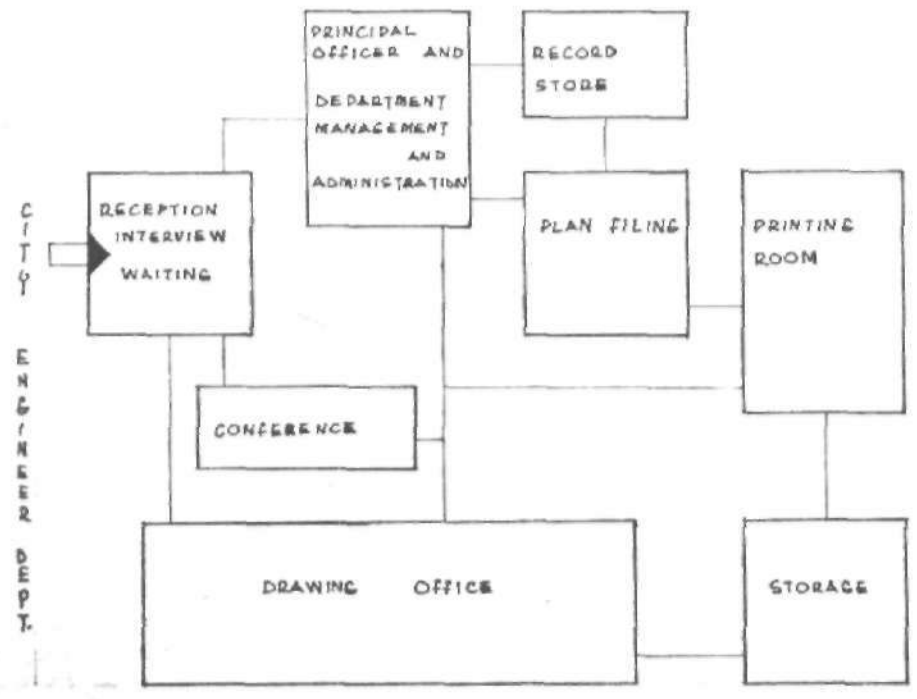


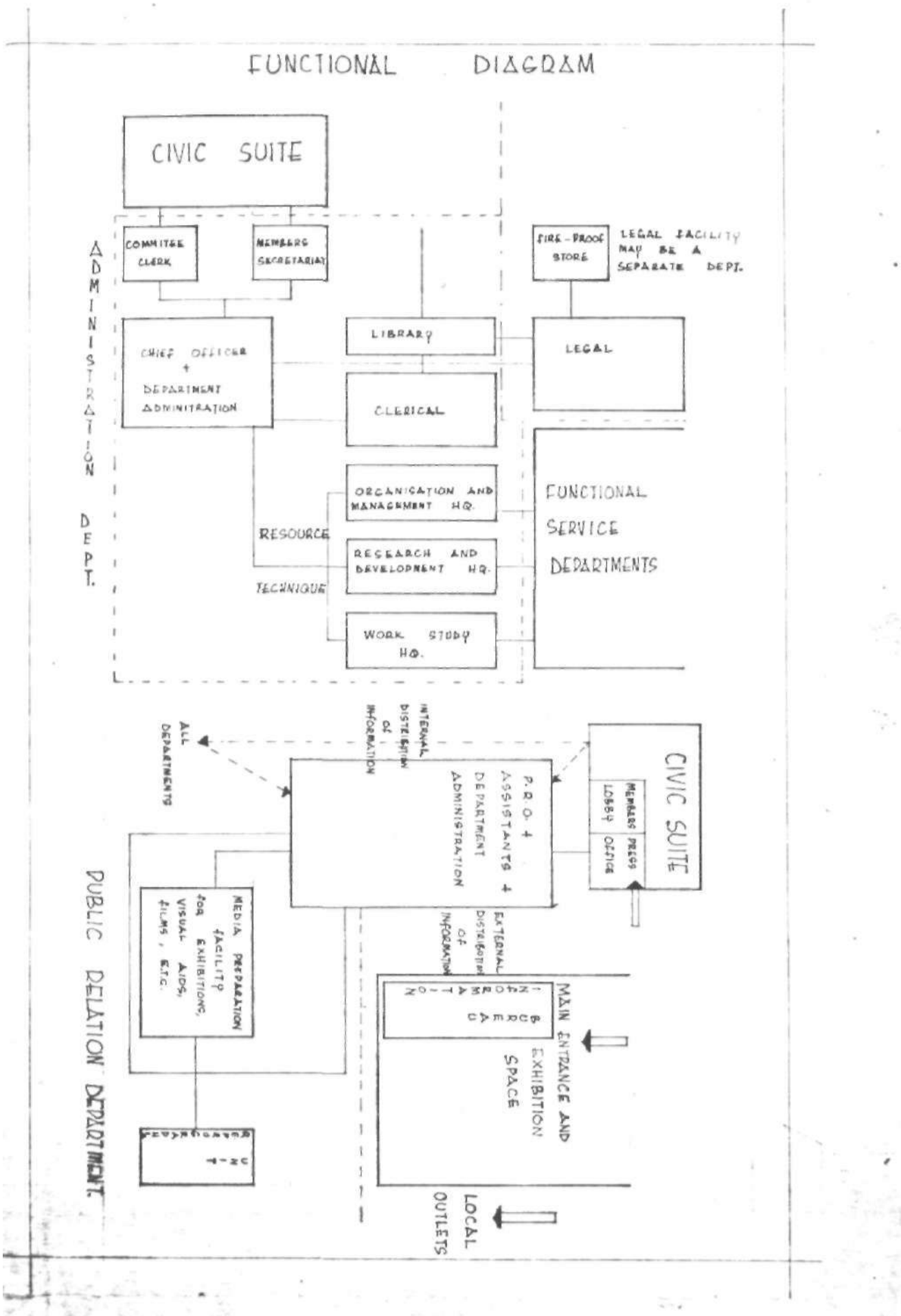
Fig. 28

FUNCTIONAL RELATIONSHIP DIAGRAMS





FUNCTIONAL DIAGRAM



a good link between the internal exhibition space (the entrance lobby) and the outdoor exhibition courtyards.

5. DEPARTMENTAL MANAGEMENT STRUCTURE:- Application to office shell planning. Fig. 28 shows the management structure of the municipal authority organised on departmental basis. Within each department the structure of the organisation is related to work type and functional requirements of the component units. Figs. 29a...f summarizes the functional relationship between the working units of each department.

Each service department is executively administered by a departmental head who is ofcourse its most senior official. He is assisted by a deputy who directly supervises the other senior executives who are usually heads of different operations units.

The heads of the various departments refered to above are individually and collectively responsible to the secretary of the municipal council who is also designated chiefly executive. The chief executive as the administrative head of the institution directs and co-ordimates the activities of all the various arms of the institution. He is the official link between the executive branch of the municipal council

and the policy body as represented by the councillors and the mayor.

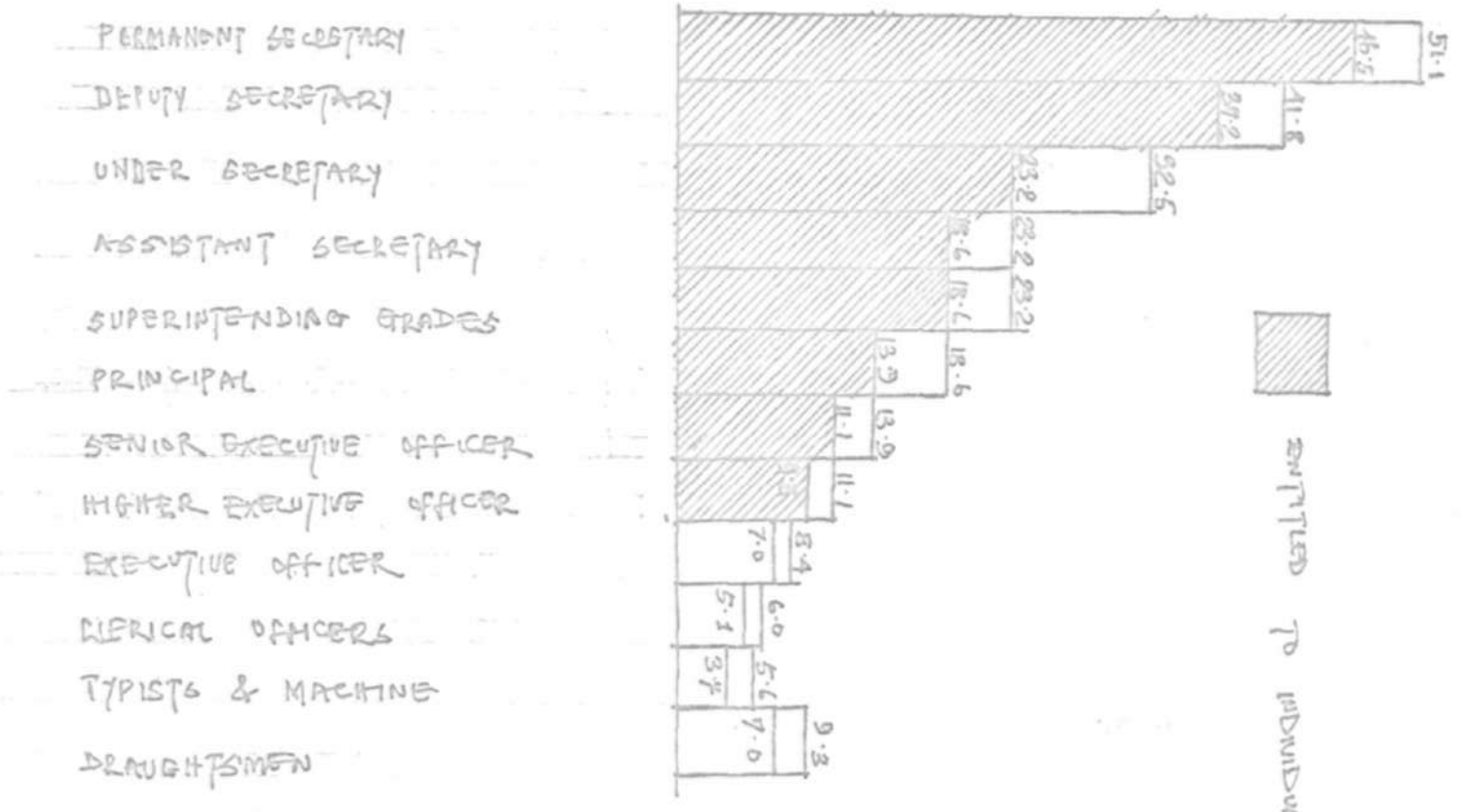
PLANNING CONCEPT BASED ON MANAGEMENT STRUCTURE:

As already mentioned in an earlier chapter, the organisational services . as represented by the central administration are critical to the execution of the various authority function.

They co-ordinate the functions of the service departments, in this sense, relates one to the other.

In the contest of architectural planning and arrangement of the internal spaces. The central administrative functions constitute the nerve centre about which all the service departments are disposed. is usually centrally located on every floor and stretching up to the very top of the building, these organisational functions act to link several department across every floor. This way the departments enjoy close proximity with the internal services that maintain them are better related one to the other. Fig. 30.

SPACE STANDARDS FOR MUNICIPAL OFFICE ACCOMODATION.



CHAPTER SEVEN

SCHEDULE OF ACCOMODATION

OFFICE BLOCK:

The adjacent figure establishes the basis for calenlating the optimum space requirements for the entire staff of the minicipal authority.

An allowance of about 30% of the net area is provided for general circulation within the building. The requirements for support and encillary facilities are also indicated accordingly wherever mentioned.

The basic unitary standards for determining space allotments in both the theatre and the council chember are also indicated against related areas.

SECRETARY DEPARTMENT

UNIT	STAFF POPULATION	SPACE REQUIRED IN M^2
SECRETARY'S SUITE		
Chief Executive	1	50
Confidential Secretary and typists	2	15
Reception and Messengers	2	40
Meeting and Interview Room	-	50
Total	5	155
DEPUTY SECRETARY OFFICE		
Deputy Chief Executive	1	36
Confidential Secretary and Waiting Room	1	9
Total	2	45

UNIT CENTRAL ADMINISTRATIVE OFFICE	STAFF POPULATION	SPACE REQUIRED IN M^2
Administrative A ssistants	4	50
Stenographers and Typists	16	80
Clerical Officers and Assistants	17	105
Duplicating and Photocopy	--	30
Total	37	265
ESTABLISHMENT UNIT		
Chief Personnel Officer	1	24
Personnel Officers and Assistants	5	60
Confidential Secretaries	2	16
Clerical Officers and Assistants	18	108
Stenographers and Typists	10	50
Total	36	258
STAFF MANAGEMENT AND TRAINING		
Principal Executives Officers	1	24
Executive Officers	5	60
Confidential Secretaries	2	16
Clerks and Typists	10	48
Total	18	148
STAFF RELATIONS		
Staff Relations Officers Incharge	1	18
Executive Officers	5	60
Clerks	8	48
Total	14	126

UNIT	STAFF POPULATION	SPACE REQUIRED IN M^2
LABOUR UNIT		
Personnel Officer incharge	1	18
Personnel Officer and Assistants	5	60
Clerical Officers	6	36
Messengers	3	12
Total	15	126
STATISTICS UNIT		
Statisticians and Planners	3	48
Executive Officers	4	48
Clerical Officer	6	36
Typists	3	15
Messengers	2	8
Total	18	155
CENTRAL REQUISITION AND SUPPLY		
Requisition and Supply Officers	3	36
Requisition Clerks	6	36
Messenger	2	8
Total	11	80
LEGAL		
Chief Legal Officer	1	24
Assistant Legal Officer	1	20
Solicitors	4	54
Confidential Secretaries	4	30
Messengers	4	16
Reference Room	-	30
Total	14	174

TREASURY DEPARTMENT

UNIT	STAFF POPULATION	SPACE REQUIRED IN M^2
CITY TREASURER'S OFFICE		
City Treasurer	1	30
Receptionist and Messenger	2	15
Confidential Secretary	1	10
Interview Room	1	36
Total	5	91
DEPUTY CITY TREASURER		
Deputy City Treasurer	1	25
Confidential Secretary and Reception	1	10
Total	2	35
DEPARTMENTAL ADMINISTRATION		
Clerical Officers	15	90
Stenographers and Typists	10	50
Administrative Executives	4	48
Stores	-	15
Total	29	203
LICENCING		
Clerical Officers	15	80
Executive Officers	4	48
Public Circulation	-	80
Total	19	208
CASH OFFICE		
Clerical Officer	12	75
Executive Officers	4	48
Public Circulation	-	80
Total	16	203

UNIT	STAFF POPULATION	SPACE REQUIRED IN M^2
PAY OFFICE		
Clerical Officers	12	75
Executive Office	4	48
PUBLIC CIRCULATION	--	80
Total	16	203
VAULT AND STRONG ROOM	--	70
RATES ACCOUNT		
Clerical Officers	12	72
Executive Officers	6	72
Public Circulation and Reception	--	50
Total	18	194
RATES ENFORCEMENT		
Enforcement Clerks	5	60
Enforcement Officers	10	60
Reception Waiting	--	30
Total	15	150
VALUATION		
Confidential Secretary	2	20
Chief Valuation Officer	1	24
Valuation Officers	6	72
Technical Officers and Assistants	6	60
Clerical Officers	4	24
Public Circulation and Reception	-	80
Total	19	280
ACCOUNTS		
Accountants and Assistants	5	80
Clerical Officers	10	60
Machine Operators	2	25
Total	17	165

UNITS	STAFF POPULATION	SPACE REQUIRED IN M^2
PRINTING AND GRAPHIC ARTS		
Printers	4	30
Attendants	3	18
Graphic Artists	2	20
Graphic Arts Attendants	2	12
Equipment Room	-	50
Total	11	130
INTERNAL AUDIT		
Auditors and Assistants	5	60
Audit Clerks and Assistants	8	48
Total	13	108
CITY ENGINEER		
CITY ENGINEER'S OFFICE		
City Engineer	1	30
Receptionist and Messengers	2	15
Confidential Secretary	1	10
Interview Room	1	36
Total	5	91
CHIEF ARCHITECTS		
Confidential Secretary and Reception	1	15
Chief Architect	1	30
Total	2	45
DEPARTMENTAL ADMINISTRATION		
Clerical Officers	10	60
Stenographers and Typists	4	20
Executive Officers	4	50
Store	-	20
Accounts Officers	3	20
Total	21	170

UNIT	STAFF POPULATION	SPACE REQUIRED IN M^2
ARCHITECTURE AND BUILDING DESIGN		
Draughtsmen - Design and Drawing Studio	20	120
Architects	5	75
Total	25	195
REQUISITION AND SUPPLY		
Executive Officers	2	20
Clerical Officers and Assistants	6	36
Total	8	56
PRINTING AND PHOTOCOPING		
Printers and Assistants	4	30
Stores and Machine Room	-	80
Total	4	110
CIVIL WORKS AND ENGINEERING DESIGN		
Engineers	4	60
Technical Officers	8	64
Draughtsmen	5	45
Equipment Store	-	35
Total	17	204
PLANNING AND BUILDING CONTROL		
Planners and Architects	4	60
Structural Engineers	2	30
Technicians and Draughtsmen	10	80
Total	16	170

UNIT	STAFF POPULATION	SPACE REQUIRED IN M^2
CAPITAL WORKS		
Technical Officers and Assistants	10	80
Surveyors and Assistants	3	30
Total	13	110
TRAFFIC CONTROL		
Traffic Officers and Assistants	3	36
Traffic Inspectors and Assistants	6	48
Typists and Clerks	3	15
Messengers	1	4
Total	13	103
PUBLIC PARKS AND CEMETERIES		
Landscape Officers and Assistants	3	36
Park Superintendents	3	30
Draughtsmen	5	40
Total	11	106
REFUSE UNIT		
Clensing Superintendents and Assistants	3	30
Messengers and Clerks	3	15
Total	6	45

PUBLIC HEALTH

MEDICAL OFFICER OF HEALTH		
Chief Consultant	1	30
Receptionist and Messenger/Waiting	2	15
Confidential Secretary	1	10
Interview Room	1	36
Total	5	91

UNIT	STAFF POPULATION	SPACE REQUIRED IN M^2
HEALTH ADMINISTRATION		
Executive Officers	5	60
Clerical Officer and Assistants	6	36
Stenographers and Typists	4	20
Office Equipment Store	-	15
Total	15	131
STAFF TREATMENT ROOM		
Waiting Room	-	30
Medical Officers	2	30
Nurses	3	30
Total	5	90
MEDICAL LABORATORY		
Laboratary Assistants	4	16
Laboratary Equipments	-	90
Laboratary Store	-	45
Total	4	151
EPIDEMOLOGY AND STATISTICS		
Consultant Health Officer	1	20
Medical Officers and Registrar	2	30
Health Superintendents	2	20
Health Inspectors and Assistants	3	20
Typists	3	18
Total	11	108
SCHOOL HEALTH		
Health Sisters Incharge	2	20
Clerical Officers and Typists	2	10
Total	4	30

UNIT	STAFF POPULATION	SPACE REQUIRED IN M^2
CHILD AND MATERNAL HEALTH		
Medical Officer Incharge	1	15
Clerical Officer and Typists	2	10
Nurses	2	20
Total	5	45
HEALTH EDUCATION		
Health Education Officers	3	36
Typists and Clerks	3	15
	6	51
ENVIRONMENTAL HEALTH SERVICES		
Health Superintendents	2	20
Health Inspectors	3	20
Messenger	1	5
Total	6	45
MARKET		
Market Superintendent Inchargo	1	15
Copy Typists	2	12
Total	3	27
SOCIAL WELFARE		
Chief Social Welfare Officer	1	25
Social Welfare Workers	10	90
Social Welfare Research	8	90
Interview Room	--	80
Clerks and Typist	5	30
Store	--	15
Document Room	--	20
Total	23	350

UNIT	STAFF POPULATION	SPACE REQUIRED IN M^2
REGISTRY		
Principal Registrar	1	24
Registrars and Marriage Consellor	2	30
Executive Officer	1	12
Clerks and Typists	5	30
Marriage Room	-	100
Public Waiting Room and Circulation	-	120
Vault and Strong Room	-	45
Total	9	361

EDUCATION DEPARTMENT

CHIEF EDUCATION OFFICER		
Chief Education officer	1	30
Receptionist and Messengers	2	15
Confidential Secretary	1	10
Interview and Meeting Room	-	36
Total	4	91
DEPUTY EDUCATION CHIEF		
Deputy Chief Education Officer	1	25
Confidential Secretary and Waiting	1	10
Total	2	35
DEPARTMENTAL ADMINISTRATION		
Executive Officers	3	36
Clerical Officers	10	60
Stenographers and Typists	8	40
Office Equipment and Stationery Store	--	45
Messengers	3	12
Accounts Clerks	5	40
Total	29	233

UNIT	STAFF POPULATION	SPACE REQUIRED IN M^2
SCHOOL SUPPLIES		
Assistant Executive Officer	2	24
Clerical Officers and Typists	5	30
Total	7	54
SCHOOL ATTENDANCE SERVICE		
Education Officers and Assistants	3	42
Clerks and Typists	2	12
Total	5	54
SCHOOL MEALS		
School Meals Inspector	3	36
EDUCATION STATISTICS		
Education Officers	3	48
Clerks and Typists	6	30
Executive Officer	2	24
Total	11	102
PRIMARY SCHOOL SCIENCE		
Education Officers and Assistants	5	50
U.P.E. TASK FORCE		
Education Officers	6	80
Executive Officers and Assistants	3	36
Clerks and Typists	5	30
Messengers	2	8
Total	16	154

UNIT	STAFF POPULATION	SPACE REQUIRED IN M^2
AUDIO/VISUAL AIDS/ART EDUCATION		
Education Officers and Assistants	1	14
Graphic Artists and Mechine Operators	4	40
Projection and Equipment Room	-	80
Total	5	134
LIBRARY SERVICE		
Chief Librarian	1	24
Library Service Co-ordinating Staff	5	50
Total	6	74

COMMON FACILITIES

COMPUTER ROOM		
Analysis and Programmers	2	24
Data Processing and Equipment	4	60
Operator's Room (Machine and Circulation)	-	200
Reception and Waiting	1	15
Total	7	299
CENTRAL SUPPLIES		
Store Keepers	5	40
Central Stationery and Office Equipment Store	-	150
Bulk Funiture Store	-	200
Total	5	390

For Lecture Room ___ Assumed $0.9m^2$/Person
Lecture Hall 150 Capacity $140m^2$

UNIT	STAFF POPULATION	SPACE REQUIRED IN M^2
CENTRAL REPROGRAPHICS		
Operations Room		
Printers and Machine Operators	20	150
Supervisors	4	40
Store	--	45
Total	24	235
Staff library (Assume $1.5m^2$ per Seat)		
Book stact and Reading Room		$180m^2$
Journals and General Information Service		65
Total		245
Staff lounge and rest area		$500m^2$
ANCILLARY FACILITIES		
Caretakers Store (one on each floor)		80
Engine Room		170
Air Conditioner		350
Technicians		84
Telephone Operators		45
Total		729
CATERING SERVICES		
Self Service restaurant (1.4m/dinner)		$300m^2$
Waiters Service Restaurant (1.6m/dinner)		$200m^2$
Kitchen and Storage		$300m^2$
Total		$800m^2$

UNIT	STAFF POPULATION	SPACE REQUIRED IN M^2
COUNCIL CHAMBER		
Allow $1.2m^2$ min. per seat for members and $0.6m^2$ per seat for public seated in the balcony area.		
Members seating	100	150
Press Room	--	24
Invited guests/press	30	40
Members lounge	50	80
Major's suit	4	100
Majors Meeting/interview room	1	50
Party leader's suite	1	36
Opposition leader's suite	1	36
Committee rooms (Five number)	--	220
Members reading room	--	80
Secretarial Services for members	--	108
Toilets	--	60
Total	180	994
MULTIPORPOSE HALL		
PUBLIC AREA		
Auditorium ($0.6m^2$/beat)	700	500
Foyer ($0.5m^2$/beat)	--	350
Toilets	--	170
Ticket Office	--	8
Public lounges	--	150
Kitchen and store (lounge)	--	60
Projection Room	--	12
Light Control Room	--	12
Total	700	1262

UNIT	SPACE REQUIRED IN M^2
STAGE	
Actors dressing and changing room plus toilets	$90m^2$
Green room/rehearsal	$120m^2$
Property store	$60m^2$
Scenery store	$120m^2$
Funiture store	$350m^2$
Costume store	$50m^2$
Total	$790m^2$

CAR PARKING FACILITIES

On the basis that every senior service staff is entitled to a parking lot within his work premises, a total of 250 cars is provided for.

Parking facilities for visitors is integrated into the concentrated car parking schedule for the central business district. One of such proposed facilities is located within the city hall premises and managed by the municipal authority.

It's location beneath the central plaza contributes to a more intensive use of the space. It is a good example of a positive attempt at exploiting the natural (gently sloping) features of the site.

CONCLUSION

The project was conceived as a complimentary contribution to the current emphasis on the institution of local government and municipal councils as a basic democratic instruments for effective government. The ultimate proposal aims at cultivating a positive attitude of awareness towards the design of important public buildings in the country especially, as related to the provision of civic facilities to an entire community.

The design solution to the complexe has a dual facet, firstly, there is need to relate the buildings harmoniously to the surrounding environs. To this effect the importance of the city hall as a dominant feature of the central urban area was stressed in a truely practical sense. Secondly, there is need to evolve a palpably sound solution to the accomodation and social functions of a most important civic complex.

Within the framework of the adopted master plan the city hall is a strategic object of visual focus. A subtle dynamic vista relates the two most important public buildings in the town - the parliament building to the east and the city hall at the other end. In addition, the projected location of the site and the organisation of the surrounding open spaces is adapted to the concept of a continuous linear recreation network, whereby a central stretch of greenry persistently links up a chain of open spaces, well disposed at strategic areas within the heart of the city, into continuous whole.

Basically, the project is comprised of four seperate but interrelated physical components, - the council chamber, the multipurpose hall, the municipal council offices and the central public plaza.

The council chamber and the multipurpose hall are in the foreground, intimately related to the chief civic space, and in silhoutte against the taller office structure in the background. The latter is designed to unite all the above mentioned sub-complexes of the project while simultaneously enclosing a series of well landscaped courtyards and gardens which flows out unto the public square. These varigated spatial enclosures together with the open plaza offer a conduicive venue for relaxation and passive recreation; and a sort of refuge from the hustle-bustle life, characteristic of city centres everywhere. In particular the plaza also provides an appropriate functional setting for random cultural activities and political actions.

Public access into the office block from the plaza is via a spacious entrance/exhibition lobby on the ground floor level, which is laterally linked to the outdoor exhibition court, and vertically, by means of a mezzanamic floor arrangement, to a circulation concourse on the first floor level. The concourse provides direct, elaborate access to major functional units which are public intensive oriented, aswell as the council chamber proper. By means of these spacious lobbies and clear

orientation of circulation layout, in addition to a category of well provided meeting spaces, the process of encounter with the public is harmoniously facilitated.

The spirit of openness inherent in the flamboyant use of glazed surfaces both as an external walls and interior partitions; internal courtyards arranged to offer quick glimses of beautifully enclosed landscapes, challenge to visiting public to explore more pleasureably the accomodation that houses an essential process and instrument of their government.

By the articulation of service function into well displaced service cores and limited use of internal columns, the interior space of the office shell is well disposed to take full advantage of the flexibility and other numerous planning advantages inherent in the principles of open planning concept for offices. This objective is again underscored through the location of peripherial columns off the building envelope. The open ended form of the office building is yet another characteristic objective of the design which guarantees a flexible approach to any future horisontal expansion.

An organixally oriented covered walking which is reading converted into an exhibition gallery links the block of offices to the multipurpose hall. The latter is a venue for a wide range of activity programme, which includes lectures, dramas, concerts, civic

receptions, banquets, dances, and many other forms of cultural and political activities. In other words it is a necessary internal extension of the activities in the open plaza. The form of the civic hall is a response to the imperative visual and acoustic factors that necessarily affect the design of any large auditorium. The design of the vertical section through the auditorium, together with the form of the stage (apron stage) offer a solution that is conduicive to the arrangement of the variety of programme mentioned above.

In the final analysis the objective is to create an environment and atmosphere conduicive to meeting and dialogue between members of the public, the authority staff, one with the other. Work and leisure facilitiesa are integrated and intermingled as a means of breaking the rigid barrier between the municipal authority, and the general public, and as a means of destroying the normal rigid segregation between them. The idea is to encourage a smoother transition from one activity to the other, and those spirits of belonging and unity which favour mutual trust and co-operation once again, the city hall is an object of national significance!

REFERENCES

Design of cities - Thames & Hudson

History of Urban forms - A.E.J. Morris

I.M.T. Enugu (MSC Thesis submission)

- U.J.C. Agunwa.

Interior spaces designed by Architects

Planning office space - Duffy, Care, Worthington

Rathauser and Kommunale Zentren - Callway

The city in History - Lewis Munford

The city, Yesterday, Today and Tomorrow

- Enry Jones, & Elannor Van Zanot

The Redevelopment of Tafawa Balawa Squre,

(MSC Thesis Submission) - C.C. Nebedum

Theatre and auditoriums - H.M. Meyer

Theatre Planning - R. Ham

Town Halls, Civic Building and Municipal Buildings

- David Hutchison, Graham Locke,

Natalie Robnson.