INTER-CITY BUS TERMINUS, LAGOS

BY

HARUNA USMAN

A Thesis submitted to the Post-Graduate School, Ahmadu Bello University, in partial fulfilment of the requirements for the Degree of:

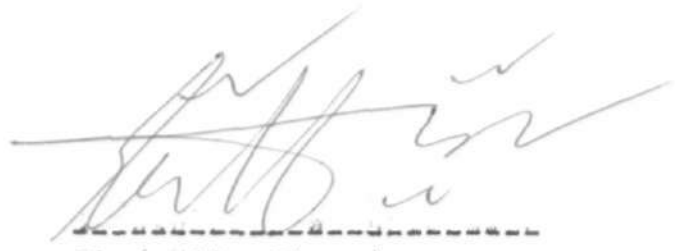
MASTER OF SCIENCE IN ARCHITECTURE (M. Sc. Arch.)

Department of Architecture
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August 1988.

DECLARATION

I, HARUNA, USMAN of the Department of Architecture, Faculty of Environmental Design, Ahmadu Bello University, Zaria hereby declare that this research work has been a personal academic undertaking executed under the supervision of my mentors at the Department. All quotations and informations utilized and their sources have been duely acknowledged.



Student's Signature

CERTIFICATION

This thesis report entitled "INTER-CITY BUS TERMINUS, LAGOS" by HARUNA USMAN, meets the regulations governing the award of the degree of Master of Science in Architecture and is approved for its contribution to knowledge and literary presentation.

Chairman, Supervisory Committee	29/8/88 Date
Sub-Group Mentor (Supervisor)	29/8/88 Date
Member, Supervisory Committee	31st Aug '88 Date
Head of Department	Date
External Examiner	Date
Dean, Post-Graduate School	Date

DEDICATION

- To Almighty God - for His Devine guidiance through the race of my academic pursuit.
- To my mum Jenebu Haruna for her motherly care and her useful advices.
- To my father Haruna Okpanachi, of the blessed memory who did not live to see the fruits of his labour bear fruits.

QUOTABLE QUOTES

No Architecture can be truely nobly which is not imperfect.

- The Stones of Venice.

The Purest and most thoughtful minds are those which love colour the most - The Stones of Venice.

All By:

John Ruskin

18-9-1900

Hardwork is the ingredient for any successful achievement in human life

- Usman Haruna

8th June, 1988, 4.33 a.m

ACKNOWLEDGEMENT

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Thank you all.

Usman Haruna,
July 1988

THESIS PROPOSAL OR (ABSTRACT)

Organised 'Bus Terminis' like air terminis, seaports and rail terminis do not exist in this country. Unfortunately before independent governments, private organisations and individuals failed to give serious attention to this vital aspect of public transportation. Local Government Authorities which controls bus terminis are more interested in quick revenues, from little investments made on their development. Such revenues are collected in the form of payment of taxes by vehicle owners, passengers, parkings, lock-up stalls, etc.

Due to the flexibility of road transportation, more than 50% of Nigeria population use it for the movement of man and his goods. There is every justification therefore to give a greater consideration to the provision of organised bus terminis in the national capital development projects.

Lagos like any other city in the world needs a standard and organised, bus terminus to meet up with its advancement in socio-economic, political, cultural and religious activities. The services to be rendered to the public by a well planned and administered bus terminus in

an urban area like Lagos will definately solve many socio-economic, political, cultural and religious problems.

Sound architectural solutions have not featured on the concept of designing bus terminals. Also the approach to the solution of transport services problems, the bus terminis, are lacking in sound architectural/planning contribution as well as genuine investment. The situation now is that the public has loose confidence in the capability of the architectural professionals to provide lasting designs and planning solution to our bus terminis.

Architects must have to restore this public confidence by striving hard to evolve a design concept for the organised bus terminis. The achitectural solutions will cater for articulate space utilization and forms. Also the proper relation of functions within the complex with respect to human activities in order to achieve desired aesthetic values and comfort.
Considering the architects role in providing a lasting solution to the proposed problems, choice of an 'Inter-City Bus Terminus' as a thesis subject is proper.

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CHAPTER 1

1.00 INTRODUCTION

The non-existence of organized Bus Terminis like railway stations, seaports and air terminis in Nigeria, are some of the vital components of organized transportation, which contribute to the degression of the nation's socio-economic growth. This negative rate of growth is as a result of the negative impact left on the road users due to the absence of these road transportation centres. The information on the percentage distribution of total traffic volume per transportation mode in Nigeria, provided by the Federal Ministry of Transport shows the existing situation: Road - 65%, Rail - 30%, Water - 4.8%, Air - 0.2%, and the future estimate give: Road - 50%, Rail - 42%, Water - 6% and Air - 2%. Hence, it can be said that the flexibility of road transportation makes more than 50% of Nigeria population use it for the movement of man and his goods. This situation is the same for Lagos State.

The architect has observed that, a high percentage of the potential travellers, tourists, business men and so on have been discouraged from

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making any journey to our major cities and towns including Lagos. This situation is even true of some of our small towns and villages. This is as a result of the fear for the safety of lives and property, due to lack of organised road transportation centres. Their action is engineered by the non-existence of organised transportation centres which expose them to the hazards of theft, robberies and all sorts of embarrassments. These are the social ills that need urgent architectural solutions. Evidence of these problems is confirmed in the extracts 1-23 pp. 192-14 from the national daily newspapers.

It cannot be disputed that road construction in Nigeria has improved since independence. However, nothing has been done by the governments, private organisations and individuals to develop road transportation facilities like organized Bus Terminis. Currently, the Federal Government has come to understand the problem of mass transportation including that of road, in Nigeria and has even gone ahead in the 1988 budget to vote ₦700 million for the development of this subject. It is then time for architects to strive hard to

propose architectural solutions for the standard road transportation facilities like organized Bus Terminis.

There will be no question of who will bear the cost since the governments (Federal, States and Local) are ready to fund any reasonable proposal, so far it is on mass transportation system.

The choice of an Inter-City Bus Terminus for Lagos therefore as a thesis topic was borne out of a conscious desire to alleviate the hardships of road users, restore confidence in them to have sense of safety of their lives and property, provide solution to traffic conjestion through provision of facilities laid out in an orderly fashion.

This orderly fashion allows for the officient and smooth transfer of passengers and their baggages within the minimum time. It will also be the architect's contribution to the execution of the Federal Government's program on mass transportation system.

1.01 Limitations -

This thesis work is based on solving the existing problems of Bus Terminis in Lagos and it is not for that of projected problems. It is therefore necessary that in planning and designing of this type of terminus, the existing physical development on and around the site must be given a critical look to ascertain the form to be adapted in the proposed terminus, in relation to the existing structures in the area.

1.02 Goals

(i) To improve the efficiency of bus services.

(ii) To cater for the convenience of the passengers.

(iii) To make bus travel more attractive through positive impact and impression of rightness of the bus terminis on uscrs.

(iv) To bring bus terminis to acceptable standard in design as railway stations, seaports and air terminis. This will correct the erroneous impression that "architectural practice" in this country cannot cater for the design of this facility.

(v) To restore confidence, desire and sense of security in travellers arriving and departing Lagos (origin and destinations).

(vi) To make the present parks and bus terminis attain a higher level of socio-economic activities therefore becoming a revenue generating venture.

(vii) Providing a desired environment for passengers, pleasant for comfort and recreation in the cause of travel.

(viii) To deconjest some areas of Lagos already experiencing serious traffic jam, thereby reducing accident, fatigue, jams and so on.

(ix) To deliver travellers and their baggages to their various residence on request from the bus terminus on arrival.

(x) To provide special services to convey intending travellers from his house to the terminus on demand. This move will safe travellers from the hands of criminals including armed robbers.

(xi) To serve as transition point or link between Lagos Metropolis and other towns and cities.

1.03 Objectives

(i) Linking hotel accommodation with the terminal building and the provision of other recreational facilities such as restaurant, bars, cinema, indoor games, etc.

(ii) Provision of passengers' facilities, such as waiting rooms, conveniences, ware houses, check-counters, telephone rooms, telext, etc.

(iii) Service of facilities namely, fire-house, police post, security office, fuel station (filling), shops and offices, auto service boys and car wash, mechanical workshop, clinic, etc.

(iv) Motor vehicle facilities - car/bus storage (long or short term), lock up garages (mostly for private vehicles), Motor ways, traffic control unit.

(v) Staff/management facilities -offices, conference room, store, and administrative building.

1.04 Scope

(i) The terminus is designed with facilities to cater for traffic on existing routes with a view to giving provision for expanding the handling capacity.

(ii) There are opportunities too for opening now routes to other towns of the Federation.

(iii) Four major existing routes are as follows:-

(a) Lagos-Benin-East-Lagos

(b) Lagos-Ibadan-Ilorin-North-Lagos

(c) Lagos-Abeokuta-Lagos.

(d) Lagos-Badagry-Benin Republi-Lagos.

Frequency of buses on theso routes can be increased with economic advantage.

(iv) More routes can be created apart from the existing ones. Example, Lagos to the New Federal Capital (Abuja). That is Lagos-Abuja-Lagos. Buses for this route can use Lagos-Benin-Abuja-Lagos.

(v) Express baggage service is bound to grow with the existence of some industries, institutions and residential area around the site.

(vi) Provision will be given for some terminus facilities to be on rental basis. Example of such facilities are office block, hotel accommodation, service areas, loading bay and unloading bay.

(vii) The passenger traffic for those making "origins and destinations" trips, will serve as the basis for arriving at the number to be designed for, though provision will be made for future growth as this kind of facility must be flexible, to meet the growing needs and demands.

(viii) In all sincerity of purpose the terminus is designed to cater for man's economic, social needs within a reasonable cost.

CHAPTER 2

2.00 MODES OF TRANSPORTATION

Mobility has causes and consequencies. The idea of moving from one place to the other is mobility and this is as old as man. It is an inherent, inevitable aspect of our life. This is mainly as a result of socio-economic factors and sustenance of human life. During the stages of development, mobility was quite modest, and without any side of consequential effects. It was either on foot, on animal backs or by animal drawn carts. But over many years of skillful thinking inventions and renovation of various mechanical means have emerged thereby coming along with problems associated with these discoveries. To his advantage, man has been able to traverse longer distances and carring heavier loads without sacrificing his comfort. This evolutionary change lead to these discoveries:-

(i) that he (man) could transport more than he could carry.

(ii) many animals have variable power for carring and haulaying than man.

(iii) that structure of materials heavier than what can be made to float on water.

(iv) that the wheel was an excellent means of overcoming resistance on the ground.

(v) that air could be utilized as power.

(vi) that power could be generated by mechanical mean using various kinds of fuel.

(vii) that the natural soil could be improved.

(viii) that air could be used in densier objects and loads.

These discoveries led to the invention of bicycle, motor car, train, the ship, aeroplanes and other modes of transportation with the unprecedented advancement in technological innovations in transport system came the problem of conjestion within urban centres leading to unnecessary delays and a consequent lowering of the economic growth rate. This also brought about the problems of pollution, noise and fumes thereby reducing the quality of life within the urban environment. A boomerang to man indeed. In order to improve and resotre good quality of life. It is imperative to have a well planned transportation system with desired supporting facilities within urban centres as well as between them.

2.01 Causes of People and Goods Movement:

(i) In Developed Countries:- Causes of people and goods' movement in developed countries is closely related to the land use. It will be proper therefore to state that all movements are principally a function of human activities. The developed countries include the European countries, U.S.S.R. and U.S.A. Such movement arises due to economic, social or recreational activities.

Such movement may be due to the transfer of higher level technology to less developed parts of the world. This explains why there is so much traffic in towns because activities are concentrated there.

(ii) In Africa:- Causes of people and goods' movement in Africa is also closely related to land use. Such movements are principally a function of human activities. This explains why there is so much traffic in towns because activities are concentrated there.

Similarly it explains why traffic flows between towns and between town and suburbs. The reason being that there are complimentary activities generating traffic represented in the following four ways:-

(a) Transportation of raw materials merchandise and food.

(b) Conveyance of passengers en mass.

(c) Conveyance of persons singly or collectively.

(d) Provision of mobile services like clinics, libraries.

In a braod sense movement of people and goods in Africa arises due to economic, social or recreational activities.

(iii) In Nigeria:- Movement of people and goods in Nigeria are almost the same with that of African continent. The movement is closely related to land use. And such movements are principally a function of human activities. This is why there is so much traffic in Nigeria towns, for the fact that here activities are concentrated.

People searching for means of living leads to traffic flows between towns and between town and suburbs. The reason being that there are complimentary activities generating traffic represented in the following four ways:-

(a) Transportation of raw materials merchandise and food.

(b) Conveyance of persons singly or collectively.

(c) Conveyance of passengers en masse.

(d) Provision of mobile services like clinics, libraries. Generally, in Nigeria, movement of people and goods are due to economic, social or recreational activities.

2.02 Types of Such Movements in

(i) Developed Countreis

(ii) Africa and

(iii) in Nigeria

It is difficult to differenciate between the types of movements in the three areas named. Basically the types of movements are the same in all cases.

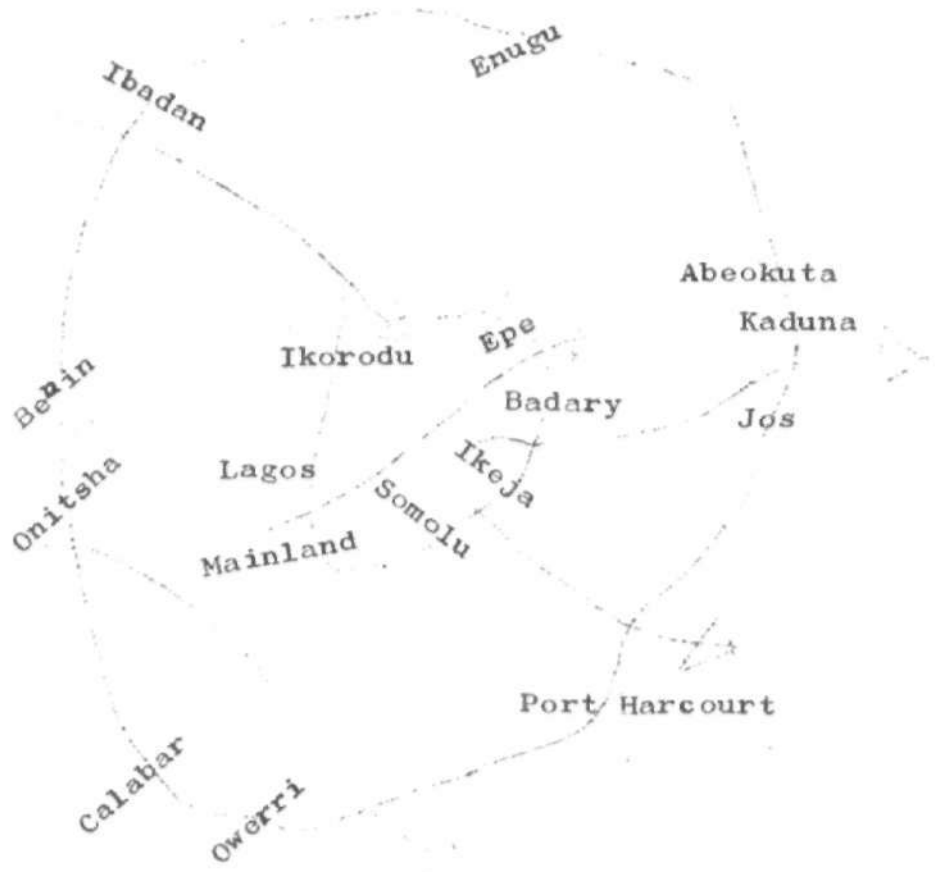
Since different types of land uses generate different types of traffic movement type is to a large extent a result of particular land use pattern. In an urban setting there are four types of movement as follows:-

(a) External - External Movements.

(b) Internal - Internal Movements

(c) Internal - External Movements and

(d) External - Internal Movements.



Adapted from Transportation Planning by M.J. Bruton.

In a lay man's language movement from Lagos Metropolis to other parts within Lagos State is internal - Internal Movements while movement from or to Lagos is regarded as Internal - External and vice versa accordingly. For the proposed Bus Terminal the Internal-External or Internal-Internal Movements is adequately catered for.

Lagos State is viewed as internal cordon whereas other States of the country are labelled External cordon.

2.03 Movement of People and Goods in

(i) Developed Countries

(ii) Africa and (iii) Nigeria.

Prior to the invention of the automobile movement of people was only localized partly because man had limited strength and energy.

This energy had to be channelled towards getting food, water and shelter, the basic necessities of life. Unlike the automobile whose speed and range in terms of movement is fast (potentially) and great, man is slow and small.

Movement however means more than just road traffic, for in 1953 Robert Mitchell and Chester Rapkin of University of Pennsylvania analysed movement and land use data for philadephia which gave birth to the theory that different types of land use generate different and variable traffic flows.

This discovery brought fundamental changes in understanding and study of movement. Therefore it is possible to control movement by controlling land use.

2.04 Direction of their movements in

(i) Developed Countries

(ii) Africa and (iii) Nigeria.

Direction of movement is the same in all case, be it in developed countries, Africa or in Nigeria. Movement as a function of human activity is directed where there is concentration of human activity. Examples are commercial centres, residential areas, industrial estates, recreation areas to name a few.

On working days for instance where government institutions exist the movement in the mornings is from home (residential) to work place and at the close of work movement is directed from work place to home. Lagos metropolis is a very good example. The direction of movement is towards the Island where most offices exist, in the morning times while it is the reverse in the evening times.

Generally, in Nigeria, for instance residential areas are trip generating in the mornings whereas work places are trip attracting.

The reverse is the case at close of work. The time lag when there is maximum traffic built-up on highways is regarded as peak period.

On a large scale however the directions of movement is from urban centres to suburbs as in the case of social obligations. For economic purposes on the other hand movement is directed more towards commercial centres.

CHAPTER 3

3.00 ROAD TRAFFIC SYSTEM IN LAGOS

This chapter summarises existing conditions relative to traffic operations along the streets and highways of the Lagos Metropolitan Area. The physical conditions, the nature and volume of traffic movements, travel speeds, and the existence of traffic control devices are the determining factors of functional adequacies and deficiencies of the study area routes.

Basic data concerning streets and highways in the Lagos Metropolitan Area were assembled through field investigations, route reconnaissance and field surveys. Data were obtained from the Highway Traffic Section, Federal Ministry of Works and Housing and the Transportation Division, Lagos State Ministry of Works.

3.01 Regional Routes and Traffic Volume around Lagos.

Good road like other transportation modes connects the Metropolitan Area with the remainder of the country. Recent road improvements, including the Lagos-Ibadan Expressway and the Lagos-Abeokuta road, provide good road connections to the areas north and east of the Metropolitan Area.



Agege Motor Road

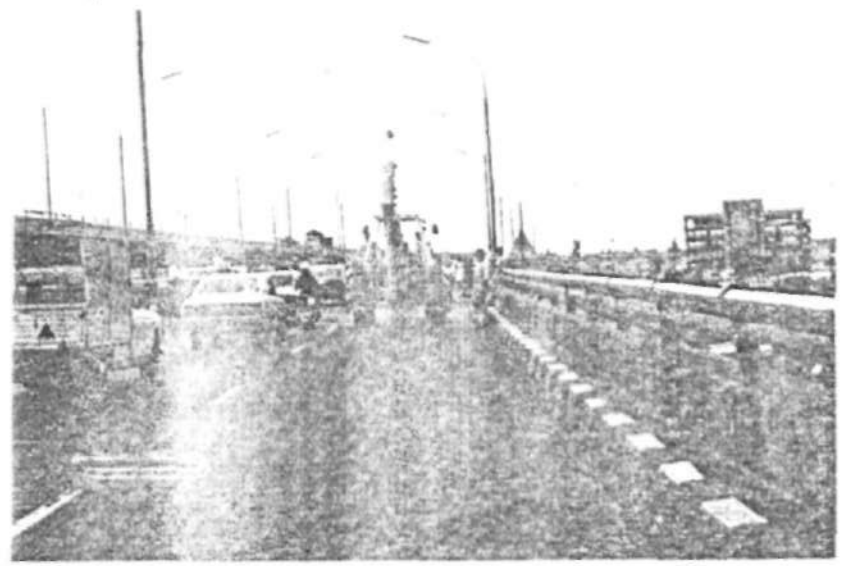


Ikorodu Road

Major Road Network



Awolowo Road - Falamo Roundabout



Western Avenue

Plate 3.1

The early development of Lagos Island also influenced the road network in Metropolitan Lagos. Carter Bridge was the first major bridge connecting Lagos Island with the Mainland. Since that vital link, the emphasis on north/south movement has continued through the extension of the carter brdige northward by means of the Deuton Causeway, the Herbet Macaulay-City Way arteries and by Ikorodu Road. The Eko bridge, constructed in 1968, was the second major connection to Lagos Island from the Mainland. This project heralded the launching of limited access roads in the Metropolitan Area. Since the completion of Eko bridge, Western Avenue, Agege Motor road and the Agege Byepass have been constructed (to connect with the Abeokuta Road), thus providing another major north/south roadway in the metropolitan area. Another major north/south road is the Apapa Road.

Other roads of major importance on the Mainland (See Fig. 3.1) include Airport Road, which connects Ikorodu Road with Agege Motor Road and Ikorodu Road, which is constructed as a six-lane divided facility with two service lanes in each direction. The Apapa-Oworonsoki Expressway constitutes a major east/west facility, connecting Oworonsoki with the port complex.

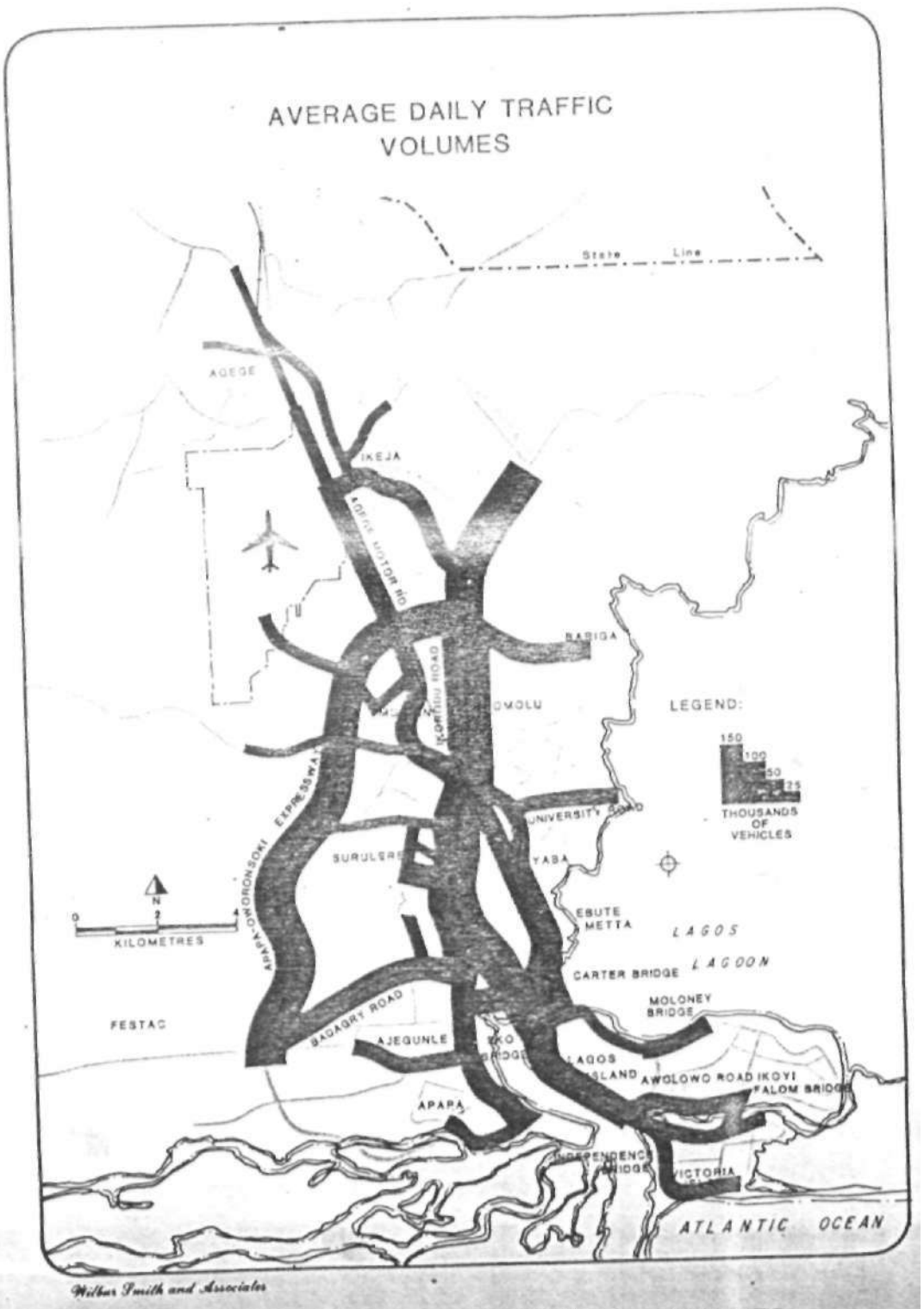


Fig. 3.1 AVERAGE DAILY TRAFFIC VOLUMES

The Ijora causeway provides the east/west link between Deuton causeway and Apapa Road.

Major routes on Lagos Island (see Fig 3.2) include the recently constructed Ring Road, an Express Bypass road around Lagos Island. Other roads of major significance include Marina, Broad Street, Nnamdi Azikiwe Street, Ereko Street, Balogun Street, Martins Street, Bamgbose-Lewis Street and Ogbosere Road. The major routes in Lagos Island have an east/west oreintation with only a few roads such as Ereko, Martins and Balogun Streets providing north/south connections of major significance.

(B) Physical Aspects of the System: Here physical aspects of the road network are described including the road classification system adopted, the length of road ways by classification, and the number of travel lanes. Additional cross-sectional features of the roads described herein include the illumination level on the roads, the existence of sidewalls and other pedestrian facilities, drainage conditions and pavement conditions.

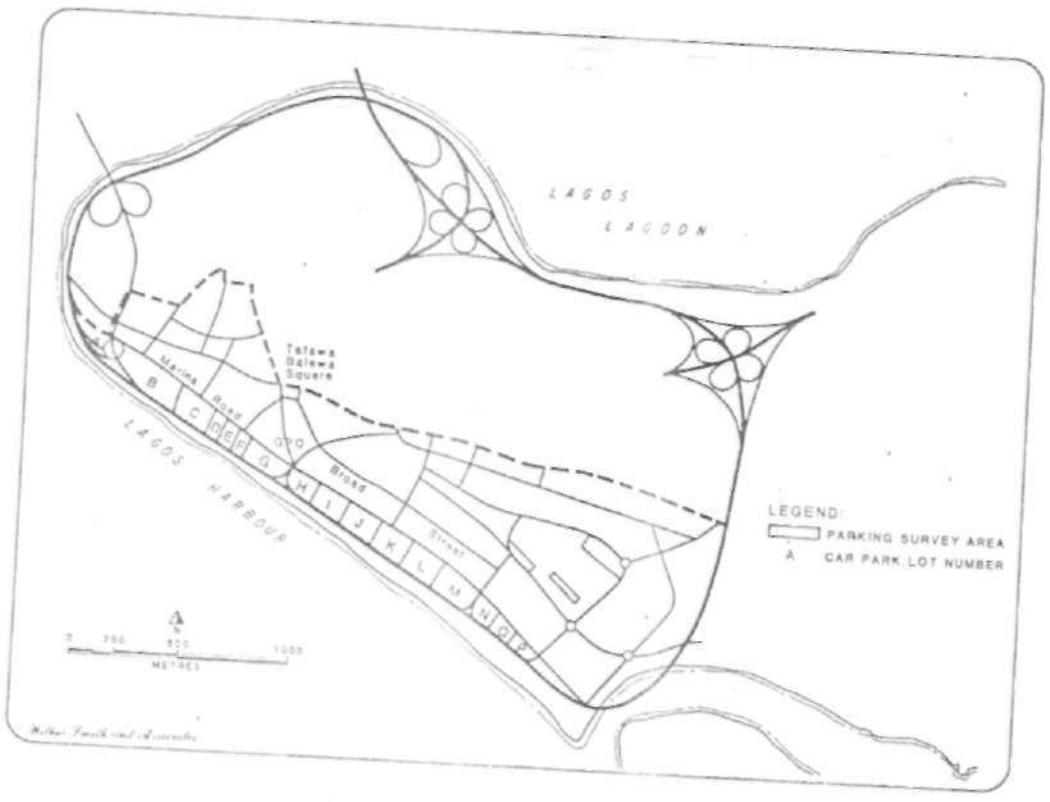


Fig. 3.2 MAJOR ROUTES ON LAGOS ISLAND.

Functional classification: Figures 3.3 and 3.4 illustrate the system of expressways, arterials and collectors within the developed sections of the Lagos Metropolitan Area. This hierarchy of roads has been adopted to facilitate the development of an integrated system of streets and highways by determining the functions, or predominant purposes, and importance of all urban streets and highways in relation to one another and to urban development.

Streets primarily providing residential and other internal access to major streets were not included in the road network for the purposes of this analysis. It is emphasised that the road classifications shown represent a functional classification and do not indicate quality of service provided. Neither do they reflect geometric or alignment features, nor in any way indicate the adequacy of these roads for such service. The distribution of road kilometres by classification is listed below:

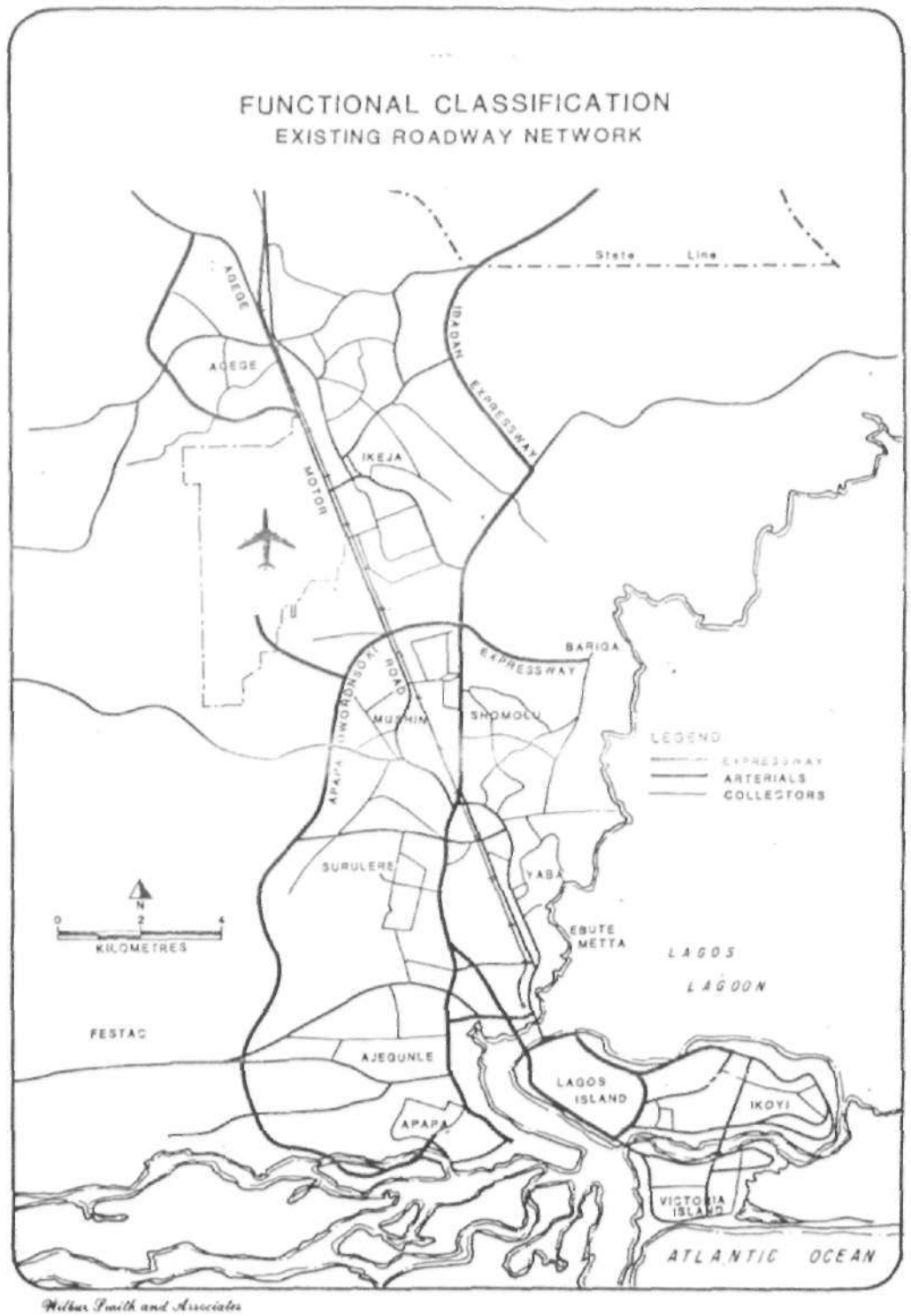


Fig. 3.3 FUNCTIONAL CLASSIFICATION
EXISTING ROADWAY NETWORK

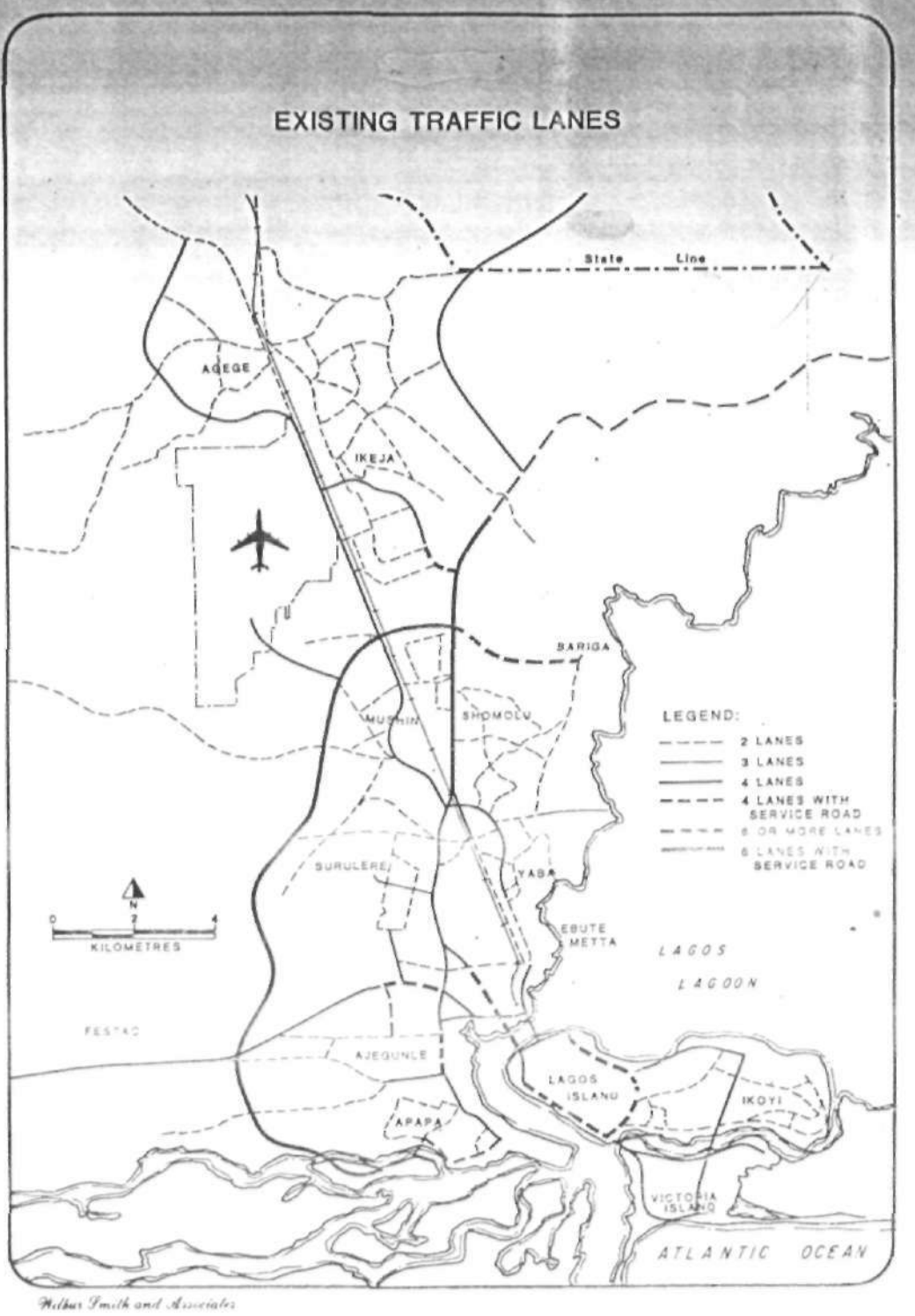


Fig. 3.4 EXISTING TRAFFIC LANES

Classification	Kilometres	Percent
Expressway	78.4	22.5
Arterial	135.9	39.1
Collector	133.4	38.4
Total	347.7	100.0

Of the approximately 348 kilometres of major roads in the Metropolitan Area, 78 milometres or 22 per cent are classified as expressway facilities. The function of the expressway is to provide for high speed movement of traffic. For the purposes of this analysis expressways are defined as the highest type of existing roads which have some degree of limited or restricted access control. Due to access control, expressways generally offer relatively high traffic service compared to the arterial or collector street system in urban areas. Ikorodu Road, Western Avenue, Lagos Ring Road and Agege Bypass are some examples of expressway roads in the Metropolitan Area.

Arterial roads comprise approximately 136 kilometres of roads and represent about 39 percent of the classified road network. Arterial roads serve principal transportation demand between

population centres both in and out of the Metropolitan Area and provide links between collector roads. These roads can be divided by medians and usually have unlimited access from side roads. Most of the road crossings along these roads are at grade. Traffic operations can be one or two-way. Some examples of arterial roads in the Metropolitan Area are Agege Motor Road, Isheri Road, Isolo Road, Itire Road and Awolowo Road.

Collector roads comprise approximately 133 kilometres or 38 percent of the classified system in the Metropolitan Area. These roads are the lowest classification in the major road network and are generally more constricted in design than arterials. Collector roads connect residential, commercial and industrial areas to the arterial system. Examples of collector roads are Ishaga Road, Eric Moore Road and Alhaji Masha Road.

The remaining unclassified roads in the Metropolitan Area serve purely local needs and should not be utilised for through traffic movements. The main function of these local roads is to provide direct access to abutting properties. However, on several occasions, these

local roads have been converted into through roads due to the inadequate provision of a collector road network. An example of this is Coker Road in Ilupeju which has been converted from a residential street to a collector road.

It is clear from a review of the classified road network that large land areas are served by a single arterial or collector road. Mushin for example, is principally served by Agege Motor Road. Although sporadic local distributive system for internal circulation is in place, there is a lack of adequate arterial and collector facilities for cross town trips. The north/south road network is dominated by Ikorodu Road and Agege Motor Road along the Mainland. With the exception of the Apapa-Oworonsoki expressway, there are no major east/west arterials or collector linking Mushin and Surulere with the Shomolu or Bariga areas. The lack of these facilities in the network result in increased travel along the limited road network.

Within the entire Metropolitan Area, there is a ratio of approximately one route kilometre per 10,000 population. This compares with 2.4 route kilometres per 10,000 population for Hong Kong and 2.7 route kilometres per 10,000

population in Kuala Lumpur. By way of comparison, Chicago has 8.8 route kilometres per 10,000 population and Pittshburgh 11.8 route kilometres per 10,000 population.

3.03 Pattern of Travel Demand

The rapid population growth experienced in the last several decades in the Lagos Metropolitan Area and the increase in economic activities have created increased travel demand to accomplish the economic, social and cultural objectives of people, business and government.

The rapid increase in demand for transportation, however, is creating serious transport problems of increasing magnitude as evidenced by traffic conjestion, time delays, and the increase in traffic accidents. Increased travel distances are caused by the expansion of the Metropolitan Area. The rapid growth in the availability and use of private cars for transport is perhaps one of the major causes of transport problems in Lagos, forcing the Government to invest a disproportionate amount of money in building roads to solve the transportation problem. (Plates 3.2-3.6).





Lagos Traffic





Plate 3.2





Illegal Activities Within Expressway Interchange Areas



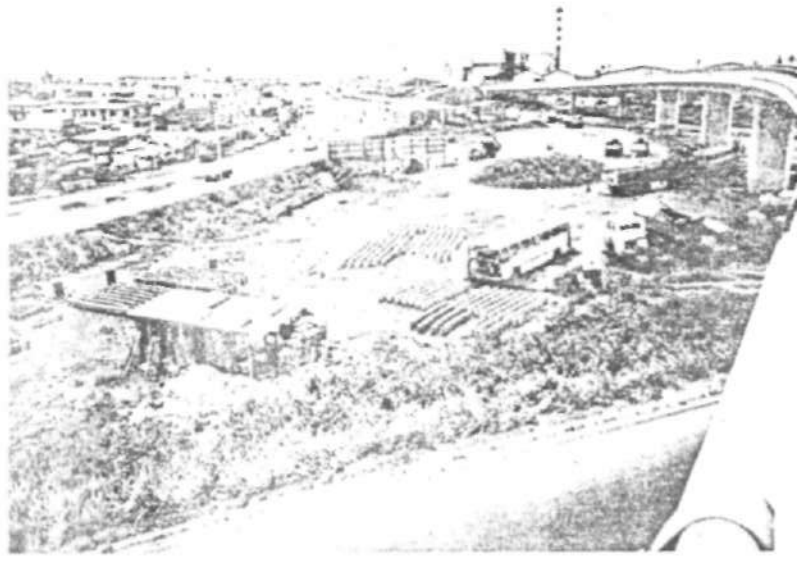
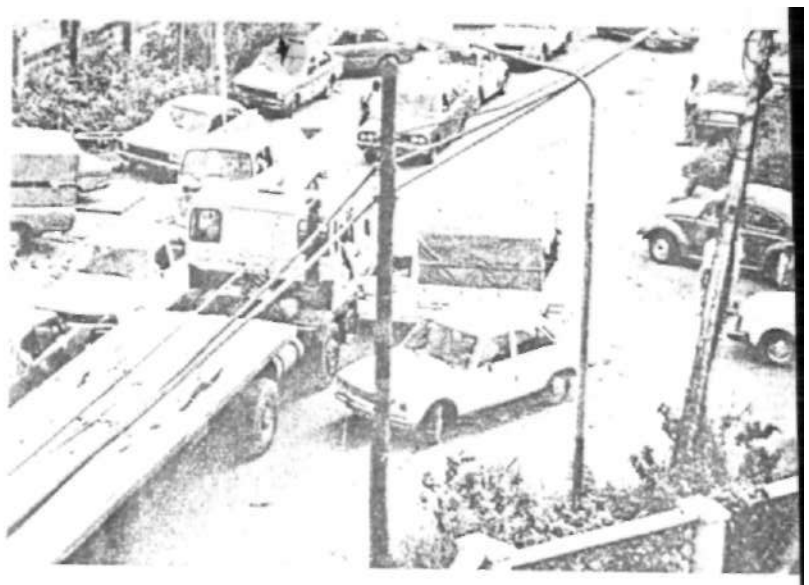


Plate 3.3





Congestion - Increasing Again





Plate 3.4





Serious Accidents - Still A Daily Occurrence

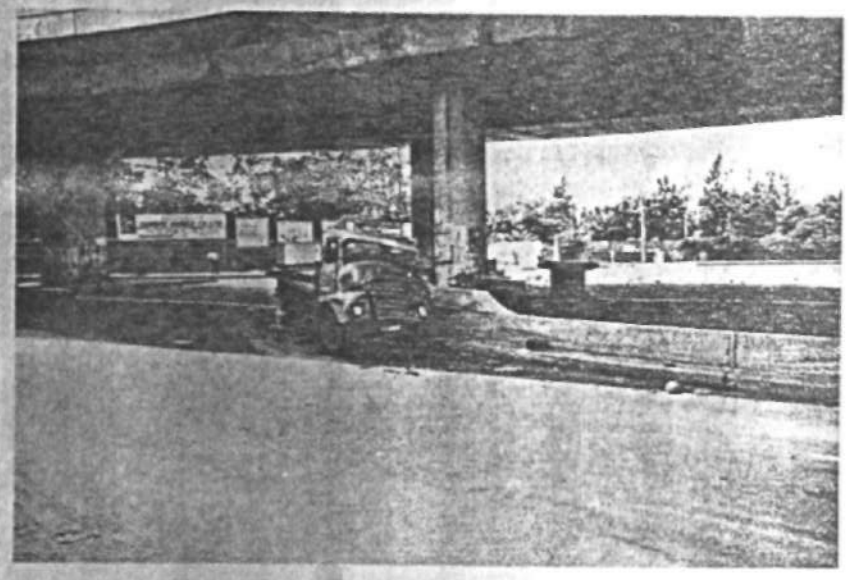
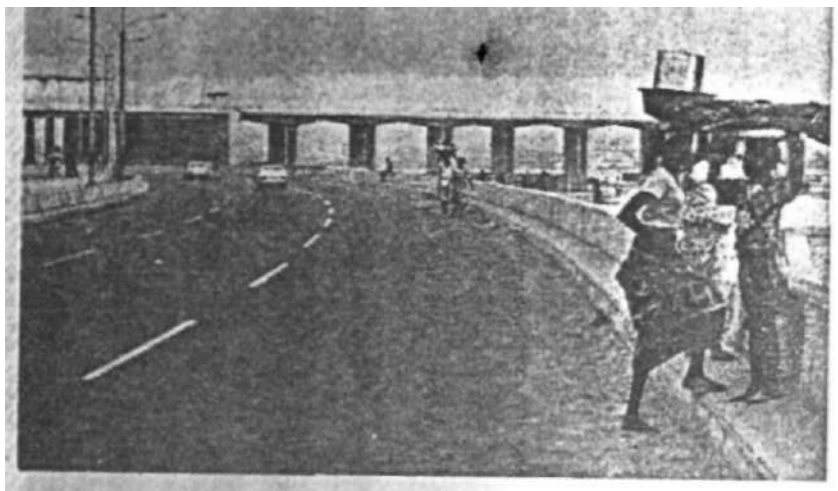




Plate 3.5





Pedestrian-Vehicular Conflicts





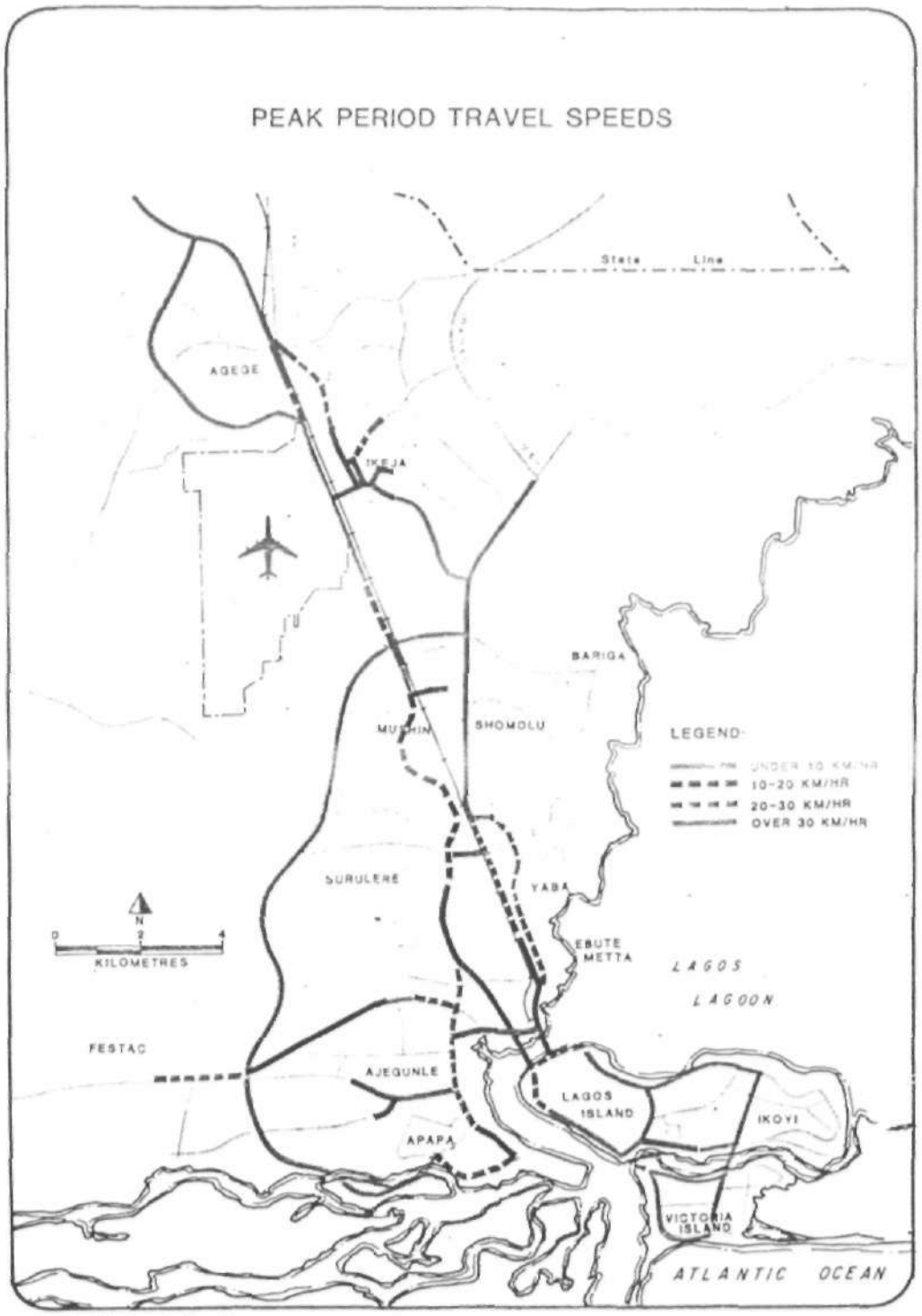
Plate 3.6

Area population distribution is such that much of the travel demand is oriented along a north/south axis. Travel is further confined by the limited number of main routes, so that very high corridor travel densities result, and these densities support high public transport service frequencies. The level of service thus achieved and the effect of low incomes and low car ownership rates results in a large proportion (about 68 percent) of vehicular person trips being made by means of public transport.

3.04 Motor Vehicle Traffic In Lagos

Traffic conditions are reflected in the distribution of volumes on the road system, variations and traffic mix of these volumes, the travel speeds afforded by the various routes and the conjested segments due to large traffic volumes or other bottlenecks. (Fig. 3.7).

Traffic volumes: The daily two-way vehicular traffic flows are shown in Fig. 3.1. showing 112,000 vehicles crossing on carter bridge. The importance of the north/south road system is further evidenced by daily traffic volumes of 109,000 vehicles along Western Avenue and 124,000 vehicles along Ikorodu Road north of the Idi-Oro Flyover.



Wilbur Smith and Associates

Fig. 3.7 PEAK PERIOD TRAVEL SPEEDS.

Major traffic volume movements were also recorded at Ijora Causeway; a daily volume of 66,000 vehicles. Along Malu Road serving the Kirikiri and Ajegunle areas, a traffic volume of 35,000 vehicles was recorded. Other major streets with heavy traffic volumes on the Mainland include Airport Road with 40,000 vehicles per day and Alhaji Masha Road with 50,000 vehicles per day.

The traffic volume between Lagos Island and Victoria Island was also heavy, with 40,000 vehicles crossing the Independence Bridge. Moloney Street Bridge, connecting Ikoyi Island with Lagos Island carried 35,000 vehicles per day. The Five Cowrie Creek Bridege connecting Ikoyi and Victoria Island had a traffic volume of 32,000 vehicles per day.

The Eko Bridge continues to provide the vital link to Lagos Island. Recently, its role had been intensified due to construction activities around old Carter Bridge for the new Carter Bridge. The connection of Ikorodu Road with Western Avenue by the Idi-Oro Plyover has also contributed to the increase in traffic volumes on Eko Bridge; rising from 76,000 vehicles per day in 1975 to 112,000 vehicles per day in 1978, an increase of 47 percent.

Peak traffic volumes: Sustained peak traffic flows in the Metropolitan Area occur between 7 a.m and 9 a.m and 3 p.m and 6 p.m. Between these periods there is a reduction in traffic volumes, but morning and evening peaks are not extremely pronounced compared to off-peak travel. Peak hour flows on Carter Bridge occur between 4 p.m and 5 p.m; comprising 6.6 percent of total daily traffic or 3,300 vehicles. The peak hour traffic on Eko bridge also amounts to 6.6 percent, or 7,400 vehicles out of the total daily volume.

Variations in Traffic volumes: The cyclic fluctuations in traffic volumes are useful in establishing roadway design criteria. Seasonal, daily and hourly variations are of interest in transportation planning. Unfortunately, there is no regular traffic counting programme established by either Federal, State or Local Governments. Therefore, it is not possible to know the seasonal variations in traffic. Daily traffic variations were analysed for a series of counts taken at various locations during one week in 1978.

List in Table below is the daily traffic variation at a typical location along Ikorodu Road near Igbobi. As shown, travel on Saturday

is the highest and on Sunday the lowest. Different week days have only a small variation from each other and, thus, data from any week day can be considered as typical of all week days. Saturday volumes are probably higher than the week days due to the removal of the odd and even number edict on that day and the increase in shopping and recreational activities.

DAILY TRAFFIC VARIATIONS IKORODU ROAD (7 a.m - 7 p.m).

Day	Traffic Volume	Percentage of Average Weekly Traffic
Monday	81,577	92.0
Tuesday	86,075	97.1
Wednesday	92,195	103.9
Thursday	90,139	101.6
Friday	92,550	104.3
Saturday	98,108	110.6
Sunday	80,141	90.4
Average	88,684	100.0

Source: MRPU/UN/WSA Traffic Survey

Hourly fluctuations of traffic were available only at a few locations. Fig. 3.8 shows the hourly fluctuation of traffic volumes in the Agege area on Abeokuta Motor Road south of the Iju Railroad crossing. As shown, the morning peak volume occurs during the period of seven to eight o'clock, followed by a flat off-peak period and increasing again in the afternnon with a peak between five and six o'clock.

Vehicle composition: For traffic counts conducted by the Traffic Control Unit of the Federal Ministry of Works and Housing, vehicles were classified as follows:

- Motorcycles and Autocycles (Mapeds)
- Private cars and Taxis
- Pick-ups and Minibuses
- Buses and coaches
- Lorries and Tippers
- Three-axle vehicles
- Four-axle vehicles

Table below lists the total number of vehicles and vehicle categories for some typical locations in the Lagos Metropolitan Area. As shown in the table, the proportion of vehicles by classification vary substantially for different count locations. Generally, the proportion of

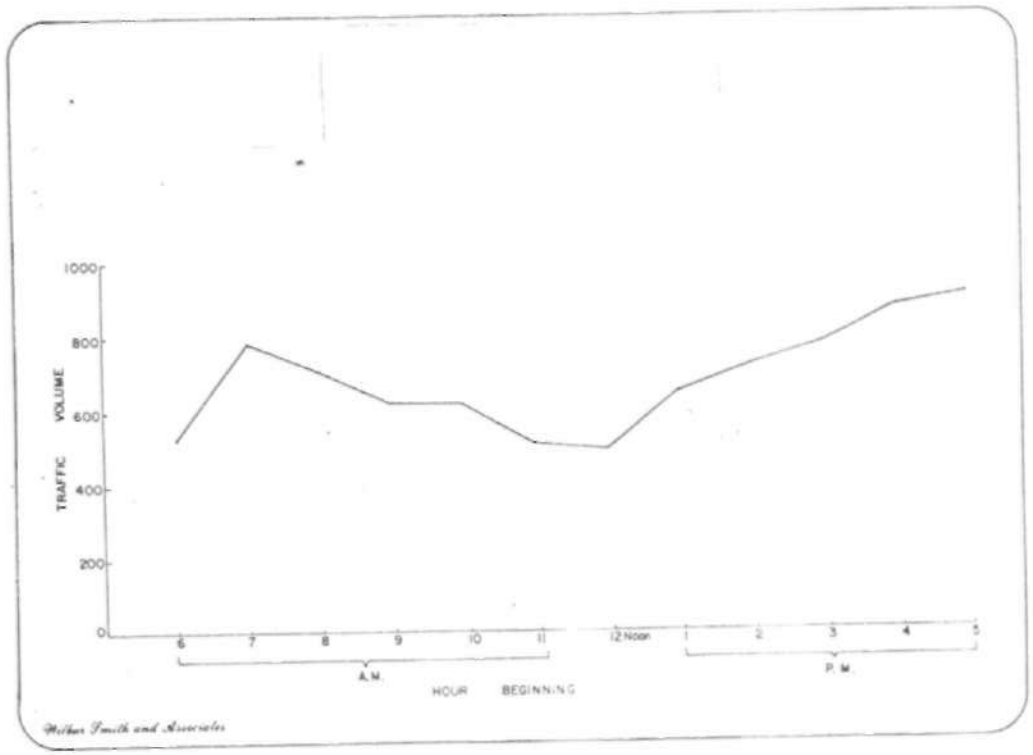


Fig. 3.8 HOURLY TRAFFIC FLUCTUATIONS

private cars and taxis is higher along the principal roads. However, on some roads, the percentage of motorcycle increases dramatically. At yet other location, trucks comprise a large percentage of total vehicles.

Peak Hour Travel Speeds: A survey of vehicle travel speeds and delays on selected major routes was made during the morning and afternoon peak hours. The results of travel time studies are inconclusive due to several other factors that determine travel speeds, but they generally probide a practical means of assessing the interaction of the physical capacity of the road system with traffic volume demands. They also provide an indication of where additional or more detailed studies should be undertaken. The speed and delay studies conducted as a part of this analysis provide a measure of efficiency which is useful as a guide in locating operational problems.

Lowest speeds (under 10 kilometres per hour) were recorded on a large section of the route network, including virtually all of Western Avenue, Carter Bridge, Apapa Road, Deuton Causeway and Ijora Causeway. Sections of Badagry Road had travel speeds of below 10 kilometres per hour.

VEHICLE COMPOSITION WEEKDAY (7 a.m - 7 p.m)

	Ikorodu Road North of Idi-Oro Flyover		Western Avenue South of Ojuelegba Road		Agege Motor Road North of Oshodi		Denton Causeway South of Oyingbo	
Vehicle Type	No	Percent	No	Percent	No	Percent	No	Percent
Motorcycles	9,327	10.5	15,294	19.6	6,231	19.8	9,451	28.5
Private Cars/Taxis	51,731	58.5	41,176	52.8	12,447	39.5	12,817	38.7
Minibuses/Pick-Ups	18,430	20.8	13,105	16.8	7,317	23.2	5,381	16.2
Buses/Coaches	703	0.8	577	0.8	296	0.9	1,033	3.1
Lorries/Tippers	7,551	8.5	7,118	9.1	4,935	15.6	4,353	13.1
Three-Axle Vehicles	176	0.2	177	0.2	107	0.3	37	0.1
Four-Axle Vehicles	590	0.7	513	0.7	209	0.7	84	0.3
Total	88,508	100.0	77,960	100.0	31,542	100.0	33,156	100.0

Source: Federal Ministry of Works.

On Lagos Island, the construction of the Ring Road has resulted in an increase of travel speed along other streets. However, sections of Broad Street, Marina, Nnamdi Azikiwe Street, Sereko Street, Martins, Balogun and Odunlami Streets have their travel speeds well reduced.

On Lagos Island some streets including Broad Street and Marina are by one-way streets because of high motor traffic on them. In the middle of Lagos Island, Odunlami Street provides a major north/south connection between the ring road and the Bamgbose-Igbosere street east/west pair. Adeniji Adele Road on the northern side of Lagos Island is operated as a two-way road.

Other streets on Lagos Island have been turned into one-way streets due to the constricted width of the roads. However in most cases, there are no traffic signs indicating the street direction. Frequently, people living in the area inform the motorist about the direction of operation on these streets.

3.05 Influence of Other Modes of Transportation

With respect to most other section of Nigeria, the Lagos Metropolitan Area contains a fairly sophisticated transportation system. The Murtala Mohammed International Airport provides a vital

CHAPTER 4

4.00 DATA AND DATA ANALYSIS

This chapter discusses the data collected, their analysis and their relationship to the design of the proposed bus terminus.

4.01 Macro-Climatic Aanalysis (Lagos State)

The general climate of Lagos State is going to be discussed here.

4.01.1 Physical and Climate

Lagos State lies within the humid climate regions of the world. The vast expanse of water adds to giving Lagos State its characteristic humid climates. The terrain is generally flat.

4.01.2 Rainfall

Total rainfall in Lagos State averages about 130 cm. The maximum rainfall occurs in June which is about 42.5 cm. Minimum rainfall is in December of about 2.5cm.

4.01.3 Temperature:

The average daily minimum temperature is about 27^{o}C while the average daily maximum temperature is about 30^{o}C. The coldest month is August with a temperature of about 27^{o}C and hotest month is March 30^{o}C, however, temperatures of 33^{o}C can be reached.

4.01.4 Humidity:

Relative humidity averages about 97% which reduce to an amount of 73% average in the afternoons. The presence of large water bodies mainly the Lagos Lagoon, Badagry Creek and the Atlantic Ocean have a great effect on the humidity of the State.

4.01.5 Prevailing Winds

These are primarily the north-east trade winds and the south-west monsoon winds.

The north-east trade winds are usually accompanied by dust particles. The wind lowers humidity and brings about cooler nights. These winds come from about November to February.

Its effects however are not predominant in Lagos. The south-west monsoon winds are very dominant in Lagos State. The winds bring the heavy rains, which could lead to soil erosion. Rains brought with this wind is reduced between late November to about March.

4.01.6 Seasons

Long wet season - middle of March-July heavy rains.

Short dry season - July/August - lasts about a month.

Long dry season - from November to March. This is the hamattan period.

4.10 Bioclimatic Approach to Architecture

The following observations are made on the climatic data discussed above for Lagos State:

(i) High humidity andhot weather - Due to the high temperature and the consequence high rainfall, there is high humidity. In view of this, drainage system should be well resolved in the proposed terminal, so that the high rainfall will not produce standing water on the site. Standing water is not favourable to the tyres of buses and other motor vehicles. It makes them to crack and burst easily while on motion.

(ii) Due to the high humidity, dews could form easily on the surfaces of the building materials. It is then necessary to select the adequate paints or other surface proecting materials and applied on the surfaces of the building materials to prevent them from absorbing excess water. Materials could get rust away, rotten away or with the strength reduced when they absorb too much water.

(iii) Due to the torrential rainfall in Lagos State, care will be taken in selecting the roofing type for the proposed terminal.

If this is not done and the rain water is allowed to remain on the roof, certainly the duration or the life span of the building will be highly reduced.

(iv) The prevailing wind will influence the orientation of the building to allow adequate natural ventilation. This will also solve the problem of high temperature.

4.20 Heat Radiation Effect of Buildings

High temperature has direct effect on buildings and other objects on the earth. Due to such high temperatures experienced in Lagos State, the whole environment is most of the time hot.

In view of this, it should be preferable to construct the proposed bus terminal with the building materials capable of reflecting the rays of the sun or that has low heat absorption rate.

It will be ironical for one to use black materials or materials with high heat absorption rate, since the resultant effect will be a very hot interior.

4.30 Body Heat Exchange

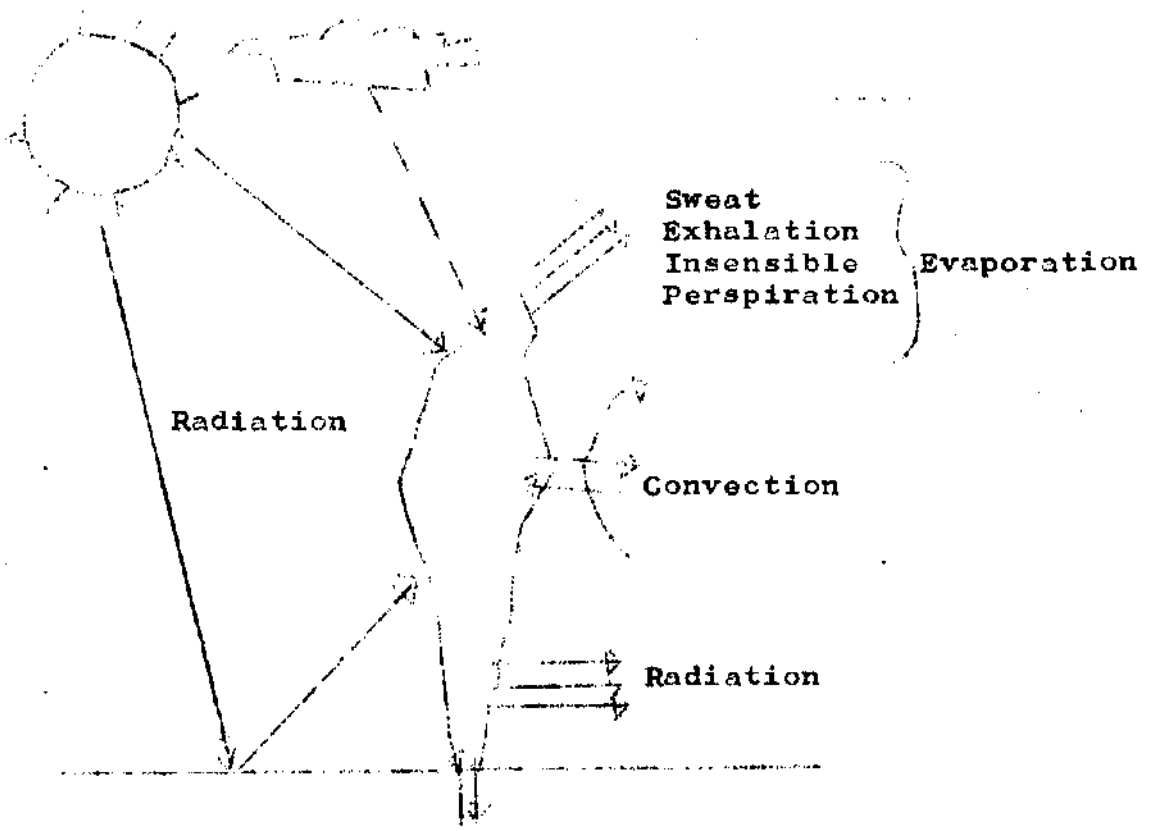


Fig. 4: Body Heat Exchange.

The deep body temperature must remain balanced and constant around 37°C. In order to maintain body temperature at this steady level, all surplus heat must be dissipated to the environment. If there is some form of simultaneous heat gain from the environment (e.g solar radiation or warm air) that also must be dissipated.

The body can release heat to its environment by convection, radiation and evaporation - and to a lesser extent by conduction (Fig. 4 above).

Convection is due to heat transmission from the body to the air in contact with the skin or clothing which then rises and is replaced by cooler air. The rate of convective heat loss is increased by a faster rate of air movement, by a lower air temperature and a higher skin temperature.

Radiant heat loss depends on the temperature of the body surface and the temperature of opposing surfaces.

Evaporation heat loss is governed by the rate of evaporation, which in turns depends on the humidity of air (the dryer the air, the faster the evaporation) and on the amount of moisture available for evaporation. Evaporation takes place in the lungs through breathing, and on the skin as imperceptible perspiration and sweat.

In Lagos where it is almost hot and with high humidity throughout the year, rate of evaporation from the body is very high. The body's rate of heat loss is therefore very high.

Hence in designing the proposed bus terminal, building materials that have high rate of heat absorption should not be used, as the heat absorbed by them will make the users uncomfortable. Materials that can deflect heat should be used.

Efforts should be made to make the interior cool for human comfort.

LAGOS - CLIM.TIC SITUATION.

	JAN	FEB	M.R	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
Average Monthly Rainfall	41.7	26.8	62.5	180.8	298.1	390.5	315.8	105.2	136.7	194.5	75.8	13.4
Mean Relative Humidity at 0900hrs	87	84	83	80	86	86	84	84	84	83	82	82
" at 1500 hrs	72	73	73	75	76	82	81	80	79	78	75	69
Daily max. Tempera-ture	30.9	31.5	31.6	31.3	30.3	28.1	27.5	27.7	28.4	29.5	30.5	30.9
Daily Min. Tempera-ture	25.1	26.0	26.0	25.8	25.0	23.7	23.5	23.5	23.7	24.2	24.6	23.9
Mean duration of sun-shine hrs	6.1	5.3	5.6	6.0	5.0	7.5	2.3	2.4	3.2	4.3	3.3	3.2
Evaporation	3.0	3.5	4.2	4.1	3.6	2.8	2.9	3.8	3.0	2.9	3.4	3.4

Source: Lagos State Metrological Services Unit.

CHAPTER 5

5.00 LAGOS AND THE SITE ANALYSIS

For the purpose of providing adequate reference to the study area. there is need to briefly discuss the location of Lagos State and its population.

In the same manner, to design and build effectively on a site an analysis of the site is necessary. This is to avoid mistakes in the design that will make the building unusable or uncomfortable to the user.

Various environmental and physical conditions coupled with possible site constraints affect a proposed building or design and they must be analysed. The site which is effectively analysed will help in the design of the proposed building. This will be in terms of the proposed buildings, orientation, location, structure and enveloping surroundings.

5.01 Lagos

Lagos State which lies in the south western part of Southern Nigeria, covers an area of 357,700 hectres of which 60,839 (17%) consists of Lagoons and waterways.

In term of land area, Lagos State is almost about 0.4% pf Nigeria and the smallest State in the country. However, Lagos State accomodates over 7% (7.2 million) of the estimated population of Nigeria.

Lagos metropolis accounts for about 89% of the total state population (about 6.4 million). However, metropolitan Lagos is only about 37% of the total area of Lagos State land area. This covers about a 15 kilometre radius.

The metropolitan area of Lagos being relatively small, coupled with high population growth rates has brought about high population density. Average population density being 15 times that of the entire Nigeria.

The high population density in Lagos metropolis (1.308 persons per square kilometre) has brought about great pressure on the existing land. Government and private efforts result in sand filling of swampy and water areas in a desperate attempt to create land area for use. However, the state has tended to grow northwards where Ojota is located today.

5.02 Criteria for Site Selection

The architect's motivation for the selection of the proposed site are due to many factors. The factors include:-

(i) Lagos State Government's policy on the location of Inter-City Bus Terminis.

(ii) Route with the highest inter-city bus traffic, in and out of Lagos and

(iii) The size of the site is big enough to give provision for future expansion.

(iv) Topography of site and suitability of physical features - planning advantage and economic construction.

(v) Strategically located along regional route: Giving a balanced linkage with other regional routes. The route along which the site is located carries 89% of the inter-city motor vehicle traffic in and out of Lagos.

(vi) Accessibility for maximum utilization.

(vii) Proximity or linkage with areas of business prospect. Especially

(a) area with incentive for transport business;

(b) good connection with economic centres - defining appropriate land use.

(viii) Environmental conditions

(a) good views from majority of the sides

(b) essential piped services, i.e telephone, electricity, sewage and piped borne water. All these are available or closely located to the site for tapping.

(c) avoidance of reflection and glare, good breeze, traffic.

(ix) Expensive land mass for required facilities and expansion (flexibility).

Closer Look into(i) above

(i) Lagos State Government policy on the location of Inter-City Bus Terminis was announced on 12/11/87 by 10.00 p.m News brief on Federal Radio Corporation of Nigeria Lagos that:

(a) In order to reduce traffic jam within the Lagos metropolis, all inter-city buses and other commercial vehicles arriving or departing Lagos through Lagos-Ibadan Express Way or Ikorodu Road should use Ojota as their station or terminis.

(b) Inter-City buses and other commercial vehicles using Lagos-Abeokuta Road should use Agege as their station.

(c) Inter-City Buses and other commercial vehicles arriving and departing Lagos through Lagos-Badagry Express Way should use Mile 2 as their station.

The statement also made it clear that as from the time of announcement, all the inter-city vehicles should stay clear of the town centre. Whoever violates the regulation will pay a fine of ₦200.00 to the government, the statement added.

Demanding further explanation on the announcement from the Lagos State Chief Transport Officer in the State's Ministry of Works and Transport,

Mr. Bola George, he explained that the existing Ojota motor park will be developed into a Bus Terminus. He said that Iddo area is in the centre of the town and that it is highly conjested. Hence it will no longer be an ideal location for inter-city bus park as it is now. This also affects the private bus owners using theirprivate stations located in the centre of the town. He therefore said that the state authority has taken decision to develop the existing Ojota Motor Park instead of Agege and Mile 2 into a bus terminus being the route where 89% of the inter-city buses use in arrving and departing Lagos. Such terminus he said will be used by all inter-city buses arriving and departing Lagos metropolis. Hence the architect's key motivation for the site selection.

Advantages of Site Choice

(i) Complies with the Lagos State policy on the location of inter-city bus terminis.

(ii) Relative cost of land compared to the urban centre.

(iii) Flexibility (expansive land) - lighting, ventilation and use of green areas for landscaping. Also future construction.

(iv) Effective separation of external traffic from internal cordon (urban).

(v) Traffic planning (a) convenient traffic flow into and out of the site (b) even and effective distribution of traffic on site (c) proper traffic linkage on site with access roads that connects the outside road system.

5.05 Site Location/Analysis

Ojota is part of Ikeja Local Government Area of Lagos State. It is located in the northern part of Lagos metropolis along the major south-north corridor of the urban road network (Ikorodu road). The area is situated between Maryland and Ketu areas along Ikorodu road. Or between Maryland-Ojota bridge and Lagos-Ibadan Express Way flyover on Ikorodu road.

The proposed site for the inter-city bus terminus is located at the south most part of Ojota along Ikorodu road. It is located on the right side of the Ikorodu bound traffic, that is the area to the right side of the Ikorodu express road and on the left side of the Lagos Island bound traffic.

The site is bounded to the south by a stream on which Ojota bridge is constructed. The stream has its origin from the Lagos Lagoon. It is bounded in the northern part by some institutional

buildings, to the west by the Ikorodu road and to the east by Oba street and the residential buildings.

The site has a size of 245m x 361m with an area of 88445m^2 (8.85 hectares or 0.0885 km^2).

5.10 Site Configuration

Due to the excavation which took place on the site, years back, while constructing the Ikorodu Express Road, the level of the site is generally below that of the adjacent areas.

The site slopes at 2% gradient from minus 3.5m to Ikorodu road in the northern part to the south. At 30.00 m from the southern boundry it has attained a level of minus 5.6m to Ikorodu road. From here it slopes at 4% gradient to the stream (the southern boundry) where it attains a level of minus 7.5m (the height of the bridge) to Ikorodu express road.

The service lane from Maryland junction continues and passes under the Ojota bridge to the site. The site has a rectangular form.

5.20 Site Vegetation Cover

Scanty green areas with some encalplus trees along the stream (the southern boundry).

The vegetation has primarily been disrupted by human activities on the site (excavation).

Vegetation development after the excavation has been further hampered by the continuous human activities i.e the site is presently used as a motor park.

The vegetation cover can adequately improve if properly landscaped and treated.

5.30 Drainage Pattern

Direction of drainage is along natural slope. The natural slope is in the southern direction i.e towards the stream. The possible erosion which might take place between the adjacent areas and the site will have to be considered in the development. The existing drainage gutter which runs southward to the stream is effective. In the future development other drainage works might be link to the existing gutter.

5.40 Soil Type

Hard core lateritic soil mainly of coarses texture and spaced intermittently with finer ones. They are formed from drift deposits. Usually water logged but adhesive bearing support to foundation. Can also be treated for good planting and landscaping. The soil is semi permeable - drains water gradually.

5.50 Micro Climate

Similar to most parts of Lagos State. It has a higher elevation with respect to other areas.

However due to forces (micro) around the site some of analysis of the site vary slightly from the state in general. High humidity - there is need for effective ventilation. It will be desirable to make use of the prevailing wind direction.

5.50.1 Temperature Variation

The average daily minimum temperature is about 27°C while the average daily maximum temperature is about 30°C. The coldest month is August with a temperature of about 27°C and hottest month is March 30°C, however, temperatures of 33°C can be reached.

5.60 Elements of the Site

Along the four sides of the site, have been put up the temporal sheds which perform the functions ranging from food selling to union offices.

Short walls of 200mm above the ground level has been used to separate parking zones.

The site already has pipe borne water. This is tapped from the main pipe along Ikorodu express road.

There is evidence of security consciousness on the site judging from the existing metallic gates at the existing entrances along Ikorodu road.

CHAPTER 6

6.00 CASE STUDIES

This chapter will give an analyses examples of:

(i) National and

(ii) International Bus Terminals

to ascertain the good and bad aspects of such examples. This will help the architect to plan and design a terminal of better standard.

6.01 National Case Studies

This will focus on the examples of bus terminals from within Nigeria.

6.01.1 Iddo Bus Park, Lagos

It is sited in the hub of the city centre along Carter Bridge - Oyingbo road. It is situated directly opposite the Iddo railway terminal with Oyingbo road separating them. The site is in a rectangular form with the north-south axis in the direction of Oyingbo road being the length.

It is bounded in the southern part by Cappa Construction Company Headquarters and the Iddo Market. In the north by Leventis Technical Offices Complex. It is bounded to the west by Oyingbo road and to the east with the residential buildings.

Size:

It is about 96m by 65m in area.

Traffic Situation:

It has the worst traffic problems, jams, delay and conjestion amongst all bus terminals and motor parks in Lagos. Uncoordinated traffic and indiscriminate parking further compounded by adjoining market and commercial activities that have infiltrated into the park.

The external traffic at entry and exit point is heavily compounded by the human and vehicular traffic in and out of the railway terminal opposite the bus park.

There are no facilities and design aspect is neglected.

The park is always choatic, filty, water logged and with the usually fenced round nature of temporary structures. There is no possibility of expansion since all the surrounding structures are permanent ones.

Advantages:

The park has advantages of its nearness to the railway terminals. Passengers could easily be transfered from rail station to the bus park.

Disadvantages:

The traffic jam created by the activities at the bus park and in the rail terminal create a static load on the Carter Bridge.

6.01.2 Idah Waterside Motor Park:

Location

Situated in the south-western part of Idah, near the River Niger. It forms part of the urban centre. It is bounded in the western and northern parts by Idah Waterside market. It is bounded to the east by Ayegba Oma-Idoko road and to the south by Ameh Oboni road.

Size

It is about 75m by 60m in area.

Traffic Situation

There is traffic jam, most especially on the market days. The market and other business activities makes the problem of vehicular and pedestrian traffic more complicated.

No space for expansion due to the existence of the surrounding permanent structures. It is unplanned, choatic, filty and the usual fencing round with temporary structures.

Advantages

The location of the motor park near the hinterland waterways, ferry crossing point, provides easy exchange of passengers from the ferry to the motor park. It therefore makes the transportation links between Idah in Benue State and Aganabode at the Bendel State side of the river easier. Nearness to the market is also an advantage.

Disadvantage

Lack of space for expansion and the traffic congestion in the area makes difficult the circulation of vehicles and pedestrians.

6.01.3 Kaduna Central Motor Park

Location

It is sited in the hub of the city centre. It is by the main entrance of the Central Market and bounded at other sides by commercial activities around the market, to the west by a cinema house and north by broadcasting house, south the access road is shared by the park and the market entrance.

Size

It is about 80m by 66m in area.

Traffic Situation

It has the worst traffic problem, jams, delay and conjestion. Uncoordinated traffic and

west by railway premises and to the east by Sabo Market road. It is located very close to Zaria Railway Station.

Size

It is about 70m by 50m in area.

Traffic Situation

There is serious intersection of vehicular traffic along Sabo Market road and that of the motor park traffic. Entrance and exist from the motor park is through a single access way. This further complicate the problem of circulation. During the peak periods traffic jam is found in this area leading to unnecessary delays.

Advantage

The location of the motor park near the railway station is a great advantage to the travellers as they can easily transfer from road to rail or inverse.

The location is also less than 100m from Sabo Market which make it possible for the travellers to do quick shopping before boarding a vehicle. The location has a quick exit to the regional routes to Sokoto, Kano and Kaduna.

Disadvantage

No possibility of expansion since all the existing structures bounding the park are permanent.

It is not planned, hence creating a disorganised environment. It is choatic, filty and with the usual fenced round nature of temporary structures.

6.02 International Case Studies

This will focus on the examples of bus terminals outside Nigeria in order to compare them with those in Nigeria. The good aspects of such terminals will be exploited while the wrong aspects will be noticed.

6.02.1 New York's New Union Bus Terminal

Location

The mighty terminal around the corner from times squares within the heart of Manhattan linked by the elevated ramp approaches to the Lincoln tummel through which 81 percent of bus traffic to Midtown Manhattan passes. Within walking distance of many New York City's department stores and theatres and many of its principal office buildings. Bounded on the North Avenue (lower concourse level) and eight avenue (main concourse level) and 40th and 41st street (on the two other sides).

Size

The block, being steel and brick structure occupies a site of 243.4m long and 60.9m wide and it is the largest terminal in the world.

Traffic Analysis, Facilities and Passenger Handling:

Traffic Capacity

At peak capacity, it is anticipated that there will be 750 bus arrivals and an equal number departing per hour.

Every five seconds a huge intercity bus arrives at the terminal.

It provides 60,000 travellers daily to the city's vast underground communication system and to surface transport system. The terminal has roof parking area for 450 privately owned automobiles.

Traffic Elements

- Has four different levels with interior bus road ways.
- Loading and unloading platforms on two levels.
- Long distance buses, 15 percent of terminal load entry and exit at North Avenue Street level.
- Sub-urban buses, 85 percent of the load, shuttles back and forth between the tunnel portals and the third floor level of terminal by means of ramps.

Ventilation

In the lower levels, through bus access or exit and expelled air from the roof through vents located under subway mezzanine.

In the upper floor - continous unglazed openings on both sides of buildings.

Six exhaust units in the roof - long axis of the building concourses 'pressurized' with fresh to terminal fumes.

Equipments

Electronic indicators - control and guide of incoming long distance bus-docks in use.

Announcing system for arrival and departures.

Fihishes

(a) Internal:

- Waiting rooms, concourse - marble warm scote (1.35m high).
- With enamel steel pands above to ceilings.
- Wearing surfaces, hand rails, trim and concourse column trush aluminium.
- Terrazo floors with non-slip aggregate on sloping surface floors.
- Suspended acoustical metal pan units with lighting fixtures set flush-ceiling.

- Stairs - terrazo treads with abrasive strips.

(b) External Finishes

- Exterior - brick with a 1.5 metres granite warmscote and limestone trum.

Passenger Facilities

Usually and particularly marked out in areas of heaviest pedestrian traffic, easily accessible not causing inconvenience but at a stand point of extra service and time saving facilities.

On the other hand, these facilities make the terminal very functional and as a source of generating revenue (development of concessional use) - uses of concourses. All these lead to the set up of shop fronts, restaurants, magazine and shoe shine stands.

Bus Facilities

(a) Commuter bus facilities - 104 loading position, 72 on sub-urban bus level, 32 on new upper bus level.

(b) Long distance bus facilities - 65 loading positions 40 on lower bus level, 25 on new upper bus level.

6.02.2 Minories Motor Park Appraisal Profile

The minories car park is one of a ring of peripherial car parks planned by the corporation of London. The car park has 606 car spaces, 45 lorry places and 12 motorcycle places.

It was intended to include offices in the development but was prevented by the control of offices and industrial development act 1965; the city University became interested in the site, so super imposed halls of residence were a feature of the design from inception, structural consideration was given and provision in the form of staircases and lift walls are incorporated in the design.

The Site

Site on 2-3 acres (0.92 hectares) falls within the junctions of Minories and Royal Mint Street. To the North, the unprepossessing back drop of Fenchurch street railway vinduct. This axis of lower bridge runs through the site, the side neighbours are Royal Mint, the Tower of London and the New Part of London Authority Offices in St. Katherine Dock House.

It has been used as a car and lorry park for some years and it was known that structures existed though research failed to reveal this.

Planning Aims

The elements were combined. The car park, the lorry park, and the various provisions (structures, lifts and staircases). The first two have a common grid at 34ft and 25ft (10.37 x 7.62m). There are four floors for parking stalls (cars) and an additional height was necessary for lorry parking. Parapet height was controlled, so basement was nucessary. Locating lorries in the basement would have eliminated the need for heavily loaded suspended floor slabs, but the necessary access routes would have occupied too much space at ground level.

Therefore, it was introduced on the ground for access convenience.

Internal ramps with split level would have been more economical or continuous spiral parking. They are not possible because there had to be a horizontal lorry parks and a flat roof on which to build the communal areas for the hall of residence, the lorry access aisle precluded the central support required these alternatives.

The depot for city engineer was included on the ground floor, this as a result of the typical cross section and length of the building was limited by side dimentions.

The load bearing wall units offered advantage of projecting free internal walls, integration of finishes and structure and a scale appropriate to the neighbourhood part of London Authority building and Tower strongly influence the character of finish concrete incorporating flint aggregate coffered slabs were used to save dead weights and appearance over solid slabs for the parking floors. The present eastern entry and western exit has complicated planning. Probably, with implimentation of GLC road proposals, and a subsequent reversal of the entry pattern.

To minimize the control problem created by the insertion of lorry and coach parking on the ground floor, services provision was included during the contract for the control of kiosks at first floor level. Instead, the present ad-hoc and temporary control arrangements were introduced, reflecting the general uncertainty as to the effects of future traffic patterns in the area.

The car park is larger in plan, though restricted in accomodation by a few floors on the account of the proposed halls of residences. In London it is one of the much needed accomodation for lorries which is confined to the

ground floor (mostly on a contract basis) and fully utilized. Other floors are poorly patronized by cars.

Large site but restriction to ease entry of longer vehicles.

Its part of ring of car parks, there seem to be no generator of cars. The adjoining are provided with more convenient parking. And proximity to docks provide customers for lorry park and that justifies its existence.

Reservoir Space, Circulation and Control

A reasonable lead-in for vehicles is provided. Though long vehicles cause problem, thereby causing traffic build-up and interruption on the adjacent roads.

The ramps are external serving the parking docks, the ramps do not serve as far as the ends of building thus preventing continuous circulation when working for vacant stalls.

Except where interrupted by columns to take future structure the out side spaces are easy. The central stalls are easy although the longitudinal spacing of columns does provide for a minimum of three stalls. Untidy parking can reduce the space available.

One pedestrian lift is provided to the advantageous use of those who find stairs difficult. It is reasonable for a three story car park. The generosity with stairs keep exit within walking distances but makes security porous and one stair discharges on to the basement ramp which is highly dangerous.

Based on the present road pattern (circulation), the park is presently operated in reverse with consequent problems of control and overmanning. So, it's difficult to comment on the final control system. A better ticketing is proposed with automatic machines and a more effective way of diverting traffic, if lorry park is engaged.

Installations

No bumper rail to prevent damage to cars. Although, the precost units can withstand a car force travelling at 10mph (16km ph) equal to a static load of 15 tons.

Heating is not provided for ramps and provision for salting was made. As this would be required on decks as a result of drainage with bad levelling of the slabs sometimes flooding one of the stairwyas. Gulleys feed into down pipes well sited at the outside edge of the decks. However,

the pipes project into space for structural reasons and are vulnerable.

The opening via the landings are protected by inset railings. They are inadequately spaced and the lack of bumper rail leaves doubt to the safety of children, lighting is provided in two rows of truncking incorporating fluorescent fittings, however, the arrangement of headrooms. The lighting presently carters for normal standard. It should be noted that the vulnerability of the unattended parking decks to thefts.

It should be reconsidered by designed and that will bring about higher electricity bill. A sprinkler system is incorporated to meet fire regulations.

Signs

The circulation is reserved, thereby confusing or not relating to the building. The present entrance (future exit) signs are fixed to high leading to users. Obscuity only visible by leaning forward and looking upwards. The stalls are marked out in brief variable yellow lines.

Building Form

Lying in a dreary area except for Tower of London to the south. The sultimate massing of the building should be an alternative addition to the city. It will be more appropriate to assess the varied concrete finishes used externally, when the building is in completed form. It will be suggested that no further to avoid our flag the wattle floor used reduces the overall floor depth but provides no recess for services and other installations. Therefore, effective headroom is dictated by the services.

Review

A multi-story car park is a highly specialised building and should be looked upon virtually as a machine. Some design decision knowing them to be wrong but looking at the overall picture of reputable car parks, many mistakes arise from ignorance of a specialist project. Careful thought are given to key points in appraising the building.

Location and Site

Survey for its demand was not carried out. This works out where on-sreet parking is prohibated. Though in some cases, competition from parks is considered. Public planning generated

most of the parks, only for few such as Minories Park on very difficult sites. Restriction on parking is surrounding areas has no coordination unit creation of parking buildings. With the coming of this type of building based on commercial viability or theoretical planning based on desirability. Local authority policies must be enforced in strategic basis to ban on-street parking if desired.

Layout and Security

The Minoroes car park had numerous advantages, being sited on a well proportioned plot but the layout could have been better. Poor layout seems to be acceptable as the results do not come home to roost owning to lack of feed-back and the unsophisticated method of operational set-up.

Security problem is imminent in most parks because of fire-fighting and escape. They are difficult problems to solve and should be looked into meticulously. It's observed that theft cases have been rampant in car parks more than from a bus. The control points must be made effective and motorists should be more enlightened of the dangers of carelessness. Also the minimum lighting level should be improved to serve as effective security alight and also help to reduce the depressing intrior appearance of many parks.

Equipment and Evacuation

Drainage connection should be sited away from where people walk as in Minories car park. Penetration in open-side part should not be underestimated. Also, run-off from cars including meting snow. There had been problem of satisfactory floor levelling and finish leading to collection of stagnant water other than outlets.

It is advisable to provide bumper rails for protection to cars. But not the spring loaded units as the cost may not be justifiable.

The provision of notices, signs and marking for entrances, check points, etc; and should be given more time and thought as an integral part of the building in the early design stage.

General

The rate of provision of multi-storey car parks is increasing and with it the importance of their effect on the town scene. The Minories car park is a development in its own right and will form in the fully developed complex a high pocliun for the future.

Summary

Ground floor area	- 31,575 sq. ft (2933 m^2)
Total floor area	- 97,905 sq. ft (9095m^2)
Date of Completion	- February 1970.

6.02.3 George Washington Bridge Bus Terminal

Location:

Occupies two-block site in the Washington height, located between 175th and 176th streets in the Manhattan Island andFort Washington and Wadsworth Avenues above the depressed expressway.

Leads inescapably to New Jersey from the east - through the great lattice work fowers of the bridge.

Completion Date: 17th January, 1963.

Size: Between 121-127 metres long and 56.4 metres wide on three levels.

Traffic:

Accomodates over 200 buses and 10,000 passengers at peak hours.

Description

A hydra-winged bird at rest. An imposing structure on the brick monotony of Washington heights - concrete with glass, metal store fronts and Rexall signs.

It strongly reflects the design chapter of Nervi or nearly so. The bus deck, top most of terminal's three levels is a display of virtuosity in the architectural uses of exposed concrete.

Taking it from the bridge end, just after the diversions to riverside expressways and further, swooping under the first terminal. Nedt, series of four air-rights apartment towers. One of the boldest malgams of buildings and transport in United States.

Design Analysis

(i) Finishes: In the lower floors, decoration of the enclosed space: the walls and sculptured columns are covered with very bright and shining materials, as a result - the interior has the quality of public rest room. Blue and white colour scheme on a glass mosaic tiles.

(ii) Structural elements: Burly trusswork, comprising 26 giant slices of cast-in-place concrete pie; each 92 by 66ft (27.6m x 19.8m), 14 slices are raised on angular bents to let fresh air through the fummy bus deck, giving the roof its winged aspect.

The columns sculpted by the loads they carry, rise 17½ft (5.25m) from slender, space-saving base to wide bearing tip.

There is much craftsmanship in the roof structure. The triangular openings initially meant for natural ventialtion were glazed up as

a result of freezing winds experienced and also erection of wind breaches: fashioned of baby blue enamel with plastic blue canopies.

(iii) Elements:

(a) Entrance - An unswept canopy issues a chic welcome at the entry.

(b) The narrow street side: Block - long walls, muscular concrete diagonals engaging in a bravura balancing act giving support to wing tips of the roof high overhead. Unfortunately some unfilling had taken place.

Deductions

Though much was spent on the terminal construction - 15 million dollars. The cost of Nervis concrete and the flexing of the structures muscles than it really needs have been questioned in some quarters. Nevertheless, seen against the tower of the bridge, the roof dispels any regrets. For it has gone beyond mere utilitarian structure rather, brings the drama of the bridge into the city. Thus giving New York it's only symbolic gateway at a major point of entry.

Passenger Facilities

Mainly have the following: ticket office, or waiting area decorated with colourful plastic seats, information services and rest room facilities.

The concessional areas have shops and stores 2-level restaurant and a bank. On the other main concourse include newstand, bakery, candy shop, barbar's shop, jewellers shop, etc.

Lockers and telephones are situated at very convenient places.

Bus Facilities

There are 36 loading berths (buses). Unloading position spans the south side of the building. After unloading goods and discharge of passengers, buses proceed to the elevated bus parking. On completing the turning, the bus stop at appropriate island platform and load-up, then proceed for exit.

6.02.4 Design Appraisal - Welbeck Street Car Park

The Car Park:

Rationale and Site Location

Debhams Limited were required by a statutory undertaking with West Minister Council to provide parking facilities for their two stores adjacent department stores and for their head office overlooking the site.

Three carpark buildings

These three London carpark buildings illustrate some of the special problems of developing city centre sites for multi-storey car-parking. All incorporate secondary uses: the first has office accommodation, the second a restaurant and student residences are proposed for the third. Another feature of interest is the varied elevational treatment—in each case a decision influenced by the character of adjoining buildings

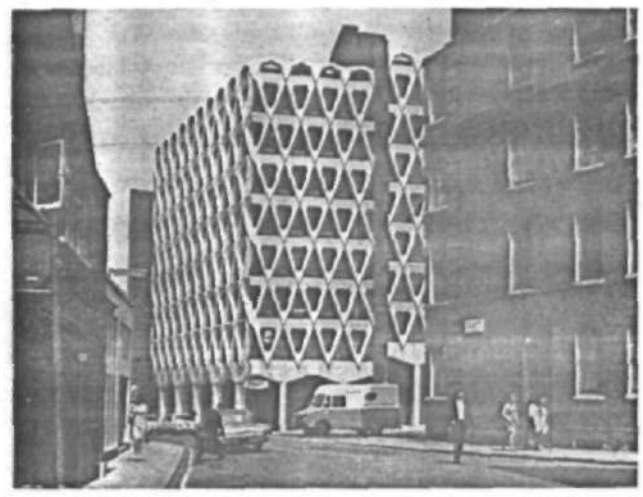
Young Street carpark

at	Young Street, London w8
for	Royal Borough of Kensington and Chelsea in liaison with National Car Parks
by	Roy Chamberlain Associates in association with Kensington and Chelsea borough architect (assistant borough architect, E. Skinner)
principal in charge	Roy Chamberlain
project architect	Ron Sidell
architectural assistant	Nick Cottle
structural engineer	James Atherton



Welbeck Street carpark

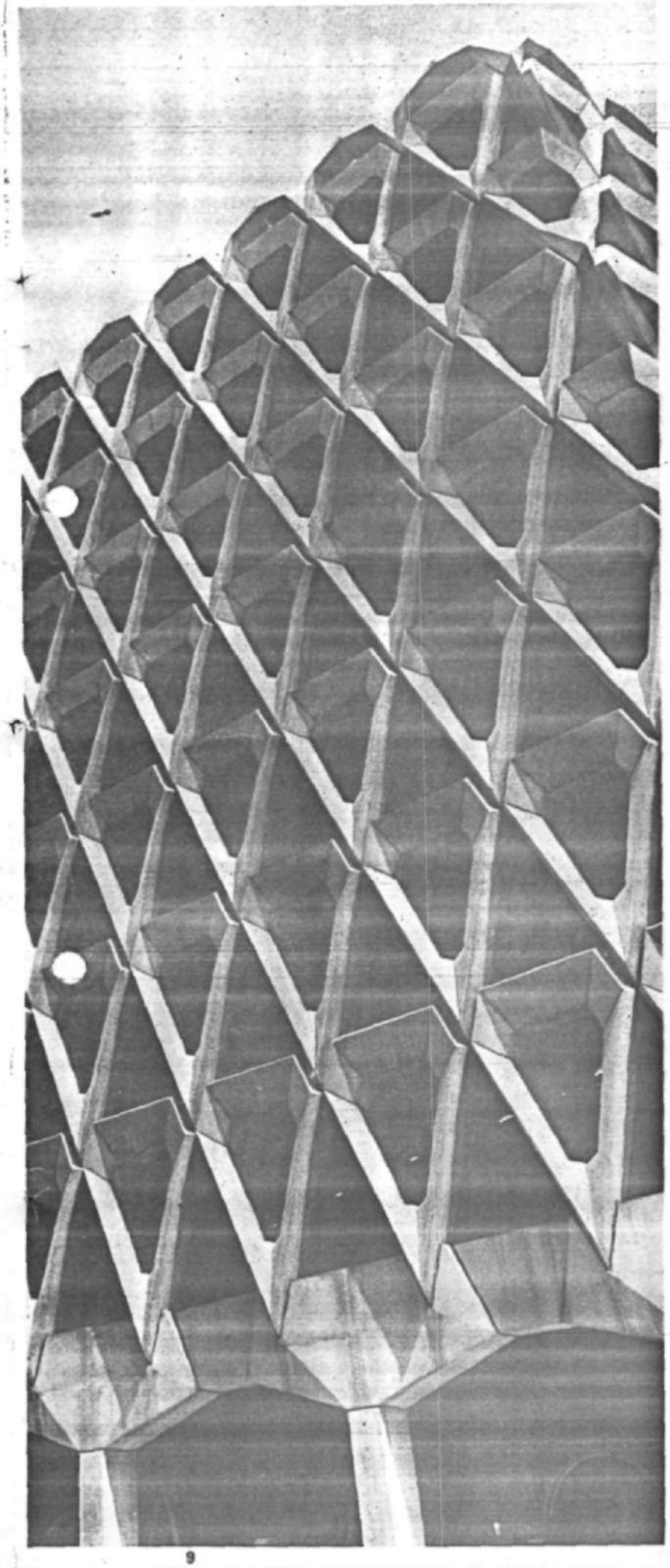
at	Welbeck Street, Henrietta Place, Marylebone Lane, London w1
for	Debenhams Ltd
by	Michael R. Blampied & Partners
partner in charge	F. D. Kahn
associate in charge	R. R. Le Duc
quantity surveyors	L. A. Francis & Sons
structural engineer	John de Bremaeker & Partners



Minories carpark

at	Minories, London ec3
for	Corporation of London
by	City architect's department
city architect	E. G. Chandler
deputy city architect	W. H. Barrett
chief assistant architect	T. E. Meddings
principal assistants	J. A. Boutwood, D. Bracey
architectural assistants	L. Winter
	R. A. Hardwick
	G. Smith, E. E. Manning
quantity surveyors	Gardiner & Theobald
electrical services	K. J. H. Stuchbury
mechanical services	Steensen, Varming, Mulcahy & Partners
structural engineer	Ove Arup & Partners





9

WELBECK STREET CARPARK: ARCHITECT'S ACCOUNT

Debenhams Ltd were required by a statutory undertaking with Westminster council to provide parking facilities for their two adjacent department stores and for their head offices overlooking the site. The brief was for approximately 400 cars plus lettable space (which is now a restaurant) on the ground floor and part of the basement. The rest of the basement was to be devoted to the client's specialised storage requirements. It was decided that the main function of the buildi· should not be disguised or hidden in any way, but that the structure should be designed in a dynamic form, expressing both the construction and its use in a manner visually acceptable in itself and also in relation to the neighbouring buildings.

There is a difference in level of approximately 5ft (1·5 m) between the Welbeck Street and Marylebone Lane frontages, with a continuous slope along the third road frontage, Henrietta Place. This change in level was partly responsible for the choice of the split-level carpark formation, although a number of other solutions were investigated. The unit height was governed by the floor-to-floor heights in the building, and a common modular width was calculated to suit all elevations of the rather awkwardly shaped site. It was not necessary to relate this module to a car-space width in the building because column-free parking areas are provided around the perimeter of each floor.

Various alternative forms of structure and cladding were considered and precast concrete proved to be the most economic, fulfilling the requirements of structure and providing a finish in keeping with the surrounding buildings. The control of weathering and inevitable staining on the units was considered in detail, and a full size mock-up of the standard unit was placed in an exposed situation for several months prior to manufacture. It appeared to weather as expected although it was not possible to simulate the exact conditions within the building.

The early stages of the design's development were carried out three-dimensionally in carved polystyrene so that all aspects of the shapes of the units, the junctions between elements and the structural requirements could be checked visually without the production of complicated drawings. In this way alternatives could be assessed quickly, and the draining characteristics could be studied.

The external structure is related directly to a system of 12in (305 mm) deep prestressed, precast I-beams which form a composite floor with 1½in (31 mm) deep precast planks and a 2½in (76 mm) in situ concrete topping. This floor is supported at the centre of the building on shallow in situ beams spanning rc ramp sections and lifts and staircase enclosure. Service holes were precast into the I-beams in the appropriate positions on each floor, according to the types of services to be contained, in an attempt to limit all lighting, sprinklers and other services within the coffered sections of the floor.

Secondary elements are related in strict modular coordination with the external structure. Fixing sockets for the plastic buffer rail were cast into the rear faces of the fascia units, and pvc sleeved holes were cast into the in situ edge beam junction connecting the floors and the fascia units to enable ¼in (5 mm) stainless steel wires, which provide a protective barrier for the building's users, simply to be threaded down from the roof level and fixed and tensioned once for each eight-storey drop.

9 *Welbeck Street carpark. Weathering of precast units has been resolved quite successfully, but unfortunate pattern staining occurs on first floor edge units*

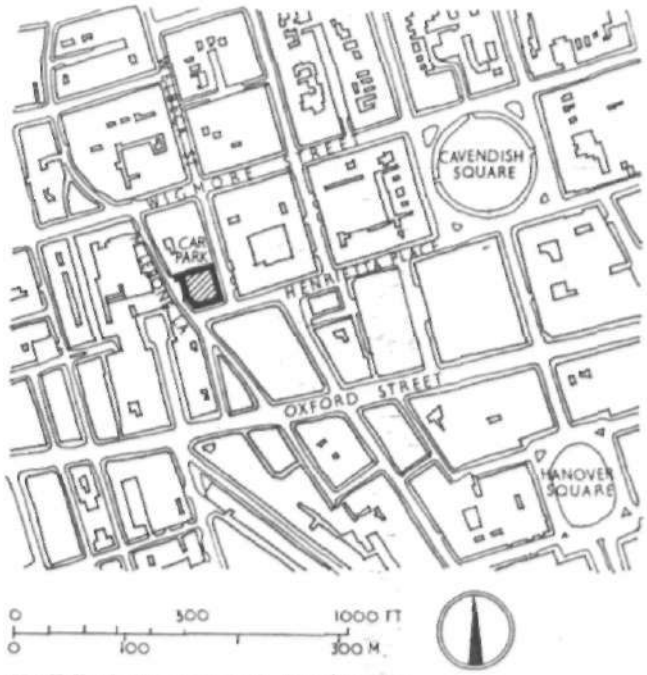
WELBECK STREET CARPARK: APPRAISAL

All too often multi-storey carparks in central areas are built for other than purely commercial and planning considerations. The Welbeck Street carpark is combined with other uses which, no doubt, help the commercial reasoning.

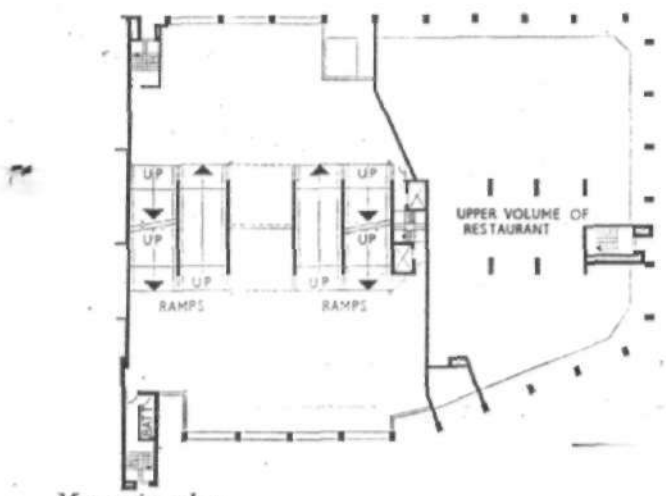
The site

The architects were presented with not only a small site for the purpose, but also one that was awkwardly shaped. In this area of London, streets run on a rough grid—here cut across by Marylebone Lane following the course of a stream. It is this road that restricted one end of the site and caused some concern in case problems arose on site during the construction of the basement areas. In fact no problems were encountered.

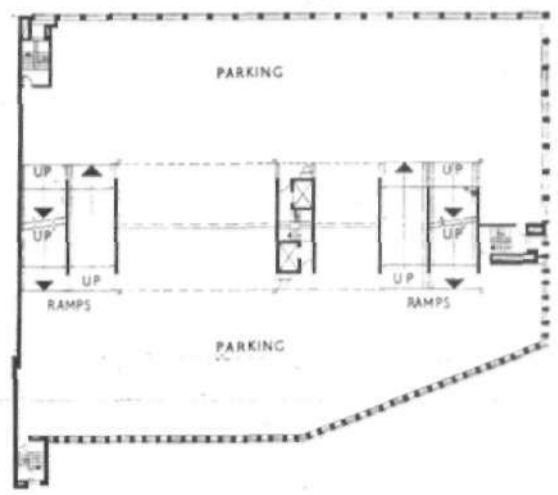
The carpark **10** was built where it is to conform with statutory undertakings. However, that aside, the site is well placed adjacent to the most popular part of the West End shopping area and is central to offices and medical consulting rooms. However, there are two other carparks nearby: the Lex Selfridge carpark to the west and the new underground park in Cavendish Square to the east. Meter parking is intensive in neighbouring streets and it may be that



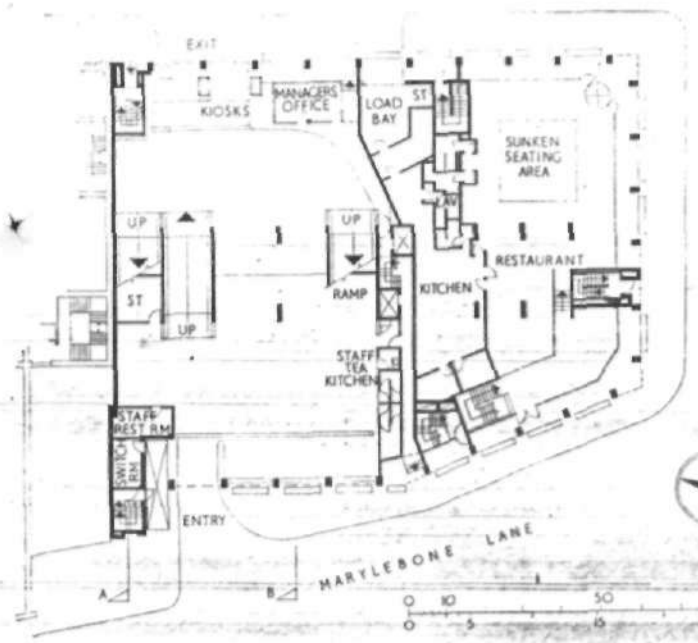
K *Welbeck Street carpark, location plan*



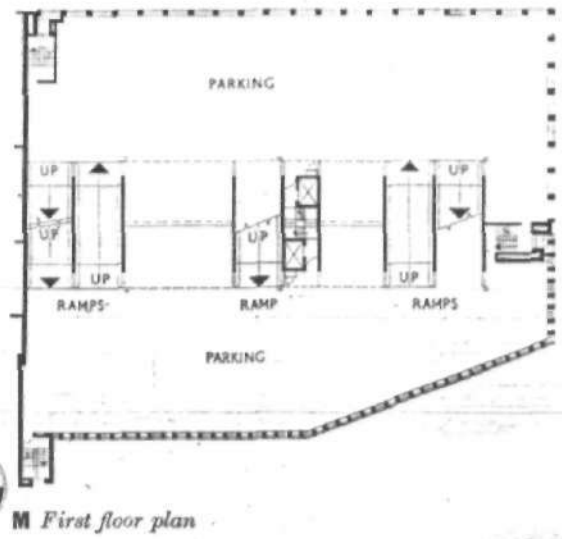
Mezzanine plan



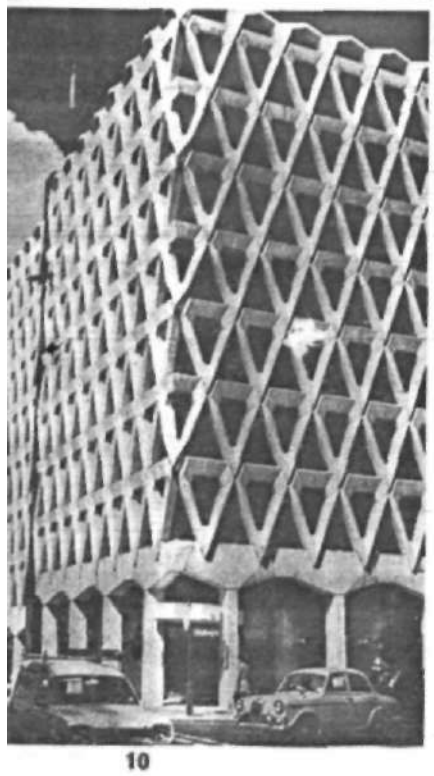
L *Fifth floor plan*



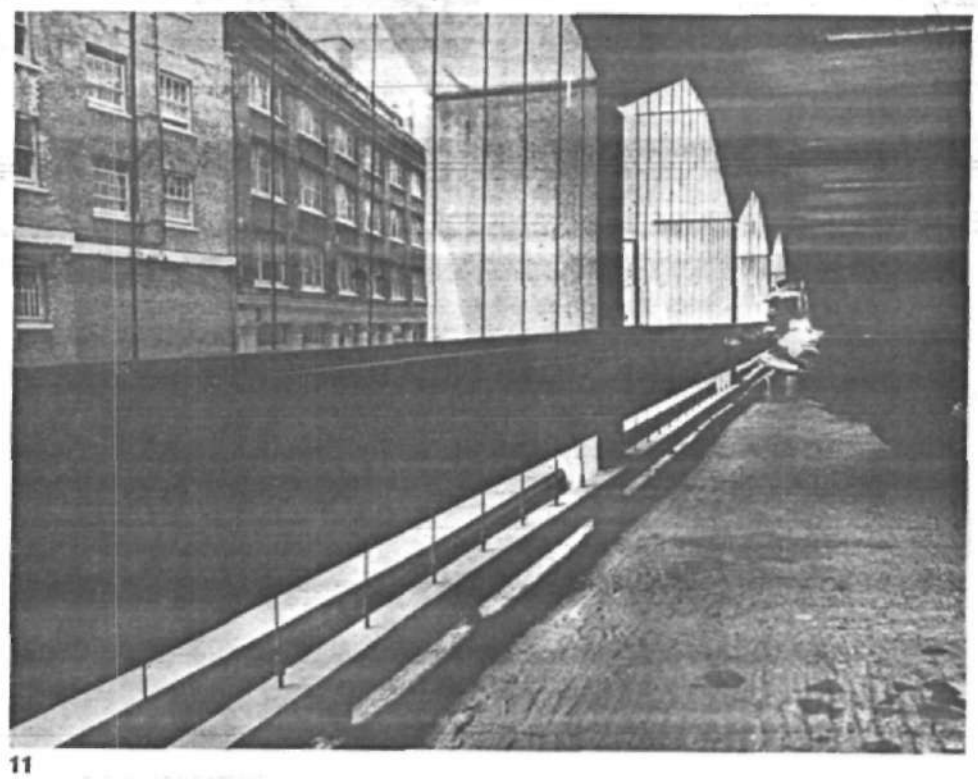
J *Ground floor plan*



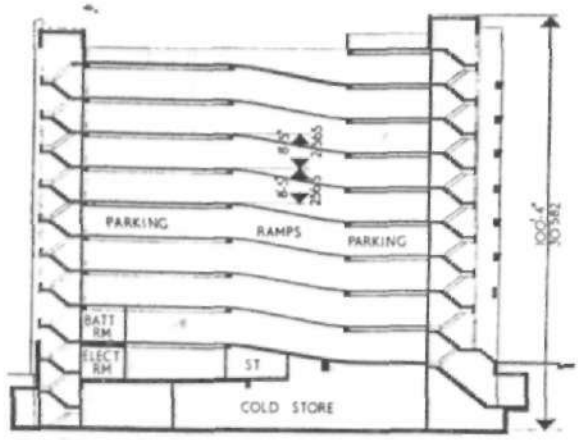
M *First floor plan*



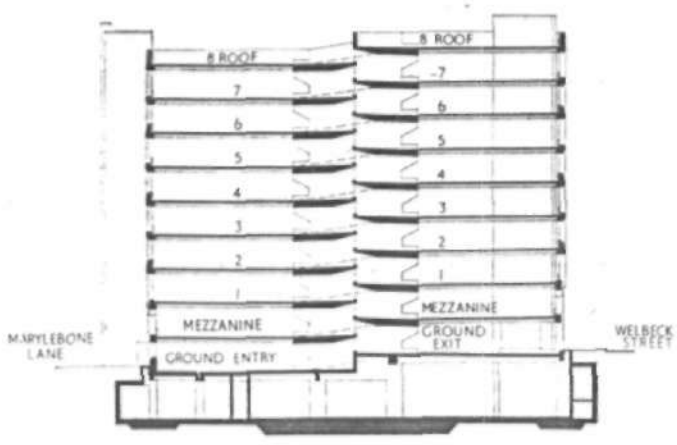
10 *Welbeck Street carpark. General view from Marylebone Lane*



11 *Bumper rail shown in relation to stainless steel wires*

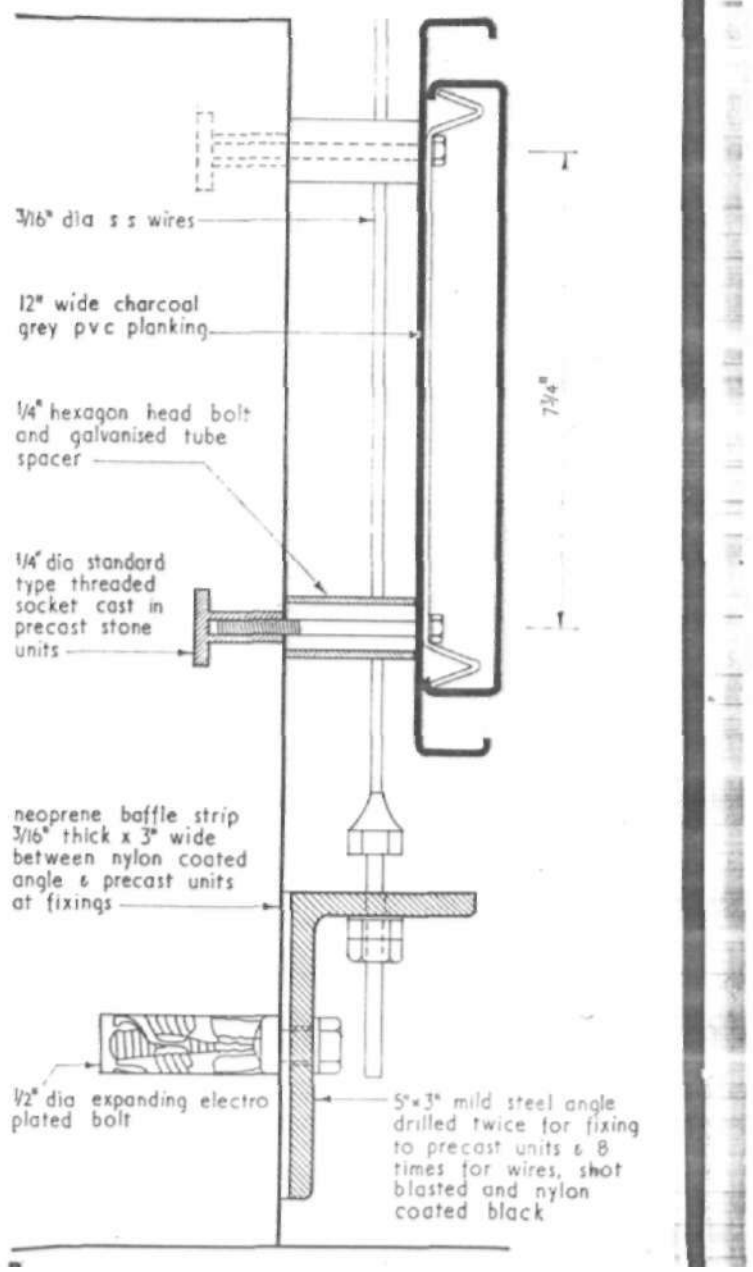


N *Welbeck Street carpark, section* AA



O *Welbeck Street carpark, section* BB

P *Welbeck Street carpark, section showing buffer rail fixing*



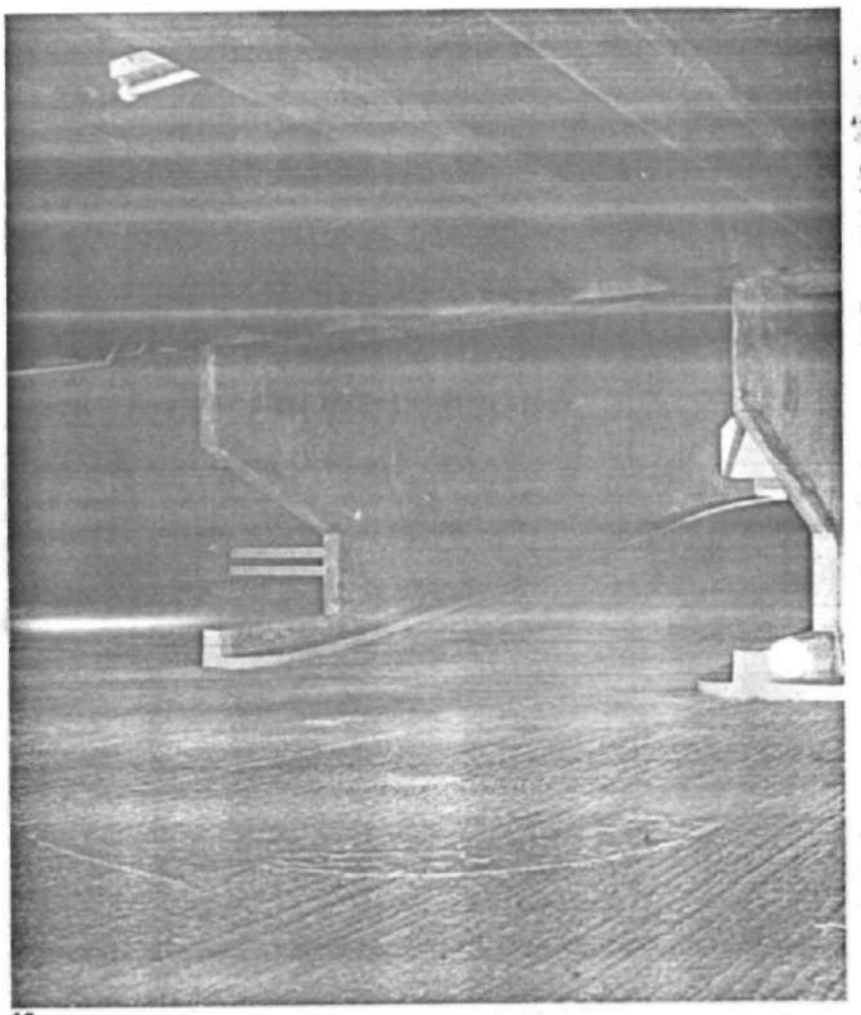
further restrictions to ban on-street parking will be the only way to bring the customers in. It is too soon to tell whether the carpark will be used more, but most motorists prefer on-street parking, being not educated yet to using parking buildings in the UK.
The reservoir space at the entrance is totally inadequate, which is not surprising in view of the restricted site. Two cars entering is sufficient to interrupt the traffic flow in Marylebone Lane.

Circulation
Circulation follows the conventional pattern of a split-level carpark with the ramps well placed, making it easy to site available stalls. One advantage gained by the short distance between ramps is that cars cannot build up too much speed. To aid visibility the supporting walls to the ramps are cut back **12** to the maximum permissible. This blind corner is always a problem and difficult to handle as it is a compromise between visibility and structural considerations.
Parking is not difficult **13** except where adversely affected by the restricted site. Side-ways parking is necessary at the tapered end. Twin stalls are provided between the ramps and the staircase areas, and their full utilisation depends on neat parking.

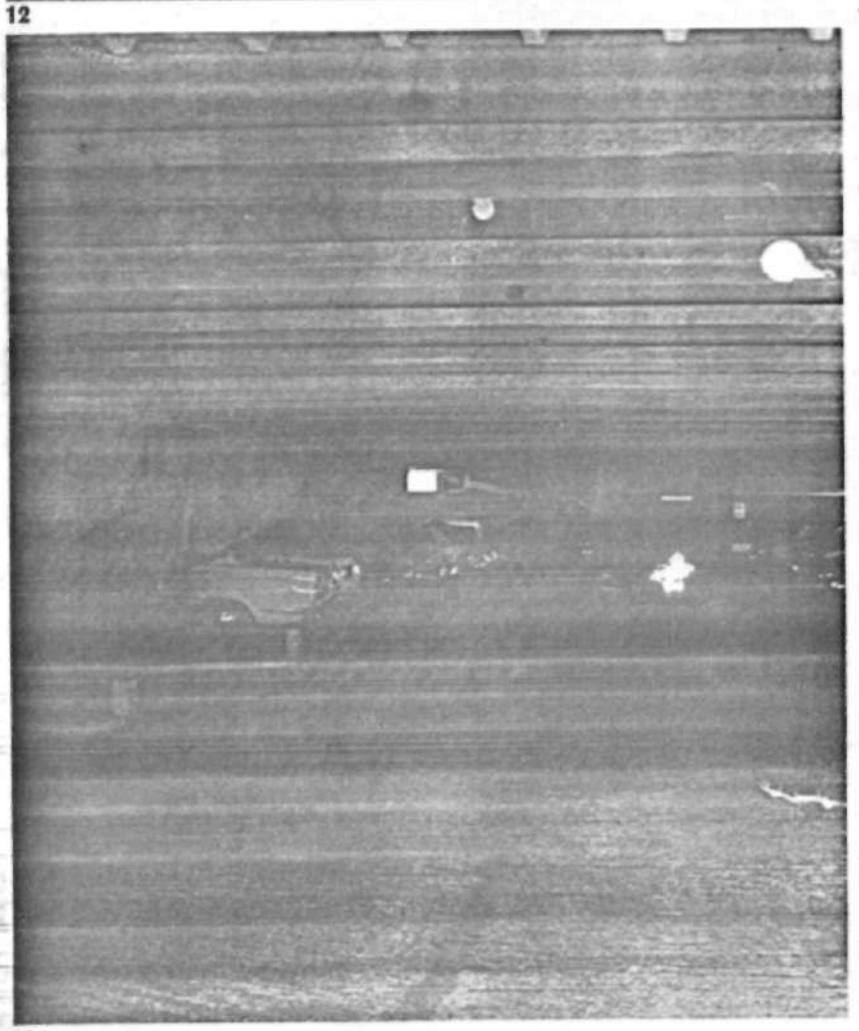
Interfloor pedestrian travel
The centre lifts and staircase **14** provide quick access for pedestrians and escape stairs also provide access. The ground floor corridor to the central lifts and staircase presents a security problem as it is not controlled. This provision came about for reasons of firemen's access to a lift reserved for their use in an emergency.

Control
Tickets are issued automatically on entering the carpark and money is collected when leaving for the recorded length of stay. Signs indicate if the park is full, keeping manning to a reasonable level with positive control.
As mentioned earlier, observation of pedestrian entry and exit is difficult from Marylebone Lane. While operators generally make it clear they cannot be responsible for thefts, it is increasingly important that a bad name for customer losses is not attached to a carpark. The operator cannot patrol the area constantly, but he can be helped if pedestrian circulation is planned to pass control points.

Installations
No provision is made at roof level for snow clearance and the exposed ramps are not heated. No doubt it is only occasionally that this facility is required, and it would be difficult to justify ramp heating in the south of the country.



12



13

12 *Welbeck Street carpark. Supporting walls to ramps are cut back to aid visibility*
13 *Welbeck Street carpark. General view showing uncluttered interior space which makes parking easy and quick, causing minimal interruption to traffic flow*
14 *Welbeck Street carpark. Entrance to central lift and staircase block. Lighting fittings are sited in recesses where they are not vulnerable. Best possible sightlines are provided by cutting back concrete structure*

The brief was for approximately 400 cars plus lettable space which is now a restaurant on the ground floor and part of the basement. It was decided that the main function of the building should not be hidden or disguised in any form, but that the structure should be designed in a dynamic form, expressing, both the construction and its use in a manner visually accepted in itself and also in relation to the neighbouring bouldings. The choice of the split level car park formation was influenced by the difference of level of approximately 1.5m between the Welbeck and street and Marylebone lane frontages, although a number of other solutions were investigated. A modular width was calculated to suit all elevations of the rather awkwardly shaped site. It was not necessary to relate this modular to a car space width in the building because a column-free parking areas were provided around the perimeter of each floor. Of the various form of structure and cladding considered precast concrete was chosen because it proved to be the most economical, fulfilling the requirements structure and providing finish in keeping with the surrounding buildings.

The external structure is related directly to a system of 305mm deep presstressed, precast I beams which form a composite floor with 31mm deep precast planks and a 76mm insitu concrete topping. The floor is supported of the centre of the building on shallow insitu beams spaning r.c. ramp sections and lifts and stair case enclosure services holes were precast into the I beams in the appropriate positions on each floor, according to the types of services to be contained, in an attempt to limit all lighting spriklers and other services within the covered sections of the floor.

Positive Evaluations

Circulation:

Circulation follows the conventional pattern of asplit level car park with the ramps well placed, making it easy to site available stalls that are empty. One advantage gained by the short level distance between ramps is that cars cannot built-up too much speed. To aid visibility at the blind sports the supporting walls to the ramps were cut back to the maximum permissible. This blind corner is always a problem and difficult to handle as it is a compromise between visibility and structural considerations.

Pedestrian Traffic

The centre lifts, the stair cases and the escape stairs provide quick and adequate access for pedestrians. The ground floor corridors to the central lifts and stairs cases presents security problems as it is not controlled.

Tolls Collection

Ticket are issued automatically on entering the car park and money is paid or collected when leaving for the recorded period of stay. Signs indicate whether floors are full or not thus keeping moving to a reasonable level with positive control.

Building Form

To provide more space it was then necessary to construct more floors than usually considered acceptable and this dictated the general massing of the building. The whole effects is pleasing. Internally the park gives the impression of lightness materials used were maintained free. Provided the house keeping standards are adequate the building should remain pleasing.

Shortcomings

Reservoir Spaces

The reservoir space was totally inadequate which was not totally surprising in view of the restricted site. Two cars entering is sufficient to interrupt the traffic flow in Marylebone lane.

CHAPTER 7

7.00 HYPOTHESIS

This chapter will discuss the problems of bus terminals in 3 (three) phases as follows:-

(i) Problem Identification - Here the problems of bus terminals will be enumerated.

(ii) Problem definition - The causes of these problems will be discussed and

(iii) Proposed Solution - The architect will propose solutions to the problems, that is he will give professional suggestions as to how the problems of bus terminals could be solved.

7.01 Problem Identification

There are so many problems confronting the bus terminals today.

(1) The flexibility of motor vehicles has brought problems of accident hazards.

(2) Problem of energy wastage by polluting the environment and noise pollution.

(3) Problem of traffic conjestion and fatigue.

(4) Bus terminals complicate the problems of urban centres.

(5) The tradition of being built with "temporary" structures of simply fenced round. The

layout is usually a large uncovered space for parking and storing of commercial vehicles with small stalls aligned along the sides of the fenced parts.

(6) Most of these stalls carry out functions from food selling, union offices, petty trading, drivers' shed, etc.

(7) The waiting passengers usually sit inside vehicles waiting for other passengers. Both passengers and vehicle are unprotected from the weather.

(8) Most of the parks and stations are inaccessible mostly, rough (especially, during the rainy seasons) dirty, uninviting.

(9) Consideration is not given to expansion, to accomodate increase in the number of passengers and vehicles.

(10) Neglect of the mentioned problems give rise to more exploitation by enterpreneurs.

(11) Neglect of investment opportunities, which would have yielded revenue generating venture.

(12) No impact of architectural profession in all bus terminals in Nigeria.

(13) Lack of security devices or bodies to reduce criminal acts.

(14) No safety planning.

(15) Passengers do not have sleeping accomodation in the terminals.

Problem Definition

Causes of existing problems of the nation's bus terminals are as follows:-

(i) Most bus terminals, for example Iddo Bus Terminal Lagos, are not located with respect to appropriate land uses, most are centralised, thereby complicating the problem of the urban centres which results in accident hazards, fatigue and traffic conjestion.

(ii) No consideration is given to the planning of the terminal facilities and this results in the nature of unorganised bus terminals.

(iii) The disorganised nature of the existing bus terminals is due to the governments, private organisations and individuals insensitivity to developing them.

(iv) The fact that the authorities fail to put up well planned permanent structure in our terminals results in the sufferings of the users.

(v) Efforts have never been made by authorities to consider drainage works in the terminal,

hence resulting in water logged, mashy and rough areas.

(vi) Decisions are most of the time taken anyhow and bus terminals are located without considering a possible, future increase of bus traffic and so most bus terminals do not have place for expansion e.g Iddo Bus Terminal Lagos.

(vii) Government's neglect over the provision of adequate transportation facilities made it possible for the private entrepreneurs to exploit users of bus terminals.

(viii) The failure of architectural professionals to provide a design concept for bus terminals, made the erection of temporal and unplanned structures to be the order of the day in the existing bus terminals.

(ix) Failure of the respective governments to invest in the bus terminals lead to a lost of thousands of naira revenue generation yearly.

(x) Since governments, private organisations and individuals have not been interested in developing bus terminals, it would not have been possible to have organised security body and safety planning programmes for our bus terminals.

(xi) Hotel accomodation are not provided.

7 .03 Proposed Solutions

Efforts will be made here to propose solutions capable of combating the existing problems of bus terminals as follows:-

(i) Location of bus terminals should be done in strict respect to the appropriate land uses. The principle of transportation planning which recommends the location of such terminals in the out skirt of the urban setting should be considered. Realisation of this will solve problems of accident hazards, fatgue, traffic conjsestion and urban pullution.

(ii) Governments, private organisations and individuals should come en mass to invest and develop bus terminals in the country. This will solve the problem of funding any planned terminal development.

(iii) Design concepts should be provided by architects for all the bus terminals. This will make the erection of permanent structures possible and consequently the bus terminals will be organised.

(iv) Hotel accomodation should be provided in all the bus terminals to alleviate the problem of users wishing to have sleeping accomodation.

(v) Adequate drainage planning should be provided for any bus terminal to solve the problem of being water logged.

(vi) Adequate security formation and safety planning program should be provided in all bus terminals. Evidence of these facilities will attract more users to the terminal.

(vii) Health services should be provided in the terminals to give emergency health services to the users and provide clean environment at the terminal.

(viii) Bus control unit should exist in the workshops to ensure the readiness of the buses, to undergo long hauls of journey. This will to a very high extent limit to the barest minimum the number of buses breaking down on the way. Hence the users will have the confidence of arriving safely at their destinations.

(ix) The Local Governments Authorities that deals directly with the bus terminals should be well informed of the need to have organised bus terminals in Nigeria.

(x) In planning the bus terminals, adequate considerations should be given for future expansion.

CHAPTER 8

8.00 PROPOSED BUS TERMINAL

8.01 Types of Users and their Categories

It is meant to be used by all members of the society. From the examples of existing ones, it does not discriminate in any form. It is synonymous to freedom of movement but there will be adequate control at all security points to avoid infiltration of dangerous criminals.

8.02 Categories of Users

There are three main catogories namely:

(i) Short stay users: Usually users of the auxilary facilities or probably aboard the bus.

(ii) Casual users: Waiting to buy fuel or make minor repairs like vulcanizing.

(iii) Long stay users: Waiting to pass the night in the hotel.

8.10 Functional Elements of the Terminal

Functional layout depends on configuration of site, the traffic volume type of bus operation, passengers and bus traffic circulation.

8.10.1 Basic Elements

(i) Baggage Room:

Varies with terminal type and operation. Ideally the sooner the departing passenger and his baggage are separated, the better. The baggage is carried straight into the bus or to the baggage room from there, its placed on bus.

Should be accessible from waiting room and concourse equipped with metal racks for baggage storage. A portion should be set aside for package express service.

Should be 10% of total building area of 50 sq. feet ($4.5m^2$) for each bus loading.

(ii) Waiting Areas:

Open, seating area. Accessible to the concourse. May be airconditioned (if possible). It is recommended to have 1 seat to every 3 passengers.

(iii) Ticketing Facilities

Irrespective of type of terminal, the trend is towards opon counters. Probably glass walled ticket offices. Provision is made for passengers to queue up for ticket purchase. Recommended space is 50 to 60 sq. feet per position and a height of 42in (1.05m).

(iv) Public Lockers and Telephones

It is revenue generating - number depends on potential earning capacity. A typical size for person is $0.9m^2$/person.

(v) Despatch Office

Controls all bus movements, so its located on the concourse. 50 to 150 sq. ft ($4.5m^2$ to $13.5m^2$).

(vi) Offices

For workers within the terminal management and technical staff. Sizes are determined by function and equipments.

(vii) Rental Spaces

In terms of shops, concessional stores to defray construction and running cost.

(viii) Concourses

Distribution of passengers getting on or off the buses, could probably be used for queuing up too.

(ix) Bus Berth

For loading and off-loading of passengers and their luggage. Size depends on bus dimensions.

The number of loading and off-loading berths at departing and arriving points respectively will be determined by the number of routes.

Since all the 41 buses cannot depart or arrive at the same time, the number of berths will be limited. Two loading and off-loading bus berths will be provided for each route at departing and arriving points. Hence, the number of bus berths at the departing point = 5 x 2 = 10 berths and also at the arriving point gives 5 x 2 = 10 berths. Total number of bus berths = 20 (both departing and arriving).

8.11 Traffic Volume

Consideration is given for the peak period - time lag at the period of highest number of passengers. Marginal time difference for arrival and departure have to be examined and monitored to ensure free and fast movement of buses from loading berth.

The number of loading positions and the capacity of the buses should be commensurate to the total number of passengers at peak periods.

The total number of luxurious buses at the

four bus parks (Iddo, Agege, Mile 2 and the private bus parks for Ekene Dilli Chuku Transport and the Young Shall Grow) serves as the basis for passenger and bus traffic in the new proposal. (Both arriving and departing). Consideration is also given to a possible 100% increase in bus traffic in the proposed terminal when the mass transit system takes off fully (see Table 8.1 to 8.4).

8.11.1 Determination of the number of Buses

(i) Total number of buses departing from the existing bus parks = 419 + 79 + 67 + 45 = 610.

Total Average Departure = $\frac{610}{15}$ = 40.66 = 41 buses/day

(ii) Total Number of buses arriving the 4 bus parks = 309 + 62 + 61 + 50 = 482

Total Average Arrival = $\frac{482}{15}$ = 32.13 = 32 buses/day.

Therefore 41 will be used as the number for both departing and arriving buses per day. The design will cater for 41 buses arriving and 41 buses departing the terminal per day. The number to be designed for therefore is 41 (fourty-one) at peak period.

Adequate provision will be given for expansion to take care of a possible increase in the traffic volume of buses at the terminal when the government programme on mass transit system takes off fully.

Table 8.1: IDDO BUS PARK

Date	0.00 - 6.00 A.M		6.00 A.M - 12.00 Noon		12.00 Noon - 6.00 P.M		6.00 P.M-12.00 Mid Night		Total	
	Arrival	Departure	Arrival	Departure	Arrival	Departure	Arrival	Departure	Toral Arrival	Total Departure
20/12/87	0	2	2	20	11	10	7	5	20	37
21/12/87	3	2	4	21	15	8	7	7	29	38
22/12/87	0	4	3	15	13	11	5	3	21	33
23/12/87	1	1	1	23	16	14	4	8	22	46
24/12/87	4	6	2	17	12	14	6	2	24	39
25/12/87	0	0	1	5	6	2	1	0	8	7
26/12/87	0	0	2	8	7	4	4	2	13	14
27/12/87	1	2	5	16	11	9	6	4	23	31
28/12/87	0	3	7	14	11	12	4	6	22	35
29/12/87	2	4	3	12	8	8	6	4	19	28
30/12/87	1	3	6	7	13	9	8	9	28	22
31/12/87	0	2	4	11	12	10	9	8	25	31
1/1/88	0	1	3	6	7	2	3	4	13	13
2/1/88	2	3	2	7	6	3	8	5	18	18
3/1/88	3	1	5	11	7	6	9	9	24	27
Total Av.	T. 17 T. Av. = 1.13	T. = 34 T. Av. = 2.27	T. = 50 T. Av. = 3.33	T = 193 T.Av. = 12.87	T = 155 T. Av. = 10.33	T = 122 T. Av. = 8.13	T = 83 T. Av. = 5.53	T = 70 T. Av = 4.67	20.6 Overal Total Average	27.93

Total Arrival = 309 Total Depature = 419 Average Arrival = 20.6 Average Departure = 27.93
Maximum Total Average Departure = 12.87 Maximum Total Averal Arrival = 10.33

Source: Data collected with the assistance of the station Managers.

Table 8.2: The Young Shall Grow and Ekene Dilli Chuku Transport.

Date	0.00 - 6.00 a.m		6.00 a.m - 12.00 noon		12.00 nonn - 6.00 p.m		6.00 p.m - 12.00 Mid Night		Total	
	Arrival	Depart-ure	Arrival	Depart-ure	Arrival	Departure	Arrival	Departure	Total Arrival	Total Departure
20/12/87	0	0	0	4	2	0	2	0	4	4
21/12/87	0	0	0	3	3	2	1	0	4	5
22/12/87	0	0	0	4	4	0	0	0	4	4
23/12/87	0	0	1	4	2	1	2	0	5	5
24/12/87	0	0	0	5	4	0	2	0	5	5
25/12/87	0	0	0	2	4	0	1	0	5	5
26/12/87	0	0	0	1	1	1	1	0	2	2
27/12/87	0	0	1	2	2	2	1	0	3	4
28/12/87	0	0	0	4	1	0	3	0	4	4
29/12/87	0	0	0	1	2	3	2	2	4	6
30/12/87	0	0	0	2	4	3	0	1	4	6
31/12/87	0	0	0	3	1	2	4	1	5	6
1/1/88	0	0	0	2	2	0	0	0	2	2
2/1/88	0	0	2	4	4	1	0	2	6	7
3/1/88	0	0	0	3	3	1	1	1	4	5
	T = 0 T.Av. = 0	T = 0 T. Av = 0	T = 4 T. Av. = 0.27	T = 44 T. Av = 2.93	T = 36 T. Av. = 2.4	T = 16 T. Av. = 1.06	T = 19 T. Av. = 1.27	T = 9 T. Av = 0.6	4.13 Overal Total Average	4.47

Total Arrival = 62. Total Depature = 67. Average Arrival = 4.13. Average Departure = 4.47.

Max. Total Average Departure = 2.93 Max. Total Average Arrival 2.4

Table 8.3: Mile 2 Bus Park.

Date	0.00 - 6.00 a.m		6.00 a.m - 12.00 Noon		12 noon - 6.00 p.m		6.00 p.m - 12.00 Mid Night		Total	
	Arrival	Depart-ure	Arrival	Depart-ure	Arrival	Depart-ure	Arrival	Departure	Total Arrival	Total Departure
20/12/88	2	1	0	1	1	0	2	0	5	2
21/12/87	1	3	0	1	2	1	0	1	3	6
22/12/87	0	1	0	0	1	1	1	0	2	2
23/12/87	1	2	1	1	1	0	1	0	4	3
24/12/87	2	1	0	2	2	0	0	1	4	4
25/12/87	0	1	1	1	2	0	1	1	4	3
26/12/87	0	0	1	1	1	0	0	0	2	1
27/12/87	1	0	0	1	2	1	1	0	4	2
28/12/87	1	1	0	2	1	0	0	1	2	4
29/12/87	1	1	1	2	2	0	2	0	6	3
30/12/87	2	1	1	1	0	2	0	0	3	4
31/12/87	0	2	1	0	1	1	0	0	2	3
1/1/88	1	0	0	0	1	1	1	1	3	2
2.1/88	0	1	2	1	1	0	0	1	4	2
3/1/88	0	1	1	2	0	1	1	0	2	4
	T = 12 T. Av. = 0.8	T = 15 T. Av. = 1	T = 9 T. Av. = 0.6	T = 16 T. Av. = 1.07	T = 18 T. Av. = 1.2	T = 8 T. Av. = 0.53	T = 11 T. Av. = 0.73	T = 6 T. Av. = 0.4	3.33 Overal Total Average	3

Total Arrival = 50. Total Departure = 45. Average Arrival = 3.33. Average Departure = 3.

Max. Total Average Arrival = 1.2. Max. Total Average Departure = 1.07.

Table 8.4: Agege Bus Park.

Date	0.00 - 6.00 a.m		6.00 a.m - 12 noon		12 noon - 6.00 p.m		6.00 p.m - 12.00 Mid Night		Total	
	Arrival	Depart-ure	Arrival	Depart-ure	Arrival	Depart-ure	Arrival	Departure	Total Arrival	Total Departure
20/12/87	2	1	3	1	0	4	1	1	6	7
21/12/87	0	1	2	2	1	3	0	1	3	7
22/12/87	1	3	1	2	0	2	0	1	2	8
23/12/87	4	2	1	3	0	1	0	2	4	8
24/12/87	2	1	4	1	0	4	1	1	7	7
25/12/87	1	0	1	1	2	1	2	1	6	3
26/12/87	0	0	2	1	1	1	2	1	5	3
27/12/87	0	0	2	3	0	1	1	1	3	5
28/12/87	1	1	1	2	0	2	1	2	3	7
29/12/87	0	1	3	1	1	1	1	0	5	3
30/12/87	0	0	2	1	1	1	0	0	3	2
31/12/87	2	0	1	2	1	1	0	1	4	4
1/1/88	0	1	1	3	0	3	0	2	1	9
2/1/88	0	1	1	1	1	0	1	1	3	3
3/1/88	0	1	2	1	2	1	1	0	5	3
	T = 13 T. Av. = 0.87	T =13 T. Av. = 0.87	T = 27 T. Av. = 1.8	T = 25 T. Av. = 1.67	T = 10 T. Av. = 0.67	T = 26 T. Av. = 1.73	T = 11 T. Av. = 0.73	T =15 T. Av. = 1	4.07 Overal Total Average	5.27

Total Arrival= 61. Total Departure = 79. Average Arrive = 4.07. Average
Max. Total Average Arrival = 1.8. Max Total Average Departure = 1.73. Departure = 5.27

8.11.2 Determination of Passengers

From the data collected, the total number of buses departing or arriving at the four bus parks named in 8.11 is 41/day. Each luxurious bus has a capacity of 50 passengers. The data collected at peak period from 20/12/87 to 3/1/88.

Hence number of passengers expected at the terminal per day at peak period will be 41 x 50 = 2050 passengers.

Total number of passengers = 2050.

Bus Routes

There are five routes. The five routes exist at bus berths for both arriving and departing buses. They are:-

(i) Lagos - Benin - East - Lagos.

(ii) Lagos - Ibadan - Ilorin - North - Lagos.

(iii) Lagos - Abeokuta - Lagos.

(iv) Lagos - Badagry - Benin Republic - Lagos.

(v) Lagos - Abuja - Lagos.

8.12 Organizational Systems in Terminal Buildings

These systems can be group into 3 categories.

(i) Centralised systems.

(ii) Consolidated systems.

(iii) Unit System.

Passenger volume is a major factor determining choice of system.

8.12.1 Centralised System

Passengers and baggages facilities are housed in the same house in the same building with various transport/services handling its own passengers and baggages.

Advantages

(i) Walking distance for interchange passengers at transfer points are kept to minimum.

(ii) Apron services handling interchange, baggage, mail, express and/or cargo are kept to minimum.

(iii) Passenger services and ticketing functions are performed in a more articulated manner.

(iv) Well integrated baggage facilities.

(v) Central waiting areas with concessions and all bus services as well as visitors.

Disadvantages

(i) Flexibility as a result of growth and development may be difficult to achieve.

(ii) Generalised identity for all various bus services with some less individual identity.

(iii) Wide isolation of ticketing and baggage operations divorced from the loading berths.

8.12.2 Consolidated System

Passengers, ticketing and baggage facilities of all bus services are housed in the same building but one organization handles passengers, baggage, visitors and cargo for all the services.

Advantages

Similar to centralised system. In addition, there's space conservation by the avoidance of duplication of spaces with the same function by the various services.

Disadvantages

Similar to that of centralised system, however there is total loss of identity.

8.12.3 Unit System

Each bus service is housed separately or a unit of allocated building and each has its own facilities for handling of passengers, visitors, baggage and cargo. In addition, administration and probably concession are housed separately.

Advantages

(i) Each bus service carters for its passengers.

(ii) Passengers make choice of using desired bus service facilities.

(iii) Passengers could make choice of being delivered at unit in proximity to the apron/loading berth.

(iv) Expansion by its nature is simple.

(v) Easier operation of Various bus service.

Disadvantages

(i) Imposes excessive walling distance on interchange passenger at transfer points.

(ii) Excessive/rolling distances for apron services vehicles handling interchange baggage, express and cargo.

(iii) Not adaptable to efficient consolidation of activities.

(iv) Confusion arises for consist travellers and visitors as a result of scattered units for each bus service. Searching becomes difficult. No centrality.

(v) Each serve unit handles its ticketing facilities in their respective buildings. There is difficulty to select and make arrangements for passenger on the convenient bus when the need arises.

(vi) Each has to cater for its furniture, and other social services.

(vii) There is a duplication of public and concession spaces and there is lower returns for concession runners as a result of potential customers and disposition to many choices.

8.13 Type of Organization System Selected

In the proposed bus terminal, the architect desire to use consolidated system of organization. This is ideal for the fact that a corporate body will be formed to manage the terminal and will be directly responsible to the Lagos State Government.

8.14 Organizational Structure of the Proposed Terminal

It is going to operate as a corporate body directly responsible to the government, thereby making it autonomous. This will enable the terminal to be articulate, efficient, profit oriented and self-sustaining by avoiding the deadlock usually caused by red tapism of the bureaucratic processes.

Fig. 8.1 outline of organisation.

8.14.1 Stratification of the Organisation

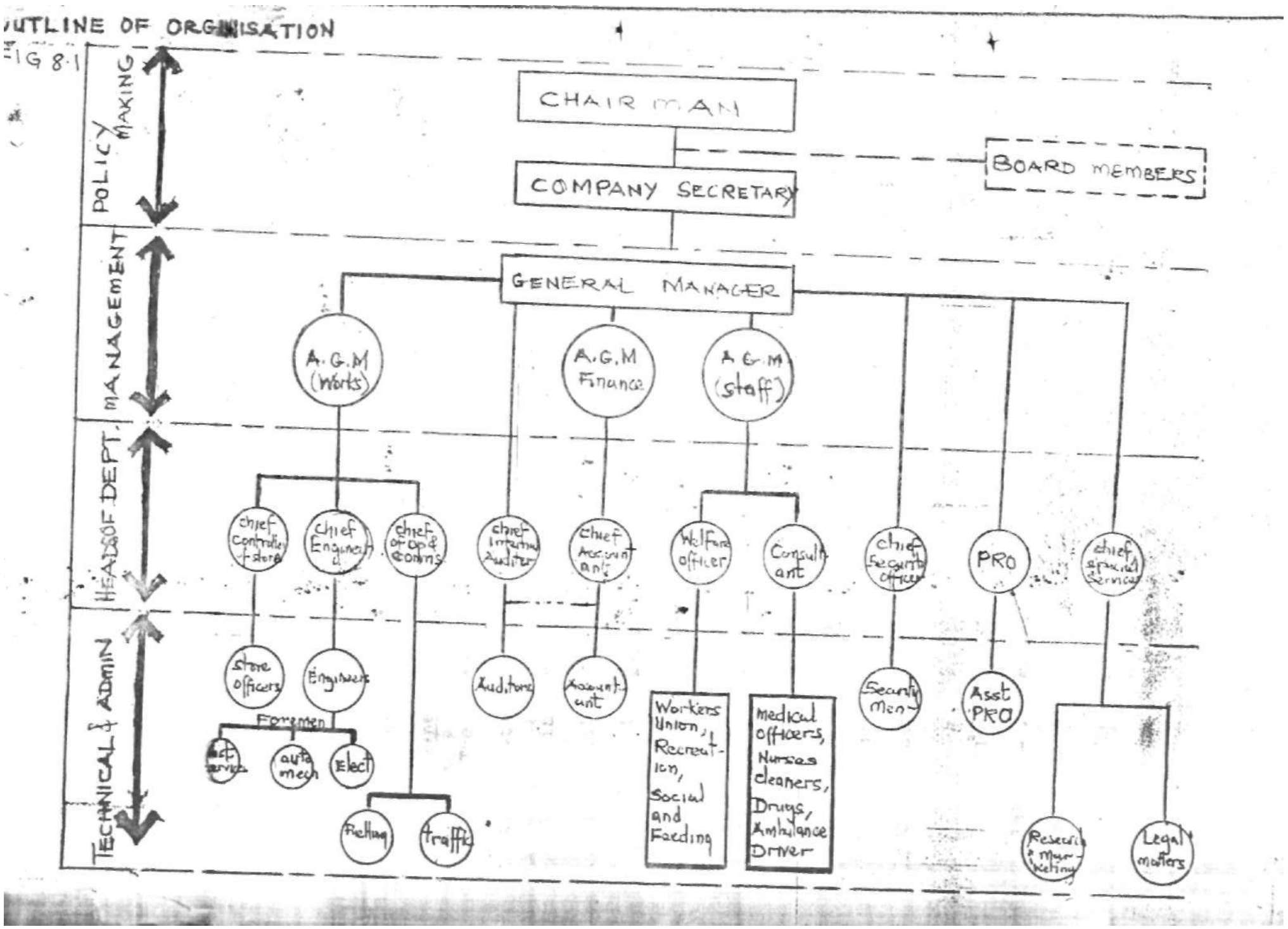
The whole organizational set-up comprises of the following departments:

(i) Chairman and Secretary (Policy Making Department)

This is the policy making body of the corporation. Should have small administration unit for its own operation.

UTLINE OF ORGANISATION

FIG 8.1



(ii) General Manager (Management Department)

The central coordinating section for all that relates to executive matters. The general manager heads and directs the administration of the terminal. He is assisted by three assistant general managers: namely -

(iii) a. Assistant General Manager (Works and Services)

Handles all technical matters of the terminal. All that relates to fueling, maintenance and repairs of vehicles, purchase and storage of parts and other equipments are directly under his office.

b. Assistant General Manager (Finance)

Deal with all financial matters of the terminal, with close cooperation with the Chief Accountant.

c. Assistant General Manager (Staff)

All personnel matters such as recruitment of staff and labour - for man-power needs, wages, conditions of services, welfare of staff, promotion of junior staff, etc come under this office.

(iv) Audit Department

Headed by a Chief Internal Auditor who is directly responsible to the General

Manager. Needs to monitor internal accounts of the terminal.

(v) Public Relations Department

Concerned with the terminal publicity - mouth piece for announcements, enlightenment of travellers, image makers of the terminal, arrangement of press conferences, lectures and talks, almanac and calender publications, posters with slogans, etc.

(vi) Staff Welfare Department

Renders welfare services for the upliftment of workers conditions. Provision of restaurant to cater for feeding and relaxation at subsidized rates, games (indoor). Also, industrial relation sections come under this department - negotiations for workers' claims through their unions, trade union meetings, etc.

(vii) Accounts Department

Comes under the Chief Accountant. Handles all financial documents of the corporation dealing with payment and receipts. Also takes care of salary payments of staff.

(viii) Engineering Department

Headed by the Chief Engineer, who oversees the affairs of the workshop complex. All maintenance services and major repairs are carried out. The service section to cater for other engineering works are under this department.

(ix) Stores and Supply Department

The Chief Controller of Stores and Supply heads this section. It is made up mainly of Central Stores and supply to other smaller stores in various departments are carried out here. Deals mainly with purchases of spare parts, accessories, vehicle equipments, stationary and office materials, used up equipment, furniture, etc.

(x) Security

This department is headed by Chief Security Officer, who is to report directly to the General Manager. Concerned with the security of the terminal and its prosperity, safety of passengers and baggages, participates in the processing of passengers and goods - e.g checking underweightment, or overweightment, platform or travelling tickets. It works closely with the police to cut down on crime.

(xi) Operation and Commercial (Traffic)

Headed by Chief Superintendent. Deals with all that concerns the traffic, i.e control, distribution and movement of vehicles, fuelling, road worthiness of vehicles, monitoring drivers' activities, etc.

(xii) Special Services Department

Comprises of two sections (i) Research Unit. Looks into new areas of transport proespects for the terminal - market prospects, new routes, introduction of new vehicles, passenger facilities, survey of travellers opinion.
(ii) Legal Affairs - all that deals with legal matters of the corporation ranging from libel suits; contract agreements; cases of hazards; etc.

CHAPTER 9

9.00 DESIGN

9.01 Brief and Brief Development

9.01.1 Brief:

Brief of the proposed Inter- City Bus Terminal is made up essentially of the following:-

(i) Administrative Complex (office and workers facilities).

(ii) Workshop complex (maintenance and service facilities).

(iii) Medical Unit (dispensary)

(iv) Security Office

(v) Offices - Terminal Administration

(vi) Fire Service Unit

(vii) Police Unit

(viii) Telephone/Public lockers

(ix) Restaurants and bars

(x) Information/Travel bureau and Newstand

(xi) Concessional Area and Shopping/rentable Offices.

(xii) (a) Showroom type. (b) Shops. (c) Offices.

(xiii) Ticketing Hall

(xiv) Hotel (Accomodation facilities)

(xv) Ticketing Hall with check-in co[illegible].

(xvi) Reception Conveniences.

(xvii) Waiting Areas.

(xviii) Public Toilts (Male and Female).

(xix) Baggage Stores

(xx) Bus facilities, i.e

(a) Despatcher. (b) Parking Spaces - Buses, taxis, cars parks (c) Lock-up garage buses, cars, etc (d) Bus berths/docks (e) Concourses/ platforms.

9.01.2 Brief Development

For the benefit of easier development, the future terminal has been categorised into seven facilities. They are:

(i) Administrative Complex (Offices and Workers' Facilities).

(ii) Terminal Building Complex (passengers' facilities).

(iii) Hotel (Accomodation) Complex.

(iv) Workshop Complex (maintenance and Services facilities).

(v) Bus and Motor Vehicle facility.

(vi) Auxiliary facilities.

(vii) General Services.

Note: Categories i, ii and iii will form a complex.

I. Administrative Complex (Offices and Workers' Facilities).

Main function is to coordinate the activities of the terminal. Most of the management, technical and administrative staff are accomodated here.

I(a) Offices

Inorder to analyse the complex properly, it is noteworthy that different functions require different equipment thereby bring about varying sizes in functions. The observation, is that most offices have similar pattern of space analysis. The requirements for each office were computed based on its need, among those listed below:

(a) Machines and Equipments

(i) Writing - Typewriter, Addressing Machine.

(ii) Copying - Duplicating, Reproducing and Printing machines.

(iii) Calculating - Calculating machine, Adding and Listing.

(iv) Data Processing - Automatic Mechanical

systems of calculating, tabulating, sorting and collating, use of punch cards.

(b) Office Waste

(i) Individual

(ii) Collective

(iii) Confidential waste

(c) Filing and Records

Files (i) Active - in constant use

(ii) Semi-active - intermittently

(Dormant - very occasional e.g secret files.

(d) Storage Materials

(i) Stationary and Books

(ii) Office hardware materials

(iii) Used-up documents

(e) Security and Protection

Provision of safe/vaults for protection against burglary of (i) cash, confidential documents and records, (ii) Protection against fire - provision of appliances - wall finish, sprinklers, hose and extinguishers, sand, buckets, etc.

(f) Services

(i) Water

(ii) Ventilage and Air conditioning

(iii) Electrical installations, telecommunication systems, wastage drainage system.

(g) Office Allotment

Space allocation concept - to provide adequate spaces which may exceed minimum standards, in work and main circulatory areas to enhance efficiency and comfort. Though apart from the functional characteristics, other considerations like status, social and economics have been considered.

I(b) Conference Room

This is a special room shared by the offices and departments. Used only occasionally. It is to be used for formal and information meetings.

(i) Committee or Board meetings: Project team discussions.

(ii) Training programmes or lectures conducted by special services unit or industrial training fund, entertainment, send-off, etc.

(iii) Press conferences and News interview.

The size of the conference room is solely based on the total number of departmentl heads and management staff.

Therefore heads of Department = 10 persons

Management staff = 6 persons

16 persons

Assumption 50% of the above representation as Board members and representatives of other staff

= 8 persons

Therefore: Total number to use conference room

= 16 + 8 persons = 24 persons

(Recommended space - Board room with 16 - 24 persons is 1.5 - 2.00m^2/person Metric Handbook, page 128) - Mainly for formal meetings, management meetings, etc. 2 - 3 hours meeting

= For 24 persons at 2.00m^2 per person = 48m^2.

Floor area for conference room = 48m^2.

I(c) Workers' Facilities

These are mainly for workers use, to add comfort and recreation to the work place - thereby not making everything always formal and boring.

The facilities are:

(a) Staff Lounge (with kitchen and dining area).

(b) Common room - for workers relaxation with seats, tables, newspaper stands, refrigerator, etc.

(c) Coffee room.

(d) Drivers restroom

Space Analysis of Workers Facilities

(a) Staff Lounge (kitchen and dining area): feeding of staff. The space analysis is based on the following assumptions:

(i) The entire staff strength patronize the lounge.

(ii) The break period spans about 1 hour based on the stated assumptions. It is recommended in Newfert "That the average time for eating is about 10-15 minutes".

Therefore, choosing an average of 12 minutes, it implies that within the break period, there would be 5 shifts. (20 percent of staff can be catered for at a time).

But providing the dinining space = 40% of entire staff. Sitting arrangement, (Recommended in Newfert Ed. 1978, p. 262). Diagonal layout of tables (4 diners at each) $1.7 \times 1.95m^2$.

(i) Space for dining area:

$$= \frac{1.7 \times 1.95}{4} m^2 \times \frac{\text{total No. of staff}}{1} \times \frac{40}{100}$$

$$= 66.30 = 66.30m^2$$

(ii) Kitchen Area = 15 - 25%
(Recommended Standard) of the
entire dining area.
Choosing 20 percent
= $\frac{20}{100}$ x Entire dining area (66.3m^2)
= 13.26m^2 - 13.30m^2

(iii) Kitchen Store = Pantry and Cuttery,
Water Sink = 9m^2

Total Staff Lounge Area
= 88.56 - 88.60m^2

(b) Staff Common Room

Used as a place for interraction amongst staff members, relaxation and playing of indoor games, e.g draft, chees, ludo, scrabble, etc. especially during breaks, holidays, etc. closely related to dining and tea/coffee room.

Recommendations

12-15 persons, 2.25 - 4.0m^2/persons - primarily for light refreshment breaks, general notices, mail pegeon holes, scheduling charts. Used throughout the day for short periods - metric handbook.

Choosing $2.5m^2$/person

Therefore, provision for 15 persons =

$15 \times 2.5m^2$

$= 37.5m^2$

Common Room Area = $37.5m^2$

(c) Coffee Room

For the preparation of beverages and high refreshments. It requires a small cooker, water heater, refridgerator, lock-up shelves and preparation table.

The space required = $9.5m^2$

Coffee Room Area = $9.5m^2$

(d) Drivers' Facilities

Adequate provision of necessary facilities for drivers largely contribute to the success of the transport business. It is desirable to look into the basic requirements of drivers emanating from their work nature and objection of efficiency. These are:-

(i) After travelling long distances, drivers and crew require some resting place.

(ii) Changing space is desired before and after undertaking trips.

(iii) There is need for conveniences to easy up themselves. Based on the aforementioned bed space is provided each for the 20 bus berths. There will be changing room and conveniences. The facilities are as follows:-

(a) Drivers rest

(b) Changing room

(c) Toilets and Bathrooms

(a) <u>Drivers' Rest Room</u>

Double decker beds are recommended to conserve space and maximize use. Therefore: Space 1 double decker bed

= 2.00m x 0.6m

Locker (0.3 x 0.7) = 0.3m x 0.7m

Space/double decker = $1.8m^2$

Since there are 41 beds needed (in a double row arrangement, there would be 11 double deckers on a row), with 1m spacing between the two rows.

= (width of bed space + width of circulation) x (Total Number of beds per row) = Length of room

= (0.6 - 0.3) x (11 beds) = 9.9m

(Length of beds on sides + spacing length between them) = Width of the room.

(2 x 2.0m) + 1.0 = 5m

Area = 5 x 9.9m^2 = 49.5m^2

(ii) Changing Room

Having Lockers - with partitioned cabins, two wash hand basins in each partitioned area. Area required = 25m^2.

(iii) Toilets and Bathrooms

Bathrooms = 0.9 x 0.9m^2/shower

Toilet = 0.9 x 1.5m/WC

Circulation = 0.9 x 3.5m^2

at peak period of use, ratio of toilet/bathroom to users 1:11 within 1 hour. It implies that each person has to use average of 5.45 minutes in the bathroom.

To cater for 41 bedspaces, there will be 4 bathrooms and 4 toilets

4 bathrooms = 4 x 0.81m^2 = 3.24m^2

4 toilets = 4 x 1.35m^2 = 5.40m^2

circulation = 0.9 x 3.5m^2 = 3.15m^2

Total 16.79m2

= 17.0m^2

Total Area for Drivers' Facilities:

(i) Restroom = 49.5m^2

(ii) Changing room = 25.0m^2

(iii) Conveniences = 17.0m^2

Total = 91.5m^2

Toilets for the Complex: It is assumed that the male and female ratio is 2:1. However, for every 25 persons there should be a toilet.

Administrative Complex Parking Spaces

For the parking of vehicles of administrative staff, official cars and the public members visiting the complex. The following assumptions will be used as basis for the parking area.

(i) It is assumed that the Chairman and the Company Secretary have two spaces each (1 for personal car and the other for official) - 4 parking spaces.

(ii) All senior staff members of the administrative complex have a car each. Which is 18 parking lots.

(iii) All management staff have 2 cars spaces each (1 personally, the other official). There will be 8 parking spaces.

(iv) All the departmental heads have 2 car spaces each (1 personal and the other official). Therefore there will be 20 parking spaces.

(v) The visitors parking space, will make 30 percent of each of the waiting rooms seats in the complex. That is equal to 25 parking spaces.

Administrative complex parking area (cars)

= Summary of all the above (i - v)x 13.75m^2

= 11^4 x 13.75m^2

= 1,567.50m^2

Parking space for cylcel = 67

= 107.20m^2

Total Parking Area for vehicle

= 107.2 + 1.567.50

= 1,674.70m^2

Conveniences for the Administrative Complex.

Space Analysis of Toilets

The rotio of female: Male in most establishment is 1:3 (Ministry of Economic Development 1978, survey report of Establishments). Therefore in most office designs, to every 25 - 35 persons, there is a toilet. So 25 persons/toilet is desirable.

(a) The policy makers and Management staff have a toilet each. That implies 6 toilets. Space for a toilet with 1 WC, 1 Wash-hand basin, and 1 Urinary

= 0.9m x 1.5m = $3.9m^2$

= 6 toilets = 6 x 3.9 = $\underline{23m^2}$

(b) The rest staff will share the toilets. They are 194 staff working out the ratio 1:3 = 49.146 (48.5: 145.5). So there are 49 women and 146 males.

(i) Female toilets = 49/25 = 2 toilets.

Area of female toilets = 2 x $3.9m^2$

= $7.80m^2$

(ii) Male toilets = 146/25 = 5.84 .

= 6 toilets

Area of male toilets = 6 x $3.9m^2$

= $23.40m^2$

The total (minimum) toilets required in the Administrative Complex = 6 + 2 + 6

= 14

= 14 toilets.

(c) Total Area of Toilets in Administrative Complex = 23.90 + 7.8 + 23.40

= $54.60m^2$

II. Terminal Building Complex

This will attend mainly to the passengers' requirements and other desired needs to further ameliorate the comfort of the passengers, they are mainly:

Passengers Facilities

(a) Waiting Areas

(b) Reception Conveniences

(c) Baggage Room

(d) Ticketing Facilities (with check-in counters)

(e) Offices - Station Administration

(f) Security Office

(g) Restaurant and Bar

(h) Public lockers/telephones

(i) Information/travel bureau (having newstand)

(j) Concessional/rentable spaces and shopping
(a) Showrrom type, (b) Shops, (c) Offices

(k) Conveniences, i.e Toilets, Urinaries, etc.

(l) Post Office

(m) Bank

(n) Insurance

(o) Travel Agency

(a) Waiting Area:

Discussed earlier on under functional elements.

Space Analysis

The recommended standard is 1 seat to every 3 passengers. Seating space is $1.0 - 1.5m^2$ (time savors' standards).
For passengers of 2050 = 683 seats
chosing area of $1.25m^2$ per seat
$683 \times 1.25m^2 = 854.13m^2$
Waiting Area = $854.13m^2$
The waiting area will have good link with outside area i.e courtyards.

(b) Reception Conveniences

Serves as the transition point between the external part of building and the complex. Usually link with entrances. In some cases, these areas are used for exhibition, conversation, etc. Some have receptionists.

(i) The entrance foyer will link the entrance door with the waiting area. It is mainly a traffic zone (pedestrian). Space analysis - 10 percent of the waiting area.

10 percent of waiting area

= Area of Entrance foyer

Entrance foyer area = 10/100 x 854.13

= $85.41m^2$

(ii) An entrance canopy is to precede the entrance foyer. It bestows a welcome feeling on passenger coming into the terminal. It could be raised on little above the ground - it gives a feeling of recognition to the building and distinguishes it from other parts.

(b) Baggage Room (Discussed earlier on).

Space Analysis:

The recommended standard is 50 sq. feet for each bus berth (Inter-City Bus L = 13.5m, W = 2.7m and H = 3.10m)

50 sq. feet per bus berth = $4.5m^2$/bus berth

for 41 bus berths = $4.5, ^2$ x 41

Total baggage area = $184.5m^2$

The entire baggage store is to be classified into the following:

(i) Forgotten/Unclaimed/Overdue Store

(ii) Baggage processing

(iii) Baggage dispatch

(iv) General baggage store

Forgotten baggage store (from field study) is 14% of the entire space. Baggage process is receiving while, dispatch is putting it on bus or giving it to its owner on identification. The flow is reversible.

Forgotton/Unclaimed baggage store:

= 14 % of entire baggage store

= $0.14 \times 184.5m^2 = \underline{25.83m^2}$

(i) Unclaimed Baggage = $26m^2$

(ii) Baggage Processing: has racks for separating and easy identification of baggages, a long reception counter schedule board.

Baggage Processing Area = $25.5m^2$

(iii) Baggage Dispatch Store = $25.5m^2$

(iv) General baggage store = (total baggage store area) - (Unclaimed baggage store + baggage processing and dispatch store Area)

= $184.5 - (26.0 + 25.5 + 25.5)m^2$

= $184.5 - 77 = 107.5m^2$

General Baggage Store = $\underline{107.5m^2}$

(d) Ticketing Facilities (Discussed earlier on).

The ticketing counters will be of five positions so as to be commensurate to the number of routes. The recommended space is $4.5m^2$ (50 sq. ft)/position.

Dimension of each = $(1.80 \times 2.5)m^2 = 4.5m^2$

Space Analysis - $4.5m^2 \times 5 = 22.5m^2$

Ticketing Counters = $22.5m^2$

Note: Five paired queuing spaces with guarded rails are provided. The pairing is to accomodate more people at a time. Also, each queue path accomodated 10 persons at 80 cm spacing. There are 10 of such which means 100 persons/ passengers can queue at a go. Each queuing space is 0.9m wide and the length is 8.00m.

Space for queuing = $1.8\ (0.8 \times 10) \times 5m^2$

$= 72m^2$

Therefore, total ticketing facilities space:-

Counter + Queuing Spaces

$= 22.5 + 72m^2$

= Ticketing Facilities = $94.5m^2$

(e) Offices

Station administration: The analysis and development are similar to that of those of the administrative complex. The variation only lies in the function which determines the equipments and materials.

(f) Security Office

Oversees the protection and preservation of terminal's property and passengers. The main law and order by enforcing it. The office is to check and combat crime. The space is similar to those of office analysis earlier mentioned.

(g) Restaurant and Bar

This is to cater for the drinking and eating of passengers and members of public. It is a revenue generating section of the terminal. The restaran' has the following facilities:-

(i) Dinning Area

(ii) Service Area (including kitchen)

The regular customers that will patronize the restaurant, (from field study is 8% of total passengers). Therefore, 8% of passengers = 164.

Therefore 164 passengers are expected in the restaurant.

Space Analysis

1(a) Dinning Area: choosing, the diagonal seating arrangement (4 diners at each). The recommended area = 1.7 x 1.95m^2

(area required including gangway)

- (Architects' data).

Therefore, Dining Arrea = $\frac{1.7 \times 1.95\text{m}2 \times x}{4 \qquad 1}$

= where x = total number of diners expected

= $\frac{1.7 \times 1.95}{4} \times \frac{164}{1}$

= $\underline{135.9\text{m}^2}$

1(b) Cashier by the Exit - Space = 1.50m^2

It is going to be a bar dining room with small bar tendering services - to cater for all assorted drinks.

1(c) Bar with Seats (at distances of 600mm centres)

U-format type (to link service area).

For a small bar of 13 seats + bar area

= 5 x 7.5m^2

Bar Area = 37.5m^2

Total of Bar Dining Area = 37.5 + 135.9 + 1.50m^2

= $\underline{174.9\text{m}^2}$

II. Service Area

Comprises mainly the preparation, services rendered to customers and the administrative of the unit. It is made up mainly of:

(i) Kitchen area

(ii) Administrative and Staff Unit

Space Analysis

(i) The kitchen area comprises mainly

(a) Area for cooking, frying, grilling and preparation of soup.

(b) Servery

(c) Colf buffet (meat, salad, fruits, fish, etc).

(d) Preparatio.. of pestries, ice creams, sweets.

(e) Scullery for washing up.

Areas

Cold buffet = 5 x $4m^2$ = $20m^2$

Scullery = 3 x $2.5m^2$ = $7.5m^2$

Preparation of pastries = 3 x 4 = $12m^2$

Servery = 1.5 x 6 = $9.0m^2$

Cooking Area = 3 x 3.5 = $10.5m^2$

Kitchen Area = $5[illegible].0m^2$

III. Administrative and Staff Unit

Comprising mainly the following

(a) The Caterer

(b) Assistant Caterer

(c) Changing rooms

(d) Service stores

Areas

(a) Caterer and (b) Assistant - $18.0m^2$

(c) Changing room (with bath and WCs, Cloak room) partitioned into two sections (male and female)

$= 6 \times 6.5m^2$

$= 39m^2$

(d) Services store = $15m^2$

Admin and staff unit = $72.0m^2$

Therefore, Service Area = Kitchen Area + Admin and Staff Unit

$= 59.0m^2 + 72.0m$

$= 131.0m^2$

= Restaurant Area = Service Area + Bar Dining Area

$= 131.0 + 174.9$

$= 305.9m^2$

(h) Public Lockers/Telephones

The number depends on potential earning capacity, a typical size is $0.9m^2$ per person. 10 is provided at a ratio of 1:200 approximately.

Space Analysis:

$0.9m^2 \times 10 = 9m^2$

circulation 50% = $4.5m^2$

$13.5m^2$

Public lockers/telephones = $13.5m^2$.

(i) Information/Travel Bureau (having newstand) Office

This section is to dispense information to travellers and enlighten them about the terminal. Information include routes, processing of baggage and passengers, services rendered by terminal, etc.

Space Analysis

Comprises of newsstand, chairs for visitors - 10, receptionist (table and chair), information officer. This section is divided into two:

(i) Showroom - 20m (Reception Area).

(ii) Information Officer - $10m^2$

Information/Travel Bureau Area = $30m^2$

(j) Concessional/Rentable Spaces and Shopping

Discussed earlier on. It is classified into 3 main sections:

(i) Showrooms type - spaces greater or equal to $50m^2$

(ii) Shops - between - $50m^2$

(iii) Offices - less than or equal to $25m^2$

A total of $200m^2$ is marked out for this area, with average of 2 for each category mentioned above. Therefore, concessional/ rentable area = $200m^2$.

(k) Post Office

A small unit type to handle basic postal services, i.e sale of stamps, telegrams, post orders, Federal Savings Unit, etc. comprises the following facilities:-

Space Analysis

(a) Public lobby (w: . counter = $15m^2$

(b) Work space (hav: : security storage + mail unit) = 25

(i) Security storage = $3m^2$

(ii) Mail Unit $4m^2$

(c) Directory = 10m

Post Office Area = 1(+ $25m^2$ + $15m^2$

= $50m^2$.

(l) Bank: To render mainly financial services ranging from depositing, savings, loans, current accounts, with drawals, etc. comprises mainly of (i) Public Spaces (ii) Operations.

Public Spaces

Made up of the (a) waiting area for customers, (b) tellers; loans section and cheque writing cashier/bank services). Therefore waiting area = $10m^2$

Banking Services = $\frac{15m^2}{15m^2}$

Operations

(a) Manager's Office = $10m^2$

(b) Accounts and Processing = $20m^2$

(c) Vaults = $10m^2$

Dimension of a vault = W = 2.4m,

L = 4.2m

H = 2.4m

Total Bank Area = $65m^2$

(m) Insurance Office

Render services on insurance matters more relevant accident and life (assurance), fire protection and property, premiums, etc.

Space Analysis

Manager = $10m^2$

Waiting Area = $10m^2$

Main Office (with counter for reception)
= $15m^2$

Data Processing + Records Store = $15m^2$

Insurance Office Area = $50m^2$

(n) Travel Agency

Agent or representative of the respective bus transport services.

Space Analysis

Representative/Agent = $10m^2$

(o) Conveniences

These are places meant for easing-off when pressed by nature. Mainly, toilets, uninaries and wash hand basins. For the allocation of toilets the following criteria have to be considered or assumed.

(i) From field work, the ratio of male:female is approximately 7:3

(ii) To every 200 persons, a toilet is provided and a urinary.

Space Analysis

Therefore, for 2050 passengers, required toilets
= 2050/200 = 10.25
= 10 toilets, 10 urinaries

Therefore, there would be 7 toilets and uniraries for males. 3 toilets and bidets for females.

Space Analysis

(a) Male Toilets: 7 toilets, wash hand basins and urinary.

7 toilets = (1.5 x 0.9) x 7 = 9.45m^2

7 wash hand basins + circulations

= 2.0 x 6.3

= 12.6m^2

urinary = 3.5 x 1.5 = 5.25

Total Male Area = 27.3m^2

(b) Female Toilets = (1.5 x 0.9) x 3 = 4.05m^2

3 wash hand basins + circulation

= 2.0 x 2.7 = 5.4m^2

Female toilets = 4.70m^2

Convenience Area = Female toilets + Male toilets for Terminal Building Complex = 11.70 + 27.3

= 39m^2

(p) Parking Spaces

To be used mainly by vehicles owners coming to the terminal complex and workers. The following conditions were applied.

(i) From field study, 5% of the passengers are brought down or taken away in motor vehicles. Therefore there are 103 motors which implies that the same number of parking spaces.

(ii) It is assumed that each unit head of the various functions has a car and their assistants, there are 34 persons (17 units) that implies 34 parking spaces.
Therefore total number of parking spaces
= 34 + 103 = 137
Area per car = 2.5 x 5.5 = 13.75m^2/car
For 137 cars = 1883.75m^2

Total Parking Spaces for Terminal Complex
= 1883.75m^2
32m^2 (3.0 x 10m^2) for 20 bicycles and motorcycles at 1.6m^2/cycle + 50% of junior staff (50) = 25 x 1.6m^2 = 40m^2 + 32m^2
= 72m^2.

III Hotel Complex

This is designed and operated especially for sleeping accomodation of travellers. Rooms, recreational and feeding facilities. The recommended standard dimensions (time savers)

are applied here for the space analysis. As to do this is beyond the scope of the thesis.

Space Analysis

(a) Guest Rooms

From field studes, 2% for double room, 4% for single room

(i) Double rooms - 2% - 41 rooms, 82 single rooms.

Requirements for room = 2 beds, 2 chairs and shelves, WC, bath tubs and lockers for clothes.

Other Requirements: Telephone boxes with space for seating and writing - maps and directory on walls.

Area = 3.9m x 9 m = 35.1 (with balcony)

Area of balcony = ($2.1 \times 3.9m^2$)

Double room area = $35.1m^2$

(ii) Single room: Same requirements as (i) above, only that single bed is provided.

Area = 3.9 x 6.0m

= $23.4m^2$/single room (with balcony).

Therefore 41 double rooms = 41 x 35.1m^2

= 1439.1m^2

82 single rooms = 82 x 23.4m^2 = 1918.8m^2

3357.9^2

Total Guest Rooms Area = 3357.9m^2 = 123 rooms.

Table 9.1: Space Allotment for Hotel Accomodation

The recommended sizes are determined by multiply the ratio of the desired number of rooms compared with a typical 100-room hotel i.e for 123 room hotel, multiply the values for 100-room hotel i.e for 123 room hotel, multiply the values for 100-room x 1.23 (time savers).

Names of Faculties		Space (Area m^2) Required	
Public Space		100-room	123-room
(a)	Lobby	99.0	121.77
(b)	Lounge	45.0	55.35
(c)	Front Office	9.0	11.07
(d)	Corridors adjoining	27	33.21
(e)	Men's toilet for Guest	12.6	15.50
(f)	Women's toilet for guests	10.8	13.28
(g)	Women's rest room	9.0	11.07
		Total	261.25

(ii)	Concessions and Sub-rentals			
	(h)	Rental stores	180.0	221.4
(iii)	Food and Beverage Services			
	(i)	Dining room (110 seats)	153.0	188.19
	(j)	Bar and Cooktail lounge (50 seats)	72.0	88.56
	(k)	Private Dining rooms (72 seats)	81.0	99.63
	(l)	Employees dining (20 seats	23.4	28.78
	(m)	Kitchen	117.0	143.91
	(n)	Stewards store room	27.0	33.21
	(o)	Walk-in refridgerators	13.5	16.61
	(p)	Beverage storage	16.2	19.93
	(q)	China Glass and Silver Storage	18.0	22.14
	(r)	Receiving room	18.0	22.14
	(s)	Garbage room	9.0	11.07
			Total	674.12
(iv)	General Service Area			
	Manager's Office		11.9	14.64
	Secretary's Office		8.1	9.96
	Accounting Office		11.9	14.64

Public Space	100-room	123-room
Linen room	31.5	35.91
Laundry	34.0	66.42
Men's toilet for employees	9.0	11.07
Men's locker room	13.5	16.61
Women's toilet for employees	10.8	13.28
Maintenance shops	54.0	66.68
Women's Locker room	15.3	18.82
Furniture storage	22.50	27.68
General Storage	54.0	66.42
Boiler room	67.5	83.03
Transformer and Switch Board room	13.5	16.61
		461.51

*12 maids are required for the rooms.

Totals:

I. Publis Spaces = 261.25

II. Concessions and Subrentals = 221.40

III. Beverage and Food = 674.17

IV. General Service Area = 461.51

$1618.33m^2$

Total Floor Area for Hotel Complex

= Guest rooms area + (I - IV) above

= 3357.9 + $1618.33m^2$

= $4976.23m^2$

Alternative Facility:

Swimming Pool

Sounding by at least 3.0m terrace and grass area. Recreation type suitable - minimum size (6 x 12)m^2

Kindey shaped or oval, or figure 8.

Toilet facilities for men and woen bathers.

Storage for water filters, pumps, purification equipments and water heater (Not more than 12m from the deep end of pool. Festra space can be used for Cabana club.

Games Room

It can be worked out based on the spaces required by the following games:

(i) Shuffle board 3 x 3.6m

(ii) Table tennis 3.6 x 6.0m

(iii) Cards and television room (for 10 persons) at 2.0m^2/person = 20m^2.

parking:

The criteria set out to determine the space allocated are as follows:

(i) 1 parking space for each guest room. That implies 123 parking spaces.

(ii) 1 parking space for every 5 seats at restaurants, that is (135 + 62 + 89) x 1/5 = 57 parking spaces.

(iii) That all senior staff of the complex have cars. Estimated at 10 parking spaces.

(iv) 2 parking spaces for delivery and service trucks.

Therefore total parking spaces

= summation of (i) - (iv) above.

= 123 + 57 + 10 + 2

= 192 parking spaces

Space/Car = (2.5 x 5.5) = 13.75m

192 spaces = 192 x 13.75

Hotel Complex = $2640m^2$
Parking Area

(a) 1 helper/maid is required for every 10 - 12 guest rooms/units - 12 maids required.

(b) Proximity of rooms to garage

(c) Play areas: away to avoid disturbing resting guests.

IV. Workshop Complex (Maintenance and Service Facilities)

Solely responsible for fueling, servicing of spare parts, equipments and materials of the terminals' vehicles and property. Though, this is extended to the public on commercial basis. It handles all that deals with engineering works. It is made up mainly of the following:

(a) Service station (petrol and diesel)

(b) Automobile shop

(c) Installation services section - metering unit, generation and air conditioner

(d) Car wash)
) Motor vehicle service area
(e) Service boys)

(a) Service Stations:

To have full time attendants. There are the following

(i) Office with desk (cask register and show case), shelves, etc. This area is for sale of small items (fuses, bulbs, engine oil, grease, etc).

(ii) Oil store - storage of items soled at the office. Area of oil store
$= 2.5 \times 5m^2 = 12.5m^2$

(iii) 2 toilets (male and female)
$= 2 (1.85 \times 0.8)$
$= 2.96 - 3.0m^2$

Total built-up area of station
$= 12.5 + 12.5 + 3.0 = 28m^2$

(iv) Drive way of station - has the sitting of the pump islands where fuel are injected into vehicles.

It is desired to separate super fuel pumps from diesel. Probably each could be combined with that of kerosene. That implies 2 pump islands. The recommended minimum standard dimension for driveway in depth = 30m and length = 37.5m for effective and convenient maneurability.

Therefore, Area = 30 x 37.5

= 1,125.00m^2

Consideration on driveway designs

(i) Covered walkways should be minimum 4m high.

(ii) Two lane drive 6m wide.

(iii) Pump island 1.25m wide.

(iv) Pumps 4.00m apart (ref. Neufert).

∴ service station area

= 28.0m^2 + 1125.00

= 1153.00m^2

(b) Automobile Shops

Deals with general repairs and services of vehicle components - disassembled parts. For a highly specialized work, 8 stall type is proposed namely:-

		Area (m^2)
(i)	General repairs and tune up	100.00
(ii)	Machine shop	40.00
(iii)	Welding/Galvanizing	20.00
(iv)	Small tool parts	45.00
(v)	Storage issue office	35.00
(vi)	Meter room	15.00
(vii)	Lubrication stall and Mufler tyre shop	63.75
(viii)	Body and steam cleaning stall	63.75
		382.50m^2

Area of Automobile shop = 382.50m^2

(c) Installation Services Section

To cater for all installation services of the terminal. These are mainly:

(i)	Bulk metering unit	17m^2
(ii)	Generator (10KV Lister Atlanta SV3	9
(iii)	Air conditioners	10
(iv)	Work area with long table for minor repairs (table = 1.2 x 3.5m^2)	15
(v)	Store	9
	Installation Services Area	60m^2

(d) Vehicle Service Area

This area caters for minor repairs works on vehicle, servicing of engines, wheel alignment, washing of vehicle, etc. The facilities are:

(i) Provision of two boys for cars:

(a) With swing lift (turntable lifts 4.5 diameter).

(b) Car wash/service bays - having slum centrally to parking.

The combination of the two car spaces will make space for a long bus. So the arrangement should be flexible.

Area for (i) 9 + 6 = 60' x 13' = 780 sq. ft

18m x 3.8m = 70.2m2

(ii) One service bay for buses (space for (i) above can serve as the second, when no cars. Service bay for bus

= 60' x 15' = 900 sq. ft.

18m x 4.5m = 81.0m^2

where 4.5 is width of entrance

= 4.5m x 6.0m

vehicle service area

= 70.2 + 81.0m^2

= 151.20m^2

Parking Spaces for Workshop Complex

Used mainly by workshop complex workers and visitors. The following assumptions are made in order to calculate the required parking spaces:

(i) That each unit head, i.e Foremen have a car each. There are four of them.

(ii) The number of visitors parking is equal to number of car spaces in the service bays = 4.

(iii) 2 spaces for Chief Engineer, 1 for personal car and the other for official.

(iv) 50% of the spaces (parking) in (i) - (ii) = 5 lots for other workers.

Therefore total parking spaces

= 4 + 4 + 2 + 5 = 15

Area per car = 2.5 x 5.5 = 13.75

Total parking space = 15.13.75

= 206.25m^2

Total parking space for workshop

= 206.25m^2

Total Area of Workshop Complex (m^2)

(a) Service Station = 1153.00m^2

(b) Automobile shops = 382.50m^2

(c) Installation Services = 60.00m^2

(d) Vehicle Service Area = 151.20m^2

Total = 1746.70m^2

Total Area of Workshop Complex: 1,746.70m^2

1746.70 + General = 1746.70 + 17.80
= 1764.50m^2

9.10 Schedule of Accomodation

9.10.1 Accomodation Schedule (Administration)

(A) Space Requirement for Policy Making Department.

Offices	Area m^2	Population
Chairman	35.0	1
Confidential Secretary	15.0	1
Typist/Messenger	10.0	2
Waiting Area ($2.00m^2$/person)	20.0	10
Board Room	30.0	12
Conference Room ($2.00m^2$/person)	50.0	16
Company Secretary	25.0	1
Confidential Secretary	15.0	1
Assistant Secretary	30.0	2
General Office	50.0	10
Store Room	10.0	-
Executive Officer	30.0	2
Clerks and Record	20.0	2
Enquiry/Reception	30.0	10
Total Area	270.0	70

(B1) General Management Department

Offices	Area m^2	Population
General Manager	35.0	1
Confidential Secretary	15.0	1
Typist/Messenger	10.0	2
Waiting Area	20.0	10
Total Area	80.0	14

(B2) Assistant General Managers

Assistant General Manager (Works)	30.0	1
Assistant General Manager (Finace)	30.0	1
Assistant General Manager (Staff)	30.0	1
Confidential Secretary	30.0	3
Executive Officer	30.0	2
Typists/Clerks	50.0	5
Store	10.0	-
Waiting Area	30.0	10
Total Area	240.0	23

B1 + B2 (above) = 32[illegible] m^2

(c) Audit Department

Chief Internal Auditor	30.0	1
Senior Auditor	25.0	1
Internal Auditor	30.0	2
Verifiers (Stock)	30.0	2
Audit Examiners	25.0	5

Offices	Area m^2	Population
Stock Examiners	25.0	5
Confidential Secretary	15.0	1
Store (Auditors)	10.0	-
Store (Verifiers)	10.0	-
Clerks/Typists	25.0	5
Total Area	225.0	22

(d) Public Relations Department

Public Relations Officer	25.0	1
Assistant Public Relations Officer	30.0	2
Work Room (5 Staff)	50.0	5
Stores	10.0	-
Total Area	115.0	8

(e) Welfare Department

Industrial (Welfare) Officer	25.0	1
Assistant Welfare Officer	30.0	2
Clerks and Typists	15.0	3
Store	10.0	-
Total Area	80.0	6

Offices	Area m^2	Population
(f) Accounts Department		
Chief Accountant	30.0	1
Senior Accountant	25.0	1
Accountants	40.0	2
Executive Officers (Accounts)	20.0	2
Accounts Clerks/ Typists	20.0	4
Store	10.0	-
Waiting Room	30.0	10
Total Area	175.0	20

(g) Operations and Commercial Traffic Department.

Office	Area m^2	Pop.	Unit Area m^2
Chief Superintendent	30.0	1	
Principal Superintendent Cooperations	25.0	1	
Principal Superintendent (Commercial and Traffic)	25.0	1	
Confidential Secretary	20.0	2	
Clerk and Typist/ Messenger	20.0	4	
Waiting Room	30.0	10	
Store	10.0	-	
			160.0

Office	Area m^2	Pop.	Unit Area m^2
Service Station Manager (Fuel)	20.0	1	
Assistant Service Station Manager	30.0	2	
Clerks/Typist and Manager	15.0	3	
Store	5.0	-	
Petrol Attendants		6	
			70.0
Vehicle Inspector	20.0	1	
Assistant Vehicle Inspector	30.0	2	
Clerks/Typist and Messenger	20.0	4	
Store	5.0	-	
			75.0
Drive way/Concourse Manager	20.0	1	
Assistant Concourse Manager (North)	15.0	1	
Assistant Concourse Manager (South)	15.0	1	
Clerk/Typist and Messenger	15.0	3	
			65.0
Total Area	370.0m^2	44	

(h) Security Department

Office	Area m^2	Population
Chief Security Officer	25.0	1
Senior Security Officer	30.0	2
Security Officers	75.0	15
Clerk/Typist and Messenger	15.0	3
Total Area	145.0m^2	21

(i) Special Services Department

Chief of Special Services	30.0	1
Research Officer-Marketing	40.0	2
Legal Affairs	40.0	2
Special Services Officer	40.0	4
Clerk and Typist/ Messenger	15.0	3
Store	10.0	-
Total Area	175.0	12

(j) Engineering Department

Office	Area m^2	Pop.	Unit Area
Chief Engineer	30	1	
Confidential Secretary	15.0	1	
Clerks/Typists and Messenger	15.0	3	
Waiting Room	30.0	10	
			90.0

Office	Area m^2	Pop.	Unit Area
Services Engineer	25.0	1	
Foreman (Airconditioning)	10.0	1	
Foreman (Electrical Service)	10.0	1	
Foreman (Plumbing Service)	10.0	1	
Changing Room/Lockers (for 6 technicians/ attendants)	20.0	6	
2 Toilets and 2 bathrooms	8.40	-	
			83.40
Automobile Engineer	25.0	1	
Foreman (Vehicle Service Area)	10.0	1	
Foreman (Automobile Shop)	10.0	1	
Changing Room/Lockers for 12 technicians/ attendants)	40.0	12	
4 Toilets and 4 bthrooms	16.80		
			101.80
Total Area	275.20m^2	40	

(k) Stores and Supply Department

Office	Area m^2	Population
Chief Controller	30.0	1
Deputy Controller (Supply)	25.0	1
Deputy Controller (Purchase)	25.0	1
Secretary	15.0	1
Clerk/Typists	25.0	5
Waiting Room	30.0	10
Store	10.0	-
Total Area	160.0	19

(l) Mail/Telephone Exchange

Mail/Telephone Officer	30.0	2
Mail Hall	15.0	
Telephone Exchange room (4 operators)	20.0	4
Clerks/Typist and Cleaner/ Messenger	15.0	3
Store	20.0	-
	100.0m^2	9

Summary (Administration)

No.	Head of Department	Senior Staff		I & J Staff	Policy Mgt.	Dept. Total
		Head of Depts	Others			
A.	Policy Making	-	6	14	2	22
B.	Gen. Mgt.	-	6	7	4	17
C.	Audit	1	6	15	-	22
D.	Public Relation	1	2	5	-	8
E.	Welfare	1	2	3	-	6
F.	Accounts	1	5	4	-	10
G.	Operations/ Commercial	1	13	20	-	34
H.	Security	1	2	18	-	21
I.	Special Duties	1	4	7	-	12
J.	Engineering	1	8	21	-	30
K.	Stores and Supply	1	3	5	-	9
L.	Mail/Tel.	1	1	7	-	9
	Total	10	58	126	6	200

9.10.2 Terminal Building Complex

Functions	Area m^2	Pop.	Unit Total m^2
A. Reception Conveniences			947.44
(i) Entrance Foyer	85.41	205	
(ii) Two Toilets (male and female)	7.90	General	
(iii) Entrance Canopy		General	
B. Waiting Area	854.13	683	
C. Baggage Room			184.5
(i) Unclaimed store	24.00	General	
(ii) Baggage Processing	25.50	General	
(iii) Baggage Despatch	25.50	General	
(iv) General Baggage Store	109.5	General	
D. Ticketing Area			94.5
(i) Ticketing Counters	22.5	General	
(ii) Queuing Space	72.0	General	
E. Security Section			75.0
(i) General Office	50.0	10	
(ii) Store	10.0	-	
(iii) Examination Room	15.0	1	
F. Resraurant Area			305.9
(i) Bar (13 seats)	37.5	13	
(ii) Dinning Area (with cashier)	135.9	164	
(iii) Service Area	131.0		

Functions	Area m^2	Pop.	Unit Total (m^2)
G. Public Lockers/ Telephone Booths	13.5	10	13.5
H. Information Office/ Travel Bureau			30.0
(i) Showroom (Reception)	20.0	11	
(ii) Information Officer	10.0	1	
I. Concessional/ Rentables			200.0
(i) Showroom Type	100.0	2	
(ii) Shops (35.0m^2 each)	70.0	2	
(iii) Offices (15.0m^2 each)	30.0	2	
J. Post Office			50.0
(i) Public Lobby	15.0	5	
(ii) Work space	25.0	5	
(iii) Directory	10.0	1	
K. Bank			65.0
(i) Waiting Area	10.0	5	
(ii) Banking Services	15.0	5	
(iii) Accounts and Processing	20.0	4	
(iv) Manager's Office	10.0	1	
(v) Vaults	10.0		

Function	Area m^2	Pop.	Unit Total (m^2)
L. Insurance Office			50.0
(i) Manager	10.0	1	
(ii) Waiting Area	10.0	5	
(iii) Main Office	15.0	4	
(iv) Data Processing and Records Store	15.0	2	
M. Travel Agency			50.0
(i) Showroom	25.0	5	
(ii) Office Assistant and Store	15.0	2	
(iii) Representative/ Agent	10.0	1	
N. Station Administration			130.0
(i) Station Manager	25.0	1	
(ii) Operating Manager	20.0	1	
(iii) Programmes Manager	20.0	1	
(iv) Accountant	20.0	1	
(v) Data Processing Manager	20.0	1	
(vi) Executive Officer	20.0	2	
(vii) Clerks/Typists/ Cleaners	75.0	15	
(viii) Voucher room	15.0	Materials	
(ix) Store	15.0	Materials	

Summary (Terminal Building Complex)

No.	Function	Area m^2
..	Reception Conveniences	
A.	Entrance Area)	947.44
B.	Waiting Area)	
C.	Baggage Room	184.5
D.	Ticketing Area	94.5
E.	Security Section	75.0
F.	Restaurant Area	305.9
G.	Public Lockers/Telephone Booths	13.5
H.	Information Office/Travel Bureau	30.0
I.	Concessional/Rentables	200.0
J.	Post Office	50.0
K.	Bank	65.0
L.	Insurance Office	50.0
M.	Travel Agency	50.0
N.	Terminal Complex Administration	230.0
O.	Conveniences (Toilets - 10)	39.0
P.	Vehicle Parking (Cycles and Cars)	1845.0
Q.	NURTW (Union Office)	50.0
	Totals	4229.84 m^2

Total - Parking Space = 4229.84 - 1845.0

= 2384.84 m^2

9.10.3 Workshop Complex: Space Analysis

	Functions	Area (m^2)	No. of persons/ Workers	Unit Totals (m^2)
A1.	Petrol Station (Service)		9 Junior Staff and 13 senior staff	28.0
	(i) Office Area	12.50		1153.0
	(ii) Oil Store	12.50		
	(iii) 2 Toilets (male & female)	3.00	General	
A2.	Driveway of Station	1125.0		1125.0
B.	Automobile Shop			
	(i) General Repairs and Turn up	100.0	1 Foreman	382.5
	(ii) Machine shop	40.0	8 Technicians/ Mechanics	
	(iii) Welding/ Galvanizing	20.0		
	(iv) Small tool parts	45.0	1 Automobile Engineer	
	(v) Storage issue Office	35.0		
	(vi) Meter room	15.0		
	(vii) Lubrication stall and Mufler Tyre	63.75		
	(viii) Body and Steam Cleaning Stall	63.75		

Functions		Area (m^2)	No. of Persons/ Workers	Unit Total (m^2)
C.	Vehicle Service Area		1 Foreman	
	(i) Small Vehicle Bays (2)		4 Technicians/ Mechanics	
	(a) With Serving lift bay	35.1	15 Workers	151.20
	(b) Car wash/ serving bay	35.1		
	(ii) Big Vehicles (1)	81.0		
D.	Installation Services			
	(i) Bulk Metering Unit	17.0	3 Foremen	
	(ii) Generator (10 KV Lister Atlanta SV 3)		6 Technicians/ Mechanics	
			Service Engineers	60.0
	(iii) Air Conditioners	10.0	= 10 Workers	
	(iv) Work Area with long tables	15.0		
	(v) Store	18.0		
E.	General			17.80
	(i) Cleaners' Store	10.0	5 Cleaners	
	(ii) Toilets (42 workers) at 25 persons/ toilet.			
	Toilet = $3.90m^2$	7.80		

Summary (Workshop Complex Space Requirements)

	Functions	Area m^2
A.	Petrol Station (Service)	1,153.0
B.	Automobile Shop	382.5
C.	Vehicle Services Area (Bays)	151.2
D.	Installation Services Section	60.0
E.	General	17.80
	Totals	1,764.5

9.10.4 Summary (Hotel Complex Requirements)

	Functions		Area m^2
A.	Guest Rooms		
	(i)	Double Rooms 41 Nos	1439.1
	(ii)	Single Rooms = 82 Nos	3357.9
		Total	4797.0
B.	Services and Administration		
	(i)	Public Space	261.25
	(ii)	Concessions and sub-rentals	221.4
	(iii)	Beverage and Food	674.17
	(iv)	General	461.51
		Total	1618.23m^2
		Totals	4976.23m^2

	Functions	Area m^2
C.	Total Hotel Parking Space =	$2640m^2$
	Overall Totals for Hotel	
	= Floor Area + Parking Area	
	= 4976.23 + 2640.0 =	$7616.23m^2$

9.10.5 Bus and Motor Facility Complex Space Requirements.

	Functions	Area m^2
A.	Driveway Layout (Concourse, Loading berth/space, road way and courtyard) Minimum	4712.40
B.	Lock-up garage (silos) - 129 cars/ mini buses ($20m^2$/car)	2580.0
C.	Lock-up garage for 129 buses/ coaches (13 x $5m^2$/bus)	8385.0
D.	Conveniences - 4 males toilets 700 persons	15.60
	- 2 female toilets 300 persons	7.80
	200 persons/toilet	23.40
	Totals	15,700.80

9.10.6 Auxiliary Facility Complex Space Requirements

	Functions	Area (m^2)	Unit Area m^2
A.	Police Unit		
	(i) Administration and Operation (Officers)		
	(a) Unit head (Inspector)	6.25	13.75
	(b) 2 Officers	7.50	
	(ii) Main Office	12.00	12.00
	(iii) Prisoner/Offenders' Facility		
	(a) Storage Vault	2.16	7.16
	(b) Isolated Cell	5.00	
	(iv) Public Entrance		20.40
	(a) Foyer (with Telephone)	12.60	
	(b) 2 Toilets (male and female) at 3.9m2/toilet	7.80	
	Totals	53.31	
B.	Fire Fighting Unit		
	(i) Apparatus Room (including truck space)	252.00	
	(ii) Fire Officers' Room	15.00	
	(iii) Firemen's Locker/ Washroom (10 persons)	54.00	
	Total	321.00	

	Functions		Area m^2	Unit Total (m^2)
C.	Dispensary			62.42
	(i)	Consultation Room	14.40	
	(ii)	Examination Room	7.20	
	(iii)	Reception Area	3.80	
	(iv)	Waiting room (Visitors)	9.72	
	(v)	Nurses' room (2 officers)	10.50	
	(vi)	Utility and Services Area	3.00	
	(vii)	Store	7.50	
	(viii)	Toilets	6.30	
		Total	$62.42m^2$	
D.	Central Stores			275.0
	(i)	Administrative Unit		
		(a) Store Officer (1)	10.00	
		(b) Store Assistants (2)	15.00	
	(ii)	Store Area	250.00	
	(iii)	Circulation and bay 20% of Store Area	50.00	
		Total	275.00	

	Functions	Area m^2	Unit Total (m^2)
E.	Vehicle Parking		387.25
	(i) Cars (27)	371.25	
	(ii) Cycles (10)	16.00	
	Totals	1098.98	

9.20 Total Floor Space Requirement of the Proposed Inter-City Bus Terminus

Complex		Area (m^2)
(i)	Administrative	2140.20
(ii)	Terminal Building	2384.84
(iii)	Workshop	1764.50
(iv)	Hotel	4976.23
(v)	Bus and Motor Facility	23.40
(vi)	Auxiliary Facility	711.73
	Total	12000.90m^2

9.30 Total Driveway Layout and Parking Space Requirements for the Inter-City Bus Terminus

Complex		Area (m^2)
(i)	Administrative	1674.70
(ii)	Terminal Building	1845.00
(iii)	Workshop	206.25
(iv)	Bus and Maotor Facility	15677.00
(v)	Hotel	2640.00
(vi)	Auxiliary	387.25
	Total	22430.20m^2

9.40 Overall Total Space Requirement of the Proposed Inter-City Bus Terminus.

(Floor Area + Circulation and Parking)

Complex		Area m^2
(i)	Administrative	3814.90
(ii)	Terminal Building	4229.84
(iii)	Workshop	1970.75
(iv)	Hotel	7616.23
(v)	Bus and Motor Facilities	15700.40
(vi)	Auxiliary Facility	1099.99

Overall Total Area of

Proposed Terminus = $34432.11m^2$

= $0.0344km^2$

= 3.3443 hectares

Entire Site Area = 361 x $245m^2$ = $88445.00m^2$

Undeveloped Site (min) = 88445 - 34432.11

= $\underline{54012.89m^2}$

Note: The architect may wish to go levels in the design. Hence, there may be possibility of the total area of land required for the proposed terminus becoming less than the total space required for all the functions. It then means that the total area of undeveloped site arrived at in the calculations above is the minimum.

9.50 Possible Future Growth of the Terminal

There is a high level of optimism, that when the mass transit system (the Federal Government programme - 1988 budget speech) comes into full operation, the number of passengers on each of the routes will increase and with a continous expansion of socio-economic activity in Lagos, there would definitely be increase in the origins and destination trips to Lagos.

Considering this vital issue, this has to be reflected in driveway, garage and waiting room by making their designs very flexible since the expansion of the terminal is most felt in these functions.

9.60 Special Requirements

(i) Funding of the Project

The major cost of construction should be provided by government and some shares may be sold out to the public (partly privatising the corporation). The running and maintenance would solely depend on the directorate and policy making body of the corporation. The Chairman and Directors are to be appointed by the government. It is to

operate as a corporate body, that is profit oriented so as to cater for its existence and for the benefit of the shareholders and government. Thereby, making it financially independent of loans from commercial institutions and grants from government.

(ii) On-Board Services

Some refreshments could be served to passengers when travelling (something similar to airlines) by steward/ hostess. They make up part of the driver's crew. The maximum capacity of each bus is expected to be 55, with 5 crew members and 50 passengers. The composition of the crew members is as follows:

(i) a driver and assistant

(ii) 1 mechanic and

(iii) 1 host(s) and/or hostess(es)

(iii) Nationalisation of Bus Service

With the introduction of Mass Transit system by the Federal Government, it can be said that, the long time advocation for the Nationalisation of Bus Service is coming to reality.

It has since been advocated that, the bus service should be nationalised by enacting an edict or decree to that effect by Federal Government. So that it equally benefits from the'National Cake' like its counterparts, i.e Airways, Waterways and Railways. Instead of the almost dying or dead state of many State Transport Corporations. The Federal Government should provide a standard bus (well equipped and furnished) with a uniform pattern of operation throughout the country, by providing terminals in the major towns. This could be started in stages - probably setting-up terminals, first, in the State Capitals, then, Local Government Headquarters, towns, major villages, etc. Safety programmes and crime prevention measures should be well executed.

(iv) Manpower:

In Lagos, there are many educational and administrative centres that could serve as sources of manpower need for the proposed inter-city bus terminus.

Administrative and Staff College of Nigeria (ASCON) in Badagry, Universities in Lagos State (Lagos and Lagos State),

Yaba College of Technology and other Polytechnics, Police College, etc will to a very high extent provide important and relevant personnel for its continued existence.

(v) Potential

For future growth of the terminal, there is abundance of land in the proposed site. The entire site area is 88445.00m^2 (8.85 hectares) and the proposed undeveloped sited is minimum area of 54012.89m^2 (5.40 hectares). The selected site is free from roadways, railways and water-ways, and the only human activities will be controlled.

CONCLUSION

Movement of man and goods from one place to another is a must, all over the world. Man needs food and shelter and these generate the idea to move.

His movement is inevitable and this has brought along with it associate problems. Problems of urban pollution, traffic congestion, motor accidents, depression, fatgue to mention a few.

Methods used to enhance movement is a challenge. The motor car has been tried in other parts of the world, example U.S.A., as a sole means for man's movement but it has failed. The failure is as a result of its high number which brought urban pollution, traffic congestion, noise, high accident rates, tension, waste and so on.

As man's efforts to alleviate these problems continued, bus was discovered. The world is impressed with bus travel. In comparison with car, bus is more efficient and effective. A prove to this is the fact that various governments, private organisations and individual businessmen in the world lay great emphasis on bus travel. An example is the recent Nigeria Government's

new programme of Mass Transit System in the 1988, Federal Budget by the President of the Federal Republic, General Ibrahim Badamosi Babangida. The programme has since taken off.

The emphasis is on intra-urban and inter-urban bus travel. Bus travel and its mass production is the government's priority in the Mass Transit System programmes. The eividence of this claim is the government's 'go ahead' order to various motor companys to produce passenger buses en mass, example, Anambra Motor Manufacturing Company Limited (ANAMMCO) at Emene is to embark on mass production of passenger buses (National Concord Daily Newspapers of Monday, March 21, 1988, back page).

The acceptance of bus both by government and private concerns will lead to the following:-

(i) Mass transportation of the majority of the populace at a cheaper rate and a larger capaicty per road spaces.

(ii) Reduction in the problem of pollution, conjestion, accidents, fatigue, etc.

(iii) Promotes social interactions.

(iv) Emergence of organised means of travel.

(v) Avoidance of political showmanship for car loans and its economic implications.

(vi) Cuts down government and private concerns expenditure on transportation of goods and services.

It is in the light of the above mentioned that nationalisation of the service is advocated just like its counterparts, the railways and air services. The implementation of this scheme, makes it inevitable, to have bus terminals and stations for effective processing, discharge and transfer of passengers and baggages in order to make it comprehensive, effective and acceptable.

The construction and design of road transport facility buildings have been one of the most neglected and obscure. There have been no architectural considerations and now a sound proposal has been made using architectural design principles.

(i) To alleviate the problems.

(ii) Meet up with desires of travellers.

(iii) Transcend the socio-economic activity of their existing states and correct the erroneous impression that architecture does not play any role.

The proposed Inter-City Bus Terminus is without any doubt relevant to Lagos. It is designed to suit the physical and social setting

of this town and the chosen site in particular. A bus terminus of this nature should be designed for other major towns in the country so that there could be continuity and making the national road network properly linked. This is possible since the road transport system has lion share in transport sector of the economy and transport in turn is the largest of the public sector economy (National Development Plan).

Bus service deserves to be treated with the share of grants so as to give room for mass mobility.

Radial concept is used in this design. This ensures the radiation of the entire facilities from the central point. The central point is the waiting room (the most general part of the complex).

Consolidated system of organisation is used in running the affairs of the terminal. That is passengers, ticketing and baggage facilities of all bus services are housed in the same building but one organization handles passenger, baggage, visitors and cargo for all the services.

In view of the high rate of social problems e.g robbery, in Lagos area, efforts should be made to establish a well organised

safety programme and crime prevention units. This is aimed at introducing confident of safety of lives and property in the users of the terminus.

The proposed terminal comprises of the following 6 sections:

Administration

Terminal Building

Hotel

Workshop

Bus and Motor Facilities and

General Services

Site planning will cover all the sections but the detailed design will take care of Administration, Terminal Building, Bus and Motor Facilities and hotel accomodation. This is as a result of the large scope of the project.

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Table of Illustrations

- National Dailies Illustrative Presentations Road Transportation Problems in Lagos and Nigeria as a whole.
- Travel Pattern Diagram by buses in and out of Lagos.
- Table of distribution of road kilometres by classification in Lagos Metropolis.
- Table of daily traffic variations on Ikorodu Road (7 a.m to 7 p.m).
- Table of vehicle composition - week day (7 a.m - 7 p.m).
- Sketch diagrams on Road Traffic System in Lagos.
- Body heat exchange diagram
- Sketches on international case studies of bus terminals.
- Table on arrival and departure of buses from Lagos Metropolis
- Table of Space Requirements.

APPENDIX (A)

Lagos State Master Plan
(1985-2000) (Page 157)

Extracts

Introduction on Transportation

The basic objectives as set out in the Terms of Reference for the Transport Sector of the Master Plan Project are to assist Government in formulating a coordinated programme of traffic control and management measures. Also, transport policies and regulations, and transport investments which will result in a more efficient use of transport resources and facilities consistent with long term urban development and planning objectives. In general the scope of work for the transport sector of the Master Plan is set out as follows:-

(i) Establish the requirements of a transportation system in which transport facilities are made available to meet consumer demand and are balanced to the greatest extent possible, with regard to the prevalent conditions in Lagos.

(ii) Determine the transport mix necessary to reach this balance and the methods by which it may be achieved.

(iii) Development an Efficient, Safe and Comprehensive Road System, which in satisfying person and goods movement needs, will assist in achieving planned Metropolitan development patterns.

(iv) Develop a public transport system which offers area-wide coverage and service as an attractive alternative to private vehicle users.

(v) Create an administrative structure capable of assuming responsibilities needed to plan, regulate, operate and maintain facilities and services required by private and public transportation; and coordinate policies of all agencies effecting the function and utilisation of the Metropolitan Transportation System.

(vi) Coordinate land use and transportation planning with a view to achieving the maximum economy in the use of resources.

APPENDIX (B)

National Development Plan 1975-1980

Extracts

Long Distance Road Development Plan 1975 - 1980

(i) Lagos - Ibadan - Sokoto - Ilela (Truck A1).
Provision of a lane bridge at Jebba - to ease off conjestion on existing one.

(ii) Badagry - Ilaro - Abeokuta-Kaiama - Yelwa.

(iii) Warri - Benin - Okene - Kaduna - Daura - Kangal (Truck A 2 Road).

(iv) Port Harcourt - Oturkpo - Makurdi - Jos - Bauchi - Maiduguri - Gambom (Truck A3) involving -

(a) Reconstruction of Imo River Bridge.

(b) Straightening of Mile 9 corner, Oturkpo, Alade, Makurdi - Lafia - Akwanga - Jos Road.

(c) Construction of a new 4-lane road bridge over River Benue at Makurdi, Establishment of traffic causis stations - 60 in number.
Installation of weight bridges - to detect over load and some ancillery buildings at points along 1^{o} road.

Road Transport in Nigeria.

7.3 billion naira on transport for 1975-80 plan period. Land transport uses up ₦6.23 billion (85%), ₦545.0 million (7.2%) on air transport and ₦545.62 million (7.5%) on water transports. Necessary to support growth and development of Agric, Commerce, Industry with efficient route of persons and goods around Nigeria. 1962-68 National Plan invested ₦154.3 million on road projects. 1970-74, second National Plan, 1.2 billion was spent on roads by October 1974. The Third Plan Period (1975-80) involves a total length of 30,487 km though only 28,712km are actual.

It was due to the fact that some of the roads are just being projected with asphaltic overlay while parallered carriageways are added for duelling. Main features of Federal roads are:-

(i) Primary Trunck 'A' Network. Includes Pre-taken over Federal Network totalling 14,487 km at the cost of ₦2,519 million. Made up of North-South and East to West roads fromerly the basic grid.
Extracts from 1975-80 Plan Period.
Lagos-Ibadan Expressway; 90 million naira 109 kilometres. Ibadan-Oyo-Ilorin,

Warri - Benin, Kaduna - Zaria - Kano, Onitsha - Enugu, Port-Harcourt - Enugu, Shagamu - Benin and Benin - Asaba Roads. Urban Centres - 451 kilometres of road length at a cost of 87.4 million naira. Use of flyovers to eliminate road/rail crossings. 1950, there were 14,000 motor vehicles and in 1963, 87,000 vehicles. This is a clear prove of increase in travel demand.

APPENDIX (C)

Extracts from Fourth National Development Plan on Transport Sector 1980-85

Transport

Has commended relatively higher investiment funds in the last two decades 1960-80 than any other sector. Thus, periods 1962-86, 1970-74 and 1975-80 respectively constitute one fifth, one third and one fifth of total public sector capital outlays.

Allocation to transport sector under the successive natural development plans since 1962 is presented in the table below. The land mode in successive plans has been commanding lion share amongst inter-modal distribution of investiment in sector, while proportionate allocations to air and water modes have continued to fall except 1970-74 when air mode's share rose. Even within the land transport, there has been historical under-investment in the rail system compared with the road system.

While the transport area is still a purity area, it will not in the 1981-85, consume as much resources in relative terms compared to the past. Nevertheless, Federal Government and its agencies are to disburse ₦6,791.0 million, while the States

and Local Governments, between them, are to disburse ₦3,916.0 million. In essence, it still controls 15 percent of the projected public sector on flay. For the 1981-85 period, the intermodal distributions of Federal Government expenditure in this sector is as follows: Land Transport - ₦5,295.00 million. Air Transport - ₦640.50 million and Water Transport - ₦855.00 million, while the distribution for State/Local Government expenditures are:-

(i) Land - ₦3,796.992 million.

(ii) Air - ₦12.600 million and

(iii) Water - ₦106.624 million Federal Government Allocation, land has 78 percent, while water and air with 13 and 9 percent respectively. The underinvestiment in the rail system has been improved with ₦1.63 Billion allocated to it in the plan period (1981-85) Table 1 below.

Table 2: Capital Programmes by Government and Activities 1981-85 (Transport)

Sub-Sectors		1981	1982	1983	1984	1985	Total
Roads	Federal Government	979.230	1,267.142	844.970	397.492	163.166	3,650.00
	State/Local Governments	246.000	548.175	474.250	333.500	32.075	1,634.00
Nation Strenght co.		1.360	4.146	2.124	1.748	1.622	11.000

Table 3: Total Length of Existing Roads in Nigeria.

Year	Bitumans Kms	Earth/ Gravel Kms	Total Kms
1951	1,782	42,632	44,414
1962	11,053	60,918	71,871
1968	15,200	75.088	90,288
1969	15,758	75,200	90,958
1971	16,122	75,088	91,210
1972	18,109	77,266	95,375
1976	28,242	85,696	113,938
1980	28,632	86,136	114,768

*Excludes Local Government and Intra-farm roads/ tracks.

Programmes and Projects

Federal Government's road network still stands at 30,000 kilometres. Out of these, 17,000 were completed in the Third Plan with a total committment by 1980 of over ₦5,000 million. In the Fourth Plan, emphasis are to be placed on maintainance of existing facilities and upgrading of a substantial part of the 13,000 kilometres.

The principle in charging the Federal road network is the establishment of a national grid, so as to link up different parts of the country as one. Some highlights of the Federal road programme are:-

(i) Lagos - Kano Federal Trunk 'A' road on even standard from Apapa to Kano

(ii) Kaduna - Zaria - Kano, additional carriage is envisaged at a cost of ₦15 million.

(iii) Okene - Lokoja - Kaduna; construction of a Northern South road estimated at ₦17 million.

(iv) Urban byepasses at most State Capitals including other major cities. Estimated cost is ₦69.388 million. Other highlights include general preventive road maintenance in all States at ₦60.258 and World Bank assisted projects at a total estimated cost of ₦219.120 million.

Sunday Times

Transportation system in chaos



IN order that the envisaged economic gains consequent upon the government plans to remove oil subsidy should be better utilised, it is necessary that the Federal Government directs efforts at giving the country an efficient transport system.

The estimated gains of about ₦6.8 billion yearly are, no doubt, very impressive. But it is logical to argue that since the gains are to be derived from a sector closely related to transportation, the most attractive way of reaping the full economic benefits would be to plough it into the improvement of the country's transportation system.

Some Nigerians have contented that they were yet to see in concrete terms gains of estimated ₦900 million annually which would have been accruable from the 1986 removal of oil subsidy.

There might be a point in such argument. Yet it could be possible that the nation has already been utilising the 1986 gains in a manner not easily discernible by Nigerians who belong to this school of thought.

There is something in the offing



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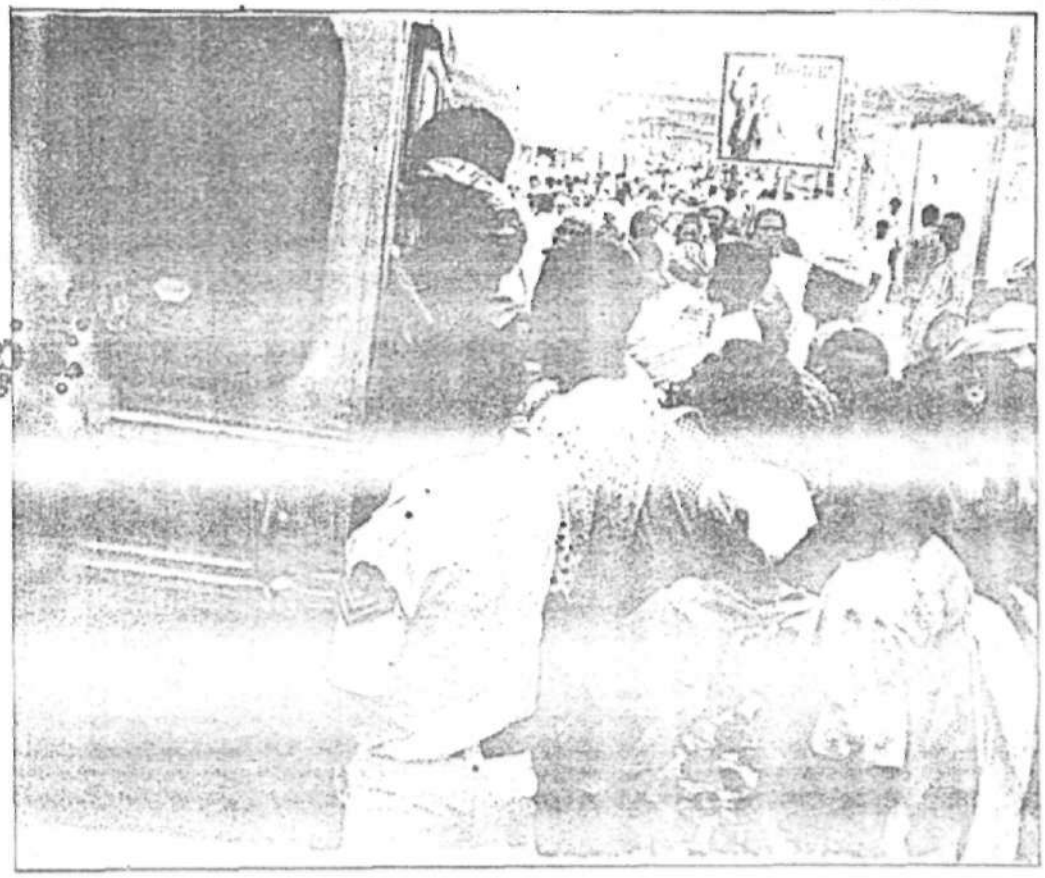
SPOTLIGHT

LAGOS: Hell of the Busstopman

By
Yomi Omotosho
and Biola Olagbami

"In order to cope with the rapidly deteriorating transport services in our cities and towns, government has decided to pursue a vigorous programme of mass road transportation, with particular reference to the enhancement of available passenger buses. The provision made for this programme is the dominant item under the 1988 Special Reflation Package. To ensure its quick implementation and mobilise all domestic capacity to produce the required vehicles, a task force will soon be set up in the office of the Chief of General Staff."

— IBB



IN recent times, the Federal Government, apparently concerned with the economic plight of the country, has harped on the need for all Nigerians to work together to revive the ailing economy.

However, for the economy to be revived, there has to be a functional transportation system. Millions of Nigerians have to get to their places of work many kilometres away from their homes. To expect them to trek such long distances everyday will wear them out before they get to work and consequently reduce efficiency and output.

The same applies to the movement of goods. Foodstuffs have to be transported from farms to the markets. Raw materials have to be moved from their sources to the industries where they are processed into consumer products, before the final transportation to markets for final disposal.

Transportation is thus necessary if economic activities are to be kept alive. Unfortunately however, transportation in Nigeria especially in our cities has been more of a nightmare than anything else.

Lagos metropolis is a typical case study. Its public transportation system has, for a long time now been unable to cope with the population. Some of the commuters make use of the train services provided by the railways, while others avail themselves of the Lagos State Ferry Services and Federal Waterways. But majority of the population depend on road transportation consisting of, Taxis, Minibuses, '*Molues*' and LSTC buses.

There are endless streams of passengers at the bus stops, waiting for buses and taxis that are not forthcoming. Each time a bus pulls up, it is mobbed by a crowd big enough to occupy three of its type. When it creaks away, it leaves in its trail a gloomy crowd, waiting to mob the next 'unlucky' bus.

For as long as one can remember, the number of commercial buses and taxis have never been enough to cope with the [illegible] commuters.

With the present economic crunch however, the issue of road transportation has taken a turn for the worse. Prices of vehicles have hit the ceiling. Spare parts too have gone beyond the reach of transporters. Where they are available, they are very expensive.

As such, the situation has remained the same, and there is no end in sight.

The RTEAN appealed to the Lagos State Government to expedite action on the proposed supply of some parts and tyres, with a view to 'waking up' all the commercial vehicles which are presently lying useless at mechanic workshops when they should be on the roads carrying goods and people.

It is only hoped that something would be done fast to alleviate the situation because as said earlier, an inefficient transportation system does not augur well for a nation which is striving towards economic recovery.

Continued on page 8

OF MASS TRANSPORTATION IN NIGERIA

Excerpts from a paper presented at the First National Seminar/Workshop on Mass Transportation organised by Anambra State University of Technology recently:

THE services of the waterways can only be restricted to the coastal areas, while the Railways would require a complete appraisal and at least 10 years to develop properly.

In this area there is need to identify our needs for Railways. No doubt we need it for the transport of goods and mass transport of people between large towns and within. This brings to mind the Lagos Metro project, (which is ideal for large cities) and particularly for those of which the layout is a linear development which is the case of Lagos. While I do not wish to interfere with the position of things, it is still evident that the layout of large cities can effect the system. This should not affect this laudable project which could solve the problems especially in Lagos. Road transportation is left with a large avenue to take care of especially for intercity and interstate services.

Mr. Chairman, it is very clear that for the next 5 to 10 years, the only way to properly cater for transport of passengers is to develop efficient Road Transport system with all types of solutions. To be efficient there are only 2 families of solutions: either importation of large fleets of few have hardly any interest at all.

I will now demonstrate very easily the argument for proper climate for industrialisation. We have recently examined how PAN would have to invest for the local production of the J5 body and specific parts, while many other components are already standard or similar to other PAN models already produced. Minimum level of investment is million dollars. Based on 6 years for 10,000 vehicles (which is reasonable) it represents a minimum of 8 per cent overcost although investment would have still been minimal. If you take into consideration local condition of production, environment and volume of specific parts and components, you immediately get my point that 15 per cent protection is minimum while 20 per cent is commendable for our type of products. Having said this it is reasonable to ask whether we should make etter if the manufacturing is done in Nigeria.

Range of Road Transport Vehicles

In Nigeria you can find all varieties of vehicles ranges from taxis to buses with 45 seats or more and often with AC or not. All are used in small and large cities for inter-state, short distances or long distances, private use or state organisations. It means that there is room for all model types if carefully selected.

It is well known that it is which is very essential for a new vehicle but not as investment cost. Our objectives are to meet a minimum of production of 10 vehicles per day per model, and a ratio of less than 4 (price N) if not A/C, and around 5 for vehicles with A/C.

Industrialization

Small and large buses are manufactured in many series in Western countries. For example Hiace Toyota are being produced in Japan at 1,000 per day and in Europe J5 is made in association between 3 main European manufacturers, Fiat-Citroen and Peugeot at 500 per day. Up to date machines and techniques are used. For example robots and transfer lines are used. While I am not expecting this development in Nigeria, I believe it is possible to implement very convenient investments now. The right climate for investment and reasonable protection must be made available to industrialists.

Without protection it is difportation.

MANAUFACTURE OF J5

First Phase — is completed — in all passenger area equipment (seats), upholstery, floor, airconditioning etc).

Second Phase — will be in force around end of 1988.

They include:-

— engine manufactured in PAN (concluding process in October) for cars and buses same standard.

— brakes wheel rims and foams — use of locally manufactured — Radiators Tyres, paints Electrical components Batteries Seats Harnesses .....etc.....

Third Phase — body and stamping parts. The Second Phase requires the achieve-

By
DANIEL LANGE
Managing Director, Peugeot Automobile Nig. Ltd., Kaduna.



ISSUES

ment of less protection for importers of similar commercial vehicles — i.e. 10 per cent as against 5 per cent — necessary at once It means FBU taxed at 15 per cent and CKD taxed at 5 per cent.

The Third Phase which is the most costly presupposes an improved protection at a minimum of 15 per cent or better 20 per cent. This protection should apply to all commercial and special vehicles. There is no reason at all to give special treatment for buses and leave other commercial vehicles partly protected or not protected at all.

Finally, I would like to conclude by making some personal comments. It is essential for Nigeria to have a reduced number of manufacturers who are dedicated to invest or better to complete in-

NATIONAL CONCORD THURSDAY, MARCH 3rd 1988

The challenge of mass transportation

By TOPE AKINYEMI

PUBLIC transportation nation-wide no longer enjoys its old, though not so good status. It has indeed gone as bad as to attract the Federal Government's attention. Even though it is now a national problem, with the Federal Government becoming responsive to people's aspirations on the solutions to it, the gravity varies from one state to another.

Ondo State in particular is one state which one can say with good authority, has no notable good roads. It has long suffered from this problem. The major effects of this grave problems have been a reduction in the lifespan and number of vehicles on the roads. A huge maintenance bill and very high operating costs, in turn, results. Commuters, therefore, are saddled with paying higher fares, even if through the nose. This, no doubt is an unhealthy situation viewed against the background of the wealth of people in the state.

The problem, as partly mentioned above, is twofold. The first one is the inadequate road network and the bad condition of the existing ones. Second, is the limited number of road-worthy vehicles plying the roads. If we now go ahead to consider these two sides of the problem within the framework of the proposed mass transit programme of the Federal Government, it would become clear that Ondo still needs a lot to get onto a sound and firm footing in public transportation.

In the main, the N700 million Federal Government's mass transit programme focuses on the provision of mass transport vehicles, which shall be distributed to the various entities that will run the business. Going by this plan, Ondo State would be supplied its own share of the Federal Government purchased buses.

One question, or two, would readily come to mind. How would this fleet of vehicles be run at a profit? What sort of organised body would so profitably run it? Answers to the questions may not be far-fetched, considering the fact that many experts would be ready to offer good advice if consulted and if their recommendations are followed.

The other big question not directly related to the issue of vehicles, is the state of the roads. Sure, there aren't enough roads in the state. Majority of the existing ones are in a state of disrepair in most of their lengths. The Federal Government roads in the state, which one would expect to get prompt attention are incredibly bad. Added to this is the inability of the state to fund the construction of new roads and the repair of those still existing, on time, before they go completely bad.

Few examples would suffice. The Ado – Ikare, Ikare – Owo (now being resurfaced) and the Ido - Omuaran roads are not in good motorable condition. Other roads in the state have received little attention. In fact, the entire Akoko area of the state has no road worth being called the name, but all stretches of potholes, rills and gullies with little level faces between. The direct result of this is that commercial activities in the area, which could have been a booster to the cosmopolitan Ikare, are not encouraging to people that love to trade there.

The story with other parts such as Ekiti and the suburb of Owo is no better. The totality of the situation of roads in the state demands that the focus of the state on the mass transit programme should be far beyond the aquisition and profitable management of the fleet in theory. The fact is that the fleet has to be operated on good roads, lest they get dilapidated so soon as to bungle the whole essence of the programme in the state. That won't be good in any way. Therefore, the issue of roads has to be addressed with the same, if not more, urgency and priority as the provision of vehicles.

There is no doubt that the lean resources of the state cannot effectively cope with extensive road construction and repairs as is needed right now. But that is not and should be the dead end. The Federal Government should be lobbied and pressurized by the state authorities, to execute with dispatch its road project in the state.

The Federal Government effort at opening up the rural areas is laudable and commendable. But then, there is an essential step to it, in order to make possible an effectively co-ordinated network of feeder roads and highways in the state. These roads just have to be connected in order to make meaningful impact.

This is not what the state authorities cannot get the Federal Government to do, even in face of the latter's apparent lean resources, too. What matters is for the state to impress on the Federal Governemnt of the urgency and necessity for caring for the roads. It is unlikely that Federal Governemnt would not oblige. This done, the hope for an efficient, effective and lasting transportation system and self-sustaining road transport businesses would not remain a dream.

The focus up to this point in this article has been on roads and motor vehicles. This is because of the paramount role it plays, above other means of transportation in the state, and even the country at large. Air transportation in the state, records show, is unprofitable to the Airways. So the Akure-Lagos route has been on and off with changing management decision in the Nigerian Airways. One only hopes that Bajowa's new challenge would put the route into use again and perhaps more importantly, and a factor a patronage, at affordable rates.

In the riverine areas, water hycinth, that "indomitable" sea weed is reported to have crippled not only the people's transport and hence commercial activities requiring mobility, but also suffocating life out of them. It would be heartening and pleasing if the Federal Government comes to the aid of people in the area.

Last but not the least, and about what is least mentioned about the state: the absence of a railway line. If one is made to pass the state and jojn on both ends to existing north-south lines, it would form a good medium for transporting heavy goods and the mass of the people in the state.

Transport goal yet to be achieved"

By PAUL OGUNDIPE

DESPITE the huge investment in the transport sector of the Nigerian economy, Nigeria is yet to achieve its target of fast and economical transport services, the Minister of Transport, Dr. Idika Kalu said in Lagos at the weekend.

Dr. Kalu was speaking at a luncheon party organised for top executives of transport sector by the Nigeria chapter of the Chartered Institute of Transport.

Recounting allocations to the transport sector in the various National Development Plans, Dr. Kalu said in the 1962-68 Development Plan, the transport sector got 19 per cent of the total plan investment, 23 per cent in 1970-74 Development Plan, 22 per cent in the 1975-80 Plan, and 15 per cent in the 1981-85 Development Plan.

"However, inspite of the huge investment in the sector, it is fair to say that we are yet to achieve the expected target set both in the 1965 Government White Paper on the Standford Research Institute Report on Economic Co-ordination of Transport in Nigeria and those expressed in the successive National Development Plans which emphasised ensuring the availability of fast and economical transport services".

He said the inauguration of a committee in 1986 to draw up a dynamic transport policy for the country was borne out of the need to change "this trend".

Government decision to revitalise and expand the nation's urban mass transit services, Dr. Kalu said was in appreciation of the fact that the major urban centres were experiencing acute transport problems.

The Transport Minister disclosed that the Federal Government on Thursday set up an implementation machinery on the mass transit system.

THE PUNCH TUESDAY, MARCH 29th 1988

What commuters say

THE effeciency or inadequacy of the transportation system in a society has a direct effect on the commuters. This being so, The PUNCH sought the views of commuters on the road transportation situation in Lagos. Many commuters shied away while some agreed to make their views known. Most of them are of the view that the number of commercial vehicles especially buses, is insufficient.

Mr. Lucky Pemu, adverts department, Vanguard: "Shortage of vehicles, especially buses is primarily due to the increase in prices of spare parts. This has made it difficult if not impossible for transporters to repair damaged vehicles or buy new ones. Thus, there is an inadequate number of commercial vehicles."

Another obstacle to an effective transportation system in Lagos is that of population migration. There is an unending influx of people from other areas into Lagos metropolis, causing overpopulation without a corresponding increase in the number of vehicles."

Mr. Pemu also suggested that the state government should increase the number of LSTC buses, but should strive to maintain existing fare. In effect, he believes government participation in transportation should be statutory i.e. government should not be out to make profit.

He also called for an improved network of roads and the development of other forms of transportation.

Mr. Femi Akinduro, a private driver who lives at Ogba had this to say: "Buses are scarce". Asked what government can do to improve public road transportation in Lagos, he said "The LSTC should try and get more buses to complement private commercial vehicles. It is not the fault of

Anthony Village echoed the same verdict on commercial vehicles. "There are not enough commercial vehicles." He went further, "I think this has to do with the reduction of money in circulation. If there was enough money in circulation, the problem of buses and taxi breaking down without being repaired would not arise at all."

Mrs. Olamiju, a teacher believes that the public transportation in Lagos is grossly inefficient. "Government should try and provide more buses and should lower the prices of vehicles so that private transporters can participate. Right now, prices of vehicles and spare parts are so high and many vehicles have been grounded, thereby leaving commuters stranded. In fact, many car owners have been forced to ground their cars and join the already long queue of commuters at the bus stops because it has become rather expensive to maintain them."

Miss Sangowawa says I think companies should find ways of providing staff buses to convey their workers to convenient spots."

Gani is a nineteen year-old trainee mechanic. He sees the problem of transport both as a commuter and a mechanic.

"It is now very expensive to repair vehicles. A lot of car owners simply park their vehicles due to lack of spare parts. Everything is expensive and salaries are not increasing. People simply give up their cars for buses and taxis. Most of the time, I walk to wherever I have to go rather than wait hours for a bus."

"Some owners bring their cars here and leave them for many months because there are no spare parts and where they are available, there is no money."

Worthy of note is the fact of the city's population go there to work.

A taxi driver, observed that it was the simple law of demand exceeding supply; the highest bidder goes home with a grin on his face.

Mr. Albert Soyinka, financial secretary of the Alhaji Masha street branch of the Lagos State Taxi Drivers' Association notes however that vehicles are available but commuters are not so many these days.

"It is true that some of us prefer to stay in parks for our passengers to come in there. This lessons the wear and tear on the vehicles."

Most taxi drivers spoken to also harped on the exorbitant prices at which they have to buy parts.

Said Azeez Omotosho, "Two years ago, a half engine cost between two and three thousands naira, it now costs N9,000. We don't mind paying the exorbitant prices if the parts are not inferior."

Tribune of Monday December 28, 1987 quoted Governor Olurin as saying that commuters will smile come 1988. This was because of an order which had been placed for 200 buses.

"These buses, "Mr. Soyinka further added, "Will be sold to the few rich who will merely act as middlemen. It will never get to the drivers who will use them as transport buses directly.

The accusation may not be true but only the hands into which the buses go into will determine that when the time comes.

A drop in the LSTC now costs 20k as against 10k. The express journey however still remain 50k.

A driver, who refused to identify himself explained that he see no reason why the other buses should not charge 50k for express routes along side LSTC.

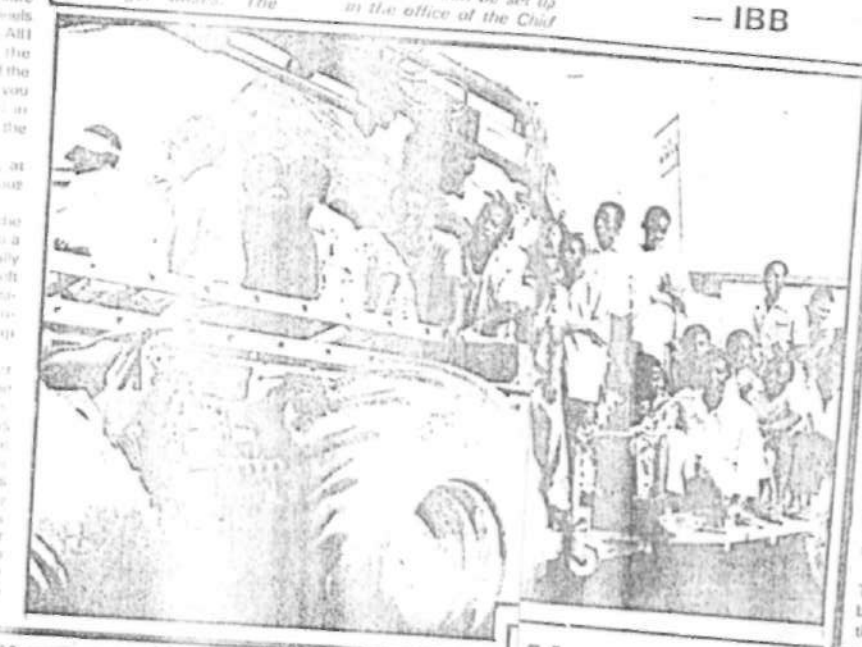
The Lagos example

Urban Mass Transportation

"IN order to cope with the rapidly deteriorating transport services in our cities and towns, government has decided to pursue a vigorous programme of mass road transportation, with particular reference to the enhancement of available passenger buses. The provision made for this programme is the dominant item under the 1988 Special Relation Package. To ensure its quick implementation and mobilise all domestic capacity to produce the required vehicles, a task force will soon be set up in the office of the Chief of General Staff.

The impact of government's decision on this important issue of mass road transportation should be felt early in the year.

— IBB



Oladeji Adebowale is a twenty-nine year old technician. He has not found a job since he left school about three year ago.

"I am no longer trying to get a job. I don't see myself taking any offer I get now. Driving every night is now part of me."

The "*Kabu-kabus*" do not only run within the city, they ply inter-state routes too especially on weekends.

Bisi Oyeyemi, a teacher, comments, "You are not sure if the guy behind the wheels is offering you a lift or not. All simply do is to shove the money at him at the end of the journey. Some guys tell you they simply 'lend a hand in trouble' while some take the money.

"I don't blame them, at least, it is more prestigious than stealing."

The almost overused cliche goes "What a man can do a woman can also do (usually better.) Women are not left out of the *Kabu-kabu* business. They are now a common feature along Alhaji Masha and CMS routes.

According to another commuter, Mr. Oshifeso, the most painful period he experienced as a commuter is when commercial vehicle drivers go on strike. "At one time, you will pity commuters as they struggle for every type of vehicle (trailers and buses inclusive) to take them to their destinations." He appealed to the government to remedy the situation because "we masses are suffering".

Subsidise prices — RTEAN

The Road Transport Employers Association of Nigeria, RTEAN is not pleased with the present hassles being faced by have broken down for months because the prices of spare parts are so exorbitant these days.

coming.

A peugeot 504 GR which

We are not to bla

THE PUNCH met "Dr." J. A. Olaoye, secretary of the Lagos State chapter of the National Union of

five years back "Before, within half years of

Fa

ALTI widely subsidy is yet to observed have go fares o Example From Grove w 10k, son cal bus From Pa (10k). Oyingbo from O (10k). I commute spent 5(which sh cost only In sir Ikeja wh 20k, now same goe which h from 10k The Secretary Branch o his union ily appre fares He the few did so th have bee frustratio by expen and the profit, no to put together. The Transport buses hov their regu

EXTRACTS 1.7

WHY WE HAVE PRODA —Minister

From CHIKE ABBEY, Enugu

THE Projects Development Agency (PRODA) Enugu, Anambra State, has been officially commissioned by the Federal Government to develop and produce tri-cycle that would be cheap enough for rural dwellers.

Industries Minister, Lt-General Alani Akinrinade (retired), made this known in Enugu while exchanging views with the state governor, Col. Robert Akonobi, during a courtesy call at Government House on Wednesday.

He told Governor Akonobi that he would visit the agency in the course of his stay in Enugu to see how far they had gone in developing small utility vehicles.

The minister said that he would also use the occasion to ask the institution to help in manufacturing industrial machinery for small-scale industries.

Lt-General Akinrinade also told Governor Akonobi that he would visit the Anambra Motor Manufacturing Company (ANAMMCO) at Emene, to see how far they had gone in assembling the buses for mass transportation system proposed by the government.

He announced that the Federal Government had earmarked N10 million as matching grant for the development of infrastructural facilities and industries in local government areas.

Earlier, Governor Akonobi had appealed to the Federal Government to assist the state government in its efforts to industrialise the state.

He told the visiting minister that the state was concerned about the dearth of industries and needed the assistance of the Federal authority to rehabilitate existing ones and the establishment of new industries.

Governor Akonobi lamented the plight of ANAMMCO and the Nigerian Cement Company at Nkalagu which, he said, needed rehabilitation.

He disclosed that lack of some basic industries was militating against the rural development programme of the state and called for urgent Federal Government's attention.



● *Lt-Gen. Akinrinade (rtd)*

NATIONAL CONCORD THURSDAY, FEBRUARY 17th 1988

THE PUNCH, MONDAY FEBURARY 1st, 1988

EXTRACTS 1.8

Mass transit panel inaugurated

By FEYI SMITH

VICE Admiral Augustus Aikhomu has inaugurated the Task Force on Mass Transit System for the nation with an eight-point assignment for the body.

Performing the ceremony at Dodan Barracks, he told the members that the emergence of the task force was a crystalization of the decisions of government to revitalise and modernise the urban mass transit services.

He told the 11-man panel that government would have moved closer to its objective of the provision of a workable and efficient mass transist system for the country if the panel members addressed their minds to the following.



Dr. Kalu I. Kalu
Transport Minister

* Review existing studies and recommendations on the introduction of mass transit system in the major urban centres in Nigeria.

* Examine the relevance and scope of various transportation modes in the various urban locations with a view to utilising them as important elements in the mass transit system.

* Consider the optimum strategy for improving mass transit infrastructure such as roads, rail and waterways.

* Articulate an efficient arrangement for the procurement and management of mass transit vehicles and other equipment.

* Study the existing regulations governing the use of the railways, waterways and urban roads, including the right of way for mass transit vehicles.

* Advise on the establishments in strategic locations in the country.

* Liaise with all appropriate bodies such as transport owners' associations, vehicle manufacturers and assemblers and other transport unions.

* Advise on the allocation of funds from the mass transport programme budget to finance domestic construction of mass transit vehicles and crafts.

To facilitate the job of the committee, the Chief of General Staff said the committe, where it deemed necessary, could set up specialist sub-committees with the transport sector/finance specialist to facilitate its

LAGOS TURNS 'HELL'

••• As the heavens open up

THE city of Lagos has been turned into a place of misery and nightmare for its millions of dwellers following the incessant rains that have beseiged it in recent times.

By MIKE AWOYINFA with bureau reports

All over the city, from the affluent surburbs of Victoria Island to the shanties of Mushin, Ajegunle and Agege, it is one horrifying story of how the rains have virtually held the city hostage — with people unable to pass the roads they used to ply, people unable to enter their homes because of flood.

The sufferings of the people of Lagos have reached an all-time high with motorists and pedestrians having to wade through mini-lakes formed by the rain, tarred roads badly battered and reduced into gullies as if bombs were dropped on them.

Many car owners can no longer pack their cars in their homes because the place have been taken over by water. Several buildings and vehicles all remain submerged in deep pools with no one to come to the rescue.

On the roads, motorists try to dodge the potholes and gullies but they end up with the frustrations of damaging their vehicles as they avoid one pothole only to run into another.

The rains have also arrested traffic causing motorists to stay for hours on the road, moving at snail pace.

Commercial drivers have hiked their fares in some places and the queues and chaos at the bus-stops have grown larger with people soaked in rain and begging helplessly for a ride.

Our reporters who combed the length and breadth of Lagos came up with more ugly pictures on the plight of Lagosians as the rains pour in on them day and night like an avalanche.

Lola Omikunle reports that Agege is a sorry sight where most roads are punctuated with deep and wide potholes which have already exposed many vehicles to accidents.

Many motorists can no longer use the first bridge along the new Abeokuta expressway because of a gully which appears to have cut off links with the bridge. Most people now prefer using the second bridge so as not to damage their vehicles.

The names of streets badly damaged or flooded in Agege are too many to be counted, reports *Hamzat Balogun*. They include Dopemu Road, Bashorun, Samuel Ajayi and Unity Streets, just to name a few.

At Isolo, *Jimmy Babalola* reports that the two communities of Egbe and Ejigbo have been completely cut off from each other due to heavy flooding of the main road linking them at different points.



Typical Lagos road, courtesy of the rains

linking Mende village to the Maryland byepass on Ikorodu Road is in a terrible state of disrepair.

The situation in Oki lane is worsened by the factory waste from the Nigercafe Coffee making company which freely empties on the road without proper drainage.

Among the numerous bad roads in Ojota are Kujore Street, Doyin Omololu, Abayomi, Olabisi, Gbadebo and Alhaji Amao Streets.

Here, it was noticed that although government had dumped tipper-load of laterite on some roads, the effect of flood on them has made them sloppy and almost unmotorable.

At Ketu, it was the same old story of impassable roads dotted with holes in every part — streets like Ikosi, Jimoh Balogun, Salawa, Taike, Adenuga and Funmilayo are nightmares for motorists.

Mafoluku area of Lagos is the story of roads badly eroded, water-logged and impassable. There are places people have to hop into their homes or wade through murky waters. And there are tenants with basins in hand trying to "eject" from their homes the invading water.

Ewaen Osarenren reports that at Majidun village along Lagos-Ikorodu Road, after Owode Onirin (the second-hand motor spare parts market) the whole village has been submerged in flood and residents have devised rickety

Continued on page sixteen

EXTRACTS 1.9

SUNDAY NATIONAL CONCORD SEPTEMBER, 27th 1988

Caution on mass transportation

By
DEQBA OMISORE

BEFORE the Federal Military Government committed itself to mending the deteriorating transportation system in the country with its special reflation package of ₦700 million for the transport sector this year, there had been general fear about total collapse of road transport services before the end of the present regime. This was in view of the high rate at which passenger vehicles got off the nation's roads everyday due to damages, lack of spare parts and hike in the prices of new vehicles.

With the advent of the Structural Adjustment Programme (SAP) under the present military administration, the prices of private and commercial vehicles rose sharply above the purchasing powers of the average Nigerian. The smallest car in the country two-door Volkswagen Bettle quickly rose from about ₦10,000 in 1985 to about N30,000 before it was phased out of the Assembly Lines by the Volkswagen of Nigeria Limited last year. And due to import restrictions under SAP, there was scarcity of spare parts for all brands of vehicles used in the country. Consequently, there was sudden hike in the prices of available spare parts and transporters had to maintain their fleets with tears.

Beside mechanical faults, the interior of passenger buses and taxi cabs plying the nation's roads looked ugly and filthy with tatered seats. In most cases, passengers sat on bare plank or iron bars which pinched their bodies and tore their dresses. Majority of such mechanical contrivances no longer have side ventilation glass, and this also exposed passengers to weather harzards during the hot and rainy seasons. Their exterior outlook was not at all better. Lack of maintenance was also clearly visible on their doors and boots as they no longer close firmly and could thus endanger the lives of passengers.

Also due to frequent pannel-beating of their bodies and chasis, as well as replacement of damaged engine parts with improvised or adulterated ones, majority of available passenger vehicles had lost their road-worthiness and became coffins on the wheels. Any slight negligence on the part of their drivers either resulted to sudden breakdown on the roads or fatal accidents. Yet, commuters rushed to have their seats in such vehicles and even paid more for uncomfortable journeys.

In the past when the prices of vehicles and spare parts were normal and very easy to come by, commercial vehicles in deplorable conditions were sent off the roads by Vehicle Inspection Officers (V.I.O) for necessary repairs and were not allowed back on the roads until they were tested and found fit to ply the highways again. But under SAP, no V.I.O had the guts to send any vehicle off the roads simply because it was not properly maintained. The government itself knew that doing so would complicate the mass transportation problems and eventually halt economic processes in the country.

The huge investments which the Federal and some State governments have made in mass transportation this year no doubt testified to their sensitivity to the problems and plights of the common citizens who go in public transport to their destinations. Three states — Lagos, Bendel and Kwara — have been in the fore-front with the establishment, before now, of their respective transport corporations. Oyo State is following suit this year with the establishment of its Trans City Transport Company (T.C.T.C.) and it is expected that more states will join the queue as transportation problems cry for attention in their cities and urban centres.

Nevertheless, there is the need for caution in order to make government's investments in mass transportation schemes viable. With the benefit of hindsight no public utility corporation ran with the civil service mentality has operated profitably in this country. Hence the general demands for the privatisation of unviable public corporations for profit orientation. The various state governments should therefore encourage their transport companies to operate on pure commercial basis and generate adequate revenue to sustain their operations effectively. Any temptation to grant them annual subventions from the public treasury should be resisted.

The mass transportation schemes of the Federal and state governments must also be purely complementary to the existing private transport system rather than paralysing private investments in the transport business. The main objective must be to force down transport fares on all routes and encourage private owners to put their vehicles in good shapes for the comfort of their passengers. Public transport corporations should also not engage in unhealthy rivalry which is capable of knocking private transporters off the business, since such situation will not only compound unemployment problems, but also eventually backfire on the commuters whenever government drivers have cause to embark on trade dispute with their employers.

It is not enough to run government's transport companies outside the civil service culture, but the general public must also be properly educated through adequate public enlightenment on the need to obtain official tickets for the fares they pay. This will minimise oficial fraud among government drivers and conductors and also channel appropriate revenues into the government covers.

Since the state and local governments have the responsibility of tackling the problems of mass transportation in their areas, it is not the business of the Federal Government to run any transport service. It is therefore expected that, apart from its reflation measures as affecting the transport sector, the Federal government should also encourage and assist all the state governments financially to run their transport companies effectively.

NATIONAL CONCORD SATURDAY JANUARY 16th, 1988

MOTOR PLANT PLANS MASS BUS PROJECT ...At Emene

NATIONAL CONCORD, MONDAY MARCH 21st, 1988

EXTRACT 1.11

ANAMBRA Motor Manufacturing Company Limited (ANAMMCO) *will soon embark* on mass production of passenger buses.

The company's plant at Emene, near Enugu, will handle the serial production of buses scheduled to take off by the end of this month.

According to the ANAMMCO's managing director, Dr. Hans-Juergen Ahlbrecht, the bus project will take-off with inter-city and city Mercedes Benz with 47 sitting capacity and 43 sitting (40 standing) capacity, respectively.

Transfer

Dr. Ahlbrecht said that the nation stood to benefit immensely from the bus project more especially in the areas of road mass transportation, transfer of technology, job creation, local content development and utilization.

"The material for the interior trimming and manufacture of seats will be completely sourced locally," he said.

Dr. Ahlbrecht also said that the manufacture of fibre glass elements of the buses would either be taken over by ANAMMCO or handed over to local manufacturers.

He, however, said that body parts of the buses, would initially come from Mercedes Benz of Brazil, Mercedes Benz of Argentina and ANAMMCO's foreign partner—Daimler Benz of Germany, until such a time they could be manufactured in Nigeria.

By TUNDE FABUNMI

Semi-finished products for the manufacture of steel structures of the bodies, Dr. Ahlbrecht said, would also be imported from Germany, "because steel and flat sheets are not yet rolling out from the Nigerian steel plants."

ANAMMCO, a reputable truck builder is diversifying it to bus production, apparently to have a feel of Federal Government's huge investment in mass transportation.

The mass transportation programme which is to gulp ₦700 million was the core item under the ₦2.5 billion "Special Reflation Package" announced by President Ibrahim Babangida in his 1988 budget speech.

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Features

Continued from yesterday, being the conclusion.

Mass road transportation system guidelines

Handling bus operator crew effectively



★ A meandering queue of bus users in the rain. IN LAGOS

By
Dr. Olukayode Oluduro
Transportation Specialist

MANPOWER:

***The staff strength must be within the 5, 1.5 and 0.5 corporate ratio guidelines, i.e, Traffic 5, Workshop 1.5 and others 0.5.**

***Designations of personnel must be reviewed to reflect the nature of job and gradual vertical ladder of progressions.**

***The concept of uniformity in designation of officers below the supervisory grade must be practised.** Thus the designation of Driver, Regulator, Conductor, Clerk may be eliminated and substituted with "Bus Operator", e.g.

Bus Operator (Driving)
Bus Operator (Conducting)
Bus Operator (Traffic Administration)
Bus Operator (Regulating)
Bus Operator (Commercial)
Bus Operator (Planning)
Bus Operator (Bus Washing)

*A corps of intelligent corps of Supervisors must be developed to control ground and line operations.

***An enlightened, aggressive and marketing oriented officer must be recruited to execute the commercial operations.**

***Talented and resourceful statisticians and planners must be recruited to execute the planning and research works.**

***The following designations and abbreviations with the accompanied grade levels will be introduced:**

Operations Manager (OM), Traffic Manager (TM), General manager (GM).
Depot Manager (DM)
Controllers
Principal Transportation Officer.
Senior Transportation Officer
Assistant Transportation Officer.
Traffic Superintendent
Chief Bus Operator
Traffic Supervisor
Bus Operator

*Salary adjustment and upgrading of crew must be made to attract and retain the crews. Entry point must be streamlined to the comfortable grade level 05. Drivers must be on special grade level outside civil service salary grade.

*The sevices of a Counsellor may be engaged to do counselling and guidance to the crew at the corporation.

*Cheap labour but extensive system through the use of undergraduates during vacation periods and the youth corps members should be explored and utilized to supplement shortage of skilled staff and offset overhead cost.

TRAINING:

***A new curriculum must be designed to reflect levels of staff and their functions.**

***A review of the existing training syllabus may be made with a view of producing a broadened new training programme which will reflect the human, social and economical aspects of their duties. Emphasis should be placed on general knowledge, map-reading, report writing, observation techniques, elementary vehicle maintenance procedures human physiology first aid, form filling, elementary preventative fire-fighting, public relations, counselling, school bus administration, trouble-shooting and accounting.**

***A written and oral driver's test must be given periodically to the Bus Operators (Driving).**

***Periodic physical test including eye and nerves test must be conducted on both the conducting and driving crew.**

***Behind the wheel (BTW) tests must be conducted every year for the driving crews and all the officers of the division.**

***A special first aid, fire drills and school bus training programme will be conducted for crew members as well as other members of the corporation.**

***A tourist guide programme may be initiated and introduced for the crew members of the corporation on special services.**

***The use of external resource personnel may be encouraged for achieving the training programme objectives and targets.**

***Inter-agency, and international exchange training programmes may be initiated for all levels of personnel in the Corporation's division.**

*** Each state must have a Driving Range.**

WELFARE

***Adequate uniforms and kits must be supplied to crews and officers.**

***A uniform outfit must be designed for the division;**
- Bus Operators (Driving and Conducting)
- Supervisors
- Traffic Officers
- Chief Bus Operators
- Workshop crews.

***Programme for uniform cleanliness must be launched.**

***Personal identification cards and name/number tags must be provided for all members of staff of the company or corporation.**

***Medical attention and prompt official intervention must be paid and provided for the crews in case of emergency and occupational hazards.**

***Causes of absenteeism, surmleasness, alienation and other psychological traits among the crews must be investigated and solutions devised.**

***Vigorous efforts must be geared towards provision of good and adequate office accommodation and facilities, secretarial materials and other essential equipment must be provided for the division.**

***Patrol cars and Towing Vans equipped with communication facilities must be provided for the Depot Managers, Ground Supervisors and Commercial, Planning and Workshop Officers to assist them in their monitoring and implementing exercises.**

SECURITY:

***Fire extinguishers must be provided on each bus, all other vehicles, and also at every office at the depot.**

***A fire van equipped with adequate fire equipment must be provided at each main depot.**

***Mutual services by the State Fire Agency and other public or private fire services, e.g., Airport, Hospital, Industrial Plants, etc., must be explored.**

***Breakdown or disabled vehicles on line must be watched by agent guards, or with the cooperation of the police or private security personnel with dogs.**

***Security guards must be provided at the Depots and Garages at all times.**

*** Security personnel must control the movement of buses and take charge of the gates.**

***Insurance cover must be provided for the buses, the staff, the buildings and other assets at the Depots.**

*** A good security unit must be established and well-equipped in terms of human and non-human resources.**

ENGINEERING:

Engineering staff should be in the 5, 1.5 to traffic staff. Engineering services, through a systems-support, must be organized and geared towards the establishment of preservicing, maintenance culture, management control, training, documentation and rehabilitation.

*** Adequate system of replenishment of spare parts must be practised.**

*** Effective supply of spare parts both to the main and mini-depots must be maintained.**

*** Spare Tyres and tyre replacement policy must be streamlined both at the depot and on line.**

*** Routine maintenance and minor repairs must be standardized. Three echelons of maintenance must be practised Terminus, Depot, Central Workshop.**

***Policy on cannibalization must be written and followed to the letter.**

*** Pre-service of new vehicles must be done according to manufacturer's specifications or guidelines.**

*** Rehabilitation of buses must be done according to written policies. Industrial rehabilitation of wrecked fleet must be explored.**

***Engineering Stores must be controlled effectively.**

***Elementary maintenance training should be provided for the lower cadre of the Engineering Section and traffic department.**

*** Provision must be made for the position of Engineering Services Manager to be assisted by a Chief Engineer and a Service Engineer. More concentration must be on recruitment of mechanics and superintendents rather than senior officers who will only man the office without going to the Workshop or the field.**

*** Arrangement must be made with manufacturers of the buses purchased to provide a competent stand-by Engineer to the Company or Corporation as a back-up after-sales service.**

***Good records of repairs, servicing, refurbishing, etc. on each bus must be kept efficiently and periodically inspected.**

***Competent mechanics must be appointed to accompany vehicles on special and long distance service.**

*** Out-of-station allowance and tools must be provided for any engineering staff who accompanies buses on long distance.**

ADMINISTRATION:

Administration staff, including finance, Security, Public Relations, Personnel, Stores, etc. must be 5. 0.5 ratio to the traffic department's total manpower.

Good records of personnel must be kept efficiently. Background search information on every member of staff must be made before confirmation of his or her appointment. Information leakage must be guarded against and cases of overtime, bonuses, salaries, allowances, uniforms and other welfare problems must be tackled with dispatch and finesse.

FINANCE:

*** The financial prospects of the Task Force or States' Transport Corporations and private transport companies will largely depend in income from passenger services and loss-reduction practices.**

*** The Corporations or companies must be self-reliant and independent of government's subsidy after the 3rd year.**

*** a 10 per cent profit margin should at least be realized annually.**

*** Other expenditure allocations should be set on the following criteria:**

Spare Parts 20 per cent Salaries and Pensions 40 per cent
Other Expenses 10 per cent Depreciation 10 per cent Servicing of Debts 5 per cent Profit Margin 10 per cent Reserve Fund 5 per cent 100 per cent.

***Accounts must be audited annually by competent Chartered auditors.**

*** An asset register must be opened and updated. The General Manager must supervise the project.**

*** Provision must be made for the position of a chief Accountant and his deputy. More cashiers must be appointed internally for the company or corporation.**

*** Capital Reserve Account must be opened after the first month of operation.**

*** All payments must be made by cheque. All cash must be banked, without**

reservation to the re

IMPLEMENTATI

Process of implementation is as important the planning and progra processes. Deter that a particular implementation is desirable considerably easier determining how to execute the operation. The antithesis of implementation lies in the fact even with careful planning, any major change may raise issues that were not reasonably foreseeable at the beginning of the implementation process. However, the following factors affect implementation:

*Major changes cannot be implemented instantaneously.

* Inherent tendency of management to limit, slow or resist change or innovation.

*Organizational and procedural barriers exist that work against effective implementation.

*Assumptions that decisions are final.

*Existence of Adversary Roles.

* Reward Structure and Carrier Patterns.

*Consideration of Non-Operation Option.

* Personal resistance in order to preserve status quo as much as possible and thus to discourage or resist change.

* Standardization of response (Routine, Procedures, Regulations, Civil Service duals and bastardisation).

* Funding

* Staffing

*Training Programmes

* Equipment

* Psychological trauma — Motivations

* Spare Parts System and Station

* Professionals versus non-professionals

* Unnecessary state government's intervention and administrative delegating.

*Over-ambition of the General Manager.

IMPLEMENTATION STRATEGY:

* Priority emphasis should be given to implementation.

* Potential sources of resistance should be identified and dealt with.

* Develop a professional corps of staff in the division.

* Training must be increased, updated and made compulsory.

* Monetary and non-monetary incentives must be given to staff especially the Line staff.

* Essential and adequate equipment and tools must be purchased for the division to enable effective operations.

* Systems support must be sought from time to time, especially as it relates to Workshop, Office, Public Relations Office and Administration Departments.

Features

Mass road transportation system guidelines

Balance between cost and services

By
Dr. Olukayode Oluduro
Transportation specialist, (Transpo Consultancy Limited).

Continued from yesterday.

PRIVATE TRANSPORTATION:

Gradual elimination of the private buses and pseudo-commercial passenger buses on the main traffic axis must be pursued vigorously.

Reduction and elimination of private buses from Lagos Island and other major cities downtown should be systematically programmed with the cooperation of Central Licensing and Parking Authority.

Cut-throat competition with other commercial buses on the Intra-state, and major traffic axis of the conurbation must be pursued.

The use of private mini-buses to the central part of towns must be gradually discouraged by pursuing "WOCO" (Win-the-Car-Owner) Programme.

COMMUNICATIONS:

A new system of effective Depot/Terminal/Master Control Service must be initiated and operated.

Radiophonists must be trained.

Standard Office accommodation will be provided as Radio Rooms at all Depots.

Linkage of Depots with mini-depots, terminals, Central Workshop, General Manager, Operations Manager, Traffic Administration Headquarters must be done.

External telephone lines must be provided for the Depot Managers, Operation Manager, Commercial Officer and Traffic Administrator.

[illegible] drivers and the Drivers.

A modern well-equipped Mobile Radio must be purchased to provide systems aid to the communication networks.

CO-ORDINATION

[illegible] public transportation for the State, e.g. Mass Transit Study, Urban Corridors Study, Railway/Bus Transit, Ferry cum Bus Services.

Sound professional advice must be given from time to time on subject of urban transport co-ordination to the States and local governments.

Routes connecting ferry, rail and air corridors must be established and operated.

A scheduled Time Table for the operation of the special connecting and destination routes established above must be provided and effectively operated.

DEVELOPMENT OF TIME TABLE

A survey on development of Time Table for operation should be conducted.

A pilot test-run of the Time Table must be operated.

Peak Period Express Service Time Table may be developed.

School Bus Time Table must be developed.

Inter-city Transport Operations Time Table must be formulated.

An 18-hours Operations Service should be developed and experimented.

A Time Table Review and Adjustment Committee must be appointed to preview, appraise and review the Time Table from time to time.

PASSENGER CONSULTATIVE COMMITTEE

A State Passenger Consultative Committee must [illegible]

A zonal meeting of the consultative committee must be encouraged and facilitated.

REVENUE GENERATION

Commercial Bus Transport Corporations all over the [illegible] cargo and mixed traffic.

However, the proportions of revenue generated from each of these principal sources differ from one Bus Company to the other. In Nigeria the revenue generated by each of these sources is [illegible] About 95 per cent of the total revenue accrues from bus passenger transport while the remainder from other areas accounted for the difference. The mono-revenue yielding concept must be radically discouraged.

CARGO SERVICE

The possibility of operating cargo services should be explored and pursued to a substantial tangible revenue logically.

Modern cargo service including urban, and rural, household, market-gardening products, industrial goods movement must be introduced and operated.

BUS HIRE/INDUSTRIAL CONTRACT SERVICES

Bus Hire Tariff should be reviewed to reflect a profit balance between cost and services.

Bus Hire Service must be pursued aggressively.

Industrial Contract Service may be explored, intensified and publicised.

Discount Bus Hire Service Programme at the weekend must be introduced.

BUS ADVERTS

Bus Adverts should be solicited with vigour and aggression.

TERMINUS USE BY OTHER TRANSPORTERS

[illegible] Kiosking should be commercialized.

Toilet toll "Slot and Open" programme must be explored at bus-stops or terminal depots.

TARGET DRIVE

[illegible] Depot Target "This Week Depot Target" should be introduced to bring the best out of the Depots via-a-vis fleet availability.

Target according to Routes, level of service, has [illegible] determined and imposed.

Target bonus formula must be devised.

Non-Target disciplinary action must be established.

[illegible] Monthly Target [illegible]

Operation "Reach this Target Today" may be launched monthly.

WEEKEND SPECIALS

A weekend special programme must be devised and operated by all states.

Operation "This is our State" tour should be organized.

"Festival Day" nicknamed "Bus Day" may be organized yearly to choose "MISS BUS".

Weekend intercity and inter-state "Mass Movement" programme should be introduced.

FARES REVIEW

[illegible] must be reviewed and compiled to correct fare disorganizations and inconsistencies.

Fares must be determined to reflect economic cost of operations.

New routes must be given new reviewed fares.

Bus Hire fares must be adjusted according to economic [illegible]

A Fares Review Standing Committee must be appointed to review and advise on economic fares periodically.

LOSS OF SALES (THIEVERY)

Fraudulent practices by Crews on Ticket Issuing Machines and Emergency Tickets must be reduced by an effective monitoring system and realistic disciplinary actions and deterrents.

More checks must be placed on the crews' activities at bus-stops, terminal and on line.

Ticket Machine rolls wastage must be reduced by an effective checking [illegible]

General supervision must be increased with more effective surveillance practised to prevent thievery on line.

Crew members must be encouraged through incentives to wage war against revenue thievery.

Campaigns on the bus and public media on revenue thievery should be launched.

Change-over-time, breakdown procedures, Depot exit plans must be overhauled to minimize delays and loss of revenue.

"Depot and Line Vigilantee" programme must be launched to help foster loss of revenue in any division of the Corporations or company.

Rapid recovery system aided by effective traffic communications systems must be devised and co-ordinated.

RAFFLE DRAW

A Raffle Draw Standing Committee must be appointed to work out the modality of a successful draw so as to generate more revenue.

Bus Operators may be mobilized to help in publicity and successful operations of the Raffle Draw.

Publicity through public media must be solicited.

Raffle Draw is a good device to encourage commuters to demand for tickets and consequently the bus will not be littered by drop-down tickets. The sale of used tickets by the crews would be minimized.

PERSONNEL

The arrangement and organizational structure of a Transport Commercial Enterprise influences and determines the manner in which operations, planning, decisions, and practices are effectively executed. Personnel organizational arrangement should be done in such a way so as to maximize efficiency and effectiveness, promote co-ordination, encourage lateral and horizontal input, provide graduated access to management and decision-making process, provide a clarity of authority and power and permit an orderly process of appeal and redress. Since conflict is inevitable among operations crews, depot officers, divisional heads an management, the organizational structure should make it possible for such conflicts to be resolved constructively.

[illegible] organizational structure should be consistent with the corporate structure and be dynamic so as to give room for redefinition of responsibilities, reorganization, or creation of new organizational structures.

[illegible]

* Depot [illegible] must be operated to some autonomous level with an optimal amount of responsibility and authority while at the same time fostering closer communications between the depot and the Headoffice.

*Three departments will be created at the Operations headquarters (Depot Control, Commercial Control, Planning and Research Control). The departments must be headed by Controllers.

* An organizational structure of the Company or Corporation in relation to other departments must be mapped and distributed to the crews and depots.

To be continued tomorrow.



* Typical Lagos transport vehicle known as "Molue" or at times referred to as "Oba straight" because you are really never sure of coming out in one piece once you board one.

> 'Fraudulent practices by crews on ticket issuing machines and emergency tickets must be reduced by an effective monitoring system and realistic disciplinary actions and deterrents'.

EXTRACT 1.13

Features

Mass road transportation system guidelines



• Faces of anguish. . .as commuters wait endlessly for commercial vehicles. IN LAGOS

Focus on mass movement and social equity

Continued from yesterday

PLANNING

Since traffic planning system is much a political process as it is a technical one and since any decision in mass road transportation planning affects many groups within and outside the State, the "differential effects" procedures must be utilized Emphasis should be placed on modern and latest quantitative techniques in the field. The focal points of bus operation planning would be "mass movement" and "social equity" among the geographical and political areas of the State. Changes in demand in technology and in public priorities should be anticipated and our systems planning would explicitly take into account the uncertainties inherent in long range forecasts.

Our planning should be sub-divided into four categories as follows:

•• Long range (1988 — 1992)

• Intermediate range (1988 — 1990)

• Short range (1988)

• Plan Evaluation and

• Reappraisal.

A transportation planning process should be managed so as to provide the systematic interdivisional and inter-agency approach. The process must be decisive, yet managed in a way that will enable it to be dynamic flexible, creative and responsible to changing conditions and to the needs of the community.

Personnel, fiscal, and time resources must be allocated periodically, based on an explicit establishment of objectives and determination of needs. A major aspect of traffic planning would be the development and revision of a process strategy and performance.

Co-ordination among various phases of system and project planning should be increased. Because of the length span of the Action Plan, there would be a need for systematic contingency planning and for a project programming process that explicitly incorporates both budget constraints and community considerations.

Periodic review and reassessment of depot operations would be built into all stages of traffic studies to provide a mechanism of accounting for new information and changes in previous assumptions of estimates. The structure of the decision process in planning and the relationships among the depots would be specifically designed to stimulate this review and assessment.

ROUTES

The Task Force will examine and reassess the existing routes in order to eliminate duplications, unnecessary overlapping and stimulate viability.

New routes must be identified within the state

Peak Period Service Routes must be established to meet future peak period travel demand.

More intercity routes must be created to cater for Intercity services.

More inter-state Routes will be identified, studied, test-run and created to link Lagos State with other states and Abuja.

Routes classifications into major and minor indexes must be carried out throughout each State and Abuja.

Area coverage in terms of operations must be intensified in state capitals' down-town.

The major axis of the capital city must be concentrated upon during the plan period to achieve fomination.

A comprehensive routes map for the State and the major towns must be drawn.

Routes designation and numbers must be reviewed, standardized and operated.

TRAFFIC STUDIES:

Since we recognize the fact that the main objective of all phases of a road transportation planning is to fully inform decision-makers connected with traffic and the fact that the best way to find out about people's transportation preferences is to ask them how they feel about present operations and specific alternatives and why they feel that way, the Task Force or State will therefore, conduct traffic studies surveys on all aspects of its operation.

— Trip length distribution

— School Bus Transportation

— Factory Workers' Area Delimitation

— Peak Period Express Service

— Identification of Congested Routes and Timing

— Feasibility of Time schedule on Routes

— Route designation

— Passengers' Survey

— Target Analysis

— New Routes Planning

— Housing Estates versus Transportation Needs

— Weekend Tour Preference Index

— O — D Analysis

— Weekend Passenger Demands

— Driver's Performance Assessment

— Effects of Ticket Machine, Breakdown on Revenue Operation.

— Feasibility Studies on Circle Lines

— Bus Hire Revenue in relation to regular bus revenue.

Operational forms and documents and their formats must be reviewed, revised and re-designed.

DEPOT PLANNING AND DEVELOPMENT

Main depots must be designed and constructed in the State capital.

Mini Depots should be established to serve as attachments to the main depots. Mini depots will reflect the spartial spread of operations within the State.

Depot concept of operations management must be established and practised accordingly.

A crew centre must be established at each main depot and managed by a Chief Bus Operator.

Suitable parcels of land within the State must be identified and acquired.

Depot operation competition in terms of target, cleanliness of buses, overall performances, etc., must be stimulated and pursued.

EVALUATION

Evaluation of operations must be made to ascertain their acceptability and to develop recommendations for decisions that affect operation.

A cost-benefit analysis and similar economic criteria and value judgment approach must be used in the evaluation process.

Differential effects and incidence of impacts concept must be utilized to gauge the impacts of operations or impacts resulting from different alternatives.

Comments and Suggestions Boxes must be provided on the buses, bus shelters and depot offices for the commuters and persons interested in bus operations.

Evaluation Summary Report Forms and Guidelines must be developed and designed.

CO-ORDINATION AND SYSTEMS SUPPORT

Co-operation is an obvious task that should be part of Bus Operations Planning. However, several different kinds of co-ordination will be required as follows:

Co-operation between the Depot Operation, and Commercial cum Planning Departments will be encouraged and effected.

Co-ordination between the division and other divisions must be stimulated and pursued with vigour.

Co-ordinative efforts between the Bus and other transport services like Ferry, Water, Railway, Airport must be accommodated.

Efforts to stimualte co-ordination between levels of government on operational matters must be made when demanded.

Co-ordination with the private transporters in sharing transportation facilities and services must be accomplished.

MONITORING

Monitoring of operations system performance is a task that the corporation's planning process must undertake in order to make continous measurements that permit a determination of how the Task Force operations are actually performing.

A monitoring unit must be created in the Planning and Research Department of the Task Force or State's Transport Company or Corporation.

Quantitative Methods must be used to analyse data and field observations.

Supervisors should be deployed to monitor all aspects of operations at the depots and on line.

OPERATIONS

The evolution and development of public bus transit into its present form in the country has been the product of the new Federal Government's philosophy of 'mass transit". The achievement of that concept, have for most part been met, but once again the mandate has changed. The TASK FORCE is now being asked to provide an efficient, adequate, economic and properly integrated modern system or road public transportation facilities within the country. These facilities must pay due regard to safety of operations and be extended to meet the needs of the public, agriculture, commerce and industry, as such needs arise or change, from time to time.

Within this broad mandate, the Task Force is being asked to operate the Federal Government Mass Transit System to provide the social services of mass transportation but on such economic criteria that will produce adequate profits for the purpose of recaptalizing its facilities. Addedly, the Task Force is asked to pay major attention to the situation whereby some people cannot and would not patronize the bus service.

This background influences the directions which the TASK FORCE would take in the implementation of the Master Action Plan.

Provision of services to fulfill a variety of transportation demands is an activity that the TASK FORCE must consider seriously.

Level of Service would be based on the type of bus, fleet operation and cost-benefit; Economy Special Service. Out of state service. Bus Hire Service; School Bus Service; Weekend Tours/Excursion; Intercity Service; Industrial Contract Service; State or Community Special Service; Out of State Weekend Service; Park and Ride Service; Twin Capital (Lagos/Abuja) Service.

FLEET OPERATION

Fleet operation must be based on "system" applications, level of service, cost-benefit ratio and time.

System one (16 hours) 2 Operators — (One Bus, 2 Drivers)

System Two (16 hours) 4 Operators — (One Bus, 2 Drivers, 2 Conductors).

System Three (8 hours) 1 Operator — (One Bus, 1 Driver).

System Four (Unlimited — (One Bus, 1 Driver, 1 Mechanic or 1 Tourist aide).

System Five (School Bus) — 2 Operators (One Bus, 1 Driver, 1 Conductor).

TICKETS

Ticket Machines must be used for all public operations except on Private Hire Operations.

Emergency Tickets should be used as substitutes and supplements.

Seasonal Tickets could be used for commuting.

One Machine-one person System must be used

Supervisor would supervise any sale of tickets at terminal points.

Anti-Tickets Campaign must be made on buses by visual and audio aids (by Operators).

Only Tickets printed by the Nigerian Security Printing and Minting Company Limited should be allowed to be used by the Operators on the buses.

BUS CLEANLINESS:

Buses must be washed by Bus Washing Crews.

Special Service buses could be washed during the resting period of the crews and cleaned internaly at night.

Bus Hire or Contract Service could be washed according to dictates of time.

All other buses must be washed at nights only in order to hasten change-over-time delays.

Washed buses must be inspectedby the Chief Bus Operator at all depots.

The accountability for depot and bus cleanliness must berendered by Depot Managers.

To be continued tomorrow

EXTRACT 1.14

Features



Then government solution to transportation.

Mass road transportation system guidelines

What the urban bus operation should be

By
Dr. Olukayode Oluduro,
Transportation Specialist
(Transpo Consultancy Limited)

"In order to cope with the rapidly deteriorating transport services in our cities and towns, government has decided to pursue a vigorous programme of mass road transportation with particular reference to the enhancement of available passenger buses."
IBB — '88 Budget speech)

IN that loaded statement, there is some good news, some bad news and some or-else news. The good news is that N700 million will be voted for the project. The bad news is that when the dust settles, we may discover that the hydra-headed N700 million will be like the tip of an iceberg in the transportation ocean since the end-result will not carry the "N700 million impact". The or-else news is that wrong people will be assembled under the nickname of "Task Force".

The Task Force will be composed of "opposite" people and at the end of the year, no one will know how the money diminished or vanished, nor who the beneficiaries were. In the end, we will institute a probe to look into the "unlookables" and "unseeables". And the crack transportation chaos will resurface. That is the way it has always been. So let sleeping dog lie and let other people worry about that later. Sounds pessimistic? No, never. But there is much truth in those strictures.

'Be that as it may, today we will take the optimistic hardline that are determined to succeed. The premise that mass road transportation can improve our socio-economic conditions in 1988 and beyond will be given in this article.

Background

Since independence, the mass road transportation has remained the problem-child of the Federal Government and its states. The existing transportation enterprises at all levels, had faced increased problems of low revenue, instability, unviability, wastages, and operational ineptitude. In response to these perennial administrative wreckages, various governments devised some counter-measures in form of probes, punitive deterrents, white paper gimmicks, consultant retirements, cannibalization, subvention, re-organization and outright closure.

As tough as these measures were, they failed for the reasons old fabled Icarius failed — trying to fly with borrowed pigins. They failed because they gave answers without framing the questions. They did not define their transportation problems nor appreciated the nature and delicacy of the operational intangibles involved in the science of moving people and their goods. With the new Federal Government massive involvement both in policy and monetary terms, it is abundantly clear that spasmodic counter-measures on a crisis basis will not be enough to achieve the desired goal on providing cheap, safe, fast and reliable road transportation in Nigeria by January 1988 and beyond.

But now that the government is on the threshold of a new phase in policy to listen to transportation professional noise-makers and support innovative approaches to the challenge posed by mass transit suicide, as evidenced by the N700 million vote, coupled with the insistence by the general public that an effective and reliable mass road transportation system be created and the growing purchases of buses and vehicles, it is therefore an appropriate time to look for a total answer to the long forgotten "bastard child" of the Federal Ministry of Transport — "the urban bus transportation".

The objective of this article is therefore to critically examine the trio question in mass road transportation with particular emphasis on bus operation. What is it? What should it be? Who is to do it? It is against such a background that the guidelines developed hereunder can become more intelligible.

Hypothesis

Before analyzing the intangibles to be taken into consideration in evolving a comprehensive policy on bus operation, it seems worthwhile to state the working hypothesis which form the philosophical basis for the guidelines.

Human lives are at stake. One traffic failure can pay off in death possibly for untold scores of people. For instance, one vehicles crash in every 100 has so far brought death to someone as a result of human, vehicle and roadway vis-a-vis environmental disfunction. This is the death factor in bus operation.

The "Driver" is the "King", "Queen", "President", "Chairman", of the system. Ultimately, it is the driver's actions and performance which determine the success and failure of a bus transportation enterprise. For instance, every incident of low revenue or mechanical damage has one aspect in common: driver's factor. Direction of resources towards motivation and improvement of the driver is the primary security requirement of an effective and viable bus operation. The more effective conditioning (as opposed to scape-goating) of the drivers can be made the lighter will be the jon of engineering and maintenance department and the greater the degree of safety of the corporation's major asset — the bus.

All that glitters is not gold. It must not be assumed that the brighter a vehicle looks physically, the better the performance or mechanical conditions. Same applies to the driver and the conductor/conductress. For instance, a beautiful conductress or a handsome driver may turn out to be hazardous to the whole operation or become a big thief in the uniform on lines.

A Bus Transport Corporation or Company is a business enterprise which must function efficiently and economically. A point of balance between operational efficiency and economic viability must be jealously maintained.

Checking

Preventive measures on operation lines take precedence over investigative and subsequent punitive measures at the depot. There is less difficulty in promoting many preventative measures like regulating, inspectorating, watchdogging, sporadic checking, etc.

Bus operation is complex and sophisticated. Any meaningful discussion and intention on the subject must utilize the systems approach. The application of this scientific appoach offers a more realistic and reliable solution to the bus operations problem. For instance, it is not enough to look at the driver or conductress before he/she goes on bus. What happens to him or her when on bus and after getting off the bus is the management's business.

Plans and programmes are one thing. Action is another. To implement the plans and programmes, that will be devised by the Task Force, Governing Board or the General Manager, it will require men and women — professionals in transportation matters. It must be spelled out that transportation is a special field. The new trend in bus operation by various tiers of government poses new challenges and deeper professional approach that are beyond the capabilities of neophytes in the field.

Better methods, officers and machines are not the entire answer in bus operations, particularly if they are not backed up by sense of "tasteful" planning and direction from the top. 'Direction' is very vital and can make the total difference between success and failure of bus operations set up.

Complete general traffic situation in terms of operations, revenue, and routing, is not attainable or possible. Each state, depot, route, revenue totals must be considered as a unique sub-system requiring a unique traffic response, approach and management.

The traffic manager's effectiveness in managing his fleet depends upon his understanding of the fleet's needs, top management's attitudes and his perspective of the "driver". Therefore his judgment is an important factor in the purchase of vehicles and traffic related equipment and service materials. Also, he must have authority to make exceptions to specific rules if they are necessary in order for him to satisfy his overall responsibility of matching cost with service.

Bus operations' viability and income revenue must not rest only on line revenue. Bus-related activities like tourism, hospitality enterprises and advertisement are other revenue that can be vigorously explored.

Lagos is more than a mere city or town. While Lagos has become a megalopolis, Lagos State has become a state housing two capitals. This dichotomy influences transport decisions, policy and operations in the unique state.

The traffic department is the ears and eyes of the Bus Company or Corporation and also its central axis with other departments revolving and offering a sort of "system" support required to achieve the overall goal of the Corporation. A breakdown in the traffic department invariably affects all other components of the Corporation or Company.

The cornerstone to the bus transportation operation could be summed up in one compound word "Time-Factor". Procrastination is the most deadly management disease that can paralyse the entire operation.

The governor of a state shall be responsible for the administration of the mass road transportation programme through a state agency which shall have adequate powers, and be sufficiently equipped and organised to carry out its duties to the satisfaction of the Federal Task Force under the Chief of General Staff.

But safety is a matter of management — top management — and must have strong convictions on the necessity for placing safety first above all other business considerations.

Challenge

The changes in transportation policy of the Federal Government and the accompanying mass road transportation vote have explicitly imposed on the Federal Task Force and States a wider responsibility than it assumed one year ago. As a result, the Task Force must play a variety of roles that include those envisaged by the Randle Report to the Chief of General Staff. The Federal Task Force is expected not only to develop efficient transportation systems within the state and its tertiary local government areas and to integrate those with the long-term goals of the Federal and State Transport Corporations but also to anticipate the future evolution of these same goals and develop ways to respond to the changing conditions and new expectations.

The guidelines developed herewith therefore is the representation of a collection of proposed actions to be undertaken at some future time. It consists of a set of proposed actions involving the operations, facilities and related services in an ideal bus transport system.

Objectives

To provide a passenger transportation plan which is both social and economical but efficient, adquate and safe, satisfying all other objectives at the lowest possible cost.

To develop a functional transportation system plan which will provide for appropriate types and levels of commuter service commensurate with the needs of the various socio-economic class, groups, areas, and commercial and social activities in the state.

To integrate the bus services with other modes of urban transportation and commuter services within the state and adjacent states.

To meet future travel demands within the urban and rural areas of the Federation.

To be continued tomorrow

EXTRACT 1.15

FEATURES

Bus drivers observe jungle law on Ikorodu Road

CASEFILE No. 1, September 11, 1987: A Peugeot 505 car was speeding towards Maryland end of Ikorodu expressway. It was around 10 o'clock in the *morning and the road* had assumed its busy traits as usual.

The man at the wheel had from Jibowu kept to the middlelane of the express until

By TUNJI BELLO

he decided to change lane to the right with the aim of overtaking the slow moving vehicle in front of him. By the time he made the overtaking, it was at Onipanu bus stop area, and he did not see the Molue bus already discharging passengers under the overhead bridge, and straight into the back of the Molue he rammed his car.

Casefile No. 2, September 18, 1987: At the same area of the express way, there was a multiple accident involving about six vehicles. According to an eye-witness account the accident was caused by another Molue bus which had discharged its passengers and instead of moving off on the same lane it was, decided to change to the middle lane because of another bus in its front and without any regard for the coming vehicle behind.

As the Molue bus suddenly veered into the middle lane it was already too late for the high-speeding vehicle coming behind whose driver in an attempt to avoid crashing into the bus changed to the left lane, hence resulting into a multiple crash involving six vehicles. The Molue vehicle that caused the accident was not affected and the driver sped off unmindful of what havoc he had caused.

Casefile No. 3, December 31, 1987: This was at Obanikoro area of the same expressway. It involved a Volkswagen Beetle car belonging to a famous pharmaceutical company in Lagos which in an attempt to avoid the LSTC bus dropping passenger on the expressway somersaulted. The two occupants of the car ended up spending their new year day at Igbobi hospital.

These are some of the documented casualties of commercial buses carelessness on the Ikorodu Road Expressway. Frequent users of the road said there had been many of such accidents which are not yet documented. But suffice it to highlight the danger posed to free flow of traffic on this road by these buses.

Like any other expressway, the 10-lane Ikorodu Road was conceived to ease traffic congestion which had characterised the area in the 1970's. Moreso is the fact that the road is a link to other parts of the country.

What is now taking place on the expressway is a recent phenomenon. About two years ago no such thing took place on this highway. Some road users now believe that such gross misbehaviour on the expressway may have to do with the relaxation of War Against Indiscipline (WAI) as the same occurrence is now witnessed at Oshodi where the commercial drivers have turned the concrete separating the four-lane highway into a turning point hence causing serious traffic bottleneck in the area.

The commercial drivers too have their own explanation. Musiliu Akintan, a Molue driver plying the Lagos-Ketu route says drivers should not be blamed for stopping along the express. He says it is the passengers who prefer being dropped there. Citing instance *from his own route, he says he* normally calls 'Ketu Straight' from Ebute-Ero in Lagos, and this means the trip is supposed to be non-stop until destination. Akintan says it pays him that way as the journey is faster and as one just charges his fare straight, which is better than breaking the journey at intervals.

According to him it is also to them a way of avoiding the traffic hold up along the route including the Ikorodu Road service lane. The snag of the route however, he says is that one does not always get a full load which means they would



have to compromise for a full capacity anytime.

Passengers offer to be *dropped along the expressway.* But can't they refuse because of the danger posed to other road users?

Akintan is of the view that like any other businessman which must make returns at the end of the day, it is a way of patching up since the owner of the vehicle has a fixed amount to be paid to him at the end of the day. He also denied that they ever cause accidents or congestions on the highway. To him, it is the excessive speeding of the road users that usually cause the accident on the road and not them.

The most disappointing to most road users on the issue is the fact that Lagos State government commercial vehicles, the LSTC buses, do the same along the same express. An official of the *Lagos' State Transport* Corporation who refused to have his name mentioned says they do not authorise their drivers to drop any passenger along the expressway as they all have the route which they must keep to.

He, however, called on the general public to take down the number of any of the LSTC buses that drops passengers along the express and report such to their headquarters at Oshodi.

Meanwhile, as the buses continue to cause traffic obstruction and accidents along the road, officials of traffic section at Ijora believe it is not their duty to police the highway. They say it is the duty of the highway-patrols. The highway-patrols, however, do not appear to be handling the situation as they seem to believe more in the cure than prevention. Rather than ensuring safety and free-flow of traffic on the expressways, they prefer to arrive and help evacuate victims only when an accident has taken place.

This is one area where the urgent attention of our road safety campaign must be seriously directed.

EXTRACT 1.17

'Road, rail dev vital'

From Front Page, Col. 3

transport sector finance specialist who had already been identified to assist them in their responsibility.

The terms of reference of the task force are to review existing studies and recommendations on the introduction of mass transit system in major urban centres in Nigeria. Examine the relevance and scope of various transportation modes in the various locations with a view to utilising them as important elements in the mass transit system. Study the existing regulations governing the use of railways, waterways and urban roads, including the right of way for mass transit vehicles.

Advise on the establishment of modern maintenance workshop in collaboration with existing private sector establishments in strategic locations and liaise with appropriate bodies such as transport, owners association, vehicle manufacturers and assemblers and other transport unions and advise on the allocation of funds from the mass transport programme budget to finance domestic construction of mass transit vehicles and crafts.

Vice-Admiral Aikhomu then repeated the government's commitment to pursue a vigorous programmes of revitalisation and modernisation of the nation's urban mass transit system.

The chairman of the task force, Air-Vice Marshall Mohammed Yahaya, in response, promised that members of the task force would do their best to ensure that the objective of the programme was realised.

Dr. E.O. Adegbeyemi of the Federal Ministry of Transport is the secretary.

Other members are: the Director Engineering, Nigerja Railway; Mr. A.F.A. Babatunde, Director of Federal Highways. Mr. S.O. Okin, the Director Inland Waterways Department, Navy Captain C.W. Esare (rtd) and chairman of Ekenedili Chukwu Trasport Service, Chief A.E. Ilodibe.

Others are, a transporter, Malam Mamman Jallo Rigachukun, Major Daniel Idoko, Nigerian Army Transport Corps, Mr. Nat Okoro, the former managing director of the Nigerian Railway Corporation, Alhaji M.O. Arogundade of the Nigeria Association of Motor Assemblers, Apapa, and the national president of the National Union of Road Transport Workers.

The Federal Government has earmarked 700 million Naira for mass transportation in this year's budget.

THE PUNCH, TUESDAY 10th MARCH, 1988

Transport: We need no paper results

By ABUBAKAR JIJIWA

I AM a car owner. Yes, I belong to the minority and fast-declining but enviable category of Nigerians who are "mobile". Don't worry that the rag-tag moving wretch of an engine is always on its way to the mechanic for yet another dose of *it's-a-small-problem, no worry*. Don't also mind the fact that it can earn Nigeria a place in the Guiness Book of Records as the most frequently panel-beaten car. Before you form the picture of me as one of those drunken, rough drivers, let me quickly disabuse your mind that this panel-beating is a function of time; wear and tear have taken their toll.

The air pollution from the car makes the Chernobyl Nuclear disaster look like a child's play; poor residents of my neighbourhood, if they knew the environmental hazards posed by my car they would have exiled me back to my village. And of course I deliberately avoid roads passing near the courts as even the most liberal judge would sentence me to 21 years for contempt of court on grounds of noise pollution from my battered four-legged vehicle which can compete favourably with the noise of a 1914 coal-powered locomotive. By the way most of our so-called "express trains" are no better than the 1914 model, but aren't we discussing that now.

Any way, I so much cherish this vehicle that every night I have to wake up ten times to reassure myself that some *Anini* does not try a fast one on me by taking the wretch to Nnewi, where I am told, it will be given an Ikemba treatment and turned into a posh, brand new car that even those long noses at PAN would readily give the 'OK' tag.

Well, I have no choice. I can't risk losing the Old Reliable since my country cannot offer me any alternative without tears. Especially when the leg-wagons look at me as *Oga car owner*, not minding that ten years ago, the Nigerian Scrap Company wouldn't have accepted it even as a gift. Of course in those good old days of money-is-not-the problem-but... (you know), there was no such thing as a scraps purchasing company.

I really have no choice; certainly I would have abandoned the pocket-eating wretch if there were an efficient public transport service that could take me to office and other places. I would also have abandoned the glorified *amalanke* if I had the means of buying a new one. Wait a minute. Buy a new car? That sounds like a dream. Who will I SAP 50,000 Naira to buy a new Peugeot, or even 30 something thousand for a new 'Peoples car'. Certainly I am not expecting to win a lottery anyway I am not a gambler. And of course I don't intend to raid a bank.

Well something has to happen and fast too. I can't get a new car and public transport means waiting for worn-out Hiace bus or *Gongoro* for up to one hour to go to your destination, enough to give me a mental breakdown.

I was therefore one of those people that jubilated when President IBB announced that the Federal Government has allocated 700 million Naira for not transport ministry, but specifically to arrest the deteriorating transport system.

Like a supersonic jet's take-off, the Air Vice Marshal Mahmud Yahaya Task Force was inaugurated by the Chief of General Staff. From the composition of the Task Force, it is clear that the members were drawn from not only the book people but also from the organised private transporters like the well-known *Ekene Dili Chukwu* fleet.

I am not a transport guru and I don't intend to pretend as one. So I am offering no solution or even suggestions to the Yahaya Task Force on ways of solving the critical, near-explosive state of our transportation system.

But the Yahaya Task Force should note that Nigerians are not expecting paper achievements at the end of the year; neither are they expecting or even ready to hear some ugly stories of mismanagement. This is actually the bane of our problems; to each new and laudable policy or programme there are some guys to take quick advantage to "make it." The Task Force on the mass transport system has a duty to convince the Nigerian people that it is not yet another of the conduit pipes where so much is spent but nothing is physically achieved.

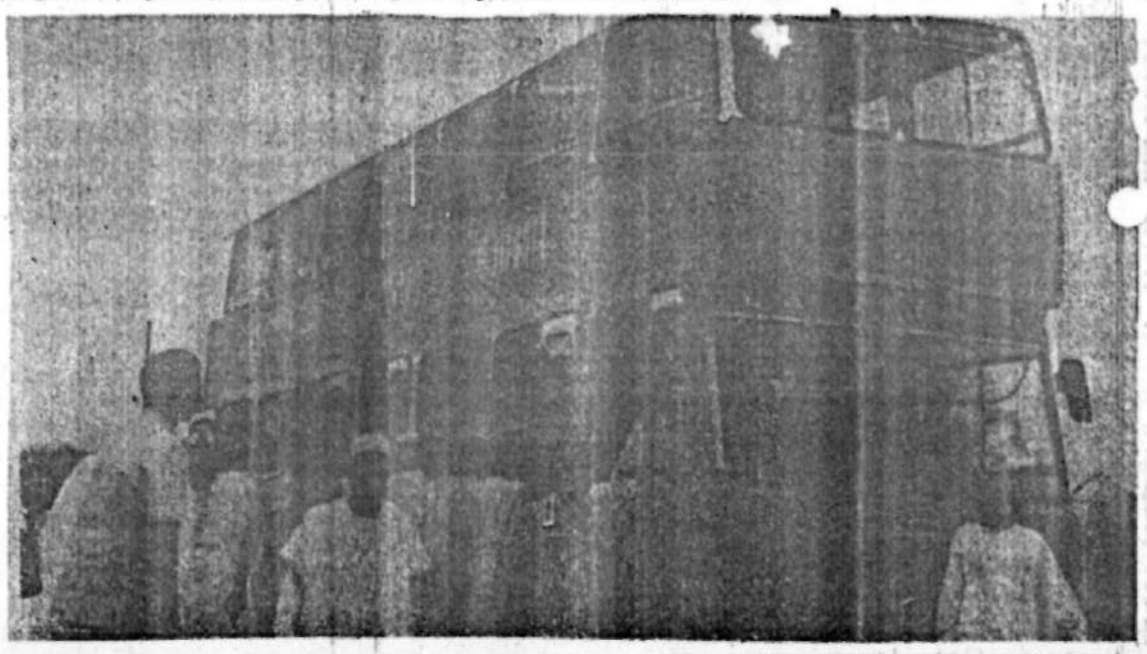
The result Nigerians desire to see from the Task Force are not too difficult-with a whopping 700 million. By December 1988 Nigerians expect to see Nigerian buses playing Nigerian roads; if a Nigerian bus is not feasible, at least a Nigerian assembled car, with high local content. Peugeot JS and Burem buses can be of some experiment. And there was the Eddy Bongos Motors and their experimental bus; but they have been off the news lately. I don't know if they have been frustrated into closure-or it is SAPPED out of the SFEM economy. That company too could be tried upon. And few others really committed into the Nigerian bus dream.

Whatever it is, we expect that vehicles will not only be available to commuters on all streets in the cities and towns, and on all the major highways and rural feeder roads, but also at very affordable prices.

Another task of the Task Force is to ensure that come December 1988, prices of at least the Nigerian-assembled cars could have gone down drastically. The present prices of the vehicles are just like fairy tales and only a bloody fool (apologies to the retired judge who cannot boast of ten thousand Naira in his bank account) can expect the average Nigerian to buy one at such a price. Again here the Task Force can bring together the major assembling plants and the numerous components manufacturers together to produce the Nigerian car even if it means granting them some subsidies and concessions.

We are all waiting, waiting for 700 million Naira to do the magic and the Task Force should give us no excuses in December.

One last word, let the Task Force not flood this country with varieties of imported vehicles that will just pack up in days. Although we are a forgiving and forgetting lot most Nigerians cannot so quickly forget the Scania buses scandal. At least let us save ourselves from the senseless rituals of yet another probe.



Will public transport be better this year?

Asks JULIET IGHURE

THE recent announcement by President Ibrahim Babangida on a mass transport system for Nigeria was for most people a decided highlight of the 1988 budget. In the special allocations under the reflation package of the budget, transport received N700 million to rehabilitate urban roads, improve road transport and provide locally made buses.

Transport is actually the pivot which binds efforts at initiating and sustaining economic growth in any country. Its impact is also a necessary factor in politically integrating the country. High transportation costs, difficulty in evacuating food from the rural to the urban areas and high accident rates caused by bad roads are all symptoms of the disease affecting Nigeria's transport sector.

In Lagos, commuters are forced to compete fiercely for the few available buses and taxi-cabs because of the generally poor transport system. On any given route, passengers outstrip the supply of vehicles, become stranded and the result is long and endless queues at bus-stops.

The shortage is further compounded by the fact that more than half of the 30,000 registered "molues", taxi-cabs, and "kabu kabus" and Lagos State Transport Corporation (LSTC) buses are off the roads, either because of poor maintenance or high maintenance costs, a dearth of spare parts, as well as the general inability to buy new vehicles because they are priced out of reach.

In some states like Kaduna and Bauchi, motorcycles are even employed to ferry people around, thus forcing the Kaduna government to recently import a consignment of buses.

The situation is that bad in Lagos that workers and school children compete for buses, with most Lagos residents leaving home as early as 5.00 a.m. in the hope of getting a bus or taxi before 7.00 a.m. But even at that hour the queues at bus-stops are very long and taxi drivers tend to take routes that do not involve traffic build-up and are economically profitably. The same problem prevails at the close of work, with workers arriving home as late as 8 p.m. after closing from 4.00 p.m. or 5.00 p.m.

According to the President, government will soon establish under the office of the Chief of General Staff, a task force on mass transportation "in order to cope with the rapidly deteriorating transport services in our cities and towns ... with particular reference to the enhancement of available passenger buses."

This task force will interact with state and local governments, transport parastatals, workers groups, co-operatives and private operators to ensure that more and better transport is available. The President also hopes that banks and other financial institutions will provide loans to rehabilitate old commercial vehicles and buy new ones.

General Babangida expects the task force to breathe new life into the vehicle assembly and parts making industry by increasing orders, standardizing models, lowering prices and providing effective back-up services. The task force is supposed to assist in mobilising indigenous craftsmen to manufacture more vehicle bodies with standard chassis.

With its new tarrif structure, government has rationalised customs duties on imported vehicles in order to protect the assembly industry. Import duties on cars have been reduced from between 30 and 200 per cent to between 35 and 100 per cent. But fully built up imported cars will also attract landing charges equivalent to the excise duty on locally produced ones. To put locally produced cars in ascendancy over imported ones, governments has brought down the import duty on Completely Knocked Down (CKD) parts from between 10 and 185 per cent to a uniform duty of 25 per cent.

"In the special allocations under the reflation package of the budget, transport received ₦700 million to rehabilitate urban roads, improve road transport and provide locally made buses."

Volkswagen officials say that the harmonised tariff rate of 25 per cent for CKD parts and spare parts, is "disturbing". They argue that locally assembled cars which are below 2,500 cc will now cost more, while bigger cars will cost less. Low engine capacity cars had previously attracted duty of between 10 and 20 per cent. This means that those who have money to buy big cars will be better off than those buying small cars.

Although excise duty on completely finished cars was reduced in the 1988 budget, duty on spare parts went up by 15 per cent. In other words, car owners will have to find more money to keep their cars on the road. The proposed increase in transport allowance for civil servants, certainly will be eaten up by maintenance costs.

Some businessmen have sounded a note of warning on general implementation of the President's transport package. They say the reduction of tariffs may flood the market with many vehicles which will lead to road congestion and increased profits for just a few people.

The abrogation of the Lagos State Traffic Edict on the use of odd and even number cars could be eventually self-defeating. There is also the risk of some corporations importing old and reconditioned vehicles at the price of new ones, with the difference going into the pockets of some officials. It is not certain whether the importation of more buses will provide more jobs, but it may certainly promote business for importers.

There is some silence on the railways and waterways transport systems, which are widely used in many parts of the country. Adequate attention has to be paid to these two if the nation's transportation policy is to be comprehensive.

While lauding government's acknowledgment of the nation's chaotic transport situation, the Nigerian Labour Congress believes that nothing short of a well co-ordinated transport system will do. Officials said it was not impressed by the huge sum allocated to public transport in the budget if the money was not spent to provide "physical and effective means of transportation in our major cities". The ball is therefore now in the court of the Office of Chief of General Staff.

(NANFEATURES)

EXTRACT 1.19

'Luxurious' buses : What luxury?

Asks SANYA ONI

A SIGNIFICANT development from the oil boom was the revolution in the *taste of Nigerians*. Revolution in the sense of rising expectation in wants created by the oil wealth. With it the average Nigerian became more choosy, than ever in not only his needs, but also in how they are satisfied.

In the transportation sector like many other sectors of the national economy, the revolution took many forms; physical transformation, as evidenced by the construction of major roads criss-crosing the length and breadth of the entire country, and with it, an upsurge in the number and types of vehicles, with varying degrees of convenience for users and *patrons*.

Specifically in the area of inter city transportation, a revolution was also silently taking place. Slowly, the mammy-wagon that was in vogue in the 50s through the 60s started to give way for the made-in-Brazil-type luxurious buses, which with its roomy, luxuriant seating structure was a far cry from the wooden, oftentimes rickety, and perhaps (now) less than comfortable mass carrier that is the mammy wagon.

For now, and may be for always, the era of mammy wagon, for long distance human conveyance is gone. Its use, even within the intra-urban network in the form of the improvised 'molue' is being increasingly viewed with scorn; Perhaps, the greatest challenge to it in Lagos State where it is most popular, is the state's transport corporation whose buses are in the class of the luxurious ones.

For many Nigerians, and perhaps undoubtably too, the luxurious bus, with its spacious, comfortable and modern structure, offers an attractive alternative mode for long distance travelling for those who cannot stand the break neck speed that commercial car transportation is noted for, or for those who for reasons of economy cannot afford air travel.

Yet, it is the opinion of many Nigerians that things have changed, perhaps for worse, in terms of the quality of service, or the assurances of a joy ride, in the luxurious buses.

To many Aba-Lagos merchant commutters, Kano-Ibadan-Lagos-Kano *kolanut* dealers, numerous student travellers, the Inyang Ettes, Adamu Fagges, Utuks, Ijeomas, Izu Chukwus Ekene Dili Chukwus etc, with their numerous fleet of buses, indispensable as they have become, offer an increasingly less-than-satisfactory means of long distance public transportation from what they used to be in times past. The question then is, how?

A recent trip from Onitsha to Lagos by this writer provided an insight into the nature of the problem that travelling in this mode has become.

Arriving at the bus terminus at 6.00 p.m. on the day of journey, the best that one could wish for and expect was a calm uneventful journey. To many travellers like this writer, *haste* was least in our preoccupations, just as personal comfort ranked high.

Somehow, it was clear from the onset that both would elude the travellers. The journey, which cost 25 naira as opposed to 15 when last the writer made the same trip two years ago started with an unusual kind of delay

but which one regular traveller, Chukwudi, said was not unusual. Boarding a bus that was nearly full, it was natural to expect that the trip would kick off in earnest. Only time was to prove that most occupants were no more than touts hired to create the impression of "bus ready to move" to unsuspecting but later to be irritated travellers.

Not only that, we (travellers) found that not only must the seats be filled, but the aisles as well, from the seats provided specifically for that purpose for fares slightly less than the normal (Onitsha to Lagos in this class costs 20 naira). Apart from the delay this also caused, it was not possible to ignore the pitiable condition of those (many aged) who for financial reasons were conditioned to these seats with no back support for such long journeys, nor could one ignore the congestion that was the lot of the bus. Many simply would not agree that it was convinient, save for the drivers and conductors.

According to the driver, it is not easy for passengers to *appreciate the enormous cost* involved in running these fleet of vehicles especially in this era of FEM, and how the management is trying to keep *them on the roads*.

True and rational as this might sound, it is, perhaps for many, difficult, to reconcile the driver's concern with the dare devil speed that characterised the entire 400 plus kilometre journey. The speed was simpley breathtaking. And regular travellers say it is the usual thing. Fact is that the luxurious bus driver, has over the years tried to outdo the commercial car driver in the game of dash and speed. What this *means in effect is* that the time travellers lose in waiting is gained in motion, even if its implies occassional disregard for road signs, and *hence lives of road users; Not* even the numerous police check points that dot the Onitsha - Benin - Lagos highway (this writer counted slightly more than twenty five;) have done much to curb the untold recklessness that is witnessed on the road.



. 'Luxurious' buses at a park

EXTRACT 1.21

sunday concord
TRUTH IS CONSTANT
VOL. 8 NO. 239 SEPTEMBER 27, 1987 SAFAR 5, 1408 A.H. 50 KOBO

UNDERWORLD CAR DEALER ARRESTED

THE Police at Osisioma district near Aba, now has in its net a 33-year-old car dealer, suspected to be the underworld king behind the purchase and disposal of cars suspected to have been stolen between Lagos and the Eastern states.

Sunday Concord investigations at Osisioma revealed that during several operations

Another one is a Toyota Corolla panel van with fake registration number OG 5825 JA with engine number 4K 1309747, chassis number KE705043576 sold to one Augustine Anyacho while the original vehicle with this number is a Renault 18 TS owned by one Mr. J.O. Diya.

Others include a Toyota Corolla panel van with fake registration number LA 7808 WE with engine number 4K1259543, chassis number KE70-5042166 sold by one Ir. Francis Igwe to one Mr.

Police is another Toyota Corolla panel van with fake registration number LA 6798 SE, engine number 4K1323794, chassis number KE70-5045392 which the suspect sold to one Mr. Nwobilor Justice while the original vehicle with this registration number is a Kawasaki motorcycle LA 6798 SE belonging to one Mr. R.M. Olukotun.

Police sources said all those whom the suspect sold these vehicles to in Aba alone have been arrested but granted bail and may soon be charged to

and Lagos.

He also claimed to have bought the Honda Accord with fake registration LA 6973 AM in the Camerouns while on a business trip in

referred *Sunday Concord* to the state Commissioner of Police in Owerri.

In a telephone interview on Tuesday, the Commissioner of Police, Mr. lawrence



Road blocks back in Lagos 212

By VICTOR OLADINNI

THE police road blocks recently cancelled by the Inspector General of Police would now be introduced in Lagos State.

The road blocks, according to an Assistant Inspector General of Police, Alhaji Aliyu Atta, would now be set up at strategies points in the state and be headed by police inspectors.

Alhaji Atta explained that this had become necessary in view of the serious and violent crimes currently being perpetrated in many parts of the country.

He also said that business premises and offices in Lagos, Ogun and Oyo states had been marked for constant raid and search to enable police flush out men of dubious character.

He also hinted that Lagos State had been divided into eight areas which would be controlled by a commissioner of police.

The police boss stated that the new strategies were aimed at curbing the excesses of junior police officers posted to the road blocks.

According to him parts of the strategies aimed at checking the crime waves in Lagos, Ogun and Oyo States is raiding of suspecting criminals hideouts, dark areas, bus stops as well as under the bridges in the state.

Alhaji Atta stated that foot and vehicle patrol would feature during the operation in the "stop and search system," involving stopping and searching of person; reasonably suspected of dubious character.

EXTRACT 1.22

VOL. 8 NO. 2404 SATURDAY, FEBRUARY 20, 1988 RAJAB 2, 1408 A.H. 50 KOBO

Fed. Road Safety governing council launched

By BOSCO IKEAKANAM

GOVERNING council of Federal Road Safety Corps was all set for its operations Thursday after inauguration in Lagos, armed with a firm promise on provision of necessary facilities for its success.

Chief of General Staff, Vice-Admiral Augustus Aikhomu, inaugurated the council at Dodan Barracks and spoke of a presidential order to the police that all road safety equipment should be handed over to the Road Safety Corps.

Besides this, the National Youth Service Corps has been directed to release 1,000 corps members nationwide to participate in the pilot scheme of the road safety corps.

Admiral Aikhomu said that necessary machinery had been set in motion to prepare an enabling decree to give legal backing to the scheme.

He advised the governing council to liaise with the inspector-general of police to enable officials of the corps undertake a tour of the states of the Federation to take stock of all available vehicles and road safety equipment in the various police commands.

The equipment were bought when the Federal Highway Commission was established under the supervision of the Nigeria Police Force, a few years ago.

Admiral Aikhomu enjoined the council to co-operate with agencies of government especially the Police Force, NYSC, the mass media, educational institutions, states and local governments, transport and automobile associations as well as other relevant voluntary groups to enforce discipline, law and order on the Nigerian roads.

"It is the responsibility of the corps to ensure strict compliance with road safety regulations and measures", he added.

He further charged the council to make adequate provisions for medical facilities at convenient places all over the country to cater for accident victims.

According to him, the council was also expected to play the major role of formulating adequate advice for government.

It would also conduct research and acquire necessary equipment for the successful execution of the programmes of the corps.

Admiral Aikhomu said the establishment of the road safety corps became necessary because road accidents, apart from causing human suffering, had a certain effect on the country's development.

He said that current research showed that in many developing countries, the cost of road accidents was almost one per cent of the annual gross domestic products.

The CGS said that of the 38 countries recently studied on the basis of deaths per 10,000 vehicles, United States of America was in the lead position while Nigeria led in Africa with Ethiopia and Malawi coming second and third respectively.

Shortly after the inauguration, the corps chairman, Professor Wole Soyinka told journalists that the council would soon establish an efficient computerisation of vital data on road users including a record of all legitimate vehicles and drivers.

"We are going all out for an efficient computerisation of the road system so that in a few years, we would have a record of all legitimate vehicles and drivers in the country", he added.

NYSC TO RELEASE 1,000 CORPERS FOR ROAD SAFETY

From NKEM AGETUA, Lagos

THE National Youth Service Corps (NYSC) directorate has been directed to release 1,000 corps members nationwide to participate in the pilot scheme of the new Federal Road Safety Corps by the President, General Ibrahim Babangida.

He has also directed that all vehicles and other road safety equipment which at present are in the custody of the police be released to the new road safety corps.

These directives by the president were disclosed by the Chief of General Staff, Vice-Admiral Augustus Aikhomu on Thursday while inaugurating the governing council of the corps at Dodan Barracks, Lagos.

Vice-Admiral Aikhomu told, members of the corps that it was their responsibility to ensure strict compliance with all road safety regulations and measures.

In addition, the corps is to make adequate provision for medical facilities at convenient places all over the country to cater for people who suffered injuries from road accidents.

The Chief of General Staff also urged the corps to conduct adequate research into road and traffic safety with the aim of preventing road accidents.

Vice-Admiral Aikhomu pointed out that accidents were taxing the nation's resources which were already severely strained.

Vice-Admiral Aikhomu, therefore appealed to members of the corps to take up the challenge and devise means to keep the nation's roads free.

Professor Wole Soyinka, chairman of the council told state house correspondents shortly after the inauguration that the council would utilize the most modern road safety technology in carrying out its assignment.

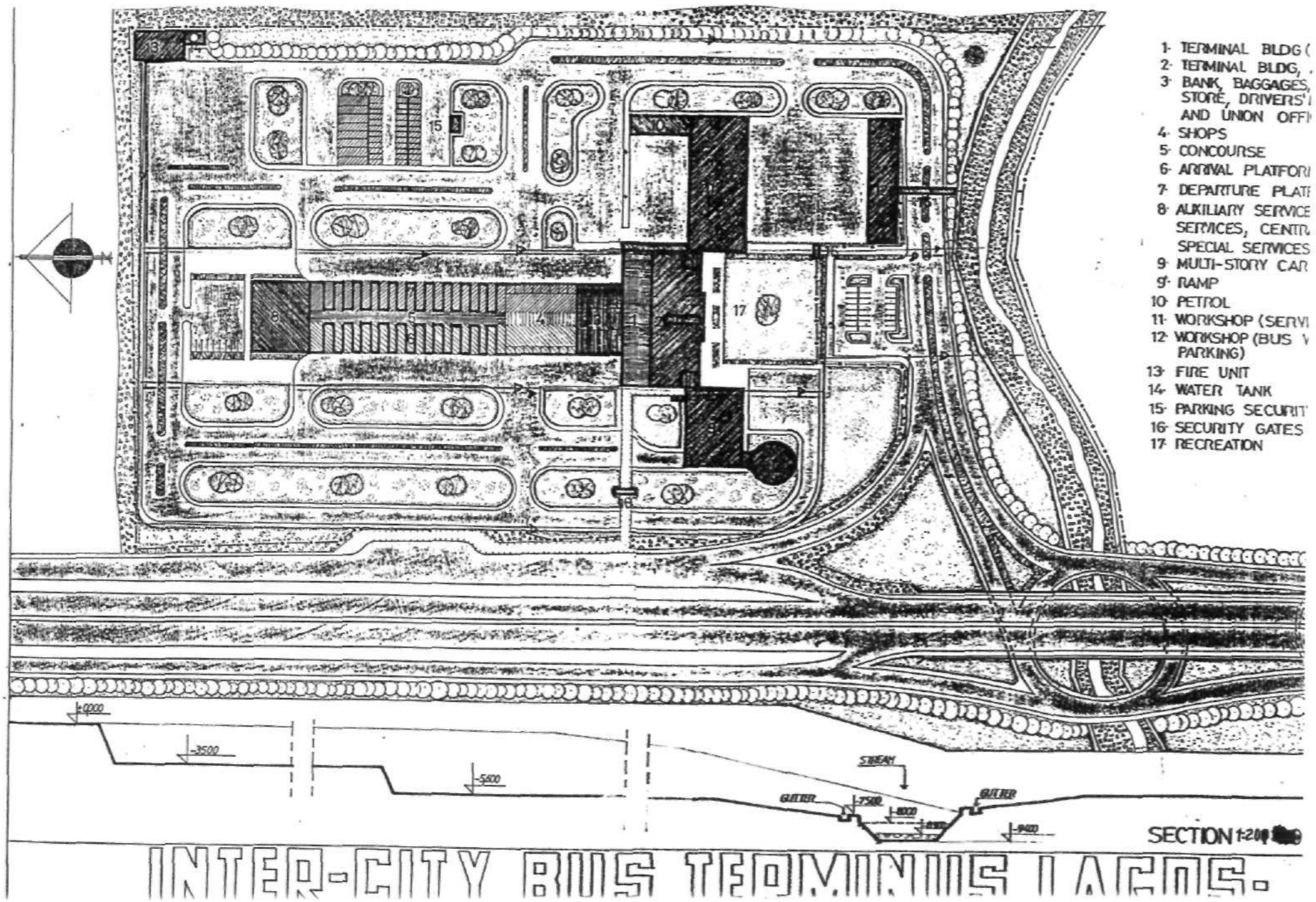
He said 'we are going all out for the very efficient computerisation of the road system so that in a few years time we will have a record of legitimate vehicles and drivers in the country.'



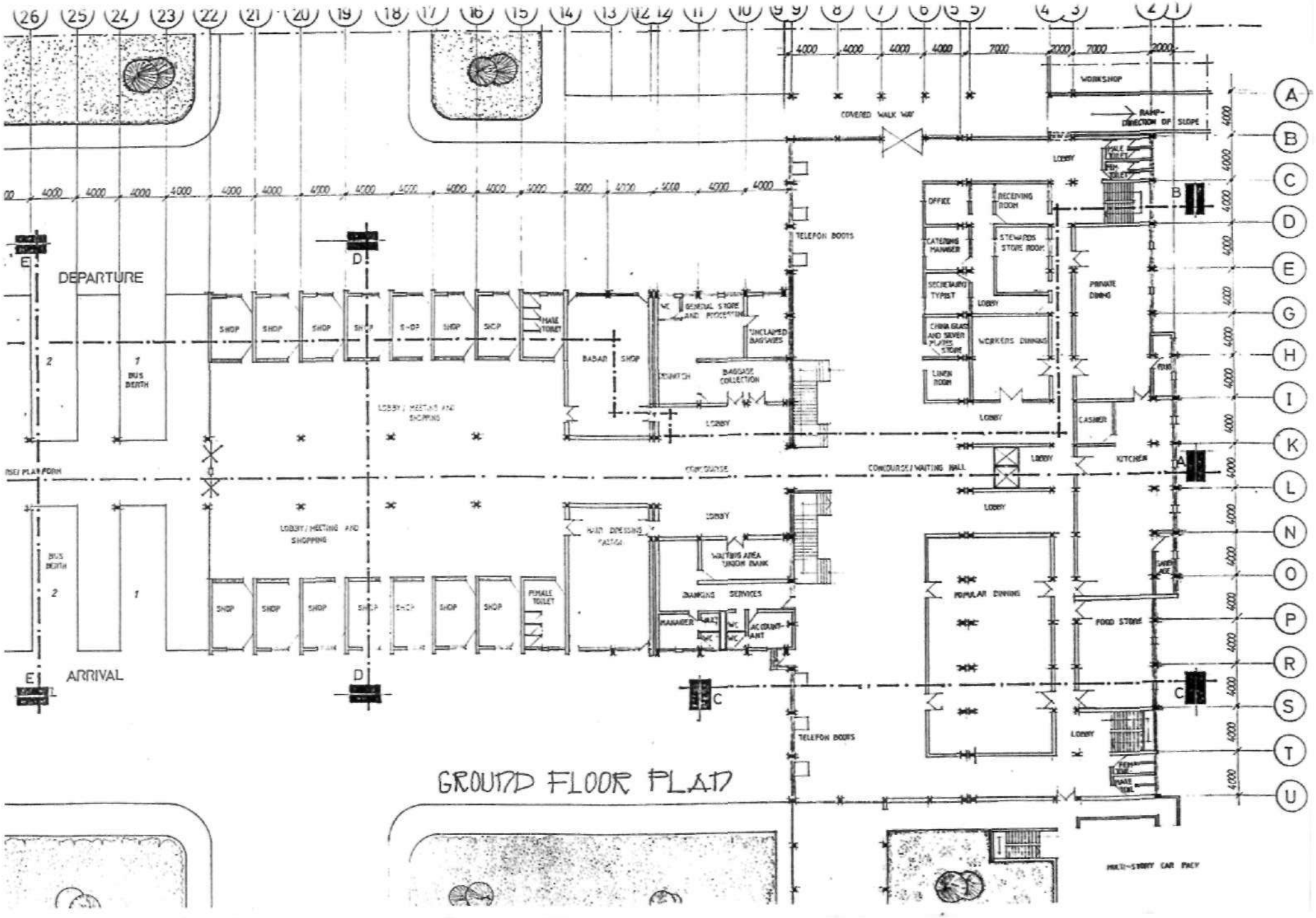
PROF. WOLE SOYINKA
Chairman, Road Safety Corps

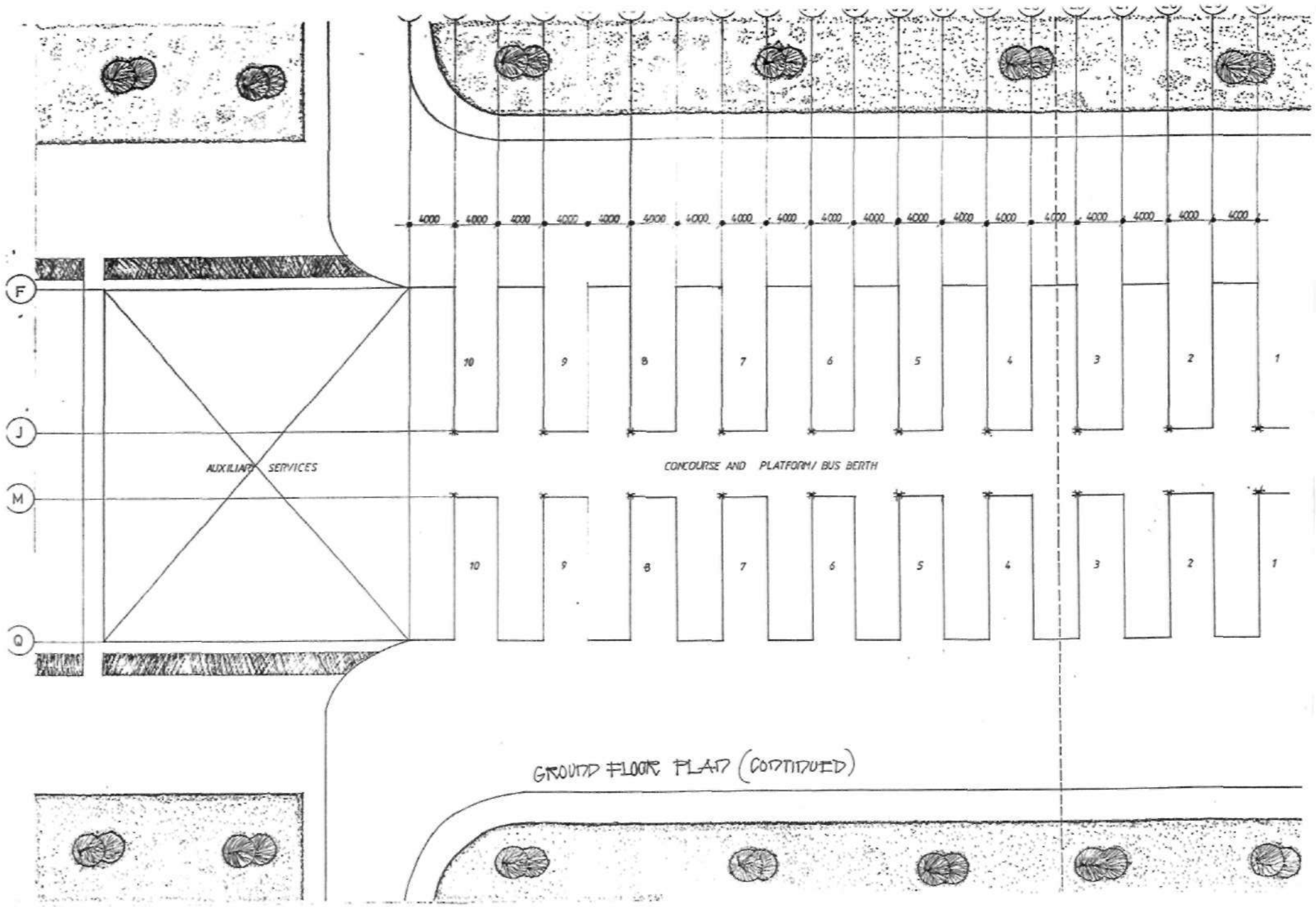
Other members of the governing council include the Editor of the *New Nigerian*, Hajiya Bilkisu Yusuf; Major R.O.A. Salawu (rtd) who is the national co-ordinator, Professor Emmanuel Obechina; Flight-Lieutenant M. A. Egbile; Dr. C. O. Oluduro, the Secretary-General of National Union of Road Transport Workers (NURTW), Mr. Jack and a representative of the Federal Ministry of Transport.

NEW NIGERIAN-NEWSPAPER SATURDAY, FEBRUARY 20th 1988

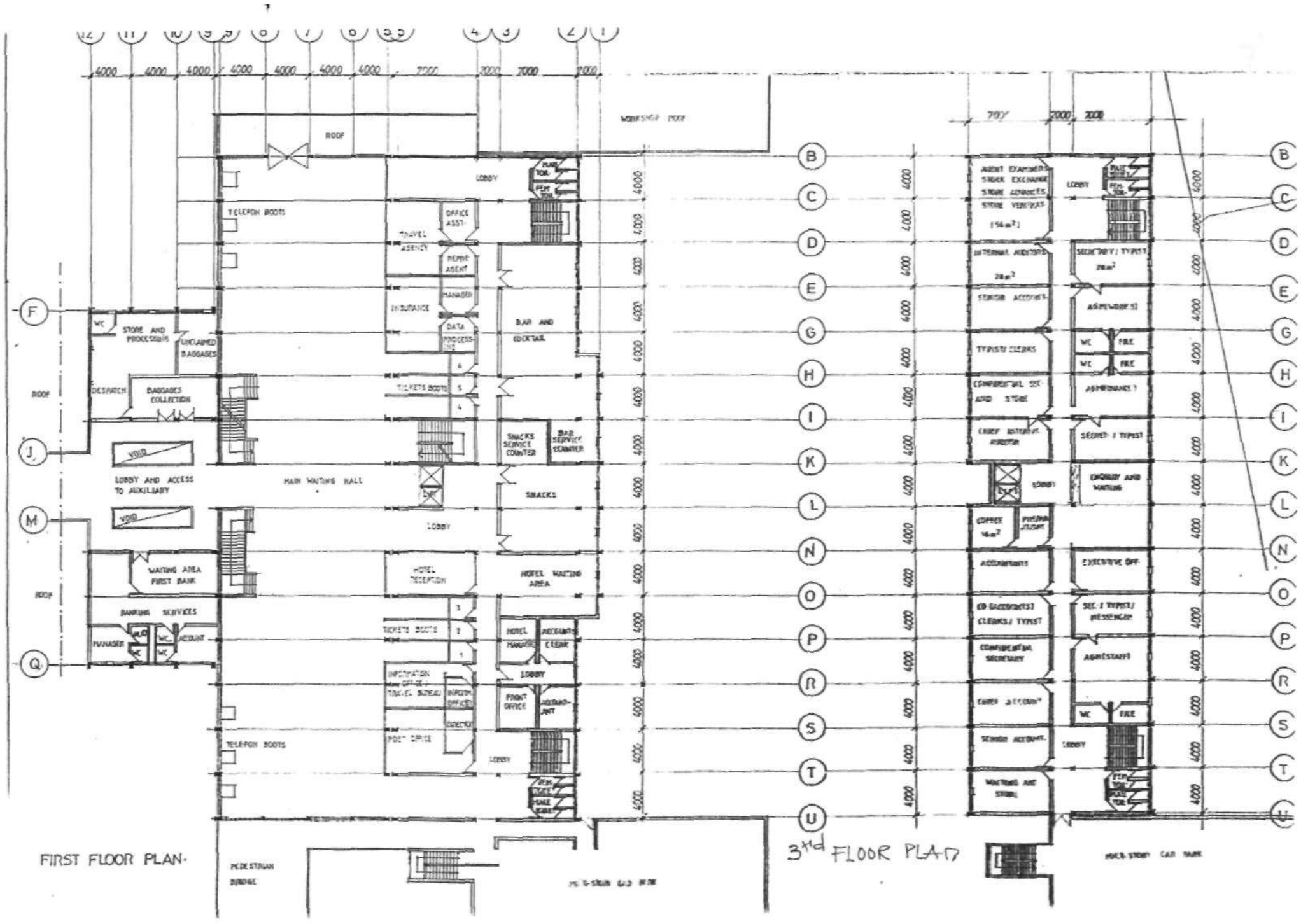


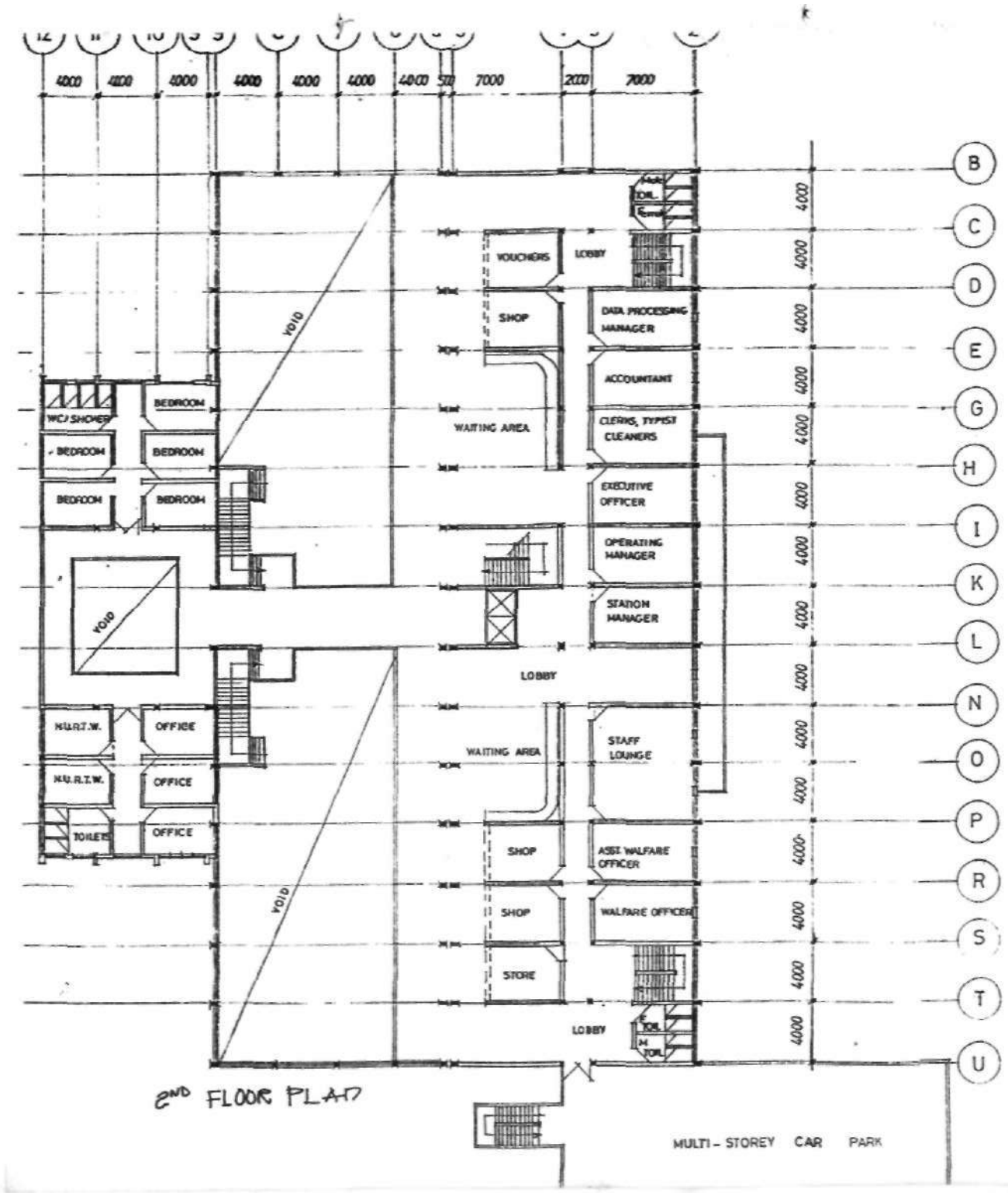
INTER-CITY BUS TERMINUS LAGOS.


DEPARTURE
ARRIVAL
BUS BERTH
SHOP
LOBBY / MEETING AND SHOPPING
BAGGAGE COLLECTION
CUSTOMS
TELEPON BOOTH
WORKSHOP
RAMP - DIRECTION OF SLOPE
OFFICE
RECEIVING ROOM
CATERING MANAGER
STEWARDS STORE ROOM
SECRETARIAL TYPIST
PRIVATE DINING
CHINA GLASS AND SILVER PLATES STORE
WORKERS DINING
LINEN ROOM
CASHIER
KITCHEN
CONCOURSE / WAITING HALL
WAITING AREA UNION BANK
BANKING SERVICES
MANAGER
ACCOUNTANT
POPULAR DINING
FOOD STORE
MULTI-STOREY CAR PARK
GROUND FLOOR PLAN

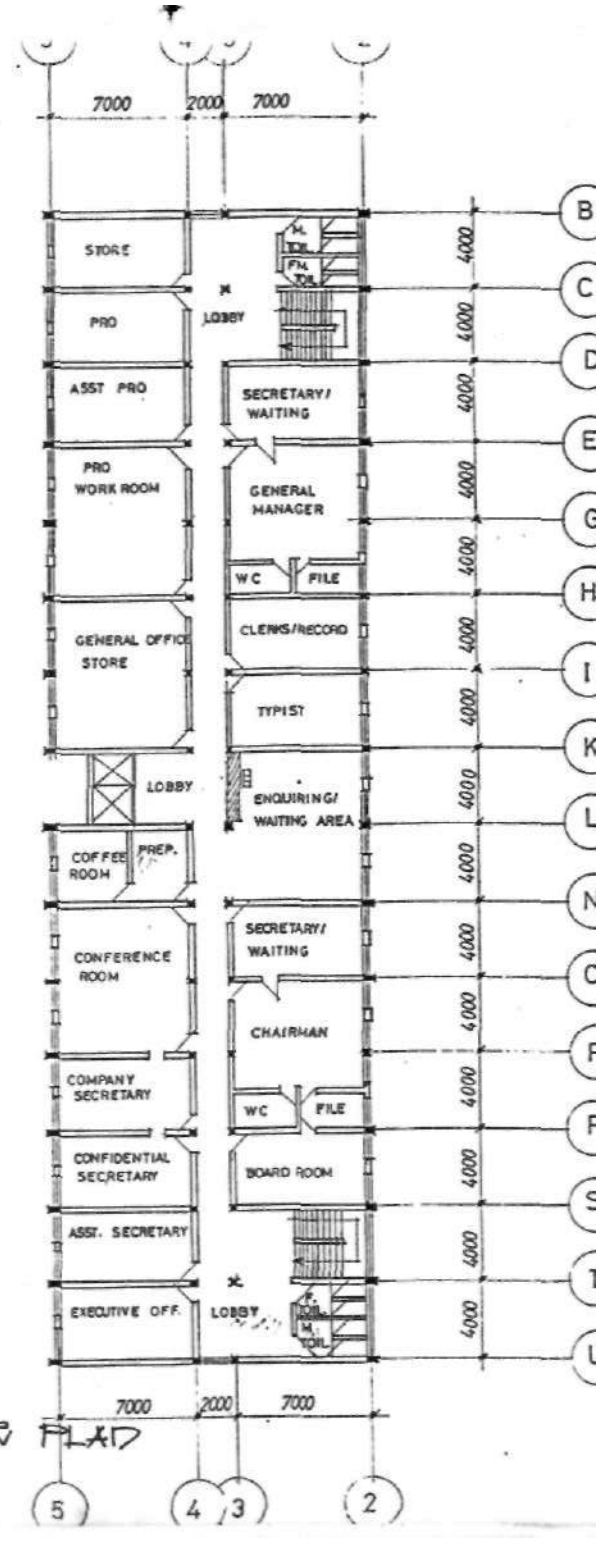


GROUND FLOOR PLAN (CONTINUED)

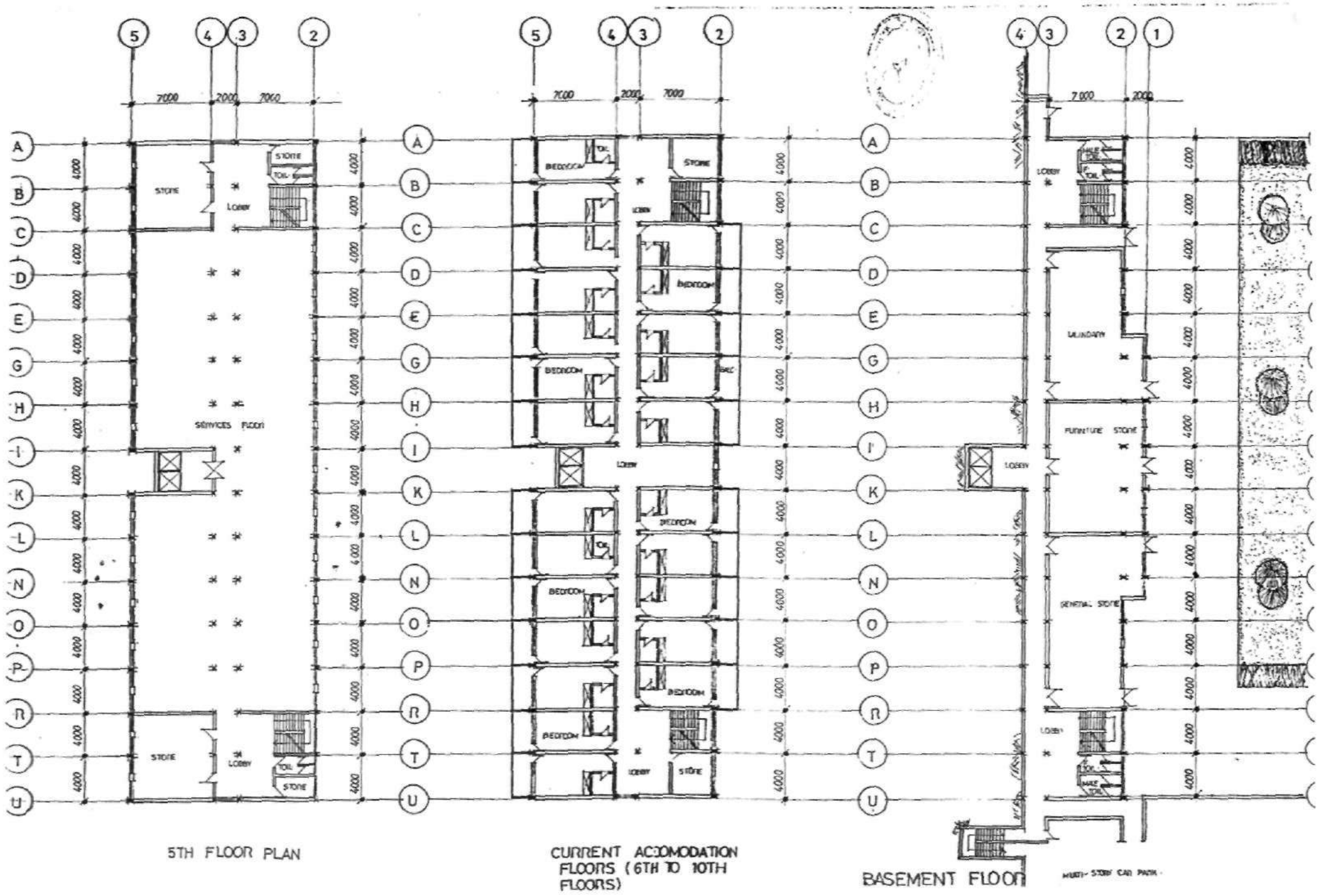

FIRST FLOOR PLAN
3rd FLOOR PLAN
ROOF
LOBBY
TELEFON BOOTS
OFFICE ASST.
TRAVEL AGENCY
PURSER
MANAGER
INSURANCE
DATA PROCESSING
BAR AND RESTAURANT
STORE AND PROCESSING
UNCLAIMED BAGGAGES
DESPATCH
BAGGAGES COLLECTION
VOID
LOBBY AND ACCESS TO AUXILIARY
MAIN WAITING HALL
TICKETS BOOTH
SNACKS SERVICE COUNTER
BAR SERVICE COUNTER
SNACKS
HOTEL RECEPTION
HOTEL WAITING AREA
WAITING AREA FIRST BANK
BANKING SERVICES
ACCOUNT
INFORMATION OFFICE / TRAVEL BUREAU
INFORM. OFFICER
DIRECTOR
POST OFFICE
FLIGHT OFFICE
ACCOUNTANT
HOTEL MANAGER
HOTEL ACCOUNTS CLERK
PEDESTRIAN BRIDGE
WORKSHOP ROOF
AGENT EXPORTS
STORE EXCHANGE
STORE ADVANCES
STORE VERIFIED
SECRETARY / TYPIST
STORES ACCTS
TYPISTS CLERKS
CONFIDENTIAL SEC AND STORE
CHIEF ACCOUNTANT
ACCOUNTANTS
CONFIDENTIAL SECRETARY
SENIOR ACCOUNT
WAITING AND STORE
EXECUTIVE OFF.
SEC. / TYPIST / MESSENGER
ASSISTANT
ENQUIRY AND WAITING
FILE
LOBBY



2ND FLOOR PLAN



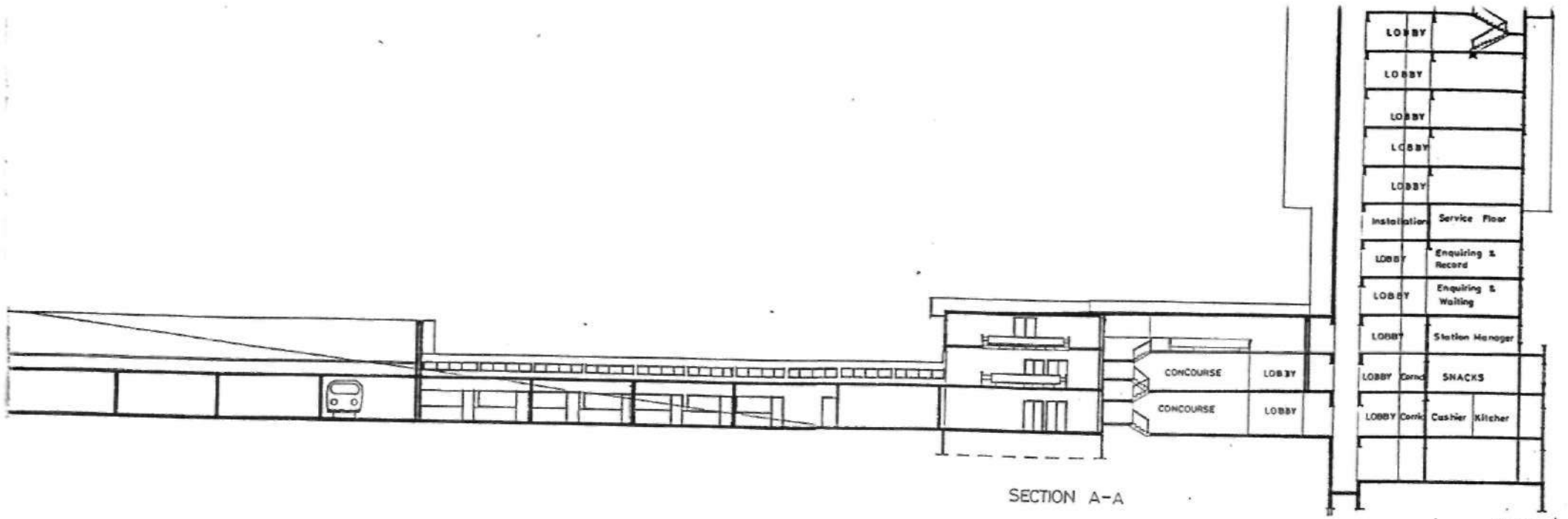
4TH FLOOR PLAN



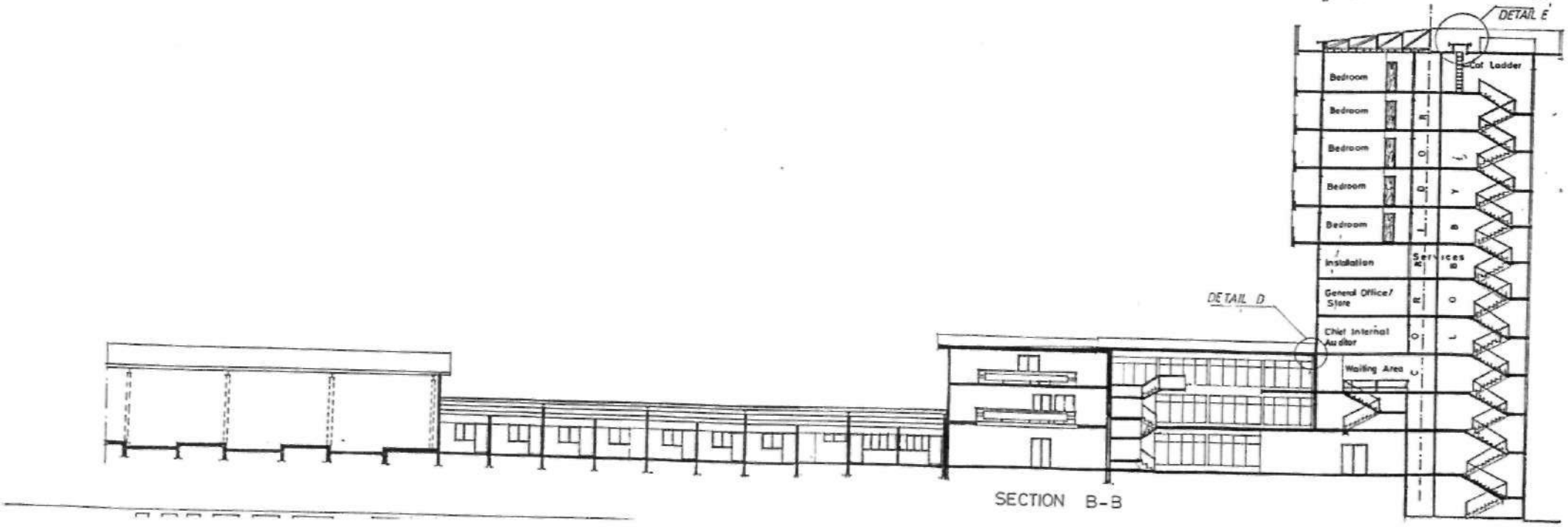
5TH FLOOR PLAN

CURRENT ACCOMODATION FLOORS (6TH TO 10TH FLOORS)

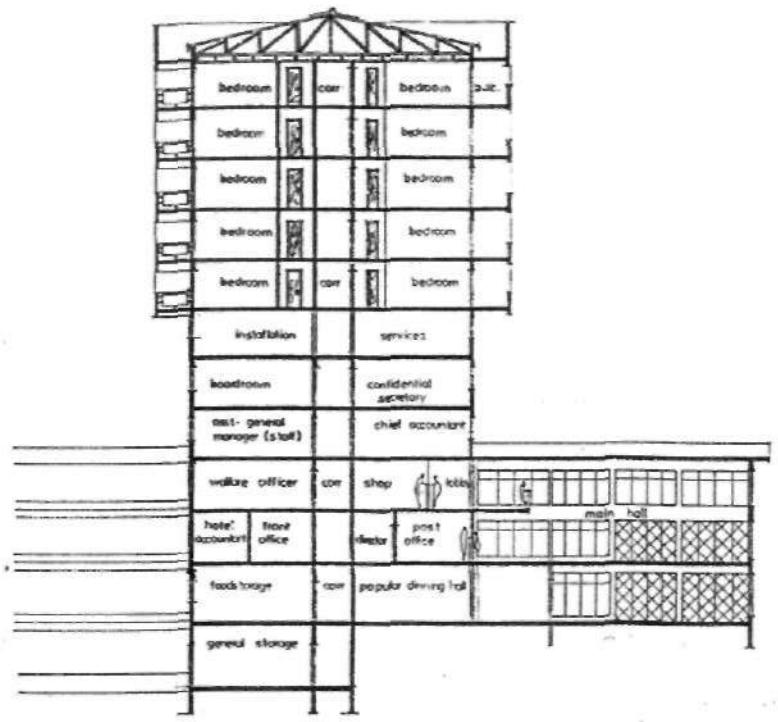
BASEMENT FLOOR



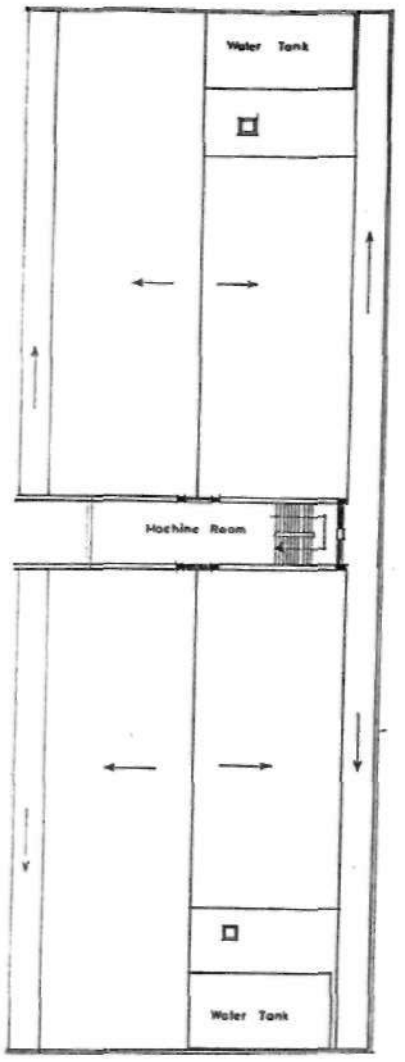
SECTION A-A



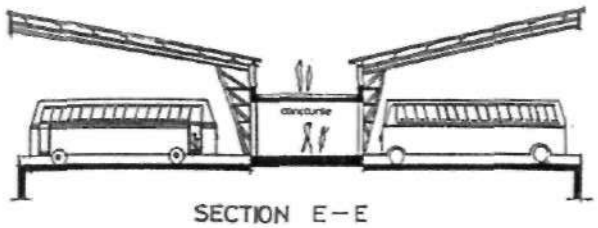
SECTION B-B



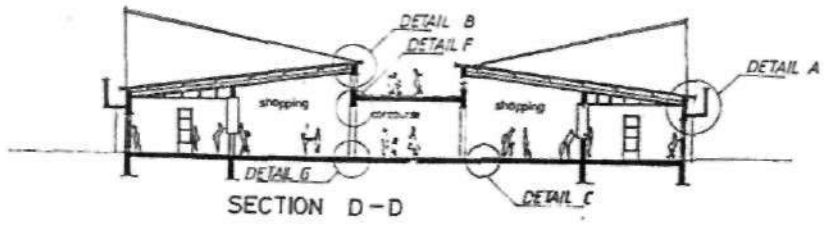
SECTION C – C



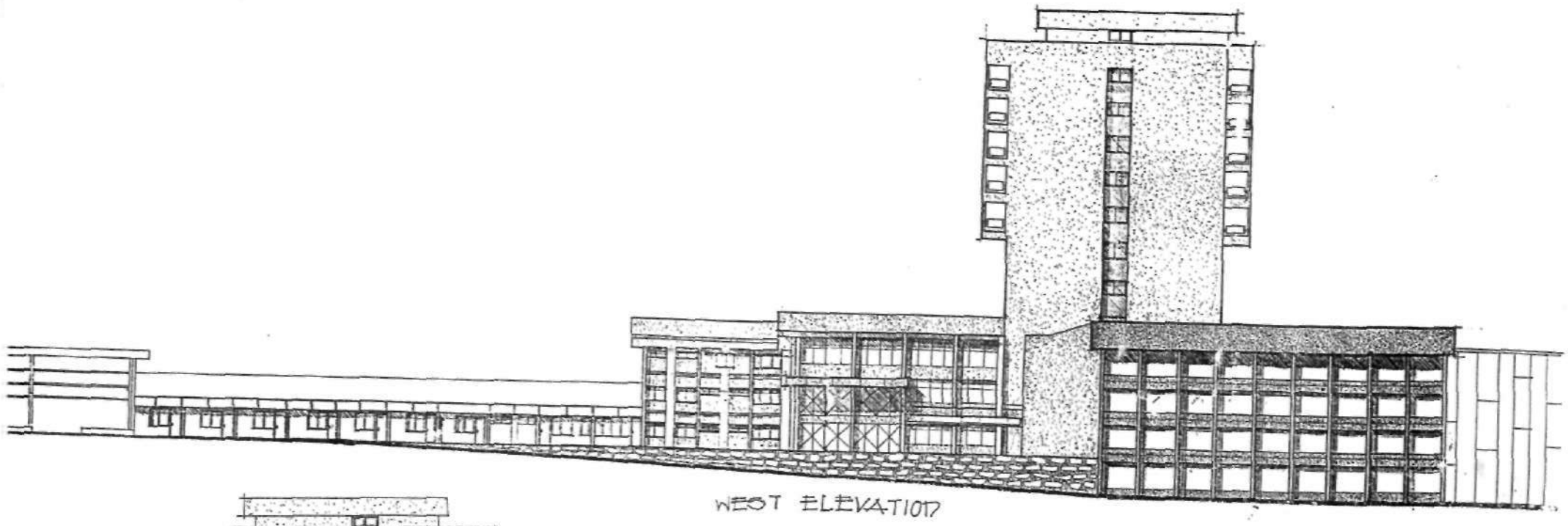
ACCOMODATION BLOCK ROOF PLAN.



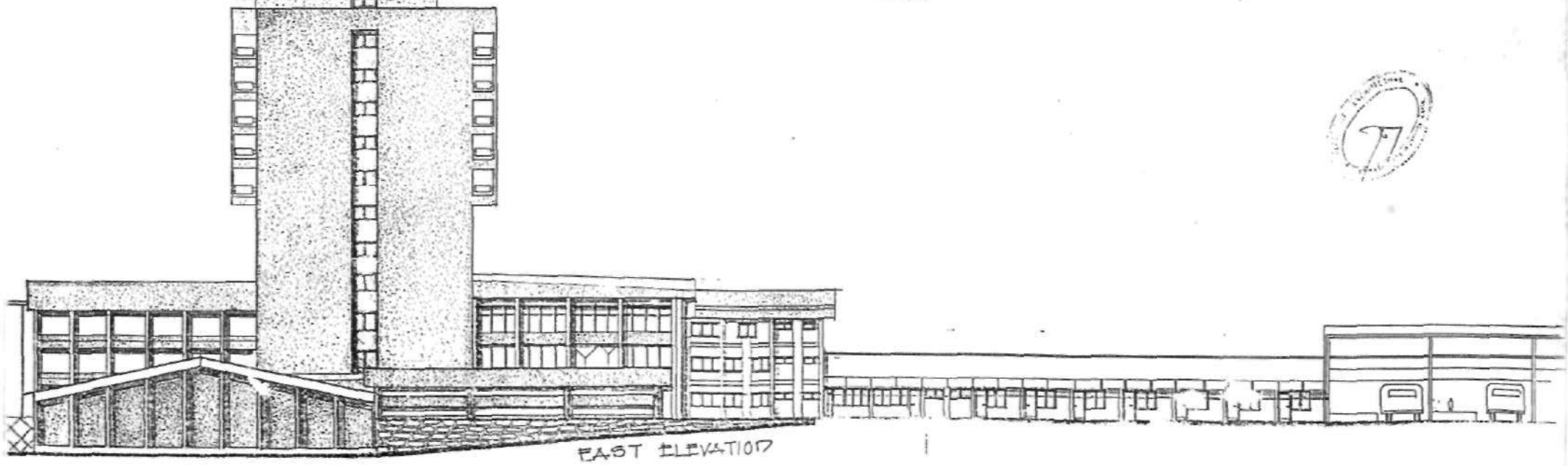
SECTION E – E



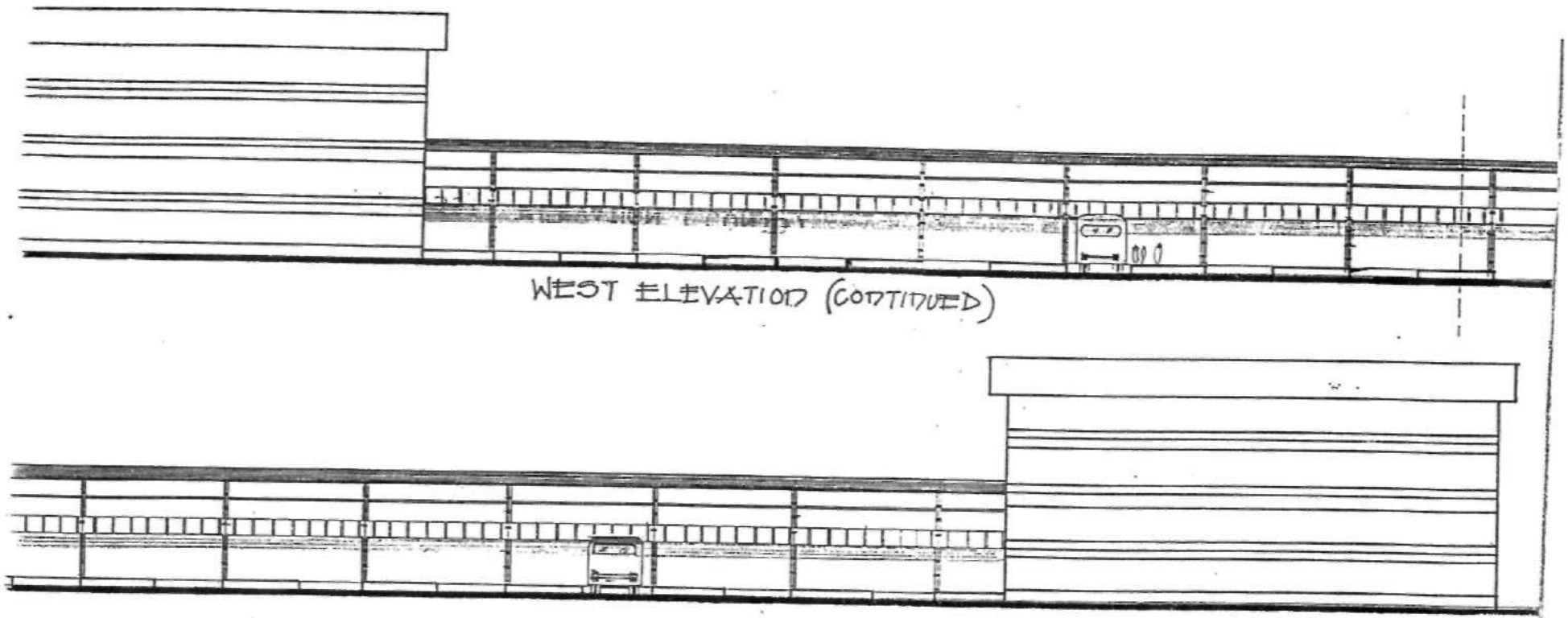
SECTION D – D



WEST ELEVATION



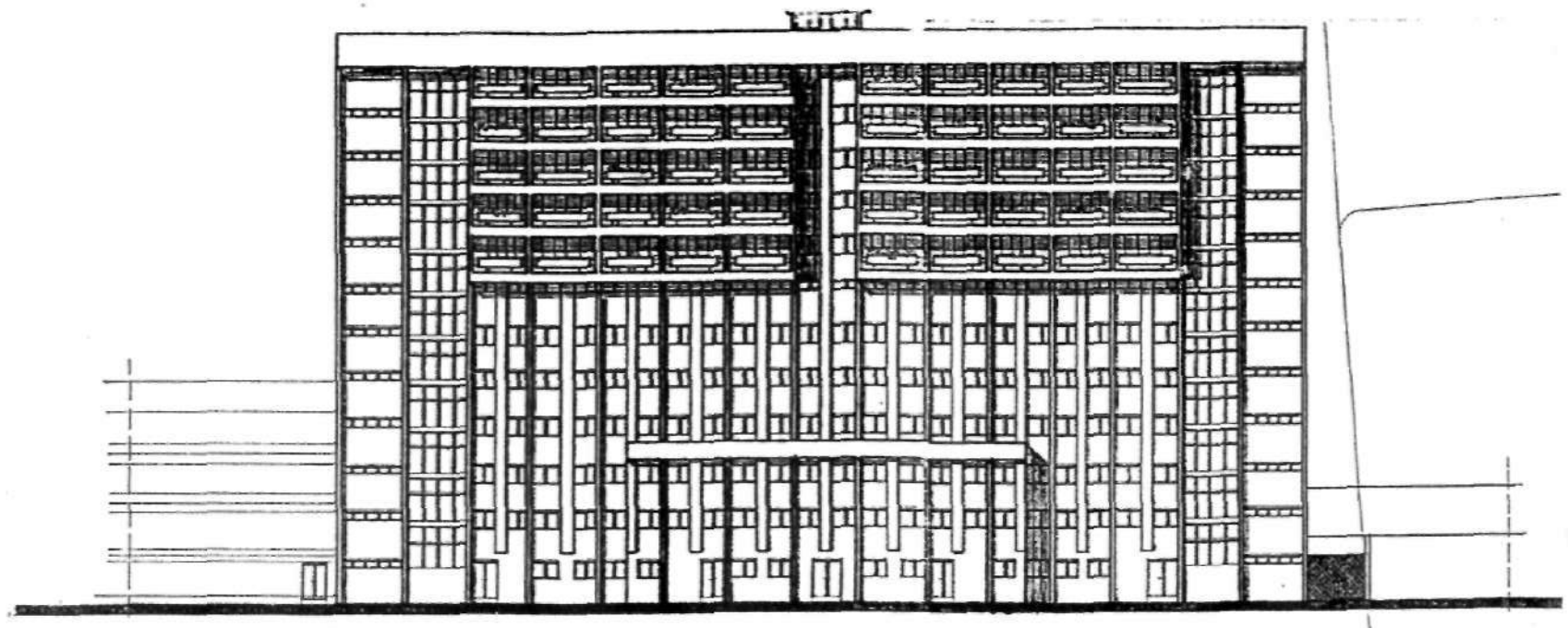
EAST ELEVATION



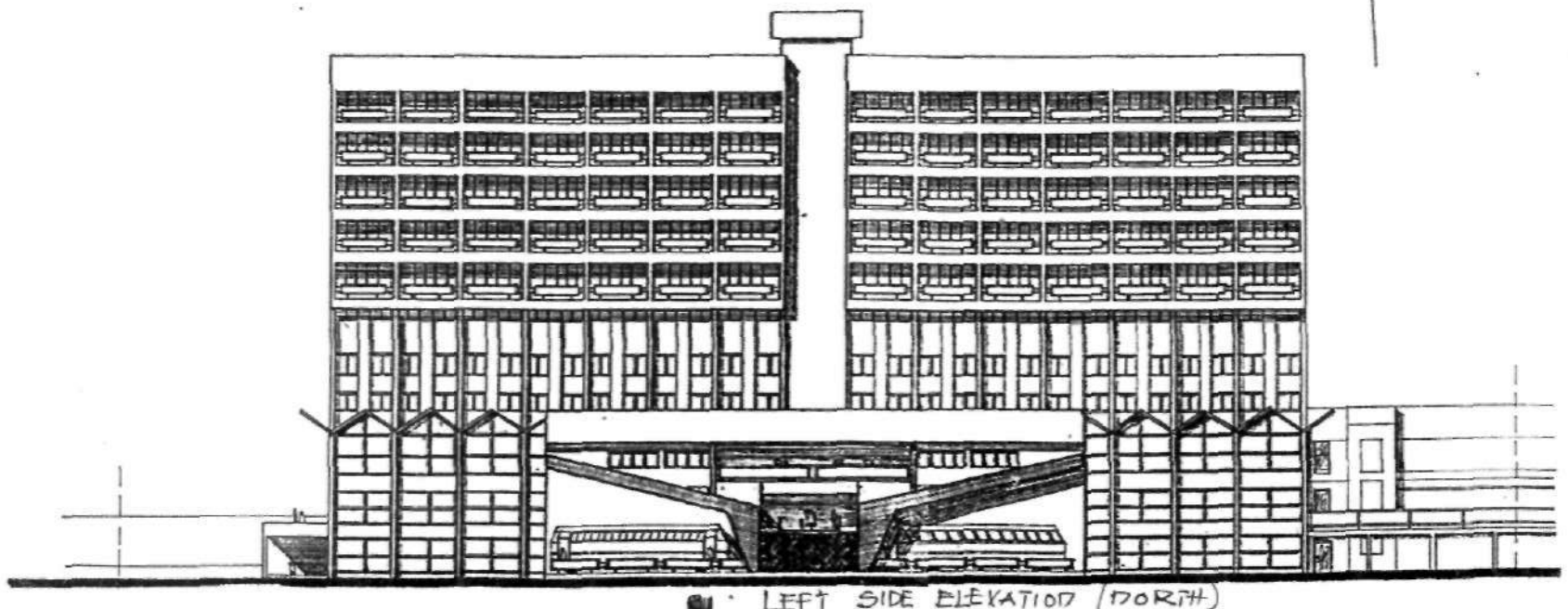
WEST ELEVATION (CONTINUED)

EAST ELEVATION (CONTINUED)

CITY BUS TERMINUS LAGOS.



RIGHT - SIDE ELEVATION (SOUTH)-



LEFT SIDE ELEVATION (NORTH)

PERSPECTIVE

