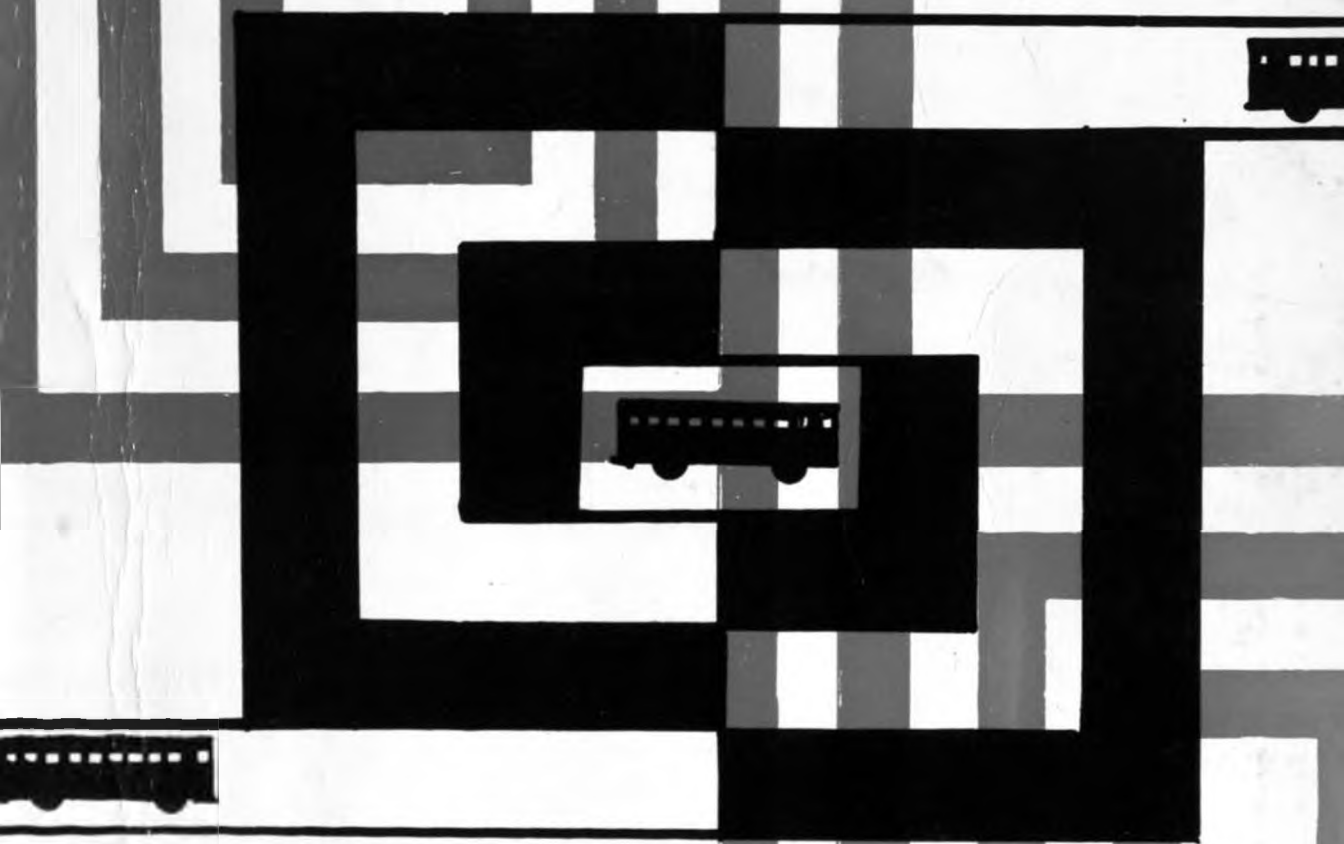


# ROAD TRANSPORT

CENTRAL BUS TERMINAL

KAMPALA UGANDA



KIKUBA SAMUEL M.ARCH. 2 1975  
UNIVERSITY OF NAIROBI

DECLARATION

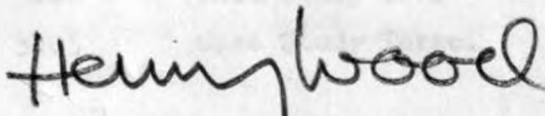
This Thesis is my original work and has not been presented for a degree in any other University.

NAME OF AUTHOR

  
Samuel Kikuba

This Thesis is submitted as part of the University Examination for the Degree of Master of Architecture.





CHAIRMAN OF DEPARTMENT OF ARCHITECTURE  
UNIVERSITY OF NAIROBI.

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## PREFACE:

Travel is man's day to day activity, travel is somewhat a leisurely affair conducted in a ground manner, that is with as much dignity as the means of transport then permitted.

In the present era, the speed and variety of transport opens up an expanding vista for travellers and the manner in which we make our journey will depend upon the facilities provided to enable us to travel. Throughout our journeys by whatever means of transport we select, we cannot be unaffected by the measures, either suggested or not, provided for our safety and comfort on our way between home and destination.

The planning and design of buildings, equipment associated with our journey and with which we come into contact intimately, constitute what we may call 'Travellers Architecture'

Every transportation network viewed as a whole consists of two elements; i.e. routes, and points or interchanges. The stops, the points of interchange, are the meeting places between the various systems or between the system and the pedestrian who still uses the most ubiquitous means available, two legs.

The passenger handling building poses within a complex, however, the greatest architectural problem not only because of its inherent planning difficulties, but because it most concerns itself with people.

As in almost every instance, it can be taken as axiomatic that the amount of architectural involvement is proportional to the intensity of human use; an underground tunnel is not an architectural problem; an underground station is.

By comparison with the aircraft and the express train the local bus is an underprivileged means of public transport, and its status is reflected in the quality of buildings housing bus passengers.

It is time to change the conception of the building from just a bus station to a prestigious design.

Though private cars grow in number, public transport will play a more important role in provincial life in the next decade.

Most urban roads and car-parks are already stretched to their limits, and bus transport must be improved.

As far ahead as we can see, movement through our towns and cities must depend on the ability of the public transport to carry a lot of people to and from work.

Although countries or towns may plan some underground railways, buses are likely to remain the most widely used public vehicles, especially in developing countries, but there has been little or no official concern or providing terms for better bus journeys ..

Identification with poorer people and maintenance of economic fares have probably caused a lack of serious consideration of the building, though there is only a difference of degree in traveller's needs whatever the sort of public transport .....

All require shelter, waiting space, shops, refreshments easy transfer to other transport services and segregation from smokers, trains and buses .....

Yet the traditional hierarchy of airport, railway station and bus station has left the poor relation out in cold-literally.

The projected development of air-conditioned, electrically controlled buses in an attempt to increase efficiency and comfort, must be reflected in terminal design ....

The bus station which is especially planned is a relatively new development brought about by a general increase in public-service traffic.

Its provision is also due to the desire to increase public safety by reduction of obstructions in streets and to avoid traffic delays arising from vehicles stopping to pick up and set down passengers change crews, etc, in any but recognised and authorised locations.

It is probable that fully planned bus station facilities will be regarded as a necessity in all urban area in the near future.

The Kampala bus station is the only one handling all buses both upcountry and local bus services i.e. city service buses, within Kampala city.

The Uganda Transport Company is responsible for the Kampala bus station. It is in most cases considered as a parastatal body since it is a government owned company.

The most important aim of this company is not so much profit making but to provide the public or citizens throughout the country with efficient transport.

Once people come together in a group i.e. forming a society of similar interests there are some common activities which are automatically formed within that society. It would be of great achievement on the part of our environmental designer to respect such social activities.



## 2.00 UGANDA'S TRANSPORT SYSTEM:

### 2.01 UGANDA'S ROAD NETWORK AND ITS DEVELOPMENT:

The road network of Uganda is well developed (and well developed) for a country at Uganda's stage of development. This may be attributed to the several factors amongst which the small size of the country is important; for instance a journey from East to West is 530 km (329 miles) whilst a journey from North to South is 905 km (562 miles).

This road network was well developed before the arrival of the British and several other early explorers remarked on the good wide roads especially in Buganda.

The original dense network has been attributed to the widespread use of communal effort to maintain the roads which were in operation before the arrival of the British and remained for the many decades afterwards.

The network was expanded and improved under the British administration, with particular emphasis on opening areas for cash crop production.

Uganda is well supplied with raw materials for road construction, and this enabled the administration to provide a good network for the light amount of traffic operation at that time. In recent years, the traffic population has increased in weight and speed; and on several main roads the murrum surface has become totally inadequate.

FIG. 1. UGANDA'S ROAD NETWORK

As a result, the Uganda Government has initiated a policy of re-aligning and bitumenising several of the main roads.

Very few new links are being constructed as the emphasis is on improving the quality and carrying capacity of the existing links.

FIG. 1. The road network as defined by the internal communication map in the atlas of Uganda and from which the main roads only have been extracted.

Since Uganda's independence in 1962, rapid progress has been made, and several projects have been started to bitumenize large stretches of the main roads.

This has been arisen partly to promote development in peripheral regions and partly because several main roads had reached the volume of traffic which necessitated a bitumen surface.

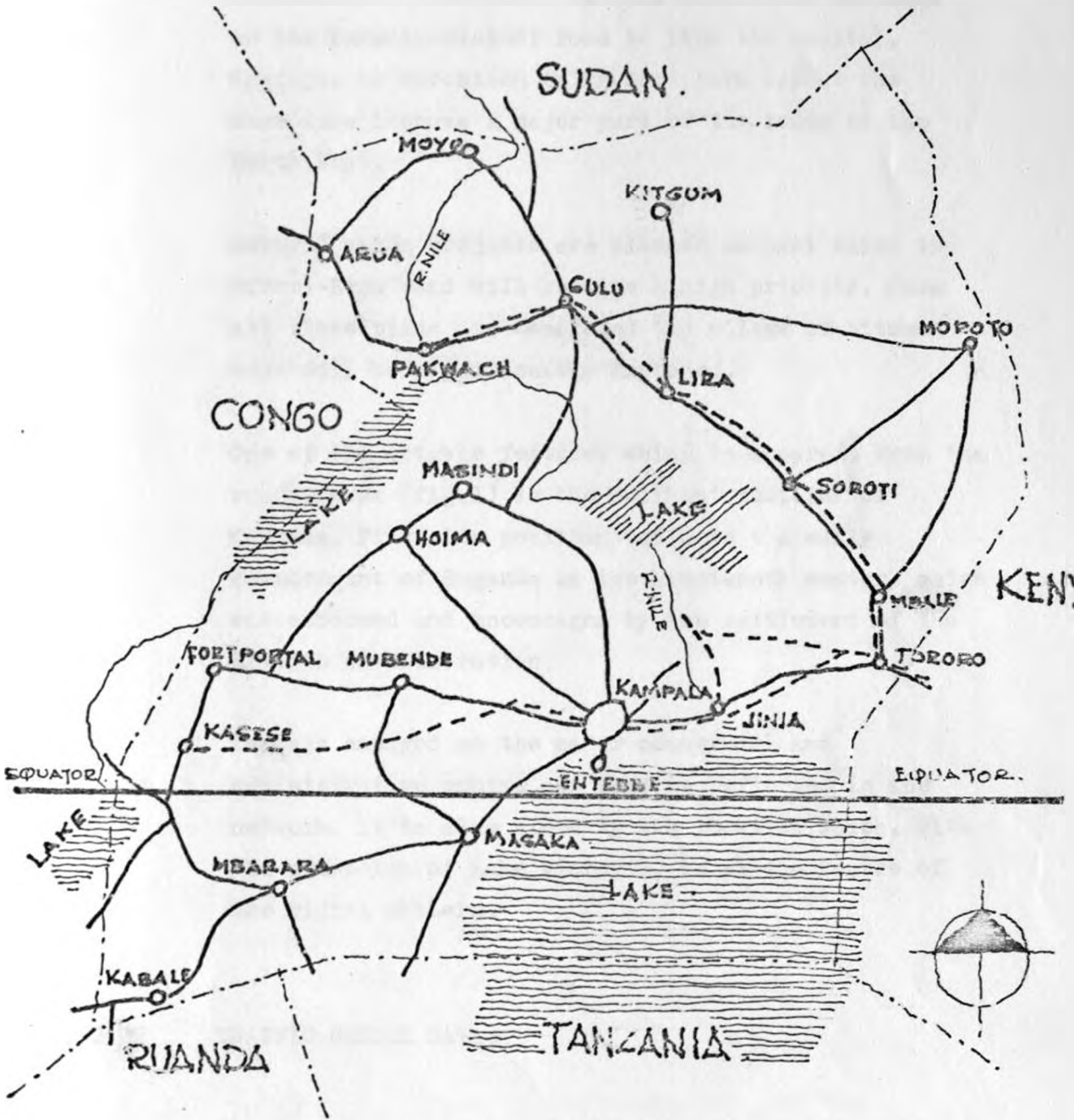
A higher priority has been given to some roads in the aim to develop farming and to speed the transit of crops from peripheral regions to the Kampala market ... ..

The desire to encourage tourism has also been reflected in the plans for road improvement. Most important consideration was the improvement of communication and transportation throughout the whole country.

SCALE 1:200,000

The completion of bitumen roads from Kampala to the West with its attraction of Kabalega Game Park and

FIG: 1 UGANDA'S ROAD NETWORK.



LEGEND

- MAJOR ROADS
- - - - RAILWAYS
- · - · NATIONAL BOUNDARIES
- TOWNS
- ▨ LAKES

SCALE 1:4,000,000

the Ruwenzori mountains. Bitumen also being extended on the Kampala-Masindi road to link the capital, Kampala, to Murchison Falls Game Park and at the same time improve a major part of the route to the North-West.

Several other projects are planned amongst which the Soroti-Lira road will receive a high priority. Once all these plans are completed the mileage of bitumen road will be significantly improved.

One of the notable features which is apparent from the road network (fig.1) is the dominant position of Kampala. First its position reflects the early development of Buganda in the nineteenth century which was enforced and encouraged by the settlement of the British Administration.

Kampala emerged as the major commercial and administrative centre and thus is reflected in the network. It is also aided by its location which, with the exception of Lake Victoria, is at the centre of the radial pattern.

## 2.02 TRAFFIC CENSUS DATA:

The traffic census is conducted by the ministry of communication and transport in all Uganda roads.

The census points are sparse and predominantly found in Buganda region and may not give an adequate picture of the whole country.

New census points are constantly being added and the present system has at least one census point on each main road. The general policy is one in recording local flow around the large towns and the long distance flow between towns.

The census is taken every six-months for 7 days each day being from 7 am to 7 pm. The counter records vehicles according to four classes; motor cars, lorries, buses and motor cycles.

Fig. 11 and 111 gives the daily flow of different types of vehicles. This has confined to the census taken during the second half of 1970.

The map shows a concentration of traffic around the main towns.

There are two elements in Uganda's traffic flow: Firstly there is a local traffic flow which will be associated with every centre but which is marked around district centres and large towns. Secondly, there is a long distance flow which appears to be originated in Kampala.

### 2.03 : REGIONAL VARIATION IN TRAFFIC FLOW:

This is purely to give a clear picture of the penetration of various vehicle types into different regions of Uganda, and to show a particular type of vehicle which seem to dominate

in any one region and why!! .....

Uganda is marked by strong regional variations in economic development which are reflected in the traffic flow.

FIG. IV and V illustrates the extent of these regional variations and also to provide a basis of comparison with other factors.

FIG. IV also present variation in density of traffic for buses only.

On the map, the lake shore districts plus Lugisu in East, show high values, with west Mengo having very high densities.

Districts adjacent to West Mengo benefit from the influence of Kampala, for example much of the East Mengo's traffic on the main roads is through traffic from Kampala to other districts. The same is true in Masaka and Mubende district. By comparison the districts in the far east and far North exhibit very low densities due both to a lack of development and a peripheral position.

It is interesting to note the correlation of traffic density with other factors. It could be expected that traffic would partly reflect the number of people available to move and therefore traffic density was correlated with population density.

Population distribution throughout Uganda is

playing a very big roll in both the road network system, traffic flow and traffic density.

Even taking population into account, there are still large regional discrepancies in the volume of traffic flow. Traffic density reflects the general economic development of Uganda which have strong contrast between the developed core areas (Masaka, Mengo, Busoga, Bukedi and Bugisu) and the relatively undeveloped North and West.

FIG. VI has been weighted by population density and thus accounts for both population and district size.

There are interesting differences however, once types of vehicles are analysed, as this is partly explained in (Fig. VII) which shows the different types of vehicles making up the average daily flow per mile of road in each district.

Whilst the pattern is predominantly uniform.

there are relatively greater concentrations of lorries in some Northern districts. Unfortunately it is impossible to determine whether this is due to differences between economic development in the North and for example West Mengo. There is a large number of army barracks in the North and the degree to which army-lorries feature in this figures cannot be calculated.

Buses play a relatively greater part in the North and to an even greater extent in the Eastern

# UGANDA'S VEHICLE POPULATION.

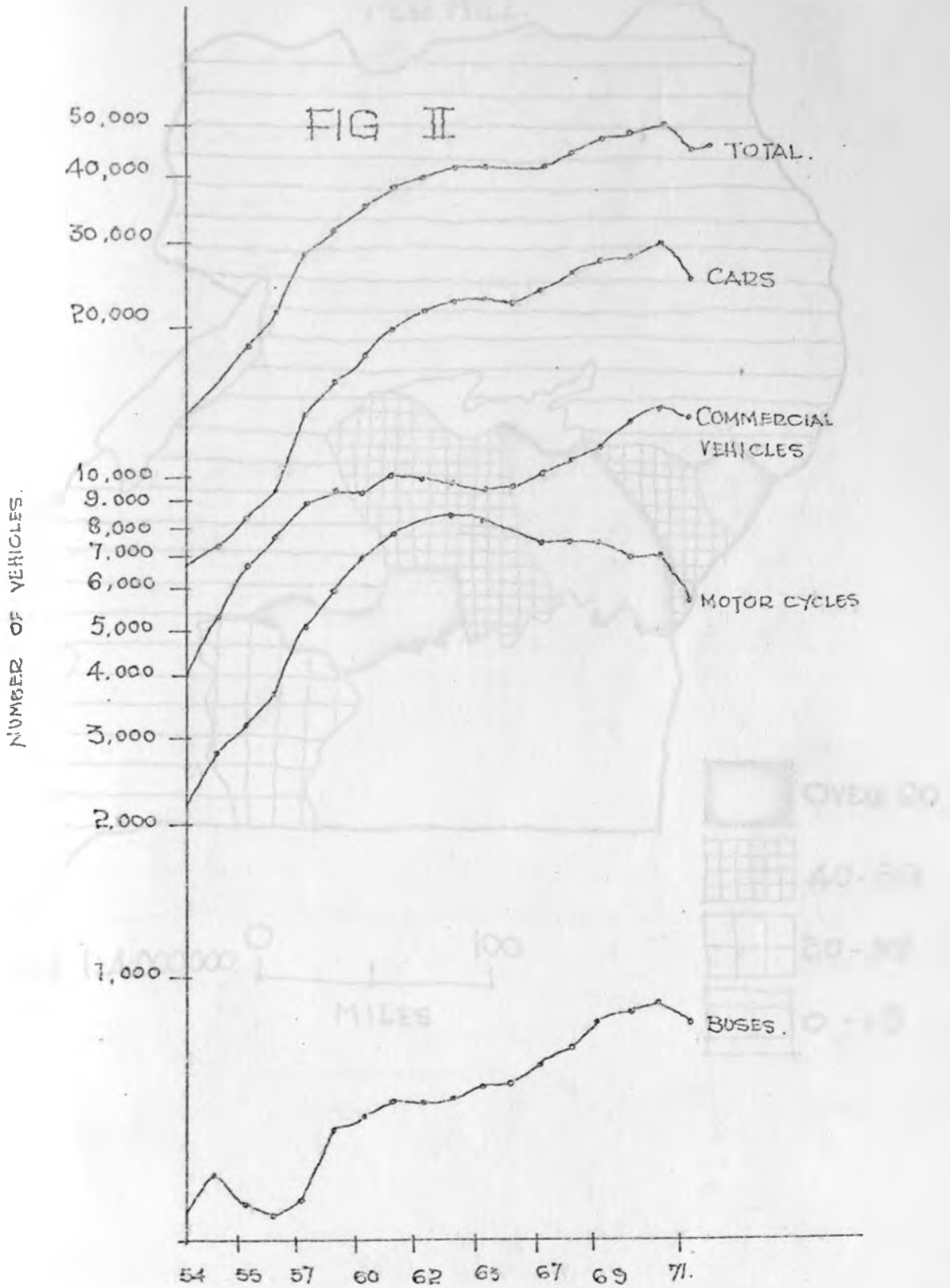
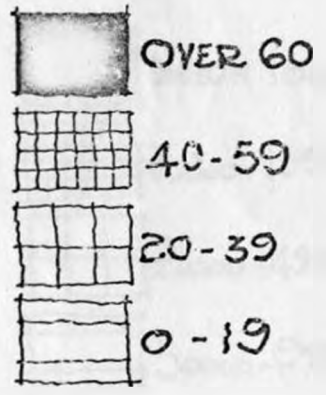
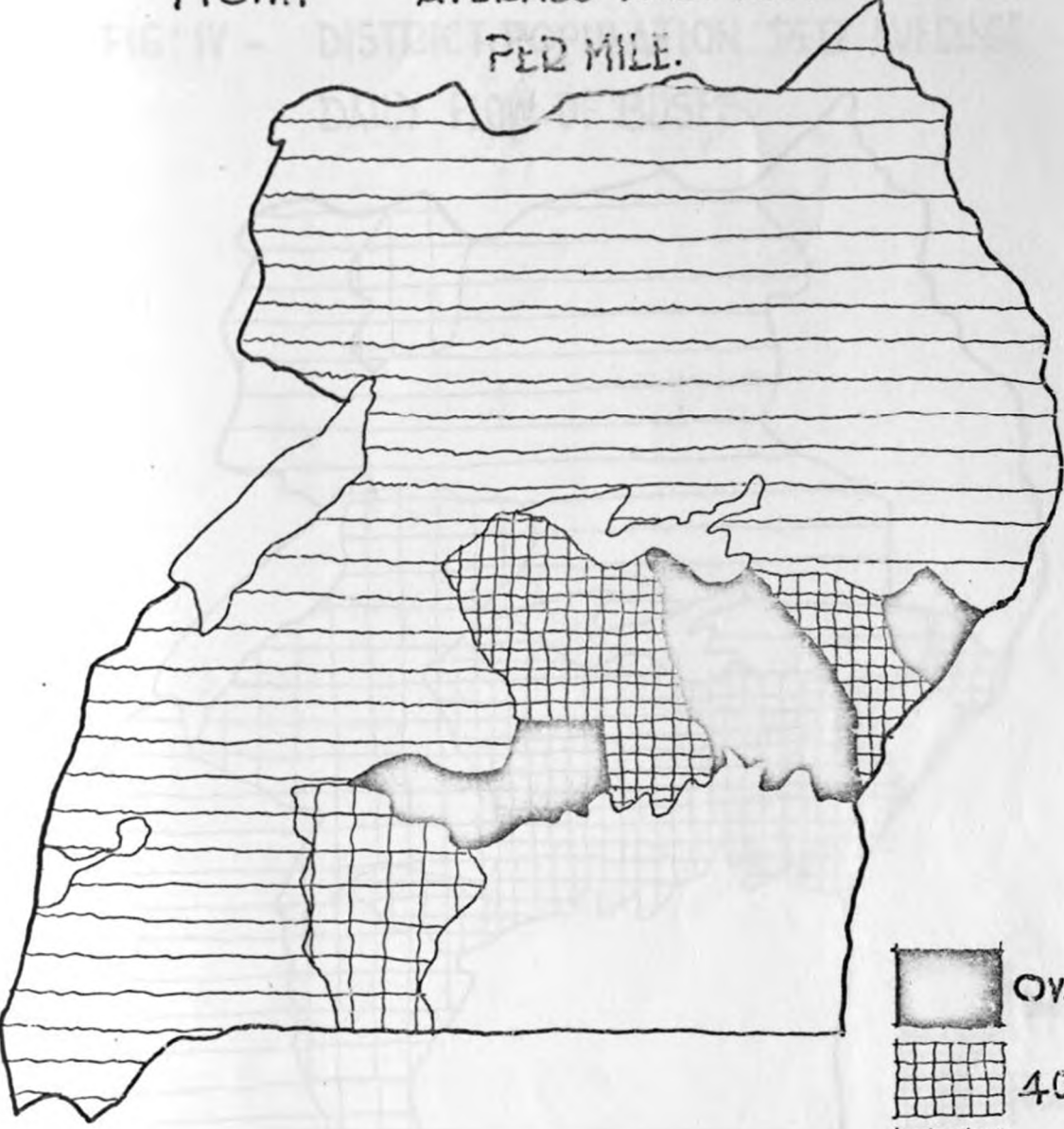


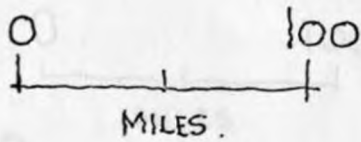
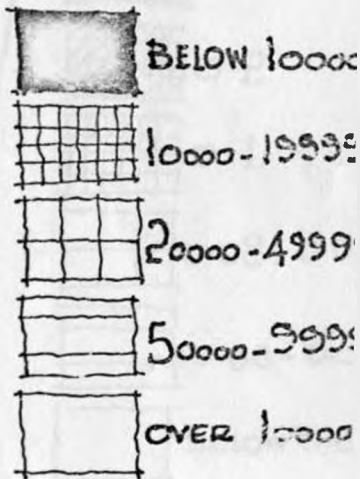
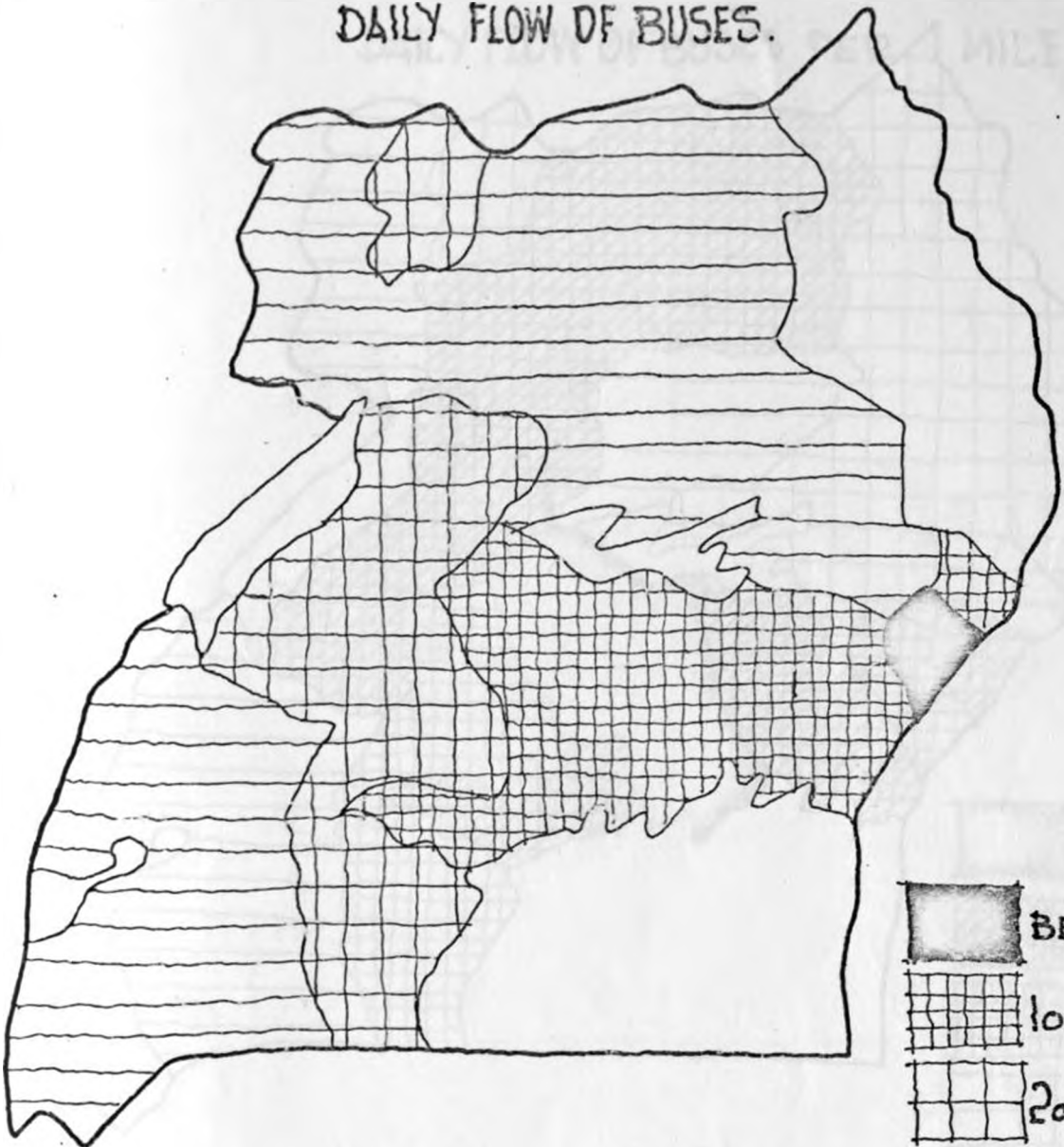


FIG. III AVERAGE DAILY FLOW OF BUSES  
PER MILE.



SCALE 1:4,000,000. 0 100  
MILES

FIG: IV - DISTRICT POPULATION PER AVERAGE DAILY FLOW OF BUSES.



SCALE 1:4000000

FIG: V POPULATION DENSITY PER AVERAGE  
DAILY FLOW OF BUSES PER MILE.

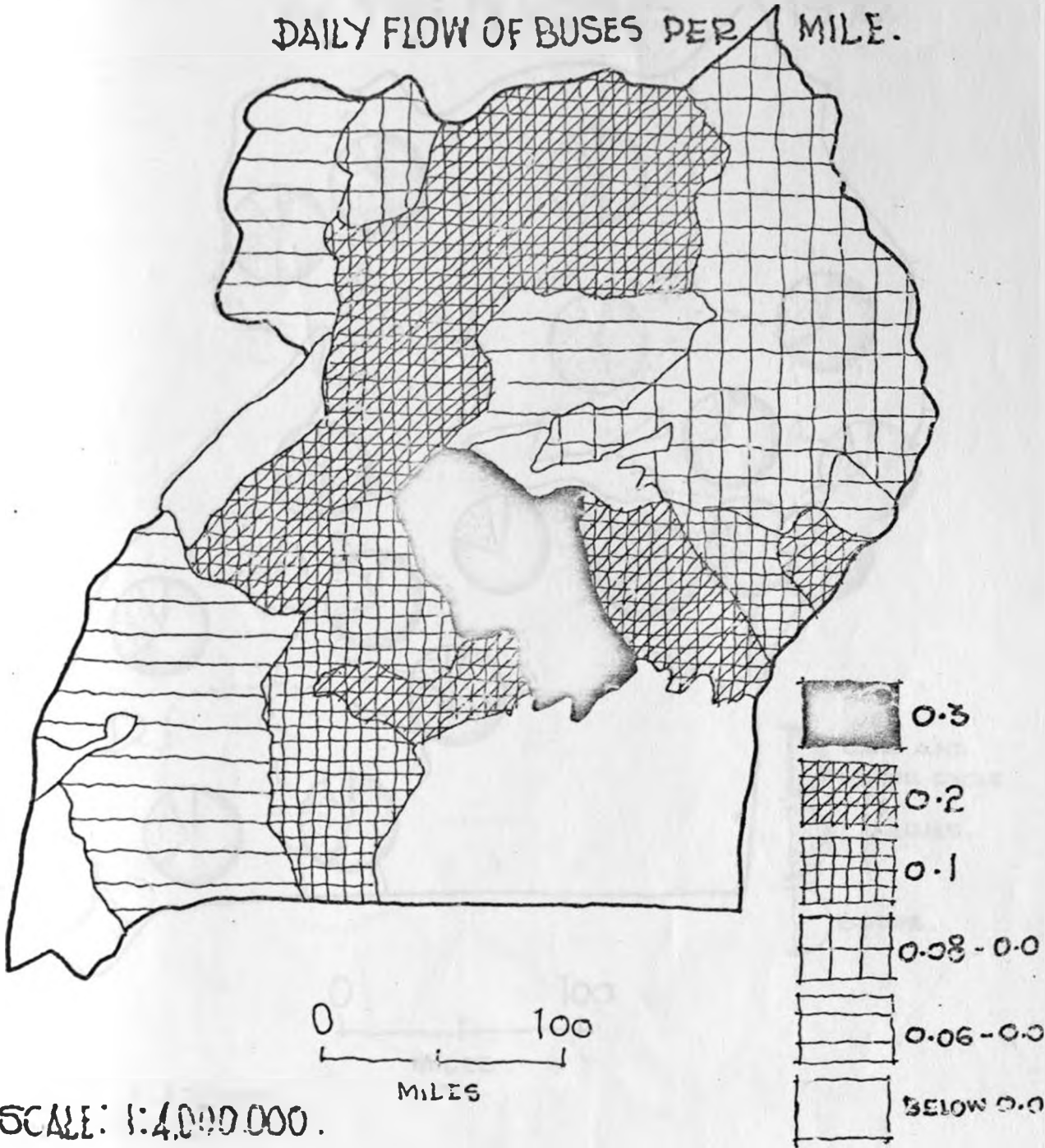
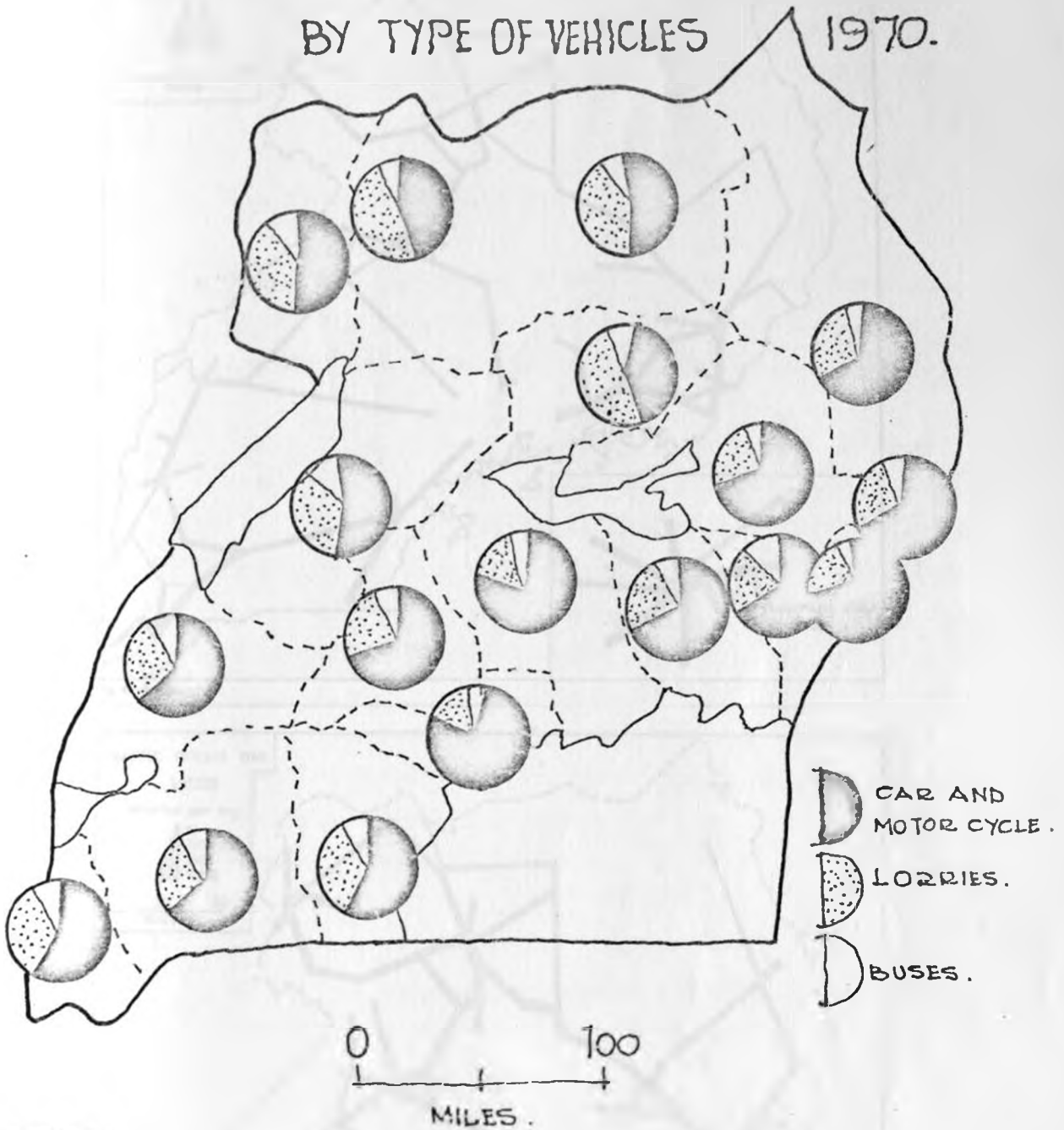


FIG: VI AVERAGE DAILY FLOW OF VEHICLES  
PER MILE OF ROAD: COMPOSITION  
BY TYPE OF VEHICLES 1970.



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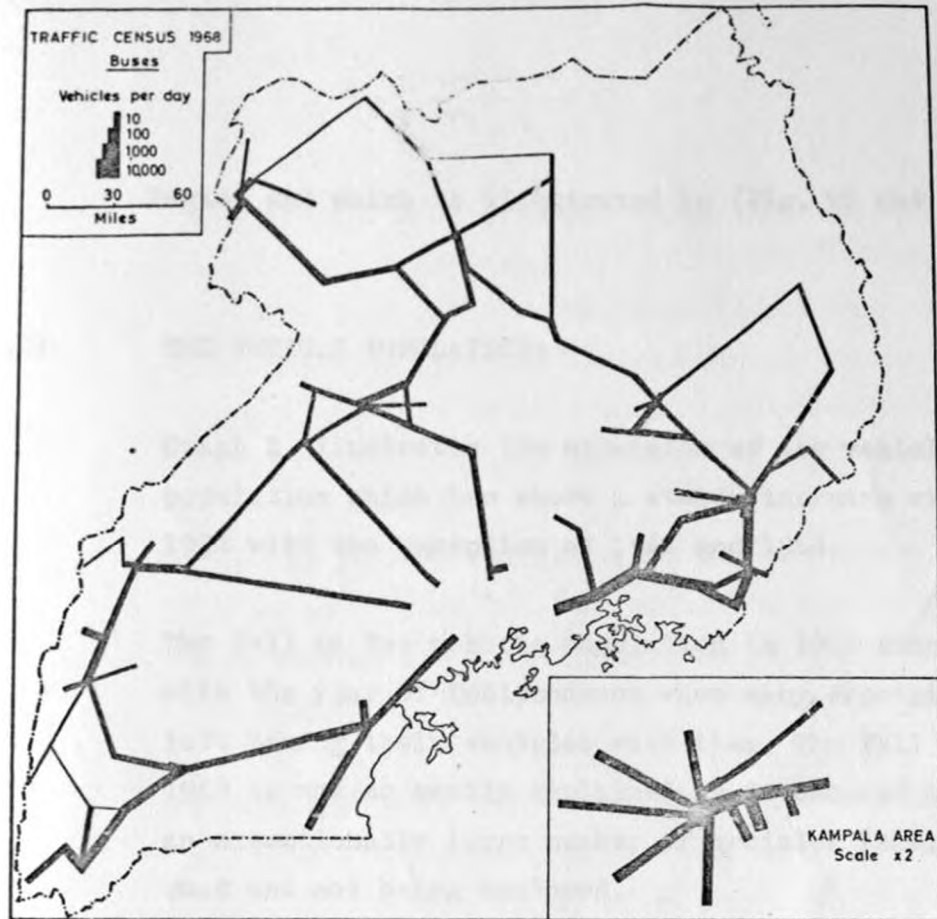


Fig. 6 - Buses

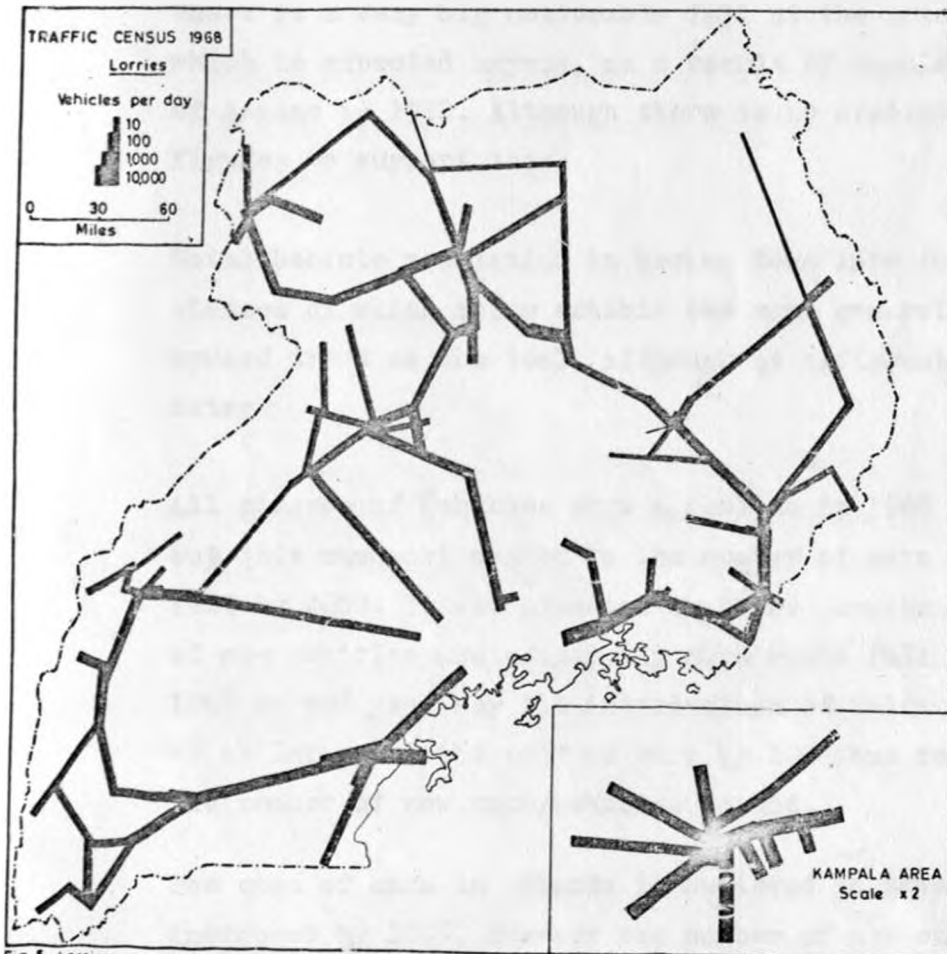


Fig. 5 Lorries

Region and which is illustrated in (Fig. VI and VII)..

2.04

#### THE VEHICLE POPULATION:

Graph 1 illustrates the expansion of the vehicle population which has shown a steady increase since 1951 with the exception of 1962 and 1968.

The fall in the vehicle population in 1962 coincided with the year of independence when many expatriates left taking their vehicles with them. The fall in 1968 is not so easily explained as it occurred through an exceptionally large number of vehicles leaving the road and not being replaced.

There is a very big noticeable fall at the moment which is expected anyway, as a result of expulsion of Asians in 1972. Although there is no available figures to support this.

Total vehicle population is broken down into four classes of which three exhibit the same general upward trend as the total, although at different rates.

All classes of Vehicles show a decline in 1968 but this was most marked in the number of cars which fell by 4000. It was expected that the number of new vehicles and especially cars would fall in 1968 as mid year saw the introduction of Sales Tax which increased the cost of cars by 10% thus reducing the number of new cars/vehicles bought.

The cost of cars in Uganda is believed to have increased by 100%. However the number of new cars actually registered in 1970 decreased.

Cars are the most important element in the vehicle population, accounting for 56% in 1968, other vehicles were lorries 29% buses 3% and motor cycles 12%. This position has almost been static since independence the vehicle population consisted of 56% cars, 29% lorries, 3% buses and 12% motor cycles.

From the general comments however, it appears that the sales of cars has been affected, car sales have even stopped since the government stopped loans to its employees.

If the number of cars leaving the road continue at the same rate, whilst the sales tax and shortage of loans reduces the number of new registrations, a fall in Uganda's vehicle population may be expected.

From the above observation there is a likelihood that most of the people are likely to resort to public transport; eg. Buses.

2.05

#### GENERAL COMMENT :

In the given analysis we find that there are three main categories in the vehicle population ie. cars lorries and buses. Cars could be considered as passenger vehicles, but to a greater extent they handle the least number of passengers. Most of the cars are private owned, and these are not concerned with public transport.

The taxis which could be considered <sup>in</sup> the public transport system are relatively few and each taxi takes a maximum number of 7 passengers only.

Lorries are mostly commercial vehicles concerned with transportation of goods. These are therefore out of the public transport system.

Buses, therefore, remain to be the most dominating vehicles fully involved in transporting the largest population throughout the country.

In a developing country like Uganda it is difficult . I may even say that it is impossible to have a bigger percentage of population owning cars. Most of Uganda's population will remain fully dependent on public transport. The cheaper and more efficient this can be done the better for a developing young country.

I would, at the same time, strongly recommend that apart from improving the road systems throughout the country, passenger handling buildings also should be constructed at each and every town of the district, since these towns have proved to be important internodes in the Uganda's road network.

The passenger handling buildings, which in most cases will be bus stations should be providing adequate facilities according to the size of the town or in relation to the expected passenger load at that particular town.



The present population of Kampala is now estimated to be over 50,000. The present population growth rate is about 7% per year.

The urban area of Kampala is expected to have 1.3 million people and 140,000 motor vehicles, ten times the present number, in year 2000.

The city is located on a number of hills at an average altitude of 1200-1300 M. The former Kings of Buganda had their residence and Government buildings on the hills of Hengo and Namirembe for several hundred years. Some of the adjacent hills were later occupied by various missions, but it was not until the 1890's that the first stores were opened in the present business district on the slopes of Nakasero Hill since then the residential areas have spread over most of the hill sides. The swamps between the hills have been drained and are retained as open areas for recreation, industrial and/or transportation purposes.

Kampala is the commercial and industrial centre in Uganda as well as the local centre for the districts of East and West Mengo which are fertile agricultural areas.

The parliament is located in Kampala and most of the government ministries and departments.

The city is the cultural and social centre of the country, with the National Theatre, Uganda Museum, Headquarters of Radio Uganda, National Hospital Mulago, Makerere University and other institutions of higher education, as well as modern hotels, cinemas and restaurants, cathedrals, temples and mosques.

Most of the major roads in Uganda radiate from Kampala and the city is also the country's railway centre. Kampala's lakeport is Portbell 10km from town but the lake shipping is now of little importance. The international airport for Uganda is located at Entebbe 35km south of Kampala.

4.07

#### PRESENT TRANSPORTATION SYSTEM WITHIN KAMPALA:

The Uganda Transport Company is responsible for the main bus service and most of the long distance bus traffic, while a few smaller companies operate some long distance routes.

Bus routes radiate from the bus terminals at South Street, Nakiwala place, and most routes terminate there. This necessitates transfers for longer trips going through Kampala as well as local trips passing through the central area. This must be considered inconvenient and reduces the attractiveness of the public transport system. Recently however, a few routes have been connected down town to avoid transfers, and these types of through routes should be gradually developed.

The location of bus stops need careful re-evaluation together with providing shelter for passengers.

The standard of the buses and the services rendered by the present route system in terms of regularity seating capacity and speed could be improved for most routes.

The taxi system operates today as an unscheduled mini-bus system which probably carries as many passengers as the bus routes within and without Kampala. The taxis also have their terminal at the South street.

Detailed information about the taxi traffic is not available primarily because most of the taxis operate illegally. The taxi system does undoubtedly give a good service being fast, flexible and reasonable priced, but an overhaul of the system is required to obtain better control of its operation, avoid undue competition and improve safety records.

The East African Railways & Harbour Company provides rail services for passengers and freight from Kampala to Nairobi and Mombasa in Kenya. The passenger traffic is of little importance, and no local service is being operated.

Of all motor vehicles crossing Kampala area boundary, 94% have either the origin or destination of their trip located inside Kampala only 6% seem to pass through. The percentage of the through traffic is twice as high as commercial vehicles as for passenger vehicles.

Of the through traffic about 39% have an essential stop of some sort in Kampala; ie. to deliver or pick up goods or passengers, some have stops like filling up with petrol or having a meal or cup of coffee.

## I N T R O D U C T I O N

The aim of a case study is in many respects to introduce someone into the system, get involved, study the problems within the system, understand these problems and from the point of view as an architect try to get some solutions or a solution to the problems.

I have chosen to study some of the existing bus stations in Kampala and Nairobi. These would give me a good study about the behaviour of passengers at their waiting stations; the arrivals and departures; to observe the general treatment given to passengers at these stations. To note the type of facilities given and those which may be necessary but not given to watch traffic movement i.e. vehicles, people and goods in relation and may be, last but not least to understand the general organisation and administration of a Transport Company.

I may mention at this moment that it is very unfortunate on my side that I could not find any single bus station in East Africa which was designed to suit and to meet passenger problems. The organisers of those stations I took study of had started to realise their responsibilities and some of the problems they were meeting through a long time of experience. They had quite good comments to make which I have added to my general observations.

Some passengers were very helpful to me and made some good contributions.

In addition to the local bus stations I have also tried to study one outstanding bus station; the Preston Bus Station Lancashire, I appreciated the general concepts and the design approach of the station.

### 3.1.00 CASE STUDY 0001

#### 3.1.01 PRESTON BUS STATION LANCESHIRE.

##### INTRODUCTION:

By comparison with the jet air craft and express train, the local bus is an underprivileged means of public transport and its status is reflected in the quality of buildings handling bus passengers.

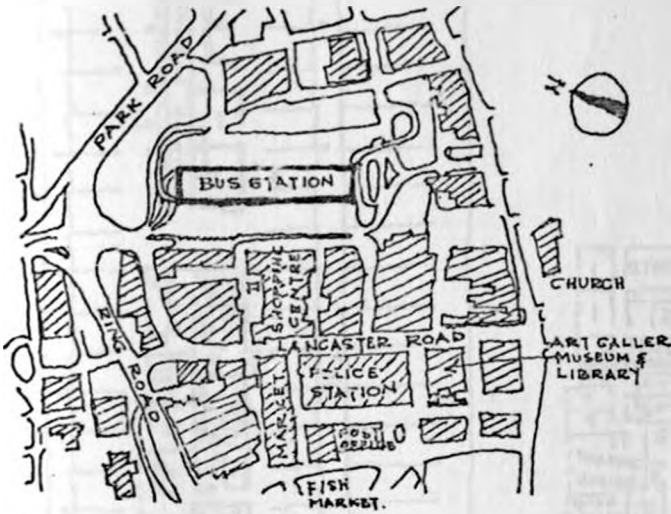
Preston bus station is a notable exception, its success being attributable to the local architects' influence on his local authority's client's brief and impressive management of the operation.

#### 3.1.02 ARCHITECTS ACCOUNT -- COLIN ELLIS:

Preston's new bus station was commissioned to concentrate the dispersed terminus of numerous services in the town and the region.

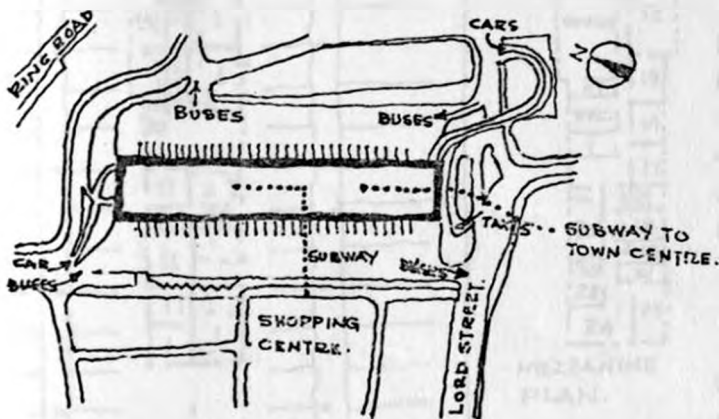
It incorporates a car park for 1000 cars. There was to be almost complete segregation of passengers from moving buses.

Departure and arrival gates for eighty buses and a private hire coach operators were required. Also offices for Preston Corporation transport department District Offices for the public motor services.



**SITE PLAN (1:7500)**

THE SITE PLAN ABOVE SHOWS NEW ROADS AND CIVIC PROPOSALS. RAILWAY STATION IS OFF MAP TO WEST.



**BLOCK PLAN (1:3150)**

BLOCK PLAN SHOWING THE MOVEMENT OF BUSES, CARS AND PEDESTRIANS INTO AND OUT OF THE STATION.



KEY:

MEZZANINE LEVEL.

1. AREA SUPERINTENDANT.
2. EQUIPMENT ROOM.
3. WAITING
4. WOMEN'S LAVATORY.
5. MEN'S LAVATORY
6. STAFF INQUIRIES
7. ASST. DISTRICT TRAFFIC SUPERV. AND DIST. TRAFFIC SUPERV.

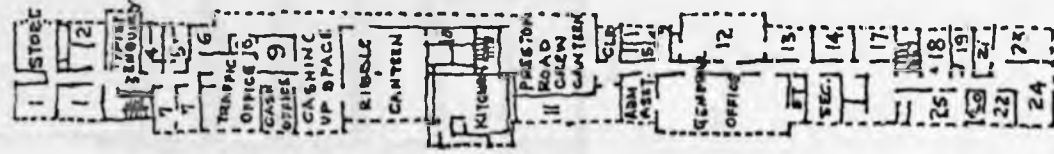
10. ELECTRICS

11. PRESTON CORP. TRANSPORT DEPART. STAFF CANTEN
12. GENERAL MANAGER
13. DEP. GENERAL MANAGER.
14. TRAFFIC SUPERINTENDENT.
15. GPO AND P&B ROOM
16. WOMAN CONDUCTORS
17. SCHEDULE CLERK
18. DUTY INSPECTOR
19. CHIEF INSPECTOR
20. STRONG ROOM
21. STORES
22. UNION AND SCHEDULE CHECKING.
23. TICKET BOX ISSUE.
24. CASHING UP
25. CASHING OFFICE.

GROUND FLOOR.

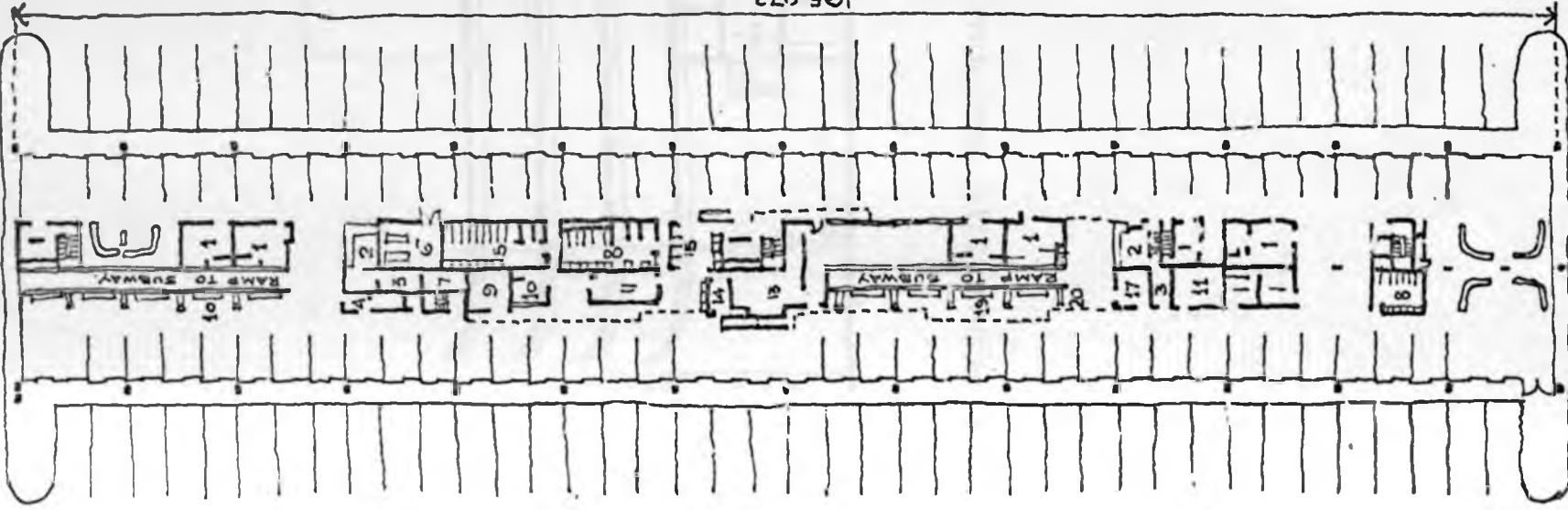
1. SHOP UNITS
2. KIOSKS
3. STORES
4. RIBBLE PARCELS AND INQUIP.-S.
5. METER ROOM.
6. BOILERS
7. SWITCH ROOM.
8. WC WITH FACILITIES FOR WHEE. CHAIR USERS.

9. CONDUCTORS
10. INSPECTORS
11. WAITING ROOM
12. LEFT LUGGAGE.
13. SNACK BAR.
14. BIN STORE
15. TELEPHONES
16. PCTD INSPECTORS
17. PCTD INQUIRIES AND LOST PROPERTY
18. VENDING MACHINES
19. SHOW CASES
20. POST BOX.

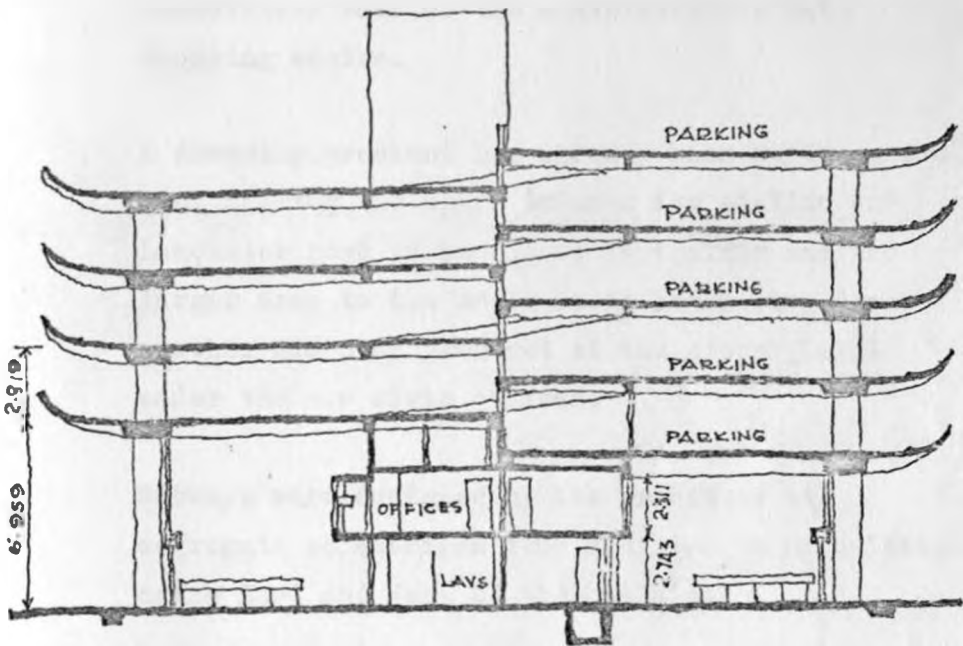


MEZZANINE PLAN.

195.072



GROUND FLOOR PLAN. (2" = 1ft)



COMPOSITE SECTION: (1:2500)

### 3.1.03 TOWN CENTRE PLAN / SITE PLAN:

The station is part of the redevelopment immediately East of the administrative and shopping centre.

A shopping precinct has already been built on the west filling the space between the station and Lancaster road to be closed to traffic and the larger area to the south is to be developed as another shopping precinct at the ground level under the new civic offices.

Subways were designed by the architect to segregate pedestrians from vehicles in circulation areas East and West of the building.

### 3.1.04 THE BUILDING:

The Structural grid had to accommodate cars and buses. A 12.2m grid was chosen to accommodate five Car Spaces or three bus stands.

Passengers are protected from the weather by allowing the buses to penetrate beneath the lower car parking floor. The cantilevered decks which fall 9.47m adequately cover the passenger platform at the concourse level - as shown in section. The headroom of approximately 5.1m enable the offices to be placed on the mezzanine level with

in the concourse. The enclosed concourse level beneath accommodates waiting rooms, shops and lavatories, and staff requirements for immediate passenger control.

### 3.1.05 SIGNPOSTING:

There are alphabetical briefing signs in the subway approaches and many confirmatory departure gate lists round the concourse to guide travellers to find easily their departure gates.

Panels projecting from the right-hand wall are arranged alphabetically to indicate destinations and gate numbers, and at gate of the ramps in the concourse the information is repeated.

The lettering is clear and the illumination pannels over each departure gate are directly related to the destination panels by the large orange numerals visible from afar.

Destinations are shown once more, for the absent minded, on the same panel in small, clear lettering.

### 3.1.06 CONSTRUCTION MATERIALS AND STRUCTURE:

Generally of reinforced concrete columns are in-situ on pile foundations, with beams and edge

units of T-beam form precast in glass fibre molds in a site factory.

Vertical circulation and service towers also cast in situ are the main wind stabilising elements of the structure.

White tiles clad end walls are off-site precast panels, left open jointed as no particular weather proofing was required.

The in-situ columns were cast with a beach pebble aggregate which is exposed by grit blasting. The size of pebble was greater than that desired due to the close spacing of reinforcing bars.

The mezzanine floor is an in-situ flat slab structure on a 6m grid of round columns. Soffits of bays and the subways are finished with a ochre texture paint.

Cladding to the office accommodation is a modular system of timber window units on a 610mm and 1220mm grid reflecting the amount of vision required for the various rooms.

Timber units are finished in black stain and glazed with a single sheet of toughened glass.

Partitions are of light weight concrete blocks plastered, and are available and can be received at the base of the window mullion as perimeter services are in a continuous casing.

### 3.1.07 FINISHES:

Circulation towers are faced with white tiles as are most of the concourse-level wall surfaces and the subway, floor finishes are generally of vinyl sheets. Walls and ceilings plastered and emulsion painted.

At the concourse level stairs, public areas are covered with black ribbed rubber tiles on floor, white tiled walls.

Doors, barrier rails and seats are all of oiled Tiroko.

Materials generally have been chosen to withstand the rough usage which the building is currently experiencing.

The perimeter of the concourse is enclosed by a sliding door system, two doors to each bus bay. The doors operate on a bottom rolling track.

Accessories such as litter bins, sign and poster boards are of glass reinforced polyester.

Incident spaces left between traffic circulation areas are floored with second hand granite setts laid to reveal their previously worned face.

### 3.1.08 ENVIRONMENTAL SERVICES:

#### VENTILATION:

Of offices is by continuous line intake grill above windows, will naturally extract vertically from the centre of the building.

Above the beam cladding is of patent glazing on a 610 mm module. A 52mm gap has been left between the top of the glazing and the soffit of the concrete structure to allow the natural convection of warm air during warm weather.

**HEATING:**

Is by a perimeter heated hand-rail passing at waist level across the inside face of window units.

**LIGHTING:**

Above the door heads is a perimeter beam containing the door guides and the main lighting installation for the concourse. Lighting on the bottom of this beam is both inside and outside the doors. Its vertical inside face is the main destination sign system with five rows of fluorescent tubes behind lettered opal acrylic diffusers.

There is also lighting on the top of the beam in the form of continuous fluorescent strips, while behind each column a taugthen iodine flood lamp concentrates the structural module.

On the outside vertical face of the perimeter beam which is clad in black stained boarding is the illuminated gate number sign.

**3.1.02**      **DISPOSITION:**

Administration offices and rooms for the crew

are separated from the concourse at mezzanine level in the core of the building from which there is a clear view of the circulation and gets below.

There are waiting rooms near the gates serving the out-of-town and long distance services. But conditions in the concourse are pleasant enough for a short wait differing in this from a railway station with the open platform.

### 3.1.10 TRAFFIC CIRCULATION IN THE STATION:

Some transport operators favour run-through traffic circulation, which prohibits a satisfactory concourse and segregation, Preston Corporation based this brief on nose-on loading of the buses which drive up to the raised platform in front of the line of gates, as shown on the ground floor plan.

Turning space is adequate, and the only criticism is that the serrated platform edge with diagonal parking, would have allowed access at one level from the platform to the bus.

### 3.1.11 PRINCIPLES OF BUILDING DESIGN:

Congestion in the concourse at rush hours. The width allowed for circulation is barely



minimal and the least blockage can begin to affect pedestrians flow. Problem becomes more serious when the queues overflow from the waiting area. The gates, each 4.06m wide are separated by sturdy steel and hardwood barrier between which the passengers are intended to form a neat coiled queue leaving the circulation space clear.

Instead the queue straggles along the barrier and declined to form a re-entrant line with in the gate wide space, extends into the circulation where it is soon met by the tail of next (intermediate barriers might cure this although they would detract from concourses' open appearance)

### 3.1.12 THE BUILDING IN USE:

The building was opened in October 1969. Soon vandalism and the clients failure to foresee the daily maintenance required, had caused the building to lose its freshness.

A pair of doors was knocked down, door closers were removed, wood work was damaged, and the walls in the lift shafts, lavatories and one of the waiting rooms were defaced with graffiti.

The designer had anticipated some hard wear, and the wash basins reputedly vandal proof, appeared to have survived, although not all taps provided water.

The ironmongery, fixed seats and reinforced plastic  
litter containers were well designed for  
durability.

The client later foresaw that the building must be  
used under close supervision. Failure to arrange  
a contract for catering in the staff canteen or  
to consult bus crews about their lavatories was  
responsible for the newsworthy official opening  
boycotted by crews.

### 3.1.13 THE EFFECT ON LOCAL TRADE:

There were already some complaints about the  
location in relation to the shops, the necessary  
changes of the route, and the inevitable criticisms  
about the spending of public money. But the effect  
of the building on the town during its first six  
months was striking.

Although many shoppers still prefer waiting for  
their bus in the street one or two stops from  
the station, the facilities and shelter offered  
are attracting the passengers to east side of the  
town.

The shopping precinct immediately west of the  
site enjoys good trade. Its neighbours south of  
the station were likely to draw shoppers to the  
area round the car park and buses where a traffic-

-free shoppers' paradise can be completed.

A restaurant would have been an attraction for long-distance travellers and shoppers and would have completed the up grading of the station to a Prestigious level- but it was omitted later on.

Snack bars and shops being installed in the concourse only partly remedy the failure to estimate the buildings potential as an important addition to the towns social life.

#### 3.1.14 GENERAL REMARK:

Preston Corporation and building design partnership have pioneered what will probably become building type essential in urban renewal.



The Preston Bus Station in its true picture  
as a prestigious building.

Large orange numerals over gates can be  
read easily both from inside and outside  
the building.



The cantilevered car deck project 2.74m to cover the passenger platform at concourse level.



Concourse finishes - white tiled walls, black rubber floor, hardwood doors handrails and barriers are of good quality and absorb sound well.

A pleasant staircase to the mezzanine level has oiled iroko guard rails and is easily noticed from the concourse.

The doors in the concourse are also made of oiled iroko.

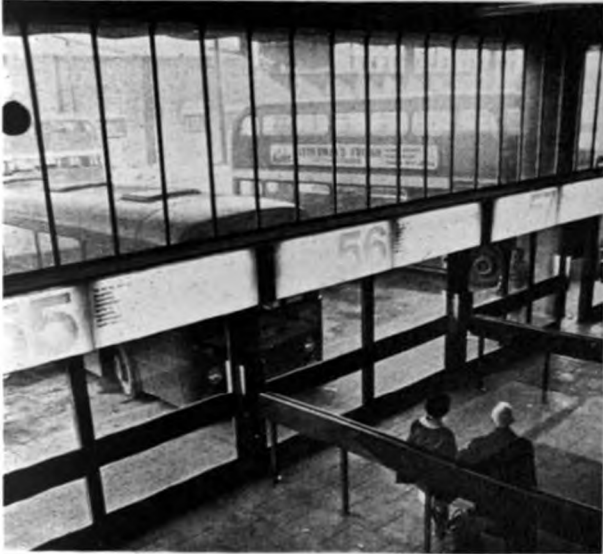
All dimensions in the central Island building were based on the unit of a tile.



11



12



13



14

11- Shows a section of a subway; the projecting illuminated panels give the passengers the gate number of their destinations before reaching the concourse.

12- Shows an information panel in the concourse at the head of each ramp, allowing an additional check.

13- Shows the gates which are 4.06m wide, separated by sturdy steel and hard wood barriers.

14- Shows the huge orange numerals over each gate.



The beginning of a straggling queue at one of the gates.

The offices on the mezzanine level on the right are separated from the concourse by a glazed soft wood curtain wall.

Gate numerals can easily be seen from inside.



### 3.2.0 CASE STUDY TWO:

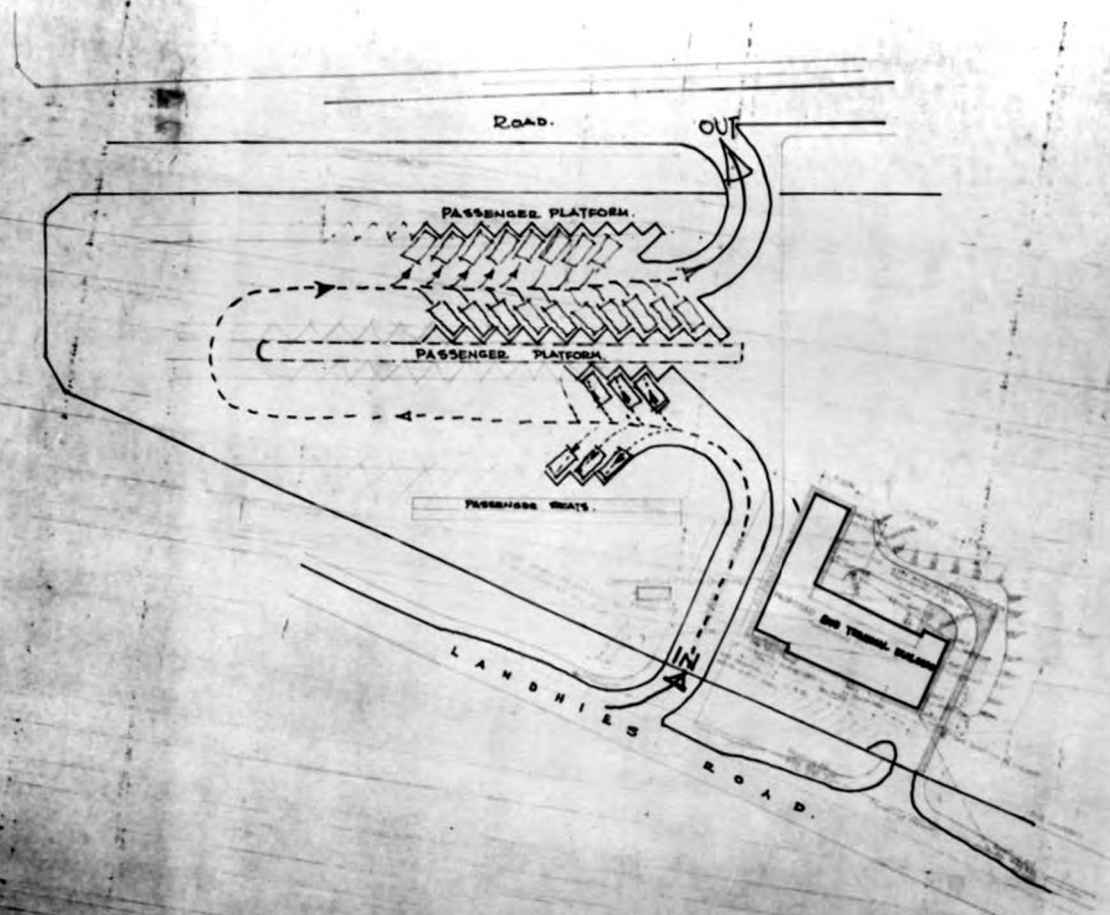
COUNTRY BUS STATION LANDHIES ROAD NAIROBI:

#### 3.2.01 I N T R O D U C T I O N :

This was a very unfortunate situation whereby the terminal building came into picture later after the bus stances/platforms had already been in existence. When stances were being planned, no body thought of a need for a terminal building in the future to provide facilities for the passengers and various bus companies.

The Nairobi City Council, the owner of the station later on found it necessary to have a terminal building built at the station as the station grew bigger and bigger in size.

The whole idea of having this new terminal building was to provide passengers with the necessary facilities. For example giving them waiting spaces, kiosks restaurant, luggage offices and toilets. The luggage storage space was especially required for those passengers who might need to visit the city before boarding their buses. The idea was good. The council also wanted to provide some parking spaces for the various bus companies which used the station.



Drawing no. 4132.1.9.29  
 2004  
 10/1/04

**PROPOSED BUS TERMINAL BUILDING**  
 working drawings. layout plan.

COUNTRY BUS STATION LANDHIES ROAD

250/21A  
 250/1A

City Engineer  
 14/10/04  
 14/10/04  
 14/10/04  
 14/10/04

3.2.02 THE ARCHITECTS ACCOUNT:

I had a discussion with the architect of the terminal to get his comment about the whole project. He admitted that he was not satisfied with the whole scheme.

The brief given to him by the client was not adequate. The client did not know the volume of buses which were to be handled at the station. The client did not even have an idea about the number of companies to operate in the terminal nor did the client know anything about the size of each individual company.

When the architect provided some facilities at the terminal eg. booking offices, which were ten in number only about two companies could afford to rent them; they were too expensive for the other bus companies. This was so because most of these local bus companies had only two to three buses in operation and could not afford renting a booking office. They also found that there was no need for advance booking.

Failure to advance booking was due to the fact that one route could be having more than three different bus companies operating on it, and passengers are normally not willing to book in

advance before they physically see the bus they are booking for.

The architect is having the opinion that before providing for such facilities, especially company offices it is better to know the volume of buses and the capability of the individual bus company to run those facilities economically.

The other observation from the architects account was that the location of the terminal building in relation to bus platforms is not satisfactory. He had no other alternative since the idea of the terminal building came in the mind of the client later after the bus platforms had already been constructed and the station was already in operation.

He would have preferred a central concourse or a terminal more related to the bus parking spaces.

Due to this misallocation of the terminal the waiting spaces provided for passengers are not used.

### 3.2.03 THE SITE:

The station is immediately east of the city centre, situated between Landhies Road and Pumwani Road.

There is hardly any development on the eastern side of the station while the western side has been developed into a market. The southern part of the site is being developed into a housing estate for the railway employees. The northern side of the station is partly residential and partly a shopping area.

The station is quite some distance from both shopping and administrative center. The station is about 2km from the railway station but this does not seem to be of much importance. The East African Road Services, another bus company which mostly operates on longer distances in Kenya and East Africa, is just a small distance on the west of the station.

Generally the site is so much isolated from the most important areas in the city, and is not easily located.

#### 3.2.04 THE BUILDINGS:

The architect had to play his role from his own experience and day to day observation.

He designed the terminal building to allow a free movement through. The location to the booking offices

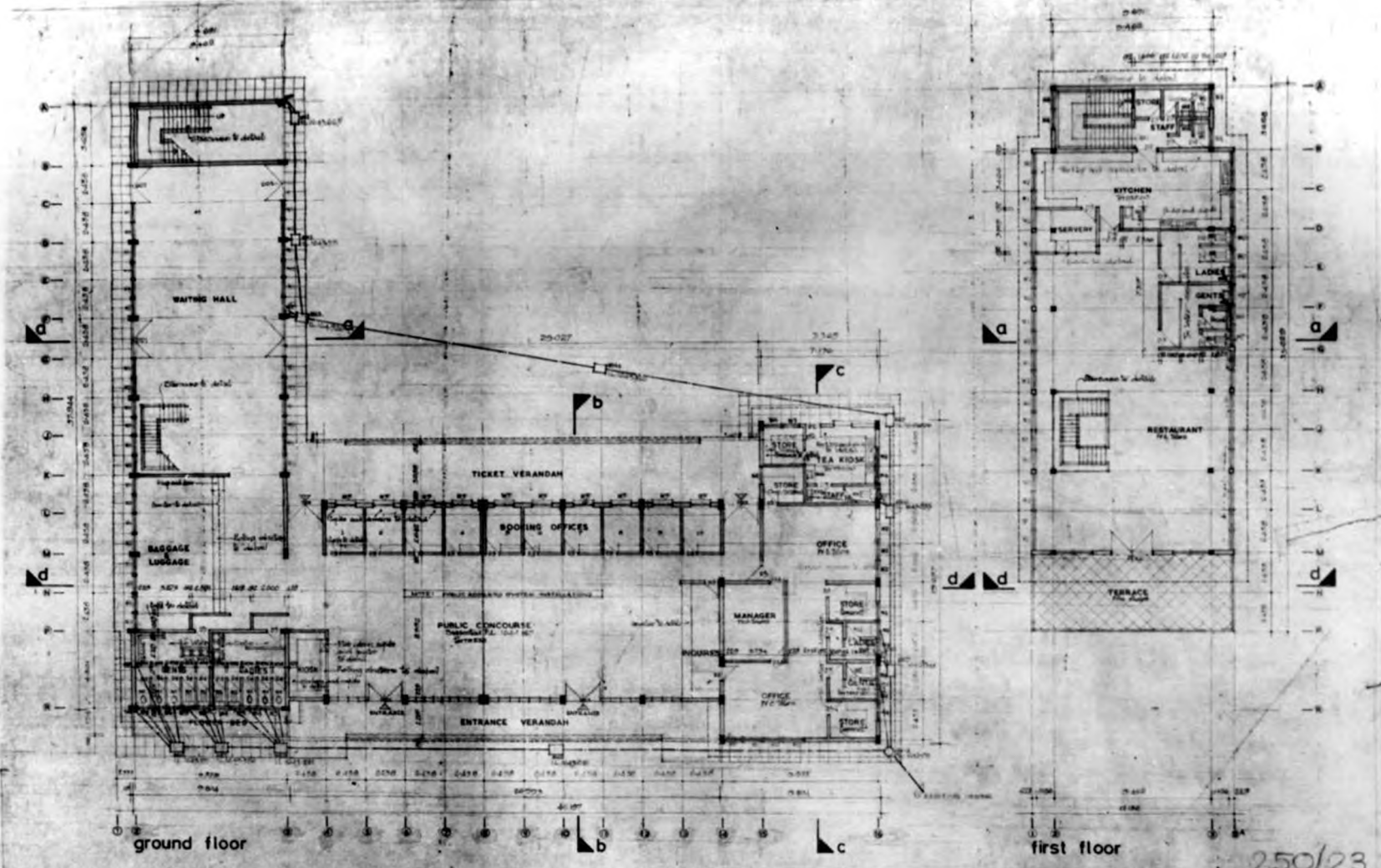
is such that booking is done from outside the building but providing a wide veranda of 1.5m wide. He avoided any internal booking to avoid congestion which was likely to grow up inside and also blockage to free movement in the building.

The position of the inquiry desk in relation to the entrance and concourse is quite obvious. The kiosk is also incorporated within the concourse. Position of the luggage space fully located and in my opinion very convenient in relation to the whole building if it is to operate.

I had doubts about the transfer of the restaurant from the ground floor to the first floor as I thought at first that it was so much hidden from passengers, but from the architect's explanation and later from my own observation I was satisfied that there should be enough barrier between the passenger waiting space. There is a number of different characters of people, and so many different unhealthy activities.

One of the restaurant requirements is to be kept as clean as possible. To keep such a standard of cleanliness might have been very difficult to achieve if the restaurant was located on the same level as the passenger waiting space. The vertical barrier provided is just good enough.

Some of the passengers may not afford the big expenses in a restaurant, and in this case a

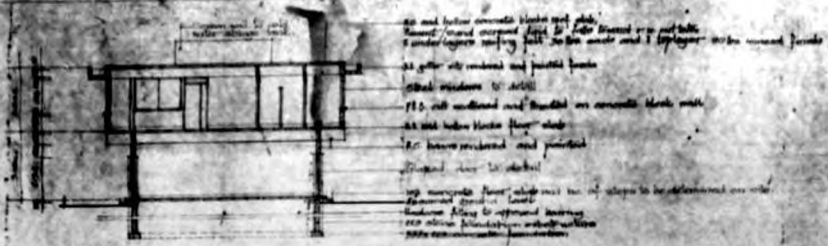


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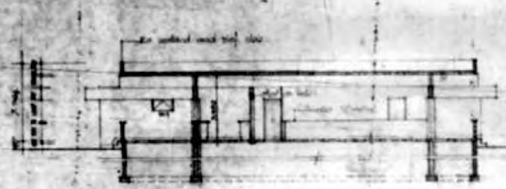
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PROPOSED BUS TERMINAL BUILDING COUNTRY BUS STATION LANDHIES ROAD  
working drawings. floor plans

ALL WORKS TO BE DONE IN ACCORDANCE WITH THE SPECIFICATIONS AND DRAWINGS  
L.P.E. ARCHITECTS  
250/23



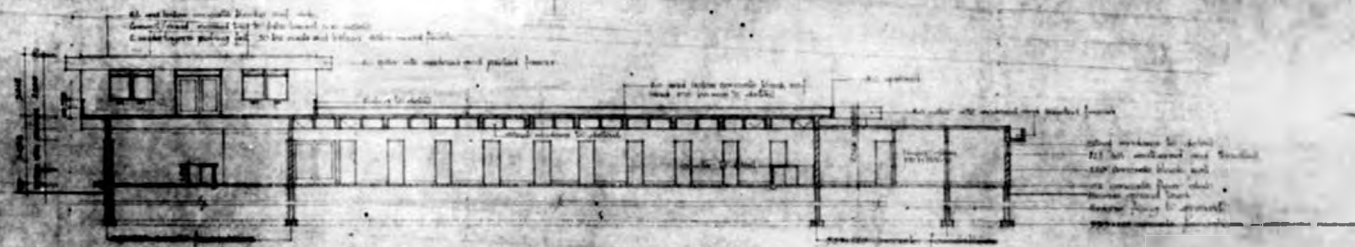
section a.d.



section b.b.



section c.c.



section d.d.

250/326

Scale: 1/10  
Date: 12/12/51

PROPOSED BUS TERMINAL BUILDING COUNTRY BUS STATION LANDHIES ROAD  
working drawings. sections.

City Engineer  
Municipal Engineer  
Municipal Engineer  
Municipal Engineer  
Municipal Engineer  
Municipal Engineer



/coffee kiosk was provided to cater for such people and is located on the ground floor connected as much as possible to the external space.

A separate service staircase to the restaurant was provided related to the loading zone behind the building. The public staircase to the restaurant is approached from inside the building within one of the waiting spaces. It can be easily located.

#### 3.2.05

#### INDICATORS:

Loud speakers have been included in the building within the concourse, waiting room, restaurant, and outside the building to assist people in terms of publication.

A publication office/controller's office is part of the administration and this is supposed to work hand in hand with the various bus companies. It would also be well informed about the various bus schedules of different companies.

There was a need for information notice boards which were not provided.

#### 3.2.06

#### PARKING:

A parking space for about 9 cars was provided for

officers in the administration. There isn't much extra parking space for visitors.

### 3.2.07 CONSTRUCTION MATERIALS AND STRUCTURE:

Generally of reinforced concrete columns are in situ on concrete foundations, with reinforced concrete beams. There are two main structural grid dimensions, the 4.875 m x 5.462 m and the 4.876m x 12.035m. Secondary beams are constructed spanning along the longer dimension at 2.438m centres.

The service staircase at one end of the building and the concrete block walls act as main wind stabilising elements of the structure.

All the partitions are of concrete blocks. The external wall in the concourse is built in concrete gills to allow sufficient air circulation into the concourse.

Cladding to the waiting hall is of a modular system of steel window units on a 1.214 grid reflecting the amount of vision required in the concourse.

The roof slab is of reinforced concrete and hollow concrete blocks. The flat roof is laid to empty into a reinforced concrete gutter.

Timber railing is used around the terrace on the restaurant above on the first floor.

3.02.08 FINISHES:

All concrete block walls in the booking offices, concourse and offices are plastered and emulsion painted.

Toilet wall surfaces are faced with white tiles. Ceilings are plastered and emulsion painted.

Floor finishes are generally of terrazzo except in the restaurant and office spaces where P.V.C tiles are used. All public areas are covered with terrazzo on the floor.

Internal doors are all flush doors emulsion painted light blue in most cases. The entrances are of 2.4 m wide glazed doors. The perimeter of the waiting hall is enclosed by glazed windows on a 1.2.4m grid.

The staircase is finished with terrazzo on the treads and the hand rails are made of hardwood.

Materials used in all spaces can withstand the rough usage which the building is likely to experience.

It is only very unfortunate that the terminal building is not currently in use by the public.

### 3.02.09 ENVIRONMENTAL FACTORS:

#### - VENTILATION:

Natural ventilation is used and seems to be very adequate (due to the size of the building and its surroundings).

#### - LIGHTING:

Natural lighting is used in all spaces of the building during day time. The windows were designed to give agreed amount of vision and light as required.

The public concourse is the only space which seems to have inadequate daylight. The grill wall on the perimeter of the concourse is not providing enough light. Artificial lighting in this space can only be the most ideal solution.

#### - NOISE:

Much of the noise generates from the side of the bus stands. This noise is not much catered for in terms of insulation. The administration offices which are likely to be affected by the noise are located away from the side which is likely to be noisy. The waiting hall is directly facing the bus stands since its activities are not much affected by noise.

### 3.02.10 ORGANISATION:

The administration offices are on the ground floor and they are located adjacent to the concourse. An inquiring counter connects both the concourse and the offices.

Booking offices are clearly visible from the concourse and the kiosk which is part of the concourse.

The waiting hall which faces the bus stands directly has four main external doors and has a clear view of the bus stances. The luggage office can be approached both from inside and outside.

The tea kiosk operated independently and the customers are served outside on a verandah adjacent to the kiosk.

### 3.02.11 COMPARATIVE AREAS PROVIDED FOR VARIOUS SPACES:

- Waiting hall	150M <sup>2</sup>
- Public concourse	180M <sup>2</sup>
- Kiosk	10 M <sup>2</sup>
- Left luggage office	6M <sup>2</sup>
- Booking office	6M <sup>2</sup>
- Administration	150M <sup>2</sup>
- Sanitary accommodation	50M <sup>2</sup>
- Tea kiosk	35M <sup>2</sup>
- Restaurant	330M <sup>2</sup>

### 3.C2.12 TRAFFIC CIRCULATION:

Vehicles enter the station from Landhies Road as shown on the site plan, and out into Rawani Road. Buses enter the stances at 45° angle. The width between the stances is about 25m. The width of each stance is approximately 4.0m.

Pedestrian movement into the station is mostly from the city centre i.e. western side of the station. In this respect it would have been a lot more convenient if the terminal building was built on the same side as the shopping centre instead of putting it on the eastern side of the station. Passengers may find it difficult to walk across through the station to the terminal building.

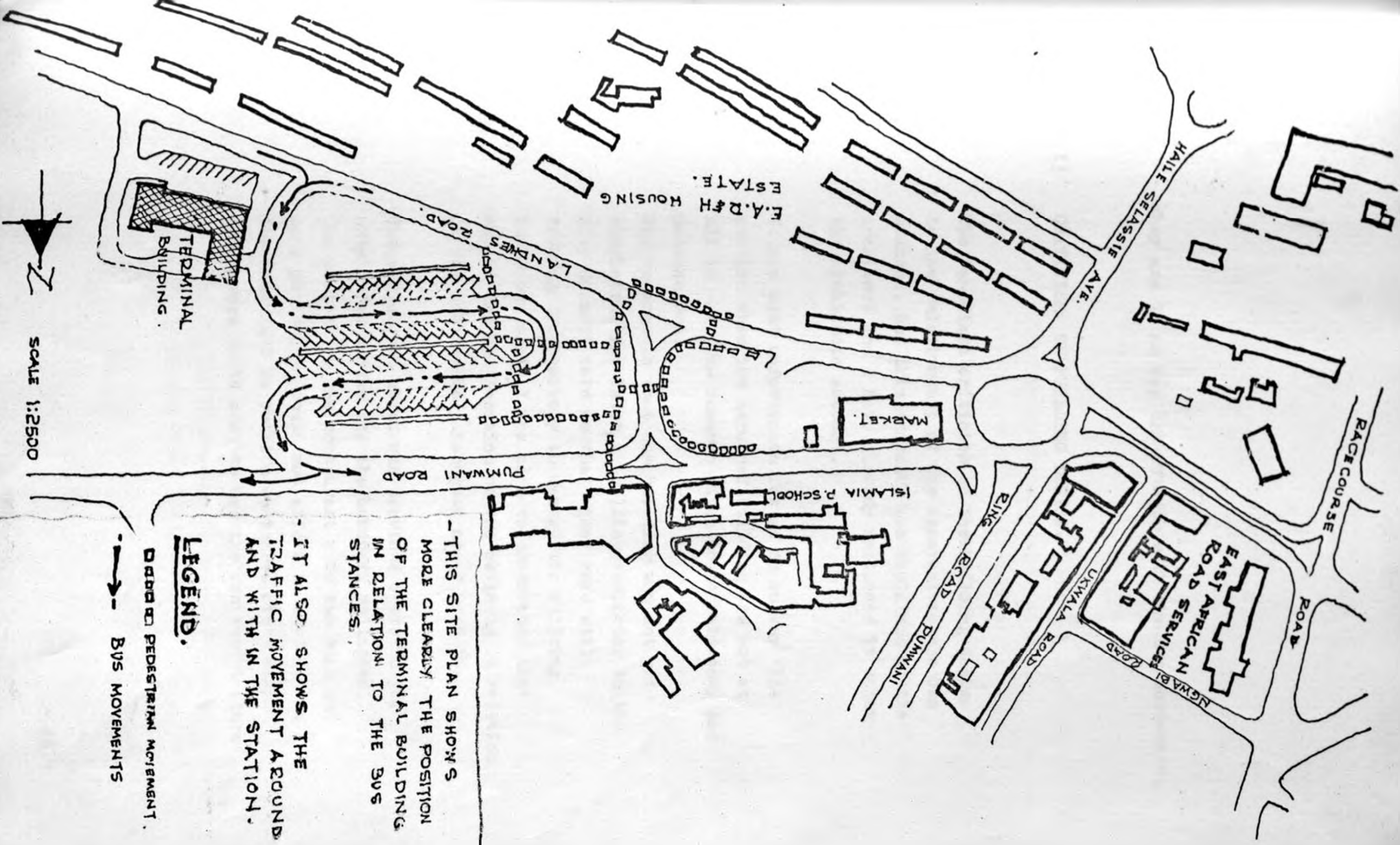
The passenger shelters which have been built near the bus stances are so much in the centre of traffic and this reduces freedom of movement within the station.

The relationship of the station to the roads and traffic flow of the surrounding area seems to be very good. The vehicles using the station do not impede normal street traffic, thus no danger is likely to occur on any other road user, vehicle or pedestrian.

The private cars for the administration staff members have a different entrance into their parking space



SCALE 1:2500



- THIS SITE PLAN SHOWS MORE CLEARLY THE POSITION OF THE TERMINAL BUILDING IN RELATION TO THE BUS STANCES.

- IT ALSO SHOWS THE TRAFFIC MOVEMENT AROUND AND WITH IN THE STATION.

**LEGEND.**

- - - - - PEDESTRIAN MOVEMENT.
- - - - - BUS MOVEMENTS

they are in no way interfering with the bus movements.

3.C2.13

**CRITICISM ON BUILDING DESIGN:**

The immediate criticism on the building design is the relationship of the terminal to the bus stances. But this drawback was explained by the architect and I have already mentioned it under the architects account.

It was most unfortunate for me to survey this station when the terminal building was not at all in use. The reasons given to me were many and unconnected.

One reason was that the building was not yet completed. But later, a building inspector in the City Council told me that they were still looking for somebody to manage the building. Later on, again, I was made to understand that due to the bad location of the building in relation to the bus stands passengers never used it.

The restaurant which was provided operated for only a few months and the business collapsed. The charges on the restaurant were too high and many passengers could not afford to meet it. At the same time no outside customers other than passengers could come to use the restaurant since



it is so much off the town centre and in a very poor location.

The person who got the tender to run the restaurant made a mistake by introducing a bar at the same time; this may be, was to try and attract more customers. This created a lot of chaos in the area by having many drunkards around. So the restaurant was closed due to lack of good management.

3.02.14 GENERAL COMMENT:

Nairobi Country bus station was not initially designed to meet passenger problems. The idea was mostly to provide a small parking space for local buses which used to come to town to pick and to deliver passengers. The City Council was trying to prevent local buses from stopping anywhere in town and to prevent traffic confusion which could have been created by such buses if no special parking space was made available for buses.

The city Council also wanted the public to have only one well known location where they could easily go and get transport.

In the real sense, this place was not designed as a bus station but was initially provided as a parking space for buses. In this case, the buses were thought of more than the passengers themselves

who were going to use these buses.

When such environment is created, where people are likely to gather, so many incidents which may not have been thought of initially begin to formulate. In this case the human life becomes more important than anything else within that particular environment. The human being becomes the subject and all other objects are just secondly in the picture.

Such was the case in the 'country bus station' where the human being became a dominating object later on, and naturally started demanding for his rights and needs. It was not only getting transport at the station which was most important, but also so many other requirements were inevitably essential and demanded for. This was later realised by the authorities and they started adding in those facilities which they had never thought of before.

It was a very unfortunate situation which also created an unsuccessful scheme. All the facilities which were added in later eg. passenger shelter, seats, toilets and now the terminal building are not in anyway related to each other and many of them seem not to be used at all by the passengers. Passengers even seem not to respect many of these facilities at all.

In such a situation one just concludes that such a scheme flopped and is a very unsuccessful one.

In the study of the 'Nairobi country bus station' I learnt a lot more about human behaviour in various environments. The human being should always be considered first and then other objects next. The human being is the one to use whatever facilities provided, and is the owner of the environment which is being created.

It is difficult to force people into a situation which they do not like, and if you do, they may either refuse to use it or never respect it at all. Once people fail to respect and to recognise any created environment, vandalism follows and everything will be in a mess.

From the 'town planning' point of view, the city council authorities were mostly worried about the buses as part of traffic elements which are now worrying all cities all over the world in terms of movement and parking. But the negligence on the passenger side cannot be forgivable at all.

### 3.3.00 CASE STUDY THREE:

#### KAMPALA BUS STATION:

#### 3.3.01 INTRODUCTION :

The Uganda Transport Company which in the past, used to act as a private company before the government nationalised it had already established its headquarters on this site in Kampala. They also provided various facilities and activities on the same site.

The major functions which are found on the site are:-

- (a) Administration,
- (b) Engineering work,
- (c) Passenger facilities,
- (d) Bus Storage,
- (e) Bus Stances.

The site is estimated to be 12000M<sup>2</sup> and to have all these functions put on the same site is already too much and thus overcrowded.

3.3.02

**THE SITE:** all engineering work is done here. This  
is a very busy part of the area about  
1/4 of the site area. The following is the

The present Kampala bus station is situated south of  
Kampala city, on its south boundary is the channel  
street, on the east is the south street, Namirembe  
road on its north end and on the western boundary is  
Nakivubo place.

The prominent developments on the surroundings of  
the site are the taxi park on the east, the  
Nakivubo stadium which is also the national stadium  
The northern side is partly occupied by the country  
bus station and shops. On the southern part of the  
site are some shops. Much of the business around  
the site is transport. This is the only area in  
Kampala where one can get public transport. (as  
shown on the map).

The site is only about 1 kilometre from the  
railway station. The site is about 12000m<sup>2</sup> in area.

**THE BUILDINGS ON SITE:**

The north western corner of the site is occupied  
by a petrol station covering about 1/8 of the  
site. The northern side is having a two-storey  
block whose ground floor is occupied by a post  
office, restaurant, private clinic and a shop. The  
first floor of the block is accomodating the  
administration offices for the Uganda Transport

# SITE PLAN - A -

compony. This block is covering about  $\frac{1}{16}$  of the site area.

Some where in the middle of the site is the Depot and all Engineering work is done here. This covers quite a big propartion of the area about  $\frac{2}{3}$  of the site area. The remainig portion is oevided between passenger waiting spaces, bus stances, bocking offices, luggage offices and the traffic departments.

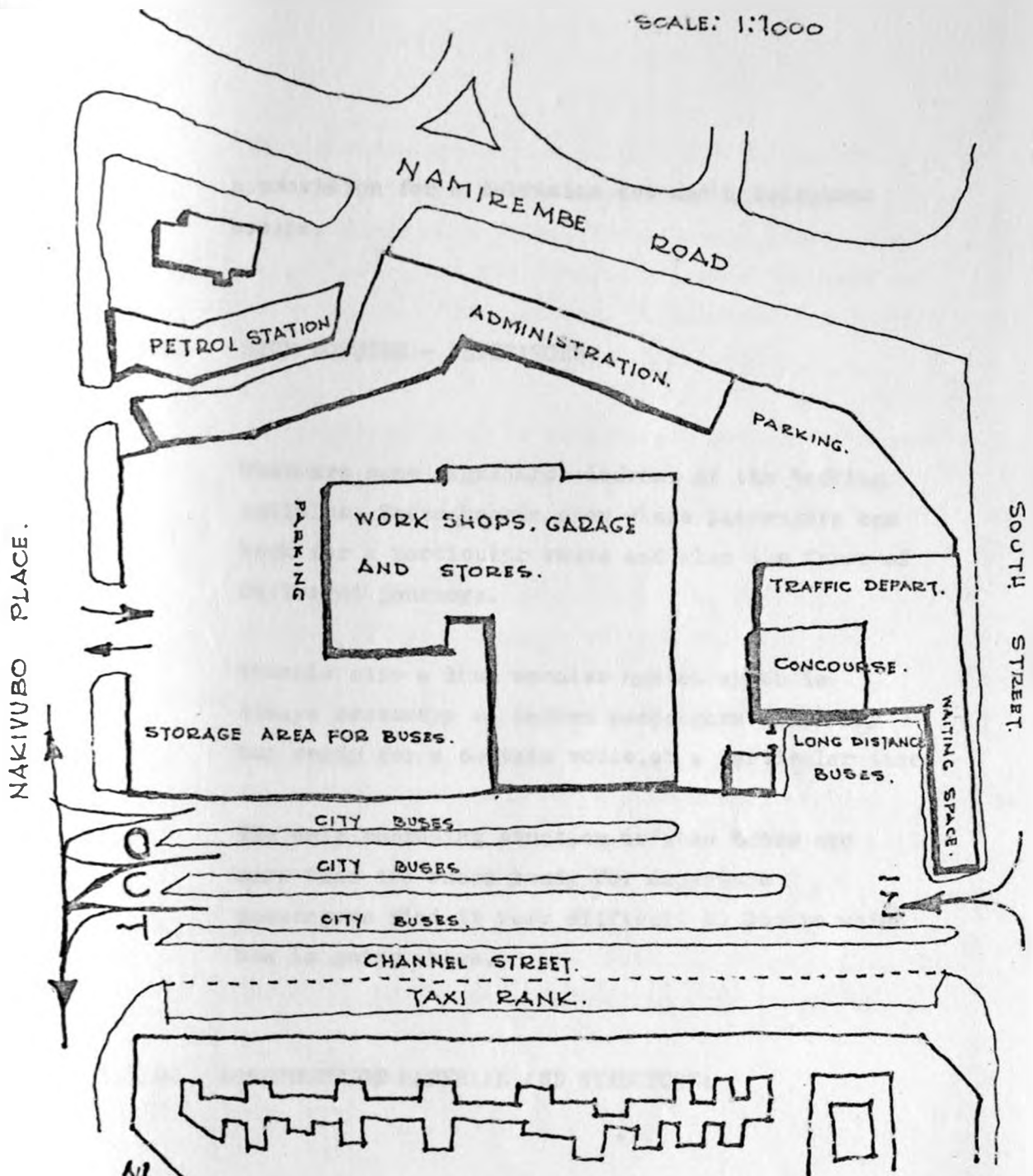
Some of the photographs show the exisiting buildings on site. Although this was not easy due to the prevailing stuation in the country.

It was not possible to get the drawings of the exisiting buildings. The drawings which are shown are just sketchy trying to show the present overal arrangement and also to show the spicial activity relationships. Drawings are not to scale. Some of the drawings shown are trying to include general spicial organisation as realised in each department. Some of the comments given in each case were made by the users of the building themselves.

The Concourse; This is the most important area on a bus station as far as passenger space is concerned. The present concourse at Kampala bus station is about  $72M^2$ . It contains the waiting spaces and the bocking offices and also the queueing rails as shown in the sketch plan of the concourse. There is also

# SITE PLAN - A-

SCALE: 1:1000



## NOTE:

SITE PLAN SHOWING THE EXISTING BUILDINGS AND SOME EXISTING FUNCTIONS ON SITE.

THE SAME SITE PLAN CAN SHOW THE RELATIONSHIP BETWEEN THE BUILDINGS AND OTHER ACTIVITIES.

From the administration block which is two stories, a provision for a television set and a telephone booths. To add to a third floor on top, but it was found later that the foundations were too weak to carry another floor on top. So the idea was dropped.

**3.3.03 SIGN POSTING - INDICATORS:**

There are some signboards in front of the booking cubicles. These boards show where passengers can book for a particular route and also the fares of different journeys. There is also a loud speaker system which is always necessary to inform passengers about any bus ready for a certain route at a particular time. The only confusing situation is when there are more than two buses ready for departure. passengers find it very difficult to locate which bus is going where.

**3.3.04 CONSTRUCTION MATERIAL AND STRUCTURE:**

Apart from the administration block whose structure is of reinforced concrete columns and beams all other structures seem to be temporary buildings on load bearing walls.



Even the administration block which is two stories, was not put on a sound foundation. The company tried to add on a third floor on top, but it was found later that the foundations were too weak to carry another floor on top. So the idea was dropped and the construction stopped immediately.

The depot building is on concrete columns with steel trusses roofed with asbestos cement sheets. The structure is not showing much permanence.

The building which accommodates the concourse, booking offices, luggage offices and some other administration offices is on load bearing walls. The walls are in concrete blocks.

The extended verandah for the passenger waiting space was added on later, and it is built on steel columns and roofed with asbestos cement sheets.

The structure of the whole building is not up to the modern standards in a developing city like Kampala.

### 3.3.05

#### FINISHES.

Floor finishes are generally of sand cement screed. Walls are plastered and emulsion painted. Walls in the concourse are painted green from the floor level up to a height of about 1.2 m. This was done to hide the rough handling expected from passengers on the walls.

All passenger platforms are finished in cement screed. Bus stances are finished in tarmac. Ceiling in nearly all spaces is finished in celotex ceiling boards.

The external wall on the depot building are fairfaced in bricks.

### 3.3.06 ENVIRONMENTAL SERVICES:

#### VENTILATION:

All buildings are naturally ventilated. In some offices they use fans especially when there is a lack of cross - ventilation.

#### LIGHTING:

The concourse is mostly lit from the roof-lights but most of the other spaces are naturally lit from the windows.

The station is poorly lit at night. The external space of the station at night is lit by street lights which do not provide adequate light.

At night the station is partially dark and due to this a lot of evil activities like stealing passenger goods are common.

## ACOUSTICS:

The office workers are not at all protected from traffic noise coming from the surrounding streets neither are they protected from noise generating from the station itself.

## + 3.3.07 ORGANISATION:

As observed on the site plan sketches, the buildings are scattered all over the site. This was due to lack of planning and later created confusion in the whole organisation.

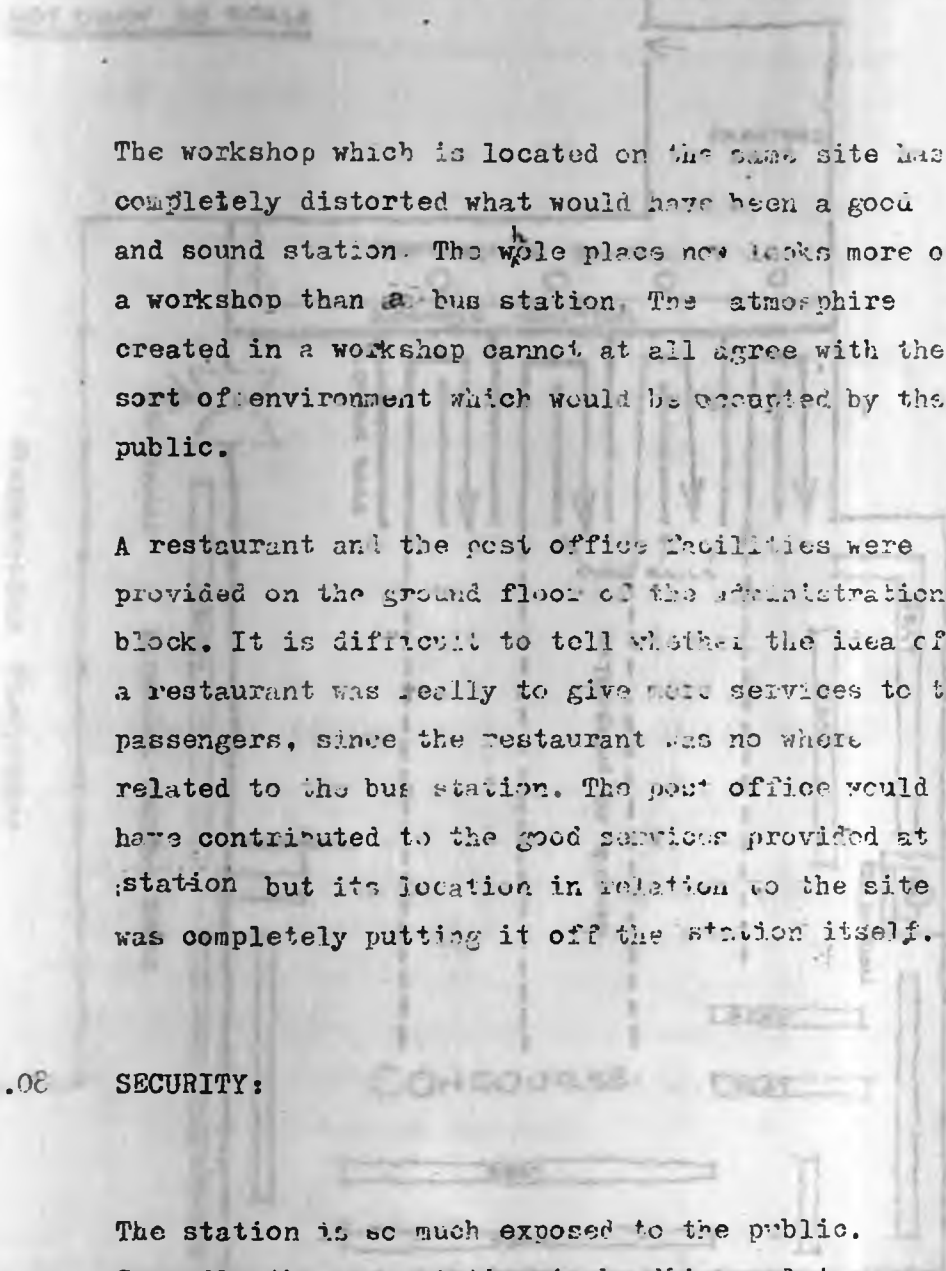
Functions are not at all related to each other in a logical way; and this has created problems due to lack of good communication within the company.

The administration offices are separated from the public area. The rooms for the crew are nowhere related to the passenger waiting spaces. There was an effort made to try and relate the left luggage office and the parcel office as near to the bus stances as possible.

The concourse is fairly related to the bus stances/ passenger platform but it is now no longer used as a passengers' main waiting space, but is now much used as a booking space.

CONCOURSE AREA - SHOWING THE ARRANGEMENT  
OF VARIOUS ACTIVITIES.

NOT DRAWN TO SCALE



The workshop which is located on the same site has completely distorted what would have been a good and sound station. The whole place now looks more of a workshop than a bus station. The atmosphere created in a workshop cannot at all agree with the sort of environment which would be accepted by the public.

A restaurant and the post office facilities were provided on the ground floor of the administration block. It is difficult to tell whether the idea of a restaurant was really to give more services to the passengers, since the restaurant was no where related to the bus station. The post office would have contributed to the good services provided at the station but its location in relation to the site was completely putting it off the station itself.

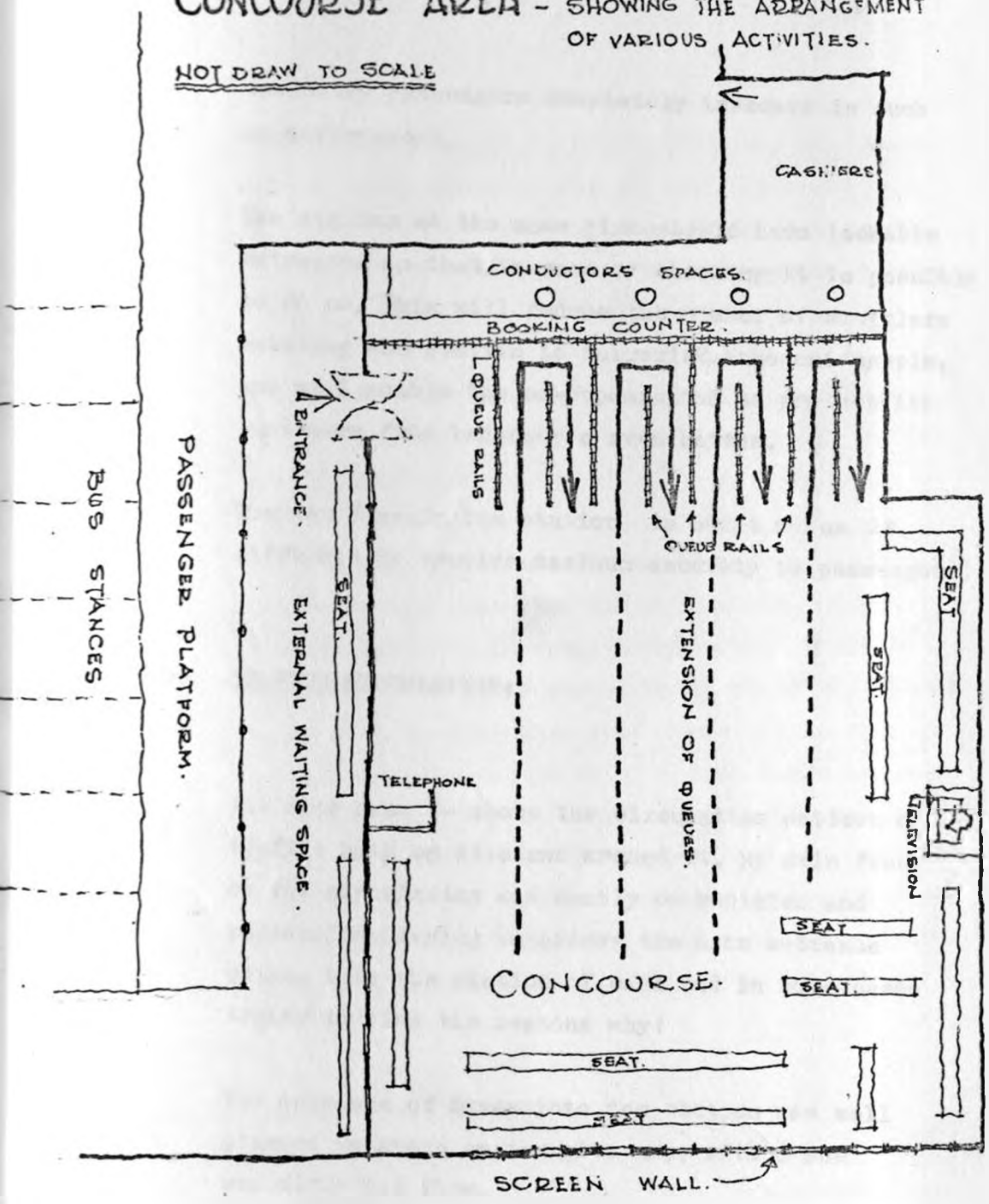
3.3.08 SECURITY:

The station is so much exposed to the public. Secondly the same station is handling all types of passengers ie. city or local buses and up-country buses. The problem in mixing people is that the latter are likely to confuse the former especially if there is no proper organisation and segregation.

When town people mix so much with up-country people they confuse them and steal their property. This makes

# CONCOURSE AREA - SHOWING THE ARRANGEMENT OF VARIOUS ACTIVITIES.

NOT DRAW TO SCALE



upcountry passengers completely insecure in such an environment.

The station at the same time should have lockable entrances so that in case of checking it is possible to do so. This will reduce the number of smugglers entering the station to terrorists, innocent people, and will enable the co-operation to protect its customers from bad people even better.

The way Kampala bus station is built makes it difficult to provide maximum security to passengers.

### 3.3.09 TRAFFIC CIRCULATION:

The site map- D- shows the circulation pattern of traffic both on site and around it. My main focus on the circulation was mostly on vehicles and pedestrians trying to assess the main entrance points into the station of each and in some cases trying to find the reasons why!

The entrance of buses into the station was well planned as shown on the site map, with a one way direction flow.

Buses entering into the garage have a different entrance on the side of Makivubo place street, the same entrance is used by the staff cars.

Pedestrian movement is mostly from the taxi park across south street. Most of the people entering the station come from the shopping centre civic area and industrial area in the peak hours of the day.

Pedestrians mix so much with vehicles, so that quite often there are so many accidents happening at the surrounding streets.

South street and Naziremba road seem to be handling a lot more traffic than Nakivubo place and Nakivubo channel streets. In reality Nakivubo channel is supposed to be a one way street, and is used in most cases as a special hire taxi route. It is only very unfortunate these days to find that there are so many buses i.e. buses out of order packed on the sides of the two streets Nakivubo place and Nakivubo channel. This has created problems in traffic flow by reducing the size of the road especially Nakivubo place which is supposed to be a two way traffic.

### 3.3.10 THE BUILDINGS IN USE:

The station has been in operation for more than 70 years most of the buildings on site were built within that period and just a few of them which seem to be recent, about eight years old.

The external waiting space for passengers and the passenger platforms are now occupied by local traders who are selling some refreshments to passengers. These local traders are giving some good services to passengers but they are doing it in a wrong place and in a very unorganised way.

Such persons who pretend to be selling some goods to passengers are in most cases thieves; they pretend to be helping the passengers in one way while in the other they are cheating them. These people, as I come to know later, have no licence to trade around the station at all, but since the co-operation itself is not providing such facilities or services which passengers really need it fails to send away such people.

It would have been really better if special places were provided for such people so that they do not interfere with the passenger areas. Some of the photographs can clearly show the sort of confusion created at the station by such traders.

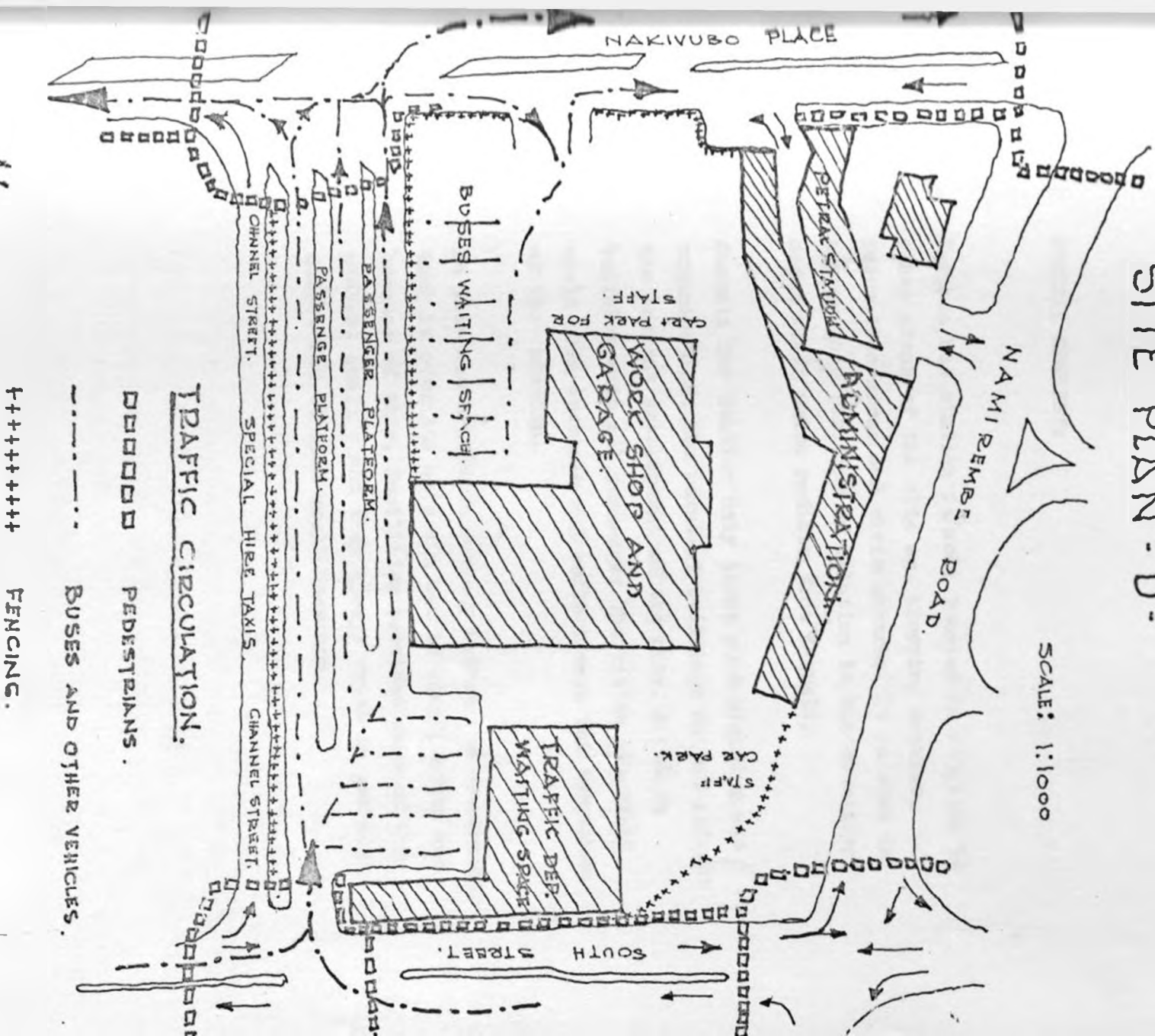
There wasn't much vandalism noticed at the station; most passengers behave well and usually respect whatever is provided for them.

Most of the furniture, fittings in the toilets, doors and other service equipments were in good condition. The Corporation is also very active in providing daily maintenance and a number of security guards.



# SITE PLAN - D -

SCALE: 1:1000



TRAFFIC CIRCULATION.

PEDESTRIANS.

BUSES AND OTHER VEHICLES.

FENCING.



### 3.3.11 GENERAL COMMENT:

Kampala bus station is well located in relation to other areas of the city: eg. shopping centres, recreation areas and civic centres. It is also in a very good position in relation to the country's major roads which radiate from Kampala.

Kampala Pur Station only lacks good planning and organisation. The terminal buildings do not reflect the present development of the city. A modern building with all passenger facilities provided would even increase and reflect more the importance of the station.

As this was a private company before the government took it over its main aim was to make profits and because of this, facilities provided were of the poorest quality and they always tried to get max output out of this small location.

A number of photographs were taken around the site to describe and to show more about the surrounding developments, problems and activities.

The photographs are grouped in ~~four~~ 5 main categories:-

1. Passengers waiting at the station and their problems.
2. The neighbouring transportation centres; ie. Taxi park and the Uncountry bus park.
3. Problems within the Bus Station eg. staff car parking;  
Refueling etc.  
Bus parking;  
Cleaning and repair work.
4. Pedestrian crossing problems within this area in relation to vehicular traffic.
5. Long passengers problems at the station showing lack of accommodation facilities before their departure;  
Types of goods passengers carry, categories of passengers; age groups, and as part of neighbouring transportation centre.
6. Some of the existing buildings, mainly as found on site.
7. Outside services given to passengers which are normally neglected but are quite important eg. wheelbarrow men,  
cold drinks.
8. Problem of parking on the site has spread to the nearby streets creating confusion and traffic congestion.



< An expression of tiredness and frustration.



< So much luggage, no waiting space and no seats; passengers tired of standing use some of their luggage as seats.



< All these passengers are not going in the same direction, they are all mixed up and there is no order at all.



< A scared child holding tight on the mother. This child could be playing in a safe place while waiting for the bus.



< Waiting while standing especially in a hot weather can be frustrating.



< Mixed upcountry buses and city buses. The bus in the foreground is loading long distance passengers.



< City buses, picking and dropping passengers.



< Shelters for the city bus service passengers at the station.



< The bus on the extreme right, has just unloaded passengers from upcountry to mix with other passengers waiting for city service buses.



< The refueling place on the right is just next the passenger waiting areas.



< Overlooking the taxi park.



< Taxi park in relation to the bus station in the foreground. There is a heavy magnet between the two parts.



< Activities within the taxi park. The small building shown contains passenger facilities like restaurants, shops and toilets.



< Movement within the taxi park not very safe. The passengers need to be most careful.



< Taxis have got only one exit road which joins into the public street at a very steep junction.



< Private buses parked in an open space no shelter.



< Passengers waiting for buses at the private bus station.



< A closer look at the parked buses waiting for passengers.



< These two photographs clearly show the open area as is occupied by the private bus companies; no organisation and facilities for passengers.

It is a proposed area for future extension.





< Fuel van feeding into the storage tank which is in a very tight position in relation to the administration and passenger building.



< Part of the Petrol Station on the same site as the bus station.



< Buses waiting to go to garage for repair work.



< Staff cars parked on the site in a disorderly manner.



< Stored, waiting buses. On the left, is the Workshop.





< Passengers crossing towards the private bus station as seen in the foreground through a heavy traffic.



< Heavy traffic of pedestrians mixed with vehicles.



< This photograph was taken at a pick hour in the evening when ~~many~~ people have left work. One can see a stream of pedestrians around the transportation area all rushing for transport.



< On the extreme right is a possible open space for storage area for buses.



< A passenger trying to save his life from being knocked down by vehicles.



< Passengers will need some refreshment while waiting for transport.



< The wheel barrow men provide services to passengers by assisting them with their bulky luggage.



< Many of these wait at the station ready to serve with their wheel barrows.



< A wheelbarrow man already at work. He is providing his services cheaply and efficiently.



Such services must be considered as essential and important too.



< The series of photographs on this sheet indicate the storage problem of buses which have now resulted in parking buses alongside the public roads.



This has caused the problem of traffic jamming.



< On the extreme right is a free open space proposed for the storage of buses. It is only 1 KM from the main station and just next to the local bus station.



< An attempt was made to make extensions on one of the existing administration block but foundations were not strong enough to carry any more wall on top. The construction is now stopped.



< Major existing buildings are all of a temporary nature.



< The petrol station can suitably be located somewhere else.



< This simple looking structure in the taxi park serves its purpose.



< Repairing work in the Workshop.



< Waiting and cleaning of buses at the station.



< Refueling.



< Inside the workshop/station broken buses are all deposited.

These occupy such a valuable space which could be used more usefully and profitably.





< Repairing work in the workshop.



< Waiting and cleaning of buses at the station.



< Refueling.



< Inside the workshop/station broken buses are all deposited.

These occupy such a valuable space which could be used more usefully and profitably.



## 4.00 FEASIBILITY STUDY:

### 4.01.00 INTRODUCTION:

Before we can consider anything of the feasibility study, I will first of all say something general about the suitable location or site of a bus station.

These general comments I am giving here may not in any way be respected as being 100% correct. But this being a new field of study in the architectural world and especially in developing countries, I may not consider myself wrong in giving these comments as my general observations. Some of these comments are given by people who are not themselves architects, but through their experience could contribute to the issue and they really gave me quite a lot of good ideas.

The information given here is therefore intended to help anyone who may like to carry out a similar project in an urban area.

### 4.02.00 SITE:

Bus Stations should not be built near dwellings or schools, because the noise can be considerable and cause discomfort to the occupants, especially during the early or late hours of the day.

Close proximity to shopping centres may be of less importance for stations concerned with long-distance Express Services.

The area required for bus station sites are entirely dependent on the various local circumstances which will dictate the volume and frequency of traffic.

However as it would seem that the use of buses is constantly increasing ample sites should be sought at the commencement of the scheme, if only to meet the possibility of the future extensions required for more frequent buses or the establishment of new services.

Unless some such policy is pursued it may mean that an urban bus station may have to be moved to a new larger site, or have to be duplicated elsewhere where purely as a result of demand.

Terminal stations involving long waits for vehicles will also need large areas especially set aside for parking.

An important planning factor in the selection of site is its relationship to the roads and traffic flow of the surrounding area. The concentration of the vehicles using the station must not impede normal street traffic or in anyway increase danger for any other road user, vehicular or pedestrian.

A station must be simple but effective link between bus, train or plane containing its passengers and a variety of other forms of transfer, including pedestrians. Providing connections large enough to cope with envisaged peak traffic, a ticket barrier providing the one necessary check point.



Building should naturally be linked to its immediate surroundings and the city centre beyond: rather than an isolation world shut off beyond barriers.

The station needing regular external cleaning in order to retain its present crispness.

Two conflicting objectives must be observed:-

1. Must be run at a profit;
2. That it provide an essential social services which must be maintained .....

Gradually, it can be realised that the two objectives are quite incompatible.

#### 4.C3.1 WHAT TO BE THE CENTRAL BUS TERMINAL:

The function of the central bus terminal is primarily to serve sub-urban routes being the express and limited stop type. Routes extending less than 5-6 km from the central area and local routes should normally pass through the central area without being bound to terminate at the down bus terminal.

The terminal building should provide waiting rooms and restaurant facilities, ticket sales and route information, left luggage storage, kiosks and parcel expedition, lodges, offices.

For the staff there should be rest rooms, canteens and administration offices. Repair and maintenance work should normally not take place at the terminal.

except minor work such as refuelling. The terminal area will normally have only enough space to expedite buses, not to store buses parked for a longer period of time.

Because the number of buses required during the peak period is considerably greater than the off peak demand, quite a few buses need to be located on a less central and expensive site than the bus terminal, but should still be within a walking distance, so that a double set of staff facilities (canteen, restrooms etc.) will not be required.

#### 4.03.02 SUITABLE LOCATION OF BUS TERMINAL:

Three major requirements should be fulfilled for the terminal location.

- (i) The terminal should be within the walking distance of the major employment and shopping area downtown.
- (ii) The terminal should have easy access for buses coming in from the motorways and other major highways.
- (iii) The terminal should provide easy transfer to other transit lines such as local bus routes and railways.

The present bus terminal in Kampala at channel street fulfills these requirements, except for the transfers to and from the railways, but this is of a minor importance in Kampala/Uganda.

It is therefore proposed to retain the present location for the bus terminal.

There will only be 200m to the future Namirembe road interchange or Bombo motorway and walking to and from the whole central business district can take place on traffic free pedestrian routes in less than 10 minutes.

Land for bus storage is available just West of Nakirubo place and also North of Namirembe road as shown on map.

#### 4.03.03 SPACE REQUIREMENTS:

It is estimated that 400 buses will leave Kampala central area in the peak hour in year 2000. It is further assumed that at the most half of these buses will depart from the terminal.

With an efficient and well planned system each bus will need on the average <sup>of</sup> only 8 minutes for loading. This leaves however very little reserve for the delays and 12 minutes is chosen as average future loading time. Each loading bay will then dispatch 5 buses in the peak hours considerably longer loading times will be allowed.

From the general observation during my survey, I found that each loading bay usually requires 250 m<sup>2</sup>, including platform and manoeuvring area. A total area of say 100,000 m<sup>2</sup> is thus required for unloading and loading of buses. In addition the area for passenger and staff facilities is estimated to require another 60000 m<sup>2</sup>.

The present Uganda Transport Company terminal is about 12,000 m<sup>2</sup>.

This suggests that by using the ground level for buses and upper level for other facilities, the area is just about sufficient.

The workshops presently located on this same site must be moved out and also the bus storage area should/will be secured else where.

The storage area which is to be needed in year 2000 is estimated to be about 6000 M<sup>2</sup>. This storage area is available just west of Nakiwubo place and also north of Namirembe road as indicated on map.

It would greatly benefit the public if the terminal could handle the routes of all bus companies. The terminal would then be jointly owned and operated by the companies, with the costs allocated according to a formula depending on each company's number of departures. Even better still, the terminal facilities should be built by the city council and leased to the bus companies.

City Council has already proposed in its development plan to sponsor the terminal building.

5.00 DESIGN GUIDE:

5.01 INTRODUCTION :

Before I can come to the detailed analysis of my  
brief, I tried to consider and analyse at the  
same time the sort of things which might be  
important in my project design which I may call  
design determinants<sup>5</sup>.

These design determinants are derived mostly  
from behavioural environments as especially  
related to type of project. Then I will also try  
to analyse further each design determinant

DESIGN DETERMINANTS:

5.1.00 - CIRCULATION.

5.2.00 - POSITION - In relation to areas of common interest

5.3.00 - TEMP-NOTION.

5.4.00 - SAFETY

5.5.00 - EQUIPMENTS - FURNITURE.

5.6.00 STORAGE.

5.7.00 - CONSTRUCTION.

5.8.00 - ENVIRONMENT

5.9.00 - SOCIAL SECURITY - First aid boxes  
Telephone Services  
Music  
Loud speakers.

5.1.00 CIRCULATION - PERFORMANCE REQUIREMENT.

5.01.01 ACCOMMODATION NEEDED:

- TYPES OF USERS: Children.  
Adults.  
Special Category (Clean or Dirty)

- TYPES OF GOODS:

Post - parcels.  
Kitchen - delivery.  
Stationary.  
Passenger goods.  
Furniture.  
Trolley or Trays.

5.01.02 PATTERN OF OCCUPANCY:

- LOCATION OF ACTIVITIES.  
- LOCATION AND NUMBER OF OCCUPANTS.  
- SEATING PLAN:

+ Classes of users.

- + Separate occupancies varying at different times.
- + Time of occupation which may differ for various parts of building.
- + Continuous.
- + Intermittent- (daily, weekly or appropriate longer periods.)

5.01.03 PATTERN OF TRAFFIC:

For people i.e. occupants and visitors. For goods and vehicles. Also to consider; arrivals, entry checking, charging and weighing and also to consider entrance rooms.

INTERNAL JOURNEYS:

Departures or dispatch, refuse disposal, escape and special access problem.

5.01.04 CONSTRAINTS UPON CIRCULATION:

Distance travelled and time spent travelling.



5.01.05 SPACE ASSOCIATED WITH CIRCULATION:

Waiting areas, ticket offices, cash desk/inquiry offices, restrooms, life lobby, exhibition space recreational rooms, restaurants, lodges and offices.

5.01.06 ANCILLARY EQUIPMENTS:

-- Doors, signposts, direction signs, notice boards, display cases chairs and seats, tables, waste bins, post boxes, public telephones, and refuse disposal equipments.

5.01.07 ENVIRONMENT IN CIRCULATION AREAS:

Lighting; Natural or Electric Heating.  
Ventilation - Excessive ventilation.  
Noise - Air borne caused by voices and movement.  
Structure borne; by impact on floor.

5.01.08 ITEMS PARKED BY OCCUPANTS AND VISITORS OR PASSENGERS:

Cars, bicycles, luggage and in some cases children.

5.01.09 ESTABLISH FROM CLIENT:

Flexibility required, likelihood of increase in use, probability of extension and any special requirements of performance standards.

5.02.00 POSITION - DESIGN DECISION:

Select methods:

5.02.01 PEDESTRIAN CIRCULATION:

Horizontal: walking or mechanical.

Vertical: walking or mechanical -stairs, ramps, lifts escalators.

5.02.02 GOODS CIRCULATION:

Horizontal and vertical i.e. non-mechanical and/or mechanical.

5.02.03 VEHICLES CIRCULATION:

5.03.00 DETERMINE LOCATIONS:

5.03.01 ON SITE:

Car parks, bicycle parks, bus parks, in relation to traffic access and siting of building.

5.03.02 IN BUILDING:

Entrances, goods delivery points, stairs, mechanical instalations.

5.04.00 SELECT MATERIALS, FITTINGS AND EQUIPMENT:

Corridors, stairs, doors and mechanical instalations.

5.05.00 PREPARE LAY OUT:

Where the economy in total journey load is required this may govern lay out.

5.05.01 TYPES OF JOURNEY:

Inward and outward, Internal; to offices, lavatories lodges, etc.

Alternative routes, means of escape in case fire.

#### 5.05.02 SEGREGATION:

Segregating different types of building users at different times. Isolation may be achieved by locking doors.

#### 5.06.00 ESTABLISH LOADINGS:

Circulation loads ie. number of people but not structural loads. This can easily be made by observation on buildings of similar function.

#### 5.07.00 DETERMINING SIZES:

The minimum type of circulation facility is usually governed by the largest object to be transmitted.

For example; Stairs, ramps, corridors must be large enough for two people while doors or gates should be large enough to take furniture and trolley.

6.00 OUT LINE OF BRIEF:

This brief has been looked at in three main categories. These categories will briefly analyse the activities at the Bus Terminal.

6.01.00 SERVICE AREA:

6.01.01 BUS PARKING SPACES:

LOADING.  
UNLOADING.  
REFUELLING.

6.01.02 BOOKING BOOTH:

CONDUCTORS.  
INSPECTORS.  
PASSENGERS.  
CASHIERS.

6.01.03 SECURITY OFFICE:

POLICE OFFICE.

6.01.04 SPECIAL NEED FACILITIES:

TAX RANK.

6.01.05 STORES:

PASSENGERS GOODS.  
PARCELS.  
LOST LUGGAGE.

6.01.06 POST OFFICE: TELEPHONE BOOTHS.

6.01.07 WASTE DISPOSAL: DUST BINS.

6.02.06 CORE SERVICES:

6.07.01 ADMINISTRATION:

Concerned with management for the centre.

6.02.02 PUBLICATION FACILITIES:

Loud speakers, Notice boards and time tables.

6.02.03 MEETING ROOMS:

These can be meeting room for the member of staff, and /or board rooms.

6.02.04 STAFF CANTEN - and also DUTY ROOMS FOR EMPLOYEES:

6.03.00 ANCYLLARY FACILITIES:

- Waiting space for passangers.
- Restaurant for public mainly;
- Passenger lodging,
- Kiosks/shops,
- Storage,
- Circulation,
- Toilets.

The station will be provided with waiting space for passengers. The restaurant will be situated near the main entrance. Passenger lodging will be provided in the form of a hostel. Kiosks and shops will be provided for the convenience of passengers. Storage space will be provided for baggage. Circulation will be provided for the smooth movement of passengers. Toilets will be provided for the convenience of passengers.

6.04.00 (a) (i) (ii)

The station layout through the station will be such as to provide for the smooth movement of passengers. The station will be provided with waiting space for passengers. The restaurant will be situated near the main entrance. Passenger lodging will be provided in the form of a hostel. Kiosks and shops will be provided for the convenience of passengers. Storage space will be provided for baggage. Circulation will be provided for the smooth movement of passengers. Toilets will be provided for the convenience of passengers.

The layout of the station, apart from the main entrance, will be such as to provide for the smooth movement of passengers. The station will be provided with waiting space for passengers. The restaurant will be situated near the main entrance. Passenger lodging will be provided in the form of a hostel. Kiosks and shops will be provided for the convenience of passengers. Storage space will be provided for baggage. Circulation will be provided for the smooth movement of passengers. Toilets will be provided for the convenience of passengers.

The station will be provided with waiting space for passengers. The restaurant will be situated near the main entrance. Passenger lodging will be provided in the form of a hostel. Kiosks and shops will be provided for the convenience of passengers. Storage space will be provided for baggage. Circulation will be provided for the smooth movement of passengers. Toilets will be provided for the convenience of passengers.

## 7.01.01 ENTRANCE OF TRAFFIC:

The traffic must be planned to proceed in a one way direction around the passenger unit which can be either a central unit as shown in fig VIII..or it could be a peripheral unit as indicated in fig. IX. The passenger unit contains all the passenger facilities.

Pedestrians will be provided with bridges or subways for access to the passenger unit to ensure some segregation between vehicles and pedestrians.

## 7.01.02 BUS STANCES.

The vehicles arriving through the station will either have to back into or out of the stance depending on whether the entrance point into the bus is either at the back or in front. This is clearly shown in fig .XIII..

The length of the stance, must be based on maximum vehicle length with an additional allowance for entering and leaving without disturbance of other vehicles as shown in fig .X. and XI..

There can be both loading stances and unloading stances if possible.



### 7.01.03 PAVEMENT OR PASSENGER PLATFORM:

The set back of the pavement or platform is to be such that the roof or cantilever provides a cover to the entrances placed near the front/back of the vehicles.

The planning of the stances at an angle as shown in fig .III.... facilitates driving in or out and occupies for less space than parking at right angles.

### OTHER POINTS TO NOTE:

### 7.01.04 SIZES OF BUSES:

It is important to note the sizes of the buses one is designing for in cases of street sizes and heights of verandahs.

### LEGAL MAXIMUM LIMITS FOR PUBLIC SERVICE VEHICLES:

WIDTH - 2.5 m (8'0") including mirrors and trafficators.

LENGTH - 9.2 m (30'0") single deck.

9.2 m (30'0") Four wheel double deck.

9.2 m (30'0") Six wheel double deck.

HEIGHT:- 4.6 m (15'0")

TURNING CIRCLES - 18.3 m (60'.0") for 8.3m (27'.0") length and under.  
20.2 m (66'.0") for lengths over 8.3 m (27'.0")

WEIGHT - 12 Tons for four wheel.  
14 Tons for six wheel.  
2 Ton per axle max.

The diagram in fig XIII shows more clearly the turning circles for public services vehicles.

7.01.05) PARKING OF BUSES:

Temporary parking of vehicles will be provided near site or on site, since garages will not be planned as part of the bus station. The vehicles are only to stand for only short periods and therefore open-air parking is adequate.

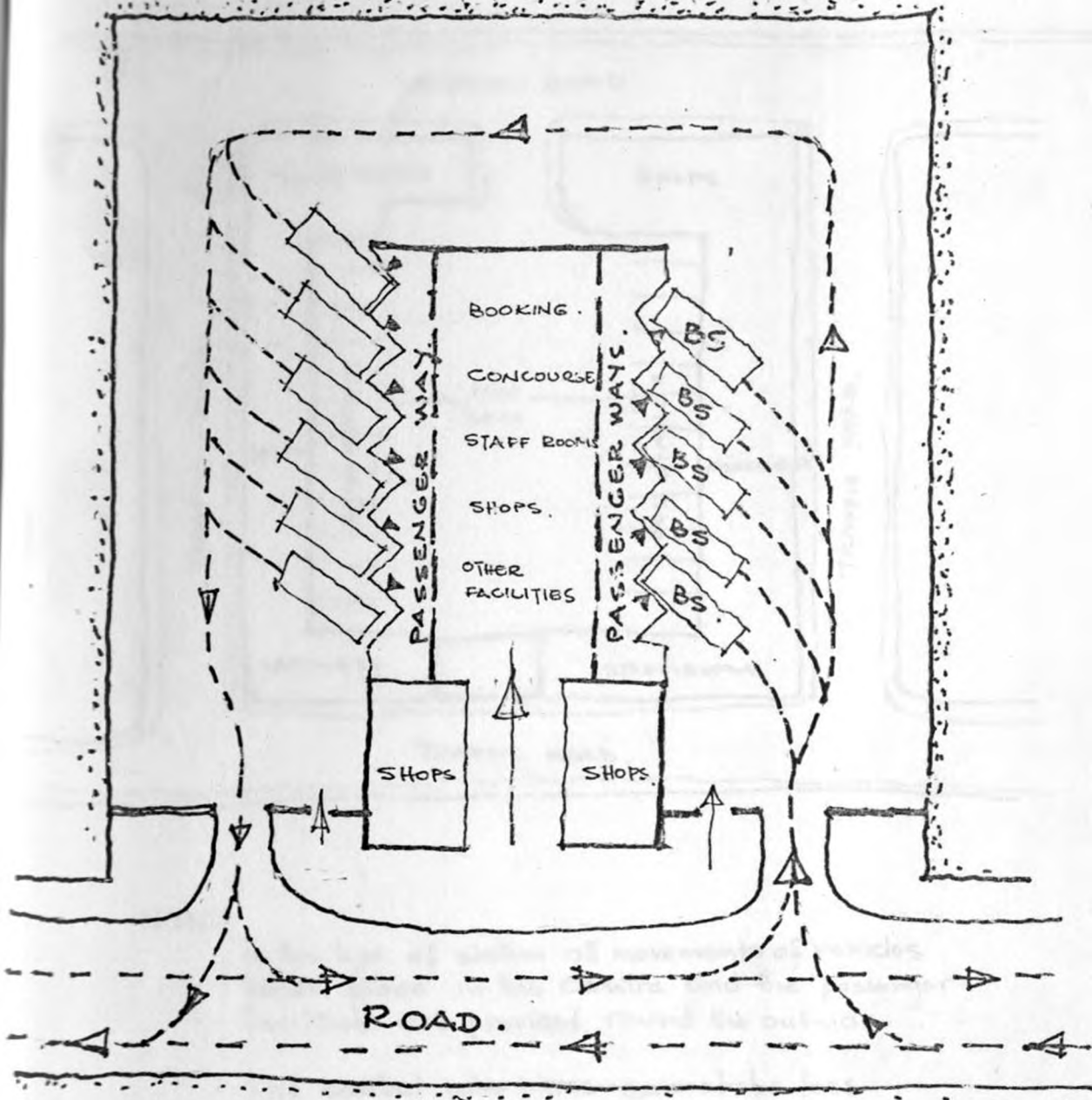
This will be designed such that any vehicle can be moved without disturbing the others.

NOTE:

7.01.06) FUEL AND WATER FILLING:

It is undesirable to have vehicles filled with in station building or near passenger platform.

FIG VIII. ALTERNATIVE BUS STATION.



**NOTE:**

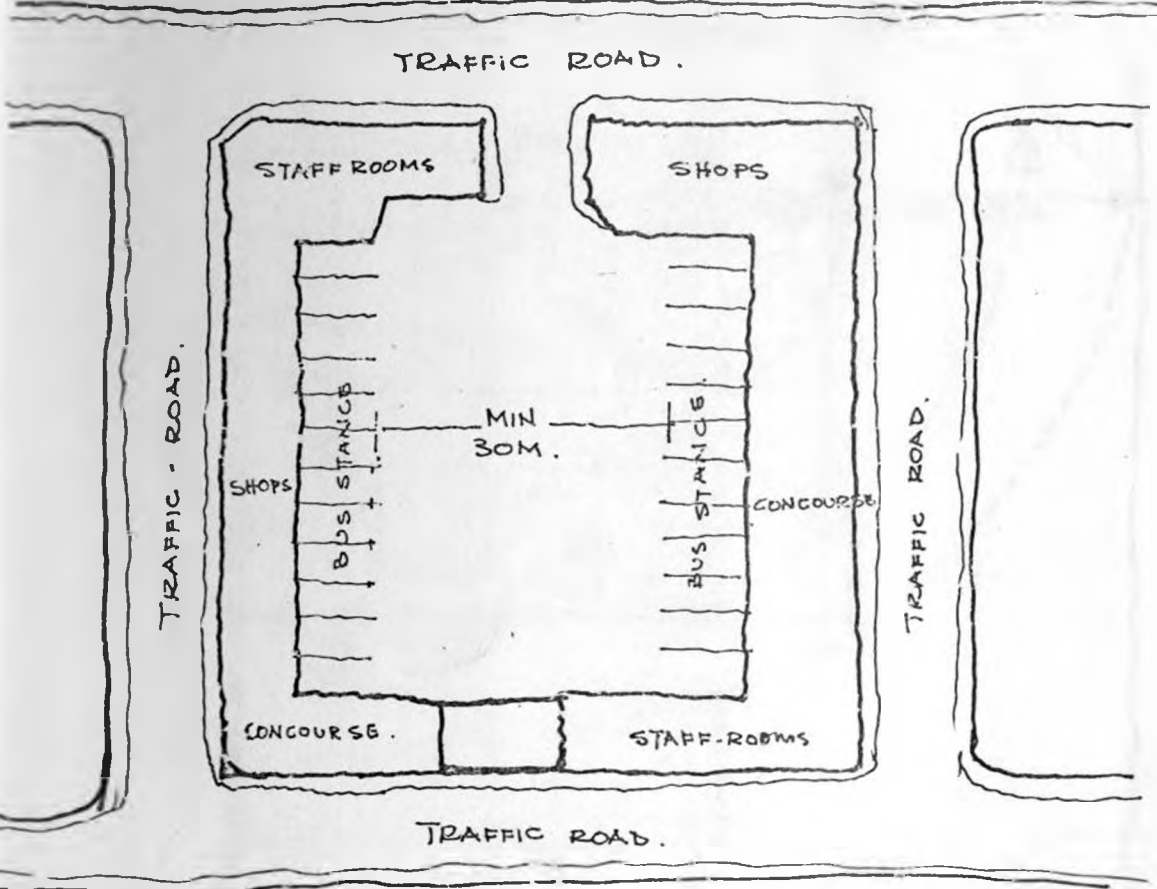
Bus station of a typical lay out which is economic on street frontage and makes good use of a deep site.

A central concourse is shown directly entered from its main street frontway.

Part of the frontage may be used as shops. The arrangement also shows one way traffic into the concourse and backing out of the stances.

This arrangement mainly for front entrance vehicles which drive into the stance and back into the traffic way.

FIG: IX PERIMETER TYPE STATION.



NOTE.

In this type of station all movements of vehicles takes place in the centre and the passenger facilities are provided round the outside.

The central place cannot be less than 30.0 m across.

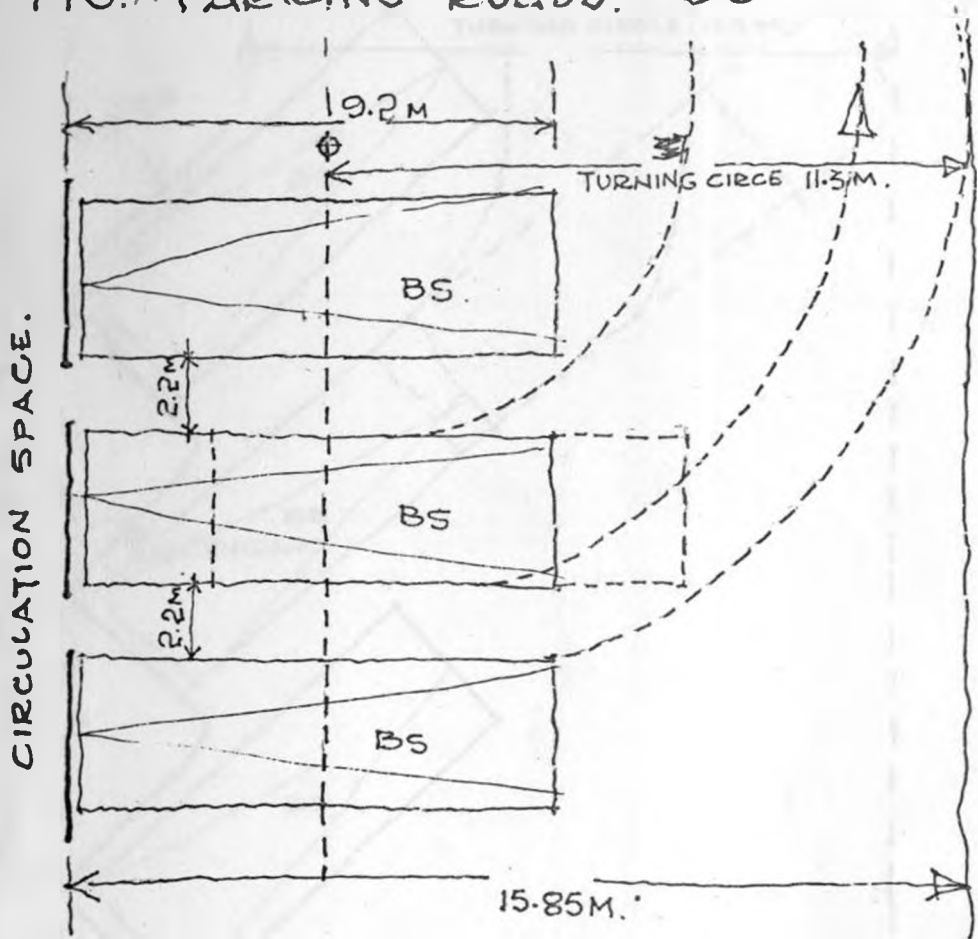
In this arrangement passengers need never cross traffic ways to reach bus. And are well protected while waiting for vehicle.

This lay out provides ample opportunity for good lighting and also for good ventilation to the open air.

The above scheme can be used on any site which has one suitable street frontage; and may not need be an island site.

The arrangement also achieves better circulation of vehicles to and from the station, and ease traffic congestion in streets adjoining the station.

FIG. X PARKING ROADS.  $90^\circ$



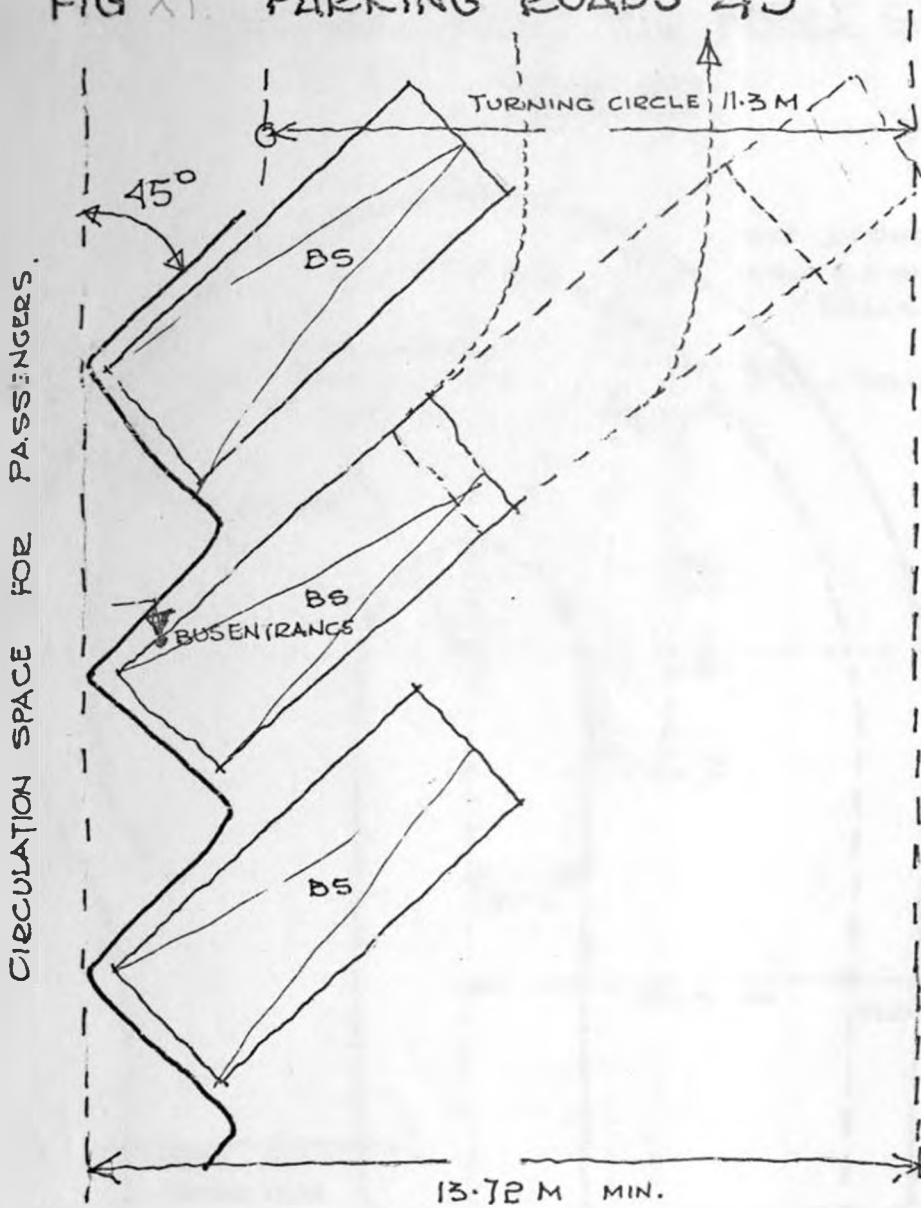
NOTES

THE DIAGRAMME ABOVE SHOWS THE SPACES NEEDED FOR DRAWING OUT BUSES FROM STATION OR PARKING STANCES FOR THE  $90^\circ$  PARKING CONDITION.

TURNING CIRCLES - MIN. 11.3M.

SPACE LEFT BETWEEN 2 PARKED BUSES 2.2M. MIN.

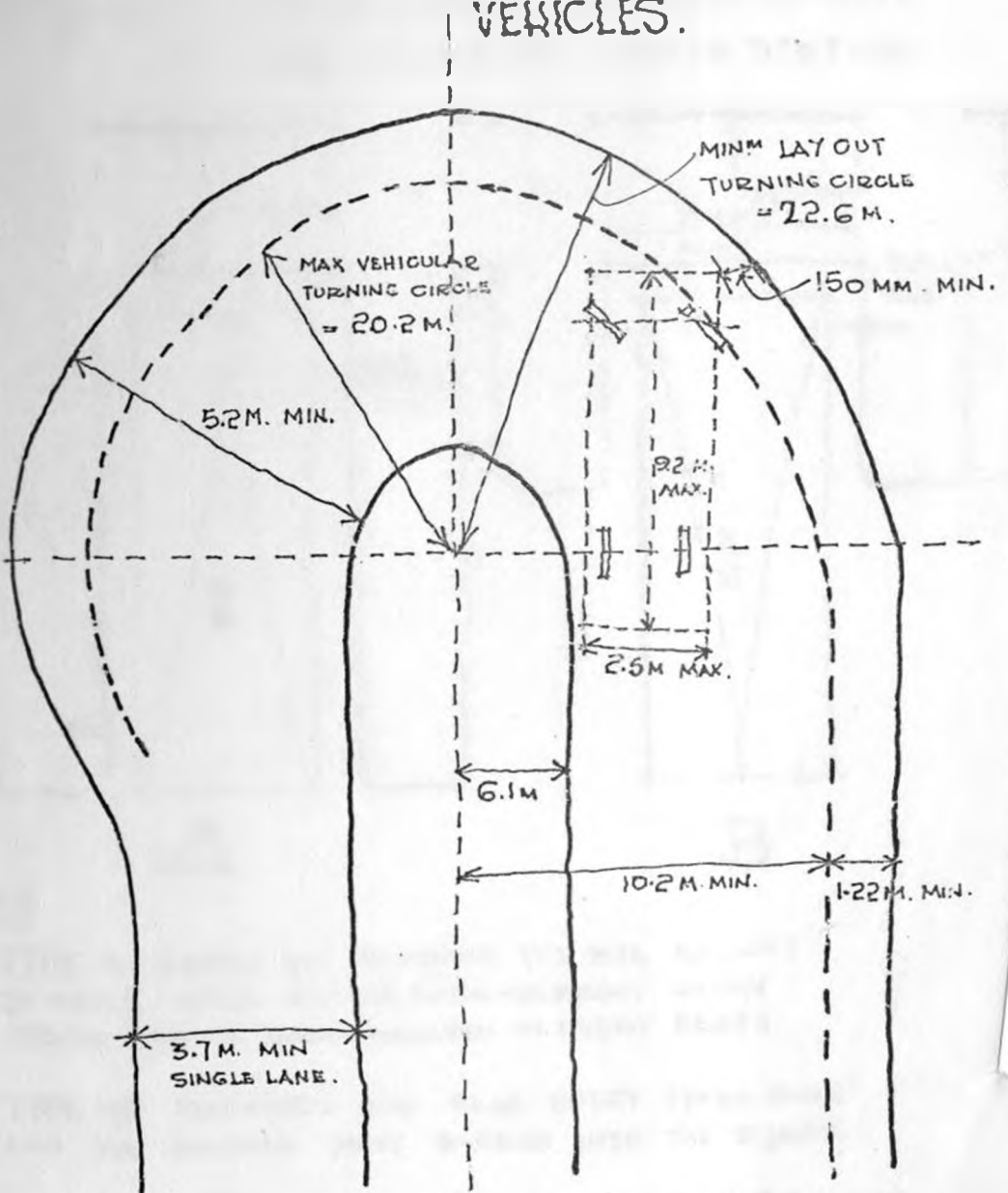
FIG XI. PARKING ROADS 45°



NOTE:

THE 45° STANCES ALLOW FOR ROADS OF CONSIDERABLY LESS WIDTH, AN IMPORTANT CONSIDERATION WHERE SITE-SPACE IS LIMITED.

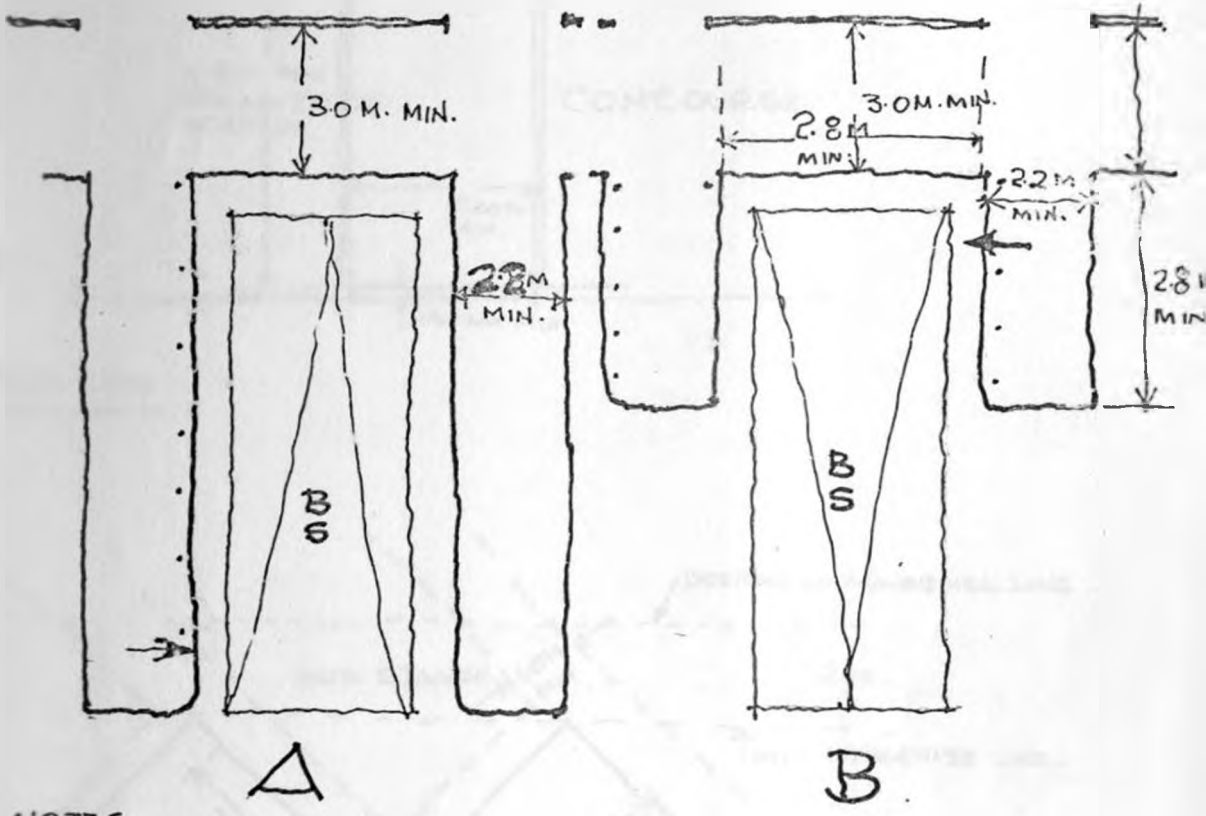
FIG. XIII TURNING CIRCLES FOR PUBLIC SERVICE VEHICLES.



NOTE:

THIS DATA IS BASED ON THE LARGEST PUBLIC-SERVICE VEHICLE IN USE.

FIG. XIV PLATFORM ARRANGEMENT.  
FOR PERIMETER TYPE OF STATION.



NOTES

TYPE-A- BASED ON BERTHING THE BUS BONNET INWARDS. HERE EITHER BACK OR FRONT ENTRY TYPES CAN BE ACCOMMODATED IN EVERY BERTH.

TYPE-B- PROVIDES FOR REAR-ENTRY TYPES ONLY AND THE VEHICLES MUST BACKED INTO THE STANCE

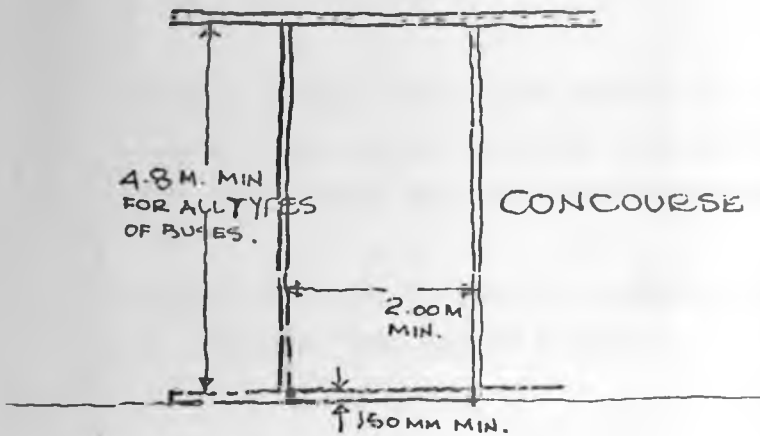
THIS TYPE OF 'CLOSED BERTH' MUST BE AT LEAST 2.8M.WIDE. TO GIVE REASONABLE LATITUDE FOR MANIPULATION OF VEHICLES.

THE MAIN PERIMETER CIRCULATION-SPACE FOR PASSENGERS SHOULD NEVER BE LESS THAN 3.0 M WIDE.

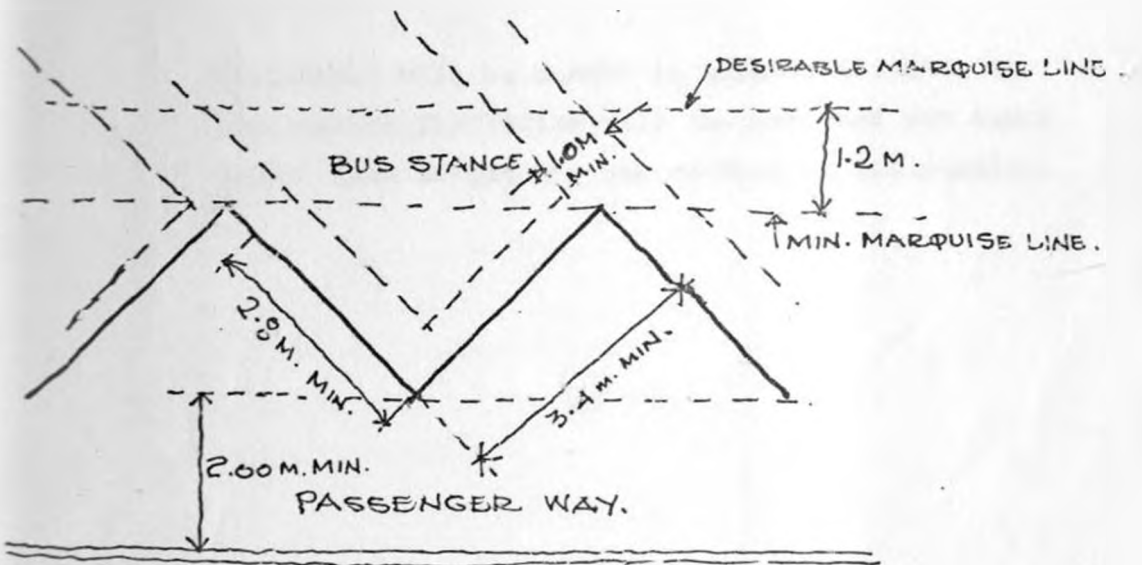
THE PLATFORM JAY FOR ACCESS TO VEHICLES SHOULD NOT BE LESS THAN 2.2 M.



FIG. XI PASSENGER WAYS & BUS STANCES.



SECTION.



PLAN.

CONCOURSE.

NOTE: = PASSENGER WAYS NOT LESS THAN 2.0 M. WIDE.  
TO BE INCREASE BY DOOR SWING AMOUNT.

= WIDTH OF BAY AT END OF VEHICLE STANCE TO BE NOT LESS THAN 3.4 M.

= SPACE BETWEEN ADJACENT BUSES TO BE 1.00 M. MIN.

= TO PROVIDE COVER UP TO BUS ENTRY AS SHOWN.

= PLATFORM HEIGHT TO A MAX. OF 150 MM.

= MARQUEE TO HAVE A CLEAR HEIGHT OF 4.8 M. ABOVE THE ROAD LEVEL.

Filling should take place in garage or in some space adjoining the station in a position to which the public does not normally have access.

Storage tank to be placed underground and must be at least 10' from public highway.

7.01.07 TAXI - RANKS:

Taxi-Ranks will be needed in association with the bus-station. Facilities will be provided for taxis to set down to pick up and to wait at the station.

## 7.02.00 PASSENGER FACILITIES:

### 7.02.01 INTRODUCTION:

I will first of all give a general comment on each of the passenger facilities which I am to provide at this station before I can analyse the special requirements of each.

This analysis is to help me and the reader to understand more about the necessity and requirement of a particular activity.

#### SUMMARY OF PASSENGER FACILITIES:

- WAITING SPACES.
- WAITING ROOMS.
- BOOKING - OFFICES.
- INQUIRY - OFFICE.
- LEFT LUGGAGE ROOM.
- BYRON OFFICE.
- SEPARATE ACCOMMODATION FOR BOTH SEXES.
- SHOP / KIOSKS.
- MEAL REPLENISHMENT FACILITIES/RESTAURANTS.
- TOILETS

### 7.02.02 WAITING SPACES:

Here I am going to consider 'age groups' and also health people, infirm persons and pregnant and mothers with children.

Important to provide seats, although it may not be possible for providing seats for all passengers even on off-peak hours.

Even if seats are provided it is important to note that not all passengers will need to use them.

6. Always provide a free space for standing passengers.

#### 7.02.03 BOOKING AND INQUIRIES:

To be most prominent. Its position to be immediately obvious from whatever direction passengers may approach. Illiteracy and ignorance of people to be considered. Many people arrive at the station without any idea of what to do next and may not even be able to read.

#### 7.02.04 INQUIRY SPACE:

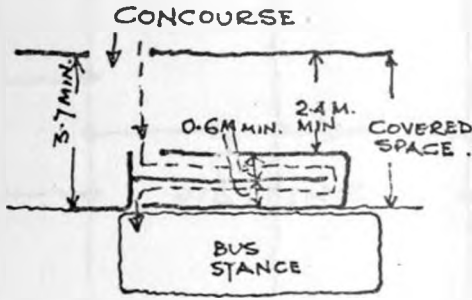
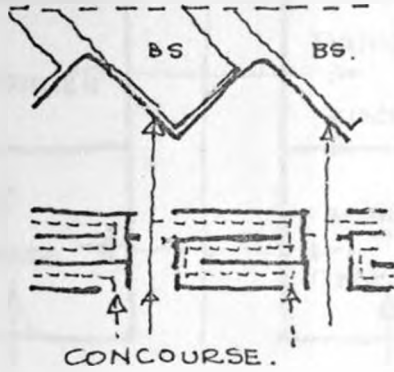
An ample counter to allow for adequate number of clerks, working at the same time, based on the needs of the average demand.

Counters with an allowance of at least 1.5m run of service space/clerk may be adequate for all purposes.

At least 4.55 m<sup>2</sup> of passenger space is necessary to each clerk's space.

Counters for inquiry or booking should be about 1.06 m high and 0.5 m wide for inquiries and

# BUS QUEUES.



## NOTE:

PARALLEL PARKING  
GIVES A GOOD COVERAGE  
TO PASSENGERS AND  
A GOOD QUEUEING SYSTEM  
BUT REQUIRES A LARGE  
SITE FOR A BIG STATION

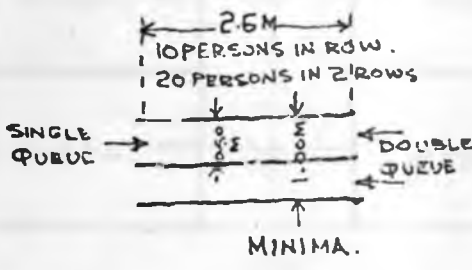
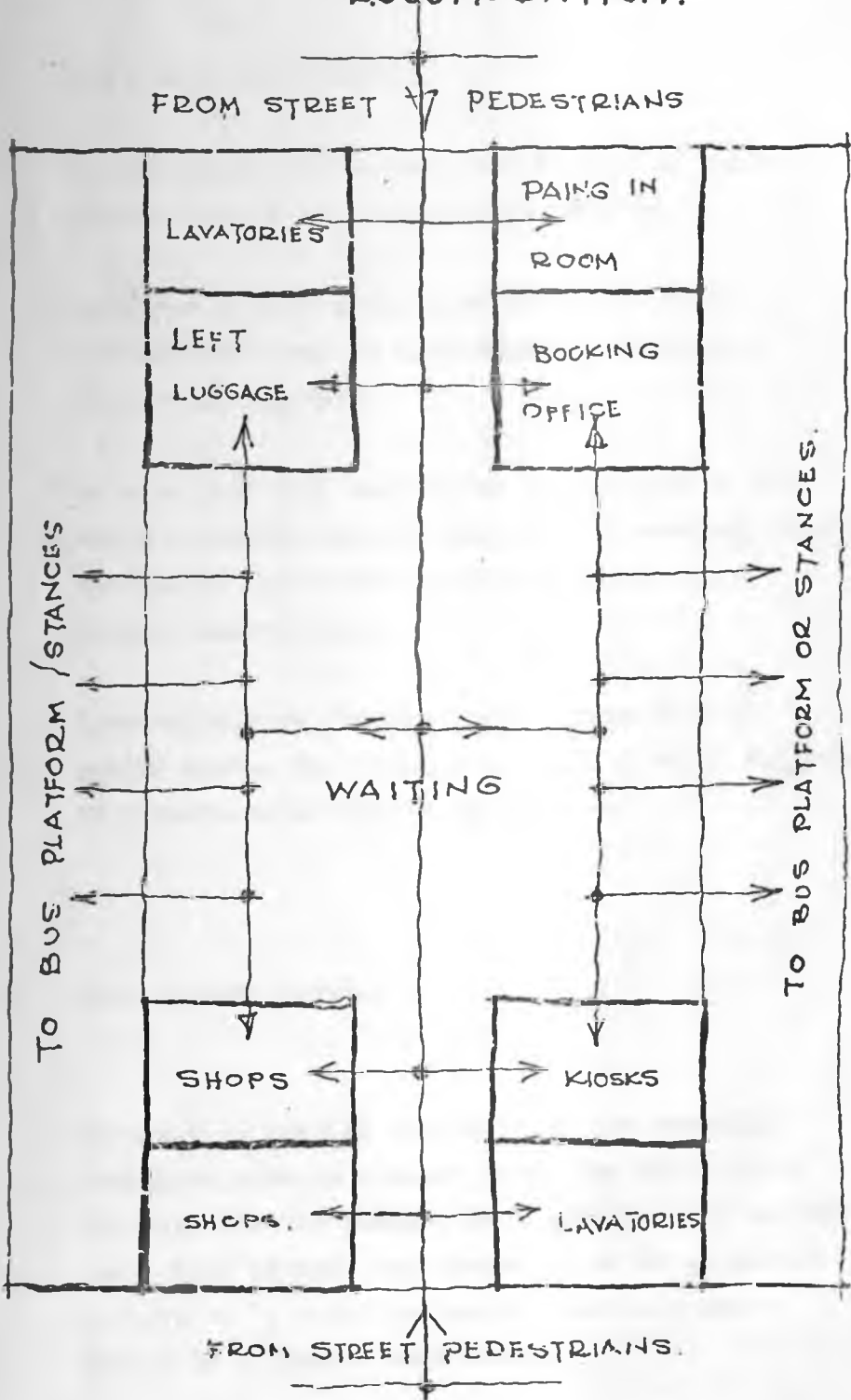


FIG. XV ANALYSIS OF ESSENTIAL BUS STATION ACCOMMODATION.



STAFF REST ROOMS, ADMINISTRATION OFFICES ETC MAY BE ON THE UPPER FLOORS.

0.6 m wide for booking.

Space behind counter may also be used as general office, but if not, may not be so wide.

Worker will need a separate office to avoid disturbance - may be approached by doors from clerk's office space.

To note also that passengers take longer at the booking counter than at the inquiry counters and the clerks space and circulation space to be planned accordingly.

There should be plenty of wall space in all public spaces for orderly and well planned displays of posters, time tables and notices.

#### 7.02.05 LEFT LUGGAGE OFFICE:

Assume that most of the articles are normally reclaimed within a short time. Few will remain for more than 24 hours. Some articles may be left for longer periods and unclaimed articles should be/have to be kept for several months - space should be allocated accordingly.

A lost property office really very necessary should be associated with left luggage office/facilities.

Left luggage office to have a counter to divide passenger space from storage and working space.

The height of the counter must be reasonable as to allow all luggage to be lifted on to and over to the counter. About 0.5m - 0.6 m is adequate.

There should also be plenty of passenger waiting space adjoining the counter.

Bus passengers have generally less bulky luggage than railway passengers, but sometimes this is not the case. It is also observed that most of the luggages/articles left by passengers are not normally bulky.

The most common article is a suitcase with a maximum size of 0.6m x 0.5 m x 0.25 m.

It is most advisable that all storage rackings should provide all purpose racking in multiple units of 0.6m x 0.6m x 0.5 m.

A clerks desk will be needed for making out passenger's tickets for goods handed in. In a large station luggage of ice should have separate in coming and outgoing traffic.

PAKAGE COUNTERS are needed. These may be associated to the left luggage office, or better still a separate unit.



Bus companies undertake the delivery of parcels on rural routes. Better to provide a dispatch office and a receiving office.

Parcels are relatively small, but packings need to be based on keeping parcels for each route together.

Parcel offices need space for weighing machines and desk space for clerk in addition to the counter.

Width of counter may be 0.5m - 0.6 m wide.

Lighting and parcel office must be kept dry and reasonably warm in say wet seasons.

#### 7.22.07 SIGNAGE:

In important aid for passengers is efficient, clear and distinct indication of when and where departures of vehicles will take place.

Seats or stances to be clearly marked with numbers, detailed destination boards are also desirable.

All important signs to be illuminated at night.

A loud speaker system need to be installed for the direction of passengers. Loud speakers need to be placed carefully in relation to the queue and waiting spaces.

The control should be placed in the inspector's or controller's office.

7.02.08 GENERAL EQUIPMENTS:

Station to be adequately equiped with rubbish bins and baskets on adjoining waiting rooms and queuing spaces.

Drinking fountains to be provided.

A service room with sink facilities for filling and emptying baskets racks for brooms etc for cleaners of both building and open yard.

7.02.09 ARTIFICIAL LIGHTING:

Bus stations must be well lighted in all parts used by passengers and vehicles; except that care must be taken that light do not shine in the eyes of drivers.

Internal lights should be screened from yards, and yard lights should be installed at least 4.5m above roadway level.

#### 7.02.09 INTERNAL ROADWAYS:

Road ways to be as level as possible: but a slight fall is needed to produce quick drainage of all surfaces.

Steep cambers towards kerbs and platforms should be avoided to reduce the risks of vehicles sliding or skidding toward kerb.

A camber of 1 in 40 should be the minimum and it is better to make the surface fall away from kerbs and platforms used by passengers.

Road surfaces to be of non-skid surface which will not be affected by oil patches.

For falls along kerbs or/and platform arrangement to be made so that kerbs are an average of 15mm and not less than 100 mm or more than 200mm.

#### 7.02.10 LAVATORIES:

To provide sanitary accommodation for male and female passengers.

Sanitation lavatories to be planned on the same level as platforms and in fairly close association

with passengers waiting space.

For a station used by long distance express services washing facilities are essential for both sexes.

Separate accommodation for passengers and staff to be planned.

Lavatories must be easy to clean, materials used for walls, floors, to be highly durable, easy to clean and should not be spoiled easily.

#### 7.02.11 CAFES AND RESTAURANT:

To provide facilities for light refreshments at the station, especially that station handling long distance passengers.

For a station where stopping and/or interchange for long-distance services is close, the service of main meals are necessary. This can be done in two ways, either self-service or waitress service at table.

Counter service is becoming more generally accepted but where it is adopted consideration to be given to the fact that many customers have luggage or parcels which they wish to keep near them during a meal.

#### 7.02.12 KIOSKS AND SHOPS:

Kiosks to be provided for the sale of light materials eg. new papers magazines, sweets and confectionery and also for tobacco.

They to be planned so that they can be leased as concessions other than operated by the bus company.

The street frontage to be used for shops on the ground floor area as much as possible.

Small kiosks or stalls will require additional space for some bulk storage in positions reasonably accessible from or to the selling place.

The kiosks have to have a counter, shelves, some storage, display area and will not need a separate sanitary facilities as are needed in the shops. Staff will use the general station accommodation or of that of the station staff.

Kiosks can be as little as 2m x 2m. (more space can be given)

#### 7.02.13 TELEPHONE BOOTHS:

Facilities for telephone boxes most suitably in the passengers waiting area or concourse to be provided, as passengers arriving at the station may need to

contact relatives, taxis or any person.

2.02.14 G.F.O. 2

It will be advantageous and improving the quality of services at the station if a post office is incorporated for passengers who may need to write to friends from the station.

7.02.15 LODGES.

For passengers who may arrive late or leave the station very early in the morning and may need accommodation the whole night at the station.

Some members of staff on duty could be accommodated. The station is likely to operate 24 hours a day.

A small room with may be two beds and a small storage space, two chairs and two small tables can be adequate.

A common lavatory and bathroom can be planned to serve about six bedroom units provided there is respect given to different sexes.

The lodges must be placed in such away that they are highly private and completely separated from

the public spaces.

The same restaurant to be /can be used by both lodgers and other passengers.

Entrance to the lodges or lodge reception to be as private as possible.

#### 7.03.00 STAFF ACCOMMODATION

Divided into two groups:

- 1-That needed for operating of vehicles.
- 2-That needed for administration.

Offices for administrative staff will occupy upper floors.

#### 7.03.01 THE FOLLOWING ACCOMMODATION IS NEEDED:

Managing directors office.

Accounts offices.

Traffic offices.

Sanitary and rest room accommodation.

Canteen.

Storage for staff cycles.

Carpark for staff cars.

Resorting clock should not be installed closer together than 1.5 m centre to centre and should be in a position where waiting staff do not impede passenger movement.

Rooms for controllers and inspectors to have good visibility of all bus stances.

A controller who acts as a starter could be placed in such a position where he overlooks the station from high level and controls the movement of the buses by light signals and the passengers by loud - speakers.

The cashiers' room and conductor's pay-in room to adjoin and have connecting hatches for intercommunication.

Storage and safety of cash to be included in the cashiers' room.

The cashiers' room to be planned on an allowance of at least  $3m^2$

Pay-in hatches at about 1.5m centre to centre to be provided.

Many conductor's rooms are to be equipped with racking for the storage of conductors' ticket boxes and equipment which vary in size and shape.

Locker rooms providing accommodation for all personnel using the station are essential. Adequate space for



changing rooms required in addition to a locker room.

Full length lockers to hold an overcoat are desirable.

Canteen to be designed to give quick service, as the breaks for meals are usually short duration for drivers, conductors and other outside staff.

#### 7.03.02 STORE BICYCLES:

All operating personnel often arrive at and leave the station before and after normal bus services. The use of cycles and motor cycles is very common. It is important that proper storage, and cover, is arranged in position to which all staff has access.

## THE ACCOMMODATION REQUIREMENTS FOR THE UGANDA TRANSPORT COMPANY OFFICES.

Below is a list of such requirements with a tentative superficial room area.

The list is in 5 sections as follow:-

1. Administration section.
2. Accounts section.
3. Personnel / Establishment section.
4. Traffic section.
5. Engineering section.
6. Stores section.

Each of the sections as mentioned above has its specialised duties in the company. But at the same time some have some direct relationship to the passengers directly; and need to be as near or directly accessible as possible. Some sections have no direct relationship to passengers. In the design such sections should be related to each other according to their interaction requirements.

The engineering section and stores section are not considered, since these are mostly connected to the workshops which has been suggested to be moved away to a different location, most likely in the industrial area. The two sections will move away accordingly with the workshop.

COMMON/PASSENGER FACILITIES.

SPACE	NUMBER OF OCCUPANTS	AREA PER UNIT	NUMBER OF UNITS	TOTAL AREA
Concourse				
Waiting Rooms				
Booking Offices				
Luggage & Parcels Offices				
Shops				
Kiosks				
Restaurant				
Post Office				
Inquiry				
T.V. Room				
Sanitary Installations				
Lodges				
Left Luggage				
Information Room				
Telephone Booths				
Litters				
Left Luggage				

TRAFFIC DEPARTMENT.

NO.	DESIGNATION	NUMBER OF OCCUPANTS	AREA PER UNIT	NO OF UNITS	TOTAL AREA(M <sup>2</sup> )
	Traffic Manager	1	25	1	25
	Personal Secretary	1	15	1	15
	Asst. Traffic Manager	1	15	1	15
	Chief Inspector	1	15	1	15
	Asst. Chief Inspector	1	12	1	12
	Transport Officers	6	24	1	24
	Senior Inspectors Ticket Examiners Inspectors		25	1	25
	Booking Clerks	4	10	1	10
	Reporting Inspectors		10	1	10
	Time Keepers	2	10	1	10
	Schedules Officer	1	12	1	12
	Clerks/Typing Pool	12	60	1	120
	Demonstration Room	30	60	2	60
	Conductors & Drivers' Room		40	1	40
	Way Bill Cashier	4	18	1	18
	Clock Room Shower		50	2	100
	General Commonroom - Drivers, Conductors		40	1	40

TOTAL 451

Allow circulation

20% 90 M<sup>2</sup>

Total Grand Area 540 M<sup>2</sup>

Provided Area

PERSONNEL DEPARTMENT.

DESIGNATION	NUMBER OF OCCUPANTS	AREA PER UNIT	NO OF UNITS	TOTAL AREA (M <sup>2</sup> )
Personnel Manager	1	25	1	25
Personal Secretary	1	15	1	15
Asst. Personnel Manager	1	20	1	20
Security Officer	2	15	1	15
Training Officer	2	15	1	15
Clerks	6	20	1	20
Typists	2	10	1	10
Sports/Welfare Officer	2	15	1	15
Welfare Clerks	4	12	1	12
Store for Equipment		20	1	20
General Office		20	1	20
Health Officer	1	15	1	15
Lipensary		36	1	36
Health Clerk	1	12	1	12
Waiting Space		30	1	30
Nurses Office	1	15	1	15

295 M<sup>2</sup>

Circulation 20%

30 M<sup>2</sup>

Grand Total

320 M<sup>2</sup>

Provided Area

ACCOUNTS SECTION.

NO	DESIGNATION	NUMBER OF OCCUPANTS	AREA PER UNIT	NO OF UNITS	TOTAL AREA (M <sup>2</sup> )
1	Chief Accountant	1	25	1	25
2	Personal Secretary	1	20		20
3	Asst. Chief Accountant	1	20	1	20
4	Chief Cashier	1	20	1	20
5	Accountant	1	15	1	15
6	Asst. Chief Cashier	1	15	1	15
7	Cashier Grade 1	1	12	1	12
8	Cashier Grade 2	1	12	1	12
9	Cashier Grade 3	1	12	1	12
10	Asst. Accountant	1	12	1	12
11	Accounts Asst.	1	12	1	12
12	Senior Accounts Clerks	6	20	1	20
13	Accounts Clerks (Revenue)	7	20	1	20
14	Accounts Clerks (Wages)	7	20	1	20
15	Accounts Clerks (Expenditure)	7	20	1	20
16	Accounts Clerks (Creditors)	7	20	1	20
17	Accounts Clerks (Debtors)	7	20	1	20
18	Accounts Clerks (Boxing Accts.)	7	20	1	20
19	Waiting Space Chief Acct.	4	10	1	10
20	Typing Pool	3	15	1	15
21	Store for Files		25	1	25

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ADMINISTRATION.

DESIGNATION	NUMBER OF OCCUPANTS	AREA PER UNIT	NO OF UNITS	TOTAL AREA (M <sup>2</sup> )
1 Managing Director	1	36	1	36
2 Personal Secretary	1	20	1	20
3 Visitors Waiting Room	6 Max	15	1	15
4 Asst. Managing Director	1	25	1	25
5 Personal Secretary	1	20	1	20
6 Board Room	18	80	1	80
7 Senior Common Room	30	80	1	80
8 Corporation Secretary	1	30	1	30
9 Personal Secretary	1	20	1	20
10 Accident & Claim Manager	1	35	1	35
11 Personal Secretary	1	15	1	15
12 Visitors Waiting Space	8 Max	20	1	20
13 Security Registry	2	35	1	35
14 Open Registry	3	40	1	40
15 Telephone Operator	= 1	10	1	10
16 Reception & Waiting		25	1	25
17 Secretaries / Stenographers	3	20	2	40
18 Staff Canteen	30-50	100	1	100
				<hr/> 631
				Circulation Space
				allowed 20%
				120
				<hr/> Grand Total
				751 M <sup>2</sup>

Actual Area Provided in the Scheme.



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