RESIDENTIAL NEIGHBOURHOOD IN ARUSHA By Martin Anael Moshi

A THESIS PROJECT SUBMITTED IN PART FULFILMENT FOR THE DEGREE OF MASTER OF ARCHITECTURE IN THE UNIVERSITY OF NAIROBI

1971/72

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RESIDENTIAL NEIGHBOURHOOD AT ARUSHA, TANZANIA.

		WORKING TIMETABLE
<u>Week</u> l	<u>Date</u> Jan.3 - 9	Work to be done Programme of work
2 3	" 10 - 16 " 17 - 23	Design brief and site study - location, size, climatic conditions, site facilities.
4	" 24 - 30	Site plan & sections, 1:2 500 site model.
5	" 31 - Feb.6) Feb. 7 - 13	Dwelling units 1:100, plans & sections plot layout sytems.
7 8	" 14 - 20) " 21 - 27))	<pre>Site layout 1:2 500 Site layout 1:2 500 - orientation, vehicular and pedestrian circulation, access and community facilities.</pre>
9	" 28 - Mar.5) March 6- 12)	Dwelling units 1:50 Site layout 1:200 - plans, sections, elevations.
11 12	$\begin{array}{c} 1 \\ 1 \\ 3 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2$	Plans, sections, elevations, 1:50 Details 1:10, 1:5, full size.
13 14 1 5 16	Apr. 3 - 9) 10 - 16) 17 - 23) 24 - 30)	Presentation 1:2 500, 1:500, 1:200, 1:50, 1:10, 1:5, • full size, model 1:50.
17	Mäy 1 - 7	Project revision & hand in.

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RESIDENTIAL NEIGHBOURHOOD, ARUSHA.

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PROGRAMME OF HOUSE CONSTRUCTION. Introduction

The Thesis work carried out in the first term of the 1971/72 session was devoted to research into the Housing Trends in Tanzania. This Design Project is a continuation of the T hesis work and therefore its findings have been used to draw up the Programme and Brief for this Project.

Scope

The project is for the design of a residential neighbourhood for about 1 500 to 2 000 people. This size is sufficiently small to effect contact between community members, and at the same time it is large enough to sustain the basic community facilities - primary school, nursery school, etc.

Public buildings are not included in the Programme although consideration is given in the overall planning. It is assumed that a good number of these will be developed by other Government services, and private people will develop buildings of commerce and services.

OVERALL CONCEPT

This project, although it is a residential neighbourhood, is distinguished from other residential developments because of the attempt made to integrate the different income groups into one viable community. The neighbourhood is expected to have a wide variety of income groups initially (it is hoped, in time, to narrow down the gap between the high and low income groups) and it is, therefore, logical that in integrated neighbourhood most of the cost of community facilities, would be borne by the high income group. The low income group will then be able to enjoy facilities which would have otherwise been out of reach in segregated development.

The building programme is structured on the assumption that the population of the neighbourhood will roughly reflect the income composition of the urban households in Arusha. This is considered to represent a reasonably accurate way of determining the market for housing urban areas.

Initially, plots will be developed up to different levels of accommodation standards and facilities to reflect the ability and willingness of expected owners or tenants to pay for housing. Later, as the size and income of family rises more accommodation and better services could be added to the dwelling.

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As the cost of high-level infrastructure cannot be financed on an economic basis for the majority of urban households, it is proposed that at the initial stage the site and service scheme, core housing and the 2 room houses should be provided with the basic infrastructure. Priority will be on community facilities such as water Kiosks and Street lighting.

PROGRAMME OF HOUSE CONSTRUCTION

PUBLIC FUNDS

HOUSE TYPE	INCOME GROUP	RENT PAYING	HOUSE COST	nan Caynin mersiyy waar waar ya maar du amaa tu ilanda amaa amaa ay ah ah ah	PHASE 1	PHASE 2	HOUSE TYPE	%AGE OF PRO-
	(SHS. P.M.)	CAPACITY (SHS. P.M.)	RANGE (SHS.)	TENURE	UNITS	UNITS	TOTAL	GRAMME TOTAL
SITE AND	UP TO 100/-	UP TO 20/-	UP TO 2500/-	TENANT PURCHASE	48	Letter der Einer vereinsetzenden der Letter bei der	48	16%
CORÉ HOUS XING		20 - 40/-	2500 - 6000/-	TENANT PURCHASE	108		108	36%
2 ROOM HOUSES	200 - 400/-	40 - 80/-	6 -12000/-	TENANT PURCHASE	Company of the second sec	99	99	33%
3 ROOM	400 as 800/us	80 - 160/-	12 -17500/	RENTAL/ TENANT PURCHASE		15	15	5%
3 ROOM BLOCK OF FLATS	OVER 800/-	OVER 160/-		RENTAL		30	30	10%
TOWN, OF PROG	но информации и на				156	7 Lş.Lş	300	100%
						CELON		

PROGRAMME OF HOUSE CONSTRUCTION

PUBLIC AND PRIVATE PART OF CONSTRUCTION

HOUSE WYDE	PUBLIC PART OF	PRIVATE PART OF	PUBLIC FUNDS	PRIVATE AND	NO. OF	H.ROOMS	MONTHL	Y RENT
	CONSTRUCTION	CONSTRUCTION	SHS. (MAX)	PUBLIC FUNDS	IN START) LATER	TOTAL	PER MONTH
SITE AND SERVICE	SANITATION BLOCK (PIT LATRINE)	OWNER BUILDS HOUSE ON SELF HELP OR OTHERWISE	2,500/=	12,000/=	0	5	100	20
CORE HOUSING	SANITATION (PT. LATR.), KITCHEN AND ONE ROOM	TENANT BUYS MATERIALS AND BUILDS POSSIBLE EXTENSIONS	6,000/=	12,000/=	1	5	100	20
2 ROOM HOUSES	SANITATION (PIT LATR.),	TENANT BUYS MATERIALS AND BUILDS POSSIBLE EXT.	9,000/=	12,000/=	2	4	80	20
3 ROOM HOUSES	COMPLETE AND FULLY SERVICED. WATER, ELECTRICITY	NONE	17,500/=	17,500/=	3	4	120	30
3 ROOM BLOCK OF FLATS	COMPLETE	NONE	24,000/=	24,000/=	3	3	180 -	60

HOUSE TYPE	NO. OF DESELINCS PLOUS	HABITABLE ROOMS IN START	PLR DESLETHG LATER (MAX)	TOTEL NO. OF MABITAALS ROOMS
SITE AND SERVICE	84	NONE	2	240
CORE HOUSING	108	r-i	5	540
2 ROOM HOUSES	66	. N	7	279
7 ROOM HOUSES	15 1		t 1	
3 ROOM BLOCK OF FLATS	30	M	01	06
			TOTAL	1209

DEVELOPMENT CONTROL (DANSIEY)

DESIGN BRIEF

SCHEDULE OF ACCOMMODATION

1.00	Site and Service Scheme :	Areas Proposed	(m ²)	Areas Attained (m ²)
	Latrine	1,2		
	Ablution	1,2		
2.00	Core Housing :			
	Living/bedroom	12,0		
	Kitchen	4,8		
	Latrine	l,2		
	Ablution	1,2		
3.00	2-Roomed Houses:			
	Living room	12:0		
	Bedroom	9,0		
	Kitchen	4,8		
	Latrine	1,2		
	Ablution	1,2		
4.00	3-Roomed Houses :			
	Living room	12, 0		
	Bedrooms	9,0		
	Kitchen	4,8		
	W.C.	1,2		
	Shower	1,2		
5.00	2-Storey Blocks of Flats :			
	Living room	12,0		
	Bedroom	9,0		
	Kitchen	4,8		
	W.C.	1,4		
	Shower	1,2		•

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COMMUNITY FACILITIES

1. Education 1 No. Nursery School site area.

l No. Primary school		0,6 ha
site area		
Playing fields		0,9=ha
	TOTAL	l,7 ha
		ALLOCATION COMMITMENTS IN THE LOCATION

2. Commercial Local market, 10 stalls @ 5.6 = 56.0 m^2 1 co-operative shop 6 corner shops @ 4.0 m^2 1 local pub 16.0 m^2 70TAL 94.0

1 Bus stop

1 Post box

- 3. Recreational Play area for children 1,0 m² per bedospace Communal open space/mark
- 4. <u>Institutional</u> TANU Office Branch

Church/mosque

0.15 ha

0,2 ha

As regards education, the number of and area to be allocated to primary school has been based on the following assumptions:

9

(a) In Tanzania, school-age children i.e. 7-14 years, represent 18% of the population.

(b) Primary school education is compulsory.

(c) Mixed attendance applies in primary schools,

(d) Each classroom accommodates 40 children.

INFRASTRUCTURE

Initially priority will be given to communal facilities.

Water

Communal supply from water kiosks to serve house types with pit latrines. Individual water supply to 3-room houses and blocks of flats. To discourage people from paying to have water carried to their houses, 50,0 m is assumed to be an average distance from furthest plot or dwelling to a water kiosk.

Electricity

Street lighting, and in community buildings and open spaces. Only the 3-room houses and blocks of flats will be provided with elecricity.

Roads

These will be of murram and ditch drainage. It is proposed that only part of the full cross-section of the internal roads are to be constructed, since initially traffic will be moderate during the first year of operation and probably for much longer.

Sanitation

Sanitation will be based on pit latrine for site and service, core houses and 2-room houses, with provision for later improvement to water borne sanitation. 3-room houses and flats will be built fully serviced with water, electricity and water borne sanitation. A period of not more than 10 years has been assumed whereby owners will be required to **im**prove their sanitary services.

i.



HOUSING

SITE

Ha. APPROX



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Location

The site is located in Arusha township in the corridor area. Longitude : $36^{\circ}E$ Latitude : $3^{\circ}S$ Altitude : 4545 ft. (1380 m) asl.

Altitude : 4545 ft. (1380 m) asl. The site is just within the existing township boundary but will fall well within the new boundaries recommended for adoption in Arusha Haster Plan. The following are the major reasons for the choice of this site :-

- (a) The Arusha Laster Plan provides for major long term growth to the east. The project will clearly be in the heart of its physical location, to be a special housing for loe income families.
- (b) The site is near the Teni Industrial Estate the focus of Industrial devolopment in Arusha during the Second Five-Year Plan period and beyond and therefore a major centre of new development.
- (c) The site can easily be acquired a most of the site is presently in maize and few structure are present.

Size

The site which is bounded by Moshi Road, on the North and Kijenge Stream, on the East is averximately 13 ha.

Land - Scape

The site falls gradually from North to South of site at a gradient of about The site is on the other hand bordered by the Temi and Suia hills on the South and North-east respectively.

Climatic Conditions

The available statistics about the climate of Arusha refer to observations made at the Arusha Airfield Meteorological Station which is about 10 Kilometres from the site.

Average rainfall, temperature, relative humidity and wind conditions are presented graphically in figures 1, 2 and 3.

Site Facilities

Water Electricity

These are readily available about 50m East of the site on the existing low density residential area.

Sewage Dispoal

At present there is no soil drain on or near the site. A sewage system is at present under construction in Arusha as part of the implimentation of the Arusha Master Plan. This will include an okidation pond South - West of Temi hill. However, with red coffee subsoil, the site presents little or no problem with drainage.







Fig. 2 Relative humidity and temperature graphs.

January

February

March



















December

Scale: 1/32 inch = 1%

between 1 and 10 knots between 11 and 21 knots Fig. 3 Wind roses

FUNCTIONAL NEEDS

A. Organisation of rooms



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BASIC UNITS

Assumed to be either concrete, adobe or stabilised earth blocks.

<u>Dimensions</u> - actual (work size). structural walls <u>390</u> x 190 x 190

partitions

390 x 190 x 90

4 M	4 M	2 M
300	200	
	. 390	IM
		┥┝┥┼
		90

work size - 390 mm.(basic unit) intermediate coordinating size - 4M coordinating size - 8M (MODULE).

Axial grid system used.



MODULATED DOOR IM x 8M x 2IM



It is proposed to introduce a single size of door for low-cost housing. Other widths may be added later, a single height being retained.

DESIGN STANDARDS - Extracts from design Project.

C_{1}	UNIT	PROPOSED	ATTAINED
living/bedroom	m ²	14,0	12,16
bedrooms	m ²	9,0	9,0
kitchen	m ²	4,8	5,72
W.C.	m ²	1,2	
pit latrine	m²	1,2	1,35
shower/ablution	m ²	1,2	1,35
w.c./shower	m ²	1,92	
store	m ²	2,0	
corrindor	m	1,2	1,1
plinth area: site & serv.	m²	31,2	
: core houses	m ²	31,2	
: 2 room houses	m ²	45,0	
: 3 room houses	m ²	50,0	
plot area	m ²	200,0	224,0
dwelling/plot ratio(compl.)	%	30,0%	
net density	p.p.h.	40	
gross density	p.p.h.	25	6
net density	r.p.h.		
gross density	r.p.h.		