Fig 3·25

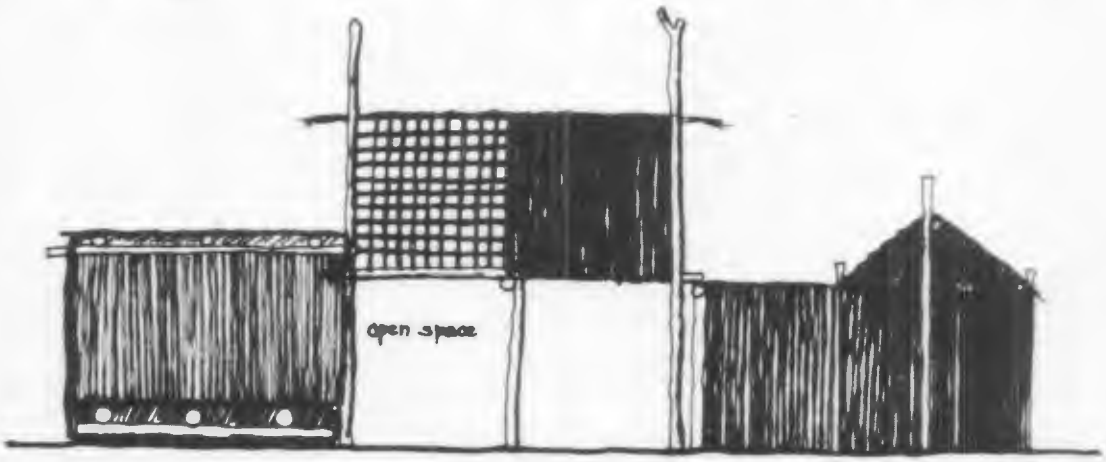
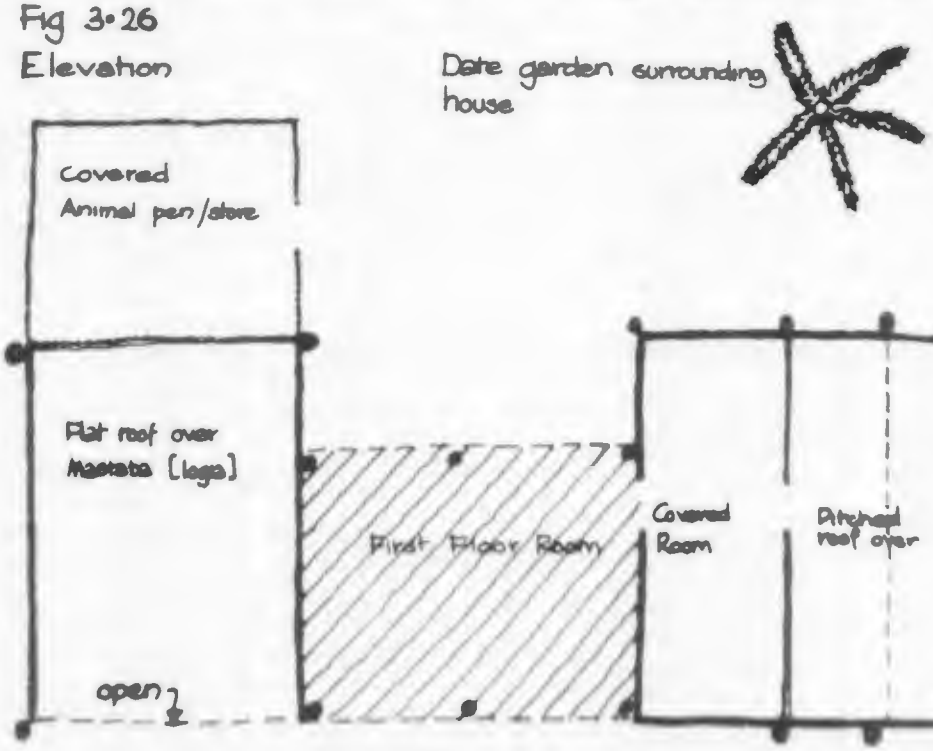
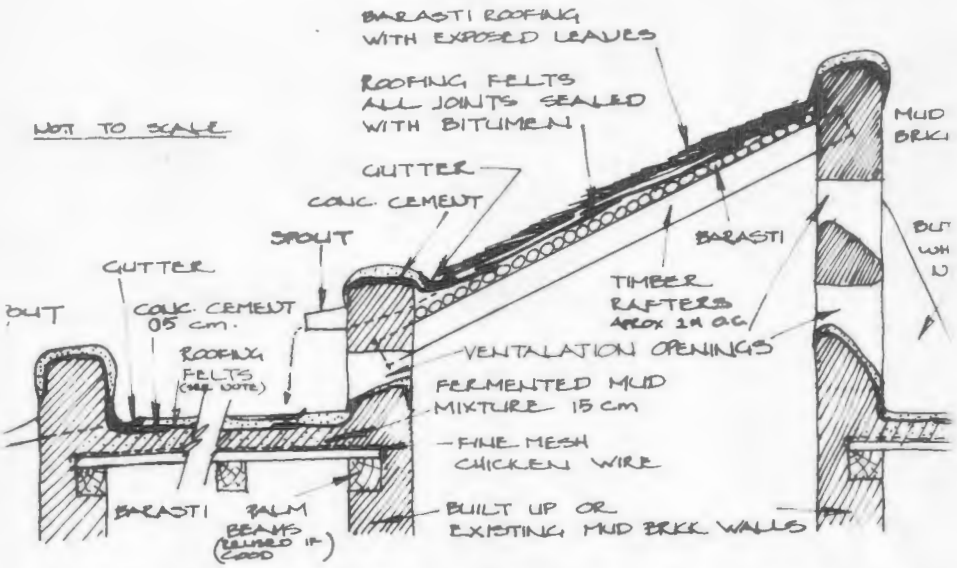


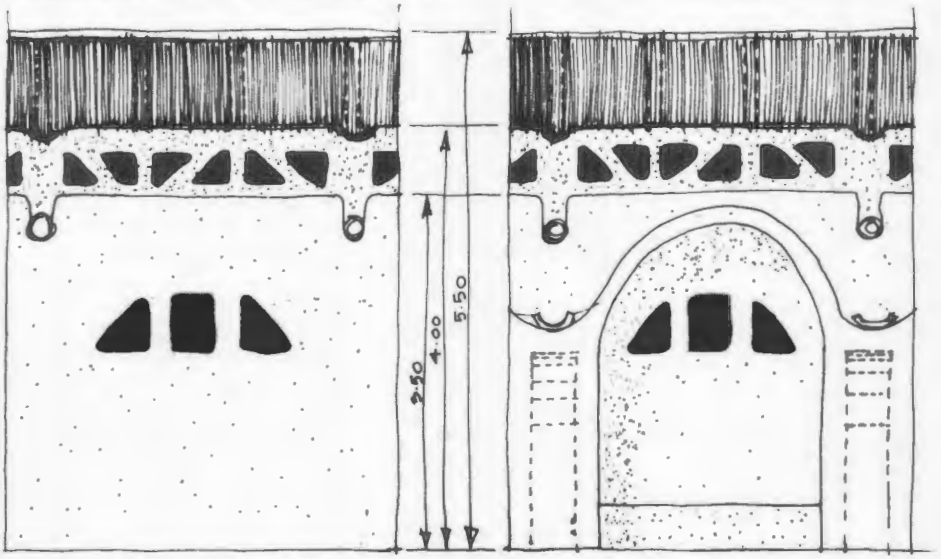
Fig 3·26
Elevation



Plan
Fig 3·27 Two storey [illegible] house at Musaraia



SECTION OF PROPOSED NEW ROOFING SYSTEM



PHASE ONE SHOWING NEW ROOF & VENTALATION OPENINGS

PHASE TWO SHOWING VAULTS AND ARCHADE

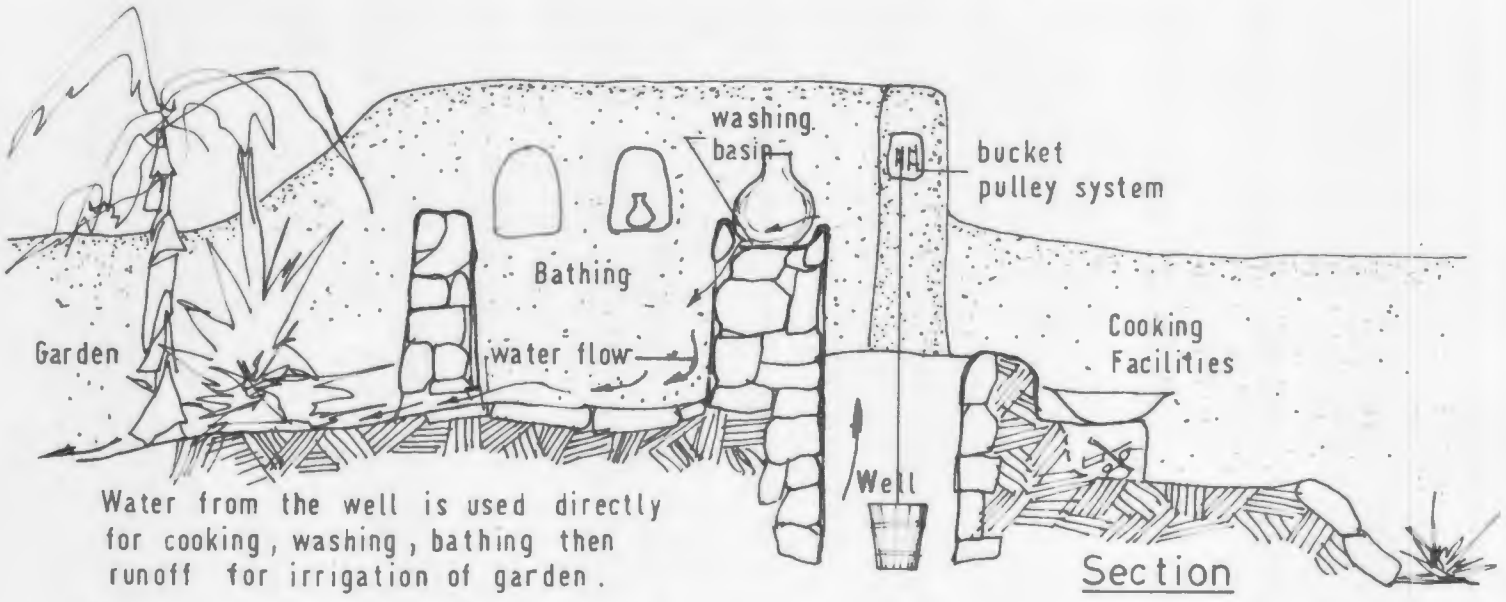
SOUTH WALL ELEVATION NOT TO SCALE

The high quality of the indiginous architecture of the Salala region can be seen in its Mosques

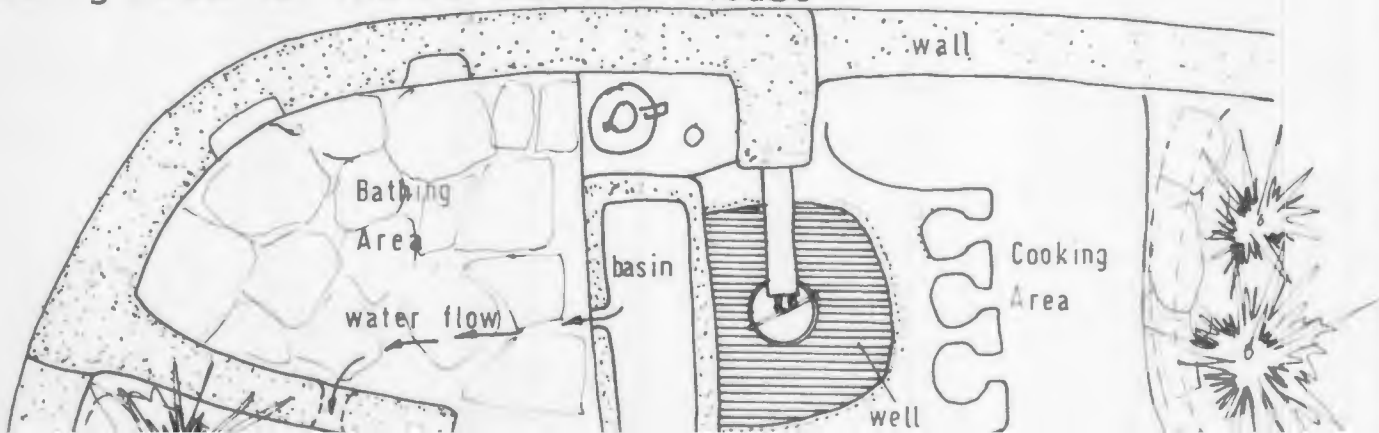
One of the oldest town houses in Salala (18'th century), though in disrepair.

Fig. 927 Washing Facilities

Washing Area designed by Professor Hassan Fathy



Washing Area for Nizwa Summer House



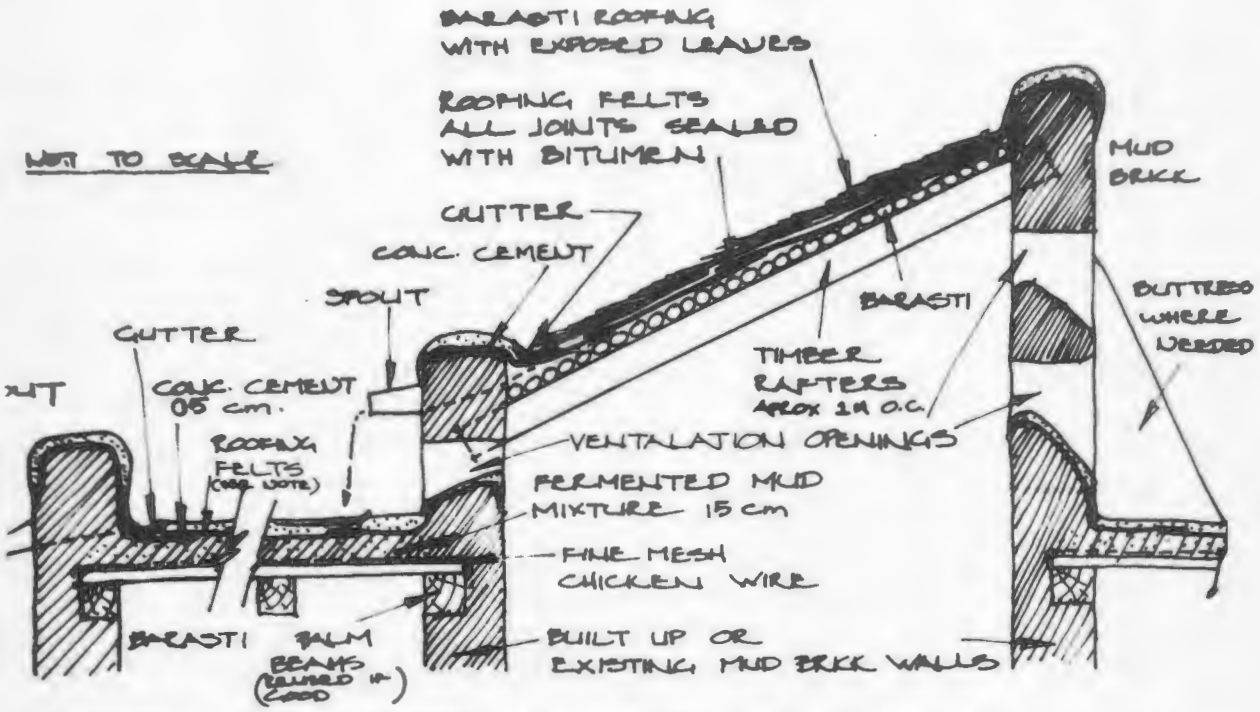
Barasti house
using mud to
stabilize openings

Detail showing
mud plaster on
a barasti wall

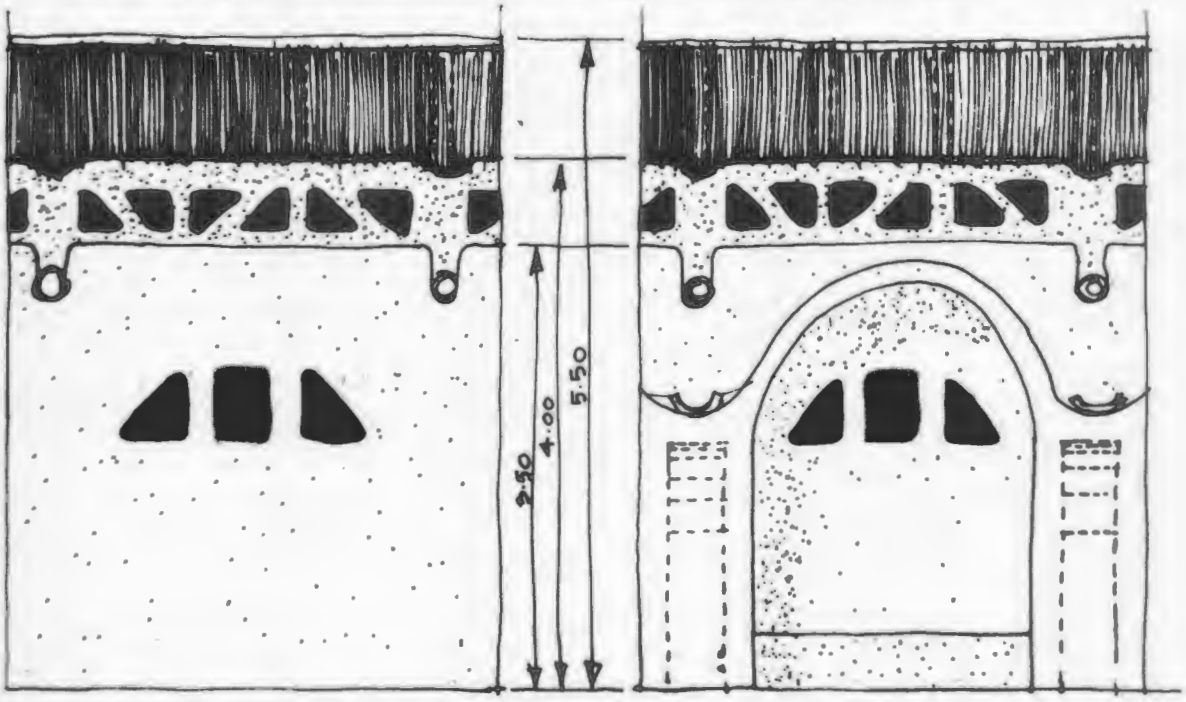
Interior of mud plastered
barasti house

Fig 3·19 Winter Village Falaj al Qabael
Note mud brick houses and added matting on barasti roof.

Fig 3·20 Summer settlement in date garden area



SECTION OF PROPOSED NEW ROOFING SYSTEM

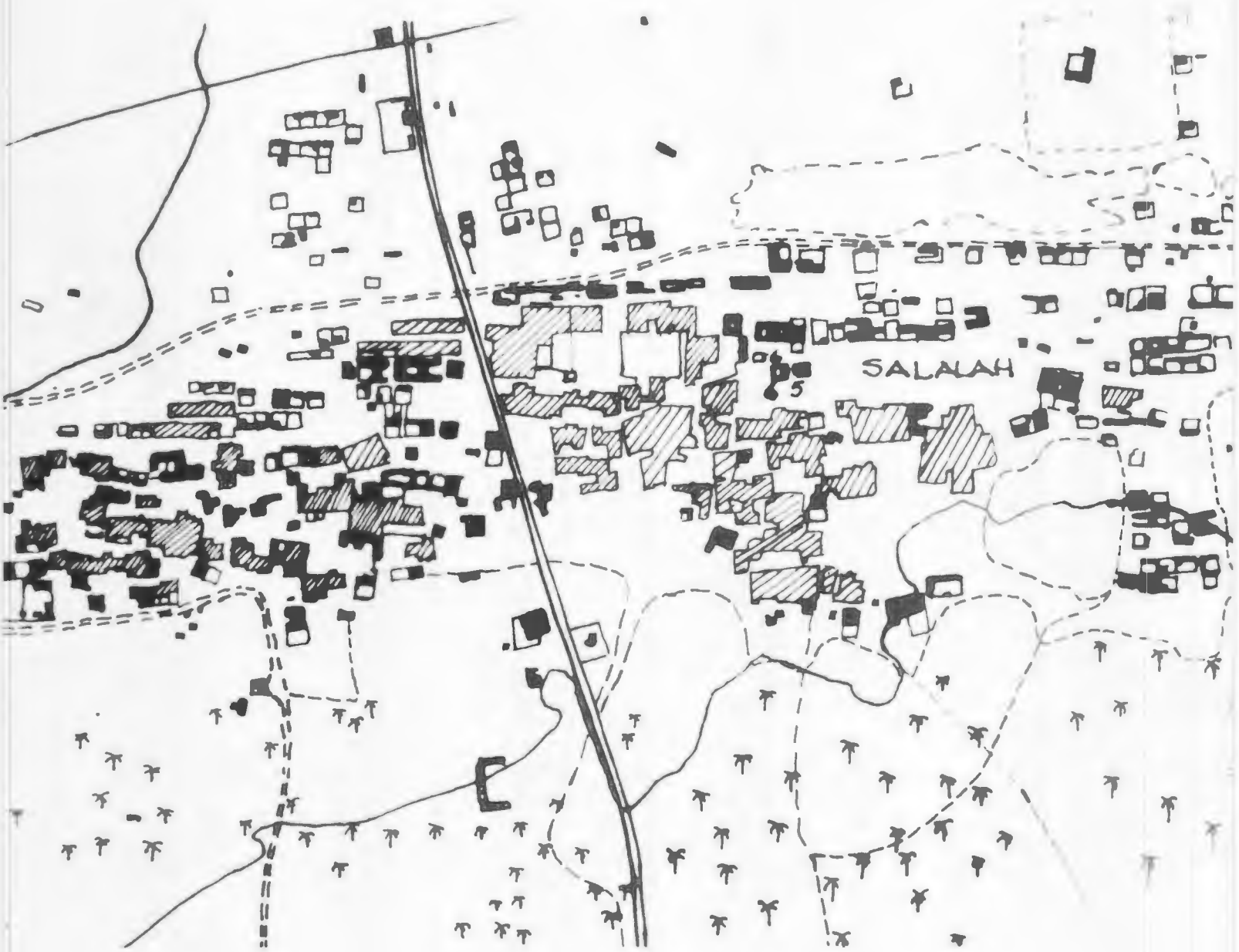


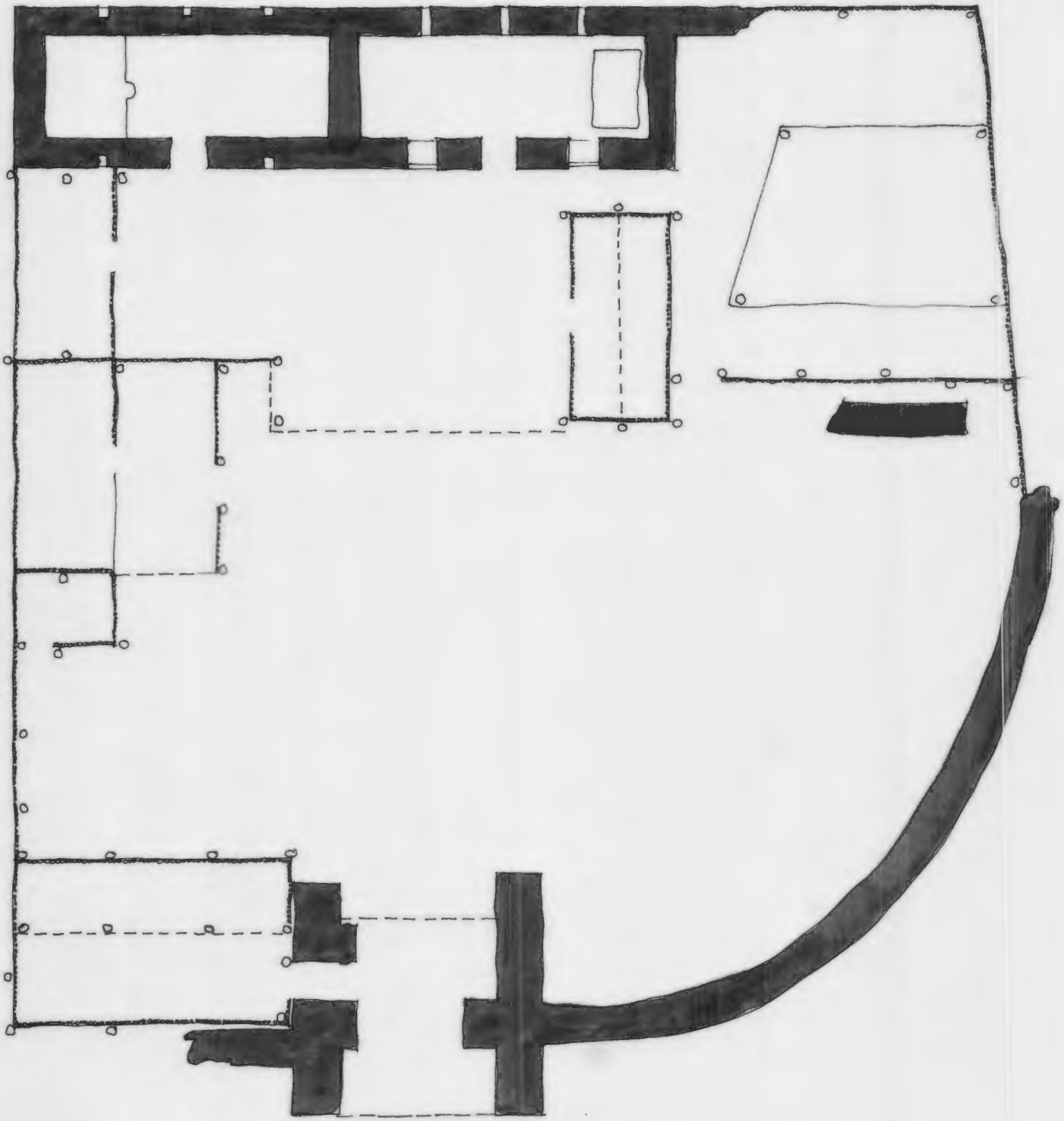
PHASE ONE SHOWING NEW ROOF & VENTALATION OPENINGS

PHASE TWO SHOWING VAULTS AND ARCHADE

SOUTH WALL ELEVATION NOT TO SCALE

Fig. 85 SALALA TOWN CENTRE





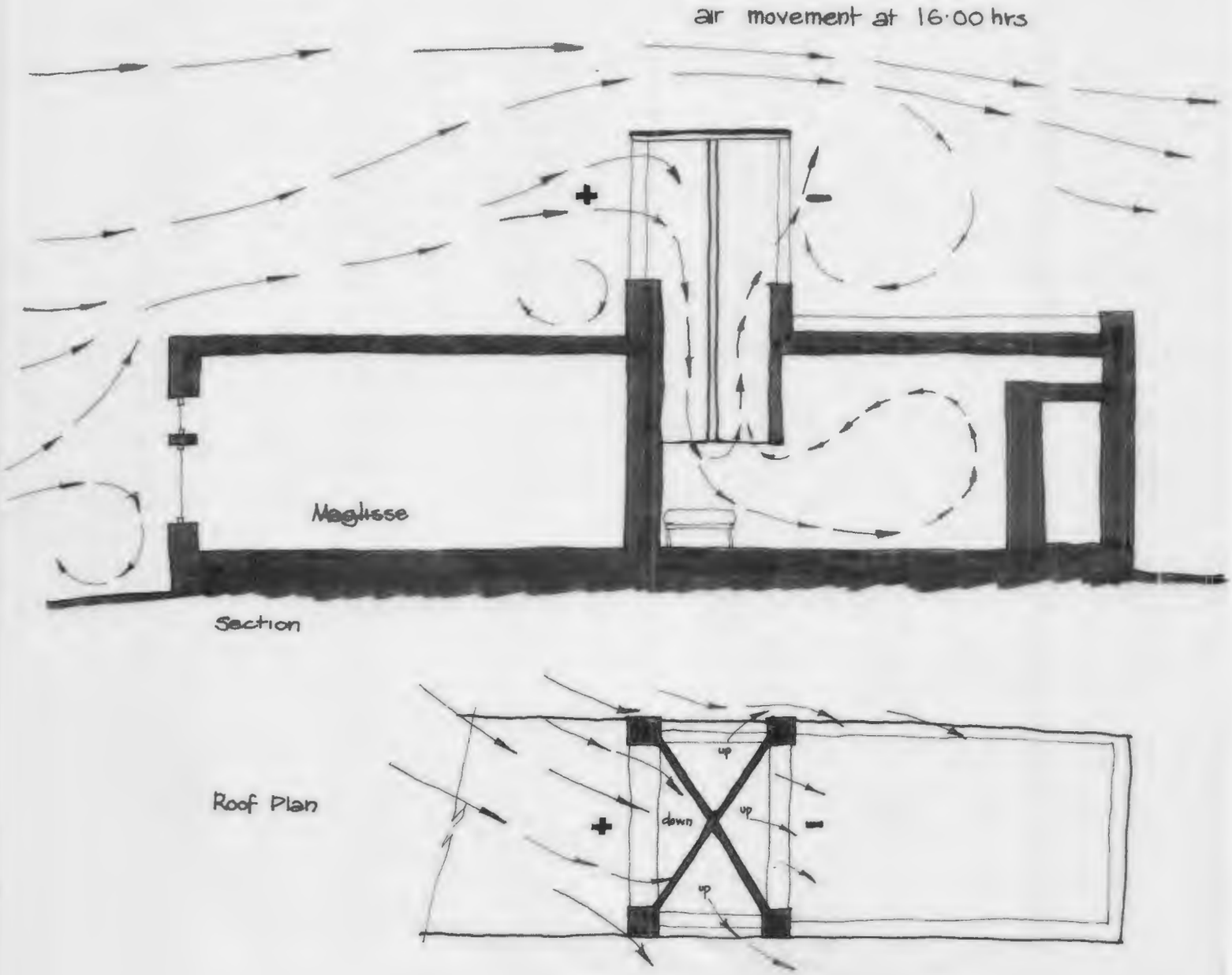


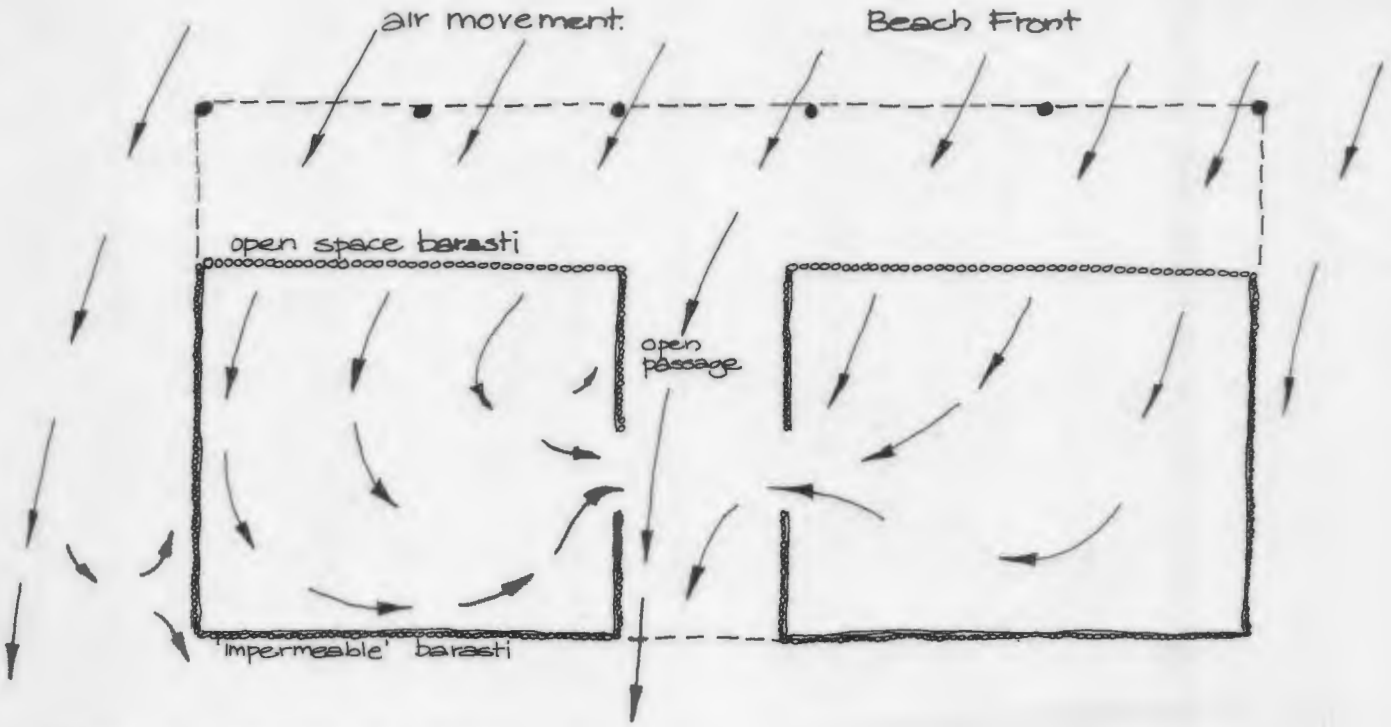
Fig 3·35 Plastered Badgir

3.3.3. Materials.

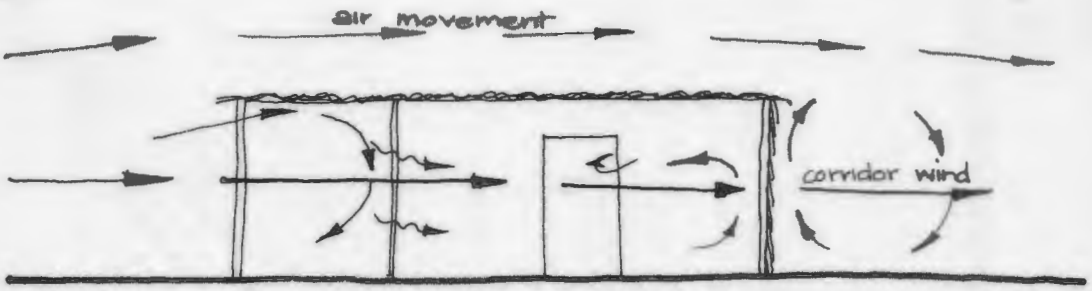
a. Barasti [palm frond stem]

b. Mud Brick.

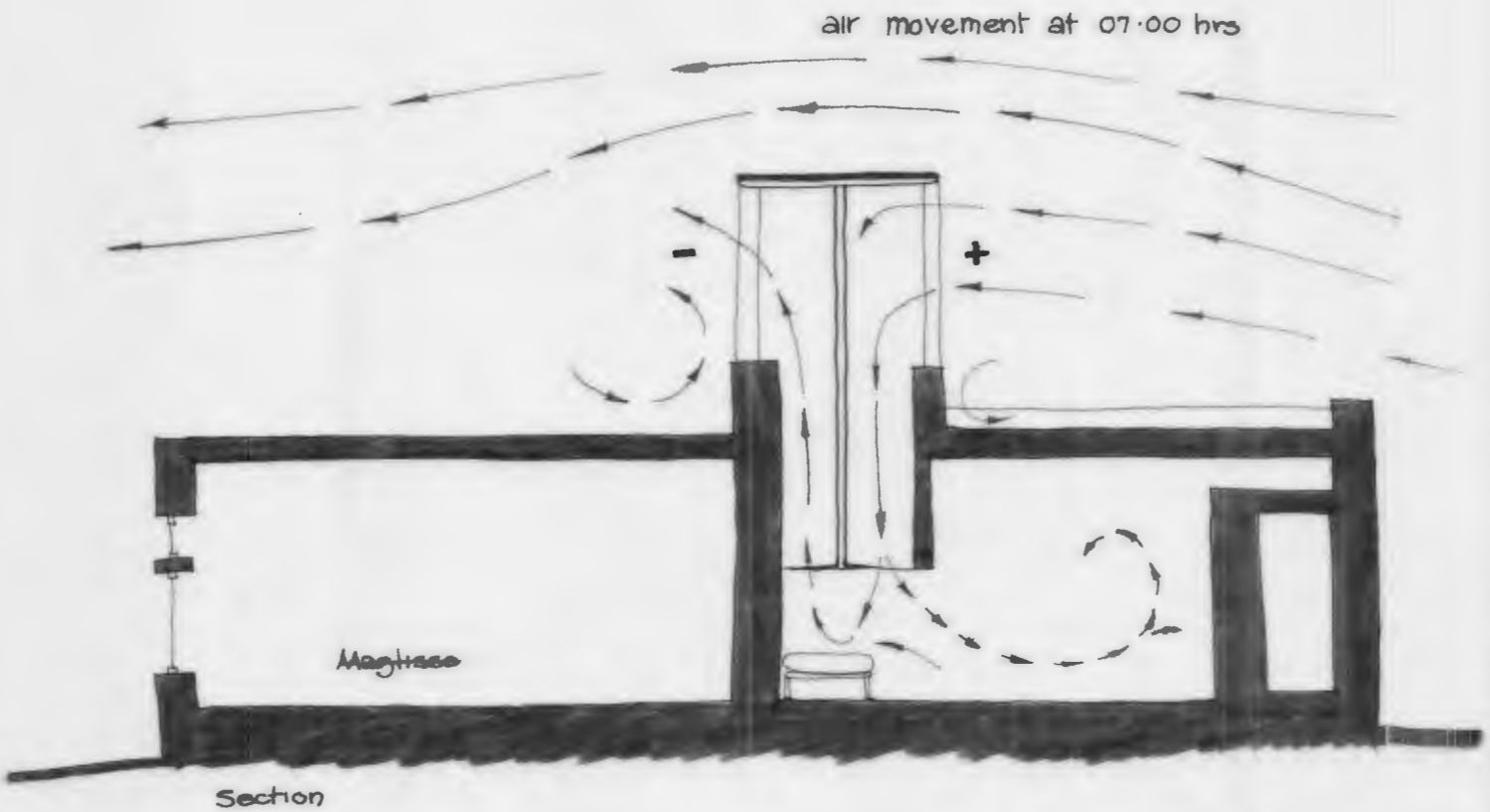
c. Concrete Block



Plan of passage way house
Fig. 3·22



Section
Fig. 3·23



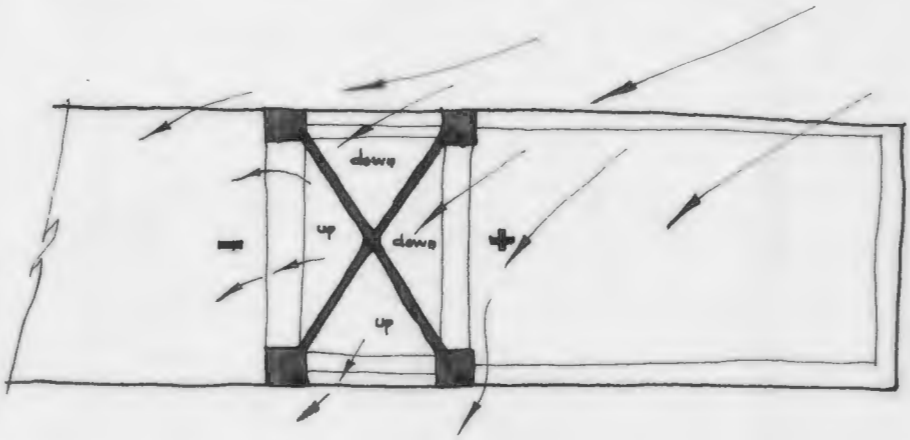
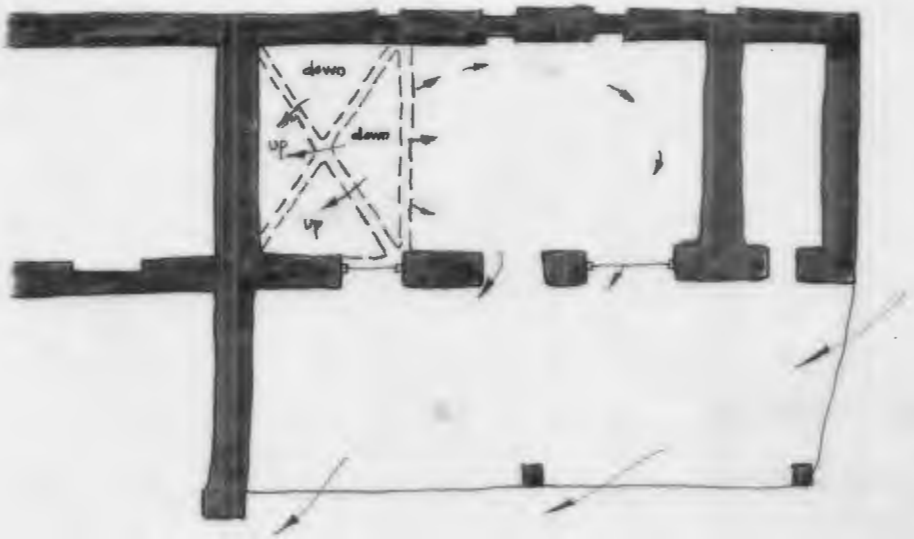
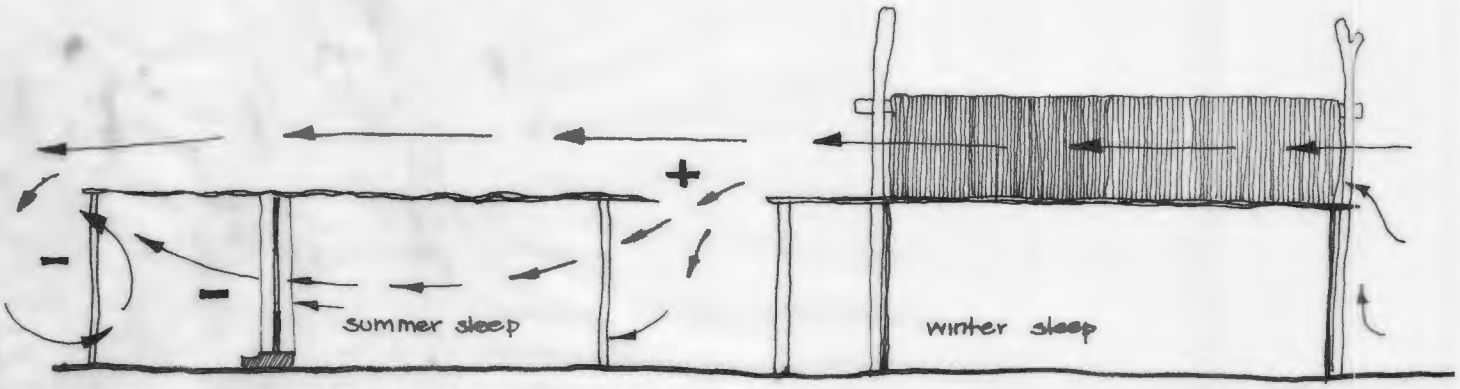


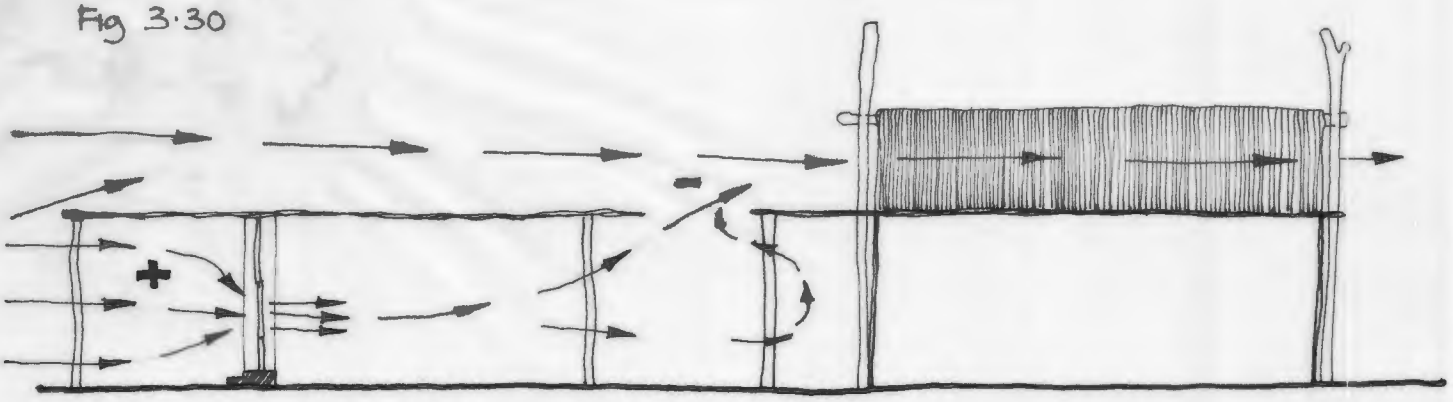
Fig 3·36 Plastered Badgir





air movement at night

Fig 3·30



air movement in the day

Fig 3·31

House of Moh'd Abdullah. Beach Front ~ Sohar. Sections

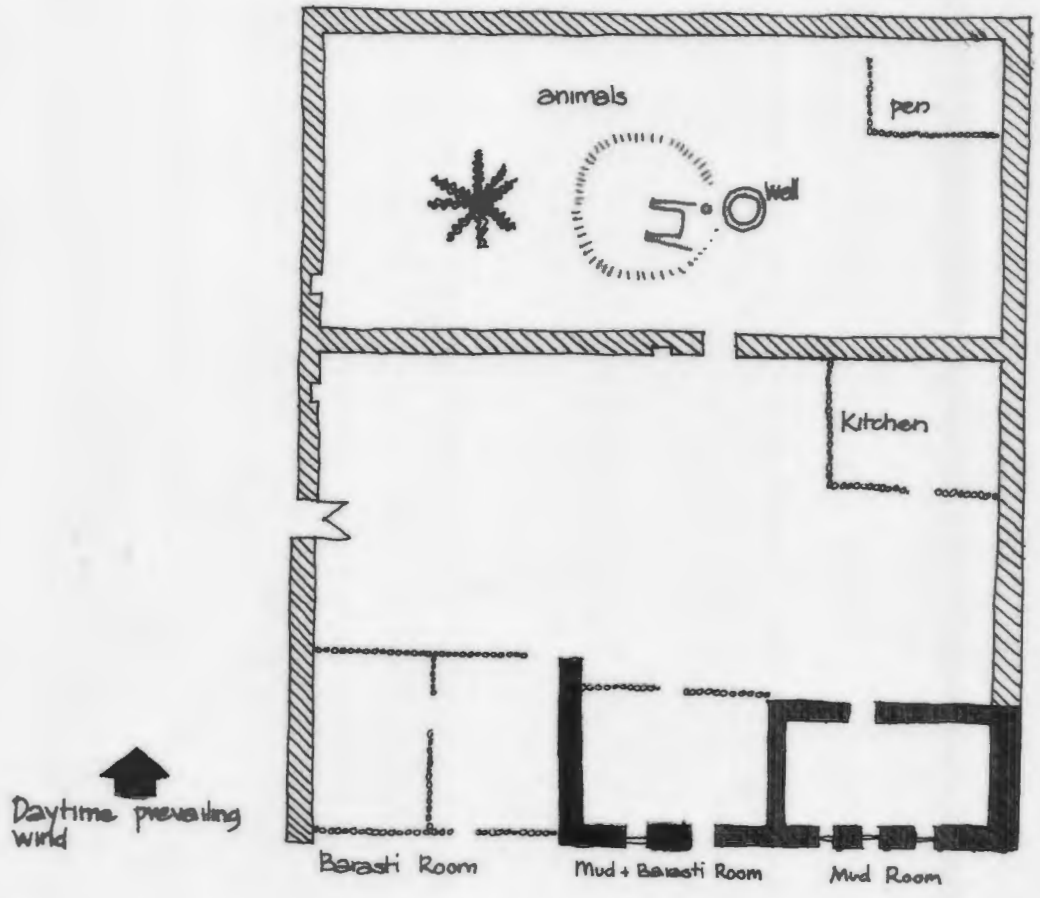
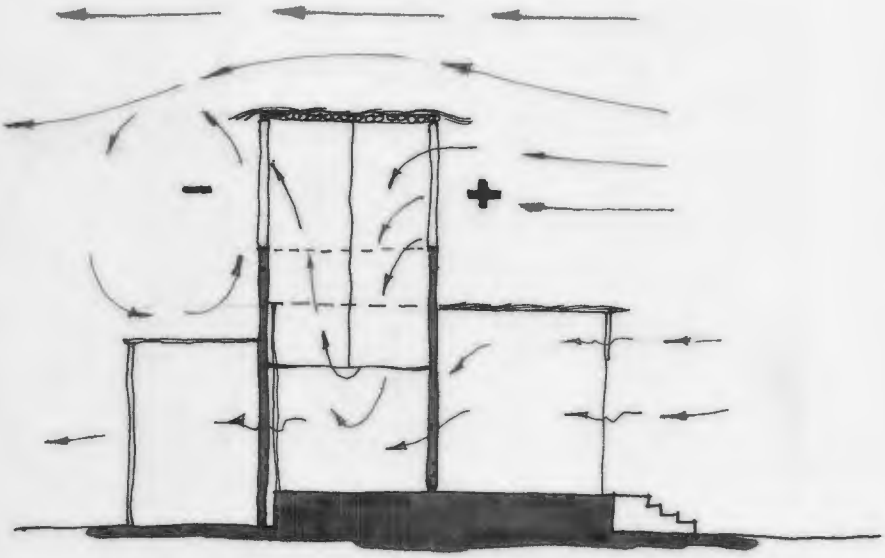
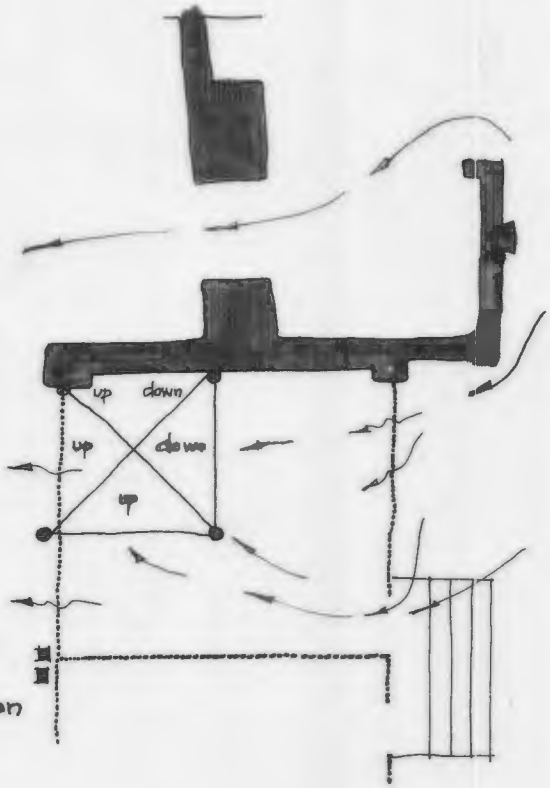


Fig 3·15 House at Maladah showing different rooms used for

air movement at 07·00 hrs

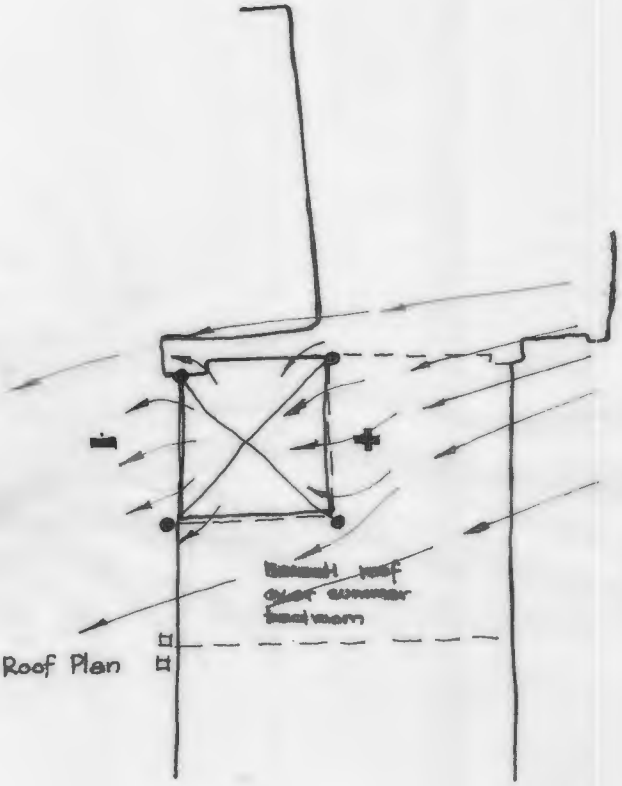


Section



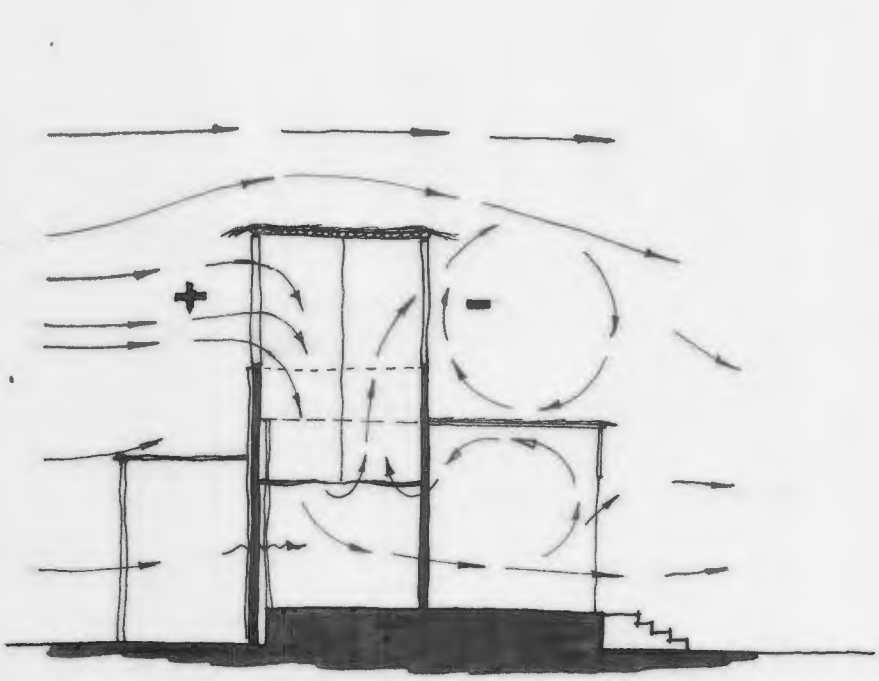
Room Plan

Fig 3·38 Cloth Badgir

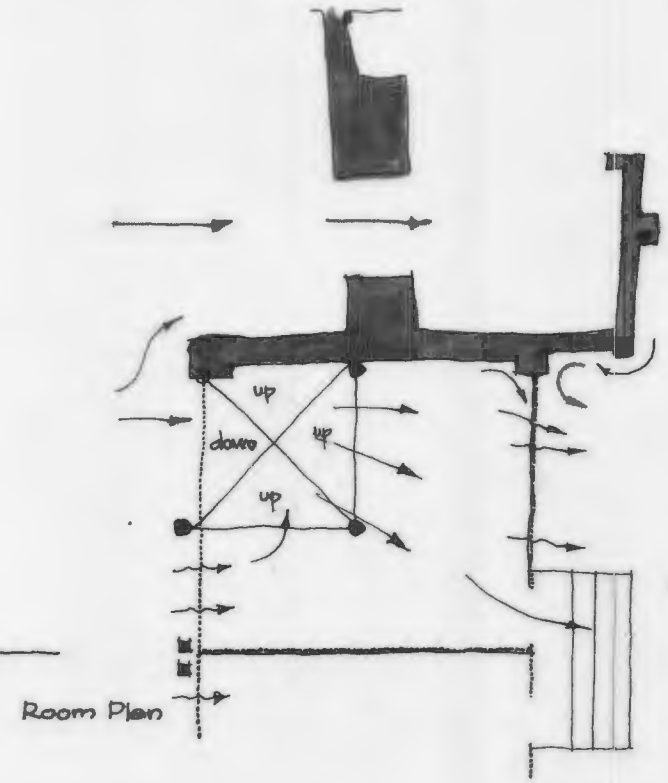


Roof Plan

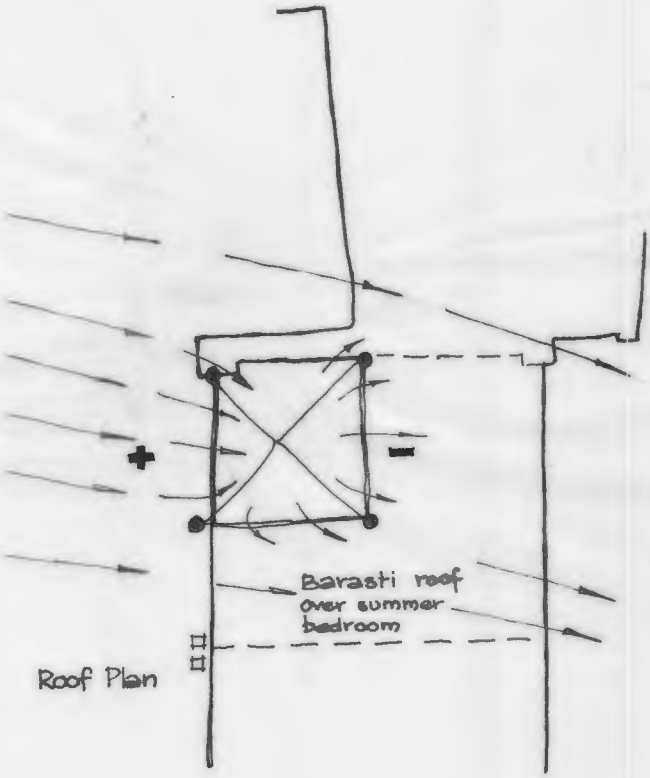
air movement at 16·00 hrs.



Section



Room Plan



Roof Plan

Fig 3·37 Cloth Badgir

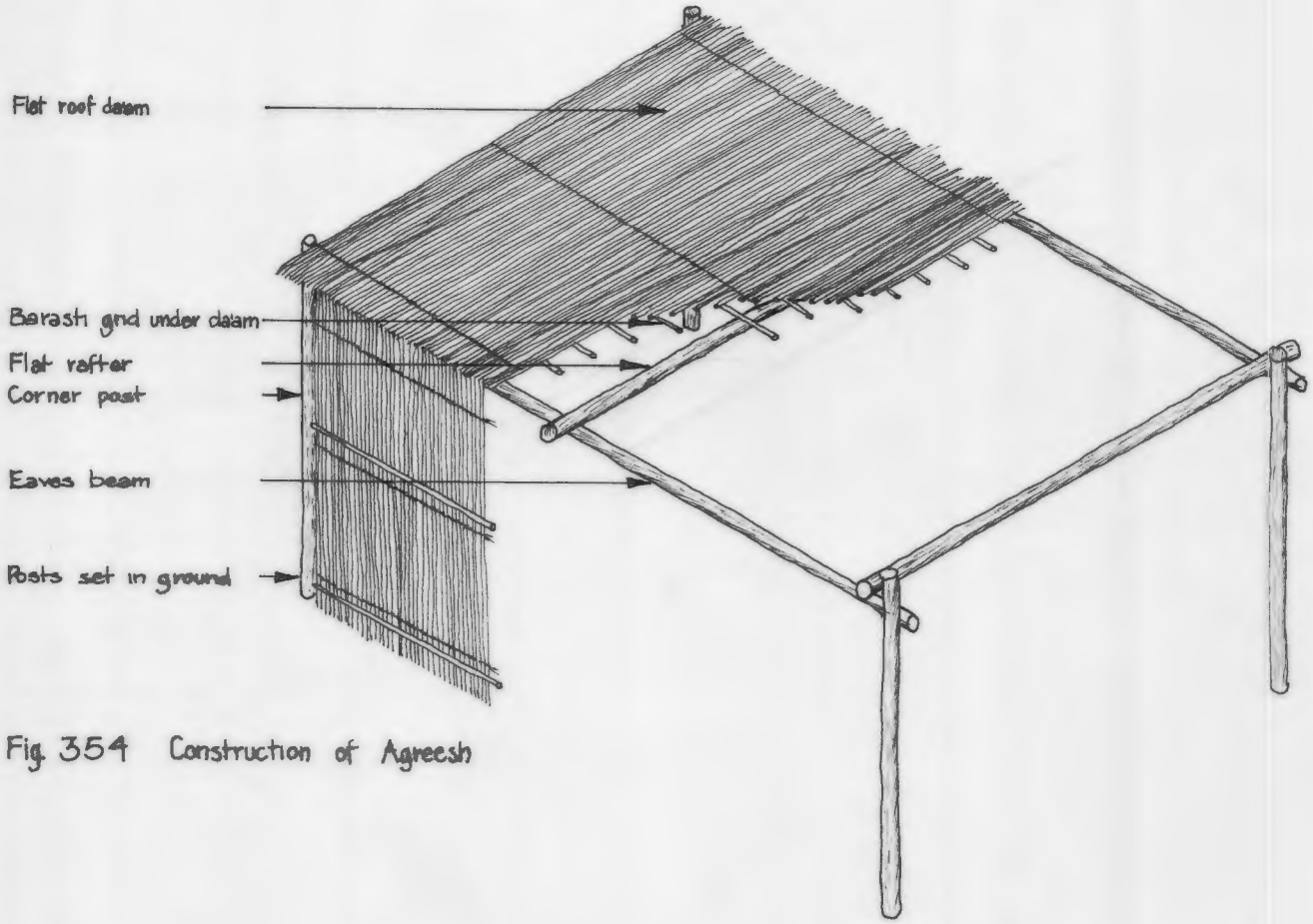
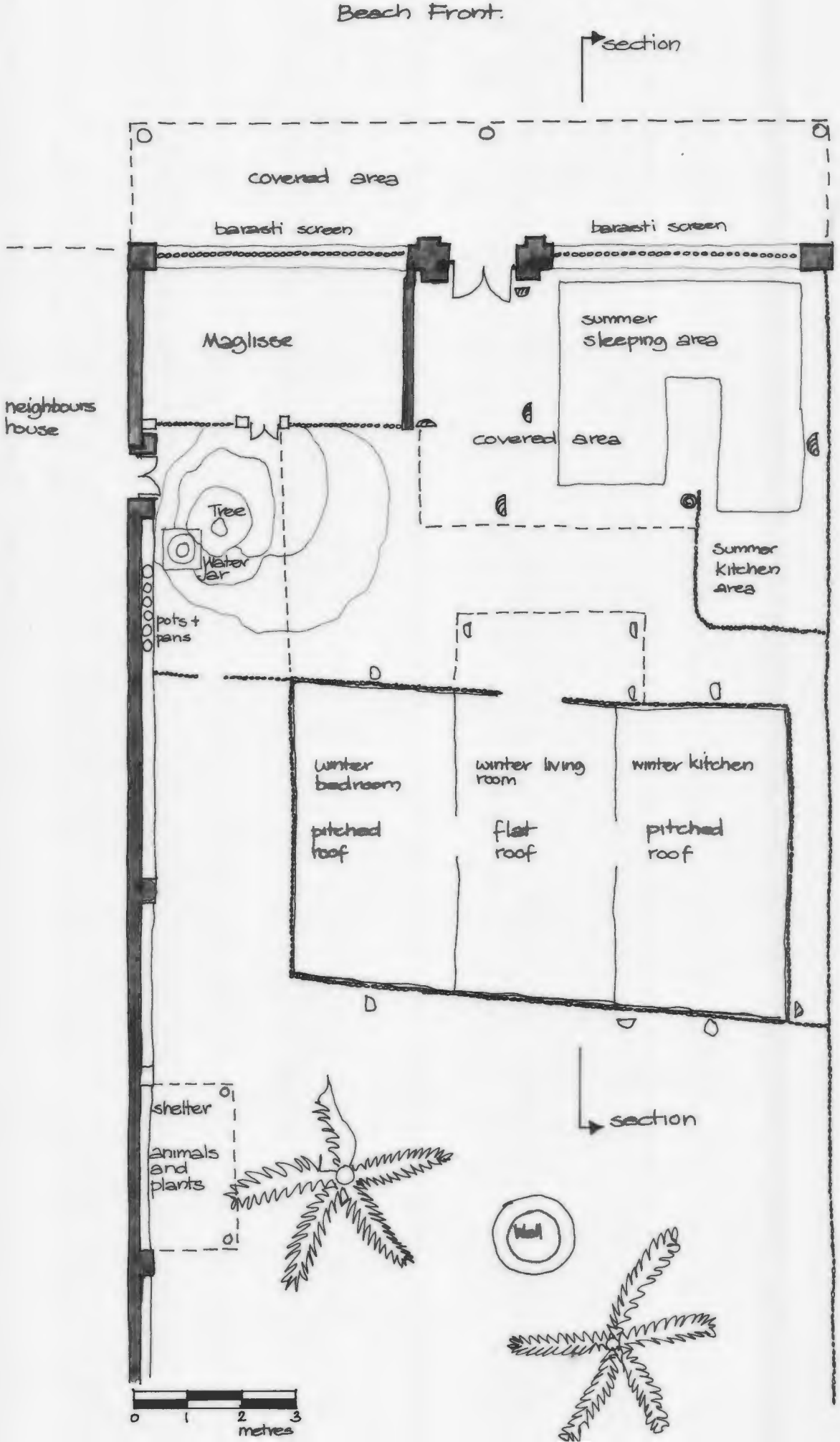
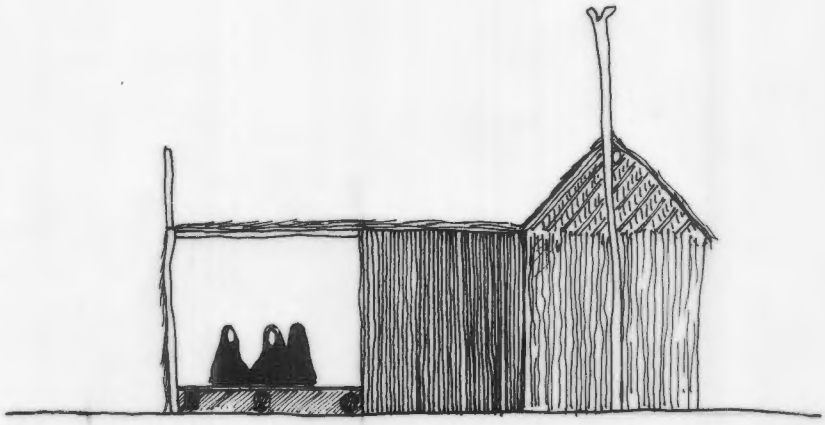


Fig. 354 Construction of Agreesh


Beach Front
section
covered area
barasti screen
barasti screen
Maglisse
summer sleeping area
neighbours house
covered area
Tree
Water Jar
Summer Kitchen area
pots + pans
winter bedroom
winter living room
winter kitchen
pitched roof
flat roof
pitched roof
section
shelter
animals and plants
0 1 2 3
metres

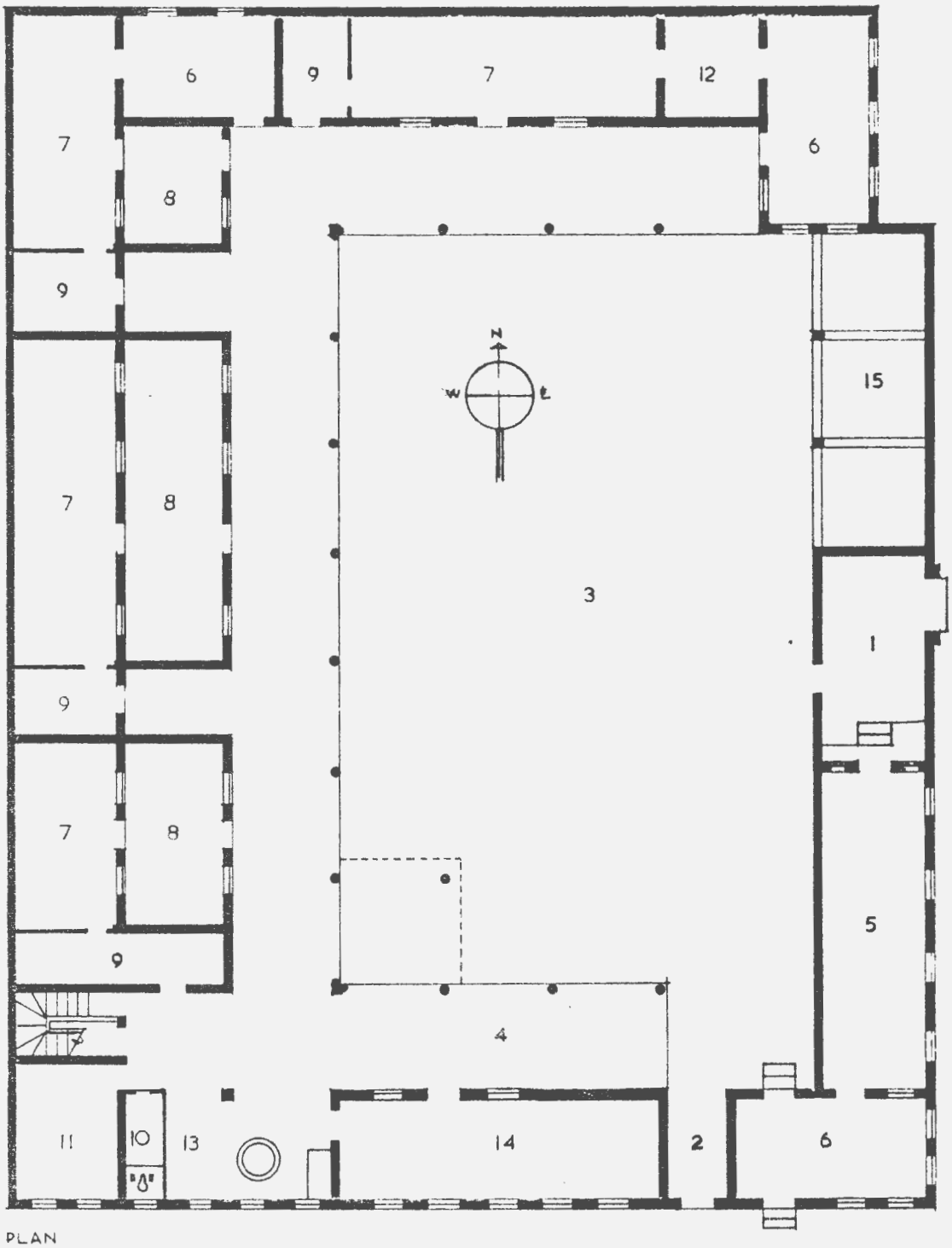


Section of barasti house showing shelter allowing free air movement through it.

low wall
Beach Front

WILLIYA OF SOHAR. VILLAGE OF OM EL BOCHE 24-25/9/73

DATE: 24/25. 9. 73. LOCATION	ORIENTATION & REMARKS.	Time				
		10.35	2.40	6.15.	11.15	6.15
See plan for location		Contact Th.	Contact Th	Contact Th.	Lux	Lux
		In. 36.5	38.5	38.0	120	165
A.	NORTH WALL. single thickness barasti. leaves on outside. Wax in. medium spacing.	Out 35.5	39.0	35.5	18	120
B.	EAST WALL. double thickness. leaves both layers, facing each other.	36.0	38.0	38.0	170	120
		39.5	38.0	35.25	50	28
C.	SOUTH WALL " " " "	36.5	38.0	36.0	400	125
		43.0	40.0	35.5	100	15
D.	WEST WALL " " " "	37.0	38.5	37.5	60	650
		37.5	48.0	37.0	40	123
E.	ROOF. plain wax surface 1in. thick with leaves out. roof over open mashrabia.	36.5	39.0	36.0	1100	650
		39.5	39.5	35.5	150	90.
F.	NORTH WALL. Double thickness as B.	37.5	39.0	37.5	—	—
		36.5	40.0	37.4		
G.	NORTH WALL. single leaves in.	36.0	38.0	38.0	—	—
		37.0	38.5	36.5		
H.	EAST WALL. plain barasti. no leaves. 1mm. spacing.	37.0	37.5.	36.5	—	—
		40.0	37.5	35.0		
J.	ROOF. single barasti. leaves out. thicker spacing. inner rm.	36.5	38.0	37.0	—	—
		39.5	39.5	35.5.		
	MAX/MIN. 24-25/9/73.	MAX	MIN.			
	ROOM. J.	32.7	26.8			
	ROOM K.	37.5	27.5.			
	For q/the readings see previous page.					
	DIRECT SUN.				1600	1450.



PLAN
SCALE 1:100

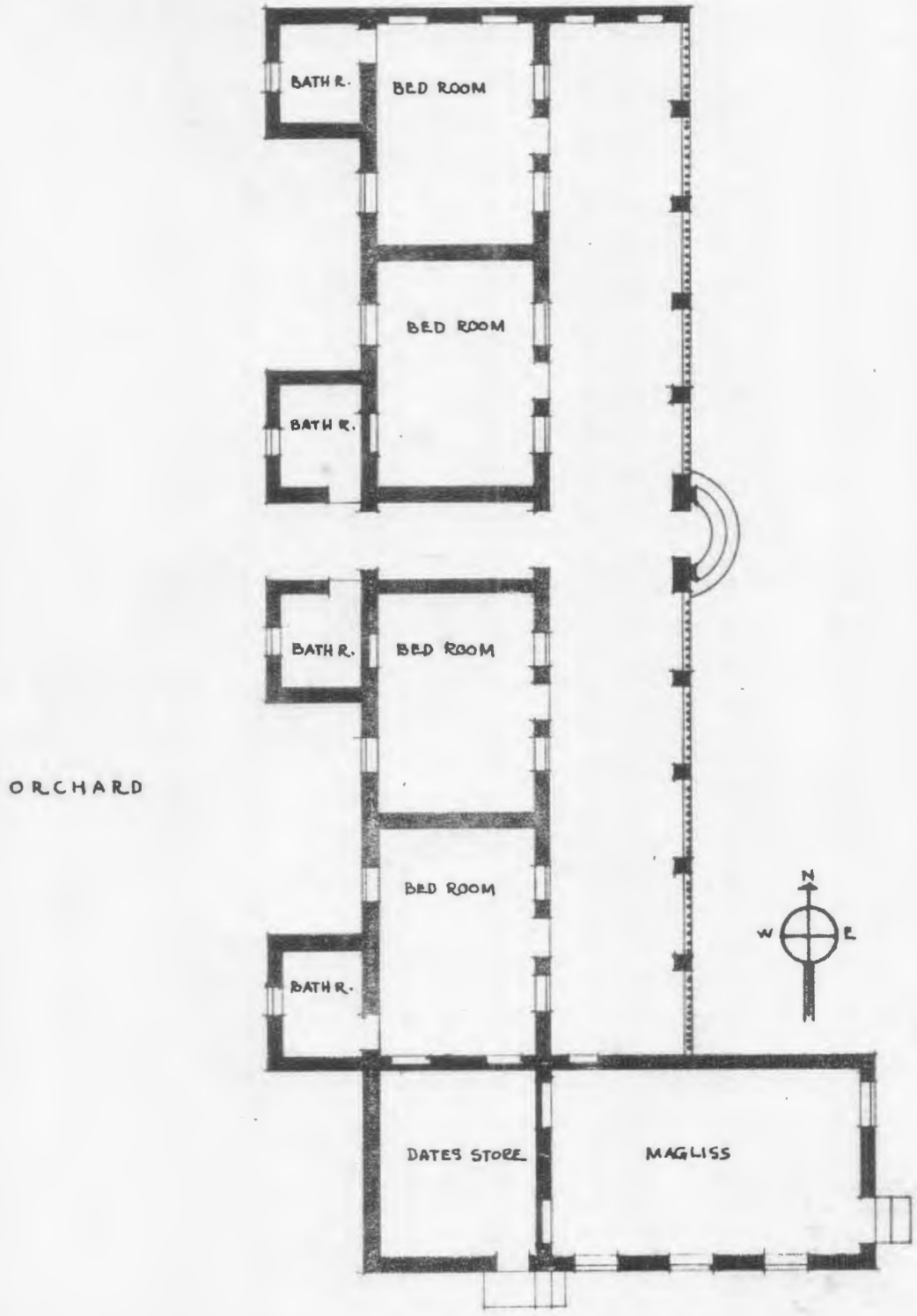
1. MAIN ENTRANCE	6. FAMILY MAGLISS	11. KITCHEN
2. SERVICE ENTRANCE	7. WINTER BED-ROOM	12. STORE
3. COURTYARD	8. SUMMER BED-ROOM	13. ANIMALS
4. LOGGIA "IWAN"	9. BATH. ROOM	14. WELL
5. MEN'S "MAGLISS"	10. W.C.	15. DATES STORE

WILAYA OF SOHAR. VILLAGE OF MAGISSE
HOUSE OF SAYED EL HAGG MOHAMMED BEN GAMAL BEN DARWICHE "MERCHANT"
BUILT IN 1963. COST: 6000 REYALS "CEMENT BLOCK & WOODEN BEAMS AND PLANKS"
One wife, one son, 5 daughters and 3 married children = 22 persons

WILAYA OF SOHAR

VILLAGE OF HARET OM.EL.BOCHE

HOUSE OF EL-SAÏD & RACHED MOHAMMAD BEN SAID

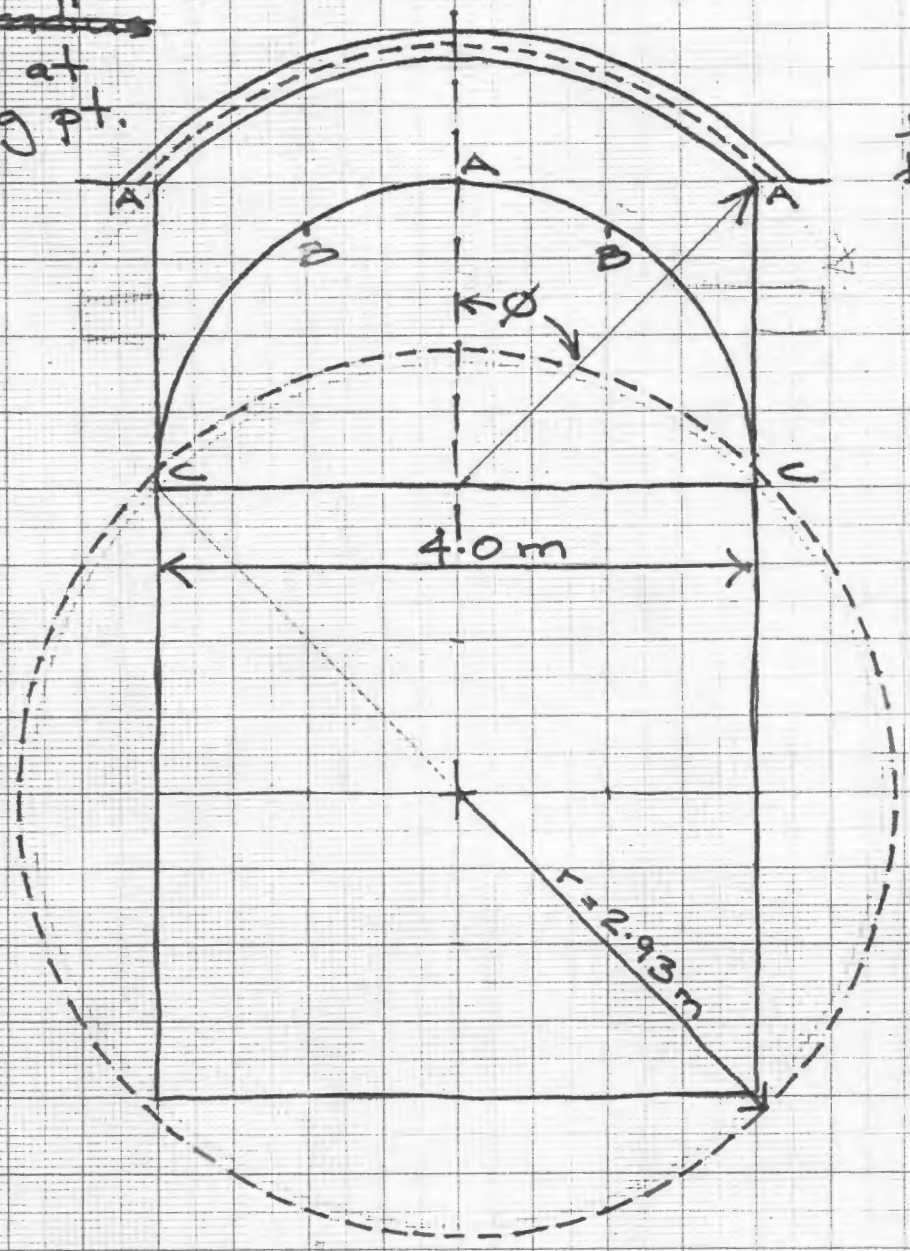


PLAN
Scale 1:100

The owners are farmers and orchards owners
The house is built of cement block & timber roofing

STRUCTURAL ANALSIS OF 4 M. DOME

(A.) W ~~radius~~ focus at spring pt.



1) Assume density of building material = 2600 kg / m³

2) Mass of shell material @ 0.20m thick
q = 400 kg / m²

3) Span of dome = 4.0 m

4) Radius to centre line of shell
R = 2.93 m

Employing shell theory (ref.) we assume:

5) Meridianal force within shell at point X = $N\phi_x$

$$N\phi_x = \frac{-Rq}{1+\cos\phi_x}$$

6) Ring or horizontal force within the shell at point X = $N\theta_x$

$$N\theta_x = -Rq\left(\cos\phi_x - \frac{1}{1+\cos\phi_x}\right)$$

7) Assume positive forces indicate tension.

Forces Acting at point "A"

i) $\phi_A = 45°$

ii) $$N\phi_A = \frac{-(2.93\text{m})\cdot(400\ \text{kg/m}^2)}{1+\cos 45°}$$

$$= \frac{-1172\ \text{kg/m}}{1.707}$$

$$= -686.58\ \text{kg/m}$$

iii) $$N\theta_A = -(2.93\text{m})\cdot(400\text{kg/m}^2)\left(\cos 45° - \frac{1}{1+\cos 45°}\right)$$

$$= -(1172\ \text{kg/m})\left(.707 - \frac{1}{1.707}\right)$$

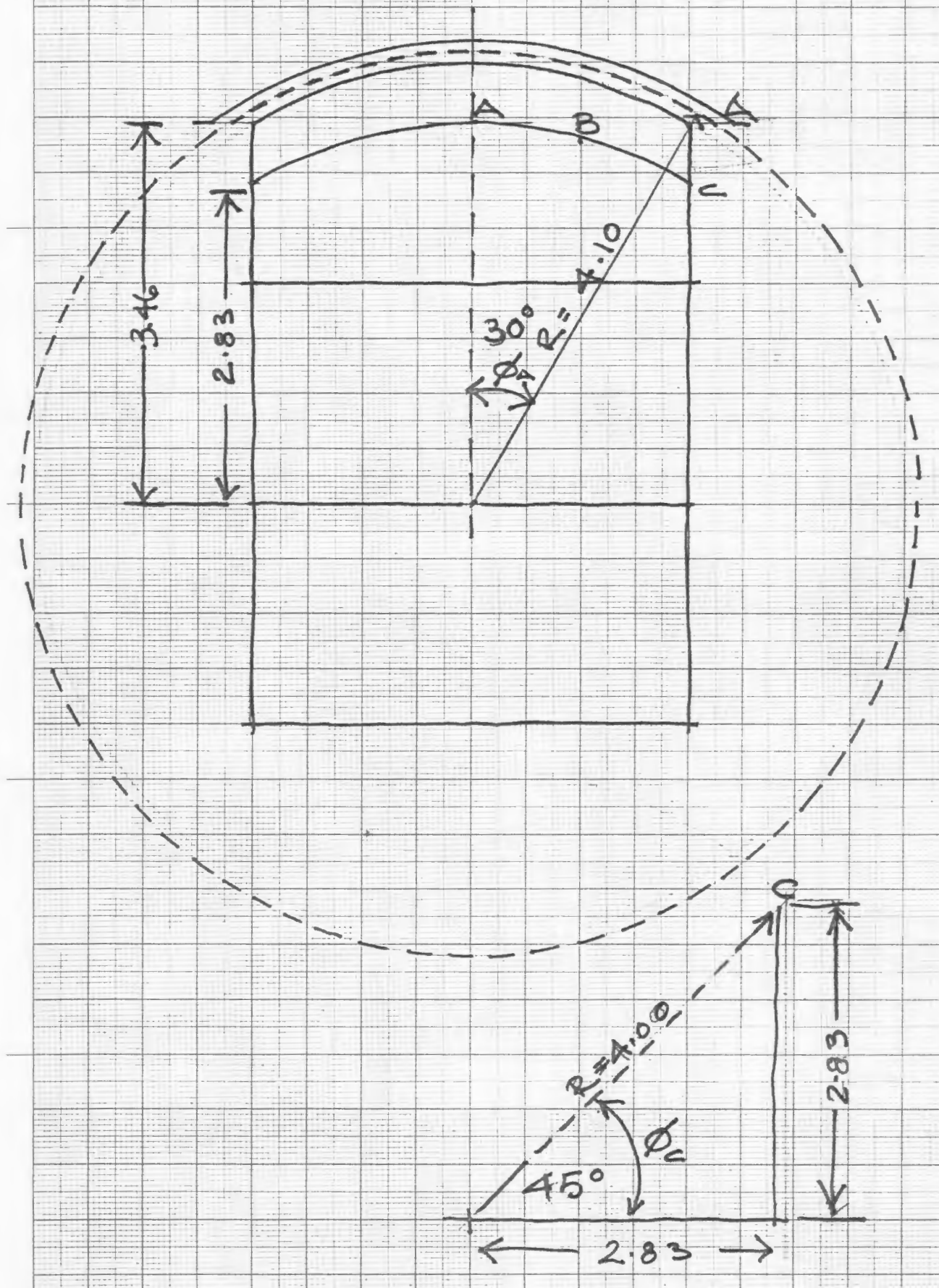
$$= -(1172\ \text{kg/m})(0.707 - 0.5858)$$

$$-(1172\ \text{kg/m})\ (0.1212)$$

$$= -142.0\ \text{kg/m}$$

B-1

(B) w focus at 2·83 m below spring point. & Radius → 4.00 m.
→ centre → 4.10 m
line



Forces Acting at point A

i) $\phi_A = 30°$ $\quad q = 400 \text{ kg/m}^2$

$R = 4.10 \text{ m}$

ii) $N_{\phi_A} = \dfrac{-Rq}{1+\cos\phi_A}$

$= \dfrac{-(4.10)(400)}{1+\cos 30°}$

$= \dfrac{-1640}{1.866}$

$= -878.89 \text{ kg./m}$

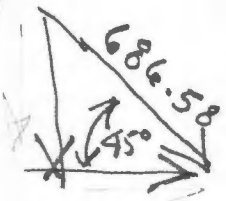
iii) $N_{\theta_A} = -Rq\left(\cos\phi_A - \dfrac{1}{1+\cos\phi_A}\right)$

$= -1640\left(0.866 - \dfrac{1}{1.866}\right)$

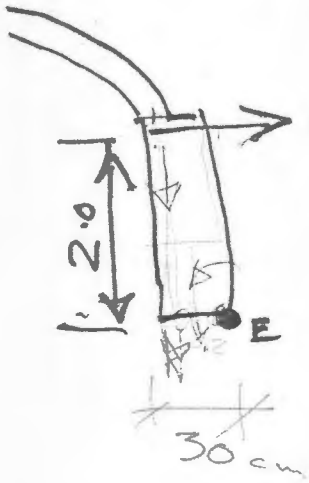
$= -1640\left(\dfrac{0.866 - 0.5359}{0.33}\right)$

$= -541.36 \text{ kg/m}$

A



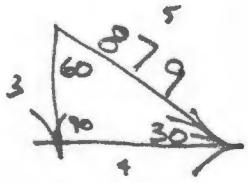
Horizontal component of thrust = 485.5 kg/m



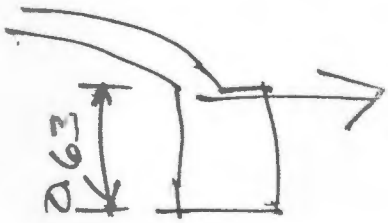
$\overrightarrow{M_E}$ = 485.5 × 2

= 971

B

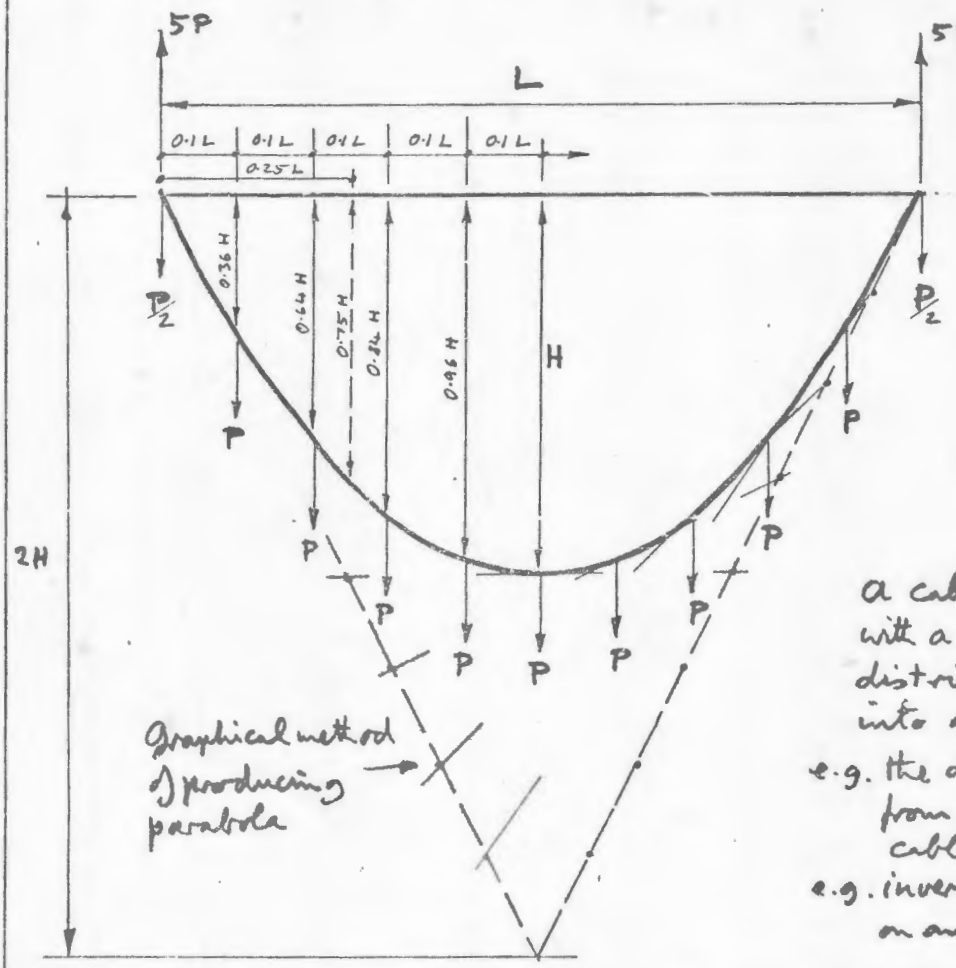


Horizontal component of thrust = 703 kg/m



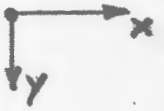
703 kg/m.

PARABOLA



Formula for Parabola

$y = 4H\left(\frac{x}{L} - \frac{x^2}{L}\right)$



Graphical method of producing parabola

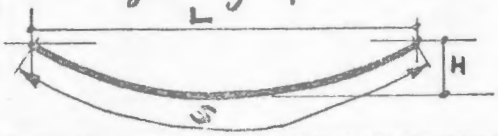
A cable with equal loads with a uniform horizontal distribution will fall into a parabolic shape.

e.g. the deck loading hanging from a suspension bridge cable.

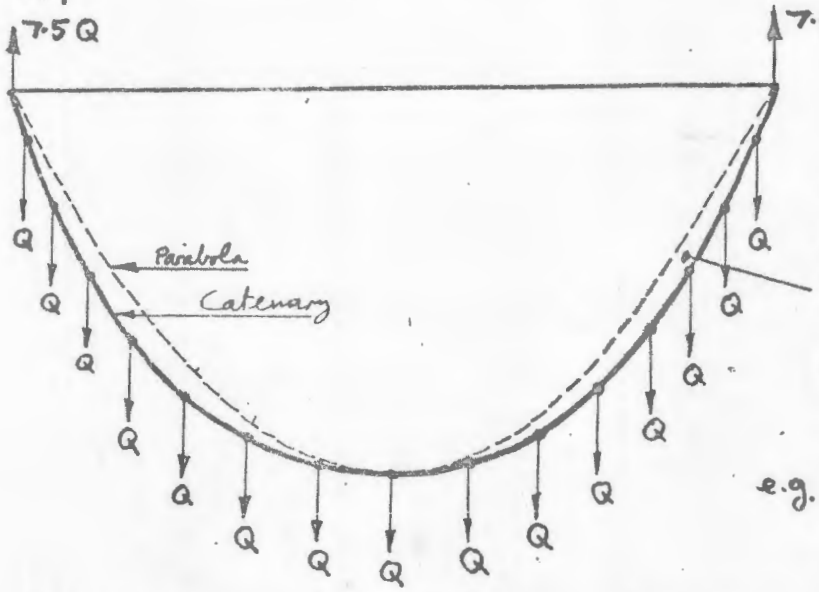
e.g. inverted, the deck loading on an arch.

If $r = \frac{H}{L}$ length S of a parabolic cable for a small value of r is given by:

$$S = L\left(1 + \frac{8}{3}r^2\right)$$



CATENARY

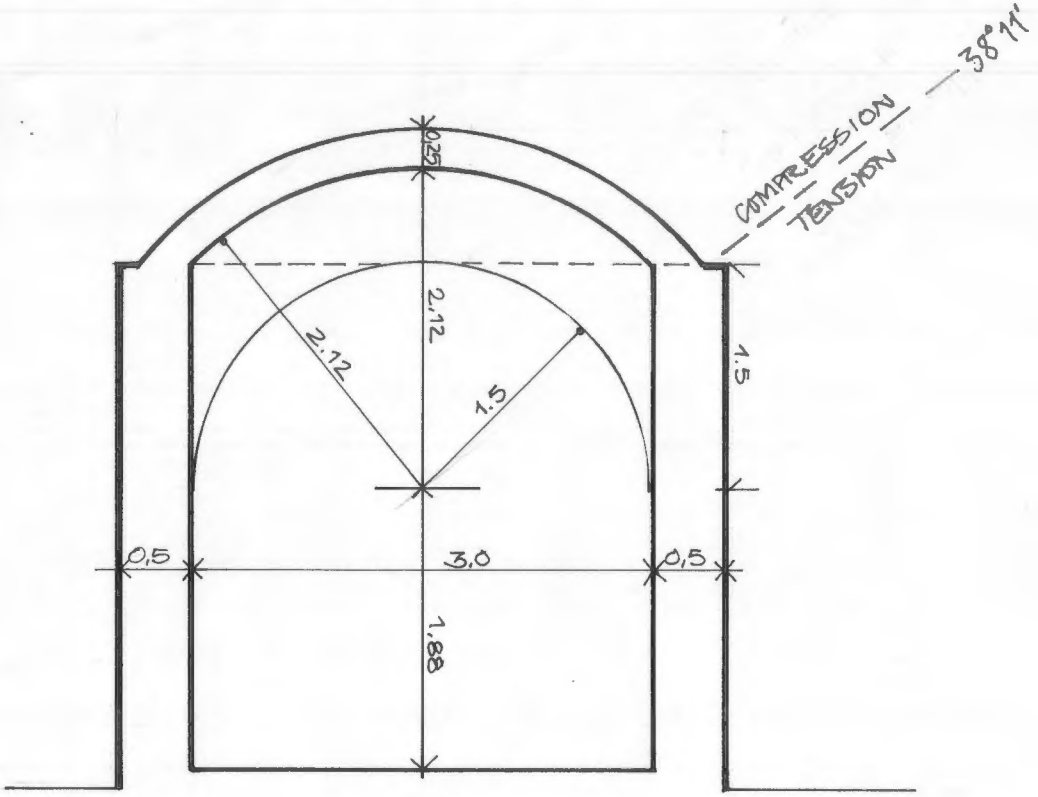


For Catenary the weight per cable unit of horizontal projection is greater towards supports, where cable slope is greater, therefore catenary is lower in this region

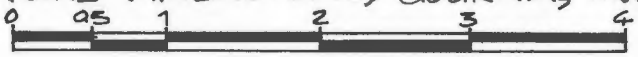
e.g. the curve of a cable or chain due to its own weight only.

For $r \leq \frac{3}{10}$ catenary and parabola of equal sag are practically indistinguishable

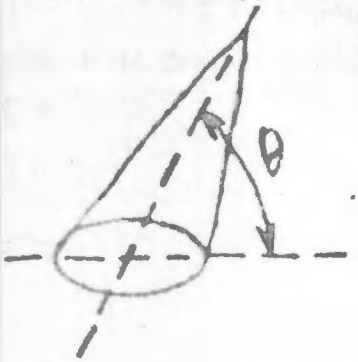
Catenary is approx. $20r^2$ per cent longer than equal sag parabola



DOME DIMENSIONS, GOURNA; MUD BRICK



Cône à base circulaire (axe ⊥ à la base)



$S = \pi R \sqrt{R^2 + h^2 (1 + \cot g^2 \theta)}$ = S totale

$V = \frac{1}{3} \pi R^2 h$

Tronc de cône à base circulaire

$A = \pi \left(\frac{R+r}{2} \right) h$ = S Latérale

$S = \pi \left(\frac{R+r}{2} \right) h + R^2 + r^2$ = S Totale

$V = \frac{1}{3} \pi \left(R^2 + r^2 + Rr \right) h$

Sphère

$S = 4 \pi R^2$

$V = \frac{4}{3} \pi R^3$

Secteur sphérique

$S = \frac{\pi R}{2} (4h + 2r)$

$V = \frac{2}{3} \pi R^2 h = 2,0944 R^2 h$

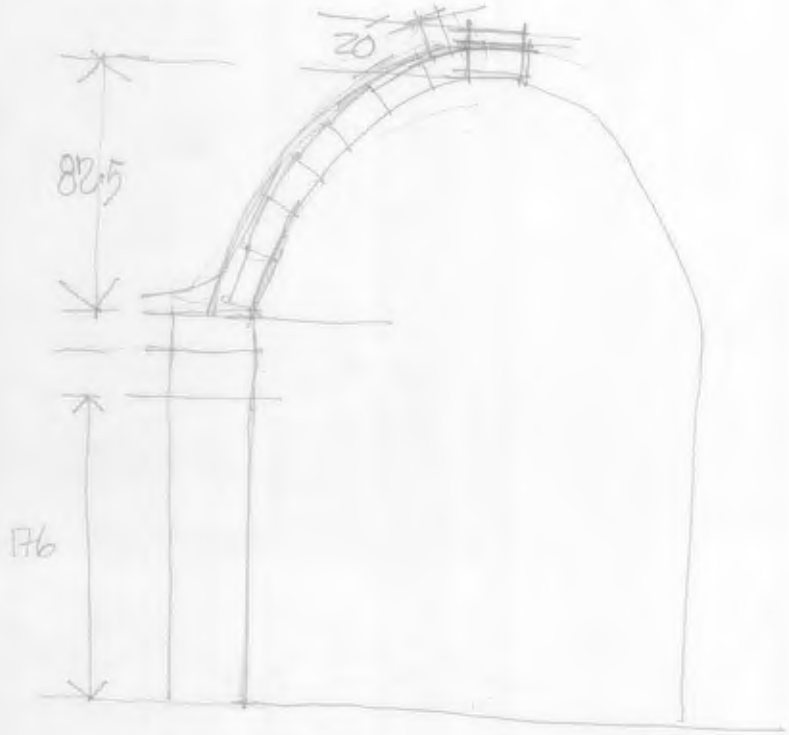
$r = \sqrt{h(2R - h)}$

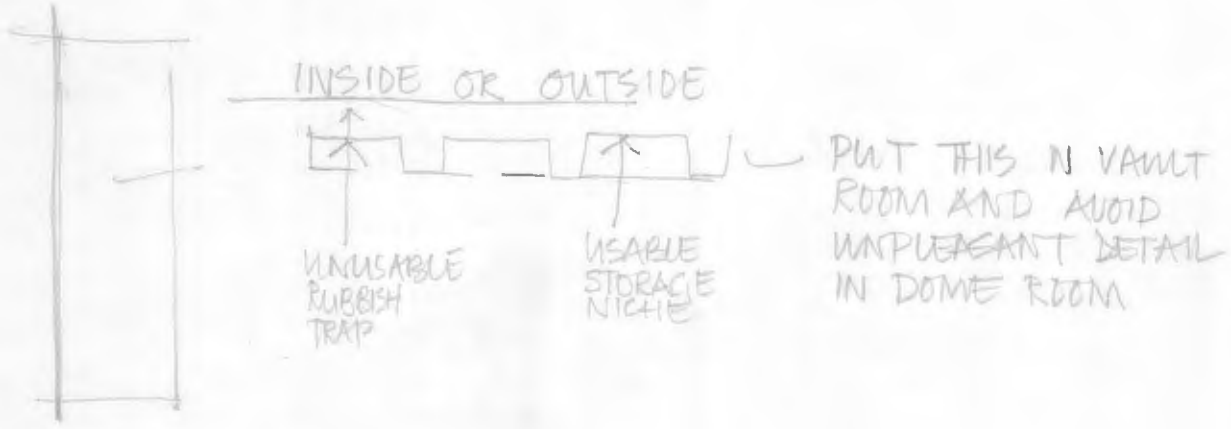
Onglet sphérique

$V = \frac{2}{3} \alpha R^3$ en radians

$= \frac{1}{6} \pi R^3 \frac{N}{90}$ en degrés

length vault
P.3 370
P 10 = 376
P 22 380

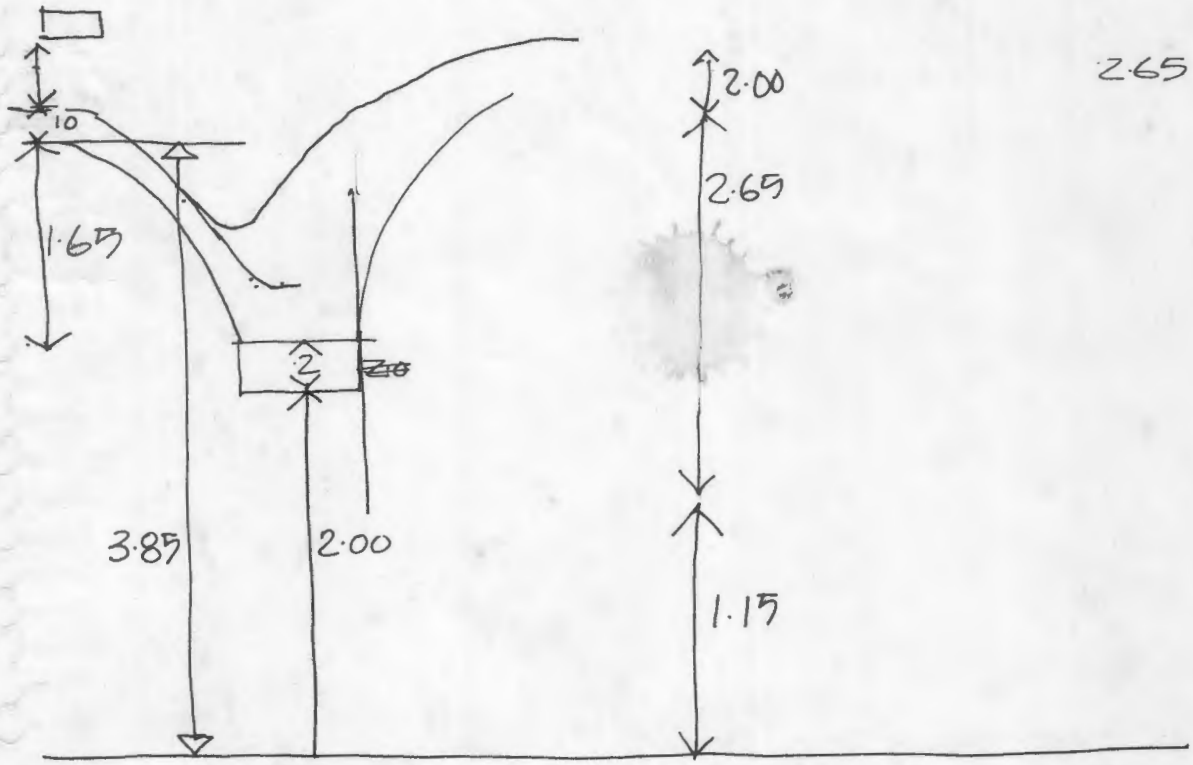




AVOID ~~HAVE~~ AUQUARD DETAIL

REDUCTION OF HEIGHT OF UNITS 1-4 TO SAVE TIME, LABOUR AND MATERIALS.

1) GIVEN RELATIONSHIP BETWEEN vault + dome, in parallel ~~so~~ as it were, much reduction cannot be achieved without complicating needlessly the vault construction. However, the connecting arch way  can be lowered without too much ~~bad~~ effect, as this ~~da can be~~ can come down to 2 m top of arch height. Perhaps even 1.95.



3·95

4·00 finish height for vault.

4·00

2·65 + 20 = 2·85

1·15