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 WORKSHOP ON HOUSING-BANGKOK 1982
 (RURAL HOUSING IMPROVEMENT IN THAILAND)



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The authors are greatly indebted to Dr. Visharn Poopath, the Acting Director of The Building Research Department/TISTR for his guidance, advice and many valuable suggestions. Appreciation is also extended to Mrs. Nongphanga Chitrakorn, for her assistance in editing some parts of the hand-outs presented herein.

ABSTRACT

This document was prepared for UNCHS-PGCHS (KULeuven) Workshop on Housing held at Rama Garden Hotel Bangkok, 6-18 December 1982.

The objectives of the workshop are to develop comprehensive understanding of the total housing process, capabilities to evolve innovative approaches to housing development and to upgrade and update professional skills.

Hand-out No.I substantially covers TISTR Programme on Rural Housing Development carried out since 1974 upto the present time (1983) with special emphasis on the goal, objectives and research methodology of the Project.

Hand-out No.II covers information on soil-cement, the most appropriate building material to be used as a substitute of wood which is now scarce. Hand-out No.III presents case study of some demonstration programmes on rural housing improvement conducted jointly by TISTR and others agencies concerned with project implementation. Hand-out No.IV shows profile of the Thai villages, including village patterns, present rural housing situation, and socio-economic conditions.

Inclusion of short reports describing the present work of the authors concerning various housing aspects and workshop evaluation in relation to personal works reflects. The accomplishment of the workshop and benefits gained by participants.

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Hand out No. I

TISTR's Programme on Rural Housing
Improvement in Thailand

by

Mr. Poonperm Wattanawongkiri

Mr. Chatsiri Thammarom

a paper presented at the U.N. Training
course on housing

Rama Garden Hotel, Bangkok.

December 6-18, 1982.

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TISTR's Programme on Rural Housing Improvement in Thailand

- Project Goal :
- To promote housing development in rural areas of Thailand.
 - To alleviate the gaps between rural and urban conditions so as to slow down urban migration.
 - To support national security and stability.

- Project objectives :
1. To find out the suitable rural housing development pattern.
 2. To set up the implementation plan.
 3. To find out local raw materials as a substitute of wood.

- Project scope :
(scope of study)
- The study covers the following aspects :-
1. Preliminary study on existing housing condition.
 2. Study of soil-cement technology including testing procedure and demonstration of the improved pattern.
 3. Preparation of Master plan for implementation at different localities in the country.

- Research Methodology : - Methodology follows 3 main phases as shown in the following diagram.

* TISTR = Thailand Institute of Scientific and Technological Research.

Diagram of Research Activities on Rural Housing Improvement in Thailand

Duration	Phase	Objectives	Activities	Conclusion/Recommendations
1 year	I Preliminary study on the existing rural housing development pattern and trend.	To find out the problems, needs and constraints of village people e.g. shortage of building materials, unavailability of technical know-how, low ability to pay, etc.	<ul style="list-style-type: none"> - Survey of available building materials as a substitute of wood - Upgrading technical skill and ability to manage the project by means of mutual help - Improving rural economic base. 	<ul style="list-style-type: none"> - Consideration should be made for the testing of housing programme by means of mutual help - Rural committee should be set up to manage further housing construction - The government should provide : <ol style="list-style-type: none"> 1) technical assistance and skill training through motivators and The Community Development Department's Staff 2) rotating funds for housing improvement in term of materials on loan.
3-5 years	II Demonstration and Testing of The improved pattern	To transfer technology of soil-cement brick production and construction procedure to village people	<p>Construction of soil-cement houses under the mutual help housing programme at the following locations:</p> <ul style="list-style-type: none"> - 1979 at Chum-phung District - 1980 at Taphraya District - 1981 at 4 village in the First Army Region (in progress) - at 3 villages in Land Reform area (in progress) 	<ul style="list-style-type: none"> - Implementation of mutual help housing programme should be extended to soil-cement production stage only. - Construction stage should be done independently by the village group concerned

Duration	Phase	Objectives	Activities	Conclusion/Recommendations
<p>1 year</p>	<p>III Master plan preparation for the whole country</p>	<p>To set up implementation guidelines as appropriate to different locations in rural area</p>	<ul style="list-style-type: none"> - Classification of housing delivery systems e.g. Forestry Village, Cooperative estate village, self-help housing estate and others. - Adoption of implementation plan for each system. 	<p>The rural housing improvement's elements should consist of ;</p> <ul style="list-style-type: none"> - motivators - effective manual as a guideline for construction management - Villages Development Plan - Provision of rotating funds - Training programme - Rural committee to manage the project.

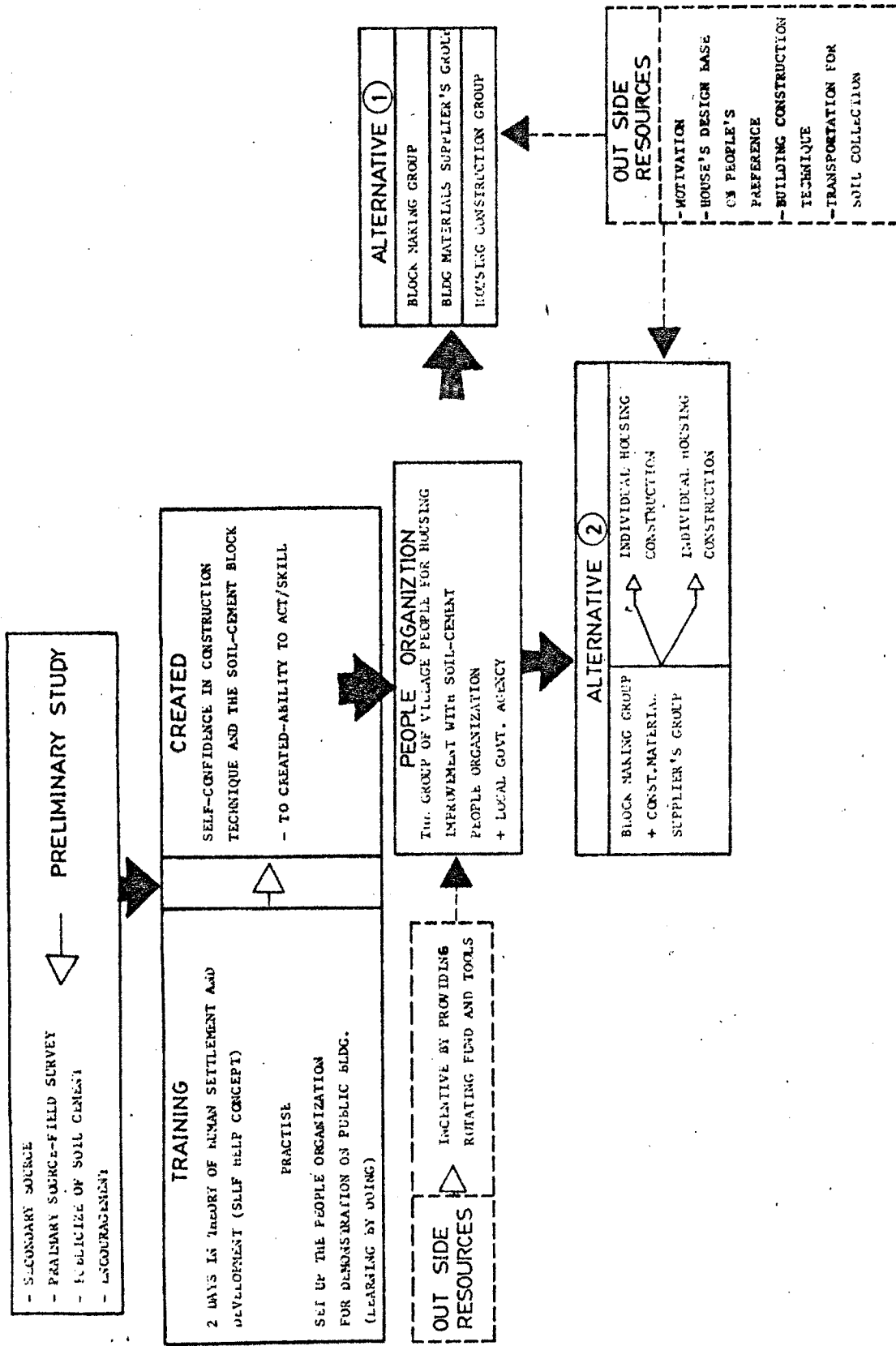


DIAGRAM SHOW : THE STRATEGIES ON RURAL HOUSING DEVELOPMENT PROGRAMME

Hand out No. II

Soil-cement as a Building Material

by

Mr. Poonperma Wattanawongkiri

Mr. Chatsiri Thanmarom

a paper presented at the U.N. Training
course on housing

Rama Gardens Hotel, Bangkok.

December 6-18, 1982.

Soil-cement as a Building Material

The Thailand Institute of Scientific and Technological Research (TISTR) has started the programme on Rural Housing Development (RHD) since 1974. It has been found by experience from research studies that the main obstacle of the country rural development in the housing sector consists of the following problems:-

1. Rural economic base is very low in comparison to the price of existing urban base building materials in the market.
2. Shortage of conventional rural base building materials or wood since favourable construction material in rural area has long been depending on it.
3. Management skill or technical know-how in housing construction is scarcely available.

Griding from the above problems, it can be concluded that one of the main problem for RHD of the country is the construction material which has long been depending on wood.

After a through analysis at both macro and micro levels, conclusion could be made that, under the prevailing circumstance and for the years ahead, the most suitable solution measures of the afore-mentioned problems are as follows:-

1. Improvement of rural economic base is necessary to catch up with the cost of urban base building materials. This category must be responsible by various government agencies concerned.
2. Other resource bases as a substitute material of wood should be explored and studied on the criteria that these materials should be locally available, require simple technology for production and implementation at low investment cost.

The results of research conducted at TISTR in accordance to the second solution indicate that Thailand has many varieties of building base materials. Among these, it has been found that a huge resources of laterite occurs almost all over the country except some parts of the Central Region. Laterite mixing with some low percentage of cement could form durable brick suitable enough for housing material. Soil-cement technology using laterite as raw material has been experimented and tested by TISTR in accordance to the foreign's guidelines and standards. The processes developed at TISTR include the production of brick, the design of housing pattern and the production of other soil-cement housing components.

Soil-cement Block production process

Fig. 1 Screening

- Taking the selected soil, (without any organic matter) screening through the 4 mm. wire mesh.

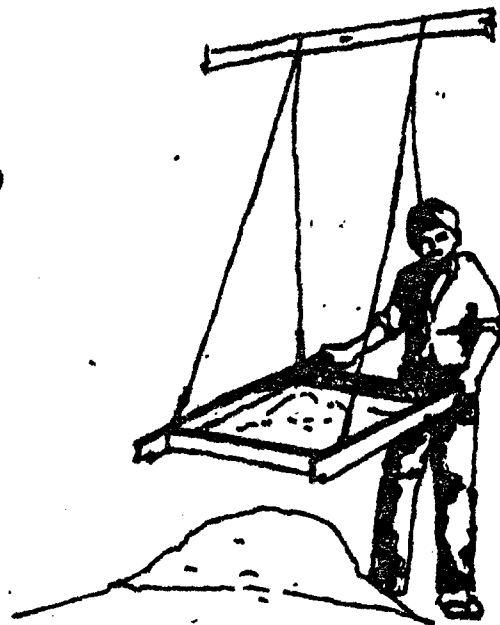


Fig. 2 Preparing the mixture (soil:cement:water)

Mixing with cement approximately 10-15% and watering 10% of the mixture. (Testing for the correct amount of moisture by squeeze a handful of the mixture if it is moist enough it will keep the shape it is squeeze into.)

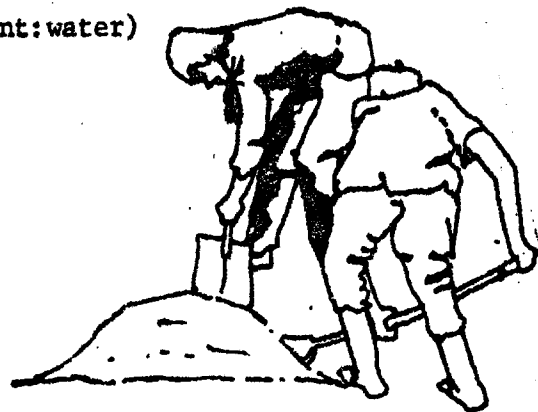


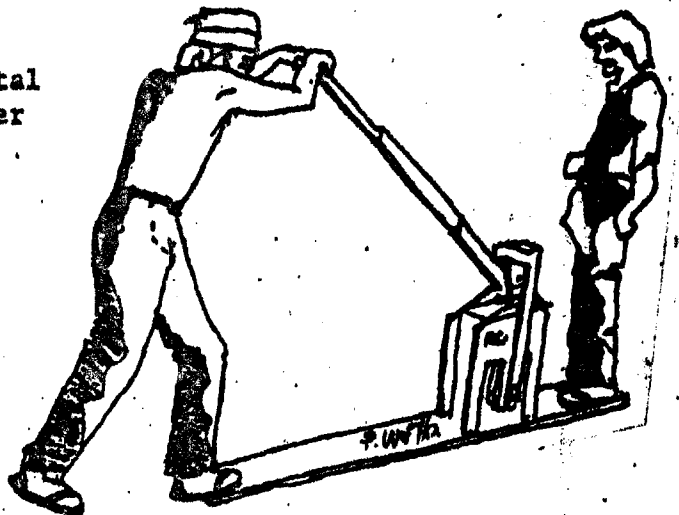
Fig. 3 Pressing

Dump the proper amount of Soil-cement mixture into the box. Fill the corners of the box to the top so that the corners of the finished block will be well pressed.



Fig. 4 Ejection

Move the lever to a horizontal position, returning the lever to the opposite position; opening the mold box, and depress the lever steadily to eject the block.



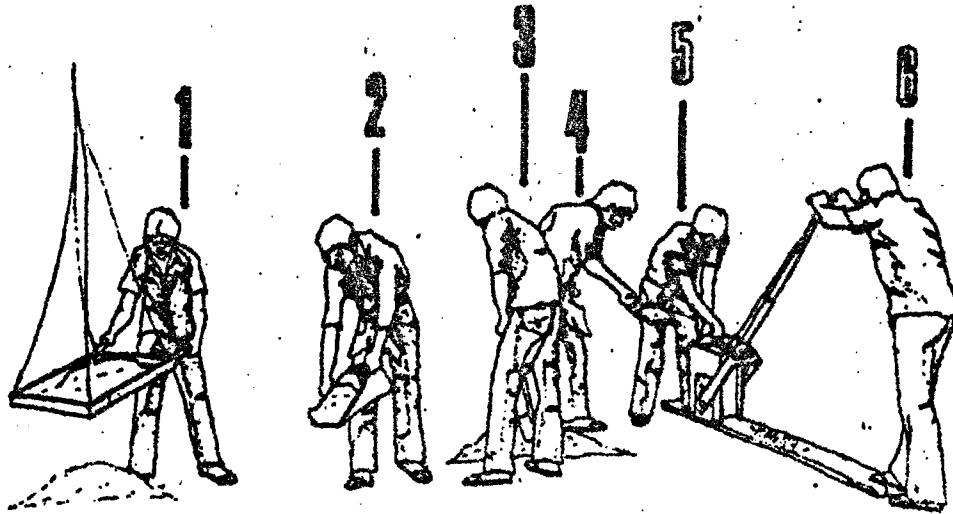


Fig.5 Soil-cement Block's production process,
(with one block making machine)
average production capacity : 40 Pieces
of Block/hr.

Task of each worker (No. 1-6)

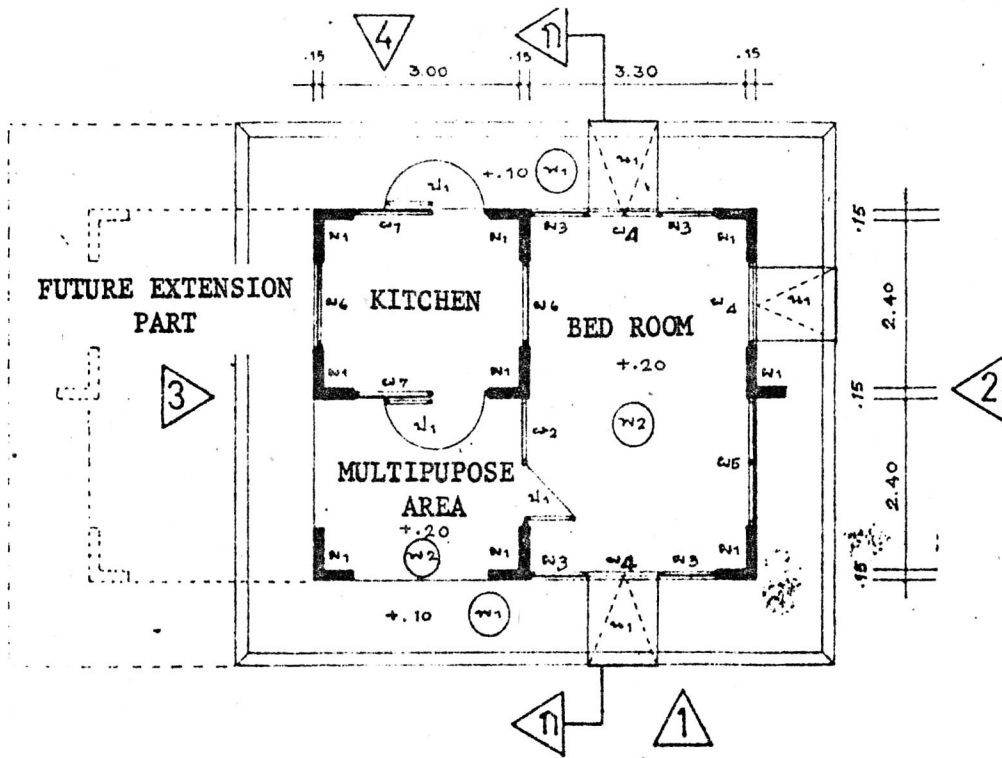
1. Screening

2, 3, 4 Mixing and taking the finished block to place for curing.

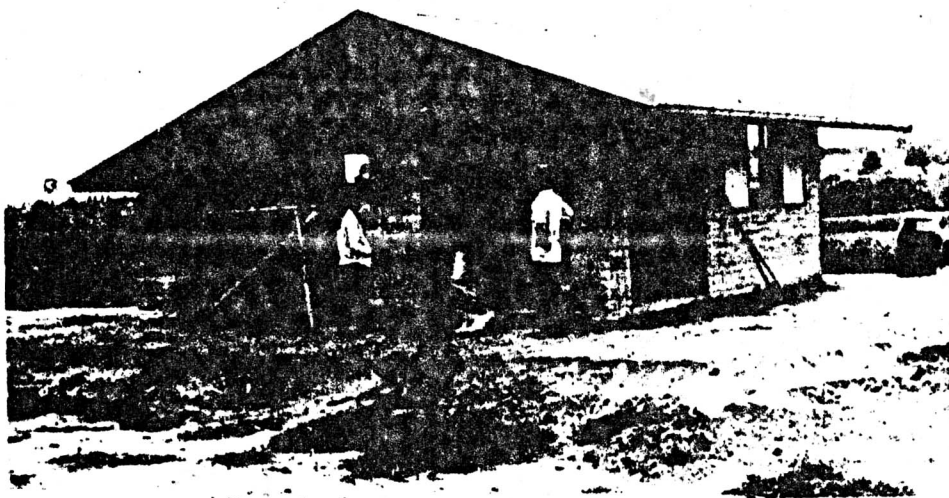
5, 6, Pressing

Note Require 14 days for curing.

ONE STOREY HOUSE



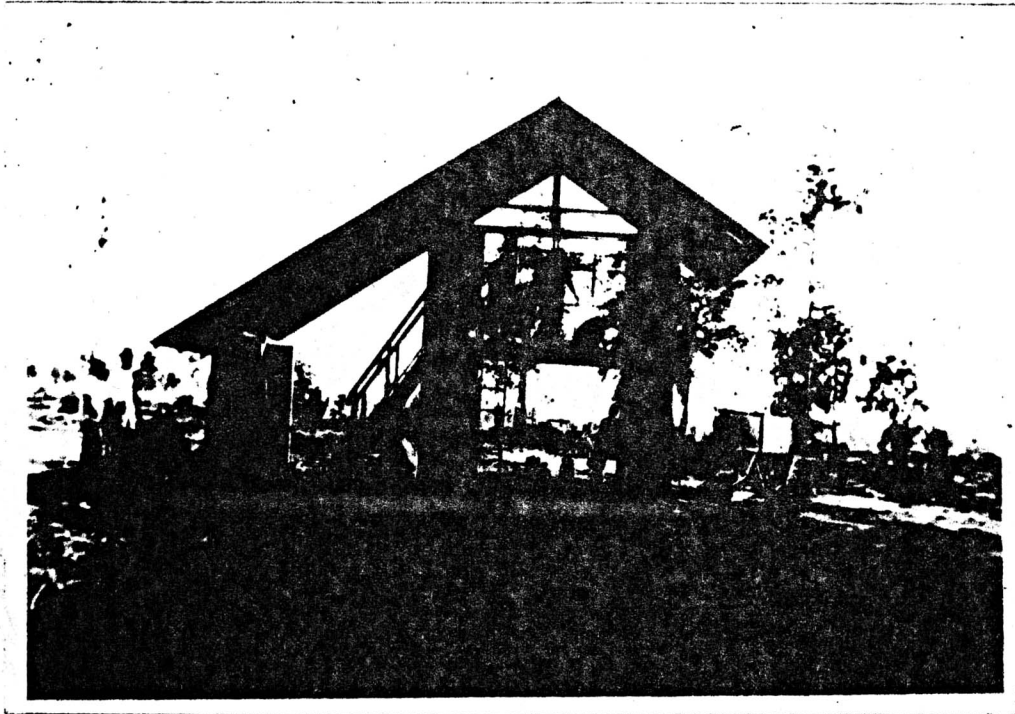
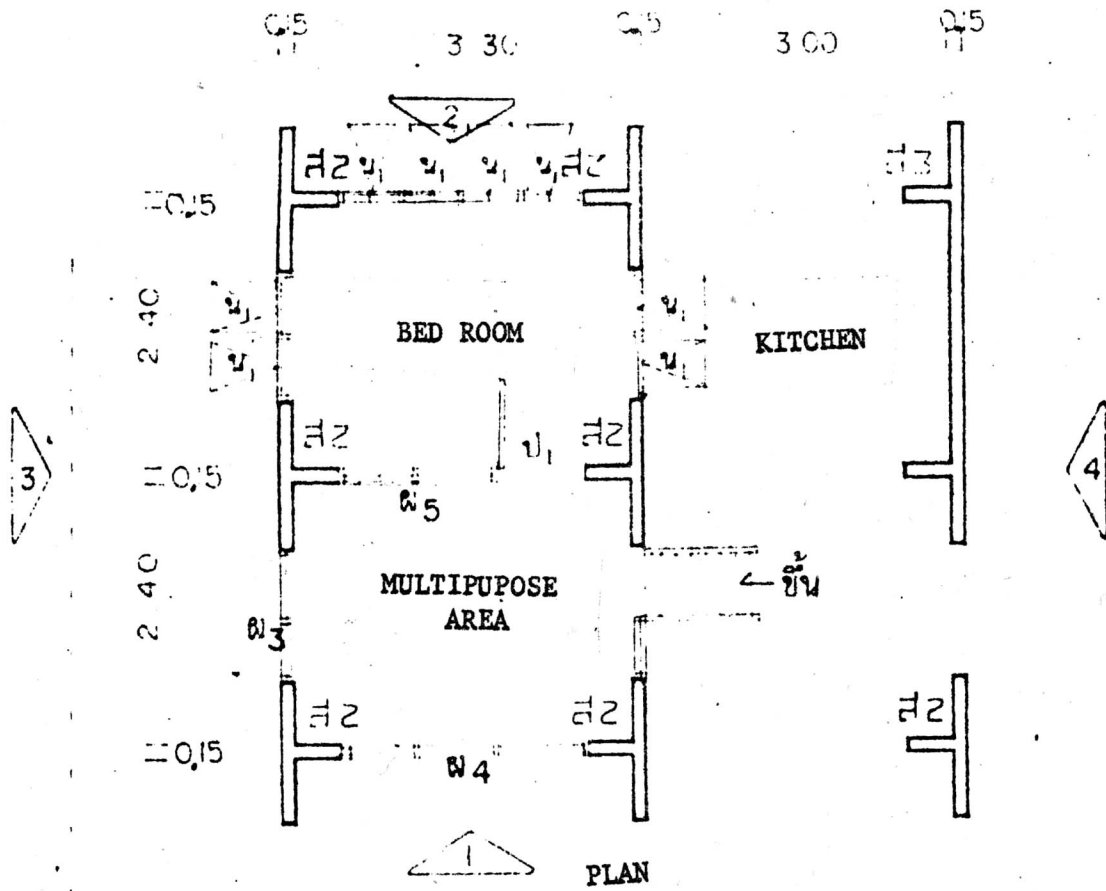
PLAN



PERSPECTIVE VIEW

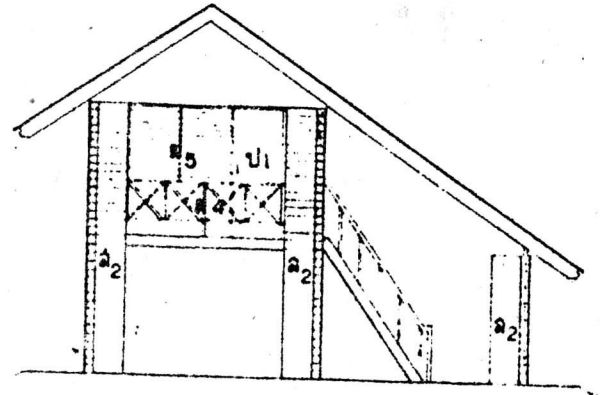
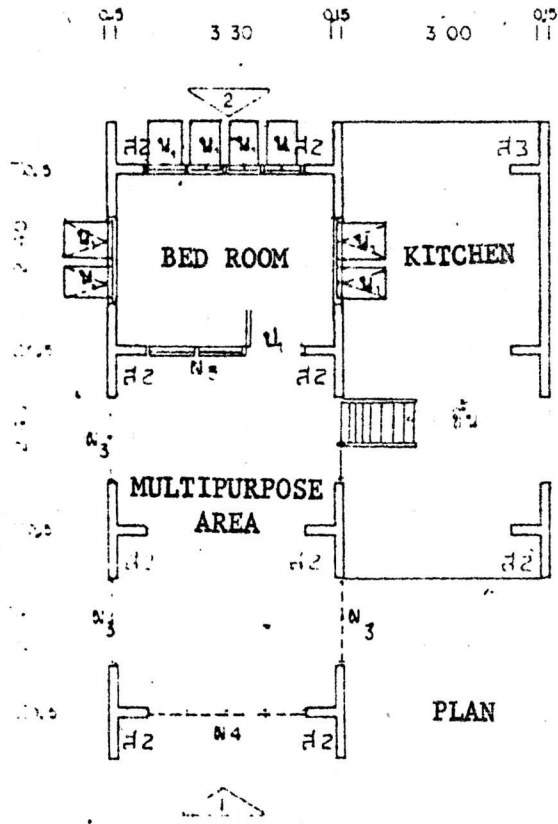
TOTAL COST OF BUILDING MATERIAL = 18495 ₱ (\$ 815 US)

TWO STOREY HOUSE



PERSPECTIVE VIEW

TOTAL COST OF BUILDING MATERIAL = 22708 ₪ (\$ 1000 US)



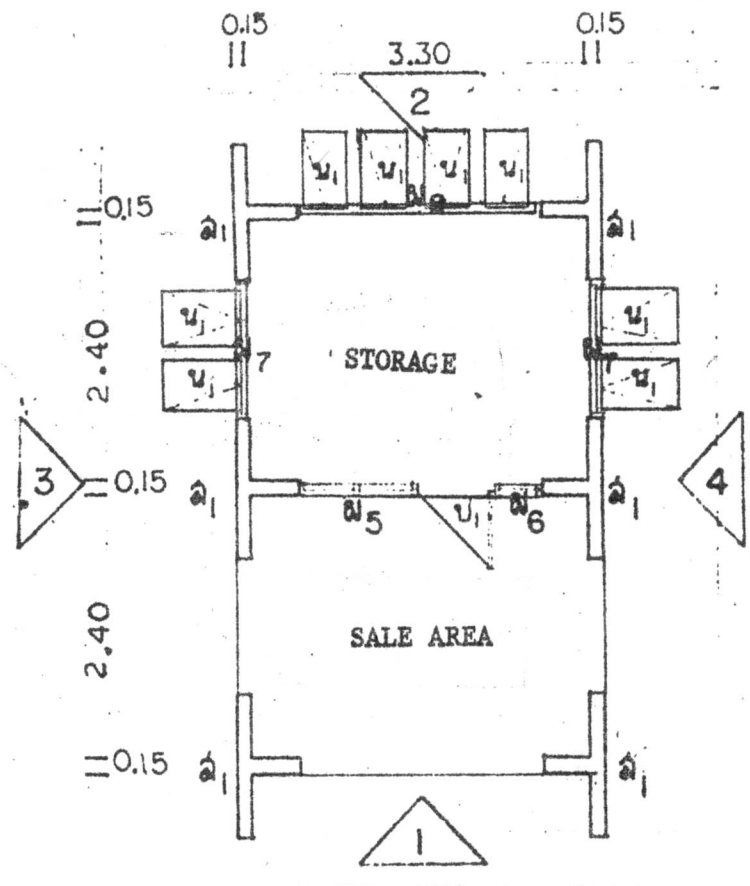
TWO STOREY HOUSE



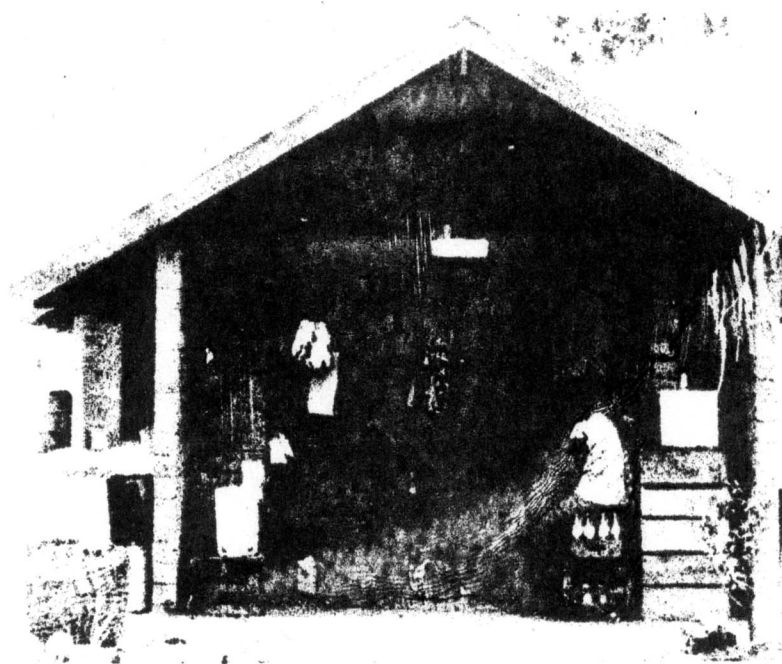
PERSPECTIVE VIEW

TOTAL COST OF BUILDING MATERIAL = 25281 ₪ (\$ 1113 US)

COOPERATIVE GROCERY SHOP



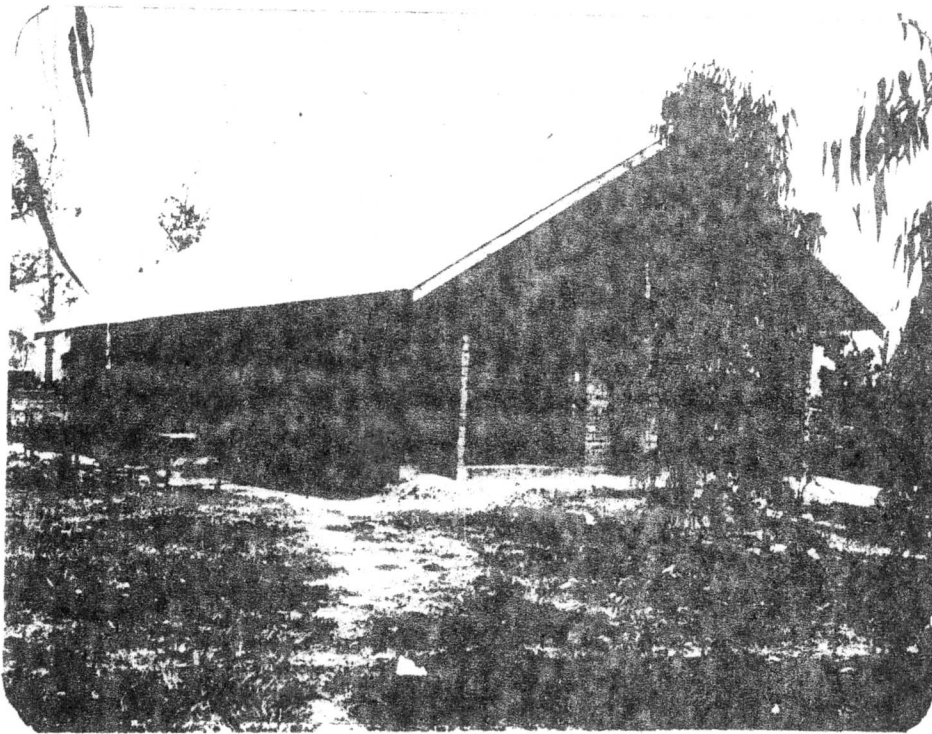
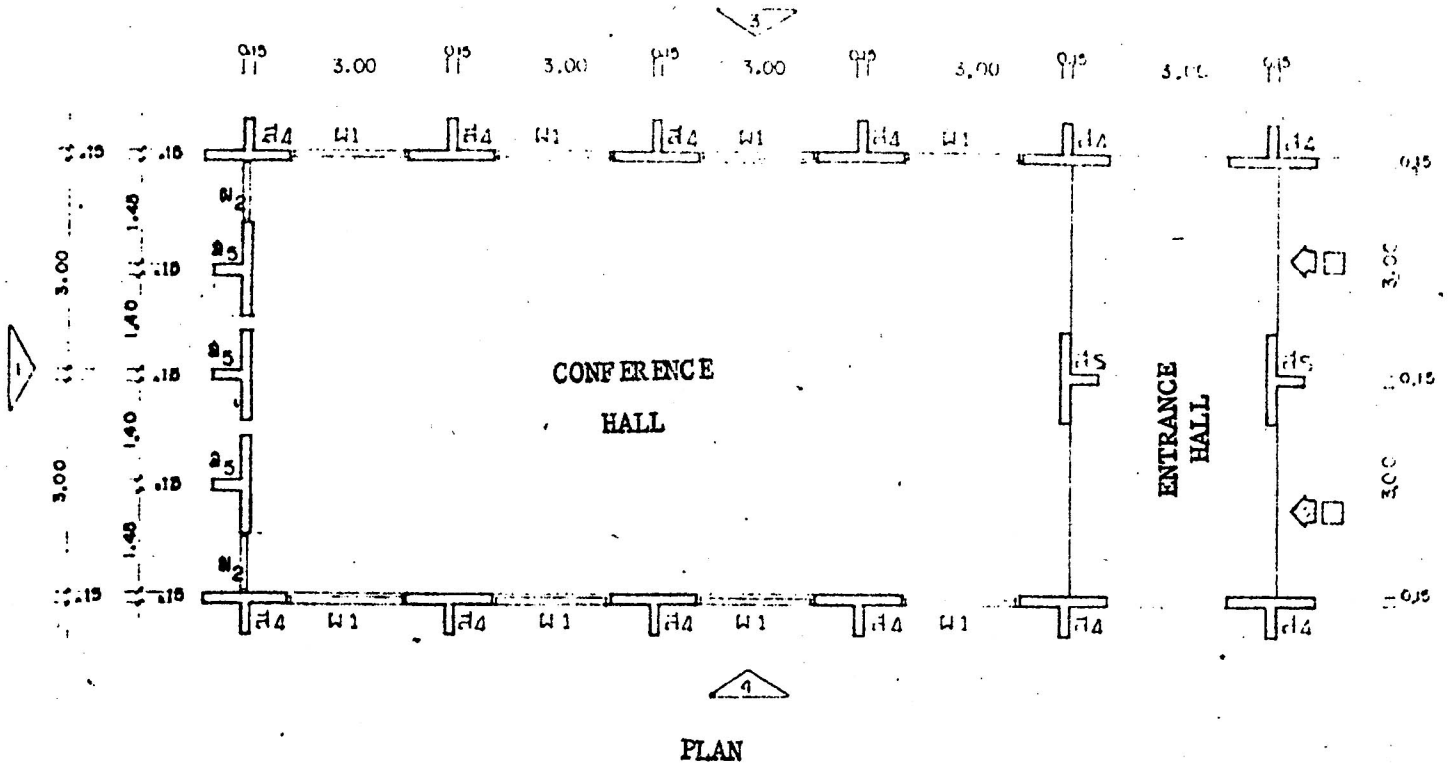
PLAN



PERSPECTIVE VIEW

TOTAL COST OF BUILDING MATERIAL = 13354 B (\$ 588 US)

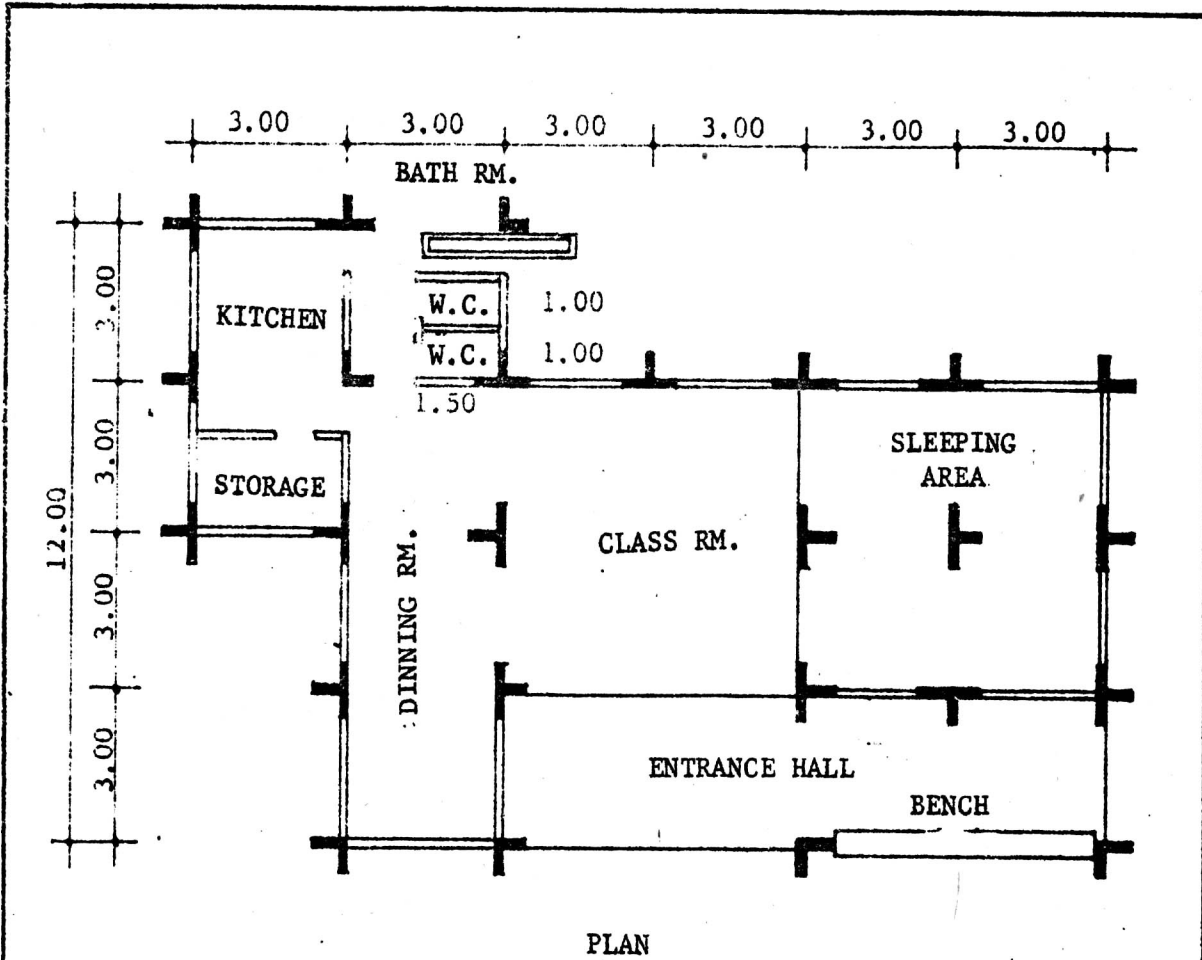
COMMUNITY CENTER



PERSPECTIVE VIEW

TOTAL COST OF BUILDING MATERIAL = 32242 ₪ (\$ 1420 US)

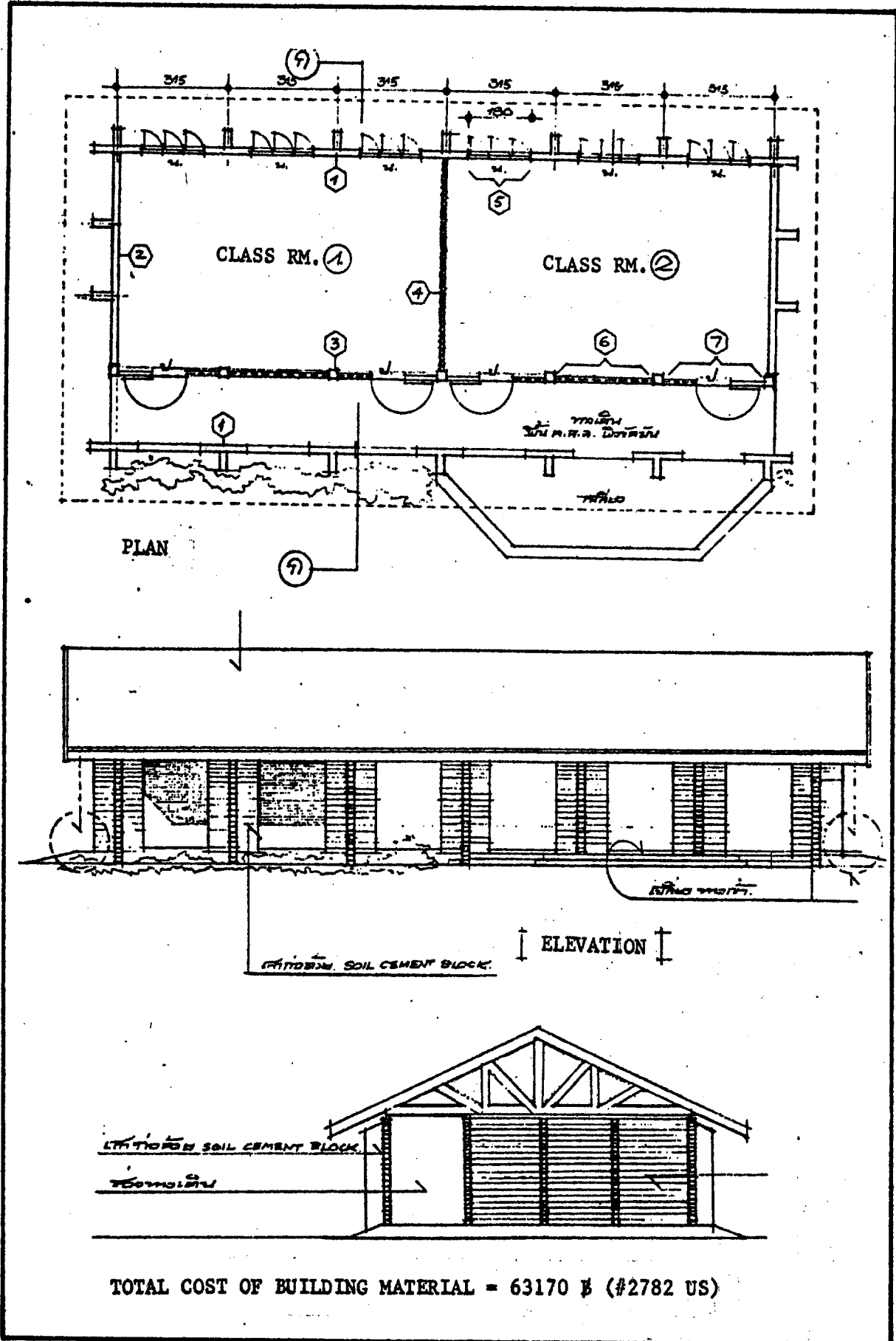
CHILD CARE CENTER

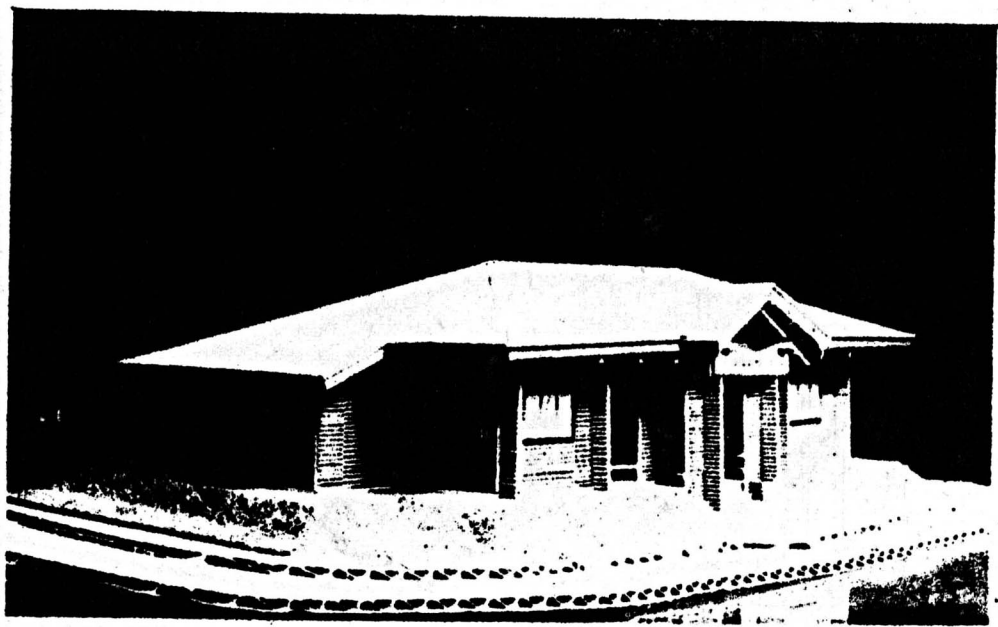
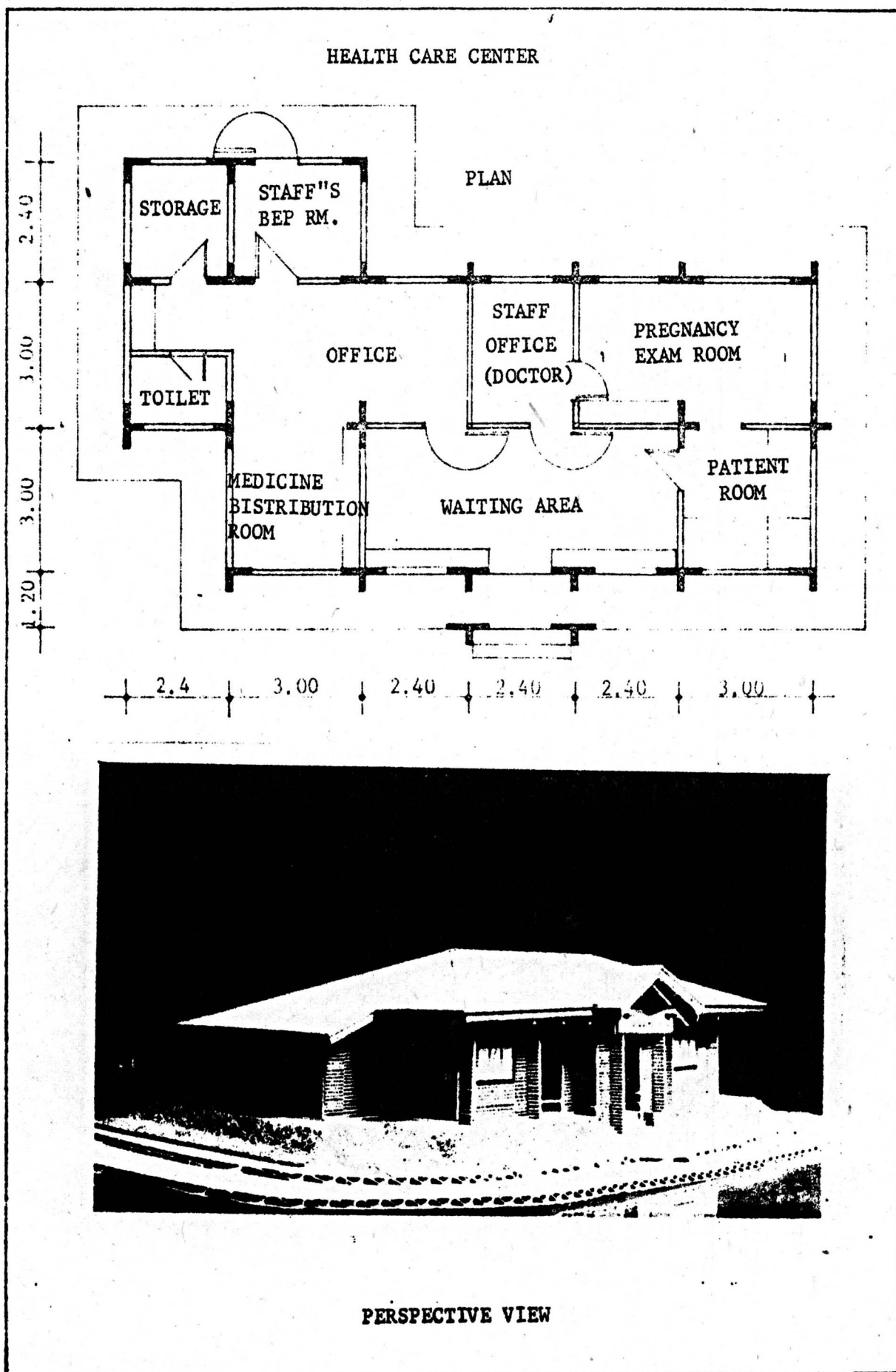


PERSPECTIVE VIEW

TOTAL COST OF BUILDING MATERIAL = 72,423 ₪ (\$3190 US)

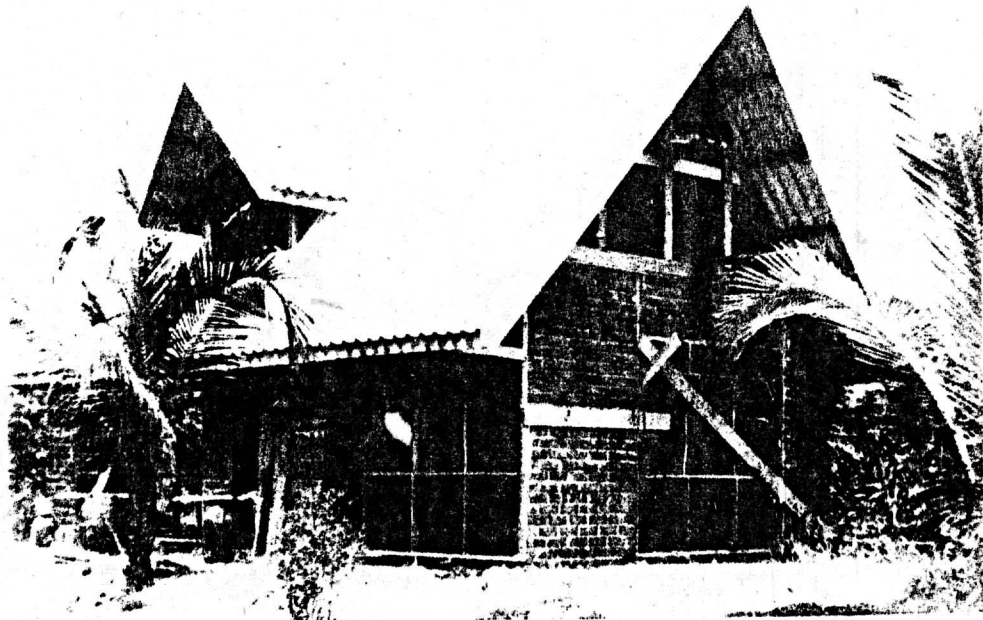
SCHOOL BUILDING



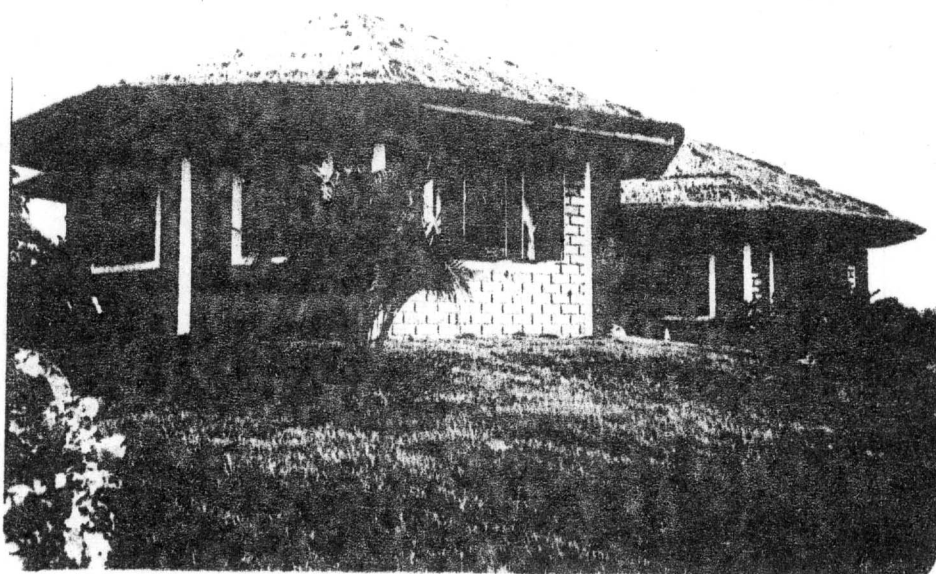


PERSPECTIVE VIEW

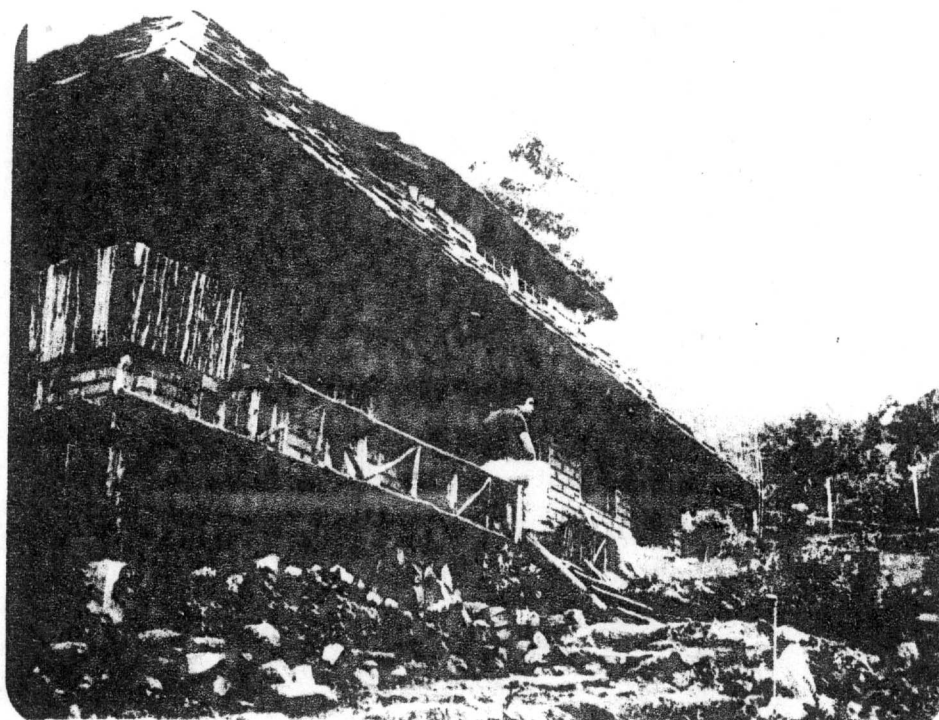
TOTAL COST OF BUILDING MATERIAL - 81822 ₪ (\$ 3604 US)



PROJECT : PRIVATE HOUSE
LOCATION : CHUMPHORN PROVINCE
(SOUTHERN PART OF THAILAND)
BUILDING MATERIAL : SOIL-CEMENT BLOCK



PROJECT : ADMINISTRATION BUILDING OF THE VOCATIONAL
TRAINING CENTRE
LOCATION : NAN PROVINCE (NORTHERN PART OF THAILAND)
BUILDING MATERIAL : SOIL-CEMENT BLOCK



PROJECT : VACATION HOUSE
LOCATION : IN THE AREA OF THE KING'S PROJECT
CHIENGMAI PROVINCE (NORTHERN PART OF THAILAND)
BUILDING MATERIAL : SOIL-CEMENT BLOCK

A-32

Appendix 3.1

Technical Details of SCB

- 1) Soil-Cement - Soil cement is a mixture of a selected lateritic soil with a certain percentage of cement (10-15% by weight) and a proper amount of water.
- 2) Soils which are applicable for soil-cement making

- Soils which are suitable for soil-cement making are mostly lateritic soils with the following properties :-

Chemical properties;

Chemical Composition

Fe_2O_3	ranges	1.5 - 3.0%
Al_2O_3	"	8 - 12%
SiO_2	"	75 - 85%
CaO + other matters		1.5 - 3.5%

Physical properties

- Loss on Ignition Less than 5%
- Dry Shrinkage 2-8%
- Fire Shrinkage 2.5-10%
- Particle size-should be mostly silt with some clay (All soils should be sieved through No.4 sieve before use.)

3) Mixture of Soil-Cement for Making Soil-Cement Block

- Proportion of the mixture for making soil-cement -block.

The proportion of soil, cement and water should be laboratorily designed. After obtaining the amount of CaO in the soil, the amount of cement used can be calculated from:-

A-33

$$C = \frac{G - F}{E - F} \times 100\%$$

when C = percent by weight of cement,
 F = " " of CaO in soil,
 E = " " of CaO in cement,
 and G = " " of CaO in the mixture.

(The percentage of cement is practically in the range of 10-15% by weight).

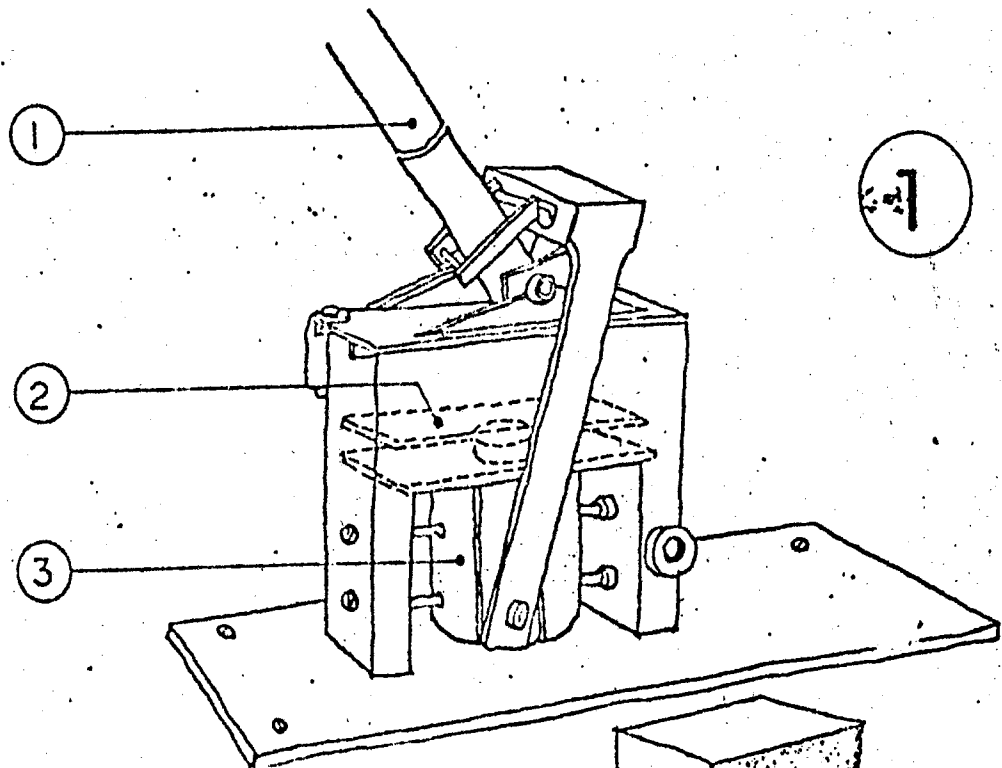
The proportion of water is equal to the amount of water at the optimum moisture content of the soil. The OMC of the soil is obtained from Laboratory test of the Standard Proctor Test Method.

- The mixture

The mixture should be uniform and homogeneous. Soil and cement should be thoroughly mixed before adding the water. Promptly after adding the water, mixing should be made to get the uniform and homogeneous mixture.

4) Soil Cement Block

SC block is a result of pressing soil-cement mixture in a mould under a certain amount of pressing energy. The pressing process can be partially or fully mechanized. The partial ones have been recently developed. One of them called "CINVARAM" is shown in the Figure C-1



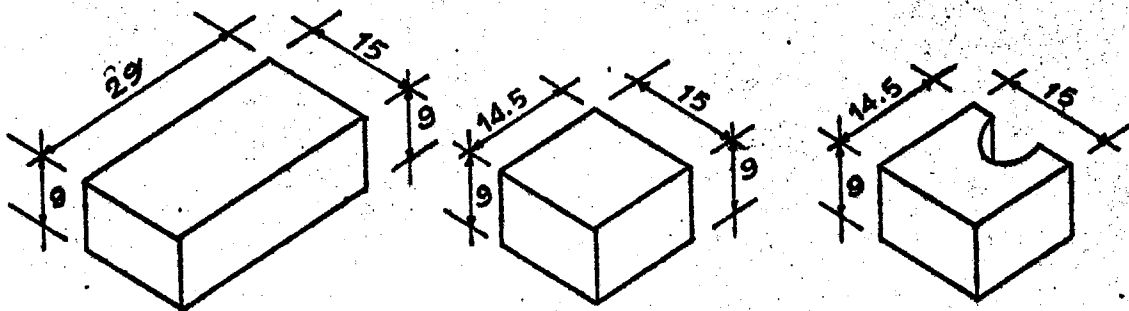
CINVA-RAM, BLOCK-MAKING-MACHINE

1. LEVER (LENTH 2m)
2. MOVABLE STEEL PLATE
3. PIUMGER TURE

Figure C-1 CINVARAM

- Shape-Size

Shape of the S-C block can be of any form, but the using ones are as shown in the figure C-2. Sizes of the blocks are also presented in the same figure.



a) Full Block
(9 x 15 x 29 cm³)

b) Half Block
(9 x 14 x 14.5 cm³)

c) Carved Half Block

Figure C-2 Shape and Size of S-C Blocks.

A-35

- General Properties of S-C Block.

In general the required properties of S-C block are in the form of physical properties rather than the chemical ones. The required physical properties are as following:-

Moisture Absorbtion : not exceed 25%
Compersive Strength : not less than 50 ksc.,
and durability : should pass at bast
6 cycle of wet and dry
process without only damage
or losing strength.

Saraburi Cose study on
Rural Housing improvement program

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Master Plan : Rural Housing Development in the
Land Reform Area, Saraburi Province

Rational

Following to the Resettlement Project area at Saraburi Province responsible by the Land Reform Department, TISTR has been requested to play role on the testing programme of rural housing development in such area. The goals and objectives of the project areas follows:

Project Goals

- To find out some available local materials such as soil to be used as a substitute of wood in building construction.
- To create the concept of self-help housing approach by setting up rural committee on housing improvement.
- To encourage small-scale block production to serve the requirements of public and private buildings in the Project Area.
- To transfer rural housing technology to rural people in the Project Area.

Project objectives

Project goals would be fulfilled by the following objectives:

- To appraise housing needs and demands of rural people in the Resettlement Project Area, Saraburi Province.
- To set up master plan and implementation plan for different Districts of the Project Area.
- To evaluate investment cost and project duration according to housing demands at each location.
- To encourage the use of soil-cement block in rural housing construction.

- To stimulate awareness of the other building materials available locally.
- To upgrade skill labours to carry on construction management by means of self-help housing approach.
- To identify the improved roles of government agencies on such program e.g. The Land Reform Department, The National Housing Authority, TISTR, etc.
- To evaluate the final output for a project follow-up as a feed back for some other similar projects.

Scope of the Project

Emphasis has been made on the following aspects:

- Materials : Utilization of local materials especially soil-cement block for housing and public buildings construction.
- Duration : Implementation plan - 10 years
- Total number of villages : 35 villages
 - 9 villages (at first stage implementation plan)
 - 3-4 villages/year (in average)

Selection of villages depends on land subdivision in each year, normally 3 villages per year.

The results of data interpretation will indicate the number of houses and public buildings that should be constructed in each location.

Results of the Study

Three main types of housing preference assess from preliminary studies at 9 villages are shown in the following table.

HOUSING NEEDS IN 9 VILLAGES

(Emphasis on Soil-Cement Blocks for Construction Material)

Name of Village	No. of households in The Village	Type of houses						Total	%
		2-Storeys Type-A		2-Storeys Type-B		1-Storey			
		No.	%	No.	%	No.	%		
* 1) Sub-kra-darn	167	37	40	28	30	28	30	92	100
* 2) Sub-kham	150	32	85	6	15	-	-	38	100
3) Sub-hang	287	30	70	9	20	4	10	43	100
4) Sub-noi-nure	132	29	55	8	15	16	30	53	100
5) Sub-sa-noon	380	70	93	40	30	-	-	133	100
6) Nong-kra-chai	60	16	68	5	22	2	10	24	100
* 7) Klong-moung-nure	240	48	80	6	10	6	10	60	100
8) Lum-sum-phung	149	29	78	22	8	-	-	37	100
9) Lam-Phra-ya-klang	165	43	75	-	-	15	25	58	100
		357		110		71		538	100

* Under implementation plan (December 1982)

Note: Mor-din-dang Village has been added up in the present implementation plan for 10 houses construction with soil-cement blocks during December 1982 - April 1983. This Village has not been included in the above data collection phase.

Hand out No. IV

Profile of The Thai villages

by

Mr. Foonperm Wattanawongkiri

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 - a) Social component
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 - c) Infrastructure component
 - 2.3 Present housing situation
 - a) Existing house's type
 - b) Typical design and lay-out
 - c) Functional components

1. RATIONALE

The National Economic and Social Development plan divides the country's development programmes into two sections closely related to one another namely the development of urban and rural areas. From the past experiences indicates that economic and social development in the urban localities has been remarkably advanced; by means of standardized cost of standardized cost of living. However, in comparison with those of the rural inhabitants which cover about 80% of the country's population, their conditions have unbalancingly changed, thus resulting in migration of the rural villages into Bangkok. Such circumstance is an inevitable way that blocks the country's advancement. For effective country's development, illiteracy and backwardness of rural people especially the farmers should be minutely studied. This includes problems on social and economic condition education level, agricultural technology, health and living condition in relation to housing, town planning, public utilities service, employment sources and communication.

As in the other Asian developing countries, socio-economic development of rural Thailand is facing many problems. One major problem is the poor quality of housing and living environment. In the past, a decent houses for an ordinary farmer's family could be easily erected. Local building materials were then abound and helps in building the house could always be easily sought from neighbours. Those conditions are impossible at present and housing becomes an expensive element of settlements which is beyond the reach of average farmer's income.

In order to alleviate the problem on rural housing, the Building Research Division (BRD) of Thailand Institute of Scientific and Technological Research (TISTR), has recently conducted a survey of physical and social aspect of housing in a number of rural settlement, in the country, as the first step in a systematic approach to the problems. Results of the survey reviale that local building materials are scarce and almost all

the houses surveyed need improvement of the housing quality in terms of space, physical environment and security. In the past, improvement of rural housing was done by farmer's own expenses without any assistance from the government. In most cases, building materials were not properly utilized and construction techniques result in a wastage of material as and labours. To implement the national Fifth Five Year Plan regarding the construction and improvement of community buildings and facilities which will be useful to the rural people for their welfare, health and economic well-being, attempts, then, have been made by the Building Research Division, TISTR to transfer technology to these sectors on the proper utilization of building materials and building techniques.

2. PROFILE OF THE THAI VILLAGES

2.1 Community Pattern

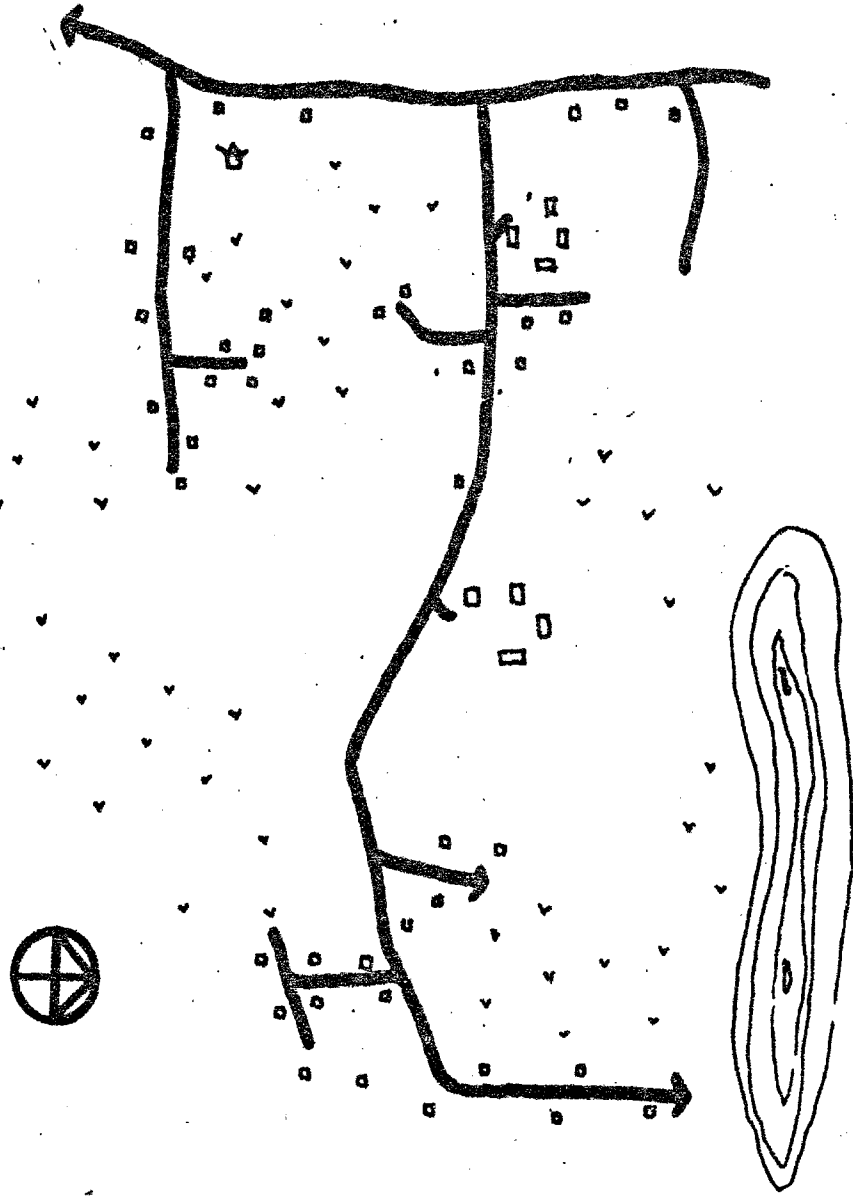
- a) Planned Settlement
- b) Unplanned Settlement

The types of the rural village structure emerges from the mass integration of the people who wish to domicile by giving to the priority on prepare to agriculture with administration, nature safety and enemy as secondary factors. The development of the village can be, however, catagorized into the following three types:-

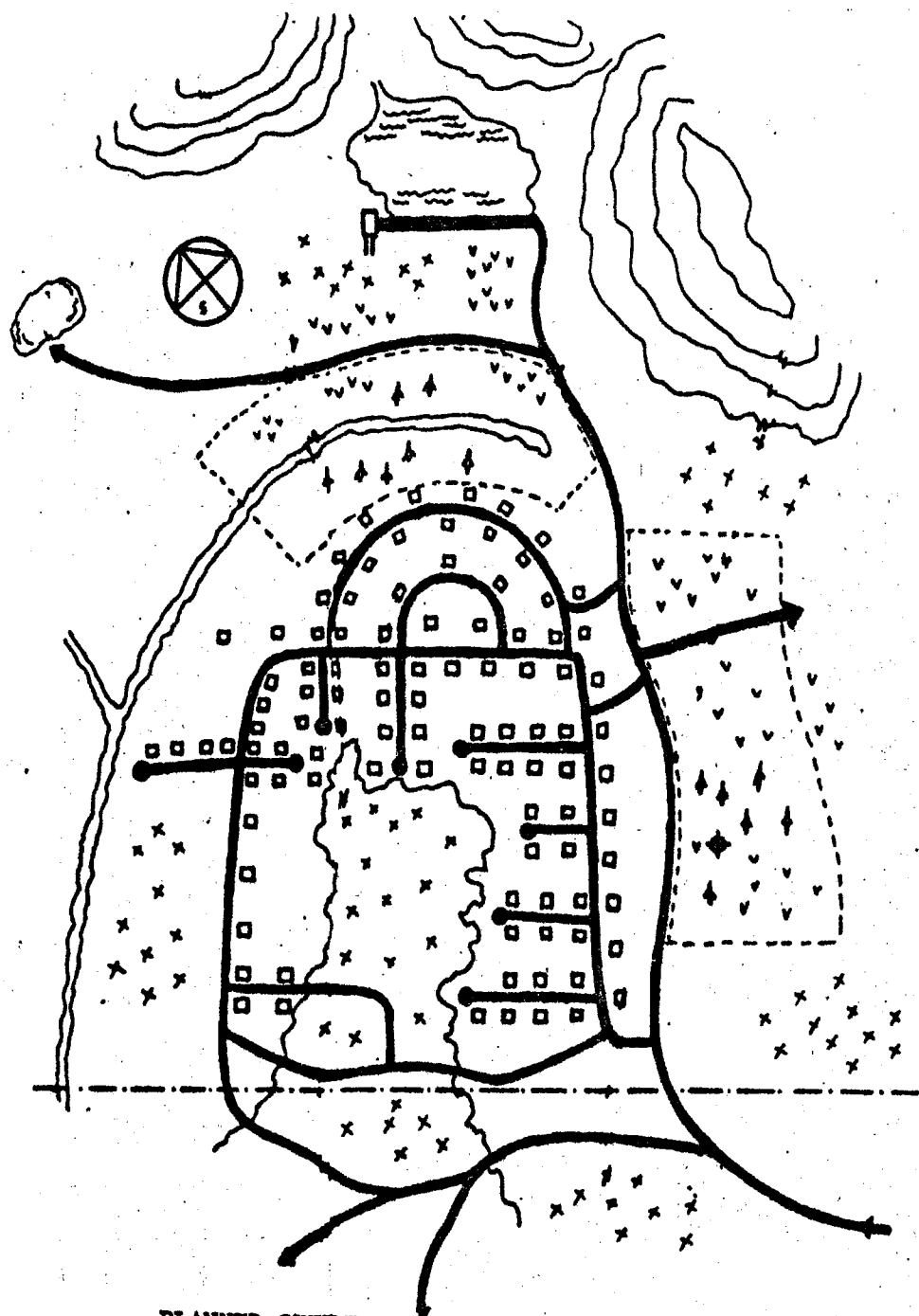
- Linear type. This type of the village is usually found along both banks of the river, canals or important roads through which communication with the outside society can be easily contacted.

- Cluster or Flock type. This classification of the villages mostly suitable for administration and planning, is mainly seen in an area where there exists swamp, marsh or arable land far away from the river and main roads. This type of the village commonly composes of about 50-200 families.

- Scattering type. This is very slightly found in the central region and generally emerges as a result of the migrations of the pioneers.



UNPLANNED SETTLEMENT
SCATTERING TYPE
SUB-KRA-DARN VILLAGE
SARABURI PROVINCE

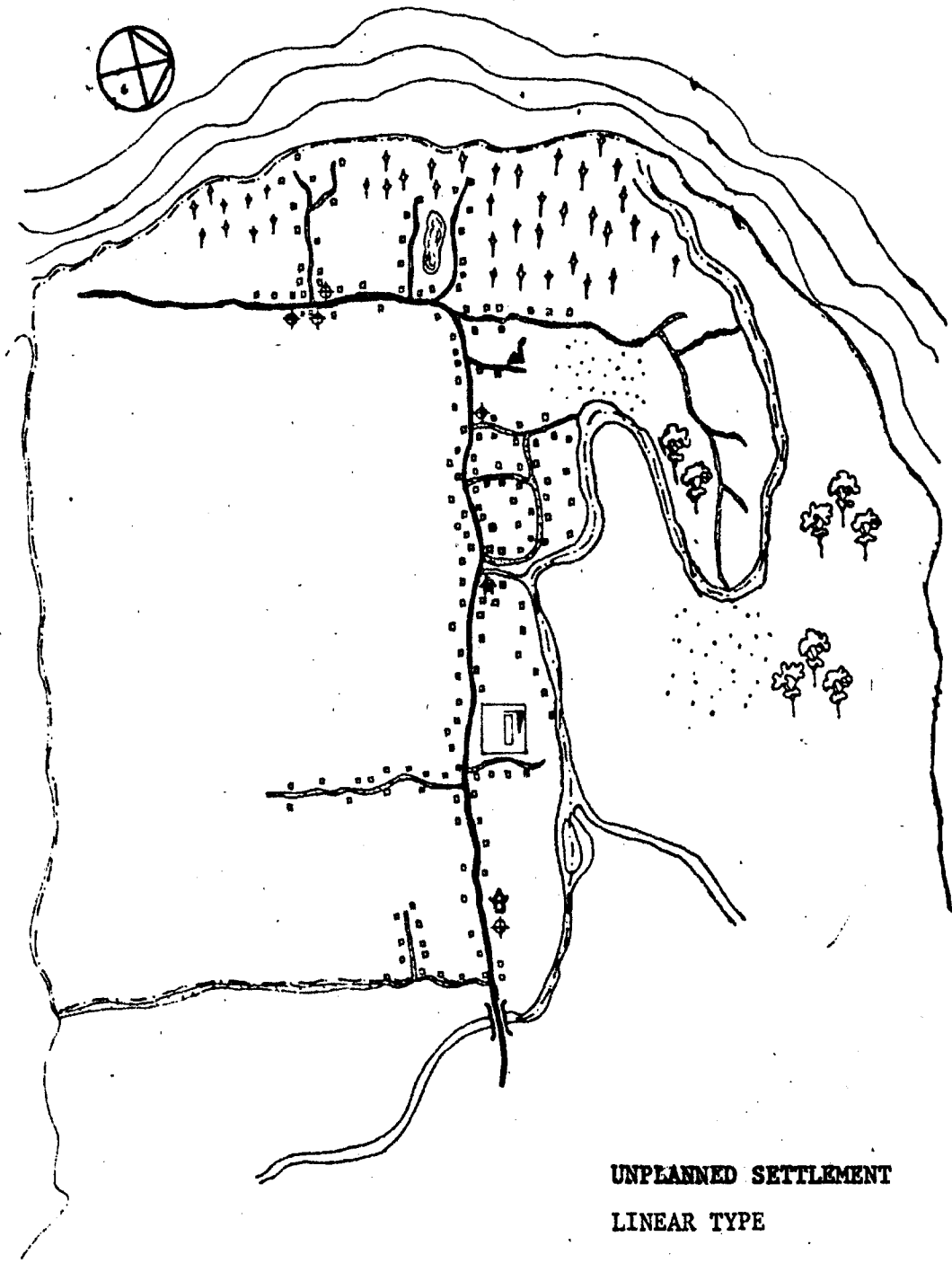


PLANNED SETTLEMENT
SANKAMPANG DISTRICT
CHIENG MAI PROVINCE



UNPLANNED SETTLEMENT

FLOCK TYPE



UNPLANNED SETTLEMENT
LINEAR TYPE

2.2 Aspects on the villages structure.

Basic component of the village structure consists of the following main elements:-

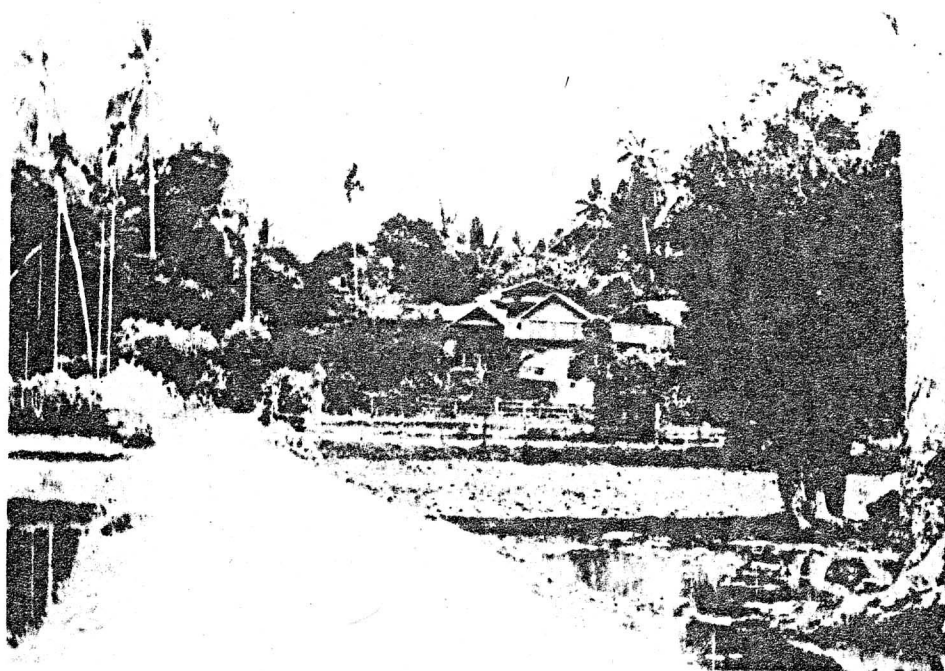
a) Social component includes of village headman, schools, children care centre, health centre, temple, police station, post office community centre and recreation area.

b) Economic component. Covers market place, Bank, Agricultural co-operatives.

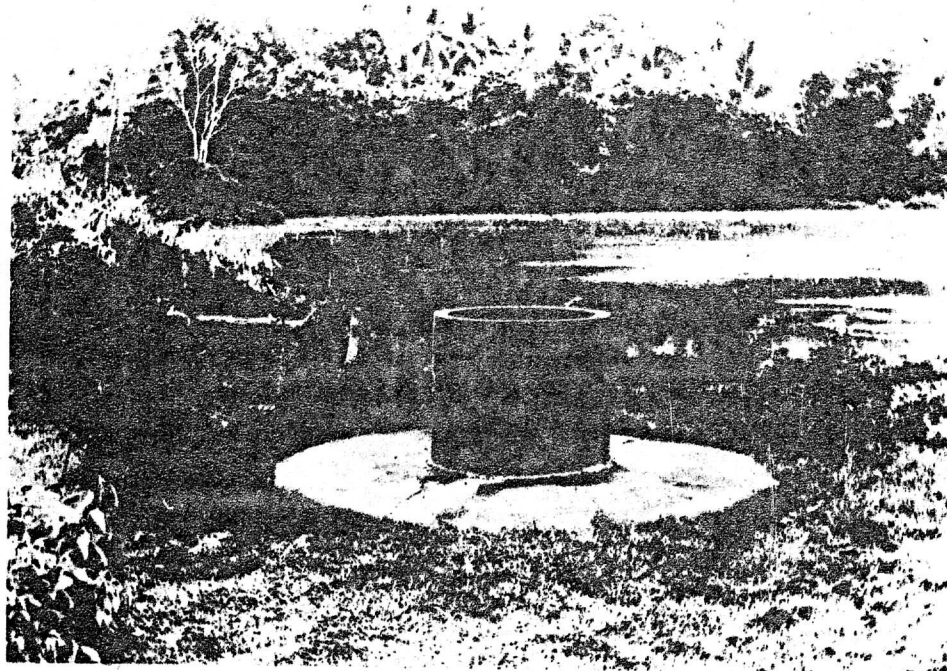
c) Infrastructure component consists of communication network, bridge, road, water resources, electricity, etc.

It was found that there are village headman, temples, schools. Almost in every village but health centre, children care centre, police station and market in every region are shortage. Drinking water was obtained from the common wells in the north, northeast and the south, but they are not popular in the central province due to availability of water supply. Electrical usage is also seldom found there, but so popular in the central region. The villages where there are modern facilities such as electricity, wells, market, police stations and health centre are normally of the cluster type.

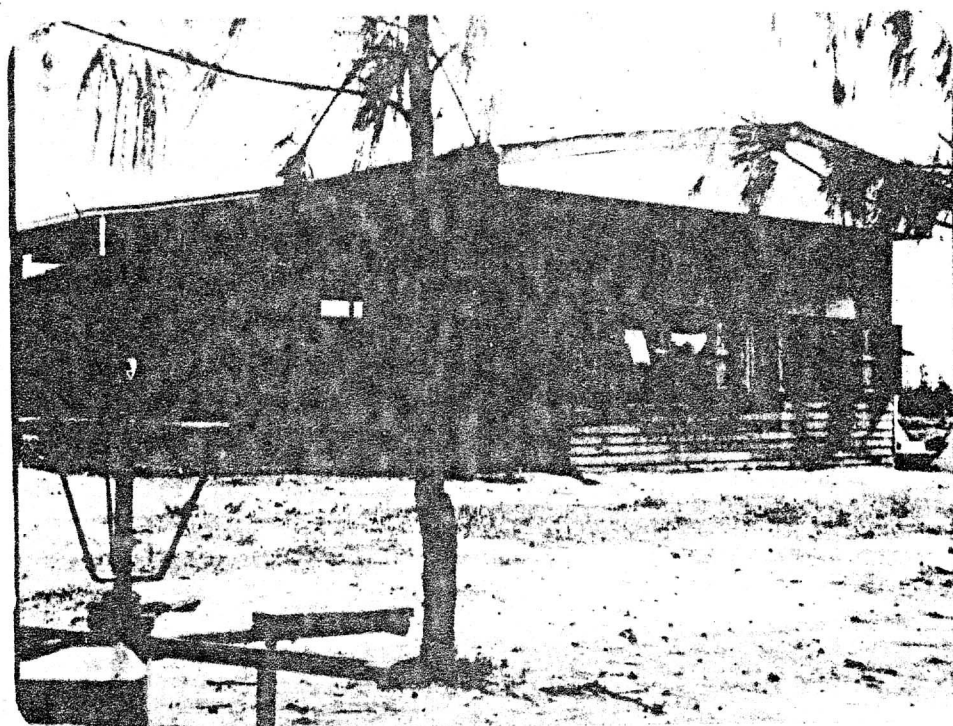
BASIC COMPONENTS OF THE VILLAGE STRUCTURE



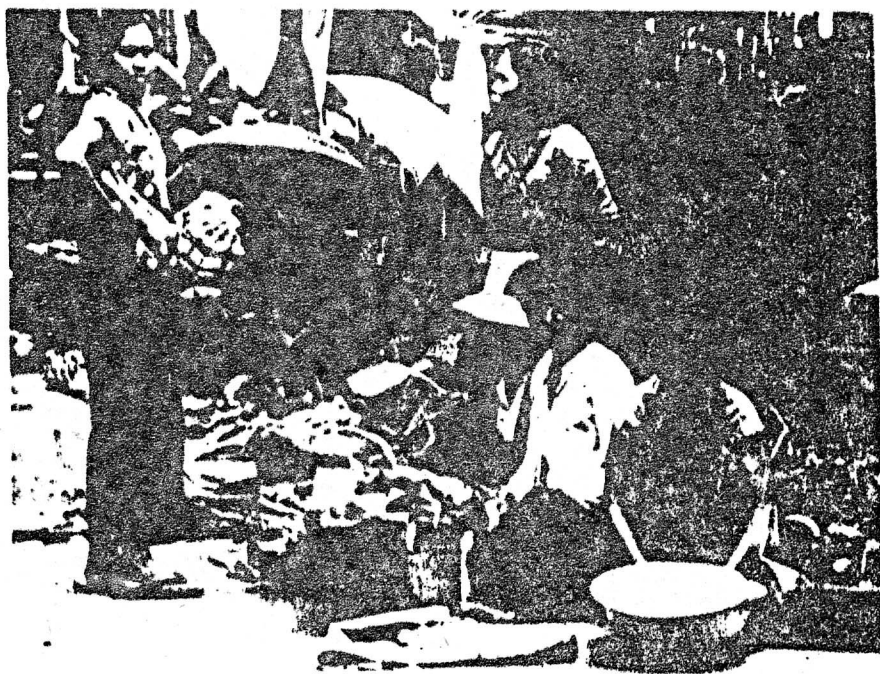
ROAD



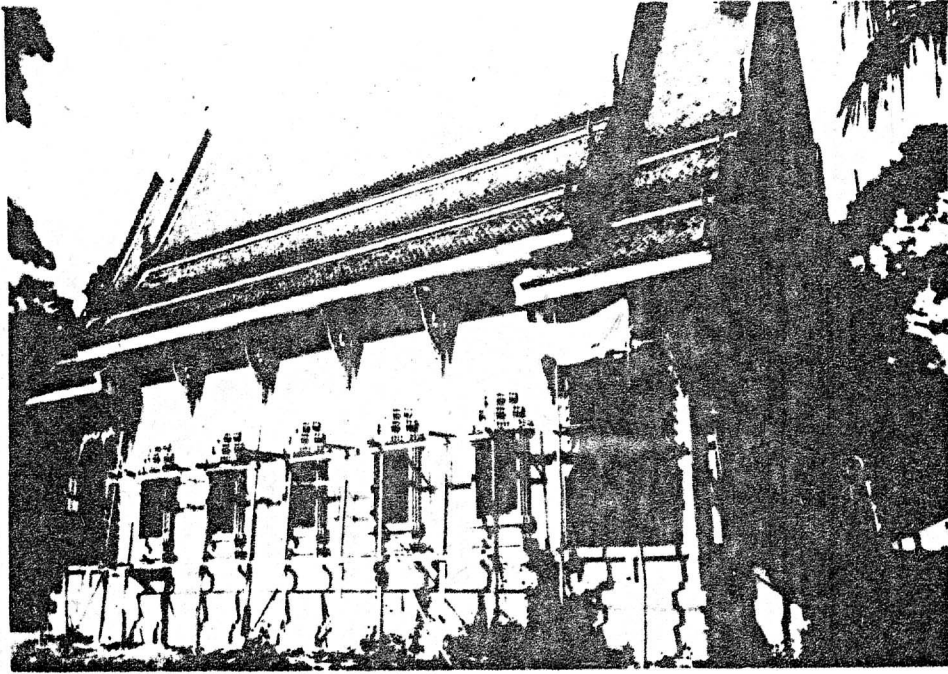
WATER RESOURCE



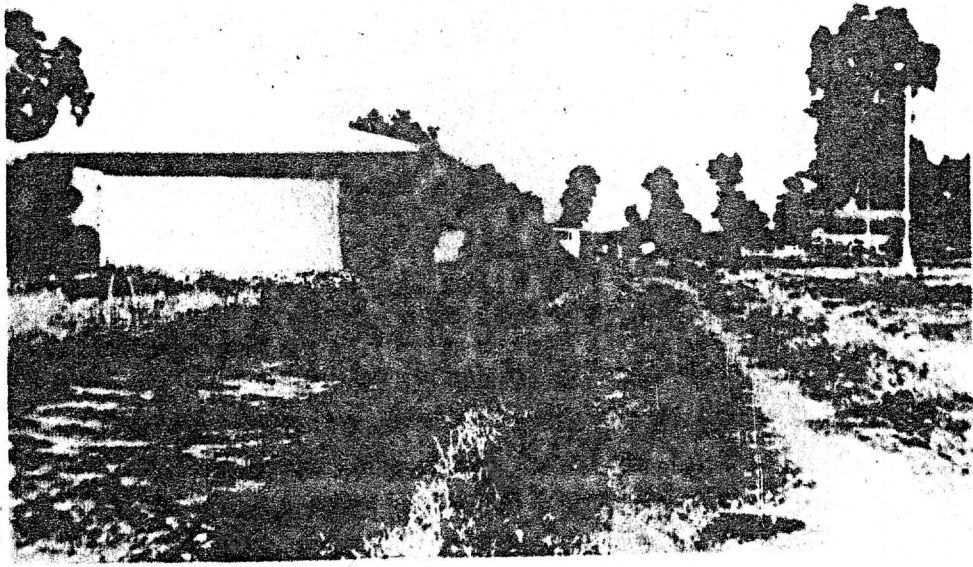
CHILDREN HEALTH CARE CENTRE



MARKET PLACE



TEMPLE



SCHOOL

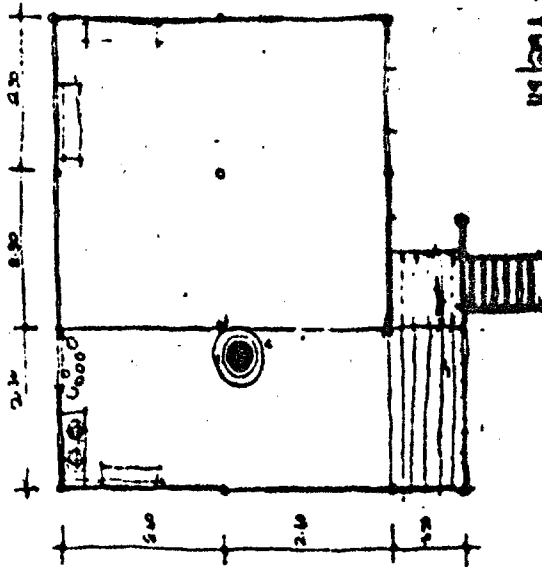
2.3 Present Housing Situation

A general picture of the present rural housing situation in the three regions appears as;

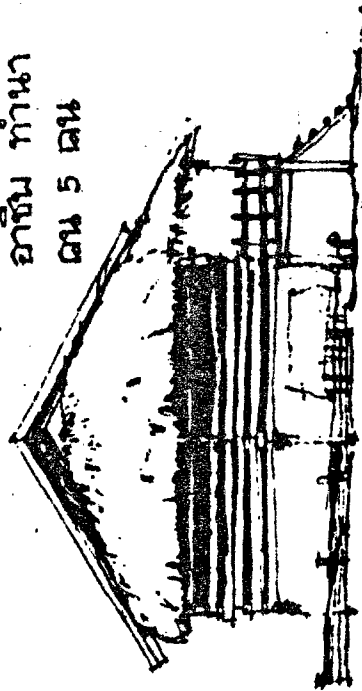
a) Existing house's type.

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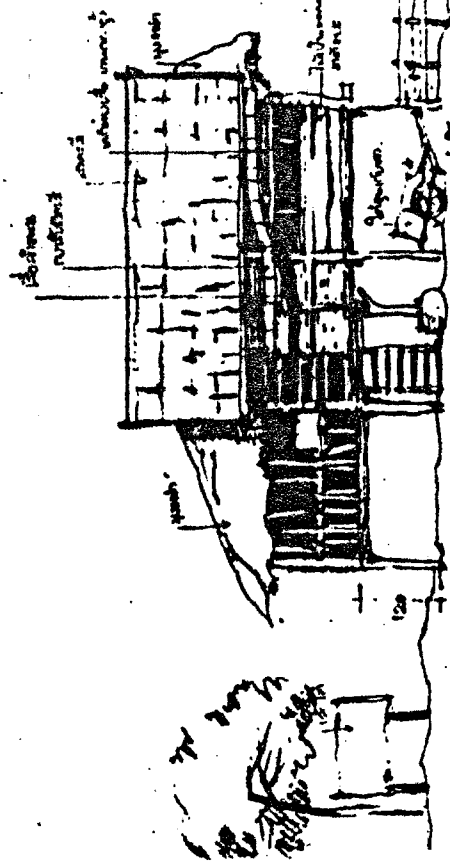
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ต. 5 ต.น



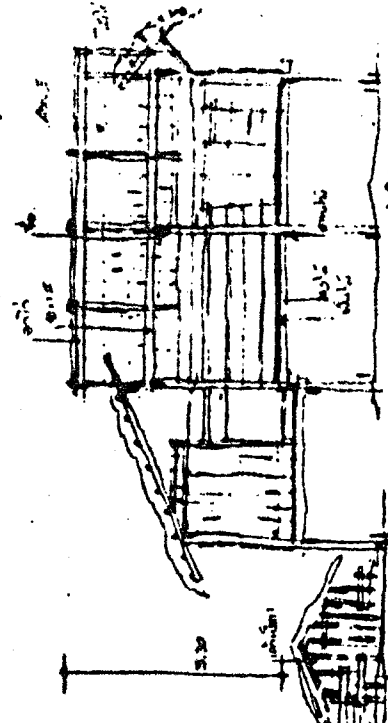
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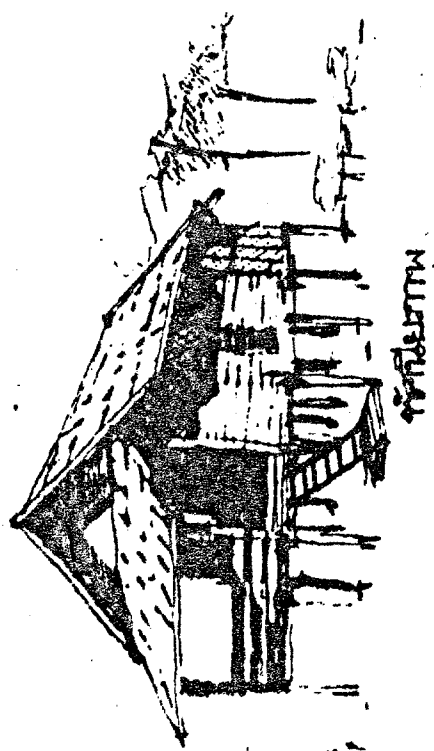
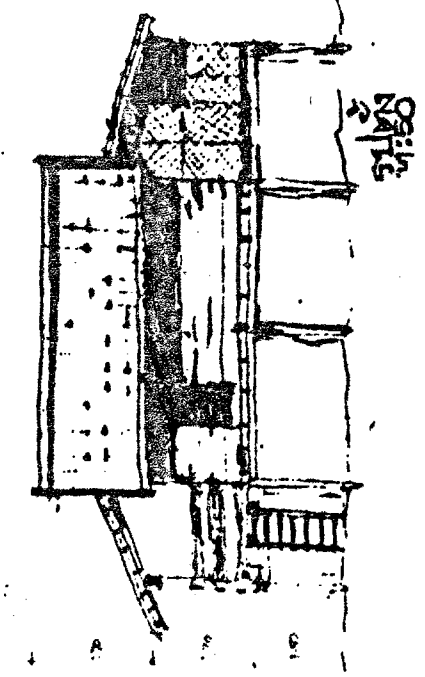
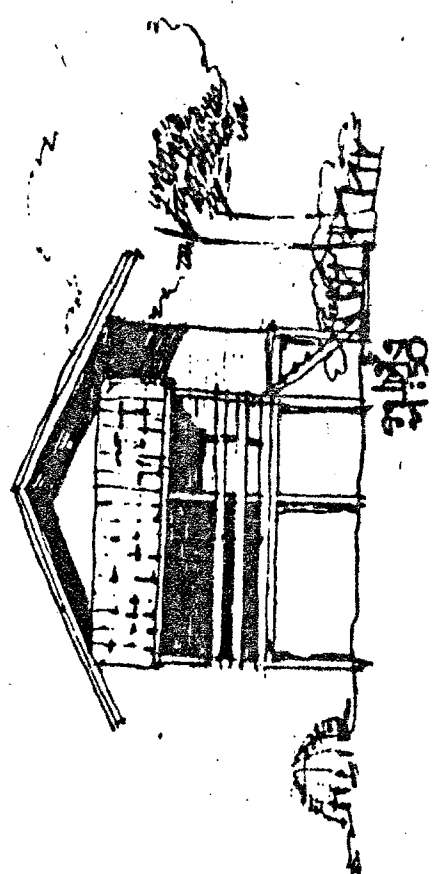
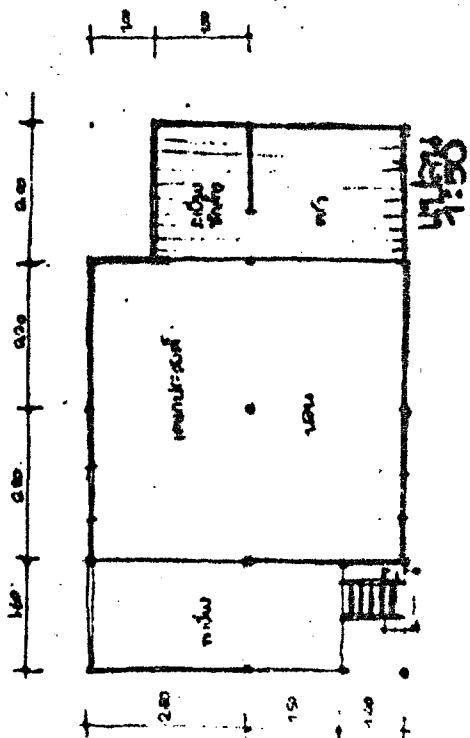
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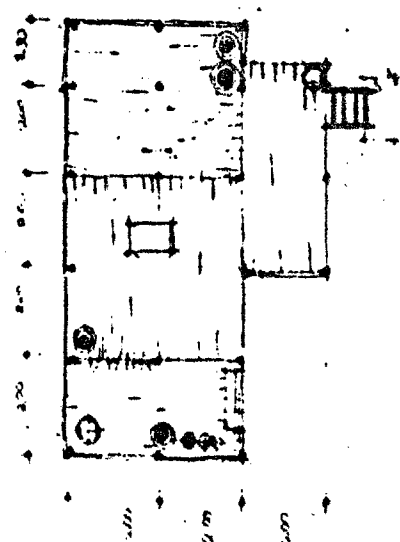


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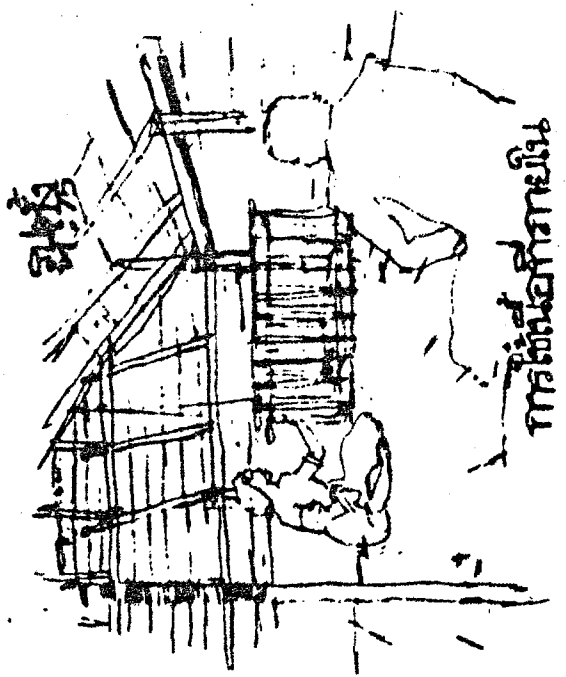
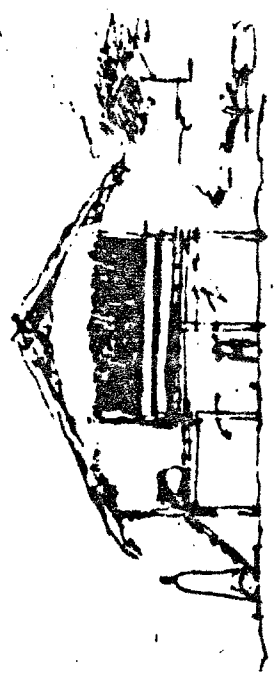


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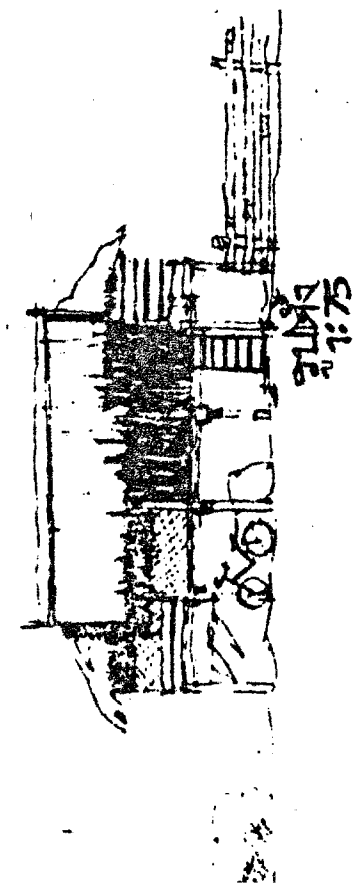
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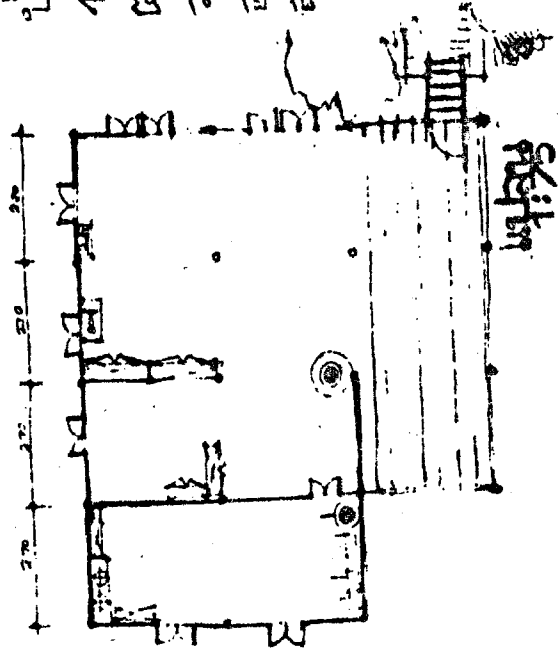


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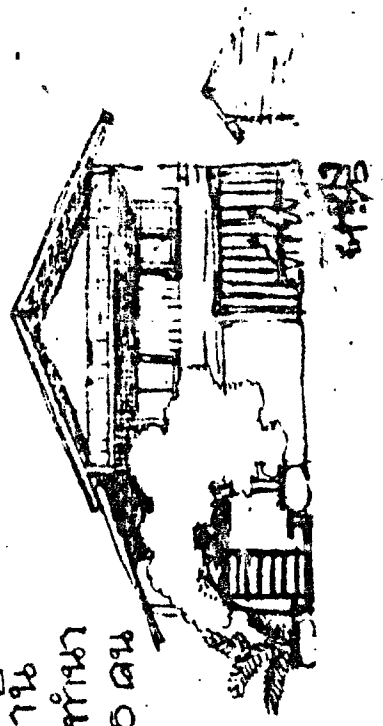


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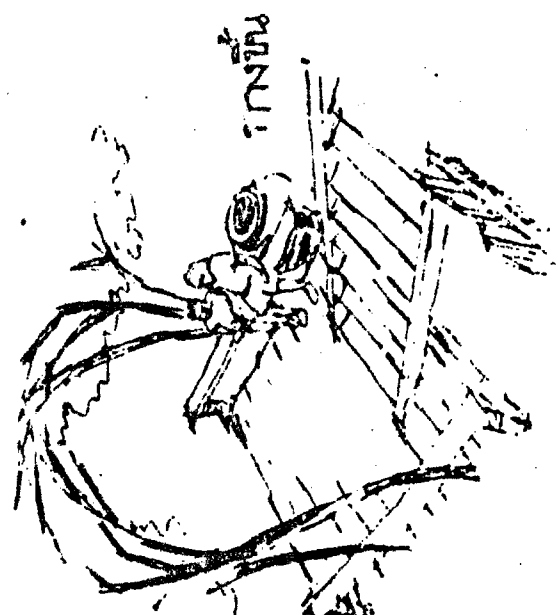
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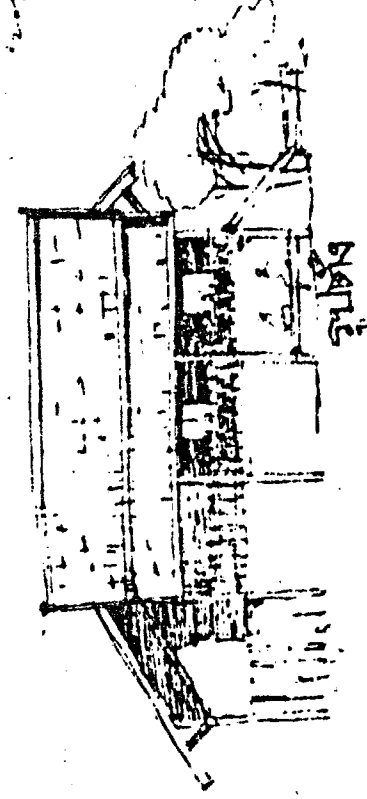
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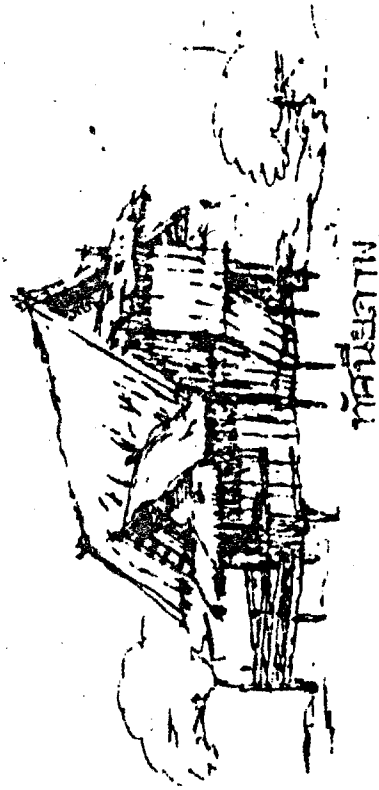
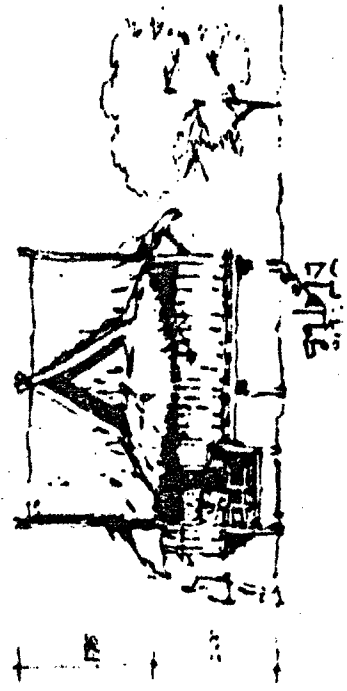
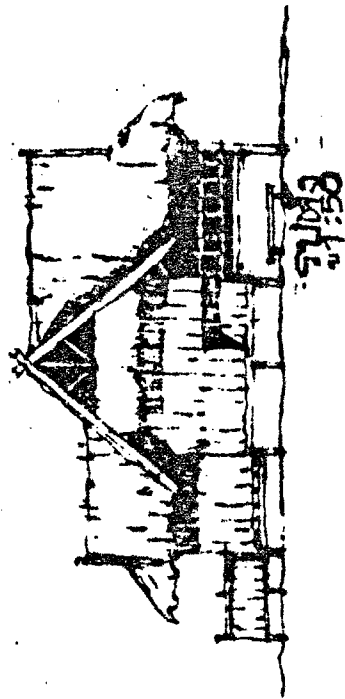
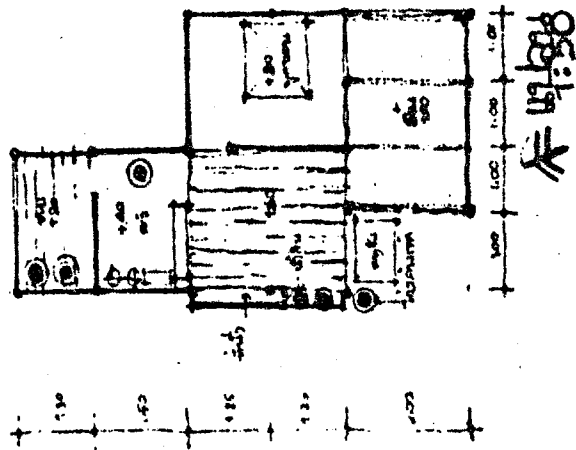


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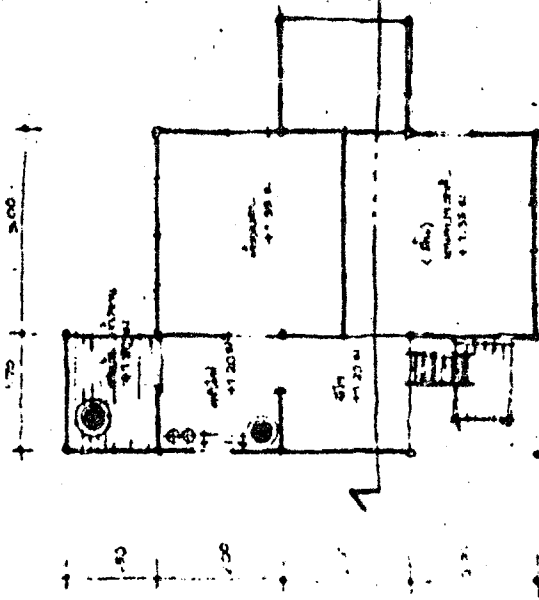


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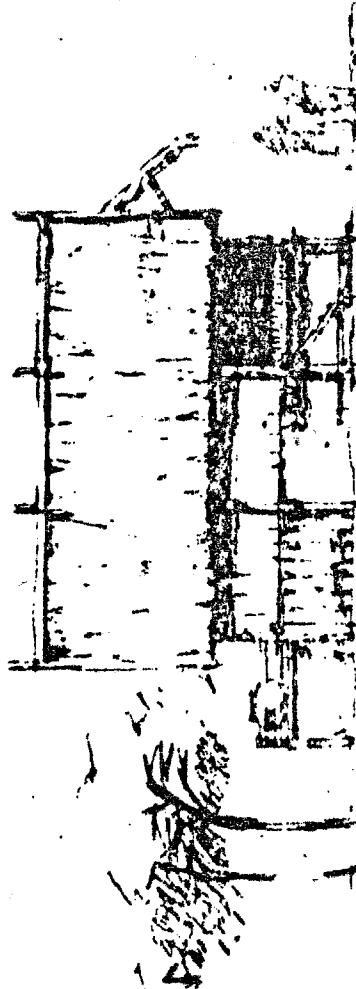
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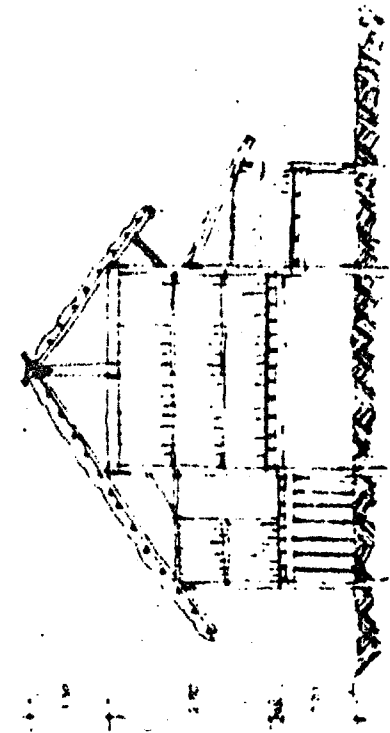
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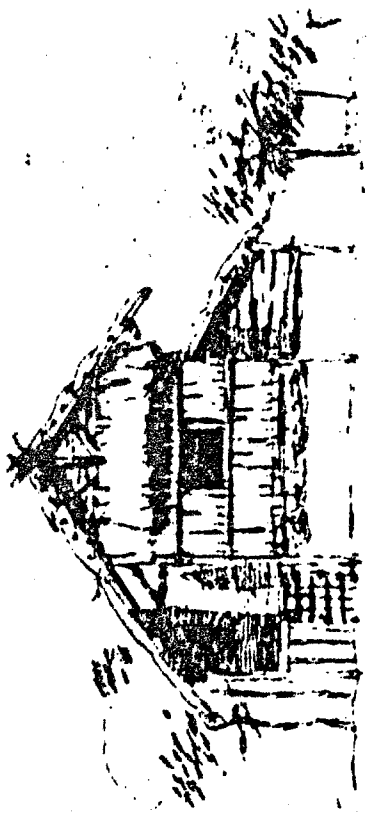
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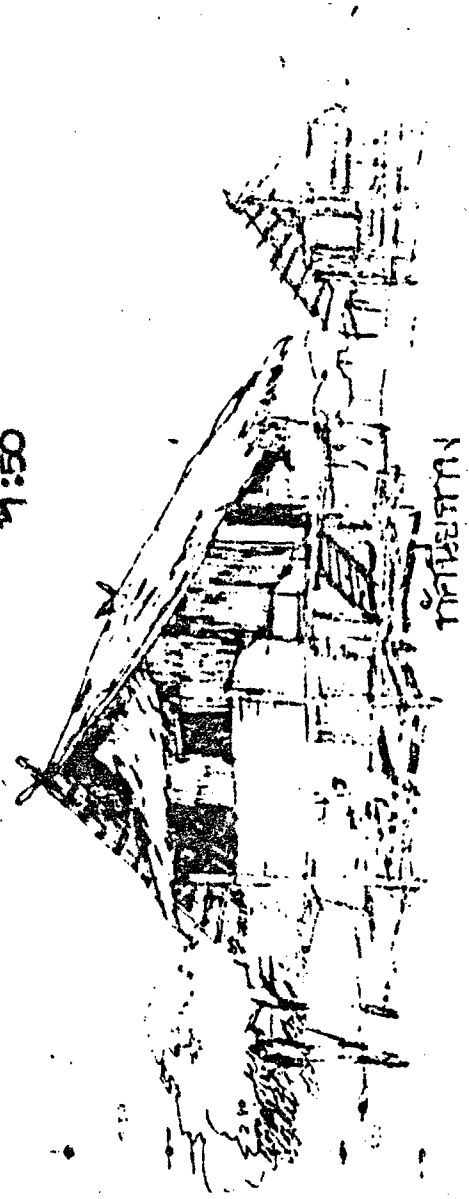
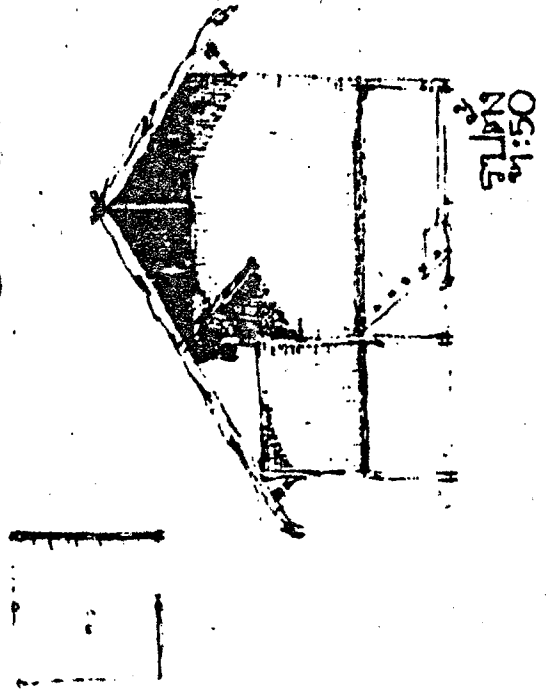
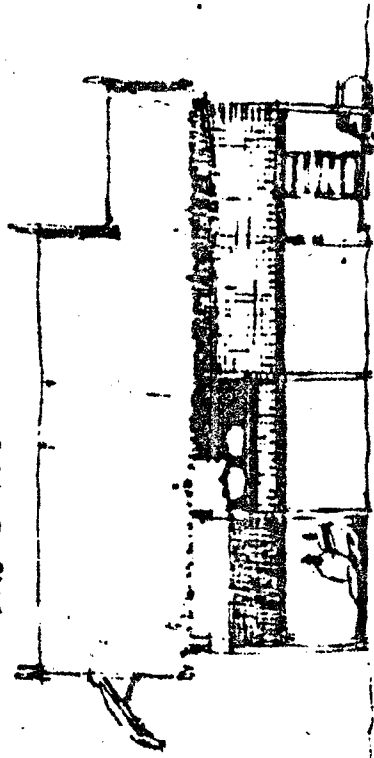
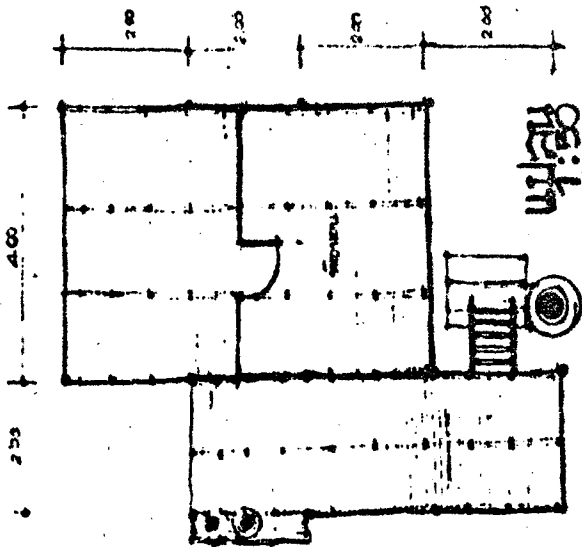


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b) Typical design and layout

Rural houses have 6 typical designs (as shown in Table 2.1 while Figure 2.1 shows the regional distribution of the 6 designs. Design Type 1 is most common in all the regions. Its popularity is much higher than the second most common design i.e., Design Tupe 2. Clearly, Design Type 1 reflects to a great extent, indigeneous Thai architecture which indicates that the traditional Thai housing cluture is still firmly rooted in rural society. Any attempt to introduce non-traditional designs should be fully aware of this fact.

Table 2.1 Percentage Distribution of Rural Houses According to their Design Types.

Design Types	Northern Region	Northeastern Region	Southern Region
Type 1	68.4	52.4	61.7
Type 2	1.9	6.7	2.6
Type 3	0.7	1.3	3.6
Type 4	11.6	16.1	15.8
Type 5	5.8	4.7	9.2
Type 6	11.6	18.8	7.1

Figure : Typical Designs of Rural Houses.

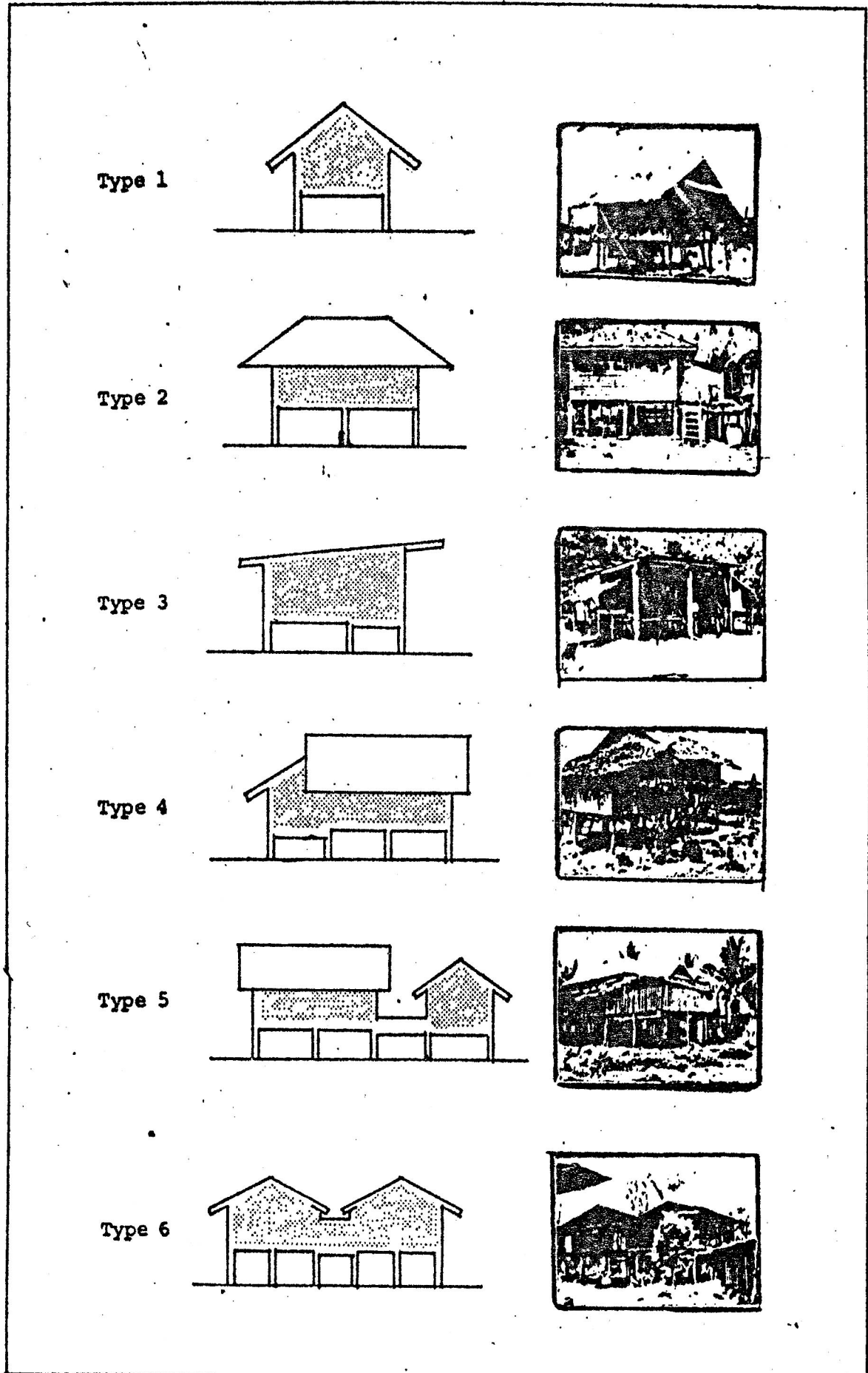


Figure 2.2 shows the typical layouts of rural houses, while Table 2.2 shows that Layout Type A is most common in the 3 regions especially in the northeastern and the southern regions. The Simple rectangular and square plans, with or without terrace, are also commonly found.

The simple designs and layouts of most rural houses, as discussed, reflects the simple style of daily living in the less complex agrarian society. It also indicates adequate space according to needs in combination with socially accepted economic considerations.

Table 2.2 Percentage Distribution of Rural Houses According to their Layout.

Layout Types	Northern Region	Northeastern Region	Southern Region
Type A	13.5	18.1	18.3
Type B	28.4	8.7	11.2
Type C	29.6	46.3	49.2
Type D	14.2	10.7	8.6
Type E	5.2	5.4	1.5
Type F	3.9	-	4.6
Type G	5.2	10.7	6.6

c) Functional Components

Rural Houses in the northern and the northeastern regions are normally elevated from 1.50 to 2.50 metres above ground. For the southern region, elevated houses are less common than in the other two regions. Space under the houses is normally used for keeping animals (most common in the northeastern region), resting, and making handicrafts. Table 2.3 Show the functional components of rural house in the 3 regions of Thailand.

Table 2.3 Functional Components of Rural Houses.

Functional Components	Northern Region			Northeastern Region			Southern Region		
	A	B	C	A	B	C	A	B	C
I. Living Space									
1.1 Privacy Living Space									
- Partitioned sleeping area	49.5	18.5	3.7	38.1	25.3	3.6	48.9	16.3	2.7
1.2 Partial Privacy Living-Space									
- Sleeping area in the multipurposed area	50.6	14.0	2.8	61.9	19.8	2.8	51.1	13.6	2.3
1.3 Non-Privacy Living Space									
- Multipurposed area	95.5	31.17	4.5	91.1	34.18	4.0	98.7	29.3	3.4
- Terrace	82.0	11.5	2.3	58.2	12.1	1.7	64.2	10.8	1.8
II. Service Space									
1.1 Living Service Space									
- Kitchen	98.1	10.3	2.1	97.6	11.1	1.6	98.0	11.2	1.9
- Indoor bathroom - toilet	7.4	-	-	5.5	-	-	10.6	-	-
1.2 Agricultural Service Space									
- Silo in or annexed to the house	15.4	-	-	10.0	-	-	29.6	-	-
- Animal barn under the house	19.7	53.4	10.7	53.4	-	-	5.6	-	-
- Handicraft making area under and on the house	14.7	-	-	15.9	-	-	2.7	-	-

Note: Column (A) = Percentage of houses in each region having that functional component.

Column (B) = Average total space of that functional component.

Column (C) = Average per capita space.

Short Report on The UNCHS-KULeuven Workshop
Held at Rama Garden Hotel
Bangkok, Thailand, December, 1981

by: Mr.Poonperm Wattanawongkiri

Personal Works

o One of the activity of The Building Research Department (BRD)/TISTR is to responsible for the development of low cost housing particulary for the rural sector. The programme is emphasis on the study of development pattern, working process, development of low cost building materials, and appropriate building technologies which aiming at simplify methods to be understand and able to carry on by the unskilled rural people.

o Being the staff of BRD/TISTR my responsibilities on the TISTR's Housing Projects are as follows :

1. Working as a project leader of the Rural Housing Development Project (RHD) which is now undertaken in the 3 main areas namely, Land Reform area, Saraburi Province, Army Region 1 area and the remaining villages which suppose to be responsible by NHA, These project areas are conducted in collaboration with NHA as mentioned above and the other cooperative bodies.
2. Responsible for the Demonstrations and Training Programmes, for the village people as well as the motivators in contributing to housing improvement emphasizing at technology transfer to introduce improved building materials and construction method; to upgrade skill labours to carry on construction management by means of self-help housing approach, and to stimulate village people to participate in the establishment of community organization.

3. Taking part in project's evaluation to determine and to assess the efficiency of the project's inputs and operating details, preference of the people on the working process, building materials, building construction method and the other project's inputs. The results of an evaluation will provide feed back for the other similar projects.

Workshop Evaluation in Relation to Personal Works.

o According to the specific objectives given by UNCHS/PGCHS, this workshop have structured 3 main elements including formal presentations in lecture type, site/project visits and group discussion.

o Formal presentation: This element seems to be the most successful achieve objective of the workshop in terms of stimulating invonative ideas and practices in housing; and updating and upgrading critical thinking on key housing issues. The lectures provide appropriate ideas on housing projects. The suggestion on FORM and SPACE as a TISSUES and the existing tissues express function which can be one of the best concept for housing improvement. Ideas should be developed whether we should follow the existing tissues to utilize existing elements or to intervene or change the original tissues which will relate to the problem, in various aspects such as environment; investment cost, etc. In the aspect of RESOURCES for Housing Impr vement, human and natural resources both local and external means are constrained to conditions that cannot be easily changed, therefore, some key consi-derations (relating to the goal of Housing project which usually mentioned the "to improve the standard of living") should be made whether it is possible to provide standardized methods and do people really need them, etc. INSTITUTION is the other important element relating to housing issues but it is a pity that we did not talk much about this, may be due to the ambiguous concept of the workshop for both architectural and engineering basis. It can be considered that architects, engineers, and technicians working in the field generally do not know much about the

institution aspect, so it will be very useful if more knowledge about the institution will be given during the lecture. Group discussion about institutions only focus on the Government institutions, but actually, the rural sectors or the community organizations also play the important roles in the development programme when the government agencies do not have enough money and manpower to completely allocate and participate in the housing projects.

o Site/project visits and Group discussion. 3 small groups were divided for an in-depth site visits and accomplished group discussion. The 3 groups were ; FORM GROUP, RESOURCES GROUP, and INSTITUTION GROUP. The project visited can be classified into 2 main groups, firstly the projects which nearly or completely finished such as sites and services project at Rangsit and building together project. Secondly the projects under construction such as sites and services project at Tung Song Hong. The second projects enable us to explore and study those realities about their situation, the obstacles they are facing and how the responsible agencies/companies have seeked the ways to solve the problems confronted by them. Hence, from the group discussion concerning with Tung Song Hong Projects, consideration has been made and could be concluded that the project management is poor, the waste of building material is enormous, the construction cost is to high for low income family, the project is very much delayed, etc. So we can say that we learn this project by mean of mistake. For the project that completely finished, we could see only the final output, whereas, The FORM GROUP and INSTITUTION GROUP could study some aspects, but it is difficult for the RESOURCES GROUP to learn the actual situation. The government's policy for the construction of walk-up apartments and a sites and services project for the low income family is quite confusing for me and the other planners, as the government had to pay very large amount of budget to subsidize the project but those housing units intended for the low income family will finally be sub-leased to the middle or high income people. The low income group will leave the place provided for them and create another new slums. It might be some mistake of the policy. If it is possible

for the Government agencies to intervene and participate more in the existing housing TISSUES and do not change too much their circumstances so we can completely say that we successfully do those projects for the poor.

Some weak points of the site visits and small group discussions were :

- The waste of time to get the information as required.
- Inadequate information and the length of time spent on discussion about the actual or existing situation thus leaving insufficient time for evaluation and ideas and experiences exchange among participants.
- etc.

Future tasks

Theoretical and practical expertises on rural housing development will be extended to the other cooperative agencies responsible for the rural projects (such as the Rural Job Creation Programme, Cooperatives Promotion Department, etc.). In the next 2-3 years, after the evaluation programme, the Master Plan for each system will be conducted in collaboration with the other cooperative bodies.

Handout No.1 TISTR's " Programme on Rural Housing Improvement in Thailand " is attached to this report.

Short Report on The UNCHS-KULeuven Workshop
at Rama Garden Hotel
Bangkok, Thailand, December, 1981

by : Mr.Chatsiri Thanmarom

A. Present works

research on activities of TISTR at present include improvement which emphasis on the area of land reform in the Army regions and the remaining areas of the villages in Thailand. These areas will be under the responsibility of NHA in the future (which suppose to be responsible by NHA in the future)

The research programme has been conducted in the following step Collection and compilation of primary and secondary data by the following means:

- a) Data collection in both secondary and primary sources. The latter source has been conducted in 4 main issues as follows.
 - 1) Discussion with the local government officials and the rural committee in each specific case area,
 - 2) Survey on topology and draw a base map.
 - 3) Exploration on the soil condition for building construction material.
 - 4) Interviewing village people and completion of questionnaires by interviewers.
- b) Data interpretation and analysis for the assessment of housing needs/demand/soil condition and socio-economic aspects such as income/expense and leisure time of the respondents.

- c) Demonstration on building technique/using local material such as soil-cement. Within the concepts of "Learning by doing" (likewise, the set-up of community organizations and local government agency agreement on developing programme).
- d) Evaluation of feed back on people preferences on building materials especially soil-cement, housing form, and their reasons.
- e) Establishment of Community organization to carry on the programme.
- f) Agreement made among government agencies for project implementation.

B. The evaluation of the workshop.

The work shop's activities including general lecture, site visits and experience sharing in group discussion covered the existing works as mentioned above in some aspects. The general lecture was most interesting and can be applied widely to our present work. Lecture given particularly in the field of housing enables the participants to develop a comprehensive understanding of the total housing process and capabilities to evolve innovative and appropriate approaches to housing development varying from policies and programmes on rural projects implementation with the application of field works and those theories provided such as the key issues on the Form, Resources and Institution.

According to TISTR's experience on rural project the "Form" of house must be integrated between the designer and the village people in term of the concept of housing design, living pattern and suitable use of local materials.

Community facilities relating to public buildings such as health centers schools, etc. seem to get less response from the village people concerning building designs.

The most difficulty in planning process deals with the people's preference to stay at the places where they belong and their dislike to move to the other settlement areas even in the land reform project. Such condition compelles the planner in planning process.

" Resources " apart from the suitable soil condition, availability of block making machine, labour intensive and outside resources such as technical skills, transportation facilities, other building materials or cement, etc., another limited resource unrealized by many government agencies concerned is the " time " available for construction. The suitable time for the implementation plan should be after crops season of each locality which varies from place to place. The village people are willing to improve their houses and the other public buildings at their leisure.

" Institution " is the last but not lease issue in rural housing improvement programme especially in the scale of community. The rural committee plays a very important role on community development. People organization is needed for the effective motivation in every step of development programme such as the construction of health care centre and other public buildings in each community. On the other hand, there is less relation between individual house improvement and out side institution in the scale of house.

For " Institution " in the scale of public agencies and NGO in rural housing improvement, in order to work with people, more information are needed by those staff members of both groups in term of the basic concept of "Helpthem to help themselves" as very few staffs in very few agencies can understand and do it in the right way.

C. Future tasks.

The overviews of the present and future tasks are shown in tabulation hereunder :

Diagram of Research Activities on Rural Housing Improvement in Thailand

Duration	Phase	Objectives	Activities	Conclusion/Recommendations
<p>up to 1985</p> <p>Present task</p> <p>1 Year</p> <p>3-5 years</p>	<p>I</p> <p>Preliminary study on the existing rural housing development pattern and trend.</p> <p>II</p> <p>Demonstration and Testing of The improved pattern</p>	<p>To find out the problems, needs and constraints of village people e.g. shortage of building materials, unavailability of technical know-how, low ability to pay, etc.</p> <p>To transfer technology of soil-cement brick production and construction procedure to village people</p>	<p>- Survey of available building materials as a substitute of wood</p> <p>- Upgrading technical skill and ability to manage the project by means of mutual help.</p> <p>- Improving rural economic base.</p> <p>Construction of soil-cement houses under the mutual help housing programme at the following locations:</p> <p>- 1979 at Chum-phung District</p> <p>- 1980 at Taphraya District</p> <p>- 1981 at 4 village in the First Army Region (in progress)</p> <p>- at 3 villages in Land Reform area (in progress)</p>	<p>- Consideration should be made for the testing of housing programme by means of mutual help.</p> <p>- Rural committee should be set up to manage further housing construction.</p> <p>- The government should provide :</p> <p>1) technical assistance and skill training through motivators and The Community Development Department's Staff</p> <p>2) rotating funds for housing improvement in term of materials on loan.</p> <p>- Implementation of mutual help housing programme should be extended to soil-cement production stage only.</p> <p>- Construction stage should be done independently by the village group concerned</p>

Duration	Phase	Objectives	Activities	Conclusion/Recommendations
<p style="text-align: center;"> </p>	<p style="text-align: center;">III</p> <p>Master plan preparation for the whole country</p>	<p>To set up implementation guidelines as appropriate to different locations in rural area.</p>	<ul style="list-style-type: none"> - Classification of housing delivery systems e.g. Forestry Village, Cooperative estate village, self-help housing estate and others. - Adoption of implementation plan for each system. 	<p>The rural housing improvement's elements should consist of:</p> <ul style="list-style-type: none"> - motivators - effective manual as a guideline for construction management - Villages Development Plan. - Provision of rotating funds. - Training Programme. - Rural committee to manage the project.

BE 37267

ศูนย์ความรู้ (ศคร.)



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