

ALTERNATIVE MEANS OF SHELTER DELIVERY IN DEVELOPING COUNTRIES:
A Cooperative Approach

by

Felton L. Lamb Jr.

B. Arch. University of Arkansas

1976

SUBMITTED TO THE DEPARTMENT OF ARCHITECTURE
IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR
THE DEGREE OF

MASTER OF SCIENCE IN ARCHITECTURE STUDIES

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

May 14, 1982

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Signature of Author

Department of Architecture
May 14, 1982

Certified by

Dr. Eric Dluhosch
Associate Professor of Building Technology
Thesis Supervisor

Accepted by

Professor N. John Habraken

Rotch

Chairman, Departmental Committee on Graduate Students
MASSACHUSETTS INSTITUTE
OF TECHNOLOGY

JUN 2 1982

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A B S T R A C T

Since the beginning of time man has struggled to provide for three basic human needs; food, clothing and shelter. The needs of the majority population in the area of shelter in our era has been neglected for too long. This situation must improve if the stability of the world is to be assured. The geographical location where the need is the greatest occurs most frequently in the less developed areas of the world. These areas have not participated profited from the rapid advancement that was effective in changing the social and economic conditions of the more developed world.

This thesis will examine the needs for shelter in developing countries and generate some possible approaches to solutions for shelter needs. First, there will be an overview of the shelter requirements that are facing the developing world. Next, it will look at those groups who are presently working in the development of shelter delivery, and develop criteria by which to judge their performance. This will be followed by a proposed strategy for one solution through the formation of shelter delivery cooperatives.

The rationale for cooperative shelter production will be discussed in terms of its advantages and disadvantage. This will be followed by a determination of how cooperatives may be organized with regard to the existing governing structures that already provides shelter. An examination of the possible systems and methods of construction that are best suited to cooperative efforts will be then presented. A case study of a construction delivery system employed in the Ivory Coast will give a real-world context against which to view the proposed method of resolving shelter needs. The conclusion will summarize the topic and give some future trends.

Thesis Supervisor: Dr. Eric Dluhosch
Title: Associate Professor of Building Technology

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Acknowledgement

A C K N O W L E D G E M E N T

I wish to express my sincere gratitude to Dr. Eric Dluhosch, my thesis advisor. His guidance, wisdom, and patience were a source of inspiration during the troublesome phase of the thesis preparation. His energy has been consistent throughout the organization and execution of my research and academic experience at M.I.T.

I would like to thank Dr. Edward Robins and Dr. Richard Robinson for their insight and knowledge as readers.

I also appreciate the information and documentation received from the staff and members of the U.S. Housing and Urban Development.

To my S.M. Arch. S. classmates I owe a special thanks, for their constructive criticisms and friendship. To all my other friends who have been supportive in a time when I had little to give or share, for this has taught me the true meaning of friendship, many thanks.

It is with special joy that I thank my parents, for their many kind and up-lifting words in my times of need but, most of all thanks for their love.

Introduction

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

HOW IS HOUSING PROVIDED?

The question of how shelter is provided is an age old problem. Throughout history man has attempted to solve the problem of shelter by the use of individual effort. However, a single individual seldom has all the skills and resources needed to acquire materials, produce the plans, and construct his own shelter in a modern manner. This approach has not been very effective in the past, nor does it appear to have much chance of success in the future. The increasing complexity of the dwelling makes the individual even less effective in providing his own shelter.

It is important to understand that, to a great extent, man has been providing the resources and building his own shelter since the beginning of history. Man has been constructing through collective rather than individual

efforts. This is a process that has been tested time and time again. This fact is evident in the many examples that are present even in the brief history of the U.S. (e.g., barn raising and community construction)

Thus, through an analysis of history we can see that the most effective way that mankind has found to deal with many problems that it had to face was and is to group together and launch a united effort to attain a desired goal.

When people join together they are able to maximize the abilities and strengths of every individual more effectively than each individual could for himself or herself without the group. Those that are weaker or less knowledgeable are either supported by the other members of the group or find roles compatible with the overall aims of a common goal. This is the organizational basis for the structural formation of the cooperative.

This form of organization has existed for many centuries. The major problem with the implementation of this concept into the shelter delivery system is that those previous cooperatives have usually operated outside the market economy. The individual members of any given rural community have long contributed what we might consider special skills to the production of shelter for the betterment of the entire community. For example, there were people who specialized in applying the wall finishing while others wove the roof with either palm fronds or thatch. Still others constructed the bamboo armature for the application of the mud infill which would follow. Each of these tasks required different skills and this simple division of labor let each person make his or her contribution in such a manner enabling each to offer the community their full potential. By allowing this mechanism to operate, the community received the maximum benefits and

the individual enjoyed the greatest sense of satisfaction. This thesis is an attempt to demonstrate the implementation of a cooperative shelter delivery system in the context of a developing country, the Ivory Coast. I selected the Ivory Coast not only because it is typical of several "developing" West African Countries, but also because of my first hand experience living and working in the country for two years.

Chapter one

C H A P T E R O N E

BACKGROUND INFORMATION ON THE IVORY COAST:

The following information is provided to give a contextual background for the remaining portion of the thesis. The information is grouped into four sections: (1) Location and climate, (2) Historical information, (3) Economic data, and, (4) Cultural and social conditions.

Location and climate: The Republic of the Ivory Coast is a country located on the west coast of Africa. It is bounded by Liberia on the west, Guinea, Mali and Upper Volta to the north, Ghana to the east, and to the south by the Gulf of Guinea. The total land area of 124,503 square miles, which is slightly larger than New Mexico. The country is located approximately 6° north of the equator. The terrain has two distinct types; First, is the tropical rain forest which is dominate in the

southern half of the country. Second, is the savanna or grasslands which are prevalent in the northern half of the country. The climate is hot and humid, with a slight temperatures ranging from 14° to 39°C (57° to 103°F) (see map on page 21)

According to the 1975 official government census the Ivory Coast has a population of 5.5 million (though other sources state eight million as being more accurate). Abidjan the capital city has a metropolitan area population of over a million people. The majority (68%) of the population live in the rural areas. Of the total population 20% is constituted by workers from neighboring countries. There is also a large French expatriate community population (50,000), and in fact this community has doubled since the countries independence when there were only 25,000. The Ivorian population is small in comparison to other West African countries.

Though the infant mortality rate is decreasing and life expectancy increasing population does not present a critical problem for the Ivory Coast as it does for some other African countries.

Historical information: The Ivory Coast was a French colony from, 1893 until August 1960 when it officially gained independence. At that time Felix Houphouet-Boigny was elected president. He has served since then without formal opposition, until the election of 1981 when other candidates were first allowed to campaign against him.

The political stability of the country is far greater than many other African countries. This stability is due to a great extent to the president's ability in creating a strong sense of national unity among the 66 ethnic groups.

In 1977 Houphouet-Boigny made several major changes in the government by replacing the ministers of; Finance, Economic Planning and Foreign Affairs: These ministry

changes and some additional laws were all measures against corruption and speculation in commodity. These efforts on the part of the president and other members government were initiated to insure the continued political stability.

The government has undertaken a program to reduce the number of foreigners in key roles in government and industry. This "Ivorianization" policy will affect nearly every aspect of country. Efforts are being made in the university to train Ivorians for positions that are essential to growth and stability of the country.

Economic data: Since independence the Ivory Coast has developed an economy based largely on the production and export of agricultural products. The country is the world's leading producer of cocoa, the third largest producer of coffee (after Brazil and Colombia), and the largest exporter of timber in Africa.

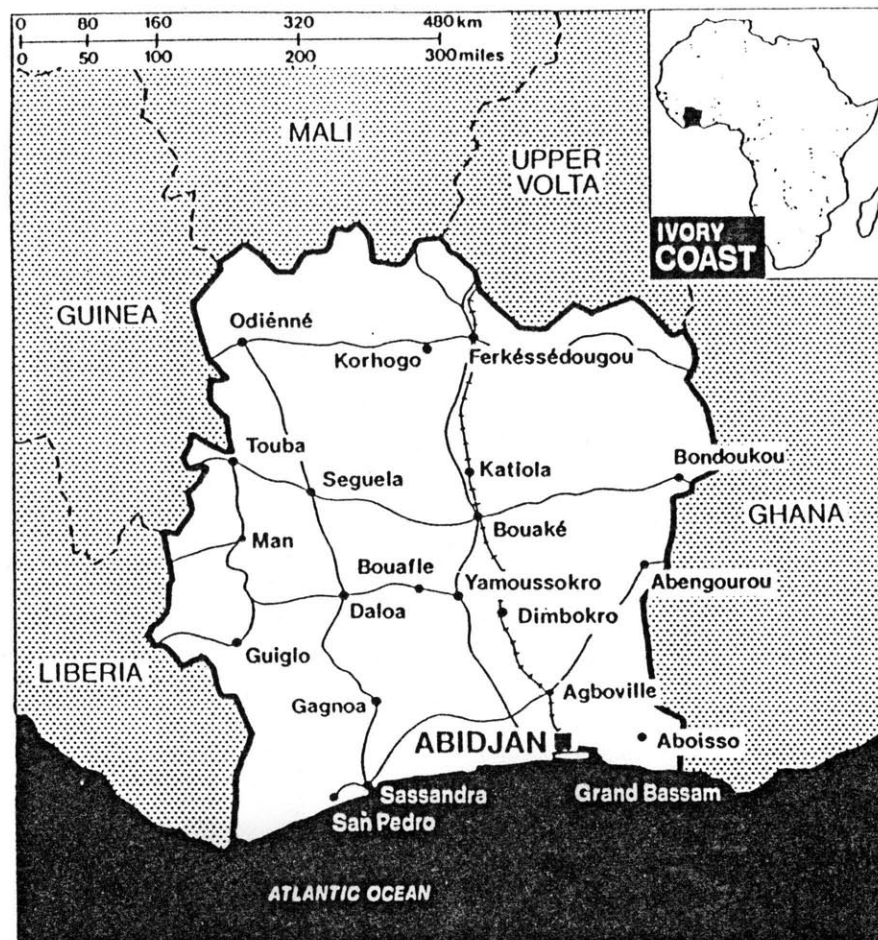
These commercial export activities have allowed the country to develop at a rate of more than 7% per year since 1960. The growth rate is far above those of most developing countries (normally 3% to 4%). This rapid growth has caused some difficulties in the expectation of the population, who feel that their living standards should be significantly improved. The recent depression in cocoa prices has caused some reduction in the growth, but it still remains at 3%. Oil finds off the coast will be able to supply the domestic needs but are too small for any real export. Through favorable incentives the country has increased its industrial development to 13% of the gross domestic product. This industrial development relies heavily on French investment. This underscores the Ivory Coast dependency on foreign money, especially from France, for investment in industrial projects. This dependency has created a situation in which the country's

development was hampered because scarce foreign exchange is needed to finance the Ivory Coast's portion of the projects.

Cultural and social conditions: The influence of the family structure must be considered in any building project in the Ivory Coast. The major organizing element of the country is based on the family or an extension of it, (i.e., clan formation, village structure, ethnic groupings). Family origin is occasionally important to the effective operation of a particular office whether elected or appointed. Should one attempt to minimize the importance of the family, problems will likely result. In some cases entire construction projects have been stopped because of a conflict relating to the family and its views of the correct method of project operation. Often times when individual conflicts arise, they quickly escalate into major confrontation with the individuals' families.

In one sense the responsibility of the individual is extended. When one part of the family has a problem the whole family participates in resolving it. This interrelation and support would provide a good base for the development of a cooperative.

The strong family structure offers some advantages to the cooperative because of its interrelation with the entire cultural structure of the society. Traditional family units have provided assistance to each other in a cooperative manner in the past. This cooperative knowledge can be used to help institute other cooperative endeavors. This past experience with cooperatives does not negate the necessity of educating and training the cooperative members, these factors remain essential to the successful implementation of any cooperative program.



THE IVORY COAST

(source: Business Internatioanal SA
Research Report)

Chapter two

C H A P T E R T W O

THE IVORY COAST CASE:

This case study has been used to demonstrate the implementation of the idea of cooperative in the context of a developing country. It shows the how and why of initiating a cooperative approach to construction.

I was in the Ivory Coast as a research architect for two years as of 1978, working in the Centre de Recherches Architecturales et Urbaines (CRAU). The research that I directed primarily focused on the restoration and renovation of the old colonial capital city . This work was quite interesting, but was not the kind of activity which I felt would be of most benefit to the real needs of the people, since I joined the Peace Corps for the sole purpose of becoming involved in work which would benefit the majority of the country's people.

Of the many projects proposed to me, upon my arrival at CRAU, one particular project seemed to meet my interests. This project dealt with the implementation and improvement of local building materials.

The intention of this program was to decrease the country's dependence on imported building materials and provide improved living condition for it's people.

Another research program, underway in the office, was to make a complete survey of the villages located in the central regions of the country. In the course of this project, I participate in several field study trips to the area being investigated. In observing the villagers' activities, it became apparent to me that there were many unaddressed needs, in terms of shelter and community facilities.

One of these needs was the apparent lack of a permanently covered village market building, as the village

conducted its market activities in the open air unprotected from harsh climatic conditions of the region.

New interest was generated in rural development through a rural development program sponsored by the Ivory Coast Government, the program known as, FRAR (Fonds Regionaux d'Amenagement Rural), provides financing for a portion of the construction of vital community facilities. The amount of support depended on the region of the country and existing available resources. Gbegbessou was a village center, fitting the conditions and purposes of the program well.

The commercial activities of Gbegbessou called for a physical structure to provide shelter during the market activities. Up until the present the villagers had used a large open space for their market activities. In a meeting with the villagers and the village chief, the idea of possible government support for construction of a covered market was presented.

In addition to the support from the Ivory Coast government the village was also eligible for financial aid from United States Self-help funds. The support provided money, could be used to finance up to 75% of the construction cost of the project. The villagers were enthusiastic about the idea. For a long time they had wanted to build a structure that would provide a covered market location for the village, but until that time they lacked the means to do so. But, first background information was collected and project data forms should have been completed, and then the proposal would be submitted to the U.S. Embassy. After my office made a presentation and had long discussions with the villagers they were provided with the necessary background information and forms to carry out the initial steps for the project proposal to be submitted to the embassy.

In a subsequent communications with the village, about three months later, I learned that nothing had transpired since my previous meeting with the villagers. The proposal had been neither completed nor submitted to the embassy. In the interim I had discussed the case with the counselor at the U.S. Embassy. He was very interested in the project and anticipated the proposal's arrival. We waited another two months, before the completed project proposal was presented to the embassy by the village council. Once the proposal was signed, the embassy was able to act on the matter quickly. The proposal was processed in less than a month. This allowed for preparation, for making plans and organizing the start up of the project. Later, there was an official document signing ceremony, granting the funds to the village. Several of the village authorities were present for this event. Because the region was included in the area covered by

A.V.B. (Autoritee de la Vallee de Bandama, a rural development extension service) the villagers were able to use the additional resources available through this development extension service, which normally provided support for coffee and cocoa cultivation in the area. By associating themselves with the market project the rural development extension service (A.V.B.) gained additional prestige by working through local agents. For the villagers the extension service provided logistical support, such as trucks and equipment, not otherwise available.

Thus, four organizations participated in the project: (1) the CRAU, who provided technical assistance, (2) the A.V.B., who provided the logistical and supports systems, (3) the U.S. Embassy, who provided most of the funding, and (4) the villagers who provided both skilled and unskilled labor and much of the local material.

By coordinating these four different groups together a covered village market was created. In the beginning, it was not difficult to get people motivated to build something that would eventually meet some of their own needs. Having had contact with one of the United Nation project there in the Ivory Coast, I saw the possibility of utilizing a precast element construction system for housing.

This system consists of small scale elements which can be produced with very low level technology. Foundation elements of approximately 60 cm by 60 cm. are located on concrete bases poured in situ. Into these foundation elements, 390 cm long 15 X 15 cm columns are inserted. After the columns are aligned a small amount of cement is used to fix the columns in place and form stable connections. Wooden beams are placed on top of the columns. These beams consist of small

wood sections of approximately 7 cm X 30 cm, which are nailed together in different configurations for structural resistance. The beams support corrugated aluminum sheets making up the roof. Roof slope was practically eliminated to prevent lateral forces from developing in the roof structure. A slight slope was generated by bending the aluminum sheets. These sheets span the entire width of the building thereby minimizing the number of joints and roof penetrations. The major roof problem was to overcome the forces of uplift. The low roof pitch caused an effect similar to that of an airplane wing. This problem was addressed by securely attaching the roof sheets to the beams. Using this construction method it was possible to build the structure of the building entirely without providing the walls, or the concrete slab floor. These two elements represent a substantial portion of the cost of the building. Leaving out the slab and the walls

allowed the villagers to construct temporary walls from readily available and economical materials. It was assumed that, at some later stage, the villagers would replace these temporary materials with better quality materials. Finishing treatment was completed after the structure had been erected. Time demands on technical assistances were also diminished a great deal in this process. If all structural materials had been provided to the site, this portion of the work could have been effectively done, with expert technical assistance, in as little as three days. With such a short time requirement for a supervising team per project, advisory personnel can reach a far greater number of locations with their present staff. The advantage for the villagers and the local construction crews was that they were able to finish the remaining part of the structure at their own pace, and chose readily available materials. In addition, local

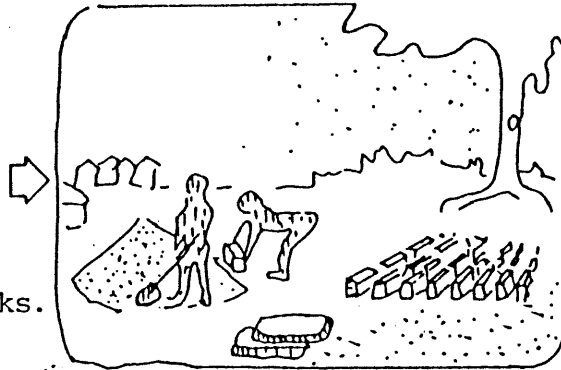
builders were able to take advantage of local price changes and use materials which would provide the greatest value for its intended use. In a typical case, where the roof structure is resting on bearing walls, required payments were often made late, and construction scheduling suffered accordingly. For example, it became necessary to build the foundation first, and then wait, and maybe within a year build the floor slab and the walls. Finally, the roof structure would be put in place, after about three years of work. The whole building could then be finished and the family would move in. With the proposed system, people could be sheltered within the first few months from the start of construction, by moving into their semifinished, but adequate house. (see figures 1 and 2)

In studying the organizational structure, we see that it is based on the villages' clan structure.

First year

YAO BUILDS HIS HOUSE.

- He buys cement.
- He brings sand.
- He hires two workers.
- He brings water.
- He makes concrete blocks.

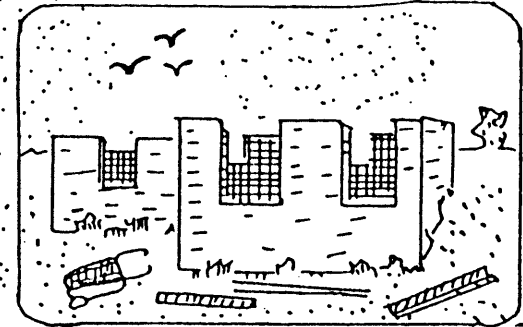
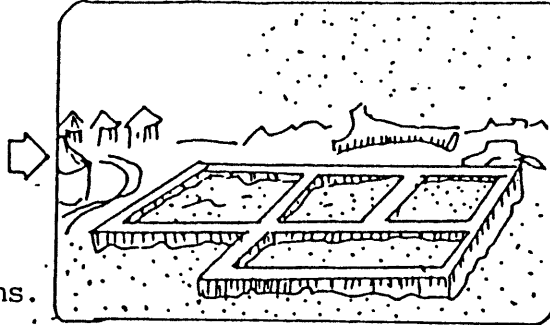


Third year

- He buys cement.
- He brings sand.
- And water.
- He hires two masons.
- And two workers.
- He makes the masonry works.

Second year

- He buys cement.
- He brings sand.
- He brings water.
- He hires two workers.
- And a mason.
- he makes the foundations.

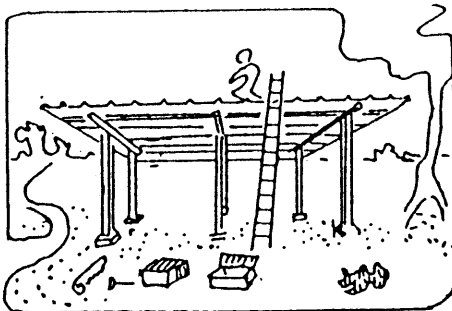


Four years later, Yao looks at his house.

First year

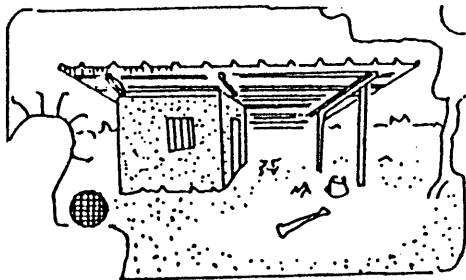
KOUASSI BUILDS HIS HOUSE

- He brings two skilled workers to construct the roof.



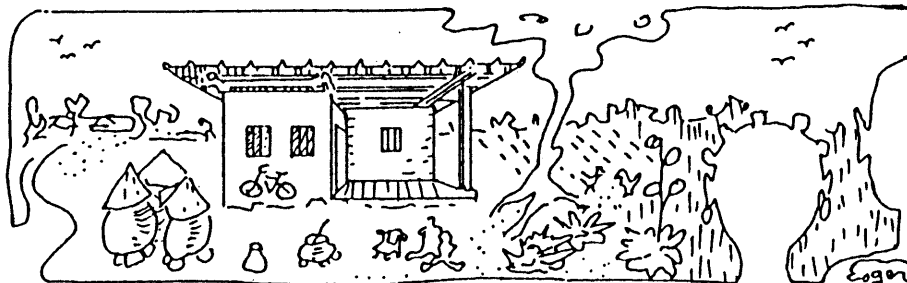
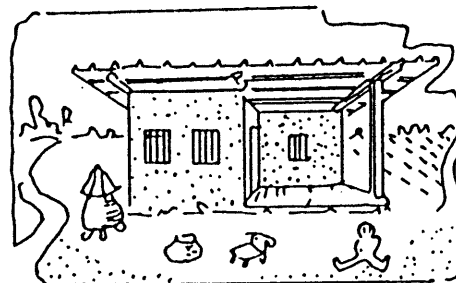
Second year

- He builds two rooms, (traditional material) and moves in with his family.



Third year

- He builds a third room (concrete), the floor, and a concrete porch.

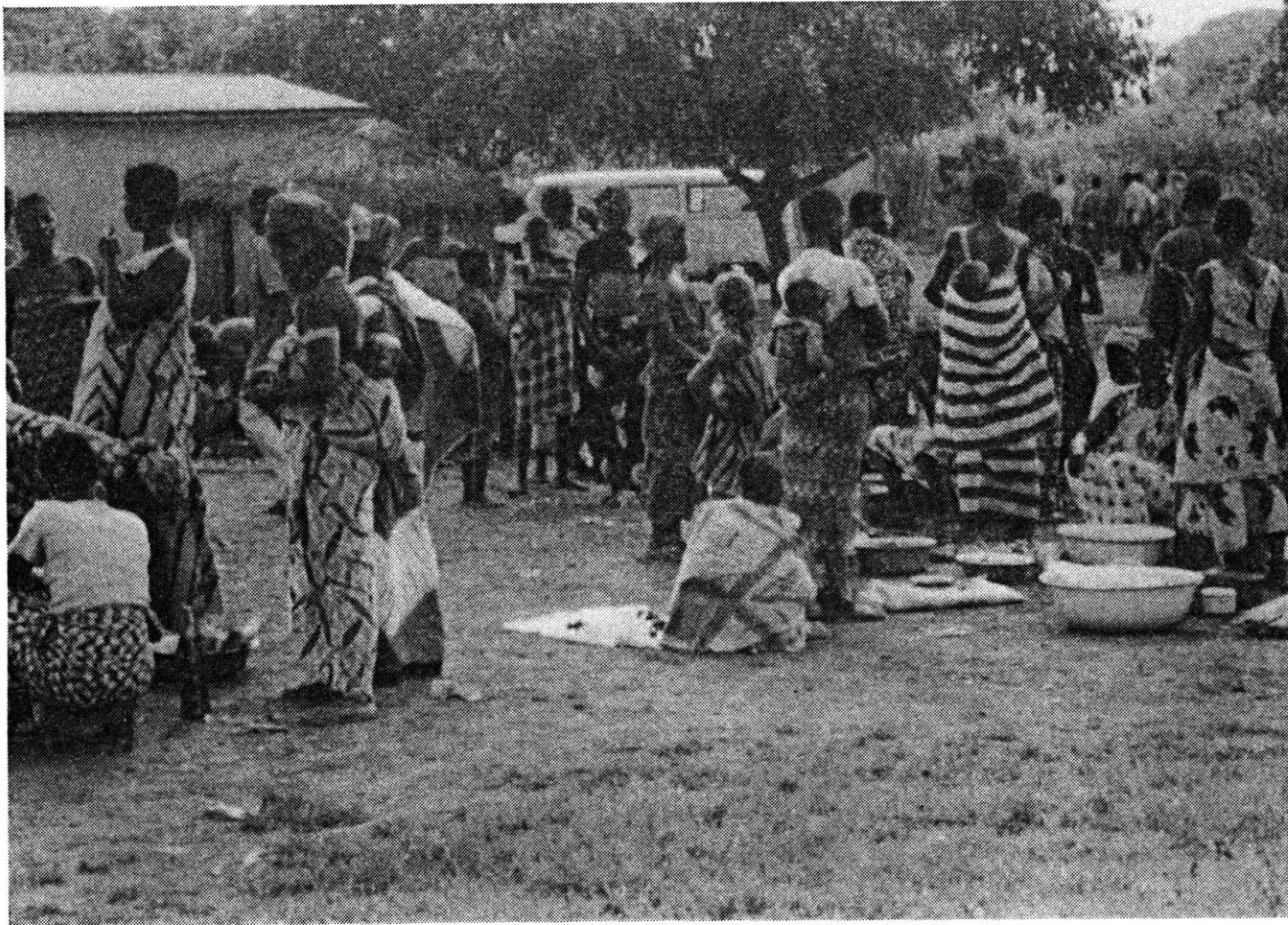


Kouassi looks at his house, four years later.

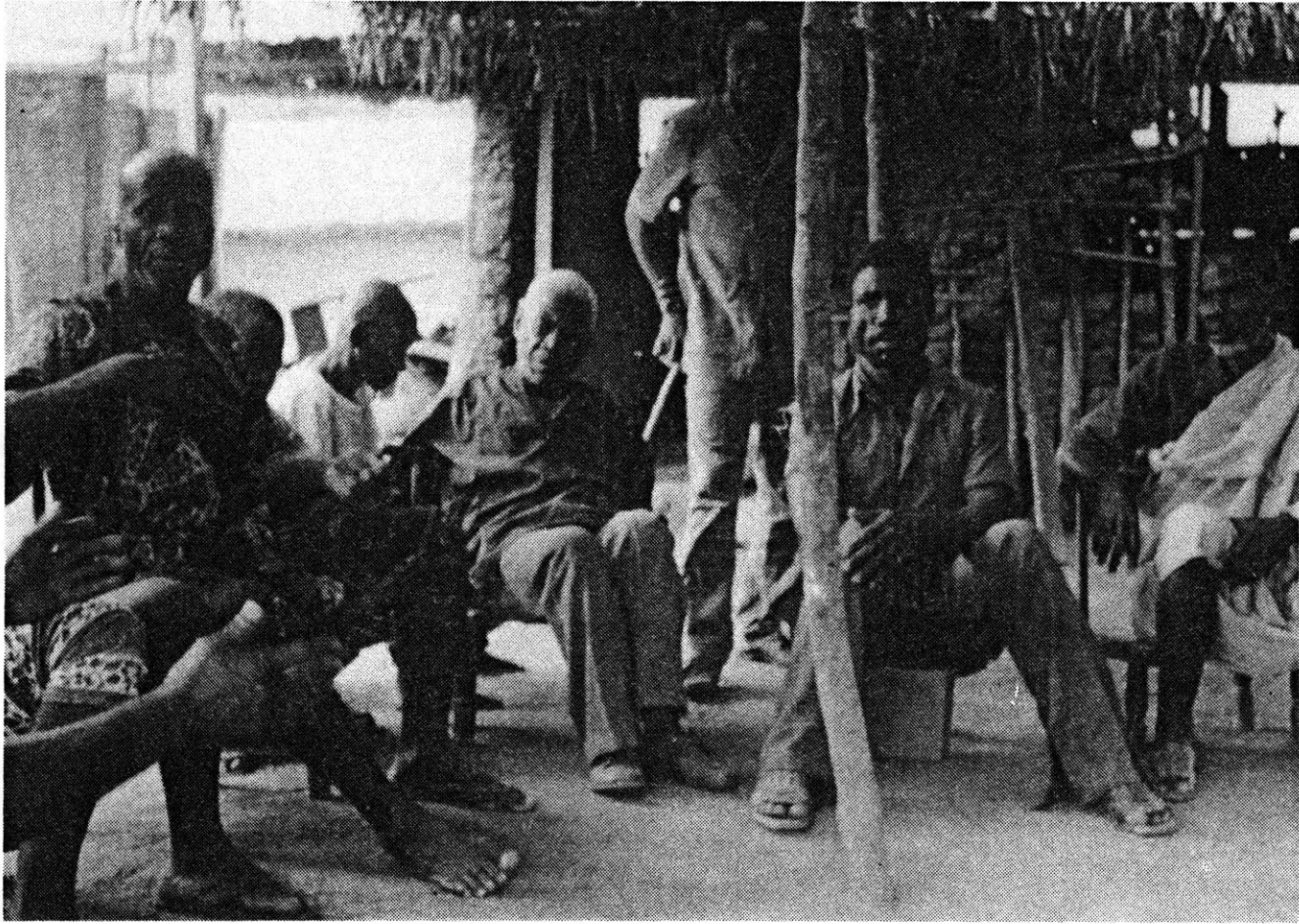
Each clan provides a predetermined number of workers for the construction site on different days. The village council and our team set the number of workers based on the different phases of construction. The workers would come to the work site and their schedule depended on the type of work required and their skills. Interruptions were frequent, due to different holidays and festivals, problems with their crops and other causes, produced delays in the construction schedule.

The villagers were not accustomed to strict scheduling and punctuality. Given their cultural predisposition, they felt that as long as progress was being made, time schedules simply were not seen to be of prime importance. Construction took about a year and six months for almost all projects of this type. Thus, the normal completion time for a project of this type is 3 to 4 years. The rural extension service provided trucks and other

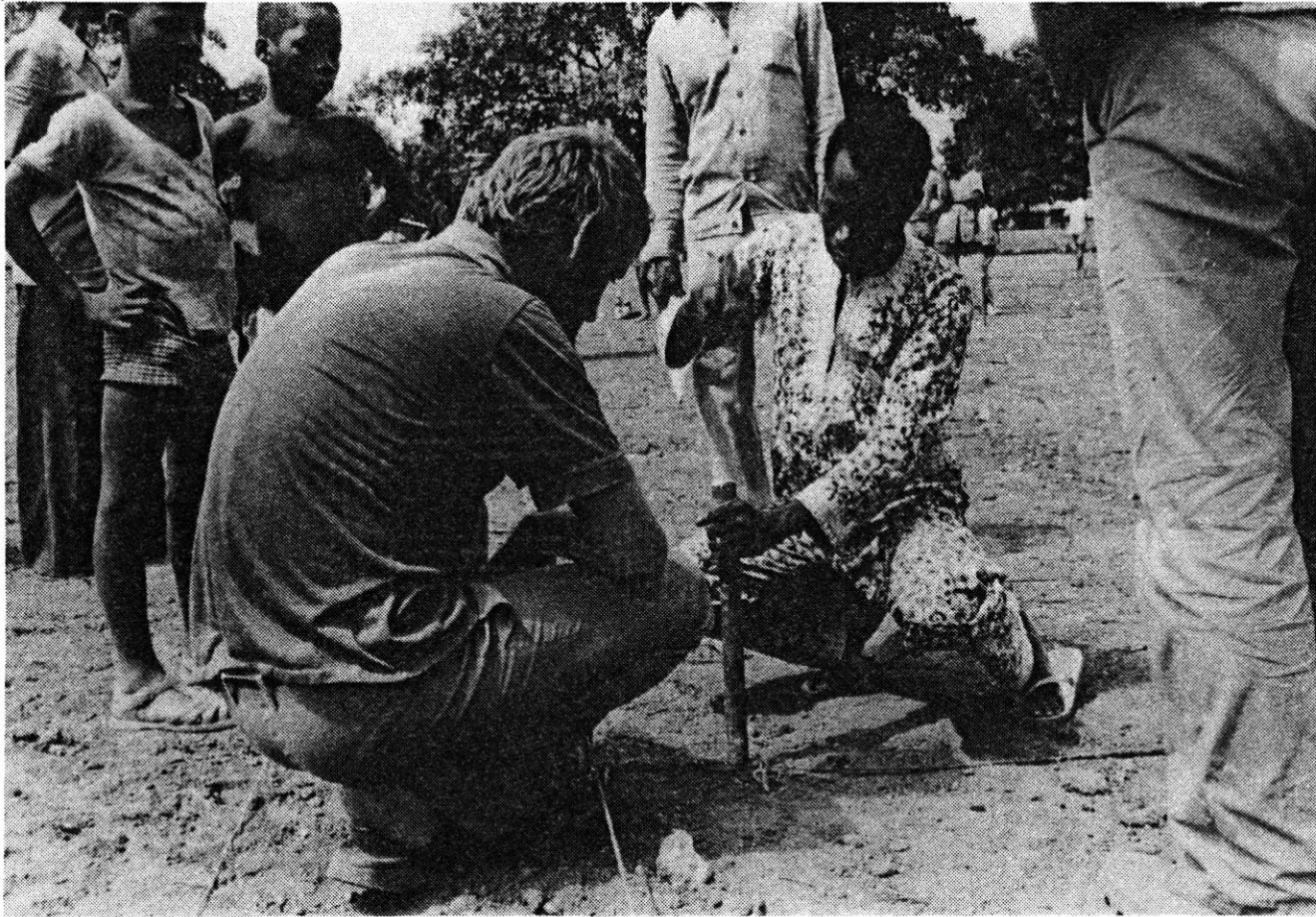
vehicles, as well as personnel familiar with local conditions. A base office was provided by the extension service, which helped to bridge the gap between the advising technical team and the villagers. The extension service agents had worked with the villagers on their agricultural products. This established a rapport with the villagers. Our work was made easier, because the agents vouched for our credibility and assured the villagers the new materials and methods would have a positive effect. If these extension service agents had not been in place at the time we introduced the cooperative construction method, our problems would have been more difficult. By having more than two years of experience working with the villagers the agents provided a link between our ideas for technological innovation and their acceptance by the villagers, thus taking on the role of mediator. This in turn, enhanced the credibility of the extension agents who participated in this project.



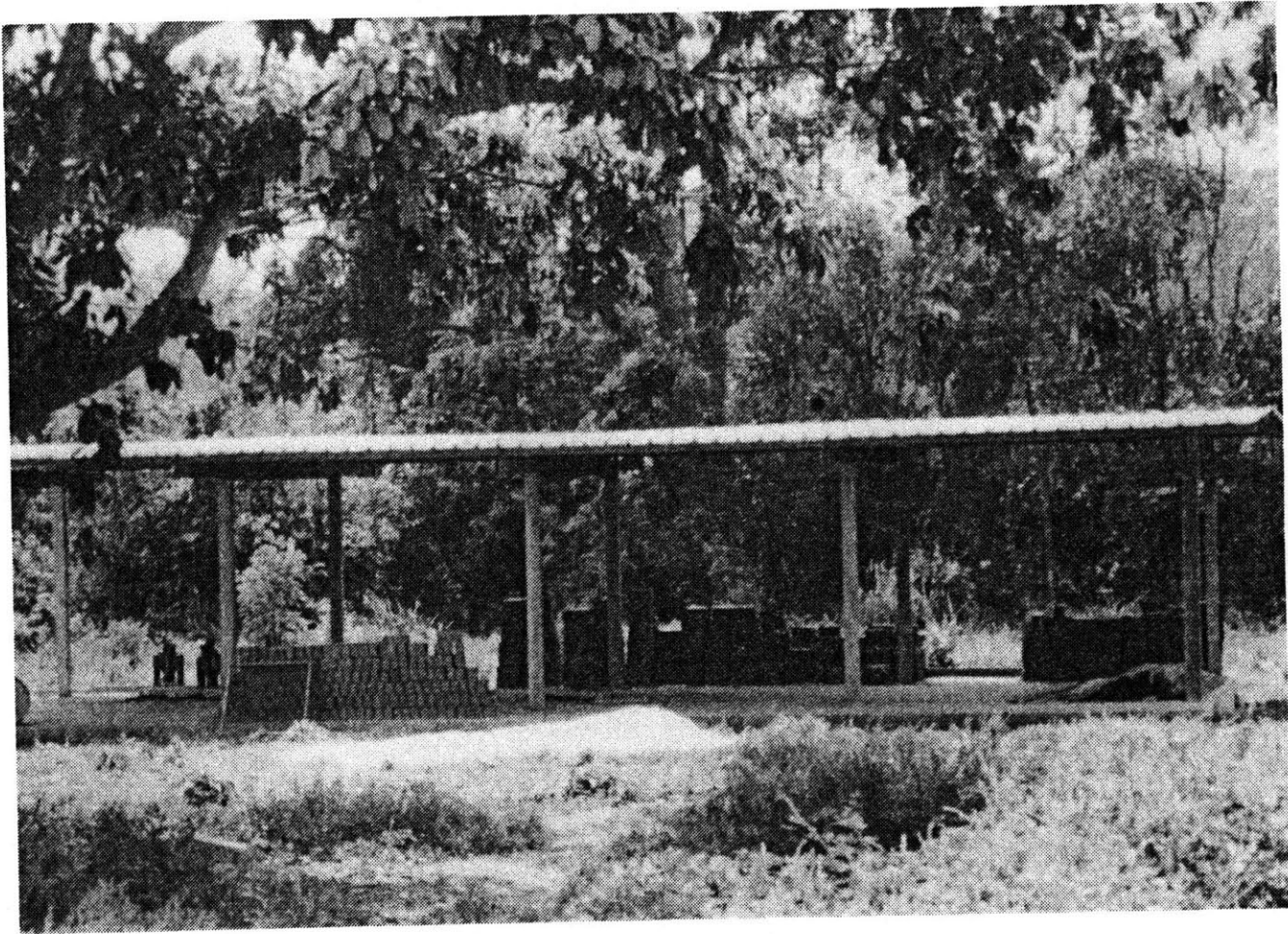
EXISTING VILLIAGE MARKET LOCATION



MEETING WITH THE VILLAGE COUNCIL



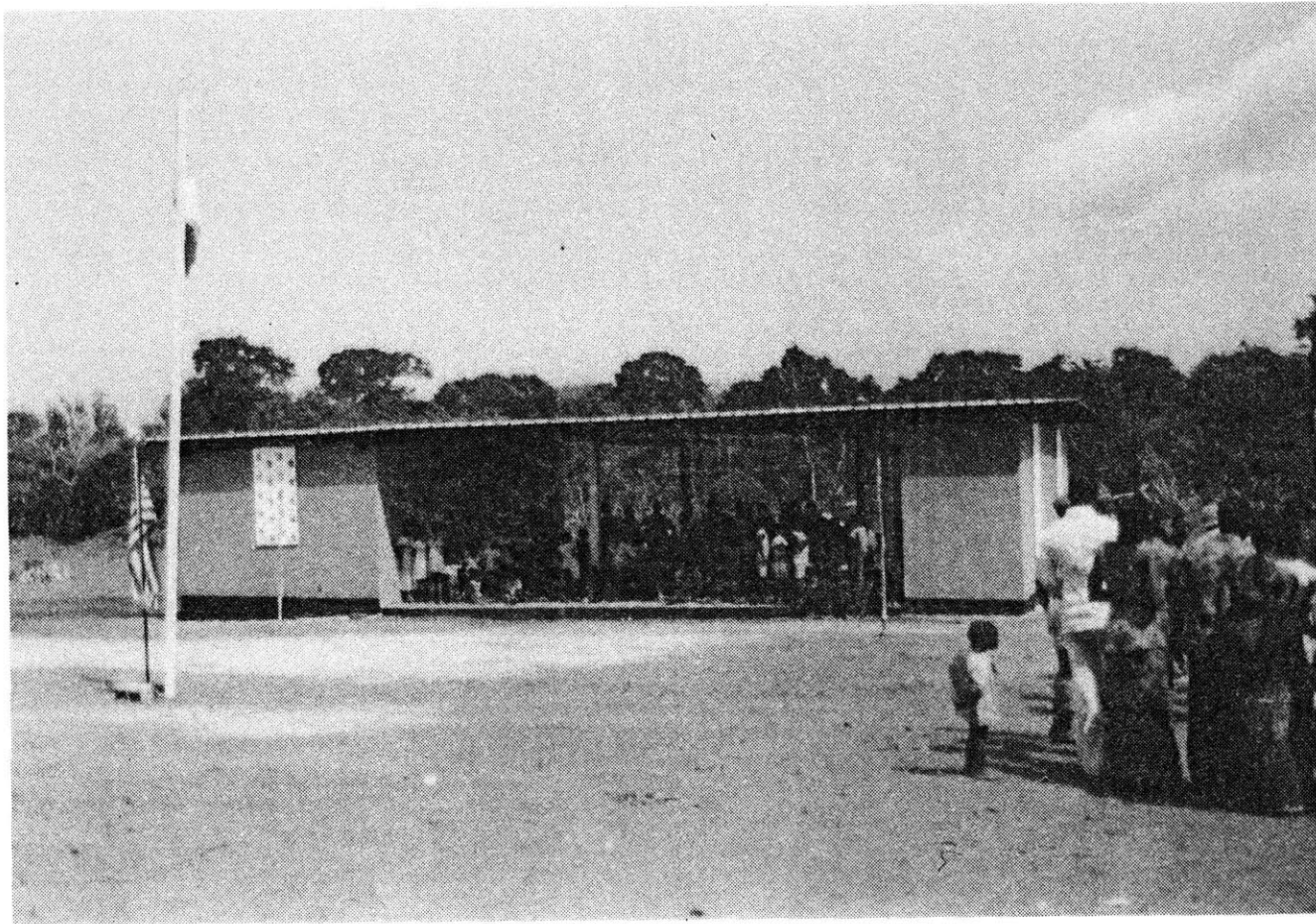
PRELIMINARY CONSTRUCTION PHASE



COMPLETED UMBRELLA STRUCTURE



CONSTRUCTION OF INFILL WALLS



THE COMPLETED VILLAGE MARKET

In order for the cooperative method to be most effective, it is good policy for all parties involved to receive some benefits. Another important aspect to cooperative is the communication links among the different components of the cooperative are the key to its proper operation, and a means of setting priorities for the cooperative. If this is not done, each member of the group will be vying for his or her particular goals and will not work in a cooperative manner thereby defeating the purpose of the organization. The cooperative process allowed the villagers to pool their resources together, forming a legally responsible unit, not only for the purchase and delivery process of cement and other construction materials but also in the eyes of the state who never took much interest in the project. The municipalities also recognized the cooperative as functioning whole, capable of controlling the villagers' destiny.

For example, a road grader was made available because of the group's efforts, which would not have been possible on an individual basis. Because the members were able to organize themselves as a responsible cooperative unit, they were able to approach the local government officials with some authority. This was an excellent example of how people can bond together to improve the conditions of the whole community. The collective effort of building their own village market resulted in self-gratification and pride on the part of the villagers, aside from adding a useful and important asset to their village. Thus, it is important to understand that the traditional structure of the village can not be ignored, in adopting new ideas and new techniques, for the improvement of their everyday life. The traditional village structure is based on the family unit, which is part of a larger clan structure, eventually encompassing all members of the village.

This structure was used to organize the working teams of the cooperative. If this structure had been suppressed, it would have been difficult to motivate the people to work together as they did. By allowing the traditional structure to continue and actually help to form the roots of the new cooperative structure, the villagers were given a reference point which they understand, and a procedure they could trust.

Size is another factor which is very important in the formation of a cooperative. If, for instance, the membership is too large (that is to say each individual loses his sense of obligation), effectiveness will be greatly reduced. The ability of the cooperative to operate effectively is based on a critical balance between that which is too small to be effective and that which is too large to be understood and appreciated by the individual members. Thus, the group we were working with consisted

of about twenty families. Each family appointed one or more representatives as active participants in the governance cooperative. These people met with the village chief and the other members of village council (a group of about 7 or 8 men), who actually helped to guide the project along the way. This group also served as a communication link to the village. We were not allowed to have direct contact with the families when it came to decision-making matters. We did, however, consult with each member of the family to find out their ideas about the project. Decision-making concerning the village matters, always took place among the village chief and the council of elders, and seldom did the technical staff make decisions outside the realm of strict technical matters. It is important to make sure that the traditional decision-making process must not be disregarded, for, if the traditional decision-makers do not feel respected, they can create

many problems in a project's operation. It is critical to understand that the elders and chiefs are the leaders of the villagers, and that they are accustomed to making decisions. It would not benefit the project team to arrive in the village and attempt to change its decision-making structure by imposing its own rules and regulations upon the villagers. The cooperation of the municipality is also important to the project. Often the municipality acts as a catalysis for a given project. The Prefect or Sous-Prefect were often able to motivate people to do work which served the needs of both the village and the local government. His function was to act as a link between the village and the national government. Ivorians have strong nationalist feelings and thus want to identify with their national government. This feeling of national identity makes it possible for the Sous-Prefect (who represents the government) to play an influential role in

many of the villages activities. He would often visit the construction site, speak with the villagers, hold meetings with the materials suppliers, and even dispatching some of his technical equipment to aid in the construction. Through his office, some media support was produced for television and the publication of news throughout country. He helped to instill motivation, energy and desire to succeed in the villagers at times when it was most critical.

The research center also derived several benefits from the construction of the village market. The centers' major focus of involvement was the application of theoretical research to the daily problems experienced by many Ivorians. The project provided an excellent opportunity to experiment with ideas and products tested in the research center. The application of these products in actual real-world situations revealed many of the

problems that arose in the use of this or that material or method. Because the project was located about 250 kilometers from the central research center, an opportunity was created to present new materials and methods to a much wider cross section of the population than could be found in the capital city, since usually projects such as this have been constructed in or near the capital city and are only experienced viewed by a limited urban population. This also made it initially difficult to convince the villagers and local people that new materials and new building methods (systems) could be was applicable to a rural situation. However, by building the market in a typical village, the chances of persuading the villagers that these innovations were also suitable for there needs were increased manyfold. Because the center had limited funds of its own, it was important to make selective alliances with other organizations which could offer financial

support, to realize the projects proposed. This made it possible to use the center's budget to support the research efforts within the center. There was little emphasis placed on actual project construction. It was difficult for the center to finance actual projects, because of the extremely high cost of construction, thus focusing it's resources on applied research.

The real-world implementation of innovation made the village market a very appealing project for the center. The cooperative approach was an excellent means to provide a market for the people and--at the same time--to realize a viable project for the research center. This is not to say that the cooperative approach is the best solution for all sectors of the housing construction industry in developing countries. Nevertheless, of all the options available to those with the most need for housing, it may be considered as one of the more operational methods for

action in the short term, since it does not require major changes in existing social and/or technical infrastructures, and since the ability of a system to be put on line rapidly is of major importance to any shelter delivery system in most developing countries. Growth patterns of developing nations show that they can not afford long delays.¹ Postponement of any project put excessive stress on the rest of the system and scheduling difficulties increase at a tremendous rate. It is also important to understand that for any shelter delivery system to be effective, radical changes impacting on the existing cultural habits of the people can only cause chaos and/or discontentment. This is the strongest advantage of introducing the cooperative process to developing countries, since traditionally people have been surviving by mutual cooperation even though they may not perceive it as such in terms we know. It is a cooperative effort that

joins people together to share their knowledge, their energy, and their skills to reach their own goals for the betterment of both individuals and the community as a whole. This is the foundation on which a shelter cooperative can easily be formed, and it is advantageous for all concerned to build upon the firm foundation of traditional cooperatives structures to provide better shelter for those in greatest need and those who can afford decent housing least in the so-called "free" market place of the well-to-do individuals.

Chapter three

C H A P T E R T H R E E

This chapter will examine those organizations which are presently involved in the shelter delivery process of developing countries. They are best divided into four different groups; (1)the traditional building sector, (2)the private sector, (3)the national or governmental sector, (4)the international sector. In the private sector there exist both the formal and informal construction processes which further divide the sector. As mentioned earlier, we will look at both the formal and informal sectors.

The traditional sector is characterized by the use of local building materials and construction methods which have been used in the country for many generations. This construction sector is responsible for most of the housing

stock found in the rural areas. The major motivation in this sector is the peoples' need to provide shelter for themselves and their families. Another sector is occupied by the private companies which use their own capital to produce housing. Profit is the motivating factor in their operation. Other types of organizations consist of the national and international groups, who are motivated by international goodwill, such as the Red Cross, CARE, and HOPE are such groups. They strive to show that they are working to improve the human condition in the world. They lay claims to a desire to improve the plight of the "less advantaged" in the world, and theirs is the wish to convince the world that their only intention is to provide shelter for those who can not afford a dwelling. They are often sponsored by the collective efforts of several nations who have united to achieve these goals. Beyond that, these international organizations also help

increase the flow of information between countries and thus reduce the communication barrier that may exist between various countries. The value of such improved communications is seen in the mutual benefits that can be derived by sharing information.

THE TRADITIONAL SECTOR:

This sector represents the oldest method of shelter delivery. Its origin is rooted in the early development of mankind. As man has begun to meet his basic human needs, i.e., those of food and clothing, he also found ways of providing shelter from the materials found in his environment.

He chose materials that were readily available, often consisting of those elements which could be found in the immediate environment. The use of wood, stone, and earth have provided the basis for the bulk of this type of

construction. As skill levels began to develop, man was able to improve the methods by which he utilized these materials, as seen in the joinery and finer detail used to obtain maximum benefits and beauty from their application. These materials were truly economical at that time, the only cost associated with their use being the time and energy required to gather and shape them. Additionally these materials were well suited to the climatic conditions of the regions where they were found.

Bamboo, which can be found along the coastal areas in many tropical countries is an example of a material which is very well adapted to its use in construction and is prevalent in areas where little thermal mass is needed. In most cases the supply of these indigenous materials is almost limitless. They exist freely in nature and can be planted and harvested many many times over in a given period. Though these materials offer several advantages,

there also some disadvantages. Because most are of an organic origin, they tend to decompose in a relatively short time span, depending on the severity of the climatic conditions. Insects are likely to invade some of the elements and may in fact attack and destroy parts of the dwelling. Fire is another problem with these materials. These and other factors also lead to the possible spread of disease. It is possible to correct some of these shortcomings, but often the cost of correcting them may be higher than using an entirely new material. It is important to understand the real significance and utility ranges of each one of these indigenous materials. Any material used improperly will result in an unsatisfactory performance and create problems. The context in which these materials are used has changed from the time that the material was developed. If such materials are applied to a situation where many of the parameters have changed

(e.g., density, frequency of use, loads, and expected standards) the performance of the material will be judged as being low. These materials have much to offer but they must be used in the appropriate manner, otherwise they will be ineffective.

The methods used to build with these materials have been used for centuries. In most instances they require skills acquired from preceding generations. A guild or apprenticeship system serves as the vehicle for transferring knowledge, skills, and technology. The type of tools used to work these materials is very basic, often consisting of only a large hammer, a machete, and a plumb line.

Labor requirements for traditional shelter construction are of a basic skill level. For construction demanding higher or industrial skill levels, labor is more difficult to secure, especially in developing countries. Rural immigrants to the cities who usually do the

construction are seldom employed full-time and are people who have more often than not acquired their knowledge and training in an informal manner. Indigenous construction methods are generally very labor intensive. In many cases there is no machinery involved. In a traditional village setting, little time pressure exist, and the workers are allowed to finish the house at their own rate. Labor is divided among several people, each having a specific task and each feeling their task to be vital to the completion of the dwelling. Children are often responsible for carrying brick and timber, women carry the water and men assist the mason. The labor force increases and decreases in strength, depending on each particular season. During the harvest season there may be no one working on the building of the a home. Thus, social and agricultural patterns are combined and activities are blended accordingly.

Traditional construction methods are also very convenient in the way dwellings are financed. In rural areas there is usually some form of barter or exchange of goods which take the place of cash or money payments. This informal economy often represents a substantial portion of the financing of housing in these areas. Another option which exists as a financial support of dwelling construction is to pay and build only as much as one can afford in any given period of time. This is called the staged approach to shelter delivery which has been effective in cases of an irregular income stream. This method eliminates the cost of long-term financing and does not obligate the family financially beyond its ability to pay. There are only a few--if any--low income families in most developing countries who are able to obtain conventional bank financing, since regular, constant, and fixed income is not typical of families in the lower income levels.

Though the traditional shelter delivery system has been in operation for many centuries in developing countries it can not be accepted as the complete solution to the many problems that face the lower income populations in the world. Various "solutions" to these (and other) problems have been developed and are being published in the literature, many of which have great validity.² Whether any of these approaches will succeed only time can tell.

THE PRIVATE SECTOR:

There are both small and large companies using private capital in many developing countries, dedicated to the production of shelter. Many of these may consist of only two or three employees. Others are large companies which employ several hundred people. Private capital for construction is limited, because there often exist other

investments which provide a better return on capital outlay. Most construction funding for these firms is provided by the government through housing programs. These programs seldom provide dwelling units that are affordable and/or suitable for low income groups. When one considers that of the 200 firms that conduct over \$50,000 worth of business a year, only 29 of these are Ivorian, while the rest are either subsidiaries of French companies, or are owned and operated by expatriate French residing in the Ivory Coast³ then it is reasonable to assert that these companies are not overly interested in the housing problems of the low income groups, since their prime motivation is the desire to earn the highest profits possible, which can not be obtained by building for the poorest sector of the economy. Neither are the small companies able to generate any great change in the shelter delivery system, due to their limited financial resources.

They are often forced to operate in the informal sector, where government control does not limit their activities. Once outside the regulation of the government, they are able to increase their profit margins and thus become commercially viable. Most of the companies are local, and the inflated profits they earn tend to stay within the community, as opposed to profits that are often taken out of the country by outside firms. These smaller companies provide much of the housing stock that is found at the fringes of the urban centers. It is interesting to note in passing that many of the workers, employed by large companies during the normal work week, run their own small scale construction operations during "off" hours. The latter are very important for the supply of housing to the lower income groups. Most of these workers have skill levels higher than those of the traditional sector. Many of these workers have also some type of formal training.

Their full-time employment is a source of regular income for themselves and their families.

As for the unskilled labor force it is mainly composed of Africans of other nationalities, who have come to the Ivory Coast for its higher wage rates and better living conditions.

More than 80% of the personnel above the foreman level is European. Presently, there is a shortage of skilled construction workers in the labor market. Attempts have been made to change this situation. Many vocational training institutions have been formed to supply skilled construction. Yet, growth in skilled construction industry personnel is very slow.

Construction materials are very similar to those used in Europe. Because of the colonizing efforts of the French, many of the materials are a direct transfer of French building materials. Many of these materials are

unsuitable for the environment into which they have been placed. The perennial problem of inflation affecting the cost of imported construction materials has been a major obstacle for an orderly growth of the shelter delivery system. These conditions have forced many builders to become more conscious of the choice of the materials to be used in construction. As this trend continues, (as may be predicted?) it is hoped that these types of building materials will gradually adapt to the environmental and economic conditions in the country.

The stringent financial credit requirements of the private sector shelter delivery system often makes its products inaccessible to the low income groups. The financial implication of securing a large sum of capital for a one time investment, places most private sector shelter schemes beyond the reach of the poor. The irregular(seasonal) employment cycles of the low income

workers do not permit the accumulation of large sums of capital needed for the financing of a free market supplied home. Some of the smaller construction companies are able to operate in an informal manner by accepting terms of payment that are suitable to the low income groups, such as longer repayment terms, etc. Also, the informal firms are able to do work in smaller stages because of their low overhead and operating cost.

Though the private sector does provide a shelter delivery system, it is not well adapted for the poor, for the reasons stated above. Therefore, the low income groups must seek other means to provide shelter for themselves and their families.

THE NATIONAL SECTOR:

To explain some of the characteristics of a national shelter delivery system, the system now in operation in

the Ivory Coast will be used as a model. One major supplier of housing for low income groups is a national organization for rural development (Fond Regionaux d'Amenagement Rural, FRAR). This funding group is quite large and has several construction programs throughout the country.

It assists hundreds of different types of projects (schools, homes, infirmaries, etc.) throughout the country. The amount of assistance is based on a project's location. In the northern regions, up to 90% of a project's construction costs may be covered by its funding program, whereas in the southern areas, which boast of a stronger economic base, funding is limited to 25% of a project's construction cost. In addition to making economic assessments of the villages in its realm of operations, the program also uses a system whereby the country is divided into small geographical regions which

could be better served by local government representatives, who control the management of the construction projects. The system provides for three levels of hierarchy: the largest being the regional village center, which serves several village centers in a given region. Next are the village centers which have been designated to have a primary health facility, schools and large commercial facilities, not available at the lower levels. The lower level is the "satellite" village level.

The project described in this study was implemented in a village which was considered a village center or the middle level of the hierarchy. The village is located near a river valley that had been flooded by the recent construction of a large hydroelectric dam. The construction of the dam has created a lake with a surface area of approximately 1,700 square kilometers. The lake provides a rich source of fish, which can be commercially

distributed from the village to surrounding areas. The villagers were well aware of possible economic gains that could be obtained, if provisions for the preparation (smoking) and sale of the fish could be provided right in the village. They would no longer have to transport their goods to the nearest town in order to sell them. For this reason the villagers were very interested in securing a permanent structure for their market.

Agricultural activities have traditionally provided the major source of income for the village, i.e., the cultivation of coffee and cocoa. These two crops provide the base for substantial economic growth and improvement in the country. As mentioned before, the rate of growth of the Ivory Coast far exceeds that of most other African countries, e.g. in 1978 and 1979 it posted a 12% and 8% growth rate respectively. Based on this stability most developed nations and international organizations are

willing to provide loans and capital as well as technical assistance to add to its development.

In the urban context one can find additional types of national shelter delivery systems, i.e., two national housing organizations which provide housing. They attempt to implement systems suitable for all income groups but have great difficulty in delivering shelter to the low income groups. These two organizations are: the Association for Construction and Management (SICOGI), and the Association for Management, Finance and Housing (SOGEFIHA). The aspiration and problems of these organization can be seen in the following statements.

"High standards are a common feature of urban services provided by the government, and public housing is no exception. A logical consequence of adopting such standards has been the need for public subsidies to reduce private costs. These subsidies have been financed through various public institutions and in some cases have reached 30 percent of the rent. It is felt, however, that in many instances occupants are capable of contributing more.

The financial situation of the public housing sector has reached the point where a costly salvage operation by the government is necessary.

The government's objective was to build a large number of houses of high standard to be given to occupants at subsidized rent. The government underestimated the cost of this program and therefore failed to provide the public agencies with the necessary financial means; in trying to meet ambitious construction targets, the public agencies had to turn increasingly to expensive suppliers' credits and the Eurodollar market. By the beginning of 1975 two companies had built about 45,000 units and one of the companies (SOGEFIHA) had accumulated debts totaling CFAF 36.8 billion by mid-1975, much of it on high interest terms.

Reorganization of the housing sector and reconsideration of policies in this sector have been given high priority. It is recommended that more appropriate standards be applied to housing, that the number of units built a year be cut, that existing urban areas be densified and upgraded rather than expanding into new areas, that attention be shifted to those really in need, and that in general the private sector should shoulder a greater share of the cost, however difficult this may be politically."³

THE INTERNATIONAL SECTOR:

This sector uses resources obtained by the selective allocation of governmental funds. Its participants seek to provide shelter for the people of the country that would otherwise be unable to obtain suitable dwelling units. The problem is that these organizations too are often ineffective in delivering shelter to people in the lower income ranges. More often than not, their programs generate shelter for those in middle income levels. These organizations are operating with frameworks and standards that have been applied in industrialized countries, which are not very well suited in the context of a developing country. Most of their structure of operation is heavily dependent on a well run national administrative and technical structure. In most developing nations this structure simply does not exist, thus leaving the lower income levels without any feasible means of obtaining adequate shelter.

The following is an example of these "ineffective", international projects. A United Nation program was funded to produce village housing for the relocation of several villages that were to be displaced due to the flood plain created by the construction of a dam on the Bandama river. This dam created a huge ponding effect and displaced many thousands of people. United Nation experts arrived and installed themselves in a location close to the site. They established all kinds of support facilities such as trucks, garages, offices, testing equipment, shops for wood metal and masonry. These facilities were developed to provide a base for finding "the solution" to the housing problem in that region. The result of almost two years of studies produced plans according to which some 80 dwelling units were eventually built. The dwellings were completely rejected by the villagers. The villagers considered the plans of the

dwellings as totally inappropriate to their life-style. Consequently, they refused to occupy the new dwellings and chose to remain in their traditional houses. Their main reason for rejecting the design of these dwellings was founded on the way in which the plans were conceived to suit mainly a western mode of living, and any concession made to accommodate local user needs did not really address the actual living patterns of the villagers. The fact that all the bedrooms could be entered directly from the exterior, was completely in contradiction with their customs. Furthermore, none of the traditional units had the kitchen attached to the sleeping section of the house. The new units all had the kitchens attached, which created special problems, because most of the food preparation is done on a wood or coal burning fire, thus creating unpleasant smoke problems within the dwelling. The attached toilets created another undesirable situation

for the villagers. Additionally, they did not like the windows made of prefabricated wood units even though they were quite economical and technically innovative. The villagers perceived the use of wood in window panel wall units as being vulnerable to burglary. Next, the color of the stabilized earth material used in wall construction was not liked by most of the villagers. Finally, the dwellings were painted white in some areas and left unpainted in other areas, This too was not welcomed by the villagers.

Often the delivery of a dwelling will be dependent on the family having a constant income, which is not a viable criterion for this income group. Thus, it is apparent that these international organizations are not able to provide the type of shelter needed for a traditional society. This inability to provide dwellings suitable for low income groups is due largely to a lack of cultural understanding, among other things.

In most circumstances people are quite well aware of their own needs, and if these people are given the opportunity to organize themselves and function as a cohesive group, they could provide shelter for themselves, which is likely to be more suitable than houses provided by some experts of the international organizations. This is not to say that these international organizations are not important. They do play an important role in the development of any country. However, their strongest role should be in providing the urban (or rural) infrastructure and dwellings for the middle and upper income groups in urban areas.

The question that arises in one's mind is the way in which these organizations operate and make decisions. If, for instance, the local town or village, where intervention by such a organization was to take place, could be induced to organize itself and define the goals,

parameters and objectives of their shelter needs, one may assume that it would be more likely that those needs could be best met by these international organizations.

The lowest income groups do not have access to media coverage and are therefore unable to have the kind of exposure that would generate interest in their plight. Without such exposure, little is done to improve their condition. The people of the lowest income levels are not readily "visible" and --furthermore-- are often seen as a less "desirable" class in society, frequently leading to rejection and neglect of their needs. Middle and upper low income people tend to enjoy a much wider media exposure than people in the lowest income levels. The influence of the mass media, such as radio and television, represents a tool which can be used to change policy and thus lead to the improvement of shelter conditions of the poorest sections of society. If the poor were organized

in such a manner as to speak with a unified voice, they too could benefit from the mass media's power and use it to help change their living conditions.

It is wrong for a so-called expert to come into a place and, in a few days or weeks, assess the "needs" of a country, which are more complex than superficial observation or selected statistics can show. Still, it is on the basis of such short-visit assessments that recommendation for shelter delivery systems are often made, which inevitably will have long term implications for the recipient country.

It is important to understand that, in most of these large organizations, decisions are usually reached through complex negotiations. If the villagers were to organize themselves in a cooperative manner they could participate in that decision making process, as a cohesive group. This type of cooperative structure has been most

effective in the past. The individual joins a communal group, thus giving him a much larger voice in the management of village or communal affairs. The various national and international organizations should be primarily considered as a "link" to the larger world as well as a resource to tap new technology and to foster a broader understanding of new developments in the dynamic field of housing science. Unless such organizations are utilized in this manner they will find it increasingly difficult to meet the criteria for the culturally and economically diverse needs for shelter required throughout the world.

CONCLUSION:

It is the conviction of the author that the best means for individuals to provide for their shelter needs is through cooperative effort, initiated by the individuals

of a given community, themselves. It is also more likely that a national organization or a national group will be more attuned to the needs of its own people than people from the outside.

Chapter four

C H A P T E R F O U R

WHAT IS A HOUSING DELIVERY SYSTEM?

The means by which a dwelling is constructed and supplied to the user, constitutes a housing delivery system. It includes: The means by which land is acquired, capital formation, the construction process and the on-going management and operation of the units. It involves those who assess the needs of the population, those involved in the political areas who will make policy, the contractors, and the occupants of the dwellings.

In several developing countries the national government fulfills many of the functions in the national housing delivery system. It is critical that the actions of the organization of a housing delivery system be well planned. The responsibility of a dwelling delivery system

is wide-reaching and affects many different professionals, trademen, craftsmen, and many others. Usually, the national government is the one entity which has all the needed resources at its disposal to provide the skills and authority to control the shelter process, at least in theory. It is the national government which can usually benefit the most from providing shelter for the poor, as this would not only "placate" them, but might also increase the government popularity. The largest percentage of development expenses for fully serviced modern housing is the cost of infrastructure. The large scale nature and technical complexity of a modern service infrastructure is such that it can be implemented best by large scale construction methods. It is not economical for this element of the shelter delivery system to depend on small independent firms. Infrastructure functions best when it is part of a larger network, a city, or state, for example.

Economies of scale are important i.e., the larger the infrastructure project, the lower the cost per dwelling. The users may participate in the construction of the infrastructure mainly through the contribution of manual labor. This can reduce costs from 5% to 15%. Management support for supervision and planning of infrastructure systems is also very important. Labor has to be skillfully directed, to be able to make a productive contribution in the overall infrastructure construction process.

What is the historical structure of a cooperative?

Historical data shows that cooperatives have been in use since 1775 in in the U.S.A. If we examine the rest of the world, it is difficult not to find a culture which does not have some record of cooperative formation.

The operation of a typical cooperative organizational structure is quite interesting. When we consider the functions necessary for delivering shelter to people, we are faced with a complex set of issues. The major elements that are considered in the delivery progress are: land, materials, technology, medium of exchange (money is most cases), and human resources (i.e., labor and knowledge). By manipulating these different elements, the cooperative can determine to a great extent what will evolve into a final shelter solution through collective efforts.

Traditional cooperatives were often based on the exchange of goods and services between people. In most cases no money was involved in this transaction. Within this non-monetary context, traditional people did understand this mode of operation quite well, even though they had not been exposed to it historically.

The introduction of money as the medium of exchange for labor eventually replaced the barter systems, even though it took some time for the adoption of this new process. Traditional societies are usually not accustomed to exchanging their services for small pieces of paper, or a few worthless pieces of base metal i.e., money. The effects of this may be observed in the slow progress that new cooperatives have made in many developing countries. In countries where cooperatives have been most successful, the programs have been designed in such a way as to take advantage of past communal experiences. One method to do this, is to offer the members of the cooperative a system of exchange other than one based on money, as the only exchange medium. It is often the case that members of a cooperative will exchange some commodity which they produce themselves, for services. Members of a cooperative can thus develop "internal credit" by lending

and borrowing from one another, and in so doing, the cooperative is made to flourish. Internal credit is very important to the operation and ongoing existence of a cooperative. When its members feel that outside elements are controlling the fruits of their endeavors, they are less willing to expend energy and resources to see that the cooperative functions properly. A great motivating factor behind a cooperative is that the people control their own resources. If this does not occur problems will arise.

PLANS FOR A COOPERATIVE FORMATION.

There are several types of cooperatives which function in their own distinctive manner. First, there are those cooperatives which only help with the acquisition of land and capital formation. Second, there are those which continue further in the process, and give assistance to

construct, as well as helping in the earlier stages of development. Third, there are cooperatives which provide management assistance after construction. The important element to consider is that the cooperative defines its goals very clearly and that the members are in agreement with these goals.

The nature of the goals selected by a cooperative will affect both its structure and operation. If its function is to provide only financial support and aid in policy and project formation, the composition and functions of the cooperative will be very different from one which is involved in construction only, or one devoted both to construction and ongoing management. The latter requires a more complex organizational structure, given that many different skills have to be interfaced, such as banking, construction, owners, government agencies, etc.. This type of organizational structure is too complex for an

independently operated cooperative. Complex type cooperatives tend to function better with expert technical and managerial assistance groups. Such cooperatives are often the most effective, since they are able to provide a complete range of shelter delivery services. They can assist with planning and development as well as other construction management.

Participants of any cooperative are generally well motivated to become more involved in a process which helps them obtain a desirable home. There is little hope of convincing people who are not familiar with the principles of modern banking and financing, to put their money into a remote bank account and make them believe that at some point they will have accumulated enough money to acquire a house. This process is too removed from their daily experience, and thus, they have difficulties trusting the system.

Another issue to be considered ,is the "visibility" of the project. Often it is sufficient to assure people of the completion of the project. Members are more willing to work and contribute to a project that is highly "visible".

Several conditions will help the successful implementation of a cooperative. If there has been a tradition of collective work habits within a traditional society, then the organization of cooperatives may be easier to start. The same skills previously employed by traditional affinity groups are often helpful in creating energy for a cooperative. However, these skills are not directly transferable. That is to say, cooperatives can not be assured of success simply as a result of their having some previous experience with similar types of activities. The quality of constructive guidance and assistance given to a newly formed cooperative is the most

important factor in its initial stages, and will lead to a successful implementation of most cooperative endeavors. The nature of educational training and information flow is also critical for the smooth functioning of a cooperative. If these two factors are satisfied, then many of the other problems become much easier to resolve, become completely eliminated or do not develop at all to present themselves as problems.

WHAT ROLE CAN COOPERATIVES PLAY?

The nature of a cooperative allows it to be effective in different types of shelter delivery systems. It can aid the traditional sector as it has in the past, by following the patterns established historically. It is also able to assist other sectors involved in the shelter delivery system, whether they be private, national, or international. In most cases the scale of the cooperative

can be adjusted to suit the needs of the project to be implemented. The structure of cooperatives also allows them to include many different interest groups. These may be bankers, contractors or international organizations. On another level, there is the possibility of cooperation between various cooperatives. The essential fact is that these organization will work in a shared decision-making process, rather than in an autocratic manner, without the participation of the users.

The benefits of the cooperative structure are found in its ability to maximize the effectiveness of scarce resources. When control of any resources is further removed from the users, they tend to be more wasteful.

Difficulties most often occur because of a lack of understanding of users needs. If an organizational method, such as a cooperative, is provided, by which users themselves are able to direct the flow of resources and

the decision-making process, control of both becomes more direct and thus less wasteful. The government role then becomes to give impetus as to the general direction cooperatives should follow, while at the same time allowing users to make a significant input into the decision-making process and the final execution of a given project.

DEVELOPMENT OF A COOPERATIVE SHELTER

DELIVERY SYSTEM:

The introduction of the cooperative approach into the shelter delivery system creates a organizational structure which has the potential to provide an alternative to both the present official and traditional shelter delivery systems. It allows the individual to have an input into deciding directly both about methods of construction and type of dwelling to be provided.

Beyond that, people are able to utilize the benefits of the aggregated value of their money and are able to have greater access to tools and machinery for the production of shelter. The banking community and other financial institutions are more confident in the ability of the cooperative to repay the financial obligations assumed by cooperatives.

Vertical and horizontal organization of cooperatives (TSO):

The above mentioned aspects form the basis which is most important for the successful operation of a shelter delivery system by cooperatives. There have been many different models of cooperatives that have been developed as a result of experiences in Europe, especially in the Federal Republic of Germany and in Sweden. These countries have had a long history of cooperative

development. They have arrived at a high state of sophistication in which all members of a cooperative have learned to collaboratively manage and control all levels of a cooperative's operation.

There are several issues which are of extreme importance in the formation of the organizational structure for cooperatives. One is the degree of integration, be it centralized or decentralized. Another is sponsorship, considered as an important aspect during the formative stages of the cooperative organizational structure. Finally, part of the most critical organizational aspects is the determination of the geographical area to be served.

In considering whether the structure of the organization of a cooperative should be centralized or decentralized, we must consider the type of program that will be of most concern to the cooperative.

If trained management personnel is a problem, then a more centralized scheme offers the most appropriate structure. Most developing countries tend to select this type of organizational structure. A decentralized system allows for closer control of the actual building site, but greatly increases the number of trained personnel required. However, availability of personnel is usually a more critical issue than better control at the construction site. This may lead to some waste of material, but the cost of additional personnel will usually far exceed the additional cost of such materials. The issue of centralized vs. decentralized control can be addressed in part by a careful selection of the geographical area the cooperative is to serve. If the area of a cooperative's activities is small, a centralized organizational structure can provide support nearly as well as could be afforded by a decentralized structure in

which the area of responsibility is much larger. If the geographical areas are closely arranged to take into consideration the number of projects to be built in any given area and transportation conditions, then a plan can be generated that will assume the best use of personnel and other resources available.

Sponsorship is another issue which affects a cooperative's entire operation. When an independent private organization is sponsoring a cooperative, making contact with government agencies and national policy makers may be difficult. On the other hand, if the sponsoring organization has some national affiliation, then many of the necessary contacts to ease the operation of the cooperative will be much easier to make. When the host country government feels that it has an active role in the cooperative movement then it may be more willing to assist in its development. Whatever the nature of the

cooperative, it is always advantageous to have some connection with the government, since government can be very helpful in solving some of the problems that arise. Often minor problems can be corrected by the government and the whole construction process will function with less effort than that of most other cooperatives. Centralized control of a cooperative may afford the best form of rapport with the central government. Thus, good relations with the government are important, because the government is usually able to provide such elements as site services, which cannot be obtained easily otherwise by a cooperative. Because the central government makes many of its decisions based on political lobbying, it might be advantageous for the cooperatives to place a key representative in the capital.

An additional reason for the centralized type of cooperative is the cost of technical assistance.

The assistance of the TSO allows cooperatives to become more effective in providing planning, management and administrative services for construction. It also favors the centralized approach for the simple reason that technical professionals often have incomes comparable to those of the primary society at a ratio of 10:1. Clearly, it is more advantageous to reduce the number of such highly paid experts by locating them in the capital, and in so doing, reduce the overall cost of a given cooperative program. Aside from cost factors, there is a shortage of trained personnel in most developing countries. If highly trained staff is spread out thinly, the shortage of personnel will not be improved.

There are other functions which are best implemented by other organizations such as savings promotion, administration of financial (loan) matters, and construction of infrastructure, and services.

Planning of a housing cooperative:

The forward planning of a cooperative should take into consideration the following four issues: (1) economic and social factors; (2) construction design; (3) cooperative components--organization, management, legal framework, and education--; (4) scheduling. These elements depend on the precondition that land is made available, and that financing, and technical assistance are rendered accessible to the cooperative. Acquisition of land may be the most important factor of the above element. According to A. C. Lewin the process of land acquisition can be summarized in the following way.⁵

- "(a) there exist no urban land market and corresponding mortgage institutions in most of the developing countries;
- (b) land prices are inflated as a result of speculation by individual estate developers;
- (c) collective ownership patterns are often a major obstacle for the sale or leasing of land;
- (d) the land tenure system usually involves customary--traditional statutory--"imported"--legislation which prevents unified and clear administration;

-
- (e) cadastral survey systems are extremely complex and outdated;
 - (f) there is a severe shortage of surveyors and survey technicians in most developing countries."

Most of the land which can be easily acquired, is usually controlled by the government. It is often better for the cooperative to work through a governmental agency to obtain land, rather than attempting to obtain it from a private source. In some cases the government will actually grant some economic incentives to the cooperative. (e.g., tax reduction and low interest long-term loans). The size of the site is important in terms of cost effectiveness for the development of an economical infrastructure. If the land area is too small, then it becomes very expensive to implement services at a cost per unit, and suitable for low income groups. Topography is important, because it can result in a much better community layout at far less cost, if extensive site modifications are not required.

For example, if drainage is properly handled, then sanitation will be less of a problem. Careful planning will create a situation in which the project can benefit substantially from taking advantage of all the natural conditions of the site. If this is done properly, large savings can be realized in the total project cost.

Site location is known to be a high priority for low income families,⁶ as it is often essential for a dwelling to be located close to the central business district, where most of the employment opportunities exist. Because low income groups are often in search of employment and work on irregular schedules, proximity to possible employment location is important. Transportation is important, for if family members are required to spend an excessive amount of time in transit between work and home, they are likely to be dissatisfied. Long travel distances are expensive, thus, if a family is forced to

spend more than 10% of its income on transportation, a distant site is inappropriate for low income housing, unless there are some other compensating features, such as low density, or a family which may have located there already.

Thus, in the design and implementation of housing site programs, units of the Technical Support Organization (TSO) can be of great assistance. Since they possess skills and abilities that are often lacking on the local level. In addition to their skills as designers and planners they should provide assistance in the cost control of a given project, as well as in the selection of materials and choice of methods of construction. Material costs of a typical dwelling unit represent approximately 50% of the total cost of construction⁷ If non-industrialized materials can be substituted, substantial savings can be achieved. Other cost savings

will result from the use of building methods which allow substantial levels of user participation or "sweat equity." The core house is an example of such an approach. The major idea of the core house is that the essential part of the house, containing the kitchen and sanitary unit, is supplied first and sometimes, with an additional one or two rooms which may be used initially as multi-purpose spaces. The problem with core dwellings is that they still require excessive capital outlays on the part of the poor during the initial stages of a project. In that sense, the process is still rather inflexible, since the recipient of the unit is obliged to provide a relatively high amount of capital required to pay for the basic core elements. Another choice in the method of construction may be "phased" construction, i.e., initially leasing it to the user to determine how much and when to invest at each phase of his income stream.

Some individuals may wish to construct the bedrooms or living spaces first and add the core element later or vice versa. Regardless of any specific method of construction, a high order of flexibility needs to be incorporated into planning and delivery of a dwelling unit. No matter how well intentioned the designer may be, the house will always evolve over time and needs to respond to changing spatial requirements. The more flexible the design of a unit, the easier it will be able to adapt to change.. One example of a possible condition of change is in situations where a family matures, the children leave their home, and the parents decide to sublet the space which has become vacant. If dwellers are allowed to participate in the design decision-making process, they will be able to suggest small design changes, which are important to their life style and yet may not be expensive to implement. For this reason alone, the value of member participation in planning a cooperative is ever so important.

Membership policies must be established in the formation period of the cooperative. If criteria can be established early in the development, then many problems can be avoided later, as the cooperative matures. Homogeneity is important for the proper functioning of a cooperative. If there is some continuity in a cooperative's development, then goals and methods of operation must be consistent. It would not be ideal to have complete homogeneity in membership, because it would generate a situation that would be very difficult to maintain and would alienate itself from the other parts of society. In order to determine the characteristics of its members, it is advisable to carry out an extensive socio-economic survey first. Such a survey should be conducted in person, and the data from it should be carefully analyzed. This information will then serve as a basis for the formulation of the bylaws and legal regulations of the cooperative.

Funding aspects:

The funding of a cooperative usually occurs in two ways: from private non-institutional sources or from public sources. The most popular is the non-profit private institution. In that group the Savings and Loan institutions, as well as Credits Unions, usually belong in this category. Credit Unions generally have some other type of affiliation, whereas the Savings and Loan Institutions usually serve a more general population.

Public sector financing is not usually suited to the needs of the low income community. In general, shelter for low income levels is not a priority issue in most developing countries. Thus, projects that are supported by public spending seldom provide affordable shelter for low income groups which are most in need of shelter. Public programs suffer from construction standards which are often too high, poorly planned, and diverge

considerably from the existing dwelling patterns. Thus, the resources of the government may be better utilized in other areas of economic development, such as large scale projects which are beyond a cooperative's reach, as in land acquisition and infrastructure development, which represent a set of much more fruitful activities for the public sector.

Formation process and interim demonstration:

The promotion of housing cooperatives is divided into different parts in the next paragraphs. Each part will be treated separately, and explained in a manner which will provide a clear understanding of each function.

The planning of a project within the national development context is important. Long-term considerations are important, if the project is to be integrated with the long range objectives of the country.

If not, one can expect failure. Shelter is in many ways closely associated with the support services to which it connects. If advance thought has not been given to the creation of efficient and economical support services (e.g., roads, lighting, and sanitation) the project will suffer greatly from such neglect. The means by which these services are to be provided should be a consideration in the selection of the site. If they are readily accessible to the site, then the cost of developing the land will be reduced. If advance planning is coherent and accepted, then it is time to consider the acquisition of land and the commitment of capital for the project.

The planning of the project itself must be based on a realistic time table, providing a reasonable plan for the operation of the cooperative during construction. Next, a target group is selected to be served by the cooperative.

Given the broad range of needs of its clients, it is necessary to have clearly defined criteria for each specific group to be addressed in a given project.

A study of the socioeconomic conditions affecting the project environment is also important. It should be detailed enough to provide in depth information on prospective members of the cooperative. Evaluation and analysis of the results will reveal much necessary and useful information. This information should help to determine the traditional and social values which are most widely held by cooperative members. Project plans are then finalized and the administrative and financial details of the cooperative are put in order. Meetings with prospective members are then held to develop some of the bylaws for different aspects of the management of the project. Included in these discussions are such questions as adoption of plans, contract agreements, financing, and various schedules of operation.

Next follows education and training of prospective members, both in the technical and administrative aspects of the cooperative--such as the means for the development of future savings--and the issuance of new loans and payment plans. The cooperative should be registered with the government authorities. This will place it in an official position with the government, and thus afford it legal recognition.

Cooperative training and education:

Operation of an effective service to the people is dependent on the training and education of a cooperative's members. When people are attempting to understand a new process, education of how the system works and what is expected of them is valuable. This education must be continuous to provide benefits to the cooperative, and helps members to contribute to the education of their

cohorts in the cooperative. This creates a snowball effect and the operation of the cooperative improves as time goes on. The training component is also useful in the education of people who may be able to provide their skills in the construction and/or maintenance processes. These people can form subgroups, developed around a particular trade speciality. People will benefit from new and valuable skills they may have acquired by such a program in the cooperative and form a pool of talented people who can fill the requirements during the project's construction. Such training should take place in the formative stage of a cooperative's development and continue during construction into the operation and maintenance phase.

Self-help construction:

Self-help construction is the means by which individuals make a contribution to the construction process of their own house. The manner in which people contribute to the self-help process can be accomplished in several ways. People can make a labor contribution, also known as "sweat equity", or they may choose to provide some of the local materials which are readily available to them (i.e. earth for bricks, sand for the concrete, stone and gravel for the foundation, etc.), and supply these materials to the builders. Or, they may arrange trading some skill or commodity in exchange for other skills they are receiving from other craftsman. Additionally, owners may provide money for construction. In this case, even though an owner does not take part in actual construction, he becomes responsible for its implementation.

Additional aspects of management and administration:

The continuous operation of the cooperative must be assured over time. By utilizing the training and education programs of the cooperative, people can learn to provide these services. In the early stages of the cooperative, it may be necessary to have some sponsorship, either from the government or from a technical support organization.

When the structure of the community is changed, as is the case with the introduction of new shelter cooperatives, it is often better that the change agent be from outside the community. This eliminates any possibility of retaliation against change directed toward other members of the community. Once the system has become more accepted, then it is easier for the local members to manage without outside help. Periodically, there should be some review by an outside organization,

but this should occur infrequently to prevent the cooperative members from feeling that they have lost control or responsibility for the operation of the cooperative, for it is the assumption of responsibility which creates self-esteem on the part of both members and alike leaders. Unless the leaders of a cooperative are able to establish such responsibility, few people will be willing to follow. Leadership should operate in a democratic manner, giving due representation to all members of the cooperative, as the effectiveness of the organization will be severely hampered if members are not allowed to participate. In fact, loss of direct member participation is in complete contradiction with the purpose of the cooperative.

The legal Framework:

Shelter cooperatives are often given lower priority than agricultural-rural projects in many developing

countries. Agricultural cooperatives are often assumed to make a much more important contribution to the operation of the national economy than urban cooperatives. Agriculture is seen as a revenue producing activity and is often viewed as a competing consumption item to the shelter producing industry.

The effectiveness of a shelter cooperative is dependent on the availability of experienced promotional staff, the availability of long-term financing, the quality and life cycle of the homes it provides, the level of participation of its members, and the ways in which the collective facilities and amenities are used. If these elements are brought into careful balance, the cooperative can provide an excellent framework for shelter delivery.

The formation of the bylaws is vital to the proper operation of a cooperative. If the rules which will govern a cooperative are established early, then a smooth

and trouble free operation will develop in the long run. The formulation of regulations is difficult to develop once trouble has developed. If the bylaws are to provide guidance for the operations of the cooperative, they should define and explain the responsibilities in the following areas of its governance:

The objectives of the cooperative should address issues regarding the creation and management of savings, seek the correct type of technical assistance, aid in the land acquisition process, secure building materials, and assist in the construction of the dwellings.

The means of member selection and type of membership should be stated clearly in this section of the bylaws.

Rights and obligations of the cooperative's members should be defined, including members' obligations to the cooperative. Bylaws should spell out how voting takes place and define the role of its shareholders.

It is critical to state in the bylaws how the shared areas and maintenance is handled, how cooperative funds are handled, conditions of borrowing and requirements for repayment, the volume and rate of interest, securities and possible changes in the loan status should be brought out in the bylaws, as well as other, less important items which are not essential to be included here. The more explicit the bylaws are, the fewer the problems will be after operation begins. At the same time, it is important for the rule structure to remain sufficiently flexible in order to adjust to the special situation of each cooperative.

Shelter cooperatives should function as non-revenue generating property. If any income is generated, it should be returned to the cooperative to be used for the collective needs of its members. The financial condition of the cooperative should be reported in a standard

accounting format, but simple enough for all members to understand. In the early stages it is often necessary to have an outside source control the accounting aspect of the cooperative. This is a service which can be assumed by the sponsoring agency, and should be passed on only gradually to the cooperative, as its ability to handle such matters develops.

A final consideration is the relation between the bylaws of the cooperative and national or other governmental laws. Bylaws should be carefully examined in the light of the latter, to eliminate cases of conflict. Areas of such possible conflict are land tenure, registration of the land, design and building regulations, planning, zoning, and legal aspects of contracting. In most cases national laws take precedence over any regulation initiated by the cooperative.

Housing for the lowest income groups:

The process of urbanization has gained much momentum during the late fifties and sixties. This is due to two reasons: (1) increase in natural population fertility, greater access to health facilities, and increase in average life expectancy. (2) the great impact of the rural to urban migration which is reaching a rate between 2% and 10% a year in most developing countries. This migration is encouraged by the wide income disparity between rural and urban areas, which in some cases reaches a ratio as high as 1:5. The concentration of manufacturing, commercial, and service organizations in the major urban centers contribute significantly to the migration from the rural areas to the cities. People come to find work and other employment opportunities which are not available in the rural areas, since there is often a lack of employment opportunities in rural areas.

This, combined with the shortage of services such as water, electricity and sanitary facilities, adds to the rural-urban migration problem. Efforts to curtail this movement have been relatively ineffective in view of the greater opportunities for improvement available in the urban centers. If one examines the process of urbanization in most developing countries, one can see that it is characterized by a slow development of the infrastructure which usually lags far behind the effective demand for these services. Elements such as roads, sewers, drainage, electricity, etc. are not able to keep pace with the increasing population. The growth of informal settlements, where in most cases 30% to 70% of the urban population lives, is often not registered or recognized by governmental authorities. Of the lowest income groups, one-third to two-thirds of the people are not able to find jobs outside the informal sector.

The income level of the informal sector is far below that of the average income in the formal sector. Additionally, employment opportunities are not keeping pace with the supply of workers available for those who move to the city to find jobs at the lower skill level.

Most often the schemes proposed for the lowest income groups are self-help and/or site and services projects. The intent is to provide the infrastructure necessary for the development of support services (water, electricity and sanitation systems) and let the users provide the dwelling by themselves by whatever means at their disposal. Initially, this was thought to be a good process, but time and many examples have shown that these schemes also face many problems. The extremely high cost of service infrastructure often leads to having the actual construction handled by private contractors. This in turn increases costs even more. The lack of qualified local

personnel also increases the cost of the infrastructure, since well trained personnel is required to plan, develop, and build the infrastructure. It is not possible to employ local personnel as they often lack the necessary skills for such work.

Speculative investment is also a problem. Often the owner may be able to sell or rent out a property which he may have acquired through low income assistance, thereby making a large "windfall" profit on the transaction. The owner will then relocate in another informal settlement and use the capital gained for other purposes, or as a business investment.

Maintenance and upkeep of the dwelling is difficult without a decent community infrastructure. Outdoor spaces soon become neglected and thus generally degrade the entire community.

The lack of securities for the repayment of debts is another difficult issue for the cooperative, since the cooperative has to assume the responsibility for paying bad debts.

Approaches to solving many of these problems can be found within the cooperative framework, which allows people to participate directly in the process which explicitly seeks to solve such problems. Additional assistance may come from the ministries or the cooperation of other national organizations, active in the shelter delivery sector. Such assistance is often critical for the survival of the lowest income groups, because here the inhabitants have practically no means for providing for anything else but the bare essentials. The legislative branch of the national government may be instrumental in implementing laws which assist cooperatives. When the cooperative is in its formation, it should confirm that

none of its policies will conflict with those of the national government. Thus with proper planning and coordination, the cooperative serves as one of the best tools for addressing shelter delivery for the lowest income groups.

Conclusion

C O N C L U S I O N

The development of cooperatives in the history of mankind has been an important element in the process of allowing people to provide shelter for themselves.

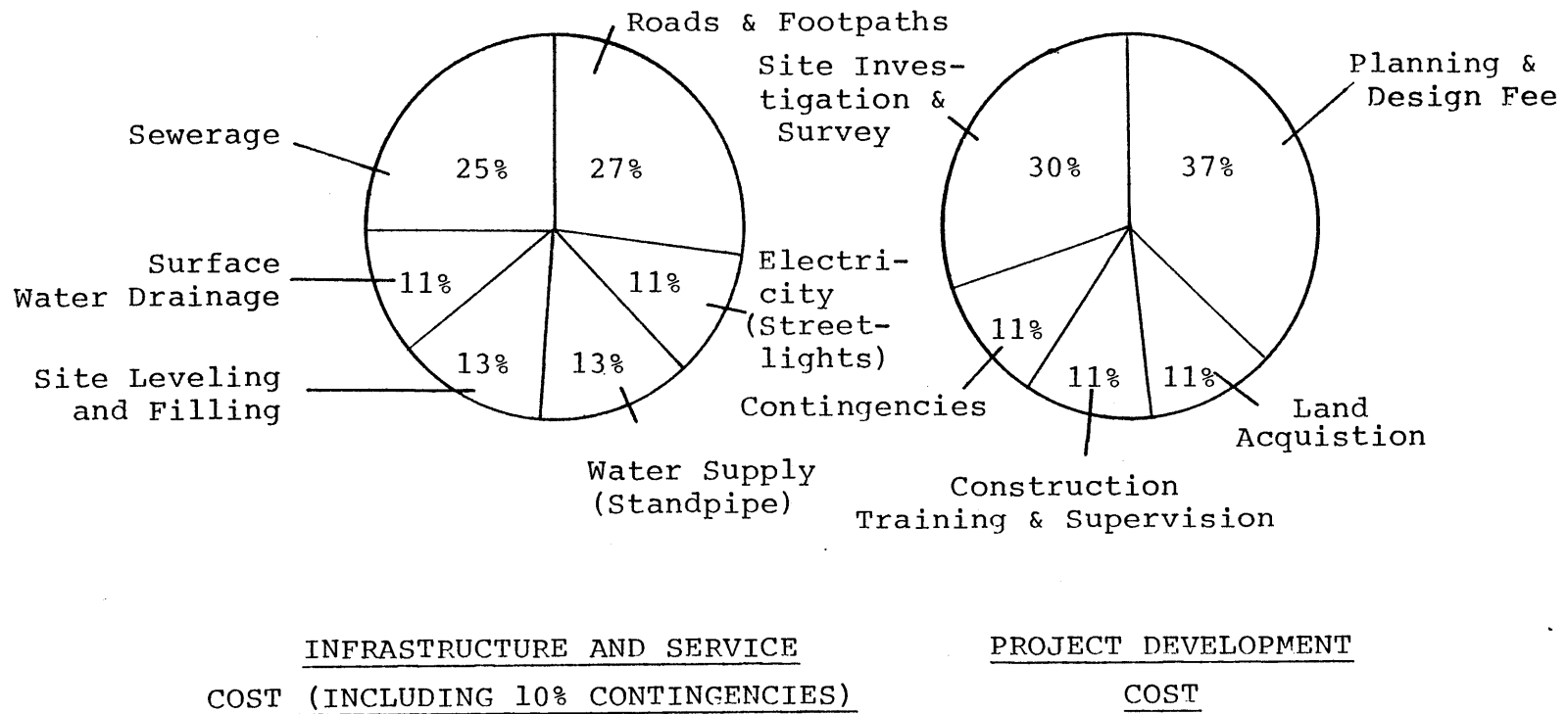
Present shelter delivery systems have many shortcomings and can no longer be considered to be an effective means of supplying shelter for the rapidly increasing population of the world. The context in which most of these systems were created no longer exist and yet existing and new shelter delivery systems have failed to adapt themselves to these changes and have consequently become outmoded.

This proposal for an alternative method of shelter delivery is based on the idea of a fusion of the modern cooperative concept and traditional community actions. In this system of shelter delivery, people will be able to

participate in the complete process of shelter design and acquisition. Individuals can participate in land procurement on through to construction and management of the units. The cooperative shelter delivery system will create a situation in which each component of the process will contribute in a manner to serve best throughout the full cycle of the shelter delivery system. Cooperatives can be viewed as a rationalization of existing traditional and modern systems, and the introduction of user participation in the process of shelter delivery. The system can function on many different levels, starting with the traditional or grassroot levels to local, national and international levels. Cooperatives should be seen as a system that can change and develop in time. The dynamic quality of this system is only possible through the intervention of its participants. People will continue to change and develop as time progresses.

This is the most important aspect of the cooperative shelter delivery system. In this manner, the system will succeed to provide good service in many different situations, for many people, for a long time.

Appendix

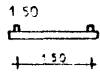


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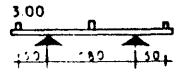
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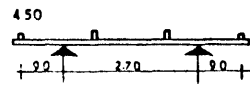


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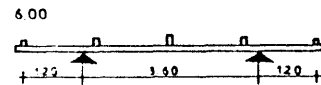
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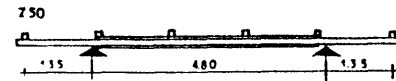
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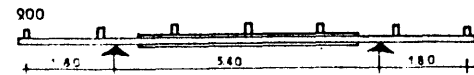
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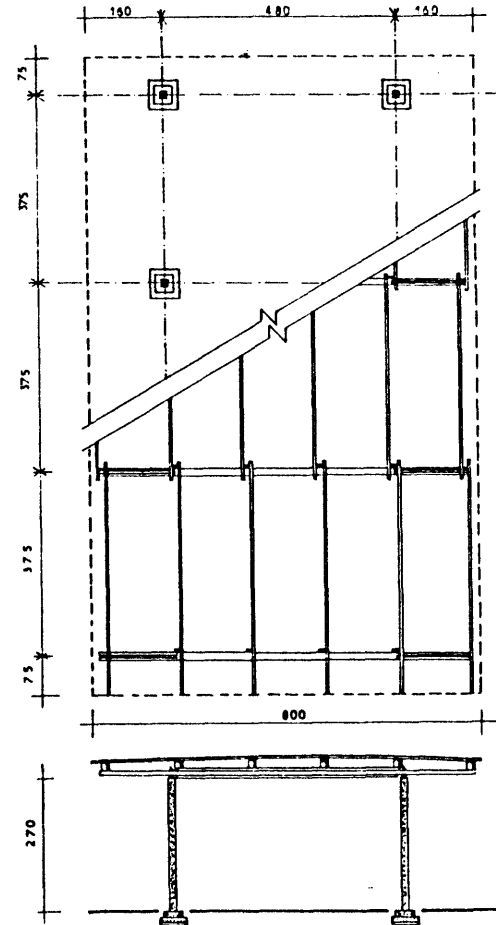
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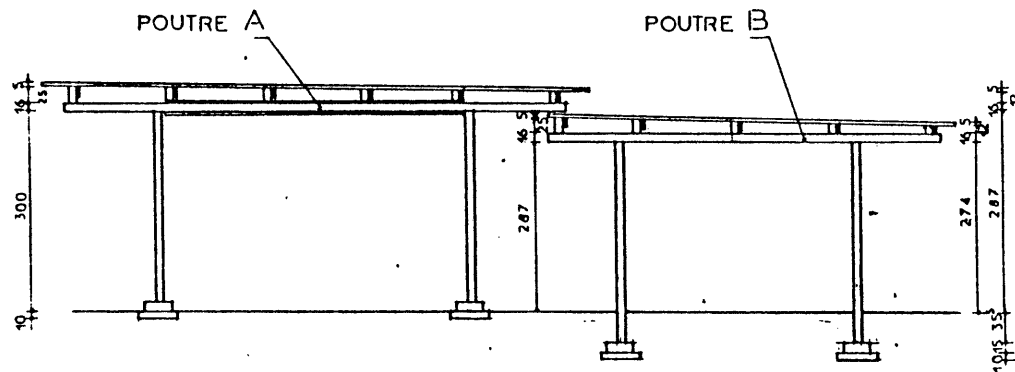
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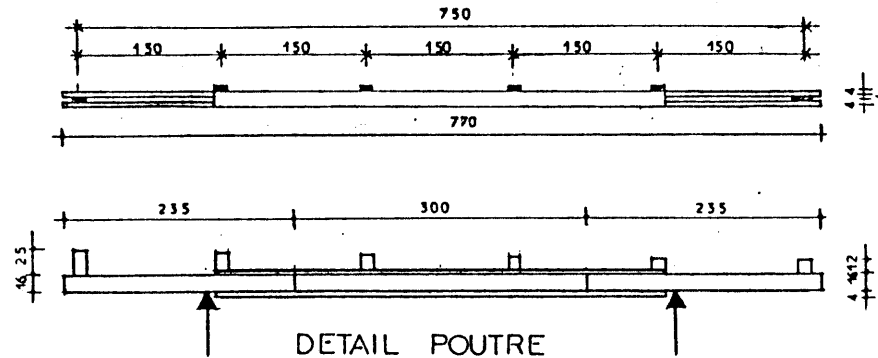
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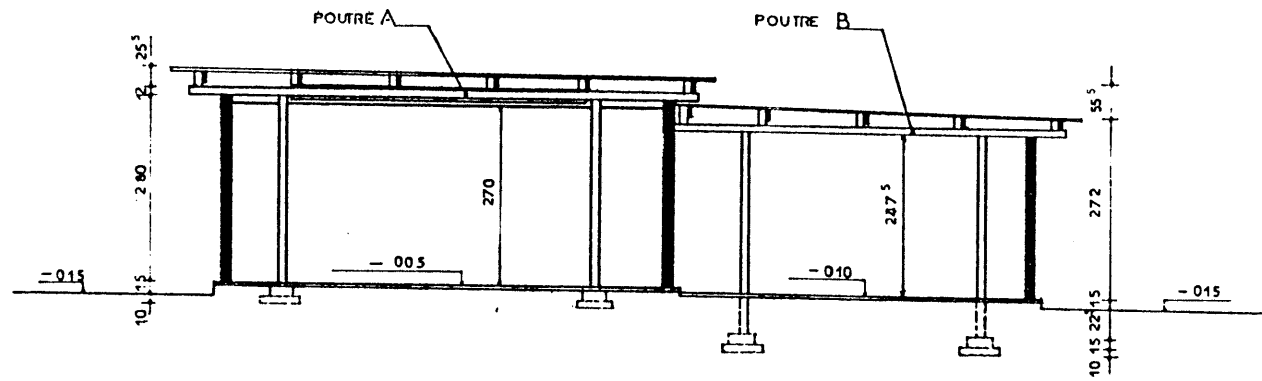




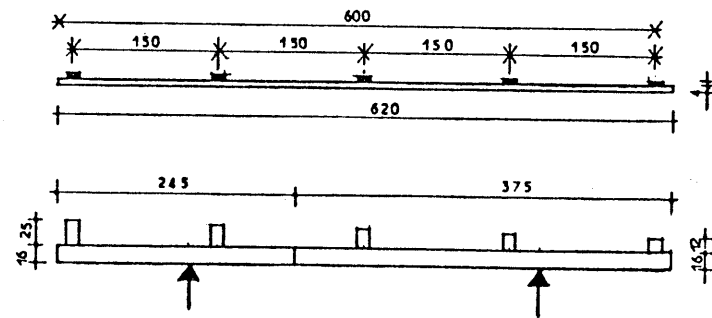
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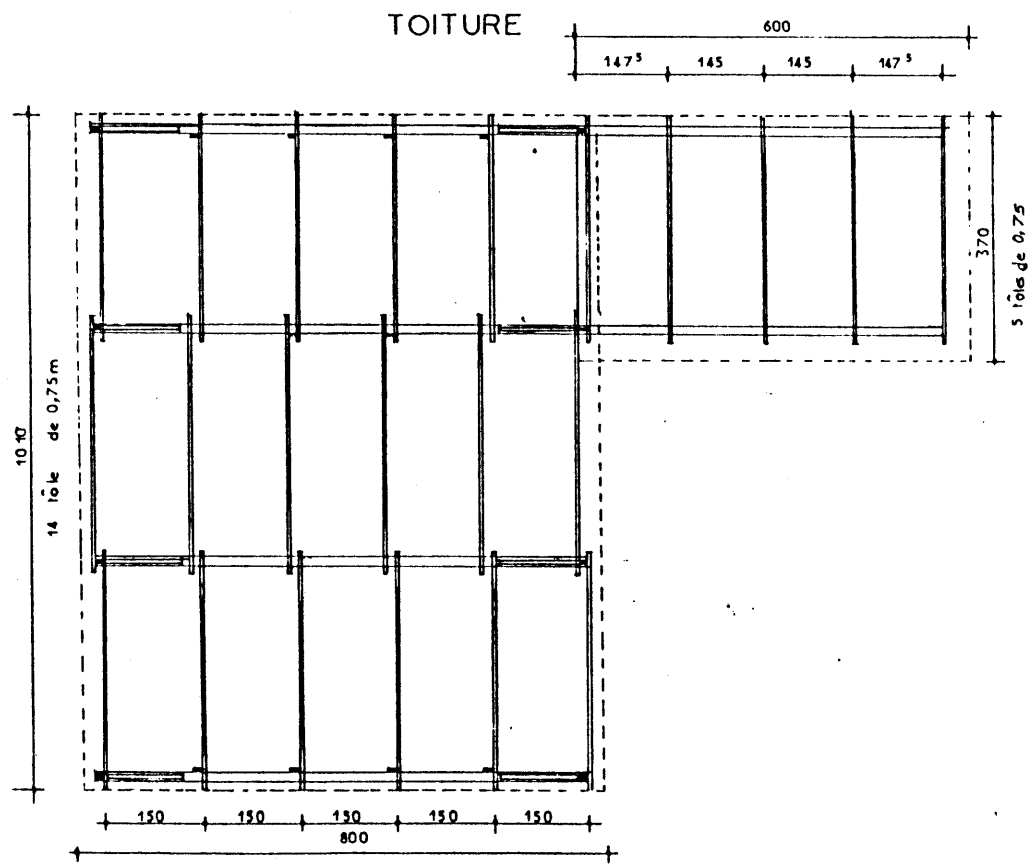
DETAIL POUTRE
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COUPE AA



DETAIL POUTRE B



WORLD BANK LISTING OF LESS-DEVELOPED COUNTRIES

HIGHER-INCOME (over \$2,500)

Greece, Israel, Oman, Singapore, and Spain

UPPER-MIDDLE-INCOME (\$1,136--\$2,500)

Argentina, Bahrain, Barbados, Brazil, Cyprus, Fiji, Lebanon, Malta, Panama, Portugal, Uruguay, and Yugoslavia

INTERMEDIATE-MIDDLE-INCOME (\$551--\$1,135)

Algeria, Chile, Republic of China, Colombia, Costa Rica, Dominican Republic, Guatemala, Ivory Coast, Jamaica, Jordan, Republic of Korea, Malaysia, Mauritius, Mexico, Nicaragua, Paraguay, Peru, Republic Syrian Arab, Tunisia and, Turkey

LOWER-MIDDLE-INCOME (\$281--\$550)

Bolivia, Botswana, Cameroon, People's Republic of Congo, El Salvador, Ghana, Guyana, Honduran, Liberia, Mauritania, Morocco, Papua New Guinea, Philippines, Senegal, Sudan, Swaziland, Thailand, and Zambia

LOWER-INCOME (\$280 or less)

Afghanistan, Bangladesh, People's Republic of Benin, Burma, Burundi, Centel African Empire, Chad, Comoros, Arab Republic of Egypt, Ethiopia, The Gambia, Guinea, Haiti, India, Kenya, Lesotho, Madagascar, Malawi, Mali, Nepal, Niger, Pakistan, Rwanda, Sierra Leone, Somilia, Sri Lanka, Tanzania, Togo, Uganda, Upper Volta, Arab Republic Yemen, People's Democratic Republic of Yemen, and Zaire

OIL-EXPORTING DEVELOPING COUNTRIES*

Algeria, Ecuador, Gabon, Indonesia, Iran, Iraq, Nigeria, Trinidad and Tobago, and Venezuela

SOURCE: World Bank, World Debt Tables, Vol. I (1978), pp. 21-23.

NOTE: Based on 1976 GNP per capita in 1976 U.S. dollars.

* Countries that export large quantities of oil, or for which oil exports are of considerable importance.

**ESTIMATED NUMBER OF DWELLING UNITS REQUIRED *
IN AFRICA, LATIN AMERICA, AND SOUTH ASIA BY
1980, 1990, AND 2000 (in millions)**

**HOUSING NEEDS : Projection of Population,
Number of Households and Percentage in
Urban Areas**

AFRICA				
	1975	1980	1990	2000
Age in Years Population (millions)				
0 - 19	218.8	281.8	336.1	436.7
20 - 44	127.2	148.3	183.1	243.0
45 +	65.3	83.8	84.9	114.0
Households				
Number (millions)	63.8	72.7	86.8	131.6
Population per Household	6.3	6.3	6.4	6.2
of Which Number 45 years and over	0.9	0.9	0.9	0.9
Urban Population				
%	24.8	27.1	32.8	37.7

	By 1980	By 1990	By 2000
Due to Population Increase			
Africa	9.5	33.3	66.7
Latin America	7.7	27.4	51.9
South Asia	28.1	97.6	184.9
To Replace Obsolescent Housing Stock			
Africa	5.5	16.5	27.5
Latin America	4.5	13.5	22.5
South Asia	17.0	51.0	85.0
To Remedy Existing Shortages			
Africa	6.3	19.0	31.8
Latin America	4.9	14.5	24.2
South Asia	19.0	56.8	94.6
TOTAL			
Africa	21.3	68.8	126.0
Latin America	17.1	55.4	98.6
South Asia	64.1	205.4	364.5
GRAND TOTAL	102.5	329.6	589.1

* Requirements as of 1975 Source : Center for Integrative Studies
Data: World Population Prospects 1970 -2000 As Assessed in
1973, UN ECOSOC, 1975.
Global Review of Human Settlements Statistical Annex,
UN ECOSOC, 1976.

**ADDITIONAL DWELLING UNITS REQUIRED (million units)
Due To Population Increase ***

PROJECTED HOUSING NEEDS: URBAN/RURAL

**ADDITIONAL DWELLINGS (million units) Required to Remedy
Existing Housing Shortages ***

		Current Estimated Deficit for 1975 (%)	Additional Dwellings Required per Year (million)	Additional Dwellings Required		
				By 1980	By 1990	By 2000
Africa	Urban	50	0.3	1.5	4.5	7.6
	Rural	50	1.0	4.8	14.5	24.2
Latin America	Urban	45	0.6	2.8	8.3	13.9
	Rural	50	0.4	2.1	6.2	10.3
South Asia	Urban	40	0.7	3.7	11.0	18.3
	Rural	50	3.1	15.3	45.8	76.3
Total	Urban	—	1.6	8.0	23.8	39.8
	Rural	—	4.5	22.2	66.5	110.8

* Requirements as of 1975.

		Dwellings Required per Year 1970 - 1980	Additional Dwellings Required		
			By 1980	By 1990	By 2000
Africa	Urban	0.9	4.4	15.6	34.4
	Rural	1.0	5.1	17.7	32.3
Latin America	Urban	1.4	7.1	24.7	47.5
	Rural	0.1	0.6	2.7	4.4
South Asia	Urban	2.2	11.0	43.8	91.8
	Rural	3.4	17.1	63.8	93.1
Total	Urban	4.5	22.5	84.1	173.7
	Rural	4.5	22.8	74.2	129.8

**ADDITIONAL DWELLINGS (million units) Required to
Replace Obsolescent Housing Stock ***

		Additional Dwellings Required per Year (millions)	Additional Dwellings Required		
			By 1980	By 1990	By 2000
Africa	Urban	0.3	1.5	4.5	7.5
	Rural	0.8	4.0	12.0	20.0
Latin America	Urban	0.6	3.0	9.0	15.0
	Rural	0.3	1.5	4.5	7.5
South Asia	Urban	0.9	4.5	13.5	22.5
	Rural	2.5	12.5	37.5	62.5
Total	Urban	1.8	9.0	27.0	45.0
	Rural	3.6	18.0	54.0	90.0

URBAN / RURAL BALANCE : Estimated and Projected Percentage of Population in Urban Areas (%)				
	1975	1980	1990	2000
World	39	41	45	50
More Developed Regions	69	72	77	81
Less Developed Regions	27	30	35	41
Africa	24	27	32	38
Latin America	60	64	70	75
South Asia	23	25	30	35
Data : Global Review of Human Settlements Statistical Annex, UN ECOSOC, 1976. World Population Prospects 1970-2000 as assessed in 1973, UN ECOSOC, 1975.				

Source : Center for Integrative Studies

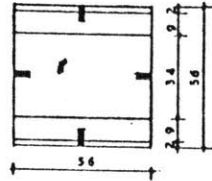
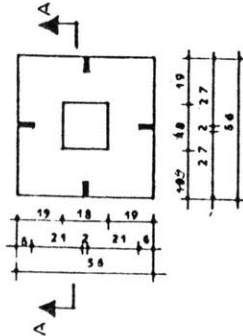
URBAN / RURAL BALANCE : Estimated and Projected Population in Urban Areas (in millions)					
		1975	1980	1990	2000
World	Total	3,968	4,374	5,280	6,254
	Urban	1,548	1,793	2,376	3,127
More Developed Regions	Total	1,132	1,181	1,277	1,360
	Urban	781	850	983	1,102
Less Developed Regions	Total	2,836	3,193	4,003	4,894
	Urban	766	958	1,401	2,007
Africa	Total	401	461	614	814
	Urban	96	124	196	309
Latin America	Total	324	372	486	620
	Urban	194	238	340	465
South Asia	Total	1,250	1,427	1,836	2,267
	Urban	288	357	551	793
Data : Global Review of Human Settlements Statistical Annex, UN ECOSOC, 1976. World Population Prospects 1970-2000 as assessed in 1973, UN ECOSOC, 1975.					

Source : Center for Integrative Studies

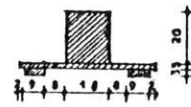
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MOULE A DES

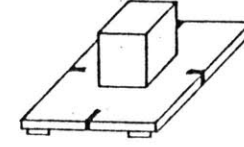
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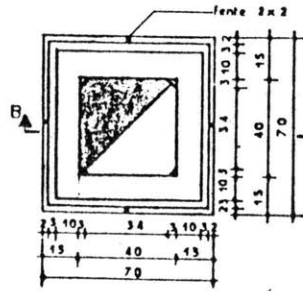


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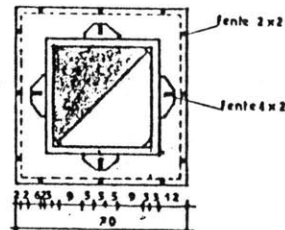
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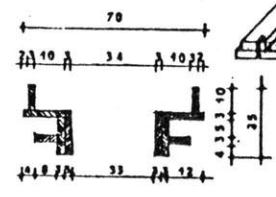


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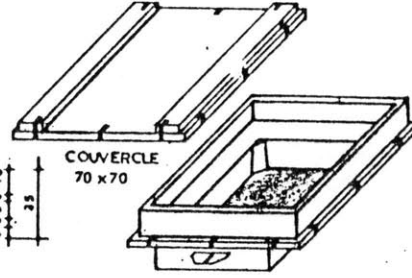
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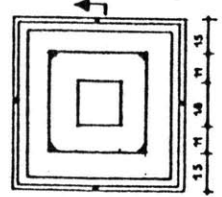


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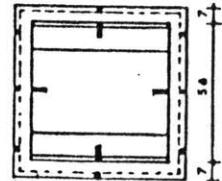


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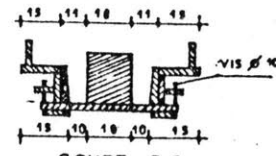
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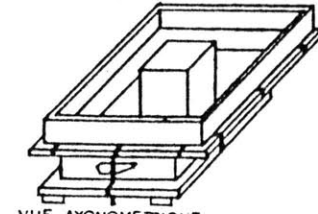
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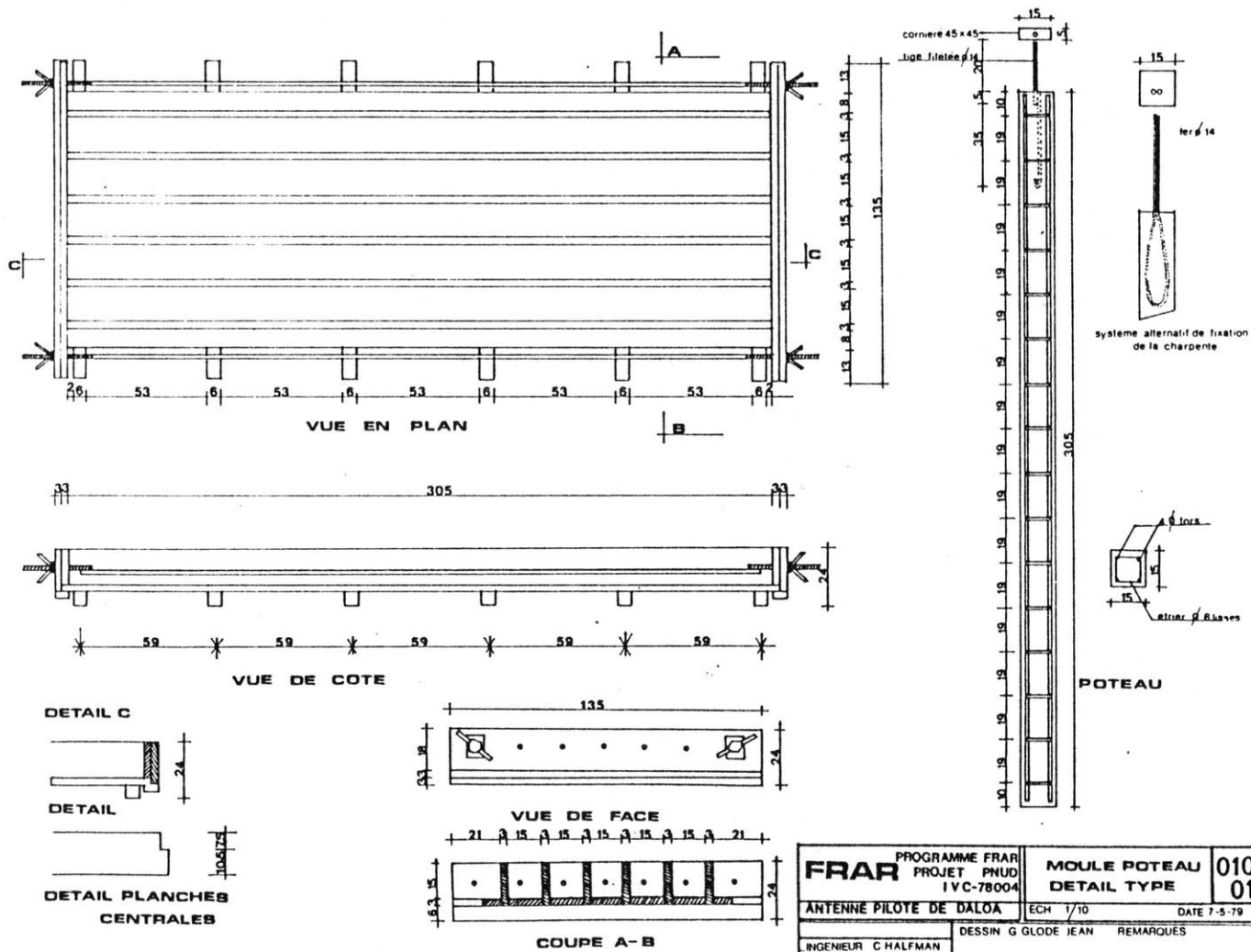
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COUPE C.C



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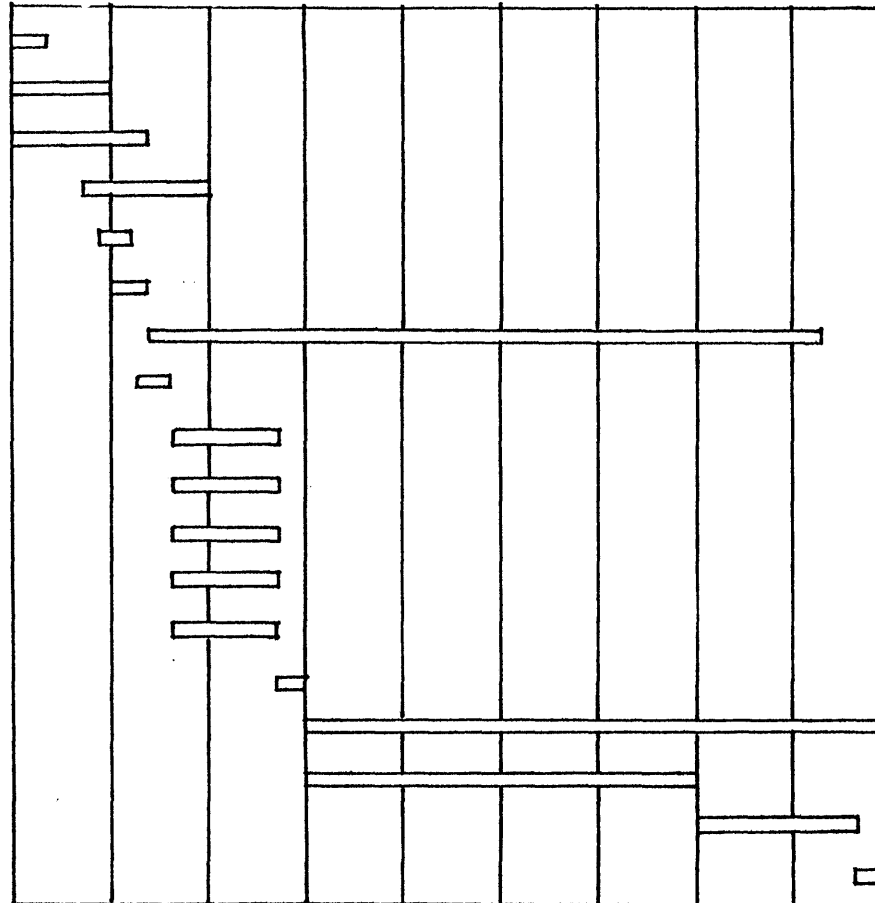


**SUGGESTED TIME-TABLE FOR HOUSING CO-OPERATIVE
PROMOTION AND FORMATION**

MONTH0.....4.....7.....10...13...16...19...22...25.....

OPERATIONS

1. PROJECT PLANNING,
2. LAND ACQUISITION
3. PLANNING AND DESIGN
4. LAND SURVEY, REGISTRATION
5. QUANTITY SURVEYING
6. PROVISIONAL FUNDING
7. SITE DEVELOPMENT
8. CALL FOR MEMBERS
9. COMMITTEE FORMATION
10. PRE-MEMBER SAVING
11. PRE-MEMBER EDUCATION
12. PROGRAM, PLANS & DESIGN
13. SOCIOECONOMIC SURVEY
14. FINAL MEMBER SELECTION
15. COMMITTEE TRAINING
16. MEMBER EDUCATION COURSE
17. MEMBER TRAINING
18. SELF-HELP CONSTRUCTION



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