SUMMARY OF INFORMATION

This report is essentially a survey of representative examples of housing types presented by agencies involved in the reconstruction. The purposes of the study are amply set forth in the introduction. But we would also like to state our hope that we all can learn from the various alternatives for future decisions.

The first section of the report is a summary of the range of the programs surveyed. It is intended to be a compilation of factual information and to indicate the important issues.

The second section consists of brief descriptions of each of the agencies' programs in housing. The format has been standarized as much as possible to enable easier comparisons. An attempt was made to verify all information but where it was not possible an attempt is made to clearly state the source of information. At least one project site was visited of each of the programs now in operation.

The information contained in this report was obtained during the month of April. Changes are quickly taking place in some programs so some data will become outdated.

The last section is an informal evaluation or assesment of what we learned from the survey. It also provided an opportunity to express the opinions of the authors, to point out critical issues, and to offer recommendations for either current changes or for future reconstruction projects.

The following report covers 24 different groups or agencies. Of these included six are international charities, six are religiously affiliated, six are representative of other nations (3 of governments, 3 are private groups) and six are locally based groups. They vary in size, experience and purpose but all have brought resources, commitment and ideas to assist in the reconstruction of housing in Guatemala. Not included are governmental programs, private business products or the unaided solution done independently by the residents.

The questionnaire inquired of the agencies about their objectives for the reconstruction program. The purpose was to be able to make a

judgement about how well a program's objectives met the apparent needs. It provides the information to evaluate how successful a program is in achieving those goals and it provides an insight into the purpose of the agency and its operational philosophy.

Eight agencies state their objectives in terms of building a specific number of houses in designated municipalities. Five agencies also plan to build a specific number of houses but they also plan to contribute towards the construction of some of the municipal buildings. Four agencies propose to provide construction materials as part of an extensive teaching program to construct earthquake resistant houses. Three agencies propose to integrate their housing project with an extensive and ongoing social and economical development program. Two groups constructed specific number of emergency structures that can be converted into more permanent housing.

While we do not have details on the process of determination of these objectives some indications were given and it is important for the understanding of the programs. We estimate the forum for the determination of the program and design are the following. Four groups were directed by strong leaders, ten worked through numerous committees, four were dependent on outside technical advice and six worked with local residents to determine the priorities, design and implementation. None was a pure system but a combination with one of the above emphasized.

The organizational set up of the various groups ranged from ad hoc group meetings, to groups of around twenty representing larger organizat ions sent here to administer their program, to permanent bureaucracies. Some of the latter have other programs here and work under international institutional constraints.

The total monetary resources devoted to the 24 housing projects by the various groups amounts to approximately 30 million Quetzales or dollars. This may change as anticipated resources may or may not materialize. The individual programs range from a low of a few thousand Quetzales to a common budget of around Q.300,000 to four large programs inthe 1 1/2 to 5 million Quetzal category.

The location of the concentration of activity seems to be in the departments of Chimaltenango and Sacatepequez. There are projects in El Progreso and some beginning in Quiché. The obvious lack is programs directed at affected zones of Guatemala City. The emphasis has been more on the rural than municipal areas. The impact of the USAID program has yet to be felt.

There are three basic types of housing structures and a fourth miscellaneous category. Seven groups are building wood houses, seven are building block houses, six are building frame/roof schemes and the four miscellaneous consist of the following. Two have undetermined futures as permanent shelters they are connected to present lamina corrugated z programs, 1 is a cement asbestos panel system and 1 is a steel, block, wood combination.

The enclosed space varies from 14.7m^2 to 51.7m^2. The Fundación del Centavo and the Canadian houses include roofed but open areas of 8m^2 and 27m^2 respectively. In most cases it is one single space which may be divided into two by the recipients later.

Only three projects provide flooring. There are several approaches to footings from 5 projects with none, six with posts, 1 prefab pod, nine on continuous steel reinforced concrete footings and two need a continuous low base wall. The roofs generally are corrugated sheets of zinc except for six project using cement asbestos sheets and one with fiber board sheets.

When all the aspects of construction are considered the various methods of construction are found to be as varied as the agencies. Of the 24 programs studied the manual labor for the construction of the houses is principally done by the recipients in 17 of them, five projects are built by paid workers, and two are built by volunteers. There are also a substantial number of volunteers contributing in the first two categories as well but most often as supervisors.

Interestingly no sophisticated construction technologies were introduced in these programs. Although some techniques are new to the workers, such as assembly of steel components, they are all quite basic. Fifteen projects are essentially wood frame and involve carpentry, seven projects are basically built of concrete blocks or adobe and require blocklaying skills, and two are a combination of carpentry and blocklaying.

Speed of construction is a primary objective for virtually all programs. Most view the reconstruction of houses as a race against time to house the most people possible before the rainy season. However, six groups are not initiating permanent housing until a later date.

There is a wide range of rates of construction. The rates, identified as the number of man days it takes to build one house, are not strickly comparable. The larger the house the more time it takes to build, or the more efficient the tools and skilled the workers the less time is required to build the houses. Nevertheless, the range of rate of construction is from a minimum 6 man days per house for Care and FEDECOAG to about 66 man days for the Bricks for Guatemala project. The latter project includes 28 man days spent producing the blocks for each house.

Some programs include training of construction skills for the workers. However, about twelve only trained the people enough to execute the program. No formal training with the objective of increasing the persons's ability to find future work in that trade was included. Two or three do offer enough experience to probably qualify the workers for finding a job in his new skills.

Only four programs, all of them influenced by the OXFAM/World Neighbors model have taken advantage of the opportunity to teach earthquake resistant construction techniques.

Reflecting the typical basic construction techniques the technological complexity of the tools used is not extreme. Nine projects use nothing more elaborate than basic hand tools, another eight use electric saws in coordination with a factory like production, four programs use CINVA-RAM block machines, two others use simple molds for making block and one program has imported an expensive automated concrete block making machine.

All programs have some form of supervision but the structure and organization vary. Thirteen programs are directed by foreign personnel, eight by nationals and three by a combination.

In terms of the recipients of the reconstruction programs perhaps the most basic issue is the method and criteria of distribution. The most common form of criteria is identifying recipients by a priority of those who are low income (as defined by each agency), have no other resources to build a house, widows, elderly, or those who care to participate. Some programs have a requirement of the ability to pay a minimum of Q.2.50 to Q.5 monthly. Other projects are very inclusive, every family in the town will receive house; one is exclusive, only members of a particular church qualify. Where there is criteria those decisions are usually made either by a local reconstruction committee or by census, the Municipality, or by a designated organization such as Desarrollo de la Comunidad. Sometimes the decision is left up to an individual promoter or agency representative.

The distribution of materials takes fewer forms. A common procedure is that all building materials are trucked to the local production set up or factory and the finished building components are delivered to the house site. This simplifies many of the problems of control. Roofing or material supply programs have warehouses where the purchaser comes to buy the material which then, depending on available transportation, is brought to the house site.

Calculating the costs of a project or the average per house is not easily determined and has generally not been detailed by the agencies. The agencies have figures material costs but have not necessarily calculated them before determining which design to use.

We have tried to estimate a more realistic cost which must include labor, transportation, land, equipment, tools and administration. It was not easy to get exact figures on any of these aspects. The implication of the various factors on the costs will be discussed in the evaluation section. Otherwise the rough results produced the following range of figures.

The total costs per complete house start with a low of approximately Q.100 depending on the extent of the use of individually produced materials to a high of Q.1,200. The least expensive houses are produced within the OXFAM/World Neighbor and CARE programs. The most costly but also the largest is the Scouts of Guatemala Program.

Another measure of costs is Quetzals per square meter. The low cost is about Q5/m^2 for OXFAM/World Neighbors and CARE, again depending on amount of traiditional materials used. Q.15/m^2 is a low cost for houses of totally purchased materials and the high cost of Q.30/m^2 most of which are built of concrete block or some combination of materials.

In the area of benefit to the local economy, there are principally three criteria against which to measure. The one is the amount of employment generated by the program, either through direct employment for construction or by purchase of nationally produced materials. Most agencies tried to first buy materials within Guatemala supporting those industries. Few people have been employed directly in construction, relative to the scale of reconstruction of the projects because the recipients are generally the source of free labor.

A second fact of benefit to the local economy is whether or not the housing programs leave behind a structure for continued employment. Some such as Bricks for Guatemala and Salvation Army plan to leave machinery and trained people who will be able to continue making blocks. Future employable skills were generally sacrificed for the speed of production.

Another important form of supporting the local economy is the strenthening of local businesses. For example, the OXFAM/World Neighbors program of working through the Coops improves the Coops capacity and promotes its growth. Hogar y Desarrollo is an ongoing industry which is expanding due to reconstruction.

The USAID, Mennonite and Comite Fratelli D'Italia require the beneficiaries to repay some of the costs of the materials to the local organization or municipality who in turn will use it for community improvement projects. This provides a longer range input to the local economy specially when the projects are of public service work orientation.

Regarding the financing of the various projects the range of alternatives is broad and by being so may be problematic. Only two groups, Hogar y Desarrollo and Fundación del Centavo, require full repayment for the total cost of the house; both, however, offer subsidies of interest. Neither is a charity institution but rather operates as a non-profit organization. Eleven agencies require partial repayment from 1/3 to 2/3 of material costs, seven of these agencies also require a contribution of work. Ten other agencies give the materials to the recipients though seven require a contribution of work on the houses and possibly public buildings on the part of the participant. The Rotary Club requires the recipients to contribute work for the municipality for the zinc roofing they receive, but the financing of the houses will be directly through BANVI or BANDESA.

Regarding the process of siting the houses, the recipients generally return to their previous lot and locate the house as they prefer. The exceptions are the cases where Mexico set up refugee camps and the Salvation Army plans to build a colonia. In general very little assistance was given in the choice of siting the house on the property. Owning the land on which to locate the house was generally a basic requirement to receive aid.

The Rotary Clubs are addressing the reconstruction of the town infrastructure including public buildings during the early stages more so than other groups. The Scouts are comprehensive in the infrastructure reconstruction of the aldea of Vista Bella. Otherwise no comprehensive planning or changing of streets, open spaces or utilities has been encouraged by the agencies. Most non shelter aspects have been left to the responsibility of the municipalities. Programs for schools or public buildings are quite separate. Other funding for large scale water projects etc. are also quite independent from the housing. Only CEPAin Zacapa, Red Cross and Fundación del Centavo have the construction of latrines as an integral part of the initial housing program.

The environmental result of the housing projects in several towns such as Santa María Cauqué, San Andrés Itzapa and El Progreso has a strong impact caused by the use of same type of wood house to such a wide extent. In the rural areas the Care and OXFAM/World Neighbors houses basically appear to not have changed the environmental appearance.

Future implications are not fact but judgements and projections from existing conditions. Some quite obvious physical problems will develop. The more speculative aspects will be discussed in the evaluation commentaries. Some of the projects will need repair and/or replacement of enclosure materials and/or structural components within the next few years. The protection of the bottom sill of wood houses sitting directly on the ground is one problem and some need cross bracing added now to even remain structurally erect and safe.

Due to limited resources and a goal to build more houses rather than bigger houses about half of the projects built units with an area in the 14-20 square meter range. While many recipients did not have houses larger than this before, some basic additions are likely to be attached. How that is done may affect the safety of the structure.

Several house designs have only one door which may cause some beneficiaries to cut another, possibly thru cross bracing to have access to back yards and additions. Modifications to or additions to block houses or steel frame houses will be difficult without damaging the structural integrity.

How well a house is used and liked by the recipient are measures of its cultural suitability. The acceptance of a housing type within a culture is dependent on a number of factors, many of which are subjective. We have dealt more directly with the physical indicators or suitability which include the following factors. The floor plan, how well the house supports the natural living patterns of the family; image - does the house in fact look like what the recipient thinks his house should look like; materials - were construction materials used with which the family feels comfortable; security - does the family feel secure from intrusion and safe from structural failure; climatic response - does the house protect well from the cold and/or heat and provide adequate ventilation; environment - does the house relate well to its surroundings, for example face the street or neighbors house in a way that supports the relation to the public or friends.

As few of the houses are actually occupied it is hard to assess the success of cultural acceptability. Attempts to achieve it are more obvious in programs such as OXFAM/World Neighbors, the Comite Fratelli D'Italia and Fundación del Centavo. Houses that satisfy the fewest of the criteria would include that of the Mexican government and of FEDECOAG. The 24 projects are discussed further in the evaluation section.