

**EL SALVADOR
HOUSING RECONSTRUCTION PROGRAM**

FINAL REPORT

FIXED OBLIGATION COOPERATIVE AGREEMENT # 519-A-00-01-00225-00

DATES OF PROGRAM:

SEPTEMBER 28, 2001- AUGUST 31, 2002

SUBMITTED TO:

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I. Introduction.

This report summarizes the construction actions carried out in the Municipality of Santa Elena, Department of Usulután, during September 28, 2001 through August 31, 2002.

The document details the most relevant executed actions in the construction of 325 housing units with its necessary accessories, complying with all the technical requirements, so the families could live in a healthy place, with dignity and in a pleasant context.

The total of people benefited with this construction project is approximately 1,625, distributed among the nine cantons of the Municipality of Santa Elena. The total cost of the project was \$1,387,297.61.

On this effort, four partners were involved: the United States Agency for International Aid (USAID) as the major donor, World Vision as the executor and donor, the Government through the Municipality, as facilitator of the local process, providing key contacts, and the Community with auxiliary non-skilled labor.

During this period, USAID provide close supervision to the construction processes, verifying the quality of the work and the compliance of the designs. They also provided technical assistance on the structural designs.

Additionally during this project, World Vision in El Salvador (WVES) built very important organizational capacities in the infrastructure area, improving the national performance of the organization. One of the most important issues was the usage of GPS / GIS technology, which will be applied to other working areas in the organization in order enhance the management of the geographical information.

Another key element was the inter-institutional coordination encouraged by USAID. This allowed World Vision to share experiences and to learn better practices from others, and to improve work methods, so as to reach the quality standards in an effectively way.

II. Background.

In January and February 2001, El Salvador suffered two major earthquakes of 7.6 and 6.6 respectively, on the Richter' scale, that cause severe damages nationwide. It caused injuries in more than two hundred thousand families, and deaths in approximately one thousand people. Social and commerce infrastructure was also destroyed, causing a direct negative impact to the economy of the country.

In response to this national disaster and emergency, World Vision in El Salvador provided emergency and rehabilitation assistance with the support of World Vision's Partnership and other international aid.

USAID in El Salvador opened an opportunity to support these emergency and rehabilitation tasks, so that American organizations working in the country could apply for assistance. World Vision submitted a proposal that resulted in the approval of the construction of 325 housing units in Santa Elena, Department of Usulután.

World Vision started the beneficiaries' selection process and the construction process in October 2001 and completed the program in August 31, 2002. Due to this support, WV in El Salvador was able to extend its coverage of the actions carried out throughout the country, and in this way mitigate the damages in the families due to the quakes.

III. Project Management.

The management of the project carried out through the regular administration processes, which are consist of the following areas: Planning, Organization, Implementation and Control: all these applied to the community infrastructure area, and specifically for the housing construction area.

During the implementation of the project, it was necessary to adapt some internal policies in order to comply with the USAID regulations, for example: Purchasing selected supplies by country of origin.

Likewise, some processes were implemented without difficulty due to computerized internal procedures, which were already complying with USAID requirements.

Project management was carried out in two main dimensions:

a) Administrative

The aim of this dimension was to provide control and monitoring of the financial accounting processes, cash control, purchase and delivery processes, and personnel hiring.

b) Field Work

The primary focus was the achievement of goals, related to time line; in the beneficiary selection, and in the construction process. The main actions were the following: Material consumption control, labor control, and the compliance of the quality standards in construction process and in raw materials.

The personnel involved in the execution of the project, for both dimensions were:

3.1 Project Personnel.

Administrative Area.

Project Director	Franklin Perdomo	Civil Engineer / MBA
Accountant	Elmer Barrientos	B.A. Bachelor.
Purchases	William Duran	Finance Tec.
Secretary	Marta de Rodríguez	Secretarial
General Services	Julio Saget	

Field Staff

Supervisor	Luis Zelaya	Architect Tec.
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Supervisor	Ricardo Calona	Architect.
Supervisor	Claudia Navas	Architect.
Warehouse Keeper	Oscar Zelaya	Finance Tech.
Warehouse Keeper	Marvin Soto	Civil Engineer Tec.
Mason Foreman	Oscar Guzmán	
Mason Foreman	Antonio Nuñez	
Mason Foreman	Luis Borja	
Mason Foreman	Alfredo Vásquez	
Social Promoter	Víctor Martínez	

3.2 Inventory Control System.

One of the main functions in the field management was to control the construction supplies in order to adequately handle the distribution and consumption of the materials. Setting up a manual system allowed an appropriate delivery control of materials to the beneficiaries' site from the suppliers. This system gathered information from the field in timely and accurately manner, thus the consumptions of the material could be monitored. The system is a documentary process, so the final reception of the materials could be reflected in papers.

A reception sheet was elaborated for each beneficiary, containing the names of every material previously printed in the sheet. As the items were handed over to the beneficiary, it was posted in the control sheet. All sheets from every beneficiary were consolidated in a general sheet and ordered by sector, so the Supervisor would be able to verify the dispatched materials, which provided the inputs to scheduled the work for the masons.

3.3 Monitoring Process.

The Manager and Director of the project monitored the process at their two administrative levels and having specific scopes for it.

In the administrative dimension, the system was implemented in the purchasing of all supplies, personnel hiring and payrolls, as well as in the compliance of the purchasing and dispatching plan. In addition, it primarily aimed to monitor the policies observance related directly to the project (USAID & Organizational policies).

In the field area, the emphasis was placed in the performance of the construction plan, work reception,

quality in the construction procedures and community involvement.

To carry out this process, it was necessary to design formats and reports that gather the required information for decision making, in order to achieve the general objective.

IV. Achievements

4.1 Built Houses

A total of 325 families were benefited with a house, and it was assured that each family would get a housing unit with all the basic services included, and that the design was appropriate and secure accordingly to the context where it is located.

Each house has access to water, electric ducting installation systems, absorption pit to appropriately manage residual waters from domestic sources, and a latrine for excrete waste. In addition, the houses were built in non-vulnerable places in case of any seismic event or other natural disaster occurs. The houses have cement floor and roof made out of refracting materials for the solar rays, so that temperature does not elevate to high levels. In general, the houses provided to the beneficiaries coincide with a healthy housing design, proposed by the World Health Organization (WHO).

4.2 Accessories

Each one of the 325 constructed houses has the following accessories:

- Latrine for the adequate excrete disposal. From the total of 325 houses, 277 latrines were built as the rest of the houses had adequate latrines. Thus, 85% of the families did not have latrine, or latrines were not in good condition to be used.
- 242 Washing sinks were installed in order to assure an appropriate disposal of gray waters resulting from washing clothes, dishes, and kitchen utensils. This accessory is connected to the gray waters

collection system. 74% of beneficiaries did not have a washing sink in good condition of use.

- A gray water collection system was connected in 100% (325) of the houses. It consists of a grease trap and pit that has a mechanism that prevents the circulation of waters on the ground's surface, and improves the house hygiene conditions.
- The families were provided with materials for the construction of firewood saver stoves. A talk on the usage and location of the stoves in the house was given.

4.3 Training

The 325 benefited families were trained on the usage and maintenance of latrines, as well as the location and use of the firewood saver stoves. Training about home hygiene and how to prevent from Dengue was also given, as at that time, El Salvador was facing a Dengue outbreak.

4.4 Summary Table

Item	Initial Goal	Total Built	Difference	Remarks
Houses	300	325	+25	Due to savings in mitigations.
Latrines	180	277	+97	Resulted more than planned..
Washing Sinks	300	242	-58	No all needed it.
Pits	300	325	+25	Due to additional houses
Stoves	300	325	+25	Due to additional houses
Internal Divisions	7476	6494	-982	The design was modified and the square meters were reduced.

V. Beneficiaries Selection

5. 1 Selection Process

The beneficiaries' selection process met the following aspects:

Municipality Identification

World Vision proposed to USAID places affected by the earthquakes and identified by the National Emergency Committee (COEN, and that coincided with the areas where WVES was working. The proposed sites were approved by USAID.

Initial Coordination with the Municipality.

Upon USAID approval, a contact with the Major of the Municipality of Santa Elena was done, in order to explain the project' scope, and the purpose of working jointly. The Major gave his approval and designated the Cantons where WVES could find earthquakes victims who could meet the USAID requirements.

Obtaining earthquake victims base list.

Based on the Municipality's orientation, a survey was carried out in the 9 Cantons covered by the Municipality of Santa Elena, except the urban area, as it was already assigned to CHF. This survey was achieved with the collaboration of the high school students. It was necessary to elaborate a format to gather the basic information of the site, as well as the socio-economical components of the family group. As a result, 839 families were identified.

Socio-Economical Evaluation.

Having the base list of earthquake victims, an evaluation of the socio-economical criteria of each family group was carried out. For this evaluation, there was a selection of surveys that met the criteria of related to monthly income that did not exceed two minimum salaries. Afterwards, home visits were carried out to verify the information and to get a final evaluation on socio-economical criteria. As a result of this process 400 families were qualified for the next step.

Legal Evaluation.

The legal evaluation consists of verifying if the land of the potential beneficiaries had an appropriate legal register. This procedure ensured that there was no risk in losing the properties in the future. For this purpose a file given by the Instituto de Libertad y Progreso (ILP) was filled out, and it contains cadastral information of the land, and copies of the title deed, identity document and the Identification Tributary Number (N.I.T) were attached. After an appropriate analysis of the documents submitted by the potential beneficiaries, these were sent to the ILP, so that this Institute could give its approval to each beneficiary.

Gathering Information using the environmental guideline for each sector.

The environmental guideline is a document that was used to evaluate the risk that may exist in any sector intended to cover. The mechanism applied was a 20 people focal group method, where they jointly were identifying the findings, and if there a risk factor was found in the area, such as slopes or rivers, a visit to the specific place was carried out. In general, no relevant risk situations were found at the community. Another important element identified with this guideline was the potable water provision for the sectors. The result was that there was an adequate water system provision that met the USAID requirements.

Site Environmental Evaluation

The environmental evaluation to every site, was carried out in cooperation with the United States Army Corps of Engineers (USACE) staff, which consisted of an evaluation of the land where it was intended to build a house. The security of the site, the existence of basic services, such as latrine, washing sink, water pit and potable water was verified. During each visit, the USACE technician recommended the adequate mitigation measures per each land. It was also taken the GPS locations, to identify the position of each site. All this information was registered in a form, which was attached to the Environmental Guidelines in order to get the USAID approval.

Sites Approval.

To initiate the housing construction in the site, it was crucial to obtain the authorizations from the USAID and ILP.

In order to obtain the ILP legal approval, detailed documents were submitted, and waited until ILP gave the resolution. This authorization from ILP was given after USAID approved each site.

The following package of documents was sent to USAID in order to obtain authorization of the sites: A sketch locating the site of the sector, and the location of each house in the targeted area. The list of the potential families to be benefited was also included in a format already prepared to write the USACE's inspection result, and the Environmental Guideline filled out for the sector. This package of documents was organized per sector, and then sent to USAID where USACE's inspection visits to every site of the potential beneficiaries they scheduled in collaboration of WVES.

World Vision sent the packages to USAID on December 10, 2001; the USACE inspections started in January 2002, and completing this process in the month of March.

5.2 Beneficiaries Participation.

The beneficiaries' participation was basically focused in three phases: During orientation meetings, when grouping the teams to carry out the works (they contributed with the auxiliary labor), and during the Environmental Sanitation training.

The beneficiaries' participation as auxiliary non-skilled labor was monitored through attendance control cards, which were administered by WVES' Social Promoter, who verified it and promoted the beneficiaries participation.

The beneficiaries were involved in the following main tasks: Digging foundations, latrines, and pits. Carrying materials, preparing and carrying concrete and mix, and preparing material for roof structure.

VI. Constructive Process.

6.1. Designs

World Vision El Salvador submitted to USAID a housing design that is consistent with the Healthy Housing Design proposed by the Pan-American Health Organization (PAHO), which has 44.70 squared meters of construction.

The architectonic distribution of the house includes a main room for the parents, a room for the children; a space for the kitchen (in case is an electrical, propane gas or any other type of combustible stove that reduces smoke). In addition, the house has a shower room and an external hallway that it may be used as a living room / dinning room.

The gap between the kitchen and the shower room, as well as in between the two bedrooms, have been separated with a metallic structure covered with fibrocement of 13 mm (1/2 inches) of width.

The concrete floor has a compression resistance of no less than 140 kgs/cm², and the average thickness is not less than 5 centimetres.

In addition, the house includes two doors, two metallic windows, and wire ducting for completion of the electrical installation system.

The housing design had two significant modifications. The first modification was the footing slabs covering, which were set at 7.5 in the base, and 5 centimetres in the lateral sides. The second important modification was carried out in the roof structure, where the one beam was added to the lengthiness of a covering.

6.2. Materials

The materials used for the construction of the houses complied with the quality standards established for each type of materials. Concrete blocks of 15 centimetres of thickness were used in the case of the walls, and ½ inch re-bar was utilized in the corners of the house. The cement employed for the concretes and block laying was of the Portland type, which is the cement available in the Salvadoran market.

The roof covering was install with zinc and aluminium materials that prevents sun heat from penetrating in the house. Other roofing materials available in the Salvadoran market lack this feature.

Sand and gravel were chosen from riverbanks closed by the construction site; in this project the selected source was the Jiboa River.

6.3. Men labour

Skilled labourers were hired to work in the concrete block laying, in the assembling of structural reinforcements, in the installation of metallic structures such as doors, windows, roof and covering structures, and in the pre-fabricated columns.

VII. Quality Control

7.1 Materials.

The materials used in the construction of the 325 housing units comply with the required standards for each type of materials. The concrete blocks were purchased in Bloqui-tubos Jibóá, which monthly provided World Vision with lab test valid for the supplying period of the project. The re-bars used in the structural reinforcements, as well as the beams and roof covering were purchased in Galvanissa.

A design was prepared for the concrete and mixture's aggregates with an agriculture production bank Calichal, located in Jibóá. The laboratory in charge of the design was GEOMAT - Ingengering Laboratories.

In order to ensure the compliance of the concrete proportions and qualities, one-bag mixers were used in the footing channels pouring, and in the floor concreting.

7.2 Skilled Labour

The skilled labour used in the construction processes received close supervision in the following two ways:

- a. Daily follow-ups (supervision)
- b. Sampling follow-ups (monitoring)

7.2.1 Supervision

The Master Builder, who was in charge of supervising an average of 15 masons, carried out oversight in the construction processes. Four master builders were hired for this purpose, and they reported directly to the site Engineer.

7.2.2 Monitoring

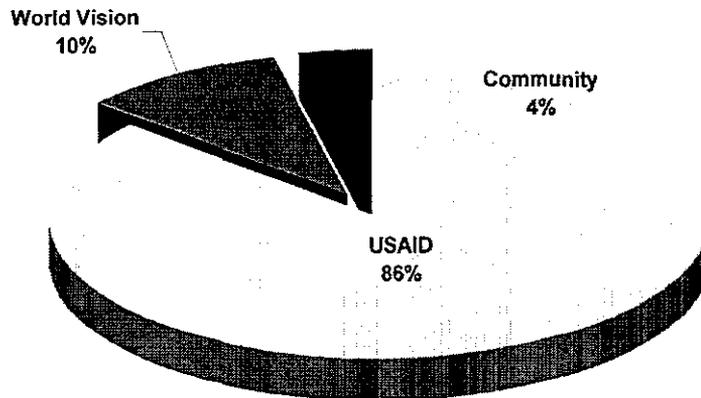
Two monitoring modalities were implemented in this project. The site engineer periodically scheduled visits to the construction sites and followed-up the master builder performance. Besides, the Project Director carried out regular visits to verify the construction processes.

7.2 External Supervision

The project received supervision from United States Army Corps of Engineers (USACE) that verified the construction processes and provided valuable feedbacks. Likewise, USAID carried out two international audits to verify the construction process and the beneficiaries' selection methods.

VIII. Shared costs

In the construction of 325 housing units in Santa Elena, Usulután, World Vision provided cash match funds to total US \$138,276.00, which indicates that per every one hundred dollars that USAID granted to the project, World Vision Inc. provided US \$11.53. The community contribution was calculated as US \$24,000.00, and this part was completely obtained through the integration of non-skilled labor to the construction processes that was controlled by attendance cards, as it was explained in numeral V related to the selection of beneficiaries.



IX. Learned Lessons.

9.1 Selection Processes

The beneficiaries' selection process implemented in this project allowed World Vision in El Salvador to know and apply judicial criteria for all the attended beneficiaries. In addition, the training received at the ILP has allowed World Vision to provide some legal advise to the beneficiaries about attaining the registration of their properties and title deed through.

9.2 Technology

The application of technology to the management of the geographical information system has benefited the organization in the usage of this technology to other working areas.

9.3 Inter-institutional Coordination

A direct output of this project's implementation was building relationships between institutions that execute infrastructure programs. Experiences have been able to be shared, as well as to learn from their experience, and in some cases, supporting efforts were done to achieve common objectives. World Vision established coordination with institutions such as CARE, CHF, Save the Children, among others.

Currently, World Vision continues building these relationships in order to carry out other activities. In some cases, the areas of interest are different from the infrastructure programs.

The coordination carried out with the Municipal authorities in Santa Elena was the key in setting up World Vision's credibility for the fulfillment of the acquired commitments.

9.4 Environmental Sanitation

The fact of integrating the house as part of the communitary development, allowed World Vision to review the housing concept in terms of all its surrounding fields; especially those related to water and sanitation, which are important when providing a healthy life for the families.

Coordination with government health units in the construction site was established so that the entity may give follow-ups and monitor the usage of the accessories such as latrines, washing sinks, grey water pits, and the shower, as well as the monitor the water quality.

World Vision has also established an Area Development Program (ADP) in the Municipality of Santa Elena, with the purpose of supporting community efforts, and trying to continue assisting the programs started with this infrastructure program.

X. Conclusions

The housing construction project recently concluded has had a significant impact in the recuperation of the life quality in the families living in the Municipality of Santa Elena. Out of 839 families identified as year 2001's earthquake victims, World Vision was able to built 325 housing units with the financial support of USAID, and 75 additional houses built with the organization's funds. It means that only 47.77% of the total affected families have met their need of a shelter, under the healthy scheme, which influences in the health improvement, and integrates the families into a better level development process.

XI. Challenges

- 11.1 It is likely that a housing unit with all the necessary elements, facilities the families to have better health conditions. Thus, it is important a government follow-up (municipality or central authorities), in order to ensure proper usage and maintenance of the installation elements that have direct influence in the health quality of the community.
- 11.2 Another existing challenge is the modification of the decrees #446 and #447, so that children may be protected, but also that it may facilitate the families to take advantage of the increased value of their lands, in order to improve the families' income.
- 11.3 The emotional health of the earthquake-affected families is also an aspect that it should be considered within the recuperation of life quality. Up now, there are few organizations providing assistance to this area, although it directly influences in the co-existence of the people in the community.