

- PD-ABQ-009 -



**BURNS AND ROE ENTERPRISES, INC.**

**Final Report**  
**ENERGY EFFICIENCY AND MARKET REFORM**  
**PROJECT: ARMENIA WEATHERIZATION**

*FINAL*

March 1996

**Submitted by:** Armenian Relief Society, Inc.

**Under Subcontract to:** Burns and Roe Enterprises, Inc.

**Submitted to:** U.S. Agency for International Development

**Contract No.:** CCN-0002-Q-100-3154-00  
Energy Efficiency and Market Reform Project  
Delivery Order No. 5, Task 7

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*Armenian Relief Society, Inc.*  
*Weatherization Project*

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## **INTRODUCTION**

This report is an account of the Armenian Relief Society, Inc. (ARS) Weatherization Project activities as per the Burns and Roe Company Labor-Hour Service Agreement No. 5826-034. The Armenian Relief Society, Inc. served as a subcontractor to the Burns and Roe Company on Delivery Order No. 5, Task No. 7 of the Burns and Roe contract with the U.S. Agency for International Development (CCN-0002-Q-00-3154-00).

Through its \$60,000 subcontract agreement with Burns and Roe Company, the ARS provided immediate support of a weatherization project in Armenia that protected vulnerable populations from the cold winter temperatures. The project helped recipients maximize efficient use of limited fuel supplies to reduce hypothermia and enabled vulnerable populations to endure Armenia's extremely harsh winter climate. This more efficient use of fuels was accomplished through the installation of various weatherization materials such as caulking, felt, and foam among others, in order to reduce loss of heat from dwellings.

ARS implementation of the weatherization project began in mid-October 1994 with the initial training of twelve individuals. Actual site weatherization began on 10-11 November 1994. The project was expected to be completed by 31 May 1995. However, due to complications which are discussed below, the project was halted for a period of one and a half months. The ARS completed all weatherization activities on 13 October 1995.

## **PROJECT OBJECTIVES**

### ***Weatherization of 20 to 30 Buildings***

The project's goal was to weatherize 20 to 30 schools, hospitals, pensioner's homes and apartment buildings which house some of Armenia's most vulnerable populations such as the sick, the elderly, schoolchildren, orphans and the displaced and destitute.

The ARS weatherized a total of fourteen (14) buildings during this project. The majority of buildings were hospitals and polyclinics. The ARS found, for several reasons, that the greatest impact of weatherization would be at healthcare institutions. First, hospitals in Armenia receive priority in the government's rationing of electricity and fuel. Therefore, it was necessary to facilitate the efficient use of these resources. Second, the patients in these hospitals are more susceptible to illness and relapse when exposed to cold temperatures. Patients require an environment conducive to recovery. Third, doctors are unable to treat some patients in such cold conditions. The cold temperatures increase the risks involved with surgery. Finally, although very few polyclinics provide inpatient care, the polyclinics do treat as many as 60,000 outpatients per year.

Due to budget constraints, the ARS was able to weatherize only fourteen (14) buildings. In order to have weatherized the minimum target of 20 buildings, it would have been necessary to hire additional crews or to have the existing crews work for a longer period of time. However, the subcontract agreement with Burns and Roe did not provide the necessary finances to do so.

The lack of sufficient training of ARS crews in weatherization techniques and the infrequent technical assistance and quality assurance checks from Resource Management Associates (RMA) at the beginning of the project impeded the ARS from reaching its goal of weatherizing 20 to 30 buildings. Only twelve ARS weatherization personnel received on-site training from RMA prior to project implementation. These twelve were responsible for beginning weatherization at selected sites and training new crew members on the job. The gradual process of training slowed down project implementation. This issue is discussed further in the section entitled "Problems Encountered."

### ***Target Cities: Giumri and Vanatzor***

The ARS project targeted the cities of Giumri and Vanatzor where the population and the infrastructure are still recovering from the 1988 earthquake. The ARS weatherized six (6) buildings in Giumri which included five hospitals and one technical school. In Vanatzor, the ARS weatherized four hospitals, two polyclinics and one school for a total of seven (7) buildings.

Upon the request of Mr. Douglas B. Wood, Burns and Roe Country Director, the ARS weatherized the only hospital in Maralik, a small town located approximately 25 kilometers south of Giumri. A group of crew members from Giumri travelled daily to Maralik to weatherize the hospital over a period of seven and a half weeks.

### ***Maintain Interior Temperatures***

The desired result of weatherization was to maintain inside temperatures between 14 and 22 degrees Celsius. Temperatures in heated rooms increased by 18-22° Celsius. After weatherization, there was on average a 3-4° C increase in temperature of rooms on the shaded sides of buildings and a 6-8° C increase in rooms on the sunny side of buildings. At the Gulbenkian Hospital in Giumri, weatherized hospital rooms maintained temperatures at 14-18° C for three days after the heat had been shut off.

Doctors, nurses and patients all reported improved conditions in hospitals following weatherization. Hospitals were able to care for more patients and provide better care for patients.

Most of the buildings were completed during the spring and summer. Therefore, post-weatherization temperature readings were not available for the winter months at the project's completion. The ARS, however, will obtain information regarding temperatures during the 1995-1996 winter from weatherized sites and submit this information to Burns and Roe when available.

## **ARS PROJECT ORGANIZATION**

The ARS project staff consisted of fifty-five (55) persons, all but one of which were located in Armenia. Please refer to Appendix A for the ARS project organizational chart and list of employees.

### ***ARS Project Director- Ms. Karine Alemian***

Based in the ARS Washington Office, Ms. Alemian reviewed narrative and financial reports from the field to ensure ARS compliance with the subcontract agreement. She prepared payroll invoices and budget summaries to be submitted to Burns and Roe for reimbursement of ARS project expenditures. Ms. Alemian was not a paid employee of the project. Burns and Roe did not allow the ARS to recoup the costs proportionate to the percentage of her time spent on project activities.

### ***ARS Country Director- Ms. Jeanne d'Arc (Sirvart) Saboundjian***

Ms. Saboundjian's responsibilities were to plan, coordinate, and manage the ARS's incountry activities as well as monitor, evaluate and report on the project's activities and expenditures. Ms. Saboundjian ensured the organizational and membership support of the ARS local affiliate, the Armenian Relief Cross (ARC), which assisted in the recruiting of crews and the locating of warehouses. Ms. Saboundjian also promoted weatherization within the communities in which ARS was working. She met with Health and Education Council members and other individuals in these communities.

### ***Staff Recruitment***

The ARS local non-governmental organization (ngo) in Armenia, the Armenian Relief Cross (ARC), was instrumental in the recruiting crew members. The Country Director consulted with the ARC Regional Executive Board and ARC chapters in Giumri and Vanatzor in identifying individuals within these cities with skills and relative experience in craftsmanship such as carpentry and construction.

### ***Operations Assistant- Ms. Nanig Melkomian***

Ms. Melkomian was responsible for overseeing the project during Ms. Saboundjian's absence from Armenia. Ms. Melkomian visited project sites, handled payroll for project staff, and maintained constant contact with Mr. Doug Wood of Burns and Roe. Ms. Melkomian assisted in the receipt of weatherization materials via the United Armenian Fund (UAF) flight in January 1995.

### ***Local Weatherization Supervisor- Mr. Mardoun Matevossian, Ms. Nanig Melkomian***

Originally, this position was created for the purpose of monitoring ARS crews performance. The Local Weatherization Supervisor's responsibility was to visit each project city twice a week to make sure crews were on-site and working effectively.

Eventually, one of the Crew Leaders in each city emerged as the Chief Crew Leader who took on the responsibility of supervising all crew members and maintaining the quality of work. At the same

time, Mr. Matevossian resigned from this position.

Ms. Melkomian was hired to fill this position as she was already experienced with the project's activities from her role as Operations Assistant. As Local Supervisor, Ms. Melkomian continued to assist in support activities for the Country Director.

### ***Weatherization Crews***

ARS crews were comprised of six individuals: one crew leader and five installers. Both men and women were considered for these positions. In Vanatzor, there were four women selected as Installers.

### ***Crew Leaders***

The Crew Leaders were responsible for training their crew members in the weatherization techniques learned from RMA, monitoring and maintaining the quality of their crew's workmanship, and ensuring the punctuality and attendance of crew members. The Crew Leaders were also responsible for finding secure storage facilities for materials and tools at project sites.

### ***Installers***

ARS Installers were responsible for weatherizing identified sites effectively and efficiently. Each Installer was accountable for his/her own work and when necessary, was asked to make the necessary modifications to ensure quality workmanship.

### ***Warehouse Security Guards***

The ARS was responsible for the security of weatherization materials stored in the ARS warehouses from November 1994 through February 1995. As such the ARS hired two guards in both Giumri and Vanatzor. Each guard was responsible for a twelve-hour shift. Warehouses were guarded twenty-four hours, seven days per week. In February, the Burns and Roe Yerevan Office assumed control over the ARS warehouses and security guards.

### ***Role of the Armenian Relief Cross (ARC)***

As mentioned above, the ARS relied upon the resources of its local affiliate in Armenia, the Armenian Relief Cross (ARC) in the implementation of this project. The grassroots structure of the ARC contributed to the extensive community awareness and support for the weatherization project. ARC representatives in Yerevan, Giumri and Vanatzor were instrumental to various components of the project including staff recruitment, public relations, site selection and monitoring.

## **BUILDING SELECTION**

The ARS crews weatherized fourteen (14) buildings under the subcontract agreement with Burns and Roe Company, Inc. Please refer to Appendix B for the list of buildings weatherized by the ARS.

During the first two and a half months of the project, sites for weatherization were selected jointly

by ARS Country Director, Ms. Jeanne d'Arc (Sirvart) Saboundjian and Resource Management Associates personnel, Mr. David Anderson and Mr. Gourgen Melikian. These sites were chosen from a list of health and educational institutions prepared by Ms. Saboundjian and representatives of the Armenian Relief Cross chapters in Giumri and Vanatzor.

In late January/early February 1995, when Burns and Roe Company, Inc. assumed direct authority over the ARS subcontract, Burns and Roe Country Director Douglas B. Wood and his assistant Vartan Avakian assisted in and reviewed the building selection process.

The buildings selected for weatherization were chosen based on three criteria: 1) vulnerable population served; 2) number of beneficiaries; and 3) physical condition and structure of buildings. The vulnerable populations targeted included: patients who were seriously ill, undergoing surgery, or staying in hospitals; the medical staff who treated these patients; and students, teachers and school administrators. Buildings were selected with consideration for the number of beneficiaries to be served. Finally, institutions that were permanent and in reasonable structural condition were chosen for weatherization over buildings that were too damaged such that weatherization alone could not improve the energy efficiency or increase interior temperatures.

## **METHODS OF WEATHERIZATION**

ARS crews implemented weatherization techniques taught to them by Burns and Roe and RMA. The techniques performed by ARS crews have proven effective in reducing heat loss from buildings weatherized. Below is a description of the weatherization techniques performed by ARS crews.

Broken or missing window panes were replaced with new glass cut to the specifications required. Cracks in panes were filled with clear acrylic latex caulk and sealed with clear weatherstrip tape on both the interior and exterior of the pane. Acrylic latex caulk was used to seal the gaps between window panes and wooden window frames. Butyl rubber sealant was used to seal the same gaps between panes surrounded by metal frames. Acrylic latex caulk and butyl rubber sealant were used to seal gaps on the interior and exterior sides of windows.

Rotted wooden frames were replaced with new wood. Wooden panes and window casings were adjusted and refitted to ensure a secure fit and to eliminate gaps through which heat could escape and drafts could enter. The outer edges of windows that opened outward were fitted with weatherstrip foam tape to prevent drafts of cold air from the outside. Window frames and casings were painted to provide an additional sealant against water.

Cracks in doors were sealed with acrylic latex caulk or polyurethane insulating foam. The edges of doors were fitted with weatherstrip foam tape. Some doors and door frames were replaced with new wood to ensure a secure fit and to prevent drafts around doors. Thresholds and doorsweeps were used to prevent drafts from underneath doors.

Gaps around window and door casings were filled with expanding polyurethane insulating foam. The foam was then painted to provide additional protection from water. Cracks in exterior walls were filled with acrylic latex caulk or expanding polyurethane insulating foam, depending on the size of the crevice.

Please refer to Appendix C for a detailed account of materials used to weatherized each building and Appendix D for a description of weatherization activities at each site.

## **PROJECT RESULTS**

As noted above, weatherization proved effective in maintaining temperatures between 14-22 degrees Celsius (57° -72° Fahrenheit). In addition, ARS weatherization activities contributed to significant savings in energy consumption. The following are accounts of project results at a few of the institutions weatherized by ARS crews.

Data collected from the Railway Technical School in Giumri demonstrates the effectiveness of weatherization in increasing energy efficiency. For the two-month period of November/December 1994 prior to weatherization, the school consumed 4-5 liters of heating fuel each day to generate heat from the building's furnaces. After weatherization, the school reported using 50% less heating fuel during the same two months in 1995. The school required only 2-2.5 liters of heating fuel per day.

In Vanatzor, the No. 2 Hospital demonstrated a 25% savings in electricity consumption for heating purposes. In January and February 1994, the hospital utilized 32,000 kilowatts to heat the building. After partial weatherization the hospital consumed only 24,000 kilowatts during the same two months in 1995.

Similarly, at the Gulbenkian Hospital in Giumri, a comparison between the hospital's fuel consumption in November 1994 (pre-weatherization) and November 1995 (post-weatherization) reveals a 25% reduction in the amount of fuel needed to heat the building effectively.

To further test the effects of weatherization at the Gulbenkian Hospital, the building's heating system was shut down for three days. During that period, hospital rooms maintained temperatures between 14-18°Celsius. As a result of weatherization, the hospital was able to use its operating room again.

Hospitals and polyclinics are now able to provide more medical services to patients. Doctors and nurses noted the significant difference in interior temperatures and the dramatic improvement in working conditions at these institutions. Rooms which were once too cold to house patients are now being used. Doctors noted that illness, mainly pneumonia, had decreased among hospital patients.

These results contributed to heightened community awareness of the benefits of weatherization. The Country Director and local ARS representatives have been approached repeatedly by city council members and hospital and school administrators to weatherize other health and educational

institutions in the project cities. Please refer to Appendix F for translations of letters the ARS received from administrators, chief doctors and city councils in Giumri and Vanatzor.

## **PROBLEMS ENCOUNTERED**

### ***Training of ARS Crews***

Prior to project implementation, ARS crews received little training from RMA in weatherization techniques. In mid-October 1994, ARS selected eight men from the ARS project cities. Four men from both Giumri and Vanatzor travelled to Yerevan for on-site training by RMA crews. While the four men from Giumri were considered well-prepared to become crew leaders, the four from Vanatzor were replaced with another group of four who also received training in Yerevan from RMA. This second group of four became crew leaders in Vanatzor.

Crew leaders who had received training from RMA were responsible for training ARS crews in Giumri and Vanatzor. Crew members were recruited and trained gradually in order to ensure quality of training and workmanship.

RMA did not fully meet its responsibility to provide timely visits to ARS project sites to inspect the workmanship of ARS crews. During the project's first month and a half, the critical period in which crews were to be trained and standards and procedures set, RMA provided technical assistance to ARS crews on only two occasions, one of which was on the first day. Two hospitals were completed before RMA had made the first trip to inspect the work. Upon inspecting the work of ARS crews, RMA found it necessary for some adjustments and re-weatherization as was to be expected considering this was the first efforts of ARS crews at weatherization.

Because of the delay, however, in RMA's quality assurance checks, ARS crews were required to go back to finished sites to make the necessary changes, thus falling behind in the weatherization of subsequent sites. Had RMA provided timely technical assistance to ARS crews, any unsatisfactory workmanship could have been detected earlier, thus preventing the same errors from recurring.

### ***Contractual Differences***

Due to contractual differences between Burns and Roe and RMA, ARS project activities were halted during the month of January. After these differences were resolved, the ARS became a direct subcontractor to Burns and Roe. Originally, the ARS entered the project as a subcontractor to RMA.

### ***Delayed Shipment of Materials***

The delayed arrival of the United Armenian Fund (UAF) flight in January 1995 also contributed to the halt of ARS project activities. ARS crews lacked sufficient materials to continue weatherization.

### ***Warehouses***

In February 1995, Burns and Roe assumed control of ARS project warehouses in Giumri and

Vanatzor. This action was taken in response to the December 28, 1994 decree by Armenian President Levon Ter-Petrossian against the Armenian Revolutionary Federation (Dashnaktsutioun). To protect weatherization materials from being confiscated by local Armenian officials in Giumri and Vanatzor, USAID and Burns and Roe stickers were affixed to warehouses and guards were directly employed by Burns and Roe. Burns and Roe/Yerevan took charge of warehouse inventories and accounting of materials use.

### ***Missing Documents***

Documents for project activities in Giumri during the period 23 January to 05 February 1995 were lost. The ARS paid Giumri employees for their labor during this period. However, the payroll documents were neither received by the ARS Washington Office nor found in the Yerevan project office. As such, these expenses were not submitted to Burns and Roe for reimbursement. The ARS absorbed the payroll expenses for the period.

### **PROJECT EXPENDITURES**

Under the subcontract agreement with Burns and Roe, the ARS project budget was \$60,000.00. The budget was divided into two funding categories: 1) ARS Project Engineer (expatriate labor) and 2) Other Direct Costs which included incountry labor, travel, per diems, etc.

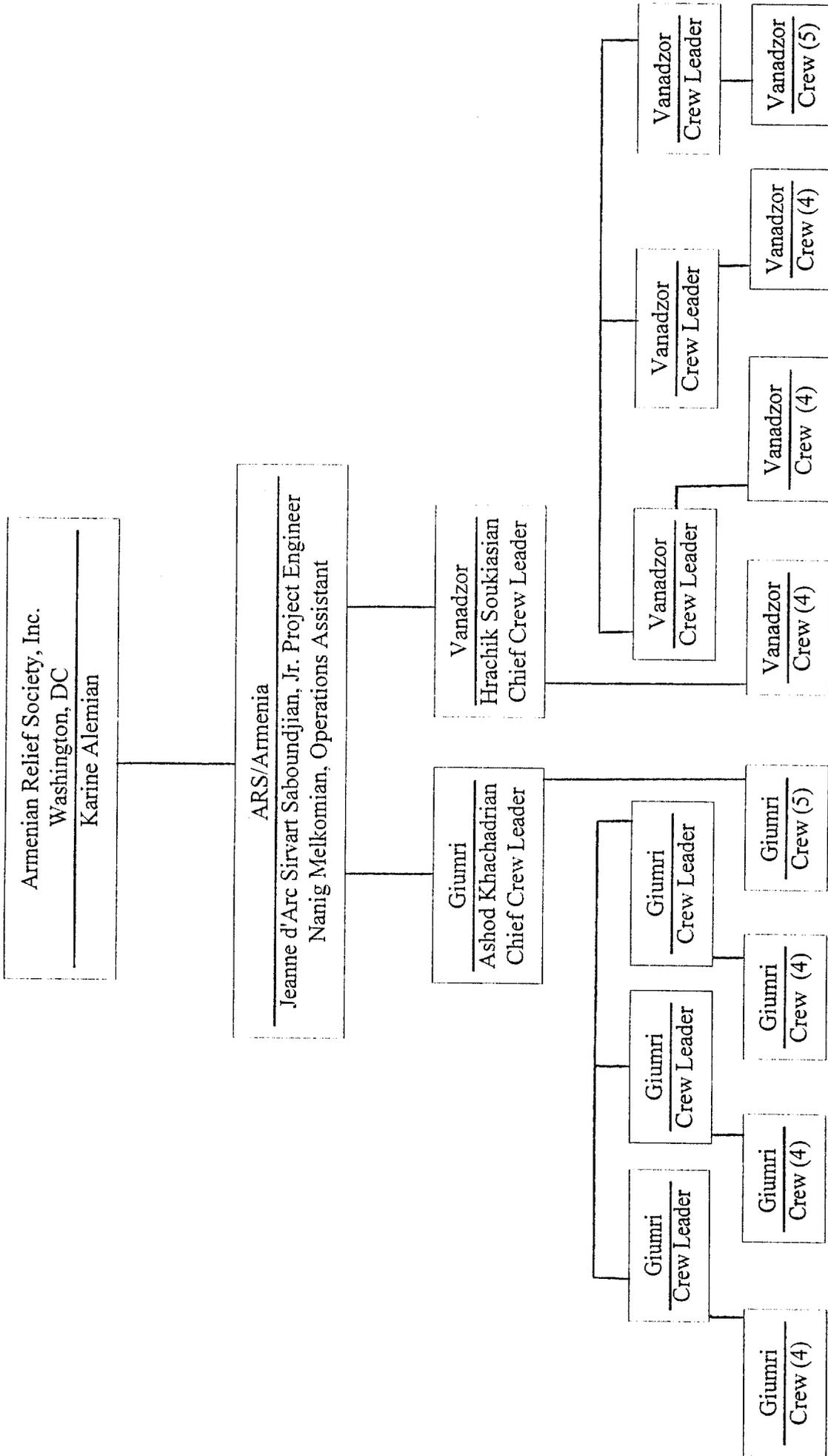
In August 1995, an additional \$200 was authorized by Mr. Don W. Fitzgerald of Burns and Roe as per Mr. Wood's suggestion. These extra funds were necessary in order to cover labor expenses for the 50 person-days needed to complete weatherization activities at unfinished sites.

The ARS did exceed its budget by \$870.44. This amount was absorbed by the ARS. Please refer to Appendix E for a budget summary of project expenditures.

The total outstanding reimbursements owed to the ARS for weatherization activities is \$16,674.56. All documents and invoices will be submitted to the Burns and Roe Accounts Payable department in Oradell, New Jersey.

**APPENDIX A  
ARS PROJECT STAFF  
ORGANIZATIONAL CHART**

Armenian Relief Society, Inc. Organizational Structure - Delivery Order #5, Task #7



**Armenian Relief Society, Inc.**  
**Delivery Order No. 5, Task 7 - Weatherization**  
**Employees**

**Gyumri**

Name	Address	Position
Khachadrian, Ashod	Lenin Street 6, Apt. 56	Chief Crew Leader
Arshalouisian, Digran	Isahakian Street 5, Building 15	Crew Leader
Bedrosian, Hohanness	Maternity Home No. 16	Crew Leader
Zadikian, Albert	Ghukasian Street 12, Apt. 52	Installer
Dilbanian, Antranig	Shirakatsi Street 58A, Apt. 17	Installer
Der Avakian, Vartan	Marks Back Street 1, Building 9	Installer
Terzian, Khatchig	26 Comissars Street, 90	Installer
Iskanderian, Ardash	Kutaissian Street 46	Installer
Nigoghossian, Aris	Shirakatsi Street 7, Apt. 27	Crew Leader
Bedrossian, Artag	Kalinin Street 2, Apt. 26	Installer
Ghazarian, Agassi	Antaravan 5 Site, 21A, Apt. 3	Installer
Avedissian, Volodia	Ghard-Bash 1/1, Building 6, Apt. 22	Installer
Edilnerian, Haratioun	Leningradian Street 6, Apt. 11	Installer
Yeghoyan, Arkadi	Meat Combine, 1 Row, Building 11A	Installer
Saroyan, Volodia	Abovian Street 1, Back Street, Bldg 74	Installer
Markarian, Volodia	Isahakian Street 5, Building 21	Installer
Khachadrian, Arshag	Lenin Street, Apt. 6	Installer
Sargsian, Avak	Sayat Nova Street 7, Apt. 11	Installer
Arshagian, Armen	Furmanov 1, Back Street, Apt. 16	Installer
Sargsian, Vano	Krupskaya Street, Building 64	Installer
Toumassian, Mgrdich	Leningradian Street 22, Building 230/271	Installer
Mouradian, Kevork	Repin Street, Building 220/104	Installer

**Vanatzor**

Name	Address	Position
Soukiassian, Hratchig	Kirov Street 1/89	Chief Crew Leader
Mkhitarian, Hamlet	Miasnikian Street, 6/28	Installer/Crew Ldr.
Edilian, Khachik	Abovian Street, 1 Blend Alley, Building 2	Installer
Sakanian, Garik	Khimiagortsneri 1 Street, Building 10	Installer
Toumanian, Lernik	Tigran Metsi Street 6/22	Installer
Tchaghetsbanian, Sarkis	Vardanants Street 82/57	Crew Ldr/Installer
Mouradkhanian, Vosgehad	Nersissian Street 7/47	Installer
Sarguessian, Sergei	Yerevanian Cross Road 103-1/3	Crew Leader
Stepanian, Babken	Taron Street 2, 2/6	Installer
Dimitrian, Arthur	Vardanants Street 5/8	Installer
Melkonian, Gagik	Ghukassian Street 32	Installer
Tchadinian, Norair	Zakarian 10/9	Installer
Bedrosian, Haroutioun	Nersisian Site, 6/28	Installer
Ghabourian, Elmira	Shirvanzade Street 24	Installer
Eloghlian, Armen	Mashtots Street 110/45	Crew Leader
Kharadian, Ara	Stepanian Street, 2 Back Street, Bldg 4	Installer
Manougian, Rouben	Nersisian Site, 8/6	Installer
Megoyan, Khachik	Kirov Street 1/112	Installer
Voskanian, Armen	Rustavi Street 7/36	Installer
Virabian, Gohar	Gribojedov Street 4/34	Installer
Melikbekian, Levon	Tigran Metsi Street 12/65	Installer
Baghoyan, Digran	Sivashavan Street 5/13	Installer

**APPENDIX B**  
**INSTITUTIONS WEATHERIZED**

## Giumri Weatherization Sites

### **Gulbenkian Hospital**

Address: 74 Moris Street  
Telephone: 269-24616  
Number of Beds: 150  
Number of Personnel: 170  
Date of Construction: 1989  
Significance: Serves Shirak District  
Chief Doctor: S. Khachatryan

### **Samariter Hospital**

Address: 8 Manushian Street  
Telephone: 269-30202  
Number of Beds: 196  
Number of Personnel: 225  
Date of Construction: 1988  
Significance: Serves Shirak District  
Chief Doctor: R. Khachatryan

### **Maternity Hospital**

Address: 6 Koshtojian Street  
Telephone: 269-34159  
Number of Beds: 190  
Number of Personnel: 217  
Date of Construction: 1992  
Significance: Only maternity hospital in the District of Shirak  
Chief Doctor: F. Grigorian

### **No. 1 Hospital**

Address: No. 1 Hospital of A. Tovmasian  
Telephone: 269-22345  
Number of Beds: 170  
Number of Personnel: 230  
Date of Construction: 1912  
Significance: Serves Shirak District  
Chief Doctor: H. Agekian

### **Railway Hospital**

Address: 64 Sevian Street  
Telephone: 269-24644  
Number of Beds: 100  
Number of Personnel: 216  
Date of Construction: 1912  
Significance: Serves the City of Giumri  
Chief Doctor: H. Zhamkochian

### **Railway Technical School**

Address: 29 Lenin Street  
Telephone: 269-21900  
Number of Pupils: 220  
Number of Teachers & Personnel: 45  
Date of Construction: 1949  
Significance: Unique Railway Technical School in Armenia  
Principal: F. Vardanian

## **Maralik Weatherization Site**

### **Maralik Hospital**

Address: Maralik Central District Hospital  
Telephone: 242-21203  
Number of Beds: 100  
Number of Personnel: 200  
Date of Construction: 1966  
Significance: Only hospital in Ani District  
Chief Doctor: E. Nazarian

## **Vanatzor Weatherization Sites**

### **Children's Polyclinic No. 2**

Address: 2 Nalbandian Street  
Telephone: 257-22193  
Number of Personnel: 60  
Date of Construction: 1952  
Date of Last Repair: 1992  
Significance: Provides care to approximately 6,000 children per year  
Chief Doctor: A. Vardanian

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**No. 2 Hospital**

Address: 53 Nizami Street  
Telephone: 257-53598  
Number of Beds: 255  
Number of Personnel: 338  
Date of Construction: 1960  
Date of Last Repair: 1985  
Significance: Serves Lori District  
Chief Doctor: K. Adamian

**Railway Hospital**

Address: 8 Kajaran Street  
Telephone: 257-26302  
Number of Beds: 200  
Number of Personnel: 288  
Date of Construction: 1991  
Significance: Serves Lori District  
Chief Doctor: M. Markarian

**Maternity Hospital**

Address: 8A Krasnaja Armija Street  
Telephone: 257-25170  
Number of Beds: 140  
Number of Personnel: 198  
Date of Construction: 1989  
Significance: Serves City of Vanatzor  
Chief Doctor: A. Djagatspanian

**Infection Hospital**

Address: 49 Alaverdian Street  
Telephone: 257-53019  
Number of Beds: 57  
Number of Personnel: 70  
Date of Construction: 1976  
Date of Last Repair: 1986  
Significance: Serves Lori District  
Chief Doctor: R. Chilingarian

**No. 1 Polyclinic**

Address: 17 Miasnikian Street  
Telephone: 257-23132  
Number of Beds: 10  
Number of Personnel: 213  
Date of Construction: 1946  
Significance: Serves approximately 32,500 patients per year  
Chief Doctor: A. Simonian

**Children's Art School**

Address: 19 Miasnikian Street  
Telephone: 257-25394  
Number of Personnel: 5  
Date of Construction: 1890  
Date of Last Repair: 1987  
Significance: Serves children of Lori District  
Administrator: K. Glojian

**APPENDIX C**  
**DETAILED DESCRIPTION OF**  
**MATERIALS USED**

## Detailed Description of Materials Used for Each Building

Item Description	Gulbenkian Hospital (G)	Samariter Hospital (G)	Maternity Hospital (G)	No. 1 Hospital (G)	Railway Hospital (G)	Railway Technical School (G)	Maralik Hospital (M)	Children's Polyclinic No. 2 (V)	Hospital No. 2 (V)	Railway Hospital (V)	Maternity Hospital (V)	Infection Hospital (V)	Polyclinic No. 1 (V)	Children's Art School (V)	Total
35 year acrylic latex, white	312	235	251	331	235	271	319	175	321	283	154	186	270	107	3450
35 year acrylic lates, clear	27	25	26	30	28	31	33	17	35	33	15	18	30	12	360
35 year acrylic latex, black	0	0	55	0	0	0	0	0	0	0	0	0	0	0	55
35 year acrylic latex, gray	19	15	17	21	20	17	19	20	19	14	10	0	20	10	221
35 year acrylic latex, bronze	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Butyl rubber sealant, aluminum	0	0	0	0	0	0	0	0	0	0	0	168	0	0	168
Butyl rubber sealant, bronze	0	0	12	0	0	0	0	0	0	0	0	0	0	0	12
Polyurethane insulating foam expanding	26	18	16	43	29	22	38	13	18	12	0	24	6	0	265
Concrete & mortar silicone	0	0	0	0	0	30	0	30	0	0	0	0	0	0	60
Prof. carpenter's glue, yellow	6	4	5	7	5	5	6	5	8	5	3	4	5	2	70
M-D 200 multi-purpose adhesive latex	38	28	30	31	29	35	30	29	31	28	27	30	32	2	400
Weatherstrip foam tape, gray 1/2"x3/4"x10'	87	83	86	91	83	87	91	76	92	86	77	79	86	60	1164

Item Description	Gulbenkian Hospital (G)	Samariter Hospital (G)	Maternity Hospital (G)	No. 1 Hospital (G)	Railway Hospital (G)	Railway Technical School (G)	Maralik Hospital (M)	Children's Polyclinic No. 2 (V)	Hospital No. 2 (V)	Railway Hospital (V)	Maternity Hospital (V)	Infection Hospital (V)	Polyclinic No. 1 (V)	Children's Art School (V)	Total
Air conditioner weatherstrip 1-1/4"x1-1/4"x42'	0	0	0	20	0	25	0	0	15	0	0	0	0	0	60
Air conditioner weatherstrip 2-1/4"x1-1/4"x42'	6	7	5	8	6	0	12	0	8	5	7	0	6	0	70
Transparent weatherstrip tape, 1"x45', clear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transparent weatherstrip tape, 2"x45', clear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storm window kit 50"x80"	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storm window kit 72"x82"	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
XX standard low boy 36"	0	2	0	0	0	2	0	2	0	0	2	0	2	0	10
AP 158 heavy duty premium low boy 36", aluminum	0	3	0	0	0	3	0	3	0	0	3	0	3	0	15
AP 334 heavy duty premium low boy 48", aluminum	0	0	5	0	6	0	3	0	0	4	0	0	0	2	20
AP 334 heavy duty premium low boy 36", aluminum	3	0	0	2	0	0	5	0	10	0	0	2	0	3	25
AFFL 312 low boy 36" alumin.	1	1	0	1	0	1	0	0	0	2	0	2	2	0	10

Item Description	Gulbenkian Hospital (G)	Samariter Hospital (G)	Maternity Hospital (G)	No. 1 Hospital (G)	Railway Hospital (G)	Railway Technical School (G)	Maralik Hospital (M)	Children's Polyclinic No. 2 (V)	Hospital No. 2 (V)	Railway Hospital (V)	Maternity Hospital (V)	Infection Hospital (V)	Polyclinic No. 1 (V)	Children's Art School (V)	Total
Premium roof pro-elastomeric, 5 gallon, deep tint (gallons)	5	0	0	1	0	0	3	0	5	0	0	0	3	0	17
Premium roof pro-elastomeric, 5 gallon, black (gallons)	1	0	0	0	0	0	0	0	0	1	0	0	0	0	2
Pro asphalt plus 5 gal., 100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roof pro fabric	0	0	0	0	0	5	0	0	0	0	0	0	5	0	10
M-D adhesive	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Caulk backer rod	23	20	22	23	34	22	36	22	23	24	12	16	18	15	310
Carpet adhesive, gallons	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2
1/2"x1/16" felt ADH #600 A	0	12	0	0	0	0	12	0	0	0	0	0	0	0	24
Door sweep 48", aluminum	8	7	12	9	7	5	7	6	8	4	6	6	8	2	95
4A307 5/16" Staples	1	1	1	1	1	0	0	1	1	1	1	1	0	0	10
Weatherstrip foam tape 3/16"x3/8"x17'	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weatherstrip foam tape 3/8"x1/2"x10'	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weatherstrip foam tape 1/4"x1/2"x17'	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Astro-foil insulation	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2
Velcro loop & hook fastener	0	0	0	3	0	0	2	0	0	0	0	0	0	0	5

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**APPENDIX D**  
**DESCRIPTION OF SITE**  
**WEATHERIZATION**

## Detailed Description of Site Weatherization and Materials and Labor Used

Item Description	Gulbenkian Hospital (G)	Samariter Hospital (G)	Maternity Hospital (G)	No. 1 Hospital (G)	Railway Hospital (G)	Railway Technical School (G)	Maralik Hospital (M)	Children's Polyclinic No. 2 (V)	Hospital No. 2 (V)	Railway Hospital (V)	Maternity Hospital (V)	Infection Hospital (V)	Polyclinic No. 1 (V)	Children's Art School (V)
Floors	3	3	2	2	2	3	2	2	3	3	1	2	3	1
Rooms	64	70	42	54	28	53	44	41	106	118	36	40	58	8
Windows	134	83	77	141	79	178	98	58	200	156	37	56	153	23
Doors	12	8	12	6	13	8	15	7	109	15	6	21	11	2
Materials cost (\$)	709	334	480	980	700	611	1,155	520	970	660	362	770	980	434
Total area (m <sup>2</sup> )	374	241	293	360	326	324	342	253	790	453	140	325	452	136
Total persondays	604.5	567	222.5	*	638	651	726	141	1,484	449	144	347	1,161	5

\* As noted in the project report, documents regarding weatherization activities at this location are missing.

**APPENDIX E**  
**BUDGET SUMMARY**

USAID Contract #CCN-0002-Q-00-3154-00  
Burns and Roe Agreement #5826-034  
Burns and Roe Reference #5905-027

**ARS Budget Summary**  
as of 25 August 1995

	<b>Contract Budget</b>	<b>Cumulative Expenditures</b>	<b>Balance Amount</b>
<b>LABOR (ARS Project Engineer)</b>			
Sirvart Saboundjian	\$14,420.00	\$14,420.00	\$0.00
<b>OTHER DIRECT COSTS (ODC)</b>			
<b>In-Country Labor</b>	\$35,672.00	\$37,689.87	(\$2,017.87)
ARS Project Operations Assistant, Local Installation Labor			
<b>Other Direct Costs</b>	\$9,908.00	\$8,760.57	\$1,147.43
Airfare, ground transportation, lodging, per diem, etc.			
	<hr/>	<hr/>	<hr/>
	\$60,000.00	\$60,870.44	(\$870.44)

USAID Contract #CCN-0002-Q-00-3154-00  
Burns and Roe Agreement #5826-034  
Burns and Roe Reference #5905-027

**ARS Budget Summary**  
as of 13 October 1995

	<b>Additional Budget</b>	<b>Cumulative Expenditures</b>	<b>Balance Amount</b>
<b>Additional Local Labor</b> 50 Person days to complete final site	\$200.00	\$200.00	\$0.00
<b>TOTALS</b>	<u>\$200.00</u>	<u>\$200.00</u>	<u>\$0.00</u>

**APPENDIX F  
TRANSLATION OF  
LETTERS RECEIVED**

**Vanatzor Roubin Factory, Medical-Sanitation Department**

02 March 1995

Please be advised that the Vanatzor Medical-Sanitation Department No. 2 utilized 32,000 kw of energy during the months of January and February 1994. During the same time period in 1995, we utilized a significantly smaller amount of energy - 24,000 kw. The main reason [for the reduction in energy consumption] is the weatherization performed in that facility.

Dr. K.V. Atamian  
Director, Medical-Sanitation Department

**Republic of Armenia  
Vanatzor City Council  
Education, Science and Teaching Department**

17 July 1995

Weatherization activities were carried out at the hospitals and clinics administered by the Vanatzor Health Department - activities which will assist in making winter conditions next year more bearable.

Noting the high quality workmanship associated with these activities, we ask that you continue this work at the 14 schools and 14 kindergartens located in various stone buildings in Vanatzor.

Thank you in advance for your assistance.

H.Y. Sarkisian  
Director  
Education, Science and Teaching Department

**Republic of Armenia  
Vanatzor City Council  
Health Department**

The extensive weatherization activities carried out by your office in 1994-1995 at the five Preventative Health Clinics in our area were of high quality and greatly assisted the clinics in remaining within energy rations and we would like to express our heartfelt appreciation for all you have done. At the same time, we ask that you continue your project in 1995 and carry out weatherization activities in eight additional Preventative Health Clinics. [clinics listed]

H.H. Badalian  
Department Director

**Republic of Armenia**  
**City of Giumri Maternity Hospital**

16 June 1995

ARS Central Executive:

The Giumri Maternity Hospital staff, the women who have given birth there, and the "little Giumrians" express their deepfelt thanks to your organization for completing the vital Weatherization Project in winter 1994-1995 and assisting us in keeping the necessary heat levels at the hospitals.

May God be with you.

F.V. Grigorian  
Head Physician

**Republic of Armenia People's Representatives  
Giumri City Council  
Health Department**

16 June 1995

ARS Central Executive:

The patients and staff of the "Samariter" Hospital express their heartfelt thanks to the ARS Central Executive for their very important humanitarian project.

The work that has been done for the hospital cannot be underestimated, since in the absence of other methods of energy conservation, this was the essential preemptive measure we could have taken to function.

Thank you, again, and we hope to see the fruits of our labor for the Armenian people.

Respectfully,  
Dr. G. Khatchatrian  
Head Physician

**Republic of Armenia**  
**Railroad Administration - Giumri Hospital**

20 June 1995

ARS Central Executive:

The Giumri "Railroad" Hospital administration and medical staff express its heartfelt thanks to the ARS Central Executive for its extensive, extremely humanitarian activities.

It is impossible to forget the invaluable work that was done for our hospital, since there was no other way to conserve energy- your work was the necessary prerequisite for the functioning of our hospital.

Expressing our appreciation once again, we hope to continue to see the fruits of our labor for our people.

Respectfully,  
H.K. Jamagotchian  
Head Physician

**Republic of Armenia**  
**Galust Gulbenkian Surgical Hospital No. 2 in Giumri**

16 June 1995

ARS Armenia Regional Executive Chairwoman, A. Bedrossian

Honorable Mrs. Bedrossian:

On behalf of the Giumri G. Gulbenkian Surgical Hospital staff and treated patients, please express our appreciation and thanks to the ARS employees who assisted in the completion of the 1994-1995 Weatherization Project, because of which we were able to treat numerous patients in favorable heating conditions.

S.V. Khatchatrian  
Head Physician, Head Surgeon  
Shirak Region

**Republic of Armenia  
City of Giumri Health Department  
A. Tovmasian No. 1 Hospital**

16 June 1995

ARS Central Executive:

The Giumri A. Tovmasian No. 1 Hospital and its cured patients express their deepfelt thanks to your organization which carried out the vital weatherization activities which helped us meet our energy conservation quotas during winter 1994-1995.

H. Kh. Aghegian  
Head Physician  
No. 1 Hospital