

UNITED STATES GOVERNMENT

# Memorandum

6360126-④  
PD-AAC-483

TO : Dr. Paul Saenz, AFR/CWA *PL*  
THRU : John P. Zedalis, ENGR/OPNS/TR *JZ*  
FROM : Ronald M. Henrikson, ENGR/OPNS/TR *RHK*

DATE: February 21, 1975

6p.

SUBJECT: Engineering Analysis of "Care/Sierra Leone Rural Penetration Roads" Project

Attached is my technical analysis of the subject project. Based upon my review of the project papers submitted by USAID and my discussions with the CARE representative in New York, Mr. Leo Pastone, and Mr. Parks of the Roy Jorgensen Company, I have determined that this project is technically sound as required by Section 611 of the FAA.



Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

## ENGINEERING ANALYSIS

*Who will carry out  
How*

### A. Description of the Roads

The roads will be designed and built in accordance to the GOSL Ministry of Work's specifications for class IV rural roads (See Annex A). In order to reduce right-of-way, clearing and excavation costs, the routes will follow existing trails and foot paths to the maximum extent possible. Adequate drainage will be provided through construction of drainage ditches, culverts and bridges. A six inch compacted roadway surface will be provided through the use of laterite which is found along the roadways' alignment. The roadway will be 16 feet wide, with provision for expansion to 22 feet where warranted by traffic and area development. Bridges will be designed according to British BS 153, Part 3a-HA loading.

### B. Cost Estimates

Selection and surveying has been completed on half of the roads programmed for construction during the first phase of this project. (This was accomplished by CARE during 1974). Additional sites under the first phase, and all sites under the second and third phase, will be selected by a committee composed of representatives from the following GOSL Ministries: Works, Development, Social Welfare, Interior Education, Health and Agriculture.

The cost of the project has been reviewed by the AID/W project engineer. The cost estimate for this project was prepared by the CARE feeder road engineering staff currently constructing feeder roads in Sierra Leone. They have included provision for normal price escalation, based on their past two years of experience in Sierra Leone. This project cost estimate is based upon the use of local labor and materials. If a source and origin waiver for the construction material is not authorized, additional funds should be provided for the non-local construction material and spare parts.

### C. Engineering Plan

#### 1. Technical Feasibility

The technical feasibility for construction of these roads, as outlined in the Project Paper, has been adequately demonstrated by the CARE Feeder Roads Program (FRP) in Sierra Leone during the past two years. The first CARE FRP was started in June 1973 when they signed an agreement with the GOSL to construct 240 miles of Feeder Roads in four Provinces. This program was carried out under the supervision of

four Peace Corps Civil Engineers, four Peace Corps construction supervisors and six site supervisors furnished by the Ministry of Works. The local labor was furnished by the village chiefs located along the roads constructed, on a voluntary self-help basis. The project was completed, as scheduled, on August 1, 1974 and included 242 miles of roadway. The second CARE FRP was started October 1, 1974 with the Kono Province Road Authority (PVO). This program provides for the construction of 200 miles of roads in Kono Province. This program is being carried out under the supervision of seven PVO supplied civil engineers and 10 MOW supplied construction supervisors. Local labor is being supplied by the villages on a self-help basis. To date, all 200 miles of the roads have been surveyed and designed. One hundred miles of roads are estimated to be constructed by March 1 with all 200 miles scheduled for completion by July 1, 1975.

The design standards for the feeder roads are those established by the Ministry of Works for class IV rural roads (See Annex A). These standards were adopted by the MOW following their recommendation by a UNDP financed Highway Maintenance consulting engineering firm.

## 2. Project Maintenance

The MOW provides maintenance for the Primary, Secondary and District Council roads. Local villages will be providing the annual maintenance for the feeder roads constructed under this project. As traffic develops on the feeder roads, they will eventually be reconstructed and maintained by the MOW as class III or II roads. The type of maintenance anticipated during the initial years after construction will consist of cleaning ditches and filling in any pot holes in the roadway that develop. This work can all be performed by hand labor with a minimum of hand tools, both of which are available locally.

The MOW is presently completing a Highway Organization and Maintenance Project sponsored by the UNDP and the IBRD. Under this project, the UNDP supplied the U.S. consulting firm of Roy Jorgensen Associates for technical assistance to the MOW and the IBRD furnished \$1.5 million for highway maintenance equipment. A new project currently being developed for IBRD consideration, will provide for additional maintenance equipment and shop facilities to enable the MOW to establish a reliable highway maintenance capability.

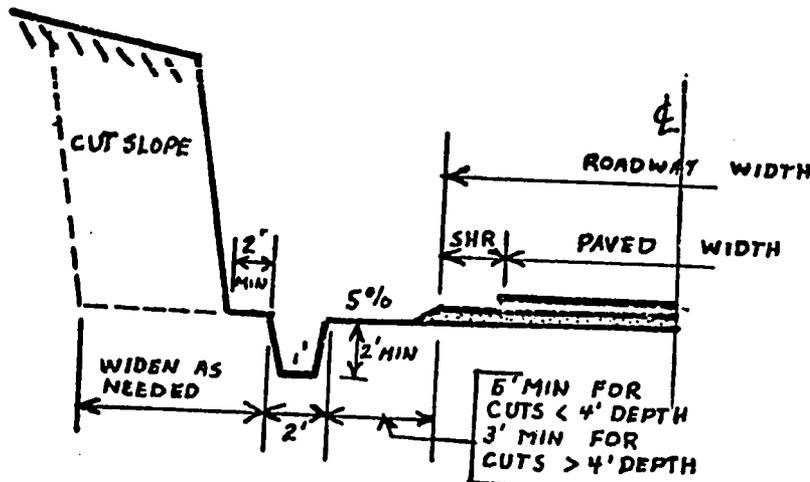
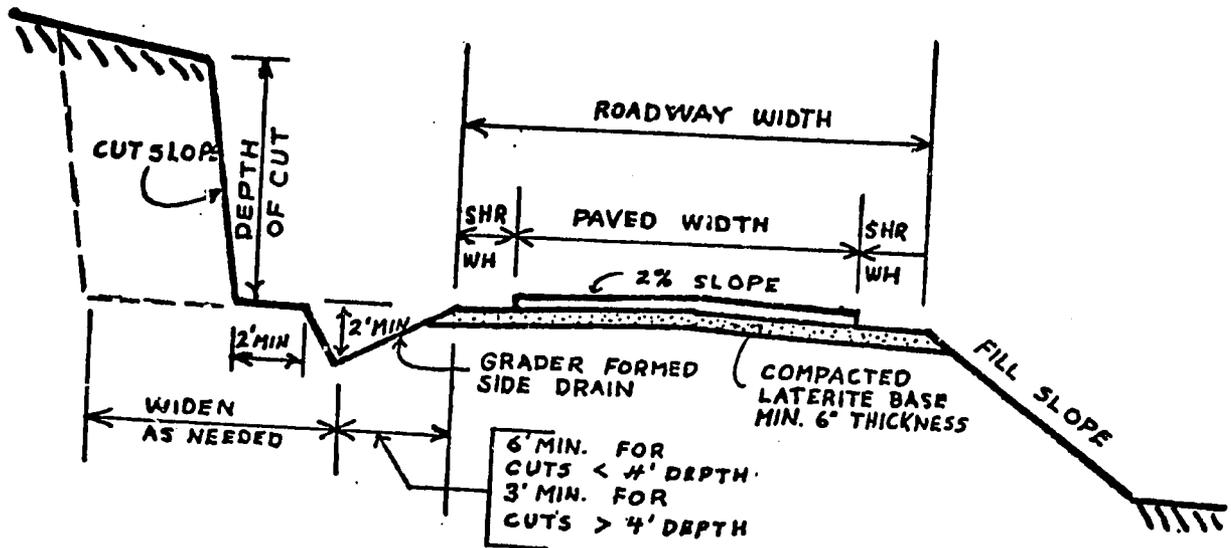
## D. Technical Soundness

The PVO/CARE proposal for construction of the feeder roads has been well planned and oriented to provide maximum utilization and benefit to the road users, with a minimum capital investment. The road alignment will utilize existing trails and local material to the maximum

extent feasible. Operationally, the roads provided will be adequate to meet the forecasted traffic and, as development and utilization increases, capable of being up-graded at minimal expense.

The technical assistance being supplied to the project and the specifications to be used for the roads are considered adequate for the completion of the project. The planning and design of the project is considered adequate for estimating the firm cost of the project to the U.S. Therefore, it is concluded that there has been sufficient technical and financial planning to determine a reasonably firm estimate of cost to the U.S. to satisfy the requirements of Section 611 of the Foreign Assistance Act of 1961, as amended.

ROAD X-SECTION STANDARDS FOR  
REMEDIAL MAINTENANCE PROGRAMME



ALTERNATIVE SECTION  
FOR HAND DUG SIDE  
DRAINS.

	ROAD CLASSIFICATION			
	I	II	III	IV
ROADWAY WIDTH	24' MIN.	24' MIN.	24'	16'
PAVED WIDTH	20'	20'	AS REQUIRED	NA
SHOULDER WIDTH	2' MIN.	2' MIN.	AS REQUIRED	NA
CUT SLOPES	1:6	1:6	1:6	1:6
FILL SLOPES				
UNDER 4' HEIGHT	3:1	3:1	3:1	3:1
OVER 4' HEIGHT	1½:1	1½:1	1½:1	1½:1
SURFACE TYPE	GRAVEL - ADT < 151      2-COAT BITUMEN-ADT > 400 1-COAT BITUMEN-ADT 151-400			

## GENERAL GEOMETRIC STANDARDS

### CLASS I

- Design speed - 50 m.p.h.
- Minimum radius of curvature - 1,000 feet
- Maximum gradient - 6%
- Maximum length of grade 1,800 feet for maximum gradient
- Formation width - 32 feet (NEW CONSTRUCTION ONLY)
- Superelevation of curves, according to accepted standard
- Axle load - 20,000 lbs.
- Bridges designed according to British standard BS 153 Part 3a, HA loading
- Bridge width - 22 feet, inside to inside curbs

### CLASS II and III

- Design speed - 40 m.p.h.
- Minimum radius of curvature - 600 feet
- Maximum gradient - 7%
- Formation width - 24 feet
- Superelevation of curves, according to accepted standard
- Axle load - 20,000 lbs.
- Bridges designed according to British standard BS 153 Part 3a HA loading
- Bridge width - 22 feet, inside to inside curbs

### CLASS IV

- Design speed - 25 m.p.h.
- Minimum radius of curvature - 300 feet
- Maximum gradient - 15%
- Formation width - 16 feet
- Bridges designed according to British Standard BS 153 Part 3 a Ha loading
- Bridge width - 12 feet, inside to inside curbs with provision for expansion of bridges to 22 feet in width where warranted by traffic and area development.

JUN 5 1975

**INFORMATION MEMORANDUM FOR THE ADMINISTRATOR**

**THRU:** ES

**FROM:** AA/APR, /s/ Samuel C. Adams, Jr.  
Samuel C. Adams, Jr.

**SUBJECT:** Ceremonial Signing - CARE/Sierra Leone Rural Roads  
Penetration Project - Friday, June 6, 1975 - 4:00 P.M.

AID is entering into a grant to provide support to CARE for a project designed to construct a total of 900 miles of rural feeder roads; 300 miles each year over the three year period of the project. This is one of the first large FVO grants in Africa in FY 75. In addition, it meets the Congressional mandate on assistance to rural poor.

Roads penetrating into swamplands will be built by local farmers and volunteer engineers from the Peace Corps and other international assistance groups so that idle swampland suitable for rice growing can be brought into production. World Bank and CARE pilot projects have demonstrated that rice production in these areas can be six times as high as upland rice crops, owing to triple cropping and better growing conditions.

In exchange for their labors in building the road, local farmers will be given the right to develop the new areas. Since the World Bank began pilot growing areas in the swamplands in 1973, the areas under cultivation have grown from 300 to 400 percent per year due to local farmer initiative. The major constraint to unlimited expansion of rice cultivation has been the lack of access to such areas, according to experts of the Government of Sierra Leone, CARE and World Bank.

The AID grant to CARE in the amount of \$1,123,000 will augment a Government of Sierra Leone commitment of \$1,785,000, a CARE contribution of \$663,000 from its own resources and \$226,000 from other donors. AID will obligate \$640,000 in FY 75. Furthermore, AID will obligate an additional \$563,000 to the project before its completion.

CARE will supervise overall construction efforts using labor-intensive methods where possible. The AID funds will be used for the payment of local extension agents, mechanics and warehousemen; equipment maintenance, repair and rehabilitation, and for construction commodities and equipment.

The agreement is to be signed by you and Frank Goffio, Executive Vice President of CARE in a ceremonial signing on Friday, June 6, 1975 at 4:00 P.M. in your office.

At this time, it is anticipated that at least the following will be participating in the signing ceremony:

INVITED AID STAFF

A/AID, Christian Holmes	PHA/PVC, Robert McClusky
A/AID, John E. Murphy	D/OPA, Clinton F. Wheeler
AA/AFR, Samuel C. Adams	SA/OPA, Vernon F. Lyon
AFR/DP, Robert Huesmann	PHA/PVC, Cleo Shook
AFR/DP, Dwight Wilson	AFR/CWA, Dalton Griffith
AA/PHA, Harriett Crowley	AFR/CWA, Paul Saenz
PHA/PVC, John Ulinski	AFR/CWA, Earline Wilkinson
	LA/TA, Jean Lewis

CARE Representatives

EVP, Frank Goffio

INVITED CONGRESSIONAL LEADERS

Congressman, Charles B. Rangel, D/New York  
Congressman, Ronald V. Dellums, D/California  
Congressman, Charles Diggs, Jr., D/Michigan  
Senator, Dick Clark, D/Iowa  
Senator, Gale McGee, D/Wyoming  
Senator, Hubert H. Humphrey, D/Minnesota  
Senator, Joseph R. Biden, D/Delaware  
Senator, James B. Pearson, R/Kansas  
Senator, Robert P. Griffin, R/Michigan  
Senator, Howard H. Baker, R/Tennessee  
Senator, Edward Brooke, R/Massachusetts  
Senator, Jacob R. Javits, R/New York

Advisory Committee on Foreign AID, Martha Irving

AFR/CWA/AOIC/EWilkinson/agb/6/5/75

## **TALKING POINTS FOR SIGNING OF THE CARE AGREEMENT FOR SIERRA LEONE**

- As you are aware it has been a personal concern of mine to see that we have as broad a participation as possible in the problem solving process of development as it relates to our A.I.D. program.
- Voluntary agencies have played an important role in the U. S. and in many instances have an even longer experience than A.I.D. in some of the developing countries.
- The experience and grass roots approach of the voluntary organization have proven to be effective tools in reaching the neglected people both in the U. S. and overseas. It is for this reason that I feel organizations such as CARE are important to us in addressing our mandate for assisting the rural poor in the less developed countries.
- The task of assisting the least developed countries is complex and requires all levels of public and private expertise. The harmony of our working relationships will hopefully bring to bear the greatest array of talent available in the U. S. to addressing the needs of the least developed world.
- I am pleased to be able to participate in the signing of this agreement with CARE. I am especially pleased that this project will be undertaken in Sierra Leone which is one of the countries designated as most seriously affected by the energy crisis and rising food costs.
- A.I.D. has not had a bilateral program in Sierra Leone for several years. I would not want that to be interpreted as a lack of interest on our part. By the signing of this agreement, I feel we are starting on a new path of activities and relationships which will be beneficial to the poor rural population in that country.
- The agreement which we have signed provides for A.I.D. support to CARE for a program designed to construct a total of 900 miles of rural feeder roads--300 miles each year over the three year period of the project.
- These roads will penetrate into swamplands and will be built by local farmers and volunteer engineers so that idle swampland suitable for rice growing can be brought into production.
- CARE will supervise overall construction efforts on these penetration roads using labor-intensive methods where possible.

- == CARE pilot projects have demonstrated that rice production in these areas can be six times as high as upland rice crops, owing to triple cropping and better growing conditions.
- == Mr. Coffie, it is a pleasure to be a partner with CARE in this important endeavor.

AFR/DP:EDonoghue:1kb:06/06/75

AFR/CWA  
Mr. Saenz

**ACTION MEMORANDUM FOR THE ADMINISTRATOR**

**23 MAY 1975**

**THRU : ES**

**FROM : AA/AFR, Samuel C. Adams, Jr. /s/ Samuel C. Adams, Jr.**

**SUBJECT: Request for you to sign a grant agreement with Care Inc.**

I have approved an Operational Program Grant to Care Inc. for \$1,123,000 which will expand a rural feeder roads construction project initiated by Care in Sierra Leone. The Care project is expected to complete 900 miles of short feeder roads, on a self-help basis, over a three year period. The roads will provide market access to small farmers participating in an important rice production program. The first tranche of the OPG is for \$640,000, covering the first two years of the project, and the grant agreement covering A.I.D.'s contribution will be ready for signature (Congressional notification procedures having been completed) on May 30. This OPG appears to meet Congressional mandate criteria quite well, in addition to being a fairly significant investment in expanded PVO activity. It appears, therefore, to be an appropriate grant for you to sign personally, in the context of a brief ceremony which would give you an opportunity to reiterate A.I.D. support for the PVO's. We have assurances from Care Inc., New York, that the Executive Vice President from that organization will represent Care at the ceremony. Along with PMA and other A.I.D. offices, we plan to invite selected others from outside A.I.D.

The signing could occur after May 30, but we would appreciate completion of the grant on that date since it would help toward meeting the 80% obligation target.

Recommendation: That you agree to be present to sign the grant to Care on May 30, 1975.

/s/ DP

*ceremony after 30 May*

Approved: \_\_\_\_\_

Disapproved: \_\_\_\_\_

Date: MAY 20 1975

Clearances: AA/AFR:DSBrown \_\_\_\_\_  
AFR/CWA:PSaenz \_\_\_\_\_  
AFR/DP:JGovan \_\_\_\_\_

AFR/DP:DWilson/RGiluesma:n:1kb:05/22/75

**DEPARTMENT OF STATE**  
**AGENCY FOR INTERNATIONAL DEVELOPMENT**  
WASHINGTON, D. C. 20523

**OFFICE OF  
THE ADMINISTRATOR**

Cooperative for American Relief  
Everywhere, Inc.  
660 First Avenue  
New York, NY 10016

Subject: Grant No. AID/afr-G-1154

Gentlemen:

Pursuant to the authority contained in the Foreign Assistance Act of 1961, as amended, the Agency for International Development (hereinafter referred to as "AID" or "Grantor") hereby grants to the Cooperative for American Relief Everywhere, Inc. (hereinafter referred to as "CARE" or "Grantee") the sum of \$640,000 to provide support for a project designed to construct 900 miles of rural penetration roads in Sierra Leone, as more fully described in the attachment to this Grant entitled "Program Description".

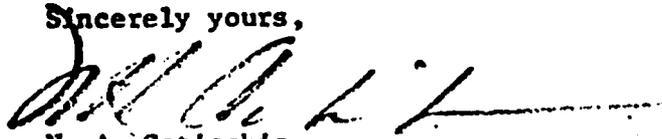
This Grant is effective as of January 1, 1975 and shall apply to commitments made by the Grantee in furtherance of program objectives during the period January 1, 1975 through December 31, 1977.

This Grant is made to CARE on condition that the funds will be administered in accordance with the terms and conditions as set forth in Attachment A entitled "Program Description", Attachment B entitled "Standard Provisions", and Attachment D entitled "Engineering Analysis", which have been agreed to by your organization.

Please sign the Statement of Assurance of Compliance, enclosed herein, and the original and seven (7) copies of this letter to acknowledge your acceptance of the conditions under which these funds have been granted.

Please return the Statement of Assurance of Compliance and the original and six (6) copies of this Grant to the Office of Contract Management, Regional Operations Division, Africa.

Sincerely yours,



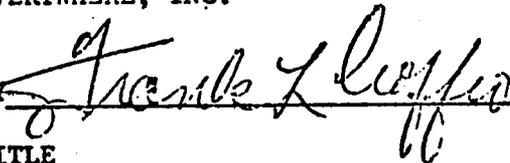
N. A. Caticchio  
Grant Officer  
Regional Operations Division, Africa  
Office of Contract Management

**Attachments:**

- A. Program Description
- B. Standard Provisions
- C. Payment Provisions
- D. Engineering Analysis

**ACCEPTED:**

COOPERATIVE FOR AMERICAN RELIEF -  
EVERYWHERE, INC.

BY 

TITLE \_\_\_\_\_

DATE \_\_\_\_\_

Accounting & Appropriation Data

Appropriation No. 72-11X1023  
Allotment No. 402-51-636-00-69-51  
PIO/T No. 636-11-199-101

## Attachment A

### Program Description

#### A. Purpose of Grant

The purpose of this Grant is to provide support to CARE for a project designed to construct a total of 900 miles of rural penetration roads; 300 miles each year over the three year period of the project.

#### B. Specific Objectives

The Government of Sierra Leone (GOSL) project committees will identify areas where penetration roads will have the greatest impact on swampland rice development and arrange through CARE/Sierra Leone for the necessary commodity and equipment inputs. Government highway maintenance vehicles will be rehabilitated and repaired for use on this project and eight engineer volunteers from U.S. Peace Corps, U.K. VSO, and C.U.S.O. will be recruited. The local farmers contribute their labor to the construction efforts in return for the right to develop sections of the swampland after the road construction is completed.

#### C. Implementation

1. The Grantee will provide guidance and overall supervision as well as administration of funds and assure proper accounting and reporting through its program director in Sierra Leone.

2. The Grantee shall provide all necessary liaison with the GOSL and other donors to effect the degree of cooperation required to achieve the purpose of the project.

3. The Grantee will assure that the roads are constructed in accordance with Attachment D entitled "Engineering Analysis".

4. The Grantee will maintain detailed records on all financial transactions involved in this project.

5. The Grantee will be responsible for keeping the U.S. Embassy in Sierra Leone, the USAID Mission in Liberia and AID/W (AFR/CWA) informed on the project.

Attachment A

**D. Reports**

1. The Grantee shall prepare program and financial reports quarterly. The report shall indicate, cumulatively and for the reporting period the following:

a. Actual as compared to projected progress toward achieving the projects objectives.

b. All financial transactions related to project construction and operations covering all funds expended under this Grant.

2. The Grantee shall prepare a final report summarizing the data contained in the quarterly reports. In addition this report shall set forth major problems encountered in the implementation of the project and action taken by the Grantee to overcome these problems.

3. The reports indicated in 1 and 2 above shall be distributed as follows:

a. Seven (7) copies, 6 copies to AFR/CWA and 1 copy to CM/ROD/AFR

b. Three (3) copies to USAID/Liberia

c. Three (3) copies to the U.S. Embassy in Sierra Leone

**E. Financing**

1. The financing of this Grant will be accomplished as set forth below:

a. Funds obligated by AID under this Grant.*	\$ 640,000
b. Estimated additional financing which may be provided by AID if funds are available.	<u>505,757</u>
<b>Total</b>	<b>\$1,145,757</b>

\*The entire amount of Grant funds are authorized for local currency costs.

**Attachment A**

2. Other proposed financial inputs to be generated and managed by the Grantee toward the cost of this project are represented by the following donors:

General Public, Principally from		
North America	-	\$ 886,008
Government of Sierra Leone	-	1,785,185
U.S. Peace Corps	-	93,418
UK VSO	-	79,440
Canada CUSO	-	52,960
<b>Total</b>		<b>\$2,897,011</b>

**F. Budget**

The funds provided herein shall be used to finance the following items:

	Firm Budget Fr: 1-1-75 <u>To:12-31-75</u>	Projected Budget Fr: 1-1-76 <u>To:12-31-76</u>	Projected Budget Fr: 1-1-77 <u>To:12-31-77</u>	<u>Total</u>
1. Local National Personnel Costs	\$ 35,000	\$ 38,500	\$ 42,350	\$ 115,850
2. Maintenance, Repair and Rehabilitation of Equipment	92,000	101,200	111,320	304,520
3. Commodities (Cement, Rod, Wire, etc.)	195,000	214,500	235,950	645,450
4. Overhead	<u>24,150</u>	<u>26,565</u>	<u>29,222</u>	<u>79,937</u>
	<b>\$346,150</b>	<b>\$380,765</b>	<b>\$418,842</b>	<b>\$1,145,757</b>

**Special Provisions**

1. The Grantee may adjust as reasonably necessary any of the line item amounts in the firm budget without obtaining prior written approval of the Grant Officer, provided that such adjustments do not result in increasing the total amount of the firm budget.

**Attachment A**

2. The projected budget for the period 1-1-76 through 12-31-76 covers total estimated costs for that period, of which \$293,850 has been obligated by AID. However, projected budget funds shall not be expended by the Grantee without the prior written approval of the Grant Officer.

## STANDARD PROVISIONS

### a. Allowable Costs and Payment (Oct. 1974)

The Grantee shall be reimbursed for costs incurred in carrying out the purposes of this Grant which are determined by the Grant Officer to be allowable in accordance with the terms of this Grant and Subpart 15.2 of the Federal Procurement Regulations (FPR) (Principles and Procedure for use in Cost Reimbursement Type Supply and Research Contracts with Commercial Organizations)\* in effect on the date of this Grant. Payment of allowable costs shall be in accordance with Attachment C of this Grant.

[\*If this Grant is made to a university, the applicable cost principles are "Federal Management Circular, 73-8 (Cost Principles for Educational Institutions)" instead of Subpart 15.2 of the FPR as cited above]

### b. Accounting, Records, and Audit (Oct. 1974)

The Grantee shall maintain books, records, documents, and other evidence in accordance with the Grantee's usual accounting procedures to sufficiently substantiate charges to the grant. The Grantee shall preserve and make available such records for examination and audit by AID and the Comptroller General of the United States, or their authorized representatives (1) until the expiration of three years from the date of termination of the program and (2) for such longer period, if any, as is required to complete an audit and to resolve all questions concerning expenditures unless written approval has been obtained from the AID Grant Officer to dispose of the records. AID follows generally accepted auditing practices in determining that there is proper accounting and use of grant funds. The Grantee agrees to include the requirements of this clause in any subordinate agreement hereunder.

### c. Refunds (Oct. 1974)

(1) If use of the Grant funds results in accrual of interest to the Grantee or to any other person to whom Grantee makes such funds available in carrying out the purposes of this Grant, Grantee shall refund to AID an amount equivalent to the amount of interest accrued.

(2) Funds obligated hereunder but not disbursed to the Grantee at the time the grant expires or is terminated, shall revert to AID, except for funds encumbered by the Grantee by a legally binding transaction applicable to this Grant. Any funds disbursed to but not expended by the Grantee at the time of expiration or termination of the Grant shall be refunded to AID.

(3) If, at any time during the life of the Grant, it is determined by AID that funds provided under the Grant have been expended for purposes not in accordance with the terms of the Grant, the Grantee shall refund such amounts to AID.

d. Equal Opportunity Employment (Oct. 1974)

With regard to the employment of persons in the U.S. under this Grant, Grantee agrees to take all reasonable steps to ensure equality of opportunity in its employment practices without regard to race, religion, sex, color or national origin of such persons and that, in accordance with Title VI of the Civil Rights Act of 1964, when work funded by this Grant is performed in the U.S. no person shall, on the grounds of race, religion, sex, color or national origin, be excluded from participation, be denied benefits, or be subjected to discrimination. In addition, the Grantee agrees to comply in accordance with its written assurance of compliance, with the provisions of Part 209 of Chapter II, Title 22 of the Code of Federal Regulations, entitled "Non-Discrimination in Federally Assisted Programs of the Agency for International Development - Effectuation of Title VI of the Civil Rights Act of 1964."

e. Termination (Oct. 1974)

This Grant may be terminated at any time, in whole or in part, by the Grant Officer upon written notice to the Grantee, whenever for any reason he shall determine that such termination is in the best interest of the Government. Upon receipt of and in accordance with such notice, the Grantee shall forthwith take immediate action to minimize all expenditures and obligations financed by this Grant, and shall cancel such unliquidated obligations whenever possible. Except as provided below, no further reimbursement shall be made after the effective date of termination, and the Grantee shall within thirty (30) calendar days after the effective date of such termination repay to the Grantor all unexpended portions of funds theretofore paid by the Grantor to the Grantee which are not otherwise obligated by a legally binding transaction applicable to this Grant. Should the funds paid by the Grantor to the Grantee prior to the effective date of this termination of this Grant, be insufficient to cover the Grantee's obligations pursuant to the aforementioned legally binding transaction, the Grantee may submit to the Grantor within (90) calendar days after the effective date of such termination a written claim covering such obligations, and, subject to the limitations contained in the Grant, the Grant Officer shall determine the amount or amounts to be paid by the Grantor to the Grantee under such claim.

f. Officials Not to Benefit (Oct. 1974)

No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this Grant or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this Grant if made with a corporation for its general benefit.

g. Covenant Against Contingent Fee (Oct. 1974)

The Grantee warrants that no person or selling agency has been employed or retained to solicit or secure this Grant upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee except bona fide employees or bona fide established commercial or selling agencies maintained by the Grantee for the purpose of securing business. For breach or violation of this warranty, AID shall have the right to cancel this Grant without liability or, in its discretion, to deduct from the Grant amount, or otherwise recover, the full amount of each commission, percentage, brokerage, or contingent fee.

h. Nonliability (Oct. 1974)

AID does not assume liability with respect to any claims for damages arising out of work supported by its grants.

i. Amendment (Oct. 1974)

The Grant Agreement may be amended by formal modifications to the basic grant document or by means of an exchange of letters between the AID Grant Officer and an appropriate official of the Grantee.

j. Grant Agreement (Oct. 1974)

The letter to the Grantee signed by the Grant Officer, the Program Description and the Standard Provisions which have been reviewed and agreed to by the Grantee, constitute the Grant Agreement.

k. Notices (Oct. 1974)

Any notice given by any of the parties hereunder, shall be sufficient only if in writing and delivered in person or sent by telegraph, cable, registered or regular mail as follows:

To the cognizant AID Grant Officer

To Grantee - At Grantee's address shown in this Grant, or to such other address as either party shall designate by notice given as herein required. Notices hereunder, shall be effective when delivered in accordance with this clause or on the effective date of the notice, whichever is later.

Procurement of Equipment, Vehicles, Supplies, Materials, and Services (Oct. 1974)

(1) Except as may be specifically approved or directed in advance by the Grant Officer, or as provided in paragraphs (2), (3), and (4) below, all equipment, vehicles, materials, supplies and services the costs of which are to be attributed to this Grant and which will be financed with United States dollars shall be purchased in and shipped from the United States. In addition, for any U.S. purchase transaction in excess of \$2,500 the Grantee shall notify the seller that the item(s) must be of U.S. source and production and comply with the componentry limitations and other requirements applicable to suppliers under AID Regulation 1, and that the supplier must execute and furnish Form AID-282 "Suppliers Certificate and Agreement with the Agency for International Development".

(2) Exceptions to the foregoing are as follows (for Title X Grants only):

Grantee may permit a subgrantee (or the Grantee on his behalf) to procure commodities already in its country (with the exception of contraceptives, drug products, pharmaceuticals, and motor vehicles) in an amount not exceeding a total cost of \$5,000 per subgrantee per annum without regard to limitations, rules and procedures applicable to commodity transactions financed by AID. Such commodities shall not be considered "Already in its country" within the meaning of the aforementioned exception if the commodities have been imported or otherwise brought into the country at the request of the Grantee or subgrantee. A subgrantee's own country for this purpose shall in no event include any of the following: Australia, Austria, Belgium, Canada, Denmark, France, Germany, Spain, Italy, Japan, Luxembourg, Monaco, Netherlands, New Zealand, Norway, South Africa, Sweden, Switzerland, and United Kingdom. The Grantee shall take all reasonable precautions to ensure that the subgrantee does not procure any commodity which has as its country of origin any of the following countries: Albania, Bulgaria, China (Mainland and other Communist-controlled areas), including Manchuria, Inner Mongolia, the provinces of Tsinghai and Sikang, Sinkiang, Tibet, and former Kwantung Leased Territory, the present Port Arthur Naval Base Areas, and Liaoning Province, Cuba, German Democratic Republic, Hungary, North Korea, North Vietnam, Outer Mongolia, Poland, Rumania, and the Union of Soviet Socialist Republics.

(3) Printed or audio visual teaching materials may, to the extent necessary, be purchased outside the United States when:

### Negotiated Overhead Rates (Oct. 1974)

Pursuant to the provisions of this clause set forth below an overhead rate shall be established for each of the Grantee's accounting periods during the term of this Grant. Pending establishment of a final rate for the initial period beginning January 1, 1975 and ending December 31, 1975, provisional payments on account of allowable indirect costs shall be made at the rate or rates of 7.5%, applied to Total Direct Costs.

(1) The Grantee, as soon as possible but not later than ninety (90) days after the close of each of his accounting periods during the term of this Grant, shall submit to the Grant Officer with copies to the Overhead and Special Cost Branch, Support Division, Office of Contract Management, AID, Washington, D.C. and to the Office of the Auditor General, AID, Washington, D.C., a proposed final rate or rates for the period, together with supporting cost data. Negotiation of final overhead rates by the Grantee and the Grant Officer shall be undertaken as promptly as practicable after receipt of the Grantee's proposal.

(2) Allowability of costs and acceptability of cost allocation methods shall be determined in accordance with Subpart 1-15.2 (Principles and Procedures for Use in Cost-Reimbursement Type Supply and Research Contracts with Commercial Organizations) of the Federal Procurement Regulations\* as in effect on the date of this Grant.

(3) The results of each negotiation shall be set forth in a written overhead rate agreement executed by both parties. Such agreement shall specify (1) the agreed final rates, (2) the bases to which the rates apply, and (3) the periods for which the rates apply. The overhead rate agreement shall not change any monetary ceiling, Grant obligation, or specific cost allowance or disallowance provided for in this Grant.

(4) Pending establishment of final overhead rates for any period, the Grantee shall be reimbursed either at negotiated provisional rates as provided above or at billing rates acceptable to the Grant Officer, subject to appropriate adjustment when the final rates for that period are established. To prevent substantial over or under payment, the provisional or billing rates may, at the request of either party, be revised by mutual agreement, either retroactively or prospectively. Any such revision of negotiated provisional rates provided in this clause shall be set forth in a modification to this Grant.

Procurement of Equipment, Etc. - Page 2 of 3

(a) Effective use of the materials depend on their being in the local language, and

(b) Other funds including U.S. owned and controlled local currencies are not readily available for procurement of such material.

The order of preference as to countries in which such purchases outside the United States are made shall be:

1. The AID receiving country
2. Countries falling within AID Geographic Code 901
3. Other Countries falling within AID Geographic Code 999

AID Geographic Codes are defined in AIDPR 7-6.5201.1.

(4) Procurements in the country in which an activity is being undertaken and which are less than \$2,500 and are for materials (regularly available and normally sold on the local market) which are to be consumed or expended during the period of this Grant, are exempt from the conditions of Paragraph 1 above, provided that the origin of such materials and supplies and the component parts thereof is a free world country as described in AID Geographic Code 935.

(5) All international air shipments made by the Grantee, to be financed hereunder, shall be made on U.S. flag carriers unless shipment would, in the judgement of the Grantee, be delayed an unreasonable time awaiting a U.S. carrier, either at the point of origin or transshipment, provided that the Grantee certifies to the facts in the documents retained as part of his Grant records for post audit by AID. All international ocean shipment made by the Grantee, to be financed hereunder, shall be made on U.S. flag vessels. Where U.S. flag vessels are not available, or their use would result in a significant delay, the Grantee may obtain a release from this requirement from the Transportation Support Division, Office of Commodity Management, AID, Washington, D.C. 20523, as appropriate, giving the basis for the request.

(6) The Grantee shall obtain competition to the maximum extent possible for any procurement to be financed hereunder. Procurement by the Grantee without consideration of more than one source must be approved by the Grant Officer. In no event will any procurement be on a cost-plus-a-percentage of cost basis. The Grantee shall take all reasonable steps necessary to insure that subgrantees procuring in accordance with Paragraph (2) obtain competition to the maximum extent possible. In addition to the foregoing, for purchases made in the United States the cost of which are to be attributed to this Grant, the Grantee shall comply with the following requirements:

Procurement of Equipment, Etc. - Page 3 of 3

To permit AID, in accordance with the Small Business Provisions of the Mutual Security Act, to give United States Small Business firms an opportunity to participate in supplying commodities and services procured under this Grant, the Grantee, shall, to the maximum extent possible, provide the following information to the Office of Small Business, AID, Washington, D.C. 20523 at least 45 days prior to placing any order or contract in excess of Five Thousand (\$5,000) Dollars, except where a shorter time is requested of, and granted by the Office of Small Business:

- (a) Brief general description and quantity of commodities or services;
- (b) Closing date for receiving quotations or bids;
- (c) Address where invitations or specifications may be obtained.

(7) Funds provided under this Grant shall not be used to procure any commodity or commodity-related services furnished by any supplier whose name appears on the List of Ineligible Suppliers under AID Regulation 8, "Suppliers of Commodities and Commodity-Related Services Ineligible for AID Financing", Grantee agrees to review said list prior to undertaking any procurement the cost of which is to be attributed to this Grant. AID will provide Grantee with this list.

### Travel and Transportation (Oct. 1974)

(1) The Grant Officer hereby approves international travel hereunder provided that the Grantee shall obtain written concurrence from the cognizant technical office in AID prior to sending any individual outside the United States to perform work under the Grant. For this purpose the Grantee shall advise the Project Manager at least thirty (30) days in advance of any travel to be undertaken outside the United States. After concurrence is received the Grantee shall provide the cognizant USAID Mission or U.S. Embassy advance notification with a copy to the project officer of the arrival date and flight identification of Grant financed travellers.

(2) Travel to certain countries shall, at AID's option, be funded from U.S.-owned local currency. When AID intends to exercise this option, it will so notify the Grantee after receipt of advice of intent to travel required above. AID will issue a Government Transportation Request (GTR) which the Grantee may exchange for tickets, or AID will issue the tickets directly. Use of such U.S.-owned currencies will constitute a dollar charge to this grant.

(3) The Grantee agrees to travel by the most direct and expeditious route, and to use less than first class transportation unless such use will result in unreasonable delay or increased costs.

(a) All international air travel under this Grant shall be made on United States flag carriers. Exceptions to this rule will be allowed in the following situations provided that the Grantee certifies to the facts in the voucher or other documents retained as part of his Grant records to support his claim for reimbursement and for post audit:

1. Where a flight by a United States carrier is scheduled but does not have accommodations available when reservations are sought;

2. Where the departure time, routing, or other features of a United States carrier would interfere with or prevent the satisfactory performance of official business;

3. Where a scheduled flight by a United States carrier is delayed because of weather, mechanical, or other conditions to such an extent that use of a non-United States carrier is in the Government's interest;

**Travel and Transportation - Page 2 of 2**

**4.** Where the appropriate class of accommodations is available on both United States and non-United States carriers, but the use of the United States carrier will result in higher total United States dollar cost to the grant due to additional per diem or other expenses; and

**5.** Where the appropriate class of accommodations is available only on a non-United States carrier and the cost of transportation and related per diem on the non-U.S. carrier is less than the cost of available accommodations of another class on a United States carrier and related per diem.

(b) All international air shipments under this grant shall be made on United States flag carriers unless shipment would, in the judgment of the Grantee, be delayed an unreasonable time awaiting a United States carrier either at point of origin or transshipment, provided that the Grantee certifies to the facts in the vouchers or other documents retained as part of the Grant records to support his claim for reimbursement and for post audit.

(4) Travel allowances shall be reimbursed in accordance with the Federal Travel Regulations (FTR).

**Conversion of United States Dollars to Local Currency (Oct. 1974)**

In countries designated "excess" or "near-excess" currency countries, Grantee agrees to convert all United States dollars to local currency through the United States Disbursing Officer, (USDO), American Embassy, unless the Disbursing Officer directs the Grantee otherwise or certifies that no local currency is available.

**Ineligible Countries (Oct. 1974)**

Unless otherwise approved by the Grant Officer, no grant funds will be expended in countries ineligible for assistance under the Foreign Assistance Act of 1961, as amended, or under acts appropriating funds for foreign assistance.

**Attachment C**

**PAYMENT PROVISIONS**

**"Federal Reserve Letter of Credit for Advance Payment"**

(1) AID shall open a Federal Reserve Letter of Credit in the amount of this grant, against which the Grantee may present payment vouchers. The amount of the payment voucher shall not be less than \$10,000 nor more than 86,500.00 nor may the amount drawn down, including unexpended amounts previously drawn down, exceed by more than \$10,000, the anticipated amount of expenditures for the following seven (7) days.

(2) In no event shall the accumulated total of all such payment vouchers exceed the amount of the Federal Reserve Letter of Credit.

(3) If at any time, the Grant Officer determines that the Grantee has presented payment vouchers in excess of the amount or amounts allowable in (1) and (2) above, the Grant Officer may: (a) cause the Federal Reserve Letter of Credit to be suspended or revoked; or (b) direct the Grantee to withhold submission of payment vouchers until such time as, in the judgement of the Grant Officer, an appropriate level of actual, necessary and allowable expenditures has occurred or will occur under this Grant, and/or (c) request the Grantee to repay to AID the amount of such excess. Upon receipt of the Grant Officer's request for repayment of excess advance payments, the Grantee shall promptly contact the Grant Officer to make suitable arrangements for the repayment of such excess funds.

**(4) Procedure for Grantee**

(a) After arranging with a commercial bank of its choice for operation under this Letter of Credit and obtaining the name and address of the Federal Reserve Bank or branch serving the commercial bank, the Grantee shall deliver, to the Grant Officer, 3 originals of Standard Form 1194, "Authorized Signature Card for Payment Vouchers on Letters of Credit" signed by those official(s) authorized to sign payment vouchers against the Federal Reserve Letter of Credit and by an official of the Grantee who has authorized them to sign.

(b) The Grantee shall subsequently receive one certified copy of the Federal Reserve Letter of Credit.

(c) The Grantee shall confirm with his commercial bank that the Federal Reserve Letter of Credit has been opened and is available if funds are needed.

(d) To receive payment, the Grantee shall:

1. Periodically, although normally not during the last five days of the month, prepare payment vouchers (Form TUS 5401) in an original and three copies.

2. Have the original and two copies of the voucher signed by the authorized official(s) whose signature(s) appear on the Standard Form 1194.

3. Present the original, duplicate and triplicate copy of the Form TUS 5401 to his commercial bank.

4. Retain the quadruplicate copy of the voucher.

(e) After the first payment voucher (Form TUS 5401) has been processed, succeeding payment vouchers shall not be presented until the existing balance of previous payments has been expended or are insufficient to meet current needs.

(f) In preparing the payment voucher, the Grantee assigns a voucher number in numerical sequence beginning with 1 and continuing in sequence on all subsequent payment vouchers submitted under the Federal Reserve Letter of Credit.

(g) A report of expenditures shall be prepared and submitted not less than quarterly within 15 days of the end of the period to the Office of Financial Management, FM/CSD, AID, Washington, D.C. 20523. This report, submitted on Standard Form 1034, "Public Voucher for Purchases and Services Other Than Personnel" shall be supported by a fiscal report, in three (3) copies, which shall include certification signed by an authorized representative of the Grantee, in substantially the same form as below:

<u>Category</u>	<u>(As set forth in the Budget)</u>	<u>Budget Amount</u>	<u>Total To Date</u>	<u>Expenditures This Period</u>
XXXX		XXXX	XXXX	XXXX
XXXX		XXXX	XXXX	XXXX
			<b>Total</b>	<b>XXXX</b>

"The undersigned hereby certifies: (1) that payment of the sum claimed under the cited Grant is proper and due and that appropriate refund to AID will be made promptly upon request of AID in the event of disallowance of costs not reimbursable under the terms of the Grant; and

**(2) that information on the fiscal report is correct and such detailed supporting information as the cognizant AID Controller or Grant Officer may require will be furnished promptly to AID on request.**

**BY** \_\_\_\_\_

**TITLE** \_\_\_\_\_ **DATE** \_\_\_\_\_

**(h) The report of expenditures on Standard Form 1034 is reviewed against the Grant provisions, and any improper disbursement is disallowed. The Grantee is notified of the reason for the disallowance and is directed to adjust the next periodic report of expenditures to reflect the disallowance and to reduce its next payment voucher against the Federal Reserve Letter of Credit by the amount of the disallowance.**

**(i) Simultaneously with the submission of the report on expenditures, the Grantee submits to the Office of Financial Management a status report on the Federal Reserve Letter of Credit as of the close of the period covered by the report of expenditures. The report is prepared in the following format:**

**Federal Reserve Letter of Credit No.** \_\_\_\_\_

- 1. Total Amount of Federal Reserve Letter of Credit**      \$ \_\_\_\_\_
- 2. Payment Vouchers presented against Federal Reserve Letter of Credit**
  - a. Previously Drawn**      \$ \_\_\_\_\_
  - b. Drawn this period, TUS 5401 Nos. \_\_\_\_\_ through \_\_\_\_\_, inclusive**      \$ \_\_\_\_\_
  - c. Total Drawn**      \$ \_\_\_\_\_
- 3. Vouchers submitted not paid TUS 5401 Nos. \_\_\_\_\_ through \_\_\_\_\_**      \$ \_\_\_\_\_
- Balance FRLC available**      \$ \_\_\_\_\_
- 4. Status of Cash Drawn from FRLC**

Cash on hand beginning of period	\$ _____
Cash drawn during period	\$ _____
<b>Total Available Cash</b>	\$ _____
Cash disbursed during period	\$ _____
Advances to Subgrantee (if any) not accounted as expended	\$ _____
<b>Cash balance on hand at close of period</b>	<b>\$ _____</b>

## **(5) Refund of Excess Funds**

**(a)** If all costs have been settled under the Grant and the Grantee fails to comply with the Grant Officer's request for repayment of excess Federal Reserve Letter of Credit funds, the Government shall have the right, on other contracts or grants held with the Grantee, to withhold reimbursements due the Grantee in the amount of the excess being held by the Grantee.

**(b)** If the Grantee is still holding excess Federal Reserve Letter of Credit funds on a grant, contract or similar instrument under which the work has been completed or terminated but all costs have not been settled, the Grantee agrees to:

1. Provide within 30 days after requested to do so by the Grant Officer, a breakdown of the dollar amounts which have not been settled between the Government and the Grantee. (The Grant Officer will assume no costs are in dispute if the Grantee fails to reply within 30 days).

2. Upon written request of the Grant Officer, return to the Government the sum of dollars, if any, which represents the difference between a. the Grantee's maximum position on claimed costs which have not been reimbursed and b. the total amount of unexpended funds which have been advanced under the Grant; and

3. If the Grantee fails to comply with the Grant Officer's request for repayment of excess Federal Reserve Letter of Credit funds, the Government shall have the right, on other contracts, grants or similar agreements held with the Grantee, to withhold payment of Federal Reserve Letter of Credit or other advances and/or withhold reimbursements due the Grantee in the amount of the excess being held by the Grantee.

## ENGINEERING ANALYSIS

### A. Description of the Roads

The roads will be designed and built in accordance to the GOSL Ministry of Work's specifications for class IV rural roads (See Annex A). In order to reduce right-of-way, clearing and excavation costs, the routes will follow existing trails and foot paths to the maximum extent possible. Adequate drainage will be provided through construction of drainage ditches, culverts and bridges. A six inch compacted roadway surface will be provided through the use of laterite which is found along the roadways' alignment. The roadway will be 16 feet wide, with provision for expansion to 22 feet where warranted by traffic and area development. Bridges will be designed according to British BS 153, Part 3a-11A loading.

### B. Cost Estimates

Selection and surveying has been completed on half of the roads programmed for construction during the first phase of this project. (This was accomplished by CARE during 1974). Additional sites under the first phase, and all sites under the second and third phase, will be selected by a committee composed of representatives from the following GOSL Ministries: Works, Development, Social Welfare, Interior Education, Health and Agriculture.

The cost of the project has been reviewed by the AID/W project engineer. The cost estimate for this project was prepared by the CARE feeder road engineering staff currently constructing feeder roads in Sierra Leone. They have included provision for normal price escalation based on their past two years of experience in Sierra Leone. This project cost estimate is based upon the use of local labor and material. If a source and origin waiver for the construction material is not authorized, additional funds should be provided for the non-local construction material and spare parts.

### C. Engineering Plan

#### 1. Technical Feasibility

The technical feasibility for construction of these roads, as outlined in the Project Paper, has been adequately demonstrated by the CARE Feeder Roads Program (FRP) in Sierra Leone during the past two years. The first CARE FRP was started in June 1973 when they signed an agreement with the GOSL to construct 240 miles of Feeder Roads in four Provinces. This program was carried out under the supervision of

four Peace Corps Civil Engineers, four Peace Corps construction supervisors and six site supervisors furnished by the Ministry of Works. The local labor was furnished by the village chiefs located along the roads constructed, on a voluntary self-help basis. The project was completed, as scheduled, on August 1, 1974 and included 242 miles of roadway. The second CARE FRP was started October 1, 1974 with the Kono Province Road Authority (PVO). This program provides for the construction of 200 miles of roads in Kono Province. This program is being carried out under the supervision of seven PVO supplied civil engineers and 10 MOW supplied construction supervisors. Local labor is being supplied by the villages on a self-help basis. To date, all 200 miles of the roads have been surveyed and designed. One hundred miles of roads are estimated to be constructed by March 1 with all 200 miles scheduled for completion by July 1, 1975.

The design standards for the feeder roads are those established by the Ministry of Works for class IV rural roads (See Annex A). These standards were adopted by the MOW following their recommendation by a UNDP financed Highway Maintenance consulting engineering firm.

## 2. Project Maintenance

The MOW provides maintenance for the Primary, Secondary and District Council roads. Local villages will be providing the annual maintenance for the feeder roads constructed under this project. As traffic develops on the feeder roads, they will eventually be reconstructed and maintained by the MOW as class III or II roads. The type of maintenance anticipated during the initial years after construction will consist of cleaning ditches and filling in any pot holes in the roadway that develop. This work can all be performed by hand labor with a minimum of hand tools, both of which are available locally.

The MOW is presently completing a Highway Organization and Maintenance Project sponsored by the UNDP and the IBRD. Under this project, the UNDP supplied the U.S. consulting firm of Roy Jorgensen Associates for technical assistance to the MOW and the IBRD furnished \$1.5 million for highway maintenance equipment. A new project currently being developed for IBRD consideration, will provide for additional maintenance equipment and shop facilities to enable the MOW to establish a reliable highway maintenance capability.

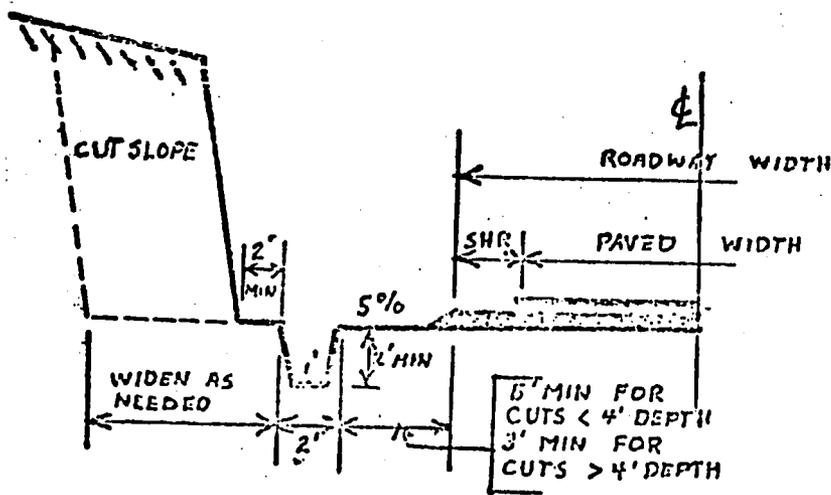
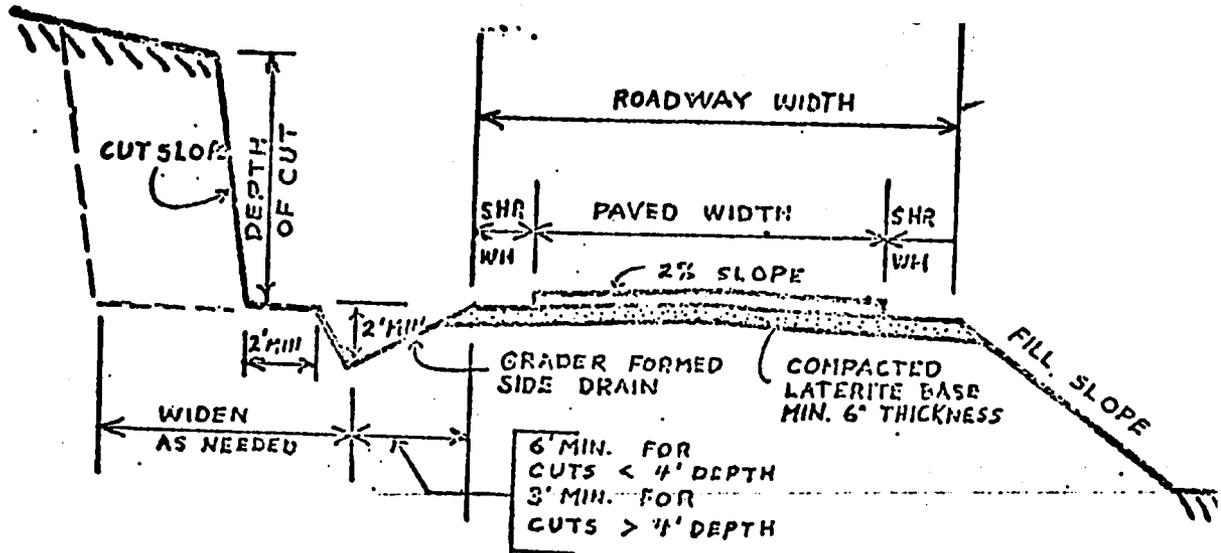
## D. Technical Soundness

The PVO/CARE proposal for construction of the feeder roads has been well planned and oriented to provide maximum utilization and benefit to the road users, with a minimum capital investment. The road alignment will utilize existing trails and local material to the maximum

extent feasible. Operationally, the roads provided will be adequate to meet the forecasted traffic and, as development and utilization increases, capable of being up-graded at minimal expense.

The technical assistance being supplied to the project and the specifications to be used for the roads are considered adequate for the completion of the project. The planning and design of the project is considered adequate for estimating the firm cost of the project to the U.S. Therefore, it is concluded that there has been sufficient technical and financial planning to determine a reasonably firm estimate of cost to the U.S. to satisfy the requirements of Section 611 of the Foreign Assistance Act of 1961, as amended.

**ROAD X-SECTION STANDARDS FOR  
REMEDIAL MAINTENANCE PROGRAMME**



ALTERNATIVE SECTION  
FOR HAND DUG SIDE  
DRAINS.

	ROAD CLASSIFICATION			
	I	II	III	IV
ROADWAY WIDTH	24' MIN.	24' MIN.	24'	16'
PAVED WIDTH	20'	20'	AS REQUIRED	NA
SHOULDER WIDTH	2' MIN.	2' MIN.	AS REQUIRED	NA
CUT SLOPES	1:6	1:6	1:6	1:6
FILL SLOPES				
UNDER 4' HEIGHT	3:1	3:1	3:1	3:1
OVER 4' HEIGHT	1½:1	1½:1	1½:1	1½:1
SURFACE TYPE	GRAVEL - ADT < 151		2-COAT BITUMEN-ADT > 400	
	1-COAT BITUMEN-ADT 151-400			

## GENERAL GEOMETRIC STANDARDS

### CLASS I

- Design speed - 50 m.p.h.
- Minimum radius of curvature - 1,000 feet
- Maximum gradient - 6%
- Maximum length of grade 1,800 feet for maximum gradient
- Formation width - 32 feet (NEW CONSTRUCTION ONLY)
- Superelevation of curves, according to accepted standard
- Axle load - 20,000 lbs.
- Bridges designed according to British standard BS 153 Part 3a, HA loading
- Bridge width - 22 feet, inside to inside curbs

### CLASS II and III

- Design speed - 40 m.p.h.
- Minimum radius of curvature - 600 feet
- Maximum gradient - 7%
- Formation width - 24 feet
- Superelevation of curves, according to accepted standard
- Axle load - 20,000 lbs.
- Bridges designed according to British standard BS 153 Part 3a HA loading
- Bridge width - 22 feet, inside to inside curbs

### CLASS IV

- Design speed - 25 m.p.h.
- Minimum radius of curvature - 300 feet
- Maximum gradient - 15%
- Formation width - 16 feet
- Bridges designed according to British Standard BS 153 Part 3 a HA loading
- Bridge width - 12 feet, inside to inside curbs with provision for expansion of bridges to 22 feet in width where warranted by traffic and area development.

## ENGINEERING ANALYSIS

### A. Description of the Roads

The roads will be designed and built in accordance to the GOSL Ministry of Work's specifications for class IV rural roads (See Annex A). In order to reduce right-of-way, clearing and excavation costs, the routes will follow existing trails and foot paths to the maximum extent possible. Adequate drainage will be provided through construction of drainage ditches, culverts and bridges. A six inch compacted roadway surface will be provided through the use of laterite which is found along the roadways' alignment. The roadway will be 16 feet wide, with provision for expansion to 22 feet where warranted by traffic and area development. Bridges will be designed according to British BS 153, Part 3a-11A loading.

### B. Cost Estimates

Selection and surveying has been completed on half of the roads programmed for construction during the first phase of this project. (This was accomplished by CARE during 1974). Additional sites under the first phase, and all sites under the second and third phase, will be selected by a committee composed of representatives from the following GOSL Ministries: Works, Development, Social Welfare, Interior Education, Health and Agriculture.

The cost of the project has been reviewed by the AID/W project engineer. The cost estimate for this project was prepared by the CARE feeder road engineering staff currently constructing feeder roads in Sierra Leone. They have included provision for normal price escalation based on their past two years of experience in Sierra Leone. This project cost estimate is based upon the use of local labor and material. If a source and origin waiver for the construction material is not authorized, additional funds should be provided for the non-local construction material and spare parts.

### C. Engineering Plan

#### 1. Technical Feasibility

The technical feasibility for construction of these roads, as outlined in the Project Paper, has been adequately demonstrated by the CARE Feeder Roads Program (FRP) in Sierra Leone during the past two years. The first CARE FRP was started in June 1973 when they signed an agreement with the GOSL to construct 240 miles of Feeder Roads in four Provinces. This program was carried out under the supervision of

four Peace Corps Civil Engineers, four Peace Corps construction supervisors and six site supervisors furnished by the Ministry of Works. The local labor was furnished by the village chiefs located along the roads constructed, on a voluntary self-help basis. The project was completed, as scheduled, on August 1, 1974 and included 242 miles of roadway. The second CARE FRP was started October 1, 1974 with the Kono Province Road Authority (PVO). This program provides for the construction of 200 miles of roads in Kono Province. This program is being carried out under the supervision of seven PVO supplied civil engineers and 10 MOW supplied construction supervisors. Local labor is being supplied by the villages on a self-help basis. To date, all 200 miles of the roads have been surveyed and designed. One hundred miles of roads are estimated to be constructed by March 1 with all 200 miles scheduled for completion by July 1, 1975.

The design standards for the feeder roads are those established by the Ministry of Works for class IV rural roads (See Annex A). These standards were adopted by the MOW following their recommendation by a UNDP financed Highway Maintenance consulting engineering firm.

## 2. Project Maintenance

The MOW provides maintenance for the Primary, Secondary and District Council roads. Local villages will be providing the annual maintenance for the feeder roads constructed under this project. As traffic develops on the feeder roads, they will eventually be reconstructed and maintained by the MOW as class III or II roads. The type of maintenance anticipated during the initial years after construction will consist of cleaning ditches and filling in any pot holes in the roadway that develop. This work can all be performed by hand labor with a minimum of hand tools, both of which are available locally.

The MOW is presently completing a Highway Organization and Maintenance Project sponsored by the UNDP and the IBRD. Under this project, the UNDP supplied the U.S. consulting firm of Roy Jorgensen Associates for technical assistance to the MOW and the IBRD furnished \$1.5 million for highway maintenance equipment. A new project currently being developed for IBRD consideration, will provide for additional maintenance equipment and shop facilities to enable the MOW to establish a reliable highway maintenance capability.

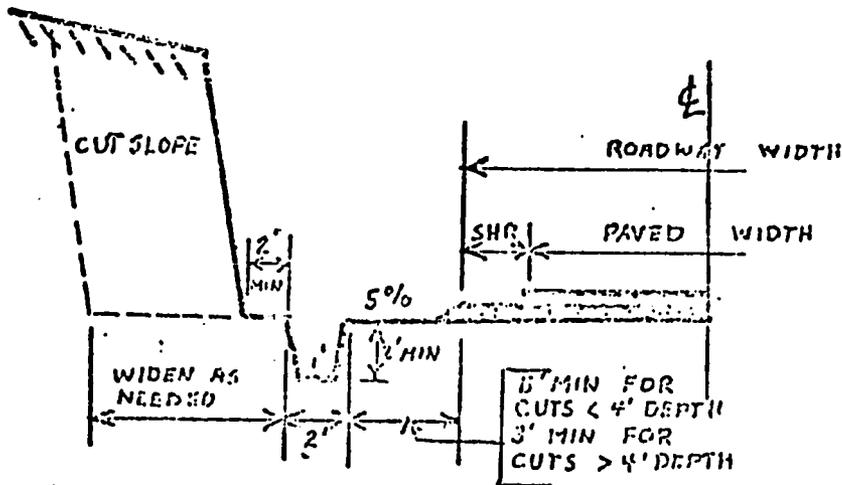
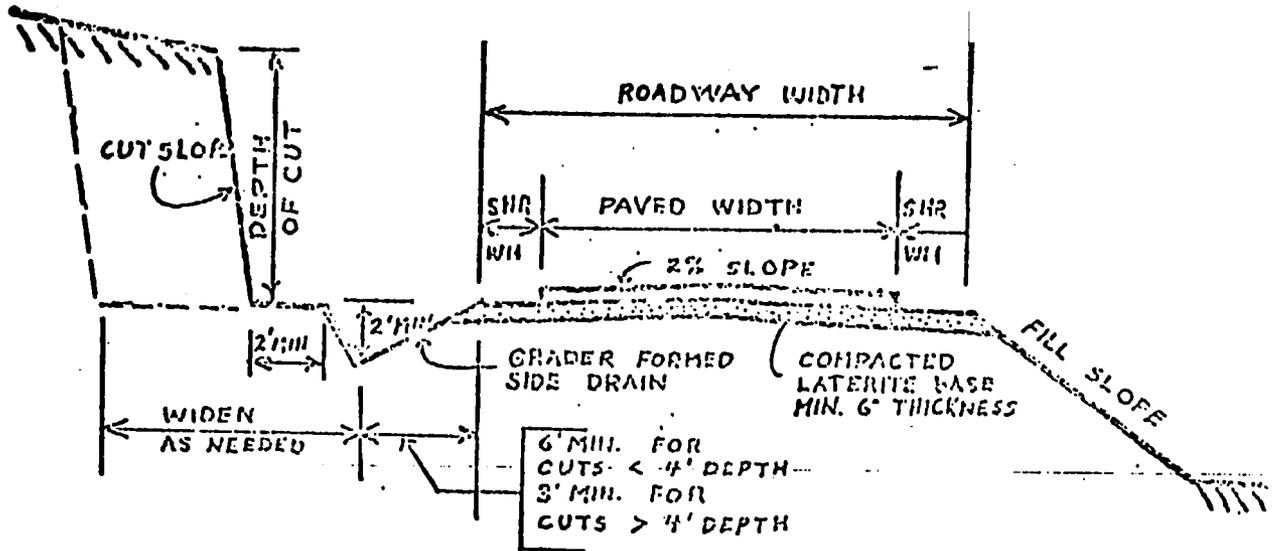
## D. Technical Soundness

The PVO/CARE proposal for construction of the feeder roads has been well planned and oriented to provide maximum utilization and benefit to the road users, with a minimum capital investment. The road alignment will utilize existing trails and local material to the maximum.

extent feasible. Operationally, the roads provided will be adequate to meet the forecasted traffic and, as development and utilization increases, capable of being up-graded at minimal expense.

The technical assistance being supplied to the project and the specifications to be used for the roads are considered adequate for the completion of the project. The planning and design of the project is considered adequate for estimating the firm cost of the project to the U.S. Therefore, it is concluded that there has been sufficient technical and financial planning to determine a reasonably firm estimate of cost to the U.S. to satisfy the requirements of Section 611 of the Foreign Assistance Act of 1961, as amended.

**ROAD X-SECTION STANDARDS FOR  
REMEDIAL MAINTENANCE PROGRAMME**



ALTERNATIVE SECTION FOR HAND DUG SIDE DRAINS.

	ROAD CLASSIFICATION			
	I	II	III	IV
ROADWAY WIDTH	24' MIN.	24' MIN.	24'	16'
PAVED WIDTH	20'	20'	AS REQUIRED	NA
SHOULDER WIDTH	2' MIN.	2' MIN.	AS REQUIRED	NA
CUT SLOPES	1:6	1:6	1:6	1:6
FILL SLOPES				
UNDER 4' HEIGHT	3:1	3:1	3:1	3:1
OVER 4' HEIGHT	1½:1	1½:1	1½:1	1½:1
SURFACE TYPE	GRAVEL - ADT < 151		2-COAT BITUMEN-ADT > 400	
	1-COAT BITUMEN-ADT 151-400			

## GENERAL GEOMETRIC STANDARDS

### CLASS I

- Design speed - 50 m.p.h.
- Minimum radius of curvature - 1,000 feet
- Maximum gradient - 6%
- Maximum length of grade 1,800 feet for maximum gradient
- Formation width - 32 feet (NEW CONSTRUCTION ONLY)
- Superelevation of curves, according to accepted standard
- Axle load - 20,000 lbs.
- Bridges designed according to British standard BS 153 Part 3a, HA loading
- Bridge width - 22 feet, inside to inside curbs

### CLASS II and III

- Design speed - 40 m.p.h.
- Minimum radius of curvature - 600 feet
- Maximum gradient - 7%
- Formation width - 24 feet
- Superelevation of curves, according to accepted standard
- Axle load - 20,000 lbs.
- Bridges designed according to British standard BS 153 Part 3a, HA loading
- Bridge width 22 feet, inside to inside curbs

### CLASS IV

- Design speed - 25 m.p.h.
- Minimum radius of curvature - 300 feet
- Maximum gradient - 15%
- Formation width - 16 feet
- Bridges designed according to British Standard BS 153 Part 3 a HA loading
- Bridge width - 12 feet, inside to inside curbs with provision for expansion of bridges to 22 feet in width where warranted by traffic and area development.