Proj: 6360111
PD-AAB-806-B1

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COUNTRY Sierra Leone

PROJECT TITLE: CARE Rural Roads II

PROJECT NUMBE 636-0111

Attachments:

1. Action Memorandum
2. PAF I
3. .PAF II
4. Three Waivers
5. Country Checklist
6. Project Checklist
7. Standard Checklist
8. OPG Proposal

ACTION MEMORANDUM FOR THE ASSISTANT ADMINISTRATOR FOR AFRICA

FROM : AFR/DR, John L. Withers JLW

SUBJECT: CARE Sierra Leone Rural Penetration Roads II Project
636-0111

Problem:

This action memo requests approval and authorization for this operational program grant.

Discussion:

The attached PVO Sierra Leone Rural Penetration Roads (Phase II) project proposal developed by the Cooperative for American Relief Everywhere, Inc., (CARE) has been reviewed by the ECPR which recommends you approve the project and an A.I.D. grant to CARE for up to $3,991,000 to carry out the project subject to the A.I.D.'s general terms and conditions for PVO grants and specific terms and conditions noted in the attached PAF II. Contrary to the indication of the funding schedule in the PP, the funding is scheduled as follows: FY 78, $1.8 million; FY 79, $1.141 million; and FY 80, $1.050 million.

The purpose of the project is to provide approximately 14,800 farmers and their families in sections of the eastern, southern and northern areas of Sierra Leone with access to agricultural markets and access to a range of developmental services by constructing or reconditioning 400 miles of rural penetration roads. Of the total road mileage, approximately 320 miles are existing roads for reconditioning and approximately 80 miles are for new construction.

In recommending project approval, the ECPR agreed to covenants in the grant which when followed will satisfy any further remaining questions of the economic benefits to be derived from the "short spur" segments and which will satisfy A.I.D. environmental procedures and considerations. (See PAF II, Covenants, for the specific language.)

The ECPR, including the SER/COM representative, recommended approval of the procurement waivers (attached). Your approval of a relaxation of shelf-item procurement rules to allow procurement for spare parts and construction materials with a local currency equivalent of up to U.S. $5,000 per purchase was also recommended by the ECPR. The spare parts and construction supplies must be readily available during the "construction season" and inordinate delays in delivery may lead to corresponding delays in the road construction schedule.

The GOSL road maintenance capacity is yet to be tested. AID/W has received official notification that the GOSL has established a Roads Maintenance Unit within the Ministry of Works and that they are budgeting for recurrent costs. In addition to its input into this project, the IBRD will most likely provide the GOSL with a substantial loan for a program of road maintenance. This loan is scheduled for implementation in late 1978. The ECPR feels that there is an element of risk and at this time the GOSL may not be able to fully maintain its road investments. (See page 4 of PP.) Nevertheless the ECPR felt that A.I.D. has received as much assurance as the GOSL can now provide on their intent to build up a road maintenance capability over the life of the project. Based upon the GOSL establishment of a Road Maintenance Unit and the understanding that the IBRD may provide substantial funding for road maintenance activities, the Director of USAID Monrovia signed the 611(e) certification. To provide further assurance, the PAF II provides that prior to obligation of FY 1979 and FY 1980 funds the AA/AFR must be satisfied that positive action has been taken by the GOSL to institute sound road maintenance. (See PAF II for specific language.)

While the ECPR recommends approval for this OPG to CARE, we wish to note that this PVO activity should be considered as an exceptional case. A.I.D guidelines give primary emphasis on PVO projects involved in local community development activities. They discourage programs at the nationa level which require government to government assurance and commitments and programs involved in capital intensive activities. Two party grant agreements with PVOs are not amenable to the kind of coordination required in national programs. In the case of the CARE Roads II project there is a heavy reliance by A.I.D. on direct local government participation, but assurances from the GOSL to CARE are not enforceable directly by A.I.D. The ECPR recommends that in the future such projects should be considered in A.I.D.'s longer range bilateral programming cycle.

The specific justification for making an exception on this project are as follows:

-- This three-year road construction project is an extension of a previous CARE OPG activity which was evaluated as a success.

-- There is a high volunteer component in this activity (British VSO and U.S. Peace Corps) as well as local villagers which significantly reduces costs.

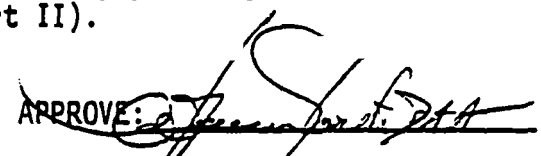
-- From an engineering standpoint, competitive bidding for rural penetration roads are not practical. Detailed plans and specifications would have to be prepared prior to the requests for bids resulting in high design costs of the project. In addition the project would lose its flexibility because an Invitation for Bid approach would require all roads be picked in advance with no possibility of substitution.

As a PVO, CARE's contribution to this activity is $1,200,800 or approximately 14% of total project costs. A private firm would not make such a contribution, thus increasing project costs. (Total non-A.I.D. contributions are 53% of total project costs.)

The justification for approving the Rural Penetration Roads project with CARE as the implementing agent is reasonable considering the circumstances in this case, but approval of this project should not be construed as a precedent for similar projects in the future. In addition, while the Office of Development Planning (AFR/DP) has cleared this project for approval, they wish to record two reservations with regard to it. USAID/SL has requested A.I.D. participation in the upcoming World Bank Second Highway project in the form of a $3 million contribution to the loan. (Freetown 3743, attached.) DP raises the questions of whether the Bank will proceed with the loan without an A.I.D. contribution of $3 million to the project and would CARE have capability to develop a national rural road maintenance capability for GOSL if the IBRD does not provide substantial funding for road maintenance activities?

Recommendation:

That you approve and authorize this project by your signature on this memorandum and on the attached PAF (Part II).

APPROVE: 

DISAPPROVE: _____

DATE: 2/6/78

CLEARANCES:
AFR/DR/GThompson 12/30/77
AFR/DR/JKelly 12/30/77
AFR/DR/BBoyd 1/3/78
AFR/DR/SKrause (subs)
AFR/CAWA/DAGriffith 1/5/78
SER/COM/CRaley 1/25/78
SER/ENGR/RMacDonald 1/6/78
GC/AFR/JPatterson 2/8/78
AFR/DP/GCauvin 1/11/78

DRAFT:AFR/DR/CAWARAP/IPeters:mb:12/29/77

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT OF FUNDS PART I

1. TRANSACTION CODE: [A] (A = ADD, C = CHANGE, D = DELETE) — PAF

2. DOCUMENT CODE: 5

3. COUNTRY/ENTITY: Sierra Leone

4. DOCUMENT REVISION NUMBER: [ ]

5. PROJECT NUMBER (7 digits): 636-0111

6. BUREAU/OFFICE: A. SYMBOL: AFR; B. CODE: 06

7. PROJECT TITLE (Maximum 40 characters): CARE Pentration Roads II

8. PROJECT APPROVAL DECISION — ACTION TAKEN: [ ] (A = APPROVED, D = DISAPPROVED, DE = DEAUTHORIZED)

9. EST. PERIOD OF IMPLEMENTATION: YRS. 3; QTRS [ ]

10. APPROVED BUDGET AID APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	PRIMARY TECH. CODE D. LOAN	E. 1ST FY 78 F. GRANT	E. 1ST FY 78 G. LOAN	H. 2ND FY 79 I. GRANT	H. 2ND FY 79 J. LOAN	K. 3RD FY 80 L. GRANT	K. 3RD FY 80 M. LOAN
(1) FN	110	061		1,800		1,141		1,050	
(2)									
(3)									
(4)									
TOTALS				1,800		1,141		1,050	

A. APPROPRIATION	N. 4TH FY ___ O. GRANT	N. 4TH FY ___ P. LOAN	Q. 5TH FY ___ R. GRANT	Q. 5TH FY ___ S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
(1) FN					3,991	
(2)						
TOTALS					3,991	

11. PROJECT FUNDING AUTHORIZED (ENTER APPROPRIATE CODE(S)) 1 = LIFE OF PROJECT, 2 = INCREMENTAL, LIFE OF PROJECT — A. GRANT: 2; B. LOAN:

C. PROJECT FUNDING AUTHORIZED THRU: FY 80

12. INITIAL PROJECT FUNDING ALLOTMENT REQUESTED ($000)

B. ALLOTMENT REQUEST NO. ___

A. APPROPRIATION	C. GRANT	D. LOAN
(1) FN	1,800	
(2)		
(3)		
(4)		
TOTALS		

13. FUNDS RESERVED FOR ALLOTMENT

TYPED NAME (Chief, SER/FM/~~EXR~~/FCD): Dannie Baker

SIGNATURE: Dannie Baker Jr.

DATE: January 5, 1978

14. SOURCE/ORIGIN OF GOODS AND SERVICES: [X] 000 [X] 941 [X] LOCAL [X] OTHER 935

15. FOR AMENDMENTS, NATURE OF CHANGE PROPOSED

FOR PPC/PIAS USE ONLY	16. AUTHORIZING OFFICE SYMBOL	17. ACTION DATE (MM DD YY)	18. ACTION REFERENCE (Optional)	ACTION REFERENCE DATE (MM DD YY)

AID 1550-2 (7-76)

Project Authorization and Request for Allotment of Funds

Part II

COUNTRY: Sierra Leone

PROJECT: Cooperative for American Relief Everywhere, Inc. (CARE)

PROJECT NUMBER: 636-0111

Pursuant to Part I, Chapter 1, Section 103, of the Foreign Assistance Act of 1961, as amended, I hereby authorize a grant to the Cooperative for American Relief Everywhere, Inc., (CARE) of not to exceed One Million Eight Hundred Thousand United States Dollars ($1,800,000) in FY 1978 to help in financing certain foreign exchange and local currency costs of goods and services required for the project as described below.

The purpose of the three-year project is to provide approximately 14,800 farmers and their families in sections of the eastern, southern, and northern areas of Sierra Leone with access to agricultural markets and to a range of developmental services by constructing or reconditioning approximately 400 miles of feeder roads.

CARE will manage the construction of approximately 115 miles of penetration roads in eastern Sierra Leone, 235 miles in the northern area, and 20 miles in the Torma Bum (southern) area, and 30 miles in support of the Peace Corps swampland development in the northern area.

Roads constructed under this project are designed to increase agricultural productivity, and to increase the flow of benefits to the population in the impact areas.

I approve the total level of A.I.D. appropriated grant funding for this project during the period FY 1978 through FY 1980, of not to exceed Three Million, Nine Hundred Ninety-one Thousand United States Dollars ($3,991,000) which includes the funding authorized above, subject to the availability of funds in accordance with A.I.D. allotment procedures, and subject to the following condition prior to obligations in FY 1979 and 1980:

> Prior to the obligation of up to $1,141,000 grant funding for FY 1979, and prior to the obligation of up to $1,050.00 grant funding in FY 1980, an evaluation of the project shall be conducted showing satisfactorily to AA/AFR that the GOSL has made progress toward the establishment of a road maintenance capability to maintain the road system in Sierra Leone.

I hereby authorize the initiation of negotiation and execution of the Grant Agreement by the officer to whom such authority has been delegated in accordance with A.I.D. regulations and Delegations of Authority subject to the following essential terms and covenants and major conditions; together with such other terms and conditions as A.I.D. may deem appropriate:

a. Source and Origin of Goods and Services.

Except as provided in paragraph b below, and except as A.I.D. may otherwise agree in writing, goods and services financed by A.I.D. under the project shall have their source and origin in the United States. Ocean shipping financed under the Grant shall be procured in the U.S.

b. Local Currency Costs.

I hereby approve the financing of local currency costs in the approximate amount of $2,297,700 principally for petroleum products, for roads construction equipment, for local labor costs and commodities.

c. Waivers.

Based upon the justifications set forth in the project paper (pages 57-58):

1. I approve a waiver of the requirements of A.I.D. Handbook 1, Supplement B, Chapter 18 and A.I.D. Handbook 15, Chapter 11 relating to imported shelf items to permit the total invoice value of each type of commodity in each transaction to equal the local currency equivalent of five thousand U.S. dollars ($5,000.-) up to an aggregate amount not to exceed $250,000.

d. Covenants.

The Grant Agreement shall contain a covenant which will provide, in substance, as follows:

(1) CARE covenants and agrees to maintain roads constructed or reconditioned under this and the prior related A.I.D. financed project, and to train a road maintenance unit of Sierra Leoneans to perform such maintenance until such time as the IBRD project, to improve and upgrade the GOSL's capacity to supervise and implement maintenance of its road system, is operational.

(2) CARE agrees to prepare and to submit to A.I.D. for its approval, prior to construction, a report or reports for short "spur roads" of three miles length or less, showing that each such road will benefit the rural poor of Sierra Leone by increasing

agricultural productivity and by providing additional health or other services to the rural poor.

e. Conditions Precedent.

The Grant Agreement shall contain a condition precedent providing, in substance, as follows:

1. Environmental Matters

Prior to any disbursement, or to the issuance of any commitment documents under the project for construction of new roads or the reconditioning of existing roads an environmental examination will be conducted to insure that no road is built under the project unless:

(1) the environmental examination reveals that the road will have no significant effect on the human environment; or

(2) an Environment Assessment is prepared and approved by A.I.D.

APPROVE: _____

DISAPPROVE: _____

DATE: 2/8/74

Assistant Administrator
Bureau for Africa

CLEARANCE:
(Same as Action Memorandum
for the Assistant Administrator
for Africa)

Procurement Waiver Request No.1

SUBJECT: Request for Procurement Waiver of the source and origin requirements for replacement parts of non-U.S. road construction equipment, to change the authorized source and origin from the United States (Code 000) to Code 935 (Special Free World).

A.	Grantee:	CARE
B.	Cooperating Country:	Sierra Leone
C.	Authorizing Document:	Project 636-0111
D.	Project:	Rural Penetration Road Project
E.	Nature of Funding:	Operational Grant
F.	Commodities Involved:	

	Description of Goods	Estimated Total Annual Cost, Delivered Freetown
1.	Assorted replacement parts for road construction equipment manufactured by Aveling Barford, England.	$30,000
2.	Assorted replacement parts for Bedford dump trucks manufactured by Vauxhall Motors, England.	$45,000
3.	Assorted replacement parts for Peugeot transport carriers manufactured in France.	$ 5,000

COMMENT: CARE currently has in operation on the Road Construction Project a fleet of road construction equipment manufactured by Aveling Barford in the United Kingdom and a fleet of Bedford dump trucks manufactured by Vauxhall Motors in the United Kingdom, plus transport carriers manufactured by Peugeot. This equipment was given to CARE by the Government of Sierra Leone at the inception of this project. The Peugeots now in inventory were purchased with GOSL funds.

JUSTIFICATION: The replacement parts, which are required for proper maintenance and operation of the equipment, are not available from eligible sources. Therefore, CARE based its justification for the requested waiver on the grounds of nonavailability of essential commodities from eligible sources. (Reference: Section 2A7a of AID Handbook No.15)

SUBJECT: Request for Procurement Waiver of the source and origin requirements for POL items, to change the authorized source and origin from the United States (Code 000) to Code

A. Grantee:

B. Cooperating Country: Sierra Leone

C. Authorizing Document: Project 636-0111

D. Project: Rural Penetration Road Project

E. Nature of Funding: Operational Grant

F. Commodities Involved:

Description of Goods	Estimated Annual Cost	Total Budgeted in PP -LOP
1. Diesel Fuel: Up to 3,600 imperial gallons per week for the duration of the project. Anticipated price per gallon is US$.80.	$149,760	$831,400
Fuel Oil: Up to 600 imperial gallons per week for the duration of the project. Anticipated price per gallon is US$1.10.	$ 34,200	
3. Oil and Lubricants: Up to 30 drums (45 gallons each) per month for the duration of the project. Anticipated price per drum is US$300.	$108,000	

G. Source: Sierra Leone

H. Anticipated Origin: Nigeria--some of the products are imported as crude and refined in Sierra Leone.

JUSTIFICATION: Procurement from the source/origin listed above is necessitated by the fact that it is neither feasible nor practical to import POL products into Sierra Leone from the U.S. The relatively small amounts involved would deter any interested suppliers or raise the cost to astronomical magnitudes. Likewise, importing US-source POL from other sources, i.e. transshipment from Liberia would entail increased prices and excessive scheduling and delivery problems.

Procurement Waiver Request No.2

SUBJECT: Request for Proprietary Procurement Waiver so as to permit U.S. procurement of major road construction by brand name from the manufacturer involved without using formal competitive bidding.

A. Grantee: CARE

B. Cooperating Country: Sierra Leone

C. Authorizing Document: Project 636-0111

D. Project: Rural Penetration Road Project

E. Nature of Funding: Operational Grant

F. Commodities Involved:

	Description of Goods	Estimated Total Cost, Delivered Freetown
1.	(2) Terex TS-14 Scrapers	$320,000
2.	(4) Caterpillar 120-G Motor Graders	290,000
3.	(1) Caterpillar #920 Wheel Loader	50,000
4.	(2) Caterpillar D6 Track Type Tractors with Ripper	194,000

COMMENT: CARE/Sierra Leine currently has in its fleet of road construction equipment at least one of each of the four types of road construction equipment described above.

JUSTIFICATION: Based on Section 3C4b(3) of AID Handbook No.15 and under Section c, Justification of Proprietary Procurement, CARE offers as justification the factors of Standardization and Compatibility with equipment on hand. Approval of this waiver will include economies in maintenance of spare parts, better repair facilities and greater technical familiarity by operating personnel. The two manufactueres involved have local agents in Sierra Leone that can provide service and parts when needed.

List of current equipment inventory attached.

CURRENT EQUIPMENT INVENTORY

MAKE	TYPE	SERIAL NO.	CONDITION
Caterpillar	D4C Dozer	88A874 Series D	Fair
Caterpillar	D4D Dozer	88A876	Fair
Caterpillar	D6 Dozer	76A2525	Poor
Caterpillar	D7 Dozer	48A6300	Fair
Caterpillar	D7 Dozer	48A11638	Poor
Terex	82-30 FA	B10634	Fair
Terex	82-30 FA	B10633	Fair
Terex	TS-14 Scraper	B10714	Fair
Terex	TS-14B-Scraper	B17665	Excellent
Aveling Barford	MG Grader	KG1549	Fair
Aveling Barford	PG Grader	PG2324	Fair
Caterpillar	Grader	70D239	Poor
Caterpillar	Grader	99E10687	Fair
Caterpillar	Grader	99E1160	Fair
Caterpillar	Grader 120G	87V2616	Excellent
Aveling Barford	Static Roller	GNR943	Fair
Caterpillar	Grader 120G	-	Excellent
Aveling Barford	Static Roller	GNR908	Fair
Aveling Barford	Vibrating Roller	VR911	Excellent
Aveling Barford	Vibrating Roller	VR939	Excellent
JCB	Front End Loader	S5660	Poor
Caterpillar	920 Front End Loader	62X992	Fair
Caterpillar	920 Front-End Loader	62X8238	Excellent

Procurement Waiver Request No. [illegible]

SUBJECT: Request for Procurement Waiver of the Source and Origin requirements for project material purchases, to change the authorized source and origin from the United States (Code 000) to Code 935 countries including the host country.

A. Grantee: CARE

B. Cooperating Country: Sierra Leone

C. Authorizing Document: Project [illegible]

D. Project: Rural Penetration Road Project

E. Nature of Funding: Operational Grant

F. Commodities Involved:

Description of Goods	Estimated Annual Requirements	Local Purchase Delivered Cost Per Bag	Estimated Total Annual Cost
Ordinary Portland Cement, packed 50 kilos per bag.	[illegible] bags	U.S. $[illegible]	$[illegible]

COMMENTS: The cost of U.S. manufactured cement, packed 94 pounds per bag, delivered to Freetown is about $[illegible] a bag. Thus the total estimated annual cost would be $[illegible].

The origin of cement regularly available and normally sold on the local market is a country not included under AID Geographic Code 935.

CARE proposes to periodically solicit bids from local dealers on a quantity purchase of cement that would be imported by the dealer from an AID Geographic Code 935 country. The anticipated origin of this cement is Spain.

CARE requests the approval of a procurement waiver that would authorize the purchase through local dealers of the estimated annual requirements for cement which are necessary for completing the project activities undertaken in relation to this Grant without prior Contracting Officer approval.

JUSTIFICATION: In view of the preceding comments, CARE believes that there are grounds for approving the proposed procurement waiver under Section [illegible] (Waiver Authority) of AID Handbook No. [illegible]. We refer particularly to Clause [illegible] which offers the following criteria for approving such a waiver, "Such other circumstances as are determined to be critical to the success of U.S. foreign policy or foreign assistance program objectives."

UNCLASSIFIED

Department of State

INCOMING TELEGRAM

[illegible]

6C(1) - COUNTRY CHECKLIST

Listed below are, first, statutory criteria applicable generally to FAA funds, and then criteria applicable to individual fund sources: Development Assistance and Security Supporting Assistance funds.

A. GENERAL CRITERIA FOR COUNTRY

1.	FAA Sec. 116. Can it be demonstrated that contemplated assistance will directly benefit the needy? If not, has the Department of State determined that this government has engaged in consistent pattern of gross violations of internationally recognized human rights?	The project aims at helping the needy by strengthening a major infrastructural impediment in the agricultural sector where one finds the bulk of the poor majority.
2.	FAA Sec. 481. Has it been determined that the government of recipient country has failed to take adequate steps to prevent narcotics drugs and other controlled substances (as defined by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in such country, or transported through such country, from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents, or from entering the U.S. unlawfully?	Nc
3.	FAA Sec. 620(a). Does recipient country furnish assistance to Cuba or fail to take appropriate steps to prevent ships or aircraft under its flag from carrying cargoes to or from Cuba?	No
4.	FAA Sec. 620(b). If assistance is to a government, has the Secretary of State determined that it is not controlled by the international Communist movement?	Yes
5.	FAA Sec. 620(c). If assistance is to government, is the government liable as debtor or unconditional guarantor on any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) debt is not denied or contested by such government?	No
6.	FAA Sec. 620(e) (1). If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or [illegible]?	No

7. FAA Sec. 620(f); App. Sec. 108. Is recipient country a Communist country? Will assistance be provided to the Democratic Republic of Vietnam (North Vietnam), South Vietnam, Cambodia or Laos	No, No
8. FAA Sec. 620(i). Is recipient country in any way involved in (a) subversion of, or military aggression against, the United States or any country receiving U.S. assistance, or (b) the planning of such subversion or aggression?	No
9. FAA Sec. 620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction, by mob action, of U.S. property?	No
10. FAA Sec. 620(l). If the country has failed to institute the investment guaranty program for the specific risks of expropriation, inconvertibility or confiscation, has the AID Administrator within the past year considered denying assistance to such government for this reason?	Sierra Leone has an investment guaranty agreement with the U.S.
11. FAA Sec. 620(o); Fishermen's Protective Act, Sec. 5. If country has seized, or imposed any penalty or sanction against, any U.S. fishing activities in international waters,	No
a. has any deduction required by Fishermen's Protective Act been made?	No
b. has complete denial of assistance been considered by AID Administrator?	No
12. FAA Sec. 620(q); App. Sec. 504. (a) Is the government of the recipient country in default on interest or principal of any AID loan to the country? (b) Is country in default exceeding one year on interest or principal on U.S. loan under program for which App. Act appropriates funds, unless debt was earlier disputed, or appropriate steps taken to cure default?	(a) No (b) No
13. FAA Sec. 620(s). What percentage of country budget is for military expenditures? How much of foreign exchange resources spent on military equipment? How much spent for the purchase of sophisticated weapons systems? (Consideration of these points is to be coordinated with the Bureau for Program and Policy Coordination, Regional Coordinators and Military Assistance Staff (PPC/RC).)	5.2% of budget for military expenditures. No sophisticated weapons systems will be purchased. Little foreign exchange involved, majority of expenditures for personnel emoluments.

14. FAA Sec. 620(t). Has the country severed diplomatic relations with the United States? If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption?	No
15. FAA Sec. 620(u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the AID Administrator in determining the current AID Operational Year Budget?	Sierra Leone is four years in arrears in U.N. obligations; $200,000. Yes
16. FAA Sec. 620A. Has the country granted sanctuary from prosecution to any individual or group which has committed an act of international terrorism?	No
17. FAA Sec. 666. Does the country object, on basis of race, religion, national origin or sex, to the presence of any officer or employee of the U.S. there to carry out economic development program under FAA?	No
18. FAA Sec. 669. Has the country delivered or received nuclear reprocessing or enrichment equipment, materials or technology, without specified arrangements on safeguards, etc.?	No
19. FAA Sec. 901. Has the country denied its citizens the right or opportunity to emigrate?	No

B. FUNDING CRITERIA FOR COUNTRY

1. Development Assistance Country Criteria

a. FAA Sec. 102(c), (d). Have criteria been established, and taken into account, to assess commitment and progress of country in effectively involving the poor in development, on such indexes as: (1) small-farm labor intensive agriculture, (2) reduced infant mortality, (3) population growth, (4) equality of income distribution, and (5) unemployment.	Yes-Sierra Leone's Development Plan focuses on agriculture, health, & education delivery to the poor.
b. FAA Sec. 201(b)(5), (7) & (8); Sec. 208; 211(a)(4), (7). Describe extent to which country is:	
(1) Making appropriate efforts to increase food production and improve means for food storage and distribution.	The GOSL is seeking self-sufficiency in rice production.
(2) Creating a favorable climate for foreign and domestic private enter-	The GOSL does not actively discourage foreign & national enterprise.

81b

(3) Increasing the public's role in the developmental process.	The GOSL promotes self-help as well as government development projects.
(4) (a) Allocating available budgetary resources to development.	11% of GOSL 77/78 budget expenditures is for development, excluding debt charges.
(b) Diverting such resources for unnecessary military expenditure and intervention in affairs of other free and independent nations.	No
(5) Making economic, social, and political reforms such as tax collection improvements and changes in land tenure arrangements, and making progress toward respect for the rule of law, freedom of expression and of the press and recognizing the importance of individual freedom, initiative, and private enterprise.	The GOSL has become increasingly aware of the need for efficiency tax collection, eradicati of corruption & social development. There is freedom of the press & encouragement of private enterprise as stated in the development plan.
(6) Otherwise responding to the vital economic, political, and social concerns of its people, and demonstrating a clear determination to take effectiv self-help measures.	It is government policy that self-help projects will play a major role in expansion of education, health, communications & other essential services, as well as in agricultural development & other productive activities.
c. FAA Sec. 201(b), 211(a). Is the country among the 20 countries in which development assistance loans may be made in this fiscal year, or among the 40 in which development assistance grants (other than for self-help projects) may be made?	Yes
d. FAA Sec. 115. Will country be furnished, in same fiscal year, either security supporting assistance, or Middle East peace funds? If so, is assistance for population programs, humanitarian aid through international organizations, or regional programs?	No
2. Security Supporting Assistance Country Criteria	No security assistance requested by/for Sierra Leone.
a. FAA Sec. 502B. Has the country engaged in a consistent pattern of gross violations of internationally recognized human rights? Is program in accordance with policy of this Section?	
b. FAA Sec. 531. Is the Assistance to be furnished to a friendly country, organization, or body eligible to receive assistance?	
c. FAA Sec. 609. If commodities are to be granted so that sale proceeds will accru to the recipient country, have Special Account (counterpart) arrangements been	

6C(2) - PROJECT CHECKLIST

Listed below are, first, statutory criteria applicable generally to projects with FAA funds, and then project criteria applicable to individual fund sources: Development Assistance (with a sub-category for criteria applicable only to loans); and Security Supporting Assistance funds.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE? IDENTIFY. HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT?

GENERAL CRITERIA FOR PROJECT.

1. App. Unnumbered; FAA Sec. 653(b)

   (a) Describe how Committees on Appropriations of Senate and House have been or will be notified concerning the project (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than $1 million over that figure plus 10%)?

   (a) Congress has been notified through Congressional Notification procedures for projects not included in fiscal year Congressional Presentation.
   (b) 15-day waiting period expired 12/1/77

2. FAA Sec. 611(a)(1). Prior to obligation in excess of $100,000, will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

   (a) Yes
   (b) Yes

3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?

   No further legislative action within the recipient country will be requiad.

4. FAA Sec. 611(b); App. Sec. 101. If for water or water-related land resource construction, has project met the standards and criteria as per Memorandum of the President dated Sept. 5, 1973 (replaces Memorandum of May 15, 1962 see Fed. Register, Vol 38, No. 174, Part III, Sept. 10, 1973)?

   N/A

5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed $1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project?

   Yes (9/13/77; MONROVIA 6883)

6 FAA Sec. 209, 619. Is project susceptible of execution as part of regional or multilateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs. If assistance is for newly independent country, is it furnished through multilateral organizations or plans to the	No, N/A
7. AA Sec. 601(a); (and Sec. 201(f) for development loans). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.	The project will facilitate trade cooperatives, agricultural development & private enterprises as it will provide vehicular access to heretofore isolated regions of Sierra Leone.
8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).	U.S. investors are interested & have already expressed interest in Sierra Leone. Increases in productive of traditional & expert crops will result from improved transportation network. Improved access to producing areas will increase private trade & improve the possibility for an expanded export program.
9. FAA Sec. 612(b); Sec. 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.	The GOSL will provide a minimum of 21% of total project funding, or $1.8 million.
10. FAA Sec. 612(d). Does the U.S. own excess foreign currency and, if so, what arrangements have been made for its release?	No US owned excess foreign currency.
B. FUNDING CRITERIA FOR PROJECT	
1. Development Assistance Project Criteria	
a. FAA Sec. 102(c); Sec. 111; Sec. 281 Extent to which activity will (a) effectively involve the poor in development by extending access to economy at local level, increasing labor-intensive production, spreading investment out from cities to small towns and rural areas; and (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions?	(a) The project will directly benefit subsistance farmers by providing them with access to agricultural inputs & markets. It will also provide access to health, education & agricultural extension services. (b) The project roads will serve to facilitate the development of marketing cooperatives.

B1

b. FAA Sec. 103, 103A, 104, 105, 106, 107. Is assistance being made available: [include only applicable paragraph -- e.g., a, b, etc. -- which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source.]

Project's main purpose is to increase availability of services & markets for the benefit of the rural poor.

(1) [103] for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; [103A] if for agricultural research, is full account taken of needs of small farmers;

(2) [104] for population planning or health; if so, extent to which activity extends low-cost, integrated delivery systems to provide health and family planning services, especially to rural areas and poor;

(3) [105] for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development;

(4) [106] for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:

(a) technical cooperation and development, especially with U.S. private and voluntary, or regional and international development, organizations;

(b) to help alleviate energy problem;

(c) research into, and evaluation of economic development processes and techniques;

(d) reconstruction after natural or manmade disaster;

(e) for special development problem, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;

(f) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.

(5) [107] by grants for coordinated private effort to develop and disseminate intermediate technologies appropriate for developing countries.

c. FAA Sec. 110(a); Sec. 208(e). Is the recipient country willing to contribute funds to the project, and in what manner has or will it provide assurances that it will provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least-developed" country)?

Yes. The Grant Agreement will require a GOSL & other donor contributions amounting to 53% of project's costs.

d. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing?

N/A

e. FAA Sec. 207; Sec. 113. Extent to which assistance reflects appropriate emphasis on; (1) encouraging development of democratic, economic, political, and social institutions; (2) self-help in meeting the country's food needs; (3) improving availability of trained worker-power in the country; (4) programs designed to meet the country's health needs; (5) other important areas of economic, political, and social development, including industry; free labor unions, cooperatives, and Voluntary Agencies; transportation and communication; planning and public administration; urban development, and modernization of existing laws; or (6) integrating women into the recipient country's national economy.

(1) Project intended to stimulate economic activity. (2) Subsequent agricultural development will focus on increased food crop production. (3) construction of roads will directly provide on-the-job training. (4-5) with increased access will come more & better health services, political integration, cooperative development & an increase in participation of women in labor saving & economic activities.

f. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civic education and training in skills required for effective participation in governmental and political processes essential to self-government.

The project will be implemented by CARE for the GOSL. CARE's constructive program utilizes to the maximum extent possible Sierra Leone nationals, on-the-job technical training, local self-help initiative and a GOSL determination of site selection.

g. FAA Sec. 201(b)(2)-(4) and -(8); Sec. 201(e); Sec. 211(a)(1)-(3) and -(8). Does the activity give reasonable promise of contributing to the development: of economic resources, or to the increase of productive capacities and self-sustaining economic growth; or of educational or other institutions directed toward social progress? Is it related to and consistent with other development activities, and will it contribute to realizable long-range objectives? And does project paper provide information and conclusion on an activity's economic and technical soundness?	Yes Yes Yes
h. FAA Sec. 201(b)(6); Sec. 211(a)(5), (6 Information and conclusion on possible effects of the assistance on U.S. economy, with special reference to areas of substantial labor surplus, and extent to which U.S. commodities and assistance are furnished in a manner consistent with improving or safeguarding the U.S. balance-of-payments position.	Off-shore procurement will consist mainly of U.S. commodities, & technical assistance.
2. Development Assistance Project Criteria (Loans only)	N/A
a. FAA Sec. 201(b)(1). Information and conclusion on availability of financing from other free-world sources, including private sources within U.S.	
b. FAA Sec. 201(b)(2); 201(d). Information and conclusion on (1) capacity of the country to repay the loan, including reasonableness of repayment prospects, and (2) reasonableness and legality (under laws of country and U.S.) of lending and relending terms of the loan.	
c. FAA Sec. 201(e). If loan is not made pursuant to a multilateral plan, and the amount of the loan exceeds $100,000, has country submitted to AID an application for such funds together with assurances to indicate that funds will be used in an economically and technically sound manner?	
d. FAA Sec. 201(f). Does project paper describe how project will promote the country's economic development taking into account the country's human and material resources requirements and relationship between ultimate objectives of the project and overall economic development?	

e. FAA Sec. 202(a). Total amount of money under loan which is going directly to private enterprise, is going to intermediate credit institutions or other borrowers for use by private enterprise, is being used to finance imports from private sources, or is otherwise being used to finance procurements from private sources? N/A

f. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete in the U.S. with U.S. enterprise, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?

3. Project Criteria Solely for Security Supporting Assistance N/A

FAA Sec. 531. How will this assistance support promote economic or political stability?

4. Additional Criteria for Alliance for Progress

[Note: Alliance for Progress projects should add the following two items to a project checklist.]

a. FAA Sec. 251(b)(1), -(8). Does assistance take into account principles of the Act of Bogota and the Charter of Punta del Este; and to what extent will the activity contribute to the economic or political integration of Latin America? N/A

b. FAA Sec. 251(b)(8); 251(h). For loans, has there been taken into account the effort made by recipient nation to repatriate capital invested in other countries by their own citizens? Is loan consistent with the findings and recommendations of the Inter-American Committee for the Alliance for Progress (now "CEPCIES," the Permanent Executive Committee of the OAS) in its annual review of national development activities? N/A

6C(3) - STANDARD ITEM CHECKLIST

Listed below are statutory items which normally will be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by exclusion (as where certain uses of funds are permitted, but other uses not).

These items are arranged under the general headings of (A) Procurement, (B) Construction, and (C) Other Restrictions.

Procurement

1.	FAA Sec. 602. Are there arrangements to permit U.S. small business to participate equitably in the furnishing of goods and services financed?	Yes
2.	FAA Sec. 604(a) Will all commodity procurement financed be from the U.S. except as otherwise determined by the President or under delegation from him?	Yes
3.	FAA Sec. 604(d). If the cooperating country discriminates against U.S. marine insurance companies, will agreement require that marine insurance be placed in the U.S. on commodities financed?	Yes
4.	FAA Sec. 604(e). If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity?	N/A
5.	FAA Sec. 608(a). Will U.S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items?	Yes
6.	MMA Sec. 901(b). (a) Compliance with requirement that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S.-flag commercial vessels to the extent that such vessels are available at fair and reasonable rates.	Yes
7.	FAA Sec. 621. If technical assistance is financed, will such assistance be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis? If the facilities of other Federal agencies will be utilized,	Yes

are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?	N/A
8. International Air Transport - Fair Competitive Practices Act, 1974	Yes
If air transportation of persons or property is financed on grant basis, will provision be made that U.S.-flag carriers will be utilized to the extent such service is available?	
B. Construction	
1. FAA Sec. 601(d). If a capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interest?	N/A - PTO activity
2. FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable?	N/A
3. FAA Sec. 620(k). If for construction of productive enterprise, will aggregate value of assistance to be furnished by the U.S. not exceed $100 million?	N/A
C. Other Restrictions	
1. FAA Sec. 201(d). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter?	N/A
2. FAA Sec. 301(d). If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights?	N/A
3. FAA Sec. 620(h). Do arrangements preclude promoting or assisting the foreign aid projects or activities of Communist-Bloc countries, contrary to the best interests of the U.S.?	Yes
4. FAA Sec. 636(i). Is financing not permitted to be used, without waiver, for purchase, long-term lease, or exchange of motor vehicle manufactured outside the U.S. or guaranty of such transaction?	Yes

5. [redacted] N/A

a. [redacted] N/A

b. [redacted] N/A

c. [redacted] N/A

d. [redacted] N/A

e. [redacted] N/A

f. [redacted] N/A

g. [redacted] N/A

h. [redacted] N/A

[redacted]

[redacted]

[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

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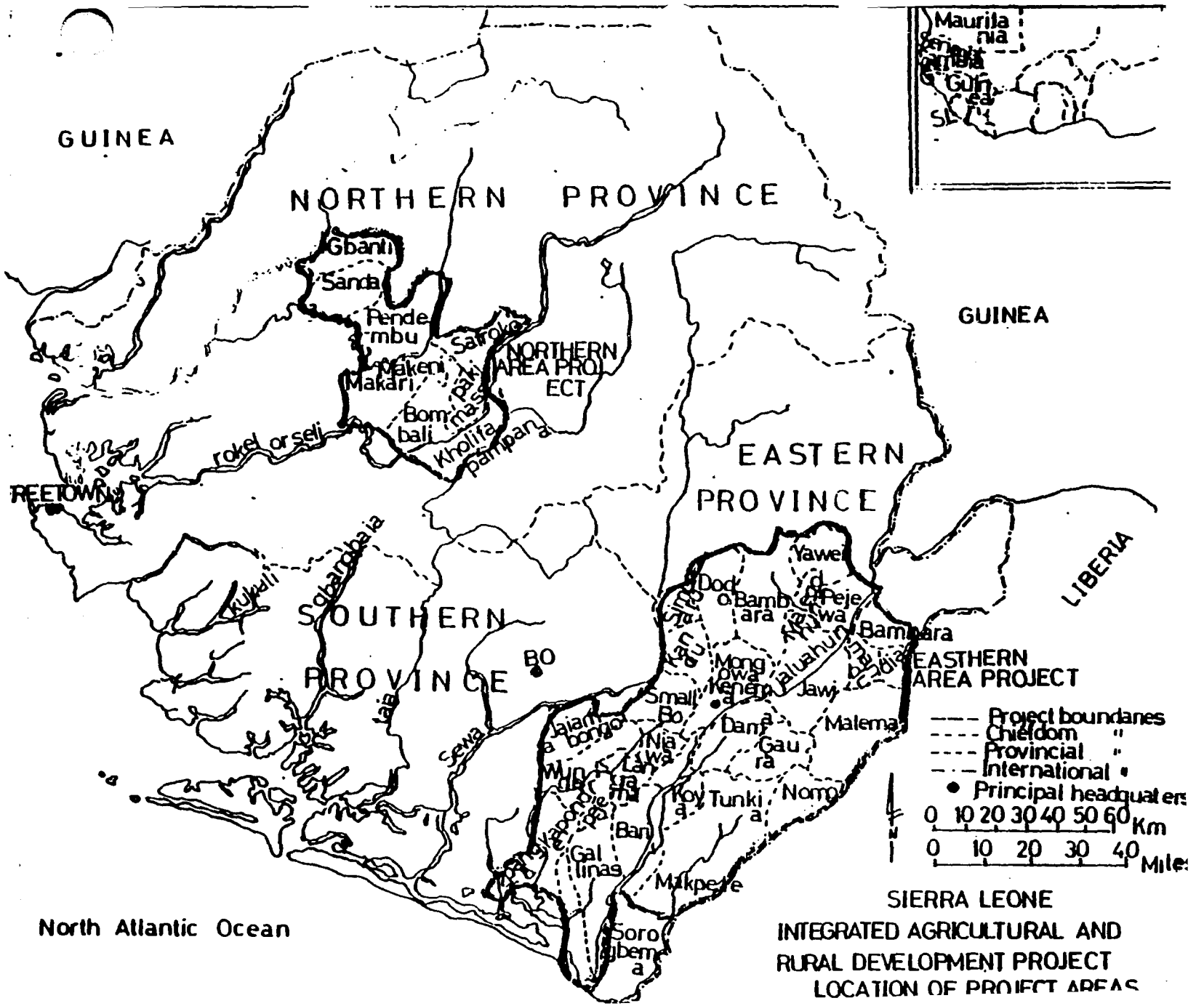
INDEX TO ANNEXES

Annexes

INTRODUCTION

In 1975, a grant in the amount of $1,145,757.00 was made to CARE for a project designed to support construction and reconditioning of approximately 900 miles of rural penetration roads in Sierra Leone. A joint AID-CARE evaluation of this project was carried out in February of this year and is attached as Annex F.

The evaluation concluded that the original construction targets of the project were unrealistic and that no more than approximately 224 miles of road will have been constructed and reconditioned by the end of June 1977. Nevertheless, the evaluation evidenced that the project showed great promise inasmuch as the quality of the roads constructed was good and the actual cost per mile of approximately $12,000 was far less than AID's usual experience in West Africa. The evaluation team found that the rural penetration roads constructed by CARE complemented ongoing agricultural development projects supported by the World Bank, and that these roads had had direct results in terms of a measurable increase in agricultural production and the flow of development benefit to the population in the impact area. On the basis of these findings, the evaluation concluded that the project to date should be considered a successful and innovative effort deserving of continued AID support. A further AID grant to support the construction and reconditioning of an additional 400 miles of rural penetration roads was recommended as well as financing to assist in the maintenance of these roads until the Government of Sierra Leone had the capability to assume full responsibility. Therefore, this Operational Program Grant Proposal requests a total AID funding for this new project of $3,991,000 for the period July 1, 1977 to September 30, 1980.



MAP 1

SIERRA LEONE - with Project Areas

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

1. TRANSACTION CODE: [A] (A = ADD, C = CHANGE, D = DELETE)

PP

2. DOCUMENT CODE: 3

3. COUNTRY/ENTITY: Sierra Leone

4. DOCUMENT REVISION NUMBER: 1

5. PROJECT NUMBER (7 digits): 636-0111

6. BUREAU/OFFICE: A. SYMBOL: AFR; B. CODE:

7. PROJECT TITLE (Maximum 40 characters): CARE Rural Penetration Roads II

8. ESTIMATED FY OF PROJECT COMPLETION: FY 81

9. ESTIMATED DATE OF OBLIGATION: A. INITIAL FY 78; B. QUARTER 1 (Enter 1, 2, 3, or 4); C. FINAL FY 80

10. ESTIMATED COSTS ($000 OR EQUIVALENT $1 =)

A. FUNDING SOURCE	FIRST FY B. FX	FIRST FY C. L/C	FIRST FY D. TOTAL	LIFE OF PROJECT E. FX	LIFE OF PROJECT F. L/C	LIFE OF PROJECT G. TOTAL
AID APPROPRIATED TOTAL	1,331.9	468.1	1,800.0	1,693.3	2,297.7	3,991.0
(GRANT)	(1,331.9)	(468.1)	1,800.0	(1,693.3)	(2,297.7)	(3,991.0)
(LOAN)	( )	( )	( )	( )	( )	( )
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST COUNTRY	34.3	455.4	489.7	431	1,362	1,793
OTHER DONOR(S)	236	1,158.1	1,394.1	563.9	2,173.3	2,737.2
TOTALS	1,602.2	2,081.6	3,683.8	2,688.2	5,833.0	8,521.2

11. PROPOSED BUDGET APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	PRIMARY TECH. CODE D. LOAN	E. 1ST FY 78 F. GRANT	E. 1ST FY 78 G. LOAN	H. 2ND FY 79 I. GRANT	H. 2ND FY 79 J. LOAN	K. 3RD FY 80 L. GRANT	K. 3RD FY 80 M. LOAN
(1) FN	130	061		1,800		1,141		1,050	
(2)									
(3)									
(4)									
TOTALS									

A. APPROPRIATION	N. 4TH FY ___ O. GRANT	N. 4TH FY ___ P. LOAN	Q. 5TH FY ___ R. GRANT	Q. 5TH FY ___ S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN	12. IN-DEPTH EVALUATION SCHEDULED
(1) FN					3,991		
(2)							
(3)							MM YY 0 1 7 9
(4)							
TOTALS							

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET.

[1] (1 = NO, 2 = YES)

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE

Director, USAID/Liberia

DATE SIGNED: MM 07 DD 28 YY 77

15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM 07 DD 29 YY 77

AID 1330-4 (3-78)

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

1. TRANSACTION CODE: [A] A = ADD, C = CHANGE, D = DELETE — PP — 2. DOCUMENT CODE: 3

3. COUNTRY/ENTITY: SIERRA LEONE

4. DOCUMENT REVISION NUMBER: [ ]

5. PROJECT NUMBER (7 digits): 636-[ ]

6. BUREAU/OFFICE: A. SYMBOL: AFR; B. CODE: [ ]

7. PROJECT TITLE (Maximum 40 characters): CARE Rural Penetration Road Construction and Maintenance

8. ESTIMATED FY OF PROJECT COMPLETION: FY 80

9. ESTIMATED DATE OF OBLIGATION: A. INITIAL FY 77; B. QUARTER 4; C. FINAL FY 80 (Enter 1, 2, 3, or 4)

10. ESTIMATED COSTS ($000 OR EQUIVALENT $1 -)

A. FUNDING SOURCE	FIRST FY B. FX	FIRST FY C. L/C	FIRST FY D. TOTAL	LIFE OF PROJECT E. FX	LIFE OF PROJECT F. L/C	LIFE OF PROJECT G. TOTAL
AID APPROPRIATED TOTAL	1,450.8	296.6	1,747.4	1,752	2,239	3,991
(GRANT)	1,450.8	296.6	1,747.4	1,752	2,239	3,991
(LOAN)						
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST COUNTRY	34.3	455.4	489.7	431	1,362	1,793
OTHER DONOR(S)	236	1,158.1	1,394.1	563.9	2,173.3	2,737.2
TOTALS	1,721.1	1,910.1	3,631.2	2,746.9	5,774.3	8,521.2

11. PROPOSED BUDGET APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	PRIMARY TECH. CODE D. LOAN	E. 1ST FY 77 F. GRANT	E. 1ST FY 77 G. LOAN	H. 2ND FY 78 I. GRANT	H. 2ND FY 78 J. LOAN	K. 3RD FY 79 L. GRANT	K. 3RD FY 79 M. LOAN
(1) FH	130	061		1,747		1,170		1,074	
(2)									
(3)									
(4)									
TOTALS				1,747		1,170		1,074	

A. APPROPRIATION	N. 4TH FY ___ O. GRANT	N. 4TH FY ___ P. LOAN	Q. 5TH FY ___ R. GRANT	Q. 5TH FY ___ S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
(1) FN					3,991	
(2)						
(3)						
(4)						
TOTALS						

12. IN-DEPTH EVALUATION SCHEDULED: MM YY: 02 78

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET.

[1] 1 = NO, 2 = YES

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE

Harvey E. Gutman
Acting Director
USAID/Liberia

DATE SIGNED: MM DD YY: 07 28 77

15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM DD YY: 1 1 1

AID 1330-4 (3-76)

1.0 SUMMARY AND RECOMMENDATIONS

1.1 (Face Sheet)

1.2 Recommendations:

The following actions are hereby submitted for AID approval within the project paper:

Operational Program Grant $3,991,000

Terms: A grant to CARE in two tranches:[1/]

A. The first tranche, in the amount of $1,747,400 will be made to CARE after this proposal is authorized and after USAID/Liberia determines that the Government of Sierra Leone has taken action to insure that maintenance of the roads constructed by CARE under this grant is funded by the Ministry of Works (MOW) and that the MOW is adequately staffed to supervise road maintenance.

B. The second tranche in the amount of $2,243,600 to CARE will be made on or about June 1978 after USAID/Liberia verifies that the Government of Sierra Leone's Ministry of Public Works has achieved the targets which are discussed in Section 3.0 of this paper which relate to the assumption of responsibility for road design and supervision of certain aspects of maintenance.

1.3 Project Description

1.3.1 Grantee and Implementing Agency:

The Grantee and implementing agency shall be CARE operating in coordination with the GOSL Ministry of Works (MOW).

1.3.2 Project Summary

The project described herein is estimated to cost $8,521,100 and will require approximately three (3) years to complete. The financial inputs required will be provided by:

A. AID - $3,991,000 for:

- road construction and maintenance equipment and materials
- local personnel costs;
- fuel and oil;
- spare parts, workshop tools and equipment for the repair and maintenance of construction and maintenance equipment
- CARE headquarters overhead costs

1/ Refer to Section 4, Conditions, Covenants and Negotiating Status

B. Government of Sierra Leone - $1,792,900 for:

- costs of road maintenance during the project period;
- local personnel costs;
- construction equipment and materials.

C. CARE - $1,200,800 for:

- U.S., Code 935 and local personnel costs;
- costs of maintaining project equipment;
- road construction materials and equipment.

D. World Bank - $1,198,900 for:

- road construction equipment and materials.

E. Peace Corps and Volunteer Services Overseas (USG and UK) - $337,500 for:

- U.S. and Code 935 personnel services;
  U.K. volunteers.

* Next paragraph to p. 24

The purpose of this project is to provide some 14,800 farmers and their families in sections of the eastern, southern and northern area of Sierra Leone with assured access to agricultural markets and to a rang of developmental services available through the GOSL's own or its foreign donor supported activities.

The physical outputs from this project include:

A. The construction or reconditioning of approximately 115 miles in the eastern area, 235 miles in the northern area, 20 miles in the Torma Bum (southern) area and 30 miles in support of Peace Corps swampland development activities in the northern part of the country, i.e., a total of approximately 400 miles.

B. The establishment of the capability to maintain the roads to be constructed or reconditioned under this project plus the 224 miles of roads constructed under the previous AID grant.

These output targets will be achieved during a three year project period commencing July 1, 1977 and ending September 30, 1980. CARE will supervise design and construction/reconditioning of the roads and will provide maintenance of the roads during the project period and beyond through 1982 with the objective of phasing itself out of the maintenance program sooner if it is demonstrated that the MOW attains the required level of competence before this target date.

1.3.3 Authorization Requested:

Authorization for this grant includes authorization for certai exceptions from normal A.I.D. procurement procedures as detailed and justified in Section 4.0 of this project paper.

A. Authorization to permit shelf item procurement of Code 935 origin for spare parts for equipment repairs and road construction materials with a local currency equivalent of U.S. $5,000 maximum per unit.

B. Authorization to permit proprietary procurement of all A.I.D. financed road construction/maintenance equipment and spare parts. All of the equipment and spare parts in this category will be procured from U.S. suppliers.

C. Authorization for cement purchase from Source/Origin Code 935. See Procurement Waiver (No. 3).

1.4 Findings:

On the basis of the analysis contained herein, the USAID Mission to Liberia concludes that the project is technically, economically and financially sound. It is recommended that an Operational Program Grant in an amount not to exceed $3,991,000 be authorized in favor of CARE. The analysis reflected in this paper supports the conclusion that the project meets all applicable statutory criteria, has a favorable economic return, and will not have a significant adverse impact on the environment. The USAID Acting Mission Director has certified that Sierra Leone has the capability to maintain and utilize this project.

1.5 Project Issues:

A. The capacity of the GOSL to maintain the roads built under this and the preceding A.I.D. Grant: Past performance, the track record of the GOSL in this regard, has been deficient. However, the Government has shown a consistant willingness to give its predecessor project priority in its annual development budget. The IBRD has under design a project to improve and upgrade the MOW's capacity to supervise and implement maintenance of its road system including the roads covered under this

project and the previous AID Grant. The GOSL, in a letter to CARE, has affirmed its intention to undertake these responsibilities once the IBRD project has been approved and the expected results therefrom taken effect. In the interim, CARE has stated that they will undertake responsibility for maintenance and training Sierra Leoneans to do the same, and the GOSL has committed itself to budgeting for the annual recurring costs of such maintenance.

B. The capacity of CARE to construct and maintain roads at the costs estimated herein: Earlier cost estimates for roads to be built by CARE under the previous AID grant proved unrealistic. Nevertheless, the actual cost (average of $12,000 per mile) is well below the norm in West Africa. The analysis of what CARE has accomplished to date set forth in the evaluation (Annex F), supports the conclusion that the cost estimates contained in this paper are realizable and that CARE has both the commitment to this project as well as the managerial capability to implement the physical outputs assumed herein.

The above two issues are discussed more fully in section 3 and Annex F of this paper.

2.0 BACKGROUND AND PROJECT DESCRIPTION

2.1 The Development Problem

Sierra Leone, a country of some 28,000 square miles, three times the size of New Hampshire, is located on the West Africa coast adjacent to Liberia. Its population of over 3 million has an estimated GNP per capita income of $190.[1/] There is a significant variance between average annual urban family income ($570.00)[1/] and that of the average rural family ($316.00).[1/] These are national averages and family unit size varies significantly by tribe. The areas served by this project generally have family incomes significantly lower than these averages. World Bank statistics[1/] show that while 76 percent of the population is engaged in agriculture, this group accounts for only 32 percent of gross domestic product. Rice is grown by 80 percent of all farmers on 50 percent of all land under cultivation. It is the basic staple food grain. Although total farm acreage under cultivation has increased since 1965 by some 30 percent, the rate of production for the major crops such as rice increased only 2.5 percent. The obvious reason for this poor performance is low productivity by the average farmer.

In order to address the constraints identified in the agricultural sector, the World Bank and other foreign donors have launched agricultural development projects which seek to provide a full range of technical services and inputs to the farmers in the southern, northern, and eastern areas of the country. These projects, already underway, are hampered by a lack of adequate roads in many of the project areas. The GOSL has put into effect in 1974 a five year development plan which has identified the agricultural sector as one of the priority concentration areas. Bothe the GOSL and the World Bank have further identified the inadequate rural road network as one of the prime constraints in improving agricultural efficiency of production and have particularly identified this constraint in the agriculture project areas in which the CARE Rural Penetration Roads Project is now operating and proposes continued operations. A major flaw in project design by the World Bank was that no provision for a rural road network; this problem now looms as a limiting factor in achieving the results anticipated.

The road network in Sierra Leone, while more extensive than in neighboring Liberia, does not penetrate into many of the rural areas, as it was not originally built to serve the now defunct Sierra Leone railways. As a result, many Sierra Leonean farmers are not able to market their product.

"Transportation projects are very important for agricultural development. Benefits may arise not only from cost reduction in marketing, but from time savings, accident reduction or development activities induced in areas opened for the first time by reasonable price market access." [2/]

1/ World Bank statistical report on Sierra Leone.

2/ Gittinger, J. Price, Economic Analysis of Agricultural Projects World Bank 1972.

The GOSL is becoming seriously concerned with the effect present agricultural practices, if continued, will have on the ecology of the country. The traditional agricultural technology of the area is one of slash and burn. As a result of this and of the growing population of the country, virtually all virgin areas have been cut over and planted.

The secondary growth, which grows during the period that the land is allowed to be fallow following one or two years of crop production, does not have the tree population nor the tree size of the original virgin forest. This will ultimately effect the amount of rainfall in the country since the evapo-transportation rate of the secondary growth is not as great as that of the virgin forest nor is the cooling rate upon the atmosphere as great as that of the original forest. Removing the original forest cover also greatly increases the effects of leaching and erosion. It is the desire of the GOSL in bringing farmers into the market economy to encourage investment in the land and the utilization of inputs and techniques which will eventually eliminate the wasteful and harmful process of slash and burn. The World Bank Integrated Agricultural Development projects which this project will service, are designed to encourage this favorable practice, and the government is very aware that the farmer's ability to have access to his markets is key to the achievement of this objective.

2.1.1 Integrated Agricultural Development Projects (IADP)

The IADP is in its second phase and its activities include: supervised farm credit, extensive extension coverage (one extension worker for 40 farmers), farmer training, the provision of agricultural supplies (fertilizer, chemicals and improved seed), and the establishment of institutions needed for continued agricultural development. The IADP now covers two separate areas referred to as the Eastern Area Project (EAP), initiated in 1972, and the Northern Area Project (NAP) which began in 1975.

2.1.2 Swampland Development Project

The Peace Corps stated the Swampland Development Project in 1974. It is located in the Northern Province Districts of Port Loko, Kambia, Tonkolili and Koinadugu. The project aims to increase rice productivity through water control, and the Peace Corps reports that the average farmer has doubled yields using water control methods. Approximately 800 farmers are participating in the Swampland Development Project.

The Peace Corps Project has experienced a 100 percent increase in rice production and the World Bank estimates similar production increases in the NAP and EAP. This will provide the farmers with increased cash income <u>if</u> there are means to transport the extra produce to the market and <u>if</u> the farmer receives a fair price.

2.1.3 Kenya Sea Agricultural Development Project

This is a rice development project being considered for financing by the African Development Bank. The project will include such activities as farm credits, extension services, provision of agricultural supplies and rice processing and marketing.

2.1.4 CARE Involvement

In December 1972, with assistance from the International Development Association (IDA), the Integrated Agricultural Development Project (IADP) was undertaken in 32 chiefdoms of the eastern area of Sierra Leone. A major omission in the project design was the provision for rural penetration roads to support the flow of new services and increased production to and from the area.

The IADP's Project Management Unit identified the need for rural penetration roads early in the implementation stage and undertook a comprehensive survey of penetration road requirements in the project area. CARE, in response to this problem, assisted in designing the rural penetration road construction program, first funded under the previous AID grant, so that it would complement IADP activities in the eastern area. CARE has since been involved in constructing roads in other agricultural development areas.

2.1.5 Rural Penetration Roads

The system of rural penetration roads is inadequate. Approximately half of the farm products are conveyed to market by headloading (on foot), and the volume of products has not seriously taxed the available transportation fleet. The fact that rural penetration roads have a significant effect on agricultural development in Sierra Leone, is supported by the findings of the AID evaluation as well as by various studies and appraisals undertaken by other foreign donors.

In 1970 the Government of Sierra Leone accepted the recommendations of the United Nations Development Program's survey of the transportation sector. The main recommendations were:

- to close down the Sierra Leone Railway, whose freight and passenger volume had declined sharply in the 1960s;

- to embark on a long-term (10 year) road construction program in order to replace the railway, and to build a road network that will correspond to the needs of the country.

Sierra Leone's road system was originally designed and constructed as a feeder system to the railways and in its present state

is inadequate to carry increased levels of traffic. There are approximately 4,300 miles of road in Sierra Leone. Six hundred and forty-nine miles are paved, and the remaining 85 percent of the roads, (approximatel 3,650 miles) have a laterite surface. Approximately 3,100 miles of laterite roads or 71 percent of all of the roads in Sierra Leone are in bad condition. 3/

The Four-Year Highway Maintenance Program proposed in the Jorgensen Report commissioned in 1974 by the UNDP was approved by the World Bank, has been accepted by the Government of Sierra Leone and, in effect, forms the basis of the GOSL's policies supporting the construction of feeder roads. The Government of Sierra Leone is giving priority to improving its road system and is expected to initiate the highway program shortly.

CARE is the only organization constructing rural penetration roads to standards in Sierra Leone. 4/

2.1.6 AID Experience

AID's previous experience incconstructing rural roads in Sierra Leone has been through its previous association with CARE in the predecessor grant project discussed in the AID Evaluation (Annex F) This experience has been satisfactory.

3/ Final Report: Proposed Four-Year Highway Programme (Roy Jorgensen Associates, Inc., for the UNDP June 1976)

4/ Rural penetration roads have a laterite surface and an average daily traffic (ADT) range of 0-150 vehicles.

2.2 Detailed Project Description

2.2.1 Goal

To increase the per capita income of Sierra Leone's rural population. By the end of 1979, average annual cash income per rural household should be greater than $365 per year. By the end of 1979, more than 40 percent of rural households should earn more than $469 per year. Here we are assuming that the current terms of trade between the urban and rural sectors (which now favor the urban sector) will not deteriorate for the rural population.

2.2.2 Purpose

To provide farmers in the eastern, southern and northern areas of Sierra Leone with increased and continued access to agricultural inputs (extension, fertilizer, improved seed) and market outlets. By 1980, it is expected that:

- increasing quantities of agricultural produce will be transported on rural penetration roads - rice, cocoa, and palm oil;

- increasing quantities of farm supplies will be transported on rural penetration roads (fertilizer, improved seed);

- two hundred seventy extension workers will be using feeder roads;

- six hundred twenty-four miles of feeder roads regularly will be maintained under the supervision of CARE and the Ministry of Works.

2.2.3 Outputs

Construction and reconditioning of 400 miles of roads (July 1, 1977 to June 30, 1980).

A. North

(1) IADP - reconditioning and construction of 235 miles of roads (30 miles the first year, 95 miles the second year and 110 miles the third year). 5/

(2) Swampland Development Project - construction and reconditioning of 30 miles of roads (10 miles each year)

5/ Rehabilitation is done on tracks and roads which were constructed previously and deteriorated.

B. East

IADP - construction and reconditioning of 60 miles of roads during the first year of the proposed extended project. In the second year 35 miles and in the third year 20 miles for a total of 115 miles.

C. South

Construction and reconditioning of 20 miles of roads for the proposed Rice Development Project funded by the African Development Bank (second year of extended project).

2.2.4 Inputs

Table I below lists the required inputs by the GOSL and other donors to this project over the life of the project. The Financial Analysis Section of the paper as well as the Technical Analysis Section contain more detail as to the types of equipment, materials and other costs summarized in this table.

TABLE I

Inputs[3/]	$(000) 7/77-9/78	10/78-9/79	10/79-9/80	Total	%
AID: Local personnel construction equipment	1,747.4	1,169.7	1,073.9	3,991.0	47
GOSL: Equipment & equipment operators for road maintenance and local personnel costs	489.7	515.5	787.7	1,792.9	21
CARE: U.S., third country and local personnel costs	370.4	385.4	445.0	1,200.8	14
IBRD: Road construction equipment	911.2	101.7	186.0	1,198.9	14
Peace Corps and Volunteer Services Overseas (V.S.O. - U.K.): U.S., third country and local personnel	112.5	112.5	112.5	337.5	4
	$3,631.2	2,284.8	2,605.1	8,521.1	100

3/ See Financial Analysis. AID Circular Airgram Number A-530 (dated 9/27/76) states that "...a 25% contribution to total life of project costs from non-AID sources will be expected for all OPGs. This would include cash and in-kind contributions from PVOs, local collaborators and other non-governmental donors as well as from host governments, other governments and international organizations."

2.2.5 End of Project Status

By June 30, 1980, project status will be:

A. An independent, self-sustaining road maintenance unit will be in operation under the supervision of CARE and funded by the Ministry of Works. This unit will be properly maintaining 624 miles of feeder roads.

B. A road maintenance equipment fund will have been established within the project budget and the costs of this depreciation fund will be entirely to the account of the GOSL.

C. Approximately 400 miles of Class IV rural Feeder roads will have been constructed or reconditioned and will be in use by the project beneficiaries.

D. Approximately 143,000 direct beneficiaries will be served by the project roads.

2.2.6 Assumptions

A. That necessary equipment deliveries will have occurred in a timely manner to permit the use of the equipment as scheduled.

B. That the estimated level of communal labor required is forthcoming.

C. That GOSL has continued to place a high priority in support of this project by meeting its financial commitments in accordance with the project budget.

D. That all donor contributions are received in a timely manner.

E. That spare parts are in adequate supply to keep equipment down-time to a minimum.

F. That weather permits 32 full weeks of construction time.

2.2.7 Road Selection

Section 3 to this paper sets forth the criteria by which project roads to be constructed or rehabilitated under this project will be identified and selected. As of this date, all 400 miles targeted have been identified and selected (see Annex G). CARE will be in charge of all aspects of construction and reconditioning of the roads covered under this project, including specifically procurement of equipment and materials, scheduling, engineering and coordination with the GOSL. In the process, CARE will utilize local engineer and supervisory level staff

whenever available; thus providing a valuable training element to the MOW, This element will complement the planned IBRD Association to the MOW which is designed to equip this agency to fulfill its responsibility for country-wide road maintenance. Substantial deviations or changes to the roads selected or to the design will require prior AID approval. Specific detail as to the technical aspects of CARE responsibilities are set forth in Section 3.1 of this paper.

2.2.8 Road Construction/Reconditioning

As explained in section 3 of this paper, CARE, in coordination with the GOSL, will be the primary implementing agency in achieving the physical outputs of this project. All of the roads to be included in this project have been identified and are listed in Annex G to this paper. Over 80 percent or 320 miles of proposed project roads will be reconditioned while the balance will be newly constructed. CARE will act as procurement agent for the project for both local and offshore purchases. All AID financed equipment and commodities will be procured in accordance with AID regulations and such procurement will be closely monitored by USAID Liberia.

2.2.9 Road Maintenance

As noted above, project road maintenance responsibilities will rest with CARE until such time as the Ministry of Works has the technical and managerial capacity to assume full responsibility. The Ministry of Works capacity in this regard is directly related to the success of a planned World Bank project designed to assist and upgrade the Ministry's capabilities. Based on present Bank planning, it is not likely that the Ministry will have this capability for one to two years after this project is completed. CARE will continue to assume responsibili for maintenance during this interim period with the GOSL providing the recurring costs of such maintenance. Project equipment will be turned over to a project maintenance unit to be funded by CARE and will be used for routine and periodical maintenance as described in Section 3.1. CARE is planning to work with the Ministry of Works, in conjunction with the expected World Bank project, to establish within the Ministry of Works headquarters - the nucleus of a maintenance unit. This unit, in accordance with CARE's planning, will commence in calendar 1978 to carry out the following responsibilities:

A. Carry out technical surveys of all roads to be constructed, prepare long section profiles and quantities lists for each road;

B. conduct soils analyses and laboratory tests on concrete cubes submitted by CARE;

C. conduct semi-annual traffic counts on roads constructed by CARE.

D. carry out assignments allocated by Project Coordinating Committee and Site Selection Sub-Committee;

E. review and approve or reject bridge and road design changes proposed byCCARE and MOW.

Further, a maintenance unit will be established in the office of the area engineer in Kenema, Bo and Makeni in 1978 which will have the following responsibilities:

A. Soils analysis of selected lateritic materials;

B. inspection of road construction operations once every two months during construction season and submit inspection reports to Professional Head, MOW;

C. provide necessary supervision for road maintenance program activities.

3.0 TECHNICAL ANALYSIS AND INITIAL ENVIRONMENTAL EXAMINATION

3.1 Technical Analysis

A. Construction Targets

Construction/reconditioning of 400 miles and maintenance of 824 miles of feeder roads, 31 bridges and box culverts and 1,470 culverts: Under AID Grant Number AID/AFR-G-1154 from November 1, 1975, to June 30, 1976, 100 miles of road were constructed. With a normal rainy season of 19 weeks and 33 weeks of good weather for construction, road construction averaged 3 miles per week. The normal construction season begins sometime in October and continues through June of the following year. During the rainy season from July through September, the rains are so unpredictable as to intensity and duration, that construction activities virtually cease. Table 4 illustrates the normal monthly periods of road construction and reconditioning. Assuming that an additional 124 miles of road will have been constructed by June 30, 1977, the average number of miles constructed per week will have increased by 25 percent (3.75 miles). Planned targets of 400 miles require a weekly construction or reconditioning average of 4.16 miles (for 96 weeks), which represents a significant increase in previously established construction miles per week. 1/

To increase the road construction output from an average of 3 miles/week to 4.1 miles/week, additional construction equipment will be added to the existing pool as well as an increase in the spare parts inventory. The evaluation of the previous CARE roads project indicated that one serious difficulty experienced was a lack of spare parts for construction equipment, which resulted in an average availability rate of 55 percent. This present project includes funding not only for spare parts for the new equipment to be purchased, but an additional level of spare parts forrthe existing CARE equipment. This will increase equipment availability rates from 55 percent to 75-80 percent, and combined with CARE's experience in constructing rural penetration roads, construction targets (per week, per construction season), should be achieved. 2/

B. Design Standards

CARE's construction of the roads is in accordance with the standards and specifications of Sierra Leone's Ministry of Works for Class IV roads. (See Table 1 for illustration of typical road section.)

1. Roads

Average Daily Traffic (ADT) - Less than 151 vehicles/day. 3/

1/ Construction targets for the extended period of the project are based on 32 weeks per construction season.

2/ See Annex G - Equipment Requirements for Construction.

3/ The majority of roads in selected areas will have a projected ADT of less than 50 vehicles/day. See Table 2.

Surface type	-	6 inch minimum thickness, compacted laterite
Design speed	-	25 miles per hour
Minimum radius of curvature	-	300 feet
Maximum gradiant	-	10 percent 4/
Formation width (roadbed)	-	18 feet
2. Bridges	-	British standard, 153 Part 3 A (equivalent to H-20 loading) 5/
	-	12 ft. wide, inside to inside, curbs, with provision for bridges to 22 feet in width where warranted by traffic and area development.
3. Drainage Structures	-	Corrugated metal pipe culverts or pre-cast reinforced concrete pipe.

C. Costs Per Mile

In its preliminary survey of potential road sites, CARE prepares an estimate of the construction cost per mile. If the estimate is significantly higher than $12,214 per mile (current estimate), the road site is rejected. This figure will be adjusted upward each year to take into account inflationary increases. By 1980, the figure will be $18,000 per mile. Details of CARE's costs per mile calculations are based on the following:

COST ESTIMATES PER MILE OF CONSTRUCTION
(1976/77 Work Season)

Description	Unit	Qty.	Unit Cost $	Total Cost $
1. Bush clearing, stripping 9" layer of topsoil	sq.yd.	7,040	0.23	1,619
2. Cut unsuitable material to spoil	cu.yd.	977	1.03	1,006

4/ Grades up to 13 percent will be allowed in very rare or unusual circumstances with the approval of the MOW.

5/ The bridges are of a prototype design proposed by CARE and approved by MOW. They are either 20' or 25' long with reinforced concrete abutments, wing walls, beams and deck slab.

Description	Unit	Qty.	Unit Cost $	Total Cost $
3. Cut suitable material to fill; transporting fill from cut to form embankment, grade and compact	cu.yd.	1,945	0.77	1,498
4. Prepare borrow pit, load and transport materials to form base, grade and compact	cu.yd.	1,752	1.15	2,016
5. Prepare base grading, shaping, watering and compacting of final road surface	sq.yd.	11,077	0.08	886
6. Shaping side drains by grader	lin.yd.	2,288	0.48	1,098
7. Culvert production and installation (3 per mile) 6/	lin.yd.	18	155.94	2,807
8. Bridge-Box culverts	Lump	Sum		1,284
9. Total Cost Per Mile				$12,214

In comparison with estimated costs of $30,000 per mile, for comparable work done by private contractors in Sierra Leone, CARE's costs per mile are exceptionally favorable. 7/

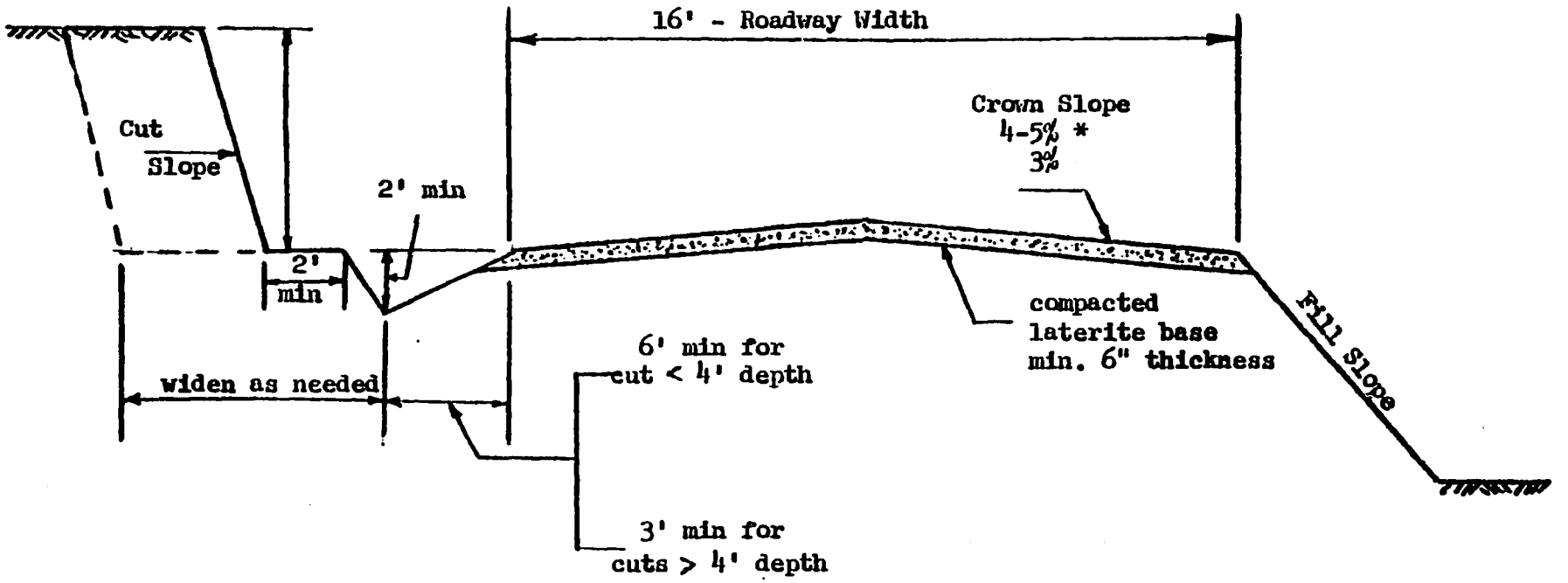
Assuming a 15 percent rate of inflation, costs per mile are expected to increase to $14,000 and $16,000 and $18,000 for the 1977/78 construction seasons.

USAID has reviewed the cost estimates per mile and found them to be reasonable and the additional equipment required for the increased volume of construction is commensurate with the weekly production rates planned for the project.

6/ Based on average number of culverts installed during previous construction of 125 miles in the same or similar areas.

7/ CARE/SL Rural Penetration Roads Evaluation.

TABLE 1: TYPICAL ROAD CROSS SECTION



*Crown Slopes

3% on profile grades less than 4%
4-5% on profile grades in excess of 4%

Fill Slopes

Under 4' height - 3:1
Over 4' height - 1½:1

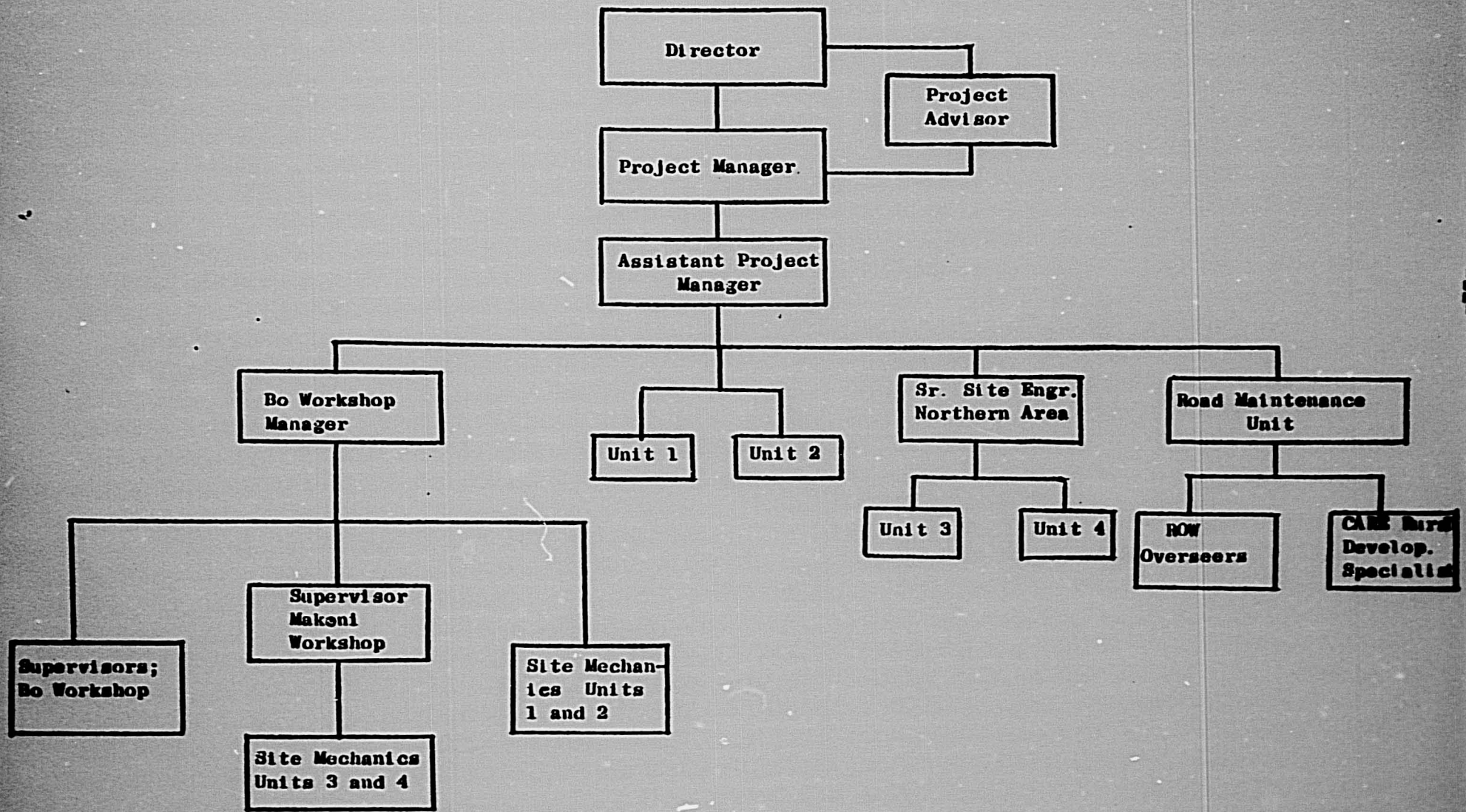
Cut Slopes - 1:5

TABLE 2: FEEDER TRAFFIC SURVEY

Road Number	Enumeration Point	Vehicle Types	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Ave.	Average 12 hours traffic volume
R 127	Goma	Heavy vehicles	1	-	2	2	-	2	1.1)	
		Light "	4	15	9	10	25	13	12.6)	13.8
R 37	Nyandehun	Heavy vehicles	-	-	-	1	1	2	.7)	
	Junction	Light "	9	2	13	8	8	11	8.5)	9.2
R 74 71A	Kambama	Heavy vehicles	-	-	2	4	-	-	1.0)	
71 71B		Light "	15	17	17	22	14	13	16.3)	17.3
R 122	Baiima	Heavy vehicles	1	-	-	-	2	1	.7)	
		Light "	3	4	5	8	4	-	4.0)	4.7
R 70	Bombohum	Heavy vehicles	7	19*	8	14*	13*	15	12.7)	
*(Govt. Bus)		Light "	104	90	86	107	88	114	98.2)	110.9
R 84	Laoma	Heavy vehicles	-	-	1	-	-	-	.2)	
		Light "	92	24	48	46	56	55	53.5)	53.7
R 115	Senga	Light vehicles	12	8	10	12	18	20	-	13.3
R 84	Baiwala	Light vehicles	38	23	39	44	67	53	-	44.0
R 90	Njala	Heavy vehicles	-	-	-	-	-	--	-	
		Light "	2	3	4	5	9	9	5.3)	5.3
R 121	Baoma	Heavy vehicles	6	6	14	7	9	5	7.8)	
		Light "	62	62	65	66	50	59	60.7)	68.5
R 43	Benduma	Heavy vehicles	-	-	-	-	-	-	-	
		Light "	3	2	5	4	5	-	3.2)	3.2
R 116	Kuiva	Heavy vehicles	-	-	-	-	-	-	-	
		Light "	14	8	9	9	8	15	10.5)	10.5
R 75	Salima	Heavy vehicles	-	-	-	-	-	-	-	
		Light "	44	43	60	46	52	66	51.8)	51.8

TABLE

CARE ORGANIZATION FOR THE FEEDER ROAD CONSTRUCTION AND MAINTENANCE PROJECT



NOTE: Units 1, 2, 3 and 4 are construction teams.

LEGEND:
EAP - Eastern Area Project
NAP - Northern " "
PC - Peace Corps (includes Tormabom)

C.A.R.E. RURAL ROAD PROJECT
CONSTRUCTION SCHEDULE

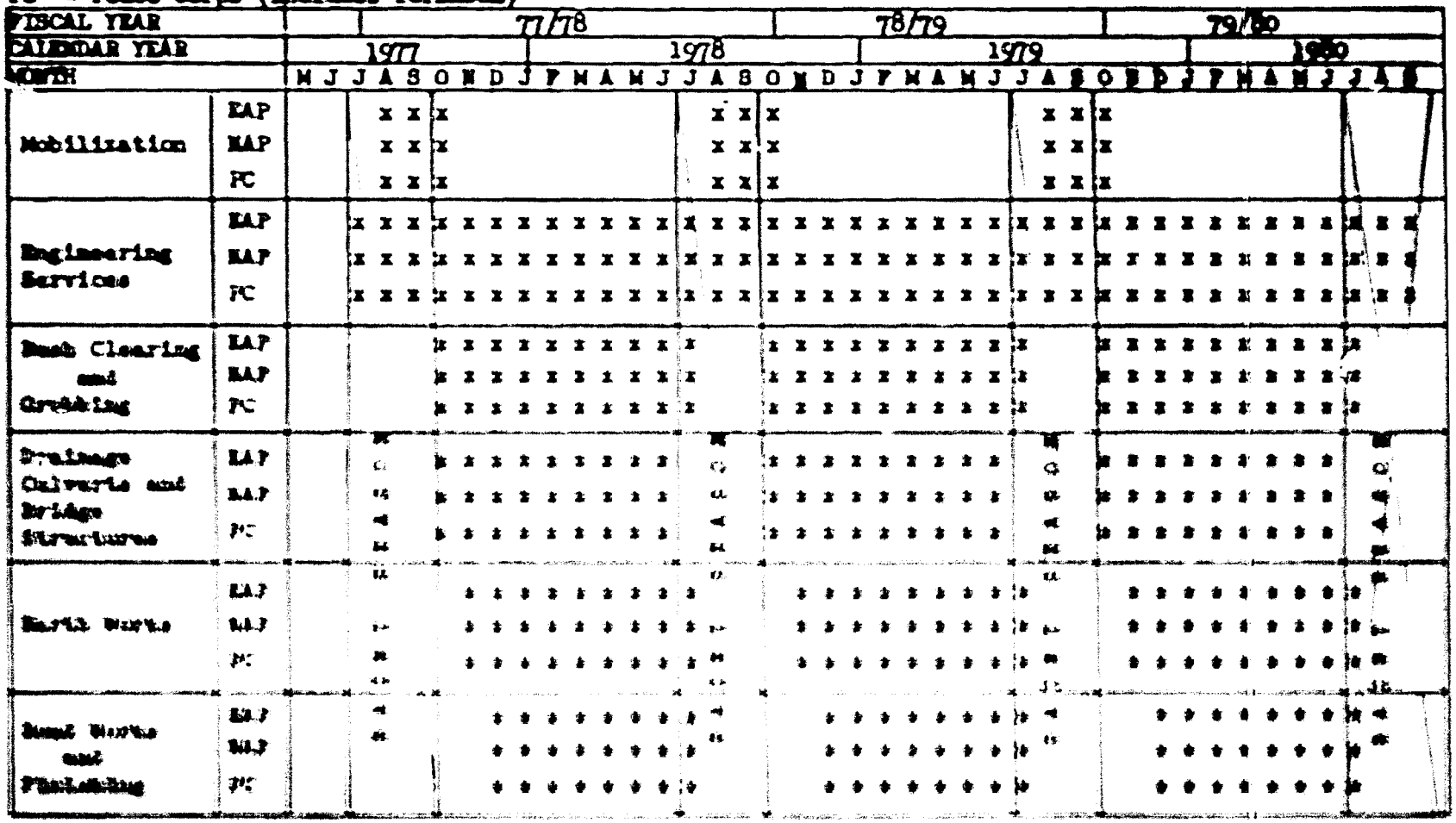


TABLE 5

MAINTENANCE PER YEAR [A]

MILES AND ESTIMATED RECURRING COSTS ($000)

MILES / YEARS

	190 mi / 1978	340 mi / 1979 [D]	490 mi / 1980	590 mi / 1981
1. ADT 0-50				
[B] a. Reballasting $1579/mi.x	(0 mi) =$ 0	(0 mi) =$ 0	(121 mi) =$191.	(72 mi) =$113.6
b. Routine $ 77/mi.x	(121 mi) = 9.3	(242 mi) = 18.6	(240 mi) = 18.5	(419 mi) = 32.2
2. ADT 51-150				
[C] a. Reballasting $2913/mi.x	(38 mi) = 110.6	(30 mi) = 87.4	(68 mi) = 198.	(52 mi) = 151.4
b. Routine $ 174/mi.x	(31 mi) = 5.4	(69 mi) = 12.0	(61 mi) = 10.6	(119 mi) = 20.7
Total Estimated Annual Recurring Costs	$125.3	$118.	$418.1	$317.9

[A] Financed by GOSL
Per mile cost figures from the R. Jorgensen Associates Report. Proposed 4-Year Highway Program

[B] Reballasting every four years

[C] Reballasting every two years

[D] In both the 1979 and the 1980 calculation of miles of road to be maintained, an additional 50 miles is included to provide for possible higher ADTs on road segments and resultant higher maintenance costs.

Long Span Bridges

In the project area, there will be two river crossings which will require bridges longer than the standard prototype 20' or 25' span. These two bridges will be similar in design and length. Preliminary designs have been proposed by the MOW, and reviewed by CARE. Cost estimates, based on the preliminary design, have been proposed and appear reasonable for this type structure.

The structure consists basically of a 130 ft. long, 12 ft. wide single lane with 3 ft. wide walkways superstructure built on two abutments and 4 intermediate piers. Foundations, piers and superstructure will be cast-in-place reinforced concrete.

The cost per bridge is estimated to be $130,000 or $1,000/lin. ft

D. Determination of Optimum Technology

This project provides employment for approximately 252 people. Ninety-three percent, or 234 people are Sierra Leoneans. With the arrival of additional road construction equipment and the construction of two long-spanned bridges, an estimated 278 additional people will be employed bringing the total of Sierra Leoneans employed to 489 people. 8/ When CARE's involvement in rural road construction began in 1973, the program envisaged a vast communal labor force to construct roads on a self-help basis. At that time, road construction consisted of manufacturing and installing concrete culvert pipes, constructing small box culverts and small bridges using old chassis from railroad cars which later proved to be impractical. Within three months of implementation, it was apparent that the availability of communal laborers was vastly overestimated, and that the amount of laterite to be moved was under-estimated The need to use heavy earthmoving equipment became obvious.

Instead of obtaining earthmoving equipment, CARE could have elected to hire a large unskilled labor force for road construction. Greater reliance on mechanization was chosen because:

- The supply of unskilled labor is not constant and fluctuates with the agricultural growing season.

- A daily wage which is competitive with agriculture could have been paid, but this would have resulted in a deficit labor supply (for agriculture) and would have had an adverse effect on agricultural production.

8/ See Annex G Staff Requirements

- Constructing roads to the MOW's Class IV standards requires considerable cutting and filling of earth to meet horizontal and vertical alignment specifications. If done only manually it would be quite impractical, and time consuming. 9/

E. Road Maintenance

Maintenance of all roads in Sierra Leone is the responsibility of MOW but until such time as the maintenance of rural penetration roads is absorbed into the MOW Road Maintenance Program, the GOSL has requested CARE to include road maintenance in its program. All recurring road maintenance operation costs will be borne by the GOSL (Annex D) Included in these cost estimates is a provision for depreciation of equipment.

CARE will establish a special bank account into which funds will be deposited quarterly, based on the number of hours each piece of equipment assigned to road maintenance is actually used for maintenance or construction work. The hourly rate for each piece of equipment will include a 20 percent construction factor for the heavy construction equipment on the basis that the piece of equipment will be utilized 1600-2000 hours a year for five years Because the cost estimates are based on equipment production rates and the hourly equipment rate charged is similar to rates used by private contractors, the amortization costs are readily identified. As disbursement is made against construction work completed, CARE's cost accounting section will separate these funds into a revolving fund to purchase the replacement road maintenance equipment as required. A list of the replacement equipment for 1979/80 maintenance program is listed in the Maintenance Plan.

With the establishment of the special MOW rural penetration road construction/maintenance unit supervised by CARE and the IBRD assistance to the MOW, these roads will be maintained to acceptable standards. To insure that the MOW takes demonstrable action to maintain the roads, the first year's funding requirements granted by AID will be provided after the GOSL establishes the special unit (staff and budget). Similarly, second year funding requirements provided by AID will be made available after it has been verified that the MOW has fulfilled its responsibilities of testing construction materials, supervising road construction and in providing design specification guidance. 10/

CARE will supervise the maintenance of the project roads during the project period and for two years thereafter by which time the MOW will have acquired the technical, managerial and physical capacity to assume full responsibility. The Maintenance Plan (Annex) explains in full detail how CARE will implement the maintenance program.

9/ CARE estimates that one mile can be constructed by 24 laborers in one construction season. Construction of 150 miles would require 3,600 persons for 32 weeks (6 days each week).

10/ See Part 4 - Conditions, Covenants and Negotiating Status and Page 4 of a summary of funding requirements.

Road maintenance projections are based on the following assumptions:

1. Twenty percent of the roads constructed will have an ADT of 51-150 vehicles of which one-half of the roads will be reballasted annually.

2. Eighty percent of the roads constructed will have an ADT of 0-50 vehicles of which 25 percent will be reballasted every two years.

The maintenance costs per mile have been estimated to be:

	Routine	Periodic
ADT 0-50	$ 77	$ 1,579
ADT 51-150	174	2,513

Routine maintenance is defined as bush clearing, filling potholes in roadbed, clearing drainage structures and bridges. All work will be done principally by communal labor.

Periodic maintenance is defined as work required to reshape the roadbed surface, clear and cut side ditches, and haul, deposit, grade and compact select surface material. All work will be done principally with mechanized equipment.

The estimated unit costs for road maintenance were prepared by Roy Jorgensen Associates, Inc., for the GOSL's Proposed Four-Year Highway Programme. The estimates of maintenance costs for each year were developed on the basis of miles of each surface type by traffic volume groups. The total cost of maintenance per year based on an average daily vehicle traffic count is shown on Table 5.

F. Technical Feasibility and Soundness

CARE has demonstrated their capability to construct laterite surface roads in Sierra Leone under the previous project. 1/ These roads were built to the standards, plans and specifications set forth in their project agreement with the GOSL. The work was completed in a very satisfactory manner by using the proper mix of supervision and labor force. The standards of workmanship were unusually high for this type of construction. An increase in manpower and equipment will be required if the total number of miles per construction season is increased from 100 miles to 150 miles. Table III shows the organization which CARE will staff to implement the project.

1/ See Evaluation Report.

CARE's construction and maintenance methodology is commensurate with the setting in Sierra Leone, and is not beyond the current technical knowledge of the MOW and the private construction sector in Sierra Leone. CARE is providing assistance to the Ministry of Works which will enable the MOW to assume increasing amounts of administrative responsibility to supervise construction and maintenance. Meeting the conditions set forth in Section 4.0 of this paper, justifies the assumption that CARE's construction and maintenance efforts will be continued by the GOSL.

G. Conclusions:

Based on the the evaluation and the analysis set forth herein, it is concluded that sufficient evidence of detailed engineering and financial planning and reasonably firm cost estimates exists to meet the requirements of FAA 611(A), Parts (A) and (B).

3.1.1 Summary of Findings - Initial Environmental Examination

A. In summary, the proposed project as identified in the report, has only slight adverse environmental, social, ecological and public health impacts on the project area. All negative impacts discussed are controllable through the application of engineering, location, and monitoring practices.

In contrast, there are a number of significant positive impacts which, if the road construction is carried out, would benefit the study area.

B. These, in order of importance, apply to the following impact areas and sub-areas:

(1) Health

An all-weather roadway through the subject area will, for the first time, enable the local people to avail themselves to the benefit of both modern biological and epidemiological medicine, as applied to animals and humans.

(2) Economic

The linkage of this project to on-going agricultural development activities is clearly demonstrated in the main report.

(3) Cultural

The motorable roads will facilitate the initiation and organization of educational programs of a higher level, with the greater mobility provided by the new facility. In addition, greater cultural interchange will result, through better communication with other cultures.

(4) The new accessibility will extend Government services and greatly improve administrative presence to a request of the rural population which is presently not reached at all or, at best, very inadequately.

3.2 Financial Analysis and Plan

3.2.1 CARE

From January 1975 to June 30, 1977, it is estimated that CARE will have contributed $778,858 to the project, financed under AID Grant Number AID/AFR-G-1154, and CARE will contribute $1,200,800 to the proposed new project.

CARE has demonstrated that it has the capability to fulfill its financial obligations for the project. For additional information regarding CARE and all donor financing, please refer to the Evaluation Report, Annex F. CARE's administrative overhead charge as shown in Table 3 is based on 7 percent of total project procurement.

3.2.2 GOSL

The GOSL budgeted a total of $522,000 for FY 1976 and FY 1977 ($261,000 each year). In FY 1976, this amounted to 18 percent of the Ministry of Finance, Development and Economic Planning's Domestic Development Budget. In FY 1977 the Ministry's Domestic Development Budget declined by 51 percent (from FY 1976). The budget for the CARE Rural Penetration Road Project (AID Grant Number AID/AFR-G-1154) was not reduced and it constituted 25 percent of the Ministry's Domestic Development Budget. (See Table 3) 1/

In FY 1976, GOSL expenditures exceeded its revenues and funds in support of the project fell short of the budgeted amount. CARE, therefore advanced money on behalf of the GOSL for the project for two basic reasons

1. CARE preferred to proceed with the project and demonstrate its worthiness before pressing the GOSL for scarce resources.

2. The GOSL was committed to provide financial support, and CARE was confident that the GOSL would meet its commitment.

As of March 31, 1977, CARE's advance for 1975/76 had been repaid in full. The FY 1977 commitment of $261,000 was paid to CARE on June 30, 1977.

GOSL revenues have not improved since FY 1973. However, the FY 1977 allocation (in view of a 51 percent reduction of the Ministry of Finance, Development and Economic Planning's Domestic Development Budget) demonstrates the priority that the GOSL is giving to this project.

1/ The GOSL reduced it Domestic Development Budget in accordance with an analysis of its budget done by the International Monetary Fund in order to qualify for an IMF standby credit of twelve million leones and a seven million leone trust fund. These credits have now been received.

TABLE 1 2/

SUMMARY OF THE GOVERNMENT OF SIERRA LEONE'S

DOMESTIC DEVELOPMENT BUDGET

($000)

Category	FY 1976 Amount	FY 1976 % of Total	FY 1977 Amount	FY 1977 % of Total
Total Domestic Development Budget	$17,648		$9,570	
a. Ministry of Agriculture and Natural Resources	2,376.8	13	2,723.9	28
b. Ministry of Works	1,243.23	7	1,151.8	12
c. Ministry of Education Social Welfare and Rural Development	1,858.7	10.5	1,287.6	13
d. Ministry of Health	1,038.7	5.8	526	5.4
e. Ministry of Finance Development and Economic Planning	2,107.14	12	1,019.64	10.6
--CARE Rural Penetration Roads	261 of e	12 of e	261	25.5 of e

2/ Government of Sierra Leone Development Estimates: 1975/76 and 1976/77. (FY = July-June) Table does not list all line items as contained in GOSL budget. All figures have been converted from Leones to U.S. Dollars at the rate of $1 = LE 1.15.

The GOSL's contribution to this proposed project is $1,835,700, of this amount $1,458,700 will come directly from the GOSL budget and $377,000 will consist of contributions in-kind.

GOSL budget financing will be as follows:

Table 2

July 1977 - Sept. 1978	$ 396,200
Oct. 1978 - Sept. 1979	395,000
Oct. 1979 - Sept. 1980	667,500
Total	$1,458,700

The funding requirements, particularly for the period from October 1979 to September 1980 are significantly greater than the GOSL's expenditures in support of the roads constructed under AID Grant AID/AFR-G-1154. The GOSL is fully aware of these financing requirements and based on its recent support to roads constructed by CARE, it is reasonable to assume that the GOSL will continue to provide the necessary funding. However, in the event of a shortfall in 1980 if the GOSL should be unable to raise its contribution that year by the $272,500 required, the effect on the project would be minimal. Assuming such a shortfall should occur, calculations show the impact on the project would be a reduction in the renovation of 15 miles of project road in 1980. This would lower the ERR to approximately 16.8 percent.

TABLE 3

FINANCING PLAN/BUDGET TABLES
SUMMARY COST ESTIMATE AND FINANCIAL PLA
(U.S. $000)
OPERATIONAL PROGRAM GRANT PROPOSAL

SOURCE	AID		CARE		GOSL		IBRD		PC & VSO		
	Fx	Lc	Fx	Lc	Fx	Lc	Fx	Lc	Fx	Lc	TOTAL
USE											
Personnel		920.7	255.4	241.2		190.3			337.5		1945.1
Commodities	1351.3	352.4	34.1	31.2	410.7	720.1	1128.9				4028.7
Fuel & Oil		746.4		5.2		88.0					839.6
CARE Overhead	276.8										276.8
Other Costs		30.0		445.8		228.8					704.6
Inflation & Contingency	65.2	248.2	18.0	169.9	20.0	135.0		70.0			726.3
TOTAL	1693.3	2297.7	307.5	893.3	430.7	1362.2	1128.9	70.0	337.5	-	8521.1

TABLE 4

COSTING OF PROJECT OUTPUTS/INPUTS

(In $000)

OPERATIONAL PROGRAM GRANT PROPOSAL

Project Inputs		Project Outputs # 1	Project Outputs # 2	TOTAL
AID Appropriated	$3,991	$3,757.5	$ 233.5	$3,991
GOSL				
Personnel & Commodities	1,321.1	986.1	335.0	1,321.1
Other Costs	471.8	428.0	43.8	471.8
CARE				
Personnel	496.6	496.6	0	496.6
Commodities & Other Costs	704.2	704.2	0	704.2
IBRD				
Commodities & Other Costs	1,198.9	1,064.9	134.0	1,198.9
Peace Corps & VSO				
Personnel	337.5	337.5	0	337.5
TOTAL	$ 8,521.1	7,774.8	746.3	8,521.1

#1 Construction/rehabilitation of 400 miles of road (including bridges, box culverts and pipe culverts)

#2 Maintenance of 824 miles of rural penetration roads.

Note: Construction cost per mile is estimated to average approx. $15,700 or $6,290,500 (Annex A.4) for 400 miles. The amount of $7,774.8 consists of:

a.	Road Construction Cost	$6,290.5
b.	Long-span Bridge Construction	260.0
c.	Residual Value of New Equipment	1,224.3
		$7,774.8

3.2.3 Project Costs

Practically all equipment spare parts and structural commodities will be purchased within a one year time span. These items have already been priced using local dealer quotations and where their purchase is scheduled for 1978 or 1979, an inflation factor of 15 percent per annum, in addition to the provision for inflation and contingency shown on Table 3, has been calculated in the costs shown. Equipment and commodity costs account for 47 percent of total project costs and 52 percent of costs excluding the provision for contingency and escalation. The CARE overhead costs shown (based on USG audited rates for CARE) are fixed at 7 percent of total local and offshore procurement. Taken together ($4,305,500), these costs account for 55 percent of total project costs excluding the provision for contingency and inflation. Thus, the provision for contingency and escalation represents 21 percent of total variable costs. At the same time, this provision is equivalent to 7 percent of all project costs. Thus, there is adequate provision in the project budget for unanticipated costs caused either by inflation, or by factors encountered (such as difficult terrain, etc.) beyond those allowed for in the project design.

3.2.4 Project Cash Flow and Provision for Depreciation

Table 5, which follows, summarizes the projected cash flow of the project by donor and by year. This table summarizes the information set forth in detail in Annex D It should be noted that the projected draw-downs against the AID grant requested herein decreases each year and that all construction equipment and spare parts proposed for financing under the AID grant will be procured during the first year of the project. Project expenditures thereafter are allocated against such items as construction materials, local personnel costs, fuel and CARE overhead costs. By the same token, the proposed expenditures of the IBRD funds show that some $911,000 out of the proposed $1.198 million inputs is to be expended during the first project year for equipment. Only CARE and GOSL expenditures increase toward the end of the project. CARE's expenditures in the latter half of the project increase due to projected increases in local support costs, office and administrative costs, etc., reflecting cumulative growth of the project. Finally, GOSL costs increase for the end of the project due to substantial project increases in local commodities procurement (cement, etc.) as well as contribution to the maintenance equipment depreciation fund which is discussed below.

3.2.5 Maintenance Equipment Depreciation Fund

Table 5 shows the projected growth of this fund during the project period. The basis of computing the amount to be contributed is set forth in Section 3.1 of this paper. All contributions to the fund are to be provided under the GOSL budget, and at the end of the project an estimated $218,900 will be available (plus any bank interest earned) for the replacement of road maintenance equipment and spare parts for the future maintenance of project roads.

TABLE 5

PROJECT CASH FLOW

	AID	GOSL	CARE	IBRD	PC/VSO	TOTAL ($'000)
7/77 - 9/78	1,747.4	489.7 1/	370.4	911.3	113.5	3,631.3
10/77 - 9/79	1,169.7	515.5 2/	385.4	101.7	112.5	2,284.8
10/79 - 9/80	1,073.9	787.9 3/	445.0	186.0	113.5	2,605.3
TOTAL	3,991	1,793.1 4/	1,200.8	1,198.9	337.5	8,521.1

1/ Includes provision for maintenance equipment depreciation fund of $43.8.
2/ " " " " " " " " $87.5.
" " " " " " " " $87.5.
" " " " " " " " a total of $218.

3.3 Economic Analysis

3.3.1 Summary

The economic rate of return of the project over a 15 year period is an estimated 18 percent which is comparable to returns on similar rural road construction projects in West Africa. 1/ The calculations presented in Annex B reflect basic benefits of increased crop production and marketing, road user cost savings on reconditioned roads, and transport cost reductions. Project costs are those included in the project budget, Annex D , including continuing annual maintenance costs after the four year life of project is completed.

The intricacies of population dynamics, and changes in rural consumption patterns have not been quantified. No attempt has been made to attribute indirect employment generation to road construction, i.e., expanded service industries, increased consumer outlets, additional transport systems. While it is anticipated that the level of economic activity will increase, there are no satisfactory indicators on which to base projections.

Parallel to quantifiable economic benefits are the quantitative improvements in quality of life for the population in the impact area. Communities located on roads previously constructed by CARE evidence more permanent housing construction, expanded communal facilities (school, store, market), improved sanitary facilities, and increased communications outside the community (more traders, extension agents, health-related visitors and radios) 2/ While it is hypothesized that similar developments will take place along the proposed roads, the benefits have not been quantified in the ERR calculations.

3.3.2 Beneficiaries

The 400 miles of road to be rehabilitated or newly constructed under the project are designed primarily to provide farmers in the Eastern Project Area (115 miles), the Northern Project Area (235 miles), the Torma Bum Area (20 miles) and Peace Corps Area (30 miles) with increased and continued access to agricultural inputs and market outlets. The economic rate of return analysis has focused on the direct project costs from all donors and on the benefits accruing to the estimated 14,800 farm families, totalling 143,000 individuals, living in the impact area.

3.3.3 Increased Crop Production/Marketing

The four major agricultural development schemes in the impact area supported by the World Bank, Wor[illegible]

1/ Analysis was also completed for a [illegible] reduced by 2 points to a still res

2/ See Annex F, AID Evaluation Report

Bank and Peace Corps are designed to increase production of food and cash crops. The ERR analysis utilizes production projections of three of the crops, rice, groundnuts and cocoa, and is based on the World Bank's Appraisal Report of the IADP. 3/ The working hypothesis, that the rural penetration roads will be used to transport the increased quantities of the crops out of the area, is grounded in findings of the Socio-Economic Analysis conducted by Anthony Airey as part of the first CARE project evaluation.

The estimated value of increased crop production transported totals $3.2 million during the first five years of which 65 percent is attributable to rice marketing, 7 percent to groundnuts and 28 percent to cocoa. 4/ Total value over the 15 year period is $15.1 million.

3.3.4 Road User Cost Savings

CARE will recondition approximately 80 percent of the 400 miles of road proposed in this project. The existing "roads" are no more than basic hand-cleared tracks that can only accommodate light vehicles during the dry season of 6 months a year. The reconditioning will consist of widening and reshaping the roadbed, installing permanent culvert structures, and surfacing to an all-weather condition.

Based on the projections contained in the Jorgensen Report prepared under UNDP auspices, the average vehicle operating cost per mile will be reduced from $.3588 to $.2248 for a savings of $.1340 per vehicle mile. Applying the ADT equivalent to the 12 hour traffic volumes on recently constructed CARE roads as determined by the Traffic Survey, it is estimated that 80 percent of the roads will have an ADT of 50 vehicles and the remaining 20 percent will have an ADT of 125. 5/ Road user cost savings over the first five years will amount to $2.9 million, increasing to $13 million over the 15 year period for which the ERR is calculated.

3.3.5 Transport Cost Reductions

As determined by the Socio-Economic Survey conducted by Airey, headloading is one of the major means of marketing of crops in the Eastern road impact area. In those communities surveyed which were not located on a road, headloading was used exclusively for up to 60 percent of the crops marketed, with some combination of headloading and vehicle use for the remaining 40% of crops transported to market.

3/ Appraisal of Integrated Agricultural Development Project II. Sierra Leone Supplementary Volume 2 and 3. April 8, 1975.

4/ Value has been calculated at farm-gate prices (4.35 per bushel of rice) rather than at the World Bank's shadow price ($8.40 per bushel).

5/ Assumption made for purposes of calculation mostly the ADT range with 0-50 and from 50-150.

Utilizing the most accurate headloading cost available, that of transporting rice at $1.30 per ton/mile, the savings attributable to vehicle use on a good laterite road amount to $1.25 per ton/mile. Over the first five years, assuming crop production and marketing projections above, estimated savings on transport of rice alone are $.1 million. Over the 15 year period, savings will total $.5 million.

3.3.6 Socio-Economic Impact of Short Spur Construction

On the surface, the roads designated for reconditioning and construction by CARE could appear in large measure to be short spurs (averaging 7 miles per road) which might not penetrate far enough to have real impact on the rural poor or on Agriculture Production. In fact, these short spurs function as a link between crop collection centers and secondary roads leading to marketing centers and also between plantation areas and collection centers. The roads form an integral part of a road netowrk for settlements with very high agriculture potential linked otherwise to the collecting centers by motorable tracks or footpaths. Complementary to the World Bank's IADP activities, the roads act as a corridor for the inflow of seeds, seedlings, fertilizers and farm equipment to and from the production areas and for the outflow of farm produce to the marketing centers.

As a result of the vital linking role, these short spurs are looked upon with equal importance as other feeder roads because they generate considerable agricultural, commercial and social activities which impact directly on agricultural production and on quality of life of the rural population. The Socio-Economic Survey conducted by Airey included an enumeration of those contacts that road communities enjoyed which were lacking in the isolated communities: agricultural extension agents, literacy-promotion groups, mobile health clinics, and representatives from Ministries of Health and Education.

3.3.7 Sensitivity Analysis

The project targets and implementation plan call for CARE to construct an average of 4.16 miles of rural penetration roads per week. The above ERR analysis is based on this construction rate. Assuming a more pessimistic projection of 3.75 miles per week (the construction rate from November 1976 to June 1977), a total of 360 miles of rural penetration roads will be completed instead of 400. The ten percent decline in road construction during the third and fourth years of the project will reduce the number of beneficiaries from 143,000 to 129,000 by the final year.

The impact on the ERR of a ten percent reduction in miles of road constructed is a reduction from 18 percent to 16.6 percent, which is still adequate to justify the project. The "sensitized" ERR calculation is based on the following assumptions:

(a) The 40 mile shortfall is distributed equally between North and South/East areas;

(b) Eighty percent of annual project costs are fixed and 20 percent are variable;

(c) The 40 mile shortfall is distributed proportionately between new construction and reconditioned roads.

3.4 Social Analysis

There are over approximately 500,000 people in the project areas, and we estimate approximately 143 thousand direct beneficiaries. 1/ The total estimated population in the Northern Project Area is approximately 172,000 of which 100,000 are direct beneficiaries. The four major ethnic groups in the northern area are:

The Temne	Largest group, concentrated in the central and southern area.
The Foulah:	The second largest group who are pastorialist and concentrated mainly in the deprived savannah area of the central uplands.
The Limba:	Who dominate the northeastern part of the area.
The Loko:	Who are concentrated to the north and west of Makeni Township.

There are also smaller and more dispersed settlements of Mende, Susu and Mandingo.

In the eastern area (portions of the Southern Region are included in road construction activities classified as IADP East) the population is approximately 328,000 and there will be approximately 37,000 direct beneficiaries. Most of the ethnic groups of Sierra Leone are represented in the East, but the Mende tribe is wholly dominant. Along the coast toward the Liberian border are settlements of Kum, Vai and Gola, which are minor groups and almost entirely concentrated in this area.

To insure that the sites selected for road construction and rehabilitation will benefit the rural poor, the project Coordinating Committee uses two basic criteria.

1. The sites selected are in priority one development areas. 2/

2. The sites selected are in areas where farmer interest in the agricultural project has been demonstrated by the degree to which farmers in various agricultural areas accept and use inputs such as credit, improved seed and fertilizer.

Information concerning demonstrated farmer interest is obtained from project management units of the respective donors (World Bank, Peace Corps)

1/ See Annex B , Economic Analysis for derivation of direct beneficiaries.
2/ Areas in which there are ongoing agricultural development projects are designated as priority one development areas. See Section 3 for site selection criteria.

and is assessed by the Coordinating Committee. In using demonstrated farmer interest in selecting areas for road construction, questions and concerns regarding participation and responsiveness to economic incentives are already answered.

The responsiveness and participation demonstrated by rural families in agriculture is transferable to other areas of development emphases (for example, health and education). The significant improvement in communication and transportation brought about by the roads in support of agriculture will stimulate and support other (sectoral) development activities. A recently completed socio-economic evaluation [3] indicates that there is a greater percentage of houses with cement exteriors in CARE rural penetration road communities than there is in communities which do not have penetration roads.

Cement exteriors indicate the farmers' intention to settle permanently, and also highlight the usefulness of the roads: farmers use the road to import the cement as well as other supplies and materials.[4]

The socio-economic evaluation also indicated that farmers living near the roads marketed a greater portion of their agricultural goods than farmers who were a greater distance from the roads.

The roads are primarily being constructed to support agricultural development. However, the criteria used to determine where roads will be constructed, as validated by findings of the socio-economic evaluation, assures a positive social impact of the CARE Rural Penetration Roads Project.

Road construction, though heavily mechanized, has been tailored to the potential availability of unskilled labor from the villages. CARE has found that the operation best suited to a voluntary communal labor input is in the installation of culverts and construction of bridges. The average daily turn-out is 60 persons per road construction site.

Rural people are accustomed to forming work groups that perform collective labor for a Chief or a Big Man, or to participate in mutual-help arrangements with neighbors in the village. Since road maintenance will be heavily dependent on voluntary communal labor, CARE considers it essential that these same people contribute to the maximum extent possible during the construction phase. Thus, they will have a bigger stake in the road and a greater interest in seeing that the road is adequately maintained.

3.4.1 Impact on Women

The majority of people living in the project areas are rural

3/ Airey, A., Short-term Socio-Economic Evaluation of CARE Feeder Roads (Jan. 15 - February 15, 1977).

4/ Ibid.

families who live in small isolated villages or family compounds. Access to many of the villages is by bush paths which are often flooded during the rainy season making travel difficult, if not impossible. Women in these areas go to the local market once a week. In larger village markets, women sell their produce, and buy items for their families.

The roads will enable women to sell their agricultural produce in both the dry and rainy seasons. It will also be possible to provide health, nutrition and family planning services and information to more women in the project areas.

4.0 IMPLEMENTATION ARRANGEMENTS

The implementation plan/schedule for this project has been jointly developed and agreed upon by CARE/Sierra Leone, Government of Sierra Leone (GOSL) Ministry of Works and USAID/Liberia staff. The REDSO/WA Commodity Management Advisor has reviewed the requirements of the project and has given his recommendations for procurement procedures which would assure timely and feasible procurement of project commodities. The USAID/Liberia engineer has reviewed the feeder roads standards, equipment specifications, road construction maintenance fleet composition, and construction schedule for conformity to accepted engineering standards and technical soundness.

All of the elements of the project mesh and are explicitly designed to insure that the components of the project will be constructed and maintained in a timely manner and in accordance with the project design stipulated in this paper.

4.1 Implementing Agency and Government of Sierra Leone Administrative Arrangements

A. The Cooperative for American Relief Everywhere (CARE), Incorporated through its Sierra Leone program office (CARE/Sierra Leone) will be responsible for implementing the construction/rehabilitation of the rural penetration roads for this project. The CARE/Sierra Leone office director will also be responsible for coordinating AID, the International Bank for Reconstruction and Development (IBRD), U.S. Peace Corps, Volunteer Services Overseas (United Kingdom) and Government of Sierra Leone (GOSL) contributions to this project. He will receive policy direction from the GOSL Rural Penetration Roads Project Coordinating Committee, of which he is a member. The Committee is chaired by the Vice President of Sierra Leone or his designee.

B. GOSL Rural Penetration Roads Project Coordinating Committee [1/] has been established within the Office of the Vice President of Sierra Leone. This Committee meets periodically to discuss matters related to the Sierra Leone Penetration Roads Project. Recommendations from the Committee are fed back to the ministries concerned for their comments and action. Also, within this Committee there has been established a Sub-Committee for Site Selection which is responsible for the initial screening of the requests for rural penetration road construction. Roads are selected according to the following guidelines:

1. Priority in site selection will be given to those areas considered target areas for agricultural development;

1/ Coordinating Committee: Ministry of Agriculture and Natural Resources; Ministry of Finance, Development and Economic Planning; Ministry of Interior; Ministry of Education, Rural Development and Social Welfare; Ministry of Tourism; Peace Corps; CARE and [illegible] Vice President (Chairman).

2. Priority in site selection will be given to roads which contribute to agricultural development. It is not intended, however, that other development interests in the fields of health and education would be overlooked;

3. Sites selected will be in a contiguous area in the interests of the practical considerations of setting up base camps, supply depots and communications;

4. The terrain through which roads will be constructed must also be taken into consideration. Less formidable terrain will be given priority over more difficult terrain which would slow down construction and would increase costs substantially. Also, selection of a difficult terrain would effectively reduce the chances of achieving mileage targets or the end of project status;

5. As the spokesmen for the rural population, the Paramount Chiefs would approve the final site selections, since they will play a key role in arranging for the required communal labor;

6. The Road Site Selection Committee will review any request by a responsible person, village or community for assistance in the construction of small feeder roads. A questionnaire has been designed expressly for this purpose and is attached as Annex B;

7. Agricultural Extension Officer (AEO) will participate in the process of site selection as it will most often be the AEO who will be familiar with the local terrain, who will know where the most responsive farmers will be located and who will be in a good position to advise authoritatively on other pertinent matters;

8. Final approval of individual site selections will be dependent upon the agreement of all interested parties on plans for road maintenance (for details refer to the Road Maintenance Plan).

9. After the list of roads has been compiled by the Site Selection Committee, it will be forwarded, with justifications for each road, to the Cabinet for approval.

C. Site Selection Sub-Committee consists of representatives from the Ministry of Works (MOW), MANR (Ministry of Agriculture and Natural Resources) and CARE. Committee members review requests for road construction to determine if the road will be in an area where there are or will be major agricultural development projects, and to determine if costs per mile will be reasonably close to MOW/CARE's estimated costs, which for the 1976/77 construction are $12,214. After preliminary site surveys and estimates are completed, the list of roads selected is submitted to the Project Coordinating Committee and then to the Cabinet for approval.

D. Ministry of Finance, Development and Economic Planning is responsible for all administrative aspects of the program. The Development and Planning Department of this Ministry is responsible for coordinating all foreign assistance and is therefore capable of cutting across ministerial lines to assist the project by reducing administrative bottlenecks.

E. The Ministry of Works has supervisory responsibility for the construction and maintenance of all primary, secondary and feeder roads in Sierra Leone. Also, the MOW is responsible for providing professional advice on the selection of penetration road sites and making periodic inspection visits to road construction sites in order to assure that road construction is proceeding according to the plans agreed to by the GOSL Rural Penetration Roads Project Coordinating Committee. Although the Ministry of Works has given CARE/Sierra Leone (CARE/SL) considerable autonomy in implementing the project, both parties have recognized and accepted the MOW's role as the responsible agent of the Government of Sierra Leone for administration and maintenance of the Sierra Leone road network.

F. Road Maintenance

1. A Four Year Highway Maintenance Program for GOSL/MOW was prepared by Jorgensen Associates, Inc. (financial by the UNDP) June 1976, will be implemented in October 1978 with financing from the World Bank. This program will focus on improving existing roads in Sierra Leone and improving MOW operations (all road maintenance activities will be consolidated within a semi-autonomous entity of the MOW). An agreement has been reached between the MOW and IBRD that the rural penetration roads which will be constructed by CARE will be included in the second phase of this road maintenance program. CARE has obtained a letter from GOSL confirming the agreement between GOSL and the IBRD. Further, the GOSL has stated in the same letter that the MOW will have the capability and resources and will take over all responsibilities for the routine and periodic maintenance of the rural penetration roads constructed by CARE at the conclusion of the project.

2. Maintenance of all roads in Sierra Leone is the responsibility of MOW but for up to two years, i.e., until the maintenance of rural penetration roads is absorbed into the MOW Road Maintenance Program, the GOSL has requested CARE to include road maintenance in its program. All recurring road maintenance operation costs will be borne by the GOSL (Annex A.8). Included in these cost estimates is a provision for depreciation of equipment. CARE will establish a special bank account into which funds will be deposited quarterly, based on the number of hours each piece of equipment assigned to road maintenance is actually used for maintenance or construction work. These depreciation funds will be managed by CARE as a revolving fund to purchase replacement road maintenance equipment.

3. The IBRD, CARE and AID have agreed that once the pending IBRD project design to upgrade the MOW's technical and managerial capability is completed (approximately 1980) that the MOW will have the capability to assume full responsibility for maintenance of all roads included in this and the previous AID project. The GOSL has agreed, subject only to the final approval of the IBRD loan. AID concludes that these arrangements provide a valid basis for concluding that the GOSL will have the capability to properly maintain the project roads. However, to insure that the MOW takes demonstrable action to maintain the roads, the first year's funding requirements granted by AID will be provided after the GOSL establishes (staff, budget) the special unit. Second year funding requirements provided by AID will be made available after it has been verified that the MOW has fulfilled its responsibilities of testing construction materials, supervising road construction and in providing design specification guidance. 2/

4.2 AID Administrative Arrangements

The timely and successful implementation of this project will not require any unusual AID staff input. Implementation of the project will be monitored by the Capital Projects Staff of USAID/Liberia. The Capital Projects staff consists of project officers and at present, of one civil engineer. By the time this project will begin implementation, a second civil engineer will have been added to the staff. The SPAR (Specific Personnel Action Request) has been approved and the American Ambassador to Monrovia has concurred in the increase in the personnel ceiling. The civil engineers will reside in Monrovia, Liberia, and make periodic inspection visits to the project sites in order to verify the extent and quality of the road construction/rehabilitation and maintenance being performed by this project. Day to day liaison with CARE and the GOSL will be the responsibility of the AID representative resident in Freetown.

The Federal Reserve Letter of Credit will be used to provide cash advances to CARE, Inc., New York, so that it may obtain funds for immediate project operating cash requirements. USAID/Liberia Capital Project Officers will verify the reasonableness of all billings and evaluate the levels of effort reported in these billings against actual performance.

4.3 Implementation Plan

Road, bridge and culvert construction will be done by CARE. CARE will also develop a road maintenance program and the recurring maintenance

2/ See Part 4.4 - Conditions, Covenants and Negotiating Status and Page 4 of a summary of funding requirements

costs will be financed by the GOSL. CARE has and will continue to provide for personnel services via:

a. CARE staff;
b. volunteers from other donor agencies;
c. contract personnel
d. organized communal (volunteer) labor.

The following are detailed implementation schedules/plans for Fiscal Years (FY) 77/78, 78/79 and 79/80;

OUTPUTS AND REQUIRED ACTION
FY 77/78

CONSTRUCTION

Month/Year	Miles constructed cumulative total	Required Action to Achieve Construction Targets. 100
0 June 1977		100 miles of Road Sites selected by site selection committee.
1 July 1977		IBRD equipment ordered.
2 August 1977		Repair and overhaul of old equipment commence.
3 September, 1977		USAID Grant approved by AID/W.
4 " 1977		Repair and overhaul of old equipment completed.
5 " 1977		Construction starts using old equipment in the E.A.P.
6 " 1977		Construction starts using old equipment in the N.A.P.
7 " 1977		Construction starts using old equipment in the PC and Tormabum Area.
8 " 1977		50 miles of road to be constructed are surveyed and designed
9 " 1977		MOW conducts concrete tests and soils analysis, inspects roads, reviews and approves design modifications (on-going) beginning.
10 " 1977		MOW completes technical survey and design of Moa River Bridge Site on road linking Weima to Bandajuma.
11 " 1977		Moa Bridge construction commences.
12 " 1977		GOSL is financing maintenance operations.
November 1977		CARE receives AID OPG first tranche.

14	December 1977		CARE orders new equipment from AID Grant
15	" 1977		50 miles of road surveyed and designed.
16	January 1978		Arrival and commissioning of IBRD equipment.
17	March 1978		Evaluation conducted by USAID/L and CARE/SL is completed.
18	" 1978		MOW is testing, inspection and performing design specification functions.
19	May 1978		Arrival and commissioning of new equipment acquired from AID OPG.
19a	June 1978		150 miles of road sites selected by coordinating committee.
20	August 1978		Overhaul and repair of equipment commence.
21	September 1978		Overhaul and repair of equipment completed.
22	" 1978		60 miles E.A.P. completed.
23	" 1978		30 miles N.A.P. completed
24	" 1978		10 miles P.C. and Tormabum completed.
25	" 1978	100	Construction season 7/77 - 9/78 ends; 100 miles completed.

[illegible] AND [illegible] ACTION
FY 78/79

Month/Year	Miles constructed cumulative total	Required action to achieve construction targets (150 miles)
[illegible] October 1978		[illegible] miles of road surveyed and designed.
[illegible] " 1978		Construction starts using both old and new equipment in the [illegible]
[illegible] " 1978		Construction starts using old and new equipment in the [illegible] and [illegible]
[illegible] " 1978		MPW completes concrete tests and soils analysis, inspects roads, reviews and approves design modifications [illegible] ongoing
[illegible] " 1978		MPW completes technical survey and design of main river bridge site on road linking [illegible] and [illegible].
[illegible] November 1978		[illegible]
[illegible] December 1978		Main site bridge construction on the road linking [illegible] and [illegible] is completed.
[illegible] " 1978		[illegible] commences work on the main [illegible] bridge site.
[illegible] " 1978		[illegible] miles of road surveyed and designed.
[illegible] March 1979		Evaluation conducted by [illegible] and [illegible] is completed.
" 1979		MPW is testing, inspecting and performing design specification functions
[illegible] June 1979		150 miles of road sites selected by coordinating committee.
[illegible] August 1979		[illegible] and repair of equipment commences.

38	September	1979		Overhaul and repair of equipment completed.
39	"	1979		35 miles E.A.P. completed.
40	"	1979		95 miles N.A.P. completed.
41	"	1979		20 miles P.C. and Tornabum completed
42	"	1979	250 miles	Construction season 10/78 - 9/79 ends. 150 miles completed.

OUTPUTS AND REQUIRED ACTION
FY 79/80

	Month/Year	Miles constructed cumulative total	Required Action to Achieve Construction Targets (150 miles)
43	October 1979	250	75 miles of road surveyed and designe
44	" 1979		Construction starts in the E.A.P.
45	" 1979		Construction starts in the N.A.P.
46	" 1979		Construction starts in the P.C. & Tormabum Area.
47	" 1979		MOW conducts concrete tests and soils analysis, inspects roads, reviews and approves design modifications.
48	November 1979		CARE receives final USAID Grant.
49	December 1979		Male River Bridge construction on the road linking Bandajuma and Wiema is completed.
50	" 1979		75 miles of road surveyed and designed
51	March 1980		Evaluation conducted by USAID/L and CARE/SL is completed.
52	" 1980		MOW is testing, inspecting and performing design specification functions
53	September 1980		20 miles completed in the E.A.P
54	" 1980		110 miles completed in the N.A.P.
55	" 1980		20 miles completed in the P.C. and Tormabum Areas.
	" 1980	400 miles	Project ends.

4.4 Conditions, Covenants and Negotiating Status

Funds granted under this proposed amendment will finance the costs of rural penetration road construction from July 1, 1977, to September 30, 1980. Grants to CARE will be made in two separate grant agreements; one in calendar year 1977 ($1,747,400), and the second in calendar year 1978 ($2,243,600).

A. Condition Precedent to Initial Disbursement Under the Amended Grant

Prior to the first grant to CARE not to exceed $1,747,400 the Director of CARE/SL will submit a letter to the Director of USAID/Liberia describing the actions taken by the Government of Sierra Leone with respect to adequate provisions (personnel, budget) for a unit that is responsible for maintaining rural penetration roads constructed by CARE under this project.

Based on the description submitted by the Director of CARE/SL, and verified by USAID/L, the Director of USAID/L or his designee will make a determination as to whether funds should be released to CARE.

B. Condition Precedent to Additional Disbursement Under the Amended Grant

Prior to the grant of the project's second year funding requirements ($2,235,100) USAID/Liberia's members of the evaluation team (February-March 1978) will assess:

(1) MOW performance in testing of concrete cubes and analysis of lateritic materials and carrying out technical surveys of roads to be constructed, doing such basic design work as plotting long sections and calculating quantities;

(2) Road inspection and supervision by MOW area engineers. (Area engineers should inspect the roads once every two months during the construction season);

(3) MOW performance in reviewing and acting on MOW's bridge specifications which have been modified by CARE in rural road construction;

(4) GOSL budgetary support for road maintenance costs; and

(5) MOW preparatory actions to supervise road maintenance.

The evaluation team will report its findings for each of the aforementioned areas, and state whether the performance has been sufficient to warrant the second year's grant to CARE.

Based on the evaluation findings, the Director of USAID/Liberia or his designee will determine whether the second year's grant should be made to CARE.

4.5 Evaluation Arrangements

Evaluation of this project will consist of three discrete but related actions:

(1) Socio-economic survey

(2) A technical inspection at least twice each year by USAID/L's Engineering Advisor.

(3) A joint CARE/SL-USAID/L evaluation in January-February each year.

A. Socio-Economic Survey

As part of the evaluation of the CARE Rural Penetration Road Project (February 1977), a socio-economic baseline survey and a traffic survey were conducted by Mr. Anthony Airey of Njala University. The surveys indicated that the construction of rural penetration roads had a measurable impact (housing population increases, greater access to services and markets) in previously isolated areas.

A more comprehensive survey is needed to verify the degree to which the project contributes to rural incomes and related development objectives. The second survey will require more preliminary planning, and AID will again be involved in preparing the areas to be evaluated and the questions to be asked for the survey well before the survey is conducted.

The second survey will be initiated in February 1978, using data collected by Mr. Airey in Feburary 1977 for comparison. It will take about two months to conduct the survey.

AID will finance up to $10,000 of the costs of the evaluation. The scope of work may be expanded resulting in an increase in the costs of the evaluation. If the costs are greater than $10,000, AID will attempt to use Program Development and Support Funds to finance the difference between the $10,000 and the increased costs. Total costs of the evaluation should not exceed $15,000.

B. Technical Inspection by USAID/L's Engineering Advisor

During the road construction season in 1978 and in 1979, and before the joint CARE/SL-USAID/L evaluation, USAID/L's Engineering Advisor will observe CARE/MOW construction and maintenance operations to assess the quality of the roads constructed and maintained, and the methodology

used by CARE and the MOW, 1/ The assessment will also be used to verify or modify planned road construction targets.

C. Joint USAID/L - CARE/SL Evaluation

Joint evaluations will be conducted in February of each year (1978 and 1979). The general scope of the joint evaluation is as follows:

(1) Use of AID-financed equipment - maintenance and availability

(2) Performance in road maintenance using communal labor.

(3) MOW progress in meeting conditions precedent prior to disbursement of funds in 1978. 2/

(4) Performance (roads constructed) against planned targets.

(5) Socio-economic impact based on studies carried out in the initial evaluation.

In summary, the three distinct and related evaluation actions will assess the areas in which AID is concerned: Social and economic impact; technical soundness and the administrative effectiveness of the MOW (maintenance).

1/ Twice each year. Assessment will also verify insignificant environmental impact (Page).
2/ Refer to Part 4.4 Conditions, Covenants, Negotiating Status

4.6 Procurement Procedures:

CARE (Cooperative for American Relief Everywhere) will procure commodities financed by A.I.D. and other donors directly. AID-financed commodities will be procured from A.I.D. Geographic Source Code 000 and host country, unless otherwise specified.

A. The submission of the CARE/Sierra Leone Annual Implementation Plan (AIP) to CARE Headquarters will include a detailed listing of construction materials and equipment which will be procured, delivery dates and source (country).

B. All U.S. procurement will be performed by CARE Headquarters based on specifications described in the Project Paper and AIPs.

C. CARE will possess title to AID-financed equipment and changes in title must be approved in advance by A.I.D. for up to three years after the project is completed.

D. All procurement will be conducted according to procurement procedures outlined in the CARE Overseas Administration Manual. All procurement financed by A.I.D. will be performed in accordance with A.I.D. Procurement Regulations in effect at the time the project is authorized.

H. Heavy Equipment Requirements

(1) The construction and rehabilitation of 130 miles of road a year will require a mainimum heavy equipment fleet consisting of the following:

QTY	DESCRIPTION	Size	Type/Make
2	Dozers	180 HP	Terex 82-30
2	Dozers	160 HP	Cat D-7
4	Dozers	140 HP	Cat D-6
2	Dozers	75 HP	Cat D-4
4	Scrapers	14 cu.yd.	Terex TS-14
9	Motor Graders	125 HP	Cat 120G & Aveling Barford
5	Front End Loaders	1½ cu. yd.	Cat. 920
2	Compactors - Static	10-12 tons	Aveling Barford
4	Compactors - Vibrating		Aveling Barford
1	Tractor-Trailer	15 tons	Bedford
25	Dump Trucks		Bedford

(2) CARE's present heavy equipment fleet consists of:

4	Dozers	180 HP
1	Dozer	140 HP
2	Dozers	75 HP
1	Scraper	14 cu. yd.
5	Motor Graders	125 HP
2	Front End Loaders	1½ cu. yd.
4	Compactors	10-12 tons
12	Dump Trucks	5 tons

(3) Additional heavy equipment which will be procured:

Qty	Description	Size
3	Dozers	140 HP*
3 a/	Scrapers	14 cu. yd.*
4 b/	Motor Graders	125 HP*
3 c/	Front End Loaders	1½ cu. yd.
2 d/	Compactors	10-12 tons **
1 e/	Tractor-Trailer	35 tons **
13 f/	Dump Trucks	5 tons **

The equipment will be divided into four (4) construction units. Two units will be assigned to the Northern Province Area and the other two units will be assigned to the Eastern and Southern Provinces. All units will be capable of carrying out all associated earthworks and roadworks operations.

I. Proprietary Procurement of Road Construction Equipment and Spare Parts

The Government of Sierra Leone (GOSL) has supplied CARE/Sierra Leone with a part of its present fleet of road construction equipment. All of the U.S. brand equipment are either Terex or Caterpillar. Also, these are the only U.S. brands of road construction equipment sold in Sierra Leone. It is vital that there be standardization and compatibility with the existing equipment fleet. Moreover, the use of proprietary procurement in obtaining the new equipment will provide the GOSL and CARE with economies in maintenance of spare parts, satisfactory repair facilities and greater technical familiarity by operating personnel. Also, there is a limited number of each category of equipment, which would preclude competitive bidding. Therefore, with the approval of this project by AID/W, proprietary procurement of the following pieces of equipment and spare parts is concurrently authorized:

(1) Two Terex TS-14 Scrapers

(2) Two Caterpillar 120-G Motor Graders

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a/ One to be purchased August 1977
b/ Two to be purchased August 1977
c/ One to be purchased August 1977
d/ One to be purchased August 1977
e/ One to be purchased August 1977
f/ Seven to be purchased August 1977
* = U.S. manufacturer and financed by AID.
** = Financed by other donors

(3) Two Caterpillar No. 920 Wheel Loaders

(4) Three Caterpillar D-6 Track Type Dozers with Rippers

(5) Spare parts for the above items 1 to 4, in addition to spare parts for the existing Caterpillar and Terex equipment, will be purchased annually from the U.S. estimated at U.S. $100,000 for Caterpillar and U.S. $50,000 for Terex.

ANNEX A

SIERRA LEONE: CARE RURAL PENETRATION ROADS

CERTIFICATION PURSUANT TO SECTION 611(e) OF THE

FOREIGN ASSISTANCE ACT OF 1961, AS AMENDED

I, Harvey E. Gutman, Acting Director of the U.S.A.I.D. Mission to Liberia, do hereby certify that in my judgment the Republic of Sierra Leone will have the financial capability and the human resources capability to implement, maintain, and utilize effectively the subject capital assistance project. This certification takes into consideration the requirements placed on the Republic of Sierra Leone to maintain and utilize other projects previously financed or assisted by the United States.

This above certification is based on the fact, inter alia, that:

1. An evaluation by A.I.D. in February, 1977, has established that CARE and the Government of Sierra Leone have successfully undertaken the construction of rural feeder roads under a previous A.I.D. grant.

2. The Government of Sierra Leone has given a high priority to budgetary support for recent and present construction of rural feeder roads by CARE under A.I.D. Grant.

3. The I.B.R.D. and the Government have concurred that the planned I.B.R.D. project to upgrade the maintenance capability of the Government of Sierra Leone Ministry of Works will enable the Ministry of Works to assume full responsibility for maintenance of the project roads within two (2) years from the end of the project, thus overcoming past and present maintenance deficiencies. For the interim, the Government has pledged necessary financial support for CARE to assume road maintenance responsibilities for up to two (2) years until the Ministry of Works' capability has been fully established and CARE has agreed to this undertaking.

Harvey E. Gutman

7/28/77

Date

ECONOMIC ANALYSIS

Methodology and Assumptions

1. Number of Direct Family Beneficiaries

The average length of the rural penetration roads constructed by CARE/SL is seven miles. Seven villages are located on an average length of road, and the population of each village is approximately 222 people in the East and South and 451.4 in the North (an average of 37 families per village, 6 and 12.2 people per family in the East and South and North respectively). 1/

Number of Family Beneficiaries

Year	Miles Constructed Per Year (cumulative)	Number of Direct Family Beneficiaries 2/			Total Beneficiar
		East/South	North	Total	
6/78	100	2,590	1,110	3,700	29,082
6/79	250	4,625	4,625	9,250	84,175
6/80	400	6,105	8,695	14,800	142,709

2. Increased Production

Ongoing agricultural projects are designed to increase production of many crops,including rice, groundnuts and cocoa. This analysis deals with these crops, and is based on the World Bank's Appraisal Report of the IADP. 3/

1/ a. Number of families per village: Airey, A., Short Term Socio-Economic Evaluation of CARE Feeder Roads (Jan. 15-February 15, 1977).
b. Size of families: Appraisal of Integrated Agricultural Development Project II Sierra Leone Supplementary Volumes 2 and 3, April 8, 1975.

2/ Derivation: Total number of miles = 7. (Average length) x 7 (Average number of villages per village length) x 27 (Average number of families per village). In these calculations, the sourthern project areas are included in the East.

3/ Appraisal of Integrated Agricultural Development Project II. Sierra Leone Supplementary Volumes 2 and 3, April 8, 1975.

The working hypothesis is that the rural penetration roads will be used to transport increased amounts of rice, groundnuts, and cocoa. In this regard, increased production alone is not considered a benefit, unless it is either consumed or sold by farm families.

a. Rice

Following are one acre farm budgets for rice in the Northern and Eastern areas:

(1) North[4/]

Output	Average undeveloped	Average developed
Yield of husk rice (lbs.)	833.3	1,616.6
Gross return @ $4.35 per bushel	60.41	117.20
Input Costs	$4.50	$20.93
Net Return (per acre)	55.90	96.27
Net Return (per pound)	$.07	$.06 [5/]
Net Return (per bushel)	4.02	3.57

The average amount of land under cultivation per family is 5 acres, and rice grown on 75 percent of cultivated land. With production at 833.3 pounds per acre for 3.75 acres, total production before development is estimated at 3,124.88 pounds per family

Annual per capita consumption of milled rice in Sierra Leone is 250 pounds Assuming that the amount of rice remaining after consumption (by the farm family) is marketed, and recalling that the average number of people per family in the North is 12.2 people, of 1,124.88 pounds of rice produced per year, 4,612 pounds are consumed leaving a deficit of 1,487 pounds.[6/]

With production increases to 1,616.6 pounds per acre, 6,062.26 pounds of rice will be produced, 4,612 will be consumed, and 1,450 pounds will be marketed. We are assuming the tice for marketing will be transported on roads constructed by CARE.

Net income from 1,450 pounds of rice is a benefit attributable to CARE's rural penetration roads. With net returns of 6¢ per pound of rice, the increment is $87 per year, per family.

4/ 1974 prices in Leones were converted to current exchange rate:
US$1 = Le 1.15
Le 1 = US$0.87

5/ Returns per pound and per bushel decline because the gross price (to the farmer) remains constant and because input costs increase.

6/ Milled rice is 66 percent of husk or paddy.
250 ÷ 66 = 378
378 x 12.2 = 4,612

(4) East

Output	Averaged Undeveloped	Average Developed
Yield of husk rice	900	1,575
Gross return @ $14.35 per bushel	$ 65.25	$ 114.18
Input costs	4.13	19.79
Net return (per acre)	61.12	94.40
Net return (per pound)	$ .07	$ .06
Net return (per bushel)	4.07	3.59

The average amount of land under cultivation per family is 3 acres and rice is grown on 50 percent of the cultivated land. With 1.5 acres of rice, total annual production before development is approximately 1,350 pounds per family.

Using the average annual consumption rate of rice per capita, (250 lbs.) and an average family of 6 people, with 1,350 pounds of rice produced per year, 2273 pounds of husk rice is required for consumption and there is a deficit of 923 pounds of rice per family. At the increased production level, 2,864.5 pounds of rice will be produced, 2,273 pounds consumed and 591.5 pounds will be marketed via CHD rural penetration roads. With net returns of 6c per pound of rice, the increment is 5.37 per year, per farm family.1/

b. Groundnuts

Groundnuts are an important crop in the North, much less so in the East. Following is an estimated one acre budget for groundnuts:

Output	Undeveloped	Developed
Yield of unshelled nuts	933.33	1,300
Gross return @ 4c per lb.	$ 37.33	$ 52
Input costs	5.22	12.58
Net return	32.11	39.42
Net return per pound	.03	.03

Groundnuts are grown on 10 percent of the cultivated land in the North, and 17 percent of the farmers grow groundnuts. We assume that on-farm consumption is ten percent of production and that the balance will be transported to the market via CHD rural penetration roads.

1/ Total benefits are greater than $5 per year per family. Increased production for consumption is income in kind. However, only the cash increment computed in the rate of return

(1) Average cultivated holdings per family = 5 acres.

(2) Groundnuts are grown on .5 acres per family

(3) 650 pounds per year, less consumption of 10 percent = 585 pounds to be marketed.

(4) At a net return of 3¢ per pound, net annual income per family is $17.55.

c. Cocoa

Cocoa is an important corp in eastern Sierra Leone. Following is a one-acre development cash flow for cocoa:

ANNEX B

One Acre Development Cash Flow

	Eastern Area - Cocoa (U.S. $1)		
	1978	1979	1980
Yield of Cocoa (lbs.)	(400)	(700)	(700)
Source of Funds			
Value of cocoa 8/	$ 88	$154	$154
Development Loan	-	-	-
Seasonal Loan	22	29	24
Total	110	183	183
Application of Funds			
Development costs	$ 22	$ 29	$ 29
Debt services:			
Development 9/	28	28	28
Seasonal 10/	24	32	32
Total	74	89	89
Net cash flow	36	94	94
Net cash return per pound	.09	.13	.13

8/ @ 22¢ per pound

9/ Total loan including interest

10/ Repaid @ 10%

Cocoa is grown on 25 percent of the average acreage under cultivation in Sierra Leone. In estimating benefits attributable to cocoa, we are assuming that cocoa is grown on .75 acres per family and that 75 percent of production iwll be transported on rural penetration roads.

Annual net income per family is derived as follows:

Year	Produced		Marketed
1978	.75 (400) = 300 x .75	=	225
1979	.75 (700) = 525 x .75	=	394
1980	.75 (700) = 525 x .75	=	394

	Pounds Marketed	Net per pound		Net Annual Income per family
1978	225	.09	=	20
1979	394	.13	=	51
1980	394	.13	=	51

d. Summary of Crop Benefits 11/ (Totals in $000)

(1) Rice East

Year	Number of Miles	Families (37 per mile)	X	($5 per year per family)	=	Total Net Income
1978	70	2,590				12.95
1979	125	4,625				23.1
1980	165	6,105				30.5

(2) Rice North

Year	Number of Miles	Families (37 per mile)	X	($87 per year per family)	=	Total Net Income
1978	30	1,110				96.5
1979	125	4,625				402
1980	235	8,695				756.5

11/ Derivation: Number of miles x number of families per mile x net income = total net income.

(3) Groundnuts - North

Year	Number of Miles	Families 12/ (21 per mile)	X	($17.55 per year per family)	=	Total Net Income
1978	30	630				11
1979	125	2,625				46.1
1980	235	4,935				86.6

(4) Cocoa East

Year	Number of miles	Families (37 per mile)	X	Net per Year	Total Net Income
1978	70	2,590		20	51.8
1979	125	4,625		51	235.9
1980	165	6,105		51	311.4

(5) Total of all crops

Year	Total Net Income
1978	172
1979	707
1980	1,185 (constant to 1978)

Assumed Constant to 1991.

3. Transport Costs (Savings)

The cost of transporting rice by headloading is $1.30 per ton per mile. On a good laterite road, transport costs will be five cents per ton per mile, for a savings of $1.25 per ton of rice transported one mile. 13/ Using the rice production and marketing estimates contained in page two, estimated annual savings are:

12/ 57 percent of the farmers grow groundnuts
57 percent of 37 = 21

13/ African Rural Economy Paper Number 15. November 1976. Njala University College.

	North	East	Total [14/]	X	5 miles [15]
1978	.90	.13	1.0		5.0
1979	3.74	.19	3.9		19.5
1980	7.04	.31	7.35		26.8

Assumed Constant to 1991.

4. Road User Costs (Savings)

Based on the Jorgensen Report, we estimated the following average operating costs per mile of rural penetration road:

ROAD QUALITY

Vehicle Type	Good	Bad
Passenger	$.1607	$.2481
Van	.1705	.2521
Truck	.3432	.5762
Average	.12248	3588

Savings = $.1340

CARE will rehabilitate approximately 80 percent of the 400 miles o road, and these roads are little more than tracks which vehicles use o during the dry season. Eighty percent of the 400 miles (320) are bad, and the quality will be good after rehabilitation. Savings per mile p vehicle will be 13.4 cents.

Eighty percent of the roads will have an ADT of 50 vehicles, and the remaining 20 percent will have an ADT of 125. Based on the above, we derived the following:

Year	Roads Rehabilitated (cumulative)	ADT = 50 (80%)	ADT = 125 (20%)
1978	80	64	16
1979	184	147	37
1980	320	256	64

14/ Number of pounds per family (1450 North, 89.5 East) x number of families (see number of family beneficiaries, Annex B, Page 1) ÷ 2,240 x $1.25.

15/ "Agricultural Statistical Survey of Sierra Leone 1970/71":
In South/East: 46% of landholders totally headload crops to market travel further than 5 miles.
In North: 60% of landholders totally headload crops to market; 3[illegible] travel further than 5 miles.

ANNUAL SAVINGS 16/
($000)

Year	ADT = 50	ADT = 125	TOTAL
1978	156	97.8	253.8
1979	359.5	226	585.5
1980	626	391	1,017

Assumed Constant to 1991.

5. Summary of all benefits ($000)

Year	Crops	Transport	Vehicle Operation	Total
1977				
1978	172	5.0	253.8	430.8
1979	707	19.5	585.5	1,312.0
1980	1,185	36.8	1,017	2,238.8
1981	1,185	36.8	1,017	2,238.8

Assumed Constant to 1991.

6. Project Costs ($000)

Year	Costs
1977	3631.2
1978	2284.8
1979	2605.1
1980	418
1981	418 17/

Assumed Constant to 1991.

16/ Miles of road x savings (.134) x ADT x 365 = Annual savings.

17/ Maintenance, based on high average costs over three year period.

7. Net Benefits ($000)

Year	Benefits	Costs	Net Benefits
1977		3631.2	-3,631.2
1978	430.8	2284.8	-1,854.0
1979	1,312.0	2605.1	-1,293.1
1980	2,238.8	418 [18]	1,820.8
1981	2,238.8	418	1,820.8
1982	2,238.8	418	1,820.8
1983	2,238.8	418	1,820.8
1984	2,238.8	418	1,820.8
1985	2,238.8	418	1,820.8
1986	2,238.8	418	1,820.8
1987	2,238.8	418	1,820.8

Assumed constant to 1991.

18/ Maintenance Costs. Page 59 of proposal.

8. ECONOMIC RATE OF RETURN
(15-year Life)

Year	Net Benefits	Discount Factor 18%	Net Present Value
1977	- 3,631.2	-	- 3,631.20
1978	- 1,854.0	.847	- 1,570.34
1979	- 1,293.1	.718	- 928.45
1980	1,820.8	.609	1,108.87
1981	1,820.8	.516	939.53
1982	1,820.8	.437	795.69
1983	1,820.8	.370	673.70
1984	1,820.8	.314	571.73
1985	1,820.8	.266	484.33
1986	1,820.8	.226	411.50
1987	1,820.8	.191	347.77
1988	1,820.8	.162	294.97
1989	1,820.8	.137	249.45
1990	1,820.8	.116	211.21
1991	1,820.8	.099	180.26
		Summation	139.03

ECONOMIC RATE OF RETURN
(15-year Life)

Year	Net Benefits	Discount Factor 20%	Net Present Value
1977	- 3,631.2	-	- 3,631.20
1978	- 1,854.0	.833	- 1,544.38
1979	- 1,293.1	.694	- 897.41
1980	1,820.8	.579	1,054.24
1981	1,820.8	.482	877.63
1982	1,820.8	.402	731.96
1983	1,820.8	.334	608.15
1984	1,820.8	.279	508.00
1985	1,820.8	.233	424.25
1986	1,820.8	.194	353.24
1987	1,820.8	.162	294.97
1988	1,820.8	.135	245.81
1989	1,820.8	.112	203.93
1990	1,820.8	.093	169.33
1991	1,820.8	.078	142.02
			- 459.47

Interpolation: $18\% + 2\ \frac{(139.03)}{(598.50)} = 18\% + 2\ (.23) = 18.46\%$

ERR = 18%

ANNEX C

1.1 INITIAL ENVIRONMENTAL EXAMINATION

Project Location: Northern, eastern and southern Sierra Leone

Project Title: CARE Rural Penetration Road Construction and Maintenance

Funding: FY 1977-1980; total project cost is $8.5 million of which $3.999 million is to be provided by AID, $1.8 million by the Government of Sierra Leone, and $1.2 million by CARE.

Life of Project: Three years starting October 1, 1977.

IEE Prepared by:

Howard Guiot, Engineer

Rudy Ramp, Director, CARE/SL

Environmental Action Recommended:

The project has only slight adverse environmental, social, ecological and public health impacts in the project area. However, there are three significant, positive impacts applying to the section of Health, Economy and Culture.

We recommend a Negative Determination for the Project.

Concurrence: Date:

7/27/77

Assistant Administrator's/Director's decision: Date:

2/4/78

INITIAL ENVIRONMENTAL EXAMINATION

1. Description of Project Areas and Its Environment

The Project consists of three main areas, the Eastern Project Area, the Northern Project Area and the Tormabom Area. There is a total of 400 miles of road in the three areas under study: 125 miles in the Eastern Project Area, 185 miles in the Northern Project Area and 50 miles in Tormabom Area. The Eastern Project Area is drained by the Sewa which borders it on the west and the Moa which cuts through it in the middle.

The Northern Project Area is also drained by the Little Scarcies on the north, the Rokel in the south and the Mabole which cuts through it in the middle.

The Tormabom Area is also drained by the Sewa.

The well-drained alluvial soils in these three areas are amongst the most productive soils in Sierra Leone. They have favorable physical properties and low plant nutrient requirement which is good for profitable yields.

1. Human Environment

A. Physical Description

The purpose of this project is to provide farmers in the eastern, southern and northern areas with continuing access to agricultural inputs and market outlets. The roads will facilitate the supply of agricultural inputs, health and extension services, and

education to farmers living in heretofore inaccessible rural areas. The project is being implemented over a three-year period 1977-1980 and aims to:

(1) Construct and rehabilitate 400 miles of rural roads to Ministry of Works Class IV standards; and

(2) Construct 33 bridges and box culverts and 1572 pipe culverts which will allow all-weather passage of four-wheeled vehicles.

The list of specific roads to be constructed can be found in Annex 7.A.

B. Social Characteristics

There are over 500,000 people in the project areas, and we estimate approximately 150 thousand direct beneficiaries.[1/] The total estimated population in the Northern Project Area is 172,000 (5,550 direct family beneficiaries). The four major ethnic groups in the northern areas are:

The Temne:	Largest group, concentrated in the central and southern area.
The Foulah:	The second largest group who are pastorialist and concentrated mainly in the deprived savannah area of the central uplands.
The Limba:	Who dominate the northeastern part of the area.
The Loko:	Who are concentrated to the north and west of Makeni Township.

1/ See Section 3, Economic Analysis for derivation of direct beneficiaries.

There are also smaller and more dispersed settlements of Mende, Susu and Mandigo.

In the eastern area (portions of the Southern Region are included in road construction activities classified as IADP East) the population is over 400,000 and there will be approximately 13,838 direct family beneficiaries. Most of the ethnic groups of Sierra Leone are represented in the East, but the Mende tribe is wholly dominant. Along the coast toward the Liberian border are settlements of Kum, Vai and Gola, which are minor groups and almost entirely concentrated in this area.

C. Population and Housing

The project area consists of the Kenema and Kailahun Districts in the Eastern Province; Bo, Bonthe, Moyamba and Pujehun Districts in the Southern Province and Port Loko, Bombali and Tonkolili Districts in the Northern Province. The total project area is 19,442 square miles having a population of about 1,768,000 persons as compared with 27,925 square miles and a population of 3.5 million for all of Sierra Leone.

For lack of data on the individual districts, the following country-wide data is provided:

(1) Sierra Leone has a land area of 17.7 million acres of which, as of 1976, 7.4% has been under cultivation.

(2) 4.5% of the total area consists of forest, and over 90% of the land is cultivable.

(3) Of 1.3 million acres under agricultural cultivation, 857 thousand acres are devoted to rice and 448,000 to crops.

(4) Eighty-three percent of Sierra Leone's farmers grow rice.

An initial examination of the roads constructed under the first Grant suggests that the communities along these roads are larger, more permanent, both locationally and structurally, and show evidence of new housing construction. There is also evidence of increased use of cement in construction which indicates increasing permanency of roadside communities.

The examination also indicated that roadside communities also have more frequent transport services as well as being accessible to a greater range of vehicles. Vehicle ownership is also more common in these communities.

D. Employment and Economy

Throughout the whole impact area the principal means of livelihood is agricultural production, and most of the production is for consumption rather than for sale. The principal crops are rice and cassava throughout the country and cash crops such as coffee and cocoa in the eastern region. The examination of the roads constructed under the first Grant suggests that isolated communities market fewer crops than their more accessible counterparts. Farmer preference in inaccessible communities tends to be to sell to buyers which reflects the difficulty and high cost of transport experienced by the communities. For headloading the transport cost per ton of rice is $1.30 while on good laterite road the cost per mile per ton is $0.05.[1/]

1/ African Rural Economy Paper No. 15, Nov. 1976. Njala University College

E. Health Conditions

Health conditions in any area are an integral part of the total environment both physical and social. In these regions the interaction of both aspects affect the condition of the human population. Thus, diseases which exist as part of the environment of an area may be replaced by others as the conditions in that area change.

The relationship between human populations, human excrement and purity of water in the streams is well-known. As only the large towns have "private" latrines, human wastes are dispersed randomly on soils or directly into the streams. Although in most areas there is sufficient water all year around, given the traditional practices of all-purpose usage of these streams, the results are a continuous threat to public health.

There is almost a direct relationship between the presence of a road and the number of health facilities and public health officials in a particular area. The resources available both in staff and medicines is much smaller in the area where no road exists. However, the communities to be linked by rural penetration roads will be more readily accessible to the hospitals and clinics in the larger towns of Kenema, Segbwema, Mobia, Pujehun and Makeni.

2. Natural Environment

A. Climate and Temperatures

Sierra Leone has two distinct ecological zones. The northern half of the country has long dry seasons with a rainfall of over 100 inches falling in a six-month wet season. The eastern and southern areas generally have less rainfall than in the north.

B. Water Resources

Along all proposed routes there are numerous streams. Some of these retain water all year around, particularly those lying in the larger catchment basins. As very few villages draw their water from wells, most of them are located alongside or near all year round supplies of water.

C. General Soil Formation Characteristics

For the most part the topography of the project areas is moderately to gently rolling. The Eastern and Southern Province areas have more clearly defined valleys. Rainfall is generally higher in the East than it is in the northern area. Most of the upland consists of deep ferralitic soils with a high laterite gravel content and low fertility. The valley bottom soils, depending on drainage conditions, have textures varying from loamy sand/sandy clay to sandy clay loams.

D. Vegetation and Wildlife

(1) Natural Vegetation

Much of the vegetation which exists in the project areas

is secondary growth having been formed several times. There remain a very few isolated patches of high forest and they are far and few between.

(2) Cultivated Vegetation

Present agricultural practices in the impact areas vary with the accessibility of farmers to roads. In the eastern and southern regions there has been considerable private planting of coffee and cocoa. However, in both these regions and in the northern region traditional agricultural practices continue. In addition, they grow other foodstuffs such as rice, cassava, yams, peppers, and plants for seasoning stews. In most towns it is possible to find kola nuts, citrus fruits, mangoes, pineapples and papaya, but only along the existing roadways is it profitable to attempt to market them.

(3) Land Tenure

Most land in Sierra Leone is owned by the state. However, small amounts, primarily in urban areas, are owned freehold. Within the impact areas, all the land is still held by the tribal authorities who retain responsibility for administration and allocation of the rights of usufruct. According to local laws each tribe is entitled to use as much public land in its territory as required for tribal and farming activities. Individual families are assigned rights to cultivate certain tracts, and it remains in their possession as long as they continue to use it. Once abandoned it returns to the tribal authorities' jurisdiction.

(4) Wildlife and Fish

In the impact areas where a roadway already exists large game has become very scarce, though smaller game such as bush hogs, squirrels and larger birds still exist. In the areas with pathways, the wild game increases, but as the population still remains relatively dense, the game is not extensive. Game provides one of the sources for protein in the diet and is hunted with guns, traps and nets.

3. Probable Impacts

Areas of probable impact are:

a. Land use and transportation;

b. Cultural and socio-economic;

c. Atmospheric and noise;

d. Natural resources;

e. Wildlife and vegetation; and

f. Public health.

Each of these areas is identified by the nature, type, level, controllability, and degree of impact resulting from the proposed road construction. The nature of impact is evaluated as to whether the overall effects of an improved road are of a negative or positive influence. Negative is defined as an action generating a directly adverse effect on the people or environment of the study area; positive is defined as an action generating a benefit in the study area directly related to the proposed road improvement.

The impact type is identified as either short or long-term, with

short-term being defined as an impact which occurs only during construction phases. An impact which involves an irreversible commitment, benefit, or loss during the operation and use of the proposed all-weather road is viewed as long-term.

The controllability of an impact addresses only negative effects. It is defined as an action's impact which can be avoided or controlled through the application of siting, engineering, and/or monitoring practices.

In order to insure that such safeguards are observed, it is proposed to require the following covenent in the Grant Agreement:

> The Grantee shall prepare all engineering plans, and all construction and renovation techniques so as to eliminate or reduce to the maximum extent possible all possible adverse environmental effects of the Project including specific attention to the following environmental hazards:
>
> a. impounded water;
> b. vehicular traffic through village or town areas;
> c. noise and pollution from vehicles using the road; and
> d. effects on wildlife and vegetation such as contamination of local streams and rivers during construction and increased hunting of wildlife.

The overall assessment of the degree of impact is in qualitative terms as little, moderate, or high. Both positive and negative impacts

are evaluated. Following the narrative section is a checklist which summarizes the overall assessment.

A. Land Use and Transportation Impacts

Impacts on land use and transportation resulting from the proposed roads will be presented in terms of their positive and negative effects, as previously defined.

Long term transportation benefits to the region will likely include the following:

(1) Provide year-round, all-weather transportation network for the project areas, thereby providing access to/from agricultural production and marketing areas.

(2) Reduce the need to lose or store crops harvested during the rainy season, thereby controlling pest losses and reaching markets during peak selling periods.

A short-term benefit that will result from the proposed road improvement is the creation of highway construction jobs for local skilled labor.

Negative transportation impacts resulting from this proposed project are as follows:

(1) Possible water retention basins created from borrow pits may serve as breeding areas for disease vectors and micro-organisms.

(2) Clearing of the land for right-of-way purposes. (See Natural Resources)

(3) Possible erosion of the land.

(4) Possible siltation of the stream waters.

B. Cultural and Socio-Economic Impacts

The long-term community and socio-economic benefits resulting from the project are:

(1) Provide improved and initial health facilities and service delivery to large, isolated regions.

(2) Provide improved and initial accessibility to educational centers.

(3) Stimulate economic growth by encouraging the cultivation of crops for market distribution on a country-wide basis.

(4) Stimulate regional development by attraction of emigrees to large population centers, back to their locality to farm their land. Part of this growth could be assumed to be produced by new settlers, attracted by the vast, now accessible land.

(5) Promote commercial exchange and lucrative services which invariably follow the opening of a new road and its requirements for local traffic support.

(6) Provide fast and safe access to the large population centers of the coast, thereby promoting cultural interchange and social equalization. Families now separated for long periods can look forward to closer ties with easier access.

(7) There are, of course, many other long-term benefits of lesser importance not mentioned here, such as training on the job, etc.

Short-term benefits to communities will result from increased local employment in construction work, and labor skills learned in the process. In addition, laborers brought in from outside the area will spend their wages on local goods and services.

(8) Long-term negative impacts from the proposed improvements will include:

(a) Safety in villages due to rapidly moving vehicles may necessitate control of speed and safety measures to protect the inhabitants.

(b) The loss of some agricultural lands by the road's right-of-way. Observations indicate that this would be of small magnitude, and inconsequential.

(c) Impact on the traditional tribal culture and social behavior.

C. Atmospheric and Noise Impacts

There will be virtually no air quality or noise impacts for several reasons:

(1) The projected ADT is low.

(2) The population density over most of the road is low, therefore, there are few receivers to be impacted.

(3) The only impact from these elements foreseen at this time may be the noise created by truck traffic in the village areas, but this possibility can be controlled.

D. Natural Resources Impacts

(1) Water Resources

No effective impact on the ground water supply is foreseen as a result of the proposed road. There may possibly be a small impact on the surface waters, but this is controllable, as discussed later. No need for drilling ground water wells for construction purposes is anticipated.

(2) Clearing of the land for roadway construction

It is considered that the narrow strip of land (50 feet) required for right-of-way purposes will not have a deleterious effect on the natural vegetation or the land. There are no known rare or unique species in the impact area. In addition, the existing bush that prevails throughout the routes forms an above-ground root system which interlaces and mats the ground, thereby precluding potential erosion along the hillsides.

(3) The predominance of the impacts to surface water area are of a negative nature. However, all land themselves to some degree of control. These impacts include the following:

(a) An elevated rural roadway will disrupt drainage patterns, thereby creating a pooling effect during the rainy season. Engineering design of appropriate drainage is being applied to eliminate this condition.

(b) During construction, erosion and sedimentation may impact the stream water quality. Minimum control measures, such as slope stabilization, sediment basins, flow retardation devices and the

like, will be applied. However, these devices should be used only where the potential of impact is evident, and is warranted on any individual situation. The long-term effect can be disregarded by the fact that the profusive plant growth indigenous to the region will, more than adequately, control sediment flow.

(c) Bridges

Very little impact on the natural channel is expected. No major alternation on the natural banks of the river is being considered. The proposed bridges will have ample clearance to preclude build-up of objectionable backwater.

Obviously, as in any other bridge or culvert construction, a negative short-term impact from this type of construction may be expected to affect the streams and rivers in terms of bottom mud disturbance, etc. This temporary condition can be remedied by advising the local people to utilize the upstream side of the waterway.

The Moa and Male River Bridges, while the largest of all anticipated project bridge construction, are not anticipated to have any adverse long range impact upon the natural environment nor to have any considerable impact (negative or positive) during the short term or construction phase. This lack of impact is a result of the type of bridge being constructed (a relatively unsophisticated continuous multi-span type) and the high banks and natural rock outcropping on the river bed which will facilitate construction. The bridges will stimulate economic and public sector activities within the impact area.

E. Wildlife and Vegetation Impacts

There are no endangered or unique species of flora or fauna in the impact areas. The clearing of a fifty foot wide right-of-way through the bush will thus not impact adversely on the vegetation. The wild game in the area consists of birds, small rodents, snakes and wild hogs. None of these species have feeding or other habits which would make the road a significant barrier. It is concluded that the impact of the road will not have a significant or deleterious impact on such fauna.

F. Public Health Impacts

A careful consideration of the biological and epidemiological features of the human health status of the area of concern leads to the conclusion that changes wrought by the proposed road will have no perceptible undesirable impact.

4. Measures Necessary to Minimize Harm and Control Potential Adverse Impacts

Certain measures can be recommended which will minimize harm and control the adverse impacts of the proposed action previously presented herein. All negative effects in this study were identified as controllable, therefore generalized measures will be discussed at this time. The various control measures necessary to minimize negative impacts are identified below, by environmental elements.

A. Land Use and Transportation Impacts

Impounded water created by borrow pits and drainage retention

will be prevented by adequate drainage and sound construction practices, and if unavoidable, the water will be monitored and treated for vector control by health personnel utilizing the new road.

B. Cultural and Socio-Economic Impacts

(1) The design of each road should avoid aligning the road through the village or town.

(2) Enforce/install speed restrictions in sensitive community areas, if necessary, for the safety of pedestrians, children and animals.

C. Atmospheric and Noise Impacts

Speed restrictions, by vehicle type, in populated areas to reduce noise emissions.

D. Wildlife and Vegetation Impacts

(1) Careful measures should be taken during construction of the bridges over large streams, to prevent excessive water pollution and contamination. This should especially apply to the construction of the bridge structures over the Moa and Male Rivers. There will be no blasting.

(2) Game wardens can increase patrols to minimize excessive hunting, as previously mentioned.

(3) Utilize careful road alignment selection to minimize the taking of cultivated land and/or homes and to avoid bisecting existing villages.

E. Public Health

The varied habitats of the intermediate hosts of the schistosoma haematobium and the s. mansoni are generally low, swampy areas as well as streams and irrigation canals. Therefore, standing or ponded water is to be considered dangerous to the public health of the area. Drinage design and construction should be such that it insures the flow of water from all depressions and precludes any permanent ponding along the route of the roadway.

Where vegetation is luxuriant and when permitted to grow tall or impede the flow of water in drainage ditches along the roadway, it provides a favorable habitat for insect vectors, particularly mosquito and tsetse flies (especially near streams in the latter case). Accordingly, provision for proper maintenance of ditches, or mowing of slopes to control plant life is of the greatest importance from the public health point of view.

IMPACT IDENTIFICATION AND EVALUATION FORM

Impact Areas and Sub-areas	Impact Identification and Evaluation
A. LAND USE	
1. Change the charager of the land through:	
a. Increasing the population	L
b. Extracting natural resources	N
c. Land clearing	L
d. Changing soil character	N
2. Altering natural defenses	N
3. Foreclosing important uses	N
4. Jeopardizing man or his works	N
5. Other factors	
B. WATER QUALITY	
1. Physical state of water	L - N
2. Chemical and biological states	L - N
3. Ecological balance	L
4. Other factors	
a. Run-off from road	L

N - No environmental impact
L - Little environmental impact
M - Moderate environmental impact
H - High environmental impact
U - Unknown environmental impact

IMPACT IDENTIFICATION AND EVALUATION FORM - 2

C. ATMOSPHERIC

1. Air additives	H
2. Air pollution	L
3. Noise pollution	L
4. Other factors	

D. NATURAL RESOURCES

1. Diversion, altered use of water	L
2. Irreversible, inefficient commitments	H
3. Other factors	

E. CULTURAL

1. Altering physical symbols	L
2. Dilution of cultural traditions	M
3. Other factors	
Ethics	M
Educational	M

F. SOCIOECONOMIC

1. Changes in economic/employment patterns	M
2. Changes in population	L
3. Changes in cultural patterns	M
4. Other factors	
Agricultural Activity	H

IMPACT IDENTIFICATION AND EVALUATION FORM - 3

G. Health

1.	Changing a natural environment	L
2.	Eliminating an ecosystem element	M
3.	Other factors	
	Accessibility to medical attention	M
	Control of endemiological diseases	M

H. GENERAL

1.	International impacts	M
2.	Controversial impacts	M
3.	Larger program impacts (positive)	M
4.	Other factors	

I. OTHER POSSIBLE IMPACTS (not listed above)

PROJECT FINANCING
July 1977 - September 1978
(DOLS $000)

	AID	GOSL	CARE	IBRD	P.C. VSO	TOTAL
A. Personnel						
1. U.S. Technicians	-	25.7	38.5	-	90	154.2
2. 3rd Country	-	7.5	71.9	-	22.5	101.9
3. Local Personnel	192.6	52.0	82.2	-	-	326.8
Sub-Total	192.6	85.2	192.6	-	112.5	582.9
B. Commodities						
1. U.S. Procured	1,154.8	8.6	34.1	-	-	1,197.5
2. 3rd Country	-	217.1	-	-	-	217.1
3. Local	94.0	125.0	26.0	911.2	-	1,156.2
Sub-Total	1,248.8	350.7	60.1	911.2	-	2,570.8
C. Other Costs						
1. Fuel & Oil	171.5	-	1.5	-	-	173.0
2. Maint. Equip. Depreciation	-	43.8	-	-	-	43.8
3. CARE/NY Overhead	124.5	-	-	-	-	124.5
4. Other Support Costs	10.0 1/	10.0	116.2 2/	-	-	136.2
Sub-Total	306.0	53.8	117.7	-	-	477.5
GRAND TOTAL	1,747.4	489.7	370.4	911.2	112.5	3,631.2

Note:

1/ $10,000 for annual evaluation.

2/ Includes office supplies, printing, postage, telephone, cable electricity, building maintenance and renovation, staff house expenses, furniture and fixtures, travel expenses, audit, insurance, publicity, bank charges, sundry.

PROJECT FINANCING
October 1978 - September 1979
(DOLS $000)

	AID	GOSL	CARE	IBRD	P.C. VSO	TOTAL
A. Personnel						
1. U.S. Technicians	-	-	69.6	-	90.0	159.6
2. 3rd Country	-	-	83.0	-	22.5	105.5
3. Local Personnel	440.4	51.1	48.9	-	-	540.4
Sub-Total	440.4	51.1	201.5	-	112.5	805.5
B. Commodities						
1. U.S. Procured	115.0	-	-	-	-	115.0
2. 3rd Country	-	85.0	-	-	-	85.0
3. Local	184.4	258.9	2.4	101.7	-	547.4
Sub-Total	299.4	343.9	2.4	101.7	-	747.4
C. Other Costs						
1. Fuel & Oil	337.0	23.0	1.7	-	-	361.7
2. Maint. Equip. Depreciation	-	87.5	.	.	.	87.5
3. CARE/NY Overhead (7.63%)	82.9	-	-	-	-	82.9
4. Other Support Costs	10.0 2/	10.0	179.8 1/	-	-	199.8
Sub-Total	429.9	120.5	181.5	-	-	731.9
GRAND TOTAL	1,169.7	515.5	385.4	101.7	112.5	2,284.8

Note:

1/ Includes office supplies, printing, postage, telephone, cables, electricity, building maintenance and renovation, staff house expenses, furniture and fixtures, travel expenses, audit, insurance, publicity, bank charges, sundry.

2/ For annual evaluation.

PROJECT FINANCING
October 1979 - September 1980
(DOLS $000)

	AID	GOSL	CARE	IERD	P.C. VSO	TOTAL
A. Personnel						
1. U.S. Technicians	-	-	78.3	-	90.0	168.3
2. 3rd Country	-	-	95.5	-	22.5	118.0
3. Local Personnel	430.9	104.0	57.9	-	-	592.8
Sub-Total	430.9	104.0	231.7	-	112.5	879.1
B. Commodities						
1. U.S. Procured	140.0	-	-	-	-	140.0
2. 3rd Country	-	100.0	-	-	-	100.0
3. Local	94.0	406.2	2.8	186.0	-	689.0
Sub-Total	234.0	506.2	2.8	186.0	-	929.0
C. Other Costs						
1. Fuel & Oil	322.9	80.0	2.0	-	-	404.9
2. Maint. Equip. Depreciation	-	87.5	-	-	-	87.5
3. CARE/NY Overhead	76.1	-	-	-	-	76.1
4. Other Support Costs	10.0 1/	10.0	208.5	-	-	228.5
Sub-Total	409.0	117.5	210.5	-	-	797.0
GRAND TOTAL	1,073.9	787.7	445.0	186.0	112.5	2,605.1

Note:
1/ For annual evaluation.

ANNEX E

ECONOMIC ANALYSIS

Methodology and Assumptions

1. Number of Direct Family Beneficiaries

The average length of the rural penetration roads constructed by CARE/SL is seven miles. Seven villages are located on an average length of road, and the population of each village is approximately 222 people in the East and South and 451.4 in the North (an average of 37 families per village, 6 and 12.2 people per family in the East and South and North respectively). 1/

Number of Family Beneficiaries

Year	Miles Constructed Per Year (cumulative)	Number of Direct Family Beneficiaries 2/			Total Beneficiaries
		East/South	North	Total	
6/78	100	2,590	1,110	3,700	29,082
6/79	250	4,625	4,625	9,250	84,175
6/80	400	6,105	8,695	14,800	142,709

2. Increased Production

Ongoing agricultural projects are designed to increase production of many crops including rice, groundnuts and cocoa. This analysis deals with these crops, and is based on the World Bank's Appraisal Report of the IADP. 3/

1/ a. Number of families per village: Airey, A., Short term Socio-Economic Evaluation of CARE Feeder Roads (Jan. 15-February 15, 1977).
b. Size of families: Appraisal of Integrated Agricultural Development Project II Sierra Leone Supplementary Volumes 2 and 3, April 8, 1975.

2/ Derivation: Total number of miles = 7. (Average length) x 7 (Average number of villages per village length) x 27 (Average number of families per village). In these calculations, the southern project areas are included in the East.

3/ Appraisal of Integrated Agricultural Development Project II. Sierra Leone Supplementary Volume 2 and 3, April 8, 1975.

The working hypothesis is that the rural penetration roads will be used to transport increased amounts of rice, groundnuts, and cocoa. In this regard, increased production alone is not considered a benefit, unless it is either consumed or sold by farm families.

a. Rice

Following are one acre farm budgets for rice in the Northern and Eastern areas:

(1) North [4]

Output	Average undeveloped	Average developed
Yield of husk rice (lbs.)	833.3	1,616.6
Gross return @ $4.35 per bushel	60.41	117.20
Input Costs	$4.50	$20.93
Net Return (per acre)	55.90	96.27
Net Return (per pound)	$ .07	$ .06 [5]
Net Return (per bushel)	4.02	3.57

The average amount of land under cultivation per family is 5 acres, and rice grown on 75 percent of cultivated land. With production at 833.3 pounds per acre for 3.75 acres, total production before development is estimated at 3,124.88 pounds per family.

Annual per capita consumption of milled rice in Sierra Leone is 250 pounds. Assuming that the amount of rice remaining after consumption (by the farm family) is marketed, and recalling that the average number of people per family in the North is 12.2 people, of 1,124.88 pounds of rice produced per year, 4,512 pounds are consumed leaving a deficit of 1,487 pounds. [6]

With production increases to 1,516.6 pounds per acre, 6,062.26 pounds of rice will be produced, 4.612 will be consumed, and 1,450 pounds will be marketed. We are assuming the rice for marketing will be transported on roads constructed by CARE.

Net income from 1,450 pounds of rice is a benefit attributable to CARE's rural penetration roads. With net returns of 6¢ per pound of rice, the increment is $87 per year, per family.

4/ 1974 prices in Leones were converted to current exchange rate:
US$1 = Le1.15
Le 1 = US$0.87

5/ Returns per pound and per bushel decline because the gross price (to the farmer) remains constant and because input costs increase.

6/ Milled rice is 66 percent of husk or paddy.
250 ÷ 66 = 378
378 x 12.2 = 4,612 .

(2) East

Output	Averaged Undeveloped	Average Developed
Yield of husk rice	900	1,575
Gross return @ $4.35 per bushel	$ 65.25	$ 114.18
Input costs	4.13	19.79
Net return (per acre)	61.12	94.40
Net return (per pound)	$ .07	$ .06
Net return (per bushel)	4.07	3.59

The average amount of land under cultivation per family is 3 acres and rice is grown on 50 percent of the cultivated land. With 1.5 acres of rice, total annual production before development is approximately 1,350 pounds per family.

Using the average annual consumption rate of rice per capita, (250 lbs.) and an average family of 6 people, with 1,350 pounds of rice produced per year, 2273 pounds of husk rice is required for consumption and there is a deficit of 923 pounds of rice per family. At the increased production level, 2,362.5 pounds of rice will be produced, 2,273 pounds consumed and 89.5 pounds will be marketed via CARE rural penetration roads. With net returns of 6¢ per pound of rice, the increment is 5.37 per year, per farm family. 7/

b. Groundnuts

Groundnuts are an important crop in the North, much less so in the East. Following is an estimated one acre budget for groundnuts:

Output	Undeveloped	Developed
Yield of unshelled nuts	933.33	1,300
Gross return @ 4¢ per lb.	$ 37.33	$ 52
Input costs	5.22	12.58
Net return	32.11	39.42
Net return per pound	.03	.03

Groundnuts are grown on 10 percent of the cultivated land in the North, and 57 percent of the farmers grow groundnuts. We assume that on-farm consumption is ten percent of production and that the balance will be transported to the market via CARE rural penetration roads.

7/ Total benefits are greater than $5 per year per family. Increased production for consumption is income in kind. However, only the cash increment computed in the rate of return

(1) Average cultivated holdings per family = 5 acres.

(2) Groundnuts are grown on .5 acres per family.

(3) 650 pounds per year, less consumtion of 10 percent = 585 pounds to be marketed.

(4) At a net return of 3¢ per pound, net annual income per family is $17.55.

c. Cocoa

Cocoa is an important crop in eastern Sierra Leone. Following is a one-acre development cash flow for cocoa:

ANNEX G

CARE

FEEDER ROADS PROJECT

SIERRA LEONE

REMEDIAL MAINTENANCE PROGRAMME

Prepared by:

L. J. Gallagher

Project Manager

CARE Feeder Roads Project

CONTENTS

1. INTRODUCTION

The construction of Feeder Roads in Sierra Leone is rightly regarded as one of the most effective ways of development in this Country. In particular this will provide access to the potentially rich agricultural lands in the rural area, and will provide the farmers with the opportunity of transporting their crops to the markets. It will also enable them to transport fertilizers and other farm inputs back to their villages throughout the year. However, without any effective remedial maintenance programme, necessary to preserve the road structure and associated drainage systems in good condition, the investment by GOSL and the donor agencies together with the economic and social benefits derived from an effective Feeder Road network, will not be realized in the long term.

CARE and GOSL are concerned that the success of this project may be lost due to the lack of the necessary maintenance required to provide access to the potentially rich agricultural areas that the roads will serve. Therefore, steps are being taken by the GOSL to establish a Feeder Road Unit within the Ministry of Works to handle all affairs related to the selection and supervision of construction and maintenance of Feeder Roads. Arrangements are also being made to include a provision in the FY 77/78 budget for the recurring expenditures of road maintenance which will include an amount for equipment depreciation. Due to severe financial constraints on the Government, the USAID is requested to assist with the provision of the initial capital inputs of equipment.

In the interim, while the Feeder Road Unit is being established, Government has requested CARE to manage the development and implementation of the Maintenance Program.

2. RECOMMENDATIONS

As the funds available to provide maintenance services are always limited, they must be used according to the order of priority, as given in the three requirements listed under "Maintenance Requirements". It is anticipated that the short term routine maintenance will be carried out by the communities in whose chiefdoms these roads are constructed. At present CARE is training personnel selected through consultation with the Paramount Chiefs in the basic fundamentals of road construction. On completion of the Feeder Roads within their Chiefdoms, these persons should have sufficient knowledge to form organised maintenance units using community labor from villages within their Chiefdom. In addition to this, CARE has assigned one Rural Development Programme Assistant to work with local leaders on the recruitment and organisation of local labor.

The type of maintenance required by communal labor will be described as short term routine maintenance. Maintenance under this heading includes all the operations which are carried out periodically, largely by hand, using simple hand tools. The work in this section can be considered under two main sub-headings:

a. The running surface

b. Shoulders, verges and drainage ditches and associated drainage structures.

Neglect of short term routine maintenance can lead to a general deterioration of the road, possibly to serious failure and certainly to expensive major maintenance work.

As clearly stated in this pre-amble, maintenance of this nature places heavy reliance on the use of communal, unskilled labor, using hand tools. Fortunately village road construction and maintenance involving communal labor is not a new concept to the rural Sierra Leonean. During the period of District Councils, village roads were mostly constructed and maintained by communal labor under the direction of the District Councils. When the District Councils were disbanded this responsibility was turned over to the Ministry of Works which has not, due to financial constraints, been able to cope with the added responsibility. Therefore, the move back to greater involvement of communal labor, as outlined in this proposal, appears workable and a realistic alternative to a totally government supported maintenance programme for which there are inadequate funds.

3. CONCLUSIONS

In concluding it must be emphasised that the financing of road maintenance should be considered as part of the whole problem of road economics. Consideration must also be given not only to financing purely engineering processes but also to vehicle operating cost and general benefits resulting from road maintenance.

4. MAINTENANCE REQUIREMENTS

Road maintenance will be a critical function during the initial years after construction, and should satisfy the following three requirements:

i) To maintain the flow of traffic

ii) To ensure the safety of road users

iii) To conserve the assets represented by the road, by preserving the road structure and its associated drainage systems in good condition.

4.1 Communal Labor

Maintenance of the running surface will be limited to filling potholes. Potholes start to form on a road as soon as it is opened to traffic. Minor flaws in the subgrade and sub-base are inevitable and the passage of traffic soon exposes these small areas of weakness in road construction.

The ingress of water into the subgrade of the road also causes localised areas to become soft and unable to withstand the traffic load.

Once a pothole appears, it quickly grows in size as does also the subsequent cost of repair. Should no action be taken to repair a pothole, other holes will appear adjacent to the original one. Vehicles travelling over a pothole at speed bounce violently and induce road damage beyond the original hole.

When a series of holes develop, traffic avoid that area of the road and all the traffic is concentrated on the same part of the road; this in turn encourages more road damage. Therefore, it is imperative, that maintenance repair work is carried out at the first sign of a pot-hole forming.

The hole must be cut square or rectangular, preferably so that its edges are neither parallel nor at right angles to the flow of traffic and it should also be rectangular in section. All loose material is removed, making sure that no mud, silt or water remains in the hole.

Whenever possible, the material used should be the same as the material used in the road construction; to fill a hole with a non-cohesive gravel will lead to further deterioration as the hole will continue to act as a reservoir to surface water run-off.

Maintenance of verges: the hard shoulder adjacent to the running surface and the area of ground sloping down from the shoulder to the side drain, are to be kept clear of debris and brush.

Maintenance of drainage ditches: hand clearing and/or shaping of side drains to restore gradient and ensure smooth running of water collected from carriageway, also manual cleaning of offshoot drains to ensure rapid collection and discharge of surface water. Maintenance of drainage ditches using hand tools will be directed towards the steady improvement of the shape of the drain as well as the removal of obstructions to the free flow of surface water run-off. In Sierra Leone, where rainfall is particularly heavy, a wide ditch with gently sloping sides has greater advantage over the narrow ditch. It provides a much larger surface area of evaporation and a much greater contact area between the water and the soil which permits more rapid downward perculation of run-off water.

Bush clearing: cutting, removing and disposing of tree branches, and roadside bush, to restore sight distance, eliminate traffic hazards and remove encroaching vegetation.

Pipe Culverts: manual clearing of pipe culverts, to remove silt and debris that prevents the normal flow of water. Culverts should be inspected prior to beginning of rainy season, and after periods of heavy rainfall and any debris removed immediately to ensure smooth discharge of side drains water across the road.

Bridges: whilst it is appreciated that bridge inspection and repair would be outside the scope of communal labor, it is anticipated that they would participate in some of the labor functions involved in bridge maintenance. Therefore, it is necessary that CARE provides necessary expertise to support this function. The person, whoever he may be, must be familiar with design and construction features to properly interprete what is observed at the time of inspection. He must be able to recognise any structural deficiency, assess its seriousness and take appropriate action necessary to keep the bridge in a safe condition. Each bridge is to be inspected at regular intervals, not exceeding 1 year. INTERIM inspections are required for any bridge with known deficiencies or which is in a questionable condition.

Inspection items. The inspection should include but is not necessarily limited to the following items.

(1) Approaches. Pavement condition should be checked for uneveness, settlement or roughness. Examine joints between the approach slabs and the abutment back wall which are designed for thermal movement to determine if there is adequate clearance. Also, determine if the joints are adequately sealed to prevent accumulation of non-compressible materials which will prevent normal movement. Conditions of the shoulders, slopes, drainage, and approach guard rails should be included under this heading.

(2) Water Way. Examine the adequacy of the waterway opening under the structure. The amount of debris carried by floods during the rains must also be considered. Existing banks and shore protection plus other protective devices should be checked to observe if they are sound and functioning properly. See that the waterway is not obstructed so that it affords free flow of water. Obstructions such as debris or growth may contribute to scour and may be a potential fire hazard to the structure.

(3) Piers and Abutments. Examine the footings for evidence of significant scour or undercutting. Making the inspection at the season of lowest water elevation will facilitate this work. Probing will be necessary

at many piers. This will be required at approximately five-year intervals except under unusual conditions. Particular attention should be given to foundations on spread footings where scour or erosion can be much more critical than a foundation on piles. However, it should be noted that scour and undercutting of a pier or abutment can also be serious. Examine all exposed concrete for the existence and severity of cracks and any deterioration of the concrete itself. Structural steel partially encased in structure concrete should be inspected at face of exposure for deterioration and for movement. Stone masonary should be checked for cracking in mortar joints and to see that the pointing is in good condition. Check for erosion, cavities, cracking and other deterioration of the stones. Any suspected settlement or movement should be checked with the engineers' level and compared with previous records. Actions should be taken as necessary and complete records made for future reference.

(4) Steel Girders. Examine steel for cracking and corrosion especially along the upper flanges around rivets or bolt heads, at contact surfaces where moisture may enter between flange plates, details at gusset and diaphram connections, and at the bearings. Inspect weld areas for cracks especially at unusual connections.

(5) Concrete Girders. Stems of "T" beams are to be checked for abnormal cracking and any disintegration of the concrete especially over bearings. Note any excessive vibration or deflection. Examine the soffit of the lower slab in box girder structures and the outside face of the girders for significant cracking. Prestressed concrete girders are to be examined for alignment cracking and deterioration of the concrete. Check for cracking or spalling in areas around the bearings and cast-in-situ diaphrams where creep and humping of the girders may have had an effect. When cracking is found, location of cracks and their size should be carefully noted for future reference and comparison.

(6) Expansion Joints. Poorly designed and maintained expansion joints are a constant source of trouble and should be examined carefully. Note if there is adequate space for thermal movement, if the joint is open an excessive amount and if it is clean of all debris. Examine the underside of the expansion joints so far as possible to detect any impending problem. Lack of adequate room for expansion especially in small areas of the joints will concentrate thermal expansion stresses causing the concrete to shear and spall.

(7) Dock. Concrete docks must be checked for cracking, leaching, scaling, potholes, spalling and other evidence of deterioration. Each item must be evaluated to determine its effect on the structural integrity and maintain a smooth riding surface. Evidence of deterioration in reinforcing steel must be examined closely to determine its extent. All

decks should be examined for slipperiness to determine if a hazard exists. Check drainage system to see that the decks are well drained with no areas where water will pond and produce danger to traffic. Poor deck drainage will usually contribute to deck deterioration. Check drain outlets to see that they do not discharge water where it may be detrimental to other members of the structure or to slopes and banks which could be eroded.

(8) Kerbs. Examine concrete kerbs for cracks, spaces and deterioration. Note any loss of height resulting from building up of the surfacing on the deck.

4.2 Mechanical Maintenance

The extent of mechanised maintenance is largely dependant on the ADT of any particular road. On average, statistics show, that gravel roads require grading twice a year, before and after the rainy season. This should be preferably done during the months of April/May and November/December. The operation would consist of, blading, re-shaping and smoothing of gravel surface without adding additional material. To restore proper shape, to provide proper crossfall for drainage and obtain a smooth running surface. A competent operator should be able to achieve an output of between 4/5 miles a day. Therefore, in order to grade 200 miles of road per year would require 50 working days per grading. The work method is as follows:

(1) Clear the carriageway edge on both sides

(2) Spread loose material uniformally over centre section of carriageway

(3) Remove grass, large rocks, and other objects from carriageway and

(4) Remove centre ridge by hand raking or if necessary make additional pass of grader.

Re-gravelling. Most roads in Sierra Leone are classified as "gravel roads". The term "gravel" implies a base and a wearing surface made from lateritic gravel. Laterite material, however, does not always perform ideally as a road surfacing aggregate. It is particularly susceptable to deterioration and loss of fines caused by traffic wear and the high intensity rainfalls generally experienced in Sierra Leone. Consequently, constant maintenance is required to preserve adequate service levels. If sufficient funds are not available for routine maintenance operations, laterite roadway progressively deteriorates to a point where total rehabilitation of the roadway (an expensive solution) becomes mandatory to provide even minimal traffic service.

Rate of wear on average, gravel disappears from the surface of a road at the rate of about 2" a year. Therefore, a 6" thick compacted gravel pavement ceases to exist after 3 years. These are rough estimates only, because several factors affect the rate of wear.

- efficiency of road drainage system
- effectiveness of routine road maintenance
- density and weight of traffic
- quality of gravel
- climatic conditions (rain and wind remove the fine binding material holding the pavement together)

The object of regravelling is to reinstate and improve the road surface, so that it gives a smooth ride, reduces routine maintenance and gives an all-weather road.

Reballasting Specifications. Reballasting operations will be performed in accordance with the performance standards developed for this activity. The general work method will be as follows:

1. Erect traffic warning signs.
2. Clear area and remove top soil from a pre-selected and tested laterite barrow pit.
3. Clean off loose material from carriageway and shoulder and reshape, grade and compact roadway surface to the proper uniform camber.
4. Wet surface of road if necessary.
5. Excavate laterite material and haul to site.
6. Spread laterite in a single (as required) layer over the carriageway width only.
7. Mechanically compact layer to produce in-situ densities not less than 95% of the maximum dry density as determined by B.S. 1377, Test 10 (Proctor).

Equipment Requirements. The equipment spread for the road maintenance unit is based on the following assumptions:

A. 400 miles of roads are required to be maintained.

B. 20% of the roads constructed will have an ADT in the range of 30-150 vehicles.

1. 50% of these roads are to be reballasted annually at the rate of one mile per two days.

2. On the alternate year routine maintenance will include one to three grades passes, depending on general road condition. One grader can complete four miles per day.

C. The remaining 80% of the roads constructed will have an ADT of 0-50 vehicles.

1. Three-fourths of these roads will require, as part of their routine maintenance, one grader pass per year. One grader can complete four miles per day.

2. The remaining one-fourth will require reballasting at the rate of one per day.

Qty.	Description
2	Graders
1	Loader
4	5 ton Dump Trucks
2	1,000 gal. water tankers
1	12 ton Steel Wheeled Roller
1	Dozer with Ripper attachment
2	Tractors with Drag
3	Motorcycles

Projected additional equipment to be purchased in FY 79/80 from the Equipment Depreciation Fund to maintain the additional 124 miles.

Qty	Description
1	Grader
2	Dump Trucks
1	Tractor with Drag

5. PLAN OF OPERATIONS

A. FY 76/77

1. CARE will:

a. Assign one Rural Development Programming Assistant to work with the local leaders on the recruitment and organisation of communal labor.

b. Provide technical assistance as and when required to inspect the condition of the roads and structures and supervise the required road and structures maintenance activities.

c. Provide the hand tools required by the communal labor.

d. Allocate earthworks equipment as and when required for mechanical maintenance activities.

2. GOSL will:

a. Establish a Feeder Road Unit within the Ministry of Works Headquarters to handle all affairs related to the selection and supervision of construction and maintenance of feeder roads.

b. Include in the FY 77/78 Development Estimates provision for:

(i) The establishment and running of the Feeder Road Unit; and

(ii) The recurring costs for the maintenance of the feeder roads constructed.

B. FY 77/78

1. CARE will:

a. Continue to develop the overall Feeder Maintenance Program.

b. Establish a road maintenance equipment fund. The operating cost per hour includes an amount for depreciation and it is this portion of the road maintenance costs financed by GOSL which is to be depreciated in the fund.

2. GOSL will:

a. Release to CARE the funds budgeted for the Feeder Road maintenance program.

b. Include in the FY 78/79 development estimates provision for:

(i) The recurring costs of the Feeder Road Unit

(ii) The recurring costs for the maintenance of the Feeder Roads constructed.

c. Develop a plan for the phase-over of feeder road maintenance responsibilities from CARE to Ministry of Works with implementation to commence in FY 78/79.

d. Establish a Feeder Road Unit in the MOW Area Engineer Office in Kenema, Bo and Makeni which will ultimately have full responsibility for the supervision of feeder road maintenance in the respective areas.

e. The Area Engineer - Kenema to depute to CARE two Overseers who will supervise road maintenance activities in that area.

C. FY 78/79:

Plan of operations to be outlined in MOW phase plan.

6. ROAD MAINTENANCE UNIT OPERATING COSTS

A. Annual Projected Expenditures for the maintenance of 400 miles

1. Equipment Operating Costs

Qty	Description	Cost per hour	Operating Hours	Annual Operating Cost
2	Graders	Le. 14.88	2000	Le. 59,520
1	Loader	11.50	"	23,000
4	Dump Trucks	5.35	"	42,800
2	Water tankers	5.35	"	21,400
1	12 ton Roller	10.00	"	20,000
1	Dozer	22.00	"	44,000
2	Tractors	5.50	"	22,000
3	Motorcycles	0.50	"	3,000

2. Hand Tools 8,000

3. Materials (Cement, Plywood, etc.) 8,000

4. Personnel
   a. Management 15,000
   b. Supervision/overseer Leo. 44/hr.x 2000 hrs. x 6 persons 5,280
   c. Casual labor (non-communal) 120 persons x Le0. .15/hr. x 2,000 hrs. 36,000

Le. 308,000

B. Calculation of Recurring Expenditures to be covered by GOSL

1. Cost to maintain 80 miles (20% of 400 miles) with ADT in the range of 50-150 vehicles.

a. 40 miles (50%) will require reballasting at rate of Le 3350/mile	Le 134,000
b. 40 miles will require routine maintenance at rate of Le 200/mile	8,000

2. Cost to maintain 320 miles with ADT in the range of 0-50 vehicles

a. 80 miles (25% of 320 miles) will require reballasting at rate of Le 1813/mile	145,280
b. 240 miles will require routine maintenance at the rate of Le 80/mile	21,360
	Le 308,640

ANNEX G

CALCULATION: COST PER MILE OF ROAD CONSTRUCTED

Total Project Cost[1/]		$8,521,000
Less:		
Residual Value of Equipment Purchased		
a. Purchased July '77 $ 697,800 x 2/5 = $279,000		
b. Purchased Nov. '77 $1,135,500 x 3/5 = 681,000		
	960,000	
Road Maintenance Costs	1,010,500	
Bridge Construction	260,000	
		2,230,500
Cost of Construction 400 miles		$6,290,500

Average Cost per Mile = $15,700

Note:
1/ Does not include the value of the equipment on hand as of June 30, 1977

Construction Targets

(FY)	EAP	NAP	Other*	Total
78	60	30	10	100
79	35	95	20	150
80	20	110	20	150
	115	235	20	400

*Peace Corps and Tormabom areas.

PERSONNEL REQUIREMENTS

Job Title	Bo Makeni Work Shop	UNITS 1	2	3	4	Road Maint.	Bridge Construction	Bo F/T	Culvert Production Installations South East	North	TOTAL MAT	CONTRACT MAT	INTER'L	VOL.	MOM
Project Advisor								1					1		
Project Manager								1				1			
Asst. Project Manager		1/3	1/3					1/3				1			
Bo Workshop Manager	1												1		
Makeni W/Shop Supv.	1											1			
Senior Site Engr Makeni				½	½								1		
Structures Engineer		½	½	½	½		3					1	1	3	
Drainage Engineer		1	1	1	1									4	
Earthworks Engineer		1	1	1	1	1								5	
Mech. Engineer	4	½	½	½	½						1	1		4	
Business Manager								1						1	
Lathe Operator	1										1				
Welder	3	½	½	½	½						4			1	
Fitters	10	2½	2½	2½	2½	2					22				
Apprentice Fitters	4	1	1	1	1						8				
Greasers		1	1	1	1						8				
Electrician	4										3			1	
Tireman	2	½	½	½	½						4				
Foreman	2	1	1	1	1		4				10				
Supervisors	1	1	1	1	1	2	6		2	2	15				2
Equipment Operator		8½	8½	8½	8½	5					39				
Drivers	5	11½	11½	11½	11½	6	5	5			55				
Tractor Drivers		1	1	1	1	2					6				
Carpenters		9	9	9	9		20				56				
Masons		9	9	9	9		20				56				
Steel Culvert Fitter		1	1	1	1						4				
Steel Bender Fixers							16		3	3	22				
Communal Lab-Foreman		2	2	2	2		4				12				
Surveyor							1	4			5				
Draughtsmen							1	1			2				
Chainmen							3	16			19				
Banksmen		1	1	1	1						4				
Fuel Clerk	2	½	½	½	½		1				5				
Cost Clerk							1	2			3				
Paymaster								2			2				
Office Messenger								1			1				
Loadloader Mate	2										2				
Storekeeper	5						2		2	2	11				
Watchman	8	3	3	3	3		8		2	2	32				
Timekeeper	1	½	½	½	½		2				5				
Unskilled Labor	4						40		10	10	64				
Accountant								1			1				
Rural Development Project Asst.						1					1				
Secretary								1			1				
	60	57⅚	57⅚	52	52	20	137	36⅓	19	19	481	5	4	19	2

ANNEX G

ROAD MAINTENANCE BUDGET c/

Description	77/78	78/79	79/80
Salaries	$ 17,000	$ 20,000	$ 76,000
Equipment Maintenance & Repair	30,000	34,000	125,000
Equipment Depreciation	43,750	43,750	87,500
Fuel & Oil	20,000	23,000	90,000
Tools, Materials	5,000	6,000	22,000
	$115,750	$126,750	$400,500

EQUIPMENT INPUT

Qty.	Description	Unit Cost	Total Cost	Funding Source
2	Grader	$72,500	$ 72,500	AID
1	Loader	55,000	55,000	"
3	5-Ton Dump Truck	20,000	60,000	IBRD
2	7-Ton Dump Truck	24,000	48,000	"
1	Water Tank	23,000	23,000	"
1/3	Static Roller	30,000	10,000	GOSL b/
1	Dozer with Ripper	106,000	106,000	AID
2	Tractor w/Drag	30,000	60,000	CARE b/
3	Motorcycle	1,000	3,000	IBRD
			$437,500	
			$ 87,500/yr.	

Depreciate over five years:

(FY)	MAINT.	CONSTR.
77/78	43,750	a/
78/79	43,750	43,750
79/80	87,500	

Note: a/ AID equipment input will not be available until May 1978
b/ Already available; therefore will not be shown as a project cost.
c/ Projected by CARE.

ALLOCATION OF EQUIPMENT

Description	Avail.	New	East & South Unit 1 Avail.	East & South Unit 1 New	East & South Unit 2 Avail.	East & South Unit 2 New	North Unit 3 Avail.	North Unit 3 New	Road Maint. Avail.	Road Maint. New	Giema Tungi
TS-Scraper	1	1	1					1			
Front End Loader	2	1			1	1			1		
82-30 Dozer	2						2				
D-7 Dozer	2		1		1						
D-6 Dozer	1		½		½						
D-4 Dozer	2		1				1				
Vib. Roller	2	1	1			1	1				
12 ton Static Roller	2		1/3		1/3		1		1/3		
Excavator/Loader	1										1
Tractor-Trailer	6		1		2		1		2		
Grader	5	2	2		2			2	1		
5 Ton Tipper	12		2		3		2		3		2
7 Ton Tipper		7				5				2	
Plate Vibrator		8		2		2		2			2
Concrete Mixer	4	1		1	1		2				1
Landrover Mobile Repair Units	3		1		1		1				
Fuel Tanker	1	1	½		½			1			
Water Tanker	1	2	1			1		1			
Delivery Truck	2	1									
Service Truck	1	1	½		½			1			
Rock Crusher	1	1	½		½			1			

Equipment Spread: AID Equipment input not yet arrived.
Project Period: July 1977 - Sept. 1978
Targeted Output: 100 Miles

ANNEX G (1 & 2)

ROADS PROPOSED FOR CONSTRUCTION

November 1977 - September 1978

A. Eastern Sierra Leone

Location	Approx. Miles	Road No.
Mambona - Jokibu	2.8	R 30A
Fabaina - Kigbai	2.1	R 30B
Segbwema - Daru	5.0	R 120
Baiima - Bandajuma	1.0	R 123
Manoworo - Salon Woro	1.4	R 34
Yoya - Madina	4.2	R 75
Gawama - Giehun	0.9	R 76
Giema - Madina	5.6	R 95
Kotuma Junction - Sandaru	9.1	R 95A
Mendekelema - Joru Junction	12.0	R 41
Daru - Baiima	4.2	R 43
Kundawahun - Wokoya	3.0	R 44
Levuma - Tawahun	1.2	R 35
Wokoya - Sahun	5.0	R 45
Waima - Niagorehun	1.5	R 48
	60.0	

B. Northern Sierra Leone

		Chiefdom
Makama - Magbinthon	8.0	Bombali Sebora
Rosint Junction - Konta	6.0	" "
Matene - Manunko	4.0	" "
Safroko Limba (Binkolo - Masapi)	12.0	Safroko Limba
	30.0	

C. Others

Giema - Tungie	4.0	Valunia
Madina - Mapamuri	3.0	Kunkie-Barina
Muluma - Kpongboku	3.0	Upper Bambara
	10.0	

ROADS PROPOSED FOR CONSTRUCTION

November 1978 - September 1979

A. Eastern Sierra Leone

Location	Approx. Miles	Road No.
Mapoima - Busu	5.0	R 46
Niagorehun - Busu	5.0	R 47
Waima - Kortumahun	2.5	R 49
Felegoma - Vaama	1.0	R 138
Jeoma - Kaipo	10.0	R 58
Kpeyima - Diamei	2.5	R 130
Goura - Komende	2.5	R 132
Kobebu - Gandorhun	2.0	R 131
Panima - Yibeima	4.0	R 87
	34.5	

B. Northern Sierra Leone

		Chiefdom
Binkolo - Masapi	5.0	Safroko Limba
Kamanka - Kitori	8.0	" "
Binkolo - Thakoblina	2.0	" "
Binkolo - Mapaki	15.0	" "
Binkolo-Kabonka-Bombanbana	10.0	" "
Mabanta-Masimera-Mafonike	2.0	Makari Gbanti
Masapri-Mankene-Makeh	3.0	" "
Robure - Robuia	1.0	" "
Masungbo - Rokupr	2.0	" "
Mile 3 - Rosint	1.0	" "
Paki-Rosint-Mabala	5.0	Paki Massabong
Mayagba-Airfield-Mayendeh	6.0	" "
Mapaki - Mafina	2.0	" "
Kalangba - Madina	9.5	Gbendembu-Gowahun
Gbendembu - Kambia	14.0	" "
Lohindi - Mosaia	2.5	" "
Kalangba - Lohindi	8.5	" "
	96.5	

C. Others

Torma Bum	10.0	Bum
Giema Tungie	4.5	Valunia
Madina - Mapamuri	2.5	Kunkie-Barina
Muluma - Kpongboku	3.0	Upper Bambara
	20.0	

ROADS PROPOSED FOR CONSTRUCTION

November 1979 - September 1980

A. Eastern Sierra Leone	Approx. Miles	Road No.
Gandorhun - Potoru	9.5	R 82
Futa - Massa	14.0	R 53A
Massina - Kpaku	1.5	R 135
Senehun - Nyandehun	1.5	R 80
Luyange - Henima	1.5	R 129
Jembeh Junction - Jembeh Swamp	3.0	R 128
	21.0	

B. Northern Sierra Leone		Chiefdom
Kalangba - Masungbo	5.0	Gbendembu-Gowahun
Mahamwa - Tanehun	6.0	" "
Mambala - Tambehun - Mambala	6.0	" "
Tambiamu - Madina Road	4.5	" "
Mafure - Makete	8.5	" "
Manjaga - Kagberi	2.5	" "
		Road No.
Mayanna - Masena	2.0	P 1
Matotoka - Matunkara	9.0	P 2
Makent - Sengbe	2.0	P 3
Mapaki - Matufun	2.0	P 4
Nosenti - Makajba	1.0	P 5
Pendembu - Lubaia	1.0	P 6
Kagbumbo - Bundane	4.0	P 7
Mara - Beach	1.0	P 8
Mara - Maminia	2.0	P 9
Rosanda - Masingbi	2.0	P 10
Matutu - Mamaka	4.0	P 11
Sirt - Mafina	2.0	P [illegible]
Mayagba - Kawlaw	1.0	[illegible]
Mayende - Makari	3.0	P [illegible]
Magburaka-Makump (old railway line)		P 15
Makump - Mamanu)	7.0	P 16
Mapake - Makera	3.0	P 17
Mapaki - Masobo)	2.0	P 18
Masint - Mamar)	1.0	
Mamar - Masobo	1.0	
Masobo - Makent	2.0	P 19
Mamankuro - Junction	2.0	

Location	Approx. Miles	Road No.
Petam-Bonna-junction	2.0	P 20
Matura - Maseri	3.0)	P 21
Lungba - Masint	2.0)	
Madibi - Mamila	1.0)	
Konta - Makiri - Mayendi	4.0	P 22
Manumko - Mankare - Konta	3.0	P 23
Masapri - Masungbo	2.0	P 24
Madina-Masogo-Mayeki-Junction	5.0	P 25
	108.5	

C. Others

		Chiefdom
Torma Bum	10.0	Bum
Giema - Tungie	10.0	Valunia
	20.0	

			EAP				NAP						
			Unit 1		Unit 2		Unit 3		Unit 4		Rd. Maint.		Glenn
Description	Avail.	New	Avail.	New	Avail.	New	Avail.	New	Avail.	New	Avail.	New	Tungi
TS-14 Scraper	2	2	1			1	1			1			
Front End Loader	3	2		1	2			1			1		
82-30 Dozer	2						2						
D-7 Dozer	2		1		1								
D-6 Dozer	1	3		1	1				1			1	
D-4 Dozer	2		1				1						
Vib. Roller	3	1	1		1		1		1				
12 ton Static Roller	2		1/3		1/3		½		½		1/3		
Excavator/Loader	1												1
Tractor-Trailer	6		1		1		1		1		2		
Grader	7	2	2		2		2			2	1		
5 Ton Tipper	12	6	2	3	3		2	3			3		2
7 Ton Tipper	7				5						2		
Plate Vibrator	8			2		2		2		1			1
Concrete Mixer	6		1		1		2		1				1
Landrover Mobile Repair Units	3	1	1		1		1			1			
Fuel Tanker	2		½		½		½			½			
Water Tanker	3	2	1		1		1			1		1	
Delivery Truck	3												
Service Truck	2		½		½		½			½			
Rock Crusher	2	1	½		½		1			1			

ANNEX Q
(2 of 2)

Equipment Spread including AID Equipment Input
Projected Period: Oct. 1978 - Sept. 1980
Targeted Output: 300 Miles

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 77 to FY 79
Total U.S. Funding $3,991,000
Date Prepared: July, 1977

Master Log Frame
Project Title CARE Rural Penetration Roads

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
PROJECT OUTPUTS:			
1. Construction/rehabilitation of	1. End of FY (Cumulative):	1. CARE/Sierra Leone records	1. Weather conditions permit 32 full weeks of construction time.
a. rural penetration roads	a. Miles (total) 1978: 100; 1979: 250; 1980: 400 IADP - North 1978: (30); 1979: (95); 1980: (110) Swampland 1978: (10); 1979: (10); 1980: (10) IADP - East 1978: (60); 1979: (35); 1980: (20) Rice project 1978: -; 1979: (10); 1980: (10)	2. USAID/Liberia engineer reports and annual evaluation.	2. Spare parts are in adequate supply to keep equipment availability above 70%.
b. bridges and box culverts	b. Culverts/bridges 1978: 10; 1979: 10; 1980: 11		3. Equipment deliveries on time to permit use as scheduled.
c. pipe culverts	c. Pipe culverts 1978: 370; 1979: 550; 1980: 550		4. Estimated level of commercial labor forthcoming.
2. Unit within MOW funds and supervises road maintenance.	2. a. MOW participates in OJT conducted by CARE. b. Maintenance funds in GOSL beginning FY 1978		5. GOSL high priority placed on this project continues.

PROJECT INPUTS: 1/ $(000)

	7/77-9/78	10/78-9/79	10/79-9/80	TOTAL	%
AID: Local personnel construction equipment	1,747.4	1,169.7	1,073.9	3,991.0	47
GOSL: Equipment & equipment operators for road maintenance and local personnel costs.	489.7	515.5	787.7	1,792.9	21
CARE: U.S., third country and local personnel costs	370.4	385.4	445.0	1,200.8	14
IBRD: Road construction equipment	911.2	101.7	186.0	1,198.9	14
Peace Corps and Volunteer Services Overseas (V.S.O. - U.K.): U.S., third country and local personnel	112.5	112.5	112.5	337.5	4
	$3,631.2	2,284.8	2,605.1	8,521.1	100

1/ See Financial Analysis: AID Circular Airgram Number A-530 (dated 9/27/76) states that "...a 25% contribution to total life of project costs from non-AID sources will be expected for all OPGs. This would include case and in-kind contributions from PVOs, local collaborators and other non-governmental donors as well as from host governments, other governments and international organizations."

Annex H

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 77 to FY 79
Total U.S. Funding $3,991,000
Date Prepared: July, 1977

Master Log Frame
Project Title CARE Rural Penetration Roads

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
SECTOR GOAL: To increase the per capita income of the rural population of Sierra Leone	1. Average cash income per rural household exceeds $365 per annum. 2. More than 40% of rural households earn more than $469 per annum.	World Bank Assessment	1. Rural terms of trade with urban sector will not deteriorate. 2. Favorable GOSL action on taxes, agricultural pricing.
PROJECT PURPOSE: To provide farmers in the eastern, southern and northern areas with continuing access to agricultural inputs and market outlets.	**END OF PROJECT STATUS:** 1. Extension services: An estimated 270 extension agents travel on penetration roads to provide agricultural services to estimated 14,800 rural families (143 direct beneficiaries). 2. Increasing quantities of produce including rice, cocoa, and groundnuts transported on penetration roads. 3. Increasing quantities of ag supplies (e.g., fertilizer and improved seed) are transported on penetration roads. 4. 624 miles of penetration roads maintained regularly by an independent self-sustaining unit operated/funded by the MOW.	Assessments conducted by: (a) World Bank (IADP) (b) USAID/Liberia and CARE/Sierra Leone	1. IADP/GOSL extension services will be provided at a ratio of 1:40. 2. Prices offered to farmers will induce increased production and marketing of crops. 3. Transport systems expand adequately to meet marketing needs. 4. All donor contributions received on schedule.