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UNCLASSIFIED

**UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D. C. 20543**

CARIBBEAN REGIONAL

PROJECT PAPER

**PRODUCTIVE INFRASTRUCTURE REHABILITATION
(AMENDMENT)**

AID/LAC/P-110/1

Project Number: 538-0082

UNCLASSIFIED

AGENCY FOR INTERNATIONAL DEVELOPMENT
PROJECT DATA SHEET

1. TRANSACTION CODE C A = Add
C = Change
D = Delete

Amendment Number 2

DOCUMENT CODE 3

2. COUNTRY/ENTITY
REGIONAL DEVELOPMENT OFFICE/CARIBBEAN

3. PROJECT NUMBER
538-0082

4. BUREAU/OFFICE
LATIN AMERICA AND THE CARIBBEAN (LAC) 05

5. PROJECT TITLE (maximum 40 characters)
PRODUCTIVE INFRASTRUCTURE REHABILITATION

6. PROJECT ASSISTANCE COMPLETION DATE (PACD)
MM DD YY
09 30 87

7. ESTIMATED DATE OF OBLIGATION (Under 'B.' below, enter 1, 2, 3, or 4)
A. Initial FY 82 B. Quarter 4 C. Final FY 85

8. COSTS (\$000 OR EQUIVALENT \$1 =)

A. FUNDING SOURCE	FIRST FY <u>82</u>			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total	7,650		7,650	14,650		14,650
(Grant) ST. VINCENT	(2,500)	()	(2,500)	(3,250)	()	(3,250)
(GRANT) ST. LUCIA	(5,150)	()	(5,150)	(1,400)	()	(11,400)
Other 1.						
U.S. 2.						
Host Country ST. VINCENT		465	465			
HOST COUNTRY ST. LUCIA		800	800		637	637
TOTALS	7,650	1,265	8,915	14,650	1,942	16,592

9. SCHEDULE OF AID FUNDING (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1) ESF	701	821		11,650		3,000		14,650	
(2)									
(3)									
(4)									
TOTALS				11,650		3,000		14,650	

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)
061

11. SECONDARY PURPOSE CODE
133

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code

B. Amount

13. PROJECT PURPOSE (maximum 480 characters)

To increase productivity in St. Vincent and St. Lucia, particularly in the agricultural sector by providing dependable access by road from productive areas to major population centers and ports.

14. SCHEDULED EVALUATIONS

Interim MM YY MM YY Final MM YY
06 85 09 87

15. SOURCE/ORIGIN OF GOODS AND SERVICES
 000 941 Local Other (Specify)

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a _____ page PP Amendment.)
The amendment will increase total AID funding by \$3,000,000; of which \$250,000 will be granted to St. Vincent and \$2,750,000 to St. Lucia. The PACD has been extended from 09/30/85 to 09/30/87.

17. APPROVED BY
Signature: James S. Hottaway
Title: JAMES S. HOLTAWAY
DIRECTOR
Date Signed: MM DD YY
09 20 85

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION
MM DD YY
| | | | | |

AMENDMENT NUMBER TWO

TO THE
AUTHORIZATION

NAME OF COUNTRIES: St. Lucia and St. Vincent and the Grenadines

NAME OF PROJECT: Productive Infrastructure Rehabilitation

NUMBER OF PROJECT: 538-0082

1. Pursuant to Part II, Chapter 4, Section 531 of the Foreign Assistance Act of 1961, as amended, the Productive Infrastructure Rehabilitation Project for St. Lucia and St. Vincent was authorized on September 17, 1982 and amended on September 30, 1983. That authorization is hereby further amended as follows:

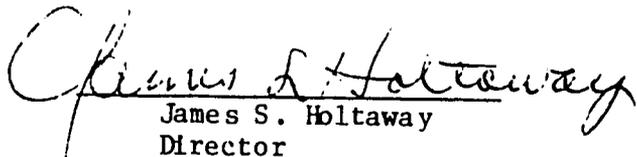
- (a) The first paragraph shall be deleted and the following paragraph substituted in lieu thereof:

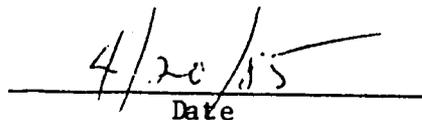
"Pursuant to Part II, Chapter 4, Section 531 of the Foreign Assistance Act of 1961, as amended, and to Redlegation of Authority No. 133.3, I hereby authorize a grant to St. Lucia of not to exceed Eleven Million Four Hundred Thousand United States Dollars (US\$11,400,000), the "Authorized Amount", and a grant to St. Vincent of not to exceed Three Million Two Hundred Fifty Thousand United States Dollars (US\$3,250,000), the "Authorized Amount", to help in financing certain foreign exchange and local currency costs of goods and services required for the project as described in the following paragraph".

- (b) The third paragraph shall be deleted and the following paragraph substituted in lieu thereof:

"I approve the total level of A.I.D. appropriated funding planned for the Project of not to exceed Fourteen Million Six Hundred Fifty Thousand United States Dollars (US\$14,650,000) of grant funding during the period FY 1982 through FY 1987".

2. The authorization cited above remains in force except as hereby amended.


James S. Holtaway
Director


Date

Clearance

RLA:TCarter

C/ENG:MDeMetre

~~CPO:JConnolly~~

C/CPO:JStephenson

A/CONT:GCa vanagh

Drafted by:ENG:Cleaford:cy

RLA:TCarter
4/19/85

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1	AID Amendment Financing by Component
2	Summary Cost Estimate
3	Road Rehabilitation Program - Amendment Two
4	Project Implementation Schedule
5	Commodity Procurement Summary

/ /

I. SUMMARY AND RECOMMENDATIONS

A. Recommendations

RDO/C recommends that AID grant an additional \$2,750,000 to the Government of St. Lucia, and an additional \$250,000 to the Government of St. Vincent and the Grenadines; and that the Project Assistance Completion Date (PACD) for the Productive Infrastructure Rehabilitation (PIR) Project be extended from the present date of September 30, 1985 to September 30, 1987.

B. Summary Project Description

In St. Lucia the amendment will finance the rehabilitation of an additional 11 road segments comprising approximately 23 miles. The GOSL has submitted a prioritized list which describes location, present condition, justification for rehabilitation, and estimated cost. Each segment has been described and the choice of the segment for rehabilitation has been justified. The majority of the road segments are located in banana producing areas, and road rehabilitation is necessary if this delicate crop is to be transported to market without bruising.

In St. Vincent the two-mile road segment to be rehabilitated has been identified and a cost estimate developed. This road segment, from Greiggs to South Union, connects the previously rehabilitated Vigie Highway with the arterial Windward Highway.

The Ministries of Communications and Works will submit to RDO/C a firm cost estimate, construction schedule, and economic analysis (including internal rate of return analysis) for each specific road segment before undertaking any construction.

Following review and approval by RDO/C, a fixed amount reimbursement (FAR) agreement will be entered into whereby each MCW will agree to complete rehabilitation of the specific road segment for the agreed fixed amount. The MCW's will use their own work forces, including their own managerial, administrative and supervisory personnel, to complete rehabilitation.

Funds will continue to be provided for the services of a Project Manager on a personal services contract to supervise Project activities in both countries. The Project Manager is primarily responsible for liaison with AID and assists in the overall management and execution of Project activities.

II. BACKGROUND

A. Project Setting

St. Lucia and St. Vincent face a range of economic constraints common to newly independent small island nations. Both countries have a limited resource base, and each has had its public sector budget strained by emergency programs initiated after hurricane damage to both public and private properties, especially in the agricultural sector.

In responding to these critical and unforeseeable needs, both governments have had to reduce their normal level of financial support in essential areas. Road maintenance and repair have in particular been curtailed, and new road construction has been nearly eliminated. Recent budget allocations for repair and maintenance of roads have barely been adequate to undertake even minimal maintenance of the national road networks, and important segments of that road system have fallen into a serious state of deterioration. Many are now in such poor condition that they can neither be restored nor maintained within present government capabilities. Further, the maintenance of feeder roads is so low a priority for the use of limited funds that many of them have become passable only in dry weather with 4-wheel drive vehicles.

In response to the development problem of maintaining the road networks in St. Vincent and St. Lucia, the FY 82 PIR Project financed a program of road and bridge rehabilitation activities carried out by the Governments' respective Ministries of Communications and Works (MCW). St. Lucia, the larger of the two islands, has more than twice as many miles of paved road as St. Vincent and the greater need for road rehabilitation assistance. Additionally the Construction Management Unit which is contracted to the St. Lucia Ministry of Communications and Works recently completed a five year EDF-financed feeder road Project, during which it constructed or restored more than 70 miles of rural access roads. Because of the greater need for rehabilitation assistance demonstrated in St. Lucia and the presence of a Construction Management Unit with proven experience in the type of road improvement envisaged, the GOSL received approximately 74% of total AID funds under the original PIR allotment and Amendment #1.

B. Past Project-Financed Activities

The Productive Infrastructure Rehabilitation (PIR) Project was obligated in September, 1982 in the amount of \$7.65 million with a Project Assistance Completion Date of September 30, 1985. \$5.15 million went to the Government of St. Lucia for the rehabilitation of 65 miles of primary and feeder roads, and the procurement of associated technical assistance and equipment. The

remaining \$2.5 million was granted to the Government of St. Vincent for the rehabilitation of 12 miles of primary roads and three bridges, and associated activities. During the first 15 months of implementation, St. Lucia successfully completed all 65 miles of road.

In St. Vincent the majority of the first year was spent mobilizing the staff and equipment required to rehabilitate roads, and only 2 miles of road were completed.

Amendment #1 to the Grant Agreement, which was signed in September 1983, obligated an additional \$4.0 million to the project; \$3.5 went to St. Lucia to rehabilitate an additional 44 miles, bringing total road rehabilitation to 109 miles.

In St. Vincent, Amendment #1 provided an additional \$300,000 to meet higher than anticipated rehabilitation costs for the original series of road segments. Amendment #1 also included \$150,000 to "top off" the salary of a Senior Engineer assigned to the St. Vincent MCW and \$50,000 to carry out an institutional study of the MCW.

Under both tranches of the Project, rehabilitation activities have included patching, resurfacing, installation and repair of drainage structures, and repair of headwalls and bridges. Work is financed under the Fixed Amount Reimbursement (FAR) system. Construction is being supervised by MCW personnel, and overall project activities are managed by an expatriate consultant.

Although the Project has focused on road rehabilitation in both countries, some assistance is also being provided to upgrade the capabilities of the Ministries of Communications and Works to maintain roads on a continuing basis. AID has provided several pieces of road equipment essential to timely completion of rehabilitation activities. This equipment will also upgrade road maintenance capabilities upon project completion.

To respond to the employment and foreign exchange problems the Project has emphasized the use of labor intensive methods in road rehabilitation, and ultimately provides a significant foreign exchange transfer. Direct employment generation in St. Lucia ranged from 251 to 572, and averaged 361 daily paid workers over the first 25 months of the project. When labor associated with subcontractors is added, total employment ranged to 750 workers.

C. Project Achievements And Setbacks

1. Achievements

St. Lucia has efficiently used and expended funds provided under the Project to rehabilitate 109 miles of road and one bridge over a period of 30 months. Employment, mostly from the ranks of the otherwise unemployed, averaged 361 daily paid labourers during the 30 month period. A Crown Agents Contract, funded by the GOSL, provided three Management Staff - an Accountant/Office Manager, a Construction Manager, and an Equipment Supervisor.

The AID-financed Project Manager was installed and located in St. Lucia from the start of the Project. He monitored, coordinated and supervised activities through weekly divisions of time between St. Lucia and St. Vincent. The Project Manager also initiated all funding documents, prepared economic analyses, arranged the procurement of approximately one million dollars of equipment, and assisted in the development of a four week training course for 25 road maintenance foremen from St. Lucia and St. Vincent.

The St. Lucia Ministry of Communications and Works has improved considerably in its conduct of road maintenance planning and programming. An inventory of the road system has been initiated and, together with regular traffic counting, will form a basis for a maintenance plan. The MCW is now finalizing a five year road rehabilitation and maintenance plan to be budgeted incrementally in coming annual budgets. During calendar year 1984 the MCW spent EC\$5,575,658 for the general maintenance of roads and bridges. Also, two new privately owned asphalt premix plants were erected in the South, and government contracts were awarded for part of their output to complement the premix output of the government-owned plant in the North.

The AID-funded four week training course for Foremen and Road Supervisors was successfully completed by 25 participants. The MCW may seek funding to conduct another course. The first course only involved participants from St. Lucia and St. Vincent. There is a demonstrated need for an exchange of ideas and practices among several Caribbean countries, all of which are interested in improving their road maintenance activities by the most efficient and economical methods. Funding is budgeted in this Amendment to conduct another similar course but with an expanded attendance to include road maintenance technicians from other Caribbean States, specifically Grenada and Dominica. The direct costs of participation of any personnel from non-project countries will be financed from sources outside the project.

2. Setbacks

In St. Vincent, work under the Project began in May 1983, about six months behind schedule. This delay was principally due to the inability of the GOSV to assign adequate staff to the Management Team, and delay in the selection and assignment of the AID-financed, full time Construction Manager until April 1983.

In addition, the St. Vincent staff, laborers, and equipment operators were not familiar with procedures for cost effective construction control or the proper management of force account type work. This resulted in slow and costly progress during rehabilitation of the first road segment.

The resulting cost overrun was financed by the GOSV, while AID provided supplemental project funds in Amendment #1. However, by the close of 1983, the efficiency of the Project Management and work force had improved and work progressed within schedule. By mid-1984, progress exceeded that originally scheduled and the 12 mile road rehabilitation program was completed on March 15, 1985, ahead of schedule. Similarly, bridge rehabilitation work, after a late start, has progressed rapidly and is now nearing completion.

The death of the AID-financed Construction Manager in September, 1984 left a gap in on-site Project Management; however, the Project Manager then devoted more time to direct involvement in St. Vincent activities. Work remaining in March 1985 within the existing AID financing involves completion of bridge rehabilitation. Overall project completion is expected by the end of April 1985.

The second Amendment will provide the funds needed to complete nearly two more miles of rehabilitation in St. Vincent for a total of 14 miles. The cost of this work is estimated at \$311,000. A small amount of funding remains in the Project Budget for use on Miles 13 and 14. The Ministry and Project Management Staff are now fully capable of completing this work by September 1985, the original Project Completion Date.

D. Lessons Learned

Particular achievements and lessons learned during the two and a half years of project activity in St. Lucia include:

1. Economical road reconstruction can be performed without costly private sector engineering design, supervision, and construction assistance;

2. Economical and efficient force account construction can be achieved with carefully controlled inputs of management and equipment;
3. With proper management roads can be constructed or rebuilt within a reasonable budget using construction methods practiced in the host country;
4. Macro-benefits, through increased and improved production and transport of agricultural products, and micro-benefits resulting from employment opportunities which generate income for injection into the economy, can be obtained through AID-financed infrastructure projects. Although an indepth evaluation quantifying benefits has not been completed, obvious indicators include:
 - a. Increased cultivation of lands with cash crops (bananas and other marketable produce);
 - b. Increased traffic growth and residential development along corridors of rehabilitated roads;
 - c. Increased production of and less damage to bananas. Bananas previously carried in bulk to regional boxing plants were subjected to damage during transport over poor roads. The Project's improved roads have facilitated the establishment of more field boxing plants where bananas are packed for export in the field;
 - d. Increased development of private sector construction equipment owners and operators, resulting from contracts for services under the Project.

The experience gained in St. Lucia supports the feasibility of AID's developing similar infrastructure programs in other countries using the force-account and FAR approach.

However, lessons learned through this Project also point out conditions which limit achievements. Major constraints have included dependence upon critical elements outside the control of the project management such as supply of equipment and materials, and the lack of experienced senior management and middle management personnel. For example, if equipment and its repair and operation, or the provision of rock and asphaltic materials, are outside the control of the Project team, the resulting delays tend to increase costs and reduce efficiency.

E. Other Donor Assistance

In St. Lucia, the European Development Fund (EDF) completed 70 miles of road construction and rehabilitation in September 1982 under the direction of the Crown Agents' Construction Management Unit. The Caribbean Development Bank completed reconstruction of approximately 20 miles of feeder roads in the eastern portion of the Island in 1982, and the British Development Division (BDD) provided approximately \$300,000 for the repair of a major roadway slide failure in the same year.

Discussions and negotiations between the Government of St. Lucia and the CDB regarding an EC\$6 million loan to fund feeder road construction and partially fund (with GOSL inputs) the final design and preparation of contract documents for the construction of the Castries-Soufriere Road, are under way. A feasibility study estimated construction at about US\$13.5 million. The GOSL is still seeking international assistance in financing.

In St. Vincent, the British Development Division (BDD) has financed two long-term consultants and several short-term equipment specialists for the Ministry of Communications and Works during the last two years. The Caribbean Development Bank funded the construction of 10 miles of feeder roads which were completed in 1983 under the management of an expatriate firm. OPEC financed the procurement of a rock crushing unit and an asphalt premix plant which were installed in 1983.

There are no other donor activities in St. Vincent which would conflict or overlap with this amended project. BDD is considering several small building projects for which necessary technical assistance will be included. For the time being the BDD does not plan to proceed with the extension of the windward highway.

F. Planned Project Activities

The proposed Amendment #2 will provide an additional \$3.0 million of grant financing to continue activities initiated in the original project. \$2.75 million will go to the Government of St. Lucia to rehabilitate an additional 22.9 miles of roads, many of which were included in the Government's original request for assistance. With the completion of activities funded under Amendment #2, the total mileage rehabilitated by AID funds in St. Lucia will be 132. For St. Vincent, the amendment will provide an additional \$250,000 to finance 2 miles of road bringing the Project total to 14 miles.

III. PROJECT AMENDMENT DESCRIPTION

A. Goal and Purpose

The unchanged goal to which this amendment contributes is to improve the economies of St. Lucia and St. Vincent. The continuing purpose is to increase income and economic productivity in designated agricultural areas through the provision of more dependable transportation to major population centers and ports.

B. Project Amendment Rationale

After 30 months trial in carrying out force-account fixed amount reimburseable infrastructure rehabilitation in St. Lucia and St. Vincent, the results indicate that the experience of both Ministry and private sector labor and equipment are adequate to provide needed infrastructure improvements.

The extent of, efficiency, and availability of manpower varies between the two countries. St. Lucia has the capacity but limited funds with which to perform needed repairs. The continued provision of AID funds to rehabilitate feeder roads will improve the economy of St. Lucia. With the persistent lack of qualified staff in St. Vincent, additional project activities will be subject to the same constraints which limited the efficiency of work performed and increased costs in the past.

C. Amendment Outputs and Inputs

The Project purpose will be further pursued through this amendment by: 1) the rehabilitation of an additional 23 miles of roads in St. Lucia and 2 miles in St. Vincent; and 2) better trained road maintenance personnel. To achieve these, AID will finance the following inputs under this Amendment:

1. Road rehabilitation in St. Lucia and St. Vincent;
2. Equipment in St. Lucia;
3. Training for road maintenance personnel from St. Vincent, St. Lucia, and other Caribbean States.

D. Project Activities

Amendment #2 will continue to finance rehabilitation work which will bring priority segments of the road system, including agricultural access roads, up to a standard conducive to regular routine maintenance. Rehabilitation work consists of clearing rights-of-way, redefining ditch drains, and improving drainage structures such as paved gutters, culverts, and headwalls. Road structures are strengthened by the addition of selected base

materials or, where appropriate, repaired by patching. The rehabilitated road base structure is then given two surface treatments of asphalt, each with a rolled gravel cover.

The Project will also provide to St. Lucia selected items of equipment critical to proper road maintenance and rehabilitation, and funds have been included to continue technical assistance and training. The Senior Engineer funded earlier for St. Vincent will continue, his contract funded from Amendment #1. A training course for road maintenance and rehabilitation personnel from St. Lucia and St. Vincent will be developed to repeat and supplement the course offered in 1984. Persons from other Caribbean States will be invited to attend any courses offered, although their participation will not be financed by the Project.

Details of the earlier Program are found on Table 2. The Program included in the amendment is listed in Tables 1 and 3. Project activities which are specific to each country include:

1) St. Lucia

The Amendment will provide funds for the rehabilitation of an additional 22.9 miles of road (see Map 1), bringing the total to approximately 132 miles. Items of equipment to be procured include air compressors for cutting ditches and rock out-crops and clearing pot holes, two water application tank trucks to wet materials for optimum compaction, small vibratory rollers to compact patching premix or sections of base, a mobile welding plant for on-site equipment and bridge repairs, and vehicles to move personnel, equipment, and materials to work sites.

The Crown Agents will continue to provide a staff consisting of a Construction Manager (and an Assistant), an Accountant for financial management, and an Equipment Supervisor. This contract will be funded by the GOSL.

The Project Amendment will also finance the services of a Senior Engineer familiar with AID procedures and force account FAR type construction. As Project Manager, he will be responsible for co-ordinating and supervising project activities, performing economic analyses, and developing training courses for road maintenance personnel. He will also be available, upon request of AID, to assist the RDO/C in replicating Infrastructure Projects similar to that carried out in St. Lucia.

2) St. Vincent

The Amendment will provide funds for the 2 mile completion of a Feeder Road circuit mostly rehabilitated by earlier

funding (see Map 2). A cost estimate for this road segment has been developed, and funds provided under this Amendment will be used to supplement funds remaining from the original project in meeting rehabilitation costs.

TABLE 1
AID AMENDMENT FINANCING BY COMPONENT

PROJECT COMPONENT	USAID (US\$ 000's)
<u>A. St. Lucia</u>	
1. <u>Rehabilitation</u>	
a. Feeder Roads	1,967
b. Primary Roads	252
c. Bridge	<u>173</u>
Sub-total	2,392
2. Equipment and Spare Parts	175
3. Technical Assistance and Training	53
4. Project Management	<u>130</u>
Sub-total St. Lucia	2,750
<u>B. St. Vincent</u>	
1. <u>Rehabilitation</u>	
a. Feeder Roads	225
b. Bridge	<u>25</u>
Sub-total St. Vincent	250
 PROJECT AMENDMENT TOTAL	 \$3,000

TABLE 2

SUMMARY COST ESTIMATE

BY COUNTRY, EXPENSE CATEGORY AND SOURCE OF FUNDING

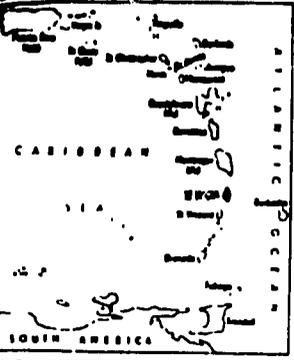
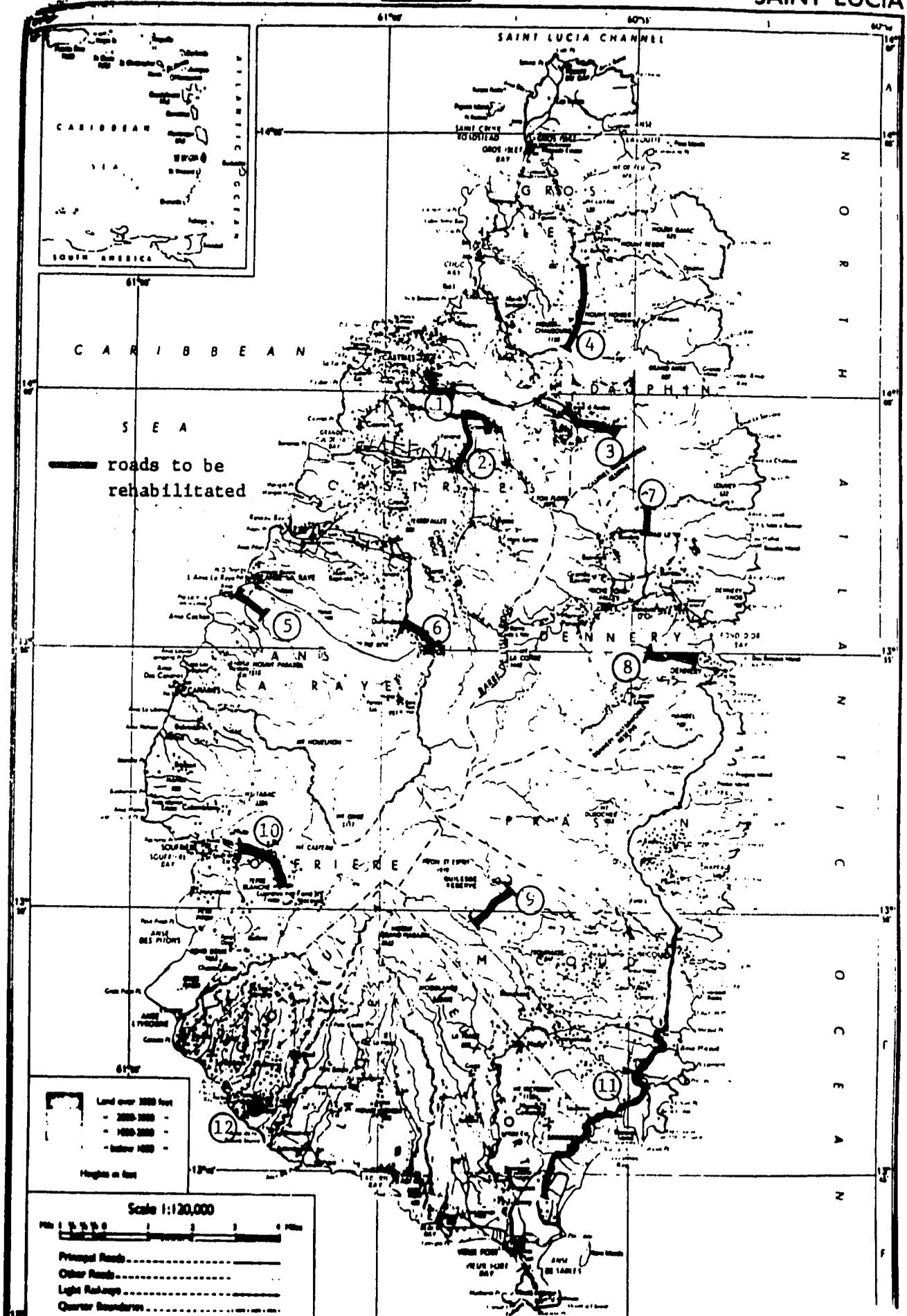
EXPENSE CATEGORY	AID				HOST COUNTRY				TOTAL			
	FY82	FY83	FY85	TOTAL	FY82	FY83	FY85	TOTAL	FY82	FY83	FY85	TOTAL
ST. LUCIA												
1. Rehabilitation												
a) Roads and Bridges	4,531	3,209	2,392	10,132					4,531	3,209	2,392	10,132
b) Procurement	269	286	175	730					269	286	175	730
c) Construction/Project Mgt.	240		130	370	540		260	800	780		390	1,170
Sub-total	<u>5,040</u>	<u>3,495</u>	<u>2,697</u>	<u>11,232</u>	<u>540</u>		<u>260</u>	<u>800</u>	<u>5,580</u>	<u>3,495</u>	<u>2,957</u>	<u>12,032</u>
2. Short-term TA/Training												
	71		53	124					71		53	124
Sub-total	<u>71</u>		<u>53</u>	<u>124</u>					<u>71</u>		<u>53</u>	<u>124</u>
3. Operating Expenses												
a) Local Salaries	-	-	-	-	85	40	40	165	85	40	40	165
b) Salaries, Rent, Etc.	24	-	-	24	175	85	80	340	199	85	80	364
Sub-total	<u>24</u>	-	-	<u>24</u>	<u>260</u>	<u>125</u>	<u>120</u>	<u>505</u>	<u>284</u>	<u>125</u>	<u>120</u>	<u>529</u>
4. Evaluation												
	15	5	5	20	-	-	-	-	15	5	-	20
Sub-total	<u>15</u>	<u>5</u>	-	<u>20</u>	-	-	-	-	<u>15</u>	<u>5</u>	-	<u>20</u>
SUB-TOTAL ST. LUCIA	<u>5,150</u>	<u>3,500</u>	<u>2,750</u>	<u>11,400</u>	<u>800</u>	<u>125</u>	<u>380</u>	<u>1,305</u>	<u>5,950</u>	<u>3,625</u>	<u>3,130</u>	<u>12,705</u>
ST. VINCENT												
1. Rehabilitation												
a) Roads and Bridges	1,457	300	250	2,007	-	118	-	118	1,457	418	250	2,125
b) Equipment	460	-	-	460	205	21	5	231	665	21	5	691
c) Construction/Project Management	368	150	-	518	-	18	4	22	368	168	4	540
d) Inflation	85	-	-	85	-	-	-	-	85	-	-	85
Sub-total	<u>2,370</u>	<u>450</u>	<u>250</u>	<u>3,070</u>	<u>205</u>	<u>157</u>	<u>9</u>	<u>371</u>	<u>2,575</u>	<u>607</u>	<u>259</u>	<u>3,441</u>
2. Short-Term TA/Training												
	71	50	-	121	-	-	-	-	71	50	-	121
Sub-total	<u>71</u>	<u>50</u>	-	<u>121</u>	-	-	-	-	<u>71</u>	<u>50</u>	-	<u>121</u>
3. Operating Expenses												
a) Local Salaries	40	-	-	40	110	-	3	113	150	-	3	153
b) Materials, Support	9	-	-	9	150	-	3	153	159	-	3	162
Sub-total	<u>49</u>	-	-	<u>49</u>	<u>260</u>	-	<u>6</u>	<u>266</u>	<u>309</u>	-	<u>6</u>	<u>315</u>
4. Evaluation												
	10	-	-	10	-	-	-	-	10	-	-	10
SUB-TOTAL ST. VINCENT	<u>2,500</u>	<u>500</u>	<u>250</u>	<u>3,250</u>	<u>465</u>	<u>157</u>	<u>15</u>	<u>637</u>	<u>2,965</u>	<u>657</u>	<u>265</u>	<u>3,887</u>
PROJECT TOTALS	<u>7,650</u>	<u>4,000</u>	<u>3,000</u>	<u>14,650</u>	<u>1,265</u>	<u>282</u>	<u>395</u>	<u>1,942</u>	<u>8,915</u>	<u>4,282</u>	<u>3,395</u>	<u>16,592</u>

TABLE 3

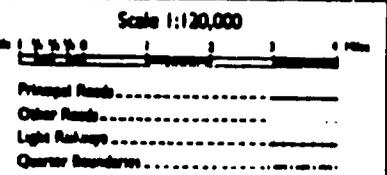
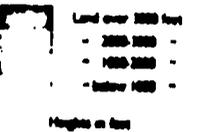
ROAD REHABILITATION PROGRAM - COST ESTIMATES

AMENDMENT TWO

<u>ST. LUCIA ROADS</u>	<u>MILEAGE</u>	<u>SCHEDULED (US\$ 000's)</u>
1. Gessneau-Tirocher-Marchand	2.1	242
2. Tirocher-Deglos	1.6	148
3. Fond Assau-Chassin	3.7	377
4. Desrameau-La Riviere Mittant	1.0	123
5. Anse-la-Raye-An Ger	2.0	208
6. Durandea-Dame de Travansay	1.0	212
7. La Resource-Gadette	0.5	71
8. Bois Jolie-Glavier	2.0	215
9. Mahaut-Ma Lartigue	1.0	158
10. Diamond-Esperance	2.0	183
11. East Coast Highway	6.0	252
12. Choiseul River Bridge		<u>173</u>
	22.9 Miles	\$2,362
<u>ST. VINCENT ROADS</u>		
1. Greiggs to South Union	2.0 Miles	\$ 311



roads to be rehabilitated



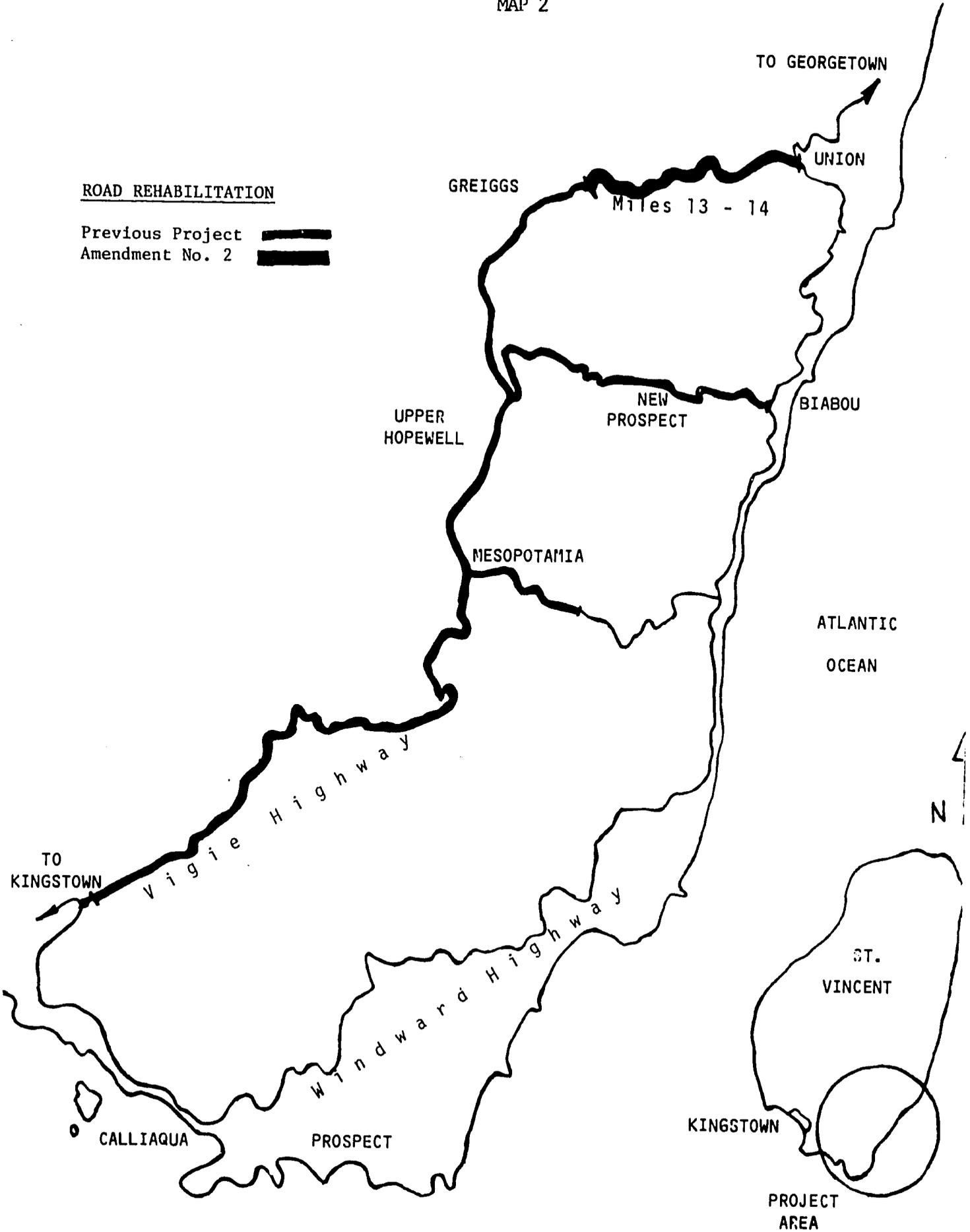


TABLE 4

PROJECT IMPLEMENTATION SCHEDULE

April 20, 1985	Project Authorization
April 25, 1985	Execute Project Agreements
April 26, 1985	Request Advance Funds for Rehabilitation
May 10, 1985	GOSL Executes Contract with Crown Agents
May 15, 1985	Satisfaction of Conditions Precedent
May 15, 1985	RDO/C Initiates Action to Select Project Manager; Road Rehabilitation Recommences
June 25, 1985	Equipment Specifications and IFB Completed
June 30, 1985	GOSL Submits Baseline Data to RDO/C
September 30, 1985	Receive Bids for Equipment
October, 1985	Initiate Planning of Road Maintenance Training Course
January, 1986	Receive Equipment
February, 1986	St. Lucia Completes Road Rehabilitation Work
April, 1986	First Training Course Held
July, 1987	Final Project Evaluation
September 30, 1987	Project Completed

IV. IMPLEMENTATION PLAN

A. Revised Implementation Plan

Amendment activities are scheduled to take place over a period extending to September 30, 1987, the amended Project Assistance Completion Date (PACD). Funding will be in one increment of \$3.0 million, which will fund activities noted in Table 1.

The proposed Implementation Schedule is found in Table 5. St. Lucia rehabilitation work will be completed by September 30, 1986. St. Vincent work will be completed by September 30, 1985; but, since the Senior Engineer is assisting in the implementation of institutional improvements funding of his services will continue to the new September 30, 1987 PACD.

After the Project Agreements have been signed, waivers will be prepared and funding for mobilization costs will be requested. The present Project Manager will calculate IRR's for roads to be rehabilitated and prepare specifications and IFB's for equipment to be procured.

B. Procurement Plan

1. Technical Assistance

The Project does not finance the construction team provided by the Crown Agents. The GOSL will extend the Crown Agent's contract following execution of the Grant Agreement.

The incumbent Project Manager will be funded with existing project funds through September 1985. During this period he will continue to monitor Project Implementation, carry out economic analyses of roads to be rehabilitated, assist in the preparation of IFB's for equipment procurement, and coordinate project activities and expenditures. Upon execution of the Project Agreement with St. Lucia, RDO/C will commence the process of selecting a follow-on Project Manager to be funded by the amendment for another year ending September 30, 1986.

For St. Vincent, the AID-funded Senior Engineer is in place and FY 83 funds will fund an extension of his current contract through September 30, 1987.

Short term technical assistance may be sought for participation in training courses developed for road maintenance staff. Such assistance will be sought through IQC's or PSC Contracts with selected West Indian experts.

2. Commodities

The road rehabilitation being carried out under this Project is being performed by force account, meaning the MCW's rely on their own equipment resources. The Project Paper recommended that although equipment existed in both countries, it was inadequate to meet the needs of routine maintenance and a major rehabilitation project simultaneously. Therefore, for certain scarce items, additional equipment was provided by the Project. The MCW's have been placing their maintenance equipment at the disposal of the Project to the extent possible, but the situation has not been ideal due to the demand for the equipment for routine maintenance work, and the general unreliability of the equipment. The AID-funded equipment has supported efforts to achieve more efficient rehabilitation work.

To improve the quality and efficiency of rehabilitation work further, selected items of equipment are required. Table 5 lists equipment to be procured under Amendment #2, as well as equipment procured earlier by the Project. In addition to construction equipment, the St. Lucia MCW has demonstrated a need to improve quality control of Project materials. The staff are adequately experienced and trained but their laboratory does not have the equipment necessary to carry out a comprehensive testing program. The amendment will provide \$10,000 for soils testing equipment. A sole source waiver for soil equipment was approved for earlier procurement and will be required for this amendment.

Additional St. Lucia equipment includes compressor units for removal of rock during drain clearing and for pot hole cleaning. Water trucks with spraying bars will be procured to wet roadway base materials prior to compaction. Small vibratory rollers are needed to carry out compaction of premix patches and base material. Pick up or van type vehicles will be procured to move personnel, materials, and parts to work sites. Since no U.S.-make right-hand-drive vehicles are available or can be repaired in St. Lucia, a waiver will be needed to permit procurement of non-U.S. manufactured vehicles. A portable welding plant will be needed to expedite field repairs of machinery and to fabricate steel drain grills and make bridge repairs. A high pressure spraying unit will be needed to clean equipment.

When the rehabilitation work is concluded the equipment provided will revert to the MCW equipment pools for continued use in reconstruction and maintenance work.

C. Administrative Monitoring Plan

RDO/C's Office of Engineering and Energy (ENGR) will continue to assume management responsibility for AID obligations under the Project and this amendment. ENGR will be assisted by the Capital Project's Office in the procurement of waivers and drafting of contracts. They will be assisted by other RDO/C Staff Support Officers and AID/W's LAC/DR Technical Office in the identification of qualified technical assistance.

The Ministries of Communication and Works continue to be the host country implementing organization in both St. Lucia and St. Vincent. In St. Lucia the MCW will be responsible for extending the Crown Agent's Contract until September 1986 and for continuing surveys of road use and agricultural lands adjacent to rehabilitated roadways.

D. Evaluation Plan

The FY 82 and 83 funding of the PIR project reserves \$30,000 for an interim and final evaluation. Base line data have been acquired for an evaluation in St. Vincent. Base line data is maintained in St. Lucia by the St. Lucia Banana Growers Association, who document production and sales of bananas by farmer and area. These data, together with traffic count data, are available when an indepth interim evaluation is carried out in mid 1985 and a final evaluation before the PACD.

COMMODITY PROCUREMENT SUMMARYI. FY 82 FUNDEDA. St. Lucia

	<u>Status</u>
2 Asphalt Distributors	On Site
2 Vibratory Rollers	On Site
1 Tractor Loader	On Site
1 Project Vehicle	On Site

Total Value - \$230,000

B. St. Vincent

1 Hydraulic Impactor	On Site
1 Asphalt Distributor	On Site
3 Pedestrian Rollers	On Site
1 Mechanical Broom	On Site
1 Vibratory Roller	On Site
2 Front End Loaders	On Site
2 Chip Spreaders	On Site
Tires, Tubes and Spares	On Site and Ordered
1 Mobile Patching Unit	Quote in Process

Total Estimated Value - \$460,000

II. FY 83 FUNDEDA. St. Lucia

2 Mobile Patching Units	Quote in Process
1 Material Wagon/Dumper	Under Review
1 VHF Communications System	Ordered
1 Soils Lab Vehicle	On Site
1 Group Selected Soils Testing Equipment	On Site
Accessories for Patching Equipment	On Site

Total Value - \$325,000

B. St. Vincent

None

TOTAL VALUE OF EQUIPMENT IN FY 82 AND 83 BUDGET - \$1,015,000III. FY 85 FUNDEDA. St. Lucia

Portable Welding Plant	\$ 8,000
2 or 4 Wheeled Air Compressor	22,000
High Pressure Air Unit	3,500
2 Water Tank Trucks (1250 Gal) with Sprinklers	60,000
3 Self Propelled Vibratory Rollers	30,000
3 Staff Vehicles	30,000
Spare Parts	<u>21,500</u>

\$175,000

B. St. Vincent

None

TOTAL VALUE OF EQUIPMENT IN FY 85 BUDGET - \$175,000

V. PROJECT ANALYSES

A. Technical Analysis

Experience gained in carrying out the first two phases of this Project have led to minor refinements in the standards to be applied to road rehabilitation. The non-availability of local contractors supports the continued use of force account and fixed amount reimbursement procedures.

1. Standards

Annex B outlines the standards and specifications to be followed in road rehabilitation. From an engineering standpoint most roads break down and deteriorate due to poor drainage, which either erodes the roadway itself or penetrates the soils supporting the surface, rendering the support structure a plastic mass. Therefore, more attention will be given to improving and rebuilding roadway drainage facilities, such as side drains, culverts, and slopes, so that wherever possible, the level of water in the drains can be kept below the pavement structure.

Under this amendment more attention will also be given to assuring a high quality base structure. This is particularly important in St. Lucia where naturally occurring blends of materials ("tuff") are used. The St. Lucia Ministry of Communications and Works (MCW) expanded its soils testing capability through the provision of equipment under the original project and, with the experienced staff now manning the soils testing laboratory, now plans to carry out a continuous program of testing materials used on project roads. Any substandard materials will be rejected and replaced. Consideration will also be given to the use of crushed rock materials, which are more costly but assure a more stable pavement base. This type base material has been and will continue to be used in the St. Vincent rehabilitation work.

A surfacing consisting of two successive treatments with asphaltic material, each topped with graded aggregate, has proven satisfactory on the roads rehabilitated to date and will continue.

In St. Lucia, total rehabilitation costs have exceeded the budgeted FAR contracts, and the GOSL has financed any minor overruns as well as the additional work the Government requested to be undertaken by the Project Team.

The Government of St. Vincent's Ministry of Communications and Works rehabilitated roads to standards which exceeded those set out in the Projects standards and specifications. Although the higher standard of construction did

not account for the entire cost overrun, it was a major contributor. The higher standards were somewhat justified as an attempt to reduce recurring maintenance costs, especially on the Vigie Highway (6 miles) which carries 1000-1300 vehicles per day.

The objective of the Project, as originally conceived, is to bring the roads up to a standard of functional efficiency where the Government can perform routine road maintenance with reasonable annual budgetary allocations while encouraging better and increased agricultural production.

2. Fixed Amount Reimbursable (FAR) Method of Financing

The procedure used in planning road rehabilitation calls for each road segment to be inspected and evaluated to determine rehabilitation requirements. Agreement is reached by the project management staff and work foremen as to what work will be done and cost estimates are prepared. The cost estimates form the basis of a fixed-amount-reimbursement (FAR) agreement with AID, stating the amount of project funding to be allocated to each road. Following an initial advance to finance mobilization, the agreed upon FAR amount is disbursed at the same percentage as work progresses. The final 20% of each FAR contract is withheld until the road has been completed, accepted by the GOSL, and inspected by AID engineers.

Any completed road segment which cost less than the FAR amount benefits the Government, while any overrun costs become the responsibility of the Government. In practice, any savings have been used to carry out additional improvements or in extending mileage. Both St. Lucia and St. Vincent Governments have contributed additional funds to the Project to cover overruns. The GOSL has also provided funds to rehabilitate mileage in excess of the original amount agreed upon with AID. Expending funds in this manner is cost effective for the Government, since equipment and labor are already mobilized.

3. Force Account

Since no local private contractors are available with the capacity required to rehabilitate the mileage proposed, Force Account construction procedures will continue.

The labor force involved in the rehabilitation varies from 250-750 for the work in St. Lucia, while about 150 are continuously employed in St. Vincent. The percentage of Civil Service employees working on the Project in St. Lucia is small since most of the administrative burden is assumed by the Crown Agent's staff. The number of civil servants working in St. Vincent is higher.

In both countries extensive use is made of small contracts which, at Government approved rates, are negotiated with private sector individuals. These contractors, with their own helpers, are paid lump sums to carry out specific elements of work such as digging drains, constructing paved ditches, laying culverts, clearing undergrowth and bush, or building masonry wall.

In St. Vincent government equipment and its operators are hired from the Government Funding Scheme (GFS). In St. Lucia the private sector is somewhat larger and the Project officer contracts with the owner/operator of equipment and trucks, and pays for quantities of work performed. Under this system the driver/owner is paid only for what he does, and if the truck or equipment breaks down or is less efficient, it is at the expense of the driver. In both countries equipment procured with project funds is also being used. In St. Lucia equipment used in construction of a previously completed EDF project has also been made available.

4. Project Management

In St. Lucia the Government will continue financing the services of a Construction Management Team consisting of Accountant/Office Manager, Construction Manager, and Equipment Manager. This team is provided through the Crown Agents. In St. Vincent the Government will continue to provide a Civil Service Construction Manager, Office Manager, and Construction Foremen.

The Project will continue to finance the services of a Project Manager to coordinate project activities in both St. Lucia and St. Vincent. The services will be financed through a Personal Services Contract. This individual will also be available to the RDO/C to assist in developing and monitoring similar infrastructure rehabilitation projects in other Caribbean States.

B. Administrative Analysis

1. St. Lucia

Past experience on the PIR Project has demonstrated that the institutional relationships and procedures created to implement this Project have been successful, and roads are being built on schedule and within the budget. Factors contributing to this success include the provision of necessary management and administrative resources by the Government of St. Lucia. The Ministry of Communications and Works was allocated the funds required to finance the Crown Agents' contract and staff the road construction unit. The combination of a full management team and staff who, with the exception of the AID-financed Project Manager, had been working together for several years provided the necessary institutional framework for project success.

An additional factor which contributed to the performance in St. Lucia was the attitude which the Management Unit adopted in regard to the objectives of the Project. Management communicated to staff that work was to proceed according to the budget and standards for road rehabilitation work established during preparation of the Fixed Amount Reimbursement request. The system for financial reporting and monitoring closely tracked project progress to assure that the standards were met and the budget not exceeded.

AID is confident that with the extension of the Crown Agent's construction management contract, which is a condition precedent to disbursement under this amendment, the Project will continue to be successfully implemented.

2. St. Vincent

In January 1984, using funds provided by the Project, the Government of St. Vincent hired a Senior Engineer to fill the position of Chief Engineer in the MCW. He and the Permanent Secretary have taken active management roles in the administration of the Project. The Vincentian Construction Manager for project activities has progressed, through on-the-job training on the project, in both the technical and administrative management aspects of rehabilitation work. The Office Manager/Accountant has also achieved an efficient accounting/reporting system following several consultations with AID Staff.

Based upon the demonstrated experience of the St. Lucia and St. Vincent administrative staff, AID is confident that the administrative management of the proposed phase 3 activities will be properly handled.

The Project also provided for the conduct of an institutional analysis of the St. Vincent MCW. The study was carried out in November 1984 and the report is now being studied by MCW officials. This report will not affect the Project activities but mostly concerns internal MCW operations.

C. Financial Analysis

1. Comparative Cost Estimates

A comparison of Project Paper Cost Estimates and actual costs of road rehabilitation in St. Vincent and St. Lucia under the first two phases of the Productive Infrastructure Rehabilitation (PIR) Project reveals that it has cost substantially more to do work in St. Vincent than in St. Lucia. For similar types of road the cost of rehabilitation in St. Lucia has averaged about US\$4,000/mile versus about US\$135,000/mile for the twelve miles in St. Vincent.

The reason for the higher cost of work in St. Vincent can be attributed to several factors:

(a) Higher design standards applied to the heavily traveled Vigie Highway rehabilitation included in the Project (6 miles). More materials and drainage structures were needed to minimize future maintenance requirements.

(b) With the exception of project procured equipment, most equipment used in St. Vincent had to be rented from the GFS, whose rates are higher than competitive prices available from the St. Lucia private sector. Efficiency in equipment use was much lower than in St. Lucia since GFS equipment is operated by daily paid Government employees who have little incentive to improve productivity.

(c) Equipment maintenance and repair in St. Lucia is performed directly by project staff using Project funds, thereby minimizing downtime. St. Vincent Project equipment repair must compete with other government requirements handled by the GFS. This, together with numerous breakdowns, has caused frequent delays with their associated labor costs.

(d) St. Lucia mobilized an experienced cadre of road builders from an earlier EDF feeder road project. St. Vincent mobilized an unexperienced supervisory and administrative staff which actually acquired on-the-job training on the first two miles of road rehabilitation under the Project. This accounts for the high cost of the Vigie Highway work - \$150-175,000 per mile.

(e) Most road construction materials in St. Vincent are provided by the Government owned and operated (GFS) rock quarry. As with equipment, Project needs had to compete with other demands placed on the quarry by both Government and private users of rock products. Consequently, delays in the provision and delivery of materials essential to project work (rock, gravel, asphalt) were common. Associated costs included equipment and labor unutilized due to lack of materials.

2. Financial Plan

a) AID Contribution

Table 2 notes the FY 82 and FY 83 obligations to the PIR Project which total \$11.650 million, of which \$8.650 million went to St. Lucia and \$3.0 million to St. Vincent. This Amendment will add \$3.0 million to the Project, of which \$2.75 million will go to St. Lucia and \$250,000 to St. Vincent for the items noted in Table 1.

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b) Host Country Contribution

i. St. Lucia

In FY 82 and FY 83 St. Lucia contributed \$925,000 to the Project. The majority (\$540,000) financed the Crown Agents Contract. The remainder consisted of local salaries for Project workers, equipment used by the Project, and rental of facilities.

This Amendment will include another Crown Agents Contract estimated to be \$260,000. In addition, \$120,000 is the estimated in-kind contribution of Ministry staff salaries and equipment rental.

ii. St. Vincent

In FY 82 and 83 St. Vincent contributed \$622,000 to Project costs in the form of equipment, staff salaries, office space, and topping-off costs for the AID-funded Senior Engineer. This Amendment estimates an additional \$15,000 for the same purposes noted above.

D. Economic Analysis

Economic benefits of the Project include:

- a. Improved transport of higher quality bananas to port;
- b. User savings to vehicles operating on improved roads;
- c. Improved access to undeveloped lands suitable for cultivation;
- d. Increased flow of money into the economy from the wages paid to project workers who otherwise would be unemployed.

1. Transport of Bananas

Studies carried out by WINBAN and individual Island banana growing associations indicate that 15-25% of the bananas transported for shipment abroad are rejected at the port. Individual economic analyses of the 35 project road segments in St. Lucia and the 5 project road segments in St. Vincent included savings realized from reduced banana damage. Most roads included in the project carried from 10 to 30 tons of bananas per week. Assuming a conservative reduction in damage to 10% due to improved

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roadways and greater vehicle access (eliminating hauling by head or donkey), 10 tons over a road in one week would result in annual savings of \$3,985/mile (10 tons/week x .10% savings x 52 weeks/year x .10EC\$/pound x 2000 pounds/ton divided by 2.67EC\$/US\$).

2. User Savings

Studies conducted by the U.K. Transport and Road Research Laboratory (TRRL) show that improved roads in St. Vincent result in per mile savings (following adjustment of gasoline cost increase from EC\$2 to EC\$5) of: US\$.09 for cars, \$.10 for pickups and vans, and \$.11 for trucks and buses. A traffic count of 39 vehicles per day consisting of 7 trucks, 9 pickups, and 13 cars will yield annual savings of \$4,146 per year/mile. Traffic growth is found to be about 10% per year, and projected savings increase annually over the useable life of the road.

3. Improved Access to Undeveloped Lands

Experience gained through examination of roads completed earlier in the project have demonstrated that improved access has led to the cultivation of additional acreages of bananas and general agricultural crops. One case in point is the 1.3 mile La Borne Road, improved at a cost of \$135,000, where an estimated 10-15 acres of bananas and vegetables have been cultivated. One acre of new banana production will yield \$741 per year of benefits directly attributable to improved access.

Consultations were held with the St. Lucia Banana Growers Association who reported the quantities of new production that could be expected from the rehabilitation of selected roads.

4. Increased Flow of Money into Economy

As noted in previous pages, the rehabilitation of roads by force account procedures involves the hiring of local trucks and equipment for work tasks, local artisans for concrete and masonry work, and local unskilled labor. The rate of unemployment for St. Lucia and St. Vincent is unknown but, as with most Caribbean Islands, is a major problem. The St. Lucia Project employed an average of 361 daily paid laborers during the period November 1982 through November 1984. Not included is the contract labor hired for specific tasks such as laying culverts, building walls and drains, transportation of materials, or clearing and moving earth with driver owned equipment. Using these methods approximately 50% of road rehabilitation costs go into the pockets of otherwise unemployed or underemployed labor.

In consideration of the benefits discussed above, economic analyses have indicated Internal Rates of Return (IRR)

ranging from 10% to 100% for the 35 road segments improved in St. Lucia and the 5 road segments improved in St. Vincent. The average IRR for all 40 segments is 26%.

Based upon the above findings there is reason to believe that the new roads to be rehabilitated will all be economically justified. As with the original Project, IRR analyses will be carried out for each new FAR road contract.

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VI. CONDITIONS AND COVENANTS

A. Conditions

1. St. Lucia

Prior to the disbursement of any funds made available under Amendment Number Two to the Grant Agreement, the Government of St. Lucia shall, except as AID may otherwise agree in writing, furnish evidence, in form and substance satisfactory to AID, that the Grantee has extended the contract with Crown Agents for Overseas Governments and Administrations Ltd., for the management of construction and rehabilitation activities undertaken in the Project.

2. St. Vincent

No new conditions precedent required.

B. Covenants

1. St. Lucia

a) The Government of St. Lucia covenants that, during the two month period following the signing of the Amendment, it will provide necessary baseline data and other information that will enable an interim evaluation and further assessment of developmental impact upon project completion, including documentation of the benefits and costs of project activities in St. Lucia.

b) The Government of St. Lucia covenants that, during the life of the Project, the AID Project Manager, on a case by case basis, may be released from the Project to assist AID in the development of similar infrastructure projects in other Caribbean States. Funding for such short periods is included in the Project Manager's contract.

c) The Government of St. Lucia covenants that the Crown Agents will coordinate all intended rehabilitation work details with the Chief Engineer of the Ministry of Communications and Works. Regular meetings will be held by Project Team and include Crown Agents, MCW, AID Project Manager, and foreman in charge of rehabilitation work.

d) The Government further covenants that the MCW soils laboratory will, on a continuous basis, conduct soils tests; particularly as regards base materials to be used in base construction. In instances where increased costs of providing

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materials according to MCW standards, the mileage of rehabilitation on any particular road segment will be reduced or the costs borne by the Government.

e) The Government of St. Lucia covenants and will certify that all rights-of-way upon which rehabilitation will be carried out are owned by the Government.

2. St. Vincent

No new covenants are required.

VII. PROJECT FUNDING WAIVERS

Waivers required for St. Lucia will:

- 1) Permit the procurement of non-U.S. manufactured motor vehicles since no U.S. right-hand drive vehicles are sold or serviced in St. Lucia.
- 2) Permit non-U.S. flag vessels to carry project materials. This waiver has been approved and is attached as an Annex to this document.

DESIGN STANDARDS:

The standards are similar to those used for previous and on-going feeder road programmes in Saint Lucia. Pavement specification has been amended where it has proved to be inadequate in previous projects and further improvements may be made in consultation and agreement with the Chief Engineer.

1. Geometric Standards:

- (i) Vertical alignment: maximum gradient of 1 in 6.
- (ii) Horizontal alignment: minimum curve radius of 50 feet
- (iii) Base dimensions: width of 14 feet and minimum cross fall of 1 in 30.
- (iv) Carriageway dimensions:
 - new roads: 14 feet carriageway width
 - improvement of existing roads; minimum carriageway width of 12 feet.
- (v) Roadside drains: minimum width 2 feet; minimum depth 1.5 feet (where required).

2. PAVEMENT SPECIFICATION:

- (i) Subgrade: The subgrade shall be trimmed or cut and filled with suitable material and compacted to a formation having the same cross-sectional shape as the proposed road surface. Formation shall be free from surface irregularities in excess of 25mm (1") and shall be compacted to a tolerance of 15mm (1") of design levels.
- (ii) Sub-base: Sub-base material shall be laid in a compacted layer of not less than 100mm (4") on subgrades having a CBR of less than 8% or a plasticity index greater than 10. Sub-base material shall be natural sands, gravels, crushed rock or tuff and shall have a grading which lies within the following envelope:

<u>BS SIEVE SIZE</u>	<u>PERCENTAGE BY MASS PASSING</u>
75mm	100
37.5mm	85-100
10mm	45-100
5mm	25-85
600µm	8-45
75µm	0-10

The material passing the 425µm sieve shall have a plasticity index of less than 6. The minimum soaked CBR of the sub-base shall be 25%. The material shall be laid and compacted at a moisture content within 2% of optimum and without drying out or segregation.

(111) Roadbase:

(A) Mechanically stabilised: This material shall be crushed rock and shall be laid to a compacted thickness of 150mm (6") and have a soaked CBR of not less than 30%. The material shall be well graded and lie within the following grading limits:

<u>BS SIEVE SIZE</u>	<u>PERCENTAGE BY MASS PASSING</u>
75mm	100
37.5mm	85-100
10mm	40-70
5mm	25-45
600µm	8-22
75µm	0-10

The material passing the 425µm sieve shall be non-plastic. In exceptional circumstances material with a PI not exceeding 6 may be permitted at the discretion of the Chief Engineer. The material shall be laid and compacted to provide a smooth close textured surface without drying out or segregation.

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(B) Cement stabilised; This material shall be crushed rock or tuff having a coefficient of uniformity of not less than 5 capable of producing a well closed surface finish and a grading finer than the following limits:

<u>BS SIEVE SIZE</u>	<u>GRADING LIMIT % BY MASS PASSING</u>
50mm	100
37.5mm	95
20mm	45
10mm	35
5mm	25
600µm	3
300µm	5
75µm	0

If the material passing the 425µm sieve is plastic, it shall have a liquid limit not greater than 45 percent and a plastic limit not greater than 20 percent.

The material shall be mixed with cement to provide a homogeneous material with an unconfined compressive strength not less than 250 psi (1.72 N/mm²).

The moisture content of the mixed cement stabilised material shall not be less than optimum nor more than 2 percent above optimum.

TESTING: A material testing schedule approved by the Chief Engineer will be drawn up prior to commencement of the works.

(ii) SURFACING:

12' of the 14/15 feet wide base will be primed with 30 or equivalent at 5 YS per gallon and blinded with crusher fines, or equal, and followed by a single coat surface dressing comprising 405, or equal, 4-5 YS per gallon and stone chips at 60-65 YS per 100; on steep gradients, a double surface dressing will be applied; on steep gradients located on sharp bends an alternative surfacing of 1½ inch thickness of bituminous macadam will be used.

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3. DRAINAGE:

- (i) Hydrological assessment: bridges, culverts and drains will be adequately dimensioned on the basis of a hydrological assessment of catchment areas, rainfall, penetration, and all other relevant factors.
- (ii) Roadside drains: normally unlined earth drains; retaining walls and checks will be provided where required.
- (iii) Culverts:
 - under roads: - **minimum 24 ins dia.** concrete or armco pipe for full width of base.
 - under side turnings:- **minimum 18 ins. dia.** concrete or armco pipe for full width of base.

The standards set out above are intended as a guide and may be varied with the prior approval of the Government of Saint Lucia and C.D.B. as the need arises.

27th February, 1985

Flag Carrier Source Waiver
Drafter: COM/TS: TAPierce:td:2/9/83
Waiver Control No. 69E

ACTION MEMORANDUM FOR THE DIRECTOR, Office of Commodity Management
Agency for International Development
Washington, D.C. 20523

Loop

FROM: Acting Chief, Transportation Support Division
Office of Commodity Management
Agency for International Development
Washington, D.C. 20523

SUBJECT: Ocean Freight Waiver for Other West Indies - Eastern Caribbean
Regional Grant 538-0082

REFERENCE: (A) Cable Bridgetown 00721, (B) Waiver No. 69

Problem: To broaden the eligible source (flag of vessel or aircraft) to authorize use of Code 941 or 899 carriers to transport cargoes financed by AID funds from Grant 538-0082, in order that excessive delays may be eliminated which are caused by nonavailability of carriers of flags of registry authorized by Code 538 loan and grant agreements.

Discussion:

1. Waiver number 69 dated September 24, 1979 covers seventeen Code 538 loans and grants. This waiver authorized financing of transportation costs on carriers of any Code 899 flag, to include 941, for the shipment of commodities financed by AID under the Code 538 loan and grant agreements as listed in Waiver No. 69, under the conditions that the supplier provides written certification as to nonavailability of Code 000 or home flag carriers. In addition, for the purpose of cargo preference, U.S. flag vessels shall be deemed to be not available with respect to transactions falling under the terms of Waiver No. 69 where the required certification is made.
2. The referenced cable requests that Waiver No. 69 be amended to cover Grant 538-0082 for Productive Infrastructure Rehabilitation. COM/TS checked availability of service with American Atlantic Lines on February 8. The three U.S. flag vessels this line operated from the U.S. East Coast and Gulf ports to the Caribbean are now out of service due to financial difficulties of this line. No other U.S. flag service is available.

Recommendation: That you authorize financing of transportation costs for commodities shipped under the above grant in accordance with the terms and conditions of Waiver No. 69.

Approved: *H. G. Schmeisser Jr.* Date 2-18-83

Disapproved: _____

Attachments: a/s
Refs A & B

STATUTORY CHECKLIST

Please refer to Statutory Checklist contained in the Project Paper for Amendment Number One to the Project.

PRODUCTIVE INFRASTRUCTURE REHABILITATION PROJECT - ST. VINCENT
 Economic Analysis: Greiggs-South Union Road (1.9 mi)
 IRR = 27.6%

Year	Average Daily Traffic (1)	Vehicle Operating Savings US\$ (2)	Savings in Product Damage US\$ (3)	Value of Increased Production US\$ (4)	Constr'n Cost US\$ (5)	Annual Maintenance Cost US\$ (6)	Annual Cash Flow US\$
1985	275				195246		-195246
1986	302	22899	29963	3296		11495	44663
1987	332	25189	29963	3296		11495	46953
1988	366	27708	29963	3296		11495	49472
1989	402	30478	29963	3296		11495	52242
1990	442	33526	29963	3296		11495	55290
1991	487	36879	29963	3296		11495	58643
1992	535	40567	29963	3296		40470	33356
1993	589	44624	29963	3296		11495	66388
1994	648	49086	29963	3296		11495	70850
1995	713	53995	29963	3296		11495	75759
1996	784	59394	29963	3296		11495	81158
1997	863	65334	29963	3296		11495	87098
1998	949	71867	29963	3296		11495	93631
1999	1044	79054	29963	3296		40470	71843
2000	1148	86959	29963	3296		11495	108723
2001	1263	95655	29963	3296		11495	117419
2002	1389	105221	29963	3296		11495	126985
2003	1528	115743	29963	3296		11495	137507
2004	1681	127317	29963	3296		11495	149081
					-19525		19525

Footnotes:

- (1) Average daily traffic based upon actual counts and 10% annual growth rate.
- (2) Vehicle-operating-cost savings based upon a weighted average of US\$75.70 per vehicle-year.
- (3) Savings in reduced damage to produce (bananas) based upon following assumptions: bananas transported = 5000 tons/year; damage reduction is 5% of total transported, i.e.

$$5000 \text{ tons/year} \times 5\% \times 2000\#/\text{ton} \times \text{EC}\$0.16/\# \div 2.67$$
- (4) Value of increased agricultural production based upon 5 acres additional cultivation.
- (5) Construction cost is reduced by 35% to reflect shadow-pricing of labor costs.
- (6) Maintenance costs assume annual cost of US\$6050 per mile with extraordinary maintenance, costing \$21,300 per mile, being performed every seventh year.

ST. VINCENT - MILE 13 AND 14

Greiggs	C = 72	South Union	C = 84
	V = 158		V = 126
	T = 62		T = 47

Upper Hopewell	Cars = 40	Average 12 Hour Count
	Vans, P.V. = 62	
	Trucks, Buses = 22	

To Biabou

		<u>Cars</u>	<u>Vans, P.V.</u>	<u>Trucks/Buses</u>
<u>Traffic</u>	At Greiggs	72	158	62
	At South Union	84	126	47
		<u>156</u>	<u>284</u>	<u>109</u>
	Average over 1.9 Mile Greiggs/South Union	78	142	55

<u>Expansion</u>				
<u>Hr. to</u>	Use Factor of 1.15			
<u>24 Hour</u>	Therefore 24 Hour =	89.7	163.3	63.3

User Savings ADT x 365 Days/Year x Length x Savings/Vehicle Mile

Cars	78 x 365 x 1.9 x .10	=	\$ 5,409
Vans, P.V.	142	.11 =	10,832
Buses, Trucks	<u>55</u>	.12 =	<u>4,577</u>
Vehicles	275		\$ 20,818
	Savings Per Vehicle Unit =		\$ 75.70

Bill No. 1 Site Clearance

Item No.	Description of work	Unit	Qty.	Rate	Cost
1.1	Cutting and removing light bush growth and grass up to 7ft 6ins on each side of existing carriageway and dispose not exceeding 2 miles	lin.yd	3344	4.00	13,376.00
1.2	Additional clearance of heavy bush growth, trees and fallen vegetation up to 15 additional feet on one side of existing carriageway and dispose not exceeding 2 miles	lin.yd	2300	8.00	18,800.00
					31,776.00
2.1	Bill to maintain Excavate and re-establish drains and re-establish existing ones with a sloping section by machine and do final shaping by hand and dispose not exceeding 2 miles	cu.yd	1500	30.00	45,000.00
2.2	Excavate for sub-race drain (12in x 15in) by hand, provide and lay 3 ins sand bed; provide and install 6 ins dia perforated pitch fibre pipes and provide and place 1" sin-le size aggregate to make good the excavation	lin.yd	NIL	NIL	NIL
2.3	Excavate foundation and construct 2'6" or 3'0" wide slipper drain with mass concrete base and upstand kerb	lin.yd	120	90.00	10,800.00
2.4	Excavate foundation by hand and construct 2 ins diameter semicircular concrete drain and dispose not exceeding 2 miles	lin.yd	75	100.00	7,500.00
2.5	Excavate foundation by hand and construct 2ft x 2ft rectangular drain with mass concrete base and dispose not exceeding 2 miles	lin.yd	NIL	NIL	NIL
2.6	Excavate foundation by hand and construct 2ft x 2ft 6ins rectangular concrete drain with mass concrete base and dispose not exceeding 2 miles	lin.yd	100	140.00	14,000.00

Bill No. 2 Drainage

Item No.	Description of work	Unit	Qty.	Rate	Cost
2.7	Excavate foundation by hand and place 6ft pedestrian culvert structure over drain using 30ins armco culverts or 24ins concrete culverts along with necessary concrete works (concrete base and cover)	No.	15	750.00	11,250.00
2.8	Excavate foundation by hand and place 15ft vehicular culvert structure over drain using 30ins armco culverts or 24ins concrete culverts along with necessary concrete works (concrete base, cover and manhole)	No.	6	2,000.00	12,000.00
2.9	Excavate foundation by hand (2ft x 2ft) and construct retaining wall to support road structure (10ft high x 10ins thick) and dispose not exceeding 2 miles	cu.yd	150	220.00	33,000.00
2.10	Excavate foundation for catchpit inlets, culvert crossing by machine and provide and install 2 ins dia concrete culverts along with accompanying concrete works (masonry walls to catchpit inlets, concrete base, cover and manhole) and backfill and compact around culvert with selected fill	lin.yd	20	200.00	4,000.00
2.11	ditto for 30 ins dia armco culverts	lin.yd	100	250.00	25,000.00
2.12	ditto for 36ins dia concrete culvert	lin.yd	20	600.00	12,000.00
Bill No. 3 Carriageway					174,550.0
3.1	Excavate for extension of base & sub-base; Provide, lay, shape and compact 3 ins downgraded crushed stone or quarry waste to 6 ins compacted thickness	cu.yd	250	80.00	20,000.00

Bill No. 3 Carriageway

Item No.	Description of work	Unit	Qty.	Rate	Cost
3.2	Carry, reshape and compact existing base to depth of 4 ins, then provide, lay, shape and compact 4 ins of 1 ins downgraded crushed stone in carriageway base and sub-base extension	cu.yd	2100	105.00	220,500.00
3.3	Make good all potholes, depressions and C & S excavation in existing bitumenised carriageway surface with premix including shaping pothole, building up with 1" aggregate, priming and smoothing the premix	sq.yd	1000	22.50	22,500.00
3.4	Provide and apply prime coat of (RC 250, LC 30 or LC 70) to base at the approx. rate of 0.2 gallons per sq. yd and provide, spread and lightly roll single size #4 aggregate or sand to prime coat	sq.yd	15000	3.75	56,250.00
3.5	Provide and apply binder or tack coat of 60/70 pen. grade bitumen or MC 800 at the rate of .2 gal/yd ² to primed surface and provide, spread and lightly roll single size #3 in aggregate to the prepared surface (150 yd ² /cu.yd)	sq.yd	16720	6.25	104,500.00
3.6	Provide and apply binder or tack coat of 60/70 pen. grade bitumen or MC 800 at the rate of .22 gal/yd ² to 1st dressing and provide, spread and lightly roll single size #2 in aggregate to the prepared surface (100 yd ² /cu.yd)	sq.yd	16720	5.00	83,600.00
					507,350.00

Best Available Document

Bill No. 4 Other Items

Item No.	Description of work	Unit	Qty.	Rate	Cost
4.1	Sum for moving and replacing utility poles lying within drainage area and too close to roadway	Sum	NIL	NIL	NIL
4.2	Sum for making good all broken water lines	Sum			10,000.00
4.3	Provide amount for accounting and supervisory services	months	4	20,000.00	80,000.00
4.4	Provide for workmen compensation Insurance (this Insurance paid over entire project of 12 miles)	mile	1.9	1,000.00	1,900.00
4.5	Provide for Public Liability Insurance (this Insurance paid over 1 year on 6 miles)	mile	1.9	1,000.00	1,900.00
					93,800.00

SUMMARY SHEET

MILES 13 & 14 - LOWMANS WD. ROAD

Bill No.	Particulars	Total
1	Site Clearance	31,776.00
2	Drainage	174,550.00
3	Carriageway	507,350.00
4	Other Items	93,800.00
		<u>93,800.00</u>
		\$807,476.00
		=====

Prepared by:

[Signature]
.....
Project Engineer

Approved by:

.....
Project Manager

.....
Chief Engineer

.....
Director of Planning

ROAD CLASSIFICATION

Road	STRUCTURAL ADEQUACY					SERVICE			SAFETY			
	Drainage	Foundation	Bridges/ Culverts		Surface Alignment	Bridges/ Culverts		Pavement	Sighting		Overall Width	
			Surface	Alignment		Distance	Surface		Width	Surface		
1. Gessneau-Tirocher	Fair	Fair	Fair	Poor	Satis.	Satis.	Poor	Fair	Fair	Satis.	Satis.	
2. Tirocher-Deglos	Poor	Fair	Satis.	Poor	Satis.	Fair	Fair	Satis.	Poor	Satis.	Fair	
3. Fond Assau-Chassin	Poor	Poor	Satis.	Poor	Good	Fair	Poor	Good	Fair	Good	Good	
4. Desrameau-La Riviere Mittant	Poor	Poor	Poor	Poor	Satis.	Poor	Poor	Fair	Poor	Satis.	Satis.	
5. Anse-la-Raye-An Ger	Fair	Fair	Fair	Poor	Good	Poor	Poor	Good	Fair	Good	Good	
6. Durandea-Dame de Travansay	Poor	Poor	Poor	V/Poor	Fair	Poor	Poor	Good	Fair	Good	Good	
7. La Resource-Gadette	Satis.	Fair	Fair	Fair	Good	Fair	Poor	Good	Poor	Good	Good	
8. Bois Jolie-Glavier	Poor	Fair	Poor	Poor	Fair	Poor	Poor	Good	Poor	Fair	Fair	
9. Mahaut-Ma Lartigue	Poor	Fair	Fair	Poor	Satis.	Poor	Poor	Fair	Poor	Satis.	Satis.	
10. Diamond-Esperance	Fair	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Poor	Fair	Fair	
11. East Coast Highway	Fair	Good	Good	Fair	Good	Fair	Fair	Good	Fair	Good	Good	

Road No. 1

GUESNEAU-TIROCHER-MARCHAND

(2.1 miles)

- Location :- As shown on the location map, 1.1 miles of this section of road lies between the completed Victoria-Tirocher and Forestiere-Guesneau Roads which formed part of the PHASE II project, and the other mile provides the outlet to Castries and the Port.
- Existing Condition :- On the Guesneau to Tirocher section, the old bituminous surface is now badly eroded, scarified and replace with tiff for the most part as a temporary measure to improve the riding surface which is rough and uneven. The bituminous surface on the Marchand section is also in very poor condition.
- Remarks :- The condition of this remaining section has been highlighted by the provision of good surfaces from Forestiere to Guesneau and Victoria to Tirocher.
- Approximately 77 tons per week moves down this road from the Forestiere area via Marchand to Port Castries.
- Estimated Cost :- \$630,000.

Road No. 2

TIROCHER-DEGLOS (1.6 miles)

- Location :- This road commences at Tirocher on the ridge between the Castries and Cul-de-sac Valleys and goes downhill to join the Castries-Dennery mainroad.
- Existing Condition :- Approximately 0.5 miles of the steepest section of this road is now barely motorable and must be reconstructed entirely. The remaining 1.1 miles requires mainly patching with premix with some large areas of foundation failure.
- Remarks :- This road forms a very important link with the Castries-Dennery road and would save the motorist to and from communities of Tirocher, Guesneau, Forestiere and Babonneau from 3 to 5 miles. The alternative route is down the Cul-de-sac Valley and up the Morne Road, then along the old Victoria Road to Tirocher, a distance of 4.7 miles.
- Approximately 12 tons of bananas still comes through this road to the Odsan Boxing Plant on the Castries-Dennery Road.
- Estimated Cost :- \$384,000.

Road No. 3

FOND ASSAU-CHASSIN INCLUDING THE ST.MARK LOOP ROAD (3.7 miles)

Location :- This road commences off the Guesneau-Babonneau Road and goes inland to the Forest Reserve at CHASSIN. The ST.MARK loop road comes off the south side of the Fond Assau Road providing the main access to the heavily cultivated holdings in that area.

Existing Conditions :- The running surface is now in an extremely poor state with large pot holes and ruts cutting deeply into the naturally occurring volcanic agglomerate used as the base course for this road.

Very little of the bituminous surface has been left intact.

Remarks :- This road serves a highly cultivated area producing some 60 tons of bananas per week, plus large quantities of mixed vegetables and fruit and coconuts.

It also serves the Government owned plant at Chassin which provides blue Mahaut creosoted fencing and fence posts and other timber products.

Estimated Cost :- \$980,000.

Road No. 4

DESRAMEAU-LA RIVIERE MITTANT (1.0 mile)

Location :- This project commences at Desrameau and forms part of a 2.2 mile long road which ends off the Mongiraud-Monchy secondary road.

Existing Condition :- The road is just barely motorable using a 4-wheel drive vehicle. The surface is cut by deep washouts and rivulets caused by uncleared slides and defective drainage. Complete reconstruction is necessary. The remaining 1.2 miles is in a fair condition.

Remarks :- The Agricultural potential of the area has not been fully exploited because of the condition of the road. According to the S.L.B.G.A. figures, the area still supplies a portion of the 7.5 tons coming through Desrameau in spite of the condition of the road. It is thought that production will increase as soon as the access road has been improved.

Estimated Cost :- \$320,000.

Road No. 5

ANSE LA RAYE - AN GER

(2.0 miles)

- Location :- The road commences off the main West Coast Road at Anse-la-raye Village (northend) and continues for 2 miles inland along the narrow valley of the An Ger River.
- Existing Condition :- The road has not been maintained for many years, but an attempt is being made to clear the dense vegetation, remove some slides and open the ditches. However, 14 sets of culverts are below the invert level of the river, causing a mal functioning of the drainage system. These are to be relocated before a new base course and surfacing is applied. The boulder base in many places is still strong and the natural subgrade is generally good.
- Remarks :- This road and the Anse-la-raye-Venus are the only two access roads into the agricultural lands in the vicinity of Anse-la-raye Village. The reinstatement of this entire road to motorable standards will greatly contribute to the welfare of the Anse-la-raye community, firstly by providing some relief during construction in an area of high unemployment and secondly by improving the agricultural potential of the area.
- Banana production is at its very lowest in the area with only 750 lbs shipped per week.
- Estimated Cost :- \$540,000.

Road No. 6

DURANDEAU-DAME DE TRAVERSAY

(1.0 miles)

Location

: This road branches off the main Vanard-Millet road, going south east across the Millet River and up hill to Dame de Traversay.

Existing Conditions

: The road has been severely damaged and washed away by successive rain storms, and is now no longer motorable. The road, including both approaches to a 40 ft. span bridge is to be completely reconstructed. River gravel and pumice deposits are available in the area for use as road building materials.

Remarks

: The area is well cultivated with fruits and mixed vegetables, and an average of 6 tons of bananas per week is still headed out under deplorable conditions. The road is to be reconstructed throughout, with side ditches and cross drainabe reinstated. A base course of naturally occurring material will be laid, followed by a bituminous surfacing.

It is anticipated that banana output could easily be trebled with one year after completion.

Estimated Cost

: \$ 525,000

Road No. 7

LA RESOURCE-GALETTE (0.5 miles)

Location :- As shown on the location map, this 0.5 mile road extends from the Resource-La Resource road rehabilitated under Phase Two of the project providing direct access into the agriculturally productive region lying just north of the village of Gadette.

Existing Conditions :- This road has been neglected for several years, the surface has failed in several areas and the base is rapidly eroding. The drainage has not been checked in several years, and reinstatement and improvement of drainage is required.

Remarks :- Rehabilitation of this road segment will culminate road rehabilitation to this area.

Estimated Cost :- \$185,000.

Road No. 8:

GLAVIER-BOIS JOLIE (2 miles)

Location

:- The road commences off the East Coast Road north of Dennery Village and continues westward towards the interior, serving good agricultural lands until it intercepts the Grande Riviere-Morne Panache Road which was completed under PHASE I of the Road Rehabilitation Project.

Existing Condition

:- Very poor indeed with the boulder base now exposed and forming the riding surface. In the absence of drainage, the base has failed in many places, and the clay subgrade has pumped through the pitched boulder base to the surface.

The road is now only motorable by landrover or a 4-wheel drive vehicle.

Remarks

:- Most of the farmers holdings have now been abandoned due to the condition of the road and the S.L.B.G.A. figures show that production has dropped to a mere 7 tons of bananas per week under extremely difficult conditions.

Most of the farmers reside in Dennery and the construction of this road will go a long way to improve the quality of life in the Village.

Estimated Cost

:- \$560,000.

55

Road No. 9

MA LARTIGUE

(1.0 mile)

Location

:- This segment of road is an offshoot of the Mahaut road which continues northward to serve very rich and heavily cultivated holdings in the area.

Existing Condition

:- At present, the road is a dry weather road built mainly by the efforts of the farmers of the area. With a clay subgrade and a rainfall of over 150 inches per year, access to those lands is sometimes impossible.

Remarks

:- The road will serve about 20 small holdings producing bananas, plantain, coconuts, citrus, mixed vegetables and fruits.

Banana production is now at 18 tons per week, but this could be easily trebled with the provision of a motorable access.

Estimated Cost

:- \$410,000.

Road No. 10

DIAMOND-ESPERANCE

(2.0 miles)

- Location :- Commencing at Diamond Estate northeast of the town of Soufriere and ending at the Morne Bonin Road which formed part of the PHASE I U.S.A.I.D. financed Road Rehabilitation Project.
- Existing Condition :- Since 1980 huge landslides with trees have completely blocked the road and water running downhill has destroyed the surface over a distance of 0.3 miles. The slides must be removed with heavy earthmoving equipment and the road reconstructed over this distance. The remaining 1.7 miles can be patched with premix and the surface restored after cutlassing and drainage.
- Remarks :- Apart from serving a very fertile area producing coconuts, cocoa, citrus, foodcrops and vegetables, this road provides a very much shorter and convenient alternative route to Fond St.Jacques, saving approximately $1\frac{1}{2}$ miles.
- Estimated Cost :- \$475,000.

Road No. 11

EAST COAST ROAD

(7.0 miles)

Location

: The main arterial road running from the capital Castries in the North, to the International Airport, docks, and industrial centre in the South; a distance of 38 miles.

Existing Condition

: The spray and chips surface now almost 10 years old, must now be patched and given a new bituminous surface dressing to prevent further deterioration and costly reconstruction.

Remarks

: Of the total distance of 38 miles, a 9 mile segment was included in PHASE I and 16 miles in PHASE II of the Rehabilitation programme. It is proposed to continue with the reinstatement programme by the inclusion of 7 more miles in PHASE III to bring the total to 32 miles.

Estimated Cost

: \$ 654,000

Road No. 12

REPAIRS TO CHOISEUL RIVER BRIDGE

Location :- The Bridge is situated over the Grande Riviere Choiseul at the entrance to the village of Choiseul and on the main Soufriere to Choiseul Road.

Existing Condition :- The bridge is a very narrow composite structure 13 ft. wide and an overall length of 60 ft. made up of two equal spans.

The bridge girders are in a very badly corroded and the structure must be made safer by replacing the beams and widening the deck.

Remarks :- The collapse of a structure on this important Soufriere to Vieux Fort route could pose serious communication problems.

A temporary by pass will be provided for traffic during reconstruction.

Estimated Cost :- \$200,000.

**PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK**

Life of Project:
From FY 82 to FY 87
Total U.S. Funding 14,650,000
Date Prepared: April 18, 1985

Project Title & Number: Productive Infrastructure Rehabilitation 538-0082

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS																																				
<p>Program or Sector Goal: The broader objective to which this project contributes:</p> <p>To improve the economies of St. Lucia and St. Vincent.</p>	<p>Measures of Goal Achievement:</p> <p>Increase in gross domestic products and per capita incomes of project nations.</p>	<p>Annual Government Statistical data.</p>	<p>Assumptions for achieving goal targets:</p> <ul style="list-style-type: none"> - Government will remain stable and pursue economic growth. - No major weather disasters. 																																				
<p>Project Purpose:</p> <p>To increase incomes and economic productivity in designated agricultural areas through the provision of more dependable transportation to population centers and ports.</p>	<p>Conditions that will indicate purpose has been achieved: End of project status.</p> <ul style="list-style-type: none"> - Increased vehicular transport on project roads. - Increased movement of agricultural and industrial goods. - Decreased travel time on project roads. 	<ul style="list-style-type: none"> - Ministry of Communications and Works reports. - World Bank Reports. - Project Evaluation. 	<p>Assumptions for achieving purpose:</p> <ul style="list-style-type: none"> - Continued budgetary support by host governments. 																																				
<p>Outputs:</p> <ol style="list-style-type: none"> 1. Rehabilitation of selected roads in St. Lucia and St. Vincent. 2. Improved road maintenance capability in St. Lucia and St. Vincent. 	<p>Magnitude of Outputs: by 1987</p> <ol style="list-style-type: none"> 1. Approximately 132 miles of roads in St. Lucia rehabilitated. 2. Approximately 14 miles of roads in St. Vincent rehabilitated. 3. Approximately 121 person-months of technical assistance provided. 4. 35 pieces of road equipment purchased. 5. Approximately 50 persons trained. 	<ul style="list-style-type: none"> - MCW reports. - Field inspections. - Project Manager reports. - Project Evaluation. 	<p>Assumptions for achieving outputs:</p> <ul style="list-style-type: none"> - Adequate pool of laborers and skilled personnel are available. - Materials and equipment will be available within time and cost limits. 																																				
<p>Inputs:</p> <ol style="list-style-type: none"> 1. Funds for Road/Bridge Rehabilitation 2. Equipment 3. Contractor/Project Management 4. Short-term Technical Assist/Training 5. Office Support, Personnel 6. Evaluation, Inflation 	<table border="1"> <thead> <tr> <th rowspan="2"></th> <th colspan="3">Implementation Target (Type and Quantity)</th> <th rowspan="2">TOTAL</th> </tr> <tr> <th>AID</th> <th>GOSL</th> <th>GOSV</th> </tr> </thead> <tbody> <tr> <td>12,139</td> <td>-</td> <td>118</td> <td>12,257</td> </tr> <tr> <td>1,190</td> <td>-</td> <td>231</td> <td>1,421</td> </tr> <tr> <td>888</td> <td>800</td> <td>22</td> <td>1,710</td> </tr> <tr> <td>245</td> <td>-</td> <td>-</td> <td>245</td> </tr> <tr> <td>73</td> <td>505</td> <td>266</td> <td>844</td> </tr> <tr> <td>115</td> <td>-</td> <td>-</td> <td>115</td> </tr> <tr> <td><u>14,650</u></td> <td><u>1,305</u></td> <td><u>637</u></td> <td><u>16,592</u></td> </tr> </tbody> </table>		Implementation Target (Type and Quantity)			TOTAL	AID	GOSL	GOSV	12,139	-	118	12,257	1,190	-	231	1,421	888	800	22	1,710	245	-	-	245	73	505	266	844	115	-	-	115	<u>14,650</u>	<u>1,305</u>	<u>637</u>	<u>16,592</u>	<ul style="list-style-type: none"> - USAID disbursement records. - MCW records. 	<p>Assumptions for providing inputs:</p> <ul style="list-style-type: none"> - AID funds available as planned. - Host governments provide adequate budget support
	Implementation Target (Type and Quantity)			TOTAL																																			
	AID	GOSL	GOSV																																				
12,139	-	118	12,257																																				
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