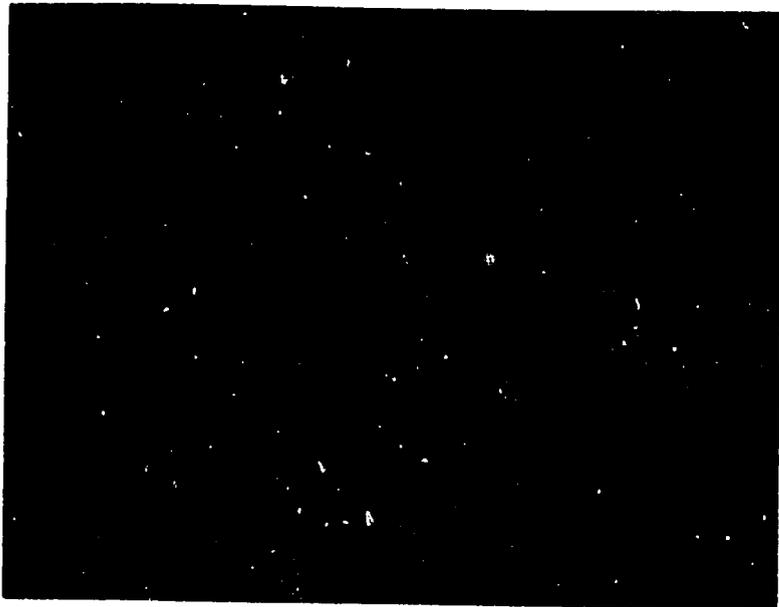


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REPORT ON
STUDY OF THE
FARM-TO-MARKET ROADS
IN THE
NORTHERN NIARI REGION OF CONGO

(SMALLHOLDER AGRICULTURAL
DEVELOPMENT PROJECT
679-0001)

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PREFACE

While on another assignment for USAID in Zaire, Mr. Gopal Pillai was requested to make a side investigation of road conditions in the Northern Niari Region of the Congo, for the Smallholder Agricultural Development Project 679-0001.

The purpose was to identify roads and improvements required for the project. The objective is for the rural roads to be improved upon in order to facilitate the movement of agricultural produce from the producing area to the principal transport arteries leading to major markets.

The specific tasks were to include:

- Conferring with concerned USG and GOC representatives.
- Identifying the specific routes which are suitable for upgrading.
- Assessing the local road-building capabilities of the GOC.
- Determining requirements in light of existing soil conditions and materials availability.
- Proposing the equipment and personnel needed to complete this project component.
- Developing a tentative work schedule.
- Estimating component costs.
- Outlining the roles and contributions of the Project participants.

CONTENTS

SUMMARY		Page No.
SECTION 1	STUDY PERSPECTIVE	1-1
SECTION 2	ROAD INVESTIGATION SAMPLING	2-1
SECTION 3	IMPLEMENTATION STRATEGY	3-1
SECTION 4	IMPLEMENTATION SCHEDULE	4-1
SECTION 5	ESTIMATED COSTS	5-1
SECTION 6	CONCLUSIONS	6-1

SUMMARY

The focus of this study is to identify the roads and the nature of improvements to be carried out in order to increase the flow of farm-to-market commerce in the Niari Valley of the Congo. Mr. Pillai visited the areas, determined what road improvements were underway or planned, inspected certain roads first-hand, determined the requirements for additional improvements and developed cost and time estimates for the work proposed.

These efforts were performed with the assistance of the Régie Nationale des Travaux Publics (RNTP) a Government organization that has responsibility for construction and maintenance of the road system in the Republic of the Congo.

Fond European de Development (FED) is also financing road construction in the Congo including several important bridges. Cooperative for American Relief to Everywhere (CARE) has been assisting in agricultural programs and is in a good position to assist in other programs.

The recommendations that resulted from this study are as follows:

- Add equipments to the upgrading team, already tasked to do similar work, to improve their capability.
- Assign a Road Engineer to complete a detailed survey of routes proposed.
- Install pipe culverts at low points for effective drainoff of rain water.

Summary (Continued)

- Use primarily the Mini Brigade crew for accomplishing the tasks enumerated in this report.
- Agreement is required among USAID, CARE and RNTP regarding responsibilities, both financial and administrative.

S E C T I O N 1

STUDY PERSPECTIVE

1.1 Introduction

The Smallholder Agricultural Development Project (679-0001) has been planned by USAID primarily to improve the agricultural production and marketing activity among small farmers in the Northern Niari Region. The various factors involved in achieving this objective included among other things the following:

- a. Reorganizing and revitalizing the farmers cooperatives among the small farmers of this region.
- b. Adopting improved farming methods, using improved farm tools. This included the manufacture and distribution of small farm implements.
- c. Improving the transport facilities for the movement of farm produce from this region by improving certain selected dirt roads (farm-to-market roads).

This report is primarily intended to identify the roads involved, the method of improvement suggested, the cost involved, the implementation procedure and the time involved in completing the suggested improvements. Each of these topics is discussed in detail in the following paragraphs.

1.2 Scope of Work

The details of the routes which have been selected for reconstruction/improvement under this project are given in Table 1.

TABLE 1
RECOMMENDED ROUTES FOR IMPROVEMENT

Item No.	Routes	Length (km)	Recommendation/Action
1	Mosendjo- Mougoundo Sud	43	Reprofiling and compacting
2	Mougoundo Sud Mayoko	62	Partial reconstruction, reprofiling and compacting
3	Mayoko-Mbinda	25	Reprofiling and compacting
4	Mayoko- Mougoundo Nord	69	Partial reconstruction, reprofiling
5	Mosendjo-Nzabi	72	Partial reconstruction, reprofiling and compacting
6	Mosendjo- Idzendi	76	Partial reconstruction, reprofiling and compacting
7	Idzendi- Moukondo	50	Partial reconstruction, reprofiling and compacting
8	Divenie- Moukondo	27	Partial reconstruction, reprofiling and compacting
9	Divenie- Paysannat	26	Partial reconstruction, reprofiling and compacting
10	Divenie-Nianga	36	Partial reconstruction reprofiling and compacting
11	Divenie- Monpitou	30	Partial reconstruction reprofiling and compacting

1.3

Background Data

Out of the 11 Items shown on Table 1, Item Nos. 4, 9 and 10 are already included in the 1981 work schedule of the Mechanized Brigade of the RNTP Niari Region. RNTP is the Government organization looking after the construction and maintenance of the road system in Congo.

FED is also financing road construction projects in Congo and part of their plans includes the reconstruction of five bridges on the Divenie-Mossendjo Road. The implementation of Item No. 10 can be effective only after the reconstruction of these planned bridges.

S E C T I O N 2

ROAD INVESTIGATION SAMPLE

As a sampling exercise, the road from Mossendjo (Item 1) towards Mayoko was inspected for a distance of 52 kms and the following assessments were made:

<u>Distance from Mossendjo (km)</u>	<u>Present Condition and Necessary Work to be Done</u>
05	Road surface consists of bad clayey soil for about 0.5 km. Reprofilng, lateriting and compacting to be done.
07	Road surface consists of bad clayey soil for about 0.5 km. Reprofilng, lateriting and compacting to be done.
08	Reprofilng and compacting to be done for 1 km.
11	Road surface consists of clayey soil for about 0.5 km; reprofiling, lateriting and compacting to be done.
13	Road surface consists of clayey soil for about 0.5 km; reprofiling lateriting and compacting to be done.
17	Road surface consists of clayey soil for about 0.5 km; reprofiling lateriting and compacting to be done.
17	Regrading of road at pipe culvert for providing a minimum of 30 cm earth cushion.
20	Reprofilng to be done.
21	1 X 0.9 m pipe culvert to be provided.
22 to 27	Road too narrow. To be reprofiled and bush to be cleared on both sides.
29	Road surface consists of clayey soil; relateriting and compacting to be done for 0.5 km.
31	Road surface to be regraded and compacted with provision of a 1 X 0.9 m pipe culvert at the lowest point.

- 34 New pipe culvert 1 X 0.9 m to be provided.
- 37 Regrading and compacting to be done for about 0.5 km
- 46 Regrading and compaction to be done for 0.5 km
- 47 One pipe culvert 1 X 0.9 m to be provided
- 47 to 50 Heavy regrading necessary; also bush clearing to be done.
- 52 One pipe culvert 1 X 0.9 m to be provided.

The approaches to the ferry across Lonessie River which is a manually operated ferry, also require improvement to enhance the transportation potential of this road.

Inspection reports, which are similar in detail to that just presented, will be required for all road sections mentioned in Items 1 through 11 of Table 1. Such survey reports require the services of a competent Road Engineer. These inspections/reports must be completed before taking up the preparation of construction/improvement plans, primarily to identify the requirements for pipe culverts.

The data obtained from the sample inspection has been used to estimate the requirements for other road sections, and to project the cost figures given in Section 5 of this report.

S E C T I O N 3

IMPLEMENTATION STRATEGY

The construction and maintenance of the road system in Congo is being done by RNTP. For administrative convenience, the entire road system has been divided into nine different regions. Each region is under the control of a Regional Director. The roads proposed for reconstruction/improvement in this report fall in the Niari Region with its headquarters at Loubomo. The Niari Region is further subdivided into six districts and the roads proposed for improvement lie in Mayoko, Divenie and Mossendjo districts. These districts are administered by the RNTP's subdivision at Mossendjo.

The road construction and maintenance program of RNTP is being done through the formation of brigades. There are different types of brigades and the Niari Region has the following brigades:

- 1 Mechanized Brigade
- 2 Reprofilng Brigades
- 1 "Mini" Brigade (at Mossendjo)
- 2 Bridge and Ferryboat team
- 1 Asphalt Road Team
- 6 Sector Teams

All these teams are extremely deficient in heavy-duty equipments and the few equipments they do have are very old and subject to frequent breakdowns. If the proposed work is to be done through RNTP, most of it will become the responsibility of the Mini Brigade. As a result, additional equipments will have to be purchased for equipping the Mossendjo Mini Brigade. At present this brigade has only one road grader (procured in 1962).

The Cooperative for American Relief to Everywhere (CARE), has already built up a good rapport with RNTP officials at National, Regional and District levels due mainly to the efforts of Mr. Steve Troester. It is recommended that the proposed reconstruction and improvement be done through the Mini Brigade at Mossendjo after equipping the brigade to the specified level.

The equipments to be added to the Mossendjo Mini Brigade are:

- 1 Wheel Loader (Caterpillar 904 or 920)
- 2 Graders (Caterpillar)
- 2 Wheel Packer
- 1 60HP Tractor
- 1 Bulldozer (Caterpillar D-7)
- 1 Pick-up Truck

The Mossendjo Mini Brigade has already been scheduled to do certain repair and maintenance work according to the priorities laid down by the RNTP. But before equipping this Brigade, agreement must be reached that the roads listed in Table 1 will be assigned for reconstruction and improvement by that unit in accordance with a mutually agreed upon implementation plan and schedule.

As stated earlier, out of the 11 sections of road proposed for reconstruction under this project, the following sections have already been included in the RNTP proposal for reconstruction under their 1981 program. As such, the costs for reconstruction of these sections are excluded from the projected costs given in Section 5 of this report. They are:

- Item No. 4 Mayoko-Mougoundo Nord
- Item No. 9 Divenie-Paysannat
- Item No. 10 Divenie-Nianga

Also FED is financing the reconstruction of five bridges on the Divenie-Mossendjo Road. These also have been excluded while calculating the project costs.

Several pipe culverts will have to be added in these road sections for effective drainage of the rain water. Their locations, along with that of other major regrading and improvement works as necessary, will have to be ascertained by the Road Engineer before commencement of the work. These can be accomplished by conducting a detailed inspection of the 11 road sections as conducted for the sampling described in Section 2 of this report. This total road survey is estimated to take 20 days.

S E C T I O N 4

IMPLEMENTATION SCHEDULE

The total kilometer distances of routes proposed for reconstruction/improvement is 516 kms. Out of this, 131 kms have already been programmed for implementation by RNTP in 1981. The Mini Brigade can do the reprofiling/reconstruction at an average rate of 2 kms/day. So the total 385 kms to be handled by the Mini Brigade can be completed in approximately 200 days. The installation of pipe culverts will take another 60 working days. In total, 260 working days will be necessary to complete the project.

The working season in Congo extends between May to October and January to February. If the Mini Brigade at Mossendjo were used exclusively to implement this project, it would take approximately 1-1/2 years. But, the same brigade is also to be used for doing reprofiling road work on other routes as specified by RNTP. Therefore, it may not be possible to utilize the efforts of the brigade exclusively for this project. This may make it necessary to extend the project implementation period to as much as 2-1/2 years.

Since the project can start only after the arrival of all equipments and partial supply of the pipe, there will be an initial delay of 4 to 6 months for commencement of the project, after finalizing the agreements. This period shall be utilized for doing a detailed inspection of all routes involved by the Road Engineer, so that the exact locations needing heavy regrading and the addition of pipe culverts can be identified. This survey shall be done as close to the actual starting of the project as possible and preferably towards the end of any rainy season.

S E C T I O N 5

ESTIMATED COSTS

5.1 Assumptions. The estimated cost for the partial reconstruction/improvement in the proposed road sections as discussed in the previous report sections, have been derived from the following:

- a. Actual inspection of the 52 kms of Mossendjo - Mayoko road to ascertain the extent of reconstruction/repair necessary, including the provision of culverts.
- b. Data supplied by RNTP regarding the composition of Mechanized and Mini Brigades, its operating expenditures and performance standards.
- c. Discussions with RNTP officials, especially M/s Jean Maillot, Kassibi Paul, Bambi Edgard.
- d. Inspection of plant maintenance depots at Loubomo and Mossendjo.

In arriving at these estimated costs, it is presumed that the reconstruction/improvement of these road sections will be done through RNTP Mini Brigade at Mossendjo under the administrative surveillance of CARE.

The total cost for reconstruction/improvement of the different road sections consists of three distinct components:

- a. Cost for equipping the Mini brigade at Mossendjo
- b. Operating costs for reconstruction/improvement of the different sections
- c. Cost of installation of new pipe culverts.

5.2 Cost of Equipment:

<u>Equipment Type</u>	<u>Qty</u>	<u>Rate (U.S.\$)</u>	<u>Amount U.S.\$)</u>
Wheel Loader (Caterpillar 904 or 920)	1	118,000	118,000
Road Graders (Caterpillar)	2	72,000	144,000
Wheel Packer/ Vibratory roller	2	11,200	22,400

60 HP Tractor	1	24,000	24,000
Bulldozer (Caterpillar D7)	1	148,000	148,000
Pick up truck	1	19,200	<u>19,200</u>
Subtotal			475,600
Add 30% for spare parts			142,700
Tools for maintenance shop			<u>100,000</u>
TOTAL			<u>717,300</u>

The prices quoted for the equipments are duty free prices for February 1981, FOB Brazzaville. A lead time of 4-6 months is anticipated for delivery of the equipments at Brazzaville, after placement of a firm order with the local dealer.

5.3 Operating Cost for Reconstruction/Improvement

Operating cost for reconstruction/improvement consists of fuel costs, and pay for operators and workers for spreading, compacting and bush clearing. An average 800 liters of gasoline consumption can be assumed per day. The total number of days for completing the works programmed is estimated at 200 days. A 20 member labor team will be able to complete the bush clearing operation during the same period. This same team will be able to assist the road reconstruction/improvement operation also. The total operating costs have been derived as follows:

Cost of fuel (at the rate of 800 liters/day for 200 days):	\$ 89,600
Pay for operators (10 operators @ 35,000CF/month):	19,600
Pay for laborers (20 laborers @ 25,000CF/month):	28,000
Maintenance cost of equipment including cost of lubricating oil, fuel oil, etc.:	<u>15,000</u>
TOTAL	\$152,200

5.4 Cost of Installation of Pipe Culverts

It is proposed that pipe culverts be installed at low points for effective drainage of rain water wherever necessary. Based on the inspection of 52 kms of road between Mossendjo and Mayoko, it is estimated that about 240 meters of pipe of varying

sizes (30 cms to 120 cms) will be necessary for installation at about 30 locations. At an average cost of \$150/meter, the costs of pipe will work out to be \$36,000. ARMCO pipes are recommended since there is an ARMCO pipe factory at Kinshasa.

Installation of pipe culverts does not involve any elaborate preparation. A D-7 Bulldozer will be able to prepare the bed, by excavation, for placement of the pipe. While back-filling, it shall be ensured that a minimum of 40 cm earth cushion is provided at the top of pipes. This is necessary for proper distribution of wheel loads. It is estimated that the installation of the pipe culverts will take approximately 60 days and the same Mini Brigade will be able to accomplish this task, once the pipes are delivered at site.

Cost of installation of pipe culverts is as follows:

Cost of pipes:	\$36,000
Cost of transportation of pipes (by hiring trucks):	\$10,000
Cost of installation:	<u>\$45,000</u>
TOTAL	\$91,500

The transportation of the pipes to the sites may be achieved by making use of the flat bed truck now located with RNTP at Loubomo.

Summary of Costs

Cost of equipment	\$717,300
Operating and construction cost	152,200
Cost of installation of pipe culverts	<u>91,500</u>
TOTAL	\$961,000

Note that these costs do not include the cost of Items 4, 9 and 10 from Tables 1 as mentioned in Section 2, since these works have already been programmed by RNTP in their projected plan for 1981.

S E C T I O N 6

CONCLUSIONS

The proposed work will greatly enhance the pace of evacuation of agricultural produce from this area. CARE has already established itself in this area and has built up a good rapport with the agricultural and RNTP officials. Since the project has to be implemented through RNTP, an agreement must be reached among AID, CARE and RNTP representatives, regarding the sharing of the financial, administrative and implementation responsibilities.

Priorities for the different routes included in this project shall be decided, along with the other routes proposed by RNTP, on a yearly basis after due consultation with RNTP. It shall be ensured that at least two thirds of the work done by the Mini Brigade at Mossendjo, which is equipped by the project funds, shall be for this project. The ownership of the project-funded equipments shall be transferred to RNTP only on completion of the project. CARE shall exercise sufficient control over the operation of the equipments to see that these are being used as agreed upon.

The Government of Congo could be asked to contribute fully towards the cost of fuel, pay for operators and laborers, maintenance of equipment, transportation cost for pipes and installation expenditure for the pipes, for a total amount of \$207,700. The Government should also ensure sufficient supply of fuel for equipments during the project implementation period.