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139p
PD-AAC-169-B1

ACTION MEMORANDUM FOR THE ACTING ADMINISTRATOR

8/27/76

THRU : ES
Acting AA/PPC, Alexander Shakow

FROM : Acting AA/AFR, W. Haven North

SUBJECT : Eastern ORD Rural Roads

Problem: To authorize a grant of $2,323,000 to the Government of Upper Volta for the construction of three rural roads in the eastern rural development sector of Upper Volta, your approval of the Eastern ORD Rural Roads Project (project number 686-0215) is required.

Discussion: The Eastern ORD (Regional Development Organization) is the location of an AID-assisted Integrated Rural Development Project. From the outset of this project, it was evident that the lack of transport infrastructure was a major and critical constraint to the area's development.

The Eastern ORD Rural Roads Project is designed to partially overcome this constraint through the construction of three all-weather roads (totalling 158 kilometers) in the major population and production centers of the region. The construction of these roads will result in greater marketing opportunities as well as increased access to social and developmental services for the people of the ORD. The roads, varying in length from 39 to 72 kilometers, will be five meters wide, using compacted lateritic soils for both the roadway fill and surfacing. The economic feasibility study performed during the project design showed an internal rate of return for the individual roads of 15% to 21.3%. The roads will be built by a division of the GOUV Department of Public Works through the creation and equipping of a "road brigade". The brigade consists of 37 people fully trained and equipped to operate and maintain the equipment needed to build the roads designated for construction under this project. It is proposed that AID finance the following inputs to the project:

1) approximately 31 pieces of road building equipment;

2) 75% of all operating costs directly connected with the construction of the project roads;

3) 100% of the salary and support costs of one full time expatriate project manager and two local hire assistants (one administrator, one mechanic).

The $2,323,000 grant will be budgeted as follows:

-Commodities and Construction	$ 1,953,000
-Technical Assistance	270,000
-Miscellaneous	100,000

The funding by fiscal year will be (obligation) in two tranches:

FY 1977	FY 1978	TOTAL
1,500	823	2,323

The Government of Upper Volta will contribute $687,000 (23%) of the total project costs. Given the Government's severely limited development budget and the intense competition for these funds, this is considered a significant contribution and a good indication of the priority the Government of Upper Volta places on this project. This level of support does not, however, meet the AID requirement of 25% host country contribution to project costs and a waiver of this requirement has been requested.

Maintenance of the completed roads will be the responsibility of the GOUV. One condition of a $7.5 million IDA loan to Upper Volta for rural road construction and maintenance is the creation by the GOUV of a secondary road maintenance fund. The roads to be built under the AID project will be maintained from this fund.

After studying the potential environmental impact of the road construction proposed in this project, a negative environmental threshold decision was made. The project will not have a significant detrimental effect on the human environment and conforms to the pertinent AID regulations. The Environmental Threshold Decision is attached as Annex D.

After completing its review, the project committee, due to the absence of unresolved substantive issues, recommended that further review by the ECPR was not necessary.

The Mission requested that waivers be granted in the Project Authorization Document for the elements listed below. The project committee concurred in the request. Justification for these waivers is attached as Annexes A through C to this memorandum. The waivers requested are:

A) A waiver of the host country contribution of 25% of the project cost;

B) A procurement source waiver from AID Geographic Code 000 to Geographic Code 941 for construction materials and to Geographic Code 935 for two four-wheel drive vehicles.

Recommendation: The project committee recommends the following:

1) That by your signature below, you approve the proposed grant of $2,323,000 for the construction of three roads in the Eastern ORD of Upper Volta.

APPROVED _____

DISAPPROVED _____

DATE 3/31/77

2) That you approve a waiver for Code 941 procurement of construction materials (cement, reinforcing steel, etc.) as described in Annex A of this memorandum and a waiver for Code 935 procurement for two vehicles as described in Annex B.

APPROVED _____

DISAPPROVED _____

DATE 3/31/77

3) That you approve a waiver for the requirement of a 25% host country contribution to the project as required in Section 110(a) of the Foreign Assistance Act as described in Annex C.

APPROVED _____

DISAPPROVED _____

DATE 3/31/77

Clearances:

GC:GMorgan _____

AFR/GC:STisa SET
PPC/DPRE:EHogan
AFR/SFWA:DShear
AFR/DR:JKelly
AFR/DP:WTate
SER/FM:TBlacka
SER/ENGR:RMacDonald
AFR/DR/SFWAP:CHusick:3/9/77

Project Authorization and Request for Allotment of Funds

Part II

Country: Upper Volta

Project: Eastern ORD Rural Roads

Project Number: 686-0215

Pursuant to Part I, Chapter 1, Section 103 of the Foreign Assistance Act of 1961, as amended (the "Act"), I hereby authorize a Grant to the Government of Upper Volta (the "Cooperating Country") of not to exceed One Million Five Hundred Thousand United States Dollars ($1,500,000) to assist in financing certain foreign exchange and local currency costs of goods and services required for the project as described in the following paragraph.

The project consists of providing technical assistance, equipment, materials (including fuel) and related services to assist in the creation and operation of a road brigade that will construct a total of approximately 158 kilometers of rural roads from Fada N'Gourma to Bilanga (72 kms.), from Diabo to Comin Yanga (48 kms.) and from Namounou to Logobou (39 kms.) and to assist in the construction of related drainage structures by local contractors (hereinafter referred to as the "Project"). Detail design and supervision of construction under the Project shall be provided by Service d'Entretien des Routes Secondaires (SERS) of the Department of Public Works, and implementation of the Project will be supervised by an A.I.D.-financed Project Manager.

I approve the total level of A.I.D. appropriated funding planned for the Project of not to exceed Two Million Three Hundred and Twenty Three Thousand United States Dollars ($2,323,000) Grant, during the period FY 1977 through FY 1978, including the amount authorized above and an additional increment of grant funding, during the period, of $823,000 in FY 1978 subject to the availability of funds and in accordance with A.I.D. allotment procedures.

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

a. Source and Origin of Goods and Services

Except for ocean shipping, goods and services financed by A.I.D. shall have their source and origin in Upper Volta or the United States,

except as A.I.D. may otherwise agree in writing. Ocean shipping under the Grant shall be procured in the United States.

b. Conditions Precedent

1. Prior to the first disbursement of funds under the Project for construction services (other than with respect to the Project Manager) or operations or for equipment and materials, or to the issuance of any commitment documents with respect thereto, the Cooperating Country shall furnish to A.I.D. the following in form and substance satisfactory to A.I.D.:

A. Evidence of the creation of a Project Coordinating Committee consisting of a representative of the Eastern ORD and of SERS, the Project Manager and the Project Manager for the Integrated Rural Development Project in Fada N'Gourma, which will meet on a monthly basis to review the status of the Project and any operational problems;

B. A plan, including a schedule, for the maintenance of all roads constructed under the Project indicating the source and availability of funds for that purpose and evidence that the Cooperating Country has taken all legal steps necessary to assure that roads constructed under the Project will also qualify for funds for maintenance from the Highway Maintenance Fund established under the International Development Association loan to the Cooperating Country;

C. A plan for the coordination of construction of the Project roads by the brigade and the construction of drainage structures by local contractors to assure that the road and drainage structures are constructed in an efficient and economical manner;

D. Construction standards and specifications for the roads to be constructed under the Project;

E. A copy of executed contracts for the procurement of equipment required for the Project with firms acceptable to A.I.D.

2. Prior to the first disbursement of funds under the Project for operation of the road brigade and construction services for each road constructed under the Project, or the issuance of any commitment documents with respect thereto, the Cooperating Country shall furnish the following to A.I.D., in form and substance satisfactory to A.I.D.:

A. A copy of an executed contract for construction services for drainage structures for such road with a firm acceptable to A.I.D.;

B. Detailed plans and specifications for drainage structures to be constructed for such road.

c. Covenants

The Grant Agreement shall contain covenants providing in substance as follows:

1. Contracts for construction services financed by A.I.D. shall be reviewed and approved by A.I.D. in accordance with country contracting policies and procedures set forth in Handbook 11 and equipment procured by direct A.I.D. contract shall be undertaken in accordance with policies and procedures set forth in Handbook 15 and A.I.D. Regulation 1.

2. The Cooperating Country shall assure the availability to the Project of adequate numbers of unskilled and skilled personnel, including engineers, equipment operators and mechanics, required for the design, operation, maintenance and supervision of the Project.

3. Equipment procured under the Project shall be retained in the Project area and shall be used for the maintenance of roads constructed under the Project.

d. Waivers

1. Based upon the justification set forth in Annex C, I hereby waive the requirement of Section 110(a) of the Act that the Cooperating Country make a contribution to the Project at least in an amount equal to twenty-five percent of the cost of the Project.

2. Notwithstanding paragraph a. above, and based on the justification set forth in Annex A, I hereby:

A. approve a procurement source waiver from Code 000 (U.S. only) and Upper Volta to Code 941 for the construction materials described in Annex A; provided that the amount of such procurement shall not exceed $250,000; and

B. certify that procurement from the sources described above is necessary for the attainment of U.S. foreign policy objectives and the objectives of the foreign assistance program.

3. Notwithstanding paragraph a. above and based on the justification set forth in Annex B, I hereby:

A. approve a procurement source waiver from A.I.D. Geographic Code 000 (U.S. only) to A.I.D. Geographic Code 935 (Special Free World) for motor vehicles and spare parts; provided

that the total amount of such procurement shall not exceed approximately $12,000;

B. certify that the exclusion of procurement of the above-described motor vehicles and spare parts from the requested source countries in Code 935 would seriously impede attainment of U.S. foreign policy objectives and the objectives of the foreign assistance program; and

C. find that special circumstances exist to waive, and do hereby waive, the requirements of Section 636(i) of the Act.

Acting Deputy Administrator

3/31/77
Date

Clearances:

AA/AFR:WHNorth
AFR/GC:STisa
PPC/DPRE:EHogan
AFR/SFWA:DShear
AFR/DR:JKelly
AFR/DP:WTate
SER/FM:JMcCall
SER/ENGR:RMacDonald
GC:GMorgan

AFR/GC:STisa:3/14/77

ANNEX A

Request for Waiver for Construction Commodity Procurement

Problem: In order to assure completion of this project in a timely economical fashion, a source/origin waiver is required for the procurement in Upper Volta of construction commodities from Geographic Code 000 (U.S. only) to Geographic Code 941 (free world developing countries).

Discussion: The construction of 158 kilometers of rural roads envisioned in this project will require a limited amount of cement, reinforcing steel and other construction commodities for culverts, drains and bridges along the roadways. These commodities are not produced in Upper Volta but are regularly available locally as imports from Code 941 countries. Given the kinds and amounts of commodities involved (approximately $250,000 in total value) and the critical need that the commodities be available as required, it is impractical to import them from the U.S., with the resulting delays and substantially increased costs that must be anticipated if these commodities are procured in the U.S.

Recommendation: Therefore, it is recommended that a waiver be approved permitting procurement of these commodities from Code 941 countries and certified that procurement from 941 sources is necessary to the foreign policy objectives of the U.S. and the objectives of the foreign assistance program.

ANNEX B

Request for Waiver for Vehicle Procurement

Problem: In order to purchase two four-wheel drive vehicles and needed spare parts, a source/origin waiver from Geographic Code 000 (U.S. only) to Geographic Code 935 (Free World) is needed.

Discussion: While all other construction equipment (trucks, bulldozers, graders, etc.) will be of U.S. origin, and can be serviced in Upper Volta, a waiver for the two vehicles is requested because a) there are no support facilities in Upper Volta for U.S. manufactured four-wheel drive vehicles; b) procurement of landrovers will assist in the Government of Upper Volta's stated policy of standardizing its vehicle fleet.

Section 636(i) of the Foreign Assistance Act of 1961, as amended, prohibits AID from the purchase or long-term lease of motor vehicles unless such vehicles are manufactured in the United States. Section 636(i) does, however, provide that "...where special circumstances exist, the President is authorized to waive the provision of this section in order to carry out the purposes of this Act."

The CDO Ouagadougou is of the opinion that travel requirements of personnel engaged in the implementation of the project, the Government of Upper Volta policy toward vehicle standardization, and the lack of adequate service facilities present special circumstances that justify the waiving of the source/origin requirements of Section 636(i) of the FAA as set forth in Chapter 2 of AID Handbook 15.

The project is designed to improve market access for the farmers of the Eastern ORD by constructing 158 kilometers of all weather rural access roads. The ORD is one of the largest regional areas in Upper Volta and is presently served by an inadequate system of laterite roads that often are nothing more than goat or bicycle tracks. These "roads" are often closed during the three-month wet season. Four-wheel drive vehicles are required on the job and even to gain access to the construction sites. The only four-wheel drive vehicles which can be maintained and repaired locally are of non-U.S. manufacture. Manufacturers of U.S. vehicles are not represented in Upper Volta and there is no spare parts, support or maintenance facilities for U.S. vehicles in the country. Until such time U.S. manufacturers are represented in Upper Volta with sufficient spare parts and adequate repair facilities, there is no reasonable alternative to the purchase of non-U.S. manufactured vehicles.

Recommendation: For the reasons stated above, it is recommended that it be concluded that the special circumstances that exist necessitate the procurement of non-U.S. manufactured vehicles and that it is certified exclusion of procurement from non-U.S. sources would seriously impede attainment of U.S. foreign policy objectives and the objectives of the foreign assistance program.

ANNEX C

Request for Waiver of Twenty-Five Percent Requirement

Problem: Your approval is required to authorize a waiver of Section 110(a) of the Foreign Assistance Act requiring the host country contribute 25% of the total Project Cost.

Discussion: Section 110(a) of the amended Foreign Assistance Act of 1961 requires that the host country contribute at least 25% of the total cost of an AID-supported project. Waivers from this requirement must be approved on a case-by-case basis.

Upper Volta is one of the poorest countries in the developing world. Officially listed by the United Nations as one of 25 least developed countries, Upper Volta is also listed as one of the countries most seriously affected by the increased price of petroleum products. Because of the country's poverty and the resulting limited tax base the Government of Upper Volta (GOUV) must commit most of its resources to meeting its recurrent costs. This leaves the country with development resources inadequate to break the circle of poverty in which it finds itself.

The GOUV operating funds currently available to the Public Works Department, the administering agency for the rural roads project, are sorely needed for maintaining existing roads. Additional funds for maintenance and/or construction will not be forthcoming until a maintenance fund to be created under an IDA loan is created or until some portions of the roads planned in the project are completed, so that funds related to the increase of production such as taxes for POL will be subsequently available for such works.

The importance the GOUV places upon the project is shown by the fact that even when faced with the financial restrictions described above, its contribution to the total project costs of the equivalent of $687,000, is 23% of these costs. It is felt that this is the maximum support the GOUV can be expected to provide and any additional demands on Voltaic fiscal resources would delay and possibly undermine the success of this project, which has been designed to aid and benefit the rural poor of the Eastern ORD area.

ANNEX D

ACTION MEMORANDUM FOR THE ASSISTANT ADMINISTRATOR FOR AFRICA

THRU : Mr. W. Haven North, DA/AFR

FROM : John L. Withers, Director - AFR/DR

SUBJECT: Environmental Threshold Decision

PROJECT TITLE: Eastern O.R.D. Rural Roads

PROJECT NUMBER: 686-0215

COUNTRY : Upper Volta

ENVIRONMENTAL THRESHOLD DECISION RECOMMENDATION: "Negative Determination"

PROBLEM: A.I.D. Regulation 16 requires that this A.I.D. financed action be examined from the viewpoint of its potentiality for having a significant effect on the human environment. If the result of this study indicates the action will not have a significant detremental effect on the human environment, then an official finding to this effect called a "Negative Determination" must be signed by the Assistant Administrator of the relevant A.I.D. Bureau.

FINDING: The Project Review Committee and the members of my staff responsible for the implementation of A.I.D.'s Environmental Procedures have reviewed this project and its proposed actions from the viewpoint of its environmental aspects and A.I.D.'s Regulation 16. They are in full accord with the design team's and the Mission's findings on page 39 of the Project Paper and Annex B pages 89-93 thereof. These findings support a conclusion that this proposed action is not an action which will have a significant detremental effect on the human environment, and is, therefore, not an action for which an Environmental Assessment or an Environmental Impact Statement will be required. A "Negative Determination" as provided for in A.I.D. Regulation 16 is therefore recommended.

RECOMMENDATION: It is recommended that you approve the recommendation for a "Negative Determination" for the project.

APPROVED: _____

DISAPPROVED: _____

DATE: _____

Drafted: AFR/DR/SDP/Environment:GNell:ge:11/24/76

Clearances: AFR/DR/SDP/Environment:DEDibble
Project Committee Chairperson:
C. Husick, DR/SFWAP
AFR/DR/SDP:JBlumgart
AFR/DR:SKlein
AFR/AA:TBrown (info)

(11. 3.8)

Aou 9A, Ch 9, HB 3

AGENCY FOR INTERNATIONAL DEVELOPMENT
PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT OF FUNDS PART I

1. TRANSACTION CODE: [A] (A = ADD, C = CHANGE, D = DELETE) — PAF
2. DOCUMENT CODE: 5
3. COUNTRY/ENTITY: Upper Volta
4. DOCUMENT REVISION NUMBER:
5. PROJECT NUMBER (7 digits): [686-0215]
6. BUREAU/OFFICE: A. SYMBOL: AFR; B. CODE: [1]
7. PROJECT TITLE (Maximum 40 characters): [Eastern ORD Rural Roads]
8. PROJECT APPROVAL DECISION — ACTION TAKEN: [A] (A = APPROVED, D = DISAPPROVED, DE = DEAUTHORIZED)
9. EST. PERIOD OF IMPLEMENTATION: YRS. [0 2] QTRS. [3]

10. APPROVED BUDGET AID APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	D. LOAN	E. 1ST FY 77 F. GRANT	G. LOAN	H. 2ND FY 78 I. GRANT	J. LOAN	K. 3RD FY ___ L. GRANT	M. LOAN
(1) FN	133	060		1,500		823			
(2)									
(3)									
(4)									
TOTALS									

A. APPROPRIATION	N. 4TH FY ___ O. GRANT	P. LOAN	Q. 5TH FY ___ R. GRANT	S. LOAN	LIFE OF PROJECT T. GRANT	U. LOAN
(1) FN					2,323	
(2)						
(3)						
(4)						
TOTALS						

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

C. PROJECT FUNDING AUTHORIZED THRU: FY 79

12. INITIAL PROJECT FUNDING ALLOTMENT REQUESTED ($000)

A. APPROPRIATION	B. ALLOTMENT REQUEST NO. 1 C. GRANT	D. LOAN
(1) FN	1,500	
(2)		
(3)		
(4)		
TOTALS	1,500	

13. FUNDS RESERVED FOR ALLOTMENT

TYPED NAME (Chief, SER/FM/XXXX): FCD
Jean McColl

SIGNATURE: [signature]

DATE: [date]

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

15. FOR AMENDMENTS, NATURE OF CHANGE PROPOSED

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

AID 1330-6 (7-79)

6C(1) - COUNTRY CHECKLIST

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

A. GENERAL CRITERIA FOR COUNTRY

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

A

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

A

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

B. FUNDING CRITERIA FOR COUNTRY

1. Development Assistance Country Criteria

a. FAA Sec. 102(c), (d). Have criteria been established, and taken into account, to assess commitment and progress of country in effectively involving the poor in development, on such indexes as: (1) small-farm labor intensive agriculture, (2) reduced infant mortality, (3) population growth, (4) equality of income distribution, and (5) unemployment.	Yes. See Country Development Assistance Program (DAP) of FY 75 and certified as remaining valid for FY 76 and FY 77.
b. FAA Sec. 201(b)(5), (7) & (8); Sec. 208; 211(a)(4), (7). Describe extent to which country is:	
(1) Making appropriate efforts to increase food production and improve means for food storage and distribution.	See DAP as cited above.
(2) Creating a favorable climate for foreign and domestic private enterprise and investment.	The country actively attempts to promote domestic and foreign investment but with limited success due to small domestic market and limited local capital.

81b

(3) Increasing the public's role in the developmental process.

(3) The Government has created a system of regional development organizations that decentralizing the decision making process and giving the local people greater participation : local development.

(4) (a) Allocating available budgetary resources to development.

(b) Diverting such resources for unnecessary military expenditure and intervention in affairs of other free and independent nations.

(4)(a) Upper Volta allocates its available budgetai resources to development whenever possible.
(b) A minimal amount of the country's resources are used for military expenditures.

(5) Making economic, social, and political reforms such as tax collection improvements and changes in land tenure arrangements, and making progress toward respect for the rule of law, freedom of expression and of the press, and recognizing the importance of individual freedom, initiative, and private enterprise.

The country is reforming its current laws as it feels appropriate to meet the needs of its people.

(6) Otherwise responding to the vital economic, political, and social concerns of its people, and demonstrating a clear determination to take effective self-help measures.

Within the constraint of its resource base, the GOUV has made a determined effort to take effective self-help measures.

c. FAA Sec. 201(b), 211(a). Is the country among the 20 countries in which development assistance loans may be made in this fiscal year, or among the 40 in which development assistance grants (other than for self-help projects) may be made?

Yes.

d. FAA Sec. 71. Will country be furnished, in same fiscal year, either security supporting assistance, or Middle East peace funds? If so, is assistance for population programs, humanitarian aid through international organizations, or regional programs?

No.

2. Security Supporting Assistance Country Criteria

a. FAA Sec. 502B. Has the country engaged in a consistent pattern of gross violations of internationally recognized human rights? Is program in accordance with policy of this Section?

N/A

b. FAA Sec. 66. Is the Assistance to be furnished to a friendly country, organization, or body eligible to receive assistance?

N/A

c. FAA Sec. 609. If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made?

N/A

CC(2) - PROJECT CHECKLIST

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

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

A. GENERAL CRITERIA FOR PROJECT.

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

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

   (a) Through annual Congressional Presentation.

   (b) Yes.

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

   (a) Yes.

   (b) Yes.

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

   N/A

4. FAA Sec. 611(b); App. Sec. 101. If for water or water-related land resource construction, has project met the standards and criteria as per Memorandum of the President dated Sept. 6, 1973 (replaces Memorandum of May 15, 1962; see Fed. Register, Vol 38, No. 174, Part III, Sept. 10, 1973)?

   N/A

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

   Yes.

A.

6. FAA Sec. 209, 619. Is project susceptible of execution as part of regional or multilateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs. If assistance is for newly independent country, is it furnished through multilateral organizations or plans to the maximum extent appropriate?

6. No.

7. FAA Sec. 601(a); (and Sec. 201(f) for development loans). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.

7. The project will increase the market accessibility for farmers in the project area. This will directly improve the efficiency of agriculture and commerce and indirectly foster private initiative, as well as rural institutions such as cooperatives and credit unions, etc

8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).

8. U.S. suppliers will provide the heavy equipment and spare parts required for its maintenance.

9. FAA Sec. 612(b); Sec. 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.

9. Upper Volta has been acknowledged as one of the world's poorest LDCs. The Government has difficulty in meeting its recurrent budget. Nevertheless, the GOUV is contributing the equivalent of $687,000 for the implementation of this project.

10. FAA Sec. 612(d). Does the U.S. own excess foreign currency and, if so, what arrangements have been made for its release?

10. The U.S. has no excess local currency.

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

a. FAA Sec. 102(c); Sec. 111; Sec. 281a. Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production, spreading investment out from cities to small towns and rural areas; and (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions?

a. The project is designed to increase the access of the rural population to marketing and other social and development services.

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

(1) [103] for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; [103A] if for agricultural research, is full account taken of needs of small farmers;	The increased market accessibility resulting from this project will create economic incentives and opportunities for the rural poor to increase their production.
(2) [104] for population planning or health; if so, extent to which activity extends low-cost, integrated delivery systems to provide health and family planning services, especially to rural areas and poor;	N/A
(3) [105] for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development;	N/A
(4) [106] for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:	N/A
(a) technical cooperation and development, especially with U.S. private and voluntary, or regional and international development, organizations;	N/A
(b) to help alleviate energy problem;	N/A
(c) research into, and evaluation of, economic development processes and techniques;	N/A
(d) reconstruction after natural or manmade disaster;	N/A
(e) for special development problem, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;	N/A
(f) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.	N/A

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(5) [107] by grants for coordinated private effort to develop and disseminate intermediate technologies appropriate for developing countries;	N/A
c. FAA Sec. 110(a); Sec. 220(a). Is the recipient country willing to contribute funds to the project, and in what manner has or will it provide assurances that it will provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least-developed" country)?	A waiver of the 25% requirement for host country contribution has been requested. As one of the poorest LDCs, the Government could not support this level of development funding. However, the Government is contributing $687,000 (23% of project costs) to project implementation.
d. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing?	No.
e. FAA Sec. 207; Sec. 113. Extent to which assistance reflects appropriate emphasis on: (1) encouraging development of democratic, economic, political, and social institutions; (2) self-help in meeting the country's food needs; (3) improving availability of trained workers in the country; (4) programs designed to meet the country's health needs; (5) other important areas of economic, political, and social development, including industry; free labor unions, cooperatives, and voluntary agencies; transportation and communication; planning and public administration; urban development, and modernization of existing laws; or (6) integrating women into the recipient country's national economy.	The road construction undertaken in this project will encourage food self-sufficiency by opening internal markets the local producers were formerly unable to reach.
f. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civic education and training in skills required for effective participation in governmental and political processes essential to self-government.	The project was developed in cooperation with the people and Government officials of the host country. The design and construction of the roads will be carried out by host country nationals through a new governmental agency. This project will both meet stated needs of the people and promote institutional development.

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g. FAA Sec. 201(b)(2)-(4) and -(8); Sec. 201(e); Sec. 211(a)(1)-(3) and -(6). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth; or of educational or other institutions directed toward social progress? Is it related to and consistent with other development activities, and will it contribute to realizable long-range objectives? And does project paper provide information and conclusion on an activity's economic and technical soundness?

Yes.

h. FAA Sec. 201(b)(6); Sec. 211(a)(5), (6) Information and conclusion on possible effects of the assistance on U.S. economy, with special reference to areas of substantial labor surplus, and extent to which U.S. commodities and assistance are furnished in a manner consistent with improving or safeguarding the U.S. balance-of-payments position.

No negative effect on the U.S. economy anticipated as a result of this project.

2. Development Assistance Project Criteria (Loans Only)

a. FAA Sec. 201(b)(1). Information and conclusion on availability of financing from other free-world sources, including private sources within U.S.

N/A

b. FAA Sec. 201(b)(2); 201(d). Information and conclusion on (a) capacity of the country to repay the loan, including reasonableness of repayment prospects, and (2) reasonableness and legality (under laws of country and U.S.) of lending and relending terms of the loan.

N/A

c. FAA Sec. 201(e). If loan is not made pursuant to a multilateral plan, and the amount of the loan exceeds $100,000, has country submitted to AID an application for such funds together with assurances to indicate that funds will be used in an economically and technically sound manner?

N/A

d. FAA Sec. 201(f). Does project paper describe how project will promote the country's economic development taking into account the country's human and material resources requirements and relationship between ultimate objectives of the project and overall economic development?

N/A

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

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

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

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

4. Additional Criteria for Alliance for Progress

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

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

b. FAA Sec. 251(b)(3); 251(h). For loans, has there been taken into account the effort made by recipient nation to repatriate capital invested in other countries by their own citizens? Is loan consistent with the findings and recommendations of the Inter-American Committee for the Alliance for Progress (now "CEPCIES," the Permanent Executive Committee of the OAS) in its annual review of national development activities N/A

6C(3) - STANDARD ITEM CHECKLIST

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

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

A. Procurement

1.	FAA Sec. 602. Are there arrangements to permit U.S. small business to participate equitably in the furnishing of goods and services financed?	Yes.
2.	FAA Sec. 604(a). Will all commodity procurement financed be from the U.S. except as otherwise determined by the President or under delegation from him?	Procurement will be in accord with AID regulations.
3.	FAA Sec. 604(d). If the cooperating country discriminates against U.S. marine insurance companies, will agreement require that marine insurance be placed in the U.S. on commodities financed?	The grant agreement will so stipulate.
4.	FAA Sec. 604(e). If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity?	N/A
5.	FAA Sec. 608(a). Will U.S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items?	No.
6.	MMA Sec. 901(b). (a) Compliance with requirement that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S.-flag commercial vessels to the extent that such vessels are available at fair and reasonable rates.	Yes.
7.	FAA Sec. 621. If technical assistance is financed, will such assistance be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis? If the facilities of other Federal agencies will be utilized,	Technical services will be provided by host country organizations and a U.S. contractor.

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

5. Will arrangements preclude use of financing:

a. FAA Sec. 114. to pay for performance of abortions or to motivate or coerce persons to practice abortions? Yes.

b. FAA Sec. 620(g). to compensate owners for expropriated nationalized property? Yes.

c. FAA Sec. 660. to finance police training or other law enforcement assistance, except for narcotics programs? Yes.

d. FAA Sec. 662. for CIA activities? Yes.

e. App. Sec. 103. to pay pensions, etc., for military personnel?

f. App. Sec. 106. to pay U.N. assessments? Yes.

g. App. Sec. 107. to carry out provisions of FAA Sections 209(d) and 251(h)? (transfer to multilateral organization for lending). Yes.

h. App. Sec. 501. to be used for publicity or propaganda purposes within U.S. not authorized by Congress? Yes.

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

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

PP

2. DOCUMENT CODE: 3

3. COUNTRY/ENTITY: Upper Volta

4. DOCUMENT REVISION NUMBER:

5. PROJECT NUMBER (7 digits): 686-0215

6. BUREAU/OFFICE: A. SYMBOL: AFR; B. CODE: 1

7. PROJECT TITLE (Maximum 40 characters): Eastern ORD Rural Roads

8. ESTIMATED FY OF PROJECT COMPLETION: FY 79

9. ESTIMATED DATE OF OBLIGATION: A. INITIAL FY 77; B. QUARTER 2 (Enter 1, 2, 3, or 4); C. FINAL FY 78

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

A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FX	C. L/C	D. TOTAL	E. FX	F. L/C	G. TOTAL
AID APPROPRIATED TOTAL	1,130	370	1,500	1,210	1,113	2,323
(GRANT)	(1,130)	(370)	(1,500)	(1,210)	(1,113)	(2,323)
(LOAN)	( )	( )	( )	( )	( )	( )
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST COUNTRY		403	403		687	687
OTHER DONOR(S)						
TOTALS	1,130	773	1,903	1,210	1,800	3,010

11. PROPOSED BUDGET APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	PRIMARY TECH. CODE D. LOAN	E. 1ST FY 77 F. GRANT	E. 1ST FY 77 G. LOAN	H. 2ND FY 78 I. GRANT	H. 2ND FY 78 J. LOAN	K. 3RD FY ___ L. GRANT	K. 3RD FY ___ M. LOAN
(1) FN	133	060		1,500		823		NA	
(2)									
(3)									
(4)									
TOTALS				1,500		823			

A. APPROPRIATION	N. 4TH FY ___ O. GRANT	N. 4TH FY ___ P. LOAN	Q. 5TH FY ___ R. GRANT	Q. 5TH FY ___ S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
(1) FN	NA		NA		2,323	
(2)						
(3)						
(4)						
TOTALS					2,323	

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

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

1 (1 = NO, 2 = YES)

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE: Edward Hurwitz For J Herrmann

TITLE: CDS Ouagadougou

DATE SIGNED: MM 08 DD 27 YY 76

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

AID 1330-4 (3-76)

EASTERN ORD RURAL ROADS

Table of Contents

EASTERN ORD RURAL ROADS

PROJECT PAPER

PART I SUMMARY AND RECOMMENDATIONS

A. Face Sheet Data

- as provided on cover sheet

B. Recommendations

The following funding is recommended by the PP Team:

Grant

FY 1977	$1,500,000
FY 1978	823,000
FY 1979	Phase II Road Program amount to be proposed by PID in 1978

Road construction to be performed by the Government of Upper Volta (GOUV) Department of Public Works (DTRS) under force account.

Drainage structures to be built by private local contractors.

Code 935 Vehicle Waiver ($12,000) for two landrovers.

C. Description of the Project

The Project is a $2,323,000 to the GOUV to upgrade the rural road system in Eastern CRD on a selective basis. The inadequacy of the current rural road network in Eastern CRD is generally regarded as the number one obstacle to development in this region. The construction of the selected roads will result in increased agricultural activity, increased access to health and educational services by local residents and will also improve administrative access by the CRD to the areas under its jurisdiction.

The project outputs proposed in this paper are the construction of three rural roads:

(1)	Fada-Bilanga	72 Km.
(2)	Diabo-Comin Yanga	48 Km.
(3)	Namounou-Logobou	39 Km.

A fourth road, Ouagarou-Nassougou (33 Km.) was proposed in the PRP in the fall of 1975, but analysis in the PP (Section III-D) reveals that it would be of marginal economic value because of the limited number of people it would affect.

The roads will be built under force account by a division of the GOUV Department of Public Works, the Service d'Entretien des Routes Secondaires (SERS), with drainage structures to be contracted to private local firms. Although all the roads are in the Eastern ORD and the projedt is designed specifically to improve development possibilities in this ORD, it was agreed jointly by the PP team, CDO and GOUV that the administration and control of the project should be in the hands of the SERS, as administering agent, rather than the E/ORD, as originally proposed in the PRP.

The inputs to be financed by the AID grant include:

(1) Approximately 31 pieces of road building equipment to equip one road brigade (see part II-B below for a detailed equipment list).

(2) 75% of all operating costs directly connected with the construction of the project roads, including: a) salaries of brigade personnel and equipment operators (excluding permanent SERS civil servants); b) fuel, spare parts, tires, batteries, etc., for vehicle operation and maintenance.

(3) 100 percent of the salary and support costs of one full-time expatriate project manager (road construction superintendent) for three years and two local hire assistants.

In the opinion of the PP team the inputs described above are necessary and sufficient to produce the project outputs, i.e., the three proposed roads. The economic analysis in Section III-D describes how the availability and utilization of the new roads will lead to the attainment of the project purpose.

D. Summary Findings

(1) Conclusions of socio-economic analyses. Of the four roads studied by the PP team, three were found to be clearly economically feasible. These are: (1) Fada Bilanga (IRR 15.0%), (2) Diabo-Comin Yanga (IRR 21.3%), (3) Namounou-Logobou (IRR 19.4%). Three sensitivity tests were also run, raising the costs by 10%; lowering the benefit by 10% and a combination of both of the above. Based on an assumed opportunity cost of capital of 12% in Upper Volta, three of the four roads reviewed were economically feasible both in the primary analysis and following

the sensitivity tests. For further discussion and derivation of these IRR's, see Section III-D, Economic Analysis and Annex 7. Accordingly the PP team recommends construction of these three roads under the project. The fourth road, Ouagarou-Nassougou, was found to be economically unfeasible with an IRR of only 1.1%, and correspondingly very high construction costs per inhabitant (about six times that of the other roads.) This is largely the result of the small population within the affected area (seven villages totalling 3,700 people). The PP team therefore does not recommend the construction of this road under this project at the present time.

However, if operating funds remain after construction of the three recommended roads, the PP team proposes the following option: drainage structure only for this road could be built for approximately $112,000. This course of action is feasible since drainage structures currently constitute the weakest aspect of the existing track, whose flat terrain makes it readily passable during most of the year, except for the water courses and seasonally dried stream beds. By building drainage structures only (culverts, paved fords, etc.), construction costs could be reduced by 75%, and a passable track would result. If 25% of the aggregate benefit stream can be attributed to the addition of drainage structures only, (as opposed to 40% for the entire road), an acceptable internal rate of return of 12% is achieved. In addition to the economic feasibility aspect, this proposal is worth considering for two other distinct reasons: (1) the area is one of the intensive zones for the AID Integrated Rural Development Project, and (2) the area is one of the poorest areas surveyed with respect to public services (see Section III-C, Social Analysis.)

(2) Recommendations for Second Phase. The PP team strongly urges the consideration of a second phase to this project, probably beginning in FY 79, which would provide for the construction of additional secondary roads in E/ORD towards the same goal and purposes as the first phase. It is recommended that in 1978 a design study be undertaken to survey the existing secondary road network in the E/ORD and to establish priorities among potential new secondary roads. In many cases this would involve upgrading existing tracks to secondary road status, based on potential economic uses, such as evacuation of agricultural products. The study would include IRR and sociological analyses on the more promising road possibilities to aid in selection of specific roads for Phase II. An amended PP would emerge which would propose a specific road program and costs for Phase II.

The present PP team performed this kind of analysis for the four roads covered in this report, of which three are recommended for construction. As noted above, the fourth, Ouagarou-Nassougou may be feasible if only drainage structures are built. In addition, the PP team would like to make one additional recommendation for consideration

in Phase II: that the feasibility of a road link between Nassougou and Namounou be studied. If, at the same time, the roadbed for the Ougarou-Nassougou section is rebuilt, a through road would be provided from the Fada-Niamey road at Ougarou to Logabou, via the Namounou-Logabou road to be built under the first phase of this project. This would provide the entire southeast corner of the E/ORD with a much more direct route to Fada and Ouagadougou, with some very interesting economic prospects. This proposal is discussed in more detail at the end of Section III-D, Economic Analysis.

(3) Legal Criteria for Project Approval. In the judgement of the PP team and the CDO/Ouagadougou, the project meets all statutory criteria. The engineering reconnaissance performed by the PP team and the detailed cost estimates contained in Section III-A, Technical Analysis, are deemed to satisfy the provisions of Section 611 (A) of the Foreign Assistance Act. A certification by the CDO/Ouagadougou under Section 611 (E) of the Act is attached as Annex H.

E. Project Issues

Implementing Agency - At the time of the PRP, two options were proposed regarding implementation responsibility by the GOUV: the E/ORD itself and the SERS. By mutual agreement of the PP team and all concerned areas of the GOUV, the SERS has been picked as implementing agency. This is contrary to the original proposal in the PRP (p.29) which would have placed administrative and financial control of the project in the hands of the E/ORD, even if construction responsibility were placed in the SERS. This concept of a split responsibility was deemed to be impractical, and the SERS is considered the more suitable organization to assume full control of the project.

Road Standards - The PRP tentatively proposed a 4 meter width for the tertiary roads and 5 meters for Fada-Bilanga, a secondary road, with the provision that these standards would be re-examined later by REDSC engineers and possibly upgraded. Based on this review, the PP team recommends 5 meter standards throughout as the minimum adequate width. Both the cost estimates and economic analysis in the PP are based on 5 meter standards with a 25 cm thick laterite wearing surface.

Personnel Costs - The two options in the PRP produced different cost estimates since it was assumed that under the SERS option (less expensive of the two) SERS would cover the cost of brigade operators from its own budget. Upon closer examination of the SERS structure, however, it is evident these operators would be recruited specifically for the project and that a large share of these personnel costs will have to be covered under the AID grant. This proposal is discussed fully under Section IV-A, Implementation Planning - Administrative Arrangement.

Road Maintenance - This issue hinges on whether the GOUV, through SERS, can realistically be depended upon to undertake responsibility for maintaining the roads built under this project, or whether project funds should be allocated for road maintenance in the early post-construction years. It is well known that road maintenance is not an area of strength in most West African governments, and this is also true of Upper Volta. On the other hand, it is cumbersome and even undesirable to expect foreign donors to finance maintenance programs for years into the future. Even then, when such assistance ends, maintenance responsibility reverts to the host government and is frequently neglected. The alternative is to build up the road maintenance capacity of the host government from the onset. This, in fact, is the principal reason for the creation of SERS with full maintenance responsibility.

One of the objectives of the recent $7.5 million IDA loan to Upper Volta for rural road construction and maintenance is to strengthen the operational and management capabilities of SERS. As a quid pro quo to the IDA loan, the GOUV will be required to contribute at least 200 million FCFA per year into a secondary road maintenance fund which could also be tapped to maintain roads built under this project. This provision is discussed more fully in Section IV-B, Implementation Planning, and IV-D, Conditions, Covenants and Negotiating Status. In sum, the design team believes the SERS will be capable of maintaining the AID financed roads (this will in fact be a major GOUV contribution to the project) and the CDO will seek strong assurances in the Project Agreement that this commitment will be honored.

Capital vs. Labor Intensive Inputs - The point was made in the PRP (page 14) that despite AID/W desire to stress labor - intensive, employment generating construction methods, the most efficient and lowest cost method of construction is a relatively capital-intensive approach, involving modern road-building equipment. A general estimate by the Louis Berger consulting firm is that road projects of this kind in West Africa using a labor-intensive technique can cost significantly more and require much more time than a capital-intensive approach. As was pointed out in the PRP, the Eastern CRD is not a labor surplus area and most of the construction personnel, in any case, will have to be brought in from other parts of the country. For these reasons the PP team recommends a capital-intensive approach adapted to local conditions and bases its financial and organizational proposals on this approach.

Proposed Belgian Study - In the early spring of 1976, CDO/Ouaga learned of a proposal by the Belgian Government to provide a credit of up to $400,000 via the African Development Bank (AFDB) to the GOUV to finance an economic feasibility study and preliminary engineering design of a road from Fada to Bani via Bilanga and Bogande. Upon closer examination of this apparent duplication of effort, it was decided that AID should proceed with its plans to build the Fada-Bilanga road, for the following reasons:

1. The Belgian offer is for a study only and is understood to be contigent upon financing being found for construction. The AFDB has been mentioned as a possible source, but Bank officials in Abidjan report that such a loan is not currently planned and that in any case the Bank would be able to finance only a portion of it in the light of its limitation of 5 million units of account (about $6 million) per project.

2. Even if financing were found, actual construction of the Belgian road probably could not begin before 1979 or 1980, whereas construction under the AID project is scheduled to begin in 1977.

3. Of the several branches of the GOUV contacted on this point (including the E/ORD Director) most had no knowledge of the Belgian road study proposal. The Public Works Department had heard of the study, but urged AID to move ahead with its plans for the Fada-Bilanga road in any case, on the grounds that if the Belgian study came to fruition, it could pick up the AID-financed road at Bilanga and extend it north through Piela and Bogande to Bani.

PART 2 PROJECT BACKGROUND AND DETAILED DESCRIPTION

A. Background

1. Project Background.

Major AID assistance to the Eastern ORD began, in 1974, in the form of the $3.0 million Eastern ORD Integrated Rural Development Project. At the same time, UNDP/FAO planned a parallel project in the same ORD using a similar approach, but concentrating on different intensive zones within the ORD. This 5-year $2.1 million project was to be fully operational in 1976; but has been delayed and may have to be reduced in size as a result of financial retrenchments in UNDP's worldwide program. From the outset of planning for AID's rural development project, it was evident that lack of transport infrastructure was a major impediment to increasing agricultural productivity and thus to rural development of the area. Both the Upper Volta DAP and the Project Paper for the E/ORD Integrated Rural Development Project recommended priority consideration of projects in rural road construction "to increase the production capacity of the rural sector". The IRD project originally proposed a two grader "road brigade" which was found to be inadequate in scope and technical address (need for resurfacing) for anything but a marginal effect. In addition, the Michigan State University report of January 1976, "An Analysis of the Eastern ORD Rural Development Project" observes: "The improvement of the road system in Eastern ORD, is, without question, the top development priority."

CDO/Ouagadougou's initial response to this priority was a PID in 1975 proposing $3.6 million towards financing the construction of a road from Fada to Bogande, the two largest population centers in the E/ORD. This proposal was later rejected in Washington on the grounds that it was effectively a point-to-point road connecting two important provincial towns, and that in keeping with the new Congressional Mandate, it would be preferable to concentrate on village roads of the farm-to-market type, which would directly benefit the rural poor.

With these criteria in mind, the PRP team undertook it's field investigation in October and November 1975. The concept which developed was that AID would finance and equip a road brigade which would be capable of constructing a series of low-cost rural roads in the E/ORD to connect villages to existing roads and open up evacuation routes for agricultural products. At first it was thought that it might be feasible to form an independent brigade under the direction of the ORD itself, similar to the IDA-financed Cotton Project road construction program in the Bobo-Dioulasso and Dedougou ORDs. This approach was favored by the E/ORD Director in order to retain control of the project within the ORD. The alternative was to construct the roads by force account using a newly formed agency of the GOUV Department of Public Works (TP) responsible for the improvement and maintenance of secondary

roads (SERS). At that time, the SERS was not yet operational, and it was decided to leave these two options open until such time (estimated as the fall of 1976) as the SERS became fully established and its capabilities readily discernable and comparable with those of E/ORD.

By the time of the PP team's field investigation in May 1976, the SERS had begun actual operation and was working on a FED-financed road from Kongoussi to Djibo, north of Ouagadougou. At that time, the PP team determined that the SERS was on sufficiently solid footing to be chosen as implementing agent for this project. The CDO and all relevant parts of the GOUV, concurred in this decision, including the E/ORD Director, who had earlier supported the other option of retaining construction responsibility in the ORD itself.

In its October 1975 field investigation, the PRP team based it's choice of roads to be constructed on three general criteria: 1) the priorities of the ORD management, which emphasized improved administrative access and communications with key parts of the ORD, was to upgrade its overall administrative effectiveness; 2) areas offering best prospects for increased economic (i.e. agricultural) activity within the road impact area; and 3) areas of concentration (intensive zones) of the AID Integrated Rural Development Project to facilitate effective implementation of this complementary AID activity. After extensive discussion with the E/ORD Director and his staff, three roads were tentatively selected for construction under this project:

Fada-Bilanga	72 Km.
Diabo-Comin Yanga	48 Km.
Ougarou-Nassougou	33 Km.

These roads were studied in some detail for economic feasibility by the PP team in May 1976. At the same time a fourth road was added for consideration: Namounou-Logobou, 39 Km. This road would open up a potentially rich and well-populated area in the south-east of the ORD which is currently isolated by the 50 Km. long Gabnangou ridge. The addition of this road was consistent with a recommendation made by the Project Review Committee in its memorandum of January 7, 1976, to the Executive Committee for Project Review (ECPR). A further discussion of the roads selected for construction under this project takes place in the following section under Project Description.

2. Description of the Eastern ORD

A basic description of the demographic characteristics of the Eastern ORD is an essential element of the analysis of the specific impact areas which have been attributed to the project roads. Recent information from National Statistical Institute indicates the following situation for the ORD.

Sub-Prefecture	Arrondissement	Area (Km^2)	Population	(P/Km^2) Density
BOGANDE	Bogande	6 548	119 252	18.2
DIAPAGA	Diapaga	8 676	66 481	7.7
	Kantchari	6 104	25 671	4.2
FADA N'GOURMA	Fada N'Gourma	18 902	113 904	6.0
	Comin Yanga	1 525	24 284	15.9
	Diabo	560	24 828	44.3
	Pama	7 677	29 661	3.9
TOTAL		49 992	404 081	8.1

Source: 1975 National Census

With an average population density of 8.1 persons per Km^2 the Eastern C.R.D is thinly populated. However, the quality of soils found in the area especially in the southern half, appear to be relatively good and adaptable to traditional subsistence and cash crops. A recent survey classified 60% of the region's 50,000 Km2 as usable farmland 1/. At the sub-prefecture level the land utilization patterns are estimated as follow:

Table II - A: Land Utilization in the Eastern ORD (000 hectares)

Description	Sub-prefecture FADA	Sub-prefecture DIAPAGA	Sub-prefecture BOGANDE	TOTAL Eastern ORD
Total area	2 866 4 (100%)	1 478.0 (100%)	654.8	4 999.2 (100%)
Useful area	n.a.	n.a.	n.a.	4 474.0 (89%)
Potential Farmland	1 990.0 (69%)	991.0 (52%)	570.0 (87%)	3 500.0 (70%)
Currently cultivated	55.5 (1.9%)	32.7 (2.2%)	50.3 (7.7%)	138.5 (2.8%)
Grazing land	n.a.	n.a.	n.a.	2 722.0 (54%)

Source: Louis Berger Int. I/S.E.D.E.S., February 1976.

1/ Total area = 50,000 Km2
National Parks = 10,000 Km2
Unusable = 10,000 Km2
Usable = 30,000 Km2

Source: Louis Berger Int. I/S.E.D.E.S., Agroeconomic Analysis of Liptako-Gourma, February 1976

Of some 3,500,000 hectares of potential farmland, therefore, only 140,000 hectares, or approximately 4% is currently under cultivation. This low actual/potential cultivation ratio has traditionally been true in the southern half of the E.R.D. because of a wide-spread problem of river blindness. (Onchocerciasis). These areas are now being opened to cultivation and grazing following an ongoing river blindness irradication program carried out under the supervision of the World Health Organization.

In recent years climatic considerations have been an important obstacle to are agricultural productivity. It would obviously go far beyond the scope of this paper to attempt an original study on long-term trends of rainfall in the Eastern O.R.D. We have therefore simply attempted to survey recent literature on the subject and have come to the conclusion that long-term trends are reasonably optimistic. A statistical analysis of available rainfall records indicate cycles of roughly six years of drought and 30 years of rainfall. The argument could be made that both the size and the accuracy of the statistical base are inadequate, but given that we have apparently just completed a six year drought cycle, the assumption of twenty years (the useful life of the project road) of relatively abundant and regular rainfall would not appear too tenuous. Note in passing that this has been the case for the 1974/75 and 1975/76 growing seasons and currently seems to hold true for 1976/77. An indication of annual rainfall for Upper Volta in an average year is graphically represented in "Map 2: Average Isohyetals for the Period 1961-70".

3. Description of the Existing Regional Road Network. To facilitate the description of the local road network as well as the calculation of user cost savings in the economic analysis, a classification system was established, defining regional roads as follows:

Class I : Paved 2-lane road well maintained
Class II : Improved laterite road well maintained
Class III: Ordinary laterite or dirt road well maintained
Class IV : " " " " " poorly maintained
Class V : " " " " " lacking maintenance for several years.

Generally speaking, the road network in the Eastern ORD may be characterized as being in poor condition, ranging from a Class II to a Class III state for the "national" (primary) road system to Class III, IV and especially V for the "departmental" (secondary) road system. Difficult drainage conditions and a regularly low level of maintenance appear to be the major factors contributing to this condition.

The uniform road sections considered by the team to be relevant to this study are described in Table II - B according to 1) their basic technical standards, 2) estimated length in kilometers, and 3) the range of road speeds attained by the team in a Land Rover over each respective section.

B. Detailed Project Description

The goal of this project is to increase the economic and social well-being of the rural population in the Eastern ORD by providing access to agricultural markets and to government agricultural, health, and educational services. Current access is prevented or severely impeded by an inadequate transport network. As a result, improvement of the road system in Eastern ORD is almost universally recognized as the CRD's number one development priority. The means of achieving the project goal therefore lies in attacking the top development obstacle: the CRD's inadequate road system.

The project purpose which relates directly to the means of achieving the goal is defined by the following three elements of improvement through the mechanism of upgrading selected rural roads in E/CRD:

1. Increase small farmer income by providing market access (economic purpose)

2. Increase access of villagers to health and education services not currently received because of isolation (social purpose);

3. Increase the E/CRD's management effectiveness by providing access to remote areas under its jurisdiction (administrative purpose).

This involves, in practical terms, building roads to acceptable secondary standards, passable virtually year-round (except perhaps for a brief period during the height of the rainy season), in place of current trails which are badly rutted and impassable for up to four months of every year. Even during the dry season frequent crossings of river beds make these trails very difficult for ordinary vehicles. This condition severely discourages the production and marketing of agricultural crops and effectively isolates many villages from Fada and other parts of the CRD where public services are available.

- The project outputs are the construction of the three proposed roads in the E/ORD, which total 159 Km, over three years:

Fada-Bilanga	72 Km.
Diabo-Comin Yanga	48 Km.
Namounou-Logobou	39 Km.

The construction would include both earthwork and drainage structures, as described in detail in Section III A, Technical Analysis. A fourth road proposed in the PRP, Ougarou-Nassougou (33 Km.) is not recommended for construction under the project because of the low internal rate of return it would yield as a result of the small population affected. However, as explained in Section I D, Summary Findings, and Section III D, 4, Conclusions of Economic Analysis, it may be feasible to build drainage structures only at a greatly reduced cost and still significantly improve access to the villages along the Ougarou-Nassougou alignment.

Important assumptions at this level are: 1) that the 5 meter secondary road standards selected for these roads are both sufficient to withstand natural erosion and suitable for predicted traffic levels; 2) that the SERS will be technically and administratively able to undertake construction; 3) that the GOUV, through SERS, will be able to discharge its responsibility to maintain the roads following their construction.

Project inputs financed by the AID grant take the form of three separate ingredients, all of which contribute to the three roads (outputs).

1. Approximately 30 pieces of road building equipment to equip one road brigade. The following equipment list was prepared jointly by the engineer on the PP team and the Deputy Director/Chief Engineer of SERS. Prices are included in Section III B, Financial Plan.

Equipment List for Road Brigade

Unit	Designation	Description
2	Bulldozers	CAT D6C or equivalent
2	Motor Graders	CAT 120G or equivalent
2	Wheel Graders	CAT 920 or equivalent
2	Agric. Tractors	75HP output
1	Compactor, self-propelled	15T weight
1	Pneumatic Roller, pulled	8000 lb. weight
6	Dump Trucks	6 cu. yd. capacity
4	Water wagons, self-propelled	$10M^3$ capacity
1	Fuel Truck	$8M^3$ capacity
2	Water Tanks, stationary	$40M^3$ capacity
2	Pick-up Trucks	1/2 ton capacity
1	Service Truck, equipped	for servicing road equipment

Equipment List (continued)

Units	Designation	Description
1	Service Trailer, incl. tools	for servicing road equipment
1	Water Pump 30^3/hr.	
2	Station Wagon	Land Rover or equivalent
1	House Trailer	For field office and sleeping accomodations for two persons

2. 75% of all operating costs directly connected with construction of the project roads, including (a) salaries of brigade personnel and equipment operators (excluding permanent CERS Civil Servants). The brigade will comprise the following personnel:

Brigade Personnel

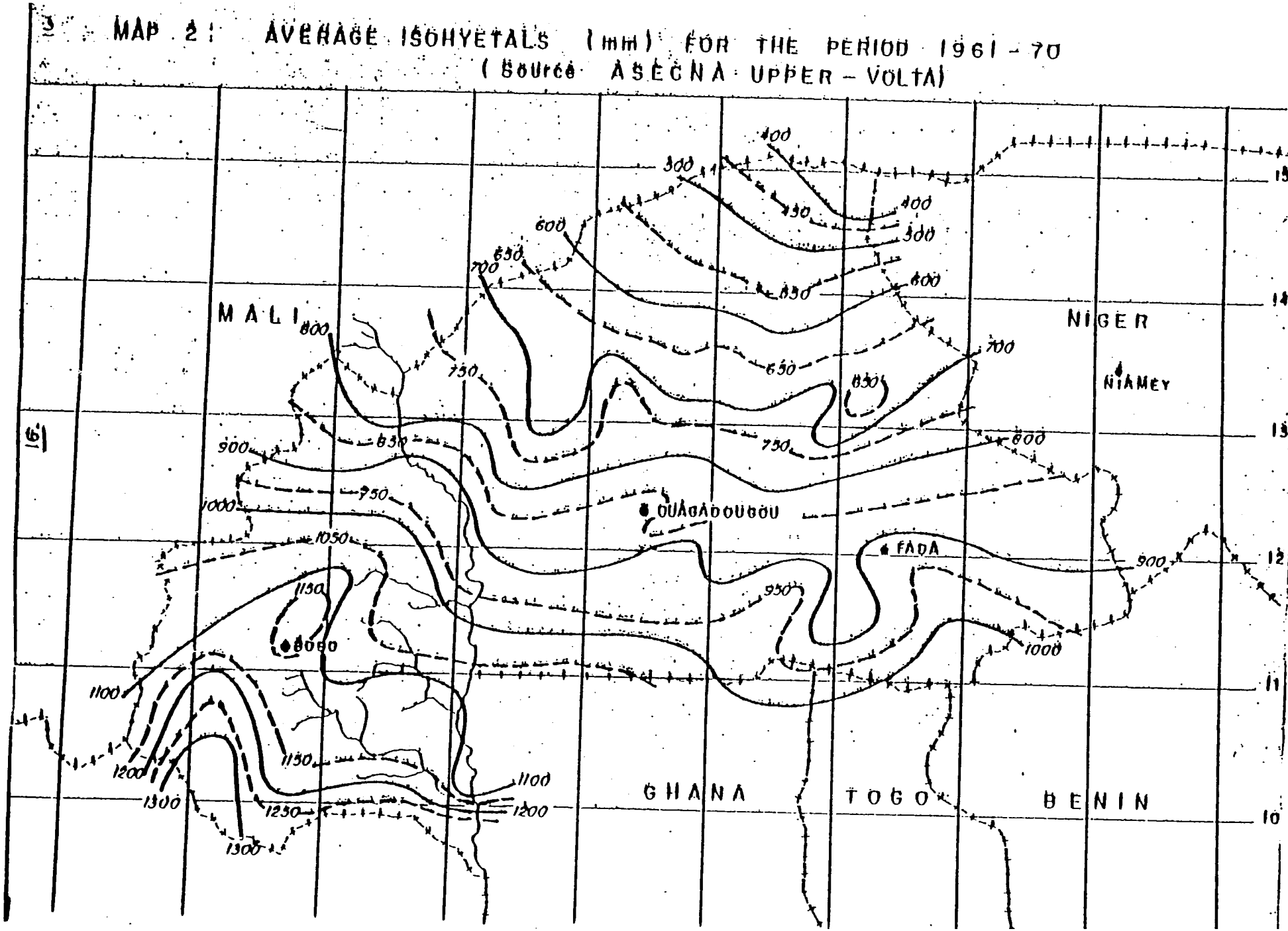
Designation	Numbers
Brigade Foreman	1
Equipment Operators	7
Truck Drivers	16
Drivers for Light Vehicles	4
Mechanic	1
Mechanic's Helper	1
Laborer	5
Timekeeper	1
Warehouseman	1
Total	37

(b) fuel, spare parts, tires, batteries, etc.; in connection with operation and maintenace of road building equipment procured under this project and maintenance of the project roads themselves during the construction period, as well as operating overhead directly arising from construction, e.g., campsite expenses for road crews. The remaining 25% will be paid by the GOUV as part of its contribution to the project. This procedure is elaborated in Section III B, Financial Analysis, and Section IV A, Administrative Arrangements.

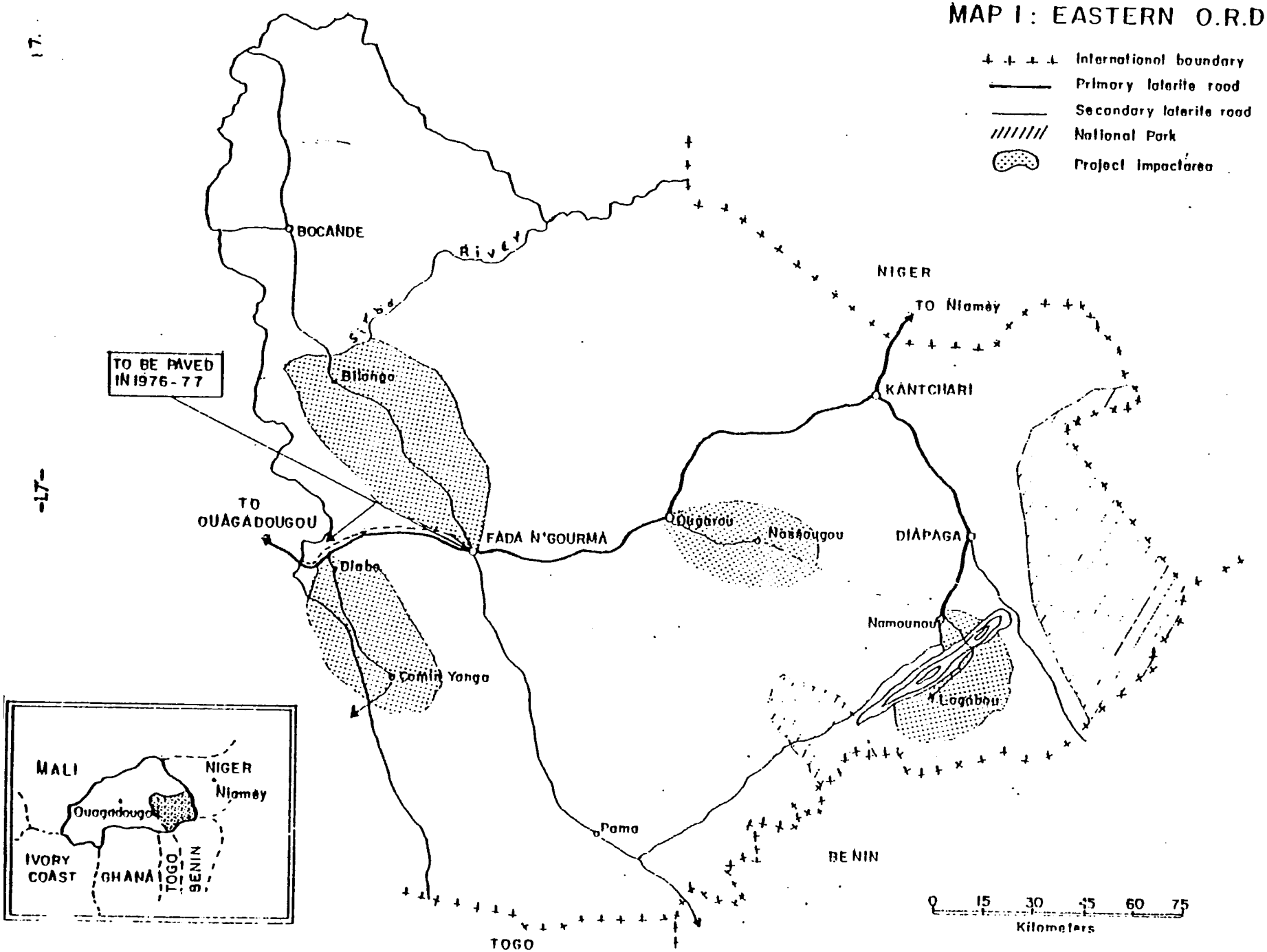
3.100% of the salary and support costs of one full-time expatriate project manager for two years. The E/ORD will be requested to provide a suitable residence for the project manager in Fada N'Gourma, but improvements, furnishings and utilities will be paid from project funds allocated to the support of the project manager.

Important assumptions at the input level are 1) that one fully equipped road brigade will be sufficient to construct the planned roads within a three year period. (This should be feasible based on other secondary road building experience in Upper Volta); 2) that SERS will be able to recruit all the necessary trained operators and other personnel necessary for the brigade from the Voltan labor market during the spring and summer of 1977, prior to the start of construction (SERS anticipates no problem on this point); 3) that AID will be successful in locating a qualified project manager, fluent in French and experienced in this type of road construction, preferably in West Africa, who is willing to live in Fada N'Gourma for three years. Possible sources are discussed in Section IV B, Implementation Planning; 4) that SERS engineers, in cooperation with the project manager, will be able to complete necessary plans, designs and drawings for both the earth works and the drainage structures, including culverts and paved fords to be carried out by the SERS brigade, or in the case of the drainage structures, probably by local private contractors.

MAP 2 : AVERAGE ISOHYETALS (mm) FOR THE PERIOD 1961 - 70
(Source ASECNA UPPER - VOLTA)



MAP I : EASTERN O.R.D.



PART 3 PROJECT ANALYSIS

A. Technical Analysis and Environmental Assessment

1. Technical Description of Road Inventories

a) General features of the terrain.

The general area of the proposed road construction consists of plateaus whose rocky structure is overlaid by lateritic layers of variable thickness which in turn are often covered by layers of sand or clay. Occasionally the overlay has been washed away and outcrops of igneous rock formations are evident in the form of smoothly rounded projections of up to 8-10 feet in height.

During part of the year, depressed clayey sections of the alignment are often waterlogged forming what is locally called bas-fonds areas. During the rainy season (June-September) these areas receive considerable amounts of surface water which, due to non-existent or insufficient slope of the terrain, tend to be retained by the hygroscopic components of the sub-soil. The bas-fonds, rather than the beds of actual watercourses, represent a major obstacle to the passage of vehicles and will require substantial improvements during road construction in the form of drainage structures, and paved fords.

Villages and hamlets, in most cases, are located near the rim of depressions where potable water is more readily available than in the higher areas. If the roads were to connect all of these settlements, the resulting alignment would involve costlier construction than if kept near the crest of watershed divides, where fewer drainage structures and lower embankments are required. Therefore, the planning and resulting cost figures for the proposed roads are based on an alignment which uses, wherever possible, the higher ground, and thus postulates the existence of short stretches of footpaths or tracks for human and animal portage leading from the villages to collection points on the roads proper.

A common characteristic of existing roadways is that, due to improper grading activities in the past, their level has sunken considerably below that of the surrounding land. As a consequence, during the rainy season they act as watercourses and thus become even more eroded each year.

More detailed physical features of each of the project roads is furnished below in conjunction with the description of their proposed improvement and or reconstruction. For the sake of simplicity the four roads are referred to by the number assigned to them in the following list:

Number	Road	Length (Km)
1	Fada N'Gourma-Bilanga	72
2	Diabo-Comin Yanga	48
3	Namounou-Logobou	39
4	Cugarou-Nassougou	33

b) General Construction Characteristics.

The question of width of roadway was the subject of considerable study including lengthy discussions with the various GOUV functionaries involved. The expected traffic density normally would not warrant anything but single lane roads, with provision for the passing of on-coming vehicles at sufficiently close intervals. This is particularly true of routes No. 2, 3, and 4. Route No. 1 could be considered as part of a relatively important point to point artery (Fada N'Gourma-Bogande) which at some future date may warrant double lane status.

Nevertheless, a 5m (16.4 ft.) wide roadway was selected for all four road projects. The principal reason being a compromise with GOUV standards requiring two lanes of 3.0m each for rural roads and also an element of uncertainty concerning effective road maintenance. A narrow roadway, of say 4.0m width, under motor vehicle traffic tends to have its edges deteriorate more readily than one built somewhat wider. In the latter case, traffic tends to use the middle of the road and wear on the edges is reduced. Another factor contributing to the reduction of shoulder width is the effect of rain and surface water which cause the edges to erode, thus gradually reducing the usable width of the roadway. It can readily be seen that a wider roadway will provide greater safety against these types of deterioration.

As to the roadway body itself, an acceptable medium had to be found between available funds and desirable characteristics of an all-weather sub-structure. Study of similar projects, both in the northeastern and the western part of the country, indicated that a small layer of selected material properly compacted shows more durability than higher fills using insufficiently compacted randomly selected material from adjacent borrows. Accordingly, there will be no distinction made between roadway fill and surfacing. Both will consist of well compacted lateritic soils. This rule, of course, will not apply in the case of approaches to drainage structures, which will require earth ramps in order to satisfy minimum cover requirement over culvert pipes as well as the need to keep the road grade above normally expected water levels. Furthermore, in the hill section of road No. 3, a certain amount of rock excavation will have to be executed which will require surfacing by a laterite layer of 12 cm. thickness only.

Major portions of the project roads are located in sandy or clayey soil. Therefore, typical construction procedures will consist of clearing an 8 to 10m wide strip of land and subsequently placing over the roadway a 25 cm. layer of selected laterite material, compacted in two layers with ample addition of water. The width of the crown will be 5.0m, with side slopes 1 (vertical): 1.5 (horizontal), resulting in a width of road at the base of 5.75m. Drainage ditches will be provided as required, with particular attention given to interceptors which will protect the roadway from erosion caused by surface water flooding.

Good borrow areas for laterite exist throughout the extent of the project and projected average hauling distances of 2-3 Kms are considered to be acceptable.

Fills of up to 1.30m height will be required on drainage structures approaches and on the ramps adjoining proposed paved fords.

In the bas-fonds areas, a certain amount of waterlogged plastic material will have to be removed and replaced by granular material.

The compaction of ramps and fill areas will be in layers of 30 cm., with the addition of water, as required, to achieve 30% modified Proctor density. These areas will be surfaced with a 12 cm. layer of lateritic material. All surfacing will be compacted to 95% (Mod. Proctor).

The most versatile type of drainage structure, which at the same time is most economical under prevailing circumstances, is a corrugated metal pipe culvert (circular, nestable) of 80 cm. diameter, which is the minimum size suitable for easy cleaning. Where greater flow is anticipated than can be accomodated by this section, multiple pipes of the same diameter are foreseen in addition to other types of culverts described below.

In order to protect the road from erosion, head-walls of laterite stone masonry or, if not available, of reinforced concrete are foreseen both at the upstream and downstream ends of pipe culverts. The added cost of these head-walls is partly compensated by the reduced length of pipe needed. Reinforced concrete culverts, where foreseen, have a 1.0m x 1.0m flow section. They are produced locally in prefabricated standard lengths and come with tongue and groove joints. As far as paved fords (often referred to as Irish bridges) are concerned, it is contemplated to use a type incorporating gabions in lieu of cast-in-place concrete; this system has proven very effective and economical in Niger, a country adjoining Upper Volta.

Reinforced concrete bridges, to the extent to which they occur, are of the conventional cast-in-place slab type, with abutments and wing walls on spread footings.

c) Route No. 1 Fada N'Gourma-Bilanga (72 Km.)

The existing facility consists of a track, often obliterated by vegetation, which runs essentially from south to north. The present alignment can be retained except for stretches where the new road has to by-pass sections that have been deeply eroded by surface water transforming it into a stream bed during the rainy season. There are no fills or wearing surface in evidence, and only a few drainage structures exist located mainly in the northern part of the alignment; some of these including several paved fords, can be reconditioned at relatively low cost. However, more drainage structures are needed due to the fact that the alignment crosses numerous watercourses with sometimes considerable catchment areas. The terrain is flat and has little permeability which adds to the need for flood protection in the form of culverts and paved fords.

The following are estimated quantities for road project No. 1, together with cost estimates made under the assumption that construction would be carried out by contract. As will be shown later, this hypothesis is correct only in the case of drainage structures whereas earthwork operations, for reasons explained in subsequent chapters, will be carried out by government force account. The assumed contract cost figures, however, are required for the economic analysis of the project, which is based on the theoretical financial cost of the project.

TABLE III-1 - Fada-Bilanga - 72 Km.

Estimate of Construction Quantities and Cost

Description	Unit	Qty.	Unit Cost	Total Cost	Grand Total
A. Drainage					
1) 80 cm. dia. corrug. metal pipes	m	174	30,000	5,220,000	
2) Headwalls, for above	pair	29	115,000	3,335,000	
3) R.C. box culverts 1.0m x 1.0m clearance	m	108	85,000	0,180,000	
4) Headwalls, for above	pair	18	220,000	3,960,000	
5) Paved fords, 5.00 wide	m	300	60,000	18,000,000	
				Total Drainage	39,695,000

Description	Unit	Qty.	Unit Cost	Total Cost	Grand Total
B. Earthwork					
6) Clearing	ha	57.6	160,000	9,216,000	
7) Borrow excavation (common)	m^3	14,100	550	7,755,000	
8) Constr. of fills & ramps	m^3	14,100	450	6,345,000	
9) Laterite wearing surface	m^3	108,000	1,200	129,600,000	
10) Overhaul for above	m^3 Km	216,000	15	32,400,000	
				Total Earthwork -	185,316,000
			Total Drainage and Earthwork CFA	225,011,000	

Cost in U.S. Dollars

	Per Km.	Total
Drainage	2,325	167,500
Earthwork	10,800	78,900
Total	13,185	949,400

Note 1) All cost figures, unless otherwise noted, are in CFA at the rate of 1/237 U.S. dollars.

d) Route No. 2 Diabo-Comin Yanga (48 Kms.)

The track currently providing the connection between Diabo-Comin Yanga takes off from National Route No. 4 at Zonre (48 Kms. to the west of Fada N'Gourma). The first Km., between Zonre and the village of Diabo is relatively substantial and has been somewhat improved by grading the roadway which consists of mostly sandy soil. According to the Acting Public Works Chief in Fada N'Gourma, this work is part of a project financed by the Catholic Mission in Diabo, which originally planned to improve 20 Km. of existing track between Zonre and Saltenga via Diabo. Unfortunately, the funds have proven insufficient for this undertaking and as a result, in addition to the aforementioned grading over Km., only a few drainage structures were constructed, namely:

TABLE III-2 - List of Existing Structures
Zonre-Saltenga

Station	Type of Structure	Dimension	Observation
1.0	Paved ford	about 50m long	Almost completed
5.0	same	10m long	same
6.0	reinforced concrete bridge	5.0 cm span	completed
9.0	Two span reinforced concrete bridge	2x2.5 cm.	Of earlier origin than previous structures, value doubtful.

At Km. 12.0 the road follows the crown of a substantial dam, evidently serving irrigation purposes, near the village of Lorgho. Substantial repairs are needed in the top part of the dam, requiring replacement of a certain amount of precast concrete slab paving.

Between Diabo and Saltenga some grading seems to have been attempted over the years, with the result that the road grade is now below surrounding ground elevation and thus a watercourse rather than a road during the rainy season. The soil in this section is predominately sandy, but some plastic material exists, in addition to numerous rock outcroppings of the type previously described.

Beyond Saltenga there are intermittant traces of an earlier lateritic pavement. Outside of this, the road is depressed and often waterlogged, although the rainy season had not properly started at the time of inspection. The terrain is slightly rolling throughout the length of the project. There are several low areas ("bas-fonds") requiring substantial improvements. In addition, there are a number of well-defined crossings of waterways, requiring single or multiple pipe culverts, as the case may be.

As the road progresses, the terrain becomes more rugged and eroded. The alignment of the old road is often intersected by deep ravines and will require a certain amount of relocation and ditch work. This configuration continues all the way to Comin Yanga.

Quantity and cost estimating shown on Table No. III-3 (below) is based on the same premises as the ones relating to Fada-Bilanga. The somewhat improved condition of the first 5 Km. of the alignment (Zonre-Diabo) is still far below the standard set for the proposed project. For this reason, reconstruction of these 5 Km. is included in the estimates. This makes the designation: Diabo-Comin Yanga something of a misnomer, since the project goes from Zonre to Comin Yanga and the estimated project length of 48 Km. relates to the distances between these two points.

TABLE III-3 - Diabo-Comin Yanga (48 Kms)

Estimate of Construction Quantities and Cost

Description	Unit	Qty.	Unit Cost	Total Cost	Total
Drainage and Structures 1/					
1. Reinf. Concr. Slab Bridge, 7.5m span	m	7.5m	1,500,000	10,250,000	
2. Repair of crown Lorgho dam	L.S.	1	6,750,000	6,750,000	
3. Paved fords 5m wide	m	170	60,000	10,200,000	
4. Corr. metal pipe culv. 80 cm. diameter	m	72	30,000	2,160.000	
5. Headwalls for above pairs		9	115,000	1,035,000	30,395,000
Earthwork					
6. Clearing	ha	35	160,000	5,600,000	
7. Misc. fill and ramps	m^3	2,000	550	1,100,000	
8. Borrow excavation for above	m^3	2,000	450	900,000	
9. Wearing surface	m^3	72,000	1,200	86,400,000	
10. Overhaul	m^3/Km.	2,160,000	15	32,400,000	126,400,000
			Drainage and Earthwork - Grand Total		156,795,000

In U.S. Dollars:	Total	Per Km.
Earthwork	553,300	11,110
Drainage	128,300	2,670
	661,600	13,780

1/ Not counting those already in place (See Table 2)

e) Namounou-Logobou Road (39 Km.)

The existing trail branches off the Diapaga-Namounou road at Km. 22, at a point about 5 Km. before reaching the last named locality. For about 5 Km. it extends from west to east (toward Tansarga) and then it turns (for 6 Km.) southward, following an existing track as far as Pentenga.

The project proposes to replace this alignment with a new one starting at Namounou and connecting it directly with Pentenga, at a saving of 5 Km. (11 Km. in lieu of 16 Km.)

Past Pentenga, between Kms. 14 and 17 of the new alignment, there is a ridge (the Gobnangou mountains) of about 100m in height, requiring some rock excavation over an estimated length of 2 Km. Because of the relatively steep grades involved, there will be some switchbacks and curves around rock outcroppings. Beyond the Gobnangou mountains, which run in a SW-NE direction, the projected alignment generally coincides (between Km. 17 and 39) with an existing track which follows the southeastern foothills of the ridge as far as Logobou.

As previously mentioned, a laterite wearing surface of 12 cm. thickness is planned for those areas having rocky subgrades.

Estimated quantities and cost for the Namounou-Logobou road are given below in Table No. III-4.

TABLE III-4 - Namounou-Logobou (39 Kms)

Estimate of Construction Quantities and Cost
(All cost figures in CFA unless otherwise noted)

Description	Unit	Qty.	Unit Cost	Total Cost	Grand Total
1. 80 cm. dia. CMP	m	96.0	30,000	2,880,000	
2. Headwalls for above	pairs	10	220,000	2,880,000	
3. Paved fords 5.0m wide	m	150	60,000	9,000,000	14,080,000
Earthwork					
4. Clearing	ha	39	160,000	6,240,000	
5. Misc. ramps and fill area	m^3	2,000	450	900,000	
6. Borrow excavation	m^3	2,000	550	1,100,000	
7. Rock cut excavation	m^3	7,000	3,950	27,650,000	
8. Laterite surfacing	m^3	57,800	1,200	69,360,000	
9. Overhaul	m^3 Km	1,734,000	15	26,010,000	131,200,000
			Grand Total	CFA	145,340,000

Cost in U.S. Dollars

	Total	Per Km.
Drainage	59,400	1,525
Earthwork	553,850	14,200
Total	613,250	15,725

f) Ougarou-Nassougou Road (33 Kms.)

The existing track branches off National Route No. 4 at the village of Ougarou. It represents a discernible alignment over its entire length and crosses mostly flat country intersected by several minor watercourses. No major relocations seem indicated except perhaps where some crossings of watercourses may require selection of more suitable locations of drainage structures which in turn necessitate minor changes in alignment.

There a a few short sections, in slightly rolling terrain, around the middle third of the road, one of which contains some outcrop of igneous rocks. Otherwise, the soil is largely sandy - for about 60% of its length - alternating with plastic material including some waterlogged bas-fonds.

The reconnaissance took place on May 7, and on May 9 part of the project site was revisited to evaluate the effect of a 3 hour rain (the first of the season) which had fallen earlier that day. It was found that wherever the soil was sandy, the effects of the rain were negligible. On the other hand, in sections where plastic soils prevail, some stagnating bodies of water were observed. This did not hold true of watercourses with adequate slopes, which had dried out rapidly, and where only occasional trickles of water were encountered.

The general alignment can easily be upgraded but it will require a number of minor pipe culverts, two short bridges of reinforced concrete and 5 paved fords (radiers, Irish bridges) of various lengths.

Quantity and cost estimates for the Ougarou-Nassougou road are found below in Table III-5.

TABLE III-5 - Ougarou-Nassougou Road (33 Kms.)

Estimate of Construction Quantities and Cost

Description	Unit	Qty.	Unit Cost	Total Cost	Grand Total
A. Drainage*					
1. Misc. Ramps and fill areas	m^3	2,355	450	1,059,750	
2. Borrow excavation for above	m^3	2,355	550	1,295,250	
3. 80 cm. dia. CMP	m	84.0	30,000	2,520,000	
4. Headwalls for above	pair	9	220,000	1,980,000	
5. Reinforced conc. slab bridges	m	10	1,506,000	15,000,000	
6. Paved Fords	m	80	60,000	4,800,000	26,655,000
B. Earthwork					
7. Clearing and Grubbing	ha	33	160,000	5,280,000	
8. Laterite surfacing	m^3	50,000	1,200	60,000,000	
9. Overhaul	m^3 km	150,000	15	22,500,000	87,780,000
				Grand Total CFA	114,435,000

Note: All costs in CFA, unless otherwise noted.

Cost in U.S. dollars =	Total	Per Km.
Drainage	112,470	3,410
	370,380	11,220
	$482,850	$14,630

* Because of the possibility that a first phase of construction will be limited to drainage structures, the pertinent earthwork (for ramps and fills), without which the structures could not be used, is included here.

2. Maintenance: Description and Cost Calculations

The economic-financial analysis includes the cost of maintaining the completed roads over the 20 year useful life of the project. In addition, a certain amount of maintenance work has been considered for individual road sections for the period of time between their completion and the overall project completion. Since completed road sections will be largely used by the construction equipment for the purpose of completing the remaining road sections, the cost of this type of maintenance has been included in overall construction costs.

The technical operations involved in the maintenance of the roads (both during and after construction), consist of the following elements:

i) standard maintenance: eliminate washboard formations, renew cross slopes, cleaning of ditches, and some re-compaction.

ii) periodic back-filling of roadway sub-structures and/or laterite surfacing eroded by traffic or climatic action.

Standard Maintenance: For the fight against washboards which are a common occurrence in laterite-surfaced roads, the Public Works Department of Niger has developed a device they call "tolard" which consists essentially of a system of blades mounted on a frame and dragged by a light wheeled tractor. This system has proven much more economical than the use of motor graders; the cost per Km. amounts to CFA 400 as against CFA 4,000 for a motor grader. As a minimum average requirement one pass every three weeks is necessary.

Re-profiling and re-compaction: As a minimum requirement, one pass with an equipment spread incorporating a motor grader and a tractor-pulled compactor is required immediately before the start of the rains and another one at the end of the rainy season, to benefit from the humid condition of the road. During the dry season, at least one pass will be required to supplement activities by the tolard. The annual cost per Km. of this type of maintenance will be CFA 37,920 or $160.00.

Periodic Back-filling Operations: For the traffic intensity expected for the proposed road, an annual loss of wearing surface of 0.7 cm. per year can be assumed. Therefore the annual losses of material per Km. for the road width of 5m will amount to 0.007x5x1000 = 35m3. Assuming a cost of CFA 2,000 per m3, the total annual cost of periodic back-filling will be 35x2000 = CFA 70,000 or U.S. $295.00.

Total annual cost of maintenance per Km.:

a) Standard Maintenance	US $160.00
b) Backfilling	US $295.00
GRAND TOTAL	US $455.00

3. Analysis of Earthwork Operations by Force Account: Inputs

As explained in Parts I and II, the intent of the project is to provide SERS, the Government agency in charge of Secondary Roads, with the necessary equipment and personnel to form a road construction brigade, which then will carry out the earthwork (including surfacing) operations under the project. In the preceding analysis, only the drainage items will enter into the financial cost of the project in the form shown. An analysis of earthwork and surfacing operations, as they will actually be carried out under the project, is developed in the following paragraphs.

The basic elements of earthwork costs executed by a road brigade are as follows:

a) Equipment cost. This item normally consists of two parts - procurement and amortization. For reasons explained elsewhere in this PP, only the first one - procurement - will figure in the present analysis.

Table No. III-6 lists the cost of all items of equipment and machinery considered necessary for the operation of the road brigade. It contains the latest available price information on equipment and machinery delivered to Fada N'Gourma. Import duties and other taxes, which amount to about an additional 25 percent, are not included. A 5% inflation factor, covering the period between the time of this writing and the expected date of ordering the material, has been added at the bottom.

TABLE III-6 - Equipment List

All Prices in U.S. Dollars, delivered - Taxes and Duties Not Included

Item No.	D	Description	Units	Unit Cost	Total Cost
1.		Bulldozers CAT D6C	2	79,300	158,600
2.		Graders CAT 120G	2	72,000	144,000
3.		Wheel Loaders CAT 920	2	63,000	126,400
4.		Tractors 75HP	2	9,830	19,660
5.		Compactor 15T	1	33,500	33,500
6.		Pneumatic Roller, pulled weight 800 lbs.	1	2,800	2,800
7.		Dump trucks 6 cu. yds. cap.	6	29,000	174,000
8.		Water Wagons, 10 cu. m. cap.	4	29,200	116,800
9.		Fuel Truck $8m^3$ cap.	1	30,300	30,300
10.		Water Tanks, Stationary @ 40m3 cap.	2	951	1,900
11.		Pick-up Trucks	2	7,000	14,000
12.		Service Truck Equipped	1	44,000	44,000
13.		Service Trailer incl. tools	1	18,600	18,600
14.		Water Pump $30m^3/hr.$	1	1,440	1,440
15.		Station Wagon (land Rovers)	2	8,500	17,000
16.		Trailer & Housing Office	1	20,000	20,000
					923,000
				5% Inflation factor	46,150
				Approximate Total	970,000

b) Equipment Operation - Expendables (including shop maintenance). Table No. III-7 shows the hourly cost of operation and maintenance of the operating personnel, which is shown separately. The hourly cost is based on a detailed analysis (not included here) in which a breakdown of the figures given in Table III-7 is given according to the following elements:

1. POL (fuel, oil, lubricants). The latest 1976 cost increases in Upper Volta, amounting to approximately 10%, were included.

2. Expendables (spare parts, tires, batteries). Contrary to more customary practice, no provisions for the cost of basic spare parts were made in Table No. III-7, the intent being to have them supplied, as the need arises, by authorized local dealers who will have to build up their stocks accordingly.

3. Wages of Workshop Personnel, including pertinent overhead. This item also includes the cost of hauling and repairing broken down equipment. A special maintenance brigade, as contemplated in the PRP, will not be needed.

TABLE III-7 Operating Cost of Brigade Equipment in CFA per Hour

Item	Number	Hourly Operating Cost
Dozers	2	11,750
Graders	2	7,120
Loaders	2	6,616
Small Tractors	2	1,816
Compactor, self-propelled	1	1,409
Compactor, pulled	1	187
Dump Trucks	6	6,720
Water Wagons	4	6,802
Fuel Trucks	1	1,702
Pick-up Trucks	2	616
Service Truck	1	1,120
Service Trailer	1	153
Water Pump	1	338
Station Wagons	2	658
House Trailer	1	230
Total Hourly Operating Cost		47,237 CFA

Assuming 7 working hours per day, the operating cost for one work day equals 47.237x7 = 330,659 CFA or $1,395.00.

To this should be added 28% or duties and taxes (GOUV Contribution)	$405.00
Grand Total	$1,800.00 per day

c) Equipment operators and related labor-salaries.

Table II-8 shows the cost figures for these personnel under the following assumptions:

1. The number of workable days per year is 200.
2. All cost figures are in CFA.
3. All wages and salaries include 25% for social overhead.
4. The salary of the expatriate construction manager is not included and will be shown separately.
5. Design services by SERS are not included and will appear separately.

TABLE III-8 Equipment Operators and Related Personnel (one brigade)

Designation	Unit Cost Annual	Unit Cost Daily	Total Cost Annual	Total Cost Daily
Brigade Foreman (1)	450,000	2,250	450,000	2,250
Operators (7)	405,000	2,025	2,835,000	14,175
Truck Drivers (16)	380,000	1,900	6,080,000	30,400
Vehicle Drivers (4)	290,000	1,450	1,160,000	5,800
Mechanic (1)	400,000	2,000	400,000	2,000
Mechanic Helper (1)	200,000	1,000	200,000	1,000
Laborers (5)	170,000	865	850,000	4,325
Timekeeper (1)	315,000	1,575	315,000	1,575
Warehouseman (1)	315,000	1,575	315,000	1,575
Total Personnel (37)	2,925,000	14,640	12,605,000	63,100 CFA

The figure of CFA 63,100 contains 25% for social overhead and taxes.

Net daily cost	50,480	(AID)
Social overhead, taxes	12,620	(GOUV)
Add to this: cost of Administration by SERS, 22% of CFA 63,100	13,880	(GOUV)
Total Daily Cost CFA	76,980 or $325.00	

Of this: AID contribution CFA	50,480	or	$213.00
GOUV contribution	26,500	or	$112.00
	76,980		$325.00

Note: All figures in CFA, unless noted differently.

d) Construction Manager

The cost for the first year is estimated at $80,000 annually for the three years and for the life of project for an estimated total of $240,000.

e) Logistic Support of Brigade

A separate expenditure has to be earmarked for temporary housing and transportation of the brigade personnel to the work sites. An estimated CFA 12,000 or U.S. $50.00 per day will be required for this item.

f) Logistic Support of Construction Manager

A mobile home and office for the construction manager is included in the equipment list. In addition, certain investments will have to be made for installing electricity, water, air conditioners, and kitchen and bathroom fixtures in the home, probably located in Fada N'Gourma, which the construction manager will occupy. The cost of these installations is estimated at CFA 2,840,000 equalling about U.S. $12,000 or pro-rated over a two year period of 200 working days each, a daily cost of 12,000 + 400 = 30/day.

g) Design and Supervisory Services

These services, are distinct from administrative and management services, and thus represent an additional input by SERS. Because of the fact that they cannot easily be pro-rated timewise, design services will be considered as a lump sum contribution, whereas construction supervision, also by SERS, will be included in periodic financing (assuming a two year period of 200 working days each). The estimated value of these two services will be expressed as a percentage of the theoretical cost of the project (based on contract prices) as follows: All cost figures are in CFA.

(Table III-9 - see next page)

TABLE III-9 Cost Derivation of Engineering Services

Project	Cost Earthwork	Cost Structures	Total Cost
Fada-Bilanga	185,316,000	39,695,000	225,011,000
Diabo-Comin Yanga	126,400,000	30,395,000	156,795,000
Namounou-Logobou	131,200,000	14,080,000	145,280,000
Ougarou-Nassougou		26,650,000	126,650,000
	442,916,000	110,820,000	553,736,000
Percentage applied for design services	2%	6%	
Percentage applied for Construction supervision	4%	4%	
Cost of Design services	8,858,320	6,649,200	15,507,520
Cost of Construction supervision	17,716,640	4,432,800	22,149,440
Total Engineering	26,574,960	11,082,000	37,656,960

TABLE III-10 Summary - Daily Cost of Construction Operations by Brigade

(For periodic financing in U.S. Dollars @ 237 CFA per $1.00)

Note: This summary does not include single procurement items, such as design Services and Equipment Purchase.

Item	Contribution USAID	Host Country	Total
Equipment operation expendables	1,395.00	405.00	1,800.00
Equipment operation cost of personnel	213.00	112.00	325.00
Cost of construction manager	400.00	-	325.00
Logistic support of road Brigade		50.00	50.00
Logistic support of Construction manager	30.00		30.00
Construction supervision		234.00	234.00
	2,038.00	801.00	2,839.00

4. Analysis of Earthwork Operations by Force Account. - Outputs

a) Quantities. According to best available data and information, the output of one road building brigade is 800m^3 per working day. This volume represente the sum of fill and wearing surface; auxilary operations, such as maintenance of road under construction, clearing and grubbing, overhaul, compaction of fills, and excavation of ditches are considered to be by-products of these operations and need not be considered separately.

Because of the possibility of equipment breakdowns, lack of efficiency in operations, weather hazards, etc. only 90% of the above figure, i.e. 720m^3 per day, has been used for the following calculations of construction time and cost.

b) Construction Time. Basically only the earthwork operations by the Brigade have been considered to determine the construction period for each of the road projects. This is due to the fact, that by their linear character of advance, these operations permit the other operations - essentially consisting of drainage structures - to be planned easily in such a way that their construction will not interfere with earthwork so that their completion date - at most - will coincide with the completion date of the road. Furthermore, some overlap between earthwork operations on two consecutive road projects will be probably accomplished by assigning certain pieces of equipment (essentially graders and compactors) to project A, while having the heavy earthmoving machinery (bulldozers, loaders) already work on the clearing and fill operations of Route B. Without considering this possibility, the number of work days needed for completion of the four roads will be as follows:

(Table III-11 - see next page)

TABLE III-11 Construction Time as Function of Earthwork Quantities

Route Designation	Length (Km)	Total Earth-work (m^3)	Construction Time			Output	
			Working Days 1/	Cal. Days	Working Months 4/	Km. per Working Month	Km. per Calendar Year
Fada-Bilanga	72	122,100	170	310	6.8	10.6	84.8
Diabo-Comin Yanga	48	74,000	103	188	4.1	11.7	93.6
Namounou-Logobou	39	68,800 2/	96	175	3.8	9.7	77.6
Ougarou-Nassougou 3/	33	52,355	73	133	2.9	11.4	91.2
Totals	192	317,255	442	806	17.6	10.9	87.2

1/ Assume 200 work days per calendar year.

2/ Including rock excavation

3/ This project is included here for the sake of completeness, although no earthwork operations are planned on it at this time.

4/ Considering a four month rainy season (mid-June to mid-October) the actual number of working months per year is 8, at 25 working days each.

As to the time required for construction of drainage structures, an average progress of 5 Km. per working month has been assumed. This would result in the following time requirement:

TABLE No. III-12

Route Designation	Length (Km)	Working Months
1. Fada-Bilanga	72	14.4
2. Diabo-Comin Yanga	48	9.6
3. Namounou-Logobou	39	7.8
4. Ougarou-Nassougou	33	6.6

The following diagram, No. 4, is based on the figures derived at in Tables No. 11 and No. 12. It assumes that no activity will take place during the rainy season (mid-June to mid-October).

For the Ougarou-Nassougou road, no earthwork operations other than access ramps to drainage structures, are considered.

5. Environment Assessment

An assessment of the impact of the four proposed project roads on the local environment was carried out in accordance with the "Environmental Procedures" (22 CFR Part 216) of March 24, 1976. For convenience we have presented the details of this assessment in Annex B.

Our findings conclusively indicated that the project roads to be funded by AID do not, in any way, significantly affect the local environment. The proposed alignments do not interfere with wildlife, rangelands or animal migration routes, do not endanger historic sites, hallowed ground or natural or landmarks and have no negative effect on natural or human resources. Finally, the natural runoff of all rainfall and established watercourses will be respected in the final technical plan to be elaborated in the field by the construction manager. Given our preliminary analyses, no problem is anticipated in this respect.

Thus, given the absence of adverse environmental inputs, there is no foreseeable need to recommend further protective measures, nor does there appear to be any additional cost associated with the projects based upon environmental considerations.

B. Financial Analysis and Plan

1. Financial Rate of Return/Viability

A financial rate of return analysis is not appropriate for a road building project. For the economic rate of return analysis (cost-benefit), see Economic Analysis, Section III D below.

2. Budget Analysis of Implementing Agency

As stated earlier SERS will be the implementing agency for this project for the GOUV. The SERS is a very new agency and has been operating only since February 1976 (four months at the time of the PP team's field visit). The SERS was created as a counterpart GOUV agency to implement the secondary road improvement program under IDA financing. Prior to that, responsibility for the upgrading and maintenance of secondary roads was not sharply focussed inside the DPW, and as a result this important aspect of the country's overall transport network did not receive the attention it deserved.

Even taking into account the extreme newness of SERS, the PP team was surprised to learn that no formal budget appears to exist for its operation. This was confirmed by both the SERS management and the World Bank Regional Office in Abidjan which is overseeing the IDA loan for rural roads and assistance to SERS. The structure of SERS is presented in the organizational chart included in Section IV A, Administrative Arrangements. The SERS headquarters staff comprises eleven professional positions, three of which will be foreign-funded (one by FAC and two by IDA). The balance will be GOUV-funded civil service positions filled by Voltaics.

Several SERS construction brigades are eventually foreseen. The personnel staffing projected for each brigade is illustrated by the personnel listing in Section IIB of this paper, Detailed Description. There is presently no budget for these brigades from the GOUV national budget. According to the SERS management, brigades will be formed as foreign-funded projects are approved which will require them and be able to finance them. It was evident to the PP team that realistically most of the brigade personnel costs would have to be funded under the AID project. The GOUV contribution to meet the 25 per cent host country requirement will consist of the following elements and estimated amounts:

1) Salaries of SERS permanent civil service personnel working on the project as included in Table III-9.

2) 25 per cent of total operating costs directly connected with the construction of the project roads (the project will bear the remaining 75 per cent), covering salaries of brigade personnel, fuel, spare parts,

vehicle maintenance, etc. Since the tax element is estimated at about 20 per cent and since the AID grant may not be used to pay taxes of any kind, it is understood that the portion representing taxes will be paid from the GOUV contribution. This in effect will constitute an internal transfer from one GOUV account to another. 25 percent of operating costs 45,651,000 CFA (or $192,620.00)

3) All road maintenance costs on project roads following completion of construction. The source is expected to be the road maintenance fund required to be established under the provisions of the $7.5 million IDA loan, which requires the GOUV to contribute initially an amount of 200 million FCFA, and an increased amount annually thereafter consistent with increases in maintenance costs. At present maintenance costs, the initial 200 million FCFA would cover about 2500 Km. of secondary roads. The present IDA loan will finance the reconstruction of 1200 Km. of secondary and the maintenance of another 2,100 Km. Both SERS and the World Bank representative in Ouagadougou believe it feasible to finance maintenance costs of the AID project roads from the above GOUV secondary road maintenance fund whose main source will be fuel tax revenues. $87,360.00 estimated annual road maintenance costs x 20 years projected life of road. (Assuming total length of road to be 192 Km. at $455.00 per Km.)

GOUV responsibility for road maintenance has been agreed in principle by the Deputy Director of the Department of Public Works and the Director of SERS. The principal will be reaffirmed in the Project Agreement, and the submission of an acceptable maintenance schedule for the project roads will be a condition precedent to disbursement under the grant.

3. Financial Analysis & Plan: Construction and Maintenance

a) Cost of Construction Operations for Drainage Structures. The cost figures given under the technical descriptions of individual component road projects include a contingency factor of about 10%, which was achieved by rounding up the figures both for quantities and unit prices. As these prices are based on recent bid and/or construction prices for work by contractors, and as it is intended to have this part of the project carried out the same way, the earlier mentioned cost figures will be kept unchanged for the purpose of financing and budgeting, except for the addition of 4% for construction supervision. Provisions for design services have already been made under a different heading. Furthermore, 20% of the net construction cost representing the tax element has to be added.

(Table No. III-13 - see next page)

TABLE No. III-13 Overall Cost of Drainage Structures 1/

Designation	Net Cost of Construction	Taxes and Duties	Construction & Supervision	Totals CFA	Totals U.S. $
1. Fada-Bilanga	39,690,000	7,939,000	1,587,800	49,216,800	207,666.00
2. Diabo-Comin Yanga	30,395,000	6,079,000	1,215,800	37,689,800	159,029.00
3. Namounou-Logobou	14,080,000	2,816,000	563,200	17,459,200	73,667.00
4. Ougarou-Nassougou 2/	26,655,000	5,331,000	1,066,200	33,052,200	139,460.00
Totals	110,820,000	22,165,000	4,433,000	137,418,000	579,822.00
	($467,594.00)	($112,228.00)			

1/ All figures are in CFA, unless noted otherwise.

2/ Includes access ramps to structures.

b) Cost of Earthwork Construction. The elements for the financial cost of earthwork construction are included in III-A-2. (Construction description and cost calculation).

c) Budgeting. The financing of the project consists of two kinds of input, as detailed in the following:

i) One time events (jointly for all four road projects):

Procurement of Equipment - Table III-6	970,000	(AID)
Design of Highway and of Drainage Structures (CFA 15,507,520) - Table III-9	65,430	(GOUV)
Maintenance of Roads for 20 years (3455.00/Km./year) 455 x 192 x 20	1,747,200	(GOUV)
Total AID	970,000	
Total GOUV	$1,812,630	

ii) Periodic payments during construction. (See Table III-10)

AID	1,963.00
GOUV	801.00
Total	2,764.00

for one working day (720m^3)

Needed number of working days (See Table No. III-11)

Including earthwork of Road no. 4	442
Excluding earthwork of Road no. 4	369

For the time being, earthwork for road no. 4 will not be considered. Therefore, the total cost for operation of earthwork brigade will be:

AID contribution 369 x 1963.00	$724,347.00
GOUV contribution 369 x 801.00	$295,569.00
Total U.S. $	$1,019,916.00

Cost per calendar month during dry season (@ 25 work days)

AID contribution 25 x 1963.00	$ 49,075.00
GOUV contribution 25 x 801.00	$ 20,025.00
Total/Month	$ 69,100.00

Drainage Structures

According to Table No. 13, the total cost amounts to:

Net construction cost (AID contribution)	467,594.00
Taxes, supervision (GOUV contribution)	112,228.00
Total	597,822.00

This cost will be distributed over the 16 dry months of a 2 year period, resulting in a cost per dry months of:

(AID)	29,224.00	
	7,014.00	
Total	$36,238.00	per dry month

TABLE No. III-14 Overall Construction Cost for Four Road Projects (excluding one-time financing)

Designation	Length Km.	DRAINAGE STRUCTURES AID	DRAINAGE STRUCTURES GOUV	No. of Working Days	EARTH WORK AID	EARTH WORK GOUV	TOTALS AID	TOTALS GOUV	Grand Total
1. Fada-Bilanga	72	167,468	39,696	170	333,710	136,170	501,178	176,367	677,545
2. Diabo-Comin Yanga	48	128,248	30,780	103	202,189	82,503	330,437	113,283	443,720
3. Namounou-Logobou	39	59,409	14,258	96	188,448	76,896	247,857	91,154	339,011
4. Ougarou-Nassougou	33	112,447	26,992	-	-	-	112,447	26,992	139,439
TOTALS		467,572	111,726		724,347	295,569	1,191,919	407,796	1,599,715

Note: All cost items are in U.S. Dollars.

TABLE NO. III-15

Overall Project Cost (including all payments) for entire two year construction period - in U.S. Dollars.

	Contributors		
	AID	GOUV	TOTALS
Equipment Procurement	970,000 .00	206,325.00	1,176,325.00
Design Services		65,432.00	65,432.00
Equipment Operation Expendables	514,752.00	149,445.00	664,197.00
Do. - personnel, incl. Logistic support	78,600.00	59,780.00	138,380.00
Drainage Structures	467,594.00	112,228.00	579,822.00
Construction Supervisor		93,600.00	93,600.00
Miscellaneous Expense	51,754.00		51,754.00
Construction Manager inc. log. support	240,000.00		240,000.00
Totals	2,322,700 .00	686,810.00	3,009,510 .00

TABLE III-16 Breakdown of Budget for FY 1977/78 in U.S. Dollars

	FY 1977			FY 1978			Both Years	
	AID	GOUV	Total	AID	GOUV	Total	AID	GOUV
Equip. Procure.	970,000	206,325	1,176,325				970,000	206,325
Design Services		65,432	65,432					65,432
Const. Supervis.		46,800	46,800		46,800	46,800		93,600
Equip. Operns.	80,400	28,350	108,750	512,952	180,875	693,827	593,352	209,225
Drainage Strucs.	287,300	56,114	343,414	180,294	56,114	236,408	467,594	112,228
Constr. Mgr. (2 yr. contract)	160,000		160,000	80,000		80,000	240,000	
Miscellaneous	2,300		2,300	49,454		49,454	1,754	
Totals	1,500,000	403,021	1,903,021	822,700	283,789	1,106,489	2,322,700	686,810

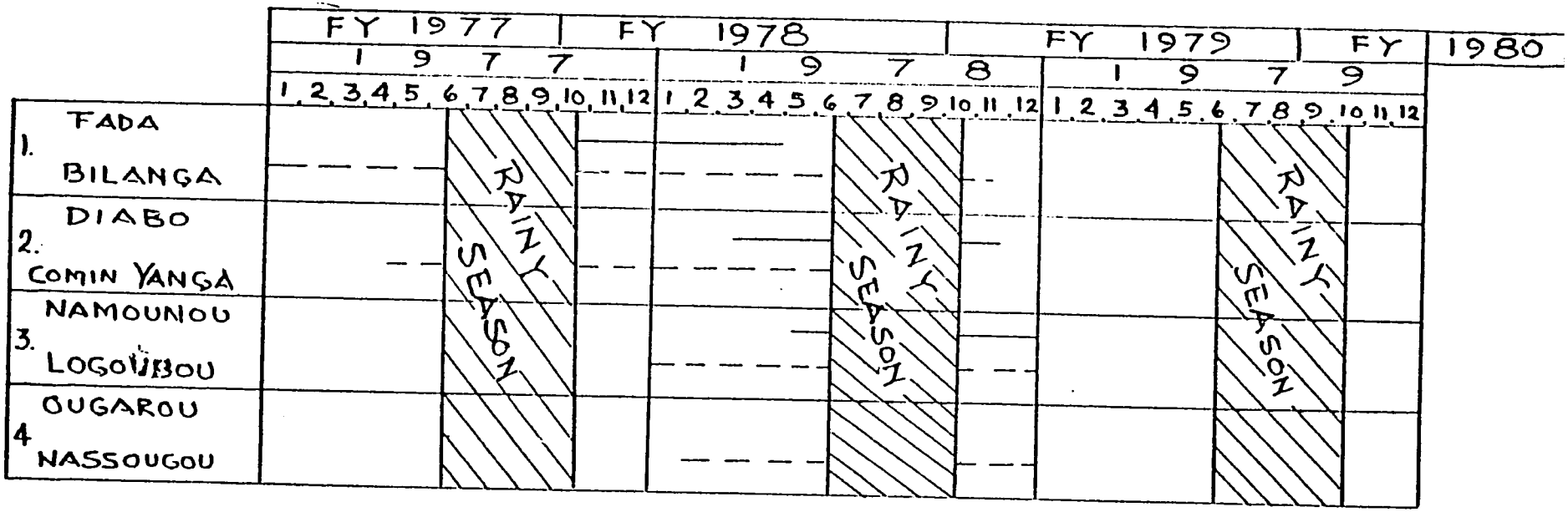
Notes:

1) 20 year maintenance of roads not included

2) For FY 1977, only 50 operating days (out of a total of 360) were assumed (see time graph)

* Assuming funds allocated for construction of most drainage structures during FY 77

TABLE III-17 CONSTRUCTION TIME SCHEDULE



LEGEND:

— — — — DRAINAGE STRUCTURES

———— EARTHWORK

4. Conclusion of Financial Soundness

Since this is a grant project, the government's repayment capacity is not an issue. What is of concern is the government's ability to contribute its share of the total project costs. Contributions in the form of payment of civil service salaries and of all forms of taxes related to operating expenses pose no problem. With respect to the GOUV's ability to pay all maintenance costs of the project roads following completion, adequate assurances have been received and the matter will be addressed in writing in the Project Agreement regarding the GOUV acceptance of this responsibility.

The PP team has made relatively detailed cost estimates both by project outputs (the three roads) and by project inputs (equipment, operating costs and services of the project manager), with provisions for typical cost escalation. We regard the financial plan as firm and barring unforeseen levels of inflation or scheduling delays, we believe the project amounts proposed for FY 77 and FY 78 are sufficient to finance the project as described in this paper.

C. Social Analysis

1. Description of Impact Area

a) Delimitation of Impact Area

The construction of a road into the difficult access zones under consideration in this paper will undoubtedly have an important impact on the local population and at a distance several kilometers from its actual alignment. The precise limits of these impact areas have been drawn up according to topographic and socio-economic considerations.

For the purposes of this study we have drawn a line at a distance of 20 kilometers to both sides of the project road (corresponding to roughly one-half day's walk by local standards) and indicated a progressive narrowing of that band as one approaches the junction point with the existing road system (See Map 1). This approach was generally corrobdrated by local inhabitants of each of the impact areas. In the case of the Fada-Bilanga road, the Sirba River serves as the northernmost boundary. In the Namounou-Logobou area, the Gabnougou escarpment represents one side of that road's potential impact area.

The precise delimitation of the impact areas of the respective projects furnishes a clearly defined point of departure for general field investigation as well as all statistical analysis.

b) Demographic Characteristics

Basing the population analysis on the recently completed national census for 1975 the following demographic data was assembled by impact area (a break down of impact area population is provided in Annex C)

TABLE III-18: Ethnic Distribution Estimate

	Area	Population 1/	Number of Villages	Av. Pop. per Village	Est. Area	Est. Density
I	Fada-Bilanga	44,333	69	643	1200km^2	36.9
II	Diabo-Comin Yanga	38,820	57	681	1000km^2	38.8
III	Ougarou-Nassougou	3,702	7	529	900km^2	4.1
IV	Namounou-Logobou	26,868	13	2,067	900km^2	29.9

1/ 1975 National Census for the Department de l'Est

TABLE III-19: Impact Area Population

	Area	Gourmantche	Peulh	Zaousse	Yana	Migrants
I	Fada-Bilanga	92%	7%	-	-	1%
II	Diabo-Comin Yanga	-	20%	50%	30%	-
III	Namounou-Logobou	94%	3%	-	-	3%
IV	Cugarou-Nassougou	99%	1%	-	-	-

N.B. Zaousse and Yana ethnies are Mossi sub-groups; Peulh peoples are generally semi-nomadic herdsmen but occasionally settle in an area and carry out sedentary agriculture or agro-pastoral activities.

c) Socio-political structures

Up to the present time the traditional political structures in the Eastern O.R.D. (Departement de l'Est) have exerted considerable authority over the local population. The highest traditional authority is the canton chiefdom (Chefferie de Canton). Important chiefdom villages in the project impact areas are Fada N'Gourma, Bilanga and Comin Yanga. In the Namounou-Logobou area there is no canton authority - local villages have successfully resisted wars of annexation by neighbouring tribes and maintained their political autonomy at the village level. Just under the canton chiefs are the village chiefs who are invested with both political and administrative powers. The village chiefs are elected by the village population, unlike the canton chiefs, whose power is inherited.

The administrative districts of the impact areas are:

	Area	Administrative District 1/
I	Fada-Bilanga	Sub-Prefecture of Fada
II	Diabo-Comin Yanga	Arrondissements of Diabo & Comin Yanga - sub-prefecture of Fada
III	Namounou-Logobou	Sub-Prefecture of Diapaga
IV	Cugarou-Nassougou	Sub-Prefecture of Fada

1/ In Upper Volta the administrative hierarchy is composed of the Prefecture (or Department), the Sub-Prefecture and the Arrondissement.

d) Family Structures

In the traditional sense of the term, the "family" includes all the members of the same patrilineal lineage and who are living under the authority of the oldest male who is considered the head of the family.

The smallest family unit is the "household" (menage); a "concession" is the traditional habitat and is composed of one or several households, the concession chief generally being the oldest household head.

The family agricultural plot is the economic expression of the family cell, which generally represents one household of an average six persons.

e) Organization of Socio-economic Activities

The principal economic activities are agriculture, animal husbandry and handicrafts, distributed as follows:

- Farmers = 70%
- Craftsmen & herdsmen = 28%
- Civil servants = 2%

Craftsmen, herdsmen and civil servants all supplement their activities by farming.

At the family level, the economic resources which determine their standard of living are drawn from family agriculture and animal husbandry activities. The family head or household head is in charge of the production and the management of the family plot of which one part is consumed by the family and another part is marketed. The monetary revenue generated by the family plot covers all required expenses (funerals, marriage, equipment, school, health, taxes, etc.) The part of the family production used for these expenses appears to be highly variable. One recent study (SAED, 1975) indicated this part to be almost 30%.

Beyond the family level certain individuals (women, young people) engage in agricultural activities ("individual plots"), in small animal husbandry, and in some handicrafts. These activities provide an additional source of income to satisfy certain personal needs (clothing, equipment, small consumption items, etc.) The relative importance of the individual income depends on the economic standing of the family and the availability of land: if the family income is not sufficient, all members of the family must work exclusively on the family plot, or, on the other hand, allow the family head to freely utilize the revenue from the individual plots to fulfil the family needs.

The lack of individual income is the primary cause for migration of the men; they generally work on the family plot during the growing

and migrate (to Niger and the Ivory Coast) during the dry season to work as salaried laborers. In the Gourmantche impact areas (Fada-Bilanga, Ougarou-Nassougou, Namounou-Logobou) the spatial mobility of the young households is noticeable by the progressive colonization of surrounding lands which then become farm camps (campements de culture).

According to the census check of several Community Development Villages carried out by the O.R.D. in January 1976 at least 15% of the population (men aging from 14 to 30 years) represents a potential source of migration due to insufficient individual income.

Over time, these traditional activities are indicated in the following schema:

JAN	FEB	MAR	APR	MAY	JUNE
Pound and winnow cereals; clean fields; construction and repair huts; funerals; emigrations				Break soil; seed	

JULY	AUG	SEPT	OCT	NOV	DEC
Seed	Weed; hoe, mound		Harvest crops		

f) Social Services

The four project zones are generally poorly equiped with basic social infrastructure. A summary of the existing situation is furnished in Table III-20.

TABLE III-20: Social Infrastructure

Item	Fada-Bilanga	Diabo-Comin Yanga	Ougarou Nassougou	Namounou Logobou
1. MEDICAL CARE				
-Dispensary	1	2	0	1
-Maternity	1	2	0	1
Total	2	4	0	2
-Density	1 per 22 167 p.	1 per 9 705 p.	0 per 3 702 p.	1 per 13 434 p.
2. EDUCATION				
- Primary Schools	1	2	0	4
- Density	1 per 44 333 p.	1 per 19 410 p.	0 per 3 702 p.	1 per 6 717 p.
3. POSTAL + TELECOM.				
- P & T	1	1	0	0
- Density	1 per 44 333 p.	1 per 38 820 p.	0 per 3 702 p.	1 per 26 868 p.
4. YOUTH CENTERS				
- Youth Centers	0	0	0	0
- Density	0 per 44 333 p.	0 per 38 820 p.	0 per 3 702 p.	0 per 26 868 p.

Finally, it should be mentioned that several religious missions play an important role in area cultural and economic activities: the construction of a school or of a dispensary, agricultural extension etc. Catholic or Protestant missions have been established in the towns of Bilanga, Diabo, Logobou and Mahadaga.

2. Social Impact of Project Roads

The ultimate social impact of the construction of the roads proposed in this paper may be analysed at two levels:

- the general effect which would be common to all four zones, including the spread of public services, and the effects on the economic relationships between the different social groups and,

- the effects which are specific to an individual area.

a) General Effects

The importance of the administrative and social infrastructure

indicates the socio-cultural level of a population. The distribution of that infrastructure and quality of access roads offered to the local population are essential factors to the eventual impact that public services may have in a given environment.

The distribution of social services in the Eastern O.R.D.is above the national average, but the present state of the regional road system handicaps severely the role they might play in the region.

First, it is extremely difficult to evacuate the ill to the nearest medical care center. The hospital in Fada N'Gourma is the largest in the region but it is difficult, if not impossible (especially during the rainy season) to transport a sick person to the medical center by vehicle. The time required to transport the patient from any one of the project zones is at least 6-12 hours and occasionally will take up to 2 days. In the case of a severe hemmorage or snake bite, the patient often dies while in transit to the hospital. While carrying out their investigation in Nassougou, in fact, the team learned of the recent death of the head of the local agricultural youth group following a snake bite which was impossible to treat rapidly.

Secondly, the school systems in each of these areas encounter difficulties in maintaining a minimum quality of education. The poor state of roads prevents the education counsellor (inspecteur primaire) from visiting area schools in Logobou, Mahadaga, Tansarga, Tambaga, Bilanga and Comin Yanga more that once a year. Further the school feeding program suffers serious losses in food spoilage due to the slowness of local transport.

Thirdly, lacking basic access routes, the regional postal system does not even function in the towns of Logobou, Bilanga, Comin Yanga or Nassougou - depriving these areas of a means of communication with the rest of the region.

Finally, the construction of the project roads have an impact on the economic relations between different social groups. The road will permit the evacuation of production surpluses on the one hand and the arrival of consumer goods and governmental extension on the other (c.f. economic analysis). These improved commercial circuits will enable all producers (family heads, young people and women) to dispose of a greatly increased monetary income: from 10 000 to 100 000 CFA. The sale of products currently in these areas is carried out by the women - either for themselves or for the family head. In this system they can only sell a small quantity of produce at one time: 100 to 500 CFA maximum. Further the system obliges the individual producers (young people) to stock their produce while the family head assures himself of the sale of the family output. It would appear reasonable to consider that the sale of produce on a larger scale will favorize the development of the economic power of the individual producers.

b) Specific Area Effects

FADA-BILANGA

The major area trade flows are carried out in the markets located to the North and West of the zone Bilanga-Bilanga Yanga. A small track between this zone and the important traditional market of Pouytenga (some 50 km to the S.E.) has permitted the generation of relatively intense seasonal trade flows between the two centers.

The market at Pouytenga offers consumer goods coming from Ouagadougou and Togo against the cereals, local products and cattle coming from Bilanga. It would not be impossible to envisage the deviation of part of this traffic into the project road after its reconstruction.

DIABO-COMIN YANGA

This zone is characterized by a high population density (40 p./Km^2) and a good potential for cotton development in the Comin Yanga section. Exceptionally for the four zones, this area appears to lack sufficient land, due mostly to presence of onchocerchiasis (river blindness) in the fertile areas to the East. This problem should be soon eliminated following the next WHO spraying campaign. The opening of the project road coincides well with the WHO project and would greatly encourage the future development of this yet-to-be settled land.

NAMOUNOU-LOGOBOU

The construction of the project road would serve as a catalyst to rapid development of this potential rich agricultural zone. Trade takes place mainly with the market at Namounou and often involves a good deal of contraband from Togo and Ghana. The road would provide a means of easier control of illicit trade by local authorities and would stimulate a rapid growth in the purchasing power of the local population.

OUGAROU-NASSOUGOU

The absence of any basic means of communication to Nassougou has left this area virtually untouched by the modern world. Lacking any school (the closest is 60 Km. away) or religious mission the local population is 100% illiterate. A primary school teacher currently serving in Fada is the only person in the zone to have received a formal education. The construction of the project road into the zone would permit the opening up of the area to eventual regional migration and insure its integration into the Eastern O.R.D. development schemes.

Generally speaking, therefore, the construction of the four project roads will have a significantly favorable impact on the local inhabitants.

A system of communications is a primordial factor for regional development at all levels. The short-term effects of the road are to be measured especially in economic terms and the long-term effects translated into socio-cultural development; the impact of public services (health, education, telecommunications) on the milieu is an essential part of this eventual development process and should consequently facilitate the adaptation of individuals to technical progress.

D. Economic Analysis

1. Evaluation Methodology

a) General Approach

In evaluating an investment, capital expenditures are compared to the derived economic benefits. In this report, special consideration is given to the measurement of discounted costs and benefits for the purposes of project evaluation and eventual ranking of possible road investment options.

All costs and benefits used in the project appraisal are expressed in economic terms at prices in effect in Upper Volta for May 1976 (in CFA francs). The opportunity cost of capital was estimated at 12% for the project area.

The project roads have been evaluated by calculating the net present worth of the investment, which is mathematically represented by the formula:

$$\sum_{t=1}^{n} \frac{Bu - Cu}{(1 + i)^n}$$

where Bu = benefits in each year
Cu = costs in each year
n = number of years
i = discount rate

This calculation is then used to find an internal rate of return, which is represented by the discount rate at which the net present worth becomes zero.

Following the numerical treatment of the project roads the team re-integrated the more non-quantifiable elements presented in the sociological analysis and concluded with critical comments and overall project conclusions.

b) Operational Outline

The establishment of a viable rural road system is obviously an important part of the rural development process. A cartographic representation depicting areas of present agricultural and/or commercial activity in Upper Volta would generally reveal the intensity of this activity to be greatest at both sides of the existing road network and decreasing progressively in importance as one moves away, normally to a distance of 20-40 Km. on either side of the roadway.

However, to assume, a priori that the construction of secondary rural roads into an area such as the Eastern O.R.D. would automatically trigger any large-scale migration into the specific project zones and a take-off of local agricultural production would surely greatly oversimplify the realities of the current situation.

We have chosen to construct our development models on the basis of a multi-sector analysis. Special attention has been paid to potential benefits in road user savings, where applicable, as well as to realistic estimations of incremental net value added. Care was taken to avoid any double-counting of these two benefit streams.

We have considered that normal daily traffic is non-existant all all the project roads, with the exception of the Fada-Bilanga alignment which currently constitues the only direct access road between Fada and the two administrative districts to the North. This small traffic consists essentially of administrative vehicles.

In general, therefore, the cost-benefit analysis of the four rural roads in question has necessarily required an approach which deviates substantially from the classical method of comparing road user savings to the proposed road investment.

The orientation of our analytic effort has consequently been toward the justification of each project road based on the development benefits which could be directly attributed to its construction.

Ascertaining, within reasonable confidence margins, the numerical importance of these benefit streams required a precise measurement of:

1) Existing levels and types of economic activity, especially agricultural, within the zone of influence (activity in goat, sheep and cattle raising were assumed unaffected by road construction, given the nomadic character of local Peulh herdsmen);

2) The potential for increasing this activity, and

3) The extent to which the implementation of the project road will contribute to this change.

Concerning this last item, our investigation of the Eastern O.R.D. concurs clearly with the recent M.S.U. Mission that the absence of a road is not the only constraint but is undoubtedly the most important one to local agricultural development. In each of the four project areas it was the unanimous opinion of local authorities and development personnel that the provision of adequate basic access predicates the the effective utilization of all other inputs considered vital to the development process.

In light of these observations we have utilized a methodology that assumes road construction to be the primary element of a larger investment package including, most importantly, extension work, improved marketing, new farm technology and agricultural credit.

A series of investments of the type mentioned above have been outlined in the "Eastern O.R.D. Integrated Rural Development Project" currently being financed by several foreign donors, including USAID, the UNDP and FAO. Having examined present commitments as well as the intent of both the donors and the GOUV we have estimated the total investment (road and other) required in order to attain desired agricultural production levels in each project impact area. The cost of the road improvement (including maintenance costs) was then divided by total estimated cost of the overall investment package and resulted in a coefficient which could be construed as the fraction of total development benefits which may be attributed to the project road. In all four cases our calculations revealed a fraction in excess of 40%. We have therefore taken 40% of the total development benefit stream as the contribution of each project road to development in its respective impact area.

Further, to circumvent any eventual criticism that the utilization of 40% appears to be a somewhat arbitrary figure, we have provided an alternative means of determining project feasibility. The ensuing calculations indicate the percentage of the total agricultural benefit stream which must be attributed to the project road in order for it to attain the minimum acceptable level of 12%, thus permiting the critic some subjectivity in assigning development benefits to the road;

2. Benefit Stream

a) Classical User Cost Savings

The improvement of an existing road automatically induces a reduction in the operating costs of the vehicles which utilize that road. With the exception of the Fada-Bilanga road, the existing traffic over the project roads in question is so small so as to be considered negligeable. Only the Fada-Bilanga alignment therefore necessitated a user cost analysis.

On the Fada-Bilanga road we have estimated the average annual daily traffic for the opening date of the project road (1979) at five vehicles for both directions (no existing traffic counts are available for this section) and growing at a rate of one per cent per year. Representative vehicles over the project road were taken to be the "pick up" (Land Rover or Peugeot 404 P.U.) totaling 3 vehicles/day and the "truck" category (5-10 tons) totaling 2 vehicles/day.

To calculate the user costs savings implied by the construction of the project road reference was made to the detailed user cost study recently completed by the Company LOUIS BERGER INTERNATIONAL in an analogous region West of the Eastern O.R.D. The results of their analysis, broken down by vehicle and road type, are reproduced in Table III- below.

TABLE III-21: Vehicle User Costs
(excluding taxes - prices for 2nd trimester 1976 and in FCFA/Km)

Vehicle Type	Road Classification				
	Class I	Class II	Class III	Class IV	Class V
Light Vehicle	22.91	28.78	39.26	57.48	71.69
Pick-up	26.72	34.82	42.64	61.09	72.74
Small bus	35.93	44.84	62.03	89.44	101.86
Truck	63.14	80.87	101.15	133.31	168.99
H.D. Truck Trailer	113.86	147.13	181.08	251.54	317.70

Source: LOUIS BERGER INTERNATIONAL, Regional Transport Study for Ouagadougou - South, preliminary results. Study commissioned by the IBRD and dated May, 1976

This user cost data utilizes the same road classification system referred to earlier in this paper and therefore permits a direct quantitative appreciation of road user savings following the project road improvement. It was considered that the Fada-Bilanga road will go from its present state (Class V) to a Class III level following the project implementation.

In the context of the Fada-Bilanga road it would appear reasonable to assume a certain level of new, or "induced", traffic following the upgrading of the project road. This traffic represents roughly those potential road users who, until the reconstruction of the route, would not have utilized it because of the inordinately high user costs implied. The level of induced traffic was estimated by assuming a transport demand elasticity of 1.0 (i.e., a reduction of 1% in vehicle user costs will stimulate an increase in the traffic volume by 1%).

The user cost savings incurred by this traffic was taken to be one half that which would have been realized by the "normal" traffic (1). This induced traffic is not to be confused with the traffic associated with the development effect outlined in the following section.

The total of both "normal" and "induced" traffic benefits are combined and presented over a 20 year period in Annex G (Economic Analysis/Fada-Bilanga).

b) Developmental Benefits

A survey of development literature on the Eastern O.R.D region indicates a serious lack of reliable base line data for the establishment of an estimation model. This problem is only compounded and the margin of potential error amplified as one attempts to interpolate this regional data to a specific small zone of influence which cuts across existing administrative boundaries.

Our methodology has therefore been to approach the construction of a model from a "micro" rather than a "macro" point of view, i.e., describing the existing levels and types of agricultural activity according to local demographic, sociologic and agricultural production calculations rather than to attempt to break down regional production figures into arbitrary units. We have followed the 3-step process outlined below:

i) Estimation of production unit size and composition in order to derive base year total impact area agricultural production;

ii) Estimation of expected growth levels by individual product and indications of supplementary production ($Prod._{T} - Prod._{base\ yr.}$)

iii) Derivation of the net value (Farmgate price - costs) in order to reflect the total value added generated by total investment in regional development and consequently the value added attribute to the project road.

Base year agricultural production in the four project zones can best be described as small-farmer subsistence agriculture centered around essentially sorghum and millet, but including other minor crops (e.g. peanuts, cotton, soya, rice, sesame, shea nuts, etc.) which vary in importance according to local rainfall and soil conditions.

The basic producing unit is the household (menage) which we have previously defined as consisting of six members (three active, three inactive). Each unit cultivates an average 2.5 hectares of land which serves the nutritional needs of the household and occasionally furnishes pocket money for the purchase of small imported goods. Based on sample studies carried out recently in each of the project zones, we were able

(1) The initially induced traffic needs only a marginal user cost reduction to be generated and receives 100% of the user costs savings. The last induced traffic needs the entire user cost reduction to be generated and receives 0% of the benefits. Consequently, as an average, the economic attributed to the induced traffic is represented by 50% of the normal road user benefits.

to reconstruct the average allocation of land area according to crop type. Knowing the average per hectare yields of each crop and knowing the total population of each project area we derived total area production figures by major crop type. The results of these calculations are summarized in Table III-22.

TABLE III-22: Base Year Production Estimates

Crop	% Distribution	Area (ha/unit)	Tonnage 1/ per unit	Tonnage per zone
I Fada-Bilanga				
- Cereals	70	1.8	1.4	10 300
- Peanuts	15	.4	.2	1 500
- Rice	5	.1	.2	1 500
- Other	10	.3	.2	1 500
II Diabo-Comin Yanga				
- Cereals	80	2.0	1.6	10 400
- Peanuts	10	.3	.2	1 300
- Cotton	2	.1	.1	600
- Rice	2	.1	.2	1 300
- Other	6	.2	.1	600
III Namounou-Logobou				
- Cereals	80	2.0	1.6	7 200
- Peanuts	2	.1	.1	500
- Cotton	3	.1	.1	500
- Rice	5	.1	.2	1 000
- Other	10	.3	.2	1 000
IV Ougarou-Nassougou				
- Cereals	85	2.1	1.7	1 000
- Peanuts	3	.1	.1	100
- Cotton	1	-	-	-
- Rice	1	-	-	-
- Other	10	.3	.2	100

1/ Using average traditional yield/ha. of:

Cereals (Millet & Sorghum) = 800 Kg/ha
Peanuts = 550 Kg ha
Cotton = 450 Kg/ha
Rice = 1500 Kg/ha
Other = 500 Kg/ha

An attempt was made to verify the general validity of these production estimates by comparing them with estimates of basic nutritional needs for each zone. Final weighted calculations according to the official census population distribution figures and the average caloric intake needs per person (according to age group and sex) indicate a theoretical mean requirement of 2,058 calories/day. Knowing the average caloric output of local sorghum and millet to be 3,400 calories/Kg. we were able to reproduce the following subsistence production table for each impact area.

TABLE III-23: Subsistence Production Estimates 1/

Area	Est. Subsistence 2/ Cereal Production	Est. Marketable Surplus
Fada-Bilanga	10 800 T.	- 500 T.
Diabo-Comin Yanga	9 400 T.	+1000 T.
Namounou-Logobou	900 T.	+ 100 T.
Ougarou-Nassougou	6 500 T.	+ 700 T.

1/ Probably slightly overestimated, given that cereals are not the only source of nutrition - The local diet is frequently supplemented by cowpeas, nere, baobab leaves, etc.

2/ Including 10% loss due to spoilage.

Finally the estimated marketable surplus of cereals was obtained by subtracting subsistence from total base year production estimates. No official statistics exist on the marketed cereals surplus in the project zones but Eastern O.R.D. representatives assured us that all of our impact areas were in an "equilibrium" state (i.e. producing enough for their own needs) or even in surplus this year. The Fada-Bilanga region deficit appears logical given the substitution of peanuts for cereals in local cultivation. Bilanga is in the southern part of an important peanut producing zone centered on the town of Bogande (see Map 1). Inhabitants of this zone traditionally trade or sell a part of their peanut products to neighboring cereal-surplus villages in order to make up for their cereal deficit.

Our base year production estimates are therefore those previously indicated in Table III-21. It needs to be emphasized that in the absence of any external investment we have hypothesized that agricultural output will remain stationary until the inception of that investment represented in this report by the opening of the project road.

An analysis of potential production for each of the four impact areas understandably must review the totality of local needs in infrastructure, services and technology. We have first attempted to summarize the state of each of the sector needs and then have concluded with an estimate of future supplementary production levels given the

level of investment commitment currently envisaged.

c) Marketing

Marketing of local agricultural surplus production is generally carried out by private merchants and transporters. The O.R.D. also makes a token effort to buy local production at official prices in order to encourage price stabilization and to assure a minimum level of remuneration for the small farmer. It appears however that the O.R.D. will increasingly attempt to withdraw from their regulatory role in favour of other state organizations such as OFNACER (Office National des Cereales). The lack of basic road access to the four project zones has been an important obstacle to the evacuation of produce. Private merchants have either refused to drive their trucks into the areas because of the poor state of the road or offer to buy up production only at extremely low prices (theoretically to compensate for high user costs).

Even governmental interventions at official prices are hampered by the inability to repair their small fleet of trucks so as to keep them running over existing roads. As a result the possibilities for marketing of produce are often so limited that the local farmer is obliged to carry out small quantities of the produce on his head or by bicycle over distances up to 40 Km. A summary of existing marketing patterns is provided in Table III-24.

TABLE III-24: Marketing Patterns

Area	Quality of Marketing System	Observations
1. Fada-Bilanga	poor	Goods transported directly to Koupela-Pouytenga region market by small private trucks from Bilanga
2. Diabo-Comin Yanga	poor	Especially difficult in Comin Yanga. Goods head carried or on bicycle to Cuargaye over 30 Km. distance. Some cotton evacuated by small trucks from CFDT
3. Namounou-Logabou	very poor	Trucks generally refuse to cross the Gabnongou escarpement. Produce carried to Namounou market at 40 Km.

Table III-25: Marketing Patterns (continued)

Area	Quality of Marketing System	Observations
4. Ougarou-Massougou	poor	All produce generally head or bicycle transported to Namounou market at 40 Km.

Road improvement is therefore an integral part of the plan to improve the existing marketing situation. Other programs at the regional level include the purchase of new trucks and utility vehicles (notably by USAID) in order to increase government mobility and eventually permit official agencies to regulate all purchases of cash crop agriculture. This combination of market access and insured reasonable farmgate prices should provide a powerful stimulus toward increasing production.

d) Extension

All extension work in the area is the sole responsibility of the O.R.D. In all the project areas local extension agents have noted the willingness with which the local population accepts modern agricultural innovations but their activities appear severely limited by inadequate or inexistent access routes to potential growth areas. Current activities in the project zones are limited to verbal encouragement: planting in rows, proper spacing and weeding. Construction of the project roads would permit rapid diffusion of O.R.D. fertilizer, insecticide, improved seed and animal traction programs and especially would give the local agent the mobility necessary to follow through on these programs.

e) Agricultural Credit

Agricultural credit is an inseparable part of the investment package discussed up to this point. Extension of credit is a natural complement to improved marketing, extension and the purchase of new material. AID has proposed the funding of an extensive farmer credit scheme in the Eastern O.R.D. (several financial experts are currently in the O.R.D. setting up the modalities of this scheme). The general guidelines for the national medium-term credit program are a 5-year scheme with one year's grace and a 5.5% interest rate.

The potential for real progress in agricultural production in the project area appears to be substantial given the preliminary plans for area investment in matters which up to now have created considerable production bottlenecks. Adding this coherent investment commitment to the previously mentioned indications of surplus good land, mobility of local populations and apparently favorable long-term climatic conditions

in all impact areas we have decided to align our short-term growth rates with those indicated in the current national plan (1972-76), modifying them only slightly where necessary so as to make them consistent with local conditions.

Upon examination, these growth rates were judged too high and consequently reduced to a more prudent level, (generally keeping just ahead of population growth rates). One notable exception is that of cotton. Our forecasts of future cotton production are based on the practical experience of the CFDT (Compagnie Francasie pour le Developpement de Fibres Textiles) in analogous regions elsewhere in Upper Volta. Their method is basically to assume an average level of production of 100 Kg/ person for the entire region within a delay of five to six years and a long-term growth slightly over that of local demographic increases 1/ It should be noted that in all cases we have estimated a potential for higher growth rates than those actually retained. They should therefore be taken to reflect a realistic, albeit somewhat conservative estimate of future production schedules.

A recapitulation of growth rates utilized in the analysis is presented in Table III-26.

1/ See Annex E for a more detailed description of cotton potential in the region.

TABLE III-26: Estimated Growth Rates

Crop	1979-85	1985-98
I. Fada-Bilanga		
- Cereals	3%	3%
- Peanuts	6%	4%
- Rice	6%	4%
- Other	3%	3%
II. Diabo-Comin Yanga		
- Cereals	2%	2%
- Peanuts	6%	4%
- Cotton	100 Kg/p.	3%
- Rice	10%	4%
- Other	3%	3%
III. Namounou-Logobou		
- Cereals	3%	3%
- Peanuts	6%	4%
- Cotton	100 Kg/p.	3%
- Rice	10%	4%
- Other	3%	3%
IV. Cugarou-Nassougou		
- Cereals	3%	3%
- Peanuts	6%	4%
- Cotton	100 Kg/p.	3%
- Rice	6%	4%
- Other	3%	3%

The tonnages derived through utilization of the above growth rates are illustrated in Annex F.

TABLE III-27: Derivation of Economic Costs 1/

Project	Financial Costs	Economic Costs
I Fada-Bilanga		
a) Construction	225,011,000	
b) Supervision	9,000,000	
c) Total Costs 1976 CFA	234,011,000	187,209,000
d) Total Costs 1976 $	$987,400	$789,900
II Diabo-Comin Yanga		
a) Construction	156,795,000	
b) Supervision	6,272,000	
c) Total Costs 1976 CFA	163,067,000	130,454,000
d) Total Costs 1976 $	$688,100	$550,400
III Namounou-Logobou		
a) Construction	145,360,000	
b) Supervision	5,810,000	
c) Total Costs 1976 CFA	151,170,000	120,936,000
d) Total Costs 1976 $	$637,900	$510,300
IV Ougarou-Nassougou		
a) Construction	114,430,000	
b) Supervision	4,580,000	
c) Total Costs 1976 CFA	119,010,000	95,208,000
d) Total Costs 1976 $	$502,200	$401,700

1/ Definitions:

a) Construction Costs = all construction costs at 1976 prices
b) Supervision Costs = estimated at 4% of construction costs supervision by Voltan Public Works Dept.
c) and d) Total Costs 1976 = the sum of a) + b) at 1976 prices
exchange rate utilized $ U.S. 1.00 + 237 CFA

N.B: Financial costs include taxes, economic costs exclude them. Tax element estimated at 20% of financial costs.

Once having an estimated production schedule over the useful life of the project road an incremental net value added is derived by applying an appropriate farmgate price and deducting all production costs (See Annex F for details).

Average farmgate prices retained in this study are:

- Cereals	=	20 CFA/Kg	
- Peanuts	=	30 CFA/Kg	(In the shell)
- Rice	=	35 CFA/Kg	(Paddy)
- Cotton	=	38 CFA/Kg	(Avg. quality)
- Other	=	35 CFA/Kg	

Production costs for cotton were calculated at 20% of the farmgate price at at 15% for all other products. The value of labor was shadow-priced at close to zero.

The total incremental net value added was taken to constitute the total developmental benefit stream. Finally this stream was multiplied by .40 to derive the developmental benefit stream which could be attributed to the construction of the project road.

3. Economic Cost Stream

a) Economic Construction Costs

For the purpose of the economic analysis total construction estimates have been modified so as to represent the real cost to the economy of the various project roads. This consideration is reflected by the removal of all taxes (which are simply an internal economic transfer payment) and the addition of a 4% to total construction costs to cover the cost of supervision. All roads were assumed to have construction periods lasting two years. All economic construction costs are indicated in Table III-27.

b) Economic Maintenance Costs

As with construction costs, the tax element has been removed from estimated maintenance costs. The costs were taken to equal approximately 100,000 CFA/Km/Yr. over the useful life of the roads.

4. Conclusion: Economic Analysis

a) Present Project Recommendations

In the concluding remarks an attempt has been made to put the theoretical analysis into more concrete terms and to provide the final recommendations pertinent to the analytic section.

Using the best available estimates of the various economic and technical parameters associated with the Eastern O.R.D. rural roads in question the results of the initial statistical analysis (see Table III-28) indicate that three of the four roads are feasible.

The Ougarou-Nassougou alignment appears economically unacceptable because of the extremely small population living in the impact area and the relatively high cost of road construction.

Given the degree of uncertainty inherent in the basic cost and benefit data, each of the project roads was the object of a series of sensitivity tests, intended to measure the accuracy with which one may use the estimated rates of return implied in the preceding analyses. These include:

TEST 1: Increase in costs by 10%
TEST 2: Decrease in benefits by 10%
TEST 3: Increase in costs by 10% and decrease in benefits by 10%.

The results of the sensitivity test are also incorporated in Table III-28.

These results would appear to confirm the initial findings by concluding that even in the case of the most pessimistic conjuncture of events three of the roads (Fada-Bilanga, Diabo-Comin Yanga and Namounou-Logobou) remain economically feasible.

In the case of the remaining road, (Ougarou-Nassougou) the internal rate of return is so low that we would not recommend its construction at the present time. One could argue, however, that initial development in this particular impact area is extremely difficult given the total lack of social infrastructure, as pointed out previously in the social analysis. It would appear useful to make a first step toward creating a basic access route into the area and thus facilitating inter-regional migration and an eventual integration of the area into regional development schemes. We have therefore examined the possibility of installing only the permanent structures in the first phase and reserving the option of providing the laterite roadway in a future second phase.

For the theoretical treatment of this additional analysis the total economic cost of the permanent structures was compared to 20% of the total potential benefit stream. The resulting internal rate of return

TABLE III-28 Economic Analysis/Principal Results 1/

Hypothesis	I Fada-Bilanga	II Diabo-Comin Yanga	III Namounou Logobou	IV Ougarou Nassougou
A Initial Analysis (40% Ag. Benefit Stream) - I.R.R. - % V.A. required to attain I.R.R. of 12% - Benefit/Cost Ratio @ 12% - Economic Construction Cost/inhabitant	15.0 % 30 % 1.3 4 223 CFA/ person	21.3 % 20 % 2.0 3 360 CFA/ person	19.4 % 22 % 1.8 4 501 CFA/ person	1.1 % 127 % 0.3 25 718 CFA/ person
B Sensitivity Test 1 (Raise costs + 10%) IRR	14.0 %	19.8 %	19.4 %	1.1 %
C Sensitivity Test 2 (Lower benefits - 10%) - IRR	13.9 %	19.7 %	19.3 %	1.0 %
D Sensitivity Test 3 (Both B+C) IRR	12.8 %	18.8 %	18.2 %	- 0.1 %
E Ougarou-Nassougou (Structures only) - I.R.R. (wi/20% Ag. Benefit Stream) - % V.A. required to attain I.R.R. of 12%				8.1 % 25 %

1/ The cash flow presentation of each of the initial economic analyses is presented in Annex C.

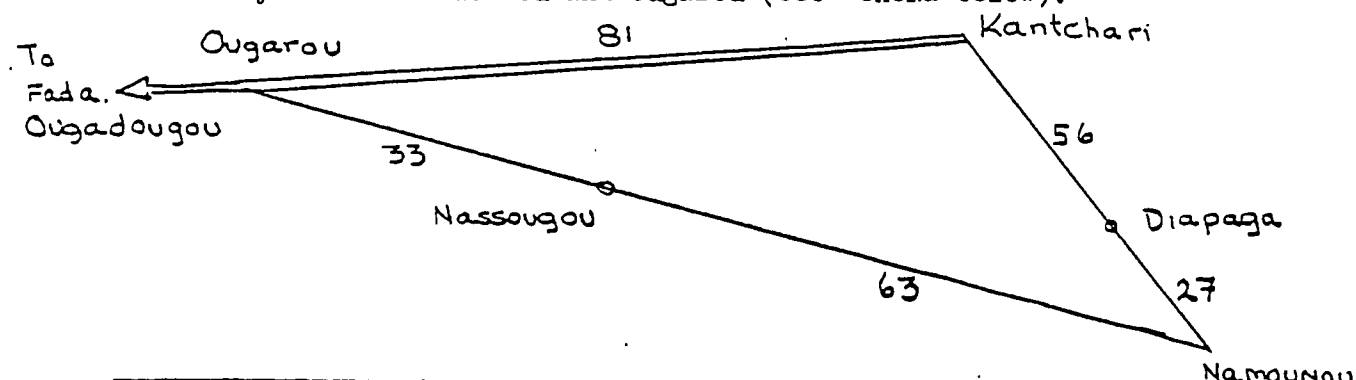
(see Table III-29) of 8.1% is not high enough to be conclusive but a case could be made that the non-quantifiable aspects of this road weigh heavily enough to justify its acceptance.

b) Future project recommendations

In the course of its investigations the team was able to identify at least one potential road project aside from those previously analyzed in this report. We would recommend that the construction of a 5 meter road from Namounou to Nassougou and the upgrading of the Nassougou-Ougarou road to the same standards be taken into eventual consideration, including necessary economic and technical feasibility studies.

On the basis of its preliminary analysis a through road of this nature, connecting the town of Namounou with the national highway to Ouagadougou could contribute significantly to the development of the appreciable agriculture potential in the south-eastern corner of the Eastern O.R.D. and complement two of the road projects advocated in the first part of this paper: Namounou-Logobou and the installation of permanent structures between Ougarou and Nassougou.

On the benefit side not only would some 2 400 Km^2 of land and several thousand local inhabitants 1/ be exposed to regional development activities but also vehicles running the route between the Namounou-Logobou agricultural zone and Fada or Ouagadougou would experience a significant reduction in basic user costs. To illustrate this latter point we have conducted a summary user cost analysis for each alternative itinerary between Namounou and Ougarou (see Schema below).



Description	Symbol	Design Speed
"Good paved road"	═══	100 k.p.h.
"Good laterite road"	———	60 k.p.h.

1/ Gangalinti 2,131 Partiaga 3,124
Nabiabondi 2,664 Bomondi 1,063
Niamanga 688 Source: 1975 National Census

Assuming equivalency of standards between the existing Kantchari-Namounou road and the proposed Ougarou-Namounou road and assuming that the national highway between Ougarou and Kantchari will either be paved (Hypothesis I) or left in a "good laterite" state (Hypothesis II) we arrive at the following calculations.

TABLE III-30: Comparison of Alternate Itineraries between OUGAROU and NAMOUNOU (For 10T. Truck only)

Description	Cost/Trip 1/			Time/Trip		
	CFA	Δ	Δ%	Minutes	Δ	Δ%
A. via Nassougou	9 710.4	0	0	96"	0	0
B. via Kantchari						
- Hypothesis I	13 509.8	+ 3 799.4	+ 39 %	132"	+ 36"	+ 38 %
- Hypothesis II	16 588.6	+ 6 878.2	+ 71 %	164"	+ 68"	+ 71 %

1/ One-way: Via Nassougou = 96 Km.
Via Kantchari = 164 Km.

Under normal conditions and accepting the assumptions defined above, the user cost saving realized by their traffic from the Namounou area to Fada and Ouagadougou would be appreciable. Our analysis indicates approximately a 40% cost and time saving in the case of Hypothesis I and a 70% savings in Hypothesis II.

On the cost side of the equation the proposed alignment cuts accross flat land and seven water crossings, indicating a per kilometer construction cost similar to that of Ougarou-Nassougou. If the construction of permanent structures is assumed in an initial phase for Ougarou-Nassougou total construction costs for a 5 meter road connecting Ougarou and Namounou would represent some 350 million CFA ($1.5 million).

Based on the above information it would seem plausible that the combination of area development benefits and the normal user cost savings for "normal" as well as "diverted" traffic could conceivably justify the Ougarou-Namounou road. Additionally this road could provide a stimulus to the local tourism potential (National Parks Arly and "W") given easier access and reduced transport costs attributed to the project road.

PART 4 IMPLEMENTATION PLANNING

A. Administrative Arrangements

1. Recipient

a) Role of SERS and E/ORD

As mentioned previously in this paper, the principal administrative issue at the time of the PRP in the fall of 1975, the question of whether E/ORD itself or SERS would be responsible for undertaking construction by means of a road brigade, has now been resolved in favor of the SERS. Rather than split responsibility for project management, it has also been decided to make SERS, rather than E/ORD implementing agent for the project. Although the PRP expressed concern that this choice might not be able to be made until after the PP was prepared, several factors have arisen which now make it clear that the SERS is the correct choice.

The main concern about SERS last fall was that it then existed only on paper and had no performance record. Since then SERS has become operational and has, since February 1976, been working on the FED-financed reconstruction of the Kongoussi-Djibo road north of Ouagadougou. A member of the PP team visited this road and found the work to date satisfactory. SERS reports that reconstruction (rechargement) is proceeding at about 300-400 meters per day and that so far the main problems encountered have been delays in obtaining spare parts to repair equipment breakdowns. Because SERS is now a going concern, the PP team and all relevant areas of the GOUV are more optimistic than before about its ability to undertake the construction and management of this project.

Secondly, the E/ORD Director and staff have adopted a more realistic view of the ORD's capacity to operate a road brigade and manage a project of this size. As pointed out in the PRP (p.29) the E/ORD has had no previous institutional experience in building or managing a road-building project. The addition of such a responsibility to the E/ORD would add to an already heavy administrative burden, even if technical aspects were handled by SERS. Accordingly, the E/ORD Director, Mr. Thiombiano, has indicated a willingness to have SERS undertake both construction and management aspects of the project. His sole condition is that it be stipulated in the Project Agreement that all equipment and operating personnel financed under the project be used exclusively in the E/ORD, this reduces the role of the E/ORD in project management to that of monitoring and coordinating work progress with other aspects of E/ORD administration, e.g. keeping village chiefs informed on construction schedule and ensuring their cooperation with the work brigade.

To provide maximum coordination, the PP team recommends the establishment of a Project Coordination Committee comprising the SERS Director or his designee, the E/ORD Director, the AID-financed project manager and the project manager of the AID Integrated Rural Development project in Fada, who would meet at least monthly, normally in Fada, to review the project status and discuss operational problems.

b) Assessment of SERS

The organizational chart for the Department of Public Works on the following page shows how the SERS fits into the DPW. It constitutes one of the four principal divisions in the Department, being responsible for the reconstruction and maintenance of secondary roads. A parallel division, SERN, is responsible for the reconstruction and maintenance of national highways (primary roads). Feasibility studies and entirely new works are handled by a third division STN (Service de Travaux Neufs), and equipment maintenance for all of these divisions is charged to a fourth division DOM(Division d'Outillages et Mecanique). As the chart shows, SERS is organized into four sections: Road Maintenance, Road Improvement, Administration and Studies/Reports. The road improvement section is divided into a road reconstruction unit (with work brigades) and a drainage structure unit (also with brigades).

Despite a well-conceived organization, the SERS is, and will be very thinly staffed. Presently SERS has only four engineers/road technicians, of whom one is expatriate (a FAC-financed Frenchman who serves as a SERS Deputy Director). According to a 1975 World Bank document, eleven professionals are foreseen for the SERS staff: two engineers, four road technicians and five administrative personnel, including one accountant. Three of these will be expatriates, with the other eight either available in country or in training abroad. In addition, SERS will require, at full operation, some 120 other personnel, including foremen, mechanics, operators and laborers, all of whom can be recruited and trained locally. There is, at present, no GOUV budget for these personnel. According to SERS' Deputy Director, operational personnel will be hired as required by foreign assisted road projects such as the current FAC and IDA projects and the AID project presented in this paper.

The SERS Director was candid about stressing the need for additional external management assistance at the operational level. He underscored the need for a full-time AID-provided manager who could supervise construction and was relieved to hear that such a person was being proposed.

SERS anticipates no difficulties regarding the recruitment of road-building crews, including equipment operators, masons, mechanics, etc. These skills are available in the local job market and the DPW can provide training where necessary. Recruiting personnel experienced in building drainage structures, however, may prove more difficult, even though SERS plans an operational unit for drainage structures.

For this reason, and because of procurement complexities, the PP team recommends drainage structures be built by private local contractors under the supervision of SERS. The World Bank proposes a similar practice for the roads to be built under the $7.5 million IDA loan.

With repect to equipment maintenance during construction, this will be the responsibility of the DOM (equipment maintenance division) within the Department of Public Works. As stated above, this is a parallel division to the SERS. As a practical matter, however, equipment maintenance will be financed out of project operating costs and DOM mechanics will be detailed to SERS for this purpose, operating out of the Department of Public Works depot in Fada.

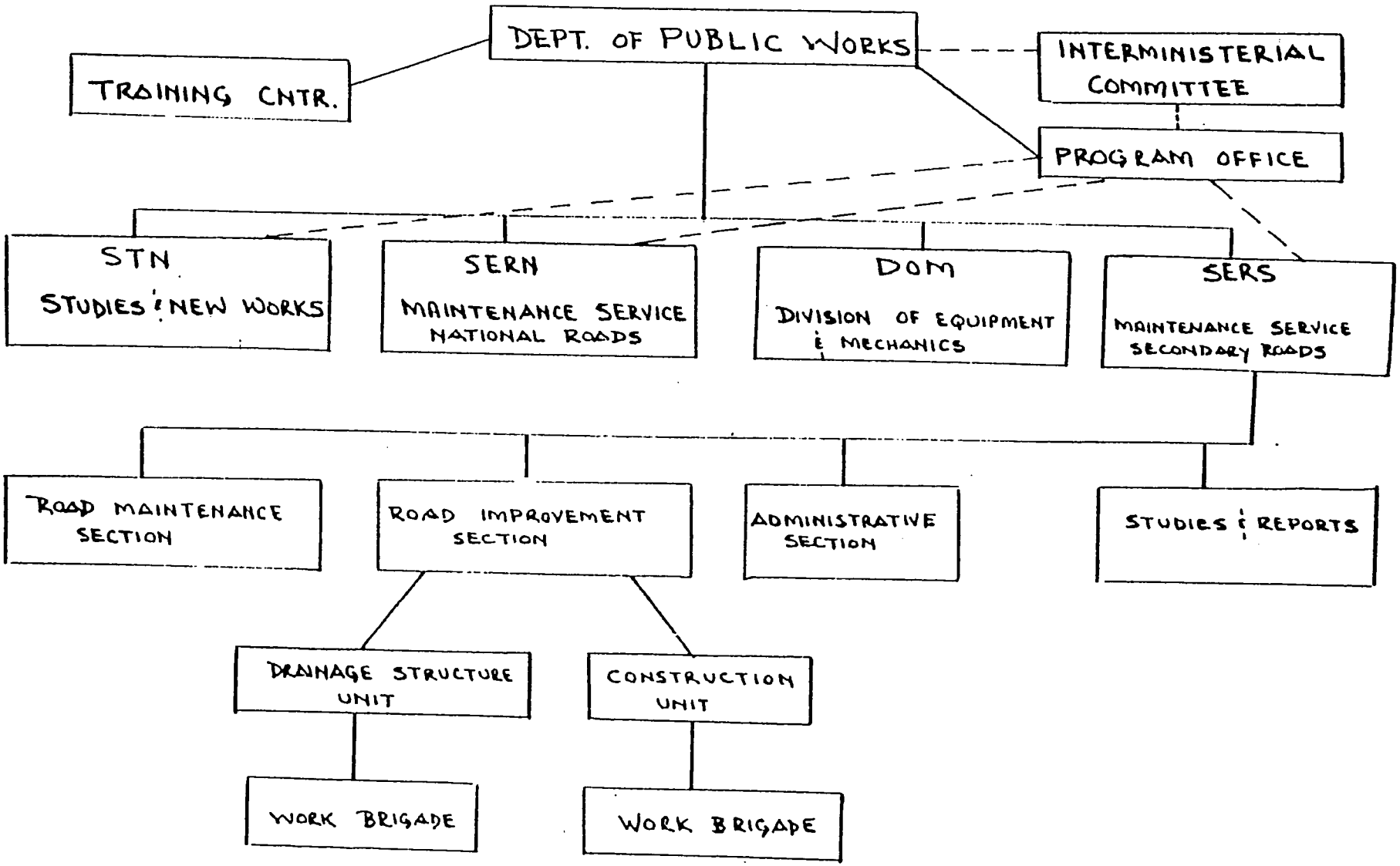
2. Role of AID

As indicated in the above description of SERS, a full-time AID-financed project manager will be needed to supervise implementation of this project over a two . year period. It is essential that a qualified and suitable person be found for this key position. Assisted by a Voltan brigade foreman, the manager will direct all aspects of construction including approval of alignment, plans and drawings for earth work and drainage structure, ordering of materials and supplies, ensuring that prescribed vehicle maintenance is performed, and closely monitoring the construction work of the brigade.

Although this position could conceivably be filled by an AID direct hire employee, it is more likely that he will be recruited under contract, either an individual PSC or through a construction or engineering firm. The incumbent must have a wide range of skills and experience, including several years of experience in rural roads construction, preferably in Africa; thorough fluency in French; experience with procurement of materials and supplies and be capable of supervising road construction crews. It may not be easy to find a person with these qualifications who is willing to live in Fada for two . years. The PP team is fairly confident, however, that a qualified American can be found, even if he must be recruited through a consulting firm. Only as a last resort and as a possible consequence of the French language requirement, will a code 935 waiver be sought for technical services.

Although actual construction will not begin until after the completion of the 1977 rainy season (early October), the project manager should be recruited and assigned to post as early as possible to participate in the selection and training of the SERS work brigade and the supervision of construction of drainage structures for Fada-Bilanga. Organizationally, he would be attached to the SERS staff and would report to the SERS director.

ORGANIZATIONAL CHART - DEPT. OF PUBLIC WORKS



B. Implementation Plan

1. Plan and Schedule

The following plan and schedule is proposed for project implementation:

1) Hydrological studies of Fada-Bilanga and Diabo-Comin Yanga roads by SERS. These studies must be made during the rainy season to measure water levels, flow, etc. as basis for design of drainage structures.	July-Sept 1976
2) Design of drainage structures for Fada-Bilanga and Diabo-Comin Yanga roads by SERS engineer	Sept-Oct 1976
3) Begin recruitment of Project Manager advertise in U.S. construction trade journals and Paris Herald Tribune for French-speaking American road-construction superintendent. If there are no satisfactory U.S. candidates, a request for a Waiver for code 935 technical services will be submitted. French language fluency is considered an indispensable requirement.	September 1976
4) Project Paper submitted to AID/W	September 1976
5) Project Authorized	November 1976
6) Project Agreement negotiated with GOUV	Oct-Nov 1976
7) Selection of procurement agent	November 1976
8) Preparation of PIO/C for equipment by CDO/REDSO	November 1976
9) Advertising of bids equipment	November 1976
10) Invitation for bids by local contractors for drainage structures on the Fada-Bilanga road.	November 1976
11) Execution of Project Agreement with GOUV	December 1976
12) Contract signed with Project Manager	December 1976
13) Opening of bids for equipment	January 1977
14) Project Manager arrives in field	January 1977

15) Begin construction of drainage structures on Fada-Bilanga road It is both feasible and desirable to build drainage structures before the roadway. This will be done before arrival of the road building equipment.	January	1977
16) Award for equipment made	February	1977
17) Invitation for bids by local contractors for drainage structures for Diabo-Comin Yanga road	February	1977
13) L/Comm for equipment opened	March	1977
19) Begin construction of drainage structures on Diabo-Comin Yanga road	April	1977
20) Inspection of equipment by AID/W (Sec/ENG) prior to shipment	May	1977
21) Suspend construction of drainage structures at onset of heavy rains	June	1977
22) Road brigade organized	June -Sept	1977
23) Hydrological studies for Namounou-Logobou and Ougarou-Nassougou roads conducted by SERS	June-Oct	1977
24) Equipment delivered in Ouagadougou	August	1977
25) Equipment serviced for use	September	1977
26) Drainage structures designed for Namounou-Logobou and Ougarou-Nassougou roads	Oct	1977
27) Equipment delivered to Fada	Sept 15,	1977
28) Resume work on drainage structures after rains	October	1977
29) Begin earthwork on Fada-Bilanga Road	October	1977
30) Invitations for bids by local contractors for drainage structures for Namounou-Logobou and Ougarou Nassougou roads	Nov	1977
31) Begin construction of drainage structures on Namounou-Logobou road	January	1978
32) Begin construction of drainage structures on Ougarou-Nassougou road	February	1978
33) Some construction equipment moved from Fada to Diabo Comin-Yanga road	February	1978

34)	Begin earthwork on Diabo-Comin Yanga Roas	March	1978
35)	Complete earthwork on Fade-Bilange Road	May	1978
36)	Move construction equipment from Fada-Bilanga to Namounou-Logobiu	May	1978
37)	Begin earthwork on Namounou-Logobou Road	May	1978
38)	Drainage structures completed on the Diabo Comin Yange Road	June	1978
39)	Suspend all work at the onset of the heavy rains	June	1978
40)	Resume work after rains	Oct	1978
41)	Complete Fada-Bilanga Road drainage structure	Nov	1978
42)	Complete Diabo-Comin Yanga Road earthwork	Nov	1978
43)	Complete Namounou Logobou Road drainage structures and earthwork	Dec	1978
44)	Complete Ougarou-Nassougou Road drainage structures	Dec	1978
45)	ProjectManager departs	Dec	1978
46)	Evaluation of Project roads vis-a-vis project objectives	Dec	1978
47)	Terminal disbursement date	Sept	1979

3. Disbursement Procedures

As mentioned in the project description, there are essentially three AID inputs into this project.

1) Commidities - road building equipment
2) Contract technician - one project manager
3) Other - local currency operating expenses including salaries of SERS work brigade and local contractor for drainage structures; fuel, spare parts, vehicle maintenance, etc.

Commodities - the procurement of the road building equipment will be financed under a letter of commitment with a U.S, bank.

Technicians- Unless, as seems unlikely, the Project Manager is a direct hire AID employee, he will be financed under a Personal Services contract or through a contract with a private construction or engineering firm.

Other - Remaining project costs for operating expenses will be all or almost all local currency. They will be made through SERS as project implementing agent. If as planned drainage structures are built by a local private contractor, SERS (not AID) would be the contracting agent. The earth work will be undertaken by a work brigade recruited directly by SERS.

The latter category of disbursements for local currency operating expenses, may, at least in theory, lend itself to the Fixed Amount Reimbursement (FAR) method of financing, with certain important qualifications. First as is stressed several times in this paper, the SERS has no budget as such for road construction. This is a reflection of the fact that Upper Volta is among the poorest countries in the world and is on the U.N.'s list of the world's 25 least developed countries. Per capita income is still gardly more that $100 a year and

the total national budget from domestic sources in 1975 was only about 15 billion FCFA ($63 million). It is thus very clear that the GOUV lacks the budgetary resources to cover operating expenses on a reimbursable basis. FAR would be possible only if the full amount were made available as an advance, or series of advances. This procedure might very well negate much of the advantage of using the supposedly administratively simpler FAR system.

Secondly, if because of greater than expected inflation or scheduling delays, operating costs exceed the fixed amount set, the GOUV could be hard pressed to make up the difference from other resources, thus jeopardizing completion of the project. For this reason, the GOUV may be reluctant to agree to the FAR method of disbursement.

On balance, the PP team has serious doubts that FAR is practiced for this project, even if only partially applied. Also the fact that half the project costs would be financed under a conventional L/Comm arrangement tends to make the FAR concept less interesting.

The PP team recommends that the CDO discuss the FAR concept with the Ministry of Finance and the Department of Public Works at the time the Project Agreement is negotiated in the fall of 1976, but that the matter not be pressed if the GOUV opposes it.

If FAR is not adopted for operating expenses, a local currency DRA would be established, and periodic (monthly or quarterly) billings or descomptes by SERS would be applied to it. Under the arrangements proposed, AID would pay 75 percent of direct operating costs for brigade personnel, fuel, spare parts and equipment operation and maintenance.

C. Evaluation Plan

Since this is a capital construction project, it will not be difficult to verify achievement of the project outputs, the physical existence of the three project roads. The project manager will be requested to submit to the CDO a quarterly report describing work progress and problems encountered which will serve the dual purpose of keeping the CDC informed and providing a useful background during subsequent project evaluations.

Verification that the outputs have achieved the project purpose is a more difficult judgment and will require special examination. To repeat from Section II B, the three-fold project purpose is, through the mechanism of upgrading selected road roads in E/ORD, to:

1) Increase a small farmer income by providing market access (economic purpose);

2) Increase access of villagers to health and education services not currently received because of isolation (social purpose);

3) Increase the Eastern ORD's management effectiveness by providing access to remote areas under its jurisdiction (administrative purpose).

To determine whether the construction of the project roads has led to achievement of the project purposes would involve several evaluations over a period of time. It is proposed to undertake the initial evaluative step (a study of about two weeks) after the first grain harvest following completion of the first road (Fada-Bilanga). Using economic, agricultural and sociological data from the PP as baseline information, the evaluation team, which should include an AID or IQC economist and a sociologist, could record changes in living patterns, availability of health services, increases in agricultural production and in sale prices of crops, etc. A traffic count would also be made on the raod and analysed by type of users.

A second similar, but more comprehensive evaluation of about one month's duration is recommended one year or two after completion of the project. Results would be compared to baseline data in the PP and the results of the initial evaluation.

D. Conditions, Covenants and Negotiating Status

The only speicial condition covenant, or condition precedent proposed for this project concerns maintenance of the project roads by the GOUV after construction. Given the oral agreement in principle of the GOUV regarding its responsibility for road maintenance, and given the mutual desire to execute the project agreement as soon as possible after its authorization, no conditions precedent to the execution of the Project Agreement are deemed necessary. However, in the Project Agreement itself, the GOUV must clearly accept full responsibility for maintenance of the project roads over the full 20 year projected life of the roads.

Further, the GOUV must, either in the Project Agreement itself or as a condition precedent to disbursement, set forth a maintenace schedule of the project roads in form and substance acceptable to AID, outlining the nature and timing of such maintenance and stating that budgetary provisions are being made by the GOUV to finance said maintenance in full.

The issue of the GOUV's responsibility for road maintenance has been discussed and orally agreed to in principle by the Director of SERS, Mr. Ouala Koutiebou; the Deputy Director of the Department of Public Works, Mr. Fadega; and the Permanent Secretary of the Inter-

ministerial Coordinating Committee for Rural Development, Mr. Tiao. However, the precise nature of the maintenance required and provisions for funding still remain to be worked out.

As mentioned earlier in this paper, a likely source of funding of the required road maintenance in part or in full is the secondary road maintenance fund which will be established by the GOUV as a quid pro quo for the new $7.5 million IDA road improvement loan. Under this loan the GOUV is required to contribute at least 200 million FCFA annually to finance the maintenace of secondary roads in Upper Volta. The roads built under this AID project will be eligible for maintenance financed by this source.

General provisions for project implementation were discussed by the PP team with the aforementioned GOUV officials, who all expressed general agreement with the nature and approach of the project. No negotiating difficulties with the GOUV are anticipated in connection with the execution of the Project Agreement.

Although the PP Team expressed serious doubts about the Fixed Amount Reimbursement method of financing, it is recommended that the CDO explain this concept to the GOUV during negotiation of the Project Agreement to determine whether there is any interest in adopting it for the local currency portion of the project.

ANNEX A

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PERSONS CONSULTED

1. Mr. Thomas Luche, AID Project Manager for Eastern ORD Integrated Rural Development Project.
2. Mr. Charles Tiao, Permanent Secretary of the Coordinating Committee for the ORDs.
3. Mr. Bertrand, Technical Advisor to the SERS, Ministry of Public Works.
4. Mr. Fadega, Deputy Director of the Department of Public Works.
5. Mr. Julien Thiombiano, Director of the Eastern ORD.
6. Mr. J. P. Salas, Director of the CFDT, Ouagadougou.
7. Mr. F. Cordeau, Director of the World Food Program in Ouagadougou.
8. Mr. Michel Bonfils, Nutritional expert with Sahel Drought Team, in UNICEF.
9. Dr. Holt and Sieman, Nutritional researchers for the British Children's Fund in Ouagadougou.
10. Mr. J. P. Novarrez, Director FAC community development project in the Eastern ORD.
11. Dr. Samogho, Director of the National Institute of Statistics and Demography in Ouagadougou.
12. Mr. Maurice Colas, Responsible for ORD small farmer plowing program.
13. Mr. Abdullah el Marouffi, Representative IBRD in Upper Volta.
14. Mr. Noel Thiombiano, Sector Chief, Diabo
15. Mr. Oumar Coulibaly, Sub-sector Chief, Diabo
16. Mr. Ouala Koutiebou, Director of SERS.
17. Mr. Henri Lompo, Engineer, ORD, Fada.
18. Mr. Mario Laure, FAC Advisor to Minister of Rural Development.
19. Mr. Gelmas Delmas, ILO Sahel Representative in Upper Volta.
20. Mr. Souleymane Traore, Sub-division Chief of the Bureau of Public Works, Fada N'Gourma.

21. Mr. Sylvain Ouedraogo, Director, TAW International Leasing Corp., Upper Volta (TRACKS).

22. Mr. Cyprien Zongo, Agricultural Specialist, ORD, Diapaga.

23. Mr. Mike Compton, Peace Corps Volunteer, Upper Volta.

24. Mr. Heonle Nacoulima, Director, Societe d'Importation de Distribution et Exportation (SIDEX) Upper Volta).

ENVIRONMENTAL ASSESSMENT

A. Physical and Chemical Characteristics

The topography throughout most of the impact zones is generally flat with elevations ranging from 200 to 400 meters. The only prominent physical feature is a 50 kilometer long Gobnangou Ridge, extending in an E-W direction to the south of the village of Namounou. Also within this region are two animal reserves, the National Park of the "W" which borders Niger and Benin and the Arly National Park which touches the northern boundary of Benin. Phosphates, the only mineral resources in the eastern ORD, are found in the area between Diapaga and Kodjari. The track between these two villages is often referred to as the Phosphate Route. Laterite, a soil which is often used in the construction of roads, is found in abundant quantities throughout the Eastern O.R.D. area.

B. Biological Conditions

Vegetation in the form of trees, shrubs and grass is in evidence throughout the four impact zones of the Eastern O.R.D. In many areas surrounding the village communities there exist clearings of from one to two hectares that have been burnt out for future crop production. In these places, understandably, no green vegetation exists. To a large degree, however, the four impact zones are mainly grassy savannah areas with a soil base containing a good production potential. The present crops produced in the impact zones are cereals, peanuts, rice, cotton and small quantities of other miscellaneous crops. Eighty percent of the crop distribution is in the cereals classification - millet and sorghum. To the best of our knowledge, microflora and aquatic plants do not exist in the areas under study for transport improvement. In addition, no rare vegetation has been identified or would be endangered by the presence of human and vehicle traffic. The lack of good access roads represent the only barrier to an overall improvement of regional growth, as indicated elsewhere in this PP.

The incidence of wildlife is sparse in all four impact zones. Some wild guinea hens and lizards were sighted throughout the area but they do not exist in any large quantities at any one location. Lakes and ponds where fish life can exist are also rare within the impact zones. Most ponds frequently dry up during the dry season and aquatic life cannot survive over any extended period of time. Birds are rarely seen except in the market place of villages where disposed waste is piled up for haulage and disposal. Various types of small insects abound throughout the region, but they include no species that could be catagorized as an endangered class.

C. Cultural Factors

Wilderness and open spaces exist to the extent that the impact zones are still largely rural in nature. There are no extensive areas of wetlands except for low spots in which, during the rainy season, there are areas where a relatively large volume of rain water accumulates which subsequently either evaporates or is absorbed by existing vegetation. Land for grazing purposes does not normally exist in the vicinity of most village compounds; accordingly, the grazing livestock is limited to small herds of goats. The predominant land use activity is agriculture with the production of cereals taking first place. Inhabited areas follow existing tracks which connect with a road which in most cases leads to the market place. Residential communities range from 200 to 5,000 inhabitants. Throughout the impact zones there appears to exist no conflict between land use and residential communities. As for commercial areas, they exist in the larger communities. There are, however, numerous markets which serve the basic needs of the villagers. Goods are usually brought from home to market or vice versa on those days which are earmarked for such activities. (Permanent structures would not inhibit market relocation if there were need to relocate such a facility). Land use activities in the form of industrial plants, mining and quarrying operations either do not exist yet, or are so minute that they represent no reasonable land use impact at this time.

Recreational activities are localized and simple in nature. Hunting and fishing, to the extent to which it exists, are usually done to augment the family food supply. More highly skilled and organized activities are carried out in the more urban centers where time for individualized leisure is more abundant.

Parks and reserves are the National Park of the "W" and Arly National Park. There are scenic vistas, open spaces and wilderness camping sites that attract tourists to the area. As mentioned before, the reserves are located in the southeastern section of the country which borders the Republics of Benin and Niger.

D. Environmental Regulation of LDC

The GCUV does not have any laws or regulations that govern environmental quality at this time. This fact is no doubt due to the current low level of economic development and the government's overall preoccupation with development efforts. The lack of suitable regulations by the GCUV by no means infers any indifference to the environmental quality of the physical, cultural and ecological relationships between its inhabitants and the areas they occupy. It is hoped that, as development in the rural areas of the Eastern C.R.D. increases, the GCUV will closely monitor the impact that each project will have on the surrounding area.

E. The Environmental Impact of the Proposed Project

1) Resource Linkage

The improvement of all routes considered in this study will allow year round access into many areas where vehicle passage was very difficult and at times impossible due to lack of drainage structures and road surfacing during the rainy season. The improved access to nearby villages, the reduction in travel time and the savings in vehicle operation costs are all positive factors from a resource point of view. The improved routes should stimulate not only increased agricultural production, but should generate additional flows of traffic other than day to day market to village traffic.

The proposed route improvements in no way interfere with wildlife, rangelands, or migration routes of animals in the Eastern O.R.D. In addition, there are no historic sites, religious or spiritually hallowed ground, natural landmarks or archaeological sites that would be endangered as a result of the route improvement. The road alignment has no effect whatsoever on resources such as timberland, mineral deposits and streams. Since agriculture is the predominant land use activity from which a large part of the population earn their living, improved access should no doubt aid in raising the area's standard of living through increased marketing of their resources.

2) Physical Aspects

The settlement of squatters along the improved road is always a likely possibility. As the road itself will offer greater comfort and ease in travel, light commercial vendors followed by squatters will in some form establish themselves, a fact that occurs in any developmental process. Strip development could be controlled with the enforcement of established regulations and thus would present no adverse consequences in connection with rural road improvement. There will be no change in drainage patterns or land configuration since the proposed improvements are along relatively flat country and culverts or paved fords are proposed where roads intersect watercourses.

Due to the expected low traffic volume, air pollution from fuel combustion should be minimal. The estimated average daily traffic volume for this project ranges from 10-20 vehicles. Dust could be of some consequence for villages now situated close to the road alignment. The development program, however, provides for systematic road maintenance, including watering and compaction, which will go a long way in reducing the formation of dust.

3. Social - Cultural Aspects

Route improvements throughout the impact zones will have beneficial effects on the cultural life within them. Changes will occur basically in the agricultural area as improved access to markets will stimulate crop production and improve village living standards. There will be no

major dislocation of village population. Several homes may have to be relocated, due to their close proximity to the proposed road alignments, while in some instances the improved routes would detour around these homes making relocation unnescessary. There will be some degree of vehicle noise since the improved roads will be surfaced by laterite which, unlike paved routes, often forms washboard surfaces which cause vehicles to vibrate. But, given the low levels of traffic estimated for the roads, the noise will not be of such volume that it would, make surrounding life unpleasant. There is no traffic congestion implied by the volume of vehicles cited above that could have any ill consequence on the social lives of villagers.

4) Public Health Aspects

For the type of route improvements suggested, the safety of users will depend largely on the pedestrians, cyclists and drivers using the route. Control systems are not warranted at the proposed levels of traffic and route improvements. There does not appear any possibility of new pathways for vectors as a result of improved rural access. The only possible exception would be the creation of breeding grounds for malaria-carrying mosquitoes by digging borrow pits in which stagnant water could accumulate. Therefore, greatest care should be given to the provision of drainage for these pits by connecting them with ditches, culverts or existing watercourses. On the positive side, health units should increase in numbers since easy access to previously inaccessible areas will become possible. Air pollution, as stated above, will have no serious effects on the surrounding population since the volume of traffic is so low that fuel combustion will not accumulate to any unhealthy level.

F. Adverse Environmental Effects

The project team made site visits to all areas where improvements are being considered. Each route was analyzed in accordance with its impact on the surrounding population, land, and natural resources. The team did not find any factors that would present any adverse effects on the surrounding environment if the improvement project was implemented. Thus, with the absence of adverse factors, there would be no need to recommend any protective measures at this time, nor will there be any added cost factors associated with the project based upon environmental considerations.

G. Alternatives

The route improvement projects are all beneficial as analyzed and therefore do not suggest any alternative courses of action. The surrounding environment will remain basically rural in nature with some growth in the agriculture sector and village population, but no major increases in any other sector will occur that would call for the consideration of alternative action at this time. There appears to be no short or long term adverse trade-off effects related to route

improvements in the impact zones. The proposed road improvements will in no manner divert either temporarily or permanently any local resources. In addition, soil erosion, spoil sites, borrow pits, noise and air pollution should not have any lasting adverse effects on the surrounding areas during the construction period. The GCUV through its maintenance team hopes to maintain and monitor the improved routes maintaining them in good condition so as to make year round passage a reality. The project will not involve any physical assets or natural resources whose usage could be termed as irreversible or irretrievable. There is adequate land for right of way, agricultural expansion, residential growth, recreational activities and commercial-industrial development within all the impact zones.

IMPACT AREA POPULATION
(Source: 1975 National Census)

Area	Village	Population
I FADA-BILANGA	Bilanga	1968
A) Bilanga Sub-sector	Tohogodo	535
	Douala	147
	Moadega	76
	Maniangou	220
	Pantaloana	271
	Barbongou	299
	Bartibagou	258
	Kanbani	62
	Tabou	1629
	Bilanga Peulh	96
	Piaga	149
	Sikouen Kou	545
	Dian doure	322
	Bilanperga	1361
	Sologtinga	281
	Yougoupan Koudougou	116
	Tiguili	476
	Banga	578
	Yagsambaga	352
	Sagadoug	144
	Bilanga Yanga	1536
	" " Peulh	297
	Yougoupangou	873
	Pognan Kare	410
	Diela	288
	Fetare	129
	Ougarou	403
	Tampeda	319
	Porogui	118
	Banlibouara	417
	Diango	112
	Bokou	232
Sub-Total (Bilanga)	(33 villages)	15519

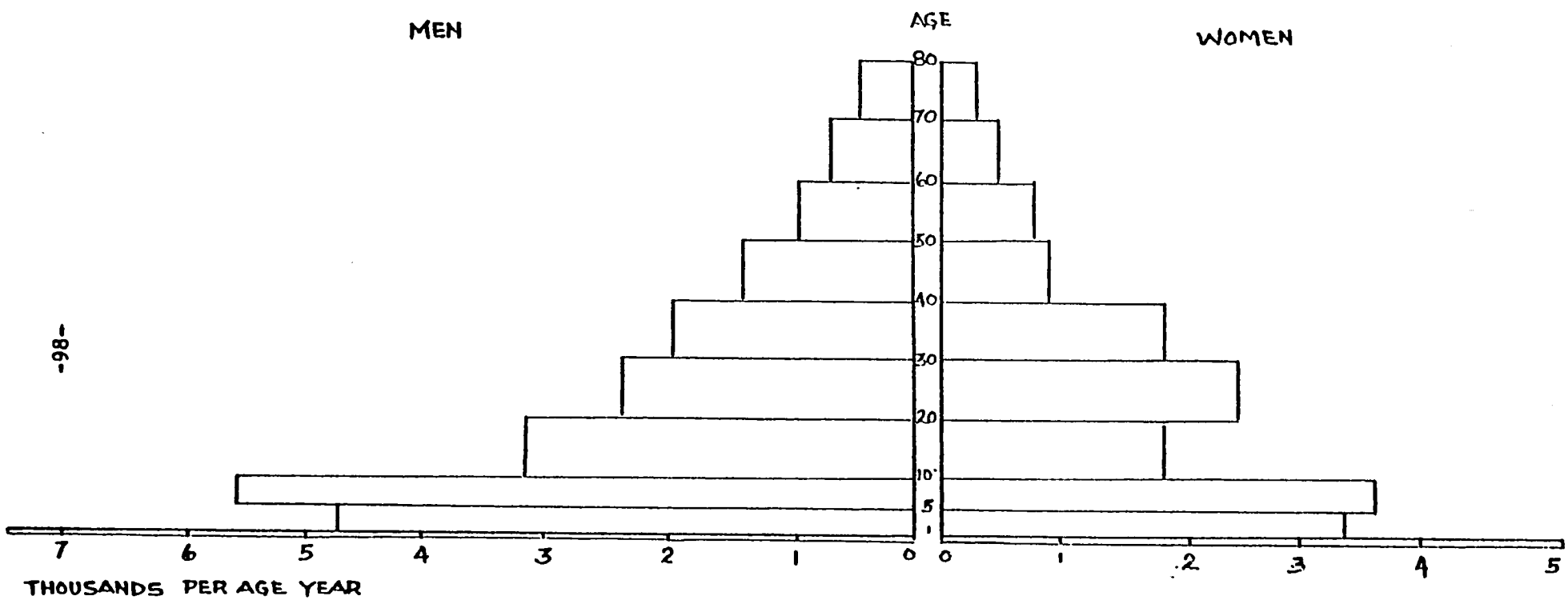
Area	Village	Population
I FADA-BILINGA B) Fada Sub-Sector	Fada	63185
	Komadougou	705
	Tandiari	87
	Komengou	552
	Yazou	560
	Coadigou Yamba	49
	Tamsougou	376
	Bouga	578
	Guiadiapouni	210
	Tanliaka	1043
	Bofole	1118
	Bjicourba	51
	Doaligou	98
	Tanilou	203
	Coumdidioga	54
	Coadigou Tantyaka	49
	Condouagou	422
	Obougouni	75
	Datargou	58
	Mayouri	809
	Koulga	281
	Gagou	16
	Balga	2714
	Guilleni	928
	Decouda	528
	Kaldiouni	519
	Yamba	1400
	Tagou	317
	Diougou	210
	Bougoudou	299
	Coamfauhi	53
	Fenjanga	117
	Sambyalgou	610
	Doundougou	89
	Bossangari	414
	Guinouna	247
Sub-Total (Fada)	(36 villages)	28814
TOTAL	69 villages	44333

Area	Village	Population
II DIABO-CONTIN YANGA A) Diabo Sub-sector	Diaba	1253
	Tiastamassougou	156
	Tiabga	379
	Ninlinga	391
	Guilguin	275
	Yantenga	651
	Pizonguin	154
	Poesintinga	405
	Siarbriokin	215
	Zieko	373
	Sanewabo	509
	Taukoursi	40
	Diapangou Peulh	544
	Pissaltore	102
	Mocoumtore	377
	Benkoko	70
	Siega	1189
	Bouri	142
	Taulalle	177
	Pituiga	211
	Lorgo	1074
	Kalbekin	73
	Kamziogaye	1094
	Cuarousse	116
	Bouloumbougdi	58
	Bolgatinga	355
	Dazouri	159
	Siemitinga	610
	Pisseguedin	255
	Kandaga	120
	Saltinga	211
	Kamona	391
	Yanivera	841
	Kabga	253
	Tansiega	57
	Kourioguin	284
	Ziela	233
	Combenbougou	182
Sub-total (Diabo)	(38 villages)	25238

Area	Village	Population
DIABO-COMIN YANGA B) Comin Yanga Sub-sector	Kandaga	764
	Konzeogo Sambila	1107
	Babbouasi	232
	Kogo	3090
	Komin Yanga	3643
	Kisbouga	597
	Camiougou	669
	Tanziega	96
	Daoga Tinga	117
	Kandiokin	503
	Poanakoaogo Dabogo	106
	Konzeogo Yalgo	237
	Gaoguin	232
	Baokin	316
	Tire	259
	Zongo Peulh	1313
	Nobsigoguin	52
	Bagare Baoguin	99
	Napinga	150
Sub-total (Comin Yanga)	(19 villages)	13582
TOTAL (A+B)	57 villages	38820

ANNEX-D

AGE PYRAMID FOR THE EASTERN ORD



ANNEX E

COTTON PRODUCTION

Due to the increasing cost of synthetic fibers following the recent upsurge in petroleum prices, as well as a shift in personal preference to greater utilization of natural materials, the world market for cotton has been typified by a rapidly rising demand and a favorable long-term outlook. It can be expected that cotton production in Upper Volta will not be excluded from this optimistic forecast.

Extension work for cotton, as is true of other agricultural production in the Departement de l'Est, is the responsibility of the ORD. Exceptionally, however, the final production is purchased at a fixed national price (currently 40 CFA/Kg for high grade) and evacuated to Ouagadougou through the services of a semi-private firm, the CFDT 1/.

The region of Comin Yanga, as well as that of Namounou-Logobou, falls within the productive Birrhinian cotton belt, a band stretching generally from Chad to Senegal and presenting good soil characteristics for cotton production, as well as the minimum 800 mm of rainfall required.

Experience in analogous regions in Upper Volta indicates clearly that the major constraint to accelerated cotton production in the Comin Yanga and Logobou areas is the provision of basic access to the zone - both in order to facilitate intensified extension by the ORD teams and the evacuation of the final produce by the CFDT.

Given the introduction of simple modern agricultural practices (fertilizer, insecticide, regular weeding) cotton yields in the region could rapidly climb from their current level of 400 Kg/ha to over 1500 Kg/ha.

CFDT estimates indicate that, with a moderate amount of good extension work in the Diabo-Comin Yanga region, a production level of 100 Kg/inhabitant 2/ (1900 T supposing 1/2 of the region concerned by cotton production) could be arrived at within 5-6 years. Following this leveling-off period we have assumed that production will increase at a rate slightly over that of the population growth rate which local figures indicate to be 2%/year.

1/ Compagnie Francaise pour le Developpement de Fibres Textiles.

2/ Representing approximately 1/2 ha. per family.

A market price of 38 CFA/Kg (the current average price for all qualities purchased) was utilized to estimate the value of this production and the total value added was estimated to be 20% of this figure 1/.

1/ Assuming a one hectare plot where production equals 1200 Kg and with a minimum of extension.

A. Costs:

- 120 Kg fertilizer	= 4,200 CFA
- 4 insecticide treatments	= 3,400 "
- Sprayer (useful life 5 yrs)	= 2,000 "
	9,600 CFA

B. Income:

- 100 Kg x 33 CFA	= 3,300 CFA
- 1100 Kg x 40 CFA	44,000 "

C. $\frac{9,600}{47,300}$ = 20%

SURPLUS PRODUCTION AND TOTAL VALUE ADDED FOR KEY YEARS

Area/Crop/Year	Total Production (T)	Surplus Production (T)	Surplus Value (000 000 CFA)	Total Value Added (000 000 CFA)
I FADA-BILANGA				
Cereals: 1979	10,600	300	6.0	5.1
1985	12,700	2,400	48.0	40.8
1998	18,600	8,300	166.0	141.1
Peanuts: 1979	1,600	100	3.0	2.6
1985	2,300	800	24.0	20.4
1998	3,800	2,300	69.0	58.7
Rice: 1979	1,600	100	3.5	3.0
1985	2,300	800	28.0	23.8
1998	3,800	2,300	80.5	68.4
Other: 1979	1,500	-	-	-
1985	1,800	300	9.0	7.7
1998	2,700	1,200	36.0	30.6
II DIABO-COMIN YANGA				
Cereals: 1979	10,600	200	4.0	3.4
1985	12,000	1,600	32.0	27.2
1998	15,500	5,100	102.0	86.7
Peanuts: 1979	1,400	100	3.0	2.6
1985	2,000	700	21.0	17.9
1998	3,300	2,000	60.0	51.0
Cotton: 1979	900	300	11.4	9.1
1985	1,900	1,300	49.4	39.5
1998	2,800	2,200	83.6	66.9
Rice: 1979	1,400	100	3.5	3.0
1985	2,500	1,200	42.0	35.7
1998	4,200	2,900	101.5	86.3
Other 1979	600	-	-	-
1985	700	100	3.0	2.6
1998	1,100	500	15.0	12.8

Area/Crop/Year	Total Production (T)	Surplus Production (T)	Surplus Value (000 000 CFA)	Total Value Added (000 000 CFA)
III OUGAROU-NASSOUGOU				
Cereals: 1979	1,000	-	-	-
1985	1,200	200	4.0	3.4
1998	1,800	800	16.0	13.6
Peanuts: 1979	100	-	-	-
1985	200	100	3.0	2.6
1998	300	200	6.0	5.1
Cotton: 1979	-	-	-	-
1985	200	200	7.6	6.1
1998	300	300	11.4	9.1
Rice: 1979	-	-	-	-
1985	100	100	3.5	3.0
1998	150	150	5.3	4.5
Other: 1979	100	-	-	-
1985	100	-	-	-
1998	200	100	3.0	2.6
IV NAHOUHOU-LOGOBOU				
Cereals: 1979	7,500	300	6.0	5.1
1985	8,900	1,700	34.0	28.9
1998	13,000	5,800	116.0	98.6
Peanuts: 1979	500	-	-	-
1985	800	300	9.0	7.7
1998	1,300	800	24.0	20.4
Cotton: 1979	600	100	3.8	3.0
1985	1,400	900	34.2	27.4
1998	2,100	1,600	60.8	48.6
Rice: 1979	1,100	100	3.5	3.0
1985	2,000	1,000	35.0	30.0
1998	3,300	2,300	80.5	68.4
Other: 1979	1,000	-	-	-
1985	1,200	200	6.0	5.1
1998	1,800	800	24.0	20.4

I FADA-BILANGA/ECONOMIC ANALYSIS

('000 000 FCFA)

Year	BENEFITS							COSTS		
	Cereals	Peanuts	Rice	Other Ag.	User Costs	Total AG.	Total User + 40% AG	Const.	Maint.	Total
1977	-	-	-	-	-	-	-	93.6	-	93.6
1978	-	-	-	-	-	-	-	93.6	-	93.6
1979	5.1	2.6	3.0	-	3.7	10.7	8.0	-	7.2	0.8
1980	11.1	5.6	6.5	1.3	3.7	24.4	13.5	-	7.2	6.3
1981	17.0	8.5	9.9	2.6	3.7	38.8	19.2	-	7.2	12.0
1982	23.0	11.5	13.4	3.8	3.8	51.7	24.5	-	7.2	17.3
1983	28.9	14.5	16.9	5.1	3.8	65.4	30.0	-	7.2	22.8
1984	34.9	17.4	20.3	6.4	3.9	79.0	35.5	-	7.2	28.3
1985	40.8	20.4	23.8	7.7	3.9	92.7	41.0	-	7.2	33.8
1986	48.5	23.3	27.2	9.5	3.9	108.6	47.3	-	7.2	40.1
1987	56.2	26.3	30.7	11.2	4.0	124.4	53.8	-	7.2	46.6
1988	63.9	29.2	34.1	13.0	4.0	140.3	60.1	-	7.2	52.9
1989	71.7	32.2	37.5	14.7	4.0	156.3	66.4	-	7.2	59.2
1990	79.4	35.1	41.0	16.5	4.1	172.0	72.9	-	7.2	65.7
1991	87.1	38.1	44.4	18.3	4.1	187.8	79.2	-	7.2	72.0
1992	94.8	41.0	47.8	20.0	4.2	203.7	85.7	-	7.2	78.5
1993	102.5	44.0	51.2	21.8	4.2	219.5	92.0	-	7.2	84.8
1994	110.2	46.9	54.7	23.6	4.2	235.4	98.4	-	7.2	91.2
1995	118.0	49.9	58.1	25.3	4.2	251.2	104.7	-	7.2	97.5
1996	125.7	52.8	61.5	27.1	4.3	267.1	111.1	-	7.2	103.9
1997	133.4	55.8	65.0	28.8	4.3	282.9	117.5	-	7.2	110.3
1998	141.1	58.7	68.4	30.6	4.5	298.9	124.0	(+ 37.4)	7.2	154.2

II DIABO-COMIN YANGA/ECONOMIC ANALYSIS

('000 000 FCFA)

Year	Cereals	Peanuts	Cotton	Rice	Other	Total	Const.	Maint.	Total
1977	-	-	-	-	-	-	65.3	-	65.3
1978	-	-	-	-	-	-	65.3	-	65.3
1979	3.4	2.6	9.1	3.0	-	18.1	-	4.8	2.4
1980	7.4	5.2	14.2	8.5	0.4	35.6	-	4.8	9.4
1981	11.3	7.7	19.2	13.9	0.9	53.0	-	4.8	16.4
1982	15.3	10.3	24.3	19.4	1.3	70.5	-	4.8	23.4
1983	19.3	12.8	29.4	24.8	1.7	88.0	-	4.8	30.4
1984	23.2	15.4	34.4	30.3	2.2	105.4	-	4.8	37.4
1985	27.2	17.9	39.5	35.7	2.6	122.9	-	4.8	44.4
1986	31.8	20.4	41.6	39.6	3.4	136.8	-	4.8	49.9
1987	36.4	23.0	43.7	43.5	4.2	150.7	-	4.8	55.5
1988	40.9	25.5	45.8	47.4	5.0	164.6	-	4.8	61.0
1989	45.5	28.1	47.9	51.3	5.7	178.5	-	4.8	66.6
1990	50.1	30.6	50.0	55.2	6.5	192.4	-	4.8	72.2
1991	54.7	33.2	52.1	59.1	7.3	206.3	-	4.8	77.7
1992	59.2	35.7	54.3	62.9	8.1	220.3	-	4.8	83.3
1993	63.8	38.3	56.4	66.8	8.9	234.2	-	4.8	88.9
1994	68.4	40.8	58.5	70.7	9.7	248.1	-	4.8	94.4
1995	73.0	43.4	60.6	74.6	10.4	262.0	-	4.8	100.0
1996	77.5	45.9	62.7	78.5	11.2	275.9	-	4.8	105.6
1997	82.1	48.5	64.8	82.4	12.0	289.8	-	4.8	111.1
1998	86.7	51.0	66.9	86.3	12.8	303.7	(+ 26.1)	4.8	142.8

III NAMOUNOU-LOGOBOU/ECONOMIC ANALYSIS

('000 000 FCFA)

Year	BENEFITS						COSTS		
	Cereals	Peanuts	Cotton	Rice	Other	Total	Const.	Maint.	Total
1977	-	-	-	-	-	-	60.5	-	60.5
1978	-	-	-	-	-	-	60.5	-	60.5
1979	5.1	-	3.0	3.0	-	11.1	-	3.9	0.5
1980	9.1	1.3	7.1	7.5	0.9	25.8	-	3.9	6.4
1981	13.0	2.6	11.1	12.0	1.7	40.4	-	3.9	12.3
1982	17.0	3.8	15.2	16.5	2.6	55.1	-	3.9	18.1
1983	21.0	5.1	19.3	21.0	3.4	69.8	-	3.9	24.0
1984	24.9	6.4	23.3	25.5	4.3	84.4	-	3.9	29.9
1985	28.9	7.7	27.4	30.0	5.1	99.1	-	3.9	35.7
1986	34.3	8.7	29.0	33.0	6.3	111.3	-	3.9	40.6
1987	39.6	9.7	30.7	35.9	7.5	123.3	-	3.9	45.4
1988	45.0	10.6	32.7	38.9	8.6	135.4	-	3.9	50.3
1989	50.3	11.6	33.9	41.8	9.8	147.5	-	3.9	55.1
1990	55.7	12.6	35.6	44.8	11.0	159.6	-	3.9	59.9
1991	61.1	13.6	37.2	47.7	12.2	171.7	-	3.9	64.8
1992	66.4	14.5	38.8	50.7	13.3	183.8	-	3.9	69.6
1993	71.8	15.5	40.4	53.6	14.5	195.9	-	3.9	74.5
1994	77.2	16.5	42.1	56.6	15.7	208.0	-	3.9	79.3
1995	82.5	17.5	43.7	59.5	16.9	220.1	-	3.9	84.1
1996	87.9	18.4	45.3	62.5	18.0	232.2	-	3.9	89.0
1997	93.2	19.4	47.0	65.4	19.2	244.3	-	3.9	93.8
1998	98.6	20.4	48.6	68.4	20.4	256.4	(+ 24.2)	3.9	122.9

IV OUGAROU-NASSOUGOU/ECONOMIC ANALYSIS

('000 000 FCFA)

Year	BENEFITS						COSTS		
	Cereals	Peanuts	Cotton	Rice	Other	Total	Const.	Maint.	Total
1977	-	-	-	-	-	-	47.6	-	47.6
1978	-	-	-	-	-	-	47.6	-	47.6
1979	-	-	-	-	-	-	-	3.3	3.3
1980	0.6	0.4	1.0	0.5	-	2.5	-	3.3	2.3
1981	1.1	0.9	2.0	1.0	-	5.0	-	3.3	1.3
1982	1.7	1.3	3.1	1.5	-	7.6	-	3.3	0.3
1983	2.3	1.7	4.1	2.0	-	10.1	-	3.3	0.7
1984	2.8	2.2	5.1	2.5	-	12.6	-	3.3	1.7
1985	3.4	2.6	6.1	3.0	-	15.1	-	3.3	2.7
1986	4.2	2.8	6.3	3.1	0.2	16.6	-	3.3	3.3
1987	5.0	3.0	6.6	3.2	0.4	18.1	-	3.3	3.9
1988	5.8	3.2	6.8	3.3	0.6	19.7	-	3.3	4.6
1989	6.5	3.4	7.0	3.5	0.8	21.2	-	3.3	5.2
1990	7.3	3.6	7.3	3.6	1.0	22.7	-	3.3	5.8
1991	8.1	3.8	7.5	3.7	1.2	24.2	-	3.3	6.4
1992	8.9	3.9	7.7	3.8	1.4	25.8	-	3.3	7.0
1993	9.7	4.1	7.9	3.9	1.6	27.3	-	3.3	7.6
1994	10.5	4.3	8.2	4.0	1.8	28.8	-	3.3	8.2
1995	11.2	4.5	8.4	4.2	2.0	30.3	-	3.3	8.8
1996	12.0	4.7	8.6	4.3	2.2	31.9	-	3.3	9.5
1997	12.8	4.9	8.9	4.4	2.4	33.4	-	3.3	10.1
1998	13.6	5.1	9.1	4.5	2.6	34.9	(+ 19.0)	3.3	29.7

ANNEX H

Eastern ORD Rural Roads
Certification Pursuant to Section 611(e) of the Foreign Assistance Act of 1961, as Amended

I, John A. Hoskins, Country Development Officer for Upper Volta, having taken into account, among other things:

A. the existence of a viable Department of Public Works within the Government of Upper Volta and the role which it can play in constructing secondary roads and drainage structures;

B. the requirement for additional sources of grant funding if secondary farm to market roads are to be improved to allow rural farmers market assess;

C. the inclusion of the Plan of the Ministry of Public Works for continued maintenance of these roads once they have been improved;

D. the importance which the Government of Upper Volta places on the improvement of rural roads to increase access of villagers to health and educational services not currently received because of isolation;

do hereby certify that in my judgment, the Department of Public Works has the financial capability and the human resource capability to implement, and effectively utilize the subject capital assistance project.

This judgment is based on the fact that:

1. The Government of Upper Volta has agreed to recruit one full road brigade and maintain the project roads as agreed upon in the Project Paper.

2. The Department of Public Works has at its disposition complementary financial and technical resources permitting it to undertake these expanded activities.

3. The Government of Upper Volta wishes to proceed with the improvement of its secondary road network in the Eastern ORD.

John A. Hoskins
Country Development Officer
Ouagadougou, Upper Volta

ANNEX J

Draft of Project Description to be used in the Project Agreement

Article 2: The Project: The project will consist of a 2,322,700 dollar grant to the Government of Upper Volta for use in upgrading selected roads in the Eastern ORD, an area covering 50,000 square kilometers.

The reconstruction of these roads is expected to lead to increased agricultural activity and will provide local residents with improved access to agricultural extension, health and educational services. An improved road network will also provide ORD administrators with access to areas that are presently difficult and, at times, impossible to reach by road during the rainy season.

The project proposes constructing a five meter roadway and necessary drainage structures for the following three roads:

1. Fada-Belanga, 72 km
2. Diabo-Comin Yanga, 48 km
3. Namounou-Logobou, 39 km.

In addition, if operational funds allow, drainage structures will be constructed on the 33 km long Ougarou-Nassougou road.

The project provides that AID will purchase thirty-one pieces of machinery to equip one full road brigade and fund the cost of an expatriate road engineer for a period of two years. In addition, the project grant will fund 75% of operating expenses over the two year construction period. All of the roads will be built under force account by the Department of Public Works, Service d'Entretion des Routes Secondaires (SERS). Drainage structures on the roads will be designed by SERS, but their construction will be contracted to private local contractors. Maintenance of the project roads during the 20 year useful life of the project will be the responsibility of SERS.

The project fully supports GOUV policy for the improvement of rural roads as a means of stimulating increased agricultural activity and improving rural residents access to GOUV services, such as health and education.

Section 2.2 Further Description of Project. To be furnished by CDO/Ouagadougou in collaboration with the project engineer and the Department of Public Works at the time of the ProAg negotiation.

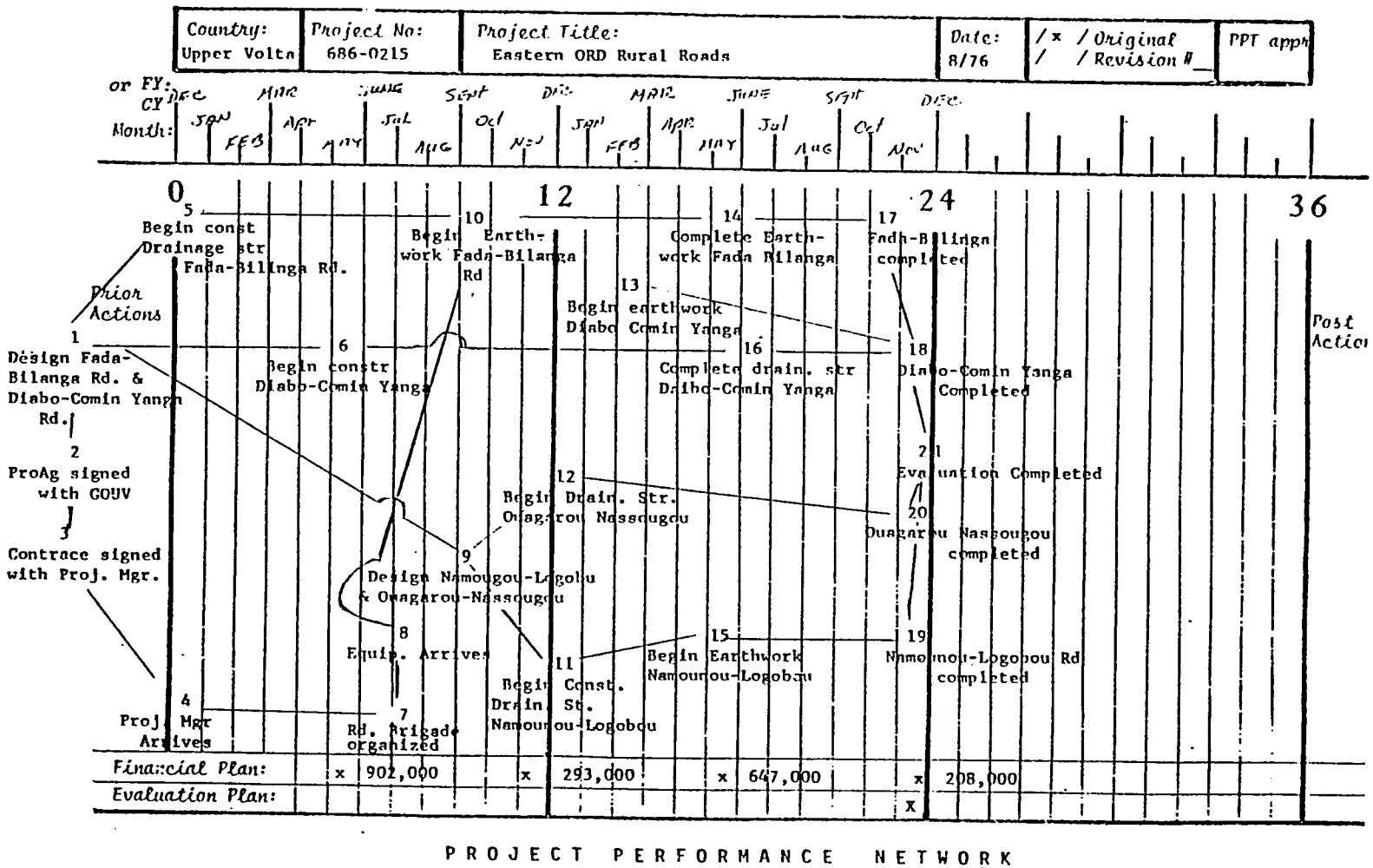
AID 1020-11-79

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 77 to FY 79
Total U. S. Funding $2,950,000
Date Prepared: 3/4/77

Project Title & Number: Eastern ORD Rural Roads

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Prog. or Sector Goal: The broader objective to which this project contributes: To increase the economic and social well being of the rural population in the Eastern ORD	Measures of Goal Achievement: 1. Increased quantities of farm supplies reaching regional markets. 2. Reduced costs to farmers in marketing surplus & obtaining supplies. 3. Reduced costs to traders serving regional markets. 4. Increased utilization of health, educational, financial, technical, and communication services (measured in terms of numbers of visits to institutions & offices providing those services).	National accounts and statistics on economic activity and income by ORD region.	Assumptions for achieving goal target: 1. GOUV will provide SERS with sufficient support in human and financial resources to permit it to function effectively. 2. GOUV will continue to use AID and other donor resources as well as its own to increase quantity and quality of financial, technical and other services available in the Eastern ORD.
Project Purpose: 1. To increase small farmer income by providing market access (economic purpose). 2. To increase access of villagers to health and education services not currently received because of isolation (social purpose) 3. To increase E. ORD's management effectiveness by providing access to remote areas under its jurisdiction (administrative purpose)	Conditions that will indicate purpose has been achieved: End of project status. 1. Increased number of farmers and traders using regional markets. 2. Increased demand from rural people for services from health & educational facilities, financial institutions and gov't (particularly E. ORD) offices. 3. More frequent visits to field by Eastern ORD staff.	1. Data collection by E. ORD on agricultural production and farm income levels. 2. National and E. ORD statistics on population health and education. 3. E. ORD operational records.	Assumptions for achieving purpose: 1. Availability of reliable rural roads in areas of high intensity ORD activity will stimulate increased agricultural outputs because of improved marketing opportunities for farmers. 2. E. ORD staff will be motivated to take advantage of opportunities for greater access to clients. 3. E. ORD admin. will be more efficient and better informed with improved access to client population. 4. Choice of 3 roads selected represents top priorities for E. ORD secondary roads using economic, social and administrative criteria.
Outputs: 1. Completed hydrological studies 2. Drainage structures designed 3. Project manager hired, working 4. Equipment in country 5. Road brigade organized, operational 6. Road construction completed on: a. Fada-Bilanga b. Diapo Comin-Yanga c. Namounou-Logoubou d. Ouagarou-Nassougou	Magnitude of Outputs: 1. 4 hydrological studies 2. Designs completed for 4 roads 3. Hired by 12/76, in country by 1/77 4. 31 pieces equipment (see pg 13 for list) arrive Ouagadougou by Aug. 1977 5. Organized & operating by Aug. 1977 6. a. 72 km secondary road, 5 m wide laterite surface with drainage structures completed by Nov. 1978 b. 43 km secondary road built to same specs as a. above, completed by Dec. 1978 c. 39 km sec. road built to same specs as a. above, completed 12/78. d. If funds allow, only drainage structures constructed by Dec. 79.	Operational records of Project Manager and SERS. Progress and completion records by contractors for drainage structures. Inspections by REDSO engineer. Surveys by Evaluation teams.	ASSUMPTIONS FOR ACHIEVING OUTPUT Construction of roads & drainage structures to prescribed standards feasible within AID project grant amount & GOUV contribution. SERS will be capable of maintaining roads after construction & GOUV's fund for secondary road maintenance will be increased as planned.
Inputs: 1. Hydrological studies (GOUV) 2. Design of drainage structures (GOUV) 3. Finance costs of 1 Proj Mgr (AID) 4. Finance cost of road building equipment (AID) 5. Finance cost of building 3 roads (AID 77%, GOUV 23%) 6. Select & train 1 road brigade (GOUV) 7. Award contracts for construction of drainage structures (GOUV a. Fada-Bilanga b. Diapo-Comin Yanga c. Namounou-Logoubou d. Ouagarou-Nassougou (if funds allow)	IMPLEMENTATION TARGET 1. One study for each road 2. One design for each road 3. $152,000/2 years 4. 31 pieces of equipment costing 5. $1,082,700 (AID) $ 321,453 (GOUV) Above estimates include the cost of drainage structures as shown below in item 7. 6. 37 people (see page 14 of PP for complete listing) 7. Following are estimated costs of drainage structures in CFA ($1.00 = 237 CFA) a. 39,580,000 (AID) 7,939,000 GOUV b. 30,395,000 (AID) 6,079,000 GOUV c. 14,080,000 (AID) 2,816,000 GOUV d. 26,655,000 (AID) 5,311,000 GOUV	1. AID financing and procurement documents 2. Financial & operating records of SERS 3. Financial & operating records of contractor for drainage structures 4. Presence of project manager 5. Inspection of equipment	Assumptions for providing inputs: 1. 1 fully equipped road brigade is sufficient to construct planned roads within 2 years from execution of Proj. 2. SERS can recruit qualified personnel as equip. operators for the brigade. 3. SERS can design drainage structures (culverts, radiers, etc) and qualified private contractors can construct th



PROJECT PERFORMANCE NETWORK

annex M

Country: Upper Volta	Project N°.: 686-0215	Project Title: Eastern ORD Rural Roads	Date: 8/76	/ x /original / / revision #	Apprvd:

CPI NARRATIVE

1.	Sept-Oct. 76	Design drainage structures for Fada-Bilanga & Diabo Commin Yanga Roads
2.	Dec. 76	Project Agreement signed with GOUV
3.	Dec. 76	Contract signed with Project Manager
4.	Jan. 77	Project Manager arrives
5.	Jan. 77	Begin construction drainage structures Fada-Bilanga Road
6.	April 77	Begin construction drainage structures Diabo-Comin Yanga Road
7.	Aug. 77	Road Brigade organized
8.	Aug. 77	Equipment delivered Ouagadougou
9.	Oct. 77	Design drainage structures for Namounou-Logobou & Ougrou-Nassougou Rds
10.	Oct. 77	Begin earthwork on Fada-Bilanga Rd.
11.	Jan. 78	Begin construction of Drainage struct. Namounou Logobou Road
12.	Feb. 78	Begin construction Drainage structures Ougarou-Nassougou Rd.
13.	March 78	Begin earthwork Diabo Comin Yanga
14.	May 78	Complete earthwork Fada-Bilanga Rd.
15.	May 78	Begin earthwork Namounou-Logobou Rd.
16.	June 78	Drainage structures completed Diabo-Comin Yanga Road
17.	Nov. 78	Fada-Bilanga Road completed
18.	Nov. 78	Diabo Comin Yanga Road completed
19.	Dec. 78	Namounou Logoubou Road completed
20.	Dec. 78	Ouagarou-Nassougou Road completed
21.	Dec. 78	Evaluation completed