

PD BAT 239

AGENCY FOR INTERNATIONAL DEVELOPMENT		1. TRANSACTION CODE A = Add C = Change D = Delete	Amendment Number _____	DOCUMENT CODE 3
PROJECT DATA SHEET		<input type="checkbox"/> A		
2. COUNTRY/ENTITY ZAIRE		3. PROJECT NUMBER 660-0115		
4. BUREAU/OFFICE AFF		5. PROJECT TITLE (maximum 40 characters) Shaba Refugee Roads		
6. PROJECT ASSISTANCE COMPLETION DATE (FACD) MM DD YY 09 30 90		7. ESTIMATED DATE OF OBLIGATION (Under "B:" below, enter 1, 2, 3, or 4) A. Initial FY 84 B. Quarter 4 C. Final FY 84		

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

A. FUNDING SOURCE	FIRST FY 85			LIFE OF PROJECT		
	B. FY	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total						
(Grant)	(4000)	()	(4000)	(7500)	()	(7500)
(Loan)	()	()	()	()	()	()
Other U.S.						
1. Host Country	100	1150	1250	500	4600	5100
2. Other Donor(s)						
TOTALS	4100	1150	5250	8000	4600	12,600

9. SCHEDULE OF AID FUNDING (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1) RP	130	941				7500		7500	
(2)									
(3)									
(4)									
TOTALS									

10. SECONDARY TECHNICAL CODES (maximum 5 codes of 3 positions each) 060				11. SECONDARY PURPOSES 220			
12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)		A. Code		B. Amount			
		BSW		LAB		PVON	
13. PROJECT PURPOSE (maximum 480 characters)							

To open up the rural roads network in the refugee area of the
Lualaba Sub-Region of Southwestern Shaba.

14. SCHEDULED EVALUATIONS				15. SOURCE/ORIGIN OF GOODS AND SERVICES			
Interim	MM YY 09 86	MM YY 09 87	Final	MM YY 09 90	<input checked="" type="checkbox"/> 000	<input checked="" type="checkbox"/> 941	<input type="checkbox"/> Local <input checked="" type="checkbox"/> Other (Specify) 935
16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a _____ page PP Amendment.)							

17. APPROVED BY	Signature Arthur S. Lentin	Date Signed MM DD YY 08 31 84	18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION MM DD YY
	Title Acting Mission Director USAID/Zaire		

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SHABA REFUGEE ROADS PROJECT

660-0115

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I. Project Summary

The Shaba Refugee Roads Project will make significant improvements in transportation facilities in Lualaba Sub-Region through capital improvements and maintenance of major sections of the area's road system. A secondary benefit will be the provision of monetary income in rural villages in areas where maintenance is to be by hand.

This project work is doubly justified. In the first instance, the western two-thirds or more of the area was profoundly affected by the 80-Day War of 1977 during which rebel forces occupied the rural areas for almost three months before retreating back into their Angolan base areas; the urbanized area of Kolwezi at the far east of Lualaba Sub-Region was in turn occupied for a brief period in 1978. Secondly, the civil wars in Angola over the past decade have repeatedly pushed Angolan refugees across the frontier into Zairian territory. This movement has recently increased because of greater military activity in Angola's northeastern provinces. In one way or another, almost the entire population of Lualaba Sub-Region has experienced displacement, whether they crossed national borders or not. Most recent United Nations High Commission for Refugees (UNHCR) estimates place the total number of refugees and returnees in the three project zones at 190,000. This represents more than half the subregion's population.

The road infrastructure of Lualaba Sub-Region has long suffered from neglect, but the late 1970s marked a decisive turn for the worse. First, the dramatic price hikes in petroleum-based fuels, beginning in 1974, dealt a severe blow to the merchants using the roads. This group was devastated by the 1977 and 1978 wars, during which vehicles were confiscated for military purposes by the opposing forces. The population dislocations of the ensuing refugee years, and the blows suffered by both the Zairian Government administration in the area and the traditional leadership structure, meant that previous manual maintenance efforts on area roads were largely abandoned. The result has been markedly less commercial activity within Lualaba Sub-Region than a decade ago. Even simple transportation is not available to meet minimal basic needs.

II. Project Rationale and Location

All of Lualaba Sub-Region forms a part of the large Lunda plateau, extending from the highlands of western Angola to the mountainous areas of central/eastern Shaba intercut by the western branches of the African Rift Valley System. This plateau forms the watershed between the Zaire basin to the north and the Zambezi basin to the south; further west, it also feeds streams flowing toward the Atlantic Ocean and to the Okavango swamps. It is basically a zone of savanna with areas of clear woodland, with heavy forests occurring primarily as remnant strands along the rivers, which flow in parallel off the sloping sides of the plateau. Communications along this east-west belt have always been relatively easy by foot, as linguistic study of parallel changes in the various Bantu language subgroups on the plateau has shown, but the largely unnavigable rivers, with their important seasonal fluctuations typical of the tropics, present significant barriers for mechanized transport.

The sub-region presents a considerable degree of cultural uniformity despite differences of language and ethnic group. In recent centuries, the entire area was part of the Lunda state system with its heartland in present-day Kapanga zone of Shaba; as a result, the various ethnic groups share a great deal of general culture and specifically political culture among themselves and with their neighbors in Zambia and Angola, despite underlying differences in linguistic/cultural origins before the Lunda conquest. Because of this widespread homogeneity and the fact that present national borders are culturally artificial, there has historically been considerable movement of people across the current national boundaries. This posed one of the first administrative problems for the colonial government. While the Ruund of the Kapanga area had erected a sophisticated state system in the 17th and 18th centuries by conquest and diplomacy, new socio-economic forces in the 19th century led to its decline and the advent of the Chokwe, Lwena, and Minungu groups tied to the ivory, slave, and rubber trades working inland from the Angolan coast. The colonial administration eventually settled on a policy of using Ruund chiefs over mixed populations, with a few token (but densely populated) areas in the south under chiefs from the incoming populations.

People continued to stream into Belgian territory in the early colonial period because of pacification campaigns by the Portuguese in eastern Angola and because of perceived differences in colonial regimes and economic opportunities. Inter-ethnic tensions came to the surface in the late 1950s and early 1960s, particularly in Dilolo and Sandoa zones.

The current refugee problems stem from more recent political crises in Zaire and Angola. In 1977 forces of the FNLC (Congolese National Liberation Front) occupied Kapanga, Sandoa, and Dilolo zones and advanced east past Matshatsha toward Kolwezi before the onset of a long stalemate. When the FNLC eventually retreated into Angola, the civilian population dispersed. Some, particularly youth of military age, were forced or recruited into FNLC forces. Others, for fear of reprisals, simply fled across the border into Angola or into the large uninhabited areas within Lualaba Sub-Region. The short but bloody occupation of Kolwezi by the FNLC in 1978 provoked a similar exodus, primarily toward Zambia. Those who had merely fled into the bush or to stay with relatives in remote villages returned to their homes relatively quickly but still with major disruption of their lives; the major part of the surviving cross-border refugees returned after the Zairian Government declared an amnesty for returnees in 1978.

The wars had a devastating impact on the occupied areas. Vehicles were immediately conscripted. Organizations lost equipment during the war or through looting during the period of insecurity and uncertainty afterwards. Equally important, personnel resources were scattered or permanently lost through death and evacuation. Postal service and telecommunications were not reestablished until the 1980s. Local social structures remain seriously weakened. In part, this is due to the demoralization accompanying the economic effects of the war. In part, it is also due to the divisions created within communities and within families between those who fled for relatively long periods (and who often suffered greater hardships) and those refugees within Zaire who returned more quickly and thus took advantage of the property left behind by those crossing international boundaries.

The second contemporary refugee problem concerns refugees from the People's Republic of Angola who have crossed into Zaire at various periods to escape fighting between the rival nationalist factions following the Portuguese withdrawal from Angola in 1975. These Angolan refugees fall into

two categories. Some have fled to relatives and acquaintances of their own ethnic groups directly across the border and are sufficiently dispersed not to be obvious. Others, especially members of the Mbunda ethnic group who have settled in the Dilolo and Kisenge areas, form refugee communities distinct from local Zairian residents. The Mbunda are ethnically closely related to the Chokwe, Lwena, and Minungu who had settled in the Dilolo area over the previous century.

The major problems facing both the local refugees and the returning refugees (and thus the population as a whole) have been in restoring health among refugees arriving in poor physical condition, tiding them over the short term until gardens are established and begin to produce, and rebuilding the economic and social infrastructure. Lualaba Sub-Region does not have a high population density by Zairian standards; the subsistence agricultural tradition of all the ethnic groups involved is basically the same. Land for resettlement is not then a critical problem, although some parts of Dilolo are much more crowded than others. The population movements do require readjustments in social patterns and also technological and resource allocation adaptations where population densities are markedly increased in comparison with former residence areas.

UNHCR operated a major relief program in the area from 1978 through 1982 in partnership with the United Methodist Church, the proposed overall implementing agency for the Shaba Refugee Health Project, a companion project to the Roads Project. The UNHCR program, however, was aimed at immediate refugee needs and at the returning refugee component of the population only; it was not designed to improve community infrastructure or to reestablish the foundations for socio-economic development. Currently UNHCR is operating on a much smaller scale to monitor the Angolan refugee situation in Dilolo Zone; it has supplied used clothing and blankets through the Roman Catholic mission at Dilolo and plans food shipments in the near future. Such relief work, while necessary in the short-term, can easily create dependency and foster segregation if poorly timed or continued too long.

Results of the 1984 Zairian census will not be available for some time. Given the traumatic events of the late 1970s, the following figures from the 1970 census may not be indicative of current population distribution and numbers:

	<u>Population</u>	<u>Area (km²)</u>
Kapanga Zone	67,016	24,476
Sandoa Zone	87,469	29,608
Dilolo Zone	233,395	25,330

UNHCR estimated the number of Angolan refugees in Dilolo Zone in July 1984 as 11,200 around Dilolo and a further 1,275 around Kisenge. The population had largely stabilized this time, despite the arrival of several additional families per average day. The Zairian authorities for Lualaba Sub-Region reported 16,000 and 3,500 for the two concentrations respectively, in late July 1984. UNHCR estimates the repatriate population at 175,000. Thus the total refugee and repatriate communities represent 50% or more of the area's population.

III. Project Description

A. General

The road system in Lualaba Sub-Region consists largely of roads built by hand labor in the 1920s and 1930s. A small portion of the major routes was redesigned and rebuilt with mechanized equipment to more modern standards in the immediate post-independence period. In recent years little consistent maintenance has been undertaken except by hand labor, and the amounts of this varied between areas with strong traditional leadership, as at Kapanga, where chiefs could effectively mobilize manpower, and areas along the railroad where transportation alternatives were available and traditional leadership structures weak. Some repair and construction work, particularly of smaller bridges, has been carried out by local merchants and by the religious missions, from a combination of their own funds and grants from abroad.

At a time when the Bureau of Roads (Office des Routes, O.R.) has been effectively organized and is actively carrying out a program of regional road infrastructure improvement and maintenance, this project presents an opportunity for major improvements in the road system of Lualaba Sub-Region over a time period much shorter than could be envisaged otherwise. This will include both mechanized and manual maintenance as well as substantial repair and improvement of road surfaces, bridges, and ferries.

B. Goal and Purpose

The goal of the project is to reintegrate the Lualaba Sub-Region repatriates and refugees into regional socio-economic development. The purpose is to open up the rural roads network in the refugee area of the Lualaba Sub-Region of southwestern Shaba. The project is designed to provide greater access to economic opportunity for the entire population of the project area. This road improvement program will eliminate obstacles to the people's own economic self-help. It will also enhance the

possibilities for a positive resolution of the refugee problem both through improving the possibilities for independent and productive lives for refugees during temporary dislocation and through providing economic opportunities for possible permanent resettlement.

Specific project objectives oriented toward achieving the goal and purpose are as follows:

1. Eliminate road blockages through repairs to inoperative bridges and ferries that currently preclude direct routings thereby reducing transport costs and opening up currently isolated areas to economic activity.
2. Rebuild existing bridges and ferries to allow normal loadings on vehicles, thereby reducing transport costs and avoiding future route blockages because of structural collapse.
3. Improve and maintain road surfaces, allowing faster travel times and lowering maintenance expenses on vehicles, thereby contributing to lower transport costs and facilitating access to the area.

C. End of Project Status

The conditions expected at the end of this project are the following:

First-priority national roads totaling 683 km in the national road system repaired and maintained; 465 km of regional priority roads repaired; regional second-priority roads totaling 694 km of secondary regional routes and 1,429 km of farm-to-market roads repaired. A map of the project roads is attached and Annex 7 an inventory of the roads for which O.R. is responsible.

29 first-priority bridges totaling 364 linear meters rebuilt; one key ferry abutment rebuilt; 13 second-priority bridges totaling 98 linear meters rebuilt; one new ferry constructed.

Flood-plain causeways constructed and additional culverts installed to avoid washouts during high-water periods.

Experienced maintenance crews provided with equipment to continue repairs and maintenance after the life of the project. These will include a resurfacing crew, a grading crew, a bridge crew, and mobile teams for manual maintenance. The first three crews would be equipped with mechanized heavy equipment, and the manual teams with appropriate hand tools. Annex 9 lists equipment to be purchased for each type of crew.

D. Work plan and schedule.

To realize the above O.R/Shaba will increase the number of work crews serving the sub-region from four to six, and also increase the number of local (missions and companies) contracted to manually maintain agricultural feeder roads. The present Road construction and maintenance brigade is based in Sandoa, in the central zone of the Iualaba sub-region, and consists of the following four work crews: a) resurfacing; b) grading; c) bridges, and d) manual maintenance. The two additional crews will consist of: a) resurfacing and b) bridges.

Together, the six crews and various local contractors will do the following:

- (1) Resurface 230 kilometers of national and regional priority roads a year, for a life of project total of 1,148 kilometers;
- (2) Grade 425 kilometers of secondary and agricultural access roads a year for a life of project total of 2,123 kilometers;

- (3) Repair or reconstruct 600 linear meters of bridge and 1,825 linear meters of culverts over the life of the project;
- (4) Manually maintain 959 kilometers per year of agricultural feeder roads.

Annex 4 gives detailed schedules by type of work.

E. Other donor activity.

UNHCR is presently the major donor active in the project area, with a six month, \$500,000, emergency relief program that is aimed at addressing the immediate basic needs of the recently arrived Angolan refugees. This program is scheduled to end in late 1984. A two year, follow on program is being planned by UNHCR with initial funding proposed for early 1985. This program, if approved and funded, will address longer-term refugee needs. Belgian aid provides small grants to missionaries in the sub-region for education, health, and road maintenance activities. The FAO is considering the possibility of funding a small agricultural project in Kapanga, the Sub-Region's northernmost zone. Finally, the World Bank is planning a major agricultural project in the Luiza zone of Western Kasai, immediately to the north of the Lualaba Sub-Region. All such correlative undertakings would be complemented and supported by the road project proposed herein.

IV. Project Analyses

A. Social Analysis

1. Background and Summary

This project addresses the need to help existing refugees and returning refugees regain self-reliance and become more productive. In particular, the Shaba Refugee Roads Project addresses the severe deficiencies which currently exist in the Lualaba Sub-Region road system and which constitute a major impediment to participation of the rural population in the regional and national economies. It addresses the economic needs of both refugee and non-refugee components in the population and thus avoids further exacerbating tensions within the community which set the refugee groups apart. The various road sub-projects to be implemented through the Bureau of Roads will include a mix of repair and maintenance activities. These may be considered as a unit for purposes of the social analysis as they are all to be carried out by employees of the O.R or of its subcontracting agents and will all produce a common output, improved roads. The social analysis indicates that the types of interventions to be included are soundly designed in that they are appropriate to the social, economic, and historical context; they address critical needs; they are socially feasible; and they will have significant beneficial impact on a large portion of the population in Lualaba Sub-Region.

2. Beneficiaries

The Project will benefit the community as a single demographic reality, including "refugees" from Angola, "returning refugees" of Zairian origin, and "residents" who have not left their communities for significant periods in the last decade but who have been affected by the social disruptions. The demographic make-up of the three communities is similar; the three component

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groups are all drawn from within the same cultural area and thus share similar ways of life as subsistence agriculturalists. Since the project is an infrastructural program which addresses the needs of the population through removing obstacles to economic activity, the entire population of the Sub-Region can be expected to benefit. The roads will be open to all potential users, but those with access to vehicles, whether as operators, passengers, shippers, or other users, will profit the most in the short term. In the medium term (3-5 years), competition for farmers' marketable surplus will improve, and prices and quantities marketed may be expected to rise.

One constraint to area development is the low population density. Excepting the urban center of Kolwezi proper, the overall density in 1970 was 4.19 persons per square kilometer (although this may have increased in the intervening period). The problem is somewhat alleviated by uneven distribution of the population, with large areas away from the roads being effectively uninhabited. However, the principal roads follow the lines of dense population pockets only in part, for their traces were also determined by the desire to avoid engineering obstacles and by following watersheds between rivers as far as possible. In a number of areas new road alignments would be advisable to avoid circuitous journeys, but the major investments required for such new construction would be less cost-effective in the short to medium term than the proposed improvements to the existing system.

When roads were better maintained during the colonial period and until the early 1970s, local economic conditions were much more dynamic and the population as a whole enjoyed much better living conditions. It is thus reasonable to expect an improvement for the entire population of the Lualaba Sub-Region as a result of the improvements envisaged.

3. Participation of Beneficiaries

Because the Shaba Refugee Roads Project is of a technical nature, only limited participation of the beneficiaries in planning and implementation is to be expected. This will be largely through the recruitment of manual maintenance teams (cantoniers) along the road system. This system was used almost exclusively before heavy equipment was introduced later in the colonial period for larger-scale construction and repairs. It is estimated that some 1,000 people will be employed in this fashion.

4. Socio-Cultural Feasibility

Given the technical nature of the project and the use of salaried labor, no appreciable problems are foreseeable in terms of socio-cultural feasibility. Local beneficiary direct participation in the project will be limited and, given consistent payment of salaries, labor availability should be no problem. In all cases, the technology is appropriate and has already been in use in the area at earlier periods.

5. Impact

The impact of the project will be great. It builds on existing road structures, so that the population of Lualaba Sub-Region is already oriented in relationship to the corridors to be improved.

For example, interest in marketing in the area will depend on agricultural price structures in Lualaba Sub-Region and in the urban consuming areas. At the present, the food supply shortages in the cities, and the government's relinquishment of price establishment to the market, make it very likely that the project will have a positive impact on marketing activity in Lualaba and in other parts of Shaba. Transport infrastructure in the Region, such as that provided through the USAID-supported North Shaba Project (660-0059), has made possible dramatic increases in economic activity and farmer well-being.

Institutions within Lualaba Sub-Region having their own vehicles will benefit immediately. These would include the Zairian Government administration, churches, hospitals and dispensaries, schools, companies such as SNCZ, SNEL, Tabazaire and Cotolu, etc. Their activities also stimulate economic development by creating a local market for agricultural produce.

B. Institutional Analysis

The GOZ implementing agency for this project is the Bureau of Roads (Office des Routes) (O.R.), which is responsible nationally for the upkeep of some 40,000 kilometers of national and regional roads. As a national agency O.R. is exceptional in several respects. Most importantly, the costs of its operations are supported entirely by a tax on fuel. This is critical to effective day-to-day operations and to long-term planning because it protects the agency from the vagaries of the national government's budgeting process and from the declining real revenues suffered by most GOZ organizations in the face of the present budget stringencies. In addition, O.R. has an in-country training program, and a large cadre of skilled mechanics and engineers.

O.R. has offices in each of Zaire's nine regions. These vary widely in capability and performance and responsibility. The Shaba regional office, in addition to its responsibility for national and regional road maintenance in Shaba, has direct responsibility for 1,500 kilometers of agricultural feeder roads in Lualaba Sub-Region alone. The upkeep of the latter is financed out of revenues generated by a local tax on agricultural produce transported by road and rail.

O.R./Shaba is probably the most effective of the nine regional offices. In 1983 and 1984 it surpassed its annual targets in almost all categories of road work. In addition, the most advanced O.R. training center, supported in part with A.I.D. funding under the Agriculture Marketing Development Project (660-0028), is located in Lubumbashi. This gives the regional office a great deal more flexibility in its worker training program than is available to offices in regions that are comparatively isolated by poor communications.

This project will not place an unsupportable burden on the institutional capacity of the Shaba office of O.R. Two technical advisors are slated to give on-the-job training to Zairian crew supervisors to ensure that the subregional brigade remains well-managed after the project ends in 1990. Lower order managerial and technical skills will be improved and brought up to date through use of the regional training center. In short, O.R./Shaba is a mature and efficient organization that does not need outside support beyond financing for a minimum of technical assistance and the equipment and supplies to do the job.

Other local institutions that will participate in the implementation of the project are the local PVOs that will be contracted by O.R. to manually maintain a part of the subregion's regional and local interest road system. Although many of the rural missions that took responsibility for such work disintegrated in the late 1970's, others have regrouped and will be capable and motivated supervisors of local maintenance crews.

Virtually all private sector, PVO, and local government institutions in the area will benefit from the project. Perhaps the most important are the health networks, operated principally by religious missions, that will be better able to provide basic health services to the local population. Other institutional beneficiaries will include GOZ schools and agricultural extension services, and companies such as SNCZ (the national railroad parastatal), SNEL (the national electric company), and other basic service providers.

C. Technical Analysis

1. Road upgrading to the level of good dirt road classification in the project area, and repair or replacement of both large and small essential bridges, will be the immediate objective. The subregional production unit's present equipment will be supplemented with essential new equipment and an adequate stock of spare parts to guarantee accomplishment of the work.

2. Providing two experienced specialists to assist the brigade in the supervision, operation and maintenance of the unit's facilities and equipment will help ensure successful execution of the work.

3. The soils in the project area are predominantly sandstone and limestone, but there are areas of sufficient quantities of fine clay and gravelly clay which, when compacted with moisture and provided with adequate drainage, can be improved to a good dirt road classification.
4. The bridge construction will be carried out by two O.R. bridge brigades properly equipped by project financing. These newly-established brigades will be supplied with metal culverts and metal bridge-building components.
5. The estimated time required for completion of the project is based on Office des Routes' records of the average working rates and days worked per month and per year as described in Annex 4. The estimated average of 500m of improvement work per brigade per work day is reasonable for road surfacing and grading. Manual laborers will maintain 2 km per person, a realistic estimate for the project area.
6. The equipment cost estimates have been prepared using current costs to O.R. for equipment procurement, handling and shipping. Spare parts costs are estimated based on a percentage of new equipment costs (8% per year for five years to ensure upkeep during the life of the project). Local cost estimates are based on information from O.R.'s records as adapted to expected project conditions and requirements. Cost estimates for bridge building were prepared by O.R. from actual construction experience, and fuel and lubricants costs are based on present-day costs. These local costs, to be borne by O.R., are within its projected revenue availabilities.

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7. The sub-project plans for bridge building and manual road maintenance will employ labor-intensive methods appropriate for the work to be accomplished. Labor for this purpose is available in the project area.

The technical design and equipment requirements for carrying out the proposed work are appropriate for the objectives to be accomplished, are practical, and are in accordance with sound engineering practice. The cost estimates are realistic. The technical assistance personnel will complement the skills already available in the Office des Routes. Assuming prompt initiation of project implementation, no technical constraints to the satisfactory completion of the project on schedule are foreseen.

D. Financial Analysis

1. Sustainability.

O.R./Shaba has three domestic sources of financing. The most important of these is a portion of the national tax on petroleum that covers most operating costs, but not equipment or fuel. The second source is the national investment budget, a portion of which is allocated to O.R. for equipment. However, given present budget stringencies, O.R.'s allocation is inadequate even to replace its present fleet as it wears out. Accordingly, O.R. has proposed, and the GOZ is considering, a plan to meet continued investment needs by increasing O.R.'s share of the petroleum tax. The third source is a local (regional) tax on corn and cassava transported by road and rail. Instituted in June 1984 under recently decentralized taxing authorities, this tax is earmarked for the upkeep of agricultural feeder roads.

The present project will ensure the investment needs of the Lualaba subregion production unit until 1994, when the AID-financed trucks and heavy equipment will be largely amortized. Continued sustainability of project gains after that will depend to a large extent on the state of the Zairian and Shaban economies, which, in turn, are a function of the state of the transport network. Other factors impinging on future supportability and maintenance include the price of copper, the Angolan political situation (especially whether the Benquela route is open), and the continued success of the economic stabilization program that began in 1983.

Progress in economic reform over the past two years bodes well for the future. The GOZ has instituted a tax system that now provides a steady flow of income to O.R.; the regional government has shown a healthy commitment to increased agricultural production by applying a local tax on transported food that is used to support the maintenance of village farm-to-market roads; and the GOZ has demonstrated over the past year and a half that it can institute and sustain free market economic policies.

2. Cost estimates

The following cost estimates are based on present CIF Matadi costs to O.R.: Inflation and contingency allowances have been built into line item estimates.

Table 1: Summary Cost Estimate and Financial Plan

Source	\$000 or local currency equivalent in \$000			
	AID		GOZ/O.R.	
	FX	LC	FX	LC
Commodities				
Road Equipment	2,500	-	-	-
Spare parts	1,146	-	-	1,000
Culverts	209	-	-	-
Bridge materials	1,300	-	-	-
POL	496	-	500	-
Equipment renewal (End of project)	629	-	-	-
Travel				105
Small Tools				60
Construction materials				950
Rent, overhead				130
Contracts for road maintenance				1000
Technical Assistance LT 10 man-years	1,220	-	-	-
Salaries				1,300
Miscellaneous				55
TOTAL	7,500		500	4,600

Local currency costs are expressed in dollars at the current rate of exchange of 37 zaires

Projection of USAID funded expenditures by fiscal year by major line item
(\$000)

<u>NO.</u>	<u>TYPE</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>TOTAL</u>
1	Road-building equipment	2,500	-	-	-	-	2,500
2	Spare parts, tires	500	150	157	165	174	1,146
3	Bailey bridge elements	800	500	-	-	-	1,300
4	Culverts (metal)	80	30	31	33	35	209
5	Technical Assistance LT 10 person/years	200	220	242	266	292	1,220
6	POL	90	94	99	104	109	496
7	Renewal of equipment	-	-	-	-	629	629
Total		4,170	994	529	568	1,239	7,500

3. Detailed estimates of the GOZ contribution to the project are given in Annex 6.

E. Economic Analysis

1. Background

The economy of the Lualaba subregion is based almost entirely on agriculture. The major crop is cassava, accounting for as much as 90% of total production. Other crops include beans, corn, rice, cotton, and tobacco. Perhaps 10% of present production is sold in the three rural towns of the subregion, in the mining city of Kolwezi to the east, and in the Western Kasai region to the north.

2. Policy constraints to production increases

Since mid-1981, most national and regional policies inimical to increased agriculture production have been rescinded. These include price controls on food crops, a ban on interregional trade, and an overvalued exchange rate that favored imports and significantly dampened prices received by local farmers. Now the major barriers to production increases are physical, and foremost among these is the deteriorated state of the road network, which was destroyed by the 1977 military invasion and never rebuilt.

3. Economic feasibility

The benefit-cost ratio for the project, at a discount rate of 15%, is 1.26. The methodology applied is that used by the World Bank in determining the feasibility of its road projects in Zaire. Foreign exchange cost estimates are based on present CIF/Matadi prices for equipment and current experience with the costs of technical assistance. Local currency costs are present prices for goods and services, expressed in dollars at the current market exchange rate of 37 zaires to one dollar. Benefit calculations are based on World Bank estimates of the traffic levels by type of road, savings by type of vehicle, and estimates of traffic increases induced by the project. Annex 3 gives a detailed description of the methodology applied.

F. Environmental Analysis and Recommended Environmental Threshold Decision

This project will be improving the existing road transportation system of the Lualaba Sub-Region of the Shaba Region of Zaire. Project components consist of:

- Resurfacing: Two units will resurface a total of approximately 130 kilometers of rural roads a year;
- Leveling: One unit will level approximately 900 kilometers of roads a year;
- Road structures: Two units will place approximately 365 linear meters of culverts and 130 linear meters of bridge a year.

This project will have the direct effect of improving the transportation system within the project area. In view of the fact that the project activities are in most cases amendments to an existing infrastructure, it is unlikely that these project activities will contribute to the deterioration of the environment.

The project may increase land utilization in the project area as farmers find ready buyers for their produce. There is no land shortage in the area, even given the traditional slash and burn techniques of most farmers, and no environmental problems are foreseen as a result of increased cropping.

In view of the absence of any identifiable direct and adverse environmental impact from the project activities, it is recommended that a Negative Determination be made and that no further assessment be undertaken.

The Initial Environmental Examination (IEE) is attached as Annex 5.

V. Implementation Plan

A. Administrative Arrangements

The Government of Zaire agency directly involved in the implementation of the project is the Office des Routes (O.R., Bureau of Roads) in the Department of Public Works. O.R. has primary responsibility for constructing, rehabilitating and maintaining some 40,000 kilometers of national and regional roads throughout the country.

The Equipment Management Service (S.G.M.T.P) is the logistical unit of O.R. and is based at O.R.'s central office in Kinshasa. S.G.M.T.P procures O.R.'s equipment and is responsible for delivering it to the appropriate work sites, and for maintaining it thereafter. The S.G.M.T.P. will be responsible for the procurement of all equipment financed under this project, and may, to this end, employ a procurement agent acceptable to USAID. O.R. will appoint a senior officer of S.G.M.T.P. to be responsible for project procurement and liaison with USAID.

The Shaba regional office of O.R. will implement the project once the equipment and technical assistance team are on site. The Shaba office will provide all necessary local qualified manpower, support services, land and physical facilities to enable work to proceed on schedule and to ensure a timely and adequate supply of fuel and lubricants.

To manage this project effectively, USAID will assign a Project Officer to Shaba whose responsibilities will include:

1. Monitoring and evaluation of project activities to ensure that the management of AID resources is satisfactory;
2. assisting in the preparation of project implementation documents, particularly those relating to procurement;

3. the maintenance of liaison with the relevant host country officials;
4. assisting in the maintenance of project reporting and record keeping, including financial management information and project performance tracking.

The officer based in Shaba will have a USAID/Kinshasa backstop who will be responsible for liaison with the S.G.M.T.P. and AID/W on all project matters.

B. Implementation Schedule

The general schedule for the implementation of project activities from the date of approval until project completion is presented below. Project Performance Tracking charts and critical performance indicators are presented in Annex 4.

Activities schedule

Project paper approved by A. I. D.	September 1984
Project grant agreement signed	September 1984
Commodities list finalized	October 1984
Initial conditions precedent met	November 1984
Commodities order placed	January 1985
Technical services solicited	January 1985
Technical assistance team arrives	May 1985
Zairian work crews on site	May 1985
Commodities on site	July 1985
Road work commences	July 1985
Technical services completed	June 1990
Project completion date	September 1990

C. Evaluation Plan

Three evaluations are slated for this project: one in September of 1986 one in 1987, and one in 1990. The first will be a start-up evaluation, the second a mid-point, and the third a final.

All evaluations will coincide with, and take into account, evaluations of the Health Infrastructure in Shaba (660-0114) and the Water Supply in Shaba (660-0116) companion refugee projects.

The first evaluation will have as its principal purpose to review project objectives, assess the degree to which project design is leading towards purpose achievement, review and confirm the validity of assumptions, assure that all participants are properly carrying out the responsibilities envisaged and assigned, and make recommendations for improving project implementation.

The evaluation team will be led by an agriculture marketing economist and will include a roads engineer and a sociologist. The team leader will assess the likely impact of the project on agricultural production and marketing in the area, the roads engineer will assess the quality of the road work against appropriate standards given present and projected traffic levels, and the sociologist will review the impact of the project on the refugee and repatriate population of the area. The mid-term evaluation will update initial evaluation findings with recommendations appropriate at that point. It will specifically review what mechanisms have been established or planned for recurrent costs and other aspects of sustainability.

The final evaluation will be conducted following the completion of all road work under the project, and will provide a comprehensive assessment of the project's impact on the Lualaba Sub-Region. A thorough economic analysis will determine the extent to which small cultivators and merchants have benefited through increased access to markets and basic services. In addition, an assessment will be made of the cumulative impact of the three refugee projects on the populace of the sub-region.

The final evaluation team will be constituted similarly to those of the earlier evaluations.

D. Procurement

This project is to be authorized in accordance with the Migration and Refugee Assistance Act of 1962.

Because the authorization for this project does not come from the Foreign Assistance Act, the provisions of that Act relating to the procurement of goods and services do not apply as a matter of law and accordingly this PP reflects greater flexibility than usually assumed in AID regarding procurement requirements.

As described above, the major responsibility for all procurement lies with S.G.M.T.F., the O.R. logistics arm. Procedures to be followed by O.R. in procurement and possible criteria to be applied to justify non-US or non-competitive procurement are included in Annex 2. USAID will review and approve all requests for procurements which do not have their source or origin in the United States.

Planning envisages that the bulk of the heavy equipment for O.R./Shaba will be of U.S. source and origin.

REPUBLIQUE DU ZAIRE
MOUVEMENT POPULAIRE DE LA REVOLUTION



REGION DU SHABA
CABINET DU PRESIDENT REGIONAL DU MPR
GOUVERNEUR DE REGION

Lubumbashi, le 16 AOUT 1984

N° 10/

080305

CAB PR MPR/GR. SHAB.

TRANSMIS copie pour information :

OBJET :
Projet routes et santé
Sous-Région de Lualaba.

A Monsieur le Directeur
de l'U.S.A.I.S. - Kinshasa
à KINSHASA

Monsieur le Directeur,

J'ai l'honneur de vous confirmer les différents entretiens que j'ai eus avec vous au sujet de la priorité que la Région du Shaba accorde aux problèmes d'assistance aux réfugiés d'Angola et de réintégration des rapatriés zairois qui ne cessent d'affluer dans la Sous-Région de Lualaba.

A cet effet, la Région appuie le projet d'amélioration des routes de desserte agricole et celui de santé communautaire que l'U.S.A.I.S. et les Services ont élaborés pour la Sous-Région de Lualaba.

Ces projets visent essentiellement :

1. l'amélioration des routes de desserte agricole dans la Sous-Région de Lualaba, projet n° 0660-0113. Cela pour faciliter l'écoulement des produits agricoles vers les centres de consommation. Le coût estimé de ce projet est de 1.200.000.000 Zaires. L'Office des Routes en assurera le financement.
2. le système de santé communautaire, projet n° 0660-0114. Le but de ce projet est de fournir à la population de la Sous-Région de Lualaba les services de santé nécessaires. Le coût estimé de ce projet est de 1.200.000.000 Zaires. L'Office des Routes en assurera le financement.

3. la fourniture d'eau potable dans la Sous-Région de Lualaba, projet n°660-116. Le but du projet est de faire bénéficier la population de cette Sous-Région d'eau potable.
Le coût estimé du projet serait de 2.250.000 K.F.

Tout en vous remerciant d'avance de l'appui que vous apportez aux projets ci-dessus qui ont un caractère prioritaire pour la Région de Shaba, je vous prie d'agréer, Monsieur le Directeur, l'assurance de ma considération distinguée.

LE PRESIDENT REGIONAL DE L.F.R.,

MANDUNGU BILA NYAMI
GOUVERNEUR DE REGION.

Annex 2

1. Source/origin/nationality requirements.

a. The following order of preference for the source and origin of goods and services will be applied by S.G.M.T.P. for purchases with A.I.D. funds under the project:

- (1) United States (A.I.D. Geographic Code 000)
- (2) Host Country or A.I.D. Geographic Code 941
- (3) A.I.D. Geographic Code 935

Procurements from countries included in Category (3) above (Code 935) but not in Categories (1) or (2) must be based on a written justification which will be prepared by S.G.M.T.P and reviewed and approved by USAID. All such justifications shall set forth the circumstances surrounding the procurement and be based on one or more of the following reasons:

- (1) the goods and services required are necessary to meet an emergency requirement which cannot be met in time with goods and services or by suppliers from the United States;
- (2) the necessary goods and services or suppliers are not available from the United States;
- (3) the lowest available delivered price of the required goods and services from suppliers from the United States would be fifty percent (50%) or more higher than the delivered price from a country included in category (3) above;
- (4) impelling political considerations precluding consideration of sources in the United States;
- (5) such other circumstances as are determined to be critical to the success of project objectives.

Annex 3

Expanded Economic Analysis

1. Assumptions

- a. The reduction in cost to the present transporters in the area realized by improving the roads will be comparable to the nationwide average calculated by the World Bank.
- b. The price elasticity of demand for road use in the Sub-Region is comparable to the nationwide average calculated by the World Bank.
- c. The traffic load by type of road in the Sub-Region is comparable to the nationwide average calculated by the World Bank.

2. Estimates of volume, savings and elasticity of demand

- a. The formula for price elasticity of demand for road use by type of road is the following:

$$T = \frac{K}{C^{1.42}}$$

- T = Traffic
- C = Cost of operating vehicles
- K = Constant

- b. Average daily traffic in vehicles per day (v/d) by condition and type of road:

		<u>Improved/maintained</u>	<u>Unimproved</u>
National roads	:	30 v/d	20 v/d
Regional priority roads	:	8 v/d	5 v/d
Secondary regional roads	:	2 v/d	1 v/d
Agricultural access roads	:	1 v/d	1/2 v/d

Based on the above, the vehicle kilometers in Iualaba are as follows:

	Km	-----v/km per day-----	
		<u>Improved/maintained</u>	<u>Unimproved</u>
National roads	(683)	20,500	13,700
Regional priority roads	(465)	3,700	2,300
Secondary regional roads	(694)	2,300	700
Agricultural feeder roads	(1,429)	1,400	700
Total		27,000	17,400

This traffic is composed of 20% light vehicles (under two tons) and 80% heavy vehicles (over two tons).

c. Vehicle operating costs

	-----in \$/km-----	
	<u>Improved/maintained</u>	<u>Unimproved</u>
Light vehicles (Landrover type)	0.56	0.82
Heavy vehicles (7 ton trucks)	1.19	1.76

d. Estimate of benefits

Benefits accruing to present traffic	3,226,000 \$/year
Benefits accruing to induced traffic	741,000 \$/year

3. Benefit/cost streams

a. The cost stream below is based on the present value of projected expenditures.

b. The benefit stream is based on the projected rate of repair/maintenance of roads, with a lag of six months between initial costs and the beginning of benefits. Benefits are calculated at \$1,000,000 for the first year and a half of the project, and at \$742,000 a year thereafter until full benefits are achieved in Year 6. The reason for the slightly higher first year benefits is that initial road work will concentrate on main trunk roads and their branches. Maximum benefits are sustained through Year 10 because the fleet of trucks and heavy equipment will be renewed in year five.

4. Discount Rate for Benefit-Cost Calculation

The discount rate used below to calculate the benefit-cost ratio is 15%. Although this rate is low by private sector standards, it is reasonable for social infrastructure projects, particularly in light of the unquantified benefits that will accrue to the entire population. Such benefits include improved access to consumer goods and health services, ease of travel, and others.

Discount rate = .15

Year	benefits	Costs	Discount Factor	Discounted Benefits	Discounted Costs
1	500	5420	.8696	435	4713
2	1200	1994	.7561	907	1508
3	1942	1229	.6575	1277	808
4	2684	1266	.5716	1534	724
5	3426	1939	.4972	1703	964
6	3967	700	.4323	1715	303
7	3967	700	.3759	1491	263
8	3967	700	.3269	1297	229
9	3967	700	.2843	1128	199
10	3967	700	.2472	981	173
<hr/>					
Total				12468	9884

The Benefit-Cost Ratio is 1.26.

Annex 4

Project Performance Tracking Charts
and Critical Performance Indicators

1. WORK PERFORMANCE PLAN

The work performance plan presented here applies to the road and embankment resurfacing, road shaping and drainage (opening of ditches and trenches), bridge construction and culvert laying. Schedules are based on historical pluviometric data for the Lualaba Sub-Region.

2. ROAD MAINTENANCE

2.1 Resurfacing

Resurfacing will be performed on road sections that are in poor condition, on national, regional priority roads, embankments and on all difficult portions of the regional secondary and agricultural service roads, or approximately 650 km.

The two resurfacing units will resurface 130km/year, or 65 km/year per unit.

2.2 Shaping

Shaping will be performed on the complete road network with slow passes of graders, i.e.: national, regional priority, secondary and agricultural service roads, or a total of 3,271 km at the average rate of 1500 km/year;

2.3 Pluviometric Data

Considering the pluviometric data for the Lualaba Sub-Region, O.R. has programmed 178 days/year of road rehabilitation work and 240 days/year of maintenance and road structures construction work.

2.4. Manual Maintenance

Maintenance workers will be placed permanently along the 1429 km of agricultural service roads to perform manual maintenance at the rate of one worker/2 km/year. This work can be performed either by the O.R., or by contractors.

The percentage of the total agricultural road network maintained annually is estimated at 67.1% well maintained by the end of each annual campaign, or 959 km/year.

2.5 Opening of Ditches and Trenches

Opening of ditches and trenches will be performed both mechanically and manually. Performance of work is estimated at 63 km/year.

3. Bridges

The bridge construction program has been established according to the importance of the structures, that is :

3.1 Culverts with openings between breaches varying from 3m to 4.5 m, which will be built or replaced by Armco culverts with rock masonry headwalls.

3.2 Bridges with between 5 m and 11.5 m spans will be rebuilt as semi permanent structures, i.e. the abutments, the piers in rock masonry and the main beams as metal girders.

3.3 Bridges with spans varying between 12 m and more, will be reconstructed as permanent structures with Bailey or Accrow elements.

22X

Table 1: GENERAL SCHEDULE

	J	F	M	A	M	J	J	A	S	O	N	D	TOTAL
Number of Days in Month	31	29	31	30	31	30	31	31	30	31	30	31	
Sundays and Holidays	6	4	4	5	4	5	5	4	5	5	6	6	
Rainy Days	22	21	20	13	2	0	0	0	5	12	10	22	
Average Daily Amount: (m) - Min.	10,06	8,88	9,84	10,22	3,75	0	0	9	10,5	7,3	8,5	10,75	
- Max.	215,5	185,5	191	117	5	0	0	9	43,5	84	157	232,5	
1 Resurfacing	4	4	7	13	25	25	25	27	20	14	14	3	178
2 Leveling	4	4	7	13	25	25	25	27	20	14	14	3	178
3 Drain & Ditch Clearing	4	4	7	13	25	25	25	27	20	14	14	3	178
4 Manual Road Maintenance	4	4	7	13	25	25	25	27	20	14	14	3	178
5 Road Structures:													
- Culverts	17	16	19	22	25	24	26	26	26	22	19	18	240
- Bridges, 5-11.5 ml.	17	16	19	22	25	24	26	26	26	22	19	18	240
- Bridges, over 12 m.	17	16	19	22	25	24	26	26	26	22	19	18	240

Table 2: ANNUAL WORK FORECAST
(LUALABA PROJECT)

It.	Type of Work	J	F	M	A	M	J	J	A	S	O	N	D	TOTAL
1	Resurfacing - PC ₁	2	2	3,5	6,5	12,5	12,5	12,5	13,5	10	7	7	1,5	65,3km
	- PC ₂	2	2	3,5	6,5	12,5	12,5	12,5	13,5	10	7	7	1,5	65,3km
2	Leveling	20	20	35	65	125	125	125	135	100	60	60	15	885km
3	Drain & Ditch Clearing	1,40	1,40	2,45	4,55	8,75	8,75	8,75	9,45	7,00	4,90	4,90	1,05	63,35km
4	Manual Road Maintenance	21,2	21,2	37,1	68,9	132,5	132,5	132,5	143,10	106,00	74,2	74,2	15,6	959km
5	Road Structures:													
	- Culverts	30	30	30	30	30	30	30	31	31	31	31	31	365ml
	- Bridges, 5-11.5 ml.													25 ml
		(Replace main beams of 5 bridges/year)												
	- Bridges, over 12 m.	8,7	8,7	8,7	8,7	8,7	8,7	9,2	9,00	9,00	9,00	9,00	9,00	106,4m)

Table 3: 5 YEAR WORK FORECAST
(TIDALABA PROJECT)

23X

It.	DESCRIPTION	1st Year	2nd Year	3rd Year	4th Year	5th Year	TOTAL	REMARKS
1	Resurfacing	130 km	650 km					
2	Leveling	1,500 km	7,500 km					
3	Drain & Ditch Clearing	63,35 km	316,75 km					
4	Manual Road Maintenance	959 km	4,795 km					
5	Road Structures:							
	- Culverts	365 ml	1,825 ml					
	- Bridges, 5-11.5 m.	25 ml	125 ml					
	- Bridges, over 12 m.	106,4 ml	532 ml					

Annex 5

Initial Environmental Examination

Project location: Lualaba Sub-Region, Shaba Region, Republic of Zaire
Project title: Shaba Refugee Roads, (660-0115)
Funding: USG \$7,500,000; GOZ \$5,100,000
Initial obligation: FY 84
PACD: FY 90
IEE prepared by: T. Born, USAID/Zaire

Environmental action recommended:

In view of the absence of any identifiable direct and adverse environmental impacts resulting from this project and the likelihood that possible indirect impacts on land usage patterns and economic/employment patterns will be favorable, a Negative Determination is made.



Mr. Arthur S. Lezin Acting Mission Director

Date:

8/31/84

Annex 6

The following three tables give a detailed estimate of the GOZ contribution to IOP costs.

Costs are expressed in dollars at the exchange rate of the date the calculations were performed: 33 zaires to one dollar.

24X

Table 1: DETAILS OF SALARIES AND RELATED COSTS

ITEM	TITLE	No.	Z/MONTH/ EMPLOYEE	BASE SALARY	
				MONTHLY TOTAL	ANNUAL TOTAL
1	Work Manager	1	3,045	3,045	36,540
2	Technical Assistant	1	2,508	2,508	30,096
3	Admin. Assistant	1	2,064	2,064	24,768
4	Accountant	1	1,758	1,758	21,096
5	Cashier	1	1,191	1,191	14,292
6	Motor Pool Drivers	2	639	1,278	15,336
7	Clerk Typist	1	639	639	7,668
8	Typist, Receptionist	1	816	816	9,792
9	Draftsman	1	1,455	1,455	17,460
10	Storekeeper	1	1,455	1,455	17,460
11	Watchmen	2	345	690	10,350
12	Brigade Supervisor	1	2,064	2,064	24,768
13	RC Site Foremen	2	1,758	3,516	42,192
14	Grading Foreman	1	1,758	1,758	21,096
15	Bridge site Foremen	2	1,758	3,516	42,192
16	Manual labor Foreman	1	1,758	1,758	21,192
17	Equipment Operators	16	1,038	16,608	199,296
18	Drivers	24	816	19,584	235,008
19	Mechanics	18	816	14,688	176,256
20	Carpenters	6	639	3,834	46,008
21	Masons	6	639	3,834	46,008
22	Bridge Builders	6	639	3,834	46,008

Table 1: DETAILS OF SALARIES AND RELATED COSTS (con't)

ITEM	TITLE	No.	Z/MONTH/ EMPLOYEE	BASE SALARY	
				MONTHLY TOTAL	ANNUAL TOTAL
23	Unskilled Workers	50	235	11,750	141,000
24	Watchmen	12	345	4,140	49,680
	SUBTOTAL	158	-	107,783	1,295,466
	CONTINGENCY (25%)			26,946	323,867
	GRAND TOTAL	158	-	134,729	1,619,333
	DOLLAR EQUIVALENT				\$ 49,071

SUMMARY

1. Salaries and indemnities Z 7,092,679

$21,619,333 \times 4.38$

(4.38 is a multiplier that accounts for housing, furniture and other perquisites)

2. Allowance for spouses Z 3,413

$158 \text{ spouses} \times Z 1.8 \times 12$

3. Allowance for children Z 246,480

$790 \times Z 26 \times 12$

TOTAL

Z 7,342,572

\$ 222,480

25X

Table 2: FIVE YEAR EXPENDITURE PLAN
OPERATIONS BUDGET
(In dollars)

No.	Item	1985	1986	1987	1988	1989	TOTAL
1	Salaries and related costs	222,503	222,503	222,503	222,503	222,503	1,112,515
2	Fuels and lubricants	100,000	100,000	100,000	100,000	100,000	500,000
3,4,5	Spare parts, non-O.R. repairs, Workshop supplies	163,758	163,758	163,758	163,758	163,758	818,790
6	Expendables and maintenance	13,636	13,636	13,636	13,636	13,636	68,180
7	Water electricity, tele- communications	4,606	4,606	4,606	4,606	4,606	23,030
8	Travel and transfers	20,303	20,303	20,303	20,303	20,303	101,515
9	Rents and related costs	3,636	3,636	3,636	3,636	3,636	18,180
10	Furnishings and tools	10,485	10,485	10,485	10,485	10,485	52,425
11	Building materials	29,939	29,939	29,939	29,939	29,939	149,695
12	Construction materials for roads and bridges	523,558	273,558	-	-	-	797,116
13	Miscellaneous	7,576	7,576	7,576	7,576	7,576	37,880
14	Contracts	150,000	150,000	150,000	150,000	150,000	750,000
	TOTAL	1,250,000	1,000,000	726,442	726,442	726,442	4,439,326

Inflation (15%)

670,674

Table 3: U.P.'s ANNUAL OPERATION BUDGET

ITEM	DESCRIPTION	AMOUNT (Zaires)	AMOUNT (Dollars)
1	Salaries and Related Costs	7,343,000	222,503
2	Fuel and Lubricants	3,027,000	91,718
3	Spare Parts and Repairs		
4	Workshop Supplies	5,405,000	163,758
5	Exterior Workshop Supplies		
6	Expendables and Maintenance	450,000	13,636
7	Water, Electricity, Telecommunications	152,000	4,606
8	Travel and Transfers	670,000	20,303
9	Rents and Related Costs	120,000	3,636
10	Tools and Furnishings	346,000	10,485
11	Building Materials	988,000	29,939
12	Fixed Assets	-	-
13	Miscellaneous	250,000	7,576
8	Contracts	4,950,000	150,000
	TOTAL	z 23,700,000	\$ 718,160

26x

Annex 7

The following is a list of the bridges and other water crossings to be upgraded or constructed under the project including cost estimates:

No.	Road	River	P.K.	Span	Type of Bridge	Remarks
1	<u>CULVERTS</u>					
	1.1. <u>Zone de SANDOA</u>					
	1.1.1 Sandoa - Muteba - Tshibamba					
		Lufaseya	-	3 m	Wood	Culvert
		Lukandi	-	3 m	Wood	Culvert
		Kanyanga	-	3 m	Wood	Culvert
		Kalonganyi	-	3 m	-	Culvert
		Li gamba	-	3 m	Wood	
		Shisiya	-	3 m	Wood	Culvert
		Shiuma	-	3 m	Wood	Culvert
		Tashiamaleka -	3 m		Wood	Culvert
		TOTAL		24 m		Culverts
2	Bridges with 5 - 11.5 meter spans					
	2.1. <u>Zone of Kapanga</u>					
	2.1.1. Kapanga - Pandamwila - Masenda - Tshisekele					
		Kashongesi 1 44		7 m	Wood	
		Kashongesi 3 -	9 m		Wood	
		Kizo	19	6 m	Wood	
		Lukingo	38	6 m	Wood	
	2.1.2. Pandamwila - Kapanga Kakese					
		Kaongeshi I 20		10 m	Wood	

Nb.	Road	River	P. K.	Span	Type of Bridge	Remarks
2.2. Zone of Sandoa						
2.2.1. Sandoa -						
	Muteba - Tshibamba	Luvuleji	-	7 m	Wood	
		Mulanda	-	7 m	Wood	
		Luando	-	10 m	Wood	
		Kandi	-	8 m	Wood	
		Riseng	-	6 m	Wood	
2.3. Zone of Dilolo						
2.3.1. Mafundu -						
	Dembo - Mafunda Kasai	Lushiiji	20	8 m	Wood	Rebuild Infra- structure
		-	-	10 m		
2.3.2. Katoka -						
	Katende	Lova I	5	6 m	Wood	
		Musamba	13	6 m	Wood	
2.3.3. Kisenge -						
	Manganèse - Luashi -					
Angolan Border						
		Kasengi	77	6 m	Wood	
		Mawakala 1	77.5	6 m	Wood	
		Mawakala 2	90	7 m	Wood	
TOTAL				125 m		
3	Bridges of 12+ Meters span					
3.1. Zone of Kapanga						
3.1.1. Kapanga -						
	Pandamwila - Masenda					
	- Tshisekele	Kashongesi 2	44	32 m	Wood	
		Kashongesi	200	15 m	Wood	
3.1.2. Pandamwila -						
	Kapanga Kakese	Kaondeshi 2	33	33 m	Wood	Nonexistent
		Kapelekese	58	12 m	Wood	
		Lomone	10	12 m	Wood	

No.	Road	River	P.K.	Span	Type of Bridge	Remarks
	3.1.3. Misumba - Karil - Tembo- Vers - Kaniama	Luiza	56	40 m	-	Nonexistent
	3.2. <u>Zone of Sandoa</u>					
	3.2.1. Sayav - Saka- pele - Tshiswenge	Luale	8	12 m	Wood	
	3.2.2. Sandoa - Muteba - Tshibamba	Lukukweji	-	12 m	Wood	
	3.2.3. Samuyemba - Kayembe Mikulu	Lueo	60	25 m	-	Nonexistent
	3.3. <u>Zone of Dilolo</u>					
	3.3.1. Muyeye - Musele	Lushi Kanduki Lova	67 32 -	25 m 21 m 12 m	- - Wood	Nonexistent Nonexistent
	3.3.2. Kasaji - Luashi - Zambian Border	Lukoshi Luashi	18 35	22 m 24 m	Wood Bailey	
	TOTAL			297 m		

In addition to the above construction of a permanent bridge on the LUBILASHI River at Kalundwe on RR1 604 with a + 120 ml span, including the development of access ramps is planned.

The cost of bridge repair is estimated as follows (not including local costs):

1. Construction of the Lovua and Lando bridges RN 39 SANDOA-LAPANGA	\$ 56,100
2. Construction as permanent structures of all bridges on the agricultural service roads, or 297 ml x 1870	\$ 555,390
3. Procurement of 10/12 checkered sheets to replace the wooden bridge coverings including small metal girders for beams equal to or smaller than 12 m. fft.	\$ 120,510
4. Construction of the Mwin-Tshamb permanent br' 'ge on the LUJALA River in Kapanga 85 ml. including development of accesses	\$ 250,000
5. Construction of the permanent bridge on the LUBILASHI River at Kalundwe on the RR1 604 with a <u>+</u> 120 ml span, including the development of accesses	\$ 300,000
6. Replacement of paint on all metallic bridge elements	\$ 18,000
TOTAL	\$1,300,000

Annex 8

Road Inventory of the Lualaba Sub-Region

1. National roads

- NR. 39 Lim. Zone Mitshatsha - Kasaji - Dilolo	247 km
- NR. 39 Dilolo - Sandoa - Kapanga - Pandamwila - Limit Kasai Occidental	<u>436 km</u>
TOTAL:	683 km

2. Priority regional roads

- RR ₁ 601 Kapanga - Mwata Lukanga - Musz'a - Limit Zone de Kaniama	199 km
- RR ₁ 606 Mbangu - Kafakumba - Lim. Zone de Kamina	152 km
- RR ₁ 607 Kasaji - Tshimbalanga	<u>114 km</u>
TOTAL:	465 km

3. Secondary regional roads

- RR ₂ 402 Pandamwila - Mwene Imbu	55 km
- RR ₂ 403 Tshikwika - Mulaba- Mwenw Imbu - Tshoza - Limit Kasai Occidental	406 km
- RR ₂ 404 Satshamba - Kafutshi - Lim. Zone de Kaniama:	44 km
- RR ₂ 405 Samuyemba - Satshamba - Kayembe Mikulu - Limit Zone of Kamina	137 km
- RR ₂ 420 Mwata Lukanga - Tshibingu - Limit Kasai Occidental	<u>52 km</u>
TOTAL:	694 km

4. Agricultural Service Roads

1. Pandamwila - Kalamba Kashama - Tshibamba	134 km
2. Katapakishi - Tshitumba - Kamana - Lim. Kasai Occidental	61 km
3. Dilembe - Kababa - Mwata Kandala - Kambamba	99 km
4. Mwene Ndeji - Elulwilu	56 km
5. Sakubema - Tshibamba - Tshiwewe - Mulaba	102 km
6. Sandoa - Muteba - Tshibamba	82 km
7. Mbako - Kambundji - Kangamba	82 km
8. Mbako - Binda - Tshikwe	28 km
9. Sapeza - Musele - Satshamba	49 km
10. Sapeza - Tenge - Mwene Jimba	33 km
11. Nasoni - Kafakumba	33 km
12. Muyeye - Musele - Sakapele - Lubanda - Tshimba- langa	138 km
13. Kahundu - Kazengwe - Malumona	55 km
14. Dilolo - Ndumba - Bumbu	50 km
15. Katoka - Tshingwele - Katende - Luashi	107 km
16. Mukikipa - Makenge - Tshiswenge	65 km
17. Kasaji - Luashi - Matengo	69 km
18. Matuku - Namwana - Masoji	78 km
19. Kawayongo - Ndwa - Tshifunga	108 km
TOTAL	1,429 km

Annex 9

Equipment required by type of crew

The following four tables estimate the equipment needs of the grading, resurfacing, bridge and manual maintenance crews.

Equipment Summary

The equipment to be purchased for the normal maintenance work of these roads consists of:

1. Grading crew

- 3 graders
- 1 7 T truck
- 1 tractor-drawn trailer
- 1 light maintenance unit
- 1 trailer tank
- 1 4 wheel drive pick-up

2. Resurfacing crew

- 2 bulldozers
- 2 loaders on wheels
- 2 chain loaders
- 2 graders
- 2 earth rollers on tires
- 2 agricultural tractors plus trailers
- 8 12 T tip-wagons
- 4 water tanks (6,000 L)
- 2 motor pumps
- 1 diesel tank truck (6,000 L)
- 2 trailer tanks (6,000 L)
- 2 tank transporter trailers
- 2 lubricating stations
- 4 4-wheel drive pick ups

3 Bridge crews(2)

- 2 liaison 4-wheel pick up trucks
- 2 5 T trucks plus cranes
- 3 cement-mixers (350 L)
- 2 agricultural tractors plus trailers
- 3 motor pumps
- 4 7 Ton tip-wagons
- 6 power saws
- 2 compressors plus vibrating needles
- Small tools

4 Manual maintenance crew

- 2000 shovels
- 2000 machette "coupe-coupe type"
- 2000 machetes
- 1000 picks
- 50 bikes
- 20 motorcycles
- 350 wheelbarrows

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Table 1: Equipment Cost Estimate for the grading crew

NO.	Items	No. of machine	Nbre Cond.	Hr or Km/yr	Consumption Aver./H/Km.	Diesel	Lubricating oil	Machine Costs	
								U.P. (\$)	T.P. (\$)
1	Graders	3	3	2,100 H.	16 L/H.	33,600 L.	1,680 L	106,000	318,000
2	Truck 7 T	1	1	25,000 Km.	0,45L/Km	11,250 L	281 L	31,000	31,000
3	Trailer	1	-	-	-	-	-	15,152	15,152
4	Light maintenance Unit	1	-	-	-	-	-	15,152	15,152
5	Trailer tanks 6000L	1	-	-	-	-	-	10,900	10,900
6	Pick up 4-wheel drive	1	1	30,000	0,15L/km	4,500 L	113 L	16,500	16,500
TOTAL:		-	5	-	-	49,350 L	2,074 L	-	406,704 \$

OBSERVATIONS: a) Diesel costs : $49,350 \text{ L} \times 0,379 = 18,704 \text{ \$}$

b) Lubricating oil costs : $2,074 \text{ L} \times 2,10 = 4,355 \text{ \$}$

c) Personnel: 2 drivers;

3 machine operators;

1 mechanic;

2 watchmen;

20 labourers.

31X

Table 2: Equipment Cost Estimate for the Resurfacing year

NO.	Items	No. of machine	No. Driv.	H/Km. an	Consumption Aver./H/Km.	Diesel	Lubricating oil	Machine Costs	
								U.P. (\$)	T.P. (\$)
1	Bulldozers	2	2	1,800 H	23 L/H	41,400 L	2,070 L	116,000	232,000
2	Loaders on wheels	2	2	1,800 H	20 L/H	36,000 L	1,800 L	90,500	161,000
3	Chain loaders	2	2	1,800 H	23 L/H	41,400 L	2,070 L	105,500	211,000
4	Graders	2	2	1,400 H	16 L/H	22,400 L	1,120 L	106,000	212,000
5	Earth rollers on tires	2	2	600 H	12 L/H	7,200 L	360 L	54,500	109,000
6	Agricultural tractors + trailers	2	2	1,000 H	8 L/H	8,000 L	400 L	35,400	70,800
7.	Tip wagons 12 T	8	8	200,000 Km	0,45L/Km	90,000 L	2,250 L	60,500	484,000
8.	Water tanks 6000 T	2	-	-	-	-	-	10,900	21,800
9.	Motor pumps	2	-	-	-	-	-	1,600	3,200
10	Diesel Tank truck 6000 L	1	2	40,000 Km	0,35L/km	14,000 L	350 L	44,000	88,000
11	Trailer tanks	2	-	-	-	-	-	10,900	21,800
12	Tank transporter trailers	1	-	-	-	-	-	25,900	51,800
13	Trailers	4	-	-	-	-	-	15,152	60,608
14	Lubricating stations	2	-	-	-	-	-	30,303	60,606
15	Pick up 4-wheel drive	4	4	120,000 Km	0,15 L/km	18,000 L	450 L	16,500	66,000
16	4-wheel drive jeep	2	2	60,000 Km	0,15 L./Km	9,000 L	225 L	14,700	39,400

OBSERVATIONS: a) Diesel fuel costs :287,400 L x 0,379 = 108,925 \$
b) Lubricating oil costs : 11,095 L x 2,10 = 23,300 \$
c) Personnel: 16 drivers;
12 machine operators;
10 Mecarics;
3 Watchmen;
20 labourers

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Table 4: Equipment cost estimate for the manual maintenance crew

No.	Items	Number	Unit Price (\$)	Total Price (\$)
1.	Shovels	2,000	10	20,000
2.	Machettes (coupe-coupe type)	2,000	2	4,000
3.	Machettes	2,000	4	8,000
4.	Picks	1,000	15	15,000
5.	Bikes	50	245	12,250
6.	Motorbicycles	10	2,500	25,000
7.	Wheelbarrows	350	70	24,500
TOTAL				108,750 \$

Note: These costs will be largely in local currency.

Annex 10

The following table outlines the work performed by the Kolwezi Production Unit from 1980 to 1983. Note that this table includes two zones and an urban center that are not in the project area.

1. Production progress of the U. P. 652/Kolwezi from 1980-1983

No.	Description	1980	1981	1982	1983
1.	Opening of dirt roads, ditches and drainage trenches	68km	57km	50km	53km
2.	Grading	802km	654km	409km	750km
3.	Resurfacing	25km	75km	84km	152km
4.	Materials transported	2,131m ³	73,713m ³	38,749m ³	180,260m ³
5.	Drainage	31ml	153ml	157ml	268ml
6.	Asphalted roads (sealing of potholes)	none	none	none	9,013m ²
7.	Repair of bridges under 4 m long	none	none	none	none
8.	Repair of bridges over 4 m long	18ml	66ml	153ml	25ml
9.	Earthwork (widening + drainage)	23m ³	21,164m ³	630m ³	62,840m ³

Annex 11

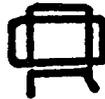
Material to be replaced in 1990

Item	Description	Quantity	Unit Price (\$)	Total Price
1	Truck 7 Tons	4	35,000	140,000
2	Dump Truck 12 Tns	6	60,000	360,000
3	Jeep 4X4	2	15,000	30,000
4	Pickup 4X4	6	16,500	99,000
TOTAL				629,000

34X

REPUBLIQUE DU ZAIRE
CARTE ROUTIERE DE LA SOUS-REGION
DE
LUALABA

DIRECTION REGIONALE



LUBUMBASHI

ECHELLE: 1 / 1000000

LEGENDE

	RN- ROUTES NATIONALES
	RR1- REGIONALES PRIORITAIRES
	RR2- REGIONALES SECONDAIRES
	RDA- DE DESSERTE AGRICOLE
	PONTS EN MAUVAIS ETAT
	BACS EN BON ETAT
	BACS EN MAUVAIS ETAT

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