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EVALUATION OF THE
REGIONAL TRANSPORT AND STORAGE DEVELOPMENT PROJECT
(KAFUE - CHIRUNDU ROAD)
(690-0209.2)

ZAMBIA

NOVEMBER 1987

Prepared by:

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TABLE OF CONTENTS

	Page
I. PROJECT EVALUATION SUMMARY.....	1
II. LIST OF ACRONYMS.....	2
III. EXECUTIVE SUMMARY.....	3
IV. PURPOSE OF EVALUATION.....	7
A. Rationale.....	7
B. Objectives.....	7
C. Methodology.....	7
D. Team Members.....	7
V. KEY ASPECTS OF THE PROJECT.....	8
A. Goal/Purpose.....	8
B. Background on Phase I.....	9
C. Background on Phase II.....	9
D. Two Key Issues: Road Maintenance & Project Management.....	11
VI. PROGRESS TOWARD OBJECTIVES.....	13
A. Status of Project Implementation.....	13
B. Progress in Completing Road Works.....	15
C. Projections for Activities Remaining.....	16
VII. CONCLUSIONS AND RECOMMENDATIONS.....	17
A. Conclusions.....	17
B. Recommendations.....	20
VIII. LESSONS LEARNED, THOUGHTS FOR THE FUTURE.....	22
A. Phase I.....	22
B. Phase II, Part A.....	22
C. Phase II, Part B.....	23
ANNEXES	
A. Maps of the Kafue - Chirundu Road	
B. Team Work-Plan for the Evaluation	
C. Project Inspection Report	
D. Project Chronology	
E. List of Key References	
F. List of Persons Interviewed	
G. Whyte Contract-Calculation of Financial Costs	

PROJECT EVALUATION SUMMARY (PES) - PART I

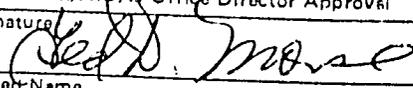
Report Symbol U-447

1. PROJECT TITLE Regional Transport and Storage Development, Phase II, Kafue-Chirundu Road			2. PROJECT NUMBER 690-0209.02	3. MISSION/AID/W OFFICE USAID/Zambia
4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) <u>611-88-1</u> <input type="checkbox"/> REGULAR EVALUATION <input checked="" type="checkbox"/> SPECIAL EVALUATION				
5. KEY PROJECT IMPLEMENTATION DATES A. First PRO-AG or Equivalent FY <u>81</u> B. Final Obligation Expected FY <u>82</u> C. Final Input Delivery FY <u>89</u>	6. ESTIMATED PROJECT FUNDING A. Total \$ <u>17,700,000</u> B. U.S. \$ <u>13,100,000</u>	7. PERIOD COVERED BY EVALUATION From (month/yr.) <u>September 81</u> To (month/yr.) <u>December 1987</u> Date of Evaluation Review <u>November 1987</u>		

B. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., program, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Clarify authorities of Engineer's Representative.	AID:T. Morse	12/15/87
2. Prepare Program of Works by Contractor for GRZ.	GRZ:T. Ngoma	12/15/87
3. Prepare schedule for monthly site meetings.	GRZ:T. Ngoma	12/15/87
4. Encourage Director of Roads to attend site meetings.	TAMS:C. Adams	2/1/88
5. Prepare schedule for bi-weekly site visits by USAID Project Officer.	GRZ:T. Ngoma	12/15/87
6. Prepare schedule for monthly site visits by SARP Engineering Officer.	AID:T. Morse	1/1/88
7. Refine project reporting by TAMS.	AID:J. Harmon	1/15/88
8. Decide whether to apply a second seal to the Nello Teer section.	SARP:D. Light	2/1/88
9. Develop baseline and follow-up data collection system.	AID:J. Harmon	2/1/88
10. Update analysis of economic activity along road.	GRZ:T. Ngoma	3/1/88
11. Update plan for maintenance of road.	AID:J. Harmon	2/15/88
12. Obtain information on status of dump trucks.	SARP:B. Mutiti	2/15/88
13. Develop S.O.W.'s for remaining evaluations.	TAMS:C. Adams	2/15/88
14. Resolve claims from first contract under Phase II.	GRZ:T. Ngoma	4/15/88
	GRZ:T. Ngoma	4/15/88
	AID:J. Harmon	8/1/88
	SARP:D. Light	7/1/88
	SARP:D. Light	
	GRZ	

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS <input type="checkbox"/> Project Paper <input type="checkbox"/> Implementation Plan, e.g., CPI Network <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Financial Plan <input type="checkbox"/> PIO/T <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Logical Framework <input type="checkbox"/> PIO/C <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Project Agreement <input type="checkbox"/> PIO/P _____	10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT A. <input checked="" type="checkbox"/> Continue Project Without Change B. <input type="checkbox"/> Change Project Design and/or <input type="checkbox"/> Change Implementation Plan C. <input type="checkbox"/> Discontinue Project
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11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles) Alan Van Egmond, Project Development Officer, AFR/PD Fred Guymont, Engineer, REDSO/ESA James Harmon, Project Officer, USAID/Zambia	12. Mission/AID/W Office Director Approval Signature:  Typed Name: <u>Ted D. Morse, Director</u> Date: <u>Dec. 2, 1987</u>
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II. LIST OF ACRONYMS

A.I.D	Agency for International Development
AID/W	A.I.D. Washington
CBD	Commerce Business Daily
CP	Condition Precedent
ESF	Economic Support Fund
FAR	Fixed Amount Reimbursement Method
GRZ	Government of the Republic of Zambia
KMS	Kilometers
LOP	Life of Project
PACD	Project Assistance Completion Date
PID	Project Identification Document
PP	Project Paper
PROAG	Project Agreement
REDSO/ESA	AID's Regional Economic Development Support Office/East and Southern Africa (located in Nairobi, Kenya)
RTSD	Regional Transport and Storage Development Project
SADCC	Southern Africa Development Coordination Conference
SARP	Southern Africa Regional Program Office (located in Harare, Zimbabwe)
S.O.W.	Scope of Work
TAMS	Tippetts-Abbett-McCarthy & Stratton
ZIM-ZAM ROAD	Road from Kafue, Zambia through Chirundu, Zambia

III. EXECUTIVE SUMMARY

A. Introduction

The purpose of this evaluation is to help the Zambian Government (GRZ) and A.I.D. obtain the information and feedback they need to complete the project successfully. The project seeks to enhance the economic development of Southern Africa by facilitating the movement of key commodities between Zambia and Zimbabwe and with neighbouring countries. This will be achieved by rehabilitating seriously deteriorated sections along 82 kms of road from Kafue, Zambia to Chirundu on the Zambia/Zimbabwe border. (See maps in Annex A.) The road is the principal transport artery between the two countries, with important onward trade links to other countries in Southern Africa.

A.I.D. designed the Regional Transport and Storage Development Project (RTSD) in 1981 in response to a request by the Southern Africa Development Coordination Conference (SADCC). The RTSD Project was divided into separate components for road rehabilitation on each side of the border. In the Zambian portion (which is the principal subject of this evaluation), the project was further divided into two phases. Phase I was funded under an ESF grant. It focused on urgent resealing of about 33 kms of the Kafue-Chirundu road to stave off further deterioration. The work was performed under a host country contract by an American firm, Nello Teer Co., at a cost of \$956,000. The work was completed in May 1982.

Phase II involves the complete reconstruction of about 30 kms of road, and pavement restrengthening along an additional 18 kms. Phase II was authorized in September 1981 as a \$13.1 million concessional ESF loan. A host country contracting method was used. The first contractor, (Whyte & Co.) was hired in 1983 to do the road work. The firm eventually proved incapable of carrying out the job and in early 1986 was terminated by the GRZ for cause. A second contractor (Lendor & Burton) was hired in January 1987. The present schedule calls for the road work to be completed by October 1988.

This is the first evaluation carried out during Phase II. It provides a guide for continued implementation of the project until the road construction is completed. The evaluation team was composed of an AID/W project development officer, an engineer from REDSO/ESA, and a USAID/Zambia project officer. The team relied upon a review of key project documents and reports, personal interviews, and field site visits.

B. Conclusions and Recommendations

The project goal and purpose remain valid and should not be changed. The project's inputs are more than sufficient to achieve the output required. Barring any major unforeseen problems, the project will be successfully completed by October 1988. Work on an 11 km section on the escarpment should be finished by December 15, 1987 before the rains start. The quality of the contractor's work appears good. The Contractor should submit a program of works (i.e., implementation schedule) for GRZ approval shortly. The quality of the supervision carried out by the engineer's representative (TAMS) also appears good. There are likely to be more than adequate funds (\$1 million contingency plus an expected contract cost savings of at least K4.5 million or \$562,500) to complete the project successfully. The GRZ has exceeded its financial commitments to the project, using local currency from budget resources, counterpart funds, and contributions in kind.

The resealing during Phase I has held up well, and represents an excellent cost saving achieved by A.I.D. through timely and effective action. Construction work completed by the first contractor under Phase II has also stood up well.

It remains questionable given existing plans, whether the road will be maintained adequately after construction is completed. The GRZ should prepare a revised maintenance plan. It should also ascertain the whereabouts of maintenance equipment financed during the early stages of Phase II for exclusive use on the road. Follow-on support by the GRZ from excess project funds may be required to ensure that adequate maintenance of the road occurs. Heavy overstressing of the road due to excessive axle loads is likely to be a continuing problem for the GRZ. The plan should describe how this will be dealt with, and whether project funds will be needed to install items like scales.

Project management by the GRZ and A.I.D. has improved greatly from an ineffectual period during the initial stages of Phase II. The GRZ Roads Department should clarify TAMS' authority as the engineer's representative immediately. The GRZ Director of Roads' needs to exert more leadership and day to day involvement in project management by convening monthly site meetings, and helping to resolve questions before they impede project implementation. A.I.D. is now providing timely and prudent oversight of the project through the USAID/Zambia project officer. He is assisted by the SARP/Harare Regional Engineering Officer, but on a somewhat irregular basis. Both should make regular visits to the project site and prepare written reports on their findings.

Thus far, an effective data collection system has not been instituted to measure progress in achieving the project purpose and monitor changed usage of the road. A program for gathering baseline and follow-up data should be developed as soon as possible.

Claims stemming from the first contractor's work remain unresolved. These claims may have to be settled before the project can officially be closed.

The GRZ continues to show strong interest in successful completion of the project. While a positive spirit of cooperation exists among the contracting parties, relations will remain fragile until the Director of Roads becomes more personally involved in project management.

In sum, the chances are good that by October 1988, Zambia will have a road between Kafue and Chrirundu of which the contractor, the GRZ, and A.I.D. can be proud.

C. Lessons Learned

The major lesson of Phase I (which was not evaluated by this team) is how much savings can be achieved through adequate and timely maintenance of roads. This should be anticipated by the GRZ as it prepares maintenance programs for new or rehabilitated roads. With some foresight and effort by the GRZ and timely infusions of aid (as necessary) at strategic points, millions of dollars were saved through the resealing work under Phase I. This lesson can be applied by a GRZ decision to use excess project funds to preserve work carried out under Phase I, and perhaps to devote some project funds to ensure the road is adequately maintained.

Phase II offers several lessons, many of which have been adopted during the latter stages of the project.

It is a violation of A.I.D. regulations (HB11, Chap.2.4) to issue invitations for bids on construction contracts before proper technical specifications, drawings, and other key documents have been prepared. The failure to observe these regulations led to problems from the onset of Phase II.

At the PP stage, there is no substitute for designing and budgeting for adequate assessments and evaluations throughout a project's life, as a management and project implementation tool. No steps were taken by the GRZ or A.I.D. to rectify this gap during project implementation until the present time. Had a rigorous formal evaluation been conducted before January 1985 when the contract had lapsed well behind schedule, it is likely the team would have concluded that Whyte & Co. was not capable of performing the work required. An analysis of the budget at this time also would have revealed that adequate funds were available to successfully complete the project under a new contractor.

Experience obtained thus far under the second stage of Phase II (Lendor and Burton) shows what can be achieved by having a good contractor with more effective management by the GRZ and A.I.D. The realities and complexities of carrying out a road construction project, regardless of whether it is a host country contract, requires timely and effective oversight by A.I.D. representatives. During the early life of the project, the GRZ and A.I.D. did not act in a timely fashion on information supplied by the GRZ's representative on site (TAMS) that the contractor was not capable of performing the work required. The problem was compounded by A.I.D.'s decision in early 1985 to abolish the engineer position at USAID/Zambia and shift it to the regional A.I.D. Office in Harare, Zimbabwe (SARP/Harare). This was contrary to what was stated in the PP, and was an error of judgement on A.I.D.'s part. A formal understanding delineating the responsibilities of USAID/Zambia and SARP/Harare for project management occurred in May 1987. It should have happened much earlier, i.e., in 1985 when the engineer's position was transferred.

IV. PURPOSE OF THE EVALUATION

A. Rationale

This evaluation is intended to help those in the GRZ and A.I.D. involved with project management obtain information about project performance they need for effective and informed decision-making. It provides a guide for continued implementation of the project until the road construction is completed. This approach is warranted in view of the many delays and difficult problems faced in implementing the project. Thus, our aim is to help bring the project to a successful completion.

B. Objectives

The main purpose of this evaluation is to provide a mid-point review of the project. We will determine whether there is adequate management, funding and contract time to complete construction and engineering services according to specifications in the PP. We will also identify lessons learned from past project activities, with possible application of these lessons to the remaining life of project (LOP).

Thus, we seek to:

1. Find solutions to major or persistent problems affecting implementation;
2. Review actual versus planned progress toward the outputs, purpose, and goal of the project;
3. Review progress to date as required by phased or performance disbursement plans for decisions about continued funding or design modifications;
4. Improve the efficiency or reduce the costs of project activities;
5. Review assumptions made during the project design and determine their continued validity; and,
6. Anticipate factors which may impact on successful completion of the project.

C. Methodology

The team's overriding concerns are whether:

1. Construction and engineering services for the project can be completed at a professional level satisfactory to A.I.D. and the GRZ by October 1988 with currently available funds;
2. The project is likely to attain the purpose set forth in the PP; and,
3. The project is likely to be maintained properly by the GRZ, thus protecting the GRZ's and A.I.D.'s investment.

The team's work-plan is included in Annex B. Given the time available, the team relied upon a review of key project documents and reports (Annex E), personal interviews (Annex F), and field site visits. The team explored key project elements to:

1. Form impressions about the extent to which the current implementation of the project is proceeding at an acceptable pace and achieving outputs called for in the PP;
2. Assess problems which may be impeding attainment of key project objectives; and,
3. Suggest approaches which may yield improved project results.

Early experiences with the project will be examined only as they relate to current concerns about implementation. The tasks of conducting impact assessments and cataloging project effects should be included in the scope of work (SOW) for a final evaluation.

D. Team Members

The team was led by an AID/W project development officer, who drafted the main body of the report. An engineer from REDSO/ESA conducted a technical assessment of the road works, contributed to the team's findings, and prepared the construction inspection report (Annex C). The Project officer from USAID/Zambia participated in all site visits, contributed background on the history and sequence of key events in project implementation, and prepared the project chronology and calculation of costs in Annexes D and G. A Regional Engineering Officer from SARP/Harare was present for two days to respond to the team's questions. Finally, the team was joined by the GRZ's Director of Roads and one of his staff during a site visit. A GRZ representative from the Roads Department was invited to serve on the team. Unfortunately, because of the press of other business, the invitation was declined.

V. KEY ASPECTS OF THE PROJECT

A. Goal/Purpose

The project's goal is to enhance economic development in Southern Africa through improvement in the region's transport and communication network. The project's purpose is to advance this goal by facilitating the movement of food grains and commercial goods between Zambia and Zimbabwe. This will be achieved by rehabilitating seriously deteriorated sections of the KaSue-Chirundu road (Zim-Zam Road), the project's sole output.

B. Background on Phase I

The road extends roughly 82 kms from Kafue, Zambia to the border crossing with Zimbabwe at Chirundu (see maps in Annex A). It is the principal transport artery between the two countries, with important onward trade links to other countries in Southern Africa. Also, the road serves as the main corridor joining the two capitals of Lusaka, Zambia and Harare, Zimbabwe.

The road fell into disuse for about seven years (1973 through early 1980), due to the war in "Southern Rhodesia." The road re-opened after an independent Zimbabwe emerged in 1980. It became a very important point for the movement of key commodities into Zambia. Other transport routes are roughly twice as long and more costly. The disuse, lack of maintenance, and subsequent rapid increase in heavy vehicular traffic contributed to the road's swift deterioration.

A.I.D. designed the Regional Transport and Storage Development Project (RTSD) in response to a request by SADCC states (Southern Africa Development Coordination Conference) for aid in repairing and strengthening regional transport links. Rehabilitation of the Zim-Zam Road was given the highest priority by the Transport Commission of SADCC.

The RTSD project was divided into separate components for road rehabilitation on each side of the border. For the Zambia portion, the road rehabilitation project was further divided into two phases. The first phase focused on urgent resealing of about 33 kms, which if conducted immediately would stave off further deterioration. A.I.D. authorized Phase I as an ESF grant of \$990,000 in early June 1981. The project agreement (proag) was signed shortly thereafter. In September 1981, a host country contract was awarded to an American firm, Nello Teer, Co. The work was completed after some delay in May 1982.

For the Zimbabwe portion, a PP was prepared in June 1982 to rehabilitate 40 kms of road from Chirundu to Makuti. A.I.D. provided \$4.2 million in concessional ESF loan funds, using the FAR contracting method. A Zimbabwean contractor completed the work as scheduled the following year.

C. Background on Phase II

Phase II involves the complete reconstruction of 30kms of road. An additional 18 kms are scheduled for pavement restrengthening. Phase II was authorized in September 1981 using \$13.1 million in concessional ESF loan funds. The proag was signed later the same month. Zambia was expected to contribute the equivalent of \$4.6 million in local currency.

This amounted to K4.14 million at the exchange rate which was governing under the Proag (\$1 = K0.9). The PP estimated that the work under Phase II would largely be completed by the end of the 1983 dry season (i.e., December). The original PACD was December 1984.

1. Part A (Whyle & Co.)

On February 28, 1983 a Zambian based firm, L.J. Whyle & Co. Ltd., was awarded a host country contract to carry out Phase II. The process of selecting a contractor was flawed in major respects and violated A.I.D. Regulations (HB 11, Ch.2.4). The GRZ had not prepared road design drawings before invitations for bids were issued. A thorough evaluation of Whyle's background at the time of awards should have revealed that the company had recently been purchased by an entirely new management team. Likewise, a survey of the company's recent performance would have revealed that unsatisfactory performance, or a lack of relevant experience had been demonstrated by Whyle & Co. on other road construction projects in Zambia.

The award was controversial and sparked protests by Nello Teer, one of the other bidders. Nello Teer claimed that Whyle was not a registered firm (more than 50% Zambian-owned), and could not perform the work required. Congressional pressure was also exerted on A.I.D. in favor of Nello Teer's claims. A.I.D. and the GRZ investigated, and then discounted Nello Teer's allegations.

Whyle & Co. was then very slow to mobilize. Road work began in June 1983. Construction work subsequently undertaken suffered a continuing series of false starts and delays.

In January 1985, the USAID/Zambia representative convened a major meeting of regional A.I.D. officers to review the status of project implementation. By this time, work on the road had virtually ground to a halt. However, with the GRZ's concurrence, it was decided that Whyle's contract should be extended. (The contract was scheduled to expire in April 1985.) A third amendment was prepared, calling upon the contractor to agree to a plan for timely completion of the road works. Also, the PACD was extended 18 months to March 1986.

Apparently, USAID/Zambia was swayed in favor of a contract extension for three reasons. First, it was felt that Whyle & Co. could do the work. Second, it was feared that there were not sufficient funds to hire a new contractor. Finally, there was a reluctance to incur further delays by seeking a new contractor. Unfortunately, this decision was not based on a rigorous or thorough technical evaluation of the project to date.

Whyte & Co. resisted agreeing to Amendment No. 3 because they felt they could not abide by the schedule. However, Whyte finally signed a contract extension in August 1985, and consented to the schedule of work called for in Amendment No. 3. Up to this time, work on the road had still not resumed. The force of Amendment No. 3 was then negated by an illegal side letter signed by the GRZ representative and Whyte & Co. later that same day. In effect, the letter released Whyte & Co. from any obligation to abide by the provisions of Amendment No. 3. USAID/Zambia was not aware of this letter until March 1986.

Whyte totally suspended road work on August 2, 1985 for alleged non-payment of two certificates. Whyte never returned to work thereafter.

In October 1985, Whyte & Co. was ordered by the GRZ to recommence work. However, Whyte refused to abide by the order because of financial claims it had lodged against the government (although the two certificates in question had been paid by that time). On February 5, 1986, Whyte & Co. was given notice by the GRZ to vacate the construction site, and the contract was terminated for cause. Whyte complied, but removed all the construction equipment as well. Claims by Whyte against the GRZ, and counter-claims by the GRZ ensued. These claims are still pending with the GRZ's Ministry of Legal Affairs.

On March 24, 1986, USAID/Zambia formally protested the issuance of a side letter to Whyte by the GRZ. The GRZ was asked to provide assurances that the Whyte termination would remain in force and the stipulations of the loan agreement would be adhered to. These assurances were provided on June 6, 1986.

2. Part B (Lendor and Burton)

In May 1986, A.I.D./W extended the PACD to June 1989. The road rehabilitation contract went out for re-tender in late June 1986. In January 1987 a contract was awarded to another Zambian-based firm, Lendor and Burton. Following the award, there was a three month gap due to unrelated claims by the contractor against the GRZ, and problems in obtaining necessary import permits. These problems were resolved, and road work began in May 1987.

D. Two Key Issues: Road Maintenance and Project Management

Much of the PP design work for Phase II had occurred at the time implementation of Phase I began. However, issues relating to road maintenance and project management appear throughout both PP's.

1. Road Maintenance

Under Phase I, road maintenance concerns were to be addressed through the implementation of Phase II. The PP and Proag for Phase II included a CP calling for the GRZ to furnish a maintenance plan satisfactory to A.I.D. The PP and Proag required the GRZ to covenant that upon completion and acceptance of each section of the road, it would establish and carry out a regular maintenance program for that section. A further covenant provided that two trucks financed under Phase II for maintenance would be used solely on the road, and would be adequately maintained and utilized for the purpose of such maintenance. These trucks were procured and provided to the GRZ early in the project. It is unclear where these trucks were deployed.

The PP suggested that the GRZ utilize a system of user fees to help underwrite the costs of maintaining the road, and establish some weigh stations with scales expected from the Dutch Government. It was also hoped that the World Bank's Third Highway Project Loan could be helpful in upgrading the GRZ's road maintenance capacity.

2. Project Management

Under Phase I, project management concerns were addressed in the PP by stipulating that the GRZ Roads Department would supervise the contractor, with frequent monitoring by REDSO/ESA engineers. This appeared to work adequately.

Under Phase II, which entailed much more extensive work, the PP and Proag provided that project implementation would occur under the overall supervision of a GRZ Roads Department engineer, supplemented by an engineering supervision consultant, with limited authority to act on the GRZ engineer's behalf. The American firm of TAMS (Tippetts-Abbett-McCarthy & Stratton) was contracted to provide this service during the initial stage of Phase II (Whyte). Subsequently, TAMS' contract was extended to cover the second stage of Phase II (Lendor and Burton).

The PP stipulated that an A.I.D. direct-hire engineer be assigned to the USAID/Zambia Mission, principally for managing the road rehabilitation project. USAID/Zambia added a direct-hire engineer to its staff as the project officer who arrived in early 1982. This person continued to serve with USAID/Zambia until December 1984.

Early in 1985, the A.I.D. engineer's position was shifted to a regional office in Harare, Zimbabwe (SARP). This reflected poor judgment and was contrary to provisions in the PP. An engineer arrived at post in September 1985. From January 1985 through February 1986, project management was exercised informally by two direct-hire A.I.D. employees and one PSC who served consecutively as USAID/Zambia's Executive Officer. No formal delegation of responsibilities between USAID/Zambia and SARP/Harare for managing the project occurred during this period.

From March 1986 to the present, day to day project management has been exercised by USAID/Zambia's Commodity Management Officer, supported through periodic visits by the SARP Regional Engineer.

Unfortunately, therefore, from January 1985 to March 1986 the project was managed by individuals with no engineering background and heavily laden with other duties. With the shifting of the engineer's position to SARP, the project lost the active involvement of a direct-hire engineer provided for when the PP was approved. An informal relationship between USAID/Zambia and SARP/Harare evolved whereby the engineer made periodic visits as a technical adviser, and USAID/Zambia exercised project management responsibility. However, this was not officially spelled-out until May 19, 1987 through Harare cable number 2736, which delegated major management responsibilities for the project to USAID/Zambia.

VI. PROGRESS TOWARD OBJECTIVES

A. Status of Project Implementation

1. Phase I

It is fortunate that the GRZ and A.I.D. had the foresight in 1981 to proceed with resealing a portion of the road under Phase I. A final evaluation of Phase I prepared in July 1982 (referenced in Annex E) concluded that up to \$7 million in additional road reconstruction was saved through the timely resealing effort, which cost \$956,000. Nello Teer's work has stood the test of time. The resealed sections remain quite serviceable.

The "streaking" appearance of the road noted in the final evaluation of Phase I was caused in part by traffic having to be let back on the road shortly after it was resealed (there was not enough time or funding to prepare diversions). Also it is likely that at times bitumen spraying equipment did not operate properly. The "streaking", however, did not effect the durability of the resealed sections.

2. Phase II, Part A

Whyte & Co. completed roughly 34% of the permanent works. During this period, \$4,805,004 (37%) of the \$13.1 million loan was expended for construction and engineering supervision services. Of this, \$3.4 million or 25.9% of the loan represents the total amount expended on the Whyte contract.

The financial cost incurred as a result of the aborted contract is roughly \$1.57 million (lost mobilization and demobilization expenses including equipment seized by Whyte), plus the cost of extending TAMS' supervision (\$1,433,210). (See Annex G for a breakdown of these calculations.) However, it should be noted that progressive devaluations of the kwacha occurred as implementation of the project was delayed. A.I.D.'s Regional Financial Management Center (RFMC) was able to stretch loan funds as kwacha could be purchased more cheaply. Ultimately, this had a salutary impact on the project's financial status.

The engineering inspection and supervisory services performed by TAMS under the initial stage of Phase II were adequate. TAMS' reports provided an accurate portrayal of Whyte & Co.'s unsatisfactory performance. Also, TAMS maintained acceptable professional standards in requiring Whyte & Co. to re-do a substantial portion of their initial work.

3. Phase II, Part B

During the period between the termination of Whyte (February 1986) and the hiring of Lendor and Burton (January 1987), TAMS through the efforts of the resident engineer who remained in-country, provided a major service by preparing the road drawings omitted under the Whyte contract. Since TAMS was thoroughly familiar with the road, these drawings could be more accurate than otherwise possible.

Once the Whyte contract was terminated, the selection of a new construction contractor proceeded in a timely fashion according to the regulations in A.I.D. Handbook 11, Chapter 2. A waiver was prepared to allow Zambian based contractors Code 935 ownership. The tenderers had access to cross section designs and typical culvert bedding details, as well as typical headwall and apron details on the culverts. (These items were prepared by TAMS between the two contracts.) Technical specifications were Standard GRZ Specifications for Roads and Bridges, with some changes based on site conditions.

In mid-1986, prequalification notices were placed in the CBD, and in newspapers in Zambia and the region. By August, a prequalification list of contractors was developed by the GRZ Department of Roads, and reviewed by USAID/Zambia with some minor changes. The prequalified contractors were invited to a pre-bid conference and site visit in October 1986.

Three tenders were received in November 1986. The contract was awarded to Lendor and Burton on January 22, 1987. The contract document was a joint effort of TAMS, GRZ, REDSO/ESA, and USAID/Zambia.

B. Progress in Completing Road Works

Lendor and Burton has been working for seven months. However, the contractor has not yet submitted a program of works to the GRZ for approval. Based on TAMS' reporting and our site visits, the rate, costs and quality of effort performed thus far appears good. Most of the work passes the first inspection (see Annex C). In some areas along the escarpment, the contractor has taken steps along the more dangerous curves to make the road safer.

About 13% of the work called for under the Lendor and Burton contract has been completed. The contractor appears ahead of schedule on the earthworks, base course stabilization and pipe culvert excavation and pipe laying. The contractor is somewhat behind schedule on the sub-base work, pot hole repairs, placement of chips, box culvert construction, and the head walls, wing walls and aprons on the culverts.

The road construction is in accordance with Zambian Standard Specifications for Roads and Bridges. These specifications compare favorably or even exceed some international standards. For instance on reconstructed areas, the existing sub base and base course are being converted to sub grade. In other words, the newly reconstructed sections of road have the benefit of an additional base course. This will assure a considerably longer life to the pavement (20 years as compared to 15 years).

Also, the concrete standards are internationally accepted, and compliance is closely monitored by TAMS through test cubes, slump tests and strict adherence to specified water-cement ratio. Further, stone chippings are a type of granite which are well within the specifications for soundness, flakiness, elongation and grading. TAMS ensures that the stones are sufficiently clean to meet the specifications either by washing or re-screening, this represents only an occasional minor delay and has not been a problem. Repairs to existing pavement are only made after a detailed inspection of the area by TAMS engineers. Instructions are then issued to the contractor as to the extent of each repair required. Some pothole repairs require the removal and replacement of existing failed base course and sub base, other repairs require thorough cleaning, filling and compacting with a cold bituminous premix. In situ density testing is conducted by TAMS on all repairs. All materials used for repairs are closely monitored by TAMS during mixing and placement.

TAMS has maintained a high level of performance on the Lendor and Burton portion of Phase II. The size, composition and qualifications of the TAMS staff are fully adequate.

C. Projections for Activities Remaining

Lendor and Burton is confident that the road works can be completed on schedule, i.e., by October 1988. They expect to complete the project at least two months earlier, by August 1988. At this point, barring any major unforeseen problems, the GRZ, TAMS and USAID engineers expect that the project will be completed by October 1988.

It is crucial that an 11 km section on the escarpment be finished before the expected rains in December 1987. (See Annex A, segments D-E of the map.) Truck travel on the diversion will be impossible once heavy rains occur, and traffic will have to be shifted back to the main road. Lendor and Burton has promised to have this section completed by December 15, 1987. Technically, this appears feasible assuming the rains do not occur early. The contractor is making an intensive effort to meet this deadline, and has moved to a seven day work week. Based on TAMS reporting and the site visits, the quality of the contractor's work appears good, i.e., almost all of the work passes inspection without major re-working.

At this point there appear to be more than adequate funds to complete the project successfully. TAMS estimates that the cost of completing the road works detailed in the contract will be as much as K6.5 million below budget, due to cost savings on certain materials and work coming in under budget.

The GRZ is exceeding its commitment to provide the equivalent of \$4.6 million to the project (K4.14 million at the rate governing at the time of the Proag). The GRZ's contribution thus far totals K9.6 million, more than double the amount prescribed. About K2.6 million in cash and in-kind contributions were furnished for the Whyte portion of Phase II. K2.4 million was then furnished from counterpart funds for meeting increased costs of supplies on the Lendor and Burton contract. Also, the GRZ Roads Department is donating high-quality chips from its nearby quarry through a crusher provided by the Finnish aid program. (Originally it was expected that the chips would have to be procured.) This has resulted in a savings of about K4.6 million.

At the request of the GRZ Roads Department, TAMS has prepared a proposal to apply unused funds in the project to add a second seal on the Nello Teer sections. Currently these sections have a single seal. It is believed that a second seal would extend the longevity of the Nello Teer sections, which are nearing the end of their 5 - 7 year design life. The estimated cost of a second seal is K2.9 million.

VII. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

1. Project Goal/Purpose. The project goal, purpose, output and inputs provided in the PP remain valid and should not be changed. Intuitively, it would appear that once the road works are completed, the project will attain its purpose. This will need to be documented, however, in a final evaluation.
2. Completion of Works. The road can be completed on or ahead of schedule (by October 1988), assuming the normal December-April rains are not unusually heavy or prolonged. It is expected that the crucial 11 km stretch on the escarpment, which must be completed before the rains, will be finished on time, by December 15, 1987. The quality of work performed by the contractor is good, and meets standard GRZ Roads Department specifications. The work will likely be completed under budget, by as much as K6.5 million (\$812,500). This does not include \$1 million which is being held in reserve for contingencies.

The quality of resealing on the Nello Teer sections, and the construction on the Whyte sections are generally good, and have stood up well. Only minor repairs and shoulder/culvert work will be required on most Nello Teer and Whyte sections.

3. Maintenance. It remains questionable, given current planning, whether the project will be maintained adequately. The contract with Lendor and Burton includes a one year maintenance program following acceptance of the work, which may occur in sections. The GRZ Roads Department was provided three dump trucks during the early stages of Phase II to be devoted exclusively to maintaining the Zim-Zam Road. The whereabouts of these trucks is unknown. The weighing scales to deter axle overloading mentioned in the PP have not been installed. It will be very difficult to avoid heavy overloading by trucks even if scales were installed and kept operational, due to bribery, low fines and a need by truckers to overload to cover their hauling costs.

4. Project Management

- a. GRZ. The contractor is being closely supervised by TAMS. TAMS is fully staffed to perform the services expected of it. However, the construction contractor has yet to receive a letter from the Roads Department outlining TAMS' authority as the engineer's representative. This was raised at the first site meeting on June 4, 1987. The construction contractor is insisting that TAMS' authorities be spelled out. He is right to do so, at least with respect to TAMS' authority to approve or disapprove work. In June 1987, TAMS prepared a letter for GRZ approval, but due to bureaucratic delays, it has not been acted upon.

The GRZ Director of Roads plays a crucial role as the Engineer. He is really the only person in the GRZ Ministry of Works and Supply who has the authority, along with the technical qualifications to make a decision on behalf of the Roads Department. His leadership is needed in convening monthly site meetings, and helping to resolve questions before they become major issues impeding project implementation. Unfortunately, his leadership has been lacking at key points, due to absences and an over-reliance on staff to keep on top of important project matters.

- b. A.I.D. It can be argued that A.I.D.'s management responsibilities on the project are limited. The project is a loan, involving two host country contracts. An engineer's representative (funded through the loan) is stationed at the site, supervising construction work. However, a proactive approach by A.I.D. is required in view of past implementation difficulties, the complexities of constructing roads that last, and the high visibility of the project.

Some of the earlier implementation problems can be attributed to A.I.D.'s failure to exercise timely and prudent oversight. To a large extent this situation was alleviated beginning in March 1986 by USAID/Zambia appointing a project officer who could devote adequate time to the project. He has provided continuity of management and nurtured a spirit of cooperation in getting the project successfully completed. Visits by the Regional Engineering Officer from Harare have not been frequent or regular enough to provide the necessary technical oversight by A.I.D.

As mentioned earlier, the division of responsibilities between USAID/Zambia and SARP/Harare for project management was formally delineated in May 1987. It should have been done in early 1985 when the A.I.D. engineer position was shifted to SARP/Harare.

5. Monitoring and Reporting. TAMS' monitoring of the progress of the road construction is good. However, the monthly reports submitted by TAMS could be strengthened by adding more quantitative data, particularly on the progress of works achieved to date.

On-site monitoring of the project by the USAID/Zambia Project Officer and SARP/Harare Engineer should be regularized and increased in frequency. Reporting by both individuals needs to be recorded and shared with Mission management.

6. Baseline and Follow-up Data Collection Designs. The PP does not provide an adequate project monitoring, data collection, and evaluation system. Thus, there has been no baseline or follow-up data collection instituted to date focusing on traffic counts, customs documentation, agricultural/trade monitoring reports and the like instituted at regular intervals over time. Unless such a system is prepared, it will be very difficult to verify the achievement of project purpose or goal other than through ex post anecdotal information.
7. Claims and Issues to be Resolved. Lendor and Burton's request to cover an increase in the price of concrete pipe appears valid (see Annex C). This issue should be resolved as soon as possible. Claims stemming from the Whyte contract remain unresolved. Hopefully, these claims can be settled before the project is officially closed. However, according to USAID/Zambia this is unlikely to have any adverse impact on the project's budget since the GRZ's counter-claims against Whyte greatly exceed Whyte's claims.
8. Counterpart Contributions. The GRZ is exceeding its counterpart commitments as stated in the PP.
9. Collaboration Among the Contracting Parties. The GRZ continues to show strong interest in successful completion of the project. Relations between the GRZ, USAID/Zambia and the contractor had deteriorated as problems with the Whyte contract grew more intense, and a side letter to Amendment No. 3 was illegally issued in 1985 by the GRZ. While a positive spirit now exists among the contracting parties, relations will remain fragile until the GRZ Director of Roads becomes more directly involved in project management.

B. Recommendations

1. Road Works.

- a. The contractor should submit a program of works to the GRZ for approval soon.
- b. The GRZ should give serious consideration to applying a second seal to the Nello Teer section. A decision should be made by March 1988 so the contractor has sufficient advance lead time. Cost savings in applying the second seal are likely, since the contractor is already mobilized, and will have staff and equipment deployed to perform minor repairs in the Nello Teer and Whyte sections.

2. Project Management

- a. The USAID/Zambia Mission Director should encourage the GRZ Director of Roads to act urgently upon TAMS' and the contractor's request for a letter outlining TAMS' authority as the engineer's representative.
- b. Monthly meetings including the contractor, TAMS, USAID and the Department of Roads should be scheduled and held. It is vital that the Director of Roads chair these meetings. Every effort should be made to accommodate his schedule in setting up meetings, preferably at site, or in Lusaka, if necessary.
- c. USAID/Zambia should strongly encourage the Director of Roads to chair the monthly meetings, and encourage him to become more actively involved in management of this important project.

3. Monitoring and Reporting

- a. TAMS should be requested to include more quantitative data in their monthly reports, amplifying present documentation of work accomplished and funds expended.
- b. The USAID/Zambia project officer should monitor the project through at least bi-weekly visits to the project site. Short memos to the Mission Director should be prepared summarizing the status of project implementation.

- c. The SARP Regional Engineering Officer should adhere to a schedule of monthly visits to the project site, hopefully coordinating the trip with monthly site meetings. This should be achievable, since a second engineer has been added to the office. During each visit, the Engineering Officer should prepare a short memo to the USAID/Zambia Mission Director and Project Officer, reporting on key observations concerning work undertaken, unresolved problems, and suggestions for improving project implementation.

4. Baseline and Follow-Up Data Collection Design

- a. USAID/Zambia should encourage the GRZ to establish a system for gathering key baseline and follow-up data. References in Annex E on evaluation methodology provide some helpful pointers in this area.
- b. Also, USAID/Zambia should arrange for a transport economist to update the PP's analysis of economic activity along the road, and project beneficiaries.
- c. USAID/Zambia and the GRZ should undertake a limited evaluation of the project roughly five months after the road construction is completed. The purpose would be to assess how the road is holding up after the 1989 rains and help frame decisions that will need to be taken on road maintenance issues. A thorough final evaluation of the project should be conducted a few months after the PACD expires.

5. Maintenance

- a. USAID/Zambia should request that the GRZ Department of Roads, update the maintenance plan originally submitted to fulfill a CP. This plan should include an analysis of the merits of installing a system of weighing stations along the road to cope with truck overloading.
- b. USAID/Zambia should request from the GRZ Department of Roads either separately or as part of the overall plan, information on the disposition and availability of the 3 dump trucks, at least two of which are stipulated under the progag to be used exclusively on the Zim-Zam Road.
- c. USAID/Zambia should obtain information on the status of road maintenance programs supported by other donors. The Mission could determine whether the GRZ's maintenance plan should be supported on a multi-donor basis.

6. Claims and Issues

- a. The GRZ Ministry of Works and Supply should encourage the Ministry of Legal Affairs to take the necessary steps to achieve final resolution of outstanding claims stemming from the Whyte contract. USAID/Zambia should continually monitor the situation.
- b. Lendor and Burton's request concerning increases in the price of concrete pipe should be resolved in a timely manner.

VIII. LESSONS LEARNED, THOUGHTS FOR THE FUTURE

A. Phase I

Experience obtained under Phase I suggested that delays in the contracting and implementation process would occur in Phase II, even under the best of circumstances. In any design of construction projects in Zambia, A.I.D. should be more realistic in judging the amount of time required to successfully carry out a project.

The major lesson of Phase I is that great savings can be achieved by providing adequate and timely maintenance of roads. With some foresight and timely infusions of aid at strategic points, millions of dollars were saved in this manner.

B. Phase II, Part A

It is a violation of A.I.D. regulations under the host country contracting process to approve proceeding with a construction contract before proper drawings have been prepared. Failure to abide by these regulations led to problems from the outset of Phase II.

There is no substitute for designing and budgeting for adequate assessment and evaluations throughout a project's life as a management and project implementation tool. Had a rigorous, thorough evaluation been conducted before January 1985 when the contract had lapsed well behind schedule, it is likely the GRZ and USAID/Zambia would have concluded much earlier that Whyte & Co. was not capable of performing the work required. An analysis of the budget at this time also would have likely shown that adequate funds were available (beyond devaluations of the kwacha) to successfully complete the project under a new contractor. This would have reinforced the option of cancelling the existing contract, and awarding a new one earlier in the project.

C. Phase II, Part B

The principal lesson offered by the second stage of Phase II, thus far, is what can be achieved by having a good contractor with effective management by the GRZ and A.I.D. During the early life of the project, the GRZ and A.I.D. failed to act in a timely fashion on information supplied by TAMS that the contractor was not capable of performing the work required. The problem was compounded by A.I.D.'s decision in early 1985 to abolish the engineer position at USAID/Zambia, contrary to the undertakings set forth in the PP. In the absence of any formal delineation of responsibilities with SARP/Harare, USAID/Zambia then managed the project without the engineer. Until March 1986 this was carried out in a fragmented manner under three successive executive officers who had a heavy load of other duties. The SARP/Harare engineer's role gradually evolved into one of being a technical advisor, making visits occasionally as his schedule permitted.

The realities of carrying out construction projects, regardless of whether it is a host country contract, requires that timely and effective management by A.I.D. representatives be carried out responsibly.

ANNEXES

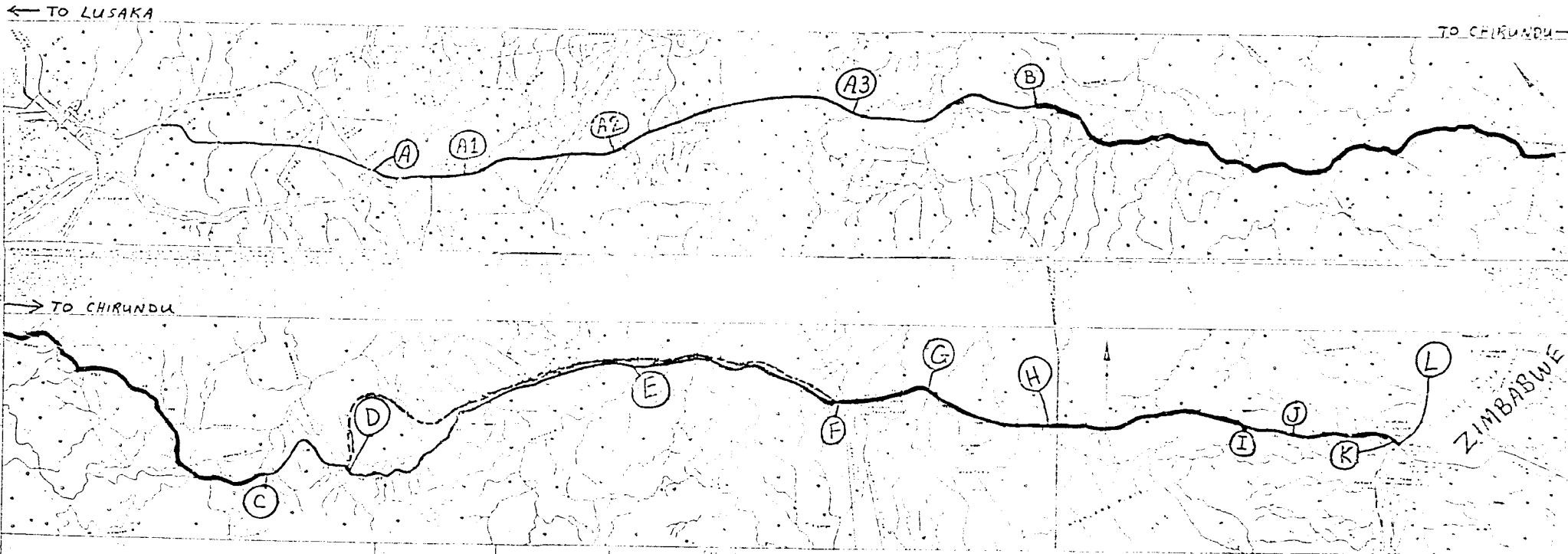
CHIRUNDU - KAFUE ROAD

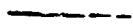


LOCATION MAP

ANNEX A - MAP OF KAFUE-CHIRUNDU ROAD

79



DEVIATION 
 NELLO TEER 
 L.J. WHYLE
 LENDOR + BURTON 
 SEE ATTACHED LEGEND

Director of Roads	Senior Executive Engineer Planning & Layout	Assistant Engineer
Senior Assistant Engineer	Assistant Road Engineer	Assistant Engineer

REPUBLIC OF ZAMBIA
 MINISTRY OF WORKS & SUPPLY
 ROADS DEPARTMENT LUSAKA

NO. 10000	PROJECT NO.
REHABILITATION OF KAFUE-CHIRUNDU ROAD TO PHASE II	TO LUSAKA
	DATE

ANNEX A

Legend to Map of Kafue-Chirundu Road

<u>FROM</u>	<u>TO</u>	<u>CONTRACTOR</u>	<u>CONTRACT ACTIVITY</u>
A (81.5 km)	A1	Whyte	Hot premix overlay
A1 (78.4 km)	A2	Whyte	Reconstruct and double seal
A2 (73.8 km)	A3	Whyte	Hot premix overlay
A3 (66.0 km)	B	Whyte	Reconstruct and double seal
B (60.0 km)	C	Teer	Repair and single seal
C (40.0 km)	D	Lendor-Burton	Repair and double seal
D (36.0 km)	E	Lendor-Burton	Repair and double seal
E (25.0 km)	F	Lendor-Burton	Repair/reconstruct and double seal
F (18.6 km)	G	Teer	Repair and single seal
G (15.4 km)	H	Lendor-Burton	Reconstruct and double seal
H (11.1 km)	I	Teer	Repair and single seal
I (5.0 km)	J	Lendor-Burton	Repair and double seal
J (3.4 km)	K	Teer	Repair and single seal
K (0.2 km)	L	Lendor-Burton	Repair and double seal
L (0.0 km)	Bridge at Chirundu to Zimbabwe		

ANNEX B

TEAM WORK-PLAN FOR EVALUATION
OF THE
KAFUE-CHIRUNDI ROAD PROJECT, PHASE II
(690-0209.02)
NOVEMBER 1987

Team:

Alan Van Egmond, AFR/PD
Fred Guymont, REDSO/ESA

Coordinator: Jim Harmon, USAID/Zambia

TABLE OF CONTENTS

- I. Purpose of Evaluation
- II. Scope-of-Work for the Evaluation
- III. Principal Areas of Focus and Team Responsibilities
- IV. Team Work Schedule
- V. Key Dates for Evaluation
- VI. Table of Contents for Draft Evaluation Report
- VII. List of Persons to be Interviewed

I. Purpose of Evaluation

A. Nature of Evaluation:

- The primary purpose of this evaluation is to conduct a mid-point review of the subject project, to determine the adequacy of available funding and contract time to complete construction and engineering services according to specifications in the PP. A secondary purpose is to identify lessons learned from past project activities with possible application of these lessons to the remaining life of project.
- AID carries out interim evaluations to:
 1. Resolve issues that were identified during the initial planning process but could not be resolved until implementation had proceeded to a specific stage.
 2. Find solutions to major or persistent problems affecting implementation.
 3. Review actual versus planned progress toward the outputs, purpose, and goal of projects.
 4. Review progress to date as required by phased or performance disbursement designs for decisions about continued funding or design modifications.
 5. Reassess the relevance of project objectives to the host country's and A.I.D.'s development program or strategy.
 6. Facilitate or promote policy dialogue.
 7. Improve the efficiency or reduce the costs of project activities.
 8. Review assumptions made during project design and determine their continued validity.
 9. Estimate the short-term effects and the probability for sustained impact of the project.
 10. To document factors accounting for success or failure.

In the case of this evaluation, items 2, 3, 4, 7, 8, and 10 are most relevant.

B. Overriding Concern of Evaluation Team

- An overriding concern of the team will be the issue --
"Can construction and engineering services for the project be completed at a level satisfactory to AID and the GRZ by October 1988 with currently available funds?"

- As currently implemented, is the project likely to attain the purpose set forth in the PP?
- Will the project be maintained properly by the GRZ, thus protecting USAID's investment?

C. Team Methodology

Given the time available, the team will rely upon a review of key project documents and reports, personal interviews and field site visits. The team will explore key project elements to:

- form impressions about the extent to which the current implementation of the project is proceeding at an acceptable pace and achieving outputs called for in the PP;
- describe problems which may be impeding attainment of key project objectives; and
- suggest approaches which may yield improved project results.

II. SCOPE OF WORK

A. General: To evaluate the implementation of the K-C Road Project: to determine whether the original assumptions remain valid, the original objectives are being satisfied, and efforts are in accord with steps required for successful attainment of project goals.

B. Phase I: Did the first evaluation, as performed by REDSO/ESA in May-June, 1982, provide appropriate recommendations for project activities during Phase I, and were the recommended actions carried out?

C. PHASE II, Part A

1. Were project works completed by Whyte roughly in proportion to expenditures?
2. How much more money was required for the project as a result of Whyte's non-performance.
3. What was the quality of work performed by Whyte?
4. Is the recovery of the AID-financed equipment, retained by Whyte Co., proceeding in a logical manner?
5. What was the effect on project implementation with the issue of the side letter by the GRZ to Whyte Co., negating Amendment No. 3 to the Whyte Contract?

D. Phase II, Part B:

1. Was the retendering for contract services and the extension of engineering services carried out in a timely manner and in good coordination between the GRZ and USAID?
2. Did contractor prequalification, tendering and award of the contract follow AID Handbook 11, Chapter 2 procedures for the retendering process?
3. Did construction activities and engineering supervision services develop in a timely manner following award of the construction contract?

E. PHASE II - Project Status and Projections:

1. Evaluate the on-going construction activities to determine the adequacy of the construction contractor's performance and quality of work. Are sufficient work staff and equipment on site to complete the work within the contract time to the required specifications?
2. Are available project funds sufficient to complete the construction and engineering services? If the work was extended?
3. Review and comment on claims.
4. Does the GRZ have adequate follow-on road maintenance resources to cover AID-funded improvements following the end of the contract maintenance period?
5. Is the AID project monitoring performance satisfactory for present project activities? Should any changes be made to cover subsequent project activities?
6. Is contract administration by the GRZ for both construction and engineering supervision adequate? Should there be a change?
7. Are the project design and project specifications adequate for the required work?
8. Is the TAMS engineering supervision staff adequate in number and experience for control of the construction work?
9. Is project reporting by TAMS, the contractor, Dept. of Roads and USAID adequate in scope and quality? Are changes required? Does USAID/Zambia receive comprehensive monthly progress reports by TAMS and the contractor?

10. Does USAID/Zambia receive a comprehensive set of field trip reports by USAID engineers?

11. Are subsequent claims, work delays and problems foreseen in completion of the construction work? (Fuel, spares, staff, water, equipment, devaluation, materials.)

III. Principal Areas of Focus and Team Responsibilities

A. Areas of Focus

	<u>AREA</u>	<u>RESPONSIBILITY</u>
1.	Overall project management	Van Egmond
2.	Road design, construction maintenance	Fred Guymont
3.	Host Country Participation	Team
4.	Timely payment of vouchers	Team
5.	Lessons Learned and Conclusions re Project Implementation	Team
6.	Chronological history and Summary description of key events in project design and implementation.	Jim Harmon
7.	Preparation of Final Report	Alan Van Egmond, Jim Harmon

B. Team Responsibilities

1. Team Coordinator and Control Officer:

- a) Provide overall direction of the team's activity.
- b) Arrange logistical support for the team members, including transportation and documents.
- c) Prepare the chronological history of the project for the evaluation report.
- d) Review team's progress, development of the evaluation report and schedule inter-office reviews of team's activities.

- e) Approve any change, additions, deletions of the evaluation format, scope of work or coverage.
 - f) Arrange for interviews by team members.
 - g) Arrange for word processing of evaluation report.
2. Team Leader:
- a) Guide and coordinate team inputs and activities.
 - b) Oversee completion of the draft evaluation report in all parts.
 - c) With team, identifies and develops detailed outline for evaluation, including changes from proposed format.
3. Engineer:
- a) Conduct an on-site construction inspection and prepares a construction inspection report.
 - b) Prepare specific sections of the report pertaining to engineering issues, including findings and recommendations.
 - c) Provide guidance with respect to the engineering aspects of this evaluation.
4. Engineer, Department of Roads:
- a) Assist in the on-site construction inspection.
 - b) Contribute, in interviews, to specific sections of the evaluation report.
 - c) Review the draft report prior to distribution to the GRZ.
5. Controller/Financial Accountant: (if available)
- a) Prepare specific sections of the report related to payment procedures, AID requirements, documentation requirements for both the construction and engineering services and contracts.
 - b) Provide findings and recommendations for the report related to project activities financial matters or other appropriate items in the services contracts.

IV. Team Work Schedule

A. Team Planning Meeting (Nov 9)

A Team planning meeting will be held in Lusaka to orient team members, familiarize them with scope-of-work specifics, and enable them to draw up a draft work-plan.

B. On-Site Inspection (Nov 10-11)

Team members will conduct an on-site inspection of road construction.

C. Review Background Materials and Interviews (Nov 11-13)

Team members will initiate and carry out interviews, and review key documents on project development and implementation.

D. Second Team Meeting: (Nov 12)

This meeting will take place in Lusaka. The team will:

- review the progress of work undertaken thus far.
- agree on additional work objectives and techniques for remaining inspections and investigations.
- confirm individual final field travel itineraries.

E. Engineer's Report Due (Nov 13)

F. Completion of Inspections, Interviews, and Research: (Nov 16-17)

G. Drafting of Report: (Nov 18-20)

- team members will draft sections of report for which they are responsible. Sections are due Nov 20.

H. Review of Draft Report and Preparation of Refined Draft for AID/Zambia Review: (Nov 20)

- Team will together review and refine draft report.

I. Submission of Draft Report for AID/Zambia Review (Nov 23)

Draft report will be submitted to USAID/Zambia for review.

25

J. Finalizing Evaluation Report and Final Team Meeting:
(Nov 25)

Comments on draft report will be incorporated, and report prepared in final.

K. Submission of Final Report: (Nov 28)

Report will be submitted in final to USAID/Zambia on November 28, and team will exit by Nov 30.

V.

KEY DATES FOR K-C EVALUATION

Nov 8	:	Team Members arrive in Lusaka
Nov 9	:	Team Planning Meeting at USAID/Zambia
Nov 10-11:		Team Conducts On-Site Inspection
Nov 11-13:		Team Members Carry Out Interviews, Complete Background Research
Nov 12	:	Second Team Meeting
Nov 13	:	Engineer's Report Due
Nov 16-17:		Team Completes Investigations
Nov 20	:	Draft Reports Due and 3rd Team Meeting on Findings
Nov 23	:	Draft Report Submitted to USAID/Zambia
Nov 25	:	Final Team Meeting to Review USAID/Zambia's Comments
Nov 28	:	Final Report Submitted

VI.

TABLE OF CONTENTS
(For Evaluation Report)

(Basic Project Identification Data Sheet)

- 1.0 Executive Summary (Van Egmond)
- 2.0 Introduction (Van Egmond)
 - 2.1 Background
 - 2.2 Objectives
 - 2.3 Methodology
 - 2.4 Team
- 3.0 Relevance of Phase I to Phase II (Van Egmond)
- 4.0 Implementation of Phase II, Project Status and Projections (Team)
 - 4.1 Summary of Phase II, input, output, purpose and goals.
 - 4.2 Status of Project Implementation
 - 4.3 Evaluate ongoing project activities covering construction work, quality of work, adequacy of engineering services, adequacy of project funding, follow-on maintenance requirements, adequacy of project monitoring by USAID, contract administration by Dept. of Roads and adequacy of project reporting.
 - 4.4 Projections on implementations of project activities remaining.
 - Assess:
 - a) the time of completion of construction.
 - b) adequacy of available funds to complete all project activities.
 - c) possible future problem areas.
 - d) possible claim actions by the contractor.
 - e) estimate of follow-on road maintenance requirements.
- 5.0 Lessons Learned (Team)
 - 5.1 Phase I,
Project Activities

- 5.2 Phase II, Part A,
Project Activities starting with the initial contracting for construction services (Whyte Co.) and engineering services (TAMS) to the termination of Whyte's contract (Feb 87) by the Ministry of Works and Supplies.
- 5.3 Phase II, Part B,
Project Activities starting with the retendering for construction services (Lendor & Burton) and re-contracting for engineering services (TAMS) up to the time of this evaluation (Nov 87).
- 6.0 Findings, Conclusions, and Recommendations (Team and Harmon as Rapporteur).
- 7.0 Appendices
 - 7.1 Chronological history of the project covering Phase I and II. (Harmon)
 - 7.2 Construction inspection report. (Guymont)
 - 7.3 Schedule of Site visits and Persons contacted. (Van Egmond)

VIII. List of Persons to be Interviewed

A. AID/W

- 1. GC. Gary Bissen (formerly USAID/Swaziland lawyer involved in prequalification and tendering procedures for Whyte contract at start of Phase II)
- 2. AFR/PD. Jim Graham (REDSO/ESA project officer during design and initial implementation of Phase II)
- 3. AFR/SA. Leonard Pompa (Zambia desk officer)
- 4. AFR/SA. Frederick Fischer (Director)
- 5. AFR/PD/SARP. Mary Ann Riegelman (Zambia PD backstop officer)
- 6. AFR/PD/SARP. Paul Thorn (Director)

B. USAID/ZAMBIA

1. James Harmon, Project Manager.
2. Leslie Dean, Deputy Director.
3. Ted Morse, Director.

C. LENDOR & BURTON

1. Tom Dwyer, Site Agent
3. Other construction engineers

D. TAMS

1. Charles Adams, Chief of Party
2. Robert Hanna, Soils Engineer

E. GRZ

1. Tyson Ngoma, Director, Department of Roads
2. Paul O'Leary, Supervising Engineer, Contracts, Department of Roads

Initial Draft: USAID/Zambia: JHarmon
Revised Draft: AFR/PD: AVanEgmond
11/04/87: eid: 3632L

ANNEX C

Project Inspection Report
Fred Guymont, Engineer, REDSO/ESA

The rehabilitation of the T2 Chirundu-Kafue Road has taken place over the last six years. The first contract was in late 1981 - early 1982. The objective was to reseal the surface of the road in order to strengthen it and prevent further deterioration, thereby avoiding more costly repairs. The contractor, Nello Teer, sealed about 33 kilometers at a cost of about \$956,000. His work was concentrated in the first 18 kilometers of the road and kilometers 40 to 60. (Kilometer 0.0 of the road is the bridge at Chirundu over the Zambezi River, kilometer 82 is the bridge South of Kafue over the Kafue River.)

The second contract should have completed the rehabilitation. It included more extensive repairs including rebuilding the sub-base and base, adding a surface treatment of rock chips, and finally a slurry seal where necessary. For various reasons including inadequate management, lack of experience, inadequate equipment and problems with foreign exchange, the contractor, Whyte was unable to finish the work.

Whyte did do some major reconstruction work, including redoing the sub-base, base and adding a double surface seal on about 11 kilometers. He added a hot premix bitumen overlay to about another 11 kilometers. His work was from kilometer 60.0 to 81.5. Total expenditures under the Whyte contract were about \$3.4 million

In March of 1987 a contract was signed with Lendor and Burton Construction Ltd. Construction of the deviation and camp began in May. The Project consists of the rehabilitation of approximately 82 kilometers and ancillary works. The work to be performed under this contract includes the following:

- (i) Reconstruction of approximately 17 kilometers of existing roadway. This work consists of scarifying, reshaping, widening and compacting existing surface and base course to subgrade standards; placing new approved subbase, base course and shoulder material including cement stabilization as required; prime and double bituminous surface treatment (surface dressing) applied over approximately 19 kilometers of reconstructed roadway.
- (ii) Repair existing bituminous surface; provide and lay a double bituminous surface treatment and slurry seal over approximately 11 kilometers of roadway; repair and widen shoulders as required and improve roadside drainage; construct interceptor and mitre ditches where feasible.

(iii) Ancillary work includes removal and replacement of damaged existing drainage structures; headwalls and slope protection; construction of additional drainage structures where required; replace existing damaged curbs and install additional ones where required; provide and place concrete guide posts and permanent traffic and information road signs; repair existing guard rails and install new guard rails as specified; provide and install gabions where required; construct weighbridge facilities; provide material and paint 100 mm white intermittent and continuous guide line on center line of finished road surface.

Field Trip - On November 10 and 11, 1987, an inspection was made of the quarry at Kafue where the stone chips are produced, the road itself, the contractor's camp which includes the concrete batch plant, bitumen heating plant, TAMS soil laboratory and the equipment maintenance facility. The purpose of the trip was to evaluate on-going construction activities to determine whether the work will be completed on time, within budget and to the required specifications. Other aspects of the project that were evaluated were longterm maintenance requirements, the claims situation, the adequacy of the engineer's monitoring of the project by AID, GRZ and TAMS (the engineer's representative on the project).

The contractor (Lendor and Burton) has been working for seven months. By this time, the contractor has a good idea of production rates for such items as placement, compaction and stabilization of base materials; application of stone chips and slurry seal; concrete work on the box culverts and excavation; and placement of concrete pipe and subsequent backfill and compaction. The contractor is slightly ahead of schedule on the earthworks, base course stabilization and pipe culvert excavation and pipe laying. The contractor is somewhat behind schedule on pot hole repairs, placement of chips, box culvert construction, and the head walls, wing walls and aprons on the culverts.

The area that is presenting the greatest problem is cleaning chips, which contain a great deal of crusher dust. Water supplies have proven inadequate since water is trucked in. Lendor and Burton is looking at ways of rescreening and blowing the dust out without washing. One suggested way is to roll the chips around on the bucket of a front end loader. Once the chips are ready they can be spread rapidly at a rate of about 1 km per day.

The contractor is confident that the work can be completed on schedule, in fact, internally they are hoping to complete the project two months early, in August 1988. They have promised to have an 11 kilometer section on the escarpment from kilometer 36 to 25 finished by December 15, 1987. In any case this section has to be finished before the rains, since truck travel on the deviation will be impossible.

I see no reason why the project can't be completed on time, assuming the rains aren't heavy and prolonged. There are no problems with materials such as cement, rebar, bitumen and fuel. Fuel problems, which would also include bitumen, are always a possibility, but since the contractor is being paid in foreign exchange, fuel and other petroleum products can be imported. In any case, there have been few problems with the availability of these materials over the last couple of years. Excellent quality chips are being produced at a Roads Department quarry at Kafue. A crusher was recently imported from Finland through the Finnish AID program. Since the Roads Department is providing the chips, a saving of K4.6 million was realized.

The contractor's equipment appears adequate. Recently six new side loading tractor trailers were purchased for the project. Two areas where there appears to be a weakness are rollers and water trucks. One 75 meter section on the escarpment was recently rejected because of inadequate compaction. Burton was using a scraper for the compaction rather than a roller, although apparently a roller was available. Water trucks usage is up because chip washing is necessary. Trucks are hauling water from the Kafue River to the camp about 11 km away.

The quality of the work is good, and is now closely supervised by TAMS. The road is being constructed to standard Roads Department specifications. TAMS now has five engineers supervising the construction. The soils lab is regularly running tests on the base and sub base, concrete, borrow material and chips. With TAMS up to a full complement, supervisors can be present when critical activities are happening. One area where Burton is somewhat short of staff is mid level foremen. Although there are about 10 expatriate top level supervisors, they cannot be at all places all the time. Supervisors are critical because most of the labor is locally hired and is being trained on the job.

The quality of resealing on the Nello Teer sections, and the construction on the Whyle sections are generally good. The Nello Teer work has stood up well, and certainly the \$956,000 investment in sealing 33 km was money well spent. During the first period of project implementation, TAMS rejected quite a bit of Whyle's work due to failure to achieve required compaction on stabilized base course, which Whyle had to re-do. Those sections that TAMS accepted have for the most part stood up well. Only minor repairs and final clean-up will be required by Lendor and Burton on most Whyle sections.

The project will likely come in under budget. The quantities in the contract were estimated on the high side and there was a significant cost savings on the chips. Variation Order 1, which reflected the chips savings and a change in size of chips, reduced costs by K4.6 million. The present estimate is that there should be reductions of about 6.5 to 7 million kwacha and price increases of material of about 2 million kwacha, for a net savings of about 4.5 to 5 million kwacha. There is some planning to use approximately K3 million remaining in the contract to reseal the Nello Teer work which is nearing the end of its design life of 5-7 years.

Maintenance - Although the contract with Lendor and Burton includes a one year maintenance program following acceptance of the work, the Roads Department should evaluate its requirements for routine maintenance such as pot hole filling, shoulder repairs, culvert and drain clearing and grass cutting. There is a maintenance camp about 15 km from the beginning of the road. The Roads Department was provided some equipment for maintenance (3 tipper trucks) a few years ago, but apparently is re-thinking its equipment requirements. They should be pushed to upgrade the maintenance plan to include the type of work, equipment, materials, labor and cost to do the routine maintenance.

Claims - The contractor has submitted his intent to file two claims to date. These were a delay in the Roads Department mobilization order and a delay in issuing an import license to clear project material out of customs. This import license was delayed because Lendor and Burton was being charged a levy they claimed they didn't have to pay under the terms of the contract. As a result the contractor is asking for an extension of time to his contract.

Issue to be resolved. This relates to increases in the price of concrete pipe. The contractor bid both steel and concrete pipe. Because steel pipe was unavailable in code 941 countries and because a waiver to South Africa wasn't approved by AID, the contractor substituted concrete pipe for which he supplied an alternate price in his tender. The price of the concrete pipe has since increased, and the contractor is trying to recover the increased cost. To date, the Roads Department hasn't approved this payment of about K150,000. Contractually it seems Lendor and Burton has a valid argument. This increased cost should be paid as a variation of price item under the contract, pending further discussions between the contractor and the Roads Dept.

Monitoring - As mentioned previously, TAMS supervision of Lendor and Burton is adequate. However the construction contractor has not received a letter from the Roads Department outlining TAMS' authority as the engineer's representative. While this has not proven to be a problem to date, TAMS' authority has to be spelled out. At a minimum, TAMS has to have the authority to approve or disapprove work. TAMS drafted a letter for Ministry approval, but the letter was not acted upon.

Project reporting has to be strengthened. The contractor's CPM chart has not been finally approved. Once this is done, progress vs scheduled progress can be quantified in the monthly report both in terms of work done and cashflow. The present monthly report is too qualitative. It is difficult to determine exactly where the project is.

Monthly meetings including the contractor, TAMS, AID and the Department of Roads should be scheduled and held. One problem is the Director of Roads is often not present in Lusaka. This underscores why the delegation of authority to TAMS mentioned earlier is critical. The Director of Roads is really the only person who will make a decision on behalf of the Roads Department. Every effort should be made to accommodate his schedule in setting up meetings, preferably at site, or in Lusaka, if necessary. This is one of the biggest and most important road projects in the country, and the Director should be strongly encouraged to chair the monthly meetings.

Finally, AID needs to monitor the project through at least bi-weekly visits to the site by the Project Officer and monthly visits by the Regional Engineer from Harare (whose trip hopefully can be coordinated with the monthly meetings). Visits by AID officers should be followed by a short memo to the files. Field trips can often uncover problems that aren't raised in TAMS' monthly reports or in meetings.

Phase II, Part B

Once the Whyle contract was terminated, the selection of a new construction contractor proceeded in a timely fashion according to the regulations in AID Handbook 11, Chapter 2. Prequalification notices were placed in the Commerce Business Daily and in Zambian and regionally based newspapers in mid 1986. By August of 1986, a prequalification list of contractors was developed by the Department of Roads, and reviewed by USAID with some minor changes. One contractor was deleted, because it was a parastatal, and another firm added.

The prequalified contractors were invited for a pre bid conference and site visit in October 1986. Three tenders were received in November 1986. The tenderers had access to design materials required for all work items, i.e., the cross section designs and typical culvert bedding details, and typical headwall and apron details on the culverts. Technical specifications are standard GRZ Specifications for Roads and Bridges. The contract document was a joint effort of TAMS, GRZ, REDSO, and USAID. The work included completion of considerable culvert work started by Whyle.

A contract was awarded by the Ministry of Works and Supply, and approved by USAID in January 1987. Because of delays in obtaining the bank guarantee, the mobilization notice was not given until March 1987. Given the rehabilitation nature of the contract with work scattered throughout 82 km of the project site, the necessity to complete work started by Whyle and to redo sections that had failed, the estimates developed by the engineer were subject to considerable variance. However to date they appear to be accurate, and the money in the construction contract appears sufficient to complete the work.

The TAMS engineering supervision contract was extended in late 1986. There was a delay of about six months in paying TAMS, but all payments have now been made under the existing new contract. The TAMS team was delayed in mobilizing because of delays in approvals of personnel by the Roads Department, and for the first month the engineer could not properly cover the work being done by the construction contractor. The team is now fully mobilized and the size of the team is adequate to monitor the construction contractor.

Reports Reviewed by Guymont

1. Government of the Republic of Zambia Standard Specification for Roads and Bridges, December 1973.

45

2. Form of Tender, Conditions of Contract, Specification and Bills of Quantities for the Rehabilitation of Approximately 82 Kilometers and Ancillary Works of the T2 Chirundu to Kafue Road.
3. TAMS Monthly Progress Reports.
4. Design Drawings prepared for the Ministry of Works and Supply Roads Department by TAMS (cross sections, bedding details and headwall dimensions for culverts).

People Interviewed

Ted Morse, Director, USAID/Lusaka.
James Harmon, Commodity Management Officer, USAID/Lusaka.
Cap Dean, Deputy Director, USAID/Lusaka.
Charles Adams, Chief of Party, TAMS.
Robert Hannah, Soils Scientist, TAMS.
Mr. T. Ngoma, Director of Roads.
Tom Dwyer, Site Agent, Lendor and Burton

ANNEX D

CHRONOLOGY OF EVENTS

- Sept.30, 1981 Loan Agreement for \$10,510,000 to rehabilitate the Kafue-Chirundu Road signed by GRZ and U.S. Government.
- Sept.17, 1982 Three tenders were received for construction services as follows:
- | <u>Tenderer</u> | <u>Amount (K)</u> |
|----------------------------------|-------------------|
| L.J. Whyte & Co. (Zambia) | 17,238,845.39 |
| Nello Teer, Inc. (U.S.) | 20,410,160.00 |
| Kundan Singh Construction(Kenya) | 23,176,465.50 |
- *Note: All tender sums exceeded available funds and competitive negotiations were carried out using original tender documents, with reductions in the quantities of work.
- New tenders were:
- | | |
|---------------------------|---------------|
| L.J. Whyte & Co. | 15,199,254.19 |
| Nello Teer, Inc. | 16,723,399.00 |
| Kundan Singh Construction | 14,686,348.30 |
- Sept.27, 1982 Agreement signed by GRZ and U.S. Government to increase the loan to \$13,100,000.
- Feb.28, 1983 The Director of Roads advised L.J. Whyte that, subject to approval by USAID, its tender in the negotiated amount of K14,900,254.19 was accepted. The period for contract completion was established at 20 months, from April 15, 1983 through December 31, 1984.
- April 22, 1983 AID-approved contract for TAMS to supervise construction was signed by TAMS and GRZ. The contracted valued at \$802,950 provided for supervisory service from May 1, 1983 through April 30, 1985.
- April 22, 1983 Director of Roads issued L.J. Whyte the Notice to Proceed with the work.
- April 30, 1983 Whyte mobilized 7 pieces of heavy equipment to site.
- May 4, 1983 Amendment No. 1 to Whyte contract provided for the contractor to procure certain equipment offshore and for USAID to make direct payments not to exceed \$2,446,560 to suppliers.

- May 5, 1983 Whyle began construction of TAM's office, housing and soils laboratory.
- May 31, 1983 Whyle mobilized various workers (totalling 86) to site.
- July 25, 1983 Program of Works was submitted by Whyle to TAMS.
- Sept.8, 1983 Traffic was diverted to first deviation completed by Whyle between km 78.4 and 72.0.
- Dec.3, 1984 Whyle submitted Claim No. 1 for extension of time to complete the works.
- Dec.3, 1984 Whyle submitted claim No. 2 for extension of time based on a shortage of fuel and lubricants.
- Feb.25, 1985 Whyle submitted claim No.2a for extension of time based on rain and the effects of rain.
- March 7, 1985 Whyle submitted claim No.5 contending that "Initial Drawings" were not provided on time, causing an overall delay equivalent to the period of late receipt of these drawings. N.B. claim 3 was never submitted and claim 4 was included in claim 11. Note: In sum Whyle prepared 18 claims, a number of which were never formally submitted to TAMS for review. TAMS carried out a detailed analysis of these claims, most of which were determined by TAMS to be either invalid or insufficiently supported to be evaluated. Several of the last claims were submitted to the Ministry of Legal Affairs where they remain, pending further legal review of contract claims, counter-claims, etc. Claims supported by TAMS are summarized below:

Claim No.	TAMS Recommendation
2	to allow a 28 day extension
2A	to allow a 18 day extension
7	to allow a 1 day extension

- April 25, 1985 Amendment No.2 to the Whyle contract provided for an amount not to exceed \$120,000 to be paid to the contractor to pay his expatriate staff salaries.
- May 16, 1985 Amendment No.1 to the TAMS contract provided for increased funding up to \$1,174,791 to add an additional 60 person months to the level of effort.

- Aug.2, 1985 Whyle advised the Roads Dept that he had no option but to suspend progress of the works in accordance with Clause 60 (vii) of the contract because certificates No. 13 and 10 had not been paid within 30 days as specified in the contract.
- Aug.15, 1985 Amendment No.3 to the Whyle contract provided for an extension of the contract period to January 31, 1986 but maintained the contractor's liability for liquidated damages as stipulated in the contract. As a result of this action, AID recommended disbursing funds.
- Aug.15, 1985 Whyle and the Roads Dept signed a side Agreement (not approved by AID) which effectively nullified Amendment No. 3 to the Whyle Contract, making substantial concessions to the contractor, including:
- relief from performance according to the approved Program of Works
 - unspecified extensions of time with associated costs based on unsubstantiated claims
 - relief from burden of liquidated damages
 - the right to not recommence work until (1) an agreement was reached on the amount to which the contractor was entitled from suspension of the works, and (2) payment of all certificates.
- Oct.7, 1985 TAMS instructs Whyle to recommence work pointing out that certificates for which he had suspended the works had been paid in full and that Whyle was contractually obligated to continue with the works.
- Jan.31, 1986 Amendment No.2 to the TAMS contract provided for an extension of time to Oct 31, 1986 and an increase in funding to \$1,476,948.
- Feb.5, 1986 Due to Whyle's failure to return to work, the Roads Dept served notice that Whyle would be expelled from the site in 14 days and construction equipment/materials on the site would be seized.

- Feb.7, 1986 Whyle formally gave Roads Dept 7 days notice of its intention to determine the contract for non payment, advised that equipment brought to the site by Whyle would be removed from the site and stated its intention to claim for any damages or losses arising from the determination.
- Feb.17, 1986 Amendment No.3 to the TAMS contract provided for an extension of time to December 31, 1986.
- Feb.19, 1986 GRZ Solicitor-General requested parties to the contract to "make all reasonable endeavors to reach a compromise".
- Feb.21, 1986 Roads Dept formally required Whyle to return all equipment to the site which had been removed subsequent to Whyle's Feb 7 letter.
- Feb.24, 1986 Whyle's lawyer responded to Solicitor-General emphasizing a spirit of cooperation and referencing efforts by the Ministry of Legal Affairs to investigate the situation.
- Feb.24, 1986 Permanent Secretary of National Commission of Development Planning advised the Ministry of Legal Affairs that it had determined Whyle incapable of completing the works and requested Legal Affairs to complete action regarding Whyle soonest.
- Feb.24, 1986 Solicitor-General advised Whyle's lawyer of his dismay with the contractors actions and that he awaited resolving outstanding issues in court. Note: the issues of removing equipment from the site, claims against the GRZ and counter-claims against Whyle etc., are now in the hands of the Ministry of Legal Affairs, completely outside the control of the Roads Department.
- March 24, 1986 USAID discovered the Aug 15 side letter and formally protested this action to the GRZ. It was advised that further financing of the project was not possible unless: (1) the GRZ provided assurances that the Whyle termination would remain in force; and (2) the Roads Dept would adhere to the loan agreement regarding all required AID approvals in the competitive selection of a second contractor and administration of the contract to complete the works.

- May 2, 1986 Project Authorization was amended to extend the PACD to June 30, 1989.
- June 6, 1986 GRZ formally agreed to AID's March 24 demands, thus allowing the tender process for a replacement contractor to proceed.
- June 22 -
July 5, 1986 Advertisements were placed in Zambia, Zimbabwe, Botswana, Kenya and the U.S. to elicit prequalification information from construction firms interested in rehabilitation of the Kafue-Chirundu Road. The successful firm would replace L.J. Whyte.
- July 22, 1986 Amendment No. 4 to the TAMS contract provided a mechanism to reimburse TAMS for services not contemplated in the original contract.
- Aug.22, 1986 USAID approved prequalification of 5 construction firms by Roads Dept.
- Oct.6, 1986 Site visit was conducted by the Roads Dept with the assistance of TAMS for the five prequalified contractors. Only Lendor & Burton (Zambia), Gulliver Construction Ltd. (Zimbabwe) and the joint venture of Williams Brothers (US)/Taylor Woodrow (US) attended.
- Oct.7, 1986 Site conference was conducted by the Roads Dept with assistance from TAMS to formally answer questions from the 3 prospective contractors. These responses were incorporated into the contract as minutes of the site conference.
- Nov.14, 1986 Tender Board received tenders from the three firms which attended the site conference.
- Jan.7, 1987 Tender Board approves GRZ/Lendor & Burton Construction Contract.
- Jan.16, 1987 USAID approves Tender Board award and authorized signing of GRZ/Lendor & Burton Construction Contract.
- Jan.22, 1987 Formal notification was sent to Lendor & Burton that the contract was awarded by the Ministry of Works and Supply.
- Jan.23, 1987 Director of Roads officially advised Lendor & Burton to commence works and stated the starting (Feb.21, 1987) and completion (Aug.20, 1988) dates of the contract.

- Feb.25, 1987 Lendor & Burton advised the Ministry of Works and Supply that the required performance bond could not be put in place until the GRZ agreed to settle financial arrangements on an earlier contract to construct the Limalunga-Senanga Road.
- Feb.25, 1987 Amendment No. 5 to the TAMS contract provided for an extension of the services of the resident engineer to February 28, 1987, and provided a mechanism to allow reimbursement to TAMS for services to close-out the contract.
- Feb.28, 1987 TAMS Supervision Contract expired and TAMS operated without a contract while negotiations proceeded between the Roads Dept and TAMS on a follow-on agreement.
- March 1, 1987 TAMS Resident Engineer officially commenced work on Lendor & Burton portion of works.
- March 19, 1987 Lendor & Burton advised Roads Dept that an agreement to settle payments on the Limalunga-Senanga Road had been reached with the Bank of Zambia, that the performance bond had been submitted and that further delays to contract signing would not be the responsibility of Lendor & Burton.
- March 20, 1987 Performance Bond was accepted by Ministry of Works & Supply and GRZ/Lendor & Burton Contract was signed.
- March 20, 1987 Roads Dept sent a letter to Lendor & Burton advising of the contractor's default in compliance with the contract provision stating that the contractor must furnish an acceptable performance bond within 14 days from the contractor's acceptance of the tender. In consequence of this default, Lendor & Burton were advised that the contract period would commence April 20, 1987 and end Oct 20, 1988.
- April 15, 1987 Lendor & Burton met with Ministry of Finance officials to discuss the issue of exemptions from customs and duties.
- April 22, 1987 Lendor & Burton take possession of site from km 0 (Chirundu) to 39.6 and km 59.78 to 81.5.
- April 28, 1987 USAID controller requested AMEMBASSY Paris to make advance payment of \$637,912.11 to Lendor & Burton.
- May 7, 1987(O/A)Lendor & Burton begin work to construct deviations

- May 11, 1987 Lendor & Burton applied to Ministry of Commerce and Industry for an import license for items to be used to complete the construction.
- May 13, 1987 Follow-on TAMS Supervision Contract approved by USAID.
- May 14, 1987 Roads Dept sent USAID-approved TAMS Contract to P.S. Works & Supply for confirmation and transmittal to Tender Board.
- May 22, 1987 Lendor & Burton submit draft of Program of Works to TAMS for review.
- June 4, 1987 After an inspection of the site, the first site meeting was held by the Director of Roads at Lendor & Burton's camp. Participants were A. Burton and staff, C.K. Adams (TAMS) and USAID as observers. A Burton advised that Roads Dept had not replied to his letter requesting details of powers delegated to TAMS.
- June 10, 1987 TAMS Supervision Contract approved by P.S. of Works & Supply and sent to Tender Board for approval.
- June 11, 1987 Lendor & Burton formally advised Ministry of Works & Supply of their intent to claim for time lost from import license delays and request a time extension.
- June 16, 1987 Citibank advised Lendor & Burton that import licenses had been approved by GRZ and that Lendor & Burton had to pay K1,015,00 to Citibank before the licenses would be released. This was to cover the debit to the Citibank account erroneously made by the Bank of Zambia as an import license levy. Import license could be collected by Lendor & Burton once Citibank received K1,015,000 either as a reimbursement from the GRZ or as a payment by the contractor.
- June 16, 1987 Lendor & Burton received a letter from the Ministry of Commerce and Industry granting an exemption to the standard import license levy.

52

June 30, 1987 USAID controller requested AMEMBASSY Paris to make payment of \$585,609.02 to Lendor & Burton on 1st certificate (preliminary work items).

July 9, 1987 TAMS Supervision Contract approved by the Ministry of Works & Supply pursuant to Tender Board approval.

July 10, 1987 TAMS Supervision Contract signed by GRZ and TAMS.

July 15, 1987 Deviation between km 28 and km 36.4 completed and opened to traffic.

July 15, 1987 Ministry of Finance advised Lendor & Burton of exemptions from customs and duties.

July 21, 1987 Citibank received refund of K1,015,000 from the Ministry of Finance resulting from the erroneous import license levy, and Lendor & Burton collected the import license from Citibank.

July 26, 1987 Robert Hanna, TAMS soils engineer, starts work.

July 31, 1987 Traffic was routed over deviation from km 22.1 to 36.4.

Aug.3, 1987 Lendor & Burton formally advised the Roads Dept of their intent to claim for their costs resulting from the delay by the employer in issuing the order to mobilize.

Aug.14, 1987 Second site meeting was held at contractor's camp following an inspection of the site. Participants were the same as on June 4, 1987. A. Burton again asks for details on powers delegated to TAMS by the Roads Dept. Mr. Ngoma said he would send a letter to Lendor & Burton.

Aug.16, 1987 B. Thurqivatuan, TAMS assistant engineer, starts work.

Sept.1, 1987 Carlos Mercado, TAMS assistant engineer, starts work.

Sept.10, 1987 D. Gephard, AID regional engineer, from Harare visits the site.

Sept.23-24,1987 Maria Asin of TAMS New York Office visits the site.

- Sept.25, 1987 Variation Order No. 1 was signed by Roads Dept reducing the tender sum by K4,599,814.00 as the Roads Dept agreed to supply chippings from its crusher at Kafue.
- Sept.30, 1987 David Khaemba, TAMS field inspector and last team member to be mobilized, starts work.
- Oct.12, 1987 Lendor & Burton receive payment for Certificate No. 2, 63 days after invoice date. Note: the contract specifies that the contractor will be paid within 60 days.
- Nov.6, 1987 Minister of Works & Supply visited the site with Roads Dept and set up ribbon cutting ceremony on Dec 15 for section of road from km 25 to 36. N.B. Putting traffic back on this section of the road was the critical path prior to the onset of the rainy season.
- Nov.10-11,1987 AID evaluation team makes an inspection of the works.
- Nov.18-20,1987 Director of RFMC meets with USAID to work out a strategy to ensure timely payments to Lendor & Burton.

ANNEX E
KEY REFERENCES

- I. Phase I
 - A. PID: Rehabilitation of the Lusaka Regional Road (Zimbabwe-Zambia Road), April 1981.
 - B. Project Authorization and Project Paper: Regional Transport and Storage Development, Phase I (690-0269), June 4, 1981.
 - C. Project Evaluation of Phase I, July 1982, and comments of USAID/Zambia Representative John Patterson and USAID/Zambia Engineer Clarence Groceman thereto, October 21, 1982.
 - D. Report by John Hewett, AID Consultant Engineer, to AID/Zambia Representative John Patterson, on Regional Transport Development (690-0209), June 23, 1981.

- II. Phase II
 - A. Project Paper: Regional Transport and Storage Development - Makuti-Chirundu Road (690-0209), June, 1982.
 - B. Project Authorization and Project Paper: Regional Transport and Storage Development, Phase II (690-0209), September 25, 1981.
 - C. Project Loan Agreement between the GRZ and the U.S. for the Kafue-Chirundu Road Rehabilitation Project - Phase II, (690-0209-02), September 30, 1981.
 - D. Action Memo from AFR/PD Peasley to AA/AFR requesting extension of PACD for subject project, May 2, 1986.
 - E. Chirundu-Kafue Road Rehabilitation Project, Government's claim against L.J. Whyte, prepared by TAMS Engineers, November 1986.
 - F. Review of L.J. Whyte's Claims, Ibid., November 1986.
 - G. Trip Report of David Gephard, SARP/Harare, on the Kafue-Chirundu Road Project, via memo to USAID/Zambia, James Harmon, September 17, 1987.
 - H. Government of the Republic of Zambia, Standard Specifications for Roads and Bridges, December 1973.
 - I. Form of Tender, Conditions of Contract, Specification and Bills of Quantities for the Rehabilitation of Approximately 82 Kilometers and Ancillary Works of the T2 Chirundu to Kafue Road.

- J. TAMS Monthly Progress Reports.
- K. Design Drawings prepared for the Ministry of Works and Supply, Roads Department by TAMS (cross sections, bedding details and headwall dimensions for culverts).

III. Evaluation Methodology:

- A. "An Approach to Evaluating the Impact of AID Projects," by Louise G. White, AID Program Design and Evaluation Methodology, Report No. 5, March 1986.
- B. "Evaluating the Socio-Economic Impact of Rural Road Projects: Three Approaches to Baseline and Follow-up Data Collection Designs," AID Evaluation Occasional Paper No. 9, April 1986.
- C. "A.I.D. Evaluation Handbook," A.I.D. Program Design and Evaluation Methodology Report No. 7, April 1987.
- D. "Guidelines for Data Collection, Monitoring and Evaluation Plans for A.I.D. Assisted Projects", by Maureen Horton and Sharon Pines Benoitel, A.I.D. Program Design and Evaluation Methodology Report No. 9, April 1987.
- E. "Designing Monitoring and Evaluation Systems: Issues and Opportunities", by Chris Hermann, AID Evaluation Occasional Paper No. 14, October 1987.

51

ANNEX F

PERSONS INTERVIEWED

AID/W

1. GC. Mr. Gary Bissen (formerly USAID/Swaziland lawyer involved in prequalification and tendering procedures for Whyte contract at start of Phase II)
2. AFR/PD. Mr. Jim Graham (REDSO/ESA project officer during design and initial implementation of Phase II)
3. AFR/SA. Mr. Leonard Pompa (Zambia desk officer)
4. AFR/SA. Mr. Frederick Fischer (Director)
5. AFR/PD/SARP. Ms. Mary Ann Riegelman (Zambia PD backstop officer)
6. AFR/PD/SARP. Mr. Paul Thorn (Director)

USAID/ZAMBIA

1. Mr. James Harmon, Project Manager.
2. Mr. Leslie Dean, Deputy Director.
3. Mr. Ted Morse, Director.
4. Mr. William MacLauchlan, Executive Officer.
5. Ms. Tess Buna, Financial Analyst.
6. Dr. James Snell, Agricultural Economist.

SARP/HARARE

1. Mr. Dennis Light, Engineer

LENDOR & BURTON

1. Mr. Andrew Burton, Director
2. Mr. Tom Dwyer, Site Agent
3. Other construction engineers

TAMS

1. Mr. Charles Adams, Chief of Party
2. Mr. Robert Hanna, Soils Engineer

GRZ

1. Mr. Tyson Ngoma, Director, Department of Roads
2. Mr. Paul O'Leary, Supervising Engineer, Contracts, Department of Roads
3. Mr. Raj Ayaru, Deputy Director of Roads

OTHERS

1. Mr. Juhani Toivonen, First Secretary, Embassy of Finland, Lusaka, Zambia
2. Mr. A. Hulliung, Director, RFMC/Nairobi

ANNEX G

Whyle Contract - Calculation of Net Financial Costs

I. Whyle Contract: Works Completed .v. Expenditures

A. Permanent Works Completed *

Payments by AID certified for Permanent Works Completed	K 3,121,643	
Contract Amount for Permanent Works	K 9,387,961	
Percentage of Permanent Works Completed	K $\frac{3,201,769}{9,387,961}$	X 100% = <u>34.1%</u>

B. Loan Funds Expended

Tender Sum:	K 14,900,254	
GRZ Contribution: (equivalent to \$4.6 million)	K 4,181,400	
Exchange Rate: K.909 = \$1.00		
Loan Funds Paid to Whyle:	\$ 3,402,416	
Dollar Equivalent of Tender Sum Funded by the Loan:	$\frac{14,900,254 - 4,181,400}{.909}$	= \$11,791,919
Percentage of loan funds for construction paid to Whyle:	\$ $\frac{3,402,416}{11,791,919}$	X 100% = <u>28.8%</u>

* Taken from Monthly Progress Report No. 27 for July 1985.

Whyle suspended the works on Aug 2, 1985 and never returned to the job.

II. Additional Costs Attributable to Non-Performance
by L.J. Whyte

A. Increase in Supervision Costs

TAMS Supervision Cost		
Actual contract expenditures to supervise Whyte (for contract amended to cover time extensions required by Whyte)	\$1,408,588	
TAMS Contract (based on original timeframe to complete works).	<u>\$ 802,950</u>	
Increase Cost on Whyte Contract		\$ 605,638
TAMS Contract to Supervise Lendor & Burton		<u>\$ 827,572</u>
Total Increase in Supervision Costs		\$1,433,210

B. Mobilization Costs Paid to Whyte by AID

Mobilization Certificates Approved for Payment	K2,770,591	
Total Certificates Approved for Payment (Mobilization plus Work Items)	K5,972,310	
Ratio of Mobilization Expenses to Total Expenses	.46	
Payments by AID to Whyte	\$3,402,416	
Dollar Equivalent of Mobilization Costs of Whyte Contract	\$3,402,416 X .46	<u>\$1,565,111</u>

C. <u>Total Additional Costs to AID of Non-Performance by Whyte</u>		\$2,998,321 =====
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